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OFFICIAL GAZETTE
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VOL NO 1021

AUGUST

1982

MICRO PHOTO DIVISION

BELL & HOWELL

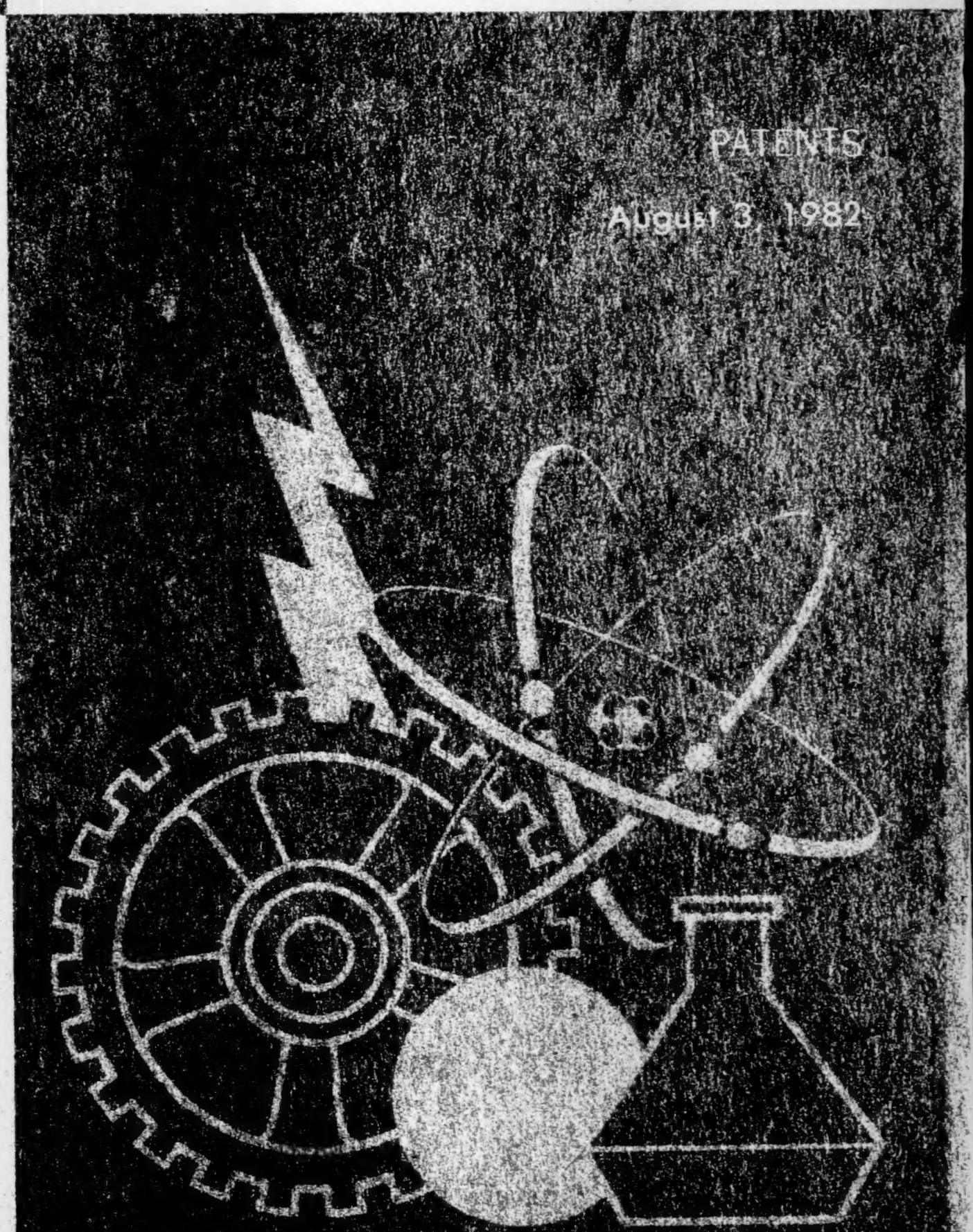
Vol. 1021 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:



PATENTS

August 3, 1982

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

August 3, 1982 Volume 1021 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION) issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION) issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

Board of Appeals Decisions Rendered in the Month of June 1982

Affirmed	221
Affirmed in Part	19
Reversed	81
Total	321

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,062,737, Re. S.N. 371,918, Filed Apr. 26, 1982, Cl. 204/043.00R, ELECTRODEPOSITION OF CHROMIUM, Donald J. Barclay, et al., Owner of Record: *International Business Machine Corp., Armonk, N.Y.,* Attorney or Agent: Francis A. Sirr, Ex. Gp.: 112

4,094,053, Re. S.N. 321,379, Filed Nov. 16, 1981, Cl. 29/420, FORGING PROCESS, Elbert K. Weaver, Owner of Record: *Wyman-Gordon Co., Worcester, Mass.,* Attorney or Agent: Norman Blodgett, et al., Ex. Gp.: 321

4,110,472, Re. S.N. 376,160, Filed May 7, 1982, Cl. 424/330, DERIVATIVES OF 1-(DISUBSTITUTED PHENOXY)-3-AMINO-2-HYDROXYPROPANES, Rudolf Hiltmann, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Jesse D. Reingold, Ex. Gp.: 125

4,203,935, Re. S.N. 379,561, Filed May 18, 1982, Cl. 261/98, FILTER MEDIA, Ernst Hackenjos, Owner of Record: *Rolf A. Jaeger, Costa Mesa, Calif.,* Attorney or Agent: Louis J. Knobbe, et al., Ex. Gp.: 177

4,248,587, Re. S.N. 379,251, Filed May 17, 1982, Cl. 433/4, ORTHODONTIC TOOL, Craven H. Kurz, Owner of Record: *Inventor,* Attorney or Agent: Keith D. Beecher, Ex. Gp.: 333

4,306,318, Re. S.N. 369,962, Filed Apr. 19, 1982, Cl. 3/1.4, TUBULAR ORGANIC PROSTHESIS, Hiroshi Mano, et al., Owner of Record: *Sumitomo Electric Industries, Ltd., Osaka, Japan,* Attorney or Agent: Thomas J. Macpeak, Ex. Gp.: 337

4,310,735, Re. S.N. 378,825, Filed May 17, 1982, Cl. 200/144B, ARC-SHIELD SUPPORTING STRUCTURE OF A VACUUM POWER INTERRUPTER, Shinzo Sakuma, et al., Owner of Record: *Kabushiki Kaisha Meidensha & Kabushiki Kaisha Gemvac, Tokyo, Japan,* Attorney or Agent: J. Harold Nissen, et al., Ex. Gp.: 217

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,866,100, Reexam. No. 90/000,215, Requested: June 24, 1982, Cl. 318/257, UNIVERSAL MOTOR CONTROL, Daniel P. Palenchar, et al., Owner of Record: *Kardex Systems Corp., Marietta, Ohio,* Attorney or Agent: Daniel H. Kane, Ex. Gp.: 210, Requester: Marvin Glazer, Cahill, Sutton & Thomas, Phoenix, Az.

4,037,418, Reexam. No. 90/000,224, Requested: July 6, 1982, Cl. 405/259, LOAD SUPPORTING BEARING PLATE, John I. Hannan, Owner of Record: *Phillips Stamping Co., Inc., Bellaire, Ohio,* Attorney or Agent: Fay & Sharpe, Ex. Gp.: 356, Requester: Jennmar Corp., Cresson, Pa.

4,208,965, Reexam. No. 90/000,222, Requested: June 30, 1982, Cl. 101/426, METHOD FOR ELECTROSTATIC ASSISTANCE IN PRINTING PROCESSES AND PRINTING MACHINES HAVING ELECTROSTATIC SUBSTRATE CONTACT PRESSURE, Helmut Fichler, et al., Owner of Record: *Inventors,* Attorney or Agent: Sughrue, Rothwell, Mion, Zinn & MacPeak, Ex. Gp.: 337, Requester: Spengler Electronic AG, Biel-Benken, Switzerland

PATENT NOTICES

Certificates of Correction for the Week of August 3, 1982

Re. 30,836	4,289,426	4,318,974	4,326,593
D. 258,518	4,289,785	4,319,011	4,327,050
D. 258,520	4,291,437	4,319,934	4,327,075
D. 258,521	4,293,236	4,319,984	4,327,114
D. 258,522	4,297,205	4,320,109	4,327,283
D. 258,524	4,297,607	4,320,268	4,327,602
D. 258,525	4,300,585	4,320,292	4,327,969
D. 262,889	4,301,294	4,320,659	4,328,044
D. 263,228	4,303,426	4,320,784	4,328,382
D. 264,098	4,303,977	4,321,205	4,328,399
3,811,544	4,304,809	4,321,951	4,328,581
4,006,103	4,304,873	4,322,400	4,328,662
4,028,366	4,305,162	4,322,561	4,328,861
4,079,693	4,305,293	4,322,647	4,329,040
4,084,051	4,305,574	4,323,169	4,329,203
4,103,081	4,308,824	4,323,197	4,329,330
4,191,635	4,310,131	4,323,521	4,329,339
4,193,291	4,310,338	4,323,674	4,329,802
4,210,043	4,310,339	4,323,757	4,330,036
4,210,416	4,310,369	4,323,765	4,330,134
4,225,257	4,310,542	4,323,772	4,330,325
4,225,322	4,311,497	4,323,973	4,330,607
4,225,787	4,312,302	4,324,215	4,330,640
4,226,838	4,312,623	4,324,382	4,330,701
4,228,410	4,312,643	4,324,768	4,331,070
4,243,938	4,312,714	4,324,788	4,331,206
4,244,404	4,312,916	4,324,804	4,331,247
4,247,732	4,313,959	4,324,887	4,331,302
4,253,195	4,314,806	4,324,928	4,331,349
4,253,843	4,314,901	4,325,124	4,331,388
4,259,359	4,315,540	4,325,460	4,331,507
4,265,533	4,316,736	4,325,532	4,331,602
4,267,609	4,316,898	4,325,582	4,331,650
4,268,401	4,317,041	4,325,589	4,331,698
4,268,944	4,317,067	4,325,618	4,331,767
4,270,399	4,317,208	4,325,653	4,331,794
4,272,202	4,317,244	4,325,721	4,331,931
4,273,923	4,317,436	4,325,836	4,332,004
4,273,957	4,317,497	4,325,922	4,332,754
4,273,981	4,317,504	4,325,940	4,332,983
4,274,445	4,317,742	4,325,947	4,333,398
4,275,096	4,317,792	4,326,368	4,333,856
4,275,163	4,318,360	4,326,382	4,333,907
4,278,100	4,318,387	4,326,448	4,333,973
4,280,604	4,318,594	4,326,473	4,334,570
4,288,625	4,318,769	4,326,515	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 12, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-03-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-11-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	6-22-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-03-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-01-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-24-80

Expiration of patents: The patents within the range of numbers indicated below expire during June 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,186,004 to 3,192,535, inclusive

Plant Patents ..... Numbers 2,522 to 2,542 inclusive

REEXAMINATIONS

AUGUST 3, 1982

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,614,368 (11th)

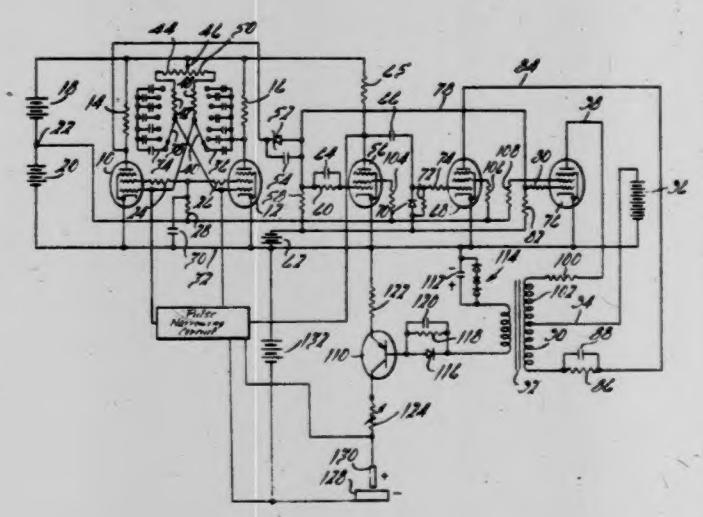
ELECTRICAL DISCHARGE MACHINING SHORT CIRCUIT PROTECTION SYSTEM OF THE KEYED TYPE

Walter Lobur, Clawson, Michigan, assignor to Colt Industries Operating Corp., New York, N.Y.

Reexamination Request No. 90/000,039, Jul. 27, 1981.

Reexamination Certificate for Patent No. 3,614,368, issued Oct. 19, 1971, Ser. No. 1,732, Jan. 9, 1970.

U.S. Cl. 219—69 P **Int. Cl.[3] B23P *1/02***



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1, 5 and 6 is confirmed.

Claims 2, 3 and 4 are amended and determined to be patentable.

1. The method of electrical discharge machining comprising the steps of providing machining power pulses of a predetermined on-off time duration across a machining gap, wherein the improvement comprises sensing for short circuit condition of said gap; responsive to said condition, increasing the off-time of said pulses but maintaining said on-time constant; and, subsequent to removal of said condition, restoring the off-time of said pulses to said predetermined time duration.

B1 4,016,395 (12th)

WIRE ELECTRODE FEED SYSTEM FOR ELECTRICAL DISCHARGE MACHINING

Frank P. Rietveld, Matthews, N.C., assignor to Colt Industries Operating Corporation, New York, N.Y.

Reexamination Request No. 90/000,040, Jul. 29, 1981.

Reexamination Certificate for Patent No. 4,016,395, issued Apr. 5, 1977, Ser. No. 532,200, Dec. 12, 1974.

U.S. Cl. 219—69 W **Int. Cl.[3] B23P *1/08***

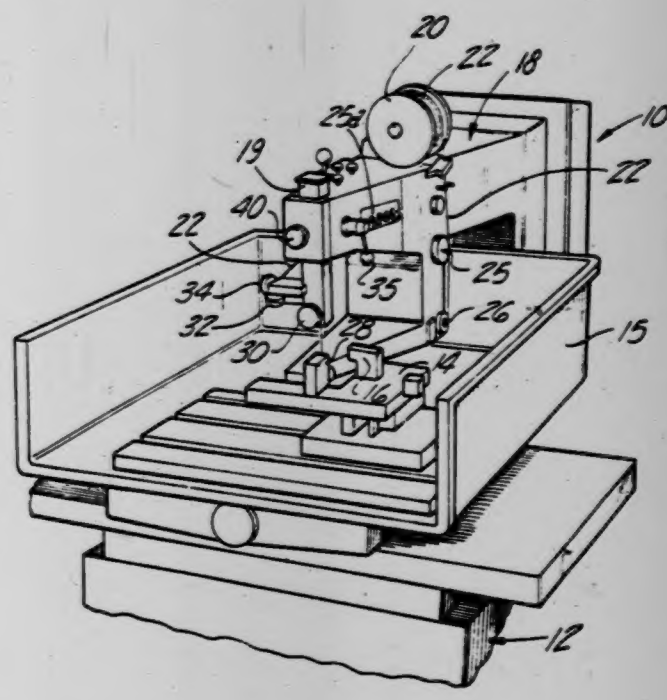
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 2–5 is confirmed.

Claim 1 is determined to be patentable as amended.

1. In an electrical discharge machining apparatus including a machine tool having a head which provides machining of a workpiece by means of a conductive electrode wire, the combination comprising:

- **a supply reel for the wire mounted in a freely rotatable manner on said machine tool;**
- **a plurality of guide rollers for retaining and transporting said wire in a continuous path to provide a cutting movement relative to the workpiece;**
- **a pair of opposed rollers biased one toward the other, one driven and the other driving, to provide a constant and uniform pulling force on the wire to provide its continuous movement through said path as machining progresses;**
- **a means operably connected to said driven roller for rocking it out of its juxtaposed position relative to said driving roller to provide clearance therebetween and allow for initial threading of the electrode wire;**



said workpiece being mounted on a first table controllably movable in an X axial direction, said first table being further mounted on a second table for controlled movement in a Y axial direction; and said electrode wire being maintained in a precisely adjustable, vertical path by a pair of guide rollers, each of said guide rollers having its axis of rotation orthogonal to the axis of rotation of the other, said guide rollers further mounted at points spaced from the upper and lower surfaces of said workpiece, respectively, each of said last mentioned guide rollers being adjustable and lockable in the axial direction to provide for adjustment to a precise degree of the vertical path of said wire proximate to said workpiece *and each of said last mentioned guide rollers having a circumferential groove for retaining said wire.*

B1 Re. 30,315 (13th)

PRECISION BASE MERCURY VAPOR LAMP

Carlo F. LaFiandra, Kinnelon, N.J., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Reexamination Request No. 90/000,019, Jul. 2, 1981.
Reexamination Certificate for Patent No. Re. 30,315, issued Jun. 24, 1980, Ser. No. 916,278, Jun. 16, 1978.
U.S. Cl. 313—51 Int. Cl.[3] H01J *5/48*

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 6 and 7 is confirmed.

Claims 2, 3 and 4, having been finally determined to be unpatentable, are cancelled.

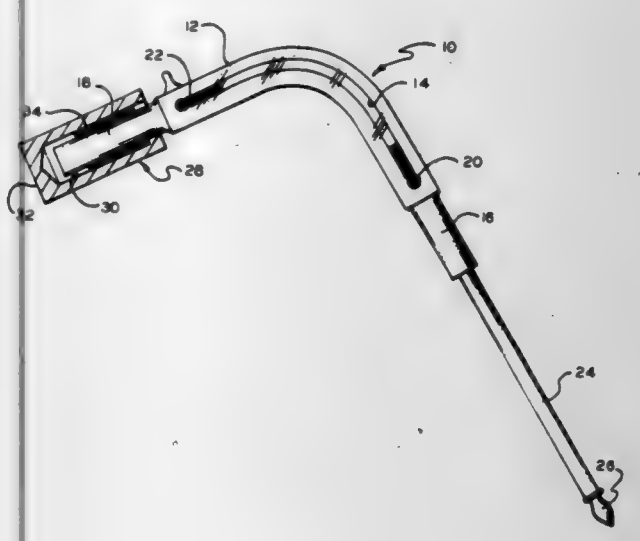
Claims 1 and 5 are determined to be patentable as amended.

New claims 8–13 are added and determined to be patentable.

1. A gaseous discharge lamp comprising:

a. a radiation-transmitting tubular envelope defining a plasma cavity of arcuate configuration and capillary cross-section containing an ionizable substance;

b. a rigid mounting base fixedly secured to one end of said envelope having *external planar faces forming a hexagonal prism*, [a configuration which is geometrically unique with respect to a predetermined position and spatial orientation of said envelope,] said base having a coaxial bore and said one end of said envelope terminating in a cylindrical stub of significantly smaller axial and radial dimensions than said bore, said stub being disposed and mounted in said bore in a position such as to establish a predetermined spatial relation and orientation between the envelope and the base, whereby installation of the lamp in its operating environment automatically and reproducibly places the envelope and, concomitantly, the plasma cavity of the lamp in a predetermined position and spatial orientation relative to said environment; and



c. means coupling the lamp to a power source for applying an operating potential to said plasma cavity.

DEFENSIVE PUBLICATIONS

PUBLISHED AUGUST 3, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T102,101
SOFT CONTACT LENSES RESISTANT TO OPACIFICATION IN USE

Nancy J. Drake, 11770 Jennifer Ct., and Charles J. Hora, 6344 Coleridge Rd., both of Painesville, Ohio 44077

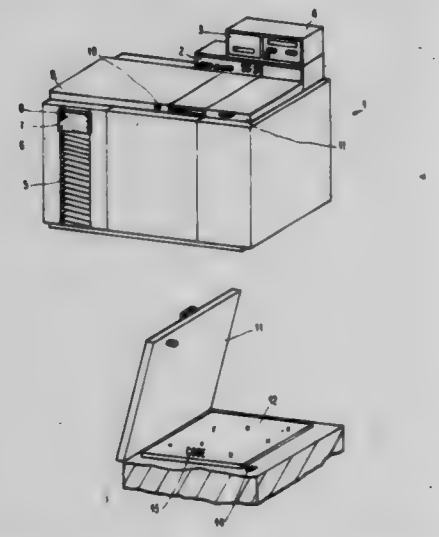
Filed Sep. 28, 1981, Ser. No. 306,294
Int. Cl.[3] C08F *8/32, 8/46*
U.S. Cl. 525—183
No Drawing. 19 Pages Specification

A hydrophilic polymer shaped article adapted for use as a soft contact lens is treated to provide at least on the surfaces thereof a modified, less hydrophilic polymeric structure inhibiting penetration by bacteria and proteins, whereby development of clouding and discoloration of the lens material during use is significantly retarded. Modification of the lens surfaces is effected by treatment of the lenses, either unhydrated or in a partially hydrated state, at a temperature ranging from room temperature to 100° C. and for a time period of 1 to 24 hours, with a water-soluble mono- or poly-carboxylic acid selected from alpha-amino acids, such as arginine, cysteine, glycine and like acids, aliphatic dicarboxylic acids or aromatic dicarboxylic and tricarboxylic acids, such as malonic, maleic, glutaric, citraionic, itaconic acid and the like. During treatment, the modifying acid becomes chemically and permanently incorporated into the hydrophilic polymer structure as evidenced by the fact that when treated with radioactive modifying acids, the lenses so treated permanently retain some labeled acid molecules (^{14}C counts) which cannot be removed with continued leaching.

T102,102
ACCESS CONTROLLED COPIER

Albert Bolle, Schurwaldstr. 7, 7300 Berkheim, Esslingen, and Karl-Heinz Jaksch, Danziger Str. 7, 7033 Herrenberg, both of Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 243,978
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 3021504
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 R
1 Sheets Drawing. 10 Pages Specification

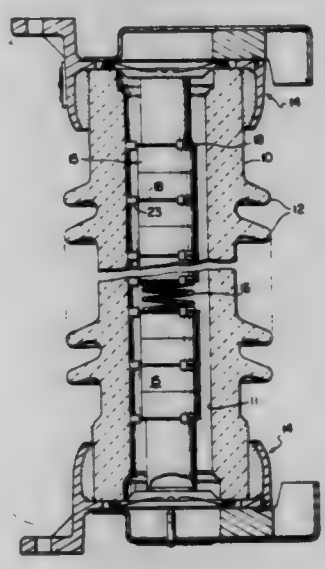


One or more collator/sorter bins at a copier output are locked to the user by means of a badge reader or the like. The user enters identification data into the copier to enable copier operation. Machine controls precede copy run by latching the document platen cover and displaying user-entered identification data in a manner so that it is recorded on the first copy which is delivered to the locked collator/sorter bin or bins. The number of copies selected by the user are then processed and delivered to user-accessible bins. The platen cover is thereafter unlatched to allow user recovery of the original document.

T102,103
SURGE ARRESTER INSULATING SPACER DEVICE

Dennis W. Lenk, 430 Miller Dr., Medina, Ohio 44256

Filed Sep. 25, 1981, Ser. No. 305,832
Int. Cl.[3] H02H *1/04*
U.S. Cl. 361—118
2 Sheets Drawing. 14 Pages Specification



An assembly for mechanically protecting and electrically insulating metal oxide varistor disks from the generally cylindrical inner wall of a porcelain housing of a surge arrestor. Each assembly comprising a flat metal disk having a diameter less than that of the inner wall of the housing and a plurality of resilient, electrically non-conductive spacer members mounted around the periphery of the disk for supporting the disk vertically in the housing.

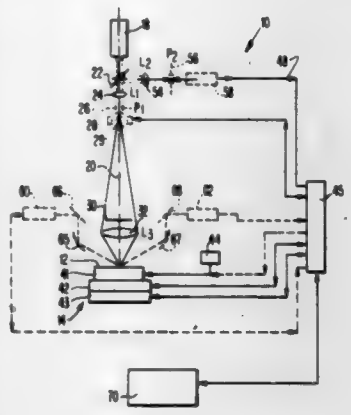
T102,104
SCANNING OPTICAL SYSTEM ADAPTED FOR LINEWIDTH MEASUREMENT IN SEMICONDUCTOR DEVICES

Joseph P. Kirk, Chelsea Rd., Chelsea, N.Y. 12512; Josef Predatsch, 12 Candy La., Hopewell Junction, N.Y. 12533, and Lo-Soun Su, 9 Amherst La., Wappingers Falls, N.Y. 12590

Continuation of Ser. No. 974,639, Dec. 29, 1978, abandoned. This application Jul. 30, 1980, Ser. No. 173,535
Int. Cl.[3] G01B *11/02, 11/30*
U.S. Cl. 356—387
3 Sheets Drawing. 18 Pages Specification

The present invention is directed to an optical system particularly adapted for measuring the linewidth of conductors. The particular arrangement of the various components of the optical system provide a simple system with high resolution for use in measuring very small linewidths. The optical system of the present invention utilizes a DC signal which is simpler and easier to control than an AC signal used with some optical measurement systems. More particularly, the optical system of

the present invention utilizes a principle used for accurate focusing or for topographical measurements to enhance the ability of the optical system to measure small linewidths. The optical system of the claimed invention includes a high intensity light source **18**, such as a laser. Means are provided for defining and focusing a spot of the light source upon a surface **12** having features to be measured. The spot defining and focusing means include in sequence between the light source and the surface, a first lens **24**, an aperture **26**, and a second lens **32**. The arrangement of the first and second lenses and the aperture is such that the light source is focused at the aperture by the first lens to provide a spot and the spot is focused on the surface **12** by the second lens. With this arrangement, the surface is located at the focal point of the second lens so that reflected light is refocused back in the plane of the aperture. The system further includes scanning means for selectively moving the spot across the surface to encounter the features to be measured. Light collection means **60, 62** are positioned proximate to the surface for detecting varying levels of light reflected from the surface as the spot is scanned over the edges of the features of interest. An electrical DC output is produced in response to the scanning. Means are provided for analyzing the output of the light sensitive means for providing high accuracy measurements of the distance between the detected edges of the features scanned by the spot.



Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,004

ELECTRONIC MUSICAL INSTRUMENT UTILIZING DATA PROCESSING SYSTEM

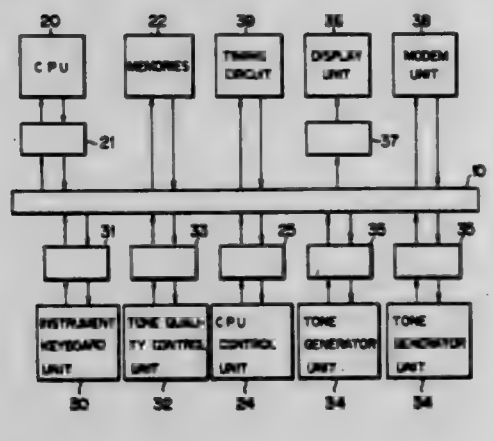
Koji Niimi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,184,400, dated Jan. 22, 1980, Ser. No. 860,100, Dec. 13, 1977. Application for reissue Jan. 30, 1981, Ser. No. 230,348

Claims priority, application Japan, Dec. 17, 1976, 51-150830

Int. Cl.[3] G10F *1/00*

U.S. Cl. 84—1.01 31 Claims



21. A computer controlled electronic musical instrument comprising:

tone generator means for generating a musical tone having frequency and waveshape parameters established in response to supplied data codes defining these parameters, said tone generator means including means for holding such data codes supplied on a time shared basis;

note selection means for providing first signals indicative of a selected frequency of a tone to be generated;

tone quality control means for providing second signals indicative of selected tone quality to be imparted to the tone to be generated;

common data bus means to which said tone generator means, said note selection means and said tone quality control means are connected; and

a programmable, stored-program computer connected to said common data bus means whereby said tone generator means, said note selection means and said tone quality control means are connected to the computer via the common data bus means respectively;

said computer including program storage and execution means for storing and executing a set of electronic computation instructions which include;

a first subset of such instructions which, when executed, causes detection of said first signals with concomitant supply on a time shared basis through the data bus means to said tone generator means of a programmed set of the frequency parameter defining data codes; and

a second subset of such instructions which, when executed, causes detection of said second signals with concomitant supply on a time shared basis through the data bus means to said tone generator means of a programmed set of the waveshape parameter defining data codes, thereby causing generation of a musical tone of frequency selected by said note selection means and waveshape based on the tone quality selection of said tone quality control means.

23. A keyboard electronic musical instrument comprising:

a common bus via which all signals are communicated between components of said instrument,

a microprocessor stored program computer operatively connected to said bus,

a keyboard unit including a key switch matrix,

a tone quality control unit,

tone generator means,

said microprocessor computer, said keyboard unit, said tone quality control unit and said tone generator means each interfacing with said bus,

said microprocessor computer having program means for causing said microprocessor to respond to condition changes of said key switch matrix or said tone quality control unit, as signaled via said bus, and in response thereto, to transmit to said tone generator means, in time shared order via said bus, tone generation control signals indicative of or responsive to the changed condition of the respective key switch matrix and tone quality control unit.

28. A keyboard electronic musical instrument comprising:

a common bus via which all data is communicated between components of said instrument,

a microprocessor stored program computer operatively connected to said bus,

a plurality of musical tone generators connected to said bus, each identified by a respective address,

a keyboard unit operatively connected to said bus to transmit to the microprocessor computer via said bus key data signals for actuated keys, and

program means, including a set of electronic computation instructions executed by said microprocessor stored program computer, for causing said microprocessor computer to recognize from said key data signals received via said bus a changed key switch state, and in response thereto to cause said microprocessor computer to produce a new or modified tone generation control signal and to transmit the same via said bus to a certain one of said tone generators, the address of which is associated with the actuated key by said microprocessor computer.

30. A keyboard electronic musical instrument comprising:

a common bus via which all data is communicated between components of said instrument,

a microprocessor stored program computer operatively connected to said bus,

musical tone generator means, connected to said bus, for generating tones in conformity with note code and waveshape data communicated thereto via said bus,

a keyboard switch state detector operatively connected to said bus, and configured to transmit to said bus first signals indicative of the changed state and identity of corresponding keys in said keyboard,

a tone quality control unit operatively connected to said bus and configured to transmit to said bus second signals for determining tone quality,

first program means, including a first set of electronic computation instructions stored and executed by said microprocessor computer, for causing said microprocessor computer to recognize from said first signals received via said bus a new key-on condition, and in response thereto to transmit via said bus the note code of the corresponding key to said tone generator means, and to recognize from said first signals a subsequent change in actuation state of the same key, and in response thereto to transmit via said bus to said tone generator means additional note production data, and

second program means, including a second set of electronic computation instructions stored and executed by said microprocessor computer, for causing said microprocessor computer to recognize from said second signals that the tone quality of the tones being generated is to be changed, and in response thereto to transmit via said bus to said tone generator means third signals for determining the tone quality, said tone generator means being configured to receive said third signals and

to modify the tone quality of the tones generated thereby in accordance with said received signals,

whereby detection of actuated keys, detection of tone quality information, and generation of musical tones in conformity with these detected data are microprocessor computer controlled.

Re. 31,005

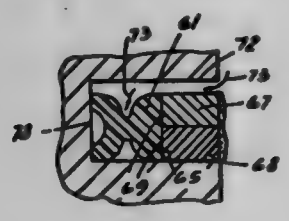
RESILIENT PLASTIC PISTON RING

Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Original No. 3,608,911, dated Sep. 28, 1971, Ser. No. 16,278, Mar. 4, 1970. Application for reissue Nov. 30, 1979, Ser. No. 98,928

Int. Cl.³ F16J *9/00, 9/20*

U.S. Cl. 277—138 **7 Claims**



15. A piston and piston ring combination for use in an internal combustion engine comprising a piston movable in opposite directions in a cylinder and having at least one ring groove therein, a plurality of axially thin metal piston rings received in said groove one atop the other and projecting radially beyond said groove, each piston ring being split axially so as to have a circumferential gap, the gaps in said piston rings being circumferentially spaced, radially inner peripheries of said piston rings terminating in spaced relationship to a radially inner periphery of said groove, an expander ring for sealingly engaging the inner periphery of said groove and for sealingly engaging the inner peripheries of said piston rings and for restraining said piston rings against independent rotation with respect to one another during movement of the piston in said opposite directions, said expander ring comprising a one-piece body of elastomeric material that is stable at temperatures up to at least 900° F. which may be present in an internal combustion engine during its operation, said expander ring body having a radial cross-section which includes an annular radially inner portion to sealingly engage said radially inner surface of the groove in the piston, an annular radially outer portion to sealingly engage radially inner surfaces of the piston rings and providing a single annular area of sealing engagement with the inner surfaces of the piston rings which spans each joint between abutting radially extending side surfaces of the piston rings and an annular connector portion which is disposed between and connects said inner and outer portions of said expander ring body, an axially extending groove projecting into said expander ring intermediate the inner and outer diameters thereof, the said axial groove projecting into said ring from the top axial end thereof and terminating in spaced relationship to the bottom axial end thereof, said expander ring having an axial extent which is at least as great as a major portion of the combined axial extents of the piston rings so that said single annular area of sealing engagement will have an axial extent which is at least as great as a major portion of the combined axial extents of the inner surfaces of the piston rings and said expander ring will be extruded radially into the gap in each piston ring to hold each piston ring against circumferential movement relative to the other.

Re. 31,006

PROCESS FOR THE DEMONSTRATION AND DETERMINATION OF REACTION COMPONENTS HAVING SPECIFIC BINDING AFFINITY FOR EACH OTHER

Antonius H. W. M. Schuurs, and Bauke K. van Weemen, both of Oss, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Reissued No. Re. 29,169, dated Apr. 5, 1977, Ser. No. 652,362, Jan. 26, 1976.

Original No. 3,791,932, dated Feb. 12, 1974, Ser. No. 221,447, Jan. 27, 1972. Continuation-in-part of Ser. No. 762,120, Sep. 24, 1968, Pat. No. 3,654,090. Application for reissue Mar. 2, 1978, Ser. No. 882,821

Int. Cl.³ G01N *33/54*

U.S. Cl. 435—7 **10 Claims**

1. Process for the demonstration and determination of a component of the reaction between a bindable substance selected from the group consisting of an antigen, a hapten, and a low molecular substance, and a protein capable of binding said bindable substance specifically, said protein being selected from the group consisting of an antibody and a specific binding protein, comprising the steps of:

a. providing a given quantity of the binding partner of the component to be determined, which binding partner is in an insoluble form;

b. reacting the component to be determined with its binding partner to form a **first** reaction mixture having a **first** solid phase and a **first** liquid phase;

c. separating the **first** solid phase from the **first** liquid phase;

d. adding to said **first** solid phase a given quantity of a coupling product **[[**of**]]** **formed by coupling** the component to be determined with an enzyme, **[[**and**]]** **which quantity of coupling product is at least sufficient to react with all of the binding partner of the component to be determined, to form a second reaction mixture having a second solid phase and a second liquid phase;**

e. separating the second solid phase from the second liquid phase; and

[[e**]]** **f.** determining the enzyme activity of the **second** solid phase which is a measure of the quantity of reaction component to be determined.

PLANT PATENTS

GRANTED AUGUST 3, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,871

ORCHID PLANT

Maurice Lecoufle, and Michel Vacherot, both of Boissy St. Leger, France, assignors to Les Petite Fils et Fils de Vacherot & Lecoufle, Boissy St. Leger, France

Filed May 21, 1980, Ser. No. 151,944

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinct variety of orchid plant substantially as herein shown and described, characterized by a strong habit of plant growth and abundant production of flowers having petals and sepals of excellent texture and substance and a distinctive lemon yellow color of the petals and sepals contrasting with a ruby red labellum.

4,872

AVOCADO TREE

Harold E. Kendall, Goulds, Fla., assignor to Kendall Brothers Trust, Goulds, Fla., G. David Parrish, Harold E. Kendall, Jr., Peter H. J. Kendall, Trustees

Filed Jan. 13, 1981, Ser. No. 224,827

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—44 **1 Claim**

1. A new and distinct cultivar of avocado tree as described and shown.

PATENTS

GRANTED AUG. 3, 1982

ERRATA

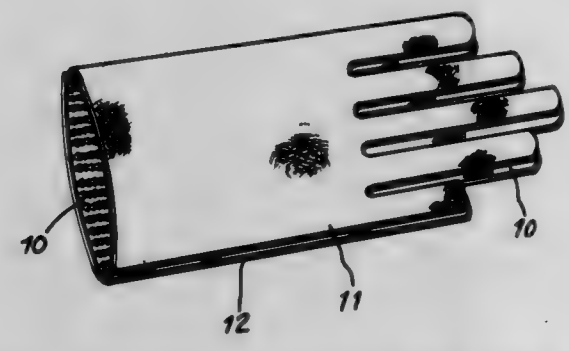
For CLASS	See PATENT NO.
015–250	4,342,126
376–272	4,342,620
376–298	4,342,621
523–353	4,342,670
525–054	4,342,671
524–029	4,342,672
523–427	4,342,673
523–177	4,342,674
524–762	4,342,675
524–458	4,342,676
523–116	4,342,677
524–539	4,342,678
524–401	4,342,679
524–100	4,342,680
524–108	4,342,681
523–179	4,342,682
549–229	4,342,693
549–273	4,342,694
549–315	4,342,695
549–331	4,342,696
549–396	4,342,697
549–505	4,342,698
549–259	4,342,699
525–326	4,342,857
373–094	4,342,878
378–099	4,342,914
378–004	4,342,916
378–034	4,342,917
422–186	4,342,918

PATENTS

GRANTED AUGUST 3, 1982

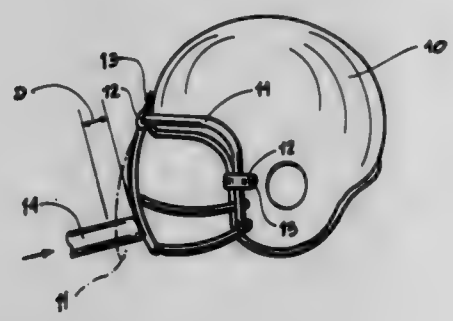
GENERAL AND MECHANICAL

4,342,121
HOT MILL GLOVE
Maris Vistins, Coshocton, Ohio, assignor to Norton Company, Worcester, Mass.
Filed Sep. 5, 1980, Ser. No. 184,594
Int. Cl.³ A41D *19/00, 19/02*
U.S. Cl. 2—161 R **9 Claims**



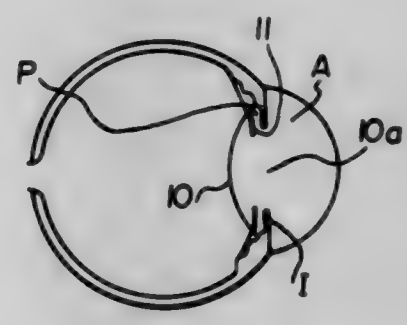
1. A glove comprising a knitted outer shell having an inner palm face and inner back face and having a lining fabric material adhered to said inner palm face of said shell and a separate fabric lining material adhered to said inner back face of said shell.

4,342,122
PROTECTIVE HEADGEAR
Carl J. Abraham, Great Neck, and Malcolm Newman, Huntington, both of N.Y., assignors to Alan H. Levine, Great Neck, N.Y.
Filed Oct. 14, 1980, Ser. No. 196,889
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—424 **4 Claims**



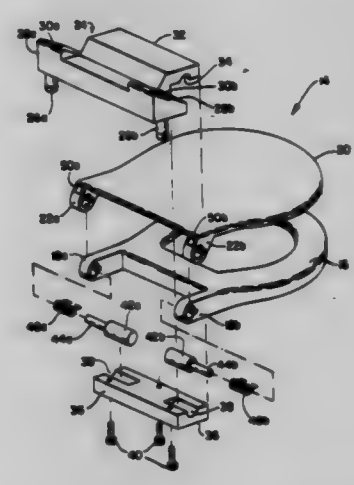
1. A protective headgear comprising:
(a) a helmet,
(b) a face mask of flexible material, and
(c) means securing the face mask to the helmet,
(d) the helmet and face mask being so constructed that when a force in the range of 200 to 1000 pounds is applied in a direction generally perpendicular to the plane of the face of the wearer, there is a deflection of the face mask with respect to the helmet in the range of two to four inches, the deflection being unaccompanied by fracture of the mask, and the face mask remaining attached to the helmet throughout the time the force is applied.

4,342,123
INTRAOCULAR LENS SYSTEM
Howard V. Gimbel, 103 - 1711 - 4 St. SW., Calgary, Alberta T2S 1V7, Canada
Filed Jun. 3, 1980, Ser. No. 156,072
Claims priority, application Canada, Feb. 20, 1980, 346023
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **5 Claims**



1. An artificial intraocular lens system constructed and arranged to be implanted within an opening in the capsular bag of the normal lens of an eye immediately adjacent the iris of the eye to supplant or replace the normal lens of the eye, comprising an optical lens portion formed in circular, convex configuration of biologically tolerable, optically suited material so as to have an optical axis, and attachment means extending generally radially outwardly from said lens portion at spaced positions about its periphery for engaging parts of the capsular bag surrounding said opening so as to secure said lens portion in the opening, said attachment means including, at at least one position about said periphery, two cooperating clip members which extend generally radially outwardly and are axially separatable so as to receive and secure therebetween a part of the capsular bag surrounding said opening, such that the respective clip members bear against inner and outer surface portions of said capsular bag to assist in securing said lens portion in position in said opening, said clip members being of resilient material and projecting radially beyond the periphery of said lens portion, said clip members being normally coplanar with one clip member lying inside the other.

4,342,124
SEAT AND COVER ASSEMBLY FOR A TOILET BOWL
Candelario Paredes, 6608 Briarhaven Dr., Dallas, Tex. 75240
Filed Sep. 24, 1980, Ser. No. 190,374
Int. Cl.³ A47K *13/00, 13/12*
U.S. Cl. 4—234 **4 Claims**



4. A seat and cover assembly for a toilet bowl, said assembly comprising a seat member; a cover member for said seat mem-

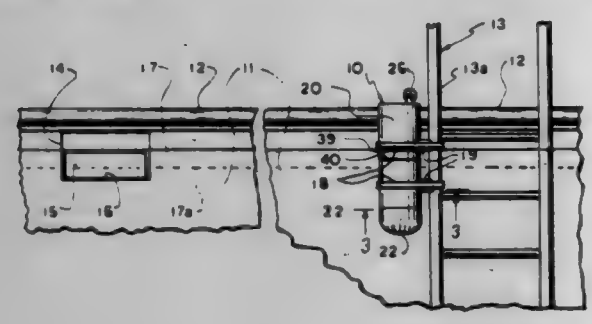
ber; means for mounting said seat member and said cover member relative to said bowl for pivotal movement between an upright position and a lowered position, said mounting means including a mounting block assembly secured to said bowl, a pair of hinge pins extending in corresponding openings formed in said mounting means, said seat member and said cover member, and a torsion spring extending around each hinge pin with one free end of each spring in engagement with said seat member and with the other free end of each spring in engagement with said cover member for biasing said seat member towards said cover member and said cover member towards said seat member in all positions of said members; and means for quick releasably securing said cover member in said upright position.

4,342,125

WATER LEVEL CONTROL FOR SWIMMING POOLS

George R. Hodge, 8528 SE. Merrit Way, Jupiter, Fla. 33458, assignor to G. Robert Hodge and Louise S. Hodge, both of Jupiter, Fla.

Filed Jul. 9, 1980, Ser. No. 167,126
Int. Cl.[3] E04H *3/18*
U.S. Cl. 4—508 5 Claims



1. A water level control for swimming pools comprising a vertically elongated casing adapted for mounting on a ladder or pool edge, said casing being of interfitting component construction providing a partial horizontal partition dividing the same into upper and lower chambers with free passage of water therebetween, and a partially open bottom permitting water flow to the pool, a ball cock valve and vertically slidable float assemblage secured to said partition and positioned in said upper chamber with the water inlet thereof protruding into said lower chamber and the water outlet thereof being above said partition, said partition having an elongated transverse aperture providing a water passage therethrough, and lateral offsets intermediate the ends of said aperture providing positioning means for said ball cock valve and float assemblage, means detachably coupling said water inlet with a pressure source of water supply, said means comprising conduit means extending downwardly through said partition laterally and upwardly to said water inlet with the upper end of said conduit means protruding from the top of said casing and carrying means for detachable coupling with said pressure source of water supply, and said casing having air vent means communicating with said upper chamber and external side markings aligned with the internal high and low water levels which relate to the closing and opening respectively of said ball cock valve.

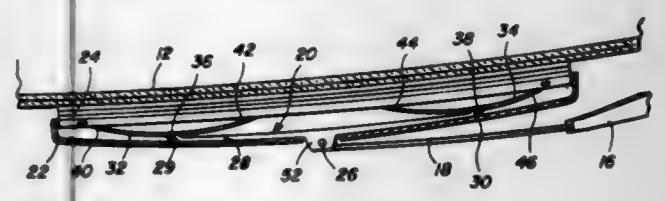
4,342,126

WINDSHIELD WIPER BOOT

Edward F. Neefeldt, c/o Brown, 67-17 53rd Dr., Maspeth, N.Y. 11378

Filed Dec. 2, 1980, Ser. No. 212,266
Int. Cl.[3] B60S *1/04, 1/38*
U.S. Cl. 15—250.42 3 Claims

1. A windshield wiper assembly protection means, said protection means comprising a cover being of only one piece of material and devoid of other components and being elongated along a longitudinal dimension having a section generally of an inverted curved shaped broad channel and the cover being foreshortened along a transverse dimension having a section generally of an inverted curved shaped narrow channel, said cover having at a domed portion thereof an aperture for communicating therethrough an extended portion of a blade retaining structure to just protrude and pass through in close proximity thereof while having distal therefrom a free edge forming a skirt and extending substantially around the entire length of the cover for sleeving over and directly contacting an entire windshield wiper assembly distal from a windshield wiper blade element so as to permit a length of the wiper blade to extend



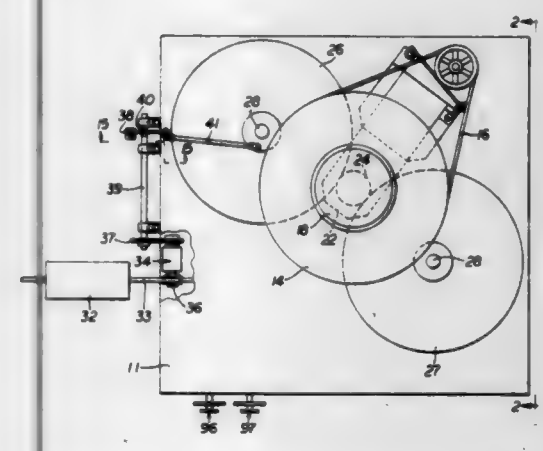
from the wiper blade itself so as to come into contact with a windshield, an interior surface of the cover along its longitudinal dimension conformably interfitting and engagingly contacting generally the entire length of a fairly rigid support arm of the windshield wiper assembly for the wiper blade element, said cover serving to effectively protect the structural components of said windshield wiper assembly from the outside environment while not interfering with a contact between a windshield surface and a windshield wiper blade forming a portion of said windshield wiper assembly.

4,342,127

APPARATUS FOR FORMING RAILROAD SPIKES AND THE LIKE

Simeon D. Weaver, Birmingham, Ala., assignor to Azcon Corporation, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 181,995
Int. Cl.[3] B21G *3/12, 3/16*
U.S. Cl. 10—57 18 Claims



1. In apparatus for forming railroad spikes and the like from a heated stock bar and having drive means, bar feed means, a head forming die, and movable and stationary gripper dies, the improvement comprises:

(a) a supporting frame,

(b) a stop member mounted for reciprocatory movement to a position to contact the forwardmost end of said bar and limit forward movement thereof,

(c) means supporting said movable gripper die for movement selectively to an open position relative to one side of said bar adjacent said forwardmost end and to a closed position in engagement with said one side so that the opposite side of said bar adjacent said forwardmost end is forced into engagement with said stationary gripper die,

(d) a bending finger mounted for reciprocatory movement alongside said stop member to a position to engage said opposite side of said bar adjacent said forwardmost end and move said forwardmost end to a position spaced from

said stationary gripper die while said movable gripper die is in said open position, to provide a laterally bent end portion at said forwardmost end upon movement of said movable gripper die to said closed position,

(e) means for forming a tapered end portion on said bar at a predetermined location spaced longitudinally from said forwardmost end,

(f) actuator means for moving said head forming die selectively to a first position spaced forwardly of said bar and to a second position with said head forming die engaging said laterally bent end portion at said forwardmost end and forcing said laterally bent end portion toward engagement with said movable gripper die to in turn move said movable gripper die toward gripping engagement with said bar so that the gripping force exerted by said movable gripper die is proportional to the force exerted by said head forming die whereby a composite finished spike is formed in a single stage operation, and

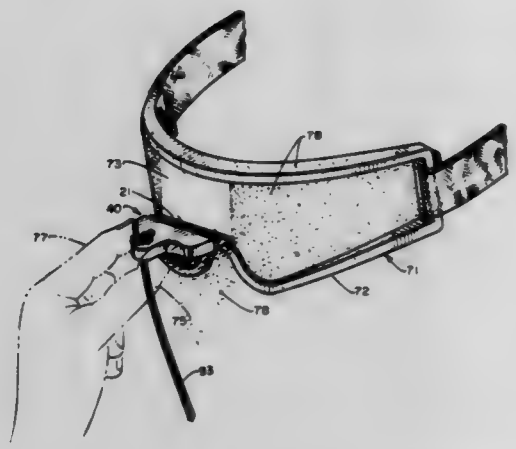
(g) means for ejecting said finished spike in response to movement of said movable gripper die away from said closed position.

4,342,128

WIPER DEVICE FOR REMOVAL OF SNOW AND LIQUID FROM SKI GLASSES OR GOGGLES

Thomas P. Doyle, 3872 Highway 49, Placerville, Calif. 95667

Filed Sep. 25, 1980, Ser. No. 190,749
Int. Cl.³ B60S 1/14
U.S. Cl. 15—245 **2 Claims**



1. A wiping apparatus for the removal of snow and debris from goggles and eyeglass lenses comprising:

a handle portion having a pair of opposed front and rear walls, a top wall, a bottom wall, and a pair of opposed side walls, at least one of said side walls being indented and adapted to receive the finger of an operator during time of use, said handle portion being about ¼ inches thick, about 1¼ to 2½ inches wide, and about 1 to 2 inches high,

an elastic wiper blade secured to the long dimension of said top wall thereof, said blade being sized in elongation such that the entire blade contacts the lens during removal process,

said apparatus including a through bore in the handle portion from the front wall to the rear wall,

a light reflective lenticular surface on one of the opposed front and rear walls, said through bore also penetrating said reflective surface,

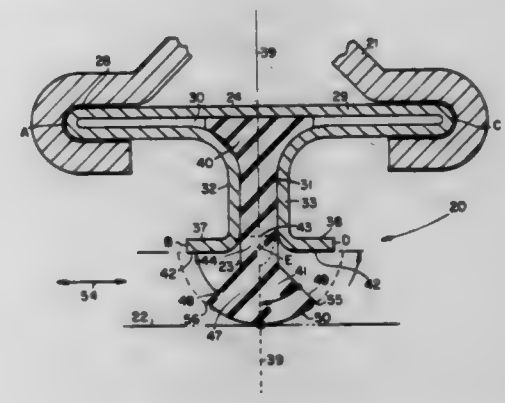
and a retainer cord adapted to encircle the neck of a wearer secured through said throughbore.

4,342,129

WIPING INSERTS FOR WINDSHIELD WIPERS, SQUEEGEES AND THE LIKE

William E. Thompson, R.R. 1, Box 89, Middletown, Ind. 47356

Filed Aug. 21, 1980, Ser. No. 180,044
Int. Cl.³ B60S 1/38
U.S. Cl. 15—250.4 **5 Claims**



1. A windshield wiper insert suitably arranged for receipt by the superstructure of a conventional windshield wiper blade assembly for wiping a windshield, said windshield wiper insert comprising:

an elongate guide strip member suitably designed and arranged for receipt by said superstructure;

an elongate, flexible wiping strip having a first section secured within said elongate guide strip member and having a second section laterally protruding beyond said elongate guide strip, said second section including an enlarged wiping portion having a sector shaped lateral cross section including two substantially flat sides corresponding to the radii of said sector shaped lateral cross section and a continuous and uniformly curved surface having a circular arc shape and extending between said two sides and defining a corresponding edge at each intersection of said curved surface and each side; and

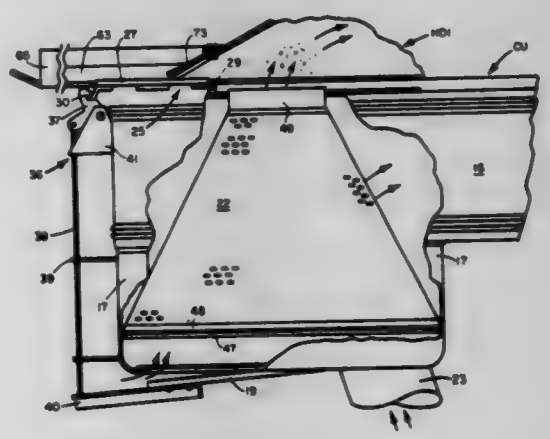
means located directly above said two flat surfaces for controlling the movement of said enlarged wiping portion, said means adapted to alternately contact each of said flat surface to position one edge and then the other edge at a point of contact against said windshield as said windshield wiper is operating.

4,342,130

TRAVELLING SUCTION CLEANING APPARATUS

Amos S. Clark, Jr., Lewisville; James R. McMordie, and Michael D. Walker, both of Winston-Salem, all of N.C., assignors to The Bahnson Company, Winston-Salem, N.C.

Filed Jan. 27, 1981, Ser. No. 228,825
Int. Cl.³ A47L 9/20
U.S. Cl. 15—312 A **15 Claims**



1. An improved travelling suction apparatus for cleaning lint from machines including a horizontal trackway mounted over

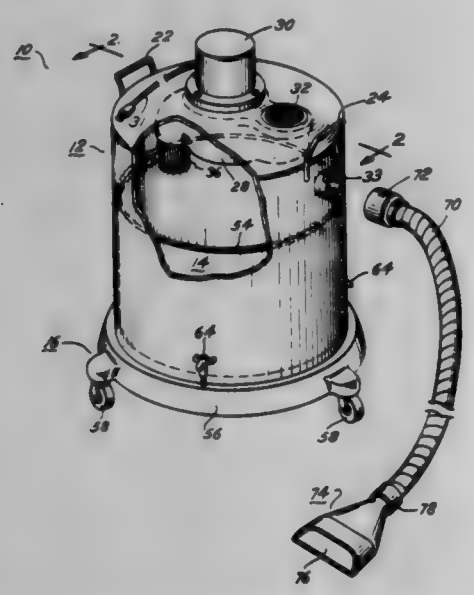
tlie machines to be cleaned, and a cleaner unit that is moved along the trackway, the cleaner unit including a housing, a pair of suction tubes that respectively depend from the housing at opposite sides of the trackway, means within the housing for drawing lint-laden air upwardly through the tubes and into the housing, lint collection chambers at opposite sides of the housing that respectively receive lint-laden air from said tubes, and a screen within each chamber for filtering lint from the air to cause the lint to accumulate within the respective chambers, wherein the improvement comprises: means for automatically removing the lint accumulated in the trackway comprising, each screen being annular and open at both ends, conduit means interconnecting the interiors of the ends of the screens with the respective suction tubes, covers respectively mounted to the housing adjacent the opposite ends of the annular screens, means for movably connecting the covers to the cleaner housing to normally hold the covers in closed positions and to permit the covers to be opened to permit lint to be extracted from said opposite ends of the screens, means located at a lint removal station along the trackway for opening said covers, and hood means stationarily mounted at said lint removal station for applying suction to remove substantially all of the lint from within the screens while said covers are open.

4,342,131

FIREPLACE CLEANER

Janet G. Reid, 51646 Lakeland Dr., Elkhart, Ind. 46514

Filed Sep. 15, 1980, Ser. No. 187,500
Int. Cl.[3] A47L *5/36*
U.S. Cl. 15—327 D 9 Claims



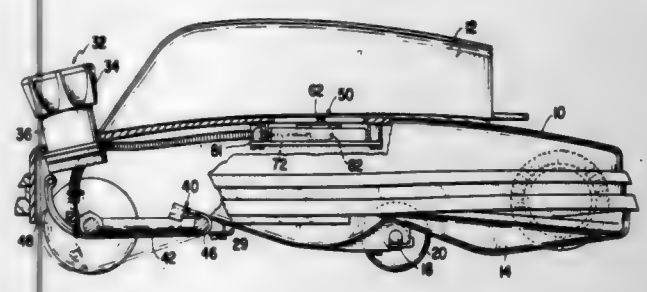
1. A fireplace cleaner comprising a base frame, a container removably supported on said frame and having a bottom and side wall of heat resistant material for receiving ashes from the fireplace, a removable housing having a top disposed over said container and side walls seated on said base frame and surrounding and enclosing said container and extending above the upper edge of said container, conduit means connected at one end to said housing above said container and communicating with the interior of said container, a scoop mounted on the other end of said conduit means and in communication therewith, and vacuum generating means secured to said top for drawing fireplace ashes from said scoop through said conduit means and depositing the ashes in said container.

4,342,132

CARPET PILE SENSOR AND INDICATOR FOR CARPET CLEANER

Charles T. Fromknecht, Anderson, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 1, 1980, Ser. No. 192,777
Int. Cl.[3] A47L *5/34*
U.S. Cl. 15—339 12 Claims



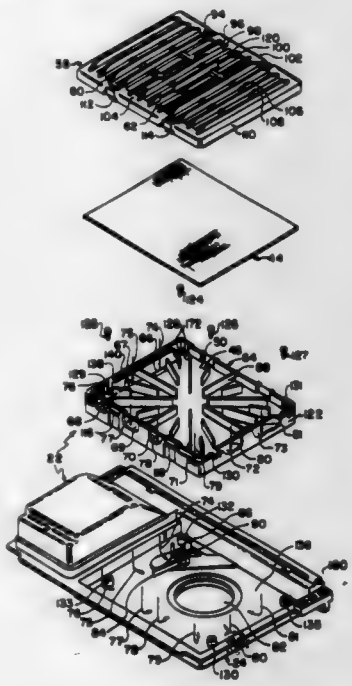
8. For use in a carpet cleaner having a chassis and a nozzle height adjusting mechanism including wheels mounted on offset ends of an axle formed with a central portion journalled in the chassis, a pile height and density sensor plate pivoted to such central portion and extending therefrom past one of said wheels for sensing the height and density of the pile of the floor covering on which the cleaner rests.

4,342,133

VACUUM CLEANER AIR FLOW SENSING ARRANGEMENT

Keith G. Minton, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Mar. 12, 1981, Ser. No. 243,066
Int. Cl.[3] A47L *9/19*
U.S. Cl. 15—339 13 Claims



6. A vacuum cleaner comprising:

(a) a first wall disposed adjacent to a fan inlet and having at least one aperture therein communicating with the fan inlet;

(b) a second wall having a wall portion spaced from the first wall and in an axial direction toward a bag chamber to establish a cavity therebetween;

(c) a secondary filter spaced in an axial direction from an outer surface of the wall portion toward the bag chamber;

(d) said second wall at least in part providing apertures located adjacent to its outer periphery so as to provide proportional air flow into the cavity along a plurality of paths and thereby providing a radial inward flow of the air within the cavity toward the at least one aperture communicating with the fan inlet;

(e) said second wall and said secondary filter unit establishing an air distribution chamber for distributing air flow from the secondary filter toward the apertures located adjacent to the outer periphery of the second wall so as to maintain proportional air flow into the cavity; and

(f) air flow sensor including a pivotally mounted vane disposed within the cavity so as to be in at least one of the plurality of paths of air flow and movable thereby to indicate a predetermined air flow value.

4,342,134

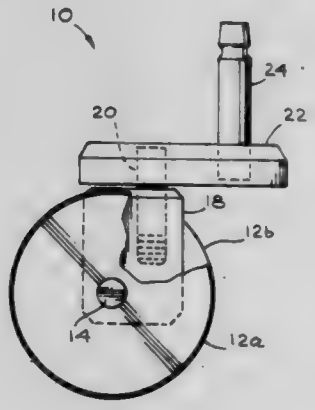
CASTER ASSEMBLY

Dale Mickelson, 829 Zurich Dr., Lake Arrowhead, Calif. 92317

Filed Jun. 15, 1979, Ser. No. 48,995

Int. Cl.³ B60B *33/00*

U.S. Cl. 16—31 R **3 Claims**



1. In a caster assembly supporting an object to be rolled, comprising:

(a) one single caster wheel unit;

(b) a support member, mounted in pivotal relation with the caster wheel unit and substantially accommodated within the periphery thereof, having a bore passing vertically therein, laterally offset from the axis of the caster wheel unit;

(c) an intermediate member;

(d) first means for pivotal mounting, laterally offset from the axis of the caster wheel unit one end of the intermediate member above and onto the support member;

(e) second pivotal means, being laterally offset from the axis of the caster wheel unit and the first pivotal means, extending upward from the intermediate member for individual engagement with the object to be rolled.

4,342,135

DEVICE FOR MODERATING MOVEMENT OF LID

Hiroshi Matsuo, and Nobuaki Omata, both of Hiroshima, Japan, assignors to Sharp Corporation, Osaka and Nifco Inc., Kanagawa, both of, Japan

Filed Sep. 30, 1980, Ser. No. 192,644

Claims priority, application Japan, Oct. 3, 1979, 54-136148[U]

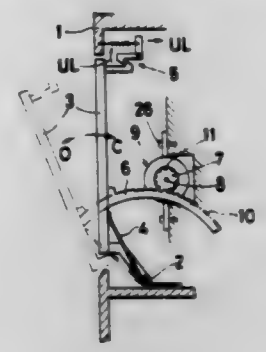
Int. Cl.³ E05F *3/14*; E05D *1/02*

U.S. Cl. 16—82 **3 Claims**

1. A device for moderating the movement of a lid, comprising:

a rotary member composed of a rotary shaft, a roller integrally formed at one terminal side of said rotary shaft and adapted to be held in frictional engagement with a member imparted motion by the lid and at least one disc formed at the other terminal side of said rotary shaft; and

a housing composed of a pair of halved portions connected to each other through the medium of a hinge, said halved portions being provided with complementary engaging means adapted to come into mutual engagement when the halved portions are rotated about said hinge toward each other and brought into intimate contact with each other, and said halved portions containing semicircular grooves adapted to form empty spaces for accommodating the rotary shaft and the discs of said rotary member and



damping oil when the halved portions are joined to each other.

4,342,136

APPARATUS FOR FASTENING INSIDE HANDLE COVER TO AUTOMOBILE DOOR

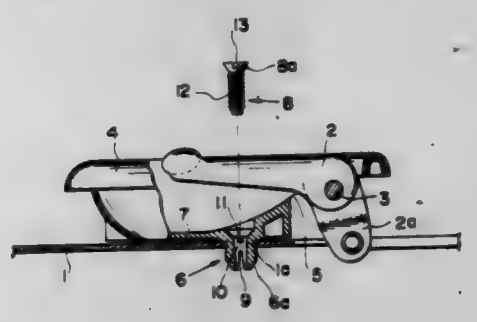
Kanae Okabe, Hiroshima, and Hiroo Murayama, Yokohama, both of Japan, assignors to Yuhshin Co., Ltd., Minato and Nifco Inc., Yokohama, both of, Japan

Filed Jul. 22, 1980, Ser. No. 170,440

Claims priority, application Japan, Jul. 23, 1979, 54-100541[U]

Int. Cl.³ A47B *95/02*

U.S. Cl. 16—115 **5 Claims**



1. In combination, a door handle cover with an integrally formed expandable fastener means extending therefrom adapted to be inserted through a preformed aperture in an automobile door panel, and a generally cylindrical headed pin adapted to be driven into engagement with the fastener means without rotation to thereby expand the fastener means, said pin and said fastener means adapted to cooperate with one another whereby rotation of the pin causes axial displacement thereof; said fastener means comprising a body having an upper end generally coinciding with a portion of the door handle cover and a lower end adapted to be inserted in the aperture and radially expanded, the body having an axial opening extending therethrough with one end of the opening disposed at the upper end of the body defining a first diameter and the other end of the opening at the distal end of the lower end defining a second diameter, the first diameter being substantially greater than the second diameter, the lower end of the body having a plurality of slots dividing the lower end into radially flexible prongs, the upper end of the body having inwardly directed protrusions intermittently disposed about the circumference of its axial opening defining a first set of ridges of limited axial extent; the pin having a head and a shank with radially outwardly extending protrusions defining a second set of ridges, one of said sets of ridges helically disposed, said second set of ridges on said pin having a major diameter substantially equal to said first diameter to positively engage said first set of ridges with said second set of ridges, whereby said door handle cover is easily installed in said automobile door panel by inserting the lower end of said fastener in said preformed aperture and axially driving said pin by impacting one end thereof to radially expand and thereby secure the cover to the panel, and

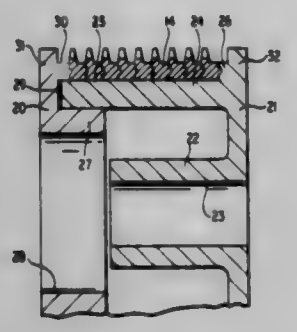
whereby the cover is easily removed by axial displacement of the pin due to rotation thereof and withdrawal of the lower end.

4,342,137

OPENING ROLLER FOR OPEN-END SPINNING APPARATUS

Brian J. Ennis, Sowerby Bridge, and Kenneth Lydall, Huddersfield, both of England, assignors to The English Card Clothing Company, England

Filed May 3, 1979, Ser. No. 35,592
Int. Cl.³ D01G *19/10*
U.S. Cl. 19—97 **9 Claims**



1. A card-clothed opening roller for use in open-end spinning apparatus comprising a roller body, a pair of oppositely facing abutments on said body, and a helical coil of metallic wire type card-clothing located on an external cylindrical surface of said body, between said pair of abutments, each said abutment having an annular inner end face in the shape of a helix with an acclivity between its maximum and minimum axial displacements, said annular face being complementary in shape to the adjacent end of said card-clothing coil, the adjacent end flank of said coil engaging with said helical annular face of each said abutment and the extremity of said coil at that end engaging with said acclivity, so that there are no recesses between said roller body and the ends of said coil.

4,342,138

OVAL BALE-TIE WIRE AND PROCESS OF MAKING THEREOF

Emil Simich, Chicago, Ill., assignor to A. J. Gerrard & Company, Des Plaines, Ill.

Filed Aug. 31, 1979, Ser. No. 71,680
Int. Cl.³ B65D *63/02*
U.S. Cl. 24—27 **2 Claims**



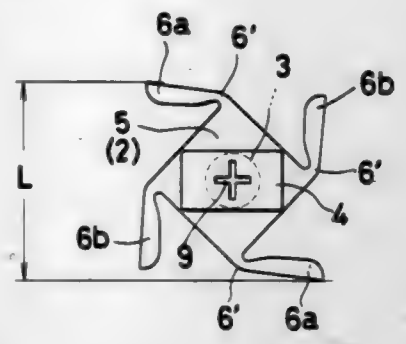
1. A bale-tie wire, including in combination:
an ovalized cross-sectional shaped body portion extending the length thereof, and
ovalized cross-sectional shaped looped end portions formed at each end of said body portion and wherein each of said looped end portions are curved in opposite directions with respect to each other, transverse to the major axis of the oval cross-section of the wire, with each of said looped end portions including a leg portion extending inwardly from said looped end portions towards the middle of said body portion, with each of said looped end portions bent out of the plane of each respective loop in opposite directions thereof, said ovalized cross-sectional shaped body portion providing predeterminedly positioning of the bale-tie wire about a bale and permitting alignment and engagement of each of said looped end portions together to form a thief knot to secure the baled material, said thief knot after engagement of the ovalized cross-sectional shaped looped end portions possessing between 2%–5% increase in joint strength from a round bale-tie wire.

4,342,139

ONE-PIECE QUICK RELEASE CLIP

Toshie Tanaka, Machida, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Jul. 31, 1980, Ser. No. 174,394
Int. Cl.³ F16B *19/00*
U.S. Cl. 24—292 **7 Claims**



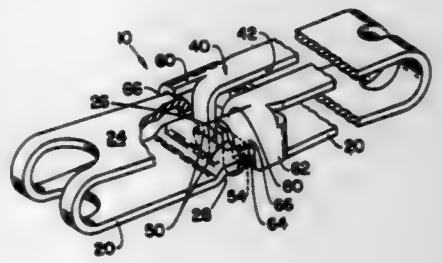
1. A one-piece plastic clip, adapted for fixing an object having a partially confined groove therein and a slot in communication therewith and being substantially C-shaped in cross-section to a panel having an aperture therein of a predetermined shape, comprising:
an insertion piece adapted to be inserted into the groove of said C-shaped object from one end thereof, said insertion piece including a central portion and four flexible wings projecting outwardly from four positions equidistantly spaced on the outer boundary of the central portion, said flexible wings being arranged in pairs and each pair being separated by a distance greater than the width of the groove of the C-shaped object,
a neck portion projecting from the center of one surface of said insertion piece and adapted to extend through and pass along the slot communicating with the groove of the C-shaped object, and
an oblong head piece formed at the leading end of said neck portion, substantially conforming to the shape of said aperture in said panel,
whereby when said insertion piece is inserted in said groove and said oblong head piece is aligned and passed through said aperture the C-shaped object and the panel may be fixedly secured relative to one another by rotation of the clip to a position where the oblong head piece is no longer in alignment with said aperture and whereby said position is defined by said wings coacting with said groove in said C-shaped object.

4,342,140

RESILIENT FASTENER HAVING KEEPER WITH LOCK

Robert L. Lacey, Palatine, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 31, 1980, Ser. No. 202,558
Int. Cl.³ A45F *5/02*
U.S. Cl. 24—373 **12 Claims**



1. A resilient fastener adapted to accept and retain one or

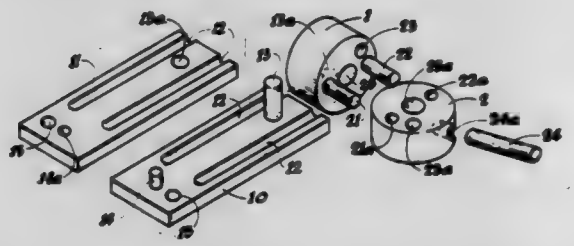
more elongated members in confined relation including an elongated base portion having aperture means intermediate its extremities, a first-retaining portion overlying said base portion and resiliently connected to said base portion adjacent one end thereof to accept said one or more elongated members, keeper means adapted to cooperate with an acceptable within said aperture means in said base portion, said keeper means carried by said first retaining portion at its second end opposite the one end connected to said base portion, spring means for actuation of said keeper means, a second locking portion overlying said base portion and resiliently connected to said base portion at its second end opposite said one end with the free end of said second locking portion lying in opposition to said keeper means, said free end and said keeper means including cooperative locking means whereby engagement of said keeper means with said aperture means activates said locking means which prevents unintentional disengagement of said keeper from said base portion aperture means.

4,342,141

BULLET MOLD DEVICE

James J. Graham, 503 - 36th Ave., Greeley, Colo. 80631, and Edward Earl, 1316 Edwina Pl., Loveland, Colo. 80537

Filed Feb. 6, 1980, Ser. No. 119,122
Int. Cl.³ C06B *21/02;* F42B *33/10*
U.S. Cl. 29—1.22 7 Claims



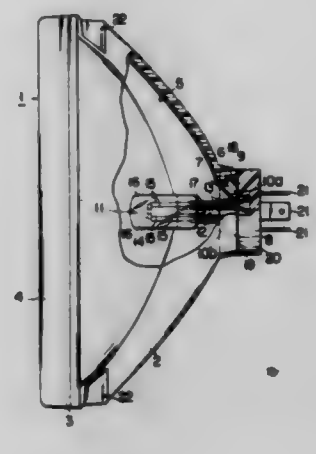
1. A bullet ball tool for casting, shearing and molding bullet balls comprising, in combination, a separable base having a cylindrical cavity therein adapted to receive molten lead in the cavity for forming a lead stick, a pair of circular flat sided dies, with a first one of said dies having a first pivot pin means secured to and extending at a right angle from a flat side thereof, and the second of said dies having a transverse opening formed therein for adapting said second die to be thereby mounted rotatably and removably upon the pivot pin means of the first die by the second die being removably mounted with its said opening slidably over the said pivot pin of the first die for adapting the second die to be pivotally moved on said first die pivot pin means and with the dies in flat side abutment with each other, an upstanding second pivot pin means secured to the base plate, the first die having a radial opening formed in its periphery for permitting said first die to be mounted on said plate second pivot pin means by said first die radial opening being slidably removably mounted on said second pivot pin means, each of the dies having an aligned equal radial distance transverse like opening adapted upon a certain pivotal position of the second die on the first pivot pin means of the first die to be aligned and to receive a lead stick inserted therethrough both transverse openings when so aligned, handle means secured to the periphery of the second die for thereby effecting manual pivotal rotational movement of the second die on the first pivot pin means of the first die in a direction to cause a cutting of the lead stick by such movement of one of said dies with relation to the other of the dies upon such pivoting and upon a lead stick insert into both of said transverse openings.

4,342,142

METHOD FOR MANUFACTURING SEALED-BEAM TYPE ELECTRIC BULB

Yasuhiro Nieda, Yokosuka, and Kiyokazu Honda, Zushi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 12, 1980, Ser. No. 186,623
Claims priority, application Japan, Sep. 17, 1979, 54-117904
Int. Cl.³ H01J *9/18*
U.S. Cl. 29—25.13 9 Claims



1. A method of manufacturing a sealed-beam type electric bulb comprising:

a first step of inserting external lead wires of a light source having a filament inside into a plurality of through holes formed in a plastic base plate, and filling said through holes with a flowable adhesive;

a second step of shifting said light source so that said filament is positioned at a predetermined position;

a third step of curing said adhesive to bond said external lead wires to said plastic base plate after shifting said light source, thereby fixing the light source to said plastic base plate;

a fourth step of inserting said plastic base plate with said light source mounted thereon into an opening formed at the rear end portion of a plastic reflector with a reflecting inner surface, and fixing said plastic base plate at the rear end of said reflector, thereby positioning said light source within said reflector; and

a fifth step of attaching a lens at the front end of said reflector so as to close an opening at the front end of said reflector.

4,342,143

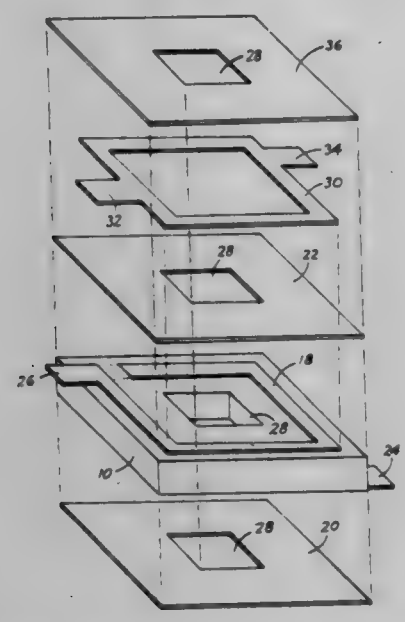
METHOD OF MAKING MULTIPLE ELECTRICAL COMPONENTS IN INTEGRATED MICROMINIATURE FORM

Thomas A. Jennings, 518A Oak Summit Apts., Glenside, Pa. 19038

Continuation of Ser. No. 711,990, Aug. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 707,881, Jul. 22, 1976, abandoned, which is a continuation of Ser. No. 439,350, Feb. 4, 1974, abandoned. This application May 1, 1978, Ser. No. 901,994
Int. Cl.³ H01G *4/30;* H01F *41/04*
U.S. Cl. 29—25.42 4 Claims

1. A method of making an integrated one-piece miniature series circuit having a central opening comprising at least a capacitor and a helical inductor coil which are integrated with one another and which are disposed so that one overlies the other, said capacitor and said coil both having central openings and being contained within the same transverse area; said method comprising the steps of providing a substrate, applying and bonding to each other a plurality of superposed films on said substrate to define said series circuit, each said films having a central opening, alternate layers of said films being comprised of electrically conductive material and dielectric material, said layers of conductive material being separated from one another by said layers of dielectric material, intercon-

necting some of said adjacent overlying layers of conductive material to provide said helical inductor coil, one of the layers of conductive material defining a first capacitor plate, the layer of conductive material defining the end of turn of said helical coil which is closest to said first capacitor plate comprising a



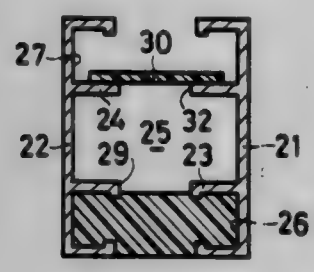
second capacitor plate whereby said first and second capacitor plates define said capacitor, and providing electrical connection means at the other end turn of said inductor coil and from said first capacitor plate so that said inductor coil and said capacitor comprise an integrated one piece series circuit.

4,342,144

METHOD OF MANUFACTURING A THERMALLY INSULATING SASH BAR

Nobushige Doguchi, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 14, 1980, Ser. No. 196,787
Claims priority, application Japan, Oct. 22, 1979, 54-135128
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—155 R 6 Claims



1. A method of manufacturing a thermally insulating sash bar, comprising the steps of:

(a) providing an elongated hollow metallic sash bar including a pair of spaced outer members and a pair of spaced first and second inner members extending between said outer members so as to define therebetween a pair of longitudinally extending first and second channels, respectively;

(b) introducing a mass of thermally insulating synthetic resin into and curing the same within said first channel to fill the latter with the cured thermally insulating synthetic resin;

(c) then forming a longitudinal gap in and along each of said first and second inner members;

(d) covering the longitudinal gap in said second inner member with a thermally insulating strip; and

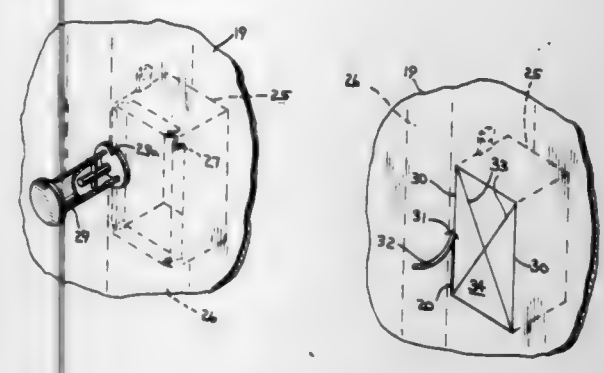
(e) then introducing a mass of the thermally insulating synthetic resin into and curing the same within said second channel to fill the latter with the cured thermally insulating synthetic resin.

4,342,145

PANELING CUTTER TOOL

Alan W. Kotchy, 628 Garrison Ave., Nekoosa, Wis. 54457

Division of Ser. No. 41,252, May 21, 1979, Pat. No. 4,286,384.
This application May 27, 1981, Ser. No. 267,466
Int. Cl.³ B26D *3/00*
U.S. Cl. 29—407 2 Claims



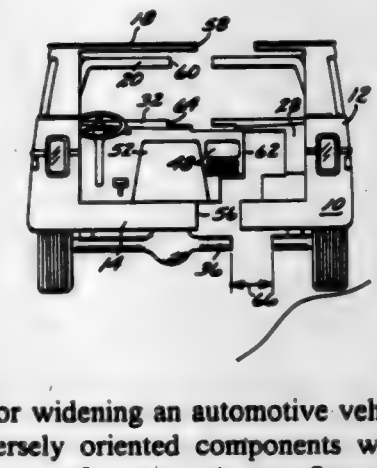
1. A method of cutting an opening in sheet paneling after the paneling is secured in place over a backing member having an opening, which comprises before the paneling is in place securing a flux responsive metal member around the periphery of said opening in the backing member for locating an opening to be cut in the paneling, securing the paneling in place over the backing member with said metal member located behind said paneling, moving a metal detecting device over the front of the paneling to locate the metal member, then marking an outline of the location of the metal member on the front of the paneling, thereafter cutting a groove in the front of the paneling along the outline marked on the front of the paneling, and removing the portion of the paneling surrounded by the cut to expose the opening in the paneling.

4,342,146

METHOD FOR WIDENING AN AUTOMOTIVE VEHICLE

Dale M. Hanson, Anaheim, Calif., assignor to Wide One Corporation, Anaheim, Calif.

Filed Feb. 25, 1980, Ser. No. 124,535
Int. Cl.³ B23P *6/00*; B62D *21/14*
U.S. Cl. 29—416 5 Claims



1. Method for widening an automotive vehicle of the type having transversely oriented components which include: a floor and transverse frame members, a fire wall adjacent the forward extremity of said floor, a transverse first dash mount having a first pair of hood mounts, a first upper hood panel mounted to said dash mount and a hood pivotally mounted to said hood mounts; a heater/air conditioner assembly mounted to said firewall to the right of the longitudinal centerline of said vehicle; and an engine oriented along said longitudinal centerline, said method comprising the steps of:

temporarily demounting said hood from said hood mounts;

cutting through said components of said automotive vehicle along a predetermined cut line extending the complete length of said vehicle and including a cut which extends through said floor and said transverse frame members along a line located to the right of said engine, said cut line

further including a cut through said fire wall and said dash mount, said cut through said fire wall being located to the right of said heater/air conditioner assembly;

removing and discarding said first upper hood panel;

moving the cut portions of said vehicle apart a predetermined stretch distance;

attaching floor and frame member spacer means between the cut portions of said floor and frame members, respectively, to bridge said stretch distance therebetween;

attaching fire wall spacer means between the cut portions of said fire wall to bridge said stretch distance therebetween;

attaching dash mount spacer means between the cut portions of said first dash mount to bridge said stretch distance therebetween;

attaching transversely extending adapter means to said dash mount, said adapter means having a substitute pair of hood mounts in replacement of said first pair of hood mounts;

attaching to said dash mount and said adapter means a second upper hood panel having hood mount openings;

remounting said hood through said hood mount openings to said substitute pair of hood mounts; and

mounting a pair of hood side panels on opposite sides of said hood and extending downwardly from said upper hood panel, each to bridge one-half of said stretch distance.

4,342,147

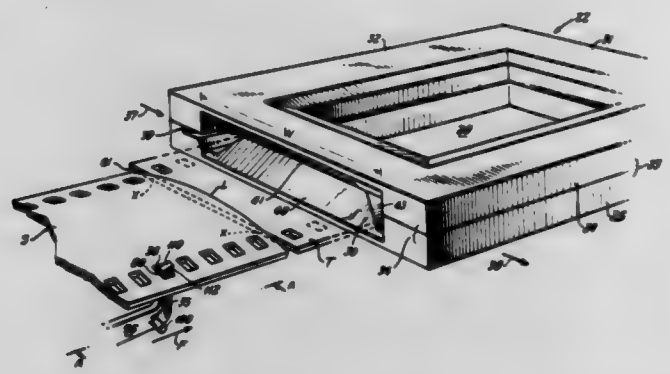
METHOD FOR LOADING PRE-CLOSED SLIDE MOUNTS

Edwin R. Thompson, Stamford, Conn., assignor to Forox Corporation, Stamford, Conn.

Division of Ser. No. 952,409, Oct. 18, 1978, Pat. No. 4,250,641. This application Jul. 24, 1980, Ser. No. 172,066

Int. Cl.³ B23P *17/00*

U.S. Cl. 29—417 **2 Claims**



1. In the method of automatically inserting film transparencies into pre-closed slide mounts each having a pocket therein for receiving the inserted transparency wherein the slide mounts are positioned one at a time in a loading station, a film strip is advanced endwise toward the respective slide mount in the loading station, the leading end portion of the film strip is cut off to form a film transparency in readiness to be loaded into the respective slide mount, the film strip is bowed longitudinally along the film strip for providing longitudinal stiffness in the film strip, and the freshly cut end of the bowed film strip is used for pushing the film transparency through an entranceway into the pocket in said respective slide mount, the improvement including the steps of:

cutting off the leading end portion of the film strip while said leading end portion is entirely outside of said entranceway;

then advancing the bowed film strip endwise toward the respective slide mount in the loading station along a forward stroke distance equal to the length of the film transparency plus an additional extent of forward travel sufficient for pushing the transparency completely through said entranceway into said pocket for loading the transparency into the slide mount; and

retracting said bowed film strip endwise away from the respective slide mount in the loading station by an amount of rearward travel sufficient for completely removing the film strip from the loaded slide mount;

thereby enabling pre-closed slide mounts to be used in a fast-loading cycle having entranceways which are only slightly wider than the width of the transparency to be inserted therein.

4,342,148

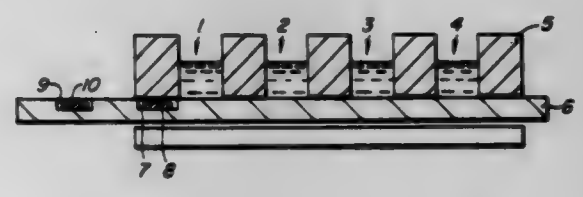
CONTEMPORANEOUS FABRICATION OF DOUBLE HETEROSTRUCTURE LIGHT EMITTING DIODES AND LASER DIODES USING LIQUID PHASE EPITAXY

Anthony J. SpringThorpe, Richmond, and Agnes Margittai, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 4, 1981, Ser. No. 231,501

Int. Cl.³ H01L *21/208*

U.S. Cl. 29—569 L **5 Claims**



1. A process for contemporaneously making double heterostructure light (LZD) emitting diodes and double heterostructure lasers using liquid phase epitaxy comprising:

filling a first liquid phase epitaxy (LPE) reservoir with a liquid material having composition appropriate for growth therefrom of an epitaxial laser first confining layer;

filling a second LPE reservoir with a liquid material having a composition appropriate for growth therefrom of an epitaxial laser active layer;

filling a third LPE reservoir with a liquid material having a composition appropriate for growth therefrom of an epitaxial laser second confining layer;

filling a fourth LPE reservoir with a liquid material having a composition appropriate for growth therefrom of an opitaxial laser capping layer;

cooling a housing containing the reservoirs at a predetermined rate;

moving a boat containing a leading source crystal and a trailing substrate crystal to a first station at which the source crystal underlies the first reservoir for sufficient time to saturate the composition in the first reservoir and to promote epitaxial growth of a first LED confining layer on the source crystal;

moving the boat to a second station at which the substrate crystal underlies the first reservoir for sufficient time to promote epitaxial growth thereon of a laser first confining layer and the source crystal underlies the second reservoir and experiences epitaxial growth thereon of a LED active layer;

moving the boat to a third station at which the substrate crystal underlies the second reservoir for sufficient time to promote epitaxial growth thereon of a laser active layer and the source crystal underlies the third reservoir and experiences epitaxial growth thereon of an LED second confining layer;

moving the boat to a fourth station at which the substrate crystal underlies the third reservoir for sufficient time to promote epitaxial growth thereon of a laser second confining layer and the source crystal underlies the fourth reservoir and experiences epitaxial growth thereon of a LED capping layer;

moving the boat to a fifth station at which the substrate crystal underlies the fourth reservoir for sufficient time to promote epitaxial growth thereon of a laser capping layer; and

subsequently fabricating light emitting diodes from the source crystal and laser diodes from the substrate crystal.

4,342,149

METHOD OF MAKING VERY SHORT CHANNEL LENGTH MNOS AND MOS DEVICES BY DOUBLE IMPLANTATION OF ONE CONDUCTIVITY TYPE SUBSEQUENT TO OTHER TYPE IMPLANTATION

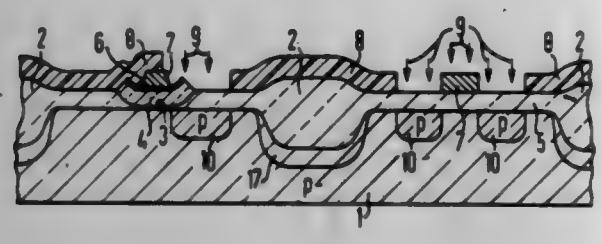
Erwin Jacobs, Vaterstetten; Ulrich Schwabe, and Dezso Takacs, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

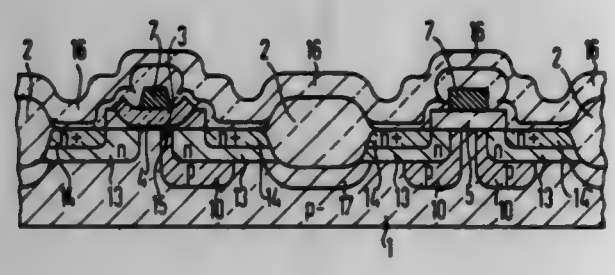
Filed Oct. 30, 1980, Ser. No. 202,347

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947350

Int. Cl.³ B01J *17/00*; H01L *29/78*

U.S. Cl. 29—576 B **4 Claims**





1. A method for the manufacture of MNOS memory transistors with very short channel lengths utilizing a silicon substrate of a first conductivity type provided with a structured field oxide SiO_2 layer for the separation of the active transistor regions comprising the steps of:

(a) forming a silicon oxide layer effective as a tunnel oxide on a surface of the silicon substrate of the first conductivity type;

(b) applying a silicon nitride layer serving as a memory layer over the entire surface of the tunnel oxide layer;

(c) structuring and retaining the memory nitride layer in the region of the memory transistor while selectively removing it elsewhere;

(d) executing a surface-wide oxidation to form a gate oxide for the non-memory transistor and an oxynitride layer on the memory nitride;

(e) precipitating a polysilicon layer and structuring the polysilicon layer as a gate electrode in the region of the memory transistor and of the non-memory transistor;

(f) selectively applying a first layer of photosensitive resist to form an implantation mask over the field oxide regions and over the gate electrode of the memory transistor;

(g) implanting ions of the first conductivity type into selected regions of the substrate;

(h) stripping the photo-sensitive resist mask and diffusing ions of the first conductivity type into the substrate;

(i) selectively applying a second layer of photosensitive resist to form an implantation mask in the region of the gate oxide for the non-memory transistor and of the gate oxide and oxynitride layer of the memory transistor;

(j) implanting low energy ions of a second conductivity type forming source/drain zones;

(k) stripping the photosensitive resist mask;

(l) implanting higher energy ions of the second conductivity type thereby forming n+ regions active as source/drain zones and for generating the short channel; and

(m) precipitating a protective intermediate oxide over the surface of the substrate, generating contact holes, and fabricating metal contacts.

4,342,150

PROCESS AND DEVICE FOR FILLING WITH A HARDENABLE FILLER GAPS WHERE CORROSIVE ATTACK CAN OCCUR IN TUBE AND FIN TYPE HEAT EXCHANGERS

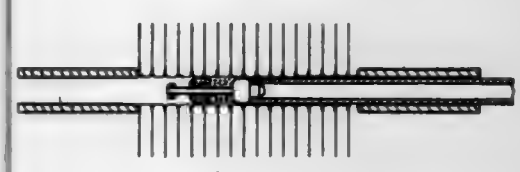
Karl Mack, Singen, Fed. Rep. of Germany, and Zdenek Maly, Kreuzlingen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 24, 1980, Ser. No. 115,088

Claims priority, application Switzerland, Feb. 1, 1979, 1001/79

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—726 **15 Claims**



1. An apparatus for filling the ring-shaped gaps formed between the tubes and fins of a tube and fin type heat exchanger with a corrosion protective filler material wherein the collars of the stacked fins form a first substantially cylindrical passage along a first axis comprising:

(a) a first closure member when in use sealingly positioned within said first substantially cylindrical passage and slidably movable from one end of said passage to the other end of said passage at a first rate;

(b) a second closure member spaced from said first closure member and when in use sealingly positioned within said first substantially cylindrical passage and slidably movable from one end of said passage to the other end of said passage at a second rate different from said first rate so as to form a variable volume chamber between said first and second closure members;

(c) said first closure member comprises a mandrel, said mandrel being provided with a shaft which extends through said second closure member along said first axis;

(d) means on at least one of said first closure member and said mandrel for charging said variable volume chamber with said corrosion protective filler material; and

(e) said first closure member and said second closure member adapted to be moved at said first rate and said second rate respectively through said first substantially cylindrical passage such that said variable volume chamber formed between said first closure member and said second closure member gradually contracts so as to force said corrosion protective filler material from said variable volume chamber into said ring-shaped gaps.

4,342,151

BLANK AND PROCESS FOR THE FORMATION OF BEAM LEADS FOR IC CHIP BONDING

John R. Guild, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

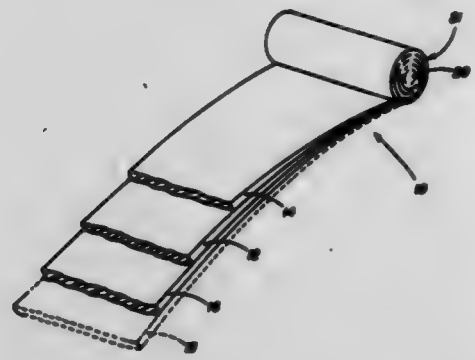
Division of Ser. No. 49,662, Jun. 18, 1979, Pat. No. 4,247,623. This application Aug. 19, 1980, Ser. No. 179,612

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—827 **2 Claims**

1. In a process for the manufacture of frames containing beam leads suitable for bonding to an integrated circuit chip, the process comprising the steps of imagewise exposing and developing a positive-working resist on one side of a flexible, electrically conductive metallic layer to form a protective

resist on the beam lead portions of the metallic layer, and a negative-working resist on the opposite side of the metallic layer to form a window-bearing spacer holding the beam leads in a desired orientation, etching through the metal foil to form the beam leads, inserting an integrated circuit chip into the spacer, and bonding the beam leads to the inserted chip,

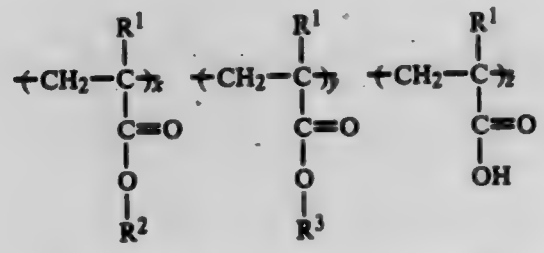


the improvement wherein

said negative-working resist comprises

(a) as a binder, a mixture of at least

(i) a polymer having recurring units with the structure



wherein each R^1 is independently hydrogen or methyl, R^2 is alkyl containing from about 3 to about 5 carbon atoms, R^3 is alkyl containing from 1 to about 2 carbon atoms, and x, y and z are mole percents and are about

$30 \leqq x \leqq 70$

$30 \leqq y \leqq 60$

$1 \leqq z \leqq 5$;

and

(ii) polymethylmethacrylate in an amount of from 0 to about 75 weight percent of the mixture; said binder having a glass transition temperature between about 50° and about 100° C.;

(b) a photopolymerizable monomer selected from the group consisting of triethylene glycol diacrylate, tetraethylene glycol diacrylate, and a mixture of pentaerthyritol tetraacrylate and either 1,6-hexanediol diacrylate or tripropylene glycol diacrylate; and

(c) a photoinitiator composition, and wherein

the exposing and developing of the negative-working resist includes the step of fully polymerizing essentially all monomer in the exposed areas, whereby outgassing of the negative-working resist during the bonding step is substantially reduced.

4,342,152

METHODS OF TERMINATING AND CONNECTORIZING CABLES

Thomas J. Taylor, Gahanna, Ohio, assignor to Western Electric Company, Inc., New York, N.Y.

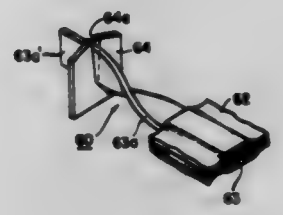
Filed Jan. 30, 1980, Ser. No. 116,704

Int. Cl.³ H01R *43/02*

U.S. Cl. 29—860 16 Claims

1. A method of connectorizing a terminated end of a given length of flat cable having two laterally disposed, overlying-/underlying arrays of insulated ribbon-like conductors, with the major plane of each conductor lying within the major plane of the cable, wherein said two arrays are respectively laminated between a common insulative center film and an associated one of two opposite side outer insulative films, and wherein two laterally disposed isolating strips of non-conductive material are respectively positioned on opposite sides of said center film in alignment, and interposed between the latter and the adjacent one of said two arrays of conductors at each predetermined termination site along said cable, as fabricated, said isolating strips being of a material that will not bond to said conductors, said method comprising the steps of:

stripping the insulation from the conductors along short, longitudinally disposed end regions thereof at the terminated end of the cable, said stripping step further includ-



ing the step of peeling at least a substantial longitudinally disposed segment of each otherwise stripped conductor end region in each array from the then co-extensive and contacting one of said isolating strips so as to completely expose each such conductor end segment;

angularly twisting at least a forward portion of the respectively stripped conductor end segments a predetermined number of degrees from their original orientation within the cable, and

securing the twisted end portions of the conductors to respectively aligned mating elements of an associated connector so as to form an interconnected flat cable-connector assembly.

4,342,153

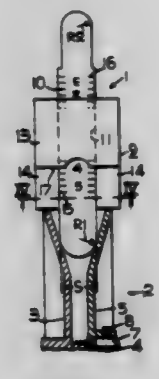
PITCH DIAMETER GAUGE FOR A VARIABLE SPEED PULLEY

Saxon Cole, Webster Grove, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Aug. 18, 1980, Ser. No. 179,255

Int. Cl.³ G01B *5/18, 5/24*

U.S. Cl. 33—169 B 6 Claims



1. A gauge for measuring the widthwise deviation between the opposing walls of a tapered groove forming the rim of an adjustable V-belt pulley, comprising:

a body member including means adapted to be abutably engaged with the outer edges of the walls of the groove;

a gauge bar slidably mounted within said body member having an end portion of predetermined width;

indicia on said gauge bar readable against corresponding indicia on said body to express the deviation of said walls

as determined by the penetration depth of the gauge bar within the groove upon engagement of the end portion with the opposing walls of the groove;

said gauge bar having a second end portion of a predetermined width sized to be selectively engaged in a second tapered groove of a different widthwise dimension than said first mentioned groove; and

second indicia on the gauge bar readable against said indicia on the body to express the deviation of the walls of said second groove as determined by the penetration depth of the gauge bar within said groove upon engagement of the second end portion with the opposing walls of said second groove.

4,342,154

MEASURING BRIDGE

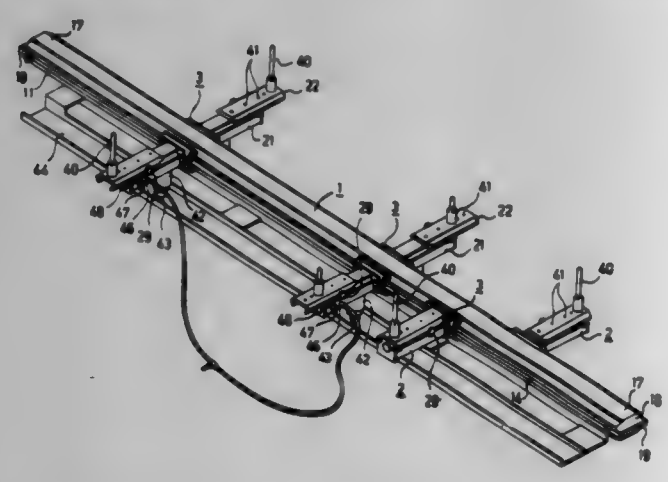
Pierre Legrand, Soumagne, Belgium, assignor to Applied Power Inc., Milwaukee, Wis.

Filed Apr. 29, 1980, Ser. No. 145,322

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1979, 2922804

Int. Cl.³ G01B *5/14*

U.S. Cl. 33—180 AT 23 Claims



1. A measuring bridge for determining the orientation of reference points on a motor vehicle, said measuring bridge including:

a single bending-resistant measuring bar and a plurality of measuring vehicles, supporting means extending downwardly from said measuring bridge for supporting the same for movement relative to said motor vehicle so that said measuring bridge may be oriented,

first and second track means located on said measuring bar and disposed respectively on the opposite sides thereof and extending longitudinally along said bar in general parallelism to each other,

a plurality of said measuring vehicles being mounted respectively on each of said first and second track means,

each measuring vehicle including support means movable longitudinally along its respective track means independently of the support means of the other measuring vehicles, one end of each measuring vehicle being coupled to its respective support means and the opposite end being spaced laterally from said track means, said measuring vehicles extending generally normally relative to its respective track means and outwardly from said measuring bar so that the area around the opposite ends of said measuring vehicles and between the measuring vehicles mounted on the same track means is unobstructed by track means to permit ready access to said motor vehicle,

an additional track means being formed on each of said vehicles and extending generally perpendicularly to said first and second track means, and measuring means mounted on each of said additional track means for lateral movement relative to said measuring bar.

4,342,155

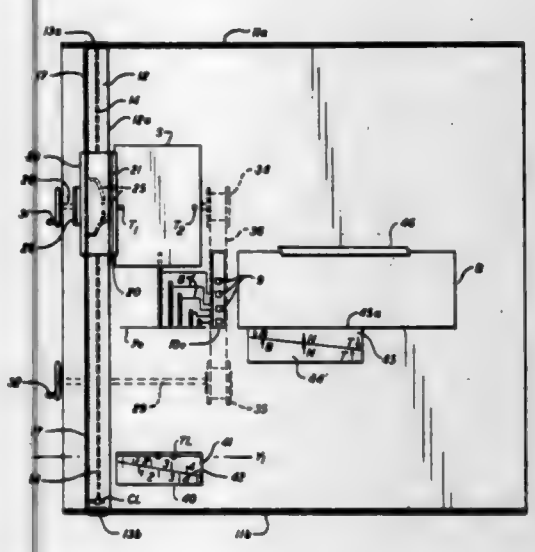
SIGN-MAKING APPARATUS

Gregory R. Waldron, West Oneonta, N.Y., assignor to Scott Machine Development Corporation, Walton, N.Y.

Continuation of Ser. No. 905,748, May 15, 1978, abandoned. This application Apr. 27, 1981, Ser. No. 257,663

Int. Cl.³ B41B *1/00*; B32B *31/20*; G09F *7/16*

U.S. Cl. 33—184.5 42 Claims



1. Apparatus for forming signs which aids an operator to form an operator-selectable number of rows of operator-selectable characters of an operator-selectable height on a sign blank having a height selectable by the operator from a plurality of different sign blank heights, by transfer of successive characters from a carrier sheet carrying said characters, with said rows of characters having operator-selectable predetermined spacings between rows and operator-selectable predetermined spacings relative to a pair of edges and a centerline of said sign blank, comprising, in combination: a base having a surface for supporting said sign blank and means for locating one of said edges of said sign blank relative to said base in a predetermined reference position in a first direction; a carriage mechanism carried on said base including a carriage having means for gripping said carrier sheet and means for constraining movement of said carriage to a plurality of predetermined discrete positions relative to said base, said discrete positions being spaced apart a predetermined incremental distance in said first direction; and means for positioning said carrier sheet in said first direction to an operator-selectable gripping position relative to said carriage and said base so that movement thereafter of said carriage to various of said discrete positions will locate characters on said sheet in said first direction in accordance with said predetermined spacings.

4,342,156

CYLINDER DRYER WITH BOUNDARY LAYER TURBULENCE

Wilhelm Wanke, Donauschwabenstrasse 47, 7920 Heidenheim, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,332

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2918985

Int. Cl.³ F26B *3/24*

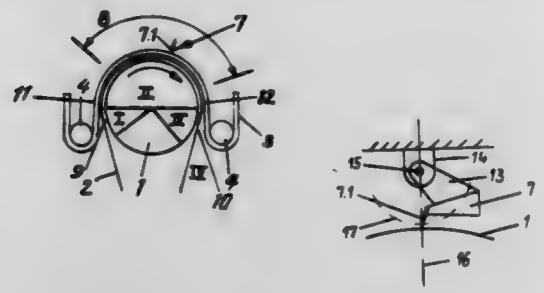
U.S. Cl. 34—41 14 Claims

1. In a method of drying a web of material running between a drying cylinder and a traveling covering cloth tending to form an air boundary layer impeding heat exchange and humidity removal, the improvement comprising in combination the steps of:

avoiding excessive wear of the covering cloth by locating a baffleplate at a distance from the covering cloth within a domain of t' e boundary layer;

promoting a heat exchange and humidity removal through turbulence by impacting air from the boundary layer against a front surface of the baffleplate at a distance from

the covering cloth, causing an exchange of air in the boundary layer and in meshes of the covering cloth, and



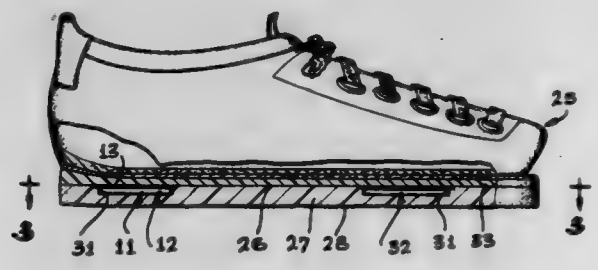
providing the front surface with a varying configuration across the covering cloth.

4,342,157

SHOCK ABSORBING PARTIALLY LIQUID-FILLED CUSHION FOR SHOES

Sam Gilbert, 17965 Seabreeze, Pacific Palisades, Calif. 90272

Filed Aug. 11, 1980, Ser. No. 177,076
Int. Cl.³ A43B *13/20, 21/26*
U.S. Cl. 36—29 **16 Claims**



1. An impact-absorbing cushion adapted for containment within a cavity in a shoe sole, said cavity having sides, a top and a bottom, comprising:

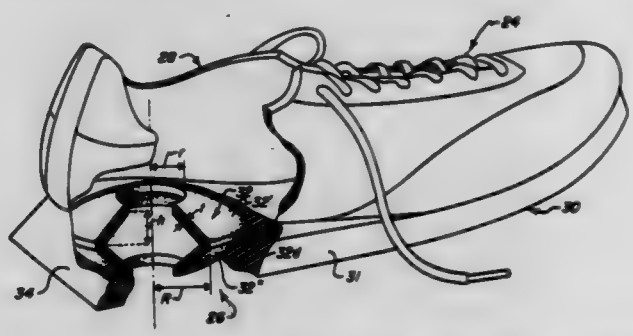
a sealed bladder comprising a thin, flexible, resilient, nonporous shell, having walls, a top and a bottom closely conforming to the walls, roof and floor of said cavity, said bladder containing a liquid under pressure, whereby the walls, top and bottom of said shell are maintained in continuous intimate force-transmitting contact with the walls, roof and floor of said cavity.

4,342,158

BIOMECHANICALLY TUNED SHOE CONSTRUCTION

Thomas A. McMahon, 65 Crest Rd., Wellesley, Mass. 02181, and Peter R. Greene, 77 Lanark Rd., Apt. 1, Brookline, Mass. 02146

Filed Jun. 19, 1980, Ser. No. 160,967
Int. Cl.³ A43B *21/26, 21/30*
U.S. Cl. 36—35 R **59 Claims**



1. A shoe that is biomechanically tuned for an optimal response for the person wearing the shoe and a selected use of the shoe has an upper and a sole that each extend in a generally horizontal direction and includes a heel construction comprising a main spring formed of a resilient material, said main spring being structured to flex repeatedly in a generally vertical direction transverse to said horizontal direction over a relatively small maximum vertical displacement while providing a high degree of vertical compliance during each complete loading cycle associated with said use and also structured to provide a high degree of resistance to lateral shear, said main spring being structured to transiently store the impact force on said heel construction during each said vertical flexure and then returning said transiently stored energy to the person with a high level of efficiency.

4,342,159

METATARSAL GUARD SAFETY SHOE

Robert G. Edwards, Manchester, Mo., assignor to Interco Incorporated, St. Louis, Mo.

Filed Jul. 21, 1980, Ser. No. 170,647
Int. Cl.³ A43C *13/14*
U.S. Cl. 36—77 R **6 Claims**



1. In a safety shoe, a sole; a firm, force-resisting toe cap; an upper attached to the sole and extending over the toe cap and the metatarsal area of the shoe; a lining layer below the upper in the metatarsal area, a unitary metatarsal guard of relatively stiff, resilient material confined between the lining and the upper to underlie the upper, the guard having sufficient resiliency to spread under impact of heavy blows upon the top of it, the guard being shaped to have its forward edge overlie the toe cap, and to extend from the toe cap upward to at least substantially overlie the metatarsal area of the shoe, and to curve downward along the sides of such area below the upper, its side edges being displaced from the sole and free of the sole so as not normally to contact the sole and to be laterally movable relatively thereto, and a padding of energy-absorbent material secured to the shoe below the metatarsal guard, the arrangement being such as to permit the guard to spread and thereby to distribute blows applied to the top of the guard over a substantial area to reduce the damaging effect thereof upon a wearer's foot.

4,342,160

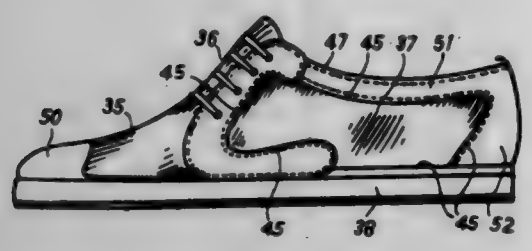
FOOTWEAR

Lancelot P. Clark, Street, England, assignor to Clarks Limited, Street, England

Division of Ser. No. 94,921, Nov. 16, 1979, Pat. No. 4,295,238. This application May 28, 1981, Ser. No. 267,860
Claims priority, application United Kingdom, Nov. 17, 1978, 45098/78
Int. Cl.³ A43C *13/08*
U.S. Cl. 36—83 **6 Claims**

1. An article of footwear having an upper whereof one part comprises two panels arranged to extend respectively on opposite sides of the foot of the wearer, a sock for underlying the foot, the side panels being preformed with the sock from flexible sheet material either integrally with each other or in separate pieces which are connected together to form a single component, and a plastics sole unit moulded integrally with the remaining part of the parts of the upper on to said one part and

the sock, said remaining part or parts of the upper overlapping marginal portions of the outer but not the inner faces of the



side panels, whereby the sock and side panels lie wholly in the inner surface of the article.

4,342,161

LOW SPORT SHOE

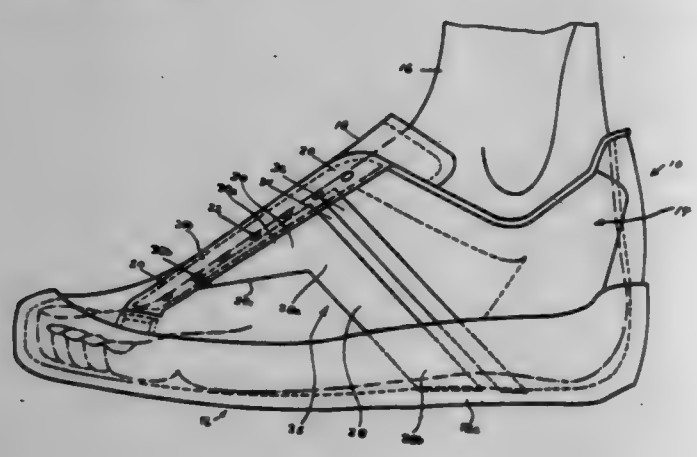
Michael W. Schmohl, Willibaldstr. 30A, D-8500 Nuremberg, Fed. Rep. of Germany, assignor to Michael W. Schmohl, Aachen, Fed. Rep. of Germany

Continuation of Ser. No. 962,459, Nov. 20, 1978, abandoned. This application Mar. 9, 1981, Ser. No. 241,814

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752301

Int. Cl.³ A43B *5/00, 11/00*

U.S. Cl. 36—114 **6 Claims**



1. A low shoe comprising a low upper formed from a first material, a sole, a lacing strip affixed directly to said upper and extending generally forwardly and downwardly and generally rearwardly and upwardly on an area of said upper adapted to overlie the instep of a foot received in the shoe, and a bandage formed from a second material which is substantially less extensible than said first material, said bandage including an elongated portion and a connecting portion extending generally laterally forward of said elongated portion at a first end thereof, said elongated portion having a substantially constant width transverse to the direction of elongation thereof and said elongated portion being longer in the direction of elongation than said width, a first edge of said connecting portion remote from said elongated portion extending laterally of said elongated portion and being affixed to said lacing strip, said elongated portion extending generally downwardly and rearwardly from said connecting portion to a second end opposite from said first end, said second end being affixed to a rearward portion of said shoe, the dimension of said connecting portion in said direction of elongation of said elongated portion being greater at the juncture of said connecting portion with said elongated portion than the dimension of said connecting portion in such direction at the forwardmost tip of said connecting portion, wherein a second edge of said connecting portion extends from the forwardmost tip of said connecting portion to the juncture of said connecting portion with said elongated portion, and said second edge of said connecting portion is substantially straight and slopes away from said lacing strip to the juncture of said connecting portion with said elongated portion.

4,342,162

DEVICE FOR PLANING A BODY OF GROUND MATERIAL

Cornelis Spaans, Delft, and Herman H. Nijhof, Purmerend, both of Netherlands, assignors to B.V. Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg, Wormerveer, Netherlands

Filed Jan. 11, 1980, Ser. No. 111,383

Claims priority, application Netherlands, Jan. 12, 1979, 7900266

Int. Cl.³ E02F *3/06, 5/00*

U.S. Cl. 37—1 **7 Claims**



1. A device for planing a body of ground material comprising: at least one tube rotatably mounted in a supporting construction capable of being moved along guide means in such a manner that the tube may be moved in horizontal position and rotated with the aid of driving means parallel to itself over the surface of the body of ground material to be planed, at least one helical blade being wound about said tube, said helical blade merging into a scoop at the discharge end thereof as regards the direction of conveyance, said scoop having the same radial dimension as the helical blade projecting with respect to the tube, an opening being provided in the wall portion of the tube partially surrounded by said scoop, and the tube being hollow at least at the location of said scoop, and means for connecting said hollow part of the tube to conveyor means for discharging therefrom the ground material removed from the top surface of said body of ground material and introduced into said hollow part of the tube by said scoop.

4,342,163

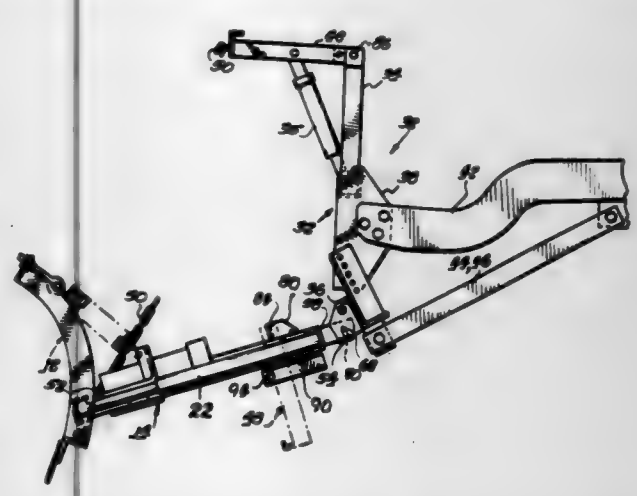
APPARATUS FOR MOUNTING A SNOWPLOW BLADE TO A VEHICLE

Ralph W. Hoekstra, Stillman Valley, Ill., assignor to Swenson Spreader Company, Lindenwood, Ill.

Filed Sep. 2, 1980, Ser. No. 183,284

Int. Cl.³ E01H *5/06*

U.S. Cl. 37—231 **18 Claims**



1. Apparatus for joining a frame member for carrying a snowplow blade or the like to a vehicle-mounted lift frame or the like, comprising: at least one mounting bracket member rigidly attached to said lift frame and including a pair of parallel, generally vertical walls supporting a generally horizontal

mounting rod therebetween, means forming at least one mounting ear on said blade-carrying frame, said mounting ear being of lesser width than the space between said parallel, generally vertical walls of said mounting bracket member and having a generally vertically oriented slot therein of predetermined depth, said slot being rotatably engageable with and over said generally horizontal mounting rod to define a rotatable joint, a retaining pin, and means in said mounting bracket member for removably receiving said retaining pin generally vertically above said mounting rod and substantially parallel therewith, the space between said retaining pin receiving means and said mounting rod being sufficient to allow relative rotation of said mounting ear with respect to said mounting rod but of lesser extent than said predetermined depth of said slot in said mounting ear and further including a lift arm link mounted at an upper portion of said lift frame and positioned for transmitting motion between a lifting piston and said blade-carrying frame member to effect lifting and lowering of a snowplow blade or the like mounted to said blade-carrying frame member, means for removably mounting said lift arm link to said lift frame including a lift frame bracket formed in said lift frame and cooperating apertures in said bracket and in said lift arm for receiving a pin, thereby rotatably mounting said lift arm link to said lift frame, and means on said blade-carrying frame for removably mounting said lift arm link to serve as a stand for holding said mounting ear above a ground surface at a level substantially similar to the level of said mounting rod to facilitate interengagement therebetween.

4,342,164

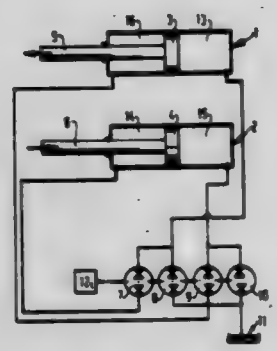
COUNTERBALANCING HYDRAULIC SYSTEM

Josephus A. M. Claassen, Nuenen, Netherlands, assignor to Hydraudyne B.V., Boxtel, Netherlands

Continuation of Ser. No. 891,768, Mar. 30, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,745

Int. Cl.³ E02F 9/22; F15B 13/06, 13/09

U.S. Cl. 37—73 **3 Claims**



1. A hydraulic system for resisting a torque couple exerted by a common output member while selectively producing displacement between the common output member and a common base for the hydraulic system while maintaining said torque couple, said common output member having a first end portion anchored in position and an opposite second end portion, which system comprises in combination:

a pair of piston/cylinder devices disposed in parallel and interconnecting said common base and the second end portion of said common output member, each device comprising a cylinder having a piston reciprocable therein and a piston rod connected to said piston whereby each device has a first cylinder space opposite said piston rod and a second cylinder space on the piston rod side of said piston in which said first cylinder space is of greater cross sectional area than is said second cylinder space by an amount equal to the cross sectional area of the piston rod;

a reservoir of hydraulic fluid;

a first pump connected directly between said first cylinder space of said one device and the second cylinder space of the other device for transferring hydraulic fluid back and forth between the first cylinder space of one device and the second cylinder space of the other device;

a second pump connected directly between the first cylinder space of the other device and the second cylinder space of said one device for transferring hydraulic fluid back and forth between the first cylinder space of said other device and the second cylinder space of said one device;

a third pump connected directly between said reservoir and the first cylinder space of said one device for transferring hydraulic fluid back and forth between said reservoir and said first cylinder space of said one device;

a fourth pump connected directly between said reservoir and said first cylinder space of said other device for transferring hydraulic fluid back and forth between said reservoir and said first cylinder space of said other device;

means for operating all of said pumps in unison whereby as said first pump transfers fluid from said second cylinder space of said other device to the first cylinder space of said one device, and third pump transfers fluid from said reservoir to said first cylinder space of said one device, said second pump transfers fluid from said second cylinder space of said one device to the first cylinder space of said other device, and said fourth pump transfers fluid from said reservoir to the first cylinder space of said other device, and vice versa; and

all of said pumps being of the displacer pump motor type and the displacement ratio of said first and third pumps and of said second and fourth pumps being such that said piston rods are extended and retracted in unison without altering the torque couple resisted by the hydraulic system.

4,342,165

TRACK WORKING MACHINE WITH A BALLAST REMOVING AND PLANING DEVICE

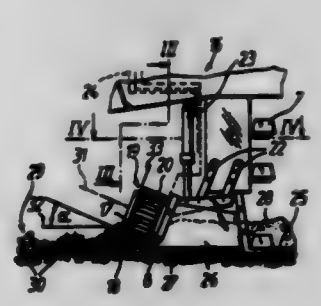
Josef Theurer, Vienna, and Manfred Brunninger, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Apr. 1, 1981, Ser. No. 249,952

Claims priority, application Austria, Apr. 16, 1980, 2063/80

Int. Cl.³ E02F 5/22

U.S. Cl. 37—104 **11 Claims**



1. In a track working machine for removing excess ballast from a ballast bed arranged to support a track defining a plane and for planing the ballast of the bed, which comprises a frame, undercarriages supporting the frame on the track for movement of the machine in a working direction, and a ballast removing and planing device mounted vertically adjustably on the frame between the undercarriages: the improvement of the device including

(a) an endless ballast removing chain comprised of a multiplicity of chain members extending substantially parallel to the track plane,

(b) two chain reversing points about which the chain is trained for movement in a plane extending substantially vertically to the track plane, and

(c) a drive for moving the chain in the substantially vertically extending plane and having an axis extending substantially parallel to the track plane,

(1) the chain having an upper and a lower stringer, the lower chain stringer facing away from the frame and projecting

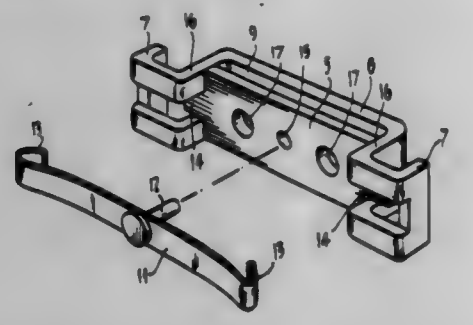
forwardly of the upper chain stringer in the working direction.

4,342,166

TOOL FASTENING

William M. Johnson; Alan Lindsay, and Harry Klaassens, all of Maidstone, Australia, assignors to Ralph McKay Limited, Victoria, Australia

Filed Jul. 14, 1980, Ser. No. 168,746
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—142 A **3 Claims**



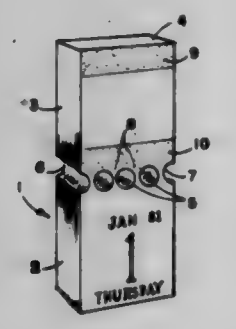
1. A mounting bracket for an earth engaging tool comprising a body portion a recess within said body portion adapted to receive a complementary shaped shaft of an earth engaging tool a clip attachable externally to said body portion of said bracket by resilient end lugs and a retaining pin, secured to said clip intermediate said ends, said pin being adapted to seat within aligned holes of the tool shaft and said body portion when said tool and said bracket are assembled, to retain the shaft in said recess and in which the body portion incorporates shoulders adapted to protect the end lugs of said clip.

4,342,167

SELF-MOUNTING DISPLAY CALENDAR

Michael Stanard, 402 Lee St., Evanston, Ill. 60202

Filed Nov. 25, 1980, Ser. No. 210,313
Int. Cl.³ G09D *3/04*; G09F *1/08*
U.S. Cl. 40—121 **8 Claims**



1. A self-mounting display calendar comprising:

a substantially rectangular calendar pad of multiple paper sheets bound at their top end and presenting a face side, a back side and two opposing edges, said pad having an upper mounting segment and a lower printed segment separable from each other along a tear line provided in an intermediate perforated segment of the pad between notches in each of said edges, said tear line being formed by two-dimensional perforations which are sufficient in number to remove substantially more than one-half the paper as measured along the tear line between the notches;

a lightweight casing which is a packaging replica bearing distinctive indicia of a package design, said casing being mounted over the top end of said pad and extending downwardly around the face and back sides and two edges of the pad to a position overlapping the intermediate perforated segment while leaving the lower printed segment exposed, said casing being adhered to at least a portion of the front and back sides of the pad; and

a double-faced adhesive mounting means attached to the outer back side of the combined pad and casing with sufficient strength per unit area to self-mount and hold the pad and casing onto a flat, vertical supporting surface against the total weight of the pad and casing and also against the force needed to detach one paper sheet from the pad.

4,342,168

FLEXIBLE STREET SIGN BLANK

Donald W. Schmanski, P.O. Box 1298, Carson City, Nev. 89701

Filed Jan. 12, 1981, Ser. No. 224,270
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—607 **6 Claims**



1. A flexible resin and fiber composite street sign blank adapted for attachment to a rigid bracket and sign post combination comprising:

a planar web section having a horizontal side greater in length than a vertical side thereof, said web having a thickness between 0.045 and 0.250 inches and a web fiber content including (i) longitudinal fiber and (ii) fiber material having a transverse fiber component, said web fiber content with resin providing a minimum balanced anisotropic strength parameter in the longitudinal direction of approximately 25,000 psi in said web section and a minimum balanced anisotropic strength parameter in the vertical direction of 5,000 psi; and

an elongate rail section extending along and being integral with said horizontal side of the web section, said rail section having a thickness of at least twice the web thickness and between 0.125 and 0.750 inches and a rail fiber content including (i) fiber material having a transverse fiber component and (ii) longitudinal fibers, said rail fiber content with resin providing a minimum balanced anisotropic strength parameter in the longitudinal direction of 40,000 psi in said rail section and a minimum balanced anisotropic strength parameter in the vertical direction of 5,000 psi, said fiber material with transverse component being continuous between the web and rail sections and along a junction therebetween.

4,342,169

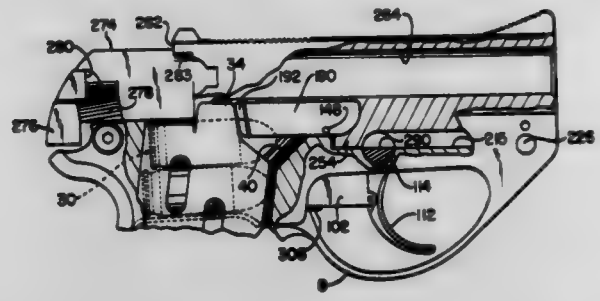
MANUALLY CYCLED PISTOL

Philip R. Lichtman, Newton, Mass., assignor to Nicholas A. Pandiscio, Wayland, Mass., a part interest

Continuation of Ser. No. 3,373, Jan. 15, 1979, abandoned, which is a continuation of Ser. No. 851,451, Nov. 14, 1977, abandoned, which is a division of Ser. No. 699,083, Jun. 23, 1976, abandoned. This application Jul. 2, 1980, Ser. No. 165,640
Int. Cl.³ F41C *3/00*
U.S. Cl. 42—11 **5 Claims**

1. A manually cycled repeating pistol comprising a frame with a handle, a barrel slidably mounted to the frame so as to be movable lengthwise from a first position in which a cartridge is positioned for firing and a second position in which a cartridge can be ejected from the pistol, a firing mechanism carried by the frame independently of the barrel for firing a

cartridge when the barrel is in its first position, said firing mechanism comprising a trigger pivotally mounted to the frame and movable from a forward non-firing position to a rear firing position, and locking means operable by said trigger for locking said barrel in said first position when said trigger is



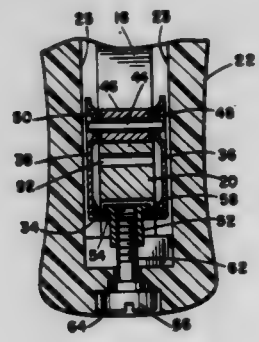
moved out of said forward non-firing position, said locking means comprising a pivot shaft for said trigger, and first and second means carried by said barrel and said pivot shaft respectively for interlocking with one another and thereby locking said barrel in said first position when said trigger is moved out of said forward non-firing position.

4,342,170

FASTENER FOR UNITARY PISTOL HAND GRIP

Guy L. Hogue, Atascadero, and James D. Mason, San Diego, both of Calif., assignors to Hogue Combat Grips, Inc., Los Osos, Calif.

Filed Aug. 18, 1980, Ser. No. 178,948
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—71 P 9 Claims



1. A fastener for use in combination with a pistol having a cut out butt frame portion with downwardly extending front and rear members and a foot portion extending between the lower ends of said front and rear members, and a unitary hand grip covering said butt frame section, said unitary hand grip having a closed bottom with an opening therein, the fastener comprising:

a yoke having a cross bar below said foot portion and having two upwardly extending side portions straddling the foot portion;

an opening in the upper end of each side portion of said yoke;

a pin extending transversely across the top of said foot portion and engaged in said openings in said side portions of the yoke, the ends of said pin being substantially flush with the outside surfaces of said side portions;

a roller rotatably mounted on said pin and riding on top of said foot portion;

inwardly concave opposed depressions formed in the side portions of said yoke around said openings therein to prevent said pin from disengaging from said yoke;

a threaded sleeve attached to said cross bar and extending downwardly therefrom;

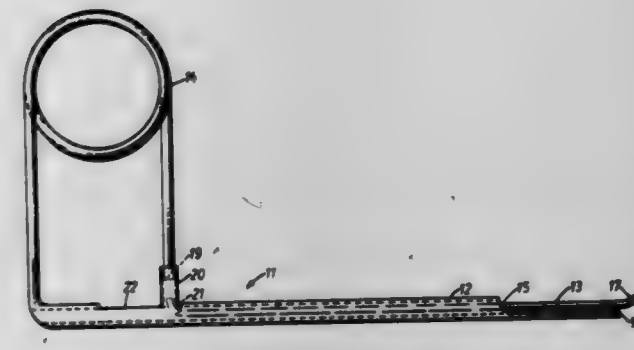
a screw extending through said opening in the bottom of said hand grip and engaging in said threaded sleeve.

4,342,171

FISH HOOK DISGORGER

Michael W. Cripps, Clay Croft, Bracken Rd., and Raymond Lee, 39 Fane Way, both of Maidenhead, Berks, England

Filed May 22, 1981, Ser. No. 266,278
Claims priority, application United Kingdom, May 22, 1980, 8016892
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—53.5 1 Claim



1. A fish hook disgorger for disgorging a fish hook and line from a fish, said fish hook disgorger comprising:

an elongated line encircler of heavy gauge wire, a forward end of said line encircler being curved to form a line encircling hook, a rear end of said line encircler terminating in a first end of a bush extending generally perpendicularly to said elongated line encircler;

a tubular plunger within which said line encircler is slideably housed, a front end of said tubular plunger being formed as a V-shaped plunger tip positioned adjacent said line encircling hook, an elongated slot formed in said tubular plunger away from said plunger tip, said bush extending through and being slideable in said slot; and

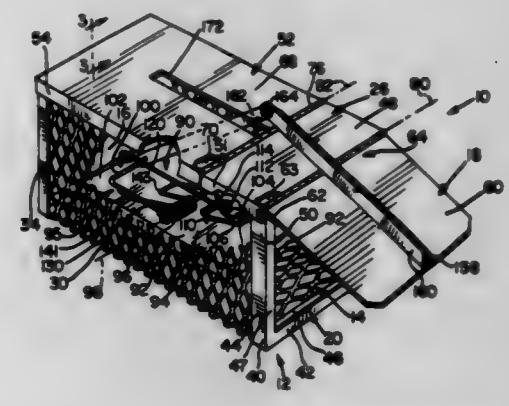
a spring, a first end of said spring being secured in a second end of said bush and a second end of said spring being attached to a rear end of said plunger, said spring forming a handle portion of said fish hook disgorger and biasing said line encircler forwardly in said turbular plunger, whereby rearwood movement of said line encircling hook relative to said plunger tip against said spring bias disgorges the fish hook and line from the fish.

4,342,172

ANIMAL TRAP

Anthony Guancl, 1928 N. Leamington Ave., Chicago, Ill. 60639

Filed Nov. 28, 1980, Ser. No. 211,243
Int. Cl.³ A01M *23/18*
U.S. Cl. 43—61 8 Claims



1. In a trap for rodents and the like including a trap device that includes an elongated planar base having on its top side a spring powered striker member, a striker bar portion at one end of same extending crosswise of the base and pivotally mounted adjacent the other end of same, intermediate the ends of the base, to swing about an axis extending transversely of the base and spring biased to swing about said axis from a set

position in which said striker bar is disposed adjacent one end of the base toward a rodent striking position adjacent the other end of the base, and releasable keeper means for holding said striker member in said set position and including bait mounting means for effecting snap release of same when a rodent pursues the bait, the improvement wherein the trap comprises:

an enclosure having side walling defining an opening and that includes a floor, a top wall, and a trap door for closing the enclosure opening,

with the trap device being mounted in said enclosure, and secured to said floor, with said one end of said base extending away from said enclosure opening and the other end of said base extending toward said enclosure opening, and with said base having its top side face upwardly,

said enclosure trap door being hinged to said enclosure adjacent the upper end thereof for swinging movement about an axis substantially paralleling said trap device axis between open and closed positions relative to said enclosure open end,

said trap door having an arm fixed to same that projects upwardly of said trap door upper end,

and a rigid link articulated between said trap door arm and said trap device striker bar portion,

said rigid link being proportioned lengthwise thereof such that when said striker member is in its set position said trap door is open and when said trap door is closed said striker member is held by said link in an upright position,

said enclosure being apertured to receive said link and accommodates the motion thereof relative to said enclosure following said swinging movement of said striker member.

4,342,173

TOY MEDICAL OFFICE

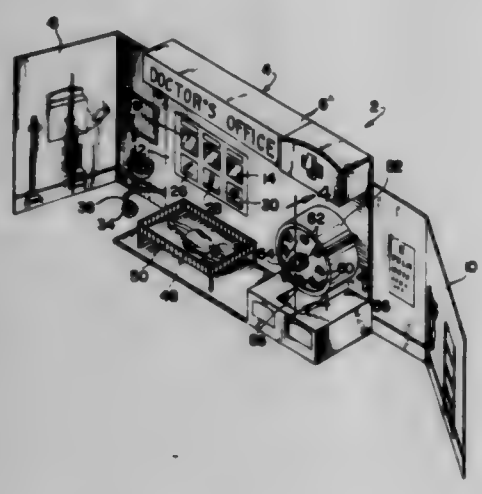
Michiko Otake, Ichikawashi, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,567

Claims priority, application Japan, Dec. 28, 1979, 54/184076[U]

Int. Cl.³ A63H *33/00*

U.S. Cl. 46—1 R **21 Claims**



1. A play toy set simulating a medical ofice comprising:

a housing member;

a display panel having a plurality of discrete display areas mounted on the housing member;

indicia indicative of a particular ailment positioned adjacent each discrete display area;

a plurality of information members positioned behind the display panel and mounted for selective display to the user, each information member providing an indication of a remedy for a particular ailment, and

a simulated diagnostic instrument capable of application to a child or a doll figure and activating the display of an information member on the display panel.

4,342,174

FLOATING TOY

Teruo Nikaido, Tokyo, Japan, assignor to Tomy Kogyo Company, Inc., Tokyo, Japan

Division of Ser. No. 151,434, May 19, 1980, Pat. No. 4,277,908. This application Apr. 16, 1981, Ser. No. 254,966

Claims priority, application Japan, Jun. 19, 1979, 54-83776

Int. Cl.³ A63H *23/10*

U.S. Cl. 46—92 **10 Claims**



1. A toy capable of floating on and propelling itself through a body of water which comprises:

a body;

an elongated member which is generally flat and has an upper surface and a lower surface, said elongated member pivotally mounted to said body at a pivot point along its length approximately equal distance between its ends and capable of pivoting with respect to said body such that both of its ends move in an oscillatory manner back and forth within a plane, said pivot point dividing said member into left and right side portions;

drive means located within the interior of said body and operatively connected to said member and capable of oscillating said member with respect to said body;

both the right and left side portions of said member having a leading edge and a tailing edge positioned between the upper and lower surfaces of said member;

a ridge located in conjunction with the leading edge on the lower surface of both said right and left portions of said member, said ridge being generally triangular in shape in cross section with at least one flat side which is synonymous with the bottom of the lower surface of said member and the angle formed by the flat side and a second side of said triangular shape is an acute angle and is positioned toward the leading edge of said member and the angle formed by said flat side and the third side of the triangular shape is at least about a ninety degree angle.

4,342,175

RADIO CONTROLLED MOTORCYCLE

Joseph S. Cernansky, Manhattan Beach, and Harold E. Garner, Lawndale, both of Calif., assignors to Entex Industries, Inc., Compton, Calif.

Filed Jul. 21, 1980, Ser. No. 170,631

Int. Cl.³ A63H *30/04, 17/36, 17/26*

U.S. Cl. 46—254 **26 Claims**

1. In a motorcycle including a longitudinal frame, a front and rear wheel mounted on the frame, a motor mounted on the frame in driving relationship to the rear wheel, and means for controlling the movement of the front wheel relative to the frame comprising:

pivot means fixed to the frame and providing a first axis, the extension of which intersects the surface upon which the motorcycle is supported, when the latter is upright, at an acute angle;

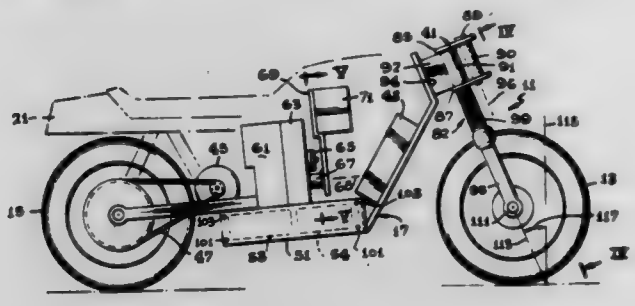
means for supporting the front wheel so that, when the front wheel is aligned with the longitudinal frame, the axis of rotation thereof is perpendicular to, but does not intersect, the first axis and is normally behind the first axis, relative

to the longitudinal frame at the location in which an extension of the first axis and the axis of rotation of the front wheel are closest to one another;

fork means to which the front wheel is rotatably attached;

down tube means fixed to the pivot means; and

means for flexibly connecting the fork means and the down tube means to one another such that the axes thereof are



perpendicular to and intersect the axis of rotation of the front wheel and are parallel to and do not intersect the first axis, comprising

hemispherical ends on the fork means and down tube means, and

means to maintain the hemispherical ends in close abutment and, normally, the down tube means and the fork means in coaxial alignment.

4,342,176

UNIT DOSAGE SYSTEM FOR TREE TRUNK IMPLANTATION TO CONTROL INSECT PESTS AFFLICTING TREES

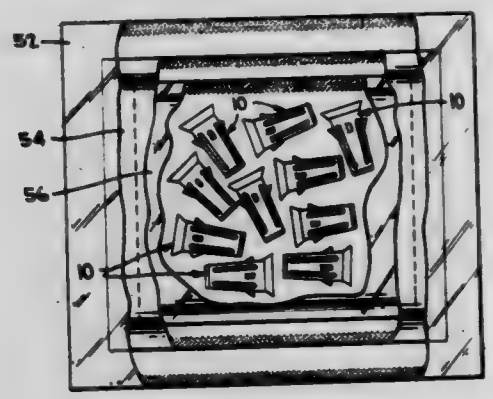
Warren D. Wolfe, 222 Park Ave., Fremont, Nebr. 68025

Continuation-in-part of Ser. No. 128,258, Mar. 7, 1980, abandoned. This application Jul. 10, 1980, Ser. No. 168,396

Int. Cl.[3] A01G 7/06

U.S. Cl. 47—57.5

7 Claims



1. A unit dosage system for tree trunk implantation comprising:

a sealed package assembly containing a plurality of sealed cartridges,

each cartridge having a capsule containing a filling of technically pure dry N-acyl derivative of phosphoramideothioate;

each cartridge being barbed to resist ejection by the tree and being adapted to release the filling into the tree trunk, and

the amount of said filling providing protection against insect pests when said plurality of said cartridges are implanted in pre-bored holes, one for each cartridge, in the trunk of the tree.

4,342,177

PREFABRICATED STEEL FRAME BUILDING CONSTRUCTION COMPONENTS AND METHODS

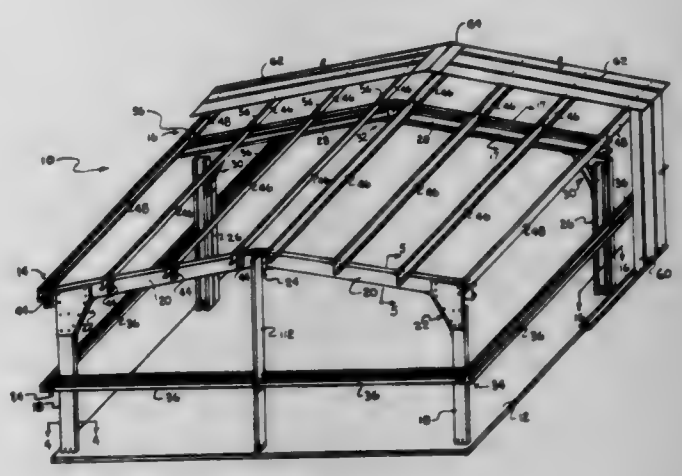
Donald A. Smith, 7514-27th NE., Seattle, Wash. 98115

Filed Jun. 18, 1979, Ser. No. 49,624

Int. Cl.[3] E04B 7/02; F16B 7/08

U.S. Cl. 52—93

24 Claims



10. A frame for a steel frame building having a peaked roof, said frame comprising:

left and right columns and left and right beams each comprising a length of non-tapered, C-channel steel stock having a web, interior and exterior flanges at right angles to said web, and a pair of inwardly extending lips at right angles to said flanges;

left and right steel plates secured with a plurality of fastener means to respective top portions of said left and right columns and to respective eave end portions of said left and right beams, said steel plates connecting, reinforcing and transferring stress between their respective columns and beams;

a ridge steel plate secured with a plurality of fasteners to the roof ridge portions of said left and right beams, said ridge steel plate connecting, reinforcing, and transferring loading between its respective beams;

left, right, and a pair of ridge stiffener angle members for stiffening and reinforcing said left, right, and ridge steel plates, respectively, and for transferring stress between the respective columns and beams secured to said left, right, and ridge steel plates, said stiffener angle members each having first and second sides disposed at generally right angles with respect to each other, said first side having extensions which extend beyond the ends of said second side and which are disposed at angles with respect to said first side, said second side being secured with a plurality of fastener means to its respective steel plate, said extensions of said left and right stiffener angle members being secured with fastener means to their respective columns and beams which are secured to their respective said left and right steel plates, and the extensions of said pair of ridge stiffener angle members being secured with fastener means to their respective beams which are secured to said ridge steel plate;

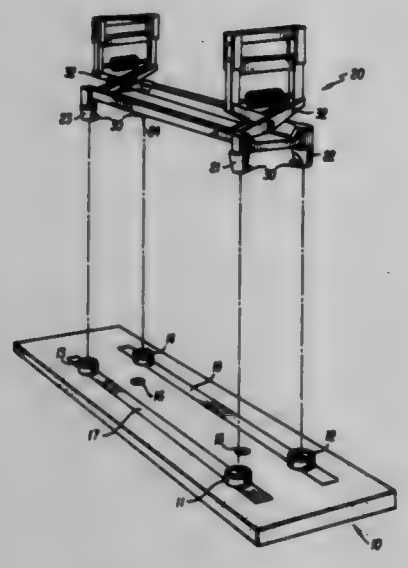
whereby said steel plates and said stiffener angle members eliminate the need for said columns and beams to have complementary angle cut adjacent ends which are structurally joined together by welding, and also eliminate the need for said columns and beams to be tapered.

4,342,178

CARBON ANODE FURNACE COVER CONSTRUCTION

Charles M. Benton, Hawesville; Franklin D. Arnold, Owensboro; George W. Kellogg, Hawesville, and Roger D. Kirk, Owensboro, all of Ky., assignors to National Steel Corp., Pittsburgh, Pa. and Southwire Co., Carrollton, Ga.

Filed Feb. 8, 1980, Ser. No. 119,918
Int. Cl.[3] B66C *1/66;* F23M *7/00*
U.S. Cl. 52—125.5 11 Claims



1. A cover construction for use with a carbon anode baking ring furnace which is subject to repeated heat cycling, said cover construction comprising:

a. an insulative cement cast into the form of the cover;

b. at least one metal beam embedded longitudinally within said insulative cement such that the upper surface thereof is exposed;

c. pickup means, connected to the exposed upper surface of the at least one metal beam embedded in the hardened cement, said pickup means including a hollow metal pipe section having at least one slot means arranged in a side wall of said pipe section for engaging a pickup device; and

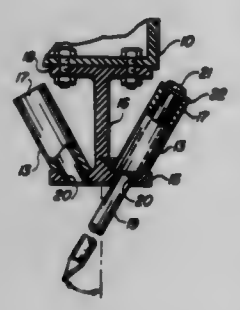
d. a multiplicity of elongate needle means, substantially uniformly dispersed throughout said insulative cement in random orientation, for reinforcing said insulative cement.

4,342,179

DEVICE FOR ANCHORING A BUILDING

Claud A. Hill, 2706 E. Contention Mine Rd., Phoenix, Ariz. 85032

Filed Jul. 1, 1980, Ser. No. 165,143
Int. Cl.[3] E02D *27/32, 5/74*
U.S. Cl. 52—155 4 Claims



1. A device for anchoring a frame supporting rail to a platform at a construction site wherein the rail is provided with holes spacedly positioned along its length, said device comprising:

an elongated hollow collar means,

said collar means being formed at one end to engage along substantially its complete end surface axially over a hole in the rail at an angular relationship to the rail's longitudinal axis,

said one end of said collar means being provided with a protrusion for engaging a surface of the rail for orienting and angularly positioning said collar means with the rail,

said angular relationship spacing the other end of said collar means at a predetermined distance from a top surface of the rail, and

a spike for positioning longitudinally through the hollow interior of said collar and being driven through the rail and the platform.

4,342,180

ASSEMBLY METHOD OF CONSTRUCTING A BUILDING

Adler E. Gibson, Tulsa, and Paul H. Kellert, Mannford, both of Okla., assignors to Gibco International Corporation, Tulsa, Okla.

Filed Feb. 11, 1980, Ser. No. 120,506
Int. Cl.[3] E04B *1/00*
U.S. Cl. 52—741 4 Claims



1. A method of constructing a building having load-bearing and insulation properties comprising the steps of erecting a loose frame by first arranging a plurality of horizontally disposed lower steel channels in the form of a closed polygon on a base support, said channels having ends welded together forming lower corners of said frame, mounting a plurality of vertical steel supporting posts on said lower corners and having their lower ends welded to said channels, arranging a plurality of horizontally disposed upper steel beams in the form of a matching closed polygon above said channels, said beams having ends welded together forming upper corners vertically disposed above said lower corners, said posts having their upper ends welded to said beams providing support for said beams so as to dispose said upper corners each above a lower corner whereby said upper polygon has a matching parallel relation to said lower polygon with said channels facing said beams, welding a first plurality of horizontally spaced vertical steel rods to the exterior side of said beams and channels, and having upper extending ends disposing a layer of plastic insulation material between said beams and said channels, welding a second plurality of horizontally spaced vertical steel rods to the interior sides of said beams and channels so as to sandwich said insulation material between said first and second plurality of vertical rods, arranging a first and a second plurality of vertically spaced horizontal steel bars on said first and second plurality of vertical rods and securing said bars to said frame by tying said bars to said rods at their points of intersection, arranging parallel layers of wire screen overlying said first and second plurality of horizontal bars and securing said layers to said frame by tying said layers to said bars thus completing said loose frame; arranging a bracing at one post so as to dispose the same in a plumb or true vertical position, then applying a layer of concrete to both sides of said frame and allowing a sufficient time lapse for said layer of concrete to set so as to provide said building with initial rigidity after which said bracing can be removed.

4,342,181

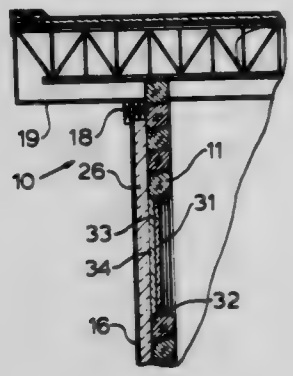
FOAMED CONSTRUCTION APPARATUS AND METHOD

Deane M. Truesdell, 2958 Helber St., Flint, Mich. 48504

Filed Jul. 18, 1980, Ser. No. 169,963
Int. Cl.[3] E04B *1/00*
U.S. Cl. 52—743 4 Claims

1. A method for modifying a pre-existing building comprising, securing additional side walls to the outer surfaces of the building at a number of points and on a number of surfaces so

that substantially the entire additional side walls are spaced horizontally from the building on the outside thereof to form spaces between the outer surfaces of said building and the inner surfaces of said additional walls and wherein said building is formed with a door or window opening and the step of adding



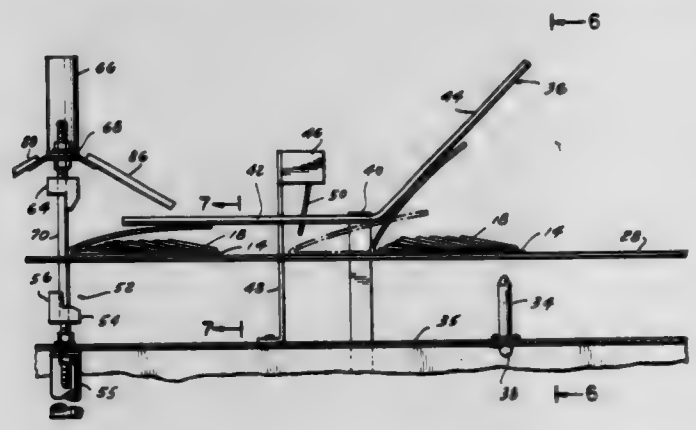
on the outside of said building reinforcing sheeting over said opening in said building to close said opening and substantially completely filling the spaces between such side walls and said building with an in situ foamed insulation to provide insulation without modifying the inside of said building.

4,342,182

CARD FOLDING AND CREASING DEVICE

Edmund G. Dennis, Belle Terre, and C. Edward Brandmaier, Centerport, both of N.Y., assignors to Cashin Systems Corp., Hauppauge, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,491
Int. Cl.[3] B65B *35/54, 49/16*
U.S. Cl. 53—156 12 Claims



1. A folding and creasing device for a card having thereon sliced food products, comprising:

a source of segregated sliced food product;

a source of supply of card with each card having a leading end and a trailing end and having a fold line intermediate these ends;

means for depositing the segregated sliced food product on the card between the fold line and the trailing end;

conveyor means for conveying the card with sliced product thereon;

folding means for folding the leading end of the card rearwardly about the fold line over the upper part of the sliced product on the card while travelling on the conveyor means; and

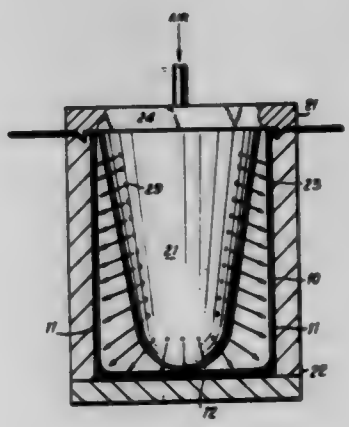
creasing means for creasing the folded card at the fold line and thereafter permitting the conveyor means to take away the creased folded card with sliced product thereon, the creasing means including a vertically reciprocal lower stop bar having a vertical surface for moving into the path of the folded card for momentarily stopping the folded card with sliced product thereon for assuring that the fold line is essentially normal to the line of travel of the folded card with sliced product on the conveyor means and having an upper horizontal surface for engaging the folded card at the fold line for creasing the folded card, means for raising said stop bar, the creasing means further including a vertically reciprocal upper bar means for lowering each upper bar into engagement with the folded card at the fold line while the folded card is momentarily stopped by the stop bar and in cooperation with said horizontal surface of said stop bar creasing the card at the fold line.

4,342,183

PROCESS FOR MAKING A CONTAINER FOR STORING FOOD

Robert L. Gordon, Monroe; George H. Naugle, Central Valley, both of N.Y., and Keith A. Cooper, Laurel, Md., assignors to International Paper Company, New York, N.Y.

Division of Ser. No. 745,834, Nov. 29, 1976, Pat. No. 4,155,697.
This application Apr. 9, 1979, Ser. No. 28,719
Int. Cl.[3] B65B *31/00, 43/08, 47/08;* B29C *17/04*
U.S. Cl. 53—433 10 Claims



1. A process for making a container comprising:

(a) positioning in a female mold a paperboard outer container comprising a bottom, at least one vertical wall and at least one bottom edge formed by the intersection of the bottom and at least one vertical wall;

(b) providing a male mandrel arranged and constructed so that it may engage the female mold;

(c) heating a layer of plastic;

(d) positioning the layer of heated plastic between said female mold and male mandrel;

(e) drawing said plastic into said paperboard outer container positioned in said female mold whereby said plastic abuts said male mandrel and is spaced from the interior of said paperboard outer container;

(f) forming at least one horizontal flange extending about the periphery of the mouth of said outer container, said at least one horizontal flange extending from the drawn plastic at least about ⅛ inch;

(g) forming at least one vertical flange, said at least one vertical flange extending from said at least one horizontal flange at least about ⅛ inch;

(h) blow forming said plastic into substantial abutment with said at least one vertical wall and said bottom by directing gas from said male mandrel into the interior of said female mold, said gas being directed substantially into the at least one bottom edge of the paperboard outer container from a series of substantially horizontally aligned holes in the male mandrel directed substantially at the at least one bottom edge.

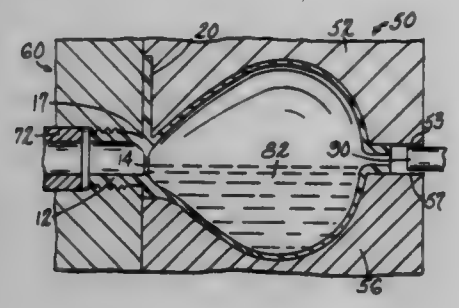
4,342,184
METHOD OF MANUFACTURE OF HYPODERMIC SYRINGE

William F. Van Eck, 300 Main St., East Haven, Conn. 06512, and Maurits J. H. Van Eck, 70 Jerome Cresent, PHO, Stoney Creek, Ontario, Canada

Continuation-in-part of Ser. No. 869,288, Jan. 13, 1978, abandoned, which is a division of Ser. No. 723,192, Sep. 15, 1976, Pat. No. 4,130,117, which is a division of Ser. No. 501,448, Aug. 28, 1974, Pat. No. 3,989,045, which is a continuation of Ser. No. 293,489, Sep. 29, 1972, abandoned. This application Apr. 4, 1980, Ser. No. 137,528

Int. Cl.[3] B65B *43/00, 51/14*

U.S. Cl. 53—452 21 Claims



1. A method for manufacturing and filling an ampul adapted for use with a hypodermic needle to form a hypodermic syringe, said method comprising:

(a) injection-moulding a preform comprising a neck at one end and a parison having an open end at other end of said preform;

(b) closing said open end around a blow-fill pin;

(c) blow-moulding the parison into the form of an ampul;

(d) introducing medicament into said ampul through said pin;

(e) withdrawing said pin from said ampul; and

(f) establishing an integral wall continuum of said ampul after withdrawal of said pin.

4,342,185
PROTECTIVE GARMENT FOR THE LEGS OF A QUADRUPED OF THE HORSE GENUS AND MATERIAL FOR SUCH GARMENT

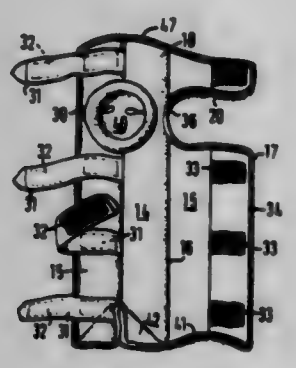
Peter I. Pellew, 9, Shafto, Mews, London S.W.1, England

Filed Nov. 26, 1980, Ser. No. 210,666

Claims priority, application United Kingdom, Nov. 27, 1979, 79 40906

Int. Cl.[3] A61D *3/00*; A61F *5/00*

U.S. Cl. 54—82 11 Claims



1. A protective garment for the front legs of a quadruped of the horse genus, comprising a flat, generally rectangular, flexible pad foldable into a generally cylindrical shape to encircle a leg of the quadruped and having a top edge, side edges and a bottom, fastening means on said pad for securing it about the legs of the quadruped, said pad further including a reinforced, thicker portion for protecting the knee or hock of the quadruped, the pad being dimensioned such that its top edge extends above the knee or hock while its bottom edge extends to the hoof and the heel of the leg, a split and flared flap provided at said bottom edge, one side edge portion being cut away to form a recess extending from that side edge to about the longitudinal central line of the garment, and the reinforced knee portion being adjacent to this recess.

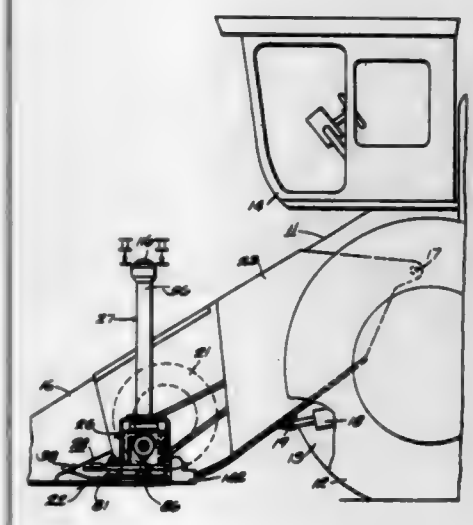
4,342,186
RESONANT SICKLE DRIVE

Larry F. Stikeleather, Hales Corners, and Tony L. Kaminski, Greendale, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 12, 1980, Ser. No. 186,571

Int. Cl.[3] A01D *55/02*

U.S. Cl. 56—257 15 Claims



1. A drive mechanism for reciprocating a sickle of a harvester comprising

a lever extending generally transverse to the direction of reciprocation of said, sickle,

means pivotally supporting said lever for movement about an oscillation axis generally transverse to said direction of reciprocation of said sickle,

means adjacent one end of said lever connecting said lever to said sickle,

power means operatively connected to said sickle causing reciprocation thereof and oscillating movement of said lever about said oscillation axis,

an elongated torsion bar in alignment with said oscillation axis,

means rigidly securing one end of said torsion bar to said lever for pivotal movement therewith about said oscillation axis,

means nonrotatably supporting the other end of said torsion bar, said torsion bar storing energy when its said one end is rotated with said lever about said oscillation axis as the sickle is moved from the midpoint of its stroke to the end of its stroke and releasing its stored energy as the sickle returns from the end of its stroke to the midpoint of its stroke.

4,342,187
RESONANT SICKLE DRIVE WITH SPRING MEANS AT OPPOSITE ENDS OF THE SICKLE

Paul T. Shupert, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 29, 1980, Ser. No. 220,502

Int. Cl.[3] A01D *55/02*

U.S. Cl. 56—257 13 Claims

1. A drive mechanism for reciprocating an elongated sickle of a harvester comprising

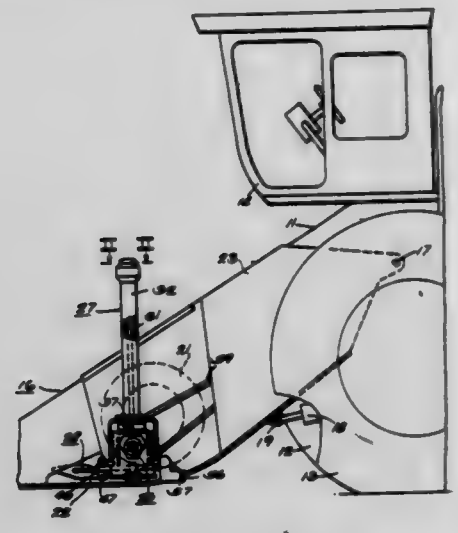
a pair of substantially parallel levers extending generally transverse to the direction of reciprocation of said sickle and having first corresponding ends pivotally connected, respectively, to opposite ends of said sickle,

means pivotally supporting said levers intermediate their

opposite ends for movement about parallel oscillation axes generally transverse to said direction of reciprocation of said sickle,

power means operatively connected to said sickle causing reciprocation thereof and oscillating movement of said levers about said oscillation axes,

a pair of elongated upright torsion bars in alignment with said oscillation axes, respectively



means rigidly securing first corresponding ends of said torsion bars to said levers for pivotal movement therewith about said oscillation axes, and

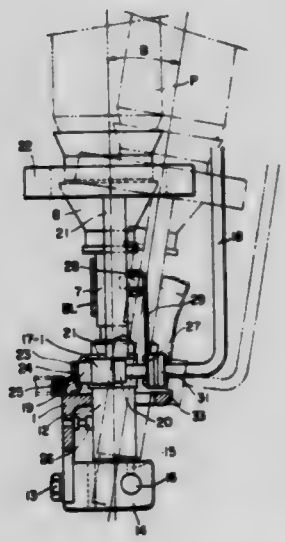
means nonrotatably supporting second corresponding ends of said torsion bars, said torsion bars storing energy as the sickle is moved from the midpoint of its stroke to the end of its stroke and releasing stored energy as the sickle returns from the end of its stroke to the midpoint of its stroke.

4,342,188

PIRN EXCHANGE APPARATUS IN DOUBLE TWISTER

Akira Okamoto, Joyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Joyo, Japan

Filed May 8, 1980, Ser. No. 147,924
Claims priority, application Japan, May 11, 1979, 54-58445
Int. Cl.³ D01H 7/22, 7/86
U.S. Cl. 57—89 5 Claims



1. In a double twisting apparatus comprising

a spindle having a wharve and upon which a pirn is placed;

a support means;

a driving belt positioned to have its longitudinal flat surface contactable with the periphery of the wharve to cause rotation of said wharve;

a bolster for holding said wharve, said bolster being pivotally supported by said support means to have said wharve movable in directions toward and away from said driving belt;

brake means for braking rotation of said wharve; and

pirn exchange means for enabling exchange of said pirn;

the improvement wherein said pirn exchange means comprises operation lever means movable in a direction parallel to said driving belt, and in a direction perpendicular to said driving belt;

means for mounting said lever means on said bolster for moving said bolster in a direction perpendicular to said driving belt;

spring means connected to said lever means and held by said support means;

said brake means being connected to said lever means and adjacent to said wharve, whereby movement of said lever means in a direction parallel to said belt moves said brake means to brake rotation of said wharve; and

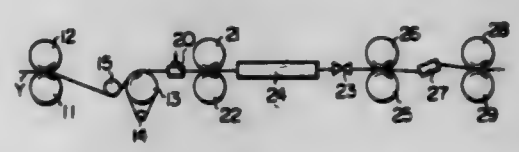
positioning means connected to said lever means for holding said brake means in a braked condition until released, and for holding said lever means and said wharve in a tilted replacement position until released, whereby after said brake means brakes said wharve and is held in a braked condition, said lever means against resilient force of said spring means is movable in a direction perpendicular to the belt to thereby cause said wharve to move away from said belt into a tilted replacement position whereby said positioning means holds said wharve in said tilted replacement position.

4,342,189

APPARATUS FOR PRODUCING A BUNDLE OF FIBROUS ELEMENTS

Takao Negishi, and Kazuo Tomiita, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 940,437, Sep. 7, 1978, Pat. No. 4,258,542.
This application Oct. 20, 1980, Ser. No. 198,603
Claims priority, application Japan, Mar. 13, 1978, 53-27634; Apr. 17, 1978, 53-40279; Jun. 16, 1978, 53-72224; Jul. 18, 1978, 53-87472; Jul. 18, 1978, 53-87473
Int. Cl.³ D02G 3/34
U.S. Cl. 57—288 8 Claims



1. A fiber processing apparatus comprising a drawing device, said drawing device provided with a frictional resistance-imparting member having a pin-like shape and a drawing roller, the central axis of said frictional resistance-imparting member having a pin-like shape being substantially in parallel to the central axis of said drawing roller, and the following relationship is established between said frictional resistance-imparting member and said drawing roller:

$$d_3^2 + d_3(d_1 + d_2) \leqq 50^2$$

where d_1 stands for the diameter (mm) of said frictional resistance-imparting member having a pin-like shape, d_2 stands for the diameter (mm) of the drawing roller, and d_3 stands for a distance (mm) between said drawing roller and said frictional resistance-imparting member.

4,342,190

STRANDING STOCK OF LARGE CROSS SECTIONS

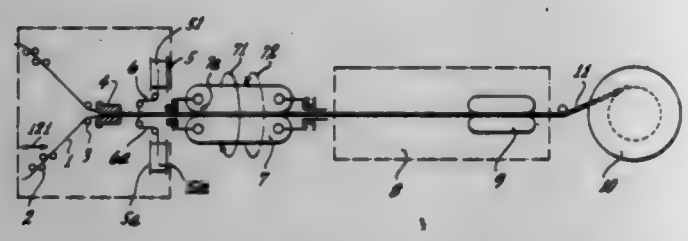
Gerhard Ziemek, Langenhagen; Wolfram Klebl, Isernhagen; Ernst Hoffmann, Langenhagen, and Reiner Brünn, Essel, all of Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,261

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946248

Int. Cl.[3] H01B *13/04*; D07B *3/00, 7/14*

U.S. Cl. 57—293 7 Claims



1. In an apparatus for stranding elongated stock paid individually from spools, there being means for pulling the stock and moving the stock in axial direction and including a stationary head, said means for pulling pulling the stock through the head and combining the stock into a bundle; a capstan including means being independently driven, for engaging individually the bundle as moved by the means for pulling, the means upon engaging the bundle holding the bundle while traveling in positive engagement therewith for a particular travel path, said engaging means disengaging from the bundle as the bundle continues beyond said travel path; means for rotating the capstan about an axis along the travel path so that a portion of the bundle, as held by the engaging means, in any instant in positive engagement therewith, is rotated as a whole without being stranded; said capstan being disposed for said engagement with the bundle at a point displaced from said head so that the bundle is stranded as between the head and the capstan, the improvement comprising:

means disposed between said head and the capstan, for winding at least one ribbon about the bundle.

4,342,191

METHOD FOR THE PRODUCTION OF ORNAMENTAL LINK CHAINS (VENETIAN CHAINS) READY FOR SOLDERING

Karl-Heinz Lange, Pforzheim, Fed. Rep. of Germany, assignor to Fico Fischer & Co., Pforzheim, Fed. Rep. of Germany

Filed Sep. 13, 1979, Ser. No. 75,023

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839746

Int. Cl.[3] B21L *11/00*

U.S. Cl. 59—35 R 1 Claim

1. A method for production of ornamental link chains ready for soldering preparation comprising:

drawing in a flat wire;

cutting the flat wire to length;

preliminarily bending a section of flat wire into a flat U with two short arms;

conveying the flat U;

finishing the flat U by bending it to an individual closed link such that said two short arms form a second transverse web having a butt-joint at their two free ends midsecting the second transverse web and forming the individual closed link where the individual links are bent at right angles out of flat wire and where each link is provided with two axial arms and a first transverse web and the second transverse web;

rotating the such closed individual link by an angle of 90° around an axis normal to the surface of the first and second transverse web;

adjusting the individual link in height while maintaining the first transverse web in an assembly plane determined by a vertical axis;

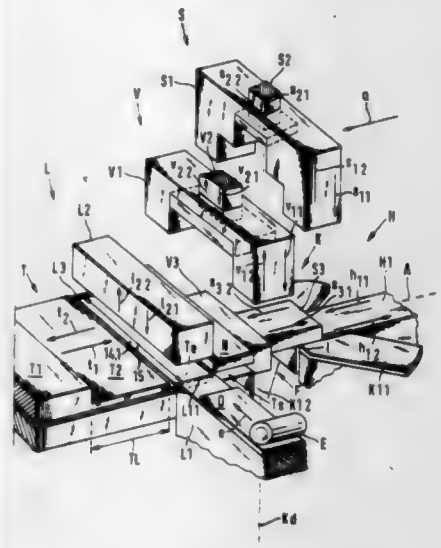
detachably fixing and positioning the first transverse web for the mounting of the following individual link;

conveying the following individual link corresponding to a discharge cycle distance along a vertical axis in an extraction section;

striking the chain for the preset adjustment of a minimum width of a gap forming said butt-joint;

the improvement comprising:

conveying the wire pieces resulting from the cutting step before preliminarily bending the same in a direction transversely to the feed direction of the flat wire blank and



transversely to the action of the cutting to length and the preliminary bending and the finishing operation;

conveying the flat U in a subsequent conveying step prior to the formation of a closed link in a direction transversely to the feed direction of the flat wire blank and transversely to the direction of action of the cutting to length and the preliminary bending and the finishing operation;

holding down the flat wire at least for the step of preliminarily bending to a flat U and during the step of closing the U;

pushing the particular individual link into the extraction section to adjust the first transverse web; and

superimposing the step of striking to the conveying in the extraction section.

4,342,192

PLANT FOR PRODUCING POWER FROM SOLID FOSSIL FUELS, MORE PARTICULARLY BITUMINOUS COAL

Klaus Heyn, and Hans-Joachim Pogrzeba, both of Essen, Fed. Rep. of Germany, assignors to Steag A.G., Essen, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,564

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2850005; Aug. 2, 1979, 2931427

Int. Cl.[3] F02C *6/18*

U.S. Cl. 60—39.18 B 16 Claims

1. A plant for producing power from solid fossil fuels comprising:

a pressure fired boiler receiving said fuel and burning same, the combustion of the fuel producing steam in said boiler and flue gases discharged therefrom into a flue gas path;

a steam turbine coupled to said boiler for generating power from the steam;

flue gas cleaning means in said flue gas path downstream of said boiler for at least partially cleaning the flue gases;

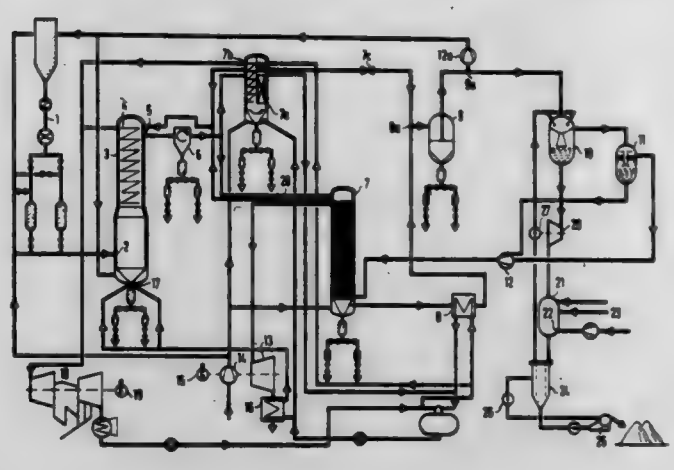
flue gas cooling means in said flue gas path downstream of said boiler for cooling said flue gases;

a flue gas recycling system connected to said flue gas path downstream of said cooling means for returning a portion of the flue gases to the boiler for reducing the boiler firing

temperature to below the ash melting temperature to obtain drying firing in said boiler; and

gas turbine means coupled to said flue gas path for receiving said flue gases for generating power from the gases;

said flue gas cooling means including a gas path parallel to said flue gas path and connected thereto downstream of



said pressure-fired boiler and upstream of said recycling system, said parallel gas path containing a waste heat boiler, said parallel gas path removing a portion of the flue gases from said flue gas path and returning same to said flue gas path after passage through said waste heat boiler, said waste heat boiler being coupled to said steam turbine for providing steam thereto.

4,342,193

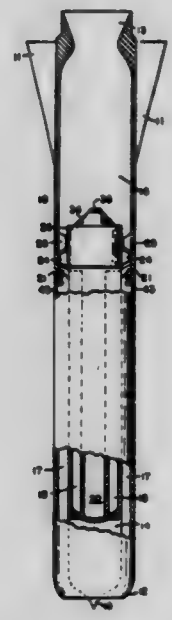
CONVERTIBLE ROCKET-AIR BREATHING ENGINE

Albert G. Thatcher, 39 Briarcliff Rd., Mountain Lakes, N.J. 07046

Continuation-in-part of Ser. No. 361,149, Apr. 20, 1964, abandoned. This application Aug. 9, 1966, Ser. No. 571,325

Int. Cl.[2] F02K *5/00*

U.S. Cl. 60—246 **8 Claims**



1. A convertible rocket-air breathing engine comprising, a tubular casing for housing all the engine components, said casing having an entrance opening at one end for admitting air and an exit opening at the other end for discharging burned gasses, a hollow rotor positioned in axial alignment with the casing and mounted for rotation, said rotor formed with walls which define a first combustion chamber where a fuel and an oxidizer are mixed and burned, said rotor also formed with a plurality of exit propulsion nozzles at the downstream end of the rotor for ejecting partially burned gasses, a second combustion chamber downstream from the rotor for mixing air with the partially burned gasses during a first mode of operation, a plurality of vanes secured to said rotor for pumping air into the second combustion chamber, a plurality of fuel nozzles positioned within the first combustion chamber for ejecting fluid fuel therein, a plurality of oxidizer nozzles also positioned within the first combustion chamber for ejecting fluid oxidizer therein, a second oxidizer nozzle in alignment with the rotor axis for supplying oxidizer fluid to the second combustion chamber during a second mode of operation, and valve flaps in the tubular casing for permitting air to pass from the atmosphere to the second combustion chamber during the first mode of operation and for blocking the air flow during the second mode of operation.

4,342,194

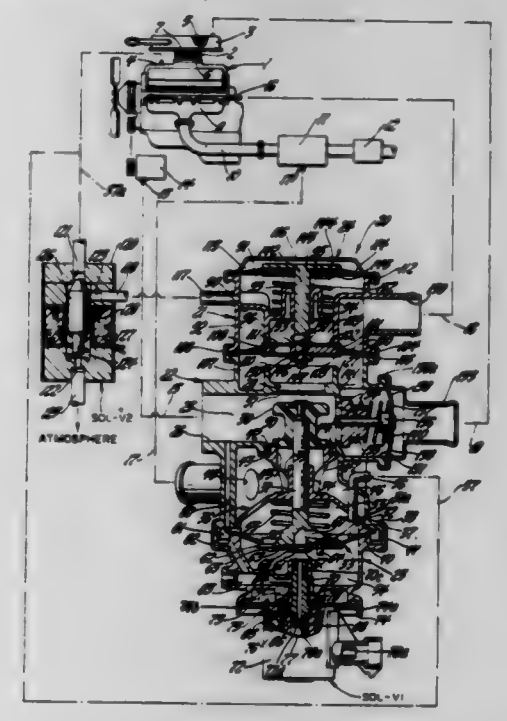
ELECTRIC AIR CONTROL SWITCHING VALVE

Gordon R. Paddock, and John E. Jones, both of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1980, Ser. No. 192,725

Int. Cl.[3] F01N *3/22*

U.S. Cl. 60—290 **4 Claims**



1. A fail safe programmable air pump discharge control valve for an engine comprising:

a switching valve having an inlet connectable with the air pump discharge and having a primary outlet passage, a converter outlet passage connectable to a catalytic converter, and a plug element movable to selectively obstruct and open the primary outlet passage and the converter outlet passage in accord with actuation of motor elements connected to the plug element;

means defining a housing having a passage in communication with the primary outlet, an exhaust passage connectable to the engine exhaust ports to deliver air to said exhaust ports and an air discharge passage to the atmosphere, said housing having a pair of coaxial, facing annular first and second valve seats with said first valve seats encircling said passage;

a flat valve located between said valve seats for selective engagement with one or the other, said valve having an aperture means therethrough;

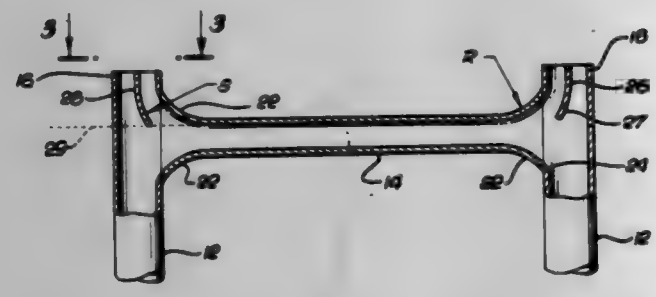
actuator means selectively operable to seat said valve on said first valve seat or on said second valve seat;

whereby said flat valve in seating engagement with said first valve seat delivers air to the exhaust valve ports and when in seating in engagement with said second valve seat delivers air only to said air discharge passage; and said actuator means including spring means to normally bias said flat valve into seating engagement with said second valve seat.

4,342,195
MOTORCYCLE EXHAUST SYSTEM

Ching P. Lo, 4900 Overland Ave., #115, Culver City, Calif. 90230

Filed Aug. 15, 1980, Ser. No. 178,398
Int. Cl.³ F01N 7/10
U.S. Cl. 60—313 15 Claims



1. For use in a motorcycle having at least two engine cylinders, a motorcycle exhaust system, comprising:

at least a pair of exhaust conduits each having an inlet end connected to a different one of the engine cylinders for receiving exhaust gases discharged therefrom;

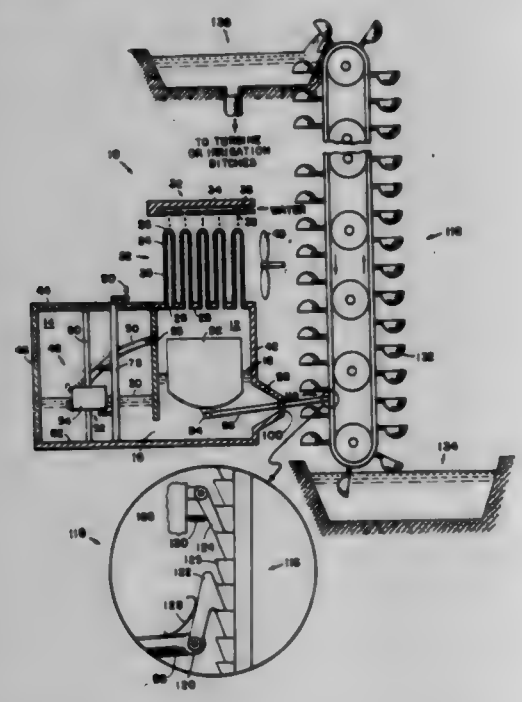
a crossover pipe connected between said exhaust conduits and defining an open flow path between said exhaust conduits; and

divider means mounted within each of said exhaust conduits for dividing exhaust gases flowing through the associated exhaust conduit into two flow portions, said divider means having a deflection surface for guiding one of the gas flow portions for flow through said crossover pipe to another of said exhaust conduits.

4,342,196
METHOD AND APPARATUS FOR GENERATING POWER AND IRRIGATING PLANTS WITH SOLAR ENERGY AND EARTH HEAT

Hsu-Chieh Yeh, 1174 Bucknell Dr., Monroeville, Pa. 15146

Filed Jul. 22, 1980, Ser. No. 171,256
Int. Cl.³ F03G 7/00
U.S. Cl. 60—531 34 Claims



1. A method of utilizing various forms of solar energy and earth heat for power generation and irrigation comprising the steps of:

a. providing interconnecting air-evacuated warm chamber and cold chamber, said two chambers being partially filled with volatile liquid, which has a large change in saturation vapor pressure per one degree of temperature change at the operation temperature, the interconnection between said two chambers being located below the levels of said volatile liquid, so that when the liquid level in one of said two chambers rises, the liquid level in the other chamber drops;

b. providing an automatically controlled valve means, which acts in such a way that when the liquid level in said warm chamber drops to a first elevation, said automatically controlled valve means automatically opens to cause the vapor in said warm chamber to flow into said cold chamber, and when the liquid level in said warm chamber rises to a second elevation, which is higher than said first elevation, said automatically controlled valve means automatically closes to prevent the vapor from flowing between said two chambers;

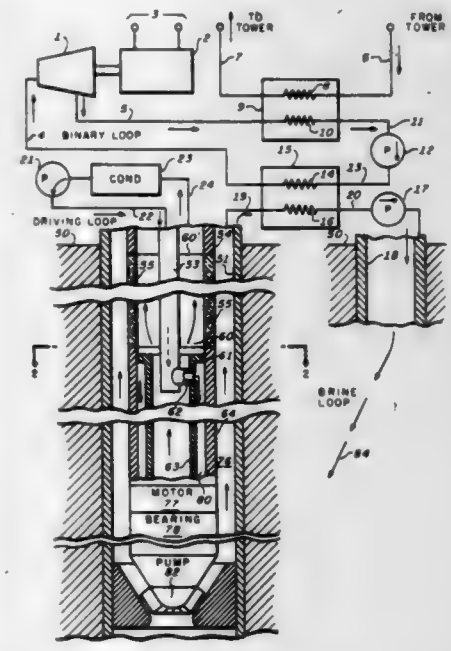
c. creating up-and-down periodic motion of the liquid in said two chambers by condensing the vapor in said cold chamber and evaporating the liquid in said warm chamber, and by the action of said automatically controlled valve means; and

d. translating the energy of said up-and-down periodic motion of liquid into useful work.

4,342,197
GEOTHERMAL PUMP DOWN-HOLE ENERGY REGENERATION SYSTEM

Hugh B. Matthews, Boylston, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,745
Int. Cl.³ F03G 7/00
U.S. Cl. 60—641.4 3 Claims



1. Apparatus for the recovery of thermal energy at a surface station from a source of hot liquid disposed at a subterranean station within the interior region of the earth comprising:

thermally conductive conduit means extending from said surface station to said subterranean station for conveying a working liquid in a relatively cool state and including a plurality of radially extending fins,

superheated fluid generator means for converting said working liquid into an energetic fluid for driving turbine motive means at said subterranean station, and

pump means at said subterranean station operatively coupled to and responsive to said motive means for pumping said hot liquid from said interior region in heat exchanging relation with said vapor generator means, and

thermally insulative conduit means disposed concentrically about said thermally conductive conduit means for guiding the exhaust of said motive means toward said surface station,

said thermally conductive and said thermally insulative means being so disposed and characterized as to minimize heat flow from said hot liquid into said exhaust and to maximize heat flow from said exhaust into said working liquid.

4,342,198

GAS TURBINE ENGINE FUEL INJECTORS

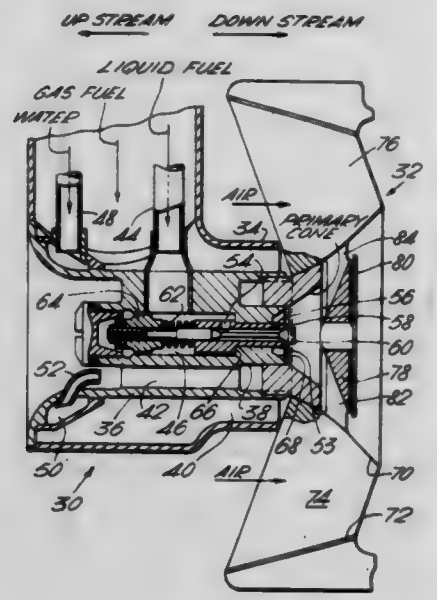
Jeffrey D. Willis, Coventry, England, assignor to Rolls-Royce Limited, London, England

Filed Jul. 16, 1980, Ser. No. 169,431

Claims priority, application United Kingdom, Aug. 1, 1979, 7926835

Int. Cl.³ F23R *3/36, 3/38*

U.S. Cl. 60—737 10 Claims



1. A gas turbine engine dual fuel injector comprising a structure defining separate gaseous and liquid fuel flow paths, the gaseous fuel flow path including a first annular gas duct in communication with a second annular gas duct, the second annular gas duct decreasing in cross-sectional area in the direction of flow therethrough and including air swirling means, the liquid fuel flow path including primary liquid fuel nozzles and a main liquid fuel nozzle and an annular liquid fuel duct downstream of said liquid fuel nozzles which decreases in cross-sectional area in the direction of flow therethrough, the primary and main liquid fuel nozzles being arranged to inject liquid fuel into air from an air flow passage located upstream of the annular liquid fuel duct, the annular liquid fuel duct being located inwardly of the second annular gas duct, both the annular liquid fuel duct and the second annular gas duct being arranged in use to receive a flow of compressed air.

4,342,199

SCREW COMPRESSOR SLIDE VALVE ENGINE RPM TRACKING SYSTEM

David N. Shaw, Unionville, and Joseph A. L. N. Gagnon, Windsor Locks, both of Conn., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed Oct. 3, 1980, Ser. No. 193,696

Int. Cl.³ B60H *3/04;* F25B *41/00*

U.S. Cl. 62—133 10 Claims

1. A helical screw compressor slide valve engine RPM tracking system for an engine driven compressed gas refrigeration system, said refrigeration system including:

an engine driven helical screw rotary compressor having a low side, suction pressure inlet, and a high side, discharge pressure outlet, and a longitudinally shiftable slide valve for loading and unloading the compressor,

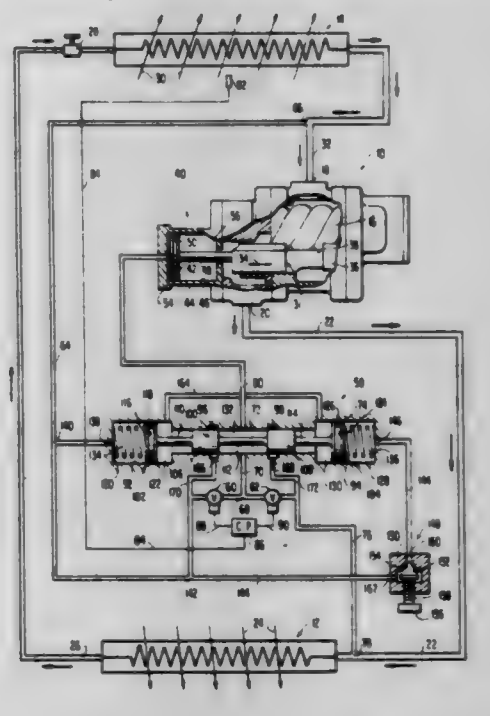
a fluid pressure operated slide valve actuator operatively coupled to said slide valve for shifting said slide valve between full load and full unload positions,

first control valve means for selectively connecting said slide valve actuator to the compressor high side discharge pressure outlet to effect compressor loading, and

second control valve means for selectively connecting said slide valve actuator to the compressor low side suction pressure inlet to effect unloading of the compressor,

the improvement wherein said tracking system comprises:

tracking means responsive to engine acceleration and deceleration for immediately connecting said slide valve actuator to the low side compressor suction pressure inlet during engine acceleration to immediately unload the compressor and for connecting the slide valve actuator to the refrigeration high side discharge pressure outlet during engine deceleration to immediately load the compressor, thereby preventing refrigeration system temperature fluctuation due to engine acceleration or deceleration, and



wherein said tracking means includes means for sensing a change in compressor suction pressure responsive to engine acceleration or engine deceleration, and means for operating said second control valve means and said first control valve means, respectively, to effect immediate unloading of the compressor or loading of the compressor as required to meet engine acceleration or deceleration conditions.

4,342,200

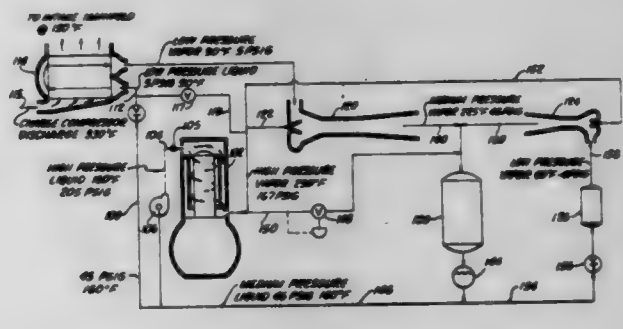
COMBINED ENGINE COOLING SYSTEM AND WASTE-HEAT DRIVEN HEAT PUMP

Alvin Lowi, Jr., San Pedro, Calif., assignor to Daeco Fuels and Engineering Company, Wilmington, Calif.

Continuation-in-part of Ser. No. 631,023, Nov. 12, 1975, Pat. No. 4,164,850. This application May 29, 1979, Ser. No. 43,313

Int. Cl.³ F25B *1/06*

U.S. Cl. 62—191 17 Claims



13. An automotive engine cooling system for utilizing otherwise wasted heat from an engine to produce a cooling effect, comprising:

a closed fluid circuit means;

a turbocharged automotive engine including a cooling jacket thereon; an evaporative engine cooling fluid in said circuit means; condenser means for condensing said coolant fluid vaporized in

said engine cooling jacket;

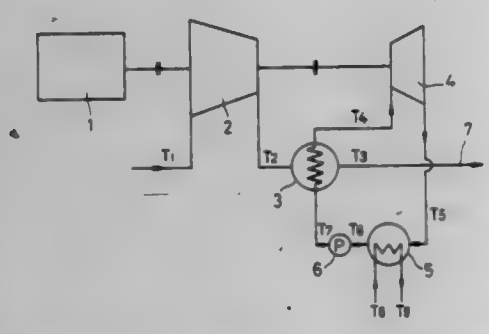
engine charge cooling means;
means for conveying a minor portion of said condensed coolant from said condenser means to said charge cooling means to effect evaporation of said condensed coolant portion in said charged cooling means at a lower pressure to create a cooling effect for the engine charge in heat exchange relationship with said evaporated coolant in said engine charge cooling means;
means for conveying a major portion of said condensed coolant fluid from said condenser at a higher pressure to said engine cooling jacket whereby to cool said engine and vaporize said coolant fluid; and
means for utilizing said vaporized cooling jacket effluent as a motive fluid for conveying said coolant evaporated in said charge cooling means into said condenser.

4,342,201

ENERGY RECOVERY APPARATUS FOR A GAS COMPRESSOR PLANT

Hiroshi Ishii, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 12, 1980, Ser. No. 233,821
Claims priority, application Japan, Feb. 19, 1980, 55/19968
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.4 **9 Claims**



1. In a gas compression plant including a gas compressor driven by a main drive, the compressor including a gas intake and a compressed gas outlet, the improvement comprising a refrigerant circuit connected to said gas outlet, said refrigerant system including a heat exchanger connected to receive said compressed gas, a turbine, a condenser, and a pump for circulating said refrigerant through said circuit, said refrigerant being heated and vaporized in said heat exchanger by a quantity of heat received from said compressed gas, and said vaporized refrigerant expanding in and driving said turbine and being liquefied in said condenser.

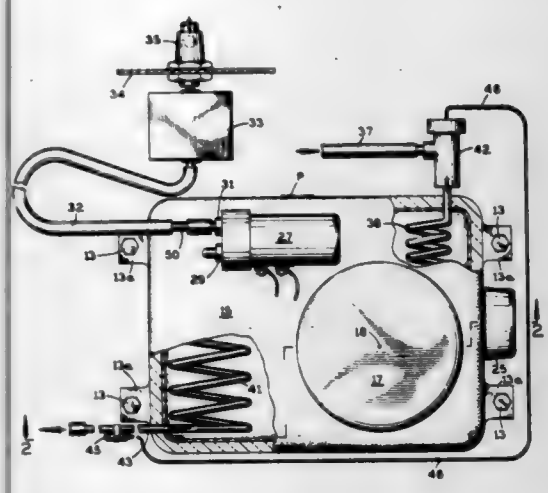
4,342,202

BEVERAGE COOLING APPARATUS FOR CONNECTION TO AUTO AIR CONDITIONER

Russell R. Knutson, 200 NE. 28 Ter., Boca Raton, Fla. 33432

Filed Mar. 25, 1981, Ser. No. 247,236
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—243 **9 Claims**

1. A beverage cooling apparatus for use on an automotive vehicle having an air conditioner, said apparatus comprising:
an insulated container for holding the beverage having substantially parallel opposite end walls;
a continuous pipe assembly having a plurality of rows of several interconnected pipe coils, each row of pipe coils extending helically about an axis which extends substantially parallel to said end walls, and said rows of pipe coils being positioned in succession along the inside of the container from one end row located adjacent one of said end walls of the container to an opposite end row located adjacent the opposite end wall;
means for introducing refrigerant from the air conditioner into said one end row of pipe coils in the container to flow through the successive rows of pipe coils for cooling the beverage in the container;
means for passing the refrigerant from the opposite end row of pipe coils in the container back to the air conditioner;
a motor-pump unit mounted on top of the container;
and a beverage intake pipe connected at its upper end to the



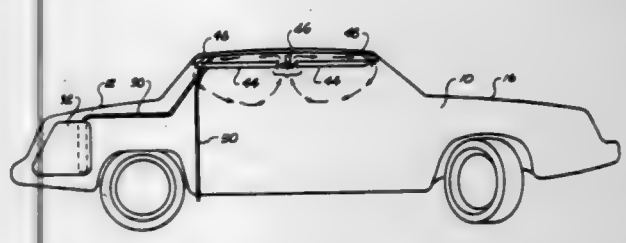
inlet of the pump in said motor-pump unit, said intake pipe extending down into the container and terminating in an open lower end in close proximity to the bottom of the container for passing the beverage from the container up to the pump.

4,342,203

COOLING FABRIC

Paul W. Moore, 152 Breckinridge Apartments, Pelham Rd., Greenville, S.C. 29615

Filed Nov. 28, 1980, Ser. No. 211,088
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—244 **8 Claims**

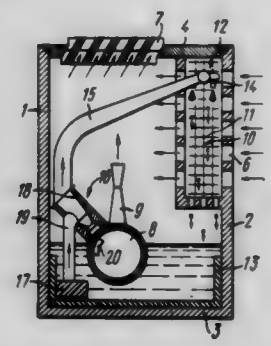


1. An apparatus for cooling objects such as vehicles comprising:
a composite layered member coextensive with said object to be cooled including,
(i) a protective and permeable upper layer of material;
(ii) a porous layer of material through which water migrates,
(iii) a nonporous heat absorbing under layer;
(iv) water conveying channels interposed between said porous and said under layer;
(v) openings provided in said channels providing communication between the interior of said channels and said porous layer of material;
(vi) opening provided in said protective and permeable upper layer of material for allowing water vapor to pass therethrough, and
(vii) valve means for controlling the flow of water through said channels;
a souce of water;
conduit means extending between said source of water and said layered member, and
means for forcing said water from said source of water through said channels into said porous material so that upon evaporation through said permeable layer by heat transferred from said object, said object is cooled.

4,342,204
ROOM EJECTION UNIT OF CENTRAL AIR-CONDITIONING

Zograb A. Melikian; Larisa G. Oganian, both of prospekt Oktemberiana, 29a, kv. 52; Arsen S. Simonian, ulitsa 4 Avan, 3 pereulok, dom 7, and Robert T. Kirakosian, Nor-Aresh, 2 ulitsa, 86, all of Erevan, U.S.S.R.

Filed Nov. 29, 1979, Ser. No. 98,619
Int. Cl.³ F28D *5/00*
U.S. Cl. 62—304 3 Claims

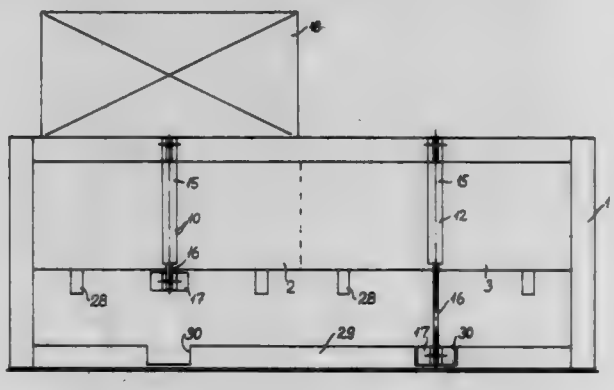


1. A room ejection unit of a central air-conditioning system comprising, a housing defining a mixing chamber and having an inlet port communicating with said mixing chamber for communicating with the exterior and an outlet port above the mixing chamber in communication therewith; a heat exchanger installed in said housing adjacent the inlet port and constructed as a direct-contact apparatus with a sprayed packing; an air humidifier in the housing adjacent the inlet port having sprayers for spraying water on said packing, a drip pan below the sprayed packing for receiving water from the sprayers dripping from the sprayed packing, a pump drawing water from the drip pan and providing it to said sprayers, a primary air supply manifold having nozzles arranged in a lower part of the mixing chamber for delivery of primary air into an upper part of the mixing chamber for mixing with a flow of air from said heat exchanger and humidifier in a direction toward the outlet port, and said pump comprising an air-water ejector communicating with said primary air supply manifold and said pan.

4,342,205
VERTICAL PLATE FREEZER

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed May 6, 1981, Ser. No. 260,985
Claims priority, application Denmark, May 19, 1980, 2177/80
Int. Cl.³ F25C *5/14*
U.S. Cl. 62—341 1 Claim

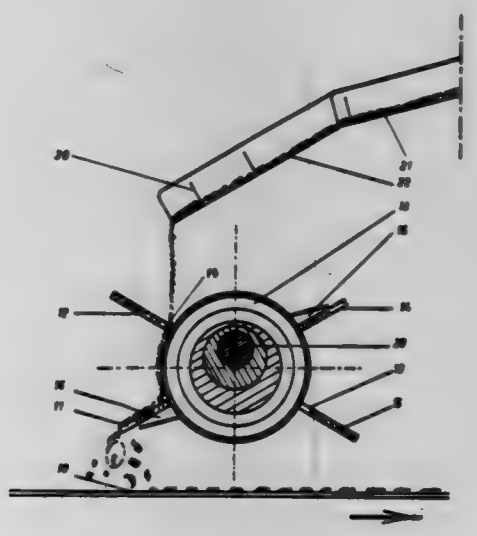


1. A contact freezer apparatus including vertically disposed freezer plates and means for supplying freezing medium thereto for freezing and for supplying defrosting medium thereto after freezing, the apparatus comprising frame means for slideably supporting a row of the plates in spaced apart relationship, means for moving the plates transversely within said frame means for adjusting the spacings between the plates, lifting devices supported by said frame means at opposite ends of said row of plates, beam means extending beneath said row of plates being interconnected with said lifting devices, bottom plates located in the spaces between adjacent freezer plates and lying above said beam means, linkage devices interconnecting said bottom plates with said beam means, each said linkage device comprising an extendable telescoping bar including a tube and a rod, a free end of said tube being connected to a corresponding one of said bottom plates and a free end of said rod being connected to said beam means, a tranversely extending lever hingedly connected at one end to said tube, and a linkage element hingedly interconnected at opposite ends respectively to said lever between opposite ends thereof and to said beam means, a fixed abutment means on said frame means disposed above said lever of each of said linkage devices outwardly of said linkage element, whereby upon operation of said lifting devices, said beam means is elevated and said lever of each of said linkage devices is caused to pivot upon engagement with said abutment means to thereby extend said tube of each said linkage device into each said space between said adjacent freezer plates for raising each said bottom plate upwardly between said freezer plates.

4,342,206
DEVICE FOR APPLYING DYE PATTERNS ONTO CONTINUOUSLY MOVING WEBS OF MATERIAL

Heinz Rommel, Seevetal, Fed. Rep. of Germany, assignor to Firma Babcock Textilmaschinen KG (GmbH & Co.), Seevetal, Fed. Rep. of Germany

Filed Apr. 28, 1980, Ser. No. 144,494
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917146
Int. Cl.³ D06B *1/04, 11/00*
U.S. Cl. 68—205 R 12 Claims



1. A device for applying dyes in the form of geometric patterns or random drops onto continuously moving webs of material, comprising:

a support element;

at least one separator bar mounted on said support element;

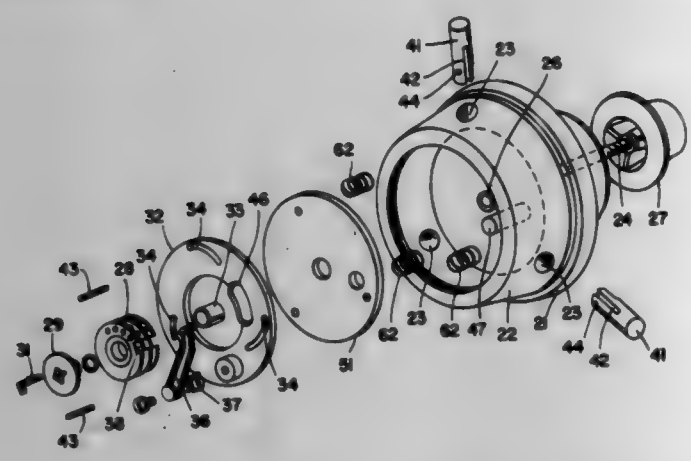
means for supplying individual dye streams to said separator bar; and

drive means coupled to said support element for generating oscillations in said support element and, in turn, said separator bar perpendicular to as well as in the moving direction and counter direction of the travel direction of the web of material.

4,342,207
SAFE RELOCK MECHANISM

Daniel L. Holmes, 913 Hoffman Blvd., Richmond, Calif. 94804, and Tim Uyeda, Torrance, Calif., assignors to Daniel L. Holmes, Richmond, Calif.

Filed Mar. 17, 1980, Ser. No. 131,155
Int. Cl.³ E05B 63/14
U.S. Cl. 70—119 16 Claims

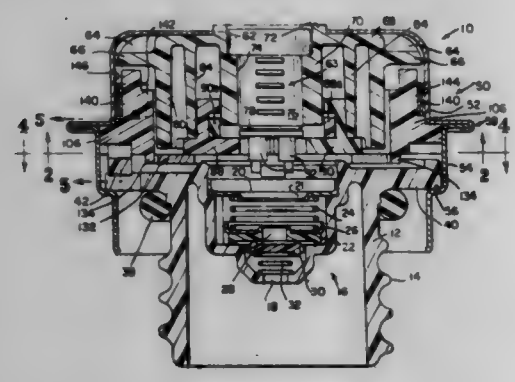


1. In a safe locking mechanism which includes a plurality of retractable locking bolts extending from a safe door, said locking bolts being generally disposed in a common plane, a relock mechansim comprising a first plate disposed in the safe door and extending to said locking bolts, means on said locking bolts for releasably engaging peripheral edge portions of said first plate with said locking bolts in the extended position to block retraction of said locking bolts, means for urging said first plate toward said common plane to engage said means on said locking bolts, and means for disengaging said first plate from said locking bolts to permit retraction of said locking bolts by said locking mechanism.

4,342,208
LOCKING GAS CAP WITH TORQUE OVERRIDE FEATURE

John H. Evans, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Division of Ser. No. 735,252, Oct. 29, 1976, Pat. No. 4,107,961, which is a continuation-in-part of Ser. No. 611,219, Sep. 8, 1975, Pat. No. 4,000,633. This application Feb. 8, 1978, Ser. No. 876,030
The portion of the term of this patent subsequent to Jan. 4, 1994, has been disclaimed.
Int. Cl.³ B65D 51/16, 55/14
U.S. Cl. 70—165 5 Claims

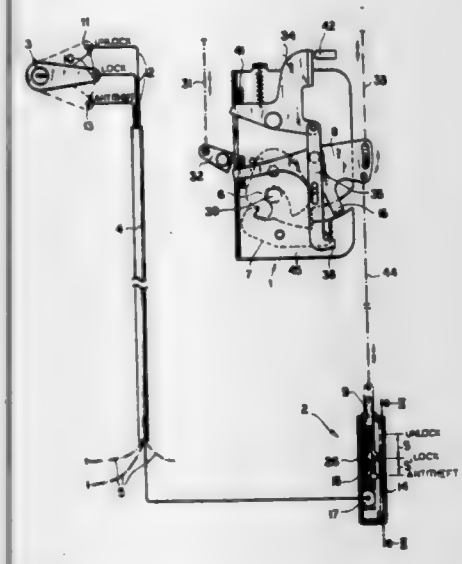


1. A locking gas cap for a threaded filler neck having an axis and sealing lip extending peripherally about said axis, said cap comprising a closure member threaded to engage and close said filler neck, gasket means on said closure member for engaging and sealing against said lip, an outer shell providing a hand grip secured to said closure member for rotation thereon about said axis, a key-operated lock and at least one locking member moved by said lock, said lock and locking member being connected to said shell for rotation therewith, in which the improvement comprises a race disposed for rotation between, and with respect to said shell and closure member, said locking member being movable into and out of engagement with said race, said shell and closure member providing adjacent axially facing surfaces between which said race is axially stationarily positioned, and means for drivingly connecting said race and said closure member for rotation together about said axis, said connecting means being torque-limited in the direction which advances said closure member on said filler neck to protect said gasket means against overtightening and positive in the opposite direction to permit removal of said cap from said filler neck.

4,342,209
CENTRAL VEHICLE DOOR-LOCK SYSTEM

Frank Kleefeldt, Heiligenhaus, Fed. Rep. of Germany, assignor to Kiekert GmbH & Co. Kommanditgesellschaft, Heiligenhaus, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,977
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911630
Int. Cl.³ E05B 53/00
U.S. Cl. 70—264 10 Claims



1. A central vehicle door-lock system comprising:

at least two door latches each including a detent movable between a lock position securing the respective door to the respective doorpost and an unlock position permitting separation of the respective door from the respective doorpost, and mechanism for displacing said detent between said lock and unlock positions;

respective servoactuators each including

an actuator operatively engaged via said mechanism with the respective detent and displaceable between respective lock and unlock positions,

an operator engageable with said actuator and displaceable between respective lock, unlock, and antitheft positions,

a servomotor connected to said operator for displacing same between the respective unlock, lock, and antitheft positions,

link means connected between said detents, actuators, and operators for joint displacement of same between the respective lock and unlock positions, and

a lock pawl displaceable by the respective operator only in the lock position of the respective actuator and in the antitheft position of the respective operator from a freeing position permitting displacement of the respective actuator from the respective lock to the respective unlock position into a blocking position preventing displacement of the respective actuator from the respective lock to the respective unlock position; and

control means connected to said servomotors and including

a switch displaceable between a respective unlock posi-

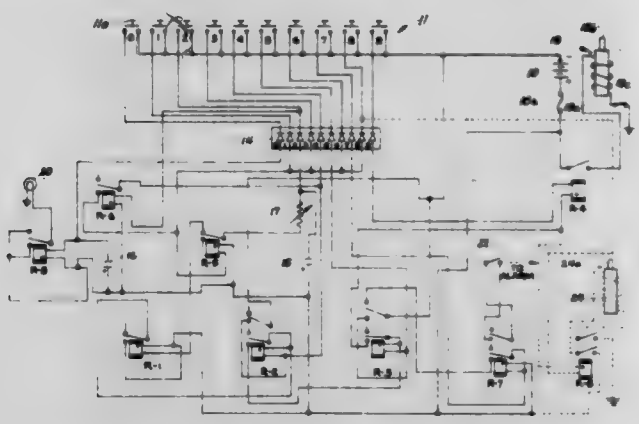
tion for displacing said operators into the respective unlock positions, a respective lock position for displacing said operators into the respective lock positions, and a respective antitheft position for displacing said operators into the respective antitheft positions, whereby when said switch is in said antitheft position said mechanisms cannot displace said detents into the respective unlock positions.

4,342,210

VEHICLE ENTRY LOCKING ARRANGEMENT

Clarence E. Denningham, 1220 S. Weinbach Ave., Vanderburgh County, Evansville, Ind. 47714

Filed Dec. 13, 1979, Ser. No. 103,337
Int. Cl.³ E05B *49/00*; H01H *9/26, 47/00*
U.S. Cl. 70—278 **9 Claims**



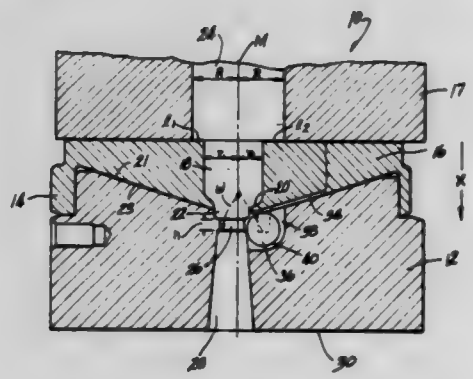
1. A vehicle entry locking arrangement comprising circuitry including a plurality of manually operated pushbutton switches, electromechanical relays arranged is a sequentially responsive relationship to a preselected combination of said pushbutton switches controlling unlocking of an entry to said vehicle, an electromechanical enabling relay energized in response to one of said pushbutton switches of said preselected combination and de-energized in response to a subsequently activated pushbutton switch of said preselected combination, where said electromechanical enabling relay serves to activate an independent alarm system, and where said pushbutton switches are each defined by switching elements arranged within a housing in a weatherproof relationship.

4,342,211

PROCESS AND APPARATUS FOR EXTRUDING A COMPOSITE SECTION

Alfred Wagner, Steisslingen, and Adolf Ames, Hilzingen-Duchtlingen, both of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation-in-part of Ser. No. 92,934, Nov. 9, 1979, Pat. No. 4,290,290, which is a continuation of Ser. No. 887,317, Mar. 16, 1978, abandoned. This application Jun. 24, 1981, Ser. No. 276,953
Int. Cl.³ B21C *23/22, 25/02, 27/00*
U.S. Cl. 72—253.1 **22 Claims**



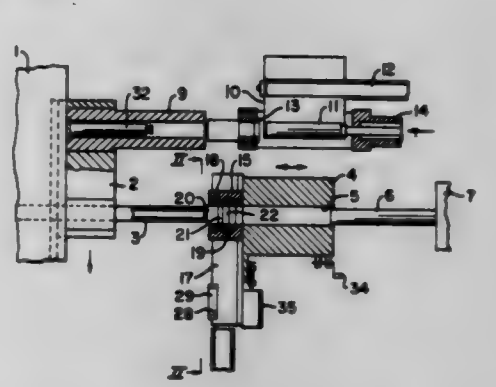
1. An extrusion die having a shape-giving opening, a feed chamber upstream of the shape-giving opening and communicating therewith, a feed channel at the side of the shape-giving opening and communicating therewith, and a container passage upstream of said feed chamber and communicating therewith, said die being for the extrusion of composite sections comprising a beam-like section, in particular a beam-like section made of a light-weight metal which can be fed to the shape-giving opening in the die through said container passage and said feed chamber, and a facing of at least a part of at least one face of the beamlike section in the form of a strip of another metal which can be fed to the shape-giving opening in the die through said feed channel, said feed chamber comprises a first section immediately downstream of said container passage and a second section downstream of said first section and immediately upstream of said shape-giving opening wherein the ratio of the maximum radius r max. of said first section of said feed chamber to the minimum radius R min. of said container passage is less than or equal to 0.8 and wherein said second section has a maximum radius r' max. less than the maximum radius r max. of said first section.

4,342,212

INDIRECT EXTRUSION PRESS

Guenter W. Sibler, Pittsburgh, Pa., assignor to Sutton Engineering Company, Pittsburgh, Pa.

Filed Sep. 2, 1980, Ser. No. 183,230
Int. Cl.³ B21C *23/00, 33/00, 35/04*
U.S. Cl. 72—255 **1 Claim**



1. Extruding apparatus comprising a platen, a platen slide movable back and forth across the rear face of the platen, a die stem behind the platen secured at its front end to slide and extending rearwardly therefrom, a billet-receiving sleeve spaced laterally from said stem and secured at its front end to the slide and extending rearwardly therefrom, a billet container behind said slide provided with a billet-receiving passage therethrough and movable toward and away from the platen, said platen slide being movable from a first position in which said die stem is aligned with said container passage to a second position in which said sleeve is aligned with said container passage, means behind said sleeve in said first slide position for pushing a hot billet into the sleeve, a horizontal track secured to the front of said container transversely thereof, a die slide slidably mounted on said track and movable back and forth along the track from an inner position between the container passage and die stem when the platen slide is in said first position to an outer position at one side of the container in which the die slide is aligned with the die stem in said second position of the platen slide, said die slide having a passage extending therethrough from front to back, a vertically movable die cassette disposed in the front end of said die slide passage, a die mounted in said cassette, an extrusion stem behind the container and movable forward into said container passage to extrude a billet through said die, a vertically movable cassette for receiving a dummy block and extrusion butt disposed in said die slide passage behind the die cassette, a shear pusher frame rigidly connected with said container and projecting therefrom toward said platen, a shear member mounted in said frame and movable downwardly therein between said container passage and die stem when the platen slide is in said first position, said track being provided in front

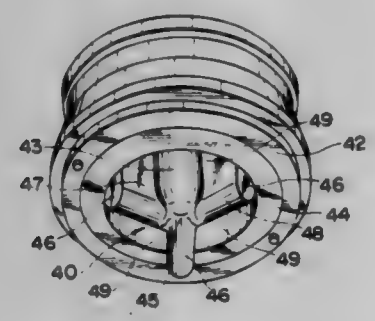
of said passage with an opening therethrough that is beneath said dummy block and butt cassette when the die slide is in its inner position, the bottom of the die slide having an opening therethrough directly above said track opening, said track and slide openings being large enough to receive the dummy block and butt receiving cassette when pushed down by said shear member to shear an extrusion, means below said last-mentioned cassette for raising it to its upper position in the die slide after said shearing, said track also being provided with an opening therethrough that is beneath said die cassette when the die slide is in its outer position aligned with said die stem, means below the die cassette for raising it above the other cassette when the die slide is in said outer position to permit the die slide to pass over the die stem to cause the die stem to eject a dummy block and extrusion butt from their cassette in the die slide when the container is moved toward the platen, means in said sleeve for pushing said hot billet from said sleeve in said second position of the platen slide into said container passage during said movement of the container toward the platen.

4,342,213

CLOSED CHAMBER EXTRUSION METHOD AND APPARATUS FOR SHAPING OF METAL ROD INTO TULIP-SHAPED PART

Hajime Koshimaru, Machida, and Shoju Ishii, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 5, 1981, Ser. No. 222,393
Claims priority, application Japan, Jan. 17, 1980, 55-3784
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—358 9 Claims



1. A method of manufacturing a tulip-shaped metal part having three outwardly extending petal-like arms which are spaced apart at equal angular intervals and which extend from one end of a solid cylinder obliquely outwardly with respect to the longitudinal axis of the solid cylinder in their root portion and parallel to said longitudinal axis in the remaining portion, the method comprising the steps of:

inserting a solid cylindrical rod of a forgeable metal material into a guide hole formed in a first of two opposingly engaged dies and pushing said rod so that said rod longitudinally protrudes into a central space defined in said engaged dies until one end of said rod collides against an impression formed on an end face surface in said second die;

exerting a compression force on the other end of said rod to axially press said rod against said impression to cause said rod to gradually and continuously cleave longitudinally into three branched portions which extend obliquely outwardly with respect to said axis of said rod and which are spaced apart circumferentially at equal angular intervals;

continuing the exertion of the compression force on the other end of said partially cleaved rod in the axial direction to extrude said three branched portions respectively into three chambers which are arranged in said second die in a circumferential arrangement at equal angular intervals and which conjoin said central space, each of said three chambers extending parallel to the longitudinal axis of said guide hole and conforming in cross-sectional shape to the axially extending region of each arm of the tulip-shaped metal part to be manufactured;

inserting a counterpunch having three circumferentially spaced elongate legs, which conform in cross-sectional shape to said three chambers, into said three chambers before intrusion of said three branched portions of the metal material into said three chambers, and maintaining the inserted counterpunch in a predetermined position;

applying back pressure to said counterpunch which is maintained in said position and further continuing the exertion of the axial compression force on the other end of said partially cleaved rod until the cleaved and deformed metal material completely fills said central space and said three chambers in said engaged dies and comes into contact with the inserted ends of said respective legs of said counterpunch; and

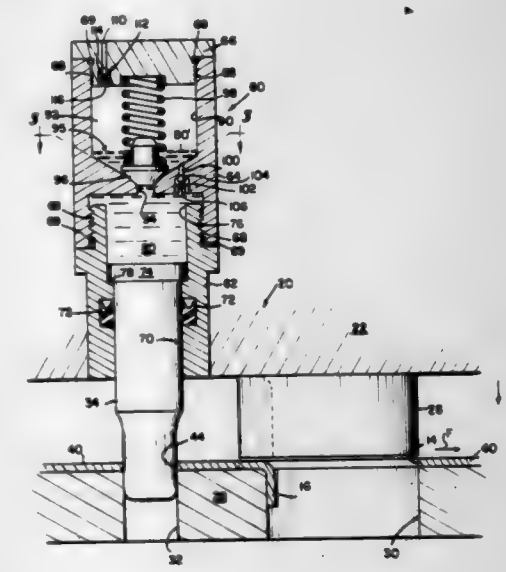
further continuing the exertion of the axial compression force on said partially cleaved rod while further continuing the application of back pressure to said counterpunch to further extrude the metal material into said three chambers and force said counterpunch to gradually retract from said position against the back pressure until the extruded metal material in said three chambers reaches a predetermined length.

4,342,214

PILOT ASSEMBLY FOR PROGRESSIVE DIE MACHINES

J. R. Neuendorf, c/o Modern Die Systems, P.O. Box 445, Elwood, Ind. 46036

Filed Jun. 16, 1980, Ser. No. 159,874
Int. Cl.³ B21D *11/22*
U.S. Cl. 72—404 13 Claims



1. A pilot mechanism for sensing the proper condition of a workpiece in a machine having a first element movable toward and away from a second element in operations on a workpiece disposed therebetween, comprising

a pilot pin mounted in the first element and having a normal projected position from which it is retractable when a force opposed to the movement of said element is applied to the pin,

a hydraulic chamber from which hydraulic fluid is displaced in response to such retraction movement of the pin,

means for preventing displacement of hydraulic fluid from such chamber at a pressure in such fluid below a predetermined high pressure so as to prevent such retraction movement under a retraction force on the pin below a corresponding high force, and for releasing hydraulic fluid from the chamber under a higher pressure produced by a higher retraction force.

4,342,215

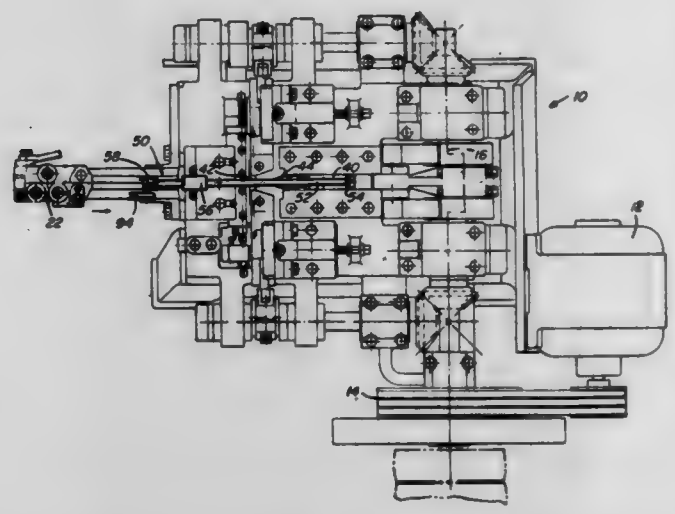
NAIL MACHINE WIRE FEED MECHANISM

Ronald L. Van Horn, Pittsburg, Pa., assignor to United States Steel Corporation, Pittsburgh, Calif.

Continuation-in-part of Ser. No. 17,296, Mar. 5, 1979, abandoned. This application Oct. 9, 1980, Ser. No. 195,588

Int. Cl.[3] B21G *3/20;* B21D *43/10*

U.S. Cl. 72—422 4 Claims



1. Apparatus for feeding wire in predetermined lengths along a wire feed path into the forming die of a nail forming machine in which a continuously operating reciprocating hammerslide is operative to impact the leading end of the wire in the forming die to form a head thereon, said apparatus comprising:

(a) a frame having a wire-backing surface thereon adjacent said wire feed path;

(b) a connecting rod for vertically supporting said frame relative to said wire feed path, said rod being connected between said hammerslide and said frame for imparting reciprocating movement to said frame along said wire feed path between a first position adjacent said forming die and a second position remote therefrom, said connecting rod providing the sole support for said frame;

(c) an elongated dog grip on the opposite side of said wire feed path from said wire-backing surface;

(d) pivot means on said frame connecting with said dog grip intermediate the ends thereof;

(e) spring means between said frame and one end of said dog grip operative to normally bias the other end thereof toward said wire-backing surface;

(f) means on said other end of said dog grip to effect gripping engagement thereof with the wire to be fed as said frame moves toward said second position;

(g) a stationary cam having a cam surface disposed adjacent said second position and operative to engage said one end of said dog grip; and,

(h) a cam follower on said one end of said dog grip operative to urge said other end thereof away from said wire backing surface only when said follower engages said cam surface.

4,342,216

LIMITED STROKE FORCE DELIVERING TOOL

Jack T. Gregory, 1322 Ross St., Petaluma, Calif. 94952

Filed Nov. 10, 1980, Ser. No. 205,427

Int. Cl.[3] B21J *9/12;* B21D *7/06*

U.S. Cl. 72—453.16 12 Claims

1. A hydraulic force delivering tool comprising:

a cylinder having an open end;

a piston slidable in said cylinder;

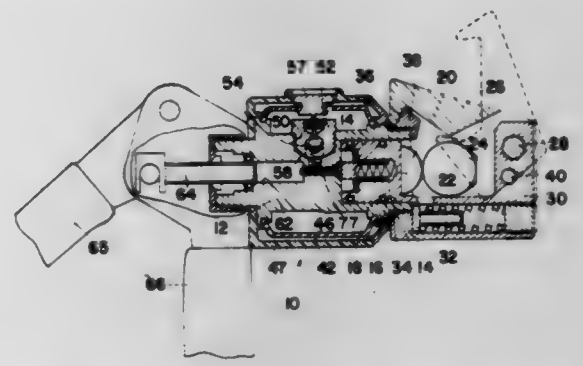
a force-applying member on one of said piston and cylinder;

a flow port opening into said cylinder;

a transfer check valve engaging said port to enable flow into said cylinder only;

a fluid transfer chamber in communication with said flow port;

pump means for forcing fluid from said transfer chamber past said check valve; and



mutually engagable means on said piston and said transfer check valve for lifting said transfer check valve from said port when said piston has traveled through a predetermined stroke.

4,342,217

STRAIN GAGE PICK-UP AND METHOD FOR ADJUSTING SUCH STRAIN GAGE PICK-UP

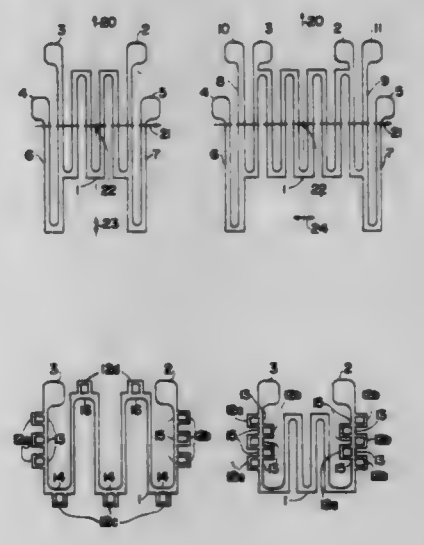
Jürgen Paetow, Darmstadt, Fed. Rep. of Germany, assignor to Hottinger Baldwin Measurements, Inc., Framingham, Mass.

Filed Jul. 18, 1980, Ser. No. 170,019

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1979, 2933676

Int. Cl.[3] G01L *25/00*

U.S. Cl. 73—1 B 9 Claims



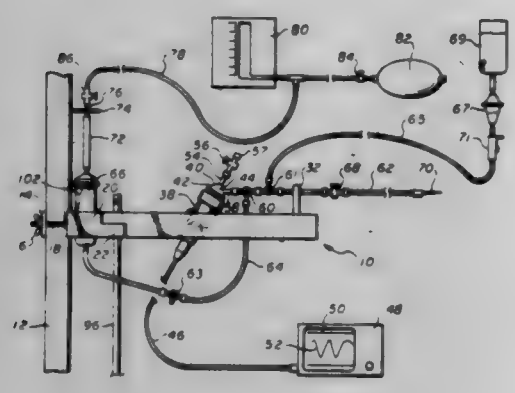
5. A strain gage transducer, comprising spring body means, main strain gage means operatively secured to said spring body means, said main strain gage means having outwardly facing edges, secondary strain gage components operatively connected to said outwardly facing edges of said main strain gage means, said secondary strain gage components having such a shape that the secondary strain gage components extend substantially across or perpendicularly to the direction defined by the respective main strain gage means, said main strain gage means constituting shunting means for said secondary strain gage components for selectively adding or subtracting any one of said secondary strain gage components to or from said main strain gage means by interrupting any one secondary strain gage component or said shunting means to shift the effective center of the grid geometry of said main strain gage means out of its initial position and relative to a given rectangular coordinate system by predetermined amounts which are sufficiently small for compensating off-center load applications.

4,342,218

METHOD AND APPARATUS FOR ZEROING AND CALIBRATING AN INVASIVE BLOOD PRESSURE MONITORING SYSTEM

Forrest Fox, 5607 Jackwood, Houston, Tex. 77096

Filed Jan. 16, 1980, Ser. No. 112,430
Int. Cl.[3] G01L *27/00*
U.S. Cl. 73—4 R 26 Claims



1. A method of zeroing and calibrating an invasive blood pressure monitoring system with a display device of which an oscilloscope waveform readout is typical and wherein said blood pressure monitoring system incorporates a calibration chamber, a blood pressure transducer having a diaphragm chamber adapted for selective communication with said calibration chamber and, a continuous flushing system is interconnected with said blood pressure monitoring system and continuously flushes the cannula to prevent development of a thrombosis therein, said continuous flushing system functions continuously during said zeroing and calibrating of said blood pressure monitoring system, said method comprising:

purging air from said blood pressure monitoring system and filling the system with sterile fluid including filling the calibration chamber to a predetermined level;

interconnecting the blood pressure transducer with the cardiovascular system of the patient through fluid filled tubing and a cannula inserted into the patient's cardiovascular system;

locating the fluid-air interface in the calibration chamber at the level of the right atrium of the patient's heart;

exposing the diaphragm of said transducer to zero reference pressure while maintaining the closed sterile integrity of said blood pressure monitoring system and setting the oscilloscope such that a zero read-out is indicated;

applying a known desired pressure above the zero reference pressure to said diaphragm and inspecting proper calibration of the pressure monitoring system by inspecting the oscilloscope readout of said known pressure, said known desired pressure above the zero reference pressure being applied to said diaphragm while maintaining the closed sterile integrity of said blood pressure monitoring system;

removing said known desired pressure above the zero reference pressure from said diaphragm after inspection of calibration of the pressure monitoring system is completed; and

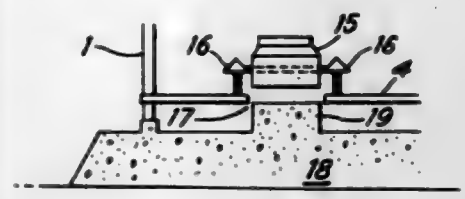
thereafter applying the cardiovascular pressure of the patient to said diaphragm by communicating said cannula with said diaphragm, thus causing said transducer to transmit an electrical waveform signal to said oscilloscope that is displayed on the screen of said oscilloscope.

4,342,219

PREFABRICATED LABORATORY UNIT AND OCTANE ANALYZER

William Stirling, Merseyside, England, assignor to The Associated Octel Company, Ltd., Merseyside, England

PCT No. PCT/GB80/00085, § 371 Date Nov. 28, 1980, § 102(e) Date Nov. 28, 1980, PCT Pub. No. WO80/02578, PCT Pub. Date Nov. 27, 1980
PCT Filed May 9, 1980, Ser. No. 227,106
Claims priority, application United Kingdom, May 15, 1979, 7916763
Int. Cl.[3] G01L *23/22*; E04H *5/02*
U.S. Cl. 73—35 7 Claims



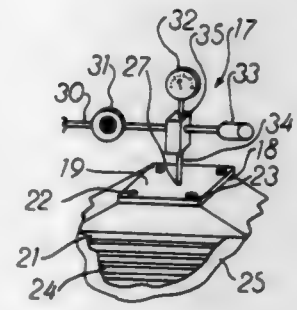
1. A prefabricated laboratory having walls, a floor and a ceiling forming an integral transportable unit and within which is or may be installed an apparatus requiring a substantially vibration-free mounting, characterised in that the floor of the unit has a hole therein, which when the unit is in position at a desired site, exposes a prepared foundation for said apparatus, and wherein there is mounted in the said unit immediately above said hole a plinth mounting or serving to mount said apparatus, said plinth being mounted on jacking means which permit said plinth, when the unit is in the desired position, to be lowered onto the prepared foundation which is exposed through said hole.

4,342,220

ENGINE TESTING METHOD AND APPARATUS

Charles R. Catchpole, and Michael E. Horton, both of Box 20042, Billings, Mont. 59104

Filed Jul. 25, 1980, Ser. No. 172,388
Int. Cl.[3] G01M *3/10*
U.S. Cl. 73—49.7 8 Claims



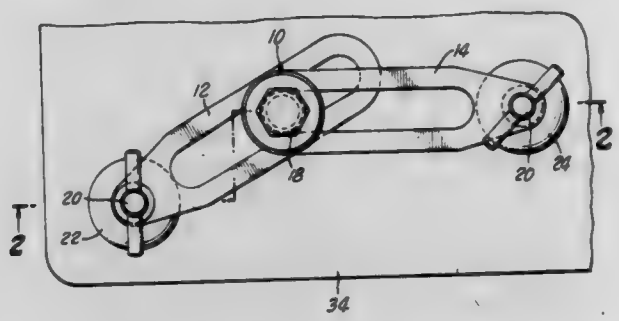
1. Testing apparatus for an engine including an aftercooler and a turbocharger, said apparatus including adapter means capable of being operatively connected to the air chamber section of said aftercooler, fastening means engageable with said adapter means capable of securing said adapter means to said engine, a passage through said adapter means, means for supplying a gas under superatmospheric pressure through said adapter means, pressure measuring means associated with said gas supplying means, and pressure relief means associated with said gas supplying means, whereby securing said adapter means to said engine and supplying gas under superatmospheric pressure through said apparatus to said air chamber of said aftercooler will cause the pressurized gas to be forced through any flaws in said aftercooler and produce bubbles in a liquid medium disposed on the opposite side of said aftercooler from said air chamber.

4,342,221

ENGINE CYLINDER HEAD PORT CLOSURE PAD CLAMP

Fred H. Silvey, Rowland Heights, Calif., assignor to Irontite Products, Co. Inc., El Monte, Calif.

Filed Jul. 28, 1980, Ser. No. 173,224
Int. Cl.³ G01M 3/04
U.S. Cl. 73—49.7 2 Claims



1. A port closure clamp for use in sealing the surface ports of an engine part such as a cylinder head or the like possessing fluid circulating conduits, said clamp comprising:

a. mounting means secured to said cylinder block having a mounting part positioned adjacent said mating surface of said cylinder block,

b. an arm on said mounting part extending parallel to said mating surface,

c. a port closure member on said arm,

d. tightening means for tightening said closure member against said cylinder head to close a fluid circulating conduit of said cylinder head, and

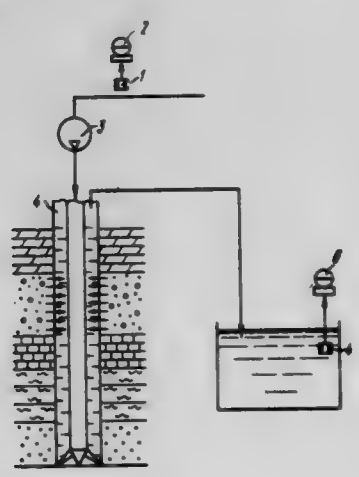
e. a longitudinal slot in said arm through which said mounting part extends whereby said arm may be radially movable with respect to said mounting part whereby the effective length of said arm may be shortened or lengthened.

4,342,222

METHOD FOR THE DETERMINATION OF DEPTH OF A FLUID-SATURATED STRATUM AND FLUID TYPE

Stanislav A. Alekhin, Chilanzar, Kvartal 24, 53, kv. 89; Vitold M. Bakhir, Gaidara, 7-A, kv. 17; Raisa I. Born, Chilanzar, kvartal 24, 53, kv. 89; Tatyana M. Bakhir, proezd Gaidara, 7-A, kv. 17, all of, Tashkent, and Aman I. Khusandzhanov, poselok neftyanikov, Surkhandarinskaya oblast, Kumkurgan-2, all of U.S.S.R.

PCT No. PCT/SU79/00086, § 371 Date Nov. 27, 1980, § 102(e) Date Nov. 25, 1980, PCT Pub. No. WO80/02050, PCT Pub. Date Oct. 2, 1980
PCT Filed Sep. 28, 1979, Ser. No. 224,552
Claims priority, application U.S.S.R., Mar. 27, 1979, 2736512
Int. Cl.³ E21B 49/00
U.S. Cl. 73—153 1 Claim



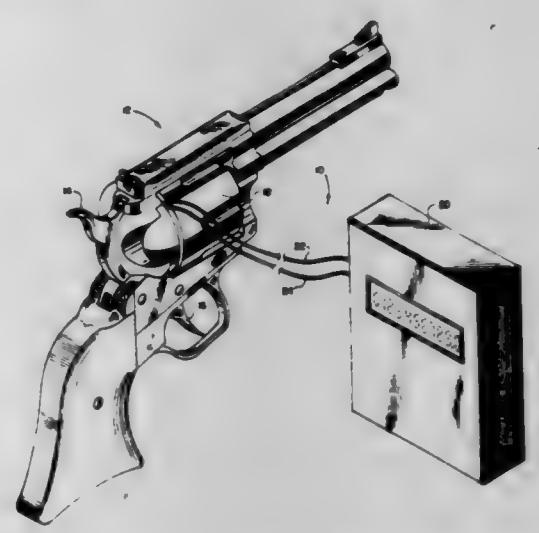
1. A method for the determination of depth of a fluid-saturated stratum and type of a fluid preferably such as mineralized water, oil and gas released during drilling, comprising suspending the supply of drilling mud to a well upon revealing a fluid in the drilling mud leaving the well and restoring the supply of the drilling mud to the well after a certain time lapse, marking the time of restoration of supply of the drilling mud to the well and the time of appearance at the surface of the batch of the drilling mud diluted with the fluid saturating the stratum to be used for the determination of depth of the stratum, characterized in that the drilling mud fed to the well is pretreated in such a manner as to maintain the original value of its redox potential at a stable level, the value of redox potential of the drilling mud leaving the well is continuously measured and compared to the original value of redox potential of the drilling mud, and upon a change in the redox potential of the drilling mud indicating to the presence of a fluid saturating the stratum in the drilling mud the supply of the drilling mud to the well is suspended, with subsequent measurement of redox potential of the batch of the drilling mud saturated with the fluid which is compared to known normal values of redox potential to determine the type of the fluid.

4,342,223

METHOD AND APPARATUS FOR CALIBRATING FIRING PIN IMPACT

James L. Smith, 4001 Sul Ross, Apt. 330, San Angelo, Tex. 76904

Filed Jul. 21, 1980, Ser. No. 170,824
Int. Cl.³ G01L 1/22
U.S. Cl. 73—167 7 Claims



1. An apparatus for calibrating the impact force of a firing pin of a firearm, said apparatus comprising:

a casing insertable into the firing chamber of the firearm, said casing having a cap for engaging the firing chamber housing when said casing is fully inserted into said firing chamber;

means disposed in said casing for transducing the mechanical effect of an impact to an electrical effect, said transducing means being anchored to said casing;

means electrically coupled with said transducing means for detecting the electrical effect of an impact; and,

actuating means mechanically coupled to said transducing means and movable with respect to said casing for transmitting the firing pin impact force to said transducing means.

4,342,224

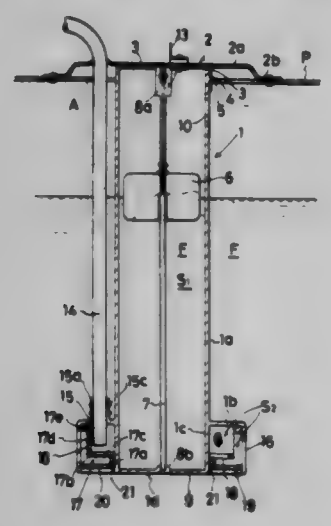
HOUSING UNIT FOR LIQUID GAUGE AND STRAINER

Kunio Hara, Kawasaki, and Shigeru Kimura, Kamakura, both of Japan, assignors to Nifco Inc., Yokohama, Japan

Continuation of Ser. No. 90,227, Nov. 9, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,459
Claims priority, application Japan, Nov. 9, 1978, 53-137341
Int. Cl.³ G01F 23/10
U.S. Cl. 73—290 R 4 Claims

1. A housing unit for use in a liquid reservoir, adapted to unitize a liquid level gauge, liquid suction pipe, strainer, and

housing, comprising a housing having at least two chambers, said at least two chambers including a generally cylindrical first chamber open at one end and substantially closed at the other end and a generally toroidal second chamber concentric with said first chamber, said second chamber adjacent to and encircling the substantially closed end of said first chamber, said second chamber having an annular opening adapted to receive a filter element therethrough and an annular lid adapted to close said opening while positioning a filter element within said second chamber, a cover adapted to be removably attached to and close the open end of said first chamber and removably suspend said housing unit within said reservoir, said first chamber adapted to contain a liquid level gauge and said second chamber adapted to contain a strainer, means within said first chamber for guiding a movable portion of the liquid



gauge, said strainer including a filter element adapted to be confined within said second chamber by said annular lid, at least two openings in said first chamber for permitting passage of a liquid and air into and out of said first chamber, and second chamber having a first opening for admitting liquid into the chamber on one side of said filter element and a second opening for permitting the insertion of one end of a liquid suction pipe on the other side of the filter element, said filter element adapted to embrace an open end of the liquid suction pipe inserted therein, whereby the movable portion of a liquid level gauge contained within said first chamber is unrestricted when moving from the end closed by the cover to the substantially closed end thereby permitting said liquid level guage a range of indication which extends to the substantially closed end of said first chamber.

4,342,225

DEVICE FOR THE INTERNAL INSPECTION OF PIPELINES

Jan Jandera, and Jan Studnicka, both of Prague, Czechoslovakia, assignors to Ceske plunarenske pdniky, koncern, Prague, Czechoslovakia

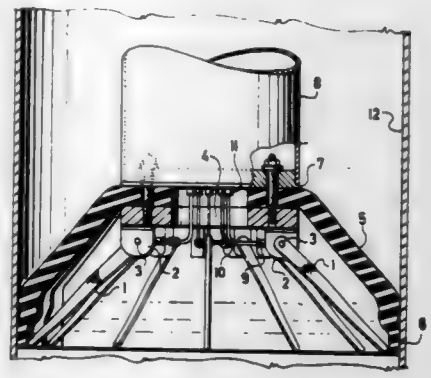
Filed Nov. 7, 1980, Ser. No. 204,951

Claims priority, application Czechoslovakia, Nov. 23, 1979, 8075-79

Int. Cl.³ G01B *5/28, 21/14*

U.S. Cl. 73—432 R **12 Claims**

1. A device for the inspection of the internal cross section of pipelines under operation, comprising a supporting body adapted to be introduced into the pipeline, a recording device, at least one packing cuff on the supporting body, and a plurality of sensing arms pivotally mounted upon the supporting body, the outer ends of the sensing arms constantly engaging the internal periphery of the portion of the packing cuff which engages the internal surface of the pipeline, and a plurality of displacement sensing elements attached to the supporting body, each of such sensing elements having a stub-shaft to which the inner end of a respective sensing arm is connected,



whereby rotation of the sensing arm similarly rotates the stub shaft of the sensing element.

4,342,226

TURN INDICATOR FOR SHIPS OR AIRCRAFT

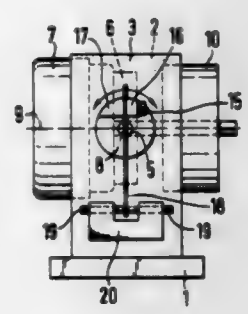
Rudolf Engel, St. Goar, and Horst P. Meier, Oberwesel, both of Fed. Rep. of Germany, assignors to Engel & Meier oHG, St. Goar, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,906

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946308

Int. Cl.³ G01P *9/02*

U.S. Cl. 73—504 **10 Claims**



1. Turn indicator for indicating the turning direction and the turning speed of a change in course of a ship or aircraft, comprising motor means; carrier means; said motor means being freely movably mounted between supports by said carrier means; said carrier means having an axle; leaf spring means having an upper end fixedly connected to said axle; said spring means having a loosely guided lower end; measuring bridge means on said spring means; and indicating means connected to said bridge means through amplifier means.

4,342,227

PLANAR SEMICONDUCTOR THREE DIRECTION ACCELERATION DETECTING DEVICE AND METHOD OF FABRICATION

Kurt E. Petersen, and Anne C. Shartel, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,685

Int. Cl.³ G01P *15/125*

U.S. Cl. 73—510 **10 Claims**

1. A planar semiconductor acceleration detecting device comprising

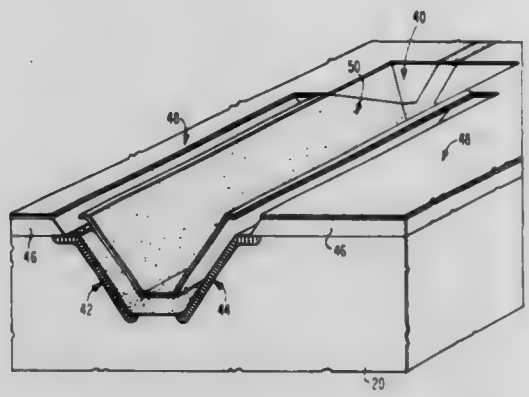
a substrate of semiconductor material having an elongated v-shaped cavity therein,

a v-shape cantilever beam arranged in said v-shaped cavity and depending from one end thereof for movement into and out of said cavity and movement from side to side in said cavity,

electrodes of conductive material arranged on the sloping

walls of said cavity and on the sloping walls of said beam, and

an electronic circuitry coupled to said electrodes and ar-



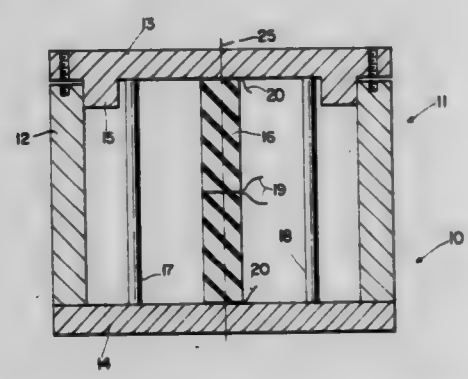
ranged for indicating the degree of acceleration to which said device is subjected in terms of the instantaneous capacity between said electrodes in said cavity and on said beam.

4,342,228

ANGULAR ACCELEROMETER

Howard T. Savage, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 4, 1980, Ser. No. 203,938
Int. Cl.³ G01P *15/08*
U.S. Cl. 73—517 A **18 Claims**



1. A device for measuring acceleration comprising:
a compression housing having an axis;
magnetoelastic means positioned in and axially compressed by the housing;
magnetic biasing means positioned in the housing; and
means for measuring a voltage generated in the magnetoelastic means;
whereby when the device is angularly accelerated, a voltage is generated in the magnetoelastic means, said voltage being an indication of the acceleration.

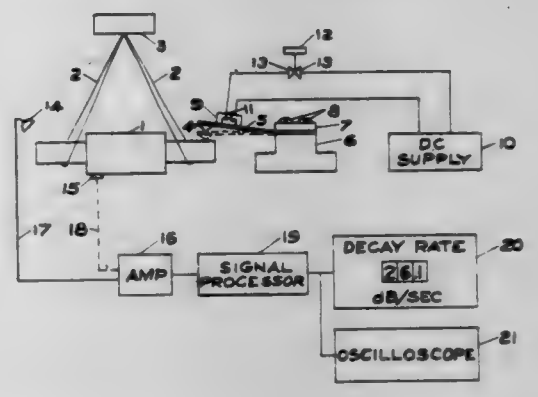
4,342,229

APPARATUS AND METHOD FOR THE NON-DESTRUCTIVE TESTING OF THE PHYSICAL INTEGRITY OF A STRUCTURAL PART

Frank Massa, Hingham, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees

Filed Aug. 25, 1980, Ser. No. 180,680
Int. Cl.³ G01H *1/00, 9/00*
U.S. Cl. 73—579 **17 Claims**

1. In combination in an apparatus for measuring the degradation of the physical integrity of a structural part, such as may occur from the presence of invisible flaws in the structural material or from vibrational fatigue of the structural material during the operational use of the structural part, support means for holding said structural part, said support means characterized in that it presents negligible resistance to the free natural vibration of said structural part, force excitation means associated with said supported structural part, said force excitation means characterized in that an impulse force of short duration may be imparted to said structural part upon command, said impulse force characterized in that it is of sufficient magnitude to excite said structural part into a free resonant mode of vibration, transducer means for converting the amplitude of vibration of said freely vibrating structural part to an electrical



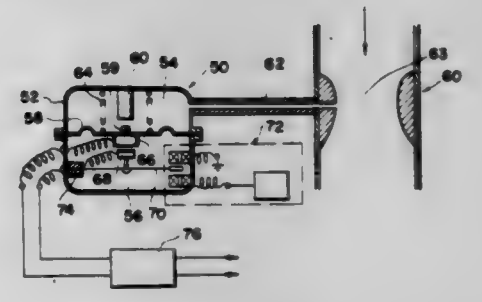
signal, means for continuously measuring the decaying amplitude of said electrical signal over a specified period of time of sufficient duration to include a plurality of oscillatory cycles of said vibrating structural part immediately following the excitation of said freely suspended structural part by said impulse force, and indicator means for indicating the logarithm of said measured decaying amplitude over said specified period of time, whereby said logarithm of said measured decaying amplitude is an indication of the physical integrity of said vibrating structural part.

4,342,230

PRESSURE SENSOR AND SENSING METHOD

Kenji Okamura, and Kenji Masaki, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jun. 17, 1980, Ser. No. 160,386
Claims priority, application Japan, Jun. 19, 1979, 54-76347
Int. Cl.³ G01L *9/00*
U.S. Cl. 73—702 **21 Claims**



1. A pressure sensor comprising:
a sensor casing having therein a pressure chamber communicated with a fluid passage for introducing pressurized fluid;
a diaphragm defining said pressure chamber and expanding and adapted to move in response to fluid pressure introduced into said pressure chamber;
means for converting fluid pressure into a length of time in which electric current flows through a sensor circuit, said means including a switch means having first and second parts separated from each other, said first part of said switch means being secured on said diaphragm so that it moves longitudinally with respect to said second part together with said diaphragm and said second part oscillating with respect to said first part with a substantially constant frequency and amplitude, said means generating an output within a period

when said first and second parts are located at a given relationship; and

an arithmetic circuit for calculating an average pressure based on the output of said converting means.

4,342,231

DIFFERENTIAL PRESSURE TRANSMITTER

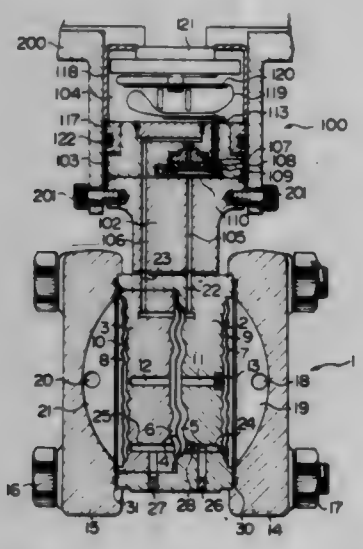
Yoshimi Yamamoto, Ibaraki; Yoshitaka Matsuoka, Mito; Syozo Kasai; Yukio Takahashi, both of Katsuta; Takeo Nagata, Hitachi; Akira Nagasu, Ibaraki; Tomomasa Yoshida, Mito, and Satoshi Shimada, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 217,025

Claims priority, application Japan, Dec. 19, 1979, 54-164126

Int. Cl.³ G01L *7/08, 9/06*

U.S. Cl. 73—721 **11 Claims**



9. A differential pressure transmitter comprising:

a pressure receiving body assembly;

two seal diaphragms disposed at both sides of said pressure receiving body assembly and forming, on both sides of said pressure receiving body assembly, pressure receiving chambers for receiving pressures of a high-pressure fluid and a low-pressure fluid, respectively,

a central diaphragm disposed in said pressure receiving body assembly and defining two isolated chambers which communicate with respective one of said pressure receiving chambers;

a semiconductor sensor having a resistance pattern formed on one side thereof and having thick-walled peripheral portion and thick-walled central portion at the other side thereof;

a hollow supporting member attached to the peripheral portion of said other side of said semiconductor sensor;

a sealing member to which said supporting member is fixed, said sealing member having a first passage for introducing a first fluid pressure to said other side of said semiconductor sensor through an internal cavity of said supporting member and a second passage for introducing a second fluid pressure to said one side of said semiconductor sensor;

a ceramic substrate disposed in said second conduit adjacent to said semiconductor sensor, said ceramic substrate being adapted to transmit to the outside an electric signal corresponding to the pressure and generated by said semiconductor sensor;

a connector casing portion encasing connectors for electrically connecting said ceramic substrate to the outside so that said electric signal may be delivered to the outside; and

a connecting member having a third passage and a fourth passage through which said first and second passages are communicated with corresponding pressure receiving chambers;

said semiconductor sensor being disposed such that the side thereof having said resistance pattern faces said pressure receiving body assembly.

4,342,232

VORTEX FLOW RATE MEASURING DEVICE

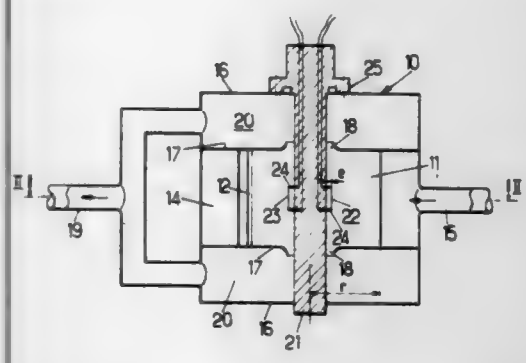
Pierre Calvet, Toulouse; Gil Ching, Paris, and Philippe Rolland, Saint-Orens de Gameville, all of France, assignors to Societe pour l'Equipement de Vehicules (S.E.V.), Issy-les-Moulineaux, France

Filed Oct. 16, 1980, Ser. No. 197,613

Claims priority, application France, Oct. 18, 1979, 79 25950

Int. Cl.³ G01F *1/70*

U.S. Cl. 73—861.05 **6 Claims**



1. A flowmeter for measuring the rate of volumetric flow of a fluid comprising: a chamber having a rotational symmetry about an axis; fluid inlet means formed at the periphery of said chamber; fluid outlet means for axial flow of said fluid out of said chamber, cooperating with said inlet means for generating a vortex in said chamber upon circulation of said fluid through said chamber; and speed detector means comprising a transmitting thermo-element wire and a receiving thermo-element wire, said wires being parallel to said axis, angularly spaced about said axis and located at the same distance from said axis in a zone where the circumferential speed of the vortex is substantially proportional to the flow rate, further comprising means for applying short electrical heating pulses to the transmitting thermo-element wire and means for detecting the arrival of the pulse heated fluid in contact with the receiving thermo-element wire.

4,342,233

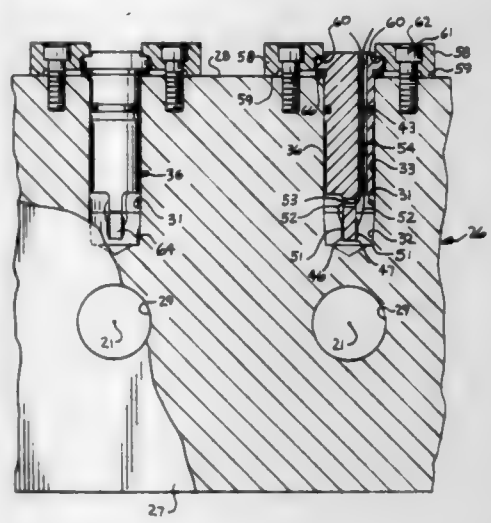
LOAD DETECTING PROBE

Richard Edmondson, and Dale A. Wisebaker, both of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Filed Aug. 18, 1980, Ser. No. 178,728

Int. Cl.³ G01L *1/22*

U.S. Cl. 73—862.06 **21 Claims**



1. In a machine tool having a frame, a tool back-up member,

the tool back-up member having a working face including means for defining a tool mounting station, said back-up member being constructed and arranged to support a tool during a working period by sustaining compressive loads through said face at the tool mounting station along an axis, a cavity having a boundary wall formed in said back-up member and extending relative to said axis laterally from a point underlying said face adjacent said mounting station to a point spaced from said mounting station, an elongated load sensing probe disposed in said cavity and extending longitudinally between said points, said sensing probe having an inner end in contact with an area of said boundary wall, and sensing means on said probe to form an electrical signal proportional to strain in said back-up member at said area of said cavity wall.

4,342,234

APPARATUS FOR EXTRACTING A HOT GAS SAMPLE FROM A CHAMBER AND FOR FEEDING THE SAMPLE TO AN ANALYZER

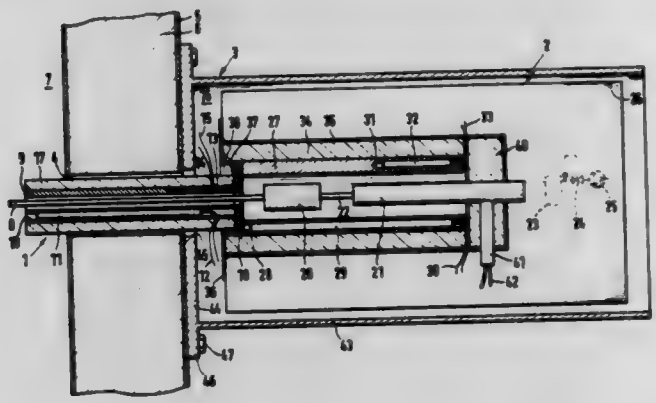
Tibor Bernath, Hauptstrasse 48, D-3000 Hannover 91, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,648

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950744

Int. Cl.³ G01N *1/22*

U.S. Cl. 73—863.12 **5 Claims**



1. Apparatus for extracting a hot gas sample from a chamber and for feeding the sample to an analyzer, in particular for monitoring the content of organic solvents or similar constituents in the air in the chamber, which such solvents or similar constituents represent an explosion hazard or are otherwise harmful when they reach a specific concentration, such apparatus comprising a sampling probe which can be introduced into the chamber through an opening in the chamber wall and is connected outside the chamber with the analyzer, which has a gas filter and a detector, there being a suction pump to draw off the sample through the probe to the analyzer, as well as a heating jacket upstream of the analyzer, wherein the analyzer (2) is located directly at the opening (4) in the chamber wall (5, 6) and is directly connected to the sampling probe (8), the heating jacket (9) surrounds the sampling probe (8) and extends beyond the chamber wall (5, 6) through the chamber-wall opening (4) up to the analyzer (2), the analyzer (2) has a heating apparatus (27) separate from the heating jacket (9) of the sampling probe (8) and the heating jacket (9) and heating apparatus (27) each has its own temperature sensor (14 and 32, respectively) for separate heating and temperature control.

4,342,235

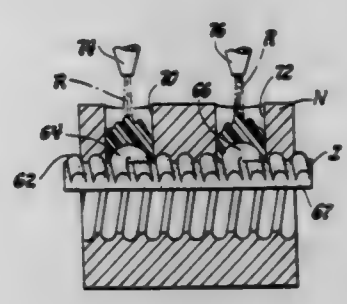
BALL NUT WITH INTERNAL CROSSOVER FOR BALL RECIRCULATION

Robert L. Benton, Bay City, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 92,432, Nov. 7, 1979, Pat. No. 4,272,476. This application Dec. 10, 1980, Ser. No. 214,888

Int. Cl.³ F16H *1/18*

U.S. Cl. 74—424.8 R **3 Claims**



1. A ball nut for a ball nut and screw assembly having a metallic body with an internal helical ball track formed therein adapted to receive a screw member having a helical ball track thereon, a cylindrical opening formed in said nut, a ball track crossover of plastic material molded into said opening, said crossover having a side wall adhering to the side wall of said opening, said crossover having internal crossover track means to feed balls from one track to an adjacent track of said ball nut, said nut being produced by selecting a first ball nut having an internal helical thread with a predetermined lead to provide a grooved track for a train of balls that drivingly interconnects the nut to an associated screw, forming an access hole in the ball nut that has a dimension spanning at least two adjacent turns of the track, forming an insert for said access opening having a grooved crossover path for circulating the balls of the ball train from one turn of the track back to another turn thereof, placing the insert in the access opening with the crossover path aligned to interconnect the selected turns of the track, utilizing the ball nut and insert as a master mold to mold a positive profile of a portion of the track of the master mold and the crossover path, removing the molded profile from the master mold, selecting a second ball nut having a grooved track and an access hole which correspond to that of the first ball nut, inserting the molded profile into the second ball nut so that the positive track formed on the profile fits in the track of the second ball nut and so that the positive crossover path of the profile extends into and closes the access hole of the second ball nut, flowing a quantity of liquified plastic material into the access hole of said second ball nut and onto said positive profile of said crossover path, allowing said plastic material to harden and removing the molded profile from the second ball nut to thereby complete the formation of a ball nut with a molded crossover path which corresponds in detail to that of said master mold.

4,342,236

CRANKSHAFT WITH LAMINATED COUNTERWEIGHT

Robert G. Everts, 2301 W. Colt Rd., Chandler, Ariz. 85224

Continuation of Ser. No. 946,216, Sep. 27, 1978, abandoned. This application Oct. 22, 1980, Ser. No. 199,629

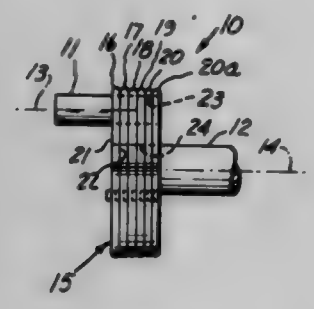
Int. Cl.³ F16C *3/04*

U.S. Cl. 74—603 **6 Claims**

1. A crankshaft with a laminated counterweight, comprising:

a stack of a plurality of identical, pressed together, substantially flat plates, each plate having a first and a second shaft mounting hole therethrough, at least one depression in one side, and at least one boss projecting as a stud from and integral with the other side, said depression and boss of each plate being coaxially aligned with each other, said depression and said boss of each plate being coaxially aligned with each other, said depression and said boss being peripherally bounded by geometrically similar walls

which extend substantially normal to the sides of said plate, the bottom of said depression being located between said sides at a spacing from the side from which said boss projects, whereby to leave a substantial shear web between said two sides, between the bottom of said depression and the base of said boss, said plates being stacked parallel to one another, with the boss of one plate in the



depression of its neighbor plate and making a net or tighter fit, all of said first holes being coaxial, and all of said second holes being coaxial;

a first shaft tightly fitted in said first holes and projecting from a first side of the stack; and

a second shaft tightly fitted in said second holes, and projecting from a second side of the stack.

4,342,237

FEEDING APPARATUS FOR MACHINE TOOLS

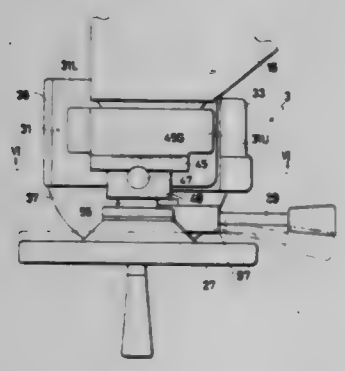
Kikuo Tsutsui, Isehara, Japan, assignor to Amada Company, Limited, Kanagawa, Japan

Filed Aug. 22, 1980, Ser. No. 180,432

Claims priority, application Japan, Aug. 17, 1979, 54-104043

Int. Cl.³ F16D *67/00*

U.S. Cl. 74—625 **7 Claims**



1. Apparatus for feeding a workpiece to a machine, either manually or by power means, comprising:

a work table means for securing said workpiece to said machine;

lead screw means, the rotation of which changes the vertical height of said work table means;

power driving means selectively connectable to said screw means;

manual driving means selectively connectable to said screw means;

selector means operatively connected to actuate said power driving means;

means attached to said manual driving means such that when said work table means is moved by said manual driving means, said power driving means is rendered inoperable;

wherein said manual driving means comprises:

a handwheel attached to a shaft;

said shaft being operatively connected to said lead screw means;

spring biased clutch means, disposed about said shaft, for selectively connecting said handwheel to drive said lead screw means;

wherein said handwheel is operatively connected to said lead screw means when said handwheel is axially shifted along said shaft; and

wherein the operative position of said handwheel and the operative position of said selector means are such that they occupy the same vertical plane in space, whereby only one of said manual and power driving means may be driving said lead screw means at any given time.

4,342,238

AUTOMOTIVE DRIVE SYSTEM WITH CONTINUOUSLY VARIABLE TRANSMISSION

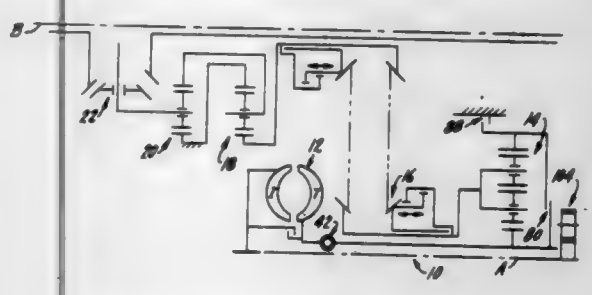
Derek Gardner, Hitchin, England, assignor to Borg-Warner Limited, Letchworth, England

Filed Jan. 28, 1980, Ser. No. 115,827

Claims priority, application United Kingdom, Sep. 6, 1979, 7931188

Int. Cl.³ F16H *37/00, 37/08*

U.S. Cl. 74—689 **3 Claims**



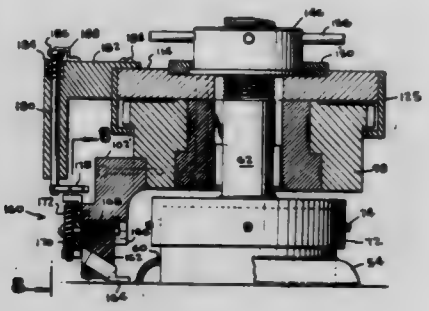
1. A transmission mechanism comprising a hydrodynamic device adapted to be driven by a prime mover, said device including impeller and turbine elements, a clutch means adapted to lock said elements together, a first shaft connected to said turbine element, a planetary forward-reverse gear set connected to said first shaft, a continuously variable drive system having an input pulley, an output pulley, and a belt extending between said two pulleys to transfer power, each of said input and output pulleys having a fixed sheave and a movable sheave, means connecting the fixed sheave of the input pulley to said forward-reverse gear set, said input pulley being coaxial with said first shaft, a reduction gear set, means connecting the fixed sheave of the output pulley to the reduction gear set, a differential mechanism having an input shaft connected to the reduction gear set and a pair of side gears, and output drive means connected to the side gears of the differential mechanism, whereby said output drive means will be driven by the prime mover through said hydrodynamic device and said continuously variable drive system, wherein said hydrodynamic device, first shaft, planetary gear set, and input pulley rotate about a first axis, and said output pulley, reduction gear set and differential mechanism rotate about a second axis, and wherein said reduction gear set includes a high-speed planetary gear train and a high-torque planetary gear train, a separate sun gear for both gear trains, each gear train having an individual ring gear and pinion carriers having pinion gears mounted thereon, said output pulley fixed sheave being connected to the ring gear of the high-speed train to drive the planet pinion gears in the same direction engaging the sun gear at a reduced gear ratio through the high-speed train pinion carrier, said sun gear being connected to the high-torque train ring gear, a shaft connected to the pinion carrier of the high-speed gear train and the plurality of pinion gears of the high-torque gear train to drive the high-torque train pinion gears and the pinion carrier in the same direction to effect a second reduction in the gear ratio, where the pinion carrier for the high-torque planetary gear train is an intergral segment of the differential mechanism.

4,342,239

CANOPY CUTTING DEVICE

William C. Feamster, III, 4013 Nina Dr., Chesapeake, Va. 23321

Division of Ser. No. 884,245, Mar. 7, 1978, Pat. No. 4,236,428.
This application Mar. 7, 1980, Ser. No. 128,371
Int. Cl.[3] B23B 5/14
U.S. Cl. 82—4 C 6 Claims



1. A canopy cutting device for machining canopies and the like in constricted spaces, said device comprising a housing including a base plate, a bearing mounted on said housing and having an axis, rotary adjustment means for shifting the position of said bearing along its axis by an amount in proportion to the amount of rotation imparted to said rotary adjustment means, a ring gear mounted on said bearing for rotation about said axis of said bearing, a cutting tool mounted on and externally of said ring gear, a pinion gear mounted for rotation on said housing and engageable with teeth extending about the outer periphery of said ring gear, means for driving said pinion gear, means for automatically progressively advancing the cutting tool including a cutting tool holder slidably mounted on the outer periphery of the ring gear for radial movement inwardly and outwardly and supporting the cutting tool, a feed screw for radially moving said tool holder, a worm and gear assembly drivingly coupled to the feed screw and to an indexing wheel extending beyond the perimeter of the ring gear and carried in a circular path during rotation of the ring gear, and at least one feed pin oriented parallel to said axis and selectively positionable and manually movable into said circular path of movement of the indexing wheel to intercept and rotate the indexing wheel intermittently under the manual control of the operator through a selected increment for driving the feed screw to radially advance the cutting tool holder through one step.

4,342,240

METHOD AND APPARATUS FOR FEEDING ROD-LIKE WORKPIECES TO A SEVERING MACHINE

Ruprecht Gaiser, Baden-Baden, and Paul Stolzer, Achern, both of Fed. Rep. of Germany, assignors to Keuro Maschinenbau Gesellschaft mit beschränkter Haftung & Co. Kommanditgesellschaft, Achern, Fed. Rep. of Germany

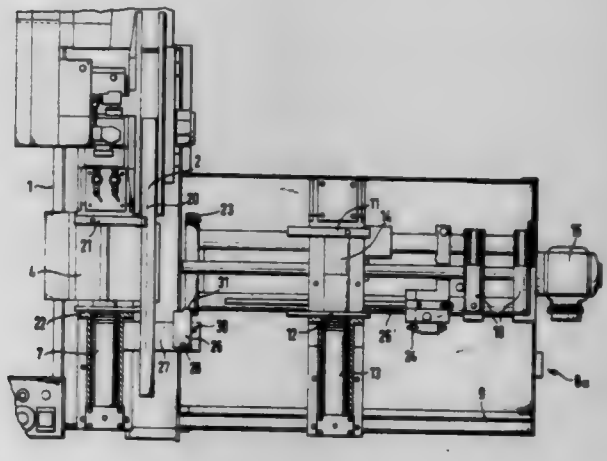
Filed May 8, 1980, Ser. No. 148,174
Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921194
Int. Cl.[3] B23D 51/04
U.S. Cl. 83—42 9 Claims

1. In a method of periodically feeding a rod-like workpiece into a severing machine for severing predetermined lengths in a cutting plane during cutting steps alternating with feeding steps; openable and closable clamping jaws immobilize the workpiece adjacent the cutting plane during each cutting step and openable and closable feed jaws grasp the workpiece at a predetermined distance upstream of the cutting plane as viewed in the direction of feed for advancing the workpiece through the cutting plane by a distance corresponding to the desired length to be cut; the improvement comprising the following repetitive steps;

(a) opening the feed jaws subsequent to the feeding step and the closing of the clamping jaws and prior to the completion of the cutting step immediately succeeding said feeding step;

(b) subsequent to step (a) and prior to the completion of said cutting step immediately succeeding said feeding step, displacing said feed jaws in an upstream direction through the distance corresponding to the length of the successive feeding step;

(c) subsequent to step (b) and prior to the completion of said cutting step immediately succeeding said feeding step,



closing said feed jaws about the workpiece for immobilizing the same; and

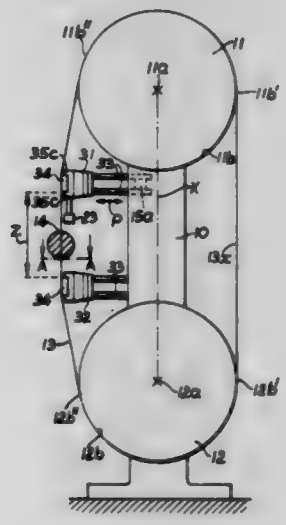
(d) supporting, during each cutting step, the workpiece adjacent said cutting plane on the upstream side thereof against the effect of a cutting force generated during each cutting step.

4,342,241

BAND SAWING METHOD

Urban Eklund, Soderhamn, Sweden, assignor to Kockums Industri AB, Malmö, Sweden

Continuation-in-part of Ser. No. 709,852, Jul. 29, 1976, Pat. No. 4,085,636. This application Jan. 30, 1978, Ser. No. 873,263
Claims priority, application Sweden, Jan. 27, 1977, 7700830
Int. Cl.[3] B23D 55/08
U.S. Cl. 83—56 5 Claims



1. In a method of continuously preserving the correction position of a cut on a saw blade which has a row of teeth extending from a front edge to a root line, said blade being installed in a band sawing machine so that it runs over respective flat peripheral edges of two spaced-apart pulleys that are rotatable about respective parallel rotational axes mounted in a common plane, said blade being guided by spaced-apart blade guides having a guide surface which is substantially parallel to said common plane, said blade being pressed by inherent tension against said guide surfaces such that said blade is free of substantial twist, said method comprising the steps of: continuously sensing during sawing any lateral displacement of a portion of the saw blade between said blade guides from a position of correct cut, countering adverse effect of the lateral

displacement by applying an arcuate corrective force to at least one of said blade guides which is proportional to the lateral deviation of the blade from the position of correct cut to cause said blade to move laterally in proportion to and in the opposite sense of the sensed lateral displacement of the blade irrespective of the direction of the sensed lateral displacement.

4,342,242

HYDRAULICALLY ACTUATED FOOD SLICER

Benny R. Schaum, P.O. Box 172, Bixby, Okla. 74008

Filed May 5, 1980, Ser. No. 146,770
Int. Cl.³ B26D *1/03*
U.S. Cl. 83—437 **4 Claims**



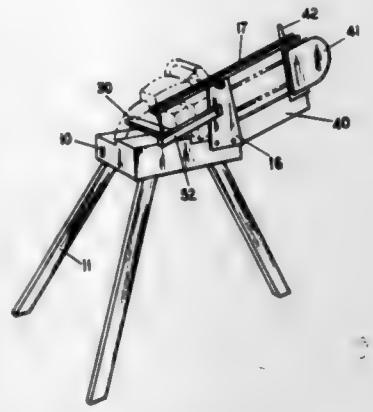
1. A food handling apparatus comprising food receiving receptacle means, cutting grid means disposed at one end of the food receptacle means, horizontally reciprocal piston means disposed in said food receptacle means and movable in alternate directions toward and away from the cutting grid means, one direction of movement of the piston means operable for forcing the food through the cutting grid means for discharge from the receptacle means and the opposite direction of movement of the piston means operable for restoring the receptacle means to a food receiving position, foot lever means, hydraulic means operably connected between the foot lever means and the piston means for providing said movement for the piston means, wherein the hydraulic means comprises a cylinder housing, a horizontally slidable piston rod means disposed within the housing and having a longitudinally extending central passageway therein for receiving a hydraulic fluid, head means carried by the piston rod means and engagable with the piston means, spring means disposed in the passageway means and operably connected with the head means for constantly urging the piston rod means toward the contracted position thereof within the cylinder housing and conduit means connected between the passageway and the foot lever means for communicating the hydraulic fluid therebetween whereby actuation of the foot lever creates a pressure differentials in the passageway surrounding the spring means for providing said movement for said piston means, the foot lever means comprising telescopically arranged fluid filled tubular members in communication with the conduit means, and outwardly extending foot lever means secured to one of said telescopic tubular members for moving thereof with respect to the other telescopic tubular member for creating said pressure differentials in the passageway, and the piston means comprising a slab-like body member movable in alternate directions toward and away from the cutting grid means, said slab-like body member being engagable with the food for discharging the food from the receptacle upon one direction of movement of the piston means, and axially arranged protrusion members extending from one face of the body in a direction toward the cutting grid means for intermeshing therewith in one relative position therebetween.

4,342,243

CHAIN SAW STAND

Kendall Porritt, 12918 64th St., SE., Alto, Mich. 49302

Filed Dec. 5, 1980, Ser. No. 213,383
Int. Cl.³ B27B *17/02*; B27G *19/00*
U.S. Cl. 83—574 **5 Claims**



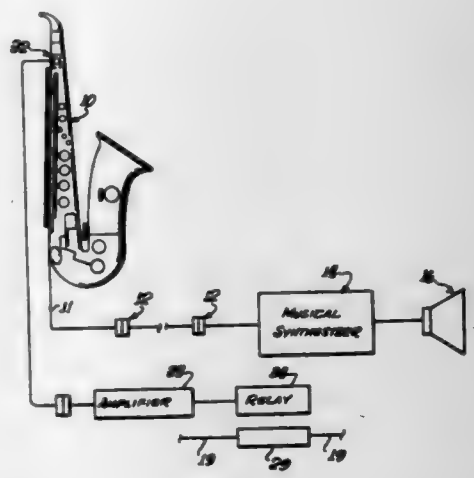
1. A chain saw stand comprising:
a stand having a top surface;
means to anchor a chain saw on said top surface with the chain saw blade extending in front of said stand;
a top lever pivotably mounted to said stand above said top surface so as to be adjacent to and generally parallel with said blade and slightly above it;
a throttle lever pivotably mounted on said surface positioned to engage the throttle trigger of said chain saw; and
resilient connecting means between the end of said top lever remote from said blade and the end of said throttle lever nearest said trigger whereby when a log is brought in contact with said blade, said log will cause said top lever to pivot downwardly which via said connecting means will cause said throttle lever to pivot upwardly to actuate said trigger to accelerate the engine of said saw for cutting said log and whereby the resilience of said connecting means will permit said top lever to continue pivoting downwardly while said log is moved downwardly during cutting after said throttle lever has completely depressed said trigger and cannot be pivoted upwardly further.

4,342,244

MUSICAL APPARATUS

William R. Perkins, 3872 Cody Rd., Sherman Oaks, Calif. 91403

Continuation of Ser. No. 853,255, Nov. 21, 1977, abandoned.
This application Jan. 31, 1980, Ser. No. 117,117
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **2 Claims**



1. A musical instrument adapted to produce acoustic tones;
playing means, mounted on said musical instrument, for causing said musical instrument to produce selected acoustic tones;

an electrophone operably attached to said musical instrument;

a quasi-keyboard for said electrophone—said quasi-keyboard being mounted on said musical instrument, and being adapted to cause the electrophone to produce electronic sounds regardless of whether or not said musical instrument is producing acoustic tones;

means, interconnecting said electrophone and said quasi-keyboard, for causing said electrophone to produce electronic sounds that are concomitant with selected acoustic tones;

said musical instrument is a trombone having a slide tone-control element;

tone-signal-producing means comprising a variable resistor;

means for associating said variable resistor with said slide tone-control element of said trombone musical instrument;

said variable resistor being thus sensitive to the instantaneous position of said slide tone-control element of said trombone, and thus producing an instantaneous resistive value and a tone signal associated with the instantaneous position of said slide tone-control element.

2. A musical instrument adapted to produce acoustic tones;

playing means, mounted on said musical instrument, for causing said musical instrument to produce selected acoustic tones;

an electrophone operably attached to said musical instrument;

a quasi-keyboard for said electrophone—said quasi-keyboard being mounted on said musical instrument, and being adapted to cause the electrophone to produce electronic sounds regardless of whether or not said musical instrument is producing acoustic tones;

means, interconnecting said electrophone and said quasi-keyboard, for causing said electrophone to produce electronic sounds that are concomitant with selected acoustic tones;

said musical instrument comprising an integral octave key adapted to produce acoustic tones one octave above the normal acoustic tones of said musical instrument;

means comprising an octave-key tone switch associated with said octave key, for automatically causing said electrophone to produce electronic sounds that are concomitant with said octave acoustic sounds.

4,342,245

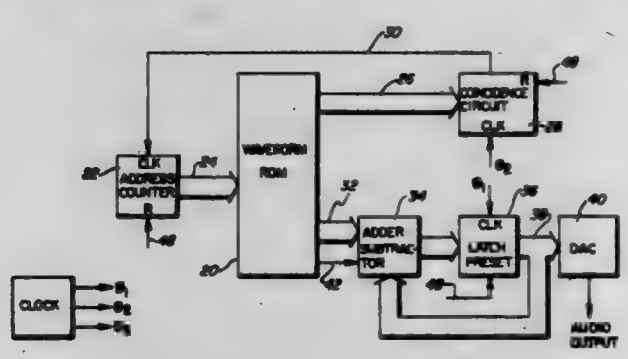
COMPLEX WAVEFORM GENERATOR FOR MUSICAL INSTRUMENT

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., White Plains, N.Y.

Continuation of Ser. No. 88,551, Oct. 26, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,764

Int. Cl.³ G10H *1/06, 7/00*

U.S. Cl. 84—1.01 **25 Claims**



1. A tone source apparatus for an electronic musical instrument comprising:

a source of clock pulses having a period defining a unit time interval;

memory means having a plurality of sequential addresses each storing an instruction defining a segment of a waveform, each of said instructions comprising at least first, second and third sub-instructions comprising, respectively, a code representing the time duration measured in terms of a number of said unit time intervals, a code representing a value corresponding to at least the amplitude variation per said unit time interval and a code representing the direction of slope of the associated waveform segment;

an address counter clockable for accessing said memory addresses in sequence;

coincidence means for clocking said address counter in response to the occurrence of a number of said unit time intervals equal to the value of said first sub-instruction of the currently accessed memory address;

counting means responsive to said clock pulses and to said second and third sub-instructions for reversibly counting up or down in accordance with said third sub-instruction in increments according to said second sub-instruction; and

control means interposed between said memory means and said counting means for selectively modifying said second sub-instruction for changing the counting increments of said counting means;

whereby the output of said counting means comprises a series of signal segments as defined by said memory means and said control means.

4,342,246

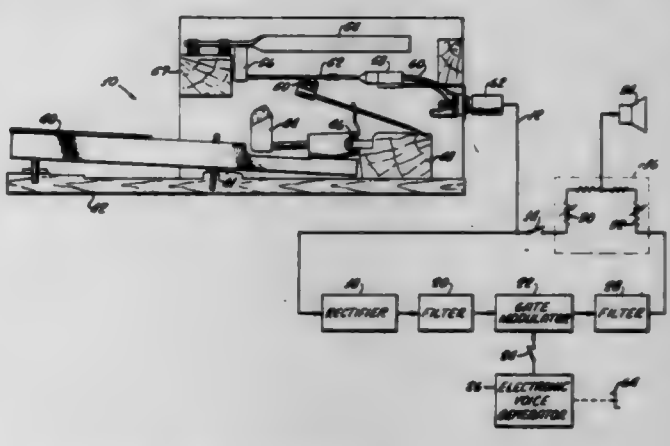
MULTIPLE VOICE ELECTRIC PIANO AND METHOD

Harold B. Rhodes, La Habra, and James B. Murphy, Costa Mesa, both of Calif., assignors to CBS Inc., New York, N.Y.

Filed Jun. 24, 1980, Ser. No. 162,487

Int. Cl.³ G10H *3/00*

U.S. Cl. 84—1.04 **21 Claims**



1. An electric piano comprising

a player actuated key,

a vibratory tine mounted to be struck and set into vibration in response to pressing of said key,

transducer means for sensing vibration of said tine and generating a piano voice signal,

means for converting said signal into sound,

means responsive to the vibration of said tine, as transduced by said transducer means, for generating a control signal having an amplitude envelope that corresponds to the amplitude envelope of said piano voice signal,

an auxiliary tone generator for generating an electronic tone signal,

modulator means responsive to said control signal generating means and to said auxiliary tone generator for impressing the amplitude envelope of said control signal upon said electronic tone signal to provide an amplitude modulated electronic tone signal,

said modulator means comprising clipping diode means connected to be responsive to said control signal and to said electronic tone signal for amplitude modulating said electronic tone signal in response to said control signal, an operational amplifier responsive to said control signal for overcoming the conduction threshold of said diode means,

and means for combining said modulated electronic tone

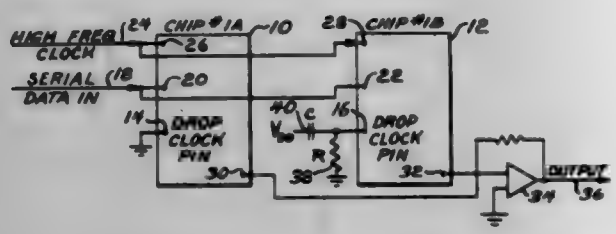
signal with said piano voice signal prior to conversion of said piano voice signal to sound.

4,342,247

PRODUCTION OF DETUNING EFFECTS IN AN ELECTRONIC MUSICAL INSTRUMENT

Anthony C. Ippolito, DeKalb, and William R. Hoskinson, Elburn, both of Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Aug. 28, 1980, Ser. No. 182,121
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **10 Claims**



1. In an electronic musical instrument including a plurality of integrated circuit tone generator chips each including tone generator and detuning circuit means responsive to a predetermined detuning control signal for detuning the tones produced by said tone generator and wherein at least one pair of said integrated circuit tone generator chips are commonly assigned for the simultaneous production of the same tones, a celeste system comprising: detuning control circuit means including signal producing means for producing at least one predetermined detuning control signal and signal selection means for selectively applying said at least one predetermined detuning control signal to the detuning circuit means of at least one of said at least one pair of commonly assigned tone generator chips to cause a predetermined amount of detuning of the tones produced thereby with respect to the other of said at least one pair of commonly assigned tone generator chips, the tone signal outputs of said at least one pair of integrated circuit tone generator chips thereby being detuned relative to each other so as to produce a celeste effect, said detuning control circuit signal producing means comprising selected capacitor means and selected resistor means coupled in series circuit between a reference voltage and ground, said signal selection means selectively coupling a junction between said capacitor means and said resistor means with said detuning means of said at least one of said at least one pair of commonly assigned tone generator chips.

4,342,248

ORCHESTRA CHORUS IN AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, and Leslie J. Deutsch, Glendale, both of Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

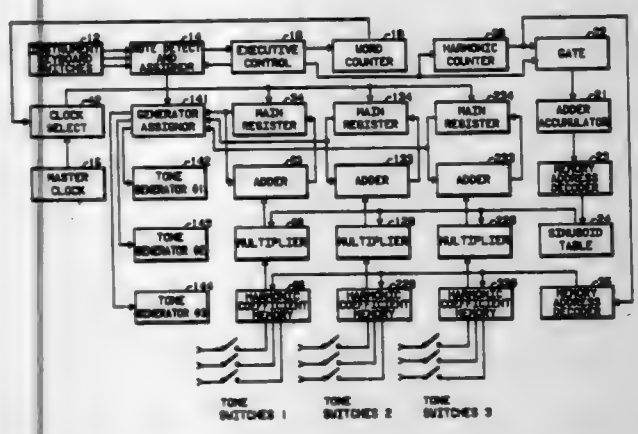
Filed Dec. 22, 1980, Ser. No. 218,884
Int. Cl.³ G10H *1/02, 1/22*
U.S. Cl. 84—1.24 **11 Claims**

1. In a musical instrument having a multiplicity of tone generators which are assigned to actuated keyswitches contained in a keyboard array of keyswitches, having keyswitches each operable in an unactuated or actuated keyswitch state, apparatus for creating an orchestra chorus wherein each assigned tone generator produces a designated audible musical tone color according to a tone priority logic that assigns a different tone color to each assigned tone generator comprising:

a plurality of waveshape generators each of which creates a musical waveshape and wherein said waveshape generators are designated by a generator index number j=1,2, . . . , M where M is the total number of the plurality of waveshape generators,

a note detection means for detecting the keyswitch states of keyswitches in said keyboard array of switches and wherein a new note signal is generated corresponding to each keyswitch whose keyswitch state changes from an unactuated to an actuated keyswitch state,

a plurality of tone generators each of which converts a musical waveshape created by said plurality of waveshape generators to an audible musical tone color, and



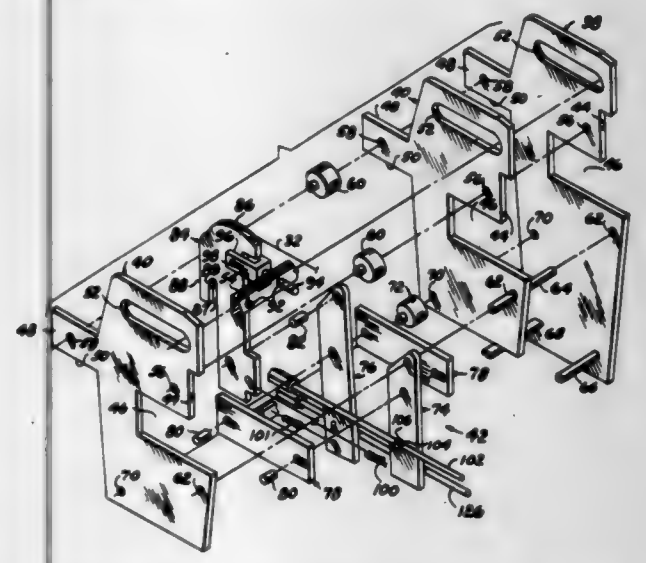
an assignor means responsive to said new note signal whereby each of said musical waveshapes created by said plurality of waveshape generators are transferred to said plurality of tone generators according to a tone priority logic thereby producing said orchestra chorus musical effest.

4,342,249

STRING MOUNTING PITCH CHANGING APPARATUS FOR A PEDAL STEEL GUITAR

Robert C. McCormick, and Tom H. McCormick, both of 1100 N. Union Bower, Irving, Tex. 75061

Filed Dec. 15, 1980, Ser. No. 217,343
Int. Cl.³ G10D *3/14*
U.S. Cl. 84—312 P **2 Claims**



1. In combination with a pedal steel guitar having a string secured at one end portion to a string tightening peg at the neck end of the guitar and having an opening in its other end, the improvement comprising:

plate assembly means including a plurality of pivotally interconnected levers extending vertically through the guitar opening for mounting and controlling the tension of said string, said plate assembly means including a displaceable puller arm having an arcuate surface over which the other end portion of said string passes,

a pair of end plates disposed in parallel spaced-apart relation transversely of said guitar,

a pair of inner plates interposed between said end plates in parallel spaced-apart relation,

a stop rod and a stop bar extending horizontally between said end plates, below said inner plates, in parallel spaced-apart relation,

a shaft extending transversely through said end plates and said inner plates in vertically spaced relation above said stop rod,

a raising lever interposed between said inner plates and pivotally connected at its upper end portion with said shaft for vertical swinging movement of its lower end portion toward and away from the guitar neck end,

a lowering lever interposed between said inner plates adjacent said raising lever and pivotally connected at its upper end portion with the depending end portion of said puller arm,

a generally horizontal link pivotally connected at its respective end portions with said raising lever and said lowering lever intermediate their ends, and,

spring means normally biasing the depending end portion of said puller arm toward the guitar neck end and normally biasing the depending end portion of said raising lever and said lowering lever toward said stop rod and said stop bar, respectively;

means for securing the string to said puller arm;

means for displacing said puller arm in predetermined directions to selectively vary the tension of said string,

said displacing means including at least one axially movable elongated rod,

a pedal actuated pivotable activator,

a clip securing at least one said movable rod to said raising lever and said lowering lever, respectively, and,

a ferrule surrounding the respective said movable rod and contacting said clip in response to axial movement of said movable rod in one direction;

means for selectively coupling said rod and said activator for selectively controlling displacement of said puller arm in a predetermined direction of predetermined magnitude by axial movement of said movable rod and consequently the tone of said string; and,

harmonic string tuning means transversely supported by said end plates and said inner plates including a pivot pin projecting transversely through and pivotally supporting said puller arm during its displacement in said predetermined directions,

said end plates and said inner plates each being provided with a horizontal slot in their upper end portions in cooperative horizontally aligned relation transversely of said guitar,

said harmonic tuning means further including a tuning bar extending through the horizontal slots,

a yoke having transversely apertured legs straddling an intermediate portion of said puller arm for receiving said pivot pin, and,

a harmonic adjusting screw threadedly extending through said tuning bar and abutting said yoke for discrete displacement of said puller arm in said predetermined directions.

4,342,250

HARMONICA

Frederick B. Robjent, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 22, 1980, Ser. No. 114,258
Int. Cl.³ G10D *7/12*
U.S. Cl. 84—377 **8 Claims**

1. A harmonica comprising:

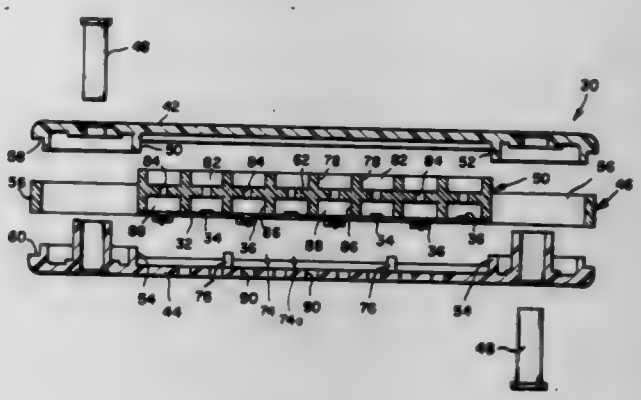
first, second and third members cooperating to form a housing, said first and second members forming outer walls of said housing and said third member dividing said housing into first and second chambers;

a plurality of first passages extending through said first member from the exterior of said housing into said first chamber;

a plurality of second passages through said second member from said second chamber to the exterior of said housing;

a reed plate having a plurality of reeds attached thereto disposed within said second chamber;

a plurality of third passages through said third member, from said first chamber to said second chamber, said second and third passages characterized by a size and shape effective



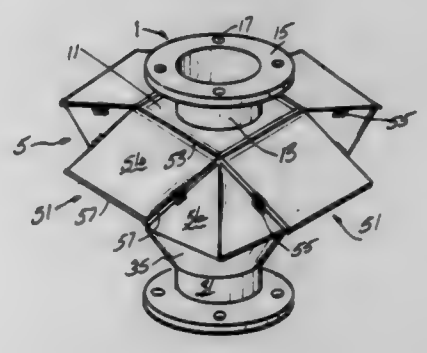
to block the passage of a reed out of said second chamber in the event a reed becomes separated from said plate.

4,342,251

ANTI-DETONATION POWDER SAFETY DEVICE

Richard W. Wahlfeldt, El Paso, Tex., and David R. Field, St. Marks, Fla., assignors to Olin Corporation, Stamford, Conn.

Filed Mar. 3, 1980, Ser. No. 126,232
Int. Cl.³ C06B *21/00*; F42B *33/00*
U.S. Cl. 86—1 R **14 Claims**



1. A safety device for preventing detonation of a quantity of powder in a bulk handling system, said device comprising:

an inlet member;

an outlet member in spaced relation to said inlet member and concentric therewith;

a plurality of box-like, open-ended body members serially interconnected and symmetrically disposed between said inlet and outlet members and defining therebetween a central chamber and a plurality of wing chambers communicating therewith, said wing chambers provided with openings having a total surface area sufficient to allow non-detonative escape of gaseous combustion products from ignition of powder to be contained therein, each of said body members including at least one wall member, normally closing said opening, and pressure responsive means for allowing said at least one wall member to open in response to a predetermined pressure increase in any of said chambers whereby said chambers and conveying member may be vented to the atmosphere.

4,342,252

TANDEM ROCKET LAUNCHER

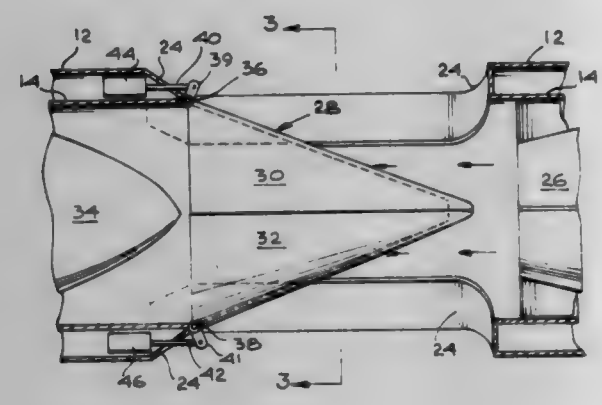
Allen C. Hagelberg, Diamond Bar, and Clark E. Allardt, Claremont, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Mar. 25, 1980, Ser. No. 133,756
Int. Cl.³ F42C *15/06*
U.S. Cl. 89—1.812 **8 Claims**

1. A tandem rocket launcher comprising:

a cylindrical launch tube with forward and rearward rocket positioning means for plural axially aligned rockets;

rocket exhaust gas escape means mounted between said forward and rearward positioning means; and



conical exhaust gas deflection means positioned adjacent said escape means effective to prevent impingement of forward rocket launching exhaust gases upon rearward rockets, said deflection means being removable from the path of a rearward rocket subsequent to firing of a forward rocket.

4,342,253

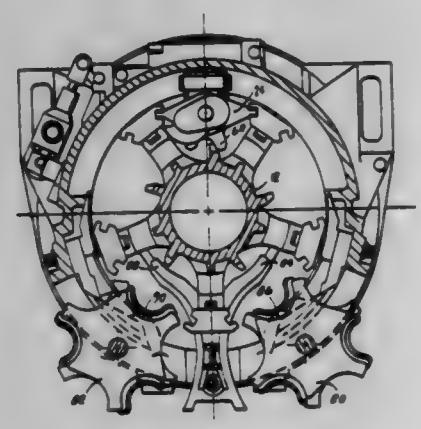
SPROCKET ARRANGEMENT IN A HIGH RATE OF FIRE REVOLVING BATTERY GUN

Robert G. Kirkpatrick, Shelburne, and Stephen A. Jarvis, Colchester, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Apr. 7, 1980, Ser. No. 137,704

Int. Cl.³ F41D *10/30*

U.S. Cl. 89—12 **3 Claims**



1. A gun including:

a housing having a main cam and a longitudinal axis;

a rotor, having a plurality of gun barrels disposed in an annular row about said axis, and a like plurality of gun bolts disposed in an annular row about said axis, and journaled for rotation in said housing about said axis;

each of said gun bolts having a cam follower engaged with said main cam whereby as said rotor and said row of barrels and said row of gun bolts rotate about said axis, said main cam drives each of said gun bolts in sequence longitudinally to and between an aft dwell position and a forward dwell position;

sprocket means journaled for rotation in synchronism with said rotor for handing a round of ammunition with its base onto the face of each of said gun bolts in sequence as the respective gun bolt passes through its respective rear dwell position,

means interrelating said sprocket means and said main cam so that each of said gun bolts is in its respective rear dwell position as the base of the respective round of ammunition is initially handed transversely onto said face of said gun bolt, but not coaxial with said gun bolt, and subsequently said gun bolt, as said rotor rotates about said axis, proceeds to move longitudinally forwardly while the round, as said sprocket rotates, continues to move transversely along the face of said gun bolt to a disposition whereat the round is coaxial with said gun bolt.

4,342,254

CIRCUIT FOR HYDROSTATICALLY OPERABLE DEVICES

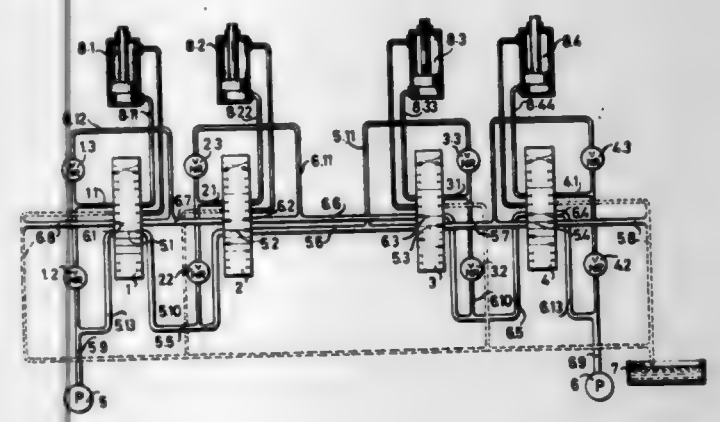
Udo Reinecke, Dortmund-Kirchhörde, and Jürgen Gerber, Ergste, both of Fed. Rep. of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 880,839, Feb. 23, 1978, abandoned, which is a continuation of Ser. No. 671,157, Mar. 29, 1976, abandoned, which is a continuation of Ser. No. 535,824, Dec. 23, 1974, abandoned. This application Mar. 31, 1980, Ser. No. 136,084

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1973, 2364282

Int. Cl.³ F01B *25/02*; F15B *11/00*

U.S. Cl. 91—6 **1 Claim**



1. A hydraulic system for actuation of working devices on construction machines including lifting and lowering movements of excavating scoops with which a plurality of hydraulic devices are operated by fluid pressure delivered by fluid flow from a hydraulic tank by two pumps, each hydraulic device being operable by pressure from both pumps or each of any two devices being operable independently by pressure from one of said pumps, said system comprising in combination two hydraulic circuits having opposite ends including discharge ends as well as fluid circulating passages thereto and having two pumps connected to opposite ends of said hydraulic circuits to provide fluid flow from the tank under pressure through circulating passages to the discharge ends at the opposite ends of said hydraulic circuits, said two pumps including a first pump connected to one end of one hydraulic circuit and a second pump connected to the opposite end of the other hydraulic circuit to produce fluid flow in opposite directions through circulating passages in said hydraulic circuits to discharge outlets at the ends of said hydraulic circuits, a plurality of hydraulic devices operable by fluid pressure connected in parallel to said fluid circulating passages to receive fluid pressure from said passages, and conduits connecting both said circulating passages to each of said hydraulic devices to receive fluid pressure from said circulating passages, so that each hydraulic device may be operated by fluid under pressure from the two circulating passages, each hydraulic device being connected to two fluid circulating passages through check valves each having a pressure connection therewith and which allow passage of fluid to said hydraulic device to operate said device, a plurality of control valve devices, each of which controls the connection of one of said hydraulic devices to said fluid circulating passages for the flow through the conduit to one of said hydraulic devices and is movable from neutral position to actuating position to connect the corresponding hydraulic device through its conduit to said fluid circulating

passages, each control valve device having fluid circulating passages for fluid flow through said circuits when said control valve device is in neutral position, so that said fluid circulating passages are continuous from the pumps to the discharge ends when all control valve devices are in neutral position, each control valve device when moved to actuating position connecting the two circulating passages to the corresponding hydraulic device through its conduit to operate said hydraulic device corresponding therewith, each control valve device in actuating position closing the two circulating passages through said hydraulic circuits, so that the circulating passage on the downstream side of the control valve device is blocked by the control valve device in actuating position, and the hydraulic devices on the downstream side of said control valve device receive no fluid pressure from that hydraulic circuit, and the movement of any two control valve devices to their actuating positions serving to connect each of the corresponding hydraulic devices to one of said circulating passages, said first and second pumps each having fluid flow discharging to the hydraulic tank after flowing through said check valves so that fluid flow in the operatively ineffective position occurs through two conduits or circulating passages capable of being closed off by said control valve device therewith in operatively effective position, each conduit having fluid flow therethrough amounting to capacity and conveying quantity of one pump associated therewith permanently in a relationship oppositely with respect to the relationship to the feed conveying direction of the other pump, each conduit under consideration upstream of each control valve device having a conduit branching to the pressure connection of the check valve open toward the control valve device associated therewith.

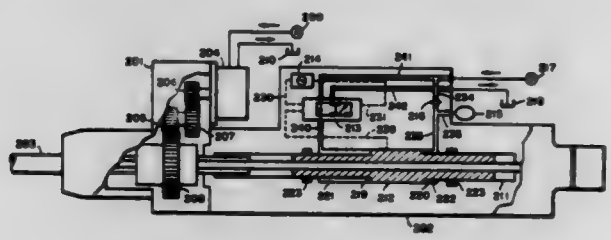
4,342,255
OSCILLATOR ACTUATED HYDRAULIC IMPULSE DEVICE

Takeo Watanabe, Yokohama, and Makoto Matsuda, Tokyo, both of Japan, assignors to Mitsui Engineering and Shipbuilding Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 11,438, Feb. 12, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,139

Int. Cl.³ F15B *21/02*; F01L *25/04, 21/02*

U.S. Cl. 91—40 **6 Claims**



1. An oscillator actuated hydraulic impulse device of the type including a spool valve actuated by an alternating signal from an oscillator to switch the hydraulic pressure in a double-acting cylinder in order to cause reciprocating motion of a piston which strikes a boring tool and the frequency of the oscillator is independent of the movement or position of the piston, said hydraulic impulse device being characterized by:

a rear end port provided in a rear chamber of said cylinder;

an accumulator coupled to said rear end port;

a flow line coupling said rear end port to a source of hydraulic fluid;

a check valve provided in said flow line;

a plurality of mid-point ports for controlling a transistion of said piston from an impulse stroke to a return stroke provided in said rear chamber further toward the midpoint of said cylinder than said rear end port which are opened and closed by movement of said piston; and

a further flow line coupling said plurality of mid-point ports to said spool valve.

4,342,256
CONTROL DEVICE FOR A HYDRAULIC MOTOR

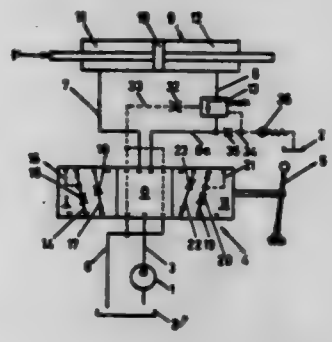
Hans S. Andersen, Augustenborg; Helge K. Christensen, and Preben Christiansen, both of Nordborg, all of Denmark, assignors to Danfoss, A/S, Nordborg, Denmark

Continuation of Ser. No. 833,877, Sep. 16, 1977, abandoned. This application May 22, 1979, Ser. No. 41,392

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1976, 2642337

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—420 **3 Claims**



1. A hydraulic motor assembly, comprising a motor having a piston forming first and second expansible chambers on opposite sides thereof, first and second ports respectively for said chambers, supply and return lines, a control valve between said lines and said motor, said control valve having first position supply and exhaust passages for respective fluid communication with said first and second motor ports and second position supply and exhaust passages for respective fluid communication with said second and first motor ports, said control valve first position exhaust passage being a throttle passage with a set throttle resistance for restricting the flow of fluid therethrough, a brake valve between said second motor port and said control valve, said brake valve having first and second through-flow ports respectively on the control valve and motor sides of said brake valve, said brake valve having first and second pressure chambers, piston means having first and second connected heads respectively in said pressure chambers and being separated by connection means to provide fluid flow passage means between said through-flow ports and between said heads, said piston means being bistable in valve opening and closing directions relative to said through-flow ports in respective response to oppositely acting pressures in said first and second pressure chambers, said second head being in valve throttling relation to said first through-flow port, means biasing said brake valve toward a position of said second head blocking said first through-flow port, scanning contrl port means for said brake valve having fluid communication with said first pressure chamber thereof for sensing supply pressure downstream of said supply passage of said control valve for said first position of said control valve, fluid connecting means between said first brake valve through port and said second brake valve pressure chamber, the pressure at said first brake valve through-port and in said second brake valve chamber thereby being directly responsive to the rate of fluid flow through said brake valve due to the fluid flow restrictive action of said first position exhaust throttle passage when said control valve is in its first position, said fluid flow restrictive action being sufficient to significantly affect the pressure in said second brake valve chamber to increase the valve closing force thereof upon in increase in the rate of fluid flowing through said brake valve.

4,342,257
ROTARY ACTUATOR WITH INTEGRAL FLUID COUPLING JOINT

Paul P. Weyer, 48811 284th SE., Enumclaw, Wash. 98022

Filed Apr. 28, 1980, Ser. No. 144,196

Int. Cl.³ F01B *3/00*

U.S. Cl. 92—31 **4 Claims**

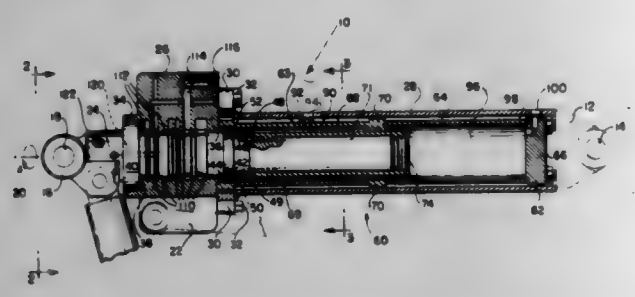
1. In a boom assembly having a rotary actuator for rotating

a fluid operated tool or other device and an integral rotary fluid coupling for said actuator, comprising:

an actuator housing fastened to one of said boom or tool and having an axial bore formed therein, an output shaft of said rotary actuator fastened to the other of said boom or tool and rotatably mounted within said bore;

drive means coupled to said shaft within said housing for rotating said shaft to rotate said tool relative to said boom;

said housing including a combined fluid slip coupling and shaft bearing mount having a plurality of sealed fluid chambers formed between said actuator housing and said rotatable output shaft, said fluid slip coupling and bearing



mount also including shaft bearings for axially and radially supporting the output shaft in said housing, said bearings being located on opposite sides of said sealed fluid chambers;

first fluid ports formed in said slip coupling and bearing mount for connection to said fluid chambers and adapted to be connected to a fluid pressure source;

second fluid ports formed in said output shaft for connection to said chambers and adapted to be connected to a fluid operated device connected to said shaft whereby the fluid operated device is provided with fluid without twisting of fluid lines.

4,342,258

VENTILATOR

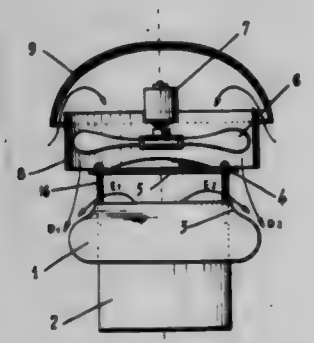
Michel H. Zaniewski, Avenue Ferdinand de Lesseps, 34110 Frontignan, France

Filed Jun. 16, 1980, Ser. No. 159,653

Claims priority, application France, Jun. 18, 1979, 79 16182

Int. Cl.³ F23L *17/02*

U.S. Cl. 98—78 **6 Claims**



1. A ventilator for use in combination with a conduit having an upwardly open mouth of predetermined shape and flow cross section, said ventilator comprising:

a generally toroidal annular flow body surrounding said conduit immediately below said mouth and having an outer wall having a lower portion spaced outwardly from said conduit and an outwardly concave and curved upper portion extending upward and inward from said lower portion to said conduit and merging with said conduit substantially at said mouth; and

means including

a horizontal deflector disk suspended above said mouth and fixed adjacent said body, said disk having an outer periphery extending outwardly beyond said mouth and defining with said mouth an annular gap having a flow cross section greater than that of said mouth, and

a fan including a drive motor fixed above said disk, an axial-throughput impeller rotatable about an upright axis by said drive motor and extending radially horizontally beyond said disk, a sleeve closely surrounding said impeller and centered on said axis, and

a cover spacedly fixed above said sleeve for generating an air stream that moves downwardly around said periphery of said disk and across said gap for inducing air flow over said body and thereby creating a low-pressure zone at said mouth.

4,342,259

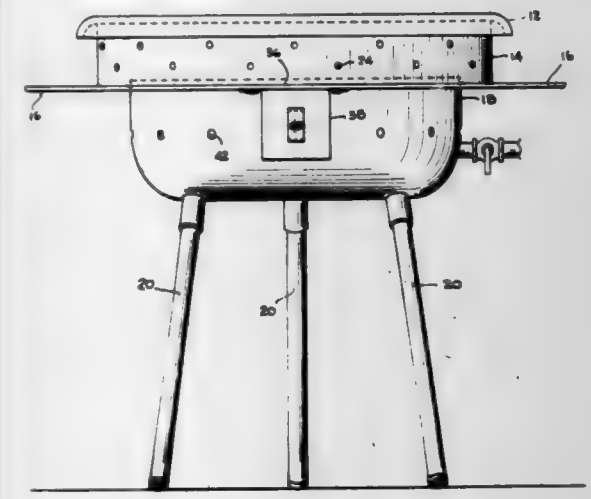
COOKING GRILL

John C. Lee, 4917 Genesta St., Encino, Calif. 91316

Continuation of Ser. No. 133,620, Mar. 3, 1980, abandoned. This application Apr. 9, 1981, Ser. No. 252,395

Int. Cl.³ A47J *37/10, 27/00*

U.S. Cl. 99—425 **7 Claims**



1. A grill comprising:

(a) a solid grill plate including grooves evenly spaced across the top surface of said grill plate for retaining grease and liquid to burn and flavor food cooked thereupon;

said grooves being from 1/16″ to 3/16″ wide, 1/16″ to 3/16″ deep and positioned from ¾″ to 1″ apart;

said grill plate curving downwardly at the perimeter portion thereof facilitating the runoff of grease and liquid therefrom;

(b) heating means for heating said grill plate;

(c) housing means for supporting said heating means and said grill plate, said housing means including air intake passages for allowing air to enter said housing means where said air is warmed by said heating means;

(d) said housing means comprises a one-piece steel bowl;

(e) collar means supported by said housing means for supporting said grill plate, said collar means including means for defining air intake passages for allowing cool air to pass and mix with said air warmed by said heating means to cool said warmed air; said collar means being displaced from said housing means to provide an air egress passage for allowing the cool air to be exhausted; and

(f) base means for supporting said housing means.

4,342,260

APPARATUS FOR PRINTING FABRICS WITH A SCREEN PRINTING PROCESS

Enrico Sala, Via Emilia Ovest, 57, Fidenza (Parma), and Rino Ricchetti, Via Lisoni, 6, Parma, both of Italy

Filed Sep. 4, 1980, Ser. No. 184,012

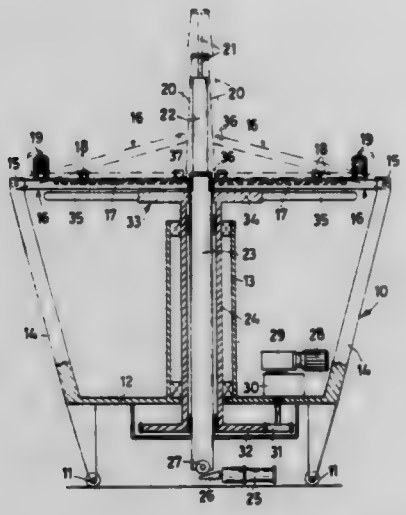
Claims priority, application Italy, Sep. 7, 1979, 25545 A/79

Int. Cl.³ B05C *17/06, 17/04*

U.S. Cl. 101—126 **2 Claims**

1. In an automatic apparatus for printing fabrics, particularly

finished garments, of the type provided with a plurality of printing screens which are lowered and raised with respect to a rotatable garment support member, the improvement comprising a substantially horizontal base member bounded by a peripheral outer region, support arms extending upwardly from the outer peripheral region of said base member, a hollow cylindrical column extending substantially vertically upwardly from the central region of said base member, a tubular outer shaft extending through said column and rotatably supported coaxially therein, a polygonal radial flange mounted at the top of said outer shaft, forms for mounting the garments to be printed removably supported on and radially extending from edges of said flange means at the lower end of said outer shaft to rotate said outer shaft in predetermined stepwise fashion to move said forms between successive printing positions, a plurality of printing screens radially oriented relative to said outer shaft and pivotally mounted at their outermost ends to the upper ends of said support arms and extending radially inwardly therefrom to overly said forms in the printing position,



an inner shaft coaxially supported within said outer shaft for relative axial movement with respect thereto and extending through the lower end and through said flange at the upper end thereof, cam means mounted on said base member operably engaging the lower end of said inner shaft to raise and lower it a predetermined amount, a hydrodynamic piston and cylinder means mounted on the upper end of said inner shaft and extending coaxially upwardly therefrom, a piston rod attachwed to said piston and extending upwardly, flexible cable members each connected at one end to an upper end of said piston rod and at the other end to a respective one of said printing screens, said inner shaft and said piston and cylinder means operating cooperatively so that raising of said inner shaft by said cam means raises said printing screens simultaneously from the printing position an incremental amount to allow rotation of said forms between said successive printing positions, and extension of said piston rod raises said printing screens a substantially greater amount about their outer pivoted ends to allow access to said screens for replacement thereof and for servicing the apparatus.

4,342,261

SHAPED CHARGE WARHEAD WITH MECHANICAL MEANS FOR PREVENTING ROTATION

John N. Majerus, Rising Sun, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 23, 1980, Ser. No. 161,710

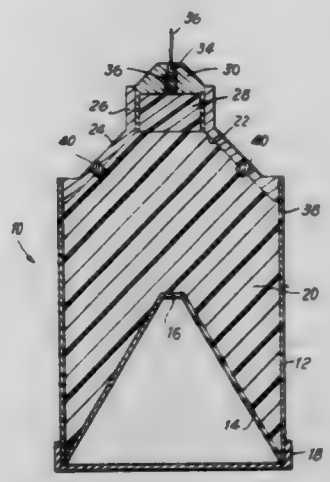
Int. Cl.³ F42B *1/02*

U.S. Cl. 102—307 **9 Claims**

1. A shaped-charge warhead comprising:

a generally cylindrical casing having an open rear end and a forward end closed by a generally conical liner;

a solidified mass of explosive material in said casing in contact with said casing and said liner; and



mechanical means for preventing rotation of said mass of explosive material in said casing.

4,342,262

CARRIER MISSILE FOR EJECTABLE BODIES

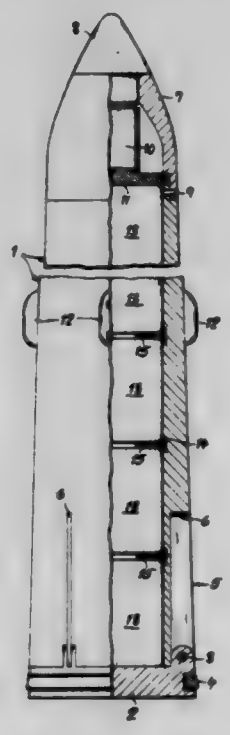
Rudolf Romer, Kaarst; Rolf Hellwig, and Dietmar Karius, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 22, 1977, Ser. No. 772,550

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1976, 2607336

Int. Cl.³ F42B *13/50*

U.S. Cl. 102—489 **7 Claims**

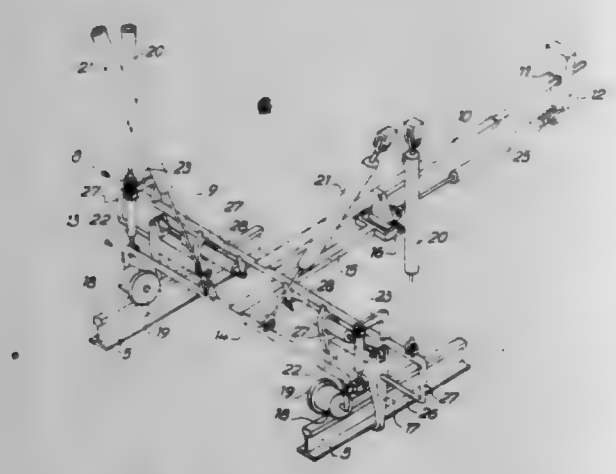


1. A carrier missile for ejectable bodies such as satellite missiles, mines and the like, adapted to be launched from a barrel, comprising a split missile envelope provided with a bottom and a head, designed to receive several aligned bodies, resting against partitions, which upon traverse of a certain flight path are released by the castoff of the missile head and the flipping-open of the missile envelope, said missile envelope being formed from half-shells and hingedly connected with the missile bottom, with a cylindrical interior and with an exterior converging conically toward the missile point, whose inner wall is provided with spaced-apart annular grooves receiving several partitions, individually supporting the bodies to be ejected, which in turn engage with their ends in the annular grooves in such a way that upon launching they clamp the half-shells of the missile envelope together but release them upon the ejection of the bodies.

4,342,263
RAILWAY WORK-SITE MACHINE EQUIPPED WITH A MECHANICAL UNIT FOR DISPLACEMENT OF THE TRACK

Hans Hurni, Ecublens, Switzerland, assignor to Sig Societe Industrielle Suisse, Chutes du Rhin, Switzerland

Filed Nov. 19, 1980, Ser. No. 208,134
Claims priority, application Switzerland, Dec. 19, 1979, 11293/79
Int. Cl.³ E01B 33/06, 33/21
U.S. Cl. 104—7 B 6 Claims



1. In a railway work-site machine having a chassis and a track displacing mechanical unit articulated in all azimuths and connected to said chassis by lifting, shifting and longitudinal displacement jacks, which unit comprises a shifting roller wheel with inner flange and an outer lifting hook mounted in opposition to each other on opposite sides of each line of rails for the guiding thereof on the track and for the grasping of the rails and means for adjusting the height and track respective transverse position of each lifting hook with respect to the roller wheel associated therewith, the improvement of the track displacing mechanical unit being composed of a hook support comprising a transverse girder on the two ends of which the two lifting hooks are mounted movable and adjustable transversely to the track and of a roller wheel support comprising a transverse girder parallel to the hook support girder and on the two ends of which the two shifting flanged roller wheels are mounted in fixed position, wherein one of said two transverse girders is connected to the chassis of the machine by a full-azimuth articulation device comprising at least one longitudinal displacement jack, said girder having a pivot on which is articulated and pivotally mounted in a plane perpendicular to said two girders at least one connecting arm to which is fastened the other girder, wherein the lifting jacks are connected to the lifting hook support and the shifting jacks are connected to the shifting roller wheel support, and wherein the two transverse girders of said two supports are connected by at least one jack for the adjustment of their height difference, whereby each lifting and shifting action passes directly from the lifting and shifting jacks to the hooks and flanged roller wheels.

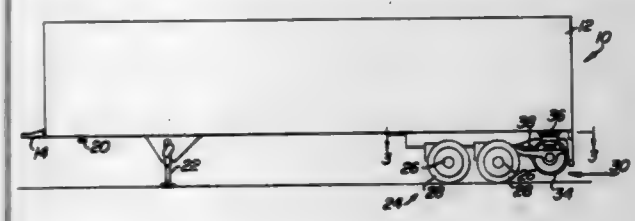
4,342,264
CONVERTIBLE RAIL-HIGHWAY SEMI-TRAILER FLUID SUSPENSION

Eugene Hindin, Bala Cynwyd, Pa.; Alan R. Cripe, and Christopher A. Cripe, both of Richmond, Va., assignors to Bi-Modal Corporation, Greenwich, Conn.

Filed Feb. 28, 1980, Ser. No. 125,505
Int. Cl.³ B60F 1/04; B61D 3/00; B61F 13/00; B62D 61/12
U.S. Cl. 105—215 C 12 Claims

1. In a vehicle having a wheel-set axle unit, an air spring suspension for the wheel-set axle unit comprising a load support member mounted to the axle and including a vertical bore, an air chamber member secured to the underside of the vehicle frame, and invaginating air bag clamped between said load support and air chamber member, a vertical shaft slidable in said vertical bore, a plate fixed to the upper end of said shaft, spring means normally urging said shaft and plate upwardly towards the vehicle frame to a vehicle supporting position, and pneumatically operable means holding said shaft in said support position and retractable to a release position which allows retraction of said shaft when air is vented from said air bag.

2. In a vehicle having a wheel-set axle unit, an air spring suspension for the wheel-set axle unit comprising a load support member mounted to the axle and including a vertical bore, an air chamber member secured to the underside of the vehicle frame, an invaginating air bag clamped between said load support and air chamber member, a vertical shaft slidable in said vertical bore, a plate fixed to the upper end of said shaft, spring means normally urging said shaft and plate upwardly towards the vehicle frame to a vehicle supporting position, and pneumatically operable means holding said shaft in said support position and retractable to a release position which allows retraction of said shaft when air is vented from said air bag wherein said pneumatically operable means includes a horizontal bore in said load support member opening into said vertical bore, a support stop pin slidable in said horizontal bore, spring means urging said pin towards said vertical bore so that its inner end engages the lower end of said shaft and supports the



same in its uppermost position and means to retract said pin to said release position when air is vented from said air bag.

8. In a vehicle convertible from highway to railroad mode of travel and vice versa including a body, a highway wheel-set axle unit, air spring means supporting said body on said highway wheel-set unit, a rail wheel-set axle unit and air spring means supporting said body on said rail wheel-set axle unit; said rail wheel-set axle unit air spring means comprising a load support member mounted to the axle including a vertical bore and a horizontal bore communicating therewith, an air chamber member secured to the underside of the body, an invaginating air bag clamped between said air chamber and said load support member, a vertical shaft slidable in said vertical bore and including a plate fixed to the upper end thereof, spring means urging said shaft and plate upwardly towards said body, a supporting stop pin slidable in said horizontal bore, spring means urging said pin towards said vertical bore and in position to have its inner end engage the lower end of said support said shaft, an airstroke cylinder and a pivoted lever operative by said airstroke cylinder and engaging said support pin whereby depressuring said air bag will simultaneously increase the air pressure in said air stroke cylinder and cause said lever to retract said pin until its inner end clears the lower end of said shaft.

4,342,265
CONVERTIBLE RAIL-HIGHWAY SEMI-TRAILER AXLE LIFTING AND RETAINING MECHANISM

Eugene Hindin, Bala Cynwyd, Pa.; Alan R. Cripe, and Christopher A. Cripe, both of Richmond, Va., assignors to Bi-Modal Corp., Greenwich, Conn.

Filed Feb. 28, 1980, Ser. No. 125,507
Int. Cl.³ B60F 1/04; B61D 3/00; B61F 13/00; B62D 6/12
U.S. Cl. 105—215 C 13 Claims

1. In a convertible rail-highway semi-trailer including a body, a rail wheel-set axle unit and air spring means supporting the body, a highway wheel-set axle unit and air spring means supporting the body on the highway wheel-set axle unit independently of the rail wheel-set axle unit; a mechanism for lifting and retaining the rail wheel-set axle unit in the elevated stored position in a highway mode when the highway wheels

engage the ground and to release said rail wheel-set axle unit upon conversion from the highway mode to a rail mode, said mechanism comprising at least one hook member, means rotatably mounting said hook member to the underside of the body for movement into and out of engagement with a part of the rail wheel-set axle unit, actuating means operatively connected to said hook member causing engagement of said hook member with said rail wheel-set axle unit in response to a deflation of the rail air spring means and selectively to release said engagement in response to an inflation of said rail air spring means and means to prevent air from inflating said rail air spring means while said hook member is engaged with said rail wheel-set axle unit.

5. In a convertible rail-highway semi-trailer including a body, a rail wheel-set axle unit and air spring means supporting the body, a highway wheel-set axle unit and air spring means supporting the body on the highway wheel-set axle unit independently of the rail wheel-set axle unit; a mechanism for lifting and retaining the rail wheel-set axle unit in the elevated stored position in a highway mode when the highway wheels engage the ground and to release said rail wheel-set axle unit upon conversion from a highway mode to a rail mode, said mechanism comprising at least one hook member, means rotatably mounting said hook member to the underside of the body for movement into and out of engagement with a part of the rail wheel-set axle unit, and actuating means operatively connected to said hook member causing engagement of said hook member with said rail wheel-set axle unit in response to a



deflation of the rail air spring means and selectively to release said engagement in response to an inflation of said rail air spring means, said actuating means including an air cylinder, a piston rod operatively connecting said cylinder to said hook member, means selectively admitting and removing air from said cylinder whereby removal of air from said cylinder causes said piston to pull said hook member into engagement with said rail wheel-set axle unit and admission of air to said cylinder causes said piston rod to push said hook member out of engagement with said rail wheel-set axle unit, said means selectively admitting and removing air from said cylinder including a valve operatively connected to said chamber and means opening and closing said valve in response to the distance between the body and the rail wheel-set axle unit.

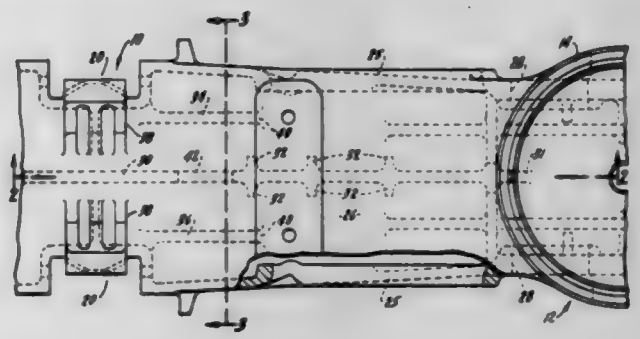
9. In a vehicle having a body, a wheel-set axle unit and air bags supporting said body; a mechanism for lifting and retaining said wheel-set axle unit in an elevated stored position when said air bags are deflated comprising at least one hook member, means rotatably mounting said hook member to the underside of said body and engageable with a part of said wheel-set axle unit, an air cylinder, a piston rod interconnecting said cylinder and said hook member, a valve operatively connected to said cylinder and means responsive to the distance between said body and said wheel-set axle unit causing said valve to selectively open and close to admit air into and remove air from said cylinder and thereby pull said piston rod and hook member into an engaged lifting and retaining position and push said piston and hook member into a retracted position.

4,342,266

RAILROAD CAR TRUCK BOLSTER

Donald B. Cooley, Wheaton, Ill., assignor to Standard Car Truck Co., Park Ridge, Ill.

Filed Jul. 28, 1980, Ser. No. 172,559
Int. Cl.[3] B61F 5/04, 5/12, 5/50
U.S. Cl. 105—226 2 Claims



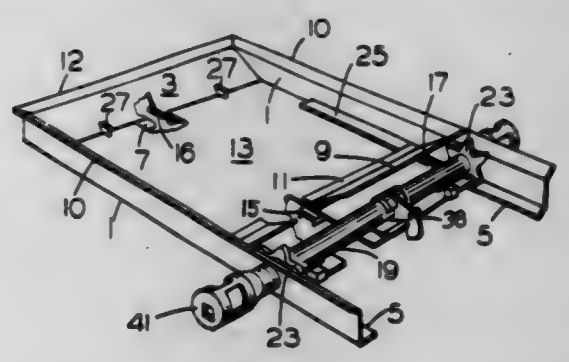
1. A bolster for use in a railroad car truck including spring seat areas at outer ends and a generally central section intermediate spring seat areas and of substantially greater vertical dimension than the spring seat areas, each of said spring seat areas including a pair of pockets positioned on opposite sides of the bolster for positioning a dampening wedge, a vertical reinforcing rib extending from the central section into the spring seat areas, the central section having slanted bottom walls which merge with bottom walls of the spring seat areas, the spring seat areas and central section being subject to loading in opposite vertical directions thereby creating areas of localized bending stress at the spring seat junction of the bottom walls and central section slanted bottom walls, the improvement comprising means for reducing such localized bending stress including separate ribs on each side of said vertical reinforcing rib and generally equally spaced therefrom, said separate ribs beginning generally inboard of a bolster wedge pocket and extending toward and terminating substantially short of the central section of said bolster, and an opening in said vertical reinforcing rib extending longitudinally through a portion of said vertical reinforcing rib, from the central section and terminating short of ends of said separate ribs.

4,342,267

HOPPER DISCHARGE UNIT WITH SLIDING GATE

Bennett O. Blout, Berwyn, Ill., assignor to Evans Products Company, Portland, Oreg.

Filed Aug. 13, 1980, Ser. No. 177,816
Int. Cl.[3] B61D 7/20, 7/22, 7/26
U.S. Cl. 105—282 P 20 Claims



1. A hopper discharge unit having spaced side and front and rear walls defining a rectangular outlet opening, a rectangular gate member comprising a uniformly flat plate sidably mounted in said opening for movement from a closed position blocking said opening to an open position clear of said opening and having longitudinally aligned uniformly spaced perforations in its side margins forming toothed racks wholly co-pla-

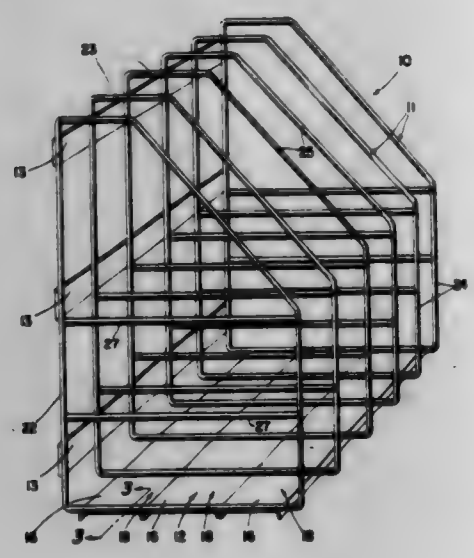
nar with said flat plate, an operating shaft journaled in said side walls rearwardly of said opening above said gate member and having pinions mounted on its end portions adjacent to said side walls and meshing with said perforations to cause movement of said gate member between closed and open positions responsive to rotation of said shaft.

4,342,268

VERTICAL STORAGE RACK

Alfred Grava, 1616 Sheridan Rd., South Euclid, Ohio 44121

Filed Jul. 9, 1979, Ser. No. 56,141
Int. Cl.³ B65D *19/44*
U.S. Cl. 108—55.1 **7 Claims**



1. A vertical storage system for sheet stock comprising a base and a plurality of laterally spaced separators fixed to and extending upright from the base, the base and separators defining a front, bottom, back, top and sides of the system, the base being formed of a set of inverted metal channels extending longitudinally continuously from one side of the system to the other in the mid-zone between the front and back, a web of each channel being in a common plane and collectively forming a support surface for sheet stock being slid thereon for loading, unloading or storage in the system, the separators being of substantially identical construction, each separator being formed of metal bar stock, the metal bar stock of a separator being fabricated into a generally planar network including a polygonal perimeter portion extending across the top and front of the system, a bottom of the perimeter portion being supported directly on the support surface, means extending across the back of the system tying adjacent separators together, the space between adjacent separators defining sheet receiving compartments, the compartments above the base and forward of the rack being substantially free of obstruction whereby sheet stock may be inserted and withdrawn from the front and top of each compartment and such stock abutting said tying means and resting on said base may extend from said compartments forwardly and upwardly of the front and top of the system during storage, said channels, separators, and tying means being sufficiently rigid to permit said system to be transported by the forks of a lift truck engaging the underside of the webs of the channels.

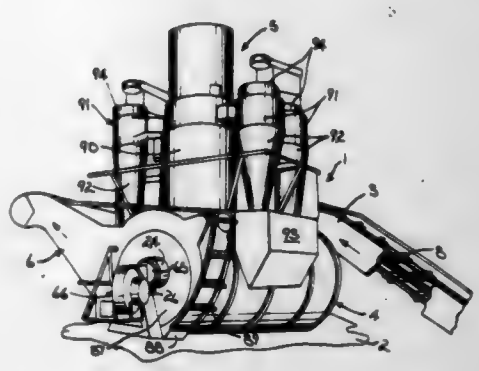
4,342,269

MATERIAL TREATING APPARATUS UTILIZING AN AUGER HAVING AN INTERNAL AIR SUPPLY AND HEAT TRANSFER SYSTEM

Gordon H. Hoskinson, 186 Mayfair Rd., Floral Park, N.Y. 11001

Filed Nov. 17, 1980, Ser. No. 207,666
Int. Cl.³ F23G *3/00*
U.S. Cl. 110—257 **13 Claims**

12. An incinerator, comprising a housing defining a combustion chamber, an auger mounted for rotation within the housing, feeding means for feeding waste to a first end of said combustion chamber, discharge means for discharging ash and non-combustible residue from the opposite end of the combustion chamber, said auger serving to convey the waste material in a downstream direction from the first end to the opposite end of the combustion chamber, said auger comprising a tubular shaft and a hollow spiral flight carried by the shaft and extending substantially the entire length of said combustion chamber, a tubular manifold spaced outwardly of the downstream end of the shaft, the downstream end of said flight being connected to the manifold and spaced radially outward from the shaft to provide a passage that provides communication between the manifold and an interior chamber in said flight, air supply means supplying air to the manifold, said air passing through said passage and into said interior chamber, said flight



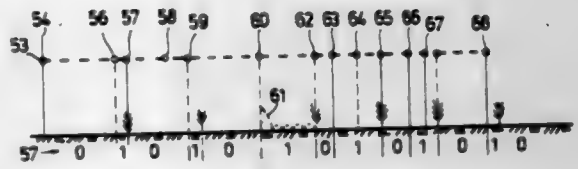
includes an upstream wall section and a downstream wall section that are spaced apart to define said interior chamber, said upstream wall section having a plurality of air discharge ports for discharging air from said interior chamber into said combustion chamber, each wall section including a pair of spaced wall panels defining a plurality of radially spaced cooling passages, means to supply cooling water to the downstream end of said passages, said water flowing in an upstream direction through said passages, means for discharging heated water from the upstream ends of said passages, and a plurality of external ribs mounted on the outer surface of the downstream wall section adjacent the apex of the flight and located between said ports, said ribs acting to agitate the waste material and prevent clogging of said ports.

4,342,270

DIGGING AND PLANTING MACHINE

Stig-Gunnar Lofgren, Jarved, and Bo G. Ekeborg, Bonassund, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed May 18, 1981, Ser. No. 264,992
Claims priority, application Sweden, Jun. 25, 1980, 8004686
Int. Cl.³ A01C *11/00*
U.S. Cl. 111—1 **23 Claims**



1. A digging and planting machine for digging holes and planting plants therein while automatically maintaining a predetermined plant density per unit of planted area, comprising, in combination, a vehicle, and, carried on the vehicle, a tubular digging and planting tool; at least one sensing and signalling means for sensing a resistance below and/or exceeding a predetermined value to penetration of the ground by the digging tip of the tool, thus gauging the condition of the ground, and detecting obstacles to such penetration so as to ensure that the digging tip provides and a plant is fed to a planting hole of the desired depth, and a digging attempt is aborted if this be impossible, and comprising an elongated member movable towards

and away from the ground in a selected location where a planting hole is to be dug; means biasing the elongated member resiliently towards the ground with a force opposed by the force resisting penetration of the member into the ground, the biasing force being insufficient to prevent movement of the member against the biasing force at a resisting force above a predetermined minimum; drive control means operatively connected to the digging and planting tool to initiate and carry out a normal cyclic digging and planting operation; and, in response to a drive signal, raising and lowering the digging and planting tool towards and away from the ground, and, in response to an abort signal, aborting that digging attempt and causing the digging and planting tool to continue to make hole-digging attempts until a hole of the desired depth has been dug; at least one drive signalling means for sending a drive signal to the drive control means; at least one abort signalling means for sending an abort signal to the drive control means; and at least one abort signal actuating means operatively associated with the elongated member and responding to a predetermined movement of the elongated member as a function of the penetrability of the ground, due to the condition of the ground at that location, by actuating the abort signalling means to give an abort signal to the drive control means indicating that the elongated member has detected a resisting force above the predetermined minimum showing the digging tip cannot provide a planting hole of the desired depth; at least one sensing and signalling means sensing when a hole of selected depth has been dug, and a plant planted therein; and sending a go-ahead signal to a second measuring means, and to a signal receiving circuit; first measuring said signalling means detecting and measuring sequential unit distances of travel of the vehicle as it moves across the ground, said distances corresponding to a selected spacing between adjacent plants, and for each travelled unit distance sending a first signal to a signal receiving circuit and automatically returning to an initial position; second measuring means detecting and measuring the said unit distances and generating a second signal before the end of said unit distances, said second measuring means responding to said go-ahead signal by returning to an initial position; a signal receiving circuit including a switch means movable between circuit-open and circuit-closed positions, receiving and counting the first signals and the go-ahead signals, and comparing the count of the first signals and go-ahead signals by subtraction to determine the difference between the count of the first signals and the count of go-ahead signals, moving the switch means into a circuit-closed position whenever the difference exceeds a predetermined minimum value, and only then actuating the drive signalling means to send a drive signal to the drive control means, so as to produce said drive signal in dependence on said go-ahead signal, whereby said unit distance and therefore the spacing between plants is reduced after a digging attempt has been aborted, so as to maintain a preselected average plant density.

4,342,271

STITCH LENGTH RANGE INDICATING ARRANGEMENT IN A MULTIPLE PATTERN SEWING MACHINE

Robert J. Socha, Elizabeth, N.J., assignor to The Singer Company, Stamford, Conn.

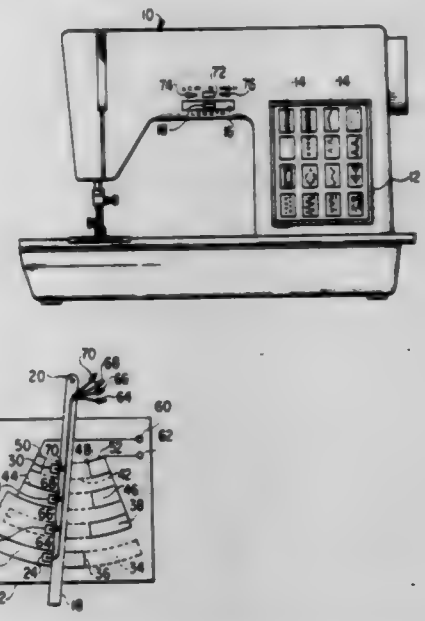
Filed Aug. 13, 1981, Ser. No. 292,462
Int. Cl.³ D05B *3/02, 79/00*
U.S. Cl. 112—158 E **7 Claims**

2. In a multiple pattern sewing machine having means for operator selection of a pattern to be sewn and operator influenced means for adjusting the relative stitch length within a selected pattern, the improvement comprising:

means for defining a preferred range of relative stitch lengths for each of said patterns;

indicator means for communicating with an operator, said indicator means including at least a first indicating element, said first indicating element being selectively energizable to assume an operator perceivable state; and

control means responsive to pattern and stitch length selection for controlling said indicator means, said control means responding to a selected stitch length within the



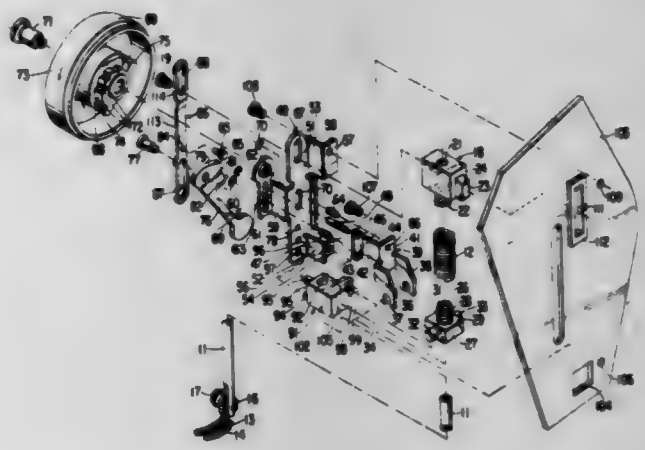
selected pattern preferred range for energizing said first indicating element.

4,342,272

PRESSER BAR BIASING SPRING STRUCTURE

James A. Transue, Union, and William Weisz, Tenafly, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Oct. 3, 1979, Ser. No. 81,404
Int. Cl.³ D05B *29/02*
U.S. Cl. 112—237 **13 Claims**



1. A presser bar mechanism for a sewing machine, the mechanism comprising:

a cylindrical presser bar reciprocally movable in its axial direction and having its first and second presser bar ends, the first end comprising means to attach a presser foot thereto;

a helical extension spring surrounding a region of the presser bar between the first and second presser bar ends and having first and second spring ends nearer the fist and second presser bar ends, respectively;

first holding means to hold the second spring end at a first location on the presser bar nearer the second presser bar end than the first presser bar end;

second holding means to hold the spring so that the spring is substantially concentric with respect to the presser bar and so that the first spring end is at a location closer to the first presser bar end than is the first location;

a bracket;

first attachment means to attach one of the holding means to the bracket; and

second attachment means to attach the other of the holding means to the bracket, at least one of the attachment means comprising slidably movable means to allow one of the

holding means to slide relative to the other of the holding means parallel to the axial direction of the presser bar.

4,342,273

MATERIAL SENSING MEANS FOR SEWING MACHINES

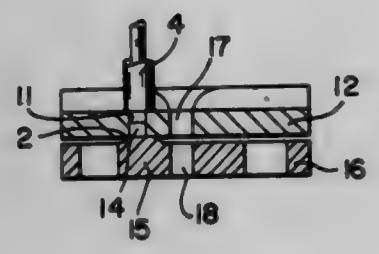
W. Andreas Petzold, Überlingen, Fed. Rep. of Germany, assignor to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,322

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935473

Int. Cl.³ D05B *69/00*

U.S. Cl. 112—272 **3 Claims**



1. For use with a sewing machine having a throat plate over which a workpiece is progressively moved, a presser foot assembly and an apparatus for indicating when the leading and trailing ends of the workpiece travel under the presser foot assembly, said apparatus comprising:

fiber optic means capable of transmitting light and having its free end mounted for movement with the presser foot assembly;

reflective surface means provided on the throat plate and arranged opposite the free end of the fiber optic means;

a transparent insert arranged intermediate the free end of said fiber optic means and the reflective surface and which is arranged flush with a lower work engaging surface on said presser foot assembly; and

means connected to the other end of said fiber optic means which are responsive to the interruption and restoration of light caused by the ends of the workpiece passing between the end of the fiber optic means and the reflective surface, said means responsive being capable of producing a signal indicative of such workpiece passage.

4,342,274

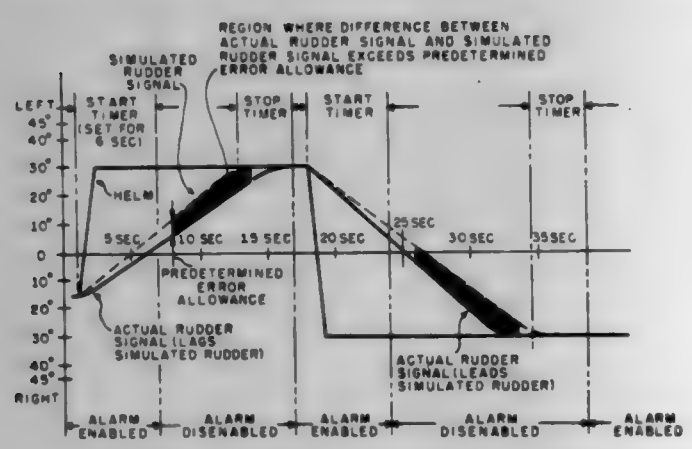
STEERING FAILURE ALARM

William T. Spurgin, Charlottesville, and Charles R. Wesner, Crozet, both of Va., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 11, 1980, Ser. No. 176,945

Int. Cl.³ B63H *25/36*

U.S. Cl. 114—144 E **4 Claims**



1. An improved ship's steering failure alarm which is adaptable for use with steering systems having non-linear rudder positioning and either constant or inconstant rate characteristics; and which is of the type having means for providing simulated and actual rudder position signals, means for comparing said simulated and actual rudder position signals, and means for providing an alarm activating signal when a comparison threshold has been exceeded; wherein the improvement comprises:

means for shaping either said simulated or actual rudder position signals when a non-linear relationship exists between said actual and said simulated rudder signals;

first timing means for disabling said alarm activating signal after an initial comparison period and prior to a period when a substantially inconstant rate relationship exists between said actual and said simulated rudder signals; and

second timing means for reenabling said alarm activating signal after the rudder should have reached its ordered position.

4,342,275

FIN RUDDER FOR SHIPS

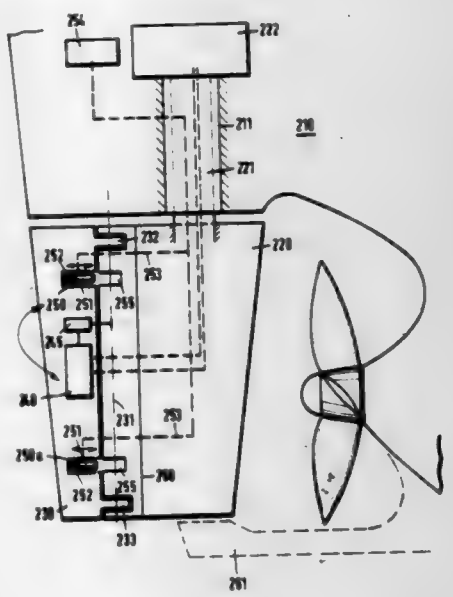
Joachim Brix, Hamburg, and Friedrich Weiss, Ahrensburg, both of Fed. Rep. of Germany, assignors to Jastram-Werke GmbH KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 860,605, Dec. 14, 1977, abandoned. This application Dec. 5, 1979, Ser. No. 100,545

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656738; Nov. 11, 1977, 2750437

Int. Cl.³ B63H *25/06*

U.S. Cl. 114—162 **9 Claims**



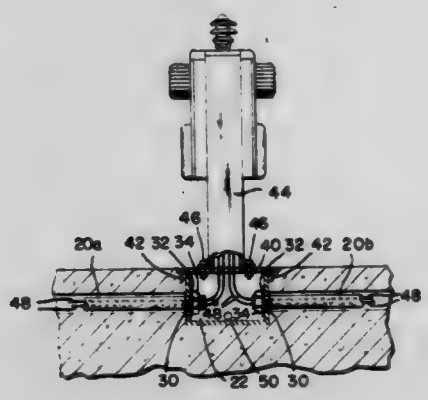
1. A rudder assembly for marine craft comprising: a main rudder member pivotally coupled to said marine craft for deflection relative thereto; a fin member pivotally coupled to said main rudder member for deflection relative thereto; and an actuating and control system comprising first control means operative to effect deflection of said main rudder member relative to said marine craft and second control means operative to effect deflection of said fin member relative to said main rudder member; said first control means being capable of effecting deflection of said main rudder member relative to said marine craft independently of said second control means; said second control means being effective to effect deflection of said fin member relative to said main rudder member independently of said first control means; said actuating and control system comprising hydraulic actuating means powered through hydraulic lines of said system by a steering gear of said marine craft in order to supply pivoting torque for said fin member, and a hydro-pneumatic fin retard arrangement operative to effect elimination of the fixed ratio of the angles of main rudder member and fin member in dependence upon fin torque, said retard arrangement being equipped with return tanks for pressure gas contained within said system corresponding to a maximum fin torque and with bias pressure tanks.

4,342,276

INTERCONNECTING SYSTEM FOR MARINE FLOATS

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Jun. 30, 1980, Ser. No. 164,915
Int. Cl.[3] B63B *35/44*
U.S. Cl. 114—266 8 Claims



1. A system for interconnecting first and second marine floats end-wall-to-end-wall, comprising:

a sheet of cushioning material positioned between adjacent end walls of said first and second floats;

a tubular conduit extending between said first and second floats through said cushioning material;

first and second junction boxes embedded, respectively, in said first and second floats, said junction boxes receiving respective ends of said conduit;

fastening mens for resiliently securing the respective ends of said conduit to said first and second junction boxes to allow said conduit to move axially and pivot with respect to said junction boxes responsive to relative pivotal movement between said first and second floats; and

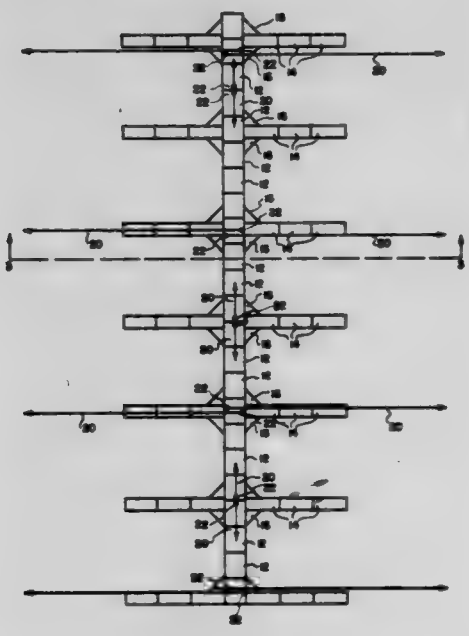
a utility conductor extending through said conduit between said junction boxes whereby said conduits provide both mechanical and utility interconnections between said first and second floats.

4,342,277

ANCHORING SYSTEM FOR FLOATING MOORAGE

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Jan. 7, 1980, Ser. No. 110,084
Int. Cl.[3] B63B *21/24*
U.S. Cl. 114—293 17 Claims



1. An anchoring system for floating moorages formed by a plurality of aligned mainwalk floats having a plurality of spaced-apart finger floats projecting perpendicularly therefrom, said system comprising:

a generally horizontal grid of post-tensioned cables positioned beneath said floats;

a plurality of anchor lines extending between said floats and said grid, the angle of said lines with respect to the horizontal being relatively small to minimize the downward forces imparted to said floats by said lines, said lines extending in opposite directions beneath said mainwalk floats and said finger floats, with pairs of lines extending beneath said finger floats alternating with pairs of lines extending beneath said mainwalk floats such that horizontal forces exerted on said floats by each line are opposed by substantially equal horizontal forces exerted in an opposite direction by another line, and said lines are shielded by said mainwalk floats and said finger floats; and

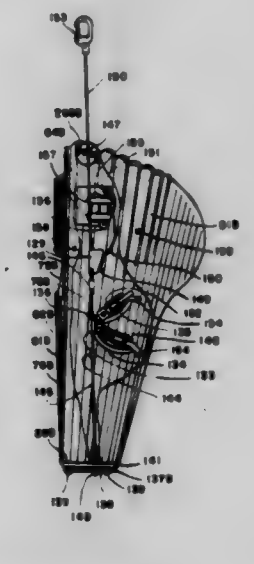
at least one weight secured to each of said anchor lines to maintain the tension in said lines substantially constant as said floats rise and fall responsive to tidal action.

4,342,278

MINIATURE INFLATABLE CONTAINMENT AND DRY-WATER-ENTRY VESSELS

John J. Horan, 60 Deerpath Rd., Chalfont, Pa. 18914

Filed Oct. 15, 1980, Ser. No. 197,321
Int. Cl.[3] B63B *7/08*
U.S. Cl. 114—345 72 Claims



1. A miniature vessel comprising:

a hull of waterproof material, said hull having a relatively deep stern, said stern having an arcuate form when said vessel is inflated and occupied in water;

a bottom tapering upwardly from an inverted apex at said stern to a shallow bow; a gunwale tapering outwardly on both sides of said hull from said bow toward and around said stern; and generally planar, precipitation-excluding, access-deck means, formed of material compatible for attachment to said first-mentioned material;

said deck means being structurally joined to and covering the full area defined within said gunwale,

said deck means including access-fastener means adapted, when opened, to permit expeditious, whole-body entry of an occupant into said vessel and his eventual exit therefrom, and when closed by him to complete his whole-body enclosure within said vessel,

said hull being formed of superimposed inner and outer sheets of generally similar shape and generally symmetrical about a transverse midline defining the cenerline of said stern,

said sheets being welded together along a continuous seam outlining the inflatable area therewithin and leaving seam-edge strip means extending outwardly thereof,

said strip means being generally of width adequate for structural bonding of at least one seam outwardly of said continuous seam,

said sheets being further bonded together discontinuously inwardly of said seam to form inflatable segments,

said segments being so proportioned that their inflated thicknesses and, consequently, the inflated thickness of said hull, will increase from said bow to said stern and from said bottom toward said gunwale,

the left and right halves of said strip means projecting below and forwardly of said hull being sealably, structurally and medially bonded thereacross, permissibly via medial attachment thereto of at least one of a bottom deck and forward extension,

said vessel including inflation means therefor,

said hull being adapted for inflation in a vertical, stern-uppermost attitude in behalf of an occupant standing therewithin on said bow and facing said deck means,

whereupon, with said access fastener closed, said occupant may jump, slide or be lowered into water or dry, self-righting water entry and insulated flotation thereafter, and

whereby, with the buoyancy of the interior air retained by said deck means around and above the ballasting weight of said occupant now thrusting directly upwardly against said deck means in addition to the upwardly directed buoyancy so patterned among said so-proportioned segments, said vessel achieves extraordinary buoyancy and upright stability against steeply rising wave fronts and a high self-righting moment after a plunge into water, even at initially unfavorable attitudes.

4,342,279

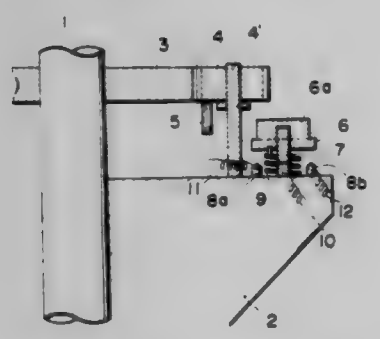
DEVICE FOR DETECTING STEERING ANGLE AND DIRECTION

Yasutoshi Seko, Yokohama, and Takayuki Yanagishima, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Claims priority, application Japan, Aug. 28, 1979, 54-118 105[U]

Filed Aug. 14, 1980, Ser. No. 177,995
Int. Cl.³ B60Q *1/42*

U.S. Cl. 116—31 **6 Claims**



1. A device for detecting a steering angle and steering direction of an automotive vehicle, comprising:

(a) a steering wheel;

(b) a steering column shaft connected to the steering wheel;

(c) a first gear fixed to the steering column shaft so that the first gear rotates together with the steering column shaft in the same direction;

(d) a second gear which is driven by the first gear in such a way that when the first gear rotates in one direction the second gear rotates in the opposite direction;

the improvement comprising:

(e) a pair of first and second fixed contacts fixed relative to the automotive vehicle;

(f) signal producing means including a movable contact formed and arranged in such a manner that, when the steering wheel rotates in one direction, the movable contact engages only the first fixed contact to produce a pulse signal, and when the steering wheel rotates in the opposite direction, the movable contact engages only the second fixed contact to produce a pulse signal; and

(g) means for electrically detecting the rotation number of the second gear and the rotation direction thereof on the basis of the pulse signals produced so that the steering angle and the steering direction of the steering wheel can be detected.

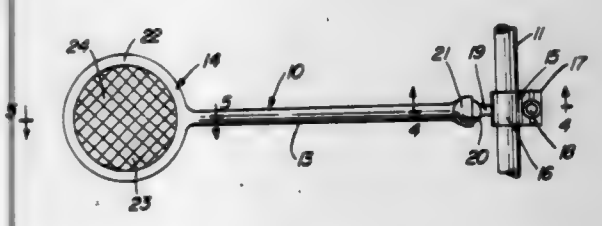
4,342,280

BICYCLE AND MOTOR BIKE WARNING SIGNAL DEVICE

Sara Ashworth, 115 Carlton Ave., Trenton, N.J. 08618

Filed Jul. 30, 1980, Ser. No. 173,592
Int. Cl.³ B60Q *1/34*

U.S. Cl. 116—202 **1 Claim**



1. A warning signal device adapted to be mounted on a supporting element on a vehicle in the form of a bicycle, motor bike, or like vehicle, comprising:

(a) a supporting arm member including

(1) an outer end portion having thereon

(2) a light-reflective warning signal element;

(3) an inner end portion;

(4) clamping means for detachably mounting the said inner end portion of the said supporting arm member and attached light-reflective warning signal element on a supporting element on the vehicle and at one side thereof;

(5) pivotal mounting means for pivotally mounting the said supporting arm member and attached light-reflective warning signal device on the said clamping means so that the said supporting arm member and the said light-reflective warning signal element thereon may be manually pivoted by the vehicle rider on the said pivotal mounting means into a generally horizontally extending effective or nighttime warning signal position at one side of the vehicle or into a generally vertically extending and upright and daylight or ineffective position, the said pivotal mounting means including

a. a ball-shaped head formed integrally with and as a lateral extension of the said clamping means at one side thereof; and

b. a socket member formed as an integral extension of the said supporting arm member at the said inner end portion thereof.

(6) the said socket member frictionally embracing the said ball-shaped head to enable the said supporting arm member and the said light-reflective warning signal element thereof to be manually pivoted on the said ball-shaped head into, and to be frictionally retained in, a generally horizontally extending effective or nighttime warning signal position at one side of the vehicle or into a generally vertically extending and upright daylight position;

(7) the said clamping means including

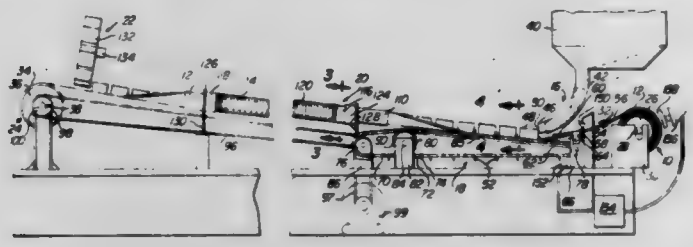
a. a web member formed integrally with the said clamping means at one side thereof and projecting laterally therefrom; and

b. the said ball-shaped head being formed as an integral extension of the said web member.

4,342,281
APPARATUS FOR PRINTING ARTICLES FROM HEAT TRANSFER PAPER

Danny L. McMillin, Golden, and James S. Stirbis, Littleton, both of Colo., assignors to Coors Container Company, Golden, Colo.

Division of Ser. No. 159,876, Jun. 16, 1980, Pat. No. 4,323,601, which is a division of Ser. No. 943,372, Sep. 18, 1978, Pat. No. 4,250,831. This application Jun. 29, 1981, Ser. No. 278,787
Int. Cl.³ B05C *1/14*
U.S. Cl. 118—32 1 Claim



1. Apparatus for continuous application of individual ink images to individual articles comprising:

continuously operable sheet conveying means for causing continuous longitudinal movement at a uniform velocity of an elongated sheet of material having a plurality of heat transferrable ink images located thereon in sequential uniform equally spaced relationship therealong;

continuously operable article conveying means for causing continuous longitudinal movement of a plurality of unprinted articles at a uniform velocity equal to the velocity of and in the same direction as and in laterally offset parallel relationship with the elongated sheet of material and in sequential uniform equally spaced relationship corresponding to the uniform sequential equally spaced relationship of the heat transferable ink images on the elongated sheet of material and in aligned relationship therewith;

wrapping means continuously operably associated with the elongated sheet of material for continuously wrapping a portion of the elongated sheet of material into image transferring relationship with the unprinted articles during continuous movement of the unprinted articles and the elongated sheet of material with adjacent ones of the heat transferrable ink images being sequentially associated with adjacent ones of the unprinted articles;

heat applying means operable associated with the wrapped portion of the elongated sheet of material and the unprinted articles wrapped therewithin for sequentially continuously applying heat thereto during continuous movement of the wrapped portion of the elongated wrapped sheet of material and the articles wrapped therewithin relative to the heat applying means to cause sequential transfer of the adjacent ones of the heat transferrable ink images to the adjacent ones of the unprinted articles;

unwrapping means continuously operably associated with the elongated sheet of material for unwrapping the elongated sheet of material from the articles after transfer of the heat transferrable ink images to the articles; and

discharge article conveying means for disassociating the printed articles from the elongated sheet of material after unwrapping of the elongated sheet of material.

4,342,282
TONER CARTRIDGE

Keitaro Yamashita, Kamisatomachi, and Toshio Kumakura, Omiya, both of Japan, assignors to Hitachi Metals, Ltd., Japan

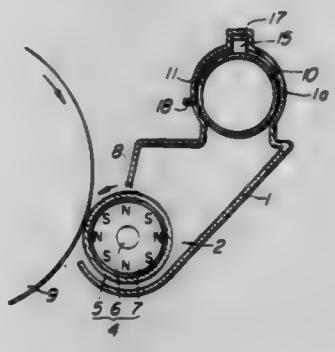
Filed Jul. 30, 1981, Ser. No. 288,342
Claims priority, application Japan, May 7, 1980, 55-60402
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—657 2 Claims

1. In combination with a developing device using a magnetic toner comprising a hopper for the magnetic toner and a nonmagnetic sleeve having a magnetic roll mounting a plurality of magnetic poles therein, the magnetic roll and the nonmagnetic sleeve rotating relative to each other to draw by magnetic attraction and transport the magnetic toner on the nonmagnetic sleeve, a toner cartridge capable of being detachably fitted in said developing device comprising:

a hollow container of a substantially cylindrical shaped closed at opposite ends;

a toner supply opening formed at an outer circumferential surface of said hollow container to extend longitudinally thereof;

a knob attached to one end of said hollow container;



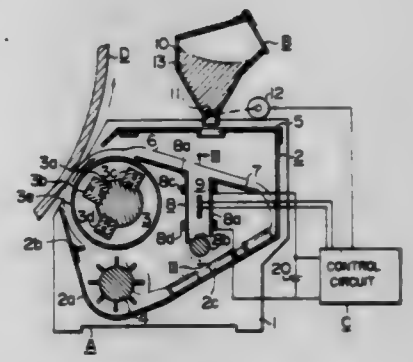
a projection formed on an outer circumferential surface of the other end of said hollow container, said projection being adapted to be inserted in a guide groove formed in said hopper and extending longitudinally, said guide groove having a length such that when said hollow container is wholly inserted in the hopper by being moved along the guide groove, said projection is released from engagement in the guide groove to allow the hollow container to move in rotary movement; and

a stopper for said projection formed at the end of said guide groove to restrict the rotation of said hollow container in a predetermined direction to a range from said toner supply opening to the underside of the container.

4,342,283
DEVELOPING APPARATUS FOR ELECTROSTATIC DUPLICATOR

Isamu Terashima, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,114
Claims priority, application Japan, Nov. 24, 1979, 54-151327
Int. Cl.³ B05B *5/02;* G03G *15/09*
U.S. Cl. 118—689 5 Claims



1. A developing apparatus for electrostatic duplicator comprising:

a developing agent including a magnetic carrier and a nonmagnetic toner;

a container in which said developing agent is placed;

means for transporting the developing agent in said container to an electrostatic latent image surface of a recording medium;

means for passing part of said developing agent into a detecting container;

means for detecting permeability of the developing agent passing in the detecting container; and

means for magnetizing the developing agent within a detection region in said detecting container in the direction of flow of the developing agent and within the range of a magnetic flux density such that the permeability of the developing agent is little changed with a change in the magnetic field whereby the developing agent is allowed to pass readily through the detection region.

4,342,284

PROCESS FOR THE COATING OF PARTICLES FOR THE PRODUCTION OF FUEL AND/OR ABSORBING ELEMENTS FOR NUCLEAR REACTORS AND APPARATUS THEREFOR

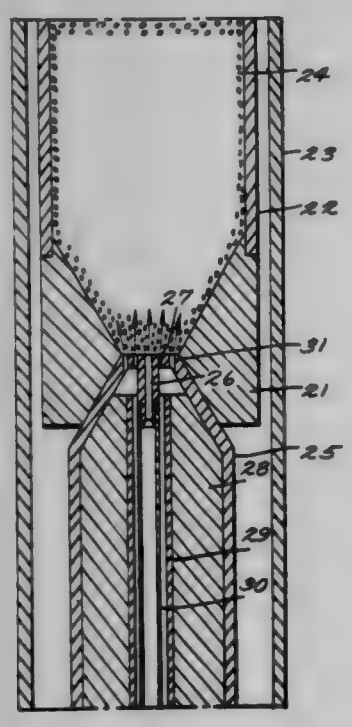
Harald Löser, Selzerweg 34, 8756 Kahl; Gerhard Schmidt, Holzgasse 7, 6460 Gelnhausen; Wolfgang Warzawa, Wiesenstrasse 15, 6450 Hanau 9, and Klaus Wegner, Hintergasse 10, 6450 Hanau 1, all of Fed. Rep. of Germany

Division of Ser. No. 805,452, Jun. 10, 1977, Pat. No. 4,271,207. This application Jan. 3, 1978, Ser. No. 866,339

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626446

Int. Cl.³ C23C *11/10*

U.S. Cl. 118—716 **13 Claims**



1. An apparatus suitable for use in a process of coating particles of fuel, fertile material, absorber material or mixtures thereof which can be employed in nuclear reactors, in which process thermally cleavable gases are introduced into a reaction space heated to an operating temperature of a fluidized bed unit provided with a gas inlet nozzle having an elongated inlet tube and cooled with a cooling medium, the cleavable gases are decomposed after leaving said nozzle and the decomposition products are deposited on said fuel, fertile material or absorber particles present in the fluidized bed, and the cooling medium employed is solely gaseous, said apparatus comprising, in said reaction space of said fluidized bed unit, inlet nozzle means for introducing said cleavable gas into said reaction space, said nozzle means including an outer tube having an axis, an inner tube disposed radially within said outer tube for carrying the cleavable gas, said inner tube having a nozzle tip with said tip having one end exposed to said reaction space and its other end spaced a distance therefrom, a cooling tube also disposed radially within said outer tube and surrounding said inner tube and having an end terminating at a cooling chamber, said cooling chamber surrounding at least a portion of said nozzle tip so that, when a cooling gas is passed through said cooling tube, said portion will be exposed to said cooling gas to cool said nozzle tip, an insulating layer disposed radially between said outer tube and said cooling tube, said outer tube being made of a heat-resistant material with a melting point above the operating temperature of said unit.

4,342,285

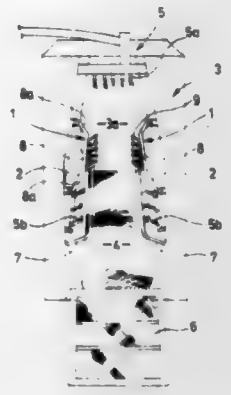
ANIMAL TREATMENT TUNNELS OR RACES

Ian W. James, 50 Hemans St., Cambridge, New Zealand

Filed Oct. 28, 1980, Ser. No. 201,476

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—155 **8 Claims**



1. Guide apparatus for an animal tunnel or race, said guide apparatus comprising at least two guiderails, one for each side of the tunnel or race, each of said guiderails being mountable with respect to opposite side walls of a tunnel or race so as to extend inward and lengthwise thereof and having a plurality of projecting fenders extending therefrom inwardly of the tunnel or race, the ends of said fenders being directed toward the exit from the tunnel or race and defining a central passage within the tunnel or race which animals passing through must negotiate; said fenders being fixedly and non-rotatably mounted and of sufficient strength and resiliency to deter the animals from colliding with the walls of the race and to prevent the animals from reversing direction within the race.

4,342,286

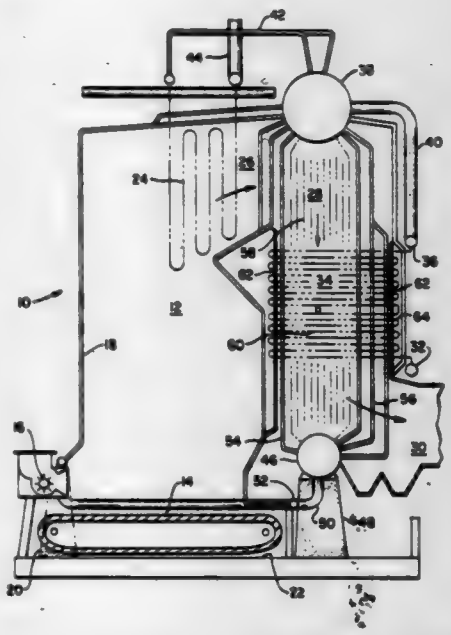
INTEGRAL ECONOMIZER STEAM GENERATOR

William H. Pollock, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 30, 1979, Ser. No. 99,184

Int. Cl.³ F22B *21/00*

U.S. Cl. 122—336 **3 Claims**



1. A bottom supported steam generator for burning a solid fuel comprising: a steam drum at an upper elevation; a water drum at a lower elevation; means for supporting said water drum from the ground; a plurality of front wall tubes forming a front wall, and a plurality of rear wall tubes forming a rear

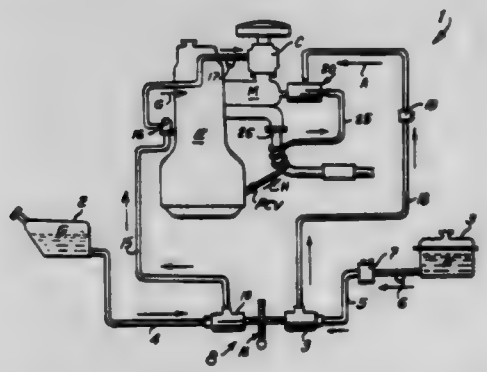
wall, said walls connecting said steam drum and water drum and forming a vertical gas pass, the front wall having an inlet opening at only the upper end for the ingress of gases and a rear wall having an outlet opening at only the lower end for the egress of gases; a furnace for the burning of fuel therein; steam generating tubes lining the walls of said furnace and connected to said steam drum; means for conducting combustion gases from said furnace to the inlet opening of said vertical gas pass; a plurality of vertical tubes arranged in a plurality of rows within said vertical gas pass, and connecting said steam drum with said water drum, and supporting said steam drum from said water drum; a plurality of horizontal economizer tubes forming an economizer bank and arranged in a plurality of rows, said economizer tubes each interspersed between said vetical tubes at elevations below the inlet opening and above the outlet opening; and means for conveying water from said economizer to said steam drum.

4,342,287

METHOD AND APPARATUS FOR UTILIZING ALCOHOL AS FUEL FOR INTERNAL COMBUSTION ENGINE

Jose Ma. R. Concepcion, Manila, Philippines

Filed Jan. 28, 1980, Ser. No. 115,616
Int. Cl.³ F02B *75/12, 25/06*
U.S. Cl. 123—1 A **6 Claims**



1. A method for feeding alcohol and gasoline fuels to an internal combustion engine wherein the alcohol to gasoline ratio is controlled by a double acting metering device and the alcohol fuel is vaporized using heated positive crankcase ventilation gas, which comprises:

(a) withdrawing alcohol and gasoline fuels from separate fuel tanks through separate fuel lines;

(b) conveying the alcohol fuel using a liquid conveying means to a vaporizing means;

(c) conveying the gasoline fuel using a liquid conveying means to a carburetor means;

(d) controlling the alcohol to gasoline ratio using a double acting metering means;

(e) conveying engine positive crankcase ventilation gas to the vaporizing means through a conduit means by force of crankcase pressure;

(f) heating the engine positive crankcase ventilation gas with engine exhaust gas heat using a heat exchange means through which said conduit passes;

(g) simultaneously introducing the alcohol fuel and the heated positive crankcase ventilation gas into the vaporizing means;

(h) vaporizing the alcohol fuel in the vaporizing means by contact with the heated positive crankcase ventilation gas;

(i) introducing the gasoline fuel into an engine intake manifold through the carburetor means;

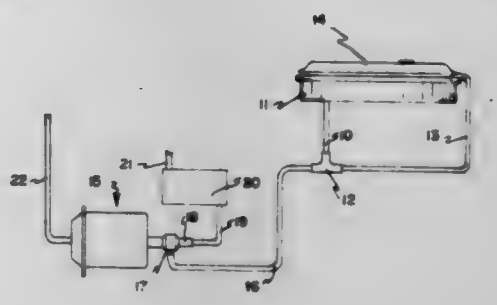
(j) conveying the vaporized alcohol fuel and the positive crankcase ventilation gas from the vaporizing means and introducing said alcohol fuel and positive crankcase ventilation gas into the engine intake manifold by pressure means.

4,342,288

WATER INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kazuo Sato, Ogden, Utah, assignor to The Klane Corporation, Ogden, Utah

Filed Jun. 30, 1980, Ser. No. 164,794
Int. Cl.³ F02D *19/00*
U.S. Cl. 123—25 B **3 Claims**



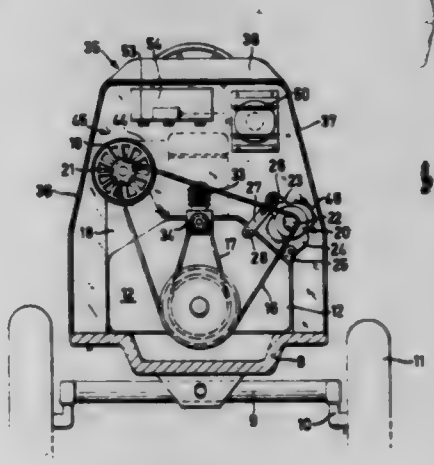
1. A method for controlling the injection of a heated vaporized air-water mixture into the fuel system of an internal combustion engine which comprises a vacuum control valve which operates to prevent the flow of air-water mixture when both fully opened and closed and is responsive to intake manifold vacuum pressures of the internal combustion engine such that at engine idle speeds, the manifold vacuum pressure fully opens said control valve presenting the flow of air-water therethrough whereas at intake manifold pressures less than that at engine idle speed and greater than zero said control valve operates to allow air and water to be drawn from an air source and a water source to an air water metering means to form an air-water mixture which mixture then passes through said control valve to a heating means for additional vaporization and then into the air fuel mixture entering the intake manifold of said engine and wherein the lower the intake manifold vacuum pressure drops from the pressure at engine idle speed, the greater the amount of air-water mixture passing through the control valve will be, providing the intake manifold pressure does not drop to zero.

4,342,289

INTERNAL COMBUSTION ENGINE, ESPECIALLY AIR-COOLED INTERNAL COMBUSTION ENGINE FOR VEHICLES AND DRIVING UNITS

Hermann-Josef Komp, Bad Münstereifel, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 933,139, Aug. 14, 1978, abandoned.
This application Dec. 10, 1980, Ser. No. 214,634
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736378
Int. Cl.³ F02P *1/02*
U.S. Cl. 123—41.7 **6 Claims**



1. An internal combustion engine which is air-cooled for tractor vehicles and driving units, comprising in combination:

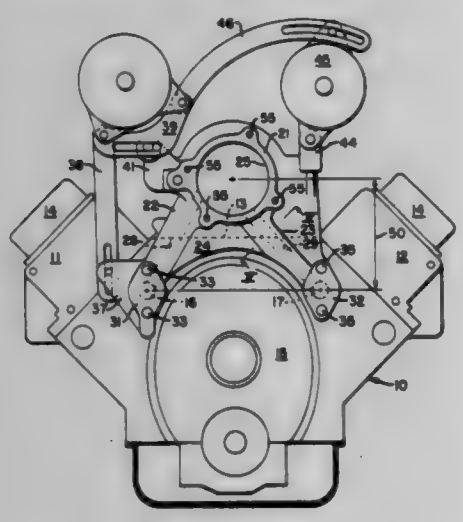
a crankcase, a plurality of cylinders, an outer mantle and at least one auxiliary machine arranged externally adjacent said crankcase, a V-belt driving means for said at least one auxiliary machine, cooling means for cooling said cylinders including a cooling air blower that provides a flow of air conveyed in a direction toward said at least one auxiliary machine to ventilate the outer mantle thereof, a front partition arranged transverse to the flow of the air conveyed in the direction of said at least one auxiliary machine and provided with an air withdrawing channel formed by at least one guiding separation wall including a rear partition and a lateral part arranged substantially transverse to said front and rear partitions as well as extending to one side thereof and preventing said cooling air from being short-circuited, the at least one auxiliary machine to be cooled being arranged laterally and above said crankcase within the region of one end face of said crankcase ahead of said front partition and is at least partially surrounded by said front partition as a container, a gearbox being connected to said front partition for noise reduction, a torsional vibration balancer smoothing V-belt running arranged ahead of said front partition, and wherein said V-belt driving means having a location preceding said front partition.

4,342,290

WATER PUMP HOUSING

John Drakulic, Box 482 -1st St., Trafford, Pa. 15085

Filed Oct. 28, 1980, Ser. No. 201,511
Int. Cl.[3] F01P *5/10*
U.S. Cl. 123—41.47 **5 Claims**



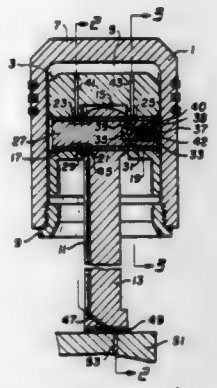
1. A housing to support the casing of a driven pump for supplying a coolant medium to the engine block of an internal combustion engine, said housing comprising a pump-mounting flange section to support said casing of a driven pump, chamber walls defining a pump impeller chamber extending from said pump-mounting flange section, two diverging leg sections extending in a generally radial direction from said chamber walls, each leg section defining an internal duct communicating with said impeller chamber for discharging a coolant medium therefrom, and two flanged housing support sections each having a coolant discharge cavity communicating with the duct in one of said radially-extending leg sections, both of the said pump-mounting flange sections and the said chamber walls being spaced from said two flanged housing support sections to substantially expose the engine block when supported thereby for access thereto below the chamber walls and between said diverging leg sections.

4,342,291

EXPANDABLE PISTON MOTOR

William C. Lewis, 7560 Belair Dr., Richmond, British Columbia, Canada

Filed Jan. 16, 1980, Ser. No. 112,595
Int. Cl.[3] F02B *75/04*
U.S. Cl. 123—78 B **13 Claims**



7. An internal combustion engine comprising:

a piston having first and second coaxial parts movable axially relative to each other in the direction of reciprocation of the piston and having a chamber therebetween which varies in volume with said relative movement, the second part having a recess for rotatably receiving a wrist pin, an inlet fluid passageway connecting the chamber to the recess and an outlet fluid passageway connecting the chamber to the recess;

a wrist piston rotatably received in the recess, the wrist pin having inlet and outlet fluid passageways therethrough;

an inlet oscillo-rotary valve comprising an opening of the inlet passageway of the second part adjacent the wrist pin and an opening of the inlet passageway of the wrist pin adjacent the second part which are aligned at a first rotational position of a crankshaft;

an outlet oscillo-rotary valve comprising an opening of the outlet passageway of the second part adjacent the wrist pin and an opening of the outlet passageway of the wrist pin adjacent the second part which are aligned at a second rotational position of the crankshaft;

a check valve within said outlet passageways for permitting a flow of fluid from the chamber when said fluid is above a set pressure;

a connecting rod non-rotatably mounted on the wrist pin and having a big end rotatably mounted on a crank pin of a crankshaft, the connecting rod having a conduit communicating at a first end with the inlet passageway of the wrist pin and having an opening at a second end adjacent the crank pin;

an opening for pressurized lubricant on the crank pin; and

an inlet rotary valve comprising the opening on the crank pin and the opening at the second end of the connecting rod conduit which are aligned at the first rotational position of the crankshaft.

4,342,292

IGNITION DISTRIBUTOR

Ronnalee House, and Byron W. Johnson, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1980, Ser. No. 198,367
Int. Cl.[3] F02P *5/00, 7/00*; H01H *19/00*
U.S. Cl. 123—146.5 A **8 Claims**

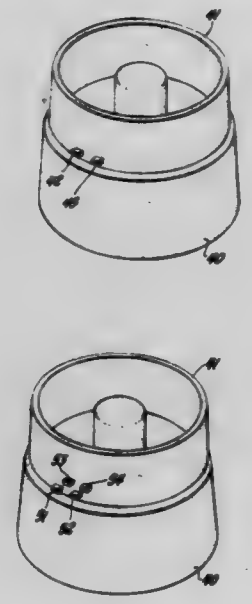
1. An internal combustion engine ignition distributor for sequentially directing the ignition spark potential induced in the secondary winding of the engine ignition system ignition coil to the spark plugs of the engine comprising:

an output circuit corresponding to each said spark plug of an associated said internal combustion engine;

an ignition spark energy conductive circuit arranged for electrical connection to a said ignition coil secondary

winding and so formed and positioned that it is substantially equally spaced from each of said output circuits;

a rotatable member of an insulating material arranged to be rotated in timed relationship with an associated said internal combustion engine and having an annular insulating rib portion disposed between said ignition spark energy conductive circuit and said output circuits; and



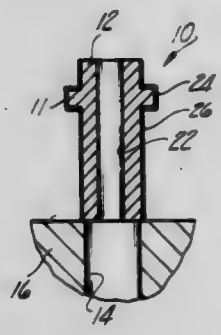
two circumferentially spaced juxtaposed conductive inserts supported by and extending through said annular insulating rib portion in such a location that each passes in spark gap relationship with both said ignition spark energy conductive circuit and successive ones of said output circuits when said rotatable member is rotated.

4,342,293

VALVE GUIDE AND METHOD FOR MAKING SAME

James W. Nickerson, Mobile, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jan. 25, 1980, Ser. No. 115,345
Int. Cl.³ F01L *3/08*
U.S. Cl. 123—188 GC **3 Claims**



1. A valve guide for a stem of a valve in an internal combustion engine having a valve guide bore, said valve guide comprising:

a tubular and cylindrical body having an outer surface and an outer diameter dimensioned to fit at least partially into said valve guide bore and an inner bore through which the valve stem is longitudinally positioned;

the inner bore of the body being nitrided to harden the body around the inner bore;

said body being completely formed prior to installation of said body in said valve guide bore, and

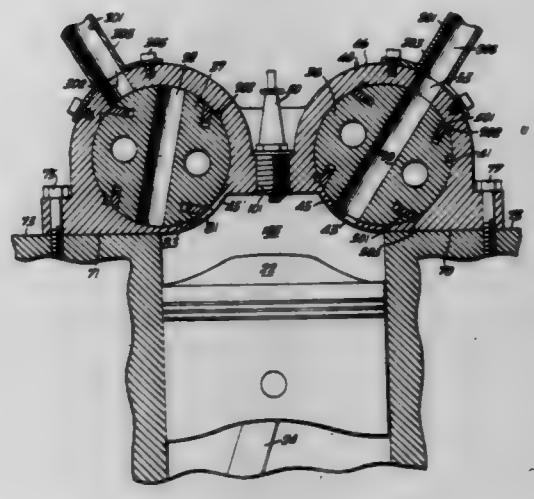
wherein the outer surface of said body is bronze plated.

4,342,294

ROTARY ENGINE VALVE WITH IMPROVED SEALS AND LUBRICATION SYSTEM

Phillip R. Hopkins, Hialeah, Fla., assignor to Energy International Corporation, Miami Lakes, Fla.

Filed Jul. 3, 1980, Ser. No. 165,748
Int. Cl.³ F01L *7/00*
U.S. Cl. 123—190 E **9 Claims**



1. In an engine having at least one rotary valve operatively associated with engine cylinders, the rotary valve being rotatable within an aperture formed in an engine head associated with the engine cylinders, and seal structure extending along the rotary valve for sealing that space located between wall surfaces of the aperture within which the valve rotates and outer surfaces of the rotary valve, the seal structure comprising at least four elongated seal members carried by said rotary valve each said seal member having a portion extending into said space to effect sealing against opposing surfaces, the improvement comprising the location of the transverse axis of each said seal member along a line coincident with a non-diametric chord of an axial cross-section of said rotary valve wherein said rotary valve is provided with at least four longitudinally extending, circumferentially spaced recesses extending into said rotary valve and opening into said space, the transverse axis of each of said recesses lying along a line coincident with a non-diametric chord of the cross-section of said rotary valve, each recess having an elongated seal member disposed therein with the portion of the seal member which extends into said space having a surface face which engages the wall surface of the aperture within which the valve rotates to effect sealing of said space and the line of each of said seal members coincident with the non-diametric chord of an axial cross-section of said rotary valve intersects the circumferentially spaced recess of a respective adjoining seal member.

4,342,295

ROTARY INTERNAL COMBUSTION ENGINE

Robert H. Williams, Rte. 2, Box 44, Bandera, Tex. 78003

Division of Ser. No. 30,993, Apr. 18, 1979, Pat. No. 4,286,555, which is a continuation-in-part of Ser. No. 956,206, Oct. 30, 1978, abandoned. This application Mar. 23, 1981, Ser. No. 246,390
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—228 **1 Claim**

1. A rotary internal combustion engine having a four-phase cycle of intake, compression, expansion and exhaust in each revolution of the engine shaft, said engine comprising:

a stator with a cylinder bore enclosed between end walls;

a power shaft in bearings journaled in said end walls and concentric with said cylinder bore;

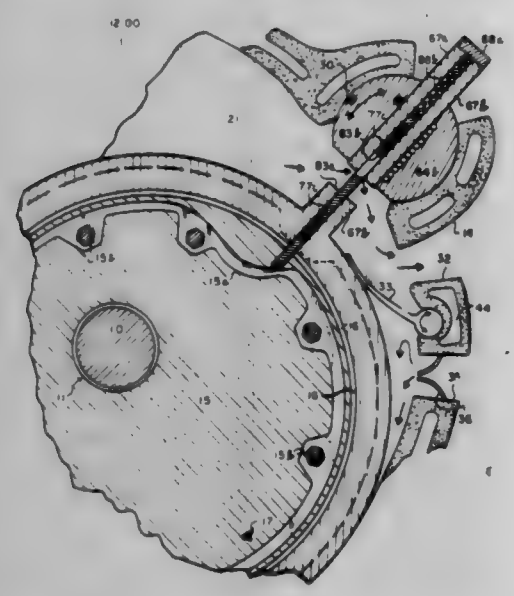
an eccentric annular rotor keyed to said power shaft and positioned approximately midway between said end walls;

an annular piston coextensive with said end walls and fitted on said eccentric rotor and concentric therewith, said piston

and said rotor having a common eccentric head, with said piston head making tangential sealing engagement with said cylinder substantially throughout said cycle;

a first abutment having a first end pivotally secured to said stator near 10:00 o'clock and a second end free to project clockwise into said cylinder space far enough to make tangential, sealing engagement with the face of said piston in all positions of said piston, said abutment making sliding sealing engagement with both end walls and, during the combustion-expansion stroke, making sealing engagement with the face of said piston, thus forming the counterclockwise end of a combustion-expansion chamber for confining a charge of fuel throughout an expansion stroke and exerting pressure against said piston to cause said eccentric rotor to rotate, the cylinder machined away along the edges of said pivot bore in said stator to permit said abutment to pivot inside said cylinder as said piston planetates, said abutment spring biased downward toward the face of said piston by a spring mechanism outside said engine, allowing a predetermined pressure in said compression chamber to force said abutment open and permit a charge of air to be compressed into said combustion chamber and aid in holding said free end of said abutment in sealing engagement with the face of said piston at the end of said compression stroke;

a second abutment closing the clockwise end of the combustion-expansion chamber comprising a rectangular metal plate ridigly affixed to said piston and co-extensive with said



end walls and pointing radially outward from the center of said piston, said second abutment inserted through a slot in a pivoting bearing journaled in said stator near 2:00 o'clock to slidably reciprocate in said slot, said stator machined away along the edges of said bore for said pivoting bearing to enable said second abutment to swing clockwise and counterclockwise as said piston planetates;

a combustion chamber comprising a shallow arcuate cavity in said stator centered near 12:00 o'clock and opening into and combining with said expansion chamber;

a suction chamber and a compression chamber, said suction chamber being the space behind the traveling piston head and said compression chamber being the space forward of said traveling piston head;

an air inlet port in said stator positioned in the vicinity of 3:00 o'clock, said port fitted with a one-way valve to admit air into said suction chamber as movement of said piston head generates a suction;

means for injecting a charge of fuel into said combustion chamber and means for firing said fuel charge in timed relation to the position of said piston head;

exhaust means for expelling spent gases from said combustion-expansion chamber at the end of the power stroke comprising of:

a rectangular slot through the center of said second abutment pointing radially outward from the center of said piston;

a close-fitting metal plate inserted slidably inside said slot in said second abutment, spring biased inward toward the center of said piston, said plate having a narrow arm projecting inward through said slot on each side of said rotor and sliding against a cam bolted to each side of said rotor, said cam shaped to allow said sliding plate to spring inward at the end of the expansion stroke to bring a port in said plate into mating position with a port in said abutment thereby allowing spent gases to escape from said expansion chamber into the space clockwise of said abutment, said cam profiled to return said sliding plate to a sealing position, covering said port in said abutment, within a predetermined number of degrees of rotation of said rotor;

an exhaust port in said stator immediately clockwise of said second abutment; and

a deflector pivotally anchored in said stator immediately clockwise of said exhaust port and spring biased inward against said piston to deflect said spent gases out of said stator via said exhaust port.

4,342,296

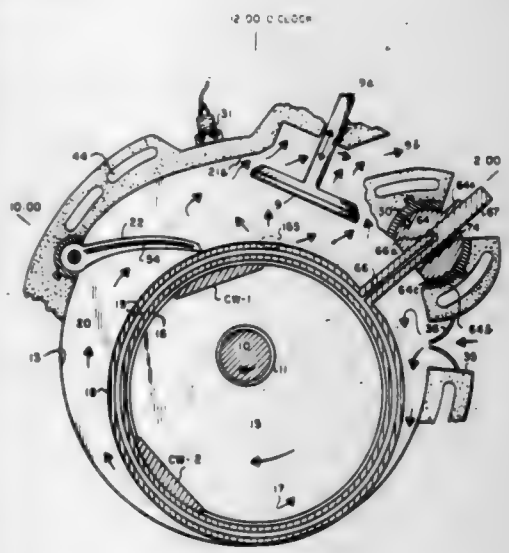
ROTARY INTERNAL COMBUSTION ENGINE

Robert H. Williams, Rte. 2, Box 44, Bandera, Tex. 78003

Division of Ser. No. 30,993, Apr. 18, 1979, Pat. No. 4,286,555, which is a continuation-in-part of Ser. No. 956,206, Oct. 30, 1978, abandoned. This application Mar. 23, 1981, Ser. No. 246,400

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—228 **1 Claim**



1. A rotary internal combustion engine having a four-phase cycle of intake, compression, expansion and exhaust in each revolution of the engine shaft, the engine comprising:

a stator with a cylinder bore enclosed between end walls;

a power shaft in bearings journaled in the end walls and concentric with the cylinder bore;

an eccentric annular rotor keyed to the power shaft and positioned approximately midway between the end walls;

an annular piston coextensive with the end walls and fitted on the eccentric rotor and concentric with it, the piston and rotor having a common eccentric head, the piston head making tangential sealing engagement with the cylinder substantially throughout the cycle;

a first abutment having a first end pivotally secured to the stator near 10:00 o'clock and a second end free to project clockwise into the cylinder space far enough to make tangential, sealing engagement with the face of the piston in all positions of the piston, the abutment making sliding sealing engagement with both end walls and, during the combustion expansion stroke, making sealing engagement with the face of the piston, thus forming the counterclockwise end of a combustion-expansion chamber for confining a charge of fuel throughout an expansion stroke and exerting pressure against the piston to cause the piston to force the eccentric rotor to rotate, the cylinder machined

away along the edges of the pivot bore in the stator to permit the abutment to pivot inside the cylinder as the piston planetates, the abutment spring biased downward toward the face of the piston by a spring mechanism outside the engine, allowing a predetermined pressure in the compression chamber to force the abutment open and permit a charge of air to be compressed into the combustion chamber and to aid in holding the free end of the abutment in sealing engagement with the face of the piston at the end of the compression stroke;

a second abutment closing the clockwise end of the combustion-expansion chamber comprising a rectangular metal plate rigidly affixed to the piston and coextensive with the end walls and pointing radially outward from the center of the piston, the second abutment inserted through a slot in a pivoting bearing journaled in the stator near 2:00 o'clock to slidably reciprocate in the slot, the stator machined away along the edges of the bore for the pivoting bearing to enable the second abutment to swing clockwise and counter-clockwise as the piston planetates;

a combustion chamber comprising a shallow arcuate cavity in the stator centered near 12:00 o'clock and opening into and combining with the expansion chamber;

a suction chamber and a compression chamber, the suction chamber being the space behind the traveling piston head and the compression chamber being the space forward of the traveling piston head;

an air inlet port in the stator positioned in the vicinity of 3:00 o'clock, the port fitted with a one-way valve to admit air into the suction chamber as movement of the piston head generates a suction;

means for injecting a charge of fuel into the combustion chamber and means for firing the fuel charge in timed relation to the position of the piston head;

exhaust means for expelling spent gases from the combustion-expansion chamber at the end of the power stroke, the means comprising a poppet valve in the perimeter of the combustion chamber.

4,342,297

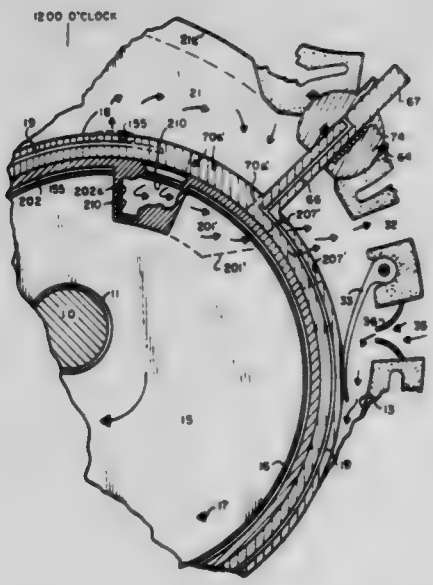
ROTARY INTERNAL COMBUSTION ENGINE

Robert H. Williams, Rte. 2, Box 44, Bandera, Tex. 78003

Division of Ser. No. 30,993, Apr. 18, 1979, Pat. No. 4,286,555, which is a continuation-in-part of Ser. No. 956,206, Oct. 30, 1978, abandoned. This application Mar. 23, 1981, Ser. No. 246,656

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—228 **2 Claims**



1. A rotary internal combustion engine having a four-phase cycle of intake, compression, expansion and exhaust in each revolution of the engine shaft, said engine comprising:

a stator with a cylinder bore enclosed between end walls;

a power shaft in bearings journaled in said end walls and concentric with said cylinder bore;

an eccentric annular rotor keyed to said power shaft and positioned approximately midway between said end walls;

an annular piston coextensive with said end walls and fitted on said eccentric rotor and concentric therewith, said piston and said rotor having a common eccentric head, with said piston head making tangential sealing engagement with said cylinder substantially throughout said cycle;

a first abutment having a first end pivotally secured to said stator near 10:00 o'clock and a second end free to project clockwise into said cylinder space far enough to make tangential, sealing engagement with the face of said piston in all positions of said piston, said abutment making sliding sealing engagement with both end walls and, during the combustion-expansion stroke, making sealing engagement with the face of said piston, thus forming the counter-clockwise end of a combustion-expansion chamber for confining a charge of fuel throughout an expansion stroke and exerting pressure against said piston to cause said eccentric rotor to rotate, the cylinder machined away along the edges of said pivot bore in said stator to permit said abutment to pivot inside said cylinder as said piston planetates, said abutment spring biased downward toward the face of said piston by a spring mechanism outside said engine, allowing a predetermined pressure in said compression chamber to force said abutment open and permit a charge of air to be compressed into said combustion chamber and aid in holding said free end of said abutment in sealing engagement with the face of said piston at the end of said compression stroke;

a second abutment closing the clockwise end of the combustion-expansion chamber comprising a rectangular metal plate rigidly affixed to said piston and co-extensive with said end walls and pointing radially outward from the center of said piston, said second abutment inserted through a slot in a pivoting bearing journaled in said stator near 2:00 o'clock to slidably reciprocate in said slot, said stator machined away along the edges of said bore for said pivoting bearing to enable said second abutment to swing clockwise and counterclockwise as said piston planetates;

a combustion chamber comprising a shallow arcuate cavity in said stator centered near 12:00 o'clock and opening into and combining with said expansion chamber;

a suction chamber and a compression chamber, said suction chamber being the space behind the traveling piston head and said compression chamber being the space forward of said traveling piston head;

an air inlet port in said stator positioned in the vicinity of 3:00 o'clock, said port fitted with a one-way valve to admit air into said suction chamber as movement of said piston head generates a suction;

means for injecting a charge of fuel into said combustion chamber and means for firing said fuel charge in timed relation to the position of said piston head;

exhaust means for expelling spent gases from said combustion-expansion chamber at the end of the power stroke consisting of:

first and second annular sleeves inserted inside said piston on each side of said rotor and bolted thereto, said sleeves rotating closely inside and clearing said piston and coextensive with and clearing said end walls;

a first window through the face of said piston on one side of said rotor beginning at said second abutment and extending counterclockwise a predetermined number of degrees;

a second window through the face of said piston on the opposite side of said rotor extending clockwise from said second abutment a circumferential distance equal to that of said first piston window;

a first window in said first sleeve of the same width and length as said first piston window and on the same side of said rotor;

a first box subtended from said first sleeve window the same width and length as said sleeve window;

a second window in said second sleeve on the opposite side of said rotor having its trailing edge adjacent to the trailing edge of said first sleeve window projecting clockwise for a circumferential distance equal to that of both said first and second piston windows plus the thickness of said second abutment to form an elongated sleeve window;

a second box subtended from said second sleeve window the same width and length as said elongated sleeve window forming an elongated box;

a hole through said rotor communicating with both first and second boxes;

said boxes so positioned on said rotor in relation to the rotor head, that at the end of the power stroke said first box begins to mate with said first piston window, and said elongated box begins to mate with said second piston window, allowing exhaust gases to pour downward via said first piston window into said first box, through said hole in said rotor into said elongated box and forward and out through said second piston window to be exhausted;

an exhaust port in said stator positioned immediately clockwise of said second abutment;

a deflector pivotally anchored in said stator immediately clockwise of said exhaust port, spring biased inward against said piston to deflect said spent gases out of said engine via said exhaust port.

4,342,298

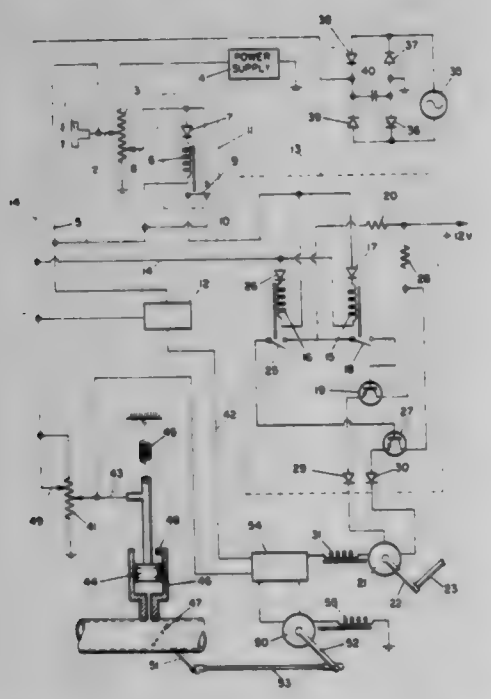
ENGINE AND TRANSMISSION CONTROL APPARATUS

David P. Ganoung, 4406 Chickasaw Rd., Memphis, Tenn. 38117

Continuation-in-part of Ser. No. 20,916, Mar. 14, 1979, Pat. No. 4,280,469. This application Jul. 18, 1980, Ser. No. 170,017

Int. Cl.³ F02D *11/10*; F02M *7/00*

U.S. Cl. 123—344 **17 Claims**



1. Apparatus for promoting unthrottled operation of an engine which is controlled by a throttle valve device and which delivers power to a load through a continuously variable ratio transmission, said apparatus comprising:

input means for selecting the desired operating speed of the engine,

ratio control means operative to adjust the ratio of the transmission to thereby substantially eliminate the difference between said desired engine operating speed and the actual operating speed of the engine,

first throttle control means operative to open the throttle device to an effectively wide open position when both (1) the actual operating speed of the engine substantially equals said desired engine operating speed and (2) the operating speed of the engine exceeds the minimum value practical for wide open throttle operation of the engine,

and second throttle control means operative to close the throttle device from an effectively wide open position when both (1) the ratio of the transmission is maintained at a constant value and (2) the actual operating speed of the engine significantly exceeds said desired engine operating speed,

whereby the reduction in engine power output due to the operation of said second throttle control means counteracts increases in power output due to engine speeds which exceed said desired value.

4,342,299

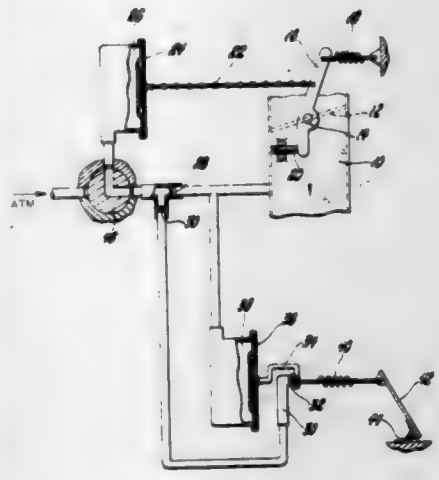
THROTTLE POSITIONING SYSTEM

Raymond J. Haka, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 15, 1980, Ser. No. 187,353

Int. Cl.³ F02D *11/02*

U.S. Cl. 123—396 **2 Claims**



1. A system for positioning a throttle within an engine induction passage to control the manifold pressure in said induction passage downstream of said throttle, said system comprising:

a control diaphragm forming a portion of a chamber adapted to sense said manifold pressure and exerting a force proportional to said manifold pressure,

a spring exerting a biasing force which opposes the force exerted by said control diaphragm,

a servo diaphragm forming a portion of a control pressure chamber,

a valve positioned by said control diaphragm and said spring to create a control pressure in said control pressure chamber,

said servo diaphragm exerting a force proportional to said control pressure which varies in inverse relation to said biasing force and in direct relation to the force exerted by said control diaphragm, said servo diaphragm being adapted to move said throttle to vary said manifold pressure in direct relation to the force exerted by said servo diaphragm, whereby said system is effective to position said throttle to maintain said manifold pressure at a value determined by said biasing force,

and means for varying said biasing force to determine the value at which said manifold pressure is maintained.

4,342,300

STRATIFIED CHARGE ENGINE WITH CHARGE PREPARATION MEANS

William R. Matthes, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 26, 1981, Ser. No. 238,379

Int. Cl.³ F02B *17/00*; F02M *25/06*

U.S. Cl. 123—430 **3 Claims**

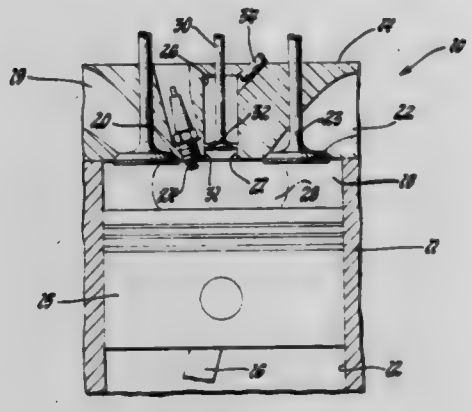
1. A stratified charge internal combustion engine comprising:

means defining a closed end cylinder having a piston reciprocable in the cylinder and defining with the closed end thereof a variable volume combustion chamber,

inlet and exhaust means communicating with said combustion chamber through said cylinder defining means including means for controlling the admission of air to and the exhaust of spent gases from said chamber upon reciprocating motion of said piston through a cycle of sequential intake compression, expansion and exhaust strokes,

a fixed volume charge preparation chamber outside said cylinder adjacent said combustion chamber and communicating therewith through an opening adjacent a selected charge admission portion of said combustion chamber to provide a stratified charge of combustible fuel-air mixture in said portion,

spart ignition means in said combustion chamber charge admission portion and operative to ignite the combustible mixture in said combustion chamber,



valve means associated with said charge preparation chamber to close and open said opening to the combustion chamber, said valve means being operative to open and close during the expansion stroke to receive a charge of pressurized gas from the combustion chamber and trap it for preparation in the charge preparation chamber and further operative to open and close during the compression stroke to discharge a prepared charge into said combustion chamber charge admission portion, and

fuel injection means discharging into the charge preparation chamber and operative to deliver a charge of fuel into the trapped gas charge upon its retention for mixing therewith to form said prepared charge during the major portions of each cycle including the piston exhaust and intake strokes and portions of the power and compression strokes,

whereby an extended time for vaporizing and mixing of the fuel and gas charge in the charge preparation chamber is provided before formation of the stratified charge in the combustion chamber.

4,342,301

DISTRIBUTOR TYPE FUEL INJECTION PUMP

Hitoshi Tomita, and Masayoshi Kobayashi, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,739

Claims priority, application Japan, Apr. 19, 1979, 54-52283[U]

Int. Cl.³ F02M *59/34*

U.S. Cl. 123—502 **6 Claims**

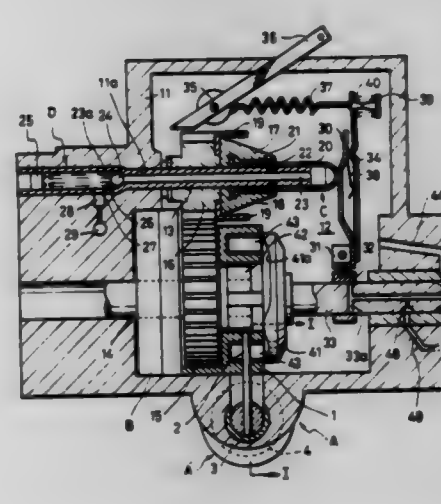
1. In a fuel injection pump for an internal combustion engine, said fuel injection pump being of the type including (a) a housing defining therein a fuel suction chamber, (b) fuel supply means for supplying fuel into said suction chamber at a pressure which is a function of the engine rpm, (c) pump means for supplying fuel in an injecting manner to the engine, (d) an engine rpm governor having a displaceable member which is displaceable as a function of the engine rpm, (e) means connecting said displaceable member of said governor to said pump means for varying the injection quantity of the latter, (f) injection timing control means having a member connected to said pump means and which is displaceable in response to a change in the pressure in said suction chamber for varying the timing of injection of the fuel injection pump, and (g) bias means responsive to the pressure in said suction chamber for biasing said member of said injection timing control means in an injection timing advancing direction after the engine starts and until said pressure in said suction chamber reaches a predetermined value,

the improvement comprising:

A. a first piston forming said member of said injection timing control means, said first piston being displaceable in response to the pressure in said suction chamber, the position of said first piston determining the timing of injection of the fuel injection pump;

B. a first spring forming part of said injection timing control means and arranged to urge said first piston in an injection timing retarding direction;

C. a second piston forming part of said bias means and having a pressure applying area larger than that of said first piston, said second piston being responsive to the pressure in said suction chamber for biasing said first piston in an injection timing advancing direction after the engine starts and until said pressure in said suction chamber reaches said predetermined value;



D. a second spring forming part of said bias means and having an urging force which is larger than that of said first spring, said second spring being arranged to urge said second piston to cause it to bias said first piston in an injection timing advancing direction;

E. means extending into said suction chamber and defining a drainage passage leading from said suction chamber to a zone under a lower pressure than the pressure in said suction chamber;

F. drainage control means forming part of said displaceable member of said governor and adapted to control the drainage of fuel through said drainage passage as a function of the position of said displaceable member of said governor; and

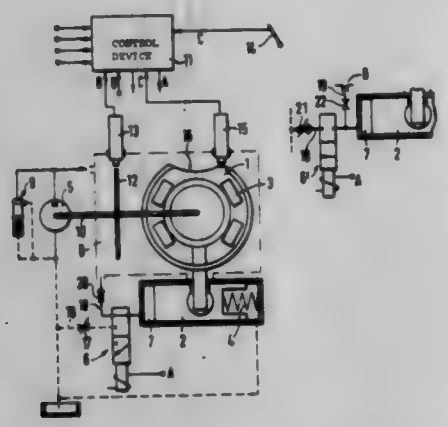
G. a valve disposed in said drainage passage downstream of said drainage control means and controlling the flow of fuel received from said drainage control means, said valve being adapted to open at a predetermined pressure of fuel flowing in said drainage passage corresponding to an engine rpm which exceeds a lower engine rpm including idling rpm;

whereby said drainage passage is blocked by said valve unless said predetermined valve opening pressure of said valve is exceeded by the pressure of fuel flowing in said drainage passage, to thus keep fuel from escaping from said suction chamber to said lower pressure zone.

4,342,302
CONTROL APPARATUS FOR A FUEL INJECTION PUMP

Max Straubel, Stuttgart; Max Greiner, Gerlingen, and Helmut Laufer, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 151,846
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, 2923445
Int. Cl.³ F02D *1/02. 1/16;* F02M *39/00*
U.S. Cl. 123—502 5 Claims



1. A control apparatus for the variation of the onset of supply by a fuel injection pump having a cam drive, the control apparatus including:

a fluid supply pump connected to the engine and the fuel injection pump to provide fluid at an rpm-dependent pressure to the fuel injection pump.

an adjustment piston connected to the cam drive to adjust cam drive position, and having a work chamber connected to the fluid supply pump such that the fluid provides a biasing force to the work chamber which biases the adjustment piston in a first direction;

a restoring means connected to the adjustment piston and which generates a restoring force to bias the adjustment piston in a second direction;

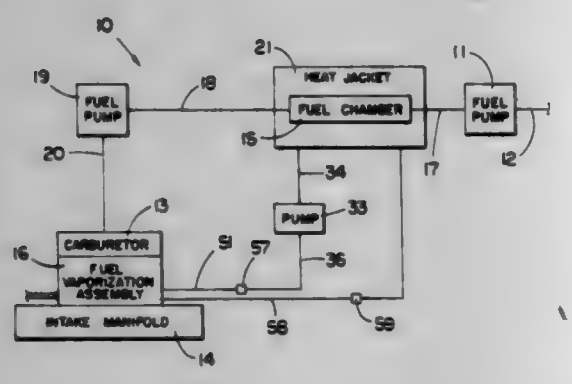
wherein the adjustment piston is connected to the supply pump and the cam drive such that the cam drive generates a reactionary force to bias the adjustment piston in the second direction upon actuation of the supply pump;

a control means connected to the work chamber which controls fluid flow out of the work chamber such that the adjustment piston is displaced in the second direction in response to the restoring force and the reactionary force to prolong the supply of fuel to the fuel injection pump.

4,342,303
FUEL VAPORIZER AND CARBURETOR PREHEATER SYSTEM

Robert L. McCord, 2000 Mark Ct., Kokomo, Ind. 46901

Filed Sep. 15, 1980, Ser. No. 187,411
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 10 Claims



1. An apparatus for preheating the fuel and carburetor and for improving vaporization of the fuel, said apparatus being for use with an internal combustion engine having a fuel tank connectable to the carburetor mounted to an intake manifold, which comprises:

a fuel chamber;

first connecting means for connecting said fuel chamber to the fuel tank;

second connecting means for connecting said fuel chamber to the carburetor;

a heat chamber adjacent said fuel chamber;

a vaporization assembly mounted between the carburetor and the intake manifold and including a frame defining an aperture corresponding to openings in the carburetor and intake manifold, said vaporization assembly including, consecutively, a first screen covering the aperture of the frame, a vaporizer conduit extending into the aperture of the frame, and a second screen covering the aperture of the frame;

conduit means for connecting the vaporizer conduit with said heat chamber;

a heat medium within said heat chamber, the vaporizer conduit and said conduit means;

heat means for heating the heat medium within said heat chamber;

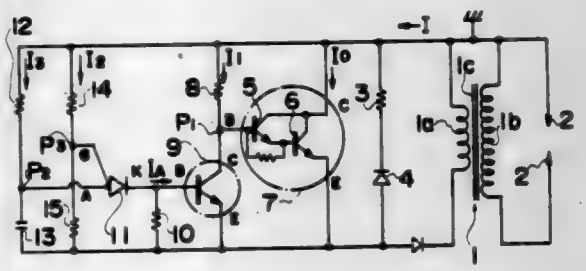
first pump means for moving fuel from said fuel chamber to the carburetor; and

second pump means for circulating said heat medium through said heat chamber, the vaporizer conduit, and said conduit means.

4,342,304
CONTACTLESS IGNITON CIRCUIT FOR INTERNAL COMBUSTION ENGINES

Hiromi Watanabe, Yokosuka, Japan, assignor to Oppama Kogyo Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 2, 1980, Ser. No. 164,508
Claims priority, application Japan, Dec. 1, 1979, 54-156119
Int. Cl.³ F02P *3/08*
U.S. Cl. 123—599 1 Claim



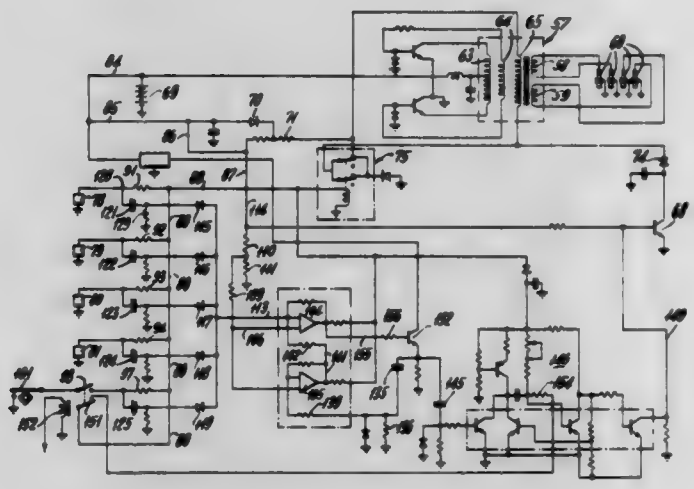
1. A contactless ignition circuit for an internal combustion engine having a coil assembly including a primary winding, said circuit comprising a power transistor, a small signal transistor, a programmable unijunction transistor, a first potential dividing circuit and a second dividing circuit, said power transistor having a collector and emitter connected respectively to the ends of the primary winding, said small signal transistor having a collector connected to the base of said power transmitter and via a resistance to one end of said primary winding, and an emitter connected to the other end of said primary winding, said programmable unijunction transistor having a cathode connected to the base of the signal transistor and an anode and gate connected respectively to said first and second potential dividing circuit, said first and second potential driving circuit being connected in parallel with said primary winding, said first potential dividing circuit consisting of a resistance and capacitor, said second dividing circuit consisting of two resistances.

4,342,305

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE EMPLOYING FUEL INJECTION

Robert E. Canup, Poughkeepsie, and Martin Alperstein, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 48,867, Jun. 15, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 200,753
Int. Cl.[3] F02B *15/00;* F02M *63/06*
U.S. Cl. 123—617 6 Claims



1. In combination with an internal combustion engine employing fuel injection and including a high tension electric spark to ignite a combustible mixture of said injected fuel,

a plurality of fuel injection valves each having an electrically conductive material plunger in seating contact with an electrically conductive material body of each valve when closed,

said plungers being actuated by fuel pressure to open the valves,

ignition breaker points being engine actuated to open after each of said fuel injection valves when operating normally,

first electrical circuit means for connecting a resistor in series with each of said plungers and with said breaker points,

a first and second comparator each having two inputs and an output,

second circuit means for connecting a predetermined EMF to one of each of said comparator inputs in parallel,

third circuit means comprising a diode in series with each of said plungers and said breaker points for maintaining electrical separation thereof,

said third circuit means connecting said plungers and said breaker points to the other input of said first comparator,

said first comparator output providing a signal to initiate said electric spark whenever any of said plungers are actuated by the fuel pressure or said breaker points are actuated, and

time delay means connected to said first comparator output for maintaining said signal for a predetermined time duration,

said time delay means comprising

an RC circuit,

said second comparator,

fourth circuit means for connecting said RC circuit between said first comparator output and the other input of said second comparator, and

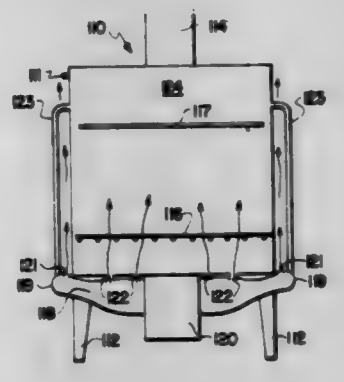
fifth circuit means for connecting the output of said second comparator to said other input of said first comparator.

4,342,306

WOOD STOVE WITH SAFETY FORCED AIR SYSTEM

Robert D. Thulman, 10596 E-1 Twin Rivers Rd., Columbia, Md. 21044, and Alve J. Erickson, 17 Pleasant St., Milford, N.H. 03055

Filed Aug. 16, 1979, Ser. No. 67,202
Int. Cl.[3] F02B *75/16*
U.S. Cl. 126—61 23 Claims



1. A high-efficiency safety stove for burning solid fuels comprising:

(a) a firebox having at least one exterior single-wall exposed to the space to be heated;

(b) means for introducing a solid fuel into said firebox;

(c) means for exhausting combustion gases from said firebox;

(d) primary air introducing means for admitting combustion air into said firebox;

(e) forced air flow means for directing a flow of room air across at least said one exposed single-wall of said firebox;

(f) supplemental air inlet means for diverting a portion of the air from said air flow means into said firebox;

(g) fan means for forcing room air through said air flow means and through said supplemental air inlet means;

(h) said firebox being constructed such that substantially all of the combustion air must enter the firebox through said primary air introducing means or through said supplemental air inlet means;

(i) the maximum sizing of said primary air introducing means being sufficiently small that if the fan means stops, the rate of combustion in the firebox will be automatically reduced to maintain the temperature of the stove at a safe level; and

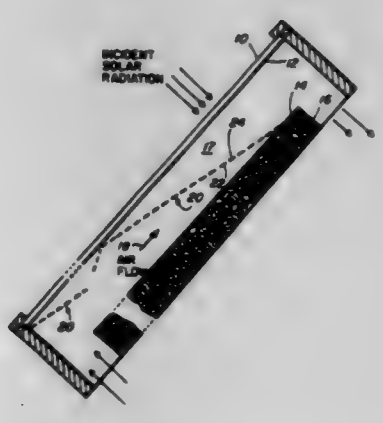
(j) means for controlling the amount of air introduced into said firebox through said primary air introducing means.

4,342,307

SOLAR COLLECTOR FOR HEATING AIR

John W. Tuck, 01 Squam Hill Ct., Rockport, Mass. 01966

Filed Dec. 10, 1980, Ser. No. 215,018
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—449 5 Claims



1. In a solar collector for heating air or other gaseous medium and having a gas passage bounded on one side by a glazing layer arranged for exposure to the sun, and having an

energy absorbing and transferring element within said passage, the improvement in which said transfer element comprises

A. a screen of thermally conductive material apertured for the ready passage of the gaseous medium and disposed for solar illumination through the glazing layer and to intercept the flow of the gaseous medium along said passage, and

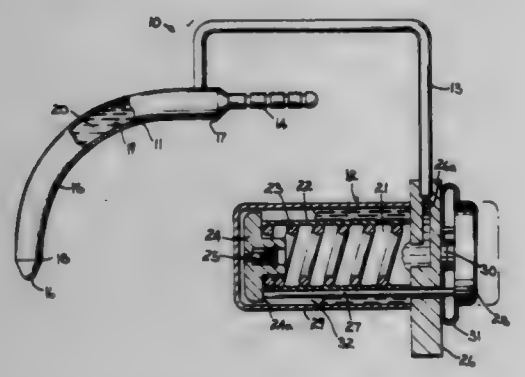
B. granules of mineral grit fixedly secured to said screen with substantially continuous distribution thereover, said granules being configured and arranged to provide said transfer element with a coarse-textured, energy-transferring surface of enhanced topographical area in which separate ones of said granules function substantially as separate energy-transferring elements.

4,342,308

PENILE ERECTILE SYSTEM

Robert E. Trick, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Filed Oct. 2, 1980, Ser. No. 193,526
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **2 Claims**



1. A penile erectile system includes:

(a) An elongated cylindrical penile inplant having a stem at one end, a conical tip at the other end, and a nondistensible chamber;

(b) a single stroke pump for pressurizing the nondistensible chamber, said pump including:

(i) an expanded collapsible pumping chamber,

(ii) a removable rod which prevents the chamber from being collapsed and maintains said pumping chamber in a normal expanded condition, and

(iii) means for collapsing the expandable pumping chamber to reduce its effective volume upon removal of said removable means; and

(c) tubing connecting the non-distensible chamber of the implant and the pumping chamber so that when the pump, implant and tubing are substantially filled with hydraulic fluid and the pumping chamber is collapsed, hydraulic fluid is forcibly displaced under pressure through the tubing to completely fill, pressurize and make rigid the non-distensible chamber of the implant.

4,342,309

BOW TYPE TRACTION DEVICE HAVING CORPOREAL INSERTION MEANS

Nas S. Eftekhar, 25 Paddock Rd., Hohokus, N.J. 07423

Filed Jan. 8, 1981, Ser. No. 223,288
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—84 R **11 Claims**

1. A traction device for providing skeletal traction application to a limb of a patient, comprising:

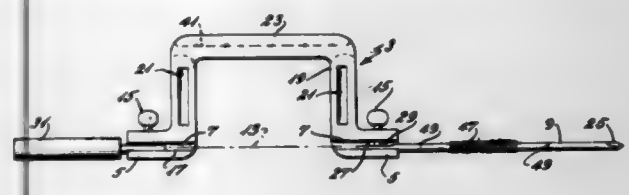
(a) an elongate traction pin, comprising a driven end and a distal end;

(b) a bow member comprising first and second end portions connected by a center portion, the end portions being aligned along a bow axis and the center portion extending between the two ends and away from the bow axis;

(c) an insertion channel in each of the end portions of the bow member, the insertion channels being adapted to receive the pin so that the center axis of the pin generally coincides with the bow axis; and

(d) a securing means associated with at least one of the end portions of the bow, the securing means being operable to prevent the pin from moving relative to the bow member when an end of the pin is in the end of the bow member having said securing means;

(e) a handle, the handle being fitted to one end of the bow at



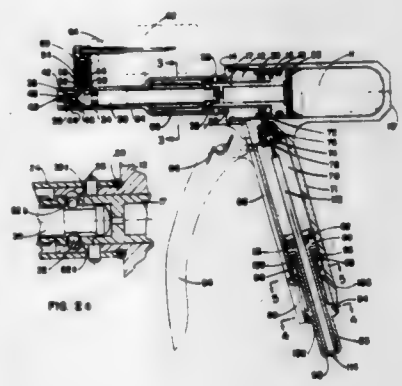
least when the other end of the bow is holding the driven end of the pin, wherein the bow may receive the driven end of the pin in one of the bow end portions and cooperate with with the pin and the handle to function as a bit and brace to insert the pin through the patient's limb with each end portion of the pin extending outside the patient's limb, and the bow may receive an end portion of the pin in each of the end portions of the bow to cooperate with the pin to effect traction on the limb by means of a conventional system of a cord, weight and pulley.

4,342,310

HYDRO-PNEUMATIC JET INJECTOR

Istvan Lindmayer, 4390 Gilles St., Pierrefonds, Prov. of Quebec, Canada (H9H 2N4), and Karim Menassa, 3035 Noorduyn, St. Laurent, Prov. of Quebec, Canada (H4R 1A1)

Filed Jul. 8, 1980, Ser. No. 167,395
Int. Cl.³ A61M *5/30*
U.S. Cl. 128—207.25 **9 Claims**



1. A jet injector for administering a fluid medicine through the skin comprising:

(a) an elongated tubular casing;

(b) handle means substantially perpendicular to said casing;

(c) plug means in said casing, said plug means dividing the interior of said casing into a medicine chamber and a compression chamber, said compression chamber containing a substance which is gaseous at normal room temperature and which converts to a liquid when subjected to pressure;

(d) an inlet duct in said casing for introducing medicine into said medicine chamber;

(e) a discharge orifice in said casing for discharging medicine from said medicine chamber into the skin;

(f) first piston means slidably mounted in said compression chamber for movement from a rest position toward said substance to a charged position, and away from said substance to the rest position;

(g) first rod means connected to said first piston means slidable in said plug means and extending into said medi-

cine chamber for drawing medicine into and discharging medicine from said medicine chamber;

(h) a charging chamber in said handle means containing a charging liquid;

(i) a pressure chamber between said plug means and said piston means for receiving liquid from said charging chamber for pressing the first piston means against the substance;

(j) second piston means in said handle means;

(k) trigger means connected to said casing for moving said second piston means against said charging liquid, whereby said charging liquid is caused to pass from said charging chamber into said pressure chamber to move said first piston means against the substance to the charged position for liquefying a portion of said substance, and to cause said first rod means to move partially out of said medicine chamber for drawing medicine into the medicine chamber;

(l) safety catch means in said handle means for locking said first and second piston means in the charged position, and for releasing said first and second piston means to cause said first rod means to force said medicine through said discharge orifice while the charging liquid is returned to the charging chamber.

4,342,311

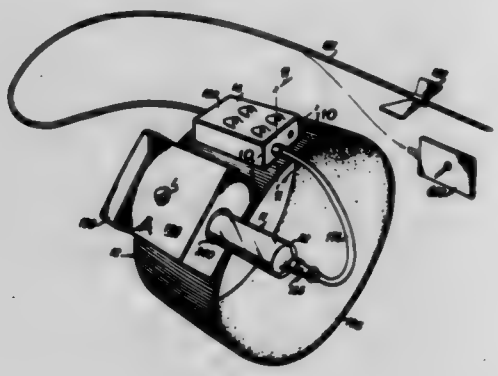
INJECTOR WITH PROGRAMMING MEANS

Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of Atlanta, Ga. 30327

Division of Ser. No. 1,091, Jan. 8, 1979, Pat. No. 4,273,112, which is a continuation-in-part of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, and Ser. No. 964,953, Nov. 30, 1978, Pat. No. 4,235,235. This application Mar. 27, 1981, Ser. No. 248,483

Int. Cl.³ A61M *5/20*

U.S. Cl. 128—214 F **4 Claims**



1. Fluid dispensing apparatus for injecting fluid into a patient at an average prescribed rate over a prolonged period of time comprising:

a container defining a fluid chamber therein carrying fluid to be dispensed and an outlet from said fluid chamber connected to the patient;

a piston slidably mounted in said fluid chamber for forcing fluid from said outlet as said piston is moved toward said outlet;

an electrical power supply;

electrically operated driving means for moving said piston toward said outlet when said electrically operated driving means is connected to said power supply; and

control means for selectively connecting said electrical power supply to and disconnecting said electrical power supply from said electrically operated driving means; said control means including switching means for selectively connecting said electrical power supply to said electrically operated driving means; timing pulse generator means for operating said switching means; programming means for selectively controlling the timing pulse rate output of said timing pulse generator; and mode selector means for selectively activating said programming means to permit adjustment said programming means to change the timing pulse rate output of said timing pulse generator means and for selectively causing said timing pulse generator means to generate the timing pulse rate output selected by said programming means while preventing adjustment of said programming means.

4,342,312

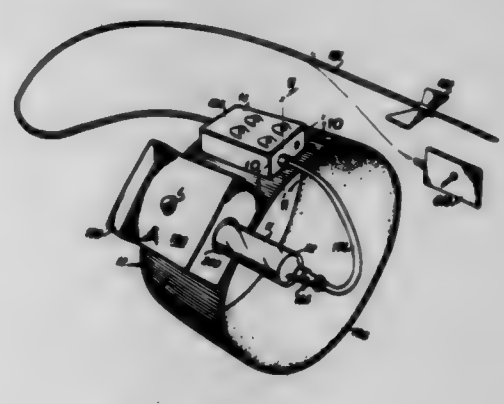
METHOD OF INJECTING FLUID

Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of Atlanta, Ga. 30327

Division of Ser. No. 1,091, Jan. 8, 1979, Pat. No. 4,273,112, which is a continuation-in-part of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, and Ser. No. 964,953, Nov. 30, 1978, Pat. No. 4,235,235. This application Mar. 30, 1981, Ser. No. 248,868

Int. Cl.³ A61M *5/20*

U.S. Cl. 128—214 F **1 Claim**



1. A method of injecting a fluid into a patient at an average prescribed rate over a prolonged period of time comprising the steps of:

alternatively injecting the fluid into the patient at a first prescribed rate greater than the desired average prescribed rate for a first prescribed short period of time of fixed duration much less than the prolonged period of time;

alternatively stopping the injection of the fluid into the patient for a second prescribed short period of time less than the prolonged period of time so that the fluid is injected into the patient at the desired average prescribed rate over the sum of the first and second prescribed short periods of time; and

selectively varying the duration of only the second prescribed short period of time without varying the duration of the first prescribed short period of time to selectively vary the selected prescribed average rate at which the fluid is injected into the patient.

4,342,313

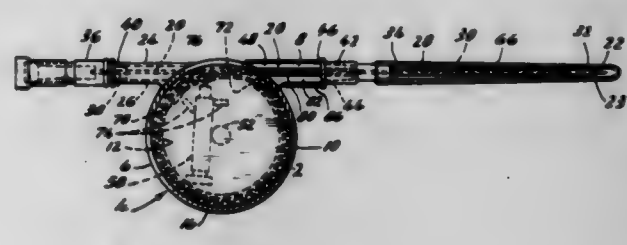
CATHETER INSERTION DEVICE

Richard M. Chittenden, Grayslake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 23, 1981, Ser. No. 237,319

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214.4 **15 Claims**



1. An improved catheter insertion device comprising:

a catheter dispenser having a base with a catheter outlet extending therefrom and a catheter receptacle including

an outwardly facing wall for receiving a catheter therewithin, the dispenser including means engaging the base and receptacle in rotating relation, said catheter being in mechanical engagement with said catheter receptacle whereby rotation of said catheter receptacle relative to said base causes said catheter to be threadably moved through said outlet;

a tubular housing having an axial bore therethrough tangentially extending from said catheter dispenser in coaxial alignment with said catheter outlet;

elongate piercing means having a sharpened tip, coaxially disposed through said tubular housing and extending through and beyond said catheter outlet for the performance of venipuncture;

a hub member affixed to the proximal end of said elongate piercing means constructed and arranged for mating engagement with the distal end of said tubular housing, facilitating the slidable removal of said elongate piercing means from said catheter dispenser; and

a cannula member generally contiguously and telescopically surrounding the distal portion of said elongate piercing means and extending beyond said catheter outlet proximate to said sharpened tip, the proximal end of said cannula being in fluid-tight connection to said catheter outlet;

said cannula being operatively associated with said elongate piercing means in performing said venipuncture;

whereupon following said venipuncture, said elongate piercing means may be slidably removed from said cannula and said catheter outlet and said catheter thereupon telescopically inserted into and through said catheter outlet and cannula and into the vein of the patient.

4,342,314

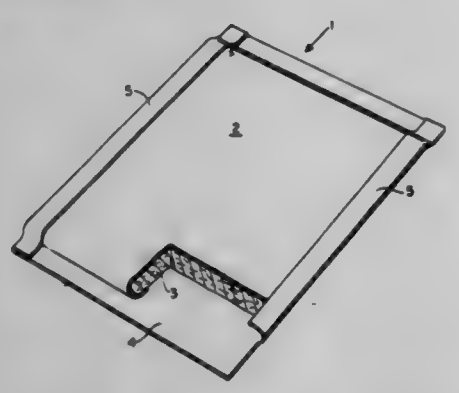
RESILIENT PLASTIC WEB EXHIBITING FIBER-LIKE PROPERTIES

Clifford J. Radel, Cheviot, and Hugh A. Thompson, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 17,506, Mar. 5, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,410

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—287 **37 Claims**



1. A resilient three-dimensional web exhibiting a fiber-like appearance and tactile impression and comprised of fluid-impervious plastic material, said web having first and second surfaces, said first surface having a multiplicity of apertures therein, each of said apertures being defined by a multiplicity of intersecting fiber-like elements interconnected to one another in the plane of said first surface, each of said fiber-like elements further exhibiting a substantially uniform U-shaped cross-section along its length, said cross-section comprising a base portion in said plane of said first surface and a sidewall portion joined to each edge of said base portion, said sidewall portions extending generally in the direction of said second surface of said web, said intersecting sidewall portions being interconnected to one another intermediate said first and said second surfaces of said web, said interconnected sidewall portions terminating substantially concurrently with one another in the plane of said second surface.

4,342,315

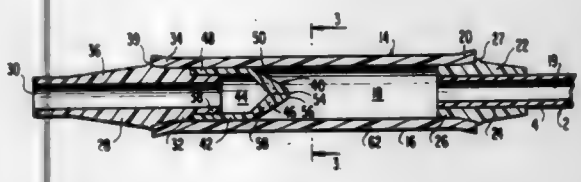
SUCTION CATHETERS WITH IMPROVED SUCTION CONTROL VALVE

Isaac S. Jackson, Greenwich, N.Y., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed May 10, 1979, Ser. No. 37,878

Int. Cl.³ A61M *25/00, 1/00*

U.S. Cl. 128—349 R **8 Claims**



1. A suction catheter assembly with a lumen having a proximal end, a ported distal end, a suction control valve assembly portion connected to the proximal end of the catheter, said suction control valve assembly comprising:

an elongated flexible tube having a proximal end, a distal end and a lumen larger than the lumen of the catheter connected to said valve,

means connecting the distal end of said flexible tube to the proximal end of said catheter,

a rigid connector member having a proximal end, a distal end and a lumen smaller than the lumen of said flexible tube fitted into the proximal end of said flexible tube with its distal end positioned within and its proximal end positioned without said flexible tube,

the distal end of said rigid connector member bearing an integral nipple, and

a valve member comprising a proximal tubular portion having a lumen larger than the lumen of said rigid connector member, but smaller than the lumen of said flexible tube, and a closed distal portion integral with the proximal tubular portion,

the free end of said proximal tubular portion being fitted over said nipple and extending into said flexible tube,

said closed distal portion being of a chisel point design having a V-shaped lateral cross-section and a U-shaped anterior cross-section, said lateral cross-section having a median longitudinal slit therethrough,

said valve member being formed of resilient material permitting said V-shaped lateral cross-section to be parted along said median slit by application of pressure upon said valve member in a direction perpendicular to the longitudinal axis of said slit and to be restored to its close position upon release of said pressure,

said flexible tube having protrusions on its outer surface positioned on said axis of said median slit to serve as indicators for application of pressure to open said valve member.

4,342,316

ZERO STASIS CATHETER

Philip Rosenberg, Gurnee, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 6, 1981, Ser. No. 280,741

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—349 B **14 Claims**



1. A catheter, comprising:

an elongated shaft having an inflation lumen extending along the shaft, and a drainage lumen extending through the shaft, said catheter having a proximal end, a distal end, and a distal end portion;

an elastic sleeve on the distal end portion of the catheter and having opposed ends; and

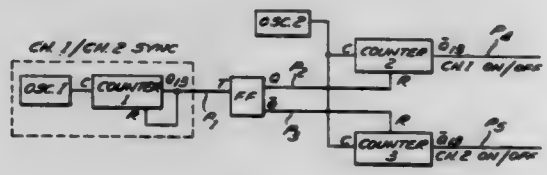
means bonding the sleeve to said distal end portion in spaced circumferential zones adjacent the opposed ends of the sleeve and along longitudinal lines at least a substantial distance between said zones on opposed sides of said distal end portion, said catheter having an inflation opening beneath the sleeve communicating with the inflation lumen, and at least one drainage eye proximal the sleeve and communicating with the drainage lumen.

4,342,317

METHOD OF ELECTRICAL MUSCLE STIMULATION FOR TREATMENT OF SCOLIOSIS AND OTHER SPINAL DEFORMITIES

Jens Axelgaard, Downey, Calif., assignor to The Professional Staff Association of the Rancho Los Amigos Hospital, Inc., Downey, Calif.

Filed Apr. 1, 1980, Ser. No. 136,310
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—421 **17 Claims**



1. A method of treating spinal curvature deformities in patients comprising the steps of:

(a) locating a reference center on the major curve to be treated;

(b) locating muscle site pairs surrounding said reference center such that, when one muscle site is stimulated electrically in accordance with a selected pulse pattern, no stimulation of the other muscle site occurs;

(c) positioning two pairs of electrodes generally symmetrically about said reference center on the convex side of said major curve at a trunk location determined by the type of curve noted for stimulation of said muscle sites;

(d) repetitively applying a first selected electrical pulse pattern to one pair of said electrodes sufficient to evoke contraction and relaxation of one of said muscle sites; and

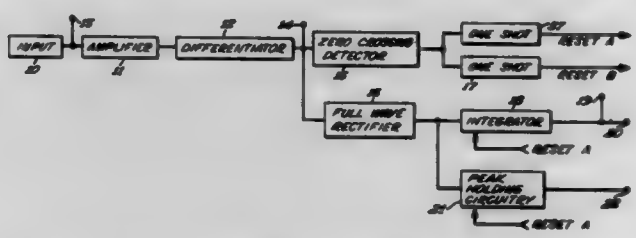
(e) alternatively repetitively applying a second selected electrical pulse pattern to the other pair of said electrodes for contraction and relaxation of the other of said muscle sites whereby one of the muscle sites is always in contraction to thereby apply a constant corrective force on the spinal curvature.

4,342,318

PHYSIOLOGICAL WAVEFORM PROCESSOR

William R. Engle, Blaine, Minn., and Ronald H. Rockland, Parsippany, N.J., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 25, 1980, Ser. No. 180,710
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—708 **9 Claims**



1. Apparatus for processing waveform signals of physiological origin including input means for receiving said waveform signals, said apparatus comprising:

first means operatively connected to said input means for developing a signal representative of the peak-to-peak amplitude between each waveform signal peak and the next successive waveform signal peak;

second means operatively connected to said input means for developing a signal representative of the maximum slew rate of said waveform signal between successive waveform signal peaks, said first and second means each comprising resettable memory means;

third means operatively connected to said input means and said first and second means for generating a memory means reset signal on the occurrence of a sign change in the slope of said waveform signal;

fourth means connected to receive said first means signal including memory means for storing said first means signal, said fourth means further comprising means for blocking all first means signals from said fourth means memory means which do not exceed the last signal stored in said memory means;

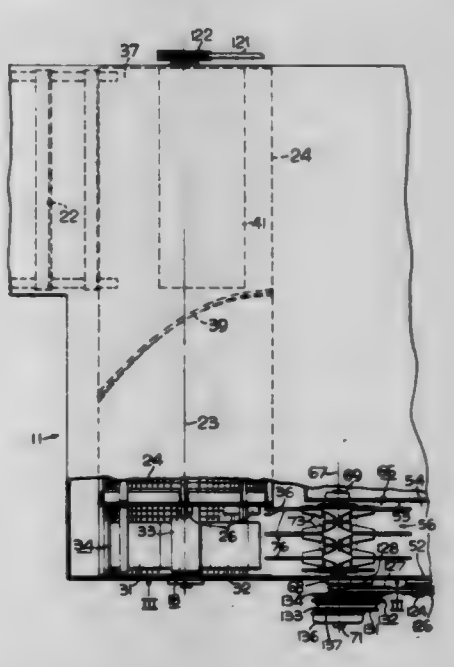
fifth means connected to receive said second means signal including memory means for storing said second means signal; and p1 means for gating said second means signal to said fifth means memory means, said fifth means including means for enabling said gating means only on the occurrence of a first means signal that exceeds the last first means signal stored in said memory means.

4,342,319

COMBINED CHOPPER AND IMPELLER FOR AN AXIAL FLOW COMBINE

Billy B. Willis, and L. Michael Fetters, both of Independence, Mo., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 29, 1980, Ser. No. 220,355
Int. Cl.³ A01F *12/40*
U.S. Cl. 130—27 R **7 Claims**



1. An axial flow combine having a foraminous cylindrical cage whose axis is transverse to the direction of travel of the combine during a harvesting operation having a rearward facing, radial discharge opening adjacent one axial end and a rotor within and generally coextensive and coaxial with the cage including a discharge paddle at the end thereof registering generally with the discharge opening in the cage whereby the paddles centrifugally impel crop material rearwardly through the discharge opening, said combine further characterized by:

top, bottom and side walls defining a longitudinally extending passageway between said discharge opening in said cage and a downward facing discharge opening at the rear end of the combine, and

a chopper mounted on said combine at the entrance of said passageway adjacent said cage discharge opening for

rotation about a transverse axis and having a plurality of radially extending knives disposed at axially spaced intervals across the transverse width of said passageway, said chopper rotating in the same direction as said rotor whereby said knives strip crop material from said paddles, chop it and impel it rearwardly to said rear end discharge opening.

4,342,320

CIS-10, 10-DIMETHYL-TRICYCLO (7.1.1.0^{2,7}) UNDEC-2-EN-4-ONE AND USE THEREOF AS PERFUMING AND FLAVORING INGREDIENT

Alan F. Thomas, Nyon, Switzerland, assignor to Firmenich, S.A., Geneva, Switzerland

Division of Ser. No. 112,928, Jan. 17, 1980, Pat. No. 4,307,122, which is a division of Ser. No. 969,583, Dec. 14, 1978, Pat. No. 4,226,745. This application May 28, 1981, Ser. No. 267,757

Claims priority, application Switzerland, Jan. 13, 1978, 360/78

Int. Cl.^{3} A24B *3/12, 15/30, 15/34*

U.S. Cl. 131—276 **2 Claims**

1. A tobacco product which comprises having added thereto cis-10,10-dimethyl-tricyclo[7.1.1.0^{2,7}]undec-2-en-4-one.

4,342,321

DEVICE FOR THE FORMATION OF GROUPS OF CIGARETTES

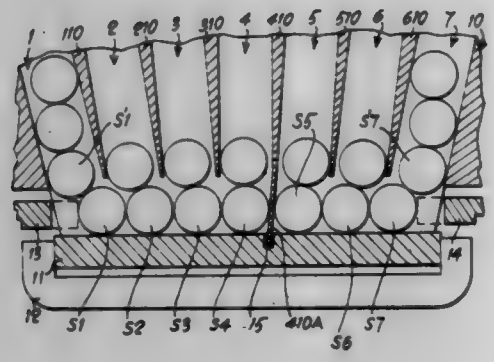
Antonio Zullo, Bologna, Italy, assignor to CIR S.p.A. Divisione Sasib, Bologna, Italy

Filed Jan. 13, 1981, Ser. No. 224,645

Claims priority, application Italy, Jan. 25, 1980, 12421 A/80

Int. Cl.^{3} A24C *5/32, 5/33, 5/352*

U.S. Cl. 131—282 **3 Claims**



1. A device for the formation of a single row of cigarettes having a predetermined number of cigarettes therein, the cigarettes in said row being side-by-side and having their longitudinal axes parallel to each other, comprising

a feeding hopper subdivided by partition walls into a plurality of adjacent passageways, the number of said passageways being equal to said predetermined number of cigarettes in said row; and

a collecting chamber, said collecting chamber including a bottom plate positioned below said plurality of passageways and side pushers located above and at each end of said bottom plate, one of said partition walls being centrally located within said hopper and having an end secured to said bottom plate to prevent movement of said partition in a direction transverse to the longitudinal axes of said cigarettes, and the remaining partition walls each having an end extending to a distance from said bottom plate which is slightly greater than the diameter of said cigarette, whereby each of said passageways feeds a single file of superposed cigarettes into said collecting chamber.

4,342,322

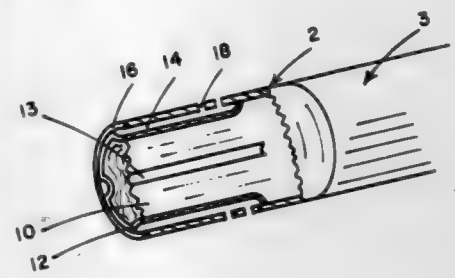
CIGARETTE FILTER

Robert A. Sanford, Prospect, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Dec. 22, 1980, Ser. No. 219,132

Int. Cl.^{3} A24D *3/04, 3/00*

U.S. Cl. 131—336 **9 Claims**



1. A filter for a cigarette comprising:

a porous filter rod of cylindrical configuration having a longitudinally extending tube centrally disposed therein extending a preselected distance from one end thereof;

a smoke impervious wrapper extending longitudinally along said rod from one end thereof and circumscribing said rod leaving flow-through opposed ends of said rod, said wrapper having at least one longitudinally extending groove embedded into the filter rod and that portion of the wrapper defining the groove remaining smoke impervious, said groove being open ended at and extending from one of said ends a distance less than the length of the filter rod; and,

tipping material extending longitudinally of and circumscribing said wrapper, said tipping material being air pervious and permitting ventilating air flow therethrough into said groove, said ventilating air being the only fluid flowing through said groove when the filter is used in combination with a cigarette during normal smoke draw.

4,342,323

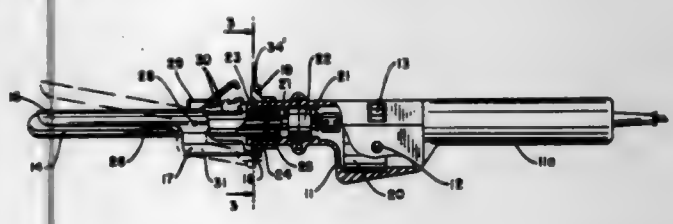
HAIR STYLING APPARATUS AND TECHNIQUES

Randy L. Rick; Paul F. Mazzotta, and Cosimo D. Daiello, all of Reading, Pa., assignors to Shearpower International Corporation, Reading, Pa.

Division of Ser. No. 972,356, Dec. 22, 1978, Pat. No. 4,267,431. This application Dec. 24, 1980, Ser. No. 220,124

Int. Cl.^{3} A45D *7/00*

U.S. Cl. 132—37 R **2 Claims**



1. A method of curling hair comprising:

positioning a group of hair strands between a rotatable barrel and a wrapping member carried by the barrel;

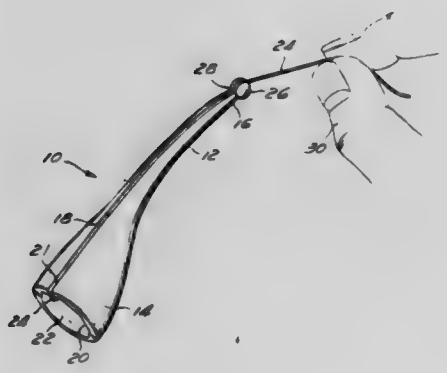
commencing rotation of the barrel so that the desired length of hair is wrapped about the barrel; and

moving the wrapping member cyclically as the barrel is rotated so that the wrapping member alternately urges the hair against the barrel and relaxes its urging of the hair against the barrel.

4,342,324
DENTAL FLOSSING FINGER

Paul E. Sanderson, 12 Rue Grand Vallee, Newport Beach, Calif. 92660

Continuation of Ser. No. 13,744, Feb. 21, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,483
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—92 R 3 Claims



1. A holder and applicator for dental floss comprising in combination:

a single unitary elongated applicator body member having (a) proximal and distal ends, (b) a generally circular cross section which smoothly diminishes in area between said proximal and distal ends, and (c) a streamlined exterior wall having a substantially continuously even surface forming a convex curve on one side of said body member and a concave curve on the opposite side of said body member, said proximal end forming an enlarged base for setting said holder and applicator upright when it is not being used so as to maintain the floss in a sanitary, unsoiled condition;

said body member having a generally cylindrical hollow recess formed in said proximal end for retaining a cartridge of dental floss;

anchoring means located at the distal end of said body member, said anchoring means comprising (a) an enlarged knob integral to said body member located at the extreme end of said body member and (b) a neck portion of smaller radius at the base of said knob around which the dental floss is easily wrapped for temporarily anchoring said floss at the distal end of said body member and leaving a loose end of floss hanging freely from said distal end for flossing teeth; and floss pathway means comprising:

(a) a longitudinal open slot in the convex curved side of the exterior surface of said body member and extending the length thereof,

(b) a slot in the wall of the proximal end of said body member so that said hollow recess is in direct communication with said longitudinal slot, and

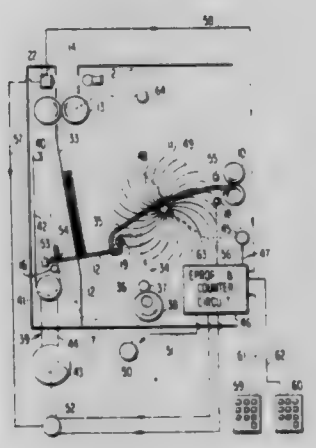
(c) an open slot in said enlarged knob in communication with said longitudinal slot;

said floss pathway means formed providing a defined, protected and easily threaded pathway for floss from (a) said point of egress of the floss to the exterior wall of said body member to (b) said anchoring means so that the user of said holder and applicator need only withdraw a length of floss from said point of egress, lay said length of floss into said open longitudinal slot, lay said floss into said open slot in said enlarged knob, and anchor the floss around said neck portion of said anchoring means.

4,342,325
DISPENSING APPARATUS

Leif J. I. Lundblad, Haradsvagen 102, S-141 41 Huddinge, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 950,108, Oct. 10, 1978, abandoned. This application Apr. 4, 1980, Ser. No. 137,189
Claims priority, application Sweden, Oct. 11, 1977, 7711413
Int. Cl.³ B65H *3/44*
U.S. Cl. 133—1 R 3 Claims

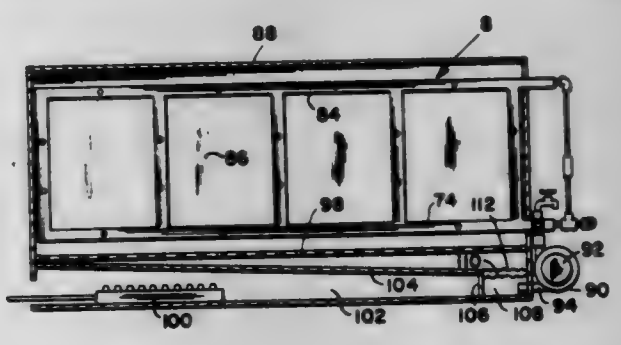


1. An apparatus for feeding a given number of sheet-like elements from a store of such elements to a receipt opening, comprising: an element-dispensing control means; first, second and third element-conveying means having respective drive means electrically connected to said control means for controlling the respective operating sequences of said drive means, said second conveying means being movable towards and away from said third conveying means; and counter means for counting the number of elements dispensed from said store in response to an ordered number of said elements, wherein the drive means of the first conveying means is arranged, in cooperation with said control means, to dispense a given number of sheet-like elements to the second conveying means in dependence upon the absence of a previously dispensed bundle of elements on the second conveying means but independent of the presence or absence of a previous conveyed bundle of elements in the receipt opening; and wherein the drive means of the second conveying means is arranged, in cooperation with said control means, to transfer the elements to said third conveying means in dependence upon the absence of a previously further conveyed bundle of elements in the receipt opening, whereby feeding of said sheet-like elements from said store to said second conveying means can commence during that time in which a previously conveyed bundle of said elements still remains in the receipt opening, thereby enabling the dispensing procedure to be considerably expedited.

4,342,326
HIGH SPEED STRIPPING APPARATUS

Paul L. Meier, Strip-Ease, Inc., Hwy. 17, Martin, Ga. 30557

Filed Jan. 30, 1981, Ser. No. 230,002
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—102 4 Claims



1. A stripping apparatus comprising an enclosure, an array of

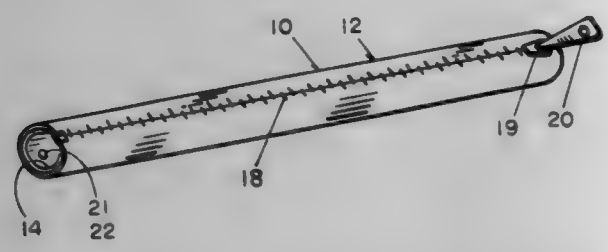
elongated tubes located within the enclosure, said tubes having side walls with a plurality of nozzles in the side walls arranged to deliver liquid solvent from the interior of the tubes to the space outside of the tubes but within the enclosure, means for collecting liquid solvent at the bottom of the enclosure, pump means, having an intake in communication with the collecting means and an outlet in communication with the array of tubes, for delivering liquid solvent collected at the bottom of the enclosure to the interiors of the tubes in the array, at least one of the elongated tubes in the array having an additional internal tube with a series of transverse pin-hole openings, said internal tube being positioned within said one of the elongated tubes and being spaced from the side walls thereof so that a space for flow of liquid solvent surrounds the internal tube substantially completely, and so that each pin-hole opening is in register with one of the nozzle openings of said one of the elongated tubes, and means for supplying compressed air to said internal tube, whereby blasts of compressed air from said pin-hole openings are directed through said nozzle openings and project fine liquid solvent droplets from said nozzle openings at high velocity.

4,342,327

TAPE STRUT AND TAPE STRUT TENT

Ming-Shean Ueng, 3410 Hayes St., Hollywood, Fla. 33021

Filed Oct. 18, 1979, Ser. No. 86,051
Int. Cl.³ A45F *1/00*
U.S. Cl. 135—1 R **21 Claims**



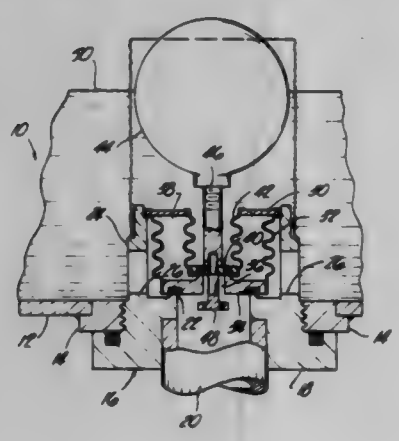
1. A tape strut comprising at least a tape and at least a zipper, means of combination of said tape and said zipper, means of attaching of said tape onto said zipper while in use and means of storage of said tape and said zipper while not in use, said zipper forming a closed loop around said tape in cross section while in use so that said tape strut being able to be used to take load as a structure tubing.

4,342,328

TWO STAGE FLOAT VALVE

Galal N. Matta, Sterling Heights, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 16, 1977, Ser. No. 806,978
Int. Cl.³ F16L *43/00*; F16K *31/18*
U.S. Cl. 137—135 **3 Claims**



1. In a vehicle having a liquid fuel tank whose bottom wall (12) is connected to a downwardly-extending suction tube (20): the improvement comprising means defining a main valve seat (22) located at the upper end of the suction tube; a main poppet valve element (34) disposed above the main seat for movement toward or away therefrom to control fuel flow thereacross; a stationary end wall (30) located above the valve seat; a first outer imperforate bellows 32 extending downwardly from said end wall to the main valve element;

said main valve element having a pilot port (36) therethrough; a liquid-level responsive float (44) located within the fuel tank directly above the stationary end wall; a pilot valve element (40) rigidly connected to the float for opening the pilot port when the liquid level in the tank rises above a predetermined low value; valve lifter means (48) carried by the pilot valve element for forcible engagement with an undersurface of the main valve element when the pilot valve element is moved upwardly by the float; and a second inner imperforate bellows extending downwardly from the stationary end wall to the pilot valve element;

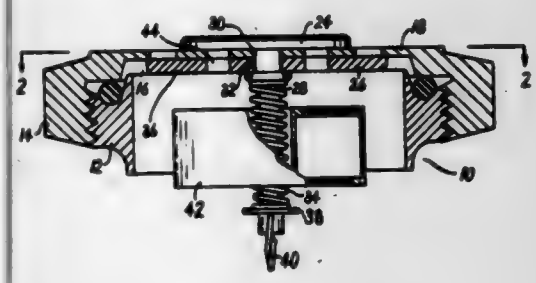
the inner and outer bellows collectively forming an annular chamber (38) whose sole communication with the fuel tank is through the pilot port.

4,342,329

BREATHER VALVE

Robert W. Roff, 15B Jetty Rd., Toora, Victoria, Australia

Filed Aug. 26, 1980, Ser. No. 181,536
Int. Cl.³ F16K *17/26*
U.S. Cl. 137—202 **6 Claims**



1. A breather valve for a closed liquid tank, said liquid tank having a tank wall, said valve comprising:

an outer valve member shaped as an essentially flat disc and having an axial stem centrally depending therefrom through stem guide means, said stem guide means being formed in said tank wall so that said stem is slidable therethrough along its axis; said outer valve member being adapted to selectively cover and uncover at least a first aperture in said tank wall, said first aperture being concentric with respect to said central stem;

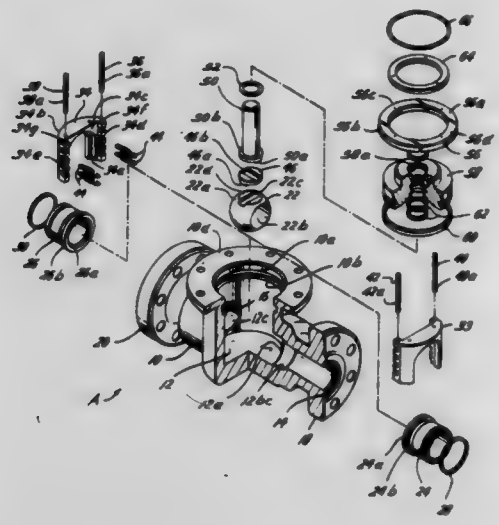
an inner valve member shaped as an essentially flat disc, said inner valve member having valve member guide means in the plane of said disc facilitating slidable movement of said inner valve member along said axis of said stem, said inner valve member also having in the plane of said disc at least one registering aperture aligned with said first aperture in said tank wall, said inner valve member being adapted to selectively cover and uncover at least a second aperture in said tank wall, said second aperture being concentric with respect to said central stem; and,

biasing means including a spring held captive between a free end of said stem and an innermost face of said inner valve member to resiliently bias said valve members together.

4,342,330
BALL TYPE VALVE HAVING IMPROVED REDUNDANT SEALING SYSTEM

Raymond Wieveg, Los Angeles, Calif., and Julian D. Keithahn, Houston, Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Aug. 18, 1980, Ser. No. 178,871
Int. Cl.[3] F16K *43/00, 5/20*
U.S. Cl. 137—315 2 Claims



1. A valve apparatus having an improved sealing system for providing enhanced access to the valve seals for maintenance operations, including:

a valve housing having a cavity forming a central flow path defining a longitudinal axis, said central flow housing forming at one end of said flow path an inlet opening for receiving a flow of fluid and disposed at the other end of said flow path, an outlet opening for exhausting the flow of fluid, said housing having means adjacent said inlet opening and said outlet opening for connecting said housing in flow containing communication with associated flow conduits, said inlet opening and said outlet opening located on the longitudinal axis at opposite ends of housing, an access opening formed in said valve housing for enabling maintenance operations in said cavity without disconnecting said valve housing from flow containing communication with the associated flow conduits;

a substantially spherical flow closure element having a flow passage formed therethrough, said closure element disposed in said cavity forming said central flow path between said inlet and said outlet for rotational movement to and from an opened position with said flow passage aligned with said central flow path to enable flow of fluid and a closed position with said flow passage disposed transversely to said central flow path for blocking passage of fluid through said central flow path, said spherical flow closure element arranged for limited floating movement in said cavity along said longitudinal axis;

seat means disposed in said central flow path on opposite sides of and in sealing engagement with said flow closure element for blocking leakage of fluid therebetween, said seat means including a first seat ring disposed on one side of said flow closure element and a second seat ring disposed the other side of said flow closure element, said first and second seat rings concentrically positioned on the longitudinal axis and arranged for reciprocating movement therealong for maintaining sealing engagement with said flow closure element;

means disposed in said cavity operably connecting said seat rings means for retaining said seat rings in sealing engagement with said spherical flow closure element, said means for retaining being installable and removable through said access opening;

a crank extending from said valve housing and operably connected with said spherical flow closure element for providing the rotational movement to and from the open and closed positions;

a plug removably mountable within said cavity of said housing for substantially filling said access opening for enclosing said cavity, said plug having an opening through which said crank extends, said access opening dimensioned to enable passage of said flow closure element and said seat means and said means for retaining said seal rings for maintenance purposes when said plug is removed;

means for releasably securing said plug with said housing;

means for sealing said plug with said housing to block leakage of fluid therebetween; and

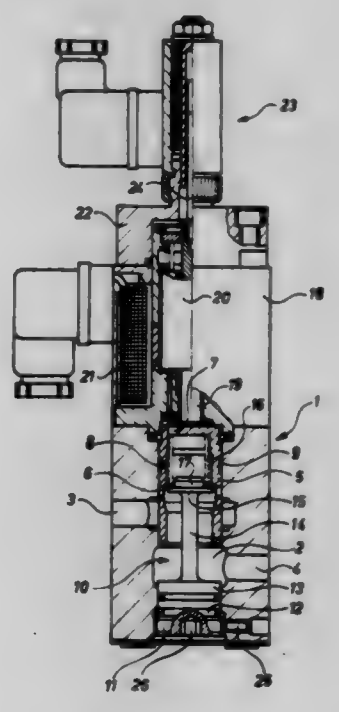
means for sealing between said crank and said plug to block leakage of fluid therebetween, wherein flow of fluid through said flow path is controlled;

wherein said plug removably mounted within said cavity of said housing by a segmented securing ring received in an annular groove formed by said housing, said segmented securing ring held in said annular groove by a securing ring.

4,342,331
HYDRAULIC CONTROL- AND/OR MEASURING DEVICE, PARTICULARLY SOLENOID-CONTROLLED FLOW REGULATING VALVE

Reiner Bartholomäus, Neuendorf, and Hans Wölfges, Lohr, both of Fed. Rep. of Germany, assignors to Die G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Jan. 14, 1981, Ser. No. 225,967
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001886
Int. Cl.[3] F16K *37/00, 39/00*
U.S. Cl. 137—553 10 Claims



1. A hydraulic control- and/or measuring device, particularly an electrically controlled flow regulating valve, having a housing formed with a cylindrical bore and a control edge; a socket-shaped control slider defining an axial blind bore and another control edge cooperating with said first-mentioned control edge; the slider being movable in said cylindrical bore between an open position and a closed position; a biasing spring for engaging one end of said slider; actuation means arranged in said housing for adjusting the position of said slider; pick-up means coupled to said slider for detecting its position; a stationary jet intercepting member projecting into said blind bore and having a deflecting member extending over a major part of the inner cross section of said blind bore; said another control edge in the closed position of said slider being located at the level of said deflecting member and at the beginning of the open position of said slider said deflecting member

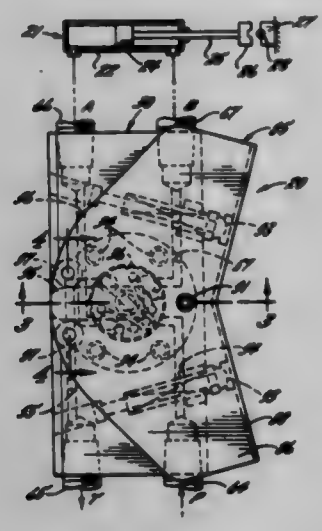
being situated between said another control edge and the bottom of said blind bore.

4,342,332

THREE-POSITION, FOUR-WAY ROTARY VALVE

Ellsworth W. Lapp, c/o Lapp Engineering, Inc., 4701 Hydraulic Rd., Rockford, Ill. 61109

Filed Aug. 21, 1980, Ser. No. 179,954
Int. Cl.[3] F16K *11/02*
U.S. Cl. 137—625.23 8 Claims



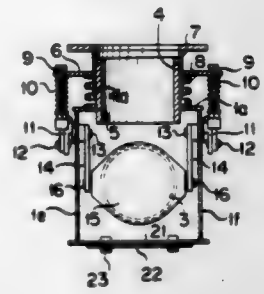
1. A three-position, four-way rotary valve comprising a housing defining a chamber, a pressure port, a drain port and first and second outlet ports all formed in said housing and opening into said chamber, said pressure port and said outlet ports being spaced around a circle with said outlet ports being located on opposite sides of said pressure port and being spaced equidistantly from said pressure port, a valve member rotatably mounted in said chamber and rotatable in one direction from a neutral position to a first active position and in the opposite direction from said neutral position to a second active position, and means formed in said member and located to establish communication (a) between said pressure port and said first outlet port and also between said drain port and said second outlet port when said valve member is rotated in said one direction from said neutral position and through a predetermined angle of less than 45 degrees to said first active position, and (b) between said pressure port and said second outlet port and also between said drain port and said first outlet port when said valve member is rotated in the opposite direction from said neutral position and through the same predetermined angle to said second active position, said means comprising first and second openings formed in said valve member and adapted to communicate with said pressure port and with said first outlet port, respectively, when said valve member is in its first active position, a first passage formed in said valve member and establishing communication between said first and second openings, a third opening formed in said valve member and adapted to communicate with said second outlet port when said valve member is in its first active position, a second passage formed in said valve member and establishing communication between said third opening and said chamber, fourth and fifth openings formed in said valve member and adapted to communicate with said pressure port and with said second outlet port, respectively, when said valve member is in its second active position, a third passage formed in said valve member and establishing communication between said fourth and fifth openings, a sixth opening formed in said valve member and adapted to communicate with said first outlet port when said valve member is in its second active position, a fourth passage formed in said valve member and establishing communication between said sixth opening and said chamber, said first, second, fourth and fifth openings being spaced from one another around a circle with the angular spacing between said first and fourth openings being different from the angular spacing between said second and fifth openings and with the angular spacing between said first and second openings being equal to the angular spacing between said fourth and fifth openings.

4,342,333

EXHAUST GAS CHANGE-OVER APPARATUS

Tadatoshi Mizuno, Tokyo; Sumihiro Hosotani, Yokohama, and Kaoru Nishihara, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 21, 1980, Ser. No. 180,384
Claims priority, application Japan, Aug. 27, 1979, 54-116748[U]; Sep. 18, 1979, 54-128116[U]
Int. Cl.[3] F16K *11/02, 51/00;* B60P *1/00*
U.S. Cl. 137—625.44 2 Claims



1. A change-over apparatus of exhaust gas for use with a vessel of a dump truck having an exhaust pipe connected to an engine of the dump truck, said vessel having a plurality of hollow ribs integrally formed therewith, said change-over apparatus comprising:

a box-like housing having a first inlet for exhaust gas formed in a first wall thereof, a first outlet for the exhaust gas formed in a second wall thereof and a second outlet for the exhaust gas formed in a third wall thereof, said second and third walls being arranged at right angles with each other;

a first pipe mounted in said first outlet and open to the atmosphere;

a second pipe mounted in said second outlet;

a third pipe telescopically mounted on said second pipe, said third pipe having a flange fixedly secured thereto and being connectible with the hollow ribs of said vessel when said vessel is in its carry position;

shutter means for selectively closing said first and second pipes, said shutter means being pivotally mounted to a fourth and a fifth walls of said housing, said fourth and fifth walls being opposed against each other;

a pair of means each operatively associated with said shutter means for causing said shutter means to selectively close said first and second pipes; and

first spring means disposed between the flange of said third pipe and said third wall for biasing said third pipe toward its raised position thereby urging said shutter means to close said second pipe; whereby said third pipe is movable between said raised position and a lowered position where said vessel is contacted with top end of said third pipe and said shutter means is urged to close said first pipe;

each of said pair of means comprising

a rod having one end loosely connected with said flange and movable therein,

a link pivotally connected with the other end of said rod,

a support shaft fixedly connected with said link and inserted for rotation in said fourth or fifth wall of said housing thereby allowing said link to pivot at said support shaft,

a lever having one end fixedly connected with said support shaft and the other end pivotally connected with said shutter means, and

second spring means mounted on said rod, compressed between said flange and an abutment on said rod for urging said shutter means to close said first pipe when said third pipe contacts with said vessel and is lowered thereby, and to close said second pipe when said third pipe moves

toward its raised position, so as to bring selectively said shutter means into close contact with either one of said first and second pipes, without causing any clearance therebetween, and thereby ensuring the prevention of leakage of the exhaust gas.

4,342,334

HYDRAULIC SERVO VALVE

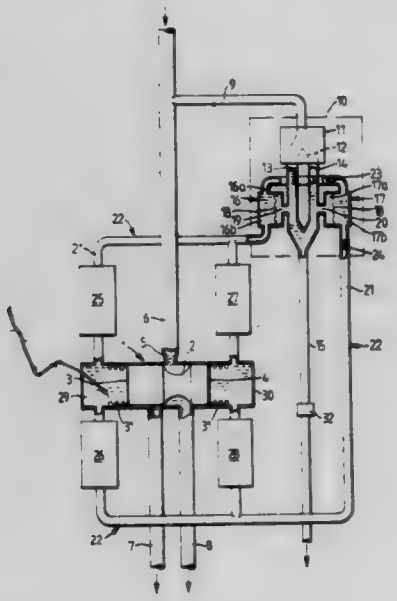
James E. Stangroom, Castleton, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

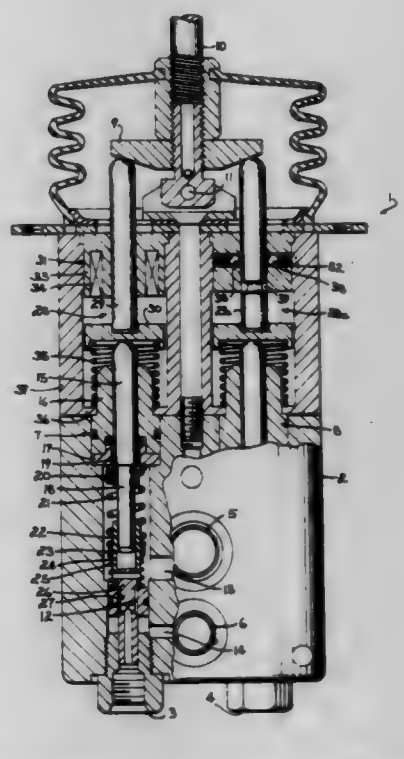
Filed Apr. 23, 1980, Ser. No. 143,147

Claims priority, application United Kingdom, May 15, 1979, 7916838

Int. Cl.³ F16K *11/07*

U.S. Cl. 137—625.48 **5 Claims**





1. A hydraulic servo valve having an adjustable control valve means for controlling the flow of a pressurized primary fluid from a source thereof comprising:

a sealed pilot circuit of electroviscous fluid having pressure transmitting means for transmitting the pressure of said electroviscous fluid thereby responsively adjusting said control valve, and electrically controlled valve means for varying the electroviscous fluid pressure at said transmitting means; and

a pumping means driveable by the primary fluid for circulating the electroviscious fluid within said sealed pilot circuit including:

a fluidic oscillator operatively connected to said primary fluid source for alternately directing a portion of said primary fluid to flow through two outlet flow lines;

first and second coupling means operatively associated with each of said two outlet flow lines for communicating fluid pressure of the primary fluid flowing in each of said two outiet flow lines to the electroviscous fluid in said pilot circuit; and

one-way flow means located in said pilot circuit intermediate said first and second coupling means for only allowing unidirectional flow of electroviscous fluid through said pilot circuit.

4,342,335

HYDRAULIC VALVE DETENT MECHANISM

Donald C. Reinicker, Waukesha, and Daniel J. Radcliffe, Menomonee Falls, both of Wis., assignors to Koehring Company, Brookfield, Wis.

Filed Oct. 23, 1980, Ser. No. 199,816

Int. Cl.³ F16K *11/14, 31/00*

U.S. Cl. 137—636.2 **1 Claim**

1. An improved detent mechanism for a lever operated hydraulic valve having a casing with first and second work ports; first and second valve means disposed to open and close the respective first and second work ports; first and second operating plunger members mounted for movement in the casing and engageable with first and second valve means; a lever pivotally connected to the casing and operably engaging the outer ends of the operating plunger members to allow pivotal movement of the lever in one direction to cause one of the operating plunger members to move inwardly toward a first position to operate the respective valve means and allows freedom of outward movement for the other operating plunger member toward a second position; the improvement comprising a first biasing member engaging the first operating plunger member to urge the first operating plunger member toward its second position; first detent means releasably engaging the first operating plunger member at its second position; a second biasing member engaging the second operating plunger member to urge the second operating plunger member toward its second position; second detent means for releasably engaging the second operating plunger member at its second position, said pivotal movement of the lever permits movement of one of the operating plunger members to its first position for opening one of the ports while the other operating plunger member is simultaneously moved independently of its associated valve means to its second position by its respective biasing member, and said other operating plunger member engages its respective detent means to establish a detent condition to hold the stroked operating plunger member and said lever in its operable position while allowing the non-stroked valve means to remain in its neutral position.

4,342,336

DOUBLE-ACTING INFLATABLE SEAL

J. Glenn Satterthwaite, 1538 Lea View Ave., Norfolk, Va. 23505, and Dennis M. Riddleberger, 5613 Springwood Dr., Portsmouth, Va. 23703

Continuation-in-part of Ser. No. 81,511, Oct. 3, 1979, Pat. No. 4,250,926, which is a continuation of Ser. No. 699,676, Jun. 25, 1976, abandoned. This application Feb. 10, 1981, Ser. No. 233,240

Int. Cl.³ F16L *55/12*

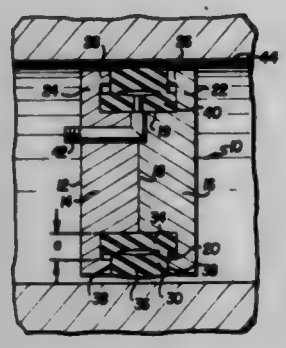
U.S. Cl. 138—90 **51 Claims**

1. An inflatable, double-acting seal apparatus, comprising:

an annular, hollow seal element having an inner wall for contacting a first surface, said inner wall being under circumferential compressive stress when said seal element is uninflated, and an outer wall for contacting a second surface, said outer wall being under circumferential tensile stress when said seal element is uninflated; and

means for inflating said seal element, so that upon inflation

said inner wall and said outer wall will displace radially inwardly and outwardly, respectively, from their uninflated positions until contact is established with one of said



first and second surfaces, whereupon further displacement of at least a portion of both said inner and outer walls occurs in the direction of the other of said first and second surfaces.

4,342,337

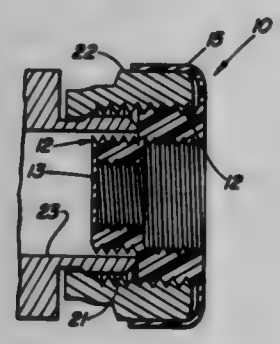
PROTECTIVE CLOSURE FOR AN ARTICLE

Gerald T. Underwood, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Mar. 28, 1980, Ser. No. 134,932

Int. Cl.³ F16L *55/10*

U.S. Cl. 138—96 T **12 Claims**



1. A protective closure for an article comprising:

(a) a hollow member having an open end, a closed end and a cylindrical portion located therebetween, said cylindrical portion having at least two pairs of overlapping, threaded internal and external surfaces; and

(b) a sleeve extending radially outward from said open end of said hollow member, said sleeve having a flexible thin wall which can be folded back over said article.

4,342,338

BOOT FOR SEALING RUPTURED GAS OR WATER MAINS AND TOOL FOR APPLICATION

William L. Glennie, Phoenix, Ariz., assignor to Jack M. Mitchell, Phoenix, Ariz., a part interest

Filed Sep. 10, 1980, Ser. No. 185,768

Int. Cl.³ F16L *21/06*

U.S. Cl. 138—99 **7 Claims**

1. A boot for sealing a ruptured gas or water main comprising:

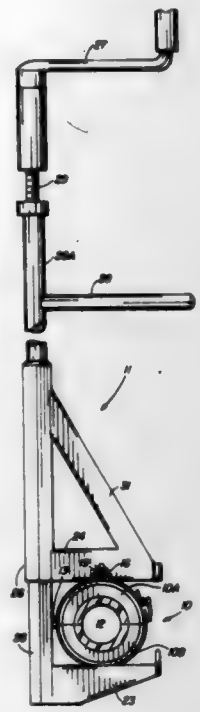
a pair of arcuate members hingedly connected along a common edge and rotatable about said hinge to form a hollow cylinder when their free edges are in an abutting relationship,

resilient means for lining the interior of each of said arcuate members,

said resilient means forming a cylindrical configuration within said hollow cylinder when the free edges of said members are in abutting relationship,

attachment means provided on the outer periphery of one of said members for pivotally connecting to a tool for rotating it relative to the other of said members,

said attachment means comprising a ridge having two spacedly aligned parts extending longitudinally of said one of said members,



each of said parts having an aperture extending longitudinally therethrough in axial alignment with the other, and

a rod extending through each of said parts and bridging the space therebetween,

whereby the tool is mounted on said rod between said parts of said ridge.

4,342,339

WEAVING HEDDLE

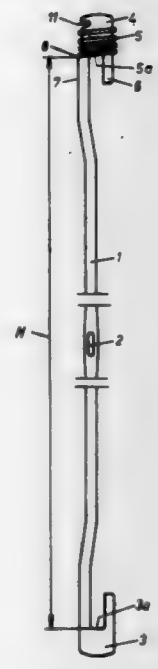
Bernhard R. Koch, Horgenberg, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Jul. 11, 1980, Ser. No. 167,485

Claims priority, application Switzerland, Jul. 30, 1979, 6999/79

Int. Cl.³ D03C *9/04*

U.S. Cl. 139—93 **5 Claims**



1. A weaving heddle, comprising an elongated heddle shaft having U-hook shaped end loops at opposite ends thereof for holding the heddle on opposed heddle carrying rods of a heddle frame, said loops including shanks for overlapping with the

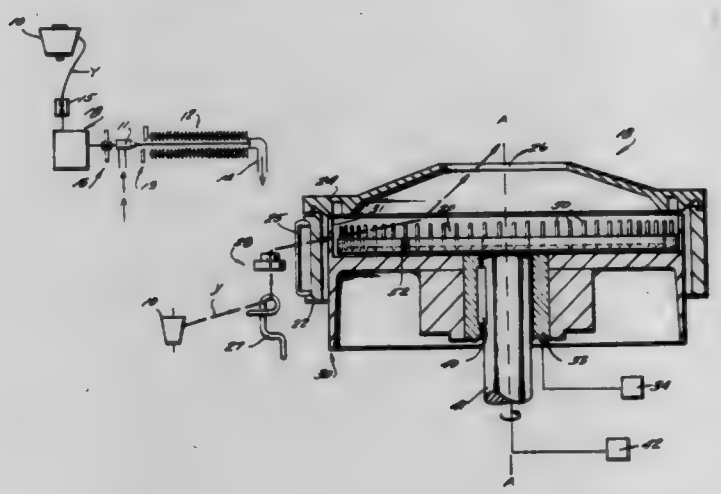
rods, said loops having inner support surfaces spaced a predetermined distance apart and extending transversely of said shaft for engagement with the rods, one of said support surfaces being formed by a resilient member for allowing said distance to increase, said resilient member being urged to accommodate any such increase in said predetermined distance.

4,342,340

AIR JET LOOM FILLING FEEDING

Worth M. Key, Hurt, and Wayne Herkness, Salem, both of Va., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Jun. 11, 1980, Ser. No. 158,577
Int. Cl.[3] D03D *47/34*
U.S. Cl. 139—435 15 Claims



1. A yarn delivery device for textile machines, comprising a stationary housing;

a yarn inlet to said housing and a yarn outlet from said housing, yarn traveling from said inlet to outlet in a yarn path;

a measuring drum mounted for continuous rotation within said housing about an axis of rotation, said measuring drum having a lip, spaced from said housing, past which yarn in the yarn path passes;

a filling snubber wheel mounted for rotation with said measuring drum and having a plurality of axially-extending projections, and mounted for axial movement with respect to said measuring drum from a first position wherein said yarn-catching projections are contained within a volume defined by said measuring drum lip, to a second position wherein said yarn-catching projections extend axially outwardly past said measuring drum lip into said yarn path so that one of said projections will catch yarn in said yarn path and cause the yarn to be taken up on said rotating measuring drum; wherein the improvement comprises:

said filling snubber wheel projections comprising a plurality of smooth-surfaced cylindrical pins; and said device further comprising a plurality of surface manifestations formed in said filling snubber wheel, and means for replaceably mounting said pins in association with said surface manifestations; and wherein said filling snubber wheel comprises a circular plate having a circular rim axially upstanding along the periphery of one face thereof, and wherein said surface manifestations are formed in said rim and said pins axially upstanding from said rim.

4,342,341

BLOOD TRANSFER DEVICE

Peter F. Lee, Minneapolis, Minn., assignor to Southland Instruments, Inc., Houston, Tex.

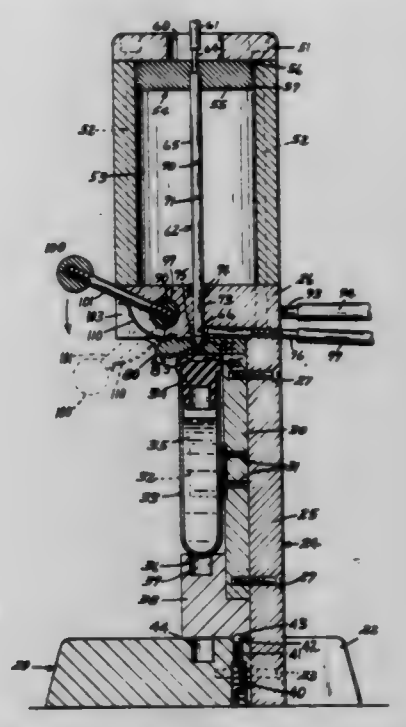
Continuation-in-part of Ser. No. 13,078, Feb. 21, 1979, Pat. No. 4,274,453. This application Jun. 12, 1980, Ser. No. 158,772
Int. Cl.[3] B65B *3/04;* B67C *7/00*
U.S. Cl. 141—1 4 Claims

1. The method of extracting a sample from a container of fluid having a longitudinal axis and a penetrable, self-sealing enclosure at one end, comprising the steps of:

(1) mounting said container with said axis vertical and said closure upward,

(2) actuating a hollow needle having a plurality interconnected apertures and passageways therein, axially penetrate said closure and enter said container,

(3) draining contents from said container through needle while simultaneously admitting replacement air to said container,



(4) withdrawing said needle from said container into a substantially enclosed area while wiping any contents from the surface of said needle as it is being withdrawn,

(5) passing a cleaning liquid through a portion of said apertures and passageways of said hollow needle while preventing said cleaning liquid from having any contact with said container, and

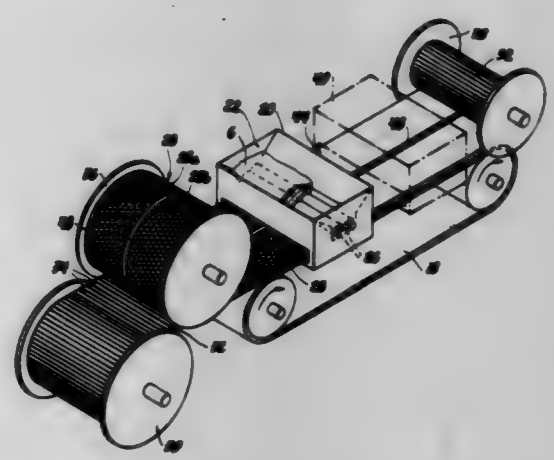
(6) removing said cleaning fluid from said needle without exposing said fluid to the ambient atmosphere surrounding said container and said needle.

4,342,342

GROOVED AND CRACKED BATTERY PLATE AND PROCESS FOR COIL-CURING SAME

Ellis G. Wheadon, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1980, Ser. No. 209,377
Int. Cl.[3] B65B *3/04;* H01M *6/10*
U.S. Cl. 141—1.1 4 Claims



1. A process for making Pb-acid storage battery plates comprising the steps of:

passing a strip of grid stock lengthwise through a battery grid pasting station, said stock comprising a network of interconnected grid-wires defining a plurality of paste-receiving cells;

applying a wet, leady active material paste to said stock at

said station such as to fill said cells and to provide a substantially flat pasty surface on each side of said stock;

scoring each of said surfaces transverse the length of said strip such as to provide a plurality of substantially paralleling grooves closely spaced along said length;

coiling the grooves stock on to reels;

curing and drying the coiled stock;

uncoiling the dried stock; and

cutting the uncoiled stock into individual battery plates;

said grooves serving to control the formation and location of cracks formed in said paste during uncoiling so as not to substantially loosen said paste from said network or substantially increase the internal electrical resistance of the plate.

4,342,343

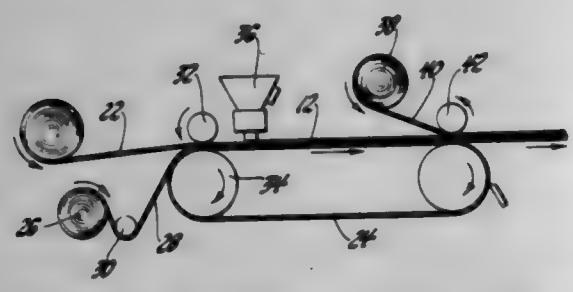
METHOD OF MAKING A NEGATIVE LEAD-ACID STORAGE BATTERY PLATE

Robert E. Clague, Berkley; Richard H. Hammar, Fraser, and Douglas J. Harvey, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 135,243, Mar. 31, 1980, abandoned. This application Mar. 25, 1981, Ser. No. 247,628

Int. Cl.³ B65B *3/04*; H01M *6/00*

U.S. Cl. 141—1.1 **4 Claims**



3. A method of distributing a plurality of interconnected carbon fibers over the face of a substantially continuous strip of lead-acid storage battery plate-making stock comprising the steps of:

securing said fibers to the surface of a substantially continuous paper carrier strip;

applying a leady active material paste to a substantially continuous strip of reticulated, conductive battery grid stock; and

pressing said surface and paste together to intimately engage said fibers with said paste and thereby enhance the formability of battery plates made from said plate-making stock.

4,342,344

FILLING ELEMENT FOR COUNTERPRESSURE CONTAINER-FILLING MACHINES

Egon Ahlers, Neu-Bamberg, Fed. Rep. of Germany, assignor to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,453

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1979, 2947035

Int. Cl.³ B65B *3/26, 31/00*

U.S. Cl. 141—39 **7 Claims**

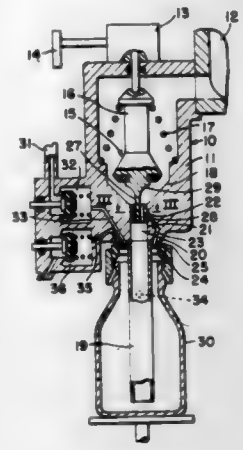
1. A filling element for counterpressure container-filling machines, said filling element comprising:

a filling element body which is in communication with a liquid filling-medium chamber;

a filling tube connected to said filling element body and open at both ends, with a first open end communicable with said filling-medium chamber for receiving said liquid, and a second open end communicating with a container which is placed thereover for receiving said liquid therefrom;

a liquid valve, which includes an axially displaceable valve body, for selectively completing and interrupting communication of said filling-medium chamber with said filling tube, said filling element body including a filling valve outlet chamber which is interposed between said valve body and said first open end of said filling tube, and has an inner peripheral surface, said filling element body also including a connecting passage, one end of which is communicable with a container placed over said second open end of said filling tube, the other end of which has a slide-over opening into said peripheral surface of said outlet chamber; and

a control valve, in the form of a valve body, for selectively



opening and curving said slide-over opening of said connecting passage, said control valve body being connected to said valve body of said liquid valve, and being axially slidably guided on said peripheral surface of said outlet chamber, said control valve being actuatable in common with said liquid valve in such a manner that when said liquid valve is open, said control valve is closed, and when said liquid valve is closed, said control valve is open.

4,342,345

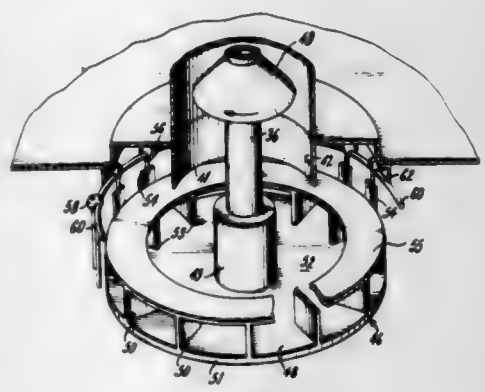
METHOD AND APPARATUS FOR FILLING BULK MATERIAL CONTAINERS

Robert P. Nadin, Wharton; Antonios Nicholakopoulos, Mercerville; Joseph P. Urban, Port Reading, and Steven G. Markowski, East Brunswick, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 9, 1980, Ser. No. 214,586

Int. Cl.³ B65B *1/10*

U.S. Cl. 141—392 **9 Claims**



1. An improvement in the apparatus for feeding and distributing in a container of varying configuration bulk materials which includes inlet means including a discharge outlet positioned near the top of the container, and rotor means horizontally positioned below said inlet means, whereby said bulk materials are delivered from said inlet means through said discharge outlet into said rotor means the improvement wherein said rotor means includes a rotor having a substantially circular base member, a rotor shaft for providing movement to said rotor, said base member being detachably secured to said rotor shaft, and a system of upright vanes radially distributed on said base member, said vanes extending from the outer periphery of said base member inwardly towards said rotor shaft and terminating at a point at or prior to the periph-

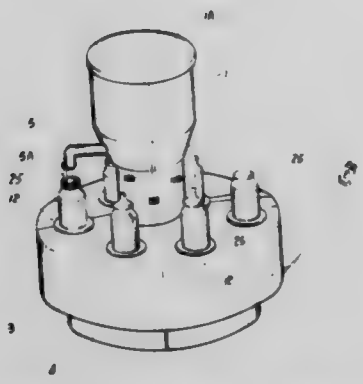
ery of said discharge outlet of said inlet means to define an unobstructed central area between said rotor shaft and the inward edge of said vanes.

4,342,346

AUTOMATIC POWDERED MILK FILLERS

Yung-Kuan Wei, No. 196, Yen Tien Li An Nan District, Tainan, Taiwan

Filed Mar. 18, 1980, Ser. No. 131,546
Int. Cl.³ B65B *1/12*
U.S. Cl. 141—85 **4 Claims**



1. An automatic powdered milk dispenser comprising a generally cylindrical hollow container having a funnel shaped portion near its lower end, said lower end being closed and the upper end being open, a removable cap for closing said upper end, a pipe-shaped outlet extending substantially horizontally from the lower part of said funnel shaped portion, a downturned outer end on said outlet, the inner end of said outlet communicating with the interior of said funnel shaped portion, feed means situated within the lower end of said funnel shaped portion to feed powdered milk within said container through said outlet, a cylindrical extension at the lower end of said container having an external screw thread thereon, a hollow upstanding cylindrical column for supporting said container, an internal screw thread at the upper end of said column engaging said external screw thread, the lower end of said column being closed, a hollow cylindrical base for supporting said column comprising an inverted dish-shaped upper member and a plate-like lower member, said lower member closing the lower open end of said upper member and being fastened thereto by screws, a cylindrical recess in the center of said upper member for receiving and removably retaining the lower end of said column in upstanding position, a plurality of holes arranged in circumferential spaced relationship in said upper member around said recess, a cup shaped member disposed within each said hole to receive and hold a bottle therein in upstanding position, said holes being located so that at any one time the upper end of one of said bottles is positioned under said downturned outer end of said outlet to receive powdered milk dispensed therefrom, an ultraviolet lamp within said base for sterilizing said bottles when placed in said cup members, means to operate said feed means, and means to energize said ultraviolet lamp.

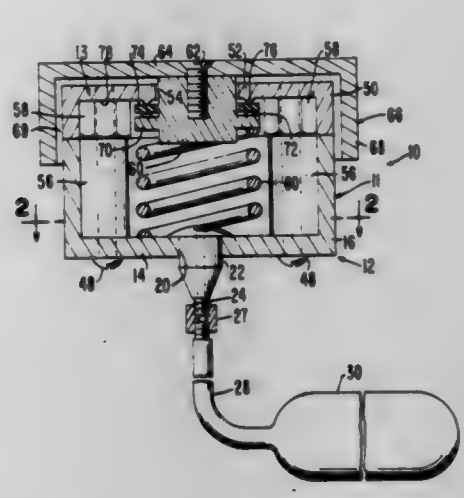
4,342,347

PRESSURE DUMP VALVE

Eugene K. Paulson, 351 Rosemont Dr., Santa Clara, Calif. 95051

Filed Jun. 20, 1980, Ser. No. 161,463
Int. Cl.³ B65B *3/04*; F16K *15/20*
U.S. Cl. 141—98 **5 Claims**

1. A fluid valve for providing filling or rapid discharge of a pressurized vessel comprising: a hollow body having a wall provided with a first opening therethrough and an internal valve seat surrounding the opening, the interior space of said body being generally cylindrical and having a pair of opposed ends, said opening being at one end of and communicating directly with said space; a valve member shiftably received within and extending through the first opening and having a flange moveable toward the valve seat in valve closing relationship with respect thereto, the first opening and the valve member defining a fluid flow passage; means coupled with the valve member for biasing the flange into valve closing relationship with the valve seat, said body having a second opening at the opposite end of and communicating directly with said space, whereby the second opening can receive means for connecting the same to a vessel to be pressurized; and valve means coupled with the body for permitting a fluid under pressure to be directed into the body and to pressurize the



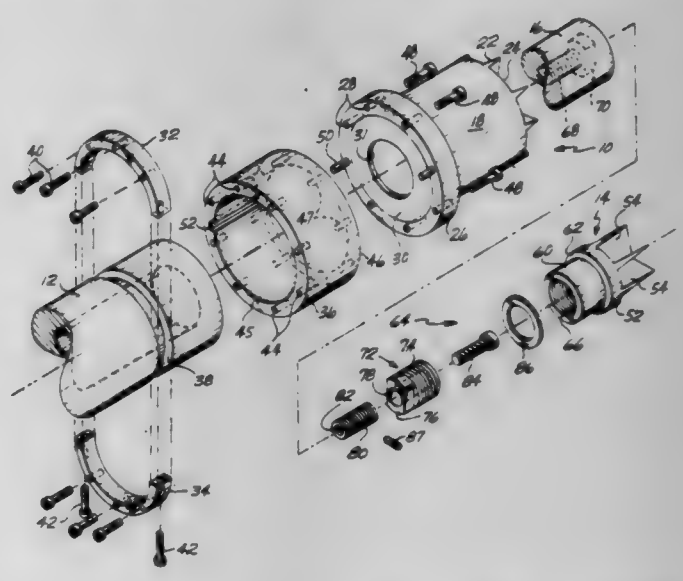
vessel when the vessel is connected with the second opening of the body and when the flange is in valve closing relationship with respect to the valve seat, said body being free of restrictive fluid flow passages between said space and said first and second openings; and including an actuating cap secured to the valve member exteriorly of the body, said cap including an end wall adjacent to said wall of the body and a skirt secured to the end wall, the skirt surrounding and being spaced from a portion of the body, whereby when said cap is depressed, said first opening is opened when it is desired to depressurize said vessel.

4,342,348

VENEER LATHE CHUCK ASSEMBLY

Robert H. Lichtenwalter, Tacoma, and Darrell E. Pierson, Federal Way, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Jul. 3, 1980, Ser. No. 165,918
Int. Cl.³ B27C *7/04*; B27L *5/00*
U.S. Cl. 144—209 R **7 Claims**



1. A chuck for use in a veneer lathe assembly, comprising;
a substantially circular base member arranged and adapted for attachment to a rotatable spindle on a first end thereof, and
a plurality of at least three thin chisel-like teeth each having a length L and width W in a ratio of approximately 1:1 extending outwardly from the base member on a second

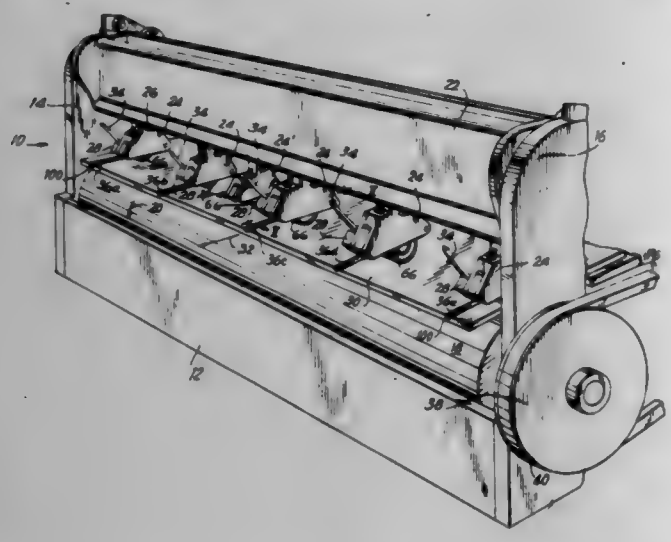
end thereof and joined together substantially along the center line of the chuck thereby forming a star-like tooth pattern and a plurality of flat sector shaped portions comprising at least 90% of the face area on the second end of the base member.

4,342,349

APPARATUS AND METHOD FOR GROOVING A BOARD-LIKE MATERIAL, A GROOVING TOOL THEREFOR AND A STRUCTURE MADE BY THE METHOD

Daniel Lipman, 741 Leslie La., East Meadow, N.Y. 11554

Filed Feb. 15, 1980, Ser. No. 121,649
Int. Cl.³ B27C *5/00*
U.S. Cl. 144—371 **38 Claims**



1. Apparatus for grooving board material having a first and second surface comprising:

a grooving tool means having a V-shaped leading cutting edge with a preselected included angle for cutting a V-shaped groove in the first surface of the board material to a depth which is a preselected distance from the second surface, said grooving tool means including an elongated member, one end of which is provided with the V-shaped leading cutting edge;

means for producing relative movement of said grooving tool means and said board material to cut the V-shaped groove in said board material;

guide means for inhibiting nonlinear relative movement of said V-shaped leading cutting edge and said board material while cutting the V-shaped groove to cause a straight groove to be cut in said board, said guide means including hold down means for maintaining said board material in firm engagement with said V-shaped leading cutting edge while cutting said V-shaped groove, said hold down means including a body, a first member pivoted to said body, a second roller rotatably affixed to said first member and spring loading means for urging said second roller against said board material to resiliently press the board material against the movement producing means; and

a superstructure supported over said grooving tool means, said hold down means being affixed to said superstructure and said grooving tool means being adjustably mounted on said hold down means to adjust the preselected distance of the V-shaped groove from the second surface of the board material.

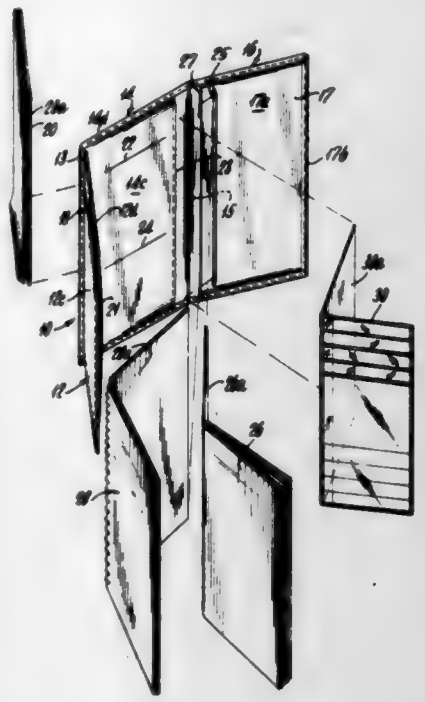
4,342,350

BUSINESS WALLET CONSTRUCTION

Lawrence Resnick, 110 Kenyon Ave., Pawtucket, R.I. 02861

Filed Aug. 29, 1980, Ser. No. 182,735
Int. Cl.³ A45C *1/06*
U.S. Cl. 150—35 **1 Claim**

1. A business wallet construction comprising first, second and third flaps, each including left and right sides and front and rear faces, a fold line separating said second and third flap, said first flap attached as a hinged free-turning appendage to the left side of said second flap, said third flap defining a substantially full length side opening into said flap adjacent said fold line and including a slightly displaced substantially full length vertical slot on said front face, said slot being cut in the material forming said front face of the third flap, a member having a securement flap, said securement flap being received within said slot,



and a second member having a back cover, said back cover being received within said slot, said back cover being slightly greater in width than said securement flap, so that when said first member is inserted in said slot, said second member may then be inserted within said slot with sufficient room to accommodate said first member in order that the two members may be folded as efficiently as possible with respect to thickness within said slot.

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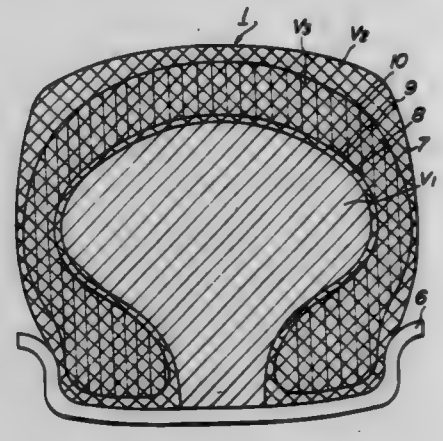
PNEUMATIC TIRE FOR HIGH SPEED UNDER HEAVY LOAD

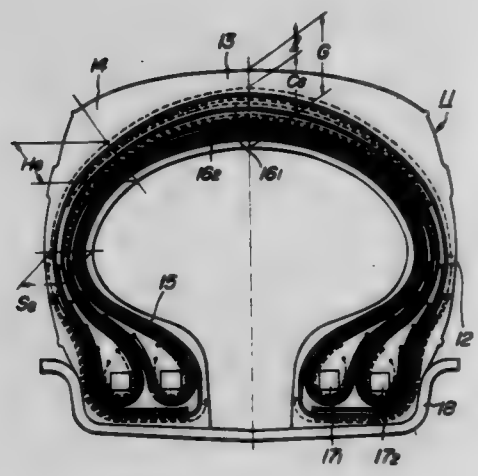
Masahiro Kuroda, Higashi-Murayama, Japan, assignor to Bridgestone Tire Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 897,814, Apr. 19, 1978, abandoned.
This application Apr. 23, 1980, Ser. No. 142,956
Claims priority, application Japan, Apr. 28, 1977, 52/48492
Int. Cl.³ B60C *3/00, 9/06, 9/20*
U.S. Cl. 152—209 R **8 Claims**

1. A pneumatic tire for high speed under a heavy load comprising; a casing reinforcing layer composed of a plurality of carcass plies mainly formed of organic textile cords inclined at an angle of at most 45° to the circumferential direction of the tire, said carcass plies extending from one bead portion of the tire through a crown portion of the tire to the other bead portion and superimposed one upon the other, and a plurality of reinforcing fabrics whose material and inclined angle to the circumferential direction of the tire are substantially the same as those of said cords of the carcass ply and interposed between said carcass plies, said plurality of reinforcing fabrics extending from those positions which are distant apart from one of the bead portions through the tire crown portion and terminating at those positions which are distant apart from the other bead portion, the number of said reinforcing fabrics being at least 20% of the total number of both said carcass plies and said reinforcing fabrics of said casing reinforcing layer, the total number of carcass plies and reinforcing fabrics of said casing reinforcing layer being divided into two halves and one of said two halves crossing the other half, said reinforcing fabrics gradually changing in width within a range between 35% and 60% of the inner peripheral length of the tire and symmetri-

cally arranged with respect to the crown center portion, the superimposed thickness of said casing reinforcing layer being uniformly and continuously decreased such that the thickness at a hump portion is within a range between 85% and 95% of the thickness at the crown center portion thereof and the thickness at a side wall portion is within a range between 50% and 75% of the thickness at the crown center portion thereof, the thickness of a tread coating rubber surrounding said casing reinforcing layer being gradually increased from the crown center portion toward the hump portions such that the thickness at the crown center portion is 10 to 28% of the total thickness of the crown center portion and is at most 1.5% of the maximum outer diameter of the tire when it is inflated, and said tire having such a high rigidity as defined by cross-sectional area ratios given by





V_2/V_1=0.45 to 0.60 and

V_3/V_2=0.6 to 0.8

where V_1 is a total cross-sectional area surrounded by the outer contour of the tire and a flat base rim, V_2 is a substantial cross-sectional area surrounded by the outer and inner contours of the tire and V_3 is a cross-sectional area of said case reinforcing layer inclusive of bead cores, wherein a decrease of the radius of curvature at the crown portion induced when the tire is rotated on the ground at a high speed under a heavy load is primarily alleviated by a deformation of said side wall portion.

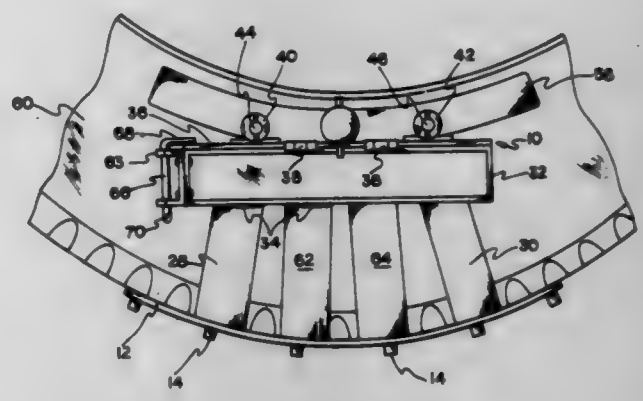
4,342,352

TRACTION DEVICE FOR VEHICLE WHEEL

Ilie Tisma, 4563 Polk St., Gary, Ind. 46408

Filed Mar. 17, 1980, Ser. No. 130,735
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—225 C **4 Claims**

1. A traction device for a vehicle tire comprising:
a shoe member;
a first support means radially upstanding from a side of said shoe member;
a first bar member connected to said first support means;
a second support means radially upstanding from the opposite side of said shoe member;
a first flat bar member supported on said second support means, said first flat bar member being disposed substantially normal to said second support means;
a second flat bar member hinged to said first flat bar member, said second flat bar member being pivotable from a position perpendicular to said first flat bar member to a position parallel and contiguous to said first flat bar member;



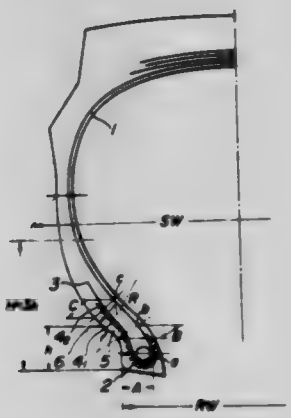
means for locking said second flat bar member to said first flat bar member when said second flat bar member is in a position parallel and contiguous to said first flat bar member;
a threaded sleeve means and guide sleeve means provided on said second flat bar member;
a threaded shaft member rotatable in said threaded sleeve means; and
a second bar member having spaced pins supported in said guide sleeve means, said second bar member being moveable toward said first mentioned bar member by said threaded shaft member.

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RADIAL TIRE FOR HEAVY LOAD VEHICLES

Akira Tamura, Kodaira, and Yasuo Suzuki, Akigawa, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed May 29, 1981, Ser. No. 268,520
Claims priority, application Japan, Jun. 9, 1980, 55/77492
Int. Cl.³ B60C *15/00, 15/06*
U.S. Cl. 152—362 R **5 Claims**



1. In a radial tire for heavy load vehicles comprising a carcass composed of wire cord plies having cords arranged substantially in a radial plane of the tire and wound around a bead core and a rubber stock disposed thereon from the inside to the outside thereof to form a turn-up portion, and a bead portion including at least one reinforcing layer arranged along the turn-up portion of the carcass and having cords crossed with the cords of said turn-up portion of the carcass, the reinforcing layer together with the turn-up portion of the carcass being

sandwiched between and embedded in the rubber stock and an outer coating rubber, the improvement in which that end of the wire cords of the turn-up portion or reinforcing layer which is located below the maximum width position of the tire and disposed outside the bead core is arranged at a position which is higher than the height h of the rim flange of a bead portion mounting rim but lower than the height which is three times of the above height h, and the outer coating rubber of the bead portion has a thickness distribution with respect to a bead portion reference width A which is shorter than the height h of the rim flange and measured from the outer surface of the bead portion through the center of the bead core in parallel with the rotary axis of the tire to the carcass ply, the thickness distribution satisfying the following condition given by

$$0.30 \leqq (B \cdot C/A^2) \times (RW/SW) \leqq 0.55$$

where

RW is a width between bead legs of the tire mounted on the rim,

SW is a maximum width between side portions of the tire mounted on the rim,

A is a bead portion reference width,

B is a minimum thickness of the rubber at the bead portion, and

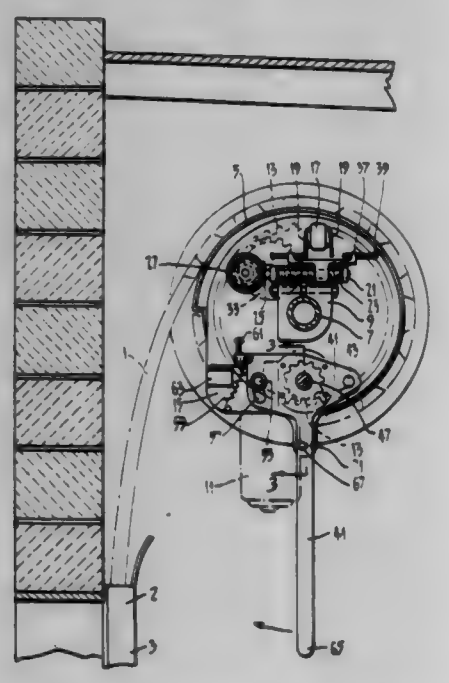
C is a maximum thickness of the rubber at the bead portion.

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MECHANISM FOR STOPPING THE DRIVE OR REVERSING THE DRIVE OF MOTORS OF ROLLER SHUTTER DOORS

Simon Leivenzon, and Steven Leivenzon, both of Caulfield, Australia, assignors to Firmaframe Nominees Pty. Ltd., Cheltenham, Australia

Filed Jun. 27, 1980, Ser. No. 163,715
Claims priority, application Australia, Jul. 4, 1979, PD9454
Int. Cl.³ E06B *9/204, 9/209, 9/10*
U.S. Cl. 160—133 **6 Claims**



1. A roller shutter door with limit switch sensing means comprising:

(a) a door curtain;

(b) drum means upon which the door curtain is to be wound, the upper portion of the curtain being secured to the drum means;

(c) an internal ring gear mounted with its central longitudinal axis in line with the central longitudinal axis of said drum means and attached thereto;

(d) a reversible electric motor means having a pinion gear drivably connected therewith and arranged to mesh with said ring gear whereby to drive said drum to wind the curtain on and off the drum for closing and opening the door respectively;

(e) a gear train drivably connected with said ring gear and including an elongate screw thread, the longitudinal axis of which extends substantially perpendicular with the central longitudinal axis of said drum means and immediately adjacent said ring gear and between the circumferential edge surfaces thereof;

(f) a carriage, said carriage being threaded on said screw thread and restrained from rotating with said screw thread but being able to be advanced or retreated along said screw thread as said screw thread is rotationally driven by said gear train, said carriage having two end flanges spaced apart in a direction substantially parallel with the longitudinal axis of said screw thread;

(g) limit switch means supported between said flanges, and;

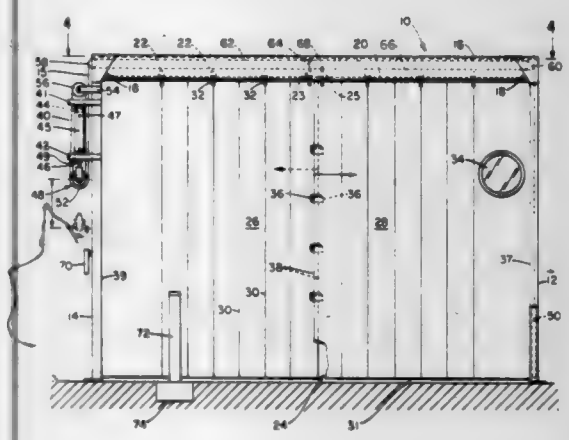
(h) respective screw thread limit stop adjusting means carried by each of said flanges whereby the limit switch means can be activated by said respective screw thread limit stop adjusting means when the door curtain is at the fully closed or fully open positions to switch off said reversible electric motor means.

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CARWASH DOOR

Martin Geller, 9 Hickory Way, Sharon, Mass. 02067, and Russell Doyle, 24 Elm St., Duxbury, Mass. 02332

Filed Mar. 31, 1980, Ser. No. 135,447
Int. Cl.³ A47H *5/00*
U.S. Cl. 160—331 **7 Claims**



1. A door for the passage of vehicles comprising:

two side supports and a top support defining a doorway;

a generally flexible curtain suspended from said top support, said curtain being formed of two sections and extending across the width of said doorway when in a closed position, each of said sections having a fixed edge adjacent an associated one of said side supports and a free edge, said free edge of each of said sections being disposed in a position intermediate said side supports and adjacent the free edge of the other of said sections when said curtain is in a closed position said free edge of each of said sections being disposed adjacent its fixed edge and in spaced relation with the free edge of the other of said sections when said curtain is in an open position;

means actuable for withdrawing said sections of said curtain into said open position to permit a vehicle to pass through said doorway, said withdrawing means comprising:

a pneumatically actuated cylinder having a piston movable within a chamber and a piston rod attached to said piston, said piston rod having a distal end projecting externally of said chamber;

a first pulley disposed at said distal end of said piston rod;

a second pulley disposed at the intersection of one of said side supports and said top support;

a third pulley disposed at the intersection of the other of said side supports and said top support;

a fourth pulley disposed adjacent said pneumatically actuated cylinder; and

pulley lines interconnecting said first pulley, said second pulley, said third pulley and said fourth pulley;

means for drawing said sections of said curtain into said closed position upon deactuation of said withdrawing means, said drawing means being interconnected with said first pulley, said second pulley, said third pulley and said fourth pulley by said pulley lines; and

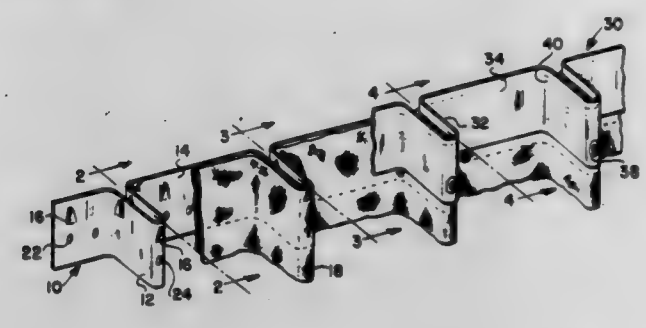
means for actuating and deactuating said withdrawing means.

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COMBINED FABRIC HANGING AND PLEATING BRACKET

Arthur C. Sickels, and Anthony R. Sickels, both of Dayton, Ohio, assignors to Soundfold, Inc., Dayton, Ohio

Filed Apr. 4, 1980, Ser. No. 137,151
Int. Cl.³ A47H *13/14*
U.S. Cl. 160—348 **2 Claims**



1. A bracket structure for use in hanging and pleating decorative wall fabric, comprising:

an enlarged flat sheet metal backing strip having a plurality of generally U-shaped cross section extensions formed at uniformly spaced intervals along the length thereof and intermediate flat sections in a common plane between adjacent extensions for resting against a wall to which said strip is to be secured, a plurality of holes defined in said intermediate flat sections for securing said strip to a wall, a plurality of fabric engaging pointed tabs formed in said strip to extend toward a side edge thereof and outwardly away from the side of said strip which will rest against a wall to hold fabric on said backing strip while defining pleats therein corresponding to said extensions, some of said tabs being formed in said extensions adjacent but removed from the corners formed by the intersection of said extensions and intermediate sections and others of said tabs being formed in the curved portion of said U-shaped extensions, and at least one hole defined in the curved portion of each U-shaped extension;

a rigid facia strip longitudinally coextensive with said sheet metal backing strip and including U-shaped extensions for telescoping over said backing strip extensions with an intermediate layer of fabric therebetween, a plurality of holes defined in said facia strip in registry with said holes in said curved portions of said U-shaped extensions, said facia strip being laterally offset when secured to said backing strip so that a portion extends beyond the fabric and the adjacent edge of said backing strip; and

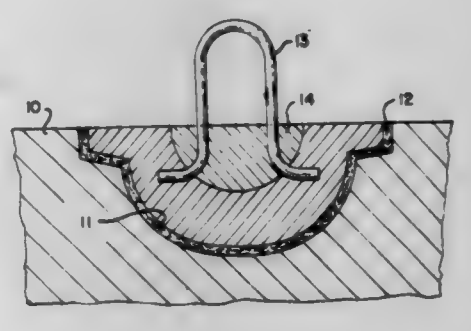
means insertable in said holes in said curved portions of said extensions of both said backing strip and said facia strip for securing said facia strip to said backing strip with said fabric layer therebetween.

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APPARATUS AND METHOD FOR PRODUCING INGOT MOLD CAPS

Norman F. Tisdale, Jr., 253 Chessrown Ave., Gibsonia, Pa. 15044

Filed May 28, 1980, Ser. No. 154,102
Int. Cl.³ B22D *19/00*
U.S. Cl. 164—112 **9 Claims**



6. A method for producing ingot mold caps comprising the steps of:

(a) forming a chill element having a cavity defined therein corresponding in shape to an ingot mold cap;

(b) placing a pre-formed pad of refractory fiber felt insulation comprising about 50 to 60% SiO_2, about 40 to 50% Al_2O_3 and the balance impurities in ordinary amounts in said opening as a fitted lining;

(c) placing a core carrying a metal staple centrally of said pad and spaced therefrom to form a metal receiving area between said core and pad, said staple having portions extending out of the core into the metal receiving area;

(d) casting molten iron in the area between said pad and core;

(e) solidifying said iron; and

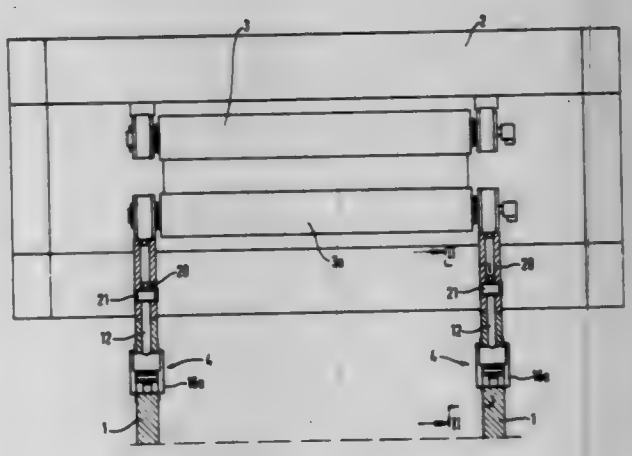
(f) removing said solidified iron as a completed ingot mold cap from said pad.

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CONTINUOUS CASTING INSTALLATION

Rudolf Guse, Ratingen, Fed. Rep. of Germany, assignor to Sack GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,403
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903540
Int. Cl.³ B22D *11/128*
U.S. Cl. 164—448 **7 Claims**



1. Continuous casting apparatus comprising an arcuate bed, a cast rod guide of segmental construction mounted on said bed, each rod guide segment including a plurality of rod guide elements mounted in a frame, and multiple fixing means releasably anchoring said frame to said bed, each fixing means comprising a first bore extending transversely in the bed, a second bore extending vertically in the bed between the first bore and said frame, a part-cylindrical bearing member fitted in the

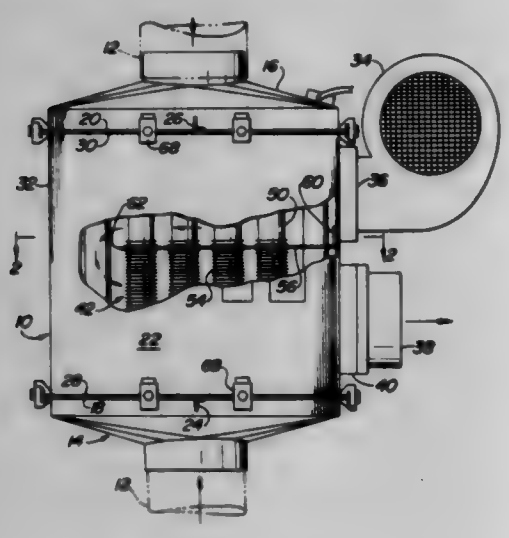
upper part of said first bore, a third bore extending through said bearing member in alignment with said second bore, a traction rod slidably mounted in said second and third bores and having projecting head and tail ends, corresponding apertures in said frame and said traction rod head end, a removable locking pin passing through said apertures to releasably interconnect the traction rod and the frame, a reaction member axially adjustably mounted on the tail end of the traction rod, biasing means for biasing the traction rod upwardly to bring the reaction member into abutting relation with the underside of said bearing member, and loading means for urging the reaction member away from the bearing member so as to exert an anchoring force on the rod guide segment frame through the traction rod.

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UNIVERSAL FLUE STACK HEAT EXCHANGER

Jack T. Baker, R.D. 1 Box 413, Greenwich, N.Y. 12834

Continuation of Ser. No. 857,737, Dec. 12, 1977, abandoned.
This application Jan. 29, 1980, Ser. No. 116,512
Int. Cl.³ F24B *7/02*; F28F *13/14*
U.S. Cl. 165—47 **3 Claims**



1. A universal flue gas heat exchanger for use in combination with a flue stack of any one of a multiplicity of heating appliances which may require different rates of heat exchange from the flue gases without affecting the safe operation of the heating appliance, comprising:

(a) an enclosed housing to replace a section of an interrupted flue stack, said housing having an inlet assembly at one end thereof for receiving a lower portion of the interrupted flue stack and an outlet assembly at the other end thereof for receiving an upper portion of the interrupted flue stack, said enclosed housing and inlet and outlet assemblies defining an enclosed heat exchange chamber;

(b) a multiplicity of straight hollow tubes for conducting flue gases through the heat exchange chamber in parallel paths between the inlet assembly and the outlet assembly;

(c) blower means for forcing air to be heated through an entrance opening in the housing into the heat exchange chamber;

(d) an exit opening in the housing to allow heated air to exit the heat exchange chamber;

(e) a pre-determined number of said tubes, less than the total number of said tubes, having spaced heat-conducting fins, the number of tubes with fins being selected to provide a rate of overall heat exchange for the heat exchanger which is matched to the heating appliance in order to provide efficient recovery of heat from the flue gases without affecting the safe operation of the heating appliance;

(f) the entrance opening for the air to be heated being located in the housing near the outlet assembly, and the exit opening to allow heated air to exit the heat exchange chamber being located in the housing near the inlet assembly and generally directly below the entrance opening, and further comprising a baffle plate located within the heat exchange chamber intermediate said entrance and exit openings to direct the air to be heated in a generally U-shaped path across first the upper portion of said tubes and then across the lower portion of said tubes, whereby the temperature differential between the air to be heated and the flue gases inside the tubes is made more uniform along the tube length;

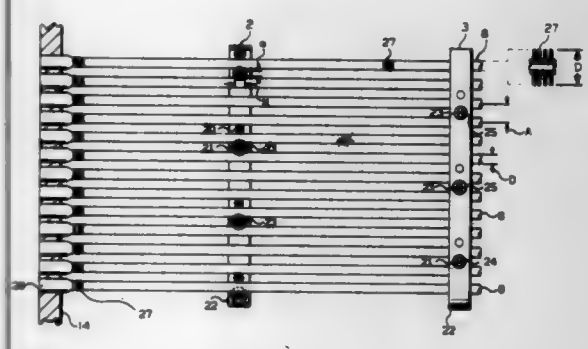
(g) said tubes which are finned having the fins concentrated along the length of the tube below said baffle.

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ROD BAFFLED HEAT EXCHANGER

Cecil C. Gentry, and William M. Small, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 31, 1980, Ser. No. 202,827
Int. Cl.³ F28F *9/00, 9/24*
U.S. Cl. 165—67 **46 Claims**



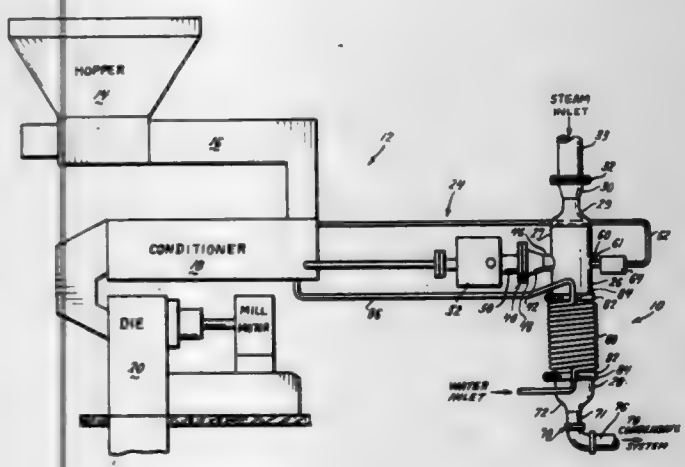
1. A rod baffle comprising a plurality of parallel rods at least some of said rod having a surface defined by a non-circular elliptical cylinder, the cross section of these rods being the same along the entire rod, and the distance between parallel, tangent planes being parallel to the rod axis and touching the rod surface varying from a smallest extension to a largest extension around the rod.

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HEAT EXCHANGER FOR PELLET MILL

Joseph A. Volk, Jr., Florissant, Mo., assignor to Beta Corporation of St. Louis, Bridgeton, Mo.

Filed Oct. 14, 1980, Ser. No. 196,436
Int. Cl.³ F22B *1/02*
U.S. Cl. 165—113 **21 Claims**



1. A heat exchanger for use in the production of pellets where both steam and water are used in a conditioner to condition milled material before pelleting, said heat exchanger comprising an elongated chamber for generally vertical orientation, said chamber having a steam inlet at the upper end thereof for the delivery of steam to said chamber from a steam supply and a steam outlet at right angles to said steam inlet for deliv-

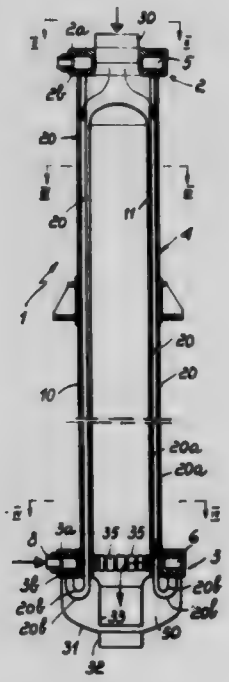
ery of steam to said conditioner, a portion of said chamber beneath said steam outlet defining a trap for the collection of condensate, a second outlet beneath said steam outlet for the delivery of said condensate from said chamber to said steam supply, and a coil surrounding at least a portion of said chamber for heat exchange therebetween, whereby water passing through said coil is heated by the heat exchange from said chamber for delivery to said conditioner.

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COUNTERFLOW HEAT EXCHANGER HAVING TWO FIXED TUBE PLATES

Riccardo Belleli, Via Hermada 13, Mantova, Italy

Filed Mar. 30, 1979, Ser. No. 25,681
Claims priority, application Italy, Apr. 6, 1978, 22067 A/78
Int. Cl.³ F28F *9/02*
U.S. Cl. 165—158 **7 Claims**



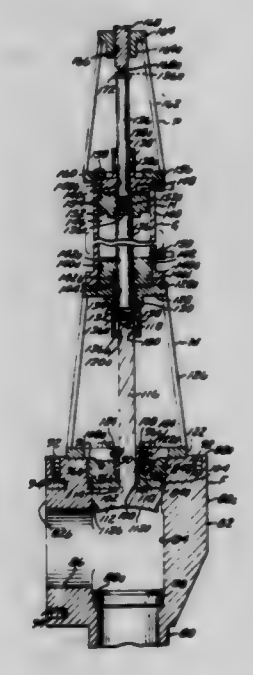
1. A heat exchanger with a longitudinal extension having a cylindrical outer shroud coaxial and substantially coextensive therewith, an inner cylindrical jecket closed at least at one end thereof and spaced from said outer shroud thereby to define therebetween a cross-sectionally annular interspace, a first annular tube plate at one end of said cylindrical shroud coaxial therewith and a second annular tube plate at the other end thereof and coaxial therewith, means defining a first opening for a first heat exchanging fluid at said one end of said cylindrical shroud coaxial therewith an surrounded by said first annular tube plate and in communication with said annular interspace, means defining a second opening for said first heat exchanging fluid at said other end of said shroud coaxial therewith and surrounded by said second tube plate and in communication with said annular interspace, said second tube plate having a mean diameter greater than the mean diameter of said first tube plate, first wall means in said first tube plate defining one annular collector chamber therein coaxial therewith, said first wall means including one annular flat surface internal to said outer shroud and facing said annular interspace in the longitudinal direction of the heat exchanger towards said other end, a first plurality of through holes distributed all over said one annular flat surface and opening into said one annular collector chamber, second wall means in said second tube plate defining another annular collector chamber therein coaxial therewith, said second wall means including another annular flat surface having a mean diameter greater than the diameter of said outer shroud and facing away therefrom in the longitudinal direction of the heat exchanger and extending in a plane parallel to said one annular flat surface, a second plurality of through holes distributed all over said another annular flat surface and opening into said another annular collector chamber, said means defining a second opening including a cap enclosing said another annular flat surface, said second plurality of through holes being circumferentially and outwardly offset with respect to said first plurality of through holes, said one and said another collector chambers having connectors for a second heat exchanging fluid to circulate therethrough, a plurality of substantially rectilinear parallel heat exchanger tubes within said annular interspace and extending in the longitudinal direction of the heat exchanger and coextensive with said annular interspace and arranged therein in substantially polar simmetry, said tubes having their one straight end thereof terminating in said first plurality of holes to allow circulation of said second heat exchanging fluid between said one collector chamber and said heat exchanger tubes, said tubes having on the opposite side thereof end portions U-bent outwardly with respect to said annular interspace and having their edges terminating at said second plurality of holes to allow circulation of said second heat exchanging fluid between said another collector chamber and said heat exchanger tubes.

4,342,363

GEOTHERMAL WELL HEAD

Lehman T. Reed, Bakersfield, Calif., assignor to Midway Fishing Tool Company, Long Beach, Calif.

Filed Nov. 3, 1980, Ser. No. 203,407
Int. Cl.³ E21B *33/03, 34/02, 34/16*
U.S. Cl. 166—97 **15 Claims**



1. In combination with a pressurized fluid producing geothermal well that has a surface string of casing cemented in the bore thereof, a production string of casing that extends downwardly through said surface string of casing to communicate with a pressurized fluid producing geothermal zone, both of said strings of casing having upper ends, a well head assembly mounted on said upper end of surface string of casing and so maintaining said production string of casing in said well that when at least a portion of said production string of casing is anchored to a lower portion of said surface string of casing said production string of casing can expand and contract longitudinally due to variations in temperature without placing any substantial additional strain on said well head assembly, said well head assembly capable of having interior components thereof subjected to wear removed therefrom for repair or replacement without shutting down said geothermal well, said production string of casing having engageable means on said upper end thereof, said well head assembly including:

a. a vertically disposed tubular spool that has upper and lower ends and an abutment on the interior thereof, said lower end of said spool secured to said upper end of said surface string of casing;

b. a vertical tubular member that has upper and lower ends and is positioned at least partially in said spool;

c. hanger means secured to said tubular member that extend outwardly therefrom and rest on said abutment;

d. tubular means secured to said lower end of said tubular member that extend downwardly and sealingly over said upper end of production string of casing, said tubular means including engaging means on the interior thereof on which said engageable means rest to support said production string prior to the latter being anchored to said surface string of casing, with said production string of casing after being anchored capable of expanding and contracting longitudinally due to variations in temperature by said engageable means moving vertically relative to said engaging means;

e. a first valve assembly that includes a first valve body that has top, bottom and first and second side surfaces, an externally threaded head that removably engages a threaded upper portion of a first passage that is vertical and extends downwardly from said top to said bottom surface, said vertical passage defining a valve seat, a second passage that is horizontal and extends from said first passage above said valve seat through said first sidewall, a valve member slidably mounted in said first passage that can occupy either a first position where it seals with said valve seat or a second position where it is disposed above said second passage adjacent said head, said valve member of no greater diameter than said head, an externally threaded bushing that removably engages a centered tapped bore in said head, and an elongate actuator rod that extends upwardly from said valve member through said bushing, said actuator rod having an upper end;

f. a second valve assembly secured to said first sidewall of said first valve body for controlling the flow of said pressurized fluid from said well head assembly when said first valve member is in said second position;

g. an actuator assembly removably secured to said upper surface of said first valve body that removably engages said upper end of said actuator rod and moves the latter vertically to dispose said first valve member in either said first or second position;

h. an elongate inverted cup shaped member that removably but non-rotatably engages the upper surface of said head to envelop said actuator rod when said first valve member is in said second position and said actuator assembly has been removed from said first valve body;

i. a gate valve that has an elongate body that has first and second ends between which a third passage extends that has a diameter greater than that of said head, a transverse valve plate slidably supported in said gate valve body that may be moved from a first position where it is clear of said third passage to a second position where it obstructs said third passage in said gate valve body, said gate valve including means for removably securing said first end to said top surface of said first valve body;

j. a working plate removably securable to said second end of said gate valve body, said working plate having a centered opening therein through which said elongate cup shaped member extends upwardly;

k. a retrieving assembly removably mounted on said working plate for removably engaging said elongate cup shaped member to rotate the latter and unscrew said head from said first valve body and thereafter move said head, first valve member, and actuator rod upwardly until said first valve member is above said valve plate, said valve plate then being moved to said second position, whereupon said working plate may be removed from said gate valve body for said first valve member to be repaired or replaced, and said head, valve member, and actuator rod being returned to an operative position in said first valve body by reversing the procedure above described.

4,342,364

APPARATUS AND METHOD FOR COUPLING SONIC ENERGY TO THE BORE HOLE WALL OF AN OIL WELL TO FACILITATE OIL PRODUCTION

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Apr. 11, 1980, Ser. No. 139,403

Int. Cl.³ E21B *43/00*; F04B *7/00*

U.S. Cl. 166—249 **8 Claims**



1. In an oil well having a casing installed in an oil bearing bore hole, a tubing string installed in said casing, check valve means installed in said string and means for providing sonic energy to said string in a longitudinal vibration mode whereby the check valve means is vibrationally actuated by the sonic energy to pump oil up said string, the improvement being means for coupling sonic energy to the wall of said bore hole to stimulate the release of oil therefrom comprising

a plurality of annular piston means mounted along said string and the casing, at least one of said piston means being tightly fitted on said string, the outer walls of said piston means being closely spaced to the inner wall of the casing to provide dynamic liquid seals to the pumping action at the frequency of the sonic energy,

means for feeding liquid to the annular space between the piston means such that a liquid annulus is formed between successive piston means, and

perforations formed in the walls of said casing,

sonic energy being transferred from the tubing string to the piston means, the sonic energy causing the liquid annuluses to be impacted between the piston means with hydraulic pressure pulses being developed in the liquid which pulses are applied through the casing perforations to the bore hole to stimulate the release of oil therefrom.

4,342,365

SOIL CRUMBLING ROLLERS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Jul. 27, 1977, Ser. No. 819,476

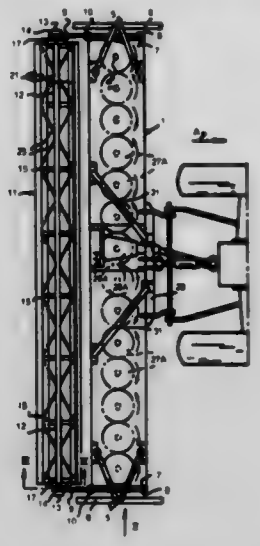
Claims priority, application Netherlands, Aug. 3, 1976, 7608610

Int. Cl.³ A01B *29/04*

U.S. Cl. 172—552 **15 Claims**

1. A soil crumbling roller comprising an elongated member having an axis of rotation and an outer periphery spaced from said axis, said periphery comprising supporting plates that mount elongated, soil-contacting elements and said elements extending in the same general direction as the axis of rotation, said elements being fastened to said plates and said plates being positioned at spaced apart intervals along the length of the axis of rotation of said roller, said plates having edge projections that comprise fastening sites for said elements and each plate having a sawtooth configuration when viewed from the side,

shorter edges of the teeth comprising radial folds of the plate and oblique portions interconnecting said folds, said elements



being fastened to respective projections and the latter being spaced from said folds.

4,342,366

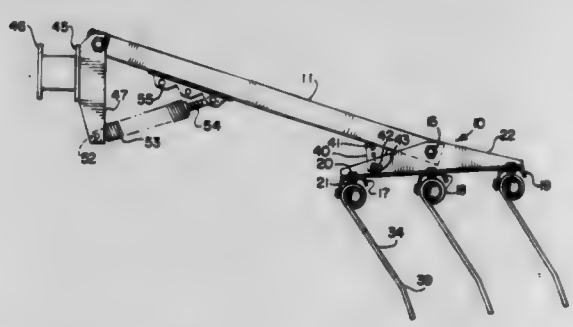
SOIL MULCHER

Dale C. Schenk, and Harold D. Ralph, both of Hamilton, Canada, assignors to International Harvester Co., Chicago, Ill.

Filed Jan. 26, 1981, Ser. No. 228,045

Int. Cl.³ A01B *23/02*

U.S. Cl. 172—643 **9 Claims**



1. A soil mulcher comprising:

(a) a longitudinal connecting member having one end adapted for connection to a mobile power source;

(b) a beam member extending transversely of said connecting member, said beam member having a downwardly opening generally channel configuration;

(c) means interconnecting said longitudinal member and said beam member;

(d) a generally curved bar located in said beam member between said channel configuration and spaced therefrom;

(e) mounting means for connecting said curved bar to a channel wall facing the mobile power source; and

(f) a spring tooth structure having a pair of spaced axially aligned coil portions and an intervening connector portion pivotally mounted on said curved bar with said coil portions surrounding said curved bar, said coil portions and said connector portion also being spaced from said channel configuration, said structure having tooth portions extending downwardly from the endmost convolutions of said coil portions, said intervening connector portion engaging said mounting means when the mulcher is towed and said tooth portions engage the soil and said coil portions wind up on said curved bar, said intervening connector portion moving away from said mounting means until said tooth portions adjacent the endmost convolutions contact said channel wall when the mulcher is backed up with the tooth portions in the soil.

4,342,367

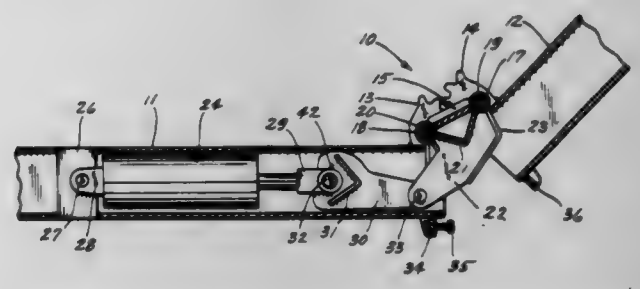
FOLDING TOOL BAR

Donald C. Gates, Fargo, N. Dak., assignor to Alloway Manufacturing, Inc., Fargo, N. Dak.

Filed Oct. 21, 1980, Ser. No. 199,356

Int. Cl.² A01B *73/00*

U.S. Cl. 172—776 **11 Claims**



11. A folding tool bar apparatus for a farm implement or the like comprising:

a hollow main frame;

a wing section pivotally attached to one end of said hollow main frame between a first horizontally extending position and a second horizontal folded position; and

floating hinge point actuation means for moving said wing section between said first and second positions, said floating hinge point actuation means comprising:

first teeth means attached to said hollow main frame,

second teeth means attached to said wing section for meshing with the first teeth means,

bracket means pivotally attached to said first and second teeth means, the pivotal attachment of said bracket means to said first and second teeth means including a plurality of pivot means one of which is disposed between said main frame and said bracket means, and another of which is disposed between said wing section and said bracket means, for providing relative pivotal movement between the main frame, bracket means and wing section,

a lever arm spaced from said one and said another of said plurality of pivot means and attached to said bracket means, and

power means disposed at least partially within said hollow main frame means for moving said lever arm between a first position, corresponding to the first position of said wing section, wherein the power means is disposed within said main frame, to a second position corresponding to the second position of said wing section.

4,342,368

ROTARY DRILLS AND DRILL BITS

Dennis Denman, Retford, England, assignor to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 934,875, Aug. 17, 1978, abandoned. This application Dec. 8, 1980, Ser. No. 214,668

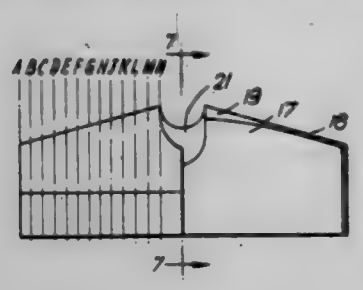
Claims priority, application United Kingdom, Aug. 18, 1977, 34758/77

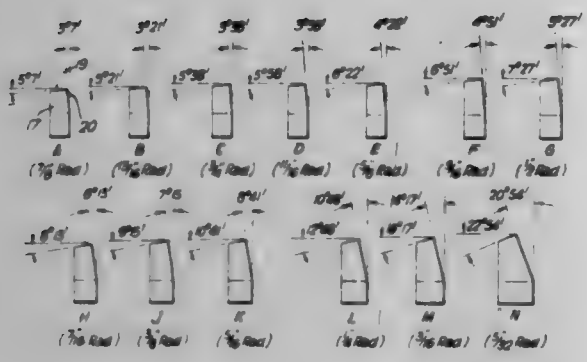
Int. Cl.³ E21B *10/46*

U.S. Cl. 175—410 **6 Claims**

1. A rotary drill bit including a drill tip having a frontal face, inclined with respect to a plane normal to the axis of rotation of the bit, a leading face, inclined with respect to a plane containing the axis of rotation of the bit, and a cutting edge extending outwardly away from the axis of rotation and defined by the intersection of said frontal face and said leading face, the angles which said frontal and leading faces make with said planes respectively both decreasing as said faces extend away from the axis of rotation of the bit, the decrease in the angle of said frontal face being such that the angle between the frontal face and the path of movement of the cutting edge, for a predetermined rotational speed and drilling rate, is substantially the same at all points along the length of the cutting edge, and the

decrease in the angle of said leading face being such that, for the same predetermined rotational speed and drilling rate, the





leading face is normal to the path of movement of the cutting edge at all points along the length of the cutting edge.

4,342,369

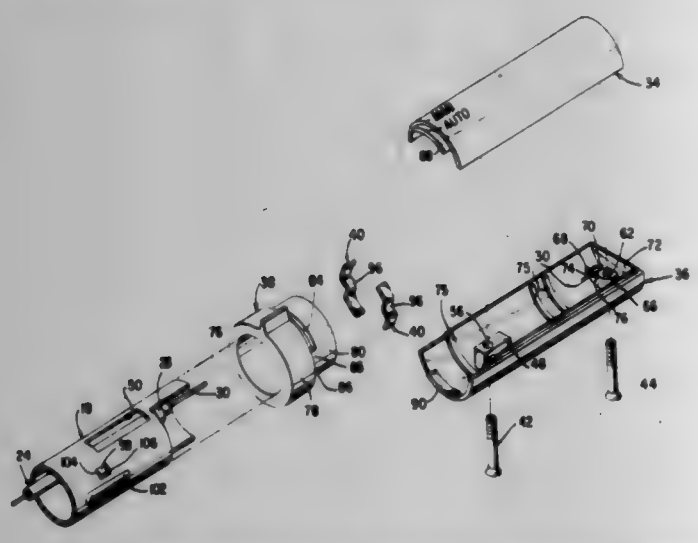
CONTROL GRIP FOR ANSATE SELF-PROPELLED APPLIANCE

Frederick J. Ransom, Dunwoody, Ga., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 23, 1980, Ser. No. 199,882

Int. Cl.[3] A47L *9/32*; B62D *51/04*

U.S. Cl. 180—19 H **2 Claims**



1. In an ansate self-propelled appliance having a drive motor and a reversible transmission mounted on a chassis for driving at least one chassis mounted wheel, a control or hand grip mounted on the handle comprising a pair of clam-shell halves having at least one inwardly extending boss, a guide perforation on the handle into which said boss extends providing limited sliding movement of said handle forward and aft and a locking collar structurally associated with at least one of said hand grip halves so as to be rotatable relative thereto while restrained against movement longitudinal relative thereof, said locking ring carrying at least one inwardly extending spring detent to selectively cooperate with a pair of angularly spaced apart recesses provided on said handle tube angularly offset one from the other, one of said recesses being of a length substantially coextensive with said detent spring so that when said detent spring is engaged therein, said hand grip is latched thereby against longitudinal sliding movement, the other of said recesses being elongated so that when said detent spring is engaged therewith, said hand grip control is slidable along the handle tube when pushed or pulled by an operator, and means for connecting said hand grip control with the transmission so that when said hand grip control is pushed forwardly by an operator said appliance will be self-propelled forwardly and when said hand grip control is pulled rearwardly by an operator said appliance will be self-propelled in a rearward direction.

4,342,370

ARTICULATED OMNIBUS

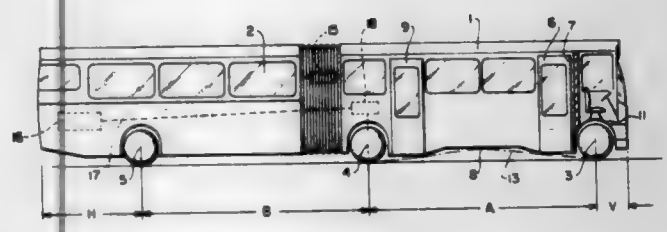
Faust Hagin, and Hans-Jürgen Drewitz, both of Munich, Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nuernberg AG, Munich, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,524

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814112

Int. Cl.[3] B62D *31/002*

U.S. Cl. 180—22 **3 Claims**



1. An articulated omnibus, comprising:

a leading member having a forward end, a rear end, a lower edge, a first axle located such that said forward end overhangs a distance V beyond said first axle, and a second axle located at a distance A aft of said first axle;

a trailing member having a forward end articulately connected to said leading member rear end, and having a rear end, a third axle located at a distance B aft of said second axle such that said trailing member rear end overhangs a distance H aft of said third axle, and an engine located aft of said third axle and operatively connected for driving said second axle, wherein the ratio of said distance is as follows:

V is less than about 1/6 A,

A:B is about 1:1, and

H is less than about ½ B;

a front wheel housing located in said leading member above said first axle, and a forward passenger entrance located immediately adjacent and to the rear of said front wheel housing, said lower edge being lower in the vicinity of said forward passenger entrance than in an area centrally-located between said first and second axles; and

a driver's seat located above said front wheel housing.

4,342,371

VEHICULAR ENERGY STORING MEANS AND SYSTEM

Marion L. Smitley, Birmingham, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

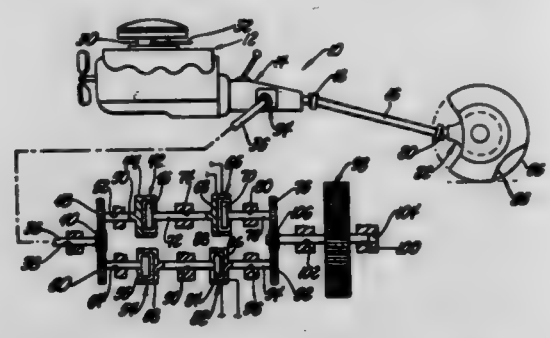
Continuation of Ser. No. 796,754, May 13, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 31,311

Int. Cl.[3] B60K *9/04*

U.S. Cl. 180—165 **16 Claims**

1. An energy storing and supplying system for a vehicle having a prime mover and surface-engaging vehicular propelling drive wheel means, comprising vehicular primary power transmitting means operatively interconnecting said prime mover and said wheel means, a flywheel, and secondary power transmitting means operatively connected to said drive wheel means and to said flywheel, said secondary power transmitting means comprising a first secondary drive train and a second secondary drive train in parallel operating relationship to each other and being effective during a first condition of operation

of said vehicle for transmitting energy from said vehicle drive wheel means through only one of said drive trains and into said flywheel as to thereby impart rotation to said flywheel, said secondary power transmitting means also being effective dur-



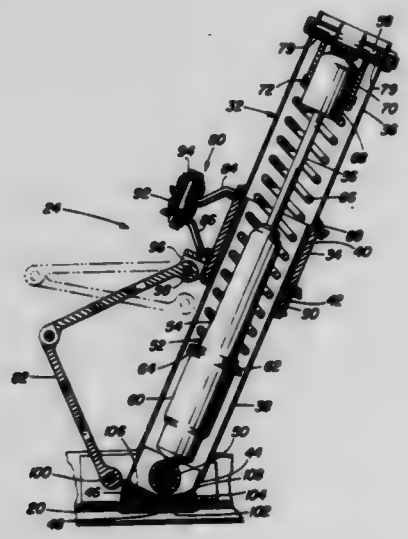
ing a second condition of operation of said vehicle for transmitting energy from said flywheel during its rotation through only the other of said drive trains and into said drive wheel means as to at least assist in propelling said vehicle.

4,342,372

TELESCOPIC STRUT SUSPENSION FOR SNOWMOBILE SKIS

Stanley G. Hayes, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Apr. 16, 1980, Ser. No. 140,730
Int. Cl.[3] B62B *17/04*
U.S. Cl. 180—182 6 Claims



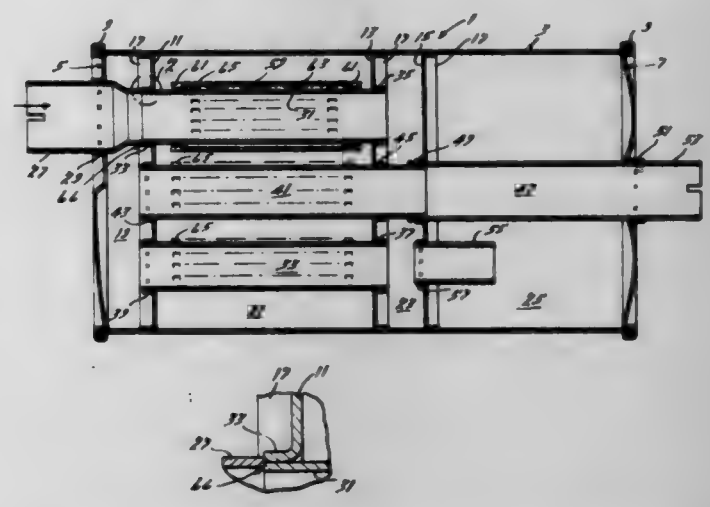
1. In a snowmobile having a pair of steerable skis respectively connected in supporting relationship to a forward portion of a frame by a pair of suspensions, the improvement wherein each suspension, comprises: a support tube forming a forward portion of the frame; a guard tube reciprocably and rotatably mounted in the support tube and having a lower end connected to one of the pair of skis; steering means operatively connected to the guard tube for selectively turning the latter within the support tube to effect steering of the snowmobile; an extensible and retractable shock absorber exclusive of the guard tube and including a cylinder located entirely within and completely spaced from the guard tube whereby the guard tube may become dented without affecting the operation of the shock absorber; said cylinder having an end connected to the one of the pair of skis; said shock absorber further including a piston rod having an end fixed directly to the frame; a coil compression spring received over the shock absorber and mounted to yieldably resist retraction of the shock absorber; said spring being located to extend coextensively with at least one-half of the length of the cylinder.

4,342,373

MUFFLER WITH THREE PART WELDED JOINT

Ernest A. Erickson, Sturtevant, Wis.; Rodger D. Hanson, Jackson, and Lance D. Mews, Clark Lake, both of Mich., assignors to Tenneco Inc., Deerfield, Ill.

Filed Mar. 17, 1981, Ser. No. 244,694
Int. Cl.[3] F01N *1/08;* B23K *31/02;* F16L *13/02*
U.S. Cl. 181—266 5 Claims



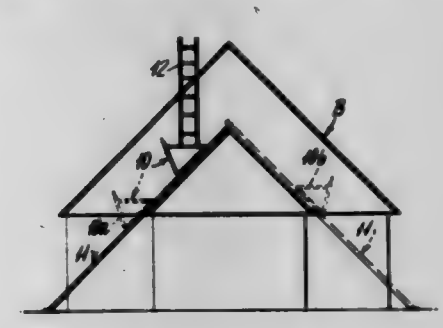
1. An acoustic muffler for hot flowing gases such as combustion engine exhaust gases comprising an outer shell, an internal member having an annular neck, said neck having an annular end edge, a first tube supported inside said neck and having an annular end edge substantially flush and coplanar with the end edge of the neck, a second tube in said muffler substantially coaxial with said neck and first tube and having an annular end edge in abutment with the end edges of both the neck and first tube, said internal member and said first and second tubes being made of low carbon steel, and a weld zone at the interface of said edges uniting each of said ends to each of the other two ends and with said neck and first tube end edges in abutment with the end edge of the second tube, said weld zone having a substantially homogeneous microstructure of the type produced by a magnet arc weld process characterized by substantial freedom from martensite and from embrittling deposits in the grain boundaries of ferrite grains.

4,342,374

LADDER SUPPORT

Antonio Montana, 5 Gates Ave., Ossining, N.Y. 10562

Filed Dec. 29, 1980, Ser. No. 220,763
Int. Cl.[3] E06C *7/16;* E04G *3/00*
U.S. Cl. 182—45 4 Claims



1. A ladder support for attachment to an inclined ladder to support a second ladder extending upwardly therefrom comprising an elongated base member adapted to lie against and span a plurality of rungs of said inclined ladder, said base member including a pair of spaced channels and plates secured to the ends of said channels to hold them in spaced relaship, hook means carried by the upper end of said base when in position on said inclined ladder for securing it to at least one of the rungs of the last said ladder, an elongated channel-shaped platform having upwardly extending leg portions hinged at one end to the upper end plate of said base when positioned on

said inclined ladder, a strut assembly including a pair of independent elongated spaced members each hinged at one end to the lower end plate of said base, said members each having a plurality of holes disposed along the length thereof with the holes of one member being aligned with the holes of the other member, said platform channel having aligned openings in said legs and adjoining said other end thereof, a U-shaped handle secured to and extending from the free ends of said members to maintain them in parallel relationship, said handle extending beyond the adjoining plate on the base member when the base member, channel-shaped platform and struts are in the folded position for carrying the support to facilitate access to said handle for carrying said support, a locking pin engaging said platform openings and a selected set of openings in said members to maintain said platform in a substantially horizontal position when affixed to said inclined ladder, said platform including a second set of openings aligned with a set of openings on said strut assembly when the support is in the folded position to receive said locking pin to hold the support in the folded position and thereby providing a highly portable support readily transported by said handle.

4,342,375

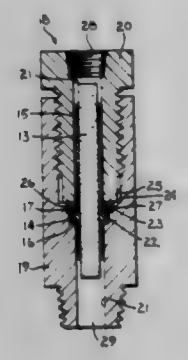
POROUS ROD METERING VALVE

Frank J. Lyden, Manitowoc, Wis., assignor to Oil-Rite Corporation, Manitowoc, Wis.

Continuation-in-part of Ser. No. 595,118, Jul. 11, 1975, Pat. No. 4,062,424. This application Dec. 7, 1977, Ser. No. 858,200

Int. Cl.³ F16N *27/00*

U.S. Cl. 184—65 **8 Claims**



1. In a lubricant metering valve having a through bore with an inlet at one end thereof and an outlet at the other end and comprising engaging male and female valve members, a porous rod disposed in said bore and being provided with radially projecting means to form an annular shoulder intermediate the length of the rod, an impervious sleeve tightly enveloping said rod and extending over at least a portion of the length thereof, and an annular sealing member disposed on the rod in engagement with said shoulder and said sleeve and the wall of the valve bore, said sealing member being compressed into proper sealing mode with assembly of the valve members to secure the rod and sealing member within the valve and preclude passage of lubricant through the valve except by passage through the porous rod.

4,342,376

ADJUSTABLE CONSTANT LEVEL OILER AND TOOL FOR MAKING ADJUSTMENTS

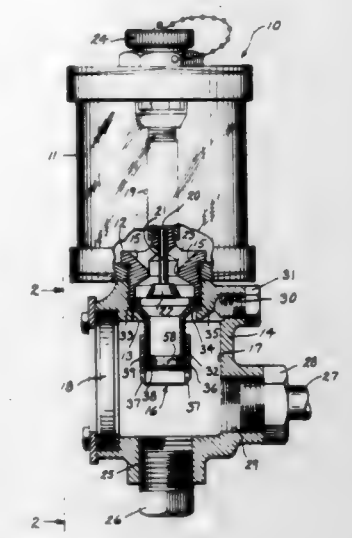
Frank J. Lyden, Manitowoc, Wis., assignor to Oil-Rite Corporation, Manitowoc, Wis.

Filed Jan. 7, 1980, Ser. No. 110,180

Int. Cl.³ G05D *9/02*; F01M *11/12*

U.S. Cl. 184—103 R **4 Claims**

1. In a constant level oiler, a reservoir for oil lubricant, a lubricant chamber beneath the reservoir and having vent means spaced above the lubricant level in said chamber to provide a surge space, conduit means placing the reservoir in communication with the lubricant chamber, valve means in said conduit means to selectively close the conduit means to preclude lubricant flow between the reservoir and the lubricant chamber, said conduit means including a nozzle assembly projecting downwardly into the lubricant chamber and serving to establish the operating level of the oil lubricant in the chamber, said nozzle assembly comprising a pair of threadedly engaged tubular members with one of said members being



generally fixed and the other of said members projecting downwardly beyond the free end of the fixed member and being movable vertically relative to the fixed member to provide for adjustment of the operating level of the oil lubricant in said chamber, and means to lock the nozzle assembly members together in any desired position of adjustment.

4,342,377

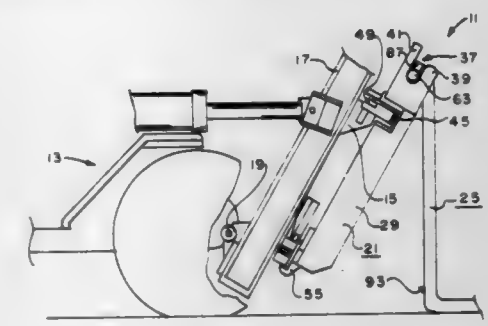
FORK ATTACHMENT MEANS FOR LIFT TRUCKS

Nolen R. Goodwin, Louisville, Miss., assignor to Taylor Machine Works, Inc., Louisville, Miss.

Filed Jun. 30, 1980, Ser. No. 164,333

Int. Cl.³ B66B *9/20*

U.S. Cl. 187—9 R **7 Claims**



1. A fork attachment means for a fork lift truck having a carriage, said fork attachment means comprising:

(a) frame means for being attached to the carriage of the fork lift truck, said frame means including first and second side frame members, each of said side frame members having an upper end and having a notch in said upper end thereof; and

(b) fork means for being removably attached to said frame means, said fork means including an elongated shaft member and including a plurality of fork members attached to said shaft member, said shaft member having a first end for being selectively positioned in said notch of said first side frame member and having a second end for being selectively positioned in said notch of said second side frame member to attach said fork means to said frame means, said fork means including alignment means for coacting with said notch in said upper end of one of said side frame members and for properly aligning said shaft member with respect to said frame means, said fork means including a plurality of bushing members for pivotally and slidably mounting each of said fork members to said shaft member, an outwardly directed peg member being fixedly attached

to each bushing member, and said fork means including an elongated fork indexing bar member for being attached to said shaft member and for spacing said bushing members along said shaft member, said bar member having a plurality of spaced slots for receiving said peg members.

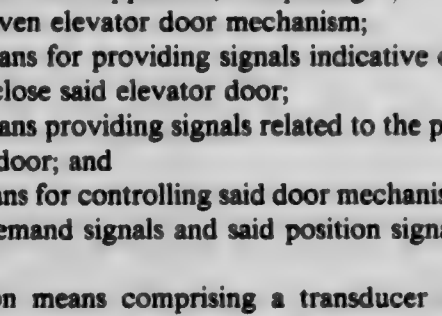
4,342,378

ELEVATOR DOOR MOTION BENCH VELOCITY

Michael W. Hmelovsky, Warehouse Point, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Dec. 27, 1979, Ser. No. 107,694
Int. Cl.³ B66B *13/08*
U.S. Cl. 187—29 R **3 Claims**

TIME CONTROLLED OPENING PROFILE



1. Elevator door apparatus, comprising:
a motor driven elevator door mechanism;
demand means for providing signals indicative of demands to open or close said elevator door;
position means providing signals related to the position of said elevator door; and
control means for controlling said door mechanism in response to said demand signals and said position signals; characterized by:
said position means comprising a transducer for providing signals which vary as a function of the position of said door mechanism; and
said control means comprising cyclically operative signal processing means for providing, in response to said transducer, signal indications of the position and velocity of said door, for providing profile signals defining a desired door traverse dictated velocity profile to accelerate the door with a desired rate of increasing acceleration to a desired maximum acceleration, accelerate the door at said desired maximum acceleration, accelerate the door with a desired rate of decreasing acceleration to a desired maximum velocity, move the door at said maximum velocity, decelerate the door with a desired rate of increasing deceleration to a desired maximum deceleration, decelerate the door at said desired maximum deceleration, and decelerate the door with a desired rate of decreasing acceleration to a desired final bench velocity, for providing an ending velocity signal, indicative of a dictated velocity at which said profile is to become responsive to the one of said profile signals defining said desired rate of decreasing deceleration, in response to ones of said profile signals defining said desired rate of decreasing deceleration, said desired maximum deceleration and said desired final bench velocity, and for providing, in each of a series of cycles throughout a period of time equal to the desired door traverse time, unipolar motion command signals to said elevator door mechanism in response to the difference between said door velocity signal indication and a dictated door velocity signal provided in response to said profile signals and said ending velocity signal.

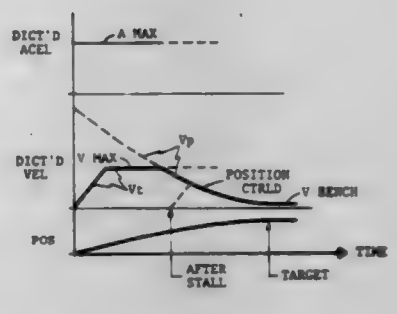
4,342,379

TIME CONTROLLED ELEVATOR DOOR MOTION

John E. Games, Granby, and Michael W. Hmelovsky, Warehouse Point, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 27, 1979, Ser. No. 107,695
Int. Cl.³ B66B *13/08*
U.S. Cl. 187—29 R **2 Claims**

POSITION CONTROLLED OPENING PROFILE



1. Elevator door apparatus, comprising:
a motor driven elevator door mechanism;
demand means for providing signals indicative of demands to open or close said elevator door;
position means providing signals related to the position of said elevator door; and
control means for controlling said door mechanism in response to said demand signals and said position signals; characterized by:
said position means comprising a transducer for providing signals which vary as a function of the position of said door mechanism; and
said control means comprising cyclically operative signal processing means for providing, in response to said transducer, signal indications of the position and velocity of said door, and, in response to said demand means and said position and velocity signal indications, for providing, in each of a series of cycles throughout a period of time equal to the desired door traverse time, a dictated door velocity signal equal to the velocity which the door is desired to have during such cycle in accordance with a desired door traverse velocity profile derived from values of desired rates of acceleration and deceleration and desired maximum velocity, acceleration and deceleration, and cyclically providing motion command signals to said elevator door mechanism in response to the difference between said dictated velocity signal and said door velocity signal indication;
said signal processing means comprising means for calculating said dictated door velocity signal in each of said cycles in response to signals representing said desired rates of acceleration and deceleration and said desired maximum velocity, acceleration and deceleration, and means for providing said dictated velocity signal by increasing an initial velocity value in each cycle by an acceleration value which begins at zero and increases in each cycle at a desired rate of increasing acceleration until said acceleration value represents said desired maximum acceleration, thereafter increasing said velocity value in each cycle by said desired maximum acceleration value until said velocity value achieves a first value from which it can be increased to a value representing said desired maximum velocity by an acceleration value which decreases in each cycle at a desired rate of decreasing acceleration until it reaches zero, thereafter increasing said velocity value in each cycle by said acceleration value which decreases in each cycle until said velocity value represents said desired maximum velocity, thereafter holding said velocity value constant in each cycle until said position signal indication represents a deceleration position of said door from which said door can be decelerated to a desired final velocity in response to said dictated velocity signal when said dic-

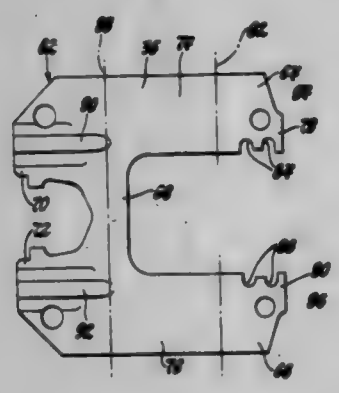
tated velocity signal is provided as follows, thereafter decreasing said velocity value in each cycle by a deceleration value which begins at zero and increases in each cycle at a desired rate of increasing deceleration until said deceleration value represents said desired maximum deceleration, thereafter decreasing said velocity value in each cycle by said desired maximum deceleration value until said velocity value achieves a second value from which it can be decreased to a value representing said desired final velocity by a deceleration value which decreases in each cycle at a desired rate of decreasing deceleration until it reaches zero, thereafter decreasing said velocity value in each cycle by said deceleration value which increases in each cycle until said velocity value represents said desired final velocity.

4,342,380

LIGHT WEIGHT DISC BRAKE CALIPER

Wolfgang Melinat, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 29, 1980, Ser. No. 191,361
Int. Cl.³ F16D *55/224*
U.S. Cl. 188—71.1 **3 Claims**



1. A composite caliper characterized by light weight and high strength for use in a disc brake and having one side formed by a sheet steel portion adapted to form a bridge for the caliper and the other side formed by a cast metal portion adapted to define a piston chamber for the caliper,

said sheet steel bridge portion having an initial generally flat H-shape defined by first and second sets of legs and a cross-piece of predetermined strength preformable therefrom into a generally inverted U-shape by bending along a first axis extending through said cross-piece and along a second axis parallel to said first axis and spaced from said cross-piece, one side of the inverted U-shape including said first set of legs integrally cast within said cast metal portion to form an anchor therewith and to place the other side of the inverted U-shape including said second set of legs opposite the piston chamber for receiving a brake disc therebetween, said one side of the inverted U-shape being configured to enhance the integrity of the anchor between said sheet steel portion and said cast metal portion while the other side of the inverted U-shape is configured to enhance the predetermined strength of the sheet steel portion and cooperating thereby to effect the light weight, high strength characteristics of said caliper.

4,342,381

DISC BRAKE

Koichi Tamura, Tokyo, Japan, assignor to Tokico Ltd., Japan

Filed Jan. 18, 1980, Ser. No. 113,269
Claims priority, application Japan, Jan. 19, 1979, 54-5684[U]
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.38 **3 Claims**

1. A disc brake comprising:

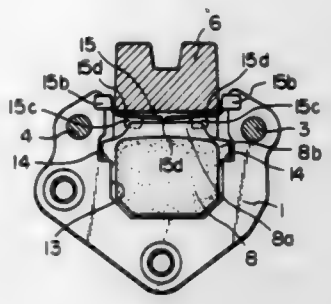
a stationary member including a guide portion, adapted to be secured to a non-rotatable part of a vehicle.

a caliper mounted on the stationary member displaceably in the direction of the rotational axis of a rotatable disc,

a pair of friction pads disposed on the opposite sides of the disc, at least one of which being supported on the guide portion of the stationary member to slide in the direction of the rotational axis of the disc, and

a pad spring acting between the caliper and said at least one friction pad to bias the friction pad toward the guide portion of the stationary member,

wherein said pad spring is formed of sheet metal and comprises two generally channel shaped supporting portions



which are spaced in the direction of the circumference of the disc and which respectively receive axially opposite outer surfaces of the stationary member within said channel shaped portion to prevent the displacement of the pad spring in the direction of the rotational axis of the disc, and a retaining portion extending radially inwardly in the direction of the circumference of the disc,

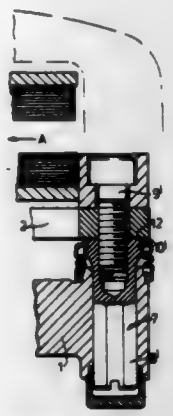
said retaining portion being engaged with said at least one friction pad when the sliding movement of said friction pad in the direction of the axis of the disc exceeds a predetermined amount.

4,342,382

TWIN-PIN SLIDING CALIPER DISC BRAKES

Heinrich B. Rath, Vallendar, and Hans J. Wienand, Steimel, both of Fed. Rep. of Germany, assignors to Lucas Industries Limited, Birmingham, England

Filed Jan. 25, 1980, Ser. No. 115,388
Claims priority, application United Kingdom, Jan. 25, 1979, 7902702; Jun. 16, 1979, 7920928
Int. Cl.³ F16D *65/00*
U.S. Cl. 188—73.45 **10 Claims**



1. A twin pin sliding caliper disc brake comprising a caliper having two bores therein, and a torque taking member having two parallel pins, said caliper being slidably mounted on the torque taking member on said two parallel pins each of which is slidably engaged in a respective one of said bores in the caliper, one of said pins being fixedly secured to the torque taking member so that it is immovable relative to the torque taking member, and the other one of said pins being laterally movable to a limited extent relative to the torque taking member for adjustment of said other pin so that it can be adjusted to engage simultaneously and positively the same predetermined side of its bore in said caliper as does the fixed pin in its bore,

the movable pin having a friction surface and means securing the friction surface of said movable pin in frictional engagement with said torque taking member after adjustment of said movable pin to engage said predetermined side of its bore whereby braking drag forces are positively shared between both pins during all normal brake operations and if the torque taking member flexes under heavy braking the frictional engagement between the movable pin and the torque taking member can be overcome so that the movable pin is moved relative to the torque taking member to prevent jamming of said pins in said caliper bores.

4,342,383

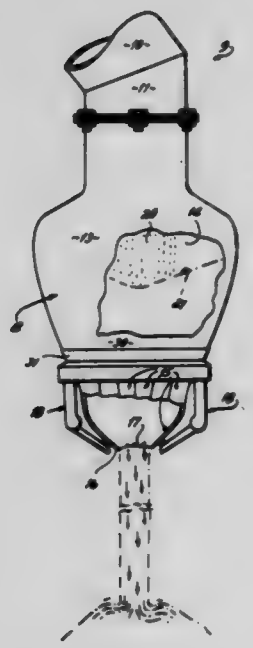
METHOD AND APPARATUS FOR CONTROLLING THE FALL OF GRAIN THROUGH A CONDUIT

William C. Burnett, 6229 Malloch Dr., Memphis, Tenn. 38138

Filed Apr. 17, 1980, Ser. No. 141,154

Int. Cl.³ B65G *11/20*

U.S. Cl. 193—32 **17 Claims**



1. A method of reducing the velocity of a stream of grain which is falling in a downwardly inclined conduit, said method comprising,

interposing an array of downwardly and inwardly sloping blades in the path of the falling stream in the conduit at a position in which the velocity of the stream is in excess of about 1000 feet per minute, the blades slowing the movement of the grain particles and deflecting them toward the axis of the conduit,

providing a central opening between lower ends of the blades,

yieldably biasing the blades inwardly, in a direction tending to reduce the size of said opening, the blades restricting the fall of the particles and slowing their movement through the central opening so that a mass of particles accumulates above said blades and opening, and

continuously discharging particles from the accumulated mass through said opening,

while varying the size of the opening between the blades as the weight of the accumulated mass of particles above said opening changes with flow rate variations, to increase the size of the opening as the weight of the mass increases in response to an increase in the flow rate of the stream, and thereby to release particles from said mass more rapidly as the weight increases.

4,342,384

MEDAL REMINANT SLOT MACHINE GAMES

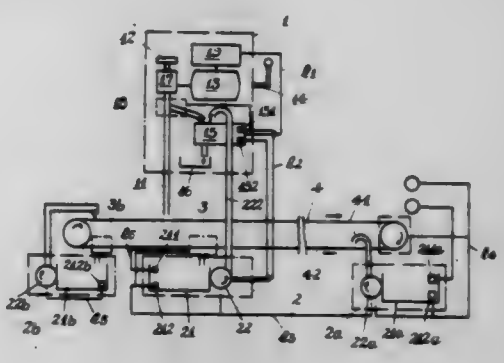
Motonobu Fukase, Tanashi; Toshikazu Yokota, and Masahisa Oura, both of Sayama, all of Japan, assignors to Sayama Precision Industrial Co., Ltd., Sayama, Japan

Filed May 8, 1980, Ser. No. 148,049

Claims priority, application Japan, May 17, 1979, 54-64923[U]

Int. Cl.³ G07D *9/00*

U.S. Cl. 194—1 C **6 Claims**



1. Coin ruminant slot machine games comprising a combination of a plurality of slot machines, back feeders, blockaders and a belt conveyer, the slot machines being operatively coupled respectively with the back feeders, the back feeders being operatively coupled respectively with the blockaders, the slot machines being located above the belt conveyer, the back feeders being located below the belt conveyer, the blockaders being located adjacent the upper surface of the lower section of the belt conveyer, the aforesaid components being cooperatively arranged so that the slot machines discharge the coins onto the upper section of the belt conveyer, the back feeders feed the coins back up to the slot machines and upper and lower sections of the belt conveyer, and the blockaders move down onto the lower belt section to guide the coins off of the lower belt section into the back feeders, and means to operate the belt conveyer, back feeders and blockaders.

4,342,385

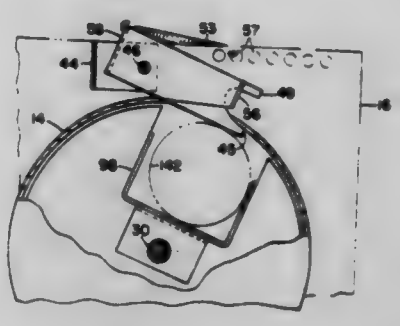
ARTICLE ACTUATED COIN DISPENSING MACHINE

Arthur H. Kaspar, Box 667, Shiner, Tex. 77984

Filed Dec. 17, 1979, Ser. No. 104,544

Int. Cl.³ G07F *7/06*

U.S. Cl. 194—4 D **15 Claims**



11. A machine for activating a trigger means upon receipt of an article belonging to a defined class of acceptable articles which comprises:

a housing;

an article opening in said housing for receiving said articles;

carriage means adapted for carrying said articles, said carriage means being located within said housing for receiving said articles through said article opening and movable within said housing;

first stop means located to engage said carriage means to stop movement of said carriage means in a first direction at at least one selected point;

movable check means located within said housing for checking at least one width of said article and for disengaging

said first stop means from said carriage means if said article is determined by said check means to be within said defined class of acceptable articles;

trigger means operable in response to sufficient movement of said carriage means in said first direction;

at least two movable probes for testing said article, said probes being located within said housing and arranged to test said article along at least two portions of said article for article width and to test at least one portion of said article for article length; and

means for disengaging said first stop means if the article widths and length measured by said probes are within the set of acceptable article widths and lengths of the defined class of articles;

said probes maintained in place by a predetermined amount of force for checking said article for article surface strength and article surface rigidity by said check means not disengaging said first stop means unless said article is strong enough and rigid enough to communicate sufficient force against said probes to sufficiently displace said probes;

a testing end of at least one of said probes sufficiently pointed to test the surface of said article for resistance to penetration and adapted to prevent articles having insufficient resistance to penetration by the pointed probe from being rotated past the pointed probe; and

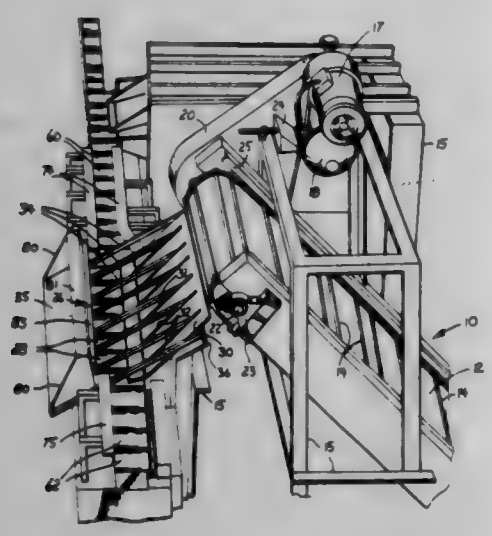
said pointed probe positioned to direct said point of said pointed probe at an opposing angle to movement of said article in said first direction to penetrate any said article of insufficient surface strength, surface rigidity or surface smoothness.

4,342,386

ARTICLE DISTRIBUTING APPARATUS

Mieczyslaw Budzich, and Forest G. Fitz, both of Lexington, Harold S. Moss, Columbia, all of S.C. assignors to Nassau Recycle Corp., Staten Island, New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,613
Int. Cl.³ B65G *47/66*
U.S. Cl. 198—360 **8 Claims**



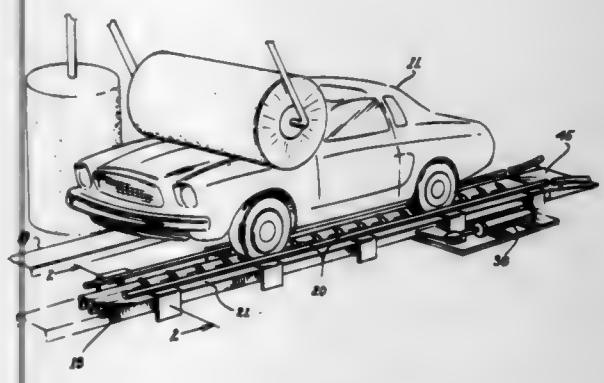
1. Apparatus for distributing articles comprising a conveyor having a set of mutually spaced rollers; a ramp inclined upwardly from said set of mutually spaced rollers; an array of mutually spaced bars aligned between said rollers; means for raising and lowering said array of bars between a lowered position beneath said rollers and at least a lower portion of said ramp and a raised position above said rollers and said lower portion of said ramp, and means for successively gravity feeding articles onto said ramp.

4,342,387

METHOD AND APPARATUS FOR LINEARLY CONVEYING WHEELED VEHICLES

James H. Gray, Phoenix, Ariz., assignor to Research Associates, Ltd., Phoenix, Ariz.

Continuation-in-part of Ser. No. 576,169, May 5, 1975, Pat. No. 4,039,075. This application Apr. 28, 1977, Ser. No. 791,961
The portion of the term of this patent subsequent to Aug. 2, 1994, has been disclaimed.
Int. Cl.³ B65G *25/10*
U.S. Cl. 198—746 **19 Claims**



1. A method for longitudinally advancing a vehicle through a predetermined distance, said vehicle being carried by at least a first pair and a second pair of independently rotatable wheels, said method comprising the steps of:

supporting one wheel in said first pair of independently rotatable wheels on a movable elongated plate while supporting the other wheel in said first pair of independently rotatable wheels on a stationary surface;

longitudinally reciprocating said plate between a forward position and a rearward position, the length of said reciprocation being substantially less than said predetermined length;

blocking the one wheel in said first pair of wheels to prevent both rotation of the one wheel and relative longitudinal movement between the one wheel and said plate as said plate moves toward its forward position;

maintaining the forward advancement of the one wheel in said first pair of wheels while permitting the one wheel to both rotate and move longitudinally relative to said plate as said plate moves toward its rearward position; and

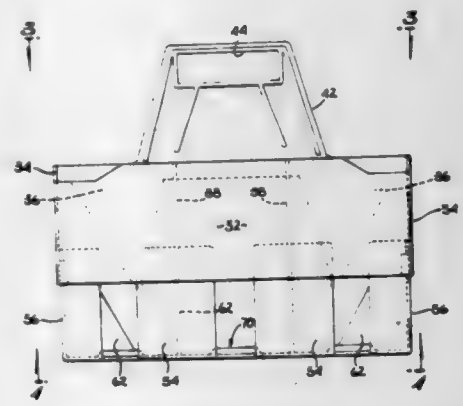
selectively omitting said blocking step to temporarily inhibit the forward advancement of said vehicle.

4,342,388

STACKABLE BOTTLE CARRIER

Thomas E. Torokvei, Don Mills, Canada, assignor to Scepter Manufacturing Co., Ltd., Toronto, Canada

Filed Sep. 7, 1979, Ser. No. 73,234
Int. Cl.³ B65D *75/00, 21/00, 85/62*
U.S. Cl. 206—203 **27 Claims**



1. A bottle carrier comprised of two slidably engaged, telescoping members, the first member being comprised of a pair

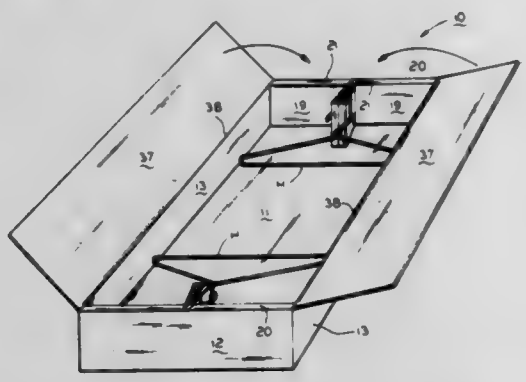
of facing side walls and a pair of facing end walls, the ends of said side walls attached to the adjacent ends of said end walls; a central dividing means extending from about the vertical center line of one of said end walls to about the vertical center line of the other; handle means extending upwards from said central dividing means; and partition walls cooperating with said central dividing means, said side walls and said end walls to form the upper region of a plurality of cells for receiving bottles; and the second member being comprised of a bottom panel, said bottom panel having an opening extending at least part way along the central axis which runs across its length; side and end panels extending upwards from the periphery of said bottom panel; and partition panels cooperating with said bottom, side and end panels to form the lower region of said plurality of cells for receiving bottles; said central dividing means and said opening communicating together and each being configured to receive the handle means of a similar empty bottle carrier positioned below in stacked relationship, said first and second members having cooperatively engaging means for allowing limited telescoping movement of said first and second members between a first predetermined relative position whereby said second member extends substantially below said first member to provide said plurality of cells as defined by said first and second members with a substantial height and a second predetermined relative position whereby said first and second members are substantially nested together to substantially reduce the height of said bottle carrier.

4,342,389

CONTAINER WITH INTEGRAL HANGER BAR

Billy R. Bethune, and Charles C. Dearing, both of Chattanooga, Tenn., assignors to Container Corporation of America, Chicago, Ill.

Filed Feb. 19, 1981, Ser. No. 235,908
Int. Cl.³ B65D *85/18*
U.S. Cl. 206—288 **8 Claims**



1. In a container for shipping articles such as hanger supported garments, said container being formed from a blank of paperboard or the like and comprising:

(a) a bottom panel having opposed end and side walls foldably connected to said bottom panel to define a tray;

(b) flaps extending from ends of said side walls and having portions extending along the inner face of an end wall;

(c) a pair of inner locking walls foldable with respect to an end wall and foldable into locking position with said bottom panel with said portions of said flaps embraced therebetween, the proximate ends of said locking walls being spaced from each other to define a slot; and

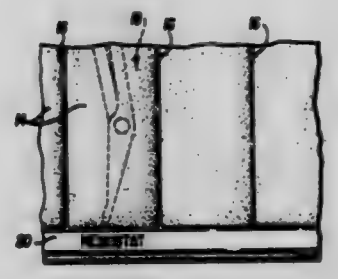
(d) distal portions of said flaps extending through said slot and being folded to position to define a hanger bar for garments.

4,342,390

APPARATUS FOR HOLDING AND PROTECTING STERILIZABLE INSTRUMENTS

James G. Mitchell, and Winalee G. Mitchell, both of 110 Secor Woods La., Perrysburg, Ohio 43551

Filed Jan. 22, 1980, Ser. No. 114,167
Int. Cl.³ B65D *83/10*
U.S. Cl. 206—363 **15 Claims**



1. An improved apparatus for holding and protecting sterilizable instruments, comprising:

a first layer of sterilizable material;

a second layer of sterilizable material overlying a portion of said first layer and being made from a thermally fusible foam material;

a plurality of seams joining said layers and defining a plurality of open-end pockets between said layers; and

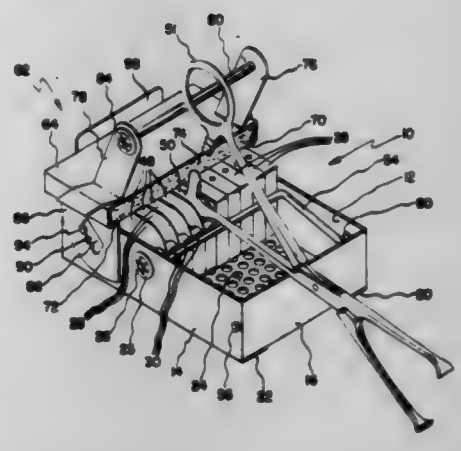
means adjacent said pocket, said means comprising a portion of said second layer of foam material in which portion the foam is fused to provide an exterior writing surface for marking with a conventional writing instrument.

4,342,391

INSTRUMENT COUNT MEMORIZER

Herbert Schainholz, 316 Locust St., Teaneck, N.J. 07666

Filed Feb. 9, 1981, Ser. No. 232,917
Int. Cl.³ B65D *85/62*; A61L *3/02, 19/02*; B65D *83/10*
U.S. Cl. 206—370 **16 Claims**



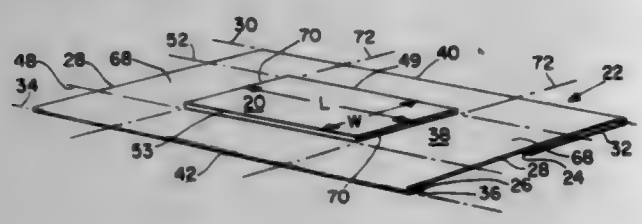
1. A count memorizing device for instruments of the type having at least one handle for manual manipulation thereof comprising, a carrier for storing a plurality of said instruments, a plurality of boots disposed in said carrier and individually movable from open to closed positions, each of said boots when in said open position having means for receiving the handle of a discrete instrument to hold said instrument in an outwardly extending position, and locking means operative to maintain said boots in selected open and closed positions, the number of open boots indicating the number of instruments selected to be stored by said carrier.

4,342,392

WRAP FOR STERILE ARTICLES

Lloyd A. Cox, Memphis, Tenn., assignor to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed Sep. 10, 1979, Ser. No. 73,971
Int. Cl.[3] A61F *15/00*
U.S. Cl. 206—438 10 Claims



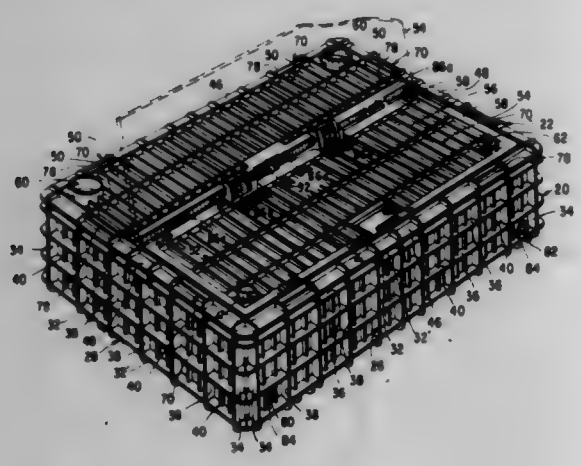
1. A wrap for a sterile article which permits unfolding of the wrap from one side without reaching into the article's sterile field comprising a bottom panel having top, bottom and side edges and situated underneath said sterile article; a first panel folded inwardly on a first fold line corresponding to the top edge of said bottom panel, said first panel having top, bottom, and side edges, said first fold line corresponding to said top edge of said first panel and said first panel being superimposed atop said article and said bottom panel; a second panel folded outwardly on a second fold line corresponding to the bottom edge of said first panel, said second panel having top, bottom and side edges, and being superimposed over said first panel, said bottom edge of said second panel corresponding to said second fold line; a third panel folded underneath said bottom panel on a third fold line corresponding to the top edge of said second panel, said third panel having top, bottom and side edges, said top edge of said third panel corresponding to said third fold line; a fourth panel folded inwardly atop said sterile article on a fourth fold line corresponding to the bottom edge of said bottom panel, and being superimposed on top of said article and said bottom panel.

4,342,393

STACKABLE POULTRY COOP

Thomas Box, Shrewsbury, N.J., assignor to Spectrum International, Inc., Shrewsbury, N.J.

Filed Aug. 25, 1980, Ser. No. 180,815
Int. Cl.[3] B65D *21/02, 1/30, 43/16*
U.S. Cl. 206—504 29 Claims



1. A stackable coop comprising:

upper and lower wall sections joined by a plurality of sidewall sections to form an enclosure, said plurality of sidewall sections being disposed about and joined to said upper and lower wall sections, said plurality of sidewall sections including first and second sidewall sections which are oppositely disposed, and at least one of said upper, lower and sidewall sections including an opening therein;

complementary male and female locking members disposed on the outer surface of each of said first and second sidewall sections, each of said male locking members extending outwardly away from the outer surface of said sidewall section a first predetermined distance, and each of said female locking members extending outwardly away from the outer surface of said sidewall section a second predetermined distance, each of said male locking members being sized to be mateably received within one of said female locking members, and said male and female locking members being disposed in predetermined positions on said first and second sidewall sections so that when a plurality of said coops are arranged in side-by-side relationship with said first sidewall sections of said coops being juxtaposed and substantially in abutting relationship to said second sidewall sections of coops, said male locking members on said first and second sidewall sections of said juxtaposed coops are mateably received in said female locking members on said second and first sidewall sections of said juxtaposed coops respectively, to lock said juxtaposed coops together, the amount of overlap of said male locking members within said female locking members being equal to the sum of said first and second predetermined distances, and said first and second predetermined distances being such as to substantially prevent said coops from unlocking during transport thereof by a vehicle;

a plurality of complementary first and second reinforced pad means on said upper and lower wall sections respectively, in vertical alignment with said sidewall sections and spaced about the periphery of said upper and lower wall sections, said plurality of first pad means being disposed in spaced positions about the upper surface of said upper wall section to define a plurality of reinforced resting pads thereon, and said plurality of second pad means being disposed on the lower surface of said lower section in vertical alignment with said plurality of first pad means to define a plurality of reinforced support pads, each of said first reinforced pad means comprising at least one rib member extending in a first direction in relation to the plane of said sidewall section it is in alignment with, and each of said corresponding second pad means comprising at least one rib member extending in a second direction which is traverse to said first direction, said reinforced support pads being adapted to engage and rest on said reinforced resting pads of the coop positioned immediately therebeneath when a plurality of said coops are stacked vertically one on top of the other so that substantially the entire weight of said coops positioned above one of said coops is borne by said sidewall sections of said one coop;

a door for said opening in said at least one of said upper, lower and sidewall sections; and

door mounting means for mounting said door in said opening for movement between an open position and a closed position, said door mounting means comprising hinge rod means disposed along a hinge edge of one of said door and said section having said opening therein, and hinge means along a corresponding hinge edge of the other of said door and said section having said opening therein, said hinge means comprising a plurality of U-shaped members having side arms defining a recess for receiving associated portions of said hinge rod means therebetween, and said side arms of at least one of said U-shaped members including protruding portions defining a gap therebetween which is less than the diameter of its associated portion of said hinge rod means so that said associated portion of said hinge rod means is firmly held in place in said recess of said at least one U-shaped member by said protruding portions.

4,342,394

REMOVABLE PROTECTIVE COVER FOR A VIDEO DISC STYLUS CARTRIDGE

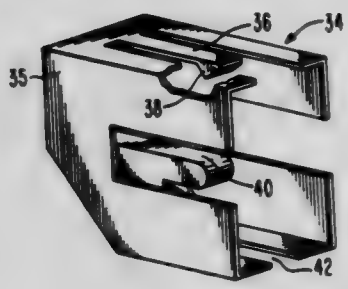
Byron K. Taylor, Carmel, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,273

Claims priority, application United Kingdom, Aug. 13, 1980, 8026335

Int. Cl.³ G11B *3/10;* B65D *81/02, 85/30*

U.S. Cl. 206—521 9 Claims



1. A protective cover for a record playback cartridge assembly, said cartridge assembly comprising: a cartridge body; a stylus arm mounted within said body; a pickup stylus mounted on one end of said arm; and an elongated flylead member connected between said cartridge body and a certain point in the vicinity of said stylus, said flylead normally assuming a bow-like shape, said cartridge assembly being inserted into a player for record playback, said protective cover comprising:

a housing adapted to slide over at least a portion of said cartridge body when said cartridge assembly is out of said player; and

means located within said housing and normally not touching said flylead for preventing the inversion of said bow-like shape of said flylead;

said protective cover being removed when said cartridge assembly is inserted into said player for record playback.

4,342,395

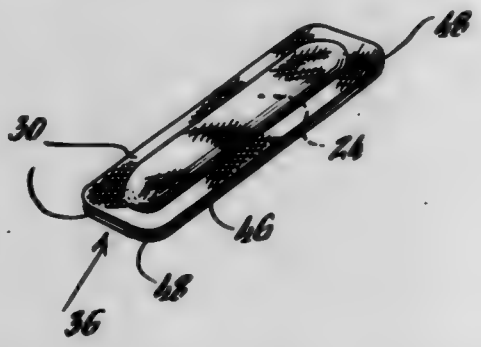
LIQUID DISPENSING UNIT AND METHOD OF MANUFACTURE THEREOF

James B. Brown, R.F.D. #2, Box 313, Mt. Kisco, N.Y. 10549

Filed Feb. 2, 1981, Ser. No. 230,604

Int. Cl.³ B65D *85/42;* B65B *83/00, 11/00*

U.S. Cl. 206—530 9 Claims



1. A liquid dispensing unit comprising: a cylindrical crushable glass vial having a liquid therein, a plastic blister package having identical complementary recesses forming a chamber for said glass vial and flange sections extending in a plane parallel to the longitudinal axis of said unit, a plurality of spaced holes in each of said recesses, and a non-woven fabric web applied to the top and bottom surfaces of said blister package whereby when said vial is crushed at least a major portion of said liquid passes through said holes in said recesses to penetrate through said non-woven cloth.

4,342,396

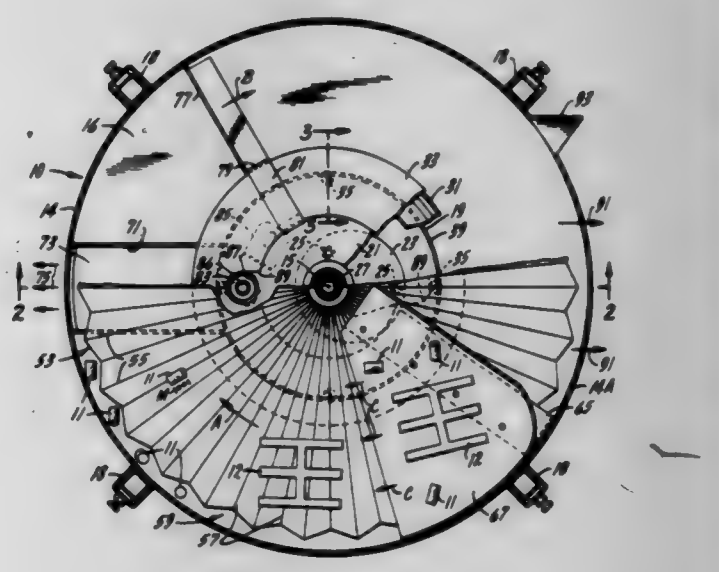
ROTARY PARTS SEPARATOR

Norman A. Fagnant, Mendon, Mass., and James L. Young, Pascoag, R.I., assignors to Nelmor Company, Inc., North Uxbridge, Mass.

Filed Aug. 11, 1980, Ser. No. 176,859

Int. Cl.³ B07C *5/00*

U.S. Cl. 209—546 9 Claims



1. A rotary parts separator for separating small parts, having a given maximum dimension, from a mixture of such small parts with larger members that have minimum principal dimensions larger than that maximum dimension, the parts separator comprising:

a cylindrical separator baffle having a vertical axis;

a conical rotor mounted within the upper portion of the separator baffle in coaxial relation thereto, the outer surface of the rotor having a corrugated configuration defining a multiplicity of peaks extending outwardly and downwardly from the rotor apex and separated by a corresponding multiplicity of outwardly and downwardly diverging and deepening valleys,

the peripheral portion of each rotor valley being wider and deeper than the maximum dimension of the small parts but not wide enough or deep enough to receive any of the larger members,

and the outer rim of the rotor being spaced from the separator baffle by an annular separation gap that is wide enough, at least at the rotor valley ends, to allow the small parts to fall therebetween at any point around the rotor periphery, but not wide enough for passage of the larger members;

drive means, including a drive shaft coaxial with the baffle axis, for rotating the rotor in a given direction of rotation;

input guide means for guiding a mixture of the small parts and the larger members onto the rotor at a predetermined input location, both the parts and the larger members moving outwardly and downwardly by combined centrifugal and gravitational forces;

output guide means, below the rotor, for guiding the small parts, falling through the separation gap, into a small parts discharge port located below the bottommost portion of the rotor rim;

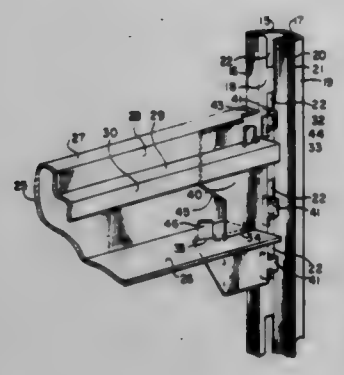
and a large member discharge port, comprising an interruption in the separator baffle, extending a substantial distance below the rim of the rotor, the larger member discharge port being located between the small parts discharge port and the input location.

4,342,397

FASTENINGS FOR STORAGE RACKS

Robert T. Halstrick, 107 Prospect Ave., Langhorne, Pa. 19047

Filed Sep. 8, 1980, Ser. No. 185,224
Int. Cl.[3] A47F *5/00*
U.S. Cl. 211—191 8 Claims



1. A storage rack comprising

upright posts rectangular in cross section and having outwardly extending vertical flanges and having vertically spaced slots,

a horizontal crossbeam member having portions with a plurality of horizontal upper and lower spaced slots, and

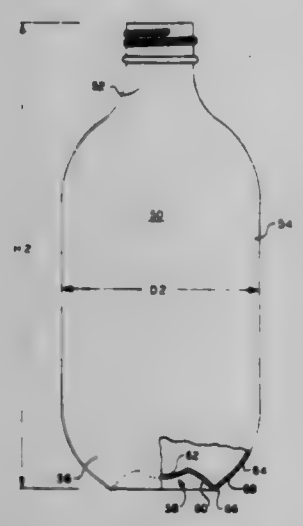
a unitary locking plate member having a plurality of downwardly extending hooks for engagement in the slots in the posts, and a plurality of tongues for engagement in the slots in the crossbeam member, at least one of the tongues being a wedging tongue.

4,342,398

SELF-SUPPORTING PLASTIC CONTAINER FOR LIQUIDS

Long F. Chang, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 16, 1980, Ser. No. 197,467
Int. Cl.[3] B65D *1/02*
U.S. Cl. 215—1 C 9 Claims



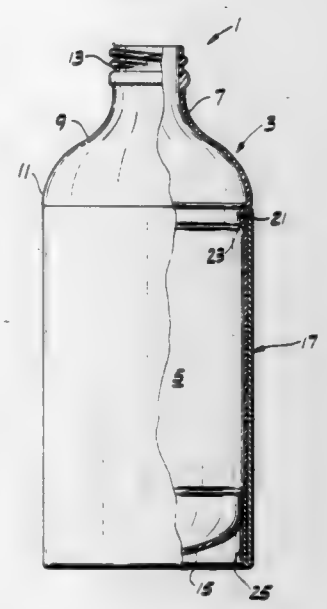
1. In a bottle for the retention of fluids under pressure, having a neck portion, a bottom portion and a side wall interconnecting the neck portion and the bottom portion, the bottom portion comprising: an inner wall defining a central cavity; a generally convex outer wall; a return portion joining lower ends of said inner wall and said outer convex wall to define a seating ring with the extreme lower end of said outer wall adjacent said return portion being concave.

4,342,399

COMPOSITE BOTTLE

Robert F. Stirling, St. Louis County, Mo., assignor to The Seven-Up Company, St. Louis, Mo.

Filed Feb. 17, 1981, Ser. No. 234,721
Int. Cl.[3] B65D *23/08*
U.S. Cl. 215—12 R 13 Claims



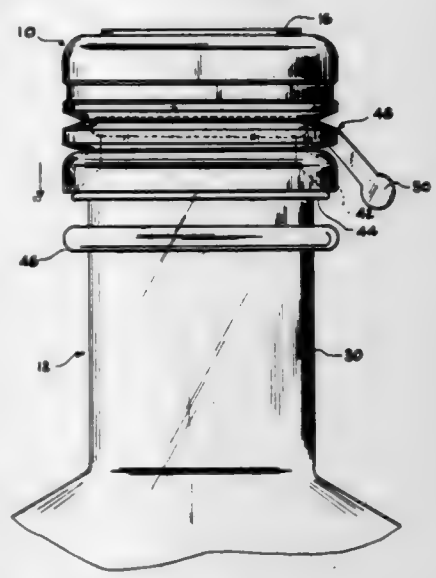
13. A composite bottle for carbonated beverages comprising a bottle of a CO_2-permeable synthetic resin material having a cylindrical body, a rounded bottom, and a neck with a transition convergent from a peripheral shoulder at the upper end of the body to the neck, the latter having a screw-thread finish for a screw cap, a tubular CO_2-impermeable jacket covering substantially the entire body of the bottle below the peripheral shoulder and extending down below the bottom of the bottle for stably supporting the latter, said jacket comprising an outer layer capable of having decorative labeling matter printed thereon, an intermediate layer of fibrous material bonded to the outer layer, and an inner layer of aluminum foil adhered to the intermediate layer and the body of the bottle, said layer of aluminum foil providing a CO_2-impermeable barrier for reducing loss of carbonation by CO_2 permeation through the bottle.

4,342,400

TAMPER INDICATING CLOSURE AND PRESSURIZED CONTAINER

Santos A. A. Llera, Calle Carite, P.R., assignor to Precision Plastic Products Corp., Toa Baja, P.R.

Filed Sep. 10, 1980, Ser. No. 185,888
Int. Cl.[3] B65D *41/48*
U.S. Cl. 215—256 10 Claims



1. A one-piece molded plastic tamper indicating closure in

combination with a pressurized container such as a champagne bottle, said closure comprising:

a crown;

a plug portion downwardly depending from said crown engaging the interior surface of the neck to provide sufficient bearing and sealing forces therebetween so as to prevent undesired or premature ejection of the closure from the container, the plug portion being cylindrical in nature, having a plurality of sealing means located thereon engaging the interior surface of the neck so as to resist withdrawal of the plug portion therefrom;

a skirt comprising a side wall depending from said crown a distance substantially less than the plug portion with said skirt fitting over the exterior of the neck;

a tamper indicating portion including a radially inwardly projecting wedge shaped internal ring and located below said side wall;

a tear-away portion connecting said side wall and said tamper indicating portion and adapted to be removed to separate said side wall from said tamper indicating portion;

the pressurized container having a neck with a retaining means thereon, said retaining means including a flange having an upper surface which slopes downward and terminates in a bottom surface, said container having an annular bead located below said bottom surface with a portion of the tamper indicating portion located between said annular bead and said bottom surface when the closure is fully placed on the container, and said bead being of sufficient size so as to inhibit removal of the tamper indicating portion from the container, the diameter of the bead and the dimensional tolerances of the ring being such that the ring is positioned snugly between the bead and the bottom surface of the retaining means so as to be substantially fixed therebetween on the neck so as to prevent prying of the ring off the neck;

said closure being integrally constructed and capable of sealing the container by being axially forced thereon while being sufficiently resilient to allow the tamper indicating portion to yielding slide over the retaining means when the closure is forced on the container with said tamper indicating portion so positioned so as to be substantially unremovable therefrom; and

whereby when the closure is fully placed on the neck of the container removal of the closure therefrom is prevented due to the engagement of the plug portion, the tamper indicating portion and the retaining means, the closure being only removable by removing the tear-away portion with the tamper indicating portion remaining on the container as an indicator of tampering to the user.

4,342,401

HOUSING FOR AQUARIUM FILTERS HAVING BAYONET FASTENING MEANS

Rudolf Panthöfer, St. Augustin, Fed. Rep. of Germany, assignor to Tetra Werke Dr. rer. nat. Ulrich Baensch GmbH, Melle, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,418

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3013624

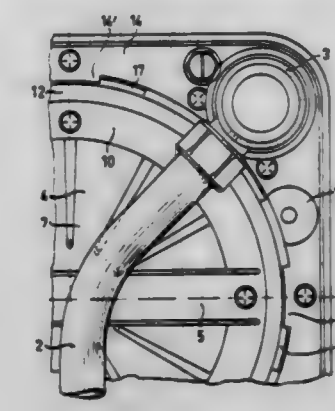
Int. Cl.³ B65D *41/06, 41/36*

U.S. Cl. 220—301 **15 Claims**

1. A pressure-resistant housing for aquarium filters, comprising:

a housing frame having at least one inlet and at least one outlet, said housing frame including inner inclined surfaces; and

a cover detachably connected to said housing frame and being rotatable relative thereto, closure of said cover, accompanied by rotation thereof, being effected by an axial movement thereof effected by means of said inclined surfaces of said housing frame, said axial movement providing a sealing pressure between said cover and said housing frame.



4,342,402

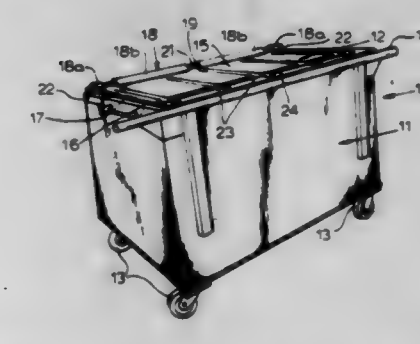
REFUSE CONTAINER COVER

Donald S. Jungles, Lockport, Ill., assignor to Dymar Industries, Inc., Lockport, Ill.

Filed May 14, 1981, Ser. No. 263,414

Int. Cl.³ B65D *43/14, 51/04*

U.S. Cl. 220—343 **12 Claims**



1. In combination with a container having an open top section with hinge rod brackets and a hinge rod at the back edge thereof, a one piece molded plastics material lid for said open section comprising a substantially planar sheet of substantially uniform thickness with a dependent peripheral lip along the front and sides of the sheet, said sheet having U-shaped hinge portions extending along the rear edge thereof with end wall portions having bores adapted to receive the hinge rod carried by the brackets of the container, and a plurality of embossments in said sheet extending transversely and longitudinally providing reinforcing ribs including at least one longitudinal rib spanning the sheet near the front edge thereof and a plurality of transverse ribs spanning the sheet between the longitudinal rib and the U-shaped hinge portions.

4,342,403

BOX AND LID CONSTRUCTION

Deane L. Badtke, and Robert V. Lehman, both of Rockford, Ill., assignors to Keystone Consolidated Industries, Inc., Peoria, Ill.

Continuation of Ser. No. 91,544, Nov. 5, 1979, abandoned, which is a continuation of Ser. No. 923,894, Jul. 12, 1978, abandoned, which is a continuation of Ser. No. 786,476, Apr. 11, 1977, abandoned. This application Mar. 12, 1981, Ser. No. 243,058

Int. Cl.³ B65D *83/04*

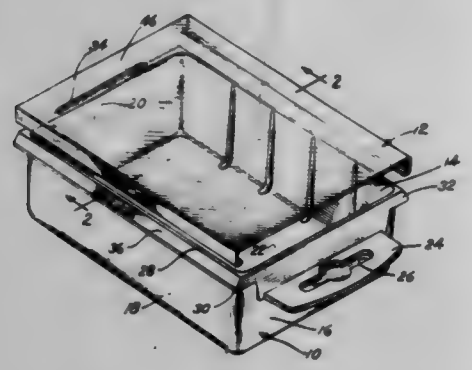
U.S. Cl. 220—345 **1 Claim**

1. A container and lid comprising in combination:

a container in the form of a rectangular box with four sides, a bottom and an open top side, each one of a first pair of opposed sides including a lip member, extending along the entire side, each lip member including a planar top surface, each lip member also including a downwardly and outwardly slanted inclined surface defining a cam surface termi-

nating at an edge and also including a lower lip surface, the edges of each of the lip members being spaced substantially uniformly, the top surface and lower lip surface being spaced substantially uniformly, the other pair of opposed sides including a planar top surface coplanar with the planar top surface of the first pair of sides, one of the other pair of sides also including a stop projection extension from the top surface and side opposite the one of the other pair of sides including an integral support bracket projecting substantially transverse to the side opposite and including a slot for cooperation with a hook; and

a substantially flat, four-sided lid of flexible material having a top which covers the open top side of the container by resting on the coplanar top surfaces and also having two opposed depending opposite side flanges extending along



the entire side, each flange including a side surface section depending substantially transverse to the top and spaced therefrom, the side surface sections being spaced substantially equal to the distance said edges are spaced and said lower gripping portion being spaced from the top of the lid substantially equal to the distance of the lower lip surface from the top surface, and providing means whereby the lid may be positioned on the box by impressing the lid flanges downwardly on the box edges and flexing the lid to snap the lid flanges over the lip members and further providing means whereby the lid may be removed from the box only by sliding the lid away from the stop projection in the top portion toward the support bracket, said stop projection acting to limit sliding movement of the lid in one direction and prevent accidental removal of the lid from the container when hanging on a hook by downward sliding of the lid.

4,342,404

AUTOMATIC CAN END TRANSFER DEVICE

Harry T. Baker, Ancaster, Canada, assignor to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 66,246, Aug. 13, 1979, abandoned. This application Jul. 16, 1980, Ser. No. 169,373

Int. Cl.³ B65G *57/06*

U.S. Cl. 221—10 **9 Claims**

1. Apparatus for transferring a work piece from a first station to a second station comprising:

(a) a main conveyor for said work pieces having an input end operably associated with said first station and an output end;

(b) a stacking means for stacking said work pieces, said stacking means having a loading end and a discharge end, and wherein said loading end is operably associated with said output end of said main conveyor;

(c) high and low indicator means associated with said stacking means for sensing the level of said stacked work pieces;

(d) a collection station for said work pieces, said collection station being intermediate said input end and said output end of said main conveyor;

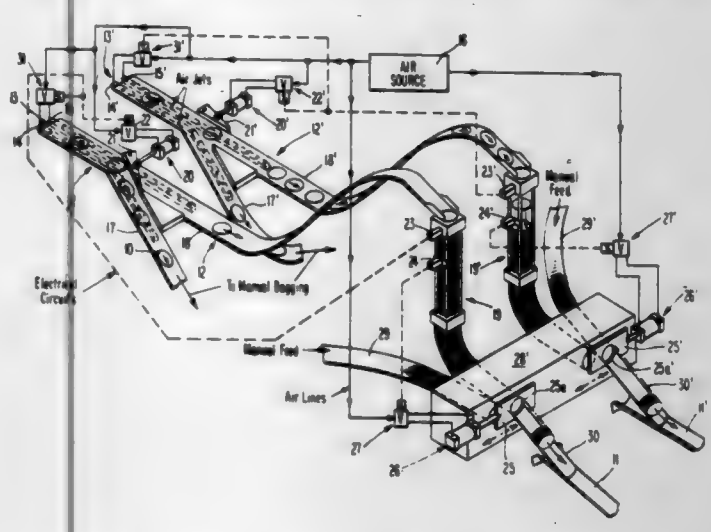
(e) an auxilary conveyor for said work pieces connected to said main conveyor between said input end and said output end thereof, said auxiliary conveyor terminating at said collection station;

(f) a manual feed conveyor, extending from said collection station to an exit proximate said stacking means discharge end, said manual conveyor being disposed to receive and convey work pieces manually fed thereto;

(g) a gate having an opening therein and movable from a first position wherein said opening is aligned with said discharge end of said stacking means to a second position wherein said opening is aligned with said manual conveyor exit;

(h) second station conveying means extending from said gate to said second station;

(i) diverter means associated with said main conveyor and said auxiliary conveyor and responsive to a signal from



said high indicator means to divert the flow of work pieces from said main conveyor to said auxiliary conveyor when said level of work pieces in above said high indicator means and to permit the flow of work pieces to procede along said main conveyor when said level is below said high indicator means; and

(j) moving means operably connected to said gate, to move said gate in response to a signal from said low indicator means from said first position to said second position when said level falls below said low indicator means and from said second position to said first position when said level rises above said indicator means.

4,342,405

RECTANGULAR FIBERBOARD CONTAINER FOR BULK MATERIAL WITH FUNNEL-LIKE DISPENSING BOTTOM

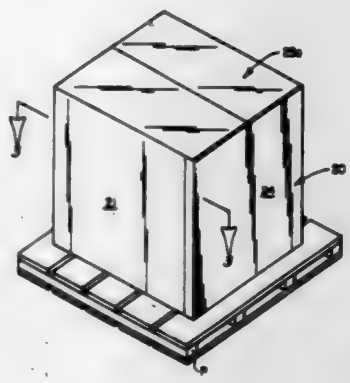
Thomas E. Croley, Worthington, Ohio, assignor to Willamette Industries, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 81,767, Oct. 4, 1979, Pat. No. 4,240,565. This application Sep. 26, 1980, Ser. No. 191,140

The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.

Int. Cl.³ B65D *35/56*

U.S. Cl. 222—105 **12 Claims**



1. A container assembly comprising a tubular body of fiberboard or the like of rectangular cros section with a bottom structure at its lower end and with four side-wall forming

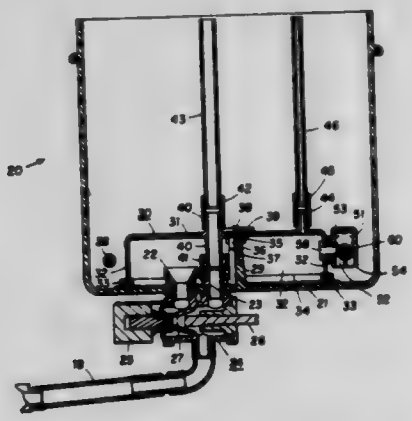
panels extending upwardly at the periphery thereof; said bottom structure including support means secured to said side-wall panels and a plurality of separate segmental insert sections forming a funnel-like dispensing bottom with a central dispensing opening, each of said separate insert sections comprising an upper material-directing wall having a pair of depending wedge-shaped support walls at its sides, each material-directing wall having a wider end outwardly at one of said side-wall panels and extending inwardly to a point spaced from the center of the bottom structure at the dispensing opening, said support walls having lower edges supported by said bottom support means of the bottom to support said material-directing wall so that it inclines downwardly towards said dispensing opening, said material-directing wall being of substantially triangular form with a wide end outwardly at the adjacent side-wall panel and a narrow end inwardly at the dispensing opening so that the insert is substantially wedge-shaped both vertically and horizontally; a plurality of said segmental insert sections being wedged side-by-side in cooperation with each of said side-wall panels and resting on said bottom support means so as to direct the material contained in the container body inwardly and downwardly from said side-wall panel to said dispensing opening.

4,342,406

DISPENSER FLOW PROPORTIONING DEVICE

Gerry A. Lee, Olin, Iowa, assignor to Beatrice Foods Co., Chicago, Ill.

Filed Sep. 16, 1980, Ser. No. 187,751
Int. Cl.³ G01F *11/28*
U.S. Cl. 222—442 **10 Claims**



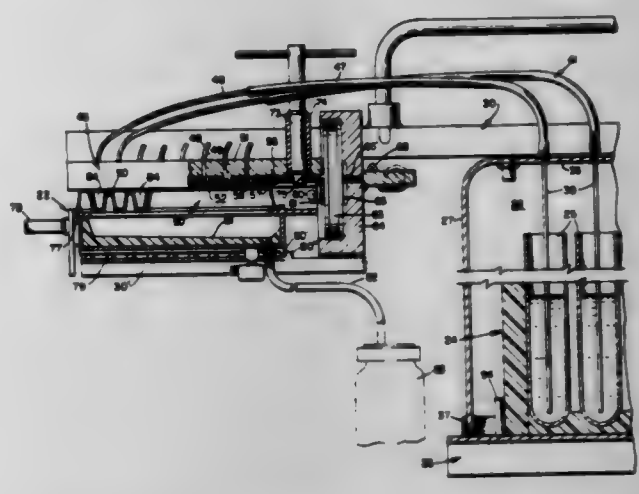
1. In liquid dispensing apparatus including a first container for liquid and a second container for liquid disposable below a liquid level in the first container, the second container having an inlet for liquid from the first container and an outlet for liquid, valve means to open and close said outlet, and means for venting the second container above said liquid level, the improvement comprising: flow control means for the second container inlet for controlling the flow of liquid from the first container into the second container so that the quantity of said flow when said valve means is open during a selected time period is substantially independent of said liquid level in the first container, the flow control means including a flow control housing disposable below said liquid level, the housing having a chamber for liquid therein and upper and lower ends with respect to said liquid level, the lower chamber end communicating with the first container for flow of liquid therefrom into the chamber, the chamber having an outlet for liquid therefrom intermediate said chamber ends in communication with the second chamber inlet for flow of liquid from the chamber into the second container; and a liquid flow check member retainable and movable in the chamber between said ends towards and away from said chamber outlet, the check member having a weight less than that of an equal volume of liquid for the first container, the check member, the chamber and the chamber outlet being proportioned relative to each other so that when said valve means is opened the check member moves relative to the chamber outlet effective to provide decreasing impedance to liquid flow from the chamber through the chamber outlet during said time period.

4,342,407

LIQUID DISPENSING APPARATUS

Paul S. Citrin, Danbury, Conn., assignor to Dynatech Laboratories, Incorporated, Alexandria, Va.

Continuation of Ser. No. 821,836, Aug. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 595,005, Jul. 11, 1975, Pat. No. 4,058,146. This application Jul. 30, 1980, Ser. No. 173,628
Int. Cl.³ B65B *3/06*; F16C *55/14*
U.S. Cl. 222—485 **8 Claims**



1. Apparatus for the rapid accurately metered dispensing of separate small amounts of liquid comprising a pinch valve having two relatively movable members, a plurality of individual liquid conducting conduits having resilient discharge terminals extending in closely spaced relation between said members, and actuating means for relatively moving said members between a valve closed position wherein all of said terminals are pinched shut between said members and a separated valve open position wherein said terminals are all free to spring to open condition, one of said pinch valve members being a reciprocable member and said actuating means comprising a piston connected to said reciprocable member and slidable in a cylinder, the interior of the cylinder being separated by said piston into two chambers, resilient means in one of said chambers biasing said piston in the direction to displace said reciprocable member to said valve open position, means for introducing air under pressure into the other chamber through a check valve, said air pressure exerting a force on said piston greater than said resilient means whereby said piston may be moved in the direction to displace said reciprocable member to pinch said terminals shut, and means for periodically introducing fluid pressure into said one chamber whereby the combined forces of fluid pressure and resilient means in said one chamber may periodically move said piston to displace said reciprocable member sufficiently to release all of said terminals for discharge of liquid during each period.

4,342,408

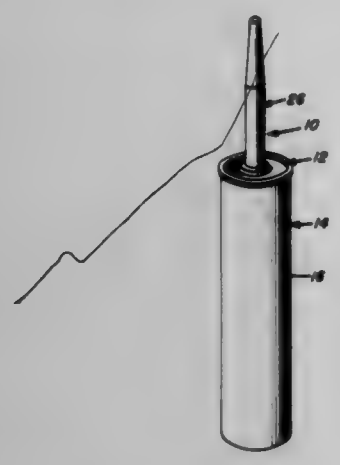
POSITIVE SEAL SPOUT

David E. Boring, New Oxford, and Larry T. Quibell, Spring Grove, both of Pa., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Jul. 16, 1980, Ser. No. 169,410
Int. Cl.³ B65D *5/72*
U.S. Cl. 222—566 **6 Claims**

1. For use in a caulking cartridge or the like, a self-sealing spout, said spout comprising an elongated material discharge tube having opposed inner and outer ends, said spout further including a generally planar enlarged sealing base integrally formed with the inner end of the tube peripherally thereabout, said base including a free peripheral edge, and inner and outer faces, a groove defined in the outer face of the base completely

thereabout and in inwardly spaced relation to the free peripheral edge of the base, said base, between the peripheral edge



and the groove, defining a continuous flexible lip, said lip being laterally directed relative to the plane of the base.

4,342,409

DEVICE FOR PRESSING PANTS

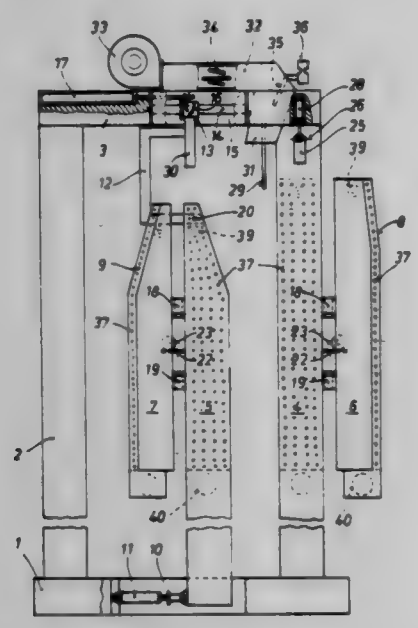
Günther Bröllos, Sonnenstrasse 72, 8804 Dinkelsbühl, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,174

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948714

Int. Cl.³ D06F *71/28*

U.S. Cl. 223—73 **10 Claims**



1. In a device for pressing pants, in which: a frame is provided, having attached thereto means comprising a clamp and a freely extending tensioning finger which are provided on an upper crossarm for holding and stretching the pants waistband; underneath there are provided two pairs of vertically running press plates each having a front plate and a back plate which in the closed state face each other in pairs, with their broad sides being furnished with nozzle openings, by which said press plates accommodate intermediate insertion plates in the pairs; and in which there are provided pressing unit assemblies for pressing the press plates against each other in pairs, and a mechanism for tensioning the pants by translating plates in the horizontal direction with respect to each other; the improvement comprising providing that the two front press plates and the two insertion plates are hinged to swing outward in flap fashion with respect to each of the back press plates; that said pressing assemblies are disposed outside the swing region of the front press plates and the insertion plates; that for tensioning the pants one back press plate is made horizontally translatable with respect to the other back press plate; and that a clamp is associated with the broad side of the wider press plate.

4,342,410

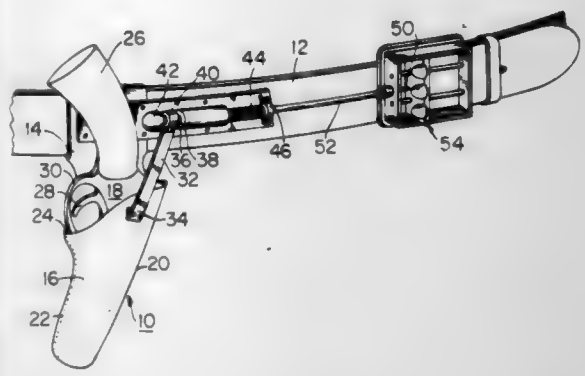
COMBINATION HAND GUN HOLSTER AND BELT

Neil B. Sloan, 1514 Ely Rd., Hixson, Tenn. 37343

Filed Mar. 6, 1981, Ser. No. 241,446

Int. Cl.³ F41C *33/02*

U.S. Cl. 224—243 **6 Claims**



1. A combination handgun holster and belt comprising:

a handgun holster having inner and outer side panels which assist in forming a tapering configuration for conformably receiving a handgun, the holster having an open end for insertion and withdrawal therethrough of a handgun;

a belt attached to the inner side panel for suspending the holster on one side of the waist of a person;

a retaining member having first and second ends, said retaining member being attached at the first end to the outer side panel of the open end of the holster;

a means for detachably mounting the seconnd end of the retaining member to the belt, whereby when the retaining member is mounted to the belt the handgun is safely retained in the holster and cannot be withdrawn therefrom; and

a release means attached to the belt for detaching the retaining member from the belt by utilizing the hand opposite the side from which the holster is suspended,

whereby when the retaining member is released from the belt the handgun can be withdrawn from the holster.

4,342,411

VEHICLE LUGGAGE RACK

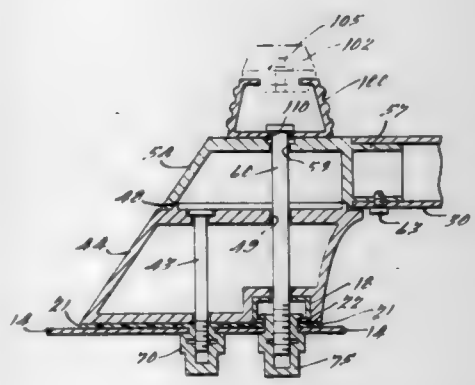
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 13,524, Feb. 21, 1979, abandoned. This application Nov. 6, 1980, Ser. No. 204,478

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—319 **15 Claims**



1. In a luggage carrier for supporting luggage and the like on an automotive vehicle,

a stanchion assembly comprising an upper stanchion part having means for supporting one end of a luggage constraining rail, and a lower stanchion part disposed at least in part below said upper stanchion part, said upper stanchion part having an upper surface capable of being opera-

bly associated with additional means for constraining articles;

first generally vertically oriented fastening means for operatively securing said upper and lower stanchion parts together and operably disposed to be capable of securing additional means for constraining articles to said stanchion assembly; and

second generally vertically oriented fastening means for securing said lower stanchion part to said vehicle concealed by said upper stanchion part when said upper and lower stanchion parts are operatively assembled, wherein said lower stanchion part is still secured to said vehicle when said first fastening means is unfastened.

4,342,412

TILT-BOX FOR GUIDING A CONTINUOUSLY MOVING WEB

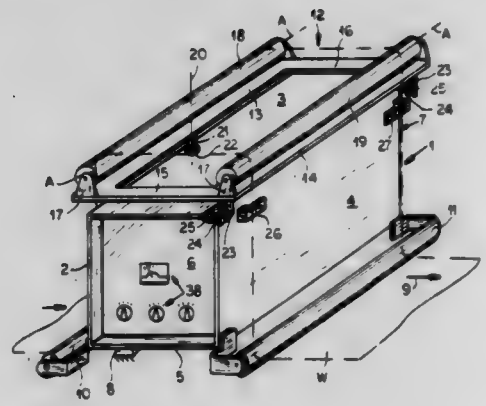
Otto Lorenz, Schwibbogenplatz 2b, 8900 Augsburg, and Merten Keller, Alter Fischbacher Weg 1, 6239 Eppstein, both of Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,891

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3008775

Int. Cl.³ B65H *25/26*

U.S. Cl. 226—21 **15 Claims**



1. A guide apparatus for a continuously moving web, said apparatus comprising:

an upstream fixed roller and a downstream fixed roller substantially parallel thereto and defining a plane therewith:

a fixed and substantially closed box between said upstream and downstream rollers;

a frame offset from said plane and pivotal on said box about a frame axis substantially perpendicular to said plane;

a pair of adjustment rollers rotatably pivoted on said frame about parallel adjustment-roller axes fixed relative to each other and to said frame and offset from said plane, whereby a continuously moving web can pass along a path over said upstream roller, over one of said adjustment rollers, over the other adjustment roller, and over said downstream roller;

a sensor mounted along said web downstream of said other adjustment roller;

a motor inside said box connected to said frame and energizable to pivot said frame on said box about said frame axis; and

control means in said box connected between said sensor and motor for pivoting said frame on said box when the web position detected by said sensor deviates for a predetermined desired position.

4,342,413

TURNING BAR FOR MOVING WEB

Imants Reba, Vancouver, Mass., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Feb. 5, 1981, Ser. No. 231,656

Int. Cl.³ B65H *17/28, 17/32*

U.S. Cl. 226—97 **12 Claims**

1. Apparatus for supporting web material as said web material is transported and redirected from a predetermined first direction of movement to a predetermined second direction of movement, said apparatus comprising:

elongated first plenum defining means having an inlet for the admission of pressurized gas into said first plenum and an outlet positioned along the length of said elongated first plenum defining means for allowing egress of said pressurized gas from said first plenum;

an elongated housing surrounding and spaced from said elongated first plenum defining means to define a second plenum therewith in fluid-flow communication with said first plenum through said outlet, said elongated housing at least partially defining a slit providing fluid-flow communication between said second plenum and the ambient atmosphere; and



means defining a generally curved fluid flow attachment surface positioned immediately adjacent said slit whereby pressurized gas exiting from said slit will attach itself to said generally curved fluid flow attachment surface due to the Coanda effect and provide along with ambient air entrained by said exiting gas a gaseous support cushion for said web during transport and redirection thereof.

4,342,414

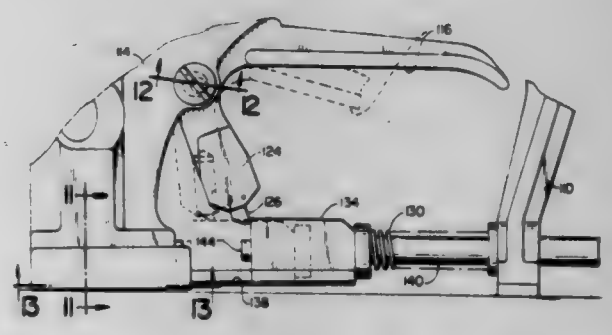
GLAZIER'S POINT DRIVER

Eugene W. Grzeika, and Vincent T. Kozyraki, both of Bristol, Conn., assignors to The Fletcher-Terry Company, Farmington, Conn.

Filed Jul. 13, 1978, Ser. No. 924,447

Int. Cl.² B25C *5/00*

U.S. Cl. 227—109 **7 Claims**



1. In a glazier's point driver having a frame defining a magazine for a stack of points and a main spring biased driving block including a plate for engaging the endmost point in the stack, and a trigger mechanism for cocking the block and releasing it for movement along a path fixed in the frame to drive the point, the improvement to said trigger mechanism comprising

an operating lever, spring return means for said lever, pivot means defining an axis for movement of said operating lever and including an angularly adjustable eccentric cam for varying the location in said frame of the lever pivot axis with respect to the path of the block, and catch means for releasably latching said operating lever and driving block during cocking movement, said catch means including at least one spring biased element between said lever and said block to permit independent driving movement of the block and return movement of the operating lever preparatory to a succeeding cocking and driving motion.

4,342,415

PROTECTIVE DEVICE FOR ELECTRIC COMPONENT WHICH CAN BE SOLDERED INTO A PRINTED BOARD BY MEANS OF A SOLDER BATH

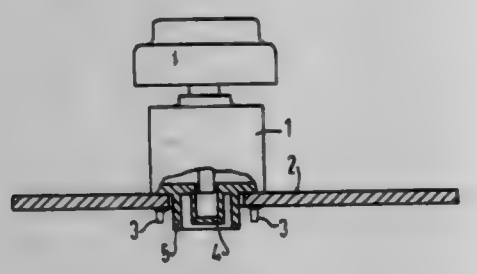
Walter Wachs, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 20, 1979, Ser. No. 105,948

Claims priority, application Fed. Rep. of Germany, May 15, 1979, 7914017

Int. Cl.³ B23K *1/08*

U.S. Cl. 228—39 **7 Claims**



1. A component protective system, comprising: an electronic component designed for soldering into a printed circuit board by means of a solder bath; a portion of the component projecting through the printed board when the component is mounted; and means for protecting said portion from the influence of the solder bath, said means including a protective collar arranged on the component around the portion to be protected, and said protective collar being open in a direction toward the solder bath and projecting beyond the portion to be protected.

4,342,416

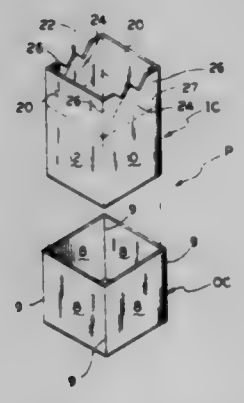
TWO-PIECE RECLOSABLE CONTAINER

Nicholas A. Philips, Glendale Heights, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 15, 1981, Ser. No. 225,308

Int. Cl.³ B65D *5/32*

U.S. Cl. 229—23 BT **1 Claim**



1. In a two-piece reclosable container, the combination of:

(a) an outer body having a closed bottom and including: opposed pairs of side walls foldably joined to each other to form a tubular structure open at both the upper and lower ends thereof;

(b) an inner body telescoped within said outer body, and including opposed pairs of side walls foldably joined to each other to form a tubular structure open at both the upper and lower ends thereof;

(c) reclosable closure arrangement means for closing and reclosing the upper end of said inner body comprising:

(i) a pair of opposed, generally rectangular, first closure flaps foldably joined to the upper ends of one opposed pair of side walls;

(ii) a pair of second closure flaps joined to the upper ends of the other pair of side walls; and each including:

(A) a generally triangular center section foldably joined at its lower edge to a related side wall and having upwardly converging side edges;

(B) a pair of side sections disposed between said center section and said first closure flaps;

(C) said side sections having outer edges foldably joined to adjacent side edges of said first closure flaps and having inner edges detachably joined to adjacent said edges of said center section;

(D) said second flap side sections being interposed between and parallel to said center sections and said first flaps in a bellows-type arrangement when said inner container is initially closed, said side sections being separable from said center sections and being insertable between corresponding side walls of said inner and outer containers when said inner container is reclosed after it has been opened initially.

4,342,417

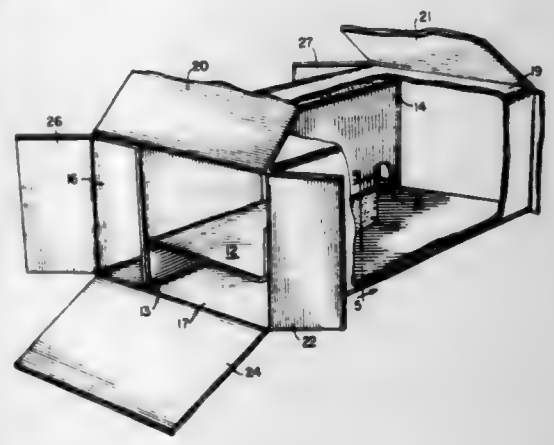
END LOADED COMPARTMENTED CARTON

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 18, 1980, Ser. No. 178,937

Int. Cl.³ B65D *5/48*

U.S. Cl. 229—27 **2 Claims**



1. An end loaded compartmented carton formed from a single blank of paperboard or the like comprising:

(a) four elongated exterior side walls foldably attached to one another along their elongated side edges which are shiftable between a substantially flat collapsed condition to an erected condition wherein the exterior side walls define an elongated rectangular carton with right angle corners;

(b) end closure flaps foldably attached to the end edges of said side walls;

(c) an internal product supporting and locating structure within the carton consisting of a substantially full length interior wall panel said wall panel having a length substantially equal to the length of said side walls connected between two opposed side walls of the carton to form two separate compartments that extend the full length of said carton;

(d) a first glue flap foldably attached along a first portion of said interior wall panel and adhered to the inside of one of

said carton side walls to secure the carton side walls together;

(e) a second glue flap foldably attached along a second portion of said interior wall panel and adhered to the side wall of said carton opposite said first glue flap to retain said interior wall panel in position and to form a first compartment that is unobstructed for easy loading;

(f) an auxiliary glue tab cut from said first glue panel and adhered to the side wall of said carton next to said second glue flap, and,

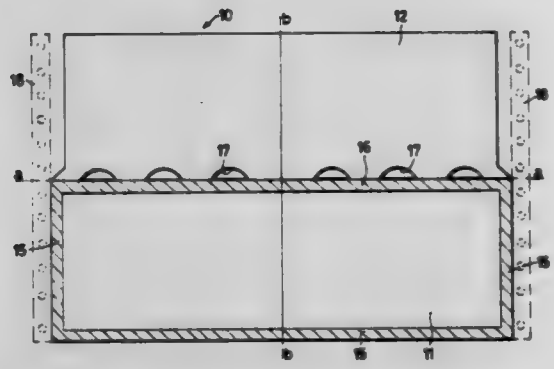
(g) an integral bridge member for one of said compartments, said bridge member being foldably attached to a first portion of said interior wall panel and arranged to extend between said interior wall panel and an adjacent side wall of the carton, said bridge member including a first glue panel that is adhered to said interior wall panel, a bridge panel connected to said first glue panel and a third glue flap adhered to an adjacent carton side wall to position said bridge panel between said interior wall panel and said adjacent carton side wall.

4,342,418

BLANK FOR THE TRANSMISSION OF INFORMATION HAVING IMPROVED PREGLUED SEALING AREAS

Luciano Meschi, Corso Amedeo 73, 57100 Livorno, Italy

Filed Aug. 14, 1980, Ser. No. 177,987
Int. Cl.³ B65D *27/00, 27/12*
U.S. Cl. 229—92.1 **7 Claims**



1. In a transmission blank for information and data, adapted to remain stable in a folded condition, comprising a sheet having a first folding line for dividing it into a first part and a second part, said first part having protruding edges from the three sides thereof forming a first strip coated on one face thereof along said protruding edges with reversible or irreversible glue, the improvement comprising:

a second strip on the same face of said first part as said first strip, said second strip being adjacent to the said first folding line and being coated with glue; and

a third strip on said second part being adjacent to said first folding line, said third strip being provided with spaced guards or cut-outs symmetrically positioned with respect to a second folding line on said sheet orthogonal to said first folding line, the area of said third strip between said guards or cut-outs ensuring a sufficiently strong sealing between said second strip and said third strip when said first and second parts are folded together over said first folding line.

4,342,419

SAFETY COVER FOR CENTRIFUGE BUCKET

George E. Conway, Newark, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 31, 1980, Ser. No. 202,891
Int. Cl.³ B04B *7/06, 15/08*
U.S. Cl. 233—1 A **8 Claims**

1. A safety cover for sealing the mouth of a pivotally mounted bucket of a centrifuge rotor comprising:

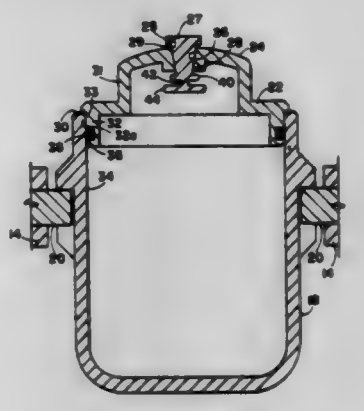
a cover member having a;

raised dome-like housing;

an outer flange communicating with the base of said housing;

a tubular extension of slightly smaller size communicating with the lower side of said flange;

said tubular extension configured to make telescoping engagement with the sidewall of said bucket, and the depth of said engagement limited by the point at which said flange contacts the top surface of said bucket;



a groove encircling said tubular extension;

a resilient O-ring disposed in said groove for effecting a seal between the cover and the bucket; and

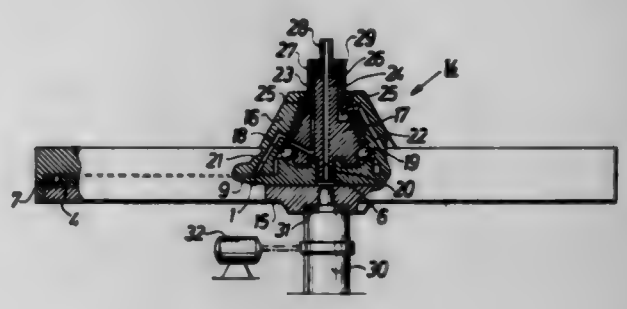
means in the cover for venting air from the bucket during telescoping movement of said cover with respect to the bucket, said means automatically sealing during centrifugation.

4,342,420

DEVICE FOR SEPARATING LIQUIDS, ESPECIALLY WHOLE BLOOD

Friedrich Rosemeier, and Helmut Kerber, both of Hechingen, Fed. Rep. of Germany, assignors to Gambro Dialysatoren KG, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,254
Claims priority, application Sweden, Sep. 28, 1979, 7908036
Int. Cl.³ B04B *3/00*
U.S. Cl. 233—28 **30 Claims**



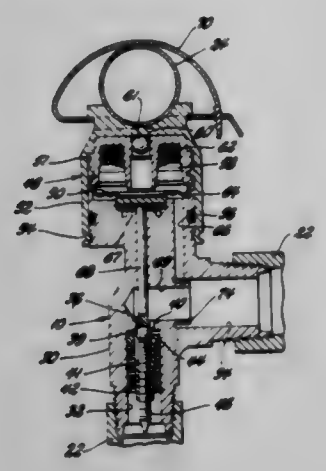
1. A rotatable rigid disc for separating a liquid into fractions according to the densities of such fractions, said rigid disc including an inlet for the liquid to be separated; at least two outlets comprising perforating holes in said rigid disc for the separated liquid fractions; channels on one side of said rigid disc, with each channel being in fluid communication with one of said outlets; and a separation chamber in the form of an elongated, curved conduit on the other side of said rigid disc; wherein said conduit is fluidically connected to said inlet and said outlets, said outlets are positioned on said disc radially outwardly with respect to said inlet, and said outlets are positioned along said elongated, curved conduit so as to provide a separate collection location for each said outlet and so that the most dense fraction is separated by the outlet nearest along said conduit to said inlet and the least dense fraction is separated by the outlet most distal along said conduit from said inlet.

4,342,421

THERMOSTATIC EXPANSION VALVE FOR A REFRIGERATION SYSTEM

Richard E. Widdowson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1981, Ser. No. 237,249
Int. Cl.[3] F25C *41/04*
U.S. Cl. 236—92 B 2 Claims



1. A thermostatic expansion valve for a refrigerant system having a condenser-evaporator line connecting a condenser at its outlet to an evaporator at its inlet and a suction line connecting the evaporator at its outlet to a compressor at its inlet, said valve having an inlet and outlet adapted for connection in the condenser-evaporator line and comprising a valve port having an upstream side open to said valve inlet for receiving refrigerant from the condenser and a downstream side open to said valve outlet for delivering the refrigerant to the evaporator, a valve element movable between open and closed positions to open and close said valve port, said valve element arranged on said upstream side so as to be urged towards its closed position by refrigerant pressure at said valve inlet, spring means for biasing said valve element to its closed position, temperature responsive valve biasing means for biasing said valve element toward its open position with a biasing force that increases in response to increasing temperature, pressure responsive valve biasing means for reducing said biasing force of said temperature responsive valve biasing means in response to increasing pressure, pressure signal passage means including a trepanned venturi connected with said downstream side for connecting said downstream side to said pressure responsive valve biasing means so as to transmit thereto a pressure that is proportional to the pressure on said downstream side but decreases upon a substantial increase in fluid flow through said valve port, and heat conduction means for directly connecting said temperature responsive pressure means in heat conducting direct body contact relationship with the suction line whereby said valve element is normally urged to its closed position by said spring means and refrigerant pressure at said valve inlet and is urged towards its open position and provides regulated flow to the evaporator to maintain the latter substantially fully active under all load conditions by said temperature responsive valve biasing means providing an opening valve force that increases with increasing temperature of refrigerant from the evaporator and decreases by operation of said pressure responsive valve biasing means with increasing pressure of the refrigerant delivered to the evaporator except when there occurs a substantial reduction in flow thereto by signaling of said pressure signal passage means.

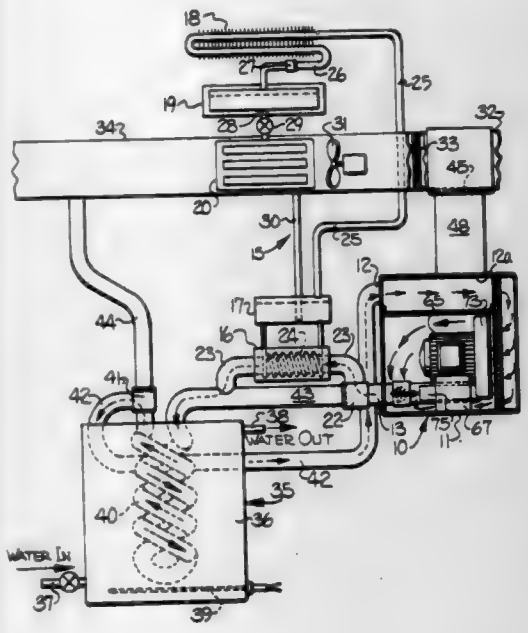
4,342,422

HEATING AND COOLING SYSTEM USING FRICTIONAL AIR HEATING

Maxie C. Davis, Rte. 8, Box 61, Mooresville, N.C. 28115

Filed Oct. 16, 1980, Ser. No. 197,491
Int. Cl.[3] F24H *1/22*
U.S. Cl. 237—19 10 Claims

1. An apparatus for heating air comprising an enclosure having an air inlet and an air outlet; and frictional heating means mounted within said enclosure and operable for drawing a flow of air into the enclosure through said inlet, frictionally heating the air, and discharging the heated air through said outlet; said frictional heating means comprising an electric motor having a rotatable shaft, said motor being positioned in the path of flow of the air which is drawn into said enclosure so that the motor is cooled by the flow of air while the heat from the motor serves for preheating the air; a fan rotor carried by said motor shaft and including a series of radially extending vanes for creating a flow of air upon rotation of the rotor by said motor shaft; a rotor housing closely surrounding said fan rotor and cooperating therewith so that the rotational move-



ment of the fan rotor and the resulting air movement produces frictional heating of the air within said rotor housing, said rotor housing being positioned with the exterior thereof in the path of flow of the air which is drawn into said enclosure so that the heated exterior of the housing also serves to preheat the air which is drawn into said enclosure; an air inlet opening formed in said rotor housing and communicating with the interior of said enclosure for admitting air from the interior of the said enclosure into said rotor housing; an air outlet opening formed in said rotor housing for discharging heated air from the rotor housing; and a conduit communicatively connected to said air outlet opening of said rotor housing and extending therefrom to said outlet of said enclosure for thereby discharging a flow of heated air from the enclosure.

4,342,423

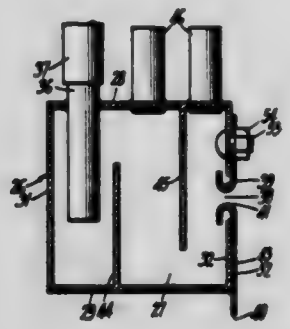
CURTAIN COATING METHOD

John D. Coleman, Surrey Hills, Australia, assignor to Commonwealth Scientific and Industrial Research Organ., Campbell, Australia

Division of Ser. No. 709,068, Jul. 27, 1976, Pat. No. 4,093,016, which is a division of Ser. No. 477,380, Jun. 7, 1974, Pat. No. 3,992,252. This application May 9, 1978, Ser. No. 904,356
Claims priority, application Australia, Jun. 7, 1973, 3579/73
Int. Cl.[3] B05B *1/36*
U.S. Cl. 239—1 2 Claims

1. A method of forming a continuous film coating of a viscous liquid on a flat surface, comprising the steps of introducing a forced flow of liquid of viscosity in the range 18 seconds to 45 seconds Steinhall Cup at 20° C. into a chamber having an upright side wall with a horizontal slot outlet of vertical width in the range of 1/16" to ¼" and maintaining the forced flow of liquid into the chamber whereby in the vicinity of the slot outlet liquid is maintained within the chamber at a level above the upper edge of the slot outlet such that liquid is extruded horizontally from the slot outlet in a horizontal stream which contacts both the upper and lower edges of the slot outlet and has a thickness equal to the width of the slot outlet, allowing

the liquid stream issuing from the slot outlet to fall downwardly under gravity across an upright flat surface extending downwardly from the bottom edge of said slot outlet to terminate at a bottom blade edge at a distance below said horizontal slot outlet such that the falling liquid forms a continuous curtain which is attenuated as it flows down said upright surface



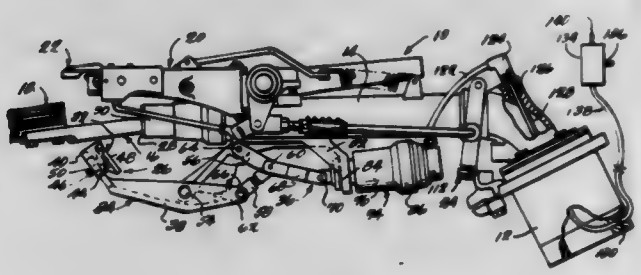
to a thickness less than that of the horizontal stream extruded from said slot outlet, allowing the attenuated continuous curtain to fall away from said upright surface at the blade edge, and moving the surface to be coated horizontally beneath said blade edge such that the continuous free falling liquid curtain below the blade edge falls onto that surface to form a continuous liquid film coating thereon.

4,342,424

COMBINED ROTARY IMPULSE SPRINKLER HEAD AND SHUT-OFF VALVE

Larry P. Meyer, and David C. Dauterman, both of Walla Walla, Wash., assignors to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed Nov. 3, 1980, Ser. No. 203,627
Int. Cl.³ B05B *3/08*
U.S. Cl. 239—233 **9 Claims**



1. A sprinkler head comprising:

a sprinkler body having an inlet and an outlet,

means adapted to be communicated with a source of water under pressure for communicating the same with said inlet and for mounting said sprinkler body for movement about a generally vertically extending axis so that water under pressure communicated with said inlet will flow through said sprinkler body and outwardly from the outlet thereof in a stream flowing in a generally upward and outward direction,

means operable in response to the aforesaid flow of water under pressure for effecting progressive movements of said sprinkler body about said axis,

means defining an outwardly facing annular valve seat on said sprinkler body disposed in surrounding relation to said outlet,

poppet valve means cooperable with said annular valve seat,

means mounting said poppet valve means on said sprinkler body for movement exteriorly of said sprinkler body (1) from an open position disposed out of the path of said stream progressively through said stream and generally inwardly onto said outwardly facing annular valve seat into a closed position with respect to said outlet so as to contain water under pressure within said sprinkler body and prevent flow thereof outwardly of said outlet beyond said annular valve seat and (2) from said closed position generally outwardly from said outwardly facing valve seat and progressively out of said stream into said open position,

means for effecting movement of said poppet valve means from said open position into said closed position while said sprinkler body is communicated with the source of water under pressure and the water under pressure is flowing through said sprinkler body outwardly of said outlet and from said closed position into said open position,

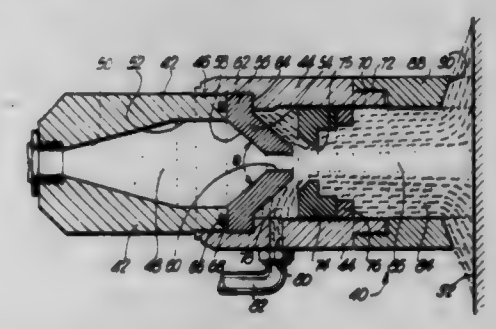
surface means on said poppet valve means operable during the progressive movement of said poppet valve means through said stream for engaging said stream and maintaining reaction forces created thereby generally free from resultant force components acting tangentially to said axis.

4,342,425

CAVITATION NOZZLE ASSEMBLY

Geoffrey W. Vickers, Vancouver, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Aug. 15, 1980, Ser. No. 178,603
Claims priority, application Canada, Apr. 10, 1980, 350120
Int. Cl.³ B05B *7/06*
U.S. Cl. 239—424 **17 Claims**



1. A cavitation nozzle assembly adapted to be connected to a source supplying liquid under superatmospheric pressure and for discharging a high velocity jet of said liquid with cavitation bubbles therein, said nozzle comprising inter alia;

a supply chamber connectible to said source for receiving said liquid therefrom, said chamber including an upstream portion divergent in a downstream direction, a downstream portion convergent in the downstream direction, and a central section of generally constant cross-sectional area interconnecting the divergent and convergent portions, said convergent portion being conical in form and converging to an apex so as to define an enclosed angle of about 65° to 90°; and

a discharge orifice at the apex of the convergent portion, and being circular in cross-section with a diameter in the range from about 1.2 mm to about 4.0 mm, said supply liquid undergoing expansion upon passage through said orifice such that cavitation bubbles form in the high velocity jet discharged therefrom.

4,342,426

NOZZLE

John P. Gagliardo, Shrewsbury, Mass., assignor to Feecon Corporation, Westboro, Mass.

Filed Sep. 24, 1980, Ser. No. 190,424
Int. Cl.³ B05B *1/32*
U.S. Cl. 239—457 **7 Claims**

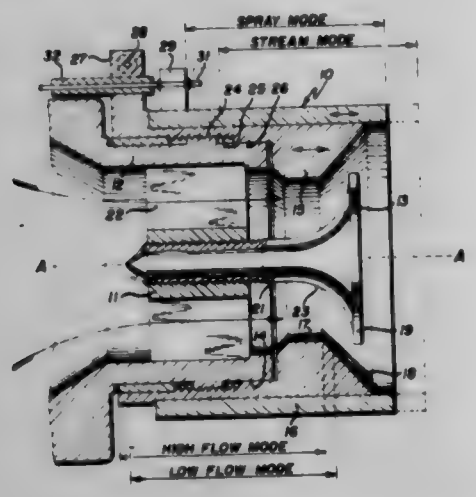
1. Nozzle for non-asipirated fire-fighting medium, comprising:

(a) a fixed assembly including a tubular housing and a button, the assembly having an outer cylindrical surface provided with threads, the housing and the button being concentric with the central longitudinal axis of the outer cylindrical surface,

(b) a first sleeve having an inner cylindrical surface provided with threads that operatively engage the threads on said outer cylindrical surface to enable the first sleeve to be

moved along said axis by rotation of the first sleeve about said axis to control a control gap between the first sleeve and the button,

(c) a second sleeve concentric with the cylindrical surface and slidably mounted on the first sleeve for movement along said axis relative to the button to control spray,



(d) first drive means for rotating the first sleeve about said axis, and

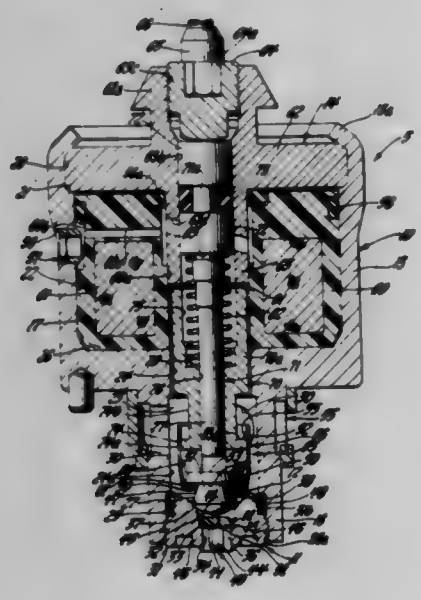
(e) second drive means for sliding the second sleeve on the first sleeve along said axis.

4,342,427

ELECTROMAGNETIC FUEL INJECTOR

Leo A. Gray, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 21, 1980, Ser. No. 170,618
Int. Cl.³ B05B *1/30*
U.S. Cl. 239—585 **3 Claims**



1. An electromagnetic fuel injector including a housing means providing a fuel chamber therein intermediate its ends adapted to receive fuel and a passage from said chamber through which fuel is injected to an engine; said passage defining an annular valve seat where said passage communicates with said chamber; a solenoid pole piece fixed in said housing means axially spaced from said valve seat; an electromagnetic actuated valve means positioned in said housing means, said electromagnetic actuated valve means including a movable valve having a flat on one end thereof and a semi-spherical surface on the opposite end for valve-closing engagement with said valve seat, a cylindrical armature having a reduced diameter cylindrical portion at one end thereof terminating at a flat surface at the free end thereof abutting against said flat of said valve and, a retainer means operatively associated with said reduced diameter portion of said armature and with said valve for loosely securing said valve to said armature for axial movement therewith while permitting lateral movement of said flat of said valve relative to said flat surface of said armature whereby said valve is free to center itself relative to said valve seat upon engagement therewith; said armature being axially movable between a first position at which said valve is in valve closing engagement with said valve seat and a second position at which said valve is in open position relative to said valve seat; and, a valve closing spring positioned to act on said armature in a direction moving said armature to said second position.

4,342,428

POWDERED COAL DELIVERY SYSTEM

Thomas P. Kosek, East Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 5, 1980, Ser. No. 184,537
Int. Cl.³ F02G *45/00*
U.S. Cl. 239—651 **2 Claims**



1. A gas turbine engine fuel supply system to direct coal powder to a fuel nozzle in a gas turbine engine combustor comprising: reservoir means maintained at atmospheric pressure and including an outlet, a fill cavity, means for continuously filling said cavity with coal powder from said reservoir means, discharge manifold means, coal transport tube means with an inside diameter for defining a continuous loop, coal dust tight, flow path between said fill cavity and said discharge manifold means, conveyor means having interconnected pistons with voids therebetween continuously formed through said coal dust tight flow path, variable speed drive means operative to drive said pistons through said fill cavity for filling said voids with coal powder from said cavity and to meter coal to said discharge manifold means, said conveyor means having a cable loop, said pistons being strung on said cable and including a small diameter segment and a segment of a diameter corresponding to the inside diameter of said tube means to define said voids and to seal between said voids, said discharge manifold means having a conveyor inlet passage and a conveyor outlet passage, means for sealing said conveyor inlet passage and said conveyor outlet passage, a discharge chamber within said discharge manifold means, said chamber having an inlet and an outlet, means for defining a plurality of air jets in said discharge chamber inlet for blasting high pressure air across said conveyor means to discharge coal powder from said voids to produce a fluidized coal powder mixture and to maintain an inlet pressure at said discharge chamber for directing said fluidized coal powder through the outlet from said chamber to a fuel nozzle in a gas turbine engine combustor.

4,342,429

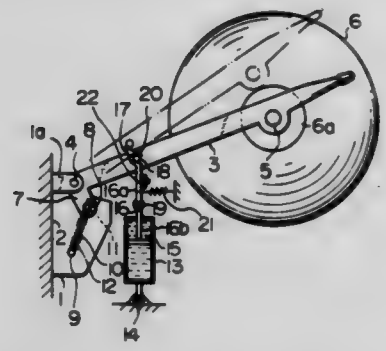
BOBBIN HOLDER

Takashi Katoh, Toyota, and Toshio Yoshizawa, Chiryu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Feb. 6, 1980, Ser. No. 118,918
Claims priority, application Japan, Feb. 16, 1979, 54-19242
Int. Cl.³ B65H *54/42, 54/52*
U.S. Cl. 242—18 DD **5 Claims**

1. In a bobbin holder for a winding unit of a textile machine, wherein a pair of cradle arms are turnably supported by mounting means on the frame of the winding unit, said cradle arms rotatably supporting a bobbin on which a yarn package is formed, the improvement which comprises: a releasable damping device comprising an oil cylinder, turnably mounted on a

stationary part of the machine, having a piston and a piston rod having an open hooked shaped engaging portion, a cradle arm provided with an engaging pin for releasably engaging with the hooked shaped portion of the piston rod, and wherein the hooked shaped portion of the piston rod is provided with a cam surface downwardly inclined toward the opening of the hooked shaped engaging portion against which the pin on the



cradle arm rides when the hook shaped portion is disengaged from the engaging pin, a spring which urges the cam surface of the piston rod toward the engaging pin of the cradle arm and a stopper means for restricting the turning of the oil cylinder at a predetermined position corresponding to the position where said hooked shaped engaging portion engages the engaging pin.

4,342,430

METHOD OF SHIFTING STRANDS BEFORE TERMINATION OF WINDING OF GLASS FIBER

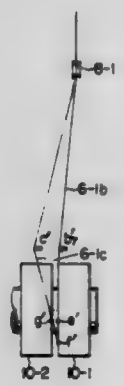
Sin Kasai; Yutaka Kawaguchi, and Michio Satoh, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed May 22, 1980, Ser. No. 152,366

Claims priority, application Japan, May 28, 1979, 54/65760; Aug. 17, 1979, 54/104105

Int. Cl.³ B65H *54/02, 67/04*

U.S. Cl. 242—18 A **2 Claims**



1. In a method of drawing a multiplicity of glass filaments from a glass melting furnace, dividing them into a plurality of strands and winding on a single spindle having a waste take-up portion adjacent to a free end thereof to form a plurality of square-ended packages thereon, a method of shifting strands from said packages to said waste take-up portion while continuing rotation of the spindle, characterized by the step of moving a guide from a position adjacent to a supported end of the spindle toward said free end along a path substantially parallel to and adjacent to said spindle so that the guide successively engages, collects and shifts the strands which are running toward the spindle, and the step of setting the spacing between said path and spindle to be sufficiently little and setting the speed of travel of said guide to be sufficiently high to enable the strand to be shifted from a peripheral surface of a package to a peripheral surface of an adjacent package without dropping into a groove formed between the adjacent packages.

4,342,431

DISPENSING UNIT FOR SHEET AND/OR RIBBON PRODUCTS PACKAGED IN REELS

Christian Watellier, 54, route de Lens, 62660 Beuvry, France

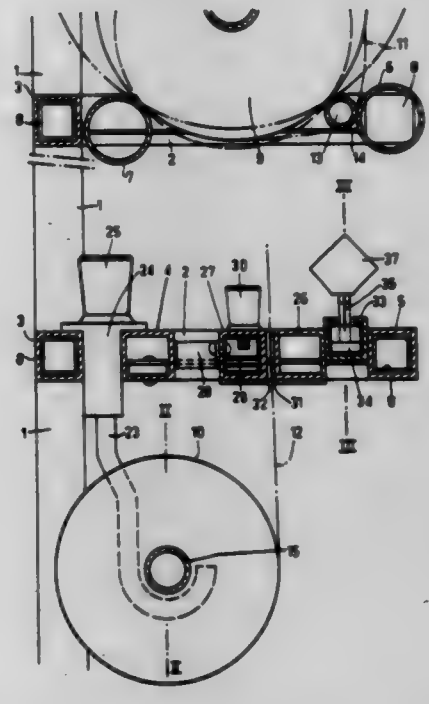
PCT No. PCT/FR79/00083, § 371 Date May 28, 1980, § 102(e) Date May 21, 1980, PCT Pub. No. WO80/00692, PCT Pub. Date Apr. 17, 1980

PCT Filed Sep. 28, 1979, Ser. No. 196,762

Claims priority, application France, Sep. 28, 1978, 78 28324

Int. Cl.³ B65H *19/04, 35/00*

U.S. Cl. 242—55.3 **5 Claims**



1. Reeling display unit for sheet and ribbon products packaged on reels, from which certain lengths of said products must frequently be taken by cutting, at a set point, using a cursor device or a pair of scissors, comprising a frame have a minimum of one level, means on said frame for supporting at least one reel and, slightly upstream from the cutting point, two transverse jaws on said frame situated essentially in the same horizontal plane holding the product between them, the product having previously been inserted from bottom to top between said jaws, further comprising at each level of the frame, in a horizontal plane, perpendicular braces and crossbeams, supporting side-pieces of the reels essentially side by side on edge above two of said braces of said frame and resting directly on only a rear one of said two braces, a transverse bar engaging the forward one of said two braces and taking the weight of the reels, guides supporting said transverse bar at opposed ends in said crossbeams, said transverse bar being pushed toward said forward brace by the weight of the reels, forming with said forward brace said two jaws for gripping the product.

4,342,432

CONTROL SYSTEM FOR SLITTER-REWINDER APPARATUS

Arnold M. Lund, and Morten A. Lund, both of 906 Boardwalk, San Marcos, Calif. 92069

Filed Jan. 30, 1981, Ser. No. 229,662

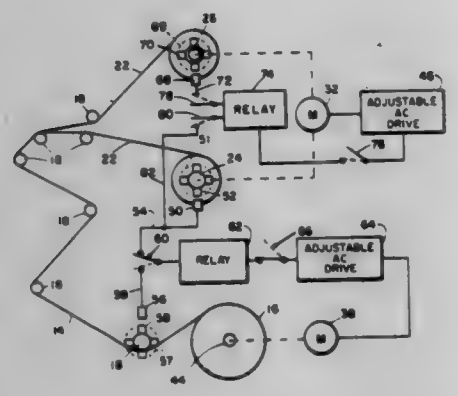
Int. Cl.³ B65H *35/02*

U.S. Cl. 242—56.2 **7 Claims**

1. A control system for a slitter-rewinder apparatus which forms a web of material into a plurality of individual rolls, the web being unwound from around a supply core and slit into strips which are rewound about a plurality of individual product cores, the apparatus having at least one takeup roller adapted to slidably receive the product cores thereabout, means for rotatably supporting the supply core and the takeup roller in spaced apart relationship with a portion of the web extending therebetween, around at least one idler roller and

past a plurality of knives for cutting the web into strips, first controllable motor means for rotating the takeup roller and second controllable motor means for rotating the supply core, the control system comprising:

sensor means for detecting the rotational speed of the product cores; and



control means responsive to the sensor means for operating the second controllable motor means to cause the speed of the supply core to automatically increase and decrease in order to maintain a predetermined relationship between the speed of the product cores and the speed of the takeup roller throughout the rewinding process.

4,342,433

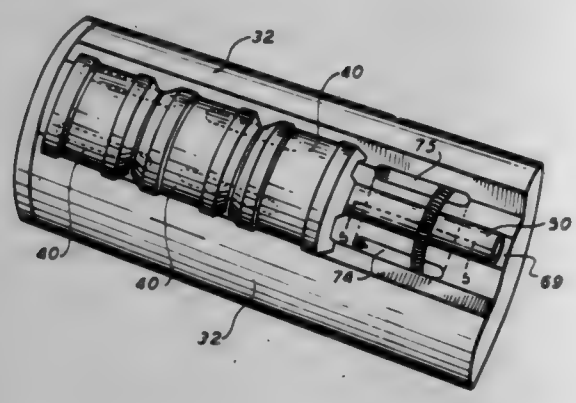
AIR DIFFERENTIAL MANDREL AND METHOD OF DIFFERENTIALLY WINDING AND REWINDING TAPES

Elvin A. Mastriani, Roseland, N.J., assignor to Arrow Converting Equipment Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 91,504, Nov. 14, 1980, Pat. No. 4,266,737. This application Feb. 23, 1981, Ser. No. 236,870

Int. Cl.³ B65H *75/24, 19/04*

U.S. Cl. 242—72 B **16 Claims**



1. Tape winding, core engaging means for winding tapes differentially from a source onto a tape winding core, on rotation of an elongated mandrel body member having flexible pressure means disposed therein; said tape winding, core engaging, means comprising:

(a) a core engaging shoe member disposed on the mandrel in registration with the pressure means therein and thereby urged outwardly thereon,

(b) an elongated rod member passing through said core engaging shoe member and aligning the same on the mandrel flexible pressure means,

(c) said core engaging shoe member being formed with an extended arcuate outer surface in a plane at right angles to the longitudinal axis of the mandrel when so disposed thereon and extending outwardly for contact with said tape winding core member,

(d) whereby tape may be wound onto said core under constant tension on rotation of the mandrel, notwithstanding caliper variations in the tape.

4,342,434

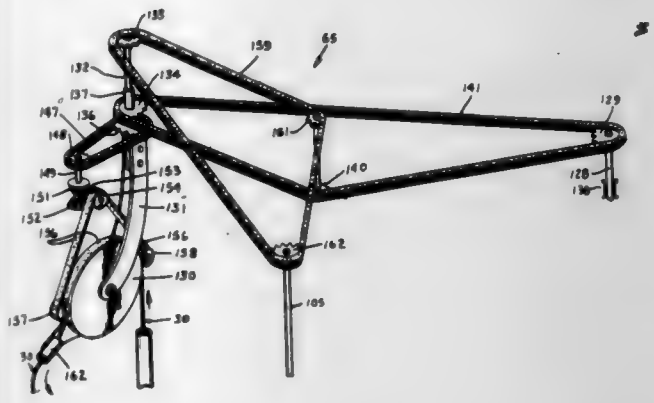
APPARATUS FOR DEPOSITING CABLE

Benjamin C. Ellis, Jr., Snellville, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 63,009, Aug. 2, 1979, Pat. No. 4,266,399. This application Mar. 2, 1981, Ser. No. 239,820

Int. Cl.³ B65H *47/14*

U.S. Cl. 242—82 **2 Claims**



1. A differential drive mechanism for a flyer-capstan of a strand element takeup, which comprises:

a flyer head input drive shaft;

a capstan input drive shaft;

a belt-driven capstan for advancing a strand element at a line speed;

means mounting said capstan for revolution about a vertical axis;

means for mounting said capstan for rotation;

means for connecting said capstan input drive shaft to said means for mounting said capstan for rotation;

means for rotating said capstan input drive shaft to rotate said capstan to advance the strand element at line speed;

means for connecting said flyer head input drive shaft to said means for mounting said capstan for revolution;

programmable means for causing said means for connecting said flyer head input drive shaft to said means for mounting said capstan for revolution to revolve said capstan about said axis at varying speeds to cause the strand element unit to be deposited about said axis in a predetermined pattern; and

means connected to said programmable means and said means for rotating of said capstan input drive shaft for causing said line speed to be maintained substantially constant.

4,342,435

TAKE-UP FORCE REDUCING MECHANISM OF A SEAT BELT RETRACTOR

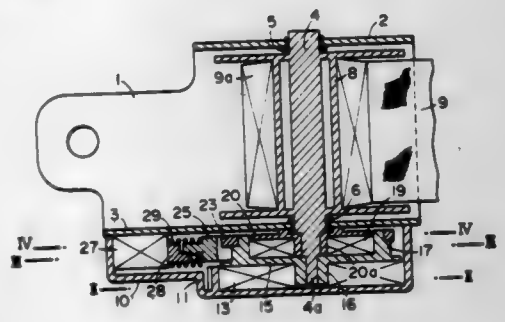
Hideo Yanagihara, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,379

Claims priority, application Japan, Aug. 21, 1979, 54/105538

Int. Cl.³ A62B *35/00;* **B65H** *75/48*

U.S. Cl. 242—107 **3 Claims**



1. In a take-up force reducing mechanism of a seat belt retractor having two springs at least one of which acts for

taking up webbing and wherein webbing take-up force can be reduced by controlling at least one of said two springs, the improvement comprising:

a rotatable member connected to one of said springs for controlling the output of that spring so that when said rotatable member is in its movable condition, there is obtained an unreduced webbing take-up force and that when said rotatable member is restrained, the webbing take-up force is reduced;

a restraining member capable of assuming a restraining position in which it is engaged with said rotatable member to restrain said rotatable member and a non-restraining position in which it cannot restrain said rotatable member, said restraining member being biased toward said restraining position;

a friction cam member capable of following the rotational movement of said rotatable member due to friction therewith and also capable of assuming a first rotated position when said rotatable member is rotated in the webbing pay-out direction and assuming a second rotated position when said rotatable member is rotated in the webbing take-up direction, said friction cam member permitting movement of said restraining member to said restraining position and being conversely prevented from moving to said second rotated position by said restraining member when said friction cam member assumes said first rotated position, and said friction cam member holding said restraining member in said non-restraining position when said friction cam member assumes said second rotated position with the restraint by said restraining member being released;

electromagnetic means for moving said restraining member to said non-restraining position; and

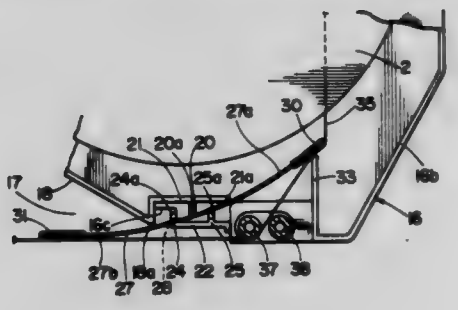
switch means for controlling said electromagnetic means, said switch means including a switch operated by said friction cam member, said friction cam member having switch operating means for closing said switch to energize the electromagnetic means when said friction cam member is in said first rotated position and opening said switch the electromagnetic means when said friction cam member is in said first rotated position and opening said switch to de-energize said electromagnetic means when said friction cam member is in said second rotated position.

4,342,436

TAPE CASSETTE

Masaru Oyama, and Kenji Takahashi, both of Tagajo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,745
Claims priority, application Japan, Jun. 29, 1979, 54-90011[U]
Int. Cl.³ G11B *23/10*
U.S. Cl. 242—199 15 Claims



1. A tape cassette comprising:

a magnetic tape;

supply and take-up means on which said magnetic tape is wound;

cassette housing means for enclosing said supply and take-up means and including means for permitting said tape to be withdrawn from said cassette housing means when in use; and

flexible strip means affixed to said housing means for biasing said tape against said housing means to prevent movement of said magnetic tape when not in use;

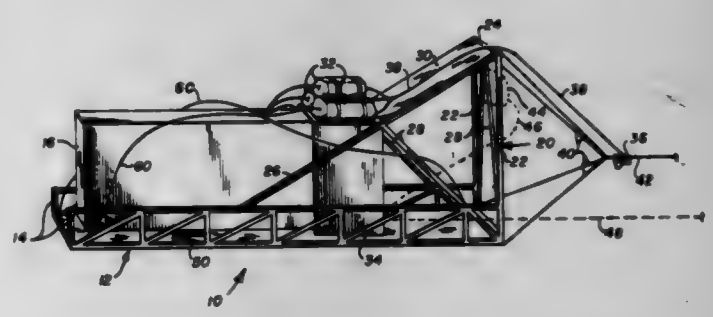
wherein said flexible strip means includes a generally flattened resilient flexible strip having a thickness, a length, and a width, and having an end portion biasing against said tape and an opening through the thickness of said strip, and said cassette housing means includes a projection extending generally in the direction of said thickness penetrating and thus engaging said opening and at least one further projection extending in a direction generally opposite the first-mentioned direction to resiliently bias said strip over the first-mentioned projection thereby to affix said resilient flexible strip to said cassette housing means.

4,342,437

HIGH ALTITUDE PLATFORM AIR DROP SYSTEM

Anthony L. Farinacci, Baldwin, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 1, 1980, Ser. No. 192,669
Int. Cl.³ B64D *1/08*
U.S. Cl. 244—137 R 10 Claims



1. An improved device for the air dropping of cargo from an aircraft flying at a high altitude comprising:

first platform means, said first platform means having first and second ends, said platform means forming a flat rectangular surface, said platform means supporting the cargo;

two reinforcing means, said two reinforcing means being secured along both sides of said platform means between said first and second ends, said two reinforcing means each forming a supporting truss, said reinforcing means transmitting forces to said platform means;

stabilizing means, said stabilizing means defining two planes, said stabilizing means being attached to said second end of said platform means with said first plane of said stabilizing means being perpendicular to said second end of said platform means and with said second plane of said stabilizing means being extended from said first plane to said two reinforcing means, said second plane of said stabilizing means forming an angle between said first plane and said platform means surface of less than 90°, said stabilizing means transmitting forces to said reinforcing means;

ramp means, said ramp means providing a flat surface, said ramp means being secured to said stabilizing means with the surface thereof lying in a plane parallel to said second plane defined by said stabilizing means;

first parachute means, said first parachute means having an open and a closed condition, said first parachute means being capable of retarding the descent of the cargo when in the open condition so that it can land intact, said first parachute means attached to said first platform means by lines, said first parachute means being positioned above the cargo;

first parachute release means, said first parachute release means holding said first parachute means in said closed condition, said first parachute release means deploying said first parachute means to said open platform when force is applied thereto;

second parachute means, said second parachute means having an open and closed condition, said open condition of said second parachute means allowing a rapid descent of the cargo, said second parachute means in the open condition supplying force to provide restoring torque to the cargo,

said second parachute means being secured to said first plane of said stabilizing means;

second parachute release means, said second parachute release means holding said second parachute means in said closed condition, said second parachute release means deploying said second parachute means to said open condition when force is applied thereto;

bridle means, said bridle means securing said second parachute means to said first plane of said stabilizing means, said bridle means secured to each corner of said first plane of said stabilizing means, said bridle means transmitting force from said second parachute means to said stabilizing means;

first connector means, said first connector means being attached to said bridle means, said first connector means also being attached to said second parachute means, said first connector means further being attached to said first parachute release means, said first connector means including a barometric sensor unit and a cutter which is activated by said sensor at a desired altitude, said cutter disconnecting said bridle means from said first connector means when activated;

third parachute means, said parachute means having open and closed conditions, said third parachute means providing a force for extracting the cargo from the aircraft when in the open condition;

second connector means, said second connector means being attached to said third parachute means, said second connector means also being attached to the cargo, said second connector means being further attached to said second parachute release means; and

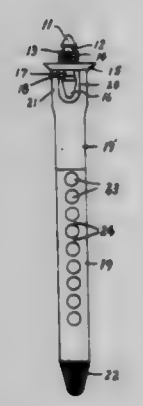
second connector release means, said second connector release means detaching said second connector means from the cargo after extraction from aircraft, said second connector release means being secured to said platform means within a space provided on said reinforcing means.

4,342,438

FLEXIBLE STRAP WITH INTEGRAL ATTACHMENT MEANS

Robert Speedie, Victoria, Australia, assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 14, 1980, Ser. No. 167,967
Claims priority, application Australia, Jul. 20, 1979, PD9658
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—73 **9 Claims**



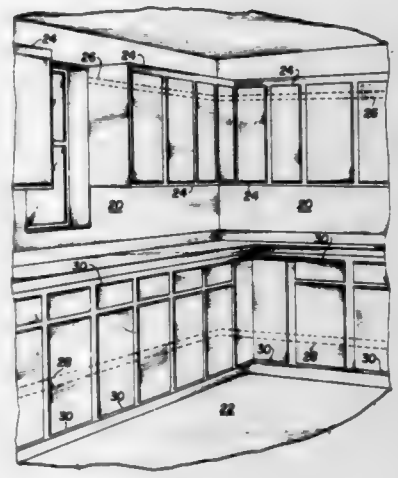
1. A cable strap fastener comprising a flange having on one side a plug member for engagement in a hole in a panel so as to hold the fastener in position and on the other side a stud coaxial with the plug member, and a strap member having a bifurcated end attached to and extending from the flange in the same direction as the stud, said strap member having at least one hole for engagement by the stud so as to hold the strap member in the form of a loop, whereby said flange, along with the plug member and the stud, may be rotated relative to the bifurcated end of the strap.

4,342,439

APPARATUS FOR TEMPORARILY HANGING FOR ALIGNING CABINETS AND THE LIKE

Wally Bruner, 6016 Telegraph Rd., Alexandria, Va. 22310

Filed Dec. 26, 1979, Ser. No. 107,244
Int. Cl.³ F16M *13/00*; A47B *67/02*
U.S. Cl. 248—544 **12 Claims**



1. An aligning apparatus for temporarily hanging and aligning cabinets and the like upon a generally vertical wall surface, said apparatus comprising:

a first elongate member having an upper edge and a lower edge and operable to be mounted in a horizontal posture upon a generally vertical wall surface, said first elongate member having a plurality of parallel slits cut inwardly and downwardly from said upper edge and of equal length so as to have slit bottoms terminating along a line parallel to said upper edge and forming a plurality of tabs so that when said tabs are bent outwardly from said wall at an acute angle with said wall, V-shaped slots are formed parallel to said wall surface;

a second elongate member operable to be secured upon a backing member of a cabinet or the like to be mounted upon said generally vertical wall surface, said second elongate member having,

a generally flat mounting portion operable to be secured to the backing member of the cabinet or the like, and

a lateral edge portion angled away from said mounting portion, wherein

said first elongate member, when horizontally installed across a wall surface with said plurality of V-shaped slots directed upwardly, can be cooperatively engaged by the later edge portion of said second elongate member mounted upon the back of a cabinet or the like whereby the cabinet may be temporarily hung upon the wall surface in a plumb posture and lateral positioning of the cabinet may be achieved by sliding said lateral edge portion of said second elongate member within said slots of said first elongate member prior to permanently securing the cabinet to the wall surface, and said first and second elongated members being of material of sufficient strength to support said cabinet and of sufficient flexibility to collapse into a generally planar as permanent securement means push said backing member against said wall.

4,342,440

CONCRETE DECK FORMING APPARATUS

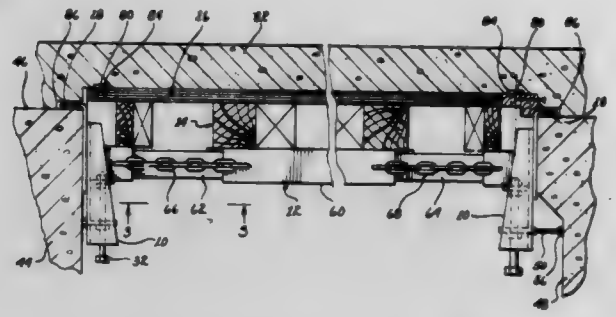
Everett A. Eyden, P.O. Box 1873, Sedona, Ariz. 86336

Division of Ser. No. 133,904, Mar. 25, 1980. This application May 18, 1981, Ser. No. 264,353
Int. Cl.³ E04G *11/00*
U.S. Cl. 249—19 **15 Claims**

1. Apparatus for temporarily supporting a poured concrete deck across a span intermediate two opposed supporting elements, said apparatus comprising in combination:

(a) a pair of opposed hangers, each said hanger including:

i. means for detachably supporting said hanger in a depending relationship from one of the support elements;
ii. a vertically positionable ledger support plate;
iii. means for vertically adjusting the position of said ledger support plate from above and below said hanger; and



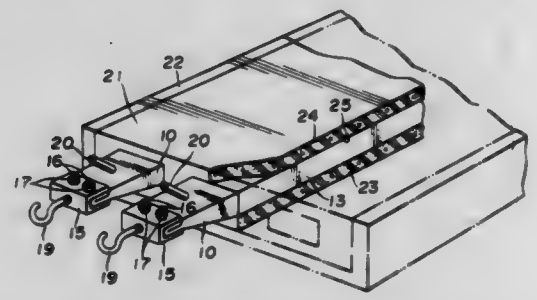
(b) a ledger locatable intermediate an opposed pair of said hangers for supporting deck joists and decking elements upon which the concrete for forming said deck is poured, said ledger including means for engaging said ledger support plates of said opposed pair of hangers in a non-interfering relationship with said adjusting means.

4,342,441

CORE FOR USE IN CASTING HOLLOW CONCRETE SLAB AND METHOD OF CASTING SUCH SLAB

Isao Maebara, and Koichiro Fujio, both of Tokyo, Japan, assignors to Ishikawajima-Kenzai Kogyo Co., Ltd., Japan

Filed Jun. 27, 1980, Ser. No. 163,559
Claims priority, application Japan, Jun. 29, 1979, 54-82478
Int. Cl.[3] B29C *1/12;* B28B *7/32*
U.S. Cl. 249—65 8 Claims



1. A core for use in casing a long concrete slab for forming a continuous hole extending along its length, which core comprises a relatively rigid resilient elongated hollow body having closed opposite ends, said hollow body having an opening formed through a wall of said hollow body at one end thereof, and a contractible filling member made of an open-cell foamed material and filling said hollow body, said body being folded at one end thereof and enclosed by a channel member having a hook attached thereto, the channel member being secured to said core.

4,342,442

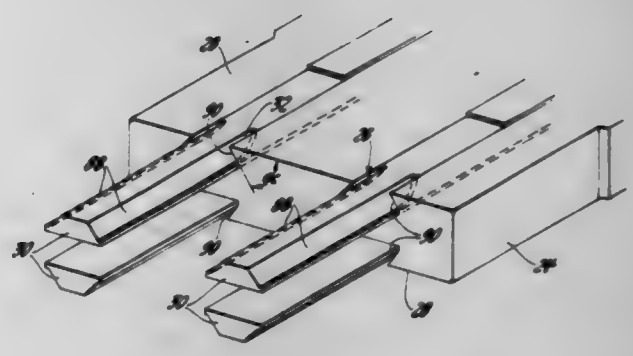
BATTERY CONTAINER MOLD

William J. Perkins; William C. Vest, both of Anderson; Walter A. Grannen, III, Bargersville, and Robert E. Meyer, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 172,513, Jul. 28, 1980, abandoned. This application May 18, 1981, Ser. No. 264,241
Int. Cl.[3] B29C *1/06, 7/00;* B29F *1/022, 1/14*
U.S. Cl. 249—67 6 Claims

5. A mold for injection molding a battery container having bottom, side and end walls and at least one partition parallel to said end walls and dividing said container into at least two compartments for housing the electrochemical innards of said battery, said container having a plurality of thin, resilient ribs integral with and projecting at acute angles from said partition and end walls into said compartments for holding said innards substantially centrally of said compartments, said mold including female and core-bearing portions coacting in a mold-closed position to define a mold cavity corresponding to said container, said core-bearing portion including a plurality of mandrels each having an exterior surface for shaping the internal surface of an associated compartment and means for stripping said container from said mandrels, said stripping means including:

a plurality of mortises in said mandrels each mortise being defined in part by at least one wall angling inward from said mandrel surface at substantially said acute angle;



substantially complementary-shaped ejector bars reciprocally slideable within said mortises, said ejector bars each being defined in part by at least one face juxtaposed said mortise side wall and being adapted for movement between an extended container-release position and a retracted container-molding position;

a recess in said face of said bar defining a rib-forming cavity between said ejector bar and an associated mortise wall while said ejector bar is in said retracted position; and

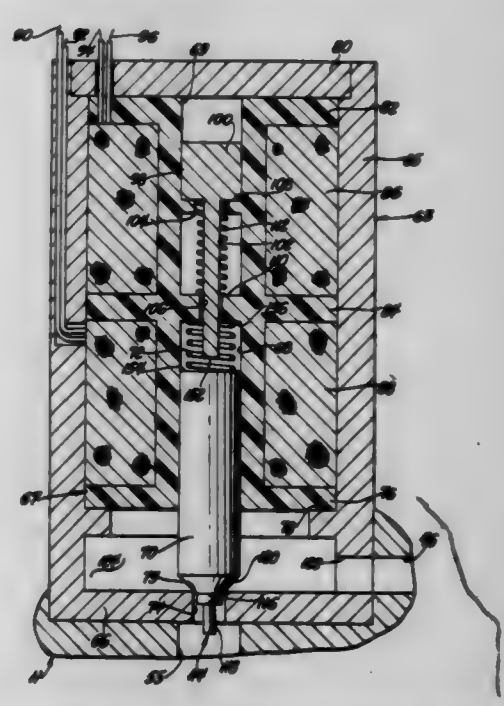
means for moving said ejector bars between said retracted and extended positions such that said ejector bars travel with said ribs to free said ribs from said rib-forming cavity at the time said container is stripped from said mandrel.

4,342,443

MULTI-STAGE FUEL METERING VALVE ASSEMBLY

Russell J. Wakeman, Novi, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,361
Int. Cl.[3] B05B *1/30;* F02M *51/06*
U.S. Cl. 251—137 21 Claims



1. A valving assembly for variably restricting fluid flow, comprising housing means, bobbin means carried by said hous-

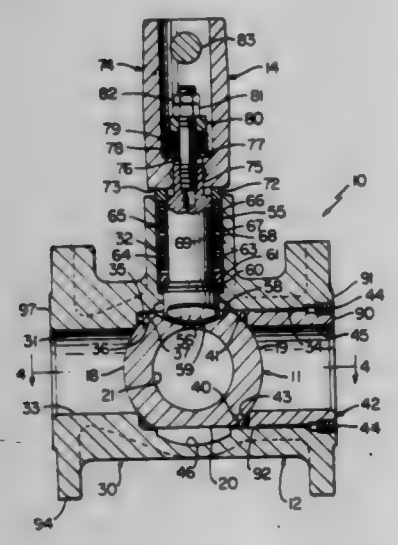
ing means, first and second axially extending passage means in said bobbin means, first electrical coil means carried by said bobbin means as to be disposed in relatively close proximity to said first passage means, second electrical coil means carried by said bobbin means as to be disposed in relatively close proximity to said second passage means, a valving member slidably received by said second passage means, stop means slidably received by said first passage means, and fluid orifice means, said valving member when moved in a first direction to a closed position being effective to terminate flow of fluid through said orifice means, said valving member when moved in a second direction opposite to said first direction being effective to permit flow of said fluid through said orifice means, said second electrical coil means when energized being effective to move said valving member in said second direction, and said first electrical coil means when energized being effective to move said stop means relative to and toward said valving member in order to provide a selected limit to the movement of said valving member in said second direction, said selected limit providing for movement of said valving member in said second direction a distance which results in the partial opening of said orifice means to the flow of fluid therethrough.

4,342,444

BALL VALVE ASSEMBLY

William G. Sonderman, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Oct. 14, 1980, Ser. No. 196,588
Int. Cl.³ F16K 5/06
U.S. Cl. 251—315 12 Claims



1. A ball valve assembly including a one-piece single body defining the entire housing structure of said valve assembly and having a passage extending therethrough; said passage including a first portion of a first constant size extending from one end of said single body and a second portion of a second constant size larger than the first constant size of said first portion of said passage extending from the other end of said single body, a first spherical seat disposed in said passage adjacent the end of said first portion of said passage, a single-piece insert disposed in said second portion of said passage, said insert being free of circumferential fastening threads and having a passage extending therethrough of the same constant size as the constant size of said first portion of said passage and coaxial therewith, means to retain said insert within said single body, a second spherical seat disposed solely in said second portion of said passage adjacent said passage in said insert, and each of said first and second spherical seats being formed of a resilient material; a ball valve disposed in said passage in said single body between said first spherical seat and said second spherical seat, said ball valve having a first spherical segment at one end for engaging said first spherical seat, a second spherical segment at its other end for engaging said second spherical seat, each of said first spherical segment and said second spherical segment being less than a hemisphere and having its inner periphery of the same length, and means connecting said first spherical segment and said second spherical segment to each other; said connecting means having its periphery no greater than the inner periphery of each of said first spherical segment and said second spherical segment; each of said first spherical segment, said second spherical segment, and said connecting means of said ball valve having its periphery smaller than the periphery of said second portion of said passage in said single body to enable insertion of said ball valve through said second portion of said passage in said single body prior to said insert being disposed in said second portion of said passage in said single body, said insert exerting a force on said second spherical seat when retained by said retaining means to exert a force on said ball valve so that said ball valve is held against said first spherical seat, said insert holding said second spherical seat in sealing engagement against said single body and against said ball valve, said second spherical seat serving the dual purpose of providing a seal between said ball valve and said single body and providing the only seal between said insert and said single body; and connecting means having a passage extending therethrough of the same constant size as said first portion of said passage in said single body and said passage in said insert; turning means supported by said single body to turn said ball valve to an open position in which said passage in said connecting means of said ball valve communicates said first portion of said passage in said single body with said passage in said insert and a closed position in which said connecting means blocks communication between said first portion of said passage in said single body and said passage in said insert; said connecting means having cooperating means to cooperate with said turning means to enable said turning means to turn said ball valve, said cooperating means not extending beyond the periphery of said connecting means and not communicating with said passage in said connecting means, said connecting means having its outer surface uninterrupted except for the ends of said passage and said cooperating means, each of said first spherical segment and said second spherical segment having its outer surface uninterrupted; said first spherical segment engaging only said first spherical seat and said second spherical segment engaging only said second spherical seat when said ball valve has been turned to its closed position in which flow cannot occur through said passage in said connecting means of said ball valve; and said single body having an end flange at each end defined as an integral part thereof, each of said end flanges having holes specifically located to enable attachment of each of said end flanges by attaching means to a similar end flange on another element having a passage extending therethrough of the same size as said first portion of said passage in said single body, said passage in said connecting means of said ball valve, and said passage in said insert.

4,342,445

SELF-ALIGNING TRUNNION BRACKET FOR METALLURGICAL VESSELS

Joseph J. Luczak, New Castle, and Rasbed N. Nagati, Mars, both of Pa., assignors to Pennsylvania Engineering Corp., Pittsburgh, Pa.

Filed Nov. 3, 1980, Ser. No. 202,941
Int. Cl.³ C21C 5/50
U.S. Cl. 266—296 11 Claims

1. A metallurgical vessel including:

a trunnion support at least partially surrounding said vessel,

a plurality of bracket means affixed to said vessel in spaced-apart relation for supporting said vessel on said trunnion support, said bracket means having a pair of arcuate lateral edges extending generally away from said vessel,

retainer means for each bracket means and including a pair of gib blocks affixed to said trunnion support adjacent each lateral edge of said bracket means and being positioned to prevent displacement of said bracket means away from said trunnion support,

said retainer means also including first and second portions disposed respectively between said gib blocks and the

lateral edges of said bracket means and each portion having a surface complimentary to and disposed adjacent one of the arcuate lateral edges on said bracket means to permit angular reorientation of said bracket means relative to said gib blocks should said vessel become distorted in operation,

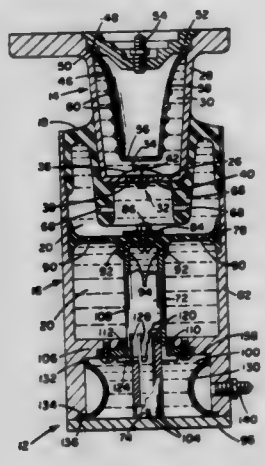
said retainer means also including a third portion interconnecting said first and second portions and disposed between said bracket means and said trunnion support and being slidably engaged by the bracket means.

4,342,446

SELF-LEVELING VISCOUS ELASTIC DAMPER

Gerald E. Eaton, Wakeman; Emile M. Shtarkman, and Daniel S. Snyder, both of Norwalk, all of Ohio, assignors to Gould Inc., Cleveland, Ohio

Filed Nov. 18, 1980, Ser. No. 207,914
Int. Cl.³ F16F 9/08
U.S. Cl. 267—35 **18 Claims**



1. In a viscous spring damper including inner and outer members connected by an elastomeric shear spring; having a main fluid chamber therebetween communicating with a second chamber in said inner member through restricted orifice means, an expandible and contractible gas chargeable elastomeric bladder in said second chamber, and first valve means for selectively charging said bladder with gas pressure, said members being relatively movable for stressing said shear spring and varying the volumes of said chambers while effecting fluid flow therebetween through said orifice means, the improvement comprising: a third fluid chamber in said outer member communicating with said main fluid chamber through restricted pump means, whereby relative movement between said members operates said pump means for leveling said viscous elastic damper.

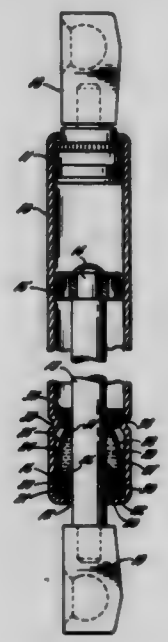
4,342,447

GAS SPRING WITH TUBULAR SHELL SEAL

Thomas O. Marx, Rockton, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Aug. 25, 1980, Ser. No. 180,623
Int. Cl.³ F16F 9/04
U.S. Cl. 267—64.23 **11 Claims**

1. In a gas spring having a cylinder open at one end and closed at the other end, a piston slidable in said cylinder, a rod fixed to said piston and projecting out of said cylinder through the open end thereof, and a body of oil and a gas under pressure in said cylinder, the combination of, a rigid annulus disposed in said cylinder adjacent said open end thereof and encircling said rod, a tubular shell located between said closed end and said rigid annulus and having an outer generally annular end portion abutting said annulus and an inner end surrounding said rod with a generally cylindrical wall connecting said outer end portion and inner end, said shell being made of a flexible and resilient material, a first annular portion formed on said outer end portion of said shell adjacent said rod and extending around the entire inner periphery of said outer end portion, said first annular portion resiliently engaging said rod around the entire circumference thereof to form a seal between the shell and the rod, and a second annular portion formed on the exterior of said shell around the entire outer periphery of said outer end portion and engaging the inside of said cylinder around the entire circumference thereof to form a seal between the shell and the cylinder whereby said shell seals the open end of the cylinder, said inner end of said shell normally resiliently



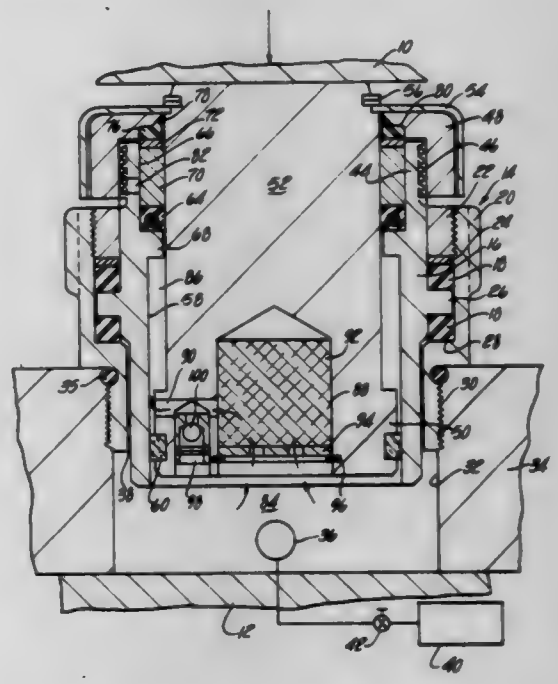
engaging said rod around the periphery thereof and said wall of said shell being spaced from said rod whereby the shell and the rod define an annular cavity, said cavity being filled with at least a portion of said body of oil, said wall expanding and contracting in response to differences of the pressures in said cylinder and in said cavity as said piston slides back and forth in the cylinder thereby to pump oil into and out of said cavity between said inner end and said rod and maintain the cavity full of oil.

4,342,448

GAS-OPERATED CYLINDER

Bernard J. Wallis, 25200 Trowbridge Ave., Dearborn, Mich. 48124

Filed Apr. 4, 1980, Ser. No. 137,369
Int. Cl.³ F16F 9/02
U.S. Cl. 267—119 **4 Claims**



1. In a press, a fluid spring assembly for use between a pair of metal die forming members which move relatively toward

and away from each other, said fluid spring assembly comprising a fluid cylinder fixedly mounted at one end thereof on one of said die members, said cylinder having an axially extending bore in which a close fitting piston is axially slideable, said piston dividing the cylinder into a working chamber and an idle chamber which vary inversely in size in response to reciprocation of the piston, said working chamber communicating with a reservoir of gas under relatively high pressure, said piston having a piston rod projecting axially through the idle chamber and outwardly through the other end of the cylinder for engagement with the other die member, said piston rod having a cross section smaller than the piston so that the cross sectional area of the piston exposed to the idle chamber is less than the cross sectional area of the piston exposed to the working chamber, means forming a passageway extending between the working chamber and the idle chamber to permit relatively free flow of the gas therebetween in response to reciprocation of the piston, said other end of the cylinder having an end wall provided with a central aperture through which the piston rod projects, said cylinder bore being provided with a circumferentially extending shoulder spaced a fixed distance axially from said end wall, an annular seal seated on said shoulder and engaging the periphery of the piston rod to prevent leakage of gas from the idle chamber outwardly of the cylinder through said aperture, said seal being axially displaceable from seated engagement with said shoulder toward said end wall in response to the axial force exerted thereon by the high pressure gas in said idle chamber, said aperture being defined at least in part by a conical surface which inclines radially inwardly in a direction axially outwardly of the cylinder, an annular rod wiper disposed in said aperture, said rod wiper having an axially inner body and an axially outer lip, the radially outer surface of said lip conforming in shape to and being seated against said conical surface, the inner periphery of said lip being in sealing engagement with the outer periphery of the piston rod, a rigid spacer extending axially between said annular seal and the axially inner end of the rod wiper body, said spacer being axially displaceable in said cylinder toward said end wall by the pressure of the gas in the idle chamber exerted axially against said seal, said wiper being formed of a material that compresses axially in response to the axial force exerted thereon by the axially displaceable spacer whereby the pressure of the gas in the idle chamber is exerted axially against the axially inner end of the wiper by said seal and the axially displaceable spacer to axially compress the wiper and, as the inner periphery of the wiper lip tends to enlarge due to wear from engagement with the piston rod, the rod wiper compresses axially as a result of said axial force thereon and as a result of said compression, the conical surface of said aperture causes the wiper lip to be cammed progressively radially inwardly to maintain said sealing engagement with the outer periphery of the piston rod.

4,342,449

CLAMPING ELEMENT FOR STORAGE BATTERY PLATE STACKS

Joachim Illmann, Garbsen, and Heribert Füllfgraf, Suthfeld, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 25, 1979, Ser. No. 42,577

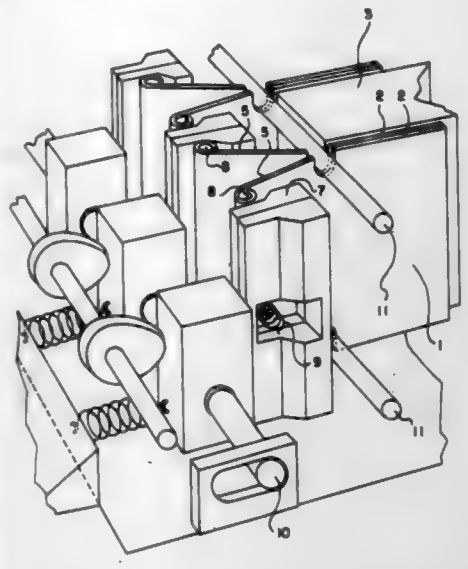
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825126

Int. Cl.³ B25B *1/20*

U.S. Cl. 269—43 **5 Claims**

1. Clamping element for holding plate stacks of lead storage batteries constituting a separating partition within a cassette conforming to a plan dimension of the block casing, wherein the clamping element consists of two closely adjacent preformed leaf springs,

wherein wedge-shaped elements which are slideable between the spring portions are provided for the clamping of the springs, and



wherein the wedge-shaped elements are attached to a common arm and are slideable by means of a cam shaft.

4,342,450

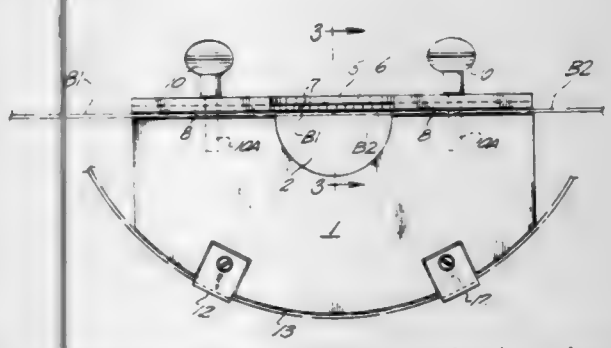
BAND SAW JIG

Thomas J. Maddock, 44561 McKenzie Hwy., Leaburg, Oreg. 97401

Filed May 19, 1980, Ser. No. 150,999

Int. Cl.³ B25B *1/00*

U.S. Cl. 269—87 **3 Claims**



1. A band saw soldering jig for retention in a vise and comprising in combination,

a main body having an irregular upper surface to provide an abutment therealong against which end segments of a band saw blade may be placed in an aligned manner preparatory to soldering of same to one another, said main body defining a centrally located recess so as to avoid contact with the blade ends being soldered to avoid resultant heat loss therefrom by conduction,

a clamping member in place above said upper surface of said main body,

adjustable means engaged with said main body for urging said clamping member into engagement with the end segments of the blade to lock same in place against the irregular upper surface of said main body, and

said clamping member defining an open area permitting access to the blade end segments clamped thereby for purposes of facilitating soldering of same.

4,342,451

COMBINATION CAST CHAIR AND SPICA TABLE

Ross L. Teague, 11313 Bel Air Pl., Oklahoma City, Okla. 73120

Filed Sep. 19, 1980, Ser. No. 188,434

Int. Cl.³ A61F *5/04*

U.S. Cl. 269—328 **9 Claims**

1. A combination cast chair and spica table, comprising:

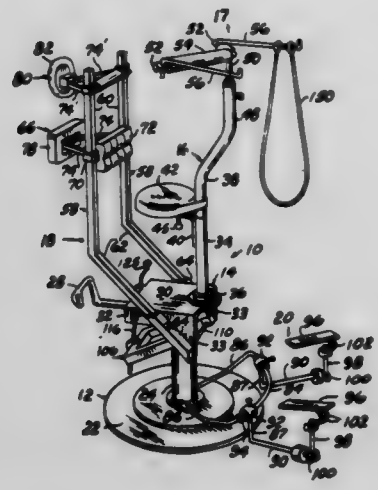
base means including an upright shaft;

platform means horizontally overlying said shaft;

generally vertical column means supported by said platform means;

a seat horizontally supported by said column means intermediate its ends;

torso support means including a pair of parallel bars connected with said platform means for forming an upright



back rest adjacent said seat and opposite said column means when in one position and forming a horizontal torso support lying in the horizontal plane of said seat when in another position; and,

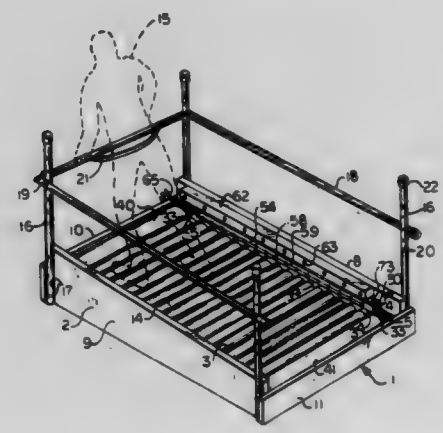
vertically adjustable and extensible feet and leg support means for supporting the feet and legs of a patient.

4,342,452

TREADMILL DEVICE

H. Wayne Summa, Rte. 1, Box 466, Flemington, Mo. 65650

Filed Jan. 25, 1980, Ser. No. 115,542
Int. Cl.[3] A63B *23/06*
U.S. Cl. 272—69 3 Claims



1. A treadmill exercising device comprising:

(a) a rigid frame having spaced side members and front and rear ends;

(b) a plurality of rollers positioned within said frame and extending laterally between said side members and providing a central upper surface for walking directly upon said rollers; said rollers having opposite end portions rotatably mounted to said side members;

(c) drive means engaged with said rollers and spaced laterally from said central upper surface, said drive means unifying said rollers in driving relation whereby rotation of some of said rollers causes rotation of other of said rollers and controls free rotation of all of said rollers;

(d) braking means connected to said rollers and movable between a first position at which the resistance to rotation of said rollers is at a minimum and a second position at which the resistance to rotation of said rollers is at a maximum; wherein

(e) said braking means is a carriage slidably mounted to said one of said side members and controllably movable front to rear, said carriage having a plurality of wheels rotatably mounted thereto; and

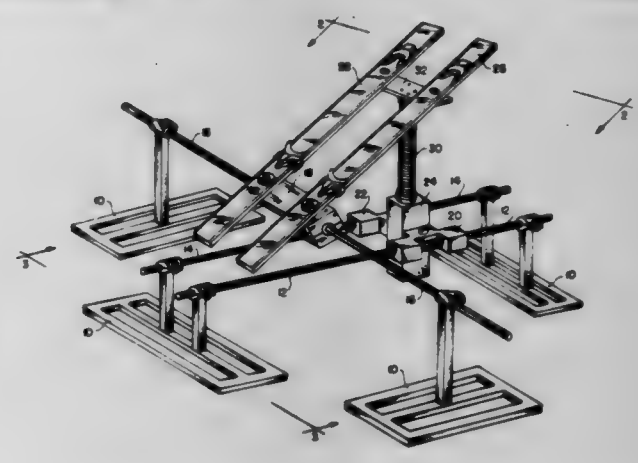
(f) said carriage is mounted adjacent said rollers and is movable between a first position with said wheels spaced longitudinally between said rollers and a second position with said wheels individually generally posititoned against said rollers and exerting pressure upon said drive means to provide braking force on said rollers.

4,342,453

SKI TRAINING APPARATUS

Richard R. Wagner, 5930 Penfield Ave., Woodland Hills, Calif. 91367

Filed Apr. 21, 1981, Ser. No. 256,035
Int. Cl.[3] A01B *23/04*
U.S. Cl. 272—97 4 Claims



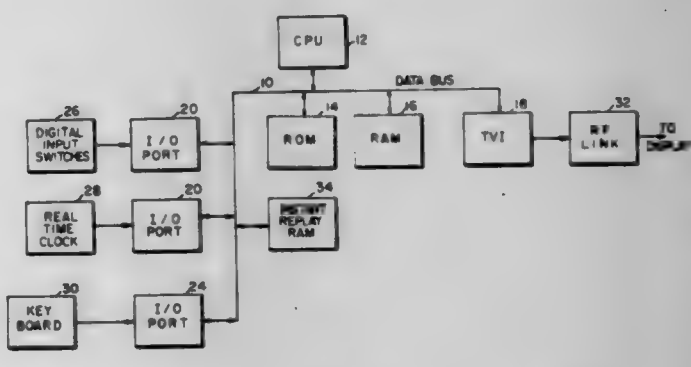
1. Ski training apparatus comprising: a base; a pair of spaced and parallel horizontal bars supported on the base; a third horizontal bar supported on the base perpendicular to said pair of bars and displaced upwardly therefrom and extending thereacross; first bushing means slidably mounted on said pair of bars; second bushing means slidably mounted on said third bar; a compression spring coupled to said first bushing means and extending upwardly therefrom; and a pair of ski-like boards pivotally mounted at their forward ends to said second bushing means and pivotally mounted at their rear ends to said compression spring, said ski-like boards being held in spaced and parallel uni-planar relationship.

4,342,454

METHOD AND APPARATUS FOR INSTANT REPLAY AND OTHER CAPABILITIES FOR MICROPROCESSOR-CONTROLLED VIDEO GAMES

Ralph H. Baer, Manchester; Leonard D. Cope, Merrimack, and Thomas J. Mortimer, Amherst, all of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Jan. 8, 1979, Ser. No. 1,806
Int. Cl.[3] A63F *9/22*
U.S. Cl. 273—85 G 13 Claims



1. In a microprocessor-controlled video game including

means for generating signals representing symbols for display on the screen of a cathode ray tube and manually actuatable controls providing responsive displayed motion of said symbols on said display, apparatus for providing an instant replay capability, comprising:

means for storing signals representing the positions of said controls at predetermined intervals for a predetermined period of time;

means for establishing predetermined intervals for a predetermined period of time; and

means for outputting said stored signals to cause replay of that portion of a game previously executed during said predetermined period of time.

11. A method of providing an instant replay capability to a microprocessor-controlled video game which includes means for generating signals representing symbols for display on the screen of a cathode ray tube and manually actuatable controls providing responsive displayed motion of said symbols on said display, comprising the steps of:

generating signals when player motion commands are entered;

generating signals representing the time when said player commands are entered; and

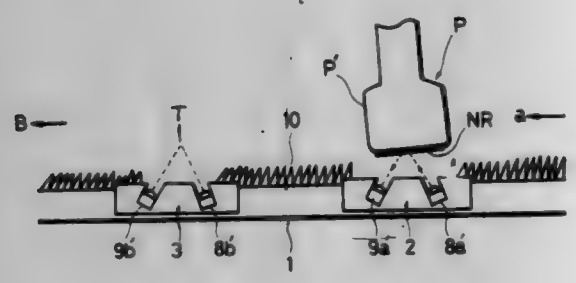
storing said signals.

4,342,455

GOLF PUTTING PRACTICE DEVICE

Toshiaki Miyamae, 36-8, Aramoto, Higashi-Osaka, Osaka, Japan

Filed Mar. 20, 1981, Ser. No. 245,652
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—186 A 2 Claims



1. In a putting practice machine comprising a flat surface having a center line on which a golf ball may be placed and over which a golf club may be swung, one or more light sources, one or more sensors of said light, which upon said ball or head of said golf club interrupting the light to a respective sensor will generate a signal indicative of the position of said ball or said head, and means for detecting the signals; the improvement comprising a plurality of pairs of signal members positioned within said flat surface, each different ones of said pairs being disposed at different distances from said center line, and each signal member consisting essentially of one said light source and one said sensor, said one light source and said one sensor being positioned at angles with respect to one another so that a straight line extending from said light source will intersect a straight line extending from said sensor at a point about where said ball or said golf club head will pass.

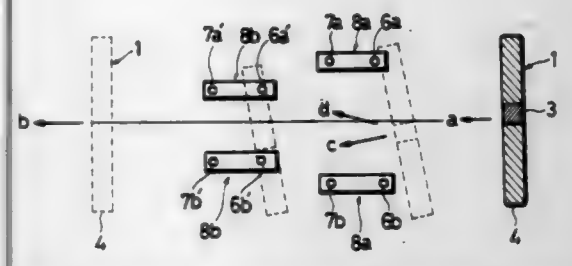
4,342,456

GOLF PUTTING PRACTICE DEVICE

Toshiaki Miyamae, 36-8, Aramoto, Higashi-Osaka, Osaka, Japan

Filed Mar. 20, 1981, Ser. No. 246,121
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—186 A 2 Claims

1. In a putting practice machine comprising a flat surface having a center line on which a golf ball may be placed and over which a golf club may be swung, light sources, sensors of said light, which upon said ball or head of said golf club interrupting the light to a respective sensor will generate a signal indicative of the position of said ball or said head, and means for detecting the signals; the improvement comprising a plurality of pairs of signal members positioned well within said flat surface, each different ones of said pairs being disposed at different distances from said center line, and each signal member consisting essentially of one of said light sources and one of said sensors, said one light source and said one sensor being positioned at angles with respect to one another so that a straight line extending from said light source will intersect a straight line extending from said sensor at a point about where said ball or said golf club head will pass, and wherein further comprising non-reflective means covering the central bottom



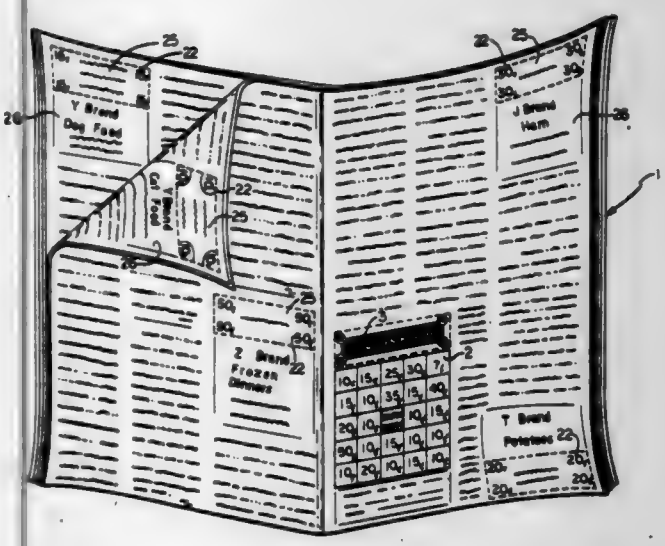
surface area of said golf club head and reflective means covering the remainder of the bottom area of the golf club head not covered by said non-reflective covering means, and wherein a first pair of said signal members are positioned from each other at a distance substantially wider than the width of said non-reflective covering on said golf club head, and an adjacent second pair of said signal means are positioned from each other at a distance slightly wider than the width of said non-reflective covering of said golf club head, whereby movement of the central bottom surface area of said golf club head off the center line will pass over different ones of said first and second sets of signal members.

4,342,457

METHOD OF PLAYING A MASS CIRCULATION PUBLICATION BINGO TYPE GAME

Maynard E. Small, 105 Ward Pkwy., Apt. 507, Kansas City, Mo. 64112

Continuation of Ser. No. 79,189, Sep. 26, 1979, Pat. No. 4,285,520. This application Jun. 12, 1981, Ser. No. 273,259
The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.
Int. Cl.³ A63F *3/06*
U.S. Cl. 273—240 9 Claims



1. A method of playing a bingo type game including the steps of:

(a) printing a single edition, run of press, multipage, and mass circulation publication;

(b) providing a playing card common to all players, said playing card being printed in said publication, said card

having a grid with several rows and columns forming a set of oriented areas, each oriented area respectively bearing individual indicia whereby every player has an identical playing card having an identical set of oriented area indicia; and

(c) printing a common set of devices in said publication, at least some of said devices being positioned at various isolated locations throughout the pages of the publication so as to be spaced apart from one another by printed subject matter unrelated thereto;

(d) providing on each device respectively an individual indicia, whereby every player has an identical set of indicia bearing devices;

(e) locating at least some of said devices on pages separate from said playing card; and

(f) said area indicia being related to said device indicia so that selected device indicia from the device indicia set match with selected indicia from the area indicia set such that said matched area indicia describes a predetermined pattern on said playing card grid; whereby each player is urged to scan each page of said publication to determine the presence of said devices in order to determine said predetermined pattern.

4,342,458

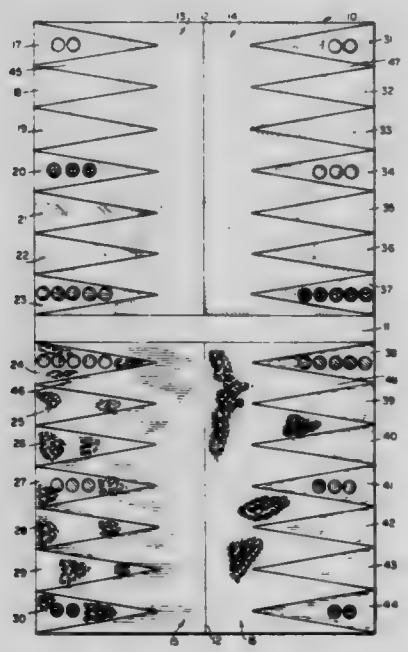
MULTI-PLAYER BACKGAMMON

Rick Lane, 845 Arlingwood Ave., Jacksonville, Fla. 32211; Donald C. Kafka, and Jayne M. Kafka, both of 108 Windsor St., Simpsonville, S.C. 29681

Filed Sep. 18, 1980, Ser. No. 188,358

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—248 **11 Claims**



1. A backgammon game for simultaneous playing of up to four people, comprising:

a. a gameboard having a rectangular shape wherein said rectangular area comprises quadrant;

b. said gameboard consisting of seven playing points per quadrant;

c. further comprising four sets of 10 playing pieces, each set having a different indicia; and

d. a random number generating device; and wherein all points in each quadrant have an indicia corresponding to the indicia on the playing pieces in one of the sets; each quadrant points' indicia being different from the other quadrant points' indicia.

4,342,459

TETHERED BALL GAME APPARATUS HAVING ECCENTRIC TENSIONING MEANS

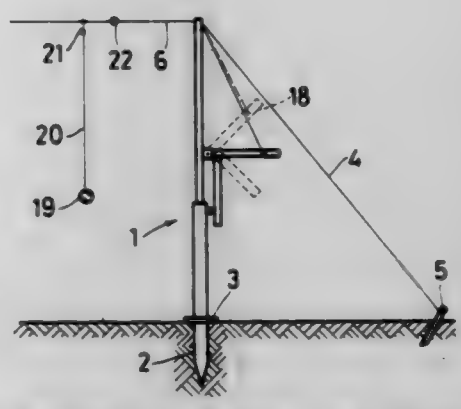
Willem J. Pretorius, Roodepoort, South Africa, assignor to Christopher P. Bath, Johannesburg, South Africa, a part interest

Filed Sep. 9, 1980, Ser. No. 185,639

Claims priority, application South Africa, Mar. 28, 1980, 80/1845

Int. Cl.³ A63B *69/40*

U.S. Cl. 273—413 **13 Claims**



1. Ball game apparatus, comprising: a pair of horizontally spaced posts adapted to support a transverse flexible filament therebetween, a member pivotally mounted to at least one of said posts and having an attachment point for an end of said flexible filament, said attachment point and said pivotal mounting being spaced apart, and said member directly embodying means for eccentrically weighting the member relative to its pivotal mounting to gravitationally bias said member to a predetermined position in which the filament is in an initial taut condition in use, whereby when the filament is pulled the moment of force about the pivotal mounting tends to return the filament to the initial taut condition.

4,342,460

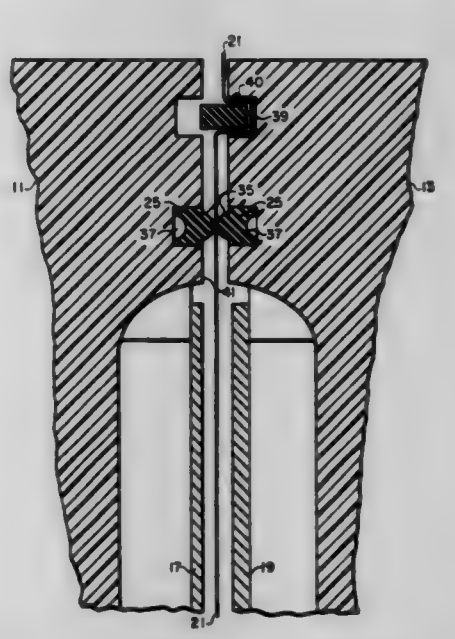
GASKET MEANS FOR ELECTROLYTIC CELL ASSEMBLY

Jeffrey D. Eng, North Vancouver, Canada, assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,978

Int. Cl.³ C25B *9/00*; F16J *15/54*

U.S. Cl. 277—1 **10 Claims**



1. An apparatus comprising in combination a plurality of electrolytic cell frames and gasket means for sealing opposing mating surfaces, the cell frames having longitudinal recesses of generally rectangular cross section for accommodating said gasket, the gasket comprising parallel side walls, bottom shoul-

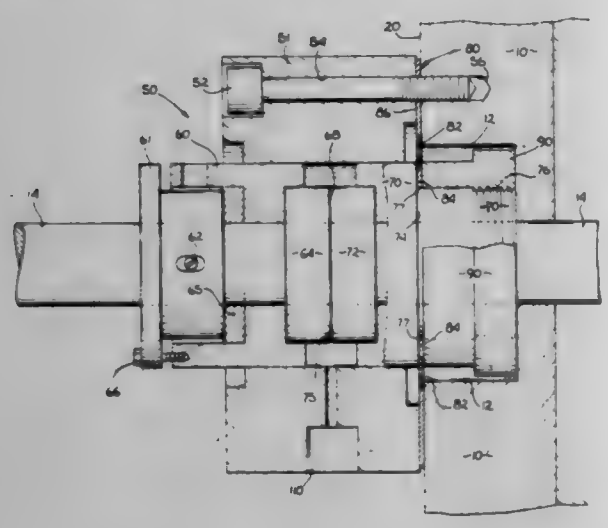
ders, an indented, arched cavity between the bottom shoulders, top shoulders and when in a relaxed state an elevated, bulb shaped bearing surface between said top shoulders, the dimensions of the indented cavity being equal to or greater than the dimensions of the elevated bearing surface, the parallel walls and shoulders of the gasket conforming in shape to the generally rectangular configuration of the recesses, said apparatus being further characterized by the absence of lateral movement of said gasket when compressed against opposing surfaces.

4,342,461

ROTATING SHAFT SEAL ASSEMBLY

Joseph Lindsay, 1821 Lacey St., Apt. D, Bakersfield, Calif. 93309

Filed Apr. 24, 1981, Ser. No. 257,211
Int. Cl.³ F16J *15/16, 15/54*
U.S. Cl. 277—30 **10 Claims**



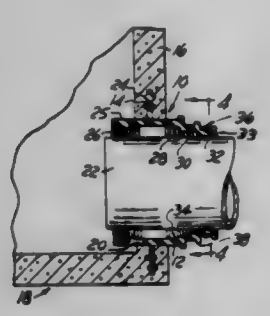
1. A mechanical rotating shaft seal assembly comprising a stuffing box gland for receiving a rotary sealing cartridge and a stationary sealing cartridge, and for mounting onto the face of a stuffing box, an axially flexible annular diaphragm member secured between said stuffing box gland and said face and extending radially inwardly to cover a portion of said stuffing box, means for coupling said stationary sealing cartridge to said diaphragm member whereby said stationary sealing cartridge may axially align itself with said rotary sealing cartridge.

4,342,462

ADJUSTABLE SEAL MEMBER FOR CONDUIT TO MANHOLE JUNCTION

John Carlesimo, 29800 W. 8 Mile Rd., Farmington, Mich. 48024

Division of Ser. No. 904,426, May 10, 1978, Pat. No. 4,200,299. This application Jul. 20, 1979, Ser. No. 59,028
Int. Cl.³ F16J *15/10*; F16L *25/00*
U.S. Cl. 277—101 **2 Claims**



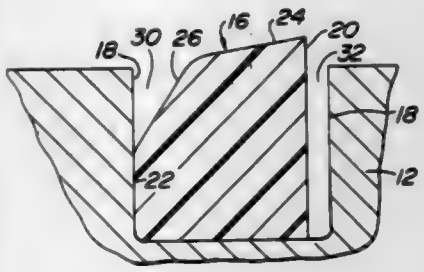
1. In a junction between a manhole well and a conduit having a generally cylindrical peripheral surface and an end disposed within an opening in a wall of said manhole well projecting within said manhole well, a one-piece seal member having a substantially cylindrical tubular body of elastomeric material comprising a sleeve having a first end portion projecting outwardly from said opening in clamped sealed relationship to the peripheral surface of said conduit and an integral outwardly flared annular flange in sealing engagement with the edge of said opening, wherein the first end portion of said sleeve in clamped sealed relationship to the peripheral surface of said conduit has an internal diameter adjustable within a range to conform to the outer diameter of said conduit, said first end portion of said sleeve comprising a plurality of contiguous integral stepped annular portions of decreasing external and internal diameters from proximate said flange to the end of said end portion, a plurality of substantially parallel annular ribs peripipherally integrally formed on said end portion, each pair of adjacent ribs corresponding to one of said decreasing external and internal diameter annular portions and defining a holding means therebetween for an adjustable strap clamping said end portion to the peripheral surface of said conduit and a plurality of circular parallel ribs integrally formed on the internal surface of each of said stepped portions, said sleeve further comprising a second end portion projecting within said manhole well surrounding the end of said conduit projecting within said manhole well, and means for clamping said sleeve second end in sealed relationship to the peripheral surface of said end of said conduit projecting within said manhole well.

4,342,463

SPRING SEAL

John A. Burke, Rocky River, Ohio, assignor to Green, Tweed & Co., Inc., North Wales, Pa.

Filed Oct. 16, 1980, Ser. No. 197,443
Int. Cl.³ F16J *15/00, 15/24*
U.S. Cl. 277—177 **2 Claims**



1. A one-piece seal comprising: an annular sealing ring of resilient deformable plastic material, said sealing ring having a radially disposed side face defining a pressure side of the ring, said sealing ring having its inner peripheral surface defined by two contiguous portions, the first portion converging inward toward said side face with a taper of between 5° and 15° with respect to the axis of the sealing ring, the second portion being an angled surface extending outwardly from said first portion at an angle of between 25° and 40° with respect to a radius on said sealing ring, the opposite side faces of the ring are parallel, the side face opposite said pressure side directly intersecting said second portion.

4,342,464

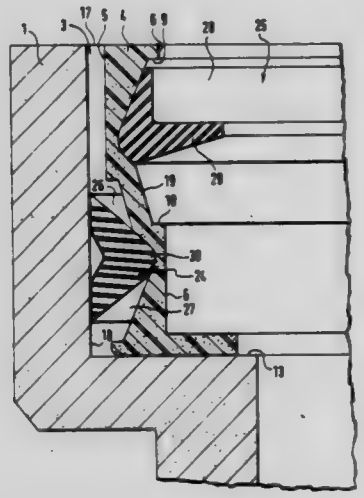
GASKET FOR A SOCKET-SPIGOT CONNECTION

Franz J. Wolf, and Hansjörg Lauer, both of Bad Soden-Salmünster, Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co., Bad Soden-Salmünster, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,337
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023619
Int. Cl.³ F16J *15/10, 15/32*
U.S. Cl. 277—207 A **13 Claims**

1. A gasket for a socket-spigot connection between a socket end and a spigot end of two pipes to be connected, said gasket being of a material stable as to its shape and being adapted to carry at its inner radial side at least one resilient sealing ring and at its outer radial side at least one other sealing ring, said gasket having an outer diameter equal to or slightly smaller than the inner diameter of said socket, said gasket having an

inner diameter equal to or greater than the outer diameter of said spigot, said gasket having a radial inner ring groove and a radial outer ring groove, said radial inner ring groove being constructed and arranged to receive one of said seal rings to provide a predetermined maximum pressure engagement be-



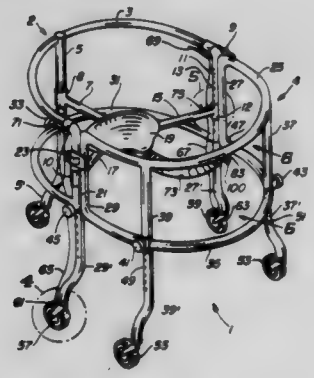
tween said one seal ring and the outer surface of said spigot, said radial outer ring groove being constructed and arranged to receive another of said seal rings to provide a predetermined maximum pressure engagement between said other seal ring and the inside surface of said socket.

4,342,465

SAFETY WALKER

Delia Stillings, 1150 W. Prince Rd.-No. 7-B, Tucson, Ariz. 85705

Filed Aug. 25, 1980, Ser. No. 181,042
Int. Cl.[3] A61H *3/04*; B62D *11/00*
U.S. Cl. 280—87.02 W 11 Claims



1. A walker for supporting an elderly or disabled person, said walker comprising in combination:

(a) a frame having first and second sections, said frame surrounding a region occupied by the person;

(b) hinge means for pivotally connecting said first and second sections together, said first and second sections being pivotable about said hinge means to allow the person to enter said region by passing between hinged ends of said first and second sections;

(c) locking means for rigidly locking said free ends together after the person has entered said region to securely enclose the person in said region;

(d) gripping means for allowing the person to grip said walker to support himself and to move said walker;

(e) a plurality of legs rigidly attached to respective areas of said first and second sections, each of said legs having a caster attached to the lower end thereof; and

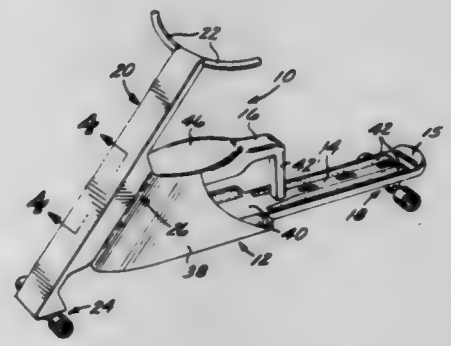
(f) a seat connected to one of said first and second sections.

4,342,466

SCOOTER WITH SEAT

Daniel Morgan, Long Beach, Calif., assignor to Irving Bullet, Jr., Carson and Maurice M. Decuir, Long Beach, both of, Calif., part interest to each

Filed Feb. 8, 1980, Ser. No. 119,872
Int. Cl.[3] B62B *7/04*; B62M *29/00*
U.S. Cl. 280—87.03 8 Claims



1. A scooter comprising:

a body section having a deck and a seat carried above said deck and having a pair of spaced apart wheels mounted beneath the rear extremity of said deck,

a steering post positioned in front of said body section and having handlebars at its upper extremity and a pair of spaced apart wheels at its lower extremity, and

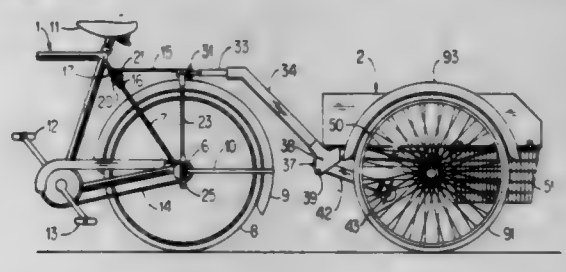
a resilient, elastic rubber hinge partially embedded in both said body section and said steering post to join said body section and said steering post together.

4,342,467

CART FOR VEHICLE WITH SINGLE REAR WHEEL

William W. Kester, 2385-B Keller Dr., Charleston, S.C. 29404

Filed May 30, 1980, Ser. No. 154,793
Int. Cl.[3] B62K *27/00*
U.S. Cl. 280—204 15 Claims



1. A device securable to a vehicle with a single rear wheel comprising:

a. cart means which is ground engaging and which is securable to said vehicle with a single rear wheel;

b. attachment means adjustably secured to said vehicle with a single rear wheel at variable heights above the axle of said single rear wheel depending on the radius of said single rear wheel and securable to said cart means at a point above said single rear wheel of said vehicle;

c. a cart framework, comprising a floor section within said cart means, said floor section positioned above the center of gravity of said cart means and said floor section positioned above the center of gravity of said single rear wheel;

d. two independent wheel systems, each of which is ground-engaging, whereby said cart framework is secured to said two independent wheel systems;

e. an independent axle housing comprising a plurality of bearings secured to said cart framework;

f. an axle rotatable within said plurality of bearings secured within said axle housing;

g. a wheel which is ground-engaging and is secured to said axle; and

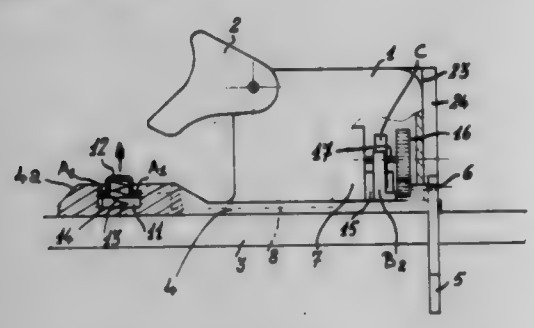
h. a basket secured below said floor section and behind each axle housing of said two independent wheel systems.

4,342,468

SKI BRAKE

Jean J. A. Beyl, Nevers, France, assignor to Ste Look, Nevers, France

Continuation-in-part of Ser. No. 23,035, Mar. 23, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 186,952
Claims priority, application France, Apr. 15, 1978, 78 10039
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **8 Claims**



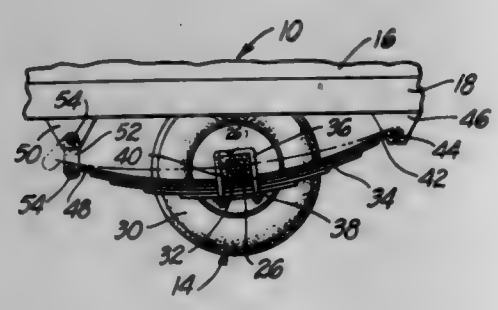
1. A ski brake adapted to be associated with a ski binding for a ski boot, comprising a pair of rotatably mounted braking arms movable between an inactive position and an active braking position, and control means for actuating said braking arms from one position to the other, said control means comprising a reversible electric motor, a drive unit connecting said motor to said rotatably mounted arms, a source of power, spring biased switch means, a pusher button adapted to be positioned beneath the ski boot for actuating said spring biased switch means, and means interconnecting said motor to said source of power through said switch means in such a manner that when said switch means is actuated by the ski boot against the action of the spring said motor moves said braking arms through said drive unit to their inactive position, and when said switch means is biased by said spring means in the absence of the ski boot, said motor moves said braking arms through said drive unit to their active braking position.

4,342,469

TRAILER SUSPENSION SYSTEMS

Frank G. Corner, Mission Viejo, and Robert E. Wilkinson, Riverside, both of Calif., assignors to Fleetwood Enterprises, Inc., Riverside, Calif.

Filed Feb. 6, 1980, Ser. No. 119,001
Int. Cl.³ B60G *11/02*
U.S. Cl. 280—718 **6 Claims**



1. A trailer suspension system for use as a part of a complete trailer which is adapted to be towed behind a moving vehicle, said trailer including a body structure having a front, a rear, sides and a bottom, wheels located substantially adjacent to said sides between said front and said rear and extending generally beneath said body, said suspension system including an individual suspension means connecting each of said wheels to said body structure, each of said suspension means being capable of permitting movement of the wheel associated with it in a generally vertical direction in response to surface irregularities in which the improvement comprises:

an axle means connecting each of said wheels to another of said wheels, said wheels being located on the ends of said axle means, said axle means extending beneath said bottom and being movable with respect to said body structure,

each of said suspension means comprising a leaf spring having front and rear ends and a shackle, said shackle being pivotally connected between the front end of said spring and said body, the rear end of said spring being pivotally connected to said body,

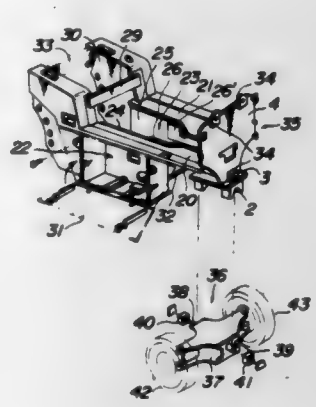
said axle means being connected to said springs between the ends of said springs, whereby each of said suspension means is capable of moving in response to an applied force so as to vary the angle of the wheel associated with it and the position of said axle means with respect to said body and the wheel on the other end of said axle means so as to be capable of steering said trailer as said trailer is towed behind said vehicle so that said trailer follows the direction of movement of said vehicle.

4,342,470

FRAME STRUCTURE FOR A FORK LIFT TRUCK

Minoru Matsuda, Hamura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 27, 1980, Ser. No. 153,655
Claims priority, application Japan, Mar. 29, 1979, 54/65533
Int. Cl.³ B62D *21/12*
U.S. Cl. 280—785 **2 Claims**

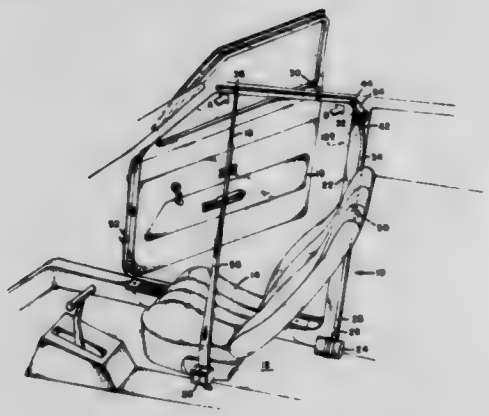


1. A frame structure of a fork lift truck including a steering axle assembly provided with a pair of longitudinally spaced pivots defining a longitudinal axis about which steering wheels are adapted to swing, the frame structure comprising a horizontal plate member provided with means to define a pair of recesses to accommodate therein the pivots of the steering axle assembly, a pair of mounting plate members having rear portions secured on respective lower edge to the upper surface of the horizontal plate member, respectively, to form a rear frame sub-assembly, a pair of longitudinal side panels respectively provided with means to define a longitudinally extending vertical side surface to which front portion of the respective mounting plate member is secured, and further including a rear plate member secured to the upper surface of the horizontal plate member and projected therefrom generally perpendicularly, rear ends of the mounting plate members being secured to the front surface of the rear plate member and rear ends of the side panels being secured to the side edges of the rear plate member.

4,342,471
MOTORIZED PASSIVE SEAT BELT SYSTEM

Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 834,936, Sep. 20, 1977, Pat. No. 4,232,822. This application Aug. 25, 1980, Ser. No. 181,293
The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.
Int. Cl.[3] B60R *21/10*
U.S. Cl. 280—804 8 Claims



1. In a passive seat belt system including a door and a seat belt adapted to be positioned about an occupant in a seat, one end of said belt being connected to a retractor on the inboard side of said seat and the other end of said belt being mounted to a structural part of said vehicle outboard of and rearward of said vehicle seat, the improvement comprising:

(a) means for automatically moving said belt into and out of an occupant-restraining position about said seat;

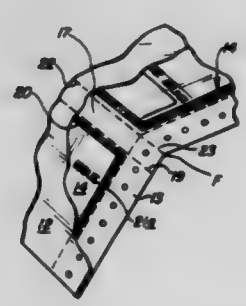
(b) means automatically movable into contact with and supporting said belt at a location adjacent to said other end upon movement of said belt out of said occupant-restraining position, whereby said belt is prevented from interfering with ingress to and egress from said seat, said movable means being automatically movable out of supporting contact with said belt upon movement of said belt into said occupant-restraining position; and

(c) a track mounted along the roof line of said vehicle and having a forward end terminating short of the front pillar of said vehicle, the rearward portion of said track extending downwardly on the B pillar of said vehicle and means movable in said track for moving said belt to its said positions.

4,342,472
CONTINUOUS FORM MULTIPLE PLY TICKET ASSEMBLY

Edward W. Heimann, Woodridge, and Donald J. Steidinger, Barrington, both of Ill., assignors to Wallace Business Forms, Inc., Hillside, Ill.

Filed Dec. 31, 1979, Ser. No. 108,850
Int. Cl.[3] B41L *1/20*
U.S. Cl. 282—11.5 A 14 Claims



1. A series of connected tickets comprising elongated coextensive top and bottom plies equipped with aligned control margins along at least one longitudinally-extending edge thereof and providing a succession of packets defining individual tickets, an interior ply assembly for each ticket packet between said top and bottom plies and captured in the control margin along one longitudinally-extending edge, each interior ply assembly having a longitudinally-extending dimension shorter than the longitudinally-extending dimension of the top and bottom plies of its associated packet to provide a fold space defined by transverse edges of adjacent assemblies, and at least one line of weakness in said top and bottom plies in said fold space extending transversely of each packet generally aligned with at least one of said transverse edges, whereby the portions of said top and bottom plies in said fold space provide a waste strip to permit removal of a ticket upon demand without sacrifice of full printing of the succeeding ticket.

4,342,473
PRESSURE-SENSITIVE COPY SYSTEMS CONTAINING PHENOLIC ESTER AS COLOR-STABILIZERS

Cheng H. Chang, Fairfield, Ohio, assignor to Champion International Corporation, Stamford, Conn.

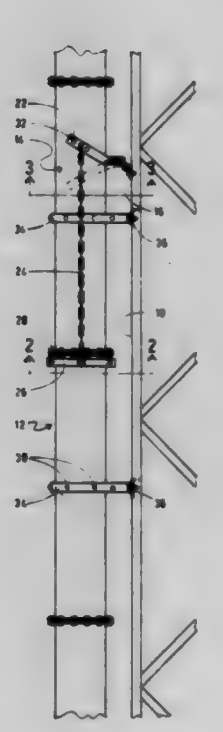
Filed Jun. 26, 1978, Ser. No. 919,086
Int. Cl.[3] B41L *1/36;* B32B *3/26*
U.S. Cl. 282—27.5 14 Claims

9. The pressure-sensitive transfer copy system comprising a substrate bearing isolated droplets of an oily solvent containing an acid-sensitive chromogenic compound and a phenolic color-stabilizing compound, said compound being an oil-soluble phenolic ester and hydrolyzable to a form capable of stabilizing colored marking, said coated substrate being superimposed over a recording sheet bearing a coating of an electron-accepting material.

4,342,474
WAVEGUIDE HANGER

Donald N. Sewell, Raymond, and Dwight A. Starbird, Casco, both of Me., assignors to Microwave Techniques, Raymond, Me.

Filed Nov. 3, 1980, Ser. No. 203,069
Int. Cl.[3] F16L *3/18*
U.S. Cl. 285—61 6 Claims



1. A system for hanging an RF transmission line vertically on a tower which comprises

a series of vertically spaced support units mounted on the tower

each unit having

at least one support arm protruding away from the tower and

means for resiliently hinging said arm to the tower so that its free end can swing vertically through an arc;

means for suspending said transmission line from said protruding arms so that each arm assumes a portion of the load and can swing up or down with contraction or expansion of said line, and

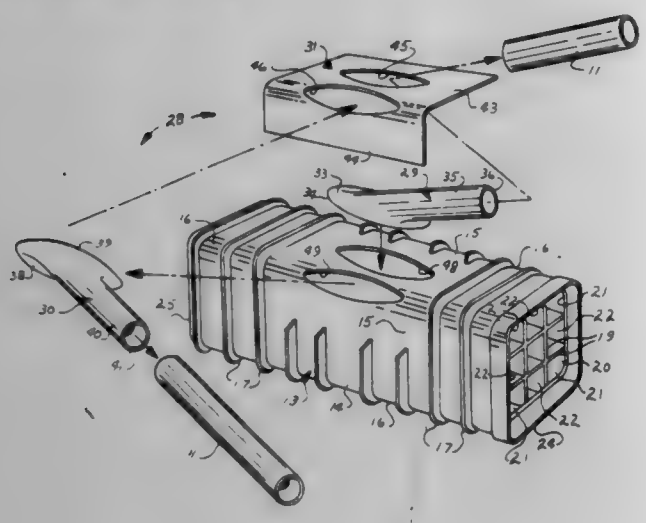
a series of stabilizing guides restraining said transmission line from lateral movement while permitting vertical movement thereof.

4,342,475

CONNECTOR AND ADAPTER FOR DUCT SYSTEMS FOR TELEPHONE CABLES AND THE LIKE

Thomas F. Moran, Aurora, Ohio, assignor to Midwest Plastic Fabricators, Inc., Chagrin Falls, Ohio

Filed Apr. 3, 1980, Ser. No. 136,914
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—137 R **15 Claims**



1. A duct system for telephone cables, electrical cables, current-carrying conductors, and other cables and conductors, which comprises:

a conduit of generally rectangular cross section having generally flat exterior surfaces connected by rounded corner exterior surfaces and having therein at least two separate, parallel bores;

a hollow, tubular duct branching from the conduit; and

a connection adapted to one end to be attached to the conduit and to communicate with one of the bores of the conduit and adapted at the other end to be attached to the end of the duct, the connection comprising a sleeve element having a base portion adapted to fit against the outside of the conduit and a tubular portion extending from the base portion, and a saddle element, the saddle element comprising

a planar portion adapted to fit against a flat exterior surface of the conduit, and

a curved portion adapted to fit against a rounded corner exterior surface of the conduit, the saddle element having at least two openings therethrough, each of which will fit over the sleeve element, one of the openings in the curved portion of the saddle element, and another of the openings in the planar portion of the saddle element, the saddle element adapted to be secured to the conduit to attach the connection thereto.

4,342,476

ELECTROMECHANICAL LID LATCH ASSEMBLY

Wade R. Brown, St. Charles, and James M. Pick, Carol Stream, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 24, 1980, Ser. No. 171,774
Int. Cl.³ E05C *3/12*
U.S. Cl. 292—201 **10 Claims**

1. An electro-mechanical latch assembly for a washing machine, said washing machine having a drum access lid and a latching hook connected to said lid, said latch comprising:

(a) a mounting bracket adapted for connection to the machine, said bracket including means defining a first fulcrum;

(b) electrical switch means mounted on said bracket;

(c) a switch lever pivotally mounted to said bracket and movable between a first and second position, said switch lever including,

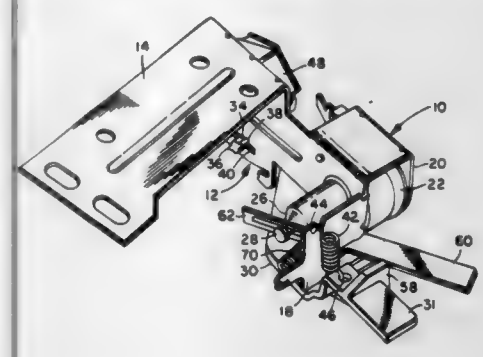
(i) a free end portion adapted for contact by said latching hook,

(ii) surface means engageable with said switch means to actuate said switch means between open and closed positions;

(d) means for biasing said switch lever to said first position;

(e) electrically operable solenoid means mounted on said bracket, said solenoid means including an armature movable between a first extended position and a second retracted position upon energization of said solenoid means;

(f) a locking lever pivotally mounted on said bracket means, said locking lever engageable with said first fulcrum, said



locking lever having a first portion thereof operably connected to said armature and another portion thereof engageable with said hook, said locking lever movable between a first position in which said hook end is spaced from said switch lever, a second position spaced from said switch lever and said first fulcrum, and a third position spaced closely adjacent said switch lever and in the path of movement of said lid hook;

(g) means for biasing said locking lever against said fulcrum surface means; and

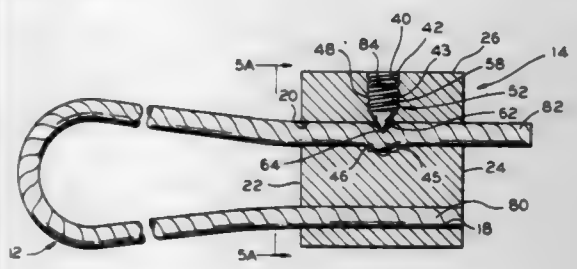
(h) said switch lever further including means defining a second fulcrum located adjacent said first portion and operable to prevent movement of said locking lever to said third position, said second fulcrum causing said locking lever to pivot thereabout when said switch lever is in said first position and said solenoid means is energized, thereby preventing said locking lever from aligning in the path of movement of said lid hook.

4,342,477

SECURITY SEAL WITH BREAK-OFF SCREW HEAD SECUREMENT

Kenneth R. McClure, St. Charles, Ill., assignor to Dickey Manufacturing Company, St. Charles, Ill.

Filed Feb. 25, 1980, Ser. No. 124,074
Int. Cl.³ B65D *33/34*
U.S. Cl. 292—307 R **6 Claims**



1. Security seal forming implements for providing a cable seal type security seal for padlock fashion locking and security sealing purposes,

said implements comprising:

a cable seal subcombination including:

a retainer body formed from a metallic material and defining oppositely directed end portions, and opposed edge portions on either side of said body extending between said end portions, respectively,

said body further defining an elongated substantially rectilinear passage adjacent one of said edge portions and extending from one of said body end portions in the direction of the other of said body end portion,

said body having a rectilinear bore formed therein extending from said one edge portion of said body and intersecting said passage substantially normally thereof and defining a mouth in said body at said one edge portion thereof and a recess in said body that is beyond said passage from said bore mouth,

said bore having an internally threaded portion between said mouth thereof and said passage and disposed adjacent said passage,

a length of cable anchored to said body at said body one end portion adjacent the other of said body edge portions,

said cable projecting from said body one end portion and having a free end proportioned lengthwise thereof to be inserted in said body passage from said body one end portion across and beyond said bore for shaping said cable shackle fashion in the body passage inserted relation of said cable free end,

and a one piece hand tool formed from tool steel for making said cable fast to said body at said bore and comprising:

a screw head having a threaded portion proportioned for threaded engagement with said bore threaded portion,

said screw head defining a protuberant working end for application against the cable when said cable free end thereof is in said body passage inserted relation thereof,

a handle including a shank portion that is integral with said screw head in aligned rectilinear relation and an elongated hand grip portion that is angularly disposed relative to said shank portion,

said screw head threaded portion lengthwise of said head having a length that is less than said bore threaded portion,

said tool shank portion having formed in juxtaposition to said head an annular groove thereabout,

said hand tool being hardened at said screw head and from said screw head into said shank portion including and across said groove whereby said groove forms a frangible connection between said screw head and said handle,

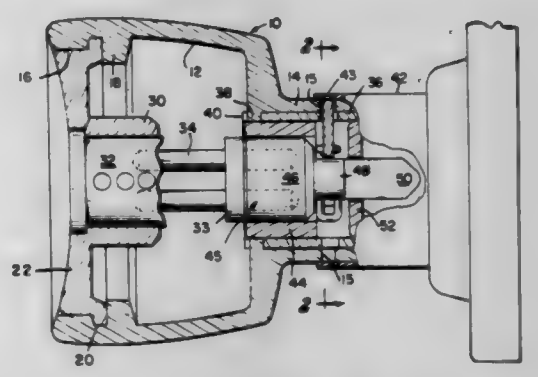
whereby when said cable is in its said body passage inserted relation thereof, said hand tool screw head may be threaded into said body bore threaded portion for making said cable fast to said body at said bore by hand gripping and moving said handle to rotate said screw head so as to make same fast within said body bore with said screw head protuberant end directed against said cable as needed to deflect said cable into said bore recess, and said hand tool handle may be separated from said head at said groove, by sidewise deflecting said handle relative to said shank portion to fracture said hand tool at said groove, and discarded, with said screw head remaining in said bore and defining a hardened jagged surfacing across the fracture that is recessed in said bore below said bore mouth whereby said screw head is resistant against being drilled out.

4,342,478

KNOB-CONNECTOR SPRING

William R. Foshee, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.

Filed Jun. 27, 1980, Ser. No. 163,472
Int. Cl.[3] E05C *21/00*
U.S. Cl. 292—352 16 Claims



1. Knob-connector mechanism for connecting a doorknob on a tubular knob sleeve or the like, comprising

a knob-connector mounted for movement radially of the knob sleeve to a knob-connecting position,

and means for biasing the connector to such position,

characterized in that said biasing means comprises a wire spring having a central bight portion in outward radial thrust relation with said connector and disposed adjacent one side of the knob sleeve,

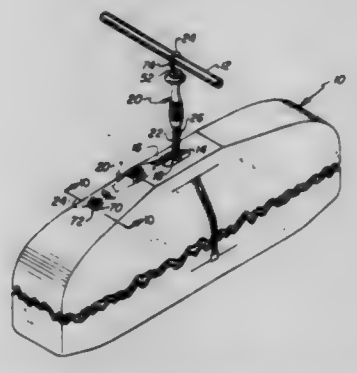
said spring also having side legs connected to said bight portion and extending therefrom in free-clearance relation across to the opposite side of the knob sleeve and there engaged in spaced lateral thrust relation with inside surfaces of the sleeve so that such lateral thrust of the spring legs reacts against such surfaces as cam surfaces to produce a component of force on the spring in the direction of outward radial movement of the connector.

4,342,479

HANGING IMPLEMENT FOR GARMENT BAGS

Wolfgang Hofer, 11 Soder Rd., North Caldwell, N.J. 07006

Filed Dec. 17, 1980, Ser. No. 217,212
Int. Cl.[3] A45C *13/26*
U.S. Cl. 294—142 14 Claims



1. A hanging implement for a garment bag of the type which is adapted to be hung from one end thereof upon a support, the one end ordinarily being provided with means for attaching thereto a hanging device, said hanging implement comprising:

hook-shaped means for engagement with the support;

attachment means for attachment to the garment bag;

a handle having opposite ends and extending longitudinally between the hook-shaped means, located at one of the opposite ends, and the attachment means, located at the other of the opposite ends, the handle having a handgrip portion extending longitudinally between the hook-shaped means and the attachment means, and a flange portion between the handgrip portion and the hook-

shaped means, the flange portion extending laterally beyond the handgrip portion adjacent the hook-shaped means;

a stop shoulder extending generally laterally along the flange portion and confronting the handgrip portion for providing an abutment for a hand when the hand is placed upon the handgrip portion for lifting the garment bag in a longitudinal direction; and

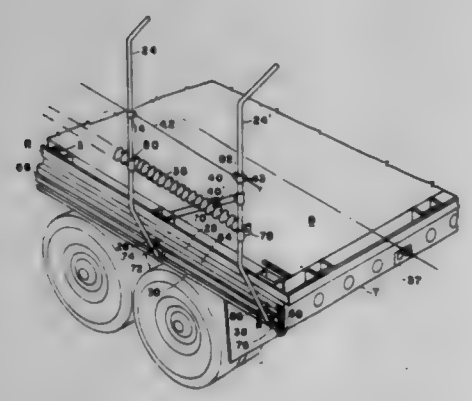
a display surface extending generally longitudinally along the flange portion for displaying information capable of being viewed in general lateral directions when the garment bag is hung upon the support.

4,342,480

TARP ENCLOSURE FOR FLAT BED TRAILER AND TRUCK BODIES

Leonard W. Ross, Jr., 10902 Huntcliff Dr., Owings Mills, Md. 21117

Filed Aug. 26, 1980, Ser. No. 181,421
Int. Cl.³ B60P 7/02
U.S. Cl. 296—100 **11 Claims**



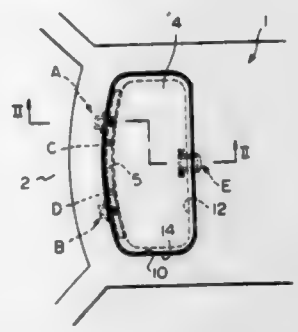
1. In a system for enclosing a trailer of the flat bed type and the like, with a canopy held by a plurality of arcuate members movably supported on over and under tracks fixed along each side of a trailer, said canopy pleated for folding upon retraction of the arcuate members toward a trailer headboard, the system having air powered means for actuating each of said arcuate members to move along said over-and-under tracks, on a respective roller engaging each of said over-and-under tracks, the improvement comprising in combination: means for preventing jamming of the rollers of respective arcuate members from misalignment of the over-and-under tracks relative to each other, comprising each of said respective arcuate members having: a substantially upright portion at each side and an inclined portion extending downwardly at an angle to each upright portion, said incline being in a fore-and-aft direction, said rollers being at said inclined portion, each of said over-and-under tracks having square-"C" shape in cross-section with the open portion of said square-"C" shape disposed outboard, a portion of each of said over-and-under tracks being between the rollers, the length of said incline being sufficient at least to increase the effective spacing of said rollers a distance preventing two-direction cramping of the rollers on said over-and-under track portion between the rollers, said air powered means comprising a respective tubular bellows extending rearwardly along the system on each side thereof, means attaching said tubular bellows to each of said respective arcuate members, means connecting said air powered means for inflating both said bellows together and extending said canopy to the rear and means for retracting said canopy including a winch for mounting at the front of a trailer, and a respective line extending rearwardly from the winch along each side of the system to connection with the rearmost arcuate member.

4,342,481

REMOVABLE ROOF EQUIPPED WITH A WIND DEFLECTOR PLATE

Noboru Kanou, and Keiji Mori, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of, Japan

Filed Jul. 30, 1980, Ser. No. 173,607
Claims priority, application Japan, Aug. 16, 1979, 54-103524
Int. Cl.³ B60J 7/18
U.S. Cl. 296—217 **18 Claims**



1. In a motor vehicle having a stationary roof which has a front end and a rear end and an opening intermediate the ends, the opening also having front and rear ends, and a removable roof having a contour shape which corresponds to that of the opening, said removable roof having a front end and a rear end, the invention comprising:

first releasable means for releasably securing the front end of said removable roof to the stationary roof;

second releasable means arranged on the stationary roof adjacent the location of the rear end of said removable roof for releasably securing the rear end of said removable roof to the stationary roof, said first releasable means comprising at least one tongue member affixed to the front end of said removable roof and extending substantially horizontally toward the front end of said stationary roof, at least one hollow case on the stationary roof in the vicinity of the front end of said removable roof and having therein an opening to receive the tongue member, and at least one link member pivotally connected to the stationary roof at a position beneath the front end of the removable roof and having a first end and a second end, the link member being rotatable between a substantially horizontal position and a standing position, said removable roof having a latch groove which is engageable with the first end of said link member when said link member is in said substantially horizontal position; and

an automatically standing wind deflector plate pivotally mounted on said stationary roof at a position beneath the front end of said removable roof and connected to said link member, said wind deflector plate being pivotally movable by the link member from a substantially horizontal position beneath said removable roof to a standing position wherein said wind deflector plate projects upwards from said stationary roof.

4,342,482

SLIDING SUNROOF WITH VENTILATOR

Joseph F. Koral, Sterling Heights; Karl S. Shargabian, Troy, and Ervin H. Strem, Jr., Utica, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1980, Ser. No. 200,924
Int. Cl.³ B60J 7/04
U.S. Cl. 296—221 **4 Claims**

1. A vehicle body sunroof comprising:

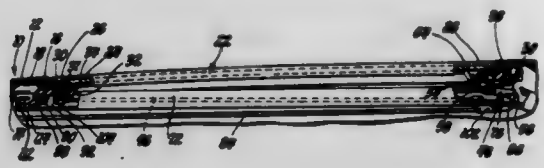
a roof panel having a roof opening;

a closure panel carrier frame adapted to sealingly mate with the roof panel and having a sunroof opening therein;

carriage means acting between the vehicle body and the carrier frame and adapted to move the carrier frame between a normal closed position sealingly mating with the roof panel to close the roof opening and an open position

in which the carrier frame is withdrawn from sealingly mating with the roof panel and stored longitudinally of the roof opening to open the roof opening;

a closure panel adapted to sealingly mate with the carrier frame to close the sunroof opening;



hinge means mounting the closure panel on the carrier frame for pivotal movement between a closed position sealingly mating with the carrier frame and a pivotally raised open position;

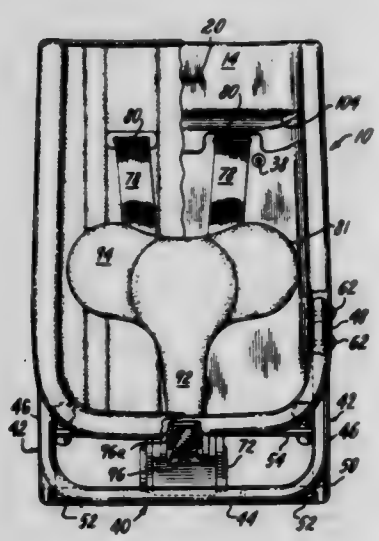
and means acting between the closure panel and the carrier frame to effect pivotal movement of the closure panel between open and closed positions.

4,342,483

CHILD SAFETY SEAT FOR VEHICLES

Juichiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,468
Int. Cl.[3] A47D *13/08*; B60N *1/12*
U.S. Cl. 297—488 7 Claims



1. A child safety seat for vehicles having a seat bottom, a seat back, a pair of shoulder restraint belts leading from laterally spaced-apart locations on the seat back above the locations of the shoulders of a seat occupant to a buckle tongue, and a buckle affixed to the front center portion of the seat bottom for receiving the tongue, characterized in that portions of the shoulder belts adapted to be disposed adjacent the abdomen of the seat occupant and a portion of the buckle tongue are embedded within and united to a generally T-shaped polymeric foam abdominal pad encased within a cover of durable sheet material wherein the foam pad is formed in situ within the cover with the belt portions and the tongue portion preinstalled within the cover prior to forming the foam, and including a relatively narrow lower portion adapted to be received between the occupant's legs and a relatively wider upper portion adapted to extend across the occupant's abdomen, the pad being adapted to cushion and protect the occupant's crotch and to cushion and spread belt loads over the occupant's abdomen, and which retains the parts of belts above the abdominal pad in laterally spaced-apart relation.

4,342,484

WELL STIMULATION FOR SOLUTION MINING

Donald H. Davidson, Bedford, and Ray V. Huff, Acton, both of Mass., assignors to Kennecott Corporation, New York, N.Y.

Division of Ser. No. 422,239, Dec. 6, 1973, Pat. No. 3,917,345.
This application Aug. 14, 1975, Ser. No. 604,869
Int. Cl.[3] E21B *43/26, 43/28*
U.S. Cl. 299—5 12 Claims

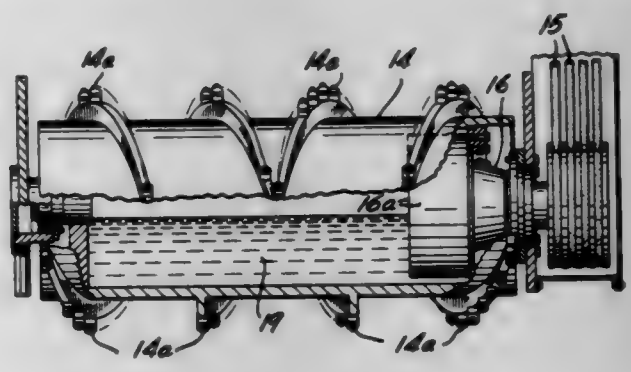
1. A method for increasing the permeability of a metal value containing subterranean igneous rock formation penetrated by at least one well which extends from the surface of the earth into the formation comprising the steps of injecting, at a pressure below the pressure producing new fractures in the formation, a hydraulic fluid through said well into the subterranean igneous rock formation at a pressure sufficient whereby said fluid diffuses into natural fractures in the igneous rock formation surrounding said well and causes said natural fractures in the igneous rock formation surrounding said well to increase in at least the cross-sectional area thereof; and, while maintaining said pressure, injecting as a second fluid a fluid, selected from the group consisting of a propping fluid and a propping fluid in combination with an acidic solution, an alkaline solution, oxidizing agents, and mixtures thereof wherein the injecting is into said natural fractures through said well whereby the use of said second fluid substantially results in maintaining the increased cross-sectional area of said natural fractures after the pressure is reduced.

4,342,485

COLD SURFACE PLANER COOLING APPARATUS

Eskil Tuneblom, Mount Arlington, N.J., assignor to Dynapac Maskin AB, Solna, Sweden

Filed Aug. 29, 1980, Ser. No. 182,430
Int. Cl.[3] E01C *23/09*
U.S. Cl. 299—39 3 Claims



1. In a cold surface pavement planer having a moveable chassis supporting a rotatable cutter drum, a gear box for driving said drum having a gear box housing disposed in the drum, an engine mounted on the chassis, and a coupling between the engine and the gear box, the improvement comprising a liquid coolant in the cutter drum, wherein the gear box housing has an outside surface partially immersed in the coolant, so that heat generated by power losses in the gear box is transmitted from said outside surface of said gear box housing to the drum surface by the coolant in the drum.

4,342,486

CUTTER BIT HOLDER

Michael L. O'Neill, Lucinda, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

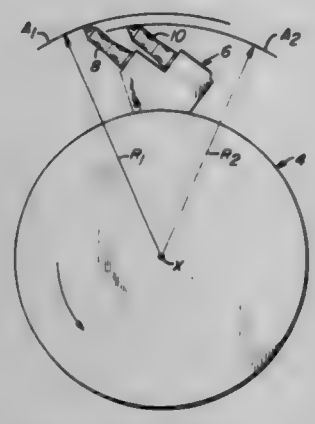
Filed Sep. 19, 1980, Ser. No. 188,969
Int. Cl.[3] E21C *35/18*
U.S. Cl. 299—86 20 Claims

1. A mining machine assembly comprising
bit support means,
a primary cutter bit secured to said bit support means,
a secondary cutter bit secured to said bit support means,
said primary cutter bit and said secondary cutter bit so posi-

tioned as to travel in substantially the same orbital cutting path upon movement of said bit support means,

said primary cutter bit projecting outwardly farther than said secondary bit, and

said primary bit being disposed closer to the leading portion



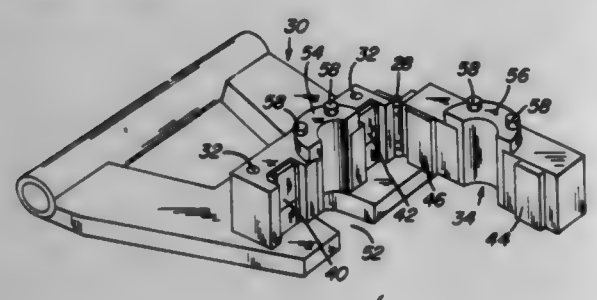
of said bit support means than to said secondary bit, whereby as between said primary cutter bit and said secondary cutter bit said primary cutter bit will do substantially all of the cutting until such time as through wear or other means said secondary cutter bit will project outwardly farther than said primary cutter bit.

4,342,487

AUTOMATIC ROOF BOLTING DRILL RETENTION APPARATUS

J. Alan Fowler, Monroeville Borough; George S. Haller, North Huntingdon Township, Westmoreland County, and C. David Rogers, Monroeville Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 29, 1980, Ser. No. 126,059
Int. Cl.³ F16C *29/10*
U.S. Cl. 308—3.9 **4 Claims**



1. Drill steel guide apparatus for selectively retaining and guiding a drill steel of a drilling machine during collaring in a rock face, said guide apparatus comprising:

a housing for guiding said drill steel including a first portion attached to said drilling machine and a second portion pivotally mounted on said first portion to move said second portion in one direction toward said first portion for guidingly engaging said drill steel and in a second direction away from said first portion for releasing said drill steel from said housing,

magnet means operable between said first and second housing portions to retain said portions together when said second portion is in its drill steel-engaging position with respect to said first portion,

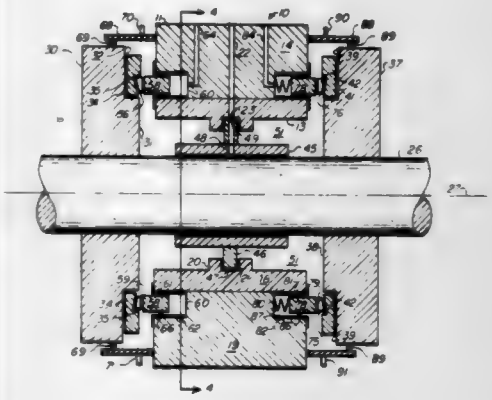
said magnet means providing a holding force of at least five pounds effective to retain said first and second housing portions together until vibrations produced by collaring of said drill steel are sufficient to break said holding force and release said housing portions from engagement with said drill steel.

4,342,488

SELF-ALIGNING ROLLING CONTACT THRUST BEARING/VIBRATION REDUCER ELEMENT

Hugh G. Anderson, Severna Park, and Philip J. Hatchard, Annapolis, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 28, 1979, Ser. No. 52,892
Int. Cl.³ F16C *17/06, 19/34*
U.S. Cl. 308—15 **12 Claims**



1. A self-aligning thrust bearing assembly for a rotating shaft comprising:

a journal bearing supporting the shaft;

a housing having a longitudinal axis, said housing being radially spaced from said journal bearing and defining a clearance space therebetween, said housing being fixed to prevent rotational and pivotal displacements of said housing;

means pivotally connecting said housing to said journal bearing for permitting pivotal movement of the shaft and journal bearing relative to said housing axis, said pivoting means comprising ridge means and a rigid rib element cooperating therewith to form a pivot therebetween; and

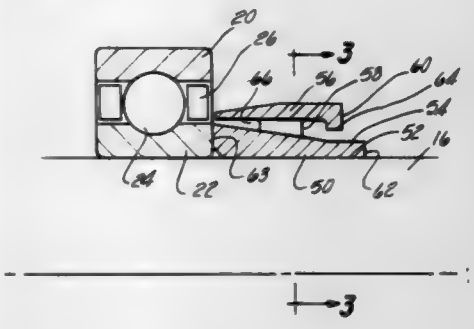
bearing means positioned in contact with said housing and the shaft for transmitting thrust loads therebetween.

4,342,489

BEARING LUBRICATING INJECTOR

Herman N. Lenz, Lambertville, Mich., and David A. Host, Phoenix, Ariz., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 7, 1980, Ser. No. 194,937
Int. Cl.³ F16C *33/66*
U.S. Cl. 308—187 **8 Claims**



1. A bearing lubrication injector for use in an engine having a housing, a shaft, a ball bearing including an inner race and an outer race for rotatably mounting the shaft in said housing, and a source of lubricant for said bearing, said injector comprising:

a first ring member having a substantially annular cross section coaxially secured to the shaft adjacent the inner race of the bearing, said ring member having an outer ramp surface which increases in diameter toward a first axial end of said first ring member adjacent the inner race;

a second ring member having a substantially annular cross section;

means for coaxially securing said second ring member to said first ring member such that the radially inner surface of said second ring member is radially spaced apart from said ramp surface to thereby define fluid passage means for axially transferring fluid between said radially inner surface and said ramp surface, said passage means having an inlet axially spaced from said inner race and in fluid communication with said source of lubricant; and

whereby upon rotation of said shaft, lubricant is centrifugally forced along said ramp surface and axially ejected from between said radially inner surface and said ramp surface into said bearing.

4,342,490

BEARING ASSEMBLIES

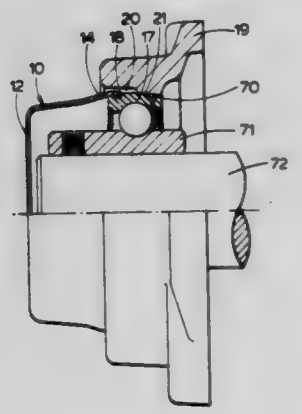
George Swinley, Castleford, England, assignor to Ransome Hoffmann Pollard Limited, Chelmsford, England

Filed Jul. 2, 1980, Ser. No. 164,536

Claims priority, application United Kingdom, Jul. 3, 1979, 7923054; Mar. 4, 1980, 8007379

Int. Cl.³ F16C *33/76*

U.S. Cl. 308—187.1 15 Claims



1. In a bearing assembly composed of inner and outer races with rolling elements therebetween in combination with a cover; the improvement comprising a reception groove provided in one of the bearing races and the cover is in the form of a resilient hollow cap provided with projections disposed at the peripheral edge of the open end of the cap, the projections extending axially beyond the peripheral edge of the open end of the cap and having lips which positively engage in the bearing race reception groove, the cap being removable from and attachable to said one bearing race by resilient deformation of the cap.

4,342,491

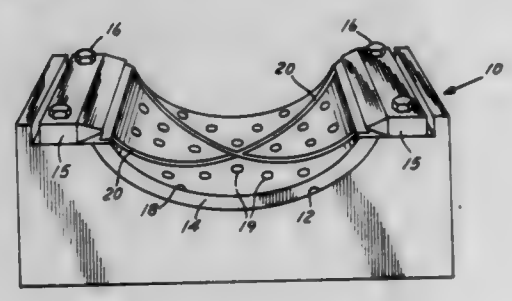
SELF-LUBRICATING JOURNAL BEARING

Warren E. Jamison, Evergreen, and Raymond C. Pennington, Denver, both of Colo., assignors to Projected Lubricants, Inc., Denver, Colo.

Filed Mar. 24, 1980, Ser. No. 133,515

Int. Cl.³ F16C *33/00, 1/24, 33/66*

U.S. Cl. 308—239 3 Claims



1. In a journal bearing subjectable to severe conditions, an arcuate bearing plate having a concave bearing surface, a plurality of apertures opening into said surface, a plug of lubricant containing material comprising an oil and a polymer composition inserted into each of said apertures and adapted to engage a rotating journal supported on said bearing surface for providing lubrication between said journal and said bearing plate, and coolant grooves cut into and extending substantially entirely across the bearing surface of said bearing plate for channeling a liquid coolant other than said lubricant containing material between the journal and the bearing plate.

4,342,492

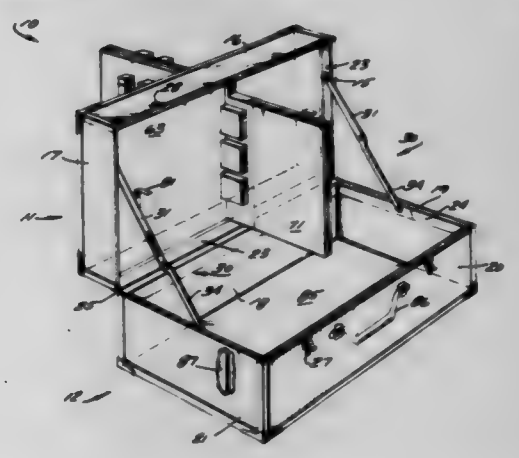
PORTABLE ARTICLE SUPPORTING CONTAINER

Steven T. Spevak, Derwood, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Continuation-in-part of Ser. No. 38,719, May 14, 1979, Pat. No. 4,286,832, which is a continuation-in-part of Ser. No. 907,321, May 18, 1978, Pat. No. 4,170,392. This application Feb. 4, 1980, Ser. No. 118,633

Int. Cl.³ A47B *97/00, 81/00*

U.S. Cl. 312—244 19 Claims



1. A portable article supporting container comprising

a first container portion including first, second, third and fourth walls, said first wall being opposite said third wall and said second wall opposite said first wall;

a second container portion including first, second, third and fourth walls corresponding to said first container portion walls;

means for pivotally mounting said first and second container portions together along said first walls for movement from a first position wherein said first, second, third and fourth walls of each respective container portion are substantially coplanar with the respective corresponding walls of the other container portion, to a second position wherein said first, second, third and fourth walls of each respective container portion are substantially perpendicular to the respective corresponding walls of the other container portion;

first latch means for latching said container portions in said first position;

second latch means for latching said container portions in said second position;

a pair of article supporting plates accessible from the exterior of said first container portion;

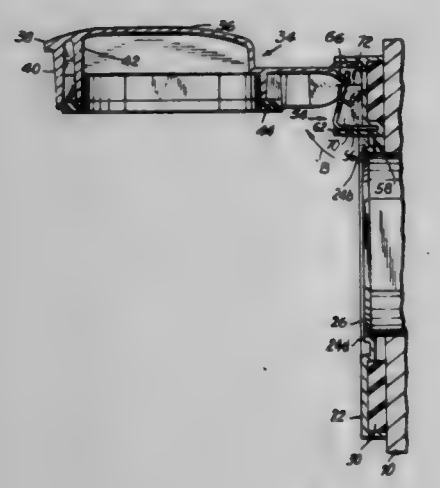
means for operatively pivotally connecting said article supporting plates to said first container portion so that access to said plates is provided from the exterior of said first container portion when in said first position with respect to said second container portion so that said plates may be pivotally moved about an axis passing through two opposite walls of said first container portion, from a first position substantially within the volume defined by said first container portion first, second, third and fourth walls, to a second position wherein said plates extend outwardly from said volume.

4,342,493

WEATHER-RESISTANT ARRANGEMENT FOR OUTDOOR ELECTRICAL DEVICES

David Grenell, Laurelton, N.Y., assignor to Allen-Stevens Corp., New York, N.Y.

Continuation-in-part of Ser. No. 970,866, Dec. 18, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,811
Int. Cl.³ H01R *13/46*
U.S. Cl. 339—44 M 14 Claims



1. A weather-resistant arrangement for protecting an outdoor electrical receptacle having an electrical device thereon from the deleterious effects of weather conditions, such as moisture, snow, rain, and like environmental conditions, comprising:

(a) a receptacle plate for mounting in sealing engagement with an outdoor support structure on which the receptacle to be protected is supported,

(i) said plate having wall portions bounding an opening at which the device is located, and through which access to the device is established;

(b) a protective cover pivotally mounted on said plate for turning movement about a turning axis and along a generally circular path, said cover being manually movable from an end-limiting fully closed position, in which said cover overlies said opening and bars access to the device, to an end-limiting fully open position, in which said cover extends at an angle relative to the plane of said opening and permits access to the device;

(c) waterproofing means mounted on said cover for movement together with the same,

(i) said waterproofing means sealingly and water-tightly engaging said wall portions of said plate in said closed position to thereby prevent water from reaching the device and doing damage; and

(d) means for constantly and affirmatively urging said cover in all positions of the latter along said path towards said closed position to thereby automatically protect the device during non-use of the same, said urging means including

(i) biasing means in force-transmitting engagement with said plate and said cover, said biasing means constituting an energy-storing leaf spring having a captivated portion mounted on said plate, and a planar cantilever portion engaging said cover at a mutual contact zone, said cantilever portion being movable along said circular path between a first tensioned position, in which said cover is affirmatively maintained at said closed position thereof with a closure force of a predetermined magnitude, and a second tensioned position, in which said cover is affirmatively urged from said open to said closed position thereof with a closure force of a magnitude greater than said predetermined magnitude, said leaf spring constantly exerting a restoring force on said cover in all positions thereof, including the fully open position, for automatically returning said cover, upon manual release of the same in said fully open position, from said fully open to said fully closed position without mechanical interference and without manual assistance, and

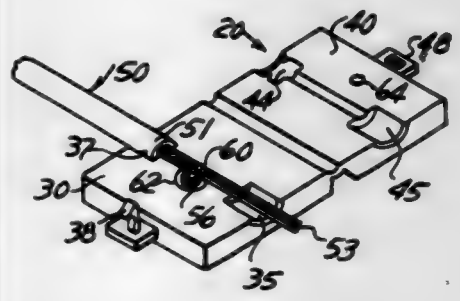
(ii) anti-over-the-center stop means in said path for preventing movement of said cover past said fully open position, and for concomitantly preventing said contact zone from being so positioned relative to said spring such that a restoring torque is constantly exerted by said spring on said cover, said stop means constituting a stop located in said circular path such that said contact zone is located substantially at or spaced upstream of an imaginary line which extends from the center of curvature of said circular path both in a radial direction towards, and at a right angle to, the plane of said planar cantilever portion, to thereby reliably and automatically return said cover to said closed position thereof.

4,342,494

ELECTRICAL CONNECTOR ASSEMBLY

Richard W. Normann, Otego, and Paul D. Niles, Bainbridge, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 4, 1980, Ser. No. 137,228
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—105 11 Claims



1. A method of making an electrical connector comprising the steps of:

forming an insulative electrical connector having a pair of mateable bodies and a channel adapted to receive a conductor;

arranging a plurality of conductive strands;

bending the conductive strands rearwardly of a forward end into a loop having overlapping portions;

securing the overlapping portions of the conductive strands together to prevent forces from disrupting the loop;

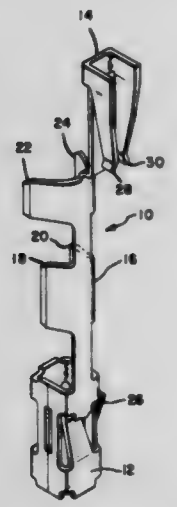
inserting the conductive strands provided with the loop into the channel of the connector body; and

securing the mateable connector bodies together to form a completed connector assembly.

4,342,495
DOUBLE ENTRY CRIMP TERMINAL

Benny M. Bennett; Timothy L. Kocher, both of Harrisburg, Pa., and David M. Little, Harrisonburg, Va., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 5, 1979, Ser. No. 54,723
Int. Cl.³ H01R 23/04
U.S. Cl. 339—163 10 Claims

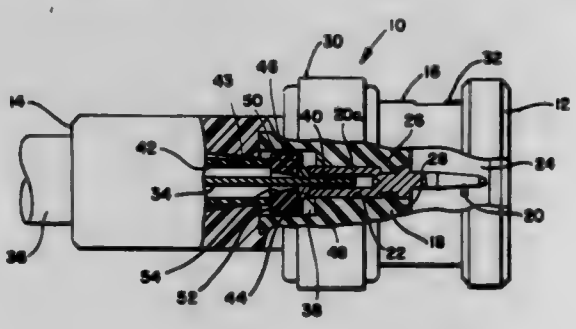


1. A double entry electrical terminal capable of being probed while in a mated condition comprising:
an elongated terminal member;
a mating receptacle on one end;
a probe receptacle on the opposite end; and
an intermediate crimp barrel.

4,342,496
CONTACT ASSEMBLY INCORPORATING RETAINING MEANS

Harold G. Hutter, Brookfield, and August B. Ramsland, New Fairfield, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 22, 1980, Ser. No. 152,218
Int. Cl.³ H01R 17/18
U.S. Cl. 339—177 E 27 Claims

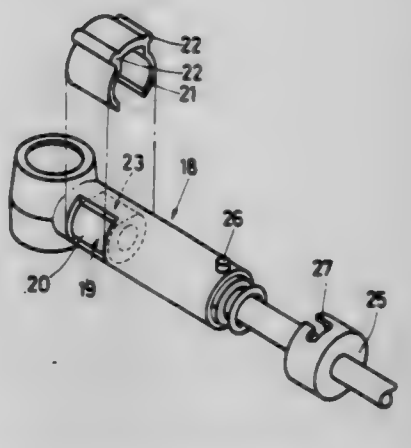


1. A connector for a cable having an inner element, comprising:
a support member having a cable-receiving opening at one end thereof for receiving said cable, without interruption, longitudinally into said cable-receiving opening, said support having therein a core including a passageway extending therethrough, said passageway communicating with said cable-receiving opening;
a terminating member disposed within said passageway in said core, said terminating member having an inner element-receiving opening at one end thereof, said inner element-receiving opening communicating with said cable-receiving opening; and
means for bitingly securing said inner element in electrically connected relationship within said inner element-receiving opening in said termination member, said securing means being adapted to freely admit said inner element into said inner element-receiving opening upon initial longitudinal insertion of said cable into said cable-receiving opening in said support member, said securing means being responsive solely to further longitudinal insertion of said cable alone into said cable-receiving opening to bitingly secure said inner element in electrical connected relationship within said inner element-receiving opening in said terminating member; and
means for retaining said cable in position in said connector.

4,342,497
BATTERY TERMINAL CONNECTOR

Charles A. Morrison, Roodepoort, South Africa, assignor to National Motor Spares Corporation, Miami, Fla.

Filed Feb. 22, 1980, Ser. No. 123,802
Claims priority, application South Africa, Sep. 7, 1979, 79/4739
Int. Cl.³ H01R 11/12, 13/52
U.S. Cl. 339—228 10 Claims



1. A battery terminal connector comprising a body made of electrically insulating material and having a socket extending transversely into the body towards one end thereof and adapted, in use, to receive a battery terminal post and to cover the top and sides of the post, a passage extending through the body in a direction transverse to the socket and a conductive battery post engaging connector block axially movable within the passage so as to be co-operable with a battery terminal post received within the socket in use, the body having at least one removably covered aperture into said passage adapted to expose a part of a conductive surface associated with the battery terminal post while the connector is attached to such post, such exposed part being in a position such that an opposed part of the body can be engaged by a crocodile clamp so that at least one side of said clamp is held in firm engagement with the conductive part and is electrically connected to the battery terminal post.

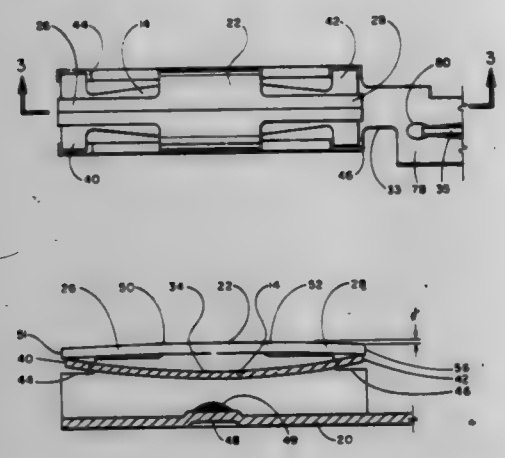
4,342,498
ELECTRICAL SOCKET

George A. Patton, Enka, and Richard C. Muehling, Asheville, both of N.C., assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 23,804, Mar. 26, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 180,720
Int. Cl.³ H01R 13/16
U.S. Cl. 339—256 R 14 Claims

1. An electrical socket comprising: an elongated metal housing being open at at least one end for receiving an electrical pin; one side of said housing having a beam projecting therefrom;
said beam forming an incline with respect to the longitudinal axis of said socket such that said beam is slightly bent inwardly so that the free end of said beam is closer to the longitudinal axis of the housing than its fixed end when the electrical pin is not received in the socket;
an elongated spring member being received in said housing;

said spring member being in contact with said free end of said beam;



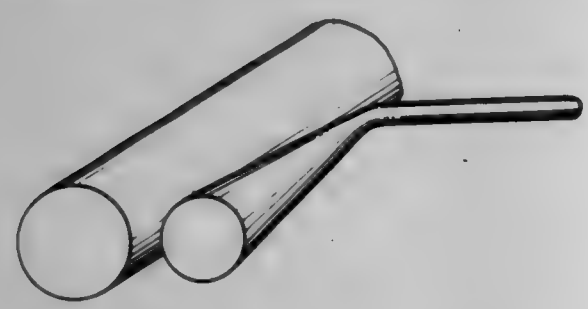
said beam being compressed outwardly upon the insertion of a pin contact into said socket.

4,342,499

COMMUNICATIONS TUNING CONSTRUCTION

John W. Hicks, Jr., P.O. Box 345, Southbridge, Mass. 01550

Continuation-in-part of Ser. No. 21,868, Mar. 19, 1979, Pat. No. 4,315,666. This application Mar. 31, 1980, Ser. No. 135,798
Int. Cl.[3] G02B *5/172*
U.S. Cl. 350—96.15 39 Claims



1. A wave length selective energy transfer device comprising first and second elongated wave guide structures of different physical characteristics to produce a different dispersion in each said structure, said first wave guide structure supporting at least two wave lengths in only a single energy mode whose phase velocity has a certain wave length dependence and said second wave guide structure supporting an energy mode whose phase velocity has a substantially different wave length dependence, said phase velocity of said single energy mode supported by said first wave guide structure being equal to said phase velocity of said energy mode supported by said second wave guide structure at a certain wave length, but with substantially different dispersions of said two propagated energy modes, and also providing coupling between said wave guide structures for a portion of their lengths.

4,342,500

HIGH VOLTAGE STABILE OPTICAL CABLE STRUCTURES

Ulrich Oestreich, Munich, and Guenter Zeidler, Unterpfaffenhofen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

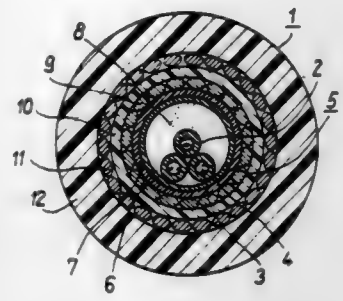
Filed Aug. 10, 1979, Ser. No. 65,602
Int. Cl.[3] G02B *5/16*
U.S. Cl. 350—96.23 8 Claims

1. An optical cable structure for use in high-voltage environments, comprising:

a metal-free cable core containing optical transmission elements;

a multi-layer sheath encasing said cable core and having an exterior layer;

a plasticized cross-linked synthetic material selected from the group consisting of a polyurethane resin, an epoxy resin and a polyester resin in all hollow spaces within said cable core and within said sheath; and



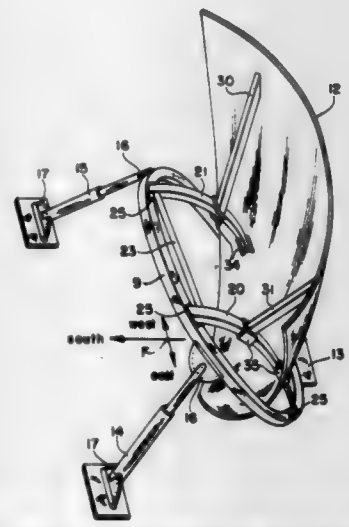
at least said exterior layer of said multi-layer sheath being composed of a creep-resistant material based on a compound selected from the group consisting of a polyolefin and a polyester material.

4,342,501

RADIANT ENERGY COLLECTOR WITH FOCAL POINT BETWEEN THE PLANE OF THE FRAME AND EARTH

Murray Solomon, II, Vineyard Rd., Newton, Mass. 02159, assignor to Murray Solomon, Newton, Mass.

Filed Jul. 25, 1980, Ser. No. 172,470
Int. Cl.[3] G02B *5/10, 7/18*
U.S. Cl. 350—296 3 Claims



1. A radiant energy concentrator comprising:

a radiation reflector (12) whose reflecting surface is a portion of a conic of revolution;

a circular frame (9) inclined at an angle to the surface of the earth;

means for mounting said reflector on said frame such that the focal point of said reflector is located along the axis of symmetry of said frame at a point between the plane of said frame and the earth;

said mounting means including a plularity of parallel, curved tracks (20,21), each of which is a portion of a circle that intersects said circular frame (9);

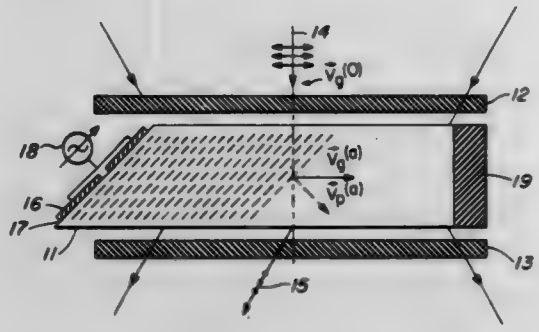
means (30,31,34,35) for slidably mounting said reflector (12) on said tracks (20,21);

and means (25) for rotating said tracks (20,21) about said frame (9).

4,342,502
TRANSVERSE TUNABLE ACOUSTO-OPTIC FILTER

I-Cheng Chang, Sunnyvale, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Jun. 12, 1980, Ser. No. 158,662
Int. Cl.³ G02F *1/33*
U.S. Cl. 350—358 5 Claims

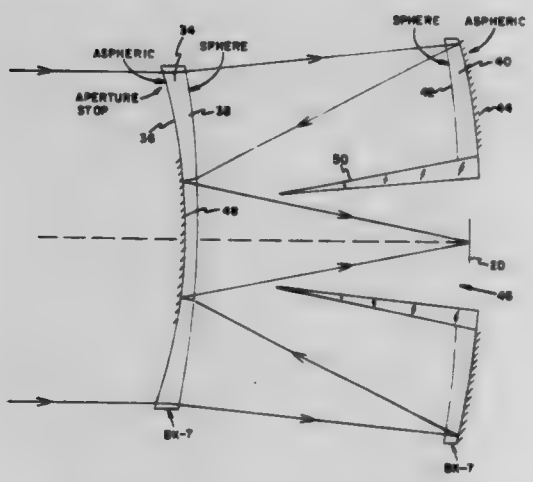


1. Apparatus for diffracting light from a first polarization to a second polarization, said apparatus comprising an acoustically anisotropic, optically birefringent crystal, means for exciting an acoustic wave in the said crystal, means for passing a light beam through the said crystal along a selected axis oriented at a non-zero angle with the optic axis of said crystal, and means for directing the acoustic wave and light in said crystal such that the group velocity of the acoustic wave is substantially perpendicular to the said axis of said light beam in said crystal, said axis of said light beam being selected such that the tangents to the locus of the wavevectors for the incident light and diffracted light are substantially parallel.

4,342,503
CATADIOPTRIC TELESCOPES

David R. Shafer, Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 9, 1979, Ser. No. 82,699
Int. Cl.³ G02B *17/08*
U.S. Cl. 350—443 9 Claims

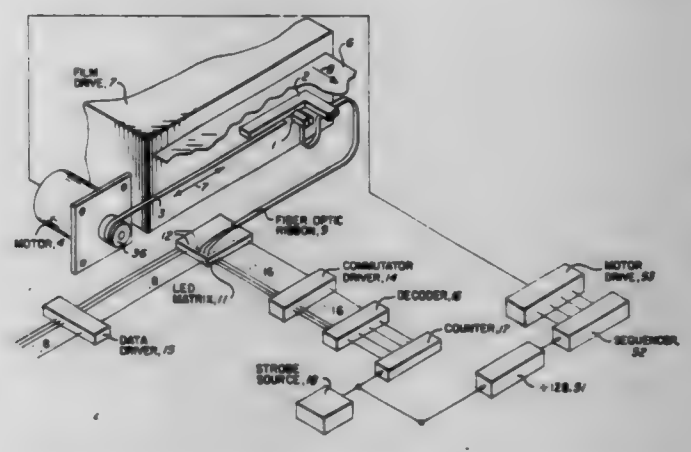


1. A two-element catadioptric telescope consisting of:
(A) a first element comprising a transmissive shell
(a) the front surface thereof being concave toward the front,
(b) the back surface thereof also being concave toward the front,
(c) said front and back surfaces being aspheric and spherical, respectively,
(d) the central portion of one of said surfaces being mirrored to form the secondary mirror of the telescope; and,
(B) a second element located behind said shell
(a) a surface of said second element being concave toward the front, and mirrored to form the primary mirror of the system.

4,342,504
LED-FIBER OPTIC CHARACTER PRINTER

Peter R. Ebner, Milford, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Aug. 25, 1980, Ser. No. 181,312
Int. Cl.³ B41B *19/00*
U.S. Cl. 354—7 23 Claims



1. A system for recording indicia upon a photosensitive medium comprising:
a. an array of light emitting elements;
b. digital electronic control means for causing said light emitting elements to be selectively illuminated by the application of electrical pulses thereto;
c. a print head;
d. a print head transport carriage coupled to said print head;
e. belt drive means including a belt having first and second terminal portions coupled to said print head carriage for driving said carriage in a first direction, said belt further including a first aperture formed within said first terminal portion of said belt and a second aperture formed within said second terminal portion of said belt, together with belt to carriage coupling means coupled to said print head carriage and positioned within said first and second apertures of said belt to provide for angular displacement of said first terminal portion of said belt relative to said second portion of said belt;
f. means for causing said film to be transported in a second direction transverse to said first direction after said print head scans said film in said first direction;
g. a flexible loop of light conducting elements;
h. means for coupling the input ends of said light conducting elements to associated light emitting elements of said array of light emitting elements, and
j. means for coupling the output ends of said light conductive elements to said print head.

4,342,505
AUTOMATIC EXPOSURE CONTROL DEVICE FOR A SINGLE LENS REFLEX CAMERA

Saburo Numata, and Shinichiro Fujino, both of Urawa, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

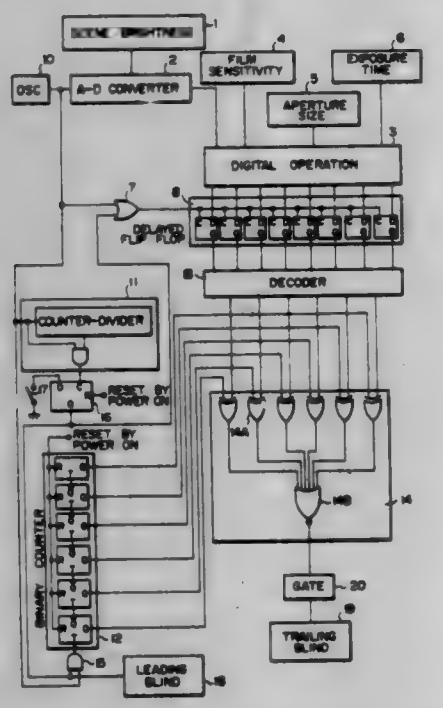
Continuation-in-part of Ser. No. 850,454, Nov. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 675,249, Apr. 9, 1976, abandoned. This application Jul. 30, 1979, Ser. No. 61,855
Claims priority, application Japan, Apr. 9, 1975, 50-42968
Int. Cl.³ G03B *7/093, 17/38*
U.S. Cl. 354—23 D 3 Claims

1. An automatic exposure control device for a single lens reflex camera wherein various exposure factors are treated in the form of digital value and the measured scene brightness is compared with the number of clock pulses counted in the camera for controlling the exposure time wherein the improvement comprising:
an oscillator for generating clock pulses of constant frequency,
a normally turned off gate connected with said oscillator,

a clock pulse counter connected with the gate for counting the clock pulses when the gate is turned on, said clock pulse counter being connected with a trailing blind control means which is connected with a memory means wherein the scene brightness is memorized,

a sampling circuit connected with said oscillator for dividing the pulses generated therefrom to provide sampling pulses,

a shutter release means for generating a signal having a high level of the period longer than the period of said sampling pulses,



a gate means having a function of an AND circuit connected with said sampling circuit and said shutter release means for giving an output of high level when said gate means receives said sampling pulses together with said shutter release signal, and

a leading blind control means for starting a leading shutter blind upon receipt of a signal,

said normally turned off gate being connected with said gate means so as to be turned on upon receipt of a signal of high level therefrom, and said leading blind control means being connected with said gate means,

whereby said normally turned off gate is turned on simultaneously with the start of the leading blind.

4,342,506

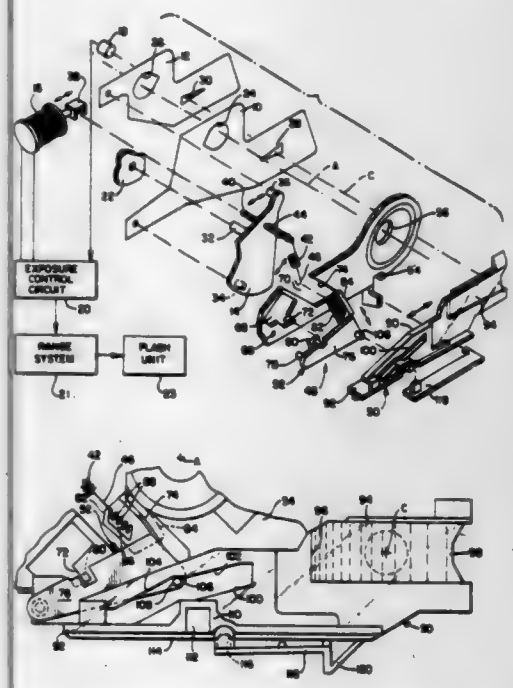
EXPOSURE TRIM MECHANISM FOR CAMERAS

Bruce K. Johnson, Andover, and Kenneth P. Black, South Weymouth, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 20, 1981, Ser. No. 236,339
Int. Cl.³ G03B *7/14*
U.S. Cl. 354—27 6 Claims

1. A trim mechanism for an automatic exposure control system usable in a photographic camera and having a scanning shutter blade mechanism movable between closed and open conditions and defining progressively increasing aperture values as they move toward their fully open position, selectively energizable means for moving said shutter blade mechanism to said closed condition, bias means acting in opposition to said selectively energizable means for advancing said shutter blade mechanism from said closed condition toward said open condition when said selectively energizable means is de-energized, said bias means being a shutter spring having one end connected to said blade mechanism, selectively operable means for illuminating the scene with a pulse of illumination in timed relation to said blade movement so as to produce said pulse in relation to a blade aperture selected in accordance with subject distance, light-responsive means for controlling operation of said selectively energized means between energized and de-energized states, and mounting means to support said exposure control system, said trim mechanism comprising:

a trim slide having a variable density light filter coupled thereto, said trim slide being movably adjustable to shift said filter in relation to said light-responsive means and thus regulate the intensity of light passing to said light regulating means, means connecting said bias means and said trim slide for varying the force of said bias means to directly vary the rate at which said shutter blades are



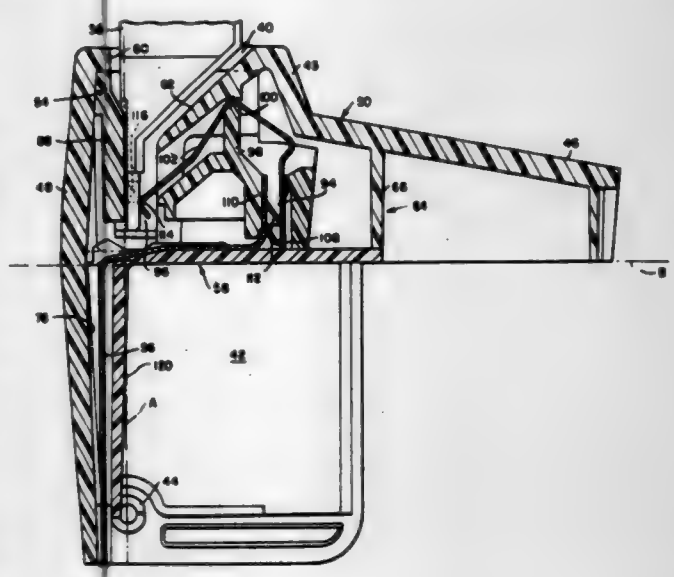
advanced toward said open condition, said trim slide comprising a cam mounted on said trim slide and a cam follower engaged by said cam and connected to the other end of said shutter spring, said cam defining a pair of ramp surfaces with a dwell surface interposed therebetween, and said trim mechanism additionally including spring detent means for locating said trim slide in a position such that said cam follower is in engagement with said dwell surface and for retaining said trim slide on said mounting means.

4,342,507

FLASH HOLDER ASSEMBLY ARRANGEMENT

Bruce K. Johnson, Andover, and John B. Morse, Boston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 175,422, Aug. 5, 1980. This application Jun. 3, 1981, Ser. No. 270,144
Int. Cl.³ G03B *15/03*
U.S. Cl. 354—143 24 Claims



1. A flash socket assembly comprising:

a plurality of generally U-shaped electrical contacts each

having first and second end portions, each of said second end portions of said electrical contacts including an inclined tab;

a flexible cable; and

a contact retainer of unitary molded construction having an opening therein for receiving at least the contact blade portion of a flash array, said retainer having a support surface positioned to support one side of the contact blade when the contact blade is operatively positioned within said opening, and means for effecting electrical contact between said second end portions of said U-shaped electrical contacts and a first end of said flexible cable, said electrical contact effecting means including a first internal surface of said retainer against which said second end portions of said U-shaped electrical contacts are seated and a second internal surface of said retainer disposed in facing relation to said first internal surface thereof and against which said first end of said flexible cable is resiliently engaged by said inclined tabs.

4,342,508

MIRROR OPERATING MECHANISM IN SINGLE-LENS REFLEX CAMERA

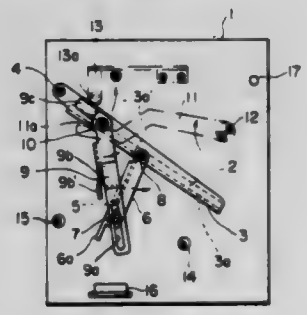
Keisuke Haraguchi, Ranzan, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 300,866

Claims priority, application Japan, Sep. 10, 1980, 55/128629[U]

Int. Cl.³ G03B *19/12*

U.S. Cl. 354—152 **7 Claims**



1. In a single lens reflex camera of the type having a mirror box body, a half-mirror in said mirror box body for receiving an incoming image beam and separating said image beam into a reflected beam and a transmitted beam, said first mirror being movable between an observation position in the optical path of said incoming image beam and a photographing position out of the optical path of said incoming image beam, and a total reflection mirror for reflecting said transmitted beam, a mirror operating mechanism comprising:

a first mirror holding frame for holding said half-mirror and being pivotably mounted to said mirror box body;

a second mirror holding frame for holding said total reflection mirror and being pivotably mounted to said first mirror holding frame, said second mirror holding frame being pivotable with respect to said first mirror holding frame between an observation position and a photographing position;

a second mirror operating lever pivotably mounted via a pivot shaft to said first mirror holding frame, said second mirror operating lever being coupled on one side of said pivot shaft to said second mirror holding frame and having an abutment portion on the other side of said pivot shaft; and

a rotation angle limiting means mounted on said mirror box body for engaging said abutment portion as said first mirror is moved toward its photographing position;

whereby said second mirror operating lever is rotated relative to said first mirror holding frame via pressure on said abutment portion by said rotation angle limiting means as said first mirror is moved toward its photographing position, thereby rotating said second mirror holding frame toward said first mirror holding frame and toward its photographing position.

4,342,509

FILM FEEDING DEVICE OF A CAMERA

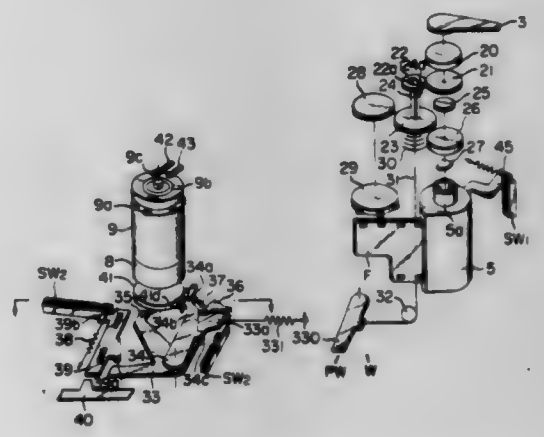
Hiroshi Wakabayashi, Yokohama, and Takeshi Okuyama, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 9, 1980, Ser. No. 195,431

Claims priority, application Japan, Oct. 13, 1979, 54-132171; Oct. 13, 1979, 54-132174

Int. Cl.³ G03B *1/12*

U.S. Cl. 354—173 **8 Claims**



1. In a film feeding device for a camera including a preparatory wind-up device for winding up on a supply spool, before exposure, a roll film in a film magazine loaded into the camera, and a second wind-up device for rewinding into said magazine the film wound on said supply spool, said second wind-up device being capable of controlling the frame by frame movement of said film in cooperation with an operation for effecting exposure of said film by a shutter device, the improvement comprising:

(a) means for detecting the completion of the wind-up, by said preparatory wind-up device, of all of the film which is drawn out of said film magazine and can be wound up on said supply spool; and

(b) change-over means for blocking and releasing the operation of said shutter device, said change-over means being operatively associated with said detecting means to block said operation before said detecting means detects the completion of the wind-up of said film and to release said blocking when said detecting means has detected said completion, said shutter device including an electromagnet energized to effect said operation for exposure, a circuit for supplying the energy to said electromagnet, and switch means for controlling said circuit, said switch means being operated in response to said detecting means.

4,342,510

APPARATUS FOR MAKING PHOTOGRAPHIC PICTURES

Emile A. H. Guillaume, Ballaigues, Switzerland, assignor to Zelacolor Systems Establishment, Vaduz, Liechtenstein

Continuation of Ser. No. 25,946, Apr. 2, 1979, Pat. No. 4,272,172. This application Oct. 31, 1980, Ser. No. 202,565

Claims priority, application Switzerland, Apr. 7, 1978, 3749/78

Int. Cl.³ G03B *1/00, 17/26*

U.S. Cl. 354—216 **5 Claims**

1. Apparatus for making a photographic picture on a film which is exposable in a film plane, said apparatus comprising:

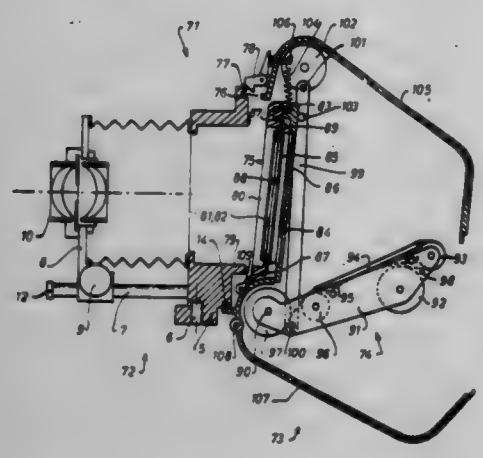
a first housing; an objective in said first housing; an optical pathway through said first housing and through said objective thereof;

a second housing, separably attached to and separable from

said first housing, said film plane being in said second housing;

said second housing including mask positioning means for positioning a mask generally in said film plane for intercepting light from said objective; said second housing including shutter means positioned between said mask positioning means and said objective;

means for automatically opening said shutter means when



said second housing is attached to said first housing and for automatically closing said shutter means when said second housing is separated from said first housing; and

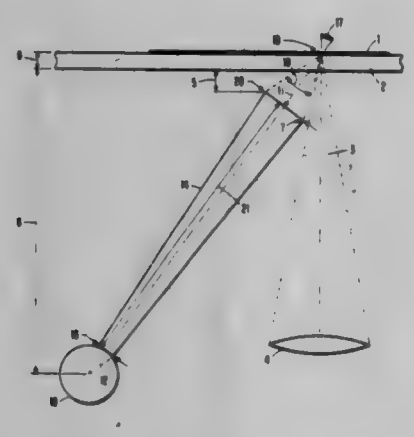
a photographic film transporting device located in said second housing on the side of said mask positioning means away from said objective and including means for moving said photographic film between a first position generally at said film plane and a second position away from said film plane.

4,342,511

ILLUMINATION SYSTEM HAVING AN EFFICIENT LIGHT GUIDE

Wilson M. Routt, Jr., Lexington, Ky., and Danny A. VanHook, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 20, 1980, Ser. No. 179,852
Int. Cl.³ G03B *27/00*
U.S. Cl. 355—1 3 Claims



1. An illumination apparatus for a document scanner comprising:

a fluorescent lamp for illuminating a document to be scanned, said lamp having an aperture defined by an aperture angle and a radiance determined by said aperture angle; and

light conducting means, having a trapezoidal longitudinal cross section, for guiding light therethrough by way of substantial total internal reflection and through said aperture to an area of said document, the narrow base of said trapezoidal shape positioned adjacent said aperture and an output window associated with the wide base of the trapezoidal shape directed towards the document area to be scanned wherein said wide base is at a scan distance from a point in said area so that said point forms a subtended solid angle with said output window,

wherein the width of said wide base is increased to correspondingly increase said solid angle,

wherein said light conducting means includes an illumination axis forming a guide angle with the document plane normal at a point of intersection with said document,

wherein a set of design parameters including said guide angle, said scan distance, said narrow base, said wide base, and the length of said light conducting means are selected so as to maximize the product of the lamp radiance and said solid angle,

wherein the design parameter selection is performed so as to maximize the total irradiance function $H(\bar{p})$,

wherein the function $H(\bar{p})$ is an integral equation of the form

$$H(\bar{p}) = \frac{\pi B(W2)\, D^2}{2} \int_{-W1}^{W1} \frac{T(y)\,(y \sin\phi - \cos\phi)\, dy}{(y^2 + D^2)^{3/2}}$$

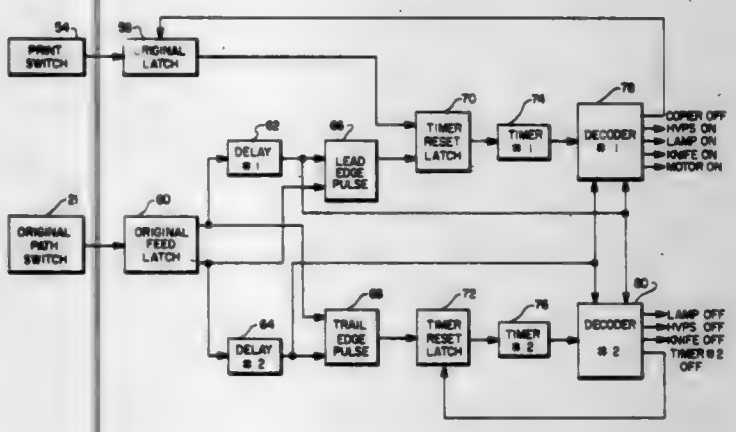
and wherein B(W2) is the fluorescent lamp radiance as a function of W2, W2 is the width of said narrow base, D is the scan distance, W1 is the width of said wide base, T(y) is the total transmitted fraction of a light ray along a light path from said document area to said lamp aperture traversing said light conducting means, y is an intercept above the illumination axis upon which a light ray strikes said output window of said light conducting means, ϕ is the guide angle, and π is the constant 3.1415 . . . , whereby the amount of light delivered to said area is maximized.

4,342,512

COPY CYCLE CONTROLLER FOR AN ELECTROSTATIC COPIER

Robert J. Tolmie, Jr., Brookfield Center, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 17, 1980, Ser. No. 207,175
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 SH 5 Claims



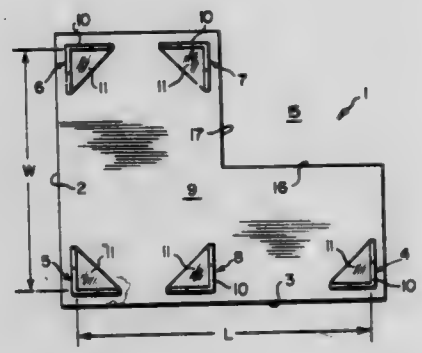
1. A dual timing system for the sequential control of a copier operative to produce copies of originals, comprising:

a print switch operative to start the copier, a switch located on the path along which the originals are conveyed, a first timer for starting the sequence of operation of the components of the copier, said first member being enabled when said path switch senses the leading edge of an original, a second timer for terminating the operation of components of the copier, said second timer being enabled by the trailing edge of an original being sensed by the path switch.

4,342,513
EASEL BOARD USED IN PHOTOGRAPHIC PRINTING

Frankie U. Gibbs, 64 Division Ave., Blue Point, N.Y. 11715

Filed Mar. 10, 1980, Ser. No. 128,397
Int. Cl.³ G03B 27/58
U.S. Cl. 355—74 11 Claims

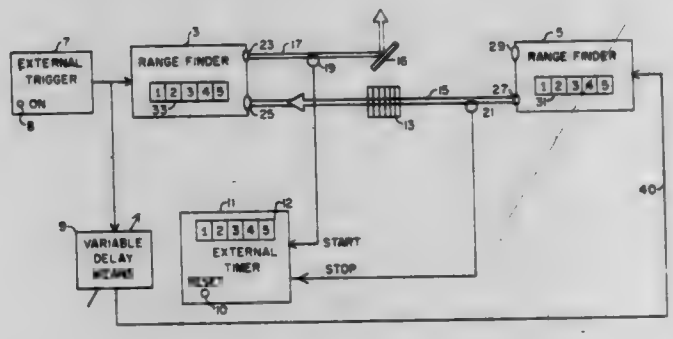


1. A rectangular shaped easel board for use with a sheet of photo paper having a longitudinal length L and a lateral width W, said board having a longitudinal length greater than L and a lateral width greater than W and including a cut out in one corner thereof equal to substantially one-half the longitudinal length of the board times substantially one-half the lateral width of the board and having on a front side of the board at least two front side sheet positioning means situated at two of the uncut corners of the board and adjacent either the lateral edge of the board or the longitudinal edge of the board and when adjacent the lateral edge of the board separated a distance W from one another and when adjacent the longitudinal edge of the board separated a distance L from one another whereby a corner of the sheet having a dimension substantially one-half W times substantially one-half L may be exposed when said sheet is positioned on the front side of said board by said front side sheet positioning means.

4,342,514
MEANS AND METHOD FOR TESTING LASER RANGE FINDERS

Paul B. Mathews, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 11, 1980, Ser. No. 177,032
Int. Cl.³ G01C 3/08
U.S. Cl. 356—5 4 Claims

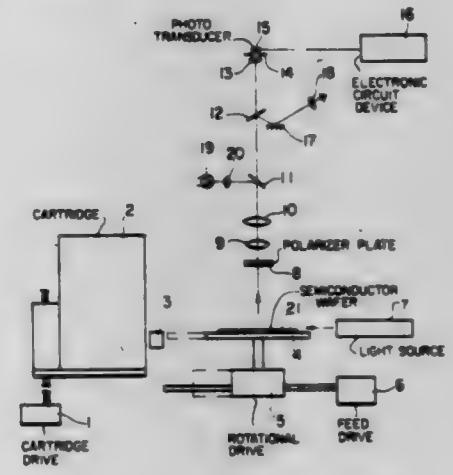


4. Apparatus for testing the accuracy and sensitivity of a first laser range finder, comprising, means for directing a transmitted beam of a second range finder into a receiver of said first range finder, an optical filter arranged in the path of said transmitted beam of such opacity that the beam entering said receiver will be just strong enough to operate the circuitry of a receiver having minimum acceptable sensitivity, an external trigger circuit connected to a trigger input of said first range finder and to a variable delay means, the output of said variable delay means connected to a trigger input of said second range finder, whereby said range finders may be sequentially triggered with different time delays between the sequential triggering, and an external timer arranged to be started in response to a transmitted beam of said first range finder and stopped in response to the transmitted beam of said second range finder.

4,342,515
METHOD OF INSPECTING THE SURFACE OF AN OBJECT AND APPARATUS THEREFOR

Masakuni Akiba, Tokorozawa; Hiroto Nagatomo, Tokyo, and Jun Suzuki, Higashimurayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1979, Ser. No. 5,924
Claims priority, application Japan, Jan. 27, 1978, 53-7277; Jan. 12, 1979, 54-1356
Int. Cl.³ G01M 21/32
U.S. Cl. 356—237 6 Claims



1. Inspection apparatus for detecting foreign matter existent on a surface of an object, comprising:

light emission means for projecting light towards the object to-be-inspected sidewards of said object;

first polarization means for polarizing light reflected from the surface of said object to-be-inspected;

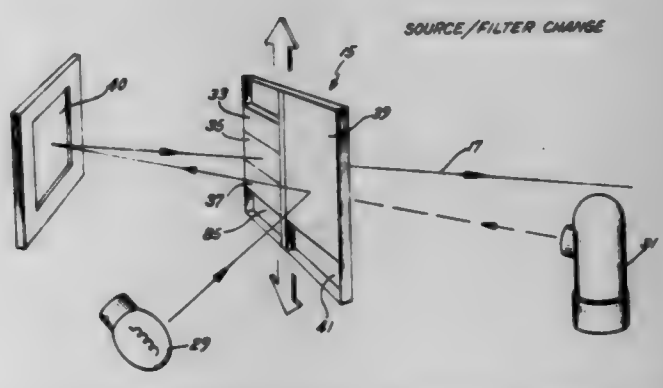
detection means for detecting the reflected light obtained after the passage through said polarization means; and

wherein said light emission means includes means for projecting light from at least two different sides of said object to-be-inspected.

4,342,516
FILTER INDEXING FOR SPECTROPHOTOMETER SYSTEM

Morteza M. Chamran, Elmhurst, Ill.; Larkin B. Scott, Fort Worth, Tex., and Paul B. Williams, Lombard, Ill., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 7, 1980, Ser. No. 128,030
Int. Cl.³ G01J 3/12, 3/18
U.S. Cl. 356—332 8 Claims



1. A spectrophotometer system comprising a first radiant energy source and a second radiant energy source for generating a beam of radiant energy, an optical system for transmitting the beam of radiant energy at preselected wavelengths through

a sample cell and onto a detector, the combination further comprising:

a filter tray movably mounted for movement along a path, said filter tray including control means for selecting the source of radiant energy to be transmitted depending on the position occupied by said tray;

a plurality of filters positioned in said tray for movement through the beam of radiant energy as said filter tray is moved along said path, said filters being positioned on said tray for independent presentation in said beam;

stepper means for indexing said tray in discrete steps along said path and

microcomputer means for controlling said optical system for successively changing the wavelength of the beam of radiant energy over a predetermined spectral range, and said microcomputer means including means for selecting any limited wavelength range to scan within the larger spectral range of the system, said microcomputer means being connected to said stepper means for indexing said tray a plurality of steps for moving a select filter into the radiant energy beam and for selecting the source of radiant energy at only predetermined wavelengths of said spectral range, said microcomputer means being caused to discontinue changing said wavelength during indexing of said tray.

4,342,517

METHOD AND ARRANGEMENT FOR THE MEASUREMENT OF ROTATIONS BY THE SAGNAC EFFECT

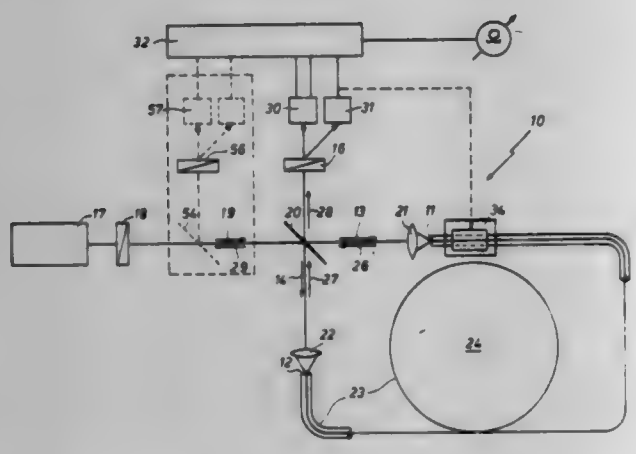
Mark Johnson, Wigan, England, and Reinhard Ulrich, Leonberg, Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,852

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1977, 2901328

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—350 **16 Claims**



1. A method for the measurement of rotation rates by the Sagnac effect in a light path encircling an area, employing two coherent light beams which are coupled into the two ends of said light path of which a section is subject to perturbations that affect the polarizations of said two light beams which, after they emerge again from the ends of said fiber, are superimposed so that they interfere, the rotation rate of said light path being evaluated from an analysis of the interference, said method being characterized in that said two light beams are coupled with defined states of polarization into said light path of which a section is subject to perturbations, and that said two interfering beams pass through at least one polarization analyzer, azimuth and ellipticity of which are adjusted for maximum transmission of light which is the conjugate of one of said light beams coupled into said light path at one end thereof, characterized in that an automatic control system, responding to variations of polarization, is used to maintain a stable state of polarization of at least one of said two light beams emerging from said perturbed section of said light path, said stable state of polarization being distinctly different from that state which is blocked by said polarization-analyer.

4,342,518

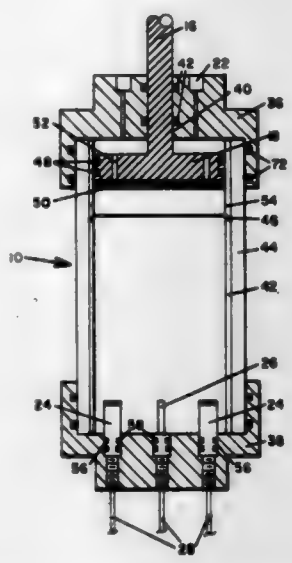
SUBSEAFLOOR ENVIRONMENTAL SIMULATOR

Donald J. Shirley, Leander, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 1, 1980, Ser. No. 211,600

Int. Cl.³ G01N *25/18, 29/00*

U.S. Cl. 374—44 **21 Claims**



1. A subseafloor environmental simulator comprising:

a pressure chamber to contain a sample;

means for compressing said sample within said pressure chamber to simulate overburden pressure;

means for allowing fluid to escape from said sample when subjected to said compressing means;

means for applying pressure to said fluid within said pressure chamber to simulate pore fluid pressure;

means for controlling the temperature of said pressure chamber and sample contained therein;

means contained within said pressure chamber for measuring the acoustic and thermal conductivity properties of said sample when subjected to compression and fluid pressure at a predetermined temperature; and

means for processing and displaying the data obtained by said measuring means.

4,342,519

CONNECTOR FOR AN END OF AN UNDERWATER PIPE

Yvon Botrel, Landorthe; Roland Fremond, Paris, and Jean Mourlevat, Roquefort sur Garonne, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Mar. 20, 1980, Ser. No. 132,170

Claims priority, application France, Mar. 2, 1979, 79 06938

Int. Cl.³ F16L *1/04*

U.S. Cl. 405—169 **10 Claims**

1. Arrangement for connecting and disconnecting two underwater pipes comprising

a first pipe,

a terminal secured to an end of the first pipe,

a laying tool within and releasably secured to the terminal, said laying tool being attached to the end of a tension cable,

a second pipe,

a receptacle secured to an end of the second pipe,

a guide funnel at the end of the receptacle and converging toward the receptacle,

said laying tool comprising a tension chuck and a sealing plug connected together by an articulated connector,

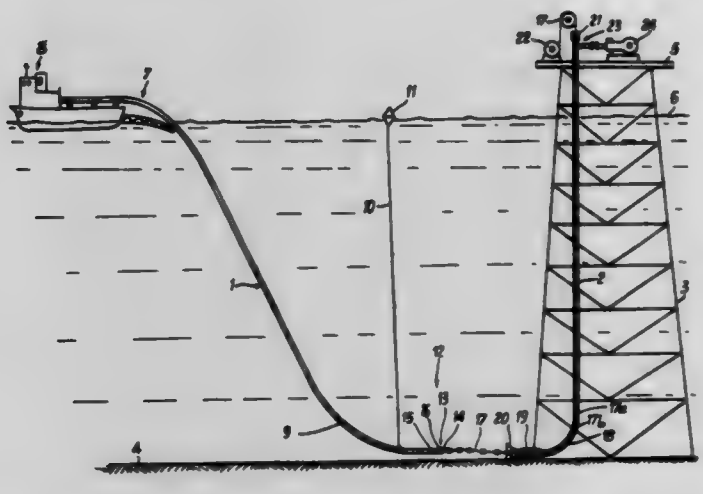
cooperating means on said chuck and terminal including locking means on said chuck, for releasably locking said chuck within said terminal against separation from the terminal upon application of a pulling force exerted by the tension cable,

plug lock means on said plug for releasably securing said plug in said terminal behind said chuck to seal the terminal end of said first pipe,

said tension cable being adapted to be thread through said second pipe to pull said terminal into said funnel and then into said receptacle in response to a pull exerted on said tension cable,

reversible means on said receptacle for securing said terminal in said receptacle,

reversible means on said receptacle for sealing said terminal in said receptacle,



axially moveable means on said chuck, moveable between a first position in which said locking means lock said chuck in said terminal and a second position in which said locking means are withdrawn and unlocked from said terminal, in response to pressure applied in said second pipe, and

means on said chuck for retaining said locking means in said unlocked position during pulling of the chuck through the second pipe by said tension cable,

and means on said plug for releasing said plug in response to a pull exerted thereon by said articulated connector during pulling of the chuck by the cable after release of the chuck from the terminal, said connector pulling said plug through the second pipe behind the pipe.

4,342,520

INKRIBBON FEED MECHANISM

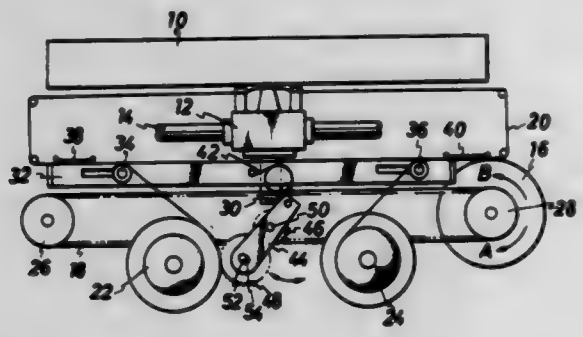
Minoru Isobe; Makoto Shimizu, and Shigemi Hagiwara, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,110

Claims priority, application Japan, Mar. 29, 1979, 54-036264

Int. Cl.³ B41J *33/44*

U.S. Cl. 400—221 6 Claims



1. An inkribbon feed mechanism for an open reel type printer, the inkribbon feed mechanism comprising a reversible spacing motor, a timing belt connected to said spacing motor to be driven thereby to move said printer, said printer printing as it moves from left to right across the width of the printer, a take-up reel and a supply reel, control means coupled between said timing belt and said take up and supply reels to cause movement of said inkribbon under control of said take up and supply reels selectively, said control means controlling said supply reel to move said inkribbon when said printer is moving from left to right and said spacing motor is rotating in one direction, said control means disengaging said timing belt from being coupled to said supply reel to halt movement of said inkribbon as said printer moves to its return position from right to left, said control means comprising means to sense when said inkribbon reaches each end of said inkribbon, said control means comprising means responsive to sensing that said inkribbon is at one end to shift said control means to couple said timing belt to said take-up reel to control movement of said inkribbon by driving said take-up reel, said inkribbon being moved by said take-up reel as said printer returns to its original print position, wherein said control means comprises a pivotable arm having a pivot point, one end of said pivotable arm having an oblong slot in which a planetary gear is rotatably connected thereto, said take-up and supply reels each comprising respective gear members driven by said planetary gear to drive each respective reel, said spacing motor rotating in one direction as said planetary gear is coupled to said gear member of said supply reel, a control drive gear connected to said pivotable arm at the pivot point of said pivotable arm and being coupled to said timing belt, said control drive gear coupled to said planetary gear, said spacing motor reversing its direction when the printer reaches its far right position causing said timing belt to reverse its direction and move said planetary gear in said oblong slot decoupling from said gear member of said supply reel.

4,342,521

PAPER FEEDING APPARATUS

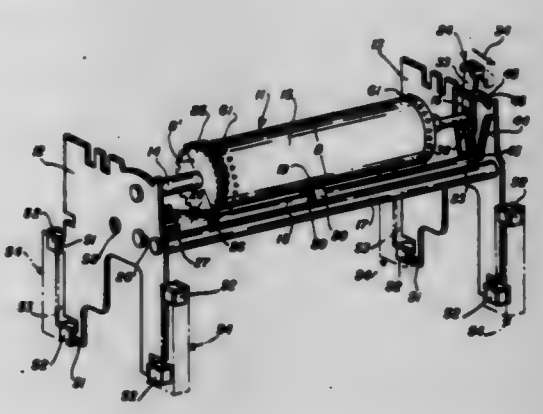
Lothar Kuhn, Frankfurt, Fed. Rep. of Germany, assignor to Adlerwerke vorm Heinrich Kleyer A.G., Nuremberg, Fed. Rep. of Germany

Filed Dec. 23, 1980, Ser. No. 219,576

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014340

Int. Cl.³ B41J *13/02*

U.S. Cl. 400—637 6 Claims



1. Paper feeding apparatus including a frame,

a platen rotatably mounted in said frame,

a shaft supporting a friction feed roll for engagement with said platen rotatably supported at one end in said frame,

lever means pivotally supported on said frame, and

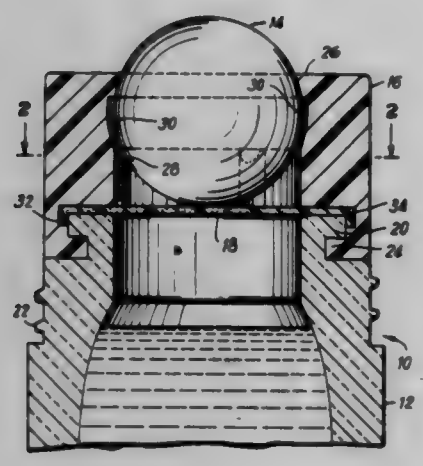
bearing means on said lever eccentric to said pivot for supporting the other end of said shaft, whereby pivoting movement of said lever means will pivot said shaft about its said one end.

4,342,522

ROLL-ON DISPENSER WITH A FLEXIBLE MEMBRANE

Leonard Mackles, New York, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 776,459, Mar. 10, 1977, abandoned. This application Nov. 17, 1980, Ser. No. 207,591
Int. Cl.[3] A45D *33/12*; B43M *11/02*
U.S. Cl. 401—214 6 Claims



1. As an article of manufacture a dispenser adapted for dispensing powder comprising a container having powdered material disposed therein and further having an open end, an applicator disposed in the open end, supporting means for rotatably supporting the applicator and limiting its movement inward into the container, which means contact an inner minor portion of the applicator, and an annular member surrounding an outer minor portion of the applicator to limit the outward movement of the applicator away from the open end of the container; said supporting means comprising a plurality of spaced lugs, the spaces between the lugs permitting passage of material from the container when the applicator is in contact with the lugs, thereby enabling continuous dispensing of the material, a variably porous membrane of open-celled foam or sponge material interposed between the applicator and the portion of the container adapted to hold the material to be dispensed, the porosity of the membrane varying with the degree of its deformation, said membrane having from about 25 to about 150 holes per linear inch and is about 0.005 to about 0.50 inches thick; the means for rotatably supporting the applicator permitting its inward movement against the membrane, whereby the applicator bears against and deforms the membrane without blockage of the continuous flow of powder when it is pressed inwardly to allow a controlled amount of material to be dispensed through the membrane.

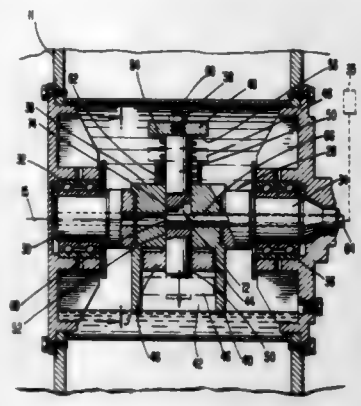
4,342,523

HIGH-LOW FORCE AMPLITUDE DEVICE

Chittaranjan Salani, Springfield, Ohio, assignor to Koehring Company, Brookfield, Wis.

Filed Feb. 24, 1981, Ser. No. 237,653
Int. Cl.[3] E01C *19/38*
U.S. Cl. 404—117 8 Claims

1. In a vibratory compacting roller apparatus of the type including a rotatable compacting roll, vibrator means operably connected to said roll to vibrate the latter, said vibrator means including a shaft rotatable relative to said roll, a motor for rotating said shaft, a movable eccentric mass rotatable with the shaft and adjustable transversely thereof, and position regulating means for regulating the position of said mass to provide for variable amplitude of vibration produced by said vibrator means, the improvement wherein said position regulating means comprises yieldable biasing means acting upon said movable mass for automatically positioning the movable mass radially inwardly to the low-amplitude position when the shaft is at rest whereby minimal start-up torque is imposed upon the



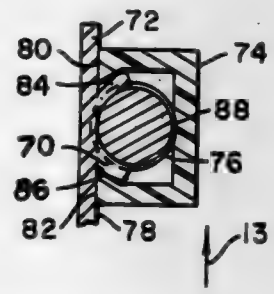
motor, and releasable locking means for retaining said movable mass in said low-amplitude position.

4,342,524

MATERIAL FASTENING STRUCTURE AND METHOD

Richard N. Anderson, P.O. Box 1613, Owensboro, Ky. 42301

Filed May 28, 1980, Ser. No. 153,946
Int. Cl.[3] F16B *2/00*
U.S. Cl. 403—331 6 Claims



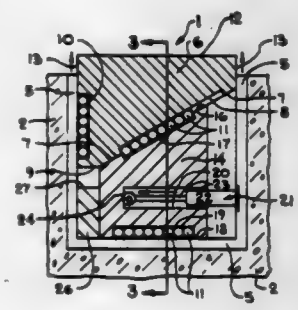
1. Structure for fastening a first member having a surface and an edge to a second member comprising a U-shaped member having parallel extending leg portions with free outer ends and a connecting portion extending between the other ends thereof, means for securing the outer ends of the leg portions of the U-shaped member to the surface of the first member adjacent the edge thereof and fastening means positioned between the surface of the first member and the inside of the U-shaped member.

4,342,525

RETRACTABLE SPEED BUMP

Carl T. Mastronuzzi, Jr., 6701 Jefferson Paige Rd., Lot 328, Shreveport, La. 71119

Filed Aug. 21, 1980, Ser. No. 180,008
Int. Cl.[3] E01F *13/00*
U.S. Cl. 404—6 3 Claims



3. A retractable speed bump for controlling the speed of vehicles in a roadway comprising:

(a) an encasement having a floor, and side and end walls;

(b) a lower wedge-shaped member having a first inclined plane facing upwardly and slidably dispose on said floor of said encasement, and provided with a transverse opening in the vertical side thereof opposite said first inclined plane;

(c) an upper wedge-shaped member having a second inclined plane facing downwardly and slidably disposed on said first inclined plane of said lower wedge-shaped member;

(d) at least one first slot in said first inclined plane and at least one matching second slot in said second inclined plane opposite said first slot and shorter than said first slot, and at least one wedge block slot in the base of said lower wedge-shaped member, and at least one cap block slot in the side of said upper wedge-shaped member opposite said second inclined plane, and a plurality of ball bearings in said first slot and said matching second slot, and in said wedge block slot and said cap block slot to better facilitate movement of said lower wedge-shaped member and said upper wedge-shaped member in said encasement;

(e) a stop block positioned in said encasement in spaced relationship from said lower wedge-shaped member and supporting one side of said upper wedge-shaped member when said speed bump is in retracted configuration; and

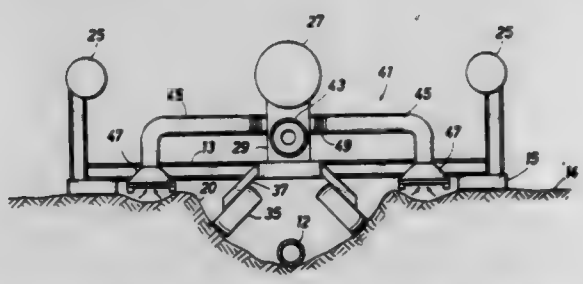
(f) at least one single-action hydraulic cylinder having a base mounted on one of said walls of said encasement and a pistion attached to said lower wedge-shaped member inside said transverse opening for selective, slidable displacement of said lower wedge-shaped member horizontally, and slidable displacement of said upper wedge-shaped member along said first inclined plane and said second inclined plane vertically upwardly responsive to activation of said hydraulic cylinder.

4,342,526

SUBMERSIBLE BACKFILL MACHINE

Al H. Mouselli, Houston, Tex., assignor to Applied Offshore Technology, Inc., Houston, Tex.

Filed Jun. 5, 1980, Ser. No. 156,561
Int. Cl.³ E02F 7/00
U.S. Cl. 405—159 9 Claims



1. Apparatus for covering a submerged conduit disposed within a trench in a sea bottom with material from said sea bottom, which comprises:

a sled positionable over said conduit in said trench on said sea bottom;

a pump supported by said sled, said pump including an intake side and a discharge side;

a pair of intake heads supported by said sled adjacent to said sea bottom on opposed sides of said trench;

means for connecting said intake heads to said intake side of said pump for the flow of water and entrained sea bottom material through said intake heads and into said pump;

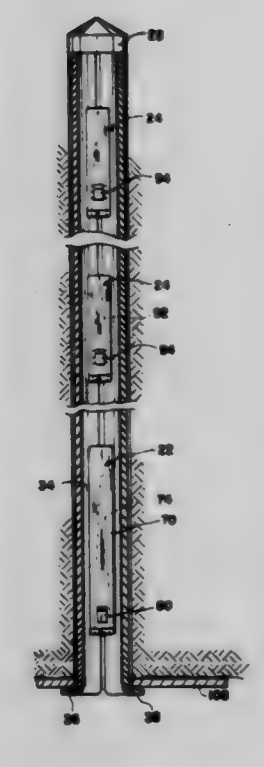
and a conical shaped dispersion nozzle supported by said sled and positioned generally over said conduit and between and rearwardly of said intake heads, for directing the flow of water and entrained sea bottom material from said discharge side of said pump over said conduit and for diffusing said flow from said discharge tide such that said entrained material settles into said trench to cover said conduit.

4,342,527

SUPPORT ASSEMBLY FOR UNDERGROUND MINE AND TUNNEL ROOFS

Claude C. White, Birmingham, Ala., assignor to Birmingham Bolt Company, Birmingham, Ala.

Filed Jul. 10, 1980, Ser. No. 168,410
Int. Cl.³ E21D 21/00
U.S. Cl. 405—259 6 Claims



1. A support assembly for positioning in openings in underground mine and tunnel roofs, said assembly including

(a) an elongated tubular member comprising a pair of semi-cylindrical portions in facing relationship

(b) means for joining one pair of opposed longitudinal edges of said semi-cylindrical portions together

(c) the other pair of opposed longitudinal edges having a plurality of angularly disposed portions in facing engagement with each other, providing a plurality of tapered openings in the tubular member wall

(d) a plurality of wedge members positioned in each of the tapered openings

(e) each of said wedge members including a wedge section engaging the facing, angularly disposed portions of the longitudinal edges

(f) an abutment connected to each of said wedge members and extending inwardly of said tubular member

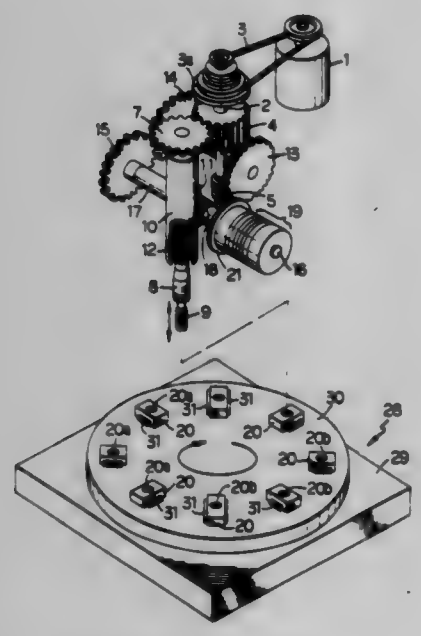
(g) said wedge member nearest the lower end of said tubular member being longer than the remaining wedge members, and the angle formed by the wedge section of said wedge member nearest the lower end of the tubular member being smaller than the angle formed by the wedge section of the remaining wedge members, whereby greater force can be exerted by the longer wedge member to initially urge said tubular member outwardly into engagement with the mine or tunnel roof, and

(h) a ram inserted into said tubular member and successively engageable with each of said abutments for urging said wedge members upwardly into the tapered openings, thereby spreading said semi-cylindrical portions apart and effecting expansion of said tubular member into bonding engagement with the mine or tunnel roof, each of said abutments being sheared from said wedge members by said ram upon application of a predetermined force on each abutment.

4,342,528
TAPPING MACHINE

Takashi Nozu; Minoru Yamada, and Yasuhiko Watanabe, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 16, 1980, Ser. No. 187,547
Claims priority, application Japan, Sep. 29, 1979, 54-125510
Int. Cl.[3] B23B *35/00, 41/18*
U.S. Cl. 408—6 7 Claims

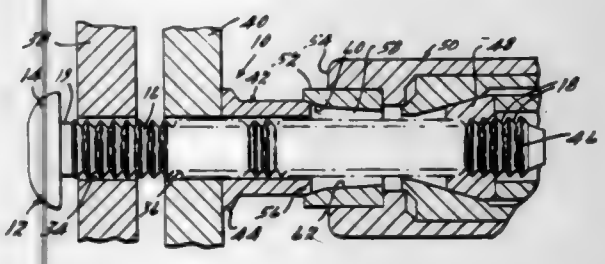


1. A tapping machine comprising:
a frame,
a quill reciprocably mounted on said frame,
a spindle rotatably mounted in, and reciprocated with, said quill, carrying a screw tap at one end thereof,
a reversible electric motor operatively connected to said spindle so as to rotate said spindle in forward and backward direction,
quill feed means operatively connected to said motor so as to move said quill in advancing and returning direction, and including an overload release clutch for disconnecting the power transmission from said motor to said quill when overload is applied to said quill in forward movement of said quill,
pulse-signal generating means disposed between said overload release clutch and said quill for generating a pulse-signal each time said quill moves one unit distance in forward movement of said quill,
means for setting a stroke of the forward movement of said quill,
preset counter for memorizing the number of pulse-signals corresponding to said stroke of said quill,
turn position sensing means for generating a turn position sensing signal when the number of pulse-signals from said pulse-signal generating means accords with the number of pulse-signals memorized in said preset counter,
a driving circuit connected to said electric motor for performing a working cycle, in which said quill advances and said spindle forwardly rotates before the generation of the turn position sensing signal from said turn position sensing means, and then said quill returns to a start position thereof and said spindle backwardly rotates after the generation of the turn position sensing signal from said turn position sensing means,
overload sensing means for generating an overload sensing signal when the interval of generation of pulse-signal by said pulse-signal generating means is longer than a predetermined time, and
means for controlling said driving circuit to reverse the rotational direction of said motor when said overload sensing signal is generated from said overload sensing means.

4,342,529
MULTIGRIP FASTENER

Walter J. Smith, Waco, Tex., assignor to Huck Manufacturing Company, Irvine, Calif.

Continuation of Ser. No. 26,652, Apr. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 899,591, Apr. 24, 1974, Pat. No. 4,208,943. This application Jan. 14, 1981, Ser. No. 224,916
Int. Cl.[3] F16B *19/05*
U.S. Cl. 411—361 18 Claims



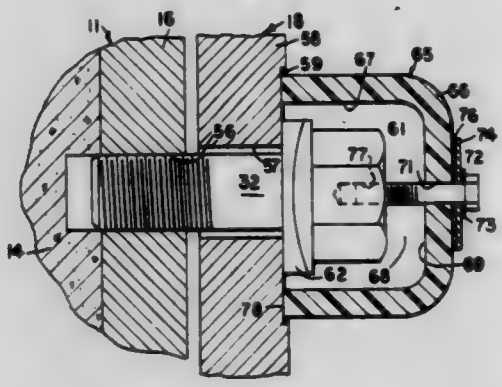
1. In a two piece fastener for fastening a plurality of workpieces together with the workpieces having a thickness varying from a determinable minimum to a determinable maximum thickness, comprising a pin member having a head and a shank portion having a plurality of grooves thereon and a tubular member adapted to be swaged into locking engagement with a predetermined number of said grooves on the shank portion of the pin member by means of a tool having a swaging anvil adapted to engage the tubular member and gripping means adapted to grip a gripping portion of the shank portion, the tool being actuable to apply a relative axial tensile force between the pin member and the tubular member whereby the tubular member is swaged into said predetermined number of said grooves on the shank portion of the pin member, at least said predetermined number of said grooves being annular combination locking and breakneck grooves, each of said predetermined number of said grooves being defined by first and second radially outwardly diverging sidewalls, the improvement comprising the juncture of said diverging sidewalls at each of the grooves including a concave radius portion interconnecting the radially inner ends of said first and second sidewalls, a selected one of the grooves being located at a predetermined location proximate the outer end of the tubular member and adapted to receive the material of the tubular member as it is swaged onto the shank portion, said first and second sidewalls being angulated such as to provide a relative force between said sidewalls in said selected one of the grooves, said force being generated by the material of the tubular member as it is swaged therein, wherein said relative force will be additive with the relative axial tensile force applied by the tool such that the shank portion will fracture at said selected one of the grooves, said convace radius portion being of a magnitude selected to provide a predetermined stress concentration to facilitate fracture at said selected one of the grooves in response to the combination of said relative force and said relative axial tensile force, any one of the grooves being capable of functioning as said selected one of the grooves when located at said predetermined location while said pulling tool exerts the relative axial tensile force on the pin member, said gripping portion of the shank portion located at the end opposite said head and having a plurality of different grooves adapted to be gripped by the gripping means of the tool, said different grooves having a shape different from that of said combination grooves to avoid an effective stress concentration of the magnitude of said predetermined stress concentration and wherein said different grooves have an axial length substantially equal to the distance between the point of engagement of said swaging anvil with said tubular member and the forward end of said gripping means plus the axial length of the portion of said gripping means engaging said gripping portion less the axial length of the transition portion.

4,342,530

WATER DAM FOR A FASTENER

Douglas H. Baker, and Dennis P. Dry, both of York, Pa., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jun. 11, 1979, Ser. No. 47,111
Int. Cl.[3] F16B 35/00; B65D 53/00
U.S. Cl. 411—374 1 Claim



1. Apparatus for confining water that leaks past a component fastener in a hydro-turbine machine to a localized area, comprising in combination:

a fastener comprising a relatively heavy screw having an enlarged head portion and a shank portion with securing means thereon, said fastener passing through an opening formed in a first component into threaded engagement in an opening in a second component to which said first component is to be secured;

a spot face surface formed on the component which is to be secured and constructed and arranged to be engaged by the head of said fastener;

a cup-shaped enclosure member molded in a single cavity mold of an elastomer material disposed in position on said spot face surface surrounding the head portion of said fastener;

securing means comprising a threaded screw to lock said cup-shaped enclosure member in operative fastener enclosing position to the component which said fastener is securing, said threaded screw securing means being constructed and arranged to pass through a circular opening formed in said cup-shaped enclosure and into threaded engagement with said fastener, said threaded screw securing means having a diameter which is greater than the diameter of said circular opening formed in said enclosure through which said screw securing means passes and operable to force said enclosure into intimate sealing contact with the spot face surface;

a threaded opening in the head of said fastener screw in which said threaded screw securing means engages; and,

a relatively large washer externally of said cup-shaped enclosure member engaged on said threaded screw securing means and extending to a substantial extent radially outwardly thereof so that the head portion of said threaded screw securing means applies a clamping force thereto which said washer distributes over a relatively large area of said cup-shaped enclosure member.

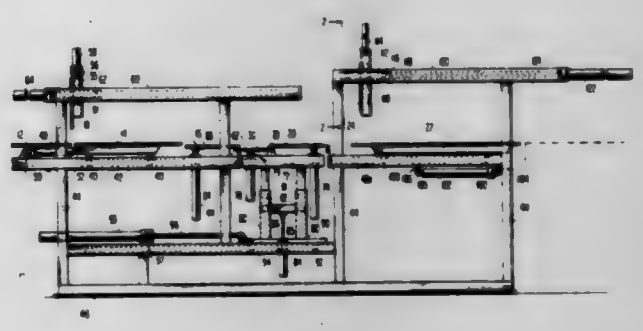
4,342,531

METHOD AND APPARATUS FOR HANDLING BRICKS

Joseph A. Cox, Fletcher, and Daniel K. Jones, Asheville, both of N.C., assignors to EA Industries, Incorporated, Asheville, N.C.

Filed Feb. 29, 1980, Ser. No. 125,906
Int. Cl.[3] B65G 57/22
U.S. Cl. 414—46 30 Claims

1. A method of facing and stacking rows of bricks to bring at least two rows of bricks into stacked interrelationship with the faces of the bricks in one row contacting the faces of the bricks in the other row comprising the steps of: individually pivoting the rows of bricks respectively from a generally horizontal plane towards each other into generally vertical planes until their faces are opposing each other and then pivoting the rows of bricks as a unit into horizontal planes to place them into stacked interrelationship with their faces contacting each other, and wherein the bricks are initially positioned on first and second fold plates, respectively and the bricks are individually pivoted by means of the fold plates, and wherein initially the bricks are conveyed in end-to-end relationship and they are individually pivoted about their adjacent ends, and wherein initially the adjacent ends of the bricks are separated from each other by moving the fold plates away from each other prior to individually pivoting the bricks.

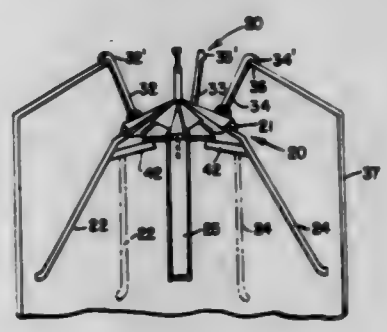


4,342,532

ADJUSTABLE GRAIN SPREADER

William H. Voegele, R.R. #5, Bismarck, N. Dak. 58501

Filed Jul. 16, 1980, Ser. No. 169,436
Int. Cl.[3] B65G 65/32
U.S. Cl. 414—299 2 Claims



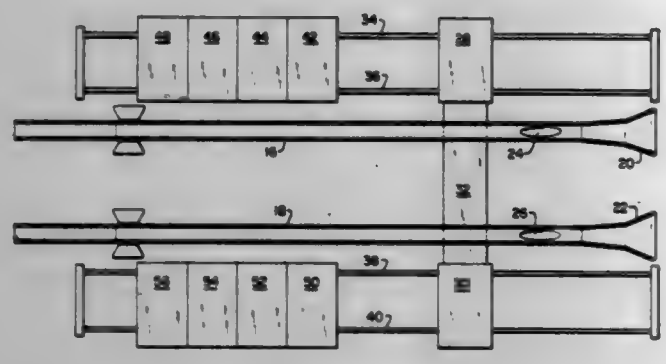
1. A grain spreader apparatus comprising a cone having a reduced upper end and tapered outward and downward with an enlarged lower end, said cone having radial extending recessed channels with raised converging portions therebetween, a plurality of pivoted channels each having its one end pivotally mounted to the lower end of the cone in the recessed channels of the cone to provide an extension for the recessed channels in the cone, said pivoted channels pivoting radially inward and outward from the cone, a central plate mounted beneath the cone, means to raise and lower the plate, said pivotal channels extending downward over the outer edges of said plate, said pivoted channels having projecting lug means on the pivoted channels, projecting hook means mounted to said cone to mount said cone in a center upper opening of a grain bin, whereby grain may be poured through the opening in the grain bin onto the cone and directed by the converging portions of the cone into the recessed channels of the cone, with the recessed channels directing the grain onto the pivoted channels where the grain will travel off the outer end of the pivoted channels, said plate means when raised and lowered by said raising and lowering means engaging said lugs on said pivoted channels to pivot the outer ends of the channels radially inward and outward to change the radial position of the channels radially inward and outward to change the radial position of the outer ends of the pivoted channels to thereby change the radial position of the grain traveling off the outer ends of the pivoted channels.

4,342,533

RECIPROCAL METHOD AND APPARATUS FOR TRANSFERRING VEHICLE BATTERIES

Dale R. Hane, 110 Union St., Sunbury, Pa. 17801

Filed Dec. 14, 1979, Ser. No. 103,617
Int. Cl.[3] B65G 67/02; B60L 11/18
U.S. Cl. 414—396 3 Claims



1. Apparatus for transferring an associated vehicle battery from an associated vehicle having an elongated battery chamber which extends between two extremities of the vehicle which comprises:

a loading station which includes first means for carrying an associated battery;

means for urging said means for carrying toward an associated vehicle, said means for urging comprising cooperating rack and pinion gears;

an unloading station which includes second means for carrying an associated battery;

means for connecting and for mounting said loading and unloading stations for movement with respect to the associated vehicle in a direction which is generally transverse to the axis of the battery chamber thereof; and

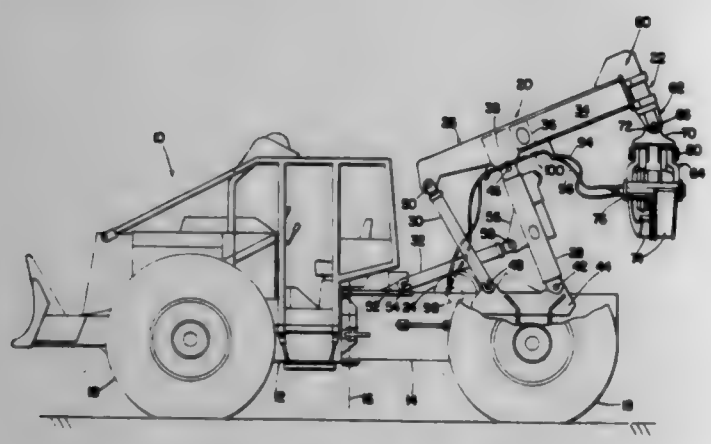
said means for connecting comprises a cross member which extends intermediate said loading and unloading stations.

4,342,534

GRAPPLE HEAD HARNESS

Thomas L. Bestard, Woodstock, and Richard R. Roesler, Plattsville, both of Canada, assignors to Eaton Corporation, Cleveland, Ohio

Filed May 30, 1980, Ser. No. 154,695
Int. Cl.[3] B66C 1/42
U.S. Cl. 414—734 6 Claims



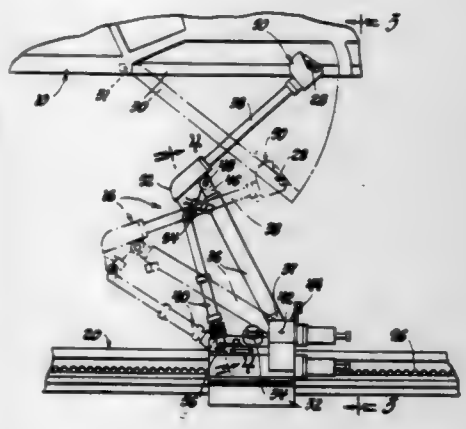
1. In a grapple skidder having a frame, a boom assembly mounted on said frame, a grapple head assembly mounted on said boom assembly for pivotal movement about generally horizontal and vertical axes, and means for selectively inhibiting said pivotal movement of said grapple head assembly; the improvement wherein said means for inhibiting movement of said grapple head assembly comprises first and second cables of substantially equal length having one end attached to said grapple head assembly at points spaced apart and symmetrically disposed about said vertical axis, and the opposite ends extending toward said frame, means on said frame for retracting and extending said first and second cables independently and simultaneously toward and away from said frame, and guide means attached to said boom assembly between said retracting and extending means and said grapple head assembly and having a longitudinal centerline intersecting said vertical axis, said first and second cables extending through said guide means.

4,342,535

DOOR-OPENER APPARATUS

Donald S. Bartlett, Troy, and Theodore J. Beaulieu, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 14, 1980, Ser. No. 178,172
Int. Cl.[3] B25J 5/02
U.S. Cl. 414—744 A 3 Claims



1. An apparatus for seizing and releasing an article supported for movement between a first position and a second position and comprising: a base, a primary arm having one end thereof mounted on said base for pivotal movement about a first pivot axis; a secondary arm having an intermediate portion thereof mounted on the other end of said primary arm for pivotal movement about a second pivot axis; a link comprising two axially aligned and relatively movable members, one of said members of said link being pivotally connected to said base at a point spaced from said first pivot axis for pivotal movement about a third pivot axis, and the other of said members of said link being connected to a portion of said secondary arm for pivotal movement about a fourth pivot axis; yieldable means between said members of said link for maintaining said link at a predetermined length; a gripper mounted at the free end of said secondary arm; a motor connected to said primary arm for moving said primary arm about said first pivot axis so as to cause said gripper to move towards said article under the control of said link and seize said article; and means operatively associated with said members of said link and responsive to relative movement thereof after said primary arm moves said article from said first position to said second position for providing a signal that said gripper has seized said article.

4,342,536

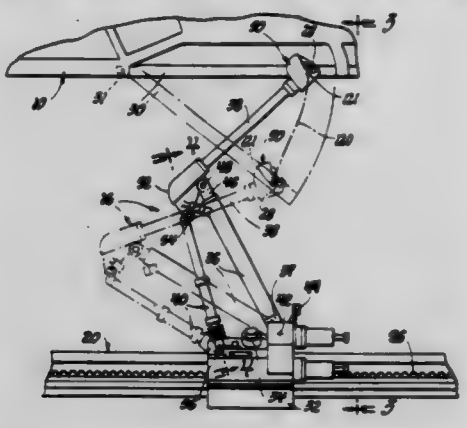
DOOR-OPENER APPARATUS

Hadi K. A. Akeel, Sterling Heights; Donald S. Bartlett, Troy; Theodore J. Beaulieu, Warren, and Mitchell Choly, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 14, 1980, Ser. No. 178,380
Int. Cl.[3] B25J 5/02
U.S. Cl. 414—744 A 2 Claims

1. An apparatus for seizing and releasing a hinged member of a vehicle body and adapted to move from a first position wherein said apparatus seizes said hinged member while in a closed position to a second position wherein said apparatus holds said hinged member in an opened position while said vehicle body is transported along a path past said apparatus,

said apparatus adapted to assume a stored position and comprising a carriage movable in either direction along a track located adjacent to said path; a primary arm having one end thereof mounted on said carriage for pivotal movement about a first pivot axis; a secondary arm mounted on the other end of said primary arm for pivotal movement about a second pivot axis; a link having one end thereof pivotally connected to said carriage at a point spaced from said first pivot axis for pivotal movement about a third pivot axis, the other end of said link being connected to a portion of said secondary arm adjacent to said second pivot axis for pivotal movement about a fourth pivot axis; an article gripper mounted at the free end of said secondary arm; means carried by said secondary arm for selectively operating said article gripper for causing said article gripper to seize or release said hinged member of said vehicle



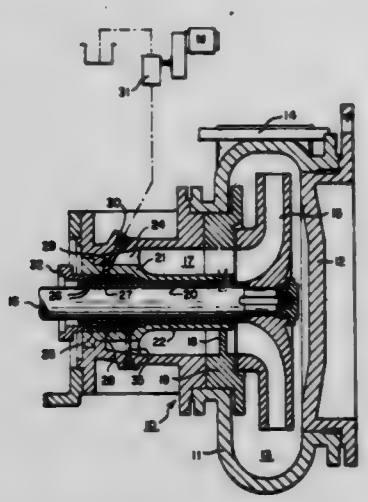
body; a motor connected to said primary arm for moving said primary arm and said secondary arm under the control of said link about said first pivot axis to said first position, said second position and said stored position, the arrangement of said first, second, third, and fourth pivot axes being such that the distance between said first pivot axis and said third pivot axis is substantially twice the distance between said second pivot axis and said fourth pivot axis, and a straight line passing through said first pivot axis and said third pivot axis intersects a straight line passing through said second pivot axis and said fourth pivot axis at a point located to one side of said track so as to permit the longitudinal center axis of each of said primary arm, said secondary arm, and said link to be located substantially parallel to said path along which said vehicle body is transported when said apparatus is in said stored position.

4,342,537

IMPELLER PUMP AND SEAL

Thomas S. Goyne, 37 S. Ninth St., Ashland, Pa. 17921

Filed Apr. 8, 1980, Ser. No. 138,863
Int. Cl.³ F04D *29/10*
U.S. Cl. 415—170 A **16 Claims**



1. A centrifugal pump comprising a housing, a pump chamber in said housing, a pumping impeller in said pump chamber, a rotatable shaft extending through said housing into said chamber carrying said impeller, a packing box in said housing surrounding the rotatable shaft adjacent the pump chamber, a rotatable sleeve removably fixed on said shaft extending from said impeller through said packing box and rotating with said shaft, a stationary sleeve in said housing connected to said packing box and extending from said packing box to a point adjacent said impeller and surrounding a portion of said rotatable sleeve between said packing box and impeller, packing means in said packing box surrounding said rotatable sleeve, said packing box and stationary sleeve being surrounded by a liquid being pumped by said impeller over a major portion of its outer surface, and a displacement type lubricant source connected to said packing box supplying continuous lubrication into at least a portion of said packing box and between the rotatable sleeve and stationary sleeve.

4,342,538

FACE-TYPE SHAFT SEAL

Dale E. Wolford, Ashland, and George S. York, Mansfield, both of Ohio, assignors to The Gorman-Rupp Company, Mansfield, Ohio

Filed Jun. 2, 1980, Ser. No. 155,405
Int. Cl.³ F04D *29/10*
U.S. Cl. 415—170 A **4 Claims**

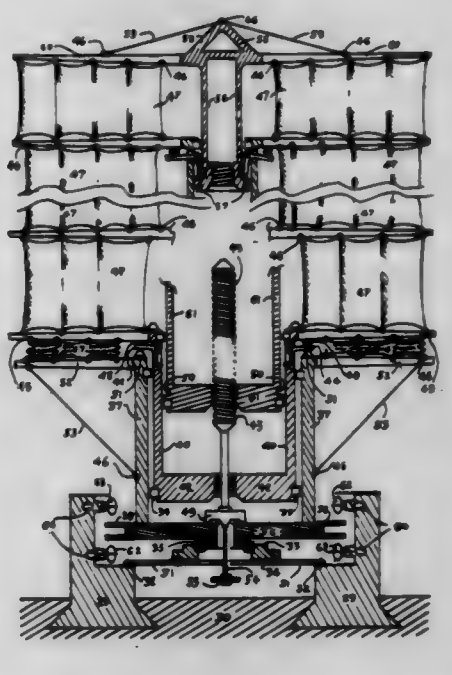
1. In a face-type shaft seal for a rotating shaft including structure providing a non-rotating seal face around the shaft, torque-transmitting drive means having one part adapted to be fixed to the shaft and an axially movable second part, a seal ring carried by said second part of said drive means, spring means biasing said seal ring axially of the shaft into engagement with said non-rotating seal face, and flexible seal means forming a fluid seal between said ring and the shaft and allowing axial movement in said seal ring, the improvement comprising a protective, flexible boot arranged inside said spring means around the assembly of said flexible seal means and said torque transmitting drive means to prevent contaminants from accumulating on said flexible seal means, said boot defining a space between itself and said flexible seal means.

4,342,539

RETRACTABLE WIND MACHINE

James A. Potter, 12 Greenhouse Blvd., West Hartford, Conn. 06110

Filed Feb. 13, 1979, Ser. No. 12,055
Int. Cl.³ F03D *11/04*
U.S. Cl. 416—9 **21 Claims**



1. Apparatus for conversion of wind energy into rotational power comprising:

a base;

a rotating mast adapted to rotate about a generally vertical axis;

flexible airfoil sails extending somewhat horizontally from the vertically disposed mast, and adapted to catch the wind and rotate the mast, there being a pair of airfoils at each of a plurality of heights along said rotating mast;

a plurality of airfoil support members, each of some of upper support members securing the bottom of an airfoil above it and the top of an airfoil below it;

telescopic means adapted to permit said airfoil support means to be lowered into a storage mode in which at least some of the airfoils are stored in a zone protected from some of the effects of a windstorm;

said telescoping means being a part of the rotatable mast means, whereby the number of sails exposed to the wind and the tautness of at least some of the sails can be adjusted by the extent of the upward movement of the telescoping mast;

resilient means urging the rotating mast into a standard vertical position, but adapted to permit the rotating mast to tilt not more than a controlled angle in response to the wind, thereby permitting the airfoils more efficiently to rotate the mast;

output transmission means directing power to at least one transducer;

moderate duty power transmission means adapted to transmit power from the rotating mast to said output power transmission means;

heavy duty power transmission means adapted to transmit power from the rotating mast to said output transmission means;

control means actuated by the tilt of the mast for utilizing said moderate duty power transmission means during the standard vertical positioning of the mast and for utilizing said heavy duty power transmission means during the rotating of the mast at a controlled amount of tilt;

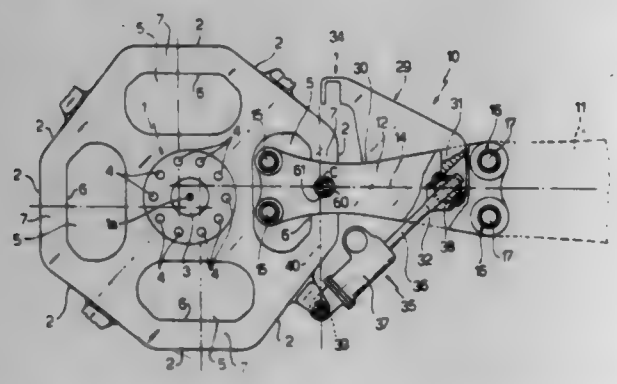
strain gauge means in the base responsive to the strain of tilting of the mast, said strain gauges detecting any dangerous wind velocities at the airfoils for lowering the airfoils and mast for storage during windstorms.

4,342,540

ARTICULATED ROTOR FOR HELICOPTERS

Bruno Lovera, Cardano; Santino Pancotti, Gallarate; Emilio Pariani, Cardano, and Giuseppe Virtuani, Milan, all of Italy, assignors to Costruzioni Aereonautiche Giovanni Agusta S.p.A., Italy

Filed Jan. 21, 1980, Ser. No. 113,726
Claims priority, application Italy, Feb. 2, 1979, 67223 A/79
Int. Cl.³ B64C *27/38*
U.S. Cl. 416—140 **2 Claims**



1. A multi-blade articulated rotor for helicopters, comprising:

a hub connected to a shaft rotatable substantially about a vertical axis, the hub being in the form of a plate comprising a plurality of perforations, each of which defines a bridge of material of said plate between a part of the edge of said perforation and a part of the edge of said plate;

a plurality of yokes, each of which is subtantially of U shape and comprises a pair of substantially parallel arms and a base element which connects together one end of said arms, the other end of the arms being connected to one of said perforations in the hub in such a manner that the corresponding bridge is disposed between said yoke arms, and the longitudinal axis of the yoke is oriented in a radial direction to the hub;

a plurality of elastomer bearings, each of which is disposed between said base element of a yoke and the corresponding hub bridge, and is bounded by a pair of coaxial spherical surfaces whose center falls within the section of the corresponding bridge;

a plurality of operating levers, each of which is arranged to control the variation of the angle of pitch of a corresponding blade of the rotor and has an end inserted between said arms of the relative yoke; and

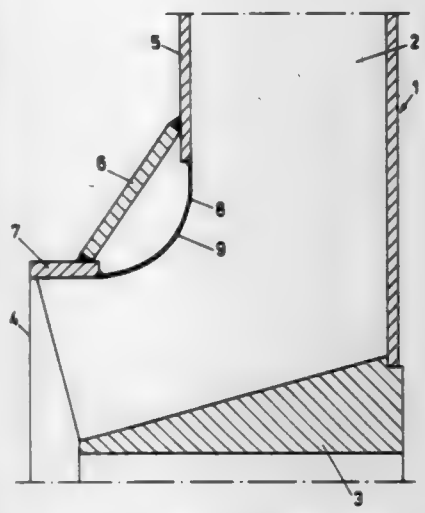
a plurality of dampers, each of which has a first end hinged, by means of a first ball joint, to the said end of the operating lever, and a second end hinged, by means of a second ball joint, to a projection of said hub, the centers of said first and second ball joints lying, respectively, on said longitudinal axis of the yoke and on a second axis substantially horizontal and perpendicular to said longitudinal axis and passing through said center of said spherical surfaces of the bearing of elastomer material.

4,342,541

IMPELLER ASSEMBLY FOR A CENTRIFUGAL BLOWER

Seppo J. Leskinen, Vaserskog, Finland, assignor to Oy Nokia AB, Helsinki, Finland

Continuation of Ser. No. 61,303, Jul. 27, 1979, abandoned. This application May 7, 1981, Ser. No. 261,560
Claims priority, application Finland, Aug. 23, 1978, 782578
Int. Cl.³ F01D *29/28*
U.S. Cl. 416—186 R **1 Claim**



1. An impeller assembly for a centrifugal blower comprising:

a back plate joined to a central hub,

a plurality of blades extending generally radially of said hub and said back plate,

a generally radially extending front plate,

a generally cylindrical axially extending suction ring disposed ahead of said front plate, said blades being disposed between and adjacent said front plate and said back plate, and said suction ring and said hub,

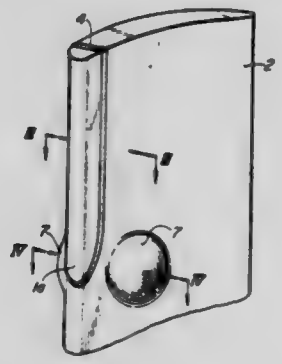
a frusto-conical supporting ring extending between and secured to said front plate and said suction ring, and

guide ring means extending between said front plate and said suction ring and disposed inwardly of said supporting ring defining aerodynamically correct fluid flow passages between said blades, wherein said guide ring means essentially does not receive stresses relative to said supporting ring which transfers stresses from said front plate to said suction ring.

4,342,542
MOVING BLADE OF STEAM TURBINE

Toshimi Tan; Katsukuni Hisano, and Takao Mizoi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 1, 1979, Ser. No. 90,435
Claims priority, application Japan, Nov. 10, 1978, 53/137911
Int. Cl.³ F01D 5/14
U.S. Cl. 416—224 3 Claims

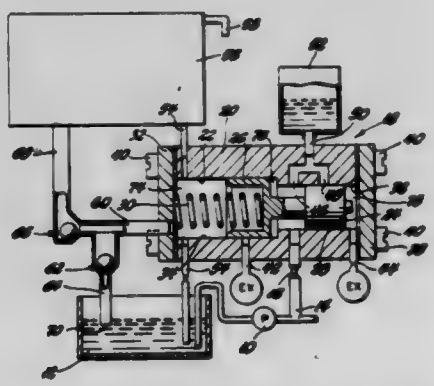


1. A moving blade for use in a steam turbine having a turbine rotor, a plurality of radially outwardly extending moving blades provided on the turbine rotor, each moving blade being provided at a leading edge of a radially outer end portion thereof with an anti-errosion plate, protrusion means projecting in a thicknesswise direction of said moving blade provided on both sides of a portion of said moving blade in a vicinity of a base of said anti-errosion plate where the anti-errosion plate is attached to said moving blade at an end closer to said turbine rotor for relieving stress at said portion of the moving blade and for preserving an original profile shape of the blade, each of said protrusion means having a surface of curvature of an arcuate cross-sectional configuration, said moving blade having a radial distribution of cross-sectional area such that the cross-sectional area is greater at said portion where said protrusion means are formed than at any other portions which are adjacent to said portion of said moving blade, as viewed in a radial direction.

4,342,543
OIL LEVEL CONTROL

Karl D. Allen, Canton; Mark A. Perlick, Brighton, and Jack H. Van Gorder, Chelsea, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 4, 1980, Ser. No. 175,315
Int. Cl.³ F04B 49/00
U.S. Cl. 417—211.5 4 Claims

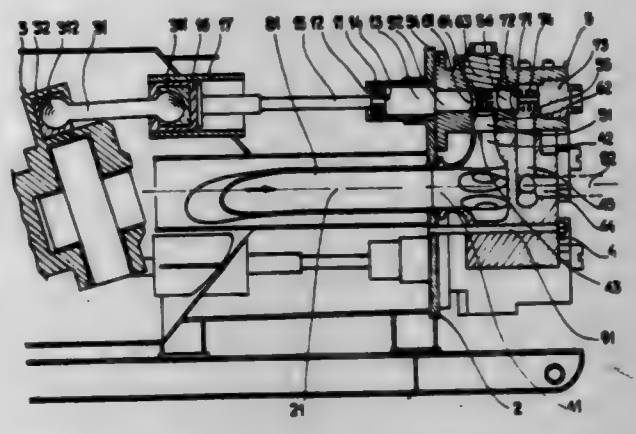


1. An oil level control for a fluid pressure system having a fluid pump pressure source, a primary reservoir and a secondary reservoir; said level control comprising; a reciprocating fluid pump having intake and discharge strokes; passage means for interconnecting said reciprocating fluid pump with the primary and secondary reservoirs, said passage means extending into the primary reservoir and including an opening at the fluid level desired to be maintained in the primary reservoir; valve means in said passage means for simultaneously permitting fluid flow from the primary reservoir and preventing fluid flow from the secondary reservoir during the intake stroke of the reciprocating fluid pump, said valve means also simultaneously permitting fluid flow to the secondary reservoir and preventing fluid flow to the primary reservoir during the discharge stroke of the reciprocating fluid pump; fluid motor means formed integrally with said reciprocating pump means and including an annular expansible chamber selectively connected to the fluid pump pressure source to enforce movement of the reciprocating pump during the initial portion of the discharge stroke thereof, and a cylindrical expansible chamber adapted to be pressurized to enforce movement of the reciprocating fluid pump during a secondary portion of the discharge stroke; a fluid pressure accumulator selectively and sequentially connected with said annular chamber and said cylindrical chamber and being pressurized by said fluid pump pressure source when the annular chamber is pressurized; restricted exhaust passage means in fluid communication with said cylindrical chamber for providing controlled exhausting of the fluid pressure in said pressure accumulator through said cylindrical chamber during the secondary portion of the discharge stroke; and spring means operatively connected with said reciprocating fluid pump for enforcing the intake stroke thereof.

4,342,544
RECIPROCATING PUMP

Gerard Pere, Le Breuil, France, assignor to Creusot-Loire, Paris, France

Filed Mar. 28, 1980, Ser. No. 135,852
Claims priority, application France, Mar. 30, 1979, 79 08006
Int. Cl.³ F04B 1/18
U.S. Cl. 417—269 5 Claims



1. A pump for liquid comprising:

(a) a plurality of pumping chambers formed by cylinders fixed to a support structure in a barrel type arrangement and by pistons slidable in said cylinders under the action of drive means;

(b) a central cylinder head having

(i) a central distribution channel;

(ii) a plurality of conduits diverging radially from said central distribution channel; and

(iii) a plurality of collector conduits opening into a collector passage connected to a general discharge conduit;

(c) a plurality of lateral cylinder heads arranged radially about said central cylinder head, each of said lateral cylinder heads being sealingly in abutment against a surface of said central cylinder head;

(d) intake valves and discharge valves mounted on each of said lateral cylinder heads;

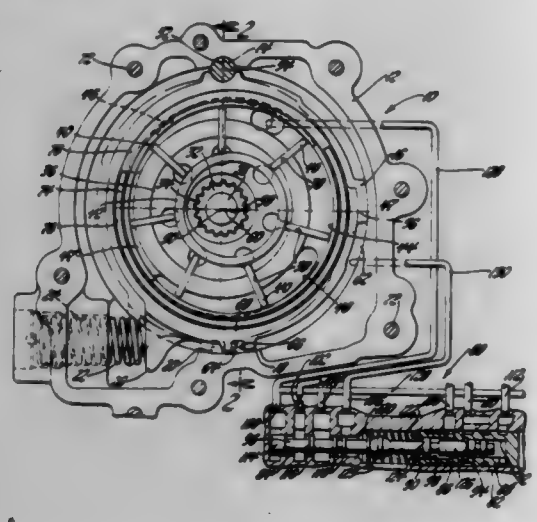
(e) conduits in said lateral cylinder heads communicating with said radial conduits and with said pumping chambers;

(f) whereby said liquid is carried from a general intake pipe through said central distribution channel and said radial conduits which communicate downstream of said intake valves with said pumping chambers, said discharge valves being located downstream of said pumping chambers to control the flow of said liquid carried by said collector conduits.

4,342,545
VARIABLE DISPLACEMENT PUMP

David A. Schuster, New Boston, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 927,507, Jul. 24, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 110,044
Int. Cl.³ F04C *15/02, 29/08*
U.S. Cl. 418—26 2 Claims



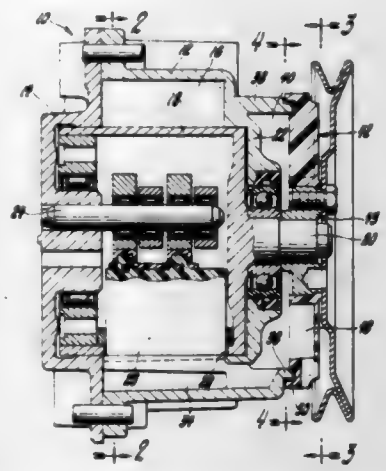
1. A variable displacement vane pump comprising; a housing; inlet and discharge ports formed in said housing; a drive shaft rotatably mounted in said housing; a rotor driven by said drive shaft and coaxially aligned therewith; a plurality of radially extending vanes slidably disposed in said rotor; pivot means disposed in said housing; a ring member pivotally disposed on said pivot means in said housing and cooperating with said housing to form a displacement control chamber including wall means for positioning said ring member, said ring having a central axis eccentric to the axis of said rotor, said ring cooperating with said rotor and vanes to form a plurality of pumping chambers that are successively connected to said inlet aand discharge ports, fluid in said chambers creating an interal pressure force adjacent said discharge port which force is directed to establish a moment continuously in one direction on said ring about said pivot means; spring means acting on said ring member and urging said ring member in said one direction; and pressure control valve means for pressurizing said control chmber to establish a controlled moment on said ring about said pivot means in a direction opposite to the first mentioned moment, said controlled moment being cooperable with said spring means and said wall means to control the displacement of said pump by controlling the pivotal position of the center of the ring within a quadrant defined by intersecting perpendicular lines one of which intersects the axis of said rotor and the other of which intersects the axes of both the rotor and the pivot means, said quadrant being remote from and exclusive of the pivot means, and the center of said ring being continually noncoincident to either of the intersecting perpendicular lines defining said quadrant.

4,342,546
AIR PUMP WITH CENTRIFUGAL FILTER

Frederick L. J. Rehfeld, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 19, 1980, Ser. No. 161,157
Int. Cl.³ F01C *21/00;* B01D *45/14*
U.S. Cl. 418—47 2 Claims

1. An air pump comprising a housing defining a pumping chamber having an end wall, a pumping member disposed in said chamber and having a shaft extending through said wall, said wall having an opening for air flow into said chamber, a rim extending outwardly from said wall concentric with said shaft and defining an annular recess between said rim and said shaft, and a centrifugal filter element mounted on said shaft and enclosing said recess to define an inlet plenum for air flow to said opening, said filter element having a plurality of curved passages extending substantially radially from the atmosphere at their outer ends to said plenum at their inner ends whereby foreign material is separated from and centrifuged out of the air flow through said passages to said plenum upon rotation of

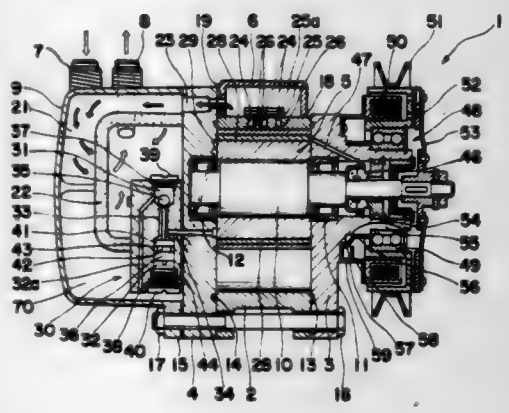


said shaft and said filter element, and wherein said filter element reaches beyond said rim and has a cylindrical extension which overlies and is closely adjacent the outer surface of said rim to inhibit passage of foreign material between said filter element and said rim.

4,342,547
ROTARY VANE COMPRESSOR WITH VALVE CONTROL OF OIL TO BIAS THE VANES

Kaichi Yamada, Kusatsu; Yoshiyuki Morikawa, Otsu; Katuharu Fujio, Shiga; Koichi Yoshihiro, Otsu; Toshio Matsuda, and Tatsuhisa Taguchi, both of Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 1, 1980, Ser. No. 136,392
Claims priority, application Japan, Apr. 4, 1979, 54-40574; Apr. 5, 1979, 54-41373; Apr. 5, 1979, 54-41374; Apr. 5, 1979, 54-41375; Apr. 5, 1979, 54-41376
Int. Cl.³ F04C *29/02*
U.S. Cl. 418—84 3 Claims



1. A vane type rotary compressor which comprises: a cylinder having a cylindrical inner wall; a rotor rotatable within said cylindrical inner wall and having an axis of rotation eccentric to the axis of said cylinder for causing part of the said rotor to approach close to the cylindrical inner wall, said rotor having a plurality of radially extending vane grooves therein; vane members mounted in said rotor for being selectively projected from and retracted into said rotor and contacting said cylindrical inner wall at the radially outer ends thereof; said cylinder having a discharge opening therein; a pair of front and rear end plates on said cylinder and holding said rotor and vanes between the inner faces thereof for forming a suction space and a compression space within said cylinder between said vanes and said rotor and on which said rotor is rotatably supported; a casing on said cylinder and forming a space communicating with said discharge opening and a lubricating oil tank at the bottom portion of said casing; said com-

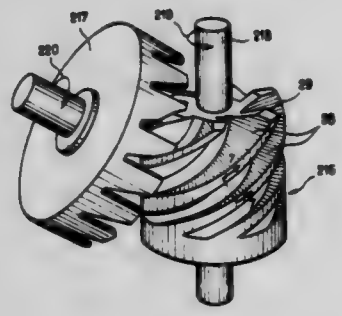
pressor having a lubricating oil supply passage extending between said lubricating oil tank and the radially inner ends of said vane grooves for feeding lubricating oil to said vane grooves at the pressure of the gas within said casing which has been discharged from said compression space for pressing the vane members against the cylindrical inner wall of said cylinder; a plunger valve mechanism in said supply passage and having a valve for selective opening and closing of said lubricating oil passage, a plunger bore, a plunger reciprocally movable in said bore and having one end engaging said valve for opening and closing said valve, and a seal ring having a comparatively large frictional resistance and provided between said plunger and said plunger bore; and said compressor having a pressure passage communicating at one end with the compression chamber in said cylinder and at the other end to said bore on the other end of said plunger, and means in said pressure passage forming a narrow passage having a small cross sectional area as compared to the cross-sectional area of the remainder of said pressure passage, whereby pressure within said compression chamber, when applied to the other end of said plunger through said pressure passage, overcomes the discharge gas pressure within said casing so as to move said plunger and to open said valve for feeding the lubricating oil to said vane grooves under said discharge pressure.

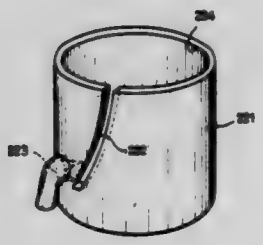
4,342,548

SCREW HAVING A V-SHAPED GROOVE PROFILE FOR COOPERATING WITH A PINION IN A COMPRESSION OR EXPANSION MACHINE

Bernard Zimmern, Neuilly sur Seine, France, assignor to Uniscrew Limited, Hamilton, Bermuda

Division of Ser. No. 897,497, Apr. 18, 1978, Pat. No. 4,222,691.
This application Dec. 5, 1979, Ser. No. 100,399
Claims priority, application France, Jun. 2, 1977, 77 16861
Int. Cl.[3] F01C *1/12, 21/08;* F04C *18/12*
U.S. Cl. 418—195 2 Claims





1. In a compression or expansion machine having a screw rotatable on an axis and at least one pinion having teeth disposed on a cylinder, the improvement comprising:

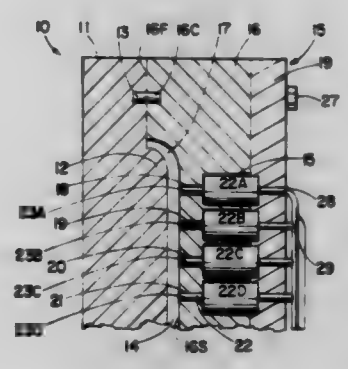
a V-shaped groove profile in said screw, said profile having one flank inclined with respect to radial lines passing through the axis of the screw and another flank lying parallel to such radial lines, the teeth on said pinion complementing the shape of said groove profile for cooperation of said pinion and said screw.

4,342,549

APPARATUS FOR CODING ARTICLES

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 968,216, Dec. 11, 1978, which is a continuation of Ser. No. 667,255, Mar. 16, 1976, abandoned.
This application Jan. 8, 1980, Ser. No. 110,545
Int. Cl.[3] B29C *1/14;* B29F *1/022*
U.S. Cl. 425—150 9 Claims



1. Molding apparatus comprising in combination:

a first mold section,

a second mold section,

means for abutting said first and second mold sections to define a molding cavity therebetween,

a variable shaping means secured to one of said mold sections and protruding therefrom into the mold cavity formed between said mold sections,

said variable shaping means defined by a plurality of movable mold members variably positionable with respect to said one mold section to permit said mold members to be disposed in a coded array on said one mold section wherein selected of said members protrude into said mold cavity,

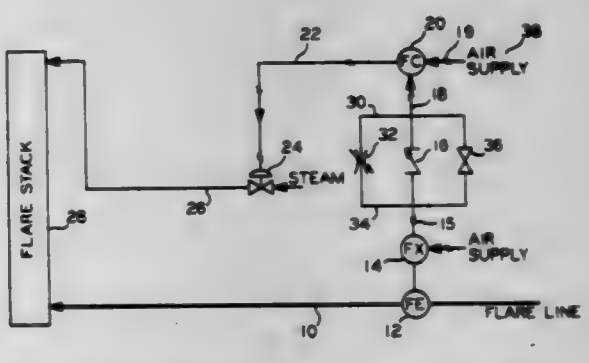
said mold cavity being configured to permit a moldable material disposed in said mold cavity to set and form an article of predetermined shape and said variable shaping means being operable to provide a plurality of cavities in a wall of said molded article, which cavities and their spacing define a code which is detectable by means disposed adjacent the molded article for sensing said cavities and actuating means to selectively protrude said movable mold members into said mold cavity.

4,342,550

METHOD AND APPARATUS FOR THE REDUCTION OF FLARE SMOKE EMISSIONS

Lee Tuck, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 18, 1980, Ser. No. 141,503
Int. Cl.[3] F23J *7/00;* F23D *13/20;* F23J *15/00*
U.S. Cl. 431—4 32 Claims



1. A method comprising:

intermittently passing a combustible gas to a flare;

detecting the passing of said combustible gas to said flare;

generating a first signal representative of the passing of said combustible gas to said flare;

passing steam to said flare in response to said first signal and burning said combustible gas in said flare in the presence of said steam;

slowly decreasing the strength of said first signal when it is detected that said combustible gas is not being passed to said flare; and

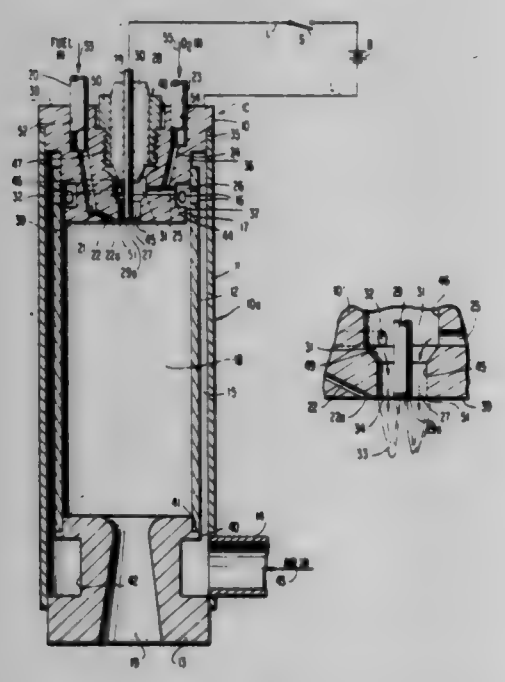
passing steam to said flare in response to said decreasing first signal after said combustible gas has stopped being passed to said flare.

4,342,551

IGNITION METHOD AND SYSTEM FOR INTERNAL BURNER TYPE ULTRA-HIGH VELOCITY FLAME JET APPARATUS

James A. Browning, Hanover, N.H., assignor to Browning Engineering Corporation, Hanover, N.H.

Filed May 23, 1980, Ser. No. 152,965
Int. Cl.[3] F23M *3/00*
U.S. Cl. 431—10 4 Claims



1. In a method of spark-igniting operating reactants in an internal burner type ultra-high velocity flame jet apparatus by causing a confined and selectively continuous stream of combustible fluid media formed of compressed natural air, oxygen-enriched air, or oxygen and a fuel constituting said reactants, to pass through an elongated cylindrical combustion chamber within said internal burner for discharge at the downstream end thereof through a flow constricting nozzle to the atmosphere and by effecting an electrical spark between a first electrode separated by a narrow annular space from a second concentric electrode and extending the length of the spark by passing a flow of natural air under pressure through the annular space, the improvement comprising the steps of:

effecting, at least during initial ignition and burner start up, an additional flow of gas having an enriched oxygen content greater than that of natural air through said narrow annular space, and

supplying said fuel in liquid form to the combustion chamber by discharging said liquid fuel into said enriched oxygen gas flow as it exits from said narrow annular space into the combustion chamber for atomizing said liquid fuel and for creating a highly enriched atomized fuel/oxygen mixture in the area of said extended length spark.

3. In an internal burner type ultra-high velocity flame jet apparatus comprising:

cylindrical tube means,

a nozzle piece closing off one end of said cylindrical tube means, and

an injector piece closing off the other end of said cylindrical tube means,

said cylindrical tube means, said nozzle piece and said injector piece defining an elongated combustion chamber,

means for supplying compressed air to said combustion chamber,

means for supplying fuel to said combustion chamber for mixing with said compressed air to form operating combustion reactants,

spark plug means carried by said internal burner and

means for creating an electrical spark between electrode means of said spark plug for effecting ignition of a combustible media formed by said operating reactants,

the improvement wherein:

said spark plug means comprises a spark plug including a central first electrode borne by said injector piece, axially aligned with said nozzle piece and insulated from said injector piece and carried by said injector piece coaxial with said nozzle piece at the opposite end of said combustion chamber from said nozzle piece,

said conductive injector piece including a portion surrounding said first electrode and forming a second electrode and being spaced therefrom to define an annular space,

said injector piece including an annular compressed air distribution chamber and having longitudinal gap means opening from said air distribution chamber to the combustion chamber interior along the inside periphery of said tube means,

means for supplying compressed natural air to said annular distribution chamber,

at least one radial passage standing between said annular space surrounding said central electrode and said annular distribution chamber for supplying compressed natural air to said annular space surrounding said central electrode,

a fuel supply passage within said injector piece opening to said combustion chamber adjacent said annular space between said first and second electrodes and,

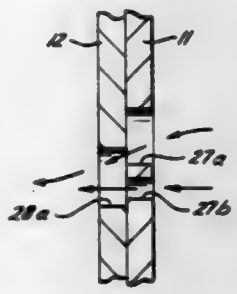
means for supplying a gas having an oxygen content greater than that of said compressed natural air to said annular space during ignition and burner start up for atomization of liquid fuel entering said combustion chamber via said fuel supply passage, whereby: said gas having an oxygen content in excess of that of natural air causes atomization of the liquid fuel entering said chamber in the vicinity of the electrodes and an extended spark between said electrodes axially of said combustion chamber and remote from the inner periphery of said tube means where the majority of the compressed natural air enters said combustion chamber to mix with the fuel and to form the operating reactants therefor.

4,342,552

OIL BURNER

Raymond Trippet, Highland Springs, Va., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,759
Int. Cl.[3] F23M *9/00*; F23Q *3/00*
U.S. Cl. 431—183 16 Claims



1. A method for improving the combustion in a gun type oil burner barrel supplied with a blast of high pressure air and which has a fuel nozzle coaxially positioned in the gun barrel

for forming a predetermined pattern of highly atomized fuel particles for being lighted by an igniter comprising the steps of,

(a) passing the blast of high pressure air through a plurality of pairs of holes in an inner air plate in the burner barrel,

(b) passing the air from each inner air plate pair of holes into a corresponding different single hole in a contiguous outer adjustable control air plate thus forming two incoming columns of high velocity air into the outer air plate single hole from each inner air plate pair of holes, one air column entering the single hole being parallel to the fuel nozzle and the second air column entering the single hole forming a portion of a spiral around the fuel nozzle, and

(c) combining and integrating the two incoming columns of high velocity air from each pair of holes into one large outgoing well mixed turbulent substantially straight column of air from the corresponding hole in the outer air plate for improved combustion by the igniter.

4,342,553

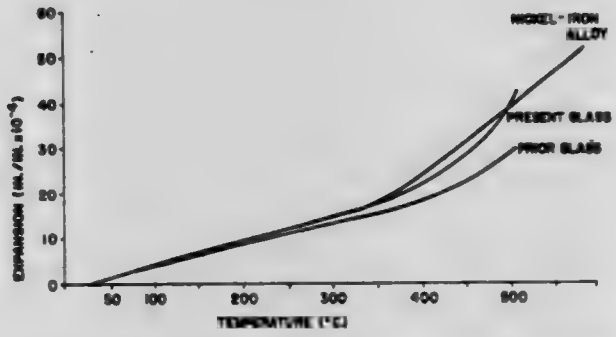
GLASS TO NICKEL-IRON ALLOY SEAL

William A. Graff, Willoughby, and George L. Thomas, Chesterland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 192,915, Oct. 1, 1980, abandoned. This application Sep. 29, 1981, Ser. No. 306,824

Int. Cl.³ C03C *3/08, 7/02;* F21K *5/02*

U.S. Cl. 431—358 6 Claims



1. A glass to metal hermetic seal directly between a nickel-iron metal alloy containing approximately 27–52 weight percent nickel and the balance iron except for minor amounts of other alloying elements and a glass composition which consists essentially of, in weight percent:

SiO_2: 55–66
Al_2O_3: 4.5–10
Na_2O: 0–4
K_2O: 3.5–7
B_2O_3: 19–26
TiO_2: 0–4

except for incidental impurities, residual fluxes and refining agents, having an average linear coefficient of thermal expansion in the 0°–350° C. temperature range between about 45 to 56×10^{-7} per °C. and a transformation temperature no greater than about 425° C.

4. In a photoflash lamp comprising a transparent glass envelope, filamentary combustible material within said glass envelope and inlead wires extending into said glass envelope, the improvements which comprise having the glass envelope formed with a glass composition which consists essentially of, in weight percent:

SiO_2: 55–66
Al_2O_3: 4.5–10
Na_2O: 0–4
K_2O: 3.5–7
B_2O_3: 19–26
TiO_2: 0–4

except for incidental impurities, residual fluxes and refining agents, having an average linear coefficient of thermal expansion in the 0°–350° C. temperature range between about 45 to 56×10^{-7} per °C. and a transformation temperature no greater than about 425° C., having the inlead wires formed with a nickel-iron alloy containing approximately 27–52 weight percent nickel and the balance iron except for minor amounts of other alloying elements, and having a direct hermetic seal between said glass envelope and said inlead wires.

4,342,554

PRODUCTION OF EXPANDED CLAY AND SHALE

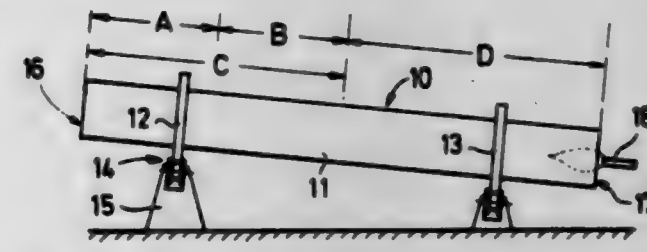
Hans-Joerg Rohrbach, Balingen, Fed. Rep. of Germany, assignor to Rohrbach Technologie KG Baustofftechnik GmbH & Co., Balingen, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,811

Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017288

Int. Cl.³ F27B *14/00*

U.S. Cl. 432—13 9 Claims



1. In a process for producing expanded clay or shale aggregate material in a rotary tubular kiln presenting an essentially linear product conveying and treating region free of lateral offset, the kiln including a raw material charging end and expanded material discharge end at respectively opposite ends of the conveying and treating region and being provided with a burner located in the vicinity of the discharge end for heating the conveying and treating region with the conveying and treating region being composed of a preheating zone and an expansion zone following one another in the direction from the charging end to the discharge end, the preheating zone being more proximate to the charging end and the expansion zone being more proximate to the discharge end, which process is carried out by operating the burner to introduce heat into the conveying and treating region while introducing raw material into the conveying and treating region via the charging end, and conveying the material through the preheating zone in order to dry and heat that material and then conveying the material into the expansion zone to produce the expanded material, with the heat produced by the burner acting to cause essentially all expansion of the material to occur in the expansion zone, and then discharging the expanded material via the discharge end, the improvement comprising providing at least one additional burner having a flame outlet orifice, mounting the additional burner on the kiln to rotate therewith in a position such that the flame outlet orifice is located within the kiln between the expansion zone and the material charging end and is oriented to direct a heating flame toward the material charging end, and supplying additional heat to the raw material in the preheating zone by operating the at least one additional burner to produce the heating flame.

4,342,555

SEALING APPARATUS

Victor A. Bohanszky, Fairview Park, Ohio, assignor to Davy Inc., Cleveland, Ohio

Filed Aug. 6, 1980, Ser. No. 175,727

Int. Cl.³ F27B *7/24;* F26B *25/00;* F27D *1/18*

U.S. Cl. 432—115 4 Claims

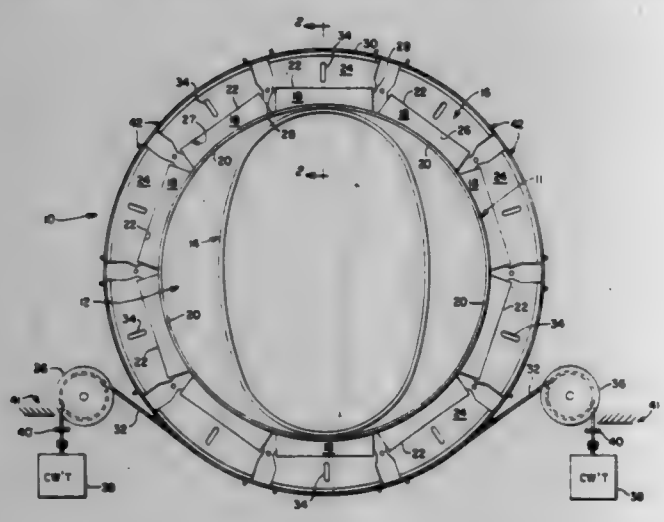
4. An apparatus for sealing a rotary member comprising:

(a) a rotary member having an opening in one end thereof for charging and discharging material therethrough, a plurality of blocks circumscribing said rotary member and engaging the periphery of said rotary member, said blocks acting to seal said opening from the surrounding atmosphere;

(b) means for biasing said blocks radially against said rotary

member including a rope having two ends, said rope overlapping over a portion of said blocks, spaced apart sheaves, weights attached to each end of said rope, said rope being looped about said sheaves such that hoop tension is constantly maintained on said blocks during movement toward and away from said rotary member by said blocks and corresponding movement of said rope is accommodated by raising and lowering of said weights;

(c) a plurality of sements for engaging corresponding ones of said plurality of blocks for holding said blocks against the periphery of said rotary member, each of said segments



having an inner surface for engaging a corresponding one of said graphite blocks and an outer surface for engagement by said rope;

(d) said inner surface of each of said segments having a channel configuration with channel sides to engage sides of corresponding blocks to prevent movement of the blocks in a circumferential direction; and

(e) each of said segments having a radial slot for engagement with a fixed member extending through said slot to provide for radial movement due to changes in the peripheral surface of said rotary member while preventing substantial circumferential movement of said segments.

4,342,556

APPARATUS FOR SIMULATED SHOOTING WITH HIT INDICATOR

Werner Hasse, Fischbeker Str. 18, 2153 Neu Wulmstorf, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,541

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 2905422

Int. Cl.³ F41J *5/12*

U.S. Cl. 434—22 **14 Claims**

1. An apparatus for simulating shooting, comprising:

a laser transmitter for transmitting a laser beam towards a target;

evaluation means for determining the direction of deviation of the laser beam from the target;

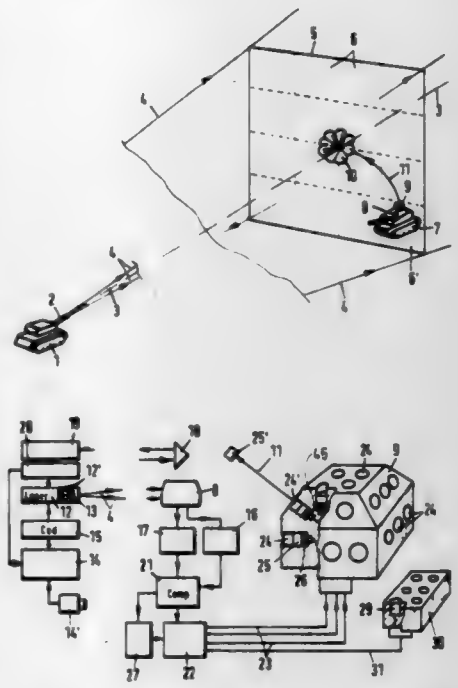
a hit indication means positioned on the target comprising at least one pyrotechnic charge; and

ignition means to ignite the pyrotechnic charge in response to the evaluation means;

an ejector device controlled by the evaluation means for ejecting the pyrotechnic charge from the target; and

ejector directional means in the ejector device for modifying the direction of ejection of said pyrotechnic charge;

said ejector directional means being controllable by said evaluation means so that the direction of ejection of the pyrotechnic charge is substantially into the direction cor-



responding to the off-aim direction determined by the evaluation means.

4,342,557

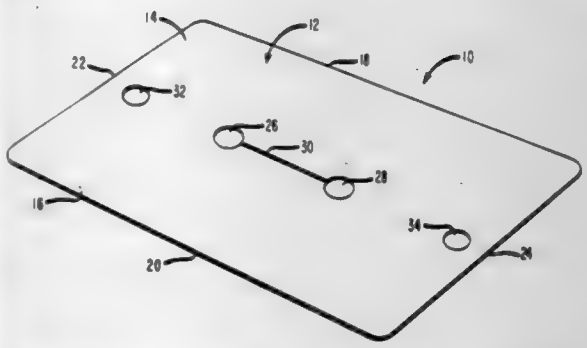
DEVICE FOR TYING DOUBLE BOW KNOT

Lesley F. Bandar, 53 Pleasant View Rd., Arlington, Mass. 02174

Filed Jun. 8, 1981, Ser. No. 271,504

Int. Cl.³ G09B *19/00*

U.S. Cl. 434—260 **6 Claims**



1. Device useful in tying a double bow knot in a length of material comprising a planar-shaped body member, a first pair of spaced-apart openings in and extending through said body member, an elongated narrow opening in and extending through said body member and connecting said first pair of spaced-apart openings, a second pair of openings spaced-apart a greater distance from one another than said first pair and located on an imaginary line in alignment with said elongated narrow opening, said second pair of openings being located equidistantly from each of said first pair of openings, said second pair of openings being unconnected by slits with said first pair of openings.

4,342,558

HYDROFOIL SWIM FIN ASSEMBLIES

Wayne Wilson, 153 1/2 N. 600 West, Salt Lake City, Utah 84116

Continuation-in-part of Ser. No. 965,314, Feb. 2, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 140,338

Int. Cl.³ A63B *31/10*

U.S. Cl. 441—61 **10 Claims**

1. A hydrofoil swim fin apparatus comprising:

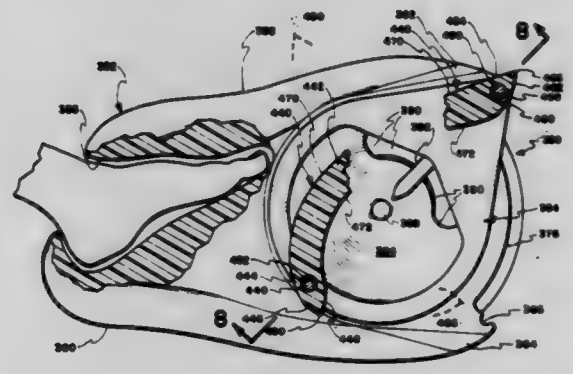
foot receiving housing means;

hydrofoil means disposed to the rear of the housing means;

means pivotably connecting the hydrofoil means to the housing means;

means defining the magnitude of clockwise and counter-clockwise rotation through which the hydrofoil means may pivot in respect to the housing means;

the hydrofoil means comprising blade means comprising (a) leading edge means which divides the relative displacement of water across the blade means into upper and lower water portions, (b) trailing edge means where the upper and lower water portions merge and (c) central flexure means associated with both the leading and trailing edge means and comprising variable curvature means which are caused to flex between convex and concave



configurations during up and down strokes of the apparatus to enhance propulsion of the user through the water during both the up and the down-strokes through hydrofoil action;

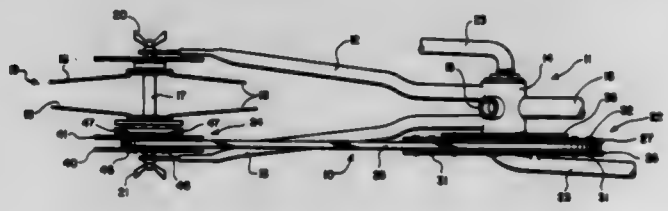
the blade means comprise two opposed sections rotatably joined at a central hub to the housing means and means between said sections adjacent the central hub sized and shaped to enhance liquid flow across the outwardly flexed portion of the central flexure means and to inhibit liquid flow across the inwardly flexed portion of the central flexure means.

4,342,559

DRIVE SYSTEM

Robert N. Williams, Salt Lake City, Utah, assignor to National Technology Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 870,427, Jan. 18, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 132,996
Int. Cl.³ F16H *55/30*
U.S. Cl. 474—50 10 Claims



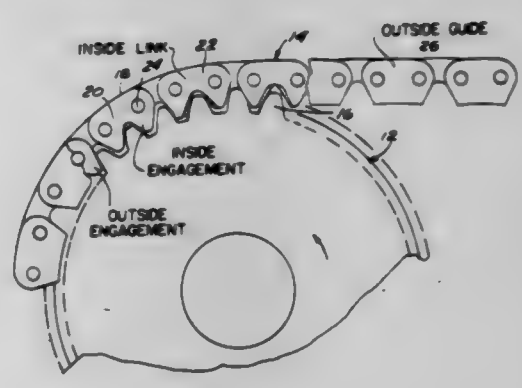
1. A variable diameter pulley comprising a hub, a first sideplate concentric to said hub and fixed thereto, a second sideplate concentric to said hub and rotatable about said hub relative to said first sideplate, a plurality of pairs of non-concentric curved slots in said first sideplate said slots extending outwardly and in the direction of rotation of said hub and first sideplate, a plurality of slots in said movable second sideplate said slots extending from an outer location adjacent the outer end of said curved slots in said first sideplate to an inner location adjacent the inner ends of said curved slots and said hub, a plurality of arcuate belt-engaging segments located between said first and second sideplates, a pair of pins extending laterally from the side of each of said arcuate segments facing said first sideplate, the pins of said pairs being spaced apart and located adjacent opposite ends of said segments and being received in the slots of one of said pairs of curved slots in said first sideplate, at least one pin extending laterally from the other side of each segment and received in a slot in said second sideplate, resilient means acting between said first and second sideplates to bias said second sideplate toward the position where said belt-engaging segments are at the limit of their outward travel in said slots, and said slots in said first and second sideplates being coordinated to the location of said pins on said arcuate segments so that at all radial locations of said pins in said slots a selected chord of each arcuate belt-engaging segment forms a right angle with a radius of said hub.

4,342,560

COMPOSITE CHAIN LINK ASSEMBLY

Timothy J. Ledvina, and Robert H. Mead, both of Ithaca, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 16, 1980, Ser. No. 150,370
Int. Cl.³ F16H *55/30*; F16G *13/02*
U.S. Cl. 474—157 24 Claims



1. A power transmission chain and sprocket combination having a plurality of ranks or sets of interleaved links, pivot means connecting the adjacent ranks or sets of links to permit the articulation of the chain, and a sprocket having a plurality of teeth substantially equally spaced around its periphery, the links of said chain each having a pair of toes separated by a crotch and each toe being defined by an outside flank and an inside flank, the inside flanks of a link at their ends being joined to said crotch, the improvement comprising:

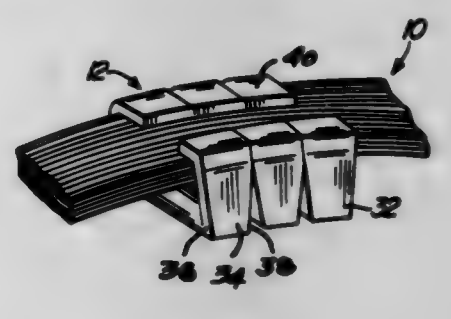
some of the links of said chain being so constructed and arranged to drivingly contact the teeth of the sprocket on the outside flanks of the links only and others of the links of said chain being so constructed and arranged to drivingly contact the teeth of the sprocket on the inside flanks of the links.

4,342,561

POWER TRANSMISSION BELT

Kenneth A. Braybrook, Letchworth, England, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 2, 1980, Ser. No. 155,256
Int. Cl.³ F16G *1/14, 5/12*
U.S. Cl. 474—242 2 Claims



1. A composite power transmission belt especially adapted to drivingly interconnect the pulleys of a pulley transmission, comprising:

first and second continuous metal bands, each having a plurality of perforations therethrough;

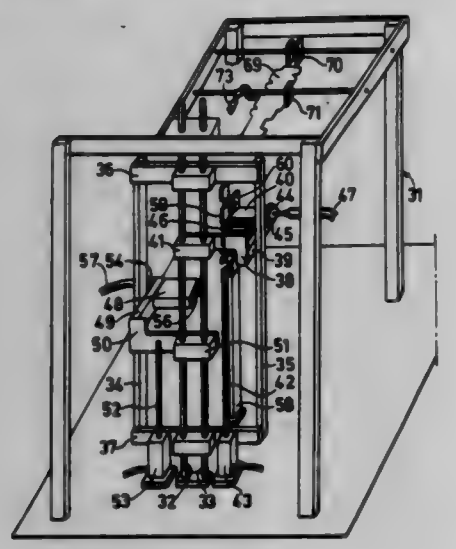
a first elastomer layer between said metal bands with elastomer portions in the perforations of each band;
a first helically wound tensile member in said first elastomer layer and between said metal bands;
a second helically wound tensile member on the outside of one of said metal bands; and
a second elastomer layer on said second helically wound tensile member.

4,342,562

PACKAGE AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

Tor A. Fröldh, Stenungsund, and Leif U. R. Widlund, Mölnlycke, both of Sweden, assignors to Molnlycke Aktiebolag, Sweden

Filed Dec. 12, 1979, Ser. No. 102,659
Claims priority, application Sweden, Dec. 21, 1978, 7813176
Int. Cl.[3] B31B *3/26*
U.S. Cl. 493—124 12 Claims



1. A method of manufacturing a package from a package blank including a plurality of adjacent lateral surfaces intended to form the lateral surfaces of said package and a plurality of adjacent end wall sections intended to form at least one end wall surface of said package, each of said end wall sections being associated with one of said plurality of lateral surfaces, each of said adjacent lateral surfaces being defined by a first set of fold lines with respect to its adjacent lateral surface, and each of said end wall sections being defined by a second set of fold lines with respect to the lateral surface with which it is associated, said method comprising folding said package blank along said first set of fold lines by applying said package blank to the surface of a rotating shaping member including a plurality of surfaces coinciding with said plurality of lateral surfaces of said package so as to form a partially folded package including said lateral surfaces, moving said package blank along a predetermined path, and rotating said package blank by means of said rotating shaping member while it is moving along said predetermined path while at the same time sequentially folding said end wall section along said second set of fold lines at one end of said package by sequentially contacting said end wall sections with a plurality of stationary arms located adjacent to said predetermined path and projecting in a direction transverse to said predetermined path so as to form an end wall surface for said package.

4,342,563

BOX ASSEMBLY SYSTEM

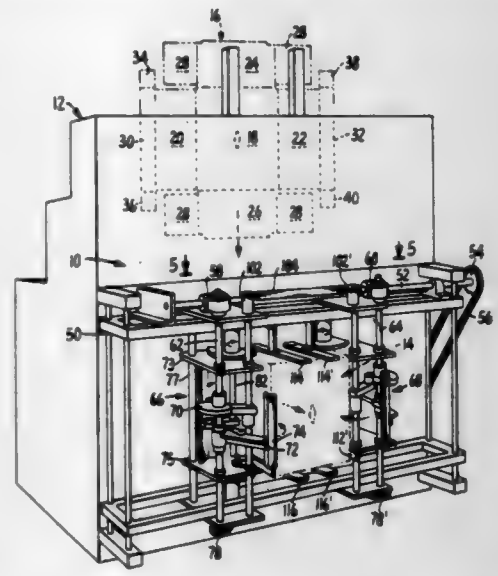
Frederick R. Campbell, Cloverdale, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Jul. 28, 1980, Ser. No. 172,884
Int. Cl.[3] B31B *1/46*
U.S. Cl. 493—168 3 Claims

1. In an apparatus for forming a box having a box body comprising interconnected bottom, side and end walls, shoulder elements connected to said side walls and securing flaps connected to said shoulder elements, the improvement comprising:

means for receiving said box body, said receiving means including a framework and skid means attached to said framework engageable with a plurality of said walls and defining a passageway for said box;

shoulder element positioning means adjacent to said skid means adapted to bend said shoulder elements relative to said side walls so that said shoulder elements define a box interior with said bottom, side and end walls when said box is disposed in said passageway, said shoulder element positioning means comprising reciprocating members and drive means for substantially simultaneously reciprocatably moving said members between a first position whereat said reciprocating members initially engage said shoulder



elements to a second position whereat said shoulder elements are bent substantially 90 degrees relative to said side walls;

securing flap positioning means adjacent to said skid means adapted to bend said securing flaps relative to said shoulder elements and to place said securing flaps into engagement with said end walls, said securing flap positioning means comprising rotatable cam members adapted to engage said securing flaps and urge said securing flaps into engagement with said end walls, said rotatable cam members additionally exerting a force on said box tending to move said box along said passageway; and

holding means engageable with said box bottom wall for positively restraining said box against motion within said passageway during the bending of said shoulder elements and said securing flaps.

4,342,564

APPARATUS FOR THE STACKING AND CONNECTION OF SYNTHETIC-RESIN FOIL BAGS

Hans Lehmacher, Auf dem Hummerich, 5216 Niederkassel-Mondorf, Fed. Rep. of Germany

Filed Jun. 13, 1980, Ser. No. 159,397
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924106
Int. Cl.[3] B31B *23/14*
U.S. Cl. 493—195 6 Claims

1. An apparatus for producing a stack of interconnected synthetic-resin foil bags from a flattened plastic tube having a substantially uniform width, comprising:

punch means juxtaposed to a path of transport of said tube for forming a multiplicity of perforations therein defining the perimeter of a predetermined closed splicing area having at least one rectilinear side extending transversely to said tube and having a length smaller than said width;

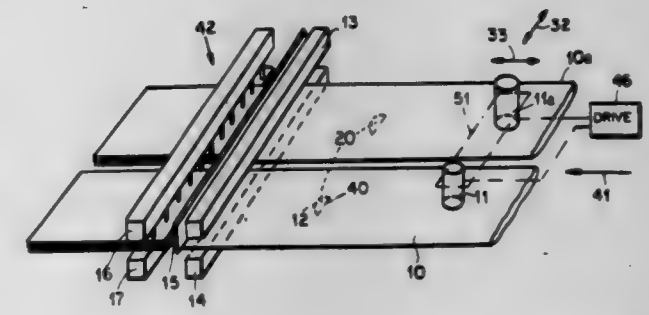
severing means at a stacking station for transversely cutting said tube along said side;

welding means for heat-sealing said tube to form a seam parallel to said side;

clamping means juxtaposed to said severing means for holding said tube during a cutting operation of said severing means;

a needle bar extending transversely to said path at said stacking station, said bar including needle means at least partially for aligning bags in a stack at said stacking station and heating means for thermally bonding splicing areas of adjacent bags in said stack; and

conveyor means for transporting said tube along said path to said stacking station, said heating means including at least one heatable mandrel extending perpendicularly to said tube and to said path, said needle means including at least two needles disposed parallel to said mandrel and substantially in a line therewith extending transversely to said tube, said bar being provided with at least one threaded



bore for the reception and mounting of a heater plug for thermally energizing said mandrel.

4,342,565

BRUSHED STRETCH DENIM FABRIC AND PROCESS THEREFOR

Edward W. Teague, Raleigh; Max H. Hance, Coats, and Carl R. Neal, Morresville, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 68,277, Aug. 20, 1979, Pat. No. 4,283,194. This application Apr. 6, 1981, Ser. No. 251,702

Int. Cl.[3] C09B *7/00;* B32B *7/00*

U.S. Cl. 8—532 26 Claims

1. A stretchable indigo dyed denim fabric comprised of hot indigo dyed warp yarns and textured stretch filling yarns wherein the warp yarn is selected from the group consisting of polyester and cotton blends, natural and synthetic yarns and blends of natural and synthetics.

4,342,566

SOLID PHASE ANTI-C3 ASSAY FOR DETECTION OF IMMUNE COMPLEXES

Argyrios N. Theofilopoulos, and Frank J. Dixon, both of La Jolla, Calif., assignors to Scripps Clinic & Research Foundation, La Jolla, Calif.

Filed Feb. 22, 1980, Ser. No. 123,562

Int. Cl.[3] G01N *33/54, 33/56*

U.S. Cl. 23—230 B 5 Claims

1. An assay method for immune complexes comprising the steps of binding F(ab')2 anti-C3 to a solid substrate, reacting the fluid suspected of containing immune complexes with the bound F(ab')2 anti-C3, and determining the amount of bound immune complexes on said substrate.

4,342,567

SIALIC ACID DETERMINATION METHOD

Nonda Katopodis, Stanford, Conn., and C. Chester Stock, New York, N.Y., assignors to Sloan Kettering Institute for Cancer Research, New York, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,616

Int. Cl.[3] G01N *33/52*

U.S. Cl. 23—230 B 1 Claim

1. Method for determining sialic acid in blood plasma or serum, consisting essentially of the steps of:

transferring approximately 50 μl, precisely measured, of serum to a container with 150 μl distilled water;

vigorously mixing the container;

cooling the container and contents to about 32° F. (0° C.);

adding to the container 3 ml of cold (4°–5° C.) 2:1 v/v mixture of chloroform and methanol, and mixing vigorously;

adding 0.5 ml cold distilled water to the container and mixing gently;

separating the phases in the container by centrifuging;

adding 50 μl phosphotungstic acid solution (1 gram per ml) to 1 ml of the upper layer from the centrifuge mixture, and mixing;

allowing the phosphotungstic acid solution mixture to stand at room temperature for about 5 minutes;

centrifuging the phosphotungstic acid mixture for 5 mins. at 2500 rpm and removing the supernatant;

adding 1 ml water to the precipitate from which the supernatant has been removed, and mixing well until precipitate is in suspension without gross particles;

adding 1 ml of resorcinol reagent, mixing and placing the container in boiling water for a precise period of time of about 15 minutes;

thereafter transfering the container to an ice and water bath and allowing the contents to cool for about 10 minutes;

to the cold container contents adding 2 ml butyl acetate-n-butanol 85:15 v/v mixture at room temperature, mixing well and centrifuging for 5 minutes at 2500 rpm; and

reading the extractive blue color at 580 nm and determining the amount of lipid bound sialic acid by the use of standard curves developed from a standard sample of n-acetyl neuraminic acid (NANA) under the same conditions and by applying the following formula:

LSA mg/100 ml

plasma=(X·100,000λ)/(y·44.7λ·1000)

x=γ NANA read from standard curve for the sample

y=1 ml of supernatant÷volume of entire supernatant (In our experience this had been 1.00/1.30).

4,342,568

REFUSE DISPOSAL APPARATUS

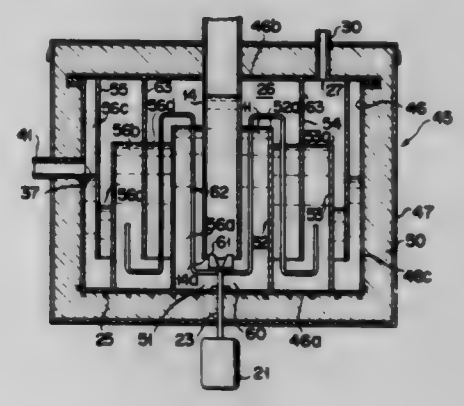
Koichi Taniguchi, Inuyama; Kiyomi Niwa, Ogaki, and Tadaaki Siraisi, Nagoya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 16, 1980, Ser. No. 169,352

Claims priority, application Japan, Jul. 20, 1979, 54-92855; Jul. 23, 1979, 54-94009; Aug. 14, 1979, 54-103317

Int. Cl.[3] C10J *3/00*

U.S. Cl. 48—111 7 Claims



1. A refuse disposal apparatus comprising:

a fermenting vat, including a ceiling portion and a bottom portion, for subjecting refuse supplied thereto to methane fermentation, said fermenting vat being covered with an adiabatic wall;

an inlet device for supplying said fermenting vat with the refuse, the inlet device including an inlet tube having a refuse inlet which extends through said ceiling portion and hangs down into the fermenting vat so that the lower end of the refuse inlet is immersed in the refuse in the fermenting vat, thereby forming in said fermenting vat a gas pool chamber which is cut off from air at said refuse inlet;

a heating device for heating refuse within the fermenting vat;

an agitating device for agitating refuse within the fermenting vat;

gas collecting means for removing from the fermenting vat methane produced as a result of methane fermentation of refuse therein; and

discharge means for removing from the fermenting vat sludge produced as a result of methane fermentation of the refuse,

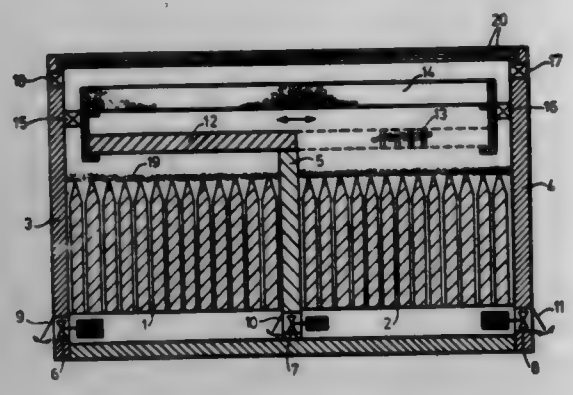
the fermenting vat including more than one spaced apart overflow tubes each of which surrounds said inlet tube and extends upwardly from the bottom portion of the fermenting vat but does not extend to the ceiling portion and one or more partition walls located in spaces defined by adjacent overflow tubes and protruding downward from the ceiling portion of the fermenting vat without protruding to the bottom portion, each overflow tube being longer than the adjacent overflow tube surrounding it, the adjacent overflow tubes and the interposed partition wall together forming at least one U-shaped trap, whereby refuse emerging from the inlet tube is forced to flow over the top of each overflow tube and through said at least one U-shaped trap toward said discharge means.

4,342,569

METHOD AND APPARATUS FOR ABSTRACTING WATER FROM AIR

Peter Hussmann, Munich, Fed. Rep. of Germany, assignor to Mittex AG, Vaduz, Liechtenstein

Filed Sep. 4, 1980, Ser. No. 184,181
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935697
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—33 31 Claims



1. A method of abstracting water from air using first and second heat storage condensers operated in conjunction with a single adsorber containing hygroscopic medium, said method comprising a recurring cycle comprising

a first phase wherein a stream of cool, humid air from the atmosphere is used first to cool the first heat storage condenser and then to moisten the hygroscopic medium;

a second phase wherein a stream of warm air heated by solar radiation is used to expel the moisture from the hygroscopic medium and to carry the expelled moisture into said first heat storage condenser where said moisture condenses and releases its heat of condensation;

a third phase wherein a second stream of cool, humid air from the atmosphere is used first to cool the second heat storage condenser and then to remoisten the hygroscopic medium; and

a fourth and final phase wherein a second stream of warm air heated by solar radiation is used to expel the moisture from the hygroscopic medium and to carry the expelled moisture into said second heat storage concenser where the moisture condenses and releases its heat of condensation; and

wherein the stream of warm air from said second phase is preheated using the heat of condensation picked up by said second heat storage condenser in said fourth phase, and the stream of warm air in said fourth phase is preheated using the heat of condensation picked up by said first heat storage condenser in said second phase before said warm air is additionally heated by solar radiation or used to expel moisture from said hygroscopic medium.

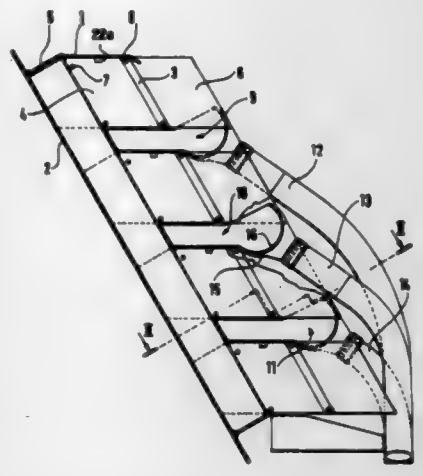
14. Apparatus for abstracting water from air comprising first and second heat storage condensers disposed in a structure with a transparent roof, a single adsorber means containing a hygroscopic medium disposed above said first and second heat storage condensers, and air handling means and air shut-off means for selectively passing streams of air through at least one of said heat storage condensers and through said adsorber means in a desired sequence and direction; said air handling means comprising first selectively operable fan means for passing a stream of air over said first heat storage condenser, second selectively operable fan means for passing a stream of air over said second heat storage condenser and third selectively operable fan means for passing a stream of air from one of said first and second heat storage condensers to the other of said first and second heat storage condensers and vice versa.

4,342,570

APPARATUS FOR SEPARATING DROPLETS OF LIQUID ENTRAINED IN A GAS OR A VAPOR

Jacques Marjollet, Paris; Jean-Claude Mevel, Les Ulis; Gerard Palacio, Montmorency, and Gerard Tondeur, Velizy-Villacoublay, all of France, assignors to Societe Anonyme dite: Stein Industrie, Velizy-Villacoublay, France

Filed Jul. 10, 1981, Ser. No. 282,348
Claims priority, application France, Jul. 10, 1980, 80 15364
Int. Cl.³ B01D *45/16*
U.S. Cl. 55—418 7 Claims



1. Apparatus for separating droplets of liquid entrained in a gas or a vapour, the apparatus comprising:

(a) stacked bundles of vertically disposed, parallel corrugated wafers between which the liquid droplet charged gas or vapour is made to flow, said bundles being housed between panels which are welded round all their edges to a support structure so as to define a horizontal gas or vapour flow direction between adjacent wafers;

(b) a gutter disposed at the lower edge of each bundle to collect the liquid running down the wafers; and

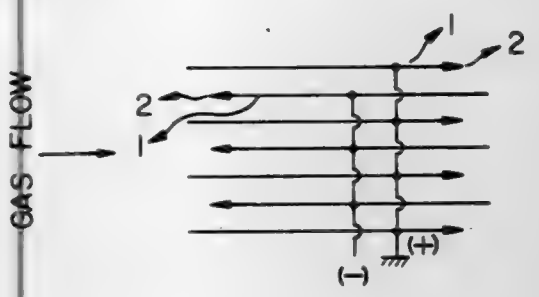
(c) a drain tube connected to each gutter so that the liquid collected by the gutters is drained away and wherein the lower edges of the wafers are notched in such a manner as to catch drops of liquid flowing along said lower edges and cause them to drop into the gutters rather than being entrained by the flow of the gas or vapour.

4,342,571

ELECTROSTATIC PRECIPITATOR

Tsutomu Hayashi, Yokohama, Japan, assignor to United McGill Corporation, Columbus, Ohio

Continuation of Ser. No. 739,802, Nov. 8, 1976, abandoned, which is a continuation of Ser. No. 560,191, Mar. 20, 1975, abandoned. This application Jun. 14, 1978, Ser. No. 915,460
Claims priority, application Japan, May 18, 1974, 49-50257
Int. Cl.³ B03C *3/08*
U.S. Cl. 55—137 11 Claims



1. An electrostatic precipitator for removing particles entrained in a fluid stream, comprising a plurality of flat-plate dust-collecting electrodes arranged in a generally uniformly spaced and parallel relationship as to be generally juxtaposed

with one another to thereby define therebetween passage means for the flow of said fluid stream therethrough, a first of said flat-plate dust-collecting electrodes having an upstream edge for being situated relatively upstream to the flow of said fluid stream, said first flat-plate dust-collecting electrode also having a downstream edge for being situated relatively downstream to the flow of said fluid stream, a second of said flat-plate dust-collecting electrodes also having an upstream edge for being situated relatively upstream to the flow of said fluid stream, said second flat-plate dust-collecting electrode also having a downstream edge for being situated relatively downstream to the flow of said fluid stream, said first flat-plate dust-collecting electrode having said upstream edge thereof positioned at a distance further upstream than said upstream edge of said second flat-plate dust-collecting electrode, said first flat-plate dust-collecting electrode also having said downstream edge thereof positioned at a distance further upstream than said downstream edge of said second flat-plate dust-collecting electrode, first discharge electrode means of a first electrical polarity carried only along said downstream edge of said first flat-plate dust-collecting electrode and extending therefrom, and second discharge electrode means of a second electrical polarity opposite to said first electrical polarity carried only along said upstream edge of said second flat-plate dust-collecting electrode and extending therefrom thereby providing for the production of uniform and non-uniform electric fields, said first discharge electrode means comprising a projecting end portion projecting in a first direction from said first flat-plate dust-collecting electrode, and said second discharge electrode means comprising a projecting end portion projecting in a second direction from said second flat-plate dust-collecting electrode, said first direction and said second direction being generally opposite to each other, said upstream edge of said first flat-plate dust-collecting electrode and said downstream edge of said second flat-plate dust-collecting electrode being devoid of discharge electrode means, said upstream edge of said second flat-plate dust-collecting electrode being situated substantially closer to said upstream edge of said first flat-plate dust-collecting electrode than to said downstream edge of said first flat-plate dust-collecting electrode, said downstream edge of said first flat-plate dust-collecting electrode being situated substantially closer to said downstream edge of said second flat-plate dust-collecting electrode than to said upstream edge of said second flat-plate dust-collecting electrode, said first discharge electrode means projecting in said first direction a distance such that said projecting end portion of said first discharge electrode means terminates at a location upstream relative to the location of said downstream edge of said second flat-plate dust-collecting electrode, and said second discharge electrode means projecting in said second direction a distance such that said projecting end portion of said second discharge electrode means terminates at a location downstream relative to the location of said upstream edge of said first flat-plate dust-collecting electrode.

4,342,572

THERMAL CIRCULATION GAS TREATER

Rodney T. Heath, 109 W. 31st St., Farmington, N. Mex. 87501

Filed Jan. 5, 1981, Ser. No. 222,285
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—160 13 Claims

1. In a well effluent separator system having a high pressure separator and a separate low pressure fluid dehydrator system with a reboiler for the fluid dehydrator, the improvement of a closed glycol heating system for the high pressure separator comprising:

(a) closed heat exchange coil means in the reboiler for heating the glycol of said closed heating system;

(b) a hot glycol supply means for receiving hot glycol from said coil means;

(c) standpipe means for delivering hot glycol from said hot glycol supply means;

(d) seal pot means defining a closed chamber and enclosing a lower end of said standpipe means for holding a variable quantity of hot glycol in a lower end portion thereof and a variable quantity of gas in an upper end portion thereof and having an upper surface level variably located above an inlet opening at the lower end of said standpipe means;

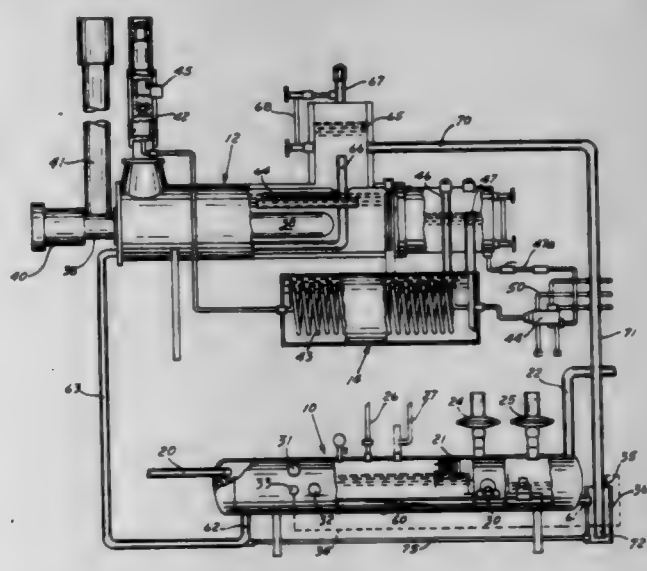
(e) heat exchange means in the high pressure separator receiving hot glycol from said seal pot means and for transferring heat from the hot glycol to the contents of the separator and being in continuous communication with a mid-portion of said seal pot means through a seal pot outlet opening located so as to be below the upper surface level of the hot glycol in a first mode of operation and above the upper surface level of the hot glycol in a second mode of standby operation;

(f) return line means for connecting said heat exchanger means to said coil means;

(g) variable pressure gas line means terminating in said seal pot means for controlling the glycol level therein for controlling the quantity of glycol transmitted to heat exchange means in the high pressure separator; and

(h) bypass line means for continuously connecting said seal pot means to said return line means whereby there is a constant continuous flow of hot glycol therebetween.

10. A fluid heating system for heating a gas-liquid type mixture in a gas-liquid separator unit of a natural gas dehydrator apparatus having a closed loop glycol-gas contacting system containing gas treatment glycol and including a reboiler unit for heating water rich laden gas treatment glycol after



contact with the natural gas to remove the water and provide hot lean gas treatment glycol for recirculation in the closed loop glycol-gas contacting system, the fluid heating system comprising:

a first heat exchanger means mounted in the gas-liquid separator unit for receiving hot separator-fluid heating glycol and transmitting heat from the hot separator-fluid heating glycol to the gas-liquid type mixture by conduction through the first heat exchanger means;

a second heat exchanger means mounted in the reboiler unit for receiving cool separator-fluid heating glycol from said first heat exchanger means and reheating the separator-fluid heating glycol by heat transfer from the hot lean gas treatment glycol in the reboiler unit by conduction through said second heat exchanger means to provide hot separator-fluid heating glycol for recirculation through said first heat exchanger means;

a storage means having a storage inlet opening connected to said second heat exchanger means for receiving hot separator-fluid heating glycol from said second heat exchanger means and storing a predetermined minimum volume of hot separator-fluid heating glycol therewithin prior to transfer to said first heat exchanger means, and having a storage outlet opening connected to said first heat exchanger means for enabling flow of hot separator-fluid heating glycol thereto;

a seal pot means having a seal pot inlet opening connected to

said storage outlet opening of said storage means for receiving hot separator-fluid heating glycol therefrom, and having a hot separator-fluid heating glycol holding chamber in the bottom portion thereof for holding variable amounts of separator-fluid heating glycol with variable upper surface levels of hot separator-fluid heating glycol therein, and having a gas holding chamber in the upper portion for holding variable quantities of gas;

a storage to seal pot passage means for enabling continuous flow of hot separator-fluid heating glycol from said storage means to said seal pot means and for providing a seal pot inlet opening within said seal pot means adjacent the bottom thereof adapted to be continuously located below the variable upper surface levels of the hot separator-fluid heating glycol held in said seal pot means;

a seal pot to first exchanger passage means for enabling flow of hot separator-fluid heating glycol from said seal pot means to said first heat exchanger means and for providing a seal pot outlet opening located above said seal pot inlet opening a distance such as to provide a first full continuous flow operating condition and a second variable continuous flow operating condition, and a third non-flow operating condition for hot separator-fluid heating glycol which are dependent solely on the level of hot separator-fluid heating glycol in said seal pot means;

a first heat exchanger to second heat exchanger passage means for enabling continuous flow of cool glycol from first said separator heat exchanger means to said second heat exchanger means providing a separator outlet opening located above a reboiler inlet opening;

bypass passage means for enabling continuous flow of hot separator-fluid heating glycol directly from said seal pot means to said first heat exchanger to second heat exchanger passage means under all conditions of operation of said seal pot means;

gas passage means having a gas inlet opening connected to the upper portion of said seal pot means for supplying gas at variable pressures thereto above the upper level of hot glycol in the lower portion thereof for holding variable quantities of gas under pressure to control the upper level of the hot separator-fluid heating glycol and establish the first, second and third operating conditions solely in accordance with the pressure and volume of gas in the chamber;

gas-operated control means for sensing the temperature of the fluids in said gas-liquid separator means and being operably connected to said gas passage means for controlling the flow of gas to said seal pot means and automatically establishing said first condition of operation whenever the temperature of the fluids in the separator is below a predetermined minimum temperature and automatically establishing said second and third operating conditions whenever the temperature of the fluids in the separator is above said predetermined minimum temperature;

said fluid heating system providing a closed loop separator-fluid heating glycol system having a flow path which is completely separate from the path of the closed loop glycol-gas contacting system, and being constructed and arranged to provide for continuous uninterrupted flow of separator-fluid heating glycol therewithin caused solely by thermosiphon effect due to the temperature differences between the hot separator-fluid heating glycol downstream and the cool separator-fluid heating glycol upstream of said second heat exchanger means.

4,342,573

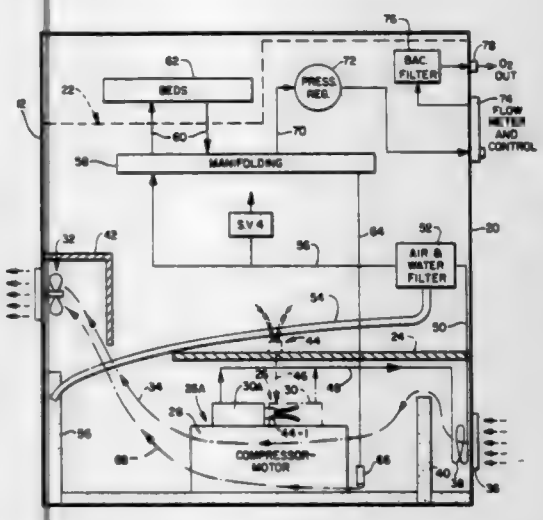
COMPACT OXYGEN CONCENTRATOR

Norman R. McCombs, Tonawanda, N.Y., and John Schlaechter, Grandview, Ohio, assignors to Greene & Kellogg, Incorporated, Tonawanda, N.Y.

Filed Oct. 12, 1979, Ser. No. 84,374

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—161 **40 Claims**



1. A machine for separating a constituent gas out of air using pressure swing adsorption, said machine including air compressor means, at least one vessel containing a bed of adsorbent material, said adsorbent material preferentially adsorbing at least one of the constituent gases in the air, a plurality of solenoid valves to control gas flows into and out of said at least one vessel, all of said plurality of solenoid valves being normally closed (no flow), control means for operating said solenoid valves in a cyclical manner to achieve alternate adsorption of said at least one constituent gas in and purging of said at least one constituent gas out of said at least one bed of adsorbent material according to a pressure swing adsorption technique, an unloading solenoid valve operatively cooperative with said compressor means, and said control means comprising means for electrically operating said unloading solenoid valve for dumping the compressor means air output until the pressure swing adsorption system is prepared to operate.

4,342,574

HOT GAS FILTER

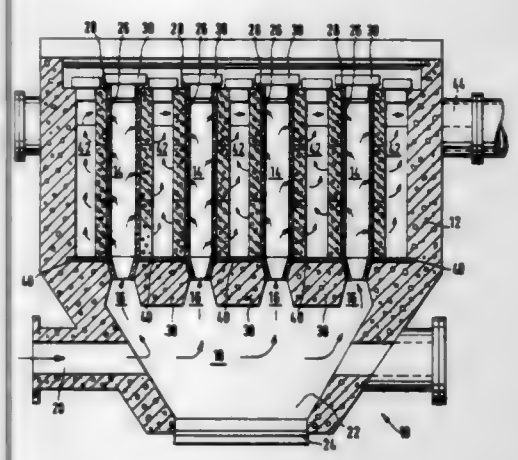
Wolfgang Fetzer, Mühlhausen, Fed. Rep. of Germany, assignor to Kraftanlagen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 20, 1980, Ser. No. 179,835

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1979, 2935564

Int. Cl.³ B01D *29/14, 39/20, 46/02*

U.S. Cl. 55—341 M **17 Claims**



1. Hot gas filter for separating solid particles from high temperature gases or waste gases, comprising: a filter case made of heat-resistant brick-work, at least one oblong filter cell

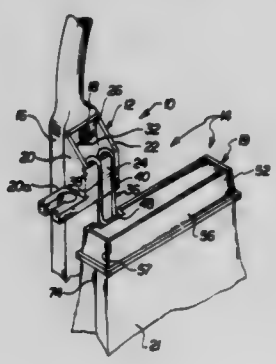
housed in said filter case, said case comprising a hot gas supply duct and means for connecting one end of said at least one filter cell with said hot gas supply duct, the other end of said at least one filter cell being tightly closed by a removable cover, said at least one filter cell having walls at least partly made of bricks with perforations, at least one replaceable filter hose of heat resistant fabric or tissue lining the walls of said at least one filter cell, and clean gas receiving means outside said at least one cell in said filter case for receiving hot gases passed through said at least one filter hose and said at least one filter cell and clean gas outlet means communicating with said receiving means for exhausting clean gas from said case.

4,342,575

BAG TOP COVER ASSEMBLY FOR A VACUUM CLEANER

Ernest R. Scott, Mayfield Hts., Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Sep. 24, 1981, Ser. No. 305,193
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—378 **9 Claims**



1. In an upright vacuum cleaner having a motor housing, a handle pivotally connected to said housing, and a flexible dirt-receiving bag extending between said housing and said handle, in combination therewith, the improvement comprising a top casing assembly for supporting the top of said bag, said top casing assembly comprising a rectangular cup-shaped cover having top, side, and end faces enveloping a portion of the top of said bag, attaching means attaching said cover to said handle and to the top of said bag within said cover, said attaching means including a wire hanger extending through the top face of said cover, said hanger extending from a location adjacent one end of said cover toward the other end of said cover, said attaching means further including clamping web means, means to fix said web means to the underside of the top face of said cover so that said web means clamps said wire against the underside of said top face, and means to attach said bag to said web means so that said enveloped portion of said bag substantially fills the longitudinal and lateral dimensions of said cover.

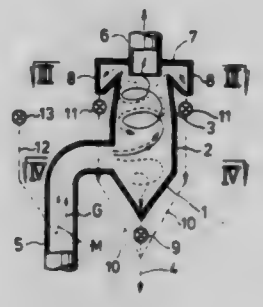
4,342,576

PARTICLE SEPARATOR

Masao Seki, and Hideo Sato, both of Yokosuka, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1980, Ser. No. 163,325
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—452 **3 Claims**

1. A particle separator for particle-laden gas, said separator having a lower body, an intermediate body and an upper body securely joined in the order named, said lower body being in the form of a conical hopper having at its bottom an outlet for collected particles, said intermediate body being cylindrical in shape and having an inlet for particle-laden gas to flow into said intermediate body, said inlet being so opened that the particle-laden gas is caused to spiral or swirl in said intermediate body, said upper body being of frustro-conical form and having a top wall spaced apart from said inlet by a selected distance, a gas discharge pipe mounted within the upper end of said upper body and extending through an opening in said top wall of said upper body coaxially thereof, said pipe having an entrance within the upper end of said upper body and spaced above said inlet enabling a non-reversing gas flow path to be established between said inlet and entrance, and particle trapping chambers extending from said upper body proximate the said top wall thereof and communicating with said upper body through openings formed through the peripheral wall thereof so that while the particle-laden gas spirals upward in said intermediate and upper bodies the particles separated from the gas can be trapped and collected in said particle trapping chambers

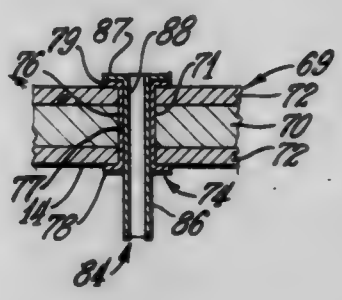


4,342,577

METHOD AND APPARATUS FOR FORMING GLASS FIBERS

Mohinder S. Bhatti, and Alfred Marzocchi, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 27, 1980, Ser. No. 200,676
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—1 **29 Claims**



1. A laminated wall for a feeder for supplying streams of glass to be attenuated into filaments comprising:

a refractory metal core having an oxygen impervious, precious metal sheath intimately bonded thereto by hot isostatic pressing to form a laminate, said laminate having at least one aperture extending therethrough adapted to permit said molten glass to flow therethrough; and

an element positioned in said aperture to prevent the oxidation of said core at elevated temperatures.

4,342,578

METHOD OF FORMING APPARATUS FOR FORMING GLASS FIBERS

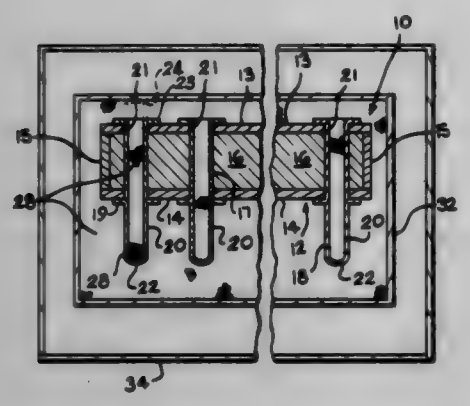
Mohinder S. Bhatti, Newark, and James M. Higginbotham, Sr., Reynoldsburg, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 20, 1981, Ser. No. 255,984
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—1 **7 Claims**

1. A method of forming a laminated wall for a feeder for supplying molten streams of glass to be attenuated into filaments comprising:

providing a refractory metal core;

providing oxygen impervious, precious metal sheathing material around said core, said sheathing material and said core having a plurality of apertures extending therethrough;



inserting oxygen impervious, precious metal elements into said apertures to form a loose assembly; and

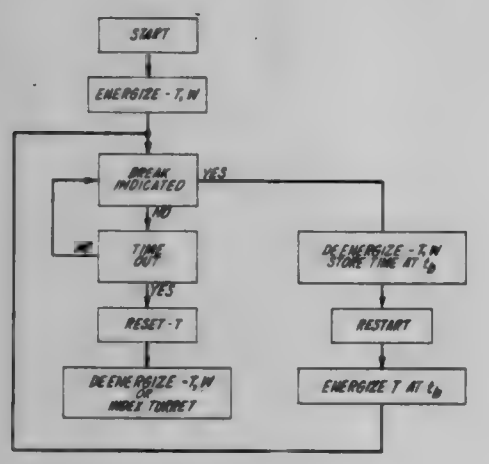
hot isostatically pressing said assembly to form said laminated wall having an oxygen impervious, precious metal sheath and elements intimately bonded thereto.

4,342,579

METHOD AND APPARATUS FOR COLLECTING STRAND

James E. Sanders, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 29, 1981, Ser. No. 229,682
Int. Cl.[3] C03B *37/025*
U.S. Cl. 65—2 20 Claims



1. A method of collecting glass filaments comprising:

supplying a plurality of streams of molten glass;

rotating a member to attenuate said streams into filaments and to collect said filaments as a first strand of glass filaments on said member in layers;

varying the speed of said rotatable member according to a predetermined pattern;

sensing the absence of said first strand being wound around said member to identify a reference point in said pattern;

supplying a second strand of glass filaments to said member from said streams;

initiating collection of said second strand upon said member over said first strand thereon at a speed substantially corresponding to said reference point in said pattern; and

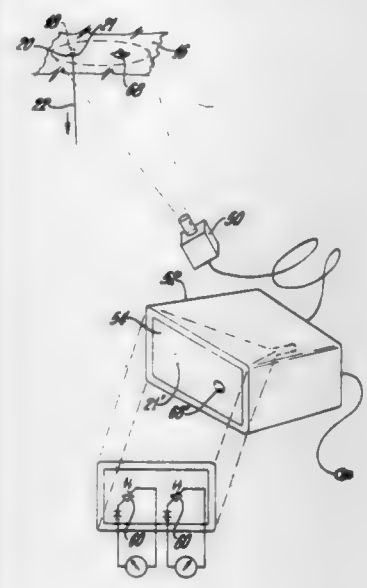
continuing to rotate said member according to said pattern subsequent to said reference point to attenuate said streams into filaments and to collect such filaments as said second strand of glass filaments thereon.

4,342,580

METHOD OF AND MEANS FOR MONITORING FILAMENT BREAK-OUTS OR GLASS FLOOD CONDITIONS IN A GLASS FILAMENT-FORMING PROCESS

Cletis L. Roberson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 2, 1981, Ser. No. 239,299
Int. Cl.[3] C03B *37/025*
U.S. Cl. 65—2 32 Claims



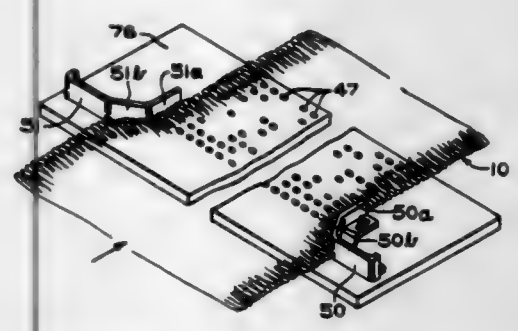
1. The method involving flowing streams of heat-softened glass from orifices in a stream feeder, attenuating the streams to filaments, scanning the stream flow region of the feeder by a lens system of a closed loop video camera, transmitting the image of the stream flow region on a matrix of optoelectronic photo detectors wherein a detector is responsive to an image of the accumulation of glass occurring at an orifice by reason of a filament break-out, the image of the accumulation of glass adapted to cause a change of state of the detector, transmitting from the detector the image of the accumulation of glass onto a receiver screen having a matrix of sweep line intersections corresponding to the spatial locations of the orifices in the feeder whereby the image of the glass accumulated at the orifice at which the filament break-out occurs visually appears on the screen.

4,342,581

MAT WIDTH CONTROL

Jeffrey A. Neubauer, Boiling Springs, N.C.; Walter J. Reese, North Huntington, Pa., and Jimmy D. Walker, Shelby, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 28, 1980, Ser. No. 198,744
Int. Cl.[3] C03B *37/025*
U.S. Cl. 65—4.4 3 Claims



1. In the manufacture of needled continuous strand mat wherein continuous strands in mat form are moved from a conveying surface through a needling zone in which the strands are entangled to provide mechanical bonding to the strands and integrity to the mat of strands by penetrating the mat repeatedly with rows of barbed needles, the improvement

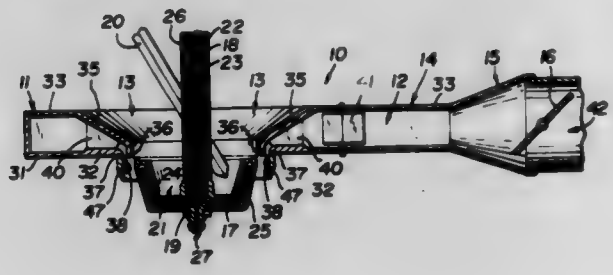
comprising moving the side edges of the mat inwardly as they enter the needling zone, confining the side edges so moved as they pass under the first row of needles in a straight line to form a straight edge to the mat on each side of the mat as the first row of needles penetrate the mat across its width thereof, continuing to confine the edges of the mat in a straight line until a few rows of needles have penetrated the mat across its width, releasing the edges of the mat after the first few rows of needles have penetrated it and continuing to needle the mat across its width throughout the remainder of the needling zone.

4,342,582

APPARATUS FOR FIBERIZATION OF MINERAL FIBER HAVING DIRECTIONAL SHROUD

William F. Porter, Lake Zurich, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Sep. 8, 1981, Ser. No. 300,313
Int. Cl.[3] C03B *37/05*
U.S. Cl. 65—14 13 Claims



1. In an apparatus for producing mineral fibers by forming molten slag and transforming the slag into fibers, the improvement comprising in combination:

(a) An air plenum defining a substantially toroidal air chamber and having a circular central opening, wherein said plenum is formed of a front wall, a rear wall, and a peripheral wall connecting said front wall and rear wall in spaced-part relationship, a substantially conical wall having its outer edge connected to said rear wall and surrounding said central opening and converging towards said forward wall and defining a funnel for directing air toward said central opening, the radial dimension of said air chamber being greater than the axial dimension thereof, the lip of said front wall and the lip of said converging conical wall cooperating to define an annular slot for discharging air from said torodial chamber through said slot in an axial direction with respect to said torodial chamber, and a compressed air inlet provided in said plenum,

(b) An annular shroud in the form of a collar affixed at one edge to the lip of said front wall, said shroud having an inner cylindrical surface substantially perpendicular to the outer surface of said front wall and in registry with the edge of the lip of said front wall at the outer periphery of said annular slot, said shroud serving to guide and restrain radially air stream emerging from said annular slot and preventing it from expanding radially,

(c) a cup mounted on a shaft adapted for rotation, the lip of said cup being positioned at said annular slot, and

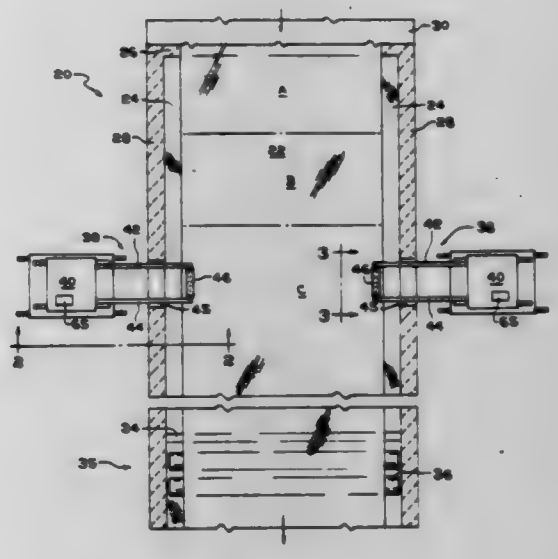
(d) means for introducing molten slag into the interior of said cup when said cup rotates, the arrangement being such that centrifugal force produced by rotation of said cup expels streams of molten slag into the air stream being discharged from said annular slot, and the air stream which is contained radially by said shroud transforms said slag streams into mineral fibers with improved yield.

4,342,583

APPARATUS AND METHOD FOR ATTENUATING FLOATING GLASS RIBBON

Edward M. Kapura, Carlisle, Pa., and Henry C. Goode, Decatur, Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,147
Int. Cl.[3] C03B *18/06*
U.S. Cl. 65—99.5 23 Claims



1. A method of attenuating a ribbon of glass which moves downstream through a chamber upon a pool of molten metal, comprising the steps of:

providing a cylindrical member having ribbon engaging means mounted in a manner to provide tractive forces about the circumferential surface of said cylindrical member;

supporting said cylindrical member with its lower circumferential surface adjacent and substantially parallel to the surface of said ribbon; and

rotating said cylindrical member about an axis of rotation generally parallel to the direction of ribbon flow to engage said ribbon with said ribbon engaging means to exert laterally outward tractive forces to the ribbon which are substantially uniform along the engaged portion thereof.

6. An apparatus for attenuating a ribbon of glass which moves downstream through a chamber upon a pool of molten metal comprising:

a generally cylindrical member;

a ribbon engaging element disposed on the circumferential surface of said cylindrical member;

a pair of spaced support members, each having a first end portion;

means for connecting said cylindrical member to and between said first end portions with its lower circumferential surface adjacent and substantially parallel to the surface of said ribbon; and

means for rotating said cylindrical member about an axis generally parallel to the direction of ribbon flow to engage the ribbon with said ribbon engaging element and exert laterally outward tractive forces thereto.

4,342,584

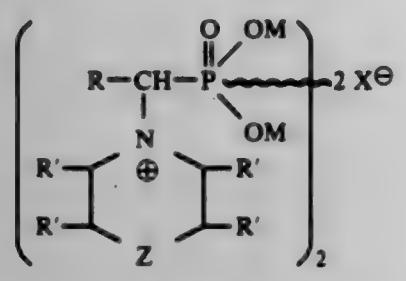
MICROBIOCIDAL PROCESS USING DI-QUATERNARY AMMONIUM SALTS OF α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,259, Aug. 9, 1978, Pat. No. 4,264,768.
This application Oct. 14, 1980, Ser. No. 196,973
Int. Cl.[3] A01N *57/00, 57/26*
U.S. Cl. 71—67 6 Claims

1. A process of controlling the growth of microorganisms in aqueous or hydrocarbon systems which comprises treating said

system with an effective amount of a compound having the formula



where R is alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl or hydroxyphenyl, R′ is hydrogen or alkyl, Z is S, SO or SO_2, M is hydrogen or a salt moiety, ~~~~ is a bridging group selected from alkylene, aralkylene, alkaralkylene, alkylene- or polyalkylene ether, alkenylene or alkinylene and X is a halide.

4,342,585

METHOD FOR OBTAINING FRUITS HAVING GOOD FLAVOR AND TASTE

Yoshie Motomura, Sendai; Jiro Ishiyama, and Junichi Shimizu, both of Noda, all of Japan, assignors to Kikkoman Corporation, Noda, Japan

Filed Sep. 8, 1978, Ser. No. 940,600
Claims priority, application Japan, Sep. 10, 1977, 52-108346
Int. Cl.³ A01N *57/00*
U.S. Cl. 71—86 **5 Claims**

1. A method for obtaining fruits having good flavor and taste which consists essentially of contacting a member selected from the group consisting of fruit-bearing flowers before flowering, and fruits before being harvested, said fruit being selected from the group consisting of apple, tomato, and strawberry, with an effective amount of an aqueous solution containing at least one cyclic-3′, 5′-adenylic acid compound selected from the group consisting of cyclic-3′, 5′-adenylic acid, alkali metal salts of cyclic-3′,5′-adenylic acid, and derivatives of cyclic-3′,5′-adenylic acid, said cyclic-3′,5′-adenylic acid being present in the concentration of 20 to 3000 p.p.m., and said derivatives of cyclic-3′,5′-adenylic acid being selected from the group consisting of 6-benzyl-cyclic-3′,5′-adenylic acid, 6-allyl-cyclic-3′,5′-adenylic acid, 8-bromo-cyclic-3′5′-adenylic acid, 8-iodine-cyclic-3′,5′-adenylic acid, N^6, O^2-(dibutyl ester)-3′,5′-adenylic acid and N^6-(butyl ester)-cyclic-3′5′-adenylic acid.

4,342,586

SUBSTITUTED 2-IMINO-1,3-DITHIO AND 1,3-OXATHIO HETEROCYCLIC COMPOUNDS AS HERBICIDAL ANTIDOTES

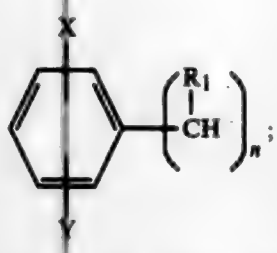
Frederic G. Bollinger, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 960,987, Nov. 15, 1978, Pat. No. 4,231,783. This application Jul. 21, 1980, Ser. No. 170,499
Int. Cl.³ A01N *43/02, 37/00*
U.S. Cl. 71—90 **20 Claims**

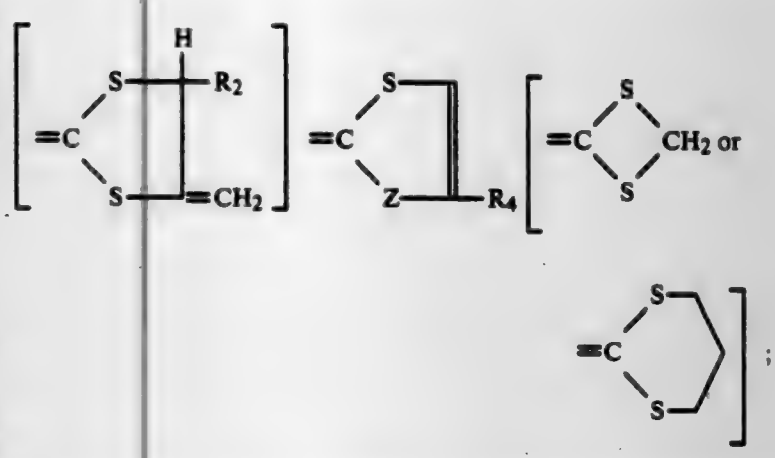
1. A method of reducing injury to crop plants due to the application thereto of thiocarbamate herbicides which comprises applying to the plant locus a safening effective amount of a compound having the formula

R−N=A

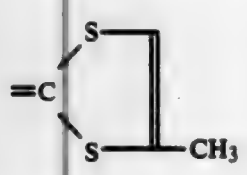
or an agriculturally acceptable acid addition salt thereof, wherein R is hydrogen, or



R_1 is hydrogen or lower alkyl; X and Y independently equal hydrogen, lower alkyl, lower alkoxy or halogen; n is 0, 1, 2 or 3; A is



R_4 is hydrogen, methyl or phenyl; Z is oxygen or sulfur; provided that when n is 1 and A is



R_1 cannot equal n-propyl or isobutyl.

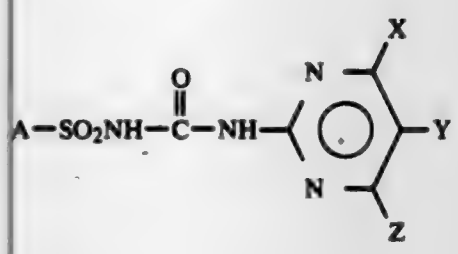
4,342,587

HERBICIDAL PYRIDINSULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

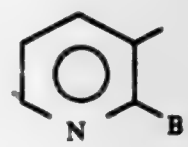
Continuation-in-part of Ser. No. 59,152, Jul. 20, 1979, abandoned. This application Mar. 14, 1980, Ser. No. 130,343
Int. Cl.³ C07D *401/12;* A01N *43/54*
U.S. Cl. 71—92 **5 Claims**

1. A compound selected from:



I

wherein
A is



B is Cl or Br;
X and Z are independently H, CH_3, Br, Cl, OCH_3, CH_2CH_3, CH_2OCH_3 or OCH_2CH_3; and
Y is F, Cl, Br, I, CH_3, CH_2CH_3, $CH_2CH_2CH_3$, $(CH_2)_3CH_3$, CH_2-CH=CH_2, OCH_3, OCH_2CH_3, CN, CH_2CH_2Cl,

$CH_2CH_2CH_2Cl$, $CH_2CH_2OCH_3$, OCH_2OCH_3, CH_2OCH_3, $OCH_2CH_2OCH_3$, $CH_2CO_2R^6$, $CH_2CH_2CO_2R^6$, CO_2R^6,



or NO;

R^6 is CH_3 or CH_2CH_3; and their agriculturally suitable salt.

4. A composition for the control of undesirable vegetation consisting essentially of an effective amount of a compound of claim 1 and at least one of (a) a surface-active agent and (b) a solid or liquid diluent.

4,342,588

WEAR RESISTANT CAST IRON

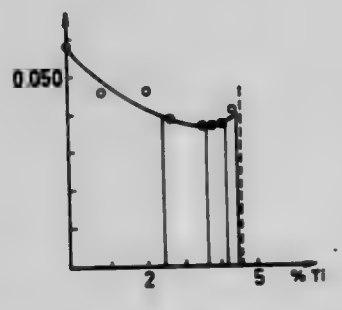
Malte Sporrong, and Lars Ramqvist, both of Nynäshamn, Sweden, assignors to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

Filed Jan. 21, 1981, Ser. No. 226,994

Claims priority, application Sweden, Jan. 25, 1980, 8000624

Int. Cl.³ C22C *38/06*

U.S. Cl. 75—124 **4 Claims**



1. Wear-resistant cast iron characterized in that it contains 3.1–3.7% carbon, 0.4–3.0% silicon, a minimum of 0.4% manganese, 1–7% chromium, 0–5% nickel, a minimum of 0.3% aluminum, and 3.7–4.2% titanium, the balance being predominantly iron.

4,342,589

PROCESS FOR PREPARING IRON COMPOUND PARTICLES FOR USE IN MAGNETIC RECORDING

Kazushi Ohshima, Yokohama; Mitsuro Matsunaga, Kamakura; Haruo Sekiguchi, Chigasaki; Kazuhiro Imaoka, Kamakura, and Fujio Hayashi, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jan. 30, 1981, Ser. No. 230,024

Claims priority, application Japan, Feb. 5, 1980, 55-11999

Int. Cl.³ C22B *5/02*; H01F *1/00*

U.S. Cl. 75—0.5 BA **5 Claims**

1. In a process for preparing α-iron for use in a magnetic recording medium which comprises reducing dried and/or sintered needle-like iron oxyhydroxide particles at 200° C. to 500° C., the improvement in which said needle-like iron oxyhydroxide particles are prepared by mechanically mixing and simultaneously cladding said needle-like iron oxyhydroxide particles with manganese and one or more than one element selected from the elements of group II of the Periodic Table at atomic weight ratios of manganese and the element or elements of Group II of the Periodic Table to iron from 0.005/100 to 10/100 and 0.001/100 to 10/100, respectively.

4,342,590

EXOTHERMIC STEEL LADLE DESULFURIZER AND METHOD FOR ITS USE

Leon A. Luyckx, 226 E. Hazelcroft Ave., New Castle, Pa. 16105

Filed Sep. 19, 1980, Ser. No. 188,968

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—58 **8 Claims**

1. A ladle desulfurization composition for desulfurizing molten steel consisting essentially of a mixture of a particulate alkaline earth oxide; a particulate metal oxide selected from the class consisting of iron oxide and manganese oxide; and a finely-divided metal selected from the class consisting of aluminum, calcium and magnesium; said mixture forming a Thermit composition which will remove sulfur when in contact with molten steel containing sulfur.

4,342,591

PROCESS FOR THE RECOVERY OF GOLD AND/OR SILVER AND POSSIBLY BISMUTH CONTAINED IN SULFURETTED ORES AND/OR SULFOARSENIDES

Marcel Lesoille, Corbais, Belgium, assignor to Mines et Produits Chimiques de Salsigne, Conques-Sur-Orbiel, France

Filed Apr. 28, 1981, Ser. No. 258,306

Claims priority, application France, Jun. 3, 1980, 80 12303

Int. Cl.³ C22B *11/04, 61/00*

U.S. Cl. 75—101 R **5 Claims**

1. In a process for recovering gold and/or silver and possibly bismuth contained in a sulfuretted ore and/or sulfoarsenide, said ore, from which is gangue has been removed according to known processes, is treated according to the following successive operations:

a reducing roasting;

an oxidising roasting;

a possible crushing;

a first lixiviation by a sulfuric acid solution containing about 20 to 120 g of acid per liter, at a temperature of about 20° to 85° C. and for a duration of 0.5 to 3 hrs.;

after separation of the solid, a lixiviation of said solid effected with the aid of a sulfuric acid thiourea solution containing from 10 to 50 g/l of thiourea, at a pH of 0.7 to 1.5, at a temperature of 20° to 70° C., for a duration of 15 mins. to 15 hrs., this lixiviation being conducted so that the potential of oxidoreduction of the medium is maintained at a value of between about 100 and about 180 mV;

and, after filtration of the solution, a cementation of said solution to recover the gold, silver and bismuth that it contains.

4,342,592

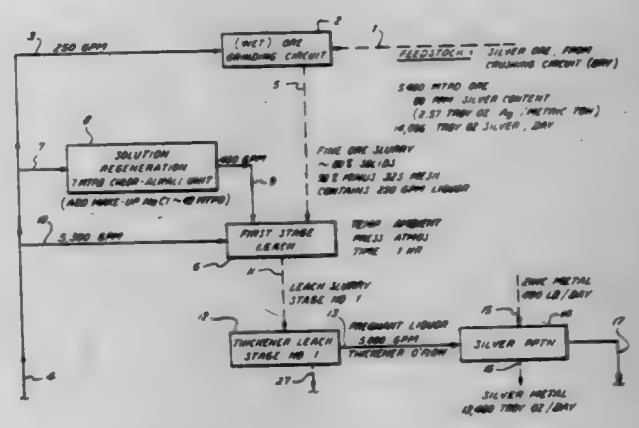
NON-POLLUTING PROCESS FOR RECOVERY OF PRECIOUS METAL VALUES FROM ORES INCLUDING THOSE CONTAINING CARBONATE MATERIALS

Frank E. Lamb, Tucson, Ariz., assignor to Duval Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 58,864, Jul. 19, 1979, abandoned. This application Aug. 1, 1980, Ser. No. 174,408

Int. Cl.³ C22B *11/06*

U.S. Cl. 75—118 R **15 Claims**



1. A cyclical hydrometallurgical process for production of a precious metal from a precious metal-containing solid material which consists essentially of:

(A) contacting the precious metal-containing material with an effective volume of a caustic leaching solution whose leachants consist essentially of an effective concentration

of a hypochlorite salt and an effective concentration of a chloride salt ion for a sufficient time to solubilize the precious metal;

(B) depositing the precious metal by displacement of the precious metal with a more electropositive metal to produce a stripped solution;

(C) adding sufficient hypochlorite to the stripped solution to maintain an effective concentration of hypochlorite salt therein; and

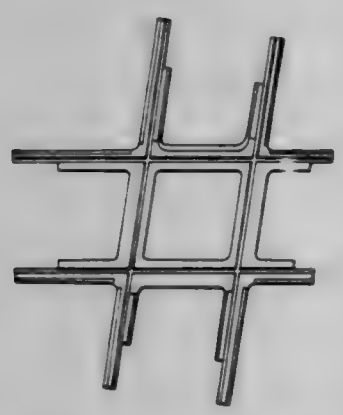
(D) recycling the stripped caustic solution to contact additional precious metal-containing material.

4,342,593

CASTINGS

Hugo R. Larson, Ridgewood; Howard S. Avery, and Henry J. Chapin, both of Mahwah, all of N.J., assignors to Abex Corporation, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,341
Int. Cl.³ C22C *38/58*; E01B *7/10*
U.S. Cl. 75—128 A **3 Claims**



1. Ferrous metal casting having a minimum yield strength of about 75,000 psi and a minimum elongation of about 30%, consisting essentially of:

C—0.85
Mn—14
Si—0.6
Cr—4
Ni—3.6
V—0.4

balance essentially iron except for impurities.

4,342,594

CEMENTED CARBIDE

Peter Ettmayer, and Richard Kieffer, both of Vienna, Austria, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Division of Ser. No. 872,926, Jan. 27, 1978, Pat. No. 4,212,671. This application Dec. 12, 1979, Ser. No. 102,963
Claims priority, application Austria, Jan. 27, 1977, 496/77
Int. Cl.³ B22F *3/00*
U.S. Cl. 75—203 **20 Claims**

1. A method of making a molybdenum-tungsten carbonitride with the structure of tungsten carbide WC comprising heating molybdenum, tungsten and carbon in proportions sufficient for formation of the monocarbide in a nitrogen-containing atmosphere at a temperature sufficient to form the said molybdenum-tungsten carbonitride, said carbonitride having a composition between the limits $(Mo_{0.9}W_{0.1})$ (C,N) and $(Mo_{0.05}W_{0.95})$ (C,N).

4,342,595

CUBIC BORON NITRIDE AND METAL CARBIDE TOOL BIT

Romeo G. Bourdeau, Tequesta, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,253
Int. Cl.³ B22F *3/14*
U.S. Cl. 75—238 **2 Claims**

1. A tool bit comprised of a mixture of cubic boron nitride particles and metal carbide particles in a metal matrix containing both a transition metal and a sintering aid, consisting by atomic percent of 52–79 tungsten carbide, 7–36 cubic boron nitride, 9–14 cobalt, and 0.2–2.5 zirconium (by weight percent, about 85–93 tungsten carbide, 1.6–8 boron nitride, 4.7–5.0 cobalt, 0.2–2 zirconium).

4,342,596

NON-PETROLEUM BASED METAL CORROSION INHIBITOR

Alvin J. Conner, Sr., 19 Charlotte Dr., New Orleans, La. 70122

Continuation of Ser. No. 138,758, Apr. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 37,418, May 9, 1979, Pat. No. 4,233,176. This application Apr. 13, 1981, Ser. No. 253,259
Int. Cl.³ C09D *5/08*
U.S. Cl. 106—14.13 **14 Claims**

1. A non-petroleum based metal corrosion inhibiting composition consisting essentially of a solution of one part by weight of an aqueous concentrate and up to five parts by weight of water, said aqueous concentrate being a reaction mixture solution comprising, per 100 parts by weight of the concentrate:

(a) 5 to 20 parts by weight of an aliphatic, monobasic acid having from 8 to 20 carbon atoms;

(b) 0.5 to 4 parts by weight of a lubricant;

(c) an aminoalkylalkanolamine of the formula:

$$H_2NR^1-N(R^3)-R^2-OH$$

where R^1 and R^2 are independently alkylidene of 1–4 carbon atoms, and R^3 is hydrogen or alkyl of 1–4 carbon atoms;

(d) 10 to 35 parts by weight of an aromatic mono- or polycarboxylic acid; and

(e) an amine which forms a water soluble salt with the aromatic acid,

the amount of amines (c) and (e) being an amount in slight excess of that necessary to neutralize the amounts of the aliphatic and aromatic acids.

4,342,597

COATING COMPOSITIONS FOR LINERS OF MOLTEN METAL TROUGHS AND LADLES

William F. Brown, Colony, Tex., assignor to Weston Research Corporation, Rothschild, Wis.

Filed Mar. 6, 1981, Ser. No. 241,060
The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.
Int. Cl.³ B28B *7/36*
U.S. Cl. 106—38.27 **5 Claims**

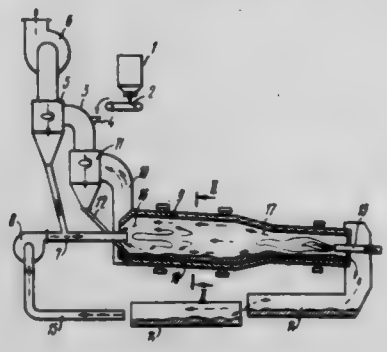
1. A composition for coating the refractory liners of ladles and troughs for handling molten metals comprising an aqueous suspension containing about 20 to about 50 weight % finely divided zirconia, about 27 to about 35 weight % colloidal silica, about 5 to about 15 weight % mica, about 5 to about 25 weight % finely divided zircon, about 0.5 to about 5 weight % bentonite, 0 to about 3 weight % of an inert coloring agent, and about 5 to about 20 weight % water.

4,342,598

METHOD AND APPARATUS FOR MANUFACTURING CEMENT CLINKER

Naum P. Kogan, ulitsa Akademika Pavlova, 140, kv. 89, Kharkov, U.S.S.R.

Filed Oct. 6, 1980, Ser. No. 194,141
Int. Cl.³ C04B 7/02
U.S. Cl. 106—100 11 Claims



1. A method of manufacturing cement clinker comprising:
(a) preheating finely divided cement raw material;
(b) injecting said cement raw material by an air flow into a rotary kiln through a charge end thereof;
(c) decarbonizing said cement raw material in suspension by a counterflow of combustion gases resulting from burning fuel at a discharge end of said kiln;
(d) withdrawing thus decarbonized material by the peripheral portion of said gas flow through said charge end of said rotary kiln;
(e) separating said decarbonized material from combustion gases;
(f) delivering said separated decarbonized material back into said rotary kiln; and
(g) burning said decarbonized material in a stirred bed within said rotary kiln.

4,342,599

METHOD OF REDUCING WATER DEMAND OF ALKALINE AQUEOUS SUSPENSIONS

William F. Mann, Westfield, and Thomas J. Smith, Springfield, both of N.J., assignors to Colloids, Inc., Newark, N.J.

Filed Mar. 18, 1981, Ser. No. 245,036
Int. Cl.³ C04B 7/02
U.S. Cl. 106—100 19 Claims

1. In the wet process for the production of cement solids wherein limestone and clay are ground in the presence of water to form a pumpable kiln feed slurry, the improvement which comprises adding to said slurry an amount of carbon dioxide sufficient to bind free cations forming insoluble carbonates therein and adding to the resulting slurry at a pH greater than 7.0, an amount of anionic polymer dispersant to adjust the viscosity of said slurry to a value suitable for pumping.

4,342,600

PROCESS FOR THE MANUFACTURE OF VISCOSES

Reinhart Mayer, Kelheim; Walter Fester, Königstein/Taunus, and Rolf Kleber, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 2, 1981, Ser. No. 222,078
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1980, 3000306
Int. Cl.³ C08B 9/00, 9/04; C08L 1/24
U.S. Cl. 106—164 6 Claims

1. In a process for the manufacture of easily filterable viscose from hemicellulose-containing cellulose pulp the improvement which comprises reacting the pulp before or during steeping with a substance which in an alkaline medium causes cross-linkage or at least blocking of the reactive groups of the hemicelluloses, and aging the alkali cellulose according to known methods, xanthating it and dissolving it subsequently to yield viscose.

4,342,601

USE OF HETEROPOLYSACCHARIDE S-119 AS A PAPER FINISH

Robert I. Yin, La Jolla, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 10, 1980, Ser. No. 168,238
Int. Cl.³ C08L 5/00; C12P 19/04
U.S. Cl. 106—209 6 Claims

1. An aqueous paper finish composition comprising:

	Parts
Pigment	100
Binding agent	5–50
Brightening agent	0–3
Dispersing agent	0–1
Alkali	0–1
Heteropolysaccharide S-119	0.1–10

said heteropolysaccharide S-119 being anionic and composed of principally carbohydrate, 2.9–3.5%, calculated as O-acetyl, O-acyl groups as the O-glycosidically linked esters, which are acetyl or succinyl or a combination thereof, 3.0–4.0% pyruvate, about 12% protein, the carbohydrate portion of which contains no uronic acid and the neutral sugars glucose and galactose in the approximate molar ratio of glucose to galactose of 7.4:1, said sugars being primarily β-linked.

4,342,602

DULLING AGENT ON THE BASIS OF WAX FOR VARNISHES, AND PROCESS FOR THE MANUFACTURE THEREOF

Karl Petz, Neusäss; Klaus Rieger, Gersthofen, and Dieter Steidl, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,244
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942487
Int. Cl.³ C08K 5/01, 5/20; C08L 91/06; C09D 7/12
U.S. Cl. 106—316 3 Claims

1. A process for the manufacture of a, wax micro-powder dulling agent for varnishes, 99% of which has a grain size distribution of less than 15 microns, which comprises subjecting a polyolefin wax having an average molecular weight of from 1,000 to 9,000 and an amide wax having a flow point/drop point of from 130° to 150° C. to common grinding in a weight ratio of from 90:10 to 10:90, wherein the amide wax is the reaction product of a fatty acid having from 12 to 34 carbon atoms and a bivalent aliphatic amine having from 2 to 6 carbon atoms.

4,342,603

CRYSTALLINE GLUCOSE AND PROCESS FOR ITS PRODUCTION

Michael J. Daniels, Reading, England, assignor to Tate & Lyle Limited, England

Filed Feb. 24, 1981, Ser. No. 237,645
Claims priority, application United Kingdom, Feb. 27, 1980, 8006661
Int. Cl.³ C13K 1/10
U.S. Cl. 127—30 13 Claims

1. A process for the production of crystalline glucose from a glucose syrup, comprising the steps of
(1) evaporating water from the glucose syrup at a pressure of less than 400 mm Hg to provide an at least 60% supersaturated solution of greater than 95% solids at a temperature of from 95° to 140° C.;

(2) subjecting the supersaturated solution to a shear force for less than 0.5 second to cause immediate nucleation of the syrup without cooling; and

(3) immediately forming the nucleated but substantially uncrystallised syrup into a quiescent layer and allowing the layer to crystallise substantially isothermally to produce solid crystalline glucose.

10. A product produced by the process of claim 1 comprising microcrystals of a mixture of α- and β-forms of glucose, at least 70% of the glucose being in the form of the β-isomer, wherein the microcrystals each have a maximum dimension of less than 50 microns.

4,342,604

PRODUCTION OF A STABLE LACTOSE PRODUCT

John W. Evans, Weed; Gary C. Young, and Charles W. Stager, both of Visalia, all of Calif., assignors to Nutrisearch Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 128,426, Mar. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 96,366, Nov. 21, 1979, abandoned. This application Oct. 7, 1980, Ser. No. 194,722

Int. Cl.³ C13K *5/00*

U.S. Cl. 127—31 **16 Claims**

1. A method of producing a crystallized lactose product comprising adding a food grade chelating agent to a lactose-containing permeate resulting from the ultrafiltration of whey, the amount of chelating agent added resulting in a product having a pH of not greater than 7.44 and having a lowered ash content.

4,342,605

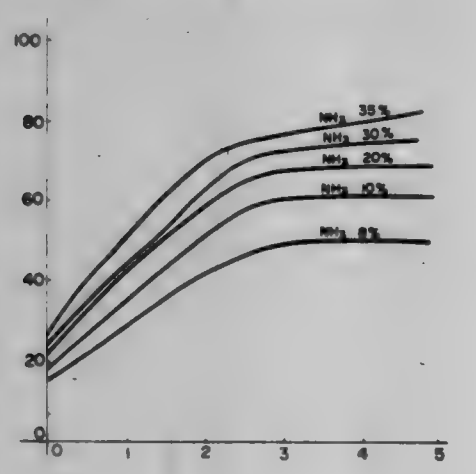
GAS SOFT-NITRIDING METHOD

Teruoki Watanabe, Kawagoe, and Shunji Kobayashi, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 54,696, Jul. 5, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 225,980

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—16.6 **8 Claims**



1. A gas soft-nitriding method for a ferrous workpiece, comprising the step of:

heating said ferrous workpiece to a temperature of 550° C.–620° C. in a furnace into which a gas atmosphere is introduced to produce an ϵ-phase soft-nitrided layer on said ferrous workpiece; and

wherein a gas atmosphere comprising a 10–30 volume percentage of ammonia (NH_3), a 2.5–4.5 volume percentage of carbon monoxide (CO), and a substantial volume percentage of nitrogen (N_2) is initially introduced into said furnace.

4,342,606

SOLDERING COMPOSITION

John H. F. Notton, Reading, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed Apr. 1, 1980, Ser. No. 136,335

Claims priority, application United Kingdom, Apr. 6, 1979, 7912209

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—23 **18 Claims**

1. A soldering composition free of liquid vehicles and solid at below 40° C. consisting essentially of a particulate soldering alloy dispersed in a solid thermoplastic material melting in the range of 40° to 150° C.

4,342,607

SOLDER FLUX

Frank M. Zado, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,417

Int. Cl.³ B23K *35/36*

U.S. Cl. 148—23 **20 Claims**

1. A rosin free solder flux which comprises:

(a) a vehicle which is nonreactive with the portion of an electronic device to be contacted by the flux;

(b) an activator having at least one halogen atom and at least one destabilizing substituent; and

(c) a surfactant selected from the group consisting of (a″) a polycarboxylic acid, (b″) a hydroxyl substituent of (a″), (c″) a keto acid and (d″) a mixture of any of the foregoing surfactants wherein said activator is present in an amount of from 0.3 to 7 weight percent and said surfactant is present in an amount of at least one weight percent of the components (a), (b) and (c).

4,342,608

Mn-Al PERMANENT MAGNETS AND THEIR MANUFACTURE

Ronald H. Willens, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 21, 1980, Ser. No. 142,012

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—101 **8 Claims**

1. Method for producing a permanent magnet element which is magnetically essentially isotropic, said method comprising thermal treatment of at least one metallic body which comprises Mn and Al in a combined amount of at least 97 weight percent of said body, said body comprising Mn in the range of 70 to 76 weight percent of said amount, said body comprising less than 0.5 weight percent carbon, said thermal treatment comprising heating at an essentially constant temperature in the range of 300 to 700 degrees Celsius, said method being characterized in that

preparation of said body comprises cooling from a melt, cooling being such that throughout at least 90 percent of the volume of said body, temperature is reduced at a rate which is greater than or equal to 1000 degrees per second to a temperature at which there is no appreciable precipitation of an equilibrium phase,

whereby upon completion of said thermal treatment said magnetic element has a magnetic energy product which is greater than or equal to 1 million gauss-oersted.

4,342,609

EXPLOSION METHOD OF FINISHING WELDED JOINTS

Branislav P. Beatovic, Tome Meje No. 26; Stevan L. Kuzmanović, Moše Pijade No. 28, both of 41000 Sarajevo, Yugoslavia; Vladimir M. Kudinov, Filatova No. 1, Kiev 42, and Vladimir G. Petuškov, Jerevanska No. 14, Kiev 87, both of U.S.S.R.

Filed Jan. 23, 1980, Ser. No. 114,554
Claims priority, application Yugoslavia, Jan. 26, 1979, 178/79
Int. Cl.³ C21D *1/00*
U.S. Cl. 148—127 2 Claims

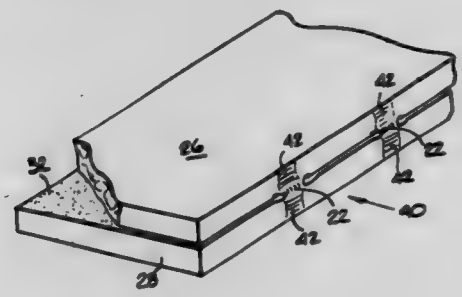
1. A method of reducing remaining tensions and corrosion resistance in welded joints by explosion finishing thereof, comprising disposing over the axis of the weld seam a main explosive charge in the form of a periodic curve, the axis of which is substantially co-extensive with that of the weld seam with the amplitude thereof extending from one side of said seam to the other, and then detonating said main explosive charge.

4,342,610

METHOD FOR INTERMITTENTLY SLITTING AND FOLDING FIBROUS INSULATION

Richard J. Ray, Jr., Littleton, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Oct. 20, 1980, Ser. No. 198,411
Int. Cl.³ B32B *19/06*
U.S. Cl. 156—62.6 3 Claims



1. A process for the manufacture of a thick batt of fibrous material comprising the steps of:

(a) forming fibrous material,

(b) collecting said fibrous material in a blanket of substantially uniform thickness, said thickness being on the order of four or more inches,

(c) cutting said material blanket to form a plurality of individual pieces of fibrous material, intermittently slitting each piece completely thru the blanket to form two portions that are interconnected by discrete pillars of fibrous material,

(d) applying an adhesive to at least one of said interconnected fibrous portions, and

(e) folding one of said interconnected fibrous portions onto the other of said fibrous portions, at least the innermost fibers in the folded pillars being uncut and functioning as a hinge to insure proper alignment of the two portions, each of said plurality of pillars being sufficiently narrow as to enable the outermost fibers in the folded pillars to tear so as not to crimp the thusly formed thick batt.

4,342,611

METHODS OF PRODUCING STAINED GLASS EFFECTS

Helen K. Tuttle, 200 Gay Rd., North East, Pa. 16428

Filed Jan. 19, 1981, Ser. No. 226,501
Int. Cl.³ B44F *1/06, 3/00*
U.S. Cl. 156—63 7 Claims

1. A method producing stained glass effect art work comprising the steps of:

a. moistening at least one edge of a length of glue impregnated string;

b. placing the moistened edge of said glue impregnated string on one of a glass and plastic object to permanently fix the string in place and to define the outlines of art work to be



produced so that at least each different color area is defined by a surrounding adhered fence of string on said object;

c. placing a liquid colored stain in each said defined area to provide the desired color in each area defined by said string fence; and

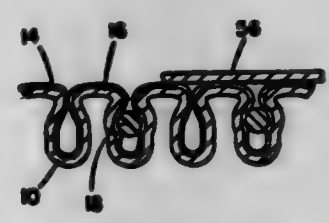
d. permitting the stain to dry.

4,342,612

METHOD OF MAKING A PREFORMED SEMIRIGID PLASTIC HOSE WRAPPED WITH A WIRE SPIRAL

James M. Lalikos, Springfield; Harold K. Waite, E. Longmeadow, and Kenneth E. Lefebvre, Hampden, all of Mass., assignors to Titeflex Corporation, Springfield, Mass.

Continuation of Ser. No. 885,389, Mar. 10, 1978, Pat. No. 4,196,031. This application Jul. 31, 1979, Ser. No. 62,546
Int. Cl.³ B32B *1/08*
U.S. Cl. 156—143 5 Claims



1. A process for making a wire wrapped, preformed, semirigid, high vacuum or pressure polytetrafluoroethylene plastic hose, said hose having spiral convoluted inside and outside surfaces, said process comprising the steps of:

(a) drawing out a length of reinforcing steel spring wire stock;

(b) looping said wire stock around a forming device in order to form said wire into a continuous spiral coil;

(c) pulling said looped spiral wire from said forming device and through a guide for maintaining the spiral formed shape of said wire;

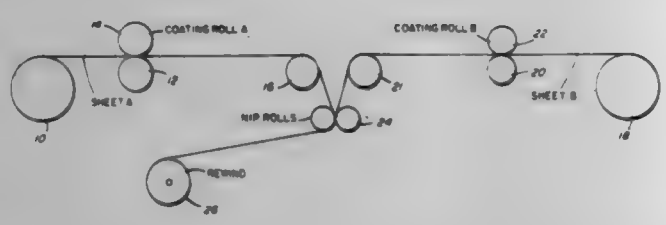
(d) taking up said wire in a valley of a preformed spiral convolution on the outside surface of said semirigid hose whereby said reinforcing wire around the outside of said hose increases its resistance to internal pressure or vacuum; and

(e) embedding said wire in the valley be deforming under heat and pressure said convolution to capture said wire and reinforce said hose and maintain its internal diameter in the presence of either pressure or vacuum.

4,342,613
METHOD OF BONDING SURFACES WITH A SOLID ADHESIVE

James N. O'Leary, 94 Newton Dr., Nashua, N.H. 03060, and Edward J. Bruzinski, 41 Stepney Rd., W. Redding, Conn. 06896

Continuation of Ser. No. 77,602, Sep. 21, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,660
Int. Cl.[3] B32B *7/00*
U.S. Cl. 156—310 7 Claims



1. A method for adhesively bonding surfaces which includes:

(a) applying to a first surface at least one component of a solventless reactive adhesive formulation as discrete discontinuous non-linear deposits in a predetermined pattern to form a coated surface;

(b) applying to a second surface another component of the solventless reactive formulation as discontinuous non-linear deposits in a predetermined pattern to form a coated surface, the deposits on both the first and second surface coated in such an amount and spacing that they maintain their dimensional stability until such time that the deposits on the first surface contact the deposits on the second surface;

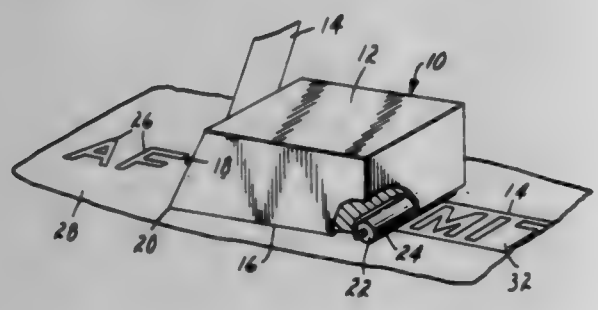
(c) mating the coated surfaces one to the other, the deposits on the first and second surfaces intimately mixing and reacting to form a continuous homogeneous film adhesive bond between the surfaces; and,

(d) curing the adhesive to form a uniform continuous bond between the surfaces.

4,342,614
PRESSURE APPLICATOR FOR GRAPHIC TRANSFER

Jan D. Vanden Bergh, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 3, 1981, Ser. No. 240,210
Int. Cl.[3] B44C *1/10, 1/16*
U.S. Cl. 156—541 3 Claims



1. A hand held applicator for transferring pressure transferable graphic images from an accepting tape to a receptor surface, the accepting tape having said pressure transferable images on one surface and having an opposite surface, the applicator comprising:

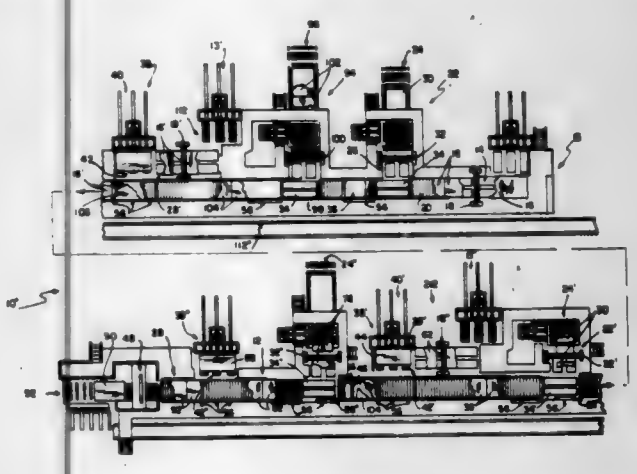
a body affording manual engagement to press and slide the applicator against said opposite surface of a said accepting tape, the body having a bottom surface and a back surface intersecting the bottom surface to define a sharp separating edge, and

a roller rotatably mounted on the front portion of the body, the axis of rotation of the roller being in parallel alignment with the separating edge, and the outer periphery of the roller projecting out from the bottom surface, so that as the applicator is pressed against the accepting tape the roller and the separating edge each form a narrow band of pressure contact with the accepting tape, and as the applicator is slid, with the roller leading the separating edge, on said opposite surface of the accepting tape with its imaged surface engaging a receptor surface, the narrow band of pressure contact from the roller initiates release of the images and maintains alignment of the accepting tape, while the subsequent pressure contact at the separating edge, together with the motion of the accepting tape around the separating edge after the applicator has passed cause the graphic images to be transferred to the receptor surface.

4,342,615
PLYWOOD LAYUP LINE

Robert L. Koch, II, Evansville, Ind., assignor to George Koch Sons, Inc., Evansville, Ind.

Continuation-in-part of Ser. No. 32,737, Apr. 24, 1979. This application Sep. 25, 1980, Ser. No. 190,585
Int. Cl.[3] B32B *31/00*
U.S. Cl. 156—563 16 Claims



1. A plywood assembly line, comprising a first means for conveying laminate layers through an assembly area, the first conveyor means extending longitudinally for substantially the full length of the assembly area, the first conveyor means including an entry end for introduction of plywood back sheets, and an exit end for removal of assembled plywood laminate structures, the plywood back sheets being introduced onto the entry end in end-to-end abutting relation, and the first conveyor means conveying the back sheets, additional laminate layers, and completed laminate structures at constant speed from the entry end to the exit end, a first curtain coater for coating the top side of the back sheets with a laminating adhesive, the first curtain coater positioned up line from and adjacent the entry end of the first conveyor means, second conveyor means for conveying plywood core laminate layers, the second conveyor means extending from an entry end toward an exit end adjacent the first conveyor means and positioned along the first conveyor means between the first curtain coater and the first conveyor means exit end, the second conveyor means operating at a speed at least equal to the speed of the first conveyor means, a second curtain coater for coating the top sides of the core laminate layers with a laminating adhesive, the second curtain coater positioned between the entry and exit ends of the second conveyor means, the one-side adhesive-coated core laminate layers being deposited from the exit end of the second conveyor means onto the adhesive-coated top side of the end-to-end abutting layer of back sheets moving on the first conveyor means to form a substantially end-to-end abutting layer of back sheet-core laminate layer substrate with an upwardly facing substantially continuous laminating adhesive-coated surface, third conveyor means for conveying face sheets and positioning them to be deposited on the laminating adhesive-coated top surface of the substantially

end-to-end abutting back sheet-core laminate layer substrate to form a completed plywood laminate structure, the third conveyor means extending from an entry end toward an exit end adjacent the first conveyor means, the third conveyor means positioned along the first conveyor means between the second conveyor means exit end and the first conveyor means exit end, fourth conveyor means for conveying plywood back sheets, extending from an entry end to an exit end adjacent the first conveyor means, and positioned along the first conveyor means between the third conveyor means exit end and the first conveyor means exit end, the fourth conveyor means operating at a speed at least equal to the speed of the first conveyor means, a third curtain coater for coating the top sides of the last-mentioned plywood back sheets, the third curtain coater being positioned between the entry and exit ends of the fourth conveyor means, the one-side adhesive-coated plywood back sheets being deposited from the fourth conveyor means, adhesive-coated sides up, on top of the completed plywood laminate structure, fifth conveyor means for conveying plywood core laminate layers, the fifth conveyor means extending from an entry end to an exit end adjacent the first conveyor means, the fifth conveyor means exit end being located along the first conveyor means between the exit and of the fourth conveyor means and the exit end of the first conveyor means, the fifth conveyor means operating at a speed at least equal to the speed of the first conveyor means, a fourth curtain coater for coating the top sides of the last-mentioned core laminate layers with a laminating adhesive, the fourth curtain coater being positioned between the entry and exit ends of the fifth conveyor means, the one-side adhesive-coated core laminate layers being deposited from the exit end of the fifth conveyor means onto the one-side adhesive-coated plywood back sheets deposited from the fourth conveyor means onto the completed plywood laminate structure to form, on top of the completed plywood laminate structure, a back sheet-core laminate layer substrate, sixth conveyor means for conveying plywood face sheets and positioning them to be deposited on the last-mentioned back sheet-core laminate layer substrate to form, on top of the first-mentioned complete plywood laminate structure, a second complete plywood laminate structure, the sixth conveyor means extending from an entry end to an exit end adjacent the first conveyor means, the sixth conveyor means being located along the first conveyor means between the exit end of the fifth conveyor means and the exit end of the first conveyor means.

4,342,616

TECHNIQUE FOR PREDICTING OXYGEN PRECIPITATION IN SEMICONDUCTOR WAFERS

Brian J. Elliott, Yorktown Heights; Eric W. Hearn, Wappingers Falls, and Gary Markovits, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1981, Ser. No. 235,207
Int. Cl.³ C30B *15/20*
U.S. Cl. 156—601 **4 Claims**

1. A process for characterizing semiconductor wafers, which have been cut from a crystalline body for purposes of integrated circuit manufacture, comprising the steps of:

measuring, prior to any thermal treatment, the resistivity at a plurality of sites along the diameter of the wafers;

characterizing such wafers by the diametral resistivity profile thus obtained, according to which changes in oxygen preciptation can be predicted precisely where compensated intrinsic regions have been measured; and,

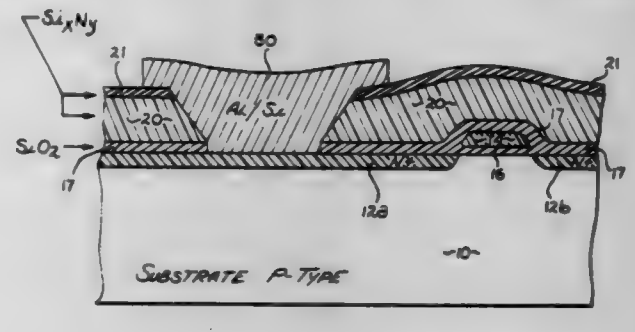
classifying said wafers based on the predicted oxygen precipitation characterisitcs, such that wafers having a substantially uniform diametral resistivity profile can be immediately used on a conventional production line, whereas the remaining wafers can be retained for use in accordance with their predicted individual precipitation characteristics corresponding with the measured compensated intrinsic regions.

4,342,617

PROCESS FOR FORMING OPENING HAVING TAPERED SIDES IN A PLASMA NITRIDE LAYER

Chao-Hsiang Fu, San Jose, and Sheau-Ming S. Liu, Los Altos, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 23, 1981, Ser. No. 236,833
Int. Cl.³ B44C *1/22*; C03C *15/00*; H01L *21/306*
U.S. Cl. 156—643 **6 Claims**



1. A process for forming a plasma nitride layer with an opening therethrough having tapered sides for receiving a contact member or the like, comprising the steps of:

forming a plasma nitride layer using silane and ammonia, including reducing the amount of ammonia relative to silane as the upper portion of said layer is formed to provide an upper portion of said layer which is richer in silicon than the remainder of said layer;

etching with a plasma etchant an opening through said plasma nitride layer such that said upper portion of said layer etches faster than said remainder of said layer, thereby providing an opening with tapered sides;

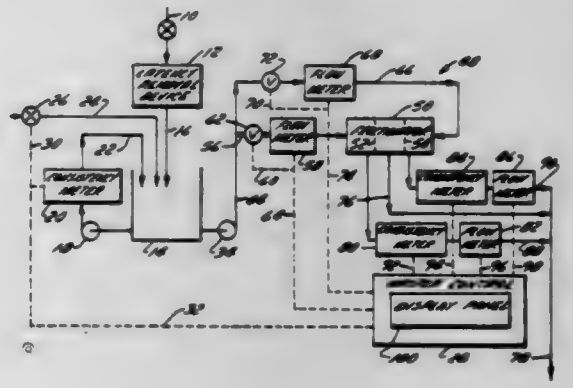
whereby contact member can be formed more readily in said opening because of said tapered sides.

4,342,618

METHOD AND APPARATUS ON-LINE MONITORING OF FIBRE LENGTH OF MECHANICAL PUMPS

Alkibiadis Karnis, 487 Montcalm Ave., Dollard des Armeaux, Quebec, Canada, and Paul M. Shallhorn, 159 Bastien, Vaudreuil, Quebec, Canada (J7V 5X9)

Continuation-in-part of Ser. No. 38,587, May 14, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,767
Int. Cl.³ D21F *7/06*; G01N *21/00*
U.S. Cl. 162—49 **7 Claims**



1. A method for on line determining the fibre length distribution by weight of a pulp comprising, feeding said pulp in two flows, measuring the required parameters of said flows to determine their fibre mass flow rates and determining the fibre mass flow rates, fractionating each of said flows by a screen into a retained and a through screen fraction, the screening means for one of said two flows having a different mesh size than the screening means for the other of said two flows, each of said mesh sizes having a retained average fibre length equivalent to a pre-determined laboratory fibre classifier retained fraction average fibre length, measuring the required parame-

ters of a selected one of said retained or through screen fractions for each of said screening means to determine their fibre mass flow rates and determining the fibre mass flow rates of said selected retained or through screened fractions, determining the laboratory fibre classifier fibre length distribution of said pulp based on: (1) said determined fibre mass flow rates, (2) said equivalent laboratory fibre classifier retained fraction average fibre length for each of said mesh sizes, and (3) a cumulative normal probability relationship for said pulp between said laboratory fibre classifier retained fraction average fibre lengths, and cumulative retained fractions by weight as a % of feed to said screening means.

4. An apparatus for on line determining the fibre length distribution by weight of a pulp comprising, means for feeding said pulp as two flowing screens, means for measuring the parameters of said streams required to determine the fibre mass flow rates of said streams, screening means of a first mesh size for fractionating one of said two streams into a retained and a through fraction, screening means of a second mesh size significantly different from said first mesh size for fractionating the other of said two streams into a second retained and through fraction, said mesh sizes each having a retained average fibre length equivalent to a pre-determined laboratory fibre classifier retained fraction average fibre length, means for measuring the required parameters of a selected one of said retained fractions and said through fractions for each of said screening means for determining their fibre mass flow rates, means for determining the fibre mass flow rates of said selected fractions, means for determining the laboratory fibre classifier fibre length distribution by weight of said pulp based on: (1) said equivalent average laboratory fibre classifier fibre length for each of said mesh sizes, (2) the fibre mass flow of said selected fractions (3), the fibre mass flow rates of said two streams, and (4) a cumulative normal probability distribution relationship for said pulp between said laboratory fibre classifier fibre lengths and cumulative retained fractions by weight as a % of feed to said screening means.

4,342,619

ADJUSTABLE PAPER MACHINE HEADBOX WITH ADJUSTMENT SENSING MEANS

Arne I. L. Gladh, Skoghall, Sweden, assignor to Billerud Uddeholm Aktiebolag, Saffle, Sweden

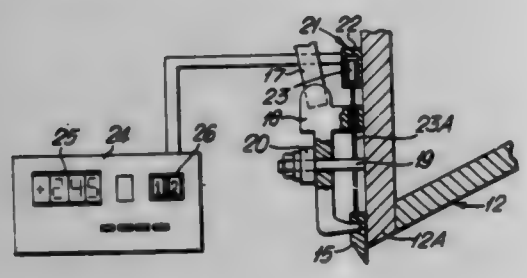
PCT No. PCT/SE78/00104, § 371 Date Aug. 8, 1979, § 102(e) Date Aug. 8, 1979, PCT Pub. No. WO79/00643, PCT Pub. Date Sep. 6, 1979

PCT Filed Dec. 27, 1978, Ser. No. 224,283

Claims priority, application Sweden, Feb. 21, 1978, 7802001

Int. Cl.³ D21F *1/02*

U.S. Cl. 162—262 **2 Claims**



1. Paper machine headbox of the type in which a slice opening running the full width of the headbox for discharging pulp stock is formed by a bottom slice lip, and a rigid top slice lip which can be raised or lowered over the full width of the headbox, said top slice lip being provided with a ruler shaped bendable profile bar running the full width of the headbox, said profile bar limiting a pulp stock discharge nozzle in the vertical direction and being locally displacable in the vertical direction by means of a plurality of adjusting assemblies distributed along the top slice lip in order to allow local adjustments of the height of the pulp stock discharge nozzle, characterized in that each adjustment assembly comprises an electrical level sensor (21) with two members, a coil (22) and a magnet core (23), which are moveable relative to each other, said magnet core (23) being mechanically attached to the profile bar with a rigid connection by means of a micro-rod, while the coil (22) is mechanically connected to the top slice lip (12) without play, said level sensor (21) being electrically connected with an indicator (24), characterized in that the indicator (24) receives the signals for all level sensors (21) and comprises means for selecting level sensors for which indications shall be performed.

4,342,620

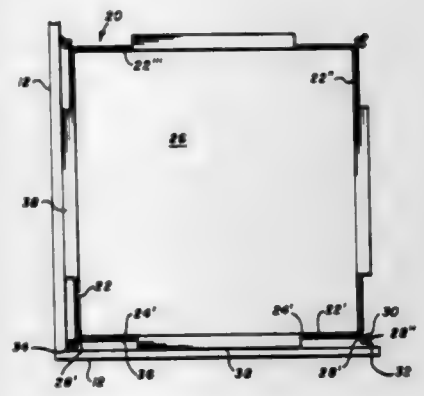
BOX INSERT FOR STORAGE OF SPENT NUCLEAR FUEL ASSEMBLY

Richard A. Vickrey, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 21, 1980, Ser. No. 142,585

Int. Cl.³ G21C *19/20*; G21F *5/00*

U.S. Cl. 376—272 **13 Claims**



1. A box to be inserted into a stationary nuclear fuel storage pool frame having a multiplicity of vertically extending polygonal openings, the box adapted for receiving a nuclear fuel assembly, comprising:

a plurality of vertically extending metal plates arranged as an open ended polygonal container having a smaller cross-sectional area than the opening in the frame;

each plate having a flat portion forming the respective sides of the container and having an integral tab portion rigidly projecting outwardly from at least one longitudinal edge of the plate;

connecting means joining each tab to a tab of an adjacent plate to form a rigid container having a plurality of outwardly projecting ribs;

whereby the box may be slidingly inserted into the frame so that the ribs fit into the corners of the frame defining the opening.

4,342,621

MOLTEN CORE CATCHER AND CONTAINMENT HEAT REMOVAL SYSTEM

Stephen J. Keating, Jr., West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 11, 1977, Ser. No. 840,588

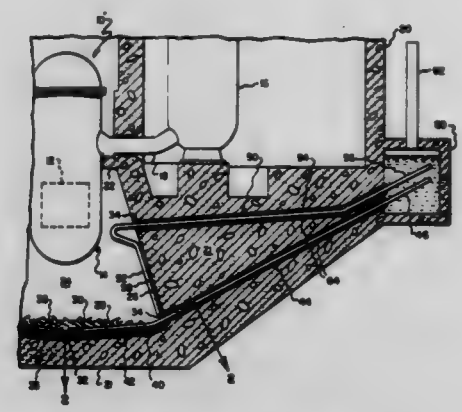
Int. Cl.³ G21C *9/00*

U.S. Cl. 376—298 **9 Claims**

1. In a nuclear reactor installation of the type having a nuclear core located within a vessel, the vessel being disposed within a chamber formed by interior walls of a hermetically sealed containment building, the chamber having at least a bottom wall and a side wall, an improved system for protecting at least the bottom wall and the lower portions of the side wall of the chamber in the event that the nuclear core melts through the vessel in a nuclear core meltdown accident, and for cooling the molten core, said improvement comprising:

means defining a shallow upwardly facing metallic basin mounted on and in intimate contact with the chamber

bottom wall, a plurality of heat pipe means, said heat pipe means each including a heat pipe having displaced evaporator and condenser sections, said evaporator sections of at least some of said heat pipes being positioned adjacent to the upper surface of said basin defining means, the some of said heat pipes which are adjacent to the basin defining means upper surface being disposed in a star-like array radiating outwardly from a point vertically aligned with the reactor core, the evaporator sections of other of said heat pipes of said heat pipe means being positioned adjacent to a portion of the surface of the side wall, said heat pipe means further including heat conducting fins attached to said heat pipe evaporator sections, said fins extending generally parallel to and being in abutting contact with the wall surfaces adjacent to their respective



heat pipes to thereby substantially completely shield said wall surfaces, said heat pipe means penetrating through and each being hermetically sealed to said containment building at a point intermediate the evaporator and condenser sections of their heat pipes whereby said heat pipes are permitted unrestrained thermally induced axial growth, said heat pipe means in the region of the condenser sections of the heat pipes being maintained in heat exchange relationship with a heat sink located to the exterior of the containment building, the evaporator section of the heat pipe of each heat pipe means including the lowest elevation between the condenser and the evaporator sections and the condenser sections of the heat pipes of said heat pipe means being disposed at an elevation higher than the elevation of said evaporator sections.

4,342,622

PROCESS FOR MAKING FORMED COKE FROM HIGH SULFUR COAL

Michael O. Holowaty, Crown Point, Ind., assignor to Inland Steel Company, Chicago, Ill.

Continuation-in-part of Ser. No. 147,916, May 8, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 237,510

Int. Cl.³ C10B *39/02, 57/00*

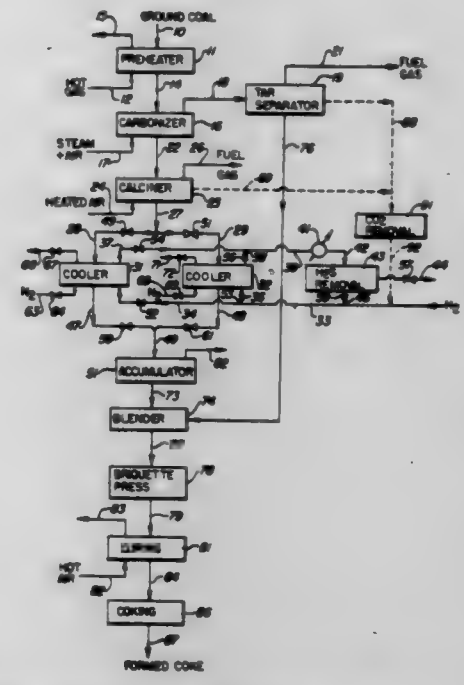
U.S. Cl. 201—6 **19 Claims**

1. In a process for making formed coke wherein sulfur-containing coal is subjected to carbonization and high temperature calcination, the resultant hot calcined char is cooled by contacting the char with a cooling gas, the cooled char is blended with a binder, and the blend is formed into briquettes which are heated to produce formed coke;

the improvement permitting the use of high sulfur coal which comprises:

introducing hot, calcined, sulfur-containing char into a cooling-desulfurization zone; and

contacting said char in said cooling-desulfurization zone at desulfurizing conditions with a reducing gas containing



predominantly hydrogen, whereby to effect concurrent cooling and desulfurization of said char.

4,342,623

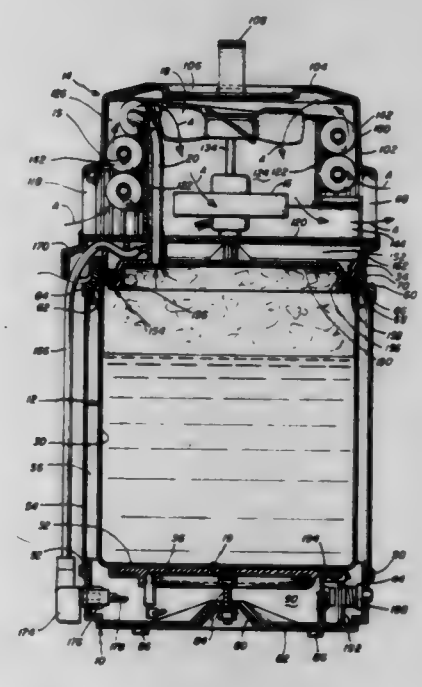
PORTABLE WATER DISTILLER

Herbert H. Loeffler, Arlington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Oct. 2, 1980, Ser. No. 193,011

Int. Cl.³ B01D *3/02*

U.S. Cl. 202—83 **2 Claims**



1. A water distiller comprising:

a container for receiving raw water and a base for supporting the container on a flat surface,

a heating plate secured to the bottom of the container for boiling raw water in the container,

a shell spaced from and surrounding the container and defining with the container an insulating chamber about the container,

a cover having a bottom wall for closing the container when the cover is mounted on the top of the container, said cover having an imperforate top wall for preventing extraneous matter from falling into it from above, said top wall being spaced from said bottom wall to define an insulating chamber above the container when said cover is on the container,

a partition mounted in the cover and spaced from the outer wall of the cover to define an outer chamber and an inner chamber in the cover,

openings in the cover sidewall communicating with the outer chamber and the inner chamber to allow air to flow in series through the chambers,

a condenser coil disposed in the outer chamber,

a discharge tube that extends out the cover connected to the bottom of the coil,

means for eliminating the requirement of a bubble catcher including:

a gasket carried in said bottom wall of said cover that forms a low pressure seal for the container by bearing against the inner surface of the wall of the container,

and an inlet tube mounted in the cover and having one end connected to the top of the condenser coil and the other end extending through the cover bottom wall and communicating with the top of the container so that steam may rise in the inlet tube and flow into the condenser coil when the cover is on the container and the heating plate is energized to boil water in the container,

said other end of the inlet tube lying above the lowest portion of the cover bottom wall so that the cover can be placed upright on a flat surface,

and a motor and fan disposed in the inner chamber of the cover for causing outside air to be drawn through the openings into the cover and over the condenser coil and motor and out the openings.

4,342,624

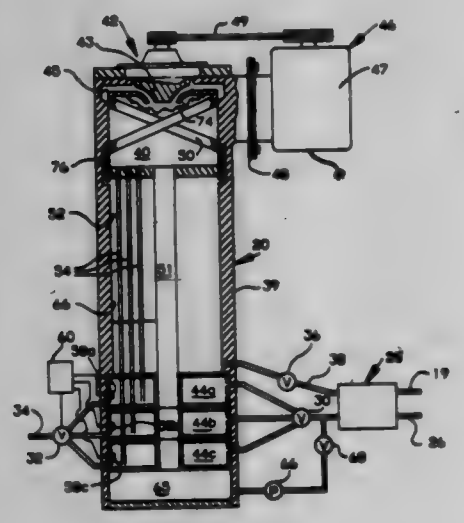
VAPOR COMPRESSION LIQUID TREATING SYSTEM

Richard Chute, Birmingham, and Ralph P. Horan, Troy, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 14,005, Feb. 21, 1979, abandoned, which is a continuation of Ser. No. 851,651, Nov. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 673,567, Apr. 5, 1976, abandoned. This application Aug. 7, 1981, Ser. No. 290,763

Int. Cl.³ B01D *1/28, 3/42*

U.S. Cl. 202—176 **4 Claims**



1. A vapor compression still for concentrating a contaminated solvent to form a concentrate suitable for recycling and a purified solvent comprising:

a. a housing enclosing an evaporation chamber;

b. a dynamic compressor disposed adjacent one end of the housing for evacuating the evaporation chamber and compressing vapor withdrawn by said compressor;

c. a plurality of concentration chambers substantially coaxially disposed at the end of the housing distal the compressor, each adapted to hold solvent to be concentrated;

d. a plurality of capillary tubes wetable by the contaminated solvent, each of said tubes having one end disposed within the solvent being concentrated within one of said concentration chambers and the other end disposed within the evacuated evaporation chamber;

e. means for directing the contaminated solvent in parallel flow to each of said concentration chambers for concentration;

f. means associated with each of said concentration chambers to selectively withdraw the concentrate;

g. means for sensing the density of the concentrate withdrawn from each of said concentration chambers; and

h. means for varying the rate at which vapor is removed from the contaminated solvent in the evaporation chamber as a function of variations in the density of concentrate withdrawn from the concentration chambers.

4,342,625

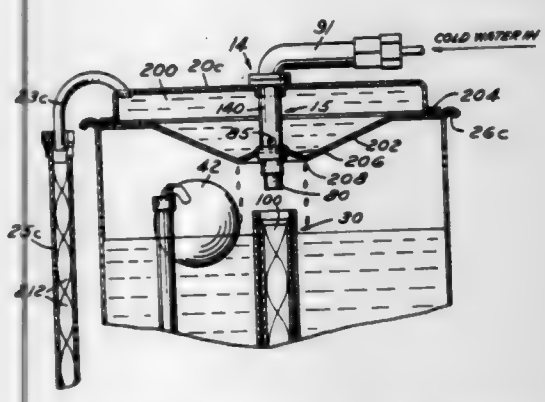
MODULAR AUTOMATIC WATER DISTILLER

Clifford C. Dennison, 440 Centenary Ave., Cleveland, Tenn. 37311

Continuation-in-part of Ser. No. 25,922, Apr. 2, 1979, abandoned. This application Sep. 19, 1980, Ser. No. 188,853

Int. Cl.³ B01D *3/02*

U.S. Cl. 202—181 **10 Claims**



1. Water distillation apparatus of a type adapted for purifying domestic tap water comprising

an evaporator chamber including means for heating water in said chamber to form steam,

enclosure means defining an enclosed volume positioned above said evaporator chamber and separated therefrom, said enclosure means including means defining a storage reservoir in a lower portion of said enclosed volume,

heat exchange means carried by said enclosure means in an upper portion of said enclosed volume in free and unobstructed spatial communication with said lower portion of said enclosed volume including said storage reservoir,

means for feeding inlet water from said heat exchange means to said evaporator chamber including means providing a feed path for inlet water to said evaporator chamber, means for limiting entry of water into said evaporator chamber to a preselected level within said evaporator chamber and means coupled into said feed path between said heat exchange means and said evaporator chamber for discharging inlet water flowing through said heat exchange means in excess of that required to maintain said preselected level such that discharged excess inlet water flows through a defined path in said apparatus which excludes said evaporator chamber,

means providing a vapor column extending upwardly through said lower portion of said enclosed volume for directing steam from said evaporator chamber into said upper portion of said enclosed volume into the region of said heat exchange means, and

water inlet means for connecting said heat exchange means to a supply of water comprising a water control valve including means suspended within said upper portion of said enclosed volume above said vapor column and responsive to temperature of steam exiting said vapor column into said upper portion for admitting water from the said supply to said heat exchange means and thence to said evaporator chamber only when said temperature of said steam exiting said vapor column indicates operation of said heating means,

said heat exchange means being constructed and arranged to

effect heat exchange between water passing from said inlet means and steam circulating in said upper portion of said enclosed volume to preheat water passing from said inlet means to said evaporator chamber and simultaneously to condense steam on said heat exchange means for dripping by gravity as distillate into said storage reservoir.

4,342,626

COOLING DEVICE FOR COKE DRY COOLING

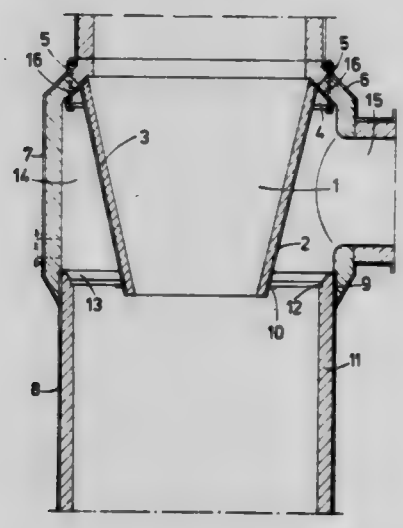
Wilhelm Jakobi, Essen; Bernhard Heinrichs, Wattenscheid, and Friedrich Jokisch, Essen, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,596

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004502

Int. Cl.³ C10B *39/02*

U.S. Cl. 202—228 **14 Claims**



1. A cooling device for coke dry cooling, comprising a housing having an upright axis and including an upper hollow part and a lower hollow part connected with one another, said upper part having an outlet opening for withdrawing a gaseous cooling medium; a separate ring-shaped insert arranged inside said upper part of said housing and being constituted of a metallic heat-resistant material, said insert having an inner surface and an upper end portion; means for protecting said insert from wear and heat and including a wear-resistant and heat-resistant coating arranged on said inner surface of said insert; means for holding said insert in said housing and including mounting means arranged to mount said upper end portion of said insert on said upper part of said housing; and means for connecting said upper part with said lower part of said housing, said connecting means including a sliding joint provided between said upper part and said lower part.

4,342,627

DEHYDRATION OF ALCOHOLS

Charles Cane, and Bertram Yeomans, both of Hull, England, assignors to BP Chemicals Limited, London, England

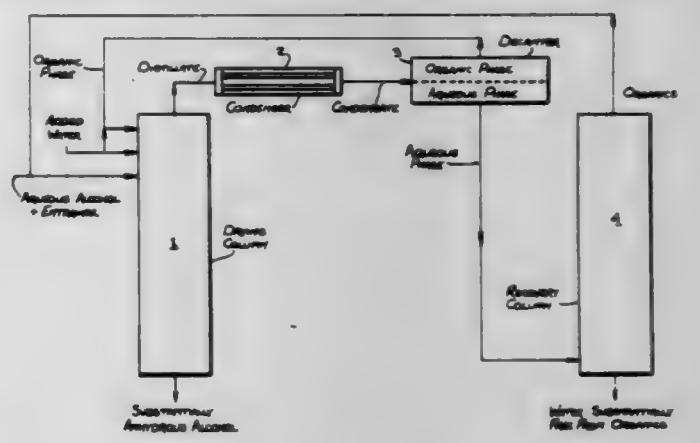
Filed Apr. 16, 1981, Ser. No. 254,740

Claims priority, application United Kingdom, Apr. 17, 1980, 8012619

Int. Cl.³ B01D *3/36*; C07C *29/82, 31/08*

U.S. Cl. 203—19 **9 Claims**

1. A continuous process for producing substantially anhydrous alcohols from aqueous solutions thereof comprising distilling a mixture of aqueous alcohol and an entrainer fed to the upper half of a drying column, withdrawing an azeotrope as an overhead distillate and continuously recovering substantially anhydrous alcohol containing not more than 0.1% by weight of water from the base of the drying column, feeding the distillate into a condenser to produce a condensate, introducing the condensate into a decanter to obtain a separation of the phases, recycling the organic hydrocarbon phase to the top of the drying column, feeding the aqueous phase into the lower half of a recovery column, recycling an overhead distillate product containing predominantly organic compounds from the recovery column to be mixed with the feed to the drying column, and removing water substantially free from organics from the base of the recovery column, characterised in that the



condensate is introduced in a substantially non-turbulent state into a decanter at a point close to the interface between the aqueous and organic phases present therein and an amount of added water not greater than 0.25 volumes per volume of the anhydrous alcohol recovered is simultaneously introduced into the drying column at a point the same as or adjacent to that at which the organic hydrocarbon phase is returned as reflux.

4,342,628

ON-BOARD DETECTION OF ANTIKNOCK COMPOUNDS IN AUTOMOTIVE GASOLINE AND APPARATUS THEREFOR

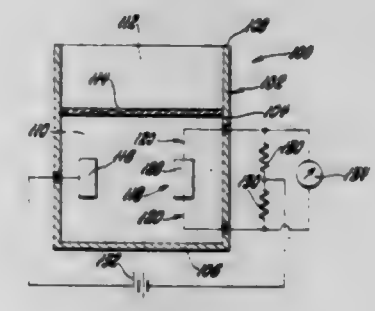
Jeffrey C. Buchholz, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 92,514, Nov. 8, 1979, abandoned, which is a division of Ser. No. 22,337, Mar. 20, 1979, Pat. No. 4,203,807. This application May 26, 1981, Ser. No. 266,727

The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.

Int. Cl.³ G01N *27/26*

U.S. Cl. 204—1 T **6 Claims**



1. In an electrolytic cell having an anode and a cathode operatively immersed in an electrolyte solution containing a metal and electrically biased to electrodeposit said metal onto the cathode, the improvement comprising a cathode for determining when the amount of electrodeposited metal exceeds a threshold amount and comprising

two metal wires, each wire insulated except at an end that is exposed to the electrolyte so that electrodeposition occurs only at the end, said wires being aligned with said ends facing and spaced apart so that metal deposition occurs onto each end in the direction of the opposite end and so that electrodeposition of the metal in the threshold amount forms a continuous deposit between said ends that is indicated by a relatively low electrical resistance measured between said wires.

4. A method for detecting a metal dissolved in an electrolyte solution and for determining whether the amount of metal exceeds a threshold amount, said method comprising

immersing an anode in the solution,

immersing a cathode assembly in the solution operatively spaced from the anode, said cathode assembly comprising two metal surfaces in facing relationship and exposed to the solution so that metal electrodeposition occurs onto each surface in the direction of the other surface, said surfaces being spaced apart by a predetermined distance that is adapted to be bridged by an electrodeposit of the dissolved metal in the threshold amount,

applying an electrical potential between the anode and both metal surfaces of the cathode assembly to electrodeposit metal from solution onto both surfaces, and

measuring the electrical resistance between the cathode wire segments, whereby said resistance is indicative of the amount of electrodeposited metal.

4,342,629

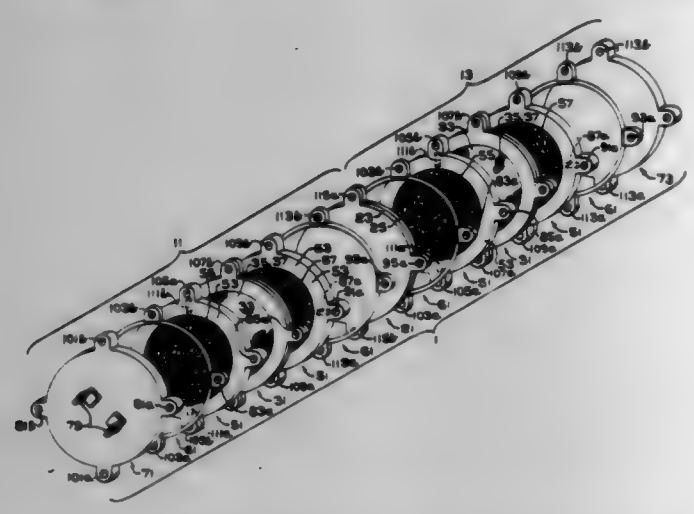
SOLID POLYMER ELECTROLYTE CHLOR-ALKALI PROCESS

Donald W. Du Bois, Corpus Christi, and William B. Darlington, Portland, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 19, 1979, Ser. No. 76,898

Int. Cl.³ C25G *1/34*

U.S. Cl. 204—98 **6 Claims**



1. In a method of electrolyzing alkali metal chloride brine to form chlorine, which method comprises feeding the brine to an electrolytic cell having an anode separated from a cathode by a permionic membrane, said anode and said cathode each comprising electrocatalyst and contacting said permionic membrane, and passing an electrical current from said anode to said cathode whereby to evolve chlorine at the anode, the improvement wherein said anode and cathode are pervious, the electrocatalysts thereof compressively bear upon but are not bonded to the permionic membrane, and the permionic membrane comprises a fluorocarbon resin having the moieties:

$$—CF_2—CXX'—$$

and

$$—CF_2—CXY—$$

where

X is chosen from the group consisting of —F, —Cl, —H, and $—CF_3$;

X′ is chosen from the group consisting of —F, —Cl, —H, $—CF_3$, and $(CF_2)_mCF$, where

m is an integer from 1 to 5;

Y is chosen from the group consisting of —A, —ϕA, —P—A, and $—O—(CF_2)_n—(P,Q,R)—A$, where P is $—CF_2—_a(CXX')_b(CF_2)_c$, Q is $(—CF_2—O—CXX')_d$ and R is $(—CXX'—O—CF_2)_e$, (P,Q,R) is or contains one or more of P, Q, and R;

n is 0 or 1;

a, b, c, d and e are integers from 0 to 6;

ϕ is a phenylene group and A is chosen from the group consisting of —COOH, —CN, —COF, —COCl, —COOR, —COOM and $—CONR_2R_3$, where R_1 is a C_1 to C_{10} alkyl group, and R_2 and R_3 are chosen from the group consisting of —H, and

C_1 to C_{10} alkyl groups;

and M is chosen from the group consisting of —H and alkali metals.

4,342,630

BRINE DISTRIBUTION SYSTEM FOR ELECTROLYTIC CELLS

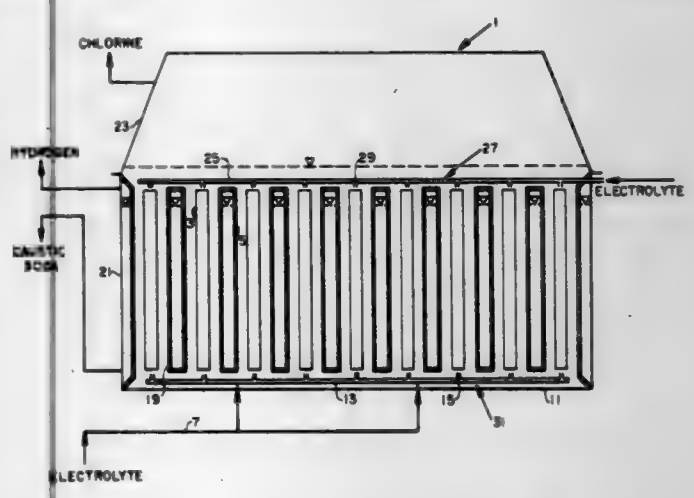
Wolfgang Strewe; Luciano Mose, both of Dortmund, and Bernd Strasser, Hamm, all of Fed. Rep. of Germany, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Aug. 20, 1980, Ser. No. 179,903

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934108

Int. Cl.³ C25B *1/34, 9/00, 1/02*

U.S. Cl. 204—98 **20 Claims**



1. A method for making high purity chlorine, alkali metal hydroxide and hydrogen which comprises applying a decomposition voltage to an aqueous solution of alkali metal chloride in an electrolytic cell, said cell comprising in combination a unitary cell container having a cell base and a cell cover, said container housing a multiplicity of reaction zones wherein each zone comprises an anolyte compartment housing a metallic anode, a catholyte compartment housing a metallic cathode and a barrier separating the anolyte and catholyte compartment, said cell including a brine distribution system located in the interior of the cell non-integral with the container walls and positioned between the lower edges of the electrodes and the cell base, said brine distribution system having at least one common brine distributor manifold, said manifold equipped with multiple brine outlets located below the anolyte compartments and adapted to discharge brine below said compartments for upward movement into each of such anolyte compartments of the cell.

4,342,631

GASLESS ION PLATING PROCESS AND APPARATUS

Gerald W. White, Dallas, Tex., and Jack C. Volkers, Elgin, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

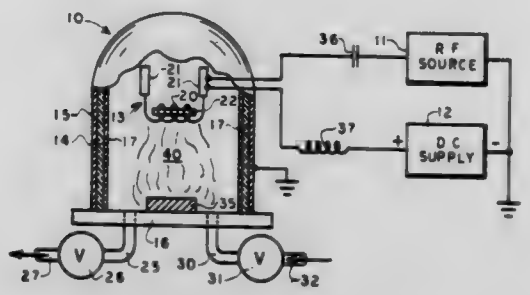
Filed Jun. 16, 1980, Ser. No. 160,045

Int. Cl.³ C23C *15/00*; B05B *5/00*; C23C *13/00*

U.S. Cl. 204—192 N **40 Claims**

1. A process for ion plating a substrate supported by a support means within a chamber with a plating material from a plating source comprising the steps of: evacuating said chamber; coupling said chamber and said support means to ground potential; applying radio frequency energy to said plating

source; developing a direct current positive bias on said plating source; and vaporizing plating material in the evacuated chamber from the plating source to create a plasma of plating ions about said substrate.



4,342,632

METHOD OF METALLIZING A CERAMIC SUBSTRATE

Werner F. Heim, Swampscott, and Hunter L. McDowell, Concord, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 1, 1981, Ser. No. 259,873
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 EC 6 Claims

1. Method of metallizing a ceramic substrate to provide a metallized substrate ready for brazing to metal parts without the use of brazing shims said method including the steps of:

(A) chemically cleaning the substrate,

(B) sputter etching the chemically cleaned substrate,

(C) sputtering a chromium layer of about 200 angstroms in thickness onto the substrate,

(D) sputtering a molybdenum layer of about 3500 angstroms in thickness onto the chromium layer,

(E) sputtering a copper layer of about 25,000 angstroms in thickness onto the molybdenum layer,

(F) firing the coated substrate in dry hydrogen at about 1000° C. for about 10 minutes,

(G) plating a copper-silver brazing alloy of about 0.0003 inch in thickness onto the copper layer, and

(H) firing in dry hydrogen at about 700° C. for about 10 minutes.

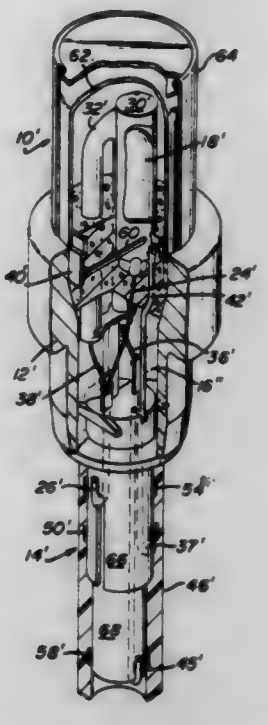
4,342,633

OXYGEN SENSOR

Omer Cure, Diepenbeek, Belgium, assignor to Electro-Nite Co., Philadelphia, Pa.

Filed Apr. 2, 1979, Ser. No. 26,142
Claims priority, application France, Apr. 6, 1978, 78 10229
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—195 S 8 Claims

1. An oxygen sensor of the immersion type for measuring the active oxygen content in a bath of molten metal comprising a measuring head adapted to fit on the end of a carrier, said head having a portion which supports an electro-chemical cell, said cell including an oxygen ion conductive solid electrolyte projecting from said head, a solid reference material juxtaposed to one surface of said oxygen ion conductive solid electrolyte, means for reducing the thermal shock to which said oxygen ion conductive solid electrolyte is subjected after initial immersion including a shield, said shield cooperating with said head to envelop said oxygen ion conductive solid electrolyte, said shield having its inner periphery juxtaposed to and in thermal contact with the opposite surface of said oxygen ion conductive solid electrolyte, said shield being constructed of a metal which melts below 2800° F. whereby the shield will be consumable by a bath of molten steel for exposing said oxygen ion conductive solid electrolyte to the bath, and a second shield supported by said head for protecting said first mentioned shield and said cell during passage through slag.

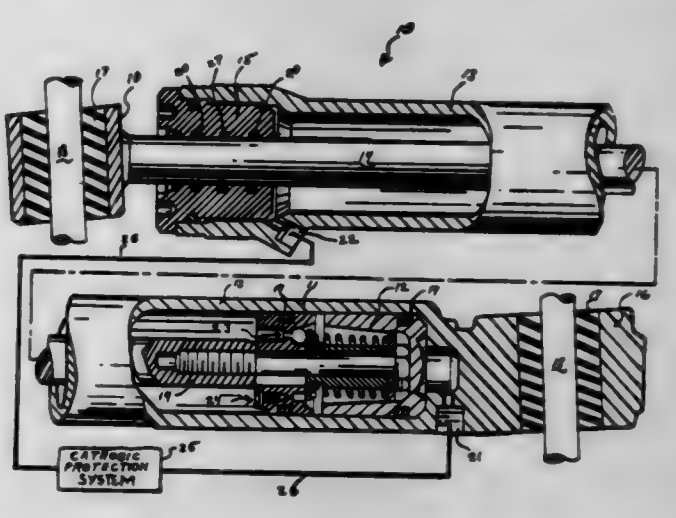


4,342,634

CONTINUITY SPRING FOR A HYDRAULIC CYLINDER

William D. Haasl, Fond du Lac, and Robert B. Weronke, Oshkosh, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Dec. 26, 1979, Ser. No. 106,589
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—197 11 Claims



1. In a hydraulic piston-cylinder for marine applications, of the type having a metal cylinder with closed ends, a piston slidably mounted in said cylinder, and a metal piston rod attached to one end of said piston and extending out one end of said cylinder, and wherein said piston rod is electrically insulated from said cylinder, the improvement comprising:

a sliding metal contact mounted between said piston rod and said cylinder to assure electrical contact therebetween as said piston rod reciprocates.

4,342,635

ANODE CASE FOR A GALVANIC BATH

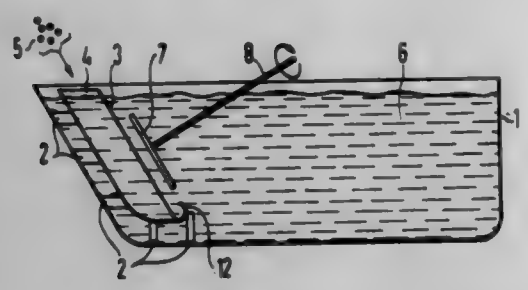
Joahann Becker, Langenhagen; Hermann Koop, Gehrden, and Hans Schüeddekopf, Hanover, all of Fed. Rep. of Germany, assignors to Polygram GmbH, Hamburg, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 238,139

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010383

Int. Cl.³ C25C *7/02, 7/04;* C25D *17/04, 17/12*

U.S. Cl. 204—263 5 Claims



5. A galvanic bath system, comprising: container means for containing an electrolyte solution; on a side wall of the container metal support means being provided for receiving a conductive anode case in freely resting support thereon, the supporting arrangement being electrically conductive; said anode case being formed of an inner casing having apertures through which the electrolyte solution may flow, an anode bag partially surrounding the casing and comprising a material which is permeable to the electrolyte solution but impermeable to a slurry formed within the casing when pellets provided therein are at least partially dissolved by the electrolyte solution; and a contact plate means having apertures therein and which is positioned between a side wall of the anode case and the supporting arrangement, said contact plate means being attached to the anode case so as to provide a slot between the contact plate and anode case side wall into which the anode bag may be slid when enveloping the anode case with the anode bag, said contact plate means providing a low resistance contact between the anode case and the support means.

4,342,636

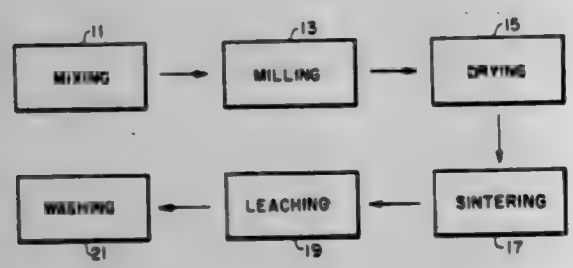
PROCESS FOR FORMING A POROUS POLYFLUOROALKYLENE SHEET USEFUL FOR SEPARATING ANOLYTE FROM CATHOLYTE IN ELECTROLYTIC CELLS

Eng-Pi Chang, Grand Island; Christine A. Lazarz, and Edward H. Cook, Jr., both of Niagara Falls, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Division of Ser. No. 64,615, Aug. 7, 1979, Pat. No. 4,292,146. This application Jun. 26, 1981, Ser. No. 277,532

Int. Cl.³ C25B *13/02, 13/08, 13/04*

U.S. Cl. 204—296 6 Claims



1. A method of making a porous polyfluoroalkylene sheet of improved tensile strength, suitable for use as a separator in an electrolytic cell, which comprises working a mixture of polyfluoroethylene particles, removable pore-forming particulate material and a lubricant to produce a sheet having at least one of (a) an A X-ray ratio in the range of 0.1 to 0.35 and (b) a B_1 or B_2 X-ray ratio in the range of 0.75 to 0.98, removing volatiles therefrom, sintering the polyfluoroethylene particles and removing any remaining lubricant and the pore-forming material.

4,342,637

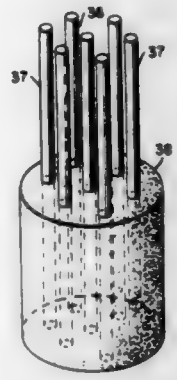
COMPOSITE ANODE FOR THE ELECTROLYTIC DEPOSITION OF ALUMINUM

James C. Withers, Strongsville, and Gary V. Upperman, North Olmsted, both of Ohio, assignors to Metallurgical, Inc., Lakewood, Ohio

Continuation-in-part of Ser. No. 62,135, Jul. 30, 1979, and Ser. No. 52,578, Jun. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 944,987, Sep. 22, 1978, abandoned. This application Feb. 6, 1980, Ser. No. 118,972

Int. Cl.³ C25C *3/06, 3/12, 3/16, 3/24*

U.S. Cl. 204—282 23 Claims



1. An anode for use in an electrolytic cell for the electrolytic production of aluminum from a molten electrolyte salt bath at a temperature above the melting temperature of aluminum and below the temperature at which aluminum ore will substantially dissolve in the electrolyte in molten form, by an electric current at a cathode, said anode comprising in combination a stable bonded mixture of an oxygen containing compound of aluminum with an electrically conductive reducing agent in an amount sufficient to carry the anodic current into and through said anode to thereby efficiently decompose the stable mixture and release aluminum ions from the compound of aluminum solely by the anodic chemical reaction at the anode as the sole source of aluminum produced at said cathode, the stable physical bond between said compound and reducing agent constituting means confining the compound of aluminum in anodic electrical connection with said conductive means until converted by said chemical reaction at the anode wherein the anode has improved conductivity by means of a conductive member in external contact with the anode intermixture, and wherein the conductive member comprises a movable clamp assembly contacting a surface of the anode at a position near the termination of the anode in the electrolyte.

4,342,638

FLASHED-DOWN RESIDUE TREATMENT INCLUDING FILTERING AND SOLVENT REPULPING

Donald A. Dahlstrom, Salt Lake City, Utah, assignor to Envirotech Corporation, Menlo Park, Calif.

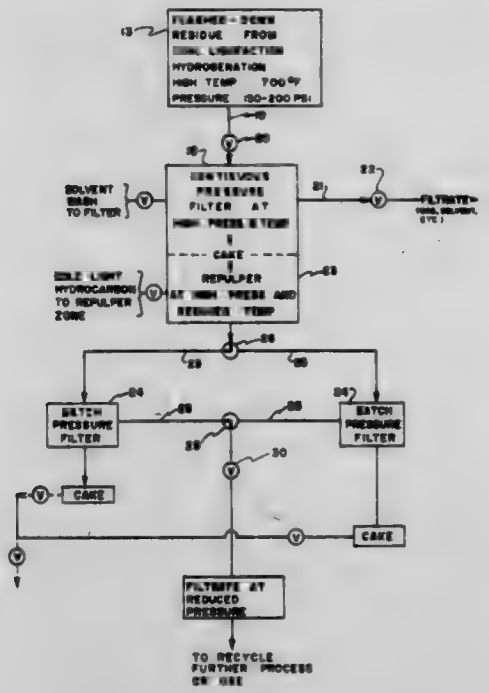
Continuation of Ser. No. 25,757, Apr. 2, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,406

Int. Cl.³ C10G *1/04*

U.S. Cl. 208—8 R 1 Claim

1. In a method for treating a flashed-down residue from a reaction zone of a coal liquifaction process which residue is a slurry of residual solids in a liquor containing dissolved hydrocarbons and is at an elevated temperature of about 700° F. and a pressure in the range from 150–200 psi, the improvement comprising feeding said slurry to a first filter zone that contains both a filter and a repulper and is maintained at substantially the same pressure and temperature as said slurry, filtering said slurry on the filter in said first zone to yield a filter cake of

solids and a filtrate, separately discharging said cake and filtrate from said filter, discharging filtrate from said filter zone, reducing the temperature of said cake by repulping it with a relatively cooler solvent in a repulper subjected to the pressure of said filter zone to yield a slurry, transferring the slurry from



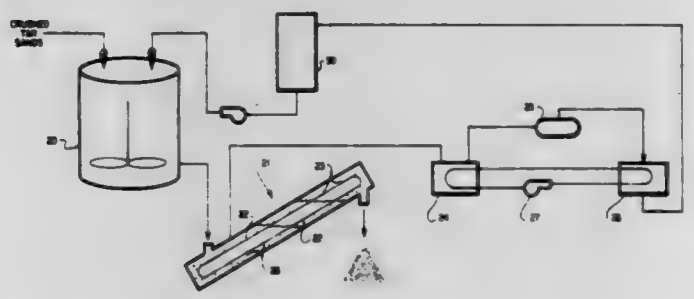
said repulper in said filter zone under the influence of pressure therein through a closed conduit to a second pressure filter wherein said pressure effects filtration of said slurry to yield a cake and a filtrate; and separately discharging said cake and said filtrate from said second filter to zones of substantially reduced pressure.

4,342,639

PROCESS TO SEPARATE BITUMINOUS MATERIAL FROM SAND (TAR SANDS)

Hugh W. Gagon, 3350 Florita Ave., West Valley City, Utah 84115

Filed Jul. 22, 1980, Ser. No. 171,137
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **9 Claims**



1. A method of recovering bituminous organic material from oil or tar sands, comprising the steps of:

mixing the sands containing the bituminous organic material with a halogenated organic solvent which is substantially immiscible in water, has a density greater than that of water and is capable of dissolving the bituminous organic material contained in the sands, thereby producing a slurry of solid particles suspended in a solution of bituminous organic material dissolved in the halogenated organic solvent;

continuously feeding the slurry onto a conveyor system which is at least partially submerged in water, said slurry being fed onto the portion of the conveyor which is submerged in the water;

moving the particulate sands on the conveyor while submerged in the water whereby the solution of bituminous organic material dissolved in the halogenated organic solvent separates from the particulate sands and forms a separate organic phase beneath the water phase;

moving the particulate sands upwardly on the conveyor through the surface of the water so that the sand particles are wetted essentially only by water and contain essentially no organic solvent; and

recovering the organic phase comprising the solution of bituminous organic material dissolved in the halogenated organic solvent from beneath the water phase.

4,342,640

MAGNETIC SEPARATION OF MINERAL PARTICLES FROM SHALE OIL

Robert T. Lewis, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 24, 1980, Ser. No. 210,092
Int. Cl.³ C10G *32/02*; B01D *35/06*; B03C *1/00, 1/30*
U.S. Cl. 208—11 R **18 Claims**

17. A process for separating oil shale mineral solids from retorted shale oil comprising the steps of:

(a) heating fresh oil shale particles in a retort to a retorting temperature above about 480° C. to drive off hydrocarbonaceous shale oil from said raw shale particles;

(b) removing retorted shale oil containing mineral solids from said retort;

(c) maintaining the temperature of said retorted shale oil containing mineral solids above 480° C. for no longer than about one minute; and

(d) thereafter exposing said retorted shale oil containing mineral solids to a magnetic field to cause the migration of mineral solids under the influence of said magnetic field to concentrate the solids and provide a retorted shale oil product having a reduced solids concentration.

4,342,641

MAXIMIZING JET FUEL FROM SHALE OIL

Henry E. Reif, Bryn Mawr, Pa.; Peter Maruhnic, and Michael C. Chervenak, both of Pennington, N.J., assignors to Sun Tech, Inc., Philadelphia, Pa. and Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Nov. 18, 1980, Ser. No. 208,094
Int. Cl.³ C10G *45/08, 45/60*
U.S. Cl. 208—89 **5 Claims**

1. In the process of hydrotreating crude shale oil the improvement which comprises:

(a) contacting crude shale oil at a temperature of up to about 650° F. with hydrogen and a hydrogenation catalyst comprising about 1-3 wt. % nickel and about 2-10 wt. % molybdenum; and

(b) contacting the treated oil of step (a) at a temperature in excess of about 800° F. with hydrogen and a hydrogenation catalyst having a higher metal content than the catalyst of step (a), said higher metal content catalyst comprising about 1.5-5 wt. % nickel and about 8-15 wt. % molybdenum;

whereby steps (a) and (b) produce, after fractionation, a jet fuel meeting JP-4 specifications.

4,342,642

STEAM PYROLYSIS OF HYDROCARBONS

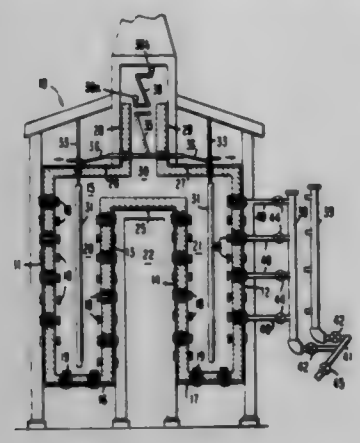
William V. Baner, New York, N.Y., and Morgan C. Sze, Upper Montclair, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation of Ser. No. 910,436, May 30, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 185,153
Int. Cl.³ C10G *9/14, 9/36*; B01J *19/24*
U.S. Cl. 208—130 **9 Claims**

1. A pyrolysis heater for the pyrolysis of hydrocarbons, comprising:

a radiant heating chamber; at least one tubular processing coil including an inlet and outlet for processing fluid in said heating chamber; a plurality of radiant burners for heating the at least one tubular processing coil, and said at least one processing coil including in at least a portion thereof an insert to provide a radiation absorption surface

within the coil, said coil interior including only said insert, said insert comprising a central portion having radially extending vanes dividing all of the interior flow cross-section of the coil in said portion into separate continuous longitudinal flow passages between the insert and interior



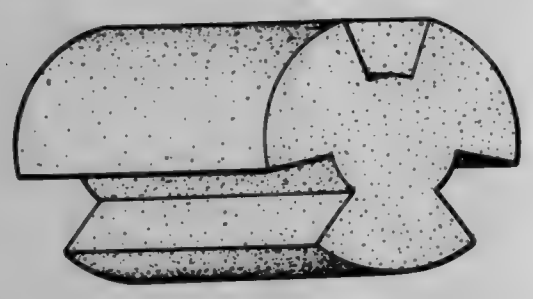
wall of the coil, said longitudinal flow passages providing for unimpeded flow, said insert being dimensioned to increase heat flux in said portion by at least 10 percent and to limit pressure drop increase in said portion to no greater than 5 psi.

4,342,643

SHAPED CHANNELED CATALYST

Chwan P. Kyan, Mantua, N.J., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 199,121, Oct. 22, 1980. This application Jun. 5, 1981, Ser. No. 270,712
Int. Cl.³ C10G *35/04, 45/04*
U.S. Cl. 208—134 **28 Claims**



1. A process for converting a hydrocarbonaceous feedstock comprising contacting said feedstock under hydrocarbon conversion conditions in the presence of a bed containing shaped catalyst particles, said particles having substantially the shape of a cylinder having a plurality of longitudinal channels extending radially from the circumference of the cylinder and defining protrusions therebetween, said protrusions having maximum widths greater than the maximum widths of said channels.

4,342,644

REFORMING WITH MULTIMETALLIC CATALYSTS

Charles H. Mauldin, and William C. Baird, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 53,376, Jun. 29, 1979, Pat. No. 4,292,204. This application Apr. 22, 1981, Ser. No. 256,322
Int. Cl.³ C10G *35/06*
U.S. Cl. 208—139 **14 Claims**

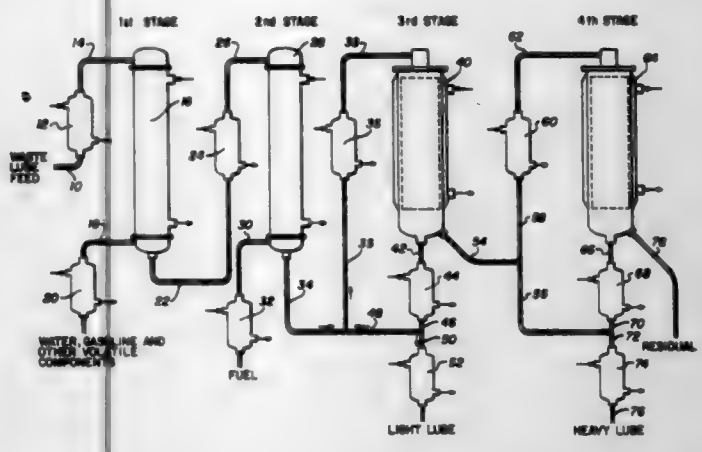
1. A process for reforming a hydrocarbon feed which comprises contacting said feed at reforming conditions with a catalyst which consists of from about 0.1 to about 2 percent palladium, from about 0.1 to about 2 percent rhenium, and from about 0.01 to about 0.2 percent iridium composited with an inorganic oxide support.

4,342,645

METHOD OF REREFINING USED LUBRICATING OIL

Laird C. Fletcher, Natchitoches, and Harold J. Beard, Baton Rouge, both of La., assignors to Delta Central Refining, Inc., Natchitoches, La.

Filed Oct. 28, 1980, Ser. No. 202,019
Int. Cl.³ C10M *11/00*; C10G *7/06*
U.S. Cl. 208—184 **20 Claims**



1. A method of rerefining used oil containing lubricating oil comprising:

(a) removing from the used oil a volatile forecut to provide a resulting oil containing lubricating oil; and

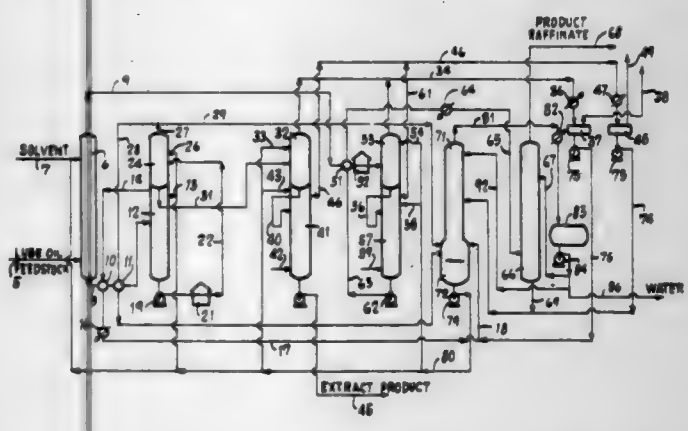
(b) evaporating the resulting oil in an evaporator unit at reduced pressure, greater than about 2.0 millimeters of mercury, to form heavy and light fractions, with a portion of said light fraction recycled and mixed into the resulting oil prior to the resulting oil entering the evaporator unit, in a quantity effective for lowering the vaporization temperature of the resulting oil to reduce the tendency of fouling, coking and cracking of the resulting oil during evaporation.

4,342,646

TRACE SOLVENT RECOVERY IN SELECTIVE SOLVENT EXTRACTION

Philip B. Sherman, Orange, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,421
Int. Cl.³ C10G *21/20*
U.S. Cl. 208—326 **2 Claims**



1. In a process for solvent refining a petroleum based lubricating oil stock containing aromatic and non-aromatic components wherein said lubricating oil stock is contacted with substantially water-free N-methyl-2-pyrrolidone as solvent effecting separation of said lubricating oil stock into an aromatics-rich extract fraction comprising a major portion of said solvent and an aromatics-poor raffinate fraction comprising a minor portion of said solvent, and solvent is recovered from each of said fractions by distillation and steam stripping, the improvement which comprises steam stripping said raffinate to a residual solvent content in the range of 0.1 to 1.0 weight percent,

and contacting the resulting stripped raffinate fraction with water in a water extraction step in an amount equivalent to 4 to 10 parts water by weight per part solvent contained in said stripped raffinate thereby extracting substantially all remaining solvent from said raffinate and producing a solvent-free raffinate product and wash water comprising solvent recovered from said product, separating water from said wash water by distillation and thereby recovering water-free solvent from said wash water, and returning said water-free solvent to said lubricating oil stock contacting step as a portion of the solvent therefor.

4,342,647

TREATMENT OF SCRAP

Fraser McMillan, Prahran; Graeme J. Guthrie, North Rocks, and David J. Williams, Northbridge, all of Australia, assignors to The Commonwealth Industrial Gases Limited, Surry Hills, Australia

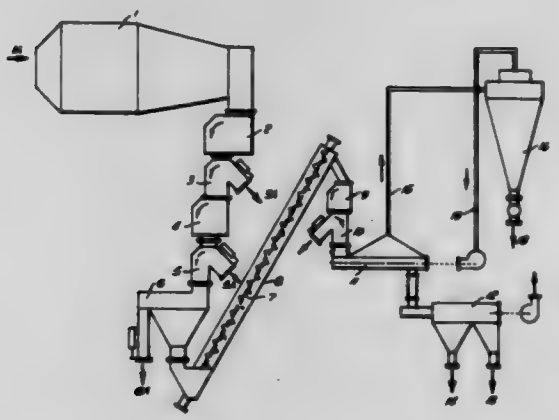
PCT No. PCT/AU80/00017, § 371 Date Nov. 26, 1980, § 102(e) Date Nov. 26, 1980, PCT Pub. No. WO80/02672, PCT Pub. Date Dec. 11, 1980

PCT Filed May 29, 1980, Ser. No. 224,576

Claims priority, application Australia, May 29, 2979, PD8991

Int. Cl.³ B03C *1/30*

U.S. Cl. 209—3 **14 Claims**



1. A method for segregating uncured rubber from a contaminant selected from the class consisting of fabrics, fibres and filaments, comprising the steps of:

A. embrittling the rubber by cryogenic cooling;

B. reducing the particle size at least of the embrittled rubber;

C. continuously during said reducing removing particles from said mixture by fluidization in a gas stream of a predetermined velocity whereby to remove particles of rubber and of contaminant having a size different from each other;

D. classifying by size said particles removed; and

E. maintaining said embrittled uncured rubber from the first step in an embrittled condition until after the fourth step.

4,342,648

DIRECT FLOTATION OF PYROCHLORE

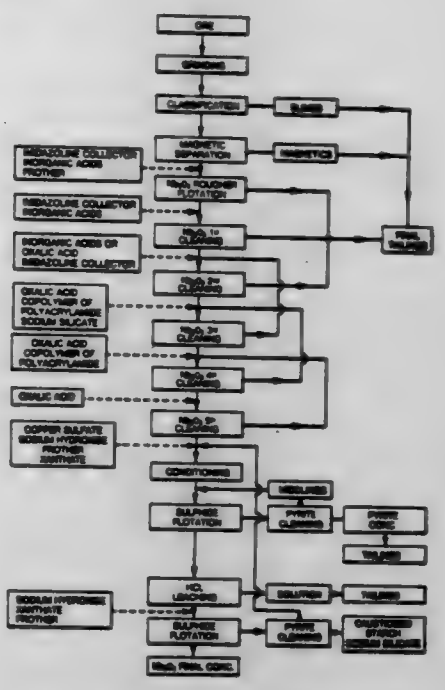
Rudy Biss, Chicoutimi Nord, and Raymond Nadeau, Dubuc, both of Canada, assignors to Les Services TMG Inc., Dubuc, Canada

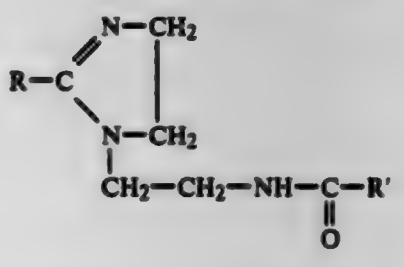
Filed May 5, 1981, Ser. No. 261,132

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—166 **12 Claims**

1. Process for recovering a pyrochlore concentrate from an ore containing pyrochlore and gangue materials comprising silicates and substantial proportions of carbonates comprising: (1) subjecting an aqueous pulp of the ore to a first froth flotation in the presence of (a) a pyrochlore collector selected from the group consisting of 1-amidoethyl-2-substituted imidazolines of the formula





(I)

wherein R and R′ are independently selected from the group consisting of alkyl and alkenyl groups of 8 to 22 carbon atoms, their salts, and mixtures thereof; and (b) an acidic-reacting fluoridic compound selected from the group consisting of hydrofluoric acid, fluoride compounds, fluosilicic acid, fluosilicate compounds, and mixtures thereof in an amount sufficient to modify the pH of the pulp to an acidic pH; (2) subjecting an aqueous pulp of the froth concentrate obtained from step (1) to a second froth flotation in the presence of a further quantity of said pyrochlore collector and a further quantity of said acidic-reacting fluoridic compound in an amount sufficient to modify the pH of the pulp to an acidic pH below the pH used in step (1); steps (1) and (2) being conducted in the presence of said fluoridic compound as the sole acidifying reagent and in the absence of oxalic acid or oxalate; and (3) subsequently subjecting an aqueous pulp of material recovered as the froth concentrate from step (2) to a froth flotation in the presence of a pyrochlore collector and oxalic acid or an acidic-reacting oxalate compound and at an acidic pH below the pH used in step (2); and recovering the froth concentrate obtained from step (3).

4,342,649

UPFLOW REACTOR FILTER ASSEMBLY

Charles D. Hughes, 1045 4th St. N., Brandon, Manitoba, Canada (R7A 2N5)

Filed Feb. 17, 1981, Ser. No. 234,879

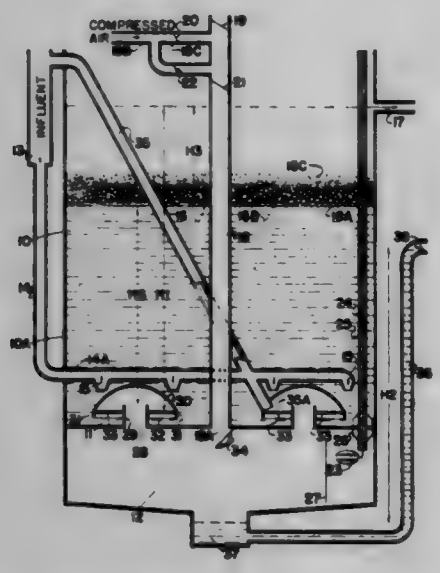
Claims priority, application United Kingdom, Mar. 3, 1980, 8007169

Int. Cl.³ B01D *41/02*

U.S. Cl. 210—108 **15 Claims**

1. An upflow reactor filter assembly for liquids containing solids and flocculents, in conjunction with a source of compressed air; said assembly comprising in combination an enclosure, said enclosure including a secondary chamber at the base thereof with a primary chamber thereabove, a substantially horizontal partition floor separating said chambers, at least one airlock situated adjacent said floor and operatively extending between said chambers and forming an air/liquid interface between said chambers, an influent conduit terminating adja-

cent to but spaced above said floor for introducing influent liquid to be treated, into said primary chamber, air control means operatively extending from said secondary chamber to said airlock and being operatively connected to the source of compressed air for controlling the operation of said airlock, sludge discharge means operatively connected to said secondary chamber and a substantially horizontal filter element spanning said primary chamber spaced above said floor and treated effluent discharge means from said primary chamber situated above said filter element, said air control means including a standpipe operatively extending upwardly from said floor and communicating therethrough with said secondary chamber, said standpipe extending above said treated effluent discharge



means, valve means adjacent the upper end of said standpipe controlling communication of said standpipe with the atmosphere and further valve means adjacent the upper end of said standpipe and below said first mentioned valve means selectively and operatively connecting said standpipe with the source of compressed air, said airlock including said floor being apertured, a tube defining said aperture and extending upwardly into said primary chamber, an inverted airlock cover component supported above and over the upper end of said tube with the lower rim of said cover component being situated at a level below the upper end of said tube and means to support said cover component in position, the air/fluid interface within said cover component being controlled by the pressure of air within said chamber during the filtering process.

4,342,650

ORGANIC SLUDGE-ENERGY RECYCLING METHOD

Lennart G. Erickson, 1070 E. Meadow Cir., Palo Alto, Calif. 94303, and Howard E. Worne, Lynon Industrial Park, Rte. 73, Berlin, N.J. 08009

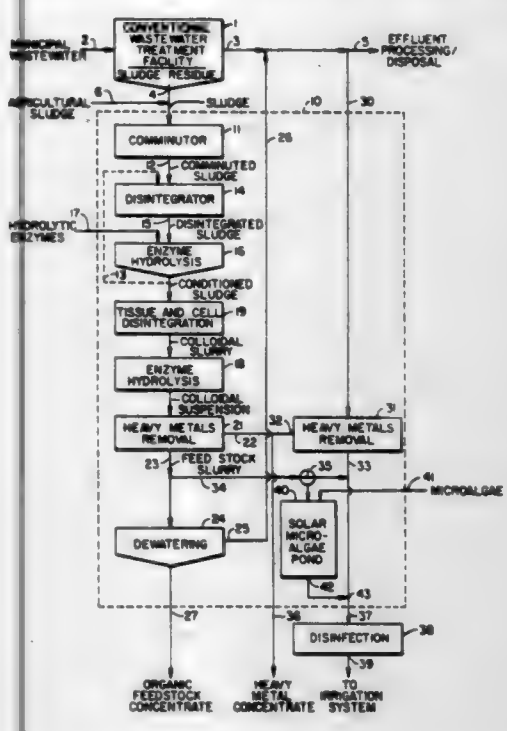
Continuation-in-part of Ser. No. 52,644, Jun. 27, 1979, Pat. No. 4,267,049, which is a continuation-in-part of Ser. No. 877,195, Feb. 13, 1978, Pat. No. 4,159,944. This application Nov. 3, 1980, Ser. No. 203,723

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.³ C02F *3/34*

U.S. Cl. 210—606 **38 Claims**

1. A method for converting substantially untreated organic sludge into a useful substance comprising the steps of disintegrating organic solids in the sludge into organic particulate matter; thereafter hydrolyzing the particulate matter in the sludge by adding thereto at least one of hydrolytic enzymes and hydrolytic enzyme-producing micro-organisms and holding the particulate matter; rupturing the hydrolyzed particu-



late matter to form a colloidal slurry and thereafter using the slurry.

4,342,651

PROCESS AND APPARATUS FOR PRODUCING STERILIZED AND BACTERIA-FREE WATER

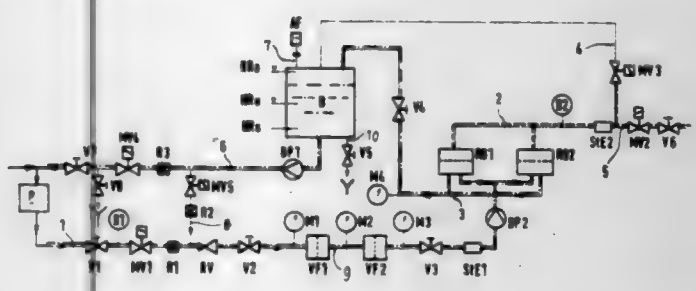
Ulrich E. Ahrens, Springe, Fed. Rep. of Germany, assignor to Blutspendedienst der Landesverbande des Deutschen Roten Kreuzes Niedersachsen Oldenburg and Remen, GmbH, Hanover, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 934,350, Aug. 17, 1978, abandoned. This application Mar. 14, 1980, Ser. No. 130,390

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739335

Int. Cl.³ B01D *31/00, 13/00*

U.S. Cl. 210—636 **19 Claims**



1. A process for producing sterilized water free of bacteria and pyrogens and suitable for medicinal injection comprising the steps of:

circulating deionized water to be sterilized into contact with a reverse osmosis non-hollow, non-fibrous filter formed of a material which is substantially impervious to attack by bacteria in the water,

passing a portion of said deionized water through said filter to obtain a sterile permeate,

recycling another portion of said deionized water from said filter,

recycling the sterile permeate which is not used to said filter, and

at least periodically sterilizing all portions of the surface of said filter with a sterilizing fluid.

4,342,652

PROCESS FOR SCALE INHIBITION IN EVAPORATIVE DESALINATION UNITS

Arthur M. Schiller, and James S. Balcerski, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 945,661, Sep. 25, 1978, abandoned. This application Jan. 22, 1981, Ser. No. 227,287

Int. Cl.[3] C02F *5/10*

U.S. Cl. 210—698 2 Claims

1. In a process for inhibiting scaling in evaporative desalination units comprising adding to the water to be treated an aliphatic copolymer derived from a monovinyl compound and a vinyl sulfonate, the improvement therein providing improved inhibition of magnesium hydroxide in desalination units operating at temperatures above 90° C. comprising selecting as the copolymer additive one derived from about 50 mole percent of maleic acid or anhydride and, correspondingly, from about 50 mole percent of allyl sulfonic acid, said copolymer having a molecular weight in the range of about 500 to about 10,000, adding the copolymer to the water to be treated in an amount effective to inhibit magnesium hydroxide scaling, heating the water in the desalination unit to temperatures above 90° C. and substantially inhibiting the magnesium hydroxide precipitation therein.

4,342,653

PROCESS FOR THE FLOCCULATION OF SUSPENDED SOLIDS

Frederick Halverson, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 156,145, Jun. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 12,274, Feb. 15, 1979, abandoned. This application Dec. 16, 1980, Ser. No. 216,891

Int. Cl.[3] C02F *1/56*

U.S. Cl. 210—734 6 Claims

1. A process for flocculating suspended solids which comprises adding to an aqueous suspension of solids selected from the group consisting of phosphate slime, uranium acid leach residue, copper acid leach residue, coal, coal refuse, and copper tailing from a flotation circuit an effective amount of a flocculant consisting essentially of a polymeric anionic flocculant wherein the polymeric anionic flocculant comprises from about 40 to about 99 mole percent of repeating units derived from acrylamide, from about 1 to about 35 mole percent of repeating units derived from 2-acrylamido-2-methylpropanesulfonic acid, and from 0 to about 25 mole percent of repeating units derived from acrylic acid, and wherein the polymeric anionic flocculant has a Brookfield viscosity of at least about 2.0 centipoises.

4,342,654

PULSATION AMPLITUDE CONTROL FOR PNEUMATICALLY PULSATED LIQUID

Jean-Luc Lambert, Fontainebleau, France, assignor to Fives-Cail Babcock, Paris, France

Filed Jun. 22, 1981, Ser. No. 275,875

Claims priority, application France, Jun. 25, 1980, 80 14080

Int. Cl.[3] B01D *21/24*

U.S. Cl. 210—744 8 Claims

1. A method of controlling the pulsation amplitude of air delivered into a tank containing a liquid pneumatically pulsated to separate products of different density into two superposed layers, which comprises the steps of

(a) intermittently delivering the air through an air inlet element into the tank,

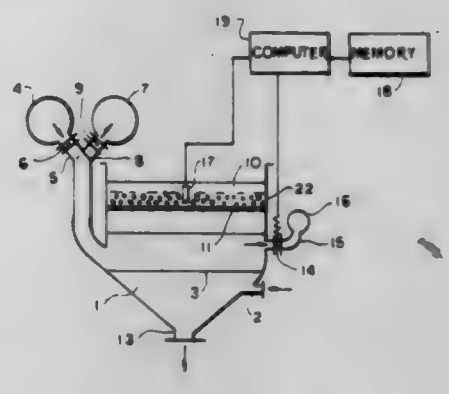
(b) programming the opening and closing of the air inlet element for the intermittent delivery of the air,

(c) storing the air inlet element opening and closing program in a memory unit generating a corresponding output signal,

(d) intermittently venting the air through a venting element,

(e) detecting the level of separation of the two layers by a level sensor emitting a control signal corresponding to the sensed level, and

(f) controlling the beginning of the venting after the complete opening of the air inlet element, the termination of



venting at the same time as the closing of the air inlet element and the duration of the venting by an output signal of a computer transmitted to the venting element, the computer having a first input receiving the control signal from the level sensor and a second input receiving the output signal from the memory unit.

4,342,655

METHOD AND APPARATUS FOR DISPERSING OIL SLICKS

Michael G. Webb, Wootton Bridge, England, assignor to The British Petroleum Company Limited, London, England

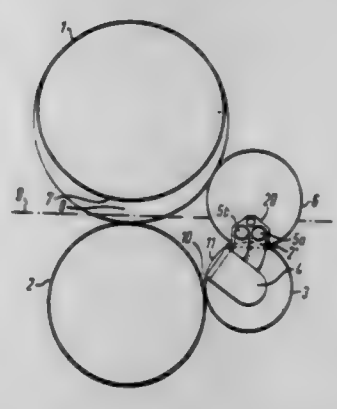
Filed May 28, 1980, Ser. No. 154,094

Claims priority, application United Kingdom, Jun. 8, 1979, 7920142

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.[3] E02B *15/04*

U.S. Cl. 210—749 8 Claims



1. A method for the dispersal of oil comprising the steps of

(a) deploying a barrier on water contaminated with oil to enclose, at least partially, an area containing oil, said barrier having one or more weirs in the barrier connecting the enclosed area with a gallery and at least one pump associated with each gallery,

(b) allowing oil and associated water to flow over the one or more weirs into the gallery,

(c) adding a dispersant to the oil and water by means of a distribution nozzle associated with each pump,

(d) pumping the oil and water from the gallery through at least two pumps under conditions such that an emulsion of oil, water and dispersant is formed, and

(e) discharging the emulsion into the water outside the enclosed area, said barrier including at least one section comprising

(1) a first elongate, flexible, buoyant, inflatable air chamber having a plurality of sections of reduced diameter,

(2) an elongate, flexible, inflatable ballast water chamber,

(3) an elongate, flexible, oil and water discharge tube, and
(4) a second elongate, flexible, buoyant, inflatable air chamber,
the first air chamber, the ballast water chamber, the oil and water discharge tube and the second air chamber being joined together in side-by-side relationship, the chamber and the tube being so positioned relative to one another that when in use on oil-polluted water the first air chamber and the ballast water chamber together form a barrier for oil spilled on water except in the sections of reduced diameter of the air chamber, these sections and the ballast water chamber defining a series of weirs for oil and water to pass into a gallery, the gallery being formed by the ballast water chamber, the oil and water discharge tube and the second air chamber.

4. A barrier for the recovery and dispersal of oil spilled on water, which includes at least one section comprising:
(1) a first elongate, flexible, buoyant, inflatable air chamber having a plurality of sections of reduced diameter;
(2) an elongate, flexible, inflatable ballast water chamber;
(3) an elongate, flexible oil and water discharge tube; and
(4) a second elongate, flexible, buoyant, inflatable air chamber;
the first air chamber, the ballast water chamber, the oil and water discharge tube and the second air chamber being joined together in side-by-side relationship, the chambers and the tube being so positioned relative to each other that when in use on oil polluted water the first air chamber and the ballast water chamber together form a barrier for oil spilled on water except in the sections of reduced diameter of the air chamber, these sections and the ballast water chamber defining a series of weirs for oil and water to pass into a gallery, the gallery being formed by the ballast water chamber, the oil and water discharge tube and the second air chamber; means being provided for the addition of dispersant to the oil and water and for discharging the oil, water and dispersant from the barrier.

4,342,656

PROCESS FOR DISPOSAL OF AQUEOUS LIPOIDAL WASTES

Thomas J. Walsh, Pepper Pike, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 903,485, May 8, 1978, abandoned. This application Jun. 5, 1981, Ser. No. 271,012
Int. Cl.³ F23G *7/00*
U.S. Cl. 210—770 **3 Claims**

1. A process for recovering the fuel value of a normally unburnable lipoidal waste and disposing of said waste wherein said lipoidal waste comprises waste lipids and water, and is the waste product of a process selected from the group consisting of: refining of fats, refining of oils, fat rendering, tall oil recovery, tall oil refining, alkali refining of lipids and saponification of lipids, comprising the steps of:
(a) separating said lipoidal waste from a portion of the waste water to produce a concentrated lipoidal waste which is about 30–70% waste lipids, the remainder being predominantly waste water in a complex emulsion from with the waste lipids;
(b) mixing said concentrated lipoidal waste with fuel oil to form a combustible mixture; and
(c) burning said mixture;
said lipoidal waste containing indigenous surface tension lowering materials selected from the group consisting of saponifiable materials, unsaponifiable materials, acids, and soaps which facilitate said mixing, said mixing producing a state of subdivision effective for substantially complete dispersion of the lipoidal waste in the fuel oil until combustion.

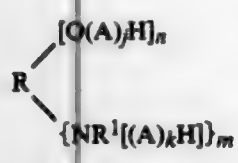
4,342,657

METHOD FOR BREAKING PETROLEUM EMULSIONS AND THE LIKE USING THIN FILM SPREADING AGENTS COMPRISING A POLYETHER POLYOL

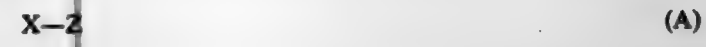
Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

Filed Oct. 5, 1979, Ser. No. 82,363
The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.
Int. Cl.³ B01D *17/04*; E21B *43/22, 43/24*
U.S. Cl. 252—8.55 D **54 Claims**

1. A method for breaking petroleum emulsions of the water-in-oil type characterized by subjecting the emulsion to the action of a homogeneous micellar solution of a thin film spreading agent, comprising: (1) from between about 5% and about 75% by weight of a polyether polyol having the formula:

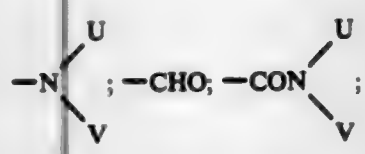


wherein:
A is an alkylene oxide group, $-C_iH_{2i}O-$;
O is oxygen;
i is a positive integer from 2 to about 10;
j is a positive integer no greater than about 100;
k is a positive integer no greater than about 100;
N is nitrogen;
R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or $[A_LH]$;
L is a positive integer no greater than about 100;
R is a hydrocarbon moiety of a polyol, a primary or secondary amine, a primary or secondary polyamine, a primary or secondary amino alcohol, or hydrogen; and
m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen,
said polyether polyol at about 25° C.: (a) being less than about 1% by volume soluble in water and in isooctane; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface between distilled water and refined mineral oil to form a film having a thickness no greater than about 20 Angstroms at a spreading pressure of about 16 dynes per cm; (2) from between about 2% and about 30% by weight of a hydrotropic agent having one of the formulas:

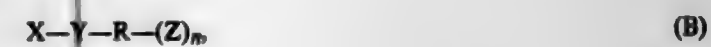


(A)

wherein X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 13 carbon atoms; and wherein Z is one of: —OH;

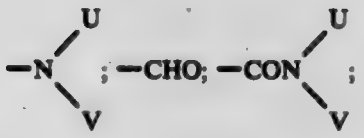


—COOH, and $-OCH_3$; and U and V are hydrogen or hydrocarbon substituents;



(B)

wherein:
Z is one of —OH;



—COOH; and —OCH_3;

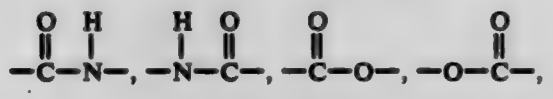
X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 12 carbon atoms;

R is a member selected from the class consisting of, —CH_2—, —C_2H_4—, C_3H_5=, —C_3H_6, and —C_2H_4—O—C_2H_4—;

n is either a one or two integer, the integer dependent upon the selection of R;

U and V are hydrogen or hydrocarbon substituents; and

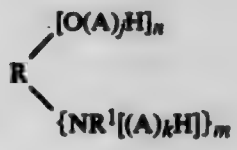
Y is a member selected from the class consisting of:



—O—, and —S—;

(3) from between about 2% and about 30% by weight of an amphipathic agent having at least one radical having from between about 10 and about 64 carbon atoms per molecule; and (4) from between about 15% and about 90% by weight, water.

26. A method of recovering oil from an oil-bearing formation into which a well bore extends, comprising the steps of: (I) generating steam at the surface; (II) supplying said steam to said oil-bearing formation by way of said well bore; (III) supplying a homogeneous micellar solution of a thin film spreading agent to said oil-bearing formation to inhibit the production of oil-water emulsion as a result of the interaction of said steam with the oil and water in the formation, said micellar solution comprising: (1) from between about 5% and about 75% by weight of a polyether polyol having the formula:



wherein:

A is an alkylene oxide group, —$C_iH_{2i}O$—;

O is oxygen;

i is a positive integer from 2 to about 10;

j is a positive integer no greater than about 100;

k is a positive integer no greater than about 100;

N is nitrogen;

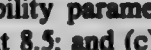
R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or $[A_LH]$;

L is a positive integer no greater than about 100;

R is a hydrocarbon moiety of a polyol, a primary or secondary amine, a primary or secondary polyamine, a primary or secondary amino alcohol, or hydrogen; and

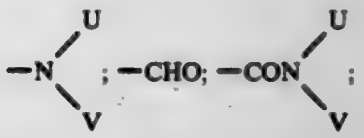
m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen,

said polyether polyol at about 25° C.: (a) being less than about 1% by volume soluble in water and in isooctane; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface between distilled water and refined mineral oil to form a film having a thickness no greater than about 20 Angstroms at a film pressure of about 16 dynes per cm; (2) from between about 2% and about 30% by weight of a hydrotropic agent having one of the formulas:



(A)

wherein X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 13 carbon atoms; and wherein Z is one of: —OH;



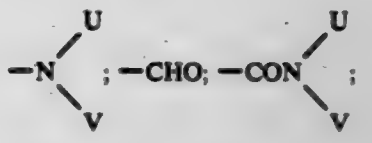
—COOH; and —OCH_3; and U and V are hydrogen or hydrocarbon substituents;



(B)

wherein;

Z is one of —OH;



—COOH; and —OCH_3;

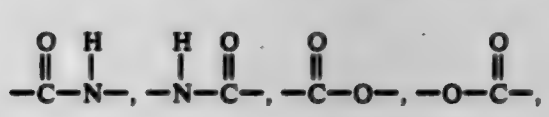
X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 12 carbon atoms;

R is a member selected from the class consisting of, —CH_2—, —C_2H_4—, C_3H_5=, —C_3H_6, and —C_2H_4—O—C_2H_4—;

n is either a one or two integer; the integer dependent upon the selection of R;

U and V are hydrogen or hydrocarbon substituents; and

Y is a member selected from the class consisting of:



—O—, and —S—;

(3) from between about 2% and about 30% by weight of an amphipathic agent having at least one radical having from between about 10 and about 64 carbon atoms per molecule; (4) from between about 15% and about 90% by weight, water; and (IV) recovering from said formation oil and water which was subjected to the action of said steam.

4,342,658

WATER-BASED HYDRAULIC FLUID CONTAINING AN ALKYL DIALKANOLAMIDE

Cline A. Tincher, Grosse Ile, and Jerrold F. Maxwell, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

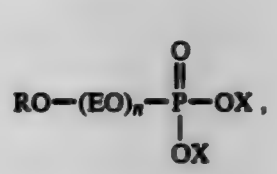
Filed Nov. 24, 1980, Ser. No. 209,817

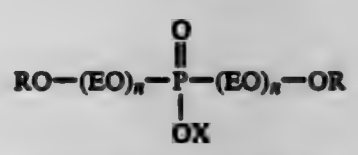
Int. Cl.³ C10M *1/44*

U.S. Cl. 252—32.5 11 Claims

1. A composition useful as a hydraulic fluid or metalworking fluid consisting essentially of water in a major proportion and minor effective lubricating amounts of:

(A) a phosphate ester salt selected from the group consisting of

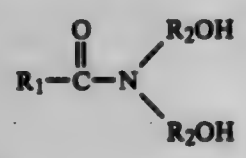




and mixtures thereof wherein EO is ethylene oxide; R is

an alkylaryl group wherein the alkyl group thereof has about 4 to about 20 carbon atoms; X is individually selected from the group consisting of an alkali metal, an alkaline earth metal, the residue of ammonia, the residue of an amine, and mixtures thereof; n is a number from 1 to 50,

(B) an alkyldialkanolamide of the formula:



wherein R_1 is alkyl of about 4 to about 54 carbon atoms and R_2 is alkyl of about 2 to about 6 carbon atoms, or an alkyldialkanolamide prepared by esterifying a dialkanolamine with an alkyl carboxylic acid and removing water of esterification wherein said alkyldialkanolamide is derived from a branched or straight chain, saturated or unsaturated aliphatic dicarboxylic acid having 8 to 54 carbon atoms.

7. The process of metalworking comprising working metal in the presence of the composition of claim 1.

8. The process for transmitting force hydraulically comprising transmitting force utilizing the composition of claim 1.

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VIDEO DISC LUBRICANTS

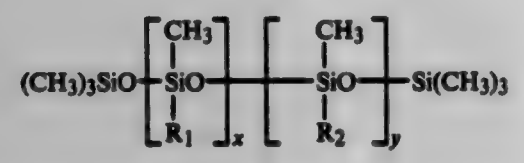
Chih C. Wang, Hightstown; Lincoln Ekstrom, Princeton; Thomas C. Lausman, Cranbury, all of N.J., and Henry Wielicki, Wyndmoor, Pa., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 937,819, Aug. 29, 1978, abandoned. This application Aug. 9, 1979, Ser. No. 65,064

Int. Cl.³ C07F *7/08*

U.S. Cl. 252—49.6 8 Claims

1. A lubricant composition for a video disc comprising a methyl alkyl siloxane fraction of the formula



wherein R_1 and R_2 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x+y is 4 or less, said fraction having a distillation temperature of about 100°–205° C. at a pressure of 10^{-5} torr and wherein said composition is free of antioxidant.

4,342,660

HIGH DENSITY INFORMATION DISC LUBRICANTS

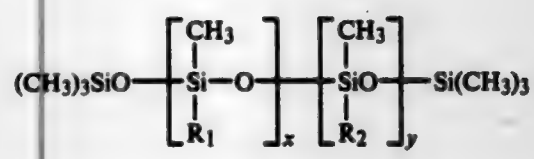
David A. Berry, Columbus; Joseph R. Preston, Radnor, and Louis J. Hillenbrand, Columbus, all of Ohio, assignors to RCA Corporation, New York, N.Y.

Filed Jun. 12, 1981, Ser. No. 272,946

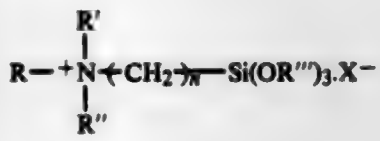
Int. Cl.³ C10M *1/50, 1/16, 1/20*

U.S. Cl. 252—49.6 6 Claims

1. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record coated with a methyl alkyl siloxane lubricant having the formula



wherein R_1 and R_2 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x plus y is 4 or less, the improvement which comprises adding to said lubricant an alkyl-substituted(trialkoxysilyl)alkyl quaternary ammonium salt of the formula



wherein R is an alkyl group of about 12 to 20 carbon atoms; R′ and R″ independently are alkyl groups of 1–8 carbon atoms; R‴ is methyl or ethyl; n is an integer of 1–3 and X is an anion.

4,342,661

HEAT STORAGE MEDIUM

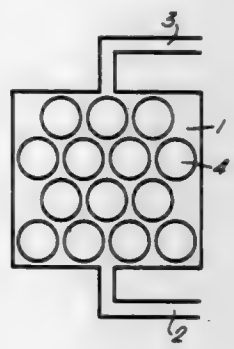
Jörn Ehlers, Uetersen, and Helmut Haukelt, Hamburg, both of Fed. Rep. of Germany, assignors to The British Petroleum Company Limited, London, England

Filed Jun. 3, 1981, Ser. No. 269,811

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3020983

Int. Cl.³ C09K *5/06*

U.S. Cl. 252—70 3 Claims



1. A heat storage medium containing (a) sodium hydroxide in a concentration from 60% by weight up to and including the stoichiometric concentration in sodium hydroxide monohydrate, (b) water in a concentration from 40% by weight down to and including the said stoichiometric concentration and (c) 0.1 to 2.0% by weight of tellurium dioxide, all percentages being expressed as percentages by weight of the combined weight of sodium hydroxide and water.

4,342,662

GETTER DEVICE

Sakae Kimura, Tokyo; Masahiro Shimura, Yokohama, and Tadatake Okai, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 27, 1980, Ser. No. 201,198

Claims priority, application Japan, Oct. 25, 1979, 54-137001; May 21, 1980, 55-66424

Int. Cl.³ H01J *7/18*

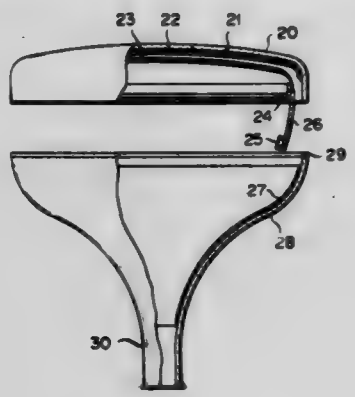
U.S. Cl. 252—181.4 4 Claims

1. A getter device comprising a metal getter container,

a getter material filled in said getter container comprising a barium-aluminum alloy and a nickel powder, and

a gas-impermeable film covering at least the exposed surface of the getter material and comprising at least one boron compound selected from the group consisting of boric

anhydride, orthoboric acid, metaboric acid, and tetraboric acid.



2. A getter device according to claim 1 wherein the gas-impermeable film contains less than 5% by weight of silicon oxide.

4,342,663

USE OF MIXTURE OF ALIPHATIC C_{10} BRANCHED OLEFINS IN AUGMENTING OR ENHANCING THE AROMA OF ARTICLES SUBJECTED TO ACTION OF AQUEOUS HYPOCHLORITES

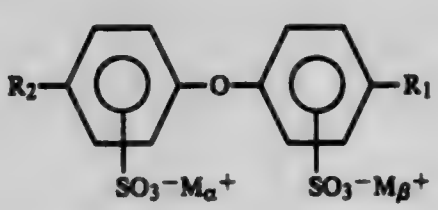
Richard M. Boden, Monmouth Beach; Lambert Dekker, Wykoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 188,576, Sep. 18, 1980, Pat. No. 4,303,555, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application Feb. 5, 1981, Ser. No. 231,771

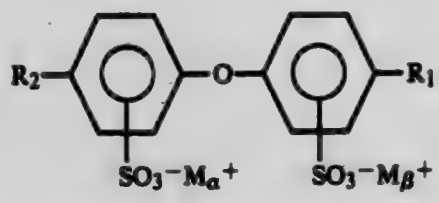
Int. Cl.³ C11D *7/54, 3/395, 3/50*

U.S. Cl. 252—186.36 5 Claims

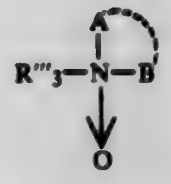
1. An aqueous alkali metal hypochlorite solution comprising as a sole detergent a composition of matter selected from the group consisting of (1) at least one substance defined according to the structure:



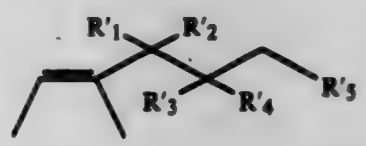
wherein at least one of R_1 and R_2 is C_{10}–C_{12} straight chain or branched chain alkyl; when one of R_1 or R_2 is C_{10}–C_{12} straight chain or branched chain alkyl the other of R_1 or R_2 is hydrogen; wherein M_α and M_β are the same or different and each represents alkali metal consisting of sodium, potassium and lithium and (2) a mixture comprising a material having the structure:



and intimately admixed therewith a substance having the structure:



wherein R_3''' is straight chain alkyl; wherein more than 55% of the R_3''' moieties consist of straight chain alkyl having from 11 up to 13 carbon atoms and wherein A and B are each separately methyl or, taken together, complete a morpholine ring; and from 0.02% up to 0.2% of one or more diisoamylene-containing compositions produced by the step of reacting 2 moles of diisoamylene in the presence of an acid catalyst whereby a mixture of compounds is formed which mixture consists essentially of compounds defined according to the generic structure:



wherein R'_1, R'_2, R'_3, R'_4 and R'_5 are the same or different and each represents hydrogen or methyl with the provisos that (i) the sum total of the carbon atoms in R'_1, R'_2, R'_3, R'_4 and R'_5 is 3; and (ii) R'_1, and R'_2 represents hydrogen when R'_5 represents methyl; and (iii) when either R'_1 or R'_2 is methyl, R'_5 is hydrogen; said diisoamylene being capable of imparting to said alkali metal hypochlorite solution or to a article to which the said alkali metal hypochlorite solution is applied, a woody, piney, herbaceous aroma, said hypochlorite solution having a pH of 11 up to 14.0.

4,342,664

MOLTEN METAL FILTER

James C. Blome, Florissant, Mo., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 83,193, Oct. 9, 1979, Pat. No. 4,265,659. This application May 23, 1980, Ser. No. 152,598

Int. Cl.³ B01J *13/00;* C04B *35/12, 35/24*

U.S. Cl. 252—313 R 2 Claims

1. An aqueous slurry for use in preparing a high temperature resistant ceramic foam having the following composition: 40 to 95% Al_2O_3; 1 to 25% Cr_2O_3; 0.1 to 12% bentonite; 2.5 to 25% of an air setting agent which is substantially nonreactive to the molten metal and up to 5% by weight ceramic fibers.

4,342,665

AQUEOUS GEL COMPOSITIONS

Hiroyuki Itoh, and Hirosuke Imai, both of Yokohama, Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Jan. 26, 1978, Ser. No. 872,431

Claims priority, application Japan, Jan. 26, 1977, 52-6761

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—316 2 Claims

1. Aqueous gel compositions comprising as the essential components (a) from 0.1 to 10% by weight of one or more surface active agents selected from the group consisting of anionic and nonionic surface active agents, (b) from 0.1 to 10% by weight of a water soluble salt of a copolymer of a diene and maleic acid or a maleic acid derivative, (c) from 0.01 to 1% by weight of calcium ion and (d) water, the cation portion of said water soluble salt being a member selected from the group consisting of sodium, potassium, lithium, magnesium, ammonium and amine.

4,342,666

ENHANCEMENT OF TRILITHIUM PHOSPHATE CATALYST ACTIVITY

Donald Hardy, Sr., Levittown, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Apr. 20, 1981, Ser. No. 255,611
Int. Cl.³ B01J *27/18*
U.S. Cl. 252—437 10 Claims

1. A method for enhancing the activity of a trilithium phosphate isomerization catalyst which comprises contacting dry trilithium phosphate catalyst with an aqueous solution containing a mineral acid selected from the group consisting of H_3PO_4, HCl, H_2SO_4 and HNO_3, separating the acid-treated catalyst from the aqueous solution and drying the activated catalyst, wherein the amount of acid in the aqueous solution is adjusted so as to maintain the pH of the solution in equilibrated contact with the catalyst at a value of from 9 to 11.

4,342,667

PROCESS FOR PREPARING A SILVER CATALYST

William D. Armstrong, South Norwalk, Conn., and Charles N. Winnick, Ridgewood, N.J., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,575
Int. Cl.³ B01J *23/04, 23/50*
U.S. Cl. 252—476 1 Claim

1. A process for preparing a catalyst useful in the oxidation by molecular oxygen of ethylene to ethylene oxide comprising:

(a) impregnating a support with a solution of a silver salt selected from the group consisting of silver acetate, silver benzoate, silver oxalate, silver lactate, silver malonate, silver succinate, silver glutarate, and silver maleate and comprising at least one non-nitrogenous reducing agent selected from the group consisting of alcohols, polyols, and keto alcohols at a temperature at or below 110° C.;

(b) activating and drying said impregnated support of (a) at a temperature not below 85° C. or in excess of 200° C. for a sufficient time to permit substantially all of the silver in the impregnated solution to be deposited on said support and leaving decomposable residues on said support;

(c) removing at least 85% of said residues of (b) from said activated support (b) by washing said support with a solvent;

(d) thereafter post-impregnating the catalyst of (c) with a solution of a compound of one or more alkali metals selected from the group consisting of cesium, rubidium, and potassium and thereafter drying said post-impregnated catalyst.

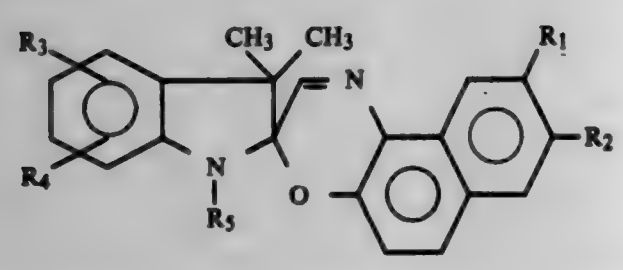
4,342,668

PHOTOCHROMIC COMPOUNDS

Richard J. Hovey, Sturbridge; Nori Y. C. Chu, Southbridge; Peter G. Piusz, Brimfield, all of Mass., and Charles H. Fuchsman, Bemidji, Minn., assignors to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of Ser. No. 940,535, Sep. 8, 1978, Pat. No. 4,215,010. This application Jul. 28, 1980, Ser. No. 172,910
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.
Int. Cl.³ G02B *5/23, 1/04;* C07D *265/38*
U.S. Cl. 252—586 9 Claims

1. A compound having the formula:



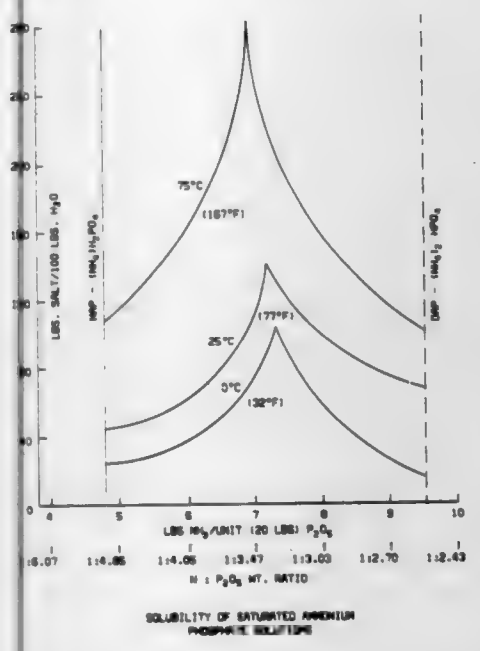
wherein one of R_1 and R_2 is halogen or lower alkoxy, and the other is hydrogen, R_3 and R_4 are hydrogen, lower alkyl, lower alkoxy, or halogen and R_5 is an alkyl radical having 2 to 10 carbons.

4,342,669

FIRE-RETARDANT INSULATING COMPOSITION AND ITS PRODUCTION

Joseph F. Wilson, Bartlesville, Okla., and Robert S. Parish, Broomfield, Colo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 11, 1980, Ser. No. 120,434
Int. Cl.³ C09K *3/28;* C09D *5/18*
U.S. Cl. 252—602 4 Claims



1. A method for producing a fire retardant insulating composition comprising incorporating into a cellulose-base insulating material a phosphate composition consisting essentially of an amount of monoammonium phosphate (MAP) sufficient to provide fire retardance, said phosphate composition having polyphosphate content in the range of about 3 to about 8 weight percent thereby producing a non-tacky, fire retardant insulating composition.

4. A fire retardant insulating composition produced by the method of claim 1, 2, or 3.

4,342,670

PROCESS FOR PREPARING RUBBER COMPOSITIONS FOR TIRE TREADS

Asahiro Ahagon; Makoto Misawa, both of Hiratsuka, and Hiroshi Hirakawa, Isehara, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,689
Claims priority, application Japan, Aug. 24, 1979, 54-107083
Int. Cl.³ C08J *3/00*
U.S. Cl. 523—353 3 Claims

1. In a process for preparing a rubber composition for tire treads by incorporating 100 parts by weight of the total of rubber material consisting of:

(1) at least one member selected from halogenated butyl rubbers,

(2) at least one member selected from the group consisting of natural rubber and a polyisoprene rubber and

(3) a polybutadiene rubber

with 40–70 parts by weight of carbon black and with a vulcanization accelerator, sulphur and other additives, and then mechanically mixing the resulting mixture to obtain the rubber composition,

the process characterized by mechanically mixing in the first mixing step 40–70 parts by weight of the rubber material containing at least one member selected from the group consisting of the halogenated butyl rubber (1) and the

polybutadiene rubber (3), in an amount of at least 50% by weight of the total of the rubbers (1) and (3) with the proviso that, in cases where the amount of said at least one member contained in said rubber material is less than 40–70 parts by weight, the rubber (2) is added in such an amount that the amounts of the rubbers (1), (2) and (3) total 40–70 parts by weight, with at least 90% by weight of the total of the carbon black and then mechanically mixing the resulting mixture with the remainder of the rubber material and carbon black in the second mixing step thereby to obtain a desired rubber composition for producing therefrom tire treads having low rolling resistance and high wet skid resistance with acceptable wear resistance.

4,342,671

SOMATOSTATIN ANALOGUES

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 54,545, Jul. 5, 1979. This application Feb. 19, 1980, Ser. No. 122,327
Int. Cl.³ C08L *37/00*
U.S. Cl. 525—54.11 **3 Claims**

1. A compound of the formula:

$$R\text{-}[Y_2]_n\text{-}Cys(R^1)\text{-}X_4(R^2)\text{-}X_5(R^3)\text{-}Phe\text{-}X_7(R^4)\text{-}X_8\text{-}Lys(R^5)\text{-}Thr(R^6)\text{-}Phe\text{-}Thr(R^7)\text{-}Ser(R^8)\text{-}Cys(R^9)\text{-}O\text{-}CH_2[\text{polystyrene resin support}]$$

in which

R is hydrogen, an α-amino protecting group, lower alkanoyl or benzoyl;

R^1 and R^9 are a thio protecting group;

R^2 is a protecting group for N^g of Arg, or the N^{im} of His;

R^3 is a protecting group for N^{im} of His or the hydroxyl group of Tyr;

R^4 is a protecting group for the 1H indole nitrogen of Trp, the N^{im} of His, or the hydroxyl group of Tyr;

R^5 is an amino protecting group;

R^6 is a hydroxyl protecting group for Thr;

R^7 and R^8 are a hydroxyl protecting group for Thr and Ser;

where

Y_2 is Ala-Gly, Ala-D-Ala- or Gly-Gly-Gly;

n is 0 or 1;

X_4 is Arg, His, D-Arg, or D-His;

X_5 is His, Tyr, Glu, D-His, D-Tyr, or D-Glu;

X_7 is Trp, Tyr, Met, or His;

and

X_8 is Trp or D-Trp.

4,342,672

USE OF HETEROPOLYSACCHARIDE S-156 IN LATEX PAINT

Thomas A. Lindroth, Spring Valley, and Philip E. Winston, Jr., San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 5, 1980, Ser. No. 184,500
Int. Cl.³ C08L *5/00*; C09D *3/10*
U.S. Cl. 524—29 **9 Claims**

1. A water base paint comprising binder, pigment, and an aqueous vehicle for said binder and pigment, and 0.1 to 1% (based on total weight of said paint) heteropolysaccharide S-156.

6. In a process for preparing a water base paint comprising binder, pigment, and an aqueous vehicle for said binder and pigment, the improvement which comprises incorporating into said paint 0.1 to 1% (based on total weight of said paint) Heteropolysaccharide S-156 or dialdehyde-treated Heteropolysaccharide S-156.

4,342,673

HIGH-SOLIDS COATING COMPOSITIONS

Austin A. Wolfrey, Peabody, Mass., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 120,861, Feb. 12, 1980. This application Feb. 2, 1981, Ser. No. 230,890
Int. Cl.³ C08L *63/04*
U.S. Cl. 523—427 **6 Claims**

1. A pigmented, high-solids content, curable composition comprising

(a) an epoxidic prepolymer or prepolymer blend comprising
  (i) a diglycidyl ether of cyclohexanedimethanol,
  (ii) a diglycidyl ether of bisphenol-A,
  (iii) a polyepoxidized phenol or cresol novolak,
  (iv) a polyglycidyl ether of a polyhydric alcohol,
  (v) an epoxidic ester having two epoxycycloalkyl groups, or
  (vi) a mixture of any of the foregoing; and

(b) from 0.5 to 35 parts by weight per 100 parts by weight of (a) and (b) combined of a catalyst consisting essentially of
  (i) diphenyliodonium hexafluorophosphate, and
  (ii) from 0.01 parts to 10 parts, per part of (i), of a copper salt; and
  (iii) from 0.1 to 10 parts, per part of (i) and (ii) combined, of a tin salt; and

(c) from 10 to 100 parts by weight, per 100 parts by weight of (a) and (b) of a pigment.

4,342,674

HIGH SOLIDS COATING FOR RUSTY STEELS

Roger E. Morgan, Piscataway, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 22, 1981, Ser. No. 256,431
Int. Cl.³ C08L *91/06*
U.S. Cl. 523—177 **9 Claims**

1. A two-component coating composition

wherein: Component A contains a polyglycidyl ether of a bisphenol having an epoxy equivalent weight between about 170 and about 200 diluted with between about 10 weight percent and about 20 weight percent of butyl glycidyl ether; an organic wax; a liquid polyglycidyl ether of a bisphenol having an epoxy equivalent weight between about 170 and about 210; a coumarone-indene resin having a softening point between about 40° F. and about 60° F.; a urea-formaldehyde resin; leafing aluminum paste; and 2-nitropropane; and

Component B contains a polyamide having a base number between about 300 and about 360; N-oleyl-1,3-propylenediamine oleate; a coumarone-indene resin having a softening point between about 40° F. and about 60° F.; an organic wax; microcrystalline silica; and 2,4,6-tris-(dimethylaminomethyl) phenol.

4,342,675

PROCESS FOR PREPARING AQUEOUS DISPERSION OF POLYTETRAFLUOROETHYLENE

Subhash V. Gangal, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 16, 1978, Ser. No. 916,844
Int. Cl.³ C08L *23/00*
U.S. Cl. 524—762 **4 Claims**

1. A process for producing an aqueous dispersion of polytetrafluoroethylene which comprises polymerizing tetrafluoroethylene in an aqueous medium at a temperature of between about 60° C. and 120° C. and at a pressure of between about 30 and 1000 psi (2.1 to 70 kg/cm^2), in which

(a) disuccinic acid peroxide and an inorganic persulfate present in a weight ratio of peroxide to persulfate of between about 55:1 and about 10:1 is charged to the aqueous medium prior to initiation of polymerization, sufficient disuccinic acid peroxide being added to result in about 100 to 550 ppm disuccinic acid peroxide in the aqueous medium;

(b) a nonionic hydrocarbon surfactant and substantially nontelogenic anionic surfactant which is present in a weight ratio of hydrocarbon surfactant to anionic surfactant of between about 1:30 and about 1:150 is added to the aqueous medium prior to initiation of polymerization, sufficient hydrocarbon surfactant being added to result in about 10 to 40 ppm hydrocarbon surfactant in the aqueous medium; and

(c) after at least about 4% polymer solids has formed based on weight of polymerization mixture and before 20% of polymer solids has formed, a mixture of between about 100 to 350% disuccinic acid peroxide based on the amount of disuccinic acid peroxide employed in part (a), and between about 100 and 300% anionic surfactant based on the amount of anionic surfactant employed in part (b), is added to the polymerization medium.

4,342,676

METHOD FOR PRODUCING LATICES OF COPOLYMERS OF BUTYL ACRYLATE AND 1-METHACRYLATE-1-TERT-BUTYL PEROXY ETHANE

Sergei S. Ivanchev, ulitsa Nalichnaya, 36/3, kv. 97; Valery N. Pavljuchenko, prospekt Energetikov, 34, kv. 53; Zinaida M. Pesina, ulitsa Pskovskaya, 6, kv. 12, and Elena D. Vasilieva, prospekt Lunacharskogo, 110, kv. 324, all of Leningrad, U.S.S.R.

PCT No. PCT/SU79/00016, § 371 Date Nov. 13, 1980, § 102(e) Date Nov. 10, 1980, PCT Pub. No. WO80/01917, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 13, 1979, Ser. No. 216,994

Int. Cl.³ C08L *00/00*

U.S. Cl. 524—458 **2 Claims**

1. A method for producing latices of copolymers of butyl acrylate and 1-methacrylate-1-tert-butyl peroxy ethane by emulsion copolymerization of butyl acrylate and 1-methacrylate-1-tert-butyl peroxy ethane in the presence of an initiating redox system, characterized in that the copolymerization is carried out through prepolymerization of butyl acrylate up to a conversion degree of 90–100% followed by introduction of 1-methacrylate-1-tert-butyl peroxy ethane into the reaction mass, potassium persulfate and sodium metabisulfite being used as the initiating redox system.

4,342,677

FLUOROCOMPLEX SALT-CONTAINING LIQUID FOR SETTING DENTAL CEMENTS

Hiroaki Muramatsu, Gotenba; Kentaro Tomioka, Chofu; Kazuo Hirota, Tokyo, and Shoji Akahane, both of Tokyo, all of Japan, assignors to G-C Dental Industrial Corp., Tokyo, Japan

Filed May 14, 1981, Ser. No. 263,589

Claims priority, application Japan, Jun. 4, 1980, 55-74408

Int. Cl.³ C08K *3/30*

U.S. Cl. 523—116 **5 Claims**

1. A liquid for setting dental cements comprising an aqueous solution of 45 to 55% by weight of a copolymer of acrylic acid and maleic acid containing tartaric acid and one or more fluorocomplex salts in amounts of 0.1 to 5% on the basis of the total weight.

4,342,678

GLASS-REINFORCED POLYESTER MOULDING COMPOUNDS

Lothar Buxbaum, Lindenfels, and Franz Breitenfellner, Bensheim, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 9, 1980, Ser. No. 167,179

Claims priority, application Switzerland, Jul. 17, 1979, 6631/79

Int. Cl.³ C08K *7/14*; C08L *67/02*

U.S. Cl. 524—539 **3 Claims**

1. A moulding compound which consists essentially of

(a) from 40 to 98% by weight, based on said moulding compound, of a polyester or copolyester which is from 90 to 100 mol % of a polyester derived from 1,4-butanediol and trans-1,4-cyclohexanedicarboxylic acid or polyester forming derivative thereof; and from 10 to 0 mol % of a polyester derived from an alkane diol of 2 to 8 carbon atoms or cyclohexane-1,4-dimethanol; and a dicarboxylic acid (or polyester forming derivative thereof) selected from the group consisting of azelaic acid, sebacic acid, succinic acid, dodecanedicarboxylic acid, cis-1,4-cyclohexanedicarboxylic acid, terephthalic acid and isophthalic acid, and

(b) from 2 to 60% by weight, based on said moulding compound, of glass fibers.

4,342,679

WEAR-RESISTANT SINTERED COMPOSITION HAVING AN EMPIRICAL FORMULA $CF_{1.3}$ COMPRISING GRAPHITE FIBERS, FLUONNATED GRAPHITE, AND PTFE

Louis Abrahams, Worcester, and Thomas P. J. Izod, Holliston, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Aug. 27, 1980, Ser. No. 181,909

Int. Cl.³ C08K *7/02*

U.S. Cl. 524—401 **2 Claims**

1. A sintered substantially non-oxidized composition having the empirically derived formula of about $CF_{1.3}$, said composition being prepared from a mixture consisting essentially of 74–84% by weight polytetrafluoroethylene, 7–17% graphite fibers, and 4–14% fluorinated graphite.

4,342,680

STABILIZED OXYMETHYLENE COPOLYMER COMPOSITION

Akitoshi Sugio, Ohmiya; Akira Amemiya; Masaharu Kimura, both of Tokyo; Yoshiharu Otuki, Kawaguchi, and Kiyokazu Kawaguchi, Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Mar. 20, 1980, Ser. No. 132,165

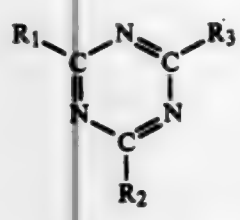
Claims priority, application Japan, Jul. 24, 1979, 54-94075

Int. Cl.³ C08K *3/22, 5/13, 5/34*

U.S. Cl. 524—100 **6 Claims**

1. A stabilized oxymethylene copolymer composition comprising an oxymethylene copolymer, and incorporated therein a stabilizer system consisting essentially of:

(1) 0.01 to 7 parts by weight, based on 100 parts by weight of the oxymethylene copolymer, of at least one aminesubstituted triazine of the following formula



(A)

wherein R_1, R_2 and R_3 represent a hydrogen atom, a halogen atom, a hydroxyl group, an alkyl group, an alkoxy group, an aryl group, a hydrogenated aryl group, an amino group or a hydroxymethylated amino group, and at least one of them is an amino group or a hydroxymethylated amino group,

(2) 0.0^5 to 5 parts by weight, based on 100 parts by weight of the oxymethylene copolymer, of at least one sterically hindered phenol (B) selected from the group consisting of 2,2'-methylenebis (4-methyl-6-t-butylphenol), distearyl-3,5-di-t-butyl-4-hydroxybenzyl phosphonate, 2,6,7-trioxa-1-phosphabicyclo[2.2.2]-oxy-4-yl-methyl-3,5-di-t-butyl-4-hydroxy-hydrocinnamate, 1-(3,5-di-t-butyl-4-hydroxyphenyl)-3,5-distearyl-thiotriazylamine, 2(2'-hydroxy-3',5'-di-t-butylphenyl)-5-chlorobenzotriazole, 2,6-di-t-butyl-4-

methylphenol, 1,3,5-trimethyl-2,4,6-tris (3,5-di-t-butyl-4-hydroxybenzyl) benzene, 4,4'-methylene-bis (2,6-di-t-butylphenol), 3,5-di-t-butyl-4-hydroxybenzyl-dimethylamine and N,N'-hexamethylenebis(3,5-di-t-butyl-4-hydroxy-hydrocinnamide), and

(3) 0.004 to 5 parts by weight, based on 100 parts by weight of the oxymethylene copolymer, of at least one metal-containing compound (C) selected from the group consisting of hydroxides of an alkali metal which is sodium or potassium or an alkaline earth metal which is magnesium, calcium or barium.

4,342,681

USE OF ORGANIC SILICON COMPOUNDS IN COMBINATION WITH OXETANE COMPOUNDS, DIOXANES OR TETRAHYDROFURANES FOR STABILIZING AND BRIGHTENING POLYCARBONATES WHICH ARE FREE FROM PHOSPHITES AND FREE FROM BORIC ACID ESTERS

Karsten Idel, Krefeld; Wolfgang Cohnen, Leverkusen, and Dieter Freitag, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,622

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920451

Int. Cl.³ C08K 5/15, 5/54

U.S. Cl. 524—108 14 Claims

1. A polycarbonate composition comprising polycarbonate resin prepared by a solution process characterized in the absence therefrom of phosphites and boric acid esters and, a stabilizing and brightening agent comprising 0.01 to 1.0 percent by weight of said composition comprising components

(i) an organic silicon compound of the general formula:

$$(R_1)_a—Si—(OR_2)_b$$

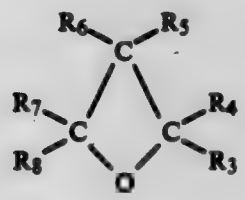
wherein

a+b=4, b is 1 to 4, R_1 is H, C_1-C_{18} alkyl, C_2-C_{18}-alkenyl C_6-C_{24} aralkyl and

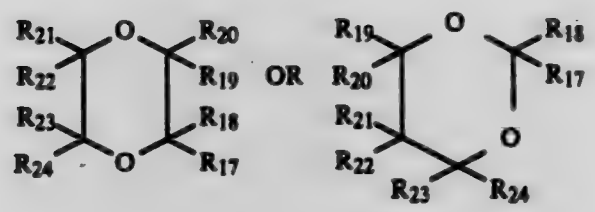
R_2 is C_1-C_{18}-alkyl, C_2-C_{18} alkenyl, C_5-C_{10}-cycloalkyl or C_7-C_{24}-aralkyl and

(ii) one or more members of the group consisting of

(a) oxetane compounds having the general formula:

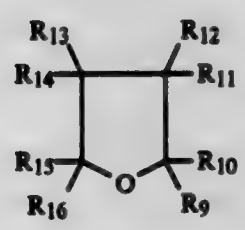


(b) dioxane compounds having the general formula:



and

(c) tetrahydrofurane compounds having the general formula:



wherein R_3 to R_{24} can be the same or different and may be H, C_1-C_{18} alkyl, C_5-C_{12} cycloalkyl, C_6-C_{15}-aryl, C_7-C_{15} aralkyl, C_7-C_{15} alkaryl, C_1-C_{18}-hydroxyalkyl, C_2-C_{18}-alkoxyalkyl, (C_6-C_{15}-aryl)oxymethyl, and (C_7-C_{15}-aralkyl)-oxymethyl and for said (b) and (c) R_9 to R_{24} may additionally be monoacyloxymethyl.

4,342,682

INTUMESCENT FLAME RETARDANT THERMOPLASTIC POLYURETHANE ELASTOMER COMPOSITIONS

Yuval Halpern, Skokie, and Donald D. Hall, Jr., Prospect Heights, both of Ill., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Sep. 18, 1981, Ser. No. 303,688

Int. Cl.³ C08K 5/52

U.S. Cl. 523—179 5 Claims

1. Thermoplastic polyurethane elastomer compositions comprising (a) a thermoplastic polyurethane elastomer, (b) a flame retarding amount of an intumescent additive selected from the group consisting of melammonium pentate, the pentate salt of ammelide, and mixtures thereof, and (c) a polyol.

4,342,683

AZO DYES WITH CARBOXYL POLYALKYLENEOXY CHAIN MOIETY

Henning Reel, Cologne; Winfried Kruckenberg, and Karl H. Schündehütte, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

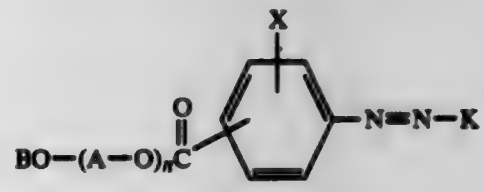
Continuation of Ser. No. 967,431, Dec. 7, 1978, abandoned. This application Jul. 2, 1980, Ser. No. 196,519

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 2755022

Int. Cl.³ C09B 29/36

U.S. Cl. 260—156 8 Claims

1. An azo dyestuff of the formula


(I)

wherein

X denotes hydrogen, nitro or $COOR_1$,

B denotes R or acyl,

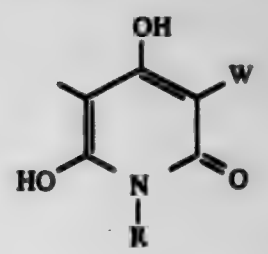
R denotes hydrogen, alkyl, cycloalkyl, alkenyl, aryl or aralkyl,

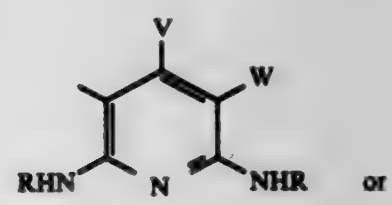
R_1 denotes alkyl or cycloalkyl,

A denotes alkylene.

n denotes the numbers 3–8 and

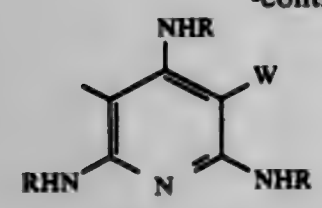
K denotes a coupling component from the series


(a)


(b)

or

-continued



R—independently of one another—has the abovementioned meaning,
V represents hydrogen or methyl and
W represents CN, COOR or CONHR, and
the alkyl, cycloalkyl, alkenyl, aryl, alkylene and acyl radicals mentioned above in any context can contain further non-ionic substituents customary in azo chemistry or can contain the radical COOH.

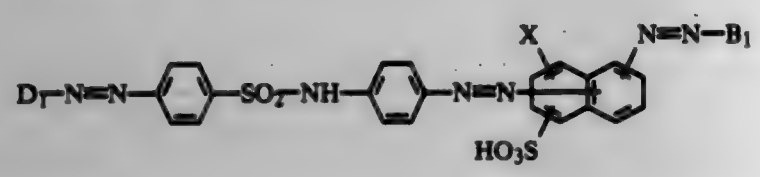
4,342,684

HYDROSOLUBLE PYRAZOLONE TRISAZO DYESTUFFS DERIVED FROM 4,4'-DIAMINO-BENZENESULFANILIDE

Pierre Frank, and Andre L. Sailer, both of Saint Clair du Rhone, France, assignors to P C U K Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Continuation of Ser. No. 541,956, Jan. 17, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,897
Claims priority, application France, Jan. 22, 1974, 74 02017
Int. Cl.³ C09B *33/22, 35/32, 35/38;* D06P *3/32*
U.S. Cl. 260—159 **1 Claim**

1. A dyestuff which in the free acid state is represented by the formula:



wherein
X is hydrogen or hydroxy;
B_1 is the residue of hydroxylated benzene or naphthalene coupling component; and
D_1 is the residue of a pyrazolone.

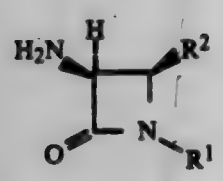
4,342,685

INVERSION OF THE 3 α-AMINO GROUP ATTACHED TO THE β-LACTAM RING

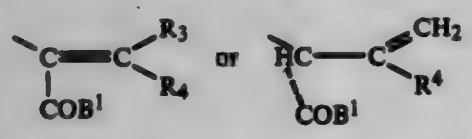
Wataru Nagata, Nishinomiya, and Tsutomu Aoki, Sennan, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 28, 1980, Ser. No. 136,073
Claims priority, application Japan, Apr. 3, 1979, 54-40624
Int. Cl.³ C07D *705/08, 498/04;* C07B *29/00*
U.S. Cl. 260—239 A **5 Claims**

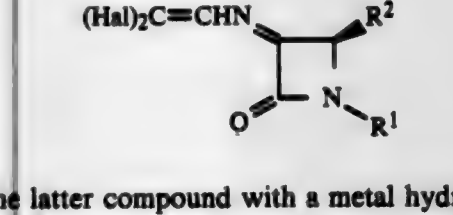
1. A process for the preparation of a 3β-amino-4β-substituted-2-azetidinone of the formula



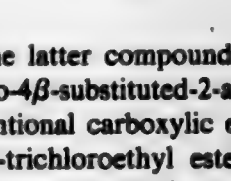
wherein R^1 is a group of the formula



in which R^3 and R^4 are the same or different C_1 to C_3 alkyl and COB^1 is carboxy or a conventional carboxylic ester group, and R^2 is C_2 to C_4 alkenyloxy, C_2 to C_4 alkynyloxy, C_1 to C_4 alkanoyloxy or C_1 to C_4 alkylthio, or R^1 and R^2 taken together represent a group of the formula



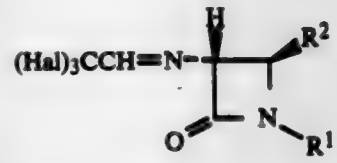
wherein Y^1 is hydrogen, halogen, C_1 to C_7 alkoxy or C_1 to C_7 alkyl which is unsubstituted or monosubstituted by halogen, acetoxy or 1-methyl-tetrazol-5-yl-thio, Y^2 is C_1 to C_2 alkylidene, and COB^2 is carboxy or a conventional carboxylic ester group, which comprises condensing a 3α-amino-4β-substituted-2-azetidinone of the formula



wherein R^1 and R^2 are as previously defined, with a trihalogenoacetaldehyde of the formula

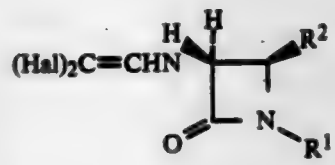
$(Hal)_3CCHO$

wherein Hal is chloro, bromo or iodo, to form a 3α-(2,2,2-trihalogenoethylidene)amino-4β-substituted-2-azetidinone of the formula



treating the thus formed compound with a base to give a 3-(2,2-dihalogenovinyl)imino-4β-substituted-2-azetidinone of the formula

reducing the latter compound with a metal hydride to give a 3β-(2-halogenovinyl)amino-4β-substituted-2-azetidinone of the formula



and hydrolyzing the latter compound with aqueous acid to yield the 3β-amino-4β-substituted-2-azetidinone compound, wherein the conventional carboxylic ester group is diphenyl methyl ester, 2,2,2-trichloroethyl ester, p-nitrobenzyl ester, p-methoxybenzyl ester, phthalidyl ester, acetoxymethyl ester, pivaloyloxymethyl ester, t-butyl ester, phenyl ester, or indanyl ester.

4,342,686

INTERMEDIATES FOR PREPARING 6-LOWER ALKYL-7,8-DIHYDROXY-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

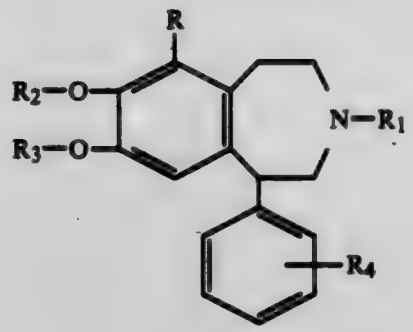
Charles K. Brush, Malvern, and Joseph Weinstock, Phoenixville, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 972,296, Dec. 22, 1978, Pat. No. 4,265,889, which is a continuation-in-part of Ser. No. 903,325, May 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 852,404, Nov. 17, 1977, Pat. No. 4,165,372. This application Nov. 13, 1980, Ser. No. 206,428

Int. Cl.³ C07D *223/16;* A61K *31/55*

U.S. Cl. 260—239 BB 10 Claims

1. A compound of the structural formula:



in which:

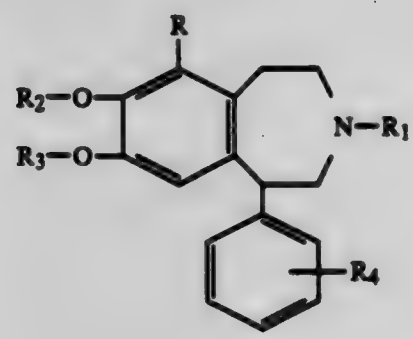
R is lower alkyl of 1–6 carbons;

R_4 is hydrogen or one substituent from the group consisting of trifluoromethyl, halo, methyl, methoxy, alkanoyloxy of 2–5 carbons, hydroxy or methylthio;

R_2 and R_3 are the same and are hydrogen, lower alkyl of 1–5 carbons, lower alkanoyl of 2–5 carbons, benzyl or, when taken together, methylene; and

R_1 is benzyl, phenethyl, lower alkanoyl of 1–5 carbons or, when R_2 and R_3 are other than hydrogen or alkanoyl, hydrogen; or pharmaceutically acceptable acid addition salts thereof.

5. A compound of the formula:



in which:

R is a α-hydroxyalkyl or α-chloroalkyl of 1–6 carbons;

R_1 is hydrogen, formyl or methyl;

R_2 and R_3 are the same and are methyl, benzyl or, when taken together, methylene; and

R_4 is hydrogen or one substituent from the group comprising trifluoromethyl, halo, methyl, methylthio or methoxy; or pharmaceutically acceptable acid addition salts thereof.

4,342,687

N-SUBSTITUTED PERHYDRODIOXAZEPINES USEFUL AS POLYURETHANE CATALYSTS

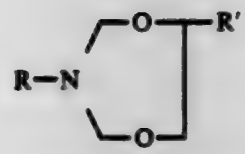
Robert L. Zimmerman, and Edward E. McEntire, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 8, 1981, Ser. No. 300,405

Int. Cl.³ C07D *413/06, 273/01*

U.S. Cl. 260—243.3 4 Claims

1. A composition of matter having the formula



where R is a tertiary amino alkyl radical and R′ is hydrogen or lower alkyl.

4,342,688

PROCESS FOR THE MANUFACTURE OF AN N-HYDROXYALKYLCARBAZOLE

Horst Tappe, Dietzenbach, Fed. Rep. of Germany, assignor to Cassella Aktiengesellschaft, Frankfurt (M) Fechenheim, Fed. Rep. of Germany

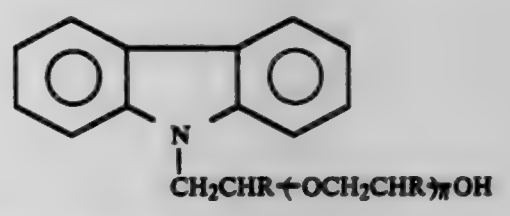
Filed Mar. 18, 1981, Ser. No. 244,910

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011808

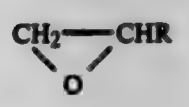
Int. Cl.³ C07D *209/86*

U.S. Cl. 260—315 10 Claims

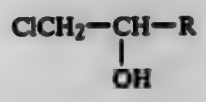
1. The process for manufacturer of an N-hydroxyalkylcarbazole of the formula



wherein R is H, CH_3 or C_2H_5 and n is a number from 0 to 4 which comprises reacting carbazole with an epoxide of the formula



or a chlorhydrin of the formula



at temperatures from 20° to 150° C. in the presence of a base and a phase transfer catalyst, in an organic solvent which is immiscible with water.

4,342,689

ω-HETEROAROYL(PROPIONYL OR BUTYRYL)-L-PROLINES

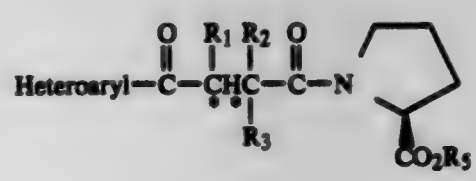
Francis J. McEvoy, Pearl River, N.Y.; William B. Wright, Jr., Woodcliff Lake, N.J.; Gary H. Birnberg, Spring Valley, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 144,741, Apr. 28, 1980, Pat. No. 4,299,769. This application Mar. 11, 1981, Ser. No. 242,765

Int. Cl.³ C07D *405/06*

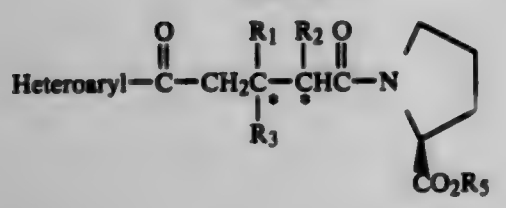
U.S. Cl. 260—326.34 10 Claims

1. A compound selected from the group consisting of those of the formulae:

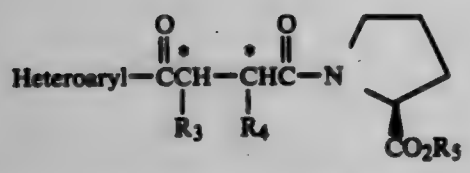


(I)

-continued



(II)



(III)

wherein R_1 is hydrogen or alkyl having 1–3 carbon atoms; R_2 is hydrogen or alkyl having 1–3 carbon atoms; R_3 is mercapto, formylthio, benzoylthio, alkanoylthio having 2–4 carbon atoms or moieties of the formulae: $-S-CO_2CH_2C_6H_5$, $-S-CO_2R_5$, $-S-CH_2CO_2R_5$ or $-S-CO-N(R_5)2$; R_4 is hydrogen or alkyl having 1–4 carbon atoms; R_5 is hydrogen or alkyl having 1–4 carbon atoms; and Heteroaryl is selected from the group consisting of moieties of the formulae:



wherein R_6 is hydrogen, fluoro, chloro, bromo or alkyl having 1–4 carbon atoms; and the pharmacologically acceptable cationic salts thereof when R_5 is hydrogen.

4,342,690

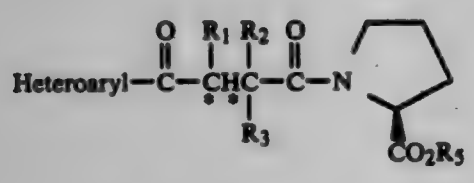
ω-HETEROAROYL(PROPIONYL OR BUTYRYL)-L-PROLINES

Francis J. McEvoy, Pearl River, N.Y.; William B. Wright, Jr., Woodcliff Lake, N.J.; Gary H. Birnberg, Spring Valley, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

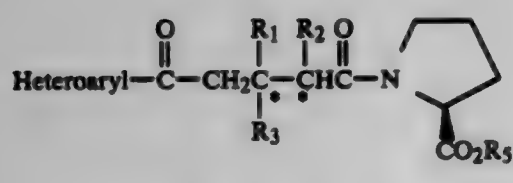
Division of Ser. No. 144,741, Apr. 28, 1980, Pat. No. 4,299,769.
This application Mar. 11, 1981, Ser. No. 242,770
Int. Cl.³ C07D *409/06*
U.S. Cl. 260—326.34 **10 Claims**

1. A compound selected from the group consisting of those of the formula:

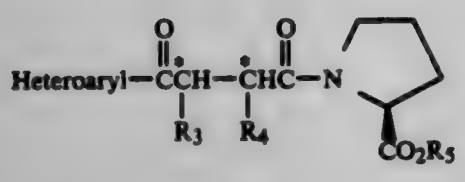
(I)



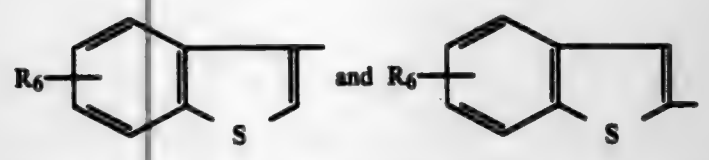
(II)



(III)



wherein R_1 is hydrogen or alkyl having 1–3 carbon atoms; R_2 is hydrogen or alkyl having 1–3 carbon atoms; R_3 is mercapto, formylthio, benzoylthio, alkanoylthio having 2–4 carbon atoms or moieties of the formulae; $-S-CO_2CH_2C_6H_5$, $-S-CO_2R_5$, $-S-CH_2CO_2R_5$ or $-S-CO-N(R_5)_2$; R_4 is hydrogen or alkyl having 1–4 carbon atoms; R_5 is hydrogen or alkyl having 1–4 carbon atoms; and Heteroaryl is selected from the group consisting of moieties of the formulae:



wherein R_6 is hydrogen, fluoro, chloro, bromo or alkyl having 1–4 carbon atoms; and the pharmacologically acceptable cationic salts thereof when R_5 is hydrogen.

4,342,691

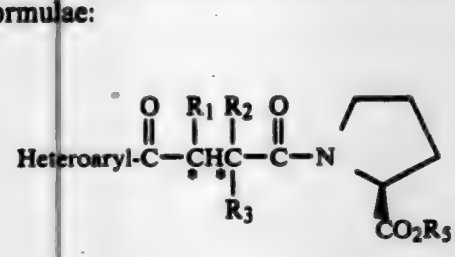
ω-HETEROAROYL(PROPIONYL OR BUTYRYL)-L-PROLINES

Francis J. McEvoy, Pearl River, N.Y.; William B. Wright, Jr., Woodcliff Lake, N.J.; Gary H. Birnberg, Spring Valley, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

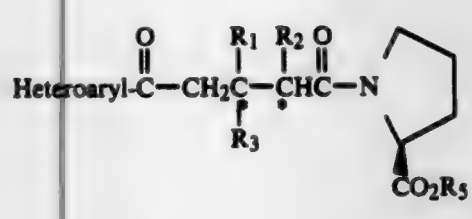
Division of Ser. No. 144,741, Apr. 28, 1980, Pat. No. 4,299,769.
This application Mar. 11, 1981, Ser. No. 242,781
Int. Cl.³ C07D *405/06*
U.S. Cl. 260—326.36 **10 Claims**

1. A compound selected from the group consisting of those of the formulae:

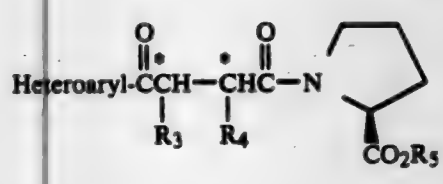
(I)



(II)



(III)



wherein R_1 is hydrogen or alkyl having 1–3 carbon atoms; R_2 is hydrogen or alkyl having 1–3 carbon atoms; R_3 is mercapto, formylthio, benzoylthio, alkanoylthio having 2–4 carbon atoms or moieties of the formulae:

$-S-CO_2CH_2C_6H_5$, $-S-CO_2R_5$, $-S-CH_2CO_2R_5$ or $-S-CO-N(R_5)_2$; R_4 is hydrogen or alkyl having 1–4 carbon atoms; R_5 is hydrogen or alkyl having 1–4 carbon atoms; and Heteroaryl is selected from the group consisting of moieties of the formulae:



wherein R_6 is hydrogen, fluoro, chloro, bromo or alkyl having 1–4 carbon atoms; and the pharmacologically acceptable cationic salts thereof when R_5 is hydrogen.

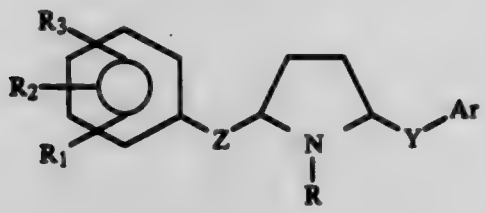
4,342,692

PYRROLIDINES

John T. Suh, Greenwich, Conn.; Rack H. Chung, Clifton Park, N.Y.; Nai-Yi Wang, Madison, Wis., and Jeffrey N. Barton, Yonkers, N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,671
Int. Cl.³ C07D *207/08*
U.S. Cl. 260—326.46 7 Claims

1. A compound of the formula:

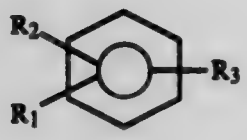


wherein,

Z and Y are each alkylene containing one to about five carbon atoms in the principal chain or said alkylene substituted with OH, alkanoyloxy, alkoxy, mercapto or alkylmercapto;

each of R_1, R_2 and R_3 is independently H, alkyl, aryl, halo, alkoxy, alkenyloxy, alkylsulfinyl, alkylsulfonyl, alkylmercapto, cyano, carboxy, carbalkoxy, carboxamido, sulfamoyl, trifluoromethyl, hydroxy, hydroxyalkyl, alkylamino, or sulfonylamino; and R_1 and R_2, when taken together, form a methylenedioxy or —O—CO—O—;

Ar is cycloalkyl or



wherein,

R_1, R_2 and R_3 are as hereindescribed; and

R is H, alkyl, cycloalkyl, aryl, aralkyl, alkenyl, alkynyl, carboalkoxy, or $CONR_4R_5$ wherein each of R_4 and R_5 is H or alkyl; wherein the total number of carbon atoms in each hydrocarbyl group is up to 10;

and pharmaceutically acceptable acid addition salts thereof.

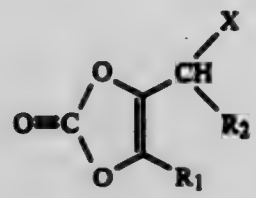
4,342,693

1,3-DIOXOLEN-2-ONE DERIVATIVES AND PROCESS FOR PRODUCTION THEREOF

Fumio Sakamoto, Osaka; Shoji Ikeda, Ibaraki; Goro Tsukamoto, Toyonaka, and Isamu Utsumi, Kyoto, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed Apr. 27, 1981, Ser. No. 257,564
Claims priority, application Japan, Apr. 30, 1980, 55-58510
Int. Cl.³ C07D *317/46, 317/40*
U.S. Cl. 549—229 14 Claims

1. A 1,3-dioxolen-2-one derivative of the general formula



wherein R_1 represents a hydrogen atom, a methyl group, or an aryl group, R_2 represents a hydrogen atom, or may be taken together with R_1 to form a divalent carbon chain residue, and X represents Cl, Br or I.

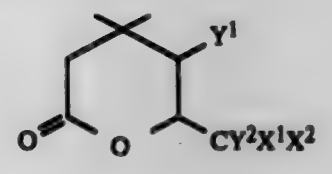
4,342,694

PROCESSES FOR PRODUCING PYRETHROID INSECTICIDE INTERMEDIATES

Kiyoshi Kondo; Toshiyuki Takashima, and Minoru Seda, all of Kanagawa, Japan, assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 90,223, Nov. 1, 1979, Pat. No. 4,235,780.
This application Jun. 23, 1980, Ser. No. 162,292
The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.
Int. Cl.³ C07D *309/30, 307/93*
U.S. Cl. 549—273 5 Claims

1. A process for preparing a 5-bromo- or 5-chlorotetrahydropyranone of the formula:



wherein X^1 and X^2 are the same or different and each is an independently selected halogen atom, a trichloromethyl group, or a trifluoromethyl group, and Y^1 and Y^2 are independently bromine or chlorine atoms with the proviso that Y^1 is a bromine atom when at least one of X^1, X^2, and Y^2 is a bromine atom, which comprises reacting 3,4-dihydro-4,4-dimethyl-2H-pryan-2-one with a halomethane of the formula $Y^1CY^2X^1X^2$ in the presence of an initiator selected from an acyl peroxide, light, and an acyl peroxide and light.

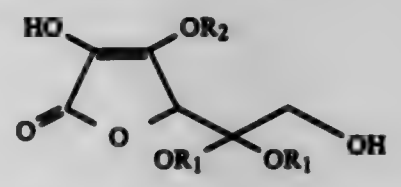
4,342,695

5-KETO-L-ASCORBIC ACID-5,5-DIMETHYL KETAL, DERIVATIVES THEREOF AND ITS USE AS AN ANTIOXIDANT AND INTERMEDIATE

Glenn C. Andrews, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 59,417, Jul. 20, 1979, Pat. No. 4,276,219.
This application Feb. 9, 1981, Ser. No. 232,596
Int. Cl.³ C07D *307/62*
U.S. Cl. 549—315 4 Claims

1. A compound having the formula



wherein R_1 is selected from the group consisting of hydrogen and methyl; and R_2 is selected from the group consisting of hydrogen, alkali metals and alkaline earth metals.

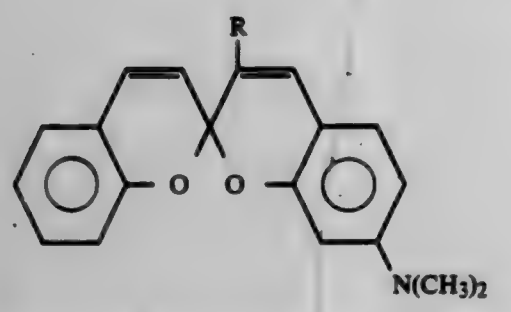
4,342,696

7-DIMETHYLAMINO-3-SUBSTITUTED-2,2'-SPIROBI[2H-1-BENZOPYRANS]

Thomas B. Garrett, Lititz; John E. Herweh, and Alan B. Magnusson, both of Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 195,320, Oct. 8, 1980, abandoned. This application Jun. 25, 1981, Ser. No. 277,176
Int. Cl.³ C07D *311/04*
U.S. Cl. 549—331 2 Claims

1. A compound having the formula



wherein R represents unsaturated alkyl.

4,342,697

PREPARATION OF GAMMA-PYRONES

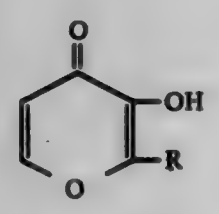
Paul D. Weeks, Gales Ferry, and Robert P. Allingham, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 608,452, Aug. 28, 1975, abandoned. This application Nov. 11, 1976, Ser. No. 741,112

Int. Cl.³ C07D *309/22*

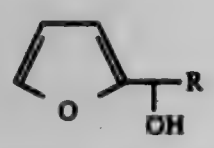
U.S. Cl. 549—396 **13 Claims**

1. A process for preparing a gamma-pyrone of the formula:

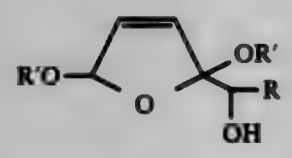


wherein R is hydrogen, lower alkyl of 1 to 6 carbon atoms, lower alkenyl of 2 to 6 carbon atoms, phenyl and benzyl which comprises

(a) contacting a compound of the formula:

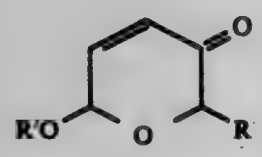


wherein R is as defined above with an alcoholic (R′OH) solution of chlorine or bromine at a temperature range of −30 ° to 40° C. to form a compound of the formula



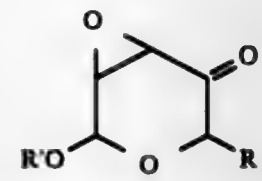
wherein R is as defined above and R′ is lower alkyl of 1 to 6 carbon atoms;

(b) contacting the compound obtained in step (a) with an essentially anhydrous acid at a temperature range of −10° to 50° C. to form a compound of the formula



wherein R and R′ are as defined above;

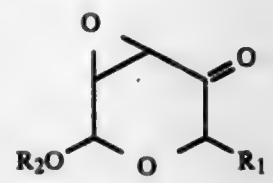
(c) contacting the compound obtained in step (b) with hydrogen peroxide at a temperature range of −10° to 15° C. to form a compound of the formula



where R and R′ are as defined above; and

(d) contacting the compound obtained from step (c) with an aqueous acid solution at 80° to 110° C. to form the desired gamma-pyrone.

12. A compound of the formula



wherein R_1 is alkyl of 2 to 6 carbon atoms and R_2 is alkyl of 1 to 6 carbon atoms.

4,342,698

OLEFIN OXIDATION PROCESS

Joseph P. Bartek, University Heights; Robert K. Grasselli, Chagrin Falls, and Rimvydas L. Cepulis, Willoughby Hills, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 29, 1979, Ser. No. 53,607

Int. Cl.³ C07D *307/36, 307/46, 307/48, 307/54*

U.S. Cl. 549—505 **15 Claims**

1. A process for producing an oxole comprising contacting at least one hydrocarbon selected from the group consisting of alkenes and alkadienes with oxygen in the presence of a heterogeneous catalyst represented by the formula:

$$A_aD_bSb_cP_dO_x$$

wherein

A is one or more of the elements selected from the group consisting of Fe, Co, Ni, U, Mn, La, and rare earth elements; and

D is one or more elements selected from the group consisting of Ag, Cu, V, W, Bi, Te, As, Se, Cr, Zr, Pb, Nb, Ti, Zn, Cd, alkaline earth elements and alkali metal elements; and

wherein

a is greater than 0 to 10;

b is 0–10;

c is 1–10;

d is 0–20; and

x is the number of oxygens required to satisfy the valence requirements of the other elements present.

4,342,699

PROCESS FOR PRODUCTION OF MALEIC ANHYDRIDE

David A. Palmer, and Juergen K. Holzhauer, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 23, 1981, Ser. No. 236,986

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—259 **22 Claims**

1. A process for producing maleic anhydride comprising

(A) contacting a non-flammable feed consisting essentially of about 3 to about 8 mole % n-butane, 8 to about 20 mole % molecular oxygen, and a balance of at least one inert gas with at least one n-butane oxidation catalyst in a heat transfer medium-cooled, tubular reaction zone maintained under oxidation conditions effective to yield a relatively low per pass conversion of n-butane, said catalyst being

graded along at least a portion of the effective length of the reaction zone so as to provide minimum reactivity nearest the feed end of the reaction zone and maximum reactivity nearest the exit end of the reaction zone, with staged or continuous increase in reactivity between the areas of minimum and maximum reactivity;

(B) withdrawing from the reaction zone an effluent comprising maleic anhydride, by-product oxygenated hydrocarbons, carbon oxides, n-butane and oxygen;

(C) separating a major portion of maleic anhydride and oxygenated hydrocarbon by-products from said effluent;

(D) removing from the effluent remaining after recovery of maleic anhydride and oxygenated hydrocarbon by-products a purge stream at a rate substantially corresponding to the rate of build-up of inert gases in the reaction zone; and

(E) recycling effluent remaining after removal of the purge stream to the reaction zone with addition of make-up gases comprising n-butane and oxygen.

4,342,700

OXIDATION-REDUCTION REAGENTS FOR A WET DESULFURIZATION PROCESS AND A PROCESS FOR PREPARING SAME

Katsuya Sakai, Yokohama; Ryuichi Mita; Toshio Kato, both of Kawasaki; Chojiro Higuchi, Kamakura, and Hisamichi Murakami, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Japan

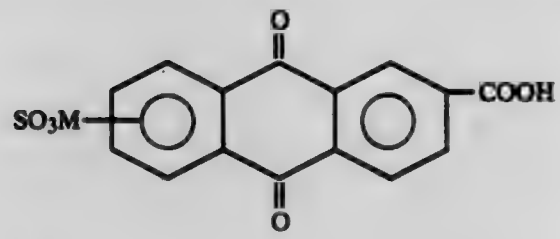
Division of Ser. No. 26,934, Apr. 4, 1979, Pat. No. 4,276,187. This application Feb. 4, 1981, Ser. No. 231,482

Claims priority, application Japan, May 19, 1978, 53-58878

Int. Cl.³ C07C *49/76*

U.S. Cl. 260—370 **4 Claims**

1. A process for the preparation of a salt of 2-carboxy-anthraquinone monosulfonic acid of the general formula



wherein M is sodium, potassium or an ammonium group, characterized in that benzophenone-2,4-dicarboxylic acid, benzophenone-2,5-dicarboxylic acid or 2-(p-carboxybenzoyl) benzoic acid is heated in fuming sulfuric acid whereby dehydration and sulfonation are effected in one step without isolation.

4,342,701

PROCESS FOR THE PREPARATION OF 4,5-DINITRO-1,8-DIHYDROXYANTHRAQUINONE

Werner Steinbeck, and Günter Gehrke, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 22, 1980, Ser. No. 123,870

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909481

Int. Cl.³ C07C *49/74*

U.S. Cl. 260—383 **3 Claims**

1. In the preparation and recovery of 4,5-dinitro-1,8-dihydroxy-anthraquinone by reacting 1,8-dihydroxy-anthraquinone or 1,8-dimethoxy-anthraquinone with nitric acid in the presence of sulphuric acid, and thereafter recovering the desired product in solid form from the reaction mass, the improvement which comprises effecting the nitration in the presence of sulphuric acid of a concentration such that, when the nitration reaction and if appropriate the saponification reaction have ended, an 80–100% strength sulphuric acid is present, or such a final sulphuric acid concentration is established by adding water, and effecting the recovery by permitting the reaction mass to stand in the sulphuric acid of 80 to 100% concentration.

4,342,702

METALLATED HALOGENATED ACETYLENE CORTICOID SYNTHESIS

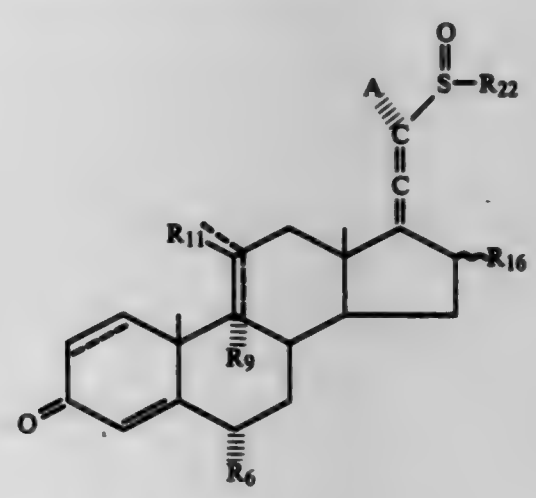
Jerry A. Walker, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 18, 1981, Ser. No. 264,759

Int. Cl.³ C07J *7/00*

U.S. Cl. 260—397.3 **20 Claims**

1. A 21-halo allene sulfoxide of the formula:



(V)

where A, R_6, R_9, R_{11}, R_{16}, R_{22}, ~ and are defined in the specification.

4,342,703

PRODUCTION OF ALKYL HYPOHALITES

Joon T. Kwon, Freehold Township, Monmouth County, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Sep. 8, 1980, Ser. No. 185,337

Int. Cl.³ C07C *69/63*

U.S. Cl. 260—453 R X **18 Claims**

1. In a process for producing a tertiary alkyl hypohalite, by reacting tertiary alkanol with at least one member selected from the group consisting of (a) halogen and aqueous inorganic base and (b) aqueous inorganic base which has been reacted with a halogen, the improvement comprising:

reacting the tertiary alkanol with said at least one member in a cooled high back-mix recycle loop reactor flow at a recycle ratio of at least 5:1 to produce the tertiary alkyl hypohalite in a reaction time of no greater than 5 minutes at a reaction temperature of no greater than 100° C. and at a velocity to provide a uniform mixing of the reactants in the loop reactor to provide a single phase flow regime.

4,342,704

PROCESS FOR THE PREPARATION OF 1,1-DICHLOROALKENES

Hellmut Hoffmann; Fritz Maurer, both of Wuppertal; Uwe Priesnitz, Unna-Massen, and Hans-Jochem Riebel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

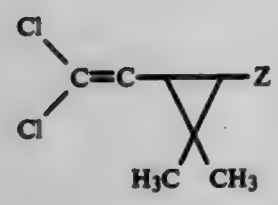
Filed Jul. 2, 1980, Ser. No. 165,872

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929645

Int. Cl.³ C07C *120/00, 121/48, 102/00, 45/61*

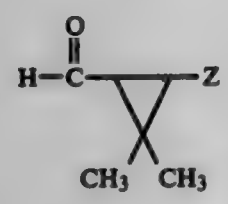
U.S. Cl. 260—464 **8 Claims**

1. A process for the preparation of a 1,1-dichloroalkene of the formula

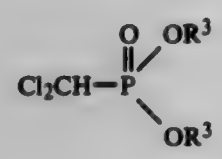


in which

Z is acetyl, cyano or carbamoyl, comprising adding a base selected from the group consisting of $NaOCH_3$, $NaOC_2H_5$ and KO—t—C_4H_9 to a mixture of an aldehyde of the formula



wherein Z is as above defined, and a dichloromethane-phosphonic acid ester of the formula



in which

R^3 each independently is alkyl with 1 to 4 carbon atoms or phenyl or the two radicals R^3 together are alkanediyl with 2 to 5 carbon atoms, and reacting at a temperature between about −50° and +50° C.

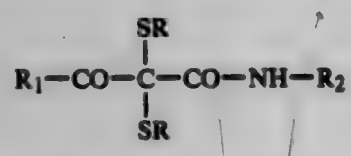
4,342,705

METHYLENE THIOETHERS

Otto W. Maender, and Eiichi Morita, both of Copley, Ohio, assignors to Monsanto Company, St. Louis, Mo.

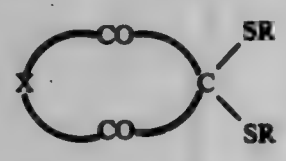
Division of Ser. No. 97,089, Nov. 23, 1980, Pat. No. 4,271,050.
This application Dec. 1, 1980, Ser. No. 238,891
Int. Cl.³ C07C *149/415, 149/40, 149/41, 149/26*
U.S. Cl. 260—465 D 25 Claims

1. A compound of the formulas



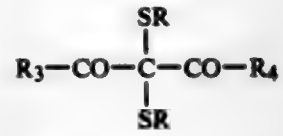
(V)

in which R is alkyl of 1–20 carbon atoms, cycloalkyl of 5–12 carbon atoms, benzyl, α-methylbenzyl, phenyl, or substituted phenyl wherein the substituents are lower alkyl, lower alkoxy, or halo, R_1 is R or anilino or substituted anilino wherein the substituents are lower alkyl, lower alkoxy or halo, and R_2 is phenyl or substituted phenyl as above, and



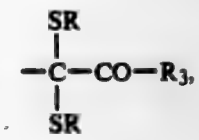
(VI)

in which R is the same as above and X is o-phenylene or straight or branched alkylene of 2–4 chain carbon atoms, and

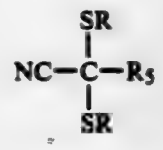


(VII)

in which R is the same as above, R_3 is lower alkyl or lower alkoxy, and R_4 is carboalkoxy of 1–5 carbon atoms or

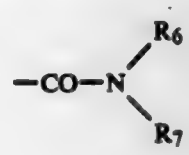


and



(VIII)

in which R is the same as above and R_5 is carboalkoxy of 1–5 carbon atoms, substituted carbamoyl of the formula



in which R_6 is hydrogen or R, R_7 is R or carboalkoxy of 1–5 carbon atoms, or R_6 and R_7 together is alkylene or oxydialkylene of 4–8 carbon atoms which along with the nitrogen atom forms a heterocycle.

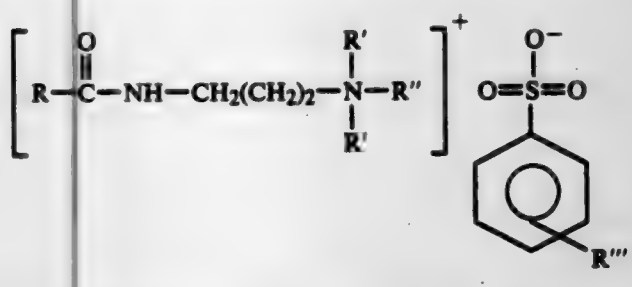
4,342,706

BENZENE SULFONATE QUATERNARY AMMONIUM SALTS

Donald E. Conner, Clifton, and Arnold W. Fogel, Park Ridge, both of N.J., assignors to Van Dyk & Company, Inc., Belleville, N.J.

Filed Sep. 8, 1980, Ser. No. 185,351
Int. Cl.³ C07C *87/30*
U.S. Cl. 260—501.15 3 Claims

1. As a novel composition of matter, a benzene sulfonate quaternary ammonium salt corresponding to the formula



wherein the RCO moiety is from the group consisting of gluconic and C_7–C_{21} fatty acid; R′ is an alkyl group having from 1 to 3 carbon atoms; R″ is an alkyl group having from 14 to 18 carbon atoms and, R‴ is selected from the group consisting of H and CH_3.

4,342,707
PROCESS FOR THE PREPARATION OF BIS-N-CHLORAMIDES

Hans-Georg Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 651,085, Jan. 21, 1976, abandoned. This application Oct. 2, 1978, Ser. No. 947,795

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1975, 2502411

Int. Cl.³ C07C *51/58*

U.S. Cl. 260—543 A 6 Claims

1. A process for the preparation of a bis-N-chloramide of a saturated aliphatic dicarboxylic acid, which comprises chlorinating a saturated aliphatic dicarboxylic acid diamide of the formula

$$H_2N\text{-}CO\text{-}X\text{-}CO\text{-}NH_2$$

wherein X is an aliphatic residue having 4 to 40 carbon atoms, with chlorine in a medium consisting essentially of an aqueous inorganic acid, at a temperature between 0° and 40° C.

4,342,708
HYDROCARBON-SOLUBLE DIORGANOMAGNESIUM COMPOUNDS, HYDROCARBON SOLUTIONS CONTAINING THE SAME AND PROCESSES FOR PREPARATION THEREOF

Hisaya Sakurai; Yoshihiko Katayama; Tadashi Ikegami, and Shigeo Tsuyama, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 16, 1980, Ser. No. 169,233

Claims priority, application Japan, Aug. 9, 1979, 54-101538

Int. Cl.³ C07F *3/02*

U.S. Cl. 260—665 R 10 Claims

1. A hydrocarbon-soluble isopropylmagnesium compound having the general formula:

$$(\text{iso-}C_3H_7)_mMgR_{2-m}$$

wherein m is a number in the range of the formula $0.4 \leqq m \leqq 1.6$ and R represents a member selected from the group consisting of n-C_4H_9, n-C_3H_7, C_2H_5 and combinations thereof.

4,342,709
PROCESS FOR PRODUCING DIETHYL PHOSPHITE

Fred Jaffe, Ossining, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 8, 1980, Ser. No. 214,072

Int. Cl.³ C07F *9/141*

U.S. Cl. 260—978 6 Claims

1. A process for producing diethyl phosphite of low acidity, high yields and increased purity comprising reacting triethyl phosphite with phosphorous acid in a reactor in a molar ratio of from about 2.05:1 to about 2.30:1.

4,342,710
APPARATUS FOR AERATING BEVERAGES

Rune Adolfsson, Solna, and Lennart Berns, Lund, both of Sweden, assignors to Intercylinder AB, Lund, Sweden

Filed Mar. 13, 1981, Ser. No. 243,421

Claims priority, application Sweden, Mar. 20, 1980, 8002181

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—121 R 5 Claims

1. An apparatus for aerating for domestic use beverages, such as water and flavoured water, comprising a stand (2) with space assigned for a glass bottle (4) and with space assigned for a gas tube (b) which contains carbon dioxide, and a sealing member (7) for sealing the mouth (8) of the glass bottle during the aerating process, through which sealing member (7) a pipe (9) for carbon dioxide extends and opens beneath the sealing member, and controllable fluid communication means connected to said pipe and adapted to be connected to the gas tube to enable controlled flow of carbon dioxide to and through said pipe, characterized in that at the place assigned for the glass bottle a bursting protection is provided, which is movable upward and downward in relation to the stand and to the glass bottle positioned in the way intended, and which in its upper position permits free placement of the bottle standing in the



place assigned for this purpose in the lower portion of the stand, and in its lower position entirely encloses the bottle thus positioned, and that said sealing member is located in the upper portion of the bursting protection and capable to be caused to seal against the mouth of the bottle only when the bursting protection is in its lower position.

4,342,711
METHOD OF MANUFACTURING HOLLOW FIBER

Yasushi Joh; Masahiro Yamazaki, both of Yokohama; Noriaki Kaneko, Kamakura; Shigehiko Oikawa, Sagamihara; Yoshihiro Makuta, Kawasaki, and Chizuko Hayashi, Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 918,808, Jun. 26, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,491

Claims priority, application Japan, Jun. 30, 1977, 52-78083

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—41 19 Claims

1. In a method of manufacturing a hollow fiber comprising the steps of:

(a) extruding a spinning solution containing a high molecular weight compound in a concentration of 10 to 35% by weight from an annular slit, said high molecular weight compound consisting of one of cuprammonium cellulose, cellulose ester, polymethyl methacrylate and polyvinyl chloride;

(b) simultaneously extruding a core liquid which consists of a low molecular weight compound which is easily mixed or compatible with said spinning solution and is substantially incapable of coagulating said high molecular weight compound, from an orifice encircled by said annular slit; and

(c) introducing said extruded spinning solution with said core liquid into a coagulating bath containing water or mainly water, said spinning solution being coagulated in said coagulating bath,

wherein the improvement comprises: selecting said core liquid from:

(i) the group of solvents consisting of a dimethyl-sulfoxide-paraformaldehyde mixture, an aqueous cuprammonium solution and a mixture thereof for said cuprammonium cellulose;

(ii) the group of solvents consisting of acetone, methyl Cellosolve acetate, dimethylsulfoxide, dimethylformamide, dimethylacetamide, methylene chloride, 1,4-dioxane, diacetone alcohol, ethyl lactate, tetrahydrofuran, ethylforma-

mide, methyl formate, and a mixture of at least two of said solvents for said cellulose ester;

(iii) the group of solvents consisting of acetone, toluene, acetic acid, formic acid, ethyl acetate and a mixture of at least two of these for said polymethyl methacrylate; and

(iv) the group of solvents consisting of dimethylformamide, cyclohexanone, nitrobenzene, mesityl oxide, tetrahydrofuran and a mixture of at least two of said solvents for said polyvinyl chloride

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4,342,712

PROCESS FOR PRODUCING CONTINUOUS INORGANIC FIBERS

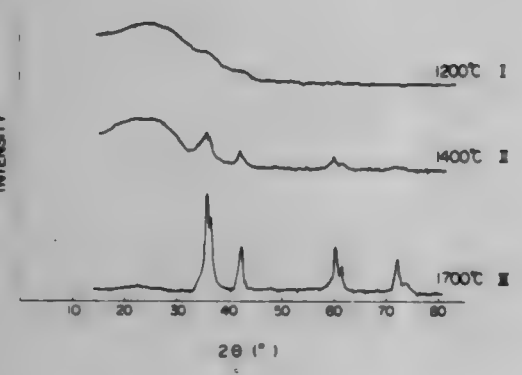
Seishi Yajima; Kiyohito Okamura; Yoshio Hasegawa, and Takemi Yamamura, all of Oharai, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Jun. 18, 1980, Ser. No. 160,342

Claims priority, application Japan, Jun. 28, 1979, 54/80793; Mar. 11, 1980, 55/29781

Int. Cl.³ C01F *7/02*

U.S. Cl. 264—63 **12 Claims**



1. A process for producing continuous inorganic fibers, which comprises a first step of preparing a semi-inorganic block copolymer comprising polycarbosilane blocks having a main chain skeleton composed mainly of carbosilane units of the formula $-(Si—CH_2)-$, each silicon atom of said carbosilane units having bonded thereto a side-chain group selected from the class consisting of hydrogen, lower alkyl and phenyl, and titanoxane units of the formula $-(Ti—O)-$; a second step of preparing a spinning dope of said semi-inorganic block copolymer and spinning the dope; a third step of subjecting the resulting fibers to a treatment of rendering them infusible under tension or under no tension; and a fourth step of firing the infusible fibers at a temperature of 800° to 1800° C. in vacuum or in an atmosphere of an inert gas or a reducing gas.

4,342,713

PROCESS AND DEVICE FOR PRODUCTION OF CONCRETE PIPE BY FILLING AND COMPACTION OF FRESH CONCRETE IN AN UPRIGHT FORM

Owe C. G. Lärkfeldt, Täby, Sweden, assignor to AB Skanska Cementgjuteriet, Danderyd, Sweden

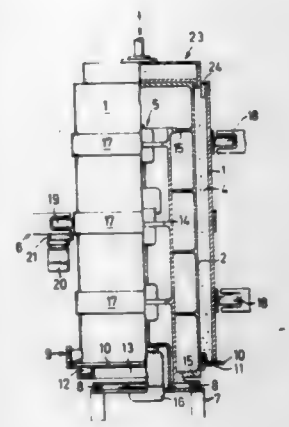
Filed Oct. 6, 1980, Ser. No. 194,592

Claims priority, application Sweden, Oct. 12, 1980, 7908482

Int. Cl.³ B28B *1/08, 7/18, 21/12, 21/14*

U.S. Cl. 264—71 **6 Claims**

1. Process for producing concrete pipe by filling and compacting fresh concrete in an upright casting form, comprising an outer jacket and a vibrator-equipped core located therein, characterized in that the outer jacket, during at least a portion of the compaction of the fresh concrete, is kept in rotation around its geometric axis with an internal peripheral speed which is greater than the maximum vibrational speed at which the vibrator-equipped core acts on the fresh concrete during the compacting thereof, the vibrational speed being the product of the amplitude and the frequency at which the core vibrates.



4,342,714

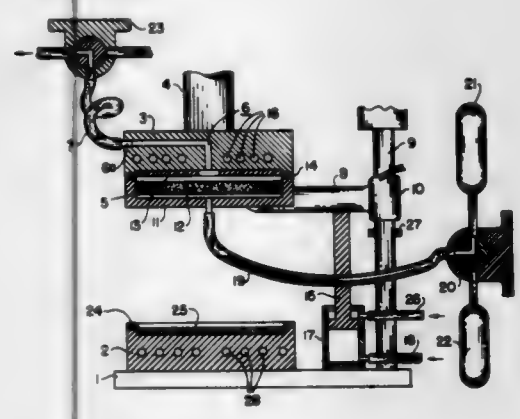
PROCESS FOR MAKING VIDEO DISCS

David P. Gregg, 3650 Helms Ave., Culver City, Calif. 90230, and Kenneth L. Keester, 66 Ocean View Blvd., #66, Santa Barbara, Calif. 93103

Filed Mar. 31, 1981, Ser. No. 249,430

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—81 **13 Claims**



1. A process for recording video information on a plastic substrate which comprises: providing a stamping element having embossments on a surface thereof representing selected video information; coating the surface of the stamping element with a selected reflective material by pyrolysis; providing a plastic substrate; moving the stamping element against a surface of the plastic substrate to cause such surface to be embossed with embossments representing the selected video information and also causing the reflective material to be bonded to the embossed surface of the plastic substrate; and withdrawing the stamping element from the surface of the plastic substrate to cause the reflective coating to be transferred from the stamping element to the plastic disc.

4,342,715

PROCESS FOR PREPARING WHOLLY AROMATIC POLYAMIDE SHAPED ARTICLES

Keizo Shimada; Akihiro Aoki; Hiroshi Mera, all of Iwakuni, and Tsutomu Nakamura, Yamaguchi, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 29, 1980, Ser. No. 201,701

Int. Cl.³ D01F *6/00*

U.S. Cl. 264—184 **9 Claims**

1. A process for preparing a wholly aromatic polyamide shaped article wherein a solution of a wholly aromatic polyamide in an organic polar amide solvent is extruded through an

orifice and the extrudate is introduced into a coagulating liquid to form a shaped article; wherein

at least 85% by mole of the recurring structural units of said wholly aromatic polyamide is represented by the general formula:

$$\text{-}(\text{-}NR_1\text{-}Ar_1\text{-}NR_2CO\text{-}Ar_2\text{-}CO\text{-})\text{-} \quad (I)$$

or

$$\text{-}(\text{-}NR_3\text{-}Ar_3\text{-}CO\text{-})\text{-} \quad (II)$$

wherein Ar_1 Ar_2 and Ar_3 independently stand for divalent aromatic residues (which includes the divalent residue of the formula:

$$-Ar_4-Y-Ar_5-$$

where Ar_4 and Ar_5 independently stand for divalent aromatic residues and Y is a divalent radical selected from the group consisting of

$$-CH_2-,\ -S-,\ -\overset{\overset{O}{\|}}{C}-,\ -SO_2-\text{and}\ -O-),$$

provided that at least part of the divalent aromatic residues, present in the polyamide, have chain-extending bonds which are metaoriented and neither coaxial nor parallel, and R_1, R_2 and R_3 independently stand for hydrogen or an alkyl group having 1 to 3 carbon atoms;

said process being characterized in that the polymer solution extruded through the orifice is introduced into a first coagulating bath consisting essentially of an aqueous coagulating liquid and, then, the coagulated polymer from the first coagulating bath is introduced into a second coagulating bath consisting essentially of an aqueous solution of an inorganic salt.

4,342,716

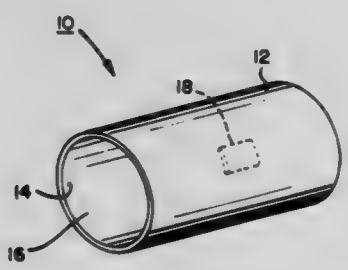
METHOD AND APPARATUS FOR MOLDING INDICIA IN ROTO-MOLDED PLASTIC CONTAINERS

Warren D. Fishbaugh, Rochester; W. Lawson Batty, Jr., Pittsford, and Frank J. Freedman, Penfield, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jun. 2, 1978, Ser. No. 912,030

Int. Cl.³ B29C *5/04*

U.S. Cl. 264—225 **1 Claim**



1. A method of rotomolding articles having indicia formed in the exterior wall thereof, comprising the steps of:

(a) forming a dam on the interior surface of a rotomold which encloses an area corresponding to the area on the article to be provided with the indicia;

(b) pouring a liquid room temperature vulcanizing silicone into the area surrounded by said dam;

(c) pressing an impression plate onto the surface of said liquid room temperature vulcanizing silicone and maintaining the position of said impression plate until RTV silicone has set;

(d) removing said dam and impression plate to leave a template which carries a mirror-image of the indicia to be molded adhering to the interior surface of the rotomold;

(e) placing a charge of thermo forming resin into the rotomold and heating the mold externally while rotating said mold to distribute and fuse said resin over the interior mold surface including said template thereby forming an article in which the exterior wall of the article has the mirror-image of said template surface molded directly therein; and thereafter

(f) removing the article from said mold while retaining said template adhered to the interior mold surface.

4,342,717

INJECTION MOULDING METHOD AND APPARATUS WITH MOULD RUNNER RESERVOIR AND SHOT EXTENSION

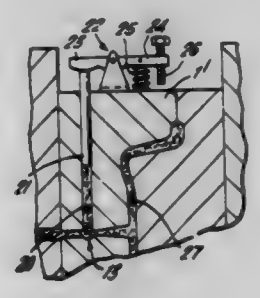
Victor T. Gardner, Sheffield, England, assignor to HPM Corporation, Mount Gilead, Ohio

Division of Ser. No. 922,448, Jul. 6, 1978, Pat. No. 4,256,689, which is a continuation of Ser. No. 725,327, Sep. 21, 1976, abandoned. This application Aug. 21, 1980, Ser. No. 179,952

Claims priority, application United Kingdom, Oct. 31, 1975, 47237/74

Int. Cl.³ B29F *1/06*

U.S. Cl. 264—328.8 **1 Claim**



1. A method of injection molding an article comprising the steps of:

providing an injection mold having a runner system extending from an article forming cavity therein to a mold entry port,

injecting a shot of plasticized thermoplastics material from an injector with a screw plasticizer into the mold through said port while advancing the screw in a chamber of the plasticizer,

communicating said runner system with a reservoir at a location upstream of said article forming cavity for conducting plasticized thermoplastics material into said reservoir against the bias of compressible means so that said compressible means is compressed and stores energy as said screw is being advanced, and

subsequently closing communication between the plasticizer chamber and said runner system while maintaining communication between said reservoir and said runner system so that the stored energy in said compressible means exerts a positive pressure on the plasticized material in the runner system and mold cavity thereby compensating for shrinkage while returning the screw for plasticization of plastics material for a succeeding shot.

4,342,718

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF IMPREGNATED MATERIAL WEBS

Hans-Peter Caratsch, Bremgarten, Switzerland, assignor to Sinter Limited, Bristol, England

Filed Jul. 25, 1980, Ser. No. 172,289

Claims priority, application Switzerland, Mar. 6, 1980, 1757/80

Int. Cl.³ B29D *7/22*

U.S. Cl. 264—345 **23 Claims**

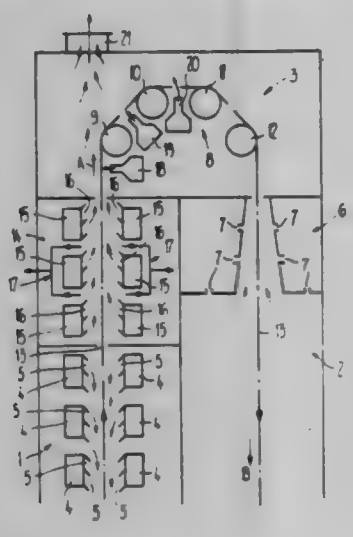
1. In a method of heat treating impregnated material webs, especially material webs impregnated with a settable synthetic resin, where in the impregnated material web is guided in an upward direction through a first heat treatment zone, thereafter about a deflection roll arrangement, and then is guided in a

downward direction through a second heat treatment zone, the improvement which comprises the steps of:

guiding the material web, after departing from the first heat treatment zone of a first length and, before passage through the deflection roll arrangement, through a cooling zone wherein the material web is cooled at both sides, and, after passage through the deflection roll arrangement through the second heat treatment zone of a second longer length.

10. An apparatus for heat treating impregnated material webs, especially material webs impregnated with a settable synthetic resin, comprising:

means defining a first heat treatment zone for the material web;



said first heat treatment zone extending essentially from a lower region towards an upper region thereof;

a deflection roll arrangement for deflecting the material web arranged following said first heat treatment zone;

a second heat treatment zone arranged following said deflection roll arrangement and extending from a top region towards a bottom thereof;

means defining a cooling zone arranged after said first heat treatment zone and before said deflection roll arrangement; and

wherein said second heat treatment zone is higher than said first heat treatment zone by a dimension which is substantially equal to the height of said cooling zone.

4,342,719

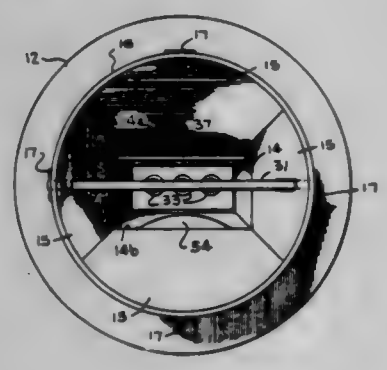
METHOD AND APPARATUS FOR MAKING TEXTURED BRICKS

William A. Cruse, and John H. Isenhour, Jr., both of Salisbury, N.C., assignors to Isenhour Brick & Tile Co., Inc., Salisbury, N.C.

Division of Ser. No. 162,054, Jun. 23, 1980, Pat. No. 4,304,541. This application May 13, 1981, Ser. No. 263,053

Int. Cl.³ B28B *11/16*

U.S. Cl. 264—504 **7 Claims**



1. The method for making extruded bricks having a textured handmade appearing face designed to form an outer building wall surface, comprising the steps of feeding a column of brick-forming clay mix into a progressively narrowing inlet funnel portion of a brick extruding die, progressively constricting the clay mix column while feeding the same from said inlet funnel portion through a die throat section of the extruding die of horizontally elongated rectangular cross-section defined by downstream converging upper, lower and side boundary surfaces to shape the clay mix column to a rectangular cross-section whose width dimension perpendicular to said face slightly exceeds the desired ultimate brick width, disrupting the clay column in said die throat section at a subsurface location spaced near and below the uppermost boundary surface of the die throat section along a plane substantially spanning the transverse extent of the die throat section by pressurized downstream-directed liquid jets internally disrupting the clay mix column at said subsurface location in said die throat section along a disruption plane substantially paralleling said uppermost boundary surface, and plowing off the uppermost strata of the clay mix column at a downstream location spaced from the zone of said subsurface disrupting liquid jets to expose the disrupted zone of the clay mix column and form the textured handmade appearing face of the extruded brick, and slicing the column exiting from the die along planes perpendicular to the direction of movement thereof after plowing off the uppermost strata thereof to form discrete bricks.

4,342,720

METHOD AND APPARATUS FOR GENERATION OF THERMONUCLEAR POWER

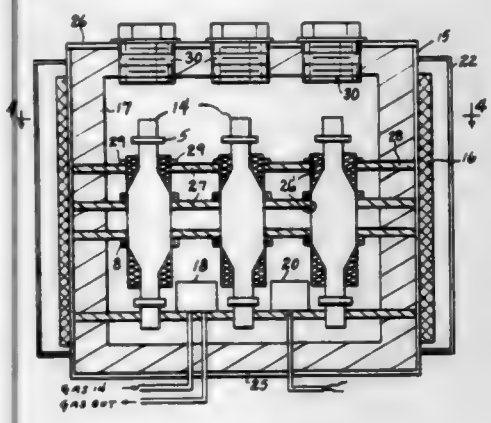
Daniel R. Wells, Miami, Fla., assignor to Trisops, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 954,248, Oct. 24, 1978, abandoned. This application Mar. 29, 1979, Ser. No. 25,105

The portion of the term of this patent subsequent to Jan. 10, 1995, has been disclaimed.

Int. Cl.³ G21B *1/02*

U.S. Cl. 376—107 **7 Claims**



1. An apparatus for heating and compressing plasma comprising a housing, a plurality of parallel theta pinch reactor assemblies mounted in said housing, each reactor assembly comprising a vacuum chamber, respective plasma sources and means for generating and simultaneously injecting plasmoids into opposite ends of each of said vacuum chambers, including conical theta pinch coil means on the opposite ends of the chambers, common magnetic coil means surrounding the housing for generating a primary steady state magnetic guide field simultaneously within all said vacuum chambers, said primary guide field being oriented to confine and direct plasmoids to collision approximately at the centers of said vacuum chambers, and means including additional coil means on each of the vacuum chambers in the vicinity of their center portions for compressing plasma in the vicinity of said center portions of the vacuum chambers for a discrete period of time beginning with each plasmoid collision event, wherein said housing includes a plurality of spaced parallel bulkhead plate members supporting said reactor assemblies in parallel relationship and formed with aligned apertures slidably receiving said reactor assemblies, and wherein said housing has a wall portion located

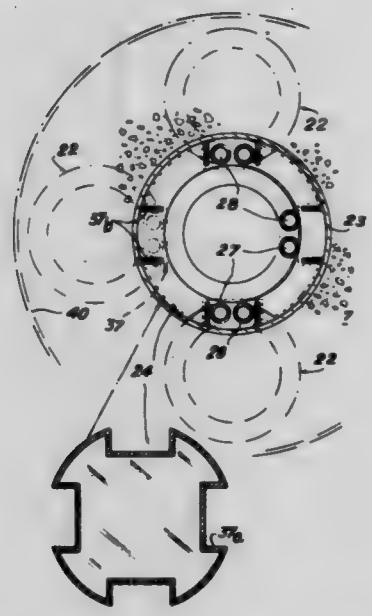
adjacent one end of each of the reactor assemblies and being provided with respective removable closure means for at times providing access to said reactor assemblies.

4,342,721

FAST NUCLEAR REACTOR

Pierre Pomie, Aix en Provence, and Philippe Verriere, Manosque, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 2, 1979, Ser. No. 16,742
Claims priority, application France, Mar. 7, 1978, 78 06435
Int. Cl.[3] G21C *15/18*
U.S. Cl. 376—298 10 Claims



1. A fast neutron nuclear reactor comprising a vesel having a vertical axis and containing a reactor core, a volume of liquid metal for cooling the core, at least one main heat exchanger and at least one auxiliary heat exchanger, said reactor vessel being closed at the top by a reactor vault roof, said auxiliary heat exchanger being constituted by a plurality of vertical heat-exchanger modules, each of said modules comprising a circuit for the flow of coolant fluid, said reactor vault roof being pierced by a single orifice in vertical alignment with the vertical axis of said auxiliary heat exchanger, the dimension of said orifice in horizontal cross-section being larger than that of each one of said heat-exchanger modules but smaller than the overall dimension of the auxiliary heat exchanger in horizontal cross-section, and a removable shield plug closing said orifice, said shield plug having a depending axial extension penetrating into said reactor vessel with said modules disposed around said extension, the fluid circuit of each module communicating with an inlet tube and with an outlet tube for admission and discharge of the coolant fluid, said inlet and oulet tubes of each module extending in a direction parallel to the shield plug and the axial extension thereof within a respective recess formed in the inner surface of one of said orifice and said shield plug, whereby any of said modules of said auxiliary heat exchanger can be individually introduced into and taken out of said reactor in any order through said orifice after removal of said shield plug.

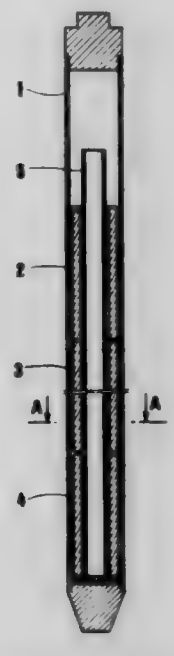
4,342,722

CONTROL ROD FOR A NUCLEAR REACTOR

Jacques Blum, Levallois, France, assignor to Uranium Pechiney Ugine Kuhlmann, Paris, France

Filed Oct. 24, 1980, Ser. No. 200,146
Claims priority, application France, Nov. 19, 1979, 79 29004
Int. Cl.[3] G21C *7/04*
U.S. Cl. 376—327 2 Claims

1. In the core of a nuclear reactor having a central zone of maximum flux density and a control rod the improvement comprising said control rod having a length equal to said reactor core and being fixedly positioned within the reactor core such that the center of said control rod is central of and extends through said zone of maximum flux density, said control rod comprising a core having a plurality of at least three elongated sections made of boron glass positioned end to end



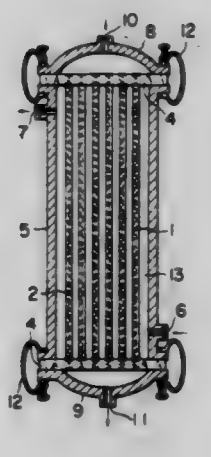
to define non-overlapping joins therebetween, and at least one of said elongated sections is more than one-half the length of said control rod and is located centrally of said zone of maximum flux density of said core, and said joins being located outward of said zone of maximum flux density.

4,342,723

GAS-EXCHANGE SHEET MEMBERS

Ryoichi Sado, Saitama, and Kazutoki Tahara, Ageo, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Japan

Continuation-in-part of Ser. No. 96,567, Nov. 21, 1979, abandoned. This application Jul. 3, 1980, Ser. No. 165,729
Claims priority, application Japan, Nov. 24, 1978, 53-145171; Dec. 30, 1978, 53-165825
Int. Cl.[3] B01D *31/00*
U.S. Cl. 422—48 7 Claims



7. An oxygenator in a mechanical heart and lung which comprises a tubular body having an air inlet and an air outlet, a plurality of sheet members made of a silicone rubber mounted in said body, a pair of support flanges made of silicone rubber and engaged with opposite ends of said sheet members maintaining the sheet members substantially in parallel relation with each other, each of the sheet members being provided with a plurality of capillary pores extending in substantially aligned parallel relation with each other through said support flanges and each of the capillary pores being open at opposite ends thereof and having an undulating longitudinal cross section and being comprised of an alternate repetition of wider portions and narrower portions, end plates positioned on opposite ends of the tubular body with one end plate having a blood

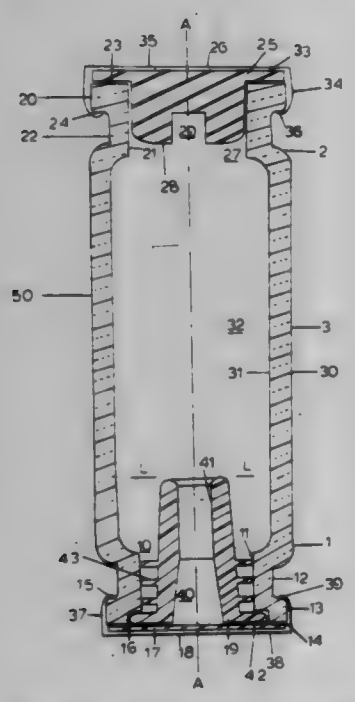
inlet and with the other having a blood outlet to allow blood flow therethrough and also through said pores in said sheet member, and clamp means securing the outer margins of the end plates with opposite ends of said body and with said silicone rubber support flanges coacting with the clamped outer margins of the end plates and the opposite ends of said body to provide hermetic seals when the clamping means is positioned in a clamped assembly.

4,342,724

RED CELL LABELING VIAL

Rama K. Narra, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 21, 1980, Ser. No. 180,209
Int. Cl.[3] B01L *3/00, 11/00*
U.S. Cl. 422—101 10 Claims



1. A centrifuge tube container comprising a container tube, a first resilient plug, and a weir separate and distinct from said first resilient plug;

said container tube comprising a central chamber wall defining a central chamber and a lower chamber wall having a first container aperture, said weir being supported within said first aperture;

said weir including a first end portion extending at a predetermined distance from said first resilient plug into said central chamber thereby defining a predetermined level above said first resilient plug, said weir further including a channel wall spaced from the central chamber wall and defining a central channel directly opening into and in fluid communication with said central chamber so that fluids and solids present in said central chamber may be centrifuged down and solids collected below the level of the first end portion of said weir, said central channel of said weir being adapted to receive and guide a hypodermic needle to extend beyond the first end portion of said weir and to withdraw fluid from said central chamber at a level above said first end portion of said weir;

said first resilient plug sealingly engaging said weir in said first container aperture;

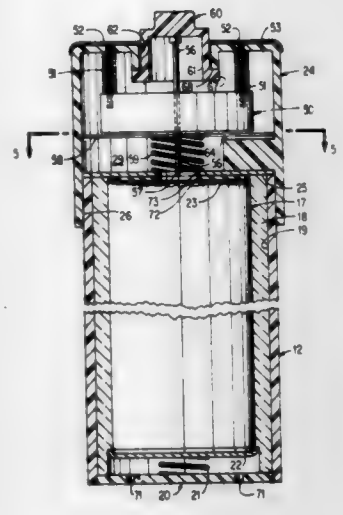
said container tube further comprising an upper chamber wall having a second container aperture and a second resilient plug, said second resilient plug sealingly engaging said second container aperture.

4,342,725

OXYGEN SUPPLY APPARATUS

John F. Collins, Lexington, Ky., assignor to Preiser Scientific, Incorporated, Charleston, W. Va.

Filed Oct. 19, 1978, Ser. No. 952,658
Int. Cl.[3] A62B *7/08;* B01J *7/00*
U.S. Cl. 422—126 6 Claims



1. An oxygen supply apparatus comprising:

a support member;

a plurality of housings;

means to support each of said housings on said support member;

each of said housings having a cartridge of oxygen generating material disposed therein, which material generates oxygen when ignited;

means to insulate against transmission of heat from said cartridge to said housing during generation of oxygen by the oxygen generating material;

a cover for each of said housings;

each of said housings having a chamber therein to receive oxygen from said cartridge when the oxygen generating material in said cartridge is ignited;

oxygen receiving means to be worn by a user; and

means to communicate each of said chambers with said oxygen receiving means;

each of said covers including means to cause ignition of the oxygen generating material within said cartridge in said housing having said cover;

each of said housings including the cover and a bottom portion, with the bottom portion having a detachably mounted end, with resilient means between said end and the bottom of a cartridge in said housing, serving to separate the bottom of the cartridge and the end so as to inhibit heating of the end by heat from the cartridge and serving to urge the cartridge to a predetermined position within the housing, away from said end, and

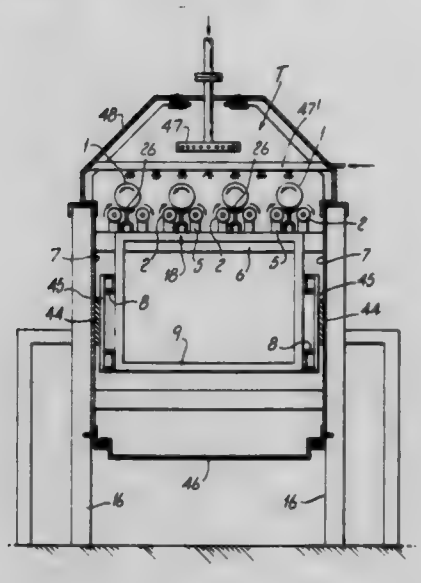
timed signal means which may be set to produce an alarm signal that occurs a predetermined period of time after such setting, with such predetermined period of time being equal to or less than the time period for which the oxygen generating material is effective in said cartridge to generate oxygen; and

means for preventing operation of the ignition means and so preventing ignition of the oxygen generating material in the cartridge without the setting of such signal means.

4,342,726
MACHINE FOR STERILIZING FOODSTUFFS IN CYLINDRICAL CONTAINERS AT NORMAL ATMOSPHERIC PRESSURE

Antonio Savi, Parma, Italy, assignor to Officine Meccaniche Savi Antonio S.p.A., Italy

Claims priority, application Italy, Apr. 13, 1981, 40040-A/81
Filed Jul. 23, 1981, Ser. No. 286,357
Int. Cl.[3] A23P *3/04*
U.S. Cl. 422—302 4 Claims



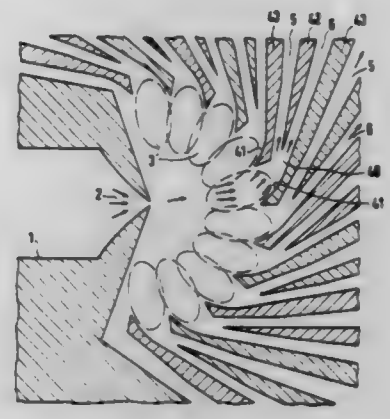
1. A machine for sterilizing foodstuffs in cylindrical containers at normal atmospheric pressure, furnished with means for pilgrim step forward movement of the containers, in which the latter revolve about their own axes, comprising a device for feeding the said containers to the machine, a tunnel, a first stage of which subjected to the effects of steam and a final stage of which subject to those of chilled atomized water and, eventually, air, characterized by the fact that it comprises: a longitudinal cage furnished with a capacity for longitudinal pilgrim step motion by means of a variable speed motor, provided uppermost with parallel longitudinal supports whose upward extremity consists of a pair of wing elements opening upwards in V-formation and designed to bear up a row, or line, of containers during that phase of the cage's movement upwards and forward; at least one pair of longitudinal stretches of roller comprising longitudinal lengths connected by support joints fastened to the upper traverses of the machine flanks which extend upwards from the basic framework, the said rollers revolving in like direction by means of a reduction gear, and positioned such that each roller pair straddles the space defined by each said longitudinal support, at a mutual distance allowing passage between said roller pair of the said pair of wings, the said rollers being designed to support a line of containers revolving about their own axes during that phase of the cage's movement downwards and in return.

4,342,727
METHOD FOR THE SEPARATION OF GASEOUS ISOTOPE COMPOUNDS

Karl Janner, Erlangen, and Klaus Gregorius, Neunkirchen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Oct. 30, 1979, Ser. No. 89,520
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849162
Int. Cl.[3] B01D *59/00*
U.S. Cl. 423—3 4 Claims

1. Method for the separation of gaseous isotope compounds in a mixture by selectively exciting by electromagnetic radiation one isotope compound, with the other isotope compounds in the mixture selectively non-excited, which comprises cooling a gas stream of gaseous isotope compounds together with an added gas by adiabatic expansion through a nozzle to form dimers containing said one isotope compound and said added gas by condensing said one gaseous isotope compound and said added gas, dissociating the dimers containing said one isotope compound by selectively exciting said one isotope compound by said electromagnetic radiation, thereby creating in said gas stream condensed particles containing the non-excited isotope compounds which are of large mass compared to said one isotope compounds, flowing the gas stream through a plurality



of diffuser spaces arranged about the discharge of the nozzle, deflecting the flow of the gas stream to effect a change of isotope distribution and different enrichment in the gas stream caused by centrifugal forces, and separating the gas stream by a peeler in the diffuser space into gas streams of different enrichment.

4,342,728
PROCESS FOR DIGESTING TUNGSTEN ORES CONTAINING ORGANIC MATTER

Paul B. Queneau, Golden; Leo W. Beckstead, and Robert F. Hogsett, both of Arvada, all of Colo., assignors to AMAX Inc., Greenwich, Conn.

Filed Jan. 19, 1981, Ser. No. 225,904
Int. Cl.[3] C01G *41/00*
U.S. Cl. 423—61 10 Claims

1. A process for digesting scheelite concentrates containing organic matter, which comprises establishing a slurry of a sodium carbonate solution having sodium carbonate concentration between about 50 gpl and about 200 gpl and a scheelite concentrate in an amount to provide a Na_2CO_3/WO_3 weight ratio of between about 0.9 to about 1.6, and heating the slurry to a temperature between about 230° C. and about 320° C. under an oxygen partial pressure of at least about 25 psi to digest the scheelite concentrate forming a pregnant sodium tungstate solution and to oxidize the organic matter.

7. A process for digesting wolframite concentrates containing organic matter which comprises establishing a slurry of a sodium hydroxide solution and a wolframite concentrate and heating the slurry to a temperature between about 230° C. and about 320° C. under an an oxygen partial pressure of at least about 25 psi to digest the wolframite concentrate forming a pregnant sodium tungstate solution and to oxidize the organic matter.

4,342,729
METHOD FOR OBTAINING ALUMINA FROM CLAYS

Emilia Garcia Clavel, Zurbano, 58; Jesus Martinez Lope, Torrelaguna, 125, and Teresa Casais Alvarez, all of Madrid, Spain, assignors to Jesus Martinez Lope and Emilia Garcia Clavel, both of Madrid, Spain

Filed Jul. 17, 1980, Ser. No. 169,903
Claims priority, application Spain, Jul. 26, 1979, 482.881
Int. Cl.[3] C01F *7/26*
U.S. Cl. 423—127 10 Claims

1. Method for obtaining alumina from aluminum silicates which consists essentially of:

(a) calcining a stoichiometric dry mixture of aluminum silicate and sodium or potassium bisulphate to a temperature between 300° and 750° C. for 45–120 minutes to form a

reaction product comprising the corresponding double salt ($AlMe_3(SO_4)_3$) where Me is Na or K, and SiO_2,

(b) dissolving at room temperature the reaction product of step (a) in an aqueous alkali to form an alkali aluminate solution, or in water to form an aqueous solution of said double salt,

(c) separating the solution of step (b) from said SiO_2,

(d) precipitating hydrated alumina from the solution of step (c),

(e) recovering the hydrated alumina from step (d), and

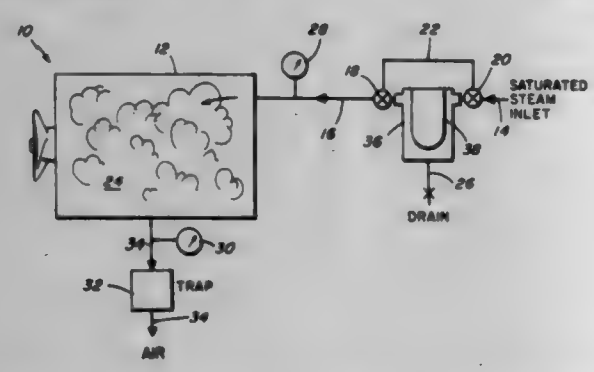
(f) calcining the hydrated alumina of step (d) to form alumina.

4,342,730

APPARATUS FOR AND METHOD OF REMOVING VOLATILE BOILER-FEED ADDITIVES FROM PRESSURIZED STEAM

Kenneth A. Perrotta, Salem, N.H., assignor to Whatman Reeve Angel Limited, United Kingdom

Filed Apr. 23, 1981, Ser. No. 256,899
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—215.5 **5 Claims**



1. A method of preparing purified, saturated, pressurized steam from pressurized, saturated steam which contains particulate matter and a volatile, alkaline boiler-feed additive therein, which method comprises:

(a) passing the saturated, pressurized steam through the wall of a filter tube, which filter tube comprises a plurality of randomly disposed, nonwoven, inorganic glass fibers having interstices therebetween, to define the porosity of the filter tube, the fibers having a diameter of from about 0.001 to 10 microns, and bonded at the junction of the fiber-crossover points with a bonding agent selected from the group consisting of hardened silicon or fluorocarbon resins to form a porous, self-supporting filter tube to filter the particulate matter from the pressurized saturated steam;

(b) passing the particulate-free, filtered, pressurized saturated steam directly downstream through a bed of hydrogen-form, sulfonic acid, ion-exchange resin material, the resin material composed of a high temperature, steam resistant polymer, the resin material having a sufficient bed-depth to provide for the reaction of the strong acid hydrogen of the sulfonic acid ion-exchange resin with the alkaline, volatile, boiler-feed additive in the steam in an acid-base reaction, the saturated steam having a pressure of from about 15 to 90 psi; and,

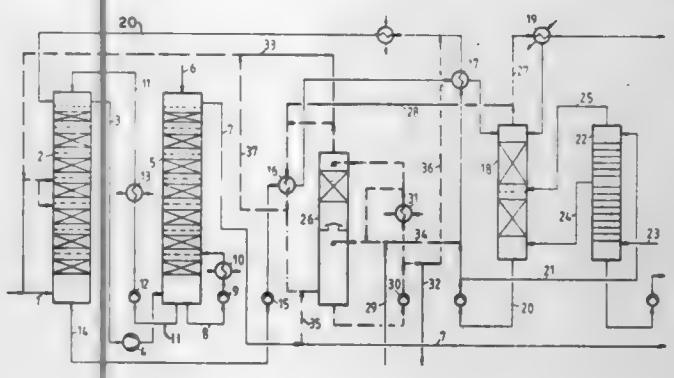
(c) recovering a filtered, purified, saturated, pressurized steam essentially free of particulate matter and having less than about 3 parts per million of volatile, alkaline, boiler-feed additive therein.

4,342,731

METHOD FOR REMOVING HYDROGEN SULFIDE FROM COKE OVEN GAS

Horst Ritter, Essen, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,579
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—234 **3 Claims**



1. In the sulfur-ammonia process for recovering hydrogen sulfide from coke oven gas containing hydrogen sulfide and ammonia, comprising

(a) a hydrogen sulfide stripping zone;

(b) an ammonia stripping zone;

(c) a deacidifying zone;

(d) an ammonia distillation zone;

(e) a concentrating/scrubbing zone;

feeding said coke oven gas and ammoniacal wash water to said hydrogen sulfide stripping zone and removing a first washed gas stream having a lower hydrogen sulfide content than said coke oven gas and recovering a first effluent liquid stream including ammoniacal water and hydrogen sulfide;

feeding said first washed gas stream to said ammonia stripping zone along with wash water to produce a second washed gas stream having a lower ammonia content than said first washed gas stream and producing a second effluent liquid stream;

recovering said second washed gas stream as a first product gas stream of washed coke oven gas and returning said second effluent liquid stream to said hydrogen sulfide stripping zone as at least a portion of the required ammoniacal wash water;

feeding said first effluent liquid stream to said deacidifying zone along with ammonia-rich gas to produce a second product gas stream containing hydrogen sulfide and to produce a third effluent liquid stream of wash water containing ammonia;

stripping at least a portion of said third effluent liquid stream to produce a fourth effluent liquid stream and to produce the said ammonia-rich gas;

delivering the said ammonia-rich gas to said deacidifying zone;

the improvement in said process comprising operating said concentrating/scrubbing zone alternatively

Firstly: as a scrubbing zone when said second product gas stream is continuously withdrawn as a product; introducing a portion of said first product gas stream into said concentrating/scrubber zone and washing therein with a portion of the said third effluent liquid stream to produce a third washed gas stream having a lower hydrogen sulfide content than the said second product gas stream and producing a fifth effluent liquid stream, recycling at least a portion of said fifth effluent liquid stream to said concentrating/scrubbing zone and delivering at least a portion thereof to said hydrogen sulfide stripping zone as a portion of the said ammoniacal wash water; and introducing said third washed gas stream into said hydrogen sulfide stripping zone along with the said coke oven gas; and

Secondly: as a concentrating zone when said second product gas stream is delivered entirely to said concentrating/-

scrubbing zone, delivering a portion of said third effluent liquid stream to said concentrating/scrubbing zone to produce a third washed gas stream, returning said third washed gas stream to said hydrogen sulfide stripping zone along with coke oven gas; and withdrawing a portion of the said fifth effluent liquid stream as a strong liquor containing hydrogen sulfide.

4,342,732

SLUDGE FIXATION AND STABILIZATION

Robert H. Smith, 1402 Conshohocken Rd., Norristown, Pa. 19401

Filed Jul. 17, 1980, Ser. No. 169,820
Int. Cl.³ C01B *17/00*; B09B *1/00*; C04B *11/00, 1/00*
U.S. Cl. 423—242 23 Claims

1. A method of disposing of wastes from a coal burning unit having flue gas desulfurization equipment utilizing wet lime or limestone scrubbing which develops a mixture of calcium sulfite, calcium sulfate and any related coal-associated wet waste products, said method comprising:

supplying said calcium sulfite, calcium sulfate and any related coal-associated wet waste products;

supplying a substantially saturated calcium sulfite-calcium bisulfite solution having a pH below about 4;

and combining said calcium sulfite-calcium bisulfite solution with said calcium sulfite, calcium sulfate and related coal-associated wet waste products to raise the pH of said calcium sulfite-calcium bisulfite solution sufficiently to precipitate and crystalize a substantial portion of the sulfite value in said solution, whereby said waste products are encapsulated into a solid mass.

4,342,733

METHOD OF IMPROVING SULFITE ANTIOXIDANT PERFORMANCE IN HIGH SOLIDS SCRUBBERS

Joe C. Steelhammer, Lansdale, and Paul J. Hutta, Warminster, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jan. 9, 1981, Ser. No. 223,591
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 20 Claims

1. A method for inhibiting the amount of oxidation of sulfite to sulfate in a sulfite containing aqueous gas scrubber medium, said medium having solids particulate matter disposed therein, said method comprising adding to said medium an effective amount of a water soluble antioxidant additive adapted to inhibit said oxidation, and also adding an effective amount of a water soluble topping agent to said medium, wherein said topping agent comprises a member selected from the group consisting of polyphosphate compounds, organophosphonic acid compounds, oligomers of said phosphonic acid compounds and mixtures thereof.

4,342,734

METHOD FOR FORMING γ-BORON

Kaplesh Kumar, Wellesley, and Dilip K. Das, Bedford, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 20, 1981, Ser. No. 284,848
Int. Cl.³ C01B *35/02*
U.S. Cl. 423—298 14 Claims

1. A method of transforming β-rhombohedral boron into dense, substantially γ-tetragonal boron, comprising the steps of:

obtaining β-rhombohedral boron in powder form;

melting the β-boron in a plasma to form a directional high velocity jet of molten boron particles;

directing the jet onto a substrate;

rapidly cooling the molten particles at the substrate to form a deposit of dense, substantially γ-tetragonal boron in solid form; and

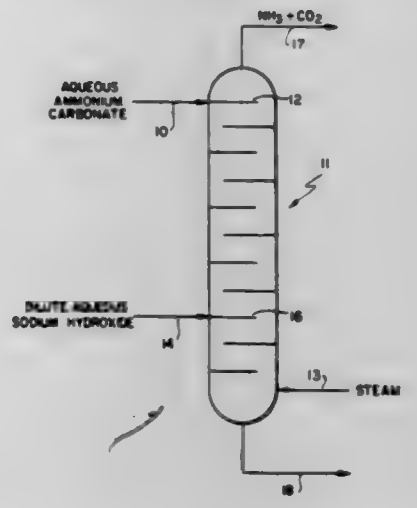
removing the deposit from the substrate.

4,342,735

STRIPPING OF AQUEOUS AMMONIUM CARBONATE SOLUTION

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Apr. 23, 1981, Ser. No. 256,945
Int. Cl.³ C01C *1/10*
U.S. Cl. 423—356 10 Claims



1. In a process for stripping in a stripping column ammonia and carbon dioxide from an aqueous ammonium carbonate solution including organic ammonium salts, wherein said column has a plurality of trays and a top and a bottom, the improvement comprising:

introducing inorganic base into the column at a point below the point of introduction of the aqueous ammonium carbonate solution and at a tray above the tray adjacent the column bottom to liberate ammonia from the organic ammonium salts and strip the liberated ammonia from the solution.

4,342,736

REDUCTION OF THE DEGRADATION OF REFRACTORIES IN A CARBON BLACK REACTOR

Earl J. Estopinal, Jr., Monroe, La., assignor to Columbian Chemicals Company, Tulsa, Okla.

Filed Jun. 1, 1981, Ser. No. 269,249
Int. Cl.³ C01B *31/02*; C09C *1/48*
U.S. Cl. 423—450 16 Claims

1. In a method of producing carbon black for subjecting to a separation step a hydrocarbon feedstock containing a meltable solid, withdrawing from the separation step feedstock reduced in the meltable solid content and withdrawing from the separation step a hydrocarbon concentrated with the meltable solid, wherein the feedstock reduced in the meltable solid content is introduced into an oil furnace process reactor having a combustion zone and a reaction zone to produce carbon black, the improvement comprising introducing the hydrocarbon concentrated with the meltable solid into the reaction zone downstream of the combustion zone at a point where the temperature is below the melting point of the meltable solid such that the meltable solid is emitted from the reactor along with combustion gases and the carbon black product thereby producing carbon black from the oil concentrated with the meltable solid without substantially depositing the melted solid on the interior walls of the reactor.

4,342,737

PROCESS OF PRODUCING A POTASSIUM SULFATE SALT

Hidemaro Iwashita, and Kenichi Hayashi, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Dec. 17, 1979, Ser. No. 104,049

Claims priority, application Japan, Dec. 25, 1978, 53-158444; Jun. 8, 1979, 54-71145

Int. Cl.³ C01B *7/01, 17/96;* C01D *5/02;* C05D *1/02*

U.S. Cl. 423—522 7 Claims

1. A process for producing a potassium sulfate salt which comprises reacting sulfuric acid with potassium chloride at an equivalent ratio range of sulfuric acid to potassium chloride of 1.07 to 1.40, based on the production of potassium sulfate, at a temperature of from above 250° C. to about 500° C., while kneading the resulting solid-liquid mixture by shearing, folding, milling and compressing at the final stage of the reaction wherein molten potassium bisulfate is present in said solid-liquid mixture, said potassium bisulfate being produced in the course of the reaction and being left in the product of the reaction because of the excess sulfuric acid, said potassium sulfate salt produced having a chloride content less than about one (1) percent by weight and said equivalent ratio enabling said resulting solid-liquid mixture to be kneaded at the final stage of the reaction.

4,342,738

HYDROGEN GENERATION AS FUEL BY USE OF SOLAR ULTRAVIOLET LIGHT PROCESS

Paul W. Burgund, 2235 Avenue L, Fort Madison, Iowa 52627

Filed Aug. 21, 1981, Ser. No. 295,214

Int. Cl.³ C01B *13/00*

U.S. Cl. 423—579 5 Claims

1. A feasible economic method of producing hydrogen and oxygen from water, said method comprising:

separating sunlight into ultraviolet light and infrared light;

concentrating said separated infrared light and said separated ultraviolet light;

placing water in an enclosed reactor vessel;

using said separated and concentrated infrared light as a heat source to convert water to steam;

placing said steam in a second reactor vessel which is at least partially transparent to ultraviolet light and continually subjecting said steam to infrared light to superheat said steam to catalytic decomposition temperatures of about 800° C.;

contacting said superheated steam, with a steam decomposition catalyst comprising a finely divided heavy metal, or a salt or oxide of a heavy metal selected from the group consisting of Group IIIB, Group IVB, Group VB, Group VIB, Group VIIB and Group VIIIB of the Periodic Chart;

introducing said concentrated ultraviolet light into said second reactor to separate said steam, in the presence of said decomposition catalyst, into its component parts of hydrogen and oxygen;

and collecting the hydrogen and the oxygen.

4,342,739

NOVEL MATERIAL FOR IMMUNOLOGICAL ASSAY OF BIOCHEMICAL COMPONENTS AND A PROCESS FOR THE DETERMINATION OF SAID COMPONENTS

Fujio Kakimi, Minami-ashigara; Nobuo Hiratsuka, Tokyo, and Hiroharu Matsukawa, Shizuokashi, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 8, 1980, Ser. No. 110,318

Claims priority, application Japan, Jan. 9, 1979, 54-1555; Nov. 16, 1979, 54-149209; Nov. 16, 1979, 54-149210

Int. Cl.³ G01N *33/58, 33/60;* B01J *13/02*

U.S. Cl. 424—1 37 Claims

1. A microcapsule comprising an oily liquid core material and a wall material having bound thereto an antigen or antibody to the surface thereof, wherein a marking substance is incorporated into said core material.

4,342,740

METHOD AND KIT FOR LABELING RED BLOOD CELLS WITH TECHNETIUM-99M

Rama K. Narra, North Brunswick, and Bruce L. Kuczynski, Highland Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 18, 1980, Ser. No. 179,306

Int. Cl.³ A61K *49/00;* G01T *1/00;* B65D *71/00*

U.S. Cl. 424—1 13 Claims

1. A method of labeling red blood cells with technetium-99m comprising:

(i) mixing a blood sample with anticoagulant, stannous ion and buffer;

(ii) adding saline to the mixture;

(iii) centrifuging the mixture;

(iv) separating the supernatant from the red blood cells; and

(v) mixing radioactive pertechnetate and an oxidizing agent with the red blood cells.

4,342,741

DENTIFRICE COMPOSITIONS

Hideki Aoki, Kukizakimura, Japan, assignor to Dental Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1981, Ser. No. 257,981

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—57 2 Claims

1. A dentifrice composition for toothpaste having a pH of from 4 to 6.9 and consisting essentially of:

30 to 35 parts by weight of an abrading agent containing 5 to 25 parts by weight of synthetic hydroxyapatite powder and the balance of at least one member selected from the group consisting of calcium phosphate and calcium pyrophosphate;

20 to 35 parts by weight of at least one filler selected from the group consisting of glycerin and sorbitol; and

20 to 35 parts by weight of water.

4,342,742

SURFACE-ACTIVE POLYSILOXANES

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

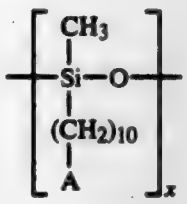
Filed Nov. 27, 1979, Ser. No. 98,329

Claims priority, application France, Dec. 5, 1978, 78 34268

Int. Cl.³ A61K *7/42, 7/04, 7/06, 31/695;* C07F *7/08, 7/10*

U.S. Cl. 424—59 11 Claims

1. A cyclic and/or linear polysiloxane or a mixture thereof, of the formula:



(I)

in which x denotes an integer from 3 to 10 and A denotes a cationic, anionic, zwitterionic or non-ionic hydrophilic unit which contains one or more of the same or different groups which are amine, amine oxide, ammonium, ammonioalkylcarboxylate, ammonioalkylsulphonate, amide, sulphonamide, thioether, sulphoxide or hydroxyl groups.

4,342,743

PREPARATION FOR THE CARE AND CONDITIONING OF THE FEET

Lithia Panton-Moore, 570 Lefferts Ave., 2D, Brooklyn, N.Y. 11203

Filed Feb. 24, 1981, Ser. No. 237,740
Int. Cl.[3] A61K *7/04, 37/48*
U.S. Cl. 424—61 8 Claims

1. In a preparation for mixture with water to form a foot-soak solution in which the feet may be soaked to sooth, comfort, relax and cleanse the feet, and soften the dead calloused skin tissue to facilitate the removal thereof, the improvements comprising, in combination by volume, about two parts magnesium sulphate, about two parts sodium chloride, about one part papaya enzyme, and about one part salicylic acid.

4,342,744

HAIR TREATMENT PRODUCTS

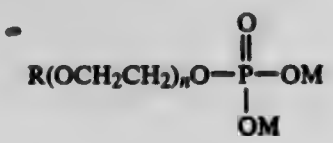
Masaaki Arai, Tocorozawa; Masami Ohba, Funabashi; Guy A. G. Ricketts, Tokyo, all of Japan, and Jean A. Steer, Weybridge, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 167,978
Claims priority, application United Kingdom, Jul. 19, 1979, 7925174
Int. Cl.[3] A61K *7/11, 7/06*
U.S. Cl. 424—70 4 Claims

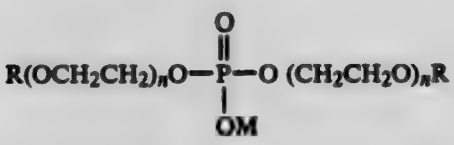
1. A product for conditioning and setting hair which comprises:

(A) from 0.05% to 3% by weight of a polyvinylpyrrolidone quaternised copolymer; and

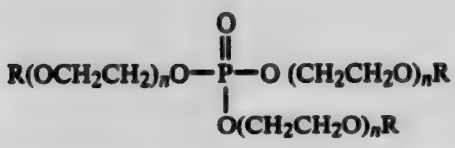
(B) from 0.1% to 3% by weight of a phosphate ester comprising a monoester of the formula



and/or a diester of the formula



and/or a triester of the formula



in which formulae R is an hydrocarbon group having from 8 to 22 carbon atoms, n is 0 or an integer of from 1 to 10 and M is hydrogen or an alkali metal, ammonium or amine salt-forming group.

4,342,745

USE OF POLYVINYL ALCOHOLS FOR THE TREATMENT OF LESIONS

Velimir Mirkovitch, Pully, Switzerland, assignor to Zyma S.A., Nyon, Switzerland

Filed May 19, 1980, Ser. No. 151,083
Claims priority, application Switzerland, May 31, 1979, 5089/79
Int. Cl.[3] A61K *31/74*
U.S. Cl. 424—78 5 Claims

1. A method of treating a lesion selected from the group consisting of varicose ulcers, burns, post-traumatic lesions, post operative lesions, fresh decubital ulcers, infected decubital ulcers, infected skin and eczemas, which comprises topically applying to said lesion an effective amount, to cicatrise said lesion, of polyvinyl alcohol in the form of powders or granulates and which is insoluble in cold water and having a degree of hydrolysis greater than 99.0%.

4,342,746

METHOD FOR TREATING DUTCH ELM DISEASE

Gary A. Strobel, Bozeman, Mont., assignor to Endowment and Alumni Foundation at Montana State University, Bozeman, Mont.

Continuation-in-part of Ser. No. 95,448, Nov. 19, 1979, Pat. No. 4,277,462. This application Nov. 10, 1980, Ser. No. 205,862
The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.
Int. Cl.[3] A01N *63/00, 63/02*
U.S. Cl. 424—93 20 Claims

1. A method for treating Dutch elm disease comprising applying a high molecular weight antibiotic-forming strain of *P. syringae* to an elm tree in a Dutch elm disease-controlling amount; said antibiotic being the same as that obtained by incubating *P. syringae* NRRL B-12050 at about 25°–28° C. in an about 1.5–2.5% potato dextrose broth adjusted to a final concentration of about 0.5–3% glucose, for about two to four days; mixing a precipitating agent with the inoculated broth in an amount sufficient to precipitate very high molecular weight substances from said broth; separating the precipitate and the liquid phase from each other; evaporating the liquid phase to dryness, thereby leaving a residue; chromatographing the residue on a column capable of separating in the void volume of eluate substances having a molecular weight of at least about 1,800 from low molecular weight substances; and recovering said antibiotic from said void volume of eluate; wherein the steps for obtaining said antibiotic are carried out at a temperature below about 50° C.

4,342,747

COLOSTRUM-BASED COMPOSITION FOR EXTERNAL USE

Serge Liotet, 12, rue Thibaud, 75014 Paris, and Pierre-Jean Assier, 18, rue Lamarch, 75018 Paris, both of France

Filed Jun. 26, 1980, Ser. No. 163,189
Claims priority, application France, Jul. 2, 1979, 79 17118
Int. Cl.[3] A61K *35/12*
U.S. Cl. 424—95 4 Claims

1. A composition for external ophthalmic use as a therapeutic agent and/or a tear substitute, characterized in that it contains colostrum as an active ingredient in an effective amount in an eye lotion carrier or in an ointment carrier.

4,342,748

SLEEP-PROMOTING FACTOR

John R. Pappenheimer, Cambridge; James M. Krueger, Newton, and Manfred L. Karnovsky, Cambridge, all of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 166,909, Jul. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 52,969, Jun. 28, 1979, abandoned, which is a continuation of Ser. No. 891,362, Mar. 29, 1978, abandoned. This application Jan. 29, 1981, Ser. No. 229,654
Int. Cl.[3] A61K *35/12*
U.S. Cl. 424—95 7 Claims

1. A process for the preparation of a sleep-promoting factor having the following characteristics:

(a) it is inactivated by incubation with carboxypeptidase;

(b) upon elution from a cation exchange resin under acidic conditions the cationic form is converted to the anionic form;

(c) it has a R_f of 0.15–0.35 after ascending paper chromatography on Whatman No. 1 paper by development with a

mixture of acetone:1-propanol:water:8 M NH_4OH (40:30:20:10, V/V/V/V);

(d) it has R_{LYS} of 0.2–0.3 after high voltage electrophoresis at pH 1.9, 65 V cm^{-1} for 60 minutes in formic acid:acetic acid:water (150:100:750, V/V/V) on Whatman No. 3 paper;

(e) it passes through a molecular sieve which prevents the passage of molecules larger than 1000 daltons;

(f) it elutes prior to sucrose on a polysaccharide gel-filtration column;

which comprises:

(i) extraction of homogenized brains from sleep-deprived animals with an acidified organic solvent;

(ii) ion exchange of the extract from (i) with a cation exchange resin and elution under acidic conditions;

(iii) removal of buffers and other small molecules by solvent extraction and re-extraction;

(iv) ion exchange of the extract remaining after Step (iii) with an anion exchange resin; and

(v) elution of said sleep-promoting factor from said anion exchange resin.

4,342,749

CLAVULANIC ACID DERIVATIVES A PROCESS FOR THEIR PREPARATION AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

John B. Harbridge, Coulsdon, England, assignor to Beecham Group Limited, England

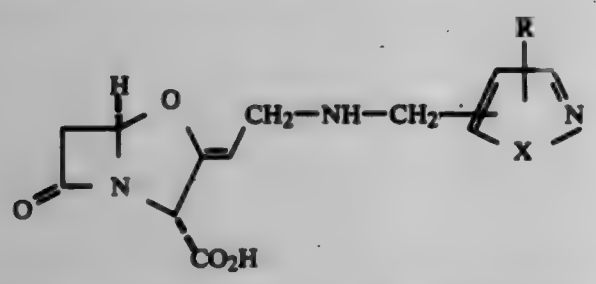
Division of Ser. No. 79,557, Sep. 27, 1979, Pat. No. 4,303,665. This application Jul. 14, 1980, Ser. No. 168,574

Claims priority, application United Kingdom, Oct. 27, 1978, 42338/78

Int. Cl.³ A61K *35/00, 31/43*

U.S. Cl. 424—114 **24 Claims**

13. A method treating bacterial infections in humans and animals which comprises administering to a human or animal in need thereof at least a synergistically effective amount of a compound of the formula (II):



(II)

wherein X is sulphur or oxygen and R is hydrogen or alkyl of 1 to 3 carbon atoms, and an antibacterially effective amount of amoxycillin, a pharmaceutically acceptable salt thereof or an in vivo hydrolyzable ester thereof, in combination with a pharmaceutically acceptable carrier.

4,342,750

METHOD FOR TREATING BENIGN PROSTATIC HYPERTROPHY WITH N-ACYL AMPHOTERICIN B

Harry W. Gordon, Bronx County, N.Y., assignor to Schmid Labs., Inc., Little Falls, N.J.

Continuation of Ser. No. 775,797, Mar. 9, 1977, Pat. No. 4,173,629, which is a continuation of Ser. No. 628,790, Nov. 4, 1975, Pat. No. 4,039,661, which is a continuation-in-part of Ser. No. 584,607, Jun. 6, 1975, which is a continuation of Ser. No. 414,968, Nov. 23, 1973, which is a division of Ser. No. 313,568, Dec. 8, 1972, which is a division of Ser. No. 194,052, Oct. 29, 1971, which is a division of Ser. No. 70,509, Sep. 8, 1970, which is a continuation of Ser. No. 623,847, Mar. 17, 1967, Pat. No. 3,584,118, and a continuation-in-part of Ser. No. 544,712, Apr. 25, 1966, abandoned. This application Jun. 8, 1979, Ser. No. 46,710

Int. Cl.³ A61K *35/00, 31/70, 31/71*

U.S. Cl. 424—122 **4 Claims**

1. A process for the treatment of benign prostatic hypertrophy in a large mammal afflicted with benign prostatic hypertrophy which comprises orally administering to said mammal an effective dose for treating benign prostatic hypertrophy of n-acyl amphotericin B.

4,342,751

MAJUSCULAMIDE C

Richard E. Moore, Honolulu, Hi., and Jon S. Mynderse, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 9, 1981, Ser. No. 241,812

Int. Cl.³ A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 **4 Claims**

1. Majusculamide C, which is a white amorphous solid having these characteristics:

(a) a molecular weight of approximately 984;

(b) an empirical formula of about $C_{50}H_{80}N_8O_{12}$;

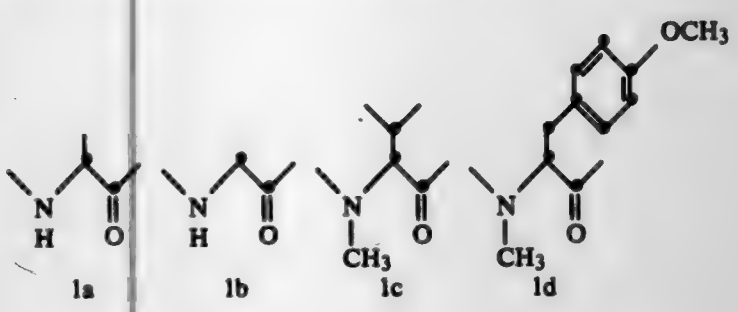
(c) a specific optical rotation, $[\alpha]_D$, of $-96°$ (c 2.5, CH_2Cl_2);

(d) an infrared spectrum as shown in the accompanying drawing;

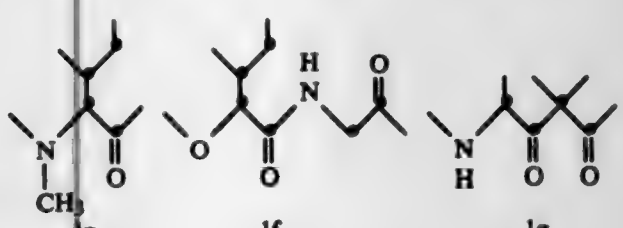
(e) an ultraviolet absorption spectrum in ethanol with absorption maxima at 278 nm (ε 1420) and 230 nm (ε 5900);

(f) is soluble in solvents such as methanol, dichloromethane, and acetone, but is insoluble in water;

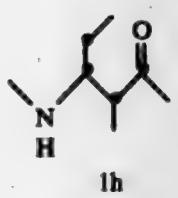
(g) contains the structural sub-units 1*a*–1*h*:



1a 1b 1c 1d



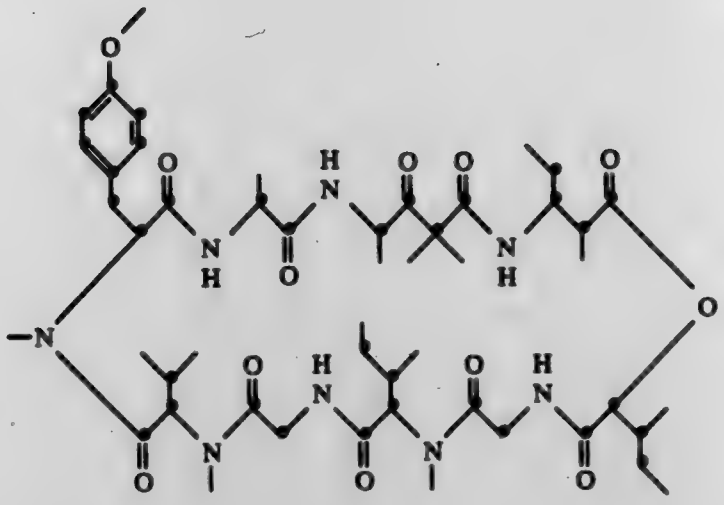
1e 1f 1g



1h

(h) appears to contain the sub-unit grouping: glycyl-N-methylisoleucylglycyl-N-methylvalyl-N,O-dimethyltyrosyl; and

(i) the following tentative structure:



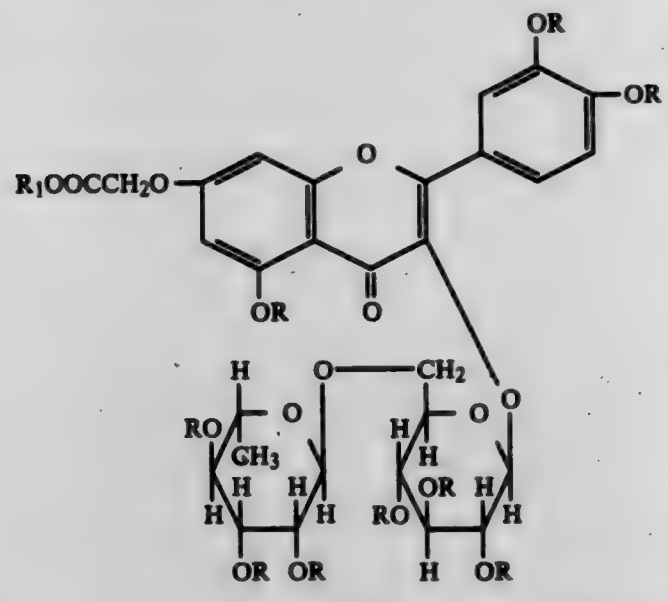
4,342,752

CARBALKOXYMETHYL DERIVATIVES OF RUTIN POLY(H-)SULFATE AND METHOD OF USE

Vijay G. Nair, New York; John F. Poletto, Nanuet, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 15, 1981, Ser. No. 273,523
Int. Cl.[3] A61K *31/70*; C07H *13/04*
U.S. Cl. 424—180 19 Claims

5. A method of inhibiting the complement system in a warm-blooded animal which comprises administering to said animal an effective complement inhibiting amount of a compound of the formula:



wherein R_1 is C_1–C_6 alkyl, R is SO_3B, and B is a pharmaceutically acceptable salt cation selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of C_1–C_6 trialkylamine, piperidine, pyrazine, C_2–C_6 alkanolamine and C_3–C_6 cycloalkylamine.

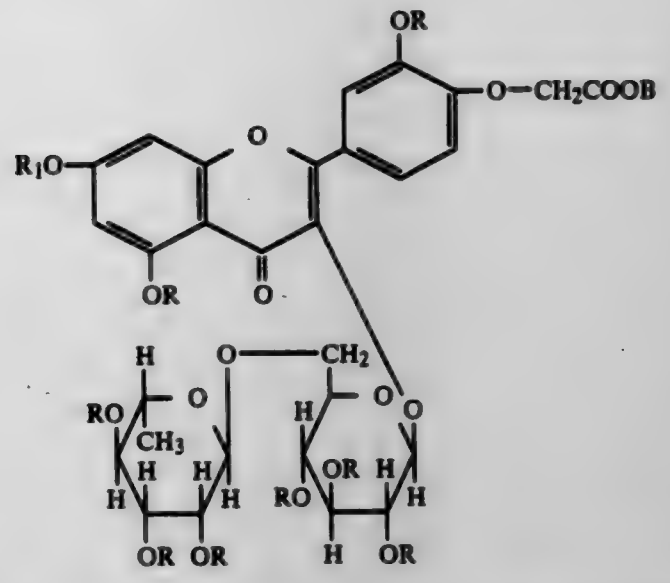
4,342,753

CARBOXYALKYL DERIVATIVES OF RUTIN POLY(H-)SULFATE

Vijay G. Nair, New York; John F. Poletto, Nanuet, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 15, 1981, Ser. No. 273,782
Int. Cl.[3] A61K *31/72*; C07H *11/00*
U.S. Cl. 424—180 14 Claims

7. A method of inhibiting the complement system in a warm-blooded animal which comprises administering to said animal an effective complement inhibiting amount of a compound of the formula:



wherein R_1 is selected from the group consisting of SO_3B and $BOOCCH_2$—, R is SO_3B, and B is a pharmaceutically acceptable salt cation selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of C_1–C_6 trialkylamine, piperidine, pyrazine, C_2–C_6 alkanolamine and C_3–C_6 cycloalkylamine.

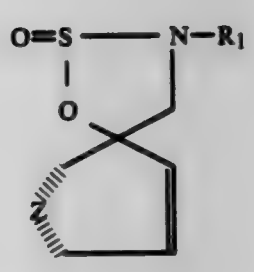
4,342,754

STEROID-SPIRO-OXATHIAZOLIDINE DERIVATIVES AND A PROCESS FOR THE PREPARATION THEREOF

Sandor Solyom; Katalin Szilagyi nee Farago; Lajos Toldi; Inge Schäfer; Eleonora Szondy; Janos Borvendeg, and Ilona Hermann nee Szente, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Mar. 11, 1981, Ser. No. 242,711
Claims priority, application Hungary, Mar. 12, 1980, OE 579
Int. Cl.[3] A61K *31/58*
U.S. Cl. 424—241 16 Claims

1. A steroid-spiro-oxathiazolidine compound of the formula (I),

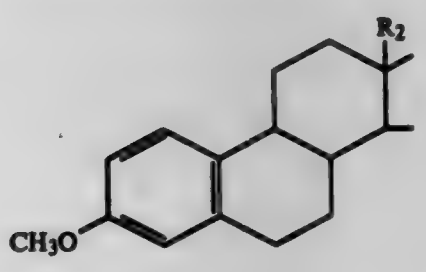


(I)

wherein

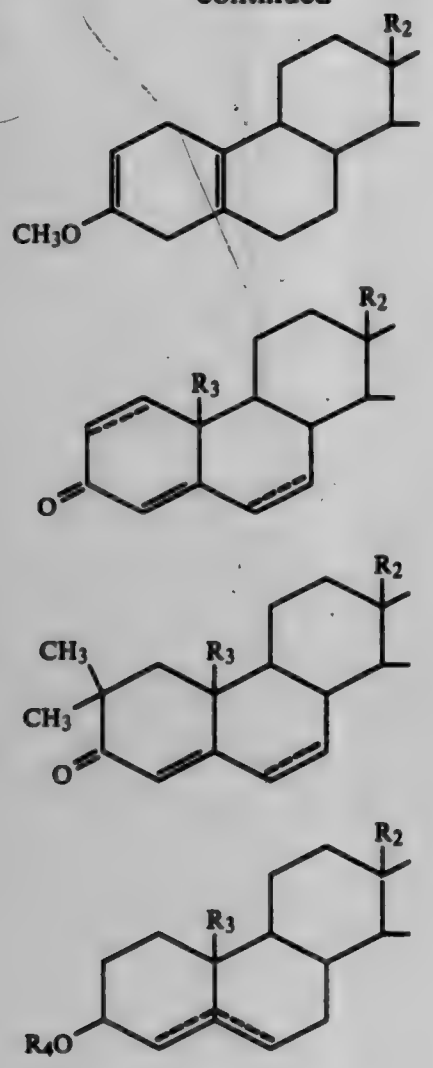
R_1 is C_{1-3} alkyl or C_{2-4} alkenyl, and

Z is one of the groups of the formulae (II) to (VI),



(II)

-continued



wherein

R_2 is methyl or ethyl,

R_3 is hydrogen or methyl,

R_4 is hydrogen, C_{1-3}alkyl, di-(C_{1-4} alkyl)-amino-C_{1-4}-alkyl, C_{2-4} alkoxycarbonyl or C_{3-6} carboxyalkylcarbonyl, and the dotted lines can represent additional valence bonds, but if Z is a group of the formula (VI), a double bond exists either between the carbon atoms in positions 4 and 5 or between the carbon atoms in position 5 and 6 if R_4 is di-($_{1-4}$ alkyl)-amino-C_{1-4} alkyl or C_{3-6} carboxyalkylcarbonyl rather than H or C_{1-3} alkyl, the compounds may also be formed as pharmaceutically effective salts by treatment with an organic or mineral acid or with a base.

2. A pharmaceutical composition containing as active ingredient an effective amount of a compound as defined in claim 1, together with a pharmaceutically acceptable carrier or diluent.

4,342,755

TRANQUILLO-SEDATIVE BENZODIAZEPINE DERIVATIVES

Julia Röhricht; Lajos Kisfaludy; Laszlo Ürögdi; Eva Palosi; Szabolcs Szeberenyi, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Continuation-in-part of Ser. No. 795,894, May 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 580,307, May 23, 1975, Pat. No. 4,045,433. This application Sep. 9, 1980, Ser. No. 185,512

Claims priority, application Hungary, May 29, 1974, RI-538

Int. Cl.³ A61K *31/55;* C07D *243/24*

U.S. Cl. 424—244 **4 Claims**

1. Racemic-1-methyl-4-carbamoyl-5-phenyl-7-chloro-1,3,4,5-tetrahydro-2H-1,4-benzodiazepine-2-one.

2. A method of tranquilizing an animal subject which comprises the step of administering to said animal subject a tranquilizingly effective amount of the compound defined in claim 1.

4,342,756

AMINOCYCLOPENTANE ALKENOIC ACIDS AND ESTERS AND PHARMACEUTICAL COMPOSITIONS

Eric W. Collington, Welwyn; Peter Hallett, Buntingford; Christopher J. Wallis, Royston; John Bradshaw, Ware, and Norman F. Hayes, Hitchin, all of England, assignors to Glaxo Group Limited, England

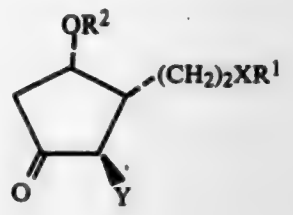
Filed Apr. 29, 1981, Ser. No. 258,721

Claims priority, application United Kingdom, Apr. 30, 1980, 8014256

Int. Cl.³ A61K *31/54, 31/535;* C07D *295/14*

U.S. Cl. 424—244 **14 Claims**

1. Compounds of the general formula (1)



(1)

wherein

X is cis or trans -CH=CH-;

R^1 is straight or branched C_{1-7} alkyl bearing as a terminal substituent -$COOR^3$ where R^3 is a hydrogen atom, C_{1-6} alkyl or C_{7-10} aralkyl;

Y represents a saturated heterocyclic amino group which has 5 to 7 ring members and (a) optionally contains in the ring -O-, -S-, -SO_2-, -NR^4 (where R^4 is a hydrogen atom, C_{1-7} alkyl or aralkyl having a C_{1-4} alkyl portion; and (b) is optionally substituted by one or more C_{1-4} alkyl groups;

R^2 is (i) C_{2-4} alkanoyl; (ii) C_{3-6} alkenyl, optionally substituted by phenyl (the phenyl being optionally substituted by C_{1-4} alkyl, C_{1-4} alkoxy, halogen, C_{5-7} cycloalkyl or phenyl (C_{1-4}) alkyl), biphenyl (optionally substituted by C_{1-4} alkyl, C_{1-4} alkoxy or halogen), or naphthyl; (iii) C_{1-12} alkyl; (iv) C_{1-5} alkyl substituted by (a) phenyl, (b) biphenyl (optionally substituted by phenyl or one or two C_{1-4} alkyl, C_{1-4} alkoxy, halogen substitutuents), or (c) naphthyl (optionally substituted by C_{1-4} alkyl, C_{1-4} alkoxy or halogen);

and the physiologically acceptable salts and the solvents thereof.

14. A pharmaceutical composition comprising an antithrombotic or anti-asthmatic effective amount of a compound as claimed in claim 1 together with one or more pharmaceutical carriers.

4,342,757

CEPHALOSPORIN ANTIBIOTIC COMPOSITIONS

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,070

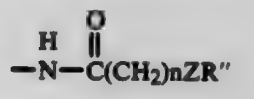
Claims priority, application United Kingdom, Jun. 16, 1970, 29158/70; Jul. 9, 1970, 33415/70; Sep. 30, 1970, 46556/70; Dec. 10, 1970, 58731/70; Jan. 27, 1971, 3296/71; Jan. 27, 1971, 3297/71; Jan. 27, 1971, 3298/71; Feb. 8, 1971, 4179/71; Feb. 11, 1971, 4479/71; Feb. 11, 1971, 4480/71; Feb. 26, 1971, 5588/71

Int. Cl.³ C07D *501/20;* A61K *31/545*

U.S. Cl. 424—246 **3 Claims**

1. An antibacterial composition comprising an antibacterially effective amount of a 3-A-7-methoxy-7-acylamido-3-cephem-4-carboxylic acid wherein A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzoyl)oxymethyl, (p-methylbenzoyl)oxymethyl, pivaloyloxymethyl, (1-adamantyl)carboxymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)oxymethyl, (N-ethylcarbamoyl)oxymethyl, [N-(2-

chloroethyl)carbamoyl]oxymethyl, (N-phenylcarbamoyl)oxymethyl, N-p-sulfophenylcarbamoyl)oxymethyl, p-carboxymethylphenylcarbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbamoylthiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethylpiperzinium-1-thiocarbonylthiomethyl, 2-furoylthiomethyl, isothiouroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxymethyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R:2S-epoxypropylphosphonyloxymethyl, or pyridinium methyl; and acylamido is



wherein n is 0–4, Z is oxygen or sulfur, and R″ is benzyl, p-hydroxybenzyl, 4-amino-4-carboxybutyl, methyl, cyanomethyl, 2-pentenyl, n-amyl, n-heptyl, ethyl, 3- or 4-nitrobenzyl, phenethyl, β,β-diphenylethyl, methyldiphenylmethyl, triphenylmethyl, 2-methoxyphenyl, 2,6-dimethoxyphenyl, 2,4,6-trimethoxyphenyl, 3,5-dimethyl-4-isoxazolyl, 3-butyl-5-methyl-4-isoxazolyl, 5-methyl-3-phenyl-4-isoxazolyl, 3-(2-chlorophenyl)-5-methyl-4-isoxazolyl, 3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolyl, D-4-amino-4-carboxybutyl, D-4-N-benzoylamino-4-carboxy-n-butyl, p-aminobenzyl, o-aminobenzyl, m-aminobenzyl, (3-pyridyl)-methyl, 2-ethoxy-1-naphthyl, 3-carboxy-2-quinoxalinyl, 3-(2,6-dichlorophenyl)-5-(2-furyl)-4-isoxazolyl, 3-phenyl-4-isoxazolyl, 5-methyl-3-(4-guanidinophenyl)-4-isoxazolyl, 4-guanidinomethylphenyl, 4-quanidinomethylbenzyl, 4-guanidinobenzyl, 4-quanidinophenyl, 2,6-dimethoxy-4-guanidinophenyl, o-sulfobenzyl, p-carboxymethylbenzyl, p-carbamoylmethylbenzyl, m-fluorobenzyl, m-bromobenzyl, p-chlorobenzyl, p-methoxybenzyl, 1-naphthylmethyl, 3-isothiazolylmethyl, 4-isothiazolylmethyl, 5-isothiazolylmethyl, 4-pyridylmethyl, 5-isoxazolylmethyl, 4-methoxy-5-isoxazolylmethyl, 4-methyl-5-isoxazolylmethyl, 1-imidazolylmethyl, 2-benzofuranylmethyl, 2-indolylmethyl, 2-phenylvinyl, 2-phenylethynyl, 2-(5-nitrofuranyl)vinyl, phenyl, o-methoxyphenyl, o-chlorophenyl, o-phenylphenyl, p-aminomethylbenzyl, 1-(5-cyanotriazolyl)methyl), difluoromethyl, dichloromethyl, dibromomethyl, 1-(3-methylimidazolyl)methyl, 2- or 3-(5-carboxymethylthienyl)-methyl, 2- or 3-(4-carbamoylthienyl)methyl, 2- or 3-(5-methylthienyl)methyl, 2- or 3-(5-methoxythienyl)methyl, 2- or 3-(4-chlorothienyl)methyl, 2- or 3-(sulfothienyl)methyl, 2-or 3-(5-carboxythienyl)methyl, 3-(1,2,5-thiadiazolyl)methyl, 3-(4-methoxy-1,2,5-thiadiazolyl)methyl, 2-furylmethyl, 2-(5-nitrofuryl)methyl, 3-furylmethyl, 2-thienylmethyl, 3-thienylmethyl, and tetrazolylmethyl; and the pharmaceutically acceptable salts thereof, or the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin in a pharmaceutically acceptable carrier vehicle.

4,342,758

ALLYLSULFOXIDE ENZYME INHIBITORS

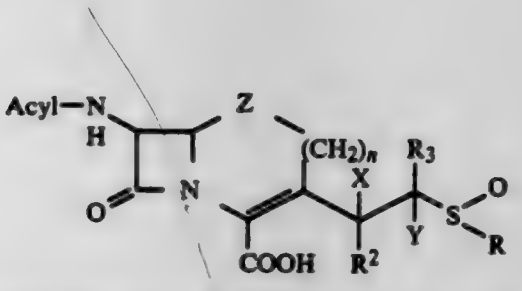
Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 66,603, Aug. 15, 1979, abandoned. This application May 7, 1980, Ser. No. 147,658

Int. Cl.³ C07D *501/36*

U.S. Cl. 424—246 **6 Claims**

1. A compound of structural formula



or a pharmaceutically acceptable salt thereof wherein: Acyl is thienylacetyl, phenylacetyl, phenoxyacetyl or mandeloyl;

Z is S, or S(o);

R is

(a) phenyl or phenyl substituted with:
- (1) nitro,
- (2) cyano,
- (3) C_{1-3}alkylsulfonyl,
- (4)C_{1-3}alkoxycarbonyl,
- (5) o-C_{1-3}alkyl,
- (6) o,o′-di(C_{1-3}alkyl), or
- (7) di(trifluoromethyl);

(b) trihalomethyl;

(c) 5–6 membered heteroaryl selected from:
- (1) thiazolyl,
- (2) imidazolyl,
- (3) pyridinyl,
- (4) pyrazinyl,
- (5) oxazolyl,
- (6) pyrimidinyl, and
- (7) thienyl; and n=1;

Y is hydrogen;

X is chloro, fluoro, bromo, iodo, C_{1-3}alkanoyloxy, toluenesulfonyloxy, benzenesulfonyloxy, C_{1-3}alkanesulfonyloxy, trifluoroacetoxy, p-nitrobenzoyloxy, or p-nitrophenoxy; or

X and Y taken together form a double bond;

R^2 is hydrogen, fluoro, chloro, C_{1-3}alkoxycarbonyl, cyano or trifluormethyl; and

R^3 is hydrogen or C_{1-3}alkyl.

4,342,759

ANTITHROMBOTIC METHOD

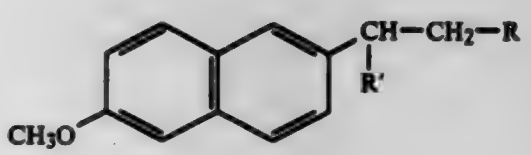
Thomas A. Purcell, Fontenay aux Roses; Braham Shroot, Sophia Antipolis, and Daniel Galtier, St Cyr L'Ecole, all of France, assignors to Synthelabo, Paris, France

Filed Aug. 19, 1980, Ser. No. 179,460

Int. Cl.³ A61K *31/54, 31/495*

U.S. Cl. 424—246 **2 Claims**

1. A method of treating or inhibiting thrombus formation or growth rate in a patient susceptible to thrombosis which comprises administering to a patient in need thereof an effective dosage to provide an antithrombotic effect of a compound having the formula



wherein

R′ is H or CH_3

R is a



radical in which Z is O, S, SO, SO_2 or NR_1, R_1 being H, C_6H_5, CH_3, $CONR_2R_3$, $COOR_2$, COR_2 or SO_2R_2, where R_2 and R_3 are, independently, H, C_{1-4} alkyl, C_6H_5 or CF_3.

2. A method of claim 1, wherein said compound (I) is 2-[2-(4-

isopropylaminocarbonylpiperazino)-1-methylethyl]-6methoxynaphthalene or its hydrochloride.

4,342,760
CEPHALOSPORIN ANALOGUES

Masashi Hashimoto, Nakayama; Keiji Hemmi, Kyoto; Matsuhiko Aratani, Osaka; Hidekazu Takeno, Higashimukikitamachi, and Daijiro Hagiwara, Moriguchi, all of Japan, assignors to Fujisawa Pharmaceutical Company, Ltd., Osaka, Japan

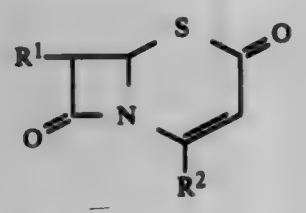
Division of Ser. No. 43,706, May 30, 1979, Pat. No. 4,264,597. This application Oct. 14, 1980, Ser. No. 196,830

Claims priority, application United Kingdom, Jun. 6, 1978, 26421/78

Int. Cl.³ C07D *501/20*

U.S. Cl. 424—246 **13 Claims**

1. Cephalosporin analogues of the formula



wherein R^1 is amino or amino substituted with a pharmaceutically acceptable carboxylic acyl protective group for the amino substituents in cephalosporin compounds or with benzyl, phenethyl or trityl, and

R^2 is carboxy or a pharmaceutically acceptable ester of said carboxy group employed in cephalosporin compounds, and pharmaceutically acceptable salts thereof.

4,342,761
PIPERIDINE DERIVATIVES

Terence J. Ward, Slough, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

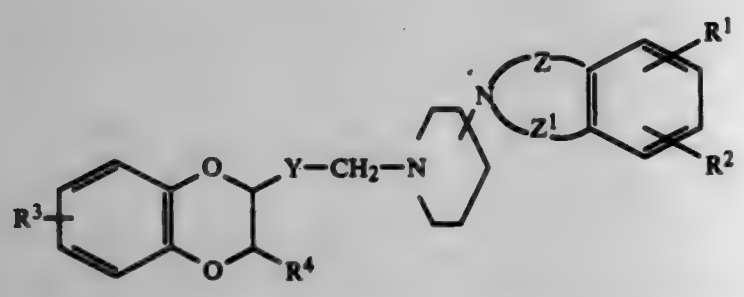
Filed Oct. 20, 1980, Ser. No. 198,414

Claims priority, application United Kingdom, Nov. 1, 1979, 7937811

Int. Cl.³ A61K *31/445*; C07D *419/14*

U.S. Cl. 424—246 **8 Claims**

1. A compound of the formula:



and acid addition and quaternary ammonium salts thereof, wherein Y represents —CHOH— or —CO—; Z and Z^1 represent, independently, —CO—, —SO_2— or —$COCH_2$—; R^1 and R^2 independently represent hydrogen, halogen, lower alkyl, lower alkoxy, nitro or trifluoromethyl; R^3 represents hydrogen, halogen, lower alkyl or lower alkoxy and R^4 represents lower alkyl or hydrogen.

8. A method of treating an animal afflicted with a disease or disorder requiring action on the cardiovascular system which comprises administering to said animal an effective amount of a compound as claimed in claim 1 or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

4,342,762
BASIC ETHERS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Zoltan Budai; Laszlo Magdanyi; Aranka Lay nee Konya; Tibor Mezei; Katalin Grasser; Lujza Petöcz, and Ibolya Kosoczky, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

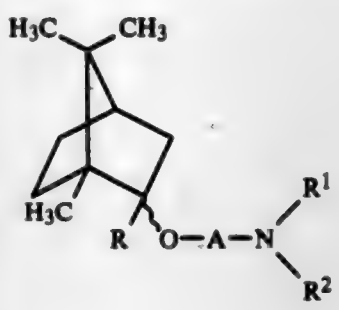
Filed Dec. 11, 1980, Ser. No. 215,154

Claims priority, application Hungary, Dec. 14, 1979, EE 2715

Int. Cl.³ A61K *31/54, 31/495, 31/445*; C07D *245/02*

U.S. Cl. 424—246 **8 Claims**

1. A basic ether of the formula (I) or a pharmaceutically acceptable acid addition salt or quaternary salt hereof



(I)

wherein

R^1 and R^2 are the same or different and each can represent a C_{1-5} alkyl group or a C_{3-6} cycloalkyl group or they form together with the adjacent nitrogen atom, a piperidino, pyrrolidino, morpholino, thiomorpholino, piperazino, N-C_{1-3} alkyl-piperazino, N-phenyl-piperazino or N-benzyl-piperazino group,

R is phenyl, phenyl-(C_{1-3} alkyl) or thienyl which can be substituted by one or more halogen or C_{1-3} alkoxy substituents,

A is C_{2-5} straight or branched alkylene chain, and ≃ represents a valence bond of α or β configuration.

7. A pharmaceutical composition possessing tranquilizing, analgesic, antiparkinsonism and antiepileptic effect, comprising an effective amount of a compound as defined in claim 1 or a pharmaceutically effective salt thereof, together with an appropriate inert, non-toxic solid or liquid pharmaceutical carrier.

4,342,763
P-CHLOROACETOPHENONE OXIME COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS

Jose Esteve Soler, Barcelona, Spain, assignor to Provesan S.A., Geneva, Switzerland

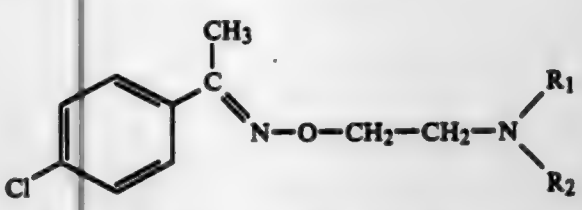
Filed Feb. 6, 1980, Ser. No. 119,104

Claims priority, application France, Feb. 13, 1979, 79 03617

Int. Cl.³ C07D *295/12*; A61K *31/445, 31/535*

U.S. Cl. 424—248.56 **10 Claims**

1. A compound of general formula I



(I)

wherein R_1 and R_2 in association with the nitrogen atom to which they are linked, form a pyrrolidino, piperidino or morpholino group, and the physiologically acceptable acid addition salts.

10. An analgesic, anti-inflammatory and anti-tussive pharmaceutical composition comprising a pharmaceutically acceptable carrier, and an effective amount of at least one compound of general formula I according to claim 1.

4,342,764

GUANIDINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND USE

Atso Ilvespää, Allschwil; Jörg Frei, Hölstein, and Ernst Schweizer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

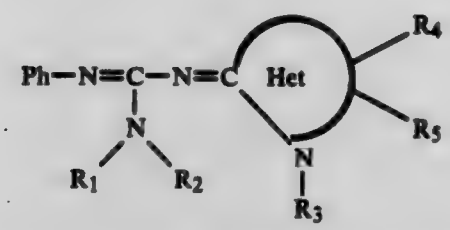
Filed May 19, 1980, Ser. No. 151,031

Claims priority, application Switzerland, May 29, 1979, 4995/79

Int. Cl.³ A61K *31/535, 31/42;* C07D *413/12, 261/04*

U.S. Cl. 424—248.56 13 Claims

1. Guanidine derivatives of the formula



(I)

in which R_1 is an aliphatic radical which is unsubstituted or substituted by hydroxyl, lower alkanoyloxy, lower alkoxy, lower alkenoxy, halo, carboxy or lower alkoxycarbonyl, or is a cycloaliphatic radical which is unsubstituted or substituted by lower alkyl, R_2 is hydrogen or an aliphatic hydrocarbon radical which is unsubstituted or substituted by hydroxyl, lower alkanoyloxy, lower alkoxy, lower alkenoxy, halo, carboxy or lower alkoxycarbonyl, or R_1 and R_2 taken together are a lower alkylene chain which is uninterrupted or interrupted by oxygen, sulfur or nitrogen, which is unsubstituted or substituted by lower alkyl or phenyl, R_3 is hydrogen or lower alkyl, R_4 is hydrogen, lower alkyl, lower alkoxy, lower alkylthio, lower alkylamino, di-lower alkylamino, halo, trifluoromethyl, or phenyl which is unsubstituted or substituted by one to three identical or different lower aliphatic hydrocarbon radicals, hydroxy, mercapto, lower alkoxy, lower alkenoxy, lower alkylenedioxy, lower alkylthio halo trifluoromethyl, nitro, amino, lower alkylamino, di-lower alkylamino, carboxy or lower alkoxycarbonyl, or is, on a carbon atom which has single bonds on both sides, oxo, R_5 is hydrogen or lower alkyl, Het is isoxazolidine, and Ph is phenyl which is unsubstituted or substituted by one to three identical or different lower aliphatic hydrocarbon radicals, hydroxy, mercapto, lower alkoxy, lower alkenoxy, lower alkylenedioxy, lower alkylthio, halo, trifluoromethyl, nitro, amino, lower alkylamino, di-lower alkylamino, carboxy or lower alkoxycarbonyl, and also their tautomeric compounds and salts.

11. A therapeutic composition for the treatment of hyperglycaemia comprising an effective amount of an hypoglycaemic active compound of formula I as claimed in claim 1 together with a pharmaceutically acceptable excipient.

4,342,765

GUANIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Derrick F. Jones, Macclesfield, and Keith Oldham, Cheadle, both of England, assignors to Imperial Chemical Industries Limited, London, England

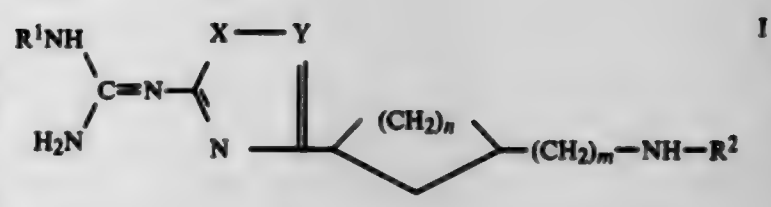
Filed Jan. 16, 1980, Ser. No. 112,608

Claims priority, application United Kingdom, Jan. 18, 1979, 7901872

Int. Cl.³ C07D *277/20, 263/30*

U.S. Cl. 424—249 10 Claims

1. A guanidine derivative of the formula:



I

in which X is oxygen or sulphur;

Y is nitrogen or a CH radical;

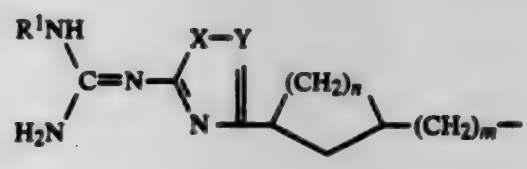
n is 1, 2, 3 or 4;

m is 0 or 1;

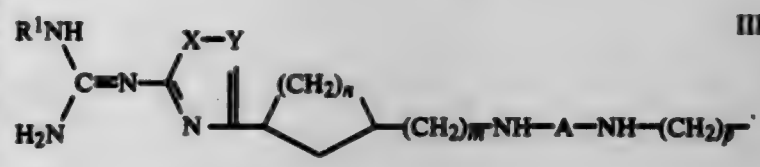
R^1 is hydrogen, alkyl of 1–6 carbons or alkoxyalkyl of 3 to 10 carbons in which the oxygen is separated from the nitrogen of the guanidine by at least two carbons;

$-R^2$ is a radical of the formula —A—B in which A is 3,4-dioxocyclobuten-1,2-dyl or C=Z in which Z is oxygen, sulphur or NCN, NNO_2, $CHNO_2$, $NCONH_2$, $C(CN)_2$, $NCOR^3$, NCO_2R^3, NSO_2R^3 or NR^4 in which R^3 is alkyl of 1 to 6 carbons, phenyl or pyridyl and R^4 is hydrogen or alkyl of 1 to 6 carbons;

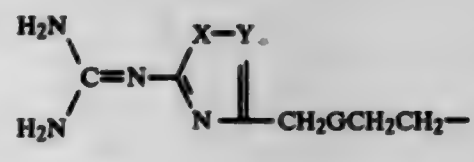
B is alkyl, alkoxy or alkylthio of 1 to 6 carbons or NHR^5 in which R^5 is hydrogen or alkyl of 1 to 6 carbons, alkenyl or alkynyl of 3 to 10 carbons in which the double or triple bond is separated from the nitrogen of NHR^5 by at least one carbon, cycloalkyl of 3 to 6 carbons, (primary hydroxy)alkyl or (primary amino)alkyl of 2 to 6 carbons, haloalkyl of 1 to 6 carbons, alkoxyalkyl of 3 to 6 carbons in which the oxygen is separated from the nitrogen of NHR^5 by at least two carbons, phenylalkyl or pyridyl-3-methyl, or R^5 is benzoylaminoalkyl or benzenesulphonylaminoalkyl in which the alkyl part is of 2 to 6 carbons and the benzene ring carries an optional chlorine, or a radical of the formula:



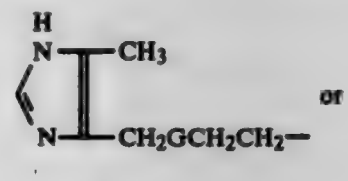
II



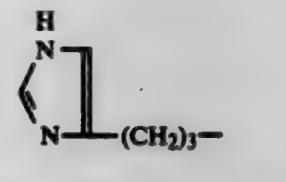
III



IV

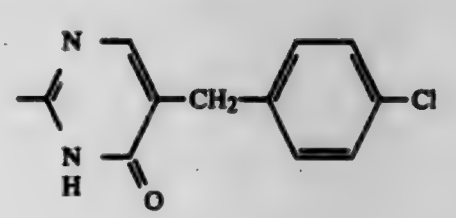


V



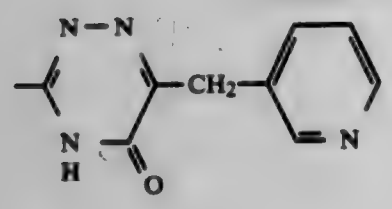
VI

in which X, Y, n, m and R^1 have the meanings given above, p is 2 to 12 and G is sulphur or methylene; or $-R^2$ is:

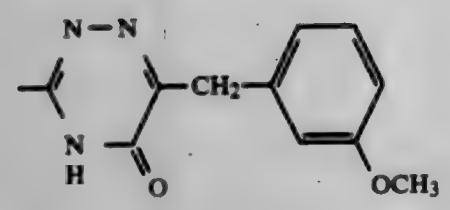


VII

-continued



or



and the pharmaceutically-acceptable acid-addition salts thereof.

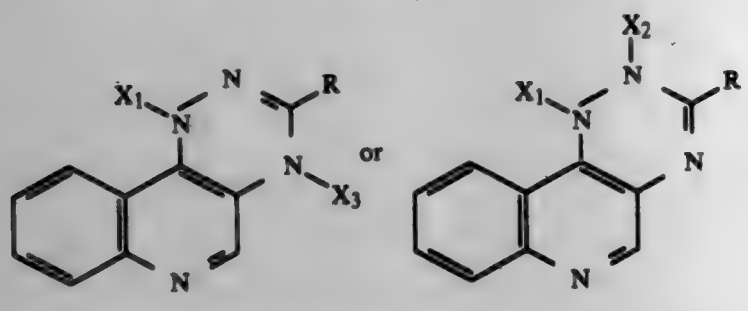
4,342,766

NOVEL DIHYDRO-AS-TRIAZINO[5,6-c]QUINOLINE DERIVATIVES AND A PROCESS FOR THE PREPARATION THEREOF

Edit Berényi neé Poldermann; Péter Görög; Katalin Grasser; Ibolya Koséczky; Ágnes Korács neé Palotay, and Lujza Petöcz, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Apr. 16, 1981, Ser. No. 254,763
Claims priority, application Hungary, Apr. 18, 1980, 939
Int. Cl.³ C07D *471/04;* A61K *31/395*
U.S. Cl. 424—249 13 Claims

1. A compound of the formula



or a pharmaceutically effective salt thereof, wherein R is C_{1-12} alkyl; or is phenyl or phenyl-C_1–C_4 alkyl wherein the phenyl can be substituted with 1 to 3 C_{1-4} alkyl or C_{1-4} alkoxy substituents; X_1 is hydrogen, C_{1-6} alkanoyl or C_{1-6} haloalkanoyl; X_2 and X_3 are hydrogen or C_{1-6} alkanoyl; and when X_1 is hydrogen, X_2 and X_3 are not simultaneously hydrogen.

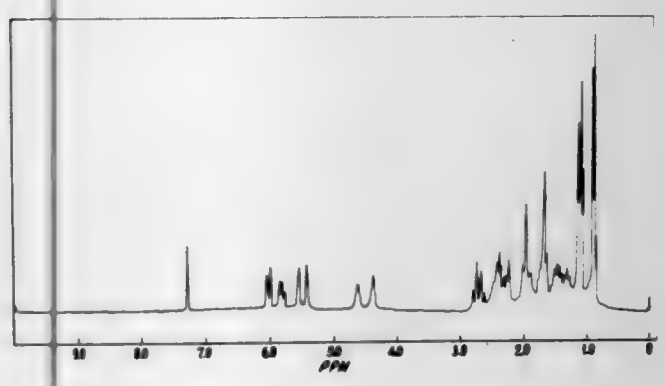
9. An antiphlogistic, analgesic, anticonvulsive or tranquillizing method of treatment which comprises administering to a patient susceptible to such treatment an effective amount of a compound as defined in claim 1.

4,342,767

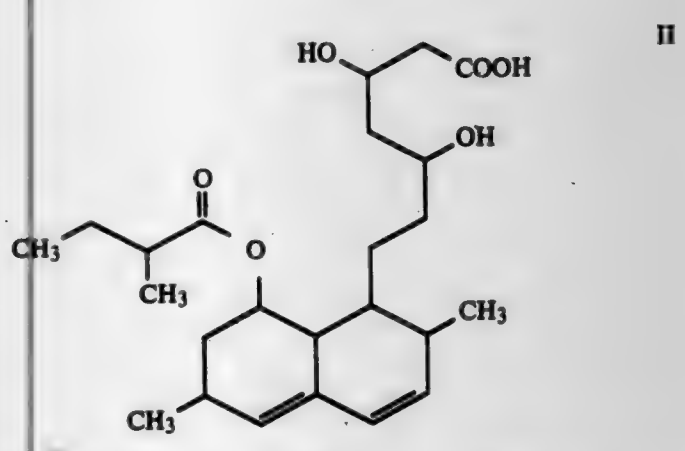
HYPOCHOLESTEREMIC FERMENTATION PRODUCTS

George Albers-Schonberg, Princeton; Richard L. Monaghan, Somerset; Alfred W. Alberts, Short Hills, and Carl H. Hoffman, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 114,459, Jan. 23, 1980, abandoned, which is a continuation-in-part of Ser. No. 48,946, Jun. 15, 1979, Pat. No. 4,231,938. This application Jun. 16, 1980, Ser. No. 159,983
Int. Cl.³ A61K *31/22;* C07C *69/74*
U.S. Cl. 424—250 12 Claims



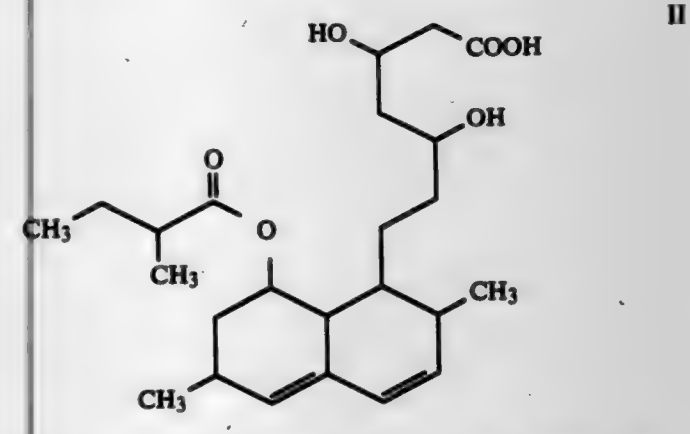
1. The compound:



II

or a pharmaceutically acceptable salt or a lower alkyl ester or a substituted lower alkyl ester wherein the substituent is phenyl, dimethylamino, or acetylamino.

7. An antihypercholesteremic pharmaceutical composition comprising a pharmaceutical carrier and an effective amount of the compound:



II

or a pharmaceutically acceptable salt or a lower alkyl ester or a substituted lower alkyl ester wherein the substituent is phenyl, dimethylamino, or acetylamino.

4,342,768

BIS-ESTERS OF 1,1-ALKANEDIOLS WITH 6-BETA-HYDROXYMETHYLPENICILLANIC ACID 1,1-DIOXIDE AND BETA-LACTAM ANTIBIOTICS

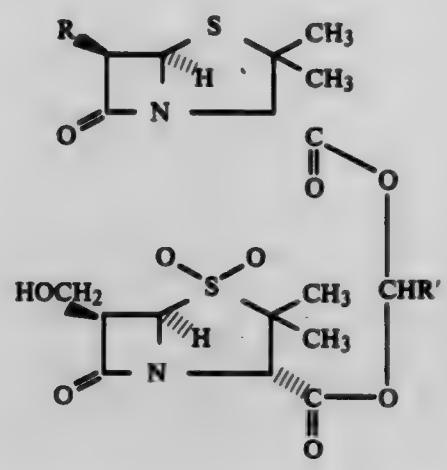
Michael S. Kellogg, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 86,864, Oct. 22, 1979, Pat. No. 4,287,181. This application Mar. 23, 1981, Ser. No. 246,505

Int. Cl.³ A61K *31/495;* C07D *499/74, 499/76*

U.S. Cl. 424—250 12 Claims

1. A compound of the formula



and the pharmaceutically-acceptable salts thereof, wherein R is 2-phenylacetamido, 2-phenoxyacetamido, D-2-amino-2-phenylacetamido, D-2-amino-2-(4-hydroxyphenyl)-acetamido, 2-carboxy-2-phenylacetamido, 2-carboxy-2-(2-thienyl-) acetamido, 2-carboxy-2-(3-thienyl)acetamido, D-2-(4-ethyl-2,3-dioxopiperazinocarbonylamino)-2-phenylacetamido or 2,2-dimethyl-4-phenyl-5-imidazolidinon-1-yl; and R′ is hydrogen or methyl.

11. A pharmaceutical composition suitable for treating a bacterial infection in a mammalian subject which comprises an antibiotically effective unit dosage amount of a compound of claim 1 and a pharmaceutically-acceptable carrier.

4,342,769

2-[(METHYLSULFINYL)ACETYL]-3-HETEROCYCLICINDOLES AND DERIVATIVES THEREOF AS IMMUNOSUPPRESSANTS

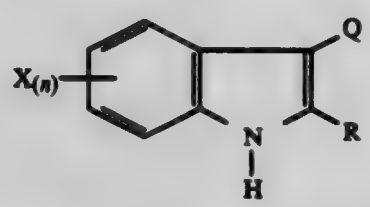
Martin Steinman, Livingston, and Pirouz Tahbaz, Cedar Grove, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 947,979, Oct. 2, 1978, Pat. No. 4,225,711. This application Apr. 25, 1980, Ser. No. 143,700

Int. Cl.³ A61K *31/50;* C07D *403/04*

U.S. Cl. 424—251 24 Claims

1. An pharmaceutical composition therapeutically useful in immunosuppression and arthritis comprising a therapeutically effective amount of a compound of the formula



wherein X is halogeno, n is an integer of zero to three, R is methylsulfinylacetyl, methylsulfonylacetyl, methylthiohydroxyacetyl, methylthioalkoxyacetyl wherein the alkoxy group has one to six carbon atoms, methylsulfinylhydroxyethyl or methylsulfonylhydroxyethyl and Q is selected from the group consisting of pyridyl, oxazolyl, isoxazolyl, pyrimidinyl, pyridazinyl, pyrazinyl, pyrazolyl, imidazolyl, thiazolyl, isothiazolyl, thienyl, furanyl and pyrrolyl, together with a pharmaceutically acceptable carrier.

4,342,770

OPTICALLY ACTIVE ISOMERS OF SUBSTITUTED PYRIDINE METHYL ESTERS OF CYCLOPROPANE CARBOXYLIC ACID AND THEIR USE AS INSECTICIDES

David P. Clifford, and Robert A. Sewell, both of King's Lynn, England, assignors to Dow Chemical Company Limited, Norfolk, England

Filed Jun. 20, 1980, Ser. No. 161,532

Int. Cl.³ C07D *213/70, 213/64;* A61K *31/44*

U.S. Cl. 424—263 9 Claims

7. A method for the kill and control of insects which comprises contacting said insects or their habitat with a composition comprising an inert carrier in intimate admixture with an insecticidally effective amount of an optically active dextrorotatory (d) form of an isomer of the compound 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropane carboxylic acid:cyano(6-phenoxy-2-pyridinyl)methyl ester.

4,342,771

HYPOGLYCEMIC 5-SUBSTITUTED OXAZOLIDINE-2,4-DIONES

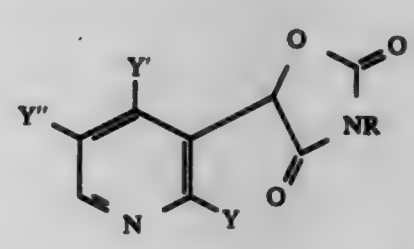
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 222,202, Jan. 2, 1981, which is a continuation-in-part of Ser. No. 173,206, Jul. 28, 1980, abandoned. This application Apr. 23, 1981, Ser. No. 252,962

Int. Cl.³ C07D *413/04;* A61K *31/44*

U.S. Cl. 424—263 21 Claims

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein

R is hydrogen, (C_1–C_4)-alkanoyl, benzoyl, (C_2–C_4)-carbalkoxy, (C_1–C_3)-alkylcarbamoyl, (C_5–C_7)-cycloalkylcarbamoyl or di(C_1–C_3)-alkylcarbamoyl;

Y is hydrogen or (C_1–C_3)alkoxy,

Y′ is hydrogen or (C_1–C_3)alkyl; and

Y″ is hydrogen or halo.

8. A method of lowering the blood glucose in a hyperglycemic mammal which comprises administering to a mammal in need of such treatment a blood glucose lowering amount of a compound of claim 1.

4,342,772

β-LACTAM COMPOUNDS, ANTIBACTERIAL COMPOSITIONS THEREOF AND METHOD OF USE

Wagn O. Godtfredsen, Vaerlose, and Welf von Daehne, Rungsted Kyst, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

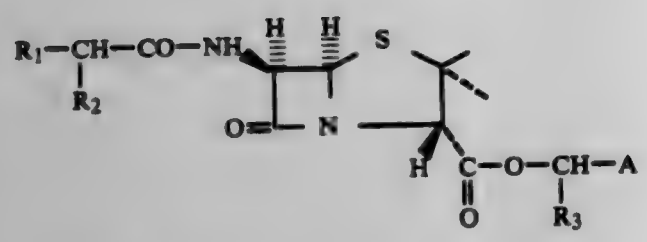
Continuation-in-part of Ser. No. 118,063, Jan. 24, 1980. This application Dec. 4, 1980, Ser. No. 213,083

Claims priority, application United Kingdom, Feb. 13, 1979, 7905020; Jun. 19, 1979, 7921341; Aug. 9, 1979, 7927761; Nov. 14, 1979, 7939473

Int. Cl.³ A61K *31/43;* C07D *499/68, 499/70*

U.S. Cl. 424—271 20 Claims

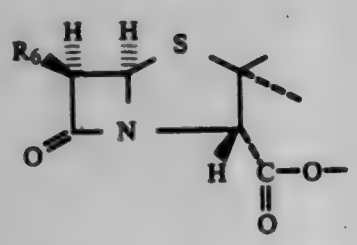
1. A compound of the formula I:



I

in which R_1 stands for a phenyl, 4-hydroxyphenyl, 1,4-cyclohexadienyl or a 3-thienyl group; R_2 represents a primary amino or a carboxy group; R_3 is a hydrogen atom, or a lower alkyl, aryl or aralkyl radical, and A stands for a radical of a β-lactamase inhibitor containing a β-lactam ring as well as a carboxy group, A being connected via the carboxy group, and salts of the compound of formula I with pharmaceutically acceptable, non-toxic acids or bases, said A substituent being a radical selected from group consisting of:

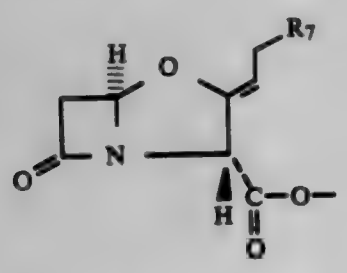
(a) a radical of the formula III:



III

in which R_6 stands for a halogen atom; and

(b) a radical of the formula IV:



IV

in which R_7 stands for a hydroxy group, or one of the radicals of known clavulanic acid derivatives with β-lactamase inhibitory activity.

14. An antibacterial pharmaceutical composition in dosage unit form for external parenteral or topical treatment of patients suffering from infectious diseases, which comprises as an active ingredient 0.025 g to 2.5 g of a compound as claimed in claim 1 together with an atoxic pharmaceutically acceptable carrier.

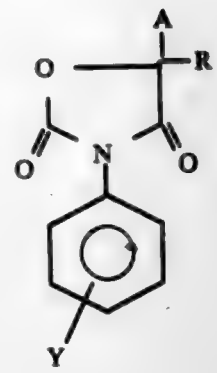
4,342,773

N-ARYL-1,3-OXAZOLIDINE-2,4-DIONES EXERTING A FUNGICIDAL, SYSTEMIC ACTION IN THE FIELD

Vincenzo Di Toro, Como; Franco Gozzo, S. Donato Milanese; Mirella Cecere, Milan; Simone Lorusso, San Giuliano Milanese, and Carlo Garavaglia, Cuggiono, all of Italy, assignors to Montedison S.p.A., Italy

Continuation-in-part of Ser. No. 13,404, Feb. 21, 1979, abandoned. This application Feb. 26, 1980, Ser. No. 124,733
Claims priority, application Italy, Feb. 24, 1978, 20579 A/78
Int. Cl.[3] A01N *43/76;* C07D *263/04*
U.S. Cl. 424—272 14 Claims

1. An antifungal N-aryl-1,3-oxazolidine-2,4-dione, having systemic activity and improved usefulness in the field, of the formula:



wherein:

R=C_1–C_5 alkyl; C_1–C_5-haloalkyl;

Y=H; halogen; 3,4-dichloro; 3,5-dichloro; 3,5-difluoro; 3,5-dimethyl; 3,5-dimethoxy; 3,5-bis-trifluoromethyl; and

A=



wherein R is as defined previously.

2. A method of fighting infestations due to fungi in useful plants, consisting essentially of treating said useful plants with a compound of claim 1, present in a solution containing said compound functioning as the active ingredient and present in an amount of at least 0.1% o.

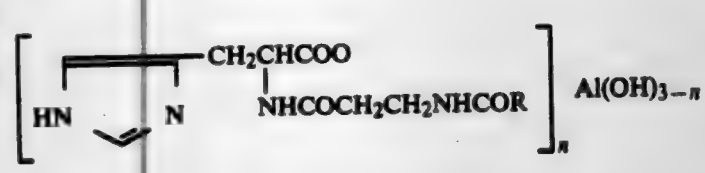
4,342,774

N-ACYLCARNOSINE ALUMINUM SALT, ITS PREPARATION, AND A DIGESTIVE ULCER REMEDY CONTAINING SUCH SALT

Susumu Okabe, Kyoto; Takashi Sonehara, Mitaka; Masaru Sato, Koshigaya, and Mitsuo Mazaki, Chiba, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,774
Claims priority, application Japan, Sep. 13, 1979, 54-116717
Int. Cl.[3] A61K *33/06;* C07D *233/64*
U.S. Cl. 424—273 R 15 Claims

1. An N-acylcarnosine aluminum salt of the formula (I),



(I)

where in R represents a lower alkyl group having 1 to 6 carbon atoms, a phenyl group or a lower alkoxy group-substituted phenyl group, and n represents an integer of 1 to 3.

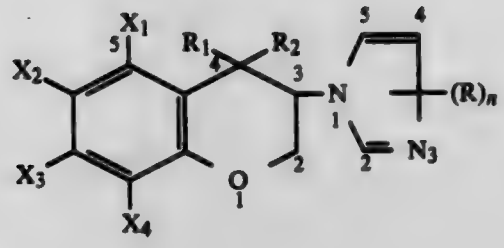
4,342,775

3-(1-IMIDAZOLYL)-DERIVATIVES OF 2,3-DIHYDRO-4H-1-BENZOPYRAN

Paolo Cozzi; Nicola Mongelli; Antonio Pillan, all of Milan; Maria Bergamaschi, Fiorenzuola d'Arda, and Pier P. Lovisolo, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

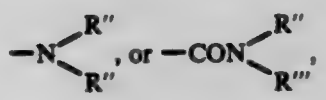
Filed Feb. 12, 1981, Ser. No. 233,961
Claims priority, application United Kingdom, Mar. 4, 1980, 8007336; Jan. 29, 1981, 8102741
Int. Cl.[3] C07D *405/04;* A61K *31/33, 31/415*
U.S. Cl. 424—273 R 76 Claims

1. Compounds having the general formula (I)



(I)

wherein
R is C_1–C_6 alkyl;
n is 0, 1, 2 or 3
one of R_1 and R_2 is hydroxy and the other is hydrogen or C_1–C_6 alkyl, or R_1 and R_2, taken together, form an oxo group;
each of X_1, X_2, X_3 and X_4, which may be the same or different, is hydrogen; halogen; hydroxy; -NO_2; —CN; C_1–C_6 alkyl; C_1–C_6 alkoxy; trihalo-C_1–C_6 alkyl; -SR′ or -COOR′, R′ being hydrogen or C_1–C_6 alkyl;



each of R″ and R‴, which may be the same or different, being hydrogen or C_1–C_6 alkyl; or one of X_1, X_2, X_3 and X_4 is phenyl, phenylthio, phenoxy or benzyl, the phenyl, phenylthio, phenoxy and benzyl groups being unsubstituted or substituted by halogen, C_1–C_6 alkyl, C_{1-6} alkoxy, or -SR′, wherein R′ is as defined above, and the others are as defined above; or any two adjacent X_1, X_2, X_3 and X_4 groups, taken together, complete a saturated or unsaturated 6-membered carbocyclic ring fused to the benzene ring shown in formula (I), the carbocyclic ring being unsubstituted or substituted by one or more groups selected from halogen, C_1–C_6 alkyl, C_{1-6} haloalkyl, C_1–C_6 alkoxy or —SR′, wherein R′ is as defined above, and any groups X_1 to X_4 not participating in the completion of such a fused ring are as defined above, or a pharmaceutically acceptable salt thereof.

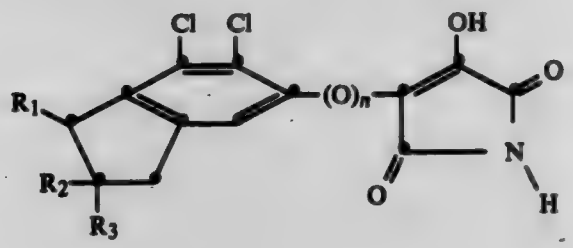
4,342,776

4-SUBSTITUTED-3-HYDROXY-3-PYRROLINE-2,5-DIONE INHIBITORS OF GLYCOLIC ACID OXIDASE

Edward J. Cragoe, Jr., Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Haydn W. R. Williams, Dollard des Ormeaux, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 5, 1979, Ser. No. 91,294
Int. Cl.³ A61K *31/40*; C07D *207/416*
U.S. Cl. 424—274 **11 Claims**

1. The compounds having the structure:



wherein
n is 0 or 1;
R_1 is —OH or =O;
R_2 is loweralkyl containing 1 to 3 carbons;
R_3 is loweralkyl containing 1 to 3 carbons cycloloweralkyl containing 4 to 6 carbons, with the proviso that when n is 1, R_1 is not=O or pharmaceutically acceptable salts thereof.

9. A method of treating persons afflicted with calcium oxalate kidney or bladder stones or preventing the formation of calcium oxalate kidney or bladder stones which comprises administering to such a patient an effective amount of a compound of claim 1.

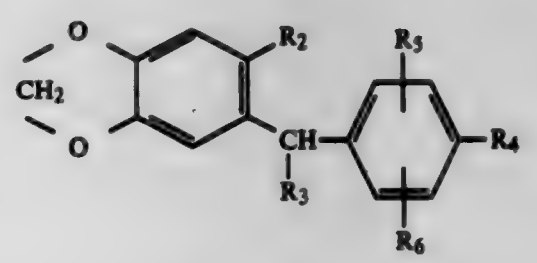
4,342,777

POLYBUTYLBENZYLPHENOLS AND BENZYL-3,4-METHYLENEDIOXYBENZENES IN INSECT POPULATION CONTROL

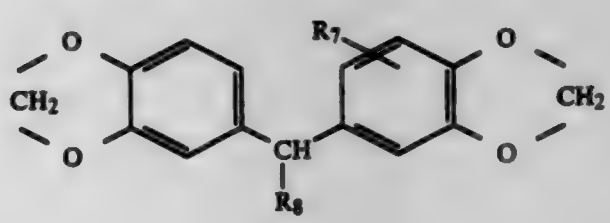
Leonard Jurd, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 25,132, Mar. 29, 1979. This application Nov. 5, 1981, Ser. No. 318,531
Int. Cl.³ A01N *43/16*
U.S. Cl. 424—282 **6 Claims**

1. A method of inhibiting growth of mosquito larvae, which comprises
administering to said larvae an effective growth-inhibiting amount of a compound selected from the group consisting of (a) compounds of the structure



wherein R_2 is hydrogen, lower alkyl containing from 1 to 6 carbon atoms, lower alkoxy containing from 1 to 6 carbon atoms, or lower alkenyl containing from 2 to 6 carbon atoms,
R_3 is hydrogen or lower alkyl containing from 1 to 6 carbon atoms,
R_4, R_5, and R_6 are independently hydrogen, lower alkyl containing from 1 to 6 carbon atoms, and lower alkoxy containing from 1 to 6 carbon atoms, and
wherein, if R_2 is hydrogen, then R_5 and R_6 must be independently lower alkyl containing from 1 to 6 carbon atoms or lower alkoxy containing from 1 to 6 carbon atoms, and
wherein, if R_4, R_5, and R_6 are hydrogen and R_3 is methyl, then R_2 must be alkoxy containing from 2 to 5 carbon atoms, and
(b) compounds of the structure



wherein R_7 is lower alkyl containing 1 to 6 carbon atoms or lower alkoxy containing from 2 to 6 carbon atoms or lower alkenyl containing from 2 to 6 carbon atoms and
R_8 is hydrogen or lower alkyl containing from 1 to 6 carbon atoms.

4,342,778

INSECTICIDAL (2,3-DIHYDRO-2,2-DIMETHYLBENZOFURAN-7-YLOXY-N-METHYLCARBAMOYL)-(N'-ALKOXYCARBAMOYL)-SULPHIDES

Jozef Drabek, Oberwil, Switzerland, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

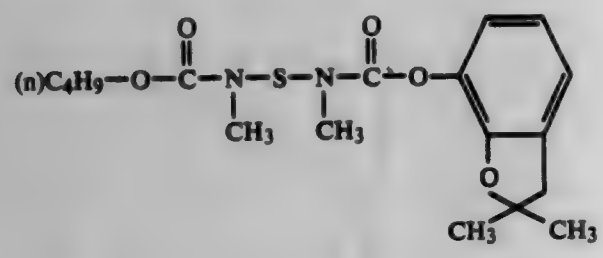
Continuation of Ser. No. 958,302, Nov. 6, 1978, abandoned, which is a continuation of Ser. No. 887,271, Mar. 16, 1978, abandoned. This application May 1, 1979, Ser. No. 35,048

Claims priority, application Switzerland, Mar. 25, 1977, 3808/77; Jan. 31, 1978, 1039/78

Int. Cl.[3] A01N *47/10;* C07D *307/86*

U.S. Cl. 424—285 3 Claims

1. The compound of the formula



3. A method of controlling insects at a locus which method comprises applying to said locus an insecticidally effective amount of the compound of claim 1.

4,342,779

7-ACETYLSPIROBENZOFURANONE COMPOUND

Hirosada Sugihara, Osaka; Masazumi Watanabe; Mitsuru Kawada, both of Hyogo, and Isuke Imada, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 115,548, Jan. 25, 1980, Pat. No. 4,284,644, which is a continuation-in-part of Ser. No. 968,520, Dec. 11, 1978, abandoned. This application Apr. 17, 1981, Ser. No. 257,316

Claims priority, application Japan, Dec. 27, 1977, 52-159177; Jun. 19, 1978, 53-74700; Nov. 6, 1978, 53-136967; May 4, 1979, 54-55082; Jun. 25, 1979, 54-80551; Greece, Apr. 23, 1980, 61757; Japan, Mar. 30, 1981, 56-48286

The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.

Int. Cl.[3] A61K *31/34;* C07D *307/94*

U.S. Cl. 424—285 3 Claims

1. 7-Acetylspiro[benzo[b]furan-2(3H), 1'-cyclopropane]-3-one.

3. A method of managing peptic ulcer in a patient which comprises administering to said patient 7-acetylspiro[benzo[b-]furan-2(3H), 1'-cyclopropane]-3-one, said compound being administered in an amount effective to manage peptic ulcer in said patient.

4,342,780

METHOD OF DEPLETING ENDOGENOUS MONOAMINES

Philippe Bey, Strasbourg, and Michel Jung, Illkirch-Graffenstaden, both of France, assignors to Merrell-Toraude et Cie, Strasbourg, France

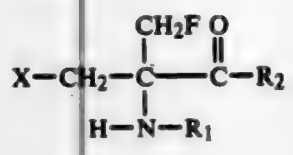
Continuation-in-part of Ser. No. 91,463, Nov. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 58,475, Jul. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 33,719, Apr. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 814,243, Jul. 8, 1977, abandoned. This application Feb. 17, 1981, Ser. No. 235,275

Int. Cl.[3] A61K *31/195*

U.S. Cl. 424—319 19 Claims

1. A method for selectively depleting endogenous central nervous system monoamines useful for controlling certain neuropsychiatric disorders in mammals in need thereof, said disorders consisting of schizophrenia, mania, tardive dyskinesia, anxiety, or depression, which comprises administering to said mammals:

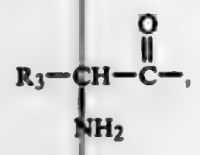
(a) from 0.25 mg/kg to 100 mg/kg of a compound of the formula:



I

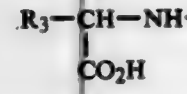
wherein:

R_1 is hydrogen, (C_1-C_4alkyl)carbonyl, or



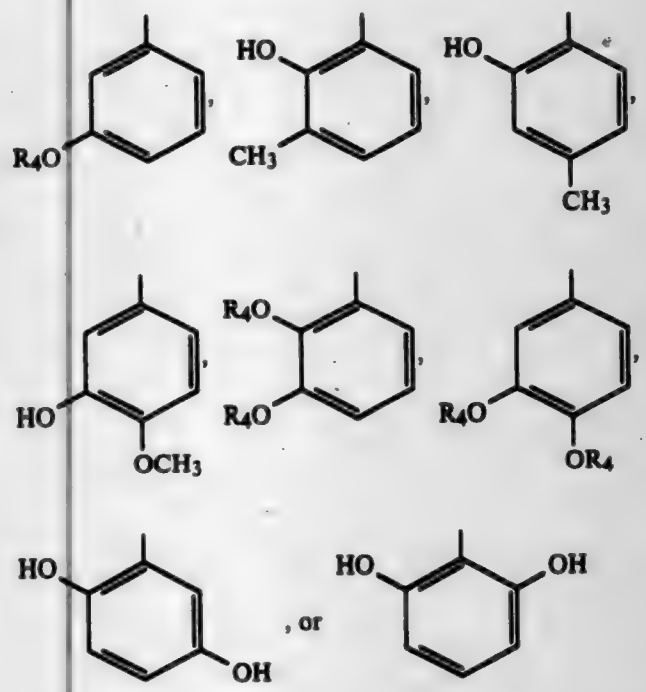
wherein R_3 is hydrogen, C_1-C_8alkyl, benzyl, or 4-hydroxybenzyl;

R_2 is hydroxy, C_1-C_8 alkoxy, amino, (C_1-C_4alkyl)amino, di(C_1-C_4alkyl)amino, or



wherein R_3 is hydrogen, C_1-C_8alkyl, benzyl, or 4-hydroxybenzyl;

X is a substituted phenyl group of the formula:



wherein R_4, as defined by X, is hydrogen, (C_1-C_4alkyl)-carbonyl, benzoyl, or phenyl(C_1-C_6alkylene)carbonyl; and the pharmaceutically acceptable salts thereof; and the individual optical isomers thereof; with

(b) from 0.01 mg/kg to 100 mg/kg to dopamine.

4,342,781

DIPHENYLPROPENAMIDES AS SRS-A ANTAGONISTS

Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

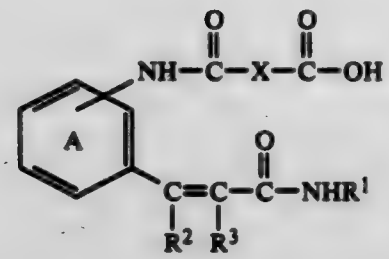
Filed May 29, 1981, Ser. No. 268,439

The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.

Int. Cl.[3] A61K *31/24;* C07C *101/453*

U.S. Cl. 424—319 17 Claims

1. A diphenylpropenamide compound of the formula



and the pharmaceutically-acceptable salts thereof;

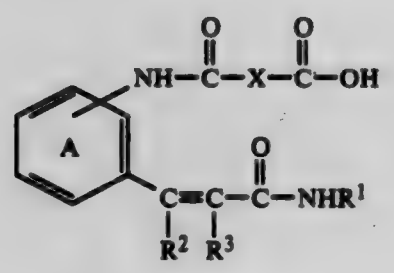
wherein R^1 is selected from the group consisting of alkyl having from 8 to 15 carbons and cycloalkyl having from 6 to 12 carbons;

X is selected from the group consisting of cis-vinylene, ethylene and propylene;

and R^2 and R^3 are each selected from the group consisting of hydrogen and phenyl;

with the proviso that R^2 and R^3 must always be different.

16. A method of antagonizing the effect of slow-reacting substance of anaphylaxis in a human subject, which comprises administering to said human subject a slow-reacting substance of anaphylaxis antagonizing amount of a diphenylpropenamide compound of the formula



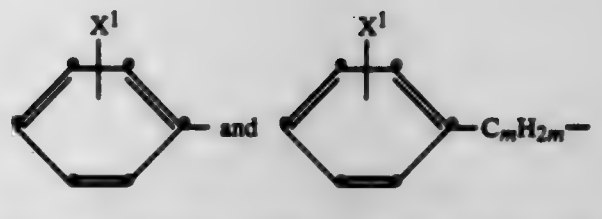
or a pharmaceutically acceptable salt thereof;

wherein R^1 is selected from the group consisting of alkyl having from 8 to 15 carbons and cycloalkyl having from 6 to 12 carbons;

X is selected from the group consisting of cis-vinylene, ethylene and propylene;

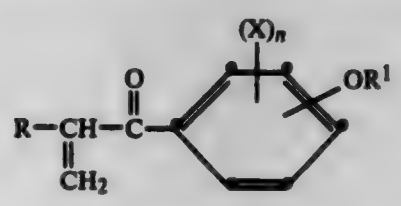
and R^2 and R^3 are each selected from the group consisting of hydrogen and phenyl;

with the proviso that R^2 and R^3 must always be different.

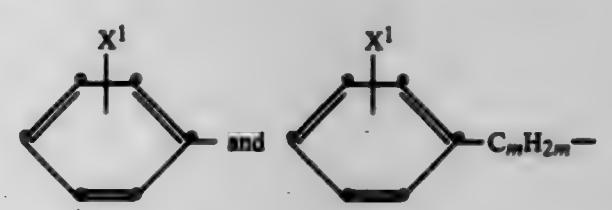


in which X^1 is hydrogen, halogen or lower alkyl and m is an integer from 1 to 5; X is hydrogen, lower alkyl, halogen or when taken together two X radicals on adjacent carbon atoms of the benzene ring to which they are attached may be joined to form the 1,3-butadienylene linkage; n is an integer from 1 to 4; and R^1 is diloweralkylaminoloweralkyl, and their pharmaceutically acceptable acid addition salts.

11. A method of treating patients having allergic conditions which consists of administering to such patient a pharmaceutically acceptable dose of a compound of the formula:



wherein R is lower alkyl, trihalomethyl substituted lower alkyl, cycloalkyl containing from 3 to 6 carbon atoms or the radicals



in which X^1 is hydrogen, halogen or lower alkyl and m is an integer from 1 to 5; X is hydrogen, lower alkyl, halogen or when taken together two X radicals on adjacent carbon atoms of the benzene ring to which they are attached may be joined to form the 1,3-butadienylene linkage; n is an integer from 1 to 4; and R^1 is diloweralkylaminoloweralkyl, and their pharmaceutically acceptable acid addition salts.

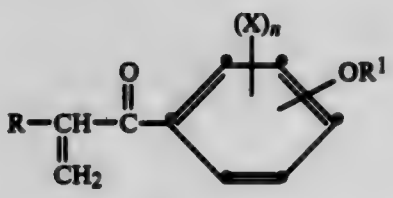
4,342,782

1-(SUBSTITUTED-AMINOALKOXYPHENYL)-2-METHYLENE-1-ALKANONES, COMPOSITIONS AND USE THEREOF

Edward J. Cragoe, Jr., Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 16, 1978, Ser. No. 961,422
Int. Cl.³ A61K *31/135*; C07C *97/10*
U.S. Cl. 424—330 14 Claims

1. A compound of the general formula:



wherein R is lower alkyl, trihalomethyl substituted lower alkyl, cycloalkyl containing from 3 to 6 carbon atoms or the radicals

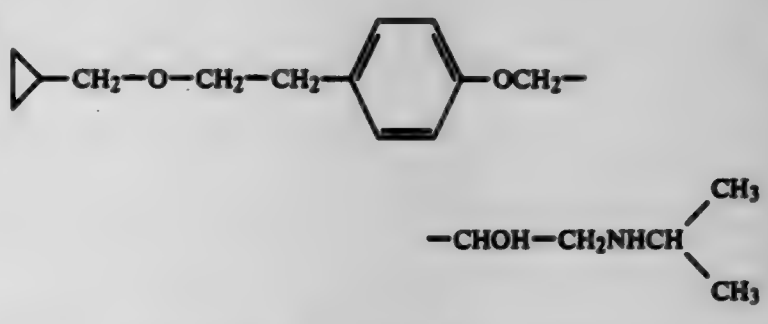
4,342,783

ANTI-GLAUCOMA AGENT

Paolo L. Morselli, Meudon Bellevue, France; Louis De Santis, Jr., and Robert Adamski, both of Fort Worth, Tex., assignors to Synthelabo, Paris, France

Filed Jun. 30, 1980, Ser. No. 164,223
Int. Cl.³ A61K *31/135*
U.S. Cl. 424—330 3 Claims

1. A method of treating glaucoma in a patient which comprises administering topically to the eye of said patient a compound of the formula:



or a pharmaceutically acceptable salt thereof in the form of a racemate or optical isomer thereof in an amount effective to treat glaucoma by reducing interocular pressure.

4,342,784

CHEMICAL COMPOSITIONS AND METHOD OF UTILIZATION

Ruth N. Havemeyer, Palo Alto, Calif., and Gilman N. Cyr, Piscataway, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 783,120, Dec. 11, 1968, abandoned, which is a continuation-in-part of Ser. No. 401,963, Oct. 6, 1964, abandoned. This application Jun. 12, 1972, Ser. No. 261,844

Int. Cl.[3] A61K *31/10, 31/60, 31/58, 31/74*

U.S. Cl. 424—337 3 Claims

1. A method of administering liquid dimethylsulfoxide cutaneously and topically to humans and animals in amounts effective for therapeutic action without having the dimethylsulfoxide run off the skin and without causing significant irritation of the skin, said method comprising

(a) applying to the surface of the skin at and surrounding the site of the disorder being treated an ionicly sensitive, semi-solid gel consisting essentially of

(i) a mixture of dimethylsulfoxide and water wherein the dimethylsulfoxide is present in a concentration of about 99.8% to about 10% by weight in the gel composition,

(ii) carboxy polymethylene water-soluble resin in an amount from about 0.2% to about 20.0% by weight of the gel composition and,

(iii) a neutralizing agent selected from the group consisting of triethanolamine, N-methylglucamine, sodium hydroxide, triethylamine, or monoethanolamine; and

(b) maintaining said semi-solid gel in contact with said skin for a period sufficient to enable the salt normally present at the surface of the skin to gradually break the semi-solid gel composition and thereby slowly release the liquid mixture of dimethylsulfoxide and water over the surface of the skin where the semi-solid gel was applied.

4,342,785

PROCESS FOR MATURING LEAVEN

Johann Zwingl, Vienna, and Heinrich Heckmann, Baden, both of Austria, assignors to Vereinigte Nahrungsmittel-industrie Aktiengesellschaft, Vienna, Austria

Filed Mar. 17, 1980, Ser. No. 130,966

Claims priority, application Austria, Mar. 22, 1979, 2143/79

Int. Cl.[3] A21D *8/00*

U.S. Cl. 426—19 14 Claims

1. A staged process for maturing leaven for bread-making comprising in a first stage the steps of pressurizing immature leaven, introducing the pressurized leaven in the form of a dough strand into an elongated, essentially closed, tubular cavity, completely filling the cavity with the leaven, fermenting the leaven in the tubular cavity, cooling the matured leaven during its passage through the cavity as the matured leaven passes at least one portion of the cavity length, and in a second stage comprising the step of further fermenting the matured leaven.

4,342,786

METHOD FOR FERMENTING VEGETABLES

Moshe Raccach, Tempe, Ariz., assignor to Microlife Technics, Inc., Sarasota, Fla.

Continuation-in-part of Ser. No. 114,760, Jan. 24, 1980, Pat. No. 4,303,679. This application May 29, 1981, Ser. No. 268,356

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.[3] A23B *7/10*; A23L *1/218*

U.S. Cl. 426—52 16 Claims

1. In the method for fermenting vegetables by the addition of a lactic acid producing bacterium to an acidic brine solution having an initial pH of less than about 4.8 to ferment carbohydrate in the solution the improvement which comprises:

providing an effective concentration of a food grade metal salt stimulated *Pediococcus pentosaceus* in the brine which can effectively and rapidly remove carbohydrate in the brine at a temperature of less than about 25° C. wherein the *Pediococcus pentosaceus* are provided in the brine as a concentrate containing at least about 1×10^7 cells per ml of concentrate.

4,342,787

DESSERT PREPARATION

Paul Rebandieres, Rueil Malmaison, and Jean-Michel Azzi, Paris, both of France, assignors to General Foods France S.A., Rueil Malmaison, France

Filed Jan. 7, 1980, Ser. No. 110,271

Int. Cl.[3] A23L *1/195*

U.S. Cl. 426—103 7 Claims

1. A dessert preparation which comprises a mixture of an instant pudding powder with about 80–95% by weight of the preparation of a food material selected from the group consisting of expanded starch based cereals such as rice, wheat, and corn; freeze-dried and air-dried fruits, and expanded nuts; said food material having a texture different from that of the instant pudding powder and having thereon a coating selected from the group of coatings consisting of chocolate, high-fat toffee mixture and confectioner's varnish; said coating rendering the coated food material substantially nonabsorptive of moisture.

4,342,788

METHOD OF COOKING CHICKEN PARTS

Kenneth A. Clatfelter, Farmington, Ark., assignor to Campbell Soup Company, Camden, N.J.

Continuation-in-part of Ser. No. 44,465, Jun. 1, 1979, abandoned. This application Nov. 14, 1980, Ser. No. 206,900

Int. Cl.[3] A23L *1/315*

U.S. Cl. 426—243 5 Claims

1. The methd of cooking a battered chicken part, comprising:

a. subjecting said battered chicken part to a first cooking in hot cooking oil only, without microwave energy, and at a temperature sufficiently high, and at least about 340° F., and for a period of time sufficiently long, and at least about 3 minutes, to dehydrate and brown the batter and to partially cook the interior meat of the chicken part to a temperature of from about 100° to 150° F., but insufficient to cook the interior meat completely; and

b. thereafter subjecting said chicken part while completely immersed in hot cooking oil to high intensity microwave energy for a period of time of less than about 1.5 minutes at a microwave power level at least 5 kilowatts sufficient to raise the temperature of said interior meat to at least about 160° F. and complete cooking of said interior meat.

4,342,789

PROCESS FOR INHIBITING GROWTH OF *CLOSTRIDIUM BOTULINUM* AND FORMATION OF NITROSAMINES IN MEAT

Ryuzo Ueno, Nishinomiya; Toshio Matsuda, Itami; Shigeo Inamine, Kobe; Tatsuo Kanayama, Takarazuka, and Yatsuka Fujita, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

Filed Jul. 1, 1980, Ser. No. 165,077

Claims priority, application Japan, Sep. 7, 1979, 54-114110; Jun. 5, 1980, 55-74983

Int. Cl.[3] A23B *4/02, 4/14*

U.S. Cl. 426—266 13 Claims

1. A process for producing ham and bacon from pork meat in which growth of *Clostridium botulinum* and formation of nitrosamines are inhibited and in which formation of mutagens is avoided, which comprises separately adding to the meat (A) a liquid additive composition consisting essentially of at least one preservative selected from the group consisting of potassium sorbate and sorbic acid or a powdery additive composition consisting essentially of potassium sorbate and (B) a liquid or powdery nitrite curing agent, by injection, spraying, daubing or dipping for adding the liquid, or by spraying or rubbing for adding the powder, under conditions such that the nitrite

does not come into contact with the preservative thus preventing the nitrite and preservative from reacting with each other thereby avoiding formation of mutagens, components (A) and (B) being added in amounts sufficient to inhibit growth of *Clostridium botulinum*.

4,342,790

METHOD OF PRODUCING MINCED FISH MEAT

Naboru Katoh; Kazumiya Komatsu, and Hisashi Nozaki, all of Sayama, Japan, assignors to Kibun Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 231,943, Feb. 5, 1981, Pat. No. 4,303,685, which is a continuation of Ser. No. 52,941, Jun. 28, 1979, abandoned. This application Mar. 26, 1981, Ser. No. 247,712

Claims priority, application Japan, Dec. 12, 1978, 53-152705

Int. Cl.³ A22C *25/14, 25/16*

U.S. Cl. 426—332 3 Claims

2. A method of producing minced fish meat comprising separating the meat from the whole fish whose heads and organs have been removed, blocks of such fish, or fillets of such fish, while substantially avoiding rapid deterioration caused by breakdown of meat cells during meat separation by showering the fish with an aqueous solution containing 0.1–20% of at least one member selected from the group consisting of sorbitol, dextrin, sucrose, sodium glutamate, glycine, sodium bicarbonate, sodium carbonate, disodium phosphate and sodium polyphosphate, and then bleaching the obtained fish meat by use of an aqueous solution containing at least one member selected from the group consisting of sorbitol, dextrin, sucrose, sodium glutamate, glycine, sodium bicarbonate, sodium carbonate, disodium phosphate and sodium polyphosphate.

4,342,791

METHOD OF PURIFYING ISO-α-ACIDS

Charles D. Baker, Uttoxeter, England, assignor to Brewing Patents Limited, Great Britain

Filed May 21, 1980, Ser. No. 152,150

Claims priority, application United Kingdom, May 24, 1979, 7918074

Int. Cl.³ C12C *3/00*

U.S. Cl. 426—600 9 Claims

1. A method of treating a starting aqueous solution containing iso-α-acids and β-acids derived from hops at a pH greater than 9, which method comprises first, if the starting solution is too concentrated, bringing it to an iso-α-acid concentration of from 0.5% to 10% w/w, then reducing the pH to a value in the range 7 to 10, the iso-α-acid concentration and the pH being chosen, having regard to the molar ratio of iso-α-acid to other anions in the solution, so as to form a precipitate of β-acids which may be readily filtered to give a clear filtrate, separating an aqueous solution of the iso-α-acids from the precipitated β-acids, and concentrating the separated aqueous solution to an iso-α-acid concentration in the range 5% to 60% by weight to the extent that a phase separation takes place into two aqueous phases of which one contains a higher concentration of iso-α-acids than the other.

4,342,792

ELECTRODES AND METHOD OF PREPARATION THEREOF FOR USE IN ELECTROCHEMICAL CELLS

David E. Brown, Weybridge; Stephen M. Hall, Feltham, and Mahmood N. Mahmood, Walton-On-Thames, all of England, assignors to The British Petroleum Company Limited, London, England

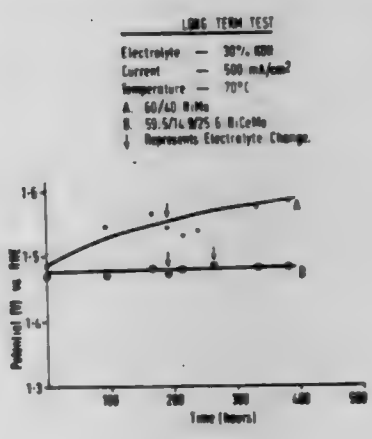
Filed May 11, 1981, Ser. No. 262,415

Claims priority, application United Kingdom, May 13, 1980, 8015797

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—34 10 Claims

1. A method of producing electrodes having electrocatalysts deposited thereon comprising coating a metal electrode substrate with a homogeneous solution of a plurality of metal compounds each of which compound, when not an oxide, being capable of thermal decomposition to the corresponding oxide, thermally decomposing the metal compounds, other than the oxides, to the corresponding oxides or mixed oxides and curing the oxide-coated substrate in a reducing atmosphere



at an elevated temperature, characterised in that the homogeneous solution comprises compounds of (a) at least one metal selected from a first group of iron, cobalt, manganese and nickel, (b) at least one metal selected from a second group of molybdenum, vanadium and tungsten and (c) at least one rare earth metal selected from the group of lanthanides having an atomic number of 57–71 inclusive.

4,342,793

INTERPENETRATING DUAL CURE RESIN COMPOSITIONS

Earl Skinner, Wayzata; Marvin Emeott, Lake Elmo, and Allan Jevne, Anoka, all of Minn., assignors to Henkel Corporation, Minneapolis, Minn.

Continuation of Ser. No. 945,370, Sep. 25, 1978, abandoned, which is a continuation of Ser. No. 759,311, Jan. 14, 1977, Pat. No. 4,128,600. This application Sep. 29, 1980, Ser. No. 191,802

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—44 12 Claims

1. A method for forming an interpenetrated urethane linked coating composition on a substrate involving the steps of radiation and thermal curing by:

(a) preparing a mixture containing:

(1) from about 40 percent to about 90 percent by weight of a saturated polyol; and

(2) from about 10 percent to about 60 percent by weight of a reactive diluent having a radiation sensitive pi bond and a boiling point greater than benzene and mixtures thereof; and

(3) from about 80 percent to about 120 percent on a hydroxyl-isocyanate equivalent basis of a polyisocyanate;

(b) applying the mixture to a substrate subjecting the coating so formed to sufficient radiation to polymerize the reactive diluent thereby partially curing the coating; and

(c) then exposing the partially cured coating of (b) to sufficient thermal energy to form the urethane link,

thereby forming the interpenetrated cured coating on the substrate.

4,342,794

METHOD OF AND APPARATUS FOR PRODUCING ELECTRICAL CONDUCTOR WIRE

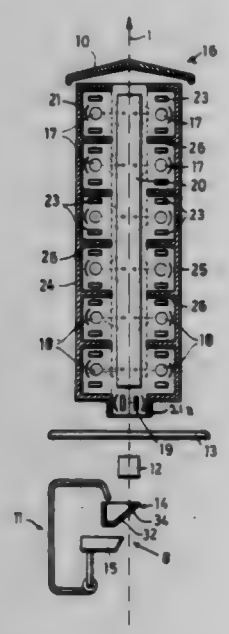
Wolfgang Völker; Fritz Pohlmann, and Friedrich Radeck, all of Arolsen, Fed. Rep. of Germany, assignors to Felten & Guilleaume Carlswerk AG, Cologne, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,858

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1978, 2843895

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 21 Claims



1. A method of producing electrical conductor wires, especially profiled heavy wires, having the steps of providing a vertical supporting frame supported on a platform and including at least two sets of guide pulleys arranged in longitudinal direction so that one set of guide pulleys is provided at a distance to the platform on one end of the supporting frame, and the other set of guide pulleys is provided on the top of the supporting frame; applying varnish onto the conductor wire in applying means above the one set of guide pulleys in separated tanks each provided with throughopenings for the wire to be coated; calibrating the thickness of the varnished layer by stripping off superfluous varnish in calibrating means directly above the applying means and each being associated with one individual tank; hardening the applied and calibrated varnish in a hardening chamber arranged between the other set of guide pulleys and the calibrating means, wherein the improvement comprises: applying the varnish onto the conductor wire in the tanks in groups or of laterally disposed individual tanks; hardening the applied and calibrated varnish by ultraviolet radiation by at least a first pair of ultraviolet radiators within the hardening chamber and disposed transversely to the guide motion of the wires, and at least a second pair of ultraviolet radiators located parallel above the first pair of ultraviolet radiators and having a higher intensity of radiation than the first pair of ultraviolet radiators; intensifying and reflecting the radiation by a first group of reflectors each provided behind each ultraviolet radiator and a second group of reflectors each arranged equi-distantly between two wires, the reflectors being perpendicular to the longitudinal axis of the respective ultraviolet radiator; and cooling by cooling means connected to the hardening chamber to achieve an optimum temperature.

13. An apparatus for producing electrical conductor wires, especially profiled heavy wires, having a vertical supporting frame supported on a platform, the supporting frame including at least two sets of guide pulleys arranged in longitudinal direction, one set of guide pulleys being provided at a distance to the platform on one end of the supporting frame, the other set of guide pulleys being provided on the top of the supporting frame; means for applying varnish onto the conductor wire, the applying means being located above the one set of guide pulleys and having separated tanks each provided with through openings for the wire to be coated, means for calibrating the thickness of the varnished layer by stripping off superfluous varnish, the calibrating means being arranged directly above the applying means and each being associated with one individual tank, a hardening chamber arranged between the other set of guide pulleys and the calibrating means, wherein the improvement comprises: an arrangement of the tanks in groups or of laterally disposed individual tanks, at least a first pair of ultraviolet radiators within the hardening chamber and disposed transversely to the guide motion of the wires, at least a second pair of ultraviolet radiators located parallel above the first pair of ultraviolet radiators and having a higher intensity of radiation than the first pair of ultraviolet radiators, a first group of reflectors each provided behind each ultraviolet radiator for intensifying and reflecting the radiation, a second group of reflectors each arranged equi-distantly between two wires, the reflectors being perpendicular to the longitudinal axis of the respective ultraviolet radiator, and cooling means connected to the hardening chamber to achieve an optimum temperature.

4,342,795

SOLAR CELL METALLIZATIONS COMPRISING A NICKEL-ANTIMONY ALLOY

Sanford M. Marcus, Wilmington, and Joseph R. Rellick, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1980, Ser. No. 218,493

Int. Cl.³ B05D *3/02;* C23C *17/00*

U.S. Cl. 427—75 6 Claims

1. A thick film composition suitable for the metallization of a silicon solar cell which comprises an alloy of nickel and antimony dispersed in particle form in an organic vehicle in a concentration sufficient to make a printable paste.

4,342,796

METHOD FOR INHIBITING CORROSION OF INTERNAL STRUCTURAL MEMBERS OF REINFORCED CONCRETE

Roy N. Brown, Edmond, and Mike F. Stout, Yukon, both of Okla., assignors to Advanced Chemical Technologies, Inc., Oklahoma City, Okla.

Filed Sep. 10, 1980, Ser. No. 185,993

Int. Cl.³ B05C *1/16;* B05D *5/10*

U.S. Cl. 427—136 8 Claims

2. A method for inhibiting corrosion of reinforcing members in a paved concrete driving structure having a driving surface due to salt migration into the structure comprising:

providing a substantially dry driving surface of the structure;

contacting the substantially dry driving surface with an effective amount of an organo silane compound to provide an organo silane covered driving surface, the silane having the general formula:

$R\text{-}Si\text{-}(OR_1)_3$, wherein:

R is an alkyl group containing from 1 to about 30 carbon atoms, an alkenyl group, an aryl group, a cycloalkyl group, a cycloalkenyl group, an aralkyl group, or an aralkenyl group; and

R_1 is an alkyl group containing from 1 to about 8 carbon atoms, a hydroxyalkyl group, or an alkoxyalkyl group; and

permitting organo silane compound to migrate into the structure; and

reacting the organo silane in the structure with an effective amount of water to hydrolyze the organo silane in the structure and form a salt resisting barrier internally within the structure.

4,342,797

WET FLOW CHARACTERISTIC OF COAL AND OTHER WATER-INSOLUBLE SOLID PARTICLES

Alfred E. Kober, Bridgewater, and Mark O. Kestner, Mendham, both of N.J., assignors to Apollo Technologies, Inc., Whippany, N.J.

Filed Jul. 5, 1979, Ser. No. 55,029
Int. Cl.³ C09K 3/00
U.S. Cl. 427—220 25 Claims

1. The method of improving the flow characteristics of wet, small water-insoluble solid particles which comprises (a) forming wet particles which have a surface coating of a fluid having the property of lowering surface tension in aqueous solution, said fluid comprises a water solution of a substance from the group consisting of methyl and dimethyl naphthalene sulfonates and ethoxylated linear secondary (C_{11}-C_{15}) alcohols, said water solution having a low viscosity, a high flash point, low toxicity, and (b) causing said particles to flow from one location to another, whereby caking tendencies of the wet particles are inhibited and freedom of flow of said particles between said locations is enhanced.

4,342,798

PROCESS FOR PRODUCTION OF FLAME RESISTANT FOAM

Hans-Walter Illger, Roesrath; Manfred Dahm, Leverkusen, both of Fed. Rep. of Germany, and Alberto C. Gonzalez-Dörner, Polinya, Spain, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Division of Ser. No. 90,195, Nov. 1, 1979, Pat. No. 4,288,559. This application May 15, 1981, Ser. No. 263,825
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849649
Int. Cl.³ B05D 5/00
U.S. Cl. 427—244 10 Claims

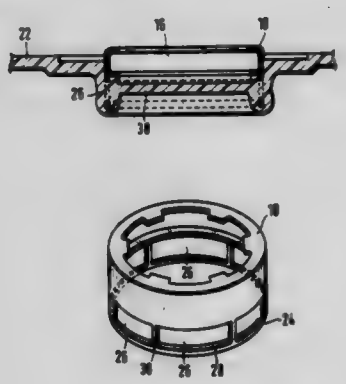
1. A process for the production of a flame resistant foam comprising spraying said foam with a dispersion comprising:
(a) a polyurethane latex;
(b) an aluminum hydroxide;
(c) an aluminosilicate and
(d) surface active substances.

4,342,799

HOLLOW BODIES AND THEIR MANUFACTURE

Hans-Joachim Schwochert, Bonn-Holzlar, Fed. Rep. of Germany, assignor to Kautex-Maschinebau GmbH, Fed. Rep. of Germany

Filed Jun. 13, 1980, Ser. No. 159,252
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924198
Int. Cl.³ B29F 1/10; B65D 41/06; B29H 9/00
U.S. Cl. 428—35 18 Claims



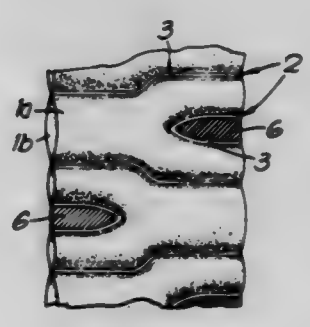
1. A method of making hollow bodies, comprising the steps of:
providing a blow-mold having an inner surface conforming to a desired external shape for the hollow body, the inner surface having at least one continuous area;
providing an insert with an extending portion having at least one opening therein, the insert to be attached to the hollow body at the continuous area, the opening being aligned substantially perpendicular to the extending portion;
supporting the insert at the inner surface of the blow-mold in the continuous area, said extension extending inwards toward the hollow body, and said at least one opening defining an axis substantially parallel to the continuous inner surface of the mold and,
expanding a thermoplastic parison in the blow-mold and, during said expansion, causing wall portions of the parison to penetrate said at least one opening from opposite sides and to become heat-sealed together at said at least one opening and to enclose the regions of the insert surrounding the openings so as to produce a positive joint between the insert and the thermoplastic material.
3. A hollow body comprising:
a continuous wall portion made of thermoplastic material;
at least one insert; and,
means positively securing said insert to said hollow body wall, said securing means comprising at least one opening in said insert, the at least one opening being in a part of the insert disposed substantially perpendicular to and intersecting the hollow body wall, the at least one opening defining an axis substantially parallel to the wall, and portions of the material forming said wall penetrating said at least one opening, said portions being heat-sealed together at and adjacent said opening, whereby regions of the insert surrounding such openings are embraced by said wall material portions.

4,342,800

POLYMERIC ARTICLES

Pushkumar D. Changani, Swindon; Donald G. Peacock, Kempsford, and David Roberts, Broome Manor Swindon, all of England, assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 28, 1980, Ser. No. 172,888
Int. Cl.³ B29C 27/00, 17/04
U.S. Cl. 428—36 9 Claims



1. A process for the production of a hollow heat-recoverable article, the steps comprising:
deforming a substantially non-cross-linked polymeric material at a temperature below the crystalline melting point or softening point of the material to render the material heat-recoverable primarily in one direction;
fusing together parts of the material to one other substantially non-cross-linked polymeric component to produce a hollow heat-recoverable article having a radial axis and a longitudinal axis, said article being heat-recoverable substantially only in a radial sense; and,
cross-linking the fused portions of the polymetic material.

4,342,801
SUEDE-LIKE SHEET MATERIAL

Klaus Gerlach, Aschaffenburg; Nikolaus Mathes, Breuberg; Hans-Jurgen Pitowski, Miltenberg, and Friedbert Wechs, Worth am Main, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Dec. 16, 1980, Ser. No. 217,067
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951307
Int. Cl.³ D02G 3/00
U.S. Cl. 428—91 16 Claims

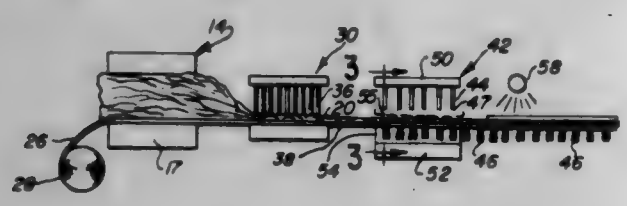


1. A suede-like textile sheet structure impregnated with a microporous polyurethane, said textile sheet structure comprising a needle-punched web of fully or partly split staple fiber from crimped multicomponent filaments of the matrix/-segment type with polyester and polyamide as components, the cross section of the filaments before splitting comprises a matrix and at least 6 peripheral segments not completely embedded in said matrix, which segments have a wedge-shaped or lenticular-shaped cross section, each filament having a denier before splitting of about 0.5 to 10 dtex, said matrix of individual segments having a denier from about 0.1 to about 1 dtex; said segments having a shrinkage differential of at least 10% compared to the matrix, said polyurethane is composed of polyglycols, diisocyanate and low MW glycols as chain extender, and at least in part surrounds the individual fibers after the fashion of tubes, whereby the lumen of the tubular section surrounding the fibers is larger than the volume of the embedded fiber section and less than 70% of the surface of said individual segment and matrix fibers is firmly bonded to said polyurethane impregnating substance.

4,342,802
FLOOR COVERING OF NEEDLED WOVEN FABRIC AND NONWOVEN BATT

Robert C. Pickens, Jr., Gurnee; Patricia R. Kirchherr, Grayslake, and Reese R. Thomas, Libertyville, all of Ill., assignors to Ozite Corporation, Libertyville, Ill.

Filed Jan. 2, 1981, Ser. No. 222,171
Int. Cl.³ B32B 5/06
U.S. Cl. 428—92 11 Claims



1. A floor covering comprising:
a needled batt of non-woven staple fibers having a predetermined color,
a woven fabric having either the warps or the fillings comprised of continuous filaments, ribbon yarns, or spun fibers having a color contrasting with the color of the staple fibers, said woven fabric being needled to a face surface of said batt, and
rows of loops of staple fibers projecting from said batt and from said woven fabric,
some of said loops include portions of said continuous filaments, ribbon yarns or spun fibers with the color of the filaments interspersed with the color of the needled batt providing the floor covering with individual loops or clusters of loops of color contrasting with the color of the fibers of the non-woven batt.

4,342,803
HEAT-RESISTANT VACUUM PAD AND METHOD OF MAKING SAME

Edward J. Stengle, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 14, 1980, Ser. No. 196,419
Int. Cl.³ B32B 17/04, 5/16
U.S. Cl. 428—131 7 Claims



1. A heat-resistant flexible laminated vacuum pad adapted to handling hot glass articles, and the like, comprising a tightly interwoven fabric substrate formed from thin glass fibers adapted to withstand temperatures up to about 1200° F., a silicone rubber backing, adhesive means securing said backing to one surface of said fabric substrate, and a continuous heat-cured coating of polysiloxane resin having a finely-divided filler of heat-resistant carbonaceous material therein extending over the other glass-contacting surface of said substrate to form a laminated pad, said laminated pad being flexible and adapted to hold a vacuum by flexure of said laminated pad prior to use thereof as a vacuum pad.

4,342,804
MICROPOROUS BITUMEN COATED UNDER-ROOFING MATERIAL

Jean-Yves Meynard, Mondoubleau, France, assignor to Siplast S.A., Paris, France

Filed Sep. 25, 1980, Ser. No. 190,600
Claims priority, application France, Oct. 18, 1979, 79 25891
Int. Cl.³ B32B 11/10, 11/12; E04D 1/20, 1/22, 5/12
U.S. Cl. 428—149 6 Claims

1. A water-tight and air- or air-vapor pervious under-roofing material for roofings made of discrete elements such as overlapping tiles, slates or the like, which comprises a sheet of agglomerated fibres, wherein said sheet is coated on its outer surface with a film of bitumen constituting an amount just sufficient for constituting when cooled a micro-perforated or micro-crackled structure preventing the passage of liquid by capillarity therethrough while permitting the passage of air or vapor.

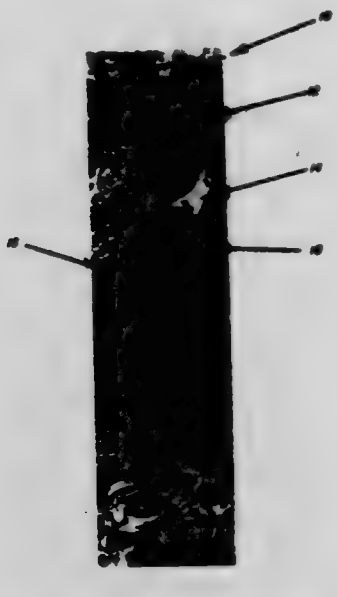
4,342,805
SIMULATED LEATHER SHEET MATERIAL

John McCartney, Chester County, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.

Filed Sep. 18, 1980, Ser. No. 188,330
Int. Cl.³ B32B 5/06, 5/22
U.S. Cl. 428—151 11 Claims

1. A simulated leather sheet material comprising:
a polymer impregnated fibrous mass with a grain layer forming one surface, the grain layer having an actual density equal to its bulk density and a split layer forming the opposing surface, the grain layer being a composite of fibers in a continuous resin matrix, the split layer having a bulk density less than its actual density, the split layer

having coated and uncoated fibers, masses of polymer and voids, said sheet material having a density decreasing



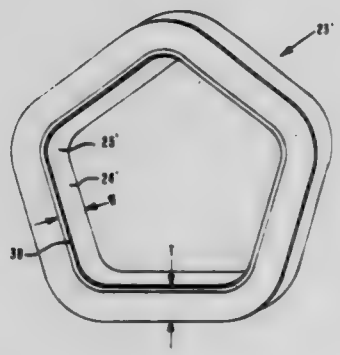
from the grain layer to the split layer, wherein the ratio of fiber to polymer is uniform throughout said sheet material.

4,342,806

COMPOSITE ELASTOMERIC SPRING BELT

Howard J. Kutsch, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 9, 1980, Ser. No. 157,512
Int. Cl.³ F16D *3/58*
U.S. Cl. 428—174 4 Claims



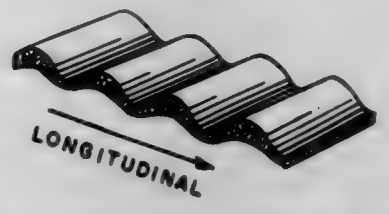
1. An article of manufacture comprising a composite belt that is suitable for use as an energy absorber in a torque converter, said belt having a fixed preformed endless path and at least three sides joined by curvilinear path changing sections, the belt comprises a plurality of strands, tapes or films of a copolyetherester elastomer that is oriented in the direction of their length and embedded within a matrix of a lower melting point copolyetherester elastomer that substantially surrounds the individual strands, tapes or films of the oriented copolyetherester elastomer forming a self-supporting structure that does not collapse upon itself when laid on one side of its outside perimeter, said belt when stretched from about 5-30% of the length of its perimeter returns to substantially its original size when force is removed.

4,342,807

LOW DENSITY MATTING AND PROCESS

Alfred Rasen; Rolf Vollbrecht; Klemens Scheuesse, all of Obernburg/Main, and Joachim Behnke, Miltenberg, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 703,277, Jul. 7, 1976, Pat. No. 4,252,590.
This application Feb. 4, 1980, Ser. No. 117,980
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1975, 2530499
Int. Cl.³ B32B *3/28*; B32B *27/02*
U.S. Cl. 428—180 10 Claims



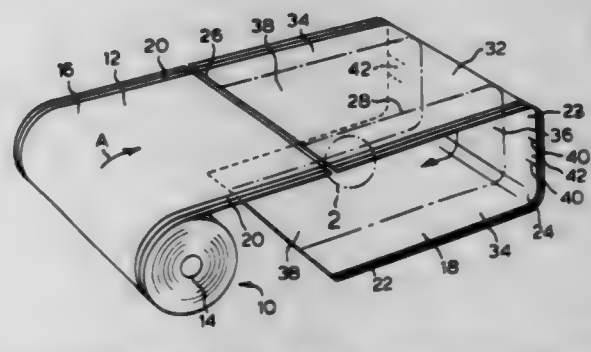
1. A low density matting article consisting essentially of a plurality of continuous melt-spun synthetic polymer filaments of a diameter of about 0.1 to 0.5 mm. laid in overlapping rows of irregularly looped and intermingled filaments to form, in the aggregate, a peak and valley three-dimensional structure undulating in the longitudinal and/or transverse directions of the matting, the individual filaments in said matting being self-bonded at random points of intersection and having a number of transversely directed loops sufficient to provide a transverse strength per unit of surface weight of at least 2 Nm/g.

4,342,808

ROLL STOCK FOR USE IN MANUFACTURE OF BAG

Marinus J. M. Langen, Rexdale, and Edgar H. Strauss, Toronto, both of Canada, assignors to H. J. Langen & Sons Limited, Mississauga, Canada

Continuation of Ser. No. 969,409, Dec. 14, 1978, abandoned.
This application Feb. 25, 1980, Ser. No. 124,338
Int. Cl.³ B32B *3/02, 29/00*
U.S. Cl. 428—194 2 Claims



1. A paper bag forming roll stock comprising a longitudinally elongated web of bag forming paper having an inner face and an outer face, a pair of oppositely disposed side edges and a marginal edge portion extending inwardly from each of said side edges, said web having a uniform thickness across its full width, said web being wound onto a roll with said inner and outer faces aligned in face-to-face contact with one another, a first pair and a second pair of bands of cohesive-adhesive material, one of said pairs of adhesive bands being applied to and extending continuously in a straight path longitudinally of the web along said inner face and the other pair being applied to and extending continuously in a straight path longitudinally along the outer face of the web, each of the adhesive bands of the first pair being located within a different one of the marginal edge portions on the one face of the paper and spaced inwardly from the adjacent side edge, and each of the bands of said second pair being located within a different marginal edge portion on the other face of the paper and spaced inwardly from the adjacent side edge by a distance which is greater than the spacing of the inner edge of the underlying first band

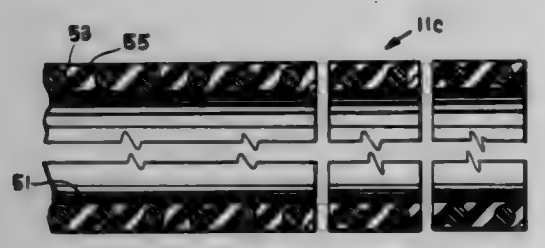
whereby the bands of the pairs are laterally offset so as to be out of alignment with one another in successive turns of said roll such that the successive turns are not adhesively secured to one another.

4,342,809

HIGH-FRICTION, LOW-ELASTICITY DRIVE BELT FOR TAPE CARTRIDGES

Chester W. Newell, San Jose, Calif., assignor to Newell Research Corporation, Saratoga, Calif.

Filed Jun. 24, 1980, Ser. No. 162,633
Int. Cl.[3] B32B *7/02*
U.S. Cl. 428—215 9 Claims



1. An inelastic compound endless belt for driving tape rolls about their peripheries at high accelerations comprising,

an endless base belt having a coefficient of elasticity at least as low as the tape being driven, and

an elastomeric coating at least on a side of the base belt facing the tape being driven, said coating having a relatively high coefficient of friction contacting the surface of the tape being driven,

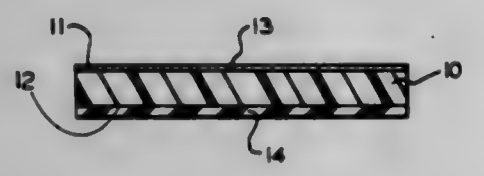
the base belt and the elastomeric coating forming a compound belt, said base belt and compound belt having uniform cross-sectional width and thickness, the width being less than the width of the tape being driven and the thickness being less than 5 mils.

4,342,810

PLASTIC CORE COMPOSITE HAVING IMPROVED IMPACT RESISTANCE

James L. Adcock, Union City, Ind., assignor to Sheller-Globe Corporation, Toledo, Ohio

Filed Mar. 23, 1981, Ser. No. 246,421
Int. Cl.[3] B32B *7/02, 15/08, 25/08, 25/18*
U.S. Cl. 428—215 14 Claims



8. An improved utility exterior attachment for a vehicle or the like, said attachment comprising an energy-absorbing composite comprising a plastic body of extended surface having a metallic layer along at least one surface thereof, and a butyl rubber layer adhered along an opposite surface thereof, said butyl rubber layer having a surface tack aiding its adherence to said opposite surface, being non-flowable and dimensionally stable, and being sufficiently elastomeric at low temperatures and of sufficient extent and thickness that said attachment has a reduced susceptability to damage by blows to the metallic layer at minus 30° F.

12. The utility exterior attachment of claim 8 in which said body has an average thickness of about 0.10 to about 1.0 inch, said metallic layer has an average thickness of about 1.50 to about 5.00 mils, and said butyl rubber layer has an average thickness of about 0.100 to about 0.500 inch.

4,342,811

OPEN-CELLED MICROPOROUS SORBENT-LOADED TEXTILE FIBERS AND FILMS AND METHODS OF FABRICATING SAME

George Lopatin, Newton; Myron J. Coplan, Natick, and James P. Walton, Jr., Newton, all of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,178
Int. Cl.[3] B01D *39/04, 39/16;* B29D *27/00*
U.S. Cl. 428—220 22 Claims

1. An open cell microporous body produced by mixing sorbent particles in a uniform liquefied blend comprising polymeric material and a diluent material, the blend being heated to a first temperature above the fusion temperature of the polymeric material, extruding the mixture to form the body, attenuating the body by draw-down from the melt, cooling the body to a second temperature sufficiently below the first temperature to cause the diluent material to undergo separation from the polymeric material into a fine distinct phase, and extracting the diluent material from said body to create an open-cell polymeric matrix, the sorbent particles being dispersed throughout the maxtrix in a state of high sorbent activity and in an amount between 10 and 50 percent by weight of the body after said extraction.

17. A method of forming a sorbent body including the steps of

mixing sorbent particles, a polymeric material and a diluent material and heating the mixture to a first temperature above the fusion temperature of the polymeric material, thereby forming a melt blend, the diluent material being chosen to be a liquid compatible and mixing uniformly with the polymeric material at said first temperature,

extruding the melt blend to form said body,

cooling the body to a second temperature sufficiently below said first temperature to cause the diluent material to undergo separation from the polymeric material into a fine distinct phase, and

extracting the diluent material from said body to create an open-cell polymeric matrix with said particles dispersed throughout said matrix in a highly active sorbent state.

4,342,812

STENTERED, BONDED, HEAT-SET, NON-WOVEN FABRIC AND PROCESS FOR PRODUCING SAME

Alan Selwood, Heighington, nr. Darlington, England, assignor to Imperial Chemical Industries Limited, England

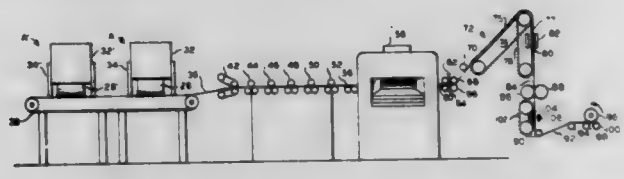
Filed Dec. 4, 1980, Ser. No. 213,119
Claims priority, application United Kingdom, Dec. 7, 1979, 7942317
Int. Cl.[3] B32B *31/08, 31/12, 31/16, 31/26*
U.S. Cl. 428—286 8 Claims

1. A process for producing a non-woven fabric comprising (1) forming a stack of three or more superimposed fibrous shims, in at least one of the shims the fibres being oriented predominantly in a first direction, corresponding to the machine direction of the shim and in at least one of the other shims the fibres being oriented predominantly in a second direction, corresponding to the machine direction of the shim, which is inclined at an acute angle to an imaginary line which is orthogonal to the first direction, and in at least one of the other shims the fibres being oriented in a third direction, corresponding to the machine direction of the shim, which is inclined at an obtuse angle to an imaginary line which is orthogonal to the first direction, (2) bonding the fibrous shims together, (3) subjecting the bonded fabric so formed to a stentering operation in a direction orthogonal to the first direction which causes the bonded shims to expand orthogonally to the first direction and to contract in the first direction, and (4) heat setting the bonded shims while they are being stentered.

4,342,813
METHOD FOR THE PRODUCTION OF A FUSED NONWOVEN FABRIC

Wayne K. Erickson, Seneca, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 14, 1978, Ser. No. 886,484
Int. Cl.³ D04H *1/04*
U.S. Cl. 428—296 14 Claims



1. A method for the manufacture of a fused nonwoven fabric from an unfused needle-punched nonwoven fabric of thermoplastic staple fibers, the unfused fabric having a first surface and a second surface opposite said first surface, comprising the steps of:

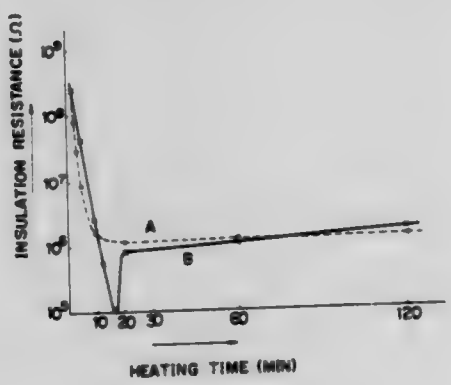
first exposing at least one of said first and second surfaces of the unfused fabric to infrared radiation to the extent that a substantial portion of the fibers forming said at least one surface and between said first surface and said second surface are fused together and the fibers forming the second surface remain substantially unfused; and

subsequently contacting the thus-treated at least one surface of the nonwoven fabric with at least one heated roll having a temperature sufficient to fuse together at least a portion of the fibers forming the surface in contact with the heated roll.

4,342,814
HEAT-RESISTANT ELECTRICALLY INSULATED WIRES AND A METHOD FOR PREPARING THE SAME

Takayoshi Usuki; Yukio Endo, both of Tokyo; Kichizo Ito, Chiba; Takao Tuboi, Ichikawa, and Shin Kubota, Urayasu, all of Japan, assignors to The Fujikura Cable Works, Ltd., Tokyo, Japan

Filed Dec. 5, 1979, Ser. No. 100,403
Claims priority, application Japan, Dec. 12, 1978, 53-90441; Dec. 12, 1978, 53-152647; Sep. 7, 1979, 54-114222; Sep. 8, 1979, 54-114740; Oct. 27, 1979, 54-138946
Int. Cl.³ B32B *27/00*; H01B *7/00*
U.S. Cl. 428—383 6 Claims



1. A heat-resistant electrically insulated wire comprising

a conductor,

at least one composite coating layer circumferentially enclosing the conductor, said composite coating layer being a mixture comprising an inorganic fine powder selected from the group consisting of Al_2O_3, $BaTiO_3$, $CaTiO_3$, $PbTiO_3$, $ZrSiO_4$, $BaZrO_3$, $MgSiO_3$, SiO_2, BeO, ZrO_2, MgO, clay, kaolin, bentonite, montmorrilonite, glass frit, mica, BN and silicon nitride, and mixtures thereof and an inorganic polymer selected from the group consisting of silicone resins; modified silicone resins; inorganic polymers having a skeleton comprising silicone, oxygen and one or more elements selected from the group consisting of C, Ti, B, Al, N, P, Ge, As and Sb and mixtures thereof, and

at least one overcoat layer of a flexible organic resin circumferentially enclosing said composite coating layer in a sleeve-like non-adhered relationship, said organic resin being selected from the group consisting of a polyimide, a polyamide-imide, a polyester-imide, a polyhydantoin, a polyester, a polyparabanic acid, an aromatic polyamide, an aliphatic polyamide, a polyurethane, a fluoroplastic, a polyolefin, a polyvinyl formal, a polysulfone, an epoxide resin, a phenoxy resin, and mixtures thereof,

wherein said composite coating layer has not artificially been fired and is adapted to be converted into a ceramic layer when exposed at elevated temperatures during use.

4,342,815
PRESSURE-SENSITIVE ADHESIVE TAPE HAVING A RELEASE COATING

Donald F. Doehnert, Millington, N.J., assignor to Permacel, New Brunswick, N.J.

Division of Ser. No. 127,702, Mar. 6, 1980, Pat. No. 4,299,741. This application Feb. 4, 1981, Ser. No. 232,779
Int. Cl.³ B32B *27/30*
U.S. Cl. 428—522 1 Claim

1. A pressure-sensitive tape having a hydrophobic film as backing and having a release coating on the non-adhesive side of the backing, said coating formed by

(A) applying an aqueous release composition comprising

(1) a release polymer formed by a polymerizing in parts of weight of

(a) from about 40 to about 80 parts of a higher alkyl acrylate ester represented by the formula

$$CH_2=\underset{\displaystyle R'}{\underset{|}{C}}-\overset{\displaystyle O}{\overset{\|}{C}}-OR''$$

wherein R′ is hydrogen or methyl and R″ is a straight chain hydrocarbon radical of from about 12 to 24 carbon atoms,

(b) from about 5 to about 30 parts of a carboxyl supplying monomer selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, maleic anhydride, half esters of maleic acid, itaconic acid and fumaric acid,

(c) from about 10 to about 45 parts of an acrylate derived hardening monomer selected from the group consisting of acrylonitrile, methacrylonitrile, methyl acrylate, ethyl acrylate, methyl methacrylate and ethyl methacrylate;

(2) a base;

(3) a polar solvent wetting agent, said solvent being employed in an amount less than about 25 percent of the volatile portion of the ultimate composition; and

(4) a water soluble thickening agent said thickening agent being present in such amounts that the viscosity of the release composition does not exceed about 200 centipoises; and

(B) drying.

4,342,816
FUEL CELL STACK ARRANGEMENTS

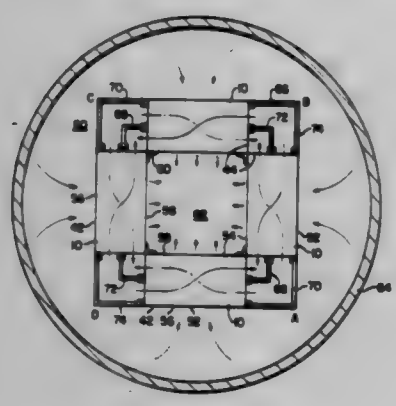
Richard E. Kothmann, Churchill Boro, and Edward V. Somers, Murrysville, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 22, 1981, Ser. No. 256,419
Int. Cl.³ H01M *8/00*
U.S. Cl. 429—13 7 Claims

1. An arrangement of fuel cell stacks, each said stack shaped in cross-section as a polygon having pairs of oppositely-dis-

posed peripheral faces and including means for flowing a fuel therethrough from fuel inlets on a peripheral face to fuel outlets on an oppositely disposed peripheral face, means for flowing an oxidant therethrough from oxidant inlets on a peripheral face to oxidant outlets on an oppositely-disposed peripheral face, and means for flowing a coolant therethrough from coolant inlets on a peripheral face which is a different peripheral face than said fuel and oxidant peripheral faces to coolant outlets on a peripheral face which is a different peripheral face than said fuel and oxidant peripheral faces;

an even number, and at least four of said stacks being arranged in a loop such that said coolant inlet peripheral



faces face outwardly of said loop and said coolant outlet peripheral faces face inwardly of said loop;

means for sealing among consecutive stacks of said loop such that the interior of said loop forms an enclosure duct;

means disposed at alternate junctures of said stacks for inletting fuel and outletting oxidant from two consecutive stacks of said loop;

means disposed at other alternate junctures of said stacks for inletting oxidant and outletting fuel from two consecutive stacks; and

means for flowing a coolant to said coolant inlets, through said stacks, and into said enclosure duct.

4,342,817

MASK FOR STRUCTURING SURFACE AREAS, AND METHOD OF MAKING IT

Harald Bohlen, Boeblingen; Helmut Engelke, Altdorf; Johann Greschner, Pliezhausen, and Peter Nehmiz, Stuttgart-Rohr, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,602

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922416

Int. Cl.³ G03C 5/00

U.S. Cl. 430—5 **13 Claims**

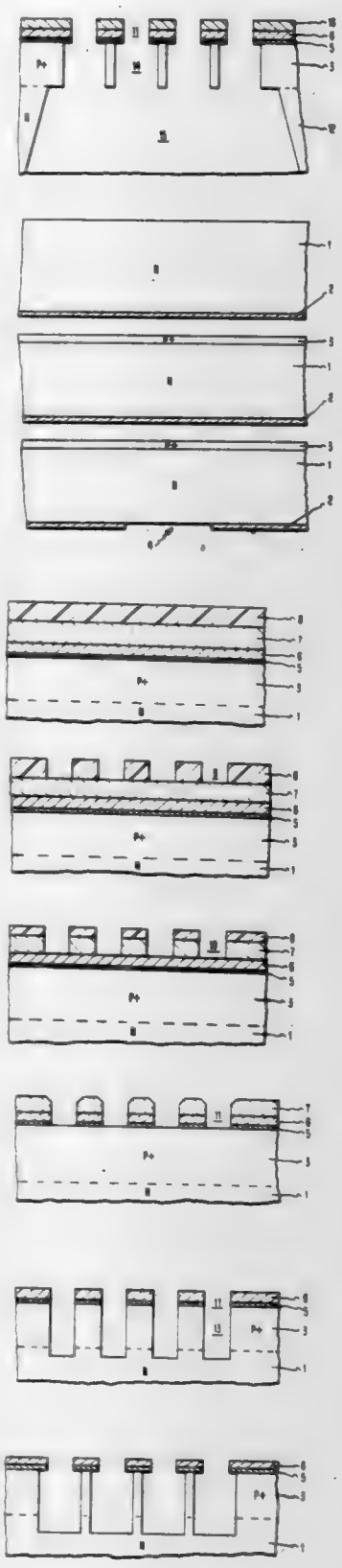
1. A mask for forming patterns with improved edge definition by avoiding scattering effects at the mask pattern edges, said mask comprising:

at least one metal layer with throughgoing apertures defining the mask pattern,

a semiconductor substrate having front and back surfaces, the front surface carrying the metal layer and having throughholes that correspond to the mask pattern, the throughholes extending from the metal layer-covered front surface through the substrate to at least one tub-shaped recess which extends from the back surface into the semiconductor substrate,

a surface layer provided in said semiconductor substrate, said layer differing in its doping from the rest of said substrate, and

said throughholes, at least as far as they extend through the surface layer of said substrate, having substantially vertical sidewalls with respect to the metal layer covered surface, said sidewalls being set back relative to said apertures in said metal layer to provide said throughholes with lateral dimensions larger than said apertures in said metal layer so that said metal layer protrudes over said surface layer



whereby a mask pattern is achieved whose effective thickness toward a scattering effect exposure is decreased to the thickness of said metal layer while still being supported by a precisely controllable semiconductor stabilization structure.

4,342,818

PROCESS FOR FORMING COLOR FILTER

Yukio Yokota, Minami-ashigara; Masamichi Sato, and Kenji Matsumoto, both of Asaki, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 22, 1980, Ser. No. 218,972
Claims priority, application Japan, Dec. 25, 1979, 54/168564
Int. Cl.³ G03C 7/00
U.S. Cl. 430—7 6 Claims

1. A process for forming a color filter, which comprises

(i) patternwise exposing a black-and-white silver halide emulsion layer of a photographic material comprising a support having thereon at least one black-and-white silver halide emulsion layer,

(ii) developing the photographic material with a developing solution containing a first color dye developer to form a first pattern containing a first color dye and silver grains,

(iii) bleaching away or re-halogenating the silver grains in said first pattern produced in (ii),

(iv) again patternwise exposing the photographic material and then developing the photographic material in a developing solution containing a second color dye developer different from said first color dye developer to form another pattern containing a second color dye, and

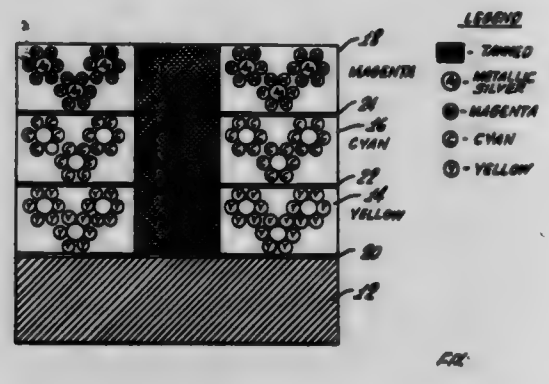
(v) removing remaining silver and/or silver halide after formation of the pattern produced in (iv).

4,342,819

HIGH RESOLUTION DEVELOPED COLOR FILM

Richard J. Goldberg, 4814 Brandenburg Pl., Tarzana, Calif. 91336

Continuation-in-part of Ser. No. 815,947, Jul. 15, 1977, Pat. No. 4,183,750. This application Jun. 9, 1978, Ser. No. 914,165
Int. Cl.³ G03C 5/04
U.S. Cl. 430—8 15 Claims



1. A high resolution developed color camera film comprising:

a base;

a plurality of superimposed layers on said base, each layer comprising a color image of the same image sense but differently colored, further comprising a silver image corresponding to the color image in the outermost layer, and wherein the film has a resolution in excess of 125 lines/mm at a contrast of 1.6:1.

4,342,820

DRY PLANOGRAPHIC PRINTING PLATE AND PREPARATION THEREOF

Takao Kinashi, Otsu; Takashi Fujita, Kusatsu, and Norio Kawabe, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 215,100
Int. Cl.³ G03C 1/68
U.S. Cl. 430—11 9 Claims

1. A negative working presensitized printing plate for use in dry planography, which comprises

(1) a base substrate,

(2) an oleophilic photosensitive layer secured to and overlying said base substrate, and

(3) an ink repelling silicone rubber layer secured to and overlying said photosensitive layer,

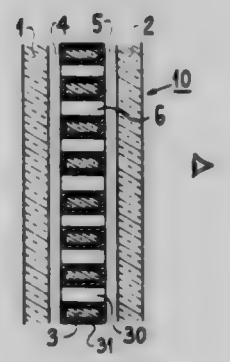
said photosensitive layer further comprising a component selected from the group consisting of a quinonediazide crosslinked with a polyfunctional compound, a quinonediazide urethanized with a monoisocyanate, an esterified quinonediazide, an amidized quinonediazide a quinonediazide graft polymerized with a vinyl monomer, so that said photosensitive layer is substantially insoluble in a developer, capable of releasing said silicone rubber layer and constituting an image area in a selected area to be exposed to the actinic light, and so that said silicone rubber layer is capable of being removed in said exposed image area by said developer and constituting a non-image area in an area unexposed to the actinic light.

4,342,821

DIRECTIONAL FILTER FOR A DISPLAY SCREEN, THE METHOD FOR MANUFACTURING SAME AND A DISPLAY SYSTEM, A CATHODE-RAY TUBE IN PARTICULAR, PROVIDED WITH SUCH A FILTER

Jean P. Galves; Pierre Merloz, and Jean Sagnard, all of Paris, France, assignors to Thompson-CSF, Paris, France

Filed Jul. 18, 1980, Ser. No. 170,278
Claims priority, application France, Jul. 27, 1979, 79 19429
Int. Cl.³ G03C 5/00; G02B 27/00, 5/20
U.S. Cl. 430—12 6 Claims



1. A method of manufacturing a directional filter for display screen comprising, in succession, the following steps:

taking a plate of a photo-sensitive glass;

exposing said plate to ultraviolet light through a mask whose meshes are arranged in a given pattern;

etching the plate by action of a chemical agent whereby obtaining a network of channels passing through the plate at the location of said meshes;

depositing over the whole of the surface of the plate, including the inside of the channels, a thin metallic layer;

blackening the deposit thus obtained, to form a plate with network of open, light transmitting channels.

4,342,822

METHOD FOR IMAGE DEVELOPMENT USING ELECTRIC BIAS

Nagao Hosono, Chofu, and Junichiro Kanbe, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,674
Claims priority, application Japan, Mar. 7, 1979, 54-26454
Int. Cl.³ G03G 13/09
U.S. Cl. 430—97 9 Claims

1. A developing method comprising:

(a) arranging a latent image holding member and a developer carrying member at spaced mutually opposed positions, and providing a space gap therebetween at a developing section, wherein said gap is maintained greater than a thickness of a developer layer applied on the surface of said developer carrying member;

(b) applying an alternating electric field across the space gap; and

(c) using a developer prepared by mixing electrically insulative toner particles having an average particle diameter of from 5 microns to 30 microns with very fine powder particles having a smaller particle diameter than said toner particles and capable of assisting electric charging of said toner particles in a polarity opposite to that of a latent image, and wherein the toner particles of up to 4 microns in particle diameter contained in the developer occupy at most 10% in the particle number distribution.

4,342,823

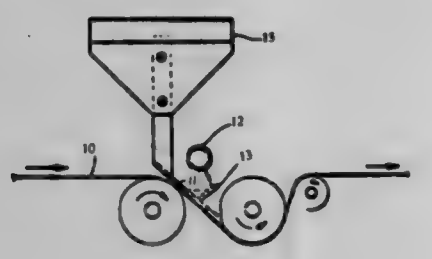
PERFORATE DEVELOPMENT ELECTRODE

Clyde P. Grant, Gorham; Merton A. Look, Westbrook, and Richard M. Lowe, South Portland, all of Me., assignors to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 570,865, Apr. 23, 1975, abandoned, which is a division of Ser. No. 338,905, Mar. 7, 1973, Pat. No. 3,916,827. This application Aug. 14, 1979, Ser. No. 66,395

Int. Cl.³ B05D *1/06*

U.S. Cl. 430—103 **1 Claim**



1. A method for developing electrostatic images on a sheet of electrophotographic copy material comprising the steps of moving the copy material sheet past and separated from a flat perforate development electrode of the type used to eliminate edge effect in a path of uniform distance from the electrode and simultaneously spraying liquid toner against pressure reducing means separate from and disposed adjacent to the electrode to reduce and make uniform the pressure of the flowing liquid toner and flowing the liquid toner uniformly over and through the perforate development electrode and over the image side of the sheet without contacting the side opposite the image side with said toner.

4,342,824

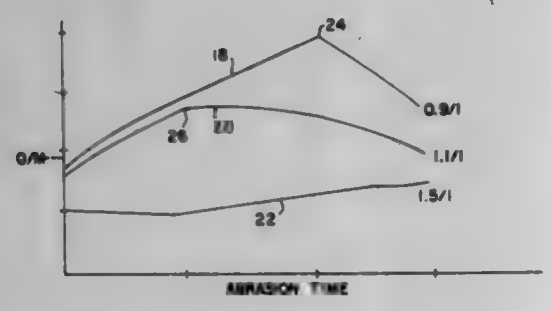
DEVELOPER WITH COATED CARRIER MATERIAL AND METHOD OF MAKING

Douglas R. Campbell, Derry, Pa., assignor to Imaging Systems Corporation, Derry, Pa.

Filed May 27, 1980, Ser. No. 153,722

Int. Cl.³ B05D *1/06*

U.S. Cl. 430—108 **22 Claims**



1. The method of coating a flowable carrier for use in electrophotographic recordings which comprise the steps of:

a. reacting from 1.4 to 1.55 parts of a polyfunctional polyisocyanate with one part of a hydroxy containing polymer in the presence of a catalyst to form a coating solution;

b. selecting the hydroxy containing polymer from the group of hydroxylated polyesters, hydroxylated acrylics, hydroxylated styrene acrylics, styrenated allyl alcohol, epoxie, polylacteons or polydimethylsilxane.

4,342,825

PHOTOGRAPHIC ELEMENTS CONTAINING CYAN-FORMING COLOR COUPLERS

Raphaël K. Van Poucke, Berchem; Marcel J. Monbaliu, and Jan J. Vandewalle, both of Mortsel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Mar. 25, 1981, Ser. No. 247,404

Claims priority, application United Kingdom, Apr. 9, 1980, 8011693

Int. Cl.³ G03C *1/76, 1/40*

U.S. Cl. 430—505 **5 Claims**

1. Photographic element comprising (a) light-sensitive silver halide emulsion layer(s) and at least one phenol-type colour coupler capable of forming a cyan indoaniline dye by reaction with an oxidized aromatic primary amino developing agent and carrying a fluorine-containing substituent, wherein said colour coupler comprises in the 2-position of the phenol a benzamido group carrying on its benzene nucleus at least one —Q—Rf group as fluorine-containing substituent, Q being oxygen, sulphur, or sulphonyl, and Rf representing a short-chain fluorine-containing group derived from hexafluoropropylene or trifluorochloroethylene, such short-chain group corresponding to one of the formulae: $—CF_2—CHFY$, $—CF=CFY$, or $—CF_2—CF=CF_2$, Y being chlorine or trifluoromethyl.

4,342,826

IMMUNOASSAY PRODUCTS AND METHODS

Francis X. Cole, Stow, Mass., assignor to Collaborative Research, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 117,864, Feb. 4, 1980, abandoned. This application Jan. 12, 1981, Ser. No. 222,815

Int. Cl.³ C12W *11/04;* G01W *33/54*

U.S. Cl. 435—7 **10 Claims**

1. An immuno test method comprising forming a mixture of

(a) a stable liposome labeled with one of an antigen or its cognate antibody sequestering an enzyme carried within it and having a signal to noise ratio of no less than 5;

(b) a substrate for said enzyme

(c) a test material to be tested for specific activity of the said one antigen or cognate antibody; and

(d) complement,

and detecting the presence or absence of enzymatic activity in said mixture under conditions which permit an immune reaction to expose said enzyme to said substrate.

4,342,827

PRODUCTION OF ENZYMES

Anthony Atkinson, Salisbury; Christopher J. Bruton, Kew, both of England; Michael J. Comer, Weilheim, Fed. Rep. of Germany, and Richard J. Sharp, Salisury, England, assignors to Public Health Laboratory Service, Center for Applied Microbiology & Research, Salisbury, England

Filed May 22, 1979, Ser. No. 41,481

Claims priority, application United Kingdom, May 22, 1978, 21194/78

Int. Cl.³ C12Q *1/32;* C12N *15/00, 9/04, 1/20*

U.S. Cl. 435—26 **27 Claims**

1. A glycerol dehydrogenase enzyme preparation having an active half-life of greater than 4 days when stored at 20° C. as a 3 mg/ml solution in a pH 6.8 buffer solution consisting of 50 mM potassium phosphate, 10 mM β-mercaptoethanol and 0.1 mM phenylmethyl sulphonyl fluoride.

4,342,828

METHOD FOR PRODUCING SUBSTANCE CAPABLE OF STIMULATING DIFFERENTIATION AND PROLIFERATION OF HUMAN GRANULOPOIETIC STEM CELLS

Fumimaro Takaku, Utsunomiya; Katsuhiro Ogasa, Yokohama; Morio Kuboyama; Nobuya Yanai, both of Tokyo; Muneo Yamada, Kodaira, and Yoshiteru Watanabe, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo and The Green Cross Corp., Osaka, both of, Japan

Filed Jul. 15, 1980, Ser. No. 169,107

Claims priority, application Japan, Jul. 20, 1979, 54-92355; May 15, 1980, 55-64625

Int. Cl.[3] C12N *5/00;* C12P *19/26*

U.S. Cl. 435—41 10 Claims

1. A method for producing a substance capable of stimulating the proliferation and differentiation of human granulopoietic stem cells, which comprises cultivating monocytes and macrophages, which have been separated from the human peripheral blood, in a synthetic medium for tissue culture containing a glycoprotein separated from the human urine and capable of stimulating human or mouse bone marrow cells to form human granulocytes or mouse macrophages and granulocytes, thereby producing a substance capable of stimulating the proliferation and differentiation of human granulopoietic stem cells in the medium, and recovering the active substance from the medium.

4,342,829

PROCESS FOR PREPARING NARASIN

Ralph E. Kastner, Indianapolis, and Robert L. Hamil, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 6, 1981, Ser. No. 261,068

Int. Cl.[3] C12P *17/16;* C12N *1/20;* C12R *1/465*

U.S. Cl. 435—118 4 Claims

1. The method of producing the antibiotic narasin which comprises cultivating *Streptomyces granuloruber,* NRRL 12389, or a narasin-producing mutant or variant thereof, in a culture medium containing assimilable sources of carbohydrate, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antibiotic activity is produced by said organism in said culture medium.

4. A biologically pure culture of the microorganism *Streptomyces granuloruber,* NRRL 12389.

4,342,830

PROCESS FOR SEPARATING AND RECOVERING ORGANICS AND INORGANICS FROM WASTE MATERIAL

Clifford C. Holloway, 303 E. Brooks, Apt. 215 W, Norman, Okla. 73069, assignor to Clifford C. Holloway; Lewis B. Holloway and Winford B. Holloway, all of Birmingham, Ala., a part interest

Filed May 11, 1981, Ser. No. 262,316

Int. Cl.[3] C12P *7/06, 7/08;* A23K *1/10*

U.S. Cl. 435—161 10 Claims

1. The process of treating waste material for the separation and recovery of organic matter comprising fermentable vegetable material and inorganic matter wherein rigid organic matter becomes soft when subjected to heat and pressure, comprising carrying out the following steps in the sequence named:

(a) feeding said waste material into a container having perforations therein and mounted within a closed chamber in spaced relation to the inner surface of said closed chamber,

(b) agitating said waste material while in said container,

(c) subjecting said waste material in said container to heat under a pressure ranging from approximately 20 psi to 100 psi for a period ranging from approximately twenty minutes to two hours to sterilize said waste material and soften said organic matter contained therein, and

(d) releasing the pressure from said chamber suddenly to thus force the softened organic matter outwardly of said container through said perforations, so that said organic matter is separated from said inorganic matter in said container.

4,342,831

FERMENTABLE ACID HYDROLYZATES AND FERMENTATION PROCESS

Marcel D. Faber, Princeton; Richard H. Ernst, Kendall Park, and Philip H. Lefebvre, Spotswood, all of N.J., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 53,979, Jul. 2, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,351

Int. Cl.[3] C12P *7/06*

U.S. Cl. 435—163 27 Claims

1. A method for preconditioning acid hydrolyzates derived from lignocellulosic materials comprising glucose and substances which tend to inhibit the fermentation thereof, consisting essentially of the steps of:

(1) subjecting said acid hydrolyzate to steam to remove steam-volatile substances therefrom;

(2) adding sufficient calcium oxide to said steam-stripped hydrolyzate to adjust the pH to between 10 and about 10.5 and maintaining said mixture at said pH for about 1 to 3 hours;

(3) adding sufficient amounts of a mineral acid to adjust the pH of said hydrolyzate to about 5 to 7; and

(4) adjusting the concentration of said hydrolyzate to a glucose concentration of less than 150 grams per liter to provide a solution fermentable to ethyl alcohol, with the proviso that when said concentration is greater than 50 grams per liter, the mineral acid employed in step (3) is phosphoric acid.

4,342,832

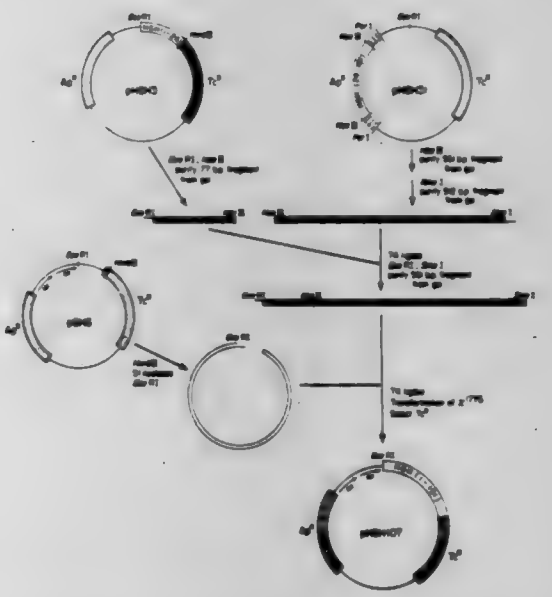
METHOD OF CONSTRUCTING A REPLICABLE CLONING VEHICLE HAVING QUASI-SYNTHETIC GENES

David V. Goeddel, and Herbert L. Heyneker, both of Burlingame, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Jul. 5, 1979, Ser. No. 55,126

Int. Cl.[3] C12N *15/00*

U.S. Cl. 435—172 12 Claims



1. In the method of constructing a replicable cloning vehicle capable, in a microbial organism, of expressing a particular polypeptide of known amino acid sequence wherein a gene coding for the polypeptide is inserted into a cloning vehicle

and placed under the control of an expression promoter, the improvement which comprises:

(a) obtaining by reverse transcription from messenger RNA a first gene fragment for an expression product other than said polypeptide, which fragment comprises at least a portion of the coding sequence for said polypeptide;

(b) where the first fragment comprises protein-encoding codons for amino acid sequences other than those contained in said polypeptide, eliminating the same while retaining at least a substantial portion of said coding sequence, the resulting fragment nevertheless coding for an expression product other than said polypeptide;

the product of step (a) or, where required, step (b) being a fragment encoding less than all of the amino acid sequence of said polypeptide;

(c) providing by organic synthesis one or more synthetic non-reverse transcript-gene fragments encoding the remainder of the amino acid sequence of said polypeptide, at least one of said fragments coding for the amino-terminal portion of the polypeptide; and

(d) deploying the synthetic gene fragment(s) of step (c) and that produced in step (a) or (b), as the case may be, in a replicable cloning vehicle in proper reading phase relative to one another and under the control of an expression promoter;

whereby a replicable cloning vehicle capable of expressing the amino acid sequence of said polypeptide is formed.

4,342,833

IMMOBILIZED RESTRICTION ENDONUCLEASES

Jack G. Chirikjian, Rockville, Md., assignor to Bethesda Research Laboratory, Rockville, Md.

Continuation-in-part of Ser. No. 801,854, May 31, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 896,811

Int. Cl.³ C12N *11/10, 9/22;* C12P *19/34*

U.S. Cl. 435—178 **2 Claims**

1. A biochemically active, immobilized, restriction endonuclease comprising restriction endonuclease Bam HI chemically bonded to cyanogen bromide activated agarose.

2. A biochemically active, immobilized, restriction endonuclease comprising restriction endonuclease Eco RI chemically bonded to cyanogen bromide activated agarose.

4,342,834

ENZYMES BOUND TO POLYURETHANE

Louis L. Wood, Rockville; Frank J. Hartdegen, and Peter A. Hahn, both of Columbia, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 574,778, May 5, 1975, abandoned, which is a division of Ser. No. 362,488, May 21, 1973, Pat. No. 4,312,946, which is a continuation-in-part of Ser. No. 250,012, May 3, 1972, abandoned. This application May 11, 1976, Ser. No. 685,230

The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.

Int. Cl.³ C12N *11/08, 11/04*

U.S. Cl. 435—182 **3 Claims**

1. A foamed polyurethane product containing an enzyme internally bound thereto prepared by the method which includes contacting, prior to a subsequent foaming step, an isocyanate-capped polyurethane with an aqueous dispersion of an enzyme, under foam-forming conditions, whereby the polyurethane foams and the enzyme becomes integrally bound to the thus formed polyurethane foam.

4,342,835

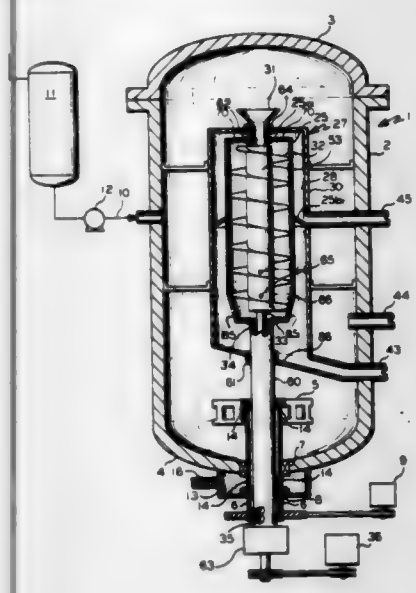
FERMENTATION PROCESS AND APPARATUS

Donald O. Hitzman, and Thomas R. Hopkins, both of Bartlesville, Okla., assignors to Provesta Corporation, Bartlesville, Okla.

Filed Oct. 3, 1980, Ser. No. 193,873

Int. Cl.³ C12N *1/16*

U.S. Cl. 435—255 **17 Claims**



1. A fermentation process comprising

(a) subjecting a mixture of a growth medium and a microorganism to a fermentation in a fermenter,

(b) generating a three phase mixture of gas, liquid and cells in said fermenter,

(c) carrying out a separation inside of said fermenter by passing the three phase mixture into a centrifuge cylinder,

(d) subjecting said three phase mixture in said centrifuge cylinder to a rapid spinning movement in contact with said centrifuge cylinder and thereby generating in at least a significant portion of the axial length of the centrifuge cylinder a first zone of material in contact with the centrifuge cylinder which material is rich in cells and depleted in liquid, a second zone being depleted of cellular material and rich in liquid,

(e) withdrawing a first fluid comprising said gas phase and a liquid depleted of cells as well as a separate second fluid being enriched in said cells and depleted of said liquid as two separate streams from said centrifuge cylinder, and

(f) recovering at least a portion of said first and/or second fluid from the fermenter as the product of the process.

5. An apparatus for carrying out a fermentation process comprising

(a) a closed fermenter housing,

(b) a centrifuge arranged within said closed fermenter housing and comprising

(aa) a centrifuge cylinder having an inner cylindrical surface arranged and designed for receiving a three phase mixture in a substantially tangential movement on said inner cylindrical surface,

(bb) a first fluid product conduit for receiving and conveying liquid product depleted of fermentation cells and gas from the centrifuge cylinder

(cc) a cell product conduit for receiving and conveying a second fluid rich in cell material from the centrifuge cylinder,

(dd) at least one of said product conduits providing a connection from said centrifuge through the confining wall of said closed fermenter housing to the outside thereof

(c) a feed inlet conduit operatively connected with said closed fermenter housing adapted for introduction of feed fluid into said closed fermenter housing and into the space within said closed fermenter housing surrounding said centrifuge,

(d) centrifuge inlet means to inject a three phase mixture from inside of said closed fermenter housing into said centrifuge

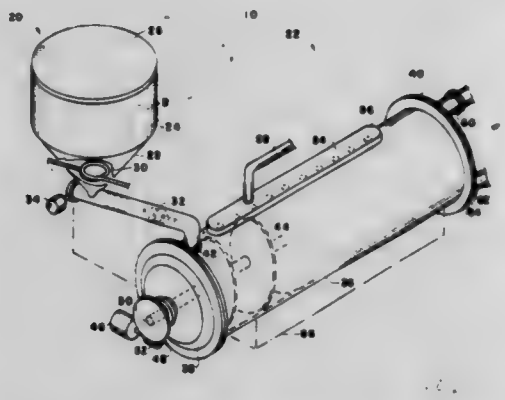
cylinder and with a substantial speed component tangentially with respect to said inner cylindrical surface.

4,342,836

CONTINUOUS ANAEROBIC DIGESTOR SYSTEM

Christian D. Harvey, Bolduc Apts., Sandown Rd., Fremont, N.H. 03044

Filed Oct. 17, 1980, Ser. No. 197,978
Int. Cl.³ C12M *1/02*
U.S. Cl. 435—316 15 Claims



1. In a system for anaerobic digestion of organic material to produce methane gas, the improvement comprising in combination: means for continuously feeding said organic material into said system, means for continuously processing said organic material through the system; means for continuously receiving said gases from the system; means for continuously discharging effluent from the system, the means for continuously processing including horizontally disposed cylindrical tank-comprising means, screw means axially mounted therein, means defining an entrance port at a first end portion of the cylindrical tank-comprising means; the means for continuously discharging effluent being means defining an exhaust port at a second end portion of the cylindrical tank-comprising means, the means for continuously processing further including means for continuously rotating the screw means in a direction for urging said organic matter from the entrance port to the exhaust port, the means for continuously rotating comprising motor means having attachment to the screw means, said screw means mounting including a plurality of bearings having respective supports to said cylindrical tank-comprising means, means for supplying a fluid to said organic material to facilitate said anaerobic digestion; and means for protecting said plurality of bearings from damage by intrusion therein of said organic material continuously processed, including means for injecting a fluid from outside the cylindrical tank-comprising means into the plurality of bearings and for expelling said fluid from the plurality of bearings within the cylindrical tank-comprising means, said fluid supplied being said fluid expelled from the plurality of bearings within the cylindrical tank-comprising means.

4,342,837

SINTERABLE SILICON CARBIDE POWDERS AND SINTERED BODY PRODUCED THEREFROM

Hiroshige Suzuki, No. 39-9, 2-Chome, Kitasenzoku, Ohta-Ku, Tokyo, Japan, and Teizo Hase, Tokyo, Japan, assignors to Hiroshige Suzuki, Tokyo, Japan

Continuation of Ser. No. 149,693, May 14, 1980, abandoned, which is a continuation of Ser. No. 17,200, Mar. 5, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 233,691
Claims priority, application Japan, Mar. 15, 1978, 53-28599
Int. Cl.³ C04B *35/56*
U.S. Cl. 501—90 2 Claims

1. Sinterable silicon carbide powders having submicron grain size produced by reacting 1.8 to 2.0 parts by weight of silicon monoxide with to 1.0 part by weight of finely divided carbon at a temperature of 1,340° to 1,440° C. under an essentially inert atmosphere at a reduced pressure of less than 10 mmHg, the partial pressure of oxygen in said atmosphere being less than 10^{-10} atmospheres, said powders when mixed with 1% by weight each of boron and carbon and then heated at 2,100° C. for 60 minutes forming a sintered body having a density of 96% of theoretical density, a fine particle structure of less than 10 μm, a bending strength of 82.0 kg/mm² in the three point bending test at 1700° C. at 10^{-6} mmHg and containing more than 90%-β-type silicon carbide.

4,342,838

BIMETALLIC CLUSTERS OF RUTHENIUM WITH COPPER, SILVER AND GOLD

Roy L. Pruett, New Providence, and John S. Bradley, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 135,998, Mar. 31, 1980, Pat. No. 4,301,086. This application Mar. 11, 1981, Ser. No. 242,638
Int. Cl.³ C07C *27/06, 45/50*
U.S. Cl. 518—713 8 Claims



1. A homogeneous process for the catalytic preparation of methanol which comprises contacting CO and H_2 in a CO:H_2 ratio of from 0.1 to 2 at a pressure of from 40 to 150 MPa in the presence of a catalytically effective amount of a bimetallic cluster compound of the formula $L_2M_2Ru_6C(CO)_{16}$ where L is RCN, R being C_1 to C_6 alkyl, C_6 to C_{10} aralkyl or phenyl and M is copper, silver or gold in an inert organic solvent at temperatures of from 225° to 325° C.

4,342,839

METHOD OF MANUFACTURE OF ION EXCHANGE RESINS

Hiroshi Akiyama, Ichikawa, and Koji Oinuma, Tokyo, both of Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 19, 1980, Ser. No. 132,474
Int. Cl.³ B01J *39/20, 41/18, 39/24, 41/14*
U.S. Cl. 521—25 10 Claims

1. An ion exchange resin derived from vinyl monomers and having a functional group therein, said resin being disposed within the matrix of a granular activated carbon particle by polymerization of the vinyl monomers within the matrix of the particle, wherein the ion exchange resin, exclusive of said functional group, comprises up to 30% by weight of said activated carbon particle.

4,342,840

PROCESS FOR PRODUCING POLYMER POLYOL

Shigeyuki Kozawa, Yokohama; Takao Doi, Kawasaki, and Nobuaki Kunii, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 214,283

Claims priority, application Japan, Dec. 25, 1979, 54-167665; Dec. 28, 1979, 54-170325

Int. Cl.³ C08G *18/14, 18/63;* C07C *125/06*

U.S. Cl. 521—137 25 Claims

1. A process for producing a polymer polyol which comprises polymerizing a monomer having a polymerizable unsaturated group in a nitrogen bond-containing unsaturated polyol or polyol mixture and said nitrogen bond-containing unsaturated polyol having at least two nitrogen-containing bonds formed by reacting organic isocyanate groups with active hydrogen groups, at least one polymerizable unsaturated group and at least 1.7 hydroxyl groups, as average.

4,342,841

POLYAMIDE POLYURETHANE PREPARED BY REACTION OF POLYISOCYANATE WITH A 1,1-DIAMINO ETHYLENE

Louis M. Alberino, Cheshire, and Dale F. Regelman, Wallingford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 14, 1981, Ser. No. 292,871

Int. Cl.³ C08G *18/14*

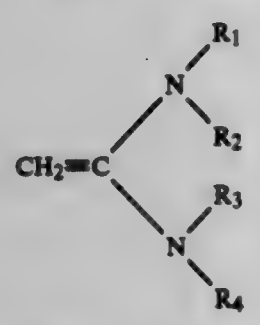
U.S. Cl. 521—163 18 Claims

1. A polyamide polyurethane which comprises the product of reaction of

A. an organic polyisocyanate;

B. at least one organic polyol; and

C. a ketene-aminal having the formula



wherein R_1, R_2, R_3, and R_4, when taken separately, are independently selected from the group consisting of lower alkyl, aralkyl, and cycloalkyl and, when taken together as R_1 with R_2 and R_3 with R_4 with the respective nitrogen atoms to which they are attached, represent independently a heterocyclic group having from 5 to 7 ring atoms

wherein the equivalent proportions of said polyol component (B) to said ketene-aminal component (C) fall within the range of about 1:4 to about 1:80 and the ratio of equivalents of said isocyanate to total equivalents of isocyanate reactive ingredients (B) plus (C) is within the range of about 0.95:1 to 6:1.

4,342,842

PROCESS FOR PRODUCING RIGID POLYURETHANE FOAM

Yasuo Hira, Fujisawa; Susumu Tsuzuku, Tokyo; Masao Gotoh, Yokosuka; Hitoshi Yokono, Yokohama; Hiroshi Kaneko, Yokohama, and Yoshihisa Hosoe, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 280,210

Claims priority, application Japan, Jul. 7, 1980, 55/91758

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—167 14 Claims

1. In a process for producing a polyurethane foam by a one-shot process using a composition comprising a polyol, a polyisocyanate, a blowing agent and a reaction accelerator as essential components, the improvement which comprises using as the polyol the following mixture comprising

(a) an alkylene oxide adduct of 4,4'-diaminodiphenylmethane having a hydroxyl value of 280–600 mg KOH/g,

(b) an aliphatic polyol having a hydroxyl value of 450–800 mg KOH/g and 3 or 4 hydroxyl groups in the molecule, and

(c) a polyol having a hydroxyl value of 30 to 100 mg KOH/g and 2 or 3 hydroxyl groups in the molecule,

the proportions of the components (a), (b) and (c) being in the closed area of A-B-C-D-E-F-A in the accompanying triangular diagram, wherein the points A to F have the following compositions in percents by weight:

	Component (a)	Component (b)	Component (c)
A	60	35	5
B	25	70	5
C	20	70	10
D	20	50	30
E	40	30	30
F	60	30	10

4,342,843

NEOPRENE LATEX CONTACT ADHESIVES

Witold Perlinski, Middlesex; Irwin J. Davis, Bridgewater, and John F. Romanick, Denville, all of N.J., assignors to National Starch and Chemical Corp., Bridgewater, N.J.

Continuation-in-part of Ser. No. 16,711, Mar. 1, 1979, abandoned. This application Feb. 24, 1981, Ser. No. 237,791

Int. Cl.³ C08L *63/00, 9/10*

U.S. Cl. 523—409 9 Claims

1. An improved multi-part aqueous contact adhesive composition containing not more than a minor amount of organic solvent consisting essentially of an unreacted blend of:

(a) a neoprene latex,

(b) a polyamine,

(c) an epoxy resin, and

(d) a tackifier selected from the group consisting of natural and modified rosins, polyterpene resins having a softening poing of from about 80° to 150° C., and aliphatic petroleum hydrocarbon resins having a Ball and Ring softening point of from about 70° to 135° C.;

wherein for every 100 parts by weight of dry neoprene, the epoxy resin is present in an amount of 10 to 40 parts, the polyamine in an amount sufficient to provide 50 to 150% of the stoichiometric amount required to cure the epoxy, and the tackifier in an amount of 20 to 50 parts.

4,342,844

PROCESS FOR PREPARING PEROXIDE MASTER BATCHES

Reinder Torenbeek, Twello; Jan D. van Drumpt, Deventer, and Gerrit F. Drost, Schalkhaar, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Dec. 4, 1980, Ser. No. 212,951

Claims priority, application Netherlands, Dec. 13, 1979, 7908964

Int. Cl.³ C08F *8/06*

U.S. Cl. 525—387 4 Claims

1. A process for the preparation of an organic peroxide master batch comprising from about 20 to about 60 percent by weight of an organic peroxide and from about 40 to about 80 percent by weight of a polymer capable of being cross-linked by the peroxide comprising (1) contacting particles of said polymer, having a diameter from about 200 microns to about 20 millimeters, at a temperature from about 15° C. to about 95° C., with a liquid medium which is not a physically stable emulsion and which comprises from about 2 to about 100 percent, by weight, of a peroxide which is a liquid at said temperature

and from about 0 to about 98 percent, by weight, of a suitable liquid in which the peroxide and the polymer are insoluble, for a period of time sufficient to incorporate from about 20 to about 60 percent of peroxide in the polymer particles, based on the total weight of the polymer particles containing the peroxide, said medium being present in such an amount that after the incorporation of the peroxide essentially all of the polymer particles are completely surrounded by the liquid medium (2) and subsequently separating the liquid medium from the polymer particles.

4,342,845

VINYL HALIDE-POLYOLEFIN POLYMER AND COPOLYMERS AND METHOD OF MAKING

William L. Schall, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Oct. 3, 1980, Ser. No. 193,560
Int. Cl.³ C08F *255/02, 255/04, 255/06*
U.S. Cl. 525—53 31 Claims

1. A process of preparing a vinyl halide polymer which comprises polymerizing a reaction charge in bulk liquid phase, in the presence of from about 0.2 to less than about 50% by weight of the reaction charge of a straight or branched chain, or cyclic saturated hydrocarbon diluent inert to the polymerization mass containing from 3 to 15 carbon atoms, said charge comprised of vinyl halide monomer alone or in combination with up to 50% by weight based on the total weight of monomers of another ethylenically unsaturated monomer copolymerizable therewith, in the presence of from about 0.05% to about 20% by weight based on the vinyl halide monomer of a hydrocarbon olefin trunk polymer having a weight average molecular weight of about 50,000 to about 1,000,000, and a free radical initiator compound for said polymerization.

31. In the process of preparing a vinyl halide polymer which comprises polymerizing a reaction charge in bulk liquid phase, said charge comprised of vinyl halide monomer alone or in combination with up to 50% by weight based on the total weight of monomers of another ethylenically unsaturated monomer copolymerizable therewith, in the presence of from about 0.05% to about 20% by weight based on the vinyl halide monomer of a hydrocarbon olefin trunk polymer having a weight average molecular weight of about 50,000 to about 1,000,000, and a free radical initiator compound for said polymerization, which is characterized by passing through a thick paste state, the improvement of carrying out the polymerization in the presence of from about 0.2 to less than about 50% by weight of the reaction charge of a straight or branched chain, or cyclic saturated hydrocarbon diluent inert to the polymerization mass containing from 3 to 15 carbon atoms, and removing from about 2% to less than about 50% by weight of the vinyl halide portion of the charge during said thick paste state of the polymerization process to adjust the concentration of said olefin trunk polymer after said removal to greater than about 3.5% by weight based on the vinyl halide remaining in the charge, the initial concentration of said olefin trunk polymer in said polymerization reaction mass being more than about 1.8% by weight based on the vinyl halide charged.

4,342,846

BLENDS OF A POLYESTER RESIN AND IMPACT RESISTANT INTERPOLYMER

Joseph Silberberg, Brooklyn, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 9, 1981, Ser. No. 241,876
Int. Cl.³ C08L *51/00*
U.S. Cl. 525—64 9 Claims

1. A blend comprising: (1) a polyester resin formed by reaction of a dicarboxylic acid and a diol; and (2) an impact resistant interpolymer comprising crosslinked (meth)acrylate, crosslinked styrene-acrylonitrile, and uncrosslinked styrene-acrylonitrile polymeric components.

4,342,847

PROCESS FOR THE PRODUCTION OF THERMOPLASTIC SYNTHETIC MATERIALS

Wilhelm Goyert, Cologne; Ernst Meisert; Wolfgang Grimm, both of Leverkusen; Alfred Eitel, Dormagen; Hans Wagner, Dormagen; Georg Niederdellmann, Dormagen, and Bernd Quiring, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 13, 1979, Ser. No. 103,001
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854409
Int. Cl.³ D01F *1/02*
U.S. Cl. 525—66 9 Claims

1. A continuous process for the production of thermoplastic materials, comprising:

I. introducing 4 to 65 parts by weight of thermoplastic polymer into an extruder at a first inlet, wherein the temperature within said extruder is such that said thermoplastic polymer melts;

II. adding to said thermoplastic polymer through a second inlet 35 to 96 parts by weight of the following polyurethane forming components, such that the total parts by weight of thermoplastic polymer and polyurethane components is 100;

(A) organic polyisocyanate; and

(B) chain lengthening agent with a molecular weight below 400 containing a hydroxyl group and/or amine group;

wherein the ratio of isocyanate groups of component (A) to Zerewitinoff active groups of component (B) is in the range of about 0.90:1 to 1.2:1; and

III. discharging from the extruder the product of the process when the reaction of said polyurethane components (A) and (B) is substantially complete.

4,342,848

PROCESSING MODIFIER FOR HIGH-DENSITY POLYETHYLENE

Robert R. Blanchard, Brusly, and Tommy R. Bourne, Baton Rouge, both of La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 20, 1981, Ser. No. 284,419
Int. Cl.³ C08L *23/06, 29/10*
U.S. Cl. 525—231 4 Claims

1. A process for extruding high-density polyethylene resins, comprising the steps of:

(a) heating above its melting point a mixture comprising about one hundred parts by weight of high-density polyethylene, and between about 0.03 and about 0.5 parts by weight of a polyvinyloctadecyl ether; and

(b) extruding the melt formed in step (a), thereby forming an extrudate.

4,342,849

NOVEL TELECHELIC POLYMERS AND PROCESSES FOR THE PREPARATION THEREOF

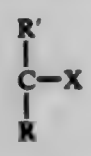
Joseph P. Kennedy, Akron, Ohio, assignor to The University of Akron, Akron, Ohio

Division of Ser. No. 73,789, Sep. 10, 1979, Pat. No. 4,316,973. This application Feb. 5, 1981, Ser. No. 231,899
Int. Cl.³ C08F *8/06, 8/12, 8/18, 8/26*
U.S. Cl. 525—333.7 6 Claims

1. A novel telechelic polymer formed from an inifer and a cationically polymerizable olefin monomer having from about 4 to about 12 carbon atoms, said polymer having a residue of said inifer in the backbone thereof and carrying at least two hydroxyl groups;

said inifer selected from compounds having the following formula: AY_n, where A is selected from the group consisting of condensed and non-condensed aromatic compounds having from 1 to 4 rings, and linear and branched aliphatic

compounds having from 3 to 20 carbon atoms, where Y is represented by the following formula:



where R and R′ are selected from the group consisting of hydrogen, methyl, and phenyl, and R and R′ can be the same when A is an aromatic compound, or where R or R′ is phenyl when A is an aliphatic compound; and

where X is a halogen selected from the group consisting of fluorine, chlorine, and bromine, and where n is an integer from 2 to 6.

4,342,850

PROCESS FOR THE PREPARATION OF HYDROCARBON RESINS

Robert P. Allen, and Albert C. Ruggles, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,866

Int. Cl.³ C08F *8/04*

U.S. Cl. 525—339 **1 Claim**

1. A process for preparing a high softening point hydrocarbon resin which comprises heat treating the C_5 and higher hydrocarbon fraction mixture obtained in the steam cracking of propane and ethane by continuously passing said mixture through a stirred autoclave maintained at 175° to 250° C. under a pressure of 450–500 psig. for a period of 0.5 to 16 hours, fractionating said heat treated hydrocarbon fraction to remove the olefins and aromatics up through toluene, activating said fractionated heat treated fraction with alumina, polymerizing said activated fractionated heat treated fraction with a Friedel-Crafts catalyst, diluting said polymerized hydrocarbon fraction, washing said diluted polymerized hydrocarbon fraction with aqueous caustic, drying said washed fraction, and hydrogenating said dried fraction to provide a low color hydrocarbon resin.

4,342,851

CURABLE COMPOSITION OF HALOGEN-CONTAINING POLYMER

Akio Suzui, Amagasaki, and Yasuo Matoba, Toyonaka, both of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

Filed Feb. 27, 1981, Ser. No. 239,036

Claims priority, application Japan, Mar. 3, 1980, 55-26900; Aug. 6, 1980, 55-108631; Jan. 29, 1981, 56-12403

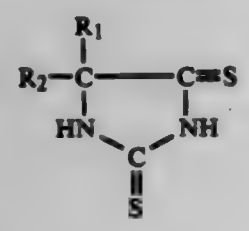
Int. Cl.³ C08G *65/24*; C08B *11/22*; C08F *8/34*

U.S. Cl. 525—403 **8 Claims**

1. A curable composition of halogen-containing polymer composed of

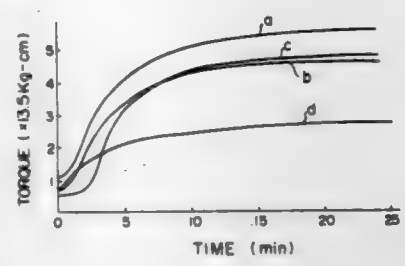
(1) 100 parts by weight of a halogen-containing polymer selected from the group consisting of polyepichlorohydrin, an epichlorohydrin/allyl glycidyl ether copolymer, an epichlorohydrin/ethylene oxide copolymer and an epichlorohydrin/ethylene oxide/allyl glycidyl ether terpolymer,

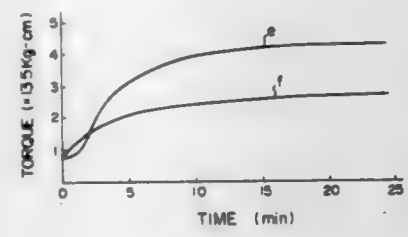
(2) as a crosslinking agent, about 0.1 to about 10 parts by weight of a 2,4-dithiohydantoin having the formula

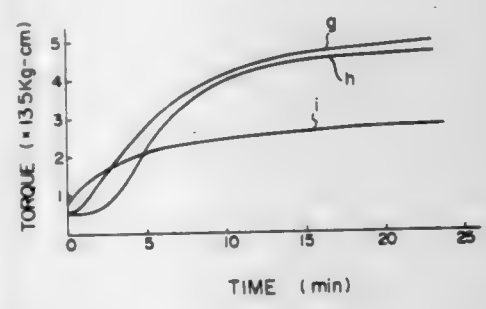


(I)

wherein R_1 and R_2 are identical or different and represent a member selected from the class consisting of a hydrogen atom, C_1–C_8 alkyl groups, C_6–C_8 cycloalkyl groups, C_2–C_8 alkenyl groups, C_6–C_8 aryl groups and C_7–C_8 aralkyl groups, or R_1 and R_2 are bonded together to form a 5- to 7-membered hydrocarbon ring which may contain a nitrogen atom and have at least one lower alkyl group as a substituent, provided R_1 and R_2 are not hydrogen atoms simultaneously







or a metal salt thereof, and

(3) as an acid acceptor, about 0.5 to about 50 parts by weight of a compound of a metal of Group II or IVa of the periodic table selected from the group consisting of Mg, Ba, Ca, Sn and Pb.

4,342,852

SETTING TYPE RESIN COMPOSITION CONTAINING A SUBSTANTIALLY LINEAR, HIGH-MOLECULAR-WEIGHT NOVOLAK SUBSTITUTED PHENOLIC RESIN

Nobuyuki Takeda, and Tadao Iwata, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

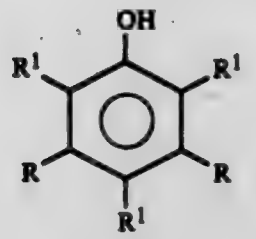
Filed Dec. 29, 1980, Ser. No. 221,354

Claims priority, application Japan, Dec. 27, 1979, 54-169140; Jun. 3, 1980, 55-73754; Jun. 3, 1980, 55-73755; Jun. 3, 1980, 55-73756; Jun. 3, 1980, 55-73757

Int. Cl.³ C08L *63/02*

U.S. Cl. 525—481 **15 Claims**

1. A resin composition comprising (A) a thermosetting resin and (B) 10 to 200 parts by weight, per 100 parts by weight of said resin (A), of a substantially linear, high-molecular-weight novolak substituted phenolic resin which comprises substantially linear novolak type recurring units formed by condensation of a phenol component containing at least 70 mole % of at least one bifunctional phenol represented by the following general formula (I):



(I)

wherein two of three R^1's are hydrogen atoms and the remaining one R^1 is an alkyl group having 1 to 8 carbon atoms, an aryl group having 6 to 10 carbon atoms, a halogen atom or a hydroxyl group, and two R's, which may be same or different, stand for a member selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, a halogen atom and a hydroxyl group,

with at least one aldehyde component respresented by the following general formula (II):

$$R^2—CHO \quad \text{(II)}$$

wherein R^2 stands for a hydrogen atom or a substituent selected from the group consisting of a methyl group and a halogenated methyl group,

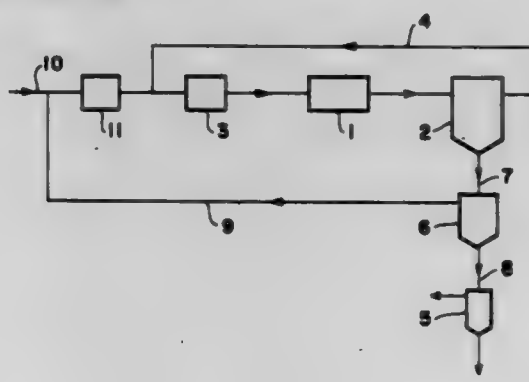
wherein said novolak substituted phenolic resin (B) may contain intervening groups consisting of a divalent hydrocarbon group, which appear alternately in blocks of said novolak type recurring units having a number average molecular weight of 250 to 1200, in an amount of 0.5 to 1 mole per mole of said blocks and wherein said novolak substituted phenolic resin has a number average molecular weight of at least 1500 as measured by the vapor pressure osmometry in N,N-dimethylacetamide as the solvent.

4,342,853

PROCESS FOR MANUFACTURING ETHYLENE POLYMERS

Pierre Durand, Neuilly sur Seine, and Pierre Gloriod, Saint Nicolas de la Taille, par Lillebonne, both of France, assignors to Societe Chimique des Charbonnages—CdF Chimie, Paris, France

Filed Jul. 2, 1980, Ser. No. 164,534
Claims priority, application France, Jul. 5, 1979, 79 17444
Int. Cl.³ C08F *2/34*
U.S. Cl. 526—68 **2 Claims**



1. Process for the production of polymers of ethylene in a continuously operating reaction system under a pressure between about 400 and 3000 bars and a temperature between about 150° and 320° C., comprising separating the polymers formed from a reaction mixture in a first separation zone maintained at a pressure between about 100 and 500 bars to form a polymer stream and a gas stream, further separating the polymers from the first separation zone from residual gases in an intermediate separation zone maintained at a pressure between about 10 and 70 bars, mixing the residual gases separated in said intermediate zone with an ethylene feed stream, compressing said residual gas-ethylene feed mixture to the pressure of the first separation zone, and further separating the polymers from the intermediate separation zone in a second separation zone maintained at a pressure between about 1 and 1.5 bars.

4,342,854

SOLID POLYMERS OF 4-METHYL-1-PENTENE

John P. Hogan, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 648,364, Jun. 23, 1967, abandoned, which is a division of Ser. No. 558,530, Jan. 11, 1956, abandoned, which is a continuation-in-part of Ser. No. 333,576, Jan. 27, 1953, abandoned, and Ser. No. 476,306, Dec. 20, 1954, abandoned. This application Sep. 16, 1971, Ser. No. 181,185
Int. Cl.³ C08F *110/14, 4/24*
U.S. Cl. 526—75 **13 Claims**

1. A normally solid homopolymer of 4-methyl-1-pentene.

4,342,855

PROCESS FOR THE PRODUCTION OF POLYETHYLENE

Shinichi Akimoto, and Akio Kimura, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,686
Int. Cl.³ C08F *4/02, 10/02*
U.S. Cl. 526—124 **27 Claims**

1. In the process for producing polyethylene comprising polymerizing ethylene in the presence of an ethylene polymerization catalyst,

the improvement comprising

(i) carrying out said polymerization in the presence of an alcohol; and

(ii) said polymerization catalyst comprising:

(A) a solid catalyst component containing at least titanium, magnesium and chlorine,

(B) trialkylaluminum of the formula

$$R^1{}_3Al$$

wherein R^1 is an alkyl or cycloalkyl group containing from 1 to 12 carbon atoms; and

(C) a chlorine-containing aluminum compound of the formula

$$R^2{}_nAlCl_{3-n}$$

wherein R^2 is an alkyl or cycloalkyl group containing from 1 to 12 carbon atoms, and n is a real number of from 1 to 2;

said solid catalyst component (A) is obtained by reacting the (1) reaction product of magnesium dialkoxide of the formula

$$Mg(OR^4)_2$$

wherein R^4 is an alkyl, alkenyl, aryl, cycloalkyl, arylalkyl or alkylaryl group containing from 1 to 20 carbon atoms, and (2) silicon tetrachloride, with a chlorine-containing titanium compound of the formula

$$Cl_mTi(OR^5)_{4-m}$$

wherein R^5 is an alkyl or aryl group containing from 1 to 10 carbon atoms, and m is a real number of from 1 to 4.

4,342,856

PROPYLENE POLYMERIZATION PROCESS AND PRODUCT

Birendra K. Patnaik, Parsippany, N.J., assignor to El Paso Polyolefins Company, Paramus, N.J.

Filed Nov. 14, 1980, Ser. No. 206,810
Int. Cl.³ C08F *4/02, 10/06*
U.S. Cl. 526—125 22 Claims

1. In a process for the production of a propylene polymer wherein propylene is polymerized in the presence of hydrogen as polymer melt flow modifier in a polymerization zone at pressures sufficient to maintain propylene in liquid phase and at temperatures between about 115° F. and about 165° F. in the presence of a catalyst composition containing the components

(a) an aluminum trialkyl at least partially complexed with an aromatic carboxylic acid ester electron donor and

(b) a solid complex of a titanium tri- or tetrahalide with an aromatic carboxylic acid ester electron donor supported on magnesium halide,

the components (a) and (b) being provided in a molar ratio of Al/Ti between about 10 and about 400,

the method of improving the melt flow of the polymer at reduced hydrogen concentration, which method comprises:

prior to its introduction into the polymerization zone admixing the complex of component (b) with an aromatic carboxylic acid ester electron donor in a mole ratio of carboxylic acid ester to titanium of from about 2:1 to about 30:1; and introducing said mixture directly to the reaction zone no later than about 5 days from the time of admixing.

4,342,857

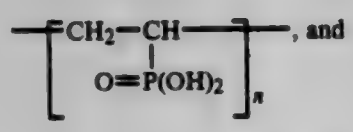
ANTIGINGIVITIS COMPOSITION COMPRISING VINYL PHOSPHONIC ACID/VINYL PHOSPHONYL FLUORIDE COPOLYMER

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,582
Int. Cl.³ C08F *8/12, 214/18, 230/02*
U.S. Cl. 525—326.4 6 Claims

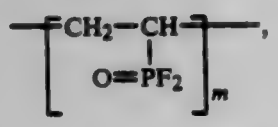
1. A water soluble copolymer composed predominantly of:

(A) units having the molecular configuration



, and

(B) units having the molecular configuration



the ratio of (A) units (n) to (B) units (m) ranging from about 2:1 to about 25:1.

6. A method of preparing a copolymer as defined in any of claims 1 to 5 comprising polymerizing a mixture of vinyl phosphonyl chloride, as precursor of the (A) units, and vinyl phosphonyl fluoride under substantially anhydrous conditions in the presence of a free radical catalyst, and then mixing the resulting copolymer with water to hydrolytically convert the vinyl phosphonyl chloride units in the copolymer to vinyl phosphonic acid (A) units.

4,342,858

POLYMERIC POLYELECTROLYTES

Daniel F. Herman, Princeton, and Uno Kruse, East Windsor, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

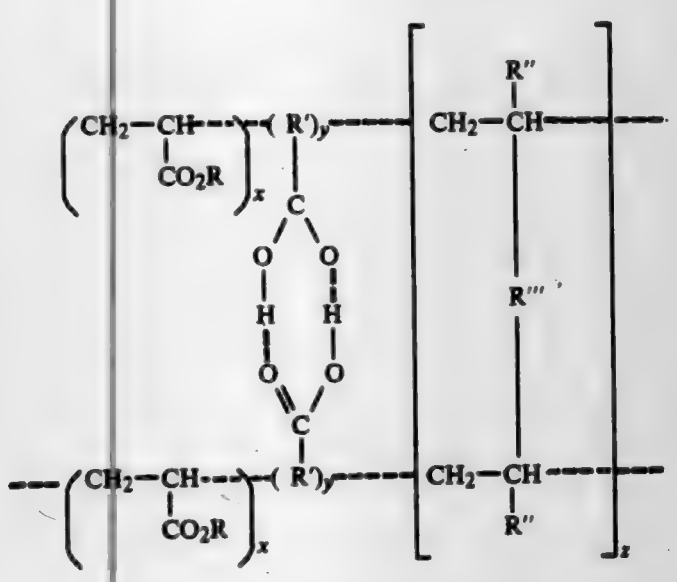
Continuation-in-part of Ser. No. 56,564, Jul. 11, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,619
Int. Cl.³ C08F *20/04*
U.S. Cl. 526—317 7 Claims

1. A water, solvent-insoluble crosslinked suspension polymer which comprises:

(a) from about 15% to about 50% by weight of an olefinically-unsaturated carboxylic acid containing an activated carbon-to-carbon olefinic double bond wherein said carboxyl group is crosslinked to another carboxyl group through hydrogen bonding;

(b) from about 49.07% to about 82% by weight of an alkyl acrylate wherein the alkyl group has from 1 to 6 carbon atoms; and

(c) from about 0.03% to about 3.0% by weight of a crosslinking agent which are polyunsaturated polymerizable vinyl monomers containing two or more free radical polymerizable ethylenic groups, said crosslinking agent being introduced directly into the carbon-carbon backbone of the polymer; and having the formula:



wherein:

X represents the relative number of alkyl acrylate groups with R being 1 to 6 carbon atoms as component (b);

y represents the relative number of olefinically-unsaturated carboxylic acid groups with R′ being the hydrocarbon portion of the carboxylic acid compounds of component (a);

z represents the relative number of crosslinking agents of component (c) with R″ being hydrogen or methyl and R‴ comprising the remaining portion of component (c).

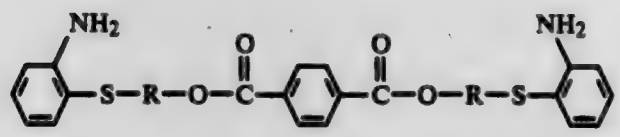
4,342,859

BIS(AMINOPHENYLTHIOALKYL)TEREPHTHALATE AND HARDENER FOR POLYURETHANE ELASTOMER THEREOF

Takao Harada, Shizuoka; Hideaki Ohashi, Fujieda; Wataro Koike, Shizuoka; Chihiro Yazawa, Yokohama, and Kazuko Nanjo, Tokorozawa, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed May 27, 1980, Ser. No. 153,417
Int. Cl.³ C08G *18/32;* C07C *69/82*
U.S. Cl. 528—64 2 Claims

2. A polyurethane elastomer including as a hardener therein a hardening effective amount of a bis(aminophenylthioalkyl)-terephthalate having the formula



wherein R represents a C_1–C_3 alkyl group.

4,342,860

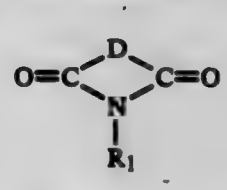
POLYISOCYANATO/IMIDO COMPOSITIONS AND IMIDE GROUP CONTAINING POLYMERS PREPARED THEREFROM

Jean-Louis Locatelli, Vienne, and Jean Robin, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 865,210, Dec. 28, 1977, abandoned. This application May 22, 1980, Ser. No. 152,416
Claims priority, application France, Dec. 31, 1976, 76 39874
Int. Cl.³ C08G *18/04*
U.S. Cl. 528—59 **55 Claims**

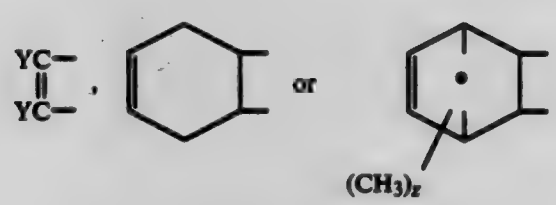
1. A composition of matter comprising (A) at least one organic polyisocyanate, and (B) at least one unsaturated imide selected from the group consisting of:

(i) a monoimide of the formula:



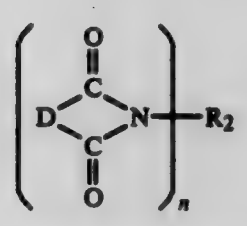
[I]

wherein D represents



in which Y is H, CH_3 or Cl, and Z is either 0, 1 or 2, and R_1 is hydrogen or a monovalent aliphatic, cycloaliphatic or aromatic hydrocarbon radical containing up to 20 carbon atoms; and

(ii) a polyimide of the formula:



[II]

wherein D is as above, n is a number ranging from 2 to 5 and R_2 is a radical having the valence n, such R_2 radical being selected from the group consisting of a wholly hydrocarbon radical, a heteroatom interrupted hydrocarbon radical, and a heterocycle containing hydrocarbon radical, and wherein in said composition the ratio r of total isocyanate functions in the polyisocyanate (A) to total polymerizable double bonds in the unsaturated imide (B) is in the range of from 0.3 to 15.

4,342,861

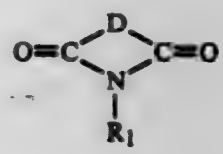
POLYISOCYANATO/IMIDO COMPOSITIONS AND IMIDE GROUP CONTAINING POLYMERS PREPARED FROM POLYISOCYANATE, POLYIMIDE AND COPOLYMERIZABLE COMONOMER

Jean-Louis Locatelli, Vienne, and Jean Robin, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 112,932, Jan. 17, 1980, Pat. No. 4,302,572, which is a division of Ser. No. 865,210, Dec. 28, 1977, abandoned. This application Jan. 15, 1981, Ser. No. 225,391
Claims priority, application France, Dec. 31, 1976, 76 39874
Int. Cl.³ C08G *18/02*
U.S. Cl. 528—59 **25 Claims**

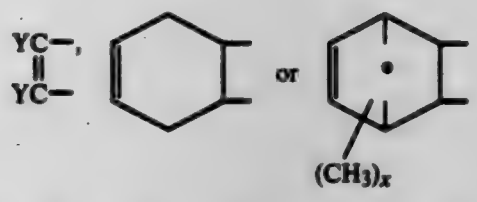
1. A composition of matter comprising (A) at least one organic polyisocyanate, (B) at least one unsaturated imide selected from the group consisting of:

(i) a monoimide of the formula:



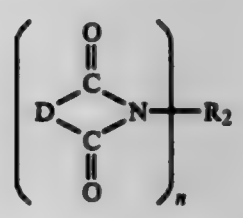
[I]

wherein D represents



in which Y is H, CH_3 or Cl, and Z is either 0, 1 or 2, and R_1 is hydrogen or a monovalent aliphatic, cycloaliphatic or aromatic hydrocarbon radical containing up to 20 carbon atoms; and

(ii) a polyimide of the formula:



[II]

wherein D is as above, n is a number ranging from 2 to 5 and R_2 is a radical having the valence n, such R_2 radical being selected from the group consisting of a wholly hydrocarbon radical, a heteroatom interrupted hydrocarbon radical, a heterocycle radical and a heterocycle containing hydrocarbon radical, and (C) a comonomer copolymerizable with the polyisocyanate (A), and wherein in said composition the ratio r of total isocyanate functions in the polyisocyanate (A) to total polymerizable double bonds in the unsaturated imide (B) is in the range of from 0.3 to 15.

4,342,862

POLYESTERS OF TRANS-1,4-CYCLOHEXANEDICARBOXYLIC ACID AND 2-PHENYLHYDROQUINONE AND MODIFICATIONS THEREOF

Winston J. Jackson, Jr., Kingsport, Tenn., and William R. Darnell, Weber City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,585
Int. Cl.³ C08G *63/18*
U.S. Cl. 528—176 **8 Claims**

1. Liquid crystalline polyesters having film- and fiber-forming molecular weights, said polyesters being prepared by react-

ing (A) at least 20 mole percent of the diacid chloride of 1,4-cyclohexanedicarboxylic acid of which at least 80 mole percent is trans-1,4-cyclohexanedicarboxylic acid, (B) 0–80 mole percent of the diacid chloride of other acids selected from terephthalic, terephthalic acid substituted with 1 or 2 chlorine or bromine atoms or an alkyl group containing 1 to 4 carbon atoms, 2,6-naphthalenedicarboxylic acid and 2,6-naphthalenedicarboxylic acid substituted with 1 or 2 chlorine or bromine atoms or an alkyl group containing 1 to 4 carbon atoms, (C) at least 20 mole percent 2-phenylhydroquinone, (D) 0–45 mole percent hydroquinone, and (E) 0–35 mole percent of a hydroquinone substituted with chlorine or bromine atoms or an alkyl group containing 1 to 4 carbon atoms.

4,342,863

PLASTIC LENS

Yorikatsu Hohokabe, Tokyo, and Eiichiro Takiyama, Kamakura, both of Japan, assignors to Showa Denko K.K. and Showa Highpolymer Co., Ltd., both of Japan

Filed Feb. 12, 1981, Ser. No. 233,765

Claims priority, application Japan, Feb. 19, 1980, 55/18490

Int. Cl.³ C08G *75/00*

U.S. Cl. 528—360 **2 Claims**

1. A plastic lens composed of a cured product of a mixture or a reaction product of (A) a compound containing at least two unsaturated cycloacetal groups per molecule, (B) a compound containing at least two mercapto groups per molecule and (D) an aliphatic polyvinyl compound selected from the group consisting of ethylene glycol diacrylate, ethylene glycol dimethacrylate, trimethylolpropane triacrylate, trimethylolpropane trimethacrylate, pentaerythritol tetraacrylate and dipentaerythritol hexaacrylate.

4,342,864

STARCH-AMINE-BASED POLYETHER POLYOLS AND PROCESS OF PREPARATION

Stephen Fuzesi, Hamden, and John G. Bayusik, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 22, 1980, Ser. No. 218,870

Int. Cl.³ C07H *15/04*; C08B *31/10*; C07H *15/08*

U.S. Cl. 536—18 **21 Claims**

14. A starch-amine-based polyether polyol prepared by

a. forming a crude polyglucoside reaction product by reacting in the presence of a catalytic proportion of an acid catalyst,

(1) starch and

(2) a polyhydric alcohol containing at least two hydroxyl groups, the proportion of said alcohol being at least 0.3 mole of alcohol per glucose unit weight of starch, and

b. admixing said crude polyglucoside reaction product with an amine in the presence of a basic catalyst, maintaining said mixture at a temperature of from 100° to 165° C., and introducing into said mixture an alkylene oxide having between 2 and about 6 carbon atoms, said amine being employed in an amount of at least about 0.1 mole to about 10 moles per glucose unit weight of starch and being selected from the group consisting of an aliphatic amine having 1–8 carbon atoms, an aromatic primary amine having 6–8 carbon atoms, an alkanolamine in which each alkanol group contains 2–5 carbon atoms, and a mixture thereof.

4,342,865

HIGH TEMPERATURE BLEACHING METHOD FOR CELLULOSE ESTERS

Richard J. Brewer, and Richard T. Bogan, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 182,904, Sep. 2, 1980, abandoned. This application Jul. 27, 1981, Ser. No. 286,919

Int. Cl.³ C08C *18/30*

U.S. Cl. 536—76 **3 Claims**

1. Improved high temperature method for bleaching cellulose esters consisting of cellulose acetate, cellulose acetate propionate and cellulose acetate butyrate, said method comprising:

adding at a temperature of about 80° C. to about 150° C. to the hydrolysis solution during the hydrolysis reaction of the cellulose ester a bleaching agent comprising a mixture of about 0.1 to about 0.3 pphr (parts per hundred parts resin) hydrogen peroxide and about 0.1 to about 0.3 pphr of at least one monopersulfate salt in an aqueous solution, said monopersulfate salt being selected from the group consisting of sodium, potassium and lithium or mixtures thereof.

4,342,866

HETEROPOLYSACCHARIDE S-130

Kenneth S. Kang, LaJolla, and George T. Veeder, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 73,573, Sep. 7, 1979, abandoned. This application Apr. 23, 1981, Ser. No. 256,632

Int. Cl.³ C07H *1/00*; C08B *37/00*

U.S. Cl. 536—119 **1 Claim**

1. Heteropolysaccharide S-130, which is principally carbohydrate, comprising 2.8–7.5% (calculated as O-acetyl) O-acyl groups, 11.6–14.9% glucuronic acid, and the neutral sugars mannose, glucose, and rhamnose in the approximate molar ratio 1:2:2, wherein the ratio of terminally linked rhamnose to 1,4 linked rhamnose is 1:2 and the glucose is primarily 1,3 linked.

4,342,867

PROCESS FOR THE PREPARATION OF CATIONIC DYESTUFFS

Harald Gleinig, Odenthal; Bernd Berger-Lohr, Leverkusen, and Kurt Breig, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

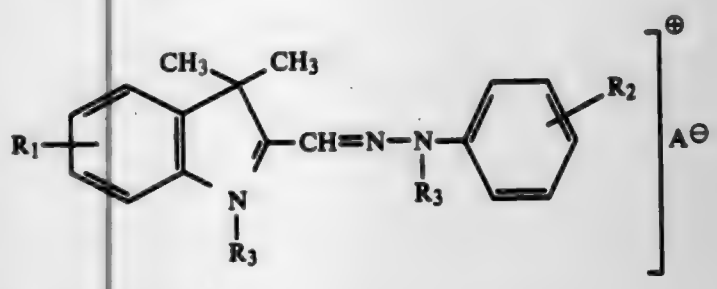
Filed Mar. 19, 1981, Ser. No. 245,412

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013272

Int. Cl.³ C07D *209/40*

U.S. Cl. 542—417 **7 Claims**

1. Process for the preparation of cationic dyestuffs of the general formula



wherein

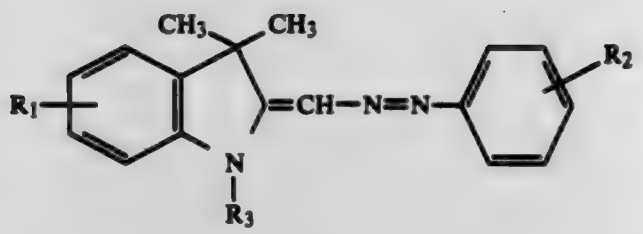
R_1 represents hydrogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, nitro or halogen,

R_2 represents hydrogen, C_1- to C_4-alkyl, C_1-to C_4-alkoxy, halogen or phenylazo,

R_3 represents C_1- to C_3-alkyl and

$A^{\ominus}$ represents an anion,

by reacting azo bases of the general formula



with dialkyl sulphates of the general formula

$$(R_3—O—)_2SO_2$$

in the absence of organic solvents and in the presence of water, and, if desired, by replacing the alkylsulphate anion with another anion, characterised in that the weight ratio of azo base to water is 100:15–100 and the molar ratio of azo base to dialkyl sulphate is 1:1.5–2.5.

4,342,868

2-DESCARBOXY-2-(TETRAZOL-5-YL)-16,16-DIMETHYL-17-(2-FURYL)-ω-TRISNORPROSTAGLANDIN E_2

Michael R. Johnson, Gales Ferry; Thomas K. Schaaf, and Hans-Jurgen E. Hess, both of Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 805,879, Jun. 13, 1977, abandoned. This application Apr. 1, 1981, Ser. No. 249,930

Int. Cl.³ C01D *405/08*; A61K *31/413*

U.S. Cl. 542—431 **1 Claim**

1. 2-Descarboxy-2-(tetrazol-5-yl)-16,16-dimethyl-17-(2-furyl)-ω-trisnorprostaglandin E_2.

4,342,869

CEPHALOSPORIN ANTIBIOTICS

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

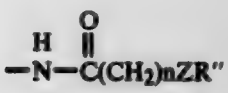
Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,115

Claims priority, application United Kingdom, Jun. 16, 1970, 29158/70; Jul. 9, 1970, 33415/70; Sep. 30, 1970, 46556/70; Dec. 10, 1970, 58731/70; Jan. 27, 1971, 3296/71; Jan. 27, 1971, 3297/71; Jan. 27, 1971, 3298/71; Feb. 8, 1971, 4179/71; Feb. 11, 1971, 4479/71; Feb. 11, 1971, 4480/71; Feb. 26, 1971, 5588/71; Apr. 30, 1971, 29158/71

Int. Cl.³ C07D *501/20*

U.S. Cl. 544—21 **11 Claims**

1. The compound of 3-A-7-X′-7-acylamido-3-cephem-4-carboxylic acid wherein X′ is chloro, bromo or iodo; A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzoyl)oxymethyl, (p-methylbenzoyl)oxymethyl, pivaloyloxymethyl, (1-adamantyl)carboxymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)oxymethyl, (N-ethylcarbamoyl)oxymethyl, [N-(2-chloroethyl)carbamoyl]oxymethyl, (N-phenylcarbamoyl)oxymethyl, (N-p-sulfophenylcarbamoyl)oxymethyl, p-carboxymethylphenylcarbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)-thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbamoylthiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethylpiperazinium-1-thiocarbonylthiomethyl, 2-furoylthiomethyl, isothiouroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxymethyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R:2S-epoxypropylphosphonyloxymethyl, or pyridinium methyl; and acylamido is



wherein n is 1–4, Z is oxygen or sulfur, and R″ is benzyl, p-hydroxybenzyl, 4-amino-4-carboxybutyl, methyl, cyanomethyl, 2-pentenyl, n-amyl, n-heptyl, ethyl, 3- or 4-nitrobenzyl, phenethyl, β,β-diphenylethyl, methyldiphenylmethyl, triphenylmethyl, 2-methoxyphenyl, 2,6-dimethoxyphenyl, 2,4,6-trimethoxyphenyl, 3,5-dimethyl-4-isoxazolyl, 3-butyl-5-methyl-4-isoxazolyl, 5-methyl-3-phenyl-4-isoxazolyl, 3-(2-chlorophenyl)-5-methyl-4-isoxazolyl, 3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolyl, D-4-amino-4-carboxybutyl, D-4-N-benzoylamino-4-carboxy-n-butyl, p-aminobenzyl, o-aminobenzyl, m-aminobenzyl, (3-pyridyl)-methyl, 2-ethoxy-1-naphthyl, 3-carboxy-2-quinoxalinyl, 3-(2,6-dichlorophenyl)-5-(2-furyl)-4-isoxazolyl, 3-phenyl-4-isoxazolyl, 5-methyl-3-(4-guanidinophenyl)-4-isoxazolyl, 4-guanidinomethylphenyl, 4-guanidinomethylbenzyl, 4-guanidinobenzyl, 4-guanidinophenyl, 2,6-dimethoxy-4-guanidinophenyl, o-sulfobenzyl, p-carboxymethylbenzyl, p-carbamoylmethylbenzyl, m-fluorobenzyl, m-bromobenzyl, p-chlorobenzyl, p-methoxybenzyl, 1-naphthylmethyl, 3-isothiazolylmethyl, 4-isothiazolylmethyl, 5-isothiazolylmethyl, 4-pyridylmethyl, 5-isoxazolylmethyl, 4-methoxy-5-isoxazolylmethyl, 4-methyl-5-isoxazolylmethyl, 1-imidazolylmethyl, 2-benzofuranylmethyl, 2-indolylmethyl, 2-phenylvinyl, 2-phenylethynyl, 2-(5-nitrofuranyl)vinyl, phenyl, o-methoxyphenyl, o-chlorophenyl, o-phenylphenyl, p-aminomethylbenzyl, 1-(5-cyanotriazolyl)methyl), difluoromethyl, dichloromethyl, dibromomethyl, 1-(3-methylimidazolyl)methyl, 2- or 3-(5-carboxymethylthienyl)-methyl, 2- or 3-(4-carbamoylthienyl)methyl, 2- or 3-(5-methylthienyl)methyl, 2- or 3-(5-methoxythienyl)methyl, 2- or 3-(4-chlorothienyl)methyl, 2- or 3-(sulfothienyl)methyl, 2- or 3-(5-carboxythienyl)methyl, 3-(1,2,5-thiadiazolyl)methyl, 3-(4-methoxy-1,2,5-thiadiazolyl)methyl, 2-furylmethyl, 2-(5-nitrofuryl)methyl, 3-furylmethyl, 2-thienylmethyl, 3-thienylmethyl, and tetrazolylmethyl; and the pharmaceutically acceptable salts thereof, or the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin.

4,342,870

NOVEL 3-(1-PIPERIDINYLALKYL)-4H-PYRIDO[1,2-A]PYRIMIDIN-4-ONE DERIVATIVES

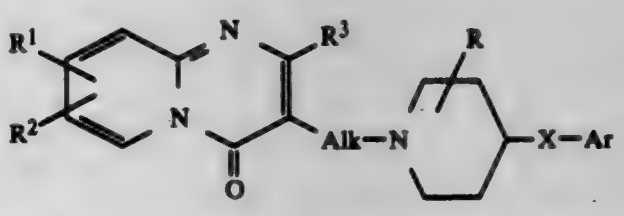
Ludo E. J. Kennis, Turnhout, and Josephus C. Mertens, Oud-Turnhout, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 134,845, Mar. 28, 1980, abandoned. This application Sep. 29, 1980, Ser. No. 191,632

Int. Cl.³ C07D *401/12*

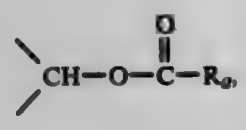
U.S. Cl. 544—282 **6 Claims**

1. A chemical compound selected from the group consisting of a 3-[(1-piperidinyl)alkyl]-4H-pyrido[1,2-a]pyrimidin-4-one derivative having the formula

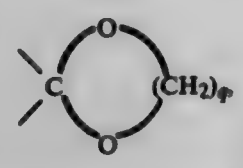


and the pharmaceutically acceptable acid addition salts thereof, wherein R^1 and R^2 are each independently selected

from the groups consisting of hydrogen, lower alkyl, lower alkyloxy, halo and trifluoromethyl;
R^3 is a member selected from the group consisting of hydrogen, lower alkyl and aryl;
Alk is a lower alkylene radical;
R is a member selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkyloxy and hydroxymethyl in the 2-, 3- or 4-position of the piperidine ring;
X is a member selected from the group consisting of >C=O, >CHOH,

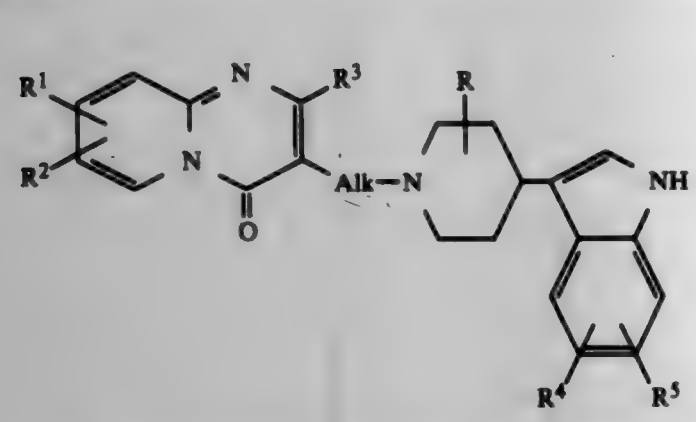


$>CH_2$, >C(O-lower alkyl)$_2$,



>C=NOH and >C=N-NH_2, wherein said R_a is hydrogen or lower alkyl and said q is the integer 2 or 3; and
Ar is aryl; wherein said aryl is a member selected from the group consisting of phenyl, substituted phenyl, thienyl, furanyl and pyridinyl, wherein said substituted phenyl has from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, trifluoromethyl, nitro, amino and hydroxy, provided that no more than one substituent is nitro and further provided that said substituents are not simultaneously hydroxy and loweralkyloxy.

6. A chemical compound selected from the group consisting of a 4H-pyrido[1,2-a]pyrimidin-4-one derivative having the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein:
R^1 and R^2 are each independently selected from the group consisting of hydrogen, lower alkyl, lower alkyloxy, halo and trifluoromethyl;
R^3 is a member selected from the group consisting of hydrogen, lower alkyl and aryl;
Alk is a lower alkylene radical;
R is a member selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkyloxy, hydroxymethyl in the 2-, 3- or 4-position of the piperidine ring; and
R^4 and R^5 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, lower alkyloxy, trifluoromethyl, nitro, amino and hydroxy;
wherein said aryl is a member selected from the group consisting of phenyl, substituted phenyl, thienyl, furanyl and pyridinyl, wherein said substituted phenyl has from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, trifluoromethyl, nitro, amino and hydroxy, provided that no more than one substituent is nitro and further provided that said substituents are not simultaneously hydroxy and loweralkyloxy.

4,342,871

BENZO(A)QUINOLIZIDINE DERIVATIVES

Csaba Szantay; Lajos Szabo; Laszlo Töke; Istvan Toth; Sandor Virag; Erzsebet Kanyo, and Agoston David, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt, Budapest, Hungary

Continuation-in-part of Ser. No. 624,470, Oct. 21, 1975, Pat. No. 4,102,886. This application Nov. 24, 1976, Ser. No. 744,608
Claims priority, application Hungary, Oct. 23, 1974, CI 1514; Sep. 11, 1975, CI 1603
Int. Cl.³ C07D *455/03;* A61K *31/47*
U.S. Cl. 546—65 **1 Claim**

1. 2-oxo-3-(beta-cyano-ethyl)-9,10-methylenedioxy-1,2,3,4,6,7-hexahydro-11bH-benzo(a)quinolizidine.

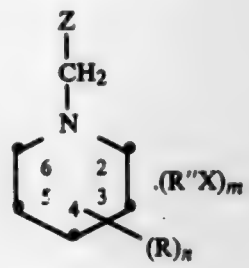
4,342,872

2-(SUBSTITUTEDPIPERIDYLMETHYL) PROPENE AND PROPANE NITRILES

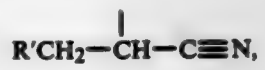
Nathaniel Grier, Englewood; Richard A. Dybas, Somerville, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 8,985, Feb. 5, 1979, Pat. No. 4,274,700, which is a continuation-in-part of Ser. No. 795,693, May 11, 1977, abandoned. This application Oct. 6, 1980, Ser. No. 194,489
Int. Cl.³ C07D *401/05*
U.S. Cl. 546—186 **4 Claims**

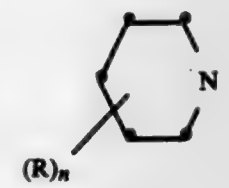
1. A compound of the formula:



where Z is



where R'' is hydrogen, C_1–C_{18} alkyl, benzyl, phenethyl; R is in the 2-, 3-, or 4-positions and is hydroxy or hydroxyalkyl; R′ is



where R is as previously defined, or
R′ is piperidino;
n is the integer of 1 to 4;
m is the integer 0 or at least 1; and
X is a suitably charged anion.

4,342,873

2-(SUBSTITUTED PIPERIDYLMETHYL) PROPENE AND PROPANE NITRILES

Nathaniel Grier, Englewood; Richard A. Dybas, Somerville, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 8,985, Feb. 5, 1979, Pat. No. 4,247,700, which is a continuation-in-part of Ser. No. 795,693, May 11, 1977, abandoned. This application Jan. 26, 1981, Ser. No. 228,520

Int. Cl.³ C07D *401/06*

U.S. Cl. 546—186 **1 Claim**

1. bis-2-[4,4′-(1,3-trimethylene)-1,1′-dipiperidyl]methyl-propenenitrile.

4,342,874

2-[2′-(HYDANTO-5-YL)-ETHYL]-5,5-DIMETHYL-1,3-DIOXANE

Axel Kleemann, and Marc Samson, both of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

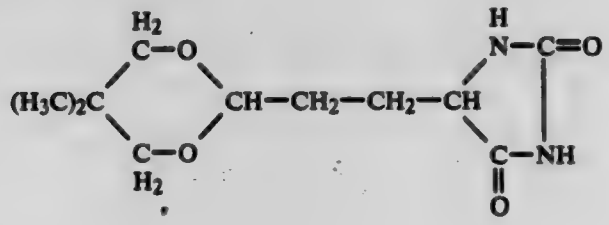
Filed Nov. 10, 1981, Ser. No. 320,130

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043250

Int. Cl.³ C07D *405/06*

U.S. Cl. 548—309 **1 Claim**

1. 2-[2′-(hydanto-5-yl)-ethyl]-5,5-dimethyl-1,3-dioxane of the formula



(I)

4,342,875

METHOXY CARBOXYLIC ACID ESTERS AND USE AS ULTRAVIOLET STABILIZERS

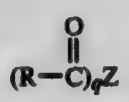
Robert G. Gough, Cincinnati, Ohio, assignor to Cincinnati-Milacron, Inc., Cincinnati, Ohio

Division of Ser. No. 297,446, Oct. 13, 1972, Pat. No. 3,814,729. This application Jan. 9, 1974, Ser. No. 431,965

Int. Cl.³ C07C *69/76*

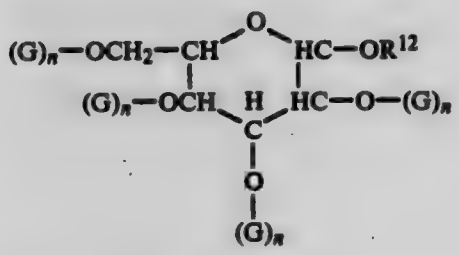
U.S. Cl. 560—64 **40 Claims**

1. A compound having a formula



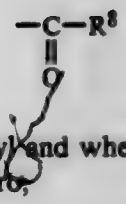
I

where R is alkoxyphenyl, dialkoxyphenyl or alkylene dioxyphenyl, the alkoxy groups having 1 to 8 carbon atoms, and the alkylene group having 1 to 4 carbon atoms, q is 1 to 6, Z is

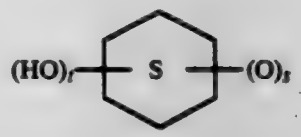


(a)

where R^{12} is lower alkyl and G is H or

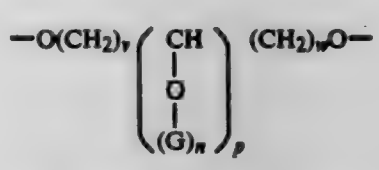


wherein R^8 is hydrocarbyl and where n is 0 or 1 and at least one of the n's must be zero;



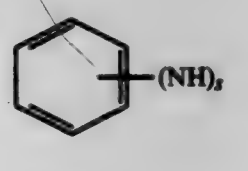
(b)

where s is 1 to 3 and t is from 1 to 2, the total of s and t being not over 3;

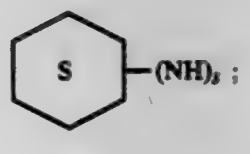


(c)

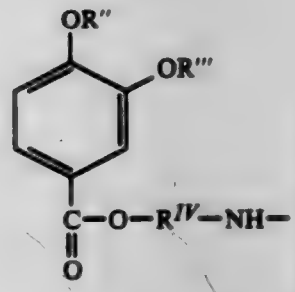
where v and w are each 1 to 4 and p is 2 to 4



(d)

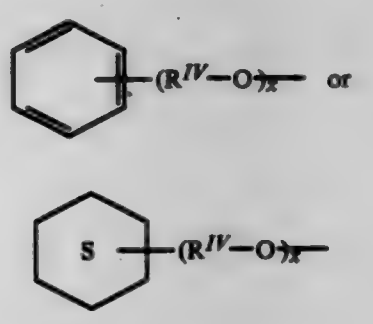


(e)



(f)

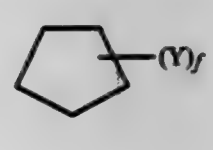
where R″ and R‴ are 1 to 8 carbon atom alkyl or where R″ and R‴ together with the oxygen atoms attached thereto and the adjacent carbon atoms of the benzene ring form a 5 to 6 membered heterocyclic ring and R^{IV} is 1 to 4 carbon atom alkylene;



(g)

where x is 2 to 3;

(h) tertiary alkyloxy of 4 to 18 carbon atoms



(i)

where Y is

$$-O-,\ -R^6-O-$$

where R^6 is 1 to 3 carbon atoms,

$$-\overset{H}{N}-,$$

or

$$-R^6-\overset{H}{N}-$$

and f is 2 to 4.

4,342,876

METHOD FOR OXIDATION OF P-XYLENE AND METHOD FOR PREPARING DIMETHYLTEREPHTHALATE

Gilbert E. Klingman, Houston, Tex., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Dec. 22, 1980, Ser. No. 219,184
Int. Cl.³ C07C *67/00, 67/08, 67/39, 51/265*
U.S. Cl. 560—77 **10 Claims**

7. In a method of preparing dimethylterephthalate by catalytically oxidizing p-xylene and p-methyltoluate to form an oxidate comprising p-toluic acid and monomethylterephthalate and esterifying said oxidate to form dimethylterephthalate and p-methyltoluate, the improvement comprising:

(a) providing at least one induced flow loop reactor, each such reactor having first and second substantially vertical reactor legs interconnected to form a loop, at least one liquid reactant inlet means; at least one oxidate outlet means and at least one gas inlet means for introducing oxygen-containing gas into one of said first and second reactor legs, either of which said first and second reactor legs having cooling means;

(b) introducing said oxygen containing gas through said gas inlet means to partially gasify the reaction medium in the first reactor leg;

(c) venting gas from the top of said loop to substantially degasify said reaction medium as it flows from said first reactor leg to said second reactor leg;

(d) cooling said reaction medium as it flows through said reactor legs to remove the heat produced by said oxidation of p-xylene and p-methyltoluate;

(e) the temperature of the reaction medium being 140°–170° C.;

said gas inlet means being disposed in said first reactor leg at a vertical distance from the top of said loop such that said introducing causes the reaction medium in said second reactor leg to flow downward and gasified reaction medium in said first reactor leg to flow upward at a rate sufficient to maintain the temperature of the reaction medium within a variation of 10° F.

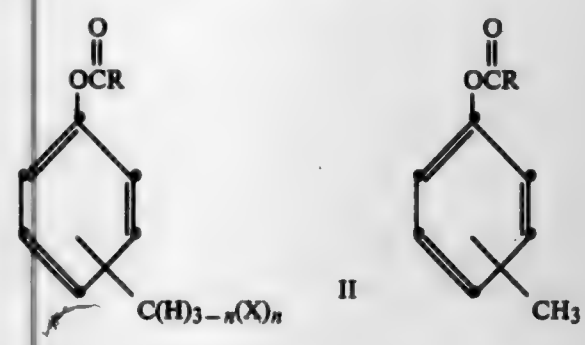
4,342,877

PROCESS FOR THE PREPARATION OF α-HALOGENATED CRESOL ESTERS

Dah-Chieh O. Cheng; Joseph S. Bowers, Jr., and Ronald J. Maner, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,661
Int. Cl.³ C07C *67/287, 69/24, 69/157*
U.S. Cl. 560—130 **9 Claims**

1. Process for the preparation of Compound I by treating Compound II with X_2 or SO_2X_2 at a temperature of about 60° to 85° C. in the presence of a halogenation-promoting free radical initiator and an anhydride having the formula $(RCO)_2O$ while eliminating the acid halide formed having the formula RCOX from the reaction mixture, wherein Compounds I and II have the formulas

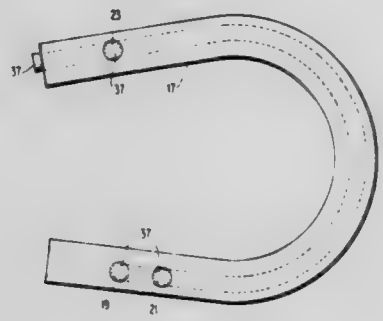


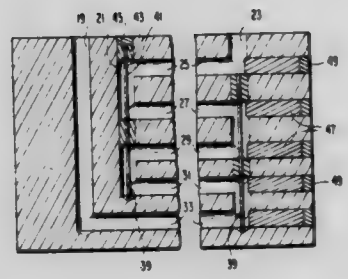
and R is C_1–C_3 alkyl, X is Cl or Br and n is 1, 2 or 3.

4,342,878
WATER-COOLED ELECTRODE HOLDER

James G. Wilson, II, Huntington, and P. Fred Hammers, Barboursville, both of W. Va., assignors to Wilson Welding Company, Inc., Huntington, W. Va.

Filed May 9, 1980, Ser. No. 148,290
Int. Cl.³ H05B 7/105
U.S. Cl. 373—94 2 Claims



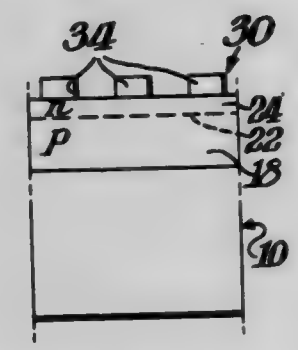


1. An electrode holder comprising a U-shaped metal bowl in the form of an elongated slab whose ends are straight, the bowl having a circuitous passageway therethrough for the flow of cooling water, the passageway being comprised by a plurality of drilled holes of circular cross section that intersect each other at a plurality of points and that open through the longitudinal edges of the bowl, first plugs closing a plurality of the ends of said holes at said edges of the bowl, and second plugs interrupting the communication between some of said holes but leaving a single circuitous passageway between said inlet and outlet through unplugged portions of said holes, a plurality of said holes extending through one of said straight ends and lengthwise of the slab, some of said first plugs closing the ends of the last-named plurality of holes, one of said holes extending perpendicular to and intersecting the last-named plurality of holes, at least one said second plug closing said one hole between its ends, at least one said first plug contacting at least one end of a said second plug and retaining the last-named second plug in place.

4,342,879
THIN FILM PHOTOVOLTAIC DEVICE

Anthony W. Catalano, and Manjul Bhushan, both of Wilmington, Del., assignors to The University of Delaware, Newark, Del.

Filed Oct. 24, 1980, Ser. No. 200,447
Int. Cl.³ H01L 31/06
U.S. Cl. 136—265 8 Claims

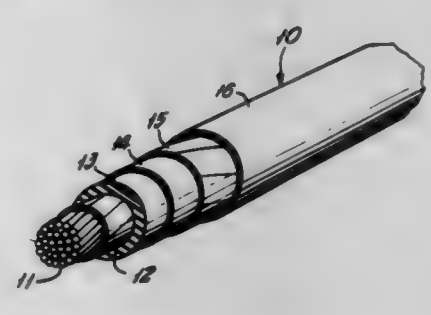


1. In a photovoltaic device having an ohmic back contact and a transparent electrical contact with at least one semiconductor layer therebetween of a material of the type formed by high temperature growth, the improvement being said device is a homojunction with said semiconductor layer having one region of p-type conductivity and an adjacent region of n-type conductivity with the electrical junction therebetween, said semiconductor layer being made of a material from the class of isostructural compounds comprised of elements selected from Groups IIB and VA of the Periodic Table, and said n-type conductivity region of said semiconductor layer being extrinsically doped with an element selected from groups IA and IIA of the Periodic Table.

4,342,880
ELECTRIC CABLE FOR MEDIUM VOLTAGE

Mario Castelli, Bergamo, and Bruno Martini, Milan, both of Italy, assignors to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Aug. 20, 1980, Ser. No. 179,638
Claims priority, application Italy, Aug. 30, 1979, 25354 A/79
Int. Cl.³ H01B 9/02
U.S. Cl. 174—36 7 Claims

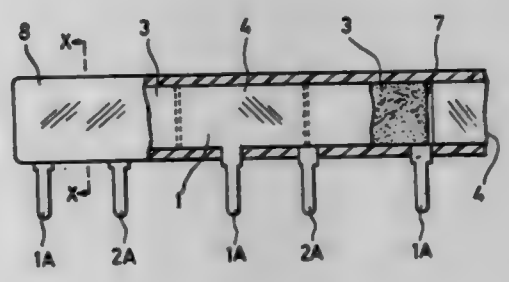


1. A medium voltage electric cable having at least one conductor, each conductor being covered by an inner semiconductive screen in contact therewith, a layer of extruded, cross-linked polymeric insulation around said inner screen, and a readily peelable outer semiconductive screen around said layer of insulation and adhering thereto, said outer semiconductive screen being a chemically cross-linked rubber comprising a cross-linked blend of 50–70 parts by weight of nitrile rubber and 50–30 parts by weight of ethylene-propylene rubber, carbon black and cross-linking agents, said blend constituting at least about one-half by weight of the material of said outer screen.

4,342,881
LAMINATED BUS BAR AND METHOD OF MANUFACTURE

Sunichi Fukuda, Kukizaki, and Masaaki Muto, Ryugasaki, both of Japan, assignors to Rogers Corporation, Rogers, Conn.

Filed May 29, 1980, Ser. No. 154,375
Claims priority, application Japan, May 31, 1979, 54-067862
Int. Cl.³ H01B 5/00
U.S. Cl. 174—72 B 9 Claims



1. A bus bar comprising:
a pair of elongated parallel flat bus bar conductors;
a plurality of thin, flat, rigid dielectric elements, said dielec-

tric elements being positioned between and spacially displaced from said bus bar conductors, said dielectric elements each having a pair of oppositely disposed planar surfaces, said surfaces of said dielectric elements being parallel to said bus bar conductors, said electrical elements being spacially displaced from one another in a linear array; and

means bonding said planar surfaces of said dielectric elements to said bus bar conductors, said bonding means being comprised of conductive metal which melts and flows at a temperature below the melting point of the bus bar conductors and the dielectric element.

4,342,882

AUTOMATIC PAUSE GENERATOR FOR DIALERS

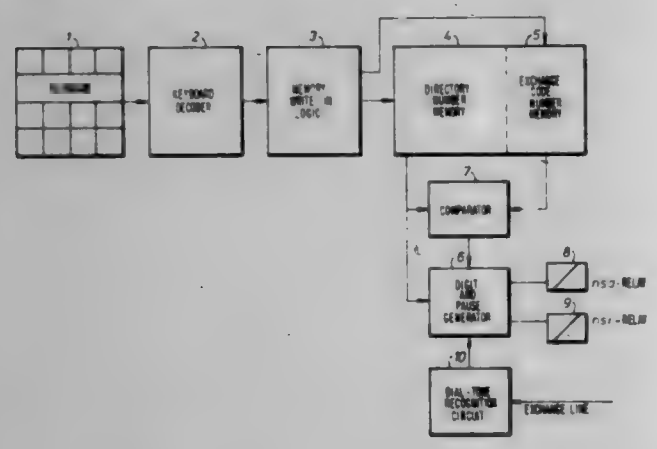
Peter Gravenhorst, Berlin, and Johannes Krenz, Kiel, both of Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany and Hagenuk, Kiel, both of, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 192,890

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940490

Int. Cl.³ H04M *1/274*

U.S. Cl. 179—90 B **5 Claims**



1. An automatic pause generator for dialers in telephone terminals with pulse dialing and additional features such as abbreviated dialing, re-dialing, direct dialing and the like, said pause generator comprising:

a keyboard;

a keyboard decoder connected to said keyboard;

exchange code number memory means coupled to said keyboard and said keyboard decoder for storing at least one exchange code number containing at least one digit which is selectively changeable;

directory number memory means coupled to said keyboard decoder to store at least one directory number input from said keyboard for transmission to a telephone line;

comparator means connected from said exchange code number memory means and said directory number memory means;

a digit and pause generator coupled to said comparator means and said directory number memory means; and

dialing and speech relays adapted to connect said digit and pulse generator to said telephone line;

whereby upon transmission of the first digit of the transmitted directory number, said digit is compared in said comparator means with at least said one digit stored in said exchange code number memory means and upon coincidence of such digits, a pause criterion is supplied to said digit and pulse generator by said directory number memory means thereby producing a pause in the number being transmitted to said telephone line.

4,342,883

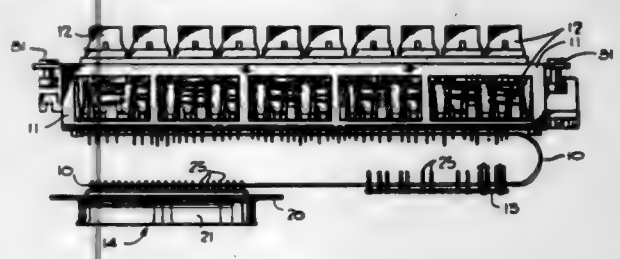
PUSHBUTTON SWITCH ASSEMBLIES FOR TELEPHONE SETS

William F. Wernet, Nashville, and Steve Miller, Smyrna, both of Tenn., assignors to Northern Telecom, Inc., Ottawa, Canada

Filed Aug. 22, 1979, Ser. No. 68,583

Int. Cl.³ H04Q *1/16*

U.S. Cl. 179—99 R **6 Claims**



1. A pushbutton switch assembly for a telephone set, comprising:

an array of pushbutton switches having pushbuttons extending from a top surface and a plurality of terminal pins extending from a bottom surface;

a terminal block comprising a circuit board having a plurality of terminals at one end of the board and a plurality of terminal pins at the other end of the board;

a connector comprising a base and a plurality of terminals extending from the base in one direction and terminal pins extending from the base in an opposite direction to said terminals;

an elongate flexible circuit member interconnecting said array of pushbutton switches, said terminal block and said connector, said terminal pins of the pushbutton switch assembly, terminal block and connector extending through said flexible circuit member and soldered to contact areas on the flexible circuit member;

the flexible circuit member foldable at one side of the terminal block to hold at least the connector back under the remainder of the flexible circuit member.

4,342,884

PISTON UNIT

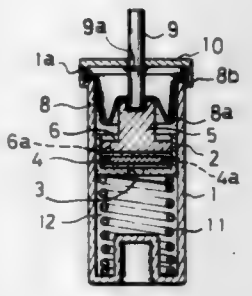
Itsuki Ban, 829, Higashi, Oizumi-machi, Nerima-ku, Tokyo, and Hidenori Kanno, 694-11, Yagigaya-cho, Funabashi-shi, Chiba-ken, both of Japan

Filed Jun. 11, 1979, Ser. No. 47,047

Claims priority, application Japan, Jun. 14, 1978, 53-70975; Jul. 18, 1978, 53-86695; Sep. 26, 1978, 53-131262[U]; Oct. 19, 1978, 53-127848; Nov. 14, 1978, 53-155724[U]; Dec. 26, 1978, 53-159365

Int. Cl.³ H01H *7/03, 35/38*

U.S. Cl. 200—34 **18 Claims**



1. A piston unit comprising:

cylinder means having a pair of opposed axial ends and substantially filled with liquid medium;

piston means slidably mounted in said cylinder means;

spring means for urging said piston means toward one axial end of said cylinder means;

an operation rod having one end portion coupled to said piston means so as to be movable therewith and a shank portion extending to the outside of said cylinder means;

sealing means for sealing said liquid medium in said cylinder means, said sealing means including a flexible membrane having a central portion fixedly interposed between said one end portion of said operation rod and said piston means and a corrugated portion integrally extending from said central portion, said corrugated portion having a peripheral edge region liquid sealingly engaged with said cylinder means such that said membrane seals said liquid medium in said cylinder means and defines a space within the cylinder means which is devoid of the liquid medium, said operation rod being situated in said space fluidly isolated from and not in contact with said liquid medium; and

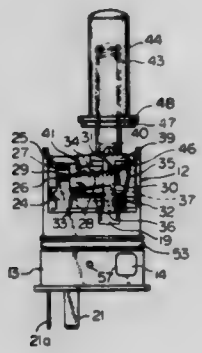
control means for providing that fluid resistance presented by said liquid medium to movement of said piston means toward one of said ends of said cylinder means is different from the fluid resistance presented by said liquid medium to movement of said piston means toward the other one of said ends of said cylinder means, said control means including a through bore formed in said piston means and a valve member coupled to said piston means adapted to open and close said through bore, said valve member being plate-shaped and having a small bore therein situated in substantially opposed relationship to said through bore.

4,342,885

LIMIT SWITCH

Isoo Kashima; Yosio Takase, and Masami Mishina, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Nov. 19, 1980, Ser. No. 208,424
Claims priority, application Japan, Mar. 27, 1980, 55-38208
Int. Cl.[3] H01H *3/16, 5/06*
U.S. Cl. 200—47 10 Claims



1. A limit switch comprising:

a hollow housing having an open bottom and a guide cylinder projecting upwardly from a top of said housing,

a casing,

electrical contact means carried by said casing, said contact means comprising at least one movable contact and at least one stationary contact, said movable contact being movable between first and second positions,

wherein said movable and stationary contacts interengage in one of said first and second positions and disengage in the other of said positions,

plunger means mounted on said casing in a manner forming with said casing and said contacts a unit capable of being inserted upwardly into said open bottom of said housing, with a part of said plunger means passing upwardly through and beyond said guide cylinder,

said plunger means being operably connected to said movable contact to move the latter and being movable upwardly and downwardly relative to said casing and said stationary contact, said contacts being in said first position when said plunger means is in a given downward position and being in said second position when said plunger means is in an upward position,

spring means for yieldably urging said plunger means upwardly, and

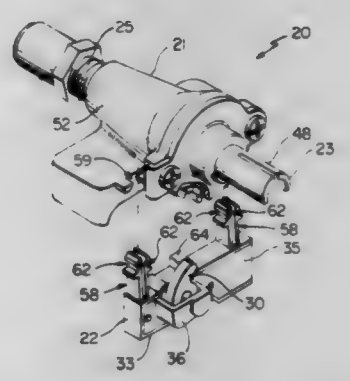
fixing means for fixedly mounting said casing to said housing at a selected position of adjustment relative to said housing to locate said contacts in said first position when said part of said plunger means projects a given distance beyond said guide cylinder.

4,342,886

BURNER VALVE CONTROL DEVICE, AN ELECTRICAL SWITCH UNIT THEREFOR AND METHODS OF MAKING THE SAME

Roy C. Demi, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 10, 1979, Ser. No. 74,157
Int. Cl.[3] H01H *9/06*
U.S. Cl. 200—61.86 10 Claims



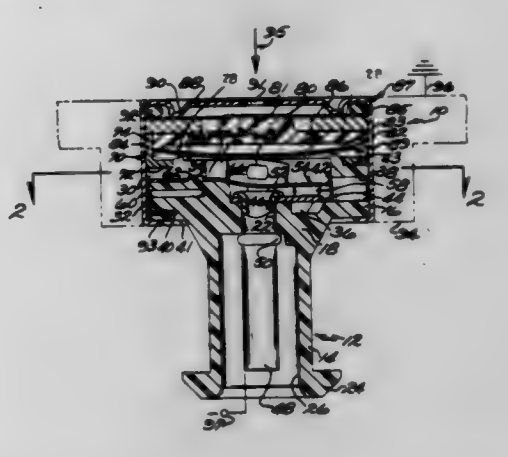
1. In a combination of a burner valve control device and an electrical switch unit carried by said device and being operated by movable actuator means controlled by the selector means of said device, said selector means comprising a control shaft rotatable about an axis thereof, the improvement wherein said switch unit has snap-fit means snap-fitted to said device when the entire said switch unit is moved in a direction substantially transverse to said axis of said control shaft to detachably secure said switch unit to said device.

4,342,887

NORMALLY CLOSED PRESSURE RESPONSIVE SWITCH WITH IMPROVED COMPACT STRUCTURE

Carlton E. Sanford, Riverside, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 15, 1980, Ser. No. 178,275
Int. Cl.[3] H01H *35/34*
U.S. Cl. 200—83 P 6 Claims



1. A normally closed pressure switch device comprising first contact means, second contact means movable between an open circuit position spaced from the first contact means and a closed circuit position engaging the first contact means, a dished disc movable with snap action between original and converted dished configurations to sharply move the second

contact means between said circuit positions, diaphragm means movable in response to applied pressure, and motion transfer means movable with the diaphragm means to move the disc between said disc configurations to open and close the circuit in response to selected changes in the pressure applied to the diaphragm means, characterized in that the second contact means are biased to move away from the first contact means to open the circuit, the disc has first and opposite sides which are respectively convex and concave when the disc is in said original dished configuration, the disc having said first, convex side engaged with the second contact means to hold the second contact means in closed circuit position against said bias when the disc is in said original configuration, annular means of a selected diameter engage a corresponding diameter portion of said first disc side, and the motion transfer means has an annular portion of relatively larger diameter than said selected diameter concentrically engaging a correspondingly larger diameter portion of said opposite disc side to press against the disc in response to movement of the diaphragm means for moving the disc to said inverted disc configuration to open the circuit in response to the application of selected pressure to the diaphragm means.

4,342,888

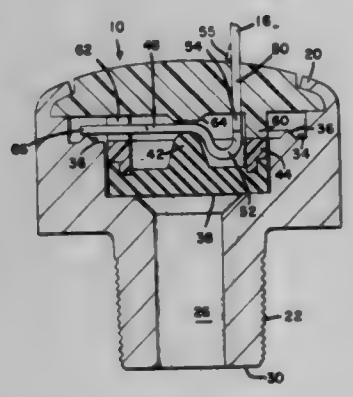
PRESSURE SWITCH WITH CONDUCTIVE HOUSING

Frank P. Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 10, 1980, Ser. No. 214,901

Int. Cl.[3] H01H *35/34*

U.S. Cl. 200—83 R 6 Claims



1. A fluid pressure switch of the type having a sensing end which contacts a fluid medium and a signal end where an electrical conductor is attached comprises:

an electrically conductive body member having a sensing end, a signal end, and a passage therethrough between said ends,

a flexible dielectric diaphragm occluding said passage between said ends,

a dielectric cap fit over said passage at said signal end of said body member,

an electrically conductive contact member having a signal portion and a spring portion, said signal portion being carried by said cap, said spring portion being disposed adjacent to said diaphragm and having a bend where it attaches to said signal portion and a free end disposed for engagement with a contact surface on said body member, said free end being resiliently movable with respect to said contact surface in response to movement of said flexible diaphragm against said spring portion.

4,342,889

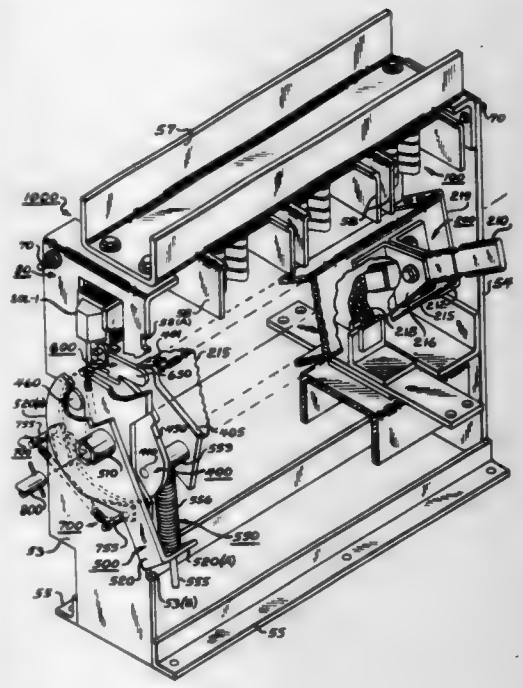
MODULAR VAULT-TYPE LOAD BREAK SWITCH

Clarence L. Welter, Valparaiso, Ind., assignor to G & W Electric Specialty Company, Blue Island, Ill.

Continuation of Ser. No. 797,455, May 16, 1977, Division of Ser. No. 472,969, May 24, 1974. This application Apr. 2, 1979, Ser. No. 26,098

Int. Cl.[3] H01H *33/08*

U.S. Cl. 200—144 R 2 Claims



1. Switch contact means for electrical power distribution load break switches for switching a plurality of phases, comprising:

a plurality of pairs of resilient spring contacts for coupling with each of the phases,

a plurality of blade contacts for electric engagement with each of said pairs of resilient spring contacts,

each of said pairs of resilient spring contacts being mounted on a bifurcated electrically conductive support means with the resilient spring contacts in confronting relation with each other,

one of said blade contacts being received between each of said pairs of resilient spring contacts,

each of said resilient spring contacts being formed into a closed loop so that upon entry of a blade contact between a pair of resilient spring contacts current flow through the closed loop produces a force biasing said resilient spring contacts toward each other and against said blade contact,

said pairs of resilient spring contacts being spaced apart from each other, and

a dielectric barrier disposed between said pairs of resilient spring contacts to suppress arcing therebetween.

4,342,890

GAS-BLAST SWITCH

Rudolf Graf, Obermuhen, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed Feb. 11, 1980, Ser. No. 120,392

Claims priority, application Switzerland, Apr. 24, 1979, 3834/79

Int. Cl.[3] H01H *33/88*

U.S. Cl. 200—148 A 5 Claims

1. A gas-blast switch comprising:

a fixed arcing contact element;

a movable arcing contact element cooperating with said fixed arcing contact element;

said arcing contact elements defining between each other an arcing path during the course of a cut-off stroke;

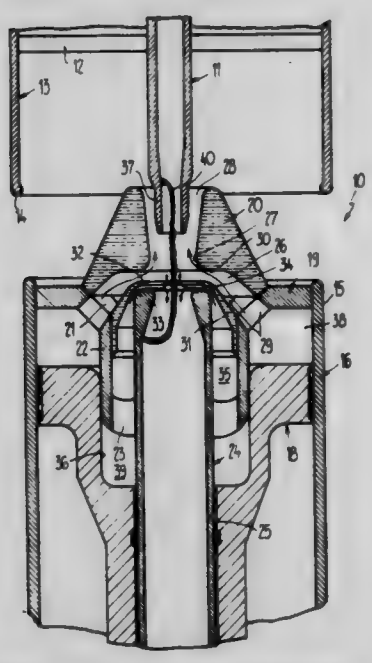
one of the arcing contact elements having a free end;

a blast nozzle operatively associated with said one arcing contact element;

said blast nozzle comprising a blast channel having a throat disposed at a distance from the free end of said one associated arcing contact element and surrounding said arcing path;

said blast nozzle further comprising a blow-in opening arranged between said free end and the throat of the blast channel and opening transversely with respect to said arcing path into said blast channel;

said blow-in opening having a through-flow cross-sectional area which is less than the through-flow cross-sectional area of the blast channel;



means defining a pump compartment containing an extinguishing gas and capable of being pressurized during the cut-off stroke of the gas blast switch;

both the blast channel and the blow-in opening being connected with said pump compartment;

means subdividing the pump compartment into pump chambers which are separate from one another at the latest during the course of the cut-off stroke; and

said blast channel flow communicating with one of the pump chambers and the blow-in opening with the other pump chamber.

4,342,891

CIRCUIT BREAKER WITH MEANS FOR PRODUCING A FLOW OF ARC-EXTINGUISHING GAS

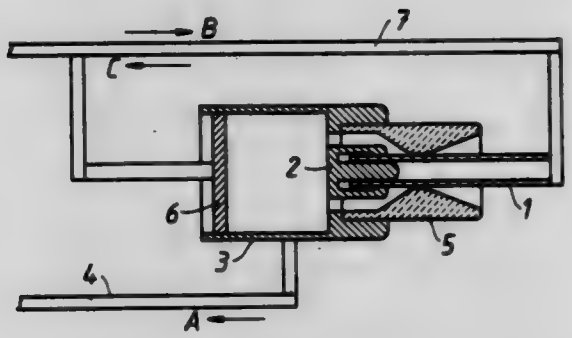
Carl E. Sölver, Ludvika, Sweden, assignor to ASEA Aktiebolag, Västeros, Sweden

Filed Jul. 8, 1980, Ser. No. 166,859

Claims priority, application Sweden, Jul. 11, 1979, 7906035

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **3 Claims**



1. Electric circuit breaker having a gaseous arc-extinguishing medium comprising:

a first and a second contact, said contacts being movable in relation to each other between an engaged and a disengaged position;

a pump means including a piston and a cylinder, said piston being joined to said first contact, and said cylinder being joined to said second contact, said pump means, during a breaking operation, compressing the gas in said cylinder to create a blast of arc-extinguishing gas towards the contact area of the circuit breaker;

an operating device being connected to said contacts, said operating device including means for moving the contacts in opposite directions away from each other during the first part of a breaking operation, and thereafter moving said first contact and the piston connected thereto back substantially to the initial position, while continuing the movement of said second contact and the cylinder connected thereto in the initial direction to said disengaged position.

4,342,892

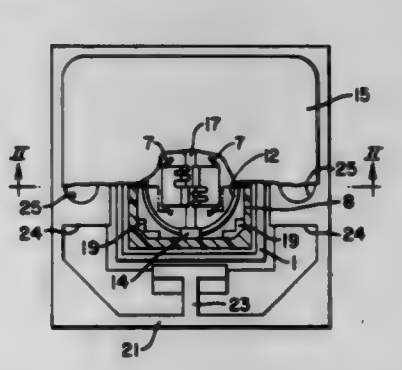
KEYSWITCH

Robert D. Ayers, Raleigh, N.C., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Aug. 8, 1980, Ser. No. 176,499

Int. Cl.³ H01H *1/26, 13/52*

U.S. Cl. 200—159 A **2 Claims**



1. A keyswitch comprising a housing having a bottom wall and an open upper end, a plunger having a tubular body extending downwardly in the housing and slidably engaging said housing for movement up and down therein, means limiting upward travel of the plunger to a predetermined elevated position, the lower end of said body being spaced above said bottom wall while the plunger is in said elevated position, said bottom wall being provided with a pair of laterally spaced openings extending substantially vertically therethrough, a pair of opposed spring contact strips mounted in said openings and projecting below said wall to form terminals, said contact strips also converging upwardly inside the plunger and having normally engaging upper ends, a cross member inside the plunger body and supported thereby between the contact strips, and a coil spring inside the plunger below said cross member and encircling the contact strips but spaced therefrom, said spring normally holding the plunger in said elevated position with said cross member spreading the upper ends of the contacts apart, said downward movement of the plunger in said housing disengaging said cross member from the contacts, and said contact strips being substantially identical and each having at least two parallel slits extending downwardly from its upper end to form a plurality of laterally spaced narrow contact fingers at one side of a wider contact finger wide enough to be engaged by the narrow contact fingers of the other contact strip when said cross member is disengaged from the contact strips.

4,342,893

COMPOSITE ELECTRICAL CONTACT AND BONDING MATERIAL

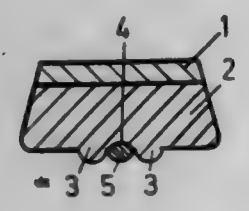
Heinrich Wolf, Hailer, Fed. Rep. of Germany, assignor to WC Heraeus GmbH, Hanau am Main, Fed. Rep. of Germany

Filed Sep. 26, 1979, Ser. No. 78,930

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844888

Int. Cl.³ H01H *1/02*

U.S. Cl. 200—268 **11 Claims**



1. Composite electrical contact-and-bonding material for bonding to a metallic carrier (11) comprising

an elongated strip of contact material having a first contacting surface and an obverse bonding surface for bonding to said carrier, in which said bonding surface is formed with at least two projections (3) which define a recess (4) therebetween,

and wherein, in accordance with the invention,

the projections comprise at least two parallel elongated ridges or elongated ribs or elongated beads (3) defining a valley (4) between adjacent ridges, ribs or beads, said valley forming the recess;

and wherein a bonding wire (5, 5') is provided, positioned in the valley between the ridges, ribs or beads,

said wire forming a bonding material, being secured to the bottom of the valley, only partly filling said valley, and having a dimension extending therefrom which is at least as high as the ridges or ribs or beads adjacent the valley.

4,342,894

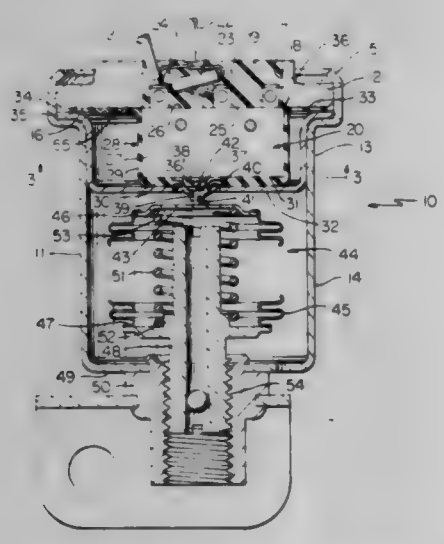
ELECTRICAL SWITCH CONSTRUCTION DIAPHRAGM SEAL THEREFOR AND METHODS OF MAKING THE SAME

Douglas R. Scott, and Frank Payne, both of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 6, 1980, Ser. No. 194,427

Int. Cl.³ H01H *9/04, 35/40*

U.S. Cl. 200—304 **46 Claims**



1. In an electrical switch construction having a housing means carrying an electrical switch means and an actuator means for actuating an operating plunger means of said electrical switch means, said construction having a flexible diaphragm seal means disposed against said electrical switch means to seal the same to a part of said housing means and define a chamber with said part of said housing means that has said switch means sealed therein, said diaphragm seal means having a portion thereof disposed between said plunger means and said actuator means, the improvement wherein said diaphragm seal means has means for preventing a pressure increase in said chamber that could adversely act across said portion of said diaphragm seal means when there is an increase in the volume of fluid in said chamber, said means of said diaphragm seal means for preventing said pressure increase comprising a readily expandable section of said diaphragm seal means that increases the volume of said chamber as the pressure therein tends to increase and thereby prevents such pressure increase at said portion of said diaphragm seal means, said part of said housing means having a substantially flat wall, said switch means comprising a casing disposed against said flat wall, said diaphragm seal means having a cup-shaped part for covering said switch casing and a substantially flat part for engaging against said flat wall outboard of said switch casing, said expandable section being disposed in said flat part of said diaphragm seal means.

4,342,895

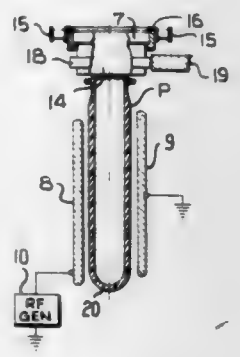
METHOD OF PROCESSING POLYETHYLENE TEREPHTHALATE PREFORMS AND APPARATUS

Suppayan M. Krishnakumar, Nashua, N.H.; John F. E. Pocock, Neu-Isenburg, Fed. Rep. of Germany; Gautam K. Mahajan, Nashua, N.H., and John F. Trembly, Loudonville, N.Y., assignors to The Continental Group, Inc., New York, N.Y.

Filed Nov. 27, 1979, Ser. No. 97,774

Int. Cl.³ H05B *6/54;* B29H *5/26*

U.S. Cl. 219—10.43 **12 Claims**



1. A method of rapidly heating a tubular preform formed of polyethylene terephthalate substantially uniformly for the full thickness of the wall thereof, said preform being of the type including a neck finish and a body portion terminating in a closed end and said method comprising the steps of supporting a preform formed of polyethylene terephthalate by its neck finish and while rotating the preform about its axis generating between a pair of electrodes a radio frequency field within the range of 13 to 98 megahertz and subjecting the body portion and closed end to said radio frequency field for a period of time of 29 seconds or less to increase the temperature of the preform body and closed end to a thermoforming temperature.

4,342,896

RADIATING MODE STIRRER HEATING SYSTEM

Wesley W. Teich, Wayland, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 954,718, Oct. 24, 1978, abandoned, which is a continuation of Ser. No. 754,064, Dec. 23, 1976, abandoned. This application Aug. 8, 1980, Ser. No. 177,309

Int. Cl.³ H05B *6/72*

U.S. Cl. 219—10.55 F **3 Claims**

1. A microwave heating system comprising:

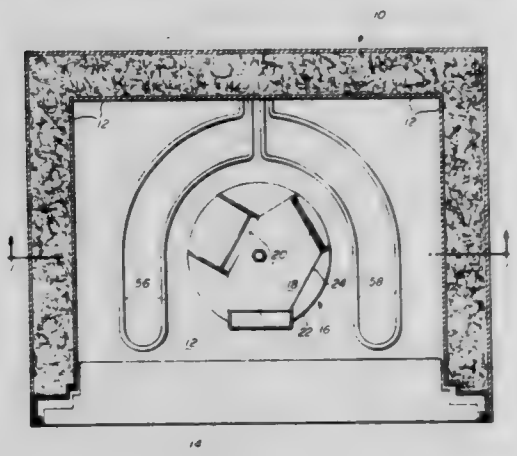
a conductive enclosure;

a source of microwave energy positioned outside said enclosure;

means positioned in said enclosure for radiating a plurality of simultaneous microwave energy beams having different polarization vectors, said radiating means comprising a

primary radiating structure formed by a flat metal plate having at least three elongated slot antennas formed therein, the longitudinal sides of said antennas being substantially perpendicular to imaginary radial lines emminating from a central region of said plate;

said radiating structure further comprising means for providing radial waveguides from said central region to each



of said slots, said plate providing one conductor surface of said waveguides;

means for coupling microwave energy from said source to said radiating structure, said coupling means comprising a cylindrical conductive member extending through a hole in a wall of said enclosure, said radiating structure being supported by said member; and

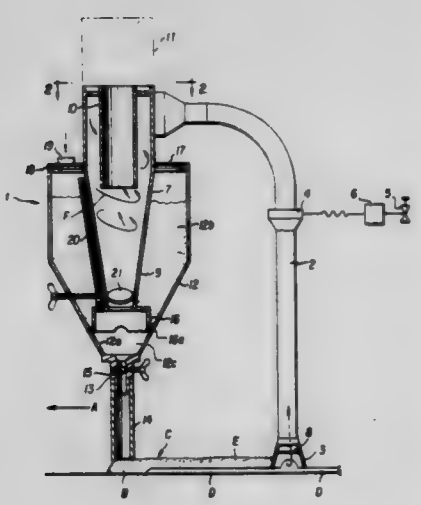
means for rotating said member about its cylindrical axis.

4,342,897

RECOVERY TYPE FLUX FEEDING ASSEMBLY

Ryuji Murai, Fujisawa; Toshihiko Watanabe, Kamakura; Yoji Ogata, Fujisawa; Masashi Nagashima, and Mitsurou Soga, both of Kamakura, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Jan. 28, 1980, Ser. No. 116,202
Int. Cl.[3] B23K *9/18;* B04C *3/00, 9/00;* B01D *45/16*
U.S. Cl. 219—73.2 8 Claims



1. A recovery type flux feeding assembly comprising:

a virgin flux hopper;

a waste flux hopper operatively associated with said virgin flux hopper;

flux feed means connected to said waste flux hopper for feeding flux to a weld area and positioned above said weld area;

flux return means connected to said waste flux hopper for returning excess flux from said weld area to said waste flux hopper;

means for selectively permitting flux from said virgin flux hopper to enter said waste flux hopper, said means comprising a virgin flux drop stop positioned between said hoppers and adjacent said flux feed means; and

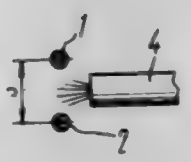
pressure equalization means interconnecting said virgin flux hopper and said waste flux hopper for equalizing pressure therebetween, whereby a mixture of said virgin flux and said waste flux enters said flux feed means.

4,342,898

METHOD OF SURFACING AND APPARATUS FOR CONTROLLING SAME

Sergei V. Gulakov, ulitsa M. Mazaya, 41, kv. 2; Boris I. Nosovsky, ulitsa Kuprina, 23-a, kv. 30; Leonid K. Leschinsky, prospekt Lenina, 75-b, kv. 60; Xenofont X. Stepnov, ulitsa Dalnevostochnaya, 50, kv. 4, all of Zhdanov Donetskoi oblasti; Petr I. Polukhin, ulitsa Dmitria Ulyanova, 3, kv. 137; Vladimir A. Nikolaev, ulitsa Lavochkina, 46, korpus 2, kv. 228, both of Moscow; Valery G. Bendrik, ulitsa Ilicha, 35, kv. 2; Eduard N. Shebanits, ulitsa Lavitskogo, 3, kv. 30, both of Zhdanov Donetskoi oblasti, and Vladimir P. Polukhin, ulitsa Dmitria Ulyanova, 3, kv. 148, Moscow, all of U.S.S.R.

Filed Sep. 3, 1980, Ser. No. 183,728
Int. Cl.[3] B23K *9/04*
U.S. Cl. 219—76.14 4 Claims



1. A method of surfacing for building up a surface layer having different-composed portions, comprising the steps of forming the weld pool by melting at least two electrodes disposed in a predetermined spaced relationship relative each other, feeding electrode and filler materials in a predetermined order to the weld pool, with the distance between said electrodes being determined from the following equation

$$s = d\left(1 + k\frac{V_m}{\Sigma V_e + V_m}\right),$$

where s=distance between said electrodes, d=diameter of said electrodes, k=proportionality factor being equal to from 3 to 7, V_m=feed mass velocity of the filler material, and ΣV_e=total feed mass velocity of delivery of the electrodes.

4,342,899

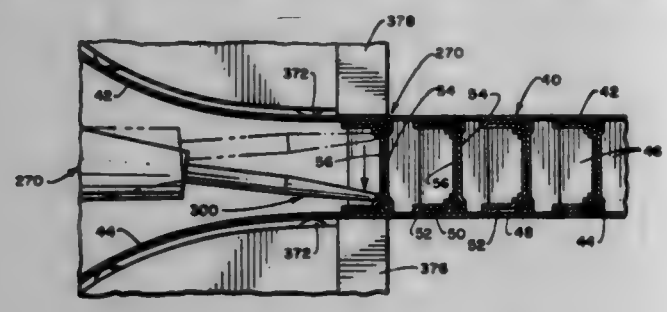
METHOD OF FABRICATING HONEYCOMB CORE STRUCTURE

James R. Campbell, South Laguna, and Roy L. Anspach, Anaheim, both of Calif., assignors to Thomas P. Mahoney, Balboa Island, Calif.

Division of Ser. No. 2,761, Jan. 12, 1979, Pat. No. 4,280,039.
This application Feb. 10, 1981, Ser. No. 233,187
Int. Cl.[3] B23K *11/32*
U.S. Cl. 219—78.12 2 Claims

1. In a method of fabricating a metallic panel having face sheets disposed in spaced relationship to define a cavity therebetween and having a honeycomb core in said cavity having securement portions operatively connected to the inner surfaces of said face sheets by weldments with the securement portions of adjacent core strips disposed in overlying internested relationship at the nodal areas thereof, said core strips having nodal areas engageable with each other, the steps of: disposing the said face sheets in spaced relationship; placing a first core strip in said cavity; urging a plurality of welding electrodes into engagement with said securement portions of said core strip; intermittently and successively impressing a welding potential on said welding electrodes to secure the

securement portions of said core strip in operative engagement with said face sheets; placing a second core strip in said cavity with said nodal areas of said second core strip juxtaposed to corresponding nodal areas of said first core strip to internest the securement portions thereof; successively and intermittently impressing a welding potential on said welding electrodes; and impressing a greater welding potential upon the internested securement portions of said first and second core strips to insure the adequate weldment of said internested securement portions to said face sheets.

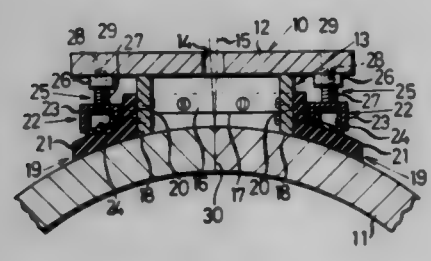


4,342,900

VACUUM SHIELD DEVICE OF AN ELECTRON BEAM WELDING APPARATUS

Shuzo Susei; Shigetomo Matsui, and Hiroyoshi Nagai, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Nov. 13, 1979, Ser. No. 93,943
Int. Cl.³ B23K *15/00*
U.S. Cl. 219—121 EN **8 Claims**



1. A vacuum shield device of an electron beam welding apparatus comprising a main body formed with an aperture for permitting a beam of electrons to pass therethrough and provided with legs spaced apart from each other, a shield member formed of flexible material joined to said main body and adapted to be brought into engagement with the surface of a workpiece, and pressing means contiguous with said shield member for forcing said shield member against the surface of the workpiece.

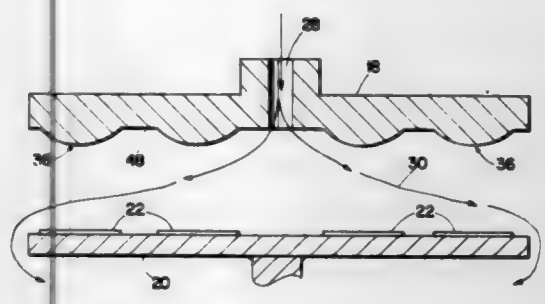
4,342,901

PLASMA ETCHING ELECTRODE

John Zajac, San Jose, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 11, 1980, Ser. No. 176,875
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—121 PD **9 Claims**

1. In a planar plasma etcher having a first electrode, and a second electrode spaced from the first and including means for receiving a plurality of wafers in a predetermined position or positions thereon; the improvement wherein the surface of said first electrode facing said second electrode is formed with a plurality of projections thereon and extending therefrom toward said second electrode.

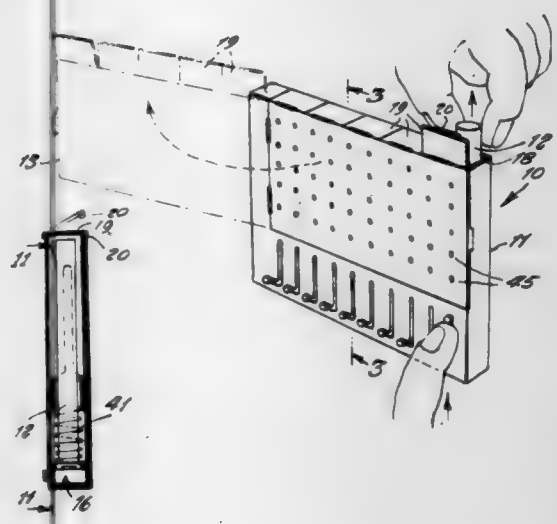


4,342,902

AUTOMATIC CIGARETTE LIGHTING CASE

Wu Ping, c/o Nationwide Adv. Ag., 233 Broadway, Rm. 3615, New York, N.Y. 10007

Continuation-in-part of Ser. No. 906,082, May 15, 1978, abandoned. This application Nov. 3, 1980, Ser. No. 203,064
Int. Cl.³ F23Q *7/16*
U.S. Cl. 219—268 **3 Claims**



1. An improved, automatic cigarette lighting case, comprising in combination, a case, a front door hinged on said case for insertion of cigarettes therein when said door is open, a row of transfer tubes in said case, each said tubes receiving one of said cigarettes in an opening along an upper end edge of said case through which said cigarettes are dispensed into respective tubes a plurality of hinged covers closing said dispensing opening, said covers mounted on said door and means for said cigarettes being pre-ignited when dispensed into respective tubes wherein said means comprising a battery powered electrically insulated electric circuit and an electrically insulated sliding igniter coil adjacent the bottom end of each said tubes for igniting said cigarette.

4,342,903

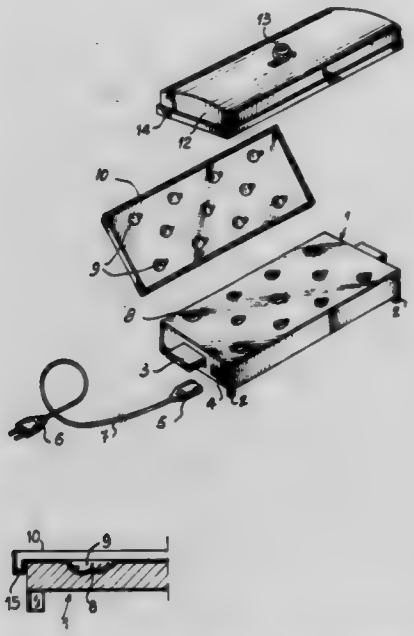
SNAIL REHEATER

Robert Hoogstoel, 2 bis, rue Mercoeur, Paris, France (75011)

Filed Mar. 31, 1980, Ser. No. 135,678
Claims priority, application France, Mar. 29, 1979, 79 07872
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—386 **6 Claims**

1. Novel assembly for reheating snails, said assembly comprising at least one snail tray having a plurality of depressions, said depressions being configured and adapted to receive a single snail wherein each of said depressions in said at least one snail tray is formed to have the shape of a snail shell, and a heating apparatus, said heating apparatus comprising a series of heating apparatus depressions corresponding in shape and

position to said depressions of said at least one snail tray on the top surface of said heating apparatus, each of said depressions in the top surface of said heating apparatus being formed to



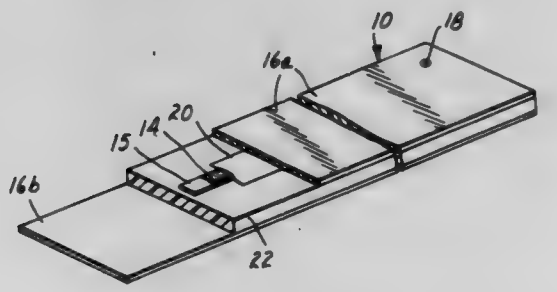
have the shape of a snail shell, and wherein said at least one snail tray is mounted on said heating apparatus whereby said depressions of said at least one snail tray fit within corresponding heating apparatus depressions.

4,342,904

LIGHTWEIGHT FERROMAGNETIC MARKER FOR THE DETECTION OF OBJECTS HAVING MARKERS SECURED THERETO

Lloyd W. Onsager, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 27, 1980, Ser. No. 201,177
Int. Cl.[3] G06K *19/06*
U.S. Cl. 235—493 5 Claims



1. A lightweight ferromagnetic marker adapted to be secured to an object for detecting the presence of that object within an applied magnetic field varying in intensity as a predetermined frequency, said marker comprising:

a thin strip of ferromagnetic material having a sufficiently low coercivity, a sufficiently high permeability, and a sufficiently large value for the ratio of its length to the square root of its cross-sectional area to afford the generation of a detectable signal whenever said object, bearing said strip, is placed within said field,

cover means for protecting said strip without adding considerable weight to the marker and for affording the attachment of said strip to the object,

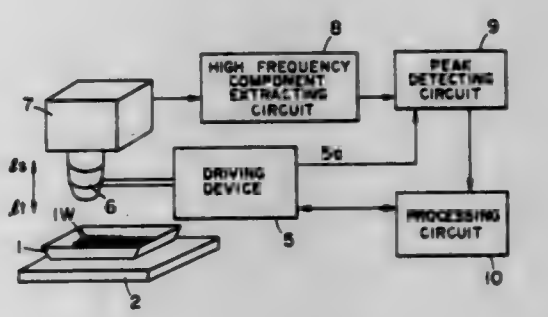
means interposed between said cover means and at least one face of said strip for affording slippage between said strip and said cover means, thereby limiting the transfer to said strip of mechanical stress applied to said cover means, said slippage means comprising at least one sheet of a low-friction release material.

4,342,905

AUTOMATIC FOCUSING DEVICE OF A MICROSCOPE

Norio Fujii, Urawa; Atsushi Kawahara, Tokyo, and Masahiro Sawada, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 21, 1980, Ser. No. 180,150
Claims priority, application Japan, Aug. 31, 1979, 54/110363; Oct. 27, 1979, 54/138271; Aug. 16, 1980, 55/112305
Int. Cl.[3] G01J *1/20*
U.S. Cl. 250—201 6 Claims



1. An automatic focusing device of a microscope having an objective lens and a stage on which a specimen is placed, said device comprising:

(a) distance varying means for varying the relative distance between said objective lens and said stage;

(b) distance detecting means for producing a distance output corresponding to said distance;

(c) photoelectric detector means for photoelectrically detecting a high frequency component of the space frequency component of the image of the specimen by said objective lens;

(d) judging means for judging whether or not a predetermined peak smaller than a maximum peak exists in the output of said photoelectric detector means within a predetermined distance range from a first distance output of said distance detecting means, when the output of said photoelectric detector means assumes said maximum peak, and for producing an in-focus output when said predetermined peak exists; and

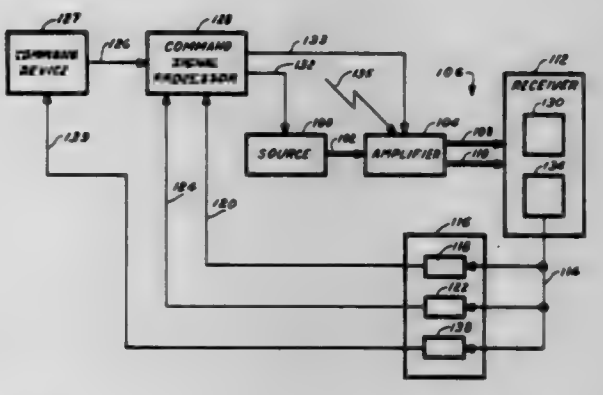
(e) means for determining said relative distance on the basis of said in-focus output.

4,342,906

PULSE WIDTH MODULATED FEEDBACK ARRANGEMENT FOR ILLUMINATION CONTROL

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation of Ser. No. 727,330, Sep. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,022. This application Feb. 2, 1978, Ser. No. 874,446
Int. Cl.[3] G01J *1/32*
U.S. Cl. 250—205 35 Claims



1. An illumination control system comprising:

an illumination source for generating source illumination;

an illumination control device for generating controlled illumination by selectively transmitting source illumination in response to a control signal;

sensor means for generating a sensor signal in response to the controlled illumination from said illumination control device; and

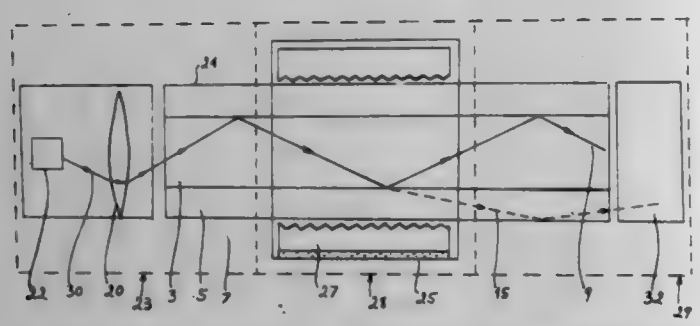
a stored program digital computer for generating the control signal to said illumination control device in response to the sensor signal under control of a stored program.

4,342,907

OPTICAL SENSING APPARATUS AND METHOD

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20034; Theodore A. Litovitz, 904 Devere Dr., Silver Spring, Md. 20903; Nicholas Lagakos, Silver Spring, Md.; Robert K. Mohr, Washington, D.C., and Robert Meister, Silver Spring, Md., assignors to Pedro B. Macedo, Bethesda and Theodore A. Litovitz, Silver Spring, both of, Md.

Continuation of Ser. No. 859,848, Dec. 12, 1977, abandoned.
This application Feb. 1, 1980, Ser. No. 117,637
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **54 Claims**



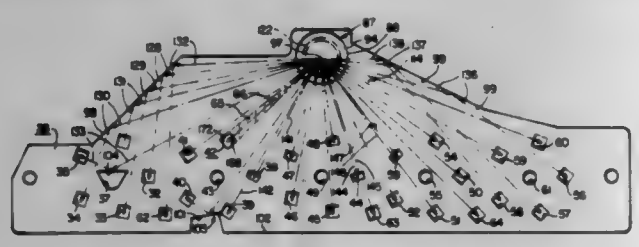
1. A sensor comprising an optical waveguide having means for transmitting light in at least two groups of modes denoted A and B, an optical light source means for injecting light into said waveguide so that light transmitted at least initially along said waveguide will be substantially in one of said groups, deformer means responsive to an external stress for deforming a region of said waveguide with such deformation being effective to change the character of the transmission of at least a portion of the light in the vicinity of the deformation from said one group to the said other group of modes, the change being approximately a linear function of the change in the external stress, and an optical detector having means to detect a change in the light in said other group only and thereby monitor said external stress.

4,342,908

LIGHT DISTRIBUTION SYSTEM FOR OPTICAL ENCODERS

Tom Henningsen, Moaroeville; Forrest E. Coyle, Penn Hills, both of Pa., and Roger D. Moates, Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 28, 1980, Ser. No. 182,300
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **29 Claims**



1. A light distribution system for an optical encoder having an array of photosensitive sensors, comprising:

a transparent light guide plate having front and back parallel surfaces;

a light input coupler including an incident radiation distributing area formed within said light guide plate for receiving a predetermined beam of input incident radiations, said distributing area spreading the input incident radiations into a distributed beam having plural beam segments each being directed in said light guide plate substantially wholly parallel to a single predetermined radiation path and further being substantially parallel to said front and back surfaces; and

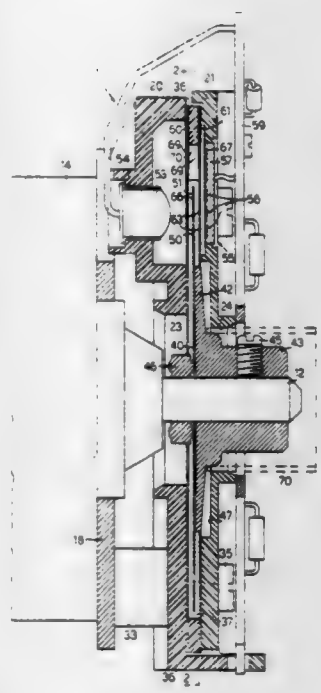
a predetermined pattern of plural discrete light output couplers each formed by an output reflecting surface recessed into one of said front and back surfaces, each of the output reflecting surfaces being in optical alignment with only a single one of said predetermined radiation paths to intercept a separate one of said beam segments, said reflecting surfaces having different surface areas corresponding to the different lengths of the predetermined radiation paths from said distributing area to produce output beams for uniformly illuminating each of said sensors of said array.

4,342,909

OPTICAL TRANSDUCER FOR DETECTING THE ANGULAR POSITION OF A ROTATING MEMBER WITH RESPECT TO A FIXED STRUCTURE

Andrea Accattino, Salerano, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Italy

Filed Apr. 14, 1980, Ser. No. 140,146
Claims priority, application Italy, Sep. 27, 1979, 68875 A/79
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 SE **10 Claims**



1. An optical transducer for detecting the angular position of a rotating member with respect to a fixed structure, comprising a disc which is connected to said rotating member and which is provided with a plurality of radial openings disposed along an anular region of said disc and having a fixed angular dimension and pitch, light emitting means and detecting means for detecting the passage of the light through said radial openings, a first fixed mask interposed between said emitting means and said disc and a second fixed mask interposed between said disc and said detecting means, wherein said first and second masks comprise a plurality of adjacent openings having a predetermined angle dimension and pitch associated with the angular dimension and pitch of the radial openings of the disc, wherein each opening of the first mask is aligned with an associated opening of the second mask and wherein the openings of the first mask and the associated openings of the second mask are aligned with said emitting means and with said detecting means thereby to collect the light into a plurality of parallel beams

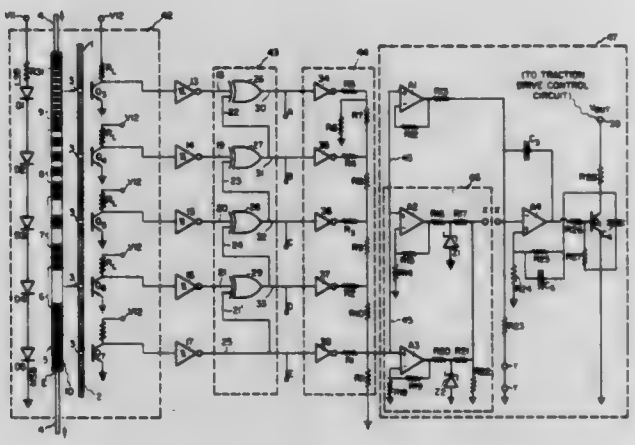
which crosses a section of the annular region of the disc and wherein the beams are substantially perpendicular to said disc.

4,342,910

OPTOELECTRONIC ABSOLUTE POSITION ENCODER WITH AN IN-LINE GRAY CODE CONTROLLING VEHICLE ACCELERATION

George F. Pfeifer; George R. Koonce, both of Liverpool, and Jack E. Phillips, Fayetteville, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 5, 1980, Ser. No. 184,213
Int. Cl.[3] H01J *3/14*
U.S. Cl. 250—237 G 12 Claims



1. An optoelectronic position encoder for providing a signal indicative of the absolute position of an encoder slide, comprising:

an optical interrupter assembly, including a plurality of paths of optical wavelength radiation passing therethrough, and a plurality of photodetectors each photodetector being in optical communication with a separate one of said paths of optical wavelength radiation, respectively; and

an encoder slide positioned for linear movement through said interrupter, said slide having optically transmissive windows arranged in a Gray code pattern, said windows being disposed in tandem and colinear with the line of movement of said slide so that in response to said movement said photodetectors detect said radiation transmitted through said windows and produce a Gray coded electronic signal indicative of the absolute position of said slide.

4,342,911

FOCUSED NUCLEAR INTERFACE SURVEY INSTRUMENT AND METHOD OF DETERMINING DENSITY CHANGES IN MINING AND STORAGE WELLS

Lewis L. French, 11250 Concho La., Houston, Tex. 77072

Filed Dec. 28, 1979, Ser. No. 107,782
Int. Cl.[3] G01V *5/00*
U.S. Cl. 250—258 20 Claims

1. An instrument for determining a fluid interface in an underground well, comprising:

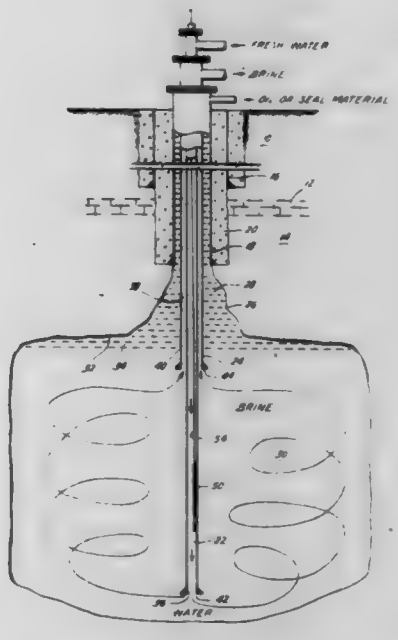
a housing;

radiation means for emitting radiation into the well;

a radiation collimator concentrically disposed on the lower end of said housing, said radiation means being eccentrically housed within said radiation collimator adjacent to the periphery thereof for directing the emission of radiation by said radiation means through restricted vertical and horizontal angles of radiation;

detection means for detecting any backscattered radiation from the fluid;

a cylindrical detection collimator mounted within said housing and having said detection means housed therein, said detection collimator having a window therein for exposing said detection means to the backscattered radiation, said window having an equi-radii cylindric surface area of exposure;



means for establishing the area of backscattering from the fluid; and

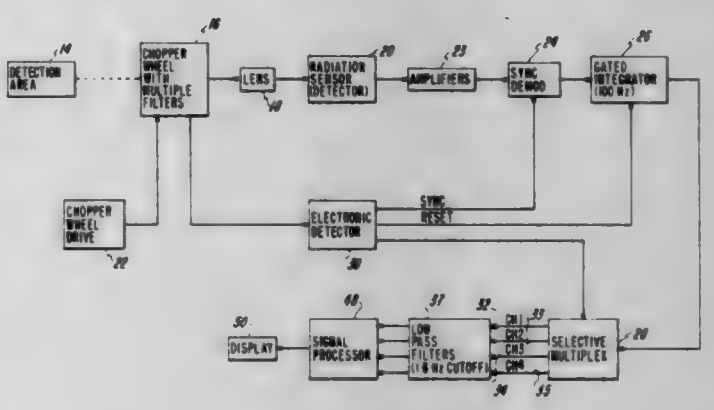
recording means for measuring the backscattered radiation.

4,342,912

APPARATUS FOR DETECTING AIR DISTURBANCES CREATED BY LOW LEVEL WIND SHEAR

Hugh P. Adamson, Golden, Colo., assignor to University Patents, Inc., Norwalk, Conn.

Filed Aug. 4, 1980, Ser. No. 175,115
Int. Cl.[3] G01J *1/00*
U.S. Cl. 250—339 28 Claims



1. An apparatus for detecting disturbances in air created by low level wind shear, said apparatus comprising:

signal developing means for receiving optical indications relating to disturbances in air created by low level wind shear and providing electronic signal outputs indicative thereof, said signal developing means including filter varying means for repeatedly successively injecting predetermined different optical filters into the path of said received optical indications so that said electronic signal outputs are indicative of optical indications received through different ones of said filters;

first signal processing means connected with said signal developing means to receive said electronic signal outputs therefrom and responsive thereto providing processed output signals indicative of said electronic signal outputs received from said signal developing means;

a plurality of output channels such of which includes electronic filter means;

multiplexing means connected with said first signal processing means to receive said processed signal outputs therefrom and connected with said filter varying means

whereby said processed signal outputs are sequentially directed to each channel of said plurality of output channels; and

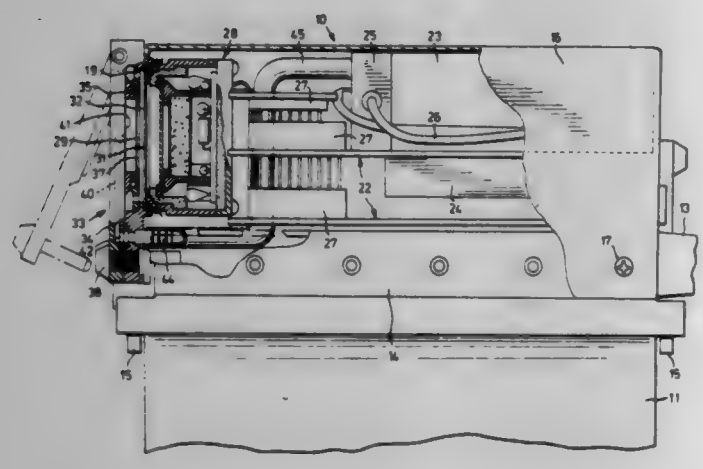
second signal processing means for receiving the outputs of said plurality of output channels and providing therefrom an output indicative of air disturbance created by low level wind shear.

4,342,913

PORTABLE RADIATION DOSIMETER

Robert A. Shepherd, Brampton, Canada, assignor to Selco Inc., Toronto, Canada

Filed Jul. 7, 1980, Ser. No. 166,063
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—364 **8 Claims**



1. A portable radiation dosimeter for measuring accumulative exposure to radioactive particles comprising, as a unitary assembly;

a housing providing an inlet for ambient air,

means defining a chamber within the housing adjacent a front wall thereof to receive ambient air via said inlet, the chamber having a frontal opening,

a clamp assembly releasably mounted on the front wall of the housing, the clamp assembly providing a peripheral seal to said frontal opening and an internal air passage positioned to interconnect said frontal opening with a second air inlet to the housing,

a filter located in cooperative relation to said frontal opening to intercept air flowing from said chamber to said internal air passage, the filter being clamped in position by said clamp assembly,

an air pump mounted in the housing, the pump being connected to said second air inlet for inducing a flow of air from said chamber and through said air passage via the filter,

a detection unit incorporating a radiation detector mounted within the housing, the detection unit having a window positioned in juxtaposition to the filter,

and

electronic means connected to said radiation detector for processing and counting pulses generated by the detection of radioactive particles from decay products entrapped by the filter.

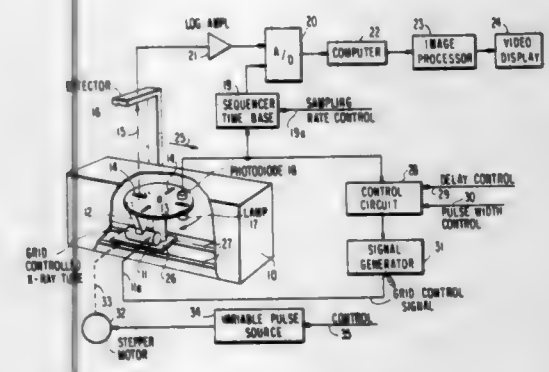
4,342,914

FLYING SPOT SCANNER HAVING ARBITRARILY SHAPED FIELD SIZE

Paul J. Bjorkholm, Sharon, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Filed Sep. 29, 1980, Ser. No. 191,900
Int. Cl.³ H04N *5/32*
U.S. Cl. 378—99 **16 Claims**

9. A flying spot X-ray scanning system comprising an X-ray source adapted to emit X-rays, collimator means positioned to intercept said emitted X-rays and operative to produce a pencil beam of X-rays which repetitively scans along a first line, means for moving said X-ray source and said collimator means along a second line transverse to said first line during the scanning of said pencil beam, first control means for selectively varying the time at which said X-ray source commences its emission of X-rays relative to the beginning of each of said scans, second control means for selectively varying the duration of said emission of X-rays subsequent to the commencement of said emission, and third control means for selectively varying the extent to which said X-ray source and collimator means are moved along said second line, whereby said first, second and third control means jointly define the position and dimensions of the X-ray scan field which is generated by said flying spot scanning system.

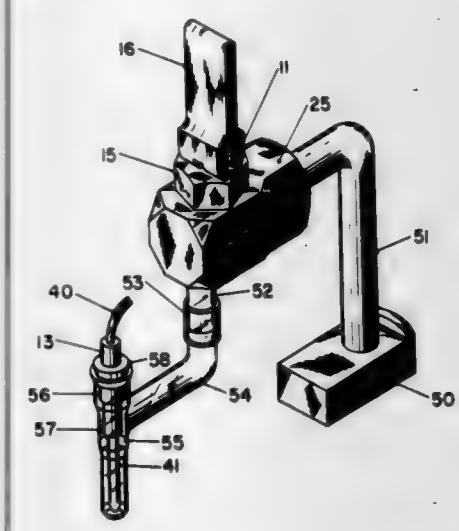


4,342,915

APPARATUS FOR PREVENTING BACTERIAL PASSAGE INTO STERILE FLUID SYSTEMS

Narbik A. Karamian, 7609 Exeter Rd., Bethesda, Md. 20014

Continuation-in-part of Ser. No. 926,664, Jul. 21, 1978, Pat. No. 4,276,256, which is a continuation-in-part of Ser. No. 737,740, Nov. 1, 1976, abandoned. This application Feb. 11, 1981, Ser. No. 233,322
Int. Cl.³ A61L *2/10*
U.S. Cl. 250—436 **3 Claims**



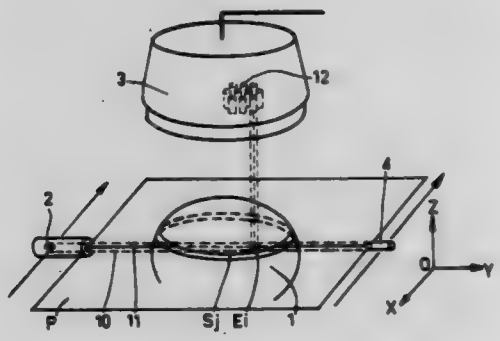
1. An apparatus for preventing bacterial passage into a sterile fluid which comprises in combination a source of sterile fluid, a conduit attached to said source of sterile fluid, a fluid delivery faucet including a shut-off valve means attached to said conduit, said faucet having a delivery spout attached thereto and downstream therefrom, including a substantially unrestricted annular sterile fluid flow path therein, said delivery spout having an ultraviolet light positioned in the center thereof, means for periodically energizing said ultraviolet light so that the annular flow path defined by the exterior of the ultraviolet light and the interior of the delivery spout is irradiated with ultraviolet light to assure bacterial sterility.

4,342,916

METHOD OF AND APPARATUS FOR TOMOGRAPHIC EXAMINATION OF STRUCTURES BY X-RAY OR GAMMA RAY SCANNING

Michel Jatteau, Lesigny; Vincent Chalmeton, Yerres, and Joseph Pauvert, Ris-Orangis, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,761
Claims priority, application France, Nov. 27, 1978, 78 33430
Int. Cl.³ G01N *21/00*
U.S. Cl. 378—4 11 Claims



1. A method of tomographic examination for determining electron density by X-ray or gamma ray scanning of at least a part of a body to enable display of images of nominal slices, in which said part of the body is subdivided into volume elements defined by a nominal matrix in each slice, comprising the following steps:

A. scanning a first slice in a first direction with a first collimated beam of penetrating radiation of known intensity which extends within the slice,

detecting radiation within the beam which has passed through the slice to obtain a first set of measuring data n_1,

simultaneously detecting Compton-scattered radiation which leaves the body in a direction perpendicular to the slice from each element in the slice, to obtain a second set of measuring data, n_2;

B. scanning the first slice with a second substantially identical collimated beam of penetrating radiation in a direction which is opposite the first direction,

detecting at least Compton-scattered radiation from each element in the slice which leaves the body in the direction perpendicular to the slice from each element in the slice, to obtain a third set of measuring data, n_3;

C. storing the first, second and third sets of measuring data;

D. calculating an electron density value in each element in the first slice on the basis of at least the first, second and third sets of measuring data;

E. storing the electron density values in each element in the slice;

F. scanning a further slice, adjacent to the slice most recently scanned, and detecting radiation per steps A and B to obtain at least further first, second and third sets of measuring data for the further slice;

G. storing the further sets of measuring data;

H. determining an electron density value in each element in the further slice on the basis of at least the further first, second and third sets of measuring data and the electron density values previously stored;

I. storing the electron density values in each element in the further slice;

J. repeating steps F, G, H, and I for a slice adjacent the slice most recently scanned until all slices within the part of the body to be examined have been scanned; and

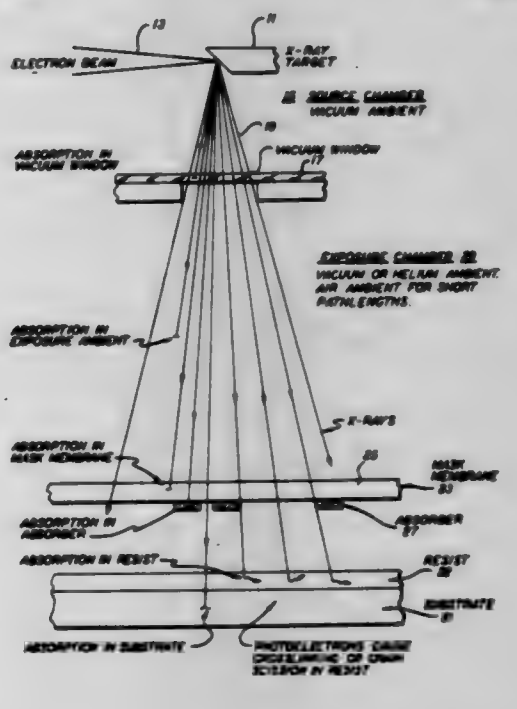
K. displaying the electron density values in elements of one or more of the slices.

4,342,917

X-RAY LITHOGRAPHY APPARATUS AND METHOD OF USE

William D. Buckley, Easton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 869,541, Jan. 16, 1978, Pat. No. 4,215,192. This application Nov. 9, 1979, Ser. No. 92,875
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.
Int. Cl.³ B05D *3/06*
U.S. Cl. 378—34 16 Claims



1. Apparatus for performing x-ray lithography comprising:

(a) means for coating the substrate on which the lithography is to be carried out with a resist;

(b) means for disposing an x-ray apparatus having a target means capable of generating M-line x-ray radiation having a wavelength in the range of between about 4 and about 14 angstroms so as to generate radiation which will impinge on and expose said coated substrate;

(c) means for operating said x-ray source so as to generate the M-line radiation;

(d) means for disposing a mask between said source and said substrate; and

(e) means for exposing said substrate to said radiation.

4,342,918

ION-NITRIDING APPARATUS

Akio Tanaka, Ono; Mizuo Edamura, Kobe; Satoshi Furuitsu, Kakogawa, and Satoru Kunise, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Division of Ser. No. 4,613, Jan. 18, 1979, which is a continuation of Ser. No. 751,328, Dec. 16, 1976. This application Aug. 27, 1980, Ser. No. 181,844
Claims priority, application Japan, Dec. 29, 1975, 50-158107; Jan. 14, 1976, 51-3471; Feb. 16, 1976, 51-16379; Mar. 1, 1976, 51-22382; Mar. 1, 1976, 51-22383; Mar. 19, 1976, 51-30381; Jun. 1, 1976, 51-64370; Jun. 1, 1976, 51-64371; Jun. 1, 1976, 51-71326
The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.
Int. Cl.³ C21D *1/09, 1/74*
U.S. Cl. 422—186.04 8 Claims

1. An ion-nitriding apparatus comprising:

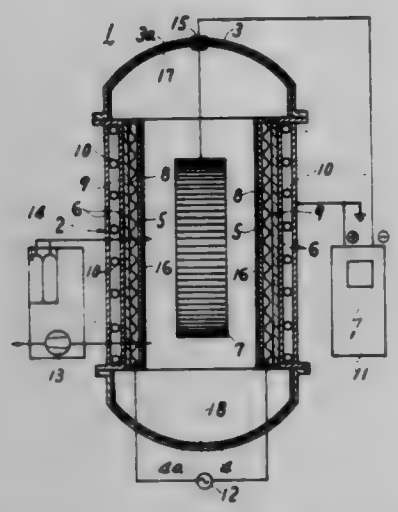
(a) a vacuum reacting furnace having a furnace body of double walled construction, with an outer wall body and an inner wall body, and a lid for inserting and removing a workpiece for treatment;

(b) a heating element which generates heat electrically and is disposed between said outer wall body and said inner wall body in said vacuum reacting furnace, said heating ele-

ment being electrically screened from said workpiece by said inner wall body;

(c) glow discharge means to generate glow discharge between said inner wall body as anode and said workpiece inserted in said vacuum reacting furnace as cathode, the anode side of said glow discharge means being grounded;

(d) a power source device having a positive terminal and a negative terminal for discharge to flow a direct current



through said glow discharge means, said positive terminal connected to said anode of said discharge means and said negative terminal connected to said cathode of said discharge means; and

(e) a power source device for heating to impress a voltage upon said heating element;

wherein the inner circumferential surface of the inner wall body of the furnace body is blackened.

4,342,919

FIBER OPTICAL MEASURING DEVICE

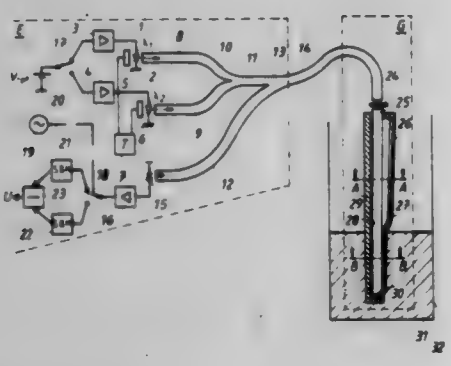
Torgny Brogardh, Västeros, Sweden, assignor to ASEA Aktiebolag, Västeros, Sweden

Filed Apr. 7, 1980, Ser. No. 138,112

Claims priority, application Sweden, Apr. 10, 1979, 7903175

Int. Cl.³ G01N *15/06*

U.S. Cl. 250—577 **16 Claims**



1. A transducer for a fiber optical measuring device for the measurement of physical parameters of a medium, comprising:

at least one light guide for receiving light signals and transmitting output light signals representative of the parameter of said medium being measured and adapted to be partially immersed into said medium;

a sheath surrounding said light guide and including at least one transparent region thereof;

said light guide further including a core having a higher refractive index than said sheath;

said core transmitting light from said at least one transparent region at the immersed portion of said light guide to produce said output light signals; and

light transmission varying means spaced from said light guide and being brought into optical contact with said core by immersion of said light guide into said medium such that the light transmitted from said at least one transparent region is altered by said medium.

4,342,920

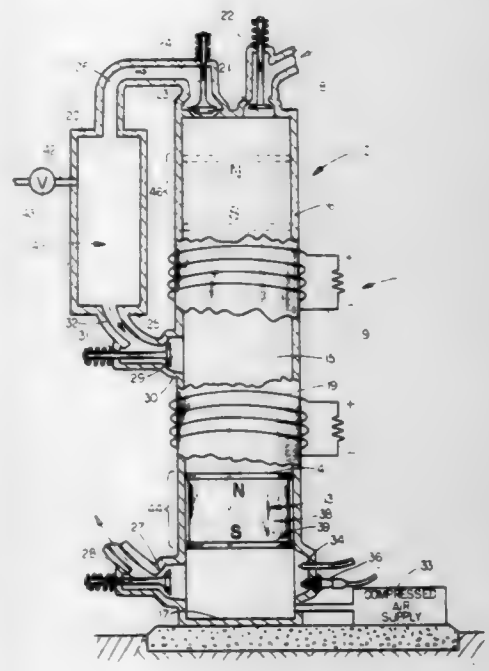
POWER PLANT AND PROCESS UTILIZING GRAVITATIONAL FORCE

Donald C. Bucknam, 2124 S. 110th St., Omaha, Nebr. 68144

Filed Oct. 15, 1980, Ser. No. 197,314

Int. Cl.³ F02B *71/04*; F02D *39/10*; F03G *7/02*

U.S. Cl. 290—1 R **21 Claims**



1. A process for converting gas expanding energy sources into useful other forms of energy, such as inducing an alternating current in a coil, comprising the steps of:

holding a piston means forming a magnetic field at a starting position near a lower end of a cylinder means, also having an upper end, with a load-connected electrical conductor coil means surrounding it intermediate said ends thereof;

lifting said piston means to an apex position near an upper end of said cylinder means thereby opening a spring-biased valve mounted in a first outlet port in said upper end in order to transfer the column of air above the piston means through a tube into a reservoir means;

permitting said piston means to initiate a repeating cycle by free falling within said cylinder means thereby allowing said spring-biased valve in the first outlet port to close, opening a spring-biased valve mounted in a first inlet port in said upper end in order to admit a charge of fresh air and opening a spring-biased mechanically operated exhaust valve mounted in a second outlet port in said lower end;

closing the valve in said second outlet port at the bottom of the cylinder when the piston means has fallen far enough to enable it to compress as much fresh air beneath it to allow it to reach said starting point;

injecting fuel into the air in the cylinder means beneath said piston means starting position prior to its reaching said starting position;

igniting the fuel and air mixture at approximately the instant when said piston means has reached said starting position thereby forcing said piston means towards the upper end, again opening said first outlet port for transferring the column of air above and ahead of said piston means into said reservoir;

opening a valve mounted in a second inlet port, intermediate the lower and upper ends of said cylinder means, and connected by pipe to a lower end of said reservoir means, as the piston means passes upwardly by, in order that compressed air in the reservoir will enter the cylinder means behind the piston between the piston means and the

lower end of said cylinder means and expel the contaminated gases through the second outlet port; and

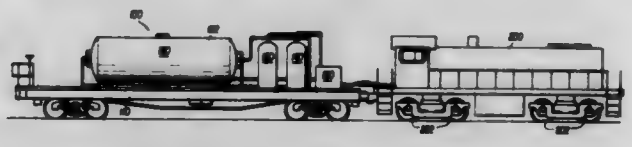
closing said second inlet port when the piston means has again reached a point near the upper end of the cylinder means and is in position to again free-fall for the next repetition of the cycle.

4,342,921

LOCOMOTIVE ENERGY RECOVERY SYSTEM

Thomas J. Williams, 1860 N. El Molino, Pasadena, Calif. 91104

Filed May 11, 1981, Ser. No. 262,434
Int. Cl.³ B60L *1/02*
U.S. Cl. 290—2 9 Claims



1. An energy recovery system for a locomotive mounted on wheels, comprising:

an internal combustion engine located on a wheeled locomotive which serves as the primary source of power for said locomotive;

an electric dynamo which is mechanically powered by said internal combustion engine;

an electric motor which is electrically powered by said dynamo, which electric motor serves to propel the locomotive by rotating at least one of the wheels of said locomotive, and which electric motor operates as a dynamo to produce electricity during dynamic braking of said locomotive; and

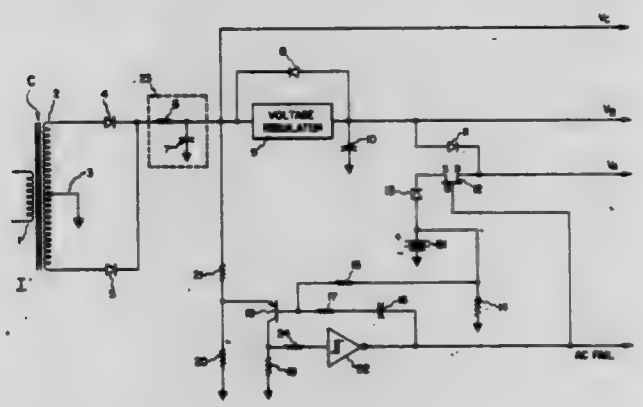
energy recovery tank means containing a heat storage fluid for capturing and storing waste heat energy generated by said internal combustion engine and electrical energy generated by said electric motor for use at a remote location at a later time.

4,342,922

AC FAIL-DETECT AND BATTERY SWITCHOVER CIRCUIT FOR MULTI-BUS POWER SUPPLY

Donald V. DiMassimo, and John B. May, both of Liverpool, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,697
Int. Cl.³ H02J *9/06*
U.S. Cl. 307—66 8 Claims



1. A circuit for detecting an AC power failure, including means for providing a first DC voltage, comprising:

a source of reference voltage;

a voltage divider providing a second DC voltage proportional to said first DC voltage;

a voltage comparator-switch circuit for comparing said second DC voltage with the reference voltage, said comparator producing an output signal when said second DC voltage exceeds the reference voltage by a predetermined amount;

a Schmitt trigger-inverter circuit coupled to the output of said comparator and providing an AC fail signal indicating an AC power failure when said output signal falls below a second predetermined level; and

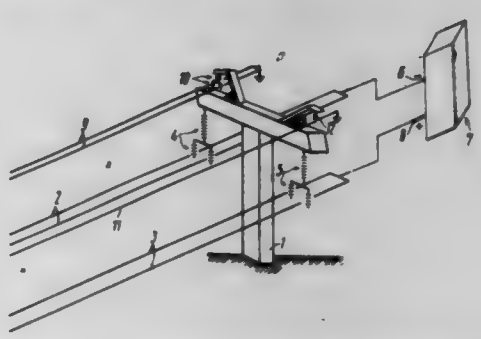
circuit means coupled to the output of said Schmitt trigger-inverter circuit, to said comparator-switch circuit and to said source of reference voltage for rapidly biasing said comparator-switch means into nonconduction when said Schmitt trigger-inverter produces the AC fail signal, and for rapidly biasing said comparator-switch means into conduction when AC power is restored.

4,342,923

D.C. POWER TRANSMISSION LINE WITH LIGHTNING PROTECTION WIRES

Vyacheslav K. Ishkin, ulitsa Paustovskogo, 8, korpus 3, kv. 161, and Veniamin G. Kagan, ulitsa Shukhova, 16, korpus 5, kv. 6, both of Moscow, U.S.S.R.

PCT No. PCT/SU80/00010, § 371 Date Aug. 31, 1981, § 102(e) Date Aug. 31, 1981, PCT Pub. No. WO81/02226, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 30, 1980, Ser. No. 297,697
Claims priority, application U.S.S.R., Jan. 12, 1978, 2570670
Int. Cl.³ H02J *1/02;* H02G *7/22, 13/00*
U.S. Cl. 307—147 1 Claim



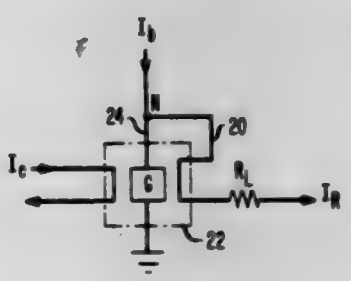
1. A d.c. power transmission line comprising line conductors connected, respectively, to poles of a d.c. power supply and two wire-type systems providing for lightning protection of the line conductors and located above the latter, characterized in that one of said wire-type systems is located above a first line conductor (2) connected to the negative pole (6) of said d.c. power supply (7) and comprises at least two conductors (9) arranged at a certain distance from each other, a second one of said wire-type systems having a single wire (11) being located above a second line conductor (3) connected to the positive pole (8) of said d.c. power supply (7).

4,342,924

NONHYSTERETIC JOSEPHSON JUNCTION CIRCUITS WITH FEEDBACK

Richard E. Howard, and Lawrence D. Jackel, both of Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 29, 1980, Ser. No. 173,388
Int. Cl.³ H03K *17/92*
U.S. Cl. 307—245 8 Claims



1. A superconductive circuit comprising

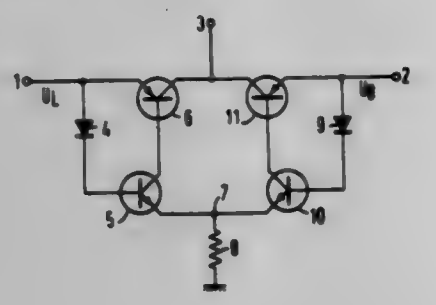
a circuit node (N) to which bias current (I_b) can be applied,
an output branch (20) connected to said node,
a second branch (24) connected to said node, said second branch including a nonhysteretic Josephson junction gate (G) having a zero-voltage, low impedance first state below a critical current I_J and finite voltage, higher impedance second state above I_J, and
control means (I_c) for switching said gate between its first state in which said bias current flows primarily through said gate and said second state in which said bias current is diverted to said output branch, characterized by
means (20, 22) for rendering the state of said gate responsive to the flow of output current in said output branch.

4,342,925

CIRCUIT ARRANGEMENT FOR INTERRUPTION-FREE VOLTAGE SWITCHING

Ludwig Schick, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,572
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929515
Int. Cl.³ H03K *17/00*
U.S. Cl. 307—270 2 Claims



1. In a circuit for interruption-free switching between feed voltages, the circuit having two input terminals to each of which a feed voltage may be connected and an output terminal to which the higher of the two feed voltages is to be connected, the improvement comprising:
a driving transistor for each input terminal, each driving transistor having a base, an emitter, and a collector, the base of each transistor being coupled to one input terminal,
a resistor having a terminal to which the emitters of both driving transistors are connected and a terminal adapted to be connected to a reference potential,
a complementary switching transistor for each driving transistor, each switching transistor having a base, an emitter, and a collector, the base of each switching transistor being connected to the collector of the associated driving transistor, the emitter of each switching transistor being connected to the input terminal to which the base of the associated driving transistor is connected, and
an output terminal to which the collectors of both switching transistors are connected.

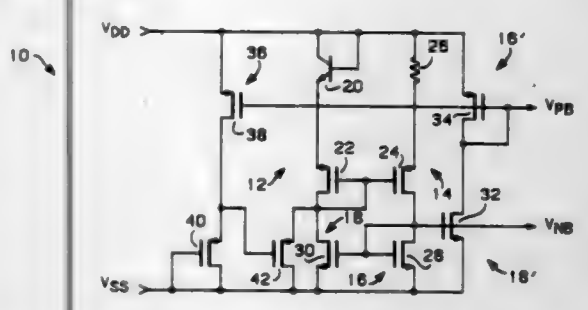
4,342,926

BIAS CURRENT REFERENCE CIRCUIT

Roger A. Whatley, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 17, 1980, Ser. No. 207,532
Int. Cl.³ G05F *3/16*; H03L *1/00, 5/00*
U.S. Cl. 307—297 13 Claims

1. A bias current reference circuit comprising:
reference voltage means for providing a reference voltage proportional to a bias current, comprising:
a first diode-connected device; and
a second diode-connected device coupled in series with said first diode-connected device;
reference current means coupled to the reference voltage means, for providing a reference current proportional to the reference voltage;
bias voltage means coupled to the reference current means, for providing a bias voltage proportional to the reference current; and



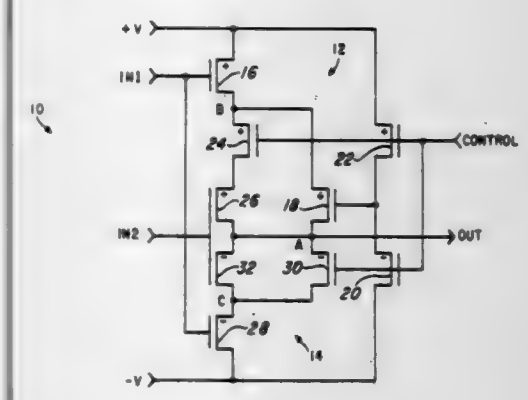
bias current means coupled to the bias voltage means and to the reference voltage means, for providing the bias current proportional to the bias voltage for said reference voltage means.

4,342,927

CMOS SWITCHING CIRCUIT

Charles G. Hull, Rosenberg, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 24, 1980, Ser. No. 133,239
Int. Cl.³ H03K *19/08*
U.S. Cl. 307—452 6 Claims



1. A switching circuit comprising:
storage means for maintaining a logical condition established therein, and for providing an output signal indicative of the maintained logical condition;
first logic means for establishing a logical high condition in the storage means in response to a first input signal having a logical high condition and either a control signal having a logical high condition or both the control signal and a second input signal having a logical low condition; and
second logic means for establishing a logical low condition in the storage means in response to the first input signal having a logical low condition and either the control signal or the second input signal having a logical low condition.

4,342,928

CIRCUIT AND METHOD FOR VOLTAGE LEVEL CONVERSION

Jörg Gachwendtner, Esslingen, and Wolfdieter Löhlein, Herrenberg, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

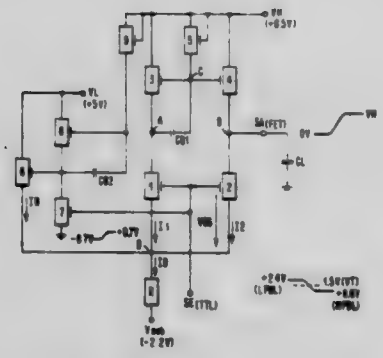
Filed Jul. 7, 1980, Ser. No. 166,206
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929383
Int. Cl.³ H03K *6/02, 19/017*
U.S. Cl. 307—475 8 Claims

1. A field-effect transistor input buffer circuit for converting low level binary logic input signals applied to an input node to high level binary logic output signals delivered to an output

node, the input signals having predefined up and down logic levels, each of the up and down levels being defined over a range of voltages, comprising:

a source bias node;

a first field-effect transistor having gate, drain and source electrodes, the gate electrode being connected to the input node, the drain electrode being connected to the output node and the source electrode being connected to said source bias node, and



source bias control means responsive to signals on the input node for changing the potential on said source bias node to increase the gate-to-source voltage of said first transistor to a voltage greater than the voltage of an up level input signal in response to an up level input signal and to decrease the gate-to-source voltage of said first transistor to a voltage less than the voltage of a down level input signal in response to a down level input signal.

4,342,929

ELECTRIC MOTOR WHEREIN LOW TEMPERATURE POLYMERIC HOUSING SUPPORTS HEAT DISSIPATING PORTIONS THROUGH HEAT RESISTING POLYMERIC BRIDGING MEMBER

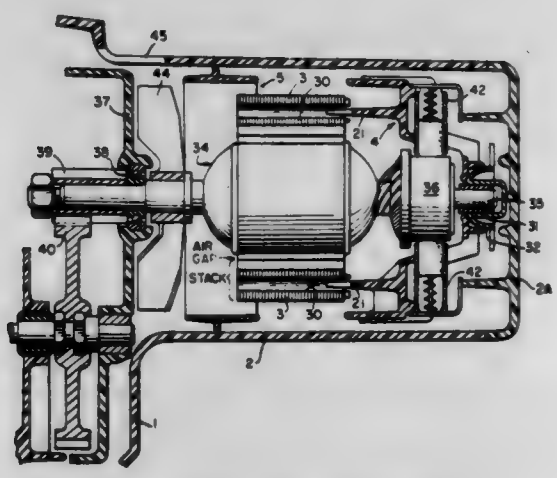
David Horne, Staines, England, assignor to Black & Decker Inc., Newark, Del.

Filed Jul. 10, 1980, Ser. No. 168,378

Claims priority, application United Kingdom, Jul. 13, 1979, 7924527

Int. Cl.³ H02K *1/04*

U.S. Cl. 310—43 **11 Claims**



2. A portable electric power tool, comprising:

an electric motor to drive said tool, said electric motor emitting heat in operation and thereby attaining an elevated running temperature;

a polymeric housing encasing said electric motor, said polymeric housing supporting said electric motor mounted therewithin;

the material of said polymeric housing inherently becoming softened if subjected to said elevated running temperature;

said electric motor being supported within said polymeric housing by spacing members axially spaced apart and extending between the said electric motor and said polymeric housing;

said spacing members being made of a polymeric material which is inherently resistant to said elevated running temperature; and

said spacing members being of low thermal conductivity to hinder conduction of heat from said electric motor to said polymeric housing.

4,342,930

STEP-BY-STEP MINIATURE MOTOR FOR WATCH MOVEMENT

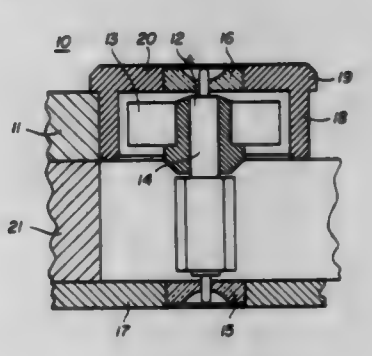
Michel H. Pellaton, Besancon, France, assignor to France Ebauches S.A., Valdahon, France

Filed Sep. 8, 1980, Ser. No. 184,801

Claims priority, application France, Sep. 6, 1979, 79 22724

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—49 R **2 Claims**



1. A miniature stepping motor for watch movement, consisting of a rotor integral with a rotating axle, a stator pierced with a circular opening in which the rotor is housed, and a stator reinforcing band and rotor bearing support member, disposed between the stator and the rotor, made up of a tubular element at least partially closed at one of its ends, composed of a lateral cylindrical wall and a flat base, this element being pressed into the circular opening concentrically within the stator, the base of the said tubular element having a central opening disposed to house a bearing for the rotor axle.

4,342,931

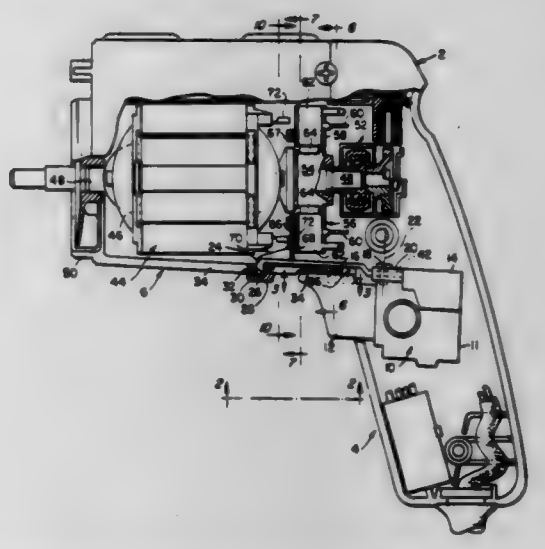
BRUSH-SHIFTING AND TRIGGER-SWITCH ARRANGEMENTS FOR A PORTABLE TOOL

Horst Grossmann, Huenfelden, and Alfred Bausch, Waldbrunn, both of Fed. Rep. of Germany, assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 29, 1981, Ser. No. 229,441

Int. Cl.³ B23B *45/02*; H02K *7/14*

U.S. Cl. 310—50 **24 Claims**



1. A portable tool having an electric motor, comprising:

an armature;

a rotatable brush-board having brushes mounted thereon;

a reversing switch for determining the direction of rotation of the armature; and

a pivoted lever mechanically coupling the brush-board to the reversing switch whereby pivotal movement of the lever angularly shifts the brushes about the axis of rotation of the armature and simultaneously actuates the reversing switch to determine the direction of rotation of the armature.

4,342,932

ROTOR OF CRYOGENIC ELECTRICAL MACHINE

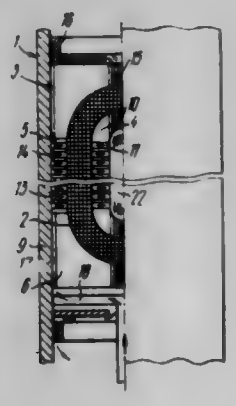
Igor A. Glebov, prospekt Smirnova, 24, Korpus 3, Kv. 52; Yanush B. Danilevich, ulitsa Tipanova, 29, Kv. 681; Sergeia A. Ivanov, ulitsa Siezzhinskaya, 24, Kv. 12; Anatoly A. Karymov, Sredny prospekt, 49, kv. 5; Galina A. Kotlyarova, prospekt Shaumiana, 58, kv. 22; Vladimir A. Sapozhnikov, prospekt Kultury, 11, korpus 1, kv. 145, and Valentin N. Shakhtarin, prospekt Metallistov, 14, kv. 6, all of Leningrad, U.S.S.R.

Filed Feb. 13, 1980, Ser. No. 121,262

Claims priority, application U.S.S.R., Feb. 15, 1979, 2725190

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 **3 Claims**



1. A rotor of a cryogenic machine of the type which includes a plurality of flat superconducting field windings assembled into a cylindrical rotor, said cylindrical rotor being surrounded by a bandage, comprising:

a first plurality of passages inside said bandage;

means for feeding a cryogenic cooling liquid into said first plurality of passages;

a central cavity on the axis of said rotor inside said field windings;

a second plurality of radial passages effective for communicating said cryogenic cooling liquid in unidirectional inward flow from said first plurality of passages to said central cavity, said cryogenic cooling liquid in said second plurality of radial passages contacting and absorbing heat from said field windings during said unidirectional flow therepast; and

a third plurality of axial passages communicating said cryogenic cooling liquid and vapor phase evolved therefrom in unidirectional flow from said central cavity to axial locations outside said field windings, whereby unidirectional flow of liquid, and vapor phase is provided through said rotor without counter flow thereof.

4,342,933

ELECTRICAL COMMUTATOR

Heinz Gerlach, Ehningen, and Lothar Woerner, Stuttgart, both of Fed. Rep. of Germany, assignors to Kautt & Bux KG, Stuttgart, Fed. Rep. of Germany

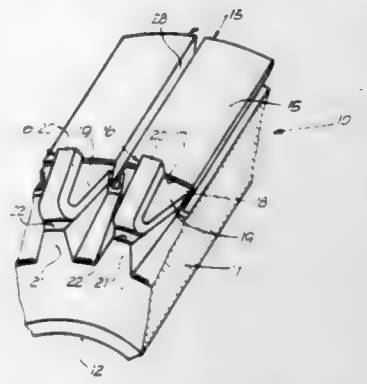
Filed Dec. 27, 1976, Ser. No. 754,682

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1976, 2601845

Int. Cl.³ H02K *13/04*

U.S. Cl. 310—234 **11 Claims**

1. A collector for electrical machines comprising a plurality of lamella segments, each segment having anchoring elements and being connected to a cylindrical insulating body by means of said anchoring elements, each of said lamella segments having at one end thereof a hook base from a free end of which a hook protrudes, said insulating body having a plurality of



supporting ribs each of which supports a respective hook base, the width of each hook base, as measured in the peripheral direction of the insulating body, increasing from the free end thereof toward its associated lamella segment.

4,342,934

PREFABRICATED BRUSH HOLDER ASSEMBLY FOR USE IN SMALL ELECTRIC MOTORS

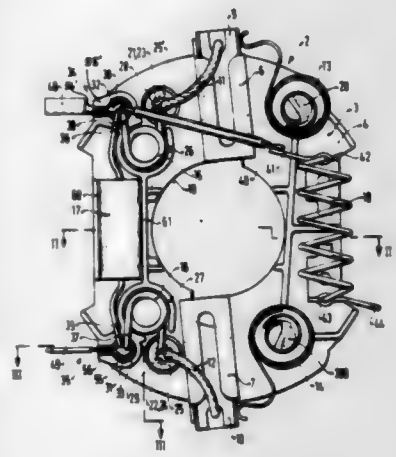
Albert van Wijhe, Bühlertal; Ernst Münster, Bühl; Gerhard Wagenbrenner, Rastatt; Fritz Röcker; Joachim Armbruster, both of Bühlertal; Klaus Metzger, Ottersweier, and Rüdiger Ratzel, Bühl, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 8, 1980, Ser. No. 138,575

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914853

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—239 **7 Claims**



1. A brush holder assembly designed for prefabrication by an automatic machine and further designed to be used with commutators of small electric motors used in fuel pumps and the like, comprising: a carrier plate manufactured of an insulating material, the carrier plate having a central opening with a periphery, the opening being so sized that a commutator of a small electric motor can be received therein and further having a first side and a second side; two hollow brush carriers fixed on the first side of the carrier plate so as to abut the periphery of the opening at opposed points; two carbon brushes, each located within a corresponding one of the brush carriers and slidably movable therewithin so as to be abuttable against a commutator received within the opening; two brush springs fixed on the first side of the carrier plate and cooperating with the brushes in a manner that each brush spring can urge a corresponding one of the brushes against a commutator received within the opening; to brush leads, each attached to a corresponding one of the brushes; anti-interference components located on and having lead ends bent toward the first side

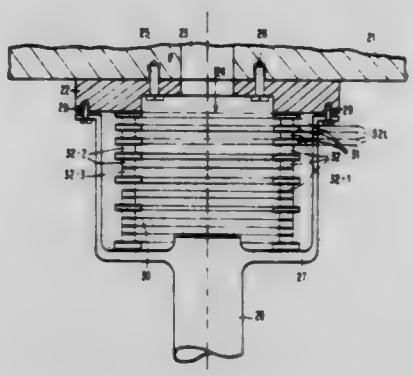
of the carrier plate; two power leads each having an end shaped into an eyelet form, which ends are fixed in the first side of the carrier plate and are electrically connected to at least one of the anti-interference components; and a plurality of electrically conductive grommets fixed in the carrier plate and electrically connecting the brush leads, the power leads and the lead ends of the anti-interference components into an electrical network.

4,342,935

BINARY PIEZOELECTRIC DRIVE FOR LENS FOCUSING SYSTEM

Michael Kallmeyer, Boeblingen; Hans Rösch, Reutlingen; Claus Scheuing, Lorch, and Bernhard Solf, Sindelfingen, all of Fed. Rep. of Germany, assignors to Discovision Associates, Costa Mesa, Calif.

Filed Apr. 10, 1980, Ser. No. 139,033
Int. Cl.³ H01L *41/08*; G11B *7/00*
U.S. Cl. 310—328 **8 Claims**



1. A high resolution focusing system usable in connection with a focusing lens for controlling the position along an optical axis of the form point of a beam of light passing through said lens in the direction of said axis, comprising:

a support structure having an opening through which said light beam passes;

a lens holder for holding said focusing lens; and

a piezoelectric driver coupling said lens holder to said support structure for imparting controllable relative motion to said lens holder with respect to said support structure, said piezoelectric driver comprising:

a plurality of annularly shaped piezocrystal members each having oppositely facing annularly shaped electrical contact faces,

a plurality of rigid annularly shaped insulating members in contact with and separating said piezocrystal members from one another, such that said piezocrystal members and said insulating members form a hollow cylindrical composite structure, the opposite ends of which are attached to said support structure and said lens holder, respectively, such that said light beam passes through the center of said cylindrical structure substantially coaxially therewith, and also passes through said lens, and

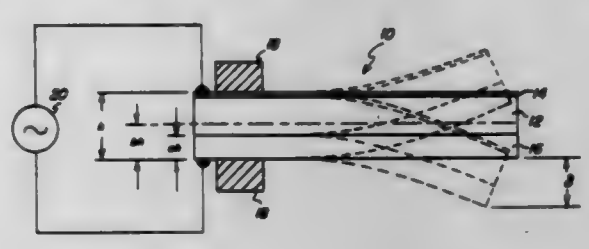
electrical drive means coupled to the contact faces of said piezocrystal members for supplying a control signal to, and thereby controlling the lengths of, said piezocrystal members to thereby control the relative position of said lens with respect to said support structure.

4,342,936

HIGH DEFLECTION BANDWIDTH PRODUCT POLYMERIC PIEZOELECTRIC FLEXURE MODE DEVICE AND METHOD OF MAKING SAME

Michael A. Marcus, Fairport, and James K. Lee, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,591
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—330 **15 Claims**



1. A piezoelectric flexure mode device, comprising: a sheet of polymeric piezoelectric material poled in a direction parallel with the thickness of the sheet; a first electrode bonded to one side of said sheet, said first electrode comprising less than 1% of the total thickness of said flexure mode device, and a second electrode bonded to the other side of said sheet, said second electrode comprising between about 2% and about 37% of the total thickness of said flexure mode device, and being of a thickness sufficient to substantially maximize the Deflection Bandwidth Product of the flexure mode device.

4,342,937

METAL HALOGEN VAPOR LAMP PROVIDED WITH A HEAT REFLECTING LAYER

Ferenc Nágel, Budapest, Hungary, assignor to Egyesült Izzólámpa és Villamossági Rt., Budapest, Hungary

Filed Feb. 12, 1980, Ser. No. 120,915
Int. Cl.³ H01J *5/16*
U.S. Cl. 313—113 **5 Claims**

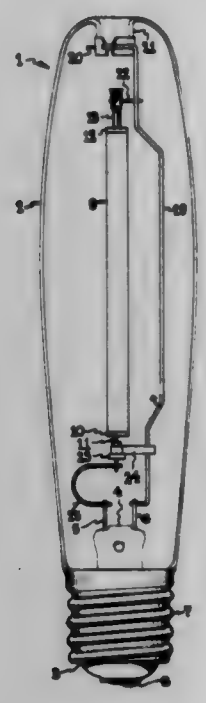


1. A metal halogen vapor lamp having a discharge tube which is permeable to light and has a high melting point, wherein there are electrodes at each end of said discharge tube having power supply elements attached thereto, said discharge tube containing inside thereof a metal of high vapor pressure at operational temperatures, a noble gas and at least one metal and a halogen which forms a metal halide with said metal and a heat reflecting layer coated on said discharge tube in an area adjacent said electrodes, the improvement wherein a binding layer comprising $MgO\text{-}MgCl_2\text{-}H_2O$ is between the heat reflecting layer and the discharge tube, binding them together.

4,342,938
UNIVERSAL BURNING CERAMIC LAMP

Jack M. Strok, Garrettsville, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,953
Int. Cl.[3] H01J *61/24*
U.S. Cl. 313—174 6 Claims



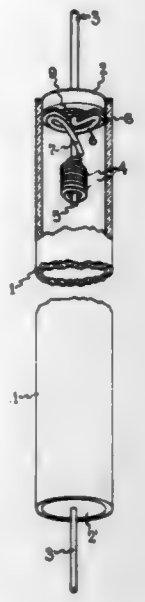
1. An alkali metal vapor lamp comprising:
a tubular elongated envelope of light-transmitting ceramic material having a pair of electrodes sealed into opposite ends,
one end of said envelope having a metal exhaust tube sealed thereto, said tube having a vent opening into the interior of said envelope and being sealed off at its outer end,
an ionizable medium including mercury-alkali amalgam sealed within said envelope in a quantity exceeding that vaporized during operation of said lamp whereby an unvaporized excess remains in liquid form during operation, the heat balance in said envelope making the sealed end of said tube the cold spot in said envelope,
and said tube having an end portion next to said sealed end serving as a reservoir for excess amalgam, said end portion being so dimensioned throughout a volume sufficient to accommodate said entire excess that the capillary attraction between the walls of the tube and the amalgam is better than 2 times the force of gravity.

4,342,939
UNIVERSAL BURNING CERAMIC LAMP

Charles I. McVey, Shaker Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 2, 1980, Ser. No. 145,778
Int. Cl.[3] H01J *61/22*
U.S. Cl. 313—174 4 Claims

1. An alkali metal vapor lamp comprising:
a tubular elongated envelope of light-transmitting ceramic material having a pair of electrodes supported in opposite ends on wire inleads sealed through ceramic end plugs,
an ionizable medium including mercury-alkali amalgam sealed within said envelope in a quantity exceeding that vaporized during operation of said lamp, the heat balance in said lamp locating the cold spot at an end of said envelope,
and an amalgam retention compartment in the cold spot end of said envelope serving as a reservoir for excess amalgam, said compartment being formed by a metal partition substantially co-extensive with the end plug and having an aperture through which the inlead sealed through the end plug extends, said partition being supported by the inlead

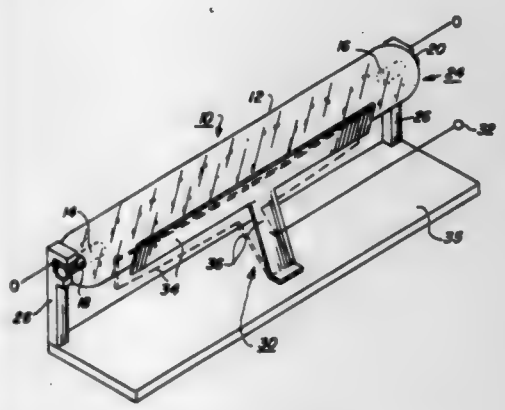


and spaced a distance within the range of capillary forces for said amalgam from the inside surface of the end plug.

4,342,940
TRIGGERING DEVICE FOR A FLASH LAMP

Joseph P. Mrusko, Victor, and Wayne D. Everdyke, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1980, Ser. No. 118,338
Int. Cl.[3] H01J *61/54*
U.S. Cl. 313—198 2 Claims

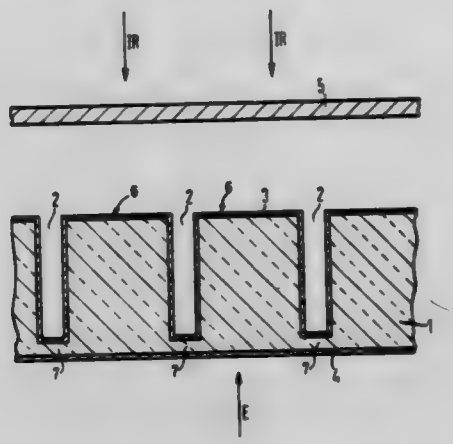


1. A flash lamp apparatus comprising:
an arc discharge flash lamp having an elongated envelope containing an ionizable gas therein and having;
a pair of electrodes at each end, said lamp being adapted for connection at each electrode to a source of electrical power;
support means for seating said lamp in an operative position;
a resilient T-shaped bar electrode for maintaining said lamp in said seated position, said bar electrode having an elongated upper sequent with opposing major side surfaces, said electrode being mounted so as to engage one of said side surfaces with a substantial portion of the longitudinally extending surface of the lamp envelope; and
a source of triggering voltage electrically connected to said bar electrode, the bar electrode applying the triggering voltage to the lamp along the envelope surface contacted by said upper segment side surface so as to cause ionization of said gas;
whereby said bar electrode serves both to fixedly secure the lamp in its operative position while simultaneously applying the required triggering voltage to the lamp.

4,342,941
THERMAL IMAGE EXPOSURE PLATE

Peter W. Steinhage, Wiesbaden, Fed. Rep. of Germany, assignor to Heimann GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 22, 1980, Ser. No. 142,704
Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2922048
Int. Cl.³ H01J *31/00*
U.S. Cl. 313—374 8 Claims

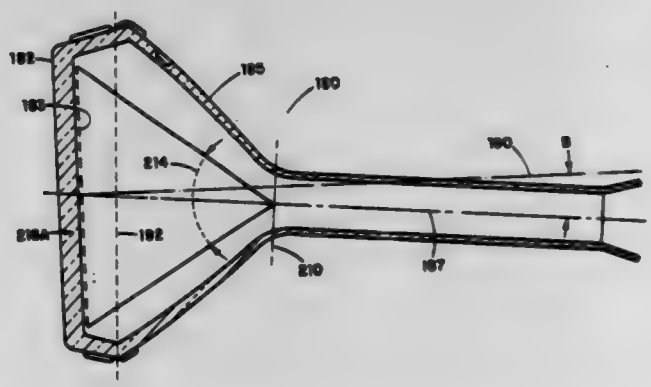


1. A thermal image exposure plate system, comprising:
conversion layer means for producing a topically distributed pattern of a given property as a result of and which corresponds to a thermal image incident on the layer means; and
said conversion layer means having a surface facing the incident thermal image formed into a grid pattern of a plurality of picture elements, each picture element being defined by a cut channel extending from the surface facing the image to a depth less than a thickness of the layer means so that a heat-conducting through-portion of the layer means is formed between adjacent picture elements and between the radiation side and an opposite scanning side of the layer means accessible for scanning by an electron beam.

4,342,942
PROJECTION TUBE ALIGNMENT MEANS

Richard L. Hockenbrock, Mundelein, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 154,197, May 29, 1980, which is a continuation-in-part of Ser. No. 110,413, Jan. 7, 1980. This application Oct. 17, 1980, Ser. No. 197,883
Int. Cl.³ H01J *31/00, 61/30*
U.S. Cl. 313—477 R 4 Claims



1. For use in a projection television system, an article of manufacture comprising a glass cathode ray picture tube having a funnel and a circular face panel with a rearwardly extending skirt and a window for receiving a rectangular cathodoluminescent screen, said skirt being conjoinable with said funnel by mating along interfacing seal edges on said skirt and on said funnel, with the seal edge of said skirt defining a plane whose normal makes a non-zero acute cant angle with respect to the axis of said window, and with the seal edge of said funnel defining a plane whose normal makes a non-zero acute cant angle with respect to the funnel axis, said tube being characterized by having a first pair of embossments on said funnel azimuthally spaced 180 degrees apart adjacent to said seal edge of said funnel, and a second pair of embossments on said face panel skirt azimuthally spaced 180 degrees apart adjacent to the seal edge on said skirt, the azimuthal position of said first and second pairs of embossments on said funnel and face panel skirt being predetermined such that when said pairs are aligned in a first tube configuration, the relative rotational position of the face panel and funnel are such that the face panel window is normal to the tube axis, and such that when said first and second pairs of embossments are aligned 180 degrees displaced, a second tube configuration is formed with the face panel window exhibiting a predetermined tilt relative to the tube axis.

4,342,943
P_2O_5-V_2O_5-PBO GLASS WHICH REDUCES ARCING IN FUNNEL PORTION OF CRT

Edward A. Weaver, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 17, 1979, Ser. No. 85,822
Int. Cl.³ C03C *3/10;* H01J *31/00;* C03C *3/16;* H01B *1/08*
U.S. Cl. 313—479 6 Claims

1. In a cathode ray tube having a neck portion and a funnel portion, an electrically resistant film coating at least one of said portions within the tube adapted to reduce arcing, said film being a glass consisting essentially in weight percent of approximately:

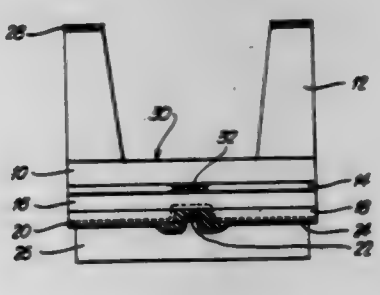
Vanadium Oxide	50% to 75%
Phosphorous Oxide	15% to 40%
Lead Oxide	5% to 20%

in which said glass composition has a softening point no higher than about 475° C., and an electrical resistance within the range of about 100,000 ohms to about 100 megohms per square.

4,342,944
LIGHT EMITTING DIODES WITH HIGH EXTERNAL QUANTUM EFFICIENCY

Anthony J. SpringThorpe, Richmond, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 15, 1980, Ser. No. 186,967
Int. Cl.³ H01J *1/70*
U.S. Cl. 313—499 17 Claims



1. A surface emitting light emitting diode comprising:
a semiconductor substrate on which is grown a double heterostructure consisting of a first confining layer, an active layer, and a second confining layer;
a transparent element on one side of the heterostructure permitting exit of light emitted from an emitting region of the active layer;
a reflective element on the other side of the heterostructure for reflecting emitted light towards the transparent element, the transparent element, the emitting region, and the reflective element being substantially aligned;

first contact metallization extending around the transparent element;

a second contact metallization extending around the reflective element; and

current directing means causing current entering at one contact metallization to converge towards the emitting region and to diverge from the emitting region to the other contact metallization.

4,342,945

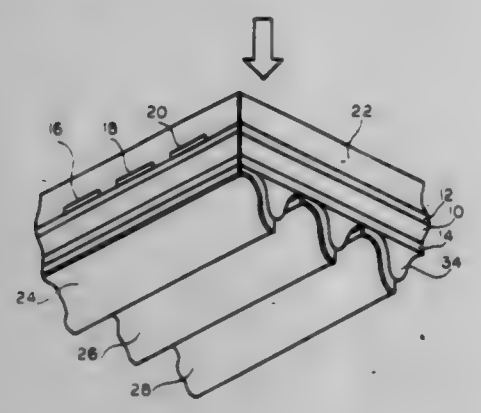
ELECTROLUMINESCENT THIN FILM DEVICE

Richard D. Ketchpel, Santa Barbara, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 20, 1980, Ser. No. 151,562

Int. Cl.³ H05B *33/02, 33/22*

U.S. Cl. 313—505 **9 Claims**



1. In a thin film electrical device, including a thin electroluminescent film, a plurality of parallel first electrodes on a first side of said film, and a plurality of parallel second electrodes on a second side of said film, each said first electrode comprising:

an energizing portion disposed sufficiently close to a first surface of said film to activate said film upon the application of an electrical potential between said first and second electrodes; and

a coupling portion, spaced sufficiently from said film to resist the effects of electrical breakdown in said film.

4,342,946

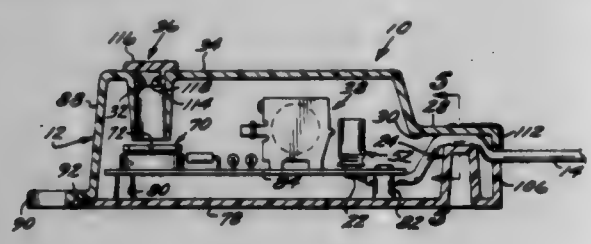
TIMED AUTOMATIC HEADLIGHT SHUT-OFF

Joseph F. Valenzona, Harbor City, and Lloyd Hewitt, Woodland Hills, both of Calif., assignors to Orion Industries, Inc., Compton, Calif.

Filed May 5, 1980, Ser. No. 146,471

Int. Cl.³ B60Q *1/02*

U.S. Cl. 315—82 **9 Claims**



1. A vehicle light time delay deactivation system for maintaining said vehicle lights coupled to a vehicle current source in an activated state for a predetermined time interval subsequent to a vehicle ignition switch being deactivated comprising:

a casing having an opening formed through a wall thereof, said opening being formed in a predetermined location;

relay means coupled to said vehicle lights in series relation for maintaining coupling between said vehicle lights and said vehicle current source for said predetermined time interval;

transistor means coupled in series relation to said relay means for providing amplification to actuate said relay means;

a variable resistor coupled in series relation to a base of said transistor means, said variable resistor being mounted within said casing in aligned relation with said casing opening for adjusting said predetermined time interval at the discretion of the user; and,

a capacitor coupled in parallel between an input to said variable resistor and ground for maintaining input current to said variable resistor when said ignition switch is deactivated.

4,342,947

LIGHT INDICATING SYSTEM HAVING LIGHT EMITTING DIODES AND POWER REDUCTION CIRCUIT

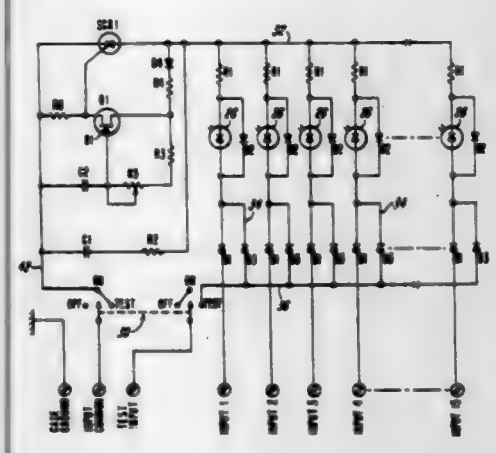
Jon A. Bloyd, 155 Franklin St., Dayton, Ohio 45402

Continuation of Ser. No. 842,410, Oct. 14, 1977, Pat. No. 4,211,956. This application Jul. 7, 1980, Ser. No. 166,067

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.³ H05B *43/00*

U.S. Cl. 315—199 **9 Claims**



1. Apparatus for controlling a component operated by low voltage direct current in response to actuation of a device operated by high voltage alternating current, said apparatus comprising rectifying means including a silicon controlled rectifier connected to said direct current operated component and to said alternating current operated device, said rectifying means being effective to rectify the alternating current received from said device into direct current for said direct current component, said direct current component being connected through a resistor to said rectifier for limiting the direct current through said component, said component being connected to said device through a diode, and voltage phase control means for limiting conduction of the rectified current through said component and said resistor for limiting the heat produced by said resistor.

4,342,948

ELECTRIC DISCHARGE LAMP CONTROL CONVERTER CIRCUITS

Philip R. Samuels, St. Albans, England, assignor to David Engineering Limited, Haverhill, England

Filed Sep. 17, 1980, Ser. No. 188,253

Claims priority, application United Kingdom, Sep. 20, 1979, 7932691

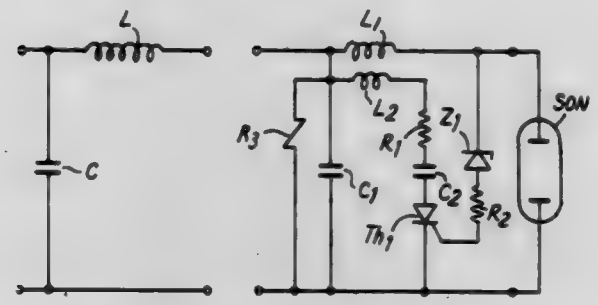
Int. Cl.³ H05B *41/23*

U.S. Cl. 315—290 **11 Claims**

1. A converter circuit for connection between an existing electric discharge lamp operating circuit and a replacement electric discharge lamp of a different type from that intended to be operated by the existing electric discharge lamp operating circuit, the converter circuit comprising: converter inductance means connectable to adjust total series inductance to a value suitable for operation of said replacement lamp;

igniter circuitry coupled to said converter inductance means for producing ignition voltages;

converter output terminal means connected to said converter inductance means and to said igniter circuitry to



apply, in use, said ignition voltages to said replacement lamp; and

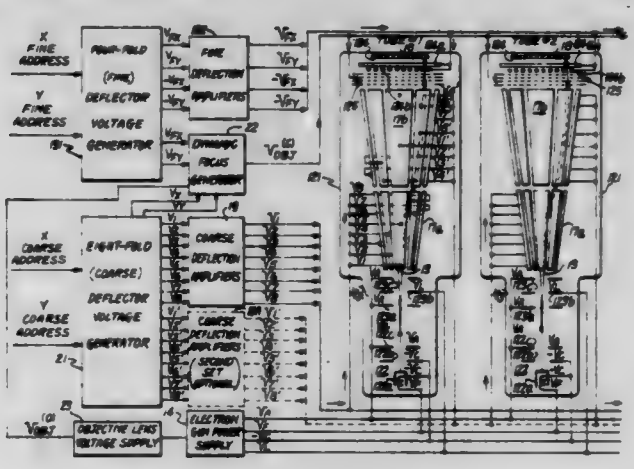
voltage protection means coupled to said igniter circuitry to protect, in use, said existing lamp operating circuit from said ignition voltages.

4,342,949

CHARGED PARTICLE BEAM STRUCTURE HAVING ELECTROSTATIC COARSE AND FINE DOUBLE DEFLECTION SYSTEM WITH DYNAMIC FOCUS AND DIVERGING BEAM

Kenneth J. Harte, Carlisle, and Edward C. Dougherty, Dracut, both of Mass., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 9, 1979, Ser. No. 93,008
Int. Cl.³ H01J *29/70, 29/74*
U.S. Cl. 315—409 35 Claims



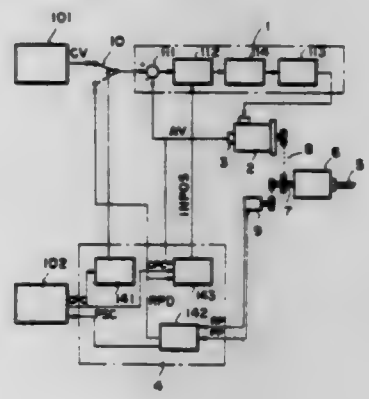
1. In an all electrostatic electron beam tube having an evacuated housing, electron gun means disposed at one end of the evacuated housing for producing a beam of electrons, electrostatic deflector means secured on the housing and disposed about the path of the beam of electrons, means for applying deflection electric potentials to the deflector means for deflecting the electron beam to a desired point on a target plane, and lens means axially aligned with said deflector means and disposed intermediate the deflector means and the target plane, the improvement comprising the addition of electron beam divergence means for causing the electron beam to diverge at a small angle of divergence from a source point located at or near the entrance to the deflector and while entering the deflector in contrast to an electron beam from a source point an infinite distance away having substantially parallel rays as is the case with a collimated electron beam whereby electron beam astigmatism at the target plane is minimized.

4,342,950

SPINDLE ROTATION CONTROL SYSTEM

Yoshinori Kohzai; Yoshiki Fujioka, and Naoto Ota, all of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 190,661
Claims priority, application Japan, Oct. 9, 1979, 54-130152
Int. Cl.³ G05B *5/01*
U.S. Cl. 318—611 9 Claims



1. A system for receiving an orientation command signal, and for controlling the rotation of a spindle which comprises:

a motor having a variable speed;

speed detecting means for detecting the speed of said motor and for producing a signal indicative of the actual speed thereof;

a speed control circuit having a variable gain, operatively connected to the speed detecting means and to the motor, for controlling said motor so as to narrow to zero a deviation between the signal indicative of the actual speed thereof and a command speed signal, and for outputting a signal representing said deviation;

a spindle driven by said motor which is rotated at a commanded speed in accordance with the output of said speed control circuit;

an orientation control circuit, operatively connected to the speed detecting means and to the motor, for producing a position deviation signal on the basis of the rotational position of said spindle and a commanded stopping position;

changeover means for applying one of the position deviation signal produced by said orientation control circuit and the command speed signal to said speed control circuit in response to said orientation command signal, so that the rotation of said motor, and hence said spindle, is controlled so as to reduce to zero the position deviation signal; and

means for raising the gain of said speed control circuit upon detecting that the rotational position of said spindle has reached a position in the vicinity of the commanded stopping position.

4,342,951

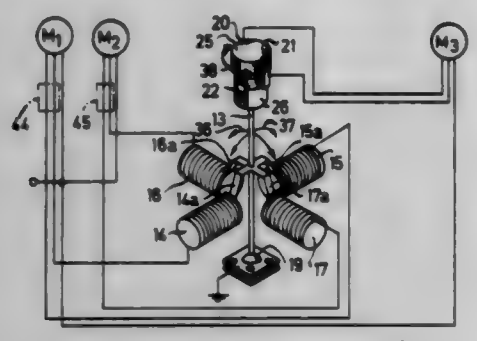
SERVOELECTRIC MICROMANIPULATOR FOR MOVEMENT ON SPHERICAL COORDINATES

Ortwin Muller; Klaus Biber, both of Aalen; Roland Schmauder, Oberkochen, all of Fed. Rep. of Germany, and Manfred Spitznas, Encino, Calif., assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,334
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854514
Int. Cl.³ G05B *11/32*
U.S. Cl. 318—625 8 Claims

1. A micromanipulator for a surgical instrument, such as a vitrectomy instrument, said micromanipulator causing said surgical instrument to move in any desired direction in a spherical coordinate system, said micromanipulator being characterized in that the surgical instrument is guided in the microma-

nipulator by the operation of servomotors which are activated by manual control of a single, remote-controlled operation



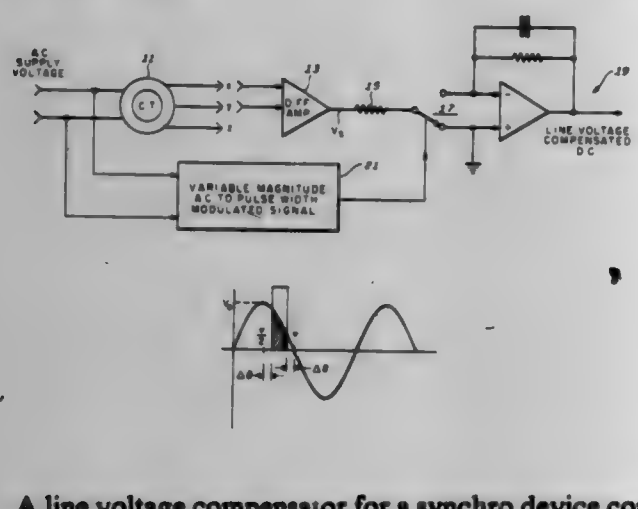
element which can be deflected in the direction of the spherical coordinates.

4,342,952

SYNCHRO STABILIZER CIRCUIT

Robert A. Bowie, Glendale, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed May 20, 1981, Ser. No. 265,309
Int. Cl.[3] G05B *1/06*
U.S. Cl. 318—654 7 Claims



1. A line voltage compensator for a synchro device comprising a pulse width modulator connected to the a.c. supply voltage used to energize the synchro device, means to produce a sinusoidal two wire information signal representative of the electrical output of the synchro device, rectifier/filter means and switching means to apply the two wire information signal to the rectifier/filter during the occurrence of a pulse from said modulator, said modulator including means for producing a pair of sinusoidal voltages having magnitudes proportional to the magnitude of a supply voltage and shifted in phase by a predetermined amount with respect to each other and with respect to said supply voltage, a source of d.c. threshold voltage having a magnitude representative of the nominal peak value of the a.c. supply voltage, means responsive to each of said sinusoidal voltages for providing a comparator signal when and only when the magnitude of the respective sinusoidal voltage exceeds said threshold, means responsive to first and second comparator signals representing a pair of sinusoidal voltages for producing a width modulated signal during the interval between the termination of the first comparator signal and the inception of the second comparator signal, and means to apply said width modulated signal to said switching means.

4,342,953

BATTERY PROTECTION CIRCUIT

John J. Collins, Kansas City, Mo., assignor to Nicholl Brothers, Inc., Kansas City, Mo.

Filed May 2, 1980, Ser. No. 145,900
Int. Cl.[3] H02J *7/10*
U.S. Cl. 320—13 11 Claims

1. A battery protection circuit for a device employing a rechargeable battery to protect said battery from damage due to deep discharge thereof, said circuit comprising:

(a) a rechargeable battery having a battery voltage and a dropout voltage at which no further discharge of said battery is desirable;

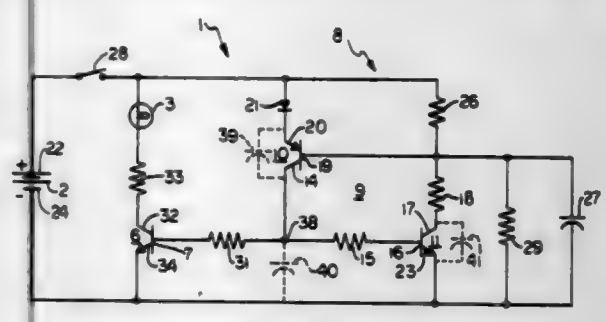
(b) load means operable by current from said battery;

(c) a load drive transistor connecting said load means across said battery and operable to allow current flow through said load means upon the application of suitable drive current to a base of said drive transistor;

(d) switching means connected across said battery and to the base of said transistor, said switching means providing said suitable base drive current when said battery voltage exceeds said dropout voltage by a selected degree; said switching means reducing said base drive in response to said battery voltage approaching said dropout voltage whereby the current through said drive transistor is reduced resulting in said load means operating at noticeably diminished capacity to warn of the need to recharge said battery; and said switching means ceasing to provide said base drive in response to said battery voltage decreasing to said dropout voltage to prevent deep discharge of said battery:

(e) a voltage sensing resistor connected to one terminal of said battery;

(f) regenerative switch means connected between said sens-



ing resistor and the other terminal of said battery; said regenerative switch means being turned on by a voltage across said sensing resistor above a selector level and being turned off upon said voltage across said sensing resistor decreasing below said selected level;

(g) said regenerative switch means having an output terminal providing a base drive voltage related to the level of said battery voltage;

(h) a base resistor connecting said output terminal to the base of said drive transistor such that said base drive current flows through said base resistor when said switch is turned on whereby said drive transistor conducts current through said load means;

(i) said base resistor having a resistance selected such that said load is operated at noticeably diminished capacity as said dropout voltage is approached to warn of the need to recharge said battery; and

(j) said sensing resistor having a resistance selected such that said regenerative switch means is turned off upon said battery voltage decreasing to said dropout voltage whereby said base drive current ceases and said drive transistor is cut off thereby cutting off the flow of current through said load means to prevent further discharge of said battery.

4,342,954

BATTERY CONDITIONING METHODS AND APPARATUS

Gerald W. Griffith, Tustin, Calif., assignor to Laser Products Corporation, Fountain Valley, Calif.

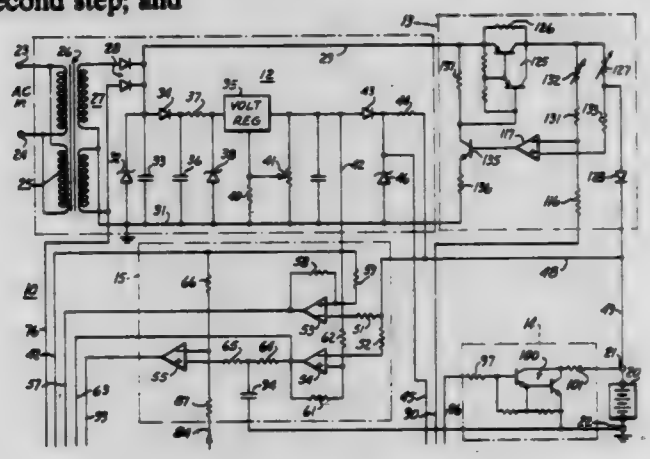
Filed Oct. 1, 1979, Ser. No. 80,876
Int. Cl.[3] H01M *10/44*; H02J *7/04*
U.S. Cl. 320—14 29 Claims

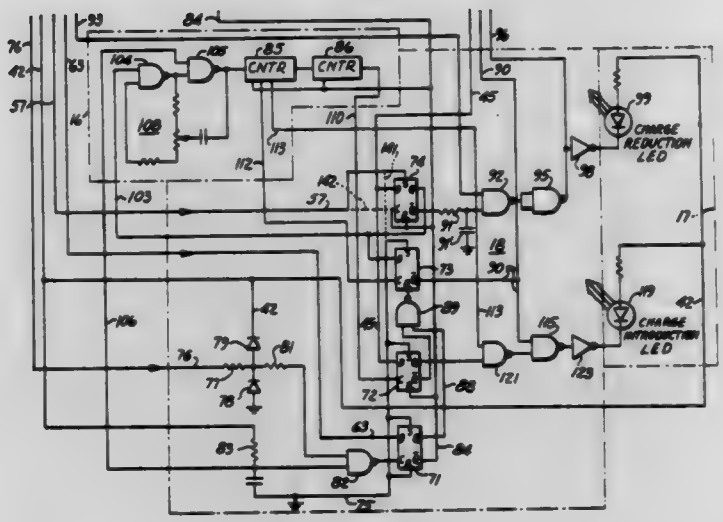
1. A method of conditioning a secondary battery, comprising in combination the steps of:

predetermining for the particular type of battery the electric

charge required to restore the battery from a predetermined first level to a higher second charge level;

comprising a conditioning operation of a first step of reducing an unknown electric charge in the battery to said first level and a second step of introducing only said predetermined required electric charge into the battery by applying to the battery only a predetermined number of coulombs in said second step; and





conditioning the battery by administering to the battery in sequence said first step to reduce said unknown electric charge to said first level and said second step to restore the battery to said higher second charge level by introduction of only said predetermined required electric charge into the battery.

4,342,955

VOLTAGE REGULATOR FOR A FIXED FIELD A.C. GENERATOR

Leroy A. Gant, 521 Jasmine La., Santa Maria, Calif. 93454

Filed Sep. 2, 1980, Ser. No. 183,186
Int. Cl.³ H02J 7/14
U.S. Cl. 322—25 3 Claims

1. A solid-state voltage regulator for regulating the supply of power by a fixed field A.C. generator which generates current to charge an electrical storage battery, comprising:

(a) a battery current charging path having one end being connectable to the fixed field A.C. generator and another end being connectable to the storage battery, said current charging path including a silicon controlled rectifier having a gate electrode;

(b) means for sensing the voltage of the storage battery and for generating first and second logic control signals in response to the battery voltage being above and below a predetermined level, including

(i) means for generating a first reference voltage proportional to the predetermined level,

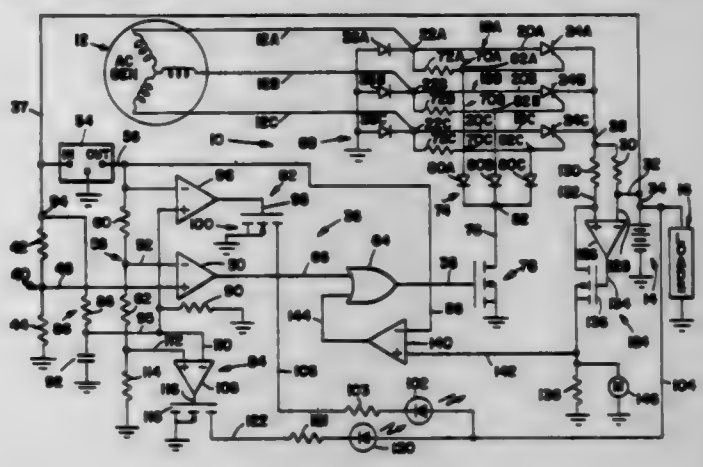
(ii) means for generating a second voltage proportional to the battery voltage,

(iii) first means for comparing the first reference voltage with the second voltage and for producing a signal of one value in response to the second voltage exceeding the first reference voltage and for producing a signal of another value is response to the first reference voltage exceeding the second voltage; and

(iv) a logic gate having an input receiving the signal of one or another value and having a control output;

(c) a first gate electrode control path having one end connectable to the fixed field A.C. generator and another end connected to said gate electrode, said first gate electrode control path having a current limiting resistor;

(d) a second gate electrode control path having one end connected between said current limiting resistor and said gate electrode and another end connected to ground, said second gate electrode control path including a transistor



connected to said control output and being turned on and off in response to the first and second logic control signals, respectively;

(e) means for generating a third reference voltage proportional to a predetermined level of charging current;

(f) means for generating a fourth voltage proportional to the level of charging current in said battery current charging path; and

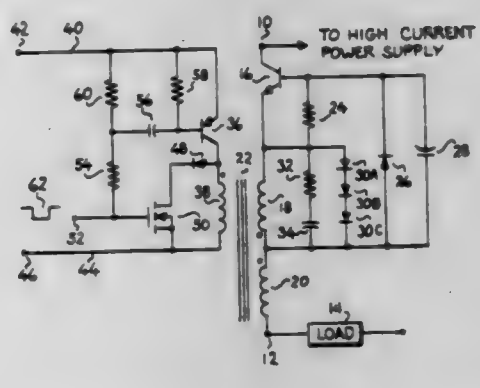
(g) second means for comparing the third reference voltage with the fourth voltage and for producing a signal of one value in response to the fourth voltage exceeding the third reference voltage and for producing a signal of another value in response to the third reference voltage exceeding the fourth voltage, said logic gate having another input receiving the signal of one or another value from said second means for comparing.

4,342,956

PROPORTIONAL BASE DRIVE CIRCUIT

William R. Archer, Ft. Wayne, Ind., assignor to General Electric Company, Salem, Va.

Filed Dec. 23, 1980, Ser. No. 219,736
Int. Cl.³ H03K 17/04
U.S. Cl. 323—289 8 Claims



1. In a circuit for repetitively switching a bipolar transistor

between conducting and non-conducting states at a relatively high frequency switching rate, the switching transistor being connected to a relatively high magnitude direct current source and being controlled by switching signals from a relatively low voltage magnitude current source, an improved proportional base drive circuit comprising:

a transformer having at least first, second and third windings, said first and said second windings being connected in series with a collector and an emitter terminal of the transistor between the high magnitude current source and a load, at least said first winding having a first end thereof connected to the emitter terminal of the transistor;

means for connecting a base terminal of the transistor to a second end of said first winding;

first controllable switch means serially connected with said third winding across said low voltage magnitude source; and

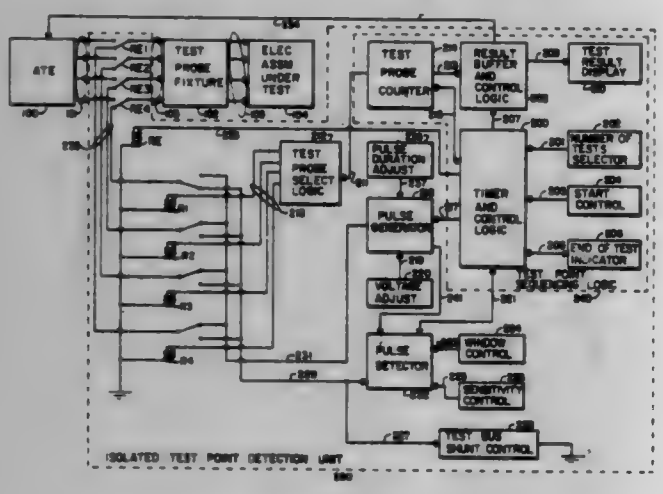
second controllable switch means connected across said third winding, whereby closing said first switch means causes a magnetizing current to flow through said third winding thereby exciting said first and second windings to initiate conduction of the transistor, and closing of said second switch means short circuits said third winding and thereby effectively open-circuits the emitter terminal of the transistor forcing collector current through the collector-base junction to effect a rapid turn-off of the transistor.

4,342,957

AUTOMATIC TEST EQUIPMENT TEST PROBE CONTACT ISOLATION DETECTION APPARATUS AND METHOD

Robert J. Russell, South Boston, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 28, 1980, Ser. No. 134,808
Int. Cl.[3] G01R *31/02, 15/12*
U.S. Cl. 324—73 R 34 Claims



1. A secondary test apparatus for determining test probe electrical contact isolation, said secondary test apparatus for use with a primary test apparatus, said primary test apparatus having a test fixture having a plurality of test probes for making temporary electrical contact with an electronic assembly to be tested by said primary test apparatus, said electronic assembly having electric circuits formed therein, said plurality of test probes for making electrical contact with a plurality of points within said electric circuits and wherein there exists an electrical path between each point of said plurality of points and at least one other point of said plurality of points, wherein said secondary test apparatus comprises:

a. a detector bus having a plurality of detector lines, each line of said plurality of detector lines corresponding to one of said plurality of test probes;

b. an isolation means for electrically isolating each of said plurality of detector lines from its associated one of said plurality of test probes;

c. a common bus;

d. a test bus;

e. a stimulation means, coupled to said common bus, for generating an electrical test signal;

f. a sensing means, coupled to said test bus, for receiving an electrical signal above a predetermined threshold and wherein said electrical signal includes said electrical test signal;

g. a test probe selection means, coupled to said common bus, said test bus and said detector bus, for selecting one of said plurality of detector lines to be coupled to said test bus and selecting all other of said plurality of detector lines to be coupled to said common bus; and

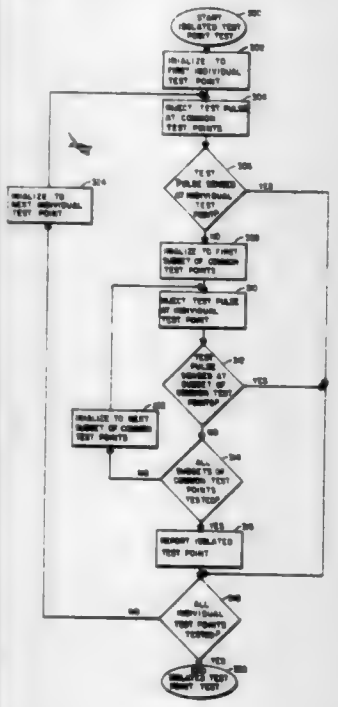
h. a reporting means, coupled to said sensing means, for reporting that said sensing means did not receive said electrical signal at a level above said predetermined threshold.

4,342,958

AUTOMATIC TEST EQUIPMENT TEST PROBE CONTACT ISOLATION DETECTION METHOD

Robert J. Russell, South Boston, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 28, 1980, Ser. No. 134,809
Int. Cl.[3] G01R *31/02, 15/12*
U.S. Cl. 324—73 R 13 Claims



1. A method of determining test probe electrical contact isolation when utilizing a test apparatus, said test apparatus having a test fixture having a plurality of test probes for making temporary electrical contact with an electronic assembly to be tested by said test apparatus, said electronic assembly having electric circuits formed therein, said plurality of test probes for making electrical contact with a plurality of points within said electric circuits, said test apparatus comprising a stimulation means, a sensing means, and a test probe selection means, the method comprising the steps of:

a. selecting a set of common probes from said plurality of test probes, said set of common probes being associated with common points of said plurality of points, said common points being points within said electric circuits that are associated with electrical conductors carrying signals that are widely distributed throughout said electronic assembly such that there exists an electrical path between each non-common point of said plurality of points and at least one of said common points;

b. electronically isolating said electronic assembly from said test apparatus;

c. selecting a one of said plurality of test probes;

d. electrically stimulating said set of common probes by said stimulation means;

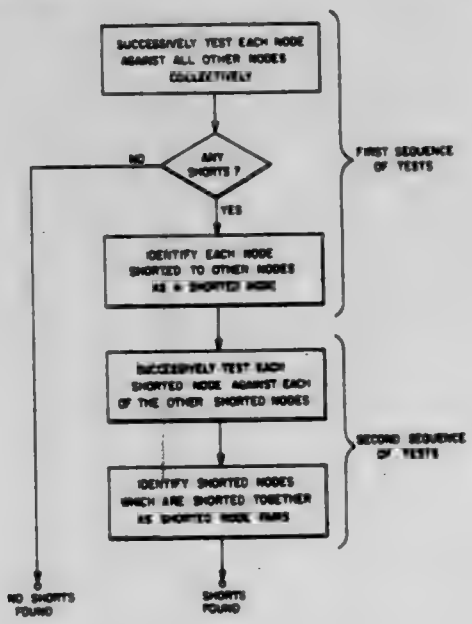
e. sensing said one of said plurality of test probes by said sensing means for a response to said electrical stimulation;
f. determining if said sensing means detected an electrical signal in response to said electrical stimulation above a predetermined threshold and if so, selecting a next one of said plurality of test probes to be said one of said plurality of test probes and returning to step d. if all of said plurality of test probes have not been selected, or going to step g. if no electrical signal above said predetermined threshold is detected by said sensing means, or completing contact isolation test if all of said plurality of test probes have been selected;
g. selecting a one of said set of common probes;
h. electrically stimulating said one of said plurality of test probes by said stimulation means;
i. sensing a one of said set of common probes for a response to said electrical stimulation;
j. determining if said sensing means detected an electrical signal in response to said electrical stimulation above said predetermined threshold and if so selecting a next one of said plurality of test probes to be said one of said plurality of test probes and returning to step d., or going to step k. if no electrical signal above said predetermined threshold is detected by said sensing means;
k. selecting a next one of said set of common probes to be said one of said common probes and returning to step h. if all of said common probes have not been selected, or going to step l. if all of said set of common probes have been selected;
l. reporting said one of said plurality of test probes as isolated; and,
m. selecting a next one of said plurality of test probes to be said one of said plurality of test probes and returning to step d. if all of said plurality of test probes have not been selected, or completing contact isolation test if all of said plurality of test probes have been selected.

4,342,959

METHOD OF ELECTRICAL SHORT TESTING AND THE LIKE

James K. Skilling, Harvard, Mass., assignor to GenRad, Inc., Concord, Mass.

Continuation of Ser. No. 51,204, Jun. 22, 1979, abandoned. This application Apr. 29, 1981, Ser. No. 258,762
Int. Cl.³ G01R *15/12*
U.S. Cl. 324—73 PC 4 Claims



1. A method of reducing the number of tests required to detect shorts and the like between nodes of an apparatus under test, the apparatus having a plurality of such nodes, and to identify shorted nodes, the method including a first sequence of tests in which shorted nodes are detected and, in the event that shorted nodes are detected, a second sequence of tests to identify shorted node pairs, the method comprising the steps of successively selecting an individual node of said plurality and connecting together the remaining nodes of said plurality in a group; testing for a short between each individual selected node and the group of the remaining connected nodes; detecting during said testing those individual nodes which are shorted to one or more other nodes of the group; and thereafter, in the event that shorted nodes are detected, testing for a short between each detected shorted node and each of the other detected shorted nodes to identify shorted node pairs.

4,342,960

BRUSH ALIGNMENT APPARATUS

Fred H. Sawada, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 5, 1980, Ser. No. 184,358
Int. Cl.³ G01R *31/02*; G08B *21/00*
U.S. Cl. 324—158 MG 4 Claims



1. An apparatus for aligning brushes of a dynamoelectric machine to minimize arcing of the brushes, said apparatus comprising:
means for receiving from a brush of a dynamoelectric machine a composite signal including noise signals and high-frequency information signals, said composite signal produced during operating mode of the dynamoelectric machine wherein a buck or boost current is superimposed on a preselected level of excitation current applied to the machine;
a first filter network for removing low-frequency components of said noise signal from said composite signal;
a clipping network connected to said first filter network for removing from said composite signal all components having absolute value of amplitude in excess of a preselected value;
means for rectifying the signal from said clipping network to provide a rectified signal;
a second filter network for removing from said rectified signal substantially all of the components of said noise signals input to said rectifying means and having frequencies less than a cutoff value determined from the fundamental slot and bar frequencies of the dynamoelectric machine;
means for amplifying and integrating said signal from said second filter to produce an output signal, said output signal, together with the level of said boost or buck current, being indicative of brush alignment adjustment required to minimize brush arcing; and
output means for displaying said output signal.

4,342,961

APPARATUS FOR MEASURING THE MUZZLE VELOCITY V-NULL OF A PROJECTILE FIRED FROM A WEAPON

Jakob Zimmermann, Pfäffikon, and Willi Kocher, Zürich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Feb. 17, 1981, Ser. No. 235,660
Claims priority, application Switzerland, Mar. 11, 1980, 1896/80
Int. Cl.³ G01P *3/66*
U.S. Cl. 324—179 8 Claims

1. An apparatus for measuring the muzzle velocity of a projectile fired out of a weapon having a weapon barrel containing a lengthwise axis, especially a sabot projectile, wherein

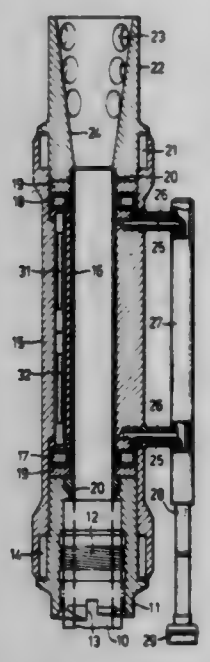
the measuring apparatus is capable of being secured to the muzzle of the weapon barrel, comprising:

two measuring coils;

each of said measuring coils having a measuring coil axis;

said two measuring coils being arranged in spaced relationship from one another such that the measuring coil axes substantially coincide with the weapon barrel axis;

a sleeve member having opposed ends;



said sleeve member possessing an internal diameter which is essentially the same as the internal diameter of the weapon barrel;

said sleeve member having an external diameter which is essentially the same as the internal diameter of the measuring coils; and

one of the measuring coils being arranged at the one opposed end of the sleeve member and the other measuring coil at the other opposed end of the sleeve member.

4,342,962

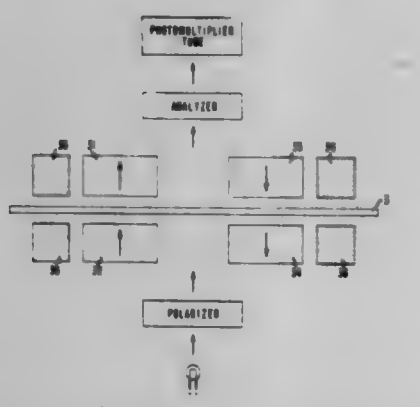
METHOD FOR MEASURING COERCIVITY IN MAGNETIC MATERIALS

George P. Vella-Coleiro, Summit, and Raymond Wolfe, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 21, 1980, Ser. No. 142,013

Int. Cl.³ G01N *27/72*; G01R *33/12*

U.S. Cl. 324—232 **10 Claims**



1. A method of measuring coercivity in materials capable of supporting single wall magnetic domains by observing a movement of domain patterns in said material, which movement is capable of being related to said coercivity, comprising the steps of producing a domain pattern in said material, subjecting said domain pattern to an AC magnetic field and monitoring in a region of said material the movement of said domain pattern induced by said AC magnetic field characterized in that at least 70 percent of the minority domains in said region satisfy the requirements that the minority domain (1) terminates at a point in said region, (2) is at least within 10 degrees of being parallel to the nearest neighbor minority domain, and (3) beyond an imaginary line passing through said point and perpendicular to the direction defined by a least-squares-fit-line of a boundary of said minority domain, has no other minority domain that both has a terminus within and extends beyond a separation distance of said point, where said separation distance is 10 μm; and where said domain pattern in said region is subjected to a static magnetic field having a mean spatial gradient less than 10 Oe/μm .

4,342,963

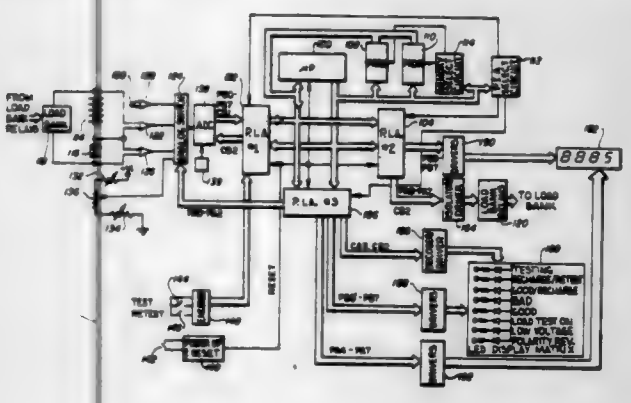
STORAGE BATTERY ELECTROLYTE TEMPERATURE MEASURING APPARATUS

Gary A. Karnowski, Milwaukee, and Durvasula V. Sriramamurty, Glendale, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Feb. 29, 1980, Ser. No. 126,172

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—431 **13 Claims**



1. An automatic battery analyzer including apparatus for compensating for the electrolyte temperature of the battery under test and comprising:

connector means for attachment to the battery under test;

temperature sensing means in association with said connector means and producing an output signal in response to the sensed temperature; and

means coupled to said connector means and said temperature sensing means for performing electrical tests on the battery under test and altering the tests performed in response to the value of said temperature sensing means output signal at a time prior to attachment of said connector means to the battery under test and at a time after attachment of said connector means to said battery under test.

4,342,964

APPARATUS FOR ELECTROCHEMICAL MEASUREMENTS

Howard Diamond, Ann Arbor; Steven E. Enzer, Brooklyn, and Joseph Flowers, Jr., Ann Arbor, all of Mich., assignors to Transidyne General Corp., Ann Arbor, Mich.

Division of Ser. No. 965,901, Dec. 14, 1978, Pat. No. 4,272,245. This application Feb. 14, 1980, Ser. No. 121,341

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—450 **19 Claims**

1. A device for measuring chemical characteristics of a liquid, said device comprising:

a housing having upper and lower end surfaces;

a longitudinally extending channel in said housing terminating at one end thereof at least upper surface of the housing and adapted to receive a capillary tube containing a sample of the liquid;

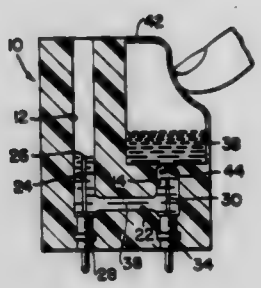
an indicating electrode located about the longitudinal axis of said channel, with said indicating electrode having a tip projecting upwardly into said channel;

a reference electrode spaced from said indicating electrode;

a chamber in said housing bridging said reference and indicating electrodes;

means for introducing an electrolyte into said chamber to cover said electrodes; and

wherein said channel is adapted to guide an open end of the



capillary tube containing the liquid into engagement with the tip of the indicating electrode to displace the electrolyte therefrom whereupon an electrical property is established between the electrodes encompassing the electrolyte which is indicative of the chemical characteristic of the liquid.

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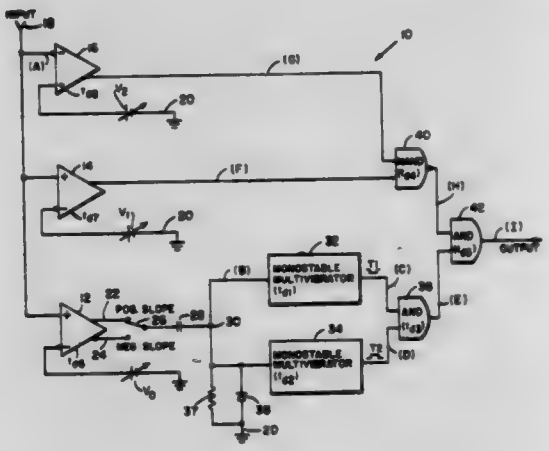
WAVEFORM INSTABILITY DETECTOR

Johnny E. Baldwin, 11031 McBride Dr., Huntsville, Ala. 35803

Filed Sep. 22, 1980, Ser. No. 189,475

Int. Cl.[3] H03K *5/153*; G01R *29/027*

U.S. Cl. 328—147 4 Claims



1. A waveform instability detector for monitoring a repetitive unipolar pulse waveform for voltage fluctuation comprising: first, second and third voltage comparators; gating means for selectively providing output pulses therefrom and adapted to receive inputs from said voltage comparators; and pulse generating means coupled between an output of said first voltage comparator and said gating means; said gating means comprises first and second AND gates and a NAND gate, said NAND gate having first and second inputs coupled to respective outputs of said second and third comparators, said first AND gate having first and second inputs adapted for receiving outputs from said pulse generating means, and said second AND gate having a first input connected to the output of said NAND gate and a second input connected to the output of said first AND gate for providing an output signal in response to input signals thereto.

4,342,966

POWER AMPLIFIER CIRCUITRY

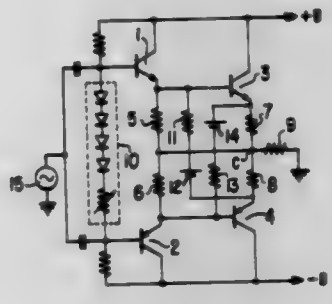
Eijiro Tamura, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1980, Ser. No. 174,918

Claims priority, application Japan, Aug. 31, 1979, 54/119824[U]

Int. Cl.[3] H03F *3/30*

U.S. Cl. 330—268 6 Claims



1. In a single-ended push-pull power amplifier circuit having a first transistor of a first driver stage, a second transistor of a first output stage where the first and second transistors are Darlington connected, a third transistor of a second driver stage and a fourth transistor of a second output stage where the third and fourth transistors are also Darlington connected, first and second resistors are connected between the respective emitters of the first and second transistors and a common output terminal, third and fourth resistors are connected between the respective emitters of the third and fourth transistors and the common output terminal, and a bias circuit for providing a bias voltage of a fixed value between the bases of the first and third transistors, the improvement comprising at least two series circuits of resistors and constant voltage sources for passing the base currents of the second and fourth transistors between (a) the emitter of the first transistor and the emitter of the fourth transistor and (b) the emitter of the third transistor and the emitter of the second transistor respectively.

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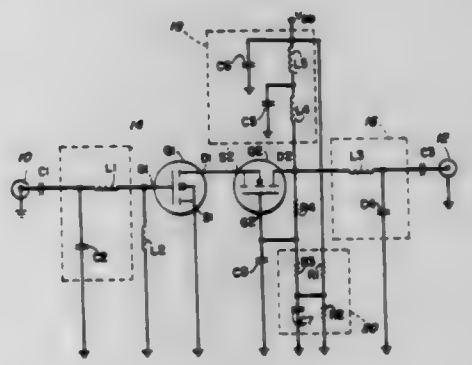
HIGH VOLTAGE, HIGH FREQUENCY AMPLIFIER

Robert J. Regan, Needham, and Paul O. Haugsjaa, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 1, 1980, Ser. No. 145,519

Int. Cl.[3] H03F *3/16*

U.S. Cl. 330—277 6 Claims



1. A high frequency amplifier comprising:

an input terminal for receiving high frequency power;

a first transistor having a first electrode coupled to said input terminal, a second electrode, and a third electrode coupled to a reference potential;

first dc biasing means, coupled to said first electrode of said first transistor, for applying thereto a dc bias potential substantially equal to said reference potential;

a second transistor having first and second electrodes and a third electrode coupled to said second electrode of said first transistor, said first and second transistors each hav-

ing an associated second to third electrode breakdown voltage, an associated second to first electrode interelectrode capacitance, and an associated third to first electrode interelectrode capacitance;

an output terminal, coupled to said second electrode of said second transistor, for delivering high frequency power to a load;

inductor means coupled between said second electrode of said second transistor and a source of operating potential;

impedance means coupled between said second and first electrode of said second transistor;

capacitive means coupled between said first electrode of said second transistor and said reference potential, and cooperating with said impedance means and said second to first electrode interelectrode capacitance of said second transistor to provide feedback between said second and first electrodes of said second transistor; and

second dc biasing means, coupled to said first electrode of said second transistor, and said capacitive means for applying thereto a dc bias potential of substantially one half of said operating potential and said reference potential;

whereby the operating potential of said amplifier can be substantially equal to one half the sum of said breakdown voltages of said first and second transistors.

4,342,968

ALTERNATING VOLTAGE AMPLIFIER CIRCUIT HAVING A PLURALITY OF SEMICONDUCTOR AMPLIFIER ELEMENTS OPERATED IN A GROUNDED GATE OR GROUNDED BASE CONFIGURATION

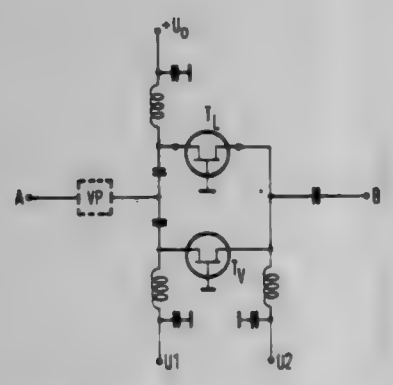
Gerhard Ritter, Thaining, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 7, 1980, Ser. No. 127,958

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917275

Int. Cl.³ H03F 3/68

U.S. Cl. 330—295 **13 Claims**



1. An alternating voltage amplifier circuit which is reversible in respect of its amplification direction, comprising:

a first input/output terminal and a second input/output terminal defining a first amplification direction from said first input/output terminal towards said second input/output terminal and a second amplification direction from said second input/output terminal towards said first input-/output terminal;

a first semiconductor amplifier element and at least one further semiconductor element, each of said semiconductor elements including a control electrode connected to a reference potential, a first main electrode coupled to said first input/output terminal and a second main electrode coupled to said second input/output terminal;

said first main electrode of said further semiconductor amplifier element connected to an operating potential and said second main electrodes connected together;

first and second control voltage terminals for receiving a first control voltage polarity thereacross for one amplification direction and a second control voltage polarity thereacross for the other amplification direction; and

said first and second main electrodes of said first semiconductor amplifier element connected to said first and second control terminals, respectively, both of said semiconductor amplifier elements responsive to the first control voltage polarity to operate in the second amplification direction and only said first semiconductor amplifier element responsive to said second control voltage polarity to operate in the first amplification direction.

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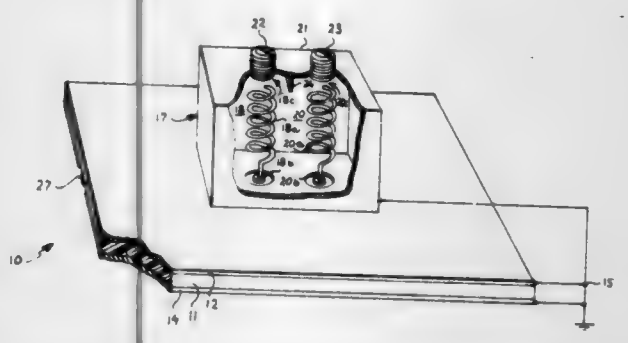
MEANS FOR MATCHING IMPEDANCES BETWEEN A HELICAL RESONATOR AND A CIRCUIT CONNECTED THERETO

Richard T. Myers, and David L. Roberson, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Oct. 6, 1980, Ser. No. 194,681

Int. Cl.³ H01P 5/02, 7/00

U.S. Cl. 333—33 **6 Claims**



1. In a network for a printed circuit board having an insulative base and including a helical resonator and a cooperating electrical circuit, means for providing impedance matching between said helical resonator and said circuit, comprising:

a. a microstrip transmission line including a microstrip stub printed on said base;

b. means electrically interconnecting a first terminal of a helical resonator, a first terminal of said circuit, and a first electrical end of said microstrip stub;

c. means electrically interconnecting a second terminal of said helical resonator, a second terminal of said circuit, and a second electrical end of said microstrip stub; and

d. said microstrip stub being of an electrical length less than one-quarter wavelength at the resonator frequency of said helical resonator for constituting an inductive impedance, and having overall dimensions and being of a configuration preselected in accordance with the thickness and dielectric constant of said insulative base to provide a predetermined inductive impedance value for said microstrip stub at the resonant frequency of said helical resonator whereby said impedance matching is attained.

4,342,970

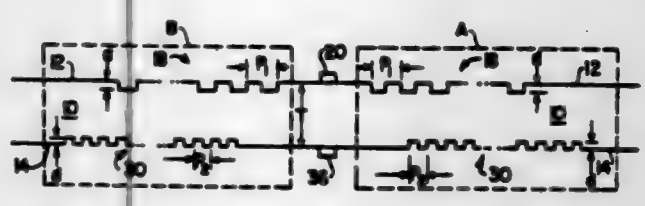
ACOUSTIC WAVE DEVICE

John Melngailis, Newton; Hermann A. Haus, Lexington, and Ana L. Lattes, Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 11, 1981, Ser. No. 233,320

Int. Cl.³ H03H 9/25, 9/64

U.S. Cl. 333—142 **9 Claims**



1. A surface acoustic wave (SAW) device comprising:

A. a crystal substrate having two substantially planar sur-

faces, said planar surfaces being substantially parallel and separated by a distance T,

B. a first SAW-to-plate mode coupler on a first of said surfaces, said first coupler including:

first SAW converting means for converting a portion of an incident SAW to a bulk acoustic wave (BAW), said first SAW converting means including a plurality of parallel linear surface perturbations, and

first BAW converting means for converting a portion of an incident BAW to a SAW, said first BAW converting means including said plurality of surface perturbations,

C. a first BAW reflector on the first of said surfaces including means for reflecting a portion of an incident BAW,

D. a second BAW reflector on the second of said surfaces including means for reflecting a portion of an incident BAW,

wherein said second BAW reflector is positioned to reflect a portion of BAW's incident thereon and propagating from said first SAW converting means and said first BAW reflector, to said first BAW converting means, and

wherein said first BAW reflector is positioned to reflect a portion of BAW's incident thereon and propagating from said second BAW reflector, to said second BAW reflector, and

whereby SAW's propagating on said first surface at said first BAW converting means reasonantly interact with SAW's produced on said first surface by said first BAW converting means, and

further comprising a second SAW-to-plate mode coupler on said second surface, said second coupling including:

second BAW converting means for converting a portion of an incident BAW to a SAW, said second BAW converting means including a plurality of parallel linear surface perturbations, and

second SAW converting means for converting a portion of an incident SAW to a BAW, said second SAW converting means including said plurality of surface perturbations,

wherein said second BAW converting means is positioned to convert to SAW's a portion of BAW's incident thereon and propagating from said first SAW converting means and said first BAW reflector,

wherein said second SAW converting means is positioned so that a portion of BAW's from said second SAW converting means is incident on said first BAW reflector,

whereby SAW's propagating on said second surface at said second BAW converting means resonantly interact with SAW's produced on said second surface by said second BAW converting means, and

wherein said surface perturbations of said first surface coupler are substantially periodic, having period P_1, and wherein said surface perturbations of said second surface coupler are substantially periodic, having period P_2, and

wherein P_1 differs from P_2, and wherein said first and second couplers are mutually positioned whereby at least a portion of a BAW generated by an incident SAW at one of said couplers is coupled to the other coupler.

4,342,971

CONTINUOUSLY VARIABLE SURFACE ACOUSTIC WAVE DELAY LINE

Clyde L. Councilman, and Larry D. Alter, both of St. Petersburg, Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Dec. 30, 1980, Ser. No. 221,279
Int. Cl.³ H03H *9/42, 9/68, 9/38*
U.S. Cl. 333—152 8 Claims

1. A continuously variable surface acoustic wave delay line comprising:

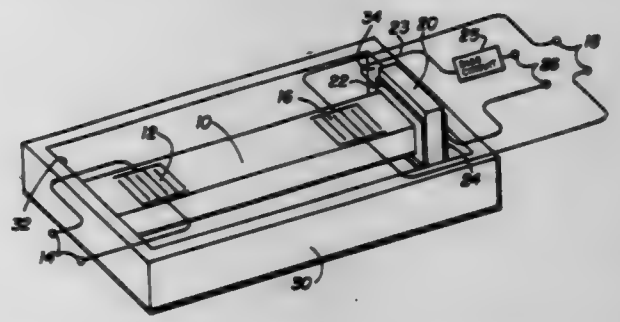
(a) a rigid housing;

(b) a surface acoustic wave device positioned within said housing and having a first edge thereof adjacent a first interior wall of said housing;

(c) an input transducer on a surface of said device, said input transducer connected to receive an input signal and apply the signal to the device;

(d) an output transducer positioned on said surface spaced apart from said input transducer, said output transducer for receiving said signal from said device and for generating an output signal therefrom;

(e) an electrostrictive element positioned within said housing



between a second edge of said device opposite said first edge and a second interior wall of said housing opposite said first interior wall; and

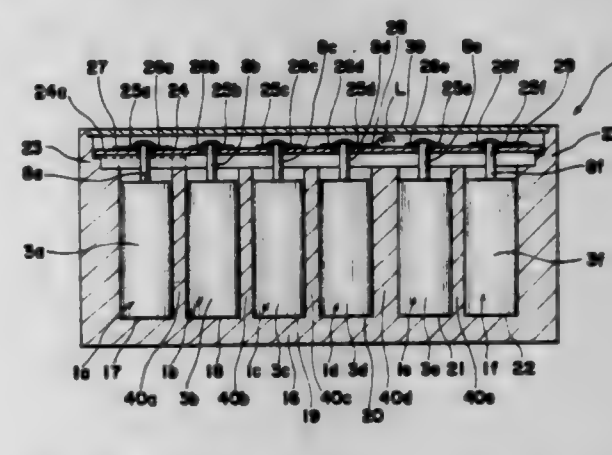
(f) means responsive to a control signal for applying an electric field to said electrostrictive element to alter the size thereof and thereby apply a mechanical force to said device to control the propagation time of said signal between said transducers.

4,342,972

MICROWAVE DEVICE EMPLOYING COAXIAL RESONATOR

Toshio Nishikawa, Nagaokakyo; Youhei Ishikawa; Sadahiro Tamura, both of Kyoto, and Haruo Matsumoto, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 1, 1980, Ser. No. 193,185
Claims priority, application Japan, Oct. 15, 1979, 54-133280
Int. Cl.³ H01P *1/202, 7/04, 1/213*
U.S. Cl. 333—206 14 Claims



1. A microwave device, comprising:

an electrically conductive housing means, said housing means being a casing member of a substantially parallelepiped configuration and having a plurality of cavities formed therein;

a plurality of resonator means equal in number to the number of said cavities, a different said resonator means being accommodated in each said cavity, each of said resonator means being mechanically secured to said housing means, each of said resonator means including a dielectric member having a bore therein, an outer conductor member disposed on the outer periphery of said dielectric member and electrically connected to said housing means, an inner conductor member disposed on the periphery of said bore of said dielectric member, and a terminal electrode member secured to and in direct electrical contact with said inner conductor member, one portion of said terminal

electrode member projecting from one end of said resonator means;

an input means for applying electrical signals to said microwave device;

an output means for removing electrical signal from said microwave device;

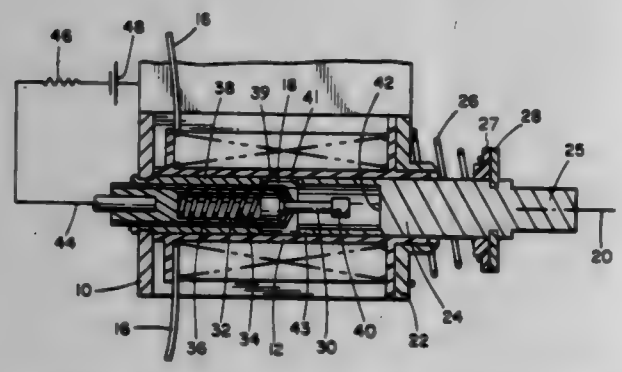
a coupling means for electrically coupling said input means, said resonator means and said output means, said coupling means including a dielectric coupling member connected between said input and output means and having thereon at least two coupling electrode layers which are spaced predetermined intervals from each other and to which the respective ones of said projecting terminal portions of said terminal electrode members are connected for establishing electrostatic capacitive coupling between said coupling electrode layers; and

said cavities of said casing member being separated by partition walls, each of said partition walls having a predetermined height which determines the band pass width of said microwave device.

4,342,973
SOLENOID ANNUNCIATOR

Richard S. Stone, Palatine, and Morris Chercasky, Chicago, both of Ill., assignors to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed Aug. 25, 1980, Ser. No. 180,677
Int. Cl.³ H01H *47/00*; H01F *7/18*; G08B *21/00*
U.S. Cl. 335—2 4 Claims



1. A solenoid annunciator comprising, in combination;

a solenoid field piece;

a solenoid bobbin mounted on the field piece, said bobbin having a central passage, said passage defining a longitudinal axis;

an annular solenoid coil on the bobbin;

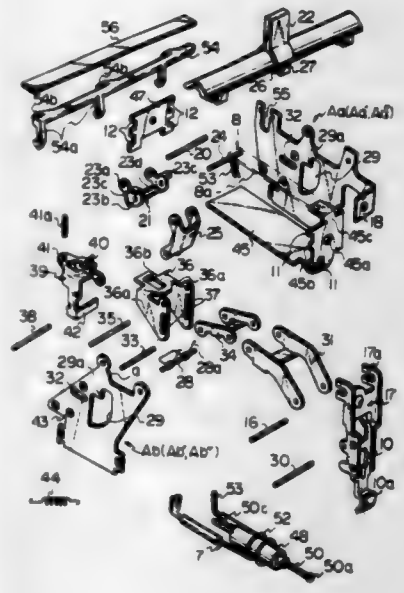
a movable core piece mounted in the passage for translation axially in response to flux in the coil; and

a contact mechanism projecting into the passage axially from one end of the bobbin, said contact mechanism being electrically insulated from the moveable core piece and projecting into the path of movement of the moveable core piece, said contact mechanism including lost motion means operative by engagement of the moveable core piece to provide continuous electrical contact with the moveable core piece upon coil actuation and travel of the core piece, said contact mechanism including a conductive plunger projecting axially toward the moveable core piece, electrically conductive biasing means acting on the plunger to bias the plunger toward the moveable core piece, and mounting means for supporting the biasing means and plunger, said conductive plunger being biased towards the moveable core piece.

4,342,974
MULTIPOLAR TYPE CIRCUIT BREAKER

Kunimitsu Nakano, and Kunio Takemura, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 9, 1980, Ser. No. 214,712
Int. Cl.³ H01H *71/24*
U.S. Cl. 335—10 9 Claims



1. A multipolar type circuit breaker including a plurality of breaker element assemblies for alternating source current poles respectively comprising a fixed contactor having a fixed contact and connected to a source side terminal, a movable contactor supported movably between ON and OFF positions of its movable contactor with said fixed contact, a contact operating mechanism for changing over said movable contactor between said positions, and a trip mechanism interlinked with said operating mechanism to form a current path between the movable contactor and a load side terminal and including means which normally latches the movable contactor at its ON position but releases the latching upon incoming of an excessive current for forcibly tripping the movable contactor out of the ON position,

said assemblies respectively having a handle link pivoted at one end to a fixed handle supporting shaft and operably connected at the other end to said contact operating mechanism, the respective assemblies being housed in a single housing respectively with said handle supporting shaft and tripping means in alignment with each other, said handle link in each of the assemblies being directly operated by a single handle engaging directly with all the assemblies, and said tripping means in the respective assemblies being interlinked to each other by an interlinking rod engaged to the respective means for transmitting said forcible trip operation in either one of the assemblies synchronously with the means in the other assemblies,

said handle comprising a main shaft part extending within said housing transversely of said plurality of assemblies while engaging said handle supporting shaft and handle link in the respective assemblies to be axially rotatable about the handle supporting shaft, and a lever part extending from said main shaft part to the exterior of said housing, and said interlinking rod extends within the housing transversely of the assemblies and is supported axially rotatably, said interlinking rod being provided with a plurality of projections respectively engageable with said tripping means in the respective assemblies, said trip mechanism including an excessive current sensing means forming said current path, said tripping means comprising a latch link connected at one end to said contact operating mechanism and having at the other end a latch engaging part, said latch link being rotatably supported substantially at an intermediate position by a fixed shaft, and a tripping lever having at one end a first part engageable with said

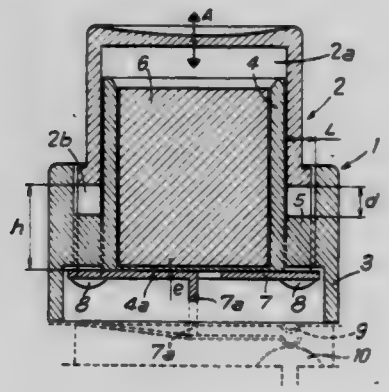
latch engaging part of said latch link for achieving a latch engagement therewith and at the other end a second part engageable with said sensing means, said tripping lever being rotatably supported substantially at the center about a fixed shaft normally biased toward engagement with the detecting means, said plurality of projections of said interlinking rod respectively comprising a pair of legs, a first one of which extending close to the latch engaging part of the latch link and a second one of which extending close to said first part of the tripping lever, such that a force imparted to either one of said first and second legs by a rotation of either one of the latch link and tripping lever causes the interlinking rod to be axially rotated.

4,342,975

MAGNETIC RETURN CONTROL KEY

Roger Charpentier, Bosquet Ay'mi, Avenue Beau Soleil, 64320 Idron, France

Filed Oct. 23, 1980, Ser. No. 199,865
Claims priority, application France, Oct. 31, 1979, 79 27077
Int. Cl.³ H01H *13/22, 3/12*
U.S. Cl. 335—205 5 Claims



1. Control key constituted by a fixed casing, a push-button mounted for sliding inside said casing between a first standing-out rest position and a second set-in work position, and magnetic means for returning the said push-button to its rest position, said means being constituted by a permanent magnet integral with the casing and by a plate of magnetic material integral with said push-button, wherein the said casing comprises a hollow centre part opened towards the top, and of which the bottom is at least partly closed by a wall of predetermined thickness, said centre part forming a housing for the said permanent magnet, whereas the said push-button is hollow on the inside so as to cap in slidable manner the said centre part, the depth of the hollow being greater than the height of the said centre part, and supports on its lower part the said plate of magnetic material, said latter closing off the hollow inside of the push-button beyond the bottom wall of the said centre part thus imprisoned in said hollow inside.

4,342,976

PULSE TRANSFORMER

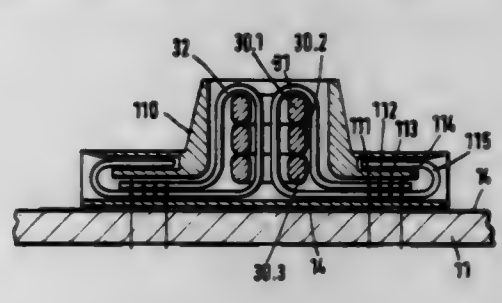
Heinrich Ryser, Schliern, Switzerland, assignor to Hasler AG, Bern, Switzerland

Filed Jan. 23, 1981, Ser. No. 228,155
Claims priority, application Switzerland, Feb. 1, 1980, 814/80
Int. Cl.³ H01F *15/04, 27/28*
U.S. Cl. 336—84 C 10 Claims

1. A pulse transformer comprising at least a toroidal, seamlessly closed core (30, 30.1–30.3) and with primary (31) and secondary windings (32) wherein the turns of the windings (31,32) are constituted by elongated conductors (82–84, 90–93, 101–103) which are applied in side-by-side relationship to flexible, plate-shaped supports of insulating material (51,53,55,57,97), wherein the supports, including the conductors (82–84, 90–93, 101–103) are passed through the core (30, 30.1–30.3) and bent into the shape of a loop, and wherein the ends of the conductors (82–84, 90–93, 101–103) are electrically connected to one another,

each support consists of at least one layer of insulating material (51, 53, 55, 57, 97) bearing at least two layers of conductors (52, 54, 56, 90–93, 96, 101–103);

each conductor (52, 56, 82, 83, 84, 90–93, 96, 101–103) exhibits either at one end or at both of its ends connecting points (70; 88; 77, 79; 76, 80; 75, 81), by means of which the



conductors (52 . . .) can be electrically connected with one another and with other conductors;

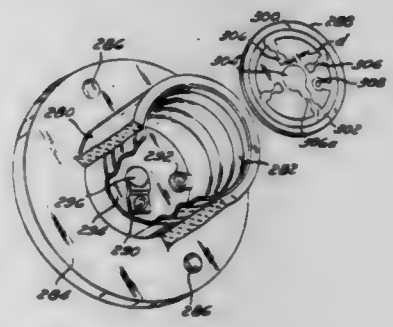
the conductors (82, 83, 84, 90–93, 101–103) with two connecting points are narrower than the conductors (52, 56, 96) with one connecting point and are arranged so that they are covered to a predominant part toward the outside by the conductors (52, 56, 96) with one connecting point and thus are electrically shielded thereby.

4,342,977

PRINTED CIRCUIT FUSE ASSEMBLY

James D. McGalliard, 11171 Fenwick Pl., Santa Ana, Calif. 92705

Division of Ser. No. 970,632, Dec. 18, 1978, Pat. No. 4,296,398.
This application May 28, 1981, Ser. No. 267,730
Int. Cl.³ H01H *85/02, 85/04*
U.S. Cl. 337—4 16 Claims



1. A fuse patch assembly for a printed circuit board and the like comprising:

a substrate;

first and second thin foil buses extending from the ends of said substrate;

a plurality of fuse elements integral with said first bus;

said second bus integral with at least one of said fuse elements, and closely juxtaposed the other of said fuse elements to form a narrow gap therebetween; and

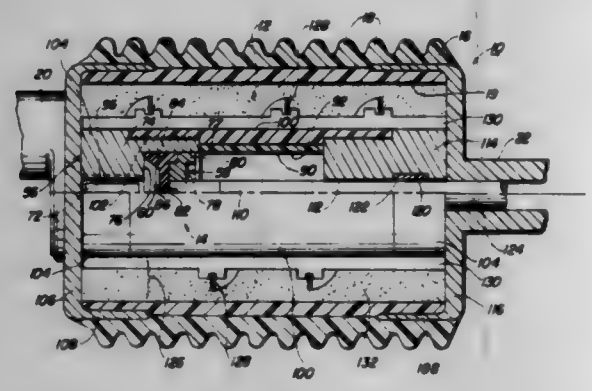
a cover forming an insulating layer over said substrate, said fuse elements and all but said extending portions of said first and second buses, said insulating layer having a small cut-out portion over each of said narrow gaps so that a substitute fuse is placed in circuit by applying solder to form a conductive bridge across the exposed gaps corresponding with said fuse element.

4,342,978

EXPLOSIVELY-ACTUATED SWITCH AND CURRENT LIMITING, HIGH VOLTAGE FUSE USING SAME

Otto Meister, Arlington Heights, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Mar. 19, 1979, Ser. No. 21,646
Int. Cl.³ H01H 85/18, 33/06, 33/28
U.S. Cl. 337—6 62 Claims



1. A high-voltage electrical switch for opening a current path in which the switch is included, comprising:

first and second normally electrically interconnected contact means for normally carrying current in the current path, the contact means being relatively movable apart along a fixed line of direction, movement of the contact means apart breaking the electrical interconnection therebetween to open the first current path;

piston means on the second contact means

(a) for defining an enclosed chamber with the first contact means when the contact means are interconnected

(b) for continuously isolating the second contact means from the chamber, and

(c) for constricting an arc formed between the contact means; and

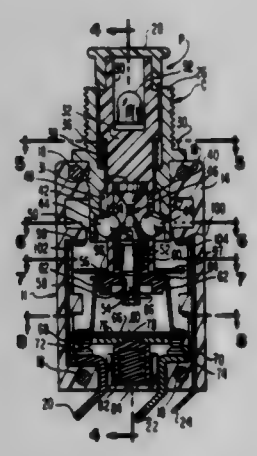
means for pressurizing the chamber to rapidly drive the contact means apart.

4,342,979

LIGHTED CIRCUIT BREAKER

Ernest L. Phillips, Denver, Colo., assignor to Jet Accessories, Inc., Denver, Colo.

Filed Jul. 14, 1980, Ser. No. 168,016
Int. Cl.³ H01H 73/14
U.S. Cl. 337—41 3 Claims



1. A push-pull circuit breaker for use in the control panel of an aircraft wherein the plunger of the circuit breaker becomes illuminated upon opening of the circuit, said circuit breaker comprising:

a housing;

a plunger longitudinally slideable within one end of the housing between an extended position and a retracted position, said plunger having a translucent first end which projects from said housing and a second end extending within said housing;

locking means within said housing for releasably holding said plunger in said retracted position;

a light within said first end of said plunger;

a pair of power leads extending from said housing;

a ground lead extending from said housing;

a first pair of spaced contacts within said housing electrically connected, respectively, to each of said power leads;

a bi-metal strip which is normally flat and extends across said first pair of contacts to close a power circuit through said circuit breaker, but which becomes bowed upon overheating due to an overload in the circuit;

a second pair of spaced contacts within said housing, one of said second contacts being electrically connected to one of said first contacts and the other of said second contacts being electrically connected to said ground lead;

support arms extending between said bi-metal strip and said locking means for holding said locking means in releasably locked condition during normal operation of said circuit and being moved to a released position upon overloading of the circuit by said bi-metal strip when said bi-metal strip becomes bowed;

first spring means urging said plunger from said retracted position to said extended position upon release by said support arms; and

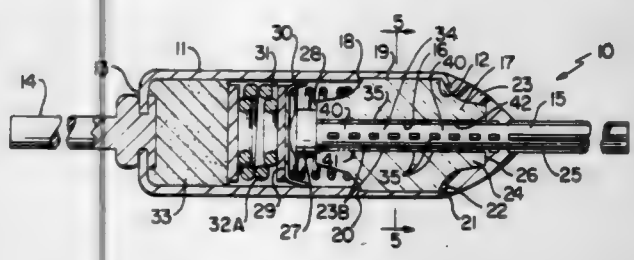
a pair of separate contact plates mounted on said second end of said plunger connected to opposite sides of said light and each moved into electrical contact with one of said second pair of spaced contacts upon movement of said plunger from said retracted position to said extended position to illuminate said light.

4,342,980

THERMALLY ACTUATABLE ELECTRICAL SWITCH CONSTRUCTION, CONDUCTIVE LEAD THEREFOR AND METHODS OF MAKING THE SAME

Ronald K. Kovacs, Kettering, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 5, 1981, Ser. No. 222,596
Int. Cl.³ H01H 37/76
U.S. Cl. 337—407 26 Claims



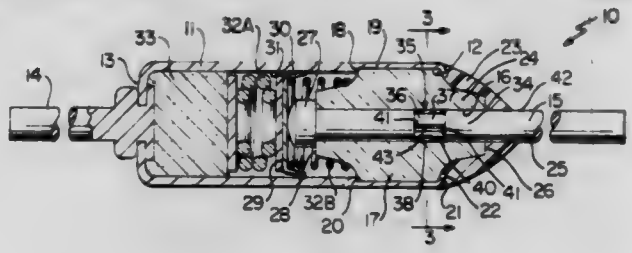
1. In a thermally actuatable electrical switch construction having a housing means carrying an electrically insulating end plug provided with an opening means passing therethrough and in which a portion of a conductive lead is disposed so that opposed ends of said lead extend beyond opposed ends of said plug and respectively define a fixed contact means inside said housing means and a terminal outside said housing means, said portion of said lead being retained in said opening means by a sealing means disposed in said opening means and extending around said portion of said lead and interlocking therewith to tend to prevent axial movement of said lead into said housing means as well as to tend to prevent rotational movement of said lead relative to said end plug, the improvement wherein said portion of said lead has a substantially unrecessed cylindrical peripheral surface throughout the entire length thereof and has a plurality of outwardly extending cog-like members that extend outwardly from said peripheral surface and interlock with said sealing means in said opening means of said end plug.

4,342,981

THERMALLY ACTUATABLE ELECTRICAL SWITCH CONSTRUCTION, CONDUCTIVE LEAD THEREFOR AND METHODS OF MAKING THE SAME

Charles Yagher, Jr., Kettering, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 5, 1981, Ser. No. 222,597
Int. Cl.³ H01H *37/76*
U.S. Cl. 337—407 20 Claims



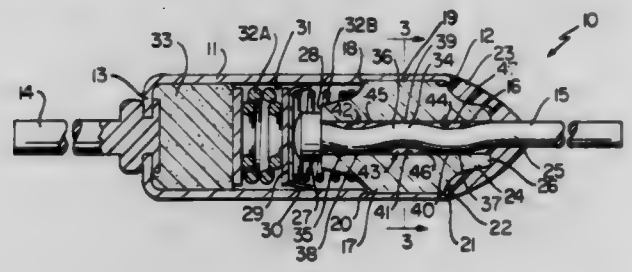
1. In a thermally actuatable electrical switch construction having a housing means carrying an electrically insulating end plug provided with an opening means passing therethrough and in which a portion of a conductive lead is disposed so that opposed ends of said lead extend beyond opposed ends of said plug and respectively define a fixed contact means inside said housing means and a terminal outside said housing means, said portion of said lead being retained in said opening means by a sealing means disposed in said opening means and extending around said portion of said lead and interlocking therewith to tend to prevent axial movement of said lead into said housing means as well as to tend to prevent rotational movement of said lead relative to said end plug, the improvement wherein said portion of said lead has a substantially cylindrical peripheral surface throughout the entire length thereof with an annular recess therein that defines an annular reduced section in said portion that has an annular peripheral surface disposed inboard of said cylindrical peripheral surface throughout its entire length and has at least one flat surface part thereof that interlocks with said sealing means in said opening means of said end plug.

4,342,982

THERMALLY ACTUATABLE ELECTRICAL SWITCH CONSTRUCTION, CONDUCTIVE LEAD THEREFOR AND METHOD OF MAKING THE SAME

Emil R. Plasko, Washington Township, Montgomery County, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 5, 1981, Ser. No. 222,598
Int. Cl.³ H01H *37/76*
U.S. Cl. 337—407 10 Claims



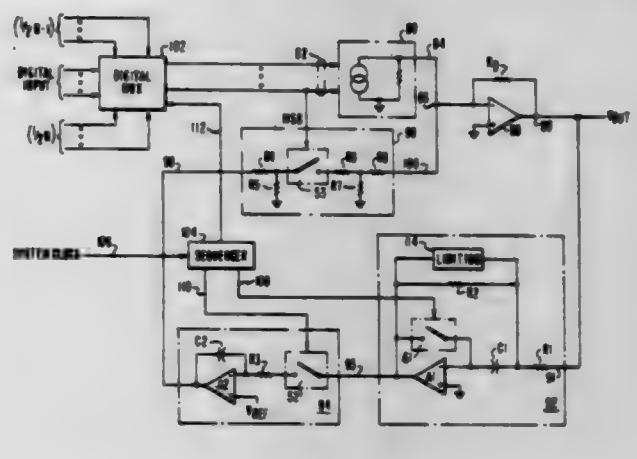
1. In a thermally actuatable electrical switch construction having a housing means carrying an electrically insulating end plug provided with an opening means passing therethrough and in which a portion of a conductive lead is disposed so that opposed ends of said lead extend beyond opposed ends of said plug and respectively define a fixed contact means inside said housing means and a terminal outside said housing means, said portion of said lead being retained in said opening means by a sealing means disposed in said opening means and extending around said portion of said lead and interlocking therewith to tend to prevent axial movement of said lead into said housing means as well as to tend to prevent rotational movement of said lead relative to said end plug, the improvement wherein said portion of said lead has a series of at least two convolutions therein that interlock with said sealing means in said opening means of said end plug, said opening means in said end plug defining an internal surface means of said end plug, said two convolutions respectively having apexes that respectively engage said internal surface means substantially on opposite sides thereof.

4,342,983

DYNAMICALLY CALIBRATED SUCCESSIVE RANGING A/D CONVERSION SYSTEM AND D/A CONVERTER FOR USE THEREIN

Benjamin F. Weigand, Catonsville, and John W. Frech, Baltimore, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 11, 1980, Ser. No. 176,625
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 CC 15 Claims



6. A digital-to-analog conversion system including apparatus for self-compensation of conversion inaccuracies, said system including:

a digital-to-analog converter circuit operative to convert a digitally coded input signal into an analog output signal representative thereof;

a first circuit responsive to said digitally coded input signal to add a compensating analog signal to said analog output signal to yield a compensated analog output signal;

a second circuit operative at predetermined times for causing said digitally coded input signal to switch between a predetermined pair of consecutive digital codes to render a corresponding transitional difference in said compensated analog output signal;

a time-gated amplifier circuit operative at said predetermined times for measuring said rendered transitional difference and generating an analog signal representative thereof; and

a time-gated integrating circuit for integrating said generated analog signal for a prespecified interval at said predetermined times to generate said compensating signal.

4,342,984

HIGH SPEED DIGITAL TO ANALOG CONVERTER CIRCUIT

Herbert Berke, Maitland, and John H. Allen, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 5, 1980, Ser. No. 213,529
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA 12 Claims

1. A high speed electronic data conversion circuit, comprising, in combination:

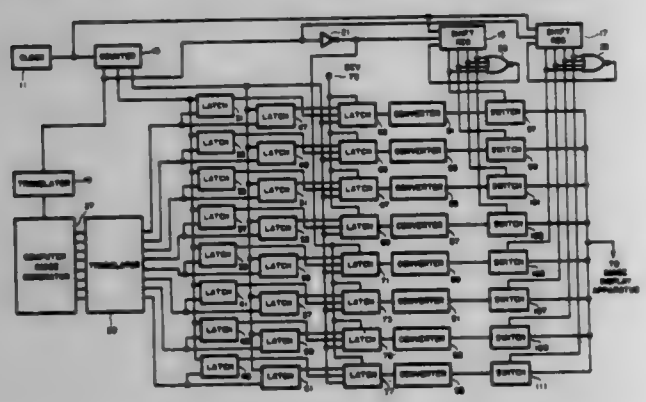
adjustable oscillating means having an output for generating a master clock signal having a series of clock pulses with the frequency thereof being variable over a predetermined frequency range;

counter means having a clock input connected to the output of said adjustable oscillating means, and first, second, third, and fourth outputs for generating first, second, third, and fourth clock signals, each of which has a series of clock pulses, the first of which has a frequency that is one-fourth that of said master clock signal, the second of which has a frequency that is one-fourth of said master clock signal and is 180° out of phase with the first clock signal thereof, the second of which has a frequency that is one-eighth that of said master clock signal, and the fourth of which has a frequency that is one-eighth that of said master clock signal and is 180° out of phase with the third clock signal thereof;

image generating means having a ready input effectively connected to the first output of said counter means and eight data outputs for producing, in response to each clock pulse of said first clock signal, a set of eight data bytes,

first storage means having eight data inputs effectively and respectively connected to the data outputs of said image generating means, a clock input connected to the third output of said counter means, and eight data outputs for latching therein, in response to each clock pulse of said third clock signal, one of the sets of data bytes produced by said image generating means;

second storage means having eight data inputs respectively connected to the data outputs of said image generating means, a clock input connected to the fourth output of said counter means, and eight data outputs for latching therein, in response to each clock pulse of said four clock signal, another of the sets of data bytes produced by said image generating means;



multiplexing means having a select input connected to the fourth output of said counter means, a clock input connected to the second output of said counter means, eight first data inputs respectively connected to the data outputs of said first storage means, eight second data inputs respectively connected to the data outputs of said second storage means, and eight data outputs adapted for alternately sampling the sets of data bytes latched in said first and second storage means in response to said fourth clock signal, and for latching therein, in respone to each clock pulse of said second clock signal, four data bytes of each set of data bytes sampled thereby;

translating means having eight data inputs respectively connected to the data outputs of said multiplexing means and eight data outputs for converting each set of eight data bytes sampled by said multiplexing means to a corresponding set of eight analog signals;

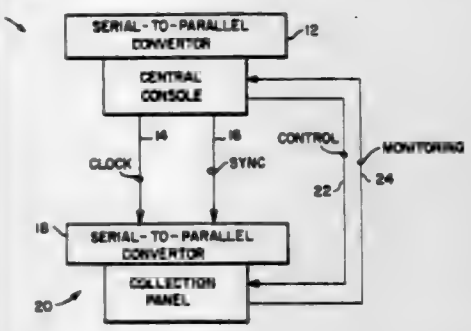
gating means having a clock input connected to the output of said adjustable oscillating means, a first reset input connected to the first output of said counter means, a second reset input connected to the second output of said counter means, eight data inputs respectively connected to the data outputs of said translating means, and an output for sequentially passing therethrough, in response to each clock pulse of said master clock signal, each analog signal of each set of analog signals converted by said translating means, with the four analog signals which correspond to the four data bytes latched within said multiplexing means being passed last in sequence thereby.

4,342,985

REMOTE SENSING AND CONTROL SYSTEM

Paul A. Desjardins, Commack, N.Y., assignor to Firecom, Inc., Woodside, N.Y.

Filed Oct. 3, 1980, Ser. No. 193,689
Int. Cl.³ G08B *26/00*
U.S. Cl. 340—525 21 Claims



1. A remote sensing and control system, comprising:

generator means producing a clock signal;

first serial to parallel converter means connected to receive said clock signal and producing a first plurality of parallel address signals;

display means connected to receive said first plurality of parallel address signals;

second serial to parallel converter means remotely located from said first serial to parallel means and connected to receive said clock signals for producing a second plurality of parallel address signals identical to said first plurality of parallel address signals;

a plurality of sensor means each having a preselected address and having an altered electrical states upon sensing a selected parameter or upon the occurrence of a malfunction of said sensor means;

sensor input means having inputs connected to each of said plurality of sensor means and being connected to receive said second plurality of parallel address signals, for interrogating a selected one of said plurality of sensor means upon the occurrence of the address of the selected sensor means at said sensor input means and for producing a monitoring signal indicating the state of said sensor means; and

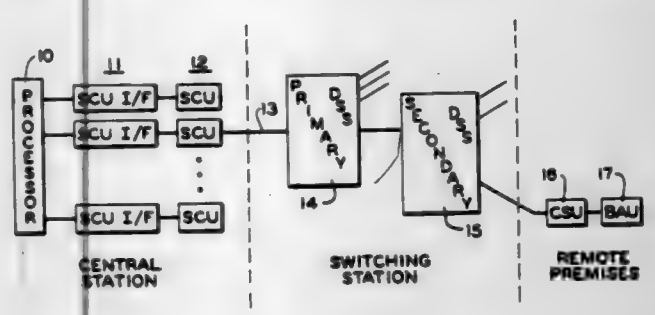
means feeding said monitoring signal to said display means for displaying the state of said sensor means during the occurrence of the address of the selected one of said plurality of sensor means.

4,342,986

CENTRAL STATION ALARM REPORTING SYSTEM

Allan F. V. Buskirk, Fountain Valley, and Gadi Moskovitch, Anaheim, both of Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 7, 1980, Ser. No. 147,689
Int. Cl.³ G08B *26/00;* H04Q *9/00*
U.S. Cl. 340—539 48 Claims



1. In a central station alarm reporting system having a cen-

tral station connected to at least one remote premises unit over a communication channel, said remote premises unit having means for providing at least two high frequency signals and at least two low frequency signals and having transmitting means for transmitting at least two bits of parallel digital information in a single transmission, said single transmission comprised of at least one of said low frequency signals and at least one of said highfrequency signals, said at least two low frequency signals, said at least two low frequency signals and said at least two high frequency signals having at least four combinations for single transmissions, said central station comprising:

receiving means for receiving said transmission from said remote premises unit; and,

decoding means having an input connected to said receiving means and having at least two output lines for providing at least a two bit digital word capable of completely describing the at least four combinations of said at least two low and at least two high frequency signals.

4,342,987

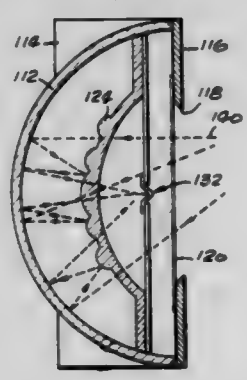
INTRUDER DETECTION SYSTEM

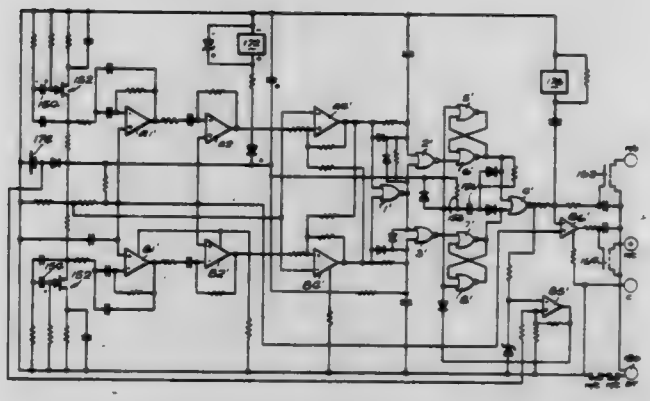
John A. Rossin, Goleta, Calif., assignor to Rossin Corporation, Goleta, Calif.

Continuation-in-part of Ser. No. 73,869, Sep. 10, 1979. This application Feb. 4, 1980, Ser. No. 117,957

Int. Cl.[3] G01D *21/04;* G08B *13/18*

U.S. Cl. 340—567 11 Claims





1. An improved Intruder Detection System for optically monitoring an area and producing an alarm signal only in response to motion of an intruder across the monitored area, including:

(a) A sensor optically responsive to infrared radiation of an intruder, the sensor having at least a pair of discrete sensing areas each producing an electrical output in response to infrared radiation;

(b) Optical means directing infrared radiation from only the monitored area onto the discrete sensing areas of the sensor, radiation from only a portion of the monitored area being directed onto each sensor area, whereby movement of an intruder across the monitored area causes one then the other of the sensor areas of the pair to produce an electrical output;

(c) Means to direct visible light from one sensor area to another sensor area, said means including a V-shaped reflector, a planar member substantially transparent to visible light generally bisecting the V-shaped reflector, the sensor areas including sensor elements positioned on both face surfaces of the planar member located relative to one another such that visible light striking one sensor element passes through the planar member then strikes the other sensor element; and

(d) Electronic means for accepting and analyzing the electrical outputs of the sensor areas and producing an alarm signal only in response to the occurrence of an electrical output of one sensor area then of the other sensor area of a pair within a predetermined period of time.

4,342,988

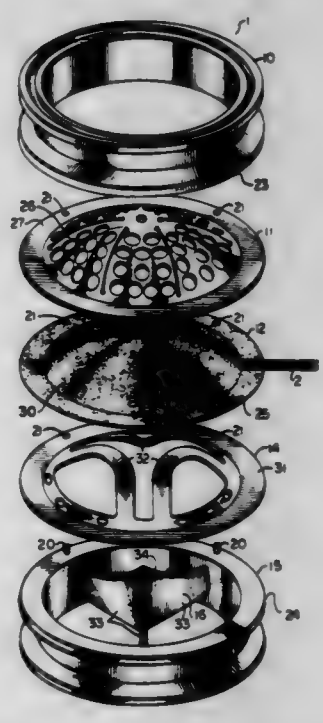
RUPTURE DISC ALARM SYSTEM

Leonard K. Thompson, Independence, and William H. Corbett, Grain Valley, both of Mo., assignors to Continental Disc Corporation, Riverside, Mo.

Filed Jan. 25, 1980, Ser. No. 115,261

Int. Cl.[3] G08B *17/02;* F16K *17/14, 17/40*

U.S. Cl. 340—679 15 Claims



14. In combination:

(a) a rupture disc seal having opposed sides for blocking flow of fluid through a passageway until a differential pressure between said sides exceeds a predetermined level whereupon said seal ruptures; and

(b) a conduit having a pathway adapted for transmitting a signal from one end thereof to an opposite end thereof; said conduit being fixedly attached to said seal such that said pathway is broken and incapable of transmitting a signal when said seal ruptures; said conduit also being adapted to communicate with alarm means such that when said pathway is unbroken said signal is transmitted to said alarm means and when said pathway is broken said signal is not transmitted to said alarm means thereby activating said alarm means.

4,342,989

DUAL CRT CONTROL UNIT SYNCHRONIZATION SYSTEM

Richard R. Watkins, Chelmsford, Mass., and Richard A. Slater, Nashua, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 30, 1979, Ser. No. 34,833

Int. Cl.[3] G09G *1/16*

U.S. Cl. 340—723 3 Claims

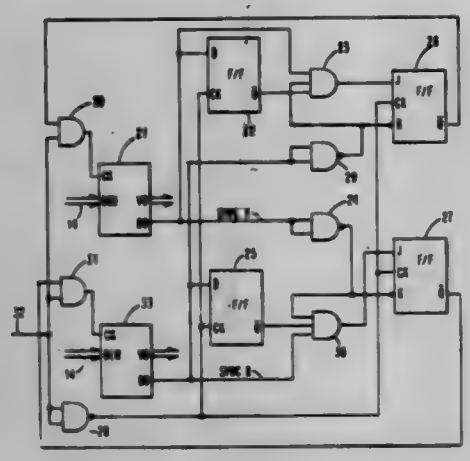
1. A logic control system for providing a binary information stream of characters to a video display system, wherein said

information stream may include both a data character byte and a visual attribute byte within same time periods of a system clock signal, which comprises:

(a) a pair of CRT control units having data character and visual attribute bytes stored therein, and responsive to said system clock signal and operable at said system clock signal rate for supplying said information stream to said video display system;

(b) first edge detector means for sensing during a leading half of a time period of said system clock signal a first synchronization signal supplied by a first of said pair of control units;

(c) a second edge detector means for sensing during said leading half of said time period a second synchronization signal supplied by a second of said pair of control units;



(d) first logic enable means responsive to said first edge detector means during a trailing half of said time period for disabling said first of said pair of control units if said first synchronization signal leads said second synchronization signal in phase, and enabling said first of said pair of control units if said first and said second synchronization signals are in phase; and

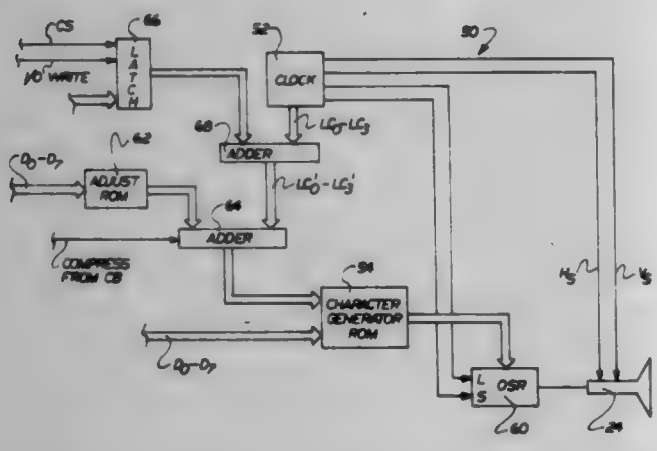
(e) second logic enable means responsive to said second edge detector means during a trailing half of said time period for disabling said second of said pair of control units if said second synchronization signal leads said first synchronization signal in phase, and enabling said second of said pair of control units if said first and said second synchronization signals are in phase.

4,342,990

VIDEO DISPLAY TERMINAL HAVING IMPROVED CHARACTER SHIFTING CIRCUITRY

Elden D. Traster, Garland, Tex., assignor to Harris Data Communications, Inc., Dallas, Tex.

Filed Aug. 3, 1979, Ser. No. 63,530
Int. Cl.³ G09G 1/16
U.S. Cl. 340—724 **12 Claims**



1. Apparatus for use in a line by line raster scanning character display system wherein stroke patterns for forming the characters to be displayed are stored in a font memory and are retrieved therefrom by addressing said font memory with character codes identifying the character to be displayed and line counts indicating which stroke of the character is to be displayed, where the line count normally remains unchanged during the scanning of each line of the raster, comprising:

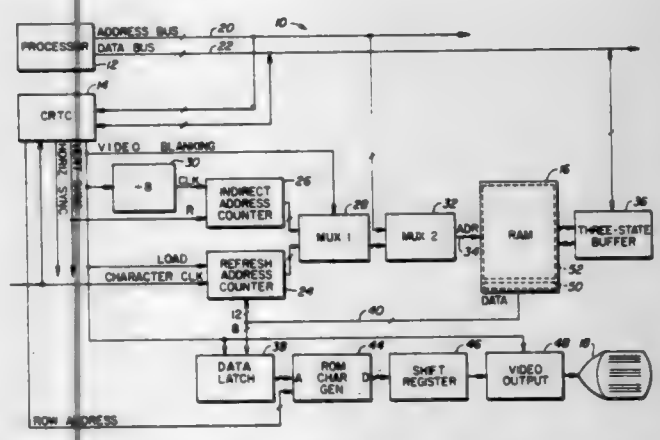
means responsive to said character codes for designating those characters which are to be displaced from their normal display location, and means for changing the line count from its normal value to one of a plurality of values in dependence upon said character codes when the character codes for the designated characters are presented to the font memory, whereby different strokes are retrieved from the font memory for the designated characters than for nondesignated characters at a displaced location relative to said nondesignated characters.

4,342,991

PARTIAL SCROLLING VIDEO GENERATOR

Richard N. Pope, San Ramon, and Richard A. Williamson, Danville, both of Calif., assignors to Multisonics, Inc., Dublin, Calif.

Filed Apr. 10, 1980, Ser. No. 128,347
Int. Cl.³ G09G 1/16
U.S. Cl. 340—726 **8 Claims**



1. A method for use in scrolling display rows in a raster scan type cathode ray tube display system wherein the display system includes a video display, refresh logic, a refresh memory, a first counter and a second counter, said refresh memory having storage locations arranged in a first matrix and a second matrix, said first matrix comprising storage for indirect address pointers of preselected base address locations for rows of said second matrix, said second matrix comprising fixed address storage for data to be presented for output to said video display, said method comprising the steps of:

(a) writing a base address pointer for each row into said first matrix;

(b) reading, according to an address value in said first counter, a base address pointer from a location in said first matrix which points to the base address of a row in said second matrix so as to supply the base address to the address input of said refresh memory; thereupon

(c) reading for output to said video display, according to a value in said second counter containing the current column address, data in said second matrix at the current column and row address;

(d) incrementing said second counter containing the current column and row address to advance the column address;

(e) repeating steps (c) and (d) until the end of the row is serviced;

(f) incrementing said first counter to access a next sequential address in said first matrix;

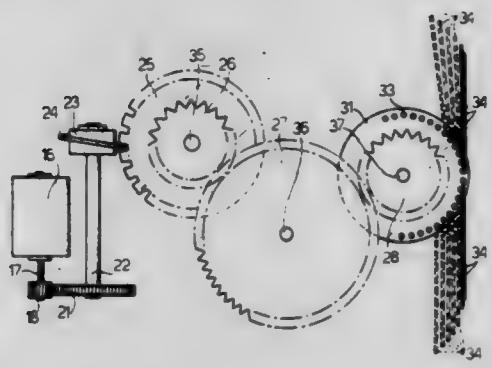
(g) repeating steps (b) through (f) to present a plurality of rows of data in said second matrix to said video display.

4,342,992

TELEINDICATOR FOR INFORMATION BOARDS

Vittorio Bozzini, Via Tolmino 50/16, 10141 Torino, Italy

Filed Jul. 22, 1980, Ser. No. 171,094
Claims priority, application Italy, Jul. 25, 1979, 68551 A/79
Int. Cl.³ G08B 5/14
U.S. Cl. 340—764 7 Claims



1. A teleindicator for information boards, comprising in combination, first means for the registration of input signals relating to an indication which has to be displayed by the said teleindicator, second arranged to process the signals from the said first means and arranged to control third means which actuate, in a mechanical way, the display of the said indication, by means of indicator elements,

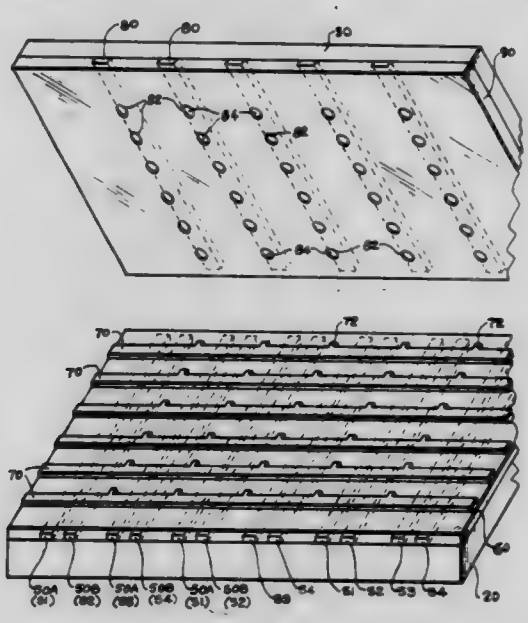
said third means comprising an electric motor and transmission mechanism for the transmission of the motion from the said motor to the said indicator means, characterized in that the said transmission mechanism comprise a mechanical transmission coupling periodically inactive while the electric motor is running, for the interruption of the transmission of the motion from the said motor to the said indicator elements, the said periodically inactive transmission coupling comprising an endless screw coupled to a gear, the profile of the said endless screw being such as to produce a rotation of the said gear only when corresponding to a section of the said profile.

4,342,993

MEMORY DISPLAY PANEL

George E. Holz, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 65,399, Aug. 9, 1979, which is a continuation of Ser. No. 928,996, Jul. 28, 1978. This application Feb. 12, 1981, Ser. No. 233,731
Int. Cl.³ G09G 3/28
U.S. Cl. 340—779 10 Claims



1. A display panel comprising

a gas-filled envelope made up of a base plate and a face plate hermetically sealed together with a space between them and with a gas filling in said space,

a plurality of parallel first electrode in said envelope insulated from said gas and adapted to have A.C. signals applied thereto to produce visible glow, and

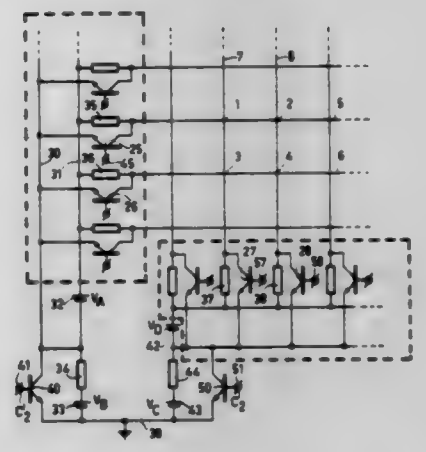
a plurality of second and third electrodes disposed in said envelope in contact with said gas and adapted to produce cathode glow when D.C. operating potentials are applied to selected ones thereof, the cathode glow produced by said selected electrodes facilitating the generation of visible glow between the adjacent ones of said first electrodes having A.C. signals applied thereto.

4,342,994

DISPLAY DEVICE HAVING A LIQUID CRYSTAL

Jean H. J. Lorteije, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 12, 1981, Ser. No. 273,281
Claims priority, application Netherlands, Jul. 8, 1980, 8003930
Int. Cl.³ G06F 3/14
U.S. Cl. 340—784 7 Claims



1. A display device having a liquid crystal, the display device comprising a display screen having a plurality of display elements each having a first and a second electrode, these display elements having been divided in at least two groups, the first electrodes of a group of display elements being interconnected by means of one selection conductor per group and the second electrodes of sets of corresponding display elements of the different groups being interconnected by means of corresponding excitation conductors, the display device further comprising a control circuit having a plurality of row selection switches for selecting in cyclic sequence the groups of display elements during always one row selection period and having a plurality of excitation switches for exciting the display elements of a selected group, a first voltage source for the row selection switches and a second voltage source for the excitation switches, characterized in that a terminal of the first voltage source is coupled to a ground connection of the control circuit by means of an auxiliary supply source for producing a periodically pulsating direct voltage, the ratio between one period of the pulsating direct voltage and one row selection period being a rational number.

4,342,995

DATA NETWORK EMPLOYING A SINGLE TRANSMISSION BUS FOR OVERLAPPING DATA TRANSMISSION AND ACKNOWLEDGMENT SIGNALS

George T. Shima, Kamakura, Japan, assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 15, 1980, Ser. No. 187,591
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.5 7 Claims

1. A network of stations for data transmissions therebetween, said network comprising:

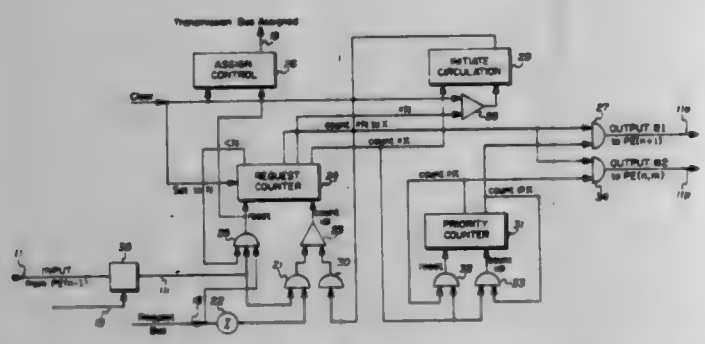
a single transmission bus;

a plurality of stations coupled to said bus, each station hav-

ing a bus assignment control pulse receiving and transmitting means;

a bus assignment control line coupled to each of said stations in a serial manner;

each station including a request counter means to count to a given count and, if said each station does not request access to said bus, to signal said pulse receiving and transmitting means to transmit said bus assignment control pulse to said next succeeding station; and



a transmission acknowledgment line coupled to each of said stations;

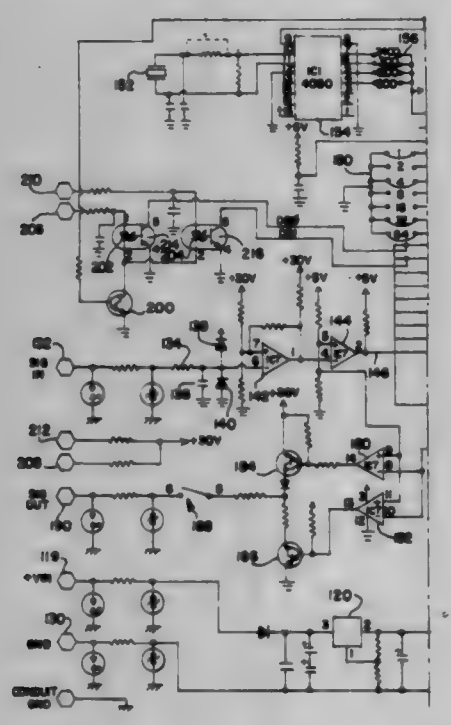
each of said stations including an acknowledgment means to receive an acknowledgment signal on said acknowledgment line only during a finite period of time after each of said stations has completed transmission on said transmission bus.

4,342,996

TWO DISC ENCODER SYSTEM FOR MONITORING HEIGHT OF LIQUID IN STORAGE TANK

Louis J. Jannotta, 2800 Bernice Rd., Lansing, Ill. 60438

Filed Oct. 29, 1980, Ser. No. 201,805
Int. Cl.³ G08C *19/16, 9/06*
U.S. Cl. 340—870.16 16 Claims



1. An apparatus for monitoring the height of liquid in a liquid storage tank, said storage tank being equipped with a height gage including a gage shaft rotatable in response to changes in the height of said liquid in said storage tank, said apparatus comprising:

instrument shaft means capable of being associated with said gage to rotate in response to the rotation of said gage shaft;

a first coded disc means associated with said instrument shaft means and rotatable in response to the rotation of said instrument shaft means;

a second coded disc means associated with said first coded disc means and rotatable in response to the rotation of said first coded disc means;

first signal emitting means comprising a plurality of distinct first signal sources located relative to said first coded disc means to emit signals through said first coded disc means;

first signal receiving means comprising a plurality of distinct first signal detectors located relative to said first coded disc means to detect signals from said first signal emitting means which pass through said first coded disc means, said first signal receiving means receiving a different, distinct pattern of signals from said first signal emitting means for each radial increment of said first coded disc means as said first coded disc means rotates;

second signal emitting means comprising a plurality of distinct second signal sources located relative to said second coded disc means to emit signals through said second coded disc means; and

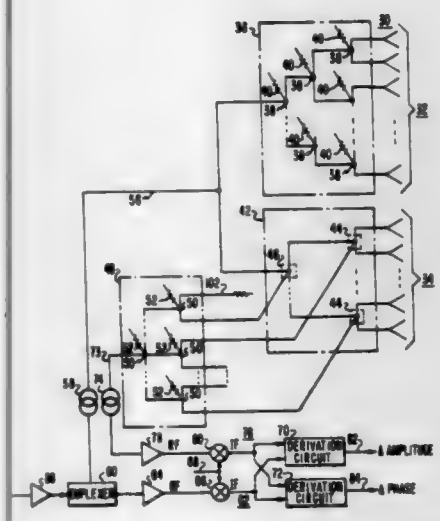
second signal receiving means comprising a plurality of distinct second signal detectors located relative to said second coded disc means to detect signals from said second signal emitting means which pass through said second coded disc means, said second signal receiving means receiving a distinct, different pattern of signals from said second signal emitting means for each radial increment of said second coded disc means as said second coded disc means rotates, wherein the patterns of signals received by said first and second signal receiving means are translatable into the absolute height of said liquid in said liquid storage tank over at least a portion of the total height of said tank.

4,342,997

ARRAY MODIFICATION THAT ADDS HEIGHT CAPABILITY TO A 2D ARRAY RADAR

Gary E. Evans, Trappe, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 3, 1980, Ser. No. 165,830
Int. Cl.³ G01S *3/46*
U.S. Cl. 343—16 R 10 Claims



1. A two-dimensional (2D) radar antenna system for forming two beams in different directions to achieve illumination characteristics of both phase angle difference and amplitude difference with respect to a common target for deriving the elevation of said target, said system comprising:

an array of antenna elements including first and second subarrays of antenna elements, said elements of said first and second subarrays being mutually exclusive;

first and second power divider networks for distributing illuminating power in said first and second subarrays, respectively, to compositely form a first beam, the illuminating power of said formed first beam being concentrated at a location in said first subarray of antenna elements;

a first receiving channel driven commonly by both the first and second power divider networks;

a third power divider network, coupled to said second power divider network, for distributing illuminating power in said second subarray of antenna elements to form a second beam in a direction different from that of said first beam, the illuminating power of said formed second beam being concentrated at a location in said second subarray of antenna elements; and

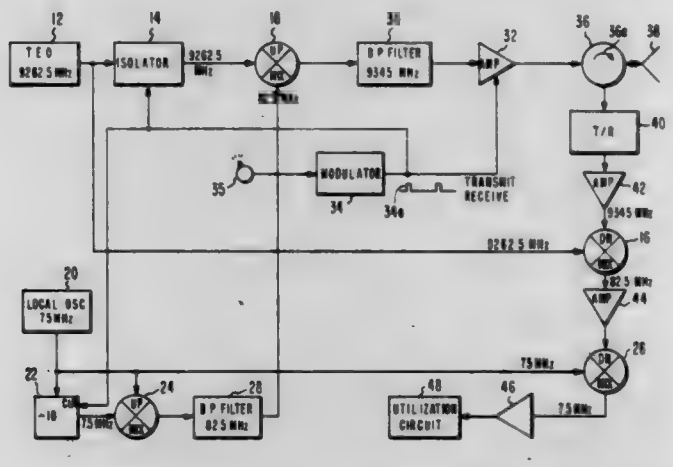
a second receiving channel driven by the third power divider network.

4,342,998

PULSED RADIO FREQUENCY TRANSMITTING AND RECEIVING SYSTEM

Finis C. Easter, Canoga Park, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 4, 1980, Ser. No. 212,861
Int. Cl.³ G01S *7/28*
U.S. Cl. 343—17.1 R **6 Claims**



1. A radio frequency transmitter-receiver for alternately periodically transmitting pulses of frequency F_1 and for receiving return echo signals of frequency F_1 comprising, in combination:

first means continuously generating a signal of frequency F_2;

second means generating a signal of frequency F_3 only during the transmission of pulses of frequency F_1;

third means responsive to signals generated by said first means and second means, when present, to generate frequency F_1; and

fourth means responsive to said return signal and first means signal for producing a signal of intermediate frequency F_3 at a time that those signals are not generated in the transmitter-receiver, whereby interference by the generated signals is avoided.

4,342,999

LOOP ANTENNA ARRANGEMENTS FOR INCLUSION IN A TELEVISION RECEIVER

Oakley M. Woodward, and John G. N. Henderson, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1980, Ser. No. 210,251
Int. Cl.³ H01Q *1/24, 1/26*
U.S. Cl. 343—702 **28 Claims**

1. An antenna arrangement for inclusion within a cabinet of a receiver including a tuner and operable over selected frequency bands comprising:

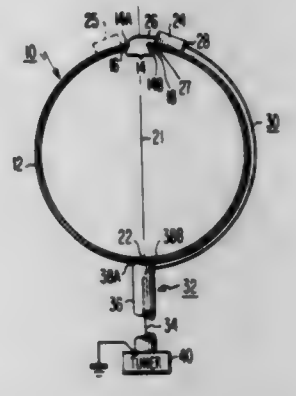
a loop of electrically conductive material, having at least one gap, said gap forming respective first and second feed terminals, said loop having at least one neutral point thereon at which a potential equal to the average of potentials at said first and second feed terminals is developed when electromagnetic radiation impinges upon said loop;

circuit means having input and common terminals for receiving an input signal therebetween, and having an output terminal for supplying an output signal responsive to said input signal, said circuit means being located proximate to said gap and including

means for respectively coupling said input and common terminals to the first and second feed terminals of said gap,

tuning circuitry connected between said input and common terminals for tuning said loop over at least a portion of said selected frequency bands, and

means for coupling signals from said tuning circuitry to said output terminal, said signal coupling means isolating said



tuning circuitry for making said tuning circuitry substantially unaffected by an impedance at said output terminal; and

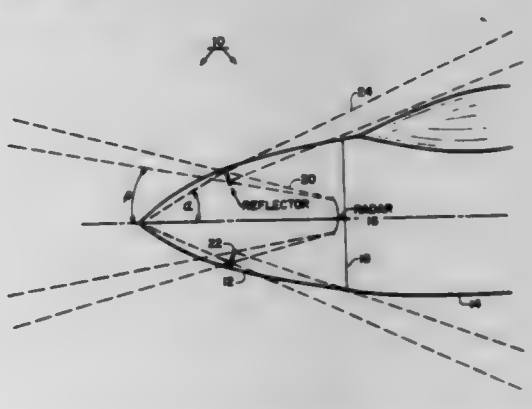
a transmission line having a conductor connected to said output terminal for receiving said output signal and for coupling said output signal to said tuner, said transmission line conductor being disposed along the periphery of said loop between said output terminal and said neutral point and departing from said loop proximate to said neutral point.

4,343,000

AIRCRAFT SELF-PROTECTION RADAR

John C. Macidull, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,617
Int. Cl.³ H01Q *1/28*
U.S. Cl. 343—705 **6 Claims**



1. A combination forward and aft-looking airborne radar antenna apparatus comprising a forward aerodynamic housing;

a forward-looking aircraft antenna in said housing for producing a forwardly projecting pattern of energy waves;

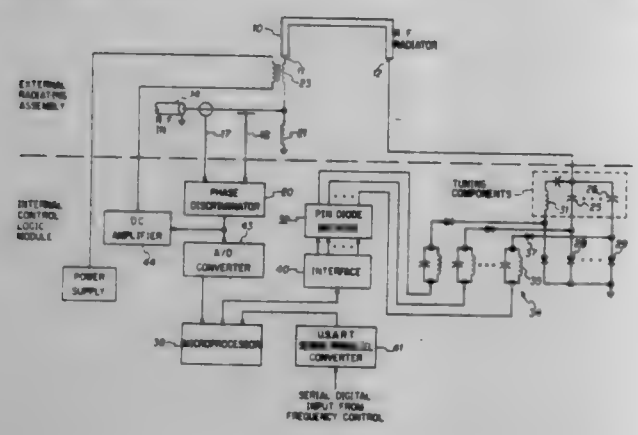
reflecting means in said housing arranged to intercept a peripheral portion of said energy wave and reflect said waves in a rearward direction.

4,343,001

DIGITALLY TUNED ELECTRICALLY SMALL ANTENNA

Mardis V. Anderson, Richardson; Leslie V. Griffee; William H. Grona, both of Dallas, and Richard D. Leverington, Plano, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 24, 1980, Ser. No. 200,345
Int. Cl.³ H01Q *9/26, 1/28*
U.S. Cl. 343—745 **5 Claims**



1. An antenna system suitable for airborne use, of the type having a blade forming a folded monopole antenna with a first terminal serving as a radio frequency input and a second terminal connectable to tuning apparatus, the improvement comprising:

tuning components, switchable to various values, connected at said second terminal;

means, responsive to the selection of a frequency to be used, for computing, from stored reference values, the values of tuning components calculated to render said antenna substantially in tune at the frequency selected to be used, and for switching said tuning components to said calculated values;

means at said first terminal for detecting the extent to which the antenna is in tune at said selected frequency;

means, responsive to an indication from said means for detecting that said antenna is substantially out of tune at said selected frequency, for switching said tuning components until new values are reached for which the antenna is substantially in tune: and

means, responsive to said new tuning component values, for computing and storing new reference values.

4,343,002

PARABOLOIDAL REFLECTOR SPATIAL FILTER

Howard H. Luh, Sunnyvale, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

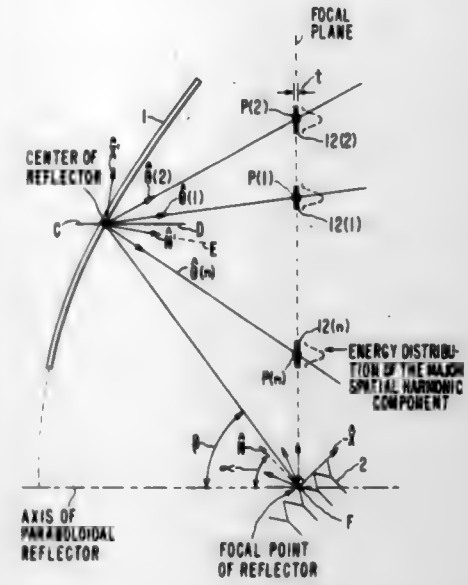
Filed Sep. 8, 1980, Ser. No. 185,084
Int. Cl.³ H01Q *15/10, 19/12*
U.S. Cl. 343—753 **8 Claims**

1. An antenna system comprising:

a paraboloidal surface capable of reflecting electromagnetic radiation;

a feed array having a plurality of substantially identical radiation-directing feed elements pointed at said surface; and

a spatial filter separate from the surface and the feed array, situated in the focal plane of said surface, for reducing the amplitudes of spatial sinusoidal perturbations in the main



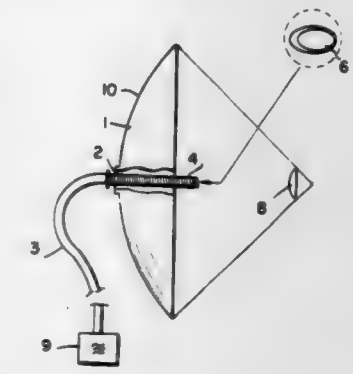
beam region of the radiation pattern associated with said system.

4,343,003

DIRECTIONAL ANTENNA FOR MICROWAVE TRANSMISSIONS

Günter Möhring, Langenhagen, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,431
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939697
Int. Cl.³ H01Q *19/19*
U.S. Cl. 343—781 P **5 Claims**



1. In a directional antenna for microwave transmissions comprising a paraboloidal main reflector, a first waveguide comprising a waveguide feed having an elliptical cross-section and having a first end with an energizer thereat, said first end having an open end operatively irradiatingly directed relative to said main reflector, and a second waveguide serially communicatingly connected between a second end of said waveguide feed and a transceiver device, the improvement in cooperative combination therewith wherein:

said elliptical cross-section of said waveguide feed completely throughout said waveguide feed and at said first end is constant and is dimensioned such that said waveguide feed at said first end simultaneously alone itself forms said energizer forming an eliptical aperture at said open end having the same cross-section as said elliptical cross-section of said waveguide feed, the energizer constituting means for completely being in irradiation communication with the entire said main reflector with respect to frequencies being transmitted,

said second waveguide is formed completely throughout

with the exact same dimensions and elliptical cross-section of said waveguide feed,

said waveguide feed and said second waveguide respectively comprises a transversely corrugated, longitudinally seam welded metallic tubular member,

said waveguide feed further comprises reinforcing tapes wound about said metallic tubular member thereof, and

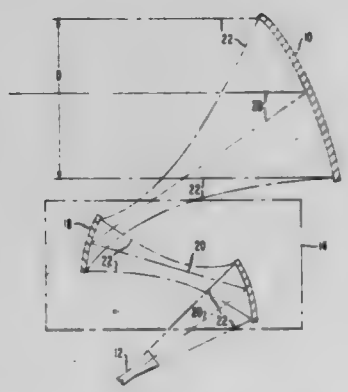
said waveguide feed and said second waveguide have oversized cross-sectional dimensions with respect to the frequencies to be transmitted for an overmoded electromagnetic wave transmission.

4,343,004

BROADBAND ASTIGMATIC FEED ARRANGEMENT FOR AN ANTENNA

Edward A. Ohm, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1980, Ser. No. 209,944
Int. Cl.³ H01Q *19/19, 19/195*
U.S. Cl. 343—781 P **2 Claims**



1. A broadband antenna system capable of correcting for astigmatism in a beam (22) which is either radiated or received by the antenna system, the antenna comprising:

a main focusing reflector arrangement (10);

a feed arrangement (12) disposed to permit either one of the radiation of the beam in a particular direction and the reception of the beam from a particular direction along a feed axis (20) of the antenna system; and

astigmatic correction means (14) disposed to reflect the beam propagating in either direction along the feed axis of the beam between the feed arrangement and the the main focusing reflector arrangement

characterized in that

the astigmatic correction means comprises:

a first doubly-curved reflector (18) disposed between the feed arrangement and the main focusing reflector arrangement along the feed axis of the beam comprising a radius of curvature in two orthogonal planes according to the relationships

$$r_1(\perp) = 2f_1(\perp)\cos\theta \text{ and } r_1(\parallel) = \frac{2f_1(\parallel)}{\cos\theta}$$

where $r_1(\parallel)$ is the radius of curvature of said first reflector in the plane of incidence, $r_1(\perp)$ is the radius of curvature of said first reflector perpendicular to the plane of incidence, θ is the angle of incidence to the beam in either of the associated principal planes, and f_1 is the focal length of the first reflector in the associated principal plane as defined by $(1/f_1)=(1/R_3)+(1/R_5)$ where R_3 is the phase front radius at said first reflector in the associated principal plane and R_5 is the phase front radius of the beam reflected from said first reflector in the associated principal plane; and

a second doubly-curved reflector (16) disposed between the feed arrangement and said first doubly-curved reflector comprising a radius of curvature in two orthogonal planes according to the relationships

$$r_2(\perp) = 2f_2(\perp)\cos\theta \text{ and } r_2(\parallel) = \frac{2f_2(\parallel)}{\cos\theta}$$

where $r_2(\parallel)$ is the radius of curvature of said second reflector in the plane of incidence, $r_2(\perp)$ is the radius of curvature of said second reflector perpendicular to the plane of incidence, θ is the angle of incidence of the beam in either of the associated principal planes, and f_2 is the focal length of the second reflector as defined by $(1/f_2)=(1/R_7)+(1/R_9)$ where R_7 is the phase front radius of the beam incident on the second reflector in the associated principal plane and R_9 is the phase front radius of the feed in the associated principal plane, and the first and second reflectors are spaced apart a distance such that $\Delta\phi(\perp)-\Delta\phi(\parallel)$ is approximately zero degrees where each of $\Delta\phi(\perp)$ and $\Delta\phi(\parallel)$ in the plane of interest is defined by

$$\Delta\phi = 180\frac{\Delta z_4}{\lambda}\left(\frac{w_1}{R_1}\right)^2 \text{ degrees,}$$

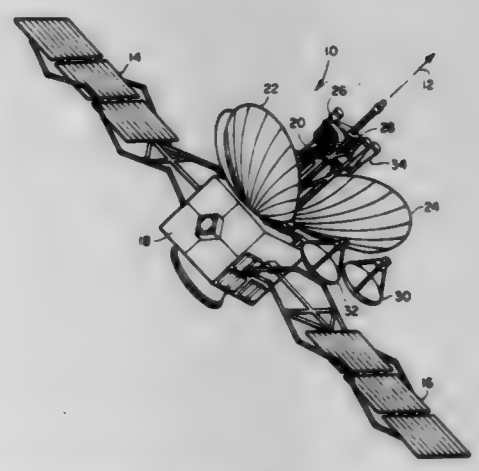
where Δz_4 is the longitudinal distance between the beam-waist location of the main focusing reflector and the beam-waist location provided by the broadband astigmatic feed arrangement, λ is the wavelength of the signal in the beam, w_1 is the spot size radius at a reflector of the main focusing reflector arrangement immediately after the first reflector along the feed axis of the beam, and R_1 is the phase front radius at the same reflector of the main focusing reflector where w_1 is determined.

4,343,005

MICROWAVE ANTENNA SYSTEM HAVING ENHANCED BAND WIDTH AND REDUCED CROSS-POLARIZATION

Ching C. Han, Los Altos; Herman W. Bilenko, Santa Clara, and Yeongming Hwang, Los Altos, all of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 29, 1980, Ser. No. 220,558
Int. Cl.³ H01Q *19/14*
U.S. Cl. 343—781 P **15 Claims**



1. A microwave antenna system for producing when energized by a source of microwave signals, first and second simultaneously propagating beams of microwave radiation, said first beam being of left-hand circularly polarized radiation, said second beam being of right-hand circularly polarized radiation, comprising in combination:

a curvilinear microwave-reflective surface defining a focal region within which parallel beams of microwave electro-

magnetic radiation impinging on said surface are brought to focus;

and disposed within said focal region, a microwave feed array, said feed array comprising a plurality of waveguide feed elements disposed mutually adjacent to one another and commonly aligned to propagate microwave energy toward, and receive microwave energy from said reflective surface, each of said waveguide feed elements comprising a circular waveguide terminating in a circular aperture facing toward said reflective surface;

and disposed about each of said circular apertures, inductive tuning means to selectively reduce mutual coupling between said adjacent feed elements, and to minimize cross-polarization between adjacent feed elements, whereby adjacent feed elements can be energized with signals of alternate polarization sense while substantially avoiding cross-polarization;

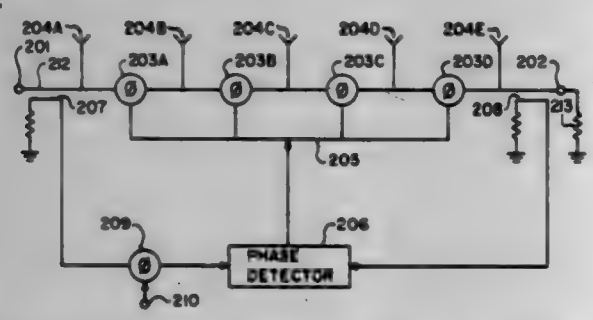
said inductive tuning means comprising an inductive stub of generally U-shape, including a first leg, a second leg spaced from said first leg and generally parallel thereto, and a root portion extending between and interconnecting said first and second legs, at least one of said legs being of trapezoidal shape, having a greater width near the portion thereof adjacent said root portion and a lesser width at a tip portion thereof.

4,343,006

HIGH ACCURACY FEEDBACK CONTROL SYSTEM FOR A PHASED ARRAY ANTENNA

Peter J. McVeigh, Hauppauge, and Ronald M. Rudish, Commack, both of N.Y., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 28, 1980, Ser. No. 182,166
Int. Cl.³ H01Q *3/26*
U.S. Cl. 343—854 **6 Claims**



1. Apparatus for accurately controlling the pointing direction of a phased array antenna, comprising:

(a) means for distributing a first signal to a plurality of antenna elements in series, said means for distributing having an input and an output port,

(b) a plurality of first means for shifting phase of the first signal, each of said means for shifting phase having an input, an output and a control port and each being positioned between antenna elements in series along said means for distributing to accept the first signal at its input port and transmit the first signal from its output port with a phase shift determined by a second signal applied to its control port,

(c) first means for sampling a portion of the first signal connected to the input port of the means for distributing,

(d) second means for sampling a portion of the first signal connected to the output port of the means for distributing,

(e) means for sensing phase having first and second input ports and an output port, the first input port being connected to the first means for sampling while the second output port is connected to the second means for sampling to accept and determine the phase difference between the samples of the first signal and produce at the output port of the means for sensing phase the second signal indicating the phase difference of the sampled signals, said second signal being applied to control the phase shift of the plurality of first means for shifting the phase, and

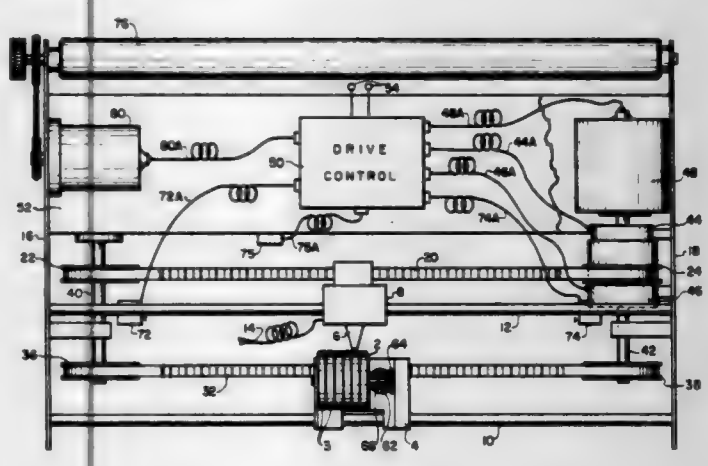
(f) second means for shifting phase designated the reference phase shifting means having an input port and output port and a control port, the second means for shifting the phase connected in series between one of the means for sampling and the means for sensing the phase to shift the phase of one of the sampled signals in accordance with a third signal designated the command signal which indicates the desired total phase shift of the plurality of first means for shifting phase, said command signal being applied to the control port of the reference phase shifting means to set its phase and the total phase of the plurality of means for shifting phase by way of the means for sensing phase.

4,343,007

MULTI-COLOR MULTI-POINT RECORDER

Robert H. Teague, Red Hill, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 26, 1980, Ser. No. 191,248
Int. Cl.³ G01D *9/32*
U.S. Cl. 346—46 **12 Claims**



1. A recording mechanism for a multi-point recorder having a recording medium comprising

a first carriage means linearly movable with respect to a recording line on said recording medium,

a recording head means mounted on said first carriage means,

a second carriage means linearly movable with respect to said recording line on said recording medium and located on the other side of said recording medium from said first carriage means,

a multi-color ink cartridge means mounted on said second carriage means and

drive means having a single drive motor for concurrently moving said first carriage means and said second carriage means across said recording medium and for separately moving said second carriage means with respect to said first carriage means to provide a selective orientation of said print head means and said ink cartridge means to select a recording ink color.

4,343,008

METHOD FOR CREATING MAGNETIC MASTERS

J. Kirk Swigert, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 28, 1980, Ser. No. 172,588
Int. Cl.³ G11B *5/00*
U.S. Cl. 346—74.2 **6 Claims**

1. A method of magnetic imaging which comprises,

(1) providing a magnetic master which is prepared by premagnitizing a magnetizable recording member at a spatial magnetization wavelength of between about 20 microns and about 120 microns,

(2) causing characters to be formed on the backing layer of the recording member with suitable marking means,

(3) exposing the backing layer of the recording member to a flash energy source having an energy of at least about 2.6×10^6 ergs/cm^2, wherein background areas on the

backing layer are de-magnetized thereby resulting in the formation of a latent magnetic image on the recording member,

(4) contacting the latent magnetic image with a magnetic toner causing development thereof,

(5) followed by transferring the developed image to a receiving surface, and subsequently repeatedly developing the magnetic latent image contained on the recording member, resulting in the production of numerous developed images, wherein the recording member is comprised of a transparent substrate containing a magnetizable material therein, which becomes paramagnetic upon exposure to said flash energy source.

4,343,009

FACSIMILE RECORDER

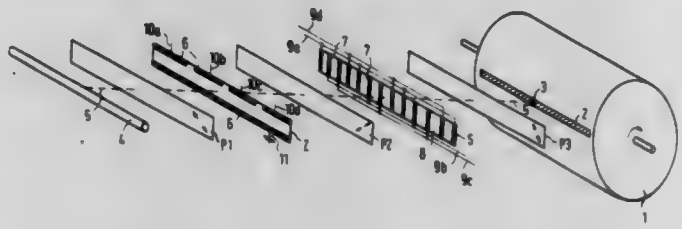
Felix Lutz, Stuttgart; Gerhard Seibold, Remseck; Gerhard Wessel, Stuttgart, and Joachim Lauckner, Korntal, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 7, 1981, Ser. No. 261,295

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018452

Int. Cl.³ G01D *15/14*

U.S. Cl. 346—108 **11 Claims**



1. A recorder for recording image information line by line on a record medium comprising means for generating light flux, a controllable optical component responsive to said light flux and having means associated therewith for forming a plurality of spot elements from which spots of light are directed onto said record medium along the length of a recording line, the plurality of spot elements formed by said controllable optical component being combined in n groups of m>1 spot elements each, the m spot elements of a group forming a partial line, and means for energizing the individual partial lines successively in time, the m spot elements being energized simultaneously, the unenergized respective n-1 partial lines blocking the light flux incident thereon.

4,343,010

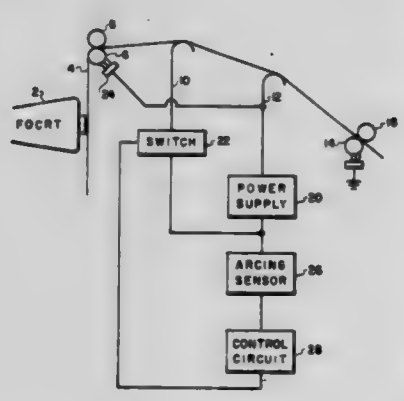
RECORDER CONTROL CIRCUIT FOR SUPPRESSING INCIPIENT ARCING AT THE HEATING ELECTRODES

Richard W. Denny, Littleton, and Paul A. Diddens, Denver, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 12, 1981, Ser. No. 242,968

Int. Cl.³ G01D *3/08*

U.S. Cl. 346—110 R **8 Claims**



1. In a recording system wherein latent images on a recording medium are developed by the application of heat to said recording medium and wherein said heat is generated by the passage of electrical energy through a conductive backing on said record medium and between two or more electrode means contacting said conductive backing, the improvement comprising a control circuit for controlling the passage of said electrical energy through said conductive backing on the occurrence of an impending loss of contact between said backing and one or more of said electrodes means, said control circuit comprising:

power supply means connected for energizing said electrode means;

switch means connected between said power supply means and said electrode means;

sensing means connected to said power supply means to sense incipient electrical arcing between one or more of said electrode means and said backing, and to provide a first signal indicative of said incipient arcing;

control means connected to said sensing means to be responsive to said first signal to produce a control signal; and

means connecting said control means to said switch means to open said switch means in response to said control signal.

4,343,011

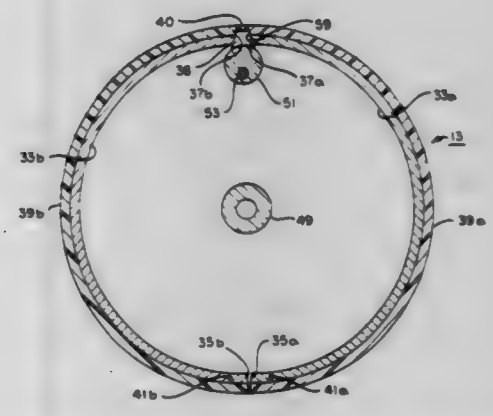
FACSIMILE APPARATUS

Thomas M. Murray, 7117 Wood Hollow, Austin, Tex. 78731, and Lloyd G. Richardson, Austin, Tex., assignors to Thomas M. Murray, Austin, Tex.

Filed Mar. 17, 1980, Ser. No. 131,163

Int. Cl.³ G01D *15/28;* B41F *13/10, 21/00;* B60B *9/00*

U.S. Cl. 346—138 **3 Claims**



1. In a facsimile system, the improvement comprising:

a generally cylindrical rotatably driven drum having expansion means for increasing the diameter of the drum from a reduced diameter position for receiving a closed loop of copy medium, to an enlarged diameter position for securing the copy medium to the drum for rotation therewith, to record transmitted signals on the copy medium;

the drum being cantilevered from one end to allow the closed loop of copy medium to be inserted over the drum from the other end;

the expansion means comprising two semi-cylindrical drum segments, each having first and second edges parallel with its axis, the two segments being juxtaposed to define a cylindrical configuration;

retention means for retaining the first edges together and fur urging the second edges toward each other; and

wedging means for selectively forcing the second edges apart from each other to expand the diameter of the cylindrical configuration;

the retention means comprising a pair of plates, one mounted on each end of the juxtaposed segments, each segment being pinned to each of the plates at a single point adjacent its first edge to urge the segments together; and

the wedging means comprising an eccentric rod rotatably mounted between the plates adjacent the second edges, and a wedge mounted between the second edges, and in

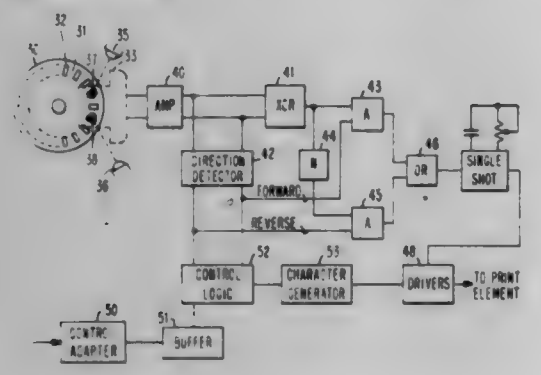
contact with the rod so that rotation of the rod forces the wedge radially outward to force the second edges apart.

4,343,012

PRINTER CONTROL CIRCUIT

Robert F. Knapp, Friendsville, Pa., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,223
Int. Cl.³ G01D *15/24*
U.S. Cl. 346—139 R **6 Claims**



1. In a printer having a recording medium supported on a platen and a carrier with energizable print elements thereon movable along said platen for recording data serially on a print line, the combination comprising:

drive means for moving said carrier along said platen to advance said print elements from one print position to another;

timing means connected to said drive means movable in synchronism with said carrier comprising a disk of alternate transparent and opaque sectors in a band of constant radius about said disk;

sensing means including light source means and a pair of tansducers fixedy disposed on opposite sides of said disk with said transducers each generating as an output waveform a succession of pulses representing the quantity of light passing through said sectors as said disk moves, said transducers being spaced from each other along said band to provide their respective output pulses in phase quadrature; and

circuit means for combining the two successions of said pulses to produce an output timing signal for enabling said print elements at the leading and trailing edges of each of the pulses in only one of said successions of pulses as said disk moves in one direction.

4,343,013

NOZZLE PLATE FOR INK JET PRINT HEAD

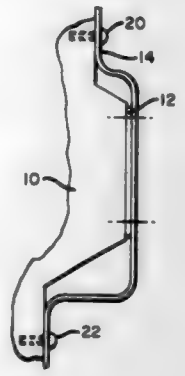
Leonhard Bader, Stadtbergen; Frank Giessner, Augsburg; Friedrich B. Rombach, Augsburg, and Hermann Winter, Augsburg, all of Fed. Rep. of Germany, assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 14, 1980, Ser. No. 196,408
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **2 Claims**

1. A nozzle plate for an ink jet print head comprising a

thin, elongated glass substrate of ink wettable material, one side of said substrate having a surface suitable for ink adherence thereto, a

plurality of substantially cylindrically-shaped nozzles formed in columnar manner to provide ink adhering surfaces through said substrate and equally spaced one from another, and a layer of ink resistant chromic material on the surface of the other side of said substrate and adjacent the orifice of each



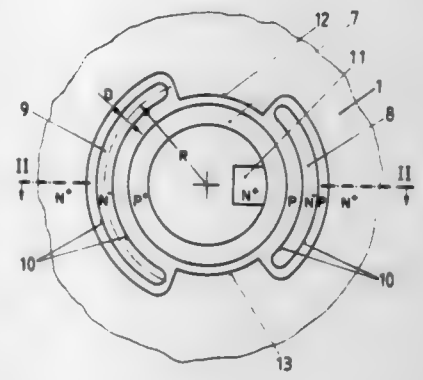
nozzle to prevent deposits of ink from adhering thereabout.

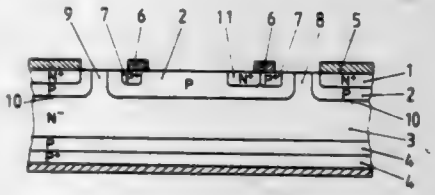
4,343,014

LIGHT-IGNITABLE THYRISTOR WITH ANODE-BASE DUCT PORTION EXTENDING ON CATHODE SURFACE BETWEEN THYRISTOR PORTIONS

Andre Jaecklin, Ennetbaden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Continuation of Ser. No. 91,829, Nov. 6, 1979, abandoned. This application Mar. 12, 1981, Ser. No. 243,146
Claims priority, application Switzerland, Nov. 15, 1978, 11725/78
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **7 Claims**





1. A light-ignitable thyristor formed of a main thyristor and an auxiliary thyristor integrated with said main thyristor on a common semiconductor wafer for ignition boosting of said main thyristor, said integrated main and auxiliary thyristors each consisting of four zones of opposite conductivity type including a cathode zone facing a cathode side surface, a cathode base zone, a common anode base zone and a common anode zone facing an anode side surface, respectively, wherein the anode base zone reaches up to the cathode side surface in a narrow duct forming a duct PN junction with said cathode base zone on the side of the main thyristor cathode zone exposed to the cathode side surface, and the cathode zone of said auxiliary thyristor is surrounded by a gate zone of the main thyristor and in contact therewith, comprising:

said gate zone being of the same conductivity type as said cathode base zone but more heavily doped than the latter;

means for concentrating current from said gate zone to said cathode zone to raise the ignition sensitivity of said main

thyristor, comprising said narrow duct of said anode base zone having a cathode side surface area formed between the gate zone and the cathode zone of the main thyristor; and

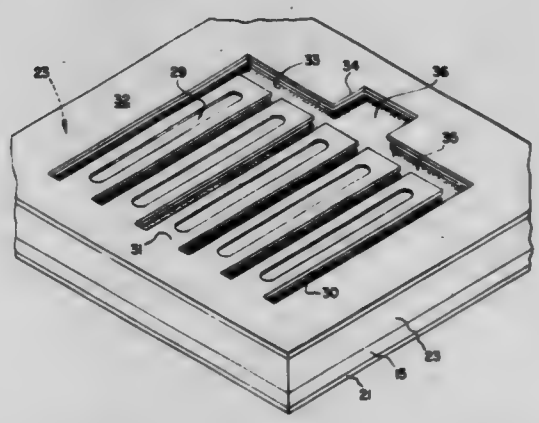
said cathode side surface area of said anode base zone duct having a width D selected such that a narrow space charge zone is at least partially maintained around the duct PN junction throughout the ignition of said main thyristor.

4,343,015

VERTICAL CHANNEL FIELD EFFECT TRANSISTOR

Bantval J. Baliga, and James R. Shealy, both of Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 14, 1980, Ser. No. 149,936
Int. Cl.³ G01L *29/06*
U.S. Cl. 357—55 **12 Claims**



1. An improved vertical channel field effect transistor comprising:

first and second semiconductor layers of the same conductivity type gallium arsenide;

a high resistivity, semi-insulating isolation region extending at least partly through said first semiconductor layer;

the surface of said first layer having a row of parallel trapezoidal grooves connected together at one end by a transversely extending groove which surround on three sides a plurality of upstanding elongated semiconductor fingers that individually have an isosceles trapezoid cross section with a wide base at the top and an interior narrow base, the other end of every trapezoidal finger intersecting said high resistivity region, and a channel region at and adjacent to each narrow base which extends from wall to wall of the trapezoidal finger;

a gate region within said grooves surrounding each upstanding trapezoidal finger on three sides, and a gate contact pad making interconnection to all of said gate regions;

first metallizations on the surfaces of said trapezoidal fingers which are all interconnected with another contact pad on said high resistivity region, and a second metallization on the opposing surface of said second semiconductor layer, one of said first and second metallizations being the source contact and the other the drain contact.

4,343,016

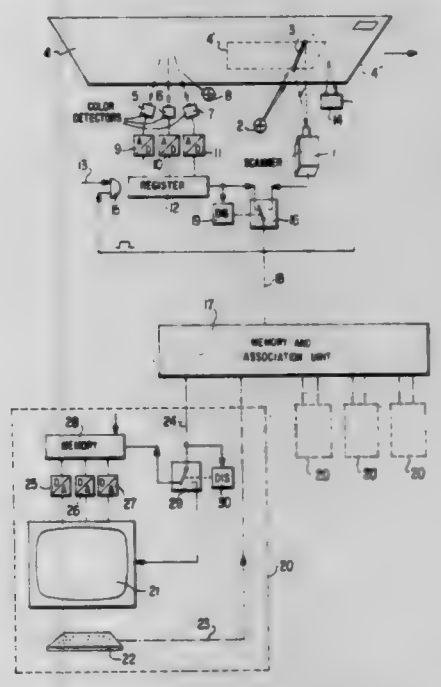
VIDEO CODING SYSTEM FOR MAIL SHIPMENTS

Gerhard Goldkuhle, Constance, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 31, 1980, Ser. No. 202,729
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944144
Int. Cl.³ H04N *7/18, 9/02*
U.S. Cl. 358—1 **5 Claims**

1. In a video coding system for mail including a scanning means for generating a video signal without color information by point-by-point scanning of the address field of an item of mail passing by on a conveying path, and a plurality of video coding stations each including a monitor responsive to a received said video signal for visually displaying a selected address field so that an operator, on the basis of visual perception, can punch the distribution information associated with the displayed address into a keyboard; the improvement wherein:

each of said monitors is a video receiver with a screen on which color reproduction can be varied by means of a received color control signal; first means are provided for generating a color control signal for each change of picture with said color control signal being associated with the new address field for the duration of the display of same, said first means for generating a color control signal includes a color detection means of low optical resolution disposed in the region of said scanning means for providing an output signal which constitutes said color control signal and which contains the color information corresponding to the color of the passing item of mail; and second means are provided for supplying said color control signal to the color control input of said monitor, said second means includes transmission and switching circuit means for feeding said color control signal to said monitors in the correct time association with the respective address fields to be displayed.

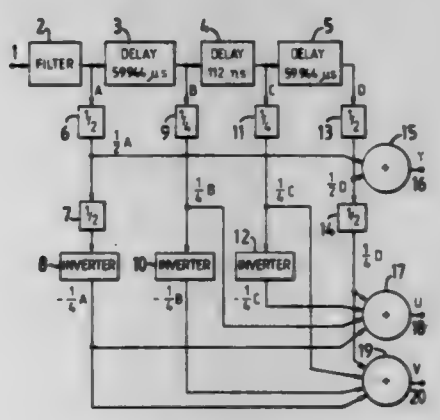


4,343,017

DECODING COMPOSITE PAL TELEVISION SIGNALS

James H. Wilkinson, Tadley near Basingstoke, England, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,862
Claims priority, application United Kingdom, Jan. 30, 1980, 8003084
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—24 **10 Claims**



1. A method of decoding a composite PAL television signal comprising the steps of:

deriving from an input PAL television signal first, second and third delayed signals delayed respectively by one horizontal line scan period minus one quarter of a period of the color sub-carrier signal, one horizontal line scan period plus one quarter of a period of the color sub-carrier and two horizontal line scan periods respectively;

deriving an output luminance component Y as one half of said input signal plus one half of said third delayed signal;

deriving an output chrominance component U as one quarter of said first delayed signal plus one quarter of said third delayed signal minus one quarter of said input signal minus one quarter of said second delayed signal; and

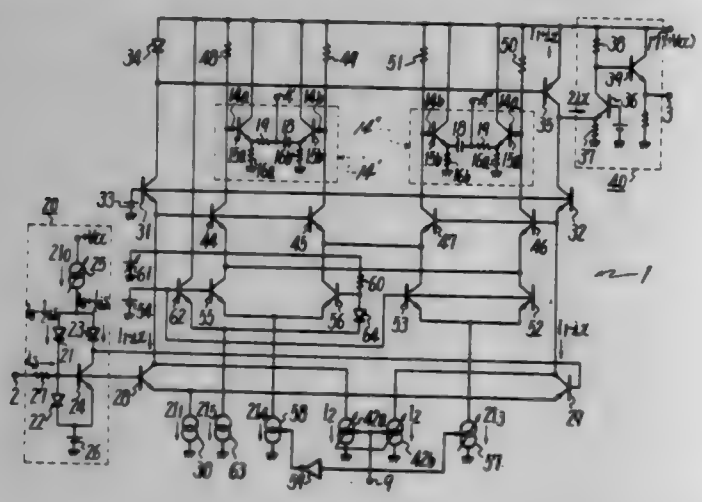
deriving an output chrominance component V as one quarter of said second delayed signal plus one quarter of said third delayed signal minus one quarter of said input signal minus one quarter of said first delayed signal.

4,343,018

CHROMINANCE SIGNAL PROCESSING CIRCUIT

Tsutomu Niimura, Hiratsuka; Kyoichi Murakami, Chigasaki, and Akira Yamakoshi, Miyori, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 19, 1980, Ser. No. 208,193
Claims priority, application Japan, Nov. 26, 1979, 54/153193
Int. Cl.³ H04N 9/535
U.S. Cl. 358—28 **8 Claims**



1. A chrominance signal processing circuit for generating a gain-controlled chrominance carrier signal and a phase-controlled burst signal, comprising:

first differential amplifier means supplied with a chrominance carrier signal and a burst signal in respective intervals and having a first constant current source;

second differential amplifier means supplied with an output signal of said first differential amplifier means;

phase control circuit means connected to outputs of said second differential amplifier means for providing therefrom said gain-controlled chrominance carrier signal and said phase-controlled burst signal;

a second constant current source for supplying a bias current to said second differential amplifier means during each said interval of the chrominance carrier signal;

a third constant current source for supplying a bias current to said second differential amplifier means during each said interval of the burst signal;

gain controlling means for controlling the ratio of the currents of said first and second constant current sources, whereby to control the gain of said chrominance carrier signal from said phase control circuit means; and

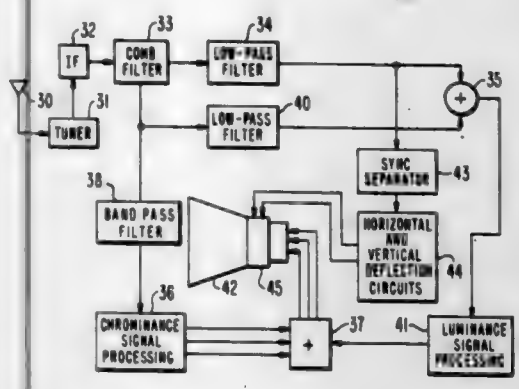
phase controlling means for controlling an output signal of said second differential amplifier means at least during each said interval of the burst signal, whereby to control the phase of the burst signal from said phase control circuit means.

4,343,019

APPARATUS FOR REDUCING THE EFFECT OF CO-CHANNEL INTERFERENCE ON SYNCHRONIZING PULSES

William A. Lagoni, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 16, 1981, Ser. No. 225,772
Int. Cl.³ H04N 9/535, 5/08
U.S. Cl. 358—31 **2 Claims**



1. A color television receiver for reducing synchronization disruption caused by co-channel interference of the type where co-channel signals having offset carrier frequencies combine to form interfering beat frequency pulses, said pulses causing disruption of said receiver synchronization, said receiver comprising:

a source of video signals, said signals including said interfering beat frequency pulses;

a comb filter coupled to said source of video signals and having a first output for producing a luminance information signal having a frequency response exhibiting signal components at regularly spaced spectral locations and having a second output for producing a chrominance information signal having a frequency response exhibiting signal components at regularly spaced spectral locations different from said luminance signal components, said luminance information signal exhibiting a reduction in the amplitude of said interfering beat frequency pulses; and

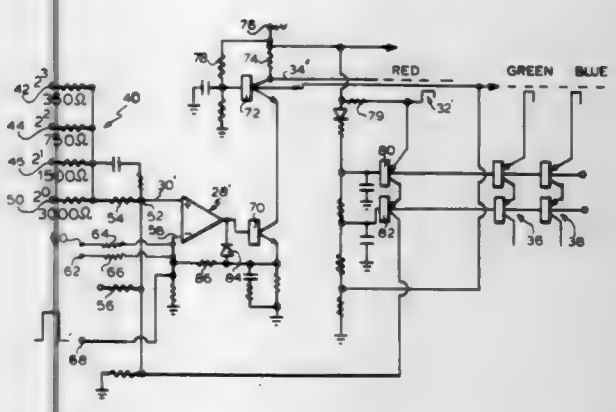
a synchronizing separator coupled to said first output of said comb filter for deriving a synchronizing signal from said luminance information signal, said synchronizing signal being substantially free of interference from said interfering beat frequency pulses.

4,343,020

OMNISPECTRAVISION

John J. Stapleton, East Brunswick, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 6, 1980, Ser. No. 157,136
Int. Cl.³ H04N 9/02
U.S. Cl. 358—81 **28 Claims**

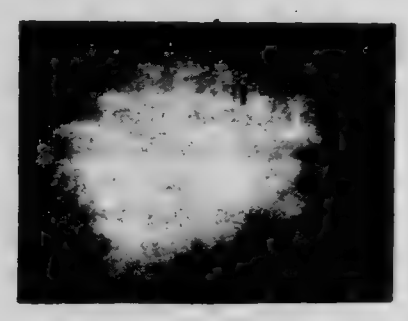


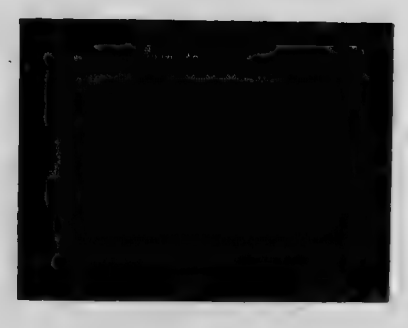
1. A method of producing a color image on a visual color display based upon multispectral or multi-sensor data pertaining to the image, including the steps of:

(a) transforming said data into data signals utilizable by the display in image production on a respective picture element by picture element basis;
(b) coding the data signals to correspond to particular tristimulus values for the respective picture elements which are weighted to facilitate color discrimination in the display; and
(c) utilizing these coded signals simultaneously in the display to produce respective color picture elements to produce the image.

4,343,021
IMAGE SENSOR SENSITIVITY VARIATION COMPENSATOR

Wayne W. Frame, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.
Continuation of Ser. No. 68,468, Aug. 21, 1979, abandoned. This application Jun. 11, 1981, Ser. No. 273,102
Int. Cl.³ H04N 5/30, 5/21
U.S. Cl. 358—213 43 Claims

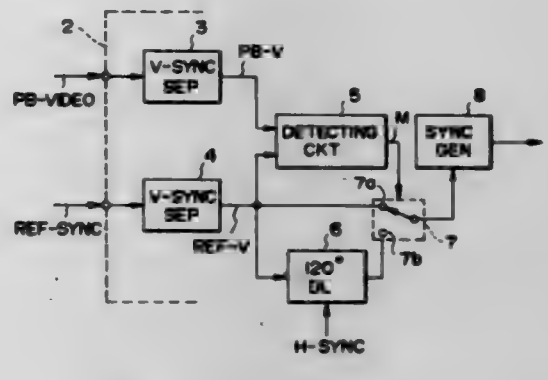




1. A method of compensating for sensitivity variations in an image sensing device, said image sensing device including a plurality of detection elements, said method comprising the steps of:
determining the sensitivity variation in each of said detection elements;
storing a correction value for each detection element related to said variation in a memory;
retrieving each correction value from said memory;
converting each said correction value to analog form; and
altering an analog signal related to the image sensed in each of said detection elements by the corresponding correction value, thus producing corrected video data, said altering step further including the step of scaling the analog form of said correction value so that the maximum correction value capable of being stored in said memory corresponds to the maximum deviation in sensitivity of said image sensing device.

4,343,022
APPARATUS FOR PRODUCING A PHASE-SYNCHRONIZED REFERENCE SIGNAL IN A VIDEO SIGNAL REPRODUCING SYSTEM

Shosuke Tanaka, and Mitsuhige Tatami, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 8, 1980, Ser. No. 166,894
Claims priority, application Japan, Jul. 18, 1979, 54-91074
Int. Cl.³ H04N 5/795
U.S. Cl. 360—36 13 Claims



1. For use in a video signal reproducing system of the type including a video signal reproducing device having first and second rotary reproducing transducers for reproducing video signals, including vertical synchronizing signals, from record tracks on a record medium, said transducers exhibiting a predetermined angular separation therebetween, said device also having means for producing a reference synchronizing signal in phase synchronism with the vertical synchronizing signal reproduced by said first transducer, and a utilization means coupled to said video signal reproducing device, apparatus for producing a substantially phase synchronized reference synchronizing signal, regardless of the particular transducer which is used to reproduce said video signals, for use by said utilization means, comprising switch means having first and second inputs and an output coupled to said utilization means; means for supplying said reference synchronizing signal to said first input; delay means for delaying said reference synchronizing signal by an amount corresponding to said predetermined angular separation between said transducers to apply a delayed reference synchronizing signal to said second input; and switch control means including detecting means for detecting the phase relationship between a vertical synchronizing signal then reproduced by a transducer and said reference synchronizing signal for producing a switch control signal as a function of the detected phase relationship and means for supplying said switch control signal to said switch means to select the particular switch input to which the output thereof is coupled and thereby select the delayed or undelayed reference synchronizing signal for application to said utilization means.

4,343,023
MAGNETIC RECORDING AND REPRODUCTION OF DIGITAL INFORMATION

Kazutoshi Nishimura, Tokorozawa, and Tadashi Hirono, Sayama, both of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan
Filed Oct. 22, 1980, Ser. No. 199,623
Claims priority, application Japan, Oct. 27, 1979, 54-139036
Int. Cl.³ G11B 5/09
U.S. Cl. 360—40 13 Claims

1. A method of magnetically recording and reproducing a digital informations comprising the steps of:
preparing a conversion table in which data words each comprising a plurality of (m) bits correspond to respective record words each having n bits (n>m) and in which an integrated value of NRZI recording current becomes zero, or two record words each including n bits and in which the integrated value of NRZI recording current is

not zero and polarities of said two record words are opposite;

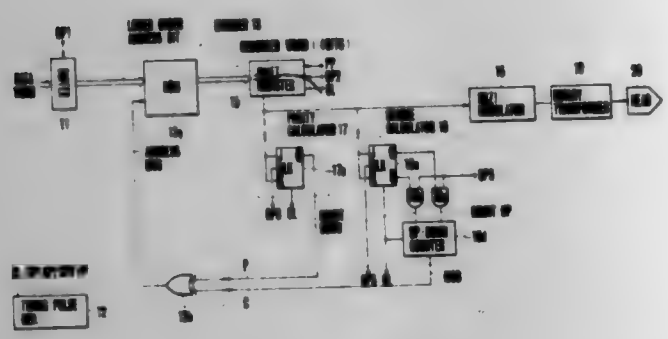
partitioning an original information bit sequence into data words at every m bits;

converting the data words into record words when the former correspond to record words in said conversion table;

when one of said data words corresponds to two record words in said conversion table, converting one of said record words into a record word such that, in accordance with the integrated value of the NIRZI recording current up to a conversion point, an absolute value of said integrated value would decrease;

recording a record word sequence obtained by said conversion on a magnetic medium as a magnetic polarity inversion sequence

$$a_0, a_1, a_2, \ldots a_i$$



where ai represents by 1 or −1 a magnetic inversion in which two N poles oppose each other or two S poles oppose each other, and by 0 a magnetic polarity noninversion and i represents a position in said magnetic polarity inversion sequence;

reading said magnetic polarity inversion sequence out of said magnetic medium converting read out informations into a 3 valued detected digit sequence of class 1 partial response type expressed by

$$b_0, b_1, b_2, \ldots b_j \ldots$$

where $b_j = a_{j-1} + a_j$

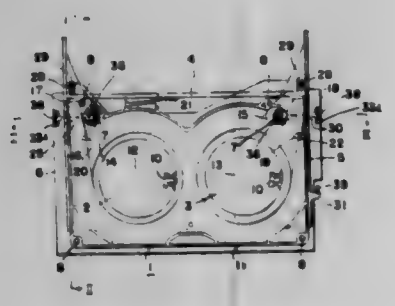
converting said detected digit sequence into m bit data words at every n digits; and reproducing the m bit data words.

4,343,024

DEVICE FOR DETECTING TAPE END OF MAGNETIC RECORDING APPARATUS

Tsutomu Kawai, 28, Ogawa-cho, Yokosuka-shi, Kanagawa-ken, Japan

Filed May 8, 1980, Ser. No. 147,832
Int. Cl.³ G11B *15/00*
U.S. Cl. 360—74.6 **4 Claims**



1. In a device for detecting a transparent portion of a normally opaque magnetic tape carried on a pair of reels arranged side by side within a cassette having openings in the bottom for positioning the cassette and an opening along one side to allow removal of an intermediate length of tape during operation and end openings in horizontal alignment with the plane of the tape, said cassette being initially supported on a tiltable receiving plate which is lowered downwardly to be supported on a fixed base plate when the cassette is in use, both of said plates being provided with openings to accomodate cassette reel driving shafts and cassette positioning poles, the combination comprising:

a unitary assembly comprising a generally U-shaped member having embedded in the upper portions of the respective upstanding legs thereof a light source, and light sensor to be responsive to the direct radiation from said light source;

the intermediate portion of said member being an elongated flat section to lie against the under side of said base plate;

one of said upstanding legs having an upwardly and inwardly tapering circular cross-section defining a positioning pole for a cassette to project upwardly through aligned openings in said plates;

the other of said upstanding legs to be disposed closely adjacent the exterior of one end of a cassette at the location of an end opening;

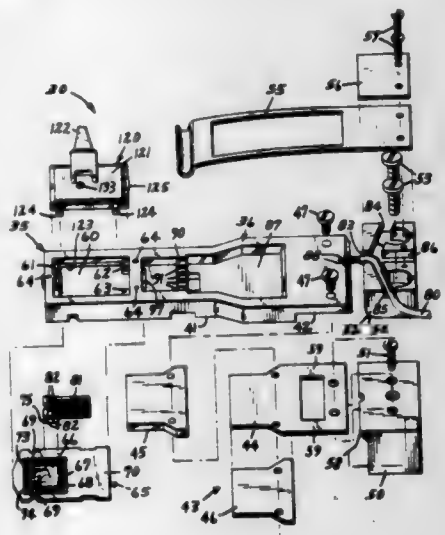
said light source being positioned when said flat section lies against the under side of the base plate to project radiation in a path to pass through the end opening of the cassette to be directly received by the light sensor after being intercepted by the tape.

4,343,025

TRANSDUCER ARM ASSEMBLY FOR FLOPPY DISK

Leonard E. Kronfeld, Minneapolis; Thomas J. Winkler, Isanti, and Ricky J. Madsen, Crystal, all of Minn., assignors to Nortronics Company, Inc., Minneapolis, Minn.

Filed Oct. 5, 1979, Ser. No. 82,236
Int. Cl.³ G11B *5/54, 5/48, 21/16, 5/22*
U.S. Cl. 360—104 **5 Claims**



1. A transducer arm assembly for use in data transfer with both sides of a double sided floppy disk, comprising, in combination:

an elongated body portion having first and second opposite faces and having an aperture therethrough near a first end thereof between said faces;

hinge means at the second end of said body portion for connecting said portion to a support member;

a substantially planar flexure member having an apertured central portion and including means for enabling pivotal movement of said central portion about mutually perpendicular axes normally lying in the plane of said member;

a transducer mounted on said flexure member to project in part through apertures therein;

means securing said flexure member to one face of said arm to extend across said aperture therein; and

a cover and means for removably positioning it in said aperture of said body portion at the second face thereof, said

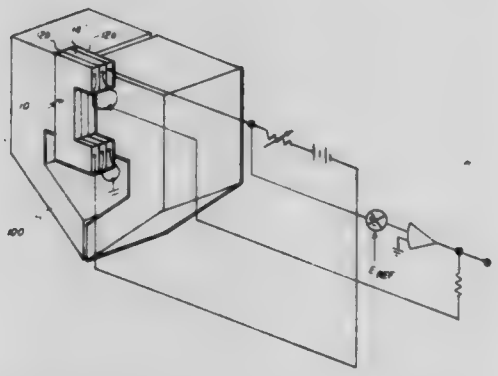
cover including a pivot member positioned to project into said aperture to engage said flexure member at the point of intersection of said axes.

4,343,026

MAGNETORESISTIVE HEAD EMPLOYING FIELD FEEDBACK

Neil J. Griffith, San Diego; Fredrick J. Jeffers, Escondido, and Ward M. Calaway, Sierra Madre, all of Calif., assignors to Spin Physics, Inc., San Diego, Calif.

Filed Jul. 9, 1980, Ser. No. 167,162
Int. Cl.[3] G11B *5/12, 5/30*
U.S. Cl. 360—113 7 Claims



1. Magnetoresistive apparatus for producing an electrical signal that is the analog of a magnetically recorded signal comprising

(a) magnetoresistive lamina means cooperative with said magnetically recorded signal,

(b) electrically conductive lamina means proximate said magnetoresistive lamina means and so disposed with respect thereto that a field about said electrically conductive lamina means bucks the field associated with said magnetically recorded signal,

(c) means cooperative with said magnetoresistive lamina means for producing and applying a current to said electrically conductive lamina means which is in proportion to the field applied to said magnetoresistive lamina means by said magnetically recorded signal, thereby to cause said magnetoresistive lamina means to see virtually no resultant field, and

(d) means adapted to receive the current applied to said electrically conductive lamina means for developing a signal voltage corresponding to said current, said signal voltage being the analog of said magnetically recorded signal,

whereby since virtually no resultant field is applied to said magnetoresistive lamina means (1) the dynamic range of said apparatus is optimal and (2) noise and signal distortion of said signal voltage are minimal,

said magnetoresistive lamina means being a thin magnetic film, and said apparatus including (1) means for passing sense current through and in the plane of said film, and (2) means for biasing the easy axis of the film to an angle that is acute with respect to the direction of current flow through the film.

4,343,027

COMMON SUSPENSION MULTI-LINE GROUNDING PROTECTIVE RELAY

Takaaki Kai, Zushi, Japan, assignor to Kabushiki Kaisha Meidensha, Japan

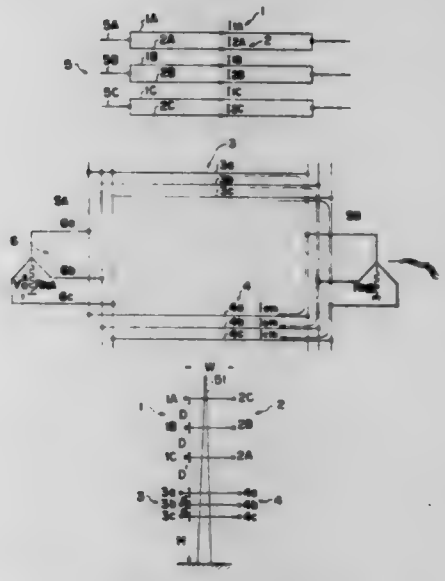
Filed May 23, 1980, Ser. No. 152,760
Claims priority, application Japan, May 29, 1979, 54/67184
Int. Cl.[3] H02H *3/16*
U.S. Cl. 361—42 19 Claims

1. A common suspension grounding protective relay, comprising:

current detector means for detecting the currents in at least three phases of a high voltage parallel transmission lines and for outputting the inter-line differential currents between each two phases of said at least three phases;

filter means inputting said inter-line differential current between each two phases of a power transmission circuit from said current detector means and for eliminating from the inter-line differential current of said each pair of phases the positive phase component;

first calculating means for calculating the zero phase component from the inter-line differential currents detected by said current detector means and for calculating the ratio of the magnitudes and the phase difference between said zero phase component and the output of said filter means;



second calculating means for calculating the zero phase circulation current in a grounding fault by calculating the vector product of the output of said filter means and the ratio of the magnitudes and phase difference derived by said first calculating means;

grounded phase detector means for carrying out detection of the phase which is grounded;

first selection means for selecting a derivation result from said second calculating means according to the phase which is grounded; and

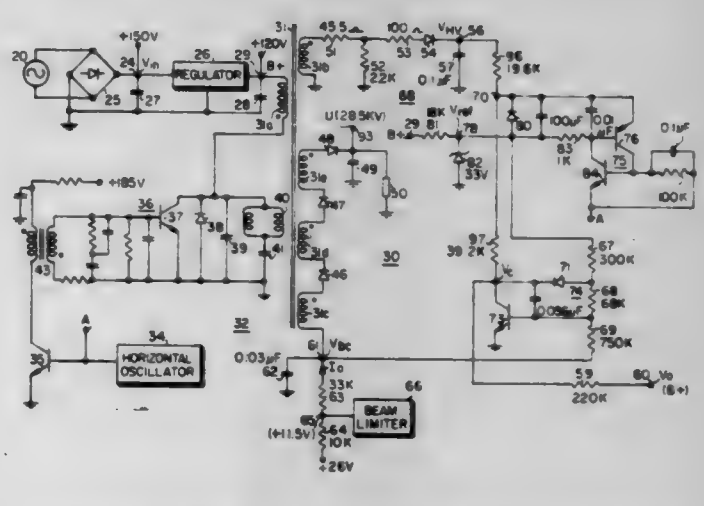
zero phase current selection means for selecting the zero phase circulation current from said second calculating means by said first selection means.

4,343,028

TELEVISION RECEIVER HIGH VOLTAGE GENERATOR PROTECTION CIRCUIT

James E. Hicks, New Palestine, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1981, Ser. No. 226,580
Int. Cl.[3] H02H *3/20*
U.S. Cl. 361—91 14 Claims



1. A protection circuit for a television display requiring an

ultor voltage and drawing ultor beam current from an ultor terminal, comprising:

a high voltage generator responsive to an alternating voltage for developing said ultor voltage at said ultor terminal;

means responsive to said ultor voltage for developing a sense voltage representative thereof;

means responsive to said ultor beam current for developing a sense voltage representative thereof;

a comparator;

means coupled to said comparator for developing a disabling signal when energized by said comparator;

means coupled to said disabling signal developing means for applying said disabling signal to said television display such that an abnormal display is produced when said disabling signal developing means is energized;

means for coupling said ultor voltage and ultor beam current sense voltages to said comparator to activate said comparator so as to develop said disabling signal when said ultor voltage exceeds a predetermined level, said predetermined level varying with variations in said ultor beam current sense voltage;

a source of bias voltage, said bias voltage when applied to an input terminal of said comparator activating said comparator so as to develop said disabling signal in substantial independence of the value of said ultor voltage sense voltage; and

means responsive to said ultor beam current sense voltage for applying said bias voltage to an input terminal of said comparator only when said ultor beam current exceeds a predetermined level indicative of abnormal high voltage generator operation.

4,343,029

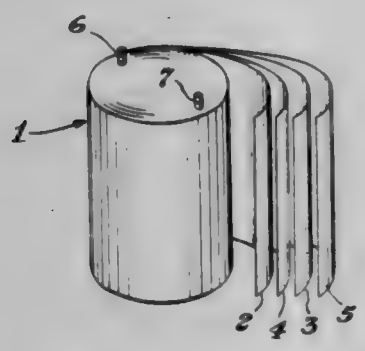
ELECTRICAL DEVICE CONTAINING AN ARYL SULFIDE DIELECTRIC LIQUID

James M. Renga, and Albert H. Emmons, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

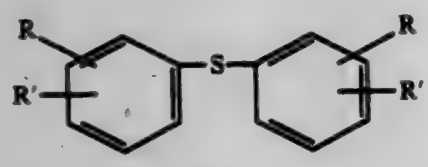
Continuation-in-part of Ser. No. 78,318, Sep. 24, 1979, abandoned. This application Sep. 16, 1980, Ser. No. 187,689

Int. Cl.³ H01B *3/22*; H01G *4/04*

U.S. Cl. 361—315 **16 Claims**



1. In an electrical device containing a dielectric liquid as the impregnating agent, the improvement wherein the dielectric liquid consists essentially of at least one compound of the formula



wherein each R is independently an alkyl group of one to about 20 carbon atoms and each R' is independently hydrogen or an alkyl group as defined for R.

5. A capacitor according to claim 1, said capacitor comprising a plurality of alternately spaced apart electrode foil sheets and separator sheets, said sheets having said dielectric liquid between them.

4,343,030

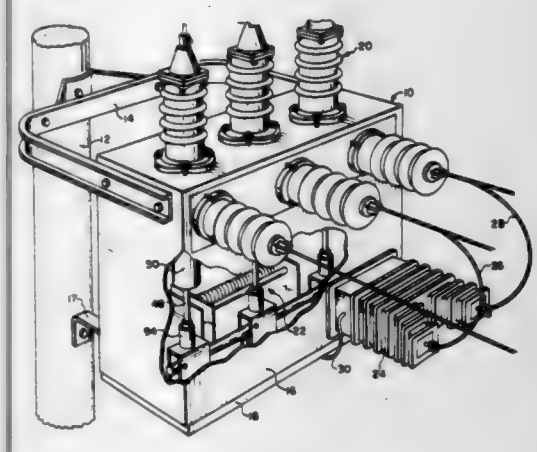
LOAD BREAK SWITCH

K. Henry Date, and Ronald Wainio, both of South Milwaukee, Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Division of Ser. No. 940,104, Sep. 6, 1978, Pat. No. 4,293,834. This application Feb. 4, 1981, Ser. No. 231,279

Int. Cl.³ H02B *1/04*

U.S. Cl. 361—335 **5 Claims**



1. A high voltage load break switch assembly which comprises:

a switch housing;

at least one vacuum interrupter and bushing assembly which includes

first and second high voltage insulating bushings, each having opposite end surfaces which define a bushing axis and also define a passage of circular cross-section extending concentrically therethrough along the insulating bushing axis, each insulating bushing being affixed at one end to the switch housing so that the axis of the first insulating bushing is orthagonal to, and coplanar with, the axis of the second insulating bushing, each insulating bushing carrying an electrically conductive end terminal at an opposite end closing one end of the passage through the insulating bushing,

a current exchange assembly which includes an annular shaped electrically conductive housing concentrically disposed about the axis of the first insulating bushing, carrying spring loaded contact members therein for making sliding contact with an electrically conductive rod extending through the annular housing along the axis of the first bushing, the current exchange assembly also includes an electrically conductive bushing rod, concentrically disposed within the passage of the second insulating bushing along the axis of the second bushing, having one end connected to the end terminal of the second insulating bushing and an opposite end affixed to the outer periphery of the current exchange conductive housing,

a current exchange insulating housing, having three portions integrally joined and formed about the outer periphery of the current exchange current exchange conductive housing, the first portion of the insulating housing being concentrically formed about the bushing rod and extending from the current exchange conductive housing into the passage of the second insulating bushing, the second portion of the current exchange insulating housing being shaped generally as a hollow cylindrical portion open at both ends and extending from the current exchange conductive housing concentrically about the axis of the first insulating bushing into the passage of the first insulating bushing, and the third portion of the current exchange insulating housing being shaped generally as hollow cylindrical portion

open at both ends and extending from the current exchange conductive housing concentrically about the axis of the first bushing in an opposite direction from that of the second portion of the current exchange insulating housing,

mounting means for affixing the current exchange insulating housing to the switch housing,

a vacuum interrupter, having a stationary electrically conducting contact rod extending from one end of the vacuum interrupter and a movable electrically conducting contact rod extending from an opposite end of the vacuum interrupter which define an axis of the vacuum interrupter, the two contact rods having adjacent inner ends within the vacuum interrupter and outer ends, the movable contact rod being movable along the axis of the vacuum interrupter between a closed position where the inner end of the movable contact rod engages with the inner end of the stationary contact rod and an open position where the inner ends of the contact rods are disengaged and separated by a suitable distance, the stationary contact rod being affixed to the end terminal of the first insulating bushing so that the vacuum interrupter is coaxially disposed within the passage of the first insulating bushing, and the opposite end of the vacuum interrupter extends telescopically into the hollow cylindrical second portion of the current exchange insulating housing, and the movable contact rod extends through the current exchange conductive housing in sliding contact with the spring loaded contact members therein into the hollow cylindrical third portion of the current exchange insulating housing, and

an insulating rod, which extends along the axis of the vacuum interrupter and the first insulating bushing, which has one end affixed to the outer end of the moving contact rod of the vacuum interrupter within the cylindrical hollow third portion of the current exchange insulating housing; and

switch operating means, mounted within the switch housing and connected to the opposite end of the insulating rod, for moving the insulating rod along its axis between a closed position and an opened position, to thus open and close the vacuum interrupter.

4,343,031

HEADLIGHT ADJUSTING DEVICE FOR VEHICLES

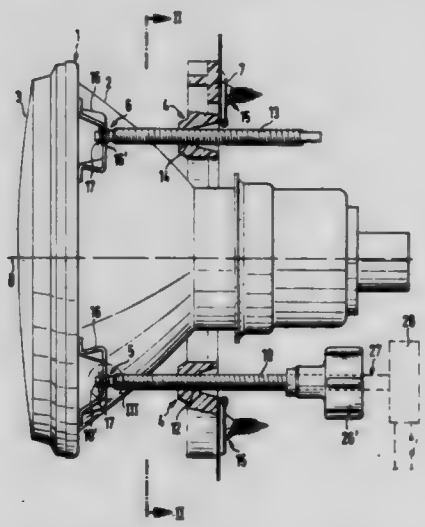
Klaus Liebegott, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,922

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2825976

Int. Cl.³ B60Q *1/00*

U.S. Cl. 362—80 **7 Claims**



1. A headlight adjusting device for a vehicle such as an automobile, comprising adjusting screws respectively arranged between one bearing at the vehicle and/or at a supporting frame mounted to the vehicle and one bearing associated with the headlight, said adjusting screws being secured in position without axial and transverse play in one of said bearings and held axially in fixed position and transversely in a movable position in the other of said bearings in that these other bearings holding said adjusting screws axially in fixed position and transversely in a movable position include elongate, slotted holes which receive said adjusting screws and permit transverse movement thereof during adjustment of said headlight, respective elastic elements in the form of spring clips being arranged between these other bearings and said adjusting screws to eliminate axial play between these other bearings and the adjusting screws while permitting transverse movement of the adjusting screws within the elongate, slotted holes of these other bearings during adjustment of said headlight.

4,343,032

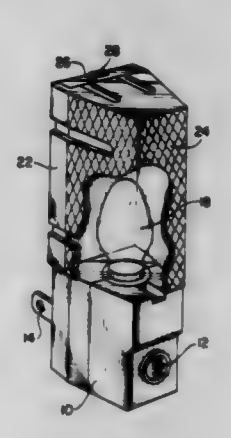
LIGHT SENSITIVE ELECTRICAL DEVICE

Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Jul. 10, 1978, Ser. No. 923,057

Int. Cl.³ F21V *23/04*

U.S. Cl. 362—276 **3 Claims**



1. A portable light-sensitive electrical device capable of being used with and movable between one or more of a number of spaced existing conventional electrical receptacles of the type normally found mounted in walls, or the like, comprising in combination: a housing having front, rear, side, top and bottom wall portions, an electrical circuit carried within said housing, blade means electrically connected to said circuit with portions thereof extending from said housing for removably matingly engaging and being physically mounted to contacts of an electrical receptacle, lamp-receiving socket means electrically cooperative with said circuit and whose substantially sole source of current is from said receptacle, and light-sensitive means carried by said housing and disposed so as to be able to receive ambient light for controlling current flow from one of said receptacle contacts to said socket means, allowing more current flow to said socket means as ambient light received by said light-sensitive means decreases and lesser current flow to said socket means as said received light increases, said device being characterized by the absence of need for a power source other than that to which it is connected and wherein said housing does not cover the receptacle openings and surrounding receptacle portions of the unused receptacle of a duplex receptacle to which the device is connected, said light sensitive means including a photo conductive cell, said device including an electric light bulb with portions thereof mounted in said socket and a shade of predetermined shape and appearance, said shade comprising front and side wall portions, said front wall portion having a generally planar surface extending between generally rectangular edges including longer vertically extending edges and relatively shorter horizontally extending edges, said side wall portions extending in a diverging manner generally symmetrically at a predetermined angle

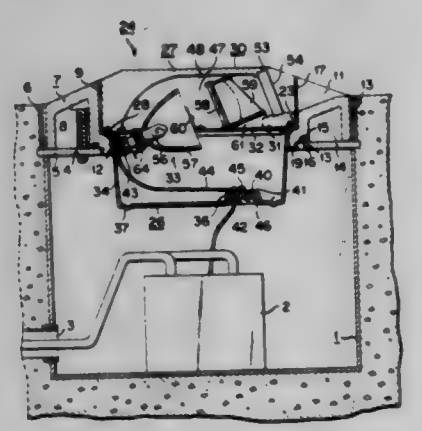
greater than 90 degrees away from said front wall portion toward a rearward plane of said housing, said shade being formed with at said front wall portion with a generally polygonal-shaped pattern extending over substantially the entire front wall portion, said shade further comprising bottom means capable of being swung inwardly to frictionally engage and disengage in a snap-on manner and be mounted to said housing in a position with respect to said housing illustrated in FIG. 1 of the drawing, said shade engagement and disengagement with said housing facilitating repeated replacement of said bulb.

4,343,033

MARKER LIGHT

Kiyoshi Suzuki, Yokohama, Japan, assignor to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Feb. 22, 1980, Ser. No. 123,694
Int. Cl.[3] F21V *7/12, 19/02*
U.S. Cl. 362—307 6 Claims



1. A marker light comprising:

a housing adapted to be embedded in or adjacent a runway, and having a flange on the upper portion formed with a circular series of apertures;

a mounting frame positioned on the flange with the upper surface exposed from the ground, the mounting frame including a circular series of arcuate slots formed along the outer periphery, an annular recess formed on the inner periphery and a plurality of threaded holes formed in the annular recess;

said mounting frame having an upper surface which is inclined so as to protrude from the ground, said upper surface having a projection guide groove cut therein, said mounting frame being narrower toward its outer periphery;

a plurality of fasteners extending through the arcuate slots in said mounting frame and apertures in said flange, and operable to fixedly clamp the mounting frame to the flange so that the position of the mounting frame is adjustable in a horizontal plane;

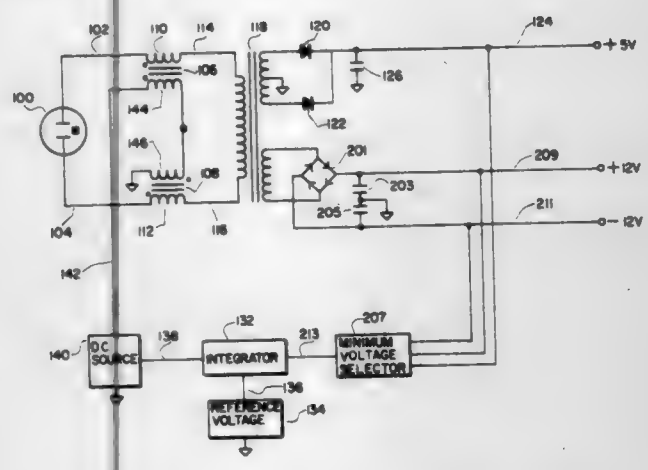
a casing including a peripheral portion positioned on the annular recess so that the casing is supported by the mounting frame, the casing including a window for directing a beam radially, said window being formed in alignment with one end of said guide groove in the upper portion of the casing, a plurality of apertures formed in the peripheral end and corresponding to said threaded holes in the annular recess, and a sealed chamber; and a lamp and light control member which are disposed in the sealed chamber whereby light emitted from the lamp is projected from the window through the light control member.

4,343,034

MAGNETIC AMPLIFIER PREREGULATOR FOR LINEAR POWER SUPPLIES

Richard B. Wells, Boise; Chester G. Haibel, Jr., Meridian, and Richard L. Hilton, Boise, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 18, 1980, Ser. No. 179,417
Int. Cl.[3] H02P *13/24;* G05F *1/22*
U.S. Cl. 363—82 1 Claim



1. A magnetic amplifier preregulator comprising:

transductor means having an inductance variable over a predetermined range of inductances in response to a first electrical signal for providing an a.c. output signal;

d.c. source means coupled to the transductor means for providing the first electrical signal and for varying the current of the first electrical signal in response to a second electrical signal;

integrator means coupled to the d.c. source means for providing the second electrical signal in response to an input signal and to a reference signal; and

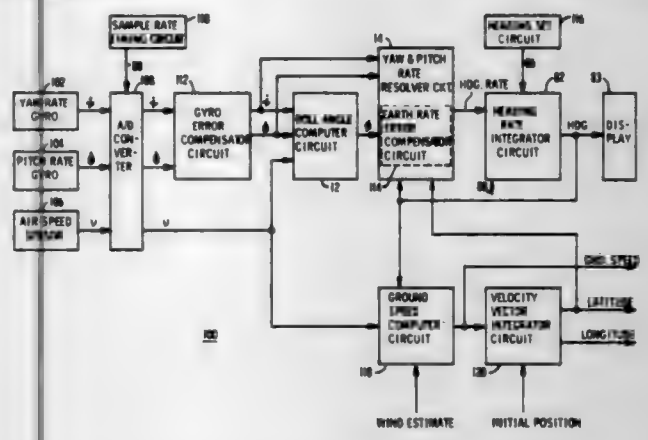
minimum voltage selector means for comparing a plurality of voltages, for selecting the lowest valued of the plurality of voltages, and for providing the input signal to the integrator means.

4,343,035

HEADING REFERENCE SYSTEM

Walter E. Tanner, 29 Barney Hill Rd., Wayland, Mass. 01778

Filed Apr. 14, 1980, Ser. No. 140,295
Int. Cl.[3] G06F *15/50*
U.S. Cl. 364—453 11 Claims



1. An aircraft heading reference system comprisng:

means for sensing the yaw rate $\dot{\psi}$ of the aircraft and producing electrical signals representative thereof;

means for sensing the pitch rate $\dot{\theta}$ of the aircraft and producing electrical signals representative thereof;

means for sensing the air speed v of the aircraft and producing electrical signals representative thereof;

means, responsive to said electrical signals representative of said yaw rate, pitch rate, and air speed, for determining an

electrical signal representative of the roll angle ϕ according to the expression:

$$\dot{\psi}+\dot{\theta}\tan\phi=(\tan\phi/\cos\phi)\,(g/v);$$

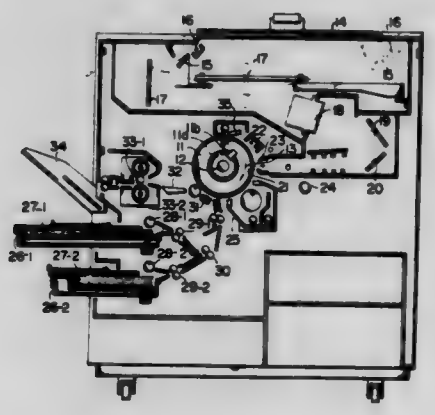
and

means, responsive to said pitch rate $\dot{\theta}$, yaw rate $\dot{\psi}$, and roll angle ϕ electrical signals, for resolving said yaw and pitch rates about said roll angle for providing an electrical signal representative of the heading rate of the aircraft.

4,343,036
IMAGE FORMING APPARATUS

Katsuichi Shimizu, Hoya; Shunichi Masuda, Tokyo, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 964,985, Nov. 30, 1978, abandoned.
This application Jun. 20, 1980, Ser. No. 161,498
Claims priority, application Japan, Dec. 2, 1977, 52-144857; Dec. 2, 1977, 52-144858
Int. Cl.³ G06F *15/20, 11/32*
U.S. Cl. 364—518 **27 Claims**



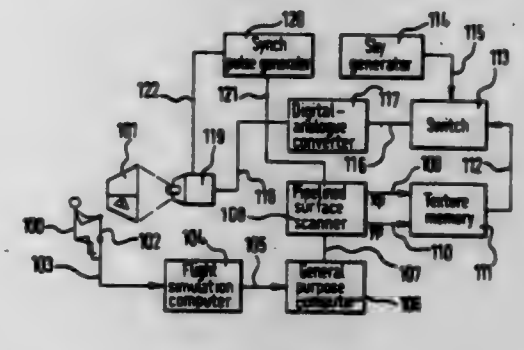
1. An image forming apparatus comprising:
image forming means having a plurality of process executing means for executing an image forming process;
a plurality of input means for entering data needed for execution of said image forming process by said image forming means;
first control means having a first storage means for storing a first program to read out the data entered from one of said input means and to control said process executing means; and
second control means having a second storage means for storing a second program to read out the data entered from another of said input means, said second control means controlling said first control means to operate said process executing means in accordance with the data entered from said input means.

4,343,037
VISUAL DISPLAY SYSTEMS OF THE COMPUTER GENERATED IMAGE TYPE

Martin J. P. Bolton, Crawley, England, assignor to Redifon Simulation Limited, Sussex, England

Filed Jun. 13, 1980, Ser. No. 159,442
Claims priority, application United Kingdom, Jun. 15, 1979, 7920882; Jun. 9, 1980, 8018838
Int. Cl.³ G09B *9/08*
U.S. Cl. 364—521 **6 Claims**

1. In a visual display system of the computer generated image type, for a ground-based flight simulator, providing a rectangular raster scanned, perspective-transformed, pilot's visual display of a simulated textured surface, the improvement comprising the provision of a surface detail generator comprising a perspective transformation computer and a surface texture detail store, the perspective transformation computer being a pipelined calculator for computing in real time the perspective transformation from the display system display plane to the simulated surface plane continuously during simulated flight, and correspondingly scanning the surface texture

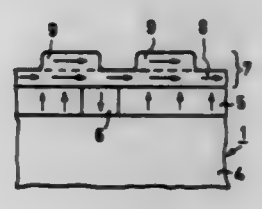


detail store to provide texture for each element of the said rectangular raster scanned pilot's visual display.

4,343,038
MAGNETIC BUBBLE DOMAIN STRUCTURE

Ulrich E. Enz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,502
Claims priority, application Netherlands, Sep. 28, 1979, 7907217
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—36 **5 Claims**



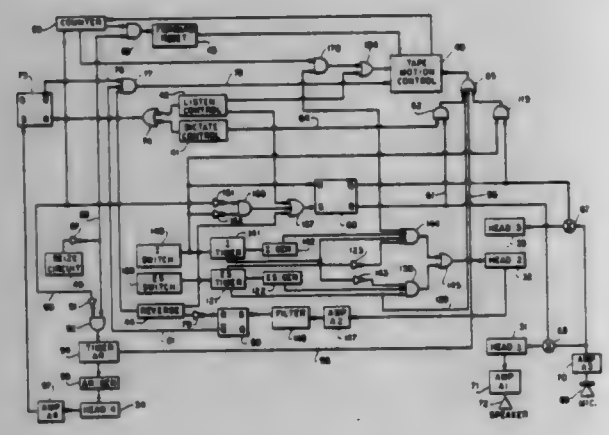
1. A magnetic bubble domain structure comprising:
a nonmagnetic substrate;
a substantially planar bubble domain layer on the substrate, said layer having a major surface opposite the substrate, said layer comprising a soft magnetic material in which magnetic domains can be propagated, said material having a positive magnetic anisotropy constant; and
a control layer on the major surface of the bubble domain layer, said control layer comprising a soft magnetic material which defines at least one bubble domain propagation path;
CHARACTERIZED IN THAT the control layer has a negative anisotropy constant, said control layer further comprising:
a first, continuous sublayer; and
a second, discontinuous sublayer which defines at least one bubble domain propagation path for guiding the movement of bubble domains under the influence of a magnetic field having a rotating field component parallel to the plane of the bubble domain layer, said first and second sublayers being substantially parallel to the plane of the bubble domain layer.

4,343,039

DICTATION-TRANSCRIPTION METHOD AND SYSTEM

Jack E. Smith, Jr., and Paul C. Mason, both of Thomaston, Ga., assignors to Lanier Business Products Co., Inc., Atlanta, Ga.

Continuation of Ser. No. 781,359, Mar. 25, 1977, Pat. No. 4,249,041. This application Dec. 27, 1978, Ser. No. 973,699
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.³ G11B *27/10*
U.S. Cl. 369—28 25 Claims



1. A method of recording dictation on a recording medium including a plurality of recording tracks, comprising the steps of

moving said medium relative to a recording device in a forward direction;

recording voice-generated dictation signals on a first track of said plurality of tracks while said medium is moving in a forward direction;

selectively moving said medium in a reverse direction relative to said recording device;

subsequent to said reverse moving of said medium again moving said medium in a forward direction while providing an audible output signal corresponding to the voice-generated signals recorded in said first track;

selectively recording an instruction indexing signal independent of voice-generated signals in a second track of said plurality of tracks following any sequence of forward and reverse moving of said medium relative to said recording device;

following recording of said instruction indexing signal, recording a voice generated instruction signal in one of said plurality of tracks other than said first track;

upon termination of said instruction signal recording step, moving said medium in the forward direction until the farthest point along said medium at which dictation signals have previously been recorded in said first track is reached at said recording device; and

preventing recording of dictation signals in said first track from the initiation of recording of said instruction indexing signal until said medium has been moved to said farthest point along said medium at which dictation signals have previously been recorded in said first track.

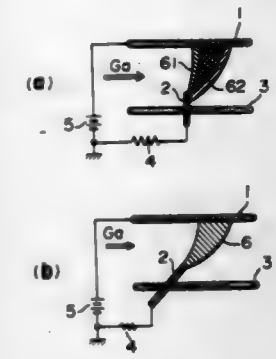
4,343,040

TRANSVERSE EXCITATION TYPE LASER OSCILLATOR

Kouzaburo Shibayama; Toshimitsu Akiba; Haruhiko Nagai, and Masao Hishii, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 47,820, Jun. 12, 1979. This application Jun. 26, 1981, Ser. No. 277,605
Int. Cl.³ H01S *3/08*
U.S. Cl. 372—87 2 Claims

1. In a transverse excitation type laser oscillator having a plane anode, a plurality of cathodes arranged in a row so that the length of each cathode is essentially perpendicular to said plane anode, a laser medium fed in transverse direction between the row of said cathodes and said plane anode to generate a glow discharge path between said plane anode and said cathodes by applying a DC voltage between said plane anode and each of said cathodes, an improvement comprising: a glow discharge stabilizing insulator on each of said cathodes for restricting movement of said glow discharge region caused by



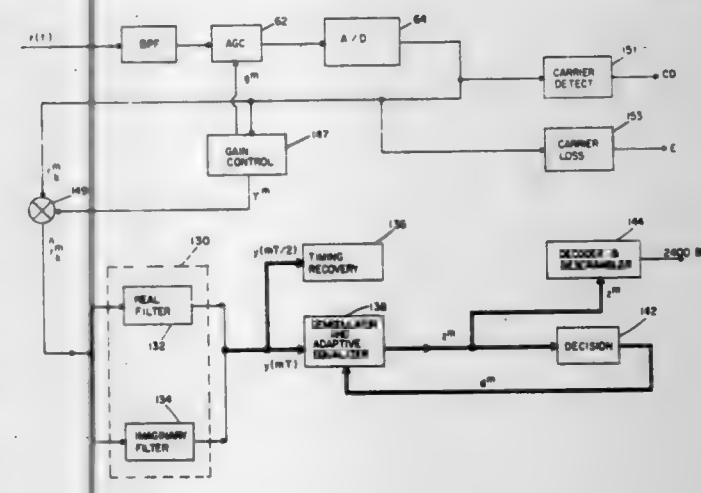
said transfer of said laser medium wherein said insulator substantially covers each of said cathodes except for the portion of a cathode nearest said plane anode to thereby satabilize said glow discharge region at high medium pressures and high discharge currents.

4,343,041

MODEM CIRCUITRY

George D. Forney, Jr., Cambridge, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Apr. 3, 1980, Ser. No. 136,754
Int. Cl.³ H04B *3/14*
U.S. Cl. 375—14 3 Claims



1. Modem receiver apparatus having circuitry for automatically adaptively equalizing received signals, including equalizer updating circuitry for updating coefficients stored in the equalizer, wherein said apparatus comprises

means for detecting the duration of periodicity in said received signals,

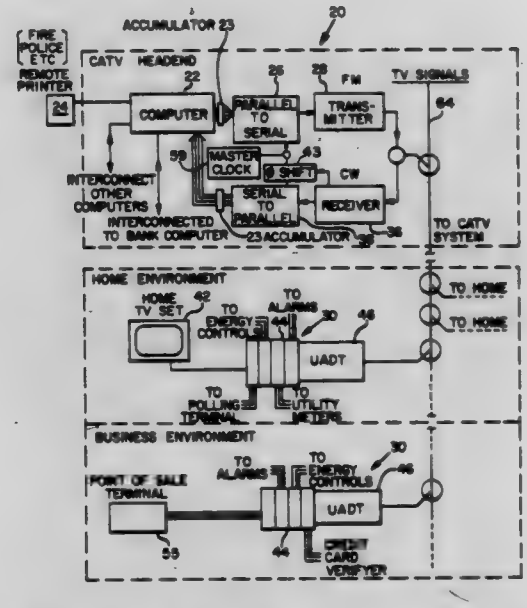
means for comparing said duration of periodicity to a threshold, and

means for freezing said updating circuitry when said duration exceeds said threshold, and for otherwise releasing said updating circuitry to permit updating of said coefficients.

4,343,042
BI-DIRECTIONAL DATA TRANSMISSION AND CONTROL SYSTEM

Clifford B. Schrock, and Linley F. Gumm, both of Beaverton, Oreg., assignors to Cablebus Systems Corporation, Beaverton, Oreg.

Filed Jul. 9, 1979, Ser. No. 56,283
Int. Cl.[3] H04N 7/10; H04B 3/50
U.S. Cl. 455—5 5 Claims



1. In a bi-directional data transmission system including a cable television (CATV) headend, said headend including a centrally-located computer for monitoring and controlling multiple different remote service devices at each of a multiplicity of subscriber terminals coupled to said CATV headend, respective circuit means different from one another for interfacing each of said remote service devices with a respective one of said terminals, and transceiver means for sending and receiving serial message packets bi-directionally between said CATV headend and said terminals, the improvement comprising:

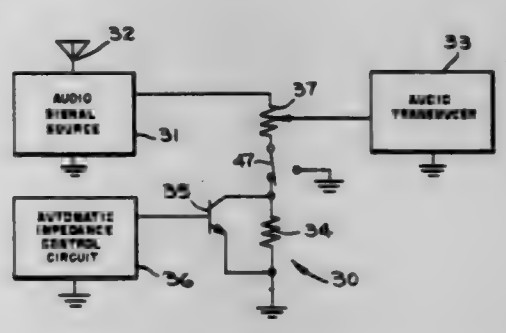
(a) demarcation means at each of said terminals operatively interposed between said CATV headend and said respective circuit means, said demarcation means including means for converting messages between parallel and serial formats respectively and including first data bus connecting means for initiating a data bus having multiple lines for conducting messages in said parallel format; and

(b) respective modules, each containing a respective one of said circuit means and each having a pair of data bus connecting means for detachably connecting a first one of said modules to said first data bus connecting means and detachably connecting said modules consecutively to each other, and for continuing said data bus consecutively through each module from one to another thereof such that messages can be transmitted on said data bus consecutively through each module without alteration thereof by said modules.

4,343,043
RADIO HAVING A CRESCENDO AUDIO ALARM

Lloyd K. McLennan, Utica, and Albert Lacell, Vernon, both of N.Y., assignors to General Electric Company, New York, N.Y.

Filed Dec. 17, 1980, Ser. No. 217,210
Int. Cl.[3] H04B 1/16
U.S. Cl. 455—231 10 Claims



1. A radio comprising:

(a) circuit means for receiving a transmitted radio having a crescendo alarm signal and providing an audio frequency electrical signal;

(b) an audio transducer;

(c) a variable impedance means having minimum and maximum impedance levels;

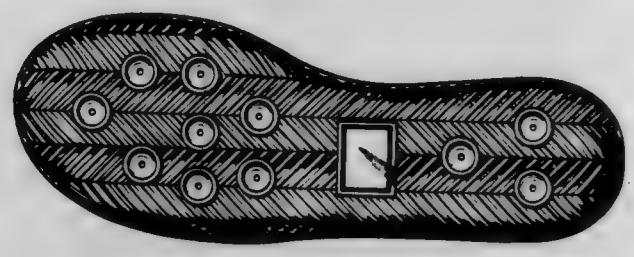
(d) selector means in series with the variable impedance means and said circuit means and being responsive to the electrical signal, said selector means being further connected to the input of the audio transducer for providing said electrical signal for driving the audio transducer to produce sound at a first level established by a selected setting of said selector means and the minimum impedance level of said variable impedance means and a second level established by the selected setting of the selector means and the maximum impedance level of said variable impedance means; and

(e) timer means for automatically varying the impedance of said variable impedance means continuously and monotonically during a predetermined time interval, thereby increasing the level of the sound above the level corresponding to said selected setting.

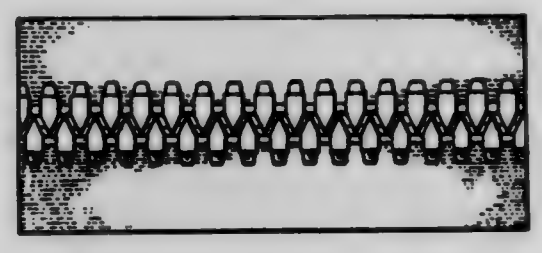
DESIGNS

AUGUST 3, 1982

265,605
UNIT SOLE
Vijay Batra, Brockton, Mass., assignor to Morse Shoe, Inc., Canton, Mass.
Filed Mar. 9, 1979, Ser. No. 19,320
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



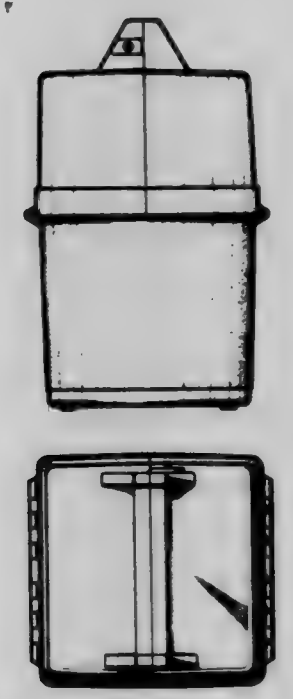
265,606
SLIDE FASTENER
Kazumi Kasai, Namerikawa, Japan, assignor to Yoshida Kogyo, K.K., Tokyo, Japan
Filed Jan. 8, 1980, Ser. No. 110,394
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—415



265,607
GARMENT BAG
Marvin Cooper, 122 Tresor Dr., New Rochelle, N.Y. 10804
Filed Jun. 2, 1980, Ser. No. 155,646
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



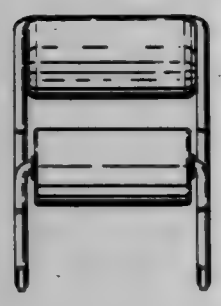
265,608
PAINT BRUSH AND TOOL KEEPER
Rodney G. Sparrow, 9 Coolidge Dr., Acton, Mass. 01720
Filed Sep. 29, 1980, Ser. No. 191,486
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—73



265,609
CHILD SAFETY SEAT FOR VEHICLES
Juichiro Takada, 3-12-1 Shimouchi Setagayaku, Tokyo, Japan
Filed Mar. 24, 1980, Ser. No. 133,469
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7



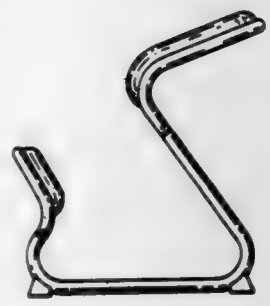
265,610
CHAIR
Svein A. Gusrud, Tokerudberget 18, Oslo 9, and Hans C. Mengshoel, Gabelsgate 41, Oslo 2, both of Norway
Filed May 7, 1980, Ser. No. 147,589
Claims priority, application Norway, Dec. 14, 1979, 60665
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38



265,611
HANGING CHAIR
Kenneth C. Knudson, Downers Grove, Ill., assignor to Sybaris Inns Ltd., Downers Grove, Ill.
Filed Mar. 18, 1980, Ser. No. 131,451
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47



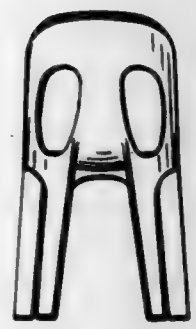
265,612
CHAIR
Svein A. Gusrud, Tokerudberget 18, Oslo 9, and Hans C. Mengshoel, Gabelsgate 41, Oslo 2, both of Norway
Filed May 7, 1980, Ser. No. 147,637
Claims priority, application Norway, Dec. 14, 1979, 60665
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38



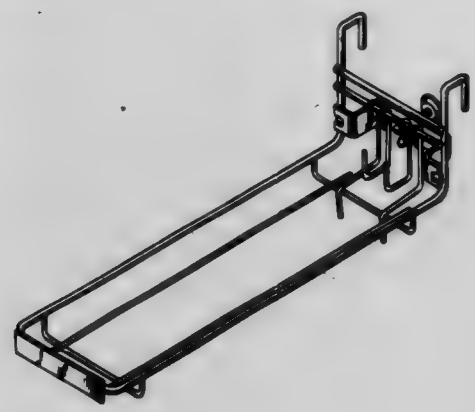
265,613
CHAIR
Otto Zapf, Königstein, Fed. Rep. of Germany, assignor to Drabert Sohne Minden (Westf.), Minden, Fed. Rep. of Germany
Filed Jul. 2, 1979, Ser. No. 53,867
The portion of the term of this patent subsequent to Sep. 15, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



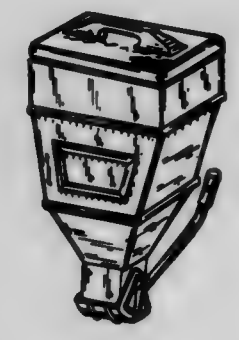
265,614
CHAIR
Henry Massonnet, Nurieux (Ain), France (01760)
Filed Jan. 14, 1980, Ser. No. 112,241
Claims priority, application France, Aug. 1, 1979, 431
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76



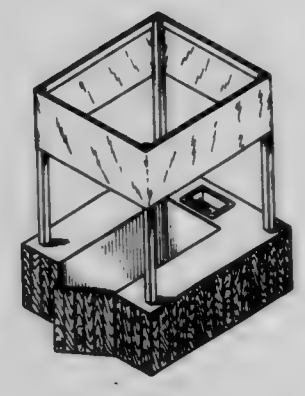
265,615
DISPLAY TRAY
Jean Virte, Domont, and Laurent Costa, Ville D'Avray, both of France, assignors to Union Carbide Corporation, Danbury, Conn.
Filed Mar. 27, 1980, Ser. No. 134,708
Term of patent 14 years
Int. Cl. D08—*08;* D06—*06*
U.S. Cl. D6—114



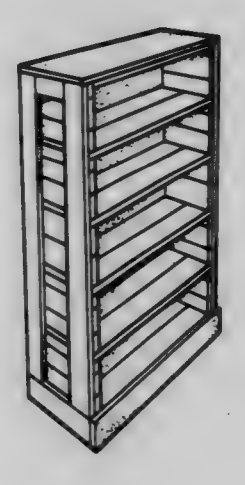
265,616
DISPENSING CONTAINER OR SIMILAR ARTICLE
Thomas C. Fischer, Gretna, and John P. Nepper, Omaha, both of Nebr., assignors to A & F Dispenser, Inc., Gretna, Nebr.
Filed Jun. 23, 1980, Ser. No. 161,779
Term of patent 14 years
Int. Cl. D6—*04;* D23—*02*
U.S. Cl. D6—127



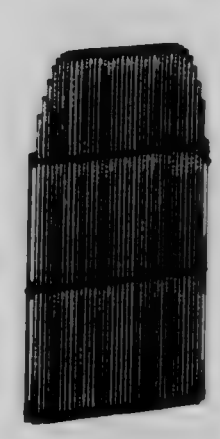
265,617
SERVICE BOOTH FOR STORES AND THE LIKE
Henry N. Saurage, III; Donna M. Saurage, and Janette D. Waddelow, all of Baton Rouge, La., assignors to Community Coffee Company, Inc., Baton Rouge, La.
Filed Apr. 28, 1980, Ser. No. 144,639
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144



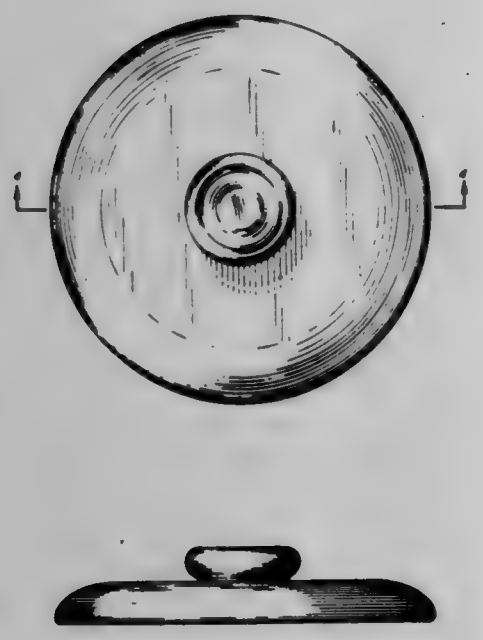
265,618
BOOKCASE
Stephen H. Robertson, 5719 Sendero Dr., and Randall L. Ward, Leesville Rd., both of, Raleigh, N.C. 27612
Filed Jul. 26, 1979, Ser. No. 60,899
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



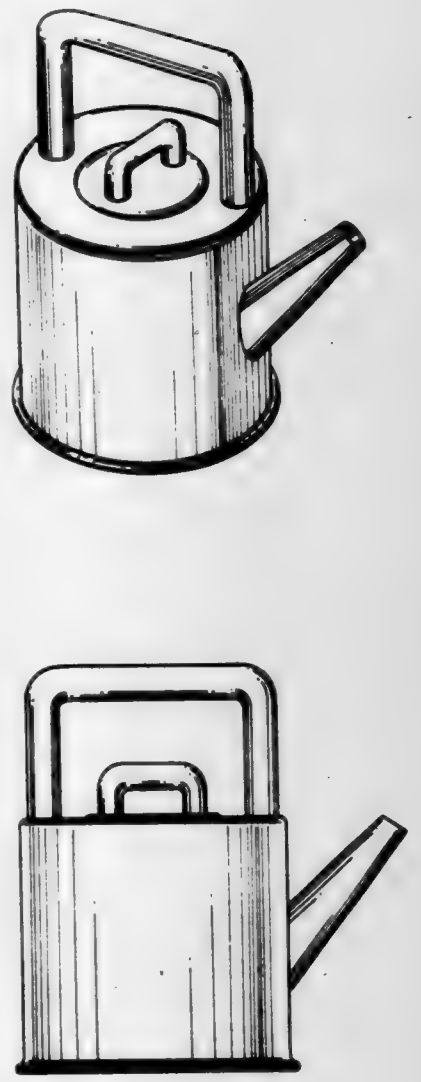
265,619
CUSHION FOR CAR SEAT
Kazuyoshi Kano, 8612 Garvey Ave., Rosemead, Calif. 91770
Filed Aug. 4, 1980, Ser. No. 175,352
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—200

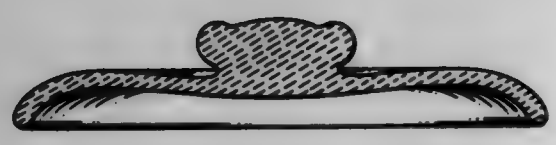


265,620
DISH COVER OR SIMILAR ARTICLE
George B. Jensen, deceased, late of Syracuse, N.Y. (by Stanley F. Campion, executor), assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Jan. 28, 1980, Ser. No. 116,316
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—40



265,621
TEA KETTLE OR SIMILAR ARTICLE
Joy Christov Urich, 1133 Park Ave., New York, N.Y. 10028
Filed Sep. 23, 1980, Ser. No. 190,008
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—60





265,622
COMBINED POT LID HOLDER AND SPOON HOLDER
Dawn R. Bartels, 11151 NW. 35th Pl., Coral Springs, Fla. 33065
Filed Aug. 11, 1980, Ser. No. 177,203
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—73



265,623
KITCHEN FORK OR SIMILAR UTENSIL
Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.
Filed Oct. 4, 1979, Ser. No. 81,979
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—106



265,624
HANDLE FOR A STAPLING MACHINE
Paul Goldfracht, P.O. Box 292, Waterbury, Conn. 06720
Filed Jun. 3, 1980, Ser. No. 156,176
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—107



265,625
VALANCE BRACKET FOR VENETIAN BLIND
Basil Buck, Middlesex, N.J., assignor to Hunter Douglas, Inc., Totowa, N.J.
Filed Jun. 27, 1980, Ser. No. 163,502
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



265,626
DISPENSING CONTAINER
Edward C. Kozlowski, Trumbull, Conn., assignor to Sterling Drug Inc., New York, N.Y.
Filed Jun. 6, 1980, Ser. No. 157,113
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—373



265,627
BOTTLE OR SIMILAR ARTICLE
Michael Segal, Mount Royal, Canada, assignor to Qualcor Inc., Montreal, Canada
Filed Jul. 28, 1980, Ser. No. 173,227
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389

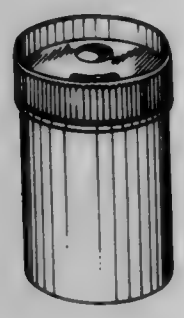


265,628

PILL DISPENSING CONTAINER

Dordie Redaelli, Fagersta, and Kerstin Berggrund, Boxholm, both of Sweden, assignors to Astra-Syntex Scandinavia Aktiebolag, Södertälje, Sweden

Filed Dec. 27, 1979, Ser. No. 107,716
Claims priority, application Sweden, Jun. 29, 1979, 791566
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418

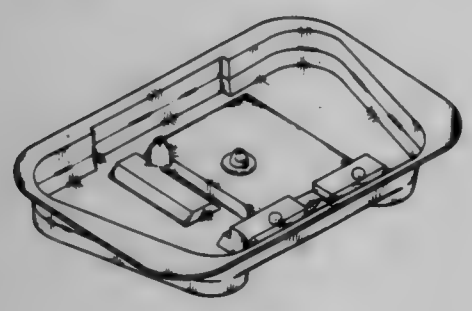


265,629

TRAY FOR HOLDING TYPEWRITER FILM RIBBON CASSETTE

Darrell D. Fish, Timonium, Md., assignor to T.H.E.M., Inc., Pennsauken, N.J.

Filed Jun. 9, 1980, Ser. No. 157,269
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—425

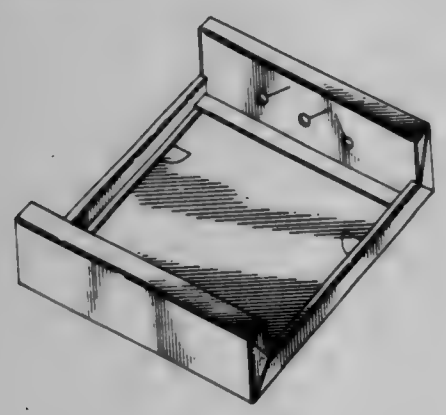


265,630

CARDBOARD BOX FOR PACKING AND DISPLAY

Birgitta Wahlberg, and Lars Wahlberg, both of Mora Tuna, S-755 90 Uppsala, Sweden

Filed Jul. 22, 1980, Ser. No. 171,036
Claims priority, application Sweden, Feb. 1, 1980, 80-0221
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—456

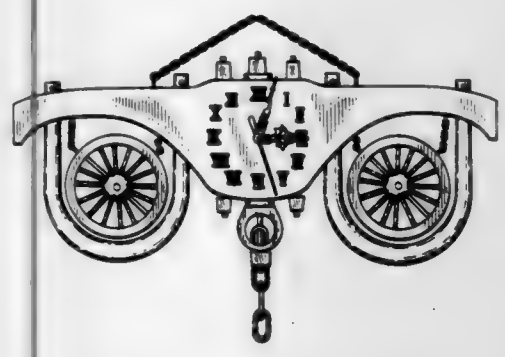


265,631

CLOCK

Billy R. Newton, 3604 Belmont Dr., Hood River, Oreg. 97031

Filed Aug. 4, 1980, Ser. No. 175,248
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6



265,632

WATCH

Jean-Louis F. Dumas-Hermes, Paris, France, assignor to La Montre Hermes S.A., Bienne, Switzerland

Filed Apr. 2, 1979, Ser. No. 26,434
Claims priority, application France, Oct. 4, 1978, 31813
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39

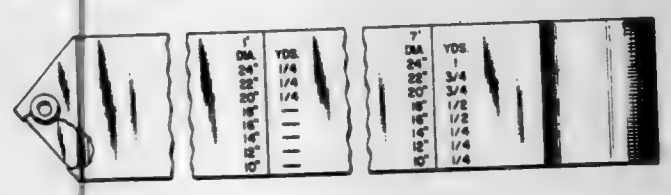


265,633

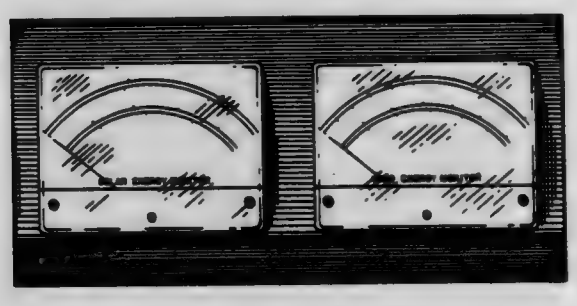
CASING VOLUME MEASURING TAPE

Edward A. Johnson, Box 4084 Civic Center, San Rafael, Calif. 94903

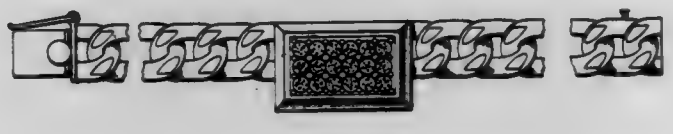
Filed Aug. 30, 1979, Ser. No. 71,108
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71



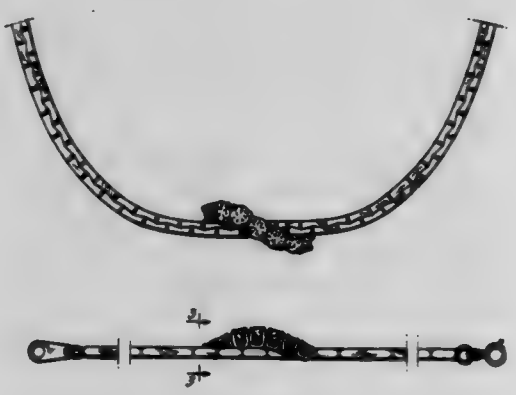
265,634
SOLAR AND WIND ENERGY MONITOR
Gaylord B. Buck, Denver, Colo., assignor to Aero Systems Research, Inc., Englewood, Colo.
Filed May 15, 1980, Ser. No. 150,194
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—75



265,635
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Apr. 28, 1980, Ser. No. 144,207
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6

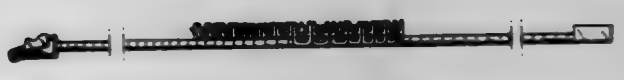


265,636
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Apr. 28, 1980, Ser. No. 144,208
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6



265,637
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed May 8, 1980, Ser. No. 148,191
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6

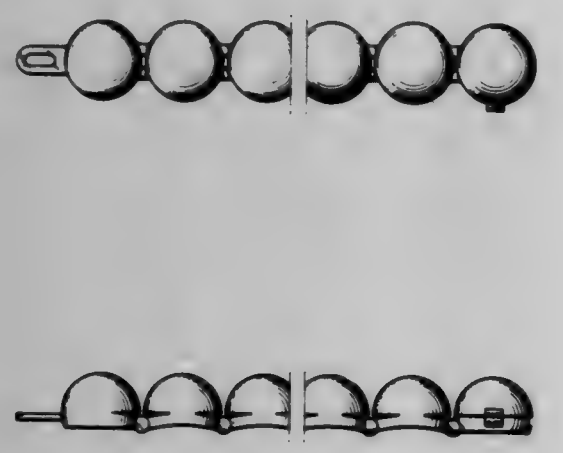




265,638
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Apr. 28, 1980, Ser. No. 144,209
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—10



265,639
BRACELET OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 7, 1980, Ser. No. 176,131
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—17



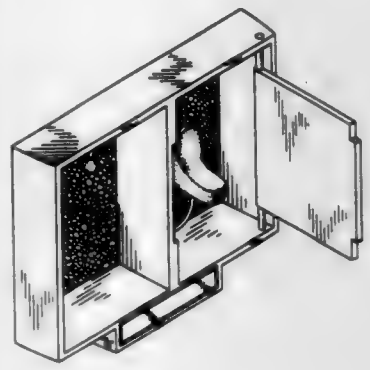
265,640
JEWELRY CHAIN ARRANGER
Betty S. Hill, 1712 Loberg La., Jonesboro, Ark. 72401
Filed Jul. 21, 1980, Ser. No. 170,945
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—86



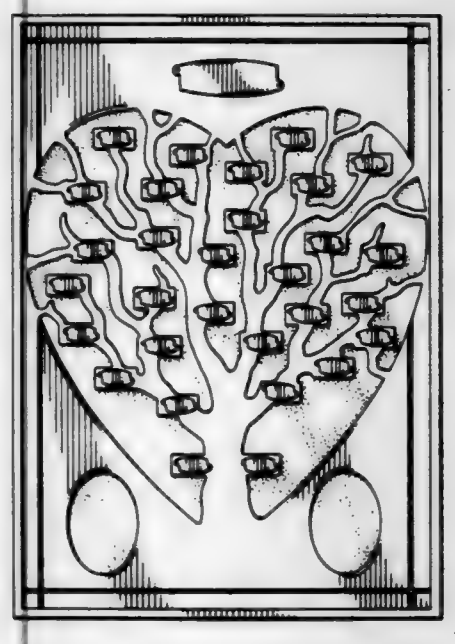
265,641
JEWEL HOLDER FOR A PINCH EARRING
Alexander J. Bongiorno, 760 Peartree La., Grosse Pointe Woods, Mich. 48236
Filed Sep. 22, 1980, Ser. No. 189,491
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—92



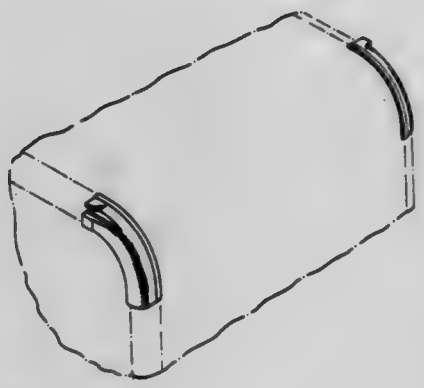
265,642
NOVELTY PLAQUE OR THE LIKE
Benjamin A. Aubert, 350 Los Encinos Ct., San Jose, Calif. 95134
Filed Jul. 28, 1980, Ser. No. 172,701
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—133



265,643
PLAQUE WITH AN ANCESTRAL TREE
Ernest P. Smith, Rte. 2, Box 9569, Show Low, Ariz. 85901
Filed Aug. 15, 1980, Ser. No. 178,022
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—135



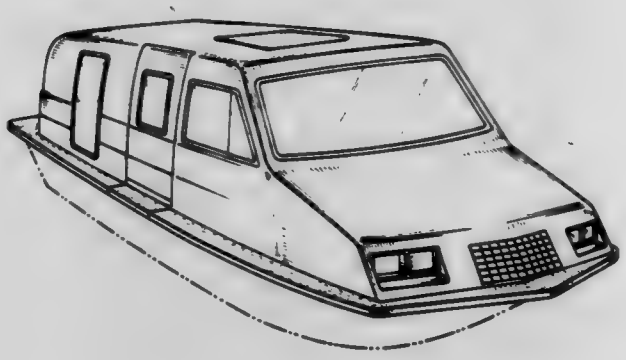
265,644
VEHICLE VAN CORNER CAP MEMBER
John R. Spence, La Habra, Calif., assignor to Pike Trailer Co., South Gate, Calif.
Filed Apr. 21, 1980, Ser. No. 141,875
Term of patent 14 years
Int. Cl. 12—*16*
U.S. Cl. D12—93



265,645
COMBINED BALL HITCH AND VEHICLE CARRIER FOR GOLF CLUB CARTS HAVING VERTICAL MOUNTING COUPLING
Auborn R. Hampton, 1307 Garth Ave., SW., Decatur, Ala. 35601
Filed Feb. 25, 1980, Ser. No. 124,232
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



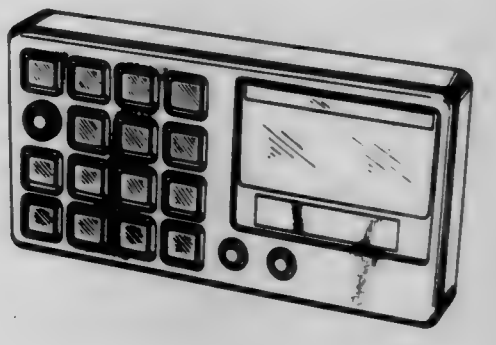
265,646
HOUSEBOAT DECK
Frank J. Fortier, 600 Railroad Ave., Pittsburg, Calif. 94565
Filed Aug. 22, 1979, Ser. No. 68,606
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—301



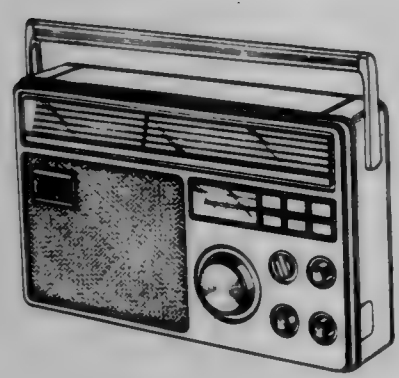
265,647
HAND HELD MICROPHONE
James P. Liautaud, Cary, Ill., assignor to American Antenna Corporation, Elgin, Ill.
Filed Jan. 16, 1980, Ser. No. 112,552
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



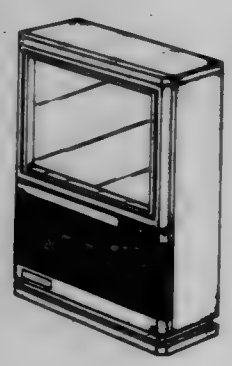
265,648
DIALING PAD FOR A CAR TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 17, 1980, Ser. No. 160,831
Claims priority, application Japan, Dec. 28, 1979, 54-055048
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



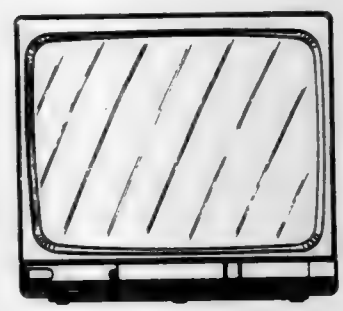
265,649
RADIO RECEIVER
Masanori Hamada, Yao, and Yoshiyuki Saigo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 30, 1980, Ser. No. 192,398
Claims priority, application Japan, Apr. 2, 1980, 55-13172
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70

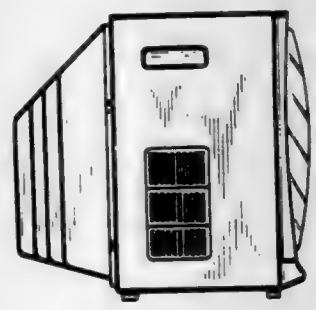


265,650
PROJECTION TELEVISION RECEIVER
Takayo Sugiwaka, Kyoto; Yoshiaki Kawata, Takatsuki, and Tadashi Sumino, Kuze, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 15, 1980, Ser. No. 150,621
Claims priority, application Japan, Nov. 20, 1979, 54-48775
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—79

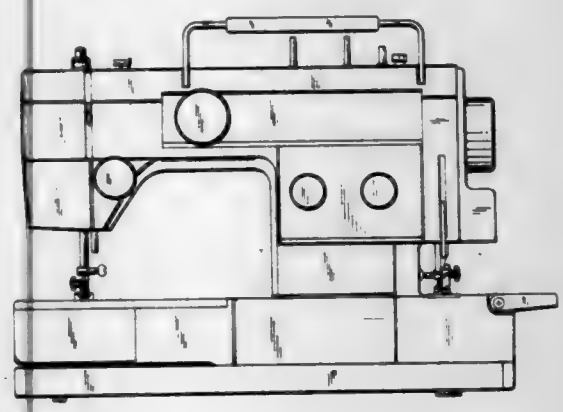


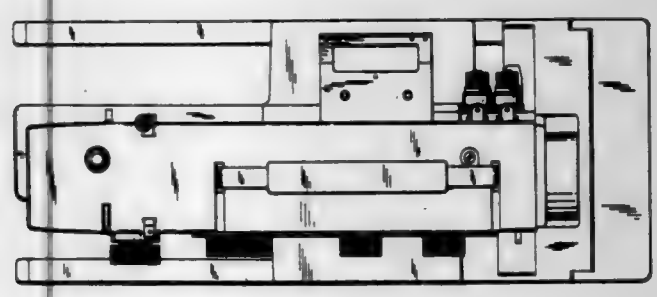
265,651
COLOR TELEVISION RECEIVER
Ennio Brion, Milan, Italy, assignor to Brionvega S.p.A., Milan, Italy
Filed Nov. 19, 1979, Ser. No. 95,257
Claims priority, application Italy, May 18, 1979, 21618 B/79
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—80



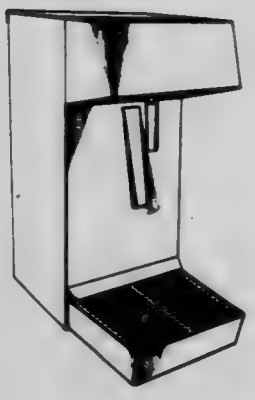


265,652
SEWING MACHINE
Yoshiaki Eguchi, Higashi-Murayama, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed Nov. 1, 1979, Ser. No. 90,483
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—70

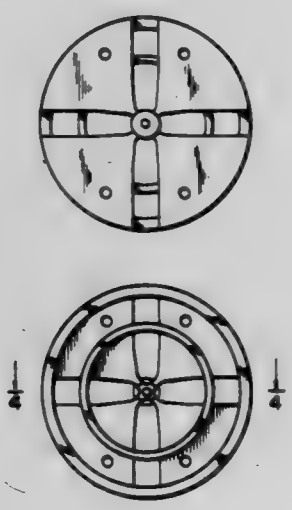




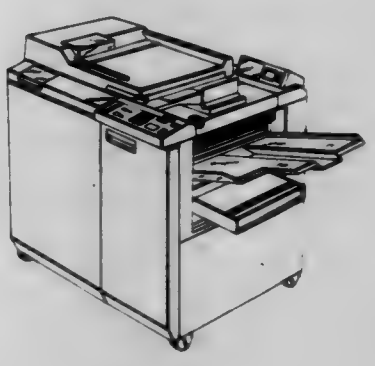
265,653
BEVERAGE DISPENSER
William A. Arzberger, Medfield, and Edward J. LaLumiere, Woburn, both of Mass., assignors to Data Packaging Corporation, Cambridge, Mass.
Filed Mar. 10, 1980, Ser. No. 129,172
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—112



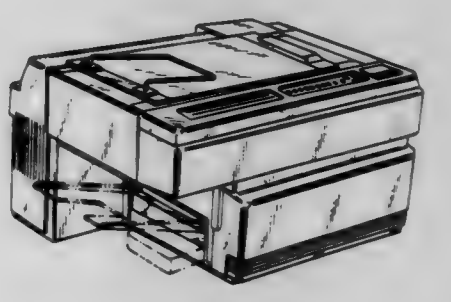
265,654
GUIDE PLATE FOR A MULTIPLE SPINDLE ATTACHMENT FOR DRILLING AND TAPPING MACHINES
Eiji Miyakawa, Tokyo, Japan, assignor to Miyakawa Industry Co., Ltd., Seki, Japan
Filed Apr. 24, 1980, Ser. No. 143,220
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—132



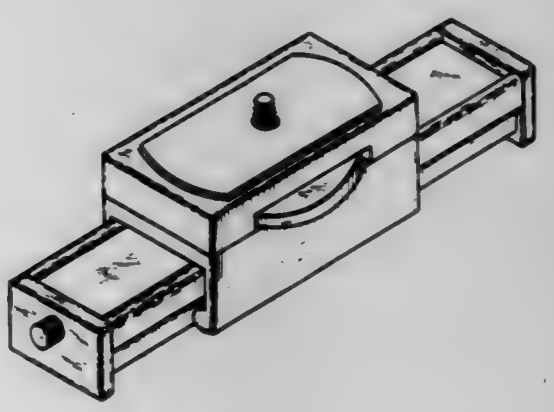
265,655
ELECTROSTATIC COPIER
Tetuya Goto, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Aug. 26, 1980, Ser. No. 181,629
Claims priority, application Japan, Mar. 7, 1980, 8885
Term of patent 7 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



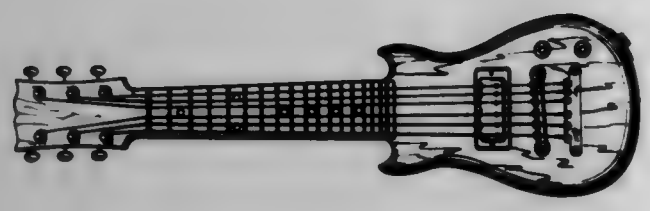
265,656
ELECTROPHOTOGRAPHIC COPIER
Hiroshi Matsushima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 8, 1980, Ser. No. 184,736
Claims priority, application Japan, Mar. 19, 1980, 10743
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



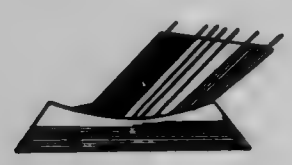
265,657
CAMERA ATTACHMENT FOR TAKING THREE DIMENSIONAL PICTURES
James R. Lovell, 402 C The Commons Way, Fishkill, N.Y. 12524
Filed Sep. 11, 1980, Ser. No. 186,250
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—47

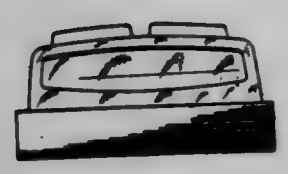


265,658
GUITAR
Thomas P. Kenny, 6661 School Circle Dr., Riverside, Calif. 92506
Filed Jun. 24, 1980, Ser. No. 162,618
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—19

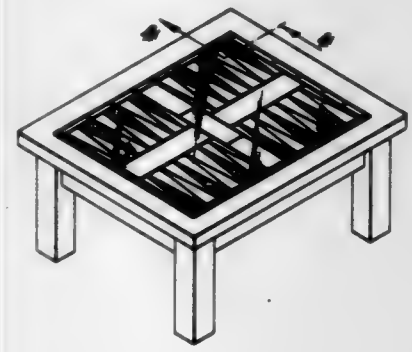


265,659
COMBINED CARD FILE AND CURVED TOP CARDS
Hildaur L. Neilsen, Metuchen, and Martin Glaubinger, Teaneck, both of N.J., assignors to Rolodex Corporation, Secaucus, N.J.
Continuation of Ser. No. 561,778, Mar. 25, 1975, Pat. No. Des. 247,042. This application Apr. 1, 1977, Ser. No. 783,860
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

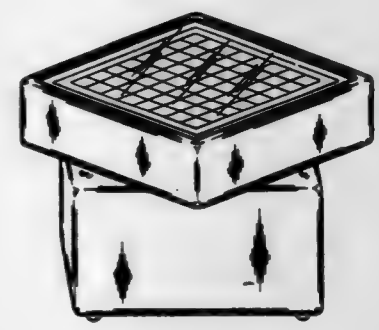




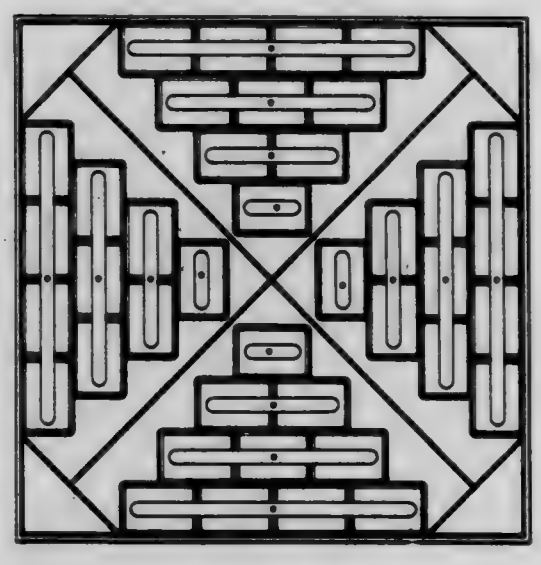
265,660
GAME TABLE
Andrew D. Jackson, 4314 Commonwealth Ave., Apt. A-8, Charlotte, N.C. 28205
Filed May 12, 1980, Ser. No. 148,981
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—14



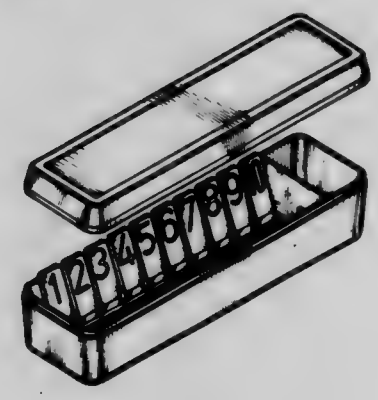
265,661
ILLUMINATED SWIVEL TOP TABLE USABLE AS AN ORNAMENTAL DISPLAY AND/OR GAME SURFACE
Robert P. Schoenfeld, 2 Kennedy Dr., Plainview, N.Y. 11803, and Monte N. Alpert, 136 Academy Hill Rd., Brighton, Mass. 02135
Filed Jun. 13, 1980, Ser. No. 159,107
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—24



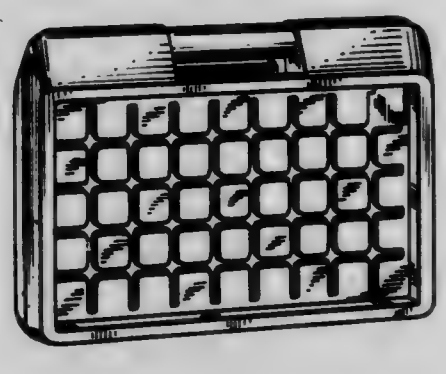
265,662
GAME BOARD
Thomas T. Bouve, Bethesda, Md., assignor to Tech Games, Incorporated, Bethesda, Md.
Filed Jun. 19, 1980, Ser. No. 161,129
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—34



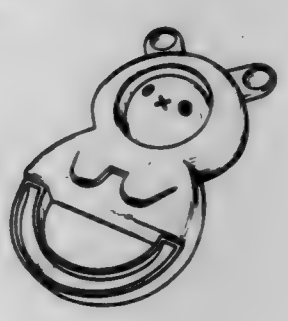
265,663
DICE GAME BOX
Donald E. Godberson, 9316 - 112th Ave., Ft. St. John, B.C. V1J 2V9, Canada
Filed Dec. 19, 1979, Ser. No. 105,425
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—41



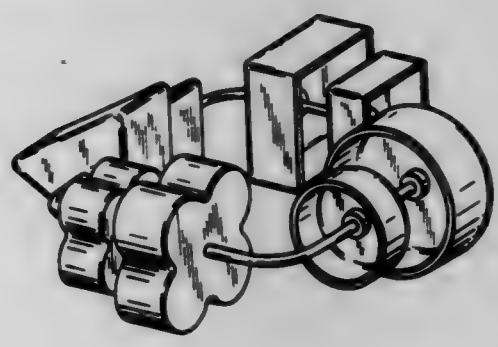
265,664
ACTIVITY TOY
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Jul. 31, 1980, Ser. No. 174,031
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—59



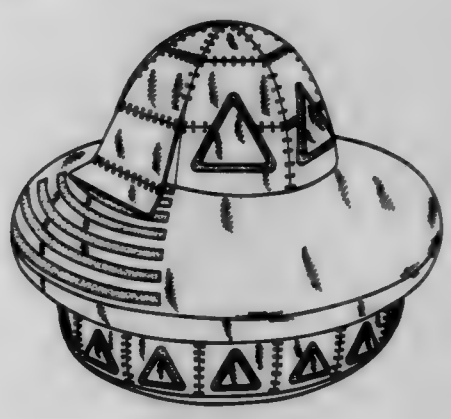
265,665
RATTLE TOY
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Masako Mizugami, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Apr. 15, 1980, Ser. No. 140,635
Claims priority, application Japan, Nov. 19, 1979, 54-48467
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—64



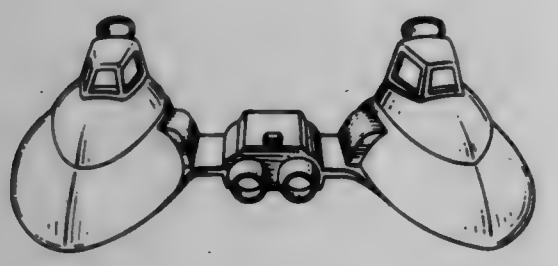
265,666
EDUCATIONAL TOY RATTLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Susumu Matsumoto, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Sep. 17, 1980, Ser. No. 188,157
Claims priority, application Japan, Apr. 22, 1980, 55-15880
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65



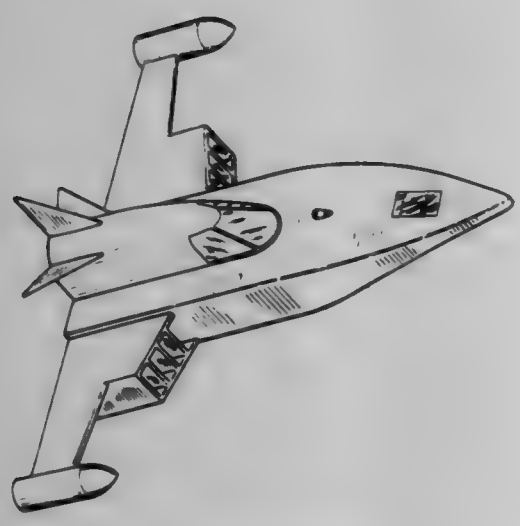
265,667
TOY SPACE VEHICLE
Hangwind F. Lippisch; Elizabeth F. Lippisch, and Debra J. Wilcox, all of Wooster, Ohio, assignors to Studio 5, Wooster, Ohio
Filed Aug. 28, 1980, Ser. No. 182,455
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—86



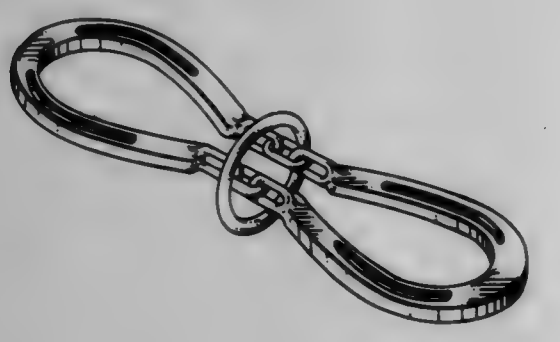
265,668
TOY SPACE VEHICLE
George W. Lucas, Jr., San Anselmo, and Joseph E. Johnston, Fairfax, both of Calif., assignors to Lucasfilm, San Rafael, Calif.
Filed Apr. 25, 1980, Ser. No. 143,906
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



265,669
TOY SPACE CRAFT
Mustafa Fehric, 20 Falstaff Ave., Apt. #406, Weston, Ontario, Canada (M6L 2C8)
Filed Sep. 8, 1980, Ser. No. 185,146
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



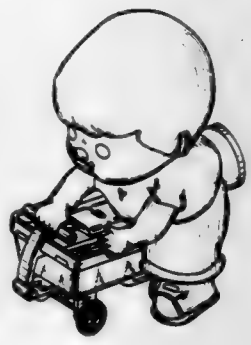
265,670
HORSESHOE PUZZLE
Joe A. Holland, 13619 N. 29th Pl., Phoenix, Ariz. 85032
Filed Nov. 5, 1979, Ser. No. 91,175
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—104



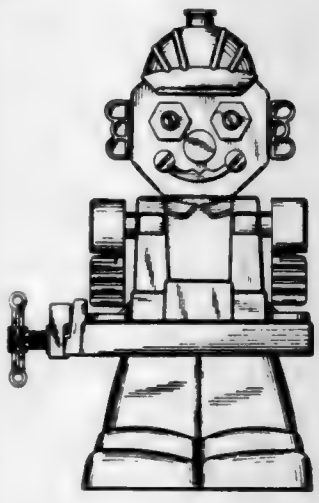
265,671
MECHANICAL DOLL TOY
Yuichi Takahashi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jun. 16, 1980, Ser. No. 159,684
Claims priority, application Japan, Jun. 5, 1979, 54-23139
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



265,672
MECHANICAL DOLL TOY
Yuichi Takahashi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jun. 16, 1980, Ser. No. 159,690
Claims priority, application Japan, Jun. 5, 1979, 54-23138
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



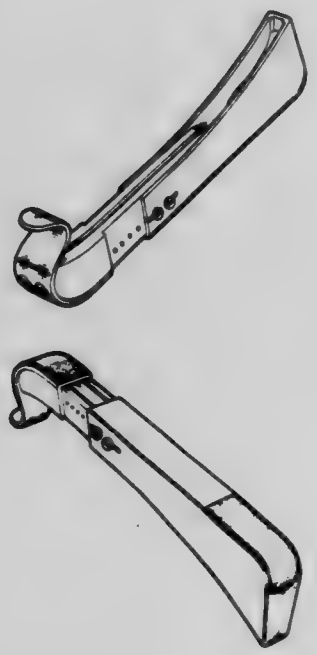
265,673
TOY ROBOT
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Aug. 11, 1980, Ser. No. 176,842
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



265,674
GUARD FOR SKATE BLADE

Jan L. Grönborg, Fullerstavägen 42, S-141 44 Huddinge, and Lars E. Persson, Mönstringsvägen 20, S-184 00 Akersberga, both of Sweden

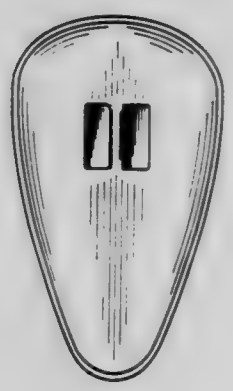
Filed Aug. 25, 1980, Ser. No. 180,697
Claims priority, application Sweden, Feb. 25, 1980, 80-0398
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—225



265,675
HAND HELD SKIING STABILIZER OR SIMILAR ARTICLE

Jacques Ducourant, 3600 S. Redwood Rd., Salt Lake City, Utah 84119

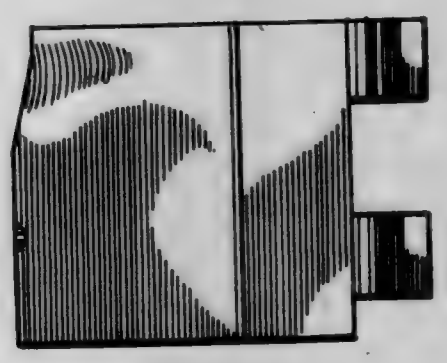
Filed May 23, 1980, Ser. No. 152,589
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—230



265,676
CORNER FOR LOBSTER TRAP

Emile A. P. Plante, 74 Badgers Island, Kittery, Me. 03904

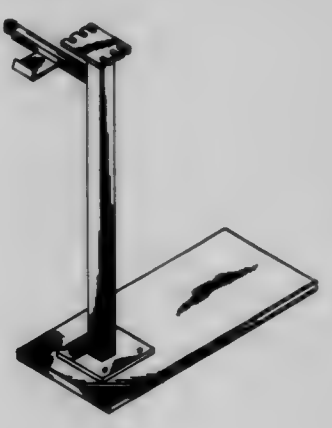
Filed Oct. 30, 1980, Ser. No. 202,329
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



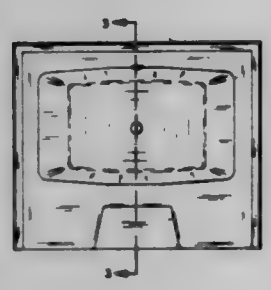
265,677
PORTABLE RELOADER PEDESTAL

Danny R. O'Connell, 975 S. Broadway, Othello, Wash. 99344

Filed Aug. 28, 1980, Ser. No. 182,462
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—99

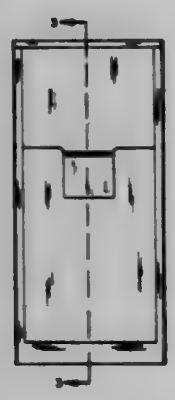


265,678
BATHTUB
James H. Ballard, 513 Bexar Ave., Hamilton, Ala. 35570
Filed Sep. 8, 1980, Ser. No. 185,363
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55

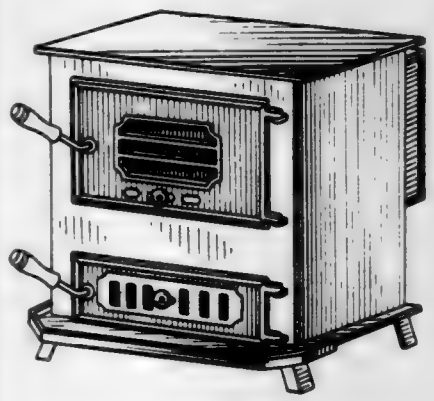




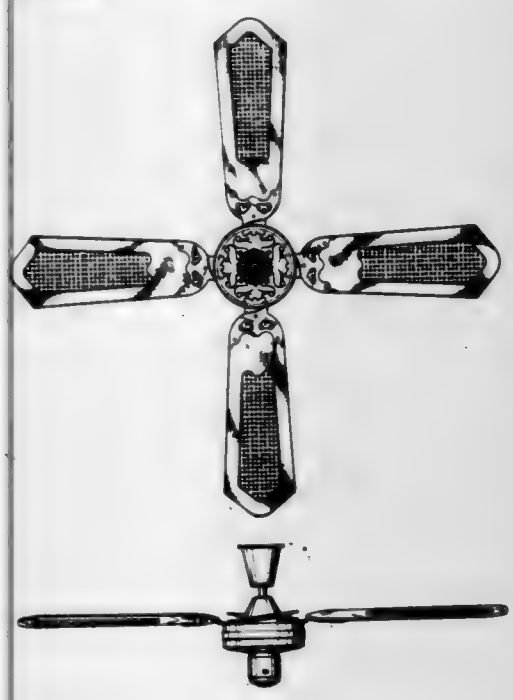
265,679
SHOWER STALL
James H. Ballard, 513 Bexar Ave., Hamilton, Ala. 35570
Filed Sep. 8, 1980, Ser. No. 185,364
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



265,680
COAL STOVE
Arthur M. Hicks, Jr., Diamond Lake, Warner, N.H. 03278, and John H. Millar, Jr., 222 Martling Ave., Tarrytown, N.Y. 10591
Filed Sep. 17, 1980, Ser. No. 188,007
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



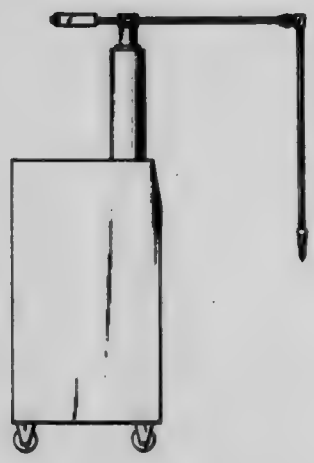
265,681
CEILING FAN
Frederick S. C. Kan, 7 Ko Fai Rd., Kofi Industrial Bldg., Block C, First Flr., Yautong, Kowloon, Hong Kong
Filed Feb. 13, 1981, Ser. No. 234,384
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—158



265,682
SURGICAL LASER

Norihiro Suenaga, Tokyo, Japan, assignor to Nippon Infrared Industries Co., Ltd., Tokyo, Japan

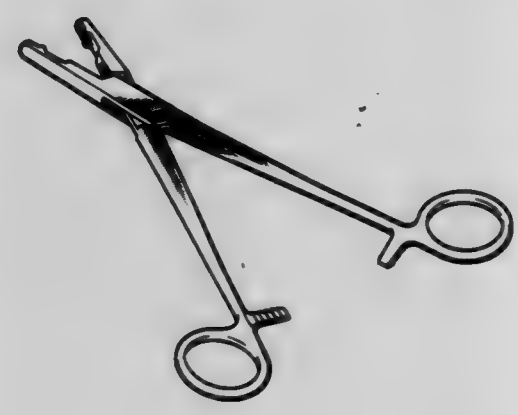
Filed Nov. 28, 1979, Ser. No. 98,040
Claims priority, application Japan, May 31, 1979, 54-22316
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—8



265,683
WINDOWED HOOK HOLDER

Denis S. Drummond, Madison, Wis., and Michael R. Mayock, Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.

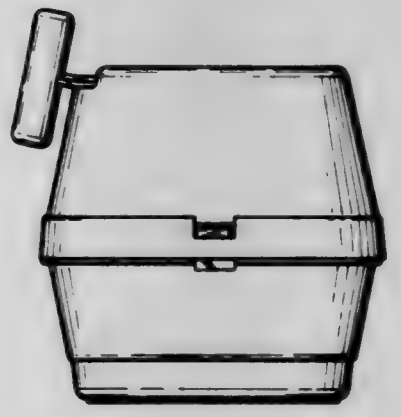
Filed Feb. 4, 1980, Ser. No. 118,320
Term of patent 14 years
Int. Cl. D24—*02*; D8—*03*
U.S. Cl. D24—27



265,684
HYPODERMIC NEEDLE DESTROYER

William D. Christoffel, Two Rivers, Wis., and Christopher J. C. Edwards, Woodland Hills, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Nov. 19, 1979, Ser. No. 97,259
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—99



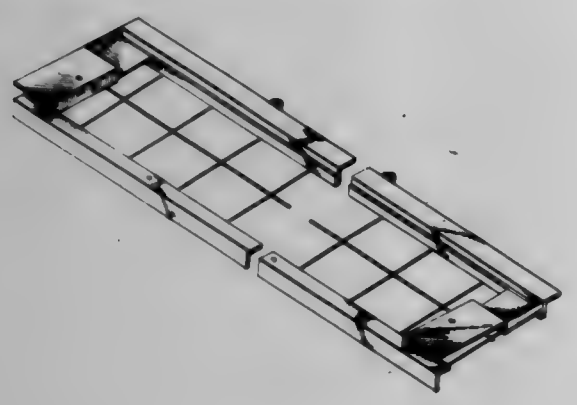
265,685
ENCLOSURE FOR TOILET

Jean C. Decaux, 53 Avenue du Marechal Lyautey, 75016 Paris, France

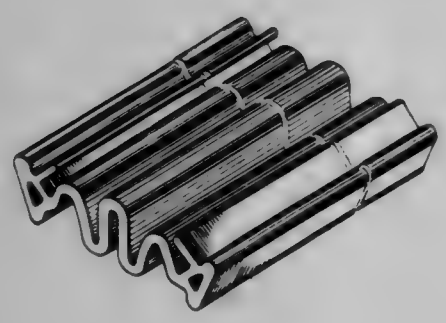
Filed Jun. 9, 1980, Ser. No. 158,055
Claims priority, application France, Dec. 10, 1979, 43,025
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—16



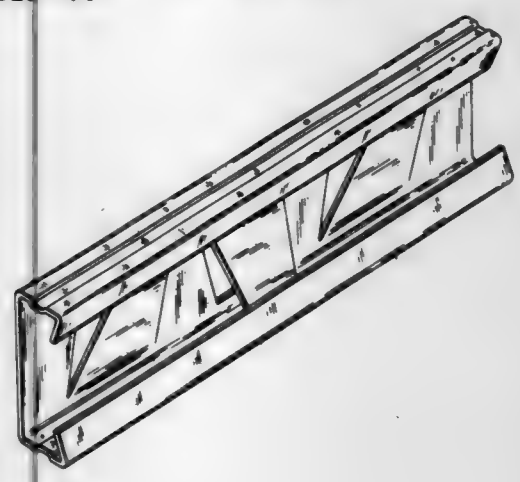
265,686
CAST-IN-PLACE THRESHOLD STRUCTURE FOR OVERHEAD DOOR OPENINGS IN BUILDING WALLS, AND THE LIKE
Ulyss E. Smithson, P.O. Box 1026, Elizabeth City, N.C. 27909
Filed Sep. 22, 1980, Ser. No. 189,795
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—73



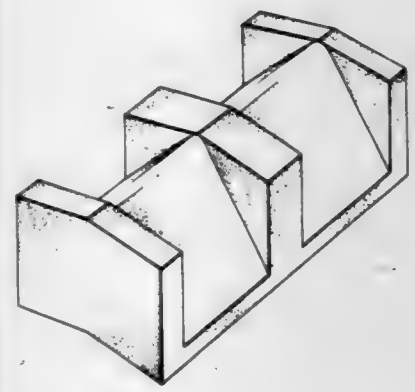
265,687
EXPANSION JOINT SEALING STRIP FOR ROADWAY JOINTS AND THE LIKE
William E. Bowman, Englewood, Colo., assignor to Bowman Construction Supply, Inc., Denver, Colo.
Filed Jun. 30, 1980, Ser. No. 164,012
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



265,688
CONSTRUCTION BEAM
Abraham C. Bissu, Av. de las fuentes No. 295, Techamachalco, Estado de Mexico, Mexico
Filed Jul. 9, 1980, Ser. No. 166,954
Claims priority, application Mexico, Jan. 10, 1980, 2994
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



265,689
MASONRY BLOCK
Richard Miniere, 685 Minnesota Ave., Winter Park, Fla. 32789
Filed Jun. 16, 1980, Ser. No. 160,022
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—97



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Chittenden, Richard M., 4,342,313, Cl. 128-214.400.

Abex Corporation: *See*—
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Abrahams, Louis; and Izod, Thomas P. J., to Millipore Corporation. Wear-resistant sintered composition having an empirical formula $CF_{1.3}$ comprising graphite fibers, fluonnated graphite, and PTFE. 4,342,679, Cl. 524-401.000.

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Adamson, Hugh P., to University Patents, Inc. Apparatus for detecting air disturbances created by low level wind shear. 4,342,912, Cl. 250-339.000.

Adcock, James L., to Sheller-Globe Corporation. Plastic core composite having improved impact resistance. 4,342,810, Cl. 428-215.000.

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Ahagon, Asahiro; Misawa, Makoto; and Hirakawa, Hiroshi, to Yokohama Rubber Co., Ltd., The. Process for preparing rubber compositions for tire treads. 4,342,670, Cl. 523-353.000.

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Ahrens, Ulrich E., to Blutspendedienst der Landesverbande des Deutshen Roten Kreuzes Niedersachsen Oldenburg and Remen, GmbH. Process and apparatus for producing sterilized and bacteria-free water. 4,342,651, Cl. 210-636.000.

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Kanou, Noboru; and Mori, Keiji, 4,342,481, Cl. 296-217.000.

Akahane, Shoji: *See*—
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Gerlach, Klaus; Mathes, Nikolaus; Pitowski, Hans-Jurgen; and Wechs, Friedbert, 4,342,801, Cl. 428-91.000.
Patton, George A.; and Muehling, Richard C., 4,342,498, Cl. 339-256.00R.
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Zengel, Hans-Georg; and Bergfeld, Manfred, 4,342,707, Cl. 260-543.00A.

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Alekhin, Stanislav A.; Bakhir, Vitold M.; Born, Raisa I.; Bakhir, Tatyana M.; and Khusandzhanov, Aman I. Method for the determination of depth of a fluid-saturated stratum and fluid type. 4,342,222, Cl. 73-153.000.

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Ames, Adolf: *See*—
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AMP Incorporated: *See*—
Bennett, Benny M.; Kocher, Timothy L.; and Little, David M., 4,342,495, Cl. 339-163.000.
Dola, Frank P., 4,342,888, Cl. 200-83.00R.

Andersen, Hans S.; Christensen, Helge K.; and Christiansen, Preben, to Danfoss, A/S. Control device for a hydraulic motor. 4,342,256, Cl. 91-420.000.

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Anderson, Richard N. Material fastening structure and method. 4,342,524, Cl. 403-331.000.

Andrews, Glenn C., to Pfizer Inc. 5-Keto-L-ascorbic acid-5,5-dimethyl ketal, derivatives thereof and its use as an antioxidant and intermediate. 4,342,695, Cl. 549-315.000.

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Kober, Alfred E.; and Kestner, Mark O., 4,342,797, Cl. 427-220.000.

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Archer, William R., to General Electric Company. Proportional base drive circuit. 4,342,956, Cl. 323-289.000.

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Grossmann, Horst; and Bausch, Alfred, 4,342,931, Cl. 310-50.000.

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Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, 4,342,867, Cl. 542-417.000.
Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, 4,342,847, Cl. 525-66.000.
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,342,704, Cl. 260-464.000.
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Illger, Hans-Walter; Dahm, Manfred; and Gonzalez-Dorner, Alberto C., 4,342,798, Cl. 427-244.000.
Reel, Henning; Kruckenberg, Winfried; and Schundehutte, Karl H., 4,342,683, Cl. 260-156.000.
Steinbeck, Werner; and Gehrke, Gunter, 4,342,701, Cl. 260-383.000.

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Liebegott, Klaus, 4,343,031, Cl. 362-80.000.

Bayusik, John G.: *See—*
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BBC Brown, Boveri & Company, Limited: *See—*
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Beatovic, Branislav P.; Kuzmanovic, Stevan L.; Kudinov, Vladimir M.; and Petuskov, Vladimir. Explosion method of finishing welded joints. 4,342,609, Cl. 148-127.000.
Beatrice Foods Co.: *See—*
Lee, Gerry A., 4,342,406, Cl. 222-442.000.
Beaulieu, Theodore J.: *See—*
Akeel, Hadi K. A.; Bartlett, Donald S.; Beaulieu, Theodore J.; and Choly, Mitchell, 4,342,536, Cl. 414-744.00A.
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Becker, Joahann; Koop, Hermann; and Schueddekopf, Hans, to Polygram GmbH. Anode case for a galvanic bath. 4,342,635, Cl. 204-263.000.
Beckman Instruments, Inc.: *See—*
Conway, George E., 4,342,419, Cl. 233-1.00A.
Beckstead, Leo W.: *See—*
Queneau, Paul B.; Beckstead, Leo W.; and Hogsett, Robert F., 4,342,728, Cl. 423-61.000.
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Harbridge, John B., 4,342,749, Cl. 424-114.000.
Behnke, Joachim: *See—*
Rasen, Alfred; Vollbrecht, Rolf; Schenesse, Klemens; and Behnke, Joachim, 4,342,807, Cl. 428-180.000.
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Howard, Richard E.; and Jackel, Lawrence D., 4,342,924, Cl. 307-245.000.
Ohm, Edward A., 4,343,004, Cl. 343-781.00P.
Vella-Coleiro, George P.; and Wolfe, Raymond, 4,342,962, Cl. 324-232.000.
Willens, Ronald H., 4,342,608, Cl. 148-101.000.
Belleli, Riccardo. Counterflow heat exchanger having two fixed tube plates. 4,342,362, Cl. 165-158.000.
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Normann, Richard W.; and Niles, Paul D., 4,342,494, Cl. 339-105.000.
Bendrik, Valery G.: *See—*
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Bennett, Benny M.; Kocher, Timothy L.; and Little, David M., to AMP Incorporated. Double entry crimp terminal. 4,342,495, Cl. 339-163.000.
Benton, Charles M.; Arnold, Franklin D.; Kellogg, George W.; and Kirk, Roger D., to National Steel Corp.; and Southwire Co. Carbon anode furnace cover construction. 4,342,178, Cl. 52-125.500.
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Berenyi nee Poldermann, Edit; Gorog, Peter; Grasser, Katalin; Kosoczky, Ibolya; Koracs nee Palotay, Agnes; and Petocz, Lujza, to Egyt Gyogyszervegyeszeti Gyar. Novel dihydro-as-triazino[5,6-c]quinoline derivatives and a process for the preparation thereof. 4,342,766, Cl. 424-249.000.
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Berke, Herbert; and Allen, John H., to United States of America, Navy. High speed digital to analog converter circuit. 4,342,984, Cl. 340-347.0DA.
Bernath, Tibor. Apparatus for extracting a hot gas sample from a chamber and for feeding the sample to an analyzer. 4,342,234, Cl. 73-863.120.
Berns, Lennart: *See—*
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Bernstein, Seymour: *See—*
Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, 4,342,752, Cl. 424-180.000.
Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, 4,342,753, Cl. 424-180.000.
Berry, David A.; Preston, Joseph R.; and Hillenbrand, Louis J., to RCA Corporation. High density information disc lubricants. 4,342,660, Cl. 252-49.600.
Best Lock Corporation: *See—*
Foshee, William R., 4,342,478, Cl. 292-352.000.
Bestard, Thomas L.; and Roesler, Richard R., to Eaton Corporation. Grapple head harness. 4,342,534, Cl. 414-734.000.
Beta Corporation of St. Louis: *See—*
Volk, Joseph A., Jr., 4,342,361, Cl. 165-113000.
Bethesda Research Laboratory: *See—*
Chirikjian, Jack G., 4,342,833, Cl. 435-178.000.
Bethune, Billy R.; and Dearing, Charles C., to Container Corporation of America. Container with integral hanger bar. 4,342,389, Cl. 206-288.000.
Betz Laboratories, Inc.: *See—*
Steelhammer, Joe C.; and Hutta, Paul J., 4,342,733, Cl. 423-242.000.
Bey, Philippe; and Jung, Michel, to Merrell-Toraude et Cie. Method of depleting endogenous monoamines. 4,342,780, Cl. 424-319.000.
Beyl, Jean J. A., to Ste Look. Ski brake. 4,342,468, Cl. 280-605.000.
Bhatti, Mohinder S.; and Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass fibers. 4,342,577, Cl. 65-1.000.
Bhatti, Mohinder S.; and Higginbotham, James M., Sr., to Owens-Corning Fiberglas Corporation. Method of forming apparatus for forming glass fibers. 4,342,578, Cl. 65-1.000.
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Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,342,265, Cl. 105-215.00C.
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Muller, Ortwin; Biber, Klaus; Schmauder, Roland; and Spitznas, Manfred, 4,342,951, Cl. 318-625.000.
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Gladh, Arne I. L., 4,342,619, Cl. 162-262.000.
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White, Claude C., 4,342,527, Cl. 405-259.000.
Birnberg, Gary H.: *See—*
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McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,690, Cl. 260-326.340.
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Biss, Rudy; and Nadeau, Raymond, to Les Services TMG Inc. Direct flotation of pyrochlore. 4,342,648, Cl. 209-166.000.
Bjorkholm, Paul J., to American Science and Engineering, Inc. Flying spot scanner having arbitrarily shaped field size. 4,342,914, Cl. 378-99.000.
Black & Decker Inc.: *See—*
Grossmann, Horst; and Bausch, Alfred, 4,342,931, Cl. 310-50.000.
Horne, David, 4,342,929, Cl. 310-43.000.
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Johnson, Bruce K.; and Black, Kenneth P., 4,342,506, Cl. 354-27.000.
Blair, Charles M., Jr., to Magna Corporation. Method for breaking petroleum emulsions and the like using thin film spreading agents comprising a polyether polyol. 4,342,657, Cl. 252-8.55D.
Blanchard, Robert R.; and Bourne, Tommy R., to Dow Chemical Company, The. Processing modifier for high-density polyethylene. 4,342,848, Cl. 525-231.000.
Blome, James C., to Swiss Aluminium Ltd. Molten metal filter. 4,342,664, Cl. 252-313.00R.
Blout, Bennett O., to Evans Products Company. Hopper discharge unit with sliding gate. 4,342,267, Cl. 105-282.00P.
Bloyd, Jon A. Light indicating system having light emitting diodes and power reduction circuit. 4,342,947, Cl. 315-199.000.
Blum, Jaoques, to Uranium Pechiney Ugine Kuhlmann. Control rod for a nuclear reactor. 4,342,722, Cl. 376-327.000.
Blutspendedienst der Landesverbande des Deutshen Roten Kreuzes Niedersachsen Oldenburg and Remen, GmbH: *See—*
Ahrens, Ulrich E., 4,342,651, Cl. 210-636.000.
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances, Inc. Use of mixture of aliphatic C_{10} branched olefins in augmenting or enhancing the aroma of articles subjected to action of aqueous hypochlorites. 4,342,663, Cl. 252-186.360.
Bodine, Albert G. Apparatus and method for coupling sonic energy to the bore hole wall of an oil well to facilitate oil production. 4,342,364, Cl. 166-249.000.
Bogan, Richard T.: *See—*
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Boger, Manfred: *See—*
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Bohanazky, Victor A., to Davy Inc. Sealing apparatus. 4,342,555, Cl. 432-115.000.
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; and Nehmiz, Peter, to International Business Machines Corporation. Mask for structuring surface areas, and method of making it. 4,342,817, Cl. 430-5.000.
Bollinger, Frederic G., to Monsanto Company. Substituted 2-imino-1,3-dithio and 1,3-oxathio heterocyclic compounds as herbicidal antidotes. 4,342,586, Cl. 71-90.000.
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Borg-Warner Chemicals, Inc.: *See—*
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Borg-Warner Corporation: *See—*
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Ledvina, Timothy J.; and Mead, Robert H., 4,342,560, Cl. 474-157.000.
Borg-Warner Limited: *See—*
Gardner, Derek, 4,342,238, Cl. 74-689.000.
Boring, David E.; and Quibell, Larry T., to Sonoco Products Company. Positive seal spout. 4,342,408, Cl. 222-566.000.
Born, Raisa I.: *See—*
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Botrel, Yvon; Fremond, Roland; and Mourlevat, Jean, to Societe Nationale Elf Aquitaine (Production). Connector for an end of an underwater pipe. 4,342,519, Cl. 405-169.000.
Bott, John A. Vehicle luggage rack. 4,342,411, Cl. 224-319.000.
Bourdeau, Romeo G., to United Technologies Corporation. Cubic boron nitride and metal carbide tool bit. 4,342,595, Cl. 75-238.000.
Bourne, Tommy R.: *See—*
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Bowers, Joseph S., Jr.: *See—*
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Bowie, Robert A., to Sperry Corporation. Synchro stabilizer circuit. 4,342,952, Cl. 318-654.000.
Box, Thomas, to Spectrum International, Inc. Stackable poultry coop. 4,342,393, Cl. 206-504.000.
Bozzini, Vittorio. Teleindicator for information boards. 4,342,992, Cl. 340-764.000.
BP Chemicals Limited: *See—*
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Braybrook, Kenneth A., to Borg-Warner Corporation. Power transmission belt. 4,342,561, Cl. 474-242.000.
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Breitenfellner, Franz: *See—*
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Brewer, Richard J.; and Bogan, Richard T., to Eastman Kodak Company. High temperature bleaching method for cellulose esters. 4,342,865, Cl. 536-76.000.
Brewing Patents Limited: *See—*
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Bridgestone Tire Co., Ltd.: *See—*
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Bristol-Myers Company: *See—*
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British Petroleum Company Limited, The: *See—*
Brown, David E.; Hall, Stephen M.; and Mahmood, Mahmood N., 4,342,792, Cl. 427-34.000.
Ehlers, Jorn; and Haukelt, Helmut, 4,342,661, Cl. 252-70.000.
Webb, Michael G., 4,342,655, Cl. 210-749.000.
Brix, Joachim; and Weiss, Friedrich, to Jastram-Werke GmbH KG. Fin rudder for ships. 4,342,275, Cl. 114-162.000.
Brodrene Gram A/S: *See—*
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Brogardh, Torgny, to ASEA Aktiebolag. Fiber optical measuring device. 4,342,919, Cl. 250-577.000.
Brollos, Gunther. Device for pressing pants. 4,342,409, Cl. 223-73.000.
Brother Kogyo Kabushiki Kaisha: *See—*
Nozu, Takashi; Yamada, Minoru; and Watanabe, Yasuhiko, 4,342,528, Cl. 408-6.000.
Brown, David E.; Hall, Stephen M.; and Mahmood, Mahmood N., to British Petroleum Company Limited, The. Electrodes and method of preparation thereof for use in electrochemical cells. 4,342,792, Cl. 427-34.000.
Brown, James B. Liquid dispensing unit and method of manufacture thereof. 4,342,395, Cl. 206-530.000.
Brown, Roy N.; and Stout, Mike F., to Advanced Chemical Technologies, Inc. Method for inhibiting corrosion of internal structural members of reinforced concrete. 4,342,796, Cl. 427-136.000.
Brown, Wade R.; and Pick, James M., to Eaton Corporation. Electromechanical lid latch assembly. 4,342,476, Cl. 292-201.000.
Brown, William F., to Weston Research Corporation. Coating compositions for liners of molten metal troughs and ladles. 4,342,597, Cl. 106-38.270.
Brown & Williamson Tobacco Corporation: *See—*
Sanford, Robert A., 4,342,322, Cl. 131-336.000.
Browning Engineering Corporation: *See—*
Browning, James A., 4,342,551, Cl. 431-10.000.
Browning, James A., to Browning Engineering Corporation. Ignition method and system for internal burner type ultra-high velocity flame jet apparatus. 4,342,551, Cl. 431-10.000.
Bruner, Wally. Apparatus for temporarily hanging for aligning cabinets and the like. 4,342,439, Cl. 248-544.000.
Brunn, Reiner: *See—*
Ziemek, Gerhard; Klebl, Wolfram; Hoffmann, Ernst; and Brunn, Reiner, 4,342,190, Cl. 57-293.000.
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Brunswick Corporation: *See—*
Haasl, William D.; and Weronke, Robert B., 4,342,634, Cl. 204-197.000.
Brush, Charles K.; and Weinstock, Joseph, to SmithKline Corporation. Intermediates for preparing 6-lower alkyl-7,8-dihydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,342,686, Cl. 260-239.0BB.
Bruton, Christopher J.: *See—*
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Buchholz, Jeffrey C., to General Motors Corporation. On-board detection of antiknock compounds in automotive gasoline and apparatus therefor. 4,342,628, Cl. 204-1.00T.
Buckeye Cellulose Corporation, The: *See—*
Cox, Lloyd A., 4,342,392, Cl. 206-438.000.
Buckley, William D., to Perkin-Elmer Corporation, The. X-ray lithography apparatus and method of use. 4,342,917, Cl. 378-34.000.
Bucknam, Donald C. Power plant and process utilizing gravitational force. 4,342,920, Cl. 290-1.00R.
Budai, Zoltan; Magdanyi, Laszlo; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; and Kosoczky, Ibolya, to Egyt Gyogyszervegyeszeti Gyar. Basic ethers and pharmaceutical compositions containing the same. 4,342,762, Cl. 424-246.000.
Budzich, Mieczyslaw; and Fitz, Forest G. Article distributing apparatus. 4,342,386, Cl. 198-360.000.
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Sluys, Wesley W., 4,342,276, Cl. 114-266.000.
Sluys, Wesley W., 4,342,277, Cl. 114-293.000.
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Bunker Ramo Corporation: *See—*
Hutter, Harold G.; and Ramsland, August B., 4,342,496, Cl. 339-177.00E.
Burgund, Paul W. Hydrogen generation as fuel by use of solar ultraviolet light process. 4,342,738, Cl. 423-579.000.
Burke, John A., to Green, Tweed & Co., Inc. Spring seal. 4,342,463, Cl. 277-177.000.
Burlington Industries, Inc.: *See—*
Key, Worth M.; and Herkness, Wayne, 4,342,340, Cl. 139-435.000.
Teague, Edward W.; Hance, Max H.; and Neal, Carl R., 4,342,565, Cl. 8-532.000.
Burnett, William C. Method and apparatus for controlling the fall of grain through a conduit. 4,342,383, Cl. 193-32.000.
Burroughs Corporation: *See—*
Holz, George E., 4,342,993, Cl. 340-779.000.
Shima, George T., 4,342,995, Cl. 340-825.500.
Buskirk, Allan F. V.; and Moskovitch, Gadi, to Honeywell Inc. Central station alarm reporting system. 4,342,986, Cl. 340-539.000.
Buxbaum, Lothar; and Breitenfellner, Franz, to Ciba-Geigy Corporation. Glass-reinforced polyester moulding compounds. 4,342,678, Cl. 524-539.000.
B.V. Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg: *See—*
Spaans, Cornelis; and Nijhof, Herman H., 4,342,162, Cl. 37-1.000.
Cable Electric Products, Inc.: *See—*
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Calaway, Ward M.: *See—*
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Calvet, Pierre; Ching, Gil; and Rolland, Philippe, to Societe pour l'Equipement de Vehicules (S.E.V.). Vortex flow rate measuring device. 4,342,232, Cl. 73-861.050.
Cama, Lovji D.: *See—*
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Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,869, Cl. 544-21.000.
Campbell, Douglas R., to Imaging Systems Corporation. Developer with coated carrier material and method of making. 4,342,824, Cl. 430-108.000.
Campbell, Frederick R., to Crown Zellerbach Corporation. Box assembly system. 4,342,563, Cl. 493-168.000.
Campbell, James R.; and Anspach, Roy L., to Mahoney, Thomas P. Method of fabricating honeycomb core structure. 4,342,899, Cl. 219-78.120.
Campbell Soup Company: *See—*
Clatfelter, Kenneth A., 4,342,788, Cl. 426-243.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Vickers, Geoffrey W., 4,342,425, Cl. 239-424.000.

Cane, Charles; and Yeomans, Bertram, to BP Chemicals Limited. Dehydration of alcohols. 4,342,627, Cl. 203-19.000.
Canon Kabushiki Kaisha: *See*—
Hosono, Nagao; and Kanbe, Junichiro, 4,342,822, Cl. 430-97.000.
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Canup, Robert E.; and Alperstein, Martin, to Texaco Inc. Ignition system for an internal combustion engine employing fuel injection. 4,342,305, Cl. 123-617.000.
Caratsch, Hans-Peter, to Sinter Limited. Method and apparatus for the thermal treatment of impregnated material webs. 4,342,718, Cl. 264-345.000.
Carl Zeiss-Stiftung: *See*—
Muller, Ortwin; Biber, Klaus; Schmauder, Roland; and Spitznas, Manfred, 4,342,951, Cl. 318-625.000.
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Tappe, Horst, 4,342,688, Cl. 260-315.000.
Castelli, Mario; and Martini, Bruno, to Industrie Pirelli Societa per Azioni. Electric cable for medium voltage. 4,342,880, Cl. 174-36.000.
Catalano, Anthony W.; and Bhushan, Manjul, to University of Delaware, The. Thin film photovoltaic device. 4,342,879, Cl. 136-265.000.
Catchpole, Charles R.; and Horton, Michael E. Engine testing method and apparatus. 4,342,220, Cl. 73-49.700.
CBS Inc.: *See*—
Rhodes, Harold B.; and Murphy, James B., 4,342,246, Cl. 84-1.040.
Cecere, Mirella: *See*—
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Cernansky, Joseph S.; and Garner, Harold E., to Entex Industries, Inc. Radio controlled motorcycle. 4,342,175, Cl. 46-254.000.
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Jandera, Jan; and Studnicka, Jan, 4,342,225, Cl. 73-432.00R.
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Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., to Perkin-Elmer Corporation, The. Filter indexing for spectrophotometer system. 4,342,516, Cl. 356-332.000.
Chang, Cheng H., to Champion International Corporation. Pressure-sensitive copy systems containing phenolic ester as color-stabilizers. 4,342,473, Cl. 282-27.500.
Chang, Eng-Pi; Lazarz, Christine A.; and Cook, Edward H., Jr., to Hooker Chemicals & Plastics Corp. Process for forming a porous polyfluoroalkylene sheet useful for separating anolyte from catholyte in electrolytic cells. 4,342,636, Cl. 204-296.000.
Chang, I-Cheng, to Itek Corporation. Transverse tunable acousto-optic filter. 4,342,502, Cl. 350-358.000.
Chang, Long F., to Owens-Illinois, Inc. Self-supporting plastic container for liquids. 4,342,398, Cl. 215-1.00C.
Changani, Pushkumar D.; Peacock, Donald G.; and Roberts, David, to Raychem Corporation. Polymeric articles. 4,342,800, Cl. 428-36.000.
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Cheng, Dah-Chieh O.; Bowers, Joseph S., Jr.; and Maner, Ronald J., to Eastman Kodak Company. Process for the preparation of α-halogenated cresol esters. 4,342,877, Cl. 560-130.000.
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Stone, Richard S.; and Chercasky, Morris, 4,342,973, Cl. 335-2.000.
Chervenak, Michael C.: *See*—
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Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt: *See*—
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Chirikjian, Jack G., to Bethesda Research Laboratory. Immobilized restriction endonucleases. 4,342,833, Cl. 435-178.000.
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Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, to Merck & Co., Inc. Cephalosporin antibiotic compositions. 4,342,757, Cl. 424-246.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, to Merck & Co., Inc. Cephalosporin antibiotics. 4,342,869, Cl. 544-21.000.
Christensen, Helge K.: *See*—
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CIR S.p.A. Divisione Sasib: *See*—
Zullo, Antonio, 4,342,321, Cl. 131-282.000.
Citrin, Paul S., to Dynatech Laboratories, Incorporated. Liquid dispensing apparatus. 4,342,407, Cl. 222-485.000.
Claassen, Josephus A. M., to Hydraudyne B.V. Counterbalancing hydraulic system. 4,342,164, Cl. 37-73.000.
Clague, Robert E.; Hammar, Richard H.; and Harvey, Douglas J., to General Motors Corporation. Method of making a negative lead-acid storage battery plate. 4,342,343, Cl. 141-1.100.
Clancy, John F.; and Welter, Clarence L., to G & W Electric Specialty Company. Modular vault-type load break switch. 4,342,889, Cl. 200-144.00R.
Clark, Amos S., Jr.; McMordie, James R.; and Walker, Michael D., to Bahnson Company, The. Travelling suction cleaning apparatus. 4,342,130, Cl. 15-312.00A.
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Clark, Lancelot P., 4,342,160, Cl. 36-83.000.
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Clifford, David P.; and Sewell, Robert A., to Dow Chemical Company Limited. Optically active isomers of substituted pyridine methyl esters of cyclopropane carboxylic acid and their use as insecticides. 4,342,770, Cl. 424-263.000.
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Cole, Francis X., to Collaborative Research, Inc. Immunoassay products and methods. 4,342,826, Cl. 435-7.000.
Cole, Saxon, to American Air Filter Company, Inc. Pitch diameter gauge for a variable speed pulley. 4,342,153, Cl. 33-169.00B.
Coleman, John D., to Commonwealth Scientific and Industrial Research Organ. Curtain coating method. 4,342,423, Cl. 239-1.000.
Colgate-Palmolive Company: *See*—
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Collaborative Research, Inc.: *See*—
Cole, Francis X., 4,342,826, Cl. 435-7.000.
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Bradshaw, John; and Hayes, Norman F., to Glaxo Group Limited. Aminocyclopentane alkenoic acids and esters and pharmaceutical compositions. 4,342,756, Cl. 424-244.000.
Collins, John F., to Preiser Scientific, Incorporated. Oxygen supply apparatus. 4,342,725, Cl. 422-126.000.
Collins, John J., to Nicholl Brothers, Inc. Battery protection circuit. 4,342,953, Cl. 320-13.000.
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Smitley, Marion L., 4,342,371, Cl. 180-165.000.
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Commonwealth Industrial Gases Limited, The: *See*—
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Coleman, John D., 4,342,423, Cl. 239-1.000.
Concepcion, Jose Ma. R. Method and apparatus for utilizing alcohol as fuel for internal combustion engine. 4,342,287, Cl. 123-1.00A.
Conner, Alvin J., Sr. Non-petroleum based metal corrosion inhibitor. 4,342,596, Cl. 106-14.130.
Conner, Donald E.; and Fogel, Arnold W., to Van Dyk & Company, Inc. Benzene sulfonate quaternary ammonium salts. 4,342,706, Cl. 260-501.150.
Container Corporation of America: *See*—
Bethune, Billy R.; and Dearing, Charles C., 4,342,389, Cl. 206-288.000.
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Continental Disc Corporation: *See*—
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Krishnakumar, Suppayan M.; Pocock, John F. E.; Mahajan, Gautam K.; and Trembly, John F., 4,342,895, Cl. 219-10.430.
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Coors Container Company: *See*—
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Cope, Leonard D.: *See*—
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Lovera, Bruno; Pancotti, Santino; Pariani, Emilio; and Virtuani, Giuseppe, 4,342,540, Cl. 416-140.000.
Councilman, Clyde L.; and Alter, Larry D., to E-Systems, Inc. Continuously variable surface acoustic wave delay line. 4,342,971, Cl. 333-152.000.
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Cox, Lloyd A., to Buckeye Cellulose Corporation, The. Wrap for sterile articles. 4,342,392, Cl. 206-438.000.
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Cozzi, Paolo; Mongelli, Nicola; Pillan, Antonio; Bergamaschi, Maria; and Lovisolo, Pier P., to Farmitalia Carlo Erba S.p.A. 3-(1-Imidazolyl)-derivatives of 2,3-dihydro-4H-1-benzopyran. 4,342,775, Cl. 424-273.00R.
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., to Merck & Co., Inc. 4-Substituted-3-hydroxy-3-pyrroline-2,5-dione inhibitors of glycolic acid oxidase. 4,342,776, Cl. 424-274.000.
Cragoe, Edward J., Jr., to Merck & Co., Inc. 1-(Substituted-aminoalkoxyphenyl)-2-methylene-1-alkanones, compositions and use thereof. 4,342,782, Cl. 424-330.000.
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Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,342,265, Cl. 105-215.00C.
Cripps, Michael W.; and Lee, Raymond. Fish hook disgorger. 4,342,171, Cl. 43-53.500.
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Dahlstrom, Donald A., to Envirotech Corporation. Flashed-down residue treatment including filtering and solvent repulping. 4,342,638, Cl. 208-8.00R.
Dahm, Manfred: *See*—
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Date, K. Henry; and Wainio, Ronald, to McGraw-Edison Company. Load break switch. 4,343,030, Cl. 361-335.000.
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Demi, Roy C., to Robertshaw Controls Company. Burner valve control device, an electrical switch unit therefor and methods of making the same. 4,342,886, Cl. 200-61.860.
Denman, Dennis, to Kennametal Inc. Rotary drills and drill bits. 4,342,368, Cl. 175-410.000.
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Dennis, Edmund G.; and Brandmaier, C. Edward, to Cashin Systems Corp. Card folding and creasing device. 4,342,182, Cl. 53-156.000.
Dennison, Clifford C. Modular automatic water distiller. 4,342,625, Cl. 202-181.000.
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Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Orchestra chorus in an electronic musical instrument. 4,342,248, Cl. 84-1.240.
Diamond, Howard; Enzer, Steven E.; and Flowers, Joseph, Jr., to Transidyne General Corp. Apparatus for electrochemical measurements. 4,342,964, Cl. 324-450.000.

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DiMassimo, Donald V.; and May, John B., to General Electric Company. AC Fail-detect and battery switchover circuit for multi-bus power supply. 4,342,922, Cl. 307-66.000.
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Doehnert, Donald F., to Permacel. Pressure-sensitive adhesive tape having a release coating. 4,342,815, Cl. 428-522.000.
Doguchi, Nobushige, to Yoshida Kogyo K.K. Method of manufacturing a thermally insulating sash bar. 4,342,144, Cl. 29-155.00R.
Doi, Takao: *See—*
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Dola, Frank P., to AMP Incorporated. Pressure switch with conductive housing. 4,342,888, Cl. 200-83.00R.
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Doyle, Thomas P. Wiper device for removal of snow and liquid from ski glasses or goggles. 4,342,128, Cl. 15-245.000.
Drabek, Jozef; and Boger, Manfred, to Ciba-Geigy Corporation. Insecticidal (2,3-dihydro-2,2-dimethylbenzofuran-7-yloxy-N-methylcarbamoyl)-(N'-alkoxycarbamoyl)-sulphides. 4,342,778, Cl. 424-285.000.
Drakulic, John. Water pump housing. 4,342,290, Cl. 123-41.470.
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Du Bois, Donald W.; and Darlington, William B., to PPG Industries, Inc. Solid polymer electrolyte chlor-alkali process. 4,342,629, Cl. 204-98.000.
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Kutsch, Howard J., 4,342,806, Cl. 428-174.000.
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Durand, Pierre; and Gloriod, Pierre, to Societe Chimique des Charbonnages—CdF Chimie. Process for manufacturing ethylene polymers. 4,342,853, Cl. 526-68.000.
Duval Corporation: *See—*
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Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,342,873, Cl. 546-186.000.
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EA Industries, Incorporated: *See—*
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Eastman Kodak Company: *See—*
Allen, Robert P.; and Ruggles, Albert C., 4,342,850, Cl. 525-339.000.
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Guild, John R., 4,342,151, Cl. 29-827.000.
Jackson, Winston J., Jr.; and Darnell, William R., 4,342,862, Cl. 528-176.000.
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Chute, Richard; and Horan, Ralph P., 4,342,624, Cl. 202-176.000.
McVeigh, Peter J.; and Rudish, Ronald M., 4,343,006, Cl. 343-854.000.
Zajac, John, 4,342,901, Cl. 219-121.0PD.
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Ebner, Peter R., to Itek Corporation. LED-Fiber optic character printer. 4,342,504, Cl. 354-7.000.
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Edwards, Robert G., to Interco Incorporated. Metatarsal guard safety shoe. 4,342,159, Cl. 36-77.00R.
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Nagel, Ferenc, 4,342,937, Cl. 313-113.000.
Egyt Gyogyszervegyeszeti Gyar: *See—*
Berenyi nee Poldermann, Edit; Gorog, Peter; Grasser, Katalin; Kosoczky, Ibolya; Koracs nee Palotay, Agnes; and Petocz, Lujza, 4,342,766, Cl. 424-249.000.
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Ehlers, Jorn; and Haukelt, Helmut, to British Petroleum Company Limited, The. Heat storage medium. 4,342,661, Cl. 252-70.000.
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Ekeborg, Bo G.: *See—*
Lofgren, Stig-Gunnar; and Ekeborg, Bo G., 4,342,270, Cl. 111-1.000.
Eklund, Urban, to Kockums Industri AB. Band sawing method. 4,342,241, Cl. 83-56.000.
Ekstrom, Lincoln: *See—*
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El Paso Polyolefins Company: *See—*
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Cure, Omer, 4,342,633, Cl. 204-195.00S.
Eli Lilly and Company: *See—*
Kastner, Ralph E.; and Hamil, Robert L., 4,342,829, Cl. 435-118.000.
Moore, Richard E.; and Mynderse, Jon S., 4,342,751, Cl. 424-177.000.
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Ellis, Benjamin C., Jr., to Western Electric Company, Inc. Apparatus for depositing cable. 4,342,434, Cl. 242-82.000.
Emeott, Marvin: *See—*
Skinner, Earl; Emeott, Marvin; and Jevne, Allan, 4,342,793, Cl. 427-44.000.
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Hopkins, Phillip R., 4,342,294, Cl. 123-190.00E.
Eng, Jeffrey D., to Hooker Chemicals & Plastics Corp. Gasket means for electrolytic cell assembly. 4,342,460, Cl. 277-1.000.
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Engel, Rudolf; and Meier, Horst P., 4,342,226, Cl. 73-504.000.
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Dahlstrom, Donald A., 4,342,638, Cl. 208-8.00R.
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Enzer, Steven E.: *See*—
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Erickson, Alve J.: *See*—
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Erickson, Ernest A.; Hanson, Rodger D.; and Mews, Lance D., to Tenneco Inc. Muffler with three part welded joint. 4,342,373, Cl. 181-266.000.
Erickson, Lennart G.; and Worne, Howard E. Organic sludge-energy recycling method. 4,342,650, Cl. 210-606.000.
Erickson, Wayne K., to Phillips Petroleum Company. Method for the production of a fused nonwoven fabric. 4,342,813, Cl. 428-296.000.
Ernst, Richard H.: *See*—
Faber, Marcel D.; Ernst, Richard H.; and Lefebvre, Philip H., 4,342,831, Cl. 435-163.000.
Esteve Soler, Jose, to Provesan S.A. P-Chloroacetophenone oxime compounds and pharmaceutical compositions. 4,342,763, Cl. 424-248.560.
Estopinal, Earl J., Jr., to Columbian Chemicals Company. Reduction of the degradation of refractories in a carbon black reactor. 4,342,736, Cl. 423-450.000.
Ettmayer, Peter; and Kieffer, Richard, to Sandvik Aktiebolag. Cemented carbide. 4,342,594, Cl. 75-203.000.
Evans, Gary E., to Westinghouse Electric Corp. Array modification that adds height capability to a 2D array radar. 4,342,997, Cl. 343-16.00R.
Evans, John H., to Stant Inc. Locking gas cap with torque override feature. 4,342,208, Cl. 70-165.000.
Evans, John W.; Young, Gary C.; and Stager, Charles W., to Nutrisearch Company. Production of a stable lactose product. 4,342,604, Cl. 127-31.000.
Evans Products Company: *See*—
Blout, Bennett O., 4,342,267, Cl. 105-282.00P.
Everdyke, Wayne D.: *See*—
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Everts, Robert G. Crankshaft with laminated counterweight. 4,342,236, Cl. 74-603.000.
Exxon Research & Engineering Co.: *See*—
Mauldin, Charles H.; and Baird, William C., Jr., 4,342,644, Cl. 208-139.000.
Pruett, Roy L.; and Bradley, John S., 4,342,838, Cl. 518-713.000.
Eyden, Everett A. Concrete deck forming apparatus. 4,342,440, Cl. 249-19.000.
Faber, Marcel D.; Ernst, Richard H.; and Lefebvre, Philip H., to American Can Company. Fermentable acid hydrolyzates and fermentation process. 4,342,831, Cl. 435-163.000.
Fagnant, Norman A.; and Young, James L., to Nelmor Company, Inc. Rotary parts separator. 4,342,396, Cl. 209-546.000.
Farinacci, Anthony L., to United States of America, Army. High altitude platform air drop system. 4,342,437, Cl. 244-137.00R.
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Cozzi, Paolo; Mongelli, Nicola; Pillan, Antonio; Bergamaschi, Maria; and Lovisolo, Pier P., 4,342,775, Cl. 424-273.00R.
Feamster, William C., III. Canopy cutting device. 4,342,239, Cl. 82-4.00C.
Feecon Corporation: *See*—
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Fetzer, Wolfgang, to Kraftanlagen AG. Hot gas filter. 4,342,574, Cl. 55-341.00M.
Fico Fischer & Co.: *See*—
Lange, Karl-Heinz, 4,342,191, Cl. 59-35.00R.
Field, David R.: *See*—
Wahlfeldt, Richard W.; and Field, David R., 4,342,251, Cl. 86-1.00R.
Firecom, Inc.: *See*—
Desjardins, Paul A., 4,342,985, Cl. 340-525.000.
Firestone, Raymond A., to Merck & Co., Inc. Allylsulfoxide enzyme inhibitors. 4,342,758, Cl. 424-246.000.
Firmaframe Nominees Pty. Ltd.: *See*—
Leivenzon, Simon; and Leivenzon, Steven, 4,342,354, Cl. 160-133.000.
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Thomas, Alan F., 4,342,320, Cl. 131-276.000.
Fishbaugh, Warren D.; Batty, W. Lawson, Jr.; and Freedman, Frank J., to Sybron Corporation. Method and apparatus for molding indicia in roto-molded plastic containers. 4,342,716, Cl. 264-225.000.
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Budzich, Mieczyslaw; and Fitz, Forest G., 4,342,386, Cl. 198-360.000.
Fives-Cail Babcock: *See*—
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Fleetwood Enterprises, Inc.: *See*—
Corner, Frank G.; and Wilkinson, Robert E., 4,342,469, Cl. 280-718.000.
Fletcher, Laird C.; and Beard, Harold J., to Delta Central Refining, Inc. Method of rerefining used lubricating oil. 4,342,645, Cl. 208-184.000.
Fletcher-Terry Company, The: *See*—
Grzeika, Eugene W.; and Kozyrski, Vincent T., 4,342,414, Cl. 227-109.000.
Flowers, Joseph, Jr.: *See*—
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FMC Corporation: *See*—
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Ford Aerospace & Communications Corporation: *See*—
Han, Ching C.; Bilenko, Herman W.; and Hwang, Yeongming, 4,343,005, Cl. 343-781.00P.
Luh, Howard H., 4,343,002, Cl. 343-753.000.
Forney, George D., Jr., to Codex Corporation. Modem circuitry. 4,343,041, Cl. 375-14.000.
Forox Corporation: *See*—
Thompson, Edwin R., 4,342,147, Cl. 29-417.000.
Foshee, William R., to Best Lock Corporation. Knob-connector spring. 4,342,478, Cl. 292-352.000.
Fowler, J. Alan; Haller, George S.; and Rogers, C. David, to United States Steel Corporation. Automatic roof bolting drill retention apparatus. 4,342,487, Cl. 308-3.900.
Fox, Forrest. Method and apparatus for zeroing and calibrating an invasive blood pressure monitoring system. 4,342,218, Cl. 73-4.00R.
Frame, Wayne W., to Ball Corporation. Image sensor sensitivity variation compensator. 4,343,021, Cl. 358-213.000.
France Ebauches S.A.: *See*—
Pellaton, Michel H., 4,342,930, Cl. 310-49.00R.
Frank, Pierre; and Sailer, Andre L., to P C U K Produits Chimiques Ugine Kuhlmann. Hydrosoluble pyrazolone trisazo dyestuffs derived from 4,4'-diamino-benzenesulfanilide. 4,342,684, Cl. 260-159.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef; and Brunninger, Manfred, 4,342,165, Cl. 37-104.000.
Frech, John W.: *See*—
Weigand, Benjamin F.; and Frech, John W., 4,342,983, Cl. 340-347.0CC.
Freedman, Frank J.: *See*—
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French, Lewis L. Focused nuclear interface survey instrument and method of determining density changes in mining and storage wells. 4,342,911, Cl. 250-258.000.
Froidh, Tor A.; and Widlund, Leif U. R., to Molnlycke Aktiebolag. Package and method and apparatus for manufacturing the same. 4,342,562, Cl. 493-124.000.
Fromknecht, Charles T., to Singer Company, The. Carpet pile sensor and indicator for carpet cleaner. 4,342,132, Cl. 15-339.000.
Fu, Chao-Hsiang; and Liu, Sheau-Ming S., to Intel Corporation. Process for forming opening having tapered sides in a plasma nitride layer. 4,342,617, Cl. 156-643.000.
Fuchsman, Charles H.: *See*—
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Fuji Photo Film Co., Ltd.: *See*—
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Yokota, Yukio; Sato, Masamichi; and Matsumoto, Kenji, 4,342,818, Cl. 430-7.000.

Fuji Photo Optical Co., Ltd.: *See*—
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Fujii, Norio; Kawahara, Atsushi; and Sawada, Masahiro, to Nippon Kogaku K.K. Automatic focusing device of a microscope. 4,342,905, Cl. 250-201.000.

Fujikura Cable Works, Ltd., The: *See*—
Usuki, Takayoshi; Endo, Yukio; Ito, Kichizo; Tuboi, Takao; and Kubota, Shin, 4,342,814, Cl. 428-383.000.

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Fujio, Katuharu: *See*—
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Fujisawa Pharmaceutical Company, Ltd.: *See*—
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Fujita, Takashi: *See*—
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Fukase, Motonobu; Yokota, Toshikazu; and Oura, Masahisa, to Sayama Precision Industrial Co., Ltd. Medal reminant slot machine games. 4,342,384, Cl. 194-1.00C.

Fukuda, Sunichi; and Muto, Masaaki, to Rogers Corporation. Laminated bus bar and method of manufacture. 4,342,881, Cl. 174-72.00B.

Fullfgraf, Heribert: *See*—
Illmann, Joachim; and Fullfgraf, Heribert, 4,342,449, Cl. 269-43.000.

Furuitsu, Satoshi: *See*—
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,342,918, Cl. 422-186.040.

Fuzesi, Stephen; and Bayusik, John G., to Olin Corporation. Starch-amine-based polyether polyols and process of preparation. 4,342,864, Cl. 536-18.000.

G-C Dental Industrial Corp.: *See*—
Muramatsu, Hiroaki; Tomioka, Kentaro; Hirota, Kazuo; and Akahane, Shoji, 4,342,677, Cl. 523-116.000.

G & W Electric Specialty Company: *See*—
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Gaffar, Abdul, to Colgate-Palmolive Company. Antigingivitis composition comprising vinyl phosphonic acid/vinyl phosphonyl fluoride copolymer. 4,342,857, Cl. 525-326.400.

Gagliardo, John P., to Feecon Corporation. Nozzle. 4,342,426, Cl. 239-457.000.

Gagnon, Joseph A. L. N.: *See*—
Shaw, David N.; and Gagnon, Joseph A. L. N., 4,342,199, Cl. 62-133.000.

Gagon, Hugh W. Process to separate bituminous material from sand (Tar Sands). 4,342,639, Cl. 208-11.0LE.

Gaiser, Ruprecht; and Stolzer, Paul, to Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft. Method and apparatus for feeding rod-like workpieces to a severing machine. 4,342,240, Cl. 83-42.000.

Galtier, Daniel: *See*—
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel, 4,342,759, Cl. 424-246.000.

Galves, Jean P.; Merloz, Pierre; and Sagnard, Jean, to Thompson-CSF. Directional filter for a display screen, the method for manufacturing same and a display system, a cathode-ray tube in particular, provided with such a filter. 4,342,821, Cl. 430-12.000.

Gambro Dialysatoren KG: *See*—
Rosemeier, Friedrich; and Kerber, Helmut, 4,342,420, Cl. 233-28.000.

Games, John E.; and Hmelovsky, Michael W., to Otis Elevator Company. Time controlled elevator door motion. 4,342,379, Cl. 187-29.00R.

Gangal, Subhash V., to Du Pont de Nemours, E. I., and Company. Process for preparing aqueous dispersion of polytetrafluoroethylene. 4,342,675, Cl. 524-762.000.

Ganoung, David P. Engine and transmission control apparatus. 4,342,298, Cl. 123-344.000.

Gant, Leroy A. Voltage regulator for a fixed field A.C. generator. 4,342,955, Cl. 322-25.000.

Garavaglia, Carlo: *See*—
Di Toro, Vincenzo; Gozzo, Franco; Cecere, Mirella; Lorusso, Simone; and Garavaglia, Carlo, 4,342,773, Cl. 424-272.000.

Garcia Clavel, Emilia; Martinez Lope, Jesus; and Casais Alvarez, Teresa, to Martinez Lope, Jesus; and Garcia Clavel, Emilia. Method for obtaining alumina from clays. 4,342,729, Cl. 423-127.000.

Gardner, Derek, to Borg-Warner Limited. Automotive drive system with continuously variable transmission. 4,342,238, Cl. 74-689.000.

Gardner, Victor T., to HPM Corporation. Injection moulding method and apparatus with mould runner reservoir and shot extension. 4,342,717, Cl. 264-328.800.

Garner, Harold E.: *See*—
Cernansky, Joseph S.; and Garner, Harold E., 4,342,175, Cl. 46-254.000.

Garrett, Thomas B.; Herweh, John E.; and Magnusson, Alan B., to Armstrong World Industries, Inc. 7-Dimethylamino-3-substituted-2,2'-spirobi[2H-1-benzopyrans]. 4,342,696, Cl. 549-331.000.

Gates, Donald C., to Alloway Manufacturing, Inc. Folding tool bar. 4,342,367, Cl. 172-776.000.

Gehrke, Gunter: *See*—
Steinbeck, Werner; and Gehrke, Gunter, 4,342,701, Cl. 260-383.000.

Geller, Martin; and Doyle, Russell. Carwash door. 4,342,355, Cl. 160-331.000.

Genentech, Inc.: *See*—
Goeddel, David V.; and Heyneker, Herbert L., 4,342,832, Cl. 435-172.000.

General Dynamics, Pomona Division: *See*—
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General Electric Company: *See*—
Archer, William R., 4,342,956, Cl. 323-289.000.
Baliga, Bantval J.; and Shealy, James R., 4,343,015, Cl. 357-55.000.
DiMassimo, Donald V.; and May, John B., 4,342,922, Cl. 307-66.000.
Graff, William A.; and Thomas, George L., 4,342,553, Cl. 431-358.000.
Kirkpatrick, Robert G.; and Jarvis, Stephen A., 4,342,253, Cl. 89-12.000.
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McVey, Charles I., 4,342,939, Cl. 313-174.000.
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Pfeifer, George F.; Koonce, George R.; and Phillips, Jack E., 4,342,910, Cl. 250-237.00G.
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Strok, Jack M., 4,342,938, Cl. 313-174.000.
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General Foods France S.A.: *See*—
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General Motors Corporation: *See*—
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Allen, Karl D.; Perlick, Mark A.; and Van Gorder, Jack H., 4,342,543, Cl. 417-211.500.
Bartlett, Donald S.; and Beaulieu, Theodore J., 4,342,535, Cl. 414-744.00A.
Benton, Robert L., 4,342,235, Cl. 74-424.80R.
Buchholz, Jeffrey C., 4,342,628, Cl. 204-1.00T.
Clague, Robert E.; Hammar, Richard H.; and Harvey, Douglas J., 4,342,343, Cl. 141-1.100.
Gray, Leo A., 4,342,427, Cl. 239-585.000.
Haka, Raymond J., 4,342,299, Cl. 123-396.000.
House, Ronnalee; and Johnson, Byron W., 4,342,292, Cl. 123-146.50A.
Koral, Joseph F.; Shargabian, Karl S.; and Strem, Ervin H., Jr., 4,342,482, Cl. 296-221.000.
Kosek, Thomas P., 4,342,428, Cl. 239-651.000.
Matthes, William R., 4,342,300, Cl. 123-430.000.
Melinat, Wolfgang, 4,342,380, Cl. 188-71.100.
Paddock, Gordon R.; and Jones, John E., 4,342,194, Cl. 60-290.000.
Perkins, William J.; Vest, William C.; Grannen, Walter A., III; and Meyer, Robert E., 4,342,442, Cl. 249-67.000.
Rehfeld, Frederick L. J., 4,342,546, Cl. 418-47.000.
Schuster, David A., 4,342,545, Cl. 418-26.000.
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GenRad, Inc.: *See*—
Skilling, James K., 4,342,959, Cl. 324-73.0PC.

Gentry, Cecil C.; and Small, William M., to Phillips Petroleum Company. Rod baffled heat exchanger. 4,342,360, Cl. 165-67.000.

George Koch Sons, Inc.: *See*—
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Gerber, Jurgen: *See*—
Reinecke, Udo; and Gerber, Jurgen, 4,342,254, Cl. 91-6.000.

Gerlach, Heinz; and Woerner, Lothar, to Kautt & Bux KG. Electrical commutator. 4,342,933, Cl. 310-234.000.

Gerlach, Klaus; Mathes, Nikolaus; Pitowski, Hans-Jurgen; and Wechs, Friedbert, to Akzona Incorporated. Suede-like sheet material. 4,342,801, Cl. 428-91.000.

Gibbs, Frankie U. Easel board used in photographic printing. 4,342,513, Cl. 355-74.000.

Gibco International Corporation: *See*—
Gibson, Adler E.; and Kellert, Paul H., 4,342,180, Cl. 52-741.000.

Gibson, Adler E.; and Kellert, Paul H., to Gibco International Corporation. Assembly method of constructing a building. 4,342,180, Cl. 52-741.000.

Giessner, Frank: *See*—
Bader, Leonhard; Giessner, Frank; Rombach, Friedrich B.; and Winter, Hermann, 4,343,013, Cl. 346-140.00R.

Gilbert, Sam. Shock absorbing partially liquid-filled cushion for shoes. 4,342,157, Cl. 36-29.000.

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Gladh, Arne I. L., to Billerud Uddeholm Aktiebolag. Adjustable paper machine headbox with adjustment sensing means. 4,342,619, Cl. 162-262.000.

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Karnowski, Gary A.; and Sriramamurty, Durvasula V., 4,342,963, Cl. 324-431.000.

Gloriod, Pierre: *See*—
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Godtfredsen, Wagn O.; and von Daehne, Welf, to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab). β-Lactam compounds, antibacterial compositions thereof and method of use. 4,342,772, Cl. 424-271.000.

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Goldberg, Richard J. High resolution developed color film. 4,342,819, Cl. 430-8.000.

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Kapura, Edward M.; and Goode, Henry C., 4,342,583, Cl. 65-99.500.

Goodwin, Nolen R., to Taylor Machine Works, Inc. Fork attachment means for lift trucks. 4,342,377, Cl. 187-9.00R.

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Gordon, Robert L.; Naugle, George H.; and Cooper, Keith A., to International Paper Company. Process for making a container for storing food. 4,342,183, Cl. 53-433.000.

Gorman-Rupp Company, The: *See*—
Wolford, Dale E.; and York, George S., 4,342,538, Cl. 415-170.00A.

Gorog, Peter: *See*—
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Gotoh, Masao: *See*—
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Gould Inc.: *See*—
Eaton, Gerald E.; Shtarkman, Emile M.; and Snyder, Daniel S., 4,342,446, Cl. 267-35.000.

Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, to Bayer Aktiengesellschaft. Process for the production of thermoplastic synthetic materials. 4,342,847, Cl. 525-66.000.

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Graff, William A.; and Thomas, George L., to General Electric Company. Glass to nickel-iron alloy seal. 4,342,553, Cl. 431-358.000.

Graham, James J.; and Earl, Edward. Bullet mold device. 4,342,141, Cl. 29-1.220.

Gram, Hans, to Brodrene Gram A/S. Vertical plate freezer. 4,342,205, Cl. 62-341.000.

Grannen, Walter A., III: *See*—
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Grant, Clyde P.; Look, Merton A.; and Lowe, Richard M., to Scott Paper Company. Perforate development electrode. 4,342,823, Cl. 430-103.000.

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Grasser, Katalin: *See*—
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Grava, Alfred. Vertical storage rack. 4,342,268, Cl. 108-55.100.

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Gray, James H., to Research Associates, Ltd. Method and apparatus for linearly conveying wheeled vehicles. 4,342,387, Cl. 198-746.000.

Gray, Leo A., to General Motors Corporation. Electromagnetic fuel injector. 4,342,427, Cl. 239-585.000.

Green Cross Corp., The: *See*—
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; Yamada, Muneo; and Watanabe, Yoshiteru, 4,342,828, Cl. 435-41.000.

Green, Tweed & Co., Inc.: *See*—
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Greene, Peter R.: *See*—
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Gregg, David P.; and Keester, Kenneth L. Process for making video discs. 4,342,714, Cl. 264-81.000.

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Grenell, David, to Allen-Stevens Corp. Weather-resistant arrangement for outdoor electrical devices. 4,342,493, Cl. 339-44.00M.

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Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., to Merck & Co., Inc. 2-(Substitutedpiperidylmethyl) propene and propane nitriles. 4,342,872, Cl. 546-186.000.

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Griffee, Leslie V.: *See*—
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Griffith, Gerald W., to Laser Products Corporation. Battery conditioning methods and apparatus. 4,342,954, Cl. 320-14.000.

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Gross, Glenn M., to Norlin Industries, Inc. Complex waveform generator for musical instrument. 4,342,245, Cl. 84-1.010.

Grossmann, Horst; and Bausch, Alfred, to Black & Decker Inc. Brush-shifting and trigger-switch arrangements for a portable tool. 4,342,931, Cl. 310-50.000.

Grzeika, Eugene W.; and Kozyraki, Vincent T., to Fletcher-Terry Company, The. Glazier's point driver. 4,342,414, Cl. 227-109.000.

Gschwendtner, Jorg; and Lohlein, Wolfdieter, to International Business Machines Corporation. Circuit and method for voltage level conversion. 4,342,928, Cl. 307-475.000.

GTE Laboratories Incorporated: *See*—
Regan, Robert J.; and Haugajaa, Paul O., 4,342,967, Cl. 330-277.000.

Guanci, Anthony. Animal trap. 4,342,172, Cl. 43-61.000.

Guardian Electric Manufacturing Company: *See*—
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Guild, John R., to Eastman Kodak Company. Blank and process for the formation of beam leads for IC chip bonding. 4,342,151, Cl. 29-827.000.

Guillaume, Emile A. H., to Zelacolor Systems Establishment. Apparatus for making photographic pictures. 4,342,510, Cl. 354-216.000.

Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P. Method of surfacing and apparatus for controlling same. 4,342,898, Cl. 219-76.140.

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McMillan, Fraser; Guthrie, Graeme J.; and Williams, David J., 4,342,647, Cl. 209-3.000.

H. J. Langen & Sons Limited: *See*—
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Haasl, William D.; and Weronke, Robert B., to Brunswick Corporation. Continuity spring for a hydraulic cylinder. 4,342,634, Cl. 204-197.000.

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Hagenuk: *See—*
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Hagin, Faust; and Drewitz, Hans-Jurgen, to M.A.N. Maschinenfabrik Augsburg-Nuernberg AG. Articulated omnibus. 4,342,370, Cl. 180-22.000.
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Armstrong, William D.; and Winnick, Charles N., 4,342,667, Cl. 252-476.000.
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Hall, Stephen M.: *See—*
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Halpern, Yuval; and Hall, Donald D., Jr., to Borg-Warner Chemicals, Inc. Intumescent flame retardant thermoplastic polyurethane elastomer compositions. 4,342,682, Cl. 523-179.000.
Halstrick, Robert T. Fastenings for storage racks. 4,342,397, Cl. 211-191.000.
Halverson, Frederick, to American Cyanamid Company. Process for the flocculation of suspended solids. 4,342,653, Cl. 210-734.000.
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Han, Ching C.; Bilenko, Herman W.; and Hwang, Yeongming, to Ford Aerospace & Communications Corporation. Microwave antenna system having enhanced band width and reduced cross-polarization. 4,343,005, Cl. 343-781.00P.
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Hane, Dale R. Reciprocal method and apparatus for transferring vehicle batteries. 4,342,533, Cl. 414-396.000.
Hanson, Dale M., to Wide One Corporation. Method for widening an automotive vehicle. 4,342,146, Cl. 29-416.000.
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Hara, Kunio; and Kimura, Shigeru, to Nifco Inc. Housing unit for liquid gauge and strainer. 4,342,224, Cl. 73-290.00R.
Harada, Takao; Ohashi, Hideaki; Koike, Wataro; Yazawa, Chihiro; and Nanjo, Kazuko, to Ihara Chemical Industry Co., Ltd. Bis(aminophenylthioalkyl)terephthalate and hardener for polyurethane elastomer thereof. 4,342,859, Cl. 528-64.000.
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Harbridge, John B., to Beecham Group Limited. Clavulanic acid derivatives a process for their preparation and their use in pharmaceutical compositions. 4,342,749, Cl. 424-114.000.
Hardy, Donald, Sr., to FMC Corporation. Enhancement of trilithium phosphate catalyst activity. 4,342,666, Cl. 252-437.000.
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Harte, Kenneth J.; and Dougherty, Edward C., to Control Data Corporation. Charged particle beam structure having electrostatic coarse and fine double deflection system with dynamic focus and diverging beam. 4,342,949, Cl. 315-409.000.
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Heyn, Klaus; and Pogrzeba, Hans-Joachim, to Steag A.G. Plant for producing power from solid fossil fuels, more particularly bituminous coal. 4,342,192, Cl. 60-39.18B.

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Hicks, James E., to RCA Corporation. Television receiver high voltage generator protection circuit. 4,343,028, Cl. 361-91.000.

Hicks, John W., Jr. Communications tuning construction. 4,342,499, Cl. 350-96.150.

Higginbotham, James M., Sr.: *See*—
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Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., to Bi-Modal Corporation. Convertible rail-highway semi-trailer fluid suspension. 4,342,264, Cl. 105-215.00C.

Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., to Bi-Modal Corp. Convertible rail-highway semi-trailer axle lifting and retaining mechanism. 4,342,265, Cl. 105-215.00C.

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Hmelovsky, Michael W., to Otis Elevator Company. Elevator door motion bench velocity. 4,342,378, Cl. 187-29.00R.

Hmelovsky, Michael W.: *See*—
Games, John E.; and Hmelovsky, Michael W., 4,342,379, Cl. 187-29.00R.

Hockenbrock, Richard L., to Zenith Radio Corporation. Projection tube alignment means. 4,342,942, Cl. 313-477.00R.

Hodge, G. Robert: *See*—
Hodge, George R., 4,342,125, Cl. 4-508.000.

Hodge, George R., to Hodge, G. Robert; and Hodge, Louise S. Water level control for swimming pools. 4,342,125, Cl. 4-508.000.

Hodge, Louise S.: *See*—
Hodge, George R., 4,342,125, Cl. 4-508.000.

Hoechst Aktiengesellschaft: *See*—
Mayer, Reinhart; Fester, Walter; and Kleber, Rolf, 4,342,600, Cl. 106-164.000.
Petz, Karl; Rieger, Klaus; and Steidl, Dieter, 4,342,602, Cl. 106-316.000.

Hoekstra, Ralph W., to Swenson Spreader Company. Apparatus for mounting a snowplow blade to a vehicle. 4,342,163, Cl. 37-231.000.

Hofer, Wolfgang. Hanging implement for garment bags. 4,342,479, Cl. 294-142.000.

Hoffman, Carl H.: *See*—
Albers-Schonberg, George; Monaghan, Richard L.; Alberts, Alfred W.; and Hoffman, Carl H., 4,342,767, Cl. 424-250.000.

Hoffmann, Ernst: *See*—
Ziemek, Gerhard; Klebl, Wolfram; Hoffmann, Ernst; and Brunn, Reiner, 4,342,190, Cl. 57-293.000.

Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, to Bayer Aktiengesellschaft. Process for the preparation of 1,1-dichloroalkenes. 4,342,704, Cl. 260-464.000.

Hogan, John P.; and Banks, Robert L., to Phillips Petroleum Company. Solid polymers of 4-methyl-1-pentene. 4,342,854, Cl. 526-75.000.

Hogsett, Robert F.: *See*—
Queneau, Paul B.; Beckstead, Leo W.; and Hogsett, Robert F., 4,342,728, Cl. 423-61.000.

Hogue Combat Grips, Inc.: *See*—
Hogue, Guy L.; and Mason, James D., 4,342,170, Cl. 42-71.00P.

Hogue, Guy L.; and Mason, James D., to Hogue Combat Grips, Inc. Fastener for unitary pistol hand grip. 4,342,170, Cl. 42-71.00P.

Hohokabe, Yorikatsu; and Takiyama, Eiichiro, to Showa Denko K.K.; and Showa Highpolymer Co., Ltd. Plastic lens. 4,342,863, Cl. 528-360.000.

Holloway, Clifford C., to Holloway, Clifford C.; Holloway, Lewis B.; and Holloway, Winford B., a part interest. Process for separating and recovering organics and inorganics from waste material. 4,342,830, Cl. 435-161.000.

Holloway, Lewis B.: *See*—
Holloway, Clifford C., 4,342,830, Cl. 435-161.000.

Holloway, Winford B.: *See*—
Holloway, Clifford C., 4,342,830, Cl. 435-161.000.

Holmes, Daniel L.; and Uyeda, Tim, to Holmes, Daniel L. Safe relock mechanism. 4,342,207, Cl. 70-119.000.

Holowaty, Michael O., to Inland Steel Company. Process for making formed coke from high sulfur coal. 4,342,622, Cl. 201-6.000.

Holz, George E., to Burroughs Corporation. Memory display panel. 4,342,993, Cl. 340-779.000.

Holzhauer, Juergen K.: *See*—
Palmer, David A.; and Holzhauer, Juergen K., 4,342,699, Cl. 549-259.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
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Honda, Kiyokazu: *See*—
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Honeywell Inc.: *See*—
Buskirk, Allan F. V.; and Moskovitch, Gadi, 4,342,986, Cl. 340-539.000.
Denny, Richard W.; and Diddens, Paul A., 4,343,010, Cl. 346-110.00R.
Teague, Robert H., 4,343,007, Cl. 346-46.000.

Honeywell Information Systems Inc.: *See*—
Russell, Robert J., 4,342,957, Cl. 324-73.00R.
Russell, Robert J., 4,342,958, Cl. 324-73.00R.
Watkins, Richard R.; and Slater, Richard A., 4,342,989, Cl. 340-723.000.

Hoogstoel, Robert. Snail reheater. 4,342,903, Cl. 219-386.000.

Hooker Chemicals & Plastics Corp.: *See*—
Chang, Eng-Pi; Lazarz, Christine A.; and Cook, Edward H., Jr., 4,342,636, Cl. 204-296.000.
Eng, Jeffrey D., 4,342,460, Cl. 277-1.000.
Schall, William L., 4,342,845, Cl. 525-53.000.
Strewe, Wolfgang; Mose, Luciano; and Strasser, Bernd, 4,342,630, Cl. 204-98.000.

Hoover Company, The: *See*—
Minton, Keith G., 4,342,133, Cl. 15-339.000.

Hopkins, Phillip R., to Energy International Corporation. Rotary engine valve with improved seals and lubrication system. 4,342,294, Cl. 123-190.00E.

Hopkins, Thomas R.: *See*—
Hitzman, Donald O.; and Hopkins, Thomas R., 4,342,835, Cl. 435-255.000.

Horan, John J. Miniature inflatable containment and dry-water-entry vessels. 4,342,278, Cl. 114-345.000.

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Horne, David, to Black & Decker Inc. Electric motor wherein low temperature polymeric housing supports heat dissipating portions through heat resisting polymeric bridging member. 4,342,929, Cl. 310-43.000.

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Catchpole, Charles R.; and Horton, Michael E., 4,342,220, Cl. 73-49.700.

Hoskinson, Gordon H. Material treating apparatus utilizing an auger having an internal air supply and heat transfer system. 4,342,269, Cl. 110-257.000.

Hoskinson, William R.: *See*—
Ippolito, Anthony C.; and Hoskinson, William R., 4,342,247, Cl. 84-1.240.

Hosoe, Yoshihisa: *See*—
Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; Kaneko, Hiroshi; and Hosoe, Yoshihisa, 4,342,842, Cl. 521-167.000.

Hosono, Nagao; and Kanbe, Junichiro, to Canon Kabushiki Kaisha. Method for image development using electric bias. 4,342,822, Cl. 430-97.000.

Hosotani, Sumihiro: *See*—
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Host, David A.: *See*—
Lenz, Herman N.; and Host, David A., 4,342,489, Cl. 308-187.000.

Hottinger Baldwin Measurements, Inc.: *See*—
Paetow, Jurgen, 4,342,217, Cl. 73-1.00B.

House, Ronnalee; and Johnson, Byron W., to General Motors Corporation. Ignition distributor. 4,342,292, Cl. 123-146.50A.
Hovey, Richard J.; Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., to American Optical Corporation. Photochromic compounds. 4,342,668, Cl. 252-586.000.
Howard, Richard E.; and Jackel, Lawrence D., to Bell Telephone Laboratories, Incorporated. Nonhysteretic Josephson junction circuits with feedback. 4,342,924, Cl. 307-245.000.
HPM Corporation: *See—*
Gardner, Victor T., 4,342,717, Cl. 264-328.800.
Huck Manufacturing Company: *See—*
Smith, Walter J., 4,342,529, Cl. 411-361.000.
Huff, Ray V.: *See—*
Davidson, Donald H.; and Huff, Ray V., 4,342,484, Cl. 299-5.000.
Hughes, Charles D. Upflow reactor filter assembly. 4,342,649, Cl. 210-108.000.
Hull, Charles G., to Texas Instruments Incorporated. CMOS Switching circuit. 4,342,927, Cl. 307-452.000.
Hurni, Hans, to Sig Societe Industrielle Suisse. Railway work-site machine equipped with a mechanical unit for displacement of the track. 4,342,263, Cl. 104-7.00B.
Hussmann, Peter, to Mittex AG. Method and apparatus for abstracting water from air. 4,342,569, Cl. 55-33.000.
Hutta, Paul J.: *See—*
Steelhammer, Joe C.; and Hutta, Paul J., 4,342,733, Cl. 423-242.000.
Hutter, Harold G.; and Ramsland, August B., to Bunker Ramo Corporation. Contact assembly incorporating retaining means. 4,342,496, Cl. 339-177.00E.
Hwang, Yeongming: *See—*
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Hyatt, Gilbert P. Pulse width modulated feedback arrangement for illumination control. 4,342,906, Cl. 250-205.000.
Hydraudyne B.V.: *See—*
Claassen, Josephus A. M., 4,342,164, Cl. 37-73.000.
Hydril Company: *See—*
Wieveg, Raymond; and Keithahn, Julian D., 4,342,330, Cl. 137-315.000.
Hydrocarbon Research, Inc.: *See—*
Reif, Henry E.; Maruhnic, Peter; and Chervenak, Michael C., 4,342,641, Cl. 208-89.000.
Idel, Karsten; Cohnen, Wolfgang; and Freitag, Dieter, to Bayer Aktiengesellschaft. Use of organic silicon compounds in combination with oxetane compounds, dioxanes or tetrahydrofuranes for stabilizing and brightening polycarbonates which are free from phosphites and free from boric acid esters. 4,342,681, Cl. 524-108.000.
Idemitsu Kosan Company Limited: *See—*
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Ihara Chemical Industry Co., Ltd.: *See—*
Harada, Takao; Ohashi, Hideaki; Koike, Wataro; Yazawa, Chihiro; and Nanjo, Kazuko, 4,342,859, Cl. 528-64.000.
Ikeda, Shoji: *See—*
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Ikegami, Tadashi: *See—*
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Illger, Hans-Walter; Dahm, Manfred; and Gonzalez-Dorner, Alberto C., to Bayer Aktiengesellschaft. Process for production of flame resistant foam. 4,342,798, Cl. 427-244.000.
Illinois Tool Works Inc.: *See—*
Lacey, Robert L., 4,342,140, Cl. 24-373.000.
Speedie, Robert, 4,342,438, Cl. 248-73.000.
White, Gerald W.; and Volkers, Jack C., 4,342,631, Cl. 204-192.00N.
Illmann, Joachim; and Fullfgraf, Heribert, to Varta Batterie Aktiengesellschaft. Clamping element for storage battery plate stacks. 4,342,449, Cl. 269-43.000.
Ilvespaa, Atso; Frei, Jorg; and Schweizer, Ernst, to Ciba-Geigy Corporation. Guanidine compounds, pharmaceutical compositions and use. 4,342,764, Cl. 424-248.560.
Imada, Isuke: *See—*
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Imperial Chemical Industries Limited: *See—*
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Inamine, Shigeo: *See—*
Ueno, Ryuzo; Matsuda, Toshio; Inamine, Shigeo; Kanayama, Tatsuo; and Fujita, Yatsuka, 4,342,789, Cl. 426-266.000.
Industrie Pirelli Societa per Azioni: *See—*
Castelli, Mario; and Martini, Bruno, 4,342,880, Cl. 174-36.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Accattino, Andrea, 4,342,909, Cl. 250-231.0SE.
Inland Steel Company: *See—*
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Intel Corporation: *See—*
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Interco Incorporated: *See—*
Edwards, Robert G., 4,342,159, Cl. 36-77.00R.
Intercylinder AB: *See—*
Adolfsson, Rune; and Berns, Lennart, 4,342,710, Cl. 261-121.00R.
International Business Machines Corporation: *See—*
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; and Nehmiz, Peter, 4,342,817, Cl. 430-5.000.
Elliott, Brian J.; Hearn, Eric W.; and Markovits, Gary, 4,342,616, Cl. 156-601.000.
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Knapp, Robert F., 4,343,012, Cl. 346-139.00R.
Petersen, Kurt E.; and Shartel, Anne C., 4,342,227, Cl. 73-510.000.
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International Flavors & Fragrances, Inc.: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,342,663, Cl. 252-186.360.
International Harvester Co.: *See—*
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International Paper Company: *See—*
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International Standard Electric Corporation: *See—*
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International Telephone and Telegraph Corporation: *See—*
Stapleton, John J., 4,343,020, Cl. 358-81.000.
Ippolito, Anthony C.; and Hoskinson, William R., to Wurlitzer Company, The. Production of detuning effects in an electronic musical instrument. 4,342,247, Cl. 84-1.240.
Irontite Products, Co. Inc.: *See—*
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Isenhour, John H., Jr.: *See—*
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Ishii, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Energy recovery apparatus for a gas compressor plant. 4,342,201, Cl. 62-238.400.
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Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
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Ishkin, Vyacheslav K.; and Kagan, Veniamin G. D.C. Power transmission line with lightning protection wires. 4,342,923, Cl. 307-147.000.
Isobe, Minoru; Shimizu, Makoto; and Hagiwara, Shigemi, to Oki Electric Industry Co., Ltd. Inkribbon feed mechanism. 4,342,520, Cl. 400-221.000.
Itek Corporation: *See—*
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Ito, Kichizo: *See—*
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Itoh, Hiroyuki; and Imai, Hirosuke, to Nippon Oil Company, Ltd. Aqueous gel compositions. 4,342,665, Cl. 252-316.000.
Ivanchev, Sergei S.; Pavljuchenko, Valery N.; Pessina, Zinaida M.; and Vasilieva, Elena D. Method for producing latices of copolymers of butyl acrylate and 1-methacrylate-1-tert-butyl peroxy ethane. 4,342,676, Cl. 524-458.000.
Ivanov, Sergeia A.: *See—*
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Iwashita, Hidemaro; and Hayashi, Kenichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process of producing a potassium sulfate salt. 4,342,737, Cl. 423-522.000.
Iwata, Tadao: *See—*
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Jackel, Lawrence D.: *See—*
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Jackson, Isaac S., to Mallinckrodt, Inc. Suction catheters with improved suction control valve. 4,342,315, Cl. 128-349.00R.
Jackson, Winston J., Jr.; and Darnell, William R., to Eastman Kodak Company, Polyesters of trans-1,4-cyclohexanedicarboxylic acid and 2-phenylhydroquinone and modifications thereof. 4,342,862, Cl. 528-176.000.
Jacobs, Erwin; Schwabe, Ulrich; and Takacs, Dezso, to Siemens Aktiengesellschaft. Method of making very short channel length MNOS and MOS devices by double implantation of one conductivity type subsequent to other type implantation. 4,342,149, Cl. 29-576.00B.

Jaecklin, Andre, to BBC Brown, Boveri & Company, Limited. Light-ignitable thyristor with anode-base duct portion extending on cathode surface between thyristor portions. 4,343,014, Cl. 357-38.000.
Jaffe, Fred, to Stauffer Chemical Company. Process for producing diethyl phosphite. 4,342,709, Cl. 260-978.000.
Jakobi, Wilhelm; Heinrichs, Bernhard; and Jokisch, Friedrich, to Krupp-Koppers GmbH. Cooling device for coke dry cooling. 4,342,626, Cl. 202-228.000.
James, Ian W. Animal treatment tunnels or races. 4,342,285, Cl. 119-155.000.
Jamison, Warren E.; and Pennington, Raymond C., to Projected Lubricants, Inc. Self-lubricating journal bearing. 4,342,491, Cl. 308-239.000.
Jandera, Jan; and Studnicka, Jan, to Ceske plunarenske pdniky, koncern. Device for the internal inspection of pipelines. 4,342,225, Cl. 73-432.00R.
Janner, Karl; and Gregorius, Klaus, to Kraftwerk Union Aktiengesellschaft. Method for the separation of gaseous isotope compounds. 4,342,727, Cl. 423-3.000.
Jannotta, Louis J. Two disc encoder system for monitoring height of liquid in storage tank. 4,342,996, Cl. 340-870.160.
Janssen Pharmaceutica N.V.: *See*—
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Jarvis, Stephen A.: *See*—
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Jastram-Werke GmbH KG: *See*—
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Jatteau, Michel; Chalmeton, Vincent; and Pauvert, Joseph, to U.S. Philips Corporation. Method of and apparatus for tomographic examination of structures by X-ray or gamma ray scanning. 4,342,916, Cl. 378-4.000.
Jeffers, Fredrick J.: *See*—
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Jennings, Thomas A. Method of making multiple electrical components in integrated microminiature form. 4,342,143, Cl. 29-25.420.
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Phillips, Ernest L., 4,342,979, Cl. 337-41.000.
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Joh, Yasushi; Yamazaki, Masahiro; Kaneko, Noriaki; Oikawa, Shigehiko; Makuta, Yoshihiro; and Hayashi, Chizuko, to Nippon Zeon Co., Ltd. Method of manufacturing hollow fiber. 4,342,711, Cl. 264-41.000.
John Wyeth & Brother Limited: *See*—
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Johnson, Bruce K.; and Black, Kenneth P., to Polaroid Corporation. Exposure trim mechanism for cameras. 4,342,506, Cl. 354-27.000.
Johnson, Bruce K.; and Morse, John B., to Polaroid Corporation. Flash holder assembly arrangement. 4,342,507, Cl. 354-143.000.
Johnson, Byron W.: *See*—
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Johnson, Mark; and Ulrich, Reinhard, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Method and arrangement for the measurement of rotations by the Sagnac effect. 4,342,517, Cl. 356-350.000.
Johnson, Matthey & Co., Limited: *See*—
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Johnson, Michael R.; Schaaf, Thomas K.; and Hess, Hans-Jurgen E., to Pfizer Inc. 2-Descarboxy-2-(tetrazol-5-yl)-16,16-dimethyl-17-(2-furyl)-ω-trisnorprostaglandin E_2. 4,342,868, Cl. 542-431.000.
Johnson, William M.; Lindsay, Alan; and Klaassens, Harry, to Ralph McKay Limited. Tool fastening. 4,342,166, Cl. 37-142.00A.
Jokisch, Friedrich: *See*—
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Jones, Daniel K.: *See*—
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Joy Manufacturing Company: *See*—
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Bey, Philippe; and Jung, Michel, 4,342,780, Cl. 424-319.000.
Jungles, Donald S., to Dymar Industries, Inc. Refuse container cover. 4,342,402, Cl. 220-343.000.
Jurd, Leonard, to United States of America, Agriculture. Polybutylbenzylphenols and benzyl-3,4-methylenedioxybenzenes in insect population control. 4,342,777, Cl. 424-282.000.
Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See*—
Mohring, Gunter, 4,343,003, Cl. 343-781.00P.
Ziemek, Gerhard; Klebl, Wolfram; Hoffmann, Ernst; and Brunn, Reiner, 4,342,190, Cl. 57-293.000.
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Kadin, Saul B., to Pfizer Inc. Diphenylpropenamides as SRS-A antagonists. 4,342,781, Cl. 424-319.000.
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Kafka, Jayne M.: *See*—
Lane, Rick; Kafka, Donald C.; and Kafka, Jayne M., 4,342,458, Cl. 273-248.000.
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Kai, Takaaki, to Kabushiki Kaisha Meidensha. Common suspension multi-line grounding protective relay. 4,343,027, Cl. 361-42.000.
Kakimi, Fujio; Hiratsuka, Nobuo; and Matsukawa, Hiroharu, to Fuji Photo Film Co., Ltd. Novel material for immunological assay of biochemical components and a process for the determination of said components. 4,342,739, Cl. 424-1.000.
Kallmeyer, Michael; Rosch, Hans; Scheuing, Claus; and Solf, Bernhard, to Discovision Associates. Binary piezoelectric drive for lens focusing system. 4,342,935, Cl. 310-328.000.
Kaminski, Tony L.: *See*—
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Kanayama, Tatsuo: *See*—
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Hosono, Nagao; and Kanbe, Junichiro, 4,342,822, Cl. 430-97.000.
Kanebo Ltd.: *See*—
Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, 4,342,693, Cl. 549-229.000.
Kaneko, Hiroshi: *See*—
Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; Kaneko, Hiroshi; and Hosoe, Yoshihisa, 4,342,842, Cl. 521-167.000.
Kaneko, Noriaki: *See*—
Joh, Yasushi; Yamazaki, Masahiro; Kaneko, Noriaki; Oikawa, Shigehiko; Makuta, Yoshihiro; and Hayashi, Chizuko, 4,342,711, Cl. 264-41.000.
Kang, Kenneth S.; and Veeder, George T., to Merck & Co., Inc. Heteropolysaccharide S-130. 4,342,866, Cl. 536-119.000.
Kanno, Hidenori: *See*—
Ban, Itsuki; and Kanno, Hidenori, 4,342,884, Cl. 200-34.000.
Kanou, Noboru; and Mori, Keiji, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Removable roof equipped with a wind deflector plate. 4,342,481, Cl. 296-217.000.
Kanyo, Erzsebet: *See*—
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,342,871, Cl. 546-65.000.
Kapura, Edward M.; and Goode, Henry C., to PPG Industries, Inc. Apparatus and method for attenuating floating glass ribbon. 4,342,583, Cl. 65-99.500.
Karady, Sandor: *See*—
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,757, Cl. 424-246.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,869, Cl. 544-21.000.
Karamian, Narbik A. Apparatus for preventing bacterial passage into sterile fluid systems. 4,342,915, Cl. 250-436.000.
Karius, Dietmar: *See*—
Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, 4,342,262, Cl. 102-489.000.
Karnis, Alkibiadis; and Shallhorn, Paul M. Method and apparatus on-line monitoring of fibre length of mechanical pumps. 4,342,618, Cl. 162-49.000.
Karnovsky, Manfred L.: *See*—
Pappenheimer, John R.; Krueger, James M.; and Karnovsky, Manfred L., 4,342,748, Cl. 424-95.000.
Karnowski, Gary A.; and Sriramamurty, Durvasula V., to Globe-Union Inc. Storage battery electrolyte temperature measuring apparatus. 4,342,963, Cl. 324-431.000.
Karymov, Anatoly A.: *See*—
Glebov, Igor A.; Danilevich, Yanush B.; Ivanov, Sergeia A.; Karymov, Anatoly A.; Kotlyarova, Galina A.; Sapozhnikov, Vladimir A.; and Shakhtarin, Valentin N., 4,342,932, Cl. 310-52.000.
Kasai, Sin; Kawaguchi, Yutaka; and Satoh, Michio, to Nitto Boseki Co., Ltd. Method of shifting strands before termination of winding of glass fiber. 4,342,430, Cl. 242-18.00A.
Kasai, Syozo: *See*—
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.
Kashima, Isao; Takase, Yosio; and Mishina, Masami, to Matsushita Electric Works, Ltd. Limit switch. 4,342,885, Cl. 200-47.000.
Kaspar, Arthur H. Article actuated coin dispensing machine. 4,342,385, Cl. 194-4.00D.
Kastner, Ralph E.; and Hamil, Robert L., to Eli Lilly and Company. Process for preparing narasin. 4,342,829, Cl. 435-118.000.

Katayama, Yoshihiko: *See—*
Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; and Tsuyama, Shigeo, 4,342,708, Cl. 260-665.00R.
Kato, Toshio: *See—*
Sakai, Katsuya; Mita, Ryuichi; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, 4,342,700, Cl. 260-370.000.
Katoh, Naboru; Komatsu, Kazumiya; and Nozaki, Hisashi, to Kibun Company Limited. Method of producing minced fish meat. 4,342,790, Cl. 426-332.000.
Katoh, Takashi; and Yoshizawa, Toshio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Bobbin holder. 4,342,429, Cl. 242-18.0DD.
Katopodis, Nonda; and Stock, C. Chester, to Sloan Kettering Institute for Cancer Research. Sialic acid determination method. 4,342,567, Cl. 23-230.00B.
Kautex-Maschinebau GmbH: *See—*
Schwochert, Hans-Joachim, 4,342,799, Cl. 428-35.000.
Kautt & Bux KG: *See—*
Gerlach, Heinz; and Woerner, Lothar, 4,342,933, Cl. 310-234.000.
Kawabe, Norio: *See—*
Kinashi, Takao; Fujita, Takashi; and Kawabe, Norio, 4,342,820, Cl. 430-11.000.
Kawada, Mitsuru: *See—*
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Kawaguchi, Kiyokazu: *See—*
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Kawahara, Atsushi: *See—*
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Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph; and Deutsch, Leslie J., 4,342,248, Cl. 84-1.240.
Kawai, Tsutomu. Device for detecting tape end of magnetic recording apparatus. 4,343,024, Cl. 360-74.600.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Ishii, Hiroshi, 4,342,201, Cl. 62-238.400.
Susei, Shuzo; Matsui, Shigetomo; and Nagai, Hiroyoshi, 4,342,900, Cl. 219-121.0EN.
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,342,918, Cl. 422-186.040.
Keating, Stephen J., Jr., to Combustion Engineering, Inc. Molten core catcher and containment heat removal system. 4,342,621, Cl. 376-298.000.
Keester, Kenneth L.: *See—*
Gregg, David P.; and Keester, Kenneth L., 4,342,714, Cl. 264-81.000.
Keithahn, Julian D.: *See—*
Wieveg, Raymond; and Keithahn, Julian D., 4,342,330, Cl. 137-315.000.
Keller, Merten: *See—*
Lorenz, Otto; and Keller, Merten, 4,342,412, Cl. 226-21.000.
Kellert, Paul H.: *See—*
Gibson, Adler E.; and Kellert, Paul H., 4,342,180, Cl. 52-741.000.
Kellogg, George W.: *See—*
Benton, Charles M.; Arnold, Franklin D.; Kellogg, George W.; and Kirk, Roger D., 4,342,178, Cl. 52-125.500.
Kellogg, Michael S., to Pfizer Inc. Bis-esters of 1,1-alkanediols with 6-beta-hydroxymethylpenicillanic acid 1,1-dioxide and beta-lactam antibiotics. 4,342,768, Cl. 424-250.000.
Kendall Company, The: *See—*
Rosenberg, Philip, 4,342,316, Cl. 128-349.00B.
Kennametal Inc.: *See—*
Denman, Dennis, 4,342,368, Cl. 175-410.000.
Kennecott Corporation: *See—*
Davidson, Donald H.; and Huff, Ray V., 4,342,484, Cl. 299-5.000.
Kennedy, Joseph P., to University of Akron, The. Novel telechelic polymers and processes for the preparation thereof. 4,342,849, Cl. 525-333.700.
Kennis, Ludo E. J.; and Mertens, Josephus C., to Janssen Pharmaceutica N.V. Novel 3-(1-piperidinylalkyl)-4H-pyrido[1,2-a]pyrimidin-4-one derivatives. 4,342,870, Cl. 544-282.000.
Kerber, Helmut: *See—*
Rosemeier, Friedrich; and Kerber, Helmut, 4,342,420, Cl. 233-28.000.
Kester, William W. Cart for vehicle with single rear wheel. 4,342,467, Cl. 280-204.000.
Kestner, Mark O.: *See—*
Kober, Alfred E.; and Kestner, Mark O., 4,342,797, Cl. 427-220.000.
Ketchpel, Richard D., to Rockwell International Corporation. Electroluminescent thin film device. 4,342,945, Cl. 313-505.000.
Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft: *See—*
Gaiser, Ruprecht; and Stolzer, Paul, 4,342,240, Cl. 83-42.000.
Key, Worth M.; and Herkness, Wayne, to Burlington Industries, Inc. Air jet loom filling feeding. 4,342,340, Cl. 139-435.000.
Keystone Consolidated Industries, Inc.: *See—*
Badtke, Deane L.; and Lehman, Robert V., 4,342,403, Cl. 220-345.000.
Khusandzhanov, Aman I.: *See—*
Alekhin, Stanislav A.; Bakhir, Vitold M.; Born, Raisa I.; Bakhir, Tatyana M.; and Khusandzhanov, Aman I., 4,342,222, Cl. 73-153.000.
Kibun Company Limited: *See—*
Katoh, Naboru; Komatsu, Kazumiya; and Nozaki, Hisashi, 4,342,790, Cl. 426-332.000.
Kieffer, Richard: *See—*
Ettmayer, Peter; and Kieffer, Richard, 4,342,594, Cl. 75-203.000.
Kiekert GmbH & Co. Kommanditgesellschaft: *See—*
Kleefeldt, Frank, 4,342,209, Cl. 70-264.000.
Kikkoman Corporation: *See—*
Motomura, Yoshie; Ishiyama, Jiro; and Shimizu, Junichi, 4,342,585, Cl. 71-86.000.
Kimura, Akio: *See—*
Akimoto, Shinichi; and Kimura, Akio, 4,342,855, Cl. 526-124.000.
Kimura, Masaharu: *See—*
Sugio, Akitoshi; Amemiya, Akira; Kimura, Masaharu; Otuki, Yoshiharu; and Kawaguchi, Kiyokazu, 4,342,680, Cl. 524-100.000.
Kimura, Sakae; Shimura, Masahiro; and Okai, Tadatake, to Tokyo Shibaura Denki Kabushiki Kaisha. Getter device. 4,342,662, Cl. 252-181.400.
Kimura, Shigeru: *See—*
Hara, Kunio; and Kimura, Shigeru, 4,342,224, Cl. 73-290.00R.
Kinashi, Takao; Fujita, Takashi; and Kawabe, Norio, to Toray Industries, Inc. Dry planographic printing plate and preparation thereof. 4,342,820, Cl. 430-11.000.
Kirakosian, Robert T.: *See—*
Melikian, Zograb A.; Oganian, Larisa G.; Simonian, Arsen S.; and Kirakosian, Robert T., 4,342,204, Cl. 62-304.000.
Kirchherr, Patricia R.: *See—*
Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., 4,342,802, Cl. 428-92.000.
Kirk, Roger D.: *See—*
Benton, Charles M.; Arnold, Franklin D.; Kellogg, George W.; and Kirk, Roger D., 4,342,178, Cl. 52-125.500.
Kirkpatrick, Robert G.; and Jarvis, Stephen A., to General Electric Company. Sprocket arrangement in a high rate of fire revolving battery gun. 4,342,253, Cl. 89-12.000.
Kisfaludy, Lajos: *See—*
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,342,755, Cl. 424-244.000.
Klaassens, Harry: *See—*
Johnson, William M.; Lindsay, Alan; and Klaassens, Harry, 4,342,166, Cl. 37-142.00A.
Klane Corporation, The: *See—*
Sato, Kazuo, 4,342,288, Cl. 123-25.00B.
Kleber, Rolf: *See—*
Mayer, Reinhart; Fester, Walter; and Kleber, Rolf, 4,342,600, Cl. 106-164.000.
Klebl, Wolfram: *See—*
Ziemek, Gerhard; Klebl, Wolfram; Hoffmann, Ernst; and Brunn, Reiner, 4,342,190, Cl. 57-293.000.
Kleefeldt, Frank, to Kiekert GmbH & Co. Kommanditgesellschaft. Central vehicle door-lock system. 4,342,209, Cl. 70-264.000.
Kleemann, Axel; and Samson, Marc, to Degussa Aktiengesellschaft. 2-[2'-(Hydanto-5-yl)-ethyl]-5,5-dimethyl-1,3-dioxane. 4,342,874, Cl. 548-309.000.
Klingman, Gilbert E., to Bechtel International Corporation. Method for oxidation of p-xylene and method for preparing dimethylterephthalate. 4,342,876, Cl. 560-77.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Komp, Hermann-Josef, 4,342,289, Cl. 123-41.700.
Knapp, Robert F., to International Business Machines Corporation. Printer control circuit. 4,343,012, Cl. 346-139.00R.
Knutson, Russell R. Beverage cooling apparatus for connection to auto air conditioner. 4,342,202, Cl. 62-243.000.
Kobayashi, Masayoshi: *See—*
Tomita, Hitoshi; and Kobayashi, Masayoshi, 4,342,301, Cl. 123-502.000.
Kobayashi, Shunji: *See—*
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Kobe Steel, Limited: *See—*
Murai, Ryuji; Watanabe, Toshihiko; Ogata, Yoji; Nagashima, Masashi; and Soga, Mitsurou, 4,342,897, Cl. 219-73.200.
Kober, Alfred E.; and Kestner, Mark O., to Apollo Technologies, Inc. Wet flow characteristic of coal and other water-insoluble solid particles. 4,342,797, Cl. 427-220.000.
Koch, Bernhard R., to Grob & Co. Aktiengesellschaft. Weaving heddle. 4,342,339, Cl. 139-93.000.
Koch, Robert L., II, to George Koch Sons, Inc. Plywood layup line. 4,342,615, Cl. 156-563.000.
Kocher, Timothy L.: *See—*
Bennett, Benny M.; Kocher, Timothy L.; and Little, David M., 4,342,495, Cl. 339-163.000.
Kocher, Willi: *See—*
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Kockums Industri AB: *See—*
Eklund, Urban, 4,342,241, Cl. 83-56.000.
Koehring Company: *See—*
Reinicker, Donald C.; and Radcliffe, Daniel J., 4,342,335, Cl. 137-636.200.
Salani, Chittaranjan, 4,342,523, Cl. 404-117.000.
Kogan, Naum P. Method and apparatus for manufacturing cement clinker. 4,342,598, Cl. 106-100.000.
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, to Fujitsu Fanuc Limited. Spindle rotation control system. 4,342,950, Cl. 318-611.000.

Koike, Wataro: *See*—
Harada, Takao; Ohashi, Hideaki; Koike, Wataro; Yazawa, Chihiro; and Nanjo, Kazuko, 4,342,859, Cl. 528-64.000.

Komatsu, Kazumiya: *See*—
Katoh, Naboru; Komatsu, Kazumiya; and Nozaki, Hisashi, 4,342,790, Cl. 426-332.000.

Komp, Hermann-Josef, to Klockner-Humboldt-Deutz Aktiengesellschaft. Internal combustion engine, especially air-cooled internal combustion engine for vehicles and driving units. 4,342,289, Cl. 123-41.700.

Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, to FMC Corporation. Processes for producing pyrethroid insecticide intermediates. 4,342,694, Cl. 549-273.000.

Koonce, George R.: *See*—
Pfeifer, George F.; Koonce, George R.; and Phillips, Jack E., 4,342,910, Cl. 250-237.00G.

Koop, Hermann: *See*—
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Koracs nee Palotay, Agnes: *See*—
Berenyi nee Poldermann, Edit; Gorog, Peter; Grasser, Katalin; Kosoczky, Ibolya; Koracs nee Palotay, Agnes; and Petocz, Lujza, 4,342,766, Cl. 424-249.000.

Koral, Joseph F.; Shargabian, Karl S.; and Strem, Ervin H., Jr., to General Motors Corporation. Sliding sunroof with ventilator. 4,342,482, Cl. 296-221.000.

Kosek, Thomas P., to General Motors Corporation. Powdered coal delivery system. 4,342,428, Cl. 239-651.000.

Koshimaru, Hajime; and Ishii, Shoju, to Nissan Motor Co., Ltd. Closed chamber extrusion method and apparatus for shaping of metal rod into tulip-shaped part. 4,342,213, Cl. 72-358.000.

Kosoczky, Ibolya: *See*—
Berenyi nee Poldermann, Edit; Gorog, Peter; Grasser, Katalin; Kosoczky, Ibolya; Koracs nee Palotay, Agnes; and Petocz, Lujza, 4,342,766, Cl. 424-249.000.
Budai, Zoltan; Magdanyi, Laszlo; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; and Kosoczky, Ibolya, 4,342,762, Cl. 424-246.000.

Kotchy, Alan W. Paneling cutter tool. 4,342,145, Cl. 29-407.000.

Kothmann, Richard E.; and Somers, Edward V., to United States of America, Energy. Fuel cell stack arrangements. 4,342,816, Cl. 429-13.000.

Kotlyarova, Galina A.: *See*—
Glebov, Igor A.; Danilevich, Yanush B.; Ivanov, Sergeia A.; Karymov, Anatoly A.; Kotlyarova, Galina A.; Sapozhnikov, Vladimir A.; and Shakhtarin, Valentin N., 4,342,932, Cl. 310-52.000.

Kovacs, Ronald K., to Emerson Electric Co. Thermally actuatable electrical switch construction, conductive lead therefor and methods of making the same. 4,342,980, Cl. 337-407.000.

Kozawa, Shigeyuki; Doi, Takao; and Kunii, Nobuaki, to Asahi Glass Company, Ltd. Process for producing polymer polyol. 4,342,840, Cl. 521-137.000.

Kozyrski, Vincent T.: *See*—
Grzeika, Eugene W.; and Kozyrski, Vincent T., 4,342,414, Cl. 227-109.000.

Kraftanlagen AG: *See*—
Fetzer, Wolfgang, 4,342,574, Cl. 55-341.00M.

Kraftwerk Union Aktiengesellschaft: *See*—
Janner, Karl; and Gregorius, Klaus, 4,342,727, Cl. 423-3.000.

Krenz, Johannes: *See*—
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Krishnakumar, Suppayan M.; Pocock, John F. E.; Mahajan, Gautam K.; and Trembly, John F., to Continental Group, Inc., The. Method of processing polyethylene terephthalate preforms and apparatus. 4,342,895, Cl. 219-10.430.

Krone GmbH: *See*—
Gravenhorst, Peter; and Krenz, Johannes, 4,342,882, Cl. 179-90.00B.

Kronfeld, Leonard E.; Winkler, Thomas J.; and Madsen, Ricky J., to Nortronics Company, Inc. Transducer arm assembly for floppy disk. 4,343,025, Cl. 360-104.000.

Kruckenberg, Winfried: *See*—
Reel, Henning; Kruckenberg, Winfried; and Schundehutte, Karl H., 4,342,683, Cl. 260-156.000.

Krueger, James M.: *See*—
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Krupp-Koppers GmbH: *See*—
Jakobi, Wilhelm; Heinrichs, Bernhard; and Jokisch, Friedrich, 4,342,626, Cl. 202-228.000.

Kruse, Uno: *See*—
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Kubota, Shin: *See*—
Usuki, Takayoshi; Endo, Yukio; Ito, Kichizo; Tuboi, Takao; and Kubota, Shin, 4,342,814, Cl. 428-383.000.

Kuboyama, Morio: *See*—
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Kuczynski, Bruce L.: *See*—
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Kudinov, Vladimir M.: *See*—
Beatovic, Branislav P.; Kuzmanovic, Stevan L.; Kudinov, Vladimir M.; and Petuskov, Vladimir, 4,342,609, Cl. 148-127.000.

Kuhn, Lothar, to Adlerwerke vorm Heinrich Kleyer A.G. Paper feeding apparatus. 4,342,521, Cl. 400-637.000.

Kumakura, Toshio: *See*—
Yamashita, Keitaro; and Kumakura, Toshio, 4,342,282, Cl. 118-657.000.

Kumar, Kaplesh; and Das, Dilip K., to United States of America, Navy. Method for forming γ-boron. 4,342,734, Cl. 423-298.000.

Kunii, Nobuaki: *See*—
Kozawa, Shigeyuki; Doi, Takao; and Kunii, Nobuaki, 4,342,840, Cl. 521-137.000.

Kunise, Satoru: *See*—
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,342,918, Cl. 422-186.040.

Kuroda, Masahiro, to Bridgestone Tire Co., Ltd. Pneumatic tire for high speed under heavy load. 4,342,351, Cl. 152-209.00R.

Kutsch, Howard J., to Du Pont de Nemours, E. I., and Company. Composite elastomeric spring belt. 4,342,806, Cl. 428-174.000.

Kuzmanovic, Stevan L.: *See*—
Beatovic, Branislav P.; Kuzmanovic, Stevan L.; Kudinov, Vladimir M.; and Petuskov, Vladimir, 4,342,609, Cl. 148-127.000.

Kwon, Joon T., to Lummus Company, The. Production of alkyl hypohalites. 4,342,703, Cl. 260-453.0RX.

Kyan, Chwan P., to Chevron Research Company. Shaped channeled catalyst. 4,342,643, Cl. 208-134.000.

Lacell, Albert: *See*—
McLennan, Lloyd K.; and Lacell, Albert, 4,343,043, Cl. 455-231.000.

Lacey, Robert L., to Illinois Tool Works Inc. Resilient fastener having keeper with lock. 4,342,140, Cl. 24-373.000.

Lagakos, Nicholas: *See*—
Macedo, Pedro B.; Litovitz, Theodore A.; Lagakos, Nicholas; Mohr, Robert K.; and Meister, Robert, 4,342,907, Cl. 250-227.000.

Lagoni, William A., to RCA Corporation. Apparatus for reducing the effect of co-channel interference on synchronizing pulses. 4,343,019, Cl. 358-31.000.

Lalikos, James M.; Waite, Harold K.; and Lefebvre, Kenneth E., to Titeflex Corporation. Method of making a preformed semirigid plastic hose wrapped with a wire spiral. 4,342,612, Cl. 156-143.000.

Lamb, Frank E., to Duval Corporation. Non-polluting process for recovery of precious metal values from ores including those containing carbonate materials. 4,342,592, Cl. 75-118.00R.

Lambert, Jean-Luc, to Fives-Cail Babcock. Pulsation amplitude control for pneumatically pulsated liquid. 4,342,654, Cl. 210-744.000.

Lane, Rick; Kafka, Donald C.; and Kafka, Jayne M. Multi-player backgammon. 4,342,458, Cl. 273-248.000.

Lange, Karl-Heinz, to Fico Fischer & Co. Method for the production of ornamental link chains (Venetian chains) ready for soldering. 4,342,191, Cl. 59-35.00R.

Langen, Marinus J. M.; and Strauss, Edgar H., to H. J. Langen & Sons Limited. Roll stock for use in manufacture of bag. 4,342,808, Cl. 428-194.000.

Lanier Business Products Co., Inc.: *See*—
Smith, Jack E., Jr.; and Mason, Paul C., 4,343,039, Cl. 369-28.000.

Lapp, Ellsworth W. Three-position, four-way rotary valve. 4,342,332, Cl. 137-625.230.

Larkfeldt, Owe C. G., to AB Skanska Cementgjunteriet. Process and device for production of concrete pipe by filling and compaction of fresh concrete in an upright form. 4,342,713, Cl. 264-71.000.

Larson, Hugo R.; Avery, Howard S.; and Chapin, Henry J., to Abex Corporation. Castings. 4,342,593, Cl. 75-128.00A.

Laser Products Corporation: *See*—
Griffith, Gerald W., 4,342,954, Cl. 320-14.000.

Lattes, Ana L.: *See*—
Melngailis, John; Haus, Hermann A.; and Lattes, Ana L., 4,342,970, Cl. 333-142.000.

Lauckner, Joachim: *See*—
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Lauer, Hansjorg: *See*—
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Laufer, Helmut: *See*—
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Lausman, Thomas C.: *See*—
Wang, Chih C.; Ekstrom, Lincoln; Lausman, Thomas C.; and Wielicki, Henry, 4,342,659, Cl. 252-49.600.

Lay nee Konya, Aranka: *See*—
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Lazarz, Christine A.: *See*—
Chang, Eng-Pi; Lazarz, Christine A.; and Cook, Edward H., Jr., 4,342,636, Cl. 204-296.000.

Ledvina, Timothy J.; and Mead, Robert H., to Borg-Warner Corporation. Composite chain link assembly. 4,342,560, Cl. 474-157.000.

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Lee, James K.: *See*—
Marcus, Michael A.; and Lee, James K., 4,342,936, Cl. 310-330.000.

Lee, John C. Cooking grill. 4,342,259, Cl. 99-425.000.

Lee, Peter F., to Southland Instruments, Inc. Blood transfer device. 4,342,341, Cl. 141-1.000.

Lee, Raymond: *See*—
Cripps, Michael W.; and Lee, Raymond, 4,342,171, Cl. 43-53.500.

Lefebvre, Kenneth E.: *See*—
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Lefebvre, Philip H.: *See*—
Faber, Marcel D.; Ernst, Richard H.; and Lefebvre, Philip H., 4,342,831, Cl. 435-163.000.
Legrand, Pierre, to Applied Power Inc. Measuring bridge. 4,342,154, Cl. 33-180.0AT.
Lehmacher, Hans. Apparatus for the stacking and connection of synthetic-resin foil bags. 4,342,564, Cl. 493-195.000.
Lehman, Robert V.: *See*—
Badtke, Deane L.; and Lehman, Robert V., 4,342,403, Cl. 220-345.000.
Leivenzon, Simon; and Leivenzon, Steven, to Firmaframe Nominees Pty. Ltd. Mechanism for stopping the drive or reversing the drive of motors of roller shutter doors. 4,342,354, Cl. 160-133.000.
Leivenzon, Steven: *See*—
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Lemelson, Jerome H. Apparatus for coding articles. 4,342,549, Cl. 425-150.000.
Lenz, Herman N.; and Host, David A., to Teledyne Industries, Inc. Bearing lubricating injector. 4,342,489, Cl. 308-187.000.
Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab): *See*—
Godtfredsen, Wagn O.; and von Daehne, Welf, 4,342,772, Cl. 424-271.000.
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Biss, Rudy; and Nadeau, Raymond, 4,342,648, Cl. 209-166.000.
Leschinsky, Leonid K.: *See*—
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P., 4,342,898, Cl. 219-76.140.
Leskinen, Seppo J., to Oy Nokia AB. Impeller assembly for a centrifugal blower. 4,342,541, Cl. 416-186.00R.
Lesoille, Marcel, to Mines et Produits Chimiques de Salsigne. Process for the recovery of gold and/or silver and possibly bismuth contained in sulfuretted ores and/or sulfoarsenides. 4,342,591, Cl. 75-101.00R.
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Leverington, Richard D.: *See*—
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Levine, Alan H.: *See*—
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Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal pyridinsulfonamides. 4,342,587, Cl. 71-92.000.
Lewis, Robert T., to Chevron Research Company. Magnetic separation of mineral particles from shale oil. 4,342,640, Cl. 208-11.00R.
Lewis, William C. Expandable piston motor. 4,342,291, Cl. 123-78.00B.
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Goldkuhle, Gerhard, 4,343,016, Cl. 358-1.000.
Lichtenwalter, Robert H.; and Pierson, Darrell E., to Weyerhaeuser Company. Veneer lathe chuck assembly. 4,342,348, Cl. 144-209.00R.
Lichtman, Philip R., to Pandiscio, Nicholas A., a part interest. Manually cycled pistol. 4,342,169, Cl. 42-11.000.
Liebegott, Klaus, to Bayerische Motoren Werke Aktiengesellschaft. Headlight adjusting device for vehicles. 4,343,031, Cl. 362-80.000.
Lindmayer, Istvan; and Menassa, Karim. Hydro-pneumatic jet injector. 4,342,310, Cl. 128-207.250.
Lindroth, Thomas A.; and Winston, Philip E., Jr., to Merck & Co., Inc. Use of Heteropolysaccharide S-156 in latex paint. 4,342,672, Cl. 524-29.000.
Lindsay, Alan: *See*—
Johnson, William M.; Lindsay, Alan; and Klaassens, Harry, 4,342,166, Cl. 37-142.00A.
Lindsay, Joseph. Rotating shaft seal assembly. 4,342,461, Cl. 277-30.000.
Liotet, Serge; and Assier, Pierre-Jean. Colostrum-based composition for external use. 4,342,747, Cl. 424-95.000.
Lipman, Daniel. Apparatus and method for grooving a board-like material, a grooving tool therefor and a structure made by the method. 4,342,349, Cl. 144-371.000.
Litovitz, Theodore A.: *See*—
Macedo, Pedro B.; Litovitz, Theodore A.; Lagakos, Nicholas; Mohr, Robert K.; and Meister, Robert, 4,342,907, Cl. 250-227.000.
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Liu, Sheau-Ming S.: *See*—
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Llera, Santos A. A., to Precision Plastic Products Corp. Tamper indicating closure and pressurized container. 4,342,400, Cl. 215-256.000.
Lo, Ching P. Motorcycle exhaust system. 4,342,195, Cl. 60-313.000.
Locatelli, Jean-Louis; and Robin, Jean, to Rhone-Poulenc Industries. Polyisocyanato/imido compositions and imide group containing polymers prepared therefrom. 4,342,860, Cl. 528-59.000.
Locatelli, Jean-Louis; and Robin, Jean, to Rhone-Poulenc Industries. Polyisocyanato/imido compositions and imide group containing polymers prepared from polyisocyanate, polyimide and copolymerizable comonomer. 4,342,861, Cl. 528-59.000.
Loeffler, Herbert H., to Arthur D. Little, Inc. Portable water distiller. 4,342,623, Cl. 202-83.000.
Lofgren, Stig-Gunnar; and Ekeborg, Bo G., to Mo och Domsjo Aktiebolag. Digging and planting machine. 4,342,270, Cl. 111-1.000.
Lohlein, Wolfdieter: *See*—
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Look, Merton A.: *See*—
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Lopatin, George; Coplan, Myron J.; and Walton, James P., Jr., to Albany International Corp. Open-celled microporous sorbent-loaded textile fibers and films and methods of fabricating same. 4,342,811, Cl. 428-220.000.
L'Oreal: *See*—
Sebag, Henri; and Vanlerberghe, Guy, 4,342,742, Cl. 424-59.000.
Lorenz, Otto; and Keller, Merten. Tilt-box for guiding a continuously moving web. 4,342,412, Cl. 226-21.000.
Lorteije, Jean H. J., to U.S. Philips Corporation. Display device having a liquid crystal. 4,342,994, Cl. 340-784.000.
Lorusso, Simone: *See*—
Di Toro, Vincenzo; Gozzo, Franco; Cecere, Mirella; Lorusso, Simone; and Garavaglia, Carlo, 4,342,773, Cl. 424-272.000.
Loser, Harald; Schmidt, Gerhard; Warzawa, Wolfgang; and Wegner, Klaus. Process for the coating of particles for the production of fuel and/or absorbing elements for nuclear reactors and apparatus therefor. 4,342,284, Cl. 118-716.000.
Lovera, Bruno; Pancotti, Santino; Pariani, Emilio; and Virtuani, Giuseppe, to Costruzioni Aereonautiche Giovanni Agusta S.p.A. Articulated rotor for helicopters. 4,342,540, Cl. 416-140.000.
Lovisolo, Pier P.: *See*—
Cozzi, Paolo; Mongelli, Nicola; Pillan, Antonio; Bergamaschi, Maria; and Lovisolo, Pier P., 4,342,775, Cl. 424-273.00R.
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Lucas Industries Limited: *See*—
Rath, Heinrich B.; and Wienand, Hans J., 4,342,382, Cl. 188-73.450.
Luczak, Joseph J.; and Nagati, Rashed N., to Pennsylvania Engineering Corp. Self-aligning trunnion bracket for metallurgical vessels. 4,342,445, Cl. 266-296.000.
Luh, Howard H., to Ford Aerospace & Communications Corporation. Paraboloidal reflector spatial filter. 4,343,002, Cl. 343-753.000.
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Bauer, William V.; and Sze, Morgan C., 4,342,642, Cl. 208-130.000.
Kwon, Joon T., 4,342,703, Cl. 260-453.0RX.
Tsao, Utah, 4,342,735, Cl. 423-356.000.
Lund, Arnold M.; and Lund, Morten A. Control system for slitter-rewinder apparatus. 4,342,432, Cl. 242-56.200.
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Lundblad, Leif J. I. Dispensing apparatus. 4,342,325, Cl. 133-1.00R.
Lutz, Felix; Seibold, Gerhard; Wessel, Gerhard; and Lauckner, Joachim, to International Standard Electric Corporation. Facsimile recorder. 4,343,009, Cl. 346-108.000.
Luyckx, Leon A. Exothermic steel ladle desulfurizer and method for its use. 4,342,590, Cl. 75-58.000.
Lydall, Kenneth: *See*—
Ennis, Brian J.; and Lydall, Kenneth, 4,342,137, Cl. 19-97.000.
Lyden, Frank J., to Oil-Rite Corporation. Porous rod metering valve. 4,342,375, Cl. 184-65.000.
Lyden, Frank J., to Oil-Rite Corporation. Adjustable constant level oiler and tool for making adjustments. 4,342,376, Cl. 184-103.00R.
M.A.N. Maschinenfabrik Augsburg-Nuernberg AG: *See*—
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Macedo, Pedro B.; Litovitz, Theodore A.; Lagakos, Nicholas; Mohr, Robert K.; and Meister, Robert, to Macedo, Pedro B.; and Litovitz, Theodore A. Optical sensing apparatus and method. 4,342,907, Cl. 250-227.000.
Macidull, John C., to United States of America, Navy. Aircraft self-protection radar. 4,343,000, Cl. 343-705.000.
Mack, Karl; and Maly, Zdenek, to Swiss Aluminium Ltd. Process and device for filling with a hardenable filler gaps where corrosive attack can occur in tube and fin type heat exchangers. 4,342,150, Cl. 29-726.000.
Mackles, Leonard, to Bristol-Myers Company. Roll-on dispenser with a flexible membrane. 4,342,522, Cl. 401-214.000.
Maddock, Thomas J. Band saw jig. 4,342,450, Cl. 269-87.000.
Madsen, Ricky J.: *See*—
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Maebara, Isao; and Fujio, Koichiro, to Ishikawajima-Kenzai Kogyo Co., Ltd. Core for use in casting hollow concrete slab and method of casting such slab. 4,342,441, Cl. 249-65.000.
Maender, Otto W.; and Morita, Eiichi, to Monsanto Company. Methylene thioethers. 4,342,705, Cl. 260-465.00D.
Magdanyi, Laszlo: *See*—
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Magna Corporation: *See*—
Blair, Charles M., Jr., 4,342,657, Cl. 252-8.55D.
Magnusson, Alan B.: *See*—
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Mahajan, Gautam K.: *See*—
Krishnakumar, Suppayan M.; Pocock, John F. E.; Mahajan, Gautam K.; and Trembly, John F., 4,342,895, Cl. 219-10.430.

Mahmood, Mahmood N.: *See*—
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Mahoney, Thomas P.: *See*—
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Majerus, John N., to United States of America, Army. Shaped charge warhead with mechanical means for preventing rotation. 4,342,261, Cl. 102-307.000.

Makuta, Yoshihiro: *See*—
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Mack, Karl; and Maly, Zdenek, 4,342,150, Cl. 29-726.000.

Maner, Ronald J.: *See*—
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Mann, William F.; and Smith, Thomas J., to Colloids, Inc. Method of reducing water demand of alkaline aqueous suspensions. 4,342,599, Cl. 106-100.000.

Manville Service Corporation: *See*—
Ray, Richard J., Jr., 4,342,610, Cl. 156-62.600.

Marcus, Michael A.; and Lee, James K., to Eastman Kodak Company. High deflection bandwidth product polymeric piezoelectric flexure mode device and method of making same. 4,342,936, Cl. 310-330.000.

Marcus, Sanford M.; and Rellick, Joseph R., to Du Pont de Nemours, E. I., and Company. Solar cell metallizations comprising a nickel-antimony alloy. 4,342,795, Cl. 427-75.000.

Margittai, Agnes: *See*—
SpringThorpe, Anthony J.; and Margittai, Agnes, 4,342,148, Cl. 29-569.00L.

Marjollet, Jacques; Mevel, Jean-Claude; Palacio, Gerard; and Tondeur, Gerard, to Societe Anonyme dite: Stein Industrie. Apparatus for separating droplets of liquid entrained in a gas or a vapor. 4,342,570, Cl. 55-418.000.

Markovits, Gary: *See*—
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Markowski, Steven G.: *See*—
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Whitney, Douglass G.; and Martin, John K., III, 4,342,312, Cl. 128-214.00F.

Martinez Lope, Jesus: *See*—
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Reif, Henry E.; Maruhnic, Peter; and Chervenak, Michael C., 4,342,641, Cl. 208-89.000.

Marx, Thomas O., to Atwood Vacuum Machine Company. Gas spring with tubular shell seal. 4,342,447, Cl. 267-64.230.

Marzocchi, Alfred: *See*—
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Masaki, Kenji: *See*—
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Mason, James D.: *See*—
Hogue, Guy L.; and Mason, James D., 4,342,170, Cl. 42-71.00P.

Mason, Paul C.: *See*—
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Massa, Frank, to Stoneleigh Trust, The, Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees. Apparatus and method for the non-destructive testing of the physical integrity of a structural part. 4,342,229, Cl. 73-579.000.

Massachusetts Institute of Technology: *See*—
Melngailis, John; Haus, Hermann A.; and Lattes, Ana L., 4,342,970, Cl. 333-142.000.

Mastriani, Elvin A., to Arrow Converting Equipment Inc. Air differential mandrel and method of differentially winding and rewinding tapes. 4,342,433, Cl. 242-72.00B.

Mastronuzzi, Carl T., Jr. Retractable speed bump. 4,342,525, Cl. 404-6.000.

Masuda, Shunichi: *See*—
Shimizu, Katsuichi; Masuda, Shunichi; and Sakamaki, Hisashi, 4,343,036, Cl. 364-518.000.

Mathes, Nikolaus: *See*—
Gerlach, Klaus; Mathes, Nikolaus; Pitowski, Hans-Jurgen; and Wechs, Friedbert, 4,342,801, Cl. 428-91.000.

Mathews, Paul B., to United States of America, Army. Means and method for testing laser range finders. 4,342,514, Cl. 356-5.000.

Matoba, Yasuo: *See*—
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Matsuda, Makoto: *See*—
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Matsuda, Minoru, to Nissan Motor Co., Ltd. Frame structure for a fork lift truck. 4,342,470, Cl. 280-785.000.

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Matsukawa, Hiroharu: *See*—
Kakimi, Fujio; Hiratsuka, Nobuo; and Matsukawa, Hiroharu, 4,342,739, Cl. 424-1.000.

Matsumoto, Haruo: *See*—
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Matsunaga, Mitsuro: *See*—
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Matsuo, Hiroshi; and Omata, Nobuaki, to Sharp Corporation; and Nifco Inc. Device for moderating movement of lid. 4,342,135, Cl. 16-82.000.

Matsuoka, Yoshitaka: *See*—
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Yamada, Kaichi; Morikawa, Yoshiyuki; Fujio, Katuharu; Yoshihiro, Koichi; Matsuda, Toshio; and Taguchi, Tatsuhisa, 4,342,547, Cl. 418-84.000.

Matsushita Electric Works, Ltd.: *See*—
Kashima, Isoo; Takase, Yosio; and Mishina, Masami, 4,342,885, Cl. 200-47.000.
Nakano, Kunimitsu; and Takemura, Kunio, 4,342,974, Cl. 335-10.000.

Matta, Galal N., to United States of America, Army. Two stage float valve. 4,342,328, Cl. 137-135.000.

Matthes, William R., to General Motors Corporation. Stratified charge engine with charge preparation means. 4,342,300, Cl. 123-430.000.

Matthews, Hugh B., to Sperry Corporation. Geothermal pump downhole energy regeneration system. 4,342,197, Cl. 60-641.400.

Mauldin, Charles H.; and Baird, William C., Jr., to Exxon Research & Engineering Co. Reforming with multimetallic catalysts. 4,342,644, Cl. 208-139.000.

Maurer, Fritz: *See*—
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,342,704, Cl. 260-464.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Johnson, Mark; and Ulrich, Reinhard, 4,342,517, Cl. 356-350.000.

Maxwell, Jerrold F.: *See*—
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May, John B.: *See*—
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Mayer, Reinhart; Fester, Walter; and Kleber, Rolf, to Hoechst Aktiengesellschaft. Process for the manufacture of viscoses. 4,342,600, Cl. 106-164.000.

Mazaki, Mitsuo: *See*—
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Mazzotta, Paul F.: *See*—
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McCartney, John, to Norwood Industries, Inc. Simulated leather sheet material. 4,342,805, Cl. 428-151.000.

McClure, Kenneth R., to Dickey Manufacturing Company. Security seal with break-off screw head securement. 4,342,477, Cl. 292-307.00R.

McCombs, Norman R.; and Schlaechter, John, to Greene & Kellogg, Incorporated. Compact oxygen concentrator. 4,342,573, Cl. 55-161.000.

McCord, Robert L. Fuel vaporizer and carburetor preheater system. 4,342,303, Cl. 123-557.000.

McCormick, Robert C.; and McCormick, Tom H. String mounting pitch changing apparatus for a pedal steel guitar. 4,342,249, Cl. 84-312.00P.

McCormick, Tom H.: *See*—
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McDowell, Hunter L.: *See*—
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McEntire, Edward E.: *See*—
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McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., to American Cyanamid Company. ω-Heteroaroyl(-propionyl or butyryl)-L-prolines. 4,342,689, Cl. 260-326.340.

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McGalliard, James D. Printed circuit fuse assembly. 4,342,977, Cl. 337-4.000.
McGraw-Edison Company: *See*—
Date, K. Henry; and Wainio, Ronald, 4,343,030, Cl. 361-335.000.
McLennan, Lloyd K.; and Lacell, Albert, to General Electric Company. Radio having a crescendo audio alarm. 4,343,043, Cl. 455-231.000.
McMahon, Thomas A.; and Greene, Peter R. Biomechanically tuned shoe construction. 4,342,158, Cl. 36-35.00R.
McMillan, Fraser; Guthrie, Graeme J.; and Williams, David J., to Commonwealth Industrial Gases Limited, The. Treatment of scrap. 4,342,647, Cl. 209-3.000.
McMillin, Danny L.; and Stirbis, James S., to Coors Container Company. Apparatus for printing articles from heat transfer paper. 4,342,281, Cl. 118-32.000.
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McVeigh, Peter J.; and Rudish, Ronald M., to Eaton Corporation. High accuracy feedback control system for a phased array antenna. 4,343,006, Cl. 343-854.000.
McVey, Charles I., to General Electric Company. Universal burning ceramic lamp. 4,342,939, Cl. 313-174.000.
Mead, Robert H.: *See*—
Ledvina, Timothy J.; and Mead, Robert H., 4,342,560, Cl. 474-157.000.
Medical Engineering Corporation: *See*—
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Medtronic, Inc.: *See*—
Engle, William R.; and Rockland, Ronald H., 4,342,318, Cl. 128-708.000.
Meier, Horst P.: *See*—
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Meier, Paul L. High speed stripping apparatus. 4,342,326, Cl. 134-102.000.
Meisert, Ernst: *See*—
Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, 4,342,847, Cl. 525-66.000.
Meister, Otto, to S&C Electric Company. Explosively-actuated switch and current limiting, high voltage fuse using same. 4,342,978, Cl. 337-6.000.
Meister, Robert: *See*—
Macedo, Pedro B.; Litovitz, Theodore A.; Lagakos, Nicholas; Mohr, Robert K.; and Meister, Robert, 4,342,907, Cl. 250-227.000.
Melikian, Zograb A.; Oganian, Larisa G.; Simonian, Arsen S.; and Kirakosian, Robert T. Room ejection unit of central air-conditioning. 4,342,204, Cl. 62-304.000.
Melinat, Wolfgang, to General Motors Corporation. Light weight disc brake caliper. 4,342,380, Cl. 188-71.100.
Melngailis, John; Haus, Hermann A.; and Lattes, Ana L., to Massachusetts Institute of Technology. Acoustic wave device. 4,342,970, Cl. 333-142.000.
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Lindmayer, Istvan; and Menassa, Karim, 4,342,310, Cl. 128-207.250.
Mera, Hiroshi: *See*—
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Merck & Co., Inc.: *See*—
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Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,757, Cl. 424-246.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,869, Cl. 544-21.000.
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,342,776, Cl. 424-274.000.
Cragoe, Edward J., Jr., 4,342,782, Cl. 424-330.000.
Firestone, Raymond A., 4,342,758, Cl. 424-246.000.
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,342,872, Cl. 546-186.000.
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,342,873, Cl. 546-186.000.
Kang, Kenneth S.; and Veeder, George T., 4,342,866, Cl. 536-119.000.
Lindroth, Thomas A.; and Winston, Philip E., Jr., 4,342,672, Cl. 524-29.000.
Yin, Robert I., 4,342,601, Cl. 106-209.000.
Merloz, Pierre: *See*—
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Merrell-Toraude et Cie: *See*—
Bey, Philippe; and Jung, Michel, 4,342,780, Cl. 424-319.000.
Mertens, Josephus C.: *See*—
Kennis, Ludo E. J.; and Mertens, Josephus C., 4,342,870, Cl. 544-282.000.
Meschi, Luciano. Blank for the transmission of information having improved preglued sealing areas. 4,342,418, Cl. 229-92.100.
Metallurgical, Inc.: *See*—
Withers, James C.; and Upperman, Gary V., 4,342,637, Cl. 204-2[illegible].000.
Metzger, Klaus: *See*—
van Wijhe, Albert; Munster, Ernst; Wagenbrenner, Gerhard; Rocker, Fritz; Armbruster, Joachim; Metzger, Klaus; and Ratzel, Rudiger, 4,342,934, Cl. 310-239.000.
Mevel, Jean-Claude: *See*—
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Mews, Lance D.: *See*—
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Meyer, Larry P.; and Dauterman, David C., to Nelson Irrigation Corporation. Combined rotary impulse sprinkler head and shut-off valve. 4,342,424, Cl. 239-233.000.
Meyer, Robert E.: *See*—
Perkins, William J.; Vest, William C.; Grannen, Walter A., III; and Meyer, Robert E., 4,342,442, Cl. 249-67.000.
Meynard, Jean-Yves, to Siplast S.A. Microporous bitumen coated under-roofing material. 4,342,804, Cl. 428-149.000.
Mezei, Tibor: *See*—
Budai, Zoltan; Magdanyi, Laszlo; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; and Kosoczky, Ibolya, 4,342,762, Cl. 424-246.000.
Mickelson, Dale. Caster assembly. 4,342,134, Cl. 16-31.00R.
Microlife Technics, Inc.: *See*—
Raccach, Moshe, 4,342,786, Cl. 426-52.000.
Microwave Techniques: *See*—
Sewell, Donald N.; and Starbird, Dwight A., 4,342,474, Cl. 285-61.000.
Midway Fishing Tool Company: *See*—
Reed, Lehman T., 4,342,363, Cl. 166-97.000.
Midwest Plastic Fabricators, Inc.: *See*—
Moran, Thomas F., 4,342,475, Cl. 285-137.00R.
Miller, Steve: *See*—
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Millipore Corporation: *See*—
Abrahams, Louis; and Izod, Thomas P. J., 4,342,679, Cl. 524-401.000.
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Lesoille, Marcel, 4,342,591, Cl. 75-101.00R.
Minnesota Mining and Manufacturing Company: *See*—
Onsager, Lloyd W., 4,342,904, Cl. 235-493.000.
Vanden Bergh, Jan D., 4,342,614, Cl. 156-541.000.
Minton, Keith G., to Hoover Company, The. Vacuum cleaner air flow sensing arrangement. 4,342,133, Cl. 15-339.000.
Mirkovitch, Velimir, to Zyma S.A. Use of polyvinyl alcohols for the treatment of lesions. 4,342,745, Cl. 424-78.000.
Misawa, Makoto: *See*—
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Mishina, Masami: *See*—
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Glennie, William L., 4,342,338, Cl. 138-99.000.
Mitchell, James G.; and Mitchell, Winalee G. Apparatus for holding and protecting sterilizable instruments. 4,342,390, Cl. 206-363.000.
Mitchell, Winalee G.: *See*—
Mitchell, James G.; and Mitchell, Winalee G., 4,342,390, Cl. 206-363.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
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Mitsubishi Gas Chemical Company, Inc.: *See*—
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Mitsui Engineering and Shipbuilding Co., Ltd.: *See*—
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Mitsui Petrochemical Industries, Ltd.: *See*—
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Mitsui Toatsu Chemicals, Inc.: *See*—
Ohshima, Kazushi; Matsunaga, Mitsuro; Sekiguchi, Haruo; Imaoka, Kazuhiro; and Hayashi, Fujio, 4,342,589, Cl. 75-0.5BA.
Sakai, Katsuya; Mita, Ryuichi; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, 4,342,700, Cl. 260-370.000.
Mittex AG: *See*—
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Miyamae, Toshiaki. Golf putting practice device. 4,342,455, Cl. 273-186.00A.
Miyamae, Toshiaki. Golf putting practice device. 4,342,456, Cl. 273-186.00A.
Mizoi, Takao: *See*—
Tan, Toshimi; Hisano, Katsukuni; and Mizoi, Takao, 4,342,542, Cl. 416-224.000.
Mizuno, Tadatoshi; Hosotani, Sumihiro; and Nishihara, Kaoru, to Kabushiki Kaisha Komatsu Seisakusho. Exhaust gas change-over apparatus. 4,342,333, Cl. 137-625.440.
Mo och Domsjo Aktiebolag: *See*—
Lofgren, Stig-Gunnar; and Ekeborg, Bo G., 4,342,270, Cl. 111-1.000.
Moates, Roger D.: *See*—
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Mohring, Gunter, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Directional antenna for microwave transmissions. 4,343,003, Cl. 343-781.00P.
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Froidh, Tor A.; and Widlund, Leif U. R., 4,342,562, Cl. 493-124.000.
Monaghan, Richard L.: *See—*
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Monbaliu, Marcel J.: *See—*
Van Poucke, Raphael K.; Monbaliu, Marcel J.; and Vandewalle, Jan J., 4,342,825, Cl. 430-505.000.
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Monsanto Company: *See—*
Bollinger, Frederic G., 4,342,586, Cl. 71-90.000.
Maender, Otto W.; and Morita, Eiichi, 4,342,705, Cl. 260-465.00D.
Montana, Antonio. Ladder support. 4,342,374, Cl. 182-45.000.
Montedison S.p.A.: *See—*
Di Toro, Vincenzo; Gozzo, Franco; Cecere, Mirella; Lorusso, Simone; and Garavaglia, Carlo, 4,342,773, Cl. 424-272.000.
Moore, Paul W. Cooling fabric. 4,342,203, Cl. 62-244.000.
Moore, Richard E.; and Mynderse, Jon S., to Eli Lilly and Company. Majusculamide C. 4,342,751, Cl. 424-177.000.
Moran, Thomas F., to Midwest Plastic Fabricators, Inc. Connector and adapter for duct systems for telephone cables and the like. 4,342,475, Cl. 285-137.00R.
Morgan, Daniel, to Bullet, Irving, Jr.; and Decuir, Maurice M., part interest to each. Scooter with seat. 4,342,466, Cl. 280-87.030.
Morgan, Roger E., to Mobil Oil Corporation. High solids coating for rusty steels. 4,342,674, Cl. 523-177.000.
Mori, Keiji: *See—*
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Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; Yamada, Muneo; and Watanabe, Yoshiteru, 4,342,828, Cl. 435-41.000.
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Morrison, Charles A., to National Motor Spares Corporation. Battery terminal connector. 4,342,497, Cl. 339-228.000.
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Morselli, Paolo L.; De Santis, Louis, Jr.; and Adamski, Robert, to Synthelabo. Anti-glaucoma agent. 4,342,783, Cl. 424-330.000.
Mortimer, Thomas J.: *See—*
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Mose, Luciano: *See—*
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Motomura, Yoshie; Ishiyama, Jiro; and Shimizu, Junichi, to Kikkoman Corporation. Method for obtaining fruits having good flavor and taste. 4,342,585, Cl. 71-86.000.
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Whatley, Roger A., 4,342,926, Cl. 307-297.000.
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Mousselli, Al H., to Applied Offshore Technology, Inc. Submersible backfill machine. 4,342,526, Cl. 405-159.000.
Mrusko, Joseph P.; and Everdyke, Wayne D., to Xerox Corporation. Triggering device for a flash lamp. 4,342,940, Cl. 313-198.000.
Muehling, Richard C.: *See—*
Patton, George A.; and Muehling, Richard C., 4,342,498, Cl. 339-256.00R.
Muller, Ortwin; Biber, Klaus; Schmauder, Roland; and Spitznas, Manfred, to Carl Zeiss-Stiftung. Servoelectric micromanipulator for movement on spherical coordinates. 4,342,951, Cl. 318-625.000.
Multisonics, Inc.: *See—*
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Murakami, Hisamichi: *See—*
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Murakami, Kyoichi: *See—*
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Muramatsu, Hiroaki; Tomioka, Kentaro; Hirota, Kazuo; and Akahane, Shoji, to G-C Dental Industrial Corp. Fluorocomplex salt-containing liquid for setting dental cements. 4,342,677, Cl. 523-116.000.
Murata Kikai Kabushiki Kaisha: *See—*
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Murata Manufacturing Co., Ltd.: *See—*
Nishikawa, Toshio; Ishikawa, Youhei; Tamura, Sadahiro; and Matsumoto, Haruo, 4,342,972, Cl. 333-206.000.
Murayama, Hiroo: *See—*
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Murphy, James B.: *See—*
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Murray, Thomas M.; and Richardson, Lloyd G., to Murray, Thomas M. Facsimile apparatus. 4,343,011, Cl. 346-138.000.
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Myers, Richard T.; and Roberson, David L., to General Electric Company. Means for matching impedances between a helical resonator and a circuit connected thereto. 4,342,969, Cl. 333-33.000.
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Nadeau, Raymond: *See—*
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Nadin, Robert P.; Nicholakopoulos, Antonios; Urban, Joseph P.; and Markowski, Steven G., to Union Carbide Corporation. Method and apparatus for filling bulk material containers. 4,342,345, Cl. 141-392.000.
Nagai, Haruhiko: *See—*
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Nagata, Wataru; and Aoki, Tsutomu, to Shionogi & Co., Ltd. Inversion of the 3 α-amino group attached to the β-lactam ring. 4,342,685, Cl. 260-239.00A.
Nagati, Rashed N.: *See—*
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Nagatomo, Hiroto: *See—*
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Nagel, Ferenc, to Egyesult Izzolampa es Villamossagi Rt. Metal halogen vapor lamp provided with a heat reflecting layer. 4,342,937, Cl. 313-113.000.
Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, to American Cyanamid Company. Carbalkoxymethyl derivatives of rutin poly(H-)sulfate and method of use. 4,342,752, Cl. 424-180.000.
Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, to American Cyanamid Company. Carboxyalkyl derivatives of rutin poly(H-)sulfate. 4,342,753, Cl. 424-180.000.
Nakamura, Tsutomu: *See—*
Shimada, Keizo; Aoki, Akihiro; Mera, Hiroshi; and Nakamura, Tsutomu, 4,342,715, Cl. 264-184.000.
Nakano, Kunimitsu; and Takemura, Kunio, to Matsushita Electric Works, Ltd. Multipolar type circuit breaker. 4,342,974, Cl. 335-10.000.
Nanjo, Kazuko: *See—*
Harada, Takao; Ohashi, Hideaki; Koike, Wataro; Yazawa, Chihiro; and Nanjo, Kazuko, 4,342,859, Cl. 528-64.000.
Narra, Rama K., to E. R. Squibb & Sons, Inc. Red cell labeling vial. 4,342,724, Cl. 422-101.000.
Narra, Rama K.; and Kuczynski, Bruce L., to E. R. Squibb & Sons, Inc. Method and kit for labeling red blood cells with technetium-99m. 4,342,740, Cl. 424-1.000.
National Machinery Company, The: *See—*
Edmondson, Richard; and Wisebaker, Dale A., 4,342,233, Cl. 73-862.060.
National Motor Spares Corporation: *See—*
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Perlinski, Witold; Davis, Irwin J.; and Romanick, John F., 4,342,843, Cl. 523-409.000.
National Steel Corp.: *See—*
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National Technology Corporation: *See—*
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NCR Corporation: *See—*
Bader, Leonhard; Giessner, Frank; Rombach, Friedrich B.; and Winter, Hermann, 4,343,013, Cl. 346-140.00R.
Neal, Carl R.: *See—*
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Neefeldt, Edward F. Windshield wiper boot. 4,342,126, Cl. 15-250.420.
Negishi, Takao; and Tomiita, Kazuo, to Toray Industries, Inc. Apparatus for producing a bundle of fibrous elements. 4,342,189, Cl. 57-288.000.
Nehmiz, Peter: *See—*
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Neubauer, Jeffrey A.; Reese, Walter J.; and Walker, Jimmy D., to PPG Industries, Inc. Mat width control. 4,342,581, Cl. 65-4.400.
Neuendorf, J. R. Pilot assembly for progressive die machines. 4,342,214, Cl. 72-404.000.
Newell, Chester W., to Newell Research Corporation. High-friction, low-elasticity drive belt for tape cartridges. 4,342,809, Cl. 428-215.000.
Newell Research Corporation: *See—*
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Newman, Malcolm: *See—*
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Nicholl Brothers, Inc.: *See—*
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Nickerson, James W., to Teledyne Industries, Inc. Valve guide and method for making same. 4,342,293, Cl. 123-188.0GC.
Nieda, Yasuhiro; and Honda, Kiyokazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing sealed-beam type electric bulb. 4,342,142, Cl. 29-25.130.
Niederdellmann, Georg: *See—*
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Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, to Sony Corporation. Chrominance signal processing circuit. 4,343,018, Cl. 358-28.000.
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Nippon Chemiphar Co., Ltd.: *See—*
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Nippon Kogaku K.K.: *See—*
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Nishikawa, Toshio; Ishikawa, Youhei; Tamura, Sadahiro; and Matsumoto, Haruo, to Murata Manufacturing Co., Ltd. Microwave device employing coaxial resonator. 4,342,972, Cl. 333-206.000.
Nishimura, Kazutoshi; and Hirono, Tadashi, to Nippon Telegraph & Telephone Public Corp. Magnetic recording and reproduction of digital information. 4,343,023, Cl. 360-40.000.
Nissan Motor Co., Ltd.: *See—*
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Okamura, Kenji; and Masaki, Kenji, 4,342,230, Cl. 73-702.000.
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Nitto Boseki Co., Ltd.: *See—*
Kasai, Sin; Kawaguchi, Yutaka; and Satoh, Michio, 4,342,430, Cl. 242-18.00A.
Niwa, Kiyomi: *See—*
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NL Industries, Inc.: *See—*
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Gross, Glenn M., 4,342,245, Cl. 84-1.010.
Normann, Richard W.; and Niles, Paul D., to Bendix Corporation, The. Electrical connector assembly. 4,342,494, Cl. 339-105.000.
Northern Telecom, Inc.: *See—*
Wernet, William F.; and Miller, Steve, 4,342,883, Cl. 179-99.00R.
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SpringThorpe, Anthony J.; and Margittai, Agnes, 4,342,148, Cl. 29-569.00L.
SpringThorpe, Anthony J., 4,342,944, Cl. 313-499.000.
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Vistins, Maris, 4,342,121, Cl. 2-161.00R.
Nortronics Company, Inc.: *See—*
Kronfeld, Leonard E.; Winkler, Thomas J.; and Madsen, Ricky J., 4,343,025, Cl. 360-104.000.
Norwood Industries, Inc.: *See—*
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Notton, John H. F., to Johnson, Matthey & Co., Limited. Soldering composition. 4,342,606, Cl. 148-23.000.
Nozaki, Hisashi: *See—*
Katoh, Naboru; Komatsu, Kazumiya; and Nozaki, Hisashi, 4,342,790, Cl. 426-332.000.
Nozu, Takashi; Yamada, Minoru; and Watanabe, Yasuhiko, to Brother Kogyo Kabushiki Kaisha. Tapping machine. 4,342,528, Cl. 408-6.000.
NSK-Warner K.K.: *See—*
Yanagihara, Hideo, 4,342,435, Cl. 242-107.000.
Numata, Saburo; and Fujino, Shinichiro, to Fuji Photo Optical Co., Ltd. Automatic exposure control device for a single lens reflex camera. 4,342,505, Cl. 354-23.00D.
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O & K Orenstein & Koppel Aktiengesellschaft: *See—*
Reinecke, Udo; and Gerber, Jurgen, 4,342,254, Cl. 91-6.000.
Oestreich, Ulrich; and Zeidler, Guenter, to Siemens Aktiengesellschaft. High voltage stabile optical cable structures. 4,342,500, Cl. 350-96.230.
Officine Meccaniche Savi Antonio S.p.A.: *See—*
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Ohm, Edward A., to Bell Telephone Laboratories, Incorporated. Broadband astigmatic feed arrangement for an antenna. 4,343,004, Cl. 343-781.00P.
Ohshima, Kazushi; Matsunaga, Mitsuro; Sekiguchi, Haruo; Imaoka, Kazuhiro; and Hayashi, Fujio, to Mitsui Toatsu Chemicals, Inc. Process for preparing iron compound particles for use in magnetic recording. 4,342,589, Cl. 75-0.5BA.
Oikawa, Shigehiko: *See—*
Joh, Yasushi; Yamazaki, Masahiro; Kaneko, Noriaki; Oikawa, Shigehiko; Makuta, Yoshihiro; and Hayashi, Chizuko, 4,342,711, Cl. 264-41.000.
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Lyden, Frank J., 4,342,375, Cl. 184-65.000.
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Okabe, Kanae; and Murayama, Hiroo, to Yuhshin Co., Ltd.; and Nifco Inc. Apparatus for fastening inside handle cover to automobile door. 4,342,136, Cl. 16-115.000.
Okabe, Susumu; Sonehara, Takashi; Sato, Masaru; and Mazaki, Mitsuo, to Nippon Chemiphar Co., Ltd. N-Acylcarnosine aluminum salt, its preparation, and a digestive ulcer remedy containing such salt. 4,342,774, Cl. 424-273.00R.
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Okamoto, Akira, to Murata Kikai Kabushiki Kaisha. Pirn exchange apparatus in double twister. 4,342,188, Cl. 57-89.000.

Okamura, Kenji; and Masaki, Kenji, to Nissan Motor Company, Limited. Pressure sensor and sensing method. 4,342,230, Cl. 73-702.000.
Okamura, Kiyohito: *See*—
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Oki Electric Industry Co., Ltd.: *See*—
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Fuzesi, Stephen; and Bayusik, John G., 4,342,864, Cl. 536-18.000.
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Omata, Nobuaki: *See*—
Matsuo, Hiroshi; and Omata, Nobuaki, 4,342,135, Cl. 16-82.000.
O'Neill, Michael L., to Joy Manufacturing Company. Cutter bit holder. 4,342,486, Cl. 299-86.000.
Onsager, Lloyd W., to Minnesota Mining and Manufacturing Company. Lightweight ferromagnetic marker for the detection of objects having markers secured thereto. 4,342,904, Cl. 235-493.000.
Oppama Kogyo Kabushiki Kaisha: *See*—
Watanabe, Hiromi, 4,342,304, Cl. 123-599.000.
Orion Industries, Inc.: *See*—
Valenzona, Joseph F.; and Hewitt, Lloyd, 4,342,946, Cl. 315-82.000.
Osaka Soda Co. Ltd.: *See*—
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Games, John E.; and Hmelovsky, Michael W., 4,342,379, Cl. 187-29.00R.
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Otuki, Yoshiharu: *See*—
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Oura, Masahisa: *See*—
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Owens-Corning Fiberglas Corporation: *See*—
Bhatti, Mohinder S.; and Marzocchi, Alfred, 4,342,577, Cl. 65-1.000.
Bhatti, Mohinder S.; and Higginbotham, James M., Sr., 4,342,578, Cl. 65-1.000.
Roberson, Cletis L., 4,342,580, Cl. 65-2.000.
Sanders, James E., 4,342,579, Cl. 65-2.000.
Owens-Illinois, Inc.: *See*—
Chang, Long F., 4,342,398, Cl. 215-1.00C.
Stengle, Edward J., Jr., 4,342,803, Cl. 428-131.000.
Weaver, Edward A., 4,342,943, Cl. 313-479.000.
Oy Nokia AB: *See*—
Leakinen, Seppo J., 4,342,541, Cl. 416-186.00R.
Oyama, Masaru; and Takahashi, Kenji, to Sony Corporation. Tape cassette. 4,342,436, Cl. 242-199.000.
Ozite Corporation: *See*—
Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., 4,342,802, Cl. 428-92.000.
P C U K Produits Chimiques Ugine Kuhlmann: *See*—
Frank, Pierre; and Sailer, Andre L., 4,342,684, Cl. 260-159.000.
Paddock, Gordon R.; and Jones, John E., to General Motors Corporation. Electric air control switching valve. 4,342,194, Cl. 60-290.000.
Paetow, Jurgen, to Hottinger Baldwin Measurements, Inc. Strain gage pick-up and method for adjusting such strain gage pick-up. 4,342,217, Cl. 73-1.00B.
Palacio, Gerard: *See*—
Marjollet, Jacques; Mevel, Jean-Claude; Palacio, Gerard; and Tondeur, Gerard, 4,342,570, Cl. 55-418.000.
Palmer, David A.; and Holzhauer, Juergen K., to Standard Oil Company (Indiana). Process for production of maleic anhydride. 4,342,699, Cl. 549-259.000.
Palosi, Eva: *See*—
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,342,755, Cl. 424-244.000.
Pancotti, Santino: *See*—
Lovera, Bruno; Pancotti, Santino; Pariani, Emilio; and Virtuani, Giuseppe, 4,342,540, Cl. 416-140.000.
Pandiscio, Nicholas A.: *See*—
Lichtman, Philip R., 4,342,169, Cl. 42-11.000.
Panthofer, Rudolf, to Tetra Werke Dr. rer. nat. Ulrich Baensch GmbH. Housing for aquarium filters having bayonet fastening means. 4,342,401, Cl. 220-301.000.
Panton-Moore, Lithia. Preparation for the care and conditioning of the feet. 4,342,743, Cl. 424-61.000.
Pappenheimer, John R.; Krueger, James M.; and Karnovsky, Manfred L., to President and Fellows of Harvard College. Sleep-promoting factor. 4,342,748, Cl. 424-95.000.
Paredes, Candelario. Seat and cover assembly for a toilet bowl. 4,342,124, Cl. 4-234.000.
Pariani, Emilio: *See*—
Lovera, Bruno; Pancotti, Santino; Pariani, Emilio; and Virtuani, Giuseppe, 4,342,540, Cl. 416-140.000.
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Wilson, Joseph F.; and Parish, Robert S., 4,342,669, Cl. 252-602.000.
Patnaik, Birendra K., to El Paso Polyolefins Company. Propylene polymerization process and product. 4,342,856, Cl. 526-125.000.
Patton, George A.; and Muehling, Richard C., to Akzona Incorporated. Electrical socket. 4,342,498, Cl. 339-256.00R.
Paulson, Eugene K. Pressure dump valve. 4,342,347, Cl. 141-98.000.
Pauvert, Joseph: *See*—
Jatteau, Michel; Chalmeton, Vincent; and Pauvert, Joseph, 4,342,916, Cl. 378-4.000.
Pavljuchenko, Valery N.: *See*—
Ivanchev, Sergei S.; Pavljuchenko, Valery N.; Pessina, Zinaida M.; and Vasilieva, Elena D., 4,342,676, Cl. 524-458.000.
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Peacock, Donald G.: *See*—
Changani, Pushkumar D.; Peacock, Donald G.; and Roberts, David, 4,342,800, Cl. 428-36.000.
Pellaton, Michel H., to France Ebauches S.A. Step-by-step miniature motor for watch movement. 4,342,930, Cl. 310-49.00R.
Pellew, Peter I. Protective garment for the legs of a quadruped of the horse genus and material for such garment. 4,342,185, Cl. 54-82.000.
Pennington, Raymond C.: *See*—
Jamison, Warren E.; and Pennington, Raymond C., 4,342,491, Cl. 308-239.000.
Pennsylvania Engineering Corp.: *See*—
Luczak, Joseph J.; and Nagati, Rashed N., 4,342,445, Cl. 266-296.000.
Pere, Gerard, to Creusot-Loire. Reciprocating pump. 4,342,544, Cl. 417-269.000.
Perkin-Elmer Corporation, The: *See*—
Buckley, William D., 4,342,917, Cl. 378-34.000.
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., 4,342,516, Cl. 356-332.000.
Shafer, David R., 4,342,503, Cl. 350-443.000.
Perkins, William J.; Vest, William C.; Grannen, Walter A., III; and Meyer, Robert E., to General Motors Corporation. Battery container mold. 4,342,442, Cl. 249-67.000.
Perkins, William R. Musical apparatus. 4,342,244, Cl. 84-1.010.
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Perlinski, Witold; Davis, Irwin J.; and Romanick, John F., to National Starch and Chemical Corp. Neoprene latex contact adhesives. 4,342,843, Cl. 523-409.000.
Permacel: *See*—
Doehnert, Donald F., 4,342,815, Cl. 428-522.000.
Perrotta, Kenneth A., to Whatman Reeve Angel Limited. Apparatus for and method of removing volatile boiler-feed additives from pressurized steam. 4,342,730, Cl. 423-215.500.
Pessina, Zinaida M.: *See*—
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Petersen, Kurt E.; and Shartel, Anne C., to International Business Machines Corporation. Planar semiconductor three direction acceleration detecting device and method of fabrication. 4,342,227, Cl. 73-510.000.
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Petz, Karl; Rieger, Klaus; and Steidl, Dieter, to Hoechst Aktiengesellschaft. Dulling agent on the basis of wax for varnishes, and process for the manufacture thereof. 4,342,602, Cl. 106-316.000.
Petzold, W. Andreas, to Union Special G.m.b.H. Material sensing means for sewing machines. 4,342,273, Cl. 112-272.000.
Pfeifer, George F.; Koonce, George R.; and Phillips, Jack E., to General Electric Company. Optoelectronic absolute position encoder with an in-line gray code controlling vehicle acceleration. 4,342,910, Cl. 250-237.00G.
Pfizer Inc.: *See*—
Andrews, Glenn C., 4,342,695, Cl. 549-315.000.
Johnson, Michael R.; Schaaf, Thomas K.; and Hess, Hans-Jurgen E., 4,342,868, Cl. 542-431.000.
Kadin, Saul B., 4,342,781, Cl. 424-319.000.
Kellogg, Michael S., 4,342,768, Cl. 424-250.000.
Schnur, Rodney C., 4,342,771, Cl. 424-263.000.
Weeks, Paul D.; and Allingham, Robert P., 4,342,697, Cl. 549-396.000.
Philips, Nicholas A., to Container Corporation of America. Two-piece reclosable container. 4,342,416, Cl. 229-23.0BT.

Phillips, Ernest L., to Jet Accessories, Inc. Lighted circuit breaker. 4,342,979, Cl. 337-41.000.
Phillips, Jack E.: *See*—
Pfeifer, George F.; Koonce, George R.; and Phillips, Jack E., 4,342,910, Cl. 250-237.00G.
Phillips Petroleum Company: *See*—
Erickson, Wayne K., 4,342,813, Cl. 428-296.000.
Gentry, Cecil C.; and Small, William M., 4,342,360, Cl. 165-67.000.
Hogan, John P.; and Banks, Robert L., 4,342,854, Cl. 526-75.000.
Tuck, Lee, 4,342,550, Cl. 431-4.000.
Wilson, Joseph F.; and Parish, Robert S., 4,342,669, Cl. 252-602.000.
Pick, James M.: *See*—
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Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., to Ozite Corporation. Floor covering of needled woven fabric and nonwoven batt. 4,342,802, Cl. 428-92.000.
Pierson, Darrell E.: *See*—
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Pillan, Antonio: *See*—
Cozzi, Paolo; Mongelli, Nicola; Pillan, Antonio; Bergamaschi, Maria; and Lovisolo, Pier P., 4,342,775, Cl. 424-273.00R.
Ping, Wu. Automatic cigarette lighting case. 4,342,902, Cl. 219-268.000.
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Piusz, Peter G.: *See*—
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Plasko, Emil R., to Emerson Electric Co. Thermally actuatable electrical switch construction, conductive lead therefor and method of making the same. 4,342,982, Cl. 337-407.000.
Pocock, John F. E.: *See*—
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Pohlmann, Fritz: *See*—
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Johnson, Bruce K.; and Black, Kenneth P., 4,342,506, Cl. 354-27.000.
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Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, 4,342,753, Cl. 424-180.000.
Pollock, William H., to Combustion Engineering, Inc. Integral economizer steam generator. 4,342,286, Cl. 122-336.000.
Polukhin, Petr I.: *See*—
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P., 4,342,898, Cl. 219-76.140.
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Pomie, Pierre; and Verriere, Philippe, to Commissariat a l'Energie Atomique. Fast nuclear reactor. 4,342,721, Cl. 376-298.000.
Pope, Richard N.; and Williamson, Richard A., to Multisonics, Inc. Partial scrolling video generator. 4,342,991, Cl. 340-726.000.
Porritt, Kendall. Chain saw stand. 4,342,243, Cl. 83-574.000.
Porter, William F., to United States Gypsum Company. Apparatus for fiberization of mineral fiber having directional shroud. 4,342,582, Cl. 65-14.000.
Potomac Applied Mechanics, Inc.: *See*—
Spevak, Steven T., 4,342,492, Cl. 312-244.000.
Potter, James A. Retractable wind machine. 4,342,539, Cl. 416-9.000.
PPG Industries, Inc.: *See*—
Du Bois, Donald W.; and Darlington, William B., 4,342,629, Cl. 204-98.000.
Kapura, Edward M.; and Goode, Henry C., 4,342,583, Cl. 65-99.500.
Neubauer, Jeffrey A.; Reese, Walter J.; and Walker, Jimmy D., 4,342,581, Cl. 65-4.400.
Precision Plastic Products Corp.: *See*—
Llera, Santos A. A., 4,342,400, Cl. 215-256.000.
Preiser Scientific, Incorporated: *See*—
Collins, John F., 4,342,725, Cl. 422-126.000.
President and Fellows of Harvard College: *See*—
Pappenheimer, John R.; Krueger, James M.; and Karnovsky, Manfred L., 4,342,748, Cl. 424-95.000.
Preston, Joseph R.: *See*—
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Pretorius, Willem J., to Bath, Christopher P., a part interest. Tethered ball game apparatus having eccentric tensioning means. 4,342,459, Cl. 273-413.000.
Priesnitz, Uwe: *See*—
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,342,704, Cl. 260-464.000.
Procter & Gamble Company, The: *See*—
Radel, Clifford J.; and Thompson, Hugh A., 4,342,314, Cl. 128-287.000.
Professional Staff Association of the Rancho Los Amigos Hospital, Inc., The: *See*—
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Provesta Corporation: *See*—
Hitzman, Donald O.; and Hopkins, Thomas R., 4,342,835, Cl. 435-255.000.
Pruett, Roy L.; and Bradley, John S., to Exxon Research & Engineering Co. Bimetallic clusters of ruthenium with copper, silver and gold. 4,342,838, Cl. 518-713.000.
Public Health Laboratory Service, Center for Applied Microbiology & Research: *See*—
Atkinson, Anthony; Bruton, Christopher J.; Comer, Michael J.; and Sharp, Richard J., 4,342,827, Cl. 435-26.000.
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel, to Synthelabo. Antithrombotic method. 4,342,759, Cl. 424-246.000.
Quaker Oats Company, The: *See*—
Robjent, Frederick B., 4,342,250, Cl. 84-377.000.
Queneau, Paul B.; Beckstead, Leo W.; and Hogsett, Robert F., to AMAX Inc. Process for digesting tungsten ores containing organic matter. 4,342,728, Cl. 423-61.000.
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Boring, David E.; and Quibell, Larry T., 4,342,408, Cl. 222-566.000.
Quinlan, Patrick M., to Petrolite Corporation. Microbiocidal process using di-quaternary ammonium salts of α-1,4-thiazine alkanephosphonic acids. 4,342,584, Cl. 71-67.000.
Quiring, Bernd: *See*—
Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, 4,342,847, Cl. 525-66.000.
Raccach, Moshe, to Microlife Technics, Inc. Method for fermenting vegetables. 4,342,786, Cl. 426-52.000.
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Radel, Clifford J.; and Thompson, Hugh A., to Procter & Gamble Company, The. Resilient plastic web exhibiting fiber-like properties. 4,342,314, Cl. 128-287.000.
Ralph, Harold D.: *See*—
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Ralph McKay Limited: *See*—
Johnson, William M.; Lindsay, Alan; and Klaassens, Harry, 4,342,166, Cl. 37-142.00A.
Ramqvist, Lars: *See*—
Sporrong, Malte; and Ramqvist, Lars, 4,342,588, Cl. 75-124.000.
Ramsland, August B.: *See*—
Hutter, Harold G.; and Ramsland, August B., 4,342,496, Cl. 339-177.00E.
Ransom, Frederick J., to Singer Company, The. Control grip for ansate self-propelled appliance. 4,342,369, Cl. 180-19.00H.
Ransome Hoffmann Pollard Limited: *See*—
Swinley, George, 4,342,490, Cl. 308-187.100.
Rasen, Alfred; Vollbrecht, Rolf; Schenese, Klemens; and Behnke, Joachim, to Akzona Incorporated. Low density matting and process. 4,342,807, Cl. 428-180.000.
Rath, Heinrich B.; and Wienand, Hans J., to Lucas Industries Limited. Twin-pin sliding caliper disc brakes. 4,342,382, Cl. 188-73.450.
Ratzel, Rudiger: *See*—
van Wijhe, Albert; Munster, Ernst; Wagenbrenner, Gerhard; Rocker, Fritz; Armbruster, Joachim; Metzger, Klaus; and Ratzel, Rudiger, 4,342,934, Cl. 310-239.000.
Ray, Richard J., Jr., to Manville Service Corporation. Method for intermittently slitting and folding fibrous insulation. 4,342,610, Cl. 156-62.600.
Raychem Corporation: *See*—
Changani, Pushkumar D.; Peacock, Donald G.; and Roberts, David, 4,342,800, Cl. 428-36.000.
Raytheon Company: *See*—
Teich, Wesley W., 4,342,896, Cl. 219-10.55F.
RCA Corporation: *See*—
Berry, David A.; Preston, Joseph R.; and Hillenbrand, Louis J., 4,342,660, Cl. 252-49.600.
Hicks, James E., 4,343,028, Cl. 361-91.000.
Lagoni, William A., 4,343,019, Cl. 358-31.000.
Taylor, Byron K., 4,342,394, Cl. 206-521.000.
Wang, Chih C.; Ekstrom, Lincoln; Lausman, Thomas C.; and Wielicki, Henry, 4,342,659, Cl. 252-49.600.
Woodward, Oakley M.; and Henderson, John G. N., 4,342,999, Cl. 343-702.000.

Reba, Imants, to Crown Zellerbach Corporation. Turning bar for moving web. 4,342,413, Cl. 226-97.000.
Rebaudieres, Paul; and Azzi, Jean-Michel, to General Foods France S.A. Dessert preparation. 4,342,787, Cl. 426-103.000.
Rederiaktiebolaget Nordstjernan: *See*—
Sporrong, Malte; and Ramqvist, Lars, 4,342,588, Cl. 75-124.000.
Redifon Simulation Limited: *See*—
Bolton, Martin J. P., 4,343,037, Cl. 364-521.000.
Reed, Lehman T., to Midway Fishing Tool Company. Geothermal well head. 4,342,363, Cl. 166-97.000.
Reel, Henning; Kruckenberg, Winfried; and Schundehutte, Karl H., to Bayer Aktiengesellschaft. Azo dyes with carboxyl polyalkyleneoxy chain moiety. 4,342,683, Cl. 260-156.000.
Reese, Walter J.: *See*—
Neubauer, Jeffrey A.; Reese, Walter J.; and Walker, Jimmy D., 4,342,581, Cl. 65-4.400.
Regan, Robert J.; and Haugsjaa, Paul O., to GTE Laboratories Incorporated. High voltage, high frequency amplifier. 4,342,967, Cl. 330-277.000.
Regelman, Dale F.: *See*—
Alberino, Louis M.; and Regelman, Dale F., 4,342,841, Cl. 521-163.000.
Rehfeld, Frederick L. J., to General Motors Corporation. Air pump with centrifugal filter. 4,342,546, Cl. 418-47.000.
Reid, Janet G. Fireplace cleaner. 4,342,131, Cl. 15-327.00D.
Reif, Henry E.; Maruhnic, Peter; and Chervenak, Michael C., to Sun Tech, Inc.; and Hydrocarbon Research, Inc. Maximizing jet fuel from shale oil. 4,342,641, Cl. 208-89.000.
Reinecke, Udo; and Gerber, Jurgen, to O & K Orenstein & Koppel Aktiengesellschaft. Circuit for hydrostatically operable devices. 4,342,254, Cl. 91-6.000.
Reinicker, Donald C.; and Radcliffe, Daniel J., to Koehring Company. Hydraulic valve detent mechanism. 4,342,335, Cl. 137-636.200.
Rellick, Joseph R.: *See*—
Marcus, Sanford M.; and Rellick, Joseph R., 4,342,795, Cl. 427-75.000.
Renga, James M.; and Emmons, Albert H., to Dow Chemical Company, The. Electrical device containing an aryl sulfide dielectric liquid. 4,343,029, Cl. 361-315.000.
Research Associates, Ltd.: *See*—
Gray, James H., 4,342,387, Cl. 198-746.000.
Resnick, Lawrence. Business wallet construction. 4,342,350, Cl. 150-35.000.
Rheinmetall GmbH: *See*—
Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, 4,342,262, Cl. 102-489.000.
Rhodes, Harold B.; and Murphy, James B., to CBS Inc. Multiple voice electric piano and method. 4,342,246, Cl. 84-1.040.
Rhone-Poulenc Industries: *See*—
Locatelli, Jean-Louis; and Robin, Jean, 4,342,860, Cl. 528-59.000.
Locatelli, Jean-Louis; and Robin, Jean, 4,342,861, Cl. 528-59.000.
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Richter Gedeon Vegyeszeti Gyar RT: *See*—
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,342,755, Cl. 424-244.000.
Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,342,754, Cl. 424-241.000.
Rick, Randy L.; Mazzotta, Paul F.; and Daiello, Cosimo D., to Shearpower International Corporation. Hair styling apparatus and techniques. 4,342,323, Cl. 132-37.00R.
Ricketts, Guy A. G.: *See*—
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Riddleberger, Dennis M.: *See*—
Satterthwaite, J. Glenn; and Riddleberger, Dennis M., 4,342,336, Cl. 138-90.000.
Riebel, Hans-Jochem: *See*—
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,342,704, Cl. 260-464.000.
Rieger, Klaus: *See*—
Petz, Karl; Rieger, Klaus; and Steidl, Dieter, 4,342,602, Cl. 106-316.000.
Ritter, Gerhard, to Siemens Aktiengesellschaft. Alternating voltage amplifier circuit having a plurality of semiconductor amplifier elements operated in a grounded gate or grounded base configuration. 4,342,968, Cl. 330-295.000.
Ritter, Horst, to Dr. C. Otto & Comp. G.m.b.H. Method for removing hydrogen sulfide from coke oven gas. 4,342,731, Cl. 423-234.000.
Roberson, Cletis L., to Owens-Corning Fiberglas Corporation. Method of and means for monitoring filament break-outs or glass flood conditions in a glass filament-forming process. 4,342,580, Cl. 65-2.000.
Roberson, David L.: *See*—
Myers, Richard T.; and Roberson, David L., 4,342,969, Cl. 333-33.000.
Robert Bosch GmbH: *See*—
Straubel, Max; Greiner, Max; and Laufer, Helmut, 4,342,302, Cl. 123-502.000.
van Wijhe, Albert; Munster, Ernst; Wagenbrenner, Gerhard; Rocker, Fritz; Armbruster, Joachim; Metzger, Klaus; and Ratzel, Rudiger, 4,342,934, Cl. 310-239.000.
Roberts, David: *See*—
Changani, Pushkumar D.; Peacock, Donald G.; and Roberts, David, 4,342,800, Cl. 428-36.000.
Robertshaw Controls Company: *See*—
Demi, Roy C., 4,342,886, Cl. 200-61.860.
Scott, Douglas R.; and Payne, Frank, 4,342,894, Cl. 200-304.000.
Robin, Jean: *See*—
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Locatelli, Jean-Louis; and Robin, Jean, 4,342,861, Cl. 528-59.000.
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Rocker, Fritz: *See*—
van Wijhe, Albert; Munster, Ernst; Wagenbrenner, Gerhard; Rocker, Fritz; Armbruster, Joachim; Metzger, Klaus; and Ratzel, Rudiger, 4,342,934, Cl. 310-239.000.
Rockland, Ronald H.: *See*—
Engle, William R.; and Rockland, Ronald H., 4,342,318, Cl. 128-708.000.
Rockwell International Corporation: *See*—
Anderson, Mardis V.; Griffee, Leslie V.; Grona, William H.; and Leverington, Richard D., 4,343,001, Cl. 343-745.000.
Ketchpel, Richard D., 4,342,945, Cl. 313-505.000.
Roesler, Richard R.: *See*—
Bestard, Thomas L.; and Roesler, Richard R., 4,342,534, Cl. 414-734.000.
Roff, Robert W. Breather valve. 4,342,329, Cl. 137-202.000.
Rogers, C. David: *See*—
Fowler, J. Alan; Haller, George S.; and Rogers, C. David, 4,342,487, Cl. 308-3.900.
Rogers Corporation: *See*—
Fukuda, Sunichi; and Muto, Masaaki, 4,342,881, Cl. 174-72.00B.
Rohm and Haas Company: *See*—
Akiyama, Hiroshi; and Oinuma, Koji, 4,342,839, Cl. 521-25.000.
Rohrbach, Hans-Joerg, to Rohrbach Technologie KG Baustofftechnik GmbH & Co. Production of expanded clay and shale. 4,342,554, Cl. 432-13.000.
Rohrbach Technologie KG Baustofftechnik GmbH & Co.: *See*—
Rohrbach, Hans-Joerg, 4,342,554, Cl. 432-13.000.
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar RT. Tranquillo-sedative benzodiazepine derivatives. 4,342,755, Cl. 424-244.000.
Rolland, Philippe: *See*—
Calvet, Pierre; Ching, Gil; and Rolland, Philippe, 4,342,232, Cl. 73-861.050.
Rolls-Royce Limited: *See*—
Willis, Jeffrey D., 4,342,198, Cl. 60-737.000.
Romanick, John F.: *See*—
Perlinski, Witold; Davis, Irwin J.; and Romanick, John F., 4,342,843, Cl. 523-409.000.
Rombach, Friedrich B.: *See*—
Bader, Leonhard; Giessner, Frank; Rombach, Friedrich B.; and Winter, Hermann, 4,343,013, Cl. 346-140.00R.
Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, to Rheinmetall GmbH. Carrier missile for ejectable bodies. 4,342,262, Cl. 102-489.000.
Rommel, Heinz, to Babcock Textilmaschinen KG (GmbH & Co.), Firma. Device for applying dye patterns onto continuously moving webs of material. 4,342,206, Cl. 68-205.00R.
Rooney, Clarence S.: *See*—
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,342,776, Cl. 424-274.000.
Rosch, Hans: *See*—
Kallmeyer, Michael; Rosch, Hans; Scheuing, Claus; and Solf, Bernhard, 4,342,935, Cl. 310-328.000.
Rosemeier, Friedrich; and Kerber, Helmut, to Gambro Dialysatoren KG. Device for separating liquids, especially whole blood. 4,342,420, Cl. 233-28.000.
Rosenberg, Philip, to Kendall Company, The. Zero stasis catheter. 4,342,316, Cl. 128-349.00B.
Ross, Leonard W., Jr. Tarp enclosure for flat bed trailer and truck bodies. 4,342,480, Cl. 296-100.000.
Rossin Corporation: *See*—
Rossin, John A., 4,342,987, Cl. 340-567.000.
Rossin, John A., to Rossin Corporation. Intruder detection system. 4,342,987, Cl. 340-567.000.
Routt, Wilson M., Jr.; and VanHook, Danny A., to International Business Machines Corporation. Illumination system having an efficient light guide. 4,342,511, Cl. 355-1.000.
Rudish, Ronald M.: *See*—
McVeigh, Peter J.; and Rudish, Ronald M., 4,343,006, Cl. 343-854.000.
Ruggles, Albert C.: *See*—
Allen, Robert P.; and Ruggles, Albert C., 4,342,850, Cl. 525-339.000.
Russell, Robert J., to Honeywell Information Systems Inc. Automatic test equipment test probe contact isolation detection apparatus and method. 4,342,957, Cl. 324-73.00R.
Russell, Robert J., to Honeywell Information Systems Inc. Automatic test equipment test probe contact isolation detection method. 4,342,958, Cl. 324-73.00R.
Ryser, Heinrich, to Hasler AG. Pulse transformer. 4,342,976, Cl. 336-84.00C.
S&C Electric Company: *See*—
Meister, Otto, 4,342,978, Cl. 337-6.000.

Sack GmbH: *See*—
Guse, Rudolf, 4,342,358, Cl. 164-448.000.

Sado, Ryoichi; and Tahara, Kazutoki, to Shin-Etsu Polymer Co., Ltd. Gas-exchange sheet members. 4,342,723, Cl. 422-48.000.

Sagnard, Jean: *See*—
Galves, Jean P.; Merloz, Pierre; and Sagnard, Jean, 4,342,821, Cl. 430-12.000.

Sailer, Andre L.: *See*—
Frank, Pierre; and Sailer, Andre L., 4,342,684, Cl. 260-159.000.

Sakai, Katsuya; Mita, Ryuichi; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, to Mitsui Toatsu Chemicals, Inc. Oxidation-reduction reagents for a wet desulfurization process and a process for preparing same. 4,342,700, Cl. 260-370.000.

Sakamaki, Hisashi: *See*—
Shimizu, Katsuichi; Masuda, Shunichi; and Sakamaki, Hisashi, 4,343,036, Cl. 364-518.000.

Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, to Kanebo Ltd. 1,3-Dioxolen-2-one derivatives and process for production thereof. 4,342,693, Cl. 549-229.000.

Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; and Tsuyama, Shigeo, to Asahi Kasei Kogyo Kabushiki Kaisha. Hydrocarbon-soluble diorganomagnesium compounds, hydrocarbon solutions containing the same and processes for preparation thereof. 4,342,708, Cl. 260-665.00R.

Sala, Enrico; and Ricchetti, Rino. Apparatus for printing fabrics with a screen printing process. 4,342,260, Cl. 101-126.000.

Salani, Chittaranjan, to Koehring Company. High-low force amplitude device. 4,342,523, Cl. 404-117.000.

Samson, Marc: *See*—
Kleemann, Axel; and Samson, Marc, 4,342,874, Cl. 548-309.000.

Samuels, Philip R., to David Engineering Limited. Electric discharge lamp control converter circuits. 4,342,948, Cl. 315-290.000.

Sanders Associates, Inc.: *See*—
Baer, Ralph H.; Cope, Leonard D.; and Mortimer, Thomas J., 4,342,454, Cl. 273-85.00G.

Sanders, James E., to Owens-Corning Fiberglas Corporation. Method and apparatus for collecting strand. 4,342,579, Cl. 65-2.000.

Sanderson, Paul E. Dental flossing finger. 4,342,324, Cl. 132-92.00R.

Sandvik Aktiebolag: *See*—
Ettmayer, Peter; and Kieffer, Richard, 4,342,594, Cl. 75-203.000.

Sanford, Carlton E., to Texas Instruments Incorporated. Normally closed pressure responsive switch with improved compact structure. 4,342,887, Cl. 200-83.00P.

Sanford, Robert A., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,342,322, Cl. 131-336.000.

Sapozhnikov, Vladimir A.: *See*—
Glebov, Igor A.; Danilevich, Yanush B.; Ivanov, Sergeia A.; Karymov, Anatoly A.; Kotlyarova, Galina A.; Sapozhnikov, Vladimir A.; and Shakhtarin, Valentin N., 4,342,932, Cl. 310-52.000.

Sarantakis, Dimitrios, to American Home Products Corporation. Somatostatin analogues. 4,342,671, Cl. 525-54.110.

Sato, Hideo: *See*—
Seki, Masao; and Sato, Hideo, 4,342,576, Cl. 55-452.000.

Sato, Kazuo, to Klane Corporation, The. Water induction system for internal combustion engines. 4,342,288, Cl. 123-25.00B.

Sato, Masamichi: *See*—
Yokota, Yukio; Sato, Masamichi; and Matsumoto, Kenji, 4,342,818, Cl. 430-7.000.

Sato, Masaru: *See*—
Okabe, Susumu; Sonehara, Takashi; Sato, Masaru; and Mazaki, Mitsuo, 4,342,774, Cl. 424-273.00R.

Satoh, Michio: *See*—
Kasai, Sin; Kawaguchi, Yutaka; and Satoh, Michio, 4,342,430, Cl. 242-18.00A.

Satterthwaite, J. Glenn; and Riddleberger, Dennis M. Double-acting inflatable seal. 4,342,336, Cl. 138-90.000.

Savage, Howard T., to United States of America, Navy. Angular accelerometer. 4,342,228, Cl. 73-517.00A.

Savi, Antonio, to Officine Meccaniche Savi Antonio S.p.A. Machine for sterilizing foodstuffs in cylindrical containers at normal atmospheric pressure. 4,342,726, Cl. 422-302.000.

Sawada, Fred H., to General Electric Company. Brush alignment apparatus. 4,342,960, Cl. 324-158.0MG.

Sawada, Masahiro: *See*—
Fujii, Norio; Kawahara, Atsushi; and Sawada, Masahiro, 4,342,905, Cl. 250-201.000.

Sayama Precision Industrial Co., Ltd.: *See*—
Fukase, Motonobu; Yokota, Toshikazu; and Oura, Masahisa, 4,342,384, Cl. 194-1.00C.

Scepter Manufacturing Co., Ltd.: *See*—
Torokvei, Thomas E., 4,342,388, Cl. 206-203.000.

Schaaf, Thomas K.: *See*—
Johnson, Michael R.; Schaaf, Thomas K.; and Hess, Hans-Jurgen E., 4,342,868, Cl. 542-431.000.

Schafer, Inge: *See*—
Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,342,754, Cl. 424-241.000.

Schainholz, Herbert. Instrument count memorizer. 4,342,391, Cl. 206-370.000.

Schall, William L., to Hooker Chemicals & Plastics Corp. Vinyl halide-polyolefin polymer and copolymers and method of making. 4,342,845, Cl. 525-53.000.

Schaum, Benny R. Hydraulically actuated food slicer. 4,342,242, Cl. 83-437.000.

Schenesse, Klemens: *See*—
Rasen, Alfred; Vollbrecht, Rolf; Schenesse, Klemens; and Behnke, Joachim, 4,342,807, Cl. 428-180.000.

Schenk, Dale C.; and Ralph, Harold D., to International Harvester Co. Soil mulcher. 4,342,366, Cl. 172-643.000.

Schering Corporation: *See*—
Steinman, Martin; and Tahbaz, Pirouz, 4,342,769, Cl. 424-251.000.

Scheuing, Claus: *See*—
Kallmeyer, Michael; Rosch, Hans; Scheuing, Claus; and Solf, Bernhard, 4,342,935, Cl. 310-328.000.

Schick, Ludwig, to Siemens Aktiengesellschaft. Circuit arrangement for interruption-free voltage switching. 4,342,925, Cl. 307-270.000.

Schiller, Arthur M.; and Balcerski, James S., to American Cyanamid Company. Process for scale inhibition in evaporative desalination units. 4,342,652, Cl. 210-698.000.

Schlaechter, John: *See*—
McCombs, Norman R.; and Schlaechter, John, 4,342,573, Cl. 55-161.000.

Schmanski, Donald W. Flexible street sign blank. 4,342,168, Cl. 40-607.000.

Schmauder, Roland: *See*—
Muller, Ortwin; Biber, Klaus; Schmauder, Roland; and Spitznas, Manfred, 4,342,951, Cl. 318-625.000.

Schmid Labs., Inc.: *See*—
Gordon, Harry W., 4,342,750, Cl. 424-122.000.

Schmidt, Gerhard: *See*—
Loser, Harald; Schmidt, Gerhard; Warzawa, Wolfgang; and Wegner, Klaus, 4,342,284, Cl. 118-716.000.

Schmitt, Frederick L.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,342,663, Cl. 252-186.360.

Schmohl, Michael W., to Schmohl, Michael W. Low sport shoe. 4,342,161, Cl. 36-114.000.

Schnur, Rodney C., to Pfizer Inc. Hypoglycemic 5-substituted oxazolidine-2,4-diones. 4,342,771, Cl. 424-263.000.

Schrock, Clifford B.; and Gumm, Linley F., to Cablebus Systems Corporation. Bi-directional data transmission and control system. 4,343,042, Cl. 455-5.000.

Schueddekopf, Hans: *See*—
Becker, Joahann; Koop, Hermann; and Schueddekopf, Hans, 4,342,635, Cl. 204-263.000.

Schundehutte, Karl H.: *See*—
Reel, Henning; Kruckenberg, Winfried; and Schundehutte, Karl H., 4,342,683, Cl. 260-156.000.

Schuster, David A., to General Motors Corporation. Variable displacement pump. 4,342,545, Cl. 418-26.000.

Schwabe, Ulrich: *See*—
Jacobs, Erwin; Schwabe, Ulrich; and Takacs, Dezso, 4,342,149, Cl. 29-576.00B.

Schwartz, Frederic W., to Cable Electric Products, Inc. Light sensitive electrical device. 4,343,032, Cl. 362-276.000.

Schweizer, Ernst: *See*—
Ilvespaa, Atso; Frei, Jorg; and Schweizer, Ernst, 4,342,764, Cl. 424-248.560.

Schwochert, Hans-Joachim, to Kautex-Maschinebau GmbH. Hollow bodies and their manufacture. 4,342,799, Cl. 428-35.000.

SCM Corporation: *See*—
Walsh, Thomas J., 4,342,656, Cl. 210-770.000.

Scott, Douglas R.; and Payne, Frank, to Robertshaw Controls Company. Electrical switch construction diaphragm seal therefor and methods of making the same. 4,342,894, Cl. 200-304.000.

Scott, Ernest R., to Scott & Fetzer Company, The. Bag top cover assembly for a vacuum cleaner. 4,342,575, Cl. 55-378.000.

Scott & Fetzer Company, The: *See*—
Scott, Ernest R., 4,342,575, Cl. 55-378.000.

Scott, Larkin B.: *See*—
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., 4,342,516, Cl. 356-332.000.

Scott Machine Development Corporation: *See*—
Waldron, Gregory R., 4,342,155, Cl. 33-184.500.

Scott Paper Company: *See*—
Grant, Clyde P.; Look, Merton A.; and Lowe, Richard M., 4,342,823, Cl. 430-103.000.

Scripps Clinic & Research Foundation: *See*—
Theofilopoulos, Argyrios N.; and Dixon, Frank J., 4,342,566, Cl. 23-230.00B.

Sebag, Henri; and Vanlerberghe, Guy, to L'Oreal. Surface-active polysiloxanes. 4,342,742, Cl. 424-59.000.

Seibold, Gerhard: *See*—
Lutz, Felix; Seibold, Gerhard; Wessel, Gerhard; and Lauckner, Joachim, 4,343,009, Cl. 346-108.000.

Seitz-Werke GmbH: *See*—
Ahlers, Egon, 4,342,344, Cl. 141-39.000.

Seki, Masao; and Sato, Hideo, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Particle separator. 4,342,576, Cl. 55-452.000.

Sekiguchi, Haruo: *See*—
Ohshima, Kazushi; Matsunaga, Mitsuro; Sekiguchi, Haruo; Imaoka, Kazuhiro; and Hayashi, Fujio, 4,342,589, Cl. 75-0.5BA.

Seko, Yasutoshi; and Yanagishima, Takayuki, to Nissan Motor Company, Limited. Device for detecting steering angle and direction. 4,342,279, Cl. 116-31.000.

Selco Inc.: *See*—
Shepherd, Robert A., 4,342,913, Cl. 250-364.000.

Selwood, Alan, to Imperial Chemical Industries Limited. Stentered, bonded, heat-set, non-woven fabric and process for producing same. 4,342,812, Cl. 428-286.000.

Seven-Up Company, The: *See*—
Stirling, Robert F., 4,342,399, Cl. 215-12.00R.
Sewell, Donald N.; and Starbird, Dwight A., to Microwave Techniques. Waveguide hanger. 4,342,474, Cl. 285-61.000.
Sewell, Robert A.: *See*—
Clifford, David P.; and Sewell, Robert A., 4,342,770, Cl. 424-263.000.
Shafer, David R., to Perkin-Elmer Corporation, The. Catadioptric telescopes. 4,342,503, Cl. 350-443.000.
Shakhtarin, Valentin N.: *See*—
Glebov, Igor A.; Danilevich, Yanush B.; Ivanov, Sergeia A.; Karymov, Anatoly A.; Kotlyarova, Galina A.; Sapozhnikov, Vladimir A.; and Shakhtarin, Valentin N., 4,342,932, Cl. 310-52.000.
Shallhorn, Paul M.: *See*—
Karnis, Alkibiadis; and Shallhorn, Paul M., 4,342,618, Cl. 162-49.000.
Shargabian, Karl S.: *See*—
Koral, Joseph F.; Shargabian, Karl S.; and Strem, Ervin H., Jr., 4,342,482, Cl. 296-221.000.
Sharp Corporation: *See*—
Matsuo, Hiroshi; and Omata, Nobuaki, 4,342,135, Cl. 16-82.000.
Sharp, Richard J.: *See*—
Atkinson, Anthony; Bruton, Christopher J.; Comer, Michael J.; and Sharp, Richard J., 4,342,827, Cl. 435-26.000.
Shartel, Anne C.: *See*—
Petersen, Kurt E.; and Shartel, Anne C., 4,342,227, Cl. 73-510.000.
Shaw, David N.; and Gagnon, Joseph A. L. N., to Dunham-Bush, Inc. Screw compressor slide valve engine RPM tracking system. 4,342,199, Cl. 62-133.000.
Shealy, James R.: *See*—
Baliga, Bantval J.; and Shealy, James R., 4,343,015, Cl. 357-55.000.
Shearpower International Corporation: *See*—
Rick, Randy L.; Mazzotta, Paul F.; and Daiello, Cosimo D., 4,342,323, Cl. 132-37.00R.
Shebanits, Eduard N.: *See*—
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P., 4,342,898, Cl. 219-76.140.
Sheller-Globe Corporation: *See*—
Adcock, James L., 4,342,810, Cl. 428-215.000.
Shepherd, Robert A., to Selco Inc. Portable radiation dosimeter. 4,342,913, Cl. 250-364.000.
Sherman, Philip B., to Texaco Inc. Trace solvent recovery in selective solvent extraction. 4,342,646, Cl. 208-326.000.
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Shima, George T., to Burroughs Corporation. Data network employing a single transmission bus for overlapping data transmission and acknowledgment signals. 4,342,995, Cl. 340-825.500.
Shimada, Keizo; Aoki, Akihiro; Mera, Hiroshi; and Nakamura, Tsutomu, to Teijin Limited. Process for preparing wholly aromatic polyamide shaped articles. 4,342,715, Cl. 264-184.000.
Shimada, Satoshi: *See*—
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.
Shimizu, Junichi: *See*—
Motomura, Yoshie; Ishiyama, Jiro; and Shimizu, Junichi, 4,342,585, Cl. 71-86.000.
Shimizu, Katsuichi; Masuda, Shunichi; and Sakamaki, Hisashi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,343,036, Cl. 364-518.000.
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Isobe, Minoru; Shimizu, Makoto; and Hagiwara, Shigemi, 4,342,520, Cl. 400-221.000.
Shimura, Masahiro: *See*—
Kimura, Sakae; Shimura, Masahiro; and Okai, Tadatake, 4,342,662, Cl. 252-181.400.
Shin-Etsu Polymer Co., Ltd.: *See*—
Sado, Ryoichi; and Tahara, Kazutoki, 4,342,723, Cl. 422-48.000.
Shionogi & Co., Ltd.: *See*—
Nagata, Wataru; and Aoki, Tsutomu, 4,342,685, Cl. 260-239.00A.
Shirley, Donald J., to United States of America, Navy. Subseafloor environmental simulator. 4,342,518, Cl. 374-44.000.
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Hohokabe, Yorikatsu; and Takiyama, Eiichiro, 4,342,863, Cl. 528-360.000.
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Hohokabe, Yorikatsu; and Takiyama, Eiichiro, 4,342,863, Cl. 528-360.000.
Shroot, Braham: *See*—
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel, 4,342,759, Cl. 424-246.000.
Shtarkman, Emile M.: *See*—
Eaton, Gerald E.; Shtarkman, Emile M.; and Snyder, Daniel S., 4,342,446, Cl. 267-35.000.
Shupert, Paul T., to Allis-Chalmers Corporation. Resonant sickle drive with spring means at opposite ends of the sickle. 4,342,187, Cl. 56-257.000.
Sibler, Guenter W., to Sutton Engineering Company. Indirect extrusion press. 4,342,212, Cl. 72-255.000.
Sickels, Anthony R.: *See*—
Sickels, Arthur C.; and Sickels, Anthony R., 4,342,356, Cl. 160-348.000.
Sickels, Arthur C.; and Sickels, Anthony R., to Soundfold, Inc. Combined fabric hanging and pleating bracket. 4,342,356, Cl. 160-348.000.
Siemens Aktiengesellschaft: *See*—
Jacobs, Erwin; Schwabe, Ulrich; and Takacs, Dezso, 4,342,149, Cl. 29-576.00B.
Oestreich, Ulrich; and Zeidler, Guenter, 4,342,500, Cl. 350-96.230.
Ritter, Gerhard, 4,342,968, Cl. 330-295.000.
Schick, Ludwig, 4,342,925, Cl. 307-270.000.
Wachs, Walter, 4,342,415, Cl. 228-39.000.
Sig Societe Industrielle Suisse: *See*—
Hurni, Hans, 4,342,263, Cl. 104-7.00B.
Silberberg, Joseph, to Stauffer Chemical Company. Blends of a polyester resin and impact resistant interpolymer. 4,342,846, Cl. 525-64.000.
Silvey, Fred H., to Irontite Products, Co. Inc. Engine cylinder head port closure pad clamp. 4,342,221, Cl. 73-49.700.
Simich, Emil, to A. J. Gerrard & Company. Oval bale-tie wire and process of making thereof. 4,342,138, Cl. 24-27.000.
Simonian, Arsen S.: *See*—
Melikian, Zograb A.; Oganian, Larisa G.; Simonian, Arsen S.; and Kirakosian, Robert T., 4,342,204, Cl. 62-304.000.
Singer Company, The: *See*—
Fromknecht, Charles T., 4,342,132, Cl. 15-339.000.
Ransom, Frederick J., 4,342,369, Cl. 180-19.00H.
Socha, Robert J., 4,342,271, Cl. 112-158.00E.
Transue, James A.; and Weisz, William, 4,342,272, Cl. 112-237.000.
Sinter Limited: *See*—
Caratsch, Hans-Peter, 4,342,718, Cl. 264-345.000.
Siplast S.A.: *See*—
Meynard, Jean-Yves, 4,342,804, Cl. 428-149.000.
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Taniguchi, Koichi; Niwa, Kiyomi; and Siraisi, Tadaaki, 4,342,568, Cl. 48-111.000.
Skilling, James K., to GenRad, Inc. Method of electrical short testing and the like. 4,342,959, Cl. 324-73.0PC.
Skinner, Earl; Emeott, Marvin; and Jevne, Allan, to Henkel Corporation. Interpenetrating dual cure resin compositions. 4,342,793, Cl. 427-44.000.
Slater, Richard A.: *See*—
Watkins, Richard R.; and Slater, Richard A., 4,342,989, Cl. 340-723.000.
Sletzinger, Meyer: *See*—
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,757, Cl. 424-246.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,869, Cl. 544-21.000.
Sloan Kettering Institute for Cancer Research: *See*—
Katopodis, Nonda; and Stock, C. Chester, 4,342,567, Cl. 23-230.00B.
Sloan, Neil B. Combination hand gun holster and belt. 4,342,410, Cl. 224-243.000.
Sluys, Wesley W., to Builders Concrete, Inc. Interconnecting system for marine floats. 4,342,276, Cl. 114-266.000.
Sluys, Wesley W., to Builders Concrete, Inc. Anchoring system for floating moorage. 4,342,277, Cl. 114-293.000.
Small, Maynard E. Method of playing a mass circulation publication bingo type game. 4,342,457, Cl. 273-240.000.
Small, William M.: *See*—
Gentry, Cecil C.; and Small, William M., 4,342,360, Cl. 165-67.000.
Smith, Donald A. Prefabricated steel frame building construction components and methods. 4,342,177, Cl. 52-93.000.
Smith, Jack E., Jr.; and Mason, Paul C., to Lanier Business Products Co., Inc. Dictation-transcription method and system. 4,343,039, Cl. 369-28.000.
Smith, James L. Method and apparatus for calibrating firing pin impact. 4,342,223, Cl. 73-167.000.
Smith, Robert H. Sludge fixation and stabilization. 4,342,732, Cl. 423-242.000.
Smith, Thomas J.: *See*—
Mann, William F.; and Smith, Thomas J., 4,342,599, Cl. 106-100.000.
Smith, Walter J., to Huck Manufacturing Company. Multigrip fastener. 4,342,529, Cl. 411-361.000.
SmithKline Corporation: *See*—
Brush, Charles K.; and Weinstock, Joseph, 4,342,686, Cl. 260-239.0BB.
Smitley, Marion L., to Colt Industries Operating Corp. Vehicular energy storing means and system. 4,342,371, Cl. 180-165.000.
Snyder, Daniel S.: *See*—
Eaton, Gerald E.; Shtarkman, Emile M.; and Snyder, Daniel S., 4,342,446, Cl. 267-35.000.
Socha, Robert J., to Singer Company, The. Stitch length range indicating arrangement in a multiple pattern sewing machine. 4,342,271, Cl. 112-158.00E.
Societe Anonyme dite: Stein Industrie: *See*—
Marjollet, Jacques; Mevel, Jean-Claude; Palacio, Gerard; and Tondeur, Gerard, 4,342,570, Cl. 55-418.000.
Societe Chimique des Charbonnages—CdF Chimie: *See*—
Durand, Pierre; and Gloriod, Pierre, 4,342,853, Cl. 526-68.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Botrel, Yvon; Fremond, Roland; and Mourlevat, Jean, 4,342,519, Cl. 405-169.000.
Societe pour l'Equipement de Vehicules (S.E.V.): *See*—
Calvet, Pierre; Ching, Gil; and Rolland, Philippe, 4,342,232, Cl. 73-861.050.

Soga, Mitsurou: *See—*
Murai, Ryuji; Watanabe, Toshihiko; Ogata, Yoji; Nagashima, Masashi; and Soga, Mitsurou, 4,342,897, Cl. 219-73.200.

Solf, Bernhard: *See—*
Kallmeyer, Michael; Rosch, Hans; Scheuing, Claus; and Solf, Bernhard, 4,342,935, Cl. 310-328.000.

Solomon, Murray, to Solomon, Murray. Radiant energy collector with focal point between the plane of the frame and earth. 4,342,501, Cl. 350-296.000.

Solver, Carl E., to ASEA Aktiebolag. Circuit breaker with means for producing a flow of arc-extinguishing gas. 4,342,891, Cl. 200-148.00A.

Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, to Richter Gedeon Vegyeszeti Gyar RT. Steroid-spiro-oxathiazolidine derivatives and a process for the preparation thereof. 4,342,754, Cl. 424-241.000.

Somers, Edward V.: *See—*
Kothmann, Richard E.; and Somers, Edward V., 4,342,816, Cl. 429-13.000.

Sonderman, William G., to Xomox Corporation. Ball valve assembly. 4,342,444, Cl. 251-315.000.

Sonehara, Takashi: *See—*
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Sonoco Products Company: *See—*
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Sony Corporation: *See—*
Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, 4,343,018, Cl. 358-28.000.
Oyama, Masaru; and Takahashi, Kenji, 4,342,426, Cl. 242-199.000.
Tanaka, Shosuke; and Tatami, Mitsushige, 4,343,022, Cl. 360-36.000.
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Soundfold, Inc.: *See—*
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Southland Instruments, Inc.: *See—*
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Southwire Co.: *See—*
Benton, Charles M.; Arnold, Franklin D.; Kellogg, George W.; and Kirk, Roger D., 4,342,178, Cl. 52-125.500.

Spaans, Cornelis; and Nijhof, Herman H., to B.V. Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg. Device for planing a body of ground material. 4,342,162, Cl. 37-1.000.

Spectrum International, Inc.: *See—*
Box, Thomas, 4,342,393, Cl. 206-504.000.

Speedie, Robert, to Illinois Tool Works Inc. Flexible strap with integral attachment means. 4,342,438, Cl. 248-73.000.

Sperry Corporation: *See—*
Bowie, Robert A., 4,342,952, Cl. 318-654.000.
Easter, Finis C., 4,342,998, Cl. 343-17.10R.
Matthews, Hugh B., 4,342,197, Cl. 60-641.400.
Spurgin, William T.; and Wesner, Charles R., 4,342,274, Cl. 114-144.00E.

Spevak, Steven T., to Potomac Applied Mechanics, Inc. Portable article supporting container. 4,342,492, Cl. 312-244.000.

Spin Physics, Inc.: *See—*
Griffith, Neil J.; Jeffers, Fredrick J.; and Calaway, Ward M., 4,343,026, Cl. 360-113.000.

Spitznas, Manfred: *See—*
Muller, Ortwin; Biber, Klaus; Schmauder, Roland; and Spitznas, Manfred, 4,342,951, Cl. 318-625.000.

Sporrong, Malte; and Ramqvist, Lars, to Rederiaktiebolaget Nordstjernan. Wear resistant cast iron. 4,342,588, Cl. 75-124.000.

Sprecher & Schuh AG: *See—*
Graf, Rudolf, 4,342,890, Cl. 200-148.00A.

SpringThorpe, Anthony J.; and Margittai, Agnes, to Northern Telecom Limited. Contemporaneous fabrication of double heterostructure light emitting diodes and laser diodes using liquid phase epitaxy. 4,342,148, Cl. 29-569.00L.

SpringThorpe, Anthony J., to Northern Telecom Limited. Light emitting diodes with high external quantum efficiency. 4,342,944, Cl. 313-499.000.

Spurgin, William T.; and Wesner, Charles R., to Sperry Corporation. Steering failure alarm. 4,342,274, Cl. 114-144.00E.

Sriramamurty, Durvasula V.: *See—*
Karnowski, Gary A.; and Sriramamurty, Durvasula V., 4,342,963, Cl. 324-431.000.

Stackpole Components Company: *See—*
Ayers, Robert D., 4,342,892, Cl. 200-159.00A.

Stager, Charles W.: *See—*
Evans, John W.; Young, Gary C.; and Stager, Charles W., 4,342,604, Cl. 127-31.000.

Stanard, Michael. Self-mounting display calendar. 4,342,167, Cl. 40-121.000.

Standard Car Truck Co.: *See—*
Cooley, Donald B., 4,342,266, Cl. 105-226.000.

Standard Oil Company, The: *See—*
Bartek, Joseph P.; Grasselli, Robert K.; and Cepulis, Rimvydas L., 4,342,698, Cl. 549-505.000.

Standard Oil Company (Indiana): *See—*
Palmer, David A.; and Holzhauer, Juergen K., 4,342,699, Cl. 549-259.000.

Stangroom, James E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Hydraulic servo valve. 4,342,334, Cl. 137-625.480.

Stant Inc.: *See—*
Evans, John H., 4,342,208, Cl. 70-165.000.

Stapleton, John J., to International Telephone and Telegraph Corporation. Omnispectravision. 4,343,020, Cl. 358-81.000.

Starbird, Dwight A.: *See—*
Sewell, Donald N.; and Starbird, Dwight A., 4,342,474, Cl. 285-61.000.

Stauffer Chemical Company: *See—*
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Silberberg, Joseph, 4,342,846, Cl. 525-64.000.

Ste Look: *See—*
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Steag A.G.: *See—*
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Steelhammer, Joe C.; and Hutta, Paul J., to Betz Laboratories, Inc. Method of improving sulfite antioxidant performance in high solids scrubbers. 4,342,733, Cl. 423-242.000.

Steer, Jean A.: *See—*
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Steidinger, Donald J.: *See—*
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Steidl, Dieter: *See—*
Petz, Karl; Rieger, Klaus; and Steidl, Dieter, 4,342,602, Cl. 106-316.000.

Steinbeck, Werner; and Gehrke, Gunter, to Bayer Aktiengesellschaft. Process for the preparation of 4,5-dinitro-1,8-dihydroxyanthraquinone. 4,342,701, Cl. 260-383.000.

Steinhage, Peter W., to Heimann GmbH. Thermal image exposure plate. 4,342,941, Cl. 313-374.000.

Steinman, Martin; and Tahbaz, Pirouz, to Schering Corporation. 2-[(Methylsulfinyl)acetyl]-3-heterocyclicindoles and derivatives thereof as immunosuppressants. 4,342,769, Cl. 424-251.000.

Stengle, Edward J., Jr., to Owens-Illinois, Inc. Heat-resistant vacuum pad and method of making same. 4,342,803, Cl. 428-131.000.

Stephenson, Robert L., to Allied Corporation. Motorized passive seat belt system. 4,342,471, Cl. 280-804.000.

Stepnov, Xenofont X.: *See—*
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P., 4,342,898, Cl. 219-76.140.

Stikeleather, Larry F.; and Kaminski, Tony L., to Allis-Chalmers Corporation. Resonant sickle drive. 4,342,186, Cl. 56-257.000.

Stillings, Delia. Safety walker. 4,342,465, Cl. 280-87.02W.

Stirbis, James S.: *See—*
McMillin, Danny L.; and Stirbis, James S., 4,342,281, Cl. 118-32.000.

Stirling, Robert F., to Seven-Up Company, The. Composite bottle. 4,342,399, Cl. 215-12.00R.

Stirling, William, to Associated Octel Company, Ltd., The. Prefabricated laboratory unit and octane analyzer. 4,342,219, Cl. 73-35.000.

Stock, C. Chester: *See—*
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Stolzer, Paul: *See—*
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Stone, Richard S.; and Chercasky, Morris, to Guardian Electric Manufacturing Company. Solenoid annunciator. 4,342,973, Cl. 335-2.000.

Stoneleigh Trust, The: *See—*
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Stout, Mike F.: *See—*
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Strasser, Bernd: *See—*
Strewe, Wolfgang; Mose, Luciano; and Strasser, Bernd, 4,342,630, Cl. 204-98.000.

Straubel, Max; Greiner, Max; and Laufer, Helmut, to Robert Bosch GmbH. Control apparatus for a fuel injection pump. 4,342,302, Cl. 123-502.000.

Strauss, Edgar H.: *See—*
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Strem, Ervin H., Jr.: *See—*
Koral, Joseph F.; Shargabian, Karl S.; and Strem, Ervin H., Jr., 4,342,482, Cl. 296-221.000.

Strewe, Wolfgang; Mose, Luciano; and Strasser, Bernd, to Hooker Chemicals & Plastics Corp. Brine distribution system for electrolytic cells. 4,342,630, Cl. 204-98.000.

Strobel, Gary A., to Endowment and Alumni Foundation at Montana State University. Method for treating Dutch elm disease. 4,342,746, Cl. 424-93.000.

Strok, Jack M., to General Electric Company. Universal burning ceramic lamp. 4,342,938, Cl. 313-174.000.

Studnicka, Jan: *See—*
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Suda, Minoru: *See—*
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Sugihara, Hirosada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, to Takeda Chemical Industries, Ltd. 7-Acetylspirobenzofuranone compound. 4,342,779, Cl. 424-285.000.

Sugio, Akitoshi; Amemiya, Akira; Kimura, Masaharu; Otuki, Yoshiharu; and Kawaguchi, Kiyokazu, to Mitsubishi Gas Chemical Company, Inc. Stabilized oxymethylene copolymer composition. 4,342,680, Cl. 524-100.000.
Suh, John T.; Chung, Rack H.; Wang, Nai-Yi; and Barton, Jeffrey N., to USV Pharmaceutical Corporation. Pyrrolidines. 4,342,692, Cl. 260-326.460.
Summa, H. Wayne. Treadmill device. 4,342,452, Cl. 272-69.000.
Sun Tech, Inc.: *See*—
Reif, Henry E.; Maruhnic, Peter; and Chervenak, Michael C., 4,342,641, Cl. 208-89.000.
Susei, Shuzo; Matsui, Shigetomo; and Nagai, Hiroyoshi, to Kawasaki Jukogyo Kabushiki Kaisha. Vacuum shield device of an electron beam welding apparatus. 4,342,900, Cl. 219-121.0EN.
Sutton Engineering Company: *See*—
Sibler, Guenter W., 4,342,212, Cl. 72-255.000.
Suzui, Akio; and Matoba, Yasuo, to Osaka Soda Co. Ltd. Curable composition of halogen-containing polymer. 4,342,851, Cl. 525-403.000.
Suzuki, Hiroshige; and Hase, Teizo, to Suzuki, Hiroshige. Sinterable silicon carbide powders and sintered body produced therefrom. 4,342,837, Cl. 501-90.000.
Suzuki, Jun: *See*—
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Suzuki, Kiyoshi, to Toshiba Electric Equipment Corporation. Marker light. 4,343,033, Cl. 362-307.000.
Suzuki, Yasuo: *See*—
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Swenson Spreader Company: *See*—
Hoekstra, Ralph W., 4,342,163, Cl. 37-231.000.
Swigert, J. Kirk, to Xerox Corporation. Method for creating magnetic masters. 4,343,008, Cl. 346-74.200.
Swinley, George, to Ransome Hoffmann Pollard Limited. Bearing assemblies. 4,342,490, Cl. 308-187.100.
Swiss Aluminium Ltd.: *See*—
Blome, James C., 4,342,664, Cl. 252-313.00R.
Mack, Karl; and Maly, Zdenek, 4,342,150, Cl. 29-726.000.
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Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Benzo(a)quinolizidine derivatives. 4,342,871, Cl. 546-65.000.
Sze, Morgan C.: *See*—
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Taguchi, Tatsuhisa: *See*—
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Takacs, Dezso: *See*—
Jacobs, Erwin; Schwabe, Ulrich; and Takacs, Dezso, 4,342,149, Cl. 29-576.00B.
Takada, Juichiro. Child safety seat for vehicles. 4,342,483, Cl. 297-488.000.
Takahashi, Kenji: *See*—
Oyama, Masaru; and Takahashi, Kenji, 4,342,436, Cl. 242-199.000.
Takahashi, Yukio: *See*—
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; Yamada, Muneo; and Watanabe, Yoshiteru, to Morinaga Milk Industry Co., Ltd.; and Green Cross Corp., The. Method for producing substance capable of stimulating differentiation and proliferation of human granulopoietic stem cells. 4,342,828, Cl. 435-41.000.
Takara Co., Ltd.: *See*—
Otake, Michiko, 4,342,173, Cl. 46-1.00R.
Takase, Yosio: *See*—
Kashima, Isoo; Takase, Yosio; and Mishina, Masami, 4,342,885, Cl. 200-47.000.
Takashima, Toshiyuki: *See*—
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,342,694, Cl. 549-273.000.
Takeda Chemical Industries, Ltd.: *See*—
Sugihara, Hirosada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, 4,342,779, Cl. 424-285.000.
Takeda, Nobuyuki; and Iwata, Tadao, to Mitsui Petrochemical Industries, Ltd. Setting type resin composition containing a substantially linear, high-molecular-weight novolak substituted phenolic resin. 4,342,852, Cl. 525-481.000.
Takemura, Kunio: *See*—
Nakano, Kunimitsu; and Takemura, Kunio, 4,342,974, Cl. 335-10.000.
Takeno, Hidekazu: *See*—
Hashimoto, Masashi; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; and Hagiwara, Daijiro, 4,342,760, Cl. 424-246.000.
Takiyama, Eiichiro: *See*—
Hohokabe, Yorikatsu; and Takiyama, Eiichiro, 4,342,863, Cl. 528-360.000.
Tamura, Akira; and Suzuki, Yasuo, to Bridgestone Tire Co., Ltd. Radial tire for heavy load vehicles. 4,342,353, Cl. 152-362.00R.
Tamura, Eijiro, to Trio Kabushiki Kaisha. Power amplifier circuitry. 4,342,966, Cl. 330-268.000.
Tamura, Koichi, to Tokico Ltd. Disc brake. 4,342,381, Cl. 188-73.380.
Tamura, Sadahiro: *See*—
Nishikawa, Toshio; Ishikawa, Youhei; Tamura, Sadahiro; and Matsumoto, Haruo, 4,342,972, Cl. 333-206.000.
Tan, Toshimi; Hisano, Katsukuni; and Mizoi, Takao, to Hitachi, Ltd. Moving blade of steam turbine. 4,342,542, Cl. 416-224.000.
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, to Kawasaki Jukogyo Kabushiki Kaisha. Ion-nitriding apparatus. 4,342,918, Cl. 422-186.040.
Tanaka, Shosuke; and Tatami, Mitsushige, to Sony Corporation. Apparatus for producing a phase-synchronized reference signal in a video signal reproducing system. 4,343,022, Cl. 360-36.000.
Tanaka, Toshie, to Nifco Inc. One-piece quick release clip. 4,342,139, Cl. 24-292.000.
Taniguchi, Koichi; Niwa, Kiyomi; and Siraisi, Tadaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Refuse disposal apparatus. 4,342,568, Cl. 48-111.000.
Tanner, Walter E. Heading reference system. 4,343,035, Cl. 364-453.000.
Tappe, Horst, to Cassella Aktiengesellschaft. Process for the manufacture of an N-hydroxyalkylcarbazole. 4,342,688, Cl. 260-315.000.
Tatami, Mitsushige: *See*—
Tanaka, Shosuke; and Tatami, Mitsushige, 4,343,022, Cl. 360-36.000.
Tate & Lyle Limited: *See*—
Daniels, Michael J., 4,342,603, Cl. 127-30.000.
Taylor, Byron K., to RCA Corporation. Removable protective cover for a video disc stylus cartridge. 4,342,394, Cl. 206-521.000.
Taylor Machine Works, Inc.: *See*—
Goodwin, Nolen R., 4,342,377, Cl. 187-9.00R.
Taylor, Thomas J., to Western Electric Company, Inc. Methods of terminating and connectorizing cables. 4,342,152, Cl. 29-860.000.
Teague, Edward W.; Hance, Max H.; and Neal, Carl R., to Burlington Industries, Inc. Brushed stretch denim fabric and process therefor. 4,342,565, Cl. 8-532.000.
Teague, Robert H., to Honeywell Inc. Multi-color multi-point recorder. 4,343,007, Cl. 346-46.000.
Teague, Ross L. Combination cast chair and spica table. 4,342,451, Cl. 269-328.000.
Teich, Wesley W., to Raytheon Company. Radiating mode stirrer heating system. 4,342,896, Cl. 219-10.55F.
Teijin Limited: *See*—
Shimada, Keizo; Aoki, Akihiro; Mera, Hiroshi; and Nakamura, Tsutomu, 4,342,715, Cl. 264-184.000.
Teledyne Industries, Inc.: *See*—
Lenz, Herman N.; and Host, David A., 4,342,489, Cl. 308-187.000.
Nickerson, James W., 4,342,293, Cl. 123-188.0GC.
Tenneco Inc.: *See*—
Erickson, Ernest A.; Hanson, Rodger D.; and Mews, Lance D., 4,342,373, Cl. 181-266.000.
Terashima, Isamu, to Hitachi, Ltd. Developing apparatus for electrostatic duplicator. 4,342,283, Cl. 118-689.000.
Tetra Werke Dr. rer. nat. Ulrich Baensch GmbH: *See*—
Panthofer, Rudolf, 4,342,401, Cl. 220-301.000.
Texaco Inc.: *See*—
Canup, Robert E.; and Alperstein, Martin, 4,342,305, Cl. 123-617.000.
Sherman, Philip B., 4,342,646, Cl. 208-326.000.
Trippet, Raymond, 4,342,552, Cl. 431-183.000.
Zimmerman, Robert L.; and McEntire, Edward E., 4,342,687, Cl. 260-243.300.
Texas Instruments Incorporated: *See*—
Hull, Charles G., 4,342,927, Cl. 307-452.000.
Sanford, Carlton E., 4,342,887, Cl. 200-83.00P.
Thatcher, Albert G. Convertible rocket-air breathing engine. 4,342,193, Cl. 60-246.000.

Theofilopoulos, Argyrios N.; and Dixon, Frank J., to Scripps Clinic & Research Foundation. Solid phase anti-C3 assay for detection of immune complexes. 4,342,566, Cl. 23-230.00B.
Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Track working machine with a ballast removing and planing device. 4,342,165, Cl. 37-104.000.
Thomas, Alan F., to Firmenich, S.A. Cis-10, 10-dimethyl-tricyclo (7.1.1.$0^{2,7}$) undec-2-en-4-one and use thereof as perfuming and flavoring ingredient. 4,342,320, Cl. 131-276.000.
Thomas, George L.: *See*—
Graff, William A.; and Thomas, George L., 4,342,553, Cl. 431-358.000.
Thomas, Reese R.: *See*—
Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., 4,342,802, Cl. 428-92.000.
Thompson-CSF: *See*—
Galves, Jean P.; Merloz, Pierre; and Sagnard, Jean, 4,342,821, Cl. 430-12.000.
Thompson, Edwin R., to Forox Corporation. Method for loading pre-closed slide mounts. 4,342,147, Cl. 29-417.000.
Thompson, Hugh A.: *See*—
Radel, Clifford J.; and Thompson, Hugh A., 4,342,314, Cl. 128-287.000.
Thompson, Leonard K.; and Corbett, William H., to Continental Disc Corporation. Rupture disc alarm system. 4,342,988, Cl. 340-679.000.
Thompson, William E. Wiping inserts for windshield wipers, squeegees and the like. 4,342,129, Cl. 15-250.400.
Thulman, Robert D.; and Erickson, Alve J. Wood stove with safety forced air system. 4,342,306, Cl. 126-61.000.
Tincher, Cline A.; and Maxwell, Jerrold F., to BASF Wyandotte Corporation. Water-based hydraulic fluid containing an alkyl dialkanolamide. 4,342,658, Cl. 252-32.500.
Tisdale, Norman F., Jr. Apparatus and method for producing ingot mold caps. 4,342,357, Cl. 164-112.000.
Tisma, Ilie. Traction device for vehicle wheel. 4,342,352, Cl. 152-225.00C.
Titeflex Corporation: *See*—
Lalikos, James M.; Waite, Harold K.; and Lefebvre, Kenneth E., 4,342,612, Cl. 156-143.000.
Toke, Laszlo: *See*—
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,342,871, Cl. 546-65.000.
Tokico Ltd.: *See*—
Tamura, Koichi, 4,342,381, Cl. 188-73.380.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Kimura, Sakae; Shimura, Masahiro; and Okai, Tadatake, 4,342,662, Cl. 252-181.400.
Nieda, Yasuhiro; and Honda, Kiyokazu, 4,342,142, Cl. 29-25.130.
Taniguchi, Koichi; Niwa, Kiyomi; and Siraisi, Tadaaki, 4,342,568, Cl. 48-111.000.
Toldi, Lajos: *See*—
Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,342,754, Cl. 424-241.000.
Tolmie, Robert J., Jr., to Pitney Bowes Inc. Copy cycle controller for an electrostatic copier. 4,342,512, Cl. 355-14.0SH.
Tomiita, Kazuo: *See*—
Negishi, Takao; and Tomiita, Kazuo, 4,342,189, Cl. 57-288.000.
Tomioka, Kentaro: *See*—
Muramatsu, Hiroaki; Tomioka, Kentaro; Hirota, Kazuo; and Akahane, Shoji, 4,342,677, Cl. 523-116.000.
Tomita, Hitoshi; and Kobayashi, Masayoshi, to Diesel Kiki Co., Ltd. Distributor type fuel injection pump. 4,342,301, Cl. 123-502.000.
Tomy Kogyo Company, Inc.: *See*—
Nikaido, Teruo, 4,342,174, Cl. 46-92.000.
Tondeur, Gerard: *See*—
Marjollet, Jacques; Mevel, Jean-Claude; Palacio, Gerard; and Tondeur, Gerard, 4,342,570, Cl. 55-418.000.
Toray Industries, Inc.: *See*—
Kinashi, Takao; Fujita, Takashi; and Kawabe, Norio, 4,342,820, Cl. 430-11.000.
Negishi, Takao; and Tomiita, Kazuo, 4,342,189, Cl. 57-288.000.
Torenbeek, Reinder; van Drumpt, Jan D.; and Drost, Gerrit F., to Akzona Incorporated. Process for preparing peroxide master batches. 4,342,844, Cl. 525-387.000.
Torokvei, Thomas E., to Scepter Manufacturing Co., Ltd. Stackable bottle carrier. 4,342,388, Cl. 206-203.000.
Toshiba Electric Equipment Corporation: *See*—
Suzuki, Kiyoshi, 4,343,033, Cl. 362-307.000.
Toth, Istvan: *See*—
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,342,871, Cl. 546-65.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kanou, Noboru; and Mori, Keiji, 4,342,481, Cl. 296-217.000.
Transidyne General Corp.: *See*—
Diamond, Howard; Enzer, Steven E.; and Flowers, Joseph, Jr., 4,342,964, Cl. 324-450.000.
Transue, James A.; and Weisz, William, to Singer Company, The. Presser bar biasing spring structure. 4,342,272, Cl. 112-237.000.
Traster, Elden D., to Harris Data Communications, Inc. Video display terminal having improved character shifting circuitry. 4,342,990, Cl. 340-724.000.
Trembly, John F.: *See*—
Krishnakumar, Suppayan M.; Pocock, John F. E.; Mahajan, Gautam K.; and Trembly, John F., 4,342,895, Cl. 219-10.430.
Trick, Robert E., to Medical Engineering Corporation. Penile erectile system. 4,342,308, Cl. 128-79.000.
Trio Kabushiki Kaisha: *See*—
Tamura, Eijiro, 4,342,966, Cl. 330-268.000.
Trippet, Raymond, to Texaco Inc. Oil burner. 4,342,552, Cl. 431-183.000.
Trisops, Inc.: *See*—
Wells, Daniel R., 4,342,720, Cl. 376-107.000.
Truesdell, Deane M. Foamed construction apparatus and method. 4,342,181, Cl. 52-743.000.
Tsao, Utah, to Lummus Company, The. Stripping of aqueous ammonium carbonate solution. 4,342,735, Cl. 423-356.000.
Tsukamoto, Goro: *See*—
Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, 4,342,693, Cl. 549-229.000.
Tsutsui, Kikuo, to Amada Company, Limited. Feeding apparatus for machine tools. 4,342,237, Cl. 74-625.000.
Tsuyama, Shigeo: *See*—
Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; and Tsuyama, Shigeo, 4,342,708, Cl. 260-665.00R.
Tsuzuku, Susumu: *See*—
Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; Kaneko, Hiroshi; and Hosoe, Yoshihisa, 4,342,842, Cl. 521-167.000.
Tuboi, Takao: *See*—
Usuki, Takayoshi; Endo, Yukio; Ito, Kichizo; Tuboi, Takao; and Kubota, Shin, 4,342,814, Cl. 428-383.000.
Tuck, John W. Solar collector for heating air. 4,342,307, Cl. 126-449.000.
Tuck, Lee, to Phillips Petroleum Company. Method and apparatus for the reduction of flare smoke emissions. 4,342,550, Cl. 431-4.000.
Tuneblom, Eskil, to Dynapac Maskin AB. Cold surface planer cooling apparatus. 4,342,485, Cl. 299-39.000.
Tuttle, Helen K. Methods of producing stained glass effects. 4,342,611, Cl. 156-63.000.
UBE Industries, Ltd.: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,342,712, Cl. 264-63.000.
Ueng, Ming-Shean. Tape strut and tape strut tent. 4,342,327, Cl. 135-1.00R.
Ueno, Ryuzo; Matsuda, Toshio; Inamine, Shigeo; Kanayama, Tatsuo; and Fujita, Yatsuka, to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo. Process for inhibiting growth of *Clostridium botulinum* and formation of nitrosamines in meat. 4,342,789, Cl. 426-266.000.
Ulrich, Reinhard: *See*—
Johnson, Mark; and Ulrich, Reinhard, 4,342,517, Cl. 356-350.000.
Underwood, Gerald T., to Deere & Company. Protective closure for an article. 4,342,337, Cl. 138-96.00T.
Union Carbide Corporation: *See*—
Nadin, Robert P.; Nicholakopoulos, Antonios; Urban, Joseph P.; and Markowski, Steven G., 4,342,345, Cl. 141-392.000.
Union Special G.m.b.H.: *See*—
Petzold, W. Andreas, 4,342,273, Cl. 112-272.000.
Uniscrew Limited: *See*—
Zimmern, Bernard, 4,342,548, Cl. 418-195.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Stangroom, James E., 4,342,334, Cl. 137-625.480.
United McGill Corporation: *See*—
Hayashi, Tsutomu, 4,342,571, Cl. 55-137.000.
United States Gypsum Company: *See*—
Porter, William F., 4,342,582, Cl. 65-14.000.
United States of America
Agriculture: *See*—
Jurd, Leonard, 4,342,777, Cl. 424-282.000.
Army: *See*—
Farinacci, Anthony L., 4,342,437, Cl. 244-137.00R.
Heim, Werner F.; and McDowell, Hunter L., 4,342,632, Cl. 204-192.0EC.
Majerus, John N., 4,342,261, Cl. 102-307.000.
Mathews, Paul B., 4,342,514, Cl. 356-5.000.
Matta, Galal N., 4,342,328, Cl. 137-135.000.
Energy: *See*—
Kothmann, Richard E.; and Somers, Edward V., 4,342,816, Cl. 429-13.000.
Navy: *See*—
Anderson, Hugh G.; and Hatchard, Philip J., 4,342,488, Cl. 308-15.000.
Berke, Herbert; and Allen, John H., 4,342,984, Cl. 340-347.0DA.
Kumar, Kaplesh; and Das, Dilip K., 4,342,734, Cl. 423-298.000.
Macidull, John C., 4,343,000, Cl. 343-705.000.
Savage, Howard T., 4,342,228, Cl. 73-517.00A.
Shirley, Donald J., 4,342,518, Cl. 374-44.000.
U.S. Philips Corporation: *See*—
Enz, Ulrich E., 4,343,038, Cl. 365-36.000.
Jatteau, Michel; Chalmeton, Vincent; and Pauvert, Joseph, 4,342,916, Cl. 378-4.000.
Lorteije, Jean H. J., 4,342,994, Cl. 340-784.000.
United States Steel Corporation: *See*—
Fowler, J. Alan; Haller, George S.; and Rogers, C. David, 4,342,487, Cl. 308-3.900.
Van Horn, Ronald L., 4,342,215, Cl. 72-422.000.

United Technologies Corporation: *See*—
Bourdeau, Romeo G., 4,342,595, Cl. 75-238.000.
University of Akron, The: *See*—
Kennedy, Joseph P., 4,342,849, Cl. 525-333.700.
University of Delaware, The: *See*—
Catalano, Anthony W.; and Bhushan, Manjul, 4,342,879, Cl. 136-265.000.
University Patents, Inc.: *See*—
Adamson, Hugh P., 4,342,912, Cl. 250-339.000.
Upjohn Company, The: *See*—
Alberino, Louis M.; and Regelman, Dale F., 4,342,841, Cl. 521-163.000.
Walker, Jerry A., 4,342,702, Cl. 260-397.300.
Upperman, Gary V.: *See*—
Withers, James C.; and Upperman, Gary V., 4,342,637, Cl. 204-282.000.
Uranium Pechiney Ugine Kuhlmann: *See*—
Blum, Jacques, 4,342,722, Cl. 376-327.000.
Urban, Joseph P.: *See*—
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Urogdi, Laszlo: *See*—
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,342,755, Cl. 424-244.000.
Usuki, Takayoshi; Endo, Yukio; Ito, Kichizo; Tuboi, Takao; and Kubota, Shin, to Fujikura Cable Works, Ltd., The. Heat-resistant electrically insulated wires and a method for preparing the same. 4,342,814, Cl. 428-383.000.
USV Pharmaceutical Corporation: *See*—
Suh, John T.; Chung, Rack H.; Wang, Nai-Yi; and Barton, Jeffrey N., 4,342,692, Cl. 260-326.460.
Utsumi, Isamu: *See*—
Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, 4,342,693, Cl. 549-229.000.
Uyeda, Tim: *See*—
Holmes, Daniel L.; and Uyeda, Tim, 4,342,207, Cl. 70-119.000.
Valenzona, Joseph F.; and Hewitt, Lloyd, to Orion Industries, Inc. Timed automatic headlight shut-off. 4,342,946, Cl. 315-82.000.
Van Dyk & Company, Inc.: *See*—
Conner, Donald E.; and Fogel, Arnold W., 4,342,706, Cl. 260-501.150.
Vanden Bergh, Jan D., to Minnesota Mining and Manufacturing Company. Pressure applicator for graphic transfer. 4,342,614, Cl. 156-541.000.
van der Lely, Cornelis. Soil crumbling rollers. 4,342,365, Cl. 172-552.000.
Vandewalle, Jan J.: *See*—
Van Poucke, Raphael K.; Monbaliu, Marcel J.; and Vandewalle, Jan J., 4,342,825, Cl. 430-505.000.
van Drumpt, Jan D.: *See*—
Torenbeek, Reinder; van Drumpt, Jan D.; and Drost, Gerrit F., 4,342,844, Cl. 525-387.000.
Van Eck, Maurits J. H.: *See*—
Van Eck, William F.; and Van Eck, Maurits J. H., 4,342,184, Cl. 53-452.000.
Van Eck, William F.; and Van Eck, Maurits J. H. Method of manufacture of hypodermic syringe. 4,342,184, Cl. 53-452.000.
Van Gorder, Jack H.: *See*—
Allen, Karl D.; Perlick, Mark A.; and Van Gorder, Jack H., 4,342,543, Cl. 417-211.500.
VanHook, Danny A.: *See*—
Routt, Wilson M., Jr.; and VanHook, Danny A., 4,342,511, Cl. 355-1.000.
Van Horn, Ronald L., to United States Steel Corporation. Nail machine wire feed mechanism. 4,342,215, Cl. 72-422.000.
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Sebag, Henri; and Vanlerberghe, Guy, 4,342,742, Cl. 424-59.000.
Van Loveren, Augustinus G.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,342,663, Cl. 252-186.360.
Van Poucke, Raphael K.; Monbaliu, Marcel J.; and Vandewalle, Jan J., to AGFA-GEVAERT N.V. Photographic elements containing cyan-forming color couplers. 4,342,825, Cl. 430-505.000.
van Wijhe, Albert; Munster, Ernst; Wagenbrenner, Gerhard; Rocker, Fritz; Armbruster, Joachim; Metzger, Klaus; and Ratzel, Rudiger, to Robert Bosch GmbH. Prefabricated brush holder assembly for use in small electric motors. 4,342,934, Cl. 310-239.000.
Varta Batterie Aktiengesellschaft: *See*—
Illmann, Joachim; and Fullfgraf, Heribert, 4,342,449, Cl. 269-43.000.
Vasilieva, Elena D.: *See*—
Ivanchev, Sergei S.; Pavljuchenko, Valery N.; Pessina, Zinaida M.; and Vasilieva, Elena D., 4,342,676, Cl. 524-458.000.
Veeder, George T.: *See*—
Kang, Kenneth S.; and Veeder, George T., 4,342,866, Cl. 536-119.000.
Vella-Coleiro, George P.; and Wolfe, Raymond, to Bell Telephone Laboratories, Incorporated. Method for measuring coercivity in magnetic materials. 4,342,962, Cl. 324-232.000.
Vereinigte Nahrungsmittel-industrie Aktiengesellschaft: *See*—
Zwingl, Johann; and Heckmann, Heinrich, 4,342,785, Cl. 426-19.000.
Verriere, Philippe: *See*—
Pomie, Pierre; and Verriere, Philippe, 4,342,721, Cl. 376-298.000.
Vest, William C.: *See*—
Perkins, William J.; Vest, William C.; Grannen, Walter A., III; and Meyer, Robert E., 4,342,442, Cl. 249-67.000.
Vickers, Geoffrey W., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Cavitation nozzle assembly. 4,342,425, Cl. 239-424.000.
Vickrey, Richard A., to Combustion Engineering, Inc. Box insert for storage of spent nuclear fuel assembly. 4,342,620, Cl. 376-272.000.
Virag, Sandor: *See*—
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,342,871, Cl. 546-65.000.
Virtuani, Giuseppe: *See*—
Lovera, Bruno; Pancotti, Santino; Pariani, Emilio; and Virtuani, Giuseppe, 4,342,540, Cl. 416-140.000.
Vistins, Maris, to Norton Company. Hot mill glove. 4,342,121, Cl. 2-161.00R.
Voegele, William H. Adjustable grain spreader. 4,342,532, Cl. 414-299.000.
Volk, Joseph A., Jr., to Beta Corporation of St. Louis. Heat exchanger for pellet mill. 4,342,361, Cl. 165-113.000.
Volker, Wolfgang; Pohlmann, Fritz; and Radeck, Friedrich, to Felten & Guilleaume Carlswerk AG. Method of and apparatus for producing electrical conductor wire. 4,342,794, Cl. 427-54.100.
Volkers, Jack C.: *See*—
White, Gerald W.; and Volkers, Jack C., 4,342,631, Cl. 204-192.00N.
Vollbrecht, Rolf: *See*—
Rasen, Alfred; Vollbrecht, Rolf; Schenesse, Klemens; and Behnke, Joachim, 4,342,807, Cl. 428-180.000.
von Daehne, Welf: *See*—
Godtfredsen, Wagn O.; and von Daehne, Welf, 4,342,772, Cl. 424-271.000.
W. R. Grace & Co.: *See*—
Wood, Louis L.; Hartdegen, Frank J.; and Hahn, Peter A., 4,342,834, Cl. 435-182.000.
Wachs, Walter, to Siemens Aktiengesellschaft. Protective device for electric component which can be soldered into a printed board by means of a solder bath. 4,342,415, Cl. 228-39.000.
Wagenbrenner, Gerhard: *See*—
van Wijhe, Albert; Munster, Ernst; Wagenbrenner, Gerhard; Rocker, Fritz; Armbruster, Joachim; Metzger, Klaus; and Ratzel, Rudiger, 4,342,934, Cl. 310-239.000.
Wagner, Alfred; and Ames, Adolf, to Swiss Aluminium Ltd. Process and apparatus for extruding a composite section. 4,342,211, Cl. 72-253.100.
Wagner, Hans: *See*—
Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, 4,342,847, Cl. 525-66.000.
Wagner, Richard R. Ski training apparatus. 4,342,453, Cl. 272-97.000.
Wahlfeldt, Richard W.; and Field, David R., to Olin Corporation. Anti-detonation powder safety device. 4,342,251, Cl. 86-1.00R.
Wainio, Ronald: *See*—
Date, K. Henry; and Wainio, Ronald, 4,343,030, Cl. 361-335.000.
Waite, Harold K.: *See*—
Lalikos, James M.; Waite, Harold K.; and Lefebvre, Kenneth E., 4,342,612, Cl. 156-143.000.
Wakabayashi, Hiroshi; and Okuyama, Takeshi, to Nippon Kogaku K.K. Film feeding device of a camera. 4,342,509, Cl. 354-173.000.
Wakeman, Russell J., to Colt Industries Operating Corp. Multi-stage fuel metering valve assembly. 4,342,443, Cl. 251-137.000.
Waldron, Gregory R., to Scott Machine Development Corporation. Sign-making apparatus. 4,342,155, Cl. 33-184.500.
Walker, Jerry A., to Upjohn Company, The. Metallated halogenated acetylene corticoid synthesis. 4,342,702, Cl. 260-397.300.
Walker, Jimmy D.: *See*—
Neubauer, Jeffrey A.; Reese, Walter J.; and Walker, Jimmy D., 4,342,581, Cl. 65-4.400.
Walker, Michael D.: *See*—
Clark, Amos S., Jr.; McMordie, James R.; and Walker, Michael D., 4,342,130, Cl. 15-312.00A.
Wallace Business Forms, Inc.: *See*—
Heimann, Edward W.; and Steidinger, Donald J., 4,342,472, Cl. 282-11.50A.
Wallis, Bernard J. Gas-operated cylinder. 4,342,448, Cl. 267-119.000.
Wallis, Christopher J.: *See*—
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Bradshaw, John; and Hayes, Norman F., 4,342,756, Cl. 424-244.000.
Walsh, Thomas J., to SCM Corporation. Process for disposal of aqueous lipoidal wastes. 4,342,656, Cl. 210-770.000.
Walton, James P., Jr.: *See*—
Lopatin, George; Coplan, Myron J.; and Walton, James P., Jr., 4,342,811, Cl. 428-220.000.
Wang, Chih C.; Ekstrom, Lincoln; Lausman, Thomas C.; and Wielicki, Henry, to RCA Corporation. Video disc lubricants. 4,342,659, Cl. 252-49.600.
Wang, Nai-Yi: *See*—
Suh, John T.; Chung, Rack H.; Wang, Nai-Yi; and Barton, Jeffrey N., 4,342,692, Cl. 260-326.460.
Wanke, Wilhelm. Cylinder dryer with boundary layer turbulence. 4,342,156, Cl. 34-41.000.
Ward, Terence J., to John Wyeth & Brother Limited. Piperidine derivatives. 4,342,761, Cl. 424-246.000.

Warzawa, Wolfgang: *See—*
Loser, Harald; Schmidt, Gerhard; Warzawa, Wolfgang; and Wegner, Klaus, 4,342,284, Cl. 118-716.000.

Watanabe, Hiromi, to Oppama Kogyo Kabushiki Kaisha. Contactless igniton circuit for internal combustion engines. 4,342,304, Cl. 123-599.000.

Watanabe, Masazumi: *See—*
Sugihara, Hirosada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, 4,342,779, Cl. 424-285.000.

Watanabe, Takeo; and Matsuda, Makoto, to Mitsui Engineering and Shipbuilding Co., Ltd. Oscillator actuated hydraulic impulse device. 4,342,255, Cl. 91-40.000.

Watanabe, Teruoki; and Kobayashi, Shunji, to Honda Giken Kogyo Kabushiki Kaisha. Gas soft-nitriding method. 4,342,605, Cl. 148-16.600.

Watanabe, Toshihiko: *See—*
Murai, Ryuji; Watanabe, Toshihiko; Ogata, Yoji; Nagashima, Masashi; and Soga, Mitsurou, 4,342,897, Cl. 219-73.200.

Watanabe, Yasuhiko: *See—*
Nozu, Takashi; Yamada, Minoru; and Watanabe, Yasuhiko, 4,342,528, Cl. 408-6.000.

Watanabe, Yoshiteru: *See—*
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; Yamada, Muneo; and Watanabe, Yoshiteru, 4,342,828, Cl. 435-41.000.

Watellier, Christian. Dispensing unit for sheet and/or ribbon products packaged in reels. 4,342,431, Cl. 242-55.300.

Watkins, Richard R.; and Slater, Richard A., to Honeywell Information Systems Inc. Dual CRT control unit synchronization system. 4,342,989, Cl. 340-723.000.

WC Heraeus GmbH: *See—*
Wolf, Heinrich, 4,342,893, Cl. 200-268.000.

Weaver, Edward A., to Owens-Illinois, Inc. P_2O_5-V_2O_5-PbO glass which reduces arcing in funnel portion of CRT. 4,342,943, Cl. 313-479.000.

Weaver, Simeon D., to Azcon Corporation. Apparatus for forming railroad spikes and the like. 4,342,127, Cl. 10-57.000.

Webb, Michael G., to British Petroleum Company Limited, The. Method and apparatus for dispersing oil slicks. 4,342,655, Cl. 210-749.000.

Wechs, Friedbert: *See—*
Gerlach, Klaus; Mathes, Nikolaus; Pitowski, Hans-Jurgen; and Wechs, Friedbert, 4,342,801, Cl. 428-91.000.

Weeks, Paul D.; and Allingham, Robert P., to Pfizer Inc. Preparation of gamma-pyrones. 4,342,697, Cl. 549-396.000.

Wegner, Klaus: *See—*
Loser, Harald; Schmidt, Gerhard; Warzawa, Wolfgang; and Wegner, Klaus, 4,342,284, Cl. 118-716.000.

Wei, Yung-Kuan. Automatic powdered milk fillers. 4,342,346, Cl. 141-85.000.

Weigand, Benjamin F.; and Frech, John W., to Westinghouse Electric Corp. Dynamically calibrated successive ranging A/D conversion system and D/A converter for use therein. 4,342,983, Cl. 340-347.0CC.

Weinstock, Joseph: *See—*
Brush, Charles K.; and Weinstock, Joseph, 4,342,686, Cl. 260-239.0BB.

Weiss, Friedrich: *See—*
Brix, Joachim; and Weiss, Friedrich, 4,342,275, Cl. 114-162.000.

Weisz, William: *See—*
Transue, James A.; and Weisz, William, 4,342,272, Cl. 112-237.000.

Wells, Daniel R., to Trisops, Inc. Method and apparatus for generation of thermonuclear power. 4,342,720, Cl. 376-107.000.

Wells, Richard B.; Haibel, Chester G., Jr.; and Hilton, Richard L., to Hewlett-Packard Company. Magnetic amplifier preregulator for linear power supplies. 4,343,034, Cl. 363-82.000.

Welter, Clarence L.: *See—*
Clancy, John F.; and Welter, Clarence L., 4,342,889, Cl. 200-144.00R.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Zimmermann, Jakob; and Kocher, Willi, 4,342,961, Cl. 324-179.000.

Wernet, William F.; and Miller, Steve, to Northern Telecom, Inc. Pushbutton switch assemblies for telephone sets. 4,342,883, Cl. 179-99.00R.

Weronke, Robert B.: *See—*
Hassl, William D.; and Weronke, Robert B., 4,342,634, Cl. 204-197.000.

Wesner, Charles R.: *See—*
Spurgin, William T.; and Wesner, Charles R., 4,342,274, Cl. 114-144.00E.

Wessel, Gerhard: *See—*
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Western Electric Company, Inc.: *See—*
Ellis, Benjamin C., Jr., 4,342,434, Cl. 242-82.000.
Taylor, Thomas J., 4,342,152, Cl. 29-860.000.
Zado, Frank M., 4,342,607, Cl. 148-23.000.

Westinghouse Electric Corp.: *See—*
Evans, Gary E., 4,342,997, Cl. 343-16.00R.
Henningsen, Tom; Coyle, Forrest E.; and Moates, Roger D., 4,342,908, Cl. 250-227.000.
Weigand, Benjamin F.; and Frech, John W., 4,342,983, Cl. 340-347.0CC.

Weston Research Corporation: *See—*
Brown, William F., 4,342,597, Cl. 106-38.270.

Westvaco Corporation: *See—*
Forbes, Hampton E., Jr., 4,342,417, Cl. 229-27.000.

Weyer, Paul P. Rotary actuator with integral fluid coupling joint. 4,342,257, Cl. 92-31.000.

Weyerhaeuser Company: *See—*
Lichtenwalter, Robert H.; and Pierson, Darrell E., 4,342,348, Cl. 144-209.00R.

Whatley, Roger A., to Motorola, Inc. Bias current reference circuit. 4,342,926, Cl. 307-297.000.

Whatman Reeve Angel Limited: *See—*
Perrotta, Kenneth A., 4,342,730, Cl. 423-215.500.

Wheadon, Ellis G., to General Motors Corporation. Grooved and cracked battery plate and process for coil-curing same. 4,342,342, Cl. 141-1.100.

White, Claude C., to Birmingham Bolt Company. Support assembly for underground mine and tunnel roofs. 4,342,527, Cl. 405-259.000.

White, Gerald W.; and Volkers, Jack C., to Illinois Tool Works Inc. Gasless ion plating process and apparatus. 4,342,631, Cl. 204-192.00N.

Whitney, Douglass G.; and Martin, John K., III. Injector with programming means. 4,342,311, Cl. 128-214.00F.

Whitney, Douglass G.; and Martin, John K., III. Method of injecting fluid. 4,342,312, Cl. 128-214.00F.

Widdowson, Richard E., to General Motors Corporation. Thermostatic expansion valve for a refrigeration system. 4,342,421, Cl. 236-92.00B.

Wide One Corporation: *See—*
Hanson, Dale M., 4,342,146, Cl. 29-416.000.

Widlund, Leif U. R.: *See—*
Froidh, Tor A.; and Widlund, Leif U. R., 4,342,562, Cl. 493-124.000.

Wielicki, Henry: *See—*
Wang, Chih C.; Ekstrom, Lincoln; Lausman, Thomas C.; and Wielicki, Henry, 4,342,659, Cl. 252-49.600.

Wienand, Hans J.: *See—*
Rath, Heinrich B.; and Wienand, Hans J., 4,342,382, Cl. 188-73.450.

Wieveg, Raymond; and Keithahn, Julian D., to Hydril Company. Ball type valve having improved redundant sealing system. 4,342,330, Cl. 137-315.000.

Wilkinson, James H., to Sony Corporation. Decoding composite PAL television signals. 4,343,017, Cl. 358-24.000.

Wilkinson, Robert E.: *See—*
Corner, Frank G.; and Wilkinson, Robert E., 4,342,469, Cl. 280-718.000.

Willamette Industries, Inc.: *See—*
Croley, Thomas E., 4,342,405, Cl. 222-105.000.

Willens, Ronald H., to Bell Telephone Laboratories, Incorporated. Mn-Al Permanent magnets and their manufacture. 4,342,608, Cl. 148-101.000.

Williams, David J.: *See—*
McMillan, Fraser; Guthrie, Graeme J.; and Williams, David J., 4,342,647, Cl. 209-3.000.

Williams, Haydn W. R.: *See—*
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,342,776, Cl. 424-274.000.

Williams, Paul B.: *See—*
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., 4,342,516, Cl. 356-332.000.

Williams, Robert H. Rotary internal combustion engine. 4,342,295, Cl. 123-228.000.

Williams, Robert H. Rotary internal combustion engine. 4,342,296, Cl. 123-228.000.

Williams, Robert H. Rotary internal combustion engine. 4,342,297, Cl. 123-228.000.

Williams, Robert N., to National Technology Corporation. Drive system. 4,342,559, Cl. 474-50.000.

Williams, Thomas J. Locomotive energy recovery system. 4,342,921, Cl. 290-2.000.

Williamson, Richard A.: *See—*
Pope, Richard N.; and Williamson, Richard A., 4,342,991, Cl. 340-726.000.

Willis, Billy B.; and Fetters, L. Michael, to Allis-Chalmers Corporation. Combined chopper and impeller for an axial flow combine. 4,342,319, Cl. 130-27.00R.

Willis, Jeffrey D., to Rolls-Royce Limited. Gas turbine engine fuel injectors. 4,342,198, Cl. 60-737.000.

Wilson, James G., II; and Hammers, P. Fred, to Wilson Welding Company, Inc. Water-cooled electrode holder. 4,342,878, Cl. 373-94.000.

Wilson, Joseph F.; and Parish, Robert S., to Phillips Petroleum Company. Fire-retardant insulating composition and its production. 4,342,669, Cl. 252-602.000.

Wilson, Wayne. Hydrofoil swim fin assemblies. 4,342,558, Cl. 441-61.000.

Wilson Welding Company, Inc.: *See—*
Wilson, James G., II; and Hammers, P. Fred, 4,342,878, Cl. 373-94.000.

Winkler, Thomas J.: *See—*
Kronfeld, Leonard E.; Winkler, Thomas J.; and Madsen, Ricky J., 4,343,025, Cl. 360-104.000.

Winnick, Charles N.: *See—*
Armstrong, William D.; and Winnick, Charles N., 4,342,667, Cl. 252-476.000.

Winston, Philip E., Jr.: *See—*
Lindroth, Thomas A.; and Winston, Philip E., Jr., 4,342,672, Cl. 524-29.000.

Winter, Hermann: *See—*
Bader, Leonhard; Giessner, Frank; Rombach, Friedrich B.; and Winter, Hermann, 4,343,013, Cl. 346-140.00R.

Wisebaker, Dale A.: *See*—
Edmondson, Richard; and Wisebaker, Dale A., 4,342,233, Cl. 73-862.060.
Withers, James C.; and Upperman, Gary V., to Metallurgical, Inc. Composite anode for the electrolytic deposition of aluminum. 4,342,637, Cl. 204-282.000.
Witzel, Bruce E.: *See*—
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,342,872, Cl. 546-186.000.
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,342,873, Cl. 546-186.000.
WOCO Franz-Josef Wolf & Co.: *See*—
Wolf, Franz J.; and Lauer, Hansjorg, 4,342,464, Cl. 277-207.00A.
Woerner, Lothar: *See*—
Gerlach, Heinz; and Woerner, Lothar, 4,342,933, Cl. 310-234.000.
Wolf, Franz J.; and Lauer, Hansjorg, to WOCO Franz-Josef Wolf & Co. Gasket for a socket-spigot connection. 4,342,464, Cl. 277-207.00A.
Wolf, Heinrich, to WC Heraeus GmbH. Composite electrical contact and bonding material. 4,342,893, Cl. 200-268.000.
Wolfe, Raymond: *See*—
Vella-Coleiro, George P.; and Wolfe, Raymond, 4,342,962, Cl. 324-232.000.
Wolfe, Warren D. Unit dosage system for tree trunk implantation to control insect pests afflicting trees. 4,342,176, Cl. 47-57.500.
Wolfges, Hans: *See*—
Bartholomaus, Reiner; and Wolfges, Hans; 4,342,331, Cl. 137-553.000.
Wolford, Dale E.; and York, George S., to Gorman-Rupp Company, The. Face-type shaft seal. 4,342,538, Cl. 415-170.00A.
Wolfrey, Austin A., to General Electric Company. High-solids coating compositions. 4,342,673, Cl. 523-427.000.
Wood, Louis L.; Hartdegen, Frank J.; and Hahn, Peter A., to W. R. Grace & Co. Enzymes bound to polyurethane. 4,342,834, Cl. 435-182.000.
Woodward, Oakley M.; and Henderson, John G. N., to RCA Corporation. Loop antenna arrangements for inclusion in a television receiver. 4,342,999, Cl. 343-702.000.
Worne, Howard E.: *See*—
Erickson, Lennart G.; and Worne, Howard E., 4,342,650, Cl. 210-606.000.
Wright, William B., Jr.: *See*—
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,689, Cl. 260-326.340.
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,690, Cl. 260-326.340.
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,691, Cl. 260-326.360.
Wurlitzer Company, The: *See*—
Ippolito, Anthony C.; and Hoskinson, William R., 4,342,247, Cl. 84-1.240.
Xerox Corporation: *See*—
Mrusko, Joseph P.; and Everdyke, Wayne D., 4,342,940, Cl. 313-198.000.
Swigert, J. Kirk, 4,343,008, Cl. 346-74.200.
Xomox Corporation: *See*—
Sonderman, William G., 4,342,444, Cl. 251-315.000.
Yagher, Charles, Jr., to Emerson Electric Co. Thermally actuatable electrical switch construction, conductive lead therefor and methods of making the same. 4,342,981, Cl. 337-407.000.
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, to UBE Industries, Ltd. Process for producing continuous inorganic fibers. 4,342,712, Cl. 264-63.000.
Yamada, Kaichi; Morikawa, Yoshiyuki; Fujio, Katuharu; Yoshihiro, Koichi; Matsuda, Toshio; and Taguchi, Tatsuhisa, to Matsushita Electric Industrial Co., Ltd. Rotary vane compressor with valve control of oil to bias the vanes. 4,342,547, Cl. 418-84.000.
Yamada, Minoru: *See*—
Nozu, Takashi; Yamada, Minoru; and Watanabe, Yasuhiko, 4,342,528, Cl. 408-6.000.
Yamada, Muneo: *See*—
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; Yamada, Muneo; and Watanabe, Yoshiteru, 4,342,828, Cl. 435-41.000.
Yamakoshi, Akira: *See*—
Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, 4,343,018, Cl. 358-28.000.
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, to Hitachi, Ltd. Differential pressure transmitter. 4,342,231, Cl. 73-721.000.
Yamamura, Takemi: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,342,712, Cl. 264-63.000.
Yamashita, Keitaro; and Kumakura, Toshio, to Hitachi Metals, Ltd. Toner cartridge. 4,342,282, Cl. 118-657.000.
Yamazaki, Masahiro: *See*—
Joh, Yasushi; Yamazaki, Masahiro; Kaneko, Noriaki; Oikawa, Shigehiko; Makuta, Yoshihiro; and Hayashi, Chizuko, 4,342,711, Cl. 264-41.000.
Yanagihara, Hideo, to NSK-Warner K.K. Take-up force reducing mechanism of a seat belt retractor. 4,342,435, Cl. 242-107.000.
Yanagishima, Takayuki: *See*—
Seko, Yasutoshi; and Yanagishima, Takayuki, 4,342,279, Cl. 116-31.000.
Yanai, Nobuya: *See*—
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Yazawa, Chihiro: *See*—
Harada, Takao; Ohashi, Hideaki; Koike, Wataro; Yazawa, Chihiro; and Nanjo, Kazuko, 4,342,859, Cl. 528-64.000.
Yeh, Hsu-Chieh. Method and apparatus for generating power and irrigating plants with solar energy and earth heat. 4,342,196, Cl. 60-531.000.
Yeomans, Bertram: *See*—
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Yin, Robert I., to Merck & Co., Inc. Use of heteropolysaccharide S-119 as a paper finish. 4,342,601, Cl. 106-209.000.
Yokohama Rubber Co., Ltd., The: *See*—
Ahagon, Asahiro; Misawa, Makoto; and Hirakawa, Hiroshi, 4,342,670, Cl. 523-353.000.
Yokono, Hitoshi: *See*—
Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; Kaneko, Hiroshi; and Hosoe, Yoshihisa, 4,342,842, Cl. 521-167.000.
Yokota, Toshikazu: *See*—
Fukase, Motonobu; Yokota, Toshikazu; and Oura, Masahisa, 4,342,384, Cl. 194-1.00C.
Yokota, Yukio; Sato, Masamichi; and Matsumoto, Kenji, to Fuji Photo Film Co., Ltd. Process for forming color filter. 4,342,818, Cl. 430-7.000.
York, George S.: *See*—
Wolford, Dale E.; and York, George S., 4,342,538, Cl. 415-170.00A.
Yoshida Kogyo K.K.: *See*—
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Yoshida, Tomomasa: *See*—
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.
Yoshihiro, Koichi: *See*—
Yamada, Kaichi; Morikawa, Yoshiyuki; Fujio, Katuharu; Yoshihiro, Koichi; Matsuda, Toshio; and Taguchi, Tatsuhisa, 4,342,547, Cl. 418-84.000.
Yoshizawa, Toshio: *See*—
Katoh, Takashi; and Yoshizawa, Toshio, 4,342,429, Cl. 242-18.0DD.
Young, Gary C.: *See*—
Evans, John W.; Young, Gary C.; and Stager, Charles W., 4,342,604, Cl. 127-31.000.
Young, James L.: *See*—
Fagnant, Norman A.; and Young, James L., 4,342,396, Cl. 209-546.000.
Yuhshin Co., Ltd.: *See*—
Okabe, Kanae; and Murayama, Hiroo, 4,342,136, Cl. 16-115.000.
Zado, Frank M., to Western Electric Company, Inc. Solder flux. 4,342,607, Cl. 148-23.000.
Zajac, John, to Eaton Corporation. Plasma etching electrode. 4,342,901, Cl. 219-121.0PD.
Zaniewski, Michel H. Ventilator. 4,342,258, Cl. 98-78.000.
Zeidler, Guenter: *See*—
Oestreich, Ulrich; and Zeidler, Guenter, 4,342,500, Cl. 350-96.230.
Zelacolor Systems Establishment: *See*—
Guillaume, Emile A. H., 4,342,510, Cl. 354-216.000.
Zengel, Hans-Georg; and Bergfeld, Manfred, to Akzona Incorporated. Process for the preparation of bis-N-chloramides. 4,342,707, Cl. 260-543.00A.
Zenith Radio Corporation: *See*—
Hockenbrock, Richard L., 4,342,942, Cl. 313-477.00R.
Ziemek, Gerhard; Klebl, Wolfram; Hoffmann, Ernst; and Brunn, Reiner, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Stranding stock of large cross sections. 4,342,190, Cl. 57-293.000.
Zimmerman, Robert L.; and McEntire, Edward E., to Texaco Inc. N-Substituted perhydrodioxazepines useful as polyurethane catalysts. 4,342,687, Cl. 260-243.300.
Zimmermann, Jakob; and Kocher, Willi, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for measuring the muzzle velocity V-null of a projectile fired from a weapon. 4,342,961, Cl. 324-179.000.
Zimmern, Bernard, to Uniscrew Limited. Screw having a V-shaped groove profile for cooperating with a pinion in a compression or expansion machine. 4,342,548, Cl. 418-195.000.
Zullo, Antonio, to CIR S.p.A. Divisione Sasib. Device for the formation of groups of cigarettes. 4,342,321, Cl. 131-282.000.
Zwingl, Johann; and Heckmann, Heinrich, to Vereinigte Nahrungsmittel-industrie Aktiengesellschaft. Process for maturing leaven. 4,342,785, Cl. 426-19.000.
Zyma S.A.: *See*—
Mirkovitch, Velimir, 4,342,745, Cl. 424-78.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Akzona Incorporated: *See*—
Schuurs, Antonius H. W. M.; and van Weemen, Bauke K., Re. 31,006, Cl. 435-7.000.

McCormick, Harold E.: *See*—
Prasse, Herbert F.; and McCormick, Harold E., Re. 31,005, Cl. 277-138.000.

Niimi, Koji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument utilizing data processing system. Re. 31,004, Cl. 84-1.010.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Niimi, Koji, Re. 31,004, Cl. 84-1.010.

Prasse, Herbert F.; and McCormick, Harold E., to Ramsey Corporation. Resilient plastic piston ring. Re. 31,005, Cl. 277-138.000.

Ramsey Corporation: *See*—
Prasse, Herbert F.; and McCormick, Harold E., Re. 31,005, Cl. 277-138.000.

Schuurs, Antonius H. W. M.; and van Weemen, Bauke K., to Akzona Incorporated. Process for the demonstration and determination of reaction components having specific binding affinity for each other. Re. 31,006, Cl. 435-7.000.

van Weemen, Bauke K.: *See*—
Schuurs, Antonius H. W. M.; and van Weemen, Bauke K., Re. 31,006, Cl. 435-7.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Lobur, Walter, to Colt Industries Operating Corp. Electrical discharge machining short circuit protection system of the keyed type. B1 3,614,368, Cl. 219—69 P.

Colt Industries Operating Corp.: *See*—
Lobur, Walter. B1 3,614,368, Cl. 219—69 P.

Rietveld, Frank P., to Colt Industries Operating Corporation. Wire electrode feed system for electrical discharge machining. B1 4,016,395, Cl. 219—69 W.

Colt Industries Operating Corporation: *See*—
Rietveld, Frank P. B1 4,016,395, Cl. 219—69 W.

LaFiandra, Carlo F., to Perkin-Elmer Corporation, The. Precision base mercury vapor lamp. B1 Re. 30,315, Cl. 313—51.

Perkin-Elmer Corporation, The: *See*—
LaFiandra, Carlo F.

LIST OF DESIGN PATENTEES

A & F Dispenser, Inc.: *See*—
Fischer, Thomas C.; and Nepper, John P., 265,616, Cl. D6-127.000.

Aero Systems Research, Inc.: *See*—
Buck, Gaylord B., 265,634, Cl. D10-75.000.

Alpert, Monte N.: *See*—
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504	4,342,226
510	4,342,227
517 A	4,342,228
579	4,342,229
702	4,342,230
721	4,342,231
861.05	4,342,232
862.06	4,342,233
863.12	4,342,234

CLASS 74

424.8 R	4,342,235
603	4,342,236
625	4,342,237
689	4,342,238

CLASS 75

0.5 BA	4,342,589
58	4,342,590
101 R	4,342,591
118 R	4,342,592
124	4,342,588
128 A	4,342,593
203	4,342,594
238	4,342,595

CLASS 82

4 C	4,342,239

CLASS 83

42	4,342,240
56	4,342,241
437	4,342,242
574	4,342,243

CLASS 84

1.01	Re.31,004
	4,342,244
	4,342,245
1.04	4,342,246
1.24	4,342,247
	4,342,248
312 P	4,342,249
377	4,342,250

CLASS 86

1 R	4,342,251

CLASS 89

1.812	4,342,252
12	4,342,253

CLASS 91

6	4,342,254
40	4,342,255
420	4,342,256

CLASS 92

31	4,342,257

CLASS 98

78	4,342,258

CLASS 99

425	4,342,259

CLASS 101

126	4,342,260

CLASS 102

307	4,342,261
489	4,342,262

CLASS 104

7 B	4,342,263

CLASS 105

215 C	4,342,264
	4,342,265
226	4,342,266
282 P	4,342,267

CLASS 106

14.13	4,342,596
38.27	4,342,597
100	4,342,598
	4,342,599
164	4,342,600
209	4,342,601
316	4,342,602

CLASS 108

55.1	4,342,268

CLASS 110

257	4,342,269

CLASS 111

1	4,342,270

CLASS 112

158 E	4,342,271
237	4,342,272
272	4,342,273

CLASS 114

144 E	4,342,274
162	4,342,275
266	4,342,276
293	4,342,277
345	4,342,278

CLASS 116

31	4,342,279
202	4,342,280

CLASS 118

32	4,342,281
657	4,342,282
689	4,342,283
716	4,342,284

CLASS 119

155	4,342,285

CLASS 121

336	4,342,286

CLASS 123

1 A	4,342,287
25 B	4,342,288
41.47	4,342,290
41.7	4,342,289
78 B	4,342,291
146.5 A	4,342,292
188 GC	4,342,293
190 E	4,342,294
228	4,342,295
	4,342,296
	4,342,297
344	4,342,298
396	4,342,299
430	4,342,300
502	4,342,301
	4,342,302
557	4,342,303
599	4,342,304
617	4,342,305

CLASS 126

61	4,342,306
449	4,342,307

CLASS 127

30	4,342,603
31	4,342,604

CLASS 128

79	4,342,308
84 R	4,342,309
207.25	4,342,310
214 F	4,342,311
	4,342,312
214.4	4,342,313
287	4,342,314
349 B	4,342,316
349 R	4,342,315
421	4,342,317
708	4,342,318

CLASS 130

27 R	4,342,319

CLASS 131

276	4,342,320
282	4,342,321
336	4,342,322

CLASS 132

37 R	4,342,323
92 R	4,342,324

CLASS 133

1 R	4,342,325

CLASS 134

102	4,342,326

CLASS 135

1 R	4,342,327

CLASS 136

265	4,342,879

CLASS 137

135	4,342,328
202	4,342,329
315	4,342,330
553	4,342,331
625.23	4,342,332
625.44	4,342,333
625.48	4,342,334
636.2	4,342,335

CLASS 138

90	4,342,336
96 T	4,342,337
99	4,342,338

CLASS 139

93	4,342,339
435	4,342,340

CLASS 141

1	4,342,341
1.1	4,342,342
	4,342,343
39	4,342,344
85	4,342,346
98	4,342,347
392	4,342,345

CLASS 144

209 R	4,342,348
371	4,342,349

CLASS 148

16.6	4,342,605
23	4,342,606
	4,342,607
101	4,342,608
127	4,342,609

CLASS 150

35	4,342,350

CLASS 152

209 R	4,342,351
225 C	4,342,352
362 R	4,342,353

CLASS 156

62.6	4,342,610
63	4,342,611
143	4,342,612
310	4,342,613
541	4,342,614
563	4,342,615
601	4,342,616
643	4,342,617

CLASS 160

133	4,342,354
331	4,342,355
348	4,342,356

CLASS 162

49	4,342,618
262	4,342,619

CLASS 164

112	4,342,357
448	4,342,358

CLASS 165

47	4,342,359
67	4,342,360
113	4,342,361
158	4,342,362

CLASS 166

97	4,342,363
249	4,342,364

CLASS 172

552	4,342,365
643	4,342,366
776	4,342,367

CLASS 174

36	4,342,880
72 B	4,342,881

CLASS 175

410	4,342,368

CLASS 179

90 B	4,342,882
99 R	4,342,883

CLASS 180

19 H	4,342,369
22	4,342,370
165	4,342,371
182	4,342,372

CLASS 181

266	4,342,373

CLASS 182

45	4,342,374

CLASS 184

65	4,342,375
103 R	4,342,376

CLASS 187

9 R	4,342,377
29 R	4,342,378
	4,342,379

CLASS 188

71.1	4,342,380
73.38	4,342,381
73.45	4,342,382

CLASS 193

32	4,342,383

CLASS 194

1 C	4,342,384
4 D	4,342,385

CLASS 198

360	4,342,386
746	4,342,387

CLASS 200

34	4,342,884
47	4,342,885
61.86	4,342,886
83 P	4,342,887
83 R	4,342,888
144 R	4,342,889
148 A	4,342,890
	4,342,891
159 A	4,342,892
268	4,342,893
304	4,342,894

CLASS 201

6	4,342,622

CLASS 202

83	4,342,623
176	4,342,624
181	4,342,625
228	4,342,626

CLASS 203

19	4,342,627

CLASS 204

1 T	4,342,628
98	4,342,629
	4,342,630
192 EC	4,342,632
192 N	4,342,631
195 S	4,342,633
197	4,342,634
263	4,342,635
282	4,342,637
296	4,342,636

CLASS 206

203	4,342,388
288	4,342,389
363	4,342,390
370	4,342,391
438	4,342,392
504	4,342,393

521 4,342,394
530 4,342,395

CLASS 208
8 R 4,342,638
11 LE 4,342,639
11 R 4,342,640
89 4,342,641
130 4,342,642
134 4,342,643
139 4,342,644
184 4,342,645
326 4,342,646

CLASS 209
3 4,342,647
166 4,342,648
546 4,342,396

CLASS 210
108 4,342,649
606 4,342,650
636 4,342,651
698 4,342,652
734 4,342,653
744 4,342,654
749 4,342,655
770 4,342,656

CLASS 211
191 4,342,397

CLASS 215
1 C 4,342,398
12 R 4,342,399
256 4,342,400

CLASS 219
69 P B1 3,614,368
10.43 4,342,895
10.55 F 4,342,896
73.2 4,342,897
76.14 4,342,898
78.12 4,342,899
121 EN 4,342,900
121 PD 4,342,901
268 4,342,902
386 4,342,903
69 W B1 4,016,395

CLASS 220
301 4,342,401
343 4,342,402
345 4,342,403

CLASS 221
10 4,342,404

CLASS 222
105 4,342,405
442 4,342,406
485 4,342,407
566 4,342,408

CLASS 223
73 4,342,409

CLASS 224
243 4,342,410
319 4,342,411

CLASS 226
21 4,342,412
97 4,342,413

CLASS 227
109 4,342,414

CLASS 228
39 4,342,415

CLASS 229
23 BT 4,342,416
27 4,342,417
92.1 4,342,418

CLASS 233
1 A 4,342,419
28 4,342,420

CLASS 235
493 4,342,904

CLASS 236
92 B 4,342,421

CLASS 237
19 4,342,422

CLASS 239
1 4,342,423
233 4,342,424
424 4,342,425
457 4,342,426
585 4,342,427
651 4,342,428

CLASS 242
18 A 4,342,430
18 DD 4,342,429
55.3 4,342,431

56.2 4,342,432
72 B 4,342,433
82 4,342,434
107 4,342,435
199 4,342,436

CLASS 244
137 R 4,342,437

CLASS 248
73 4,342,438
544 4,342,439

CLASS 249
19 4,342,440
65 4,342,441
67 4,342,442

CLASS 250
201 4,342,905
205 4,342,906
227 4,342,907
4,342,908
231 SE 4,342,909
237 G 4,342,910
258 4,342,911
339 4,342,912
364 4,342,913
436 4,342,915
577 4,342,919

CLASS 251
137 4,342,443
315 4,342,444

CLASS 252
8.55 D 4,342,657
32.5 4,342,658
49.6 4,342,659
4,342,660
70 4,342,661
181.4 4,342,662
186.36 4,342,663
313 R 4,342,664
316 4,342,665
437 4,342,666
476 4,342,667
586 4,342,668
602 4,342,669

CLASS 260
156 4,342,683
159 4,342,684
239 A 4,342,685
239 BB 4,342,686
243.3 4,342,687
315 4,342,688
326.34 4,342,689
4,342,690
326.36 4,342,691
326.46 4,342,692
370 4,342,700
383 4,342,701
397.3 4,342,702
453 R X 4,342,703
466 4,342,704
465 D 4,342,705
501.15 4,342,706
543 A 4,342,707
665 R 4,342,708
978 4,342,709

CLASS 261
121 R 4,342,710

CLASS 264
41 4,342,711
63 4,342,712
71 4,342,713
81 4,342,714
184 4,342,715
225 4,342,716
328.8 4,342,717
345 4,342,718
504 4,342,719

CLASS 266
296 4,342,445

CLASS 267
35 4,342,446
64.23 4,342,447
119 4,342,448

CLASS 269
43 4,342,449
87 4,342,450
328 4,342,451

CLASS 272
69 4,342,452
97 4,342,453

CLASS 273
85 G 4,342,454
186 A 4,342,455
4,342,456
240 4,342,457
248 4,342,458

413 4,342,459

CLASS 277
1 4,342,460
30 4,342,461
101 4,342,462
138 Re.31,005
177 4,342,463
207 A 4,342,464

CLASS 280
87.02 W 4,342,465
87.03 4,342,466
204 4,342,467
605 4,342,468
718 4,342,469
785 4,342,470
804 4,342,471

CLASS 282
11.5 A 4,342,472
27.5 4,342,473

CLASS 285
61 4,342,474
137 R 4,342,475

CLASS 290
1 R 4,342,920
2 4,342,921

CLASS 292
201 4,342,476
307 R 4,342,477
352 4,342,478

CLASS 294
142 4,342,479

CLASS 296
100 4,342,480
217 4,342,481
221 4,342,482

CLASS 297
488 4,342,483

CLASS 299
5 4,342,484
39 4,342,485
86 4,342,486

CLASS 307
66 4,342,922
147 4,342,923
245 4,342,924
270 4,342,925
297 4,342,926
452 4,342,927
475 4,342,928

CLASS 308
3.9 4,342,487
15 4,342,488
187 4,342,489
187.1 4,342,490
239 4,342,491

CLASS 310
43 4,342,929
49 R 4,342,930
50 4,342,931
52 4,342,932
234 4,342,933
239 4,342,934
328 4,342,935
330 4,342,936

CLASS 312
244 4,342,492

CLASS 313
51 B1 Re. 30,315
113 4,342,937
174 4,342,938
4,342,939
198 4,342,940
374 4,342,941
477 R 4,342,942
479 4,342,943
499 4,342,944
505 4,342,945

CLASS 315
82 4,342,946
199 4,342,947
290 4,342,948
409 4,342,949

CLASS 318
611 4,342,950
625 4,342,951
654 4,342,952

CLASS 320
13 4,342,953
14 4,342,954

CLASS 322
25 4,342,955

CLASS 323
289 4,342,956

CLASS 324
73 PC 4,342,959
73 R 4,342,957
4,342,958
158 MG 4,342,960
179 4,342,961
232 4,342,962
431 4,342,963
450 4,342,964

CLASS 328
147 4,342,965

CLASS 330
268 4,342,966
277 4,342,967
295 4,342,968

CLASS 333
33 4,342,969
142 4,342,970
152 4,342,971
206 4,342,972

CLASS 335
2 4,342,973
10 4,342,974
205 4,342,975

CLASS 336
84 C 4,342,976

CLASS 337
4 4,342,977
6 4,342,978
41 4,342,979
407 4,342,980
4,342,981
4,342,982

CLASS 339
44 M 4,342,493
105 4,342,494
163 4,342,495
177 E 4,342,496
228 4,342,497
256 R 4,342,498

CLASS 340
347 CC 4,342,983
347 DA 4,342,984
525 4,342,985
539 4,342,986
567 4,342,987
679 4,342,988
723 4,342,989
724 4,342,990
726 4,342,991
764 4,342,992
779 4,342,993
784 4,342,994
825.5 4,342,995
870.16 4,342,996

CLASS 343
16 R 4,342,997
17.1 R 4,342,998
702 4,342,999
705 4,343,000
745 4,343,001
753 4,343,002
781 P 4,343,003
4,343,004
4,343,005
854 4,343,006

CLASS 346
46 4,343,007
74.2 4,343,008
108 4,343,009
110 R 4,343,010
138 4,343,011
139 R 4,343,012
140 R 4,343,013

CLASS 350
96.15 4,342,499
96.23 4,342,500
296 4,342,501
358 4,342,502
443 4,342,503

CLASS 354
7 4,342,504
23 D 4,342,505
27 4,342,506
143 4,342,507
152 4,342,508
173 4,342,509
216 4,342,510

CLASS 355
1 4,342,511
14 SH 4,342,512

74 4,342,513

CLASS 356
5 4,342,514
237 4,342,515
332 4,342,516
390 4,342,517

CLASS 357
38 4,343,014
55 4,343,015

CLASS 358
1 4,343,016
24 4,343,017
28 4,343,018
31 4,343,019
81 4,343,020
213 4,343,021

CLASS 360
36 4,343,022
40 4,343,023
74.6 4,343,024
104 4,343,025
113 4,343,026

CLASS 361
42 4,343,027
91 4,343,028
315 4,343,029
335 4,343,030

CLASS 362
80 4,343,031
276 4,343,032
307 4,343,033

CLASS 363
82 4,343,034

CLASS 364
453 4,343,035
518 4,343,036
521 4,343,037

CLASS 365
36 4,343,038

CLASS 369
28 4,343,039

CLASS 372
87 4,343,040

CLASS 373
94 4,342,878

CLASS 374
44 4,342,518

CLASS 375
14 4,343,041

CLASS 376
107 4,342,720
272 4,342,620
298 4,342,621
4,342,721
327 4,342,722

CLASS 378
4 4,342,916
34 4,342,917
99 4,342,914

CLASS 400
221 4,342,520
637 4,342,521

CLASS 401
214 4,342,522

CLASS 403
331 4,342,524

CLASS 404
6 4,342,525
117 4,342,523

CLASS 405
159 4,342,526
169 4,342,519
259 4,342,527

CLASS 408
6 4,342,528

CLASS 411
361 4,342,529
374 4,342,530

CLASS 414
46 4,342,531
299 4,342,532
396 4,342,533
734 4,342,534
744 A 4,342,535
4,342,536

CLASS 415
170 A 4,342,537
4,342,538

CLASS 416
9 4,342,539
140 4,342,540
186 R 4,342,541
224 4,342,542

CLASS 417
211.5 4,342,543
269 4,342,544

CLASS 418
26 4,342,545
47 4,342,546
84 4,342,547
195 4,342,548

CLASS 422
48 4,342,723
101 4,342,724
126 4,342,725
186.04 4,342,918
302 4,342,726

CLASS 423
3 4,342,727
61 4,342,728
127 4,342,729
215.5 4,342,730
234 4,342,731
242 4,342,732
4,342,733
298 4,342,734
356 4,342,735
450 4,342,736
522 4,342,737
579 4,342,738

CLASS 424
1 4,342,739
4,342,740
57 4,342,741
59 4,342,742
61 4,342,743
70 4,342,744
78 4,342,745
93 4,342,746
95 4,342,747
4,342,748
114 4,342,749
122 4,342,750
177 4,342,751
180 4,342,752
4,342,753
241 4,342,754
244 4,342,755
4,342,756
246 4,342,757
4,342,758
4,342,759
4,342,760
4,342,761
4,342,762
248.56 4,342,763
4,342,764
249 4,342,765
4,342,766
250 4,342,767
4,342,768
251 4,342,769
263 4,342,770
4,342,771
271 4,342,772
272 4,342,773
273 R 4,342,774
4,342,775
274 4,342,776
282 4,342,777
285 4,342,778
4,342,779
319 4,342,780
4,342,781
330 4,342,782
4,342,783
337 4,342,784

CLASS 425
150 4,342,549

CLASS 426
19 4,342,785
52 4,342,786
103 4,342,787
243 4,342,788
266 4,342,789
332 4,342,790
600 4,342,791

CLASS 427
34 4,342,792
44 4,342,793
54.1 4,342,794
75 4,342,795

136		4,342,796	8		4,342,819	163		4,342,831		CLASS 518		54.11		4,342,671	119		4,342,866
220		4,342,797	11		4,342,820	172		4,342,832	713		4,342,838	64		4,342,846		CLASS 542	
244		4,342,798	12		4,342,821	178		4,342,833		CLASS 521		66		4,342,847	417		4,342,867
	CLASS 428		97		4,342,822	182		4,342,834	25		4,342,839	231		4,342,848	431		4,342,868
35		4,342,799	103		4,342,823	255		4,342,835	137		4,342,840	326.4		4,342,857		CLASS 544	
36		4,342,800	108		4,342,824	316		4,342,836	163		4,342,841	333.7		4,342,849	21		4,342,869
91		4,342,801	505		4,342,825		CLASS 441		167		4,342,842	339		4,342,850	282		4,342,870
92		4,342,802		CLASS 431		61		4,342,558		CLASS 523		387		4,342,844		CLASS 546	
131		4,342,803	4		4,342,550		CLASS 485		116		4,342,677	403		4,342,851	65		4,342,871
149		4,342,804	10		4,342,551	5		4,343,042	177		4,342,674	481		4,342,852	186		4,342,872
151		4,342,805	183		4,342,552	231		4,343,043	179		4,342,682		CLASS 526				4,342,873
174		4,342,806	358		4,342,553		CLASS 474		353		4,342,670	68		4,342,853		CLASS 548	
180		4,342,807		CLASS 432		50		4,342,559	409		4,342,843	75		4,342,854	309		4,342,874
194		4,342,808	13		4,342,554	157		4,342,560	427		4,342,673	124		4,342,855		CLASS 549	
215		4,342,809	115		4,342,555	242		4,342,561		CLASS 524		125		4,342,856	229		4,342,693
		4,342,810		CLASS 434			CLASS 493		29		4,342,672	317		4,342,858	259		4,342,699
220		4,342,811	22		4,342,556	124		4,342,562	100		4,342,680		CLASS 528		273		4,342,694
286		4,342,812	260		4,342,557	168		4,342,563	108		4,342,681	59		4,342,860	315		4,342,695
296		4,342,813		CLASS 435		195		4,342,564	401		4,342,679			4,342,861	331		4,342,696
383		4,342,814	7		Re.31,006		CLASS 501		458		4,342,676	64		4,342,859	396		4,342,697
522		4,342,815			4,342,826	90		4,342,837	539		4,342,678	176		4,342,862	505		4,342,698
	CLASS 429		26		4,342,827				762		4,342,675	360		4,342,863		CLASS 560	
13		4,342,816	41		4,342,828					CLASS 525			CLASS 534		64		4,342,875
	CLASS 430		118		4,342,829				53		4,342,845	18		4,342,864	77		4,342,876
5		4,342,817	161		4,342,830							76		4,342,865	130		4,342,877
7		4,342,818															

CLASSIFICATION OF DESIGNS

D2—	320	265,605	D7—	40	265,620		75	265,634		66	265,648		34	265,662	D22—	18	265,676
	415	265,606		60	265,621	D11—	6	265,635		70	265,649		41	265,663		99	265,677
D3—	71	265,607		73	265,622			265,636		79	265,650		59	265,664	D23—	55	265,678
	73	265,608		106	265,623			265,637		80	265,651		64	265,665		57	265,679
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36 :	T102,104	39 :	T102,101		T102,103						

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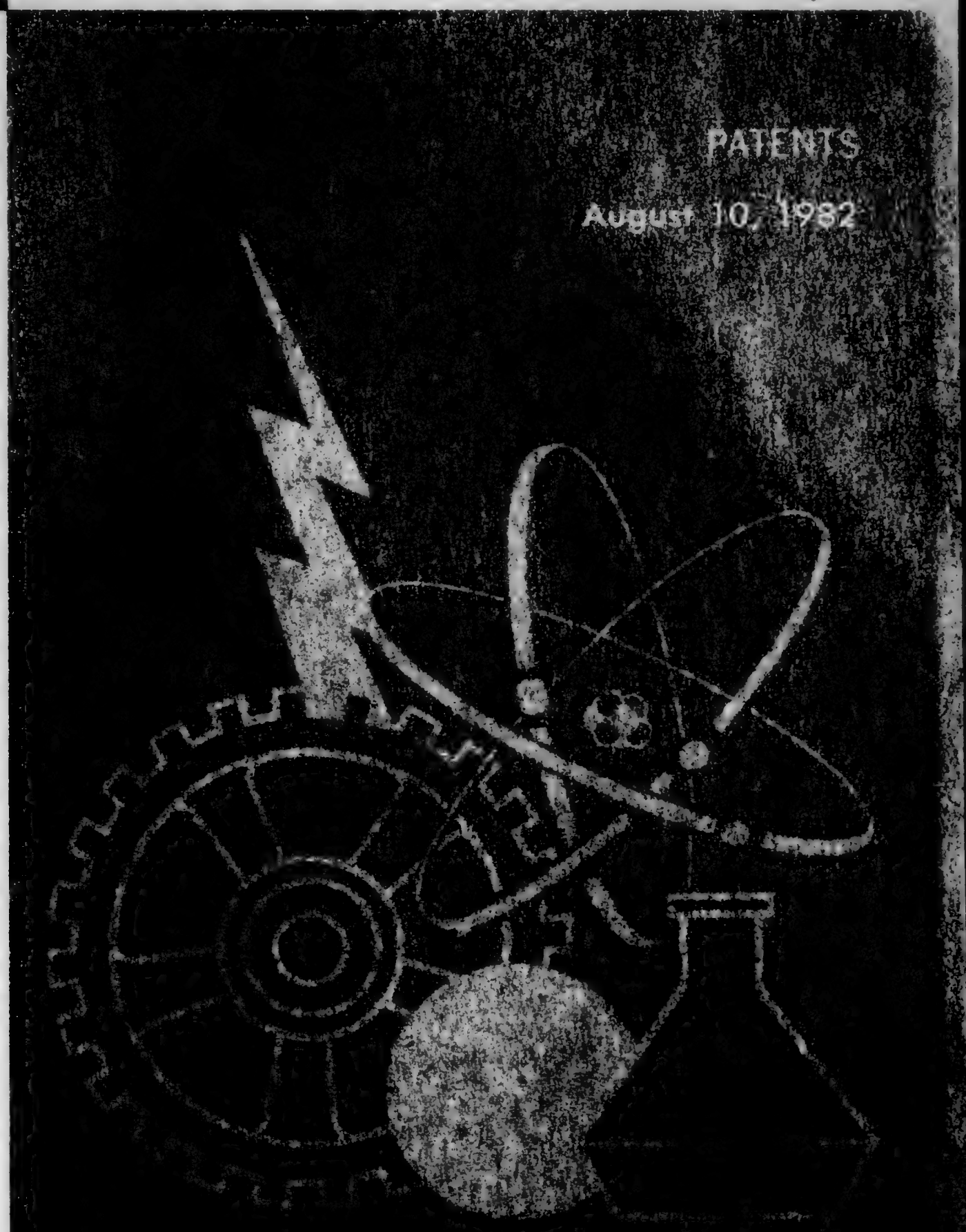
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For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

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International Fees	
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GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,573,173, Re. S.N. 384,494, Filed June 3, 1982, Cl. 203/21, PROCESS FOR RECOVERING EXCESS AMMONIA IN UREA SYNTHESIS BY DIRECT CONTACT CONDENSATION WITH LIQUID AMMONIA, Eiji Otsuka, et al., Owner of Record: *Mitsui Toatsu Chemicals, Inc., Tokyo, Japan,* Attorney or Agent: Eugene Sabol, et al., Ex. Gp.: 177

3,640,950, Re. S.N. 345,544, Filed Feb. 3, 1982, Cl. 260/45.75 K, HALOGENATED RESINS STABILIZED WITH NOVEL COMPOSITIONS, Lewis B. Weisfeld, Owner of Record: *Carstah Corp., Reading, Ohio,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 143

3,943,493, Re. S.N. 386,841, Filed June 9, 1982, Cl. 364/200, SHARED PROCESSOR DATA ENTRY SYSTEM, Richard M. Shelton, Owner of Record: *Sperry Rand Corp., New York, N.Y.,* Attorney or Agent: B. Franklin Griffin, et al., Ex. Gp.: 237

4,009,385, Re. S.N. 385,024, Filed June 4, 1982, Cl. 372/38, LASER CONTROL CIRCUIT, Darrell Dean Sell, Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: R. B. Ardis, Ex. Gp.: 352

4,139,302, Re. S.N. 366,903, Filed Apr. 9, 1982, Cl. 356/32, METHOD AND APPARATUS FOR INTERFEROMETRIC DEFORMATION ANALYSIS, Yau Y. Hung, et al., Owner of Record: *Engineering Consultants, Inc., Rochester, Mich.,* Attorney or Agent: Allen M. Krass, et al., Ex. Gp.: 257

4,191,182, Re. S.N. 354,054, Filed Mar. 2, 1982, Cl. 128/214R, METHOD AND APPARATUS FOR CONTINUOUS PLASMAPHERSIS, Robert P. Popovich, et al., Owner of Record: *Hemotherapy Instruments, Inc., Austin, Tex.,* Attorney or Agent: Michael T. McLemore, et al., Ex. Gp.: 335

4,206,344, Re. S.N. 383,199, Filed May 28, 1982, Cl. 219/507, ELECTRIC POWER CONTROLLERS, Karl Fischer, et al., Owner of Record: *E.G.O. Regeltechnik, GmbH., Oberderdingen, Germany,* Attorney or Agent: J. Rodman Steele, Jr., et al., Ex. Gp.: 213

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4,206,344, Re. S.N. 383,270, Filed May 28, 1982, Cl. 219/507, ELECTRIC POWER CONTROLLERS, Karl Fischer, et al., Owner of Record: *E.G.O. Regeltechnik, GmbH Oberderingin, Germany,* Attorney or Agent: J. Rodman Steele, Jr., et al., Ex. Gp.: 213

4,207,707, Re. S.N. 383,461, Filed June 1, 1982, Cl. 49/501, METAL CLADDED WINDOW PRODUCTS, Joseph W. Holdiman, et al., Owner of Record: *Lancer Corp., Dubuque, Iowa,* Attorney or Agent: Robert E. O'Neill, Ex. Gp.: 354

4,237,443, Re. S.N. 387,343, Filed June 11, 1982, Cl. 338/202, MOVABLE WIPER FOR POTENTIOMETERS, Ernst Gass, Owner of Record: *Novotechnik KG Offterdinger & Co., Ostfildern, Germany,* Attorney or Agent: Henry L. Shenier, et al., Ex. Gp.: 213

4,247,306, Re. S.N. 386,440, Filed June 8, 1982, Cl. 51/322, DETECTION OF FLAWS IN METAL MEMBERS, Arnule Berge, Owner of Record: *Elkem-Spigerverket A/S, Oslo, Norway,* Attorney or Agent: William D. Lucas, et al., Ex. Gp.: 323

4,259,340, Re. S.N. 379,793, Filed May 19, 1982, Cl. 424/269, AURONE DERIVATIVES, Stephen Richard Baker, Owner of Record: *Lilly Industries Ltd., London, England,* Attorney or Agent: Authur R. Whale, et al., Ex. Gp.: 125

4,303,365, Re. S.N. 385,851, Filed June 7, 1982, Cl. 414/47, CONTINUOUS CHAIN STACKER/UNSTACKER, Maynard R. Euverard, et al., Owner of Record: *Velten & Pulver, Inc., Chicago, Ill.,* Attorney or Agent: Edward U. Dithmar, Ex. Gp.: 314

4,315,642, Re. S.N. 386,737, Filed June 9, 1982, Cl. 281/33, INTEGRALLY MOLDED COVERS AND SPINES FOR LOOSELEAF BOOKS, Dominic R. Errichiello, Owner of Record: *Glenbard Molded Binder, Inc., Lombard, Ill.,* Attorney or Agent: Herbert B. Keil, et al., Ex. Gp.: 322

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,982,953, Reexam. No. 90/000,226, Requested: July 7, 1982, Cl. 501/127, REFRACTORY CASTING, RAMMING OR STAMPING MASS, Paul Lennart Ivarsson, et al., Owner of Record: *Requester,* Attorney or Agent: Burns, Doane, Swecker & Mathis, Ex. Gp.: 113, Requester: Hoganas Aktiebolag, Hoganas, Sweden

4,165,717, Reexam. No. 90/000,227, Requested: July 9, 1982, Cl. 122/40, PROCESS FOR BURNING CARBONACEOUS MATERIALS, Lothar Reh, et al., Owner of Record: *Metallgesellschaft AG, Frankfurt am Main 1, West Germany,* Attorney or Agent: Felfe &

Lynch, Ex. Gp.: 340, Requester: Owner of Record

4,295,143, Reexam. No. 90/000,225, Requested: July 8, 1982, Cl. 343/8, LOW WIND LOAD MODIFIED FARABOLIC ANTENNA, John R. Winegard, et al., Owner of Record: *Conifer Corp., Burlington, Iowa,* Attorney or Agent: Robert C. Dorr, Ex. Gp.: 250, Requester: Owner of Record

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Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,236,709, Bandag, Inc., TIRE RECAPPING PROCESS, **filed** Feb. 18, 1982, D.C., E.D. Tex. (Texarkana), Doc. TX-82-27-CA, *Bandag, Inc.* v. *Smith Tire Co.* **Same, filed** June 3, 1982, D.C., M.D. Ga. (Macon), Doc. 82-204-3-MAC, *Bandag, Inc.* v. *Wall Tire Distributors, Inc.*

3,306,465, Francis P. Brennan, WARDROBE HANGER BAR WITH CAP LOCKING MEANS, **filed** May 13, 1976, D.C.N.J. (Camden), Doc. 76-0887, *Francis P. Brennan* v. *Garment Bar, Inc.* Stipulation of Settlement and Order of Dismissal without prejudice filed June 10, 1982.

3,330,557, Niels O. Young, MEANS FOR FORMING A RIGID LOOP FROM A LIMP LOOP; **3,374,933, same,** LOOP ERECTION SYSTEM; **3,398,949, same,** METHOD OF FORMING A RIGID LOOP FROM A LIMP LOOP; **3,406,967, same,** LOOP ERECTING DEVICE, **filed** May 11, 1982, D.C. Mass. (Boston), Doc. 82-1229-ML, *Bio-Rad Laboratories, Inc.* v. *Toys (R) Us, Inc.*

3,338,482, Clarence W. Jordan, DISPENSING BOTTLES, **filed** Feb. 5, 1982, D.C., W.D. Okla. (Oklahoma City), Doc. 82-180-E, *Continental Plastics Co.* v. *Clarence W. Jordan.* Case hereby dismissed without prejudice to its being refiled in a district where personal jurisdiction over draft is appropriate. Filed Apr. 7, 1982.

3,361,471, Warren S. Radford, BACK SUPPORT, **filed** May 26, 1982, D.C., N.D. Ohio (Cleveland), Doc. C82-1382, *Warren S. Radford* v. *Florida Orthopedics, Inc.*

3,363,876, The Moorform Corp., PRECAST CONCRETE MANHOLE BASE MOLDING APPARATUS; **4,103,862, same,** APPARATUS FOR PRODUCTION OF PRECAST MANHOLE BASES; **4,177,229, same,** METHOD FOR PRODUCTION OF PRECAST MANHOLE BASES, **filed** Apr. 6, 1982, D.C., W.D. Va. (Roanoke), Doc. 82-0226, *The Moorform Corp.* v. *Salem Concrete Products, Inc.*

3,374,933. (See 3,330,557.)

3,385,140, Carpenter Mfg. Co., Inc., FLAT MULTICONDUCTOR STRIPPING APPARATUS, **filed** Aug. 13, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 4618, *Carpenter Mfg. Co., Inc.* v. *American Navigator.* Defendant is permanently enjoined from further infringing Plaintiff's patent. Filed Apr. 26, 1982.

3,398,949. (See 3,330,557.)

3,402,407, Edythe D. Andrews, DRAIN COVER, **filed** May 17, 1982, D.C.N.J. (Newark), Doc. 82-1556, *Edward O'Malley Valve Co.* v. *Melard Mfg. Corp.*

3,402,707, Paul Heron, VIBRATIONLESS ENGINES, **filed** May 27, 1982, D.C.N.J. (Newark), Doc. 82-1699, *Paul Heron* v. *American Honda Motor Co., Inc.*

3,406,967. (See 3,330,557.)

3,459,199, Jerry F. Connell, TEASING AND UNSNARLING IMPLEMENT, **filed** June 3, 1982, D.C., N.D. Ala. (Birmingham), Doc. 82-C-1261-M, *Jerry F. Connell, et al.* v. *K Mart Corp.*

3,537,725, C. I. Frost & Son, Inc., TROUGH-LIKE SEAL FOR ROLLER ASSEMBLY, **filed** May 24, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-71923, *C. I. Frost & Son, Inc.* v. *Jervis B. Webb Co.*

3,554,495, Bach, Rothman and Pascual, PRECAST CONCRETE RAIL CONSTRUCTION; **3,617,028, same,** PRECAST REINFORCED CONCRETE POST AND RAIL ASSEMBLY, **filed** May 19, 1982, D.C., M.D. Fla. (Orlando), Doc. 82-248-ORL-CIV-EK, *Concrete Unlimited, Inc.* v. *Oldaker Construction Co., Inc., et al.*

3,579,696, Rite-Hite Corp., DOCKBOARD; **3,728,753, same, filed** Oct. 22, 1980, D.C., W.D.N.Y. (Buffalo), Doc. 80-991C, *Rite-Hite Corp.* v. *Blue Giant Equipment of America, Inc.* Order of Dismissal without prejudice filed June 3, 1982.

3,589,177, Angelo L. Merlo, COMBUSTION MICROWAVE DIAGNOSTIC SYSTEM, **filed** May 11, 1982, D.C., E.D. Mich. (Ann Arbor), Doc. 82-60157, *Angelo L. Merlo* v. *Jodon Engineering Association, Inc.*

3,590,326, Westinghouse Electric Corp., OVERCURRENT PROTECTIVE DEVICE; **3,818,275, same,** CIRCUIT INTERRUPTER INCLUDING IMPROVED TRIP CIRCUIT USING CURRENT TRANSFORMERS; **3,826,951, same,** CIRCUIT BREAKER WITH REPLACEABLE RATING ADJUSTER AND INTERLOCK MEANS; **3,852,660, same,** CIRCUIT BREAKER FAULT SIMULATOR; **3,924,160, same,** CIRCUIT BREAKER WITH DETACHABLY CONNECTED FAULT SIMULATOR, **filed** Apr. 3, 1979, D.C. Del. (Wilmington), Doc. 79-174, *Westinghouse Electric Corp.* v. *Gould, Inc., et al.* Stipulation and Order dismissing action without prejudice filed May 27, 1982.

3,599,637, Boris Schwartz, INTRAVENOUS CATHETER ASSEMBLY, **filed** May 25, 1982, D.C.N.J. (Newark), Doc. 82-1653, *C. R. Bard, Inc.* v. *Boris Schwartz.*

3,617,028. (See 3,554,495.)

3,646,624, Bridgewater Mfg. Corp., DISPOSABLE DRAW SHEET, **filed** June 7, 1982, D.C.N.J. (Trenton), Doc. 82-1862, *Bridgewater Mfg. Corp.* v. *Clopay Corp., et al.*

3,648,768, Gunter Scholl, HEAT-EXCHANGE COMPONENTS; **4,112,921,** Calvin D. MacCracken, METHOD AND SYSTEM FOR UTILIZING A FLEXIBLE TUBING SOLAR COLLECTOR, **filed** Mar. 5, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1378, *Bio-Energy Systems, Inc.* v. *Environmental Resources, Inc.*

3,682,418, Garden Island Helicopters, Inc., AERIAL SPRAYING DEVICE, **filed** Jan. 6, 1978, D.C. Hawaii (Honolulu), Doc. 78-0003, *Garden Island Helicopters, Inc., et al.* v. *Murrayair, Ltd., et al.*

3,712,951, Ovation Instruments, Inc., BRIDGE TYPE PIEZOELECTRIC PICKUP FOR STRINGED INSTRUMENTS, **filed** June 6, 1982, D.C. Conn. (Hartford), Doc. H-82-530, *Ovation Instruments, Inc.* v. *Morlin Industries, Inc.*

3,728,753. (See 3,579,696.)

3,818,275. (See 3,590,326.)

3,826,951. (See 3,590,326.)

3,862,660. (See 3,590,326.)

3,857,774, Imperial Metal Industries (Kynoch) Ltd., CATHODES FOR ELECTROLYTIC CELL, **filed** Apr. 30, 1982, D.C.S.C. (Columbia), Doc. 82-846-6, *IMI Kynoch, Ltd.* v. *Nassau Recycle Corp., et al.* **Same, filed** May 27, 1982, D.C.N.J. (Newark), Doc. 82-1688, *Titanium Industries* v. *IMI Kynoch Ltd.*

3,863,691, Maschinenfabrik Zuckerman Komm-Ges, CONTOUR COPYING LATHE, **filed** Sept. 9, 1981, D.C. District of Columbia (Wash. D.C.), Doc. 81-2160, *A. C. Compacting Presses, Inc.* v. *Maschinenfabrik Zuckerman Komm-Ges.* Stipulation of dismissal with prejudice filed Apr. 15, 1982.

3,885,932, Super Products Corp., DUST FILTRATION SYSTEM; **3,973,935, same, filed** May 16, 1978, D.C., N.D. Ill. (Chicago), Doc. 78 C 1929, *The Meyers-Sherman Co.* v. *Super Products Corp.* Cause dismissed with prejudice on May 4, 1982.

3,897,056, Turco Mfg. Co., SAFETY STRAP SWING SEAT, **filed** May 22, 1981, D.C., S.D. Ill. (E. St. Louis), Doc. 81-3219, *Turco Mfg. Co.* v. *The May Dept. Stores Co., et al.* Defendant is hereby permanently enjoined and restrained from further infringing Plaintiff's patent. Filed Apr. 26, 1982.

3,904,506, Shatterproof Glass Corp., APPARATUS FOR CONTINUOUS PRODUCTION OF SPUTTER-COATED GLASS PRODUCTS; **3,925,182, same,** METHOD FOR CONTINUOUS PRODUCTION OF SPUTTER-COATED GLASS PRODUCTS, **filed** Apr. 23, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-71481, *Leybold-Heraeus GmbH* v. *Shatterproof Glass Corp.*

3,913,520, Precision Thin Film Corp., HIGH VACUUM DEPOSITION APPARATUS; **4,107,350, same** METHOD FOR DEPOSITING FILM ON A SUBSTRATE; **4,210,701, same,** METHOD AND APPARATUS FOR DEPOSITING FILM ON A SUBSTRATE, AND PRODUCTS PRODUCED THEREBY, **filed** Dec. 8, 1981, D.C., C.D. Calif, (Los Angeles), Doc. 81 6198, *Precision Thin Film Corp.* v. *Plastar Optical Laboratories, Inc., et al.* Plaintiff is owner of Pat. Nos. 3,913,520, 4,107,350 and 4,210,701, which are good and valid. Defendant is permanently enjoined from further infringement of Plaintiff's patents. Filed May 7, 1982.

3,924,160. (See 3,590,326.)

3,925,182. (See 3,904,506.)

3,944,760, CTS Corp., SWITCH ASSEMBLY HAVING SLIDER ACTUATOR INSULATING PLATE INSERTED BETWEEN NORMALLY CLOSED CONTACTS, **filed** Apr. 28, 1982, D.C., N.D. Calif. (San Francisco), Doc. 82-1850, *CTS Corp.* v. *Stanford Applied Engineering, Inc.*

3,960,006, Alco Standard Corp., NON-DESTRUCTIVE TEST APPARATUS AND METHOD FOR A MATERIAL HAVING A CAVITY THEREIN, **filed** May 27, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-2352, *Alco Standard Corp.* v. *Westinghouse Electric Corp.*

3,973,935. (See 3,885,932.)

3,989,110, Medlock and Ragsdale, GREEN ONION HARVESTER, **filed** Sept. 25, 1981, D.C., N.D. Calif. (San Francisco), Doc. C81-3855 SAW, *H. Gene Medlock and Herman Ragsdale,* v. *Oshita, Inc., et al.* Complaint and Counterclaims dismissed with prejudice. Filed Apr. 22, 1982.

3,993,520, Werner & Wiele, WINDSHIELD REPAIR APPARATUS AND METHOD, **filed** Dec. 3, 1981, D.C. Minn. (Minneapolis), Doc. 4-81-Civ. 835, *Novus, Inc. and Frank D. Werner* v. *Hare D. Stuart, et al.* **Same, filed** June 7, 1982, D.C. Minn. (Minneapolis), Doc, 4-82 Civil 802, *Novus, Inc. and Frank D. Werner* v. *International Glass Repair of St. Paul Ltd., et al.*

4,018,135, Consolidated Technologies Corp., HYDRAULICALLY POWERED IMPACT DEVICE, **filed** Jan. 19, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 0309, *Consolidated Technologies Corp.* v. *Edgar J. Justus.* Case dismissed without prejudice on June 16, 1982.

4,034,534, John L. Taylor, LOUVERED CEILING, **filed** June 9, 1982, D.C., S.D.N.Y., Doc. 82-Civ-3789, *Intalite International, N.V.* v. *Neo Ray Lighting Systems, Inc., et al.*

4,046,923, L. D. Schreiber Cheese Co., Inc., PACKAGE WITH STAGGERED PRODUCT SLICES AND PROCESS FOR PRODUCING THE SAME, **filed** Sept. 7, 1977, D.C., W.D. Pa. (Pittsburgh), Doc. 77-1032, *L. D. Schreiber Cheese Co., Inc.* v. *Clearfield Cheese Co., Inc. Plaintiff's Pat. No. 4,046,934, Inc.* v. *Clearfield Cheese Co., Inc.* Plaintiff's Pat. No. 4,046,923 determined to be invalid for obviousness under 35 U.S.C. §103. Judgment hereby entered for Defendant and action dismissed on May 20, 1982.

4,062,648, Frank J. Nola, POWER FACTOR CONTROL SYSTEM FOR AC INDUCTION MOTORS, **filed** Jan. 23, 1981, D.C.N.J. (Newark), Doc. 81-207, *Cynex Mfg. Corp.* v. *Mercury International Sales, Inc., et al.* Default Judgment for Plaintiff filed May 26, 1982.

4,062,481, Tandy Brands, Inc., PISTOL HOLSTER; **D. 239,532, same,** HOLSTER, **filed** Feb. 22, 1982, D.C., N.D. Tex. (Ft. Worth), Doc. CA4-82-89, *Tandy Brands, Inc.* v. *Smith & Wesson, Inc.*

4,064,382, Gulf & Western Industries, Inc., IGNITION DISTRIBUTOR BREAKER CONTACT POINT SET HAVING GROUNDING STRAPS DISPOSED BETWEEN CAPACITOR AND CONTACT TERMINAL, **filed** May 24, 1982, D.C. Conn. (New Haven), Doc. N-82-262, *Gulf & Western Industries, Inc.* v. *Echlin, Inc.*

4,065,866, Connecticut Valley Mfg., Inc., MUZZLE LOADING FIREARM; **Reg. No. 1,075,909,** (CVA AND DESIGN), Connecticut Valley Arms, Inc., **filed** June 14, 1982, D.C. Conn. (Hartford), Doc. H-82-568, *Connecticut Valley Arms, Inc. & Connecticut Valley Mfg., Inc.* v. *Traditions, Inc.*

4,079,225, Allan S. Warner, FIBER OPTIC/PHOTON DETECTOR FOR BRAZING MACHINE; **4,224,496,** Riordan and Mangan, METHOD AND APPARATUS FOR CONTROLLING A BRAZING MACHINE, **filed** Jan. 25, 1982, D.C.N.J. (Newark), Doc. 82-208, *Joyal Products, Inc.* v. *Irtronics, Inc.* Consent order for permanent injunction filed June 3, 1982.

4,102,383, Clopay Corp., WINDOW SHADE; **4,102,384, same, filed** Dec. 9, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 6879, *Clopay Corp.* v. *Graber Industries, Inc.* Stipulated Order of Dismissal without prejudice filed Apr. 27, 1982.

4,102,384, Clopay Corp., WINDOW SHADE, **filed** Dec. 9, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 6878, *Clopay Corp.* v. *Newell Companies, Inc.*

4,102,384. (See 4,102,383.)

4,103,862. (See 3,363,876.)

4,107,350. (See 3,913,520.)

4,111,477, Paul D. Rigali, WINDOW GUARD RELEASE, **filed** May 24, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-2559, *Paul D. Rigali* v. *Los Alimitos Ornamental Castings, Inc.*

4,112,921. (See 3,648,768.)

4,129,129, Bruce A. Amrine, VENOUS RETURN CATHETER AND A METHOD OF USING THE SAME, **filed** Apr. 1, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1618, *Minnesota Mining & Mfg. Co.* v. *C. R. Bard, Inc.*

4,150,265, Buildex, Inc., HINGE-ACTIVATED SWITCH, **filed** May 21, 1982, D.C., E.D.N.Y. (Brooklyn), Doc. 82-1418, *Buildex, Inc.* v. *Kason Industries, Inc.*

4,151,416, Richey, Wake, Wilson and Cheiky, DYNAMIC UNIFORM FLOOD CORRECTION FOR RADIOISOTOPE CAMERAS; **4,220,860,** Carlson and Jagatich, TOMOGRAPHIC SCANNER WITH CADMIUM TUNGSTATE SCINTILLATION CRYSTALS, **filed** May 4, 1982, D.C.N.J. (Newark), Doc. 82-1391, *Technicare Corp.* v. *Elscint Ltd.*

4,176,921, Carrera International Corp., EYEGLASSES HAVING REMOVABLE LENSES, **filed** Apr. 12, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2320 GLG, *Carrera International Corp.* v. *Riviera Trading Corp.* Plaintiff's Pat. No. 4,176,921 is good and valid in law. Defendant is enjoined from further infringing Plaintiff's

patent. Filed June 9, 1982. **Same, filed** June 23, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4113, *Carrera International Corp.* v. *John Tworoger, Inc.*

4,177,229. **(See 3,363,876.)**

4,187,335, Michael D. Labate, PROCESS FOR TREATING COKE OVEN DOORS AND JAMBS TO PREVENT THE BUILD UP OF TAR THEREON; **4,251,322, same, filed** Feb. 2, 1982, D.C., N.D. Ohio (Cleveland), Doc. C-82-0244-Y, *Michael D. Labate* v. *United Refractories, Inc.* Stipulation and Order of dismissal without prejudice filed Apr. 22, 1982.

4,204,225, Wisconsin Alumni Research Foundation, REAL-TIME DIGITAL X-RAY SUBTRACTION IMAGING; **4,204,226, same,** REAL-TIME DIGITAL X-RAY TIME INTERVAL DIFFERENCE IMAGING, **filed** May 4, 1982, D.C., N.D. Calif. (San Francisco), Doc. 82 2010 EFL, *Adac Laboratories* v. *Wisconsin Alumni Research Foundation.*

4,204,226. **(See 4,204,225.)**

4,208,946, Norman Van Sickle, FIREARM ALIGNMENT AND SUPPORT APPARATUS, **filed** May 21, 1982, D.C. Neb. (Omaha), Doc. 82-0-238, *William E. Venard* v. *Chief Industries, Inc., et al.*

4,210,701. **(See 3,913,520.)**

4,213,548, Bruce G. Wood, INSULATIVE WIDE STYLE WATCHBAND, **filed** Nov. 14, 1980, D.C., S.D. Calif. (San Diego), Doc. 80-1812-E(I), *Bruce G. Wood* v. *Ocean Trends, et al.* Dismissal with prejudice filed May 28, 1982.

4,215,431, John Nady, WIRELESS TRANSMISSION SYSTEM, **filed** Apr. 28, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82-1842SC, *Sam Ash Music Corp.* v. *John Nady.*

4,220,860. **(See 4,151,416.)**

4,224,496, **(See 4,079,225.)**

4,234,785, Frederick L. Lefebvre, LIQUID LEVEL RESPONSIVE CONTROL DEVICE, **filed** May 7, 1982, D.C., N.D. Ohio (Cleveland), Doc. C82-1259, *Cleveland Process Corp. & Frederick L. Lefebvre* v. *Process Technology, Inc.*

4,248,975, Kenneth P. Satterly, A RIGID SHRINK STABLE POLYURETHANE FOAM DERIVED FROM AN ADDUCT OF AN ALKYLENE OXIDE HAVING AT LEAST THREE CARBON ATOMS AND A POLYOL HAVING AT LEAST FOUR HYDROXY GROUPS AND BLOWN WITH A FLUORINATED-CHLORINATED ALKANE, **filed** Nov. 19, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7062 (WCC), *Mobay Chemical Corp.* v. *Witco Chemical Corp.* Plaintiff dismisses action without prejudice on May 21, 1982.

4,251,322. **(See 4,187,335.)**

4,253,624, Robert E. Colbert, WELDING WIRE DISPENSER, **filed** May 19, 1982, D.C., S.D. Ohio (Dayton), Doc. C-3-82-242, *National-Standard Co.* v. *Hobart Brothers Co.*

4,287,993, Vito Licari, ADJUSTABLE RACK FOR HANGING ARTICLES, **filed** May 7, 1982, D.C.N.J. (Newark), Doc. 82-1449, *Basic Line, Inc.* v. *K-Del Corp.*

4,301,206, Medline Industries, Inc., SURGICAL WRAPPER, **filed** May 24, 1982, D.C., N.D. Ill. (Chicago), Doc. 82C3212, *Medline Industries, Inc.* v. *American Institutional Textile Co., Inc.*

4,305,091, James Carl Cooper, ELECTRONIC NOISE REDUCING APPARATUS AND METHOD, **filed** Apr. 19, 1982, D.C., N.D. Ohio (Cleveland), Doc. C82-1060, *James Carl Cooper* v. *Harris Corp., et al.*

4,310,029, Matthew Dudek, EXPANDIBLE TUBE PLUG, **filed** May 3, 1982, D.C.N.J. (Newark), Doc. 82-1389, *Exxon Corp.* v. *Matthew Dudek.*

4,314,665, Michael R. Levine, ELECTRONIC THERMOSTAT, **filed** Apr. 26, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-60132, *Allen M. Krass* v. *Chester L. Davis, Jr.*

Re. 30,315, Perkin-Elmer Corp., PRECISION BASE MERCURY VAPOR LAMP, **filed** Apr. 28, 1982, D.C., N.D. Calif. (San Francisco), Doc. 82-1861 SC, *Perkin-Elmer Corp.* v. *Actinic Spectra, Inc.*

D. 239,532. **(See 4,062,481.)**

D. 251,833, Rubbermaid Commercial Products, Inc., DOLLY FOR REFUSE CONTAINER, **filed** June 11, 1979, D.C., E.D. Mo. (St. Louis), Doc. 79-0702, *Contico International, Inc.* v. *Rubbermaid Commerical Products, Inc.* Plaintiff is restrained and enjoined from further infringing Defendant's patent. Filed May 7, 1982.

International Nonproprietary Names for Pharmaceutical Substances

The World Health Organization has published a list of proposed drug names which are being considered for International Nonproprietary Names. The Organization allows interested persons an opportunity to make comments or objections before International Nonproprietary Names are adopted.

A copy of the list of proposed names, which was published in the Apr. 1982 *WHO Chronicle,* may be obtained by writing or calling the Office of the Director of the Trademark Examining Operation, Box 5, Patent and Trademark Office, Washington, DC 20231, telephone (703) 557-3268. Comments or objections should be sent directly to the Pharmaceuticals Unit, World Health Organization, Ave. Appia, 1211 Geneva 27, Switzerland, not later than Aug. 31, 1982. Comments or objections should refer to the drug in question, cite the proposed name, and state clearly and in appropriate detail the comments or objections (legal, technical, scientific, or other). The individual making the comments or objections should be identified.

July 7, 1982.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

National Technical Information Service

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Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-047,172. (Patent 4,329,368) PROCESS FOR PRESERVATION OF STORED WOOD CHIPS. Dept. of Agriculture.

SN 6-054,926. (Patent 4,328,343) COBALT-CATALYZED ONE-STEP SYNTHESIS OF ANNULATED PYRIDEINES. Dept. of Health & Human Services.

SN 6-160,753. (Patent 4,327,710) ADDITIVES IN RESEALED ERYTHROCYTES FOR DISSEMINATING CHEMICALS VIA THE CIRCULATORY SYSTEM. Dept. of Agriculture.

SN 6-165,336. (Patent 4,328,309) METHOD FOR PRODUCING TRIPDIOLIDE TRIPTOLIDE AND CELASTROL. Dept. of Health & Human Services.

SN 6-213,446. (Patent 4,328,901) MULTILAYER PRESSURE VENT FOR EXPLOSION PROOF ENCLOSURES. Dept. of Interior.

SN 6-266,462. HISTAMINE PHOTOAFFINITY ANALOG: SPECIFIC IRREVERSIBLE ANTAGONISM OF HISTAMINE RECEPTORS BY PHOTOAFFINITY ACTUATED COMPOUNDS. Dept. of Health & Human Services.

SN 6-288,260. (Patent 4,329,337) TURKEY SEMEN EXTENDER. Dept. of Agriculture.

SN 6-346,314. THREE-ELEMENT ANTENNA. Dept. of Commerce.

SN 6-348,575. DEVICE FOR MEASUREMENT OF THE SPECTRAL WIDTH OF NEARLY MONOCHROMATIC SOURCES OF RADIANT ENERGY. Dept. of Commerce.

SN 6-348,576. STABILIZATION MECHANISM FOR OPTICAL INTERFEROMETER. Dept. of Commerce.

SN 6-148,491. (Patent 4,324,661) APPARATUS AND METHOD FOR CONTINUOUS COUNTERCURRENT EXTRACTION AND PARTICLE SEPERATION. Dept. of Health & Human Services.

SN 6-247,684. (Patent 4,327,233) METHOD FOR PRODUCING CARBOCYCLIC COMPOUNDS FROM CYCLIC SULFIDE. Dept. of Commerce.

SN 6-140,380. (Patent 4,330,090) METHOD FOR WROUGHT AND CAST ALUMINUM SEPERATION. Dept. of the Interior.

SN 6-160,752. (Patent 4,330,443) DRY CHEMICAL PROCESS FOR GRAFTING ACRYLIC AND METHYL ACRYLIC ESTER AND AMIDE MONOMERS ONTO STARCH-CONTAINING MATERIALS. Dept. of Agriculture.

SN 6-266,225. (Patent 4,330,509) SEPERATION OF ZIRCONIUM AND URANIUM. Dept. of Interior.

SN 6-284,088. HIGHLY POTENT 6-KETO-MORPHINANS BELONGING TO THE 14-HYDROXY-SERIES AND PREPARATION. Dept. of Health & Human Services.

SN 6-284,089. 6-KETO-MORPHINAN ANALGESICS. Dept. of Health & Human Services.

SN 6-351,588. METHOD FOR THE IDENTIFICATION AND PURIFICATION OF HUMAN LUNG TUMOR-ASSOCIATED ANTIGENS (HLTAA) AND CLINICAL DETECTION AND DETERMINATION OF THESE ANTIGENS. Dept. of Health & Human Services.

SN 6-259,766. INHIBTION OF NEURAL DECLINE WITH AGING. Dept. of Health & Human Services.

SN 6-329,590. COMENTITIOUS DENTAL COMPOSITIONS WHICH DO NOT INHIBIT POLYMERIZATION. Dept. of Health & Human Services.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 10, 1982

Re. 30,942	4,303,441	4,320,151	4,328,749
D. 258,496	4,305,974	4,320,186	4,328,857
D. 258,523	4,306,907	4,320,271	4,329,086
D. 264,097	4,307,112	4,320,631	4,329,150
D. 264,341	4,307,806	4,320,768	4,329,163
3,953,011	4,308,116	4,321,268	4,329,549
3,963,958	4,308,341	4,321,735	4,329,942
4,169,762	4,308,475	4,321,749	4,329,946
4,177,322	4,308,812	4,322,034	4,330,159
4,179,393	4,309,415	4,322,341	4,330,212
4,185,025	4,310,461	4,322,348	4,330,352
4,190,325	4,311,187	4,322,525	4,330,444
4,214,284	4,311,765	4,322,544	4,330,463
4,219,529	4,311,770	4,323,038	4,330,611
4,226,772	4,311,912	4,323,081	4,330,676
4,227,727	4,312,011	4,323,105	4,330,691
4,236,918	4,312,075	4,323,120	4,330,946
4,237,054	4,312,123	4,323,326	4,331,026
4,242,309	4,312,478	4,323,338	4,331,068
4,252,515	4,312,808	4,323,454	4,331,228
4,262,857	4,312,918	4,323,903	4,331,453
4,264,960	4,313,260	4,323,940	4,331,488
4,265,812	4,313,379	4,324,038	4,331,527
4,268,722	4,313,851	4,324,405	4,331,565
4,269,540	4,314,313	4,324,664	4,331,643
4,269,919	4,314,457	4,324,740	4,331,759
4,270,809	4,314,911	4,324,850	4,331,809
4,271,026	4,315,366	4,324,927	4,331,937
4,273,334	4,316,028	4,325,546	4,332,116
4,274,140	4,316,282	4,325,686	4,332,187
4,276,465	4,316,305	4,325,907	4,332,347
4,278,655	4,316,321	4,326,101	4,332,348
4,285,306	4,316,409	4,326,257	4,332,430
4,286,054	4,316,529	4,326,276	4,332,463
4,288,225	4,317,272	4,326,596	4,332,547
4,288,668	4,317,296	4,326,668	4,332,701
4,289,650	4,317,297	4,326,956	4,332,863
4,292,296	4,317,645	4,326,991	4,332,866
4,292,458	4,317,718	4,327,130	4,332,937
4,293,748	4,317,823	4,327,206	4,332,939
4,293,834	4,317,906	4,327,289	4,333,076
4,293,867	4,317,912	4,327,422	4,333,674
4,295,713	4,318,178	4,327,729	4,334,108
4,296,462	4,319,063	4,328,263	4,334,564
4,297,141	4,319,328	4,328,342	4,334,607
4,298,968	4,319,341	4,328,343	4,334,647
4,301,075	4,319,707	4,328,703	4,334,691
4,302,527	4,319,828	4,328,731	4,335,738
4,303,321	4,319,911	4,328,739	4,335,879

Disclaimers

Des. No. 262,279.—*Rallie P. Rallis,* and *Richard A. Cullity,* Los Angeles City, and *Lyle R. Tamplin,* Orange County, Calif. MOBILE SELF-POWERED HYDRAULIC LIFT. Patent dated Dec. 15, 1981. Disclaimer filed June 1, 1982, by the assignee, *Mark Industries.*

The term of this patent subsequent to Oct. 6, 1995, has been disclaimed.

3,980,791.—*Hans Peter Schulz,* Wuppertal; and *Herbert Voege,* Opladen-Bruchhausen, Germany. TETRAMISOLE AND LEVAMISOLE POUR-ON ANTHELMINTIC COMPOSITIONS AND METHODS OF USE. Patent dated Sept. 14, 1976. Disclaimer filed Apr. 30, 1981, by the assignee, *Bayer Aktiengesellschaft.*

Hereby enters this disclaimer to claims 1-3, 11-13, 21-33, 36-44, and 47 of said patent.

4,073,797.—*Henri Ramuz,* Birsfelden, Switzerland. SULPHUR CONTAINING DERIVATIVES. Patent dated Feb. 14, 1978. Disclaimer filed May 10, 1982, by the assignee, *Hoffmann-La Roche, Inc.*

Hereby enters this disclaimer to claim 4 of said patent.

4,085,079.—*Richard C. Kmetz,* Longmeadow and *Leland P. Miner,* Wilbraham, Mass. FORMALDEHYDE SOLUTIONS STABILIZED WITH INTERPOLYMERS OF VINYL ACETATE, VINYL ACETAL AND VINYL ALCOHOL. Patent dated Apr. 18, 1978. Disclaimer filed June 14, 1982, by the assignee, *Monsanto Co.*

Hereby enters this disclaimer to claims 1, 4, 5, and 6 of said patent.

4,239,009.—*Emmett M. Cunningham,* Alexandria, Va. PORTABLE TURNTABLE FOR MICROWAVE OVEN. Patent dated Dec. 16, 1980. Disclaimer filed Apr. 5, 1982, by the assignee, *Plastics, Inc.*

The term of this patent subsequent to Aug. 12, 1997 has been disclaimed.

4,313,085.—*William C. Balchunas,* Mendham, N. J. APPARATUS FOR DETECTING ADJACENT INSULATION FAULTS IN TWO OR MORE WIRES. Patent dated Jan. 26, 1982. Disclaimer filed Apr. 20, 1982, by the assignee, *Western Electric Co., Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

4,320,849.—*Bernard Yellin,* Oak Brook, Ill. FOOD SERVING CONTAINER. Patent dated Mar. 23, 1982. Disclaimer filed May 5, 1982, by the inventor.

Hereby enters this disclaimer to claim 8 of said patent.

Dedications

Des. No. 228,728.—*Theodore R. Bergstron,* St. Paul, Minn. FIREPLACE GRATE. Patent dated Oct. 23, 1973. Dedication filedApr. 15, 1982, by the assignee, *Cardinal American Corp.*

Hereby dedicates said entire patent to the Public.

3,127,293.—*Albert Jean Trenteseaux,* Mouscron, Belgium. METHOD OF PRODUCING UNWOVEN CLOTHS AND VELVETS AND APPARATUS USED THEREFOR. Patent dated Mar. 31, 1964. Dedication filed Apr. 14, 1982, by the assignee, *A. F. Stoddard & Co. Ltd.*

Hereby dedicates said patent to the Public.

3,789,104—*Albert P. McCauley,* Chagrin Falls, Ohio. CONTROL METHOD FOR FUME INCINERATORS. Patent dated Jan. 29, 1974. Dedication filed Mar. 1, 1982, by the assignee, *SCM Corp.*

Hereby dedicates to the Public the remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 12, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-03-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-11-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	6-22-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-03-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-01-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-24-80

Expiration of patents: The patents within the range of numbers indicated below expire during June 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,186,004 to 3,192,535, inclusive

Plant Patents ..... Numbers 2,522 to 2,542 inclusive

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1 and 2

Revision of Patent and Trademark Fees

AGENCY: Patent and Trademark Office, Commerce

ACTION: Final Rule.

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish fee related procedures and fees in amounts which would comply with the requirements of either Public Law 96-517 or H.R. 6260, dependent upon which is effective on October 1, 1982. This action is necessary at this time in view of the requirements to establish fees and procedures contained in Public Law 96-517 and the requirements which would also be present under H.R. 6260 enacted as a Public Law. This final rule is being issued in two sections with the first section relating to patent fees and the second section relating to trademark fees. This final rule is also being issued in alternative form so that the proper fees and procedures will become effective on October 1, 1982, under either Public Law 96-517 or the Public Law which results from enactment of H.R. 6260. Thus, if Public Law 96-517 remains fully effective on October 1, 1982, the rule changes contained herein which are common to Public Law 96-517 and H.R. 6260, as well as those specific to Public Law 96-517, contained in Alternative A of each section, will become effective. Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, the rule changes contained herein which are common to Public Law 96-517 and H.R. 6260, as well as those specific to H.R. 6260, contained in Alternative B of each section, will become effective. Thus, the intended effect of this action is to adopt rules which will be effective on October 1, 1982, establishing patent and trademark fees and procedures regardless of whether Public Law 96-517 remains fully effective or whether H.R. 6260 has been enacted.

EFFECTIVE DATE: October 1, 1982. However, prior to October 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

FOR FURTHER INFORMATION CONTACT: As to the patent rules contact R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D. C. 20231.

FOR FURTHER INFORMATION CONTACT: As to the trademark rules contact Miss Maude Williams by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D. C. 20231.

SUPPLEMENTARY INFORMATION:

SECTION I - REVISION OF PATENT FEES

Background

A notice of proposed rulemaking was published in the Federal Register on June 28, 1982, at 47 FR 28042-28063 and in the Official Gazette on June 29, 1982, at 1019 O.G. 57-120. An oral hearing was held on July 9, 1982. Fourteen written letters and statements were submitted. Five persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These rule changes are designed primarily to implement the Patent and Trademark Office fees which are provided for by Public Law 96-517, or which would be set in, or provided for by, the Public Law resulting from H.R. 6260.

Public Law 96-517

Public Law 96-517 presently requires that fees be established by the Commissioner for the processing of patent applications from filing through issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. Public Law 96-517 requires that by October 1, 1982, fees for the processing of patent applications, other than design patents, be set by the Commissioner to recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. Similarly, fees for processing design patents are to be set to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. By October 1, 1982, fees for all other services or materials related to patents are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

Public Law 96-517 also requires that fees be set for maintaining all patents filed on or after December 12, 1980, other than design patents, in force. It also requires that maintenance fees must recover 25 per centum of the estimated cost to the Office of processing patent applications, other than design patent applications, by the fifteenth fiscal year following December 12, 1980. Under Public Law 96-517, the maintenance fees are due 3½, 7½, and 11½ years after grant of the patent.

Public Law 96-517 is presently effective and this rule change is designed to implement the fee provisions of that law if it remains fully effective on October 1, 1982. The changes which will become effective on October 1, 1982, under Public Law 96-517 (without enactment of H.R. 6260) are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under only Public Law 96-517, which appear in Alternative A.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. H.R. 6260 would establish a number of statutory fees which the Commissioner is required to charge. Among the more significant of these are fees for filing a patent application, issuing, and maintaining a patent in force. The fees for filing a patent

application and issuing a patent would be set forth in §41(a) of Title 35, United States Code, as proposed to be amended by H.R. 6260. Certain other fees, such as appeal fees, the fee for filing a disclaimer, and fees for filing petitions seeking to revive an abandoned application and for extensions of time, would also be set in §41(a) of Title 35, United States Code. Section 41(b) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would set forth the fees for maintaining a patent in force. These fees would be due 3½, 7½, and 11½ years after grant of the patent or within a grace period of six months thereafter. Section 41(c) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would provide for the acceptance of maintenance fees after the statutory grace period under certain conditions and with certain effects.

H.R. 6260 would also provide for the reduction by 50 per centum in the fees paid under §41(a) and (b) of Title 35, United States Code, by independent inventors, small business concerns, and nonprofit organizations, who meet the definitions established, and to be established therefor.

Section 41(d) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would also provide that the Commissioner establish fees for all other processing, services, or materials related to patents which are not covered in §41(a)-(c) of Title 35, United States Code, to recover the estimated average cost to the Office of the processing, services, or materials.

The changes which will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. H.R. 6260 includes other provisions which would be the subject of other proposals for rulemaking.

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a patent application, or during the term of a patent. A number of significant changes are made in order to implement either Public Law 96-517 or H.R. 6260.

Under H.R. 6260, and Alternative B of this rulemaking, fees under §41(a) and (b) of Title 35, United States Code, would be reduced by 50 per centum for independent inventors, small business concerns, and nonprofit organizations. H.R. 6260 would give the Commissioner authority to establish regulations defining independent inventors and nonprofit organizations. H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking, in Alternative B, implements the fee system which would be established by H.R. 6260 and lists all applicable fees. Alternative A does not include fees relating to independent inventors, small business concerns, and nonprofit organizations since such fees are not authorized by Public Law 96-517.

Another significant change relates to fees established under Public Law 96-517 and which would be established by H.R. 6260 for petitions for extensions of time to take actions required by the Commissioner in an application. H.R. 6260 would establish a fee of $50 for filing a petition for a first one-month extension of time, an additional fee of $100 for filing a petition for a second one-month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a petition for a third one-month extension of time which would expire three months after the end of the time period set for taking action. A fourth one-month extension with an additional fee of $200 could be requested if additional time was available under the statute. Under H.R. 6260, the Commissioner would have authority to issue regulations providing when, within any maximum time period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. The Commissioner would also not be precluded by H.R. 6260 from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause. This rulemaking implements the extension of time provisions of H.R. 6260 by permitting applicants in the majority of situations to file the petition for an extension of time and the fee at the time of and along with the filing of the response for which a non-statutory or shortened statutory time period has been set. This will reduce the amount of paperwork involved and should significantly reduce the expenses of applicants and the Office since resources now devoted to the separate processing of petitions for extensions of time will no longer be required to be expended thereon. The fees are set to provide a proper control on the number of extensions of time given. The same procedures relating to extensions of time which would be established under Alternative B and H.R. 6260 will also be established under Alternative A and Public Law 96-517. Thus, whether the rules are effective on October 1, 1982, under Public Law 96-517 and Alternative A, or under H.R. 6260 and Alternative B, the same procedures for obtaining extensions of time will be in effect with the only differences being in the amount of the fees.

Another significant change relates to the implementation of the fee for revival of an unintentionally abandoned application which would be authorized under H.R. 6260. H.R. 6260 would establish two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees would be applicable to petitions to accept the delayed payment of the fee for issuing a patent. Under H.R. 6260, a fee of $50 is established in §1.17(l) for filing a petition for revival under §§133 or 151 of Title 35, United States Code, in accordance with standards presently in effect where the delay resulting in the abandonment, or the delay in payment of the issue fee, was unavoidable. Under H.R. 6260, a fee of $500 is established in §1.17(m) for filing each petition for revival, or for acceptance of the delayed payment of an issue fee, where the abandonment or the failure to pay the issue fee was unintentional. A mere statement that abandonment was unintentional plus the $500 fee is all that is required in this case for this purpose. Under H.R. 6260 and this rulemaking an applicant would have a choice of which petition and fee to file seeking revival depending on the

circumstances involved. The changes discussed in this paragraph cannot be made effective without enactment of H.R. 6260 as a Public Law.

The rulemaking also provides for fees for filing certain petitions which have, in some cases, heretofore, been decided without a charge. These fees are established under Public Law 96-517 and are provided for by the amendment of §41(d) of Title 35, United States Code, which would be introduced by H.R. 6260. Under §41 of Title 35, United States Code, as amended by Public Law 96-517 or as it would be amended by H.R. 6260, fees are authorized for the processing of various petitions desiring certain actions to be taken regarding patent applications, for the recording of assignments, for reexamination of patents, and for the processing of international applications under the Patent Cooperation Treaty. In general, fees are not being required for those petitions which are supervisory in nature. For example, where applicants are petitioning from an allegedly improper action of the examiner, it is felt that such petitions should be processed and decided without charge since they are not asking for any special privilege but are attempting to correct an allegedly incorrect Office holding. The changes discussed in this paragraph will be in effect on October 1, 1982, whether the rules become effective under Public Law 96-517 and Alternative A, or under H.R. 6260 and Alternative B.

Many of the fees currently set forth in §1.21 are being increased to reflect the cost of currently performing that service.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this proposal under three different categories. Those changes which are common to Public Law 96-517 and H.R. 6260 appear first and are numbered 1-54. Those changes which relate only to Public Law 96-517 appear as Alternative A and are numbered 55-62. Those changes which are dependent upon enactment of H.R. 6260 appear as Alternative B and are numbered 63-71. The changes common to Public Law 96-517 and H.R. 6260 will become effective on October 1, 1982, whether or not H.R. 6260 is enacted as a Public Law. The changes contained in Alternative A will become effective on October 1, 1982, if H.R. 6260 does not become a Public Law prior to that date. Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, Alternative B will become effective on October 1, 1982, in which case Alternative A will not become effective.

Rule Changes Common To Public Law 96-517 and H.R. 6260

The following sections are changed, effective October 1, 1982, under either Public Law 96-517 or H.R. 6260:

Section 1.11 is amended to change the reference for the reexamination request fee to §1.20(c).

Section 1.12 is amended to break the section into four paragraphs. Paragraph (a) maintains current practice but adds specific reference to §1.19(a)(5) which sets the cost of copies.

Paragraph (b) maintains current wording except for inserting "patent" after "abandoned" and changing "his" to "applicant's". Paragraph (c) includes new language relating to obtaining copies of assignment records not open to the public. Access can be obtained only with the applicant's permission or by petition with fee to the Commissioner for such access in particular situations. No change in the showing required by petition to obtain access is intended by this amendment. Paragraph (d) contains present language except for reference to the specific rule which sets forth the charge for time consumed in making assignment searches.

New paragraph (e) of §1.14, sets forth the two ways in which access can be obtained to patent applications which are not open to the public. The two ways are (1) by petitioning and paying the petition fee and approval of the Commissioner of such petition and (2) by obtaining written approval from the applicant.

New §1.19 provides fees for copies of various documents supplied by the Office. The fees have been grouped into 5 paragraphs. New paragraph (a) provides fees for uncertified copies. Subparagraphs (a)(1) and (2) indicate the prices of printed patent copies. Subparagraph (a)(3) provides a single fee for a copy of an application, as filed, for each 50 pages, or fraction thereof. This practice should make it much easier to determine the amount of the required fee. Subparagraph (a)(4) sets a single fee for a copy of each 100 pages, or fraction thereof, of a patent file wrapper. Subparagraph (a)(5) provides for a charge of 30 cents per page for copies of Office records other than those covered by subparagraphs (a)(1) through (4). Subparagraph (a)(6) provides a fee for a microfiche copy of a microfiche.

Paragraph (b) of §1.19 sets fees for certified copies of Office documents. Subparagraph (b)(1) sets a fee for certifying Office records. Subparagraph (b)(2) provides a single fee for searching assignment records, preparing an abstract of the title and certification thereof. Subparagraph (b)(3) provides a fee for comparing copies not prepared by the Office prior to certification in order to provide basis for certification. Paragraph 1.19(c) sets the fees for subscribing to all of the patents issued annually in particular subclasses. This charge is in addition to the normal copy charge under §1.19(a)(1) and (2). Paragraph 1.19(d) sets the fee for providing patent copies to libraries under 35 U.S.C. 13. Paragraph 1.19(e) provides fees for lists of United States patents in particular subclasses.

Section 1.21 is amended to contain those miscellaneous fees which do not relate to the topics covered in §§1.16-1.20. All of the fees in §1.21 are established under the authority given the Commissioner by 35 U.S.C. 41(d) as amended by Public Law 96-517 or as proposed in H.R. 6260. Paragraph 1.21(a) establishes fees for admission to the examination for registration to practice, registration, reinstatement and issuance of certificates of good standing of patent attorneys and agents. Subparagraph 1.21(b)(1) sets forth the fee for establishing and reinstating deposit accounts, while subparagraph 1.21(b)(2) sets forth the fee due when the balance at the end of each month is below $40. Paragraph 1.21(c) sets the fee for filing a disclosure document.

Paragraph 1.21(d) sets the fee for renting a delivery box. Paragraph 1.21(e) sets the fee for an international-type search report. Although all national applications now receive what is known as an international-type search, if a report thereof is desired in addition to an Office action, the fee set in §1.21(e) is required. Paragraph 1.21(f) sets a fee for searching Office records for purposes not otherwise specified. Paragraph 1.21(g) sets the fee for tokens for copying machines. Paragraph 1.21(h) sets the fee for recording assignments, agreements, and other documents. Paragraph 1.21(i) sets forth the fee for publishing a notice of availability of a patent for licensing or sale in the Official Gazette. Paragraph 1.21(j) sets the fee for the Office providing a duplicate or replacement of a permanent Office user pass. Paragraph 1.21(k) indicates that the Commissioner may specify charges for items and services not otherwise specified at a level to recover the actual cost of providing such an item or service by the Office.

Section 1.24 is revised so that the denomination of coupons sold by the Office will be in more convenient amounts.

Section 1.25 is amended to provide, in paragraph (a), a reference to the fee for establishing a deposit account and a service charge if the end of the month balance is below $40.00. Paragraph (b) is amended by revising the present sentence to refer to post-issuance fees and by adding a second sentence which would specifically provide in the regulations for the possibility of an applicant giving a general authorization to charge any fee due under §§1.16-1.18 in a particular application to a deposit account during the entire pendency of the application. This general authorization would not apply after the patent issues, e.g., to maintenance fees. The last sentence of paragraph (b) permits fees during reexamination to be charged to a deposit account by filing an authorization with the request for reexamination.

Section 1.26 is amended to provide in paragraph (a) that a withdrawal of a request for an oral hearing will not entitle appellant to a refund. Paragraph 1.26(a) raises the amount which will not be refunded without specific request from fifty cents to one dollar. Paragraph (b) relating to refunds of international search fees during subsequent examination of a national application is deleted since such refunds are now covered by reductions in the appropriate fees paid under §1.445 rather than solely by direct refunds. Paragraph (c) is amended to bring the spelling of "requester" into conformance with that used in other sections of the regulations.

Section 1.45 is amended to provide in paragraphs (b) and (c) for a petition and petition fee to be filed to correct misjoinder of inventorship situations in pending applications. The fee will cover the additional time required by the Office to process such applications.

Section 1.47 is amended to provide for petitions and fees for filing applications signed by less than all inventors, or a person not the inventor.

Section 1.51 is amended to refer to the filing fees in new §1.16 and to add a new paragraph (c) indicating that applicants may file authorizations to charge fees required under any of §§1.16-1.18 to deposit accounts.

Section 1.52 is amended to add a reference in paragraph (a) to new paragraph (d). New paragraph (d) provides in the rules for filing an application in a language other than English if a verified English translation and fee under §1.17(k) are timely submitted.

Section 1.55 is amended in paragraph (b) to require a petition and fee for processing priority papers submitted after the issue fee is paid.

Section 1.75 is amended to add a reference to §1.16 and a sentence referring to the fee for multiple dependent claims set forth in §1.16(d).

Section 1.85 is amended to delete the sentence relating to mounting of informal drawings.

Section 1.86 is removed to delete the reference to the Office draftsman making drawings since such service is no longer available.

Section 1.102 is amended by revising paragraph (a) and adding new paragraphs (c) and (d). Revised paragraph (a) refers to paragraph (b) and added paragraphs (c) and (d). Paragraph (c) requires a petition but no fee where the basis for the petition to make special is the applicant's age or health or the impact of the invention on improving the environment or conservation of energy. Paragraph (d) requires a petition and the fee set forth in §1.17(i) for petitions to make special on grounds other than those above.

Section 1.103 is amended in paragraph (a) to provide for filing a petition and the fee set forth in §1.17(i) for a suspension of action except that no fee would be required where the reason for the suspension is the fault of the Patent and Trademark Office. Paragraph (b) is amended to clearly indicate that suspensions are directed to actions by the Office and not responses by the applicant.

Section 1.104, paragraph (d) is amended to change the fee reference to correspond to §1.21(e).

Section 1.134 is added to indicate that unless applicant is notified of any non-statutory or shortened statutory period in an Office action, a maximum period for response of six months is allowed.

Section 1.135 is amended to provide that if no response is filed within the time set in the Office action under §1.134 or as it may be extended under §1.136, the application will be abandoned unless an Office action indicates that another consequence, such as disclaimer, will take place. Paragraph (b) is amended to include a reference to paragraph (a). Paragraph (c) is amended

to add that applicant's reply must be a bona fide attempt to respond as well as to advance the case to final action in order for applicant to be given an opportunity to supply any omission.

Section 1.136 is amended to revise the title and provide for two distinct procedures to extend the period for action or response in particular situations. The procedure which is available for use in a particular situation will depend upon the circumstances. Paragraph 1.136(a) permits an applicant to file a petition for extension of time and a fee as in §1.17(a), (b), (c), or (d) up to four months after the end of the time period set to take action except (1) where prohibited by statute, (2) in interference proceedings, or (3) where applicant has been notified otherwise in an Office action. The petition and fee can be filed prior to or with the response. The filing of the petition and fee will extend the time period to take action up to four months dependent on the amount of the fee paid except in those circumstances noted above. Paragraph 1.136(a) will effectively reduce the amount of paperwork required by applicants and the Office since the extension will be effective upon filing of the petition and payment of the appropriate fee and without acknowledgment or action by the Office and since the petition and fee can be filed with the response. Paragraph (b) provides for requests for extensions of time upon a showing of sufficient cause when the procedure of paragraph (a) is not available. Although the petition and fee procedure of §1.136(a) will normally be available within 4 months after a set period for response has expired, an extension request for cause under §1.136(b) must be filed during the set period for response. The sentence in paragraph (b) relating to who may grant an extension under paragraph (b) is eliminated thereby providing additional flexibility to designate persons to act on requests under paragraph (b). Extensions of time in interference proceedings are governed by §1.245.

Section 1.165, paragraph (b) is amended to delete therefrom the last sentence which refers to a fee for mounting copies. Since little or no need has been found for this provision in the rules, it is deleted.

Section 1.171, as amended, adds a reference to §1.19(b)(2) which sets forth the fee for title reports.

Section 1.177 is amended to require a petition and fee as set forth in §1.17(i) where it is desired that divisions of a reissue issue on different dates.

Section 1.181 is amended to indicate in paragraph (d) that if a petition to the Commissioner is filed under the provisions of a section which requires a petition fee and the required fee is not paid, the petition will be dismissed. The amendment to paragraph (g) deletes the reference to §1.183.

Section 1.182 is amended to add a sentence requiring any petition filed under this section to be accompanied by the petition fee set forth in §1.17(h).

Section 1.183 is amended to specifically refer to the inherent authority of the Commissioner to suspend or waive the rules at the Commissioner's initiative. The amendment also indicates the Commissioner's authority to designate others to act for the Commissioner in appropriate circumstances. The rule language also requires the payment of the petition fee set forth in §1.17(h) if a petition to suspend or waive the rules is filed.

Section 1.191 is amended to change the fee reference for filing a notice of appeal to §1.17(e) and delete the word "primary" since some actions which are subject to appeal are not made by a "primary" examiner.

Section 1.192, paragraph (a), is amended to refer to the fee for filing an appeal brief set forth in §1.17(f). The present language requiring a showing of sufficient cause for extensions of time for filing the brief and an indication that an oral hearing is desired at the time of filing the brief are removed from paragraph 1.192(a). Under the amendment to paragraph 1.192(a), the provisions of §1.136 will apply to extensions of time for filing the brief. The time for requesting an oral hearing is now set in §1.194(b).

Section 1.194 is amended to revise paragraphs (b) and (c) to refer to the fee for oral hearing in §1.17(g) and to indicate in paragraph (b) that any request for an oral hearing must be made within one month after the mailing date of the examiner's answer.

Section 1.197, paragraph (b), is amended to modify the last sentence relating to extensions of time to make the provisions of §1.136 applicable thereto. Paragraph 1.197(b) is also amended to limit requests for rehearing, reconsideration or modification of a Board decision to one. This will not significantly change present practice since such requests are now required to be filed within thirty days from the date of the original decision.

Section 1.231, paragraph (a)(1), is amended to change the reference to the fee for filing a request for reexamination to §1.20(c).

Sections 1.245 and 1.246 are amended to indicate that the provisions of §1.136 do not apply to time periods in interferences.

Section 1.263 is amended to add a reference to the fee for filing a disclaimer contained in §1.20(d).

New section 1.268 is added to provide a rule relating to the filing of interference settlement agreements. The rule generally follows 35 U.S.C. 135(c) and provides for filing of petitions and fees in paragraphs 1.268(b) and (c).

Section 1.292, paragraph (a), is amended to require the payment of the fee set forth in §1.17(j) with any petition for the institution of public use proceedings.

Section 1.304, paragraph (a), is amended to provide for extension of the time period for filing an appeal or civil action to be

subject to the provisions of §1.136 and refer to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals.

Section 1.311 is amended to designate the present section as paragraph (a) and revise it in several ways. Paragraph (a) indicates that the notice of allowance will be sent to the correspondence address as indicated under §1.33. The issue fee (§1.18) is indicated as being due 3 months from the date of mailing of the notice of allowance. Paragraph 1.311(b) permits an authorization to be filed either before or after the mailing of the notice of allowance to charge the issue fee to a deposit account.

Section 1.312 is amended to divide the section into two paragraphs and require a petition and payment of the fee under §1.17(i) for any amendment filed after payment of the issue fee.

Section 1.313 is amended to provide in paragraph (a) clear basis for the Office withdrawing applications from issue on its own initiative or upon petition by applicant accompanied by the petition fee set forth in §1.17(i). Any accompanying amendment must comply with the requirements of §1.312. Paragraph (b) clarifies when an application will be withdrawn from issue after assignment of the issue date and patent number.

Section 1.314 is amended to revise the wording to eliminate reference to a portion of the issue fee and adds reference to the possibility that an application in which the issue fee was paid can be withdrawn from issue under §1.313 or the issuance thereof deferred pursuant to a petition by the applicant and the payment of the petition fee under §1.17(i).

Section 1.321 is amended to include references in both paragraphs (a) and (b) to the statutory disclaimer fee in §1.20(d) and delete the reference to §1.21.

Section 1.324 is amended to include reference to the fee in §1.20(b) and change the word "application" to "petition".

Section 1.331, paragraph (a), is amended to add a new sentence which gives the citation of the fee for recording assignments and to indicate that instruments recorded on the Government register under Part 7 of Title 37, Code of Federal Regulations, do not require payment of such fee.

Section 1.332 is amended to refer to the fee in §1.21(h) for recording an assignment.

Section 1.334 is amended to divide the rule into three paragraphs and also require an address of the assignee so that correspondence can be directed to the assignee if required. New paragraph (c) provides for filing a petition and the fee set in §1.17(i) seeking to have the patent issue to the assignee where such assignment has not been recorded at the time the issue fee is paid.

Section 1.341, paragraph (h), is amended to refer to the fee set forth in §1.21(a)(2) for registration of an attorney or agent.

Section 1.347 is amended to add a sentence referring to the fee set forth in §1.21(a)(3) for reinstatement of an attorney or agent.

Section 1.445 is amended to increase the PCT transmittal fee and search fee to a level needed to cover the cost of performing the required functions. Paragraph 1.445(a)(2) is also amended to provide, in effect, for a reduction in the international search fee due to the United States Patent and Trademark Office as an International Searching Authority where a corresponding United States national application with fee has been filed. In addition, paragraph 1.445(a)(4) is amended to credit the national fee required under §1.16(a)-(d) where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. The supplemental search fee for inventions in addition to the first, where lack of unity of invention has been found, is reduced since the present fee is more than is required to cover the costs. The national fee amount is the same as the national application filing fees in §1.16(a)-(d).

Section 1.446(b) is revised to permit a refund of a portion of the search fee to the extent set forth in §1.445(a)(4), if such refund is requested at the time of paying the national fee.

Section 1.451 is amended in paragraph (b) to revise the citation of the fees for a certified copy.

Section 1.510 is amended to cite the section which sets forth the fee for requesting reexamination. There is no change in the amount of this fee.

Alternative A - Rule Changes Under Only Public Law 96-517

The following sections will become effective under only Public Law 96-517 on October 1, 1982, unless H.R. 6260 is enacted as a Public Law prior to that date:

New §1.16 relates to application filing fees. Paragraph (a) sets a basic filing fee of $150 which will be required in all original patent applications. The term "original" as used in the regulations means "non-reissue". An "original" application can be a first filing, a division, a continuation, or a continuation-in-part application. Paragraph 1.16(b) provides for an additional fee of $15 for each independent claim in excess of 3 in an original application. New paragraph 1.16(c) provides for an additional fee of $5 for each claim in excess of 20, whether independent or dependent. A multiple dependent claim is considered to be that number of claims to which direct reference is made. Also, any claim which refers to a multiple dependent claim is considered for fee calculation purposes to be the number of claims to which direct reference is made in the multiple

dependent claim. Paragraph 1.16(d) provides for a new fee of $50 in each application which contains one or more multiple dependent claims. The note following paragraph 1.16(d) is intended to clearly indicate that the applicant, attorney, or agent may pay any additional fees required under paragraphs (b), (c) and (d) of §1.16, or cancel such claims without payment of such additional fees, either at the time of filing or by the time a response is due to any notice of fee deficiency mailed by the Office. If the fees are not paid or the claims cancelled by the end of the period set for response to the notice of fee deficiency, the application will be held abandoned. Paragraph 1.16(e) is reserved under this Alternative (Alternative A). New paragraph 1.16(f) provides for a filing fee of $63.00 for a design application.

Paragraphs 1.16(g) and (h) establish the filing fees for plant and reissue applications.

Paragraphs 1.16(i) and (j) set forth the additional claim fees required in reissue applications based on claims in excess of those in the original patent.

New §1.17 relates to patent application processing fees which are normally due during the time a patent application is pending. New paragraphs (a), (b), (c) and (d) provide for the payment of an extension fee for obtaining an automatic extension of time upon filing a petition as provided for in §1.136(a). The extension fee can be paid during the period for which an extension of time to respond is desired, or after the original period for response has expired, provided that any maximum statutory period which may apply has not expired. The fees set forth in §1.17 are the total fees required under §1.136(a) for the periods indicated and any extension fee previously paid to extend a particular period is credited toward the total extension fee required. Paragraph (e) sets forth the fee for filing a notice of appeal to the Board of Appeals. Paragraph (f) sets forth the fee for filing an appeal brief by appellant. Paragraph (g) provides for a new fee for requesting an oral hearing before the Board of Appeals. Paragraphs (h) and (i) set forth fees which will be required with petitions to the Commissioner under those sections of the regulations which specifically indicate that such petition fees are required. The amounts of the fees are set at two levels based on the degree of complexity of the petitions in order to recover the estimated average cost to the Office of processing the petitions. Paragraph (j) provides for a fee to be paid with any petition for institution of a public use proceeding to cover the estimated average cost of such a proceeding. Paragraph (k) sets forth a new fee for processing an application filed with a non-English language specification. The fee will cover the additional processing costs involved in such applications. New paragraph (l) incorporates into the regulations the fee which will be charged for filing a petition to revive or to accept late payment of the issue fee where the delay was unavoidable.

New §1.18 sets the amount of the issue fees pursuant to the authority contained in Public Law 96-517. New paragraph (a) establishes an issue fee of $250.00 for all original and reissue

patents except for designs and plants. New paragraph (b) sets the amount of the issue fee for a design patent at a uniform $88.00 even though terms of 3½, 7, or 14 years may be requested. New paragraph (c) establishes the issue fee for a plant patent.

New §1.20 sets fees for various post-issuance functions performed by the Office. New paragraph (a) sets forth a fee for providing a certificate of correction of an applicant's mistake. New paragraph (b) sets a fee to accompany a petition to correct inventorship in a patent under §1.324. New paragraph (c) transfers the $1,500.00 fee for requesting reexamination from present §1.21(x) to this new section. New paragraph (d) provides for a fee for filing a disclaimer under §1.321. Maintenance fees required by Public Law 96-517 are placed in this section. Specific maintenance fees, which are required by Public Law 96-517, for those patents resulting from applications filed on and after December 12, 1980 and up to the date of enactment of H.R. 6260 are established at this time in paragraphs 1.20(e)-(g). The fees in paragraphs 1.20(e)-(g) are only set at one level because they are established under Public Law 96-517 and are not subject to reduction for small entities, i.e., independent inventors, small business concerns, and nonprofit organizations. The details implementing the payment of maintenance fees are not being established at this time.

Section 1.137, as amended, designates the existing section as paragraph (a), adds a reference to the new fee under §1.17(l) for a petition for revival where the delay which resulted in abandonment was unavoidable, and states when the showing that the delay was unavoidable must be verified. Paragraph 1.137(b) is reserved under this Alternative (Alternative A). Paragraph (c) requires that any petition for revival under paragraphs (a) or (b) of §1.137 be promptly filed and that a terminal disclaimer, equivalent to the period of abandonment of the application, be filed with any petition filed more than six months after the date of abandonment.

Section 1.155 is amended to refer in paragraph (a) to §1.18(b) which sets forth the issue fee for a design application as being $88.00. Paragraph 1.155(b), as amended, includes a reference to the fee for delayed payment of the issue fee set forth in §1.17(l) where the delay in payment was unavoidable and states when showings that the delay was unavoidable must be verified. Paragraph 1.155(c) is reserved under this Alternative (Alternative A). Paragraph 1.155(d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where any petition under this section is not filed within six months of the date of abandonment.

Section 1.316 is amended to clarify the language and to delete reference to the fee specified in the notice of allowance. Paragraph (b) is amended to provide for petitions for revival with the fee in proposed §1.17(l) where the delay in payment was unavoidable and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is reserved under this Alternative (Alternative A). Paragraph (d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where any petition under this

section is not filed within six months of the date of abandonment.

Section 1.317 is amended to implement the statutory provisions of 35 U.S.C. 41(a) with regard to petition fees for patents lapsed for failure to pay the remaining balance of the issue fee. Paragraph (a) is amended to show that it applies only to patents in which the issue fee was paid prior to October 1, 1982. Issue fees paid on or after that date will be in accordance with §1.18. Paragraph (b) is amended to provide for petitions with the fee in §1.17(l) where the delay in payment was unavoidable and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is reserved under this Alternative (Alternative A). Paragraph (d) is added to require a terminal disclaimer equivalent to the period of lapse of the patent where any petition under this section is not filed within six months of the date of lapse.

Alternative B - Rule Changes Under H.R. 6260

The following sections will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to that date:

Section 1.16 in Alternative B establishes in the regulations those statutory fees which would be charged by the Commissioner for filing patent applications under H.R. 6260. Section 1.16 also includes additional filing fees set in 35 U.S.C. 41(a)(1) to cover the cost of examining complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. Section 1.16 also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under 35 U.S.C. 41(a) as it would be amended by H.R. 6260, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in §112 of Title 35, United States Code, or any claim depending therefrom, is considered as separate dependent claims in accordance with the number of claims to which reference is made.

The fees in §1.16 are reduced by 50 per centum for applications filed by small entities, i.e., independent inventors, nonprofit organizations and small business concerns, in accordance with H.R. 6260. Therefore, two fees are listed under each paragraph.

New §1.16 relates to application filing fees. Paragraph (a) sets a basic filing fee of $300 which will be required in all original patent applications. The term "original" as used in the

regulations means "non-reissue". An "original" application can be a first filing, a division, a continuation, or a continuation-in-part application. Paragraph 1.16(b) provides for an additional fee of $30 for each independent claim in excess of 3 in an original application. New paragraph 1.16(c) provides for an additional fee of $10 for each claim in excess of 20, whether independent or dependent. A multiple dependent claim is considered to be that number of claims to which direct reference is made. Also, any claim which refers to a multiple dependent claim is considered for fee calculation purposes to be the number of claims to which direct reference is made in the multiple dependent claim. Paragraph 1.16(d) provides for a new fee of $100 in each application which contains one or more multiple dependent claims. The note following paragraph 1.16(d) is intended to clearly indicate that the applicant, attorney, or agent may pay any additional fees required under paragraphs (b), (c) and (d) of §1.16, or cancel such claims without payment of such additional fees, either at the time of filing or by the time a response is due to any notice of fee deficiency mailed by the Office. If the fees are not paid or the claims cancelled by the end of the period set for response to the notice of fee deficiency, the application will be held abandoned. New paragraph 1.16(e) establishes the amount of the surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application. This fee is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. New paragraph 1.16(f) provides for a filing fee of $125.00 for a design application.

Paragraphs 1.16(g) and (h) incorporate into the regulations the filing fees for plant and reissue applications.

Paragraphs 1.16(i) and (j) set forth the additional claim fees required in reissue applications based on claims in excess of those in the original patent.

New §1.17 relates to patent application processing fees which are normally due during the time a patent application is pending. New paragraphs (a), (b), (c) and (d) provide for the payment of an extension fee for obtaining an automatic extension of time upon filing a petition as provided for in §1.136(a). The extension fee can be paid during the period for which an extension of time to respond is desired, or after the original period for response has expired, provided that any maximum statutory period which may apply has not expired. The fees set forth in §1.17 are the total fees required under §1.136(a) for the periods indicated and any extension fee previously paid to extend a particular period is credited toward the total extension fee required. Paragraph (e) sets forth the fee for filing a notice of appeal to the Board of Appeals. Paragraph (f) sets forth the fee for filing an appeal brief by appellant. Paragraph (g) provides for a new fee for requesting an oral hearing before the Board of Appeals. Paragraphs (h) and (i) set forth fees which will be required with petitions to the Commissioner under those sections of the regulations which specifically indicate that such petition fees are required. The amounts of the fees

are set at two levels based on the degree of complexity of the petitions in order to recover the estimated average cost to the Office of processing the petitions. Paragraph (j) provides for a fee to be paid with any petition for institution of a public use proceeding to cover the estimated average cost of such a proceeding. Paragraph (k) sets forth a new fee for processing an application filed with a non-English language specification. The fee will cover the additional processing costs involved in such applications. New paragraph (l) incorporates into the regulations the fee which will be charged for filing a petition to revive or to accept late payment of the issue fee where the delay was unavoidable. New paragraph (m) incorporates into the regulations the fee which will be established in 35 U.S.C. 41(a)7, as amended by H.R. 6260, to be charged for a petition for the revival of an unintentionally abandoned application for patent or for the unintentionally delayed payment of an issue fee.

Since paragraphs 1.17(h), (i), (j) and (k) are established under the authority given the Commissioner under 35 U.S.C. 41(d) as it would be amended by H.R. 6260, only one level of fee is set. H.R. 6260 only provides for the reduction of fees charged to small entities of those fees established in 35 U.S.C. 41(a) and (b).

New §1.18 sets the amount of the issue fees specified by H.R. 6260. New paragraph (a) establishes an issue fee of $500.00 for all original and reissue patents except for designs and plants. New paragraph (b) sets the amount of the issue fee for a design patent. New paragraph (c) sets forth the issue fee for a plant patent. All fees in §1.18 will be reduced by 50 per centum for small entities.

New §1.20 sets fees for various post-issuance functions performed by the Office. New paragraph (a) sets forth a fee for providing a certificate of correction of an applicant's mistake. New paragraph (b) sets a fee to accompany a petition to correct inventorship in a patent under §1.324. New paragraph (c) transfers the $1,500.00 fee for requesting reexamination from present §1.21(x) to this new section. New paragraph (d) provides for a fee for filing a disclaimer under §1.321. Maintenance fees required by Public Law 96-517 and which would be set in H.R. 6260 are placed in this section. Specific maintenance fees, which are required by Public Law 96-517, for those patents resulting from applications filed on and after December 12, 1980 and up to the date of enactment of H.R. 6260 are being established at this time in paragraphs 1.20(e)-(g). New paragraphs 1.20(h)-(j) incorporate into the regulations the maintenance fees which would be provided in 35 U.S.C. 41(b) by H.R. 6260. The fees in paragraphs 1.20(a)-(c) are only set at one level because they are established under 35 U.S.C. 41(d). The fees in paragraphs 1.20(e)-(g) are only set at one level because they are established under Public Law 96-517 and are not subject to reduction for small entities. The details implementing the payment of maintenance fees are not being established at this time.

Section 1.66 is amended to provide for the use of an apostille of a foreign official to attest to oaths or affirmations made in foreign countries in accordance with 35 U.S.C. 115 and 261, as amended by H.R. 6260.

Section 1.137, as amended, designates the existing section as part of paragraph (a), adds a reference to the new fee under §1.17(l) for a petition for revival where the delay which resulted in abandonment was unavoidable, indicates that the petition must be promptly filed, and states when the showing that the delay was unavoidable must be verified. New paragraph 1.137(b) provides for filing a statement and a fee under §1.17(m) for revival of an application which was unintentionally abandoned, and also indicates when such petitions can be filed. Paragraph (c) requires that any petition for revival under paragraph (a) of §1.137 be promptly filed and that a terminal disclaimer, equivalent to the period of abandonment of the application, be filed with any petition under paragraph (a) filed more than six months after the date of abandonment.

Section 1.155 is amended to refer in paragraph (a) to §1.18(b) which sets forth the issue fee for a design application. Paragraph 1.155(b), as amended, includes a reference to the fee for delayed payment of the issue fee set forth in §1.17(l) where the delay in payment was unavoidable, indicates that the petition must be promptly filed, and states when showings that the delay was unavoidable must be verified. New paragraph 1.155(c) provides for acceptance of the late payment of the issue fee where the delay was unintentional upon petition and payment of the fee set forth in §1.17(m). New paragraph 1.155(c) also indicates when such petitions can be filed. Paragraph 1.155(d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where petition under paragraph (b) of §1.155 is not filed within six months of the date of abandonment.

Section 1.316 is amended to implement the statutory provisions of 35 U.S.C. 41(a) with regard to petition fees for revival of applications abandoned for failure to pay the issue fee. Paragraph (b) is amended to provide for petitions for revival with the fee in §1.17(l) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions for revival with the fee in §1.17(m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where a petition under paragraph (b) of §1.316 is not filed within six months of the date of abandonment.

Section 1.317 is amended to implement the statutory provisions of 35 U.S.C. 41(a) with regard to petition fees for patents lapsed for failure to pay the remaining balance of the issue fee. Paragraph (a) is amended to show that it applies only to patents in which the issue fee was paid prior to October 1, 1982. Issue fees paid on or after that date will be in accordance with §1.18. Paragraph (b) is amended to provide for petitions with the fee in

§1.17(l) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions with the fee in §1.17(m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of lapse of the patent where a petition under paragraph (b) of §1.317 is not filed within six months of the date of lapse.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony, were considered in adopting the changes set forth herein.

Written comments were received from three patent law groups and eleven individuals. The three patent law groups were (1) the American Patent Law Association whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office; (2) the Patent, Trademark and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of The Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups and by 3 individuals on their own behalf.

These comments appear below along with responses thereto.

Comments received relating to §§1.9, 1.27 and 1.28 and the forms of Part 3 are not discussed in substance in this rule change since additional time for submitting written comments is provided until August 13, 1982. All comments presented to these rules will be discussed in a later rule promulgation.

Comment: One person argued that it is unreasonable to require fees to lengthen a shortened statutory period.

Reply: A shortened statutory time is provided for by statute. The shortened period helps reduce patent pendency time and speed the disclosure of technology and information about patent rights. Many applicants can reply within the present three month shortened period which has been in effect for over fifteen years. The fee for extending the time provides a positive method for applicants to obtain an extension of time while still expediting the prosecution of their applications.

Comment: Another person commented that H.R. 6260 should be rejected in that the fee levels are too high.

Reply: The consideration of the merits of H.R. 6260 is not before the Office in this rule change.

Comment: Three patent bar groups and two individuals presented comments relating to the effect of the new extension of time fees

in §1.17 and the effect thereof on the current practice of granting an automatic one-month extension of time if a timely first response to a final rejection is filed by the applicant.

Reply: The Office plans to terminate the automatic one-month extension of time practice on October 1, 1982. It is felt that the extensions of time which are readily available under §§1.17 and 1.136 will meet the needs of applicants. The amount of the fees required to obtain an extension will be the same for periods of response before and after final rejection.

Comment: One suggestion was made to permit the filing of an appeal without the appeal fee where the Office has not acted on a timely response after final rejection by applicant.

Reply: Such a procedure is not possible under the provisions of H.R. 6260 since it calls for the appeal fee "On filing an appeal" in §41(a)6.

Comment: Two comments were received requesting that the rules be changed to make the due date for paying the fee for an oral hearing on appeal after the examiner's answer on appeal.

Reply: A change in the rules has been made to provide that the fee for an oral hearing is due no later than one month after the date of mailing of the examiner's answer.

Comment: Two comments were received requesting that no charge for revival of an abandoned application be made where the abandonment resulted from the non-receipt of an Office action by the applicant.

Reply: It is present Office practice to remail any Office action which is not received at applicant's correspondence address and start anew the response period. This procedure will continue in the future under the revised rules.

Comment: Three patent bar groups and two individuals indicated that the proposed deletion of the refund provisions due to PCT search reports in §1.26(b) and §1.446(b) would make the cost of filing under the Patent Cooperation Treaty prohibitively high and does not recognize the benefit of an earlier search on a corresponding application.

Reply: In view of these comments, proposed §1.445(a)(2) and (4) and §1.446(b) have been amended to provide a credit of $250 where there is a corresponding application.

Comment: One individual requested that the multiple dependent claim practice set forth in §1.75(c) be changed to permit one multiple dependent claim to refer to another multiple dependent claim as permitted under European practice.

Reply: This suggestion cannot be adopted since it is contrary to 35 U.S.C. 112 and cannot therefore be changed by rule.

Comment: One suggestion was made to change "official" to "Office" in §1.135(b).

Reply: The suggestion has been adopted.

Comment: One suggestion was made to allow refund of the oral hearing fee if an oral hearing is not held.

Reply: This suggestion was not adopted since such refund is not appropriate in view of the fact that the fee is stated to be "for requesting an oral hearing" and not the actual conduct thereof.

Comment: Three patent bar groups raised the question as to whether an applicant would be permitted to revive an unintentionally abandoned application under §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a) and suggested that this be made clear when the proposed rules are promulgated.

Reply: Yes, an applicant under certain conditions could use §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a).

Comment: Several comments related to the possibility of reviving applications unintentionally abandoned up to 15 years ago.

Reply: In view of the comments received, §1.137(b) is being implemented to provide only for the revival of applications which were unintentionally abandoned for a reasonable but limited period of time. This should create no substantial problems in regard to intervening rights situations. It would permit some greater flexibility than that originally proposed but should have no significant effect on the current case backlog, pendency or number of interferences pending.

Comment: One comment was received pointing out that the availability of an "unintentional abandonment" revival under §1.137(b) should not result in stricter holdings in "unavoidable abandonment" revival petitions under §1.137(a).

Reply: The Office plans to continue to use the current criteria used to decide petitions to revive applications unavoidably abandoned.

Comment: One written comment questioned whether the Commissioner has statutory authority to revive unintentionally abandoned applications.

Reply: If Congress did not intend the Commissioner to have such authority there would have been no reason to establish fees in §41(a)7 in H.R. 6260. The legislative history of H.R. 6260, House Report No. 97-542 (Committee on the Judiciary), also makes the Congressional intent clear. The provisions in H.R. 6260 relating to unintentional abandonment are substantive in addition to setting the fee.

Comment: One letter questioned what is intended by the statement in §1.137(b) that the Commissioner may require additional information where there is a question whether the abandonment was unintentional.

Reply: Additional information would be required only where there is an indication that the abandonment was intentional, for example, where an express abandonment has been filed. The record should be clear how such an express abandonment was unintentional if the petition is to be granted.

Comment: One comment raised the question as to whether in a petition to revive on grounds that the delay was unavoidable under §1.137(a), it would be sufficient that a registered attorney's statement be submitted which merely recites facts as related to him or her by another.

Reply: Statements must be made, where possible, by the person having direct personal knowledge of the facts. No change in the "showing" required or the persons making them is intended in such petitions. The rule merely clarifies that a statement by a registered attorney or agent need not be in the form of an oath or declaration.

Comment: One comment suggested that §1.317 be changed to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Reply: Section 1.317 has now been changed to provide for this lapse situation.

Comment: Three patent bar groups and one individual indicated that a full credit of the amount equal to the international search fee be made where both a U.S. national and international search are made by the United States Patent and Trademark Office.

Reply: While a complete credit is not considered proper in view of additional processing work (including searching) required in the second application, a credit of $250 has been provided in revising §1.445(a)(2) and (4).

Comment: One person commented that the term "patent" should be inserted after "abandoned" in §1.12(b).

Reply: The suggestion has been adopted.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of other changes which have been made as a result of the comments received and further review of the proposed rulemaking are identified below.

Implementation of the changes to §1.9, new §§1.27 and 1.28, and the deletion of Part 3 are being deferred for further comments by August 13, 1982. See the discussion below.

Subparagraph (a)(5) of §1.19 has been changed from that proposed by referring to subparagraphs (1) through (4) rather than (3) and (4) in order to clarify that copies of patents cannot be ordered at the rate set in subparagraph (a)(5). Instead, copies of patents must be ordered under paragraphs (a)(1) and (2) of §1.19.

Section 1.24 has been changed from that proposed to provide for the sale of 40-cent coupons. Coupons in this denomination may be useful in view of the charge of forty cents for a printed copy of a registered mark in §2.6(m) of Alternative A of the trademark rules.

Sections 1.137, 1.155 and 1.316 have been changed from that proposed in Alternative B to further specify the conditions under which unintentionally abandoned applications can be revived.

Sections 1.192 and 1.194 have been changed from that proposed so as to allow a request for an oral hearing and the payment of the required fee therefor to be made one month after the date of the examiner's answer. Previously, appellant was required to indicate a desire for an oral hearing at the time of filing the brief. The sections will now permit appellant to consider the examiner's answer before deciding whether to request an oral hearing and pay the required fee.

Section 1.317 has been changed in Alternative B to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Section 1.445(a)(2) and (4) have been changed from that proposed to provide for a reduction in the international search fee where there has been a corresponding United States national application and a credit to the national fee where an international search fee has been paid in a corresponding international application and the international search has been made by the United States Patent and Trademark Office.

Section 1.446(b) has been changed from that proposed to permit a refund of a portion of the search fee to the extent set forth in §1.445(a)(4), if such refund is requested at the time of paying the national fee.

IMPLEMENTATION OF PATENT FEE REVISION

The effective date of the patent fee revisions contained in this rulemaking is October 1, 1982. The changes which will become effective on October 1, 1982, under Public Law 96-517 (without enactment of H.R. 6260) are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under only Public Law 96-517, which appear in Alternative A. The changes which will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96-517 and H.R. 6260 will become effective on October 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to October 1, 1982. The rule changes in Alternative A will become effective on October 1, 1982, unless H.R. 6260 is enacted as a Public Law prior to October 1, 1982. If Alternative A becomes effective on October 1, 1982, the rule changes in Alternative B will not become effective on October 1, 1982. Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, the rule changes in Alternative B will become effective on October 1, 1982, in which

case the rule changes in Alternative A will not become effective on October 1, 1982.

Any fee which is due and payable on or after October 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of specific sections is set forth below:

IMPLEMENTATION OF SPECIFIC SECTIONS

The various sections will be implemented in the manner set forth below:

§1.16 National application filing fees.

Any national patent application filing fees paid on or after October 1, 1982, must be paid in the amounts set forth in this section. Any additional fees which become due under §1.16 in pending applications on or after October 1, 1982, or which have not been paid prior to October 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to October 1, 1982. For example, if an application filed prior to October 1, 1982, is amended on or after October 1, 1982, to include a multiple dependent claim for the first time, the fee set forth in §1.16(d) must be paid.

The surcharge in §1.16(e) of Alternative B is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. The statutory authority for the late filing of the fee or the oath or declaration becomes effective six months after enactment of H.R. 6260 as a Public Law.

§1.17 Patent application processing fees.

Any patent application processing fees paid on or after October 1, 1982, must be paid in the amounts set forth in this section.

The extension fees which must accompany a petition for an extension of time become effective on October 1, 1982, and apply to any application for which the period for responding, i.e., taking action, expires on October 1, 1982, or thereafter. If a response or action by the applicant was due before October 1, 1982, and was not filed timely or an extension of time until October 1, 1982, or thereafter, was not obtained, then §1.136(a) cannot be used to obtain an extension. Any response or action required before October 1, 1982, cannot have its time extended by using §1.136(a). If one or more previous extensions have been granted prior to October 1, 1982, extending the time for taking action until October 1, 1982, or thereafter, the fees which are due for additional extensions under §1.136(a) will be as set forth in §1.17(a)-(d) under either Alternative A or B. For example, under Alternative A, if a first one-month extension has

been granted prior to October 1, 1982 extending the time for taking action to October 15, 1982, a date on or after October 1, 1982, response within one month after the October 15 date to which the time for taking action has been extended would require a second month extension fee of $100. The $50 fee for the extension of the first month to October 15, 1982, would not be required since it had been granted before October 1, 1982. Response within two months after the October 15 date to which the time for taking action has been extended would require a $300 fee. Similarly, response within three months after the October 15 date to which the time for taking action has been extended would require a $500 fee. However, in no case may an applicant respond later than the maximum time period set by statute.

Other examples of the fees to be charged under Alternative A are contained in the following table:

Number of Extension(s) Prior to October 1, 1982	Total Fee For Response After Date to Which Time for Taking Action Has Been Extended As Of October 1, 1982		
	Within 1st Month	Within 2nd Month	Within 3rd Month
ONE	$100	$300	$500
TWO	$200	$400	*
THREE	$200	*	*

*If extensions for four months have previously been granted, no additional extensions are possible under §1.136(a) but may be available under §1.136(b) in certain limited situations.

The previous practice of extending the shortened statutory period an additional month upon the filing of a timely first response to a final rejection is being discontinued effective with any first response to a final rejection filed on or after October 1, 1982. Applicants can obtain additional time for response after that date by paying the appropriate fee for the same. An object of the previous practice, as expressed in §714.13 of the Manual of Patent Examining Procedure, was to obviate the necessity for appeal or filing a continuing application merely to gain time to consider the examiner's position in reply to a response timely filed after final rejection. Under §1.136(a) the object of the previous practice can be achieved without continuing the previous practice. Thus, under §1.136(a) an applicant can file a timely first response to a final rejection within the initial period without having to file an appeal or a continuing application if the examiner's response is not received prior to the expiration of the initial period for response. If the timely first response places the application in condition for allowance no additional response and no extension fee from applicant is required. If the examiner's advisory action indicates the timely first response did not place the application in condition for allowance the applicant may then consider the examiner's position to determine whether further prosecution is desirable. If further prosecution is not desired the application can be abandoned without further

response or expense. If further prosecution is desired, the applicant can petition and pay the necessary fee to extend the time to the extent appropriate up to the maximum permitted by statute. The availability of this flexibility under §1.136(a) eliminates the necessity for the previous practice. Further, under H.R. 6260 extensions of time would be granted in most instances by virtue of the payment of fees rather than without fees as in the previous practice. The elimination of the previous practice after final rejection is thus consistent with the letter and spirit of H.R. 6260.

After an applicant has petitioned and paid the extension fees of $550 for response within the fourth month pursuant to §1.136(a), any further extensions which are permitted under the statute must be obtained under §1.136(b).

A petition for extension of time under §1.136(a) may incorporate by reference a previously filed response without including an additional copy of the response in circumstances where the response was received late and the petition is filed to extend the time so that the response will be considered timely.

The appeal fees set forth in §1.17(e)-(g) are due for notices of appeal or briefs filed, or requests for oral hearings filed, on or after October 1, 1982. If more than one appeal occurs in an application, the fees are due for each notice of appeal, each brief, and each request filed for an oral hearing as long as a decision on the merits by the Board of Appeals resulted from the first notice of appeal, brief, and request for an oral hearing. If the examiner reopens prosecution in the application after appeal and prior to the decision by the Board of Appeals then the fee for the notice of appeal, brief, and request for an oral hearing will apply to a later appeal which does result in a decision by the Board of Appeals. No refund of any appeal fees is permitted since such are due on filing or on requesting an oral hearing. No fee is required for a reply brief.

The fees for petitions set forth in §1.17(h)-(j) and (l) apply to any such petition filed on or after October 1, 1982. The fee set forth in §1.17(m) of Alternative B would apply, with enactment of H.R. 6260 prior to October 1, 1982, to petitions (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent. Section 1.137(b) of Alternative B would apply to applications unintentionally abandoned by failure to prosecute, e.g., failure to respond to an Office action. Sections 1.155(c) and 1.316(c) of Alternative B would apply to applications in which the payment of the fee for issuing a patent is unintentionally delayed. These sections would be implemented, with enactment of H.R. 6260 prior to October 1, 1982, by making them effective as to any applications which would be covered by the literal language of the sections. In addition, and for a transition period between October 1, 1982, and December 31, 1982, a petition to revive an unintentionally abandoned application would be granted if (i) the application received a decision on a petition to revive the application on or after October 1, 1981, and before July 30, 1982, or (ii) a petition was filed or renewed on or after October 1, 1981, and before July 30, 1982, provided in the case of both

(i) and (ii) that a petition to revive was filed within one year of the date of abandonment. The dates in question were chosen so as to permit this remedial provision to be given as wide an application as possible to benefit applicants whose applications have previously been unintentionally abandoned, but who could not meet the previous requirements for a showing that the delay resulting in the abandonment was unavoidable. The dates were also chosen to prevent an applicant whose application has been abandoned for an unduly long period from attempting to take advantage of this new provision, possibly to the detriment of individuals or companies who had begun to make, use, or sell the subject matter of the application after the date of abandonment of the application. By using these dates the possibility of reviving the application of an applicant who has, in effect, abandoned the invention under 35 U.S.C. 102(c) is minimized. Implementing these sections in the manner set forth would be appropriate and proper in view of the legislative history of H.R. 6260, contained in House Report No. 97-542 (Committee on the Judiciary), which indicates that the Commissioner can establish time limits within which petitions to revive or to accept late payment of issue fees can be filed. Thus, it is entirely proper to limit such petitions in the manner set forth in order to prevent abuses from occurring. To ensure that abuses do not occur, §§1.137(b), 1.155(c), 1.316(c), and 1.317(c) specifically indicate that waivers of the time periods involved will not be considered via petitions under §1.183.

The fee set forth in §1.17(k) is required for any application filed on or after October 1, 1982, with a specification in a non-English language.

§1.18 Patent issue fees.

Any patent issue fee paid on or after October 1, 1982, must be paid in the amounts set forth in this section even if the notice of allowance was mailed prior to October 1, 1982, and indicates different amounts due. If the issue fee is paid prior to October 1, 1982, any balance of issue fee due must be paid in accordance with §1.317.

§1.19 Document supply fees.

The document supply fees set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after October 1, 1982.

§1.20 Post-issuance fees.

The post-issuance fees set forth in §1.20(a)-(d) apply to any petitions, requests, or actions filed on or after October 1, 1982. The amounts of the maintenance fees are included in §1.20.

Maintenance fees will be required for any patent actually applied for on or after December 12, 1980, whether or not the patent is entitled to the benefit of an earlier filing date under 35 U.S.C. 120 or a right of priority under 35 U.S.C. 119. For reissue patents, the controlling date would be the filing date of the original patent. For example, maintenance fees would only be

required where the application for the original patent was filed on or after December 12, 1980. As to patents resulting from international applications filed under the Patent Cooperation Treaty, maintenance fees will be required on all patents resulting from international applications having PCT filing dates on or after December 12, 1980.

The details implementing payment of the maintenance fees are not being established at this time since such fees will not be due for some time and additional consideration of the problems thereof is required.

§1.21 Miscellaneous fees and charges.

The miscellaneous fees and charges set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after October 1, 1982.

§1.445 International application filing and processing fees.

Any international application filing and processing fees paid on or after October 1, 1982, must be paid in the amounts set forth in this section.

Implementation Of Certain Sections Deferred For Further Comments

In view of the comments and the recommendations received at the hearing on July 9, 1982, the period for written comments on §1.9(c), (d), (e), and (f), and on §§1.27 and 1.28, has been extended until August 13, 1982 (see 47 FR 32458, July 27, 1982). Comments received at the hearing on July 9, 1982, expressed the view that there is no necessity to publish final rules on §1.9(c), (d), (e), and (f), and on §§1.27 and 1.28, by August 2, 1982, and that further time for consideration and comment was necessary. Persons commenting stated a belief that the pressure of time does not apply to §§1.27 and 1.28 as it does apply to the fee rulemaking. Accordingly, the period for written comments on these sections is extended until August 13, 1982. After receiving written comments by August 13, 1982, the changes to §1.9 and proposed §§1.27 and 1.28 will be adopted as final rules with such modifications as are found to be appropriate after review of the comments. These rule changes, with any appropriate modifications thereof, must become effective on October 1, 1982, with enactment of H.R. 6260 prior to October 1, 1982. Accordingly, adoption of the changes to §1.9 and new §§1.27 and 1.28 is being deferred at this time to permit additional written comments by August 13, 1982. However, these rule changes will be adopted, with any appropriate modifications, as soon as possible after receipt of the additional written comments. No additional proposal will be published and no additional hearing will be held prior to adoption of final rules on the changes to §1.9 and on new §§1.27 and 1.28.

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 3 was also extended until August 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change. Since it is not essential

that this deletion be published by August 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 3 as proposed.

SECTION II - REVISION OF TRADEMARK FEES

Background

A notice of proposed rulemaking was published in the Federal Register on June 28, 1982, at 47 FR 28063-28065 and in the Official Gazette on June 29, 1982, at 1019 TMOG 110-119. An oral hearing was held on July 9, 1982. Three written letters and statements were submitted. Three persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These amendments establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks.

Public Law 96-517

Public Law 96-517 authorizes the Commissioner to establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks. Public Law 96-517 requires that by October 1, 1982, fees for the filing and processing of an application for the registration of a trademark or other mark be set to recover in the aggregate 50 percent of the estimated average cost to the Office of such processing. Also by October 1, 1982, fees for providing all other services and materials relating to trademarks and other marks are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. This bill would amend the fee provisions to be implemented on October 1, 1982. H.R. 6260 would repeal the provisions in Public Law 96-517 requiring that filing and processing fees be set to recover in the aggregate 50 percent of the estimated average cost of such processing to the Office, and that fees for providing all other services and materials relating to trademarks and other marks be set to recover the estimated average cost to the Office of performing the service or furnishing the material. In passing H.R. 6260, the House of Representatives recommended a fee schedule to the Commissioner for fiscal year 1983. The fees set in Alternative B adopt the House recommendation.

This rule change, therefore, is also designed in the alternative to implement the fee provisions as they would be amended by H.R.

6260. The rule change contains changes which are common to Public Law 96-517 and H.R. 6260, as well as alternative rule changes which are specific to Public Law 96-517 (Alternative A) and to H.R. 6260 (Alternative B).

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a trademark application, or during the life of a registration.

Rule changes for implementing provisions of Public Law 96-517 or H.R. 6260 other than the fee provisions have not been included. Rule changes for implementing provisions other than the fee provisions will be published in a later rulemaking proposal.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this document under three different categories. Those changes which are common to Public Law 96-517 and H.R. 6260 appear first and are numbered 72-76. The change which relates only to Public Law 96-517 appears as Alternative A and is numbered 77. The change which is dependent upon enactment of H.R. 6260 appears as Alternative B and is numbered 78. The changes common to Public Law 96-517 and H.R. 6260 will become effective on October 1, 1982, whether or not H.R. 6260 is enacted as a Public Law. The changes contained in Alternative A will become effective on October 1, 1982, if H.R. 6260 does not become a Public Law prior to that date. Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, Alternative B will become effective on October 1, 1982, in which case Alternative A will not become effective.

The specific rules for which changes are made are §§2.6, 2.85, 2.101, 2.146, 2.162 and 2.167.

Rule Changes Common to Public Law 96-517 and H.R. 6260

Section 2.85, paragraph (e), is amended to delete reference to late filed fees for oppositions and affidavits. The manner in which such fees shall be handled is described in the pertinent sections for affidavits and oppositions.

Section 2.101, paragraph (c), is amended to delete the reference to a service charge which will no longer be charged for late-filed fees for oppositions.

Section 2.146, paragraph (b), is amended to add a fee for filing a petition to the Commissioner. Paragraph (f) of this section which indicates that no fee is required is deleted.

Section 2.162, paragraph (d), is amended to remove the reference to a service charge for late-filed fees on §8 affidavits.

Section 2.167, paragraph (g), is added to establish procedures relating to the fee for affidavits under §15, 15 U.S.C. 1065, and

to state the Office's action when no fee or an insufficient fee is filed.

Alternative A - Rule Change Only Under Public Law 96-517

Section 2.6 is revised to establish the fees authorized by Public Law 96-517 for filing and processing applications for the registration of trademarks or other marks and for providing services and materials relating to trademarks or other marks.

Alternative B - Rule Change Only Under H.R. 6260

Section 2.6 is revised to establish the fees recommended by the House of Representatives under H.R. 6260 for filing and processing applications for the registration of trademarks or other marks and for providing services and materials relating to trademarks or other marks. The $10 fee recommended by the House for certified copies appears in paragraphs (n) and (o) as a fee of $6.50 for a copy of a registered mark showing title and/or status and a fee of $3.50 for certification.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on several of the sections. All of the comments included in the written submissions and the oral testimony were considered in adopting the changes set forth herein.

Written comments were received from three individuals. Oral comments were presented at the hearing on behalf of a patent and trademark law group, the American Patent Law Association, and an organization of trademark owners and lawyers, the United States Trademark Association. One individual spoke on behalf of a law firm and expanded upon the points raised in his previously submitted written comments.

These comments appear below along with responses thereto, where appropriate.

Comment: The representative of the trademark association spoke favorably about the proposal presented. The organization opposed 100% recovery of trademark costs from user fees. It was felt that such an approach reflected a misconception that trademarks benefit only their owners and not consumers and the economy as a whole. The speaker solicited the assistance of the Patent and Trademark Office in altering this viewpoint.

Comment: The representative of the bar group questioned the fairness of the Office in establishing the fees under Alternative B. It appeared that the Office had accepted the USTA proposals only where they were higher. In all cases where the USTA recommendations were lower than those proposed, the difference was split. The filing fee was singled out as the most unfair fee.

Reply: In Alternative B, the rules adopt the fee levels recommended by the House Committee on the Judiciary in House Report No. 97-542. The Report recognizes that the Office needs to recover a certain amount of fee income over the next three

years. The application filing fee is expected to furnish more than 60% of the estimated annual income. It could not be reduced further without endangering operations. The reduction from $200.00 to $175.00 per class was covered to a large extent by higher fees for other services.

Comment: The philosophy of H.R. 6260 is to recover no more than 100%. Final fees should recover this level and no more.

Reply: Projecting processing costs three years in advance can never be absolutely accurate. The Office must have sufficient funds to process anticipated workloads under the fees set during fiscal years 1983-1985 when costs are expected to be somewhat higher than present costs.

Comment: One suggestion involved retaining Part 4 of 37 CFR, at least for the present. Occasional users of the registration system find it to be a readily available reference. Certain information in the forms is available from no other source. The speaker believed the time pressures to implement the fee changes precluded proper consideration of the merits of Part 4.

Reply: The period for comment on deletion of Part 4 has been extended to August 13, 1982 to allow for additional public comment and internal consideration.

Comment: The suggestion was made that references to affidavits and oppositions should be eliminated from §2.85(e) as the handling of late filed fees for these items is already covered directly in §§2.101(c), 2.162(d) and 2.167(g).

Reply: This suggestion was implemented.

Comment: A suggestion was made that §§2.101(c), 2.162(d) and 2.167(g) dealing with oppositions and affidavits under Section 8 and Section 15 be amended to require payment of all late filed fees within the time period specified in the notification by the Office.

Reply: All of the sections state that the affidavit or opposition "will not be refused if the required fee(s)...are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office." This language is considered sufficient to require payment of all fees or have the opposition, affidavit or declaration refused.

Comment: One suggestion was made to either cite §2.6 in all sections being changed relative to fees or to cite it in none.

Reply: Citations of §2.6 have been added to §2.101(c) and §2.146(b) to conform to §2.162(d) and §2.167(g).

Comment: It was suggested that the fee for a combined section 8 and 15 affidavit needed to be specified in the rules.

Reply: Section 2.6 has been changed to provide this combined fee.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of changes which were made as a result of the comments received and further review of the proposed rulemaking are identified below.

Deletion of Part 4 has been deferred for further comments by August 13, 1982 (see 47 FR 32458, July 27, 1982). As elimination of Part 4 is not essential to the setting of fees, and does not have to be in place 60 days before implementation, it was decided to ask for further public comment.

Section 2.85(e) has been revised to eliminate the references to oppositions and affidavits. Because the handling of late filed fees for these items is specified elsewhere, these references in §2.85(e) were redundant and confusing.

Both alternatives of §2.6 have been revised to add a fee for a combined affidavit under sections 8 and 15 of the Act. In order to prevent possible confusion by users of the Trademark system, it was included separately.

IMPLEMENTATION OF TRADEMARK FEE REVISION

The effective date of the trademark fee revisions contained in this rulemaking is October 1, 1982. The changes which will become effective on October 1, 1982, under Public Law 96-517 (without enactment of H.R. 6260) are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under only Public Law 96-517, which appear in Alternative A. The changes which will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96-517 and H.R. 6260 will become effective on October 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to October 1, 1982. The rule changes in Alternative A will become effective on October 1, 1982, unless H.R. 6260 is enacted as a Public Law prior to October 1, 1982. If Alternative A becomes effective on October 1, 1982, the rule changes in Alternative B will not become effective on October 1, 1982. Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, the rule changes in Alternative B will become effective on October 1, 1982, in which case the rule changes in Alternative A will not become effective on October 1, 1982.

Any fee which is due and payable on or after October 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of Section 2.6 is set forth below:

IMPLEMENTATION OF SECTION 2.6

Fees set forth in Section 2.6 must be paid in the amounts set forth in this section on or after October 1, 1982. Any additional fees which become due under §2.6 in pending applications on or after October 1, 1982, or which have not been paid prior to October 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to October 1, 1982. For example, if an application filed prior to October 1, 1982, is amended on or after October 1, 1982, to include additional classes, the fee set forth in §2.6(a) must be paid per class added.

IMPLEMENTATION OF CERTAIN SECTIONS DEFERRED FOR FURTHER COMMENTS

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 4 has also been extended until August 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change (see 47 FR 32458, July 27, 1982). Since it is not essential that this deletion be published by August 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 4 as proposed.

OTHER CONSIDERATIONS RELATING TO PATENT AND TRADEMARK FEE REVISIONS

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et. seq.).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. Public Law 96-517 and H.R. 6260 have both taken into consideration the impact they may have on small entities. The fees under Public Law 96-517 are set to recover 50% of patent and trademark processing costs rather than full costs and generally the rate of increase in the fees is less than that of inflation since the last increase in fees in 1965. Further, the rules implementing Public Law 96-517 take into consideration small entities by setting a lower patent filing fee than issue fee to recover the required level of patent processing costs. The lower filing fee permits a small entity to file a patent application for a relatively low cost and not have to pay the higher balance of fees required to achieve Public Law 96-517 recovery levels until examination is complete and it is known that a patent will issue. Under H.R. 6260 and this rulemaking, small entities would be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et. seq., since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to requests for extensions of time, will be reduced.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

AMENDMENT OF REGULATIONS

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and under Sections 31 and 41 of the Trademark Act of July 5, 1946, 15 U.S.C. §§1113, and 1123, Parts 1 and 2 of Title 37, Code of Federal Regulations, are amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

The table of contents for Part 1 is amended as follows:

FEES AND PAYMENT OF MONEY

1.16 National application filing fees.
1.17 Patent application processing fees.
1.18 Patent issue fees.
1.19 Document supply fees.
1.20 Post-issuance fees.
1.21 Miscellaneous fees and charges.

* * * * *

TIME FOR RESPONSE BY APPLICANT; ABANDONMENT OF APPLICATION

1.134 Time period for response to an Office action.

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INTERFERENCES: TERMINATION

* * * * *

1.268 Filing of interference settlement agreements.

SECTION I - REVISION OF PATENT FEES

RULE CHANGES COMMON TO PUBLIC LAW 96-517 AND H.R. 6260

1. Section 1.11 is amended by revising paragraph (c) to read as follows:

§1.11 Files open to the public.

* * * * *

(c) All requests for reexamination for which the fee under §1.20(c) has been paid, will be announced in the Official Gazette. Any reexaminations at the initiative of the Commissioner pursuant to §1.520 will also be announced in the Official Gazette. The announcement shall include at least the date of the request, if any, the reexamination request control number or the Commissioner initiated order control number, patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

* * * * *

2. Section 1.12 is revised to read as follows:

1.12 Assignment records open to public inspection.

(a) The assignment records, relating to original or reissue patents, including digests and indexes, and assignment records relating to pending or abandoned trademark applications and to trademark registrations, are open to public inspection and copies of any instrument recorded may be obtained upon request and payment of the fee set forth in §1.19(a)(5).

(b) Assignment records, digests, and indexes, relating to any pending or abandoned patent application are not available to the public. Copies of any such assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or applicant's assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee, or licensee of such application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules.

(c) Any request by a member of the public seeking copies of any assignment records of any pending or abandoned patent application preserved in secrecy under §1.14, or any information with respect thereto, must (1) be in the form of a petition accompanied by the petition fee set forth in §1.17(i) or (2) include written authority granting access to the member of the public to the particular assignment records from the applicant or applicant's assignee or attorney or agent of record.

(d) An order for a copy of an assignment should give the identification of the record. If identified only by the name of the patentee and number of the patent, or in the case of a trademark registration by the name of the registrant and number

of the registration, or by name of the applicant and serial number or international application number of the application, an extra charge as set forth in §1.21(f) will be made for the time consumed in making a search for such assignment.

3. Section 1.14 is amended by adding a new paragraph (e) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(e) Any request by a member of the public seeking access to, or copies of, any pending or abandoned application preserved in secrecy pursuant to paragraphs (a) and (b) of this section, or of any papers relating thereto, must (1) be in the form of a petition and be accompanied by the petition fee set forth in §1.17(i) or (2) include written authority granting access to the member of the public in that particular application from the applicant or the applicant's assignee or attorney or agent of record.

4. A new §1.19 is added which reads as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents

(1) Printed copy of a patent, including a design patent, or defensive publication document, except color plant patent---------- $ 1.00

(2) Printed copy of a plant patent in color---------- $ 8.00

(3) Copy of patent application as filed, each 50 pages or fraction thereof---------- $18.00

(4) Copy of patent file wrapper and contents, each 100 pages or fraction thereof---------- $30.00

(5) Copy of Office records, except as provided in paragraphs (a)(1) through (4) of this section, per page---------- $ 0.30

(6) Microfiche copy of microfiche, per microfiche---------- $ 2.00

(b) Certified copies of Office documents

(1) For certifying Office records, per certificate---------- $ 3.50

(2) For a search of assignment records,

abstract of title and certification, per patent---------- $12.00

(3) For comparing copies not prepared by the Office with the original, prior to certification of the copies, per page---------- $ 0.10

(c) Subscription services

(1) Subscription orders for printed copies of patents as issued, annual service charge for entry of order and one subclass---------- $ 4.00

(2) For annual subscription to each additional subclass in addition to the one covered by the fee under paragraph (c)(1) of this section, per subclass---------- $ 0.40

(d) Library service (35 U.S.C. 13)

For providing to libraries copies of all patents issued annually, per annum---------- $ 50.00

(e) Lists of patents in subclass

(1) For list of all United States patents in a subclass, per 100 patent numbers or fraction thereof---------- $ 2.00

(2) For list of United States patents in a subclass limited by date or patent number, per 50 patent numbers or fraction thereof--------- $ 2.00.

5. Section 1.21 is revised to read as follows:

§1.21 Miscellaneous fees and charges.

The Patent and Trademark Office has established the following fees for the services indicated:

(a) Registration of attorneys and agents

(1) For admission to examination for registration to practice, fee payable upon application---------- $75.00

(2) On registration to practice---------- $50.00

(3) For reinstatement to practice---------- $25.00

(4) For certificate of good standing as an attorney or agent---------- $10.00

(b) Deposit accounts

(1) For establishing or reinstating a deposit account---------- $10.00

(2) Service charge for each month when the balance at the end of the month is below $40---------- $ 2.00

(c) Disclosure document

For filing a disclosure document---------- $10.00

(d) Delivery box

Local delivery box rental, per annum---------- $24.00

(e) International-type search reports

For preparing an international-type search report of an international-type search made at the time of the first action on the merits in a national patent application---------- $25.00

(f) Search of Office records

For searching Patent and Trademark Office records for purposes not otherwise specified, per one-half hour or fraction thereof---------- $10.00

(g) Copy machine tokens

Token for copying machine, each---------- $ 0.20

(h) Recording of documents

(1) For recording each assignment, agreement or other paper relating to the property in a patent or application---------- $20.00

(2) Where a document to be recorded under paragraph (h)(1) of this section refers to more than one patent or application, for each additional patent or application--------- $ 5.00

(i) Publication in Official Gazette

For publication in the Official Gazette of a notice of the availability of an application or a patent for licensing or sale, each application or patent---------- $ 6.00

(j) For a duplicate or replacement of a permanent Office user pass (There is no charge for the first permanent user pass).-------- $ 5.00

(k) For items and services, that the Commissioner finds may be supplied, for which fees are not specified by statute or by this section, such charges as may be determined by the Commissioner with respect to each such item or service---------- actual cost.

6. Section 1.24 is revised to read as follows:

§1.24 Coupons.

Coupons in denominations of forty cents and one dollar are sold by the Patent and Trademark Office for the convenience of regular purchasers of U.S. patents and trademark registrations; these coupons may not be used for any other purpose. The 40-cent coupons are sold individually and in books of 50 with stubs for record for $20. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50. These coupons are good until used; they may be transferred but cannot be redeemed.

7. Section 1.25 is revised to read as follows:

§1.25 Deposit accounts.

(a) For the convenience of attorneys, agents, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§1.21(b)(1)). A minimum deposit of $50 or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An amount sufficient to cover all services, copies, etc., requested must always be on deposit. A service charge (§1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $40.

(b) Filing, issue, appeal, international-type search report, international application processing, petition, and post-issuance fees may be charged against these accounts. A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed. An authorization to charge to a deposit account the fee for a request for reexamination pursuant to §1.510 and any other fees required in a reexamination proceeding in a patent may also be filed with the request for reexamination.

8. Section 1.26 is revised to read as follows:

§1.26 Refunds.

(a) Money paid by actual mistake or in excess, such as a payment not required by law, will be refunded, but a mere change of purpose after the payment of money, as when a party desires to withdraw an application, an appeal, or a request for oral hearing, will not entitle a party to demand such a return. Amounts of one dollar or less will not be returned unless specifically demanded within a reasonable time, nor will the payer be notified of such amount; amounts over one dollar may be

returned by check or, if requested, by credit to a deposit account.

(b) (Reserved)

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,200.00 will be made to the requester of the proceeding. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

9. Section 1.45 is amended by revising paragraphs (b) and (c) to read as follows:

§1.45 Joint inventors.

* * * * *

(b) If an application for patent has been made through error and without any deceptive intention by two or more persons as joint inventors when they were not in fact joint inventors, the application may be amended to remove the names of those not inventors upon filing of a petition including a statement of the facts verified by all of the original applicants, the required fee (§1.17(h)), and an oath or declaration as required by §1.65 by the applicant who is the actual inventor, provided the amendment is diligently made. Such amendment must have the written consent of any assignee.

(c) If an application for patent has been made through error and without any deceptive intention by less than all the actual joint inventors, the application may be amended to include all the joint inventors upon filing of a petition including a statement of the facts verified by, and an oath or declaration as required by §1.65 executed by all the actual joint inventors, along with the required fee (§1.17(h)), provided the amendment is diligently made. Such amendment must have the written consent of any assignee.

10. Section 1.47 is revised to read as follows:

§1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the Official Gazette. The omitted inventor may subsequently join in the application on filing an oath or

declaration of the character required by §1.65. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the Office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the Official Gazette. The inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.65. A patent may be granted to the inventor upon a showing satisfactory to the Commissioner.

11. Section 1.51 is amended by revising paragraph (a)(4) and by adding a new paragraph (c) to read as follows:

§1.51 General requisites of an application.

(a) * * *

(4) The prescribed filing fee, see §1.16.

* * * * *

(c) Applicants may desire and are permitted to file with, or in, the application an authorization to charge, at any time during the pendency of the application, any fees required under any of §§1.16 to 1.18 to a deposit account established and maintained in accordance with §1.25.

12. Section 1.52 is amended by revising paragraph (a) and by adding a new paragraph (d) to read as follows:

§1.52 Language, paper, writing, margins.

(a) The application, any amendments or corrections thereto, and the oath or declaration must be in the English language except as provided for in §1.69 and paragraph (d) of this section, or be accompanied by a verified translation of the application and a translation of any corrections or amendments into the English language. All papers which are to become a part of the permanent

records of the Patent and Trademark Office must be legibly written, typed, or printed in permanent ink or its equivalent in quality. All of the application papers must be presented in a form having sufficient clarity and contrast between the paper and the writing, typing, or printing thereon to permit the direct reproduction of readily legible copies in any number by use of photographic, electrostatic, photo-offset, and microfilming processes. If the papers are not of the required quality, substitute typewritten or printed papers of suitable quality may be required.

* * * * *

(d) An application including a signed oath or declaration may be filed in a language other than English if it is accompanied by the fee set forth in §1.17(k). A verified English translation of the non-English language application is required to be filed with the application or within such time as may be set by the Office.

13. Section 1.55 is amended by revising paragraph (b) to read as follows:

§1.55 Serial number and filing date of application.

* * * * *

(b) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by §1.65. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed in the case of interference (§1.224); when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in §1.17(i).

* * * * *

14. Section 1.75 is amended by revising paragraph (c) to read as follows:

§1.75 Claim(s).

* * * * *

(c) One or more claims may be presented in dependent form, referring back to and further limiting another claim or claims in the same application. Any dependent claim which refers to more

than one other claim ("multiple dependent claim") shall refer to such other claims in the alternative only. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. For fee calculation purposes under §1.16, a multiple dependent claim will be considered to be that number of claims to which direct reference is made therein. For fee calculation purposes, also, any claim depending from a multiple dependent claim will be considered to be that number of claims to which direct reference is made in that multiple dependent claim. In addition to the other filing fees, any original application which is filed with, or is amended to include, multiple dependent claims must have paid therein the fee set forth in §1.16(d). Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of each of the particular claims in relation to which it is being considered.

* * * * *

15. Section 1.85 is revised to read as follows:

§1.85 Informal drawings.

The requirements of §1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted but in such case the drawing must be corrected or a new one furnished, as required.

§1.86 [Removed]

16. Section 1.86 is removed.

17. Section 1.102 is amended by revising paragraph (a) and adding new paragraphs (c) and (d) to read as follows:

§1.102 Advancement of examination.

(a) Applications will not be advanced out of turn for examination or for further action except as provided by this part, or upon order of the Commissioner to expedite the business of the Office, or upon filing of a request under paragraph (b) of this section or upon filing a petition under paragraphs (c) or (d) of this section with a verified showing which, in the opinion of the Commissioner, will justify so advancing it.

* * * * *

(c) A petition to make an application special may be filed without a fee if the basis for the petition is the applicant's age or health or that the invention will materially enhance the quality of the environment or materially contribute to the development or conservation of energy resources.

(d) A petition to make an application special on grounds other than those referred to in paragraph (c) of this section must be accompanied by the petition fee set forth in §1.17(i).

18. Section 1.103 is amended by revising paragraphs (a) and (b) to read as follows:

§1.103 Suspension of action.

(a) Suspension of action by the Office will be granted for good and sufficient cause and for a reasonable time specified upon petition by the applicant and, if such cause is not the fault of the Office, the payment of the fee set forth in §1.17(i). Action will not be suspended when a response by the applicant to an Office action is required.

(b) If action by the Office on an application is suspended when not requested by the applicant, the applicant shall be notified of the reasons therefor.

* * * * *

19. Section 1.104 is amended by revising paragraph (d) to read as follows:

§1.104 Nature of examination; examiner's action.

* * * * *

(d) Any national application may also have an international-type search report prepared thereon at the time of the national examination on the merits, upon specific written request therefor and payment of the international-type search report fee. See §1.21(e) for amount of fee for preparation of international-type search report.

* * * * *

20. Section 1.134 is added and reads as follows:

§1.134 Time period for response to an Office action.

An Office action will notify the applicant of any non-statutory or shortened statutory time period set for response to an Office action. Unless the applicant is notified in writing that response is required in less than six months, a maximum period of six months is allowed.

21. Section 1.135 is amended by revising paragraphs (a), (b) and (c) to read as follows:

§1.135 Abandonment for failure to respond within time period.

(a) If an applicant of a patent application fails to respond within the time period provided under §§1.134 and 1.136, the application will become abandoned unless an Office action indicates otherwise.

(b) Prosecution of an application to save it from abandonment pursuant to paragraph (a) of this section must include such complete and proper action as the condition of the case may require. The admission of an amendment not responsive to the

last Office action, or refusal to admit the same, and any proceedings relative thereto, shall not operate to save the application from abandonment.

(c) When action by the applicant is a bona fide attempt to respond and to advance the case to final action, and is substantially a complete response to the Office action, but consideration of some matter or compliance with some requirement has been inadvertently omitted, opportunity to explain and supply the omission may be given before the question of abandonment is considered.

* * * * *

22. Section 1.136 is revised to read as follows:

§1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a) If an applicant is required to respond within a non-statutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in §1.17 are filed prior to or with the response, unless (1) applicant is notified otherwise in an Office action or (2) the application is involved in an interference declared pursuant to §1.207. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available.

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See §1.245 for extension of time in interference proceedings.

23. Section 1.165 is amended by revising paragraph (b) to read as follows:

§1.165 Drawings.

* * * * *

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water

color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See §1.84.

24. Section 1.171 is revised to read as follows:

§1.171 Application for reissue.

An application for reissue must contain the same parts required for an application for an original patent, complying with all the rules relating thereto except as otherwise provided, and in addition, must comply with the requirements of the rules relating to reissue applications. The application must be accompanied by a certified copy of an abstract of title or an order for a title report accompanied by the fee set forth in §1.19(b)(2), to be placed in the file, and by an offer to surrender the original patent (§1.178).

25. Section 1.177 is revised to read as follows:

§1.177 Reissue in divisions.

The Commissioner may, in his or her discretion, cause several patents to be issued for distinct and separate parts of the thing patented, upon demand of the applicant, and upon payment of the required fee for each division. Each division of a reissue constitutes the subject of a separate specification descriptive of the part or parts of the invention claimed in such division; and the drawing may represent only such part or parts, subject to the provisions of §§1.83 and 1.84. On filing divisional reissue applications, they shall be referred to the Commissioner. Unless otherwise ordered by the Commissioner upon petition and payment of the fee set forth in §1.17(i), all the divisions of a reissue will issue simultaneously; if there be any controversy as to one division, the others will be withheld from issue until the controversy is ended, unless the Commissioner shall otherwise order.

26. Section 1.181 is amended by revising paragraphs (d) and (g) to read as follows:

§1.181 Petition to the Commissioner.

* * * * *

(d) Where a fee is required for a petition to the Commissioner the appropriate section of this part will so indicate. If any required fee does not accompany the petition, the petition will be dismissed.

* * * * *

(g) The Commissioner may delegate to appropriate Patent and Trademark Office officials the determination of petitions.

27. Section 1.182 is revised to read as follows:

§1.182 Questions not specifically provided for.

All cases not specifically provided for in the regulations of this part will be decided in accordance with the merits of each case by or under the authority of the Commissioner, and such decision will be communicated to the interested parties in writing. Any petition seeking a decision under this section must be accompanied by the petition fee set forth in §1.17(h).

28. Section 1.183 is revised to read as follows:

§1.183 Suspension of rules.

In an extraordinary situation, when justice requires, any requirement of the regulations in this part which is not a requirement of the statutes may be suspended or waived by the Commissioner or the Commissioner's designee, sua sponte, or on petition of the interested party, subject to such other requirements as may be imposed. Any petition under this section must be accompanied by the petition fee set forth in §1.17(h).

29. Section 1.191 is amended by revising paragraph (a) to read as follows:

§1.191 Appeal to Board of Appeals.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected, or who has been given a final rejection (§1.113), may, upon the payment of the fee set forth in §1.17(e), appeal from the decision of the examiner to the Board of Appeals within the time allowed for response.

* * * * *

30. Section 1.192 is amended by revising paragraph (a) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in §1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved. The time periods set forth herein are subject to the provisions of §1.136.

* * * * *

31. Section 1.194 is amended by revising paragraphs (b) and (c) to read as follows:

§1.194 Oral hearing.

* * * * *

(b) If appellant desires an oral hearing, appellant must file a written request for such hearing accompanied by the fee set forth in §1.17(g) within one month after the date of the examiner's answer. If appellant requests an oral hearing and submits therewith the fee set forth in §1.17(g), an oral argument may be presented by, or on behalf of, the primary examiner if considered desirable by either the primary examiner or the Board.

(c) If no request and fee for oral hearing have been timely filed by the appellant, the appeal will be assigned for consideration and decision. If the appellant has requested an oral hearing and has submitted the fee set forth in §1.17(g), a day of hearing will be set, and due notice thereof given to the appellant and to the primary examiner. Hearing will be held as stated in the notice, and oral argument will be limited to twenty minutes for the appellant and fifteen minutes for the primary examiner unless otherwise ordered before the hearing begins.

32. Section 1.197 is amended by revising paragraph (b) to read as follows:

§1.197 Action following decision.

* * * * *

(b) A single request for rehearing or reconsideration, or modification of the decision, may be made if filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states. Such time may be extended under the provisions of §1.136.

* * * * *

33. Section 1.231 is amended by revising paragraph (a)(1) to read as follows:

§1.231 Motions before the primary examiner.

(a) Within the period set in the notice of interference for filing motions any party to an interference may file a motion seeking:

(1) To dissolve as to one or more counts, except that such motion based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications will not normally be considered. A motion to dissolve an interference in which a patentee is a party on the ground that the claims corresponding to the counts are unpatentable to the patentee over patents or printed publications will be considered through reexamination if it complies with the requirements of §1.510(b) and is accompanied by the fee for requesting reexamination set in §1.20(c). Otherwise, a motion to dissolve an interference in which a patentee is a party will not

be considered if it would necessarily result in the conclusion that the claims of the patent which correspond to the counts are unpatentable to the patentee on a ground which is not ancillary to priority. Where a motion to dissolve is based on prior art, service on opposing parties must include copies of such prior art. A motion to dissolve on the ground that there is no interference in fact will not be considered unless the interference involves a design or plant patent or application or unless it relates to a count which differs from the corresponding claim of an involved patent or of one or more of the involved applications as provided in §§1.203(a) and 1.205(a).

* * *

* * * * *

34. Section 1.245 is revised to read as follows:

§1.245 Extension of time.

Extensions of time in any interference proceeding not otherwise provided for may be had by stipulation of the parties, subject to approval, or on motion duly brought, sufficient cause being shown for such extension. The provisions of §1.136 do not apply to time periods in interferences.

35. Section 1.246 is revised to read as follows:

§1.246 Late papers.

A motion or other paper belatedly filed will not normally be considered except upon a showing, under oath or in the form of a declaration (§1.68), of sufficient cause as to why such motion or paper was not timely presented. The provisions of §1.136 do not apply to time periods in interferences.

36. Section 1.263 is revised to read as follows:

§1.263 Statutory disclaimer by patentee.

The disclaimer referred to in §1.262, when made by a patentee in interference is not a disclaimer under 35 U.S.C. 253. If a disclaimer under the statute and the fee set forth in §1.20(d) (see §1.321) cancelling claims involved in the interference from the patent, is made by the patentee, including all assignees as shown by the records of the Patent and Trademark Office, the interference will be dissolved pro forma as to such claims.

37. Section 1.268 is added to read as follows:

§1.268 Filing of interference settlement agreements.

(a) Any agreement or understanding between parties to an interference, including any collateral agreements referred to therein, made in connection with or in contemplation of the termination of the interference, must be in writing and a true copy thereof filed in the Patent and Trademark Office, directed to the Board of Patent Interferences, before the termination of

the interference as between the said parties to the agreement or understanding.

(b) If any party filing the agreement or understanding pursuant to paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in §1.17(i) and on a showing of good cause.

(c) Failure to file the copy of the agreement or understanding pursuant to paragraph (a) of this section, will render permanently unenforceable such agreement or understanding and any patent of the parties involved in the interference or any patent subsequently issued on any application of the parties so involved. The Commissioner may, however, upon petition accompanied by the fee set forth in §1.17(h) and on a showing of good cause for failure to file within the time prescribed, permit the filing of the agreement or understanding during the six-month period subsequent to the termination of the interference as between the parties to the agreement or understanding.

38. Section 1.292 is amended by revising paragraph (a) to read as follows:

§1.292 Public use proceedings.

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations and the fee set forth in §1.17(j) is filed by one having information of the pendency of an application and is found, on reference to the primary examiner, to make a prima facie showing that the invention involved in an interference or claimed in an application believed to be on file had been in public use or on sale one year before the filing of the application, or before the date alleged by an interfering party in his or her preliminary statement or the date of invention established by such party, a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted, times may be set for taking testimony, which shall be taken as provided by §§1.271 to 1.286. The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

* * * * *

39. Section 1.304 is amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time provided pursuant to §1.197(b) or §1.256(b), the time for filing an appeal

or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. The time periods set forth herein are subject to the provisions of §1.136.

* * * * *

40. Section 1.311 is revised to read as follows:

§1.311 Notice of allowance.

(a) If, on examination, it shall appear that the applicant is entitled to a patent under the law, a notice of allowance will be sent to applicant at the correspondence address indicated in §1.33, calling for the payment of a specified sum constituting the issue fee (§1.18), which shall be paid within 3 months from the date of the mailing of the notice of allowance.

(b) An authorization to charge the issue fee (§1.18) to a deposit account may be filed in an individual application, either before or after mailing of the notice of allowance. Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of the notice of allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance.

41. Section 1.312 is revised to read as follows:

§1.312 Amendments after allowance.

(a) No amendment may be made as a matter of right in an application after the mailing of the notice of allowance. Any amendment pursuant to this paragraph filed before the payment of the issue fee may be entered on the recommendation of the primary examiner, approved by the Commissioner, without withdrawing the case from issue.

(b) Any amendment pursuant to paragraph (a) of this section filed after the date the issue fee is paid must be accompanied by a petition including the fee set forth in §1.17(i) and a showing of good and sufficient reasons why the amendment is necessary and was not earlier presented.

42. Section 1.313 is revised to read as follows:

§1.313 Withdrawal from issue.

(a) Applications may be withdrawn from issue for further action at the initiative of the Office or upon petition by the applicant. Any such petition by the applicant must include a showing of good and sufficient reasons why withdrawal of the application is necessary and, if the reason for the withdrawal is not the fault of the Office, must be accompanied by the fee set forth in §1.17(i). If the application is withdrawn from issue, a new notice of allowance will be sent if the application is again allowed. Any amendment accompanying a petition to withdraw an application from issue must comply with the requirements of §1.312.

(b) When the issue fee has been paid, and the patent to be issued has received its issue date and patent number, the application will not be withdrawn from issue for any reason except (1) mistake on the part of the Office, (2) a violation of §1.56 or illegality in the application, (3) unpatentability of one or more claims, or (4) for interference.

43. Section 1.314 is revised to read as follows:

§1.314 Issuance of patent.

If payment of the issue fee is timely made, the patent will issue in regular course unless (a) the application is withdrawn from issue (§1.313) or (b) issuance of the patent is deferred. Any petition by the applicant requesting deferral of the issuance of a patent must be accompanied by the fee set forth in §1.17(i) and must include a showing of good and sufficient reasons why it is necessary to defer issuance of the patent.

44. Section 1.321 is revised to read as follows:

§1.321 Statutory disclaimer.

(a) A disclaimer under 35 U.S.C. 253 must be accompanied by the fee set forth in §1.20(d) and identify the patent and the claim or claims which are disclaimed, and be signed by the person making the disclaimer, who shall state therein the extent of his or her interest in the patent. A disclaimer which is not a disclaimer of a complete claim or claims may be refused recordation. A notice of the disclaimer is published in the Official Gazette and attached to the printed copies of the specification. In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

(b) A terminal disclaimer, when filed in an application to obviate a double patenting rejection, must be accompanied by the fee set forth in §1.20(d) and include a provision that any patent granted on that application shall be enforceable only for and during such period that said patent is commonly owned with the application or patent which formed the basis for the rejection.

45. Section 1.324 is revised to read as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that there was a misjoinder or nonjoinder of inventors and that such misjoinder or omission occurred by error and without deceptive intention, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate deleting the misjoined inventor from the patent or adding the non-joined inventor to the patent.

46. Section 1.331 is amended by revising paragraph (a) to read as follows:

§1.331 Recording of assignments.

(a) Assignments, including grants and conveyances, of patents, national applications, or international applications which designate the United States of America, will be recorded in the Patent and Trademark Office under 35 U.S.C. 261. Other instruments affecting title to a patent, a national application, or an international application which designates the United States of America, and licenses, even though the recording thereof may not serve as constructive notice under 35 U.S.C. 261, will be recorded as provided in this section or at the discretion of the Commissioner. Any instrument to be recorded, except those under Part 7 of this title, must be accompanied by the fee set forth in §1.21(h).

* * * * *

47. Section 1.332 is revised to read as follows:

§1.332 Receipt and recording.

Assignments are recorded in regular order as promptly as possible, and then transmitted with the date and identification of the record stamped thereon to the persons entitled to them. The date of the record is the date of the receipt of the assignment at the Office in proper form and accompanied by the fee set forth in §1.21(h).

48. Section 1.334 is revised to read as follows:

§1.334 Issue of patent to assignee.

(a) In case of an assignment of the entire interest in the invention and application, or of the entire interest in the patent to be granted, the patent will normally issue to the assignee. If the assignee should hold an undivided part interest, the patent will normally issue jointly to the inventor and the assignee. If it is desired that the patent so issue, the assignment in either case must first have been recorded, and at a day not later than the date payment is made of the issue fee.

(b) At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent and Trademark Office. In the event an assignment has been filed, such statement must include the name and address of the assignee and indicate whether or not an acknowledgement of a recorded assignment has been received from the Patent and Trademark Office.

(c) If the assignment is recorded after the date of payment of the issue fee, the assignee may petition that the patent issue to the assignee as recorded. Any such petition must be accompanied by the fee set forth in §1.17(i).

49. Section 1.341 is amended by revising paragraph (h) to read as follows:

§1.341 Registration of attorneys and agents.

* * * * *

(h) Oath and registration fee. Before his or her name may be entered on the register of attorneys or on the register of agents, every applicant for registration must, after his or her application is approved, subscribe and swear to an oath or make a declaration prescribed by the Commissioner of Patents and Trademarks and pay the prescribed registration fee. (See §1.21(a)(2).)

* * * * *

50. Section 1.347 is revised to read as follows:

§1.347 Removing names from registers.

Attorneys and agents, registered to practice before the Patent and Trademark Office, should notify the Office of any change of address for entry on the register, by letter separate from any notice of change of address filed in individual applications. The Office may address a letter to any person on the registers, at the address of which separate notice for the register was last received, for the purpose of ascertaining whether such person desires to remain on the register. The name of any person failing to reply and give the information requested within a time limit specified will be removed from the register, and the names so removed published in the Official Gazette. Any name so removed may be reinstated, either on the register of attorneys or the register of agents, as may be appropriate. Any request for reinstatement must be accompanied by the fee set forth in §1.21(a)(3).

51. Section 1.445 is amended by revising paragraphs (a)(1) through (4) to read as follows:

§1.445 International application filing and processing fees.

(a) * * *

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) - $125.00.

(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:

(i) No corresponding prior United States national application with fee has been filed---------- $500.00

(ii) Corresponding prior United States national application with fee has been filed---------- $250.00.

(3) A supplemental search fee when required (see PCT Art. 17(3)(a) and PCT Rule 40.2) - $125.00 per additional invention.

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited by an amount of $250 where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single international search fee.

* * * * *

52. Section 1.446 is amended by revising paragraph (b) to read as follows:

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) Refund of a portion of the search fee may be made to the extent set forth in §1.445(a)(4) if requested at the time of paying the national fee.

* * * * *

53. Section 1.451 is amended by revising paragraph (b) to read as follows:

§1.451 The priority claim and priority document in an international application.

* * * * *

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Art. 8 and PCT Rule 17). The fee for preparing a certified copy is stated in §1.19(a)(4) and (b)(1).

* * * * *

54. Section 1.510 is amended by revising paragraph (a) to read as follows:

§1.510 Request for reexamination.

(a) Any person may, at any time during the period of enforceability of a patent, file a request for reexamination by the Patent and Trademark Office of any claim of the patent on the basis of prior art patents or printed publications cited under

§1.501. The request must be accompanied by the fee for requesting reexamination set in §1.20(c).

* * * * *

ALTERNATIVE A - RULE CHANGES UNDER ONLY PUBLIC LAW 96-517

Prior to October 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

55. A new §1.16 is added which reads as follows:

§1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant cases---------- $150.00

(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3---------- $ 15.00

(c) In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that §1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.)---------- $ 5.00

(d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s), per application------- $ 50.00

(If the additional fees required by paragraphs (b), (c) and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) (Reserved)

(f) For filing each design application----------$ 63.00

(g) Basic fee for filing each plant application-------- $100.00

(h) Basic fee for filing each reissue application------ $150.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent---------- $ 15.00

(j) In addition to the basic filing fee in a reissue application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent, (Note that §1.75(c) indicates how multiple dependent claims are considered for fee purposes.)---------- $ 5.00

(Note, see §1.445 for international application filing and processing fees.).

56. A new §1.17 is added which reads as follows:

§1.17 Patent application processing fees.

(a) Extension fee for response within first month pursuant to §1.136(a)---------- $ 50.00

(b) Extension fee for response within second month pursuant to §1.136(a)---------- $150.00

(c) Extension fee for response within third month pursuant to §1.136(a)---------- $350.00

(d) Extension fee for response within fourth month pursuant to §1.136(a)---------- $550.00

(e) For filing a notice of appeal from the examiner to the Board of Appeals---------- $ 58.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal---------- $ 58.00

(g) For filing a request for an oral hearing before the Board of Appeals---------- $ 50.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph----------$120.00

--§1.45 - for correction of inventorship
--§1.47 - for filing by other than all the inventors or a person not the inventor
--§1.182 - for decision on questions not specifically provided for
--§1.183 - to suspend the rules
--§1.268 - for late filing of interference settlement agreement

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph----------$ 60.00

--§1.12 - for access to an assignment record
--§1.14 - for access to an application
--§1.55 - for entry of late priority papers

--§1.102 - to make application special
--§1.103 - to suspend action in application
--§1.177 - for divisional reissues to issue separately
--§1.268 - for access to interference settlement agreement
--§1.312 - for amendment after payment of issue fee
--§1.313 - to withdraw an application from issue
--§1.314 - to defer issuance of a patent
--§1.334 - for patent to issue to assignee, assignment recorded late

(j) For filing a petition to institute a public use proceeding under §1.292----------$750.00

(k) For processing an application filed with a specification in a non-English language (§1.52(d))----------$ 20.00

(l) For filing a petition (1) for the revival of an abandoned application under 35 U.S.C. 133, or (2) for delayed payment of the issue fee under 35 U.S.C. 151----------$120.00.

57. A new §1.18 is added which reads as follows:

§1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent----------$250.00

(b) Issue fee for issuing a design patent for a 3½, 7 or 14 year term----------$ 88.00

(c) Issue fee for issuing a plant patent----------$125.00.

58. A new §1.20 is added which reads as follows:

§1.20 Post-issuance fees.

(a) For providing a certificate of correction of applicant's mistake (§1.323)----------$ 40.00

(b) Petition for correction of inventorship in patent (§1.324)----------$ 120.00

(c) For filing a request for reexamination (§1.510(a))----------$1,500.00

(d) For filing each statutory disclaimer (§1.321)----------$ 50.00

(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant-------- $ 200.00

(f) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980, in force beyond 8 years; the fee is due by seven years and six months after the original grant---------- $ 400.00

(g) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant---------- $ 600.00.

59. Section 1.137 is revised to read as follows:

§1.137 Revival of abandoned application.

(a) An application abandoned for failure to prosecute may be revived as a pending application if it is shown to the satisfaction of the Commissioner that the delay was unavoidable. A petition to revive an abandoned application must be accompanied by a showing of the causes of the delay, by the proposed response unless it has been previously filed, and by the petition fee set forth in §1.17(l). Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(b) (Reserved)

(c) Any petition filed pursuant to paragraph (a) of this section must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment. Any such petition not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

60. Section 1.155 is revised to read as follows:

§1.155 Issue and term of design patents.

(a) If, on examination, it shall appear that the applicant is entitled to a design patent under the law, a notice of allowance will be sent to the applicant, or applicant's attorney or agent, calling for the payment of the issue fee (§1.18(b)). If this issue fee is not paid within 3 months of the date of the notice of allowance, the application shall be regarded as abandoned.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that

the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) (Reserved)

(d) Any petition filed pursuant to paragraph (b) of this section must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment. Any such petition not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

61. Section 1.316 is revised to read as follows:

§1.316 Application abandoned for failure to pay issue fee.

(a) If the issue fee is not paid within 3 months from the date of the notice of allowance, the application will be regarded as abandoned. Such an abandoned application will not be considered as pending before the Patent and Trademark Office.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) (Reserved)

(d) Any petition filed pursuant to paragraph (b) of this section must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment. Any such petition not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

62. Section 1.317 is revised to read as follows:

§1.317 Lapsed patents; delayed payment of balance of issue fee.

(a) If the issue fee was paid prior to October 1, 1982, any remaining balance of the issue fee is to be paid within three months from the date of notice thereof and, if not paid, the patent will lapse at the termination of the three month period.

(b) The Commissioner may accept the payment of the remaining balance of the issue fee later than three months after the mailing of the notice thereof as though no lapse had ever

occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) (Reserved)

(d) Any petition filed pursuant to paragraph (b) of this section must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the lapse. Any such petition not filed within six months of the date of lapse must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of the patent equivalent to the period of lapse of the patent.

ALTERNATIVE B - RULE CHANGES UNDER H.R. 6260.

Prior to October 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

63. A new §1.16 is added which reads as follows:

§1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant cases:

By a small entity (§1.9(f))	$150.00
By other than a small entity	$300.00

(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§1.9(f))	$ 15.00
By other than a small entity	$ 30.00

(c) In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that §1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.):

By a small entity (§1.9(f))	$ 5.00
By other than a small entity	$ 10.00

(d) In addition to the basic filing fee in an original application, if the application

contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§1.9(f))---------- $ 50.00
By other than a small entity---------- $100.00

(If the additional fees required by paragraphs (b), (c) and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) Surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application:

By a small entity (§1.9(f))---------- $ 50.00
By other than a small entity---------- $100.00

(f) For filing each design application:

By a small entity (§1.9(f))---------- $ 62.50
By other than a small entity---------- $125.00

(g) Basic fee for filing each plant application:

By a small entity (§1.9(f))---------- $100.00
By other than a small entity---------- $200.00

(h) Basic fee for filing each reissue application:

By a small entity (§1.9(f))---------- $150.00
By other than a small entity---------- $300.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity (§1.9(f))---------- $ 15.00
By other than a small entity---------- $ 30.00

(j) In addition to the basic filing fee in a reissue application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent, (Note that §1.75(c) indicates how multiple dependent claims are considered for fee purposes.):

By a small entity (§1.9(f))---------- $ 5.00
By other than a small entity---------- $ 10.00

(Note, see §1.445 for international application filing and processing fees.).

64. A new §1.17 is added which reads as follows:

§1.17 Patent application processing fees.

(a) Extension fee for response within first month pursuant to §1.136(a):

By a small entity (§1.9(f))	$ 25.00
By other than a small entity	$ 50.00

(b) Extension fee for response within second month pursuant to §1.136(a):

By a small entity (§1.9(f))	$ 75.00
By other than a small entity	$150.00

(c) Extension fee for response within third month pursuant to §1.136(a):

By a small entity (§1.9(f))	$175.00
By other than a small entity	$350.00

(d) Extension fee for response within fourth month pursuant to §1.136(a):

By a small entity (§1.9(f))	$275.00
By other than a small entity	$550.00

(e) For filing a notice of appeal from the examiner to the Board of Appeals:

By a small entity (§1.9(f))	$ 57.50
By other than a small entity	$115.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

By a small entity (§1.9(f))	$ 57.50
By other than a small entity	$115.00

(g) For filing a request for an oral hearing before the Board of Appeals:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$100.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph $120.00

--§1.45 - for correction of inventorship
--§1.47 - for filing by other than all the inventors or a person not the inventor
--§1.182 - for decision on questions not specifically provided for
--§1.183 - to suspend the rules

--§1.268 - for late filing of interference settlement agreement

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph----------$ 60.00

--§1.12 - for access to an assignment record
--§1.14 - for access to an application
--§1.55 - for entry of late priority papers
--§1.102 - to make application special
--§1.103 - to suspend action in application
--§1.177 - for divisional reissues to issue separately
--§1.268 - for access to interference settlement agreement
--§1.312 - for amendment after payment of issue fee
--§1.313 - to withdraw an application from issue
--§1.314 - to defer issuance of a patent
--§1.334 - for patent to issue to assignee, assignment recorded late

(j) For filing a petition to institute a public use proceeding under §1.292----------$750.00

(k) For processing an application filed with a specification in a non-English language (§1.52(d))----------$ 20.00

(l) For filing a petition (1) for the revival of an abandoned application under 35 U.S.C. 133, or (2) for delayed payment of the issue fee under 35 U.S.C. 151:

By a small entity (§1.9(f))----------$ 25.00
By other than a small entity----------$ 50.00

(m) For filing a petition (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent:

By a small entity (§1.9(f))----------$250.00
By other than a small entity----------$500.00.

65. A new §1.18 is added which reads as follows:

§1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§1.9(f))---------- $250.00
By other than a small entity---------- $500.00.

(b) Issue fee for issuing a design patent:

By a small entity (§1.9(f))---------- $ 87.50
By other than a small entity---------- $175.00.

(c) Issue fee for issuing a plant patent:

By a small entity (§1.9(f))	$125.00
By other than a small entity	$250.00.

66. A new §1.20 is added which reads as follows:

§1.20 Post-issuance fees.

(a) For providing a certificate of correction of applicant's mistake (§1.323)	$ 40.00
(b) Petition for correction of inventorship in patent (§1.324)	$ 120.00
(c) For filing a request for reexamination (§1.510(a))	$1,500.00
(d) For filing each statutory disclaimer (§1.321):	
By a small entity (§1.9(f))	$ 25.00
By other than a small entity	$ 50.00
(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before (date of enactment), in force beyond 4 years; the fee is due by three years and six months after the original grant	$ 200.00
(f) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before (date of enactment), in force beyond 8 years; the fee is due by seven years and six months after the original grant	$ 400.00
(g) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before (date of enactment), in force beyond 12 years; the fee is due by eleven years and six months after the original grant	$ 600.00
(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after (date of enactment), in force beyond 4 years; the fee is due by three years and six months after the original grant:	
By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00

(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after (date of enactment), in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f))	$ 400.00
By other than a small entity	$ 800.00

(j) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after (date of enactment), in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§1.9(f))	$ 600.00
By other than a small entity	$1200.00.

67. Section 1.66 is revised to read as follows:

§1.66 Officers authorized to administer oaths.

(a) The oath or affirmation may be made before any person within the United States authorized by law to administer oaths . An oath made in a foreign country may be made before any diplomatic or consular officer of the United States authorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority shall be proved by a certificate of a diplomatic or consular officer of the United States, or by an apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States. The oath shall be attested in all cases in this and other countries, by the proper official seal of the officer before whom the oath or affirmation is made. Such oath or affirmation shall be valid as to execution if it complies with the laws of the State or country where made. When the person before whom the oath or affirmation is made in this country is not provided with a seal, his official character shall be established by competent evidence, as by a certificate from a clerk of a court of record or other proper officer having a seal.

(b) When the oath is taken before an officer in a country foreign to the United States, any accompanying application papers, except the drawings, must be attached together with the oath and a ribbon passed one or more times through all the sheets of the application, except the drawings, and the ends of said ribbon brought together under the seal before the latter is affixed and impressed, or each sheet must be impressed with the official seal of the officer before whom the oath is taken. If the papers as filed are not properly ribboned or each sheet impressed with the seal, the case will be accepted for examination, but before it is allowed, duplicate papers, prepared in compliance with the foregoing sentence, must be filed.

68. Section 1.137 is revised to read as follows:

§1.137 Revival of abandoned application.

(a) An application abandoned for failure to prosecute may be revived as a pending application if it is shown to the satisfaction of the Commissioner that the delay was unavoidable. A petition to revive an abandoned application must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by a showing of the causes of the delay, by the proposed response unless it has been previously filed, and by the petition fee set forth in §1.17(l). Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(b) An application unintentionally abandoned for failure to prosecute may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date of abandonment of the application. A petition to revive an unintentionally abandoned application must be accompanied by (1) a statement that the abandonment was unintentional, (2) a proposed response unless it has been previously filed, and (3) a petition fee as set forth in §1.17(m). Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three month period set forth in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(c) Any petition pursuant to paragraph (a) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

69. Section 1.155 is revised to read as follows:

§1.155 Issue and term of design patents.

(a) If, on examination, it shall appear that the applicant is entitled to a design patent under the law, a notice of allowance will be sent to the applicant, or applicant's attorney or agent, calling for the payment of the issue fee (§1.18(b)). If this issue fee is not paid within 3 months of the date of the notice of allowance, the application shall be regarded as abandoned.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of abandonment of the application. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

70. Section 1.316 is revised to read as follows:

§1.316 Application abandoned for failure to pay issue fee.

(a) If the issue fee is not paid within 3 months from the date of the notice of allowance, the application will be regarded as abandoned. Such an abandoned application will not be considered as pending before the Patent and Trademark Office.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed

after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of abandonment of the application. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

71. Section 1.317 is revised to read as follows:

§1.317 Lapsed patents; delayed payment of balance of issue fee.

(a) If the issue fee was paid prior to October 1, 1982, any remaining balance of the issue fee is to be paid within three months from the date of notice thereof and, if not paid, the patent will lapse at the termination of the three month period.

(b) The Commissioner may accept the payment of the remaining balance of the issue fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the lapse, and must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing

must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the remaining balance of the fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the patent lapsed or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of lapse of the patent. The petition to accept the delayed payment must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay in payment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting acceptance of an unintentionally delayed payment will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of lapse must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of the patent equivalent to the period of lapse of the patent.

(35 U.S.C. 6 and 25)

PART 2 - RULES OF PRACTICE IN TRADEMARK CASES

SECTION II - REVISION OF TRADEMARK FEES

RULE CHANGES COMMON TO PUBLIC LAW 96-517 and H.R. 6260

72. Section 2.85 is amended by revising paragraph (e) to read as follows:

§2.85 Classification schedules.

* * * * *

(e) Where the amount of the fee received on filing an appeal in connection with an application or on an application for renewal or in connection with a petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because multiple classes in an application or registration are involved, the appeal or renewal application or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent and Trademark Office

within the time limit set forth in the notification of this defect by the Office, or if action is sought only for the number of classes equal to the number of fees submitted.

* * * * *

73. Section 2.101 is amended by revising paragraph (c) to read as follows:

§2.101 Filing an opposition.

* * * * *

(c) If no fee, or a fee insufficient to cover at least one class, is filed within 30 days after publication of the mark to be opposed or within an extension of the time for filing an opposition, the opposition will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office.

* * * * *

74. Section 2.146 is amended by revising paragraph (b) to read as follows, and by removing paragraph (f):

§2.146 Petition to the Commissioner.

* * * * *

(b) Any such petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested and the requisite fee (See §2.6). Any brief in support thereof should accompany or be embodied in the petition; in contested cases any brief in opposition shall be filed within fifteen days after service of the petition. Where facts are to be proved in ex parte cases (as in petition to revive an abandoned application), the proof in the form of affidavits or declarations in accordance with §2.20 (and exhibits, if any) must accompany the petition.

* * * * *

75. Section 2.162 is amended by revising paragraph (d) to read as follows:

§2.162 Requirements for affidavit or declaration during sixth year.

* * * * *

(d) Include the required fee for each class to which the affidavit or declaration pertains in the registration. If no fee, or a fee insufficient to cover at least one class, is filed before the expiration of the sixth year following the date of registration or of publication under §12(c) of the Act, the affidavit or declaration will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office

within the time limit set forth in the notification of this defect by the Office. If insufficient fees are included to cover all classes in the registration, the particular class or classes to which the affidavit or declaration pertains should be specified.

* * * * *

76. Section 2.167 is amended by adding a paragraph (g) as follows:

§2.167 Affidavit or declaration under Section 15.

* * * * *

(g) Include the required fee for each class to which the affidavit or declaration pertains in the registration. If no fee, or a fee insufficient to cover at least one class, is filed at an appropriate time, the affidavit or declaration will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office. If insufficient fees are included to cover all classes in the registration, the particular class or classes to which the affidavit or declaration pertains should be specified.

ALTERNATIVE A - RULE CHANGE ONLY UNDER PUBLIC LAW 96-517

Prior to October 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

77. Section 2.6 is revised to read as follows:

§2.6 Trademark fees.

The following fees and charges are established by the Patent and Trademark Office for trademark cases:

(a)	For filing an application, per class----------	$88.00
(b)	For filing an application for renewal of a registration, per class----------	150.00
(c)	For filing to publish a mark under §12(c), per class----------	50.00
(d)	For issuing a new certificate of registration upon request of assignee----------	50.00
(e)	For a certificate of correction of registrant's error----------	50.00
(f)	For filing a disclaimer to a registration----------	50.00

(g) For filing an amendment to a registration---------- 50.00

(h) For filing an affidavit under §8 of the Act, per class---------- 50.00

(i) For filing an affidavit under §15 of the Act, per class---------- 50.00

(j) For filing a combined affidavit under §§8 and 15 of the Act, per class---------- 100.00

(k) For petitions to the Commissioner---------- 50.00

(l) For filing petition to cancel or notice of opposition, per class---------- 100.00

(m) For ex parte appeal to the Trademark Trial and Appeal Board, per class---------- 50.00

(n) For printed cópy of registered mark
Copy only---------- .40
Copy showing title and/or status---------- 6.50

(o) For certifying trademark records, per certificate---------- 3.50

(p) For photocopies or other reproductions of records, drawings, or printed material, per page of the material copied---------- .30

(q) For recording trademark assignment, per document---------- 20.00

For each mark in addition to one assigned in the same document---------- 5.00

(r) For abstracts of title to each registration or application, including the search---------- 12.00

(s) For special service handling of late filed fees in connection with a renewal------- 50.00

(t) For items and services that the Commissioner finds may be supplied, for which fees are not specified, such charges as may be determined by the Commissioner with respect to each such item or service---------- actual cost.

ALTERNATIVE B - RULE CHANGE ONLY UNDER H.R. 6260

Prior to October 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

78. Section 2.6 is revised to read as follows:

§2.6 Trademark fees.

The following fees and charges are established by the Patent and Trademark Office for trademark cases:

(a)	For filing an application, per class	$175.00
(b)	For filing an application for renewal of a registration, per class	300.00
(c)	For filing to publish a mark under §12(c), per class	100.00
(d)	For issuing a new certificate of registration upon request of assignee	100.00
(e)	For a certificate of correction of registrant's error	100.00
(f)	For filing a disclaimer to a registration	100.00
(g)	For filing an amendment to a registration	100.00
(h)	For filing an affidavit under §8 of the Act, per class	100.00
(i)	For filing an affidavit under §15 of the Act, per class	100.00
(j)	For filing a combined affidavit under §§8 and 15 of the Act, per class	200.00
(k)	For petitions to the Commissioner	100.00
(l)	For filing petition to cancel or notice of opposition, per class	200.00
(m)	For ex parte appeal to the Trademark Trial and Appeal Board, per class	100.00
(n)	For printed copy of registered mark Copy only Copy showing title and/or status	 1.00 6.50
(o)	For certifying trademark records, per certificate	3.50
(p)	For photocopies or other reproductions of records, drawings, or printed material, per page of the material copied	.30
(q)	For recording trademark assignments, per document	100.00
	For each mark in addition to one assigned	

in the same document---------- 20.00

(r) For abstracts of title to each registration or application, including the search-------- 12.00

(s) For special service handling of late filed fees in connection with a renewal----- 100.00

(t) For items and services that the Commissioner finds may be supplied, for which fees are not specified, such charges as may be determined by the Commissioner with respect to each such item or service---------- actual cost.

(Sections 31 and 41 of the Trademark Act of July 5, 1946 (15 U.S.C. §§1113 and 1123); (35 U.S.C. 6 and 25))

July 14, 1982
Date

Gerald J. Mossinghoff
Commissioner of Patents
and Trademarks

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,007

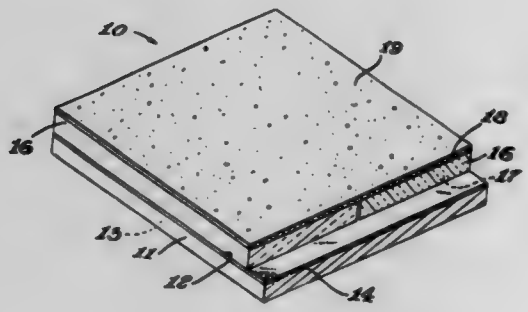
ROOF CONSTRUCTION AND METHOD THEREOF

John S. Best, deceased, late of Midland, Mich., by Dow Chemical Company, assignor to The Dow Chemical Company, Midland, Mich.

Original No. 3,411,256, dated Nov. 19, 1968, Ser. No. 495,847, Oct. 14, 1965. Application for reissue Aug. 2, 1978, Ser. No. 930,439

Int. Cl.[3] E04B *1/80, 7/00*

U.S. Cl. 52—408 2 Claims



1. A method of preparing a built up roof consisting essentially of applying and affixing to a roof deck a water impermeable membrane disposing a plurality of closed cell water impermeable thermal insulating members *in coplanar disposition* having fissures therebetween above said water impermeable membrane on the upper side of the membrane and applying a water permeable protective layer [on] *consisting only of loose gravel spread directly over* the thermal insulating layer, *the exposed face and body of said protective layer and the interface of said protective layer with said thermal insulating layer being water permeable.*

Re. 31,008

DAMPENED RAILWAY CAR TRUCK

Franklin D. Barber, Flossmoor, Ill., assignor to Standard Car Truck Company, Chicago, Ill.

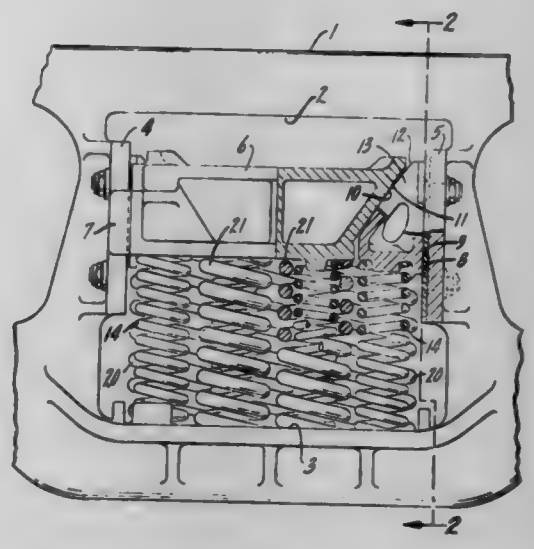
Original No. 3,714,905, dated Feb. 6, 1973, Ser. No. 115,184, Feb. 16, 1971. Application for reissue Jan. 31, 1980, Ser. No. 112,713

Int. Cl.[3] B61F *5/06, 5/12, 5/24*

U.S. Cl. 105—197 DB 5 Claims

1. A railway truck assembly including a pair of parallel side frames, a window in each of said side frames, a bolster extending perpendicularly between said side frames and having each of its opposite ends received in one of said windows, each of said windows having widened side walls, said side walls having portions extending *in the same plane and* in opposite directions laterally of their associated side frame, said side walls *and planar extending portions,* paralleling each other and carrying a plurality of wear plates, *with each wear plate having its planar engaging surface parallel with the planar side wall and extending portions,* said wear plates being positioned on opposite sides of the linear center line of their associated side frame, each of said wear plates having a portion positioned inwardly of said extending side wall portions, each of said bolster end portions having a plurality of spaced pockets positioned in its sides, each of said pockets having a wall inclined downwardly away from and opposed to one of said wear plates, an individual wedge element received in each of said pockets, each of said wedge elements engaging the inclined wall of its associated pocket and engaging the wear plate opposed to its associated pocket *the entire engaging surfaces of the respective wear plates and wedge elements being in substantially the same lateral plane,* and yielding means for each of said wedge elements, each said yielding means being positioned in said window and urging its associated wedge element toward its associated pocket.

3. In a railway truck bolster and side frame assembly, a side frame having a window, a bolster having an end portion penetrating said window, said side frame having parallel *and planar* window side wall portions extending *only* laterally in opposite directions from the linear center line of said side frame, a first pair of wedge means engaging one side of said bolster end and one of said side wall portions, a second pair of wedge means engaging the opposite side of said bolster end and the other of said side wall portions, said wedge means of said first pair



being positioned on opposite sides of the linear center line of said frame, said wedge means of said second pair being positioned on opposite sides of said center line of said side frame, each of said wedge means of said first pair being opposite and aligned with a wedge means of said second pair *the entire engaging surfaces of the respective and engaging wedge means and side frame being in substantially the same plane and applying only compressive forces perpendicular to the bolster center line and only frictional shear forces parallel to the bolster center line upon the opposing surfaces of said side frame.*

4. A railway side frame and bolster assembly including a side frame having a window, the vertical side walls of said window including parallel *and planar* portions extending laterally in opposite directions from the longitudinal center line of said side frame and substantially beyond the main body of said side frame, said bolster having an end portion penetrating said window and wedge means engaging the opposite sides of said bolster end portion and said laterally extending side wall portions on opposite sides of the longitudinal center line of said side frame *with the entire engaging surfaces of said wedge means and said laterally and planar extending side wall portions being in substantially the same plane.*

Re. 31,009

Patent Not Issued For This Number

Re. 31,010

PREPARATION OF CARBOXYLIC ACID ESTERS WITH BF_3 COMPLEX CATALYST

Abraham P. Gelbein, Morristown, N.J., assignor to Chem Systems Inc., New York, N.Y.

Original No. 4,262,138, dated Apr. 14, 1981, Ser. No. 28,459, Apr. 9, 1979. Application for reissue Jun. 11, 1981, Ser. No. 272,519

Int. Cl.³ C07C *67/38*

U.S. Cl. 560—233 8 Claims

1. A process for the carbonylation of an olefin selected from the group consisting of ethylene and propylene which comprises reacting the olefin with carbon monoxide in the presence of a catalyst complex containing equimolar amounts of BF_3 and alcohol at a temperature of from 0° C. to 100° C., carrying out said reaction with an internal molar ratio of carbon monoxide to olefin of at least 5:1 until about 50% of the alcohol in said catalyst is consumed, thereby forming a carboxylic acid ester and liberating free BF_3; separating sufficient BF_3 from the reaction mass by stripping to leave a first residue containing equimolar amounts of the BF_3, the alcohol and the carboxylic acid ester; admixing the first residue with additional alcohol; thereafter distilling said admixture to separate overhead an azeotrope of said alcohol and said carboxylic acid ester [and additional uncomplexed alcohol] until a second residue containing BF_3 to alcohol in a molar ratio of 1:2 remains; and thereafter combining said second residue with additional BF_3 to form the catalyst complex.

8. The process of claim 1 wherein additional uncomplexed alcohol is distilled from the admixture of the first residue and additional alcohol, after the azeotrope of said alcohol and said carboxylic acid ester is separated overhead.

PLANT PATENTS

GRANTED AUGUST 10, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,873
GRAPE VINE

Allan A. Corrin, 6541 S. Holbrook, Reedley, Calif. 93654

Filed Dec. 12, 1980, Ser. No. 216,062
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—47 1 Claim

1. A new and distinct variety of grape vine, substantially as illustrated and described, characterized by its general resemblance to the Thompson Seedless grape vine (unpatented) in bearing elongated, seedless, light green berries, but being distinguished therefrom and characterized as to novelty by having leaves wherein the petiole sinus of each leaf is not closed by the adjacent lobes thereof and by bearing berries having a more blunt apical end; the fruit of the new variety, in comparison with fruit of the Thompson Seedless variety, maturing about 30 days later, retaining a desirable color in cold storage for a substantially longer period of time, having a tougher skin, and being superior in seedless quality, the clusters borne by the new variety being resistant to "shatter" and the berries thereof being of large size without girdling or application of gibberellin or other growth regulator, the shatter-resistance of the bunches and the size of the berries borne by the new variety without girdling or such application being equal to said bunch and berry characteristics of the Thompson Seedless variety with girdling and/or such application.

4,874
GRAPE VINE

Allan A. Corrin, 6541 S. Holbrook, Reedley, Calif. 93654

Filed Dec. 12, 1980, Ser. No. 215,670
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—47 1 Claim

1. A new and distinct variety of grape vine, substantially as illustrated and described, characterized by its resemblance to the Black Rose grape vine (unpatented), which it most nearly resembles, in bearing fruit of large size having a dark, approximately black skin, the new variety being characterized as to novelty by having leaves of extremely large size and berries having a heavy bluish-gray bloom and by being distinguished from the Black Rose variety in that the new variety is of more vigorous growth and bears fruit which matures about 30 days later, has superior shipping qualities due to a tougher skin and heavier stem, and being further distinguished from the Black Rose variety by more even ripening of each bunch so that each berry of the new variety has a skin color which is substantially solidly and uniformly dark except for a small annulus about the stem.

4,875
AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA", Isselburg, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,124
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet known by the cultivar name Atlanta, as described and illustrated, and particularly characterized by its light pink flower color, medium to dark green variegated leaves, with contrasting light green centers; upright and rigid stems; floriferous habit, with 7–12 flowers appearing on each stem, and by its uniform and compact growth habit.

PATENTS

GRANTED AUG. 10, 1982

ERRATA

For CLASS	See PATENT NO.
441–003	4,343,055
441–084	4,343,056
374–031	4,343,182
374–158	4,343,185
376–293	4,343,681
376–214	4,343,682
524–041	4,343,727
523–456	4,343,728
524–529	4,343,729
524–551	4,343,730
523–427	4,343,731
524–114	4,343,732
524–087	4,343,733
548–412	4,343,741
549–380	4,343,742
429–157	4,343,849
525–449	4,343,957
278–021	4,343,995
378–021	4,343,996

PATENTS

GRANTED AUGUST 10, 1982

GENERAL AND MECHANICAL

4,343,044

STRETCHABLE SPEED SWIM SUIT

William F. Borda, Laureldale; Thomas M. Fry, Greenfields, and Charles A. Rist, Jr., Muhlenberg Park, all of Pa., assignors to Dolfin Corporation, Shillington, Pa.

Continuation-in-part of Ser. No. 1,925, Jan. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 845,338, Oct. 25, 1977, abandoned. This application Aug. 11, 1980, Ser. No. 176,621

Int. Cl.[3] A41D *5/00*

U.S. Cl. 2—67 17 Claims



1. A speed swim suit fashioned out of hydrophobic, synthetic stretch yarn knit into an open mesh fabric, said fabric having a multitude of openings therein of sufficient size to allow water and air to pass freely therethrough to avoid water retention, water entrapment and resultant billowing of said fabric, while being sufficiently opaque to conceal the underlying body of the wearer, said mesh comprising a plurality of courses and wales formed of loops in length of said yarn, said yarn lengths being disposed in a first group and a second group, each yarn length of said first group forming a loop in each consecutive course, the loops of the first group of yarn lengths being disposed consecutively in at least three alternate courses extending in a first direction and at least three alternate courses extending in a second, opposite, direction, each yarn length of said second group forming a loop in each consecutive course, with the loops of the second group of yarn lengths being disposed consecutively in at least three alternate courses extending in said second direction and at least three alternate courses extending in said first direction.

4,343,045

SHOULDER GARMENT

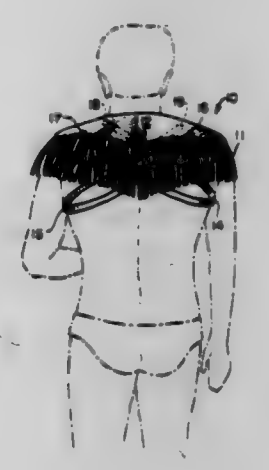
Gino Ferrari, 83 Colebay Corner, St. Maarteen, Netherlands

Filed Jan. 12, 1981, Ser. No. 224,066

Int. Cl.[3] A41D *23/00*

U.S. Cl. 2—92 3 Claims

1. A garment comprising a main body section adapted to extend over the upper chest and shoulders of the wearer, a fringe area secured along the entire lower edges of said main body section and depending downwardly therefrom, said fringe area comprising a plurality of threads or cords, a pair of strap members detachably secured to the inner surface of said garment, said pair of strap members extending below the arm pits of the wearer thereof and extending to the back portion of the garment and detachably secured thereto, said strap members maintaining the garment in proper position on the upper chest area and the shoulders of the wearer of the garment.



4,343,046

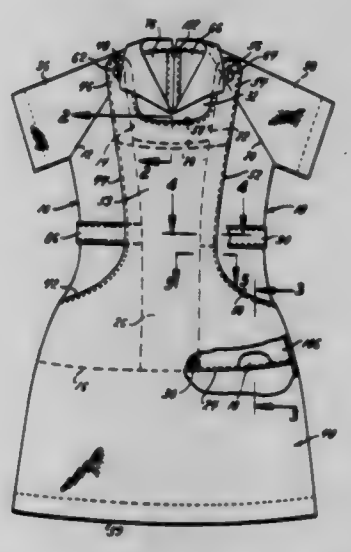
PLURAL-SIZE ARTICLE OF WEARING APPAREL

Diane Zebell, St. Louis, Mo., assignor to Angelica Corporation, St. Louis, Mo.

Filed Jul. 2, 1980, Ser. No. 164,538

Int. Cl.[3] A41D *1/22*

U.S. Cl. 2—105 11 Claims



1. A plural-size, fitted article of wearing apparel which has a panel of readily-expansible material in the front thereof and which has a portion of less-expansible material overlying said panel of readily-expansible material, said panel of readily-expansible material extending downwardly from the chest area of said article of wearing apparel through the waist area of said article of wearing apparel to a point below said waist area, said panel of readily-expansible material having substantial portions thereof which are movable relative to said portion of less-expansible material and hence are capable of expanding and contracting in said chest and waist areas without corresponding expansion and contraction of said portion of less-expansible material in said chest and waist areas, said portion of less-expansible material substantially concealing said panel of readi-

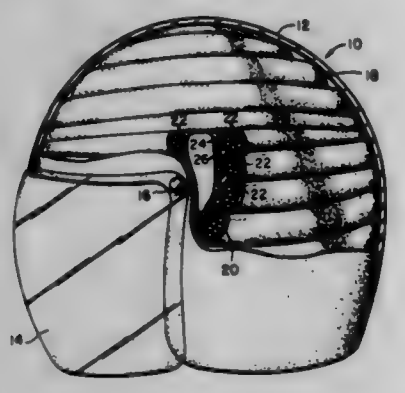
ly-expansible material and providing a relatively unstressed fitted appearance for said front of said article of wearing apparel while permitting said panel of readily-expansible material to conform to the size and configuration of the wearer of said article of wearing apparel in said chest and waist areas, whereby said article of wearing apparel can be worn by persons having different sizes and configurations in said chest and waist areas of their front portions and yet can have a relatively unstressed fitted appearance.

4,343,047

PROTECTIVE HELMETS

James C. Lazowski, Downsview; Sharron Katz, Toronto, and John A. Winship, Batawa, all of Canada, assignors to Her Majesty the Queen in Right of Canada, Ottawa, Canada

Filed Oct. 21, 1980, Ser. No. 199,322
Claims priority, application Canada, Jun. 3, 1980, 353324
Int. Cl.[3] A42B *3/02*
U.S. Cl. 2—411 10 Claims



1. Apparatus for providing both sizing and impact energy absorption in a protective helmet, comprising:

(a) a flexible, air permeable mesh tube made of a textile material; and

(b) loose beads of an energy absorbing material stuffed into said mesh tube to substantially fill the same, the stuffed tube being coiled so that adjacent coils abut one another, the stuffed coiled tube being attachable to the interior of the protective helmet so that said loose beads, during donning and nestling of the stuffed coiled tube helmet by a wearer, shift to conform to the contours of the wearer's head, while simultaneously providing a capability for attenuation of an impact load on the helmet by progressive crushing of the beads combined with motion of individual beads within said tube to distribute said impact load.

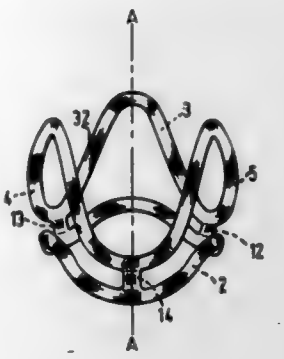
4,343,048

STENT FOR A CARDIAC VALVE

Donald N. Ross, 25 Upper Wimpole St., London W.1; Endre Bodnar, 9 West End Ct., West End Ave., Pinner, Middlesex, and William J. Hoskin, 5 Long Buftlers, Harpenden, Hertfordshire, all of England

Filed Aug. 4, 1980, Ser. No. 175,083
Claims priority, application United Kingdom, Aug. 6, 1979, 7927293
Int. Cl.[3] A61F *1/22*
U.S. Cl. 3—1.5 21 Claims

1. A stent for a cardiac valve, the stent having an axial direction, a metal base ring disposed generally radially about said axial direction, and metal legs, for attachment of commissures or cusps of a valve, projecting from the base ring generally in said axial direction, wherein said legs are flexible such that in use they bend resiliently along substantially the whole of their axial length to take up strain in a valve mounted in the



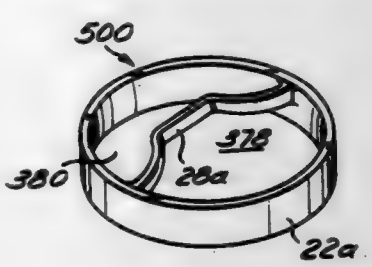
stent when the valve closes without substantially impairing the performance of the valve.

4,343,049

ELECTRO-CHEMICALLY MACHINED RING AND STRUT STRUCTURE FOR PROSTHETIC HEART VALVES

Bruce E. Fettel, Newport Beach; Paul E. Morris, Mission Viejo, and Leo J. Lichte, Riverside, all of Calif., assignors to Shiley, Inc., Gillette, Calif.

Division of Ser. No. 18,566, Mar. 8, 1979, Pat. No. 4,276,132, which is a continuation-in-part of Ser. No. 870,685, Jan. 19, 1978, abandoned. This application Dec. 1, 1980, Ser. No. 211,760
Int. Cl.[3] A61F *1/22*
U.S. Cl. 3—1.5 12 Claims



7. Support structure for a prosthetic heart valve having a moveable occluder, said support structure comprising:

a ring defining an orifice which is alternately opened and closed by the movement of said occluder; and

strut means for limiting the movement of said occluder with respect to said ring, said strut means projecting a substantial amount into the cylinder of space defined by the interior of said ring extended on either side of said ring, said strut means being formed integrally with said ring from a solid metal blank with at least a portion of said strut means having a non-circular cross-sectional shape which offers lower fluid dynamic flow resistance than a circular cross-sectional shape of equal cross-sectional area, while having substantially the same strength as said circular strut.

4,343,050

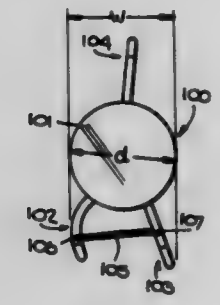
INTRAOCULAR LENSES

Charles D. Kelman, 150 E. 58th St., New York, N.Y. 10022

Filed Jul. 14, 1980, Ser. No. 167,923
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 23 Claims

14. An intraocular lens with flexible support suitable for use as an artificial lens in the interior of a human eye and insertable through an incision in said eye, said eye interior having groove portions extending circumferentially at lower and upper portions of the eye when viewed in cross-section, said lens comprising a light-focusing lens body with first and second peripheral sections, and first and second position fixation means respectively joined to said first and second peripheral sections of said lens body and extending generally radially beyond said

peripheral sections, said position fixation means being respectively engageable with the corresponding one of said groove portions, one of said position fixation means comprising first and second support members each having a free end, one of said first and second support members being resiliently deformable in response to a predetermined force applied thereto in a direction toward the other of said support members for reducing the distance between said free ends a predetermined



amount, said deformable support member being capable of spontaneously returning toward substantially its undeformed condition upon removal of said applied force after said lens has been inserted into the eye, said lens further including a force applicator means connected to said first and second support members to establish said predetermined force on said one of said support members, the other of said support members being substantially nondeformable in response to said predetermined force.

4,343,051

DECOMPOSITION CONTAINER, ESPECIALLY A DECOMPOSITION LATRINE

Nils C. Persson, Östersund, Sweden, assignor to Inventor Invest AB, Östersund, Sweden

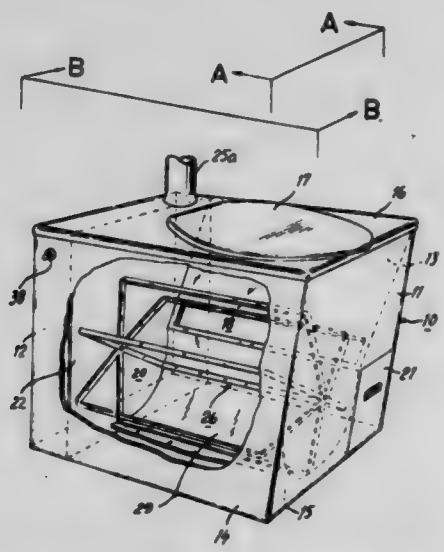
PCT No. PCT/SE79/00225, § 371 Date Jul. 6, 1980, § 102(e) Date Jul. 6, 1980, PCT Pub. No. WO80/00962, PCT Pub. Date May 15, 1980

PCT Filed Nov. 5, 1979, Ser. No. 198,015

Claims priority, application Sweden, Nov. 6, 1978, 7811469; Feb. 1, 1979, 7900891

Int. Cl.³ A47K *11/06*

U.S. Cl. 4—111.1 **6 Claims**



1. In a decomposition chamber for providing decomposition of a mass consisting of decomposable material, comprising a mass receiving chamber and an electric heat source (28) associated therewith to raise the temperature of the mass (27) in the chamber (20) to a value in the region of between 45° and 80° C. for providing a rapid thermophilic decomposition process as well as simultaneous pasteurization, the pasteurized portion of the mass being movable from the region at the heat source with the help of a stirring means rotatable about a horizontal axis; the improvement wherein an opening (18) is provided in one side of the chamber for discharging material with the help of the stirring means, an electric motor (24) for rotating the stirring means, and means for reversibly driving the motor in either direction, whereby when the stirring means moves down across said opening, material in the chamber is agitated without being discharged through the opening, whereas when the motor is operated in the reverse direction and the stirring means moves up across the opening, material is discharged by the stirring means through the opening.

4,343,052

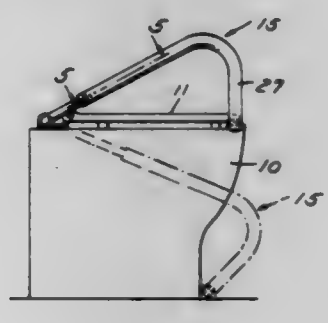
TOILET SUPPORT

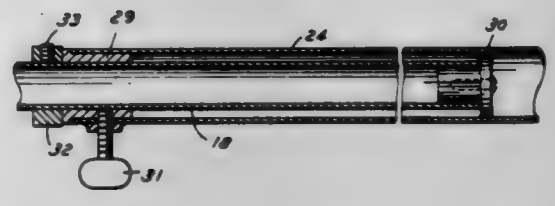
Torbett B. Guenther, Plymouth, Mich., assignor to C. D. Sparling Company, Plymouth, Mich.

Filed Sep. 2, 1980, Ser. No. 182,852

Int. Cl.³ A47K *17/02*

U.S. Cl. 4—254 **16 Claims**





1. In a toilet support for use with a toilet bowl, the combination comprising

a pair of first arm portions,

bearing means adapted to be mounted on said toilet bowl for mounting said arm portions on said toilet bowl,

a pair of second arm portions mounted on said first arm portions and movable generally axially of said first arm portions,

means joining the ends of said second arm portions such that said first and second arm portions can be moved about said bearing means and axially relative to one another such that in a first position the means connecting the second arm portions engage the edge of the toilet bowl and in another position the first and second arm portions are extended relative to one another such that the connecting portion can engage the floor adjacent the bowl and forwardly thereof.

4,343,053

DISPOSABLE BEDPAN LINER

Nicholas E. O'Connor, 18 Cramond Rd., Chestnut Hill, Mass. 02167

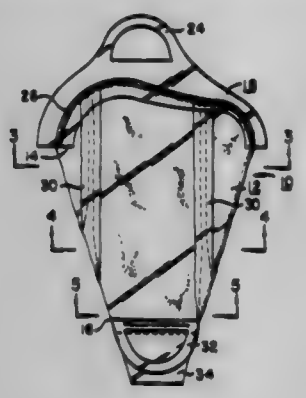
Filed Jul. 11, 1980, Ser. No. 168,328

Int. Cl.³ A61G *9/00*

U.S. Cl. 4—452 **12 Claims**

1. A disposable liner for bedpans and the like comprising an elongated liquid impervious flexible sleeve having oppositely disposed open ends; the liner having a mouth which is defined at one of said ends of said sleeve and having first handle means comprising a pair of handles movable towards and away from one another to provide the closed and open positions of the mouth of said liner and to allow the mouth of said liner to be closed after use by a patient, wherein each of said pair of handles has a respective marginal seat section connected thereto, with said one end of the sleeve connected to the mar-

ginal seat sections to further define the mouth of the bedpan liner, the marginal seat sections, in the open position of the mouth, being adapted to overlie at least part of the seat portion of a bedpan; and a second handle means connected adjacent the other of said open ends so that when being positioned on a bedpan one handle of said pair of handles can be put into





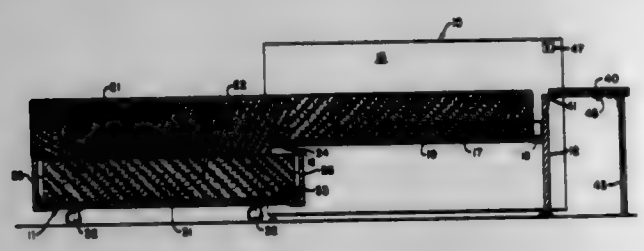
substantial alignment with said second handle means, and when the sleeve is folded over on itself and the first and second handle means are brought and held together, a purse-like structure is provided with the thus folded over sleeve forming a pouch for containing waste matter, and wherein release of said second handle means allows the sleeve to unfold and the waste matter to pass outwardly through said other of the open ends.

4,343,054

SOFA BED COMBINATION

Dan S. Kane, 1329 Lombard St., Apt. 111, Philadelphia, Pa. 19147

Filed Jan. 28, 1980, Ser. No. 116,127
Int. Cl.³ A47C *17/13, 17/37*
U.S. Cl. 5—18 R **11 Claims**



1. A sofa-bed combination comprising a floor-supported sofa frame including a bolster member support surface adjoined with spaced-apart end walls which are further interconnected by a front crossplate enclosing an area containing cushion support means carried by the sofa frame above the floor, the space between said cushion support means and the floor defining a storage area,

a cushion carried by said cushion support means,

a floor-supported trundle bed receivable within said storage area for withdrawal therefrom to form a lateral extension of said cushion support means, said trundle bed including a cushion support means and a cushion supported thereby, said cushions being dimensionally equivalent, and

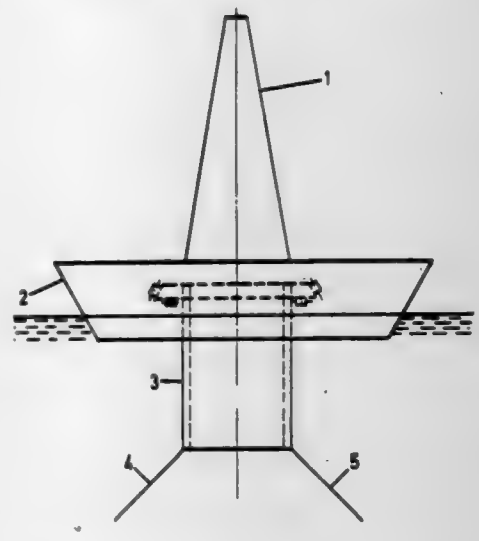
two bolster members adapted to form a sofa back cushion by superimposed positioning into a face-to-face arrangement for support by said sofa frame, said two bolster members being dimensioned for side-by-side positioning and support by the cushion support means of the trundle bed upon positioning of said trundle bed to form an extension to the cushion support means of the sofa frame, said bolster members having a thickness which together with the total height of said trundle bed top surface forms a coplanar extension of said cushion to thereby form a bed of essentially standard conventional dimensions and at a conventional height above the floor.

4,343,055

ROLLER SUSPENSION

Gunnar Bergling, Partille, Sweden, assignor to Aktiebolaget SKF, Goteborg, Sweden

Filed Dec. 19, 1979, Ser. No. 105,029
Claims priority, application Sweden, Jan. 18, 1979, 7900442
Int. Cl.³ B63B *21/52*
U.S. Cl. 441—3 **10 Claims**



1. An assembly supporting one member (2) rotatable about a mainly vertical axis on another member (3) and adapted to transfer forces parallel to and/or perpendicular to the vertical axis of rotation comprising a pair of annular race tracks arranged on said other member and a plurality of rollers journalled in bearings at opposite axial ends on said one member, said rollers disposed in two rows, the rollers of one row engaging one of said race tracks and the rollers of said other row engaging said other race track, the axes of the rollers of said one row forming an acute angle to the axes of the rollers of said other row in a plane parallel to said vertical axis of rotation, the bearings for the rollers being mounted in separate retainers arranged on both axial ends of each roller, the retainers for at least one of the rows of rollers being resiliently carried by support members including adjustable resilient means so that the rollers of both rows engage their respective associated race track under preload.

4,343,056

MAN-OVERBOARD RESCUE APPARATUS FOR SAILBOATS

Charles D. McDonald, 7906 Royal La., Dallas, Tex. 75230

Filed May 5, 1980, Ser. No. 146,505
Int. Cl.³ B63C *9/00*
U.S. Cl. 441—84 **5 Claims**

1. Man-overboard rescue apparatus for use on a sailboat having at least one mast supported by shrouds on both the port and starboard sides of the boat extending from a point at least part way up the mast to a point adjacent the boat deck, said apparatus comprising

boom means;

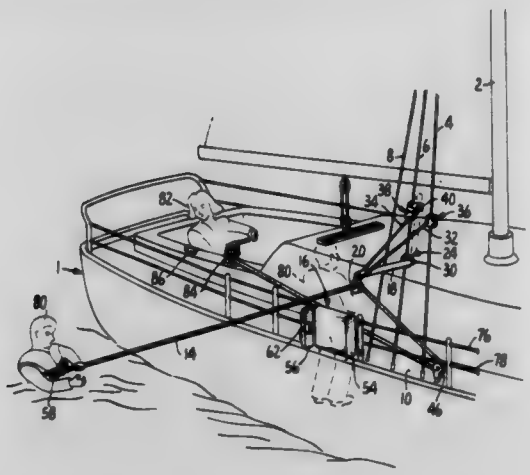
mounting means for attaching said boom to said shrouds on one side of the boat and providing for movement of said boom means between a stowed position generally parallel

to said shrouds and an extended position with the outer end of said boom means projecting outboard of said shrouds;

a recovery line having one end attached to said boat and the other end being fed through guide means attached adjacent said boom means outer end;

sling means attached to said recovery line other end and being adapted to encircle the chest of the man overboard;

container means attached to said boat for releasably containing said sling means and the portion of said recovery line adjacent said sling means, said container means having selectively openable closure means which, in its closed configuration, provides for substantially complete enclosure for said sling means and said recovery line portion and, in its open configuration, provides for quick removal of said sling and said recovery line portion therefrom, whereby the container may be opened and the sling and recovery line quickly removed therefrom and tossed to the man overboard.



4,343,057

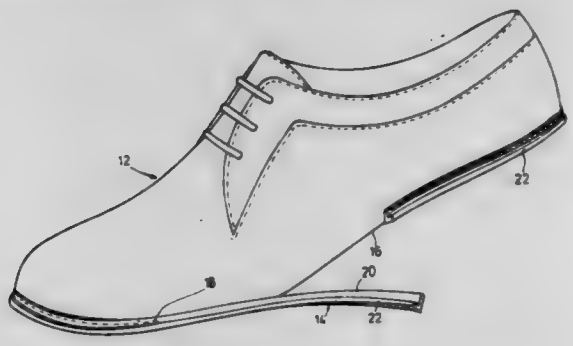
METHOD OF MAKING FOOTWEAR

Douglas W. Bensley, 1385 Commissioners Rd. West, London, Ontario, Canada

Continuation-in-part of Ser. No. 100,586, Dec. 5, 1979. This application May 12, 1980, Ser. No. 148,611

Int. Cl.³ A43D *9/00;* A43B *13/18, 3/24*

U.S. Cl. 12—142 D **3 Claims**



1. A method of making an article of footwear including providing a preformed forward upper part and a preformed rear upper part, each upper part having a pair of laterally spaced lower edge portions, attaching a first connecting strip to the edge portions of the forward and rear upper parts on one side thereof, attaching a second connecting strip to the edge portions of the forward and rear upper parts on the opposite side thereof, each connecting strip having a profiled section providing a projecting extension, providing a preformed sole unit with a peripheral wall internally profiled for snapping engagement with the projecting extensions of the connecting strips, and snapping the projecting extensions of the connecting strips into engagement with the sole unit on opposite sides thereof to position the forward and rear upper parts thereon.

4,343,058

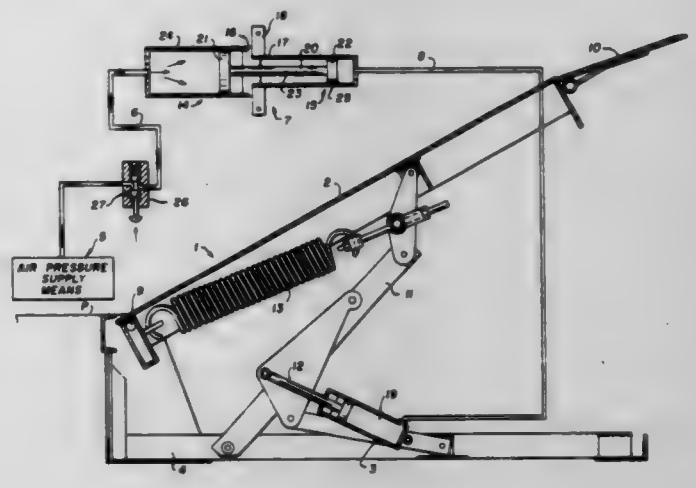
COMPOSITE PNEUMATIC-HYDRAULIC SYSTEM IN A DOCKLEVELLER INSTALLATION

Norton M. Loblick, Edmonton, Canada, assignor to Argo Engineering Ltd., Edmonton, Canada

Filed Oct. 31, 1980, Ser. No. 202,487

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—71.7 **1 Claim**



1. In a dockleveller installation, the combination comprising:

a dockboard hinged at its inner edge for pivoting movement between cross-traffic and bridging positions;

a hydraulic cylinder connected with the dockboard for biasing it between said positions;

pressurized air supply means and a first conduit extending therefrom for supplying and exhausting pressurized air;

a multiplier comprising

connected air and fluid cylinder segments, said segments combining to form a closed cylindrical member, the interior cross-sectional area of the air segment being greater than that of the fluid segment;

a double-headed piston disposed in the cylindrical member,

said piston having a first piston head which reciprocates within the air segment and sealably engages it, a second piston head which reciprocates within the fluid segment and sealably engages it, and means rigidly interconnecting said piston heads;

said first conduit interconnecting the air supply means with the air segment, for supplying pressurized air into said segment and exhausting it therefrom; and

a second conduit, interconnecting the fluid segment with the hydraulic cylinder, for supplying pressurized fluid into the cylinder and exhausting it therefrom.

4,343,059

RADIOACTIVE HOT CELL ACCESS HOLE DECONTAMINATION MACHINE

William E. Simpson, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,643

Int. Cl.³ A46B *13/02*

U.S. Cl. 15—21 E **8 Claims**

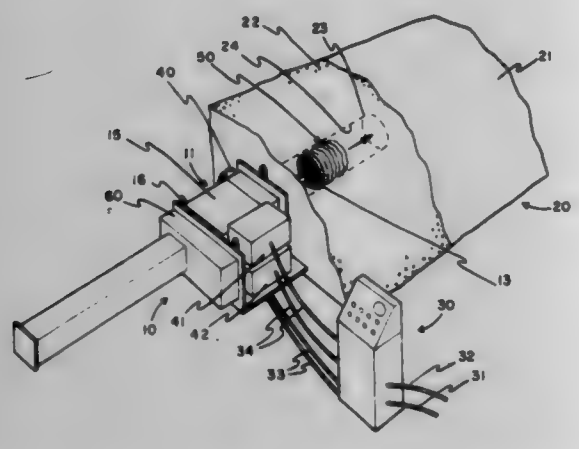
1. A system for removing radioactive contamination from the wall of a generally horizontal right circular cylindrical access hole in a chamber suitable for containing radioactivity, comprising:

(a) a portable housing, outside said chamber, having an opening, said housing moveable for positioning said opening in front of and proximate said access hole, and said opening large enough to encompass said access hole;

(b) a radiation shielding door attached to said housing and covering said opening, said shielding door providing a barrier to radioactivity;

(c) means for opening and closing said shielding door;

(d) a shaft, having a longitudinal axis and an end, disposed generally horizontally within said housing;
(e) means for rotatably moving said end of said shaft about said longitudinal axis;
(f) means for translatably moving said end of said shaft, along said longitudinal axis, from an initial position within said housing out through said opening and said access hole, without contacting said wall, into said chamber, and moving said end of said shaft back to said initial position;



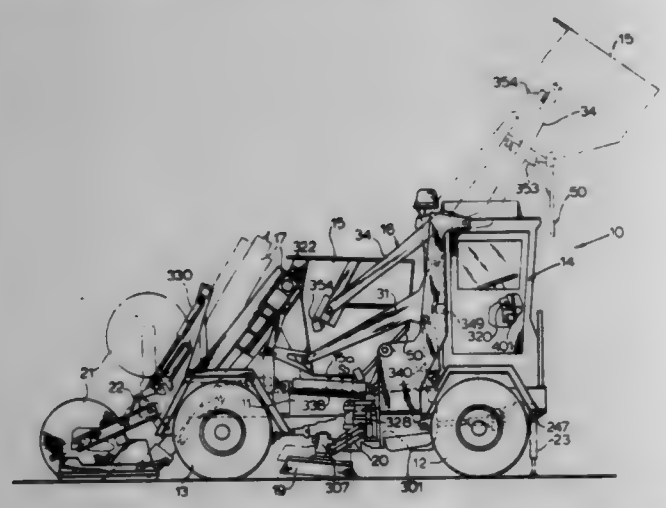
(g) a generally right circular cylindrical cleaning pig having a sufficient diameter for said pig to circumferentially and compressibly contact said wall; and
(h) means for attaching said cleaning pig to said end of said shaft so that said end of said shaft rotates said pig and pushes said pig from within said housing out through said opening and said access hole into said chamber, said pig circumferentially and compressibly contacting said wall to remove radioactive contamination thereon, and so that thereafter said pig detaches from said end of said shaft to fall into said chamber.

4,343,060

HYDRAULIC CONTROL SYSTEM FOR A STREET SWEEPER

Donald L. Hildebrand, Union, and Ernest F. Prescott, Elgin, both of Ill., assignors to Elgin Sweeper Company, Elgin, Ill.

Filed Jul. 18, 1980, Ser. No. 169,939
Int. Cl.³ E01H *1/04*
U.S. Cl. 15—84 **10 Claims**



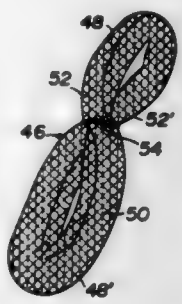
1. A street sweeper having a frame with an engine mounted on said frame for powering the street sweeper for movement along a sweeping surface, a series of operating mechanisms mounted on said frame to assist in a street sweeping pick-up operation and a plurality of hydraulic motors arranged to power said operating mechanisms and a series of hydraulic components arranged to move said operating mechanisms into a street sweeping pick-up position and into a retracted position wherein the improvement comprises:
a variable volume and reversible hydraulic pump which is suitably driven by said engine and operatively associated with said plurality of hydraulic motors when said pump is regulated to produce fluid pressure flow in a first direction and which is operatively associated with said series of hydraulic components when said pump is regulated to produce fluid pressure flow in a second direction;
means to selectively regulate said pump as a variable volume pump for producing fluid pressure flow in said first direction at a consistent preset output irrespective of the driving speed of said engine and to selectively regulate said pump as a fixed volume pump for producing reversed fluid pressure flow in said second direction, and a hydraulic system including a first closed loop circuit for interconnecting said variable volume reversible pump with said plurality of hydraulic motors and back to said pump for directing operating hydraulic pressure flow in said first direction and a second closed loop circuit for interconnecting said variable volume reversible pump with said series of hydraulic components and back to said pump for directing operating hydraulic pressure flow in said second direction.

4,343,061

BODY WASHING IMPLEMENT FOR BATHING

Yoko Hanazono, No. 3-3-7, Ikejiri, Setagaya-ku, Tokyo, Japan

Filed Nov. 14, 1979, Ser. No. 94,332
Claims priority, application Japan, Jan. 17, 1979, 54-4163[U]; Jun. 7, 1979, 54-77400[U]; Sep. 10, 1979, 54-124936[U]
Int. Cl.³ A47K *7/02*
U.S. Cl. 15—244 B **20 Claims**



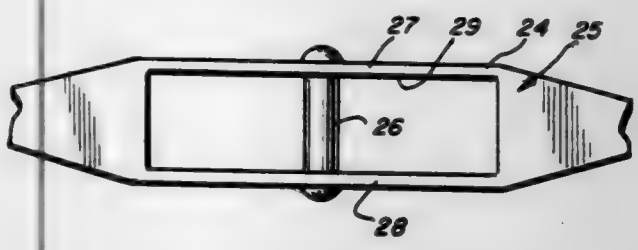
1. A body washing implement, comprising a sponge member having a covering web wrapping the sponge member therein, said sponge member consisting of two closed loop portions which merge with each other.

4,343,062

DEVICE FOR CONNECTING A WIPER BLADE HOLDER TO A WIPER ARM

Johan H. van den Berg, Hasselt, Belgium, assignor to Champion Spark Plug Europe S.A., Virton, Belgium

Filed Oct. 4, 1979, Ser. No. 81,681
Claims priority, application France, Oct. 19, 1978, 78 29787
Int. Cl.³ B60S *1/40*
U.S. Cl. 15—250.32 **17 Claims**



1. An adaptor (30,130,230,530,630) mounted between a wiper blade (25) and a wiper arm (21,121,221,221A,321,421, 621), said wiper blade (25) having a crosspin (26) extending between a pair of spaced walls (32,33; 132-133; 232; 532; 632,633), said adaptor (30,130,230,530,630) comprising:

a body (31,131,231,531,631) having an upper portion (39,139,239,539,639) and a lower portion (40,140,240,540,640);

said upper portion (39,139,239,539,639) of said body (31,131,231,531,631) receiving any one of several types of wiper arm ends (20,120,220,220A,320,420,620);

said lower portion (40,140,240,540,640) of said body (31,131,231,531,631) receiving said cross-pin (26) of said blade (25);

spring means (41,141,241,541,641) integrally formed with said body (31,131,231,531,631) between said upper portion (39,139,239,539,639) and said lower portion (40,140,240,540,640);

first latch means (44,144,244,544,644) carried by said spring means (41,141,241,541,641) and cooperating with said cross-pin (26) to prevent deflecting of said spring means (41,141,241,541,641) with respect to the wiper arm end (20,120,220,220A,320,420,620); and

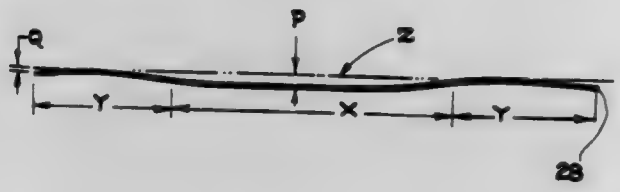
second latch means (45,145,245,545,645) carried by said spring means (41,141,241,541,641) and cooperating with the wiper arm end (20,120,220,220A,320,420,620) to prevent displacement of said wiper arm end with respect to said adaptor (30,130,230,530,630).

4,343,063

WINDSHIELD WIPER ASSEMBLY

Richard A. Batt, Williamsville, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,886
Int. Cl.³ B60S *1/38*
U.S. Cl. 15—250.42 **9 Claims**



1. In a windshield wiper assembly including a refill unit comprising an elongate elastomeric wiping element supported by an elongate flexible backing member for distributing pressure applied at spaced points along its length over the length of the wiper blade and an articulated superstructure having a plurality of longitudinally spaced pairs of laterally opposed claws for supporting and transmitting applied pressure to said backing member; a refill unit characterized in that said backing member consists of a pair of elongate side rails connected together at the ends thereof and is of sinuous non-angular configuration in longitudinal section defining a central zone of convex curvature on the side facing the wiping element and end zones of concave curvature facing the wiping element extending from the ends of the central zone to the outer ends of the backing element, said end zones each having its free end displaced downwardly toward the wiping element.

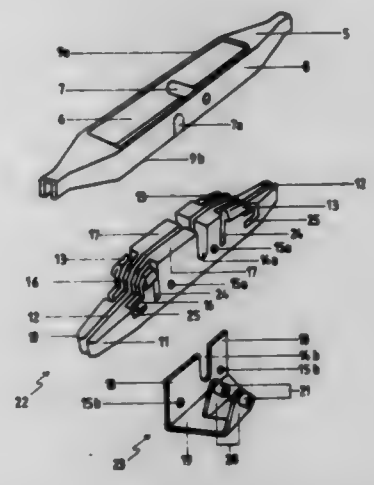
4,343,064

DEVICE FOR CONNECTING A WIPER BLADE HOLDER TO A WIPER ARM

Johan H. van den Berg, Hasselt, Belgium, and Guiseppe Maiocco, Rivoli, Italy, assignors to Champion Spark Plug Europe S.A., Virton, Belgium

Filed Jan. 4, 1980, Ser. No. 109,555
Claims priority, application Italy, Jan. 5, 1979, 67020 A/79
Int. Cl.³ B60S *1/40*
U.S. Cl. 15—250.32 **10 Claims**

1. A connecting device between the superstructure of a wiper blade and the free end portion of a wiper arm wherein the upper central portion of said superstructure is provided with a substantially rectangular opening and wherein said wiper arm has a bore (2) and a flexible spring clip (3), characterized in that at least one relatively resilient part (10,11 32,42) is snap-fitted into said opening (6), means (13,38,48) carried by the first part (10,11 32,42) cooperating with the edge of said opening (6) for positioning said first part in said opening, one other part (23,30,40) being carried by said first part and being



provided with holding means (21,31,41) capable of cooperating with the bore (2) and flexible spring clip (3) on the free end portion of the wiper arm (1) such as to maintain said arm (1) in its working position with respect to the superstructure (5) of the wiper blade.

4,343,065

LOCK AND HINGE ROTARY DEVICE

Michel Liber, Paris, France, assignor to Seilib, France

Filed Mar. 12, 1980, Ser. No. 129,808
Claims priority, application France, Sep. 5, 1978, 78 25485
Int. Cl.³ E05D *7/12, 9/00*
U.S. Cl. 16—225 **2 Claims**



1. A lock rotary device for two parts to be locked together, having two semi-circular bolts not attached one to the other, each bolt carrying a bead on the edge of the semi-circle and a laterally projecting bead, characterized in that it can realize a supplementary function consisting in hinging said two parts, after said parts have preliminarily been locked, each of said bolts becoming then a semi-circular flap carrying a hinge portion disposed in such a way that when the diameters of said flaps lie side by side, the hinge portions of the flaps are aligned with one another and do not lie along either of the said diameters, said parts being effectively hinged when said hinge portions being aligned are moreover in the alignment of the end faces of said parts.

4,343,066

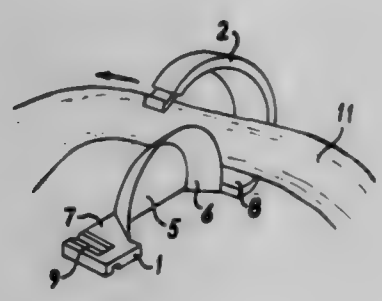
TUBE CLAMP

Mark A. Lance, Pascoe Vale Sth, Australia, assignor to Illinois Tool Works, Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 191,587
Claims priority, application Australia, Oct. 15, 1979, PE0930
Int. Cl.³ A22B *5/00*
U.S. Cl. 17—1 R **13 Claims**

1. A clamp, for closing a flexible tube, comprising a base and a strap, said base having a projecting generally arcuate surface

inclined in relation to the longitudinal direction of the tube to be closed, said strap adapted for clamping the tube against said inclined surface, and means for securing the strap in its clamping position relative to the inclined surface wherein said strap generally conforms to said arcuate surface when said strap is secured in the clamping position.

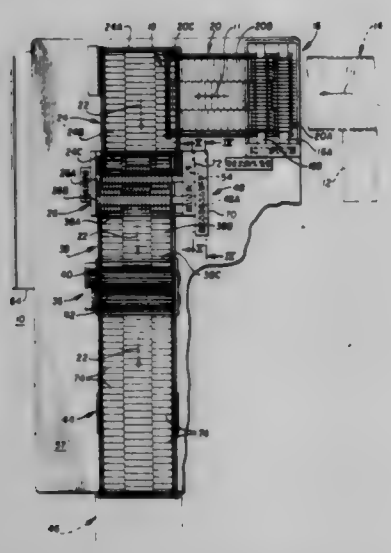


4,343,067

MEAT CUTLET TENDERIZING MACHINE

Charles L. Shelton, Garland, Tex., assignor to Quik-to-Fix Products, Inc., Garland, Tex.

Filed May 23, 1980, Ser. No. 152,662
Int. Cl.[3] A22C 9/00
U.S. Cl. 17—26 3 Claims



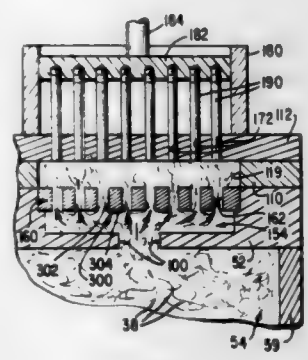
1. Meat tenderizing apparatus comprising, in combination:
a loading station;
a first processing station;
a first conveyor assembly having a loading end, an intermediate transporting section and a delivery end for transporting meat cutlets in a first direction of feeding movement from said loading station to said first processing station;
a first array of coacting rollers disposed below and adjacent the first conveyor assembly in the first processing station and extending across the delivery end of the first conveyor assembly for receiving cutlets, said coacting rollers having radially projecting tenderizing elements for engaging opposite faces of the cutlet and tenderizing the cutlet along parallel lines;
an inverting station;
a second conveyor assembly having a loading end disposed below and adjacent said first array of coacting rollers for receiving cutlets as they are discharged from said coacting rollers, an intermediate transporting section and a delivery end for transporting cutlets in said first direction of feeding movement to the inverting station;
a second processing station;
a third conveyor assembly extending in a second direction of feeding movement transversely with respect to the first direction of feeding movement, said third conveyor having a loading end, a delivery end and an intermediate section for transporting cutlets from the inverting station to said second processing station, the loading end of said third conveyor assembly being disposed in the inverting station at a lower elevation relative to the delivery end of the second conveyor assembly to permit free fall and rotational inversion of said cutlet so that it is delivered in upside down position onto said third conveyor assembly;
a second array of coacting rollers disposed below and adjacent the third conveyor assembly in the second processing station and extending across the delivery end of the third conveyor assembly for receiving the inverted cutlets, said coacting rollers having radially projecting tenderizing elements for engaging opposite faces of the inverted cutlets and tenderizing the cutlets along parallel lines which extend transversely with respect to the parallel tenderizing lines produced in the first processing station;
a delivery station; and
a fourth conveyor assembly having a loading end disposed below the coacting rollers of the second array for receiving the cutlets as they are discharged from said coacting rollers, an intermediate transporting section and a delivery end for transporting cutlets in said second direction of feeding movement to the delivery station.

4,343,068

METHOD AND APPARATUS FOR UNIDIRECTIONAL FORMATION OF A PLUG-FORMED PATTY WITH CLEANOUT FEATURE

James A. Holly, 5728 W. 129th St., Crestwood, Ill. 60445

Filed Jan. 19, 1981, Ser. No. 226,211
Int. Cl.[3] A22C 7/00
U.S. Cl. 17—45 6 Claims



1. A method for forming a patty of plastic food material containing tissue fibers, including ground meat and the like, said method comprising:
(a) providing a foraminous member having an upstream side and a downstream side with apertures therein communicating between said upstream side and said downstream side;
(b) providing mold parts defining a mold opening and at least a portion of a mold cavity having the shape of at least a portion of the exterior surface of said patty and positioning said mold parts to dispose said mold opening adjacent said downstream side of said foraminous member;
(c) forcing said food material under pressure from the upstream side of said foraminous member through said apertures to the downstream side of said foraminous member and into said mold opening as discrete extrudate masses which together define a packed array forming said patty;
(d) moving at least some of said mold parts away from said foraminous member to carry said formed patty therewith and expose the downstream side of said foraminous member; and
(e) providing a plurality of rigid probe members, each of said rigid probe members associated with a foraminous member aperture, and inserting said probe members into at least some of said foraminous member apertures from said downstream side for dislodging tissue fibers that may have lodged on the upstream side of said member.

4,343,069
FIBER CUTTING MACHINE

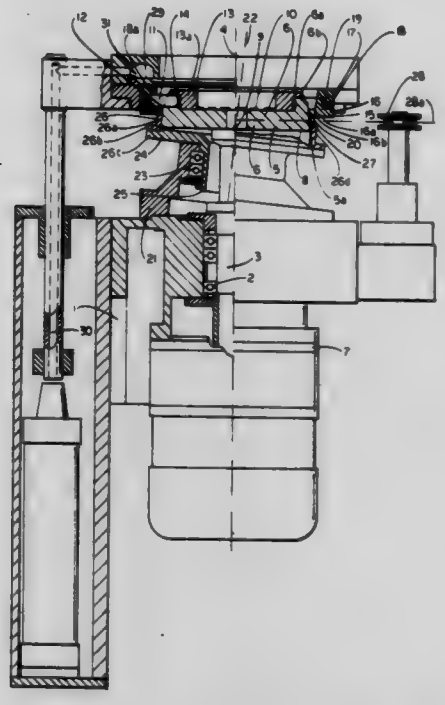
Albert McLuskie, Aukrug-Buenzen; Johann Ratjen, Willenscharen, and Ernst Vehling, Bordesholm, all of Fed. Rep. of Germany, assignors to Neumuenstersche Maschinen- und Apparatebau GmbH (NEUMAG), Neumuenster, Fed. Rep. of Germany

Filed Sep. 25, 1980, Ser. No. 190,821

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939154

Int. Cl.[3] D01G *1/04*

U.S. Cl. 19—0.6 15 Claims



1. In a machine for producing staple fibers by cutting a travelling tow, a combination comprising a rotationally symmetrical blade carrier having a circumferential first surface shaped in conformance with a portion of a sphere; a plurality of cutting blades on said carrier, circumferentially distributed thereabout and having portions projecting therefrom; a mounting ring secured on said portions of said blades and having a circumferential second surface shaped in conformance with a portion of a hollow sphere concentric to said first surface and defining therewith an annular channel across which said blades extend; a tow pressing ring extending at one side of said channel into the same and close to said blades and being at the opposite side of said channel located outside the same and in part defining a tow inlet gap communicating with said channel, said pressing ring having an axis which is inclined to an axis of said blade carrier and intersects it at the center of curvature of said spheres; and means rotatably mounting at least one of said blade carrier and pressing ring with freedom of adjusting its speed of rotation to the other of said pressing ring and blade carrier, respectively.

4,343,070
REMOVAL OF LINT FROM COTTONSEED

Clinton P. Wade, Jefferson, and Stanley P. Rowland, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 25, 1980, Ser. No. 180,542

Int. Cl.[3] D01B *1/04;* F26B *19/00*

U.S. Cl. 19—40 8 Claims

1. A process for the improvement of cotton-ginning by chemical treatment to render lint ameanable to easy removal from cottonseed without affecting the strength of the fiber or the fabric made therefrom, the process comprising:

(a) impregnating the open cotton boll with an aqueous solution containing one or more compounds selected from the group consisting of:

a certain wetting agent, and

a hemicellulase from the Aspergillus niger Series,

(b) allowing time for the point of attachment of the lint to the seedcoat to respond to the action of the wetting agent or the action of the enzyme, and

(c) subjecting the wet cotton boll to the ginning process.

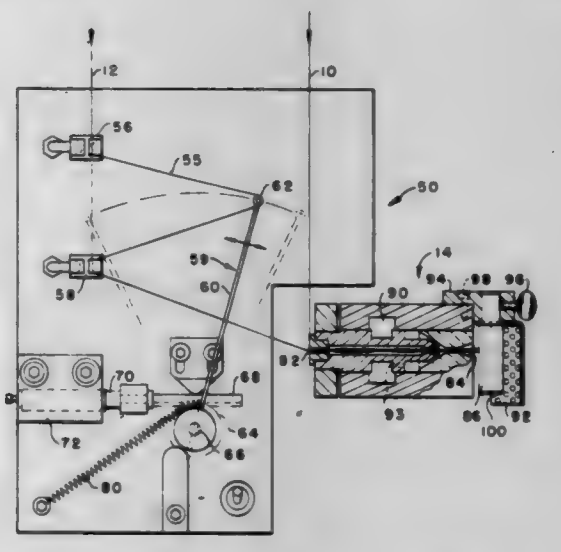
4,343,071
AIR TREATMENT JET FOR YARN

William J. Schroder, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 8, 1980, Ser. No. 185,250

Int. Cl.[3] D02G *1/16, 1/20*

U.S. Cl. 28—254 1 Claim



1. An improved yarn commingling gaseous fluid jet comprising: a body member, a central passage through said body member for the passage of yarn, means to supply a gaseous fluid under pressure into said central passage, a mounting bar connected to the top of said body member and projecting outward therefrom beyond the outlet from said central passage, means forming an opening in said mounting bar in the portion thereof projecting beyond said central passage, an impact member secured in said opening and projecting downwardly from said mounting bar to a position adjacent the outlet of said central passage, a perforated cage held by said impact member against the bottom of said mounting bar and surrounding said impact member, said cage member being open at the bottom thereof to allow yarn to exit therefrom.

4,343,072
METHOD OF MANUFACTURING COMPOSITE RINGS FOR BEARINGS

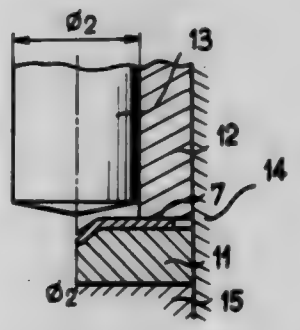
Jean Beauchet, Veyrier du Lac, France, assignor to Societe Nouvelle de Roulements, Annecy, France

Filed Sep. 24, 1979, Ser. No. 78,453

Claims priority, application France, Sep. 25, 1978, 78 27347

Int. Cl.[3] B21D *53/10*

U.S. Cl. 29—149.5 DP 8 Claims



1. A process of forming a composite ring consisting of a

particulate material portion on which is secured a sintered steel sheet portion, comprising:

positioning a sheet metal blank on a particulate steel material in the form of a cylindrical rough shaped body;

compressing said sheet metal blank together with the particulate steel material under pressure ranging from 20 to 100 Kg/mm^2 at a first temperature ranging from 300° to 700° C.;

sintering said compressed sheet metal blank and particulate steel material at a second temperature ranging from 1100° to 1200° C. to form an assembly;

cooling the assembly to a third temperature ranging from 950° to 1000° C;

positioning the assembly in a die and contacting the assembly with a blank hold-down member so that the assembly is held in position; and

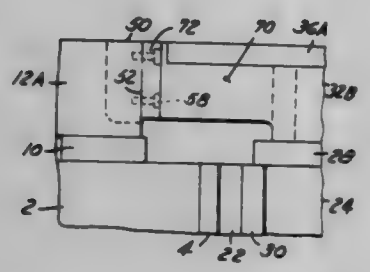
introducing a punch into the die and assembly to perform a combined drawing and density increasing operation by press and die forming the assembly, the punch operating through the hold-down member and penetrating into the assembly and cooperating with the die to shape the particulate steel material to the shape of the particulate material portion of the composite ring and to increase the density of the sheet metal blank portion thereby forming the sintered steel sheet portion of the composite ring.

4,343,073

BASE SUPPORT FOR TRANSFER MACHINES

John H. Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Filed Apr. 18, 1980, Ser. No. 141,601
Int. Cl.³ B23P *23/00;* B23Q *1/02*
U.S. Cl. 29—38 C **2 Claims**



1. In a multiple station transfer machine in which workpieces are located and clamped in pallets and in which said pallets are sequentially moved on rails from station to station to be located on registry means at each station independent of said rails and in which each working station comprises:

1. base means,

2. registry means rigidly mounted on said base means and adapted to support, locate, and clamp a pallet in a fixed position, and

3. tooling means mounted on said base means and adapted to feed tools on a first axis into said workpiece supported on a pallet and in turn on said registry means,

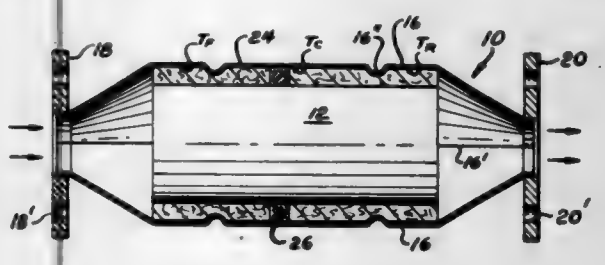
that improvement which comprises a direct, positive, in-line connection means extending between and rigidly connecting said registry means and said tooling means on a second axis in close proximity to said first axis and exclusive of the indirect connection therebetween through said base means, said in-line connection means being structured to transmit compression and tension forces between said registry means and said tooling means.

4,343,074

METHOD OF MAKING A CATALYTIC CONVERTER

Charles H. Bailey, Mt. Prospect; Ted V. De Palma, Schaumburg, and James E. Dillon, Elgin, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 86,990, Oct. 22, 1979, Pat. No. 4,269,807.
This application Nov. 10, 1980, Ser. No. 205,555
Int. Cl.³ B23P *15/00;* F01N *3/28*
U.S. Cl. 29—157 R **3 Claims**



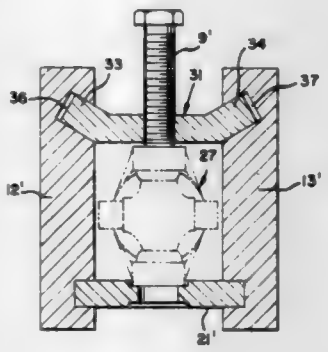
1. In a method of making a catalytic converter of the type wherein a monolithic catalyst element is mounted in a metal housing and is resiliently engaged by a compressed blanket of metal wire mesh, the improvement comprising the step of injecting a continuous circumferential band of viscous fiber reinforced high temperature intumescent caulking material which is of substantially less axial length than the axial length of said catalyst element into the interstices of the mesh and throughout its thickness before the mesh and monolithic element are assembled into the housing, said caulking material being expanded by the hot exhaust gases to which the converter is subjected during use, said band of caulking material serving to reduce bypass gas leakage through the metal wire mesh and also reducing the temperature of the metal mesh.

4,343,075

TOOL FOR DISASSEMBLY OF AUTOMOTIVE UNIVERSAL JOINTS

Robert H. Guptill, 4839 Snow Dr., San Jose, Calif. 95111, and Raymond G. Penrod, San Jose, Calif., assignors to Robert H. Guptill, San Jose, Calif.

Filed Mar. 10, 1980, Ser. No. 128,904
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—251 **2 Claims**



1. A portable tool for effecting the disassembly of a vehicular-type universal joint from the drive-shaft bearing yoke on which it is normally mounted,

(a) an upper cross-head member having a threaded aperture therethrough;

(b) a pair of oppositely disposed tension members engaging opposite edge portions of said upper cross-head member and extending therefrom in spaced parallel relation to one another and terminating in free end portions having abutments thereon;

(c) a lower cross-head member having opposite edge portions engaging said abutments and restricted against movement in a direction away from said upper cross-head member by said abutments and engageable with said abut-

ments by movement in a direction transverse to said tension members, said lower cross-head member having an aperture therein the axis of which is coincident with the axis of the aperture in said upper cross-head member when said lower cross-head member is properly positioned on said abutments by transverse movement thereof between said tension members, said upper cross-head member including a central body portion and integral inclined edge portions on said body portion, the abutments on the free end portions of said tension members being correspondingly inclined whereby tension imposed on said tension members when engaged on said inclined edge portions imposes a force on said tension members tending to prevent separation thereof during use of the tool; and

(d) pressure applying means associated with the aperture in said upper cross-head member and operable to impose pressure on a universal joint positioned between said upper and lower cross-head members and oriented with the aperture in said lower cross-head member whereby the universal joint is pressed from the bearing yoke in which it is normally retained.

4,343,076

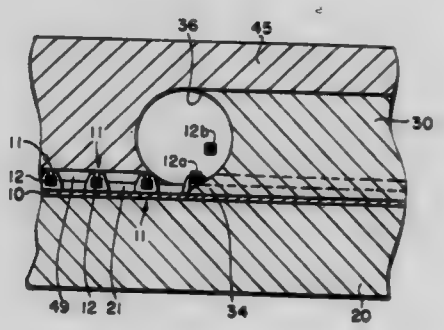
APPARATUS, AND A METHOD, FOR REMOVING TERMINAL PINS FROM A BANDOLIER

Harold J. Ostapovitch, Lachine, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 17, 1980, Ser. No. 207,271

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—426.5 **12 Claims**



1. Apparatus for removing terminal pins from a bandolier, comprising:

a base and a top defining a slot therebetween for passage of the bandolier;

at least one rib extending into the slot and having a chamfered forward end, said forward end adapted to enter a clearance between the terminal pin and the bandolier, the bandolier passing beneath the rib and the pin ejected upward from the bandolier;

a transverse passage above said forward end of said rib, said passage having an exit at one end for emission of pins therethrough and having an inclined surface on the side of the rib remote from the exit, the inclined surface extending over the forward end of the rib, whereby the pins removed from the bandolier hit the inclined surface and are impelled laterally to the exit.

4,343,077

AUTOMATIC TOOL EXCHANGING APPARATUS OF MACHINE TOOL

Mitsuharu Satoh, and Katsuyoshi Aiso, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

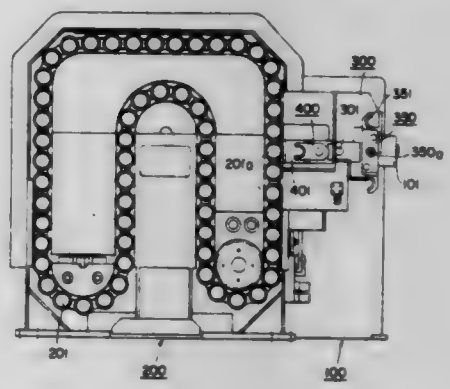
Filed Apr. 22, 1980, Ser. No. 142,756

Claims priority, application Japan, Apr. 29, 1979, 54-52734

Int. Cl.³ B23Q *3/157*; B66C *1/42*

U.S. Cl. 29—568 **6 Claims**

1. In an automatic tool exchanging apparatus of a machine tool of the type comprising a machine body, a magazine for storing a number of tools located on the side of said machine body, a spindle of the machine tool, a tool exchanging mechanism and a tool conveying mechanism which are located between said spindle and said tool storage magazine, and means for driving said tool exchanging and conveying mechanisms, said tool exchanging mechanism being provided with an intermediate tool pot and constructed to be swingable for exchanging a tool fitted in said spindle with a tool received in said intermediate tool pot, and said tool conveying mechanism being adapted to transfer a tool between a predetermined tool pot of said tool storage magazine and said intemediate tool pot, the improvement in which said tool conveying mechanism comprises a guide bar horizontally arranged between a predetermined position of said magazine and said intermediate tool



pot, a tool carriage supported movably by said guide bar, means for reciprocating said tool carriage, a tool conveying arm member supported rotatably by said tool carriage and adapted to clamp a tool, means for rotating said conveying arm member mounted to said tool carriage, and means for linearly reciprocating said tool conveying arm member, said means for rotating said tool conveying arm member comprising a hydraulic cylinder-piston assembly, a cylinder of said assembly being movable, a rack member formed on one outer side surface of said cylinder, a pinion in engagement with said rack member, and a rotation shaft rotatable together with said pinion, one end of said rotation shaft being operatively connected to said tool conveying arm member.

4,343,078

IGFET FORMING METHOD

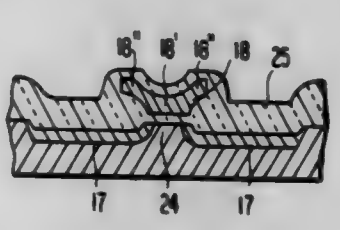
Isamu Miyagi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1980, Ser. No. 127,337

Claims priority, application Japan, Mar. 5, 1979, 54/25291; Jun. 7, 1979, 54/71406

Int. Cl.³ H01L *21/28, 21/22*

U.S. Cl. 29—571 **8 Claims**



1. A method of defining a gate structure for use in an insulated gate field effect transistor comprising the steps of forming a first insulator film on a first region of a semiconductor substrate; forming a second insulator film on a second region of said semiconductor substrate directly adjacent to said first region, said first insulator film being thicker than said second insulator film; forming a continuous layer of a high melting point material on said first and second insulator films in such a manner that a first portion of said layer lies on said first insulator film and a second portion of said layer lies on said second insulator film, removing at least a part of said first insulator film under said first portion of said layer to form a cavity under said first portion of said layer.

4,343,079

SELF-REGISTERING METHOD OF MANUFACTURING AN INSULATED GATE FIELD-EFFECT TRANSISTOR

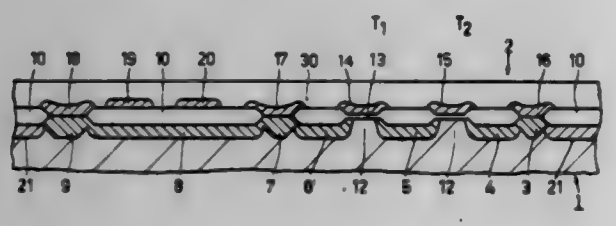
Pieter J. W. Jochems, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,510

Claims priority, application Netherlands, Apr. 23, 1979, 7903158

Int. Cl.[3] H01L *21/26*

U.S. Cl. 29—571 8 Claims



1. A method of manufacturing an insulated gate field effect transistor in an entirely self-registering manner, in which a silicon body of which at least a surface-adjoining sub-region is of one conductivity type is provided with a plurality of surface zones of the second conductivity type while using a masking layer of a material differing from silicon oxide which masks the underlying material of the semiconductor body against oxidation, from which zones the source and drain zones of the transistor are formed, and said body is then provided, by means of an oxidation treatment, with an oxide pattern which is sunk in the silicon body over at least a part of its thickness and which extends above the surface zones and above the adjoining parts of the silicon body and which comprises a plurality of apertures which define mesa-shaped regions of the semiconductor body which form the channel region of the transistor and contact regions of the zones which in the mesa-shaped regions adjoin the surface of the body beside the sunken oxide pattern, characterized in that, before forming the surface zones, a first strip-shaped mask is formed from said masking layer and covers the surface parts of the semiconductor body where the surface zones, the contact regions and the channel region are formed and does not cover the adjoining parts of the semiconductor body, and in that, while using said first mask as a doping mask, an impurity of one conductivity type is provided in the adjoining parts of the semiconductor body and said adjoining parts are provided with a first oxide layer while using the same mask as an oxidation mask, after which the first mask is subjected to a selective etching treatment in which parts of the first mask extending transversely over the whole width of the strip are removed at the area of the surface zones to be provided and a second mask is obtained from the first mask which covers the channel region of the transistor and the contact regions of the zones and which together with the first silicon oxide layer forms a third mask with windows above parts of the semiconductor body where the surface zones are provided, after which an impurity of the second conductivity type is provided in the exposed parts of the semiconductor body through said windows, after which the sunken oxide pattern is provided by means of an oxidation treatment in which semiconductor body is locally masked against oxidation by the second mask, said mesa-shaped regions being thereby defined, the impurities of the second and the first conductivity type provided in the semiconductor body diffusing further into the semiconductor body to form, respectively, the surface zones of the second conductivity type comprising the source and drain zones of the transistor and, in the adjoining parts of the semiconductor body, channel stopping zones of the same conductivity type as the semiconductor body and with a higher doping concentration, after which the remaining parts of the masking layer masking against oxidation and forming the second mask are removed entirely and an insulated gate electrode of the field effect transistor and contacts for the surface zones are provided in the apertures thus exposed in the sunken oxide pattern.

4,343,080

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE

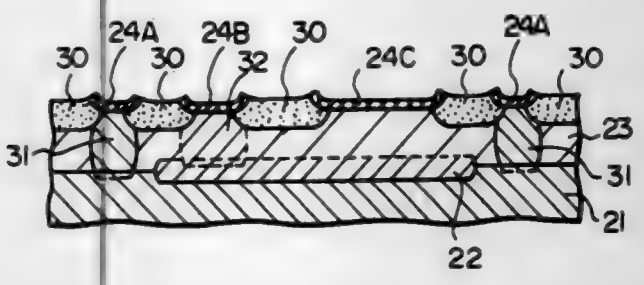
Osamu Hataishi, Yokohama; Yoshinobu Momma, and Ryoji Abe, both of Sagamihara, all of Japan, assignors to Fijitsu Limited, Kawasaki, Japan

Filed May 30, 1980, Ser. No. 155,122

Claims priority, application Japan, May 31, 1979, 54/67611

Int. Cl.[3] H01L *21/22*

U.S. Cl. 29—571 6 Claims



1. A method of producing a semiconductor device comprising at least on bipolar transistor and an isolation region which are formed in an epitaxial layer formed on a semiconductor substrate having a buried layer, said method comprising, in sequence, the steps of:

forming an anti-oxidation masking layer on said epitaxial layer,

selectively removing said masking layer by etching to expose portions of said epitaxial layer,

thermally oxidizing said exposed portions of the epitaxial layer to form a thin oxide layer,

introducing a first impurity into a first predetermined portion of said epitaxial layer corresponding to said isolation region by using a first patterned resist layer as a mask,

introducing a second impurity through said masking layer into a second predetermined portion of said epitaxial layer corresponding to a collector-connecting-region of the bipolar transistor by using a second patterned resist layer as a mask,

thermally oxidizing said epitaxial layer by using the remaining anti-oxidation masking layer as a mask to form a thick oxide layer, while at the same time diffusing said introduced first and second impurities into said epitaxial layer to form said isolation region and said collector-connecting-region coming into contact with said buried layer, respectively, and

forming a base region and an emitter region of the bipolar transistor in a portion of said epitaxial layer above said buried layer.

4,343,081

PROCESS FOR MAKING SEMI-CONDUCTOR DEVICES

Francois Morin, Lanmerin, and Madeleine Bonnel, Lannion, both of France, assignors to L'Etat Francais represente par le Secretaire d'Etat aux Postes et Telecommunications et a la Telediffusion (Centre National d'Etudes des Telecommunications), Issy les Moulineaux, France

Filed Jun. 17, 1980, Ser. No. 160,213

Claims priority, application France, Jun. 22, 1979, 79 16083; Dec. 18, 1979, 79 30954

Int. Cl.[3] H01L *21/225*

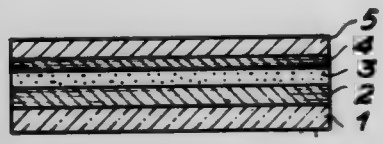
U.S. Cl. 29—571 5 Claims

1. In a process for making thin film transistors on an amorphous substrate, the steps;

(A) in a first phase: of introducing the substrate in a deposition chamber, making on all this substrate, without contact with the outside atmosphere, a uniform deposit of four successive primary layers; a first layer of protective insulating material, a second layer of semiconductor material, a third layer of insulating material, of smaller thickness than the first layer, and finally a fourth layer of a metal,

(B) and, in a second phase,

of withdrawing the substrate coated with these four layers from the deposition chamber, by a first photoetching operation through a first mask, two openings for each transistor are opened through the fourth layer of metal and the third layer of insulator, the metal part remaining



between these two openings constituting the grid of the transistor, and

a layer of diffusing metal is deposited on the whole of the substrate, then, by selective chemical attack, this second metal is eliminated, this leaving, in the semiconductor, two conducting zones, one constituting the drain and the other the source of the transistor.

4,343,082

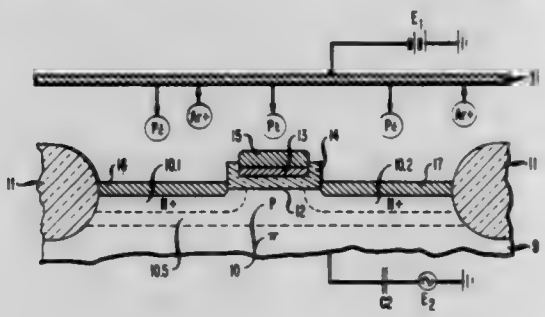
METHOD OF MAKING CONTACT ELECTRODES TO SILICON GATE, AND SOURCE AND DRAIN REGIONS, OF A SEMICONDUCTOR DEVICE

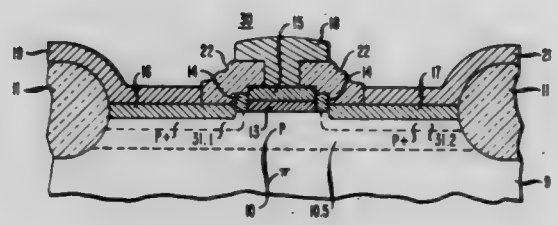
Martin P. Lepselter, Summit, and Simon M. Sze, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 17, 1980, Ser. No. 141,120

Int. Cl.³ C23F *1/02*; B01J *17/00*; B05D *5/12*; C23C *11/08*

U.S. Cl. 29—576 B **10 Claims**





1. A method for making transistor devices in a silicon semiconductor body (10), each said device (20 or 30, FIG. 6 or FIG. 7) having a gate electrode layer contact (15) to a polycrystalline silicon gate electrode (13) during a stage of manufacture of said device, a source electrode layer contact (16), and a drain electrode layer contact (17), including the steps of coating side edges of said polysilicon gate electrode (13) with a silicon dioxide layer (14), and forming said gate and source and drain electrode contacts simultaneously by depositing on said body (10) a transisition metal capable of forming a silicide to form silicide of said metal contacting a pair of then exposed regions (10.1, 10.2) contiguous with a major surface of the body (10), thereby to form said source and drain electrode contacts (16, 17), and simultaneously to form said silicide contacting the then exposed regions of the polycrystalline silicon gate electrode (13), thereby to form said gate electrode contact (15), whereby essentially no silicide accumulates on the silicon dioxide coating (14).

4,343,083

METHOD OF MANUFACTURING FLEXIBLE PRINTED CIRCUIT SHEETS

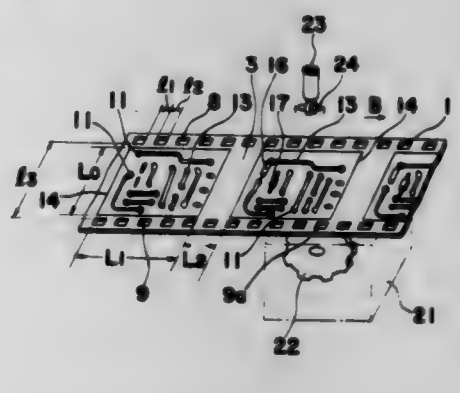
Katsuyoshi Takemura; Masatoshi Kondo, both of Hirakata; Fumio Hasuike, Kadoma, and Yoshifumi Okada, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Filed Oct. 11, 1979, Ser. No. 83,932

Claims priority, application Japan, Oct. 11, 1978, 53-125340; Oct. 11, 1978, 53-125341

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—832 **3 Claims**



1. A method of manufacturing a flexible printed circuit sheet for use in electrical and electronic equipment, which comprises the steps of:

providing a flexible base sheet having a belt-like configuration and a flexible base material with a layer of electrically conductive material covering the entire surface of at least one side of said flexible base material and having rows of guide holes at predetermined intervals along the opposite longitudinal edges of said base sheet;

forming electrically conductive circuit patterns on said base sheet at predetermined intervals in the longitudinal direction and at positions between the rows of said guide holes, the forming steps for each circuit pattern comprising selectively removing electrically conductive material within an area on said base sheet to leave a circuit pattern within said area, said area having a periphery within which said area lies, said forming step further comprising leaving electrically conductive material around said area with a conductive material edge thereof lying along the periphery of said area, the electrically conductive material which is left on said base sheet after the forming steps for a succession of circuit patterns lying outwardly of the peripheries of said areas and extending between said areas and to the base sheet edges and around said guide holes and said circuit patterns being spaced inwardly from said conductive material edges;

moving said flexible base sheet and positioning the circuit patterns successively at a parts attaching position by engagement of moving and positioning means in said guide holes and connecting electronic parts to the individual circuit patterns successively positioned at said parts attaching position; and

thereafter moving said base sheet for positioning the successive circuit patterns in a cutting position and cutting individual flexible printed circuit sheets from said base sheet by cutting said flexible base sheet along and adajacent the conductive material edge defining the periphery of each area and between said conductive material edge and the circuit pattern within that area.

4,343,084

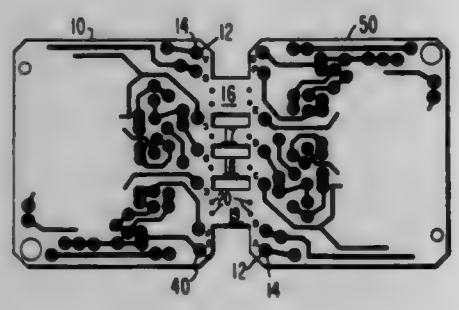
METHOD FOR MAKING PRINTED CIRCUIT BOARDS WITH CONNECTOR TERMINALS

Paul C. Wilmarth, Nobelesville, Ind., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 115,361, Feb. 8, 1980, abandoned. This application Apr. 15, 1981, Ser. No. 254,536

Int. Cl.³ H05K *3/00*

U.S. Cl. 29—843 **6 Claims**



1. A method of manufacturing mounting terminals for two printed circuit boards comprising the steps of:

(a) aligning said two boards in a spaced apart relationship in the same plane, wherein each opposing edge contains a row of metallic pads located near the edge on the surface of the board, each pad having a hole for receiving a wire, and said alignment causing respective pads of one board to be opposite respective pads on the other board;

(b) inserting jumper wires through said holes in said pads from the sides of said boards opposite said pad side so as to connect opposing pads;

(c) soldering said jumper wires to said pads; and

(d) cutting said jumper wires at locations intermediate said spaced apart boards to form a row of wire terminals extending beyond said opposing edges of each of said printed circuit boards.

4,343,085

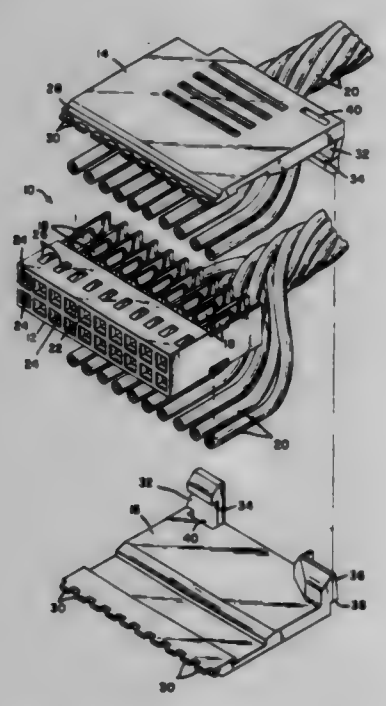
CONNECTOR ASSEMBLY FOR MASS TERMINATION

John E. Lucius, Etters, and Leon T. Ritchie, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 53,150, Jun. 28, 1979, Pat. No. 4,243,288. This application Aug. 18, 1980, Ser. No. 179,375

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—866 **3 Claims**



1. A method of mass terminating a plurality of conductors comprising the steps of:

providing a housing with a plurality of parallel spaced terminal passages opening at a front end on a mating face and at a rear end on the side of the housing in the form of outwardly directed channels;

pre-loading a terminal in each said passageway with each said terminal having a forward mating portion directed towards said mating face and a rear conductor terminating portion including at least one outwardly directed insulation displacing slot and a pair of crimp ears disposed in said channel;

aligning said conductors with their axes parallel to those of said terminals;

applying conductors in a direction normal to said axes to engage each respective terminal to effect an insulation displacing termination thereof while substantially simultaneously crimping said crimp ears against said conductor; and

enclosing the exposed rear side portion of each terminal and the rear end of said housing with a pair of hermaphroditic cover members by inserting one end portion of each said cover members into said passageways of said housing and rotating said cover members until their opposite ends are interengaging.

4,343,086

SHAVING APPARATUS

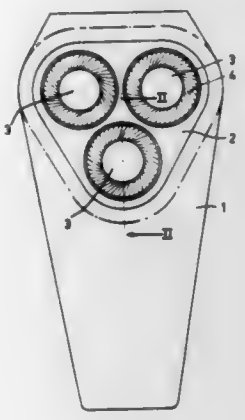
Jochem J. de Vries, and Ferdinand M. Trees, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

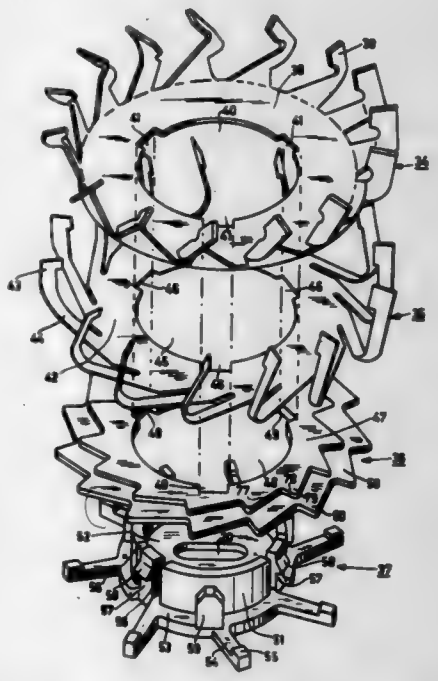
Filed May 5, 1980, Ser. No. 146,553

Claims priority, application Netherlands, May 23, 1979, 7904042

Int. Cl.³ B26B *19/14*

U.S. Cl. 30—43.6 **1 Claim**





1. A shaving apparatus having a circular shear plate pro-

vided with hair-entrance apertures and a cutting unit associated with and rotatable relative to the shear plate; said cutting unit comprising a cutting member having a circular central body provided with a central opening, a hair-pulling member having a circular central portion provided with a central opening, cutters extending from the circumference of said central body toward the shear plate, hair-pulling elements respectively associated with and movable relative to the cutters, each hair-pulling element, with reference to the direction of rotation of the cutting unit, being positioned in front of its associated cutter, respective connecting arms extending from the hair-pulling elements to the central portion of the hair-pulling member, an annular cover plate positioned over the inner ends of said connecting arms and engaging said central portion, and means formed on said cover plate for extending through the central openings and engaging the cutting member to secure the hair-pulling member between said cutting member and the cover plate, the outer peripheral portion of the cover plate being axially offset from its inner peripheral portion to provide a flange constituting a stop limiting the movement of each hair-pulling element, said outer peripheral portion and said inner peripheral portion of the cover plate being connected by a continuous annulus, the radial dimensions of the two peripheral portions being such that the annulus is positioned with respect to the inner ends of the connecting arms to prevent accumulation of hair clippings and other particles between said inner ends of the connecting arms and the cutting member.

4,343,087

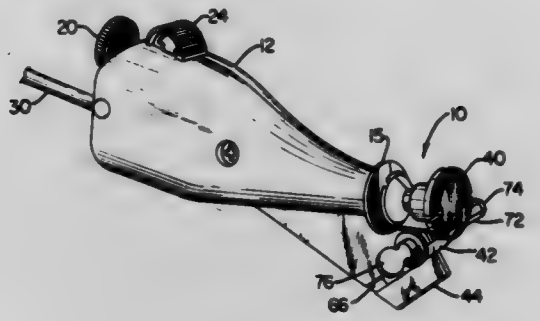
PATTERN CUTTING APPARATUS

Wayne E. Simon, P.O. Box 125, Evergreen, Colo. 80451

Filed Jan. 22, 1981, Ser. No. 227,513

Int. Cl.³ B26B *15/00*

U.S. Cl. 30—241 **14 Claims**



1. Cutting apparatus adapted for cutting patterns in paper and the like, comprising:

a handle;

an anvil member provided with at least one open slot on its periphery extending in a direction toward the center of said anvil;

a blade mounted in fixed relation to said handle for forward extension through said slot in said anvil and at an angle toward the center of said anvil; and

drive means in said handle for reciprocating said anvil along an axis through the center of said anvil.

4,343,088

PRECISION TRIMMING DEVICE

Dewey R. Farley, Richmond, and Vernon K. Holden, Sandston, both of Va., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,655

Int. Cl.³ B26B *25/00*; B24B *17/00*; B26D *5/08*

U.S. Cl. 30—273 **11 Claims**

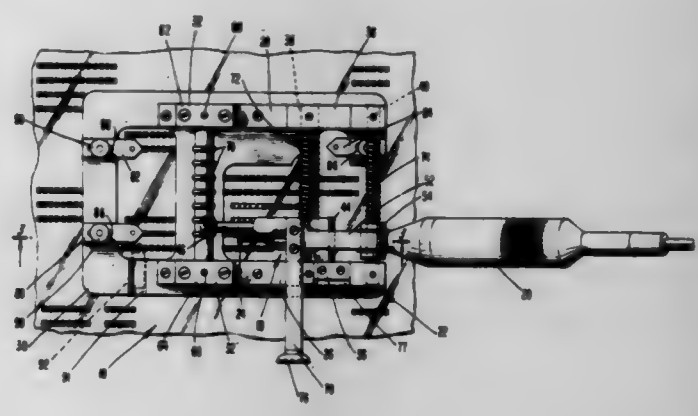
1. A precision trimming device comprising:

a frame having a base positionable on a surface of an article;

means mounted on said frame for trimming the surface of the article;

means mounted on the frame for mounting the trimming means for movement in a first direction adjacent to the surface to be trimmed and simultaneously in a second direction perpendicular to the first direction into trimming engagement with a preselected portion of the surface;

means mounted on the frame for locating the frame relative to the article so as to locate the trimming means in alignment with a preselected portion of the article to be trimmed;



first means for moving said trimming means in said first direction; and

second means, responsive to movement of the trimming means in said first direction, for moving said trimming means in the second direction such that the trimming means trims the preselected portion of the surface of the article.

4,343,089

OUTER BLADE OF ELECTRIC SHAVERS

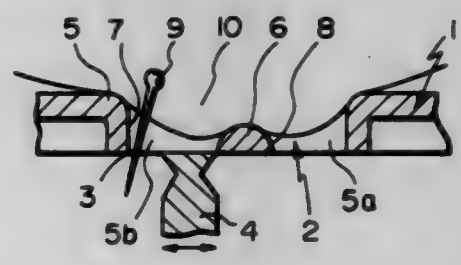
Tadashi Suzuki, Yuzawa, and Sinichiro Tugimura, Nagahama, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 29, 1980, Ser. No. 191,755

Claims priority, application Japan, Oct. 3, 1979, 54-127756; Oct. 3, 1979, 54-127757

Int. Cl.³ B26B *19/02*

U.S. Cl. 30—346.51 **1 Claim**

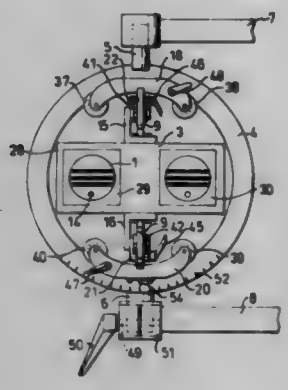


1. An outer blade for electric shavers made of a metal foil and comprising an outer surface which slides against the user's skin and an inner surface against which an inner blade may slide, said outer blade including hair inlet apertures each having an undulated peripheral sidewall, said sidewall including a plurality of portions oriented generally concave relative to the center of said aperture as viewed in a direction perpendicular to the plane of said outer blade, and a plurality of portions oriented relatively convex relative to said center as viewed in said direction, each said sidewall portion having an angle of inclination comprising the angle which the respective sidewall portion makes with said inner surface, the angle of inclination of said generally concave portions being larger than that of said generally convex portions, said sidewall portions arranged such that said apertures are larger at said outer surface than at said inner surface.

4,343,090
SUSPENSION DEVICE FOR ANGLE INDICATOR

Lars A. Bergkvist, Vastmansvagen 16, 890 23 Sjalevad, Sweden

PCT No. PCT/SE79/00243, § 371 Date Aug. 1, 1980, § 102(e) Date Jul. 21, 1980, PCT Pub. No. WO80/01202, PCT Pub. Date Jun. 12, 1980
PCT Filed Nov. 30, 1979, Ser. No. 200,494
Claims priority, application Sweden, Dec. 1, 1978, 7812389
Int. Cl.³ G01C 1/00
U.S. Cl. 33—275 R 9 Claims

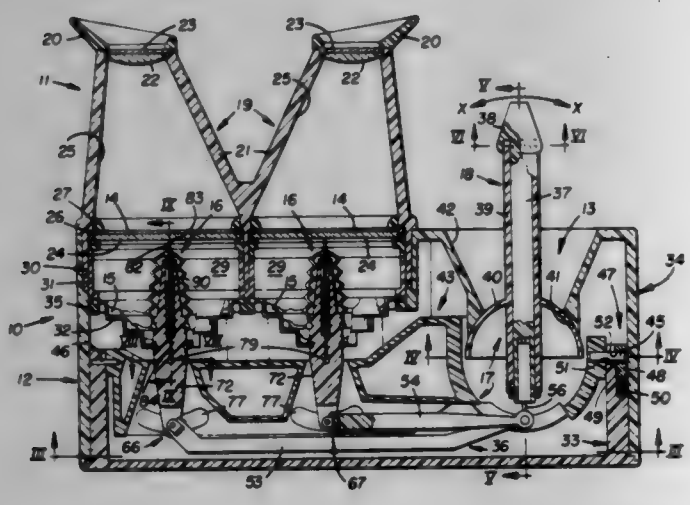


1. A suspension device for use in combination with an angle indicator (3) intended to indicate the angle of an object relative to the vertical line and comprising two angle-indicating devices (1,2), each designed to indicate a predetermined angle to the vertical line, and located in two planes perpendicular to each other, characterized in the suspension device comprises an outer ring (4), support means enabling rotation of said outer ring about a diameter of said outer ring including axle means on the periphery, and having an axis including a diameter, of said outer ring, said support means adapted to be secured to the object whose angle is to be indicated, an inner ring (9) located perpendicularly to and inside of the outer ring (4) and movable along said outer ring (4), and attachment means (15,16) for attaching said angle indicator (3) inside of said inner ring (9), which attachment means (15,16) are movable along said inner ring (9), and that the outer ring (4) is rotatable about the axis of said axle means which is in parallel with a direction characteristic for the object, for example its longitudinal direction.

4,343,091
THREE-DIMENSIONAL DRAWING TOOL

Peter H. Stephens, 636 Stanyan St., San Francisco, Calif. 94117

Filed Mar. 19, 1981, Ser. No. 245,306
Int. Cl.³ B43L 13/00
U.S. Cl. 33—18 R 38 Claims

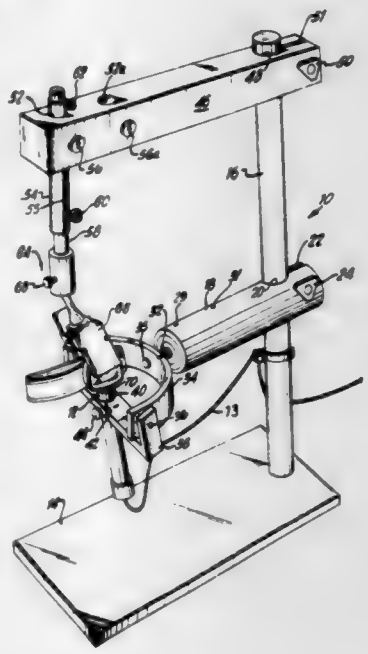


1. A three-dimensional drawing tool comprising a housing,
first and second transparent screens mounted on said housing, each having upper and lower sides,
a powderized etching composition, normally coating the lower sides of said first and second screens,
first and second scribing means for simultaneously scribing individual designs on the etching composition coating the lower sides of said first and second screens, respectively,
operator control means for simultaneously moving and for also moving said first and second scribing means relative to each other in a preselected direction on the lower sides of said first and second screens to etch nearly identical said designs thereon, and
first and second optical viewing means in alignment respectively with said first and second screens for stereoscopically viewing the individual images resulting from said individual designs as a composite three-dimensional image.

4,343,092
PROBE GUIDE AND HOLDER

Robert O. Wahl, Sound Beach; William D. Hay, Peekskill, and Raymond J. Prohaska, Locust Valley, all of N.Y., assignors to UPA Technology, Inc., Syosset, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,971
Int. Cl.³ G01B 7/06
U.S. Cl. 33—169 R 5 Claims

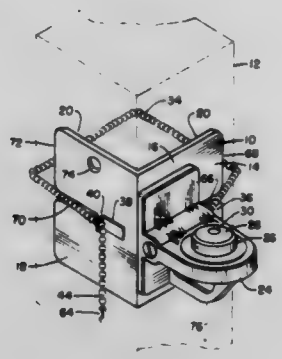


1. A probe holder and guide for holding a non-destructive thickness measuring probe in contact with a workpiece having a coated substrate comprising:
a base;
a gimbal assembly mounted on the base having means for holding the probe such that the probe may swivel freely about a point located at the geometric center of a face of a probe head of the probe;
a workpiece clamp means, supported on the base, for holding the workpiece;
means for positioning the workpiece clamp means to forceably move the workpiece into abutting relation with the face of the probe head to cause the probe to swivel until the resultant vector through the center of moment of the static forces through the workpiece acting on the probe head at the point or points of contact between the workpiece surface and the face of the probe head passes through the geometric center of the probe head face;
means for securing the workpiece clamp means after the workpiece clamp means is positioned to secure the relation between the workpiece and the probe head during a measurement period.

4,343,093
PLUMB TOOL

Richard L. Eadens, 204 Magnolia Ave., Jeffersonville, Ind. 47130

Filed Feb. 23, 1981, Ser. No. 237,345
Int. Cl.³ G01C *9/28, 9/36*
U.S. Cl. 33—373 4 Claims



1. A plumb tool that is adapted to be mounted to the object that is being plumbed, said tool comprising:

a. a body member of a substantially rigid material having a pair of right-angular arm portions, each arm having a substantially flat inner surface for use in engaging an object that is to be plumbed;

b. a ledge projecting outwardly from one arm portion and supporting an orbital bubble level on the top surface thereof in a substantially horizontal position, said ledge being being located adjacent the vertical corner formed by the joining of the two arm portions and

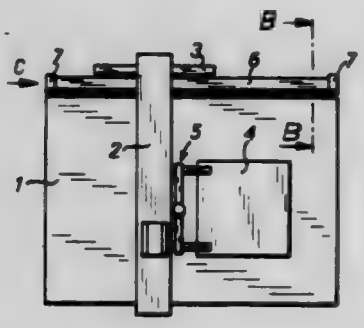
c. a flexible elongated strap member attached at one end to the ledge and being adapted to encircle an object that is to be plumbed, and keeper means on the exterior of the other arm portion for engaging the strap member along the length of the strap member for mounting the plumb tool to the object to be plumbed with a quick-attachment and quick-release capability;

d. a substantially horizontal slot formed in each right-angular arm portion, and each slot being open at the outermost edge of its related arm portion, and each slot being generally located in a common horizontal plane that includes the ledge and the said keeper means, said slots being for use in receiving the strap member therein whenever the object to be plumbed has relatively small transverse dimensions that are smaller than the width of the arm portions.

4,343,094
DRAFTING APPARATUS

Lorenzo Ubezio, Dietikon, Switzerland, assignor to Reppisch-Werke AG, Dietikon, Switzerland

Filed Mar. 31, 1980, Ser. No. 135,541
Claims priority, application Switzerland, Apr. 3, 1979, 3076/79
Int. Cl.³ B43L *13/04, 7/00, 9/04*
U.S. Cl. 33—430 6 Claims

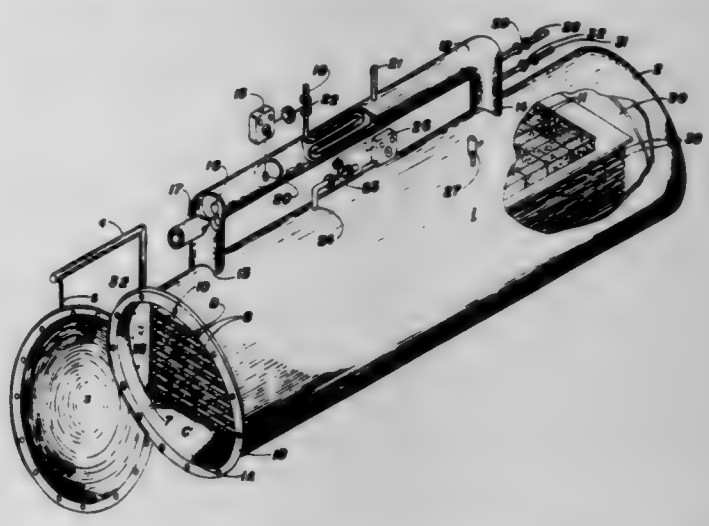


1. A drafting apparatus for attachment to a drafting board, comprising rail means (6) having an upper edge (10) forming an abutment surface for a T-square, at least a portion of said rail means (6) being made of ferromagnetic material for magnetically holding a T-square, said rail means (6) further comprising a flat surface (22) for resting flat on a work surface, first means (8, 9, 12) for removably securing said rail means (6) to an edge of a drafting board, trammel head means (7), second means (13, 15, 24) for operatively securing said trammel head means to said rail means, and compass means (16, 19) operatively secured to said trammel head means, whereby said rail means are useable as a holding guide means for a T-square when the rail means are secured to a drafting board and as a straight edge or ruler or as a beam compass when the rail means are removed from a drafting board, and wherein said first means for removably securing said rail means comprise bracket means (8), means (11) for operatively securing said bracket means to an edge of a drafting board, and magnet means (9) operatively interposed between said bracket means and said rail means for removably holding said rail means to said bracket means.

4,343,095
PRESSURE DRYER FOR STEAM SEASONING LUMBER

Howard N. Rosen; Robert E. Bodkin, both of Carbondale, and Kenneth D. Gaddis, Johnston City, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 24, 1981, Ser. No. 246,971
Int. Cl.³ F26B *5/04, 13/30*
U.S. Cl. 34—16.5 10 Claims



5. A process for accelerated drying of lumber at pressures above atmospheric pressure to rapidly remove moisture from the wood in a generally cylindrical kiln defining a chamber to contain boards having a bypass line with an inlet and outlet communicating with the chamber, heater means to heat gas within the bypass line and blower means to move gas through the bypass line including;

a. loading the boards in the kiln in generally parallel spaced relation;

b. evacuating air from the chamber to a selected absolute pressure within the chamber whereby water vapor is emitted from the wood; and

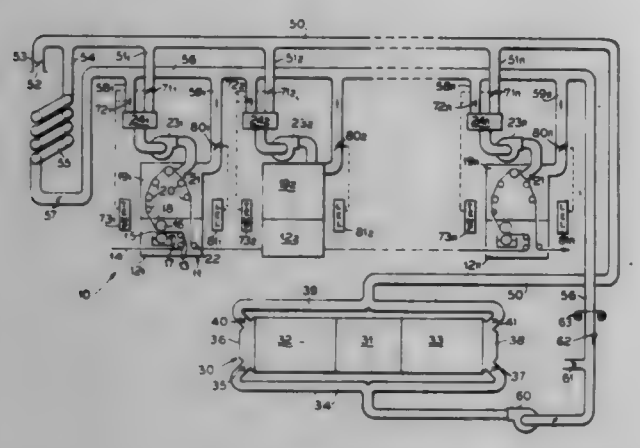
c. circulating the water vapor, as steam through said bypass line and heating said steam to a selected temperature above 212° F. to provide a selected steam pressure in said chamber to heat said lumber and vaporize water therefrom to provide dried lumber of selected moisture content.

4,343,096

SYSTEM FOR CONTROLLING EMISSIONS OF A SOLVENT FROM A PRINTING PRESS

Paul W. Bergland, Montville, N.J., assignor to Bobst Champlain, Inc., Roseland, N.J.

Filed Nov. 25, 1980, Ser. No. 210,277
Int. Cl.³ F26B *21/10*
U.S. Cl. 34—47 **5 Claims**



1. A system for controlling emissions of a solvent from a printing press having a plurality of printing stations, said system including a separate drying hood for each of said printing stations, each of said drying hoods having means for moving a web of material through the hood, nozzle means for directing a flow of drying gases onto the moving web of material in the hood, blower means having a gas inlet for creating a flow of gas through said nozzle means, and a gas discharge outlet from said hood; means for removing solvents from a flow of gas, said means having inlet means for receiving a flow of gas containing solvents and outlet means for discharging said gas substantially free of said solvents; an output manifold having a first inlet connected to the outlet means, said manifold having a plurality of discharge outlets with one outlet in communication with the gas inlet for the blower means for each of said hoods, an adjustable outlet for discharging gas to the atmosphere and a terminal outlet; an exhaust manifold having a first inlet, a plurality of discharge outlets with one outlet in communication with the gas inlet of the blower means of each hood, a plurality of exhaust inlets with one exhaust inlet in communication with each gas discharge outlet of each hood, said exhaust manifold terminating in means for producing a negative pressure in said exhaust manifold, said means for producing discharging into the inlet means of said means for removing; and means for interconnecting the first inlet of one exhaust manifold to the terminal outlet of the output manifold so that the gas flow through the nozzle means of each hood is a mixture of the gas from the output and exhaust manifold and the exhaust from each hood is processed in the means for removing and discharged into the output manifold for recirculation through the system.

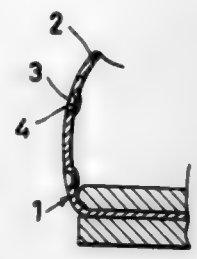
4,343,097

SHOES

Kyozo Sasaki, Hyogo, Japan, assignor to Sasaki Co., Ltd., Osaka, Japan

Filed Aug. 8, 1980, Ser. No. 176,632
Claims priority, application Japan, Aug. 27, 1979, 54-118064[U]
Int. Cl.³ A43B *7/06*
U.S. Cl. 36—3 A **2 Claims**

1. A shoe having an upper, said upper having a plurality of hollow depressions in one of the surfaces thereof, each of said depressions having an air hole therein extending through the thickness of the material of the upper, the material of the upper between the surface of each of the hollow depressions and the



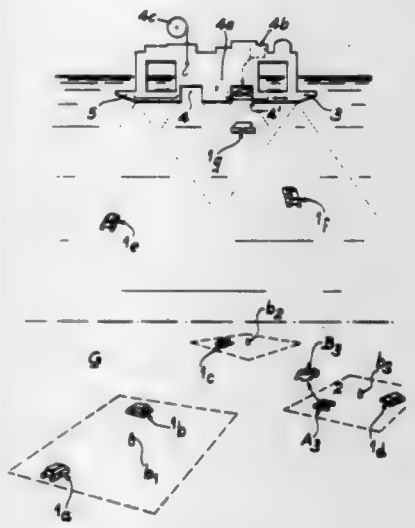
opposite surface of the upper being denser and harder than the remainder of the material of the upper.

4,343,098

APPARATUS FOR MINING NODULES BENEATH THE SEA

Pierre Balligand, Sceaux; Yves Corfa, Nantes; Pierre Lemercier, Grenoble; Paul Marchal, Gif-sur/Yvette, and Jean Vertut, Issy les Moulineau, all of France, assignors to Commissariate a l'Energie Atomique, France

Division of Ser. No. 869,148, Jan. 23, 1978, Pat. No. 4,231,171.
This application Mar. 10, 1980, Ser. No. 129,125
Claims priority, application France, Jan. 18, 1977, 77 01288
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—54 **22 Claims**



1. An installation for the exploitation of a deposit of polymetallic nodules on a sea floor, said installation comprising,

(a) a platform positioned at the surface of the sea,

(b) a plurality of self-propelled vehicles provided with releasable ballast means, nodule dredging and stocking means, and self-propelling means,

(c) said self-propelling means comprising at least two support units of revolusion, each unit being provided with at least one helical propulsion fin,

(d) said platform comprising docking stations to which are connected means for unloading nodules and means for loading the vehicles with ballast, and stocking means designated for receiving discharged nodules.

4,343,099

APPARATUS FOR THE PARALLEL GUIDANCE OF THE BUCKET OF A HYDRAULIC EXCAVATOR

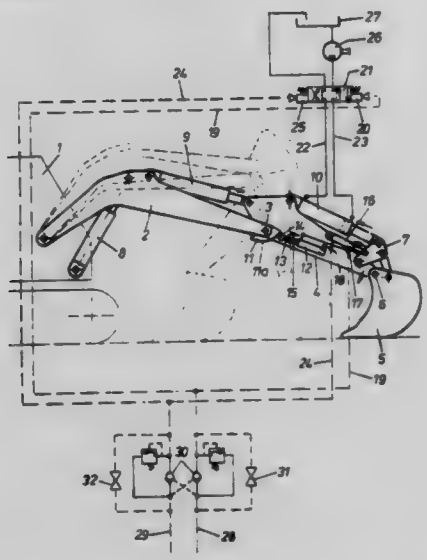
Mario Ziegler, and Ulrich Ziegler, both of Frenkendorf, Switzerland, assignors to Ziegler AG, Liestal, Switzerland

Filed Nov. 21, 1980, Ser. No. 209,206

Claims priority, application Switzerland, Nov. 28, 1979, 10563/79

Int. Cl.[3] E02F *5/02*

U.S. Cl. 37—103 8 Claims



1. A hydraulic dredger/excavator of the type having an excavator frame, a boom swivellably journalled at the excavator frame and a first hydraulic cylinder therebetween, a dipper boom pivotally connected to the boom and a second hydraulic cylinder therebetween, a bucket pivotally connected to the end of the pivotable dipper boom and a third hydraulic cylinder therebetween, and having a control device for forcedly changing the angular position of the bucket with respect to the dipper boom and the angular position of the boom with respect to the excavator frame in dependence on manually controlling the hydraulic cylinder for varying the angle between the boom and the dipper boom, in order to move the bucket so as to maintain a position parallel to itself, the control device comprising cam means having control surface means, the cam means lying adjacent the axis of rotation of the dipper boom relative to the boom, and control means for effecting a follow-up control working with comparison of index value and actual value and acting on the hydraulic cylinder for varying the angle between the dipper boom and the bucket and on the hydraulic cylinder for varying the angle between the boom and the excavator frame, the control means having means for mechanically scanning the control surface means of the cam means, which at any point corresponds to the value of said angular position respectively, at which the bucket moves along a path so as to maintain a position parallel to itself.

4,343,100

FLOOR SUPPORT FOR MOBILE SCRAPER

Lyle E. York, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00245, § 371 Date Mar. 10, 1980, § 102(e) Date Mar. 10, 1980, PCT Pub. No. WO81/02598, PCT Pub. Date Sep. 17, 1981

PCT Filed Mar. 10, 1980, Ser. No. 173,929

Int. Cl.[3] E02F *9/28*

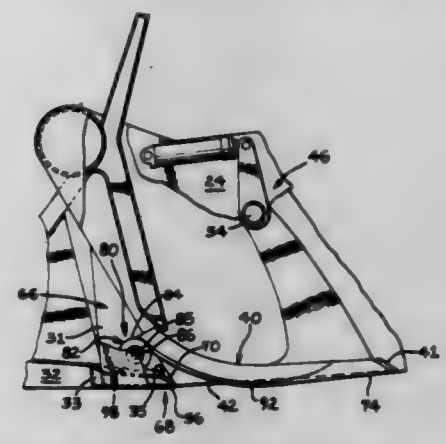
U.S. Cl. 37—126 AE 5 Claims

1. A mobile scraper (10), comprising:

a frame (32);

a bowl (26) connected to said frame (32), said bowl (26) having a bottom opening (30), a floor (40) and a pivoting apparatus (46) connecting said floor (40) to said bowl (26), said floor (40) being movable between a closed position at which said floor (40) closes said bottom opening (30) and an open position at which said floor (40) opens said bottom opening (30), said floor having a striking edge (41) being at a location below said frame (32) at the open position of said floor (40);

first means (68) for stopping said floor (40) at the open position and for supporting said floor (40) at a location adja-



cent said striking edge (41) and in a substantially horizontal direction; and,

second means (80) for substantially vertically supporting said floor (40) on said frame (32) in the open position, the closed position and during movement therebetween.

4,343,101

SCRAPER BOWL STRUCTURE

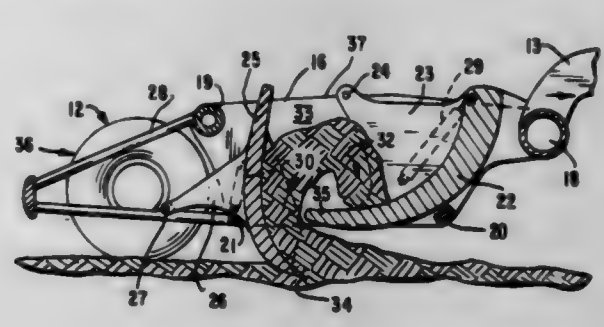
William H. Klekamp, Decatur, and Philip H. Tullis, Taylorville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01196, § 371 Date Sep. 12, 1980, § 102(e) Date Sep. 12, 1980, PCT Pub. No. WO82/01021, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 12, 1980, Ser. No. 250,747

Int. Cl.[3] E02F *3/64*

U.S. Cl. 37—129 10 Claims



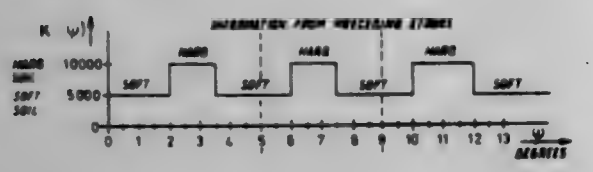
1. In a scraper bowl structure (11) of the type having a pair of upright sidewalls (16,17), frame means (36) for supporting and maintaining the sidewalls (16,17) in a substantially fixed elevational relationship to the earth, and a concave apron (22,23) pivotally connected to the sidewalls (16,17) and being swingable between raised and lowered positions therebetween, the improvement comprising

a concave blade (25,26) pivotally connected to the frame means (36) and being swingable between raised and lowered positions between the sidewalls, the blade (25,26) being of a construction sufficient for bulldozing earth forwardly onto the apron (22,23) in the lowered position of the blade (25,26) and apron (22,23), said apron defining a lower rear edge and said blade defining a lower front edge, said edges extending generally horizontally and overlapping in the lowered position of the apron and blade, and said blade including a sideless bulldozer blade portion (25) and a pair of rearwardly extending arms (26), the arms being pivotally connected to the frame means (36).

4,343,102
METHOD FOR CONTROLLING THE OPERATION OF A DREDGING APPARATUS

Christiaan A. Cornelis, Papendrecht, and Cornelis De Keizer, Dordrecht, both of Netherlands, assignors to IHC Holland N.V., Papendrecht, Netherlands

Filed May 8, 1980, Ser. No. 147,758
Claims priority, application Netherlands, May 10, 1979, 7903679
Int. Cl.[3] E02F *3/88*
U.S. Cl. 37—195 5 Claims



1. A method for controlling the operation of a dredging apparatus provided with a cutting tool adapted to perform working strokes on submarine soil, comprising performing a first said working stroke, measuring a parameter of the operation of the dredging apparatus during said first working stroke, recording said measured parameter as a function of the distance covered by the cutting tool during said working stroke, and regulating the hauling speed according to said recorded function during only a second working stroke that immediately follows said first working stroke.

4,343,103
FABRIC STRETCHER

Kumiko Murashima, P.O. Box 515, Williamstown, N.J. 08094

Filed Mar. 24, 1980, Ser. No. 132,826
Int. Cl.[3] D06C *3/00, 3/08*
U.S. Cl. 38—102 4 Claims

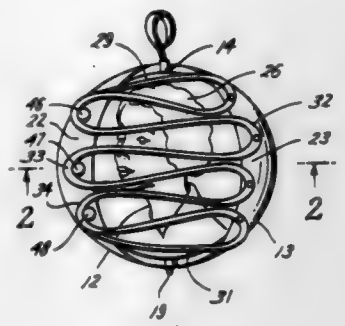


1. A fabric stretcher comprising:
a pair of end clamp means adapted to hold the two ends of a length of fabric, each of said clamp means including a cylindrically-shaped member and an elongated semicylindrically-shaped cover therefor;
means for securing a rope means to each end of each of said clamp means for suspending the same from a fixed support, and
a plurality of elongated substantially rigid rod-shaped members having a length substantially equal to the length of each of said clamp means, each of said rod-shaped members including a pin extending axially from each end thereof, said rod-shaped members being capable of being flexed and being adapted to transversely stretch fabric being longitudinally stretched by said clamp means.

4,343,104
DISPLAY OF ARTICLES

Andrea Szabo, 1626 Wentwood Dr., Pasadena, Tex. 77504

Filed Jul. 22, 1981, Ser. No. 285,796
Int. Cl.[3] G09F *3/18*
U.S. Cl. 40—10 R 9 Claims

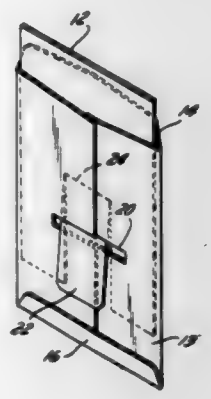


1. An ornamental design for display of selected articles such as photographs comprising:
(a) a bifurcated body having a pair of planar base members and hinge means connecting said members together for a pivotal interconnection therebetween;
(b) said members having overlaying edges forming a recess adapted to secure an article to be displayed;
(c) a filigree cover extending across said recess from edge to edge on said base members;
(d) said cover integrally carried by one of said members at said overlaying edge thereon; and
(e) said cover releasably secured to the other of said base members at said overlaying edge thereon, whereby said cover is released from said overlaying edge and said base members pivoted rearwardly from said cover to permit the article to be displayed, to be inserted or removed from the recess in said members.

4,343,105
ENVELOPE-DISPLAY DEVICE AND METHOD

Robert Isaacson, Far Rockaway, N.Y., assignor to Connecticut Valley Paper & Envelope Co., Inc., New York, N.Y.

Filed Feb. 7, 1980, Ser. No. 119,424
Int. Cl.[3] A47G *1/06;* G09F *1/12*
U.S. Cl. 40—155 13 Claims



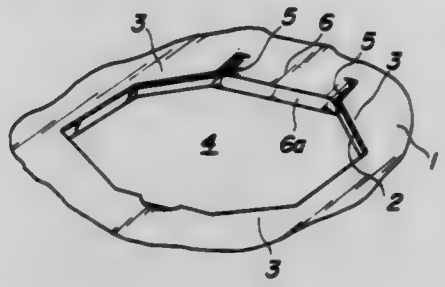
1. A display device comprising an envelope consisting substantially entirely of relatively thin, flexible sheet material and having a substantially planar front sheet, a substantially planar rear sheet, said front and rear sheets being joined together along selected edges to form said envelope, an opening in said rear sheet, a relatively stiff planar member in the envelope, said member having a tongue extending outwardly through said opening to serve as a prop for the envelope.

4,343,106

THIN-PIECE HOLDING STRUCTURE AND A SLIDE FILING SHEET USING THAT STRUCTURE

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,339
Claims priority, application Japan, Jun. 2, 1980, 55-72675
Int. Cl.[3] A47G *1/06;* G09F *1/10;* B42F *5/00*
U.S. Cl. 40—158 B 11 Claims



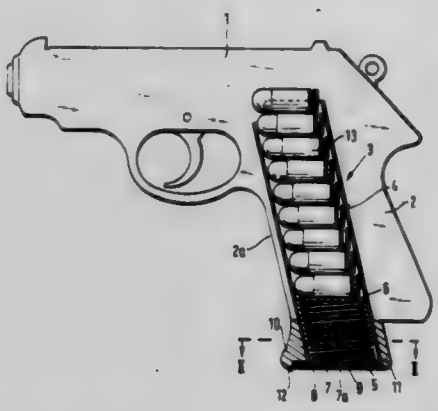
1. A structure to hold a rectangular thin-piece in an aperture comprising a base sheet, at least two holding portions formed on said base sheet at opposite sides of the aperture, a thin-piece seat covering at least a portion of the aperture and being recessed relative to the holding portions so as to receive said thin-piece between said holding portions and said seat, said holding portions being defined by slits separating said holding portions from said thin-piece seat, a push-in area formed on said base sheet and having a portion thereof contiguous to said seat, said push-in area being defined by slits extending from the aperture that are adjacent to both said seat and at least one of said holding portions, and an abutting member formed on that part of said push-in area which is contiguous to said seat, said push-in area being so dimensioned that one edge of the thin-piece is adapted to be once pushed in between said push-in area and said holding portion adjacent thereto to an extent sufficient for clearing the thin-piece from said holding portion located at the opposite side of the aperture, wherein said thin-piece is movable back from said push-in area onto the seat where said abutting member abuts one edge of the thin-piece to keep the thin-piece in position.

4,343,107

CARTRIDGE MAGAZINE FOR PISTOLS

Benno Kaltenegger, Condominio Eden Roc II, Campione b. Lugano, Italy

Filed Apr. 30, 1980, Ser. No. 145,387
Claims priority, application Switzerland, May 7, 1979, 4250/79
Int. Cl.[3] F41C *25/00*
U.S. Cl. 42—7 3 Claims



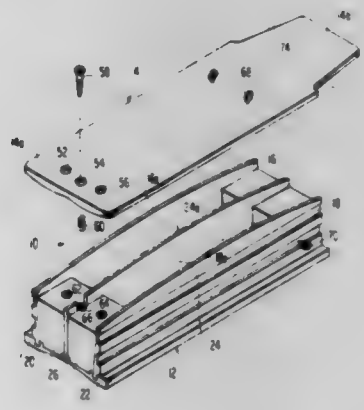
1. In a cartridge magazine for pistols of the type including an elongated magazine sleeve adapted to receive cartridges therein, upper and lower abutment plates housing therebetween a spring, a slide plate for retaining the magazine sleeve operatively associated within a pistol handle, and a finger support at a lower end of the magazine sleeve having a forwardly directed bead-shaped extension, the improvement comprising a lower edge of the magazine sleeve and a lower edge of the bead-shaped extension lying in generally contiguous planes, and said slide plate lying in the plane of said bead-shaped extension lower edge.

4,343,108

DOUBLE DEEP TONE GOBBLER TURKEY CALL

Ben R. Lee, Coffeeville, Ala., assignor to Lee Calls, Inc., Coffeeville, Ala.

Filed Dec. 12, 1980, Ser. No. 215,784
Int. Cl.[3] A63H *5/00*
U.S. Cl. 46—189 3 Claims



1. A highly versatile, double deep tone gobbler turkey call comprising a generally rectangular, elongated upwardly open wooden box assembly, said box assembly comprising:

a longitudinally extending bottom wall,

laterally spaced generally vertical sidewalls fixed at their lower ends to said bottom wall at opposite sides thereof,

a vertical sound board sized and configured to said sidewalls and being fixed to and rising vertically from said bottom wall at the center thereof,

end blocks positioned between said sound board, on both sides thereof, and respective sidewalls, at opposite ends of said box assembly, and being fixedly mounted therebetween and to said bottom wall to form dual tone sound chambers on respective sides of said sound board,

the upper edges of said sidewalls and said sound board being longitudinally slightly convex,

a generally planar wooden actuator top pivotably mounted at one end to the top of said wooden box assembly at an end thereof and having a laterally double convex bottom wall in contact with said convex edges of said sidewalls and said sound board such that pivoting of said actuator top causes lateral scraping of said actuator top simultaneously across the edges of both of said sidewalls and said sound board to imitate the double deep tone of an old tom turkey gobble.

4,343,109

CAPILLARY DISC AND SUPPORT THEREFOR

Reinhold Holtkamp, Werther Strasse 112, 4294 Isselburg, Fed. Rep. of Germany

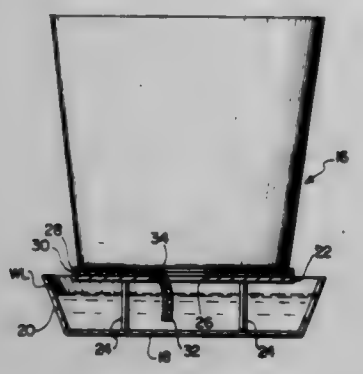
Filed Nov. 12, 1980, Ser. No. 205,989
Int. Cl.[3] A01G *27/00*
U.S. Cl. 47—81 5 Claims

1. A plant watering device comprising:

(a) support means adapted to rest on the bottom of a tray or like water-containing vessel, said support means including a support disc and a plurality of legs extending downwardly from said disc and spaced inwardly from the edge thereof so as to elevate said disc from the bottom of the tray, said disc being formed with a substantially central opening therein, and

(b) pad means constructed of water absorbent material positioned on said disc, said pad means having a movable tab

hinged at one end thereof to said pad means and aligned with and commensurate in size with said opening in said disc, said tab being adapted to be bent downwardly through said opening in said disc for submergence in the water in the tray,



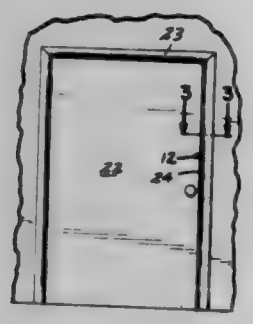
whereby water is transmitted by capillary action from said tab to and uniformly throughout said pad for providing water to a pot having an apertured bottom positioned on said pad.

4,343,110

WEATHER STRIPPING APPARATUS

Eileen Thompson, Rte. 1, Barnesville, Minn. 56514

Filed Jan. 21, 1980, Ser. No. 113,448
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—477 **1 Claim**



1. A weather stripping apparatus used to inhibit the flow of air between doors or windows and adjoining surfaces, said weather stripping apparatus comprising:

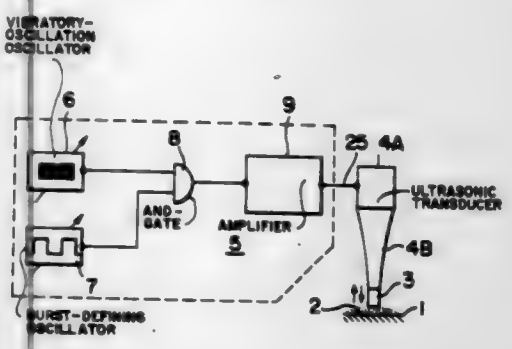
an elongated planar flexible member defined by two side edges extending in a longitudinal direction and two ends, said member being folded along its longitudinal direction and the side edges being joined to form a front edge, the side edges being affixed to one another along the front edge in a non-continuous manner such that the side edges define a plurality of openings along the front edge of said flexible member, said flexible member having a hollow tubular shape which is generally flat defined by the front edge, a back edge, two side portions, and two opposite end portions, said openings along said front edge being adapted to face outwardly from a structure toward the direction of the flow of air whereby air can enter the hollow interior of said tubular shaped flexible member to inflate said tubular member and seal gaps between doors or windows and adjoining surfaces of said structure, thereby preventing unwanted air from flowing into the structure, said flexible member including a length of removable string, said string being disposed within said flexible member along its full length and operable to cause the side portions of said flexible member to be separated.

4,343,111

ULTRASONIC MACHINING METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jan. 23, 1980, Ser. No. 114,557
Claims priority, application Japan, Jan. 24, 1979, 54/6107
Int. Cl.³ B24B *1/04*
U.S. Cl. 51—59 SS **6 Claims**



1. In an ultrasonic machining method wherein an ultrasonically vibrating tool is disposed in a machining relationship with a workpiece and juxtaposed with the workpiece across a cutting front to mechanically machine the workpiece by means of vibratory energy transmitted from the tool to the cutting front, the improvement which comprises the steps of:

(a) modifying said vibratory energy by intermittently interrupting the vibratory oscillations applied to said tool, thereby applying a series of time-spaced bursts of vibratory oscillations to said cutting front; and

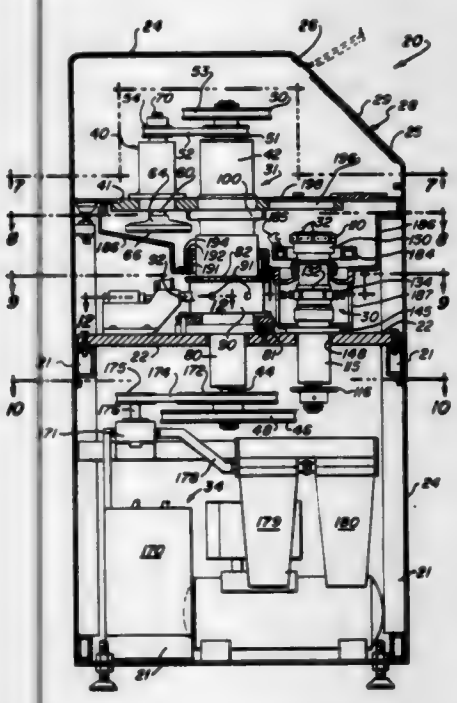
(b) modifying the frequency of said vibratory oscillations during each of said bursts.

4,343,112

APPARATUS FOR GRINDING METALLOGRAPHIC SPECIMENS

Tracy C. Jarrett, P.O. Box 15397, Denver, Colo. 80215

Filed Aug. 8, 1980, Ser. No. 176,510
Int. Cl.³ B24B *7/04*
U.S. Cl. 51—131.3 **8 Claims**



1. A grinding machine for grinding and polishing metallographic specimens, comprising, in combination, a rigid frame and housing; a multiple-lap, indexable, vertical grinder assembly supported on said frame within said housing, means for rotating each lap of said assembly about a vertical axis, a rotating vertically positionable specimen holder assembly supported on said frame within said housing, and a coolant and grinding fluid system supported on said frame within said

housing for supplying coolant and grinding fluid to specimens supported in said specimen holder during grinding thereof, means for indexing said grinder assembly for the relative positioning of laps with respect to said specimen holder, means for rotating said specimen holder about a vertical axis and means for vertically positioning said specimen holder relative to and with a predetermined pressure against a selected lap of said grinder assembly, whereby specimens held by said holder can be ground and polished to a predetermined finish by a selected successive plurality of laps.

4,343,113

ABRADING DEVICE

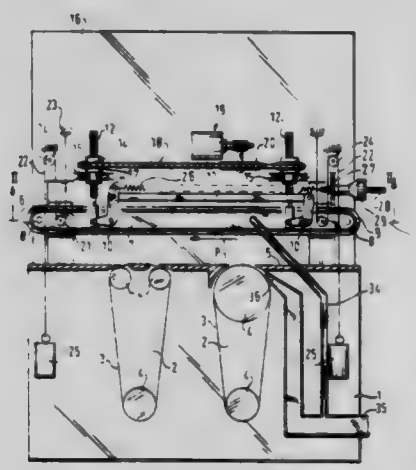
Jacob A. van der Linden, Kapellen, Belgium, assignor to Machinefabriek A. van der Linden. B.V., Goes, Netherlands

Filed Feb. 15, 1980, Ser. No. 121,826

Claims priority, application Netherlands, Mar. 30, 1979, 7902493

Int. Cl.³ B24B *21/04*

U.S. Cl. 51—137 **3 Claims**



1. An abrading device comprising, in combination:

a work support surface having abrading means protruding thereabove at a particular location;

a conveyor assembly located in spaced relation above said surface and defining a guide channel therewith whereby a workpiece is guided and conveyed through said channel, said conveyor assembly comprising a framework, roller means supported by said framework, an endless conveyor belt trained over said roller means to present upper and lower flights in which the lower flight is essentially parallel with said work support surface, means for driving said roller means, and a guide plate overlying said lower flight whereby a workpiece forces said lower flight upwardly against said guide plate, said guide plate having a flat and smooth undersurface in that portion thereof registered above said particular location whereat said abrading means is located, and said undersurface of the guide plate having transverse recesses at locations other than in registry above said particular location, and means for subjecting said recesses to a source of negative pressure whereby said lower flight is maintained up against said undersurface of the guide plate even when a workpiece does not so force it.

4,343,114

APPARATUS FOR MACHINING CAMS AT A CONSTANT CUTTING SPEED

Marc Tourasse, 53 Chemin de la Garenne, Lyon 50, Rhône, and Roger Duvernay, 16 Allée de Longcheêne, Saint Genis Laval, Rhone, both of France

Filed Jun. 27, 1980, Ser. No. 163,721

Claims priority, application France, Jun. 29, 1979, 79 17425

Int. Cl.³ B24B *5/42*

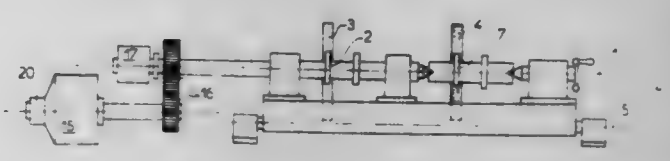
U.S. Cl. 51—165.71 **4 Claims**

1. A device for machining a cam mounted between points on a support mounted to oscillate about an axis parallel to the axis of rotation of a cam, this support also supporting a master cam co-axially with the cam, whereas motorized means insure the drive of the cam and of the master cam which cooperate respectively with a follower member and with a cutting member, characterized in that it comprises:

memory means for storing predetermined theoretical instantaneous values of the speed of the rotation of the cam that must be implemented such that the cutting speed remains the same at any point around the cam;

encoder means, coupled to the cam, for providing a first signal indicating the instantaneous angular orientation of the cam;

means, responsive to the output from the memory means and the first signal from the encoder means, for providing a



second signal whose magnitude is proportional to the predetermined theoretical instantaneous value of the speed of the rotation of the cam at each predetermined angular orientation of the cam;

means, connected to the output shaft of the motor means, for providing a third signal whose magnitude is proportional to the instantaneous speed of the motor means; and

means for varying the speed of rotation of the cam such that the cutting speed remains the same at any point around the cam;

the speed varying means including means for comparing the second and third signals and adjusting the magnitude of the voltage supply to the motor means at each instant in order to reduce to zero the difference between the magnitude of the second and third signals.

4,343,115

PROTECTING HOOD FOR A MOTOR-DRIVEN HAND TOOL

Manfred Stäbler, and Fritz Schädlich, both of Leinfelden-Echterdingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 13, 1980, Ser. No. 121,257

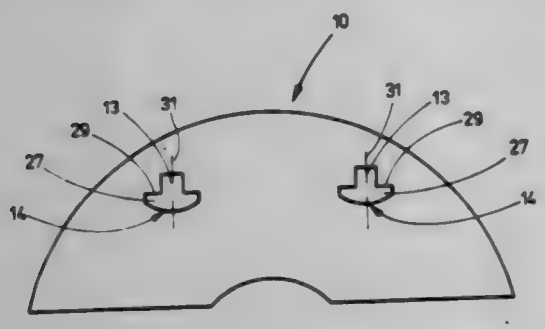
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 7909078[U]

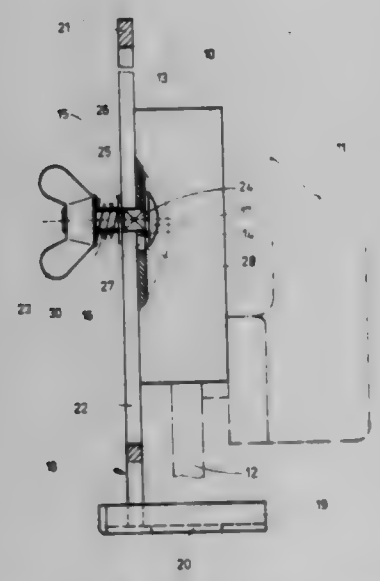
Int. Cl.³ B24B *55/04*

U.S. Cl. 51—268 **11 Claims**

1. A protecting hood assembly for use with a motor-driven hand tool, comprising a hood; at least one supporting vertical member formed with an elongated slit; and fastening means for connecting said supporting member to said hood, said fastening means including at least one bolt having a threaded projection and a head formed with a peripheral portion having a rounded outer surface, said hood including at least one opening to receive said bolt, said opening having a narrowing portion of a substantially squared cross-section and a widened portion downwardly extending from an end of said narrowing portion and having a rounded lower surface, said widened portion having a size in a horizontal direction being relatively larger than a diameter of said peripheral portion of said bolt and said opening having a size in a vertical direction being relatively smaller than said diameter of said peripheral portion so that

said head of said bolt is easily inserted into said elongated slit upon assembling and is thereafter inserted into said opening





upon rotation of said bolt about said peripheral portion, and clamped on said hood.

4,343,116

PROCESSES FOR FINISHING GLASS SURFACES

Norman A. Murphy, Liverpool; John G. Banner, Wirral; Edwin Fletcher, Ormskirk, all of England, and Arthur Brown, Clwyd, Wales, assignors to Pilkington Brothers Limited, St. Helens, England

Filed Jul. 15, 1980, Ser. No. 169,217

Claims priority, application United Kingdom, Jul. 26, 1979, 7926032

Int. Cl.³ B24B *1/00, 13/00*

U.S. Cl. 51—284 R **9 Claims**

1. In a method of finishing a surface of a glass article to a close tolerance and a substantially blemish-free state, comprising the steps of causing a polishing lap to act on the surface by relative movement while continuously supplying to the surface a treatment liquid comprising water, inert particles which exert an abrasive action while preventing direct contact between the polishing lap and the glass surface, a bifluoride which forms an at least partially insoluble silicofluoride or fluoride by reaction with the glass surface, an acid which supplies hydrogen ions in solution in the water, and a solubility suppressant which maintains the treatment liquid in such a state that the silicofluoride or fluoride separates out and continues to separate out on the glass surface, whereby the lap and inert particles remove the silicofluoride or fluoride from high portions of the surface and thereby allow further reaction and glass removal in those areas, and continuing the relative movement of the polishing lap and the supply of treatment liquid until a desired finished form of the glass surface has been achieved, the improvement which resides in continuing the relative movement of the polishing lap while stopping the supply of treatment liquid and replacing it immediately by a supply of an alkaline solution which neutralises any treatment liquid remaining on the glass surface or on the lap and which contains inert particles which continue the prevention of direct contact between the polishing lap and the glass surface, and finally washing the surface to remove the alkaline solution and any remaining neutralised treatment liquid.

4,343,117

ASSEMBLABLE STRUCTURES

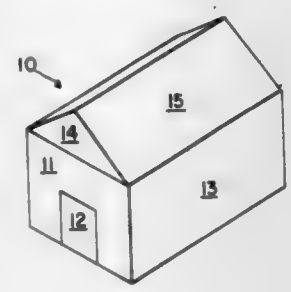
Norman S. Shemitz, Woodbridge, Conn., assignor to Shem Safe Incorporated, Milford, Conn.

Filed Apr. 11, 1980, Ser. No. 139,452

The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.

Int. Cl.³ E04B *1/38;* A63H *33/10;* F16B *1/00*

U.S. Cl. 52—90 **37 Claims**



1. A building structure having side walls and a roof formed of separate panels connected together by a support system, each of said panels having a plurality of corners, and said support system comprising essentially non-stretchable collars mounted on said panel corners and elastic members connecting at least some of the collars together such that groups of adjacent collars on juxtaposed panels are connected together at their proximate ends by a said elastic member, and at least some of the said groups of collars are connected to other groups of collars which are spaced from the first group by tensioned elastic members stretched between the said groups of collars, such that the collars are capable of being releasably held in place on their respective panel corners to releasably hold all of the panels under the tension of the elastic members in the predetermined shape of the building structure.

4,343,118

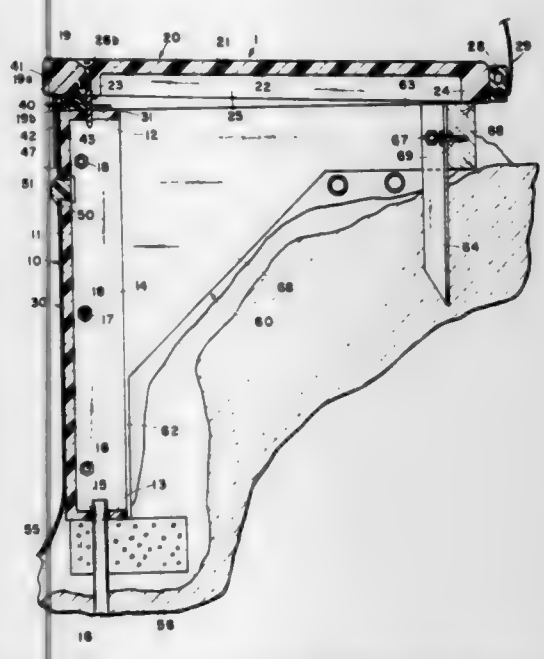
REMOVABLE SWIMMING POOL CONSTRUCTION

Jay A. Lankheet, 1320 Bayview Ave., Holland, Mich. 49423

Filed Oct. 24, 1979, Ser. No. 87,743

Int. Cl.³ E04H *3/16, 3/18*

U.S. Cl. 52—169.7 **18 Claims**



1. In a removable swimming pool construction including a plurality of side wall panels, deck panels, and a flexible liner, the improvement comprising:

a facing member connected between said side wall panels and said deck panels, and extending about an inside marginal edge of said pool construction; said facing member depending from said deck panels to a point disposed normally in the vicinity of the water line of said pool construction, and overlying an associated upper portion of said flexible liner for alleviating deterioration and damage thereto, and wherein said flexible liner includes a free edge connected with an upper portion of said side wall panels; and

said facing member is substantially L-shaped, and includes one leg thereof disposed between said deck panels and said side wall panels, with the other leg depending therefrom and overlying the upper portion of said liner.

4,343,119

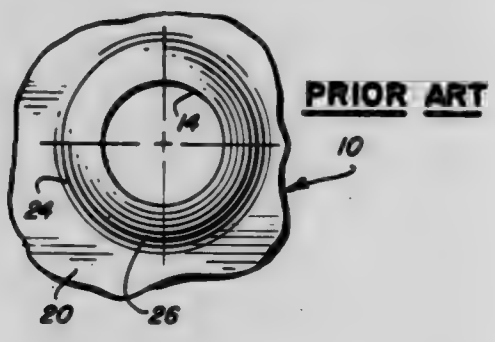
BEVELED LOBE ANTI-SKID GRATING

William A. Bahnfleth, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 89,120, Jun. 18, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,496

Int. Cl.³ B32B *3/10*; E04C *2/42*; F16S *1/08*

U.S. Cl. 52—180 **2 Claims**



1. In a grating (10) for use as a deck, said grating (10) including a substantially rigid metal plate (32), and a plurality of gripping members (30) extending upwardly from the plane of said plate (32), the improvement comprising:

a base (38) for each gripping member at the junction of each gripping member with said plate (32), at least three lobes (36) extending upwardly from said base, each lobe (36) having a parabolic tongue shaped configuration and being connected to the plate (32) along a circular path at said base, each lobe (36) ascending upward and inward to form a crest (40), each crest (40) of each lobe (36) being spaced from each crest (40) of the remaining lobes (36) to form a star-shaped opening (42) therebetween, and a continuous, vertically oriented wall (41) on the edge of each lobe (36) which wall (41) is spaced from a wall (41) of each adjacent lobe (36) to define said star-shaped opening and to define extensions (43) between adjacent lobes which extend from the crest (40) of one lobe to the base (38) thereof and to the crest (40) of an adjacent lobe (36), said extensions being parabolic shaped to provide substantial openings between the lobes at the base of each gripping member, portions of said walls (41) of said star-shaped opening (42) defining said extensions (43) between adjacent lobes (36) and diverging as they extend from said base (38) to their respective crests (40), said walls being tapered inwardly and downwardly toward the center of the opening to assist in dispersing mud scraped loose by said crests (40) of the gripping members (30).

4,343,120

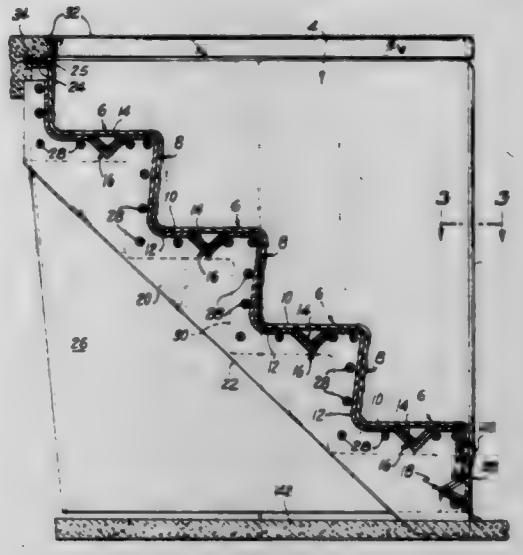
STAIR STRUCTURE FOR SWIMMING POOLS

Donald H. Witte, Arlington, Tex., assignor to Carl R. Meyer and Carol S. Meyer, both of Port Isabel, Tex.

Filed Mar. 17, 1980, Ser. No. 131,221

Int. Cl.³ E04F *11/00*

U.S. Cl. 52—184 **18 Claims**



1. A modular component stair structure for a swimming pool, which stair structure comprises:

(a) a stair assembly including integral stair treads and risers;

(b) integral side flanges extending downwardly and rearwardly from the opposed ends of the treads and risers;

(c) a pair of wall plates carried by the side flanges, with each wall plate extending downwardly and rearwardly from the flanges for supporting vertical compression loading imposed on the stair assembly; and

(d) means extending linearly along and in the general configuration of the opposed ends of the tread and risers for substantially their entire lengths for watertight compression sealing the side flanges to the wall plates.

4,343,121

WINDOW GLASS MOUNTING ARRANGEMENTS

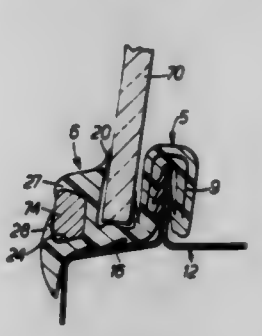
Werner Kruschwitz, and Heinz Andrzejewski, both of Viersen, Fed. Rep. of Germany, assignors to Draftex Development AG, Zug, Switzerland

Filed Sep. 26, 1979, Ser. No. 79,033

Claims priority, application United Kingdom, Oct. 14, 1978, 40604/78; Dec. 28, 1978, 50174/78

Int. Cl.³ E06B *3/62*

U.S. Cl. 52—208 **15 Claims**



1. A window glass mounting arrangement, comprising

flexible material which is formed to define first and second channels substantially side-by-side and facing in opposite directions,

the first channel being sized to fit over and grip a support member surrounding the window opening so that the second channel then runs alongside the window opening for receiving the window glass,

a stiffening member,

the material defining the first channel having embedded in it a metal carrier of substantially channel-shape which en-

hances the grip of the material of the first channel on the support member, the metal carrier being associated with means positively preventing significant lengthwise stretching thereof but without preventing a limited amount of lengthwise compression,

the wall of the second channel furthest from the first channel being entirely free of any embedded and inseparable metal reinforcement and being freely bendable outwardly away from the support member to receive the window glass in the second channel and defining means for receiving the said stiffening member for stiffening that wall after it has resiled, so as to secure the window glass in the second channel.

4,343,122

SYSTEM FOR ANCHORING A TENDON IN A STRUCTURAL CONCRETE UNIT

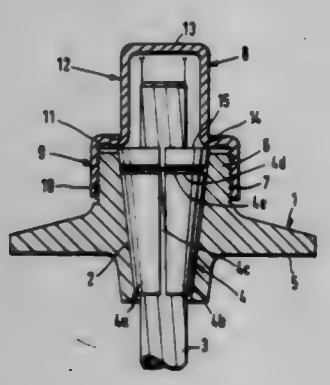
Johann Wlodkowski, and Dieter Jungwirth, both of Munich, Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 23, 1981, Ser. No. 227,596

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 8002044[U]

Int. Cl.³ E04C *5/12*

U.S. Cl. 52—223 L **8 Claims**



1. In a wedge anchoring system for anchoring a tendon extending through a structural concrete unit at a location where the tendon extends from the unit including an anchoring member arranged to bear against the concrete unit and having an axially extending central passage through which the tendon extends out of the concrete unit, the central passage through the anchoring member widens conically outwardly from the concrete unit and is arranged to form a frusto-conical seating surface for a wedge member arranged to grip the tendon, a cap elongated in the axial direction of the central passage and connectible to the anchoring member in a form-locking manner for forming a closure over the end of the anchoring member located outwardly away from the concrete unit, said cap arranged to exert a compressive force on the transverse ends of the wedge member facing outwardly away from the concrete member, wherein the improvement comprises that said cap having at least one inwardly directed projection formed integraly therewith and forming a surface within said cap extending transversely of the elongated axial direction thereof and arranged to extend into contacting engagement with the transverse ends of the wedge member facing outwardly away from the concrete member for affording the compressive force thereon.

4,343,123

COMPOSITE BRIDGE WITH PRECOMPRESSION SYSTEM

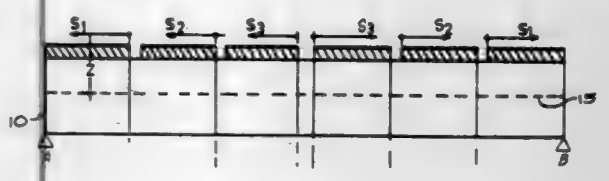
Roosseno Soerjohadikusumo, 14 Diponegoro St., Jakarta, Indonesia

Filed May 13, 1980, Ser. No. 149,444

Claims priority, application Indonesia, Jul. 16, 1979, PP/7160

Int. Cl.³ E04C *3/10*

U.S. Cl. 52—225 **21 Claims**



1. A composite bridge structure having a beam for supporting loads thereon, the bridge structure comprising a plurality of spaced apart concrete consoles secured to the beam, the consoles located on the beam and being urged apart for creating a bending moment in the beam in a direction opposite to the direction of the moment created by the load supported by the beam.

4,343,124

STRUCTURAL ELEMENTS

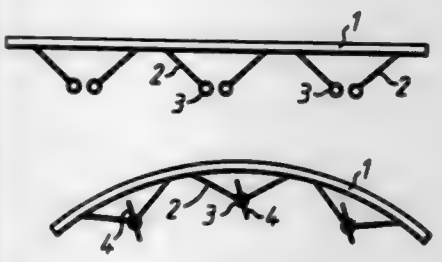
Friedrich C. Math, Farnham, England, assignor to The British Petroleum Company Limited, London, England

Filed Apr. 25, 1980, Ser. No. 144,173

Claims priority, application United Kingdom, Apr. 26, 1979, 7914503

Int. Cl.³ E04C *3/10*

U.S. Cl. 52—226 **7 Claims**



1. A structural building element comprising an elongate member of a fibre reinforced plastics material capable of limited flexing, pairs of rigid projecting means located along and connected to said elongate member, said projecting means having means adapted to engage and lock with a neighboring projecting means upon flexing of said elongate member.

4,343,125

BUILDING BLOCK MODULE AND METHOD OF CONSTRUCTION

Calvin Shubow, 30995 Hunter's Dr., Farmington, Mich. 48024

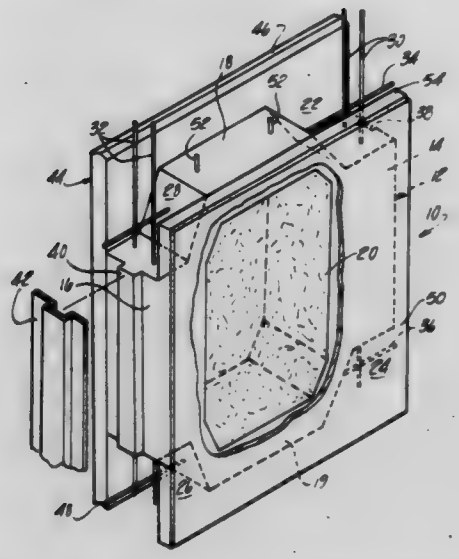
Filed Jun. 15, 1980, Ser. No. 168,992

Int. Cl.³ E04B *2/06*

U.S. Cl. 52—236.8 **10 Claims**

1. A building module for use in erecting a wall load bearing structure, the building module comprising a hollow rectangu-

lar member of reinforced concrete, including a pair of sides and a connecting top section defining a central space each of said



sides and top section including reinforcement bars extending there through.

4,343,126

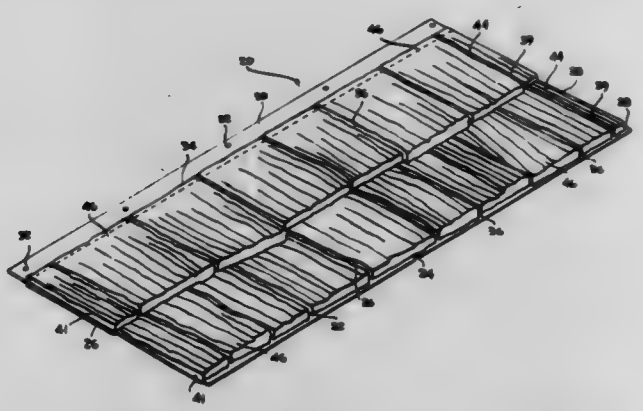
INTERLOCKING PANELS

William J. Hoofe, III, 1816 Newport Hills Dr. East, Newport Beach, Calif. 92660

Continuation of Ser. No. 16,119, Feb. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 914,614, Jun. 9, 1978, abandoned, which is a continuation of Ser. No. 725,256, Sep. 9, 1976, abandoned. This application Nov. 14, 1980, Ser. No. 206,691

Int. Cl.³ E04D *1/00*

U.S. Cl. 52—313 **10 Claims**



1. A panel for use in plurality to simulate wood shake covering an area, comprising a panel member formed from a unitary sheet of thermoplastic having upper, lower and first and second side edges, and having an area therebetween with the desired three dimensional decorative pattern on the top surface thereof simulating a plurality of individual wood shake, said decorative pattern including a hollow raised portion at least adjacent said first side edge thereof, said unitary sheet having a first planar region above said three-dimensional decorative pattern for lying flat against a surface to be covered, and a second region extended between said first planar region and said upper edge of said unitary sheets, said second region being folded through approximately 180° to overlie said first planar region to define a slot adjacent and facing the top of said decorative pattern with a double thickness nailing flange thereabove, said double thickness nailing flange being defined by a portion of said second region immediately overlying and substantially in face to face abutment with a portion of said first planar region, the remainder of said second region being formed to only overlie the first planar region with a space therebetween which is substantially unaffected by the passing of nails through said nailing flange during installation of the panels, said bottom edge of said unitary sheet being curved under to define a lip adjacent and under the lower region of said panel approximately parallel to said first planar region, said slot being proportioned to receive and retain at least a portion of the lip of a similar decorative panel, said panel member further having a raised portion adjacent said second side edge thereof, complimentary to said hollow raised portion adjacent said first side edge, whereby said first side edge of one panel may overlie the second side edge of another panel to provide a decorative pattern extending across both panels with a moisture barrier therebetween, at least one end of said slot in each panel terminating short of the adjacent edge of said panel so that the slots in adjacent panels cooperate to provide a slot of substantially uniform elevation across adjacent panels, and at least one end of said lip also terminating short of the adjacent edge of said panel so that the lips in adjacent panels are substantially colinear to mate with the slots defined by similar panels in a lower course in any desired staggered relationship.

4,343,127

FIRE DOOR

Dale R. Greve, Beaverton, and Charles W. Lehnert, Lake Oswego, both of Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Continuation of Ser. No. 10,268, Feb. 7, 1979, abandoned. This application Jan. 15, 1981, Ser. No. 225,197

Int. Cl.³ E04B *2/28*

U.S. Cl. 52—785 **12 Claims**



1. A fire door comprising a core and edge banding, the core comprising a molded mixture formed from particulate materials including at least 50 weight percent of expanded perlite, at least 10 weight percent of calcined gypsum and an aqueous binder, the molded core having a density of not greater than about 35 lbs./cu. ft., and the banding comprising composite banding elements each formed of a strip of wood and a strip of a cast mixture formed from an aqueous slurry of particulate materials including at least 60 weight percent of calcined gypsum, fibers, an accelerator and an aqueous binder, the cast strip having a density of at least 50 lbs./cu. ft., the wood and cast strips of each element being adhesively bonded to each other, and the banding elements being positioned at edges of the core and being secured to the core with the cast gypsum strip of each element presented inwardly toward the edge of the core.

4,343,128

METHOD AND CIRCULAR TRANSFER APPARATUS FOR AUTOMATIZED CONDITIONING OF PHARMACEUTICAL PHIALS

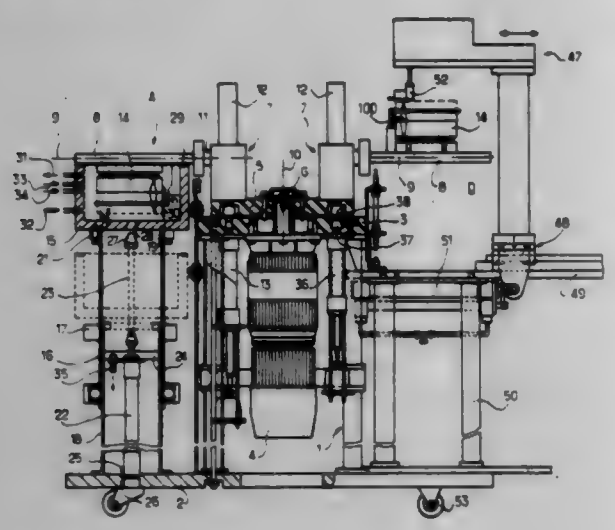
Edouard Mena, Marseilles, France, assignor to Publimepharm, Monte-Carlo, Monaco

Filed Sep. 17, 1980, Ser. No. 188,145

Claims priority, application France, Sep. 21, 1979, 79 23639

Int. Cl.³ B65B *17/00*

U.S. Cl. 53—167 **11 Claims**



1. A rotating transfer apparatus for automated conditioning of pharmaceutical phials, which comprises:

a frame;

a plate member supported on said frame so as to be rotatable around a vertical axis;

a plurality of phial conditioning stations angularly spaced on the periphery of said rotating plate member and including at least a cleaning station and a filling station each provided with an associated conditioning pan having a bottom and an opening and adapted to contain at least momentarily a liquid for cleaning or filling said phials;

a plurality of angularly spaced devices for holding and handling sets of phials mounted on said rotating plate member and extending radially outwardly therefrom;

a controllable driving means for selectively rotating said rotating plate member;

means for controllably rotating individually said phial holding and handling devices at selected said stations around a horizontal axis extending in a radial direction so as to introduce at least partially said associated phials in a said conditioning pan, further including, at each one of said phial cleaning and filling stations, a pan supporting device onto which is releasably mounted an associated said pan and which is vertically displaceable sequentially with said means for rotating said rotating plate member and said means for rotating said phial holding and handling devices;

each said pan supporting device comprising:

a cylindrical shroud, the upper end of which is adapted to be connected to said bottom of the associated said conditioning pan, said shroud being mounted for sliding displacement on a stationary vertical support connected to said frame;

a double action cylinder means connected to said stationary support in coaxial relationship with said shroud and having one cylinder rod end terminated by an obturating and bearing head adapted to selectively come into bearing engagement with a draining opening formed in said bottom of said conditioning pan, said draining opening being shaped so as to define a fluidtight bearing seat for said operating head, and

draining means associated with said shroud.

6. The apparatus according to claim 1, comprising a station for cleaning the ends of the phials in said set of phials, which includes a pair of sponge rolls adapted for displacement in a to-and-fro movement in the radial direction.

7. The apparatus of claim 6, which comprises a station for sealingly closing the ends of the filled phials, including a welding torch adapted for displacement in a radial to-and-fro movement.

4,343,129

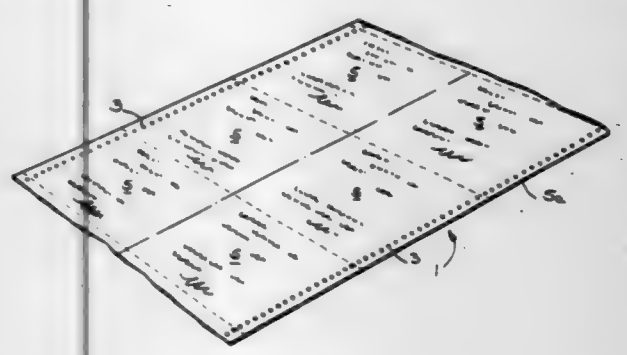
MECHANISM OF MAKING AN ENVELOPE

William H. Gunther, Jr., Mystic; Roman M. Golicz, Clinton, and James W. Hough, Madison, all of Conn., assignors to G.B.R., Ltd., Dover, Del.

Continuation of Ser. No. 846,902, Oct. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 680,788, Apr. 27, 1976, Pat. No. 4,071,997. This application Jul. 9, 1979, Ser. No. 55,551

Int. Cl.³ B65B *11/48*

U.S. Cl. 53—206 **9 Claims**



1. A mechanism for forming an envelope, comprising an envelope assembly having a sealing flap and an insert assembly, a predetermined envelope assembly being adapted to envelope a predetermined insert assembly, means for moving said predetermined envelope assembly along one path and for moving said predetermined insert assembly along another path, said paths moving in the same direction, said means for moving said predetermined insert assembly includes means for positioning the predetermined insert assembly in superimposed relationship to the predetermined envelope assembly, and for moving the two assemblies synchronously in the same direction so that said predetermined insert assembly is superimposed over said predetermined envelope assembly, said means for moving the predetermined envelope assembly includes means for causing the predetermined insert assembly to be deposited on said moving predetermined envelope assembly, means for folding the predetermined envelope assembly around the predetermined insert assembly, said predetermined envelope assembly being part of a continuous web of envelope assemblies connected together in lengthwise relationship to each other, cutter means being provided to separate the envelope assemblies from each other, said predetermined insert assembly being part of a continuous web of insert assemblies connected together in lengthwise relationship to each other, cutter means being provided to separate the insert assemblies from each other, the path of said predetermined insert assembly and said predetermined envelope assembly being in substantially superimposed relationship to each other, said envelope assembly moving means comprises conveyor means, said insert assembly moving means comprises a slide chute overlying the conveyor means down which the insert assembly slides, said slilde chute having a lower toe overlying the conveyor means, said lower toe pointing in the direction of travel of the said paths and the said conveyor, said envelope assembly moving means comprising conveyor means having upstanding pins adapted to strike the envelope assembly, slits being provided in said chute to permit the pins to strike the insert assembly and push it off the toe and onto an envelope assembly, a folding mechanism is provided adjacent the upper edge of said slide chute to fold the insert assembly, means are provided for applying adhesive to the edges of the envelope assembly, said envelope assembly fold-

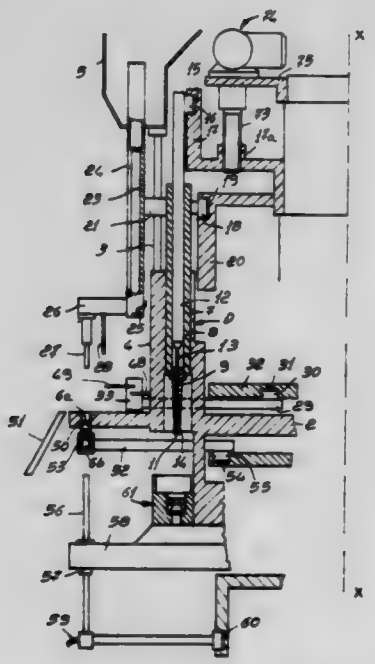
ing means comprises a ramp having a stop at its forward end and being spaced above the plane of the conveyor to form a gap and means for causing the envelope to fold along a fold line and to push the folding envelope through said gap, a deflecting mechanism is provided movable upwardly to close the gap and permit the envelope to move up the ramp and to thereafter be movable downwardly to open the gap to permit the envelope to pass through the gap, pressure applying means are provided to seal the edges of the folded envelope assembly, means are provided for transferring said folded envelope assembly to a flap folding means, said flap folding means comprises second conveyor means moving at an angle to said first conveyor means, pressure rollers are adapted to place the envelopes into contact with the second conveyor means, said pressure means comprises a roller assembly pivotally mounted above said second conveyor means, means to pivot said rollers from a raised position to allow an envelope assembly to be deposited on the second conveyor means to a lowered position in contact with the envelope assembly, means to apply adhesive to the flap and means are provided to turn the flap, and a pressure roller is provided to seal the flap.

4,343,130

CONTINUOUS MOVEMENT CAPSULE FILLING AND CLOSING MACHINE, PARTICULARLY FOR PACKAGING POWDER OR GRANULATED LOOSE PRODUCTS

Libero Facchini, Via Borgatti, 5, Bologna, Italy

Filed Nov. 6, 1979, Ser. No. 91,848
Claims priority, application Italy, Nov. 9, 1978, 3591 A/78
Int. Cl.³ B65B *1/00, 1/22*
U.S. Cl. 53—272 **3 Claims**



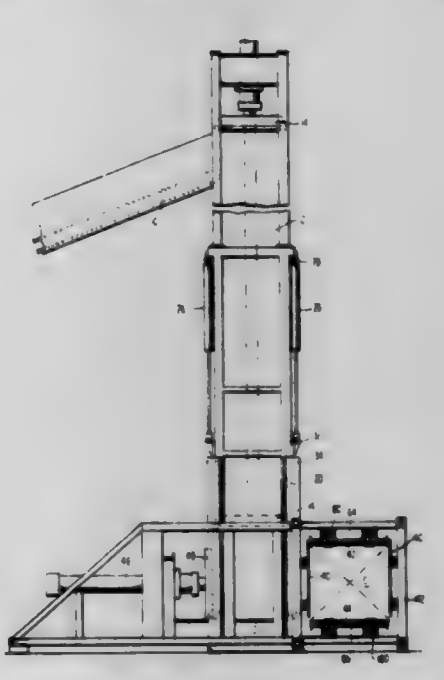
1. A capsule filling machine for filling capsules comprising a bowl portion and a cap portion with powder or granulated loose product, said machine including a turret which is continuously rotatable about a vertical axis and is formed by a plurality of sectors each comprising a station for feeding empty capsules to be filled from a container in which the capsules are randomly oriented, in closed condition, a capsule orienting station, a station for metering and loading the product into said capsules and a station for opening, closing and ejecting the loaded capsules, wherein said orienting station comprises a bushing element defining a vertical calibrated passage therein for the capsules and having a longitudinal slit and transversal upper groove and transversal lower groove intersecting said passage and said longitudinal slit, the bushing element being adapted, during operation, to slidably engage sequentially a first detent, which is adapted for penetrating the lower transversal groove to stop the downward movement of a capsule fed into the bushing element, and a second detent which is operative to penetrate the upper transversal groove and tilt the capsule over, as stopped by the first detent, by turning it upwards or downwards, in order to orient it horizontally and arrange it with its cap inside said inner passage and its bowl protruding from said longitudinal slit.

4,343,131

METHOD AND APPARATUS FOR PRODUCING BALES

Lloyd G. McCormick, Asheville, and Robert E. Score, Arden, both of N.C., assignors to EA Industries, Incorporated, Asheville, N.C.

Filed May 2, 1980, Ser. No. 146,128
Int. Cl.³ B65B *13/20, 63/02*
U.S. Cl. 53—397 **25 Claims**



1. A method of producing bales of loose compressible material such as tobacco, the steps comprising, compressing the material in a compression chamber, conveying individual upper and lower packing members for each bale having generally planar inside surfaces along upper and lower spaced generally horizontal and parallel paths to a compressed material receiving station, pushing the compressed material out of the chamber along a first path and directly to and between said opposed packing members and into direct engagement therewith at said receiving station, holding said members stationary and supporting them against movement away from each other under the pressure of the compressed material engaging the packing members, conveying the packing members with the compressed material therebetween to a strapping station while maintaining the support of the packing members to prevent movement away from each other, and then strapping the packing members with the material therebetween to a predetermined tension to form a bale, and wherein the method further includes the step of pushing the material against a stop surface after leaving the compression chamber and arriving between the packing members.

4,343,132

BALE WRAPPING DEVICE AND METHOD

Joseph F. Lawless, Jr., R.R. 2, Box 187, Jacksonville, Ill. 62650

Filed Dec. 28, 1979, Ser. No. 108,287
Int. Cl.³ B65B *11/04, 13/02*
U.S. Cl. 53—399 **28 Claims**

1. A method for wrapping flexible sheet material around a bale of a hay-like crop, comprising the steps of:

providing a bale of hay-like crop resting on the ground,

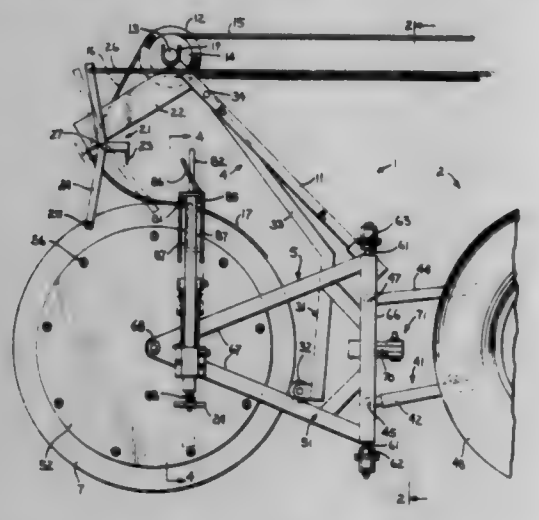
rotatably supporting a roll of said material on the frame of a farm implement having a pair of bale holding discs rotatably carried by two swing arms mounted on the two sides, respectively, of said frame for rocking movement about two spaced, substantially vertical axes between a closed position and an open position,

moving said implement, with said swing arms and discs in open position, against a bale on the ground,

rocking said swing arms with said discs thereon into closed position so that the two ends of said bale are engaged by said discs, respectively,

raising said frame to lift said bale slightly off the ground,

causing said discs and the bale engaged thereby to be rotated, together with a holding element urging the sheet material pulled off said roll against said bale by more than



one revolution with the bale slightly off the ground, so that the leading and trailing portions of the flexible sheet of material are made to overlap, in a zone underneath the bale,

cutting the sheet material behind said trailing portion, and

rocking said swing arms to open said discs and thereby release said bale so that the overlapping leading and trailing portions of the wrapped sheet material are held in position by the weight of the bale.

4,343,133

POLYVINYL ACETATE LATEX IMPREGNATED TOWELETTE

Wiley E. Daniels, Easton, Pa.; George Davidowich, Dunellen, and Gerald D. Miller, Belle Mead, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 870,551, Jan. 18, 1978, Pat. No. 4,245,744. This application Jun. 26, 1980, Ser. No. 163,240

Int. Cl.³ B65B *5/04*

U.S. Cl. 53—431 **6 Claims**

1. A method of preparing a packaged towelette having enhanced wet strength while maintained in wet condition in a sealed container package and while during use until flushed in water, comprising:

(a) forming an emulsion binder of a vinyl acetate-ethylene copolymer containing polyvinyl alcohol as a protective colloid in a web of nonwoven fibers to form an emulsion impregnated towelette;

(b) packaging said impregnated towelette in an impervious, closed container; and

(c) maintaining said emulsion binder in a gel-like form in a wet condition in said container by contact with a non-alkaline aqueous solution of boric acid having a concentration of at least 3% by weight up to its limit of solubility, thereby temporarily insolublizing said binder until flushed in water.

2. A method of preparing a packaged towelette having enhanced wet strength while maintained in wet condition in a sealed container package and while during use until flushed in water comprising:

(a) forming an emulsion binder of a vinyl acetate-ethylene copolymer containing a water soluble polyvinyl alcohol as a protective colloid in a web of nonwoven fibers to form an emulsion impregnated towelette;

(b) packaging said impregnated towelette in an impervious, closed container; and

(c) maintaining said binder in a gel-like form in a wet condition in said container by contact with a non-alkaline aqueous solution of a water soluble salt selected from the group consisting of sodium sulfate and potassium citrate, wherein said binder is temporarily insolubilized until flushed in water.

4,343,134

FLUSHABLE TOWELETTE

George Davidowich, Dunellen, and Gerald D. Miller, Belle Mead, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 870,552, Jan. 18, 1978, Pat. No. 4,258,849. This application Jun. 26, 1980, Ser. No. 163,243

Int. Cl.³ B65B *5/04*

U.S. Cl. 53—431 **4 Claims**

1. A method of preparing a packaged towelette having enhanced wet strength while maintained in wet condition in a sealed container package and while during use until flushed in water, comprising:

(a) forming a polyvinyl alcohol binder in a web of nonwoven fibers to form a polyvinyl alcohol impregnated towelette, wherein said polyvinyl alcohol binder consists of enhanced flushability polyvinyl alcohol having a degree of hydrolysis of from 80–95%;

(b) packaging said impregnated towelette in an impervious closed container; and

(c) maintaining said polyvinyl alcohol binder in a gel-like form in a wet condition in said container by contact with a non-alkaline aqueous solution of boric acid having a concentration of at least 3% by weight up to its limit of solubility, thereby temporarily insolubilizing said polyvinyl alcohol binder until flushed in water.

2. A method of preparing a packaged towelette having enhanced wet strength while maintained in wet condition in a sealed container package and while during use until flushed in water, comprising:

(a) forming a polyvinyl alcohol binder in a web of nonwoven fibers to form a polyvinyl alcohol impregnated towelette, wherein said polyvinyl alcohol binder consists of enhanced flushability polyvinyl alcohol having a degree of hydrolysis of from 80–95%;

(b) packaging said impregnated towelette in an impervious closed container; and

(c) maintaining said polyvinyl alcohol binder in a gel-like form in a wet condition in said container by contact with a non-alkaline aqueous solution of a soluble salt selected from the group consisting of sodium sulfate and potassium citrate, said soluble salt solution having a concentration of at least 3% by weight, thereby temporarily insolubilizing said polyvinyl alcohol binder until flushed in water.

4,343,135

SUPPORT FRAME AND METHOD OF MAKING AND PACKAGING THE SAME

Daniel F. Ilich, 149-44 Cherry Ave., Flushing, N.Y. 11255

Continuation-in-part of Ser. No. 924,984, Jul. 17, 1978, Pat. No. 4,262,810. This application Aug. 2, 1979, Ser. No. 63,055

The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.

Int. Cl.³ B65B *19/00*

U.S. Cl. 53—444 **2 Claims**

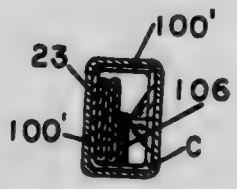
1. A method of packaging the components of a support frame comprising a pair of U-shaped end supports interconnected by a pair of opposed side rails comprising the steps of,

forming said pair of U shaped end supports as a rectilinear elongated member of an angular cross section having angularly disposed web portions,

forming a notch in a web portion of each of said elongated members at spaced apart intervals intermediate to the ends

thereof, whereby said elongated members can be readily folded at said notched portions to define U shaped end support,

placing said unfolded members in face to face relationship,



locating the side rails between said faced to faced elongated members,

and releaseably securing said elongated members and side rails disposed therebetween to define a compact unit in the disassembled position of said support frame.

4,343,136

HARNESSING SYSTEM FOR LUNGING HORSES

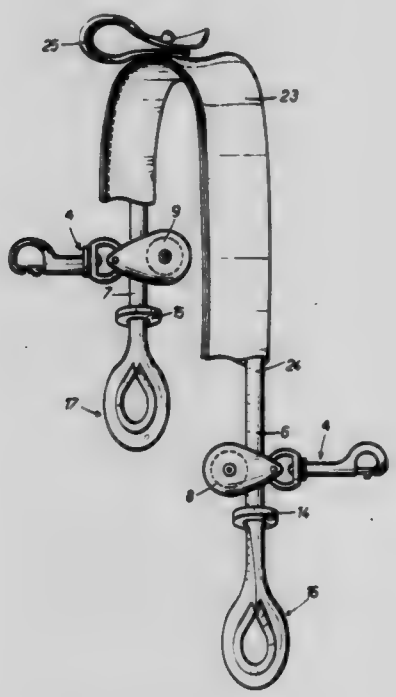
Eric LeTixerant, 8, rue Erlanger, 75016 Paris, and Philippe LeTixerant, 66, rue Ponsardin, 51100 Reims, both of France

Filed May 1, 1980, Ser. No. 145,691

Claims priority, application France, May 4, 1979, 79 11238; Nov. 15, 1979, 79 28238

Int. Cl.³ B68B *1/04*

U.S. Cl. 54—14 **4 Claims**



1. Supplemental head equipment attached to a conventional horse head-stall having bit rings and to a lunge for the purpose of lunging a horse, comprising a head piece having a central substantially U-shaped portion adapted to rest against the nape of the horse's neck, the central portion of the head piece comprising a sheath having open ends, and a tie element extending through the sheath and having end parts at opposite ends thereof adapted to lie on either side of the neck, a pair of linking elements each including a releasable fastener at one end thereof for attachment to a respective bit ring of the head-stall, the elements also each including a rotatable pulley at the other end thereof spaced from the fastener, the end parts extending partially about the pulleys and through the spacings between the pulleys and the fasteners, the end parts terminating at predetermined distances from the pulleys and having stop blocks adjacent the terminal ends thereof which strike against one or the other of the pulleys when lunging the horse with a left hand or right hand lead, and ring-shaped elements secured to the terminal ends of the end parts for attachment of the head piece with the lunge.

4,343,137

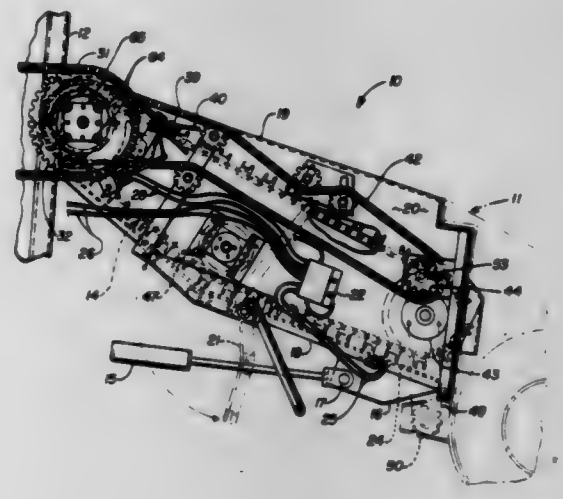
CROP ELEVATOR DECELERATING MEANS

Shaun A. Seymour, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 25, 1980, Ser. No. 181,331

Int. Cl.³ A01D *75/18*

U.S. Cl. 56—10.2 **28 Claims**



1. In a harvesting and threshing machine for harvesting crop material from a field with a header attached thereto and apparatus for processing the crop material having:

(a) a mobile frame;

(b) power means mounted to the frame to propel the machine across the field and to drive the moving components thereon;

(c) an infeed housing mounted to the frame and the header and having two opposing sides interconnected by a floor and an opposing top;

(d) a crop elevator movably mounted within the infeed housing to convey crop material from the header into the machine for processing, said crop elevator including a drive means connectable to the power means to operatively drive the crop elevator;

(e) stone sensing means connected to the machine to identify the presence of stone-like objects within the crop material being conveyed for processing and effective to send a signal upon such identification;

(f) drive control means connectable to the crop elevator effective selectively to disconnect the drive to the elevator after identification by the stone sensing means so that the elevator ceases to be actively driven thereby preventing detected stone-like objects from being conveyed to the machine, said drive means including a rotatable shaft with at least a first drive transfer means and a second drive transfer means mounted thereto, the first drive transfer means being connected to the power means and the drive control means and the second drive transfer means being drivingly connected to the first drive transfer means and via the shaft connected to the crop elevator; and

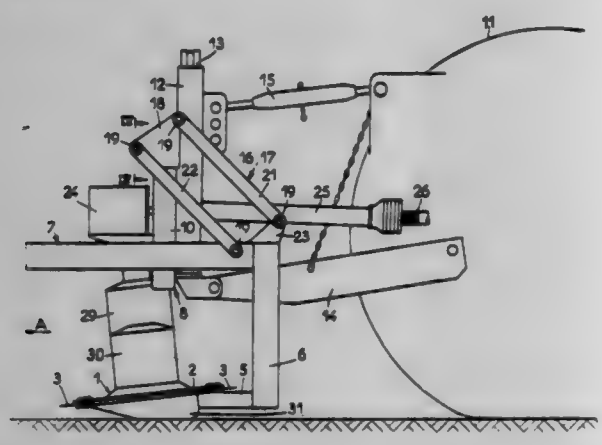
(g) controlled overrun means cooperable with the drive control means and the crop elevator for a rapid dissipation of the inertia of the crop elevator when the drive thereto is disconnected so that the movement of the crop elevator is halted before any detected stone-like objects can be conveyed to the crop material processing apparatus without causing damage to the infeed housing or the drive means.

4,343,138

SUPPORTING STRUCTURE FOR AN AGRICULTURAL MACHINE

Horst Neuerburg, Haegen, France, assignor to Kuhn S.A., Saverne, France

Filed Jun. 10, 1980, Ser. No. 158,257
Claims priority, application France, Jun. 19, 1979, 79 16486
Int. Cl.³ A01D *35/14*
U.S. Cl. 56—15.9 **6 Claims**



1. A supporting structure for an agricultural machine, and connectable to a vehicle, movable in a first direction in a plane substantially parallel to the ground

comprising in combination:

a first frame adapted to be connected to the vehicle,

a second frame adapted to be connected to the agricultural machine, and

parallelogram means interconnecting said frames, and including spherical joints permitting movement therebetween in several directions, including an upright direction, a direction opposite thereto, in lateral directions substantially at right angles to said first and upright directions, and

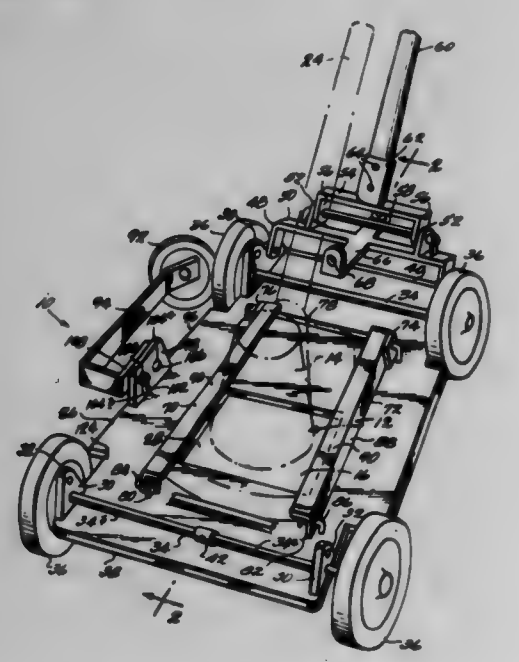
restraining means limiting the movement between said frames in said lateral directions, and including portions of said frames arranged to block the path of each other.

4,343,139

CARRIAGE FOR A GRASS TRIMMING DEVICE

Joseph M. Lowry, 308 Sweetbriar Dr., and Ernest E. Griffin, 12306 Ridgefield Pkwy., both of Richmond, Va. 23233

Continuation-in-part of Ser. No. 119,176, Feb. 6, 1980, Pat. No. 4,287,709. This application Apr. 8, 1981, Ser. No. 252,221
Int. Cl.³ A01G *3/06*
U.S. Cl. 56—16.9 **1 Claim**



1. A carriage for a trimming device of the type having a motor, a housing for the motor, a cutting element in the form of a length of cable connected to said motor so as to be rotatable about an axis at high speed for cutting grass, weeds and the like, said housing being of the type having a skirt extending generally transverse to the axis of rotation of the motor, said carriage comprising:

a platform having a top and a bottom side, means for supporting said platform for movement over the grounds,

an aperture in said platform for receiving and supporting the skirt portion of the housing of a motor driven cutting device,

said platform having along one side of said aperture thereof flange means for engaging the front edge of the skirt of the housing of a motor driven cutting device,

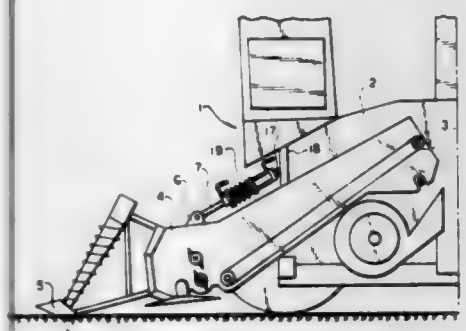
releasable clamping means movably mounted on said top side of said platform for securely holding the cutting device in said aperture with the cutting element disposed to extend from said bottom side of said platform and with the motor on said top side thereof above said aperture, said clamping means including a retaining arm in the form of a flexible metal rod having one end pivotably mounted on one side of said aperture, hook means for the other end of said rod mounted on said platform on the opposite side of said aperture, said retaining arm being pivotable between a retracted position wherein a grass trimming device can be inserted into said aperture with the leading edge of the skirt portion thereof engageable by said flange means, and a closed position wherein said arm extends in a housing engaging in retaining relationship with the trimming device.

4,343,140

SUGAR-CANE HARVESTER

Josef Hegger, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,153
Int. Cl.³ A01D *35/12*
U.S. Cl. 56—17.1 **14 Claims**



1. A self-propelled sugar-cane harvester, comprising a frame; a supporting pin mounted on said frame; a cutter unit vertically swingably supported on said pin; said cutter unit having a longitudinal axis and including a skid adapted to engage the ground in the travelling path of the harvester; spring-biasing means mounted between said frame and said cutter unit and adapted to counteract the major portion of the weight of said unit; adjusting means for regulating the movement of said unit relative to the ground when said skid meets raised portions and depressions in said travelling path, said adjusting means including a double-acting piston-cylinder unit having a piston operatively connected to said cutter unit and a cylinder operatively connected to said frame, a first supporting plate having a bore to receive said cylinder, and a second supporting plate also receiving said cylinder and rigidly connected thereto, said first supporting plate being spaced from said second supporting plate along the length of said cylinder to form a space therebetween, said spring-biasing means including a compression spring located in said space, said adjusting means being adapted to automatically regulate the movement of said unit in dependence upon each inclined position of

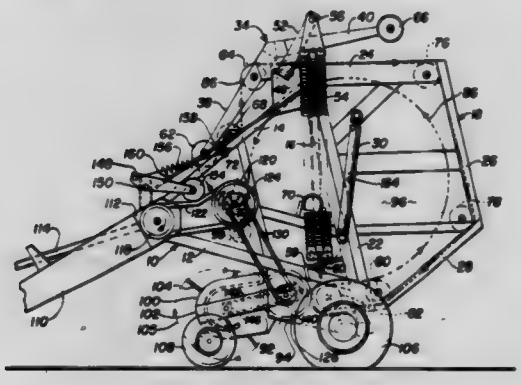
said cutter unit relative to said longitudinal axis when said skid engages uneven ground and to provide for relatively smooth travelling of the harvester over uneven ground; and manually-operated means for controlling said movement of said cutter unit relative to the ground.

4,343,141

BALING MACHINE WITH IMPROVED ARM ASSEMBLY FOR CONTROLLING EXPANSION OF THE UPPER APRON

Franklin A. Oellig, Leola, and Willis R. Campbell, Ephrata, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Sep. 16, 1981, Ser. No. 302,928
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **6 Claims**



1. In a roll baling machine having forward and rearward ends and including a base frame, a rear frame pivotally connected to said base frame, apron means supported on said base frame and said rear frame for forming a roll bale of crop material, said apron means moving from one position when the machine is empty to another position during formation of a roll bale, the improvement comprising:

(a) an arm assembly for supporting part of said apron means;

(b) said arm assembly rotatably mounted on said base frame and having first and second guide members for engaging the inner and outer surfaces, respectively, of said apron means at spaced apart locations therealong;

(c) said arm assembly being rotatable between a first position where said second guide member engages the outer surface of said apron means at a location inside said rear frame and a second position where said second guide member is spaced from the outer surface of said apron means; and

(d) said arm assembly rotating from its first position to its second position as said apron means moves from said one position to said another position during formation of a roll bale.

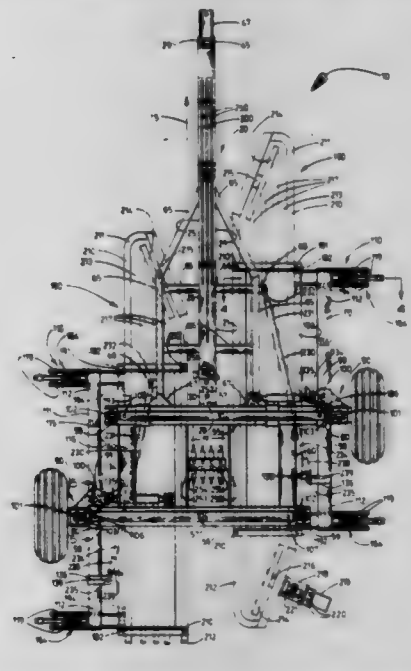
4,343,142

APPARATUS HAVING A VARIABLE ATTITUDE WORK IMPLEMENT

David R. Allen, 6744 E. Belmont, Fresno, Calif. 93727

Filed Apr. 28, 1980, Ser. No. 144,610
Int. Cl.³ A01D *76/00*
U.S. Cl. 56—377 **20 Claims**

1. An apparatus comprising an adjustable frame adapted for earth traversing movement in a direction of travel and having a movable portion adapted for extension and contraction substantially laterally of the direction of travel; a work assembly including a subframe, a work implement, links pivotally interconnecting the subframe and the work implement to mount the work implement for movement along a path toward and from the earth and power means interconnecting the subframe and one of said links for expansion and contraction to move the work implement along said path, said power means including an hydraulic cylinder assembly having a range of expansion and contraction less than the range of movement of the work implement permitted by said links and one end of said hydraulic cylinder assembly is connected to said one of the links, an adjustment assembly mounted on the subframe in supporting relation to the hydraulic cylinder assembly and being adjustable to move the hydraulic cylinder assembly along a path toward and from the subframe and to support the hydraulic cylinder assembly at any selected position in said path, and an hydraulic system operably connected to the hydraulic cylinder assembly selectively operable to expand and alternatively to



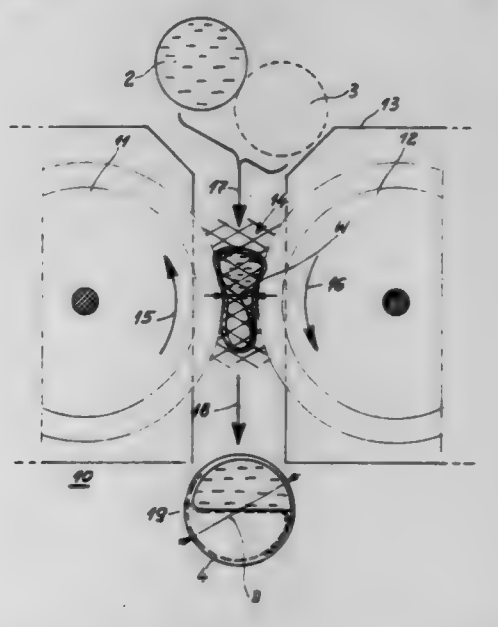
contract the hydraulic cylinder assembly within said range; means mounting said work assembly on said movable portion of the frame for substantially pivotal movement about a substantially vertical axis through a plurality of attitudes relative to said direction of travel; and control means for moving the work assembly to a selected one of said attitudes in response to predetermined adjustment of the frame.

4,343,143

BINDING FOR FIBER BUNDLES, A METHOD FOR THE PRODUCTION OF THE BINDING AND AN APPARATUS FOR CARRYING OUT THE METHOD

August Baumgartner, Uster, Switzerland, assignor to Zellweger, Ltd., Uster, Switzerland

Filed May 13, 1980, Ser. No. 149,545
Claims priority, application Switzerland, Sep. 28, 1979, 8784/79
Int. Cl.³ B65H *69/06, 69/00*
U.S. Cl. 57—22 **45 Claims**



1. A method for the production of a binding wherein a plurality of fiber bundles are to be bound together, comprising the steps of positioning the fiber bundles so that they are at

least approximately parallel to each other and are close together; exerting both thrust as well as tractive and/or pressure forces on at least one part of the circumference of each of the fiber bundles to be bound including subjecting the entirety of the fiber bundles to agitated deformation by means of physical contact with the bundles in order to change the original cross sections and/or structure of the fiber bundles and to release the individual fibers of at least one of the fiber bundles at least partly from their bundle and to displace them so that they finally wind around the fiber bundles to be bound in a manner locked by tension; and then relocating the fiber bundles which are bound by the winding out of the operational region of the deformation operation.

4,343,144

CONTROL ARRANGEMENT FOR A TEXTILE MACHINE

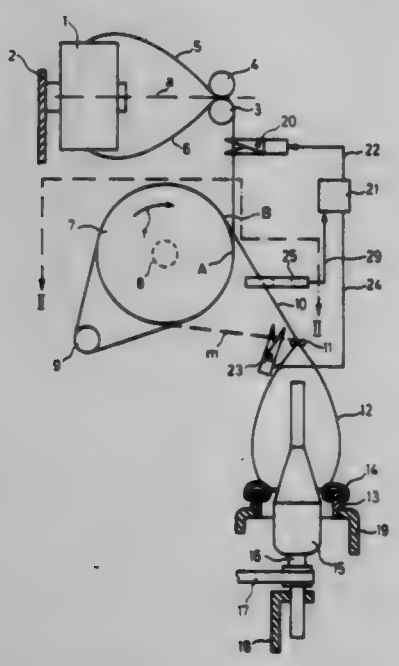
Walter Ernst, Weinfelden; Hans Giger, Riedt, and Ernst Sigrist, Turbenthal, all of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Feb. 13, 1981, Ser. No. 234,259

Claims priority, application Switzerland, Feb. 28, 1980, 1584/80

Int. Cl.³ D01H *13/16*

U.S. Cl. 57—86 **6 Claims**



1. In a control arrangement for a textile machine equipped with at least one roll having a roll axis and a ring spindle system, wherein a thread along its path of travel from a creel package to a take-up bobbin placed onto the spindle first is wound around a substantially cylindrical surface of the roll in at least one wrap, and subsequently the thread is guided via a thread guide eyelet arranged substantially coaxially with respect to the spindle to the ring spindle system, the improvement which comprises:

a first thread severing element which viewed in the direction of thread travel, is arranged upstream of the roll and upon activation of said first thread severing element severs the thread passing between the creel package and the roll;

a second thread severing element arranged at the immediate vicinity of the thread guide eyelet and upon activation of said second thread severing element severs the thread unwound from the creel package onto the roll between the roll and the take-up bobbin;

a thread feeler shaped as an open slot, arranged in the thread path of the thread running normally between the roll and the thread guide eyelet, the slot of said thread guide being capable of releasing the thread in a plane substantially perpendicular to the roll axis, and said slot being open at a side facing the roll; and

a control device for effecting activation of both thread severing elements in the absence of a thread in the thread feeler.

4,343,145

ROTATING RING

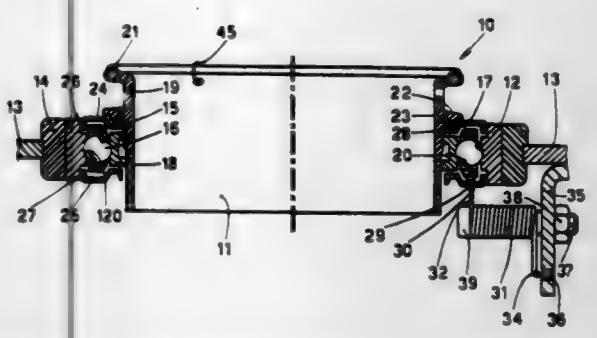
Giovanni Barro, Imola, Italy, assignor to Officine Savio S.p.A., Pordenone, Italy

Filed Sep. 24, 1980, Ser. No. 190,185

Claims priority, application Italy, Sep. 24, 1979, 83458 A/79

Int. Cl.³ D01H *7/56*

U.S. Cl. 57—124 **18 Claims**



1. Rotating ring device comprising a fixed body, a rotating ring arranged coaxially in said fixed body, an annular cage interposed between said ring and body, a plurality of spheres positioned within said annular cage, lateral means for shielding and closure of said cage, braking means cooperating with said cage and means for carrying out required brake adjustment.

4,343,146

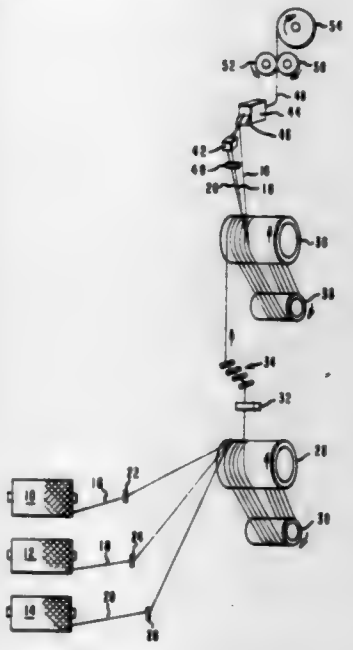
BULKED CONTINUOUS FILAMENT YARN WITH COLOR-POINT HEATHER

Thomas L. Nelson, Georgetown, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 135,126, Mar. 28, 1980, abandoned. This application Sep. 29, 1980, Ser. No. 192,033

Int. Cl.³ D02G *3/34*

U.S. Cl. 57—208 **14 Claims**



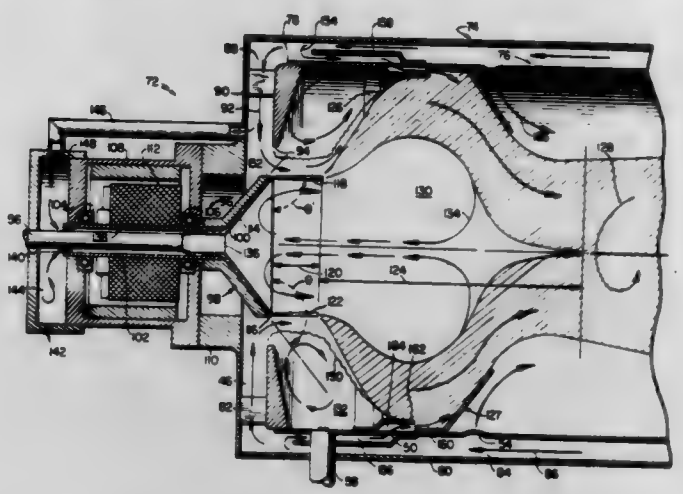
1. A heather-dyeable or heather-dyed synthetic combined yarn comprised of a first yarn in the form of a relatively loose matrix of crimped filaments which are randomly intermingled with portions of at least one second bulked yarn which is differentially-dyeable or differentially-dyed with respect to said first yarn and which contains frequent periodic relatively compact nodal regions of high filament entanglement across the entire filament bundle of the second yarn which nodal regions are substantially free from intermingling with filaments of said first yarn, said nodal regions being separated from one another along the second yarn by bulkier relatively open regions of the same filaments randomly intermingled with filaments of said first yarn to provide a coherent combined yarn.

4,343,147

COMBUSTORS AND COMBUSTION SYSTEMS

Jack R. Shekleton, San Diego, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Mar. 7, 1980, Ser. No. 128,199
Int. Cl.[3] F23R 3/20; F02C 7/22
U.S. Cl. 60—39.06 11 Claims



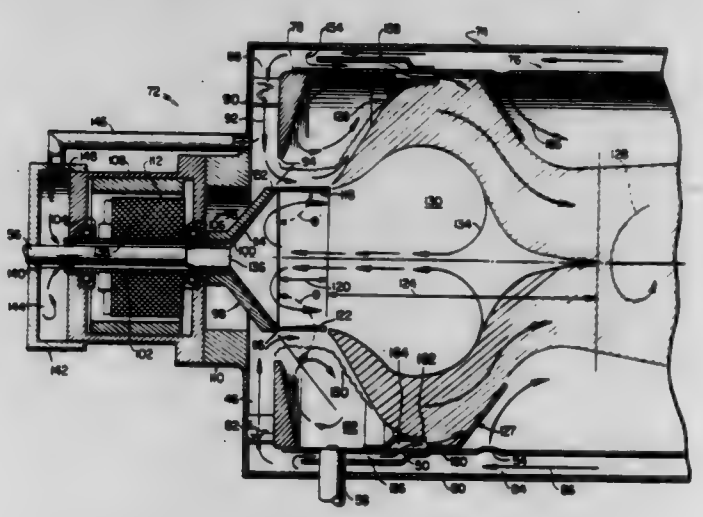
1. A method of effecting the stable, nonluminous combustion of a liquid fuel which comprises the steps of: generating an annulus of axially moving, rotating combustion air; forming the liquid fuel being burned into a thin, uniform, annular, stratified, atomized film of fuel on the inner boundary of said combustion air annulus at a specified location therealong; vaporizing said atomized fuel while it remains in said stratified film; and thereafter rapidly expanding said annuli of combustion air and vaporized fuel and then so effecting a downstream contraction of the fuel-air mass by way of a mechanical or aerodynamic constraint as to promote the mixing and subsequent combustion of said vaporized fuel and air and the formation of a recirculation zone containing hot gases which stabilize the flame generated by the combustion of the fuel and air and effect said vaporizing of the stratified atomized fuel and the heating of the vaporized fuel before said vaporized fuel is mixed with the combustion air.

4,343,148

LIQUID FUELED COMBUSTORS WITH ROTARY CUP ATOMIZERS

Jack R. Shekleton, San Diego, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Mar. 7, 1980, Ser. No. 128,359
The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.
Int. Cl.[3] F02C 7/22
U.S. Cl. 60—39.06 24 Claims



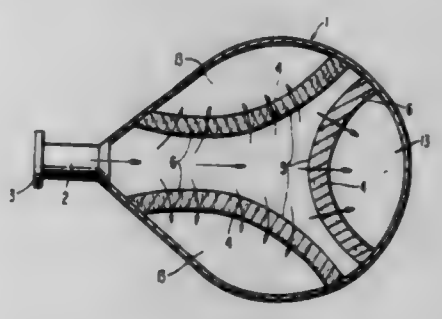
2. A method of effecting the stable non-luminous combustion of a liquid fuel which comprises the steps of: generating an annulus of axially moving, rotating combustion air; forming a thin, uniform film of atomized fuel on the inner boundary of said annulus at a specified location therealong by employment of a rotating cup-type atomizer; aerodynamically constraining said annulus against expansion for a period sufficient to effect the evaporation of said fuel; thereafter expanding the air in said annulus and then effecting a downstream contraction of the fuel-air mass to promote the mixing and subsequent combustion of said fuel and air and the formation of a recirculation zone containing hot gases which stabilize the flame generated by the combustion of the fuel and air and so ignite the fuel as to effect evaporation and heating of the fuel before it is mixed with the combustion air, said aerodynamic constraint being produced by effecting a radial inward movement of said combustion air, imparting a rotational component thereto, and then flowing the combustion air through an orifice to generate a vena contracta effect in said annulus of combustion air.

4,343,149

SOOT FILTER IN THE EXHAUST GAS STREAM OF AIR-COMPRESSING INTERNAL COMBUSTION ENGINES

Jörg Abthoff, Plüderhauser; Hans-Dieter Schuster, Schorndorf; Hans-Joachim Langer, Remseck, and Rolf Gabler, Waiblinger, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 27, 1979, Ser. No. 97,694
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852226
Int. Cl.[3] F01N 3/02
U.S. Cl. 60—311 8 Claims

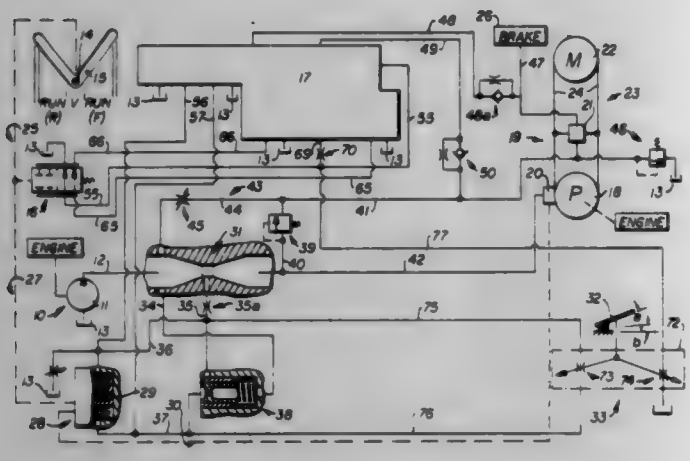


1. A soot filter in the exhaust gas flow of an air-compressing internal combustion engine, comprising an approximately cylindrically-shaped filter housing means arranged for receiving exhaust gases from the internal combustion engine, inlet connection means connected to the filter housing means and ceramic fiber material arranged in the filter housing means, characterized in that the fiber material is constructed as a plurality of arcuately-shaped filter walls which bow inwardly, said filter walls, together with the inner wall surfaces of the filter housing means, form hollow spaces that extend lengthwise within the housing means in a manner requiring the exhaust gases to pass through the filter walls prior to entering the hollow spaced, said hollow spaces forming a means for conducting the exhaust gases essentially in an axial direction of the filter housing means to an exhaust line means, said exhaust line means being connected to an end wall of said filter housing means so as to extend therefrom substantially in said axial direction.

4,343,150
SEQUENTIAL PRECONDITIONING CIRCUIT FOR HYDROSTATIC TRANSMISSION

Lucien B. Shuler, Bettendorf, Iowa, and William J. Spivey, Jr., Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00414, § 371 Date Jun. 13, 1979, § 102(e) Date Jun. 13, 1979, PCT Pub. No. WO80/02865, PCT Pub. Date Dec. 24, 1980
PCT Filed Jun. 13, 1979, Ser. No. 89,321
Int. Cl.[3] F16H *39/46*
U.S. Cl. 60—399 29 Claims



1. A fluid control circuit comprising

a source of pressurized fluid (10),

variable displacement pump means (18) for having the displacement thereof varied, said variable displacement pump means (18) including a servo system (20) adapted to vary the displacement of said pump means (18),

a motor (22) connected in a closed loop with said pump means (18) forming a hydrostatic transmission,

a replenishing valve (21) connected between said source (10) and said pump means (18) to make-up loss of fluid and to controllably interrupt fluid from said pump means (18),

first valve means (16) including supply and vent passages therein for movement between first and second positions,

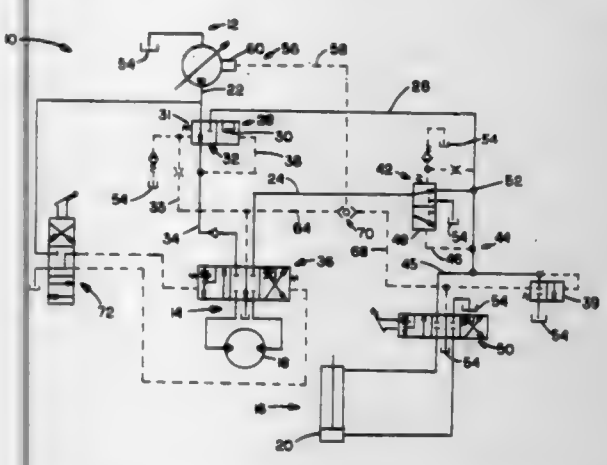
pressure responsive second valve means (53) for movement between a first position blocking communication of fluid to said replenishing valve (21) in response to positioning of said first valve means (16) in its first position to vent actuating fluid pressure from a pressure responsive portion of said second valve means (53) through said first valve means (16) and a second position communicating fluid to said replenishing valve (21) in response to communication of fluid pressure thereto when said first valve means (16) is in its second position to prevent venting of actuating fluid pressure from the pressure responsive portion of said second valve means (53) through said first valve means (16), and

pressure responsive third valve means (60) for movement between a first position blocking communication of fluid from said source (10) to said second valve means (53) while no source fluid is present when said first valve means (16) is in its first position communicating said source (10) with a pressure responsive portion of said third valve means (60) and a continuously maintained second position communicating fluid from said source (10) to said second valve means (53) in response to communication of fluid pressure thereto from said source (10) and when said first valve means (16) is in each of its first and second positions when source fluid (10) is present, said second valve means (53) being further responsive for movement to its second position in response to communication of fluid pressure thereto upon positioning of said first valve means (16) in its second position and positioning of said third valve means (60) in its second position, each of said first (16), second (53), and third (60) valve means connected to said source (10) and also connected to each other.

4,343,151
SERIES - PARALLEL SELECTOR FOR STEERING AND IMPLEMENT

Larry W. Lorimor, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00577, § 371 Date May 16, 1980, § 102(e) Date May 16, 1980
PCT Filed May 16, 1980, Ser. No. 245,241
Int. Cl.[3] F15B *11/16, 13/06;* F16H *39/46*
U.S. Cl. 60—422 6 Claims



1. In a control system (10) having a pressurized fluid source (12), a first work circuit (14) which has an output flow, a second work circuit (16), an input flow path (22) connected to deliver flow of pressurized fluid from the source (12) to the first circuit (14), and a series flow path (24) connected to receive the output flow from the first circuit (14) and to deliver the output flow to the second circuit (16), the improvement comprising:

a parallel flow path (26) connected to the source (12) and to the second circuit (16) and being adapted to receive a portion of the flow from the source (12) and deliver said portion to the second circuit (16);

a single valve means (42) in the series flow path (24), having an open position adapted to direct flow from the series flow path (24) to the second work circuit (16) and a closed position adapted to block flow from the series flow path (24) to the second work circuit (16), means biasing said single valve means to said open position; and

pressure responsive means (44) in continuous open communication with said parallel flow path (26) for permitting opening of said single valve means (42) by said biasing means in response to load pressure in the second circuit (16) being below a selected value and for closing said single valve means (42) in response to load pressure in the second circuit (16) being above said selected value.

4,343,152
LOAD SENSING PORTING ARRANGEMENT

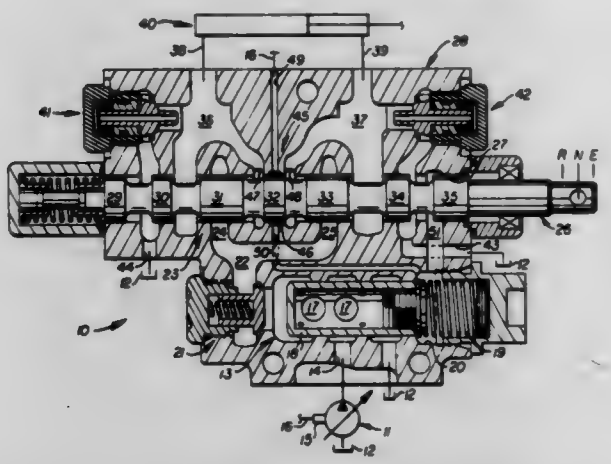
Cyril W. Habiger, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00579, § 371 Date May 16, 1980, § 102(e) Date May 16, 1980, PCT Pub. No. WO81/03362, PCT Pub. Date Nov. 26, 1981
PCT Filed May 16, 1980, Ser. No. 245,230
Int. Cl.[3] F04B *49/08;* F15B *13/04*
U.S. Cl. 60—452 9 Claims

1. In a fluid circuit (10) having a pump (11), a fluid actuator (40), a control valve (23) having a housing (28) with a bore (27) defined therein, and including an inlet (22) in communication with said bore (27) and connected to said pump (11), first (36) and second (37) outlets in communication with said bore (27) and connected to said actuator (40), spool means (26) in said bore (27) and being sequentially movable between a first posi-

tion (R) communicating said inlet (22) with said first outlet (36), a second position (N) blocking communication of said inlet (22) with each of said first (36) and second (37) outlets, and a third position (E) communicating said inlet (22) with said second outlet (37), load sensing means (45) for sensing fluid pressure in said first (36) and second (37) outlets when said spool means (26) is in its first (R) and third (E) positions, respectively, and control means (13,15) for being controlled in response to the magnitude of fluid pressure sensed by said load sensing means (45), the improvement comprising:

said load sensing means (45) including an annular land (32) defined on said spool means (26) and engaging said bore



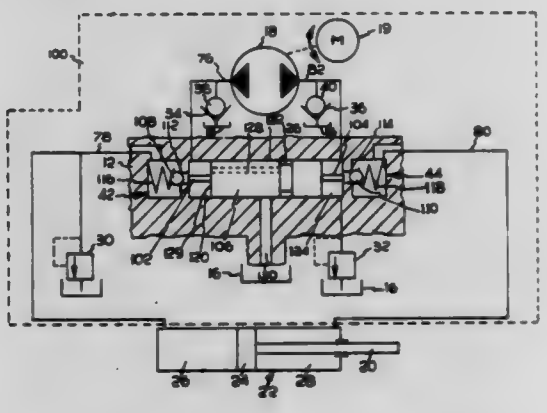
(26), and a single annulus (46) disposed in said housing (28) axially between said directly adjacent to said first (36) and second (37) outlets and being of lesser width than the width of said annular land (32), said annulus (46) opening to said bore (27) and circumventing said land (32) to block communication with said first (36) and second (37) outlets when said spool means (26) is in its second position (N) and communicating with said first (36) or second (37) outlet when said spool means (26) is in its first (R) or third (E) position, respectively, and passage means (16) for communicating fluid pressure from said annulus (46) to said control means (15).

4,343,153

ANTI-SUPERCHARGE PRESSURE VALVE

Calvin V. Kern, Maumee, and Bruce W. Mitton, Fayette, both of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Mar. 21, 1980, Ser. No. 132,555
Int. Cl.³ F15B *13/042*
U.S. Cl. 60—460 2 Claims



1. A device for moving and maintaining the position of a load moveable in at least two directions, comprising:

a supply of fluid;

a reversible pump connected to said supply of fluid, having a first port and a second port; p1 a cylinder operably connected to said pump and having a piston dividing said cylinder into a first chamber and a second chamber, said piston having a rod attached thereto, said rod extending through said first chamber and outside said cylinder;

valve means operably connected between said cylinder and said pump;

said valve means including a unitary pilot means, said pilot means being a piston means moveable in response to pressurized fluid from said pump, said piston means having a first portion and a second portion;

first and second check valve means adjacent respective said first and second portions of said piston means and operable respectively thereby to allow flow of said fluid from said first and second chambers of said cylinder, respectively, to said pump, each said check valve means being operably connected to said pump and to said cylinder;

said valve means including a conduit interposed between said second port and said supply of fluid, and includes means for blocking said conduit and means responsive to pressure at said first port for opening said conduit;

said piston means being interposed in said conduit;

said piston means including an annular groove formed in said piston means and a passage formed in said piston means between said second portion thereof and said annular groove and being in continuous communication therewith;

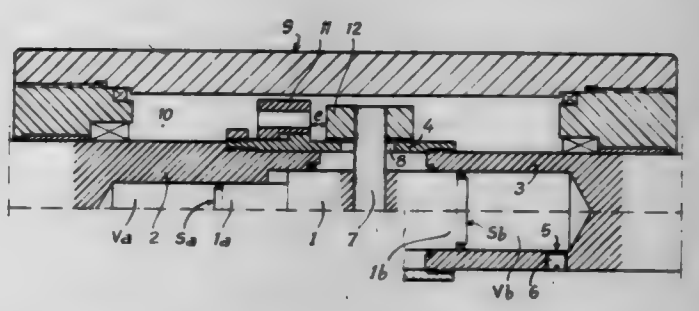
said conduit being blocked and said first check valve being operated by said piston means when said piston means is in a first position responsive to pressure at said second port applied to said second portion, and said axial passage and annular groove being interposed in said conduit to open said conduit and said second check valve being operated by said piston means when said piston means is in a second position in response to pressure at said first port applied to said first portion.

4,343,154

MOTIVE DEVICE FOR CONVERTING A VARIATION IN TEMPERATURE INTO MECHANICAL ENERGY

Jean M. Jarret, 4 rue de Mareil, Montainville 78124 Mareil sur Mauldre, and Jacques H. Jarret, 32, allee des Soudanes, 78430 Louveciennes, both of France

Filed Nov. 20, 1978, Ser. No. 962,023
Claims priority, application France, Nov. 28, 1977, 77 35790
Int. Cl.³ F03G *7/06*
U.S. Cl. 60—527 4 Claims

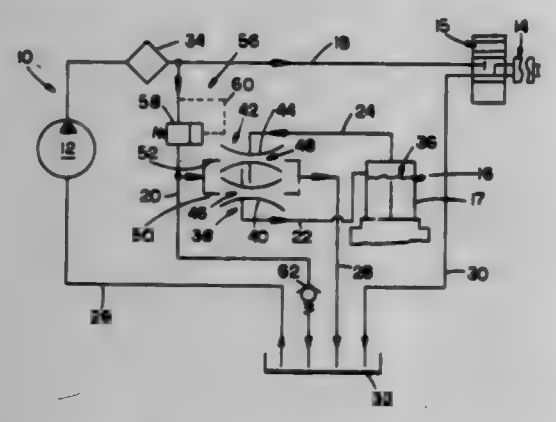


1. A motive device adapted to convert a variation in temperature to which it is subjected into mechanical energy, said device including first and second piston chambers rigidly secured to each other and having different cross-sectional dimensions, a piston having first and second ends slidably mounted with said first end in said first chamber, and its second in said second chamber, said piston ends and chambers cooperating to define in the first chamber a first closed volume and in the second chamber a second closed volume, larger than the first closed volume, each of said volumes being filled with elastomer under pressure and each of said chambers including separate means for establishing and regulating pressure therein whereby each chamber and corresponding end of the piston constitute a spring involving the hydrostatic compression of the elastomer.

4,343,155
RESERVOIR FILLING APPARATUS

Robert A. Stinson, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00635, § 371 Date May 23, 1980, § 102(e) Date May 23, 1980, PCT Pub. No. WO81/03309, PCT Pub. Date Nov. 26, 1981
PCT Filed May 23, 1980, Ser. No. 245,247
Int. Cl.³ B60T *11/26*
U.S. Cl. 60—586 9 Claims



1. In a hydraulic circuit (10) having a pressurized fluid source (12), first and second fluid pathways (18,20) and a first work element (14), said first fluid pathway (18) being in fluid communication with said fluid source (12), and positionable in fluid communication with said second fluid pathway (20) and said first work element (14), the improvement comprising:

third and fourth fluid pathways (22,24);

first means (38) for initiating a first preselected pressure condition in said third fluid pathway (22) in response to a fluid flow in said second fluid pathway (20);

second means (42) for initiating a second preselected pressure condition in said fourth fluid pathway (24) in response to said fluid flow in said second fluid pathway (20), said second pressure condition being of a magnitude less than said first pressure condition; and

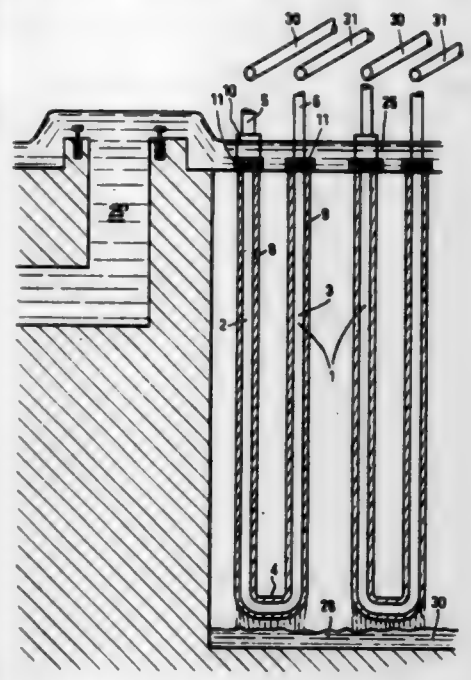
a second work element (16) having a reservoir (17) containing fluid at a fluid level, said reservoir (17) being positioned in fluid communication with said third and fourth fluid pathways (22,24), said fluid in said reservoir (17) being maintained at a preselected fluid level in response to a fluid flow initiated by said pressure conditions in said third and fourth fluid pathways (22,24) through said third fluid pathway (22) into said reservoir (17) and from said reservoir (17) into said fourth fluid pathway (24).

4,343,156
RE-HEATING CRYOGENIC FLUIDS

Pierre Gauthier, Fresnes, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Feb. 24, 1981, Ser. No. 237,736
Claims priority, application France, Feb. 29, 1980, 80 04509
Int. Cl.³ F17C *7/02*
U.S. Cl. 62—52 11 Claims

1. A method of reheating a cryogenic fluid by heat exchange with a heat-carrying fluid the freezing point of which is higher than the temperature of said cryogenic fluid prior to its final reheating, comprising introducing the cryogenic fluid into the upper end of a length of vertical tube, passing the cryogenic fluid down through that length of tube and up through another length of vertical tube, removing the reheated cryogenic fluid from the upper end of said another length of tube, and flowing said heat-carrying fluid by gravity from the upper end of and

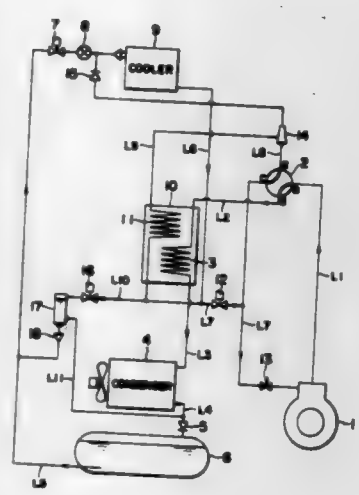


along both of said lengths of tube downwardly by gravity to and beyond the lower ends of said lengths of tube.

4,343,157
REFRIGERATOR

Kiyoshi Hattori, Aomori, Japan, assignor to Taisei Kogyo Kabushiki Kaisha, Aomori, Japan

Filed May 13, 1980, Ser. No. 149,324
Claims priority, application Japan, May 22, 1979, 54-62225
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—160 3 Claims



1. A refrigerator comprising a coolant compressor, a condenser connected at its inlet to the discharge port of said compressor, a liquid receptacle connected at its inlet to the outlet of said condenser via a check valve which can be opened toward said liquid receptacle, a cooler connected at its inlet to the outlet of said liquid receptacle via an expansion valve, flow passages for connecting the outlet of said cooler to the admission port of said compressor, a trap provided between the outlet of said liquid receptacle and the outlet of said cooler via a normally-closed valve, a flow passage for connecting the lower portion of said trap to the outlet of said condenser through a check valve having a small aperture which can be opened toward said condenser, and allows a part of coolant to flow toward said trap, a flow passage having an orifice portion for connecting the lower portion of said trap and the outlet of said trap (17), and a flow passage switching mechanism for shifting, when starting a defrosting operation, the inlet of said cooler from the admission port of said compressor to the dis-

charge port thereof, and the inlet of said condenser from the discharge port of said compressor to the admission port thereof, and for switching said normally-closed valve to open state.

4,343,158

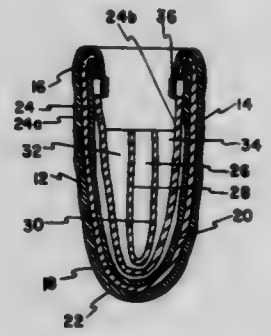
PORTABLE POUCH FOR INSULIN

June H. Campbell, P.O. Box 4162, Foster City, Calif. 94404

Filed Mar. 23, 1981, Ser. No. 246,240

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—372 8 Claims



1. A portable, flexible, insulated, cooling, open-mouth pouch especially adapted and sized for (use in) carrying and storing a vial of insulin to prevent deterioration thereof comprising:

a pair of opposing walls joined to one another (to form) providing a rounded closed bottom for said pouch, each of said walls including an outer wall, an inner wall and a layer of insulating material distributed substantially evenly therebetween;

means for opening and closing said pouch, said means being secured to said pouch in the upper portion thereof around the inner periphery thereof; and

a flexible, water-repellent liner disposed inside said pouch, the upper narrow portion of said liner being attached to said inner wall adjacent the top of said pouch, the major portion of said liner being unattached and disposed adjacent said inner wall, said liner having a front wall, a rear wall, a front partition and a rear partition (forming) constructed to form a central open-top pocket therebetween (for holding) containing a readily removable refrigerating means, the bottom of said pocket (being) disposed adjacent the bottom of said pouch, said front partition (forming) arranged together with said front wall of said liner to form a first insulin-holding compartment (for holding a vial of insulin) and said rear partition (forming) providing together with said rear wall of said liner a second syringe-holding compartment (for holding a syringe).

4,343,159

ABSORBER UNITS OF CHILLERS

Isaih Vardi, Rehovot; Yigal Kimchi, Ramat Gan, and Jonathan Ben-Dror, Hadar Am, all of Israel, assignors to Tadiran Israel Electronics Industries, Ltd., Tel Aviv, Israel

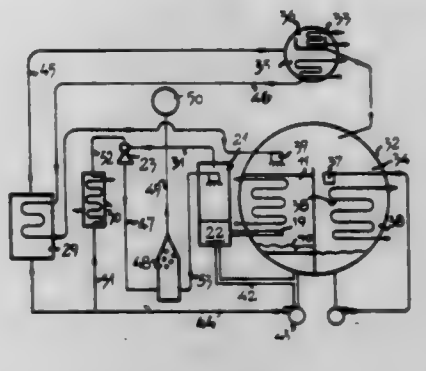
Filed May 15, 1980, Ser. No. 150,136

Claims priority, application Israel, May 16, 1979, 57310

Int. Cl.³ F25B *43/04*

U.S. Cl. 62—475 9 Claims

1. In an absorption chiller comprising an absorber, an evaporator, a condenser, and a generator using water as refrigerant and aqueous lithium bromide as absorbant, the improvement which comprises: an absorber vessel having at least one horizontal conduit means extending through the absorber serving as conduits for water, the vessel being subdivided into a plurality of individual compartments by sealing means substantially perpendicular to said conduit means; and a purge line for



removing non-condensable gases, and means for removing liquid provided in each of the compartments.

4,343,160

ROW COUNTER FOR KNITTING INSTRUMENT

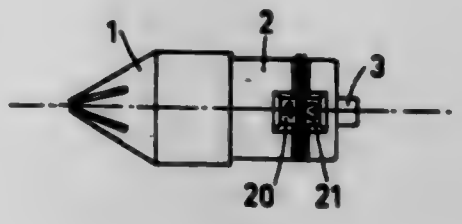
Jacqueline Ponthus born Turquet, Domaine de l'Epine 15, Avenue du Midi, 91760 Itteville, France

Filed Apr. 21, 1980, Ser. No. 142,435

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 8003828[U]

Int. Cl.³ D04B *3/02*

U.S. Cl. 66—1 A 4 Claims

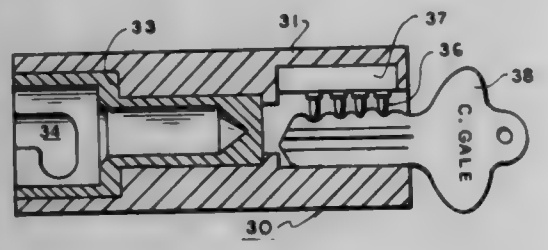


1. A row counter for a knitting instrument having an active end and an inactive end terminating in an enlarged abutment, characterized in that said row counter comprises two mating elements, the first element being formed from an elastic material and comprising a conical part and a first connector part, said conical part having slots therein oriented along generatrices extending to the apex of said conical part to define elastic sectors therebetween adapted to enter into pressing engagement with the knitting instrument when said first element is fitted thereon, said first connector part comprising a hollow cylinder which is open at its outermost end, the second element comprising a receptacle for a counting mechanism, said second element having a second connector part comprising a hollow cylindrical body of a size to be received within said first connector part when said first element is fitted on the knitting instrument and slid to the inactive end thereof with said first connector part facing the inactive end of said instrument, whereby said second element may be attached to said first element from the inactive end of the knitting instrument, a counting mechanism contained in said second element, said second element including a cap engagable with the outer end of said second connector part, an opening in said cap, an operating knob projecting outwardly through the opening in said cap for actuating said counting mechanism, and window means in said second element to permit reading of said counting mechanism.

4,343,161
OUTBOARD MOTOR LOCK

Charles Gale, General Delivery, Block Island, R.I. 02807

Filed May 21, 1980, Ser. No. 151,764
Int. Cl.[3] E05B *73/00*
U.S. Cl. 70—14 3 Claims



1. A security device for preventing unauthorized use of an outboard motor of the type to which a remote fuel source is connected by coupling of a detachable fuel line to a fuel line coupling on said outboard motor, wherein said fuel line coupling is formed as a hollow post having a pair of oppositely projecting radial retaining teeth thereon, said fuel line including a fuel line coupling connector detachably engageable with said radial retaining teeth on said post; the security device comprising:

covering means for covering said fuel line coupling so as to prevent connection of said fuel line coupling connector thereto, said covering means including a body having a cylindrical aperture therein arranged for overfitting said hollow post and said pair of teeth;

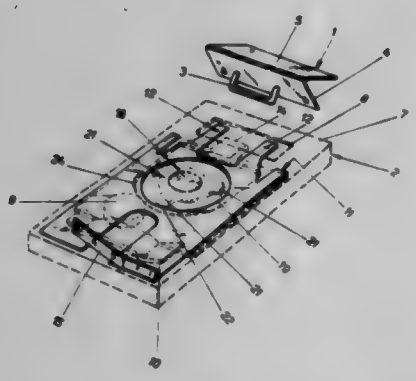
means for selectively engaging said retaining teeth on said hollow post when said covering means is in position on said fuel line coupling, said selectively engaging means including a hollow cylindrical sleeve fit in said socket and having an inside diameter sufficient to accommodate said post but smaller than the span of said teeth and having a pair of oppositely arranged axial cutouts to accommodate said teeth, said sleeve being rotatable between an open position wherein said teeth are free to slide in said cutouts and a blocking position wherein said teeth are block from sliding in said cutouts; and

means for lockably holding said selectively engaging means in engagement with said retaining teeth on said post, so that removal of said covering means is prevented and unauthorized connection of said fuel line to said outboard motor is thereby denied.

4,343,162
LOCK WITH A RESILIENT ELEMENT ACTING BOTH AS THE EJECTOR AND AS THE SLIDER RETURN SPRING, FOR BAGS, BRIEF-CASES, SHOULDER BAGS AND THE LIKE

Antonio Giacometti, Varese, Italy, assignor to Siac Industria Accessori Cavaria S.p.A., Italy

Filed Nov. 3, 1980, Ser. No. 203,801
Claims priority, application Italy, Dec. 24, 1979, 23475/79[U]
Int. Cl.[3] E05B *65/48*
U.S. Cl. 70—67 2 Claims

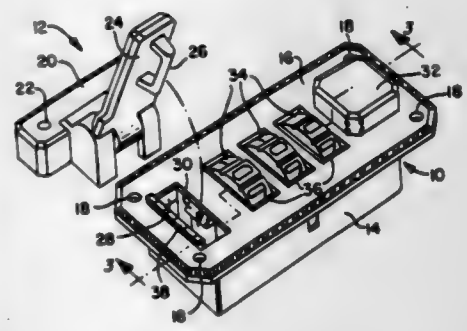


1. A lock for bags, brief-cases, shoulder bags and the like, comprising two components, one being provided with an eyelet, tooth or stirrup and fixed to the rotatable flap of the bag or the like, the other being connected to the fixed part of this latter and provided both with an aperture into which said eyelet is inserted and a knob connected to a slider so as to be able to move this latter against a spring, in order to enable a slider appendix, which acts as the bolt and is situated in a position corresponding with said aperture, to be withdrawn from the eyelet which is inserted into this latter and so enable the bag or the like to be opened, the opening being facilitated by resilient means which tend to eject the eyelet from the aperture into which it is inserted when the bag is closed, wherein the spring and resilient means are replaced by a resilient plate (11) comprising at one end ejector fingers (12) and at the other end an appendix (15) bent at an angle to the plane of the plate (11) and forming a resilient arm which acts on the slider (10), so acting as a return spring.

4,343,163
COMBINATION LOCK WITH SCRAMBLE FEATURE

Stephen S. Scelba, Clifton, and Lazlo Bako, Woodcliff Lake, both of N.J., assignors to Presto Lock, Inc., Garfield, N.J.

Filed Jun. 18, 1980, Ser. No. 160,420
Int. Cl.[3] E05B *37/02*
U.S. Cl. 70—312 24 Claims

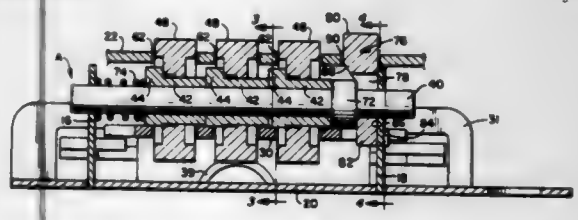


1. A combination lock including a latch adapted to engage a hasp, actuator means for moving said latch from a hasp-engaging position to a disengaging position only when the lock is on-combination, connection means between said latch and said actuator means for permitting movement of said latch out of said hasp-engaging position independently of said actuator means when said latch is disengaged from a hasp, whereby the hasp may be re-engaged with the latch when the lock is off-combination, and blocking means effectively preventing movement of said latch out of said hasp-engaging position independently of said actuator means when the hasp and latch are in engagement.

4,343,164
COMBINATION LOCKS

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Jul. 11, 1980, Ser. No. 167,430
Int. Cl.[2] E05B *37/02*
U.S. Cl. 70—312 9 Claims



1. A combination lock including a plurality of combination elements disposed coaxially on a shaft in a lock casing for axial movement in unison out of coupling engagement with cooperating combination components in order to change the combination of the lock, a shift member mounted on said shaft adja-

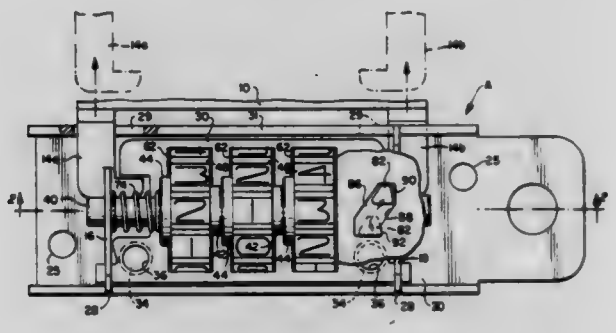
cent a terminal one of said combination elements through an elongated opening in said shift member, said shift member including a manual actuator portion projecting through an opening in the lock casing and said shift member being movable from a rest position substantially transversely to the axis of said shaft by depression of said actuator portion in said opening, said shift member further including a cam surface for moving said elements axially responsive to depression of said actuator portion in said opening by reaction of said shift member with an internal surface of the lock casing, means for releasably retaining the shift member in position when the actuator portion is depressed to hold said elements and said cooperating components out of coupling engagement, and means acting on said cam surface for returning the shift member to the rest position upon release of said retaining means and return of said elements into coupling engagement with said cooperating components.

4,343,165

COMBINATION LOCKS

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Jul. 11, 1980, Ser. No. 167,914
Int. Cl.³ E05B *37/02*
U.S. Cl. 70—312 **8 Claims**



1. A combination lock including a plurality of combination elements disposed on a common axis in a casing for axial movement in unison out of coupling engagement with cooperating combination components in order to change the combination of the lock, a shift member for moving said elements axially, said shift member including an actuator portion extending through an opening in said casing and means providing a camming action between said shift member and said casing for causing said shift member to move said elements axially responsive to movement of said actuator portion in said opening, said means including a lock surface extending obliquely to said axis and the shift member being adapted to move along said surface to provide the camming action.

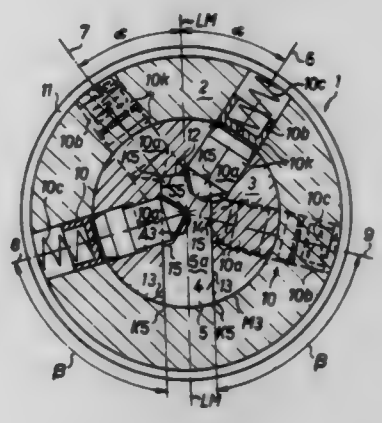
4,343,166

CYLINDER LOCK WITH ASSOCIATED FLAT KEY

Rudolf Hofmann, Eggenburg, Austria, assignor to Bauer Kaba AG., Switzerland

Filed Sep. 9, 1980, Ser. No. 185,878
Claims priority, application Austria, Sep. 11, 1979, 5992/79
Int. Cl.³ E05B *27/06*
U.S. Cl. 70—358 **8 Claims**

1. An improved clyinder lock and key combination, the key being of the type having a shank of substantially rectangular cross section with sides and edge surfaces, the lock being of the type having a stator portion, a rotor portion received and rotatable in the stator portion, a substantially rectangular, axially extending key slot in said rotor, a plurality of rows of longitudinally spaced, radially movable two-part pin tumblers received in said rotor and stator, at least two of said rows lying in planes on opposite sides of said key slot and intersecting each of the longer sides of said key slot, at least one additional third, row of tumblers lying in a plane intersecting a narrow side of said slot and inclined relative to the median plane of the key inserted therein, and wherein the key includes, on each of its flat side surfaces, a row of recesses for receiving tumblers in the rows lying on opposite sides of said slot and a third row of recesses in at least one narrow edge surface thereof the median axes of said recesses in said third row being inclined at the same angle as said additional row of tumblers, the improvement wherein



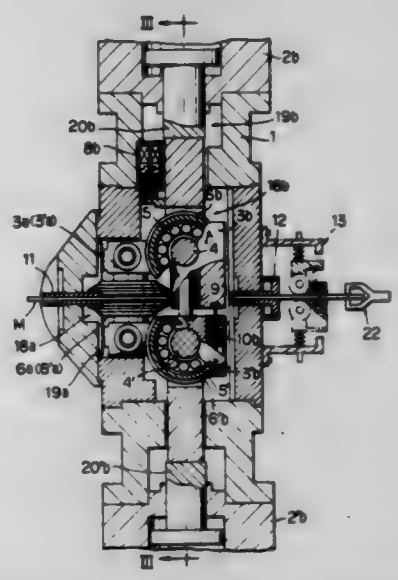
the plane containing the axes of the recesses in said third row of recesses intersects the narrow edge surface of said key adjacent a corner formed by the junction of a flat side surface and an edge surface so that the recesses in said third row open onto both of said side and edge surfaces.

4,343,167

ROLLER-DIES-PROCESSING METHOD AND APPARATUS

Yoshimichi Hasegawa, Nagoya; Osamu Furuta, Tokai; Jouji Shinta, Tokai, and Hideo Nakamura, Tokai, all of Japan, assignors to Aichi Steel Works Ltd., Aichi, Japan

Division of Ser. No. 967,695, Dec. 8, 1978, Pat. No. 4,283,930.
This application Apr. 13, 1981, Ser. No. 253,533
Claims priority, application Japan, Dec. 28, 1977, 52-158482; Jan. 30, 1978, 53-9129
Int. Cl.³ B21B *37/08*
U.S. Cl. 72—8 **23 Claims**



1. An apparatus for manufacturing a long bar from a deformable blank comprising:

(a) multi-tandem type roller dies means including at least

a first set of roller dies, wherein a plurality of idly rotatable rollers having a concave groove on the periphery thereof are disposed in a mutually approachable and departable way along a plane through the rotation axes thereof, and

a second set of roller dies, wherein a plurality of idly rotatable rollers having a concave groove on the periphery thereof are disposed in a mutually approachable and departable way along a plane through the rotation axes thereof parallel to said one plane;

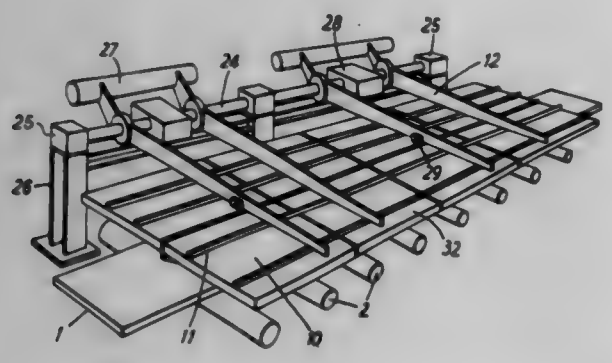
(b) propelling means for forwarding said deformable blank in a longitudinal direction;
(c) roller adjusting means for changing position of each roller of each of said roller dies;
(d) controlling means for outputting electric signals indicating a target distance from a predetermined level line to each roller of each of said roller dies;
(e) roller position sensing means capable of sensing, in each of said roller dies, a distance from said predetermined level line to each of said rollers; and
(f) servo means capable of comparing an actually measured distance by said roller position sensing means and a target distance output from said controlling means for controlling the position of each roller of each of said roller dies, and of designating said roller adjusting means, so as to make the difference between said measured distance and said target distance equal to zero.

4,343,168

HEAT SHIELD ARRANGEMENTS FOR A ROLLING MILL

William R. Laws, 19 Tudor Ave., Worcester Park, Surrey, and Geoffrey R. Reed, 8 Beechdene, Tadworth, Surrey, both of England

Continuation-in-part of Ser. No. 902,560, May 3, 1978, abandoned. This application Nov. 6, 1979, Ser. No. 91,752
Claims priority, application United Kingdom, May 4, 1977, 18760/77; Apr. 27, 1978, 16704/78
Int. Cl.³ B21B *43/00, 45/02*
U.S. Cl. 72—10 21 Claims



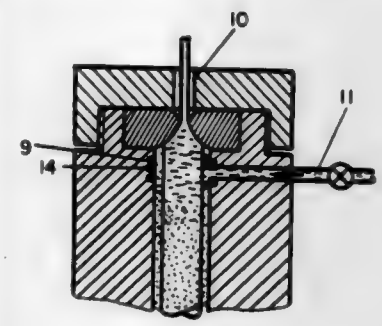
1. A heat shield arrangement for material being processed in a hot rolling mill, the arrangement comprising heat insulating panels, support means mounting said panels in respective series above and below a path for the hot material through the mill, the panels each having a heat insulating core and a cover plate forming or overlying a main face of each panel, said cover plate facing the hot material and forming the hot face of the panel to radiate back heat from the material, displacement means connected to support means of the upper series of panels for lifting the panels away from the material path, sensing means disposed adjacent the material path and responsive to upward distortion or lifting of the material towards the upper series of panels, and control means operated by said sensing means for initiating the operation of said displacement means in dependence upon the response of said sensing means to said distortion or lifting of the material towards said series of panels to avoid contact of the material with the panels and thereby protect the panels against damage by the material.

4,343,169

PROCESS FOR CONTINUOUS HYDROSTATIC EXTRUSION OF METALS THEREFOR

Marc Moreau, Asnieres, France, assignor to Trefimetaux, Clichy, France

Filed Oct. 1, 1979, Ser. No. 81,037
Claims priority, application France, Oct. 12, 1978, 78 29852
Int. Cl.³ B21C *23/32, 29/00*
U.S. Cl. 72—45 8 Claims



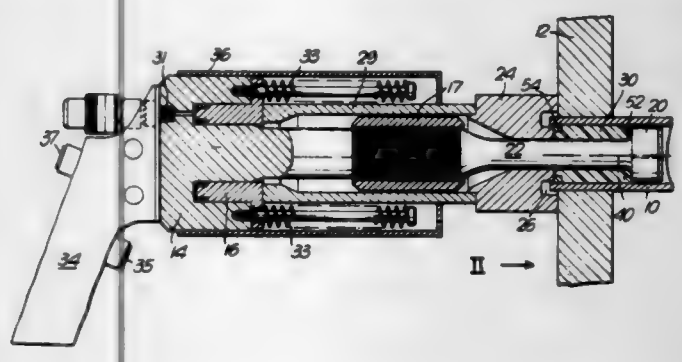
1. In a process for the continuous hydrostatic extrusion of an indefinite length blank from a first cross-section to a reduced cross-section comprising the steps of passing said blank lengthwise into the space between a peripherally grooved rotor and a stator having a spiral shaped interior fixed with a relation to and surrounding the rotor, introducing a first viscous driving fluid into said space, increasing the pressure of said fluid between its point of introduction and an isostatic chamber adjacent to a die; the improvement comprising the step of introducing a second fluid, less viscous than said first fluid, into the isostatic chamber adjacent to said die, said viscous driving fluid causing forward movement of said blank toward said die, and said second less viscous fluid acting as a lubricant for the die.

4,343,170

APPARATUS FOR EXPANDING TUBULAR MEMBERS

Peter F. Hufton, Etwall, England, assignor to Northern Engineering Industries Limited, Newcastle upon Tyne, England

Filed Jan. 22, 1981, Ser. No. 227,361
Claims priority, application United Kingdom, Feb. 14, 1980, 8004986
Int. Cl.³ B21D *22/10*
U.S. Cl. 72—61 9 Claims



1. Apparatus for expanding tubular members comprising an annular body of elastomeric material, means operable to apply a load to said body parallel to the central longitudinal axis thereof to compress said body and to expand same radially against one said tubular member, said body comprising end portions of reduced diameter, said apparatus further comprising two support means, respectively arranged about said end portions, each said support means comprising a closed annular array of pieces, each said piece having surfaces which slidably engage respective surfaces of adjacent pieces to allow the respective array to expand radially while remaining closed without any gap arising between said engaged surfaces, said pieces being arranged so that said engaged surfaces are forced together by said load.

4,343,171
APPARATUS FOR MANUFACTURING A SLAT FOR A SHUTTER

Tokiyoshi Kagawa, Tokyo, Japan, assignor to Sanwa Shutter Corporation, Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,128
Claims priority, application Japan, May 7, 1980, 55-59483
Int. Cl.³ B21B *15/00*
U.S. Cl. 72—181 4 Claims



1. An apparatus for manufacturing a slat for a shutter, said slat having longitudinal ribs, comprising:

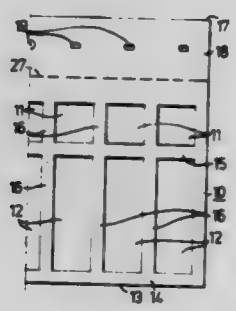
a plurality of forming rolls comprising stages successively disposed along the path line of a metal sheet to form the metal sheet into a predetermined slat configuration; and

a pair of pattern embossing rolls, having upper and lower driving shafts, disposed along said path line at the last of said stages, at least one of said pattern embossing rolls having embossing patterns thereon to produce corresponding patterns on a surface of said slat, the patterns being formed on the flat surface provided between the longitudinal ribs of said slat, said upper and lower driving shafts of the pattern embossing rolls being rotated only by the slat passing therebetween.

4,343,172
TOOL HOLDERS AND A METHOD OF THEIR MANUFACTURE

Sven P. Nordlund, Ostvik, Sweden, assignor to Svenor Modul-System AB, Lulea, Sweden

Filed Sep. 18, 1979, Ser. No. 76,599
Claims priority, application Sweden, Sep. 19, 1978, 7809819
Int. Cl.³ B21D *53/00*
U.S. Cl. 72—339 12 Claims



1. A method of manufacturing a tool holder, comprising the steps of:

(a) producing a strip of material;

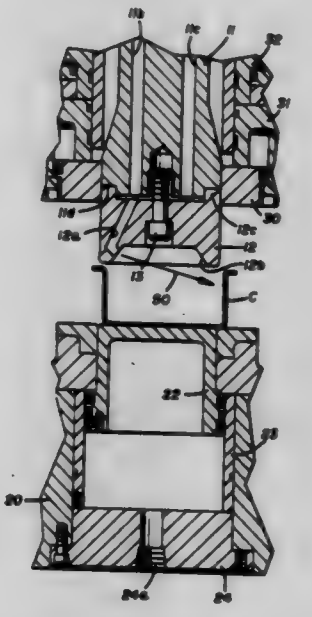
(b) forming in said strip in the longitudinal direction thereof at least two mutually parallel rows of rectangular tool-receiving apertures spaced from one longitudinal edge of said strip, the apertures of one row being located immediately opposite respective apertures of an adjacent row and the transverse length of the apertures in one row being greater than the transverse length of the apertures in said adjacent row, while the longitudinal length of the apertures of said rows are equal, and said apertures being defined by at least three defining bars which are integral with the strip and the width of which is small in comparison with the smallest width of any aperture; and

(c) folding a portion of said strip located between said one longitudinal edge and the row of apertures nearest said edge to form a mounting flange substantially at right angles to the plane of said nearest row.

4,343,173
DOUBLE ACTION CUPPER HAVING IMPROVED CAN REMOVAL MEANS

Joseph D. Bulso, Jr., and William R. Lewers, both of Canton, Ohio, assignors to Redicon Corporation, Canton, Ohio

Filed Jul. 24, 1980, Ser. No. 171,905
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—345 7 Claims



1. Apparatus for forming containers for use in a press having a base and a movable platen reciprocal with respect to the base, comprising:

(A) at least one blank and draw die carried by the base of the press;

(B) at least one draw horn carried by the movable platen for movement into and out of said blank and draw die to form the container;

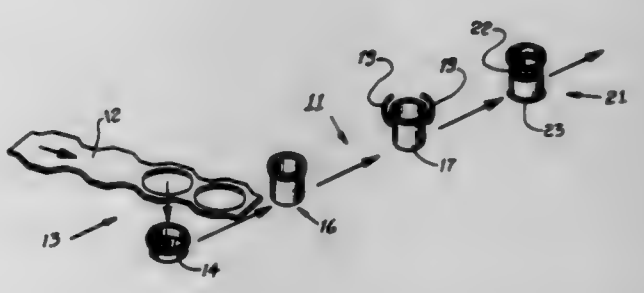
(C) means carried by the base of the press to lift the formed container out of said blank and draw die; and

(D) removal means carried by said draw horn for moving the formed container in a direction substantially normal to the direction of movement of said draw horn upon movement of said draw horn out of said die to thereby expel the formed container from the press.

4,343,174
BEADING DIE FOR CAN BODIES

Kurt L. Hahn, San Rafeal; Howard J. Padgett, Sunnyvale, both of Calif., and Manjeshwar S. Rao, Hoffman Estates, Ill., assignors to American Can Company, Greenwich, Conn.

Filed Nov. 1, 1979, Ser. No. 90,498
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—349 2 Claims



1. A press for making a body of a two-piece can from metallic strip of the type wherein a blanking and drawing station is provided to form a cup from said strip and wherein additional forming stations are provided to generate an elongated can body of reduced diameter from said cup, the improvement, an additional station comprising:

(a) a set of internal die segments, each segment having an outer face and an inner face with a first end and a second

end and wherein the outer face proximate the first end is provided with a projection and wherein said projections on said segment faces align one with the other to substantially form an annular projection for chime bead embossment and wherein said outer faces of said segments are further contoured to include recessed areas intermediate said first end and said second end for body bead embossment;

(b) a first set and a second set of external die segments disposed around said internal die segments and spaced apart therefrom to define a position for receiving said can body and wherein said external segments are each provided with an inner face and an outer face and wherein said inner face of said segments of said first external set includes a recessed area in confronting relationship with said annular projections on the outer face of said internal set and wherein said inner face of said segments of said second external set include projections in confronting relationship with said intermediately disposed recesses on said outer face of said internal set;

(c) cam means driven by said press and operably connected to said internal and said external die segments to advance said first external set inwardly from an outward receiving position to an inward working position and to advance said internal set outwardly from an inwardly receiving position to an outwardly working position wherein said internal projections are proximate said recesses of said first external set but where said internal set recesses are intermediate said projection of said second external set and to advance said second external set inwardly from an outward receiving position to an inward working position wherein said second external set projections are proximate said internal recesses; and

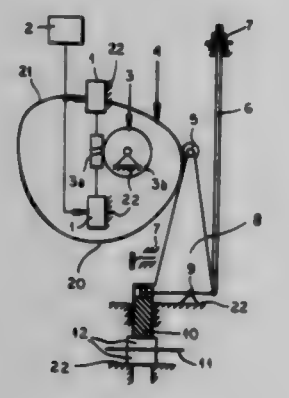
(d) can support seat in vertical alignment with said die segments to advance and retreat in cooperation with said cam means whereby a can body mounted on said support seat is advanced by the stroke of said press into said can receiving position and therein centered and axially supported for chime and body bead embossment.

4,343,175

POWER PRESS

Alexander S. Petrov, Sofia, Bulgaria, assignor to Vmei "Lenin" - Centar Po Robotika, Sofia, Bulgaria

Continuation of Ser. No. 36,086, May 4, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,301
Claims priority, application Bulgaria, May 5, 1978, 39637
Int. Cl.³ B21J *9/18*
U.S. Cl. 72—452 **4 Claims**



1. A power press comprising:

a press tool adapted to engage a workpiece for plastically deforming same;

a cam provided with force-storing and force-delivering sections;

a cam follower engageable with said cam and displaceable in accordance with the contour thereof;

at least one low-inertia motor operatively connected to said cam for driving same;

a resilient force-storing member operatively connected to said cam follower and stressed during engagement of said cam follower with said force-storing section of said cam and relieved upon engagement of said cam follower with said force-delivering section of said cam to operate said tool, said force-storing member being operatively connected to said tool; and

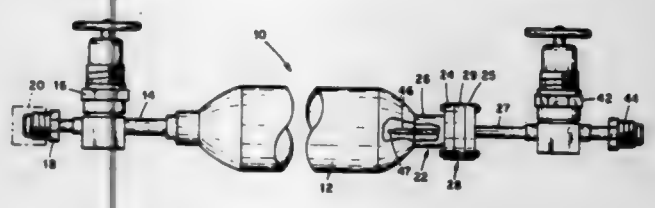
control means connected to said motor for controlling the speed of said motor whereby said control means at least in part controls the rate at which stored force is applied by said force-storing member through said tool to said workpiece.

4,343,176

LONG-LIFE LEAK STANDARD ASSEMBLY

James A. Basford; John E. Mathis, and Harlan C. Wright, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 12, 1980, Ser. No. 206,222
Int. Cl.³ G01N *1/00*; G12B *13/00*
U.S. Cl. 73—1 G **5 Claims**



1. A portable leak standard for providing a stream of gas at a preselected and virtually uniform flow rate comprising:

a reservoir for retaining said gas under pressure with said reservoir having a sufficient volume therein to retain said gas at essentially a constant pressure over a relatively extensive period for maintaining said stream of gas at said virtually uniform flow rate,

first conduit means in registry with said reservoir for conveying said gas into the reservoir,

first valve means in said conduit means for selectively closing or opening the latter,

second conduit means in registry with said reservoir at a location thereon spaced from said first conduit means,

flange means on said second conduit means at a location spaced from said reservoir,

a metal discoidal body having a passageway therethrough affixed to said flange means for sealing said second conduit means and preventing flow of gas from said reservoir except through said passageway,

a metal gas flow restricting means operatively associated with said passageway for providing a flow of gas from said reservoir through said passageway at said preselected flow rate, and

second valve means in said second conduit means for selectively interrupting or establishing the flow of gas at said preselected flow rate through said passageway.

4,343,177

FLOW COMPENSATED GAS COMPARISON PROBE

Hugh R. Carlon, Bel Air, and Bernard V. Gerber, Randallstown, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 7, 1980, Ser. No. 204,744
Int. Cl.³ G01F *13/00*
U.S. Cl. 73—23 **12 Claims**

1. A gas probe for sensing a characteristic of a gas near a planar surface comprising:

a first well chamber;

a first gas sensor operatively disposed in said first well chamber;

means for drawing a first flow of gas across said planar

surface and impinging said first flow of gas on said first gas sensor which includes;

a cylindrical hoising having a bottom section threadably connected to an upper section;

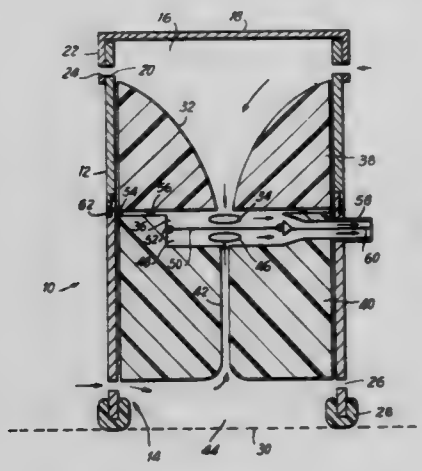
a lower block member having a central channel disposed in said bottom section, said central channel communicating with a gas flow chamber adjacent to said planar surface and with said first well chamber;

a second well chamber;

a second gas sensor operatively disposed in said second well chamber;

means for drawing a second flow of gas originating at a substantial distance from said planar surface and impinging said second flow of gas on said second gas sensor, which includes;

an upper block member operatively disposed in said upper section of said housing, having a venturi shaped upper



flow directing surface which permits said second flow of gas to communicate with said second well chamber;

means for isolating said first and second flows of gas, which includes;

a nipple member transversly disposed through a wall of said housing and positioned intermediate said lower section and said upper section of said housing, further including;

a first septum member longitudinally disposed in said nipple member for isolating said first and second flows of gas from each other;

second septum means operatively disposed intermediate said lower and upper section members cooperating with said first septum member for pneumatically isolating said first and second gas sensors; and

means for independently varying at least one of said first and second flows of gas whereby outputs of said first and second gas sensors may be calibrated.

4,343,178

KNOCKING DETECTOR

Yoshida Kenichi, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 9, 1980, Ser. No. 195,628

Claims priority, application Japan, Oct. 11, 1979, 54-131224; Nov. 16, 1979, 54-148456; Mar. 26, 1980, 55-38721

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—35 **12 Claims**

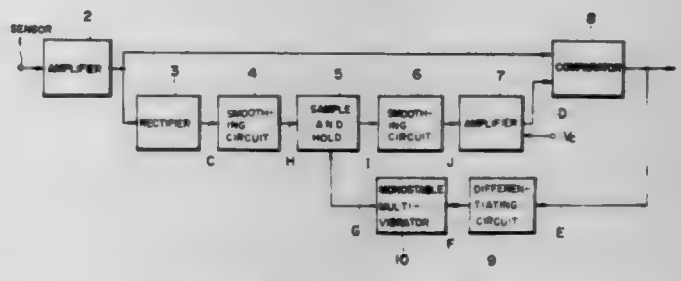
1. A knocking detector for an engine, comprising:

(a) means for sensing vibration of the engine as an alternating current signal;

(b) means for rectifying the output of said sensing means;

(c) means for smoothing the output of said rectifying means;

(d) means for comparing the output of said smoothing means with the output of said sensing means; and



(e) means responsive to the output of said comparing means for cutting off supply of the rectified signal to said smoothing means during knocking.

4,343,179

UTILITY POLE HARDNESS TESTER

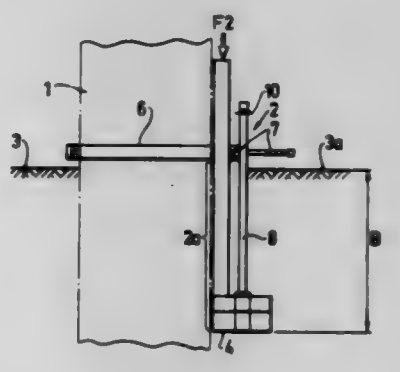
Göta L. Aström, 12 Lämmeltaget, Lulea, Sweden (S-951 46), and Sigvard N. Johansson, 30 Söderbyvägen, Västerhaninge, Sweden (S-137 80)

Filed Nov. 25, 1980, Ser. No. 210,260

Claims priority, application Sweden, Nov. 27, 1979, 7909777; Nov. 17, 1980, 8008054

Int. Cl.³ G01N *3/48*

U.S. Cl. 73—81 **14 Claims**



1. A device for testing the hardness or rot depth of a pole, comprising a frame portion, a penetration portion cooperating with the frame portion for penetrating into the pole material in response to an actuation force, actuator means exposed to actuations for producing the actuation force for the penetration portion, the frame portion includes a part which can be driven or sunk into the ground base of the pole adjacent the pole, the penetration portion being arranged on said part, said actuator means, when the part of the frame portion is driven entirely or partially into the ground base, including upper portions that extend above the ground surface so that said actuations can be applied for producing said actuation force, and indicating means arranged at an upper part of the frame portion for indicating the penetration of the penetration portion into the pole material for a definite magnitude of the actuation force.

4,343,180

APPARATUS FOR FURNISHING A SIGNAL INDICATIVE OF THE LOAD OF AN INTERNAL COMBUSTION ENGINE

Werner Herden, Stuttgart, and Hans Neu, Vaihingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 18, 1980, Ser. No. 160,599

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932336

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—115 **14 Claims**

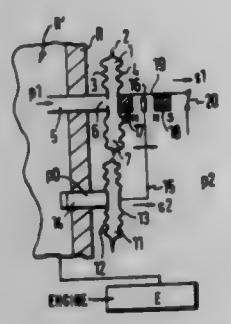
1. In an internal combustion engine having an intake pipe

and means for controlling the fuel supply in accordance with the then-present load on said internal combustion engine,

apparatus for furnishing a load signal indicative of said then-present load, comprising

absolute pressure transducing means (11);

differential pressure transducing means (1) connected to said intake pipe (R);



means (17) for generating a magnetic field varying in accordance with the pressure sensed by at least one of said pressure transducing means including a first magnet and a second magnet, said magnets being so arranged that a pole of said second magnet faces a pole of the first magnet of the same polarity; and

Hall generator means mounted in said magnetic field for generating an output signal varying as a function thereof, said output signal constituting said load signal.

4,343,181

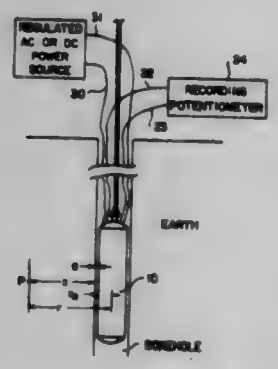
METHOD FOR DETERMINING THERMAL CONDUCTIVITY AND THERMAL CAPACITY PER UNIT VOLUME OF EARTH IN SITU

Heinz F. Poppendiek, LaJolla, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 11, 1980, Ser. No. 129,300

Int. Cl.³ E21B *49/00*

U.S. Cl. 73—154 **6 Claims**



1. A method of determining thermal conductivity and capacity parameters of each in situ using a probe in a borehole, said probe comprising a long cylindrical tube having means for measuring the temperature gradient along said tube, and means for surface heating one zone of said tube, comprising the steps of

positioning said probe in said borehole, wherein said probe has a tube of outside diameter sufficiently less than the diameter of the borehole to facilitate lowering the probe into position, thus leaving a fluid annulus between the probe tube and the borehole wall,

allowing said probe to remain in position for a period sufficient for said temperature gradient to reach thermal equilibrium,

applying a known step function of heat through said surface heating means at said one end of said probe tube;

recording the change in thermal gradient along said probe tube as a function of time in response to said step function of applied heat, said thermal gradient being recorded as a rise in temperature above the temperature at thermal equilibrium, and

relating the recorded rise in temperature as a function of time during heating to the thermal conductivity and thermal capacity per unit volume of the surrounding earth.

4,343,182

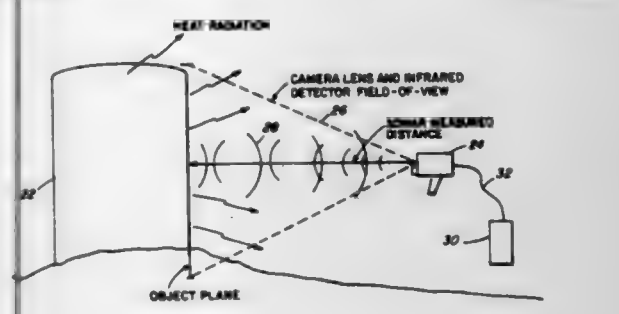
RADIATION HEAT LOSS DETECTOR

Francesco Pompei, Wayland, Mass., assignor to Exergen Corporation, Wayland, Mass.

Filed Jul. 14, 1980, Ser. No. 168,532

Int. Cl.³ G01K *17/00*

U.S. Cl. 374—31 **23 Claims**



1. A radiation heat loss detector assembly for providing an indication of the heat loss from an extended surface area comprising:

a camera for providing a visual image of said surface area on photographic film;

a thermal radiation sensor having a wide field of view of at least about 20° at any instant substantially matching the field of view of a designated area of the image recorded on the film;

display means responsive to the output of the radiation detector for providing an illuminated display indicative of the radiation heat loss from said extended surface area; and

means for recording a visual image of the display with the image of the surface area on the photographic film.

4,343,183

APPARATUS FOR MEASURING AIR FLOW IN THE AIR INTAKE MANIFOLD OF AN INTERNAL COMBUSTION ENGINE

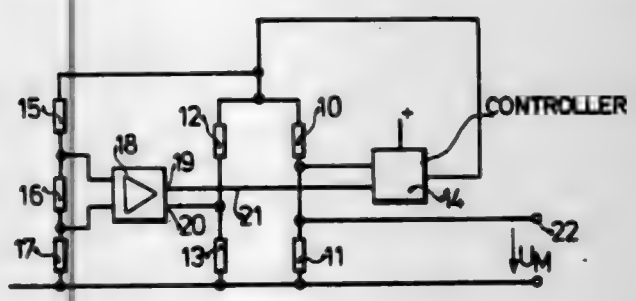
Günther Plapp, Filderstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,018

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906847

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—204 **17 Claims**



1. An apparatus for measuring the air flowing through the intake manifold of an internal combustion engine having a bridge circuit comprising at least four resistors, of which at least one is disposed in the air flowing in the air intake manifold, and having a controller for the electric current flowing through the bridge circuit, wherein the at least four resistors of the bridge circuit are connected to form two parallel resistive

paths, each path having an intermediate connection point, and the controller is connected to receive a bridge circuit signal produced across the bridge intermediate connection points, characterized in that the apparatus includes a temperature signal generating means for generating a temperature signal pertaining to the temperature of the air flowing in the air intake manifold, and the controller is also connected to receive the temperature signal, wherein the temperature signal generating means comprises:

temperature sensing means for generating an output signal which is a function of the temperature of the air flowing in the air intake manifold; and

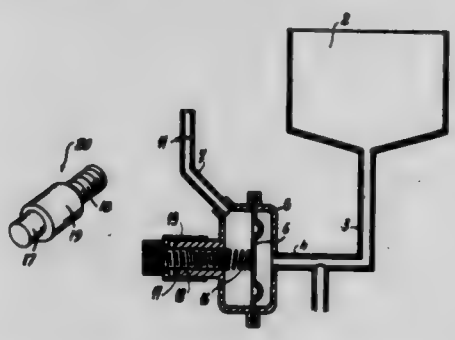
differentiation signal processing means, connected to receive the output signal of the temperature sensing means, for supplying the temperature signal to the controller, wherein the temperature signal is a function of the rate of change of the output voltage of the temperature sensing means with respect to time.

4,343,184

DEVICE FOR DISPLAYING THE LEVEL OF FLUID CONTAINED IN A TANK

Christian Jaulmes, Paris, France, assignor to Ateliers de la Motobecane, Pantin, France

Filed May 13, 1980, Ser. No. 149,532
Claims priority, application France, May 23, 1979, 79 13160
Int. Cl.³ G01F *23/16*
U.S. Cl. 73—299 6 Claims



1. In a device for displaying level of a fluid of a tank, the device including a housing, a single membrane positioned within the housing to separate said housing into a first chamber and a second chamber, communicating means for providing fluid communication between the tank and the first chamber of the housing, a pipe at least a portion of which is transparent or translucent, in fluid communication with said second chamber of the housing and a display liquid of given substantially fixed volume within said pipe, said fluid of said tank and said display liquid both being bounded in part by said single membrane, the improvement comprising

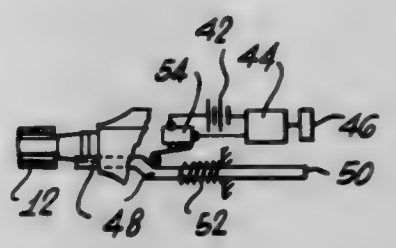
means to determine the level of fluid in the tank by adjusting the position of said membrane and thereby bringing the level of the display liquid to a given position in said pipe, said means comprising spring means within said second chamber of said housing in contact with said membrane on that side thereof which is in contact with said display liquid, a nut fixed to said housing on the second chamber side thereof, a screw extending through said nut into said second chamber of said housing and in contact with said spring means to adjustably compress said spring means to adjust the position of said membrane and to thereby bring the level of the display liquid to the given position, and index means on said nut for determining instant relative position of said screw with respect to said nut to provide a reading of the level of fluid in the tank.

4,343,185

TEMPERATURE SENSING PROBE AND DISPOSABLE PROBE COVER

Wallace L. Knute, Del Mar, Calif., assignor to Ivac Corporation, San Diego, Calif.

Continuation of Ser. No. 10,540, Feb. 9, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,313
Int. Cl.³ G01K *1/16, 7/16*
U.S. Cl. 374—158 6 Claims



1. A temperature sensing device including a sensing probe and a removable probe cover, said device comprising:

an elongated probe shaft having a temperature sensor at a distal end thereof and being rigidly secured to a handle at a proximal end thereof; and

a substantially rigid tubular cover, separate from the structure defining said probe, said cover having an open proximal end adjacent said handle and a closed distal end in tight engagement with said temperature sensor, whereby said cover is releasably mounted on said probe by said tight engagement of said cover on said sensor;

said device further characterized in that said handle includes a movable means for engaging the proximal end of said cover and urging said cover away from said handle and toward the distal end of said probe shaft, and said movable means is movable between a first position toward said distal end of said probe shaft and a second position away from said distal end, and wherein said handle includes means for resiliently biasing said movable means toward said first position, said movable means being held in said second position, against the urging of said biasing means, by the tight engagement of said cover on said sensor.

4,343,186

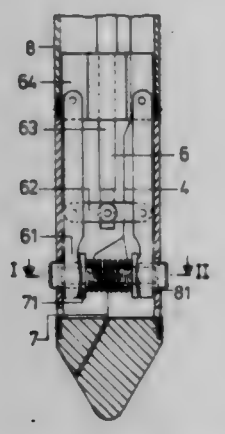
VIBRATION PICKUP

Herbert Schnapp, Muelldorf, Fed. Rep. of Germany, assignor to Interatom Internationale Atomreaktorbau GmbH, Bergisch Gladbach, Fed. Rep. of Germany

PCT No. PCT/EP79/00026, § 371 Date Feb. 28, 1980, § 102(e) Date Feb. 28, 1980, PCT Pub. No. WO80/00187, PCT Pub. Date Feb. 7, 1980
PCT Filed Apr. 19, 1979, Ser. No. 192,516
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828541
Int. Cl.³ G01H *1/04*
U.S. Cl. 73—649 4 Claims

1. Device for performing vibration measurement of parts, having at least one measuring instrument making contact with a measuring point under spring load, and a manipulating device operatively associated with the measuring instrument for bringing the latter to the measuring point comprising means for retracting the measuring instrument into the manipulating device while the measuring instrument is brought to the measuring point by the manipulating device, the measuring instru-

ment being detachable from the manipulating device, except for yieldable connections, during vibration measurement at the



measurement point, the measuring instrument having means for firmly fixing the position thereof at the measuring point.

4,343,187

SENSOR WITH INNER PROTECTIVE CHAMBER

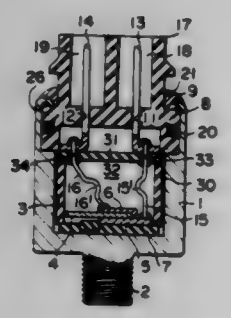
Kiyokane Kaji, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 23, 1980, Ser. No. 162,101

Claims priority, application Japan, Aug. 15, 1979, 54-104300; Aug. 15, 1979, 54-104301

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—654 **20 Claims**



1. A sensor for sensing a condition of a body, comprising:

an outer hollow tubular sensor casing, a first end of which is open and a second end of which is closed and is provided on its outside side with a protuberance adapted for connection to the body;

an end closing member which closes the first open end of the outer hollow tubular sensor casing, and is fixedly mounted thereto;

a sensor element for producing an electrical output signal, mounted within the outer hollow tubular sensor casing;

a sensor element side protective member, passing all around the sensor element between it and the inner wall of the outer hollow tubular sensor casing;

a sensor element base end protective member, between the sensor element and the second closed end of the outer hollow tubular sensor casing;

a sensor element other end protective member defining an end of the substantially closed sensor element protective chamber remote from the second closed end of the outer hollow tubular sensor casing;

the sensor element side protective member, the sensor element base end protective member, and the sensor element other end protective member are formed as separate members, and are all clamped together between the end of the end closing member closest to said second closed end of the outer hollow tubular sensor casing, and the inside side of the second closed end of the outer hollow tubular sensor casing, the side of the end closing member closest to the second closed end abutting the side of the sensor element other end protective member remote from the second closed end, the side of the sensor element other end protective member closest to the second closed end abutting the end of the sensor element side protective member remote from the second closed end, the end of the sensor element side protective member closest to the second closed end abutting the side of the sensor element base end protective member remote from the second closed end, and the side of the sensor element base end protective member closest to the second closed end abutting the inside surface of the second closed end; and

an electrically conducting sensor lead structure, connected at its one end to the sensor element for receiving a sensor output electrical signal therefrom, and passing through an aperture in the end closing member to the outside of the sensor.

4,343,188

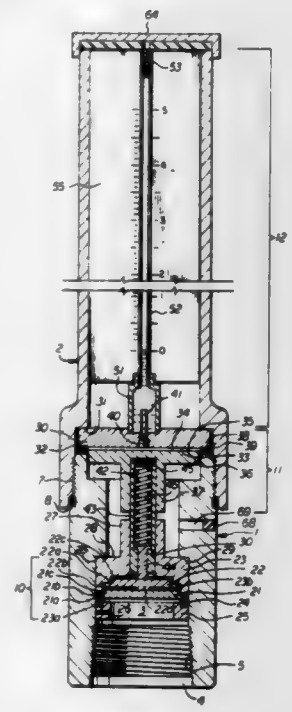
FLUID PRESSURE INDICATING APPARATUS

William E. Baker, 10627 Sugar Hill, Houston, Tex. 77042

Filed Aug. 27, 1980, Ser. No. 181,755

Int. Cl.³ G01L *71/16*

U.S. Cl. 73—706 **44 Claims**



1. Fluid pressure indicating apparatus comprising:

body means adapted for connection to a source of fluid pressure and having an inlet in fluid communication therewith;

indicator means attached to said body means for indicating the magnitude of said fluid pressure;

transducer means carried by said body means and one side of which is in fluid communication with said source of fluid pressure through said inlet, said transducer means translating pressure applied to said one side thereof from said source of fluid pressure to linear motion at said opposite side thereof;

amplification means carried by said body means between said transducer means and said indicator means for amplifying said linear motion at said opposite side of said transducer means to increased motion of said indicator means in predetermined relationship with the magnitude of said fluid pressure; and

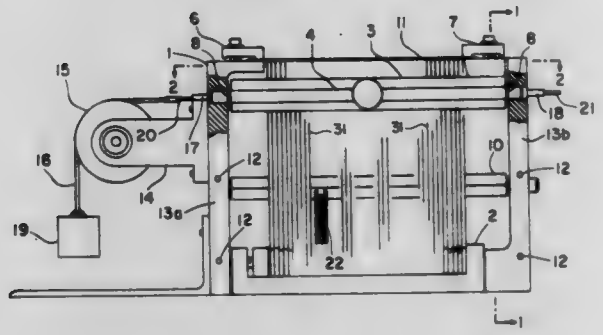
said transducer means comprising at least one circular plate member, one side of which is exposed to said source of fluid pressure, the opposite side of which faces said amplification means, and the periphery of which is relieved to form an annular surface for bearing against a corresponding annular support shoulder within said body means, said annular surface substantially coinciding with the neutral stress surface of said plate member when subjected to bending forces from exposure of said one side thereof to said source of fluid pressure.

4,343,189

METHOD AND APPARATUS FOR EDGEWISE COMPRESSION TESTING OF FLAT SHEETS

Dennis E. Gunderson, Madison, Wis., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 23, 1980, Ser. No. 152,874
Int. Cl.³ G01N *11/00*
U.S. Cl. 73—822 16 Claims



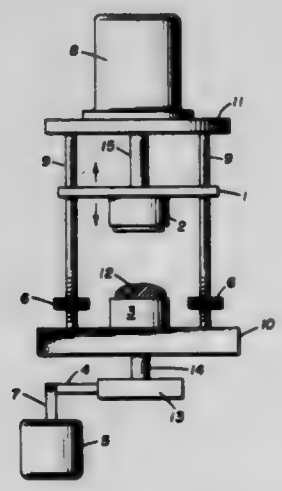
1. An apparatus for edgwise compression testing of a flat sheet, comprising: (a) means for restraining said sheet from buckling in the lateral direction, comprising: (1) a sheet-supporting surface, flexible in the directions of test loading, on one side of said sheet; and (2) air pressure on the unsupported side of said sheet exceeding that on the supported side of said sheet; (b) means for holding said sheet adjacent to said restraining means during testing; and (c) means for placing a load on said sheet in a desired direction.

4,343,190

MOVING DIE RHEOMETER, METHOD OF TESTING MATERIALS THEREWITH, AND DIE FOR USE THEREIN

Michael J. Danko, Uniontown; Leslie L. Randall; Ray J. Smith, both of Akron, and James E. Walsh, North Canton, all of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 2, 1980, Ser. No. 155,883
Int. Cl.³ G01N *3/24*
U.S. Cl. 73—846 39 Claims



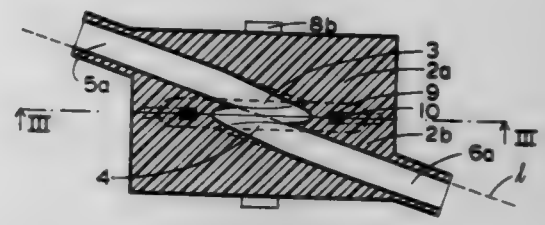
14. Apparatus for testing rheological properties of viscoelastic material comprising, in combination, a die having two opposing faces and annular wall means attached to at least one of said faces, annular sealing means arranged to contact said wall means, said faces wall means and sealing means defining a closed space, each face having at least one annular protrusion extending therefrom toward the opposing face, the annular protrusions from one face intermeshing with the annular protrusions from the opposing face, means biasing said faces towards one another, means for rotating one of said faces with respect to the other, and measuring means for measuring rheological properties of a viscoelastic material contained in said die.

4,343,191

FLUID FLOW METER

Runo M. J. Cairenius, 195 Kennedy Rd. South, Ste. 309, Brampton, Ontario, Canada (L6W 3H2)

Filed Jun. 11, 1980, Ser. No. 158,526
Int. Cl.³ G01F *1/70*
U.S. Cl. 73—861.05 3 Claims



1. A fluid flow transducer comprising

two housing halves of impervious material both having a groove of circular shape and of semicircular cross-section, said grooves forming a toroidal passageway for fluid in said housing when combined, one orifice in each said housing half at the bottom of said groove, said orifices being, when said housing halves combined, located on opposite sides of said passageway and being off-set from the exact opposite location by one full revolution of said combined housing halves less one distance of the orifice diameter, one connection means for fluid on the outside of each said housing half connected to said corresponding orifice in parallel direction that is less than 45 degrees but more than 5 degrees to the plane defined by the center line of said toroidal passageway, characterized in that the cross-sectional areas of said toroidal passageway, said orifices and said connection means are equal or nearly equal,

a ball slightly smaller than the inner diameter of said passageway,

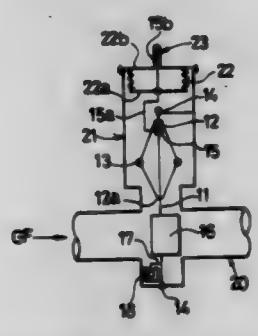
fastening means to form a fluidtight enclosure of said two housing halves, whereby the motion of said ball indicates the velocity of fluid.

4,343,192

FLOW RATE MEASURING INSTRUMENT

Takao Shimomura, Takaishi, Japan, assignor to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Feb. 27, 1980, Ser. No. 124,970
Claims priority, application Japan, Mar. 2, 1979, 54-23382
Int. Cl.³ G01F *1/20*
U.S. Cl. 73—861.21 7 Claims



1. A flow rate measuring instrument comprising: an oscillation assembly which self-oscillates in response to the flow condition of a fluid, said oscillation assembly having a component which is of fixed dimensions which interacts with the fluid to generate the self-oscillation; and

a mechanism for adjusting the moment of inertia of the oscillation assembly in response to the variations in the

flow condition of the fluid, thereby performing a correction of a detected flow rate of the fluid.

4,343,193

FLUID FLOW MEASURING APPARATUS

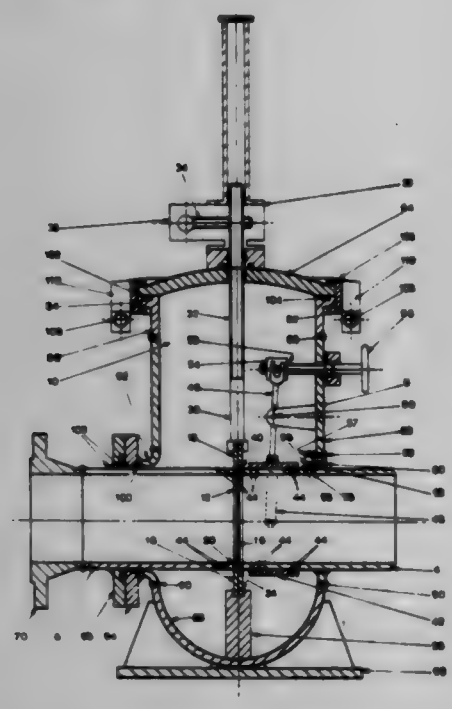
Raymond W. Dawson, 47, Ingle Head, Fulwood, Preston, Lancs.; Anthony W. Stevenson, Woodley, and Ernest Manners, London, all of England, assignors to Raymond Winston Dawson, Preston, England

Filed Feb. 15, 1980, Ser. No. 121,988

Claims priority, application United Kingdom, Feb. 17, 1979, 7905672; May 2, 1979, 7915336

Int. Cl.³ G01F *1/42*

U.S. Cl. 73—861.61 **7 Claims**



1. Fluid flow measuring apparatus comprising first and second pipe portions, a housing positioned around the pipe portions, a chamber in the housing, an orifice plate, orifice plate moving means for moving the orifice plate from a first position in which it is located between the pipe portions to a second position in which it is located in the chamber in the housing and for moving the orifice plate from the second position to the first position, and sleeve sealing means for sealing the pipe portions when the orifice plate is in the second position, the housing being fabricated of metal in sheet and/or tubular form, the housing having a pivotable lid, and the orifice plate moving means being such that it can be pivoted to an inoperative position for allowing access to the orifice plate.

4,343,194

FLOW SENSING APPARATUS

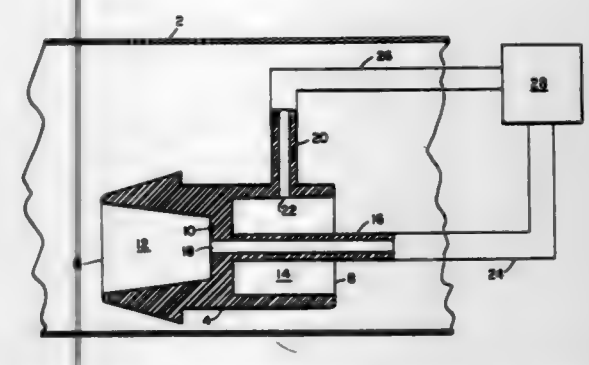
Marv L. Dehart, Mesquite; M. Leon Kloostra, Rowlett, and Harold E. Straub, Garland, all of Tex., assignors to Environmental Elements Corporation, Baltimore, Md.

Continuation-in-part of Ser. No. 849,403, Nov. 7, 1977. This application Apr. 8, 1980, Ser. No. 121,726

Int. Cl.³ G01F *1/46*

U.S. Cl. 73—861.65 **4 Claims**

1. A gas flow sensing device comprising a tube having an upstream end and a downsteam end and having an opening at each end thereof, a wall dividing the tube into an upstream chamber and a downstream chamber, a total pressure sensing probe located in the tube and having its opening in the center of the wall dividing the tube into the upstream and downstream chambers and facing upstream, a static pressure sensing probe located in the walls of the downstream chamber of the tube and having its opening perpendicular to the flow of gas,



means for connecting the total pressure probe and static pressure probe to a visual readout means or a control means.

4,343,195
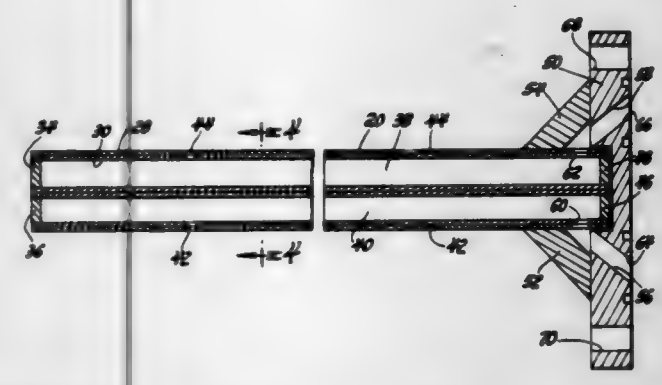
FLOW MEASURING DEVICE

Michael Victor, 41226 I-94 Expressway Service Dr., Van Buren Township, Wayne County, Belleville, Mich. 48111, and James R. Bowers, 1471 Lakeview Ave., Rocky River, Ohio 44116

Filed Jul. 21, 1980, Ser. No. 170,681

Int. Cl.³ G01F *1/46*

U.S. Cl. 73—861.66 **7 Claims**



1. Pitot tube means suited for connecting a pressure responsive instrument without connecting tubing, comprising:

an elongated housing having a first port and a second port;

a pair of similarly shaped D-shaped tubes telescopically disposed back-to-back in said housing and extending substantially the full length of said housing, including a first tube having a first chamber and an opening fluidly connecting said first chamber with said first port, and a second tube having a second chamber and an opening fluidly connecting the second chamber with the second port;

a plate mounted on the end of said housing, and means attaching said plate to the housing, said plate having a pair of passages diverging from the housing and extending from one side of the plate to the opposite side thereof, the outer ends of said passages being spaced a distance greater than the diameter of the housing;

one of said passages being fluidly connected to the first fluid chamber and the second of said passages being fluidly connected to the second fluid chamber;

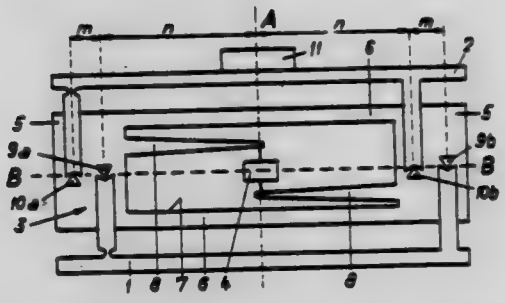
said plate having a flange, and opening means for receiving fastener means, said plate being adapted to be mounted in face-to-face relationship with the flange of instrument means without tubing being disposed between the plate and the instrument.

4,343,196

MASS AND FORCE METER

Johannes Wirth, and Mario Gallo, both of Zurich, Switzerland, assignors to Wirth, Gallo & Co., Zurich, Switzerland

Filed Sep. 9, 1980, Ser. No. 185,418
Claims priority, application European Pat. Off., Aug. 25, 1980, 80105032.9
Int. Cl.³ G01L 1/04
U.S. Cl. 73—862.62 4 Claims



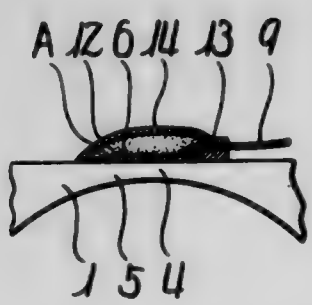
1. In a mass and force meter a body, a load support, a load cell, an intermediate body mounted between said body and said load support and comprising two rigid parts linked to each other by two horizontal, flexible parts mounted one below the other, a number of loading points anchored to said rigid parts, a same number of supporting points anchored to said rigid parts, said loading points and said supporting points being mounted pair-wise in the same horizontal plane, said loading points being shifted horizontally by the same amount and in the same direction from said supporting points, said intermediate body being supported by said body over said supporting points, said load support being supported by said intermediate body over said loading points, at least one spring with two ends the resilience of which is much greater than that of said flexible parts, said spring having one of its ends fitted into one of said rigid parts and its other end being linked to said load cell, the latter being linked to the other of said rigid parts.

4,343,197

LOAD-CELL BALANCE

Seiji Suzuki; Kohichiro Sakamoto, and Tohru Kitagawa, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,645
Claims priority, application Japan, Apr. 19, 1979, 54-47242
Int. Cl.³ G01L 1/22
U.S. Cl. 73—862.65 5 Claims



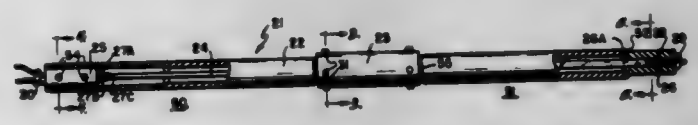
1. A load-cell balance comprising: a load cell body having a parallelogram form constituted by a stationary column, a movable column holding a load support and two arms through which said stationary and movable columns are connected to each other at their upper and lower ends, each of said arms having thin-walled flexible portions; strain gauges including lead wires, said strain gauges being adhered to said flexible portions; a spacer made of a material of a butyl rubber group and interposed between said lead wires of each strain gauge and a corresponding flexible portion and a coating of a material of butyl rubber group adapted to coat and seal said spacer and said strain gauge.

4,343,198

FLUID FORCE TRANSDUCER

Joseph A. Jendrzejczyk, Warrenville, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 9, 1980, Ser. No. 214,801
Int. Cl.³ G01L 5/16, 1/22
U.S. Cl. 73—862.65 11 Claims



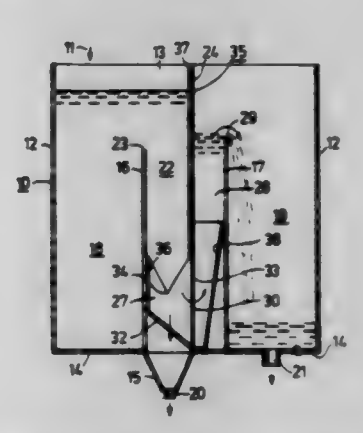
1. A force transducer for use with a bridge circuit means for sensing changes in strain gauge means comprising:
support tube means;
a rod positioned longitudinally within said support tube;
first and second support means for securing the respective ends of said rod under tension to said tube;
a sleeve extending about said support tube and rigidly connected to said rod; and
circuit means including strain gauge means attached to said rod for measuring stress in said rod.

4,343,199

SAMPLING DEVICE

G. Sigvard Sunna, Skelleftea, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE79/00242, § 371 Date Aug. 4, 1980, § 102(e) Date Jul. 1, 1980, PCT Pub. No. WO80/01205, PCT Pub. Date Jun. 12, 1980
PCT Filed Nov. 30, 1979, Ser. No. 200,493
Claims priority, application Sweden, Dec. 4, 1978, 7812470
Int. Cl.³ G01N 1/20
U.S. Cl. 73—863.43 5 Claims



1. A device for taking from a flowing suspension a sample-flow which is of substantially constant flow rate and which is representative of the composition of said suspension, said device being of the kind which comprises a first chamber arranged to receive the flowing suspension and which communicates via a weir with the upper part of a second chamber having first and second openings arranged at the bottom thereof for the removal of the sample-flow and the remaining part of the suspension respectively, said openings being separated from one another by partition walls which extend transversely of said weir over the whole length of the second chamber; and in which the second openings communicate with an outlet via a substantially U-shaped passage and a second weir whose lip is located substantially on the same level as the lip of the weir of the first chamber, while the first openings communicate with a second outlet which is so adapted that with normal flow of the suspension entering the first chamber the flow rate of said suspension into the first openings is substantially equal to the flow rate of said suspension into the second openings, at least one of said partition walls defining communication between the U-shaped passage and said second outlet in

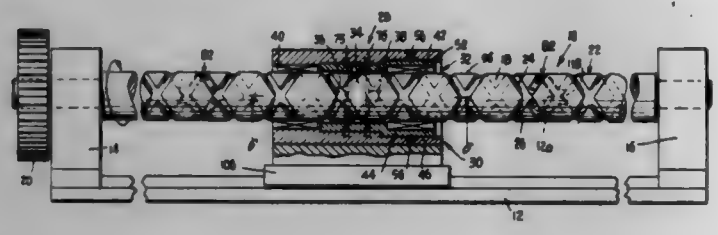
a region located lower than the uppermost level of the two legs of the U-shaped passage.

4,343,200

REVERSING ATTACHMENT FOR DIAMOND THREAD SCREW

James Alworth, Rte. 58, West Redding, Conn. 06896; John C. Kennedy, 930 Orange Center Rd., Orange, Conn. 06477; Berger La Barre, 42 Maple Ave., Bethel, Conn. 06801, and Gus Sandin, 45 Westville Ave., Danbury, Conn. 06810

Filed Sep. 8, 1980, Ser. No. 185,170
Int. Cl.[3] F16H *25/12, 29/20*
U.S. Cl. 74—57 14 Claims



1. As a new article of manufacture, a reversing attachment adapted to be applied to a diamond thread screw of the type having intersecting thread grooves, comprising in combination:

(a) an abutment adapted to be positioned in a groove at any one of various intersections thereof for engagement with a driving element of an anti-friction follower that rides in the grooves of the screw, said abutment preventing passage of said element past said one intersection, and

(b) means for detachably securing the abutment to the screw at said one intersection to maintain it in its operative position,

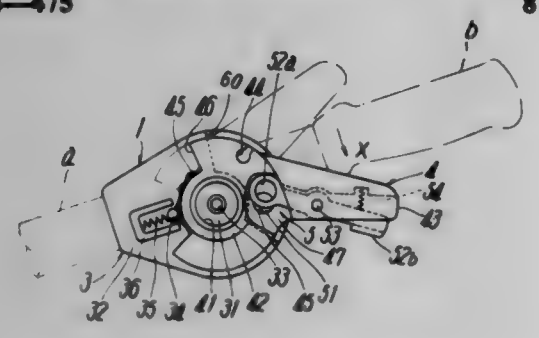
(c) said securing means comprising a snap ring adapted to occupy two intersecting thread grooves, one end of said ring constituting the said abutment.

4,343,201

SPEED CONTROL DEVICE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jul. 2, 1980, Ser. No. 165,935
Claims priority, application Japan, Jul. 16, 1979, 54-98938[U]
Int. Cl.[3] G05G *5/06*
U.S. Cl. 74—475 8 Claims



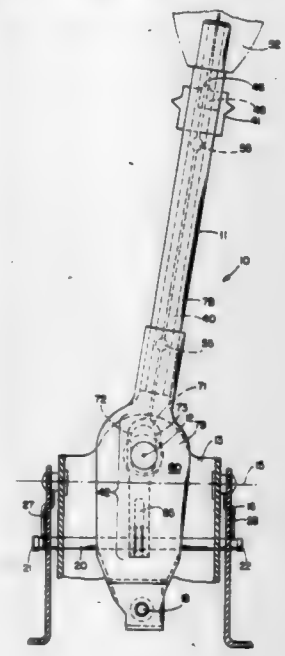
1. A speed control device for operating a control wire to actuate a derailleur comprising: a fixing member having a lever shaft and a control lever supported rotatably to said lever shaft and rotatable in predetermined directions to operate said control wire, said control lever having retaining means for retaining a terminal of said control wire, a retaining mechanism located between said control lever and fixing member which retains said lever at at least on speed control position, said retaining mechanism having a releasing means for releasing said lever from being retained, and having an arm supported to said control lever so as to be rotatable in the same directions as said lever, said arm being rotatable to release said lever from being retained.

4,343,202

PULL-TYPE LOCKOUT ACTUATOR FOR TRANSMISSION SHIFTERS

Charles Osborn, Spring Lake, Mich., assignor to JSJ Corporation, Grand Haven, Mich.

Continuation-in-part of Ser. No. 905,123, Aug. 12, 1978, Pat. No. 4,245,521, and Ser. No. 115,126, Jan. 24, 1980. This application Apr. 14, 1980, Ser. No. 139,822
Int. Cl.[3] F16H *57/06;* G05G *9/16*
U.S. Cl. 74—476 17 Claims



1. A pull-type actuator for a transmission shifter lockout comprising:

a stationary base adapted to be mounted to an automotive vehicle;

a gate disposed in said base;

a pivotable upstanding shift lever extending from said base;

detent means mounted for reciprocal movement adjacent the lower end of said shift lever said detent means being alignable in said gate to allow entry into a locked out gear;

a manually actuable pull disposed on the upper end of said shift lever;

a flexible actuator link extending from said detent means to said pull;

detent engaging means for engaging said detent disposed adjacent the lower end of said actuator link;

a plurality of teeth disposed on the upper end of said actuator link; and

tooth engaging means disposed on said pull for engaging said teeth on said actuator link in a one way ratchet-like fashion and thereby tensioning the same between said detent engaging means and said pull.

4,343,203

ROTOR STRUCTURE FOR GYROSCOPIC APPARATUS

Peter E. Jacobson, and Conrad M. Rustenburg, both of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,296
Int. Cl.[2] G01C *19/06*
U.S. Cl. 74—5 R 6 Claims

1. A gyroscope bimetal rotor assembly adapted to spin about an axis comprising

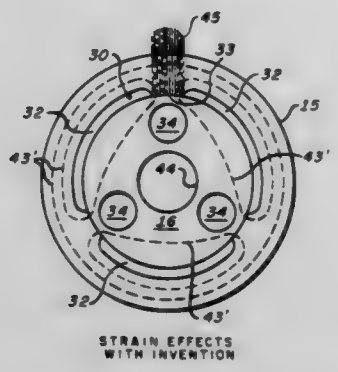
a generally cylindrical rim member fabricated from a high density material and having a first coefficient of thermal expansion characteristic,

a generally flat circular web member fabricated from a relatively lower density material and having a second, relatively higher coefficient of thermal expansion than said rim member,

anti friction spin bearing means having a desired predetermined bearing preload in said web member adapted to support said assembly for spinning about said axis,

interface means between said rim member and said web member for maintaining the mechanical integrity of said rim and web members over an operating temperature range, said interface means comprising

a plurality of annularly distributed interface pads on one of said members formed by relieving a diameter thereof between said pads, said pads concentrating stress forces produced by thermal expansion of said members at said pads, and



a corresponding plurality of annularly distributed holes in said web member in radial alignment with said pads, whereby said holes direct said stress forces toward the adjacent pads and away from said bearing means thereby substantially preventing deformation of said bearing means and deleterious changes in said bearing preload over said operating temperature range.

4,343,204

OPERATING PEDAL FOR POWER TRANSMISSION IN MOTORCYCLE

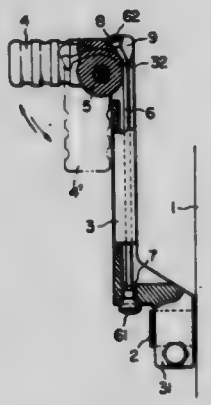
Norio Hoshi, Fujimi, and Tomoyuki Tagami, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1980, Ser. No. 141,392

Claims priority, application Japan, Apr. 26, 1979, 54-56119[U]

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—594.7 **2 Claims**



1. A pedal assembly for operating a power transmission device in a motorcycle, which comprises:

(a) a shaft connected at a base end of said shaft with, and for actuating, said power transmission device, said shaft projecting laterally from a side surface of a casing accommodating therein said power transmission device;

(b) a pedal arm with one end thereof being fixedly secured to said shaft, said pedal arm having an internal groove throughout the length thereof;

(c) a foot pedal, mounted at the other end of said pedal arm on a pivot shaft carried by said pedal arm perpendicularly to the lengthwise direction of said pedal arm in a manner to permit the foot pedal to be collapsible only in the direction toward the said base end of said shaft; and

(d) an elastic member provided in said internal groove in said pedal arm to maintain said collapsible pedal at its pedalling position by the resititutive action thereof.

4,343,205

DIFFERENTIAL

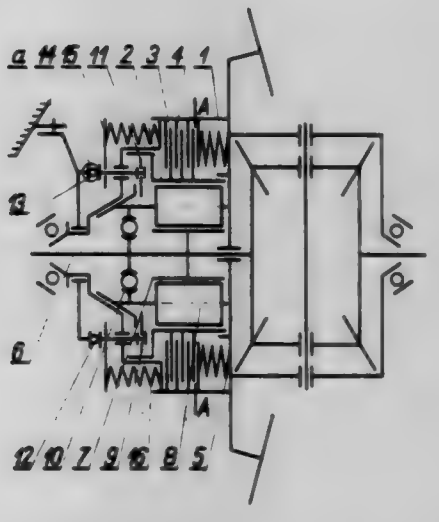
Jan Dzida, Bielsko-Biala, Poland, assignor to Politechnika Lodzka, Lodz and Fabryka Samochodow Rolniczych "POLMO", Poznan, both of, Poland

Filed Mar. 20, 1980, Ser. No. 132,022

Claims priority, application Poland, Mar. 22, 1979, 214348

Int. Cl.³ F16H *1/44, 1/40*

U.S. Cl. 74—711 **1 Claim**



1. In a differential with inner friction forces being variable as a function of the ratio of rotational speeds of the driven axle shafts, adapted especially for axles of vehicles, comprising multiple-disc friction clutch, having an outer hub, constituting a part of the differential housing, connected with an inner hub over inner friction discs and outer friction discs outside of which axially arranged helical compression springs are mounted, and a roller-type clutch means on the inside of the inner hub including a polygonal sleeve mounted non-rotatively on one axle shaft in such way that between its walls and the inner cylindrical surface of the inner hub a plurality of rollers are disposed with a small radial clearance, said rollers being sustained by a cage the improvements comprising a spring-loaded centering device for the roller clutch means mounted in a flexible way in a position symmetrical in relation to the walls of the polygonal sleeve, said cage having a generally conically shaped friction portion with a radial flange, said portion being engageable in a conical recess in the differential housing, and the radial flange of the cage being adapted to contact an annular pressure plate, said pressure plate being axially urged toward and away from said flange by means of a plurality of axially arranged tappets disposed uniformly around the axle shaft, said tappets having cam follower means on the other ends thereof which contact a crown-shaped annular cam mounted non-rotatively in relation to the axle housing, the front face of said cam being provided with recesses disposed uniformly around the periphery thereof in a number equal to the number of the tappets, the tappets being connected to a thrust disc, said disc and the housing being axially connected by tension springs.

4,343,206

SLIDE SYSTEM FOR MACHINE TOOLS

Spivey S. Douglass, Oak Ridge, and Walter L. Green, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 12, 1980, Ser. No. 158,832

Int. Cl.³ B23B *7/14*

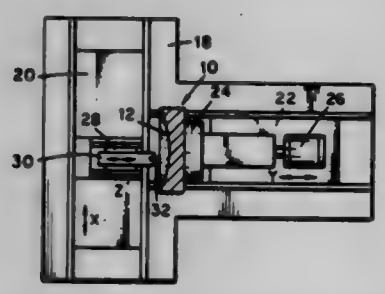
U.S. Cl. 82—2 R **2 Claims**

1. A machine tool for shaping a workpiece with a nonax-

isymmetric surface by turning the workpiece about a central axis of rotation comprising:

a spindle supporting the workpiece for rotation thereof about said axis,

first and second slide means movable along planes normal to one another with the first of said slide means supporting a material-removing tool in a working relationship with the surface of said workpiece and providing for the displacement of the material-removing tool in opposite directions along a plane perpendicular to the axis of rotation of the workpiece, and the second slide means supports said spindle for displacing the latter in opposite directions along a plane parallel to the axis of rotation of the workpiece,



third slide means disposed intermediate said first slide means and the material-removing tool for carrying the latter and for displacing the material-removing tool in opposite directions along a plane radially spaced from said axis of rotation to generate a nonaxisymmetric surface on said workpiece, and means coupled to said third slide means and responsive to a predetermined angular position of said workpiece and the position of said first slide means for displacing the material-removing tool carried by said third slide means a selected distance in either direction along the plane of displacement of said third slide means for providing said workpiece with said nonaxisymmetric surface.

4,343,207

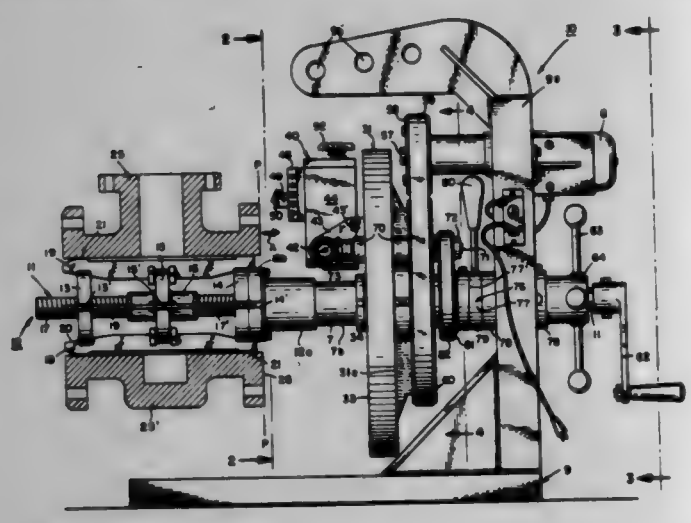
TOOL FOR SPIRAL MACHINING

Joseph R. Paysinger, Houston, Tex., assignor to Crutcher Corporation, Houston, Tex.

Filed Feb. 4, 1980, Ser. No. 118,336

Int. Cl.³ B23B *3/26*

U.S. Cl. 82—4 R **7 Claims**



1. A tool comprising:

a rigid stand having an upright,

a horizontal main support shaft fixedly mounted on the upright,

a platform rotatably mounted about said main shaft, said platform having a face plate,

a first pulley coupled to said platform,

a traveling tool holder movably mounted on said face plate,

a transmission drive mechanism for moving said tool holder in a radial direction relative to the center of the face plate, said transmission being driven by a first shaft through a first clutch, the axis of said first shaft being substantially parallel to the face plate,

a second shaft being rotatably mounted relative to said platform and extending therethrough in a horizontal direction, said first and second shafts being geared to each other,

a motor mounted on the upright with its shaft extending in a horizontal direction for rotating said platform, and

a planetary drive mechanism for rotating said second shaft through a second clutch, whereby the rotation of said second shaft is converted into the radial movement of said tool holder.

4,343,208

METHOD AND APPARATUS FOR SHEARING METAL BILLETS

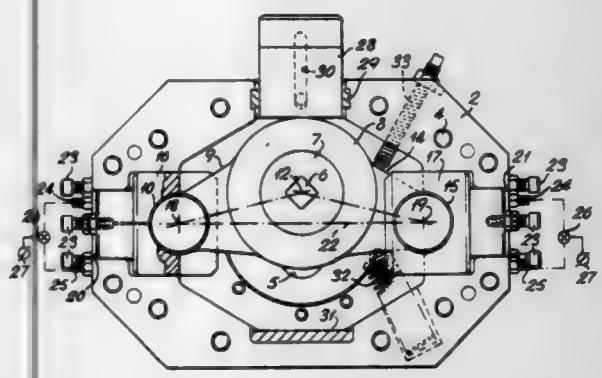
Basily B. Basily, Cairo, Egypt; Mihir K. Das, Selly Park, England; Clifford G. Price, Stourbridge, England, and Stephen A. Tobias, Selly Park, England, assignors to National Research Development Corporation, London, England

Filed Sep. 8, 1980, Ser. No. 184,971

Claims priority, application United Kingdom, Sep. 12, 1979, 7931594

Int. Cl.³ B23D *15/00*

U.S. Cl. 83—13 **8 Claims**



1. Apparatus for shearing a workpiece comprising:

two lever arms;

each said lever arm having a pivotal mounting, whereby said arms may pivot about parallel axes;

a jaw unit carried by each said lever arm, whereby to hold said workpiece;

slide means whereby the pivotal mounting of each said lever arm may execute sliding movement;

stops associated with said slide means whereby said sliding movements of said lever arms may be arrested, and

means to cause said lever arms to pivot about said mountings and by so doing to execute a shearing action upon a workpiece held in said jaw units, whereby said shearing action may comprise two successive stages, in the first of which stages said pivotal mountings execute sliding movement within their said slide means, and in the second of said stages such sliding is arrested by contact with said stops.

4,343,209

ZONE HEATING AND SHEARING SYSTEM, AND METHOD

Heinrich Moelbert, Bratenahl, Ohio, assignor to Advanced Machine Design Company, Cleveland, Ohio

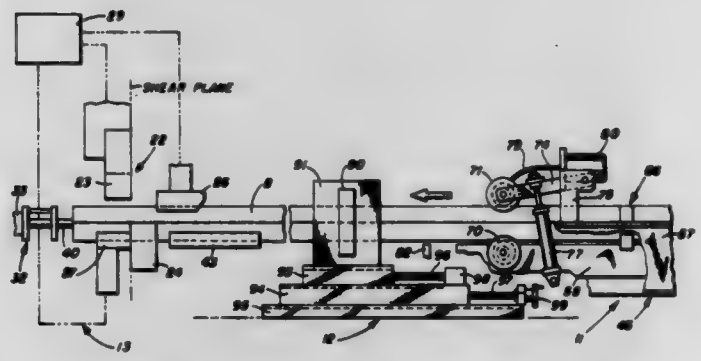
Filed Aug. 12, 1980, Ser. No. 177,381

Int. Cl.³ B26D *7/10*

U.S. Cl. 83—16 **35 Claims**

27. A method of shearing pieces of predetermined length from bar stock, comprising the steps of incrementally longitudinally advancing a bar one piece length at specified intervals past a zone heating element toward a bar shear to heat the bar at incrementally spaced localized shear areas thereof, locating such zone heating element at a number of piece lengths in front

of such bar shear corresponding to the soak time required to obtain the desired core temperature at each localized shear area by the time each localized shear area is incrementally



longitudinally advanced from the heating zone through a region free from heating to the bar shear, and sequencially shearing the bar after each incremental advance of the bar at the then presented localized shear area.

4,343,210

PUNCH PRESS

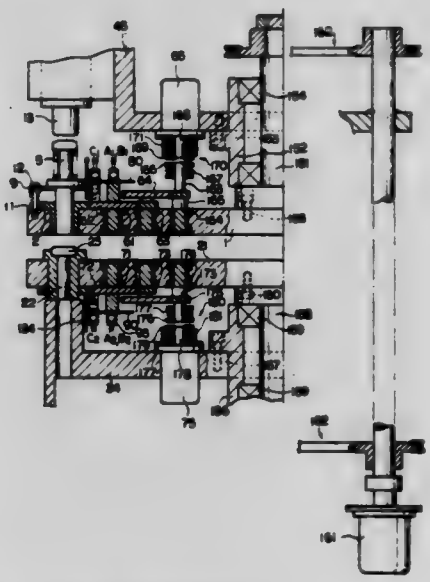
Kazuo Kuroyone, c/o Anritsu Denki Kabushiki Kaisha, 12-20, Minamiazabu 4-chome, Minato-ku, Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,658

Claims priority, application Japan, May 31, 1979, 54-66882; Jul. 31, 1979, 54-96675

Int. Cl.³ B26D *5/08*

U.S. Cl. 83—71 **26 Claims**



1. A punch press, comprising:

a base member;

a pair of vertically spaced apart upper and lower plates secured to said base member;

a punch holder rotatably mounted on said upper plate for supporting a punch and having a first check point at a fixed position thereof so that said first check point draws a predetermined first locus by rotation of said punch holder;

a die holder rotatably mounted on said lower plate for supporting a die and having a second check point at a fixed position thereof so that said second check point draws a predetermined second locus by rotation of said die holder;

drive means for rotating said punch holder and said die holder;

first detection means adapted to produce a first detection signal when said first check point is positioned at a predetermined first location on said first locus;

second detection means adapted to produce a second detection signal when said second check point is positioned at a predetermined second location on said second locus;

said punch and die being cooperable with each other to machine a workpiece interposed therebetween when said first and second check points are positioned respectively at said first and second locations or when an angular displacement of said first check point from said first location is the same as that of said second check point from said second location;

means for positioning the workpiece in the X axis and/or Y axis;

means supplied with said first and second detection signals and adapted to produce a start signal upon receipt of both of said first and second detection signals;

a control unit adapted to start operation upon receipt of said start signal and to generate a punch instruction signal; and

means for actuating said punch relative to said die upon receipt of said punch instruction signal, whereby to machine the workpiece.

4,343,211

JET CUTTER HAVING SUPPLY HOSE WOUND ON A DRUM

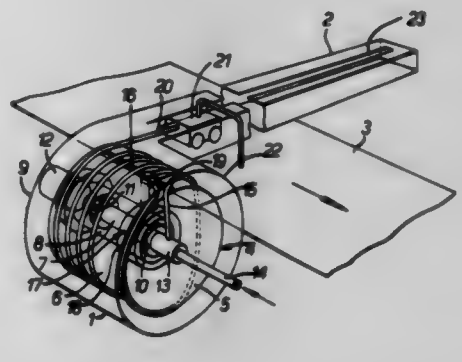
Frode I. Volle, Nesoya, Norway, assignor to Thune-Eureka A/S, Tranby, Norway

Filed Dec. 2, 1980, Ser. No. 212,257

Claims priority, application Norway, Dec. 13, 1979, 794076

Int. Cl.³ B26F *1/26*

U.S. Cl. 83—177 **6 Claims**



1. A cut squirt wherein a nozzle for a jet of cutting liquid is movably supported on a boom extending transversely of the direction of advancement for a web of paper and is connected to a supply hose for cutting liquid which is coiled in one layer on a driven drum and is connected at the drum to a feed conduit for said liquid, whereby the nozzle is driven back and forth along the boom when the hose is uncoiled from or coiled onto the drum, characterized in that the drum end of the hose is attached to a carrier which rotates together with the drum and has cam engagement with a fixed guide member such that the carrier is displaced one hose width in the axial direction of the drum for each revolution of the drum, and in that flexible, liquid-conduit connection is arranged between the drum end of the hose and the cutting liquid feed conduit to the drum.

4,343,212

SHEARING DEVICE FOR INGOTS

Takehiro Hishinuma, and Yutaka Tsuchida, both of Yokosuka, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 845,779, Oct. 26, 1977, abandoned, which is a division of Ser. No. 780,541, Mar. 24, 1977, Pat. No. 4,145,942. This application Jun. 15, 1979, Ser. No. 48,884

Claims priority, application Japan, Mar. 29, 1976, 51-34982; May 28, 1976, 51-62103

Int. Cl.³ B23D *17/00, 25/00*

U.S. Cl. 83—303 **1 Claim**

1. A shearing device for shearing a horizontally arranged elongated longitudinally traveling ingot into a plurality of successive sections, comprising

(a) shear means for shearing the ingot into sections; and

(b) means including bracket means (46) for supporting said

shear means in vertically spaced relation relative to said ingot;

(c) said shear means including

(1) shear main body means (30) connected with said bracket means and including

(i) an opposed pair of side plates (31);

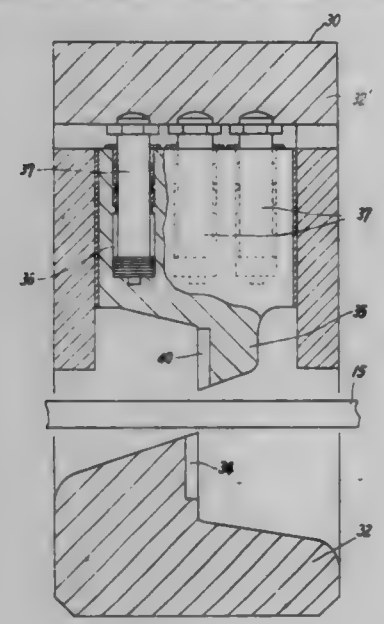
(ii) an upper intermediate member (33) arranged between and secured to said side plates; and

(iii) a lower intermediate member (32) arranged between and secured to said side plates;

(2) a cylinder main body member (35) secured to said side plates;

(3) a first shearing blade (40) arranged adjacent and transverse to the longitudinal axis of said ingot;

(4) a second shearing blade (34) connected with said lower intermediate member and arranged opposite said first shearing blade adjacent and transverse to the longitudi-



nal axis of said ingot, said ingot passing between said first and second blades;

(5) piston (37) and cylinder (36) motor means connected with said cylinder main body member for displacing said first shearing blade vertically relative to said ingot, said motor means including a plurality of cylinders arranged within said main body member and aligned in the direction of movement of the ingot for reciprocating said first blade, the axis of each cylinder being perpendicular to the direction of movement of the ingot and being contained in a vertical plane containing the longitudinal axis of said ingot, whereby when said motor means is actuated to displace said first shearing blade, said ingot is cleanly sheared by said first and second blades, and further whereby when a plurality of shear means are provided for shearing a plurality of ingots, the spacing between the ingots is reduced.

4,343,213

BLADE PROTECTION IN TILTABLE CIRCULAR SAW MACHINES

Karl Drixler, Nürtingen-Neckarhausen, Fed. Rep. of Germany, assignor to Chr. Eisele Machinenfabrik GmbH. & Co. KG, Fed. Rep. of Germany

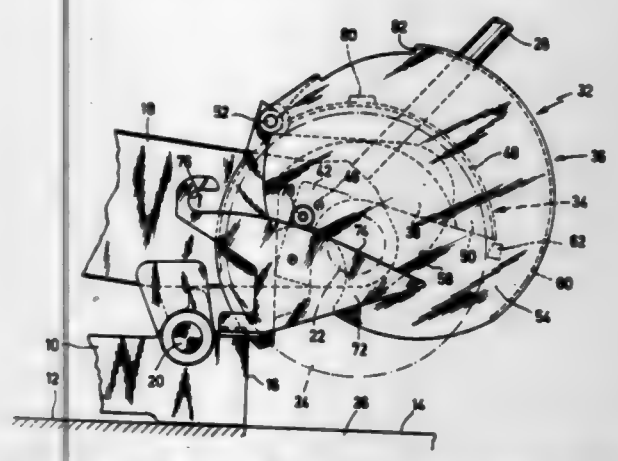
Filed Dec. 10, 1979, Ser. No. 102,124

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856038

Int. Cl.³ B27B *5/18;* B23D *45/04*

U.S. Cl. 83—397 **2 Claims**

1. A protection device or a circular saw blade in a circular saw machine having a tiltable saw assembly which comprises a horizontal saw shaft and which is tiltable about a horizontal pivot axis for the purpose of performing the saw advance, the protection device comprising a first part and a second part which, in a starting position of the saw assembly, together cover the circular saw blade from above at its freely accessible side face and at least at a peripheral portion of the saw blade which is present at the operating side of the saw assembly, the first part being arranged stationarily on the saw assembly and the second part being pivotally mounted on a horizontal bearing shaft provided on the first part in spaced relation to said saw shaft and being engageable over the first part, the said first part embracing the circular saw blade at least from behind and extending substantially as far as a lower peripheral region of the saw blade. the said second part forming a cover which in covering position engages over the circular saw blade and which, in the starting position of the saw assembly, surrounds the circular saw blade at an upper peripheral portion thereof and at the peripheral portion of the saw blade which is present at the operating side of the saw assembly at least as far as the vicinity of a lower peripheral portion of the blade which performs the cutting, the device including contol means by which the second part is adjustable about said bearing shaft relative to the first part, during tilting of the saw assembly, in such a



manner that, in each phase of the tilting movement of the saw assembly, the second part retains substantially the same position in space relative to a horizontal plane, said control means comprising a control cam interacting with a cam-follower member, said cam having a recess engaging the cam-follower member in the starting position of the saw assembly to prevent said second part from being pivoted from its covering position about said bearing shaft when the saw assembly is in its starting position, the second part also being pivotable about said bearing shaft to a release position permitting replacement of the saw blade when the saw assembly has been tilted from its starting position to a point where the cam-follower member has disengaged said recess, and including means releasably locking the second part in the release position, said bearing shaft being positioned in such a manner, that the second part moves automatically from its release position to its covering position under its own weight as soon as said locking means are released.

4,343,214

ARRANGEMENT FOR FASTENING A CIRCULAR SAW BLADE ON A TRUNNION AXIALLY PROJECTING FROM A DRIVE SHAFT

Fritz Schädlich, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,597

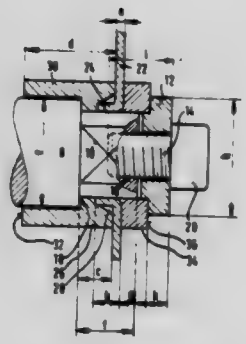
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1979, 2941358

Int. Cl.³ B23D *61/02;* B27B *5/32*

U.S. Cl. 83—543 **13 Claims**

1. An arrangement, comprising a drive shaft rotatable in a given direction and having a trunnion of reduced diameter projecting from one end thereof to form at the junction of drive shaft and trunnion an annular shoulder; a pair of annular clamping elements on said trunnion; circular saw blade means mounted freely rotatably on said trunnion between said annular clamping elements; a pressure ring engaging with an end

face thereof an end face of one of said annular clamping elements directed away from said saw blade means; a screw screwed into a threaded bore in said trunnion and having a head engaging the opposite end face of said pressure ring to thereby press said one annular clamping element against the saw blade means and the other of said annular clamping elements against said shoulder, said annular clamping elements



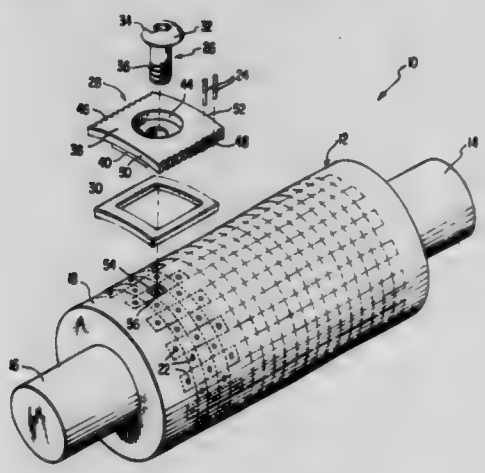
together with said pressure ring and said screw forming slip clutch means connecting said saw blade means to the trunnion of said drive shaft for rotation, said slip clutch means and said saw blade means being constructed to cooperate with each other to permit mounting of said saw blade means on said trunnion only in a correct way in accordance with the direction of rotation of said drive shaft.

4,343,215

PERFORATING CYLINDER

Henry O. Fuchs, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Treasury, Washington, D.C.

Filed Sep. 11, 1980, Ser. No. 186,363
Int. Cl.³ B26F *1/08*
U.S. Cl. 83—670 **6 Claims**



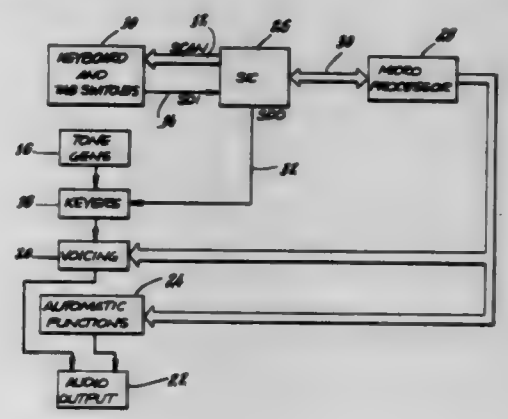
1. In a male perforating cylinder for cooperating with a corresponding female perforating cylinder to perforate stamp material comprising a cylinderical surface, a plurality of spaced-apart aligned perforating pins, a means for clamping said plurality of pins to said surface which permits rapid and easy replacement of said pins, said plurality of pins comprising a first plurality of pins oriented to lie in planes passing through the axis of rotation of said cylinder and a second plurality of pins oriented to lie in planes transverse to said axis, said first plurality of pins consisting of the number of pins necessary to perforate a set of opposing edges of a stamp, said second plurality of pins consisting of the number of pins necessary to perforate the set of remaining opposing edges of the stamp, said means for clamping said plurality of pins comprises at least one clamp, said clamp comprising a cavity, an individually removable clamping member, a resilient member, and an attaching means, wherein said cavity comprises a base and four walls, said four walls further comprises a first opposing pair of walls and a second opposing pair of walls, said first opposing pair of said walls are oriented to lie in said planes passing through the axis of rotation of said cylinder and said second opposing pair of said walls are oriented to lie in said planes transverse to said axis, said first opposing pair of walls contains a first plurality of grooves of substantially semicircular cross section, said second opposing pair of walls contains a second plurality of grooves of substantially greater than semicircular cross section, said clamping member includes a first pair of sides with a first plurality of substantially semicircular cross section grooves therein for cooperating with said first plurality of grooves in said first opposing pair of said walls to receive and retain said first plurality of pins, said clamping member further includes a second pair of sides having straight and ungrooved sides for cooperating with said second plurality of grooves in said second opposing pair of walls to receive and retain said second plurality of pins whereby said walls, said resilient means and said clamping member coact to keep said plurality of pins in alignment to permit proper meshing action with said female perforating cylinder.

4,343,216

SERIAL INTERFACE CIRCUIT FOR AN ELECTRONIC MUSICAL INSTRUMENT

Richard S. Swain, Niles, and Douglas Moore, Vernon Hills, both of Ill., assignors to Norlin Industries, Inc., White Plains, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,561
Int. Cl.³ G10B *3/10*; G10F *5/00*
U.S. Cl. 84—1.01 **7 Claims**



1. In an electronic musical instrument of the type having a programmed microprocessor for controlling selected functions of said instrument and a plurality of key and tab switches responsive to a scan control signal repetitively scanning said switches for developing a serial data signal defining the operated key and tab switches during each of said scans, an interface circuit interposed between said microprocessor and said switches comprising:

means for developing a clock signal;

means responsive to said clock signal for developing said scan control signal;

means coupled to said switches for receiving said serial data signal developed in response to said scan control signal;

memory means comprising a plurality of addressable multibit memory locations;

means responsive to said received serial data signal for causing binary representations of operated ones of said key and tab switches to be stored at said memory locations; and

means enabling said stored representations to be coupled to said microprocessor from said memory means in response to two consecutive scans of said key and tab switches resulting in the development of identical serial data signals immediately preceded by a scan resulting in the development of a serial data signal different therefrom.

4,343,217
DUAL MODE GUITAR

Reid Brody, 5525 W. Warren St., Morton Grove, Ill. 60053

Filed Mar. 12, 1981, Ser. No. 242,881
Int. Cl.³ G10D *1/08*; G10G *3/00*; G10H *3/18*
U.S. Cl. 84—1.16 5 Claims

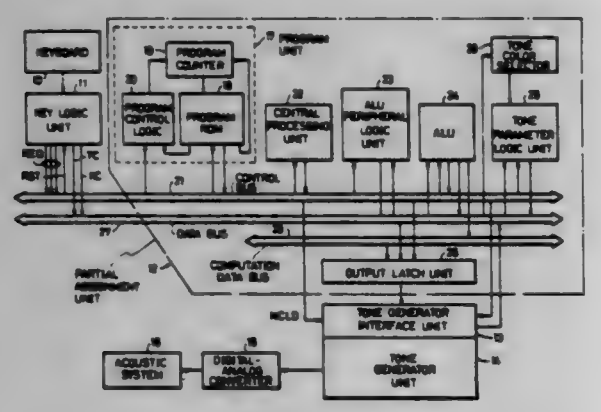


1. A stringed musical instrument of the guitar type comprising a body portion, a first neck secured to and radiating outwardly from said body portion, a second neck secured to and radiating from said body portion in a direction substantially opposite but non-colinear to said first neck, each of said necks adapted to carry strings under tension, a mechanical rotary connection attached to the rear of said body proximate to the center of gravity of said body and adapted to be attached to a harness adapted to be worn by a performer.

4,343,218
ELECTRONIC MUSICAL INSTRUMENT

Tsuyoshi Futamase, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 27,244, Apr. 5, 1979, abandoned. This application Nov. 19, 1980, Ser. No. 208,268
Claims priority, application Japan, Apr. 11, 1978, 53/42431
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.21 28 Claims



1. A polyponic electronic musical instrument of a type wherein notes to be played are selected by depression of keys, and wherein a tone is produced by separately calculating the amplitude contribution of each partial of the tone and accumulating the partials, comprising:

tone generator means for calculating partials individually at a specific number of time slots, each time slot being available for assignment to any partial of any selected note;

partial tone assignment means for assigning, responsive to depression of a key designating a selected note, each partial to be produced individually for that note to any available one of the time slots;

said tone generator means calculating the partials having been assigned to available time slots, and accumulating said calculated partials to produce said tone, assigned partials for different, concurrently selected notes being assigned to separate arbitrary time slots.

26. A polyphonic keyboard electronic musical instrument in which a time shared tone generator synthesizes a tone by separate evaluation of each partial associated with each note selected by key depression, the improvement comprising:

tone parameter storage means for storing, for every tone partial, separate amplitude and/or envelope duration touch sensitivity scale factors for scaling the amplitude and/or envelope duration of the respective partial,

touch responsive means for determining the elapsed transit time of each key during the depression thereof, said time being indicative of keyboard touch,

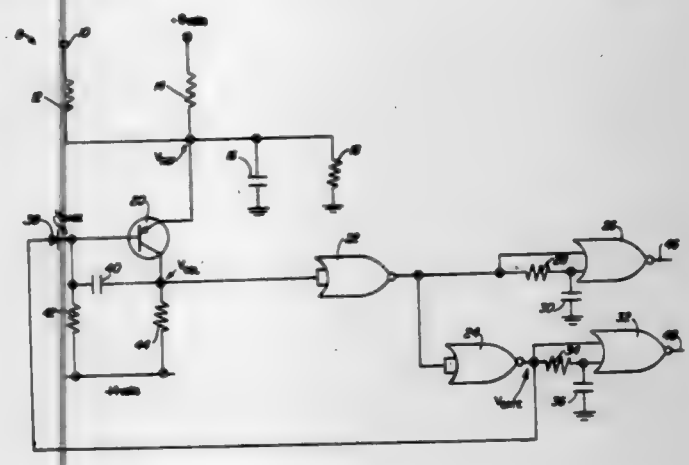
touch calculation means, responsive to the elapsed transit time determined by said touch responsive means and operative prior to tone production, for computing amplitude and/or envelope duration scale values for each partial in response to the contents of said touch responsive means and the scale factors for said each partial accessed from said tone parameter storage means, and

tone generator interface unit means for providing said computed scale values independently to said tone generator in the respective time-shared time slots associated with corresponding individual partials for use in said evaluation.

4,343,219
DELAY LINE OSCILLATOR

Dale M. Uetrecht, Colerain Township, Hamilton County, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Jun. 24, 1980, Ser. No. 162,631
Int. Cl.³ G10H *1/043*
U.S. Cl. 84—1.24 5 Claims



1. In an electronic musical instrument, a delay modulation apparatus comprising:

voltage-controlled oscillator means for providing output clock signals having a period that is directly proportional to a modulation control voltage, said voltage-controlled oscillator means having a transistor, bias means connected to a first source of operating potential for biasing the emitter of said transistor, input means for connecting the emitter of said transistor to a source of modulation control voltage, capacitive means connected between the base of said transistor and the collector of said transistor, first impedance means connecting the base of said transistor to a second source of operating potential, second impedance means connecting the collector of said transistor to the second source of operating potential, first inverter means having its input connected to the collector of said transistor for providing a first output clock signal, second inverter means having its input connected to the output of said first inverter means for providing a second output clock signal, and connecting means connecting the output of said second inverter means to the base of said transistor;

whereby when the second clock output of said second inverter means is in a first state, said transistor is in the off state thereby causing said capacitive means to discharge through said second impedance means and the voltage level at the collector of said transistor to decrease until the

threshold voltage of said first inverter means is reached, at which time the first clock output of said first inverter means switches from a second state to the first state thereby causing the second clock output of said second inverter means to switch from the first state to the second state, thereby in turn causing said transistor to switch to the on state, thereby further causing said capacitive means to charge through said first impedance means until the threshold voltage of said first inverter means is reached, at which time the output of said first inverter means again switches states and the cycle is repeated; and

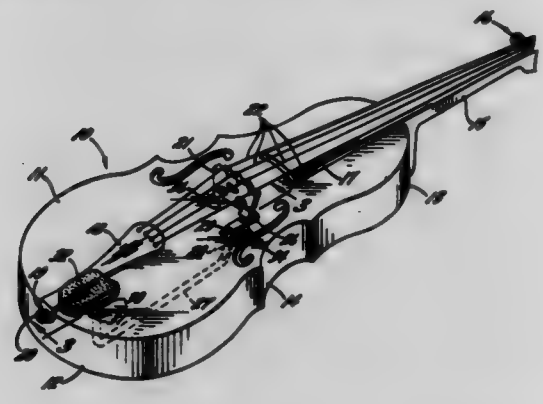
analog delay line means having an output terminal, an input terminal for receiving an input signal and a clock terminal for receiving the first and second clock signals from said voltage-controlled oscillator means, said analog delay means producing delay in a signal applied at the input of said analog delay line means that is directly proportional to the period of the first and second clock signals, and for providing a delayed signal at the output terminal of said analog delay line means, whereby the amount of delay introduced to a signal between the input terminal and the output terminal of said analog delay line means is directly proportional to the modulation control voltage applied to the input means of said voltage-controlled oscillator means.

4,343,220

VIBRATO ATTACHMENT FOR STRINGED INSTRUMENTS

Eric G. Lundquist, 2340 - 22nd St., Rockford, Ill. 61108

Filed Apr. 13, 1981, Ser. No. 253,789
Int. Cl.[3] G10D *3/00*
U.S. Cl. 84—313 6 Claims



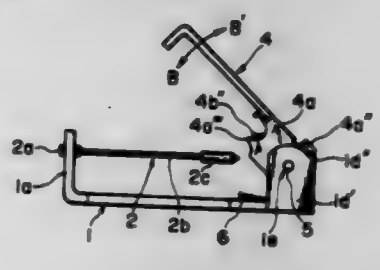
1. In a stringed musical instrument, the combination of, a hollow sound box having top and bottom walls joined by end walls and side walls, an elongated neck projecting outwardly from one end of said sound box, a peg box mounted on the outer end of said neck, a tail piece mounted on the top of said sound box adjacent the other end of said box, a bridge disposed on top of said box between said neck and said tail piece, a plurality of spaced strings extending from said tail piece over said bridge to said peg box and tensioned by the peg box to bear downwardly on the bridge, a member disposed between the top of said box and said bridge and movable relative to the box to raise and lower the bridge thereby to increase and decrease the tension of said strings and cause a vibrato as the instrument is played, a first hole formed in the top of said box adjacent said member, a second hole formed in said box and at a point spaced from said first hole to be adjacent a part of the body of a player of the instrument, an actuator disposed outside said box and adjacent said second hole to be engaged and moved by the body of the player, an elongated movable rod disposed within said box and extending from said first hole to said second hole, a first connector projecting through said first hole and rigidly joining said rod and said member, said connector being operable to move said member as said rod is moved thereby to move said bridge up and down, and a second connector projecting through said second hole to join said actuator and said rod and operable to move said rod upon movement of said actuator.

4,343,221

ACOUSTIC SOUND GENERATING DEVICE

Fumito Komatsu, Shiojiri, and Makoto Orii, Nagano, both of Japan, assignors to Kabushiki Kaisha Sankyo Seki Seisakusho, Nagano, Japan

Filed May 13, 1980, Ser. No. 149,593
Claims priority, application Japan, May 24, 1979, 54-69894[U]
Int. Cl.[3] G10D *13/08*
U.S. Cl. 84—404 14 Claims



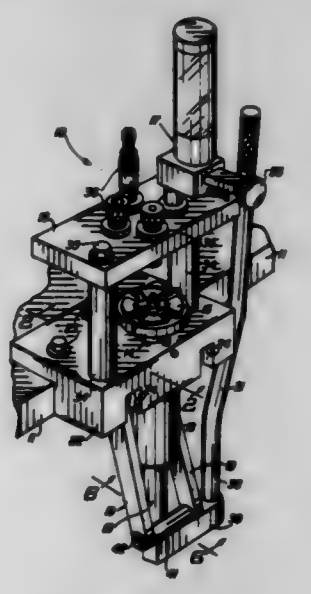
1. An acoustic sound generating device comprising a base frame, at least one vibrating rod member formed of a base end portion secured to said base frame, an intermediate portion having a small diameter and a free end portion to be picked, and pawl segment means, movably supported by said base member and having at least one associated picking projection, for picking said free end portion of said vibrating rod while moving along a predetermined path from a first position to a second position to thereby produce acoustic sounds and for picking said free end again while returning along said predetermined path from said second position to said first position.

4,343,222

SHELL RELOADING MACHINE

Michael J. Dillon, 7021 E. Paradise Dr., Scottsdale, Ariz. 85254

Filed Oct. 16, 1980, Ser. No. 197,540
Int. Cl.[3] F42B *33/02*
U.S. Cl. 86—27 7 Claims



1. A shell reloading machine comprising in combination:

a frame,

a revolubly mounted shell registering plate adapted to carry a plurality of shells,

a support mounted on and arranged to extend above said frame and said plate,

a plurality of tools mounted on said support, one at each of a plurality of work stations for preparing and reloading

shells depending from said plate and arranged in a circle so as to register with a plurality of shells held by said plate,

said tools sequentially comprising at each of said work stations a sizing die for reshaping the shells' outer wall and dislodging the spent primer from a primer cavity in the shell, primer insertion tool for inserting a new primer in the primer cavity of the shell, a powder dispenser and a bullet positioner and securing element,

a drive cylinder comprising piston means mounted below said plate,

said piston means being connected to said plate for moving shells mounted thereon into engagement with said tools,

said plate being revolubly mounted on said piston means, and

a lever arm pivotally mounted on said frame and connected at one end to said piston means for moving said plate toward and away from said tools to simultaneously execute various operations on the shells,

said lever arm comprising an operating arm and a linkage,

said linkage being pivotally connected at one end to said frame and at the other end to said operating arm,

whereby pivotal movement of said operating arm causes relative movement of said piston means.

4,343,223

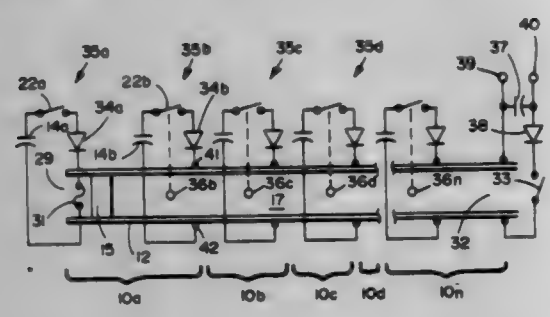
MULTIPLE STAGE RAILGUN

Ronald S. Hawke, Livermore; Jonathan K. Scudder, Pleasanton, and Kristian Aaland, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 23, 1980, Ser. No. 153,365

Int. Cl.³ F41F *1/00, 1/02, 7/00*

U.S. Cl. 89—8 **9 Claims**



1. A multiple stage magnetic railgun (10) having breech and discharge ends (29,32), comprising:

a pair of electrically conductive rails (11,12) extending between said breech and discharge ends (29,32), said rails (11,12) being spaced apart to define a bore (17) therebetween, said pair of rails (11,12) being divided into a plurality of successive rail stages (10*a–n*) along the length of said railgun (10),

energizing means (35*a–n*) for electrically energizing each successive rail stages (10*a–n*) in sequence to accelerate an arc (13) through the energized stage and in a direction toward the discharge end (32) of said railgun (10), and

means (34*a–n*, 55*a–n*) for preventing propagation of energy from an energized stage (10*b–n*) back towards the breech end (29) of said railgun (10).

4,343,224

AUTOMATIC CONTROL SYSTEM

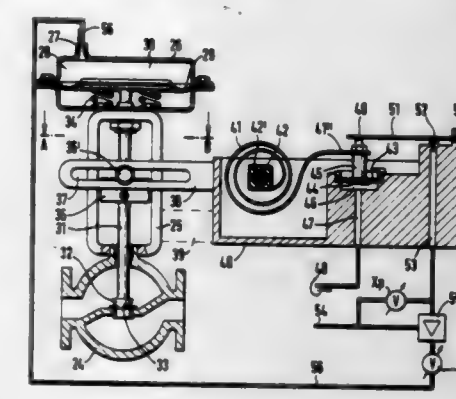
Lothar Kemmler, Mörfelden, Fed. Rep. of Germany, assignor to Samson Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

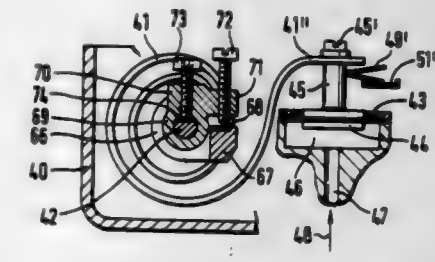
Filed Oct. 17, 1979, Ser. No. 85,591

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1978, 2847380; Feb. 14, 1979, 2905577; Feb. 15, 1979, 2905799

Int. Cl.³ F15B *13/16*

U.S. Cl. 91—47 **7 Claims**





1. An automatic position control mechanism powered by a servo-motor, comprising:

a housing;

a servo driven element rotatable about an axis;

a rotatable shaft mounted in said housing along said axis;

a sensing unit for sensing pressure including a diaphragm member responsive to the sensed pressure and having a rest position in a common plane with the axis of said rotatable shaft; and

a spiral spring having one end connected to said rotatable shaft such that the tension of said spiral spring is increased and decreased in accordance with the rotation of said servo driven element, and another end connected by a pin to said diaphragm member to transmit the tension of said spiral spring to said pressure sensing unit, said servo driven element being connected to said rotatable shaft.

4,343,225

FLUID ACTUATOR

Dean Runkle, LaPorte; Robert K. Wilson, Granger, and William E. Monroe, Syracuse, all of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 2, 1980, Ser. No. 155,355

Int. Cl.³ F01B *7/18;* F01L *23/00*

U.S. Cl. 91—52 **17 Claims**

1. In an actuator;

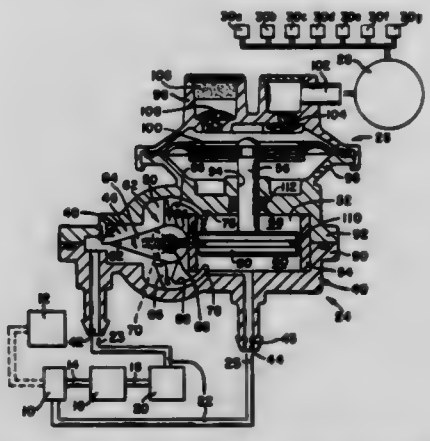
a housing having an inlet and an outlet for communicating a pressurized fluid through said housing;

an output member movable relative to said housing and exposed to the pressurized fluid therein; and

a valve assembly movable within said housing from a first position to a second position, said valve assembly substantially closing communication from the inlet to the outlet in the first position,

said valve assembly communicating fluid pressure to one side of said output member to cause the latter to move in a first direction relative to the housing, said output member being

movable in the first direction to engage said valve assembly to move the latter away from the first position toward the second position, said valve assembly communicating fluid pressure to another side of said output member to cause the latter to move in a second direction relative to the housing, said output member being movable in the second direction



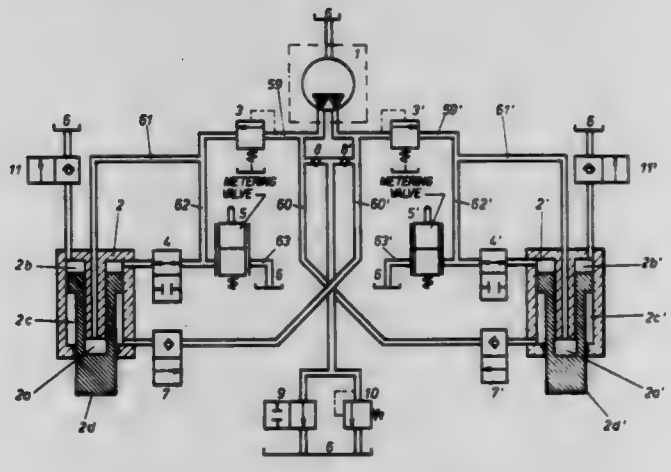
to engage said valve assembly to move the latter away from the second position toward the first position, and said output member defining a differential area between opposite sides thereof such that communication of fluid pressure to both sides of said output member bias the latter to move away from a neutral position.

4,343,226

ARRANGEMENT FOR HYDRAULIC PRESSES AND BENDING PRESSES

A. A. Ribeiro de Almeida, Porto, Portugal, assignor to Firma Inter-Hydraulik GmbH, Berneck, Switzerland

Filed Jul. 10, 1979, Ser. No. 56,254
Claims priority, application Portugal, Jul. 11, 1978, 68274
Int. Cl.³ F01B *25/04*; F15B *11/22*
U.S. Cl. 91—171 **7 Claims**



1. A hydraulically actuated machine comprising two parallel spaced apart multiple-acting cylinders having respective pistons connected with opposite end portions of a beam that has a predetermined orientation substantially transverse to the cylinder axes, and wherein the pistons must be constrained to move at equal rates through their extension strokes to maintain said orientation of the beam, said machine having two effectively separate sources of pressure fluid at substantially equal flow rates, one for each of said cylinders, and each of said cylinders having at a blind end thereof a blind end chamber into which pressure fluid is fed for extension of its piston and at a rod end thereof a rod end chamber into which pressure fluid is fed for retraction of its piston, said machine being characterized by:

A. each cylinder having a coaxial projection therein that extends into a well in its piston and defines an inner chamber within the piston into which pressure fluid can be fed to impose an extending force upon the piston, the blind end chamber in the cylinder being annular and in surrounding relation to said coaxial projection;

B. bifurcated duct means for each cylinder, each said duct means having

(1) a common portion connected with the pressure fluid source for the cylinder and

(2) a pair of branch portions,

(a) one of which is connected with the inner chamber of the cylinder and

(b) the other of which is connected with the blind end chamber of the cylinder;

C. means connecting the rod end chamber of each cylinder in feedback relation to the pressure fluid source for the other cylinder so that during the extension strokes of the pistons fluid expelled from the rod end chamber of each cylinder augments the supply of fluid fed to the blind end chamber of the other cylinder;

D. a two-condition valve for each cylinder, each said two-condition valve being connected in said other branch portion of the bifurcated duct means for the cylinder and being shiftable between

(1) a closed condition blocking flow of fluid from the pressure fluid source for the cylinder to the blind end chamber of the cylinder, so that pressure fluid can flow only to the inner chamber, for rapid extension of the piston, and

(2) an open condition permitting flow of pressure fluid from said source to the blind end chamber as well as the inner chamber, for slower and more forceful extension of the piston;

E. a pair of synchronizing valves, one for each cylinder, each having a metering valve element which is progressively movable between a closed position and a fully open position;

F. means connecting the synchronizing valve for each cylinder between said common portion of the bifurcated duct means for the cylinder and a vent outlet, to provide for venting of pressure fluid flowing towards said branch portions at a rate that increases with increasing displacement of said metering valve element towards said open position; and

G. a pair of sensor means, one for each synchronizing valve, each said sensor means being connected with an end portion of the beam to which the cylinder for its synchronizing valve is connected and being arranged to displace the metering valve element of its synchronizing valve towards its open position substantially proportionally to displacement of its end of the beam away from said orientation in the direction of piston extension.

4,343,227

HYDRAULIC PERCUSSION APPARATUS

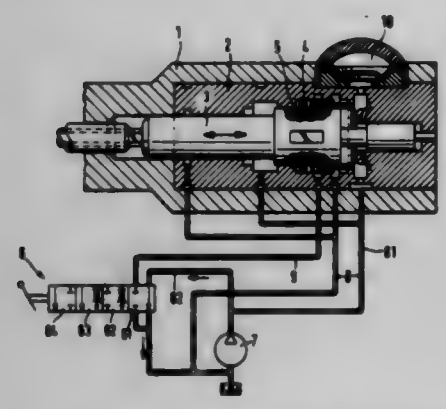
Esa Karru; Pekka Salmi, both of Tampere, and Hannu Paasonen, Nokia, all of Finland, assignors to Oy Tampella AB, Finland

Filed Jun. 23, 1980, Ser. No. 162,157
Claims priority, application Finland, Jun. 26, 1979, 792019
Int. Cl.³ F01B *7/18*
U.S. Cl. 91—276 **5 Claims**

1. In a hydraulic percussion apparatus comprising:
a body member,
a cylinder disposed within said body member,
a piston reciprocable within said cylinder,
a distributing valve controlling energization of said percussion apparatus,
a hydraulic pump,
an accumulator,
means providing hydraulic channels between said pump and said accumulator to thereby form a percussion circuit,
means providing hydraulic channels with said distributing valve to thereby form a distributing valve circuit,

means providing a free circulation circuit in parallel with said percussion circuit, the improvement comprising:

a start-and-stop valve having a plurality of positions, including



an intermediate position in which the pressure in said percussion circuit rises up to a predetermined value while said distributing valve circuit remains closed independently of the pressure in said percussion circuit.

4,343,228

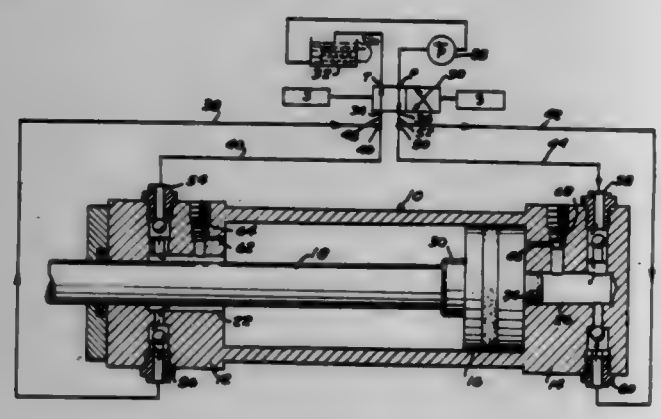
HYDRAULIC CYLINDER ARRANGEMENT

Bernard J. Wallis, 25200 Trowbridge Ave., Dearborn, Mich. 48124

Continuation of Ser. No. 6,274, Jan. 25, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,337

Int. Cl.³ F15B *15/22, 13/042*

U.S. Cl. 91—457 **3 Claims**



1. In combination, a hydraulic cylinder having a bore therein, a piston adapted to be reciprocated axially between the opposite ends of the bore in response to a differential pressure across the piston, said piston being connected to a work output member, a pair of unidirectional, oppositely acting check valves directly adjacent each end of the cylinder, one side of each check valve being directly connected with the adjacent end of the cylinder bore by means forming a short passageway, two pairs of relatively long, individual hydraulic conduits connected at one end, one each to the other side of each check valve, the other ends of the individual conduits in each pair being connected together, a control valve located remotely from said cylinder and having a plurality of ports thereon, one of said ports connected to a pump, another of said ports being connected to sump, a heat exchanger for cooling the oil returned to sump, the connected ends of one pair of said conduits being connected with a third port on the control valve by means forming a short passageway and the connected ends of the other pair of conduits being connected to a fourth port on said control valve by means forming another short passageway, said control valve being operable to supply hydraulic fluid under pressure to either of said third or fourth ports and simultaneously connect the other of said third and fourth ports with sump, said individual conduits each having a length many times greater than the length of all of said short passageways, said check valves providing the sole communication between said conduits and the cylinder bore and being responsive at all times to open and close in response to the pressure differential between the adjacent end of the cylinder bore and the associated conduit so that one of the long conduits in each pair comprises an inlet passageway to the cylinder and the other an outlet passageway from the cylinder, whereby, when the piston is reciprocated between the opposite ends of said bore, all of the fluid discharged through said outlet passagway conduits from the opposite ends of the cylinder is constrained by said oppositely acting check valves to flow to sump before it is directed back into either end of the cylinder through said inlet passageway conduits.

4,343,229

ASSEMBLED PISTON FOR ENGINE

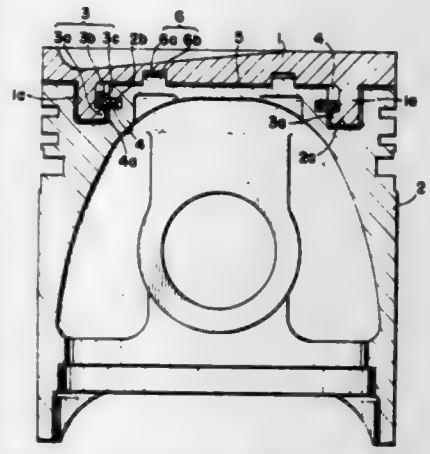
Yoshihiko Tsuzuki, Nagoya; Kiyoshi Uchida, and Toshio Tanahashi, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 3, 1979, Ser. No. 35,682

Claims priority, application Japan, Jun. 15, 1978, 53-725870

Int. Cl.³ F16J *1/00*

U.S. Cl. 92—212 **13 Claims**



1. An assembled engine piston comprising

a hollow metal body having an axially extending annular groove in a top end thereof, said groove opening through a top surface of said body, the metal of the body being selected from the group consisting of aluminum or an aluminum alloy,

a unitary ceramic material head on the top of said body, said head comprising an end wall covering the top end of the body and an axially extending annular projection extending into said groove,

radially extending interengaging means within said annular groove and carried by said projection and said body for securing said head to said body against relative axial movement, said interengaging means comprising, first and second inclined surfaces movable into a position of mating engagement in response to rotation of said head with respect to said body to tightly seat the head on the body and

means to prevent relative rotation of said head and body, after assembly, said means comprising, a closed end cavity formed in said head, said cavity opening toward said body, and a boss deformed into said cavity by cold or hot pressing a portion of the body into the cavity from inside the body.

4,343,230

AUXILIARY DEVICE FOR CLIMATE-CONTROL UNITS IN MOTOR VEHICLES

Gustaf B. Lundström, Göteborg, Sweden, assignor to AB Volvo, Göteborg, Sweden

Filed Jan. 15, 1980, Ser. No. 112,323

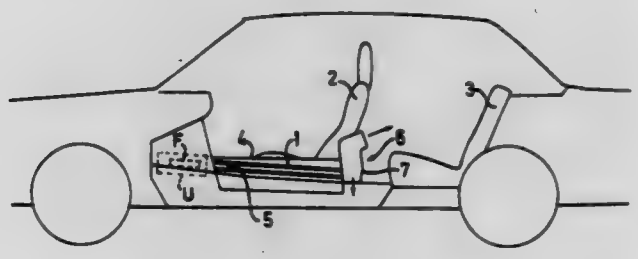
Claims priority, application Sweden, Jan. 25, 1979, 7900680

Int. Cl.³ B60H *1/00*

U.S. Cl. 98—2.05 **3 Claims**

1. In a motor vehicle, in combination, a climate-control unit including fan means to the exhaust side of which ducts are

connected with conduct air both to the space in front of the front seat of the vehicle and to the space between the front seat and the back seat, and an auxiliary device comprising a housing with at least one inlet, which is connected to at least one duct which conducts air from said fan means to the space between the front and back seats, and at least one outlet, said housing containing an electrically driven fan whose suction side faces the inlet of the housing and whose discharge side faces the



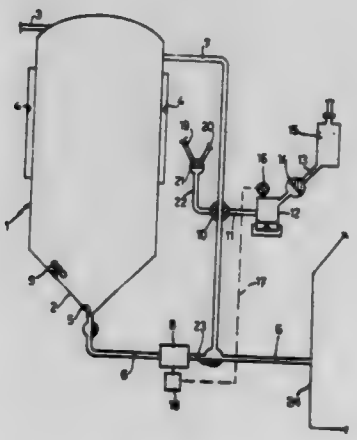
outlet of the housing, said housing outlet having at least one outlet vent which is arranged to produce an air flow towards the floor of the vehicle, and at least one outlet vent which is arranged to produce an air flow directed towards the back seat, said housing being provided with manually adjustable damper members for regulating the distribution of air between said vents and with manually adjustable means for starting and stopping the fan and for manual adjustment of the r.p.m. of the fan.

4,343,231

BREWING APPARATUS HAVING SAMPLING MEANS DELIVERING SUSPENSION TO FERMENTING VESSEL

Andre F. Devreux, Mons, Belgium, assignor to Compagnie Internationale de Participation et d'Investissement "Cipari" S.A., Luxembourg, Luxembourg

Filed Jan. 22, 1981, Ser. No. 227,555
Claims priority, application Luxembourg, Feb. 7, 1980, 82145
Int. Cl.³ C12G *3/04, 3/02*
U.S. Cl. 99—277.2 9 Claims



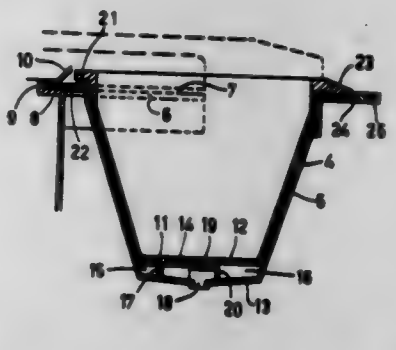
1. Plant for adjusting the amount of yeast to be introduced into a fermentation enclosure, comprising a container having a conical bottom containing yeast suspended in a liquid and a pipe connecting the bottom of said container to at least one fermentation tank, as well as a regulating pump, for supplying yeast from the yeast container into said fermentation tank, a pipe for recycling the suspended yeast contained in said container, means for insuring, during a predetermined time interval, the recycling of the suspension of yeast from the bottom of said container to the upper part of this container, means for taking from said recycling pipe, at selected moments, a sample having a predetermined volume of the yeast suspension, during the recycling thereof, and for sending said sample into a little fermenting vessel to which a nutrient agent is supplied, means for determining the fermentative power of the yeast sample in the fermenting vessel and means for adjusting the yeast supply of the fermentation tank in accordance with the fermentative power of the yeast sample as determined in the fermenting vessel.

4,343,232

COFFEE MAKER

Wierd Corbier, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 202,036
Claims priority, application Netherlands, Nov. 15, 1979, 7908339
Int. Cl.³ A47J *31/06*
U.S. Cl. 99—299 3 Claims



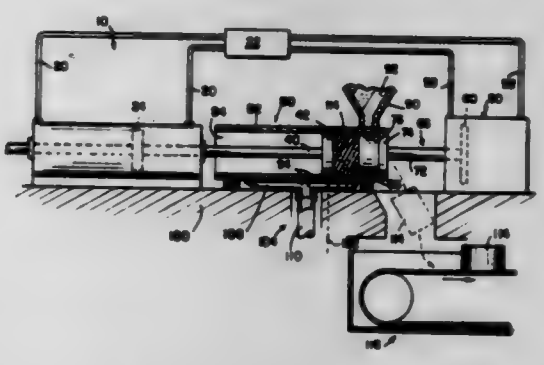
1. A coffee maker including a housing and a filtering assembly removably suspendible in the housing; said filtering assembly comprising a filter vessel provided with an outlet opening in its bottom, a filter-vessel holder surrounding the filter vessel and provided with an outlet opening in its bottom, the filter vessel bottom being spaced from the filter-vessel holder bottom, an upright partition arranged on the bottom of the filter-vessel holder and dividing the space between the filter vessel bottom and the filter-vessel holder bottom into a discharge section and a drip reservoir, an upright pin extending from the filter-vessel holder bottom for engagement with the outlet opening of the filter vessel, and means to rotate the filter vessel and the filter-vessel holder with respect to each other to vary the position of the upright pin for control of the rate of flow of coffee through the discharge section and also alternatively to position the filter vessel outlet opening over the drip reservoir.

4,343,233

APPARATUS FOR PRODUCING AND COLLECTING A LIQUID EXTRACT AND A DRY BY-PRODUCT FROM A MASH

Kermit H. Burgin, R.R. 1, Box 334, Whitestown, Ind. 46075

Filed Mar. 31, 1980, Ser. No. 135,922
Int. Cl.³ B30B *9/06*
U.S. Cl. 100—116 12 Claims



1. An apparatus for producing and collecting a liquid extract and a dry by-product from a mash of material, comprising: an extraction chamber having at least one open end, the chamber including a material inlet opening in proximity to the open end for filling the chamber with the mash and a liquid outlet for collecting the liquid extract, a first plunger movable in the chamber, a second plunger movable relative to the open end, means for moving the first and second plungers to close the open end and to compress the mash within the extraction

chamber thereby to extract the liquid and form a pressed dry by-product therefrom, the second plunger including closure means received in the open end in response to the moving means to close the filler opening during compression of the mash, a by-product outlet opening for collecting the dry by-product, and means for expelling the by-product from the extraction chamber.

4,343,234

PRESSURE-FIXATION APPARATUS

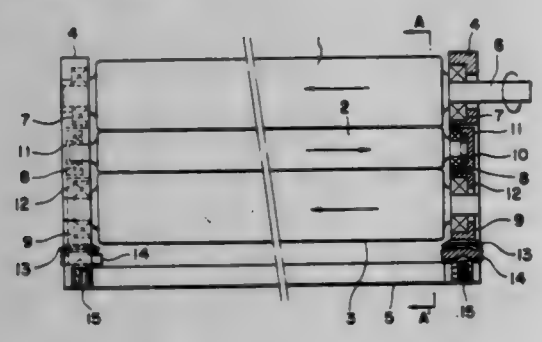
Yoshitaka Sasaki, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Japan

Filed Apr. 2, 1979, Ser. No. 26,210

Claims priority, application Japan, Mar. 31, 1978, 53/37925; Jun. 26, 1978, 53/77303

Int. Cl.³ G03G *15/20*

U.S. Cl. 100—158 R 7 Claims



1. A device for fixing a dry, pressure-fusible toner image to a carrier sheet by pressure, the device comprising:

A housing member including a pair of vertically oriented side frame members,

first and second rolls having different diameters and forming a pair of pinch rolls, said rolls being journaled at both their ends in the side frame members to form a nip through which the carrier sheet, having a dry, pressure-fusible toner image thereon, is passed to fix the toner image to the sheet,

means for imparting opposing axially directed forces to said pinch rolls to rub the carrier sheet passing therebetween and to prevent offset images and creases from occurring on the carrier sheet, said means including means for driving one of said pair of pinch rolls by surface contact with the other of said pair and means for positioning said pinch rolls with a skew angle ranging from about 10′ to 1°30′ between the axes of said pinch rolls, said skew angle being measured between the projections of said axes on a horizontal plane, and

a third roll resiliently pressing the second roll to the first roll.

4,343,235

FILTER PRESSES

Paul F. Jones, Newcastle-Under-Lyme, England, assignor to Johnson-Progress, Ltd., Stoke-On-Trent, England

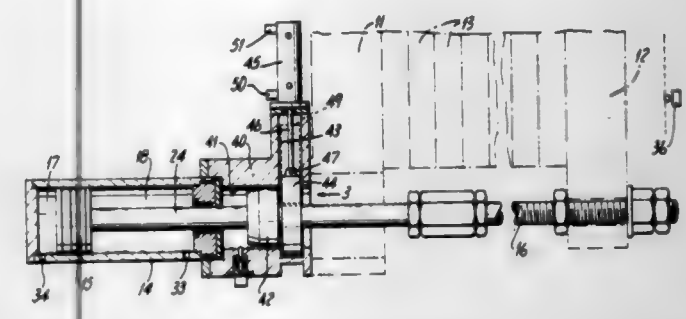
Filed Jan. 31, 1980, Ser. No. 117,335

Claims priority, application United Kingdom, Jan. 31, 1979, 7903411

Int. Cl.³ B30B *7/00, 15/10*

U.S. Cl. 100—204 4 Claims

1. A plate type filter press comprising a king end, a queen end horizontally movable toward and away from the king end, a stack of horizontally movable filter plates between said king end and said queen end, a piston-and-cylinder unit operable to open and close the press, said piston-and-cylinder unit including a cylinder connected to one of said king end and said queen end and a horizontally-extending piston rod connected to the other of said king end and said queen end, a lock collar fast on said piston rod to move therewith, a lock gate movable in a direction at right angles to the axis of said piston rod into and out of the path of the lock collar, and a lock piston-and-cylinder coupled to said lock gate to move said lock gate into the



path of said lock collar when the press is closed thereby to lock the press mechanically in the closed position.

4,343,236

PRESTRESSED PRESS FRAME

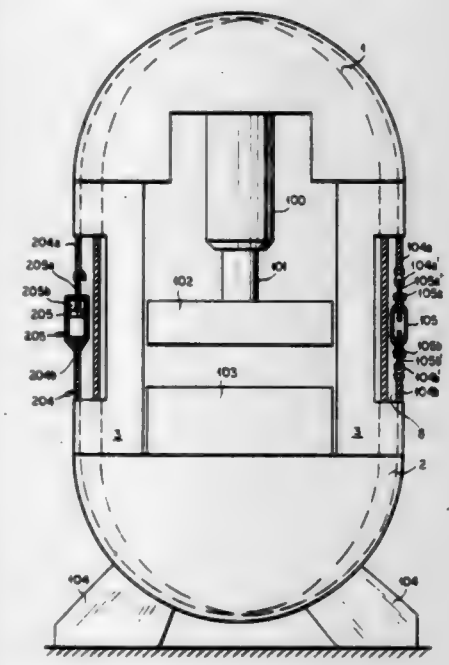
Eduard J. C. Huydts, Düsseldorf-Gerresheim, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,024

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007975

Int. Cl.³ B30B *15/04*

U.S. Cl. 100—214 5 Claims



1. A prestressed press frame comprising:

an upwardly complex head;

a downwardly complex bed underlying and spaced from said head, said bed and said head extending in a common direction;

at least a pair of posts disposed between said bed and said head on opposite sides of the frame, said posts being formed with outwardly open compartments;

a multiplicity of tension members extending around said bed and said head in a double-U pattern and passing through said compartments, each of said tension members lying in common vertical plane perpendicular to said direction, said tension members being spaced apart in said direction, each tension member defining in the respective plane a stress section, the press sections of alternate tension members in succession in said direction being offset to one side and the other side of said frame; and

a respective stressing unit connecting opposite ends of each tension member and applying tension thereto, the stressing units for successive tension members in said direction being received in said compartment on alternate sides of said frame with the stressing units always engaging the ends of outermost tension members in said compartment.

4,343,237

APPARATUS FOR MANUFACTURING CABLE HARNESSES AND PRINTER THEREFOR

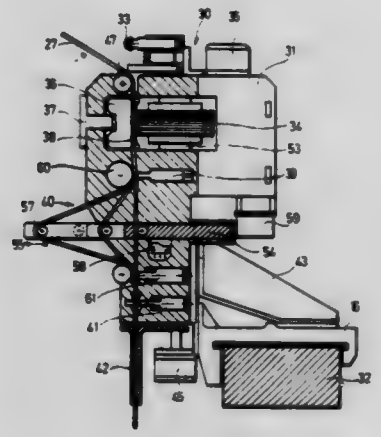
Dieter Endruhn, Appel, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,783

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939360

Int. Cl.³ B31F *1/07;* B44B *5/00;* B21F *45/00;* B41F *13/56*

U.S. Cl. 101—11 9 Claims



1. A mounting apparatus for continuously manufacturing a cable harness including a plurality of initially unmarked cables, comprising table means including a table top and pin means extending from the table top, cable coil magazine means arranged at one side of said table means for holding a plurality of cable coils and for cooperation with said table means, program controllable cable laying head means, carriage means for supporting said cable laying head means on said table means, said magazine means comprising means for feeding a cable in a main feed advance direction from any one of said cable coils toward and through said cable laying head means, said cable laying head means comprising as an integral part thereof means for marking a cable and means for buffering a cable, said buffering means being arranged downstream of said cable marking means as viewed in said main feed advance direction and means for moving said buffering means in a direction extending substantially perpendicularly to said main feed advance direction of a cable being laid, to such an extent that a length of cable is buffered to form a loop prior to its marking which loop provides a dwell time sufficient for said marking which thus takes place as part of the continuous cable harness manufacturing with a continuous cable feed advance.

4,343,238

COUNTING OR PRINTING MECHANISM FOR CONSECUTIVE COUNTING NUMBERING

Ulf Koch, Eberbach, and Gerhard Nagel, Hirschhorn, both of Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,497

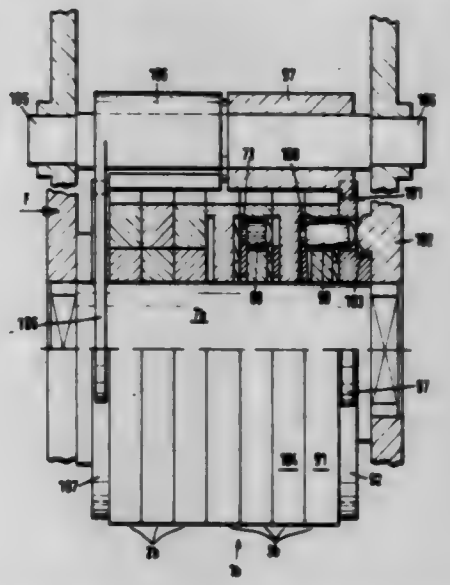
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1980, 3001321

Int. Cl.³ B41J *45/00*

U.S. Cl. 101—85 14 Claims

1. In a printing device comprising a frame, plural individually rotatable printing wheels, and holding means for holding each wheel individually in a particular rotated position, each of said printing wheels mounted by an axial bore along the longitudinal axis of a common rotatable shaft, at least two of said wheels being counting wheels having numerical characters spaced about and on an outer periphery thereof such that each counting wheel provides a different place of a plural place number, mechanical advancing means for consecutive, stepwise rotary indexing of said counting wheels to consecutive counting positions, said advancing elements coupleable together in a predetermined counting rhythm such that two adjacent counting wheels are rotatable together by one of said advancing elements according to said rhythm, the improvement comprising:

each of said counting wheels comprising a driving side surface and a driven side surface such that the driven side surface of each counting wheel abuts and slidably engages



the driving side surface of a higher place wheel, each driving side and driven side being recessed, respectively, to provide a driving side recess and a driven side recess within which said position holding means and said advancing means are concealed from said outer periphery and actuatable during said indexing such that closer spacing of each place of said plural place number is provided.

4,343,239

ELECTROMAGNETIC RELEASE MECHANISM FOR PRINT HAMMERS OR THE LIKE

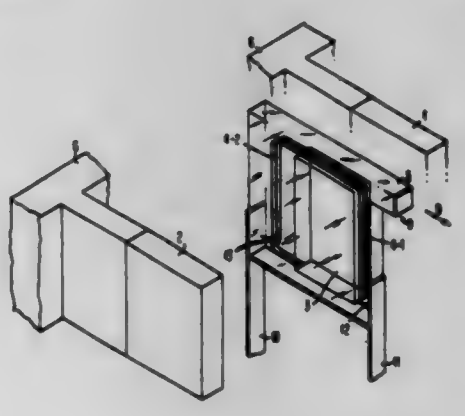
Hans-Gordon Seifert, Weil im Schonbuch, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,898

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944287

Int. Cl.³ B41J *9/30*

U.S. Cl. 101—93.34 3 Claims



1. An actuator mechanism comprising

an actuator element movable in a linear direction including an actuator permanent magnet having opposed sides parallel to the direction of motion,

said actuator magnet having a magnetization vector perpendicular to the direction of motion of said actuator element,

field magnet means forming an interactive magnetic field with said actuator magnet,

said field magnet means comprising a pair of stationary parallel edge aligned permanent magnets on opposite sides of said actuator magnet,

said stationary field magnets having a magnetization vector perpendicular with said direction of motion and anti-par-

allel with said magnetization vector of said actuator magnet,

said stationary field of magnets having aligned front and rear edges, relative to the direction of motion, misaligned with front and rear edges of said actuator magnet and coacting therewith to produce magnetic edge forces whereby said actuator element is maintained at an initial stop position, and

actuating means for moving said actuator element in said direction of motion from said stop position to a second position wherein said magnetic edge forces accelerate said actuator in said direction of motion including

coil means surrounding said actuator magnet and carried by said actuator element for generating a magnetic field,

said coil means having a coil plane parallel with said stationary permanent magnets,

said coil means in said stop position having a first coil portion external to and a second coil portion within a high flux density region of said interactive magnetic field produced by said stationary permanent magnets,

said coil means being energizable for producing a release force whereby said actuator magnet is moved against said magnetic edge forces from said stop position to said second position in which said edge forces accelerate said actuator element in said direction of motion.

3. An actuator mechanism comprising

an actuator element movable in a linear direction including first and second actuator permanent magnets having opposed sides parallel to the direction of motion and aligned one behind the other,

said first and second actuator magnets having opposite magnetization vectors perpedicular to said direction of movement,

field magnet means forming an interactive magnetic field with said first and second actuator magnets,

said field magnet means comprising a first pair of stationary parallel permanent magnets on opposite sides of said first actuator magnet and a second pair of stationary parallel permanent magnets on opposite sides of said second actuator magnet,

said first pair of stationary field magnets having a magnetization vector perpendicular with said direction of motion and anti-parallel with said magnetization vector of said first actuator magnet,

said second pair of stationary field magnets having a magnetization vector perpendicular with said direction of motion and anti-parallel with said magnetization vector of said second actuator magnet,

said first and second pairs of stationary field magnets having mutually aligned front and rear edges, relative to the direction of motion misaligned respectively with front and rear edges of said first and second actuator magnets and coacting respectively therewith to produce magnetic edge forces whereby said actuator element is maintained at an initial stop position, and

actuating means for moving said actuator element from said stop position against said edge forces to a second position wherein said magnetic edge forces accelerate said first and second actuator magnets in said direction of motion including

coil means carried by said actuator means between said first and second actuator magnets for generating a magnetic field,

said coil means having a coil plane parallel with said first and second pairs of stationary field magnets,

said coil means in said stop position having a first coil portion in a high flux density region of said magnetic field of said first pair of stationary magnets and a second coil portion in a high flux density region of said magnetic field of said second pair of stationary magnets,

said coil means being energizable for producing a release force whereby said first and second actuator magnets are moved against said magnetic edge forces from said stop position to a second position wherein said edge forces accelerate said actuator element in said direction of motion.

4,343,240

TROLLEY

Yosaku Nishimura, Osaka, Japan, assignor to Vital Kogyo Kabushiki Kaisha, Osaka, Japan

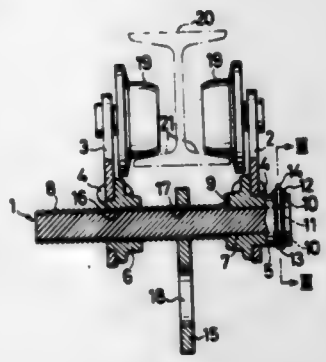
Filed Nov. 4, 1980, Ser. No. 203,905

Claims priority, application Japan, Mar. 11, 1980, 55-31357[U]

Int. Cl.³ B61B *3/00, 7/00*

U.S. Cl. 105—154

6 Claims



1. In a trolley having fixed and adjustable side plates supported in spaced relationship at a given distance by a stay rod passing through bushings fixed to the lower part of the side plates, a hanger plate coupled to the stay rod between said bushings, and rollers rotatably mounted on the upper part of the side plates, the improvement comprising the bushing on the fixed side plate is provided with a bearing hole, a journal formed at one end of the stay rod insertable into said hole for free rotation therein, said fixed side plate bushing and journal having diametrical aligned borings therethrough respectively, a pin having a head at one end removably inserted in said borings to couple said stay rod and fixed side plate bushing together an annular groove on the outer surface of said fixed side plate bushing aligned with said borings, an elastic holder releasably engaging in said groove and engaging said head of said pin to retain said pin in said borings, and an internal screw thread through the adjustable side plate bushing, and an external screw thread on the stay rod, other than the part formed as said journal, cooperatively engaging in said internal screw thread.

4,343,241

CONTROL DEVICE FOR SUCTION GRIPPER SYSTEMS IN SHEET GUIDING CYLINDERS

Otfried Rudolph, Dresden; Gunter Peter, Coswig; Karlheinz Fischer, Coswig, and Victor Hefftler, Coswig, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 135,624, Mar. 31, 1980, abandoned. This application May 19, 1980, Ser. No. 151,112

Claims priority, application German Democratic Rep., Apr. 2, 1979, 211939

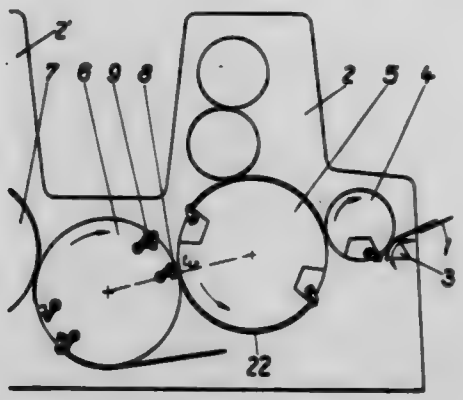
Int. Cl.³ B41F *21/06;* B65H *5/14*

U.S. Cl. 101—231

3 Claims

1. A control device for a suction gripper system arranged on guiding cylinders of a sheet fed, face and back printing machine having at least two impression cylinders and at least one sheet guiding cylinder situated therebetween, the gripper system being operative for reversing a sheet about its rear edge, the device comprising a tumbler shaft mounted in the sheet guiding cylinder; a suction unit including a suction head cooperating with a sheet being processed and a suction arm supporting said suction head and mounted on a pivot having a pivot point, and a support arm secured to said tumbler shaft and having a free end supported on said pivot, said pivot being

spaced from said tumbler shaft, said suction arm being arranged for swingable movement about said pivot point so that the position of said suction head relative to a sheet being processed is controlled so that a sheet is taken over from the



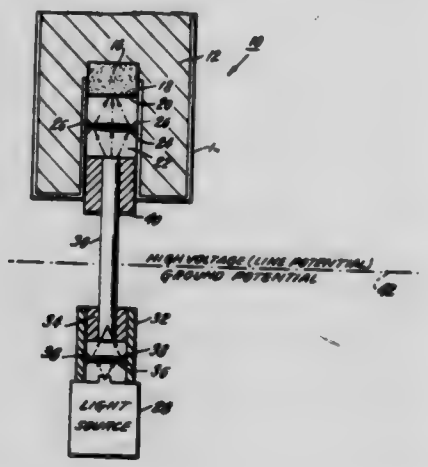
cooperating impression cylinder at a minimum deviation angle, said support arm being spring biased by a tension spring mounted between said support arm and said suction arm to provide for a self-adjustment of the swingable movement of said suction arm.

4,343,242

LASER-TRIGGERED CHEMICAL ACTUATOR FOR HIGH VOLTAGE ISOLATION

Steven Welk, Lansdale, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Apr. 28, 1980, Ser. No. 144,651
Int. Cl.[3] F42C *19/00*
U.S. Cl. 102—201 7 Claims



1. An optically triggered chemical actuator system for actuating electrical apparatus at high potential relative to ground potential comprising:

a laser optical source means mounted at ground potential and operable to produce a high intensity optical signal;

a chemical actuator means fixed to electrical apparatus mounted at high potential relative to said ground potential and operable in response to a high intensity optical signal to cause an operation of said electrical apparatus;

and

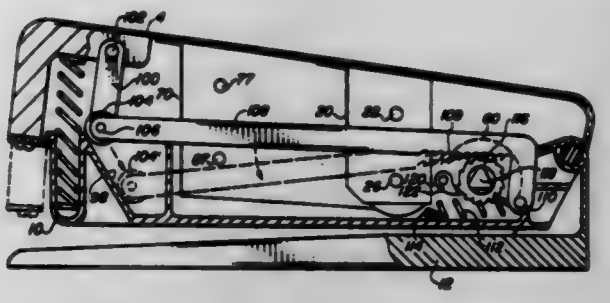
a single elongated electrically insulative optical fiber means having a first end thereof connected to said laser at ground potential and a second end thereof connected to said chemical actuator means at high potential for conveying said signal produced by said laser optical source means to said chemical actuator means.

4,343,243

PRINTER FOR IMPRINTING ZIP CODES AND THE LIKE

Dorothy I. Gentry, 1344 W. Joan de'Arc, Phoenix, Ariz. 85029, and Walter F. Ludwig, Phoenix, Ariz., assignors to Dorothy I. Gentry, Phoenix, Ariz.

Filed Apr. 21, 1980, Ser. No. 142,117
Int. Cl.[3] B41J *9/00*
U.S. Cl. 101—96 9 Claims



1. A printer for imprinting inked characters upon an article, said printer comprising:

a. a base member having front and rear portions;

b. a clamping member overlying said base member and having front and rear portions, said clamping member having an aperture therein and including an inclined surface sloping toward the rear portion of said clamping member;

c. a printing lever overlying said clamping member and having front and rear portions;

d. pivot means for pivotally connecting the rear portions of said base member, said clamping member and said printing lever to each other;

e. a printing head mounted upon said printing lever adjacent the aperture in said clamping member, said printing head selectively providing raised type characters for imprinting the article;

f. an inked ribbon positioned between said printing head and the aperture in said clamping member;

g. first biasing means connected to said printing lever and to said clamping member for exerting a biasing force which biases said printing head away from the aperture in said clamping member;

h. second biasing means connected to said base member and to said clamping member for exerting a biasing force which biases the front portion of said clamping member away from the front portion of said base member, the biasing force exerted by said second biasing means being lesser than the biasing force exerted by said first biasing means;

i. depression of said printing lever toward said base member causing an article inserted between said base member and said clamping member to be clamped between said base member and said clamping member prior to passage of said raised type characters and said inked ribbon through the aperture in said clamping member for imprinting inked characters upon the article;

j. dispensing means supported by said clamping member on one side of the aperture for dispensing said inked ribbon;

k. receiving means supported by said clamping member on an opposite side of the aperture for receiving said inked ribbon, said receiving means including a shaft upon which said inked ribbon is wound; and

l. ribbon advance means coupled to said printing lever and to said clamping member and engaging said receiving means, said ribbon advance means causing a portion of said inked ribbon to be received by said receiving means each time said printing lever is actuated for positioning a fresh portion of said inked ribbon between said printing head and the aperture in said clamping member, said ribbon advance means comprising:

i. a link having two ends and pivotally connected at one of its ends to said printing lever;

ii. a roller-follower rotatably mounted to said link at the

other of its ends, said roller-follower abutting the inclined surface of said clamping member for rolling engagement therewith when said printing lever is depressed;

iii. a rack bar pivotally connected to said roller-follower, said rack bar having a longitudinal axis and having a toothed surface;

iv. ratchet gear means mounted to said clamping member adjacent said rack bar and engaged with the toothed surface thereof, said ratchet gear means remaining fixed against rotation upon movement of said rack bar in a first direction along its longitudinal axis and being rotated upon movement of said rack bar along its longitudinal axis in a second direction opposite to said first direction, said ratchet gear means engaging the shaft of said receiving means for rotating the shaft upon reciprocal movement of said rack bar along its longitudinal axis and thereby causing a fresh portion of said inked ribbon to be positioned between said printing head and the aperture in said clamping member; and

v. third biasing means connected to said rack bar for biasing said rack bar toward the front portion of said clamping member;

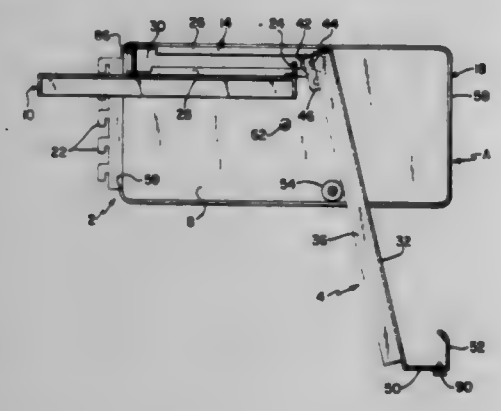
whereby, upon depression of said printing lever, said roller-follower travels along the inclined surface of said clamping member causing said rack bar to move toward the rear portion of said clamping member and, upon release of said printing lever, said third biasing means biases said rack bar toward the front portion of said clamping member for rotating said ratchet gear means.

4,343,244

PERIODICAL SHELF

Frederick J. Moriarty, Worcester, and Edmund T. Paquette, Shrewsbury, both of Mass., assignors to Wright Line Inc., Worcester, Mass.

Filed Apr. 17, 1980, Ser. No. 140,977
Int. Cl.³ A47B *5/00*
U.S. Cl. 108—1 **8 Claims**



1. A storage shelf for storing documents such as magazines, periodicals, pamphlets and the like comprising a frame assembly and a shelf assembly, movable between a first substantially horizontal storage position which permits access to documents stored thereon and a second inclined display position,

said frame assembly comprising a pair of opposite side plates, at least one member connecting and holding said side plates in parallel spaced relation, means for attaching said side frame assembly to a supporting stand, and a pair of substantially linear tracks attached to said side plates; and

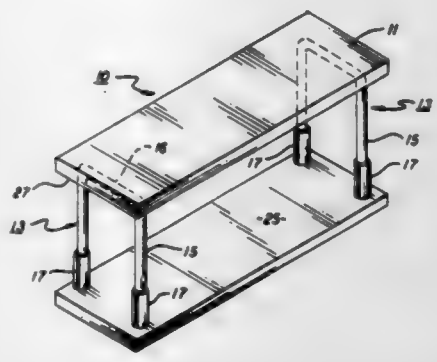
said shelf assembly comprising a shelf with means at one end for preventing a magazine or other document on said shelf from slipping off of said shelf when it is located with said one end facing down; and a pair of rollers carried by said shelf immediately therebelow and engaged with said tracks, said rollers being movable along said tracks so as to permit said shelf to be moved from the first position wherein it is disposed so as to be in a substantially horizontal plane and the second position wherein it is suspended by said rollers from said tracks with said one end facing down.

4,343,245

SUPPORT UNIT FOR SHELVING SYSTEM

Alwilda N. Edwards, 218 W. Thomas St., Rome, N.Y. 13440

Filed Jun. 2, 1980, Ser. No. 155,564
Int. Cl.³ A47B *47/00*
U.S. Cl. 108—111 **10 Claims**



1. A support unit for use in a shelving system that includes

a U-shaped bracket formed from a single piece of tubing having two spaced-apart parallel legs that are cojoined at their proximal ends by a straight perpendicular cross member,

a first wood screw securely affixed to the cross member and extended outwardly from the top surface thereof along an axis that is parallel with the axes of said legs whereby the screw can be threaded into a shelf by turning the bracket about the axis of the screw to draw the cross member tightly against the shelf

a pair of cup-like bushings, each of which is capable of slidably receiving the distal end of one of the bracket legs therein, and

a second wood screw securely affixed in the end wall of each bushing that is axially aligned with the bushing and which extends outwardly from the top surface thereof whereby each bushing can be threaded into a second shelf by turning the bushing about the axis of said second screw to draw the top surface of the cap tightly against the second shelf thereby enabling the two shelves to be cojoined by the support unit.

4,343,246

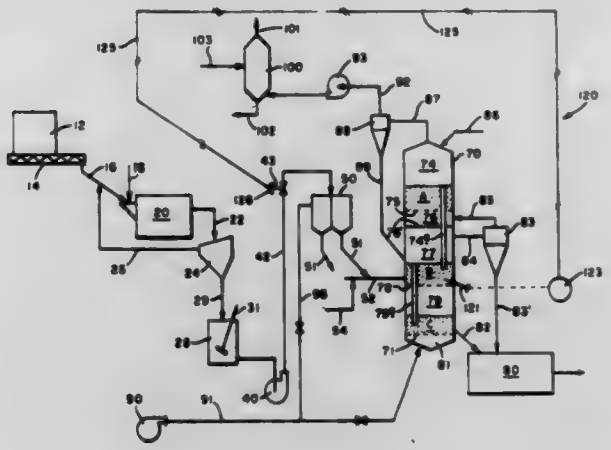
SLURRY COAL FEED SYSTEM FOR FLUIDIZED BED REACTOR

Walfred W. Jukkola, and Thomas D. Heath, both of Westport, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Apr. 7, 1980, Ser. No. 138,188
Int. Cl.³ F23G *7/00*
U.S. Cl. 110—222 **1 Claim**

1. A solid fuel preparation and feed system, wherein slurry coal is the fuel feed to be employed, for a multi-compartment fluidized bed calciner having a preheat compartment, a calcining compartment, a precooler compartment and a blower for supplying fluidizing air to said calciner, comprising a coal bin, a coal crusher having an inlet for water, means for withdrawing coal from said bin and forwarding it to said coal crusher, a slurry storage tank having agitating means therein, means for withdrawing coal from said crusher and forwarding it to said slurry storage tank, slurry coal feed guns mounted on said fluidized bed calciner for directing a flow of coal slurry into said calcining compartment, a pressurized distribution box between and connected by conduits to said slurry tank and said fuel guns for dividing the slurry flow from said slurry storage tank for delivery to a plurality of said fuel guns, means for diverting a portion of the air from said blower to said pressur-

ized distribution box to effect pressurization thereof and control means responsive to the temperature in said calcining



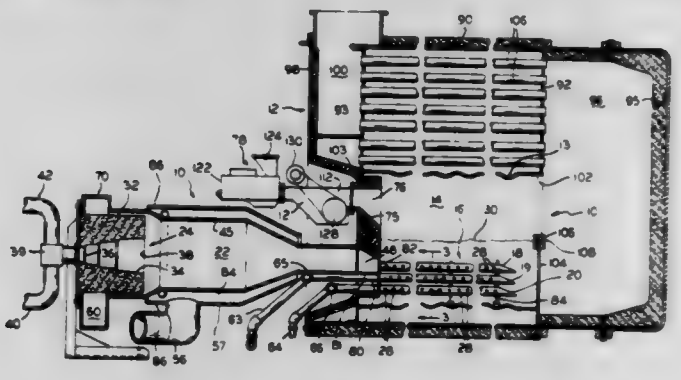
compartment to actuate valve means in said conduit between said distribution box and said slurry storage tank to adjust the flow of coal slurry to said feed guns as required by the system.

4,343,247

FLUIDIZED BED COMBUSTION METHOD AND APPARATUS

Robert A. Chronowski, Hartford, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Jun. 30, 1980, Ser. No. 164,033
Int. Cl.³ F23G *5/00*
U.S. Cl. 110—245 **3 Claims**



1. A fluidized bed combustion device including a quantity of particulate material defining a unitary bed,

a first gas distributor comprising a row of aligned elongate tubular members disposed within a central portion of said bed and a second distributor comprising a row of aligned elongate tubular members disposed in said bed and below said first row of tubular members and in general parallelism therewith,

said tubular members each having a plurality of axially spaced perforations formed therein for distributing fluidizing gases to plural zones within said bed,

gas delivery means and air delivery means respectively coupled to said first and second distributors,

control means coupled to said gas delivery means and to said air delivery means and operable to permit the flow of fluidizing gas to said first distributor and for preventing the flow of fluidizing air to said second distributor whereby the portion of the bed above the first distributor is fluidized while the remaining portion therebelow is quiescent, said control means also being operable to simultaneously affect the delivery of fluidizing gas to said first distributor and air to said second distributor, said distributors thereby cooperating to simultaneously fluidize the entire bed at least to the depth of said second distributor,

means for selectively delivering fuel to said bed,

said combustion device further including a start-up burner and a combustion chamber having a first end and on opposite end, said start-up burner being disposed at the first end of said combustion chamber and said gas delivery means being coupled to the opposite end of said combustion chamber whereby heated combustion products are delivered therefrom to said first gas distributor, and

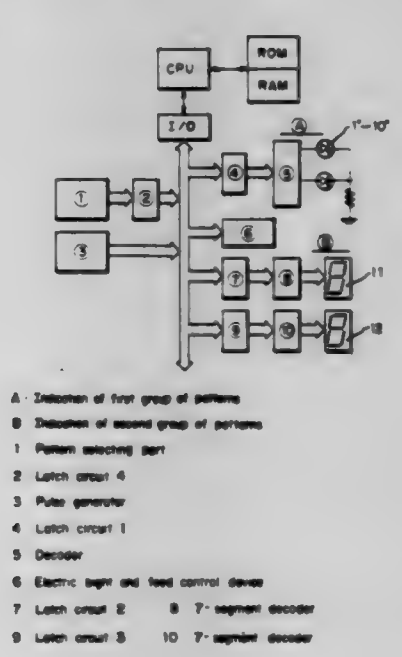
said air delivery means including a fan and a jacket surrounding said combustion chamber having openings formed therein, the inlet of said fan being connected to said jacket for drawing air through said openings and into the space between said jacket and said combustion chamber and then into the inlet of said fan.

4,343,248

PATTERN SELECTING SYSTEM OF AN ELECTRONIC SEWING MACHINE

Susumu Hanyu; Hideaki Takenoya, both of Hachioji, and Toshiro Fujimura, Musashino, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 88,868
Claims priority, application Japan, Apr. 20, 1978, 53/45904
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **1 Claim**



1. A pattern selecting system for an electronic sewing machine, comprising an electronic memory storing a plurality of pattern data in a first group displayed on the machine and another plurality of numbered pattern data in a second group in which each pattern data number is a two-figure number; pattern selecting means including a plurality of push buttons each corresponding to displayed pattern data of the first group; and switching means having a first operating position in which it enables said push buttons to select any of the pattern data of the first group, and a second operating position in which it enables said push buttons to select any of the two-figure numbers corresponding to the pattern data of the second group.

4,343,249

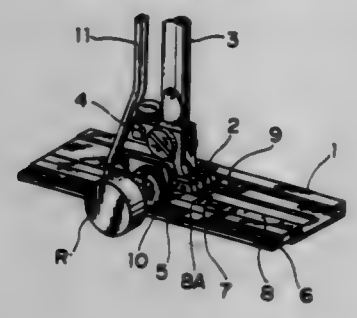
STITCH-LENGTH CORRECTING SEWING MACHINE AND STITCH-LENGTH MEASURING PRESSER FOOT ASSEMBLY USED THEREIN

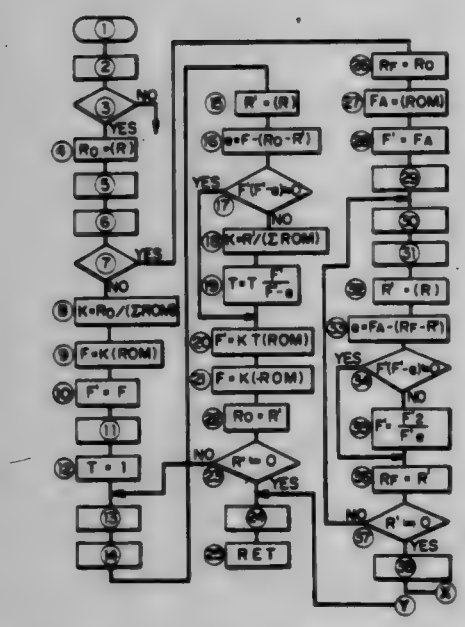
Hideaki Takenoya, and Eiichi Shomura, both of Hachioji, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 169,935
Claims priority, application Japan, Jul. 18, 1979, 54-90299; Jul. 18, 1979, 54-90300
Int. Cl.³ D05B *3/02, 35/12*
U.S. Cl. 112—158 E **9 Claims**

9. A sewing machine, comprising stitch forming means including a needle to effect sewing a fabric; feeding means for moving said fabric relative to said needle; a presser foot for pressing against said fabric, an electronic memory means for storing stitch control data for different stitch patterns; pattern

selecting means for selecting stitch control data for a pattern; a presser frame slidably attached to said presser foot, said presser frame being adapted to slidably move at a pitch equal to a feeding pitch of said fabric during the feeding thereof; sensor means disposed on said presser foot so as to engage said presser frame, said sensor means being adapted to produce electric





signals which indicate a position of said presser frame during said movement thereof; and calculating means, said calculating means comparing a first calculated feed control signal and a feed back signal provided by said sensor means during the stitching operation, said calculating means calculating from said latter compared signals a different control signal to substantially equal said first calculated control signal.

4,343,250

LOCK STITCHING AND OVER-LOCK STITCHING SEWING MACHINE

Susumu Hanyu; Noboru Kasuga, both of Hachioji; Kazumasa Hara, Tama, and Koichi Watanabe, Fussa, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

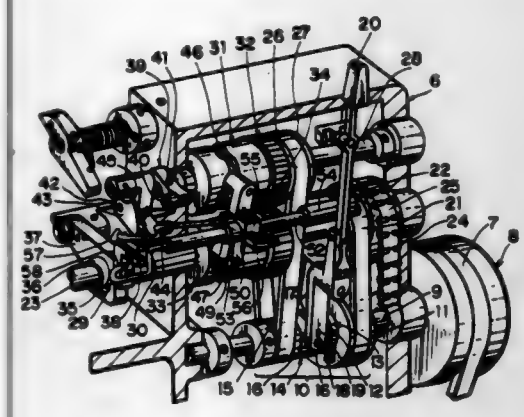
Continuation of Ser. No. 860,589, Dec. 14, 1977, Pat. No. 4,267,786. This application Nov. 26, 1980, Ser. No. 210,761

Claims priority, application Japan, Dec. 17, 1976, 51-1507497

Int. Cl.³ D05B *1/14*

U.S. Cl. 112—168 **2 Claims**

1. A lock stitching and over-lock stitching sewing machine having a frame and a primary driving means, comprising, in combination, a lock stitching device having a stitch forming part including a needle bar driving mechanism for forming lock stitches, said frame with said primary driving means forming an integral part of said lock stitching device; an over-lock stitching device having a stitch forming part spaced apart from said part for forming lock stitches and including a separate needle bar driving mechanism for forming overlock stitches, said frame with said primary driving means forming an integral part of said overlock stitching device; and a clutch device operated to selectively connect said primary driving means to said lock stitching device and to said overlock stitching device, said primary driving means including a drive motor and a rotatable shaft operatively connected to the drive motor, said clutch device being mounted on the rotatable shaft of the primary driving means and including an element operable for being displaced on the rotatable shaft between a first position



in which said element connects said rotatable shaft to said lock stitching device and a second position in which said element connects said rotatable shaft to said overlock stitching device.

4,343,251

SEWING MACHINE

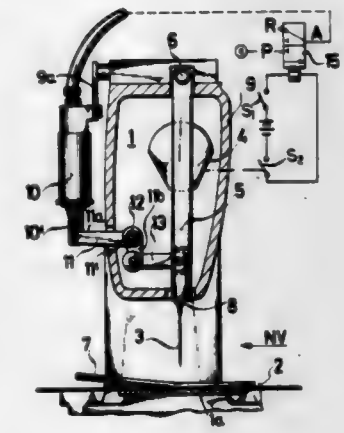
Heinz Goldbeck, and Helmut Frodermann, both of Bielefeld, Fed. Rep. of Germany, assignors to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,807

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826426

Int. Cl.³ D05B *55/14, 55/10, 69/08*

U.S. Cl. 112—221 **3 Claims**



1. In a sewing machine having a worktable, means for advancing a workpiece to receive a stitch seam along said table past a stitch location, a head overhanging said location and formed with a housing, a needle bar vertically reciprocatable in said housing and carrying at least one needle, and drive means including an eccentric rotatable in said housing for vertically reciprocating said needle bar to sew said seam in said workpiece, the improvement which comprises a mechanism for forming a stitching lock against loosening for said seam at least at one end thereof, said mechanism comprising:

a guide for said bar in said housing in the form of a rocker suspended from a pivot in said housing and swingable transversely to the direction of reciprocation of said bar;

a pneumatic cylinder mounted on said head and having a piston rod;

a bell-crank lever having one side articulated to said piston rod of said cylinder and another side articulated to a link pivotally connected to said rocker for shifting same in said housing;

control means for operating said pneumatic cylinder only upon withdrawal of said needle from said workpiece, said control means including a three-port, two-position valve having one port connected to said cylinder, another port connected to a vent and a third port connected to a pres-

surized air source, said valve being electromagnetically operated; and

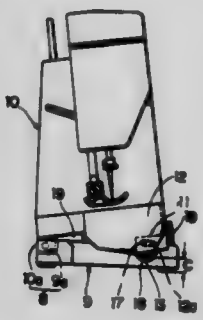
circuit means responsive to the position of said eccentric for operating said valve.

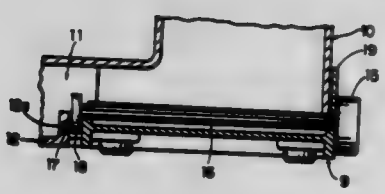
4,343,252

FREE ARM SEWING MACHINE

Susumu Hanyu, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Feb. 22, 1980, Ser. No. 123,793
Claims priority, application Japan, Feb. 27, 1979, 54/21302
Int. Cl.³ D05B *75/00*
U.S. Cl. 112—258 **3 Claims**





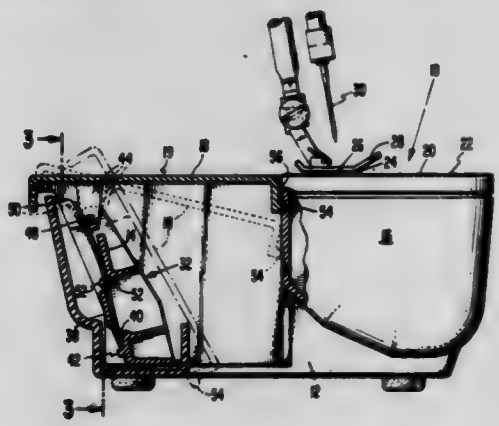
1. A free arm sewing machine, comprising a sewing machine body having stitch forming instrumentalities; a base for supporting the sewing machine body; pivot means turnably connecting the sewing machine body to the base; and positioning means manually operated to displace the sewing machine body relative to the base and to hold the sewing machine body in a predetermined position, said positioning means including a transverse shaft turnably arranged in said base, an operating dial secured to one end of the transverse shaft, a disc secured to the other end of the transverse shaft and having a pin secured to one side thereof, and a groove formed in a part of the free arm and being in engagement with the pin.

4,343,253

LID AND HINGE ARRANGEMENT FOR A CONVERTIBLE SEWING MACHINE

Ronald C. Iannarone, Hillside, N.J., assignor to The Singer Company, Stamford, Conn.

Filed May 23, 1979, Ser. No. 41,955
Int. Cl.³ D05B *73/10*
U.S. Cl. 112—260 **7 Claims**



1. In a sewing machine having a base, an elongated arm including a primary work supporting surface extending longitudinally from said base, and a support stand extending longitudinally from said base in spaced relation from said elongated arm, the invention comprising:

a lid including a supplemental work supporting surface thereon hingedly supported from said stand for movement between a substantially horizontal position, in which the supplemental work supporting surface serves as an extension of the primary work supporting surface on the elongated arm, and a lowered position that permits free arm sewing on the elongated arm;

rigid locking means interlocking the lid with the arm to hold the lid in the substantially horizontal position;

first means extending from said stand;

second means depending from the lid in spaced relation with the first means when said lid is hingedly fastened to said stand, one of the first and second means comprising substantially horizontal slot means open at one end facing away from the arm, the other end of said slot means terminating in a closed end, and the other of said first and second means comprising aperture means;

a hinge pin carried in said aperture means and received within said slot means and slidable laterally relative to the axis of the hinge pin with the extent of the slot means; and

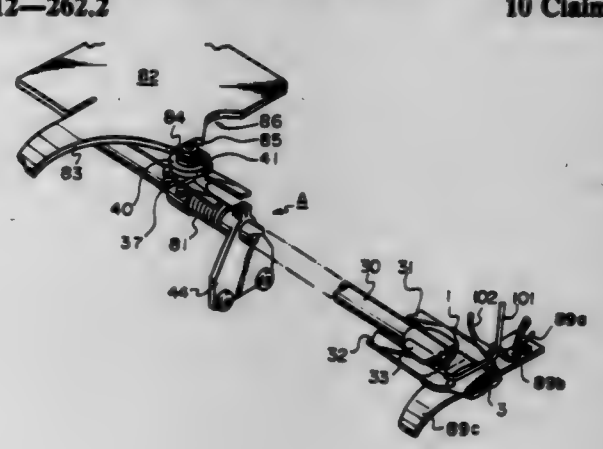
spring means held by said one of said first and second means and extending adjacent the open end of said slot means for retaining said hinge pin within said slot means and urging the locking means into interlocking position but resiliently permitting the lid to be slid away from the arm within the extent of the slot means to allow disengagement of the locking means.

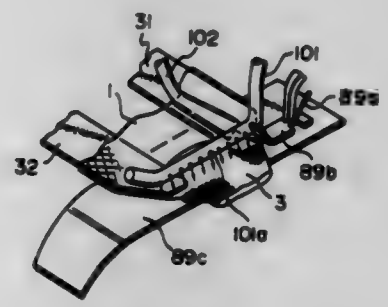
4,343,254

METHOD AND APPARATUS FOR CLOSING THE TOE END OF A HOSE

Osho Takatori, Nara, Japan, assignor to Takatori Machinery Works Ltd., Japan

Filed Jan. 30, 1980, Ser. No. 116,960
Claims priority, application Japan, Jan. 30, 1979, 54-010204
Int. Cl.³ D05B *19/00, 21/00*
U.S. Cl. 112—262.2 **10 Claims**





1. Improved method for closing the toe end of a hose comprising

manually inserting a material hose inside out over a pair of fingers pieces with its toe section extending beyond the front ends of the said finger pieces,

automatically moving said front ends of said finger pieces away from each other in order to stretch and open said material hose,

automatically moving said front ends of said finger pieces with said toe section laterally towards the sewing region on a sewing machine whilst maintaining the stretched and open state of said material hose,

automatically moving said front ends of said finger pieces with said toe section across said sewing region along a prescribed locus including an arc section,

closing said toe section by said sewing machine during its travel along said prescribed locus,

blowing both terminals of said toe section by a first air jet nozzle in a direction parallel to said hose only when either of said terminals passes by a cloth clamper of said sewing machine, and

blowing said toe section by a second air jet nozzle during the closing process for stable and successful passage of said toe section across said sewing region.

2. Improved apparatus for closing the toe end of a hose comprising

a holding unit for holding a hose material and including a pair of elongated finger pieces arranged in a side-by-side relationship, and front end moving means for moving the front ends of said finger pieces away from and towards each other at prescribed timings,

a sewing machine including a needle, a cloth clamper and a needle plate arranged in its sewing region,

drive means for driving said holding unit for horizontal movement in a direction substantially normal to the longitudinal direction of said finger pieces,

a cam plate operationally coupled to said holding unit in order to urge the front ends of said finger pieces to travel across said sewing region on said sewing machine along a prescribed arc locus,

a first air jet nozzle arranged in said sewing region and including ejection mouths facing said needle plate, and

a second air jet nozzle arranged in said sewing region and including an ejection mouth facing said cloth clamper.

4,343,255

AUTOMATED PLACKET SHIRT MACHINE

James C. Kelly, and Frederick W. Garnett, both of Starkville, Miss., assignors to Starkville Tool and Die Company, Starkville, Miss.

Filed May 1, 1979, Ser. No. 34,917

Int. Cl.³ D05B *1/00, 33/00, 21/00*

U.S. Cl. 112—262.3 **32 Claims**

1. A method of automatically sewing, removing, and stacking a garment after first hand orientating the garment in relation to a sewing machine comprising:

(a) transferring a garment to a sewing machine;

(b) initiating the sewing of said garment at a point intermediate a first end and a second end of said garment and sewing from said point to said first end of said garment;

(c) cutting the threads from said sewing machine after sewing to said first end of said garment;

(d) clamping said second end of said garment; and

(e) pulling said sewn garment from said sewing machine.

23. A machine for sewing placket shirt fronts comprising in combination:

(a) means for aligning and layering a shirt front, placket and liner to form a garment;

(b) a transfer clamp for clamping and transferring a garment from one area to another;

(c) a sew clamp for receiving cloth received from said transfer clamp, said sew clamp including means for positioning said garment under a sewing machine intermediate the ends of said garment means for incrementally advancing said sew clamp in timed relationship with said sewing machine;

(d) a sewing machine;

(e) means for cutting the sewing thread after sewing; and

(f) means for removing said garment from said sewing machine.

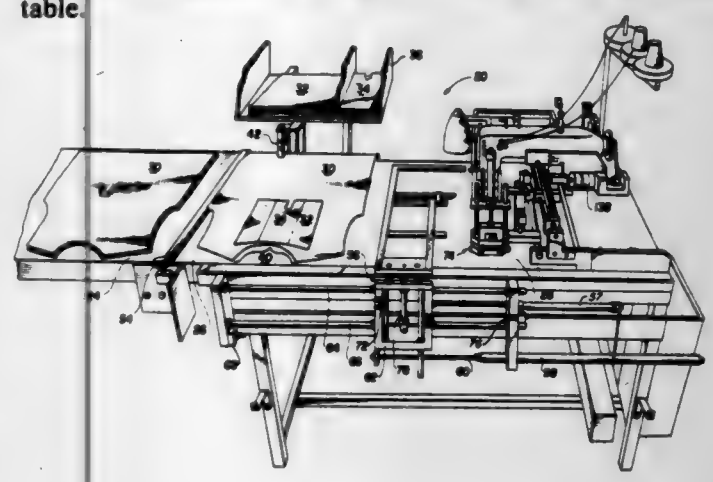
29. A stacking apparatus for removing garments from garment handling machinery comprising:

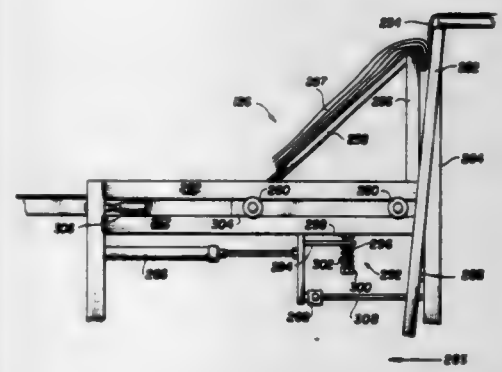
(a) a frame;

(b) a garment stacking table slideably mounted with respect to said frame;

(c) a garment clamp formed by the cooperation of one side of said slideably mounted garment stacking table with said frame wherein said clamp is disposed between said stacking table and said frame; and

(d) a raker bar pivotally mounted to said frame for travel between said garment clamp and said garment stacking table.





32. A method for automatically sewing, removing, and stacking a garment comprising:

(a) aligning and layering parts of a garment to be sewn by employing a layering guide means;

(b) mechanically transferring said garment to a sewing machine by employing a transfer clamp;

(c) sewing said garment from a point intermediate a first end and a second end of said garment and sewing from said point to said first end of said garment; and

(d) mechanically removing said garment from said sewing machine by employing a stacking apparatus wherein said steps of transferring, sewing and removing said garment are performed in a timed mechanical sequence.

4,343,256

SEWING MACHINE

Armin Neuweiler, and Otmar Stillhard, both of Steckborn, Switzerland, assignors to Fritz Gegauf AG Bernina-Naehmaschinenfabrik, Steckborn, Switzerland

Filed May 19, 1980, Ser. No. 150,836

Claims priority, application Switzerland, Aug. 24, 1979, 7717/79

Int. Cl.³ D05B *69/22*

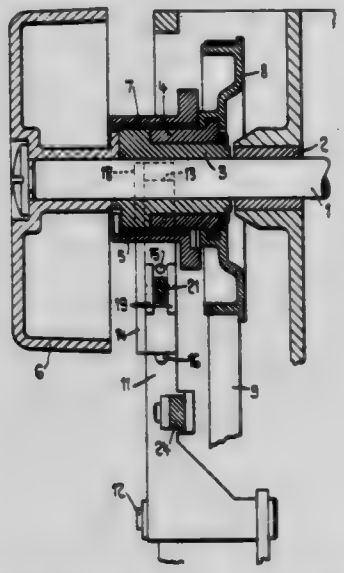
U.S. Cl. 112—275 **9 Claims**

1. A domestic sewing machine having a needle bar coupled to a drive shaft, comprising:

an electric motor, the speed of which is controlled by means of a pedal via a control circuit;

means for disengageably coupling said motor to the drive shaft of the machine, said coupling means including a spiral spring having one end driven by said motor and the other end fixed relative the drive shaft;

a catch device connected to the driven end of said spiral spring and thus resiliently coupled to said drive shaft; and



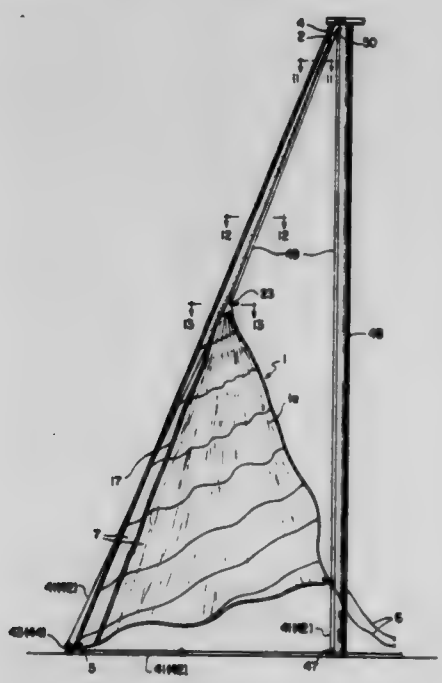
means for engaging said catch device upon release of said pedal causing said spiral spring to disengage said motor from the drive shaft and causing resilient braking of the drive shaft, thereby stopping the needle bar in a predetermined position.

4,343,257

WORKING SAILS AND METHODS FOR FURLING THEM WHILE ALOFT

William H. Stevenson, IV, Rte. 5, Box 532, Travelers Rest, Easton, Md. 21601

Filed Apr. 10, 1980, Ser. No. 139,105
Int. Cl.³ B63H 9/10
U.S. Cl. 114—104 71 Claims



1. The method for furling a working sail while the sail is aloft, the sail being of flexible sheet material, comprising

providing flexible sheet material extending along the sail from head to foot and located aft of the leading edge of the sail;

at least preliminarily furling the sail from leech to luff while the sail is aloft and the leading edge of the sail is attached to a support;

progressively forming said flexible sheet material into a tubular bag the length of which extends between the head and the foot of the sail and progressively disposing the sail in fully furled condition within the tubular bag as the bag is formed and while the leading edge of the sail remains attached to the support, the step of progressively forming said flexible sheet material into a tubular bag and progressively disposing the sail in fully furled condition within the tubular bag as the bag is formed is carried out by engaging a travelling furler over the aft portion of the sail adjacent one of the head and the foot of the sail and moving the furler progressively over the aft portion of the sail in a direction extending between the head and the foot; and

as the tubular bag is formed, progressively securing the bag against opening.

54. A feeder for progressively furling a working sail from head to foot while the sail is aloft comprising, in combination

an intermediate portion having a face having a configuration and dimensions such as to be slidably engageable with the leech portion of the sail during furling;

two flexible arms each extending from a different side of the intermediate portion so as to be disposed each on a different side of the sail during furling,

the arms being of substantial length and adapted to be connected to furling line means by which the feeder can be pulled downwardly to traverse the aft portion of the sail from head to foot; and

fastener means secured to the intermediate portion and exposed for connection of an unfurling line to the furler.

55. A triangular working sail comprising, in combination

a primary sail body of generally triangular plan form,

one long side of the primary body constituting the leech of the sail,

the other long side of the primary body being spaced rearwardly of the leading edge of the sail;

a luff portion comprising

two portions of flexible sheet material each having a leading edge and a trailing edge, said two portions being of the same shape and dimensions,

the trailing edges of said two portions each being secured to said other long side of the primary body of the sail; and

a luff tape,

the leading edges of said two portions being secured to the luff tape,

said two portions being free and unattached throughout their length between the luff tape and said other long side of the primary body of the sail.

60. In a sail stowage bag, the combination of

a bag body of flexible sheet material comprising

a bottom wall, and

an annular side wall extending upwardly from the bottom wall and defining an open top;

annular reinforcing means connected to the top of the bag body and dimensioned to hold the top of the bag open;

flexible partition means comprising a single piece of sheet material extending from near the top of the bag body toward the bottom to divide the interior of the bag into two upright compartments open at the top;

two pairs of releasable fasteners,

the fasteners of each pair being secured to the bag adjacent the top of a different one of said compartments;

two additional fasteners secured to the side wall of the body adjacent the annular reinforcing means at points spaced across the open top of the body along a line generally transverse to the partition means; and

line means operatively connected to the top of the partition means and releasably attachable to one of said additional fasteners to draw the upper portion of the partition means across the open top of the corresponding one of the two compartments.

4,343,258

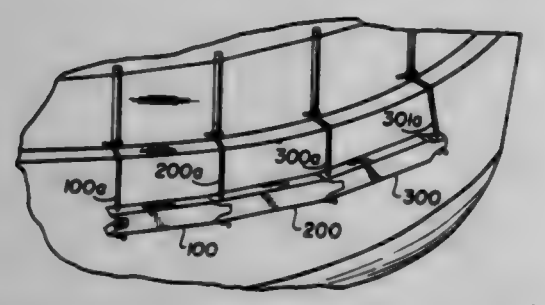
BOAT BUMPERS

Mark Belvedere, c/o Mrs. Sarubbi, 5063 NW. 6th Ct., Delray Beach, Fla. 33445

Continuation-in-part of Ser. No. 59,690, Jul. 23, 1979, abandoned. This application Dec. 3, 1979, Ser. No. 99,799

Int. Cl.[3] B63B *59/02*

U.S. Cl. 114—219 1 Claim



1. In combination, a plurality of suspension lines and a plurality of endwise interconnected elongate resilient boat bumper units extending transversely to said lines; each said bumper unit having a male protuberance at one end and a complimentary female socket at the other end, the sockets and protuberances of successive bumper units being mated with each other in a particular relative angular orientation, each said socket having two holes therethrough aligned transversely of the bumper unit elongate axis providing a straight transverse passage through the socket, and each said protuberance having a hole therethrough located to interconnect and align with said two holes of a socket mated therewith when the protuberances and sockets are mated in said particular angular orientation, whereby said protuberances and sockets mate only in said relative angular orientation wherein all said holes are interconnected and aligned; each of said suspension lines passing through the aligned holes of a respective set of mated protuberances and sockets to interlock successive bumper units into an assembly and to suspend the assembly of bumper units.

4,343,259

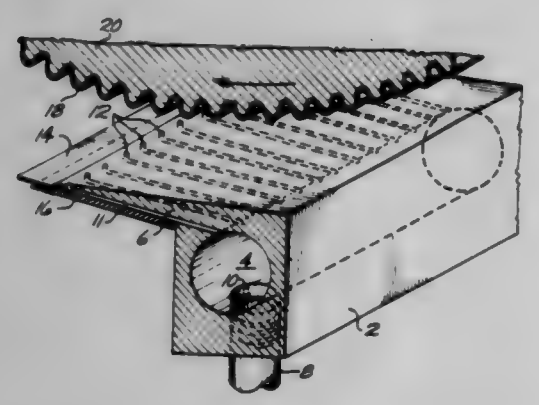
APPARATUS FOR APPLYING ADHESIVE IN CORRUGATED BOARD MANUFACTURE

Ronald J. McConnel, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jul. 11, 1980, Ser. No. 167,617

Int. Cl.[3] B05C *5/02, 11/04*

U.S. Cl. 118—44 10 Claims



1. In a corrugated container board manufacturing apparatus having means for forming corrugations in a generally planar corrugating medium in which the corrugations have a predetermined tip-to-tip distance between adjacent flutes, and means for applying an adhesive to the flute tips, the improvement which comprises:

a. an elongate adhesive extrusion head operatively associated with the machine at a location downstream from the point at which the corrugations are formed, said head being in communication with a source of liquid adhesive material, said head further being of a size and shape that can be located closely adjacent to the moving corrugated medium in order to transfer adhesive thereto from an application surface on the head, and

b. a relatively thin, flexible spreader element located parallel to and downstream from the application head, said element having one longitudinal edge attached to the extrusion head and a free longitudinal edge raised above the level of the application surface so that it is in wiping contact with the tips of the moving corrugated flutes, said spreader element having an effective length which is less than the tip-to-tip distance between adjacent flutes so as to improve adhesive spread uniformity on the flute tips without significant adhesive removal.

4,343,260

APPARATUS FOR APPLYING LIQUID STATE MATERIAL ONTO A SURFACE OF A CLOTH OR THE LIKE

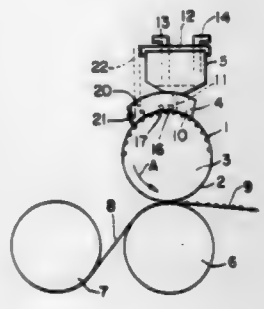
Mikiharu Yajima; Masuki Masumiya, and Sadao Obe, all of Itami, Japan, assignors to Nitto Boseki Co., Ltd. and Nittobo Itamikako Co., Ltd., both of, Japan

Filed Dec. 3, 1980, Ser. No. 212,530

Claims priority, application Japan, Dec. 4, 1979, 54-168561[U]

Int. Cl.[3] B05C *1/08*

U.S. Cl. 118—204 4 Claims



1. An apparatus for applying liquid state material onto a surface of a cloth or the like, comprising a stamp roll having a peripheral surface provided with a pattern of pits, a rubbing block having at least one material supplying passage extending vertically therethrough, said rubbing block being disposed above said stamp roll in such a way that a lower rubbing surface of said rubbing block is in sliding contact with said peripheral surface of said stamp roll, a supply container connected to said material supply passage of said rubbing block for supplying the material in liquid state through said rubbing block to said peripheral surface of said stamp roll, and a pressure roll disposed below said stamp roll in abutting relation thereto to carry the cloth in intimate contact with said peripheral surface of said stamp roll, said rubbing surface of said rubbing block being formed in the down stream side of said material supply passage of said rubbing block with a plurality of parallel recesses extending orthogonally to the rotating direction of said stamp roll where a portion of said downstream side rubbing surface is disposed between the material supply passage and said plurality of parallel recesses.

4,343,261

ANIMAL CAGING SYSTEM

William R. Thomas, 187 Main St., Conyngham, Pa. 18219

Continuation-in-part of Ser. No. 76,698, Sep. 18, 1979, abandoned. This application Nov. 12, 1980, Ser. No. 206,058

Int. Cl.[3] A01K *1/03*

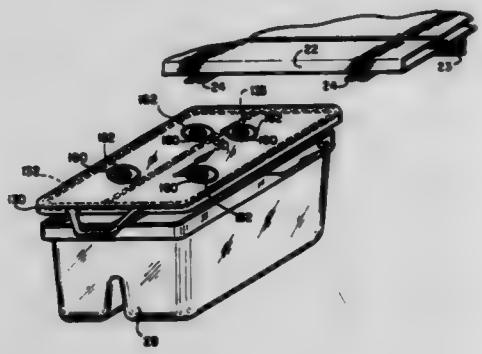
U.S. Cl. 119—15 16 Claims

1. A contagion-safe animal housing system, comprising:

a plurality of animal cages of material impervious to air, the cages mounted in a rack, the rack having internal ducting communicating with air supply and exhaust openings for the cages;

cage lids sealingly fittable on each of the cages, the lids having air passages corresponding to the air supply and exhaust openings in the rack;

airflow controlling means located in the lids, the airflow controlling means operable by contact with the rack to



open the air passages in the lids upon mounting the cages and biased to close the air supply and exhaust upon withdrawing the cages; and,

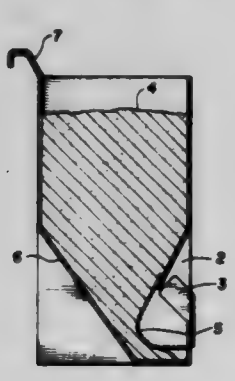
means for supplying and exhausting air to and from said ducting in the rack.

4,343,262

LABORATORY RAT FEEDER

John Hunziker, Jr., Pine Bluff, Ark., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Mar. 26, 1981, Ser. No. 247,713
Int. Cl.[3] A01K *5/00*
U.S. Cl. 119—18 7 Claims



1. A feeding device for laboratory rats comprising a feed storage hopper including wall means defining a chamber, closed at its bottom, which chamber holds a quantity of animal feed, said chamber having an upper portion, a lower portion, a feed inlet means at its upper portion and a feeding opening in the lower front face of the chamber above the closed bottom, a back panel sloped at an angle of about 35° with respect to its vertical plane,

generally U-shaped feeding means mounted in the feeding opening in the lower portion of said chamber for allowing restricted contact of the feed by the rat, said feeding means comprising a "floating" screen firmly affixed at its upper end to said upper portion and covering said feeding opening, provided with rectangular openings, sloped from the top of said feeding opening toward the center and downwardly at an inclined angle of about 60° with respect to its horizontal plane sufficient so that the weight of the feed thereabove forces a continual collapsing thereof downwardly along said sloping back panel as the feed is consumed from below, the lower portion of the screen extending horizontally and being unattached at the end thereof to allow slight movement and flexing thereof by the rat permitting faster breaking up of any caked food, thus allowing the rat to ingest the feed resting on the upper screen portion, the mesh size of the screen openings being sufficient to support powdered mash feed without falling through the openings while permitting the rat to insert his tongue through the openings for feeding purposes, and

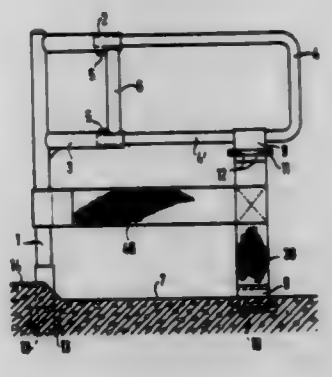
partitioning means connected to said feeding means for preventing the rats from bodily entry to the feeder thus precluding possible contamination of the feed through feces or urine.

4,343,263

SIDE WALL STRUCTURE FOR AN ANIMAL STALL

Martin Glöggler, Memelstrabe 4, D-7910 Neu-Ulm, Fed. Rep. of Germany

Filed May 19, 1980, Ser. No. 151,456
Claims priority, application Fed. Rep. of Germany, May 29, 1979, 2921821
Int. Cl.[3] A01K *1/00, 29/00*
U.S. Cl. 119—27 17 Claims



16. A sidewall structure for an animal stall comprising:

an upright support means located at a front part of said stall and having a lower end located in a floor of said stall;

a cantilever wall element for defining a sidewall of said stall, supported by support means above the floor at a predetermined height and extending backwardly from said support means to the back of said stall;

a first flexible belt spaced from said support means and extending vertically from said cantilever to said floor;

means for fastening a lower end of said first belt to said floor;

means for adjustably fastening an upper end of said first belt to said cantilever;

at least one second flexible belt spaced above said floor and below said cantilever, extending longitudinally from the support means to said first belt;

means for fastening said at least one second belt to said first belt; and

means for movably fastening said at least one second belt to said support means.

4,343,264

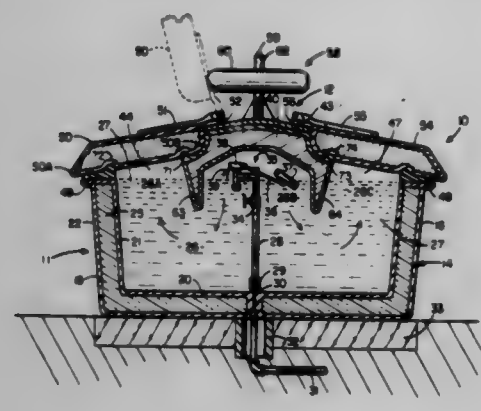
ANIMAL WATERING APPARATUS

Kenneth L. Schafer, Rte. 3, Box 73, Le Sueur, Minn. 56058, and Maurice L. Peterson, Kerkhoven, Minn. 56252

Filed Jun. 16, 1980, Ser. No. 159,812
Int. Cl.[3] A01K *7/02*
U.S. Cl. 119—73 33 Claims

25. An animal watering apparatus comprising: a tank having wall means defining a chamber for accommodating water, a top wall mounted on said wall means covering said chamber, said top wall having a drinking opening open to the chamber providing animal access to the water in the chamber, cover means for closing the drinking opening, means for mounting the cover means on the top wall for movement to an open position in uncovered relationship relative to the drinking

opening, and a bumper assembly mounted on the top wall to limit pivotal movement of the cover means toward the open



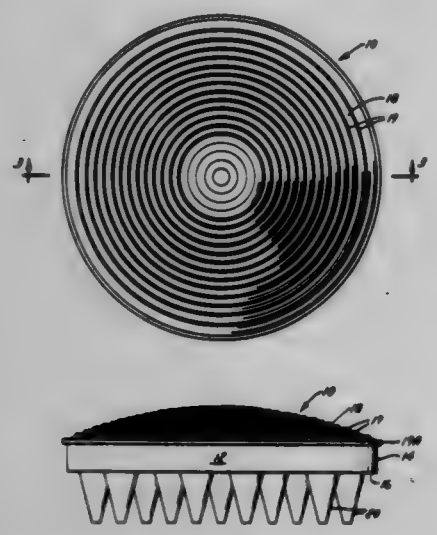
position and urging the cover means toward the closed position when the animal moves away from the drinking opening.

4,343,265

BRUSH FOR GROOMING ANIMALS

Elmer Belschner, 23510 Durand Ave., Kansasville, Wis. 53139

Filed Oct. 20, 1980, Ser. No. 198,703
Int. Cl.[3] A01K *13/00*
U.S. Cl. 119—83 5 Claims



1. An animal grooming brush comprising:

a solid cylindrical body portion having a flat lower surface and a dome-shaped upper surface, said dome-shaped upper surface being provided with at least one integrally formed projection extending outwardly beyond said cylindrical body portion and along a plane substantially located midway between the top of said dome-shaped upper surface and said flat lower surface to facilitate gripping of said brush, said body portion having a straight peripheral outer edge surface axially extending between said outwardly extending projection and said flat surface, said dome-shaped upper surface being further provided with a plurality of integrally formed concentrically arranged projections to facilitate gripping of said brush;

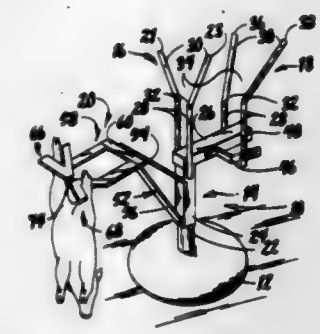
and a plurality of solid conically shaped flexible teeth integrally formed with said body portion and extending from said lower surface, each tooth having a predetermined length and the centerline of each tooth being spaced from that of an adjacent tooth by a distance substantialy equal to said predetermined length.

4,343,266

PIG HOLDING DEVICE

Brian J. Moeller, R.R. 1, Somers, Iowa 50586

Filed Dec. 19, 1980, Ser. No. 218,216
Int. Cl.[3] A61D *3/00*
U.S. Cl. 119—98 4 Claims



3. A device for holding a pig above a support surface comprising:

a U-shaped frame having a cross-member and two leg members;

support means connected to said U-shaped frame and holding said U-shaped frame in approximately a horizontal position suspended in spaced relation above said support surface;

a pair of V-shaped members, each being fixed to one of said leg members of said U-shaped frame, and each having two V-legs joined at a V-apex;

said V-apexes of said V-shaped members pointing toward one another;

said V-members being disposed at an angle of approximately 40° with respect to horizontal with said V-apexes pointing downwardly;

the angle between said V-legs of each V-shaped member being between 20° and 30°;

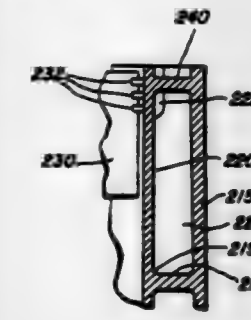
said V-shaped members being sized to receive and grasp the rear legs of said pig and hold said pig by said rear legs in upside down position.

4,343,267

CYLINDER BLOCK FOR AN INTERNAL COMBUSTION ENGINE

Terrence M. Shaw, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 3, 1979, Ser. No. 99,535
Int. Cl.[3] F02F *1/10*
U.S. Cl. 123—41.81 6 Claims



1. A cylinder block for a reciprocating piston internal combustion engine comprising a cooling jacket defined by a continouous side wall and a floor section subtending same; at least one cylinder tube having a wall of predetermined thickness as measured along a radius extending from an interior of the tube wall to an exterior of the tube wall and being connected to and extending upwardly from said floor section and surrounded by said jacket, said cylinder tube being substantially axially supported only by the jacket floor section and substantially radially supported only by a plurality of independent circumferetially spaced radially extending supports connecting the exte-

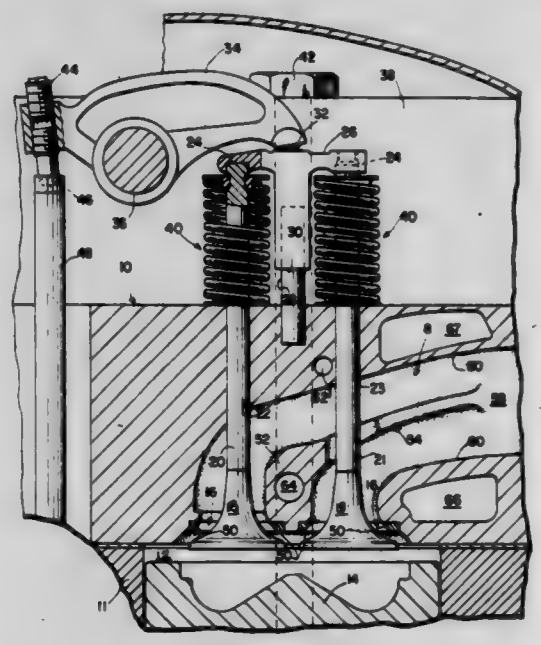
rior of said tube wall to an adjacent portion of the jacket side wall, the cylinder tube being substantially isolated from said jacket but for the supports and jacket floor section, said supports being disposed adjacent the uppermost end of said tube where the piston assumes a top dead center position, each support in transverse cross section with respect to a longitudinal axis having a width and thickness of substantially the same dimension as the cylinder tube wall thickness, wherein said supports resists radial deflection yet are axially compliant to minimize distortions when a cylinder head is compressed against the uppermost end of the cylinder tubes to form a combustion seal.

4,343,268

ENERGY CONSERVING EXHAUST PASSAGE FOR AN INTERNAL COMBUSTION ENGINE

John H. Stang; Walter A. Brighton, and David A. Ruthmansdorfer, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 7, 1979, Ser. No. 46,222
Int. Cl.³ F01L 1/26
U.S. Cl. 123—90.4 13 Claims



8. Exhaust passage apparatus for directing the flow of exhaust fluid within an internal combustion engine including first and second exhaust poppet valves having separate valve stems which may be simultaneously operated to open corresponding first and second exhaust valve ports shaped to form a pair of exhaust gas streams moving generally parallel to one another in a first direction, said exhaust passage apparatus comprising

(a) exhaust passage forming means for receiving and joining the pair of exhaust gas streams formed by the exhaust ports and for redirecting the joined gas streams along a path which has a second direction different from the first direction and which intersects the stem of the second poppet valve at a point downstream from the first poppet valve, said exhaust passage forming means containing an exhaust passage extending from the exhaust valve ports to a joining area substantially downstream of the stem of the second poppet valve; and

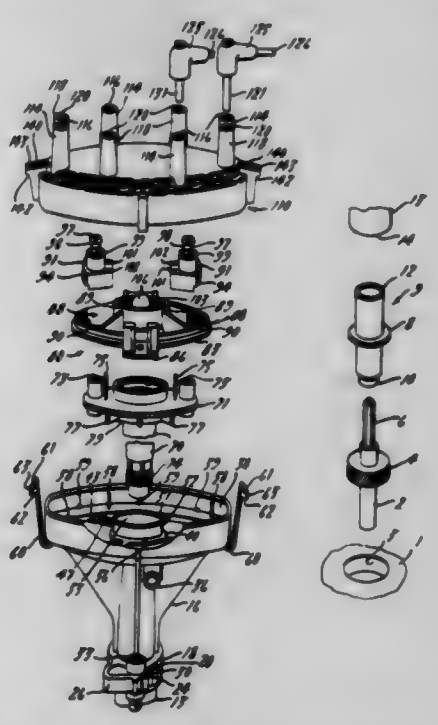
(b) guide means positioned within said exhaust passage and integral with said exhaust passage forming means for redirecting the pair of exhaust gas streams toward the second direction and for maintaining the pair of exhaust gas streams substantially separate until the pair of exhaust gas streams are both moving parallel to one another in the second direction prior to reaching said joining area defined by said exhaust passage forming means, said guide means including a vane positioned within said exhaust passage for dividing the exhaust passage into a pair of sub exhaust passages for receiving, respectively, the pair of exhaust gas streams formed by the exhaust valve ports, said vane extending from a point adjacent the exhaust valve ports to a point just upstream from said joining area, and said vane contains a central slot dimensioned to provide substantial clearance around the stem of the second poppet valve and to provide limited communication between said sub exhaust passages, said central slot extending from a point upstream of the stem of the second poppet valve to the joining area, whereby exhaust gases from the exhaust gas stream which are joined within said central slot may be moved into the joining area without being returned to said sub exhaust passages.

4,343,269

IGNITION DISTRIBUTOR ROTOR ALIGNMENT AND LOCK-DOWN ASSEMBLY

David H. Fox, Ann Arbor, and Charles C. Kostan, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1979, Ser. No. 103,673
Int. Cl.³ F02P 7/02
U.S. Cl. 123—146.5 A 13 Claims



1. An ignition distributor rotor alignment and lock-down assembly comprising:

a distributor housing adapted for non-rotational mounting on an internal combustion engine and defining a rotor shaft housing along a central axis and a commutation cavity at one end of said shaft housing;

a rotor shaft mounted for rotation in said shaft housing and adapted for rotational driving connection to said engine about said central axis;

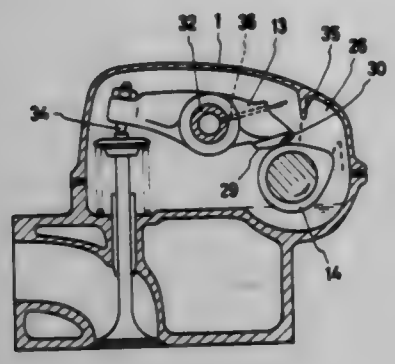
a commutation rotor mounted on said rotor shaft for rotation therewith;

means for mounting said commutation rotor on said rotor shaft in a selected angular disposition about said axis with respect to a predetermined point on said distributor housing and a corresponding timing position of said engine, wherein said rotor is circularly configured with at least one arcuate aperture having outer and inner arcuate side walls, one of which is tapered with respect to said central axis and said mounting means includes a correspondingly tapered wedge element configured to fit in a plurality of locations within an associated arcuate aperture and means for attaching said wedge element to said rotor shaft.

4,343,270
INTERNAL COMBUSTION ENGINE

Toshihiko Kawabe, Takatsuki, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Apr. 25, 1980, Ser. No. 143,909
Claims priority, application Japan, Sep. 3, 1979, 54-121532[U]; Sep. 3, 1979, 54-121534[U]; Dec. 6, 1979, 54-168820[U]
Int. Cl.³ F01M 1/00
U.S. Cl. 123—196 V 1 Claim

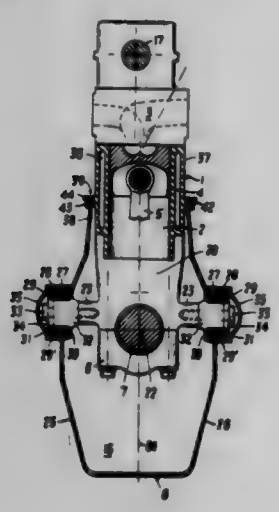


1. An internal combustion engine having on a cylinder head a valve mechanism consisting of a cam and a valve arm, comprising a rib type oil receiver provided on that portion of the inner surface of a head cover which is in opposition to contact portions of said cam and said valve arm, and an oil ejection bore provided in said valve arm and directed to said rib type oil receiver.

4,343,271
LOW-NOISE-LEVEL INTERNAL COMBUSTION ENGINES

Othmar Skatsche, and Gerhard Feichtinger, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Jan. 16, 1980, Ser. No. 112,429
Claims priority, application Austria, Feb. 7, 1979, 925/79
Int. Cl.³ F02B 77/00
U.S. Cl. 123—198 E 8 Claims

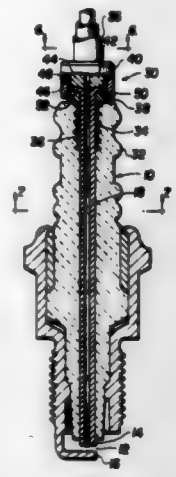


1. An internal combustion engine comprising, an engine unit support containing parts directly affected by sound vibration, namely a cylinder head, cylinders, pistons, connecting rods, crankshaft main bearings and crankshaft, and a crankcase connected with said engine unit support by sound insulating means, the improvement wherein said sound insulating means serves as a power transmitting support of said engine unit support on said crankcase and is disposed in the immediate vicinity of the crankshaft axis between opposing sides of said engine unit support and lateral walls of said crankcase, and said means comprising cylindrical elastic vibration absorbing elements mounted within said lateral walls of said crankcase and being readily accessible from outside said crankcase.

4,343,272
DEVICES FOR SUPPLEMENTING CONVENTIONAL LIQUID FUELS IN INTERNAL COMBUSTION ENGINES WITH GASEOUS FUEL SUPPLEMENTS

Alan C. Buck, 6073 Nauru St., Cypress, Calif. 90630

Filed Mar. 12, 1980, Ser. No. 129,791
Int. Cl.³ F02P 13/02
U.S. Cl. 123—297 2 Claims



1. In a spark plug having a spark gap between two electrodes, the improvement comprising:

(a) first means for introducing a mixture of gases into said spark gap, said first means comprising a plurality of conduits which extend through one of said electrodes, and

(b) second means for connecting said spark plug to a spark plug wire which likewise contains a plurality of conduits for the gases, said second means comprising:

(i) external threads on one of said spark plugs and the spark plug wire,

(ii) a cup-shaped collar carried by the other of said spark plug and the spark plug wire, said cup-shaped collar having internal threads sized to mate with said external threads,

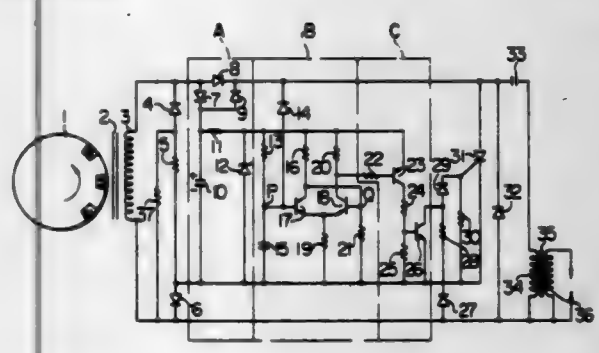
(iii) one of the interfacing surfaces of said spark plug and the spark plug wire being convex and the other being correspondingly concave, and

(iv) the surface of the conductor in said spark plug being flared to provide the maximum possible contact with the interfacing surface of the conductor in spark plug wire.

4,343,273
IGNITION SYSTEM WITH OVERRUN PREVENTION

Tadasige Kondo; Susumu Ono, both of Tokyo, and Kenichi Takata, Musashino, all of Japan, assignors to Kioritz Corporation, Japan

Filed Oct. 5, 1981, Ser. No. 309,155
Claims priority, application Japan, Oct. 15, 1980, 55-146867[U]
Int. Cl.³ F02B 0/00
U.S. Cl. 123—335 5 Claims



1. An ignition system capable of preventing an overrun of an engine in which a main capacitor is charged by one component of an electromotive force of a magneto and the charge stored

in said main capacitor is discharged through a primary winding of an ignition coil by triggering a main thyristor by an ignition signal derived from the other component of said electromotive force to induce a high voltage necessary to ignite an engine across a secondary winding of said ignition coil, said ignition system comprising;

a switching circuit connected to a gate circuit of said main thyristor and having a switching transistor for preventing said ignition signal from being applied to a gate of said main thyristor, a transistor for driving said switching transistor and a series circuit of a pair of resistors, the junction of said pair of resistors being connected to a base of said switching transistor,

a constant voltage circuit connected in parallel with a generator coil of said magneto, and

a control circuit for actuating said switching circuit for a predetermined time period from a predetermined time point,

said control circuit including an integration circuit connected in parallel with said constant voltage circuit and having a series circuit of a resistor and a capacitor, a pair of first and second transistors each connected in parallel with said integration circuit and a voltage divider connected in parallel with said integration circuit and having a pair of series-connected resistors, a collector of said first transistor being connected to one end of said integration circuit through one of said pair of resistors of said voltage divider, a collector of said second transistor being connected to said one end of said integration circuit through a resistor, emitters of said first and second transistors being connected to the other end of said integration circuit through a common resistor, a base of said first transistor being connected to the junction of said resistor and said capacitor of said integration circuit, a base of said second transistor being connected to said collector of said first transistor and to the junction of said pair of resistors of said voltage divider, a base of said driving transistor for said switching transistor being connected to said collector of said second transistor through a resistor,

whereby when a rotational speed of said engine exceeds a normal rotational speed region and enters an overrunning region to shorten a period of said ignition signal so that said ignition signal partially overlaps the constant conduction period of said switching circuit, an ignition timing is retarded by a crank angle of said engine corresponding to the overlapping period to reduce the rotational speed of said engine.

4,343,274

INJECTION PUMP CONTROL ARRANGEMENT

Franz Butscher, Friedrichshafen, Fed. Rep. of Germany, assignor to MTU Motoren - und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

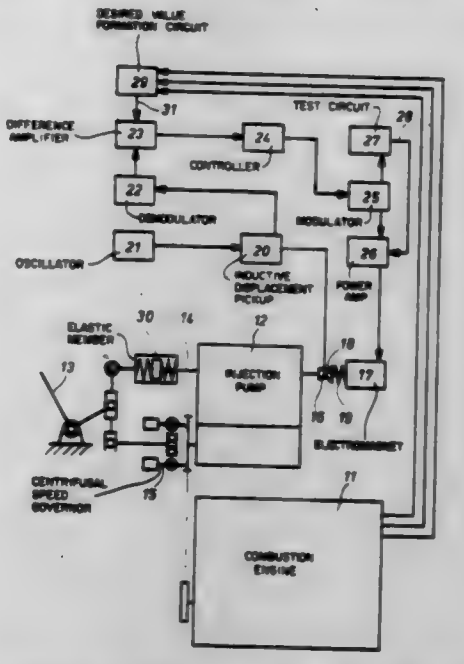
Filed Mar. 3, 1980, Ser. No. 126,696

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2908235

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—357 8 Claims

1. A control arrangement for a fuel injection pump of an internal combustion engine, the control arrangement including a control rod means for adjusting a required feed rate of the injection pump, a correcting means for determining a required power of the internal combustion engine, a centrifugal governor means for maintaining limiting speeds of the internal combustion engine, the correcting means and centrifugal governor means being operatively effective on the control rod means for adjusting a required feed rate of the injection pump, and means for limiting a displacement of the control rod means in dependence upon at least one predetermined variable of the internal combustion engine, characterized in that the limiting means includes an electromagnetic means having a core adapted to cooperate with a free end of the control rod means, means are provided for sensing a position of the control rod means and for providing an output signal indicative of the sensed position, and in that electronic circuit means are provided for processing the output signal of said sensing means at least one signal



defining an operating condition of the internal combustion engine and for effecting a metered activation of the electromagnet.

4,343,275

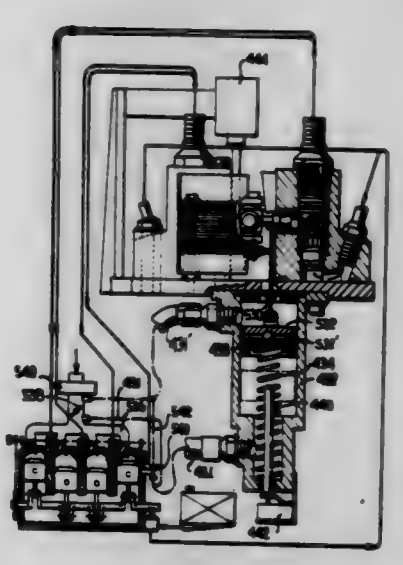
ELECTROMAGNETICALLY ACTUATED PUMPS

Willem Brinkman, Velp, Netherlands, assignor to Holec, N.V., Hengelo, Netherlands

Division of Ser. No. 560,771, Mar. 21, 1975, Pat. No. 4,022,174, and Ser. No. 766,549, Feb. 7, 1977, Pat. No. 4,210,116. This application Oct. 22, 1979, Ser. No. 87,146

Int. Cl.³ F02M *51/04*

U.S. Cl. 123—382 3 Claims



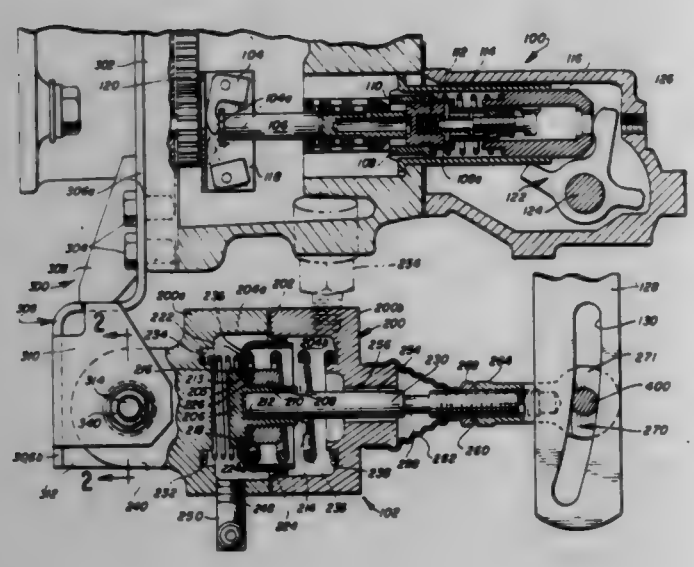
1. An injector for giving off fuel to at least one atomizer of a combustion engine comprising at least one pump communicating with said atomizer and at least one control-member displaceable in dependence upon the pressure in the inlet branch pipe of the combustion engine for regulating the quantity of fuel to be atomized by the atomizer, characterized in that the natural frequency of the mass spring system of the control-member and of the elements coupled herewith is appreciably lower than the frequency of the pressure variations in the inlet branch pipe at a low engine speed due to the suction of air by the combustion cylinders.

4,343,276

TURBOCHARGER BOOST FEEDBACK CONTROL FOR ENGINE GOVERNOR

Salim A. Jaliwala, and Eric Day, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 16, 1981, Ser. No. 225,526
Int. Cl.[3] F02D 1/06
U.S. Cl. 123—383 6 Claims



1. A turbocharger boost feedback control unit for use with a governor of an associated engine wherein the governor includes rotating flyweights interacting through a movable fuel control shaft with an opposing force of a governor spring, the relative forces due to the rotation of the flyweights and compression of the spring determining the position of the shaft and the fuel flow to the associated engine, the governor spring abutting one side of a movable stop axially aligned with the control shaft, the opposite side of the stop being engaged by a pivotally mounted lever means, said feedback control unit comprising:

a control arm being adapted to be adjustably connected to the lever means at a selected position relative to the pivotal axis of the lever means;

a fixedly mounted bracket;

a housing adjustably mounted on said bracket, said housing including an interior chamber in which is disposed a diaphragm separating said chamber into first and second subchambers, said first subchamber having a port for connecting to the turbocharger boost pressure of the associated engine, and said second subchamber having a port for connecting to the atmosphere;

a first spring mounted within said first subchamber;

and a second spring mounted within said second subchamber;

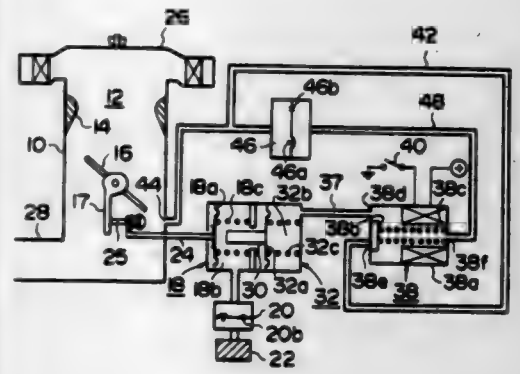
said control arm including a shaft fixedly mounted to said diaphragm and extending therefrom into said second subchamber and out through an axially aligned opening formed in said housing, and a connecting member having a first portion adjustably secured to the outwardly extending end of said control arm shaft and a second portion adapted to be connected to the lever means at the selected position whereby the speed droop of the associated engine is controlled by the location on the lever means of the selected position of connection between the lever means and the second portion of said connecting member.

4,343,277

THROTTLE VALVE OPENING CONTROLLER

Hidemi Ohnaka, Susono, and Norikatsu Ishikawa, Mishima, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 30, 1980, Ser. No. 164,272
Claims priority, application Japan, Jul. 20, 1979, 54/92929
Int. Cl.[3] F02D 11/08, 9/08; F02M 19/12
U.S. Cl. 123—389 4 Claims



1. A throttle valve opening controller for applying varying retarding forces against closing force of a throttle valve depending on the operating condition of engine, said controller comprising:

a first diaphragm device for applying retarding forces against the closing force of the throttle valve when said valve is to be quickly closed, comprising a first diaphragm which is moved in association with the throttle valve when the throttle valve opening is smaller than a predetermined value, a spring for urging said first diaphragm with a force smaller than the closing force of the throttle valve, and a first diaphragm chamber which is formed on the rear side of said first diaphragm and to which atmospheric pressure is admitted;

a second diaphragm device connected to said first diaphragm device, comprising a second diaphragm having a stopper for controlling the position of said first diaphragm, a spring for urging said second diaphragm with a force larger than the closing force of the throttle valve, and a second diaphragm chamber formed in the rear of said second diaphragm;

a solenoid valve communicated with said second diaphragm chamber and an intake manifold for admitting atmospheric pressure to said second diaphragm chamber when said engine is cool, and intake vacuum in said intake manifold to said second diaphragm chamber when said engine has warmed-up;

said solenoid valve being communicated with said second diaphragm chamber and a portion of said intake manifold directly downstream of the throttle valve for admitting nearly atmospheric pressure to said second diaphragm chamber when said engine is cool, and intake vacuum in said intake manifold to said second diaphragm chamber when said engine has warmed-up;

a first passage directly connected between said solenoid valve and said portion of said intake manifold;

a second passage directly connected between said solenoid valve and said second diaphragm chamber; and

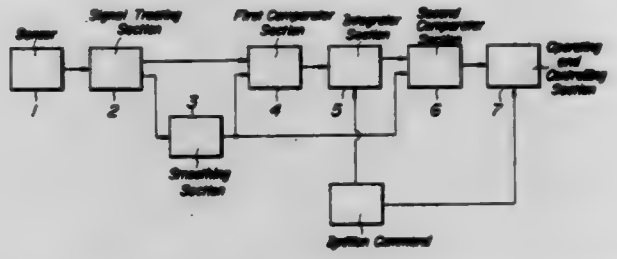
a third passage connected between said solenoid valve and said portion of said intake manifold through a transmitting valve.

4,343,278

CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Masaharu Asano, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 30, 1980, Ser. No. 173,757
Claims priority, application Japan, Jul. 31, 1979, 54/97940
Int. Cl.[3] G01L *23/22*; F02P *5/04, 5/14*
U.S. Cl. 123—425 7 Claims



1. A control device for an internal combustion engine comprising:

detecting means for detecting a signal corresponding to a particular frequency component caused by the knocking from pressure changes produced in the combustion chamber or vibrations caused by the pressure changes;

signal treating means for rectifying the detected signal from said detecting means;

smoothing means for smoothing the rectified signal from said signal treating means to obtain a first reference signal;

a first comparing means for comparing said first reference signal and said rectified signal;

integrating means for integrating the output signal of said comparing means;

a function generator for generating a second reference signal in response to said first reference signal;

a second comparing means for comparing the integrated signal from said integrating means and said second reference signal;

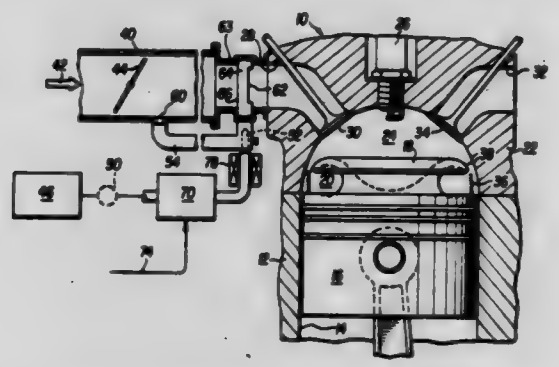
operating and controlling means for feedback-controlling at least one of an ignition timing, an exhaust gas recirculation flow rate, a fuel injection amount and a fuel injection timing in response to the output signal from said second comparing means.

4,343,279

CHARGE FORMING DEVICE FOR INTERNAL COMBUSTION ENGINE

Richard F. Blaser, 14416 Innsbruck Ct., Silver Spring, Md. 20906

Filed Nov. 2, 1979, Ser. No. 90,683
Int. Cl.[3] F02M *39/00*
U.S. Cl. 123—445 18 Claims



1. In a charge forming device for an air breathing internal combustion engine including at least one variable working chamber, an intake manifold system for supplying individual air and fuel charges to an intake port of each working chamber, the manifold system including an air throttle device; and a periodically opening and closing intake valve for controlling the flow of air and fuel charge through the intake port, the improvement comprising:

a. a fuel distribution port in the intake manifold system facing towards and located closely adjacent the intake port and through which all of the fuel portion of each charge flows;

b. a venturi restriction in the intake manifold system adjacent the fuel distribution port and through which substantially all of the air portion of each charge flows to induce suction of fuel through the fuel distribution port during each engine intake event;

c. said fuel distribution port being disposed within the intake manifold system whereat it is subjected to the compression and expansion waves naturally induced in the charge adjacent to and upstream of the intake valve as a result of the closing of the intake valve at the completion of each charge intake event;

d. a carrier air duct in communication with said fuel distribution port, said carrier air duct communicating with said intake manifold system through a fluid restriction located upstream of said fuel distribution port location and downstream of said air throttle device; and

e. means enabling supply of the fuel portion of each charge for entrainment in said carrier air before the fuel is delivered through said fuel distribution port.

14. A method of forming a charge for each individual working chamber of a piston type, air breathing internal combustion engine, wherein each working chamber is provided with its own intake port and a periodically closing and opening intake valve for controlling intake of charge into the respective working chamber, and wherein it is desired to form a substantially fuel-free initial part of each charge between valve openings, comprising

a. supplying substantially all of the air portion of each charge to each working chamber through an individual intake manifold system in communication with each intake port;

b. supplying all the fuel portion of each charge through a fuel distribution port located in each intake manifold near to and facing toward the respective intake valve;

c. intaking a charge into and closing the respective intake valve rapidly to cause a momentum compression of the flowing charge adjacent the intake valve in the respective intake manifold system;

d. directing a portion of each charge disposed between the respective fuel distribution port and the respective intake valve upstream back into the respective fuel distribution port by using only the natural expansion wave induced in the respective charge portion by the rapid closing of the intake valve; and

e. making up the respective portion of the charge directed into the fuel distribution port with fuel-free air between intake valve openings.

4,343,280

FUEL DELIVERY CONTROL ARRANGEMENT

Douglas A. Luscomb, Mt. Upton, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 24, 1980, Ser. No. 190,127
Int. Cl.[3] F02M *57/02*
U.S. Cl. 123—459 14 Claims

1. A jerk pump assembly for an internal combustion engine of the type including at least one engine cylinder, at least one corresponding fuel injector nozzle associated with said at least one cylinder to direct the injection of fuel charges into said engine cylinder, said jerk pump assembly including:

a housing having a bore therein;

a plunger mounted for reciprocating movement in said bore;

an injection chamber defined by the space between said bore and said plunger;

means for periodically receiving and directing fuel into said injection chamber;

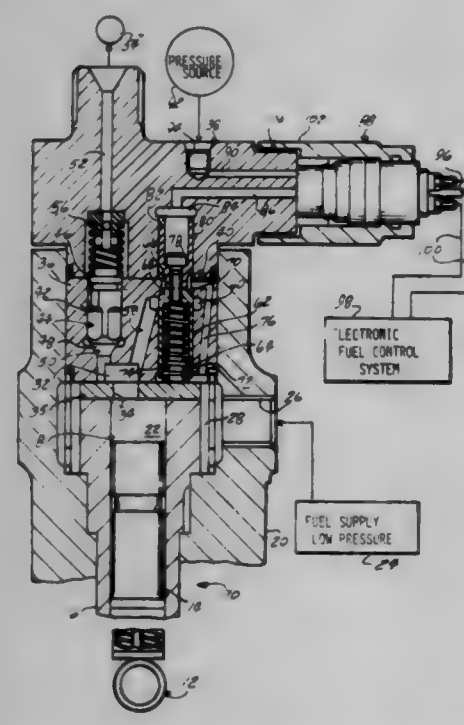
delivery valve means for periodically discharging fuel from

said injection chamber upon development of a predetermined pressure in said injection chamber;

means for controlling the pressure in said injection chamber to control the delivery valve means and the discharge of fuel from said injection chamber, said control means comprising:

means for establishing and disestablishing outflow from said injection chamber to control the opening and closing of said delivery valve means, said means including:

a bypass valve having a valve member and a valve seat, each having corresponding mating surfaces, said valve member being movable between an open position and a closed position against said valve seat mating surface to stop and start the outflow of fuel from said injection chamber in correspondence with said open and closed positions of said bypass valve member; and



operating means acting on said bypass valve means to alternately position said valve member in said open and closed position, said operating means including operator piston means moving together with said valve member and extending from said mating surface of said valve member and configured to establish a hydraulic balance of said pressure in said injection chamber acting on said valve member;

pilot valve means for controllably applying a fluid pressure on said operator piston means creating a force tending to cause said movement of said valve member, and means acting on said valve member opposing said fluid pressure force to thereby enable said movement of said valve member between said open and closed positions;

whereby establishing or disestablishing outflow from the injection chamber and the discharge of fuel from the injection chamber into an engine cylinder.

4,343,281

FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yasuzi Uozumi, Tokyo; Makoto Hashiguchi, Ohi, and Fumiaki Kikuchi, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

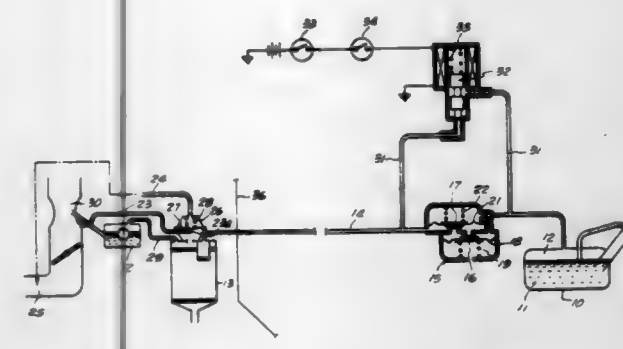
Filed Apr. 11, 1980, Ser. No. 139,356

Claims priority, application Japan, Apr. 19, 1979, 54-51428[U]

Int. Cl.³ F02M *33/02*

U.S. Cl. 123—519 **2 Claims**

1. In a fuel system for an internal combustion engine, the system including a fuel tank, a canister and means connecting the canister to the intake passage of the engine, the improvement comprising, in combination: a conduit connecting the fuel tank to the canister, valve means in said conduit normally preventing flow therethrough, said valve means opening to permit flow through said conduit when vapor pressure in the fuel tank exceeds a predetermined limit or falls below a predetermined limit, a bypass line connected to said conduit and bypassing said valve means, means including a first electric



switch closing when the engine is running, means including a second electric switch closing when an engine operating condition exists, and an electrically-operated valve device in said bypass line adapted to open in response to closing of both of said switches.

4,343,282

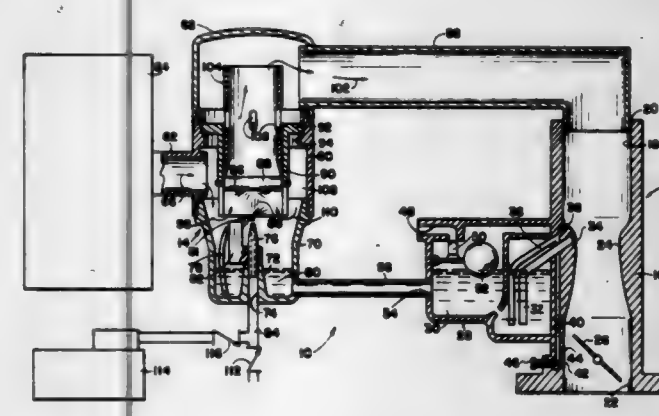
LIQUID TOWER CARBURETOR

Joseph G. Glenn, Rte. 1, Box 1221, Broken Arrow, Okla. 74012

Filed Jul. 16, 1979, Ser. No. 57,641

Int. Cl.³ F02M *17/18*

U.S. Cl. 123—523 **11 Claims**



1. A liquid tower carburetor for an internal combustion engine and comprising a nebulizer section, a carburetor having a fuel reservoir for receiving a fuel therein and being in communication with one portion of the nebulizer sections and a carburetor barrel in communication with another portion of the nebulizer section whereby the fuel is drawn from the carburetor fuel reservoir into the nebulizer section, nozzle means provided in the nebulizer section for discharging a high pressure air stream thereto for pulling the fuel into the nebulizer section, passageway means introducing a second high pressure air stream into the nebulizer section for atomization of the fuel and directing the atomized fuel through the carburetor barrel and into the carburetor for delivery from the carburetor in the usual manner.

4,343,283

DIESEL ENGINE FUEL PREHEATING SYSTEM

Clarence R. Shepherd, 3008 S. Mebane St., Burlington, N.C. 27215

Continuation-in-part of Ser. No. 97,329, Nov. 26, 1979. This application Oct. 20, 1980, Ser. No. 198,772

Int. Cl.³ F02N *31/00*

U.S. Cl. 123—557 **2 Claims**

1. A fuel preheat system for use with a diesel engine equipped with a fuel injection system and a thermostatically-controlled engine cooling system for circulating an engine

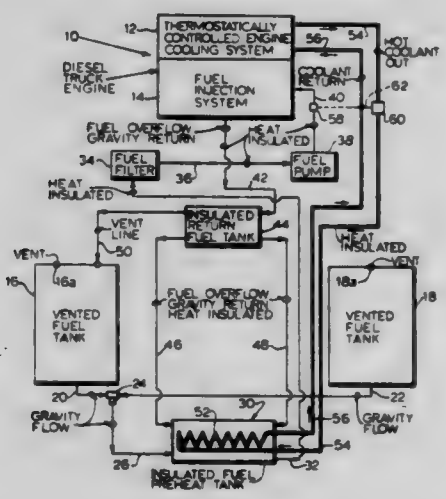
coolant and fed with diesel fuel supplied by a fuel pump from main fuel tanks positioned near said engine, comprising:

(a) a heat insulated fuel preheat tank, said fuel preheat tank being gravity fed from the engine's main fuel tanks and providing means for storing a portion of said fuel to be consumed by said engine;

(b) heat exchange means operatively associated with said fuel preheat tank and said cooling system of said engine enabling said portion of said fuel stored in said fuel preheat tank to be heated within a predetermined temperature range while contained therein;

(c) a heat insulated overflow fuel return tank adapted for receiving excess fuel supplied to said fuel injection system and for gravity feeding such excess fuel initially to said fuel preheat tank and in the event of need for gravity feeding any additional amounts to said main fuel tanks;

(d) a pump and piping system operatively associated with said fuel preheat tank, said overflow fuel return tank, and



the main fuel tanks associated with said engine, said pump and piping system enabling fuel to be continuously drawn from said main fuel tanks, pumped through and heated in said preheat fuel tank to a temperature within said predetermined temperature range, then to be admitted in a preheated condition to said fuel injection system in said engine whereby to decrease the fuel consumption requirements of said engine for a given load and load condition placed thereon as compared to the fuel consumption requirements of said engine for the same load and load condition utilizing the same said fuel at ambient temperature, return and excess preheated fuel to said overflow fuel return tank and then transfer said fuel from said overflow fuel return tank to said fuel preheat tank for recycling; and

(e) auxiliary temperature control means for controlling the flow of hot engine coolant from the engine cooling system to said heat exchange means whereby to establish said predetermined temperature range.

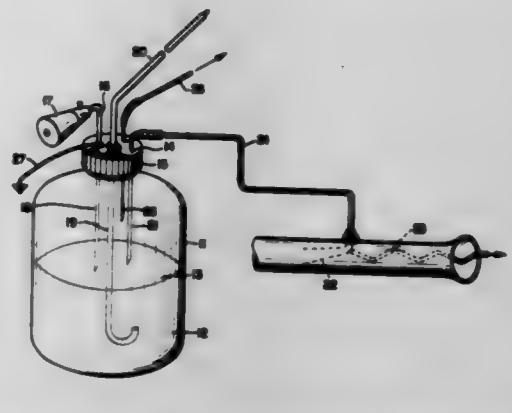
4,343,284

ANTI-POLLUTION SYSTEM FOR INTERNAL COMBUSTION AND DIESEL ENGINES

Nicolas Martinez-Delgado, P.O. Box 37-451, Mexico City, Mexico

Filed Mar. 10, 1980, Ser. No. 128,824
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **4 Claims**

1. An anti-pollution system for an internal combustion engine having an ignition system, a fuel intake system providing a source of vacuum, and an exhaust gas system; characterized by a container within which is a body of water, a cap structure on said container, an air injection system including first tube means extending through the cap structure into the container, second tube means constructed and arranged to extract combustion gases from said exhaust system and introduce said gases through said cap structure into said container, third tube means extending from within the container through said cap structure to said intake system to subject the interior of the container to vacuum, and means energized from the vehicle ignition system



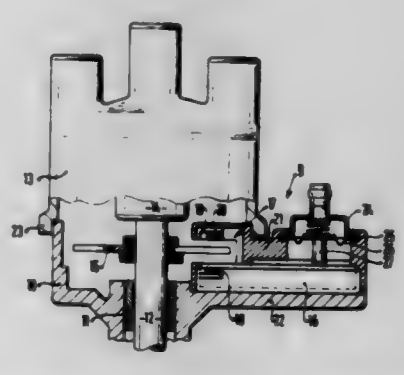
for heating said body of water, whereby during engine operation combustion gases are introduced into the container where they are cleansed, enriched with air and passed into said fuel intake system.

4,343,285

CONTACTLESS IGNITION SYSTEM OF UNITARY CONSTRUCTION

Hartmut Brammer, Vaihingen, and Heinz Leiber, Leimen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,734
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935412
Int. Cl.³ F02P *5/04, 1/00*
U.S. Cl. 123—647 **5 Claims**



1. For combination with an internal combustion engine,

a unitary contactless controlled ignition system comprising

a distributor housing (10,13);

a distributor shaft (12);

a Hall generator (17) including a magnetic circuit having a gap and a segmental rotor (15) moving through said gap, located in the housing;

and a circuit-holding member holding circuit elements forming overvoltage protection circuits, amplifying and output stages,

a single building block incorporating said circuit-holding member and said magnetic gap of said Hall generator;

a pressure box (24) having a rod (27) moving along a predetermined path as a function of load on said internal combustion engine, and

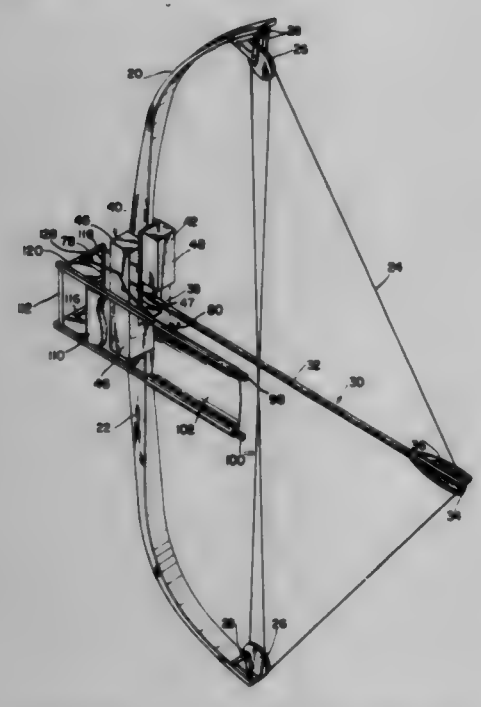
said single building block being mounted on said distributor housing and said pressure box being integrated in said building block.

4,343,286

ARCHERY BOW

Bobby J. Thacker, 505 Dranesville Rd., Herndon, Va. 22070

Filed Apr. 6, 1979, Ser. No. 27,732
Int. Cl.[3] F41B 5/00
U.S. Cl. 124—24 R 20 Claims



1. In combination with an arrow including a shaft having a pile at one end of magnetic material and fletching at the other end of the shaft, an archery bow comprising:

(a) upper and lower limbs

(b) a bow string connecting the remote terminals of said upper and lower limbs, and

(c) an arrow rest for the arrow mounted on said upper limb of the bow

(d) said arrow rest including a stationary member

(e) a movable magnetic member supported by said stationary member and movable downwardly to a point centrally of the bow, and

(f) first means for limiting the downward movement of said magnetic member, whereby said magnetic member magnetically engages the pile of said arrow as the latter is moved to full draw, and the magnetic member is urged to its lowermost position under the weight of said arrow until the arrow is dead center of the bow.

4,343,287

CRYSTAL CLEAVING MACHINE

Frederick C. Hallberg, Wheaton, Md., and John S. J. Benedicto, Falls Church, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 29, 1980, Ser. No. 182,879
Int. Cl.[3] B28D 1/32
U.S. Cl. 125—23 R 24 Claims

1. A crystal cleaving machine comprising:

means (38, 42, 43, 44, 53) for holding a crystal (40) to be cleaved;

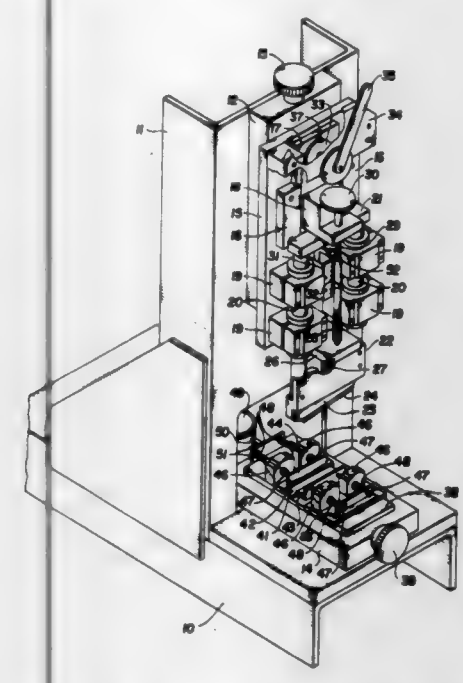
means (23, 24) for cleaving the held crystal;

means (14) for selectively positioning the held crystal relative to said cleaving means;

biased means (18, 19, 20, 21) for imparting a shock wave to the held crystal by said cleaving means;

means (28, 29, 30) for selectively adjusting the level of bias upon said biased means;

means (12, 13, 15) for effecting contact of said cleaving means with a surface of the held crystal; and



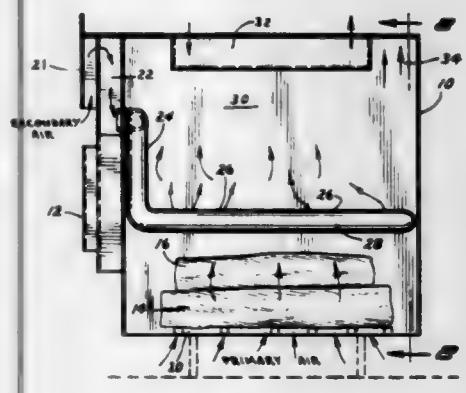
means (33, 35, 37, 17) for actuating said biased means to effect impartation of a shock wave to the held crystal by said cleaving means.

4,343,288

FURNACE

David C. Tjosvold, c/o Wilson Industries, Inc., 2296 Wycliff St., St. Paul, Minn. 55114

Filed Jun. 17, 1977, Ser. No. 807,410
Int. Cl.[2] F23L 9/02
U.S. Cl. 126—112 1 Claim



1. A furnace for the combustion of wood comprising:

a. combustion chamber means including four sidewalls, a top and a bottom;

b. grate means at the bottom of said combustion chamber means introducing primary air to said combustion chamber means;

c. secondary air inlet means contourly positioned adjacent a sidewall of said combustion chamber means;

d. preheat chamber means adjacent the top of said combustion chamber means and including a wall in common with an outer surface of an upper portion of said sidewall of said combustion chamber for preheating secondary air from said secondary air inlet means, and;

e. means in said combustion chamber means equally distributing said preheated secondary air to the top level of flames in said combustion chamber means, said preheat secondary distribution means including a U-shaped duct contoured closely adjacent all of said other sidewalls, positioned below said secondary air inlet means, and including a plurality of generally, inwardly directed holes, vertical tubes connected to and positioned above the ends of said U-shaped duct, and closely adjacent said sidewall,

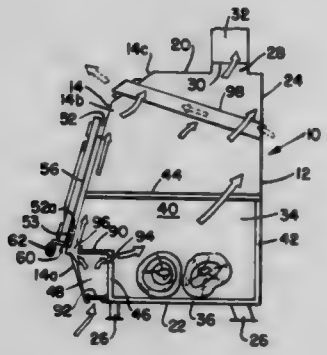
means connecting said preheat chamber means to said vertical tubes, and the integrated area of said holes having an area equal to substantially twenty percent of the area of said primary air inlet means whereby the introduction of said preheated secondary air thereby increases the efficiency of combustion and ignition of unburned gases in said combustion chamber means.

4,343,289

WOOD BURNING STOVE

Valentine J. Zimmerman, 224 N. 4th St., Galesville, Wis. 54630

Filed Mar. 21, 1980, Ser. No. 132,625
Int. Cl.³ F24C *1/14*; F24B *5/00, 7/00, 3/00*
U.S. Cl. 126—77 12 Claims



1. A wood burning stove for heating a designated space comprising:

(a) a housing having top, bottom, front, rear and side walls, an access opening in said front wall for inserting therethrough wood to be burned and at least one door closing said opening for making said housing air tight;

(b) a combustion chamber within said housing for burning said wood, whereby combustion gases are produced in said combustion chamber and rise;

(c) an air chamber within said housing in air flow communication with said combustion chamber whereby air flowing from said air chamber is heated in said combustion chamber and rises, said air chamber defined by the intersection of said front wall, said bottom wall, a first interior wall extending generally upwardly from said bottom wall and a second interior wall extending generally rearwardly from said front wall below said at least one door;

(d) damper means formed in said bottom wall in said air chamber for controlling air flow into said air chamber;

(e) means associated with said air chamber for directing at least a portion of said air flow from said chamber across the surface of said door within said housing;

(f) flue means adjacent the top of said housing for discharging combustion gases and heated air therefrom; and

(g) conduit means having air inlet openings in at least one wall of said housing and air outlet openings in another wall of said housing, said outlet openings communicating with said space to be heated, said conduit means disposed within said housing in the path of said rising combustion gases and heated air, whereby said combustion gases and heated air give up at least a portion of their thermal energy to said air in said conduit means before being discharged through said flue means and said heated air in said conduit means is discharged through said outlet openings into said space to be heated.

4,343,290

HOT AIR FURNACE

James W. Flatte, 673 Bradford St. SW., Gainesville, Ga. 30501

Filed Feb. 26, 1981, Ser. No. 238,507
Int. Cl.³ F24H *3/02*
U.S. Cl. 126—110 E 10 Claims

1. A hot air furnace comprising:

an outer housing having a smoke exit, a hot air exit to a space to be heated and a fuel loading chute having a closure thereon;

a firebox having side walls, a rear wall and a front wall;

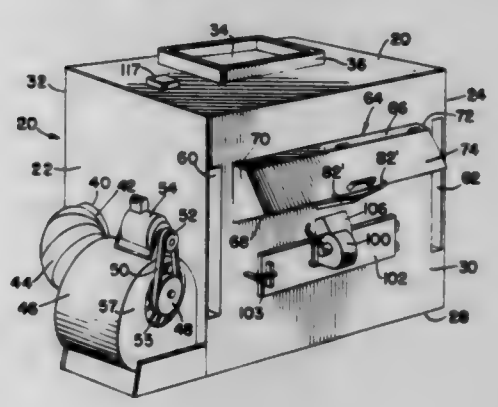
a pre-heating chamber between the outer housing and the firebox;

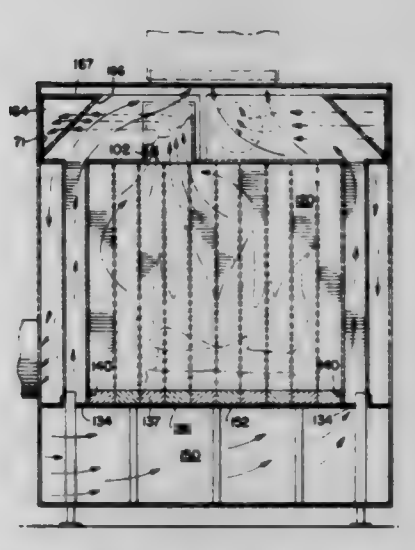
a lower chamber beneath the firebox;

an upper hot air chamber above the firebox, said hot air chamber in communication with the hot air exit;

an air distribution blower for directing air between the pre-heating chamber and the lower and upper chambers;

heat exchange means between the lower and upper chambers, said heat exchange means adapted to permit air to pass between said chambers;





a smoke chamber above the firebox, said smoke chamber in communication with the firebox and the smoke exit, and in heat exchange communication with the hot air chamber;

a combustion blower for feeding air to the firebox;

means within the space to be heated connected to the blowers for automatically operating the blowers whereby the fire is fed by the combustion blower and the space to be heated is supplied with hot air by the distribution blower which extracts pre-heated air from the pre-heating chamber and forces said air into the lower chamber and through the heat exchange means into the upper chamber where the hot air is further heated upon contact with the smoke chamber prior to exiting the hot air exit into the space to be heated; and

latching means to the loading chute closure.

4,343,291

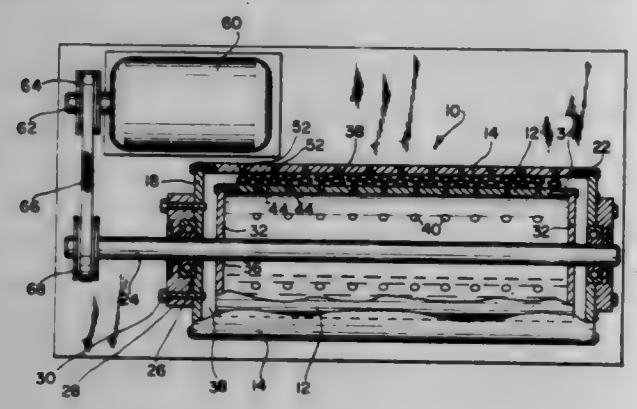
FRICTION HEAT GENERATOR

Robert L. Clausen, 1912 Pound Hill Rd., R.F.D. #1, Woonsocket, R.I. 02895

Filed Apr. 21, 1980, Ser. No. 142,108
Int. Cl.³ F24C *9/00*
U.S. Cl. 126—247 4 Claims

1. A frictional heat generator comprising, an inner cylinder and a coaxial outer cylinder in surrounding spaced relation to the inner cylinder so as to provide a chamber therebetween

and wherein said chamber is adapted for receipt of a heat exchange fluid, said inner cylinder having a plurality of first pins affixed thereto having enlarged heads at their free ends and radially outwardly extending into said chamber with said enlarged heads positioned proximal to the inner surface of said outer cylinder, said outer cylinder having a plurality of second pins affixed thereto having enlarged heads at their free ends



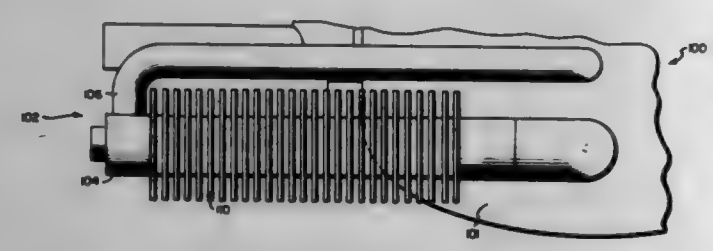
and radially inwardly extending into said chamber with said enlarged heads positioned proximal to the outside surface of said inner cylinder, said first and second pins arranged so as to be longitudinally spaced from each other and means for rotating said inner cylinder with respect to said outer cylinder whereby the movement of said first pins past said second pins and said outer cylinder churns and agitates said fluid so as to generate frictional heat in turn absorbed thereby.

4,343,292

VAPOR JACKETED COOKING VESSEL

Edward L. Kells, Batavia, and Robert L. Narowski, Park Ridge, both of Ill., assignors to Groen Division/Dover Corporation, Elk Grove Village, Ill.

Filed Feb. 21, 1980, Ser. No. 123,386
Int. Cl.³ A47J *27/06*
U.S. Cl. 126—378 **3 Claims**



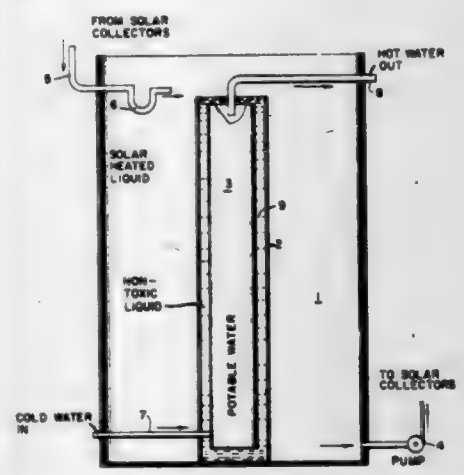
1. A vapor jacketed cooking vessel comprising a kettle having a bottom and side walls for receiving and containing therein a product to be heated; a vapor jacket disposed about all or a portion of the bottom and side walls of said kettle; and a working fluid contained within said vapor jacket; the improvement comprising a means for heating said kettle and a product contained therein, said means comprising at least one tubular evaporator having one closed end and one open end, said open end being affixed to said vapor jacket so that said working fluid flows into and floods said evaporator and functions as the working fluid therein, said working fluid in said vapor jacket functioning as a reservoir of working fluid for said evaporator to maintain sufficient working fluid in said evaporator to prevent burning said evaporator at high heat inputs, said vapor jacket and said tubular evaporator defining a space which is operationally sealed, essentially free of non-condensible gases and partially filled with said working fluid, means for heating said tubular evaporator to vaporize said working fluid flowing into it from said reservoir in said vapor jacket and a vapor conduit having one end thereof affixed in open communication to said tubular evaporator adjacent said closed end thereof and its other end affixed in open communication with said vapor jacket for conveying said vaporized working fluid from said evaporator into sid vapor jacket the entrance of said one end of said vapor conduit being above said evaporator and above the usual level of said working fluid in said vapor jacket, said working fluid upon being vaporized flowing to and condensing on that portion of said kettle surrounded by said vapor jacket, whereby said kettle and the product therein is heated by the thermal energy stored in the heat of evaporation of said fluid.

4,343,293

SOLAR DOMESTIC WATER HEATER

Harry E. Thomason, and Harry J. L. Thomason, Jr., both of 609 Cedar Ave., Fort Washington, Md. 20022

Filed Nov. 3, 1980, Ser. No. 203,427
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—400 **2 Claims**



1. Solar domestic water heater apparatus comprising a first outer container containing a heat-storage, heat-transfer liquid to be circulated to a solar heat collector, a second container inside of said first container containing a heat-storage, heat-transfer liquid, and a third container inside of said second container containing stored solar-produced heat in the form of relatively clean liquid such as water, said liquid in said first container not necessarily being potable and said liquid in said third container being potable, said third container and said second container extending downward to a point almost as low as the bottom of said first container and almost as high as the top of said first container.

4,343,294

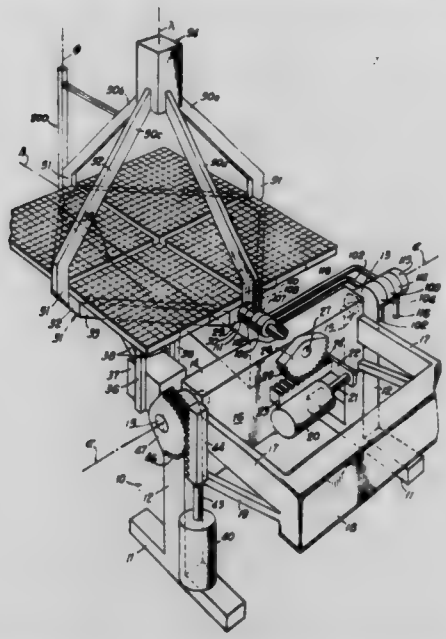
SOLAR COLLECTOR ASSEMBLY

Jack H. Daniel, 4009 Melinda Dr., Chattanooga, Tenn. 37416

Filed Oct. 26, 1979, Ser. No. 88,608
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 **16 Claims**

1. In an apparatus for collecting solar energy of the type having a hot box against which the rays of the sun are reflected, the combination therewith of a plurality of flat mirrors spaced from and arranged around an axis extending between said mirrors and said hot box, said mirrors being in a plane generally perpendicular to said axis, a plurality of said mirrors being longitudinally adjacent to each other, a plurality of said mirrors being transversely adjacent to each other and a bed below said mirrors, said bed including means for individually supporting and permitting longitudinal and transverse adjustment of the position of each of said mirrors for assuring that said mirrors respectively individually reflect the rays of the sun toward said hot box, said means including a plurality of rods, a plurality of bolts passing through said rods and extending toward said hot box, swivel elements on the upper ends of said bolts for respectively supporting the lower central portion of each mirror for tiltably mounting the mirrors respectively on their bolts, said swivel elements each including a flat plate supporting each mirror, said plate being provided with a cen-

tral recessed portion and a hole through the recessed portion, and a pair of curved washers on opposite sides of said hole, said



bolt extending through said hole and said washers and having a bolt head within said recessed portion.

4,343,295

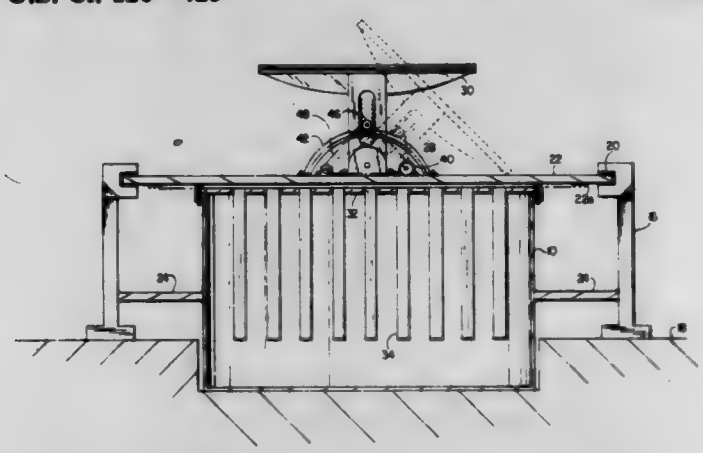
SOLAR ENERGY SYSTEM

Robert Dubicki, 240 Cianci Rd., New Britain, Conn. 06053

Filed Mar. 5, 1981, Ser. No. 240,627

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—425 **2 Claims**



1. A solar energy system comprising means defining a fluid storage tank and including fluid inlet and outlet conduits communicating with the said tank,

a heat conductive top for said storage tank and including depending conductive elements connected to the underside of said top and adapted for immersion in the fluid filled tank,

fixed frame means supporting a ring gear for rotation on a vertical axis which is located within said heat conductive top,

a movable frame supported on said ring gear for rotation therewith and including a yoke structure pivotally supported on said ring gear for movement on a horizontal axis defined by said movable frame and said axis located in fixed relationship to said ring gear,

lens means for focusing solar energy, said lens means mounted on said yoke structure and adapted to focus solar energy at said heat conductive fluid storage tank top,

means for moving said yoke structure to permit said lens means to be aligned with the source of solar energy throughout the day, said yoke moving means including drive means mounted on said movable frame and said movable frame including parallel support tracks,

a follower journalled on a shaft which is driven by said drive means and which follower engages said track to support said movable yoke structure and the lens means mounted therein.

4,343,296

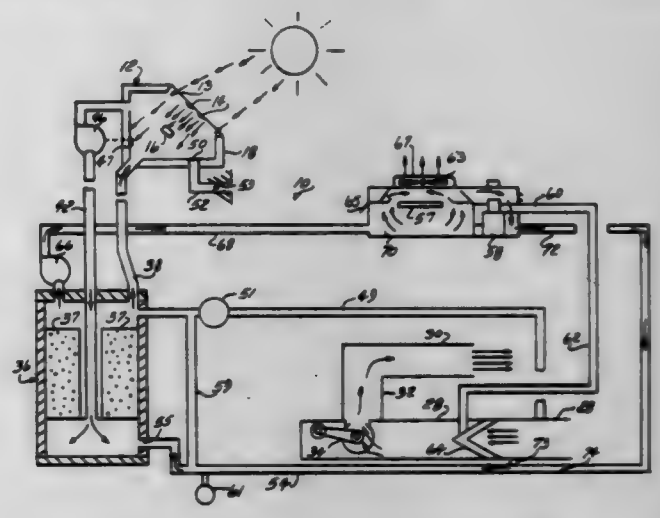
SOLAR HEATING SYSTEM

Antonino Franchina, Sterling Heights, Mich., assignor to Karl Wojcik, Warren, Mich., a part interest

Continuation-in-part of Ser. No. 84,880, Oct. 15, 1979, Pat. No. 4,291,833. This application Dec. 11, 1980, Ser. No. 215,380

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—436 **3 Claims**



1. A stationary solar heater having interior walls and a solar energy collector for utilizing sunlight to heat the walls and the solar energy collector whereby air is circulated past the walls and collector to absorb heat therefrom and translated to a device for utilizing the heat contained within the air, the improvement comprising:

a solar panel through which the sun rays pass for heating the interior walls of the solar heater and thus the air therein;

a plurality of lenses carried on a portion of the panel, said lenses concentrating the solar energy on the collector;

the collector having a length substantially longer than the length of the plurality of lenses;

wherein the plurality of lenses and the collector are aligned so that in the morning the entire amount of solar energy striking the lenses is concentrated directly on a first portion of said collector, at noon the entire amount of solar energy striking the lenses is concentrated directly on a second or central portion of the collector, and in the afternoon the entire amount of solar energy striking the lenses is concentrated directly on a third portion of the collector;

a heat chamber;

a plurality of Zeolite crystals in said chamber adapted to store heat communicated to said storage chamber from said solar energy collector;

means for communicating said solar energy collector to said heat storage chamber when the temperature in said solar energy collector reaches a predetermined amount; and

means for communicating moist air to said heat storage chamber to release the heat stored in said Zeolite crystals.

4,343,297

SOLAR ENERGY COLLECTOR

Irving E. Figge, 11209 Susan Dr., Sandy, Utah 84070

Continuation-in-part of Ser. No. 45,918, Aug. 17, 1979, abandoned. This application May 5, 1980, Ser. No. 146,434

Int. Cl.³ F24J *3/02*

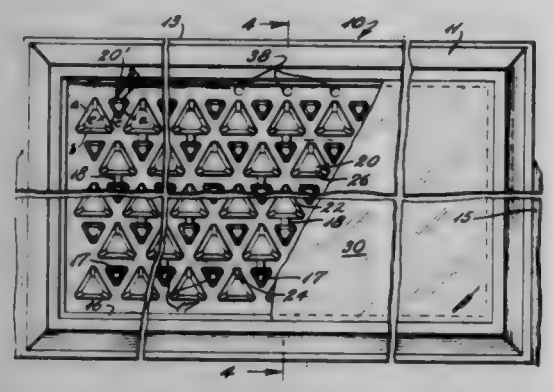
U.S. Cl. 126—449 **4 Claims**

1. A solar energy collector having a front, a back, and sides, and comprising:

a thin-walled energy collector panel comprising plural alternately interspersed small and large generally tetrahedron-

al-shaped collector pockets formed therein, an exposed surface facing said front and exposable to the sun and an unexposed surface facing said back, each of said pockets opening toward said exposed surface and having a truncated closed base, and a substantially perpendicular depth from said exposable surface to said base, the depth of said small pockets being less than the depth of said large pockets;

a glazing sealingly attached to and closing said front;



a back cover sealingly attached to and closing said back and engaged by at least some of said large pocket bases such that said large pockets provide internal structural support to said collector;

inlet means for entrance of air to and outlet means for exit of air from said collector; and

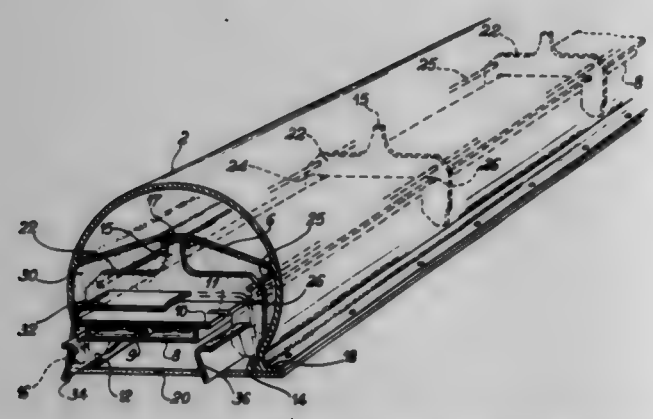
circulation means for circulation of air along a flow path from said inlet means to said outlet means.

4,343,298

COLLECTOR FOR SOLAR BOILER WITH LINEAR CONCENTRATION

Georges Ambille, Andernos; Eugene Bacconnet, Marcoussis, and Philippe Ragot, Suresnes, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 21, 1980, Ser. No. 151,912
Claims priority, application France, May 28, 1979, 79 13471
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **4 Claims**



1. In a collector for solar boiler with linear concentration, comprising a pick-up tube through which a heat-transfer fluid passes and disposed in a supporting structure,

said supporting structure is constituted by a section in omega form, with a wide opening at its base, this section being provided with an inner reinforcement, and

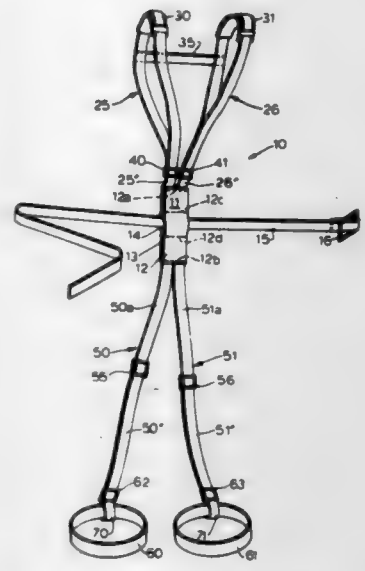
the pick-up tube is held by rigid crosspieces made of insulating material, distributed along the section and fixed to the base of the omega.

4,343,299

STABILIZING APPARATUS FOR MALE AND FEMALE PARTNERS

Luther C. Oxendine, Jr., Rte. 2, Box 63, Maxton, N.C. 28364

Filed Mar. 30, 1981, Ser. No. 249,148
Int. Cl.³ A61M *19/00*
U.S. Cl. 128—1 R **1 Claim**



1. A stabilizing apparatus for male and female partners comprising:

(a) an inelastic rectangular flexible back pad formed of mated stitched together pieces having a laterally extending tubular portion formed by lateral stitching intermediate the length thereof and adapted for placement in a central lengthwise of the body extending position in the lower lumbar curve of he back of the female partner and to conform with the shape thereof;

(b) an inelastic strap passing loosely through said tubular portion of said pad and adapted with adjustable securing means to encircle the abdomen of said female partner for maintaining said pad secured to said curve of said female partner's back;

(c) a pair of inelastic shoulder loop straps having the loop ends thereof secured by stitching in a spaced apart relation to an upper end portion of said pad and adapted with adjustable securing means mounted on each of the respective front loop portions thereof to be adjustably mounted on and passed under the shoulders of said female partner;

(d) a shoulder pad positionably mounted on each of said shoulder loop straps;

(e) an elastic cross strap secured by stitches to and extending between respective back loop portions of said shoulder loop straps and adapted in use to extend across the back of said female partner above the location of said pad and below the location of said shoulder pads; and

(f) a pair of strap assemblies for use by the said male partner, each said assembly comprising:

(i) an inelastic strap having one upper end integrally secured by stitching to the lower end edge of said pad and spaced apart from the other such assembly elastic strap and having an opposite lower end formed as a first strap loop means with means for adjusting the length of said first strap loop and to an extent at least sufficient to accommodate to the normal leg and foot positions of said male partner during coitus;

(ii) a closed elastic strap loop adapted as a stirrup for receiving one foot of said male partner; and

(iii) means for releasably locking the lower loop end of said first strap loop to retain said closed elastic strap loop positioned therein,

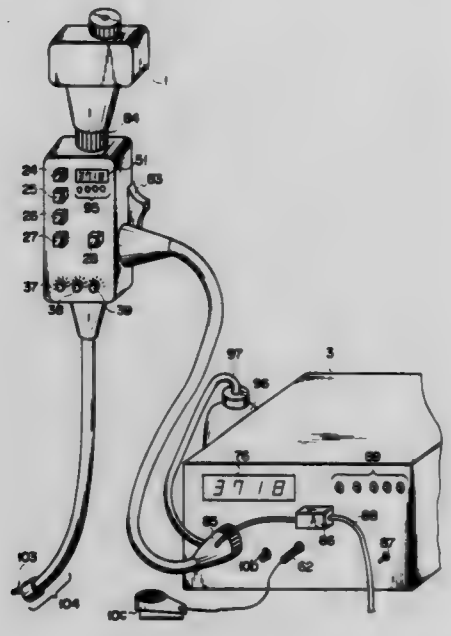
whereby during use each of said partners' positioning is stabilized by action of said apparatus and each leg of said male partner is forced to act against the resilient force of said elastic strap loops utilizing the same as elastic stirrups for the feet of said male partner.

4,343,300

DATA TRANSMISSION SYSTEM FOR AN ENDOSCOPE APPARATUS

Shinichiro Hattori, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,538
Claims priority, application Japan, Sep. 20, 1979, 54-121225
Int. Cl.[3] A61B *1/04, 1/06*
U.S. Cl. 128—6 10 Claims



1. A data transmission system for an endoscope apparatus which performs data-transmission between at least two of an endoscope, a photographic attachment and a light source unit, comprising:

a first data transmission/reception device provided in the light source unit and including at least one data generating means and at least one means responding to a reception data;

a second data transmission/reception device provided in at least one of the endoscope and the photographic attachment;

two-way data transmission lines provided in the endoscope to relay data between the first and second data transmission/reception devices; and

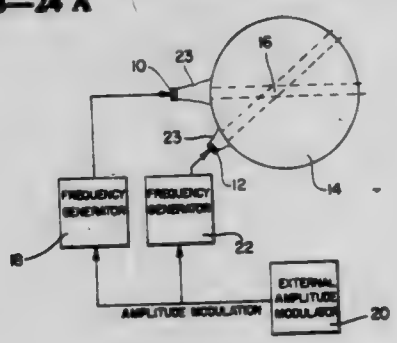
means for connecting the data transmission/reception devices and the two-way data transmission lines.

4,343,301

SUBCUTANEOUS NEURAL STIMULATION OR LOCAL TISSUE DESTRUCTION

Robert Indech, 46 Roger Williams Green, Providence, R.I. 02904

Filed Oct. 4, 1979, Ser. No. 81,884
Int. Cl.[3] A61H *23/00, 39/00*
U.S. Cl. 128—24 A 7 Claims



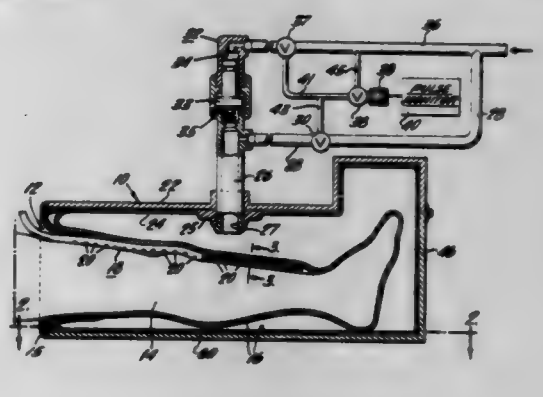
1. A method of noninvasively stimulating a neuron within a body via a mechanical resonance produced by a low frequency sonic beat comprising the steps of positioning a pair of transducers on the body so that the sonic waves emanating therefrom will intersect, sending a high frequency sonic wave from one transducer, sending a high frequency sonic wave from the other transducer, one of said sonic waves having a slightly higher frequency than the other, whereby a low frequency beat is produced at the intersection of said waves equal to the difference in frequency between said waves, whereby said low frequency beat is sufficient in amplitude to produce an action potential at a neuron situated at said intersection point, and directing said intersection to a predetermined point within the body.

4,343,302

PROMOTING CIRCULATION OF BLOOD

Richard S. Dillon, 150 Mill Creek Rd., Ardmore, Pa. 19003

Continuation of Ser. No. 955,620, Oct. 30, 1978, Pat. No. 4,269,175, which is a continuation-in-part of Ser. No. 803,656, Jun. 6, 1977, abandoned. This application Feb. 9, 1981, Ser. No. 233,073
Int. Cl.[3] A61H *1/00*
U.S. Cl. 128—24 R 1 Claim



1. Apparatus for improving circulation of blood through a leg which comprises: a rigid enclosure for a leg; a conduit communicating with an aperture in the upper wall of said enclosure and extending upwardly from said enclosure, said conduit having an outlet valve in an upper portion thereof, said outlet valve comprising a valve element normally biased upwardly to the open position to permit gas to flow through a circumferential area between the valve member and the valve seat; a compressed gas supply conduit communicating with the first-named conduit in a lower portion thereof; a normally closed inlet valve in said conduit; a source of compressed gas to said supply conduit and to said inlet valve and said outlet valve; means biasing said outlet valve to the open position; means responsive to heart action for supplying compressed gas from said source to said inlet valve to open said valve, and to said outlet valve to force said valve to the closed position in opposition to said biasing means, and for alternately interrupting said supply, thereby to close said inlet valve and to return said outlet valve to the open position.

4,343,303

STIMULATING APPARATUS

L. Benton Williams, P.O. Box 916, Georgetown, S.C. 29440

Filed Oct. 21, 1980, Ser. No. 199,343
Int. Cl.[3] A61H *1/00*
U.S. Cl. 128—32 8 Claims

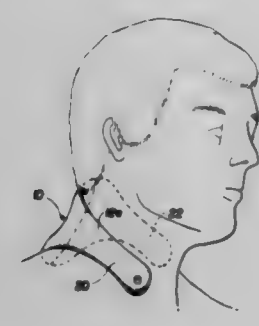
1. Apparatus for stimulating muscle activity in a selected body area, comprising:

a body portion formed of a flexible and resilient, substantially hard plastic material having an inner layer of a soft, porous material and having a shape generally corresponding to the selected body area, said body portion being constructed to extend only partially around the selected body area to an extent sufficient to be self-supporting thereon and to allow freedom of movement of the selected body area when said body portion is mounted thereon, the hardness of the plastic material being varied in said body portion to facilitate movement of the body area on which

it is mounted and the self-supporting of the body portion thereon,

vibrating means mounted on said body portion for stimulating muscle activity in the selected body area when said body portion is mounted thereon, and

portable power means mounted on said body portion and connected to said vibrating means.

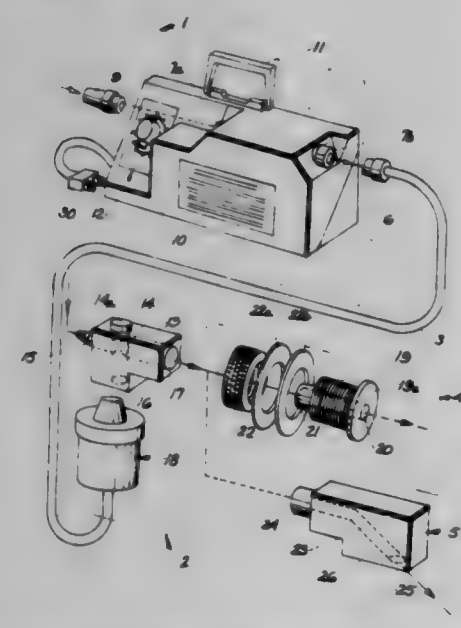


4,343,304

VETERINARY INHALATION THERAPY APPARATUS

Horst R. Hickmann, 455 Montegor, Cincinnati, Ohio 45230

Filed Jul. 17, 1980, Ser. No. 169,740
Int. Cl.[3] A61M *11/00*
U.S. Cl. 128—200.14 6 Claims



1. A veterinary inhalation therapy apparatus by which liquid medication is reduced to a fine spray for the treatment of upper respiratory conditions in a small animal confined in a cage of the type having bars in a vertical plane with a spaced parallel relationship, said apparatus comprising:

(a) a portable electrically powered air compressor unit for producing a pressurized air output;

(b) a flexible conduit having inlet and outlet ends, the inlet end being connected to and receiving the output of said compressor unit;

(c) a nebulizing assembly having an inlet connected to the outlet end of said flexible conduit and an outlet, said nebulizing assembly including a reservoir for the liquid medication used in said inhalation therapy and means for reducing the medication in said reservoir to a fine spray by the interaction with the pressurized air flow from said compressor; and

(d) means for delivering said spray from said outlet of said nebulizing assembly to said cage, said means comprising:

(1) a straight, tubular fitting having an inlet end connected to said outlet of said nebulizing assembly and an outlet end of enlarged diameter adapted to be located within said cage, said fitting being externally threaded from said inlet end to said outlet end; and

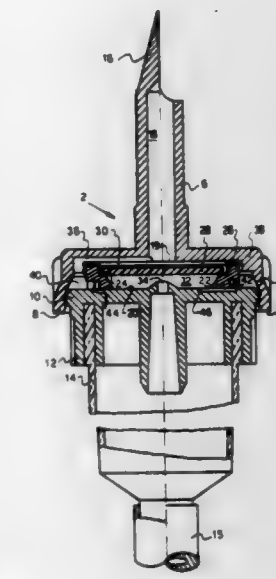
(2) a nut threadedly engaged on said fitting whereby said fitting can be located between an adjacent pair of said bars with said last mentioned bars being clamped between said nut and said enlarged outlet end of said fitting.

4,343,305

ADJUSTABLE-RATE, CONSTANT OUTPUT INFUSION SET

Dan Bron, 36 Palmach St., Haifa, Israel

Continuation-in-part of Ser. No. 842,168, Oct. 14, 1977. This application Jun. 5, 1980, Ser. No. 156,781
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—214 R 20 Claims



1. An adjustable-rate, constant-output infusion set comprising:

an inverted-cup-shaped connector piece having substantially cylindrical walls and a downward-facing, bottom surface provided with an inlet port,

a head piece rotatably engaging said connector piece;

a member comprised at least by an annular portion, interposed between and rotatable relative to either of, said connector piece and said head piece, and having means rendering it stationary relative to the other one of said pieces;

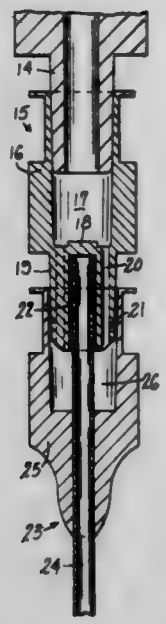
an elastically stretchable diaphragm at least the radial position of which is maintained by said member and which diaphragm defines with its upper surface a first chamber comprising said inlet port, and with its lower surface a second chamber comprising a control port, wherein, upon being exposed to a liquid pressure differential between said first chamber and said second chamber, at least a portion of said diaphragm, due to its elastic stretchability, is movable between positions closer to said control port to thereby reduce the rate of flow therethrough, and positions further away from said control port, to thereby increase the flow therethrough, to maintain a constant rate of flow, and further comprising

means defining a passageway leading from said first chamber via said member into said second chamber, said passageway including at least one first portion in which flow is relatively unobstructed as well as at least one second portion in which flow is relatively restricted, the restrictive effect of which second portion determines said differential pressure and, thus, the flow rate of said infusion set, wherein said restrictive effect can be varied by means of a rotary displacement of one of said pieces relative to the other.

4,343,306
CLEANING DEVICE FOR SYRINGE TYPE NEEDLES

Gerald E. Mericle, 130 Second St., Hamden, Conn. 06514

Filed Feb. 23, 1981, Ser. No. 236,834
Int. Cl.[3] A61M 5/00
U.S. Cl. 128—218 N 5 Claims

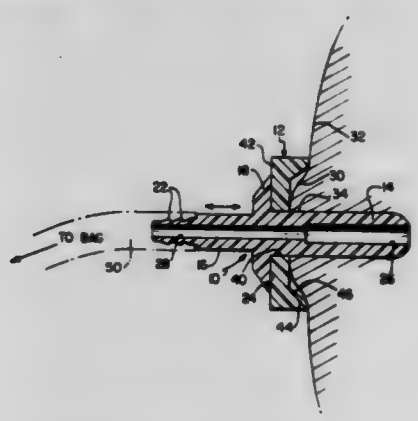


1. A cleaning device for surgical needles in combination with a syringe having a nozzle, said device comprising an adapter adapted for operative engagement with the syringe nozzle, the adapter including an axially extending portion having a substantially cylindrical outer wall, an axially extending passage in said portion and at least one radially disposed vent extending from said passage through said wall, the adapter being provided further with a proximally open chamber adapted to receive a syringe nozzle, a distally open chamber and a transverse wall between said chambers.

4,343,307
FLUSHING NOZZLE AND DILATER FOR COLOSTOMY IRRIGATION

Emil T. Reda, 5808 Waycross Rd., Baltimore, Md. 21206

Filed Dec. 16, 1980, Ser. No. 216,978
Int. Cl.[3] A61M 3/00
U.S. Cl. 128—239 4 Claims



1. A flushing nozzle and seal for colostomy irrigation, comprising:

(a) a flushing nozzle having a flushing section at the leading end thereof which can be inserted through a stoma opening, a metering section, and a sealing flange integrally formed with said nozzle and positioned intermediate said flushing and metering sections, the outer end of said metering section being adapted to receive a connecting hose to an irrigation source, said flushing section having a flushing orifice and said metering section having a metering orifice, said orifices being coaxial and longitudinally spaced, with said flushing orifice being of relatively larger diameter so as to improve the flushing action, and

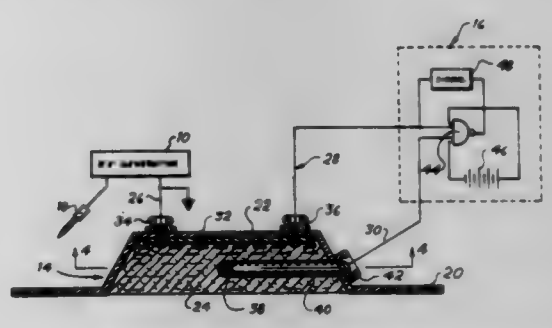
(b) a stoma seal adapted to fit over said flushing section and having an opening such that said flushing section fits relatively tightly within said opening but permits said stoma seal to be moved longitudinally along the peripheral surface of said flushing section, said stoma seal being generally cup-shaped and including a leading peripheral edge adapted to contact the abdominal wall around the stoma, and a rear surface against which the leading end of said sealing flange can selectively engage,

whereby sealing is provided at least at the peripheral edge of said stoma seal and the interface of said flushing section and the opening in said stoma seal.

4,343,308
SURGICAL GROUND DETECTOR

Robert D. Gross, 5427 6th St., Lubbock, Tex. 79416

Filed Jun. 9, 1980, Ser. No. 157,403
Int. Cl.[3] A61B 17/39
U.S. Cl. 128—303.13 9 Claims



1. The method of preventing burns at a grounding pad during use in an electrosurgical procedure comprising:

a. monitoring the temperature at the grounding pad during the procedure, and

b. activating an alarm when the monitored temperature of the grounding pad exceeds a predetermined limit.

6. An electrosurgical device to determine the occurrence of a burn producing condition having

a. a signal generator,

b. an active electrode connected to said generator,

c. a system ground on said generator, and

d. a grounding pad with

(i) a conductive medium of a gel that is adapted to contact the patient,

(ii) said medium connected to said ground, and

(iii) an outer perimeter having an adhesive surface that is adapted to contact the patient;

wherein the improvement comprises:

e. a temperature sensor in said medium,

f. an alarm connected to said temperature sensor for sounding an alarm when the temperature exceeds a predetermined temperature.

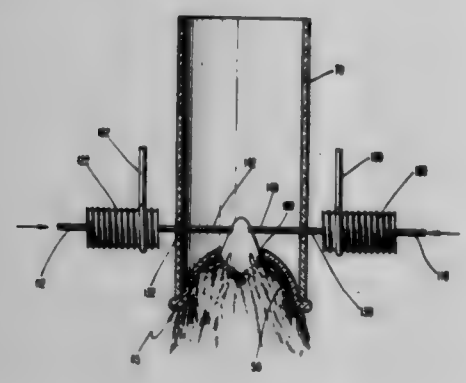
4,343,309
METHOD FOR REMOVING APPENDAGES FROM AVIAN SPECIES

Ronald A. DuBose, Marietta, Ga., and William D. Woolsey, Greenville, Tenn., assignors to Agri-Bio Corporation, Ithaca, N.Y.

Division of Ser. No. 906,808, May 17, 1978, Pat. No. 4,237,891.
This application Jun. 24, 1980, Ser. No. 162,553
Int. Cl.[3] A61B 17/36
U.S. Cl. 128—303.14 8 Claims

1. A method for removing an undesired portion of an appendage having opposing sides from avian species which com-

prises making electrical contact with each of said opposing sides and burning a hole through said appendage by passing an



electric current between said electrical contacts such that the undesired portion will later be rejected.

4,343,310

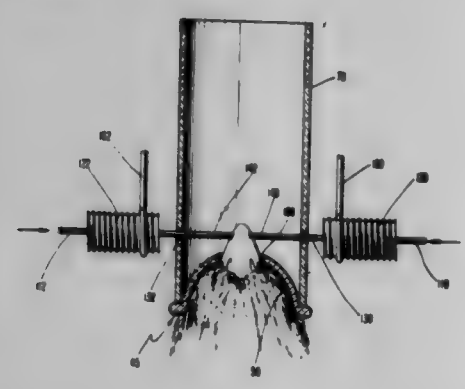
APPARATUS FOR REMOVING APPENDAGES FROM AVIAN SPECIES

Ronald A. DuBose, Marietta, Ga., and William D. Woolsey, Greenville, Tenn., assignors to Agri-Bio Corporation, Ithaca, N.Y.

Division of Ser. No. 906,808, May 17, 1978, Pat. No. 4,237,891. This application Jun. 24, 1980, Ser. No. 162,554

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.14 **2 Claims**



1. An apparatus for removing an undesired portion of a beak from a fowl comprising:

mask means for receiving and positioning the beak of the fowl, the mask means having a recess element through which a portion of the beak extends with the beak received by the mask means; and

means for communicating with the portion of the beak extending through said recess element and for applying energy directly through the interior of said portion of the beak and selectively damaging a portion of said interior extending from one surface to an opposing surface of the beak by heating in said interior, the energy applied through said portion of the beak being of sufficient magnitude to damage said interior portion of the beak by burning without effecting the immediate removal of the undesired portion.

4,343,311

ATRIAL REFRACTORY CONTROL FOR R-WAVE REJECTION IN PACEMAKERS

H. Toby Markowitz, Anoka, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1980, Ser. No. 145,052

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **8 Claims**

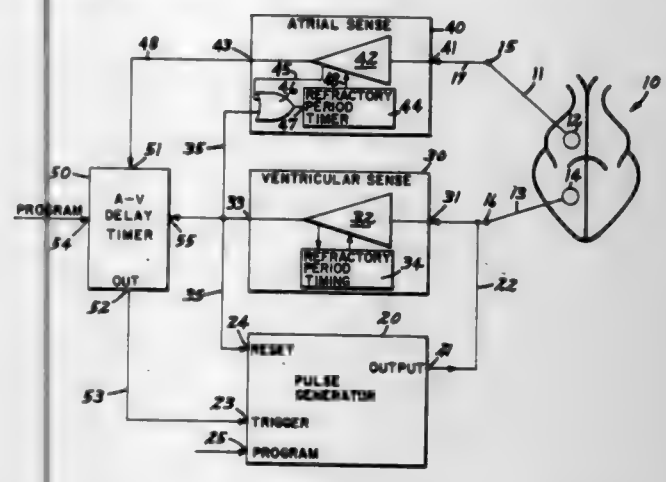
1. A pacemaker for selectively delivering stimulating pulses to the heart in an atrial synchronous mode of operation, comprising:

ventricular terminal means for connection to a patient's heart for delivering ventricular stimulation pulses thereto;

generating means for selectively delivering ventricular electrical stimulation pulses to said ventricular terminal means;

ventricular sense amplifier means connected to said ventricular terminal means for sensing ventricular beats of the heart, said ventricular sense amplifier means having a refractory period following the sensing of a ventricular heartbeat or stimulation pulse;

atrial terminal means for connection to a patient's heart for sensing atrial beats;



atrial sense amplifier means connected to said atrial terminal means for sensing atrial contractions of the heart;

delay means operatively connected to said atrial sense amplifier means and said generating means for causing generation of a ventricular electrical stimulating pulse after a predetermined time interval following a sensed atrial contraction; and

control means operatively connected to render said atrial sense amplifier means inoperative during the refractory period of said ventricular sensing amplifier.

4,343,312

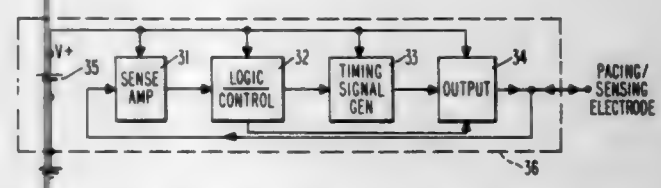
PACEMAKER OUTPUT CIRCUIT

Guillaume L. M. Cals, Dieren; Frederik H. M. Wittkampf; Kornelis A. Mensink, both of Brummen, and Hendrik L. Brouwer, Dieren, all of Netherlands, assignors to Vitafin N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 30,457, Apr. 16, 1979, Pat. No. 4,305,396. This application Feb. 5, 1981, Ser. No. 231,889

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **6 Claims**



1. A pacemaker of the type for delivering pacing stimulus signals to a patient's heart, having an output circuit for generating said pacing stimulus signals, a timing generator for timing the generation of said pacing stimulus signals, sensing means for sensing heartbeat signals from said patient's heart, and logic means connected to said sensing means and said timing generator for controlling generation of said pacing stimulus signals,

wherein said output circuit is characterized by a coupling circuit having an output capacitor, for coupling said stimulus signals to said patient's heart;

a charging circuit connected to said coupling circuit and having switchable circuit means for providing a first charging current to charge said output capacitor during a first predetermined time duration;

a first switching circuit connected to said coupling circuit and having means for providing discharge of said output capacitor for a second time duration, thereby providing a negative stimulus pulse to said heart; and

a second switching circuit with a capacitance element, connected to said coupling circuit, and having means for providing a second charging current to said output capacitor circuit during a third time duration.

4,343,313

ADHESIVE BRASSIERE AND ITS METHOD OF MANUFACTURE

Danielle Le Jeune, Rue du Vignoble, 44450 St Julien de Concelles, France

PCT No. PCT/FR79/00055, § 371 Date Feb. 29, 1980, § 102(e) Date Feb. 29, 1980, PCT Pub. No. WO80/00121, PCT Pub. Date Feb. 7, 1980

PCT Filed Jun. 29, 1979, Ser. No. 192,385

Claims priority, application France, Jun. 30, 1978, 78 19579

Int. Cl.³ A41C *3/00*

U.S. Cl. 128—505 **12 Claims**



1. A brassiere element for supporting a single breast, comprising: a thin, shaped sheet material, said element being adhesively attached at a lower end thereof to at least the outer side surface of the breast for supporting the same, said element including a strap-like portion extending upwardly from the breast toward a corresponding shoulder of the wearer and terminating proximate the shoulder, at least a portion of said strap-like portion being adhesively attached proximate said shoulder and constituting a shoulder strap.

4,343,314

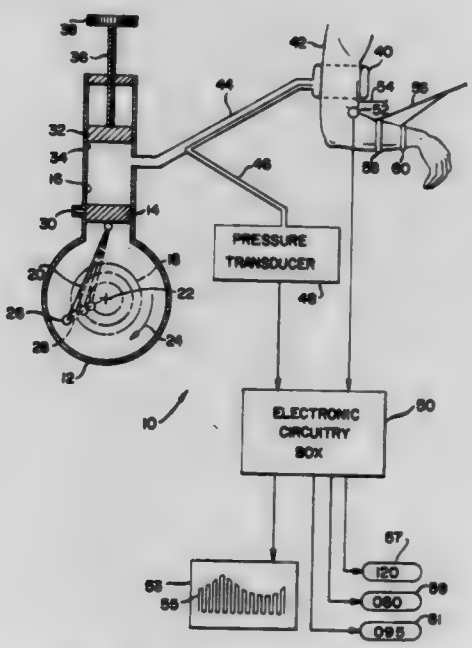
NON-INVASIVE REAL TIME BLOOD PRESSURE MEASUREMENT SYSTEM

Bohumir Sramek, 19211 Edgehill Dr., Irvine, Calif. 92715

Filed Aug. 11, 1980, Ser. No. 177,061

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—680 **17 Claims**



1. A non-invasive blood pressure measurement system for performing blood pressure measurements on a real time basis comprising:

a cuff composed of a flexible material for encircling a body appendage;

pump means for supplying fluid to said cuff, said pump means including means for periodically varying the pressure of said fluid at a frequency higher than the rate at which the heart beats and over a sufficient pressure range that the periodically varying fluid pressure repeatedly passes through both the systolic and diastolic blood pressure levels during each heartbeat interval in said appendage during blood pressure measurement acquisition;

means for detecting the times at which said fluid pressure is equal to said blood pressure;

means for measuring said fluid pressure; and

electrical circuit means for correlating said detecting means with said measuring means to thereby produce an electrical blood pressure signal indicative of the blood pressure in said appendage.

4,343,315

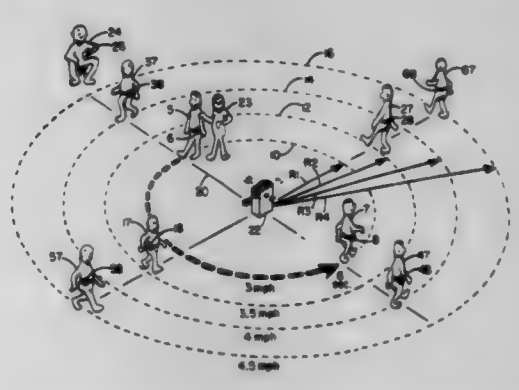
METHOD OF AND APPARATUS FOR MEASURING THE PHYSICAL CONDITION OF A PERSON

John B. O'Leary, Minnetonka, Minn., assignor to Grey-Mac Fitness, Ltd., Minneapolis, Minn.

Filed Jun. 20, 1980, Ser. No. 161,574

Int. Cl.³ A61B *5/02, 5/00*

U.S. Cl. 128—689 **11 Claims**



1. A method of simultaneously testing the physical condition of a plurality of persons, comprising the steps of:

providing a plurality of adjacent paths of progressively different lengths, the length of the longest path being at least twenty-five percent greater than the length of the shortest path,

having each person sequentially walk over each path in said plurality of paths in the same set period of time for each path, at a speed defined by requiring each walker to cover the length of each path in the same predetermined time interval, and after the set period of time, having each person move to an adjacent path of greater length, said persons moving progressively from the shortest path to paths of progressively increasing length such that the walking speed is progressively increased, and

continuously observing the heart rate of each person.

4,343,316

ELECTRONIC URINE FLOW MONITOR

Chris A. Jespersen, Fanwood, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed May 16, 1980, Ser. No. 150,250

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—771 **25 Claims**

1. An electronic urine flow monitor comprising,

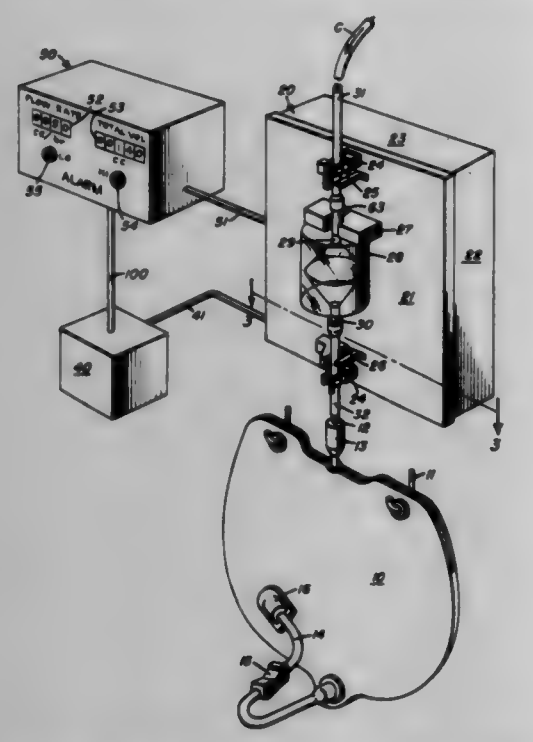
a calibrated volume urine collection chamber having top and bottom portions in the shape of truncated cones, the narrow open ends thereof being at the top and bottom extremities of the container,

first tubing means connecting said top narrow end of the chamber to a patient and adapted to pass urine to said chamber,

a urine drainage reservoir,

second tubing means connecting said bottom narrow end of the chamber to said reservoir,

first remote control normally closed valve means normally acting to prevent flow through said second tubing means, second remote control normally open valve means between said chamber and the patient and closable to block



flow through said first tubing means when said first valve means is open,

sensor means for sensing the filling of said double conical chamber,

indicator means for displaying total urine output, and

control means connected to said sensor means, said first and second valve means, and said indicator means for closing said second valve means and opening said first valve means to dump the contents of said chamber into said reservoir, and advancing said urine output display when said sensor means indicates the filling of said chamber.

4,343,317

METHOD OF TREATING GREEN TOBACCO

Gordon H. Bokelman, Boulder, Colo., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 9, 1980, Ser. No. 214,492

Int. Cl.³ A24B *3/00, 3/18*

U.S. Cl. 131—290 **6 Claims**

1. A method for treating whole green tobacco leaf comprising:

(a) expressing protoplasmic juice from the tobacco leaf by means of pressure; and

(b) artificially curing the tobacco leaf product resulting from step (a).

4,343,318

METHOD OF ENDOTHERMIC FERMENTATION OF TOBACCO

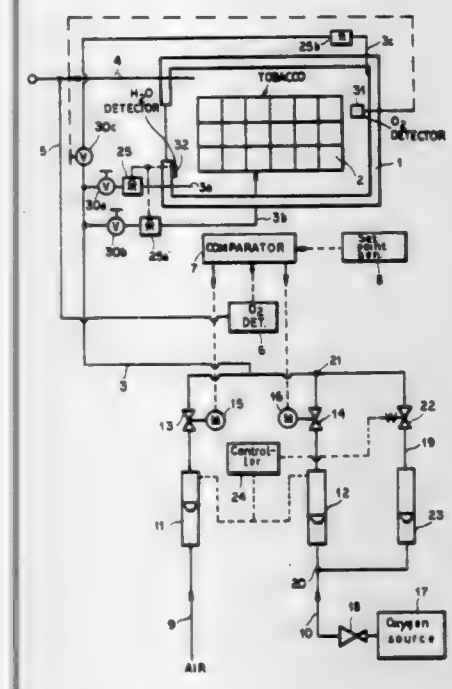
Wenzel Brenik, Grünwald, and Heinz Rudhard, Geretsried, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,805

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927188

Int. Cl.³ A24B *3/18, 15/18, 15/20, 15/28*

U.S. Cl. 131—300 **4 Claims**



1. A method of fermenting tobacco, comprising the steps of:

storing tobacco in a closed chamber;

maintaining an atmosphere in said chamber which has a concentration of greater than 25% oxygen; and

fermenting the tobacco in said chamber endothermically in said atmosphere.

4,343,319

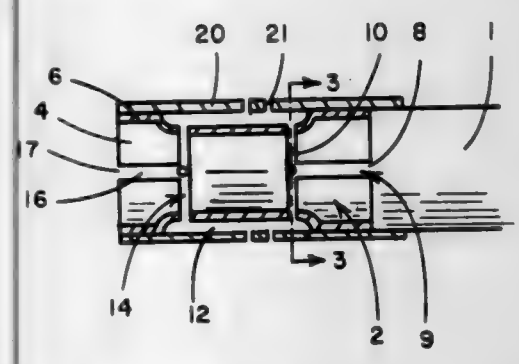
CIGARETTE FILTER

Daniel V. Cantrell, Prospect, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 28, 1980, Ser. No. 210,877

Int. Cl.³ A24B *3/04*

U.S. Cl. 131—336 **11 Claims**



1. A cigarette filter comprising:

a porous filter rod of substantially cylindrical configuration circumscribed by a smoke impervious plug wrap, the filter rod having at least one opening in at least one end thereof and at least one longitudinally extending groove embedded into the outer periphery of the rod and the wrapper and longitudinally spaced from said at least one opening and in flow-through communication with said at least one opening wherein said at least one opening is in flow communication with a longitudinally extending hollow channel disposed centrally of said filter rod and extending a distance less than the length of the filter rod, said longitu-

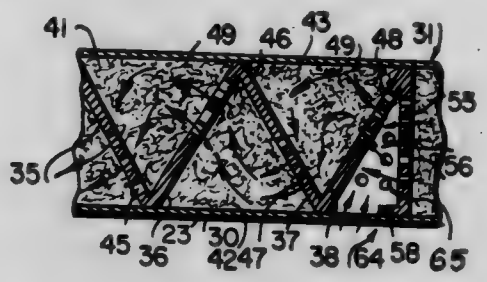
dinal channel interconnecting with groove connecting channels, said groove connecting channels being in flow communication with said groove, the groove being in flow communication with ventilating air.

4,343,320

CIGARETTE FILTER WITH OBLIQUE PARTITIONS

Rudolph Muto, 24 Williams St., Andover, Mass. 01810

Filed Feb. 25, 1981, Ser. No. 238,118
Int. Cl.[3] A24D *3/04*
U.S. Cl. 131—339 9 Claims



1. A filter for cigarettes and the like comprising:
a hollow elongated tube having an axial bore;
a fan folded web of oval shaped cross partitions each extending in a plane oblique to the axis of said bore and forming a succession of sealed chambers along said bore;
said oval shaped, oblique cross partition having staggered perforations to alternately guide smoke through each chamber in an undulated path;
the chamber at the downstream end of said tube containing aromatic unburned tobacco to enrich the flavor of said smoke and
fibrous filter material in all other said chambers to absorb and filter out undesirable substances in said smoke.

4,343,321

HAIR CLIP

John C. Caranicas, Brookfield, Mass., assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 228,901
Int. Cl.[3] A45D *8/24*
U.S. Cl. 132—48 A 7 Claims



1. A clip for securing a generally cylindrical hair roller with a wound tress of hair in a direction generally perpendicular to the longitudinal axis of the roller comprising:
a resilient member having a hinge portion, a first arm portion, and a second arm portion, said first arm portion and said second arm portion each having a first end and a second end, said first end of said first arm portion and said first end of said second arm portion being connected to said hinge portion thereby forming a general U shape, said first arm portion including a curved portion defining a first arc segment, said second arm portion including a curved portion defining a second arc segment, the concave sides of said first and second arc segments facing one another, said first arc segment having a different centerpoint than said second arc segment, said second arm portion including a reinforced area between said hinge portion and said second arc segment for providing that said first arm portion flexes more than said second arm portion when the clip is being positioned over the generally cylindrical roller, wherein said hinge portion provides sufficient tension to said first arm portion and said second arm portion to releasably retain between said first and second arc segments a generally cylindrical hair roller having a range of outside diameters.

4,343,322

PORTABLE SUN SHELTER

Maurice K. Fiddler, 31 Hygeia Parade, Ringwood, Victoria, Australia

Filed Apr. 21, 1980, Ser. No. 142,392
Claims priority, application Australia, Apr. 23, 1979, PD8509
Int. Cl.[3] E04F *10/04*
U.S. Cl. 135—5 R 3 Claims



1. A foldable shelter comprising a framework having two joints, first, second and a plurality of intermediate ribs each of generally U-shaped configuration, a flexible cover connected to said ribs, one end of the cover being connected to the first rib and the other end of the cover being connected to the second rib, one of the free ends of each rib being connected at one of said joints and the other of the free ends of each rib being connected at the other of said joints, said joints permitting the ribs to be rotatable relative to one another, at least one of the joints including resilient means for resiliently restraining rotation of at least the first and second ribs relative to said joints, characterized in that the first and second ribs are mounted for rotation on a common shaft but are isolated from one another by an intermediate washer which is non-rotatably mounted on the shaft, thereby isolating rotational movement of the first and second ribs relative to said joints, so that said first and second ribs can be moved independently.

4,343,323

PIPELINE TRANSPORTATION OF HEAVY CRUDE OIL

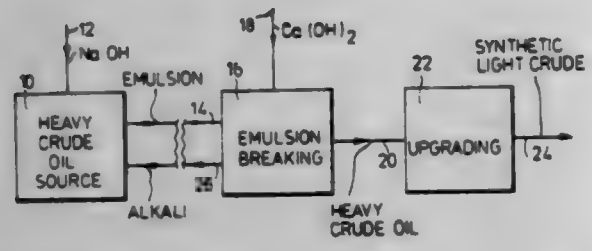
Michael A. Kessick, Edmonton, and C. Earl St. Denis, Fort Saskatchewan, both of Canada, assignors to Research Council of Alberta, Edmonton, Canada

Filed Jun. 9, 1980, Ser. No. 157,940
Claims priority, application United Kingdom, Jun. 8, 1979, 7920003
Int. Cl.[3] F17D *1/17*
U.S. Cl. 137—13 11 Claims

1. A method of transporting a heavy crude oil having an API gravity of less than 25° and containing groups capable of forming surfactants from a first location connected by a pipeline to a second location, which comprises:
contacting said heavy crude oil at said first location with deaerated water containing at least sufficient strong base to provide a pH of the water of at least about 11 so as to

form an oil-in-water emulsion from the crude oil having a viscosity of less than 200 centistokes at 60° F.,

transporting said emulsion through said pipeline to said second location,



contacting said emulsion with slaked lime at said second location to invert said emulsion to form a water-in-oil emulsion, and

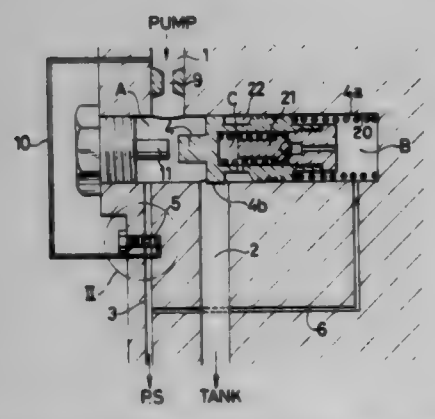
dewatering said water-in-oil emulsion to separate said oil from said emulsion.

4,343,324

FLOW CONTROL VALVE

Takeshi Obe, and Haruo Okamoto, both of Matsuyama, Japan, assignors to Judosha Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 970,310, Dec. 18, 1978, abandoned.
This application Dec. 1, 1980, Ser. No. 211,594
Claims priority, application Japan, Jul. 19, 1977, 52-96014
Int. Cl.³ G05D *11/00*
U.S. Cl. 137—117 8 Claims



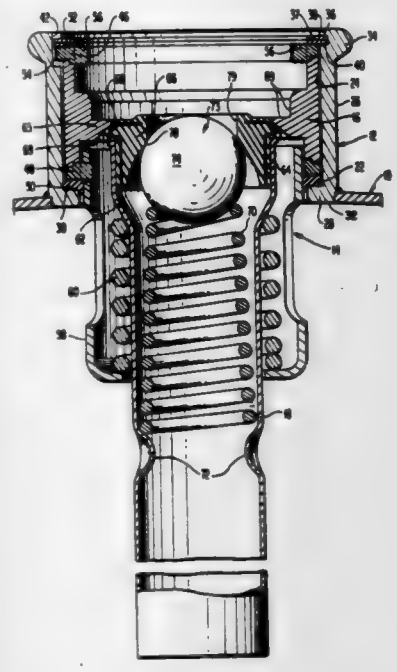
1. A valving system for a power assist hydraulic system comprising: means defining an external utilization hydraulic circuit having an intake section; a pump for supplying hydraulic fluid and an internal hydraulic circuit receiving said fluid; said internal circuit including sensor means to divert fluid from delivery to said external circuit to a recirculation passage when a predetermined level exists; said sensor means including first valve means responsive to the pressure at said pump outlet, an orifice disposed at an outlet passage of said pump, said first valve means being responsive to the pressure differential across said orifice, such that, upon said pressure differential exceeding a predetermined value, said first valve means operates to reduce fluid delivery to said external circuit to a predetermined minimum positive fluid delivery rate, and second valve means located upstream of, and responsive to, the pressure differential upstream and downstream of said first valve means, whereby when the fluid supply in said intake section reaches a predetermined level said second valve means diverts flow of hydraulic fluid from said intake to said recirculation passage while said first valve means allows at least said predetermined minimum positive fluid delivery rate, and wherein said orifice is arranged in the fluid flow downstream of said pump and upstream of said first and second valve means.

4,343,325

VALVE ASSEMBLY AND COUPLER THEREFOR

Merton R. Fallon, Thousand Oaks, Calif., assignor to Draft Systems, Inc., Northridge, Calif.

Continuation of Ser. No. 837,450, Sep. 28, 1977, Pat. No. 4,181,143. This application Sep. 10, 1979, Ser. No. 73,624
The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.
Int. Cl.³ F16K *51/00*; F16L *37/00*; B65D *83/00*
U.S. Cl. 137—212 48 Claims



1. A valve sealing arrangement for sealing a container of fluid comprising:

(a) a valve assembly for providing access to said container;

(b) a valve assembly receiving member secured to said container;

(c) a deformable sealing member;

(d) said valve assembly having a body portion with a seal engaging surface; and

(e) said sealing arrangement including a non-threaded retaining member for insertion between said valve assembly and said receiving member for deforming and compressing said sealing member between said seal engaging surface of said valve assembly and said receiving member for effecting a seal between said valve assembly and said receiving member without a need for substantial rotational movement, said non-threaded retaining member being releasably secured within said receiving member at a predetermined position relative to said valve assembly for avoiding overcompression of said sealing member when said sealing member is in engagement with said seal engaging surface of the valve assembly.

4,343,326

APPARATUS FOR DISPENSING A LIQUID ADDITIVE

Iran P. Pelov, Montville, and Brian R. Penman, Rockaway, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 30, 1980, Ser. No. 154,610
Int. Cl.³ B67D *3/00*
U.S. Cl. 137—454 3 Claims

1. A portable self-contained liquid dispensing device for introducing a liquid additive to the surface of the ballast water in a cargo tank of a tanker vessel before and while the ballast water is being discharged from said cargo tank, said dispensing device comprising:

a container for holding a supply of said additive,

a container fitting threadably engaged to the top of said container,

a deck fitting including threads for threadable connection to the deck of said tanker vessel,

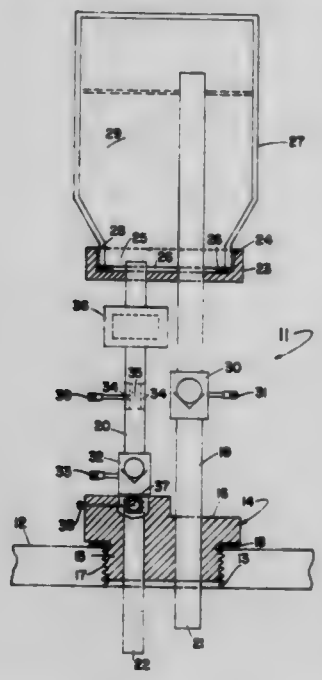
an additive flow line having a first end extending through said container fitting and a second end extending through and substantially beyond said deck fitting,

a first shut-off valve located in said flow line adjacent said deck fitting,

a flow control valve located in said flow line between said container fitting and said shut-off valve including adjustable orifice means for regulating the flow rate of additive during operation of said dispensing device,

a pressure equalization line having a first end extending through said container fitting and terminating substantially adjacent the bottom of said container and a second end extending through said deck fitting, and

a second shut-off valve located in said equalization line between said deck fitting and said container fitting, said



shut-off valves when in a closed position allowing said dispensing device to be inverted and threadably connected to a threaded aperture in the deck of said tanker vessel with the second end of the additive flow line and the second end of the pressure equalization line extending below the level of said deck without loss of liquid additive, said second shut-off valve when opened being effective to permit equalization of the vapor pressure in the cargo tank and the vapor pressure in the container, whereby when said first shut-off valve is opened liquid additive will flow by gravity from said container onto the surface of the ballast water at a greater initial rate and at a subsequent gradually decreasing rate as the height of the liquid additive in said container decreases for any given adjustment of said orifice means and air vent means mounted in said deck fitting for said flow line.

4,343,327

PRESSURE RESPONSIVE, MANUALLY OPENING VALVE

Robert R. Hallstein, Danning, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 11, 1980, Ser. No. 167,508
Int. Cl.³ F16K *17/00*
U.S. Cl. 137—464 **11 Claims**

1. A valve device for regulating the flow of fluids from a supply container to a utilizing means comprising:

first chamber means for directing the flow of fluids;

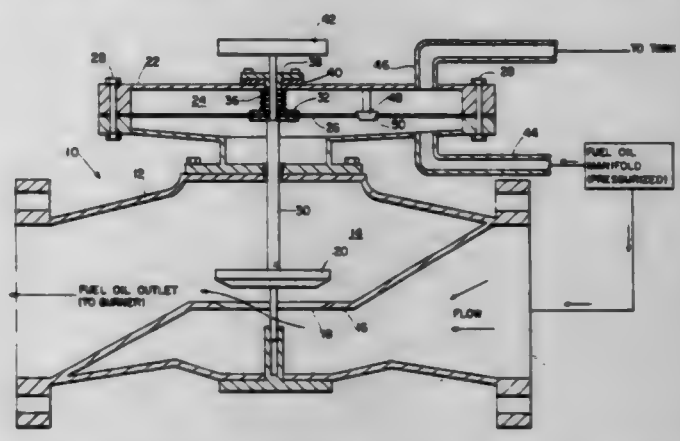
primary inlet means for delivering fluids into said chamber means;

primary outlet means for delivery fluids from said chambers means;

aperture means in said first chamber means for allowing the passage of fluids from said inlet means to said outlet means;

primary valve means for regulating the flow of fluids through said aperture means, said primary valve means substantially closing said aperture means when in its closed position;

control means for moving said primary valve means from an open to a closed position, said control means including reset means to manually reset said primary valve means to an open position, pressure-responsive means to maintain said primary valve means in said open position when the fluid pressure is greater than a predetermined amount and means forming a second chamber isolated from said first chamber means, said pressure-responsive means being located in said second chamber means, said second chamber means including a secondary inlet and a secondary outlet and means forming a secondary valve, said pressure-responsive means including a diaphragm



extending substantially across said second chamber, said diaphragm having port means therein in substantial alignment with said secondary valve means for allowing fluid to pass therethrough from said secondary inlet to said secondary outlet, said secondary valve means being located substantially centrally in said diaphragm between said primary valve means and the exterior of said second chamber and positioned so as to close said port means when said fluid pressure from said secondary inlet is above a predetermined pressure and to open said port means when said fluid pressure is below said predetermined pressure, thereby allowing fluid to flow from said secondary inlet to said secondary outlet through said port means, and thereby permitting said primary valve means to close, and when said primary valve means is manually set to an open position by said reset means said primary valve means is maintained in said open position by said pressure-responsive means provided said fluid pressure is at or above said predetermined pressure.

4,343,328

FLOW SENSING CHECK VALVE

Eugene E. Junger, New Berlin, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Sep. 26, 1980, Ser. No. 191,639
Int. Cl.³ F15B *13/042*
U.S. Cl. 137—491 **8 Claims**

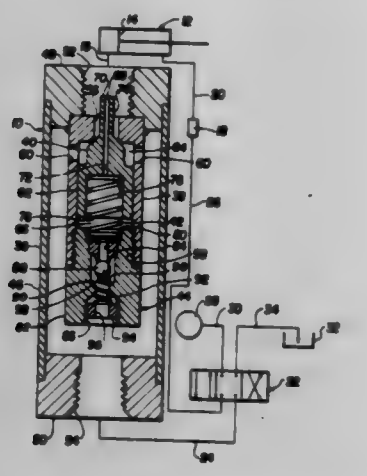
1. A flow sensing check valve comprising:

(a) an outer shell having a first port at one end thereof and a second port at the other end thereof;

(b) an inner sleeve mounted in said outer shell, said inner sleeve having a first port at one end thereof in fluid communication with the first port in said outer shell, a second port at the other end thereof in fluid communication with the second port in said outer shell, and a third port intermediate the other two ports in said inner sleeve, the third port in said inner sleeve being in fluid communication with the second port in said outer shell;

(c) a poppet valve slidably disposed in said inner sleeve, the outer periphery of said poppet valve being in sealing engagement with the inside of said inner sleeve between the second and third ports in said inner sleeve and having

a passageway therethrough serving as a pilot flow control orifice, said passageway having a first end in fluid communication with the first port in said outer shell and a second end in fluid communication with the interior of said inner sleeve between said poppet valve and the second port in said inner sleeve;



(d) first means urging said poppet valve into valving engagement with the first port in said inner sleeve; and

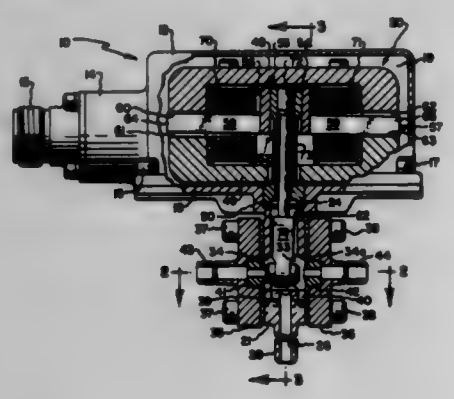
(e) a velocity fuse cooperating with the second port in said inner sleeve to close the second port in said inner sleeve upon sensing a pre-selected pressure in the first port in said outer shell.

4,343,329

BISTABLE FUEL VALVE

Clement J. Turansky, Tonawanda, and Gerard J. LeBlanc, North Tonawanda, both of N.Y., assignors to Textron Inc., Providence, R.I.

Filed Dec. 6, 1978, Ser. No. 966,888
Int. Cl.³ F16K *11/02, 31/08*
U.S. Cl. 137—625.44 **17 Claims**



1. A magnetically actuated bistable valve assembly comprising, in combination:

a valve body defining a fluid supply chamber and having a fluid inlet and a pair of fluid outlets, said fluid outlets presenting a pair of spaced valve seats;

a valve member projecting into said chamber between said valve seats and having a pair of valves respectively engageable with said valve seats;

flexure means mounting said valve member on said valve body for centering said valves each in spaced relation to its associated valve seat whereby both fluid outlets are open and for allowing opposite deformations thereof sufficient respectively to engage each valve with its seat;

an armature carried by said flexure means and having opposite free end portions;

permanent magnet means defining a pair of North-South air gaps respectively between which said free end portions of the armature are situated for latching said armature in either one of two positions corresponding to said opposite deformations of the flexure means, said permanent magnet means being poled such that said armature is subjected to relatively opposite flux fields longitudinally thereof in said respective two positions thereof; and

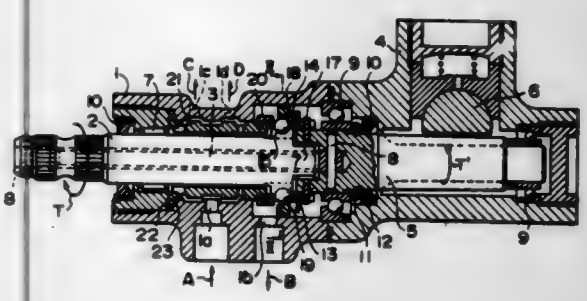
electromagnetic means for transiently opposing first one and then the other of said flux fields thereby to allow said armature to oscillate back and forth between opposite deformation conditions of said flexure means.

4,343,330

POWER STEERING DEVICE

Akio Numasawa, Nagoya; Ryouhei Kizu, Toyota; Mitsuru Naka, Toyota, and Nobuo Hiraiwa, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 7, 1980, Ser. No. 128,037
Int. Cl.³ F15B *9/00*
U.S. Cl. 137—625.48 **6 Claims**



1. A power steering device transmitting torque of a steering wheel to wheels of an automotive vehicle utilizing fluid pressure comprising:

an input shaft coupled with said steering wheel, said input shaft having a first ball confining path means extending angularly along the shaft;

an output shaft coaxial with said input shaft;

a torsion bar connecting said input shaft with said output shaft;

a ball movable along said first ball path;

a valve spool for controlling the flow of said pressure fluid in response to movement in the axial direction, said valve spool coaxially located with said input shaft;

a ball holding means for holding said ball in said first ball path and axially movable with said ball, said ball holding means engaged at one end with said valve spool and including a first abutment member for axially retaining said ball in said first ball path, a second abutment member having a biasing means radially holding said ball under compression in said ball path, and a slot in the ball holding means for engaging a member coupled to said output shaft, said slot permitting axial movement of the ball holding means with respect to said output shaft and preventing rotational movement with respect to said output shaft, whereby when said input shaft is rotationally displaced from said output shaft, said ball holding means axially moves as said ball moves along said ball path as a result of said ball holding means being rotationally fixed and said valve spool moves axially.

4,343,331

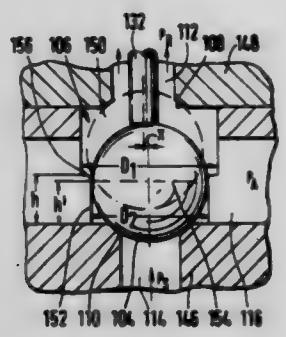
ELECTRO-HYDRAULIC ACTUATING DEVICE AND A FAST-SWITCHING MAGNETIC VALVE FOR USE THEREIN

Johannes Tersteegen, Brunswick, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt fur Luft- u. Raumfahrt, Cologne, Fed. Rep. of Germany

Division of Ser. No. 43,782, May 30, 1979, Pat. No. 4,281,584. This application May 19, 1981, Ser. No. 265,414
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900473
Int. Cl.³ F16K *11/02*
U.S. Cl. 137—625.65 **3 Claims**

1. A switching valve designed as a magnetically-coupled

bistable, 3/2-way valve, a spherical valve closure member, through which fluid from a source of supply is controllably directed and through which a return flow of said fluid is controllably directed, a plunger movable in the axial direction by means of a magnetic drive to move said valve closure member into alternative engagement with a first valve seat coordinated with the return flow and an opposite second valve seat coordinated with the supply, said valve having in the region of the



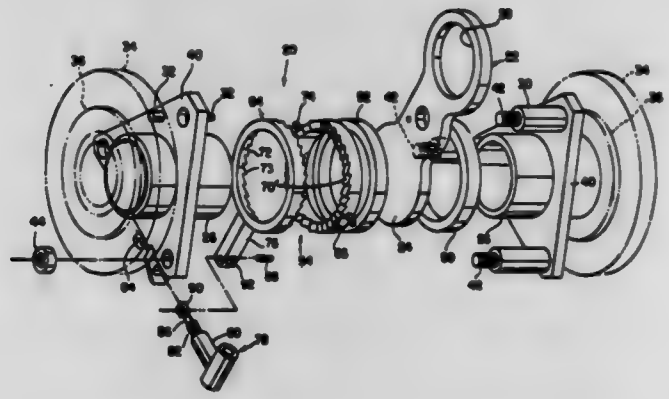
valve seat coordinated with the supply a first fixed lateral guidance means for the valve member extending from the valve seat to beyond the largest diameter of the valve member when in the closure position and in the region of the valve seat coordinated with the return flow, a second fixed lateral guidance means for guiding the valve member laterally with a clearance which is greater than a maximum positional error due to maintenance of said valve seats.

4,343,332

LINE BLIND

James W. Williams, 3rd, Lansdale, and John S. Fetterolf, Royersford, both of Pa., assignors to Fetterolf Corporation, Skippack, Pa.

Filed Aug. 27, 1979, Ser. No. 70,030
Int. Cl.³ F16L *55/10*
U.S. Cl. 138—94.3 **1 Claim**



1. A line blind comprising two tubular opposed body sections having a common longitudinal axis, two circular cross-sectioned tubular, longitudinally inner, end portions each forming part of a different one of these particular body sections, bolting means to rigidly clamp one body section to the other in a fixed position with a fixed gap between their inner end portions, a spectacle plate setup having a plate which includes a solid part and an apertured part and having one position in which the solid part will be interposed between the end portions and another position in which the the apertured part will be interposed between the end portions, as well as a position in which neither is in between, each of the end portions having an annular recess facing the end and a fixed surface in its bottom, which fixed surface in the bottom of the recess limits motion in its direction by anything in the recess, a sealing ring fixed in position in one recess abutting against the fixed surface in the bottom of that recess and projecting out of the top of that recess toward the other end portion but with a space between, there being in the other recess a separate unattached movable sealing ring toward the top of the recess and further into the recess two annular cams facing one another and each having a series of sloping cam surfaces on respective longitudinal annular ends cooperating with one another, one of the cams abutting on the fixed surface in the bottom of that recess, the other cam bearing on the sealing ring above it in the recess, the recess in which the cams and movable sealing ring are present forming and acting as an unobstructed tubular guide for the movable sealing ring all the way up to and including the very top opening of the recess, there being no obstruction short of the fixed sealing ring for movement of the movable sealing ring when the spectacle plate setup is in the position in which neither the solid part nor the apertured part is interposed between the end positions; means for selectively bringing the cams into contact at relatively lower places on the above-mentioned intercooperating sloping cam surfaces and at relatively higher places on the above-mentioned intercooperating sloping cam surfaces at will and thereby urging the cam nearer the top of the recess in the direction of the very top opening of the recess for a greater or lesser distance, the fixed gap between the ends of the end portions, the position of the top of the fixed seal, the thickness of the spectacle plate, and the travel of the cam elements being so interrelated that these features constitute means whereby

(a) when the spectacle plate has its solid or apertured part in a position where it is located between the ends of the end portions of the above body sections, the cam movement is enabled to bring the movable seal with pressure against the spectacle plate and the spectacle plate with pressure against the fixed seal, thereby sealing off the interior of the body sections, and whereby

(b) when neither the solid nor the apertured part of the spectacle plate is located between the ends of the end portions of the above body portions, the cam movement is enabled to bring the movable seal up into position for ready removal, and whereby

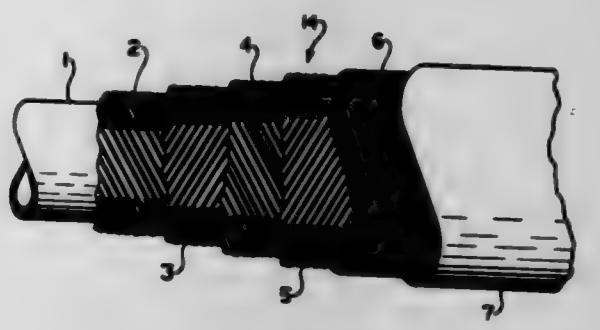
(c) any fluid which might happen to come out of the interior of either body section to a position outside of either seal despite the presence of the seal can go outside of the line blind setup as a whole and thus make its presence outside of the interior of the body section evident to someone interested in the effectiveness of the line blind setup.

4,343,333

FATIGUE RESISTANT HIGH PRESSURE HOSE

Bernard Keister, Aurora, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 27, 1979, Ser. No. 70,206
Int. Cl.³ F16L *11/12*
U.S. Cl. 138—125 **19 Claims**



1. An improved flexible reinforced hose adapted for use in the conveyance of fluids under pressure, said hose comprising a core tube having a laminated wall comprising an inner layer of extruded flexible nylon material and an outer layer of extruded flexible polyurethane material, a first layer of synthetic reinforcement fibers wound helically about the core tube with at least a portion thereof bonded to the core tube by embedment in the polyurethane material, a second layer of synthetic reinforcement fibers wound helically about the first layer, a third layer of synthetic reinforcement fibers wound helically about the second layer, a fourth layer of synthetic fibers wound

helically about the third layer, a braided layer of reinforcement fibers disposed about the fourth layer, and a protective sheath disposed about the braided layer, said second layer wound in a direction opposite to the winding direction of the first layer and said fourth layer wound in a direction opposite to the winding direction of the third layer, said synthetic fibers of the helically wound layers having a tenacity of from about 12 to about 25 grams per denier and an elongation at break of from about 2% to about 8%, and said fibers of the braided layer comprising a nylon or poly(ethylene-terephthalate)ester material; wherein the improvement comprises: said hose having improved resistance to flexing and pressure pulsation fatigue provided by the synthetic fibers of the first and second layers comprising a plurality of the same or different deniers of said fibers, the deniers of the fibers having a twist of 1.5 turns per inch or less, corded together with a twist of more than 2 and less than 20 turns per inch in a direction opposite to the direction of twist in each of the deniers and the synthetic fibers of the third and fourth layers comprising a plurality of the same or different deniers of said fiber having a twist of about 1.5 turns per inch or less.

4,343,334

JEANS FABRIC COMPRISING OPEN SHEATH CORE FRICTION SPUN YARNS AND PROCESS FOR ITS MANUFACTURE

Christian Schulze, Hattersheim am Main, and Hans-Joachim Plein, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,798

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036069

Int. Cl.³ B65H *71/00*; D02G *3/36*; D03D *15/00*

U.S. Cl. 139—420 R **8 Claims**

1. Jeans fabric which consists of at least 40% by weight of polyester fibers and at least 10% by weight of cotton and in which the filling yarn is a polyester yarn or a polyester fiber/-cotton mixed yarn and in which the warp has been dyed and the filling has not been dyed, wherein at least the warp consists of a sheath-core staple

fiber yarn manufactured by the open end sheath-core friction spinning process, in which yarn the polyester fibers are disposed predominantly in the core, while the cotton fibers are disposed predominantly in the sheath, of the warp yarn.

8. Process for the manufacture of a jeans fabric according to claim 1 by spinning polyester fibers and cotton to form a polyester-cotton mixed yarn for the warp and a polyester yarn or polyester-cotton mixed yarn for the filling, dyeing the warp yarn and weaving in a twill construction, wherein an open sheath-core friction spinning process is used in the manufacture of the warp yarn, at least 20% by weight, relative to the cross-section of the yarn, is employed for the sheath of the warp yarn, and the % by weight of cotton used in the sheath is

$$A \geq 0.0041\,(S-37)^2+90.5,$$

relative to the mixture of fibers in the sheath.

4,343,335

PROCESS AND APPARATUS FOR MANUFACTURING SOAP PADS

Hisao Kobayashi, Chiba, and Kazuo Fujita, Wakayama, both of Japan, assignors to Kao Soap Company, Ltd., Tokyo, Japan

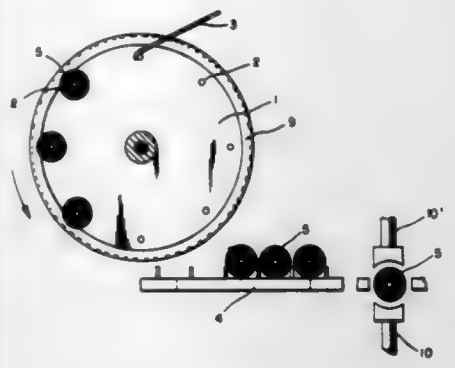
Filed Mar. 27, 1980, Ser. No. 134,689

Int. Cl.³ B21F *3/00*

U.S. Cl. 140—71 C **10 Claims**

1. A method for manufacturing a soap pad comprising the steps of: winding metallic wool into a roll form onto a spindle containing at least one hole therein;

applying a soap solution to said roll form through said hole of said spindle to cause said solution to adhere to said metallic wool;



separating said metallic wool from said spindle; and

press forming said metallic wool into a desired shape.

4,343,336

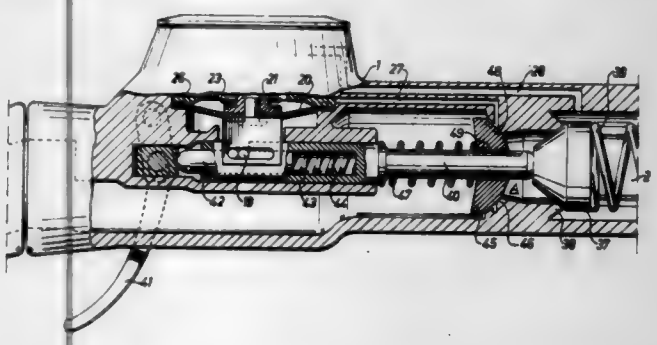
LIQUID DISPENSING DEVICE

Lars E. Trygg, Villa Solvik 310, S-770 13 Grangärde, Sweden

Continuation-in-part of Ser. No. 171,232, Sep. 24, 1979, Pat. No. 4,331,187. This application Nov. 6, 1979, Ser. No. 192,116

Int. Cl.³ B65B *57/14*

U.S. Cl. 141—218 **9 Claims**



1. A liquid dispensing device in the form of a pistol valve, comprising:

a valve housing having an inlet connected to a pump, and an outlet; a valve for controlling the flow of liquid from the inlet to the outlet; a discharge pipe connected to said outlet; and a manually operable operating mechanism for controlling movement of said valve, said operating mechanism including adjustable means movable between an engagement position and a free position, wherein the movement of said adjustable means between said free position and said engagement position occurs in dependence upon the pressure of the liquid at said inlet, and wherein means are provided for equalizing an overpressure at said inlet:

(a) when the pump is deactivated when the valve is open, or

(b) if an attempt is made to open the valve when the pump is deactivated and said pressure is sufficient to move said adjustable means;

said valve being arranged to open against the flow of fluid.

4,343,337

FUEL DISPENSING NOZZLE

James W. Healy, 54 Plymouth Rd., Wakefield, Mass. 01880

Filed Jul. 9, 1980, Ser. No. 167,347

Int. Cl.³ B65B *3/26, 57/14*

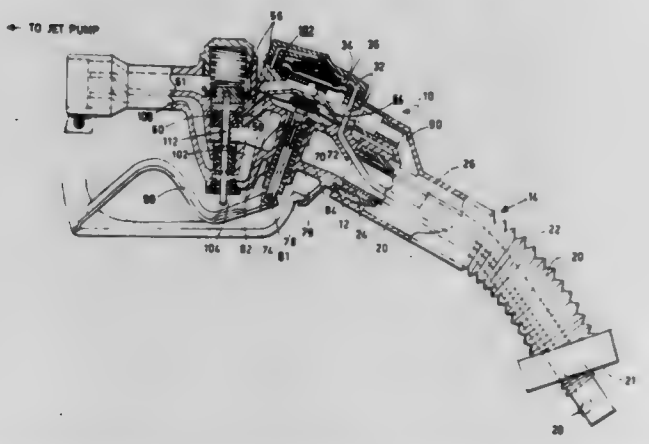
U.S. Cl. 141—226 **10 Claims**

1. In a fuel dispensing nozzle for filling a fuel tank, said nozzle having a spout, a fuel conduit leading to the spout, a vapor return line associated with the spout for withdrawing displaced vapors from the fuel tank being filled and transporting them to a remote vapor collection system, a fuel valve for controlling the flow of fuel through the conduit, an aspirator

line having its tip located with respect to said spout so as to be in communication with the interior of the tank being filled when said spout is inserted in the fill pipe, means for producing a negative pressure in said aspirator line and pressure sensitive means in communication with said aspirator line for closing said fuel valve when a predetermined negative pressure exists in said aspirator line, the improvement which comprises

an aspirator valve in said aspirator line located between said tip and said means for producing a negative pressure, and

pressure actuable means in communication with said aspirator line for controlling said aspirator valve,



said pressure sensitive means being in communication with said aspirator line between said aspirator valve and said means for producing a negative pressure,

said pressure actuable means being arranged to respond to both negative and positive pressures in said line and to close said aspirator valve when either of a predetermined negative or positive pressure is detected in the fuel tank being filled, thereby permitting the negative pressure in said aspirator line to reach said predetermined value at said pressure sensitive means so as to actuate said pressure sensitive means to close said fuel valve.

4,343,338

TIRE COOLING SYSTEM AND METHOD

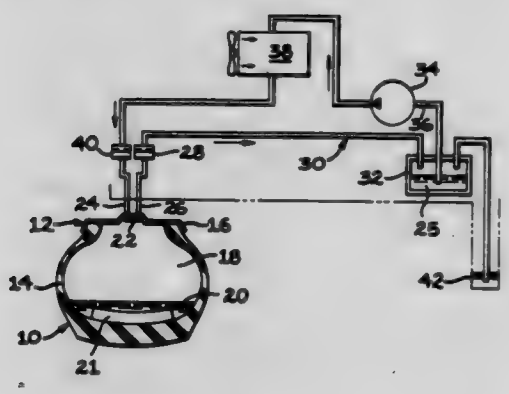
Cullen P. Hart, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00241, § 371 Date Feb. 25, 1981, § 102(e) Date Feb. 25, 1981

PCT Filed Feb. 25, 1981, Ser. No. 277,756

Int. Cl.³ B60C *19/06;* F28F *1/00*

U.S. Cl. 152—153 **26 Claims**



1. In a wheel assembly having a wheel (12) mounted on a vehicle, said wheel (12) having a rim (16), a tire (14) mounted on said rim (16), and a central cavity (18) defined by said tire (14) and rim (16), the improvement comprising:

fluid circuit means (22,28,30,40) for pumping a liquid (25) between said central cavity (18) and a non-rotating heat exchanger (38), said heat exchanger (38) being external to said wheel (12).

4,343,339

PROCESS FOR THE PRODUCTION OF TIRES COMPRISING VULCANIZED ELASTOMERS CONTAINING URETHANE GROUPS

Jürgen Schwindt; Otto Ganster, and Hans-Joachim Meiners, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 69,452, Aug. 24, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,496

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838756

Int. Cl.³ C08G *18/82, 18/62;* B60C *1/00*

U.S. Cl. 152—209 R **13 Claims**

1. A process for the production of vulcanized elastomers containing urethane groups by casting, comprising:

(A) mixing the following components:

(1) liquid diene polymers containing isocyanate reactive functional groups, having an average functionality of 2 to 3 and an average molecular weight of from 500 to 30,000,

(2) compounds having molecular weights of from 400 to 10,000, and containing at least two hydroxyl groups,

(3) polyisocyanates,

(4) 3 to 30% by weight, based on 100 parts by weight of components (1)+(2), cross-linking agents having molecular weights of from 32 to 400 and containing at least two active hydrogen atoms,

(5) vulcanization agents used for vulcanization and optionally

(6) reinforcing fillers; and subsequently

(B) pouring the mixture into a mold and allowing the mixture to react in the mold; and subsequently removing the molded product and

(C) vulcanizing outside the mold at temperatures above 120° C.

13. Tires and tire components such as tread surface strips and/or side parts as well as retreaded tires, comprising vulcanized elastomers containing urethane groups prepared by casting, comprising:

(A) mixing the following components:

(1) liquid diene polymers containing isocyanate reactive functional groups,

(2) compounds having molecular weights of from 400 to 10,000, and containing at least two hydroxyl groups,

(3) polyisocyanates,

(4) cross-linking agents having molecular weights of from 32 to 400 and containing at least two active hydrogen atoms,

(5) vulcanization agents used for vulcanization and optionally

(6) reinforcing fillers; and subsequently

(B) pouring the mixture into a mold and allowing the mixture to react in the mold; and subsequently

(C) vulcanizing the molded product at temperatures above 120° C.

4,343,340

SHUTTER SLAT CONFIGURATION

Helmut Paule, Palgrave, Canada, assignor to Prime Marketing Group, Inc., St. Petersburg, Fla.

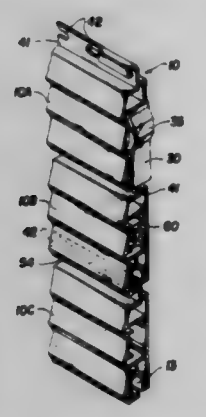
Filed Jul. 28, 1980, Ser. No. 172,548

Int. Cl.³ E06B *9/14*

U.S. Cl. 160—232 **5 Claims**

1. A slat configuration for a shutter assembly comprising in combination, an extruded hollow body generally rectangular in cross section having two interlock members extending from opposite end surfaces to form mating tongue and channel interlocking elements respectively and one side having an outer zig-zag surface configuration providing a plurality of at least three ribs on each slat, having in said hollow body three successive closed cell regions formed by two integral panel members extending across the hollow body from wall to wall substantially at rib positions with the intermediate cell longer

than the outer two and formed with internally extending flanges near each end thereof defining a central compartment with slots at either end thereof wherein the channel interlock member comprises a half cylindrical structure from which extends an L-shaped extension substantially closing the half cylindrical structure so that entry of the interlock tongue member is only permitted from the ends of the slat and wherein the hollow body terminates in two end pieces one comprising



said L-shaped extension substantially perpendicularly disposed to the side walls and arranged to meet face to face to form a substantially weathertight crease along the zig-zag surface directly below an adjacent said rib when two adjacent slats are interlocked in closed position, thereby to allow rain to run downwardly off the zig-zag outer surface ribs without penetration to the inside of an assembled shutter configuration of a plurality of adjacent slats.

4,343,341

PNEUMATIC TIRE AND WHEEL RIM ASSEMBLIES

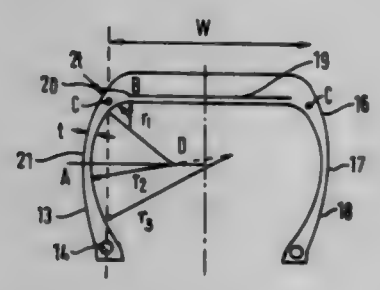
William L. Jackson, SuttonColdfield, England, assignor to Dunlop Limited, London, England

Continuation of Ser. No. 769,679, Feb. 17, 1977, abandoned. This application Dec. 27, 1978, Ser. No. 973,730

Claims priority, application United Kingdom, Feb. 17, 1976, 6112/76

Int. Cl.³ B60C *9/20, 13/00*

U.S. Cl. 152—353 R **3 Claims**



1. A radial pneumatic tire comprising a tread, a tread-reinforcing breaker assembly beneath said tread and extending across the full width thereof, a pair of tire beads, a pair of flexible tire sidewalls each radially extending between a respective one of said beads and a respective edge of said breaker, said tire being reinforced by a reinforcing carcass ply of relatively inextensible cords, said breaker having both at least one low angle ply and at least two high angle plies, one of said high angle plies being above and one of said plies being below said low angle ply to make the breaker substantially transversely rigid so as to resist bending moments about its center and inward pull of said edges by said sidewalls when said tire is inflated to its normal working pressure and to minimize cross-sectional circularity of the tire when so inflated, each of said sidewalls extending from said breaker assembly towards a bead wire core along an arc defining a flex zone which has a respective center of curvature, said arc beginning at a first point adjacent said breaker assembly where the thickness of said sidewall is substantially twice the minimum thickness of said sidewall and ending at a point defined by the intersection of a vertical line extending through said first point with said sidewall, said sidewalls being formed to have a shape when the tire is inflated to its normal working pressure such that the tangent of half the angle subtended by the arc of each of the flexible sidewalls at its respective center of curvature is less than +0.85, said angle controlling the pneumatic constant of said tire wherein a decrease in said angle and the arc defining said angle resulting from the increased transverse rigidity of said breaker reduces the circularity of said sidewalls, increasing said pneumatic constant, resulting in an increased load capacity of said tire.

4,343,342

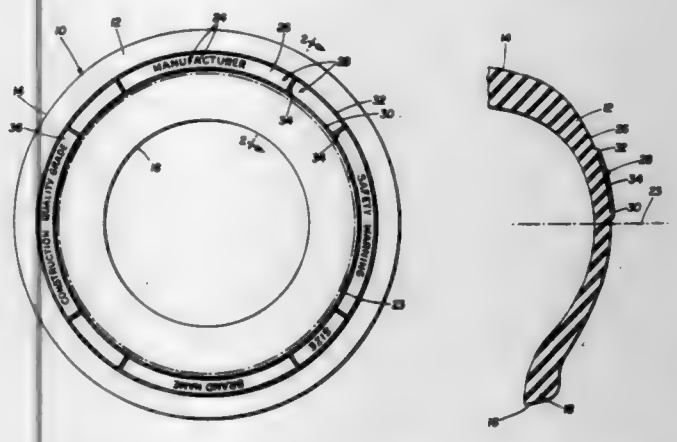
UNIFIED MODULAR INDICIA MARKING FOR RUBBER ARTICLES

Peter McDonald, Hudson, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 25, 1981, Ser. No. 247,454

Int. Cl.³ B60C *13/00*

U.S. Cl. 152—353 R **15 Claims**



1. A pneumatic tire having, on the base surfaces of each of its two sidewalls, information-bearing indicia markings contained within several of a plurality of sequentially-adjacent modules, said modules forming a segmented annular band concentric with the tire sidewall, wherein said plurality of sequentially-adjacent modules on one sidewall is located substantially radially inwardly of the maximum section width of said tire and said plurality of modules on the other sidewall is located substantially radially outwardly of said maximum section width.

4,343,343

ELONGATABLE REINFORCEMENT CORD FOR AN ELASTOMERIC ARTICLE

Rene F. Reuter, Warken, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 29, 1981, Ser. No. 229,374

Int. Cl.³ B60C *9/00;* D02G *3/00*

U.S. Cl. 152—359 **6 Claims**



1. A composite cord for reinforcing an elastomeric article comprising a core composed of at least one unoriented polymeric filament selected from the group consisting of polyamides and polyesters, said core having an initial modulus of elasticity of between 1500 and 4500 newtons/mm^2 and an elastic limit of at least one kilogram, the cord further comprising at least one high tenacity substantially inextensible yarn spirally wrapped about said core, said core having an elongation at break of at least 200 percent and a length at break which

is greater than the length of said yarn, when said yarn is fully stretched out to permit stretching out of said yarn without rupture of said core, the cord having an elongation at break of at least 100 percent of its length before elongation.

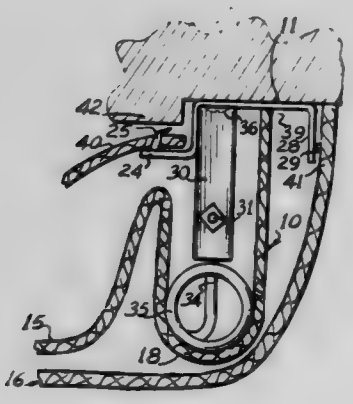
2. A vulcanized pneumatic tire reinforced with a plurality of composite cords, the tire having a first section height when mounted on a rim prior to inflation thereof and being inflatable to a second section height which is at least 50 percent greater than said first section height, each of said cords comprising a core composed of at least one unoriented polymeric filament which has a modulus of elasticity of between 1500 and 4500 newtons/mm^2 and an elastic limit of at least 1 kilogram, each cord further comprising at least one high tenacity substantially inextensible yarn spirally wrapped around said core, said core having a length at break which is greater than the length of said yarn when said yarn is fully stretched out to permit stretching out of said yarn without rupture of said core during inflation of the tire to said second section height, said core having an elongation at break of at least 100 percent of its length before elongation.

4,343,344

TIE BACK HOLDER WITH PLEAT SUPPORT

Andrew B. Shelton, 2783 Ben Hill Rd., East Point, Ga. 30344

Filed Dec. 6, 1979, Ser. No. 100,740
Int. Cl.^{3} A47H *1/00*
U.S. Cl. 160—349 D 7 Claims



1. A drapery tie back holder for a drapery having one edge adjacent to a wall and an opposite edge remote therefrom and in a plane parallel to said wall, a tie back extending generally from said one edge around said drapery and back to said one edge, said tie back holder including a base defining means for fixing said base to said wall, a first arm extending from said base generally towards said opposite edge for holding a first end of said tie back, and a second arm extending from said base generally perpendicularly to said wall for holding a second end of said tie back, said drapery defining a plurality of pleats therein, including a final pleat adjacent to said one edge of said drapery, said tie back holder including a pleat holding means supported from said base between said first arm and said second arm for supporting said final pleat.

4,343,345

PROCESS OF APPLYING A TITANIUM DIOXIDE COATING TO A CENTRIFUGAL CASTING MOLD

Gottfried Brugger, Werksgelände 5, Mitterberghütten, Austria (A-5503)

Filed Aug. 18, 1980, Ser. No. 179,245
Int. Cl.^{3} B22D *13/10*
U.S. Cl. 164—33 11 Claims

1. A process for applying a heat-conductive gas-permeable, non-gas producing and porous coating to a centrifugal casting mold for casting copper or alloys thereof, said mold having an internal surface, said process comprising the steps of preheating the mold, spraying onto the internal surface of the mold after the preheating thereof a suspension of powdery material in a liquid dispersion agent of distilled water having a low-lime content, the main constituent of said powdery material being titanium dioxide, said suspension being substantially free of binding agents and surface active agents, said step of spraying said suspension being performed as the mold is rotated to form a thin layer therein and evaporating rapidly the liquid dispersion agent so that steam and foam of this agent escape in inward direction through said layer thereby loosening the texture of said layer.

4,343,346

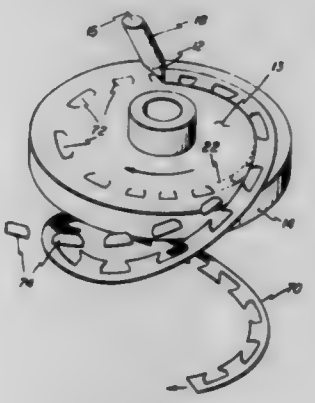
Patent Not Issued For This Number

4,343,347

METHOD OF MAKING PATTERNED HELICAL METALLIC RIBBON FOR CONTINUOUS EDGE WINDING APPLICATIONS

Howard H. Liebermann, Schenectady; Peter G. Frischmann, Scotia, both of N.Y., and George M. Rosenberry, Jr., Hendersonville, Tenn., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 972,240, Dec. 22, 1978, Pat. No. 4,281,706.
This application Mar. 30, 1981, Ser. No. 249,033
Int. Cl.^{3} B22D *11/06, 25/00*
U.S. Cl. 164—463 13 Claims



1. A method of casting patterned metallic ribbons in helical form by chill block melt-spinning including the process steps of:

a. providing a substrate wheel, said wheel having major opposed top and bottom surfaces and a peripheral edge surface area interconnecting said major surfaces, said top surface lying normal to the axis of rotation of said wheel and being a casting surface;

b. providing a predetermined pattern on said casting surface forming thereby a patterned casting region, said pattern being delineated by means of barrier lines;

c. rotating said substrate wheel at a predetermined speed to impart to said patterned casting region a predetermined surface velocity;

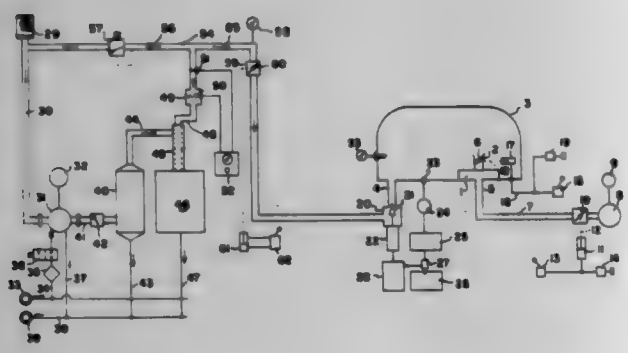
d. positioning a crucible with respect to the moving patterned casting region with the orientation of the longitudinal axis of said crucible with respect to said patterned casting region being defined by the inclination angle α and azimuthal angle γ;
e. forming molten alloy of a predetermined composition in said crucible;
f. ejecting said molten alloy through an orifice in said crucible to form a melt stream having a preferred velocity, said orifice and said melt stream having axes substantially colinear with the axis of said crucible;
g. impinging said melt stream onto said moving patterned casting region; and
h. rapidly chilling said molten alloy impinging on said moving patterned casting region to form a continuous length of metallic ribbon edge-wound in a helical shape, said ribbon having a substantially uniform cross section, a pair of substantially parallel major surfaces, a pattern of cutouts therein corresponding to said predetermined pattern on said casting surface, and inner and outer peripheral edges of constant radii defined by the motion of said patterned casting region at the locus of impingement of said melt stream thereon.

4,343,348

APPARATUS AND METHODS FOR SIMULATING VARYING ATMOSPHERIC CONDITIONS

George Scourtes, Livonia, Mich., assignor to The Allen Group, Saginaw, Mich.

Continuation of Ser. No. 912,009, Jun. 2, 1978, abandoned. This application Jun. 6, 1980, Ser. No. 156,982
Int. Cl.[3] F25B *29/00*
U.S. Cl. 165—1 11 Claims



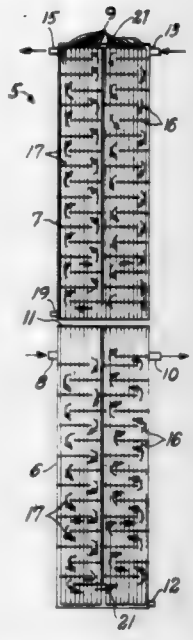
7. In a method of simulating different atmospheric conditions within an enclosure that is sealed except for an air inlet and an air outlet, said method including exhausting air from said enclosure via said outlet and admitting air into said enclosure selectively at rates such as to establish within said enclosure a pressure that is selectively greater, lesser, or the same as ambient barometric pressure, the improvement comprising compressing air to be introduced to said enclosure in an excessively moisture rich environment to enable such moisture to absorb heat from the compressed air; separating compressed air and excess moisture during the compression of said air and discharging the excess moisture and compressed air along separate paths; extracting additional moisture from said air following its compression; and separating said additional moisture from said compressed air prior to the introduction of said compressed air to said enclosure.

4,343,349

HEAT PIPE DEVICE AND HEAT PIPE FABRICATING PROCESS

Charles H. Busch, Jr., 1501 Parks Rd., Lake Orion, Mich. 48035

Filed Sep. 30, 1980, Ser. No. 192,366
Int. Cl.[3] F28D *15/00*
U.S. Cl. 165—1 5 Claims



5. An energy saving liquid to liquid heat exchange process for a dishwater or like device discharging hot waste water comprising;
providing a hot water tank for holding the waste water from the dishwasher or like device and having inlet and outlet pipes;
providing a cold water tank for holding the fresh water going to a water beater and having inlet and outlet pipes;
disposing the cold water tank on top of the hot water tank;
disposing inside of the two tanks a bundle of heat pipes containing low-boiling refrigerant
providing a vertical baffle in and along the length of each tank defining elongated inlet and outlet sections in each tank;
positioning and laterally staggering baffles in each tank and within each section and spaced along the length thereof;
causing the intake water to move in a path at right angles to the heat pipes and longitudinally of the respective inlet and outlet sections with the water in opposing sections in each tank moving in opposite directions;
evaporating the refrigerant in the heat pipes within the hot water tank extracting heat from the water in the hot water tank;
and condensing refrigerant in the tubes in the cold water tank, with the heat of condensation being transmitted to the water within the cold water tank, elevating the temperature of the fresh water leaving the heat exchanger above its entering temperature.

4,343,350

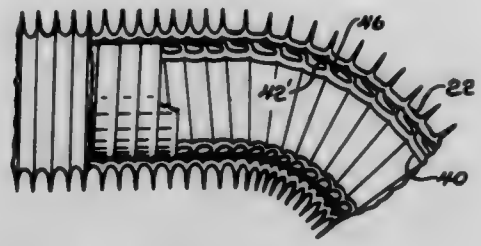
DOUBLE WALL TUBING ASSEMBLY AND METHOD OF MAKING SAME

Bonnie J. Campbell; Thomas G. Counts; James L. Cunningham, and Karl J. Youtsey, all of Decatur, Ala., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 4, 1978, Ser. No. 930,942
Int. Cl.[3] F28F *1/42, 13/12*
U.S. Cl. 165—11 R 10 Claims

1. A double wall heat exchange tube assembly comprising an outer tube portion having external fins along at least the major portion of its length and an inner tube portion inside said outer tube portion, said inner tube portion having integral, generally transverse external fins along a portion of its length, said fins

on said inner tube portion having their tips bent over so as to be generally parallel to the axis of the tube assembly, said inner and outer tube portions being in firm, mechanically bonded relation to each other along the finned portions thereof with the bent over tip portions of the inner tube portion contacting the inner wall of the outer tube portion so as to define a helically continuous chamber between the inner and outer finned



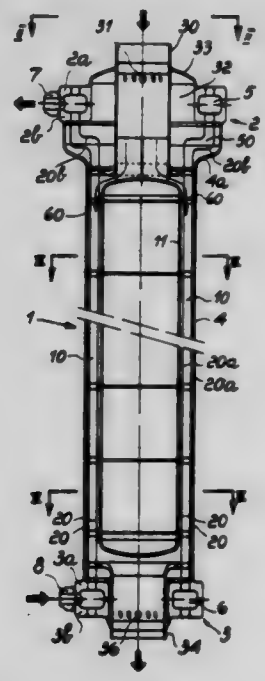
tube portions in the fin space of the inner tube portion which underlies the bent tip portions, said helically continuous chamber being sufficiently open to permit the flow of leakage fluid therethrough and the detection of leaks through the walls of either tube portion into said chamber, said inner tube portion having a non-smooth configuration over at least a substantial portion of its length within said outer tube portion for inducing turbulence in fluid flowing therethrough.

4,343,351

COUNTERFLOW HEAT EXCHANGER

Riccardo Belleli, Viale Hermada, 13 - Mantova, Italy

Filed May 14, 1979, Ser. No. 39,003
Claims priority, application Italy, May 16, 1978, 23455 A/78
Int. Cl.³ F28D *7/08;* F28F *9/02;* F22B *37/10*
U.S. Cl. 165—81 **8 Claims**



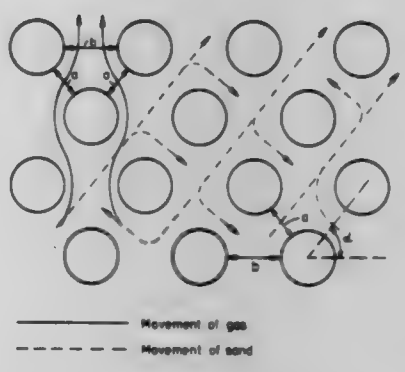
1. A heat exchanger comprising an upper tube plate and a lower tube plate arranged to face each other in parallel and coaxial relationship and having different mean diameters of the bored areas, an inner jacket and an outer shroud coaxial therewith and with said annular tube plates and attached to said tube plates and defining an annular interspace therebetween, a tube nest extending between said upper and lower tube plates and including a plurality of tubes, said tubes being connected to said tube plates and distributed substantially in a polar symmetry arrangement and having a rectilinear portion and at one end an S-like bent portion, the rectilinear portion of said tube nest defining a substantial thermal exchange zone enclosed with substantially uniform distribution within said annular interspace and wherein said S-like bent end of said tubes lays in a substantially radial plane with respect to the heat exchanger longitudinal axis.

4,343,352

HEAT EXCHANGER FOR GASES

Ole K. Bockman, Oslo, and Kjell Rydland, As, both of Norway, assignors to A/S Norsk Viftefabrikk, Oslo, Norway

PCT No. PCT/NO80/00012, § 371 Date Dec. 9, 1980, § 102(e) Date Dec. 5, 1980, PCT Pub. No. WO80/02193, PCT Pub. Date Oct. 16, 1980
PCT Filed Apr. 9, 1980, Ser. No. 220,036
Claims priority, application Norway, Apr. 9, 1979, 791191
Int. Cl.³ F28D *13/00;* F28C *3/16*
U.S. Cl. 165—104.16 **3 Claims**



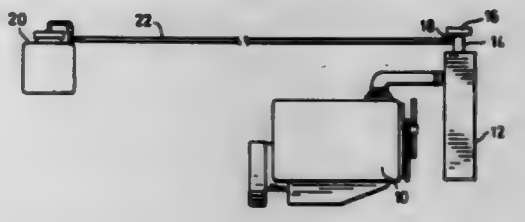
1. Heat exchanger for gases, constructed as a vertical shaft with upward gas flow between rows of staggered, horizontally disposed sets of tubes, downwardly restricted by a gas-penetrable bottom (2) and upwardly by the uppermost set of tubes, and over its entire vertical length containing a granular material (7) which is kept in motion by means of the essentially vertically upward flow of gas, characterized in that the ratio between the diagonal free opening a and the horizontal free opening b between the tubes (4) in the set of tubes is within the range 0.45:1–0.9:1 for controlling and restricting the vertical movement of the grains in the heat exchanger, thereby obtaining an approximately continuous temperature gradient in the gas-grain mixture over the entire height of the heat exchanger.

4,343,353

AUTOMOBILE RADIATOR FILTER

John Tsopelas, 15 Canlish Rd., Suite No. 2, Scarborough, Ontario M1P 1S5, Canada

Filed Nov. 26, 1980, Ser. No. 210,425
Int. Cl.³ F28F *19/00*
U.S. Cl. 165—119 **21 Claims**



11. In combination with an internal combustion engine cooling system having overflow port means permitting overflow of liquid engine coolant when the cooling system overheats, and providing suction as the cooling system cools, a filtering apparatus comprising:

filtering means for removing debris from engine coolant passing through the filtering means, including filter inlet means for receiving engine coolant to be filtered and filter outlet means for releasing filtered engine coolant;

a reservoir in fluid communication with the filter outlet means for receiving and containing the filtered engine coolant;

conduit means for placing each of the filter inlet means and the interior of the reservoir into fluid communication with the overflow port means to permit flow of engine coolant therebetween; and,

valve means for directing the flow of fluids through the conduit means so that in use

(a) engine coolant overflowing from the overflow port means is forced through the filter means into the reservoir and,

(b) the suction provided at the overflow port means when the cooling system cools draws filtered engine coolant from the reservoir.

4,343,354

STATIC CYLINDRICAL MONOLITHIC STRUCTURE HAVING A LARGE AREA OF CONTACT

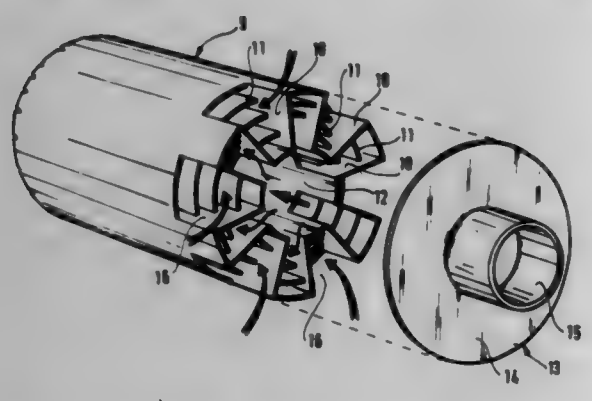
Jean Weber, Tarbes, France, assignor to Ceraver, Paris, France

Filed Sep. 25, 1980, Ser. No. 190,769

Claims priority, application France, Sep. 25, 1979, 79 23767

Int. Cl.³ F28D *17/04*

U.S. Cl. 165—165 **19 Claims**



1. A static, cylindrical monolithic, heat exchange structure having a large area of contact, said structure comprising circumferentially spaced radial walls and radially spaced circular walls intersecting said radial walls and forming at least two radial groups of ducts with each group conveying a fluid flow particular to the group with at least some of the radial walls constituting group boundaries, and wherein the circular walls of the parallel ducts forming at least one of said groups is cut out at at least one location along their length to facilitate fluid flow into or out of the parallel ducts of said group.

4,343,355

LOW STRESS HEAT EXCHANGER AND METHOD OF MAKING THE SAME

Alexander Goloff, East Peoria, and George B. Grim, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00027, § 371 Date Jan. 14, 1980, § 102(e) Date Jan. 14, 1980, PCT Pub. No. WO81/02060, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 14, 1980, Ser. No. 130,489

Int. Cl.³ F28F *3/00*

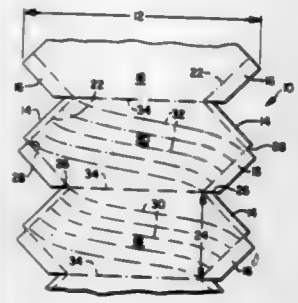
U.S. Cl. 165—166 **9 Claims**

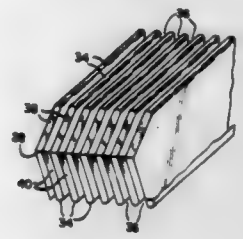
1. A heat exchanger core unit (50) comprising

(a) a unitary pleated sheet (10) having a plurality of walls (18, 20) with interconnecting, alternating first and second crest portions (34) extending between adjacent walls (18, 20) on opposite sides thereof, said first crest portions each interconnecting a first (18) and second (20) wall along a first side thereof and said second crest portions each interconnecting said second (20) and the next adjacent first wall (18) along a second side thereof opposite to said first side and

(b) closure means (38,40) to define alternating fluid flow passages (36) between said walls (18,20) by closing at least a portion of the space between adjacent walls (18,20) at each end thereof, said closure means (38,40) including

(c) tab means (14,16) extending along the ends of each wall (18,20) formed to engage tab means (14,16) on the next adjacent wall (18,20) to bridge a space between the ends of said walls (18,20), said tab means (14,16) being arcuate in cross section and including a first tab (16) extending from a first wall (18) and a second tab (14) extending from a second wall (20) adjacent said first wall (18), said second tab (14) engaging and overlying said first tab (16) when said sheet (10) is pleated, said first (18) and second (20) walls extending tangentially away from spaced points





(46,48) on the juncture formed by said first (16) and second (14) tabs, said second tab (14) terminating at a terminal edge which is between and spaced from said spaced points (46,48), the second tab (14) being secured to the first tab (16) at said terminal edge (42).

4,343,356

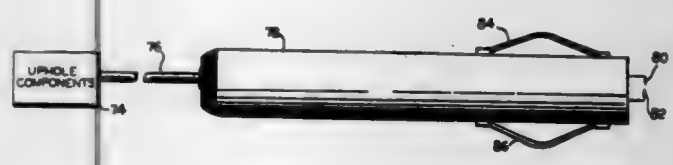
METHOD AND APPARATUS FOR TREATING SUBSURFACE BOREHOLES

Emmet D. Riggs; Eugene R. Brownscombe, and James R. Bilhartz, all of Dallas, Tex., assignors to Sonics International, Inc., Dallas, Tex.

Division of Ser. No. 295,694, Oct. 6, 1972, abandoned. This application Mar. 20, 1978, Ser. No. 888,352

Int. Cl.³ E21B *36/04, 37/00*

U.S. Cl. 166—60 **15 Claims**



1. Apparatus for descaling a borehole casing comprising:

a. a sonde for being lowered into said borehole,

b. a cable coupled to said sonde for raising and lowering said sonde in said borehole,

c. a low voltage source located external of said borehole,

d. a voltage multiplier interconnected with and adapted to travel into and out of said borehole with said sonde,

e. a first electrical circuit within said cable for connecting said low voltage source to said voltage multiplier,

f. arc means attached to said sonde for gasifying and ionizing a medium in said borehole whenever a high voltage arc is generated thereby creating a plasma which generates an initial shockwave in said medium to loosen scales of material followed by a rarefactionwave which forces loosened scale material back into the borehole where it falls to the bottom, and

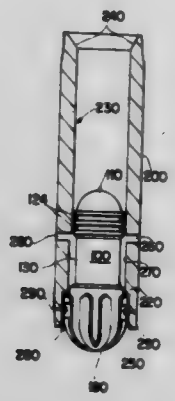
g. means coupling said voltage multiplier to said arc means at predetermined intervals to generate said high voltage arc.

4,343,357

DOWNHOLE SURGE TOOLS

Robert D. Yeates, 100 West Building, Midland, Tex. 79701

Filed Oct. 10, 1980, Ser. No. 195,825
Int. Cl.³ E21B *23/04, 33/12, 34/10, 34/14*
U.S. Cl. 166—154 6 Claims



1. Apparatus for well completion and related downhole operations, wherein the well includes a bore and casing therefor, tubing within the casing, perforations or open hole and a packer for disposition between the tubing and casing, comprising:

(a) a tubular nipple having an upper end and a lower end, the upper end of the nipple having connection with the downhole end of the tubing, said nipple defining an internal abutment adjacent the lower end thereof, said nipple including plural pressure relief ports disposed above said internal abutment;

(b) an impact actuated surge plug, movably disposed within the lower end of the nipple, the uppermost portion of said plug extending beyond said pressure relief ports, said plug further including abutment means for complementary restraining engagement with the internal abutment of said nipple, said plug further including a positive ejection assembly, said positive ejection assembly being actuated upon partial ejection of said plug to permit only partial reentry of the plug into said nipple and thereby permit uninterrupted backsurge of the well;

(c) sealing means between said plug and said nipple said sealing means being disposed above said pressure relief ports; and,

(d) wherein said positive ejection assembly is disposed substantially within a housing provided within said plug; and,

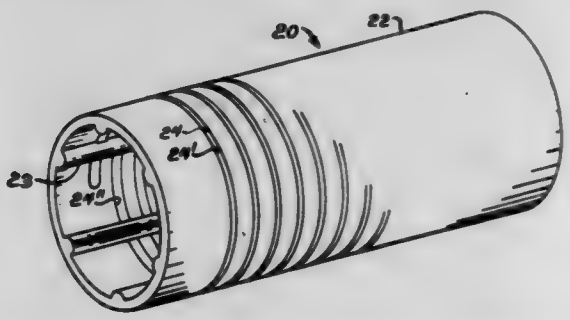
(e) wherein the positive ejection assembly of said plug includes resilient engagement means for complementary effect with the lower end of said nipple.

4,343,358

LASER SLOTTED PLASTIC WELL SCREEN

Gregory A. Gryskiewicz, North St. Paul, Minn., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 7, 1980, Ser. No. 119,279
Int. Cl.³ B23K *9/00*; E21B *43/08*
U.S. Cl. 166—227 2 Claims



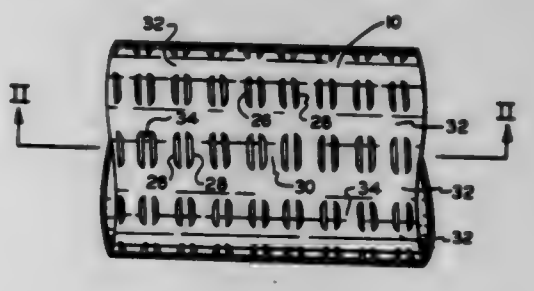
1. A plastic well screen comprising an integral, one piece wall portion having a cylindrical outside surface and a hollow interior, said wall portion having a longitudinally extending series of elongated transverse slots along its circumference which permit fluid to flow from outside said wall portion to said hollow interior, said slots being characterized in that the generally radially extending portions of the wall portion which define their side surfaces are angularly divergent in an inward direction and in that each of said transverse slots has a minimum width of opening on the outside surface of said wall portion which is less than about 0.020 inches, said wall portion including at least three, circumferentially spaced, longitudinally extending support portions which extend, uninterrupted, for the entire length of the screen and wherein said longitudinally extending support portions comprise rib portions projecting inwardly from said wall portion to provide axial strength to said screen and wherein said transverse slot portions overlie said rib portions.

4,343,359

PERFORATED PIPE

Horst J. Krause, 5305 Oleander Ave., Ft. Pierce, Fla. 33450

Filed Sep. 18, 1980, Ser. No. 188,327
Int. Cl.³ E21B *43/08*
U.S. Cl. 166—233 3 Claims



1. A screen of the type described comprising sets of slits disposed along a helical path defined on an elongated tube, the slits of each set being parallel to each other and opening in opposite direction into the interior of the tube, said sets being so spaced along said path as to dispose the sets located 360° from each other along said path in alignment longitudinal of said tube and so spaced from the directly adjacent sets along said path as to provide circumferentially spaced longitudinal extending unslitted tube area.

4,343,360

METHOD FOR CONTROLLING UNDERGROUND COMBUSTION

Irwin Ginsburgh, Morton Grove, and Robert D. Hall, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

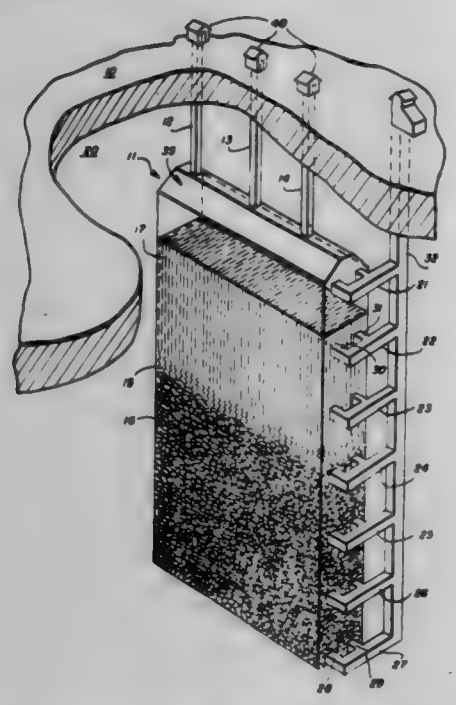
Division of Ser. No. 925,181, Jul. 17, 1978, Pat. No. 4,271,904.
This application Aug. 1, 1980, Ser. No. 174,601
Int. Cl.³ E21B *43/247, 47/00*
U.S. Cl. 166—251 2 Claims

1. In the in-situ combustion of a subterranean carbonaceous stratum, a method of controlling an underground flame front comprising

(a) monitoring the progress and orientation of the flame front in a vertical retort to determine the location of one or more segments of said flame front which exhibit unfavorable combustion characteristics by means of the Resistance Method which comprises:

inserting two or more pairs of resistance probes into the surface of the ground above a vertical retort and outside the sidewall boundaries of said retort, connecting said pairs of probes in an electrical circuit capable of measuring the resistance between pairs of probes wherein the progress, movement and spatial orientation of the flame front in three dimensions within said retort is correlated

to the difference between the resistances detected by each pair of probes, and



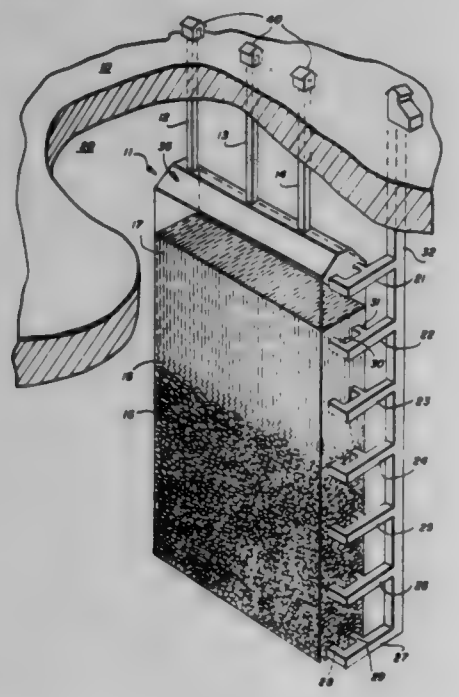
(b) injecting and controlling the flow of one or more gases into the vicinity of one or more of said segments to speed up or retard the combustion in said segment.

4,343,361

METHOD FOR CONTROLLING UNDERGROUND COMBUSTION

Irwin Ginsburgh, Morton Grove, and Robert D. Hall, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 925,181, Jul. 17, 1978, Pat. No. 4,271,904.
This application Aug. 1, 1980, Ser. No. 174,608
Int. Cl.³ E21B *43/247, 47/10*
U.S. Cl. 166—251 **2 Claims**



1. In the in-situ combustion of a subterranean carbonaceous stratum, a method of controlling an underground flame front comprising

(a) monitoring the flame front to determine the location of one or more segments of the flame front which exhibit unfavorable combustion characteristics by means of the Seismic Method which comprises

initiating a seismic signal on or near the surface of the earth at a position to one side of an essentially vertical sidewall of said retort such that the angle of incidence of the seismic signal to said sidewall inherently results in predominantly downward reflected seismic energy,

positioning at least one seismic detector means on or near the surface of the earth at a second position to the same side of said essentially vertical sidewall intended to reflect said seismic signal,

detecting the reflected seismic energy as a function of time by using said seismic detector means, and

determining the position of said flame front from the enhancement of the relative amount of seismic energy being reflected back to the surface of the earth associated with high temperature induced refraction of said initiated seismic signal which occurs in the vicinity of the flame front, and

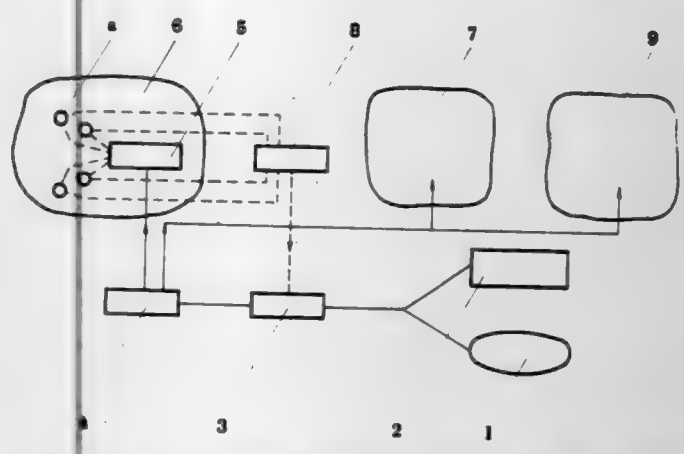
(b) injecting and controlling the flow of one or more gases into the vicinity of one or more of said segments to control and optimize the combustion of said segment.

4,343,362

RECOVERY OF OIL FROM AN OIL RESERVOIR BY MISCIBLE DISPLACEMENT

Alexandru Turta, and Marius Cuculat, both of Cimpina, Romania, assignors to Institutul de Cercetari si Proiectari Pentru Petrol si Gaze, Cimpina, Romania

Filed Jan. 29, 1980, Ser. No. 116,551
Int. Cl.³ E21B *43/22, 43/20*
U.S. Cl. 166—267 **6 Claims**



1. A method of recovering oil from at least one oil reservoir by the miscible displacement process, said method comprising the steps of:

(a) injecting gaseous carbon dioxide mixed with at least 20% of impurities selected from the group consisting of methane or other gaseous impurities capable of increasing the miscibility thereof as a miscible displacement agent into a first oil reservoir region through at least one well thereof at a first pressure enabling miscibility at the respective oil composition and temperature;

(b) thereafter injecting water into said first oil reservoir region through at least one well thereof whereby oil is displaced from the porous structure of said region and, toward the end of the oil displacement, said displacement agent is present in residual saturation in said region at least partly dissolved in water.

(c) then withdrawing said displacement agent and water containing said displacement agent from said first oil reservoir region through at least one well thereof;

(d) separating the displacement agent withdrawn in step (c) from water and compressing same;

(e) injecting a portion of the compressed displacement agent separated in step (d) as a miscible displacement agent into a second oil reservoir region at a second pressure lower than said first pressure through at least one well thereof, thereby enabling miscibility at the respective oil composition and temperature, and repeating steps (b), (c) and (d) therewith; and

(f) injecting a portion of the compressed displacement agent recovered from said second oil reservoir region as a miscible displacement agent into a third oil reservoir region at

a third pressure lower than said second pressure through at least one well thereof, thereby enabing miscibility at the respective oil composition and temperature, and repeating steps (b), (c) and (d) therewith

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4,343,363

PROCESS FOR CLEANING A SUBTERRANEAN INJECTION SURFACE AND FOR SELECTIVELY REDUCING THE PERMEABILITY OF A SUBTERRANEAN FORMATION

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Jan. 2, 1981, Ser. No. 221,966
Int. Cl.³ E21B *33/138, 43/22*
U.S. Cl. 166—281 **14 Claims**

1. A process for selectively reducing the permeability of a subterranean formation penetrated by a well bore in fluid communication therewith wherein an aqueous solution having a dry polymer dissolved therein is injected into the formation via the well bore until a face plug forms over an injection surface thereby significantly reducing the injectability of the aqueous solution, the process comprising:

(a) injecting into the well bore an aqueous acidic solution having an oxidizing agent dissolved therein, said oxidizing agent reacting with organic matter contained in said face plug to form lower molecular weight organic compounds causing dissolution of at least a significant portion of said face plug, polyvalent metals present in the oxidizing agent concomitantly being reduced to a lower valence state;

(b) injecting an aqueous spacer medium into the formation via the well bore to transport said lower molecular weight compounds and said reduced polyvalent metals into the formation; and

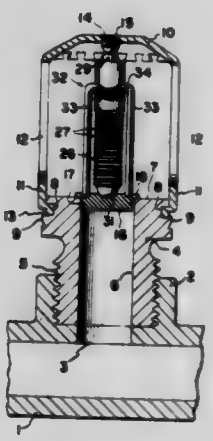
(c) injecting an aqueous solution having a dry polymer dissolved therein into the formation via the well bore, said dry polymer being crosslinked by said reduced polyvalent metals to form a plugging gel preferentially and predominantly within areas of the formation having relatively high permeabilities thereby improving vertical conformance and flow profiles of fluids subsequently injected into or produced from the formation.

4,343,364

SPRINKLER HEAD CONSTRUCTION

Hermann R. Glinecke, Pennington, N.J., assignor to Globe Fire Equipment Company, Standish, Mich.

Filed Jul. 6, 1979, Ser. No. 55,457
Int. Cl.³ A62C *37/08*
U.S. Cl. 169—38 **21 Claims**



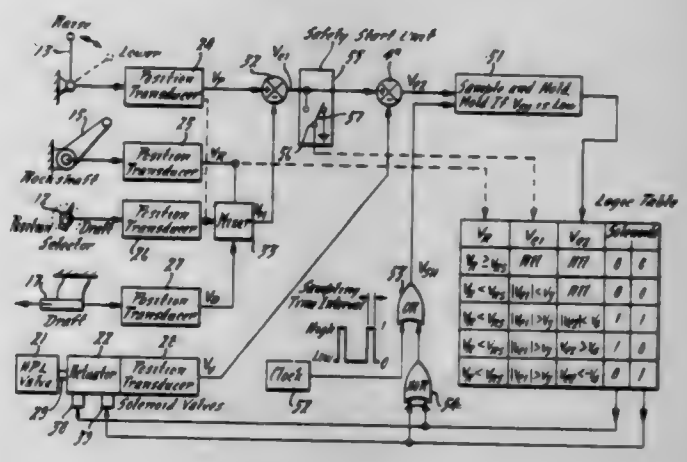
1. In a sprinkler head construction having a coupling adapted to be mounted on a fluid line and having a passage therein through which fluid may flow, a removable closure member normally sealing said passage, a frame carried by said coupling and having a portion overlying said closure member, and a strut assembly interposed between said frame portion and said closure member and normally maintaining the latter in sealing relation with said passage, the improvement wherein said strut assembly comprises a eutectic member sandwiched between a pair of elongate, thermal insulators extending in longitudinal prolongation of one another, said eutectic member and said insulators being encircled by a thermally conductive member.

4,343,365

ELECTRICALLY OPERATED HYDRAULIC POWER LIFT SYSTEM

Ganesh Rajagopal, Richardson, Tex., and Habil S. Basrai, Port Huron, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 7, 1980, Ser. No. 166,731
Int. Cl.³ A01B *63/111*
U.S. Cl. 172—4 **5 Claims**



1. A control system for a tractor hydraulic power lift system that includes a hydraulic cylinder coupled to a rockshaft and linkage system for raising and lowering an implement supporting means, a source of fluid under pressure, a main hydraulic valve means for controlling the flow of fluid to and from the hydraulic cylinder for regulating the height of the implement supporting means, and an electrohydraulic actuator having an operating member coupled to the main hydraulic valve means for operating the latter;

the control system comprising:

a feedback electronic control circuit including circuit means for mathematically combining a plurality of transducer means generated signals into a command signal;

the command signal comprising the output of a first differential summing device that receives a first input signal produced by a position transducer sensing the position of an operator actuated input handle for raising and lowering of an implement carried on the implement supporting means and substracts therefrom a second input signal produced as the output of a signal mixer that combines input signals from a position transducer means sensing the rockshaft position, a position transducer means sensing the draft position as set by an operator selector control knob and a transducer means sensing the magnitude of a draft force on a link of the linkage system;

a position transducer means coupled to the operating member of the electrohydraulic actuator for generating a signal sensing the actual position of the operating member;

a second differential summing device having as its inputs the command signal and the electrohydraulic actuator operating member position sensing signal and as its output an error signal representing the difference between the actual and desired positions of the implement;

a sample-and-hold circuit having an input to receive the error signal;

a clock logic means for transmitting the error signal at predetermined time intervals from the same-and-hold circuit to the electrohydraulic actuator to activate the latter to operate the main hydraulic valve to cause the hydraulic cylinder to move the rockshaft and linkage system in implement raising or lowering direction or to hold the

implement at a fixed height, the clock logic means including a clock means and a logic circuit having a plurality of inputs one of which is the output of the sample-and-hold circuit, a second of which is the output of the position transducer coupled to the rockshaft, and the third of which is an interruptible output of the first differential summing device;

and wherein the interruptible output of the first differential summing device is coupled to the logic circuit through a switch responsive to de-energization or re-energization of an ignition circuit of a tractor;

the switch having a latch means operable in response to de-energization of the ignition circuit that sets the switch output to the logic circuit to zero by grounding it;

the switch being adapted to maintain the output of the first differential summing device to the logic circuit at zero until the operator places the input handle in a position corresponding to the actual position of the rockshaft causing the output of the first differential summing device to become zero upon which the switch latch unlatches permitting the first differential summing device output to be coupled to the logic circuit.

4,343,366

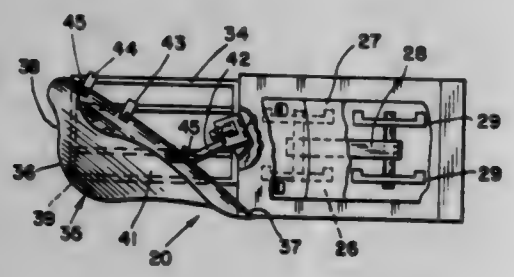
ROTOR TILLER WITH REVERSELY DIRECTED PLOW

Robert Walker, 5422 Hawthorne Pl., Washington, D.C. 20016

Filed Sep. 22, 1980, Ser. No. 189,807

Int. Cl.³ A01B *49/02*

U.S. Cl. 172—41 **6 Claims**



6. A walking type, power-operated, rotor tiller having rotatable tiller blades rotated unidirectionally in vertical planes on horizontal axes to advance said tiller along a path while cultivating a swath of ground, and a handle extending rearwardly and upwardly from said tiller blades for guidance, said tiller characterized by;

an elongated sheet metal, plow blade, having a tapered leading edge, an upstanding, arcuately-curved, rearward facing, concave plowing surface and an upstanding, rearward-facing, trailing, plowing edge, affixed to said tiller in rear of, and directly behind, said tiller blades to extend obliquely across the vertical planes of rotation of said tiller blades and face rearwardly of said tiller whereby said plow plows a furrow along said path only when said tiller is manually retracted along said path.

4,343,367

DRILLING MACHINE POSITIONING ARRANGEMENT

Toru Mashimo, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Continuation of Ser. No. 914,748, Jun. 7, 1978, abandoned. This application Nov. 18, 1980, Ser. No. 208,119

Claims priority, application Japan, Jun. 7, 1977, 52-66996

The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.

Int. Cl.³ E21C *11/00*

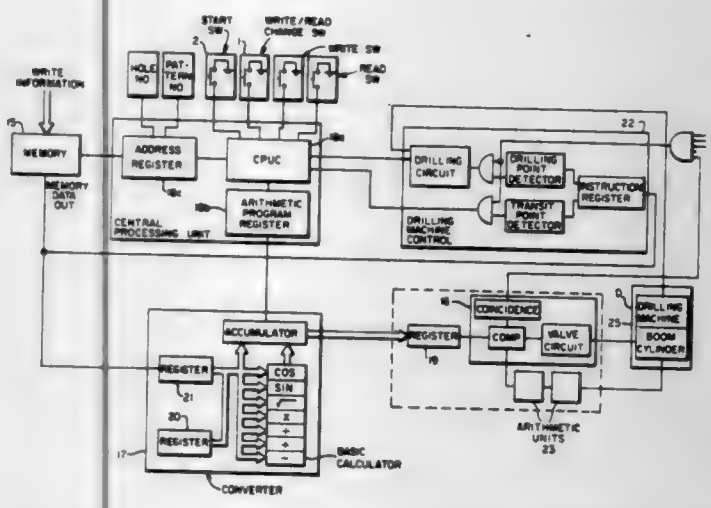
U.S. Cl. 173—43 **7 Claims**

1. A positioning arrangement for a drilling machine and the like which comprises,

boom means on which the drilling machine is operably mounted;

memory means for storing coordinate values of the working distance and working direction from a reference point to a drilling point on a drilling pattern plane immediately in front of a working face to be drilled, said working distance and working direction being in a rectangular coordinate system, and including means for supplying said values as output from said memory means;

converter means connected to said memory means for converting said working distance and working direction values from the rectangular coordinate system to a boom coordinate system, and for providing said converter values as output;



positioning servo control means connected to said converter means and to said boom means for displacing said boom means according to said working distance and working direction values supplied as output from said converter means for bringing the drilling machine into adjustment with the drilling point in the drilling pattern plane; and

arithmetic means connected to said boom means and to said positioning servo control means for calculating values of the working distance and working direction upon displacement of the boom means and for feeding back said calculated values to said position servo control means.

4,343,368

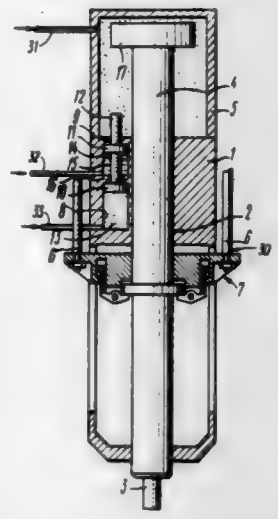
IDLE STROKE BRAKING UNIT FOR AN IMPACT DEVICE

Vladimir Y. Fadeev, ulitsa Tereshkovoi, 6, kv. 180; Petr Y. Fadeeve, ulitsa Russkaya, 25, kv. 204; Vladlen V. Korobkov, ulitsa Shljuzovaya, 12, kv. 17; Rim A. Kulagin, ulitsa Tereshkovoi, 2, kv. 22, and Nikolai P. Ermilov, ulitsa Rossiiskaya, 12, kv. 56, all of Novosibirsk, U.S.S.R.

Filed Dec. 20, 1979, Ser. No. 105,859

Int. Cl.³ B25D *9/04*

U.S. Cl. 173—139 **14 Claims**



1. An impact device for producing impact pulses acting on the object of work comprising a body; a ram having a front

portion effecting on the object of work by impact pulses at the end of its forward motion and a tail portion with at least one boss near its cross-cut and installed in said body with a provision for reciprocating movement; a power cylinder connected with said body so that it accommodates said tail portion of ram and is filled with a compressible fluid medium under pressure intended to accumulate potential energy in said power cylinder when being compressed during the backward motion of the ram and to act on the cross-cut end of said tail portion of said ram on its forward motion; a backward motion unit of the ram mounted on said body and being capable of interacting with said ram for performing the backward motion of the ram and compressing said compressible fluid medium; a unit for braking said ram at the end of its idle motion comprising at least one space located in said body so that it opens at one side into said power cylinder and a cylindrical member one end of which is provided with a circular piston-like boss and the middle part is provided with another circular boss separated from said piston-like boss by an annular space, said cylindrical member being accommodated in said body space with a provision for reciprocating movement so that the other end of said cylindrical member protrudes from the body into the space of said power cylinder and is intended to interact with said boss of the tail portion of the ram while said piston-like and other bosses are located inside of said space of the body, contacting with its surface, wherein said one space comprises at least two chambers, with a first chamber formed by the end face of said piston-like boss and the surface of said space of the body near said one end of the cylindrical member, filled with a compressible fluid medium under pressure for performing the backward motion of the cylindrical member; and a second chamber comprising a braking chamber formed by the surface of said cylindrical member between said piston-like and other bosses and the surface of said space of the body and filled with a fluid; and a circular throttling projection in the body, inside of said body space, located between said piston-like and other bosses of the cylindrical member and forming with the surface of the cylindrical member a gap intended to throttle the fluid in the process of braking said ram on its idle motion.

4,343,369

APPARATUS FOR DRILLING STRAIGHT PORTION OF A DEVIATED HOLE

William C. Lyons; Scot L. Scurlock, both of Sante Fe, N. Mex., and Edward A. Zublin, Houston, Tex., assignors to Drilling Development, Inc., Houston, Tex.

Filed Sep. 19, 1980, Ser. No. 188,728
Int. Cl.³ E21B *7/08*
U.S. Cl. 175—75 **12 Claims**



1. A flexible, resilient drill guide, connectable at its upper end to a rotary drill string and at its lower end to a rotary drill bit, for guiding the direction of drilling a well bore deflected from the vertical, said drill guide comprising:

an inner flexible segmented tubular drive member for transmitting rotational forces and drilling fluid between said drill string and said drill bit; and

an outer flexible, resilient, tubular member for exerting directional drilling forces on said drill bit,

said outer tubular member having disposed along at least a major portion of its length a plurality of nonconnected shaped cuts extending therethrough and around a portion of the circumference thereof, by not severing said outer tubular member, and,

said outer tubular member in an unstressed condition being normally curved through a portion of its length and normally straight through a portion of its length.

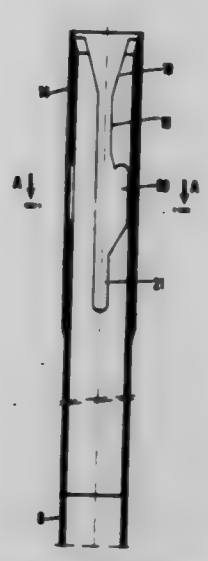
4,343,370

TURBO-CORING DEVICE EQUIPPED WITH A FOLLOWING PIPE

Michel Chatard; Alain Sonnet, both of Rueil Malmaison, and Jean Thiery, Le Pecq, allof, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 10, 1980, Ser. No. 158,265
Claims priority, application France, Jun. 13, 1979, 79 15334
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—107 **4 Claims**





1. A coring device comprising a tubular body provided with a coring bit, said tubular body being housed in a following pipe which is provided with a reaming bit and being connected to a

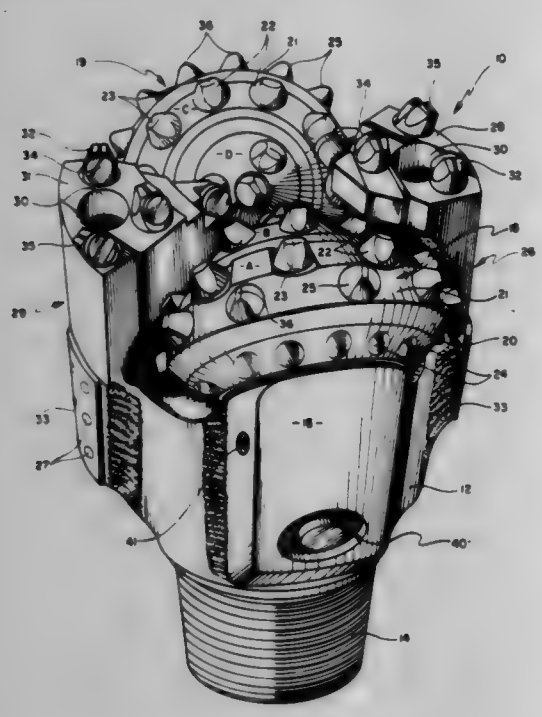
turbine through at least one hydraulic fluid distributor adapted to discharge through at least one lateral opening a fraction of the fluid flow leaving the turbine, while the remaining fraction of this fluid flow feeds said tubular body, releasable latching means permitting to connect said tubular body and said following pipe, wherein said fluid distributor is provided with means for automatic interruption of the fluid discharge through said lateral opening, when the lower part of said tubular body is obturated by ground formations, and wherein said releasable latching means are of the bayonet type and maintains said lateral opening of said fluid distributor at such a level as to discharge the fluid above said following pipe, this coring device further comprising, in combination with said fluid distributor, an annular sealing packer located between said tubular body and said following pipe, so that at the bottom of the device the fluid leaving said tubular body flows upwardly from said coring bit to said reaming bit.

4,343,371

HYBRID ROCK BIT

William Baker, III, Irvine; Lloyd L. Garner, Dana Point, and Charles R. Harris, Whittier, all of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 28, 1980, Ser. No. 144,515
Int. Cl.³ E21B *10/14*
U.S. Cl. 175—329 **5 Claims**



1. A hybrid rock bit comprising:

a rock bit body having a pin end at a first end and a cutting structure at a second end, said cutting structure consisting of a pair of opposed roller cones mounted to journaled legs extending from said rock bit body, said cutting structure further consisting of a pair of opposed drag bit legs on adjacent sides of said roller cones extending from said body;

a multiplicity of chisel inserts inserted in said roller cones, said inserts being substantially spaced apart and circumferentially positioned in said cones, the chisel crest of each of said multiplicity of chisel inserts mounted inwardly of a plurality of gage row inserts being oriented substantially circumferentially with respect to said roller cones;

a multiplicity of diamond inserts inserted in a face of said drag bit legs, said diamond inserts being so strategically positioned to remove ridges adjacent kerf rows in a borehole bottom; and

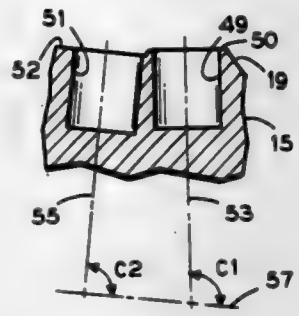
at least one extended nozzle formed in said face of each of said drag bit legs, said extended nozzle directing fluid toward said borehole bottom during rock bit operation.

4,343,372

GAGE ROW STRUCTURE OF AN EARTH BORING DRILL BIT

Donald L. Kinzer, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jun. 23, 1980, Ser. No. 161,701
Int. Cl.³ E21B *10/52*
U.S. Cl. 175—374 **3 Claims**



1. In a rolling cutter of an earth boring drill bit having a gage surface adapted to contact the sidewall of a borehole as the cutter rotates about its axis and rolls over the bottom of the borehole, the improvement comprising in combination:

first and second rows of inserts positioned adjacent each other on the cutter next to the gage surface, the second row inserts being positioned farther from the gage surface than the first row inserts and staggered so that the first and second row inserts alternate in contacting the bottom of the borehole;

each first row insert having a cylindrical base with a centerline that intersects the cutter axis at a selected angle c1;

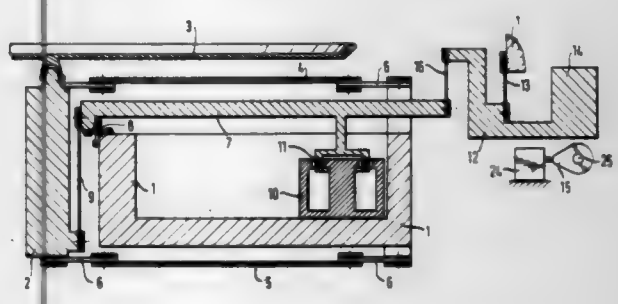
each second row insert having a cylindrical base with a centerline that intersects the cutter axis at a selected angle c2 that is less than the angle c1.

4,343,373

ELECTRONIC WEIGHING APPARATUS WITH CALIBRATING DEVICE

Eberhard Stadler, and Dieter Blawert, both of Göttingen, Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 247,219
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012344
Int. Cl.³ G01G *19/52, 7/00, 23/01*
U.S. Cl. 177—50 **8 Claims**



1. An electronic weighing apparatus comprising:

a load pan;

a load receiver forming part of a parallel construction and supporting the pan;

a weight compensating means;

at least one two-armed force-transmitting lever having a short arm and a longer arm, and at its short arm connected to take up the force transmitted by the load pan, and at its longer arm connected with the weight compensating means; and

a built-in calibrating device comprising a two-armed calibrating lever having a center of gravity located on one side of the lever, while on the other side of the lever a

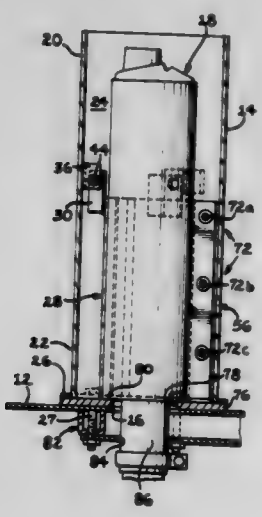
force-transmitting connection to the longer arm is provided via a coupling element whereby the force-transmitting connection can be selectively established or broken.

4,343,374

MUFFLER MOUNTING STRUCTURE

Larry A. Hollandsworth, Bettendorf, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00440, § 371 Date Apr. 17, 1980, § 102(e) Date Apr. 17, 1980
PCT Filed Apr. 17, 1980, Ser. No. 173,931
Claims priority, application Japan, Sep. 7, 1979, 54-123132[U]
Int. Cl.³ B62D *25/00;* F01N *7/18;* F16L *9/18, 39/00*
U.S. Cl. 180—69 R 2 Claims



1. In a structure (10) including a plate (12) having a hole (16) and a longitudinally extending member (18) extending generally outwardly through said hole (16), the improvement comprising:

a stack (14) having first (20) and second (22) end portions (20, 22), an internal cavity (24) extending from the first end portion (20) to the second end portion (22) and a flange (26) extending generally outwardly from the first end portion (22) and being in surrounding relation about the member (18) with the member (18) being positioned in the cavity (24);

means (27) for attaching said flange (26) to said plate (22);

a sleeve structure (28) distinct and removable from and surrounding and holding the member (18) and being within the cavity (24), said sleeve structure (28) extending at least a substantial portion of the length of said member (18);

a tab (30) attached to the sleeve structure (28) and extending generally outwardly towards the stack (14);

a bracket (36) attached to the stack (14) and extending generally inwardly towards the sleeve structure (28);

means (42) for removably securing the bracket (36) to the tab (30);

a base plate (76) having a central opening (78) having a periphery (80) which is smaller than said hole (16), said base plate (76) being positioned between said plate (12) and said flange (26) with said opening (78) aligned generally with said hole (16) and said periphery (80) extending inwardly over said hole (16);

said member (18) being sized to sit against said periphery (80); and

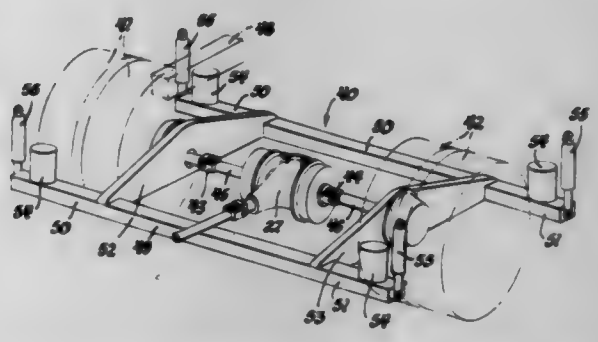
said sleeve structure (28) extending to adjacent said second end portion (22) and said stack (14).

4,343,375

VEHICLE DRIVE WHEEL SUSPENSION

Donald L. Manning, 4002 Normanwood Dr., Orchard Lake, Mich. 48033

Division of Ser. No. 86,857, Oct. 22, 1979, which is a continuation of Ser. No. 870,701, Jan. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 630,053, Nov. 7, 1975, abandoned. This application Jul. 9, 1980, Ser. No. 167,083
Int. Cl.³ B60G *9/000*
U.S. Cl. 180—73 R 1 Claim



1. A drive wheel suspension for a vehicle having a body, a pair of laterally spaced driving wheels, a differential securely mounted to the body between the wheels, and a pair of driving axles each having universal joints at its opposite ends connected to the differential and one of the wheels, said suspension comprising a dead axle whose portion inboard of said wheels is of generally rectangular configuration as viewed in plan and spring means for cushioning relative vertical movements of said body and dead axle, said dead axle including two parallel cross-members extending transversely of the vehicle and two wheel carrying members interconnecting said cross-members, said cross-members being spaced apart by said wheel carrying members such that when said wheels are carried by said wheel carrying members one of said cross-members is spaced rearwardly of the differential for freedom of movement in a generally vertical plane relative to the differential and the other of said cross-members is spaced forwardly of the differential for freedom of movement in a generally vertical plane relative to the differential, said rectangularly shaped dead axle being unobstructed between said cross-members and said wheel carrying members to permit said differential to be secured directly to and supported solely by the body whereby said cross-members throughout their extents are free to move vertically relative to said body and said differential.

4,343,376

VIBRATORY ELEMENTS FOR AUDIO EQUIPMENT

Tsunehiro Tsukagoshi; Shinichi Yokozeki; Sumio Hagiwara; Masataka Uchidoi; Toshikazu Yoshino, and Yasuyuki Arai, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 9, 1981, Ser. No. 241,554
Claims priority, application Japan, Mar. 18, 1980, 55-33362; Mar. 31, 1980, 55-40270; Mar. 31, 1980, 55-40271
Int. Cl.³ B32B *9/00, 5/16;* G10K *13/00*
U.S. Cl. 181—167 15 Claims

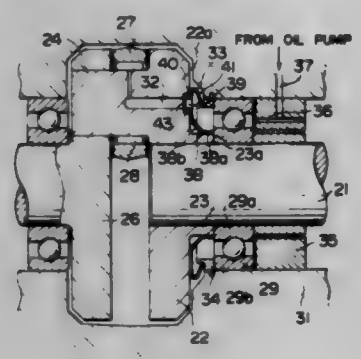


1. An acoustic vibratory element fabricated from a kneaded mixture comprising post-chlorinated polyvinyl chloride and flaky graphite powder, the graphite flakes being oriented substantially parallel to the surface of the element.

4,343,377
CRANK MECHANISM LUBRICATING SYSTEM

Shinichi Tamba, Kakogawa; Hitoshi Yamamoto, Nakamura, and Ryoji Uda, Kakogawa, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 8, 1980, Ser. No. 119,960
Claims priority, application Japan, Feb. 8, 1979, 54/15558[U]
Int. Cl.³ F01M *1/06*
U.S. Cl. 184—6.5 6 Claims



1. Crank mechanism comprising crankshaft means journalled on crankcase means through main bearing means and having crankarm and crankpin means, connecting rod means connected with said crankpin means through second bearing means, lubricant oil passage means formed through said crankarm means and crankpin means and leading to said second bearing means, said crankarm means having a side surface facing said main bearing means, said lubricant oil passage means having inlet port means opening to said side surface of the crankarm means, means for supplying lubricant oil to said main bearing means at a side opposite to said crankarm means, oil receiver means provided between said main bearing means and said crankarm means for directing the lubricant oil which has passed through the main bearing means to the inlet port means of the lubricant oil passage means, said oil receiver means including an outer peripheral guide portion, an annular seating portion adapted to be placed along said side surface of the crankarm means and central holding portion which is comprised of a cylindrical portion adapted to be fitted to a cylindrical surface of the crankshaft means between the main bearing means and the crankarm means and a resiliently deformable portion between said cylindrical portion and said seating portion, said deformable portion being adapted to be resiliently deformed by being axially compressed by the main bearing means through said cylindrical portion.

4,343,378
METHOD AND APPARATUS FOR LUBRICATING BEARINGS

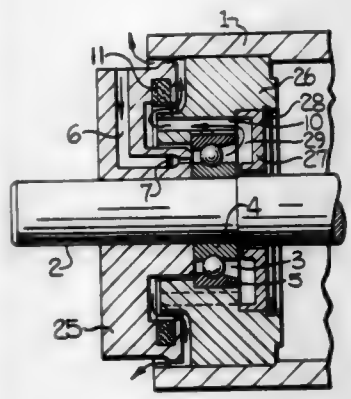
C. Hermann Bremer, Remscheid, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,348
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939604
Int. Cl.³ D03J *1/00*; F16N *7/26*
U.S. Cl. 184—6.26 22 Claims

1. A method of providing lubricating oil to a bearing and characterized by the high speed application of the oil onto the bearing, and comprising the steps of;

directing under relatively low pressure, air having oil mist droplets entrained therein, through a passageway extending to a location adjacent the bearing to be lubricated, while

accumulating entrained oil from the moving air at a location in the passageway upstream of the discharge end, and then directing air under a relatively high pressure through the passageway to propel at least a portion of the accumulated

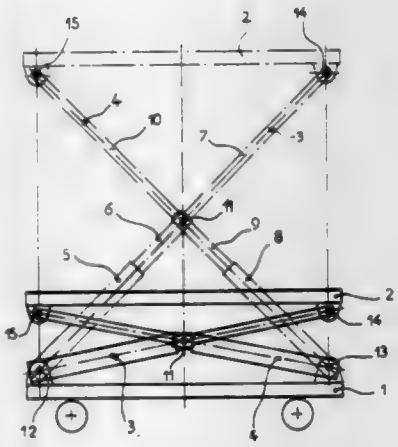


oil therein from the discharge end of the passageway at a high speed and onto the bearing.

4,343,379
PLATFORM LIFT MECHANISM

Georges Haulotte, La Ravoire, France, assignor to Creusot-Loire, Paris, France

Filed May 20, 1980, Ser. No. 151,749
Claims priority, application France, May 22, 1979, 79 13909
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—18 2 Claims



1. A lift mechanism comprising

(a) a mobile base;

(b) a support platform arranged above said base in substantially parallel orientation for movement with respect to said base;

(c) a pair of elevator scissors each having their opposite ends connected to said base and to said platform, respectively;

(d) each of said pair of scissors having three elements adapted to telescope within one another, said elements including

(i) a base element fixedly mounted on said base and having an interior diameter sufficient to receive in their entirety the two other elements when in their fully retracted position;

(ii) a medial element slidable within said base element between retracted and extended positions; and

(iii) an end element slidable within said medial element between retracted and extended positions;

(e) the medial elements of each of said pair of scissors being connected by a horizontal axle;

(f) means for coordinating the sliding movement of each of said medial and end elements of said pair of scissors, so that the movement of said medial element with respect to said base element is substantially equal to the movement of said end element with respect to said medial element;

(g) each of said pair of scissors being extendable and retractable independently of each other, whereby said platform is

displaceable longitudinally with respect to said base while remaining substantially parallel thereto.

4,343,380

DISK BRAKE ASSEMBLY

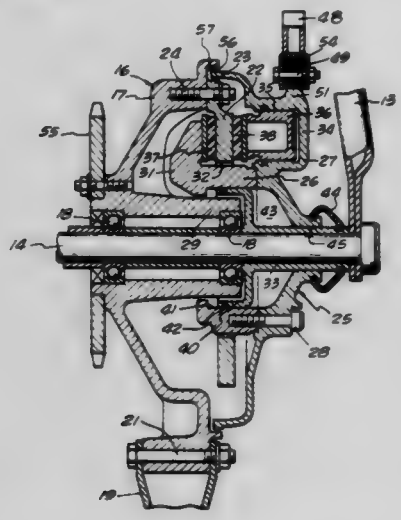
Takeshi Kawaguchi, Fujimi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1980, Ser. No. 143,789

Claims priority, application Japan, May 29, 1979, 54-65529

Int. Cl.³ B60T *1/06*

U.S. Cl. 188—18 A **7 Claims**



1. In a disk brake assembly, the combination of: a stationary axle, a wheel hub, axially spaced bearings supporting said wheel hub on said axle, a support member having a stationary cylindrical sleeve mounted directly on said axle, a brake disk having opposite parallel faces and having a central opening, means at the outer periphery of the brake disk for securing it to said wheel hub, a caliper member carrying brake pads for contacting opposite faces of said brake disk, said caliper member having a first part supported through said cylindrical sleeve on said axle at a position axially spaced from said wheel hub and a second part extending through said central opening of said disk, said second part formed with a cylindrical bore which encircles a portion of the wheel hub, a cylindrical rim of said stationary cylindrical sleeve slidably supporting said cylindrical bore of said second part spaced radially about said wheel hub, means on said caliper member for clamping said brake disk between said disk pads, and means for preventing rotation of said caliper member.

4,343,381

DISC BRAKE FRICTION PAD RETAINING MEANS AND GUIDE SEAL

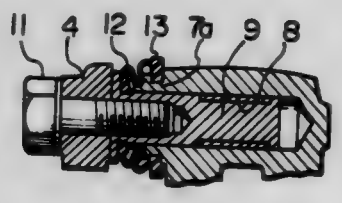
Tetsuo Haraikawa, Funabashi, and Koichi Tamura, Tokyo, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Jun. 16, 1980, Ser. No. 159,926

Claims priority, application Japan, Jun. 25, 1979, 54-87076[U]

Int. Cl.³ F16D *65/14*

U.S. Cl. 188—73.45 **3 Claims**



1. A disc brake comprising: a stationary member secured to a non-rotatable part of a vehicle and having a stepped portion, a caliper member supported on the stationary member for movement toward and away from a rotatable disc, at least one friction pad supported on the stepped portion of the stationary member for movement toward and away from the disc, a piston provided in the caliper member and acting on said one friction pad for moving it toward the rotatable disc, a pin and guide bore means provided between the caliper member and the stationary member for guiding the caliper member during movement thereof with respect to the stationary member, said means having a pin with a portion projecting from a guide bore, a dust boot covering the portion of the pin projection out of the guide bore, one end of the dust boot being integral with an intermediate portion of a flange secured to the stationary member said flange having a further integral portion radially extending from said intermediate portion and functionally separate from the remainder of said boot and extending towards the stepped portion sufficiently far to extend into the path of movement of said friction pad along said stepped portion and having a rigidity sufficient for preventing said one friction pad from being displaced off said stepped portion.

4,343,382

FRICTION PAD ASSEMBLIES FOR RAIL VEHICLE BRAKES

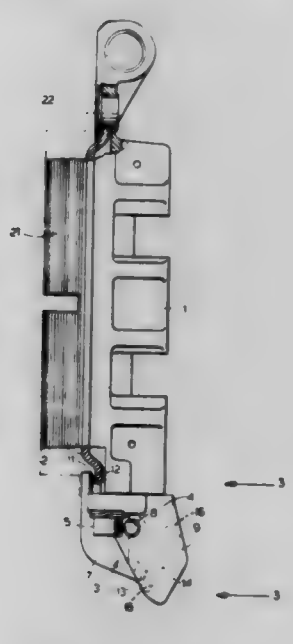
Gerald A. Ottewell, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 31, 1979, Ser. No. 108,671

Claims priority, application United Kingdom, Jan. 18, 1979, 7902044

Int. Cl.³ F16D *65/004*

U.S. Cl. 188—242 **6 Claims**



1. A friction pad assembly for a rail vehicle brake, comprising a shoe, a rigid backing plate detachably mounted on said shoe, a pad of friction material carried by said backing plate, and a keeper for engagement with one end of said backing plate, said keeper comprising a clamping member, wherein a pivotal connection pivotally mounts said clamping member on one end of said shoe for movement between an operative clamping position to urge said backing plate into engagement with said shoe and a retracted position spaced from said operative position in which said friction pad and said backing plate can be removed from said shoe, the friction pad assembly further comprising a mounting block provided on said shoe, said mounting block having spaced lugs and a bearing face, and said pivotal connection comprises a pin by means of which said clamping member is pivotally mounted between said spaced lugs, a wedge for urging said clamping member into said operative clamping position, said wedge being movable between an operative wedging position in which said wedge is releasably driven between said clamping member and said bearing face, and a retracted position in which the wedge is removed from engagement with said clamping member and said bearing face to enable said clamping member to be pivoted out of its operative clamping position and said friction pad and said backing plate can be removed from said shoe.

4,343,383

HYDRODYNAMIC TORQUE TRANSMITTING UNIT, PARTICULARLY FOR A HYDRODYNAMIC BRAKE

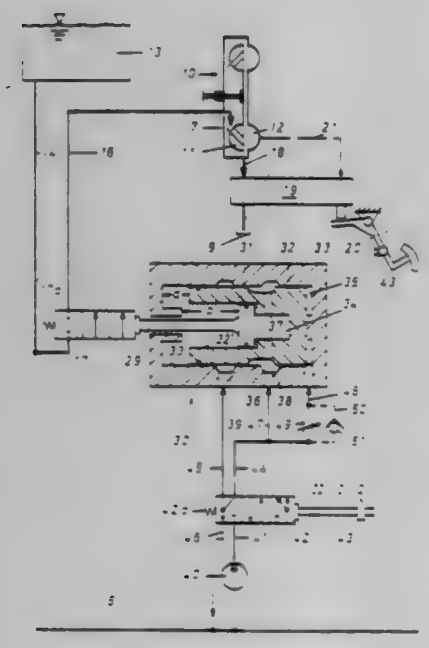
Klaus Brosius; Hans Lindenthal, both of Heidenheim-Mergelstetten, and Franz X. Zaunberger, Augsburg, all of Fed. Rep. of Germany, assignors to Voith Getriebe KG, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,787

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948400; Jul. 8, 1980, 3025803

Int. Cl.³ F16D *57/02*

U.S. Cl. 188—296 34 Claims



1. A hydrodynamic torque transmitting unit, for a hydrodynamic brake or for the like purposes, the unit including:

a toroidal working chamber containing a stator and a rotor;

an inlet line to the working chamber for filling the chamber with working fluid; an outlet from the working chamber for removal of working fluid therefrom, such that the selective filling of the working chamber through the inlet line and the removal of working fluid therefrom through the outlet line establishes the torque to be transmitted through the working chamber;

an inlet valve in the inlet line; the inlet valve being adjustable to a first position for establishing a large inlet flow in the inlet line and to a second position for establishing a smaller inlet flow in the inlet line;

inlet valve adjustment apparatus connected to the inlet valve for moving the inlet valve to either of the first and second positions thereof; the adjustment apparatus including:

first means for establishing a stage I condition, where the adjustment apparatus first moves the inlet valve to the first position thereof and automatically thereafter moves the inlet valve to the second position thereof after a predetermined time period; and

second means for establishing a stage II condition, where the adjustment apparatus moves the inlet valve to the first position thereof and retains the inlet valve in the first position thereof.

4,343,384

CONNECTOR APPARATUS FOR ELECTRICALLY CONDUCTIVE GUIDE RAILS

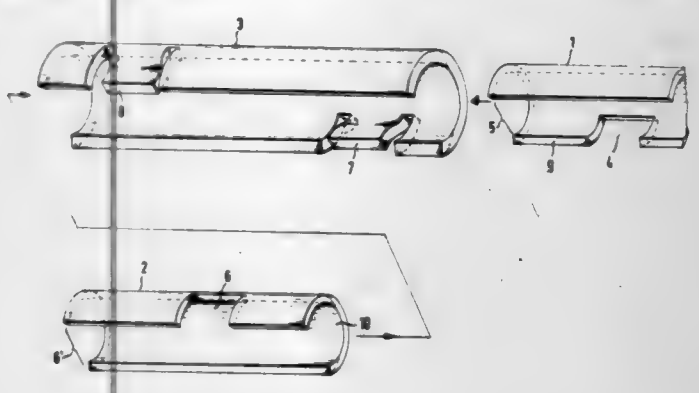
Alfred Mutter, Rheinweiler, Fed. Rep. of Germany, assignor to Wampfler GmbH, Weil am Rhein-Märkt, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 99,051

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852267

Int. Cl.³ B60M *1/00*

U.S. Cl. 191—22 R 8 Claims



1. An improved electrical connector, comprising:

a first segment of hollow electrically conductive tubing having a first axial slot extending through the wall thereof;

at least one notch in said wall extending circumferentially at least partially around the exterior of said first segment;

a second segment of hollow electrically conductive tubing having a second axial slot extending through the wall thereof, said second segment having an inner geometry sized to receive said first segment of hollow tubing;

at least one first protrusion in said wall of said second segment extending radially into the interior thereof in position to fit into said at least one notch in said first segment when said first segment is inserted into said second magnet and rotated both to engage said at least one first protrusion with said at least one notch and to align said first and second axial slot;

a third segment of hollow electrically conductive tubing of the same outer geometry as said first segment, said third segment having a third axial slot extending through the wall thereof;

at least one notch in the wall of said third segment extending circumferentially at least partially around the exterior of said third segment; and

at least one second protrusion in said wall of said second segment, at the opposite end thereof from said at least one first protrusion, said second protrusion extending radially into the interior of said second segment in position to fit into said notch in said third segment when said third segment is inserted into said second segment and rotated both to engage said at least one second protrusion with said at least one notch in the wall of said third segment and to align said first, second and third axial slots.

4,343,385

AUTOMATIC DRIVE MECHANISM FOR VEHICLES

Toru Kosuda, Okazaki, and Takeshi Matsui, Aichi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 29, 1980, Ser. No. 126,015

Claims priority, application Japan, Mar. 7, 1979, 54-26290

Int. Cl.³ B60K *41/02*

U.S. Cl. 192—0.02 R 3 Claims

1. An automatic drive mechanism for an automotive vehicle for positioning an output shaft, comprising:

a housing;

an electric motor, having an output shaft, fixed to said housing;

a reduction gear mechanism, having an input and an output

gear, arranged inside said housing, said input gear being engaged with said output shaft of said electric motor;

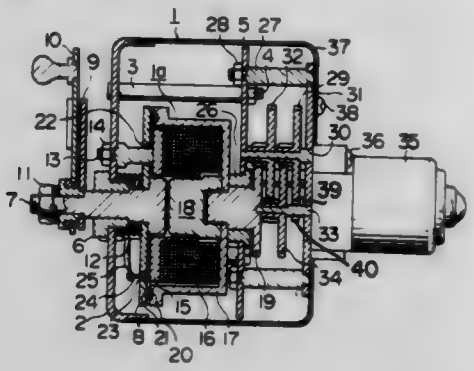
a coil cover fixed to said output gear of said reduction gear mechanism;

an electromagnetic coil surrounded by said coil cover;

a magnetic core member arranged in a central space of said electromagnetic coil and fixed to said coil cover;

an output shaft supported rotatably and shiftably in a direction of its axis by said housing;

a clutch plate fixed to said output shaft and being arranged to face said coil cover, said clutch plate having a first and a second angular slot;



a friction engagement member intervening between said clutch plate and said coil cover, and fixed to one of said coil cover and clutch plate;

feed means arranged to extend through said first angular slot and electrically connected to said electromagnetic coil for energizing the same; and

fixing members extending through said second angular slot for fixing said electromagnetic coil to said housing,

whereby, when said electromagnetic coil is energized, said clutch plate is coupled to said coil cover so that limited rotation of said electric motor is transmitted through said reduction gear mechanism, said coil cover and said clutch plate to said output shaft.

4,343,386

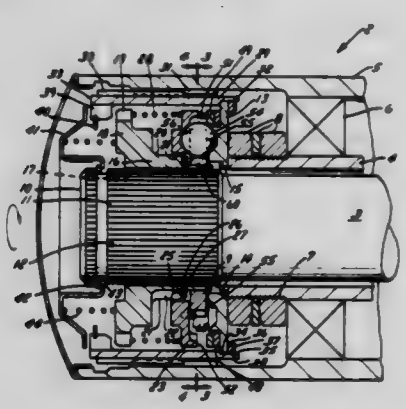
BALL MOVEMENT COORDINATOR AND CAM MEMBER FOR TORQUE RESPONSIVE HUB CLUTCH

David V. Schaefer, Burlington, and Clark J. Hamkins, Racine, both of Wis., assignors to Tenneco Inc., Bannockburn, Ill.

Filed Jul. 21, 1980, Ser. No. 170,851

Int. Cl.³ F16D *13/04*

U.S. Cl. 192—54 7 Claims



1. An actuator ball movement coordinator and cam member for a hub clutch of the ball and cam type, said hub clutch having a first non-rotatable working surface for being affixed to a non-rotatable spindle, a second rotatable working surface rotatable with, and axially moveable on, a selectively driveable axle journaled in said spindle, said rotatable working surface being affixed with a drive means for being selectively engaged with and disengaged from a driven means on a wheel hub mounted for rotation about said spindle, a plurality of actuator balls interposed between said first and said second working surfaces, each of said working surfaces having a plurality of detents, each of said detents in each working surface being sized to receive a portion of an actuator ball for enabling said working surfaces to be relatively close together when each actuator ball occupies a detent in each working surface to enable said drive means to be disengaged from said driven means, said ball movement coordinator and cam member comprising:

an annulus having a central opening for receiving said axle, said annulus being interposed between said first working surface and said second working surface;

a plurality of actuator ball receiving recesses radially outwardly spaced from said opening and equidistant from each other, each of said recesses having a radially innermost actuator ball receiving portion alignable with a detent in each of said working surface to enable an actuator ball contained in said innermost portion to occupy a detent in each of said working surfaces; a pair of diverging walls extending radially outward from the innermost portion of each actuator ball receiving recess; whereby, as said second working surface is forced to rotate with respect to said first working surface, each actuator ball contained in the innermost portion of a recess is forced out of the detents in each working surface to force said second working surface axially away from said first working surface thereby forcing said drive means into engagement with said driven means and a diverging wall of each recess cams an actuator ball radially outwardly out of alignment with the detents to maintain the drive and driven means engaged.

4,343,387

DEVICE FOR AUTOMATIC ACTUATION OF AN AUTOMOBILE CLUTCH

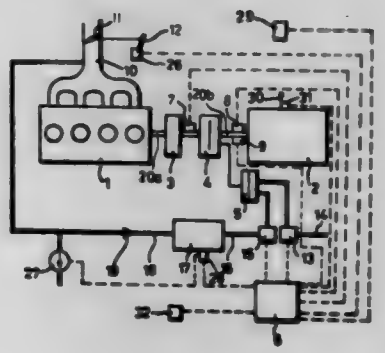
Peter Hofbauer, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Feb. 21, 1980, Ser. No. 123,440

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 2906587

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.076 10 Claims

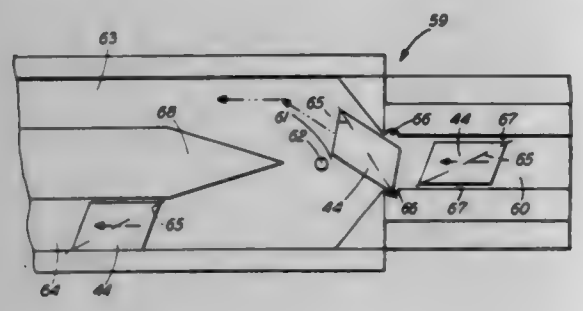


1. In a motor vehicle, a device for automatically actuating a clutch arranged between the output shaft of the engine and the input shaft of the transmission comprising servo means coupled to said clutch for selectively actuating said clutch, first detection means for measuring the speed of said engine output shaft, second detection means for measuring the speed of said transmission input shaft, and control means coupled to said servo means and to said first and second detection means for controlling said servo means for actuating said clutch as a function of the speeds of said engine shaft and transmission shaft and their second derivatives with respect to time.

4,343,388
APPARATUS FOR SORTING ARTICLES

Loring E. Du Bois, Kansas City, and Lawrence D. Simpson, Summit, both of Mo., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 24,223, Mar. 26, 1979, Pat. No. 4,235,014, which is a division of Ser. No. 863,107, Dec. 22, 1977, Pat. No. 4,170,021. This application Aug. 21, 1980, Ser. No. 179,592
Int. Cl.³ B65G *47/24*
U.S. Cl. 193—47 1 Claim



1. An apparatus for sorting electronic articles in the shape of parallelepipeds having rhomboidal bases as major surfaces into two groups, each group being distinct from the other by the orientation of the bases of the articles, which comprises:

a feed track for advancing the articles in a single row, along a path with one or another of the major surfaces of the articles supported by a base surface of the track;

guides, spaced laterally in parallel along the track to support the advancing movement of each such article substantially without rotation of such article away from its direction of travel along the feed track;

first and second branch tracks coupled to the feed track and forming a fork at one end thereof;

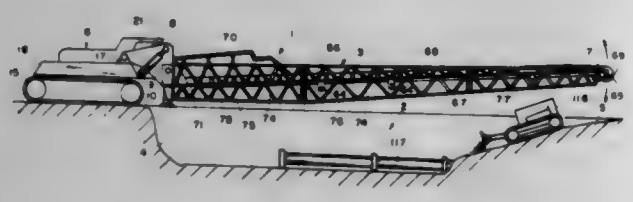
a single obstruction fixedly mounted in the center of the path of the articles at the fork for engaging the leading edge of the articles and deflecting the articles into a selected one of the branch tracks depending on the direction in which the leading edge of the articles forms an acute angle with the direction in which the articles are advanced along the track; and

one recess on each side of the track located in the guides adjacent to the fork to receive a trailing corner of articles and permit rotation of the articles toward either branch track after contact of the leading edge of the article with the obstruction.

4,343,389
MOBILE CONVEYOR

William M. Ponstein, 3615 Wentworth Dr., SW., Grand Rapids, Mich. 49509

Filed Apr. 14, 1980, Ser. No. 140,185
Int. Cl.³ B65G *21/10, 41/00*
U.S. Cl. 198—316 9 Claims



1. A mobile conveyor arrangement for filling trenches and the like, comprising:

a conveyor having upstream and downstream ends, and means for transporting excavated trench material thereon from a digging point to a filling point of a trench;

mobile power means operably connected with said conveyor for intermittently moving said conveyor longitudinally along the trench to conveyor set up points, and laterally positioning said conveyor with respect to the trench;

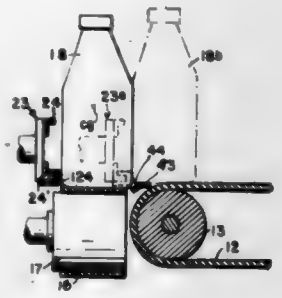
means for pivotally connecting the upstream end of said conveyor with said mobile power means for pivotal movement in a substantially vertical plane; said connecting means comprising a connector having one portion adapted for detachable connection with said conveyor and another portion adapted to be rotatably mounted in a boom arm pivot block portion of said mobile power means;

stabilizing means depending from said conveyor and adapted to selectively engage the ground at the conveyor set up points along the trench and support said conveyor in the selected position during conveyance of the excavated material; said stabilizer means comprising a longitudinally adjustable foot connected with and depending from said connector; said foot supporting said conveyor in a cantilevered fashion over said trench, and being extended and retracted to pivot the conveyor at said boom arm pivot block portion for varying the elevation of the downstream end of said conveyor during conveyance of the excavated materials.

4,343,390
CASER UNIT FOR CONTAINERS

Herman Laub, III, 244 N. San Marino, San Gabriel, Calif. 91775

Filed Jul. 10, 1980, Ser. No. 168,305
Int. Cl.³ B65G *25/08*
U.S. Cl. 198—429 6 Claims



1. In a caser for casing upright containers, the combination comprising

first conveyor means,

second conveyor means for moving said containers in a column to a loading zone adjacent said first conveyor means,

the container supporting plane of said second conveyor means being located below the container supporting plane of said first conveyor means,

transferring means comprising a platen moveable from an initial position on one side of said second conveyor for transferring said containers from said second conveyor means to said first conveyor means,

a stationary guide member mounted between said first and second conveyors on the other side of said second conveyor so that it is spaced from said platen when said platen is in said initial position and cooperative with said platen to guide said containers to said loading station,

said guide member having an inclined upper surface, and

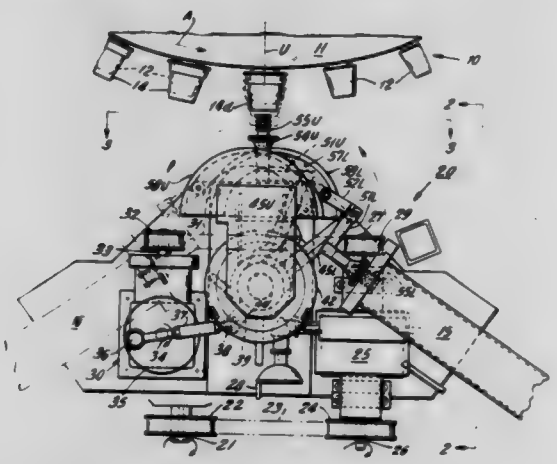
means for moving said platen from said initial position across said second conveyor to move said containers over said inclined surface and onto said first conveyor means,

said platen comprises an upper container engaging ledge projecting from said platen located in a horizontal plane extending through or below the centers of gravity of said containers while at said loading station and a lower container engaging ledge projecting from said platen and located below said upper ledge, said lower ledge projecting further from said platen than said upper ledge whereby said lower ledge initially solely advances said containers onto said guide member and said upper ledge engages those containers tilted by said guide member.

4,343,391
TAKEOFF AND RESTACKING DEVICE FOR CUP-LIKE CONTAINERS

John P. Skrypek, Mahwah; Robert Williams, Randolph, and James W. Dominico, West Paterson, all of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Mar. 21, 1980, Ser. No. 132,513
Int. Cl.³ B65G 47/26
U.S. Cl. 198—438 15 Claims



1. Apparatus for removing cup-like containers one at a time from mandrels, extending radially from the turret of a container decorator, when each of these mandrels stops at a takeoff station, and delivering such containers to the rear of a stack located at a stacking region remote from the takeoff station; said apparatus including a drive arm, a support arm, a laterally movable first pivot operatively connecting said support and drive arms, first means connected to said support arm for holding each of the containers as they move between said takeoff station and said stacking region, cam means connected to said support arm at a location displaced from this first pivot the control the angular relationship between said drive and support arms as a function of the angular position of said drive arm about a second pivot laterally displaced from said first pivot, and drive means operatively connected to said drive arm for moving the latter about said second pivot as a center, said first means comprising a suction head which includes a bellows for engaging containers at said takeoff station, said bellows being substantially collapsed while carrying containers from said takeoff station to said stacking region, said bellows when substantially collapsed being sufficiently resilient to permit tilting of a container carried by said suction head in the event there is interference between said container and the mandrel from which the container is being removed.

4,343,392
METHOD AND APPARATUS FOR FEEDING ENVELOPES

James B. Ellis, Palatine; Mieczyslaw J. Lisiecki, Norridge, and Stephen Ruderman, Oak Park, all of Ill., assignors to AES Technology Systems, Inc., Elk Grove Village, Ill.

Filed Mar. 31, 1980, Ser. No. 135,354
Int. Cl.³ B65G 47/82
U.S. Cl. 198—484 5 Claims

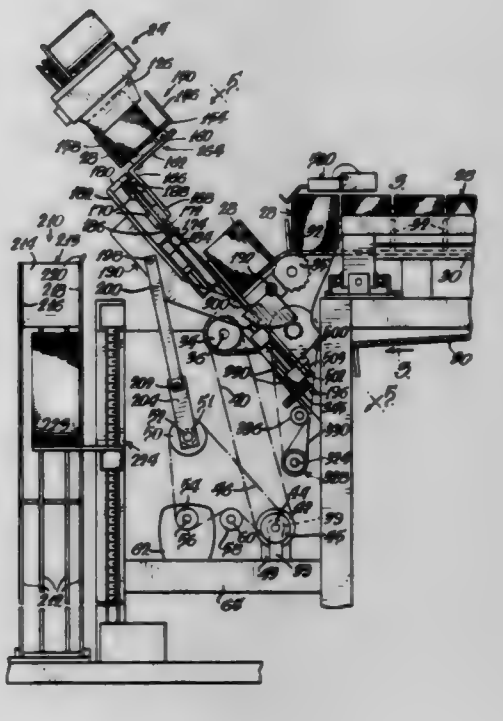
1. An apparatus for moving envelopes that have been segregated into batches with each said batch formed by a plurality of envelopes arranged in face-to-face relationship and having an exterior envelope at each end of the batch, said apparatus comprising:

(a) an endless loop conveyor oriented in a generally vertical plane and defining a conveying path spaced from and at a lower elevation than a transfer station, said conveyor including a pair of spaced-apart endless chains below said conveying path, said conveyor also including a plurality of spaced-apart, outwardly projecting planar flights oriented generally normal to said conveying path, each said flight being secured on each side of said conveying path to said chains, each pair of adjacent flights being adapted to receive therebetween one of said envelope batches, each said conveyor flight having a length dimension as measured normal to and across the conveying path that is less than the length dimension of each said envelope in said batch whereby opposite end portions of each said envelope in the batch extend beyond the ends of said flights;

(b) means for intermittently moving said endless chains in one direction of rotation to move said conveyor flights along said conveying path to carry each said batch of envelopes along at least a portion of said conveying path in said conveyor;

(c) a discharge station defined along a portion of said conveying path where each batch of envelopes is removed from said conveyor;

(d) an input car for receiving a batch of envelopes at said discharge station from said conveyor, said input car having a pair of spaced-apart, outwardly projecting members for engaging the bottom edges of the envelopes in a batch, said pair of outwardly projecting members of said input car being arranged to receive and permit passage of said conveyor flights therebetween when said input car is at said discharge station, said input car further including a flat, generally U-shaped member adapted to engage a face of one of said two exterior envelopes in each batch, said U-shaped member having a configuration to at least partially encompass each said conveyor flight and to permit passage of each conveyor flight when said input car is at said discharge station and the conveyor flights are moved along the conveying path;



(e) guide means slidably engaged with said input car and extending between said discharge station and said transfer station for guiding said input car in reciprocative movement between said discharge station and said transfer station; and

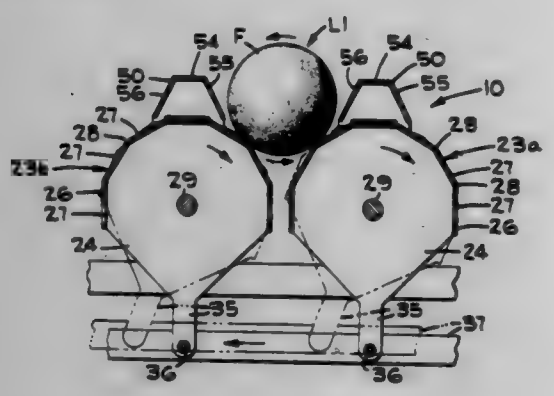
(f) means for reciprocating said input car along said guide means between said discharge station and said transfer station whereby a batch of envelopes can be lifted out of said conveyor from said discharge station by said input car and presented at said transfer station to permit removal of said batch from said input car and whereby, when said envelope batch has been removed from said input car at said transfer station, said input car can be moved in an empty condition back to said discharge station.

4,343,393

FEEDER FOR FRUITS AND THE LIKE

Gregory J. Larsen, Lakeland, Fla., assignor to FMC Corporation, Chicago, Ill.

Filed Feb. 13, 1980, Ser. No. 120,967
Int. Cl.[3] B65G *47/04, 13/02*
U.S. Cl. 198—533 3 Claims



1. A feeding apparatus in which a supply of randomly arranged substantially spherical articles are segregated to progress along an inclined feed path terminating at a downstream transfer station where the leading article of an abutting row of articles is transferred to a processing machine,

said feeding apparatus comprising:

inclined laterally spaced article support members defining therebetween a downwardly extending feed path,

means mounting said support members for oscillatory movement,

means for simultaneously oscillating said support members in successive clockwise and counterclockwise directions so that articles supported thereby are partially revolved in opposite directions to impart a side-to-side swaying action thereto thereby to enhance movement of the articles by gravity down said feed path,

said support members having generally undulating surfaces defined by a plurality of ridges extending longitudinally thereof at the intersections of generally arcuately spaced rectangular panels, thereby to impart limited upward movement to said articles in addition to side-by-side swaying movement thereof as said articles progress along said feed path, thereby causing said articles to partake of multi-directional movement to preclude stoppage of article flow along said feed path by static friction thereof,

elongated stationary means overlying each said support member thereby to laterally confine said articles to said path and prevent lateral passage of said articles transversely of said support members during said swaying movement, and,

said oscillating means further including a connection therein for adjusting the arc of oscillatory motion imparted to said support member.

4,343,394

APPARATUS FOR HANDLING FLUENT MATERIAL

Joseph W. Emmert, and Lawrence J. Sweeney, both of Willow Street, Pa., assignors to Addare Corp., Willow Street, Pa.

Filed Jun. 23, 1980, Ser. No. 161,889
Int. Cl.[3] B65G *33/12, 33/30*
U.S. Cl. 198—616 8 Claims

1. Apparatus for displacing fluent material, comprising:

a tube having an inlet at one location and an outlet spaced from said inlet,

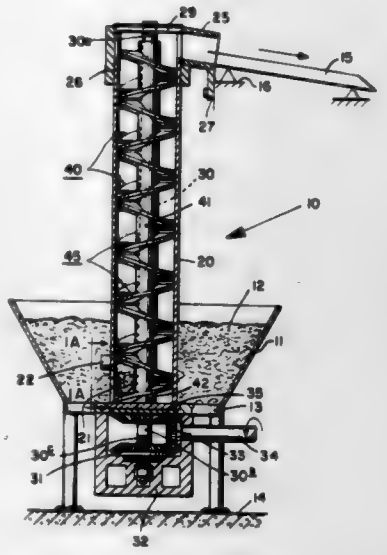
a shaft extending axially inside said tube,

means mounting said shaft for combined rotary and axial motion relative to said tube,

a first helical blade mounted to said shaft,

a second helical blade of a pitch opposite said first helical blade mounted to said tube,

said first and second helical blades each being interrupted at diametrical locations by a pair of edges defining narrow gaps, said gaps being arranged relative to one another so that said shaft mounted blades pass through the gaps in the tube mounted blades and said tube-mounted blades pass through the gaps in the shaft mounted blades when said blades are rotated relative to one another, and



means for rotating said first blade relative to said second blade,

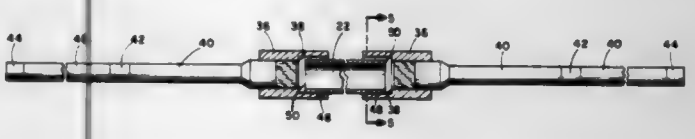
whereby fluent material admitted into the tube at its inlet is displaced axially therein to exit from the outlet.

4,343,395

ROLLER HEARTH FURNACE

Charles Lippert, Pinckney; Leonard G. Nowak, Ypsilanti, and Paul K. Shefsiek, Farmington, all of Mich., assignors to Holcroft & Co., Livonia, Mich.

Filed Nov. 10, 1977, Ser. No. 850,167
Int. Cl.[3] B65G *13/06*
U.S. Cl. 198—781 6 Claims



1. A transport mechanism for a roller hearth furnace comprising:

a cylindrical roller;

a rigid retaining sleeve positioned at each end of said roller, said sleeve including an open end having an inner cylindrical surface loosely surrounding the end section of said roller for supporting said roller and forming a slip joint with said roller end section; and

drive means attached to the end of said sleeve opposite said open end for rotating said sleeve;

said inner cylindrical surface of said sleeve, when rotated, frictionally engaging said roller end section, thereby rotating said roller.

4,343,396

ROLLER CONVEYORS WITH CLUTCH DRIVES

Alan L. George, West Northaw, England, assignor to Dexion-Comino International Limited, Hertfordshire, England

Filed May 5, 1980, Ser. No. 146,872
Claims priority, application United Kingdom, May 14, 1979, 7916613
Int. Cl.[3] B65G *13/07*
U.S. Cl. 198—781 12 Claims

2. A drivable load-carrying roller assembly comprising, in combination with a conveyor roller and a roller-driving means, clutch means disposed at an end of said conveyor roller for coupling said conveyor roller to said roller-driving means; said

load-carrying roller assembly further comprising a support member supporting said conveyor roller end, said support member having spaced flanges extending toward said conveyor roller end, with a guard plate slidably mounted between said spaced flanges for linear displacement wherein said guard

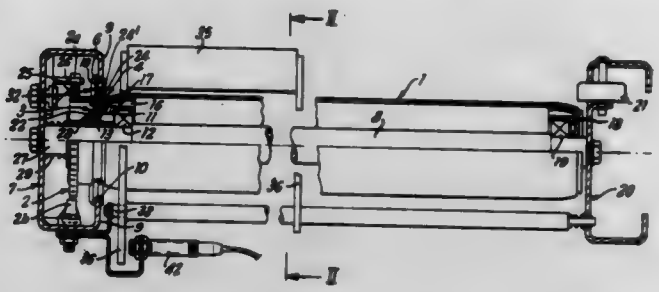


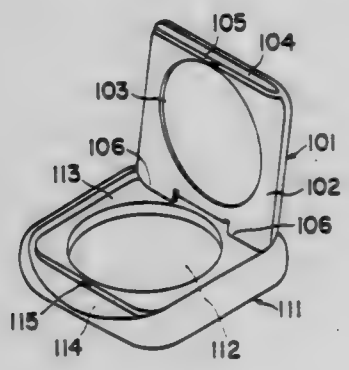
plate shields said roller-driving means from said conveyor roller, said roller-driving means being further shielded on further sides by said support member; said guard plate having operative means for selectively altering the position of said clutch means during sliding of the plate to facilitate coupling of said conveyor roller to said roller-driving means.

4,343,397

COMPACT HAVING STAY-OPEN LID STRUCTURE

Takamitsu Nozawa, and Takaharu Tazaki, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 142,710, Apr. 22, 1980, Pat. No. 4,291,818.
This application Dec. 11, 1980, Ser. No. 215,496
Claims priority, application Japan, May 18, 1979, 54-61116
Int. Cl.[3] A45C *11/00*
U.S. Cl. 206—37 3 Claims



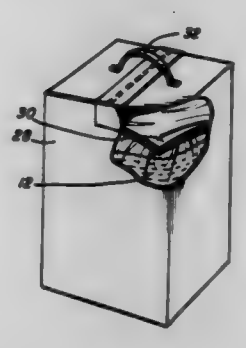
1. In a compact made of a synthetic resin comprising a container (111) for a cosmetic, and a lid (101) connected to the upper surface of said container at the rear end thereof, and swingable like a cover for a book to open or close said container, the improvement in which said lid (101) comprises a main body (102), a generally flat rear end portion of said main body reduced in thickness to define a hinge (107), a hinge base (108) contiguous to said hinge, a fitting member (109) depending from the underside of said hinge base (108), and a leg (106) of desired length extending rearwardly from the rear end of said main body (102), said leg being discontinuous in the area of said hinge, while said container (111) comprises said upper surface (113) which is flat at least in the rear end portion thereof where said lid (101) is connected to said container, and a hole (116) provided in said rear end portion thereof opposite to said fitting member (109) of said lid (101) for receiving said fitting member (109) therein to hold it against any shaky movement.

4,343,398

EMULSION PACKAGE AND METHOD OF MIXING THE EMULSION

Robert G. Snyder, Norway, Me.; John J. Clancy, Westwood, and Richard S. Brenneman, Natick, both of Mass., assignors to Engineering Industries, Inc., Norway, Me.

Filed Aug. 20, 1980, Ser. No. 179,730
Int. Cl.[3] B65D *81/30, 35/28, 33/36, 85/00*
U.S. Cl. 206—219 19 Claims



1. A package comprising a fluid product in a sealed bag, the fluid product having a normal viscosity of about 13,000 centipoises or less but being subject to separation into a paste and liquid, the liquid having a watery consistency and making up at least about 5% of the separated bag contents, the volume of product being at least one gallon and less than half the capacity of the bag, and the bag being substantially completely evacuated but for the product such that the separated contents of the bag may be remixed by compressing the sides of the sealed bag into face-to-face contact by hand, inducing turbulent flow of the bag contents for hydraulic mixing thereof.

4,343,399

TWO COMPONENT DEVICE FOR USE IN ANCHOR BOLTING AND METHOD OF ANCHORING

Natvarlal K. Patel, Warrensville Heights, and Anthony C. Plaisted, North Royalton, both of Ohio, assignors to Celtite, Inc., Georgetown, Ky.

Filed Apr. 13, 1981, Ser. No. 254,004
Int. Cl.[3] B65D *25/08*
U.S. Cl. 206—222 11 Claims



1. A device for securing a bolt in a bore hole, said device being adapted to be positioned in said hole and comprising first and second axially aligned chambers, said first chamber containing a first flowable component of a multicomponent self-setting mix, said device further comprising a second chamber having radially oriented discharge openings, said second chamber being provided with a second component of said mix,

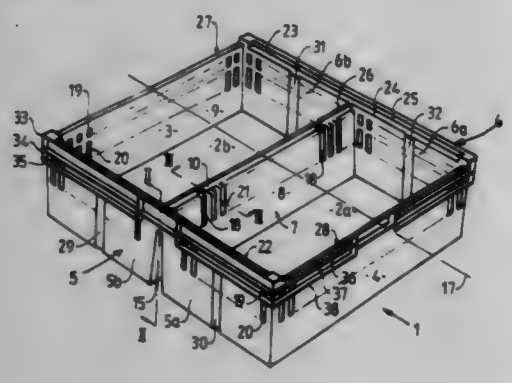
and rupturing means to induce flow of said first component into said second chamber whereby upon application of further inwardly directed axial force, said first and second components are urged radially of said second chamber through said discharge openings and outwardly of said second chamber toward said hole.

4,343,400

CONTAINER CRATE THAT CAN BE STACKED OR NESTED

Michel Faucillon, Baillet en France, France, assignor to Allibert, S.A., Grenoble, France

Filed Oct. 17, 1980, Ser. No. 197,877
Claims priority, application France, Oct. 17, 1979, 79 25779
Int. Cl.³ B65D *21/04, 25/04*
U.S. Cl. 206—507 **5 Claims**



1. A container crate of molded plastic or similar material, comprising a bottom and four sides forming a basically rectangular structure of the type that can be rotated 90 degrees in relation to other such crates to provide two stacking possibilities—either nesting within one another with considerable overlap of the sides, for compact storage or shipping of empties, or stacking of crates on top of each other with very little overlap but with the sides interlocking to prevent the stacked crates from sliding relative to each other, said crate further comprising:

at least one partition parallel to two of the crate's sides, which divides the crate into at least two compartments, step down stacking shoulders extending substantially the length of the other two sides, said partition protruding from the bottom of the crate and having a ridge at its top extending substantially at the level of the shoulders, the partition having the cross-sectional shape of an inverted V or symmetrical, inverted, short-stemmed Y forming a downward-opening groove between the two compartments, the crate further including:

at least one reinforcing tab connecting the two sides of said V near the bottom of the crate, with the tab being tapered, and at least one notch formed through the ridge and the upper part of said partition, the notch being directly located above and adapted for receiving a tab and into which the tab of a crate above is inserted when the crates nest within one another, said tab and notch being of similar width for permitting secured interlocking relation therebetween, and wherein said ridge and shoulders provide interlocking support during stacking.

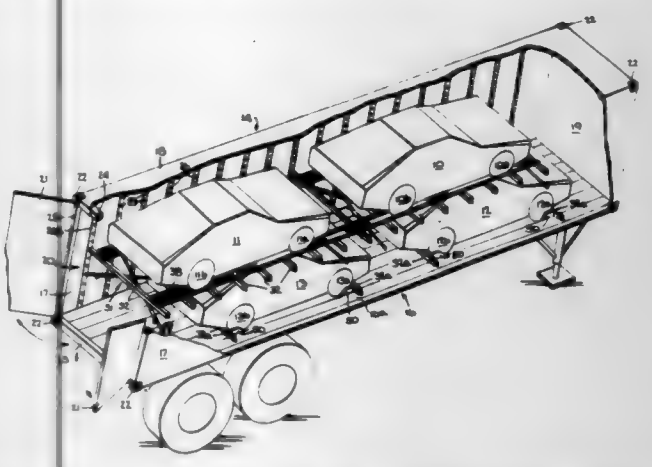
4,343,401

AUTOMOBILE CONTAINERIZED SHIPMENT SUPPORT KIT

John T. Paulyson, Wyckoff, N.J., assignor to United States Lines, Inc., Cranford, N.J.

Filed Mar. 31, 1980, Ser. No. 135,444
Int. Cl.³ B60P *3/08;* B61D *3/04;* B65D *69/00*
U.S. Cl. 206—577 **5 Claims**

1. A kit of assemblable component parts for loading and transporting automobiles as cargo within an enclosed, dry-cargo intermodal shipping container having a floor, respective sidewalls having opposed and spaced apart mounting tracks thereon and along substantially their respective lengths, a front wall, a top, and a rear doorway, said kit comprising apparatus for installing an elevated automobile track deck within said container comprising a plurality of manually installable and removable crossbeams respectively adapted for mounting on, and spanning between, opposed ones of said sidewall mounting tracks within said container, a plurality of automobile track sections adapted for mounting on said plurality of crossbeams when so installed to provide a pair of parallel, spaced apart wheel tracks extending longitudinally within said container for receiving an automobile moved thereon, at least some of said



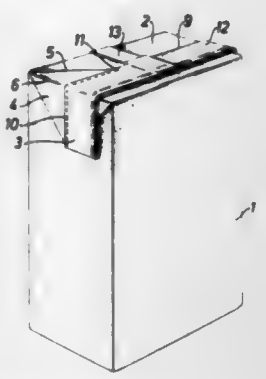
crossbeams and said automobile track sections being adapted by means thereon for connecting said track sections to said adapted crossbeams to substantially prevent vertical, longitudinal, and lateral movement of said track sections when so mounted on said installed crossbeams thereby to form said automobile track deck within said container, and a plurality of adjustable take-up strap means each adapted for connection to an automobile and for extending and connection to respective ones of said sidewall mounting tracks to substantially prevent movement of said automobile when the latter is on said automobile track deck.

4,343,402

PARALLELEPIPEDIC PACKING CONTAINER PROVIDED WITH AN OPENING ARRANGEMENT

Sven N. H. Holmström, Slogstorp, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Dec. 21, 1979, Ser. No. 105,915
Claims priority, application Sweden, Jan. 15, 1979, 7900315
Int. Cl.³ B65D *5/74*
U.S. Cl. 206—622 **8 Claims**



1. A packing container comprising:

a top end wall and a bottom end wall and side walls;

first and second triangular lugs extending from opposite sides of the top end wall and overlapping the adjacent side walls;

a first sealing fin extending along the top end wall from the tip of the first lug to the tip of the second lug, said first sealing fin being double-walled and having a base edge adjoining said top end wall and a free edge spaced from

said base edge, said first sealing fin having a sealing zone; and

said first sealing fin also having a perforation along said base edge, said perforation extending from the tip of one lug to a central portion of the top end wall, said first sealing fin being folded down against the top end wall after being sealed along said sealing zone, said perforation being spaced from said sealing zone, said sealing zone being located closer to said free edge of said first sealing fin than to said perforation, and opposing interior faces of said double-walled fin being unsealed along said perforation.

4,343,403

POLYVINYL ACETATE LATEX IMPREGNATED TOWELETTE

Wiley E. Daniels, Easton, Pa.; George Davidowich, Dunellen, and Gerald D. Miller, Belle Mead, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 870,551, Jan. 18, 1978, Pat. No. 4,245,744.
This application May 12, 1980, Ser. No. 148,618
Int. Cl.³ B65D *81/24*
U.S. Cl. 206—812 **10 Claims**

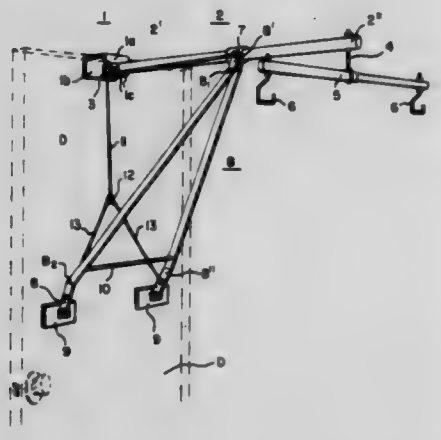
1. A packaged towelette composed of a sheet of nonwoven fibers impregnated with an emulsion binder of vinyl acetate-ethylene copolymer containing polyvinyl alcohol as a protective colloid, said binder being maintained temporarily insolubilized in gel-like form while in wet condition within said package by contact with a non-alkaline aqueous solution of boric acid, wherein said temporarily insolubilized binder is dissolvable by flushing in water.

4,343,404

PORTABLE BICYCLE REPAIR RACK

Jeffrey A. Folsom, Lions Mouth Rd., Amesbury, Mass. 01913

Filed Jun. 20, 1980, Ser. No. 161,457
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—17 **1 Claim**



1. A portable bicycle repair rack which mounts on a conventional door comprising in combination:

(a) a boom having a first and a second end;

(b) a bracket means affixed to said first end of said boom for mounting over the top edge of a door;

(c) a bicycle supporting yoke means on said second end of said boom;

(d) a sleeve slidingly engaging said boom between said bracket means and said bicycle supporting yoke means;

(e) a plurality of elongate bracing means having a first end affixed to said sleeve and a second end extending angularly away therefrom; and

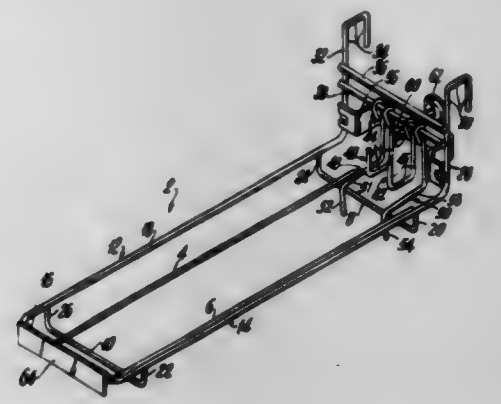
(f) cable means extending between said sleeve, said bracket means, and said second end of said bracing means for transferring weight from said bicycle supporting yoke means by way of said bracket means and said bracing means to said door.

4,343,405

UNIVERSAL MOUNTABLE DISPLAY TRAY

Jean Virte, Domont, and Laurent Costa, Ville D'Avray, both of France, assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,638
Int. Cl.³ B01D *35/00, 35/14*
U.S. Cl. 211—88 **7 Claims**



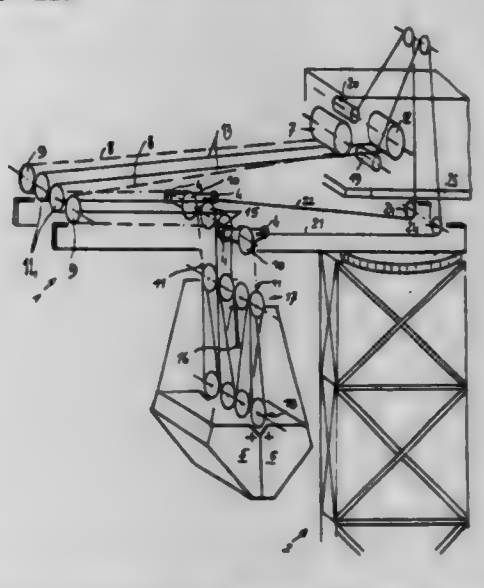
1. A universal mountable merchandise display tray comprising a trough-like receptacle for containing a plurality of items of merchandise, said receptacle comprising a bottom wall; a pair of side walls; a front wall and a rear wall, said rear wall comprising two spaced-apart members each extending from one of the side walls and terminating with rearwardly inverted U-shaped members adapted for securing on a support member; at least one support bar extends across and is secured to the two spaced-apart rear wall members; a plurality of first rod members pivotally secured on one support bar and terminating in inwardly U-shaped segments which when pivoted to an upright position provide rearwardly inverted U-shaped segments for securing on a support member; a plurality of second rod members pivotally secured on one support bar and each comprising a downward vertical segment extending with an inwardly horizontal segment and terminating in a downward vertical segment such that when pivoted towards an upright position, each terminal segment is adapted to be fed in an aperture of a wall support member until vertically oriented whereupon the display tray becomes secured to the wall support member.

4,343,406

CONTROL APPARATUS FOR A DISTRIBUTION CRANE EQUIPPED WITH A CABLE BUCKET

Jean Noly, La Clayette, France, assignor to Potain, France

Filed Jul. 30, 1979, Ser. No. 62,046
Claims priority, application France, Jul. 28, 1978, 7823042
Int. Cl.³ B66C *3/00*
U.S. Cl. 212—225 **13 Claims**



1. A control device for a distribution crane having a mast

and a boom disposed adjacent to said mast, said boom having one end pivotally mounted to said mast, an opposite end and at least one track extending longitudinally from said one end to said opposite end, said device comprising:

a distribution carrier movably mounted on said at least one longitudinal track, said one end of said boom further being inclined vertically above said opposite end to urge said distribution carrier toward said opposite end by gravity;

a bucket suspended below said distribution crane, said bucket having a first half-jaw and a second half-jaw disposed opposite said first half-jaw for cooperative engagement therewith;

means, mounted adjacent to said one end of said boom, for moving said distribution carrier and said bucket along said longitudinal track toward said one end of said boom, said moving means including a first drum means and a second drum means mounted parallel to said first drum means, and a first motor interposed said first and second drum means, said first motor connected to said first and second drum means for rotation therewith when said first motor is activated;

first epicyclic hoist means, mounted coaxially with said first drum means, for opening and closing said first half-jaw relative to said second half-jaw of said bucket, said first epicyclic hoist means including a second motor having a shaft and a third drum means mounted to said shaft of said second motor;

second epicyclic hoist means, mounted coaxially with said second drum means, for vertically moving said bucket up and down relative to said boom independent of said first epicyclic means, said second epicyclic hoist means including a third motor having a shaft and a fourth drum means mounted to said shaft of said third motor; and

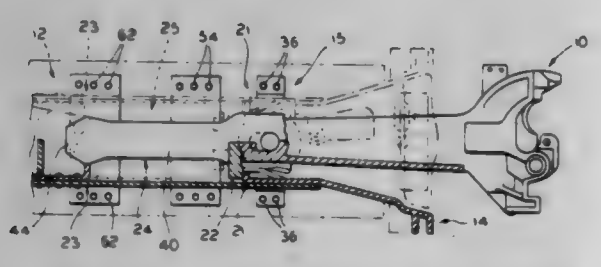
means for connecting said moving means to said first and second epicyclic hoist means to simultaneously rotate said first, second, third and fourth drum means so as to maintain said bucket level relative to said boom when said distribution carriet rolls along said track.

4,343,407

COUPLER LUBRICATING BEARING WEAR LINER CHANNEL SHAPED SUPPORT PLATE

Richard F. Murphy, Batavia, Ill., assignor to Holland Company, Aurora, Ill.

Filed Oct. 6, 1980, Ser. No. 194,019
Int. Cl.³ B61F *1/08*; B61G *7/10, 9/20*
U.S. Cl. 213—51 **4 Claims**



1. In a draft gear rigging for railroad cars having a channel shaped center sill opening downwardly and extending longitudinally of the car, with the rigging mounted at the end of the car and comprising a draft gear applied between stops spaced longitudinally of the car and within the center sill and defining the draft gear pocket, which draft gear is embraced by a vertical yoke within the draft gear pocket and extending longitudinally of the car and operably connected to the car coupler, with the yoke comprising upper and lower straps, with the yoke being supported by its lower strap riding on a support plate assembly secured at its ends at the underside of the center sill, said support plate assembly including a generally planar support plate underlying the draft gear pocket and extending crosswise of and being substantially coplanar with the underside of the center sill, and a liner formed from a polymer of dry self lubricating characteristics and aligned with the draft gear pocket and interposed between the support plate upper side and the yoke lower strap underside and forming a bearing surface on which the yoke lower strap inner end rides to dispose the yoke at its operative level within the center sill.

the improvement wherein said support plate is of light gauge steel and of channel shaped transverse cross-sectional configuration defining a planar web portion separating a pair of depending rigidifying side flanges that extend longitudinally of said plate and are integral and coextensive with same,

said plate being of one piece construction and of substantially uniform gauge along the length of its said web portion,

said plate having its respective ends secured to the centersill underside in transverse relation to the centersill to secure the support plate assembly to the centersill with said plate web portion top surface being substantially coplanar with the underside of the centersill,

with the liner being centered on said plate between said rigidfying flanges,

said rigidfying flanges depending below said plate web portion a dimension that rigidfies said plate web portion,

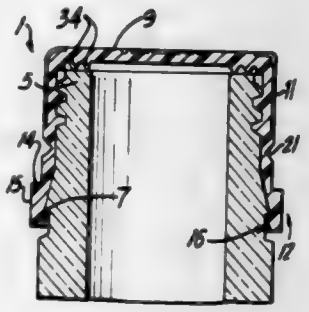
said liner having a width that is slightly smaller than the width dimension of said plate web portion.

4,343,408

TAMPER-EVIDENT PLASTIC CLOSURE

Ernest J. Czaszar, Mountainside, N.J., assignor to General Kap (P.R.) Corporation, San Juan, P.R.

Filed Apr. 21, 1980, Ser. No. 142,429
Int. Cl.³ B65D *49/12*
U.S. Cl. 215—258 **27 Claims**



1. A tamper-evident closure for use in connection with a container including a threaded neck portion and an annular collar portion below said threaded neck portion, said closure comprising a one-piece closure body including an end wall and a cylindrical side wall, said cylindrical side wall including an internallythreaded upper portion, a depending lower skirt portion, and an intermediate side wall portion therebetween, said depending lower skirt portion including an inwardly projecting bead adapted to engage the lower end of said annular collar portion of said container when said closure is completely threaded onto said container, said cylindrical side wall including a frangible portion comprising a circumferential groove formed on the outer surface of said closure to thereby uniformly substantially reduce the thickness of said intermediate side wall portion of said closure at a predetermined location on said intermediate side wall, said predetermined location being located above said inwardly projecting bead so as to divide said intermediate side wall portion into a first intermediate side wall portion located above said predetermined location and a second intermediate side wall portion located below said predetermined location, said first and second intermediate side wall portions being in substantial alignment with each other in the plane of said cylindrical side wall, said frangible portion therefore having a substantially uniform thickness circumferentially around said closure, and being designed to fracture in a substantially horizontal plane across said closure when said closure is unthreaded from said container so as to leave said depending lower skirt portion and said second intermediate side wall portion engaged to said annular collar portion after

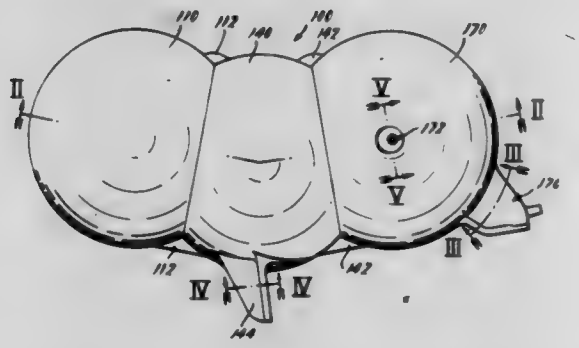
said internally threaded upper portion and said first intermediate side wall portion of said closure have been unthreaded from said container.

4,343,409

LARGE HIGH TEMPERATURE PLASTIC VACUUM RESERVOIR

David S. Silver, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 87,352, Oct. 22, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,478
Int. Cl.[3] B65D *1/16, 1/42*
U.S. Cl. 220—72 6 Claims



1. An implosion resistant, blow molded, large capacity, one piece, rigid plastic reservoir having the configuration of intersecting spheroids, comprising:

(a) a plurality of hollow bulb portions, including a first side bulb, a second side bulb, and a bulb intermediate said first and second side bulbs and attached to each, wherein:

(i) said bulbs are each spheroid to the line of attachment with each adjacent bulb;

(ii) a first line drawn between the center of the intermediate bulb and the center of the first side bulb forms an obtuse angle of intersection with a second line drawn between the center of the intermediate bulb and the center of the second side bulb; and

(b) at least one mounting tower unitary with the wall of said reservoir and extending outwardly from the exterior thereof, said mounting tower comprising:

(i) a first portion suitable for mounting the reservoir, and

(ii) a second portion unitary with said first portion, attached at an angle thereto, whereby the first portion is strengthened against bending; and

(c) a reinforcing rib unitary with the wall of said reservoir located along each line of attachment between adjacent bulbs;

wherein the center of a bulb is the center of a complete sphere coincident therewith.

4,343,410

ANTI-SIPHON DEVICE

Donald E. Lenda, Williamsville, N.Y., assignor to Warehouse Bus Parts, Inc., Cheektowaga, N.Y.

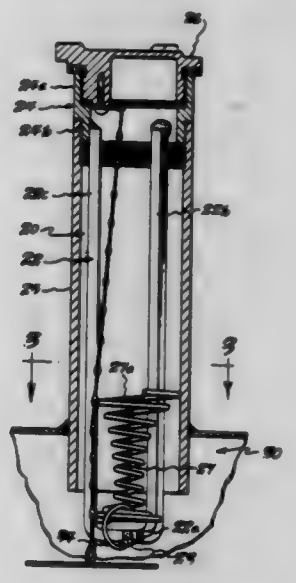
Filed Dec. 22, 1980, Ser. No. 218,839
Int. Cl.[3] B65B *3/06*
U.S. Cl. 220—86 AT 20 Claims

17. An anti-siphon device adapted for permanent installation in a vehicle filler pipe having an inner end in communication with the vehicle fuel tank and an outer end normally closed by a manually operable closure element, said device comprising:

(a) an elongated rigid supporting unit having one end in neighboring relation to said outer end of said filler pipe and adapted to extend into and along said filler pipe, said supporting means having a length such that the opposite end of said supporting means is located beyond the inner end of said filler pipe in said tank, said supporting means having an open central region extending lengthwise from said one end forming a structure which allows free fluid flow along said filler pipe into said tank; and

(b) means for joining said one end of said supporting means to said filler pipe; and

(c) spring means carried by said supporting means in a manner such that a portion of such spring means is located within said filler pipe and a portion of said spring means is located beyond said inner end of said filler pipe in said tank, said portion of said spring means in said filler pipe extending across a major portion of the cross-sectional dimension of said filler pipe.

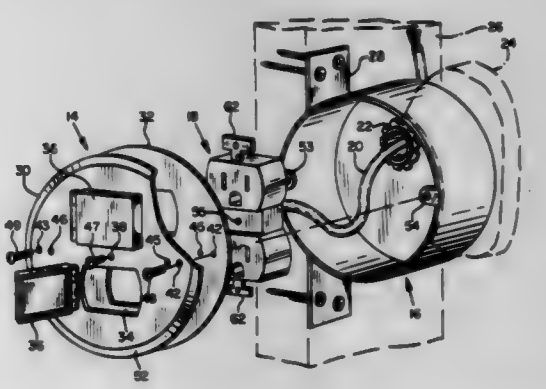


4,343,411

ELECTRICAL BOX COVER

Ronald D. Chesnut, 5230 Mason La., and James M. Tepper, P.O. Box 2093, Oretech Branch, both of Klamath Falls, Oreg. 97601

Filed Mar. 2, 1981, Ser. No. 239,369
Int. Cl.[3] H02G *3/14*
U.S. Cl. 220—242 5 Claims



1. An electric box cover for covering an electrical receptacle and outlet box comprising:

a circular cover plate having one or more access openings to provide access to one or more corresponding electrical receptacles,

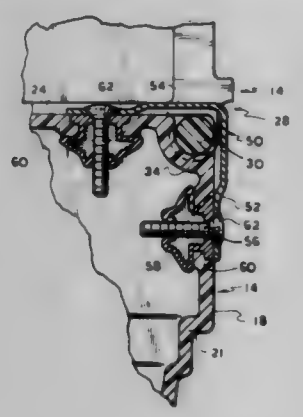
a circular gasket with a diameter at least slightly greater than that of said cover plate, said gasket having one or more openings which are in alignment with the openings of said cover plate when the two are fitted together in concentric relationship,

said cover plate including universal means for enabling said box cover to be used with several types of outlet boxes.

4,343,412
HINGE FOR CARRYING CASE

Donald G. Wilcox, Seymour, and Nobile Zambrano, Branford, both of Conn., assignors to Show-Pak Incorporated, New Haven, Conn.

Continuation-in-part of Ser. No. 236,049, Feb. 19, 1981. This application Apr. 6, 1981, Ser. No. 251,151
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 220—342 7 Claims

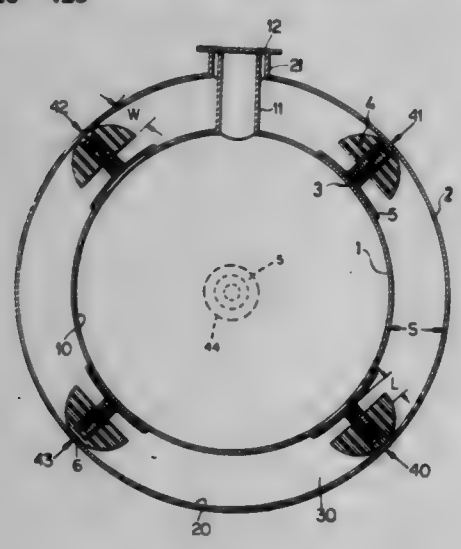


1. In a carrying case having a base and a cover for the base, an improved hinge construction comprising, said cover having a pair of oppositely directed hinge pins formed thereon, said base having a pair of spaced hinge pins receiving bosses formed therein for receiving and only partly surrounding said pins, and a locking strap associated with each boss and secured to said base, having intermediate portions overlying said pins.

4,343,413
DOUBLE-WALL VESSEL ESPECIALLY DEWAR FLASKS, WITH WALL SPACER

Johann Chatzipetros, Frechen, and Manfred Helten, Titz-Müntz, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,043
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942164
Int. Cl.³ B65D *90/06*
U.S. Cl. 220—425 6 Claims

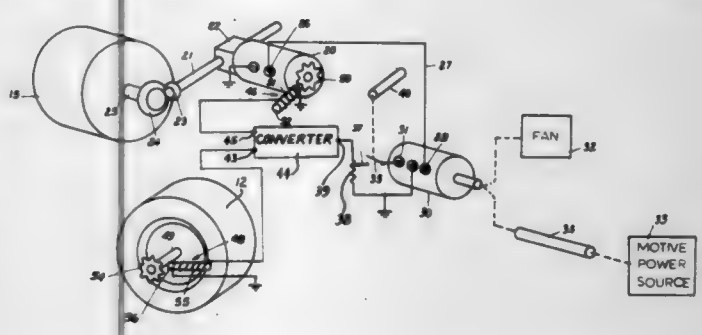


1. A double-wall vessel comprising:
an inner receptacle;
an outer receptacle spacedly surrounding said inner receptacle and sealed thereto, said inner receptacle defining an inner wall and said outer receptacle defining an outer wall juxtaposed with said inner wall but spaced therefrom by an interwall spacing; and
spacer means interposed between said walls, said spacer means including a plurality of spacer assemblies regularly spaced from each other, each of said assemblies comprising:
a threaded pin fixed to one of said walls and reaching toward the other of said walls, said pin having a length smaller than said interwall spacing but greater than a maximum fabrication tolerance of said interwall spacing, and
a thermally insulating body threaded onto said pin and engaging with a top of said body slidably said other of said walls, said top of said body having a maximum distance from said one of said walls when fully threaded onto said pin which is not greater than the minimum interwall spacing.

4,343,414
SEED PLANTER DRUM DRIVE SYSTEM

Wayne W. Lark, Clarendon Hills; Marvin D. Jennings, Naperville, both of Ill., and Marvyn J. Madeksho, Manhattan Beach, Calif., assignors to International Harvester Co., Chicago, Ill.

Continuation of Ser. No. 932,167, Aug. 9, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,373
Int. Cl.³ A01C *7/18*
U.S. Cl. 221—13 8 Claims



1. A drum drive system for a seed planter including a main frame structure, a seed drum rotatably journalled on said main frame structure, fan means for supplying air under pressure to said drum, drive means for said fan means, and a wheel journalled on said main frame structure and engaging the ground to be rotated at a rotational speed proportional to the linear speed of travel of the planter over the ground, said drum drive system comprising:
DC generator means carried on said seed planter having output terminal means and field winding means, drive means for driving said DC generator means, DC motor means electrically connected to said output terminal means of said DC generator means and mechanically connected to said seed drum, ground speed signal generator means mechanically connected to said wheel to develop an electrical ground speed signal having an amplitude proportional to ground speed, converter means having an input electrically connected to said ground speed signal generator means and connection means for applying said output of said converter means to said field winding means of said DC generator means.

4,343,415
NAPKIN DISPENSER

John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Company, Chicago, Ill.

Continuation of Ser. No. 76,830, Sep. 19, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,396
Int. Cl.³ B65H *1/12*
U.S. Cl. 221—59 3 Claims

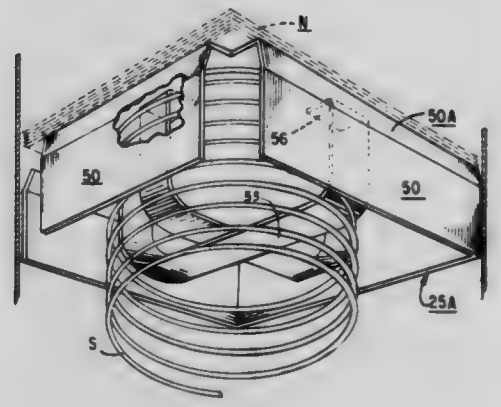
1. A dispenser for paper napkins arranged in a stack, each napkin folded in multiple plies having a final rectangular contour with the outermost lifting ply terminating in a straight edge extending across the width of the folded napkin along a line parallel to the top and bottom edges thereof, comprising
(a) a rectangular parallelopiped container having a rectangu-

lar end wall of the approximate dimensions of said folded napkins and four side walls fixed to said end wall,

(b) an ingress-egress wall secured to the side walls opposite said end wall and having a generally rectangular opening therein for loading and dispensing napkins into and out of said container, said opening having marginal edges,

(c) the edges of said opening in said ingress-egress wall being turned to form a smooth peripheral flange encompassing said opening, to facilitate egress of a napkin without damage thereto,

(d) means inside said container for resiliently urging napkins toward said opening, comprising a cup-like follower having a planar surface for supporting a stack of napkins, with marginal flanges extending generally normally from the edges of said surface and dimensioned to be slideable within the side walls of said container,



(e) a spider disposed within said follower comprising a pair of U-bars having end portions crossing each other and opposed portions at the opposite ends secured to the underside of said planar surface, and leg portions extending between said opposed end portions and defining relatively limited spaces between them and the marginal flanges of the follower, and

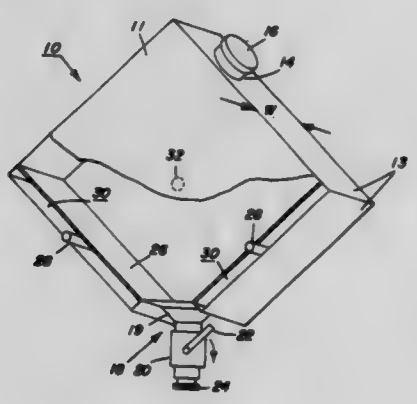
(f) a helical spring extending from the end wall of said container to said follower with a plurality of the turns at the movable end of said spring disposed within said spaces between the legs of said spider and marginal flanges, to serve as a stabilizing guide for said movable end of said spring, the follower and spring being otherwise unconnected.

4,343,416

CONTAINER FOR NUCLEAR FUEL POWDERS

Benjamin F. Etheredge, and Richard I. Larson, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Division of Ser. No. 844,750, Oct. 25, 1977, abandoned. This application Oct. 12, 1979, Ser. No. 84,135
Int. Cl.³ B65D *83/06*
U.S. Cl. 222—1 **1 Claim**



1. A method for storing enriched nuclear fuel material in blended powder form in a critically safe container and for discharging said powder from said container without particle size segregation comprising the steps of:

(1) providing a hollow, slab-shaped container body having two large planiform walls and four side walls with one critically safe dimension;

(2) providing a powder inlet on one side wall of said body adjacent a corner thereof;

(3) providing a normally closed powder discharge port at one corner of said body located approximately diagonal to said powder inlet;

(4) providing a pair of gas plenums each formed by attaching a porous metal, rectangular-plate member inside said body slightly spaced from a respective one of the two side walls adjacent said powder discharge port;

(5) providing a gas inlet for feeding gas to each of said plenums;

(6) placing an amount of pre-blended powder through said powder inlet into said container;

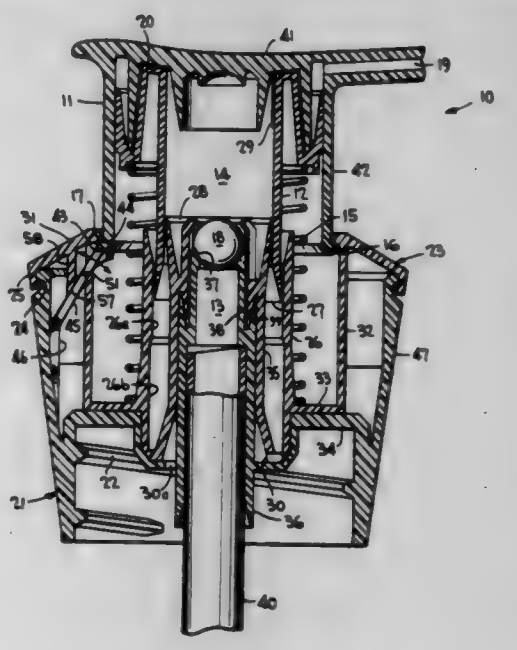
(7) opening said powder discharge port while simultaneously providing gas to said gas inlet at a moderate rate of flow which provides about 4 standard cubic feet per minute of gas flow through each square foot of surface of the porous plate members at 2 inches of H_2O pressure differential whereby the gas flow is limited to the region of the porous plate members and said gas flows out of said discharge port with the powder.

4,343,417

DISPENSING PUMP LOCKING MEANS

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed Feb. 13, 1980, Ser. No. 121,001
Int. Cl.³ B67D *5/32*
U.S. Cl. 222—153 **19 Claims**



1. In a dispensing pump having a finger-operated plunger head mounted for reciprocation on a pump body member secured in a fluid tight manner on a container of flowable product to be dispensed, reciprocation of said head effecting the dispensing of the product, a downwardly facing stop shoulder on said head, a control member rotatably mounted on said body member and having an axial opening through which said stop shoulder extends during plunger reciprocation, at least one upstanding locking finger secured to one of said members and being deflectable transversely to the axis of reciprocation of said plunger into the path of reciprocation of said stop shoulder, the improvement wherein first and second cam means are provided on the other of said members for engaging said finger to positively deflect said finger transversely into as well as out of the path of said stop shoulder, respectively, in response to relative rotary movement of said members, said first and second cam means lying opposite each other and

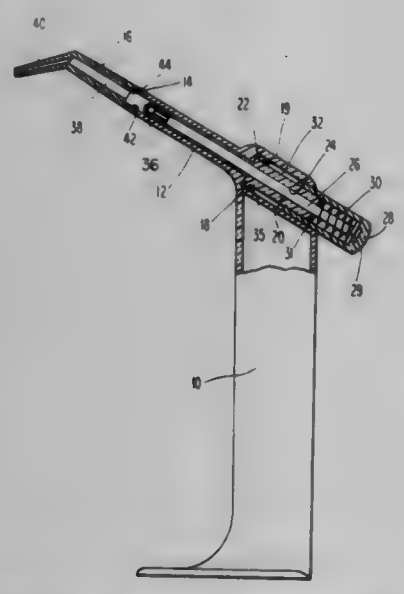
being in constant engagement with opposite sides of said finger during said relative rotary movement for supporting said finger against any buckling loads applied to said plunger when selectively immobilized upon deflection of said finger into said path of reciprocation, and for avoiding any interference between said head and said finger during during reciprocation of said head when said finger is deflected out of said path of reciprocation.

4,343,418

DISPENSER FOR DENTAL SEALANT

Anton Jurecic, Springfield, and James V. Romano, Skippack Township, Montgomery County, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 5, 1980, Ser. No. 156,840
Int. Cl.³ G01N *1/14*
U.S. Cl. 222—386 **9 Claims**



1. A dispenser for the controlled delivery of a liquid contained therewithin comprising

a dispenser handle.

a barrel arranged in operable disposition with said handle, said barrel having a rearwardly disposed flared portion,

a plunger arranged for reciprocable movement within said barrel,

a bushing fitted against said flared portion and in alignment therewith, said bushing having a head at a forward portion thereof of larger diameter then remainder of said bushing, said bushing head force-fitted against a forward portion of said flared portion of said barrel, said bushing and bushing head having an axial bore therethrough for receiving said plunger reciprocably therein,

a dispensing tip communicating with and frictionally engaged to a forward portion of said barrel,

means for imparting said reciprocable movement to said plunger whereby said liquid is controllably dispensed through said dispensing tip upon application of a dispensing pressure to said plunger, said plunger ejecting said dispensing tip from said forward portion of said barrel upon application to said plunger of a pressure excessive of said dispensing pressure.

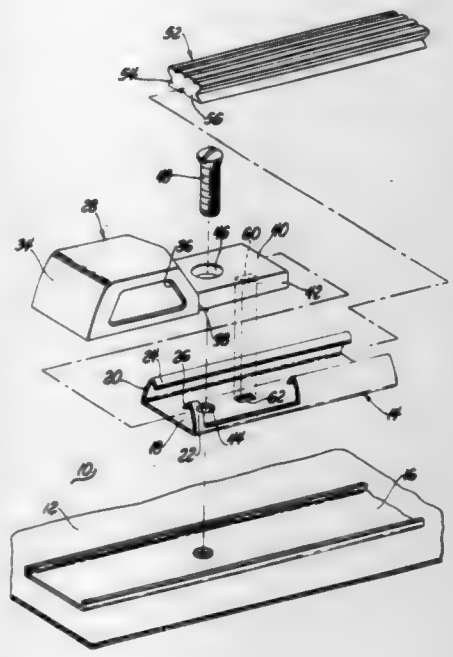
4,343,419

ARTICLE CARRIER TIE-DOWN AND END PIECE

Ray G. Mareydt, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.

Filed Jun. 3, 1981, Ser. No. 270,183
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—326 **5 Claims**

1. An article carrier of the type comprising a low profile, hollow slat for mounting on a vehicle surface and a unitary member adapted to close one end of said slat, the slat including a base portion, side walls extending upwardly from said base portion and terminating in transversely spaced end portions vertically spaced above said base portion, said base portion and side walls defining an upwardly opening groove, a first opening formed through said base portion proximate one end of the slat, said unitary member including a main body portion having an opening therethrough for receiving an article tie-down member and a tongue-like portion extending longitudinally from the main body portion and adapted to project within said hollow slat whereby said main body portion encloses the one end of said slat, said tongue-like portion including an opening adapted to be in coaxial registry with the slat opening when the



tongue-like member is disposed within said slat, and fastening means extending through the coaxial openings to secure said slat and said unitary member to the vehicle surface, the improvement comprising:

a second opening formed in said slat;

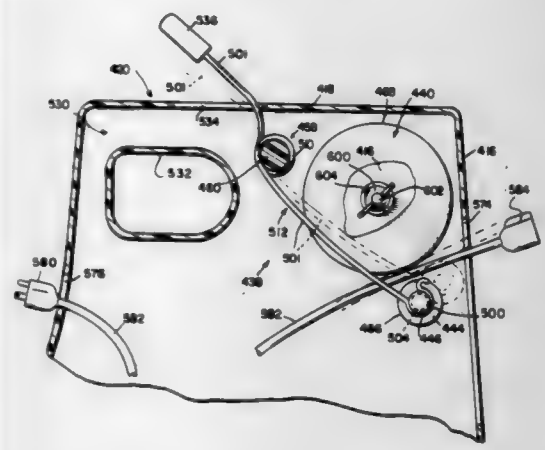
a stud-like element projecting from the tongue-like portion of the unitary member and longitudinally spaced from the opening in the tongue-like portion, the stud-like element coacting with the second slat opening to prevent rotation of the unitary member about the coaxially related openings.

4,343,420

RETRIEVAL AND STORAGE DEVICE FOR FLEXIBLE ELEMENTS

Robert F. Scott, P.O. Box 1442, Terre Haute, Ind. 47808

Continuation-in-part of Ser. No. 865,741, Dec. 29, 1977, Pat. No. 4,212,421. This application Dec. 12, 1979, Ser. No. 102,740
Int. Cl.³ B65H *17/22*
U.S. Cl. 226—49 **8 Claims**



1. An apparatus for retrieving and storing a flexible element having first and second ends, the apparatus comprising means for retrieving the flexible element and means for providing

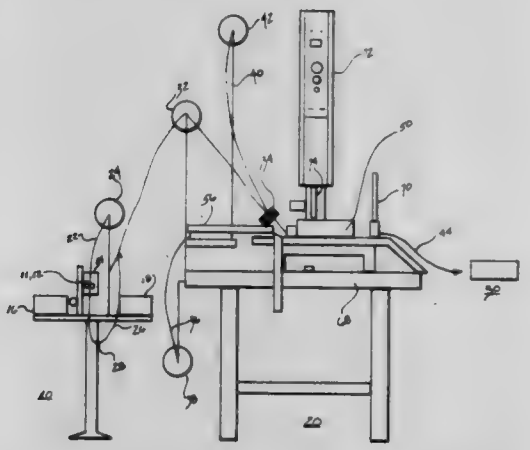
storage of the retrieved flexible element, the retrieval means being attached to the storage means so that the flexible element is stored in the storage means as it is retrieved, the retrieving means including a first wheel, means for holding the flexible element frictionally against the periphery of the first wheel, the holding means including a second wheel, means for supporting the second wheel for rotation, the support means having a flexible element retrieval position supporting the second wheel in closely spaced-apart relation to the first wheel with the space between the peripheries of the first and second wheels being sufficiently small that said wheels bear frictionally upon the surfaces of the flexible element to move the flexible element therebetween as the first wheel is turned, and means for turning the first wheel in a direction to cause retrieval of the flexible element between the first and second wheel peripheries, the turning means including a hand-manipulable crank, and means for connecting the crank to the first wheel, the support means comprising a bifurcated shiftable support yoke having two tines, each having a remote end and a handle portion, the tine ends including means for rotatably mounting the second wheel, and the retrieval means further comprises a housing providing means for pivotally mounting the support yoke, the support yoke being gravity-urged to a position in which the second wheel is in an orientation providing slippage of the flexible element between the peripheries of the first and second wheels.

4,343,421

TENSIONLESS FABRIC FEEDING APPARATUS

John J. Assmann; James L. Knox; Martin J. Kueny, all of Philadelphia, and James W. Smith, Havertown, all of Pa., assignors to Interco Incorporated, St. Louis, Mo.

Filed Sep. 2, 1980, Ser. No. 183,289
Int. Cl.³ B65H *17/42*
U.S. Cl. 226—113 **4 Claims**



1. An apparatus for feeding fabric in a tensionless and distortion free manner to a fabric treating device comprising:

a station for continuously forming an unsupported tensionless loop of fabric,

a feeding station comprising, a pin clamping assembly for sequentially receiving and advancing said fabric to a predetermined location, clamping means coupled to said pin clamping assembly and adapted to hold and maintain alignment of said fabric, thereby preventing any stretch or distortion, drive means coupled to said pin clamping assembly and clamping means; and

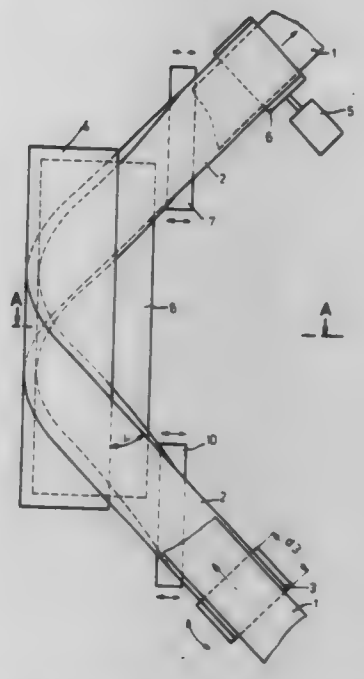
a collector station.

4,343,422

APPARATUS FOR DEFLECTING A MOVING WEB OF MATERIAL

Wilfried Dabringhaus; Helmut Glotzbach, and Karl Voss, all of Leverkusen, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,383
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948290
Int. Cl.³ B65H *23/32*
U.S. Cl. 226—197 **12 Claims**



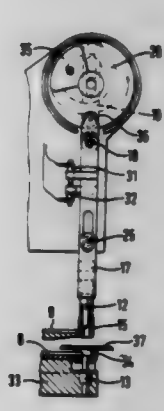
1. Apparatus for deflecting a web of material moving in its longitudinal direction by mechanical means both into a plane situated at right angles to the surfaces of the web and into a plane situated in the surface of the web, characterized in that a supporting element provided for the web during its deflection is an endless flat belt which the web mounts before it is deflected and which the web leaves after its deflection and in that cylindrical rollers and deflecting bodies in the form of tubes and/or tube segments having supporting rollers on their circumferential surface are provided, which guide the endless flat belt to deflect the web and subsequently return the belt to the point were the web mounts the belt.

4,343,423

MACHINE WITH FINGER PROTECTION GUARD

Otto Sauermilch, Stolberg, Fed. Rep. of Germany, assignor to William Prym-Werke KG, Stolberg, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 136,966
Int. Cl.³ B21J *15/28*
U.S. Cl. 227—1 **4 Claims**



1. In a machine having a stationary lower tool and a vertically movable upper tool, a combination comprising an electrically energized machine drive; a workpiece support mounting the stationary lower tool; a plunger mounting the movable

upper tool and being vertically movable towards and away from said support, said plunger being driven by said machine drive; a finger guard; means mounting said finger guard for movement ahead of said plunger toward said support, said means including a first link and a second link extending parallel to one another and to said plunger, said first link and second link being formed with a first slot in a lower portion thereof, a first stationary projection extending into said first slot, said second link having a second slot spaced from said first slot in a direction of said plunger, a second guide projection extending into said second slot, and spring means between said first and second projections, said links being normally moved by said spring means into a first relative position and being relatively shiftable to a second relative position in response to said finger guard encountering an obstacle; and circuit means, including a pair of normally abutting contacts on the respective links, said contacts moving apart from one another to interrupt said circuit means and stop said machine drive in response to relative displacement of said links.

4,343,424

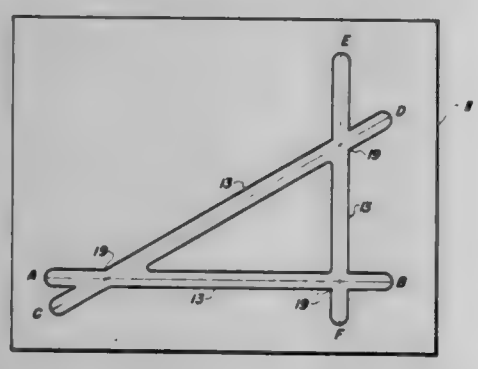
CRACK SUSCEPTIBILITY TEST UTILIZING AN AIRPORT RESTRAINT SPECIMEN

Thomas W. Montemarano, Annapolis, and Michael E. Wells, West Hyattsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1980, Ser. No. 154,193

Int. Cl.³ B21K *25/00*

U.S. Cl. 228—104 **6 Claims**



1. A method for testing the susceptibility of welds to cracking under conditions of heavy restraint comprises the steps of:

forming a triangular pattern of intersecting grooves in one surface of a plate of the metal selected for welding, which plate is used to provide the restraint of the weld metal necessary to cause cracking of the weld metal;

depositing a first layer of weld beads in the triangular pattern of grooves;

cooling the weld layer to a predetermined temperature and inspecting the weld layer by visual and radiographic methods to detect the presence of cracks;

depositing a predetermined number of additional layers of weld beads over the prior weld layers, allowing each to cool to a predetermined temperature and detecting the presence of cracks appearing in each successive weld layer; and

observing the cracks which appear at selected intervals and locations in the successive weld layers and recording the resulting pattern of weld cracks.

4,343,425

PROCESS AND DEVICE FOR THE PRODUCTION OF A COMPOSITE SECTION

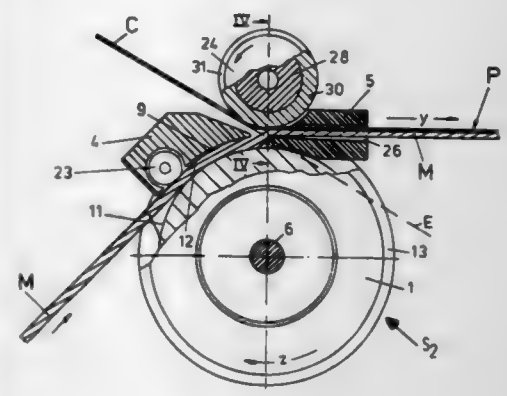
Alfred Wagner, Steisslingen, and Adolf Ames, Hilzingen-Duchtlingen, both of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 898,659, Apr. 21, 1978. This application Feb. 6, 1980, Ser. No. 119,028

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720122

Int. Cl.³ B21C *33/00, 23/22;* B21K *20/12*

U.S. Cl. 228—117 **13 Claims**



1. A process for the continuous extrusion of a composite metal section comprising a beam-like section and a facing strip of another material which forms at least part of the surface of the beam-like section, the beam-like section of said composite being produced by extruding a metal matrix through a shape-giving opening in a stationary extrusion die, wherein said metal matrix is fed to said stationary die at a first rate by a first endless face having a channel and a press wheel adjacent said first endless face for pressing said metal matrix into said channel and said strip is fed to said stationary die at a second rate greater than said first rate by a second endless face.

4,343,426

METHOD OF FABRICATING AN ANNULAR TANK

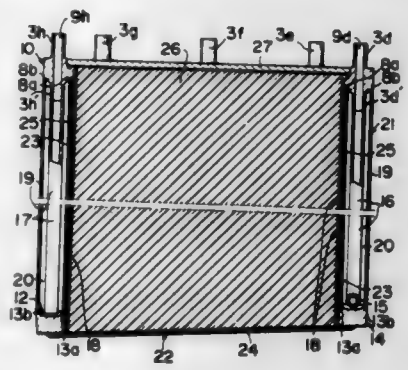
Katsuyuki Otsuka; Akio Todokoro; Yoshiharu Takahashi; Kazuhito Hiroe, and Yoshinobu Ishikawa, all of Tokai, Japan, assignors to Doryokuro Kaku Nenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Feb. 13, 1980, Ser. No. 121,052

Claims priority, application Japan, Feb. 20, 1979, 54-18718; Feb. 20, 1979, 54-20418[U]

Int. Cl.³ B23K *31/00*

U.S. Cl. 228—170 **5 Claims**



1. A method of fabricating an annular tank for the storing of nuclear reaction material in an annular space using upper and lower dies elevationally disposed in space and inner and outer sheaths extended over the inner and outer peripheries of the upper and lower dies, said method comprising the steps of:

(a) preparing a first and a second annular blanks;

(b) cutting in the first blank a plurality of pairs of upper and lower longitudinal coaxial bar-like members, said mem-

bers extending upwards and downwards on the upper and lower surfaces of the first blank and forming protruding welding edges on the inner and outer peripheries of the lower surface of the blank;

(c) perforating the upper and lowr pairs of said bar-like members longitudinally and coaxially therethrough to form the upper die;

(d) forming a recess groove on the upper surface of the second blank and forming welding protruded edges on the inner and outer perpheries of the upper surface of the second blank to form the lower die; and,

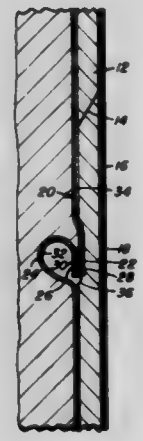
(e) contacting and welding the upper and lower dies at said protruding edges of the inner and outer perpheries of said first and second dies held elevationally in a predetermined position in space with the upper and lower edges of said inner and outer sheaths.

4,343,427

COMPOSITE CONTAINER WITH BALLOON FOLD

Jerry F. Sansbury, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Mar. 18, 1980, Ser. No. 131,098
Int. Cl.³ B31C *3/04;* B65D *3/04, 3/22*
U.S. Cl. 229—4.5 **11 Claims**



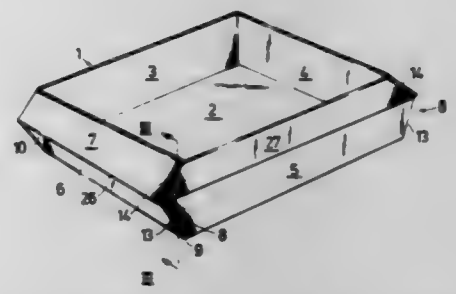
1. In a composite container adapted to accommodate a reduced internal pressure, an elongated self-sustaining body having opposed ends and inner and outer surfaces, a hermetic liner within said body substantially coextensive with and bonded to the inner surface thereof to define a hermetic seal, said liner including an integral inflatable fold formed therein spirally about the inner surface of the body along the length of said body between the opposed ends and being of generally constant width, said fold, along the full length thereof, including a first flap overlying said liner, a second flap overlying said first flap in unbonded relation to said first flap and connected thereto by a fold line, said first flap having a first portion along the length thereof adjacent said fold line and in unbonded free overlying relation to said liner and having a second portion adjacent said first portion and fixedly secured to said liner, the fixedly secured portion being substantially narrower than the width of said first flap and remote from said fold line, said first portion, said fold line, and said second flap forming a continuous section in unbonded free overlying relation to the liner and defining means for inward ballooning relative to the fixed second portion, the liner, and the inner surface of the body upon development of a reduced pressure environment within the container, and without disruption of the hermetic liner.

4,343,428

TRAY WITH HANDLES

Karl R. Persson, Halmstad, Sweden, assignor to Sprinter System AB, Sweden

Filed Aug. 13, 1980, Ser. No. 178,114
Claims priority, application Sweden, Jul. 27, 1979, 7906437
Int. Cl.³ B65D *5/24*
U.S. Cl. 229—31 R **19 Claims**



1. A tray of the type which is made from a blank of a stiff material and creased, said tray comprising:

a bottom;

first, second, third and fourth upstanding side walls, each said side wall having a bottom edge joined to said bottom and each having two opposite side ends; said first and third side walls each being adjacent to each of said second and fourth side walls; and each said side wall having a top edge opposite its bottom edge;

first and second flaps extending outward and downward from said top edge of said first and third side walls and defining an angle less than 90° therewith; each said flap having two side ends;

said second and fourth side walls each having a triangular projection in the plane thereof, at each side end thereof, each said projection being defined by an upper edge and a lower edge which intersect; and

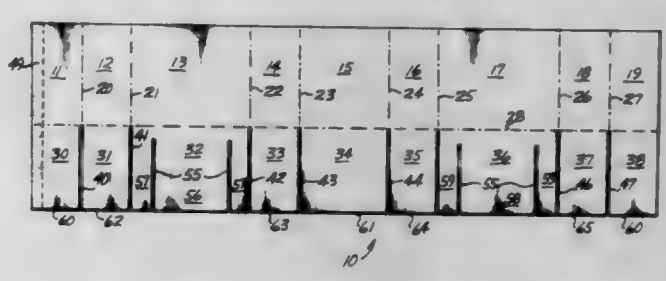
respective securing means maintaining each said side end of each said flap adjacent and stationary relative to said upper edge of a respective said projection, whereby said flaps define handles at opposite sides of said tray.

4,343,429

OCTAGONAL BULK BIN

James H. Cherry, Marion, Iowa, assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed May 1, 1981, Ser. No. 259,628
Int. Cl.³ B65D *5/08*
U.S. Cl. 229—38 **4 Claims**



1. The closure for an octagonal bulk bin having opposed pairs of side and end panels and opposed pairs of corner panels extending between said side and end panels, said corner panels being narrower than said side and end panels;

side closure flaps extending from and hinged to the lower edge of each of said side panels, and

corner closure flap extending from and hinged to said corner panels,

said bottom closure comprising in sequence;

said side closure flaps extending into said container, each of said side closure flaps having a pair of slots extending from their outer edges toward said side panels to which they are attached, said slots being substantially parallel to the sides of said side closure flap and dividing said side closure flaps

into a central section and side sections, said slots extending to the exterior side edges of said corner closure flaps;

said corner closure flaps extending through said slots and being beneath said side sections and over said central sections;

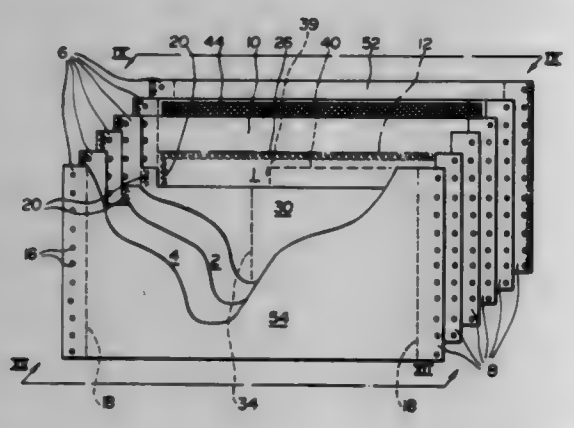
said end closure flaps extending through said slots and being beneath said corner closure flaps and said side sections, and between said corner closure flaps and said central section.

4,343,430

ENVELOPE ASSEMBLY FOR MANUFACTURE AS A PRESTUFFED CONTINUOUS FORM

Jean-Claude P. Martineau, Thurso, Canada, assignor to Canada Post Corporation/Societe Canadienne de Postes, Ottawa, Canada

Filed Mar. 30, 1981, Ser. No. 249,213
Claims priority, application Canada, Jun. 20, 1980, 355656
Int. Cl.³ B65D *27/08, 27/10*
U.S. Cl. 229—69 **6 Claims**



1. An envelope assembly for manufacture as a prestuffed, continuous form, comprising: two outer panels and a partition panel, all having matching pin hole feed strips along opposed sides of each panel, and an envelope sealing flap, the envelope sealing flap being integral with one of the panels, the envelope sealing flap extending between the pin hole feed strips along a flap side of the panel to which it is attached, the pin hole feed strips of all of the panels being secured together and separable from the remainder by pin hole feed strip line perforations, marginal edge portions of the remainder of all of the panels, adjacent the pin hole feed strip line perforations being secured together, the remainder of all of the panels also being secured together along their opposite side to the flap side, and having matching envelope opening line perforations adjacent one pin hole feed strip, one of the outer panels having the partition panel secured thereto, along the side adjacent the flap, for forming a prestuffable, sealed compartment therewith, and the other of the outer panels being secured to the partition panel along an inner marginal edge portion adjacent the envelope opening line perforations, whereby the prestuffable, sealed compartment only may be opened by tearing the envelope assembly along the envelope opening line perforations.

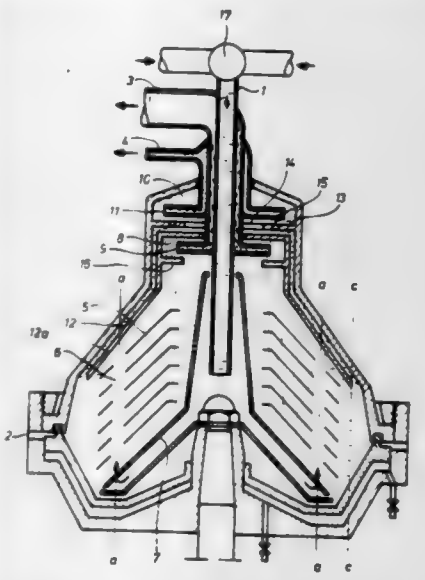
4,343,431

CENTRIFUGAL SEPARATOR

Holger Wehling, Solna, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Sep. 4, 1980, Ser. No. 183,943
Claims priority, application Sweden, Sep. 5, 1979, 7907385
Int. Cl.³ B04B *1/14*
U.S. Cl. 233—20 A **3 Claims**

1. A centrifugal separator comprising a rotor mounted for rotation about an axis and having a central inlet for a mixture to be centrifuged, the rotor also having a separating chamber for receiving said mixture and provided with peripheral sludge ports adapted to be opened intermittently for discharging heavier components separated from said mixture, the rotor also having a first outlet chamber communicating with the separating chamber and including outlet means for removing separated lighter liquid phase, the rotor also having a second outlet chamber and an annular overflow device through which said second outlet chamber communicates with the separating chamber, said second outlet chamber including outlet means for removing separated heavier liquid phase, said annular overflow device having passages located at an outer level relative to said rotation axis and also having an inner overflow edge located closer to said axis, said passages being dimen-



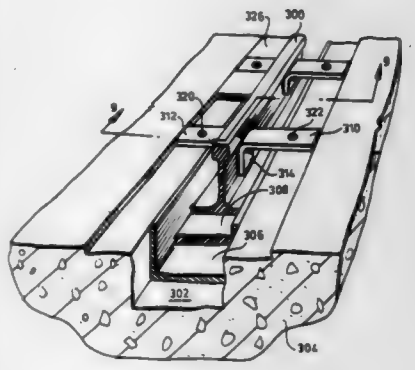
sioned to pass all heavier liquid phase during normal operation of the separator but not to pass an increase in heavier liquid phase added to the separator before opening of said sludge ports, and means for intermittently supplying to the separating chamber said added heavier liquid phase, whereby said added heavier liquid phase acts to displace the interface level between the heavier and the lighter liquid phases radially inward in the separating chamber toward the rotation axis to a level corresponding to said inner overflow edge.

4,343,432

GUIDEWAY FOR CONTINUOUS WELDED RAIL

Frank J. Belenguer, P.O. Box 211, Stn. A, Kingston, Ontario, Canada (K7M 6R2)

Filed Jul. 23, 1979, Ser. No. 59,799
Int. Cl.³ E01B *29/02, 29/42*
U.S. Cl. 238—2 **17 Claims**

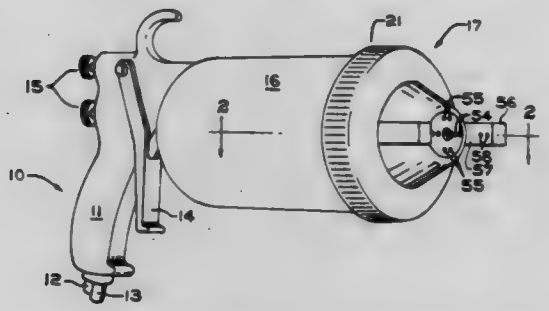


1. A guideway for tangent track for railway vehicles and the like comprising a plurality of supporting columns, a plurality of beams supported by said columns, a continuous welded rail supported by said beams and by said columns, wherein said rail is fixed to said columns and wherein said rail is maintained in tension between the locations where said rail is fixed to said columns when said rail is below a selected temperature which temperature is above the highest expected operating temperature of said rail.

4,343,433
INTERNAL-ATOMIZING SPRAY HEAD WITH SECONDARY ANNULUS SUITABLE FOR USE WITH INDUCTION CHARGING ELECTRODE

James E. Sickles, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 837,797, Sep. 29, 1977, abandoned. This application May 23, 1979, Ser. No. 41,663
Int. Cl.[3] B05B 5/02
U.S. Cl. 239—3 12 Claims



1. A spray head of the internal-atomizing type adaptable for use on induction charging air-atomization spray apparatus suitable for applying a spray stream of particles of liquid material to a substrate, comprising:

a fluid delivery nozzle body having upstream and downstream ends and having passageways for transferring under pressure separate streams of air and of liquid material between said upstream and downstream ends;

means for operatively connecting the upstream ends of the passageways of said fluid delivery nozzle body to separate sources of air and of liquid material;

a spray stream discharge nozzle body comprising a generally hollow frustum-like portion with a wide-mouthed upstream end in which said fluid delivery nozzle body is nested and a narrower downstream end;

an air cap body having a downstream-oriented substantially planar exterior face and having a hollow interior portion between an upstream wide-mouthed open end and a narrower downstream end, in which said hollow portion of said spray stream discharge nozzle body is nested;

an orifice in the narrower downstream end of the hollow portion of said air cap body;

a spray stream discharge nozzle extension protruding downstream from the downstream end of said spray stream discharge nozzle body, said nozzle extension terminating in a spray stream discharge port;

an atomization chamber within said spray stream discharge nozzle body having an upstream inlet for receiving a stream of liquid material and having a downstream outlet orifice in communication with the passageway of said spray stream discharge nozzle extension;

a liquid stream delivery nozzle extension downstream from the downstream end of said fluid delivery nozzle body, said nozzle extension being of dielectric material and having an outlet orifice in communication with the upstream end of said atomization chamber for delivery of a stream of liquid material into said atomization chamber;

a first annular orifice in said atomization chamber inlet for delivering a stream of atomizing air for mixing with a stream of liquid material, said orifice defined by a downstream portion of the liquid delivery nozzle extension and the atomization chamber inlet;

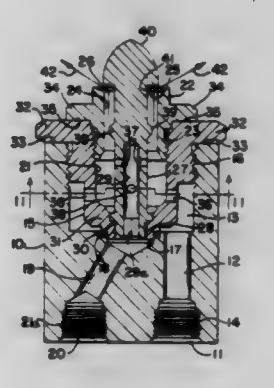
induction charging means in said atomization chamber connectable to a direct current high voltage source for inducing electrostatic charge upon air-atomized particles formed from a stream of liquid material as said particles are formed; and

a second annular orifice for delivering a stream of atomizing air for mixing with said spray stream of atomized liquid material discharged from the spray stream discharge port, said second annular orifice defined by a portion of the downstream end of the spray stream nozzle extension and said air cap body orifice.

4,343,434
AIR EFFICIENT ATOMIZING SPRAY NOZZLE

James Haruch, Clarendon Hills, Ill., assignor to Spraying Systems Company, Wheaton, Ill.

Filed Apr. 28, 1980, Ser. No. 144,642
Int. Cl.[3] B05B 7/10
U.S. Cl. 239—390 5 Claims

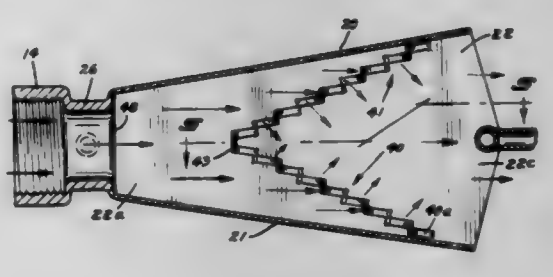


1. An atomizing spray nozzle including a nozzle body having an entrance opening for liquid and an entrance opening for air and an orifice passage, said passage being elongated, a liquid whirl chamber in the nozzle body in communication with said liquid entrance opening located behind said orifice passage of greater diameter than such passage and of less axial extent than the passage, a tangential inlet admitting liquid to the whirl chamber from said entrance opening, a central air stem containing an air chamber mounted in the nozzle and extending into the whirl chamber, a plurality of laterally directed openings in the air stem admitting air from said air chamber, said openings being disposed to discharge air into the whirl chamber at positions axially spaced from said inlet, said air stem having an extension into said elongated orifice passage, a restriction on said extension within said passage to form a constriction in the passage and cause a depressurization and sudden expansion of the liquid and air mixture, and means for varying the spray angle of the nozzle discharge comprising an interchangeable stem having a deflection cap including a deflection surface having a fixed angularity to the axis of said stem, said deflection cap disposed outwardly of the orifice passage with said deflection surface in spaced relation to the orifice such as to define an annular emission opening effecting the spray angle of the nozzle discharge.

4,343,435
FIRE HYDRANT DIFFUSER

Ronald V. Anderton, 5450 Balsam La., Plymouth, Minn. 55442, and Donald S. Atwood, 11656 Mississippi Dr., Champlin, Minn. 55316

Filed Nov. 13, 1980, Ser. No. 206,478
Int. Cl.[3] B05B 1/26
U.S. Cl. 239—499 5 Claims



1. A fire hydrant diffuser comprising

a housing having an inlet and an outlet;

said housing flaring in the direction of said outlet;

a pair of screen members being disposed within said housing

in opposed relation extending transversely of said housing and being secured thereto;

said screen members being angled relative to each other and coverging at a point spaced from said inlet;

said screen members being formed as an expanded mesh;

the openings of said mesh being defined by interconnected wall portions of said screen members;

corresponding wall portions of said screen members being disposed in planes at right angles to the direction of water passing through said housing and corresponding of successive of said wall portions in the direction of the outlet of said housing being in outward stepped relation and said openings formed by said wall portions being disposed in a corresponding stepped relation

whereby, said wall portions form vertical barriers receiving directly the thrust of water passing through said housing blunting said thrust prior to the passage of said water through said openings.

4,343,436

METHOD AND APPARATUS FOR THE SPRAY-COATING OF THE INSIDE OF TUBULAR BODIES HAVING A SEAM

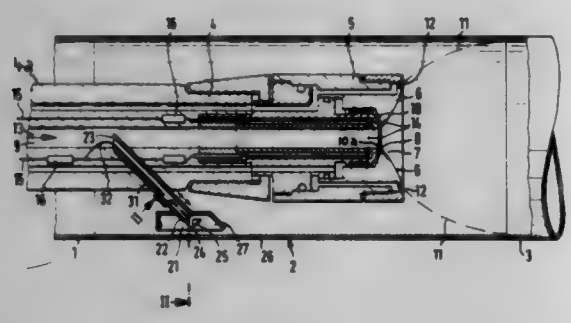
Ernst Lehmann, St. Gallen, Switzerland, assignor to Gema AG Apparatebau, Switzerland

Filed Apr. 4, 1980, Ser. No. 137,395

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914960

Int. Cl.³ B05C *7/02*

U.S. Cl. 239—696 **26 Claims**



1. An apparatus for spray coating the interior of a hollow body, comprising:

first atomizer means for atomizing a coating material for producing a cloud of the coating material inside the interior of the hollow body for coating the body interior with the coating material;

feed conduit means for transporting the coating material to the first atomizer means for atomization;

spray jet atomizer means for aiming a spray of coating material at a selected region of the interior of the hollow body for spray coating the selected region with a layer of the coating material; and

means for feeding coating material to the spray jet atomizer means simultaneously with the transportation of coating material to the first atomizer means, whereby the first atomizer means and the spray jet atomizer means can respectively atomize the spray simultaneously;

and additional means for adjusting the relative volumes of flow of coating material to the first atomizer means and to the spray jet atomizer means;

said first atomizer means producing a cloud of the coating material inside the interior of a hollow body for uniformly coating the body interior with the coating material.

4,343,437

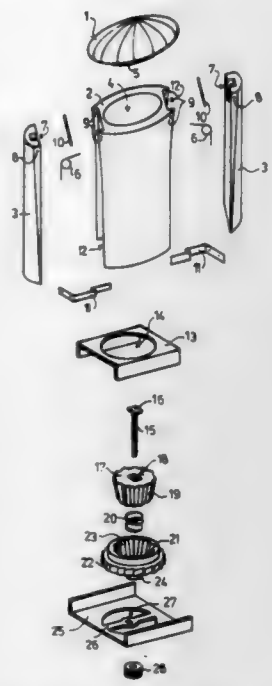
CONDIMENT GRINDER

John C. Czelen, 3411 30th St., NW., Washington, D.C. 20008

Filed Oct. 22, 1979, Ser. No. 85,190

Int. Cl.³ A47J *42/04*

U.S. Cl. 241—169.1 **5 Claims**



1. A condiment grinder, adapted for one-hand operaton, comprising a hollow reservoir, having a central axis, an upper end, and an open lower end, a grinding mechanism mounted in said reservoir adjacent to said open lower end, said grinding mechanism including a grinding wheel with internal grinding surfaces and a grinding hub with external grinding surfaces, interfitting and cooperating with said internal grinding surfaces to grind the condiment therebetween upon relative movement of said hub and grinding wheel, said relative movement being achieved by means of a ratchet mechanism consisting of at least one ratchet arm, reciprocable in a direction transverse to said axis, one end of said arm engaging either said hub or said grinding wheel, the other end of said ratchet arm engaging a compression arm, movement of said compression arm causing said ratchet arm to move in a direction transverse to said central axis, and thus causing relative motion between said hub and said grinding wheel.

4,343,438

RING HAMMER

Anthony W. Slikas, Birmingham, Ala., and Joseph P. Nigro, Villanova, Pa., assignors to Pennsylvania Crusher Corporation, Broomall, Pa.

Filed Apr. 1, 1980, Ser. No. 136,216

Int. Cl.³ B02C *13/28*

U.S. Cl. 241—196 **12 Claims**

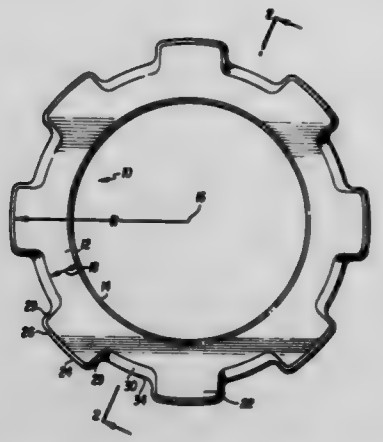
1. A ring hammer for a material reducing apparatus, comprising:

a substantially circular body having a central bore with an axis, said circular body having an axial length and a radial thickness;

a plurality of teeth projecting radially outwardly from said circular body, each of said teeth having at least one contact surface extending partially circumferentially around said circular body at least at the radially outermost portion of the tooth and being substantially parallel to said axis, each of said teeth also tapering radially inwardly from said contact surface toward the axial ends of said hammer; and

a plurality of connecting segments extending circumferentially between and interconnecting adjacent ones of said

teeth, each of said connecting segments tapering radially inwardly toward the axial ends of said hammer, at an



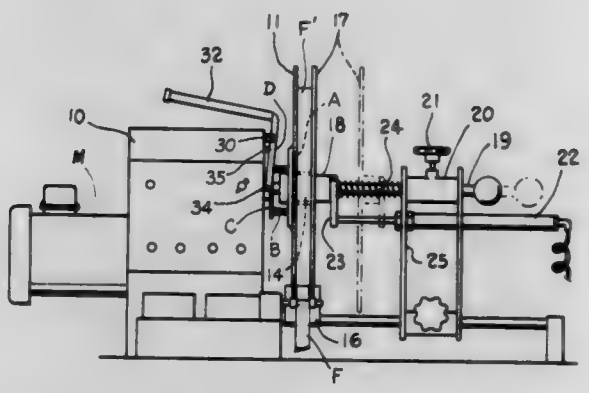
angle greater than the angle at which said teeth taper from said contact surface.

4,343,439

NARROW FABRIC BLOCKER

Kenneth M. Cavanagh, Warwick, R.I., assignor to Marshall & Williams Company, Providence, R.I.

Filed Oct. 15, 1980, Ser. No. 197,249
Int. Cl.[3] B65H *67/02, 75/00*
U.S. Cl. 242—41 2 Claims



1. A blocker for narrow fabric and the like having a stationary frame carrying a hub carried flange on a motor driven shaft opposite an axially shiftable flange movable into and out of package positioning relation to said hub carried flange comprising:

an ejector plate carried by said flange about said hub;

circumferentially spaced means extending through said flange connected to said ejector plate;

operator means carried by said circumferentially spaced means; and

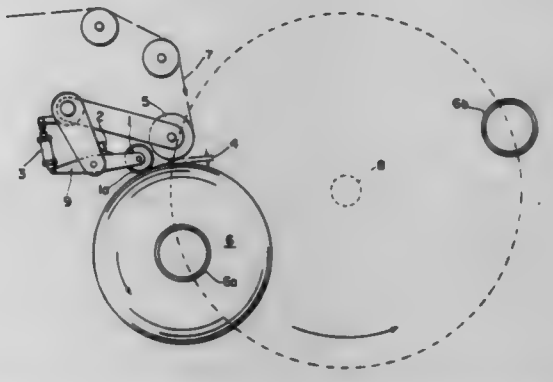
a yoke pivotally mounted on said stationary frame movable into operating relation to said operator means for urging said ejector plate, through said operator means and said circumferentially spaced means, away from said flange and for engaging and ejecting a block of narrow fabric packaged on said hub.

4,343,440

ADDITIONAL DEVICE FOR ROLLING INSTALLATIONS AND PROCEDURES FOR ROLLING OF PRESSURE-SENSITIVE MATERIALS

Rupert Engl, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Zanders Feinpapiere AG, Bergisch Gladbach, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 184,016
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1979, 2935743
Int. Cl.[3] B65H *17/02*
U.S. Cl. 242—67.1 R 10 Claims



1. An auxiliary winding control device for use with an apparatus for winding web-like material up to form a roll, said apparatus having a web contacting roller, said auxiliary device comprising:

another web contacting roller having a soft surface;

pivoted lever means for displaceably supporting said other roller for rotation;

means connected to said lever means for urging said other roller with a predetermined pressure against said wind-up roll;

means for varying the relative distance between said wind-up roll on the one hand and the first-mentioned roller and the pivot of said lever means on the other hand; and

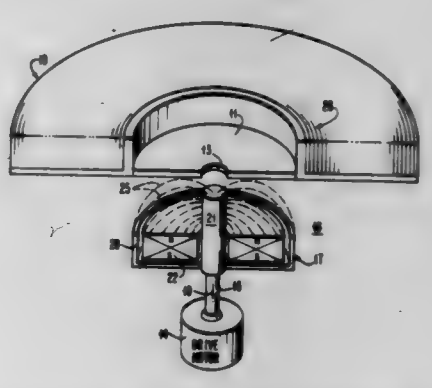
contact means linked to said lever means and responsive to the displacement of said other rollers by said wind-up roll incident to the winding operation, for controlling said distance-varying means so as to maintain a predetermined gap between said first-mentioned roller and said wind-up roll.

4,343,441

MAGNETIC TAPE REEL CLAMP WITH EXTENDED CENTER POLE

Scot M. Graham, Emsworth, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,621
Int. Cl.[3] B65H *17/02*
U.S. Cl. 242—68.1 2 Claims



1. An arrangement for releaseably clamping a reel of magnetic tape to a driving motor comprising a magnetic clamp having a doughnut-shaped magnet and magnet holder mounted for rotation with said motor, said magnet holder

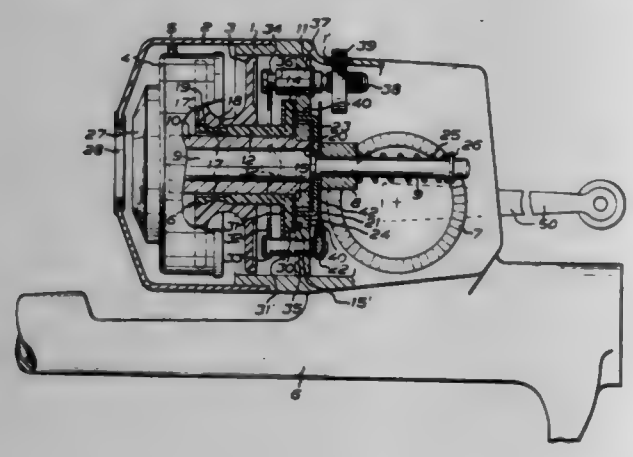
having a center pole which is disposed coaxially with said motor shaft for receiving said doughnut-shaped magnet and extending a predetermined distance above the surface of said magnet, said magnetic clamp further including a circular metal plate attached to the hub portion of said reel and adapted to engage said magnet holder, said magnet being polarized in an axial direction to provide a flux field which extends from said center pole to the circumferentially disposed edge portion of said magnet holder when no reel is disposed on said clamp, said center pole being extended to a point where the strength of the magnetic field is insufficient to adversely affect the magnetic condition of said magnetic tape and the shunting effect of said metal plate is not required to protect the tape.

4,343,442

ARRANGEMENT IN FISHING REELS FOR COMPENSATING FOR THE LINE RETRIEVAL IN RELATION TO THE BRAKE FORCE ON LINE WITHDRAWAL

Jan-Ake Andersson, Mörrum, Sweden, assignor to Abu Aktiebolag, Sweden

Filed Aug. 1, 1980, Ser. No. 174,473
Claims priority, application Sweden, Aug. 10, 1979, 7906702
Int. Cl.³ A01K *89/01, 89/02*
U.S. Cl. 242—84.2 A **7 Claims**



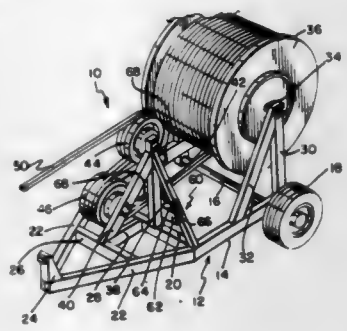
1. In a fishing reel having a frame, a line spool rotatably supported by said frame, a hand crank, transmission means and line retrieval means connected to and rotated by said hand crank via said transmission means for retrieval of the line and winding it onto the line spool, and a sliding clutch comprising coaxially mounted friction members, one such friction member being non-rotatably fixed in relation to said frame and another friction member being connected to be rotated with said line spool, said friction members being axially adjustable into friction contact with each other for providing an adjustable brake force against rotation of said line spool, a control mechanism (32, 37–39) for adjusting the degree of frictional contact pressure between said friction members, said line spool being rotatable by means of the line at a pull in the line sufficient to overcome said brake force and bring said clutch to slide, the improvement comprising a power transmission mechanism connected between said hand crank and said sliding clutch for converting a torque from said hand crank into a force which tends to increase said contact pressure preset by said control mechanism, said power transmission mechanism comprising first and second cooperating members, said first member being rotatable and connected to be acted upon by said torque from said hand crank and said second member being movable by torque from said first member and connected to said clutch to press said friction members together with a force depending on said torque.

4,343,443

WIRING APPARATUS

Thomas M. Grounds, Wichita, Kans., assignor to C & T Line Construction, Inc., Wichita, Kans.

Filed Aug. 15, 1980, Ser. No. 178,498
Int. Cl.³ B65H *75/40, 59/16*
U.S. Cl. 242—86.7 **9 Claims**



1. An apparatus for installing under tension electrical conductor or cable comprising:

a frame;

wheels supporting said frame and rotatable thereon;

an electrical cable or conductor reel rotatably attached to said frame;

guide means connected to said frame for guiding said electrical conductor or cable as it leaves said reel;

a lower and upper bull wheel, both rotatably attached to said frame and positioned such as to have said electrical conductor or cable traverse an essentially S-shaped course with respect to a vertical plane as same passes over and around said lower and upper wheels;

brake means connected to said frame and operatively communicating with said lower and upper bull wheel to maintain tension on said conductor or cable as it traverses said S-shaped course;

an adjustable tension swagger roller means attached to said frame and positioned between said guide means and said lower bull wheel;

said adjustable tension swagger roller means comprises an L-shaped bracket pivotally attached to said frame including a tension roller rotatably connected to one end thereof for engaging said electrical conductor or cable to prevent swagging;

a threaded conduit pivotally attached to the other end of said bracket;

a threaded shaft bound to a hand crank and threadably engaging said threaded conduit such that a predetermined directional rotation of the hand crank causes the threaded conduit to move in a predetermined direction along said threaded shaft which in turn causes the roller end of said L-shaped bracket to rise or fall depending upon the predetermined directional rotation of said hand crank.

4,343,444

TILT COMPENSATING PENDULUM FOR SEAT MOUNTED RETRACTOR

Philip L. Francis, Bloomfield Hills, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

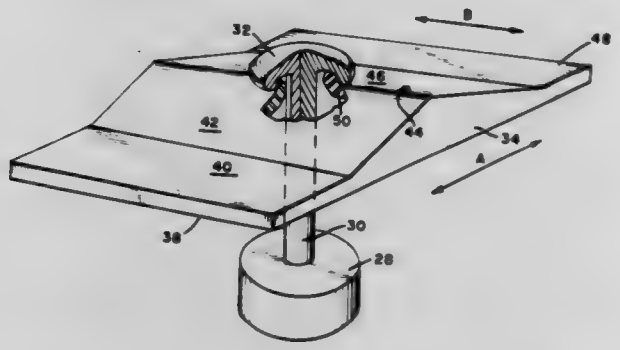
Filed Oct. 3, 1980, Ser. No. 193,688
Int. Cl.³ A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A **9 Claims**

7. In a seat belt retractor for installation in a vehicle, said retractor comprising a frame, locking means on said frame operable to lock said retractor and an inertia sensor for actuating said locking means, said inertia sensor comprising a weighted mass extending by an elongated stem from a cap member and a support member for supporting said cap member, said support member having an opening through which said stem extends, the improvement comprising:

first surface means on said support member in contact with said cap member, said first surface means preventing motion of said cap member in directions substantially

normal to the longitudinal axis of said vehicle in response to a deceleration force below a predetermined value; and

second surface means normally spaced from said cap member when said frame is in a horizontal position, said second surface means comprising an inclined surface extending in a direction substantially parallel to said longitudinal axis and intersecting said first surface means, said second surface means being effective to restrict tilting motion of said



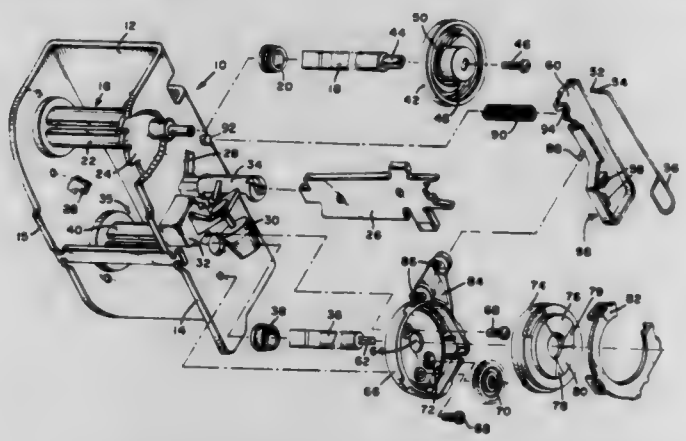
cap member in a direction substantially parallel to said longitudinal axis to a predetermined degree without imparting a lifting force to said cap member, said second surface means being effective to permit tilting motion of said cap member in said direction substantially parallel to said longitudinal axis at the occurrence of a deceleration of said vehicle in said direction above said predetermined value.

4,343,445

DUAL SPOOL SEAT BELT RETRACTOR WITH COMFORT FEATURE

Klaus F. Ocker, Fraser; Richard J. Jodts, Mt. Clemens, and Robert C. Pfeiffer, Sterling Heights, all of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 29, 1979, Ser. No. 89,648
Int. Cl.³ A62B 35/02; B65H 75/48
U.S. Cl. 242—107.7 8 Claims



1. In a dual spool seat belt retractor including a housing, a lap belt retractor mounted in said housing and adapted to store a lap belt thereon, said lap belt retractor having a shaft, a shoulder belt retractor mounted in said housing and adapted to store a shoulder belt thereon, said retractors being rotatable in rewind and extraction directions, and rewind means associated with said retractors and normally exerting a rewind force urging said retractors towards the rewind direction, the improvement comprising:

tension relieving means operatively associated with said shoulder belt retractor and effective in an operable position to relieve the rewind force associated with said shoulder belt retractor and ineffective in an inoperable position to relieve said force; and

release means operable to position said tension relieving means in its inoperable position, said release means comprising a gear mechanism coupled to said shaft for actuating said release means in response to rotation of said lap belt retractor in said rewind direction and being actuatable to position said tension relieving means in its operable position in response to rotation of said lap belt retractor in said extraction direction, said gear mechanism including contact means for positioning said tension relieving means in its operable and inoperable positions,

said tension relieving means including first and second members, said second member being coupled to said shoulder belt retractor, said first member adapted to engage said second member to effect said relief of said rewind force, and a pivotable member in contact with said first member and said contact means of said gear mechanism and effective to control engagement of said first and second members, and

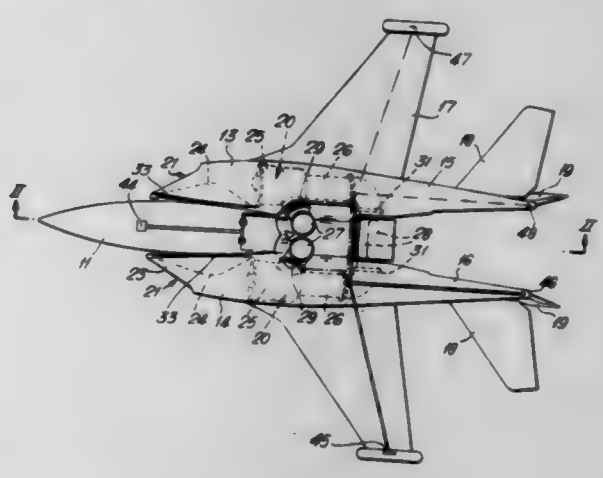
means biasing said pivotable member so that said first member is held away from said second member when said lap belt is fully wound up on said lap belt retractor.

4,343,446

V/STOL AIRCRAFT

Kenneth R. Langley, Wotton-Under-Edge, England, assignor to Rolls Royce Limited, London, England

Filed Apr. 29, 1980, Ser. No. 144,937
Claims priority, application United Kingdom, May 29, 1979, 7918674
Int. Cl.³ B64C 29/00, 15/00
U.S. Cl. 244—12.5 20 Claims



1. An aircraft capable of vertical or short take-off and landing comprising:

a rearwardly bifurcated fuselage comprising a front nose portion extending along the longitudinal center-line axis of the aircraft and two spaced engine nacelles which extend rearwardly to comprise two spaced tail booms:

a gas turbine engine located within each nacelle;

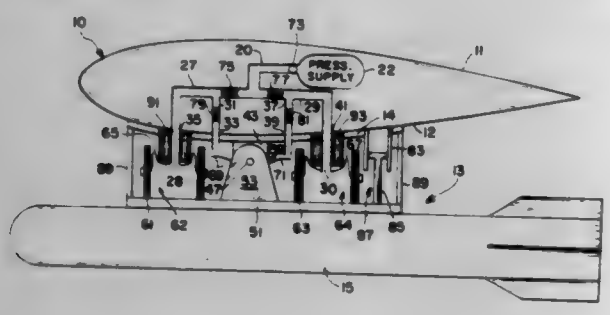
a plurality of turbine exhaust nozzles located to the rear of the nose portion and between the tail booms, said plurality of turbine exhaust nozzles are located in close proximity to the longitudinal center-line of said aircraft, and an efflux of gases from said gas turbines is discharged through said plurality of turbine nozzles to provide a propulsive thrust; and

means to vary the direction of the thrust.

4,343,447
DECOUPLER PYLON: WING/STORE FLUTTER SUPPRESSOR

Wilmer H. Reed, III, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 28, 1980, Ser. No. 135,057
Int. Cl.[3] B64D *1/00, 9/00*
U.S. Cl. 244—137 R 12 Claims



1. A device for suspending a store from a support, comprising:
an airfoil lifting surface subjected to flutter;
store means;
means for suspending said store means from said airfoil lifting surface and enabling movement thereabout;
soft-spring means connected between said airfoil lifting surface and said store means; and
control means actuated by movement of said soft-spring means;
said soft-spring means and control means maintaining alignment of said store means about a spanwise axis of the lifting surface and isolating the pitch modes of the store means from the torsion modes of the airfoil lifting surface alleviating airfoil lifting surface flutter and vibratory loads.

4,343,448
ALL RADIAL CONSTRUCTION FOR CONTINUOUS RIBBON PARACHUTES

Donald W. Johnson, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 29, 1980, Ser. No. 126,074
Int. Cl.[3] B64D *17/10*
U.S. Cl. 244—145 1 Claim



1. A continuous ribbon parachute comprising a canopy having a plurality of continuous horizontal ribbons, each of said ribbons being represented by circles, the center of each of said circles being the center of said parachute, said ribbons being of gradually decreasing diameter from the base of said parachute to the center of said parachute, a plurality of adjacent tapes each fully extending radially between said base and said center of said parachute and wherein each pair of said adjacent radially extending tapes define therebetween a substantially triangular-shaped gore thereby forming a plurality of gores within said parachute, three equally spaced adjacent mini-tapes within each of said gores, each of said three mini-tapes extending radially part way between said base and said center of said parachute, a central mini-tape of said three adjacent mini-tapes extending farther upward toward said center of said parachute than the other two adjacent mini-tapes, and said ribbons being fixedly secured at a plurality of points thereon to said radially extending tapes and said radially extending mini-tapes such that the centerlines of said radially extending tapes and said radially extending mini-tapes are perpendicular to the tangent of the centerline of said horizontal ribbons at said points of securement thereby maximizing parachute symmetry and minimizing the number of local stress concentrations therein.

4,343,449
PORTABLE SIGN

Ramon L. Osthus, Clear Lake, Iowa, assignor to Triad Service & Marketing, Ltd., Marshalltown, Iowa

Continuation-in-part of Ser. No. 62,155, Jul. 26, 1979, abandoned. This application May 21, 1980, Ser. No. 152,147
Int. Cl.[3] A45F *3/44;* A16M *13/00*
U.S. Cl. 248—156 4 Claims



1. For use with a portable post assembly having elongated post sections interconnected by a separable joint, a base adapted to be anchored in the ground by vertical pressure applied thereto, including an elongated ground contact element dimensioned between opposite ends to accommodate a human foot, ground-piercing means means depending from said element adjacent said opposite ends thereof for piercing the ground in response to the vertical pressure applied, one of said elongated post sections projecting from the element at a location closer to one of said opposite ends thereof, and stabilizer means secured to the element in spaced relation to the ground piercing means for engagement with the ground laterally of the element, said stabilizer means comprising an elongated member pivotally and adjustably attached to said element and having a ground level surface portion generally perpendicular to said one of the post sections and a depending leg adapted to be embedded in the ground, said ground-piercing means comprising a pair of blades with opposed tapers.

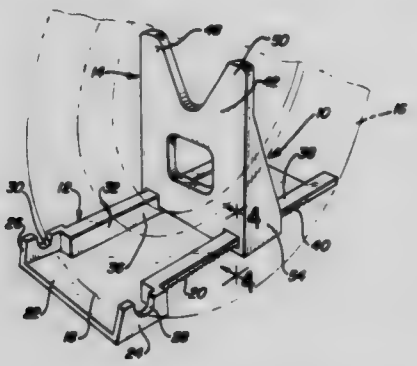
4,343,450
PLATE HOLDER

George C. Anderson, Mount Prospect, Ill., assignor to Altra Corporation, Elk Grove Village, Ill.

Filed Dec. 10, 1979, Ser. No. 102,239
Int. Cl.[3] A47G *1/24*
U.S. Cl. 248—454 5 Claims

1. A plate holder for holding a plate in a substantially vertical attitude for displaying the plate comprising; a base, said base having a rim catch for holding a rim of the plate, said base

having a track connected to the rim catch with a plurality of serrations on the track; and a support movably mounted on the base and being substantially perpendicular to the base, said support having a plate panel adapted for engaging the plate having its rim in the rim catch to hold the plate in a substantially vertical attitude, and a tooth connected to said plate panel and engageable with the serrations of the track for releasably holding the support in a selected position relative to the



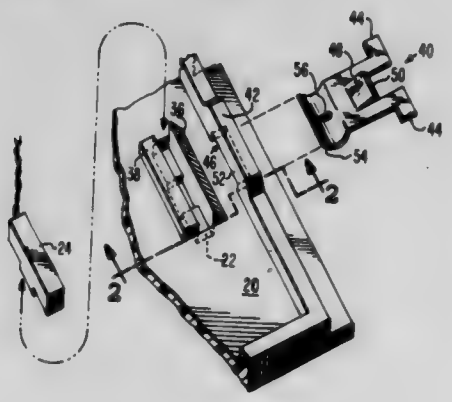
base for holding the plate in a selected attitude, the track including an elongated ear, said ear having the serrations on its lower side, the support including an upper wall slidably engaging the ear on its upper surface, the tooth fixedly connected to the upper wall and being spaced from the upper wall sufficiently to allow the upper wall to slide on the upper surface of the ear when the upper wall is substantially parallel to the ear and the tooth to engage lockably the serrations when the upper wall is not parallel to the upper surface of the ear.

4,343,451

SENSOR RETAINING SYSTEM

John L. Armstrong, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 5, 1979, Ser. No. 100,500
Int. Cl.³ H05K *5/00*
U.S. Cl. 248—500 3 Claims



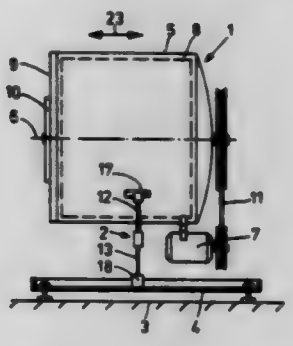
1. A sensor retaining system comprising:
a base member having a recess for receiving the sensor;
said base member having a fulcrum portion positioned adjacent the recess along a front portion of the base member, said fulcrum portion having a slot formed therethrough;
said base member having a rear support wall and an intermediate support wall extending upward along the recess, said intermediate wall having an inclined ramp portion; and
spring clip means for passing through the slot in the fulcrum portion and retaining the sensor within the recess;
said spring clip means having an end formed into a curved follower for engaging the inclined ramp portion and traveling along the ramp and up onto the sensor thereby flexing said spring clip means.

4,343,452

SPRING SUPPORT STRUT FOR DRUM-TYPE WASHING MACHINE

Fritz Bauer, Altdorf, Fed. Rep. of Germany, assignor to Suspa Federungstechnik Fritz Bauer & Shone Ohg, Altdorf, Fed. Rep. of Germany

Filed Aug. 14, 1979, Ser. No. 66,454
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837801
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—565 11 Claims



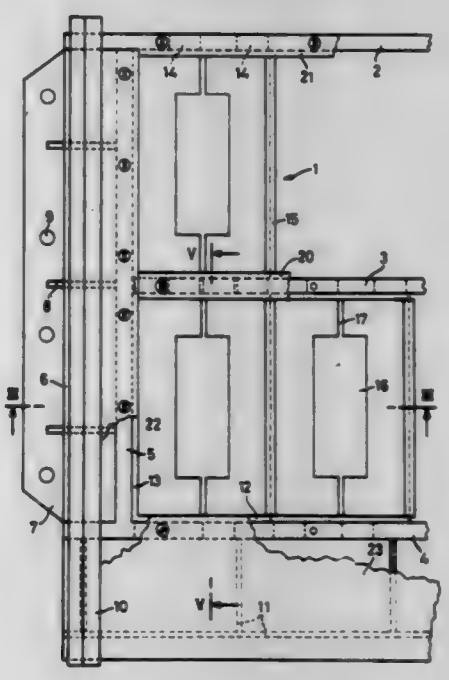
1. An elastic support structure for a washing machine which includes a housing and a horizontally rotating drum, said support structure including a base and at least two spring support struts each attached resiliently to said base at the lower end thereof and to said housing at the upper end thereof, said spring support struts each including an upper guide rod and a lower guide rod, each of which is surrounded by a compression spring extending substantially the entire length of said guide rod, a centrally disposed guiding and damping casing for said upper and lower guide rods defining guide passages in which said upper and lower guide rods move axially and including means for providing frictional resistance between the walls of said passages and said guide rods, one end of each of said compression springs being supported by said casing.

4,343,453

MOULD FOR PRODUCING CONCRETE MOULDINGS

Guenter Rodon, Erbach, Fed. Rep. of Germany, assignor to Rampf KG Formen GmbH & Co., Allmendingen, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,340
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012817
Int. Cl.³ B28B *1/14, 7/16*
U.S. Cl. 249—120 6 Claims



1. A mold for producing concrete moldings comprising a frame insertable into a molding machine and a plurality of

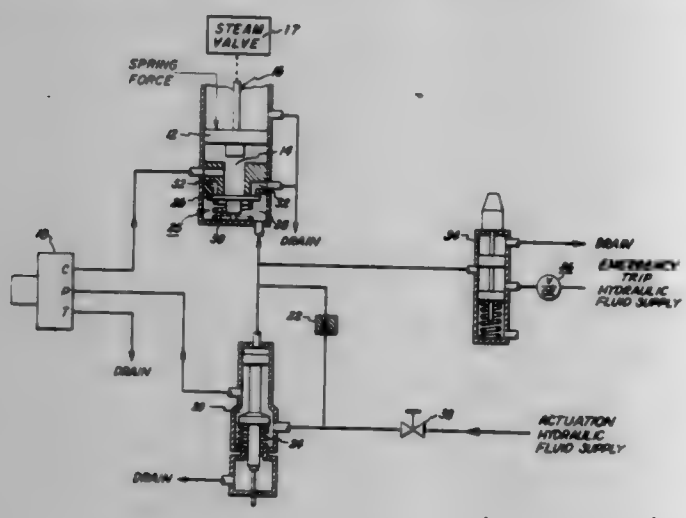
individual molding boxes mounted in said frame, said frame having a longitudinally extending central wall and said molding boxes being arranged in said frame in two parallel rows on opposite sides of said central wall, the interiors of said molding boxes containing a molding core corresponding to the moldings to be formed, each of said molding boxes having a pair of opposed longitudinal walls and a pair of opposed transverse walls joined together to form the outer walls of said molding box surrounding the mold core, said molding boxes each having at least two support flanges joined to and extending outwardly from each of the opposed longitudinal walls, the support flanges on one longitudinal wall being positioned with respect to the support flanges on the opposite longitudinal wall to provide sufficient space between the support flanges of the molding boxes to permit flanges of the molding boxes to be secured to the central wall with the flanges of the molding boxes in one row secured to the central wall between the flanges of the molding boxes of the opposed row of molding boxes.

4,343,454

APPARATUS FOR INDIVIDUAL ISOLATION OF HYDRAULICALLY ACTUATED VALVES

Jens Kure-Jensen, and Patrick S. Coppola, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,332
Int. Cl.³ F15B *13/043*; F16K *31/124*
U.S. Cl. 251—26 **12 Claims**



1. In combination with a steam valve for a steam turbine, said valve having a hydraulic actuator including a pilot chamber for control of a disc dump valve for fast valve closure and operable from an actuation hydraulic fluid supply and from an emergency trip hydraulic fluid supply, apparatus for hydraulically isolating said actuator, comprising:

valve means for shutting off hydraulic flow from said actuation supply to said actuator;

flow restriction means fluidly interposed directly between said emergency trip supply and said pilot chamber for limiting the inflow rate of hydraulic fluid to said pilot chamber; and

flow direction control means fluidly interposed between said emergency trip supply and said pilot chamber, said flow direction control means permitting hydraulic fluid flow only toward said emergency trip supply;

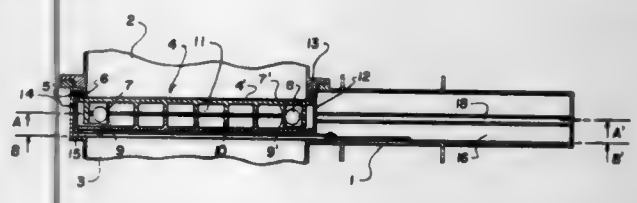
said valve means and said flow direction control means being operative to isolate said actuator from said actuation supply and said emergency trip supply upon closure of said valve means.

4,343,455

HIGH VACUUM VALVE CONSTRUCTION

Otto Winkler, Balzers, Liechtenstein, assignor to Balzers Aktiengesellschaft für Hochvakuumtechnik und Dünne Schichten, Liechtenstein

Filed Feb. 21, 1980, Ser. No. 123,399
Claims priority, application Switzerland, Feb. 26, 1979, 1858/79
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—58 **5 Claims**



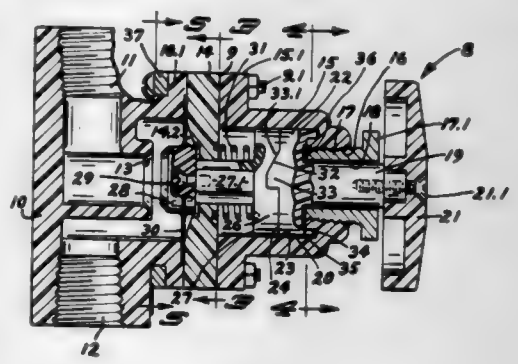
1. A high-vacuum valve comprising a casing having a valve inlet port, a valve outlet port connected to said inlet port, a valve seat including a flange extending at least partly thereabout, said seat defined in said casing between said valve inlet port and said valve outlet port, said casing also defining a valve movement passageway adjacent said valve seat, a valve member movable in said housing on said passageway between a position in which said valve member is aligned with said valve seat for closing the valve to a position in which said valve member is out of alignment with said valve seat for opening said valve, said valve member including at least two separate relatively movable plate parts both of which move along said passageway and one of which is movable relative to the other when said valve member is aligned with said valve seat and into firm engagement with said seat, and drive force transmission means acting between said plate parts to move at least one relatively to the other in a direction to place it against said seat, the other of said plate parts being braced by said casing passageway, a channel section member connected to said housing and engaged over a part of said flange, and with said valve member in its aligned position, engaged with said other of said plate parts, said other of said plate parts including a support element engaged over said flange in its aligned position.

4,343,456

PLASTIC CONTROL VALVE

Wayne D. Zitzloff, Brooklyn Center, Minn., assignor to Galtek Corporation, Chaska, Minn.

Filed May 16, 1980, Ser. No. 150,326
Int. Cl.³ F16K *31/524*
U.S. Cl. 251—255 **3 Claims**



1. A control valve for flowing fluids, comprising

a plastic valve body having a flow passage for flowing fluids and including a valve seat, the valve body having an access opening opposite the valve seat,

a plastic valve element movable toward and away from the valve seat, the valve element having a flexible sealing diaphragm thereon around the periphery thereof, the diaphragm and valve element traversing the access opening and the outer edge of the diaphragm being entirely

sealed against the valve body to isolate the access opening at one side of the diaphragm from the fluids adjacent the valve seat at the other side of the diaphragm, the diaphragm flexing to accommodate movement of the valve element toward and away from the valve seat,

a plastic operating slide extending through the access opening and having an inner end connected to the valve element and also having an outer end with an end face, the slide being slidably movable endways through the access opening for moving the valve element toward and away from the valve seat, and

a plastic control rotor on the valve body and turning about a rotation axis extending in the direction of the sliding movement of the slide, the control rotor having an end face traversing the rotation axis and confronting the end face of the slide, said end faces having cooperating cam and follower means spaced from the rotation axis and producing endways sliding of the operating slide in response to turning of the control rotor,

the cam and follower means including an elongate ramp on one end face and spaced from the rotation axis and said cam and follower means also including an engaging part bearing against the ramp, the elongate ramp and engaging part being relatively rotatable in response to turning of the rotor to produce endways sliding of the slide and movement of the valve element, and the control rotor having an annular shoulder facing away from the slide,

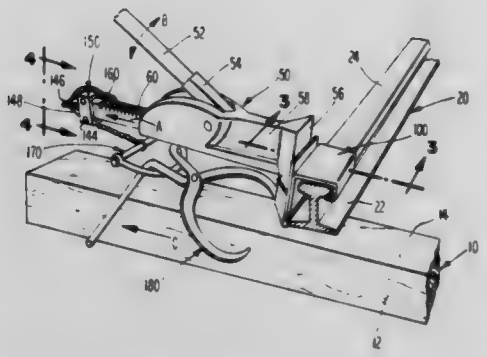
and an adjustment nut threaded into the valve body, the nut embracing the rotor and bearing against the annular shoulder of the control rotor for accurately positioning the rotor, slide and valve element relative to the valve seat.

4,343,457

RAIL JACK ADAPTOR

James C. Siano, 53 E. Baltimore Pike, Second Flr., Clifton Heights, Pa. 19018

Filed Oct. 10, 1980, Ser. No. 196,116
Int. Cl.³ E01B *29/22*
U.S. Cl. 254—43 **10 Claims**



1. A rail jack adapter for use with a rail jack having a base for supporting said jack, a generally upright body extending away from said base, a rack longitudinally movable with respect to said body, at least the head of which rack is extensible beyond the top end of said body, and a pivoted jack handle extending generally away from said body for moving said rack with respect to said body, said adapter facilitating the use of said rail jack to pull railroad ties, said adapter comprising:

(a) rail bracket means connectable to a railroad rail for receiving said base of said jack to position said jack parallel to, over and substantially above a tie to be pulled; and for positioning said pivoted jack handle to extend generally vertically away from said tie;

(b) a jack cap connectable to said rack head;

(c) tie gripping means for selectively gripping a tie to be pulled said tie gripping means comprising tong means for engaging opposite outer surfaces of said tie, and force conversion means for converting at least a portion of the substantially linear tie pulling force applied through said chain means into opposing gripping forces applied to said tie surfaces through said tong means, said tie gripping means comprising pivotally connected tongs having transversely disposed handles thereon, and a yoke around said tongs, said yoke comprising a "C" bar for engaging said tongs and a tie rod bridging said "C" bar, said tie rod being connected to said chain means; and

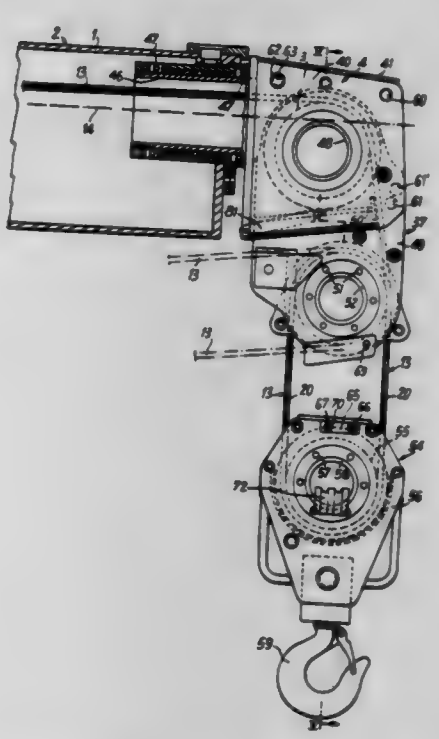
(d) chain means connected to said tie gripping means and selectively connectable along its length to said jack cap for interconnecting said jack rack with said tie gripping means, whereby pivotal movement of said jack handle will cause relative movement of said tie with respect to said base.

4,343,458

SUPPORTS OF BOOM END SHEAVES OR SIMILAR FOR A LIFTING AND/OR HANDLING MACHINE

Francois Simon, Rte. d'Annecy, 73410 Albens, France

Filed May 16, 1980, Ser. No. 150,636
Claims priority, application France, May 18, 1979, 79 12687
Int. Cl.³ B66D *3/08*
U.S. Cl. 254—399 **6 Claims**



1. A support for boom end sheaves for lifting and/or handling machines comprising a boom having a free end, a support member attached to said free end, a first sheave attached to said support member, said first sheave having an axis transverse to the longitudinal direction of said boom, a first pulley block comprising pulleys having an axis parallel to that of said first sheave, a lever articularly connected at one end to said first sheave and carrying said first pulley block at its other end, a lifting cable running along said boom, passing on said first sheave and then to said first pulley-block, said pulley axis of said first pulley block being fixed with respect to said lever.

4,343,459

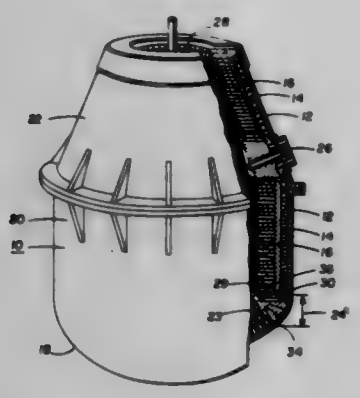
BASIC OXYGEN FURNACE CONSTRUCTION

Loren L. Kimmel, Chicago Heights, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 8, 1980, Ser. No. 184,824
Int. Cl.³ C21C *5/42*
U.S. Cl. 266—243 **2 Claims**

1. In an oxygen converter vessel, comprising a metal shell having a mouth at its top, a shell protective lining in contact with the inside surface thereof, and a working lining, said vessel constructed of three major zones, the bottom zone, the barrel zone, and the cone section zone, the three zones containing refractory brick having generally face, side and end surfaces, an end surface of each brick in these zones in the working lining being exposed to the interior of said vessel, the

bottom zone being generally dish-shaped and of upwardly opening concave configuration, the brick in said zone terminating in a knuckle area with their face surfaces inclined from the vertical axis of the vessel, the barrel zone extending from the knuckle area upwardly to the cone section zone, the cone section zone being of downwardly opening truncated cross-



sectional configuration, the improvement comprising a plurality of courses of refractory brick in the cone section zone, at the working lining, having a parallelogram cross-sectional configuration wherein opposed end surfaces of the shape are inclined with respect to the top and bottom surfaces and there are a pair of opposed acute angles and obtuse angles formed by the end surfaces and top and bottom surfaces.

4,343,460

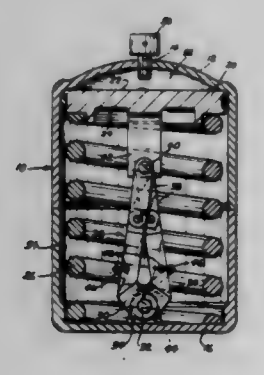
FORCE-RECEIVING AND APPLYING DEVICE

Joseph J. Gende, 4311 7th Ave., Moline, Ill. 61265

Continuation-in-part of Ser. No. 961,804, Nov. 17, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 136,184

Int. Cl.³ F16F *3/10*

U.S. Cl. 267—151 **16 Claims**



1. A force-receiving and -applying device, having a hollow cylinder having a first end including an opening and a second end including an abutment; a pixton axially reciprocable within the cylinder and having a front face adapted to receive and to apply force via said opening; a first coil spring coaxially disposed within the cylinder between the back of the piston and the abutment and biased to urge the piston toward the first end of the cylinder; and secondary biasing means operative on the piston in conjunction and simultaneously with the coil spring, and having such spring rate relative to that of the coil spring as to offset at least some of the forces of the coil spring, so that the coil spring and secondary biasing means together provide a substantially constant resistance to movement of the piston when force is received by the piston and to apply a substantially constant force to the piston when force is applied by the piston, characterized in that the secondary biasing means is disposed coaxially within the cylinder between the abutment and the back of the piston.

4,343,461

PAPER FEEDING CASSETTE

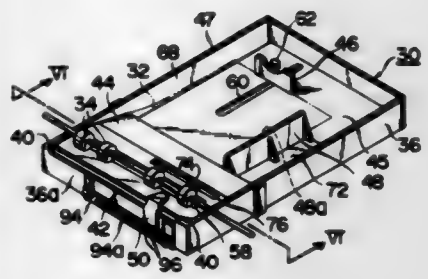
Kiyoshi Tomimori, and Shunichi Nakajima, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 17, 1979, Ser. No. 104,062

Claims priority, application Japan, Dec. 20, 1978, 53-157862; Dec. 20, 1978, 53-157863; Dec. 20, 1978, 53-157864; Dec. 20, 1978, 53-157867; Dec. 20, 1978, 53-157868

Int. Cl.³ B65H *3/30*

U.S. Cl. 271—22 **11 Claims**



1. In a paper feeding cassette for receiving paper piles of different widths, comprising a cassette body including a stationary bottom plate on which is disposed the rear portion of the paper pile with respect to the take-up direction of the paper, a movable bottom plate vertically movable relative to the stationary bottom plate in the cassette body and having the front portion of the paper pile disposed thereon, means for upwardly urging the movable bottom plate, a first side plate regulating one side edge of the paper pile, a second side plate regulating the other side edge of the paper pile, a front wall regulating the front edge of the paper pile, and separation means for enabling the uppermost paper alone of the paper pile to be fed; the improvement in which:

(1) the first side plate is a stationary side wall fixed to the stationary bottom plate,

(2) the movable bottom plate has a width not smaller than the width of the largest paper which can be housed in the cassette body,

(3) the second side plate is attached to the stationary bottom plate and movable in the direction perpendicular to the paper-feeding direction so as to allow the side edges of the paper pile of a width smaller than the width of the largest paper to be regulated by the first and second side plates,

(4) the urging means includes a stationary coil spring stretched between the stationary bottom plate and the movable bottom plate and a movable coil spring spaced apart from said stationary coil spring in the width direction of the movable bottom plate and movable sideways together with the second side plate, and

(5) the cassette further includes a rear upright plate movable back and forth relative to the stationary bottom plate for regulating the rear edge of the paper pile.

4,343,462

ROCKING AUXILIARY GRIPPER SYSTEM FOR SHEET PROCESSING MACHINES

Günter Weisbach, Radebeul, and Günter Lucius, Dresden, both of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 135,625, Mar. 31, 1980, abandoned. This application May 19, 1980, Ser. No. 151,111

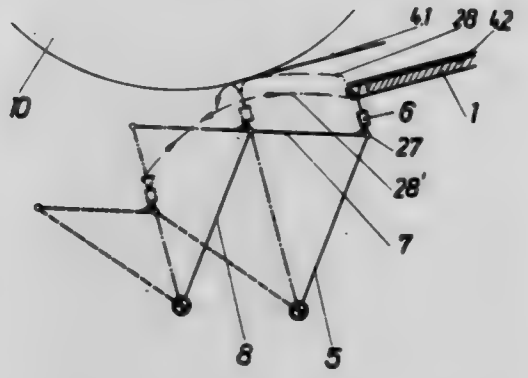
Claims priority, application German Democratic Rep., Apr. 2, 1979, 211940

Int. Cl.³ B65H *5/10, 5/14*

U.S. Cl. 271—267 **3 Claims**

1. An auxiliary gripper system for transferring sheets from a feed table to a feed cylinder of a sheet fed rotary press, comprising a parallel linkage arranged under the feed cylinder; a gripping mechanism secured to said linkage and including a

suction-type gripping element which is movable relative to the linkage between a lower position and a raised position; drive means for oscillating said linkage between a sheet takeover position in which the gripping element is below said feed table and the linkage reverses its motion, and a sheet transfer position in which the gripping element passes below a transfer



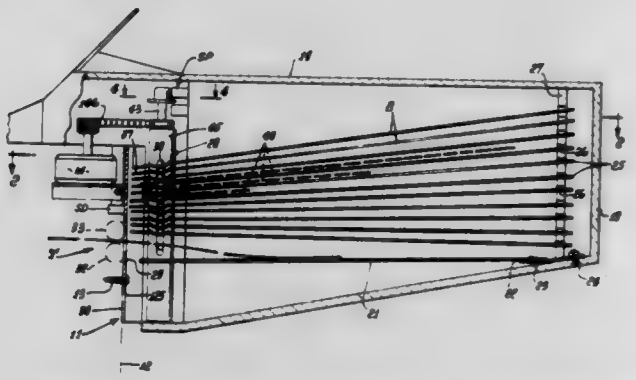
point of said feed cylinder at a speed synchronized with that of said transfer point; and means for displacing the gripping element relative to the linkage into its lower position when the linkage moves toward the sheet takeover position, and for lifting the gripping element relative to the linkage against said feed cylinder when the linkage moves from the takeover position to the sheet transfer position.

4,343,463

COMPACT SORTER

Frederick J. Lawrence, Tustin, Calif., assignor to Gradco/Dendoki, Inc., Santa Ana, Calif.

Filed Nov. 27, 1979, Ser. No. 98,191
Int. Cl.³ B65H *39/11*
U.S. Cl. 271—293 **17 Claims**



1. An improved sorting apparatus of the shiftable bin type including a frame structure having means for mounting the sorting apparatus at the sheet outlet from a copying machine, sorting bins shiftable relative to one another to provide a wide sheet entry between bins at said outlet, and means for shifting the bins, the improvement wherein said bins have ends remote from said outlet pivotally arranged and ends adjacent said outlet mounted for shifting movement past said outlet, and said means for shifting said bins engages successive bins at said ends adjacent to said outlet to move the latter successively from one side of said outlet to the other, spring means acting on said bins to bias said bins in at least one direction into engagement with said shifting means, and including control means to intermittently effect operation of said shifting means in opposite directions following passage of sheets into successive bins from the copying machine, means guiding said bins at said ends adjacent to said outlet for uniform movement past said outlet including portions of said bins engaged with one another to space said bins at opposite sides of said outlet.

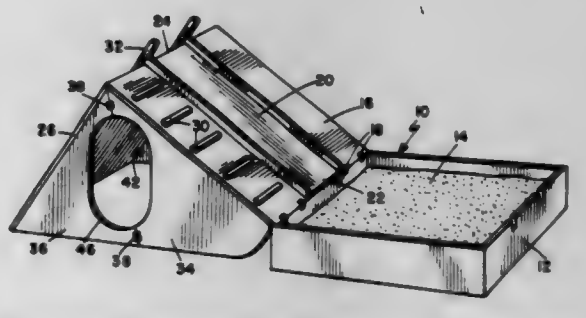
11. An improved sorting apparatus comprising: a frame structure; a plurality of bin members shiftably disposed in said frame structure; means for successively moving said bin members in said frame structure between first and second positions at which said bin members are at opposite sides of a sheet entry location and in closely spaced relation and for widely spacing successive bins at said entry location to receive a sheet at said entry location; said means for moving said bin members comprising supports at at least one of the opposite sides of said bin members in abutting relation with one another when said bin members are in said first and second positions; driven bin shifting means including a member engageable with successive supports to move said bins successively and oppositely from one side of said entry location to the other; and drive means to intermittently drive said bin shifting member in opposite directions.

4,343,464

PLAYGROUND SLIDE AND SHELTER

Curtis R. Dose, 2559 San Anselmo, San Diego, Calif. 92109

Filed Apr. 7, 1980, Ser. No. 138,114
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—56.5 R **7 Claims**



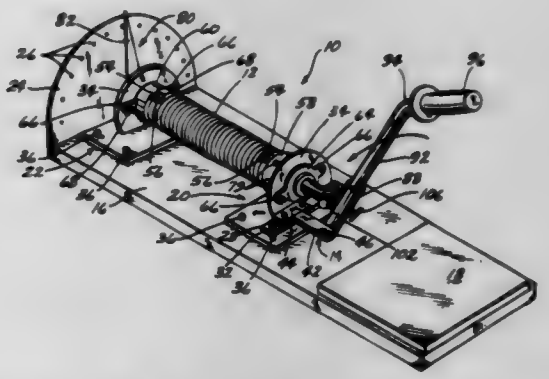
1. A playground structure, said structure comprising:
an open top container for containing a playing medium;
a substantially rigid cover panel having an inner edge and an outer edge and connected at said inner edge to said container for pivoting to a first position for covering said container and to a second position for opening said container for exposing the playing medium;
an elongated slide mounted on the inside of said cover panel and having an inner end at said inner edge and an outer end at said outer edge remote from said inner edge; and
support means pivotally connected to said cover panel at said outer edge for supporting said cover panel and said slide in an inclined position inclined toward said container for enabling sliding into said container when said cover is in said second position.

4,343,465

SPRING TYPE ARM WRESTLING DEVICE

Dan V. Allen, Rolfe, Iowa 50581

Filed Jul. 28, 1980, Ser. No. 173,040
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—67 **7 Claims**



1. An arm wrestling device for use in training for arm wrestling competition or for recreation, comprising:
a base support, having an upper surface and a pair of spaced apart shaft supports on said upper surface;
an elbow support on said upper surface adjacent one of said shaft supports;

an elongated shaft extending between and rotatably journaled within said shaft supports, said shaft having first and second opposite ends;

a lever arm operatively connected to said first end of said shaft and extending radially outwardly therefrom to terminate in a handle, said handle being located above said elbow support;

said lever arm and said shaft being pivotal about the longitudinal axis of said shaft from a first position wherein said handle is above said base to a second position wherein said handle is lowered to approximately the level of said base;

spring means interconnecting said shaft and said shaft supports for yieldably urging said lever arm and said shaft from said second to said first positions;

stop means engaging said lever arm for limiting the rotation of said lever arm beyond said first position in response to said spring means;

a pointer assembly operatively connected to said second end of said shaft;

a calibrated scale mounted on said base support adjacent said pointer assembly;

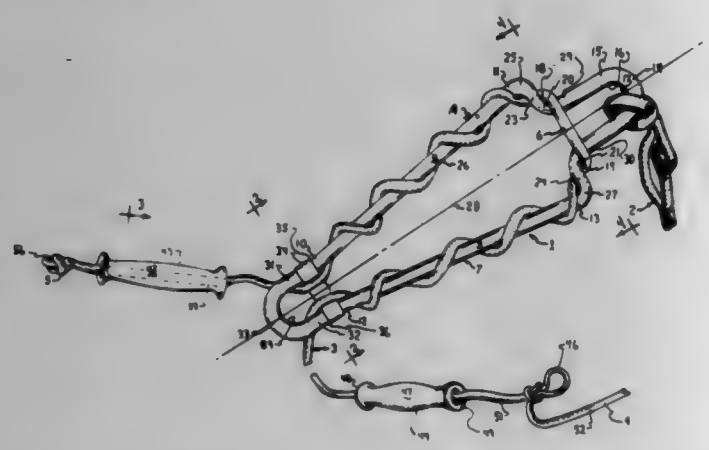
said spaced apart shaft supports each comprising a rectangular horizontal plate and an integrally connected truncated circular vertical plate, each of said horizontal plates having holes for connecting said horizontal plates to said base support, said horizontal plate of one of said shaft supports having additional holes for operatively attaching said stop means, each of said vertical plates having a hole therethrough with a diameter sufficiently large to rotatably receive said first and second ends of said shaft respectively.

4,343,466

FRICTIONAL RESISTANCE TYPE EXERCISER AND METHOD OF FORMING AN EXERCISING DEVICE

Roger C. Evans, 10214 Dogwood Ave., Palm Beach Gardens, Fla. 33410

Filed Nov. 15, 1979, Ser. No. 94,531
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—133 **4 Claims**



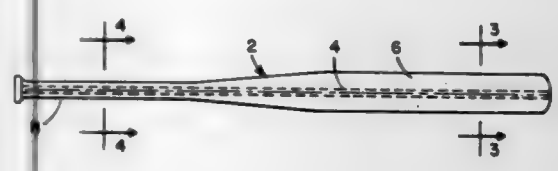
1. An exercising device for use with a length of rope comprising a body formed by only a single continuous contoured rod, said body having two spaced apart rod sections, each spaced apart rod section being long enough to have several turns of rope therearound, one end of each of the rod sections bending inwardly toward the other rod section, each of said inwardly extending rod sections forming a shoulder, said inwardly extending rod sections bending to extend as substantially parallel rod sections to a point where they bend toward each other and join to form a curved end, said parallel rod sections forming an open neck portion, the two spaced apart rod sections extend from said shoulders and are attached to form a second curved end, said two spaced apart rod sections taper towards each other as they extend from said shoulders, the bend between each inwardly extending rod section forming a shoulder and each parallel rod section forming the neck portion provides for a rope guide and bearing for guiding a length of rope from one spaced apart rod section to the other.

4,343,467

SHORT HITTING BASEBALL BAT

Nelson F. Newcomb, and Nelson F. Newcomb, Jr., both of Mirror Lake, N.H. 03853

Filed Jul. 10, 1980, Ser. No. 168,277
Int. Cl.³ A63B *69/40*
U.S. Cl. 273—26 B **6 Claims**



5. A baseball bat comprising an elongated core element and an outer molded portion surrounding said core element in the shape of a baseball bat,

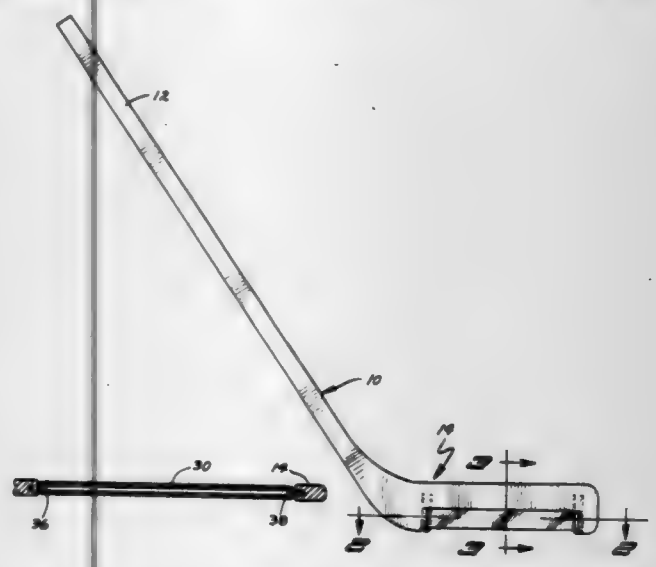
said bat being flexible to an extent that it will bend noticeably as it is waggled back and forth by a batsman.

4,343,468

HOCKEY STICK BLADE STRUCTURE

Wallace I. Lindgren, 4471 Ellerdale Rd., Minnetonka, Minn. 55343

Filed Aug. 18, 1980, Ser. No. 178,878
Int. Cl.³ A63B *59/14*
U.S. Cl. 273—67 A **10 Claims**



1. A hockey stick in which the improvement of the blade structure thereof consists of

a planar blade member,

said blade member having an open bottom open sided recess therein and having a top wall and end walls defining the extent of said recess,

an insert member disposed within said recess and forming the entire wall thereof to the full extent thereof to act as the entire striking member,

said insert member being sufficiently resilient to flex upon engagement with a hockey puck, and

means carried by said blade member removably securing said insert member within said recess.

4,343,469

GOLF GAME PRACTICING APPARATUS

Yoshisuke Kunita; Yoshikatsu Ishida, and Masaharu Kuwabara, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

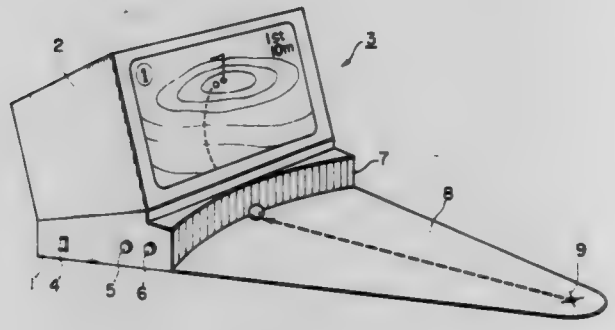
Filed May 6, 1980, Ser. No. 147,296
Claims priority, application Japan, May 7, 1979, 54-55567
Int. Cl.² A63B *69/36; A63F 9/22*
U.S. Cl. 273—185 A **25 Claims**

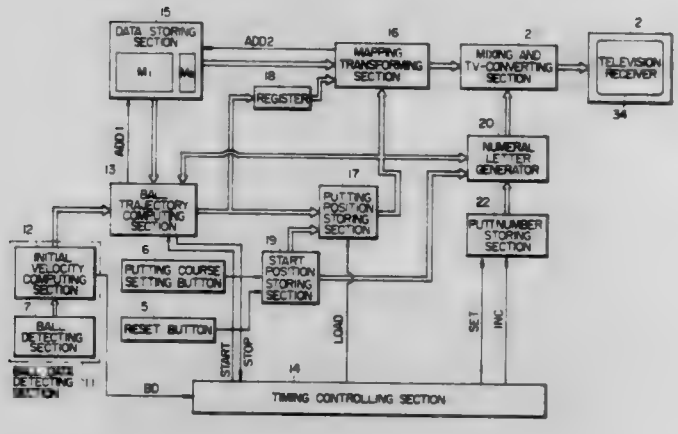
1. A golf game practicing apparatus having a putt mat provided with a putt position, comprising:

information storing section for memorizing information concerning surface condition of a "hole"-containing green;

ball information detecting section for detecting a velocity vector of the ball struck at said putt position;

ball trajectory computing section for computing a trajectory of the ball rolling on said green, based on respective informations from said information storing section and said ball information detecting section;





converting section for converting the information concerning the surface condition of the green memorized in said information storing section to be used in depiction of an image and for converting th ball trajectory computed by said ball trajectory computing section to be used in depiction of an image; and

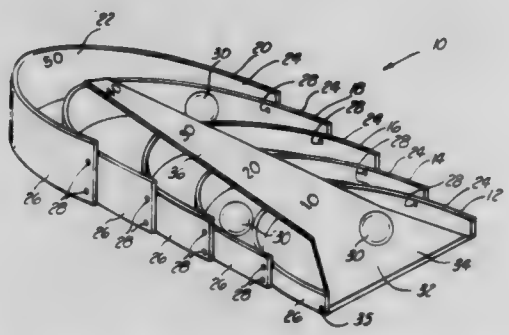
display unit for displaying movements of the ball on the green due to said putting by a signal delivered from said converting section.

4,343,470

BALL ROLLING GAME

Norman J. Grifhorst, 131 N. Hillside, Wichita, Kans. 67208

Filed Feb. 9, 1981, Ser. No. 233,008
Int. Cl.³ A63F *7/00*
U.S. Cl. 273—123 R **4 Claims**



1. A ball rolling game for the enjoyment of one or more players, the game comprising:

a ball;

a plurality of dividers, each of the dividers having side portions and a center portion, the dividers disposed in a vertical position and formed into a semi-circular shape with the ends of the side portions abutting against and attached to the side portions of each of the adjacent dividers, the center portion of each of the dividers disposed in a spaced relationship to the center portion of the adjacent one of the dividers a sufficient distance to receive the ball therebetween; and

an elongated ramp, the ramp having a wedge-shaped launch pad and an elongated neck integrally attached to the launch pad, the launch pad extending the width of the forward most semi-circular divider and attached thereto, the neck of the ramp received on a portion of the top of the center portion of all but the rearwardmost the dividers and centered thereon;

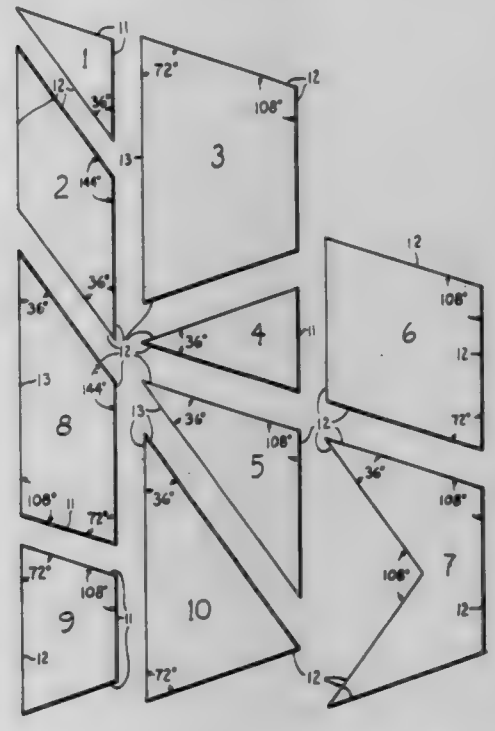
the ball adapted to be rolled onto the launch pad of the ramp and upwardly along the neck of the ramp until the ball falls off the side or the end of the ramp where it is to be received between the center portions of two adjacent ones of the dividers.

4,343,471

PENTAGONAL PUZZLE

Murray B. Calvert, 745 Rowntree Ave., London, Ontario, Canada (N6C 2L9)

Filed Jun. 22, 1981, Ser. No. 275,603
Int. Cl.³ A63F *9/10*
U.S. Cl. 273—157 R **9 Claims**



1. A puzzle comprising three triangular tiles, three quadrilateral tiles, and one pentagonal tile,

wherein said tiles may be assembled on a horizontal surface to form a regular pentagon,

wherein each apical angle of each said tile is a multiple of 36 degrees, and the sides of said tiles occur in three lengths.

4,343,472

GOLF PUTTER WITH ALIGNMENT SYSTEM

Thomas R. Hamilton, 12394 Maple Ave., Goodrich, Mich. 48438

Filed Aug. 29, 1980, Ser. No. 182,829
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—164 **5 Claims**

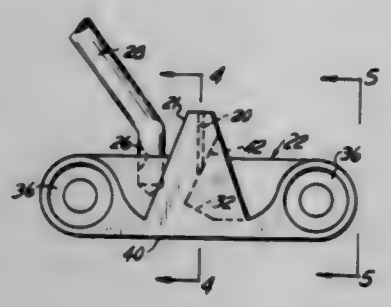
1. A putter head and alignment system, comprising:

a substantially flat striking face and a substantially flat rear surface;

a flat bottom portion and a flat top portion;

a central portion elevated relative to said top portion, said central portion having a front portion substantially flush with said striking face and a rear portion substantially flush with said rear surface, said central portion having at least one vertical sighting opening extending there-

through, said at least one opening lying in a plane at a right angle to the plane of said striking face, said central portion having an angled central cut-out portion thereby



spacing the lower end of said opening from the bottom surface of said central portion, said bottom surface comprising a slanted, planar reflective surface that is angularly oriented with respect to said opening.

4,343,473

GOLF SWING TRAINER

Paul D. Laursen, 1620 Buckingham, Lincoln Park, Mich. 48146

Filed Jul. 11, 1980, Ser. No. 167,704
Int. Cl.[3] A63B *69/36*
U.S. Cl. 273—186 A 6 Claims



1. A golf swing trainer consisting essentially of:
a hand grip;
a shaft formed of a flexible rope, said shaft connected to said hand grip at one end and having an opposed unweighted, free end unravelled for a predetermined distance to present a soft end on said shaft;
means, affixed to the shaft at the predetermined distance, for preventing further unravelling of the free end of the shaft;
the characteristics of the rope being such that the rope will extend to a straight, stiffened form to create the feel of a correctly swung golf club only when the golf swing trainer is swung through the hitting area at a predetermined velocity and timing.

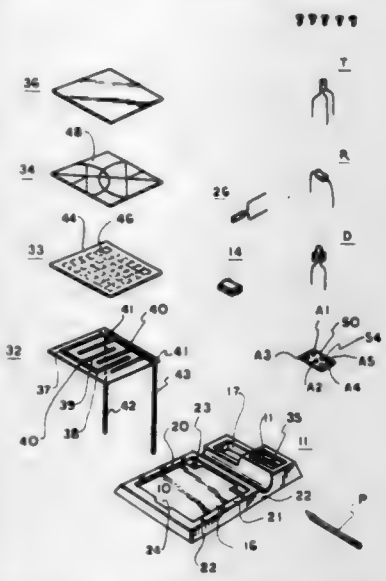
4,343,474

MULTIPLE GAME DEVICE

Steven Caney, P.O. Box 51, Carlisle, Mass. 01741

Filed May 19, 1980, Ser. No. 151,133
Int. Cl.[3] A63F *3/00*; G09B *7/00*
U.S. Cl. 273—237 9 Claims

1. A game device comprising a semi-conductor switch including a controlled output and a resistance responsive control input, a source of voltage, an electrically actuated signal member connected through said switch output across said source of voltage, a contact member including a first insulating panel having a pair of separate conductor members located along a first face thereof and defining a plurality of pairs of opposing, regularly spaced electrically separate contact sections, means connecting said conductor members to said switch input and a program member including a pliable second insulating panel superimposed on said first panel and having a first inside face thereof confronting said first panel, said first face of said second insulating panel having conducting sections bridging and engaging predetermined pairs of said contact sections and normally having relatively high electrical resistance interfaces with said predetermined pairs of contact sections and being responsive to pressure applied to the outside face of said second panel in the area of a conducting section to sufficiently



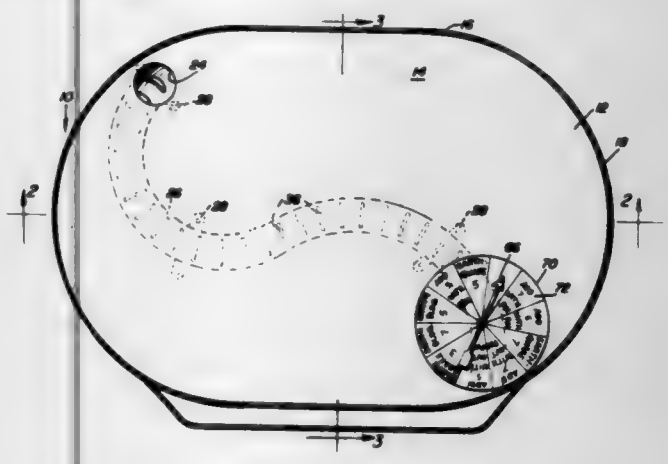
reduce the resistances at said interfaces between said conducting section and said contact sections to actuate said switch and energize said signal member, said conducting sections comprising lead pencil marks occupying corresponding areas of said second panel first face.

4,343,475

EARTHQUAKE GAME DEVICE

Irvin S. Stader, 3783 Alma Dr., Memphis, Tenn. 38127

Filed Feb. 11, 1981, Ser. No. 233,439
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—276 6 Claims

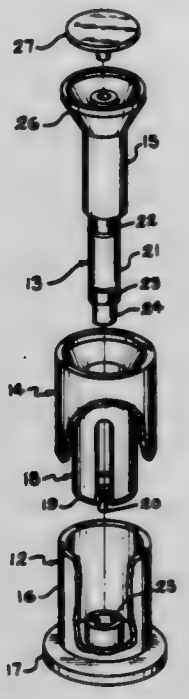


1. A game device comprising a building board forming an enlarged generally planar surface, means supporting the building board in elevated position from a supporting surface, a plurality of building blocks positionable on the upper surface of the building board to construct a block building, and an elongated, downwardly inclined trackway having the upper end connected to the building board and communicating with the upper surface of the building board through an opening and the other end oriented at a lower elevation in communication with a storage tray, at least one heavy ball rollable down the trackway by dropping it through the opening into the upper end thereof, and projections on the interior of the trackway engageable by the ball to produce noises and vibrations as the ball rolls down the trackway, simulative of earthquake conditions for producing noise and vibration of the building board to determine if the arrangement of building blocks on the building board will withstand the vibrations simulative of an earthquake.

4,343,476
PLAYING PIECE FOR A BOARD GAME

Robert W. Engel, 2745 Provincetowne, Toledo, Ohio 43613, and John R. Grube, 878 Maple La., Waterville, Ohio 43566

Filed Jun. 30, 1980, Ser. No. 163,941
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—289 7 Claims

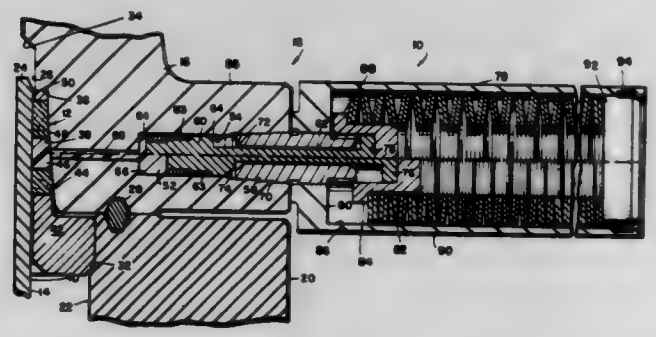


1. A playing piece for a board game, said piece comprising: a cup-shaped base adapted to be self-supporting on a horizontal surface and having an open top, a stem connected within and centrally in said base, said stem having an upper head portion protruding upwardly above the open top of said cup-shaped base, and a generally tubular jacket having one end receiving said body and being axially movable between an upper position wherein said head portion of said stem closes one end of said jacket and a lower position exposing the head portion of said stem above said jacket.

4,343,477
SEALING DEVICE WITH THERMAL EXPANSION PRESSURE ACCUMULATOR

Charles D. Bridges, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 4, 1981, Ser. No. 231,305
Int. Cl.[3] F16J *15/40, 15/46*
U.S. Cl. 277—73 6 Claims



1. For adequately but not excessively pressurizing an annulus of fluid viscous plastic sealant material that is received, confined and held compressed in an annular pocket coaxially between the outer periphery of a surrounded, inner metal part and the inner periphery of a surrounding, outer metal part,

a thermal expansion pressure accumulator comprising:

housing means providing a cylinder;

a piston sealingly slidingly received in the cylinder to provide a sealant reservoir chamber within the cylinder between one end of the piston and one end of the cylinder;

means providing a fluid passage for communicating the sealant reservoir chamber with the annulus of fluid viscous plastic sealant material;

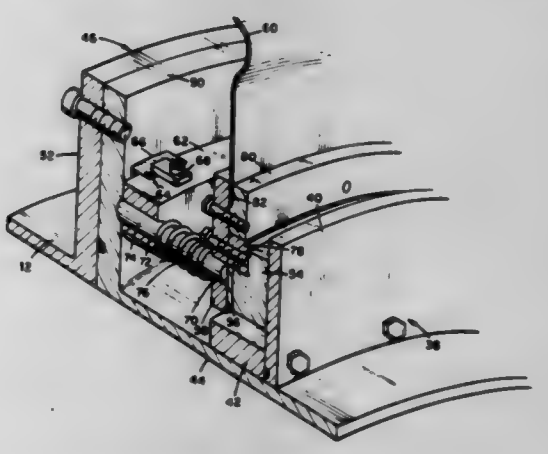
said reservoir chamber and fluid passage being adapted to be filled with fluid viscous plastic sealant material in communication with said annulus;

and compressible variable force means in operative contact with the opposite end of said piston so that, in use, as the pressure on said sealant tends to build up, said piston tends to retract in said cylinder and to correspondingly compress said compressible variable force means, and as the pressure on said sealant tends to fall, said compressible variable force means tends to extend said piston in said cylinder to apply more pressure to said sealant.

4,343,478
FACE SEAL ASSEMBLY FOR ROTATING DRUM

J. Giles Morgan; Mark J. Rennich, both of Knoxville, and Marvin E. Whatley, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 13, 1981, Ser. No. 243,395
Int. Cl.[3] F16J *15/36*
U.S. Cl. 277—90 11 Claims



1. An assembly comprising:

rotatable means having first and second surfaces projecting radially from and extending circumferentially of the axis of rotation thereof, said surfaces being spaced apart longitudinally of said axis;

a first ring one side of which abuts said first surface of said rotatable means;

a second ring abutting the other side of said first ring;

a flexible wall having an aperture therein, the portion of said wall adjacent said aperture being attached to said second ring and said wall projecting radially away from the axis of rotation of said rotatable means;

a third ring disposed between said second ring and said second surface of said rotatable means; and

means disposed between said second and third rings for urging them apart.

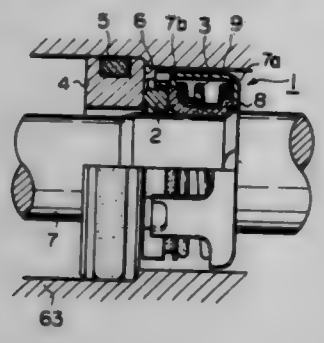
4,343,479
MECHANICAL SEALS

Tatsuhiko Fukuoka, Aichi, and Akira Takenaka, Nagoya, both of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Filed Nov. 12, 1980, Ser. No. 205,955
Claims priority, application Japan, Nov. 13, 1979, 54/145990
Int. Cl.[3] F16J *15/34*
U.S. Cl. 277—96.2 2 Claims

1. A mechanical seal for a swash-plate type compressor of an air-conditioner for an automobile, comprising a carbon-graphite sealing ring which rotates together with a rotating shaft, a stationary mating ring of hardened bearing steel which has a

lapped surface coming into contact with said sealing ring, the hardness of said lapped surface being in the range of H_v 500 to



H_v 900, and means for pressing said sealing ring against said stationary mating ring.

4,343,480

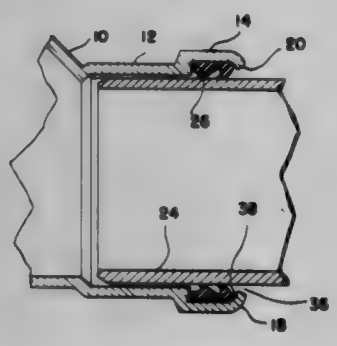
PIPE BELL AND GASKET

Efrain D. Vassallo, La Rambla G-558, Ponce, P.R. 00731

Filed Jun. 23, 1980, Ser. No. 162,377

Int. Cl.[3] F16J *15/32*

U.S. Cl. 277—207 A 17 Claims



1. A pipe bell in the cylindrical body of a pipe or fitting, the pipe or fitting having a longitudinal axis comprising

an enlarged, generally cylindrical, one piece hub formed in the forward end of the said body, the hub having a cylindrical section of a first diameter suitable to overfit an end of an adjacent length of pipe,

the hub including an integral, radially inward open, internal groove of a second diameter, the second diameter being greater than the first diameter,

the internal groove being defined forwardly by an integral, radially inward bent retainer,

the internal groove being defined rearwardly by an integral, circular, angular corner,

the bent retainer and the hub being of unitary construction.

4,343,481

COMPOSITE TANK FOR TRANSPORTING LIQUID

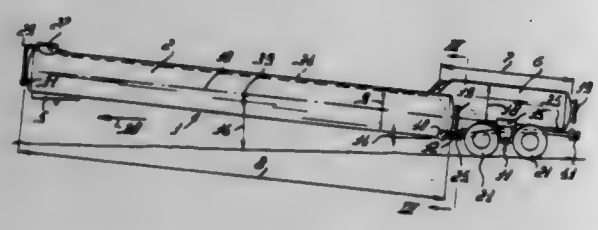
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed May 5, 1980, Ser. No. 147,067

Claims priority, application Netherlands, May 14, 1979, 7903760

Int. Cl.[3] B60P *3/24*

U.S. Cl. 280—5 C 13 Claims



1. A composite tank for transporting liquid material comprising one set of wheels, first and second tanks extending in the direction of travel from proximate said set of wheels, said first and second tanks located at a lower level than the upper aspect of a third tank in the vicinity of said set of wheels, said third tank being arranged on said set of wheels; said set of wheels being arranged substantially beneath, the middle of the length of said third tank.

4,343,482

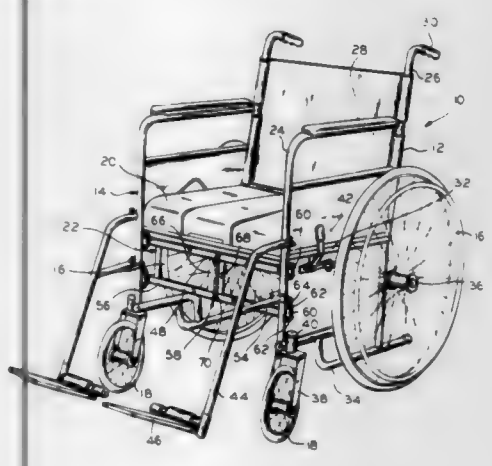
WHEELCHAIR

Dieter F. Wegner, P.O. Box 222, Menomonee Falls, Wis. 53051

Filed Mar. 4, 1980, Ser. No. 127,100

Int. Cl.[3] B62B *11/00*

U.S. Cl. 280—42 3 Claims



1. A wheelchair having a pair of opposed side frames each including portions which define front and rear ends thereof,

a seat removably mounted on the side frames,

wheel means rotatably mounted on each of said side frames,

first brace means pivotally mounted at each of its opposite ends to the front ends of said side frames and being collapsible intermediate its ends,

second brace means pivotally connected at its opposite ends to the rear ends of said side frames and also collapsible intermediate its ends,

third brace means pivotally connected at its opposite ends to the rear ends of said side frames and being collapsible intermediate its ends, said third brace means being disposed at an elevation of at least equal to that of said seat means,

said first and second brace means being pivotally mounted to the side frames for collapsing movement in a generally horizontal direction and the third brace means being collapsible in a direction generally perpendicular to the direction in which said first and second brace means collapses whereby said braces, when uncollapsed, support said side frames in a spaced apart when said seat has been removed,

said first and second brace means lying respectively along the front and rear margins of said wheelchair when extended,

said seat including a relatively rigid frame having lateral sides each of which includes means for being releasably mounted on one of said side frames,

the width of said seat means being substantially equal to the distance between said side frames when said brace means are fully extended,

said seat preventing the collapse of said first second and third brace means when mounted on said side frames,

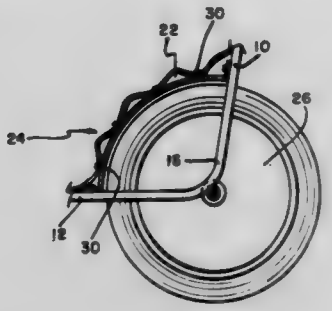
said seat means also having a central portion which is removably mounted on said seat frame to provide a central opening through said seat without affecting the rigidity of the seat frame,

said second brace means being disposed at an elevation at least equal to that of the lower edge of said seat means, the area below said seat means being otherwise unobstructed to permit said wheelchair to be backed over a toilet bowl.

4,343,483
WOOD TOTER

Leonard C. Base, Rte. #3, Kingman, Kans. 67068

Filed May 19, 1980, Ser. No. 151,174
Int. Cl.[3] B62B *1/02*
U.S. Cl. 280—47.26 3 Claims

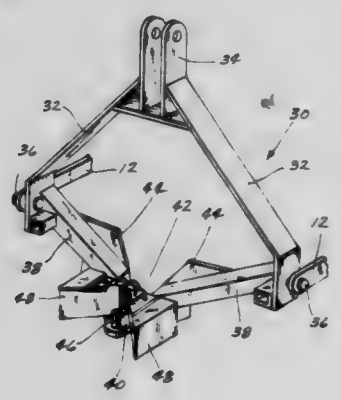


1. A wheeled carrier for hauling logs or the like comprising:
a frame defined by a continuous generally rectangular rod member configured into a substantially U-shape having a bottom and a pair of sides, one of said sides extending higher than the other with respect to said bottom, said higher side providing a handle gripped by a user so that a number of logs can be transported easily in said carrier;
a panel connecting to and essentially traversing the entire length of said frame while contouring the same;
a pair of wheels supported by sold frame and rotatably carried thereby,
said panel having a vertical section defining an arc which partially shelters said wheels, and a shield member between said arc and said rod frame and attached thereto to additionally partially shelter said wheels and to strengthen the construction of said carrier.

4,343,484
POWER HITCH

Ferne R. Van Antwerp, R.R. 1, Unionville, Iowa 52594

Filed Apr. 15, 1980, Ser. No. 140,668
Int. Cl.[3] B62D *1/04*
U.S. Cl. 280—479 A 2 Claims

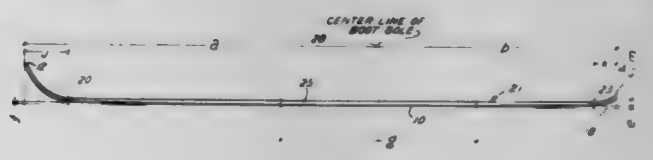


1. A power hitch for connecting a trailing implement draft tongue to the drawbar of a draft vehicle, said power hitch comprising:
a frame attached to said draft vehicle;
an upwardly extending hitch pin mounted on said frame;
two guide blocks attached to said frame and disposed adjacent to and at the lateral sides of said hitch pin, whereby said guide blocks contact the free end of said implement draft tongue and guide it to a position above said hitch pin;
an intermediate slot disposed immediately forward of said hitch pin;
means for rotating said guide blocks in the direction of said hitch pin, said guide block rotation means including means for biasing said guide blocks in a first position;
means for preventing rotation of said guide blocks in one direction including a clutch plate attached to said frame and a mating clutch sleeve connected to said guide block and biased in contacting relationship with said clutch plate;
means for moving said frame between a first lowered position, wherein said hitch pin will initially engage the free end of said implement draft tongue; and a second raised position wherein said hitch pin couples the trailing implement to the draft vehicle.

4,343,485
REVERSE CAMBER SKI

Norman H. Johnston, and David A. Johnston, both of Valparaiso, Ind., assignors to Ski World, Inc., Indianapolis, Ind.

Continuation of Ser. No. 18,800, Mar. 8, 1979, abandoned. This application Dec. 4, 1980, Ser. No. 213,012
Int. Cl.[3] A63C *5/00*
U.S. Cl. 280—609 6 Claims

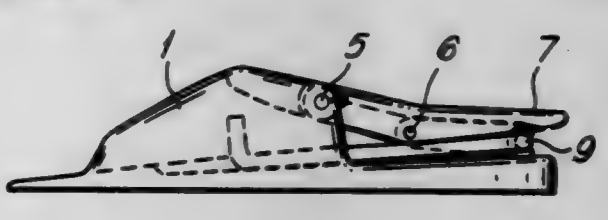


1. An improved snow ski especially useful for instruction and for use by beginning skiers to make conventional turns and for parallel skiing, said ski comprising, in combination:
an elongate ski member at least 120 cm. long having a tip, a bottom surface, a rear end, a binding section for receipt of a boot sole, sides, and means for improved stability in turns and in parallel skiing;
said means for improved stability including said bottom surface having a curved, smooth surfaced, reverse camber configuration extending from adjacent the tip to adjacent the rear end, said bottom surface substantially continuous, uninterrupted, substantially flat and planar in the transverse direction and defining a compound curve in the longitudinal direction with the bottom surface between the tip and a middle waist portion and the bottom surface between the rear end and the middle waist portion of the ski both elevated above the middle waist portion when the ski is in a horizontal plane to define a reverse camber, the sides having a side camber configuration with a waist substantially coincident with the middle waist portion intermediate the tip and rear end; the opposite sides being spaced a greater distance near the tip and rear end than at the waist; the ratio of maximum ski width to maximum ski length being less than 0.075 and decreasing toward the waist; the binding section having a center substantially coincident with the waist and middle waist portion; and the ratio of the length of the ski forward of the waist to the length of the ski rearward of the waist in the range of 1.25 to 2.00.

4,343,486
SKI BINDING

Sven I. Dysthe, Gamle Rykkinn vei 38, N-1349 Rykkinn, Norway

Filed Jun. 17, 1980, Ser. No. 135,658
Int. Cl.[3] A63C *9/00*
U.S. Cl. 280—615 5 Claims



1. A ski binding which comprises
a keeper element which includes a base portion and a bridge

portion, said base portion including two spaced-apart grooves therein extending below said bridge portion, and

a clamping mechanism for pulling and retaining a ski boot within said bridge portion of said keeper element, said clamping mechanism including

a generally U-shaped fixing strap which has two legs, a transverse portion connecting corresponding ends of said two legs, the opposite corresponding ends of said two legs having upwardly extending end portions intended to fit within said grooves in said keeper element base portion, and

a tensioning device for moving said U-shaped fixing strap such that it will slide in said grooves from a position wherein the upwardly extending end portions thereof are outside said bridge portion of said keeper element to a position wherein the upwardly extending ends thereof are within said bridge portion of said keeper element, said tensioning device including a tension arm rotatably connected to the bridge portion of said keeper element and an intermediate piece, the first end of the intermediate piece being rotatably connected to said tension arm at about halfway along the length of the tension arm to form a hinge joint and the second end of the intermediate piece being C-shaped and rotatably snap fitted onto said transverse portion of said U-shaped fixing strap, said tension arm and said intermediate piece being operable such that when said tension arm is rotated towards said base portion of said keeper element, said hinge joint will move downwardly to a dead point.

4,343,487

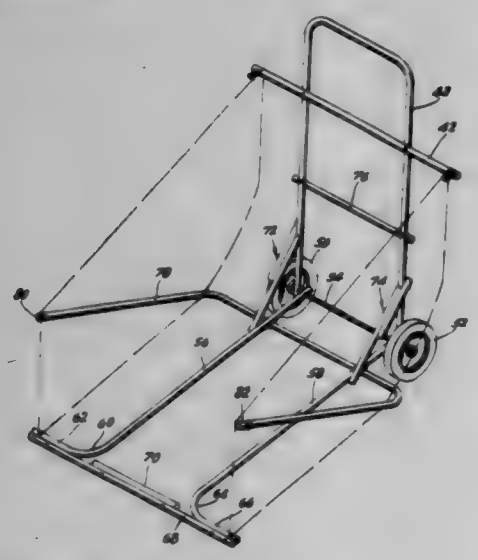
FOLDING CART

William R. Crothers, 424 W. Springfield Rd., Springfield, Pa. 19064

Division of Ser. No. 939,398, Sep. 5, 1978, Pat. No. 4,222,585. This application Jun. 2, 1980, Ser. No. 155,391

Int. Cl.³ B62B *11/00*

U.S. Cl. 280—654 **3 Claims**



1. A folding cart comprising:

a foldable scoop-shaped body, said body having an open front, a bottom wall, a rear wall, and side walls extending upwardly from the bottom wall;

a pair of wheels rotatable on an axis located adjacent the intersection of said rear wall and said bottom wall;

frame means comprising a first substantially rigid frame member extending from the front edge of said bottom wall thereof to said axis, and a second substantially rigid frame member extending from said axis at least to the upper edge of said rear wall, said first and second frame members being pivotally connected together substantially at the location of said axis, whereby the upper edge of said rear wall can be brought into close proximity to the front edge of said bottom wall; and

collapsible brace means connecting said first and second frame members, said collapsible brace means comprising a first element pivotally secured at one end to said first frame member and rotatable about an axis substantially parallel to the wheel axis and a second element pivotally secured at one end to said second frame member and rotatable about an axis substantially parallel to said wheel axis, said first and second elements being hinged together at an intermediate location between said frame members, and one of said first and second elements extending beyond the location at which said elements are hinged together and being adapted to contact, with its opposite end, the frame member to which the other of said first and second elements is pivoted, the length of said one of said first and second elements being such that said opposite end contacts the last-mentioned frame member only when said elements are moved slightly beyond their parallel condition in the unfolding direction.

4,343,488

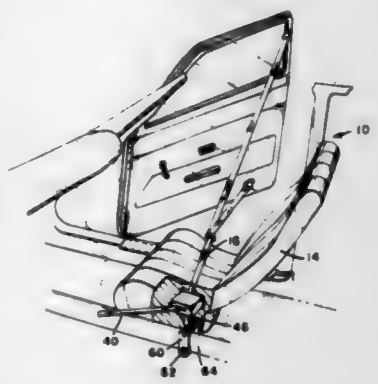
SEAT BELT SYSTEM WITH REDUCED SPOOLING

Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 5, 1979, Ser. No. 91,641

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **19 Claims**



1. A seat belt restraint system for installation in a vehicle, said system comprising:

seat belt retractor means adapted for mounting in said vehicle;

seat belt webbing stored in a roll on said retractor means and adapted to be extracted from and rewound onto said retractor means;

load transfer means for transferring forces acting on said retractor means to a load-bearing part of said vehicle;

locking means actuable to lock said retractor means in response to an emergency condition of said vehicle; and

clamp means connected to said load transfer means and adapted for contact with said roll of webbing on said retractor means upon relative motion between said clamping means and said retractor means following actuation of said locking means, whereby extraction of said webbing from said retractor means is prevented and said forces acting on said retractor means are transferred to said structural part of said vehicle.

4,343,489

SEATBELT SYSTEM

Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 15, 1980, Ser. No. 150,133

Claims priority, application Japan, May 21, 1979, 54-68753[U]

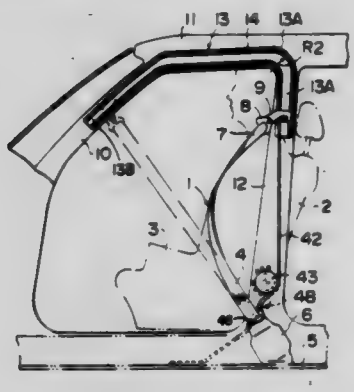
Int. Cl.³ B60R *21/02*

U.S. Cl. 280—804 **9 Claims**

1. A seatbelt system, wherein an end of an occupant restraining webbing is connected to a slider and said slider travels along a guide rail laid on a vehicle body so as to cause the

webbing to approach or recede from the body of an occupant, being of such an arrangement that:

said seatbelt system comprises a head, a body suspended from a central portion in cross-section of the head and inserted through a driving tape; and a leg extended from the lower end of the body secured with an anchor plate, to which the webbing is connected; and



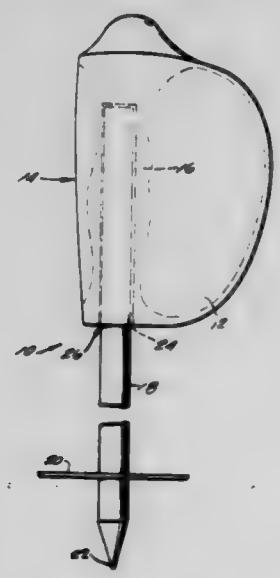
said guide rail comprises a substantially letter 'T' shaped sliding groove including a head groove portion for slidably guiding the head of slider and a body groove portion for slidably guiding the body of slider and a tape groove perpendicularly intersecting the body groove portion of the sliding groove for receiving and guiding said driving tape.

4,343,490

SAFETY SKI POLE GRIP

Jerome E. Adamson, 400 W. Brambleton Ave., Suite 300, Norfolk, Va. 23510

Filed Oct. 17, 1980, Ser. No. 198,067
Int. Cl.³ A63C *11/22*
U.S. Cl. 280—821 **9 Claims**



1. A ski pole hand shield comprising:

an enclosure member of rigid, non-deformable, highly impact-resistant material, and having means defining an access opening thereto, and dimensioned to enclose a skier's hand so as to protect the hand from injury; and

a hand grip integrally formed with said enclosure member and disposed within said enclosure member, said hand grip mounted adjacent said access opening for easy access through said access opening;

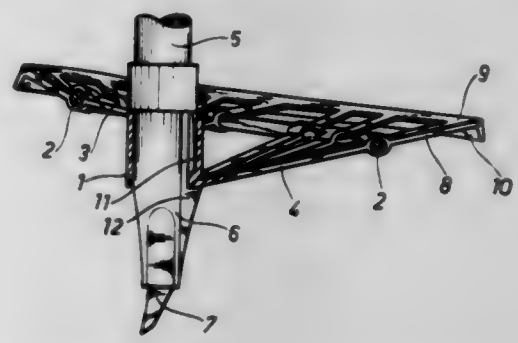
said hand grip having means defining a central bore therein and an opening in said enclosure member aligned with the central bore of said hand grip so that an end of a ski pole may be inserted through said aligned openings into said central bore and held by said hand grip.

4,343,491

SNOW DISK FOR A SKI STICK

Yrjö Aho, Helsinki, Finland, assignor to Exel Oy, Finland

Filed Mar. 3, 1980, Ser. No. 126,647
Claims priority, application Finland, Feb. 16, 1979, 790526
Int. Cl.³ A63C *11/02*
U.S. Cl. 280—824 **4 Claims**



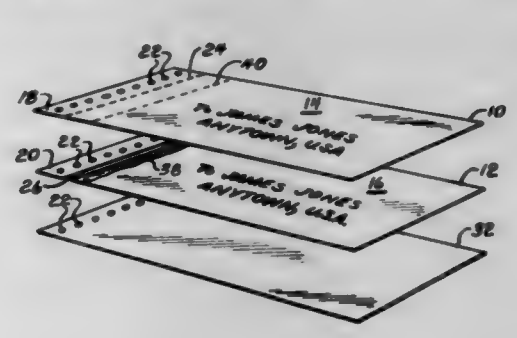
1. A snow disk for a ski stick, comprising a socket-shaped portion (1) for mounting on a ski stick (5, 6), said socket portion (1) having an upper edge and a lower edge, and a stiff annular rim (2) having a leading portion and a trailing portion and secured to the socket portion (1) by means of radially extending first and second, flexible support ribs (3, 4) which yield so that the annular rim (2) can pivot relative to the socket portion (1), characterized in that said first support ribs (3) are secured generally to the leading portion of said rim (2) and the upper edge of the socket portion (1) and said second support ribs (4) are secured generally to the trailing portion of said rim (2) and the lower edge of the socket portion (1), said first support ribs (3) being shorter than said second support ribs (4), said socket portion (1) and the support ribs (3, 4) together being generally Z-shaped in side view.

4,343,492

MULTIPLE PLY ADHESIVE BUSINESS FORM

Gary W. Fitzgibbons, Prairie View, Ill., assignor to UARCO Incorporated, Barrington, Ill.

Continuation of Ser. No. 131,250, Mar. 17, 1980, abandoned. This application Aug. 28, 1981, Ser. No. 297,438
Int. Cl.³ B41L *1/24*; B65D *27/00*
U.S. Cl. 282—11.5 R **4 Claims**



1. A business form comprising:

first and second superimposed plies of paper each including information receiving portions;

image transfer means at the interface of said first and second plies;

pressure sensitive adhesive on the face of one of said plies opposite said image transfer means;

a release liner releasably adhered to said pressure sensitive adhesive and removable therefrom to expose the pressure sensitive adhesive so that said one ply may be adhered to another object;

a slit extending through said one ply, but not through said release liner, severing the same into a gripping portion in addition to the associated information receiving portion; and

means securing the other ply to said one ply information

receiving portion in close adjacency to said slit, said securing means having greater strength than the adhesion between said release liner and said pressure sensitive adhesive;

whereby said release liner may be removed from said one ply information receiving portion by separately grasping said gripping portion and said other ply and separating the same.

4,343,493

DUPLICATING AND MARKING SYSTEMS

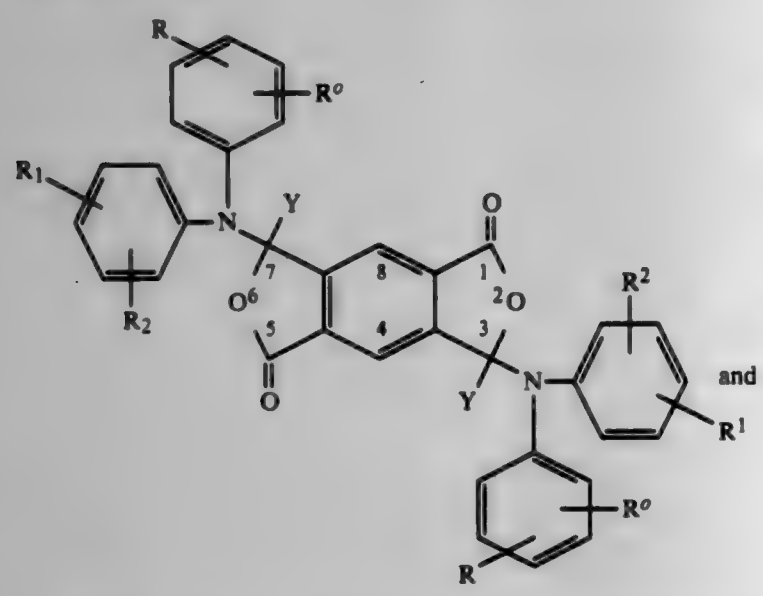
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,717

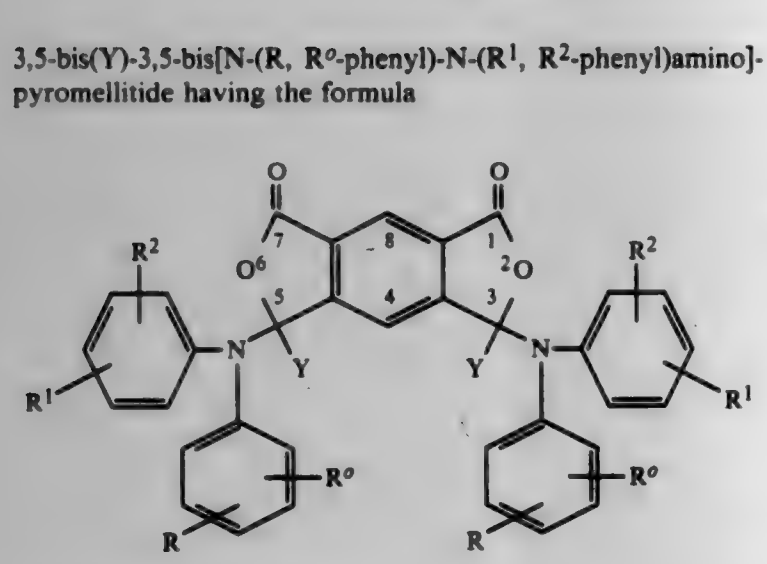
Int. Cl.³ B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **5 Claims**

1. A pressure-sensitive carbonless duplicating system or thermal marking system comprising a support sheet coated with a layer containing as a colorforming substance a compound selected from the group consisting of 3,7-bis(Y)-3,7-bis[N-(R, R^o-phenyl)-N-(R^1, R^2-phenyl)amino]pyromellitide having the formula



and

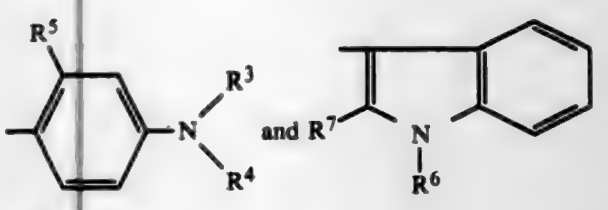


3,5-bis(Y)-3,5-bis[N-(R, R^o-phenyl)-N-(R^1, R^2-phenyl)amino]-pyromellitide having the formula

and mixtures thereof wherein:

R, R^o, R^1 and R^2 are the same or different and are selected from the group consisting of hydrogen, halo, hydroxyl, non-tertiary C_1 to C_4 alkoxy, non-tertiary C_1 to C_9 alkyl, COOZ and NZ^1Z^2 where Z and Z^1 are hydrogen or non-tertiary C_1 to C_4 alkyl and Z^2 is hydrogen, non-tertiary C_1 to C_4 alkyl, C_5 to C_7 cycloalkyl, C_1 to C_4 alkanoyl, phenylsulfonyl or phenylsulfonyl substituted by non-tertiary C_1 to C_4 alkyl;

Y is a radical selected from the group consisting of



in which

R^3 and R^4 are the same or different and are selected from the group consisting of non-tertiary C_1 to C_4 alkyl, benzyl, and benzyl substituted by one or two of halo, C_1 to C_4 alkyl, C_1 to C_4 alkoxy or nitro;

R^5 is selected from the group consisting of hydrogen, non-tertiary C_1 to C_4 alkyl, halo and non-tertiary C_1 to C_4 alkoxy;

R^6 is selected from the group consisting of hydrogen and non-tertiary C_1 to C_{12} alkyl; and

R^7 is selected from the group consisting of hydrogen, non-tertiary C_1 to C_4 alkyl and phenyl.

4,343,494

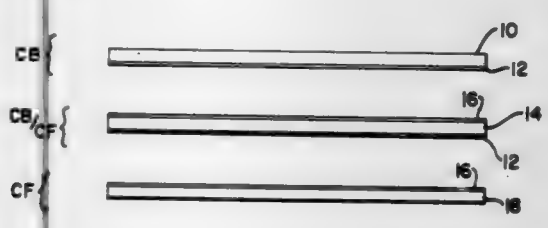
CARBONLESS COPY PAPER SYSTEM

Gerry H. Ehrhardt, W. Des Moines, and Gene D. Carlson, Ankeny, both of Iowa, assignors to Frye Copysystems, Inc., Des Moines, Iowa

Continuation-in-part of Ser. No. 159,587, Jun. 16, 1980, and Ser. No. 160,724, Jun. 18, 1980, said Ser. No. 160,724, is a continuation-in-part of Ser. No. 34,030, Apr. 27, 1979, abandoned, and Ser. No. 34,130, Apr. 27, 1979, abandoned, and Ser. No. 34,131, Apr. 27, 1979, abandoned. This application Nov. 21, 1980, Ser. No. 208,826

Int. Cl.³ B41M *5/16, 5/22*

U.S. Cl. 282—27.5 **15 Claims**



1. A pressure sensitive chemical type transfer medium comprising:

planar sheet material having an at least partially transferable coating layer disposed on one surface thereof constituted by the solidified residue of an applied hot melt low oil content wax base emulsified liquid film including a chemically modified wax-like material having flow agent, dispersant and emulsifying properties and having discrete liquid droplets of a concentrated water base solution of ionized zinc chloride and an acidic halogen neutralizing agent dispersed therein and

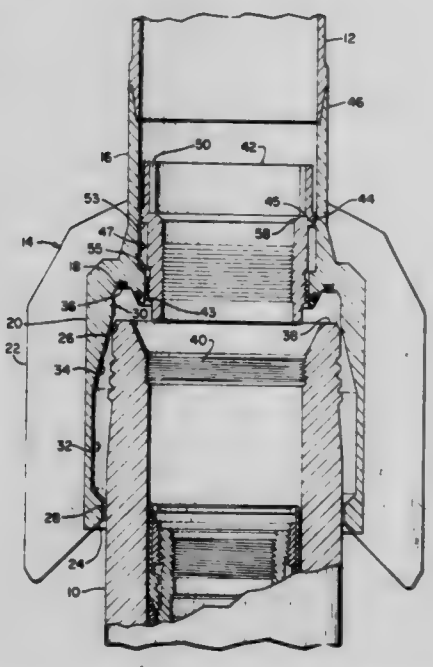
a non-transferable image producing receptor layer dispoed on the other surface thereof;

said image receptor layer comprising the solid residue of an applied alkaline biased liquid intermixture of an evaporable non-polar liquid hydrocarbon solvent vehicle, a non-acidic resinous binder, opacifier-filler material and a chromogenic reagent selected from the group consisting of tri (p-phenylamino) phenyl methanol and biphenyl triamino triphenyl methanol dispersed therewithin and being selectively convertable into a color producing condition upon interreaction with said zinc chloride chromogenic reagent material.

4,343,495
CONDUCTOR TIEBACK CONNECTOR

Philippe C. Nobileau, London, England, and Darrell L. Jones, Ventura, Calif., assignors to Vetco Offshore, Inc., Ventura, Calif.

Filed Feb. 11, 1980, Ser. No. 120,200
Int. Cl.[3] F16L *55/00*
U.S. Cl. 285—23 4 Claims



1. A conductor tieback connector for connecting a conductor to an internally threaded subsea wellhead comprising; a tubular body, sealably and rigidly connectable to the conductor; a downwardly extending funnel means for aligning the connector, rigidly connected to said tubular body, and having a first internal bearing surface remote from said tubular body and forming a diameter only slightly greater than the outside diameter of the wellhead, and a second internal bearing surface adjacent said tubular body forming a diameter only slightly greater than the outside diameter of said wellhead, said second surface vertically spaced from said first surface; abutting surfaces on the wellhead and said tubular body for abutting when said connector is fully engaged within the wellhead; lockdown means comprising, an externally threaded floating bushing located within said tubular body, a shoulder internal of said tubular body and having shoulder means thereon and engaging said shoulder means on said floating bushing for preventing downward movement of the bushing relative to said body, said bushing adapted to engage the internal threads of said wellhead and means for interlocking said bushing with a rotating tool, whereby rotation of said bushing locks said tubular body downwardly against said wellhead.

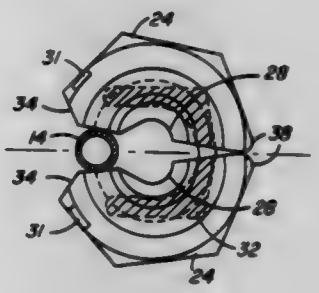
4,343,496
SPLIT GLAND

Joseph J. Petranto, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 31, 1980, Ser. No. 174,284
Int. Cl.[3] F16L *35/00*
U.S. Cl. 285—39 11 Claims

1. A split gland comprising:

a pair of separate unconnected essentially mirror image half glands, said pair fittable together about a mutual axis of rotation, each of said half glands comprising a threaded portion, a shoulder, a wrench engaging head portion a slot, and a concave inner surface along said mutual axis of rotation, said half glands being held together by a spring clip having a circumferential extent greater than 180 degrees disposed about said shoulders and being maintained essentially fixedly juxtaposed to one another with substantial thread alignment by a retainer fitted into said slot in each of said half glands wherein said spring clip allows said half glands to be spread sufficiently to allow said gland to be slipped laterally over tubing and wherein each said concave inner surface is defined by a wall portion and together engage the tubing and define a teardrop shape

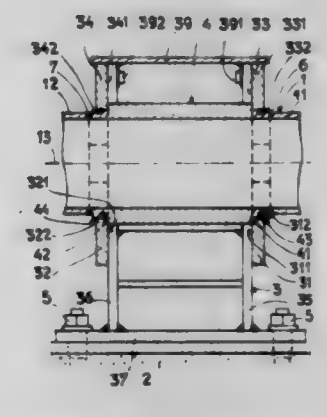


with the narrow portion being located at the area which passes laterally over the tubing so that upon removal of said gland from the tubing said teardrop shape inner surface promotes spreading of the gland.

4,343,497
FIXED POINT DEVICE BETWEEN PIPEWORK AND A SUPPORT

Jean-Yves Bot, Fontenay Sous Bois, France, assignor to Framatome, Courbevoie, France

Filed Jul. 24, 1980, Ser. No. 172,848
Claims priority, application France, Jul. 25, 1979, 79-19169
Int. Cl.[3] F16L *3/10*
U.S. Cl. 285—61 6 Claims



1. Means for establishing a fixed point connection between piping and a supporting structure capable of absorbing axial, flexional and torsional forces applied to said piping, said means comprising a support structure comprising

(a) a sleeve mounted coaxially between two sections of said piping and welded to said sections, said sleeve having two plane and opposite bearing surfaces perpendicular to the axis of said piping, said support structure having corresponding opposite plane bearing surfaces in abutment with said hearing surfaces of said sleeve said bearing surfaces of support structure also being perpendicular to the axis of said piping;

(b) said sleeve further having at least two prismatic bearing surfaces each formed by at least two plane faces parallel with the axis of said piping; and

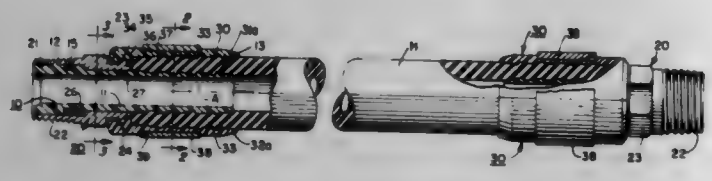
(c) said support structure comprising at least two prismatic seats each formed by plane faces parallel with the axis of said piping and equal in number to and closely surrounding said plane faces on said prismatic bearing surface;

(d) whereby, upon engagement of said prismatic bearing surfaces against said prismatic seats, rotation of said piping relative to said support structure is effectively prevented and said abutting bearing surfaces effectively preventing axial movement of said piping relative to said support structure.

4,343,498
SWIVEL HOSE COUPLING

Sergio Campanini, 224 E. Miller Rd., Iola, Kans. 66749

Filed Oct. 6, 1980, Ser. No. 193,993
Int. Cl.[3] F16L *33/22*
U.S. Cl. 285—174 7 Claims



1. A swivel coupling for terminating the end of a resilient hose having a bore therethrough, the coupling comprising:

(a) a tubular nipple having a central opening therethrough and having an outer surface including a cylindrical portion near one end stepping down in diameter at a shoulder to an annularly barbed portion adjacent to the other end, the barbed portion being tightly receivable in the hose bore;

(b) a screw fitting having a passage therethrough with a cylindrical wall portion snuggly receiving the cylindrical portion of the nipple, the fitting having a threaded portion facing away from the hose with wrench flats thereadjacent and the passage stepping down at a shoulder to a diameter sized to just pass said barbed portion of the nipple, said shoulders abutting each other when the coupling is assembled, and the fitting having an annular outwardly-extending abutment therearound adjacent to the hose;

(c) resilient fluid seal means operative between said cylindrical portions;

(d) an annular collar divided longitudinally into multiple shell portions, the collar when its shell are assembled having an internal surface having annular ribs therearound sized to receive the hose and clamp it tightly onto the barbed portion of the nipple, and the collar having near its end adjacent to the screw fitting an internal annular retaining groove shaped to overlie and rotatably engage the annular abutment of the screw fitting, and the collar having around its outer surface an external groove located about midway between the ends of the collar and having a substantially cylindrical surface; and

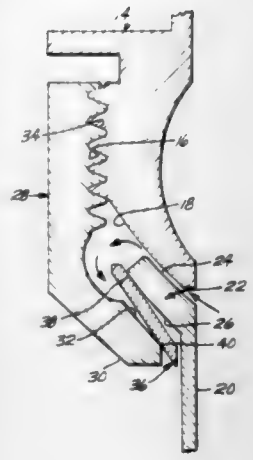
(e) means for retaining the shell portions assembled and tightly clamped on the hose comprising a band having a cylindrical inner surface fitting in the external groove.

4,343,499
BALL JOINT FLEXIBLE WEAR RING AND SEAL

William L. Dumar, Jr., Bellevue, and Jimmie E. Ledlow, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 16, 1980, Ser. No. 160,035
Int. Cl.[3] F16L *27/06*
U.S. Cl. 285—263 3 Claims

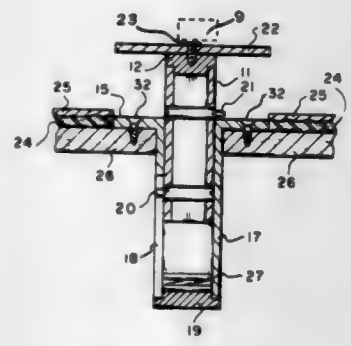
1. A sealed spherical coupling joint for ducting comprising: a retainer joined to one section of ducting and having a spherical outer surface; a flange joined to a second section of ducting with the flange having a spherical inner surface to match the retainer outer surface and a spherical outer surface; a retainer nut for joining the flange to the retainer with the nut having an extension with an inner spherical surface to match the outer surface on the flange; and a frustoconical shaped wear ring located between the flange and the nut and angled outward to provide a pair of spaced apart line of contact seals with one line of contact of the wear ring adjacent the inner minimum diameter of the nut extension and the other line of contact of the wear ring adjacent the outer maximum diameter of the flange.



4,343,500
FLOOR IMBEDDED DOOR BOLT

John W. Steiner, Millville, N.J., assignor to Thunderbolt Corporation, Millville, N.J.

Filed May 21, 1980, Ser. No. 151,900
Int. Cl.[3] E05C *1/10*
U.S. Cl. 292—175 8 Claims



1. A security door stop bolt for mounting in a carpet covered floor area located inside a door swinging to the inside of the structure to be protected, the bolt being out of the reach of anyone attempting entrance through the door comprising:

(a) a housing comprising a first attachment means to secure the housing to a floor and a tube depending therefrom imbedded in the floor,

(b) a door stop with a top slidably fitting in the tube below the upper surface of the floor,

(c) a lifting means to manually grasp the door stop and lift it to a height above the floor surface to prevent the door from being pushed open into the inside area,

(d) a retractable stop post means to hold the door stop at the upraised height, and

(e) a second attachment means to secure on top of the door stop, a cut out of carpet of the same shape as the top of the door stop housing.

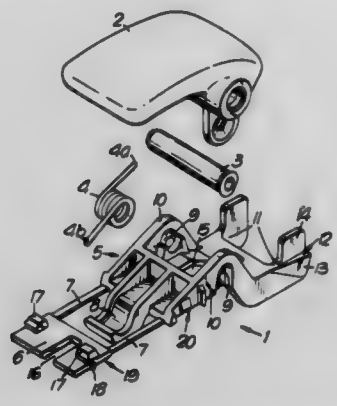
4,343,501
DOOR HANDLE ASSEMBLY

Alan M. G. Meeks, Basingstoke, England, assignor to ITW Limited, Windsor, England

Filed Mar. 3, 1980, Ser. No. 126,777
Claims priority, application United Kingdom, Mar. 1, 1979, 7907231
Int. Cl.[3] E05C *3/00, 5/00, 19/14*
U.S. Cl. 292—336.3 11 Claims

1. An adjustable mounting for assembly to a panel, compris-

ing a main part and a foot, the foot being a substantially planar component and having on one face means to snap-engage in an aperture in the panel in order to secure the foot on one side of the panel, and on its other face a series of teeth, and the main part including abutment surfaces to engage the side of the panel remote from the foot, the abutment surfaces being so



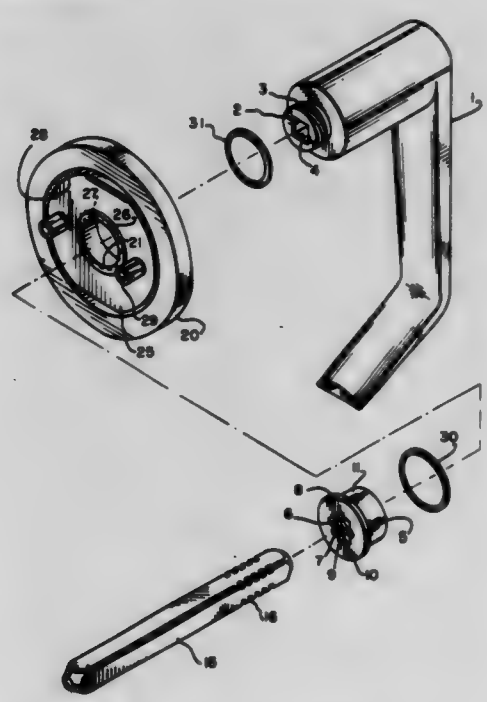
positioned and configured as to allow sliding motion of the main part in one direction relative to the panel, and the main part further including a series of teeth complementary to those of the foot and situated between the abutment surfaces so that when the abutment surfaces engage the panel the teeth of the main part engage those of the foot to resist relative motion between the main part and the foot in one direction.

4,343,502

DOORKNOB CONSTRUCTION

Kenneth R. Nelson, West Vancouver, Canada, assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 9, 1980, Ser. No. 195,390
Int. Cl.³ E05B *15/02*
U.S. Cl. 292—356 **7 Claims**



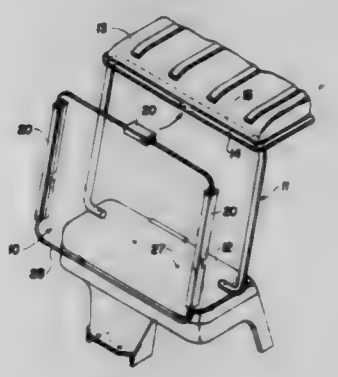
1. A doorknob assembly comprising:
- a rotating hand operator threaded about its centerline of rotation at one end;
- a non-circular bore in said operator along said centerline of rotation;
- an adjustment bushing in threaded engagement with the thread on said hand operator;
- said adjustment bushing having a shoulder provided at one end opposite said hand operator and a journal bearing surface concentric about said centerline of rotation intermediate said shoulder and the opposite end of said adjustment bushing;
- a hand operator mounting means disposed for rotation on and orientation about said journal bearing surface;
- said adjustment bushing being further provided with an indexing non-circular hole at said one end disposed concentrically about said centerline of rotation; and
- a spindle of non-circular cross section inserted into said non-circular bore of said hand operator and said indexing non-circular hole in said adjusting bushing and cooperating with each to rotate said spindle and prevent rotation of said adjustment bushing relative to said hand operator once said spindle is inserted.

4,343,503

SNAP-ON WINDSHIELD FOR GOLF CARTS AND LIKE VEHICLES

Donald G. Samuelson, and Paul R. Farris, both of Augusta, Ga., assignors to Club Car Inc., Augusta, Ga.

Filed Jul. 18, 1980, Ser. No. 169,957
Int. Cl.³ B60J *1/02*
U.S. Cl. 296—84 D **12 Claims**



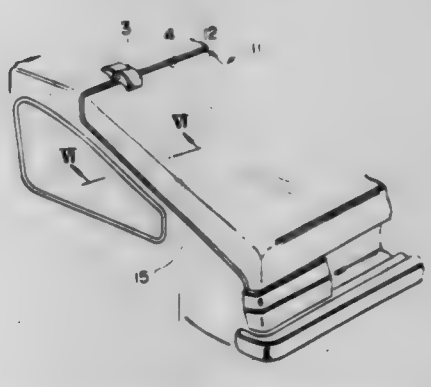
10. In combination, an all weather vehicle with a replaceable windshield, such as a golf cart,
- a vehicle cowling,
- a framework mounted on the cowling for mounting the windshield presenting a pair of substantially parallel vertically disposed rods with a top cross connecting link rod section, and
- a selectively removable windshield having a snap-on rim with mounting structure thereon comprising a resilient plastic extruded frictional member engaging the windshield and having a substantially U-shaped extension extending perpendicular thereto and disposed to mate with and frictionally snap on said framework rods.

4,343,504

ALL GLASS REAR DOOR ASSEMBLY FOR AN AUTOMOTIVE VEHICLE

Hirotaka Tomioka, and Shuji Yamagata, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 2, 1980, Ser. No. 145,950
Claims priority, application Japan, May 7, 1979, 54-60387[U]
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—76 **7 Claims**



1. A glass rear door assembly for an automotive vehicle

having a vehicle body formed with a rear access opening, said door assembly comprising:

(a) a glass rear door hingedly mounted to the vehicle body in a manner to close the rear access opening, said door comprising:

(i) a substantially flat main body portion;

(ii) substantially flat side portions formed integrally with said main body portion and extending at an angle thereto to conform to the adjacent exterior surface portions of the vehicle body when said door is in its closed position;

(iii) said main body portion and said side portions forming transition portions along their angled junction lines; and

(b) a weatherstrip mounted on the vehicle body adjacent the access opening inboard of the body exterior surface portions, said weatherstrip sealingly contacting said rear door flat main body portion immediately inboard of said transition portions when said door is in its closed position.

4,343,505

EDDY-ELIMINATING ARRANGEMENT FOR A TOWING VEHICLE

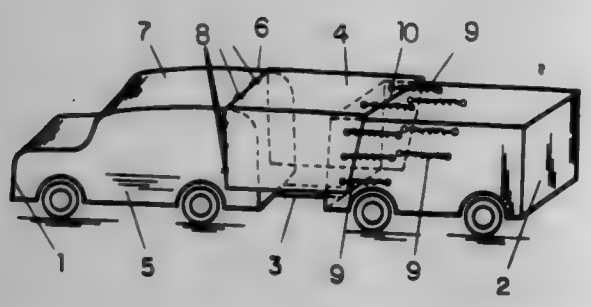
Jean Levassor, 11 Villa Molitor, 75016 Paris, France

Filed Oct. 7, 1980, Ser. No. 195,216

Claims priority, application France, Oct. 8, 1979, 79 24961

Int. Cl.³ B62D *35/00*

U.S. Cl. 296—1 S **4 Claims**



1. An arrangement for preventing eddy formation between a towing vehicle and a towed vehicle comprising a nonrigid sheet which overlies the opposing sides and the top of a transverse section of the towing vehicle and which extends rearwardly therefrom and overlies the top and opposing sides of the towed vehicle adjacent the front part of the towed vehicle, the said sheet being releasably attached to and bearing against the opposing sides and the top of the towing vehicle, and said sheet being releasably secured to the towed vehicle by spring means which are disposed between said sheet and the top and opposing sides of the towed vehicle and which keep the sheet stretched against the opposing sides and the top of the said towed vehicle in all relative positions of the two vehicles.

4,343,506

LOW-DRAG GROUND VEHICLE PARTICULARLY SUITED FOR USE IN SAFELY TRANSPORTING LIVESTOCK

Edwin J. Saltzman, North Edwards, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

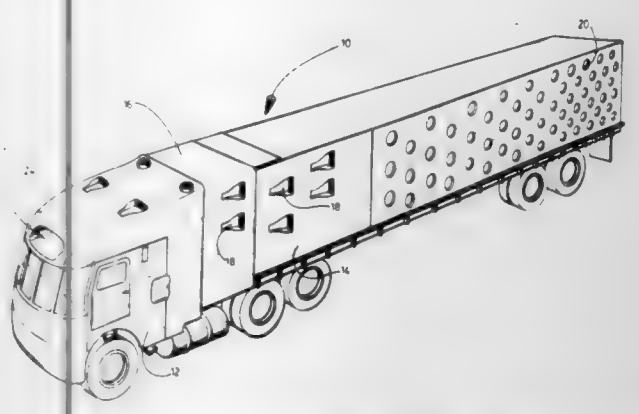
Filed Aug. 5, 1980, Ser. No. 175,453

Int. Cl.³ B62D *35/00*

U.S. Cl. 296—1 S **7 Claims**

1. In combination with a low-drag ground vehicle including a streamlined forebody and an elongated, substantially closed cargo box, said forebody being suitably shaped for establishing an attached flow of ambient air along the surface of the upper and side walls of the box as the vehicle is propelled at highway speeds, the improvement comprising:

means for continuously flushing gases from the box as the vehicle is propelled at highway speeds including a ram air inlet system with an intake flushly disposed on said forebody and a plurality of submerged inlets defined in the walls of the box for ingesting portions of the attached flow and delivering the ingested portions of the flow to the



interior of the box, and a plurality of flow discharge ports defined in the walls of the box aft of the plurality of submerged inlets for discharging gases from the interior of the box to the attached flow.

4,343,507

MOUNTING ARRANGEMENT FOR A VENTILATION OR HEATING SYSTEM FOR VEHICLES

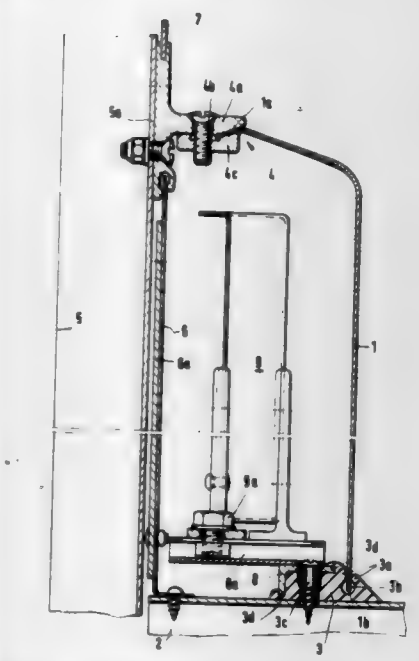
Wolfgang Heuer, Düsseldorf, and Wilhelm Gerhardinger, Dormagen, both of Fed. Rep. of Germany, assignors to Duewag Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,648

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923086

Int. Cl.³ B62D *25/00*

U.S. Cl. 296—208 **7 Claims**



1. A mounting arrangement for a ventilation or heating system for passenger vehicles having an air duct located in the interior of the vehicle, comprising an enclosure bounding said air duct, said enclosure including a profile of an angularly-shaped cross-section, said profile having a first end portion and a second end portion; support means for supporting said first end portion and secured to the floor of the vehicle and formed of an elastic material, said support means including a pair of projecting lips forming a free space therebetween, said first end portion having an end extended into said free space and engaged by said lips, said second end portion of said profile being inclined toward the floor at the vehicle with the line of inclination tangent to a circumference having a center point located at said end of said first end portion; and clamping means connected to a side wall of the vehicle and arranged to secure said second end portion of said profile, said clamping means includ-

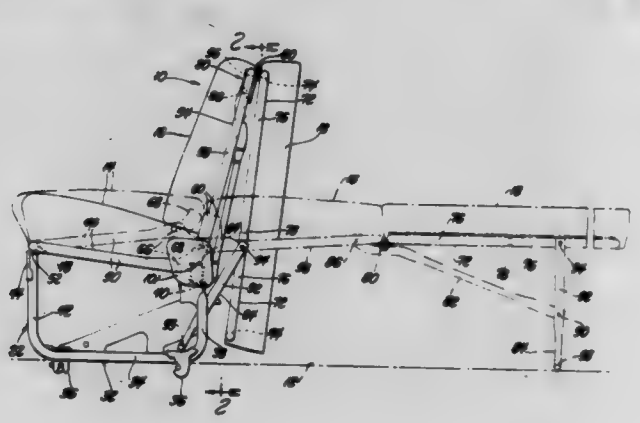
ing a gap to engage said second end portion, said gap being inclined in the direction corresponding to that of said second end portion to thereby facilitate dismounting of said profile by releasing said profile from said gap and pivoting said profile relative to said center point in the direction from said gap.

4,343,508

LATCH MECHANISM FOR VEHICLE SEAT CONVERTIBLE TO BED

Dennis H. Heling, Canton; Walter Lyszczarz, Westland, and Frank J. Sposite, Clinton, all of Mich., assignors to Lear Siegler, Inc., Livonia, Mich.

Filed Jan. 18, 1980, Ser. No. 113,147
Int. Cl.³ A47C *13/00, 17/16*
U.S. Cl. 297—114 **10 Claims**



1. In a vehicle seat including cushion, back, and auxiliary components and also including a support linkage that connects the cushion and back components and mounts the auxiliary component on the back component such that the seat is movable between a seating position where the auxiliary component extends vertically at the rear of the back component and a bed position where the components extend generally horizontally, a latch mechanism for securing the seat in the seating position comprising: a first latch having a latched position for securing the cushion and back components in the seating position and having an unlatched position where the cushion and back components are allowed to move to the bed position from the seating position; a second latch having a latched position for securing the auxiliary component in the vertical seating position at the rear of the back component and having an unlatched position where the auxiliary component is allowed to move to the horizontal bed position from the vertical seating position; and an actuator having a connector that extends between and is connected to both the first and second latches to provide movement thereof from the latched positions thereof to the unlatched positions thereof in order to allow movement of the seat from the seating position to the bed position.

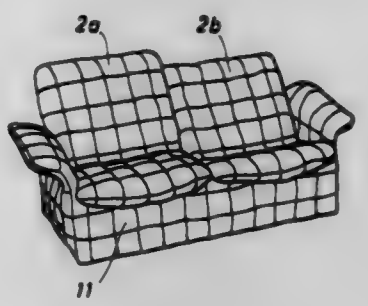
4,343,509

PIECE OF SEATING FURNITURE

Gillis Lundgren, Lönashult, Sweden, assignor to Inter-ikea A/S, Humlebaek, Denmark

Filed Apr. 2, 1980, Ser. No. 136,729
Claims priority, application Denmark, Apr. 9, 1979, 1479/79
Int. Cl.³ A47C *15/00*
U.S. Cl. 297—232 **7 Claims**

1. A piece of seating furniture shaped as a sofa comprising a hollow upwardly open lower part (1) having a tube frame (11) with two side member-forming frame portions (11*a*, 11*b*) and separated front and rear supporting portions (1*a*, 1*b*) respectively provided with upwardly and downwardly curved supporting surfaces (1*a'*, 1*b'*), said supporting portions being a pair of front auxiliary tubes (11*c*, 11*d*) and a pair of rear auxiliary tubes (11*e*, 11*f*), both pairs of auxiliary tubes being connected to the side member frame portions, a preferably H-shaped bracing member (19) made of tube provided between the supporting portions (1*a*, 1*b*), and at least two seat and back units (2*a*, 2*b*) loosely arranged on top of the lower part (1) and resting on the supporting portions and being unconnected thereto, said seat-and back units each having a seat portion and a back portion with each of said portions having a substantially planar top surface and a back surface which is slightly curved



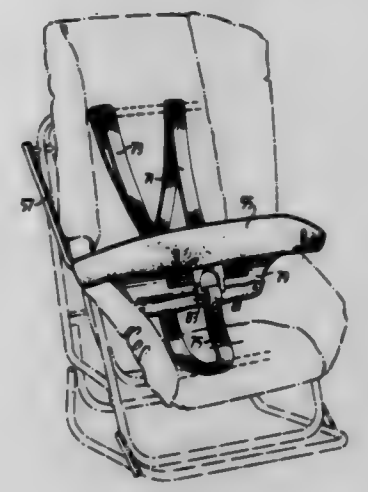
to have a curvature corresponding to the curvature of said supporting surfaces, said seat and back portions being connected together to form an angle (α) of about 90–120 degrees with respect to each other, said angle for said units being seperately adjustable.

4,343,510

CHILD CAR SEAT AND RESTRAINING SYSTEM

Richard E. Cone, Dayton, Ohio, assignor to Questor Corporation, Toledo, Ohio

Filed Mar. 31, 1980, Ser. No. 135,933
Int. Cl.³ A47C *31/00*; B60R *21/10*
U.S. Cl. 297—250 **11 Claims**



1. In a child's car seat including an adjustable frame and a unitary seat and back structure, an improved restraining apparatus comprising

a U-shaped member pivotally mounted at its terminal ends to opposite sides of the upper portion of said frame so as to be movable between positions above the occupant and in front of the occupant;

a padded shield mounted about the bight of said U-shaped member;

at least one pair of opposed slots in the back of said seat structure;

a shoulder harness strap extending through each of said slots, said straps being secured together at one of their ends behind said back of said seat structure;

means secured to the underside of said shield for adjustably retaining the other ends of said shoulder harness straps, said straps passing under the inner edge of said shield;

a crotch strap secured at one end thereof to said one end of said shoulder straps;

a slot in said seat structure, said crotch strap passing under said seat structure and upwardly through said slot in said seat structure; and

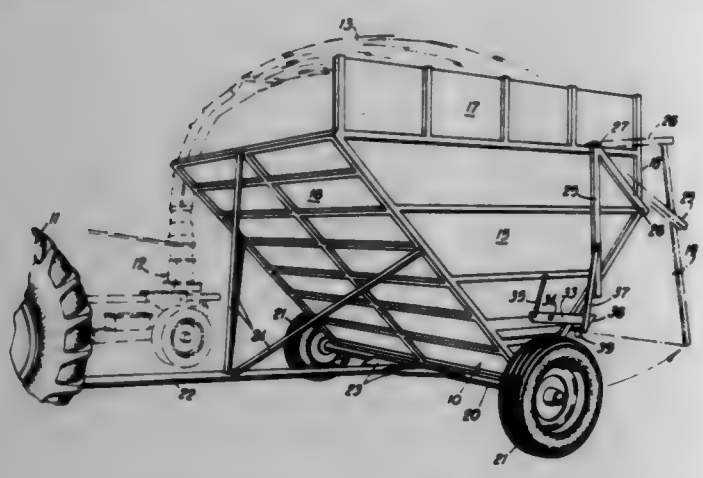
releasable latching means for securing the other end of said crotch strap to said underside of said shield.

4,343,511

SILAGE WAGON

Robert A. Rowan, and Leroy Mathis, both of P.O. Box 68, Enigma, Ga. 31749

Filed Aug. 28, 1980, Ser. No. 182,107
Int. Cl.[3] B60P *1/56*
U.S. Cl. 298—6 4 Claims



4. A self-emptying silage wagon comprising a generally triangular wagon body having an open level top and an apex at its bottom on a transverse axis, the wagon body having substantially vertical side walls and forward and rear inclined walls rising from said apex, said forward and rear inclined walls forming the bottom of the wagon body and bearing the weight of material placed in the wagon body, means hingedly connecting at least one of said forward and rearward inclined walls to the wagon body near the top of the wagon body and near the top of such inclined wall so that the latter may swing open in response to the weight of material thereon to completely dump such material by gravity action without tilting the wagon body, releasable latching means for said one inclined wall on the wagon body and on said one inclined wall, and said latching means comprising a biased rotational latching bar on said one inclined wall extending transversely thereof, at least one remotely operated release arm secured to the rotational latching bar to turn it in a direction opposite to that in which it is biased, at least one pivoted latch member for said latching bar on the wagon body and being biased toward latching engagement with the latching bar, and a release element for said latch member on the latching bar and turning therewith in response to remote operation of said release arm.

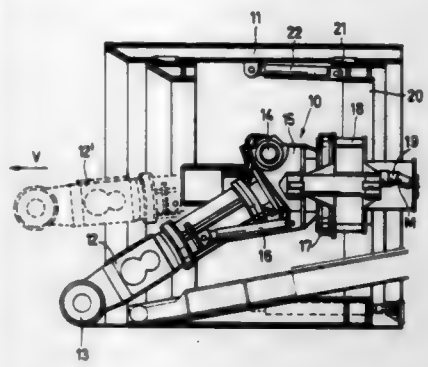
4,343,512

CUTTER DRIVE REGULATION APPARATUS FOR A TUNNELLING MACHINE

Herbert Heitkamp, Werne, and Werner Dehmel, Lünen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhütte Westfalia, Lünen, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,419
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933597
Int. Cl.[3] E21D *9/08*
U.S. Cl. 299—1 12 Claims

1. Apparatus for regulating the capacity of a tunnelling machine having a rotatable cutting head mounted at one end of an arm, the other end of the arm being pivotally mounted in the chassis of the tunnelling machine about a pivot pin whose axis extends transversely to the axis of the arm, a rotary drive for rotating the arm about the axis of the tunnel being formed, and drive means for rotatably driving the cutting head about the longitudinal axis of said arm, the regulation apparatus comprising: regulator means for regulating the rotary drive of the arm in dependence upon the capacity of the cutting head drive means, and a device for measuring the angle between the axes of the arm and the tunnel, said regulator means being responsive to an output of said measuring device for decreasing the



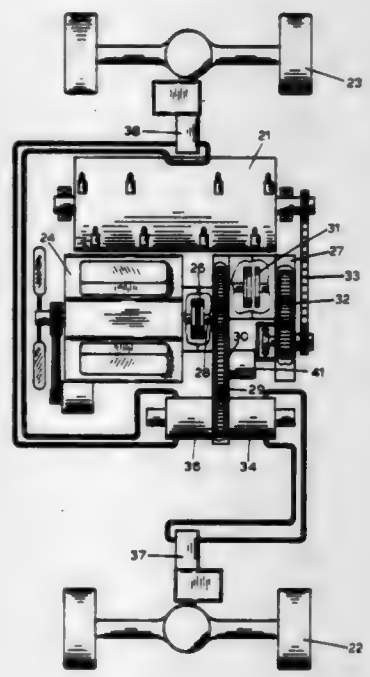
capacity of the rotary drive as said angle decreases, thereby reducing the force applied by the cutting head to a working face.

4,343,513

METHOD AND POWER TRANSMISSION SYSTEM FOR OPERATING A ROAD PLANAR MACHINE

Gary L. Godbersen, Ida Grove, Iowa, assignor to Gomaco, Inc., Ida Grove, Iowa

Filed Aug. 25, 1980, Ser. No. 181,163
Int. Cl.[3] E01C *23/09*
U.S. Cl. 299—1 5 Claims



4. The method of automatically controlling the load on a single power unit that rotates a rotary cutting unit on a ground working machine and drives the machine traction units, comprising the steps of:

(a) rotating the cutting unit in a direct gear driven relation from the power unit,

(b) operating a variable volume displacement pump and associated traction unit in a direct gear driven relation from the power unit,

(c) electrically indicating a set rotational speed of the power unit to drive the cutting unit at a predetermined rotational speed and the traction unit at a predetermined road speed,

(d) electrically actuating the variable volume displacement pump in direct response to a drop in the indicated set rotational speed of the power unit to simultaneously reduce the road speed of the machine and maintain the rotational inertia force of the cutting unit.

4,343,514
RESONANT TOOL DRIVING SYSTEM WITH GAP

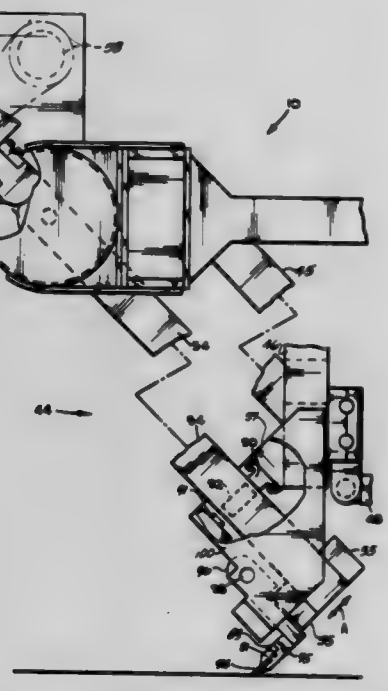
Raymond A. Gurries, Reno, Nev., assignor to The Gurries Company, Sparks, Nev.

Continuation-in-part of Ser. No. 973,161, Dec. 26, 1978, Pat. No. 4,229,046, which is a continuation-in-part of Ser. No. 873,249, Jan. 30, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,748

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ E01C *23/09*

U.S. Cl. 299—37 4 Claims



1. Resonant work performing apparatus comprising:

a resonant system that is vibratory in resonance at an unloaded resonant frequency near which the resonant system has a vibratory input, an output vibratory in first and second opposite directions about a neutral position responsive to vibrations at the input, and at least one vibratory node;

a frame rigidly attached to the resonant system substantially at the node, said frame preventing substantially all motion of the resonant system relative to the frame except the vibratory resonance thereof;

a load receiving periodic impulses from the vibratory output is the output moves in said first direction;

means for applying a vibrational force to the input of the resonant system at or near the unloaded resonant frequency to excite the resonant system to at least near resonance; and

means for establishing and maintaining a gap between the neutral position of the vibratory output and the load to prevent cessation of resonance when the load is excessive to minimize the transmission of the applied vibrational force to the frame.

4,343,515
DEVICE FOR ROTATING A BODY

Robert H. Higgs, Burton-on-Trent, and John M. Jones, Etwall, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Oct. 19, 1979, Ser. No. 86,437

Claims priority, application United Kingdom, Nov. 3, 1978, 43098/78

Int. Cl.³ E21C *25/08*

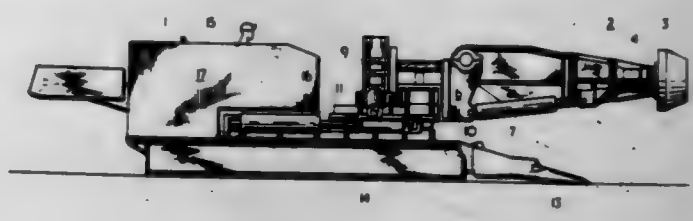
U.S. Cl. 299—75 5 Claims

1. A device for rotating a body, comprising:

a pivotally mounted yoke having a slot in which is slidably mounted a member adapted, in use, to be attached rotatably and eccentrically to the body;

a pair of opposed pivotally mounted rams each of which is rotatably attached to the yoke and which are connected to be operated out of phase;

a third ram coplanar with the pair of rams connected between the member and the yoke; and



switching means which co-ordinate the actions of the rams such that the pair of rams pivot the yoke about its mounting, the third ram moves the member longitudinally to and fro in the slot and the pivotal movement of the yoke and the longitudinal movement of the member is translated into a rotary movement of the body.

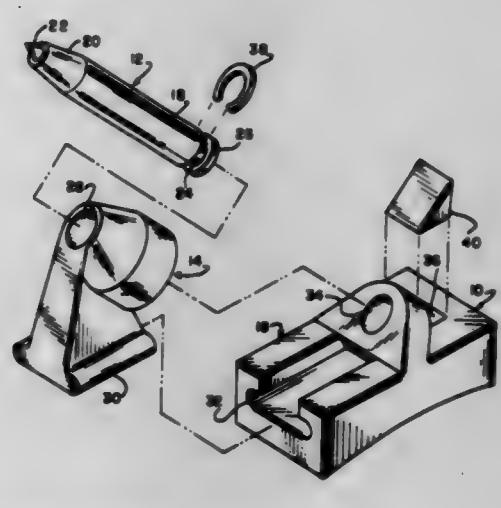
4,343,516
CUTTER BIT ASSEMBLY

Michael L. Aden, Indiana, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lakes, N.J.

Filed Aug. 11, 1980, Ser. No. 176,986

Int. Cl.³ E21C *35/18*

U.S. Cl. 299—86 12 Claims



1. A cutter bit assembly comprising:

a. an elongated cutter bit;

b. a bit holder having an engaging body portion wherein the engaging body portion is a bifurcation and a first elongated opening for receiving the elongated cutter bit;

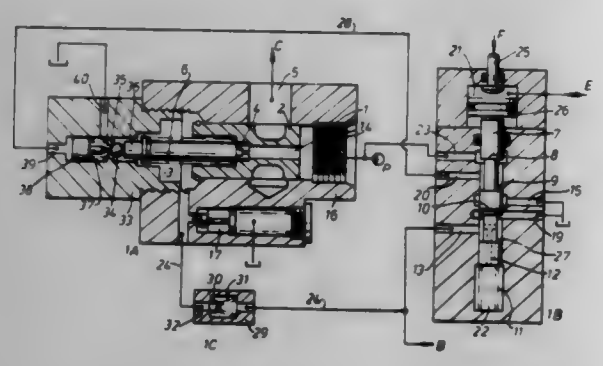
c. a bit block having an engaging means for receiving the engaging body portion of the bit holder and a second elongated opening for receiving the elongated cutter bit; and

d. means for removably affixing the elongated cutter bit to the cutter bit assembly wherein the elongated cutter bit having been received by the bit holder and the bit block locks the bit holder to the bit block.

4,343,517
HYDRAULIC BRAKING SYSTEMS FOR TRACTOR-TRAILER COMBINATIONS

Henry J. Levington, Snelland, England, assignor to Clayton Dewandre & Company Limited, Lincoln, England

Filed Feb. 22, 1980, Ser. No. 123,641
Claims priority, application United Kingdom, Feb. 23, 1979, 796416
Int. Cl.[3] B60T *13/68*
U.S. Cl. 303—7 10 Claims



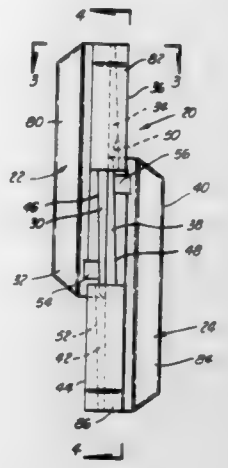
1. A hydraulic braking system for a tractor-trailer combination having a hydraulic pressure source on the tractor, a tractor braking circuit for tractor brakes and a trailer braking circuit for trailer brakes, said trailer braking circuit including a connection to said trailer brakes and a connection to a return line, a pressure control valve connected between said source and said trailer braking circuit and operable to provide hydraulic braking fluid under pressure through a service outlet to said trailer braking circuit, said pressure control valve having a chamber and a restricted bypass connecting said source to said chamber for conveying braking fluid under pressure to said chamber, conduit means connected to an outlet of said chamber for conveying bypassed braking fluid under pressure to said trailer braking circuit, a pilot valve in the trailer braking circuit connected to said conduit means and operable for selectively controlling admission of hydraulic braking fluid under pressure to the trailer brakes or to the return line, a pilot operated check valve disposed at a further outlet for said chamber, means controlled by actuation of said pilot valve for controlling said check valve.

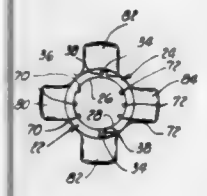
4,343,518
ROD GUIDE APPARATUS

Melvin E. Pourchot, Shawnee, Okla., assignor to Central Plastics Company, Shawnee, Okla.

Filed Sep. 26, 1980, Ser. No. 191,086
Int. Cl.[3] F16C *29/02*
U.S. Cl. 308—4 A 5 Claims

1. In a rod guide apparatus formed of a plastic material for a reciprocating rod comprised of two substantially identical half sections which include semicircular recesses therein adapted to be lockingly clamped together adjacent opposite sides of the outer periphery of the rod whereby the rod extends through a circular bore formed by the semicircular recesses in the half sections, the improvement comprising each of said half sections including three longitudinally extending ridges on said surface of said semicircular recess thereof, one of said ridges being positioned at the center of said surface when said recess is viewed laterally and the other two ridges being positioned one on either side of said center ridge at equal distances therefrom whereby when said half sections are clamped together adjacent opposite sides of said rod, the three ridges of each half section contact opposite sides of said rod over arcs of about 60 degrees to 70 degrees and said bore formed by said semicircular recesses through which said rod passes is deformed into an elliptical shape in cross section so that said clamped together half sections contact the periphery of said rod at at least four points, each of said ridges having a height of from about 1/32



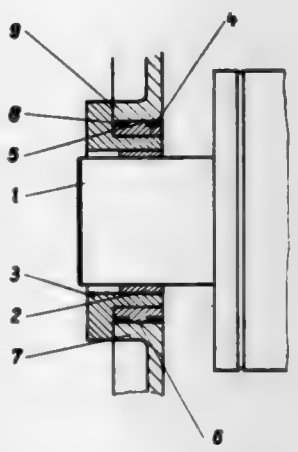


inch to about 1/16 inch and a width of from about 1/32 inch to about 3/32 inch.

4,343,519
BEARING FOR THE CYLINDERS OF PRINTING MACHINES

Horst Schulz, Dresden; Arndt Jentzsch, Coswig; Werner Kühnert, Radebeul; Heiner Fink, Dresden; Frank Junker, Radebeul; Günter Lehmann, Coswig; Hans Johne; Peter Kahlert, both of Radebeul, and Norbert Dittmann, Dresden, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed May 23, 1980, Ser. No. 152,575
Int. Cl.[3] F16C *23/02*
U.S. Cl. 308—37 5 Claims

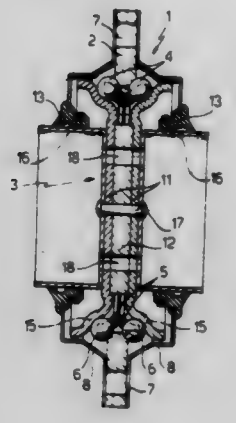


1. A bearing arrangement for cylinders utilized in printing machines and adapted to support a cylinder trunnion within a machine frame, comprising a first sliding bushing encompassing the cylinder trunnion; a flange bearing surrounding said sliding bushing, said flange bearing being supported in the machine frame and having a radially extending face mounted in contact with the respective face of the machine frame and an axially extending circumferential surface, said machine frame being provided with an axial bore; and means for compensating for misalignment between said flange bearing and the machine frame including a second bushing mounted between said axially extending circumferential surface of said flange bearing and said axial bore of the machine frame.

4,343,520
ROLLING BEARING

Enrico Bertone, Turin, Italy, assignor to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed Sep. 23, 1980, Ser. No. 189,569
Claims priority, application Italy, Sep. 21, 1979, 53582/79[U]
Int. Cl.³ F16C *19/18*
U.S. Cl. 308—178 10 Claims

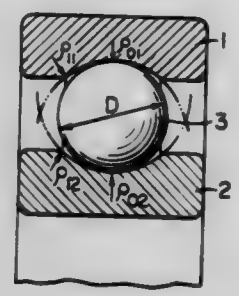


1. A rolling bearing comprising an outer race, an inner race, two or more rows of rolling bodies disposed intermediate said outer race and said inner race, and wherein said inner race comprises means for supporting a cantilevered shaft, said means comprising the inner race being formed by first and second disks.

4,343,521
BALL BEARING

Yukihiro Akabane, Tokyo; Hisashi Satoh, Hiratsuka; Yukio Shiraiwa, Yokohama, and Shuyou Tsuchiya, Fujisawa, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1980, Ser. No. 170,660
Claims priority, application Japan, Aug. 23, 1979, 54/106602
Int. Cl.³ F16C *19/06, 33/58*
U.S. Cl. 308—193 2 Claims



1. In a ball bearing including an outer race, an inner race and ball-like rolling members interposed between said two races, the orbit grooves of said two races and being non-circular, the improvement residing in that when the orbit groove coefficient F_1 of said outer race and the orbit groove coefficient F_2 of said inner race are respectively expressed as

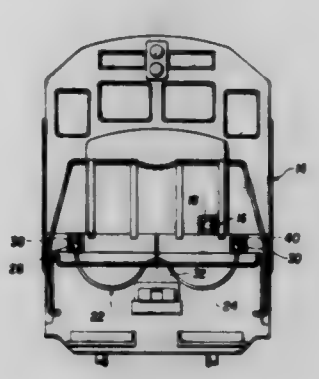
$$F_1 = \frac{\frac{\rho_{11}}{D} - 0.5}{\frac{\rho_{01}}{D} - 0.5} \qquad F_2 = \frac{\frac{\rho_{12}}{D} - 0.5}{\frac{\rho_{02}}{D} - 0.5}$$

where ρ_{01} is the curvature radius of the groove bottom of the orbit groove of said outer race, ρ_{11} is the curvature radius of the groove edge of the orbit groove of said outer race, ρ_{02} is the curvature radius of the groove bottom of said inner race, ρ_{12} is the curvature radius the groove edge of said inner race and D is the diameter of said ball-like rolling members, F_1 is smaller than F_2.

4,343,522
JUMPER CABLE SYSTEM FOR RAILWAY TRAINS

Paul T. O'Neil, Bethesda, Md., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Sep. 5, 1980, Ser. No. 184,374
Int. Cl.³ H01R *13/60;* B60D *1/08*
U.S. Cl. 339—10 8 Claims



1. In combination, a first locomotive unit and a second locomotive unit mechanically coupled together in a consist,

the first locomotive unit and the second locomotive unit each including first and second live electrical receptacle mounted on the front end and rear end, respectively of the locomotive unit, the first and second live electrical receptacles being located on opposite sides of the longitudinal vertical center plane of the locomotive unit,

an elongated jumper cable having a first end and a second end,

an elongated flexible support element,

means permanently connecting one end of the elongated flexible support element to the front end of the second locomotive unit adjacent the region of the longitudinal vertical center plane of the second locomotive unit,

means permanently attaching the other end of the elongated flexible support element to the elongated jumper cable intermediate the ends thereof,

a first dummy receptacle and a second dummy receptacle each permanently mounted on the front end of the second locomotive unit,

the first dummy receptacle being mounted adjacent one side of the second locomotive unit displaced in one direction from the longitudinal vertical center plane of the second locomotive unit,

the second dummy receptacle being mounted adjacent the other side of the second locomotive unit displaced in an opposite direction from the longitudinal vertical center plane of the second locomotive unit,

the elongated jumper cable including a connector head at one of its ends adapted to be received by the first live electrical receptacle mounted on the front end of the second locomotive unit and adapted to be received by the first dummy receptacle,

the elongated jumper cable including a connector head at its other end adapted to be received by the second live electrical receptacle at the rear end of the first locomotive unit and adapted to be received by the second dummy receptacle,

the length of the elongated jumper cable and the length of the elongated flexible support element being selected relative to the distance between the first live electrical receptacle mounted on the front of the second locomotive unit and the second live electrical receptacle mounted on the rear of the first locomotive unit so that when the elongated jumper cable is used to electrically connect the first and second locomotive units the elongated jumper cable is supported intermediate its ends by the elongated flexible support element and its adapted to be supported by the live electrical receptacles on the front of the second locomotive unit and on the rear of the first locomotive unit, and

the length of the elongated jumper cable and the length of

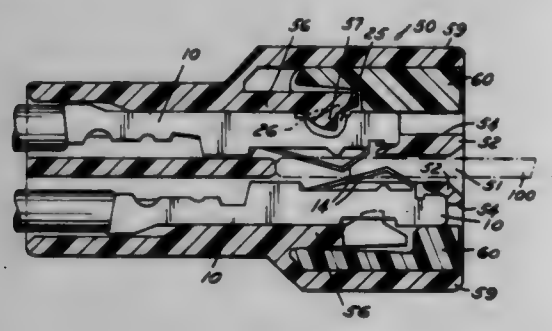
the elongated flexible support element being selected relative to the distance between the first dummy receptacle and the second dummy receptacle so that the elongated jumper cable when not used to form an electrical connection between the first and second locomotive units is supported intermediate its ends by the elongated flexible support element and is adapted to be supported at its ends by the dummy receptacles.

4,343,523

PRINTED CIRCUIT BOARD EDGE CONNECTOR

Thomas M. Cairns, Birmingham, and David G. Connors, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 27, 1980, Ser. No. 153,812
Int. Cl.³ H01R *13/40*
U.S. Cl. 339—59 M **5 Claims**



1. A printed circuit board edge coupling means for connecting to conductor portions of a printed circuit board, said coupling means including a connector and a plurality of terminals;

said connector including a contact receiving slot cavity with an entrance extending across the width of said connector, said cavity being adapted to receive the conductive portions at the edge of a printed circuit board, said cavity having a pair of spaced apart walls extending parallel to the plane of insertion of the printed circuit board into said coupling means;

said terminals being positioned along said cavity adjacent said walls on sides opposite from said cavity;

said walls having a plurality of contact openings for passing a portion of said terminals so that said terminals can have access to the conductor portions on a printed circuit board inserted into said cavity, pairs of said openings being generally opposed along said slot cavity and staggered forward and rearward in a direction parallel to the direction of insertion of the printed circuit board into said slot cavity so that insertion of a printed circuit board edge successively engages each one of a pair of said terminals at the same longitudinal position thus reducing the magnitude of the peak force during insertion of the printed circuit board, and preventing generally opposing terminals from shorting;

adjacent contact openings in the same wall also being staggered forward and rearward in a direction parallel to the direction of insertion of the printed circuit board into said slot cavity so that said printed circuit board is centered between said spaced apart walls as said printed circuit board is inserted, first by portions of said terminals extending through a first group of contact openings nearest said entrance and then by portions of said terminals extending through a second group of contact openings furthest from said entrance;

said walls having a plurality of aligned troughs for receiving said terminals;

said troughs having a generally U-shaped cross section with an open side and being formed on the sides of said walls opposite from said cavity;

one of said plurality of openings being associated with each trough to provide communication through said wall between a trough and said cavity; and

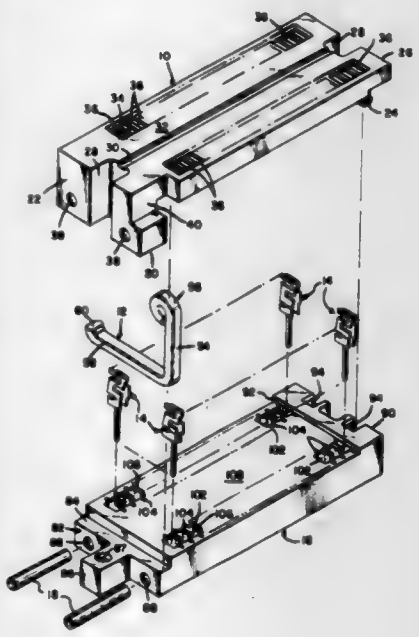
removable securing means positioned at the open sides of said troughs for at least partially securing said terminals thereby preventing undesired motion of said terminals, and for providing a supporting surface across said troughs to support said terminals and limit movement of said terminals away from said slot cavity when the printed circuit board is inserted into said slot cavity.

4,343,524

ZERO INSERTION FORCE CONNECTOR

Edward J. Bright, Elizabethtown; Larry E. Dittmann, Harrisburg, and Van K. Webster, Camp Hill, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 30, 1980, Ser. No. 164,199
Int. Cl.³ H01R *13/629*
U.S. Cl. 339—74 R **9 Claims**



1. A connector for receiving a dual in-line package or the like having a plurality of leads extending therefrom, said connector comprising:

a. a lower housing of insulating material having a plurality of spaced apart cells opening upwardly on the top surface;

b. an upper housing of insulating material slidably mounted on the top surface of the lower housing and having a plurality of spaced apart openings extending vertically therethrough;

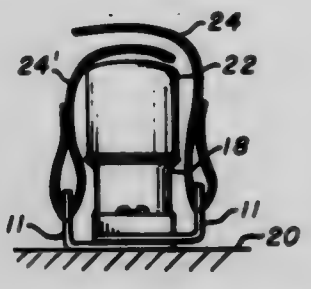
c. a plurality of resilient contact members having first and second arms in facing arrangement and hinged together at a lower portion thereof with the second arm being removably biased against the first arm, said second arm having a top portion with laterally extending free ends and a generally S-shaped intermediate portion providing at least one torsional axis said contact members being positioned in the cells of the lower housing with the first arms held immobile and with the laterally extending free ends on the second arms being coupled to the upper housing so that upon sliding the upper housing, the second arms are pulled away from the first arms and the intermediate portions twist about the one or more torsional axes thereby storing energy useful for exerting compressive forces on leads which may be inserted between the first and second arms through the openings in the upper housing.

4,343,525

ELECTRICAL PANEL CONNECTOR HOLD-DOWN ADAPTER

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Continuation-in-part of Ser. No. 128,108, Mar. 7, 1980, abandoned. This application May 1, 1980, Ser. No. 145,621
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 P 6 Claims



1. An apparatus for holding electrical cable connectors to electrical panel connectors which are attached to a mounting surface, the electrical connectors having first and second opposite sides, the apparatus comprising:

two identical metal bracket means, said bracket means each having two angularly related sides, a first of said sides having at least a first elongated cutout and the second of said sides having two apertured extensions with each extension located at the outer extremity of said second side and in the plane of said second side, said second sides of both of said bracket means being intended to be fastened to the mounting surface by means of the apertures in said extensions, said first side of one of said bracket means being positioned generally parallel to the first side of at least one panel connector and the first side of the other of said bracket means being positioned generally parallel to the second side of said at least one panel connector whereby the apertures in said extensions may be superimposed and intercepted by common fasteners when said apparatus is fastened to a mounting surface; and

strap means, said strap means passing through cutouts in the said first sides of both bracket means, said strap means being positioned over and in contact with a cable connector, said strap means being temporarily secured to itself and cooperating with said bracket means for holding the cable and panel connectors in engagement, said strap means being divided into two sections, said first section having a plurality of loops and said second section having a plurality of cooperating hooks.

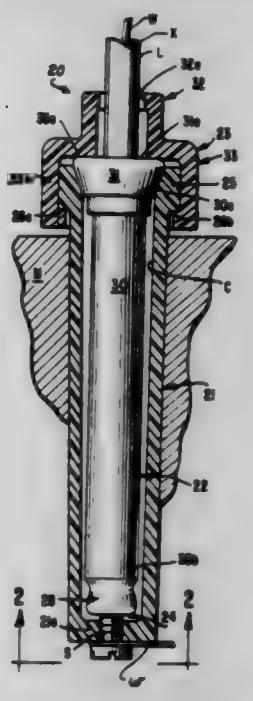
4,343,526

QUICK DISCONNECT ASSEMBLY

Ervin J. Hobson, Chicago, and William J. Leitmann, Northbrook, both of Ill., assignors to Hobson Bros., Inc., Chicago, Ill.

Filed Feb. 6, 1980, Ser. No. 119,163
Int. Cl.³ H01R *13/54*
U.S. Cl. 339—90 R 5 Claims

1. A quick disconnect assembly for use in a high voltage circuit, comprising an elongated housing of insulative material provided with a longitudinally extending cavity closed at one end and open at the opposite end, a segment of the cavity adjacent the open end being tapered with an enlarged end and a narrow end, the latter being disposed closest to the cavity closed end, a fixedly mounted first electrical contact disposed within the cavity adjacent the cavity closed end and having a portion thereof disposed on the housing exterior, said housing being provided with an external collar encompassing the cavity open end, said collar having a first surface closest to the cavity closed end, a second surface farthest removed from said cavity closed end, and a side surface connecting the first and second surfaces and being provided with at least one elongated external groove interconnecting the first and second collar surfaces and extending in a direction substantially parallel to the longitudinal axis of said housing, the collar first surface being provided with a substantially annular cam commencing from an end of said groove; an elongated unit in slidable engagement within said housing cavity, said unit including an elongated insulated electrical lead with a first portion thereof disposed within the cavity and a second portion thereof extending substantially longitudinally from the cavity open end, a second electrical contact carried on said lead first portion and in abutting engagement with said first electrical contact, a sleeve of substantially inflexible insulative material slidably encompassing said lead first portion, one end of said sleeve engaging said second electrical contact and a second end of said sleeve terminating between the narrow and enlarged ends of the tapered cavity segment upon the unit being initially assembled in the housing cavity, and a resilient seal piece snugly and slidably encompassing a section of the lead proximate the tapered cavity segment; and a cover member slidably and rotatably encompassing the lead second portion and being initially movable substantially axially of the housing and subsequently movable simultaneously rotatably and axially of said housing to effect locking of said cover member on said external collar, said cover member during the initial axial movement being guided by said groove exerting a first compressive force on said seal piece forcing the latter against the second end of the sleeve and effecting a first predetermined abutting force between said first and second electrical contacts, and during the subsequent simultaneous rotational and axial movement of the cover member being guided by said cam whereby said cover member exerts a greater compressive force on said seal piece increasing the abutting force between said first and second electrical contacts, said seal piece being in sealing engagement with the tapered cavity segment when said cover member and housing portion are in locking relation.



4,343,527

TELEPHONE CONNECTING DEVICE

Patrick C. Harrington, Edgewood, Md.; Milton I. Levin, Langhorne, Pa.; Walter H. Shope, Fallston, and Max K. Wilson, Cockeysville, both of Md., assignors to Western Electric Company, Inc., New York, N.Y.

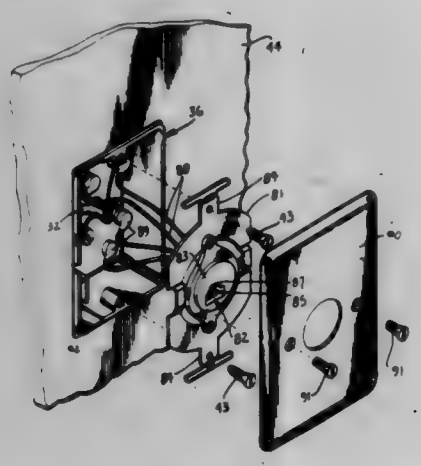
Filed Apr. 29, 1980, Ser. No. 145,194
Int. Cl.³ H02B *1/10*
U.S. Cl. 339—125 R 12 Claims

1. A receptacle which is adapted to be mounted within a wall and which is adapted to interconnect terminals of a modular plug with conductors of a service cable within the wall, said receptacle comprising:

a housing which is made of a dielectric material, said housing having a base with side walls projecting from the periph-

ery of said base and an open side which is opposite to said base, means for mounting said housing to a structural support member within the wall, and means for mounting means for enclosing said open side;

means attached to and disposed within said housing for establishing an electrical connection with each of a plurality of conductors of the service cable, said means including a plurality of pedestals, which are formed integrally with said housing with each having a free end between said base and said open side of said housing and each having an opening formed therein, and a plurality of terminals each of which is adapted to be moved into one of said pedestal openings to secure an end portion of one of the conductors of the service cable in engagement with the pedestal, each said terminal being formed with a headed end which maintains the end portion of a conductor in engagement with a pedestal and which is spaced from said base of said housing by the pedestal;



cover means for enclosing said open side of said housing;

a modular jack mounted on said cover means, said modular jack including a cavity for receiving the modular plug and including a plurality of wire-like contact elements which are adapted to engage terminals of the plug when the plug is inserted into said cavity; and

means disposed in said housing for connecting each of said contact elements of said jack which is mounted on said cover means to said means for establishing an electrical connection to connect said contact elements to the conductors of the service cable, said means for connecting each of said contact elements of said jack to said means for establishing an electrical connection with each conductor including a cap and a conductive member which is joined electrically to an associated contact element, each said cap being adapted to be snap-locked into engagement with the headed end of one of said terminals.

4,343,528

MODULAR INTERCONNECT SYSTEM

John E. Lucius, Harrisburg, and Leon T. Ritchie, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 25, 1980, Ser. No. 143,708

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.³ H01R *9/00, 13/50*

U.S. Cl. 339—198 G **6 Claims**

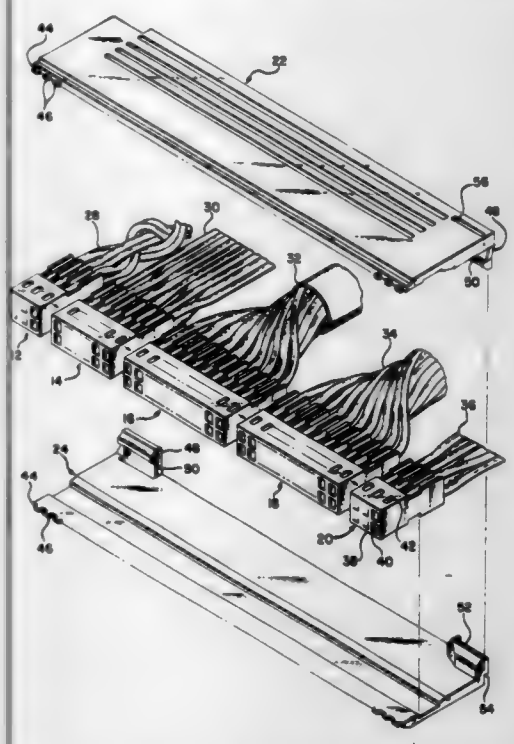
1. A modular electrical connector assembly comprising:

a plurality of housing modules each having a plurality of terminal passages extending from a rear end through said housing module to open on a front mating face,

each said passageway being fully enclosed at the mating face and forming an outwardly directed open channel shape at the rear end remote from said mating face;

a plurality of terminals each mounted in a respective one of said passageways, each said terminal having a forwardly directed mating portion lying in said fully enclosed portion of said passageway and an insulation displacing rear portion lying in and accessible from said rear channel shaped portion; and

a pair of hermaphroditic cover members each having a forward end receivable in said enclosed portions of said passageways and intermating rear latching portions, said



cover members being of sufficient size to engage and enclose the rear ends of all of said plurality of modules,

whereby each module is used to terminate a specific cable and an assembly of modules is enclosed in a single pair of covers to form an integral connector unit of cables of different sizes and types.

4,343,529

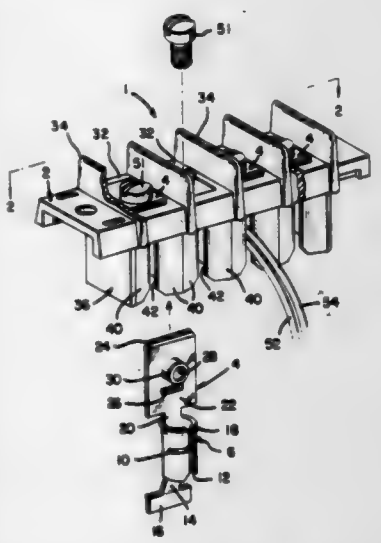
TERMINAL BLOCK WITH SELF LOCKING TERMINAL

Robert P. Reavis, Jr., Stateville, and Lawrence P. Weisenburger, Winston-Salem, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 19, 1980, Ser. No. 160,886

Int. Cl.³ H01R *9/16*

U.S. Cl. 339—198 R **5 Claims**



1. In a terminal block for commoning electricl wires or for providing a junction for plural conductors, and provided with an electrical terminal, having a hollow cylindrical barrel provided with a longitudinal open seam defining one or more sets of conductor engaging and gripping jaws, and a plate portion to receive a screw, and one or more projecting ears interfitting with said housing to prevent rotation of said barrel, the improvement comprising:

a portion of said plate interfitting in a slotted portion of said housig and spaced radially from said barrel a distance

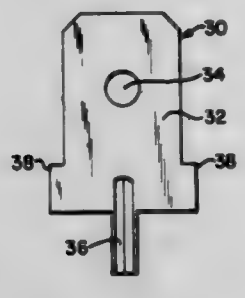
different than the radial spacing of each said ear from said barrel, an end of said barrel being radially outwardly flared and abutting a shoulder of said housing, and an opposite end of said barrel including a conductor receiving entry for said seam.

4,343,530

WAVE SOLDERABLE QUICK DISCONNECT MALE TERMINAL FOR PRINTED CIRCUIT BOARDS

Laurie J. Leger, Bradford, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 10, 1980, Ser. No. 110,881
Int. Cl.³ H01R 4/16
U.S. Cl. 339—220 R **8 Claims**



1. A wave solderable terminal for making an electrical connection to a printed circuit board comprising:

A. a terminal blade having a base;

B. a V-shaped cross-section stem at said base of said terminal blade; and

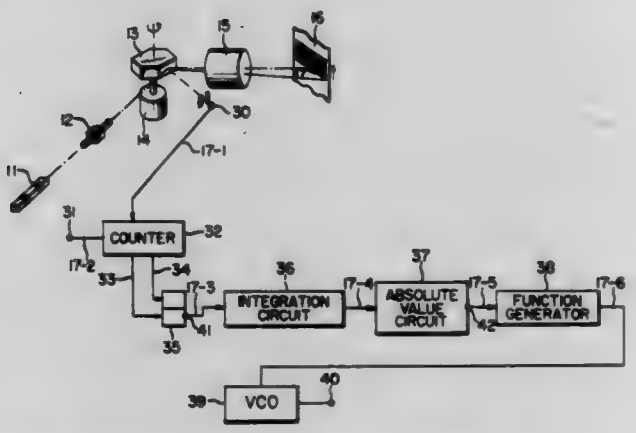
C. a portion of said base of said terminal blade adjacent to said V-shaped stem also having a V-shaped cross-section, wherein each side of said V-shaped stem is at an angle substantially equal to 90 degrees with respect to another side of said V-shaped stem and at an angle substantially equal to 45 degrees with respect to a surface of said terminal blade, and wherein said portion of said base is radiused at the top of said V-shape such that undue stress is not placed in said base.

4,343,531

LIGHT BEAM SCANNING DEVICE WITH CONSTANT SPOT INTENSITY AND SCAN SPEED RELATED MODULATING MEANS

Masamichi Tateoka, and Takao Tsuji, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,455
Claims priority, application Japan, Feb. 16, 1979, 54/16961
Int. Cl.³ G02B 27/17
U.S. Cl. 350—6.5 **4 Claims**



1. A light beam scanning device comprising:

(a) a deflector for deflecting an incident light beam in a predetermined direction;

(b) a scanning surface to be subjected to scanning by the light beam deflected by said deflector;

(c) an image forming optical system disposed between said deflector and said scanning surface for collecting the light beam deflected by said deflector and for forming an image on said scanning surface, and having a distortional coefficient of $\frac{1}{2}$;

(d) a light source section for supplying the light beam to said deflector; and

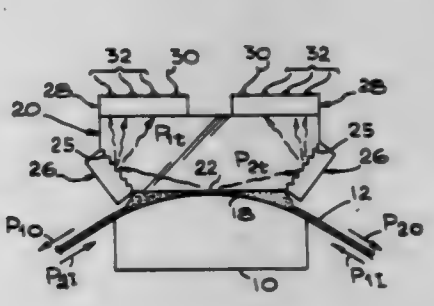
(e) modulation control means which emits a horologically long modulating signal when the light beam passes through a place away from the optical axis of said image forming optical system in comparison with that when the light beam passes in the vicinity of the optical axis of said image forming optical system.

4,343,532

DUAL DIRECTIONAL WAVELENGTH DEMULTIPLEXER

John P. Palmer, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jun. 16, 1980, Ser. No. 160,396
Int. Cl.³ H04B 9/00
U.S. Cl. 350—96.19 **18 Claims**



1. A fiber optic dual directional demultiplexer for tapping off predetermined portions of multiplexed optical energy from a single optical fiber and demultiplexing the optical energy comprising:

a curved form for supporting an optical fiber and shaping a portion thereof to a predetermined segment of a circle;

a single optical fiber mounted on said form and capable of transmitting light in both directions along its axis;

means for affixing the optical fiber along a portion thereof to the curved portion of the form of a selected radius of curvature, the fiber and affixing means in the center section of the curved portion of the fiber being lapped and polished to a preselected depth of penetration into the fiber to develop a planar surface;

prism means having two faces of predetermined opposed characterisitc angles affixed to said planar surface in contact with the optical fiber and affixed thereto by means of an optically transparent adhesive, each face being effective to receive light travelling in a corresponding direction in said fiber and coupled out of said fiber;

light diffracting means formed on each of said prism faces positioned in the path of the coupled light exiting said fiber and effective to reflect and diffract signals incident thereto; and

plural photosensitive means positioned adjacent said prism to respond selectively to different wavelengths of light directed from the light diffracting means.

4,343,533

SOLAR RADIATION REFLECTOR WITH A CELLULOSIC SUBSTRATE AND METHOD OF MAKING

Cedric G. Currin, and Bernard Van Wert, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 31, 1980, Ser. No. 221,950
Int. Cl.[3] G02B *5/10, 7/18*
U.S. Cl. 350—288 10 Claims



1. As an article of manufacture, a solar radiation reflector consisting essentially of a laminate of

(A) at least one layer of a metal foil possessing a solar radiation reflective surface located on the outermost surface of

(B) a substrate composed of at least one layer of a cellulosic material selected from the group consisting of paper, paperboard, cardboard, fiberboard and combinations of two or more thereof,

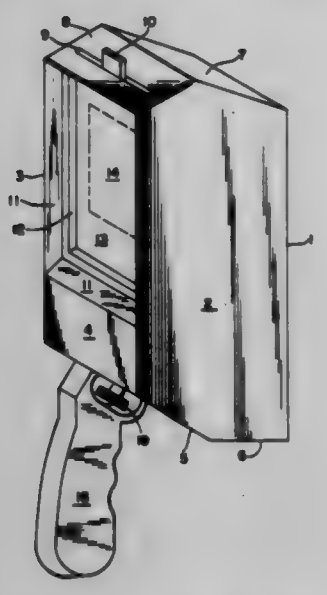
the reflective surface of said foil being coated with a weather-resistant protective coating and being faced away from the substrate, said (B) being impregnated with a sufficient amount of a weather-resistant cured polymer composition to render the cellulosic material suitable for use in outdoor applications, said impregnating polymer composition also serving as an adhesive to bond said foil to the substrate layer.

4,343,534

SIMULATED CAMERA VIEWER FOR VIDEO PRODUCTIONS

Kenneth A. Gruskin, 52 Blokland Dr., Longmeadow, Mass. 01106

Filed Feb. 2, 1981, Ser. No. 230,521
Int. Cl.[3] G02B *5/00;* G01C *3/00;* G03B *13/12*
U.S. Cl. 350—319 8 Claims



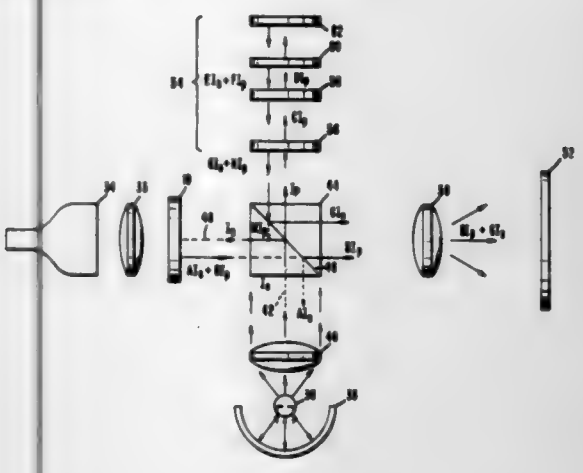
1. A viewer for simulating a camera having a front, a rear, a top, two sides, and a bottom, an opening in the front, a slot in the top parallel to the front opening, an opening in the rear, means circumscribing the opening in the rear whereby a person may place one of his eyes in front of said opening, a plurality of frame members, having a tab holder at the top thereof, each of said frame members having openings therein of a different size from the other frame members whereby when a frame member is placed in the slot in the top, it changes the size of the said opening in the front.

4,343,535

LIQUID CRYSTAL LIGHT VALVE

William P. Bleha, Jr., Carlsbad, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 14, 1979, Ser. No. 103,683
Int. Cl.[3] G02F *1/135*
U.S. Cl. 350—342 23 Claims



1. In a method for displaying an image wherein an input image modulates a polarized projection beam with a polarization modulation liquid crystal light valve to generate an output image, the improvement comprising the steps of:

(a) generating a beam of light;

(b) spatially grading the intensity of said beam;

(c) combining said spatially graded beam with said modulated projection beam to form a composite beam; and

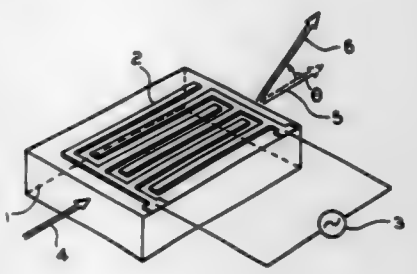
(d) projecting said composite beam with a lens onto a screen so as to superimpose said beam onto said output image and to thereby compensate for brightness non-uniformities in said output image.

4,343,536

ELECTRO-OPTIC LIGHT DEFLECTOR

Takaya Watanabe, and Teruo Matsuba, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 12, 1980, Ser. No. 149,274
Claims priority, application Japan, May 15, 1979, 54-59569; Nov. 14, 1979, 54-147418; Jan. 28, 1980, 55-8549; Feb. 27, 1980, 55-23542; Feb. 27, 1980, 55-23543; Feb. 27, 1980, 55-24383
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—355 22 Claims



1. an electro-optic light deflector comprising:

a. a light transmissive body means capable of experiencing a change in its refractive index when subjected to an electric field;

b. a plurality of elongaged electrode means arranged on the surface of said body;

c. at least one voltage source means for generating a predetermined voltage; and

d. means for applying said predetermined voltage to said electrodes to change the refractive index of said body means in at least one layer area defined by and adjacent to said electrodes, said refractive index changing in the thickness direction of said body which is perpendicular to

said electrodes, said refractive index change being such that a light beam incident to one end surface reaches the opposite end surface without coupling to the surface of said body which bears said electrodes;

whereby a light beam incident to one end surface of said body travels through said body in a direction generally aligned with said electrodes and is deflected in response to said predetermined voltage.

4,343,537

ELECTRO-OPTICAL CELL

Hans-Joachim Güntherodt, Witterswil; Peter Pfluger, Lucern, and Hans-Ulrich Künzi, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

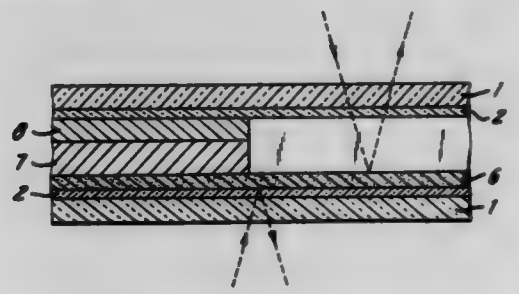
PCT No. PCT/CH79/00135, § 371 Date Jun. 18, 1980, § 102(e) Date Jun. 17, 1980, PCT Pub. No. WO80/00880, PCT Pub. Date May 1, 1980

PCT Filed Oct. 16, 1979, Ser. No. 195,143

Claims priority, application Switzerland, Oct. 18, 1978, 10777/78; Jul. 31, 1979, 7047/79

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 24 Claims



1. An electro-optical cell which comprises a working electrode having electrically controllable optical properties, a counter-electrode, an electrolyte disposed between the two electrodes and means for applying an electric voltage or electric current to the cell, the working electrode having an intercalated graphite layer structure.

4,343,538

PROJECTOR

Ulf J. E. Astero, Tumba, Sweden, assignor to Asthausbolagen HB Astero & Stockhaus, Tumba, Sweden

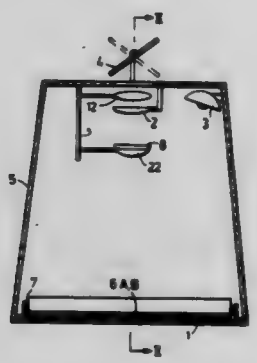
PCT No. PCT/SE79/00247, § 371 Date Jul. 23, 1980, § 102(e) Date Jul. 23, 1980, PCT Pub. No. WO80/01210, PCT Pub. Date Jun. 12, 1980

PCT Filed Dec. 6, 1979, Ser. No. 200,500

Claims priority, application Sweden, Dec. 6, 1978, 7812542

Int. Cl.³ G03B *21/08*

U.S. Cl. 353—64 10 Claims



1. A projector comprising a substantially horizontal table, projection optics arranged substantially centrally above the table, a light source which is located above the table and arranged to illuminate the table, a deflection mirror for substantially horizontal deflection of light radiating vertically upwardly from the table, and a light shaft which at least partly screens off the area between the optics and the table from the surroundings, a covering arranged to selectively lie upon the table surface, one of an upwardly facing surface of the laid-out covering and an upper surface of the table is light-absorbing while the other is is arranged to emit light vertically upwardly.

4,343,539

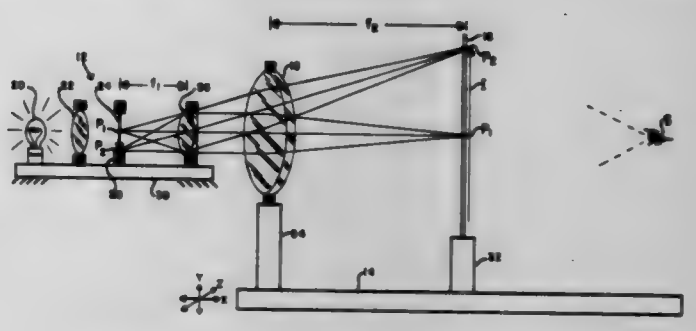
VIBRATION STABILIZED IMAGE PROJECTION SYSTEM

Harry L. Task, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 3, 1981, Ser. No. 240,048

Int. Cl.³ A61B *3/00*; G03B *21/00, 21/24*

U.S. Cl. 353—122 7 Claims



1. A vibration stabilized image projection system, comprising:

(a) a platform subject to vibratory movement in X, Y and/or Z planes;

(b) an image viewing screen supported on said platform for undergoing vibratory movement therewith;

(c) an image projector supported off said platform in a relatively vibration-free environment for projecting an image toward said screen; and

(d) an image stabilizing lens interposed between said projector and screen for providing an optical link between them, said stabilizing lens being supported on said platform for undergoing vibratory movement therewith and relative to said projector, said lens focusing said image from said projector at a stationary position on said screen as said lens, screen and platform undergo vibratory movement relative to said projector.

4,343,540

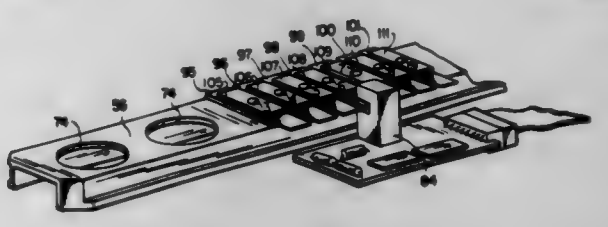
PLOTTING APPARATUS AND METHOD UTILIZING ENCODED OPTICAL MEANS

Henry F. Berdat, Manchester, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Feb. 17, 1981, Ser. No. 235,170

Int. Cl.³ G03B *41/00*

U.S. Cl. 354—4 19 Claims



1. A recording apparatus for generating images on a photosensitive material comrising:

light projecting means having a source of light and means for directing light rays in a beam from the source onto a photosensitive material;

optical means supported in the path of the light rays from the source and having light modifying means with adjustable characteristics for modifying the light rays directed from the source onto the photosensitive material;

control means connected to the optical means for adjusting the characteristics of the light modifying means;

encoding means associated with the optical means and including detectable indicia corresponding to the adjustable light modification characteristics of the light modifying means; and

detector means associated with the encoding means for sensing the detectable indicia and producing signals corresponding to the detectable indicia and the adjusted light modification characteristics of the light modifying means.

4,343,541

REFLECTION PHOTOMETRIC APPARATUS FOR CAMERA INCLUDING FOCAL PLANE SHUTTER

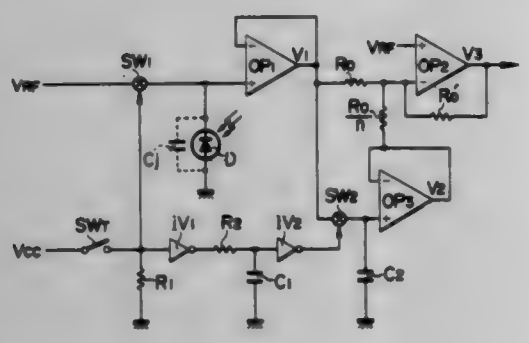
Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Jui. 21, 1980, Ser. No. 170,514

Claims priority, application Japan, Sep. 17, 1979, 54-119644; Oct. 17, 1979, 54-133992

Int. Cl.³ G03B *7/081*

U.S. Cl. 354—51 **17 Claims**



1. In combination with a camera of the type which includes a focal plane shutter, a reflection photometric apparatus comprising:

an integrating circuit including a photoelectric transducer element for sequentially measuring light reflected from a first blind and light reflected from a film surface of a film located in said camera and for generating a photometric output signal representative of the amount of light being received at any instant by said transducer element; said integrating circuit integrating said photometric output signal to provide an integrated voltage; and

a correction circuit for properly correcting said integrated voltage provided by said integrating circuit so as to compensate for a difference in reflectivity between said first blind and said film surface, said correction circuit including a sample-and-hold circuit for receiving said integrated voltage from said integrating circuit until a predetermined time after the initiation of a shutter operation and for subsequently maintaining said integrated voltage received at said predetermined time, said sample-and-hold circuit producing an output voltage which until said predetermined time is equal to said integrated voltage which said sample-and-hold circuit is receiving and which output voltage is thereafter equal to said integrated voltage at said predetermined time, and a summing amplifier circuit for summing said output voltage with said integrated voltage in a manner which provides a corrected integrated voltage which has compensated for a difference in reflectivity between said first blind and said film surface.

4,343,542

SMOOTHING DEVICE FOR SCAN LINES OF A PHOTOGRAPHED CRT DISPLAY

Roelof R. Jonker, Westminster, and Dennis A. Webb, Culver City, both of Calif., assignors to N.I.S.E., Inc., Cerritos, Calif.

Filed Jul. 6, 1981, Ser. No. 280,885

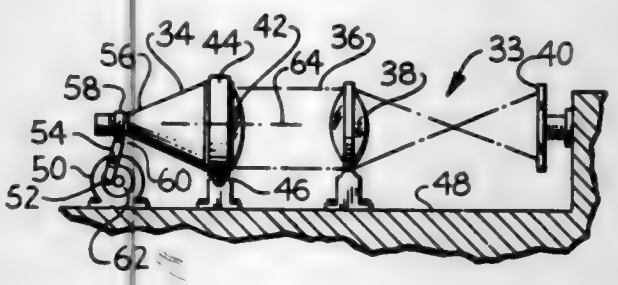
Int. Cl.³ G01D *9/42*; G03B *29/00*; H04N *5/84*

U.S. Cl. 354—76 **28 Claims**

1. A device to produce a photograph of an image represented by raster scans of variable intensity light having predetermined widths and predetermined spacing therebetween including:

a cathode ray tube having a face on which the raster scans of variable intensity light are produced thereacross in a first direction as its output representative of the image;

photographic means sensitive to the output of said cathode ray tube;



an imaging system to project the output of said cathode ray tube on said photographic means; and

mechanical means to move the output of said cathode ray tube with respect to said photographic means a distance about equal to the predetermined spacing between the raster scans in a second direction which generally is at right angles to said first direction.

4,343,543

MULTIPLE IMAGE ROLL FILM CAMERA

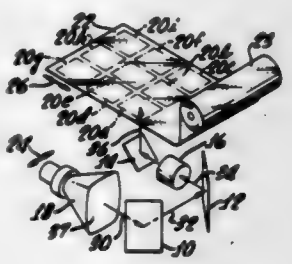
Otto M. Schiff, Irvine, and Vitolds Rikis, Mission Viejo, both of Calif., assignors to Schiff Photo Mechanics, Santa Ana, Calif.

Continuation-in-part of Ser. No. 157,674, Jun. 9, 1980, Pat. No. 4,285,587. This application May 19, 1981, Ser. No. 265,154

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ G03B *29/00, 1/00, 27/42, 27/70*

U.S. Cl. 354—124 **31 Claims**



1. A multiple-image camera comprising

a camera housing,

an oscilloscope mounted to the housing having a screen forming

images to be photographed,

optical means mounted to the housing for transmitting light from the screen along an output axis behind the screen and generally parallel to the screen,

means for transporting film in a first direction perpendicular to said output axis, said means for transporting film comprising

a film spool supply mounted to said housing,

metering drive means for driving film across said output axis,

means for cutting film from said film spool supply, and

means for effecting relative shifting of said output axis and said film.

4,343,544

DIAPHRAGM CONTROL APPARATUS FOR COMBINED USE OF AN ELECTRONIC FLASH WITH A CAMERA

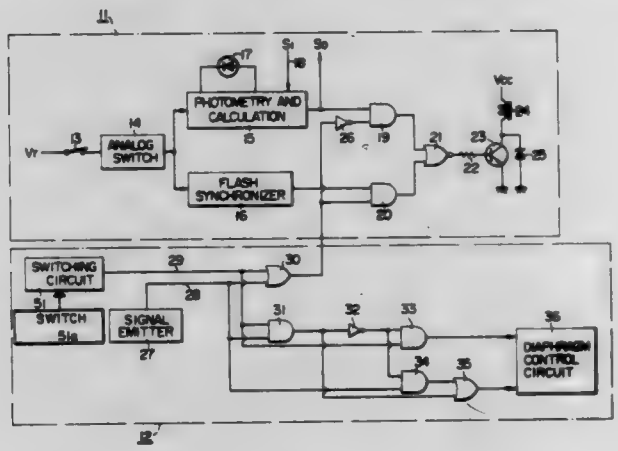
Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 166,078

Claims priority, application Japan, Aug. 22, 1979, 54-106932

Int. Cl.³ G03B *15/05, 17/18*

U.S. Cl. 354—149 **4 Claims**



4. A camera including a diaphragm control apparatus, said camera being usable with a usual electronic flash or with a devoted electronic flash, said apparatus comprising:

switch means having a first position for a normal photographing operation or a devoted electronic flash operation, and a second position for a usual electronic flash operation;

a switching circuit for producing a first output signal indicative of a usual electronic flash being mounted on said camera and said switch means being in said second position;

a signal emitter for producing a second output signal indicative of a devoted electronic flash being mounted on said camera and said switch means being in either said first position or said second position;

a diaphragm presetting circuit responsive to receiving said first output signal only for producing a first diaphragm control signal and responsive to receiving said second output signal only for producing a second diaphragm control signal and responsive to receiving both said first and second output signals for producing said second diaphragm control signal; and

a diaphragm control mechanism responsive to said first or second diaphragm control signals from the diaphragm presetting circuit for establishing a diaphragm aperture corresponding to said first or second diaphragm control signals.

4,343,545

APPARATUS FOR STOPPING THE MOTOR OF A MOTOR DRIVE MECHANISM IN A CAMERA

Kenji Onogi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,793

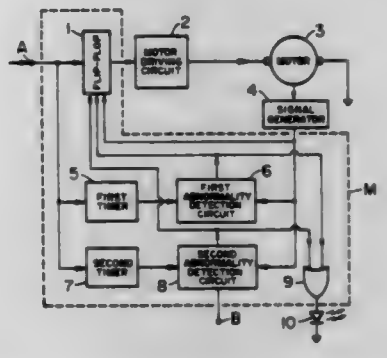
Claims priority, application Japan, Jul. 12, 1979, 54-95056[U]

Int. Cl.³ G03B *1/18*

U.S. Cl. 354—173 **12 Claims**

1. An apparatus for stopping the motor of a motor drive mechanism in a camera of the type in which the motor is started upon the occurrence of a film winding start signal and is stopped in response to a film winding end signal being generated upon completion of a film winding operation, said apparatus comprising:

timer circuit means for generating a first timing signal a first predetermined time after said film winding start signal, said first predetermined time being selected such that it is before the time said film winding end signal is generated during normal operation of the mechanism, and for generating a second timing signal a second predetermined time selected to be after said time said film winding end signal is normally generated, and



abnormality detection means responsive to the timing signals and to the film winding end signal for producing a stop signal for stopping the motor when said film winding end signal is being generated at the first predetermined time or when no film winding end signal is being generated at the second predetermined time.

4,343,546

LATCH MECHANISM FOR USE WITH REMOVABLE MEDIA

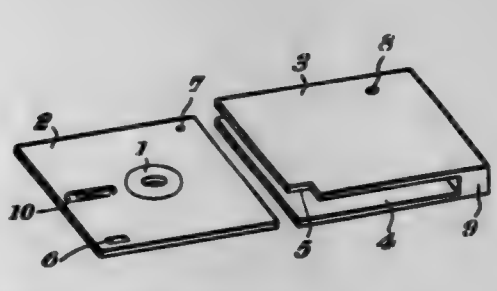
Roderick M. Urquhart, Fife, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 12, 1980, Ser. No. 120,818

Claims priority, application United Kingdom, Feb. 15, 1979, 7905387

Int. Cl.³ G03B *17/26;* G11B *17/04, 23/02*

U.S. Cl. 354—281 **16 Claims**



1. A camera system comprising:

removable film having a photosensitive sheet and encasing means for said photosensitive sheet, said encasing means surrounding said supporting said photosensitive sheet, said encasing means providing operational access of said camera to said photosensitive sheet;

film protecting means for containing and protecting said film wherein said film protecting means comprises an envelope of rigid material where said envelope fits over said removable film, said envelope protecting and containing said removable film and where said envelope is provided with an opening whereby said removable film may enter or be withdrawn, said removable film being retained in said film protecting means by friction, said film protecting means containing and protecting said film where on insertion of said film contained in said film protecting means into said camera said film is actively retained by said camera allowing independent withdrawal from said camera of said film protecting means and where on reinsertion of said film protecting means into said camera so as to contain said removable film and removable film is released by said camera being retained within said film protecting means on withdrawal of said film protecting means from said camera; and

second film retaining means comprising a first part situated on said encasing means and second part situated within said

camera, such that said first and second parts of said second film retaining means come together when said removable film is fully inserted into said camera, said second film retaining means on insertion of said film, enclosed within said film protecting means, into said camera providing a retaining force on said removable film such that said film protecting means may be withdrawn independently against said friction force, leaving said removable film within said camera and where on reinsertion of said film protecting means over said removable film into said camera, said second film retaining means provides no retaining force, allowing said removable film contained within said film protecting means by said frictional force to be withdrawn from said camera together with said film protecting means.

4,343,547

IMAGE FORMING APPARATUS

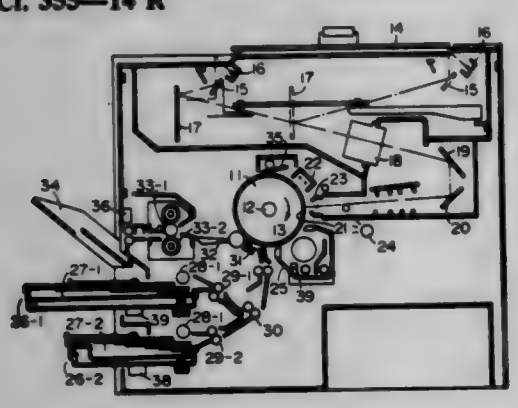
Nao Nagashima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

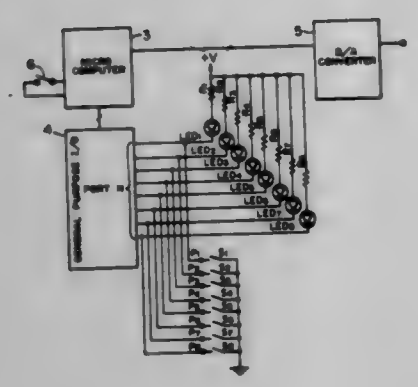
Filed Sep. 17, 1980, Ser. No. 188,230

Claims priority, application Japan, Sep. 26, 1979, 54-123631; Sep. 26, 1979, 54-123632

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—14 R 10 Claims





8. A display apparatus, comprising:

an input-output circuit in which a same terminal is selectively usable for both data input and data output;

a switch for switching said terminal for data input or data output; and

a display circuit connected to said input-output circuit and adapted to interrupt the ordinary display function for effecting a display in response to the input data entered into said terminal when said terminal is switched for data input.

4,343,548

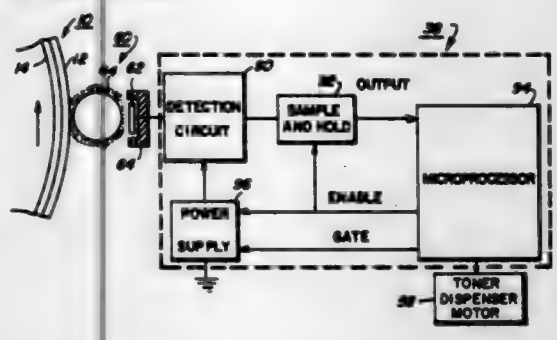
CONTROL SYSTEM FOR REGULATING THE CONCENTRATION OF TONER PARTICLES WITHIN A DEVELOPER MIXTURE

Jan Bares, Webster, and James C. Maher, Sodus, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 19, 1980, Ser. No. 151,234

Int. Cl.[3] G03G *15/08*

U.S. Cl. 355—3 DD 16 Claims



4. An electrophotographic printing machine of the type having a developer roller for transporting a conductive developer mixture comprising toner particles into contact with an electrostatic latent image recorded on a photoconductive surface so as to develop the latent image with the toner particles, wherein the improvement includes:

a probe disposed closely adjacent to the developer roller and in contact with the developer mixture;

means for producing a voltage difference between said probe and the developer roller including means for switching the polarity of the voltage difference between said probe and the developer roller;

means for detecting first and second currents flowing through said probe corresponding to the respective polarities of the voltage difference;

means, responsive to the detected current, for generating a control signal corresponding to the difference between the detected first current and detected second current;

means for storing a supply of toner particles; and

means, responsive to the control signal, for dispensing toner particles from said storing means into the developer mixture to adjust the toner particle concentration thereof.

4,343,549

BOX TYPE CONTACT PRINTER

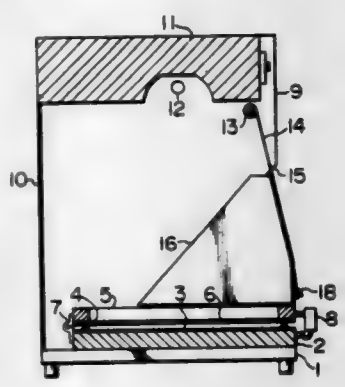
Yasuyuki Nanjo, Nishi, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Oct. 2, 1980, Ser. No. 193,351

Claims priority, application Japan, Oct. 9, 1979, 54-139771[U]

Int. Cl.[3] G03B *27/04*

U.S. Cl. 355—113 3 Claims



1. A box type contact printer comprising:

(a) a lower frame and an upper, transparent frame positioned thereon, said frames being pivotally connected to each other at their rear ends so as to rotate from an open to a closed position so that a photosensitive material and an

original picture disposed thereon may be positioned between the frames when in open position; and

(b) a shield box for covering the frames including a top wall, a rear wall and two side walls defining a front opening which is adapted to be shielded by a roll-up, opaque sheet member, an exposure light source mounted in said box above the upper frame, wherein a side opening is defined in the lower front corner portion of at least one of the side walls of the shield box by means of a diagonally cut off section, and wherein an opaque, shield plate is mounted on the upper frame disposed and shaped so as to shield said openings in the side walls from leakage of exposure light when the lower and upper frames are in said closed position.

4,343,550

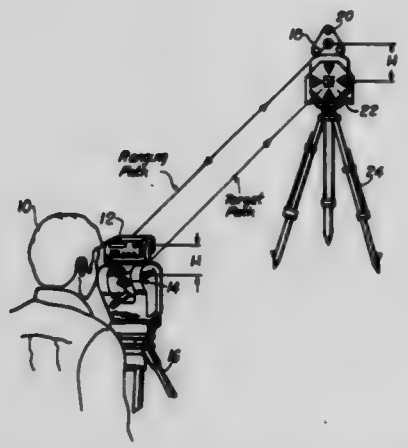
UNIVERSALLY ADJUSTABLE RANGING TARGET AND RETRO-REFLECTOR HOUSING BRACKET

Galen L. Buckley, 40 Ashwood, Irvine, Calif. 92714, and Harold W. Martin, 1848 Port Sheffield, Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 117,859, Feb. 4, 1980. This application May 27, 1980, Ser. No. 153,348

Int. Cl.³ G01C *3/08*

U.S. Cl. 356—5 **4 Claims**



1. A combined sighting target and bracket for receiving a retro-reflecting device for use in conjunction with remotely located electronic distance measuring instruments using a target line-of-sight path and a range measurement path, the combination comprising:

a yoke member having means for rotational engagement with a supporting tripod about an axis that is perpendicular to the surface upon which the tripod stands, said yoke member also having means for defining a target point fixed in space along a fixed axis parallel to said surface;

a tilting member having means for rotation relative to said yoke member about a second axis that is parallel to the surface upon which the tripod stands, and also having means for receiving said retro-reflecting device for elevational adjustment thereof; and

a slide member slideably interconnecting said tilting member to said yoke member for linear adjustment of the distance between said target point and said retro-reflecting device along said perpendicular axis.

4,343,551

APPARATUS FOR COUNTING AND CLASSIFYING PARTICLES

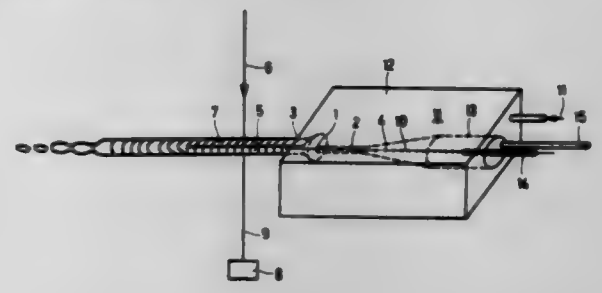
Wolfgang G. Eisert, Hanover, Fed. Rep. of Germany, assignor to Gesellschaft für Strahlen- und Umweltforschung mbH München, Munich, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 155,131

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922643

Int. Cl.³ G01N *15/02, 21/01*

U.S. Cl. 356—335 **4 Claims**



1. In an apparatus for hydrodynamically focusing particles to permit counting and classification of the particles, which apparatus includes a flow nozzle terminating in a capillary nozzle that forms a thin stream containing the particles and having a circular cross section with the particles oriented along one axis of the thin stream, and a jacket pipe enclosing the capillary nozzle for providing an entraining stream for the thin stream of particles leaving the capillary nozzle, the improvement comprising: a further flow nozzle located downstream of said capillary nozzle and presenting a rectangular cross section for receiving the composite stream composed of the stream leaving said capillary nozzle and said entraining stream, and changing the composite stream cross section from circular to rectangular such that the stream exits from said further nozzle with a rectangular cross section; means directing a laser beam normally to one flat side of the rectangular cross section at a location downstream of said further nozzle; and a radiation detector disposed for detecting radiation resulting from impingement of laser radiation on particles in the stream of rectangular cross section.

4,343,552

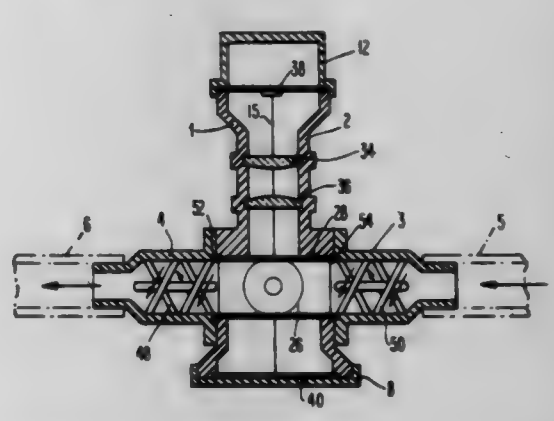
NEPHELOMETER

Frederick K. Blades, Boulder, Colo., assignor to PureCycle Corporation, Boulder, Colo.

Filed Dec. 28, 1979, Ser. No. 107,934

Int. Cl.³ G01N *23/00*

U.S. Cl. 356—339 **18 Claims**



16. In apparatus for the continuous monitoring of condition of a fluid, comprising optically transparent window means for the passage of light therethrough, and inlet passage means, the improvement which comprises helical flow diverter means disposed in said inlet passage for establishing a current

whereby a laminar layer is prevented from forming on said window means.

4,343,553

SHAPE TESTING APPARATUS

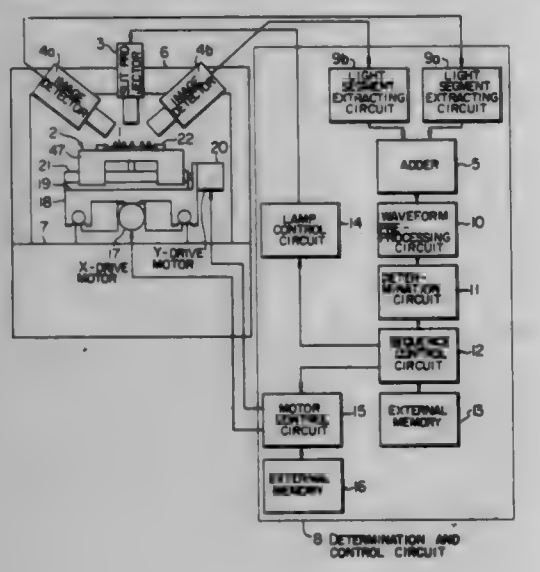
Yasuo Nakagawa; Hiroshi Makihira, both of Yokohama; Yoshitada Oshida, Fujisawa, and Nobuyuki Akiyama, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

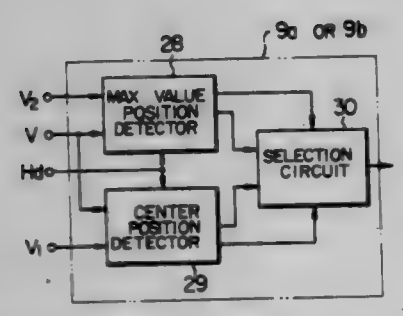
Filed Aug. 27, 1980, Ser. No. 181,768

Claims priority, application Japan, Sep. 3, 1979, 54/111706; Nov. 14, 1979, 54/146427; Aug. 6, 1980, 55/107193

Int. Cl.³ G01B *11/00*

U.S. Cl. 356—376 **6 Claims**





1. A shape detecting apparatus comprising:

(a) a slit projecting means for projecting a slit image on a three-dimensional object;

(b) a positioning means for positioning said three-dimensional object relative to said slit projecting means;

(c) an image pickup means for two-dimensionally scanning the slit image projected by said slit projecting means to pickup the image;

(d) a light segment extracting circuit including

a center position extracting means for extracting a mean position $(Z_1+Z_2)/2$ of two position signals Z_1 and Z_2 at which a video signal derived by transversely scanning said slit image by said image pickup means corresponds to or approximates to a first higher reference V_1 when a maximum value of said video signal exceeds said first higher reference V_1,

a maximum value position extracting means for extracting a position Z corresponding to the maximum value of said video signal when the maximum value of said video signal is no higher than said first higher reference V_1 and exceeds a second lower reference V_2, and

an erasing means for erasing the position signal of said video signal when the maximum value of said video signal is no higher than said second lower reference V_2; and

(e) a detecting means for detecting a shape of said three-dimensional object by analyzing the light segment position information derived from said light segment extracting circuit.

4,343,554

KNEADER FOR PARTICULATE TO GRANULAR MATERIALS

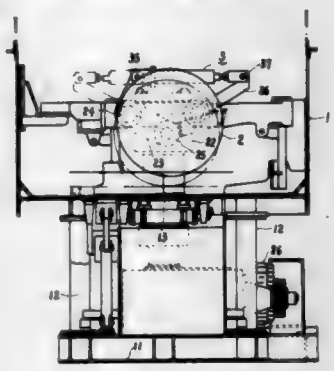
Koji Tawara, Mishima, Japan, assignor to Taiyo Chuki Co., Ltd., Osaka, Japan

Filed Apr. 7, 1980, Ser. No. 137,756

Claims priority, application Japan, Sep. 1, 1979, 54-120805[U]

Int. Cl.³ B28G *5/08*

U.S. Cl. 366—65 **6 Claims**



1. A kneader for particulate or granular materials comprising:

a container having the shape of a bottomed hollow cylinder;

a vertical shaft rotatably mounted in the center of the interior of the container;

roll carrier means having agitating rolls rotatably mounted thereon, said roll carrier means being pivotally mounted on the vertical shaft for causing said rolls to move upwardly or downwardly by pivotal movement of said roll carrier means; and

pressure adjusting means connected to said roll carrier means for varying the pressure applied to the agitating rolls in accordance with the level at which the rolls are positioned, said pressure adjusting means having a cylinder member, a rod slidably extending into the cylinder member and having a flange at the end within the cylinder for dividing the interior of the cylinder member into two chambers, and means disposed in the respective chambers for biasing the rod in opposite directions when said flange is moved from a neutral position in said cylinder member, one of the cylinder member and the rod being connected at one end portion thereof to the vertical shaft, the other of the cylinder member and the rod being connected at the other end portion thereof to said roll carrier means.

4,343,555

CHEMICAL PRINT ELEMENT

David D. Abbott, Downingtown, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 5, 1980, Ser. No. 146,684

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **13 Claims**

1. A print element for a serial impact printer for forming characters within a rectangular grid space having a length L and a width W on a document comprising:

a first set consisting of 52 character elements having the typeface configurations of the upper and lower case English language alphabet;

a second set consisting of 8 character elements having typeface configurations of upper case numerals from 2 through 9;

a third set consisting of 9 character elements having typeface configurations of the lower case numerals from 1 through 9;

a character element having a typeface configuration of a vertical line;

a character element having a typeface configuration of a horizontal line;

a first pair of character elements each having a typeface configuration of a horizontally disposed arrow, each arrow being oppositely disposed to the other and adapted to mate with said horizontal line;

a second pair of character elements each having a typeface configuration of a vertically disposed arrow, each arrow being oppositely disposed to the other and adapted to mate with said vertical line;

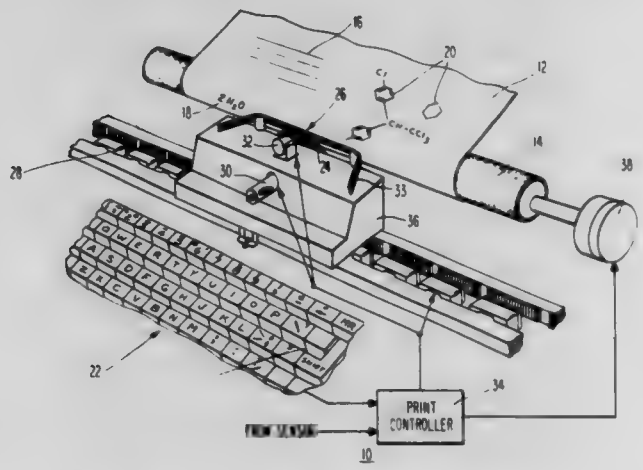
a third pair of character elements each having a typeface configuration of a diagonal line with slopes of plus and minus L/W respectively;

the character elements of said third pair each having a length slightly exceeding L/ sin θ, where θ equals arctan L/W, each passing through at least one corner of said grid space and extending to a diagonally opposite corner of said grid space; and

a fourth pair of character elements each having a typeface configuration of a diagonal line with slope of plus and minus L/2W respectively;

the character elements of said fourth pair each having a length slightly exceeding L/2 sin θ', where θ' equals arctan L/2w, each passing through at least one corner of said grid space and extending to an opposite side of said grid space substantially at a mid-point of said opposite side;

each of said character elements situated at the distant end of a separate spoke radially extending from a central hub.



13. A serial impact printing systems comprising:

a print element having

support means;

a set of character elements mounted on said support means in a character array, each of said character elements in said array adapted to be moved to and from a print position, said set including a subset having typeface configuration of lower case numerals;

at least one coded area mounted on said support means containing a code for identifying said print element;

drive means coupled to said print element for moving said character elements to and from said print position;

means for moving a copy medium lengthwise relative to said print element;

keyboard means for selecting particular ones of said set of print characters to be moved to said copy medium;

sensor means for sensing the coded area of said print element; and

print control means responsive to said sensor means and to said keyboard means and coupled to said moving means for controlling the lengthwise increment and movement of said copy medium relative to said print element whenever said code has been sensed by said sensor means and print characters from said subset have been selected by said keyboard means;

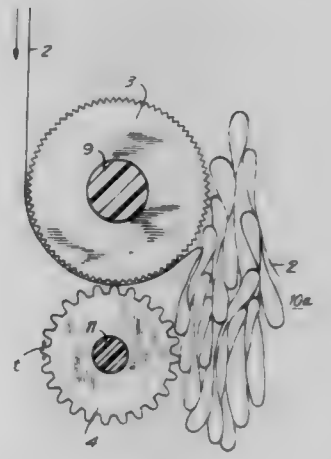
said means for moving said copy medium moving said medium lengthwise in discrete steps of a first magnitude corresponding to a line to line step and, when a character from said second subset has been selected, for moving said medium first in one direction in a step of a second magnitude less than said first to permit imprinting of said selected character of said subset in a position displaced lengthwise of said medium from adjacent imprinted characters and then returning said copy medium to its previous lengthwise position when said character element of said subset is moved away from said print position.

4,343,556

INK RIBBON CARTRIDGE

Takao Kobayashi, Shiojiri, Japan, assignor to Shinshuseiki Kabushiki Kaisha, Nagano, Japan

Filed Oct. 24, 1980, Ser. No. 200,184
Claims priority, application Japan, Oct. 26, 1979, 54-138545
Int. Cl.³ B41J *33/26, 33/10, 32/02*
U.S. Cl. 400—196.1 **21 Claims**



1. A ribbon cartridge for a printer producing characters on a recording media, comprising:

a feed roller of a first finite module mounted for rotation and having peripheral teeth of a first profile;

a pinch roller of a second finite module mounted for rotation and having peripheral teeth of a second profile, the teeth of said rollers being in engagement, said first and second modules being different;

a ribbon of extended length, said ribbon being interposed between said feed and said pinch rollers in the region of said engagement, whereby said ribbon is transported when said feed roller rotates.

4,343,557

SPACEBAR TOUCH CONTROL APPARATUS

Robert M. DuRoss, Huntsville, Ala., and Robert J. Stuhler, Mattydale, N.Y., assignors to SCM Corporation, New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,271
Int. Cl.³ B41J *5/28*
U.S. Cl. 400—496 **16 Claims**

1. A typewriter space bar touch control apparatus comprising:

support frame means;

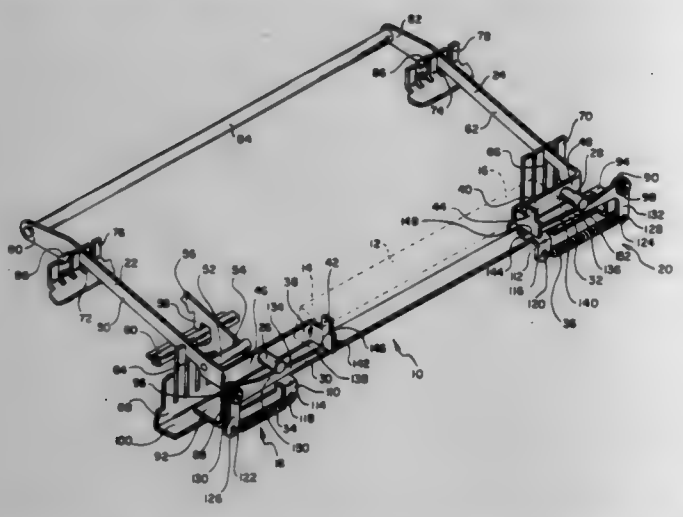
a pivoting member pivotally mounted on said support frame means and having a support portion;

spring means connecting said pivoting member and said support frame means and disposed to resist pivoting motion of said pivoting member;

space bar means supported by said support portion of said pivoting member, with initial motion of said space bar resisted by said spring means;

an engagement member mounted on said space bar means for motion with said space bar means and with said engagement member engaging an intermediate portion of said pivoting member, having a pivot radius less than that

of said support portion, responsive to motion of said space bar beyond said initial motion for causing an abrupt in-



crease in the rate of resistance to further motion of said space bar.

4,343,558

MECHANICAL PENCIL

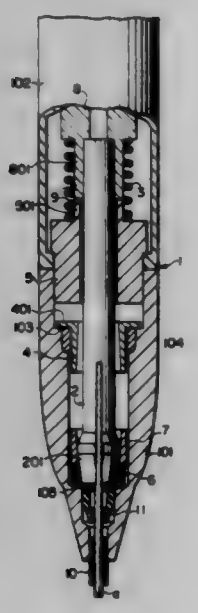
Masashichi Fujiwara, Tokyo, Japan, assignor to Yugen Kaisha Tokyo Kinzoku Seisakusho, Tokyo, Japan

Filed Jan. 8, 1980, Ser. No. 110,463

Claims priority, application Japan, Jul. 31, 1979, 54-105740[U]; Aug. 16, 1979, 54-113252[U]

Int. Cl.³ B43K *21/16*

U.S. Cl. 401—67 **1 Claim**



1. A mechanical pencil comprising:

a holder tube having a back end and a front end, and having an intermediate connecting piece located therein;

a hollow movable lead case having a back end and being positioned in the back end of said tube;

a lead chuck, said lead chuck having a back end movably fitted within said lead case and a front end in the front end of said tube, said back end of said lead chuck including a shoulder means;

a buffer spring having a first spring rate and being positioned between said shoulder means and the back end of said lead case to bias said shoulder means against the front end of said lead case;

a retraction spring having a spring rate less than said first spring rate and being located between said lead case and said intermediate connecting piece and compressible by movement of said lead case, said movement of said lead case moving said lead chuck towards said front end of said tube via the biasing of said buffer spring;

a movable fastening ring having a conical internal surface in the front end of said holder tube, said fastening ring being positioned so as to be engageable with said chuck for chucking said lead when said chuck is moved toward said front end of said tube; and

a buffer spring operating mechanism comprised of said front end of said lead case, the rear end of said intermediate connecting piece and a predetermined distance therebetween, wherein said engagement between said chuck and said fastening ring occurs at said predetermined distance, whereby said buffer spring operating mechanism causes said buffer spring to compress upon compression of said retraction spring due to said engagement between said chuck and said fastening ring so that the impact of engagement of said front end of said lead chuck with said fastening ring is buffered.

4,343,559

RETRACTABLE MECHANISM FOR A WRITING ELEMENT

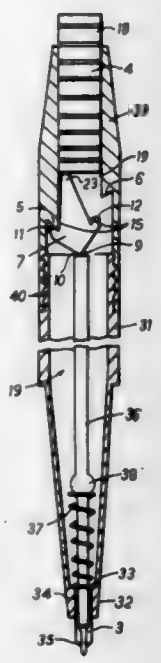
Derrick J. Silver, Letchworth, England, assignor to Platignum Limited, Great Britain

Filed Jun. 25, 1980, Ser. No. 162,991

Claims priority, application United Kingdom, Jul. 2, 1979, 7922832; Mar. 3, 1980, 8007188

Int. Cl.³ B43K *24/00*

U.S. Cl. 401—109 **6 Claims**



1. A retractable mechanism for a writing element comprising

a casing including a passage extending longitudinally therethrough and walls bounding said passage,

a plunger constrained to move in the longitudinal direction of said passage,

a pair of latch formations oppositely disposed on said walls of said passage when viewed in a plane normal to the longitudinal direction of said passage,

a latch member reciprocally displaceable in the longitudinal direction of said passage by said plunger,

a pair of laterally extending latch arms on said latch member oppositely directed and each disposed for engagement with a respective one of said latch formations,

one of said latch formations defining a forward projected position of the writing element and the other of said latch formations defining a rearward retracted position of the writing element,

a rearward extending limb on said latch member having faces extending convergently from said latch arms towards the rearward end of said latch member,

a forward end of said plunger contacting the rearward end of said limb upon a successive depression of said plunger into said passage, said forward end of said plunger having a linear surface generally normal to the direction of de-

pression and allowing freedom of lateral movement of said rearward end of said limb over said surface,

a pivot means at a forward portion of said latch member for engagement with a rearward portion of the writing element,

resilient bias means moving the writing element to produce a force on said pivot means laterally displaced from a force transmitted to said limb by said plunger when said plunger is depressed,

said plunger movable longitudinally forward a distance to move said latch member to release a said latch arm from an engaged said latch formation and position the other of said latch arms forward of the other of said latch formations,

said resilient bias means producing its said force sufficiently laterally displaced from said force from said plunger to move said latch member about said pivot means laterally to align said other of said latch arms with said other of said latch formations,

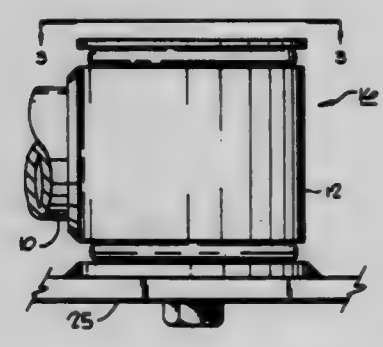
a point on each said latch formation for contact with a point on each said latch arm upon engagement of one of said latch arms with a respective one of said latch formations upon release of said plunger, with said points acting as a fulcrum about which said latch member moves, moving said rearward end of said limb laterally over said unobstructed surface of said plunger and moving a said converging face of said latch member against said wall of said passage contiguous with said engaged latch formation with said converging face of said latch member placed in sliding contact with said wall of said passage for a successive depression of said plunger.

4,343,560

SPIGOT JOINT

Wallace G. Chalmers, 2 Gloucester St., Suite 214, Toronto, Ontario, Canada (M4Y 1L5)

Filed Jul. 23, 1980, Ser. No. 171,651
Claims priority, application Canada, Mar. 26, 1980, 348350
Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*
U.S. Cl. 403—13 **10 Claims**



1. A spigot assembly for attaching a knuckle of a member of a vehicle to a relatively movable part of the vehicle via a bushing, the bushing having a bore and ends and being held within said knuckle, said spigot assembly comprising:

a spigot having a base arranged to be rigidly secured to said vehicle part and a tubular projection extending from said base, said projection having an outer end defining a first annular surface facing axially outwardly of the projection;

a tubular cap having on an inner end thereof a second annular surface in engagement with the first annular surface of said projection;

a centering and aligning means being located at the inner end of said cap to ensure registry of the first and second annular surfaces and alignment of the spigot and cap along a common axis;

bolt means extending within the aligned spigot and cap and fastening said spigot and cap together with said first and second annular surfaces tightly engaged with one another;

the centering and aligning means taking up the bolt forces and transmitting them to the cap part; and

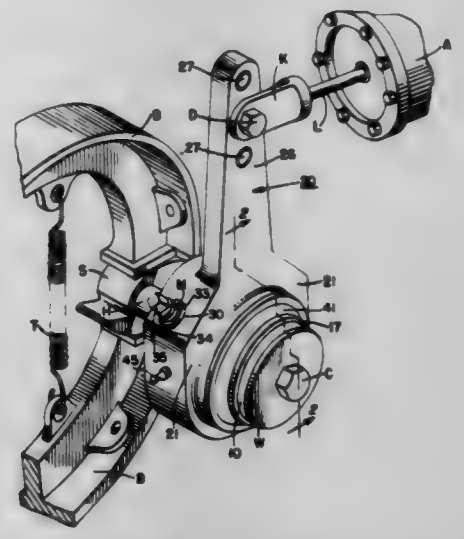
said contacting first and second annular surfaces transmitting the bolt forces and any bending moments applied by the bushing to the cap part directly to the spigot part so that the bolt means is not subject to bending forces.

4,343,561

SLACK ADJUSTER

Sergio Campanini, 224 E. Miller Rd., Iola, Kans. 66749

Filed Nov. 3, 1980, Ser. No. 203,745
Int. Cl.³ F16C *11/00*; F16D *1/12, 3/00*
U.S. Cl. 403—97 **8 Claims**



1. A slack adjuster assembly for coupling a brake shaft to a power actuator to achieve rotation of the brake shaft about its axis when the actuator is moved, comprising:

(a) a bushing member surrounding the shaft and fixed thereto, the bushing member having an annular flange therearound and having a bearing surface around the bushing member and located adjacent to the flange which extends outwardly from the bearing surface at an annular shoulder;

(b) a lever having a hub member surrounding the bearing surface of the bushing member and journaled thereon, and the hub member having an annular shoulder disposed opposite to the annular shoulder of the bushing member, and the lever having an arm extending from its hub member and coupled to said actuator;

(c) an annular series of teeth carried by each of said shoulders, the respective series of teeth manually engaging when the hub member is displaced axially along the bearing portion so that said shoulders approach each other;

(d) spring means carried by the members and yieldable urging the hub member toward the bushing shoulder to maintain said series of teeth normally engaged;

(e) the shoulder of one of said members having a recess therein and having a bore extending from the recess outwardly of the member; and

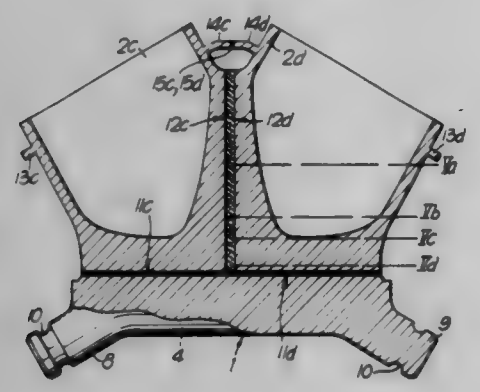
(f) a pawl in the recess and having an adjustment shaft extending outwardly through said bore and operative to rotate the pawl in the recess; and the pawl having lug means engageable with a tooth of the series carried by the other of said members and operative when the pawl is rotated to force the shoulders apart against the spring means and to annularly shift said mutual engagement by one tooth.

4,343,562

JOINT FOR TRUSSES

Inge-Bertin Almeland, and Marc Lefranc, both of Oslo, Norway, assignors to A/S Akers Mek. Verksted, Oslo, Norway

Filed Dec. 19, 1979, Ser. No. 105,268
Claims priority, application Norway, Dec. 22, 1978, 784353; Dec. 3, 1979, 793921
Int. Cl.³ F16B 7/00
U.S. Cl. 403—171 11 Claims



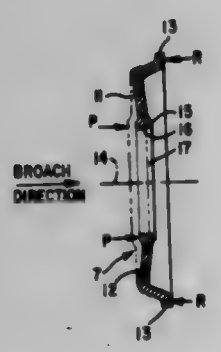
1. A joint for a truss having truss members constituted by pipe-like hollow bodies, comprising a core member, a plurality of transition pieces attached at one of the ends thereof to said core member, the other and free ends of said pieces being adapted for securement with said hollow bodies, the cross-sections of said pieces changing between said one and said free ends thereof, the improvement wherein said core member has an elongate, substantially cylindrical trunk including a plurality of longitudinal ribs, said cross-sections of said pieces being gradually transitional between annular formations at said free ends and narrow elongate formations at said one ends thereof, said elongate formations defining elongate surfaces along which said pieces are attached to said core member, pairs of said pieces being attached to said ribs, respectively.

4,343,563

TAPERED SPLINE AND METHOD OF MANUFACTURING SAME

James R. Bernhagen, Eldridge, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00578, § 371 Date May 16, 1980, § 102(e) Date May 16, 1980, PCT Pub. No. WO81/03296, PCT Pub. Date Nov. 26, 1981
PCT Filed May 16, 1980, Ser. No. 245,240
Int. Cl.³ F16B 11/00
U.S. Cl. 403—282 12 Claims



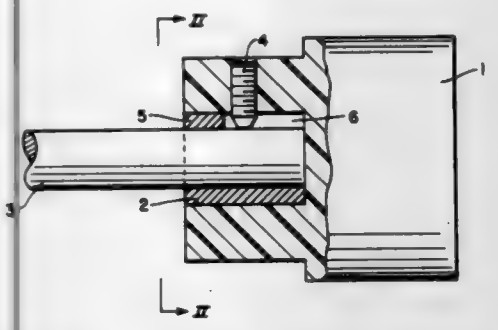
7. In a splined connection between a female member (7) and a male member (10), the improvement comprising a tapered spline (6) in the female member (7) capable of mating with a straight spline (9) on the male member (10).

4,343,564

ROTATABLE MEMBER RIGIDLY MOUNTED ON AN UNDERSIZE SHAFT

Roderick M. Francis, Garner, N.C., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Feb. 17, 1981, Ser. No. 234,800
Int. Cl.³ F16D 1/06
U.S. Cl. 403—362 2 Claims



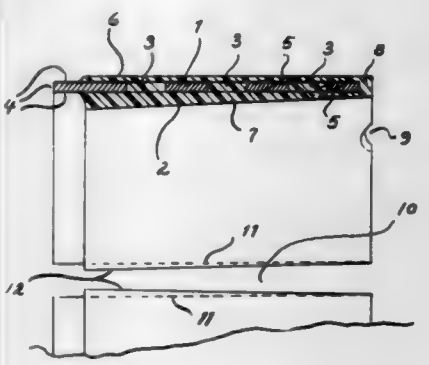
1. In combination, a rotatable shaft, a rotatable member provided with a cylindrical axial bore receiving one end of the shaft, the diameter of the shaft being materially less than the diameter of the bore, a set screw threaded in said member radially of said bore and projecting into the bore, and a cylindrical sleeve encircling the shaft in the bore and centering the shaft in the bore, the sleeve being provided with a longitudinal slot extending outwardly from its inner end, and said screw extending through said slot and tightly engaging the shaft to rigidly connect said rotatable member and shaft, said slot being wide enough to permit it to be moved along the projecting inner end of the screw when the sleeve is inserted in said bore.

4,343,565

FASTENING SLEEVE

Stig L. Hallerbäck, Gothenburg, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

Filed Nov. 19, 1979, Ser. No. 95,580
Claims priority, application Sweden, Jan. 22, 1979, 7900526
Int. Cl.³ F16B 2/00
U.S. Cl. 403—370 9 Claims

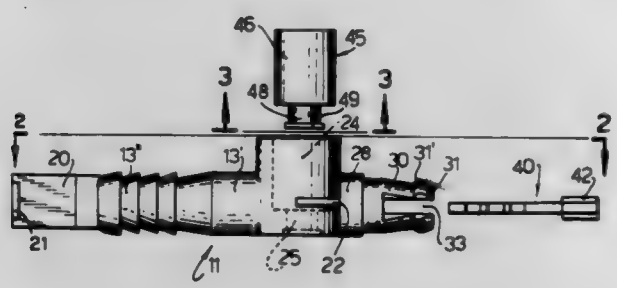


1. A fastening sleeve assembly engageable with a press fit in the annular space between confronting annular surfaces of two members comprising an outer elongated generally tubular housing element made of a plastic material having at least one peripheral surface which tapers from one axial end to the other, at least one generally cylindrical slotted inner body element made of pressed sheet metal encapsulated by said housing element and having an axial end portion which projects outwardly beyond one axial end of said housing.

4,343,566
CLAMPING DEVICE FOR RELEASABLY SNAP JOINING TWO PIECES OR PANELS

Fiorello Giovannetti, Via Marciano, 4, Milano, Italy

Filed Jan. 16, 1980, Ser. No. 112,565
Claims priority, application Italy, Mar. 23, 1979, 21246 A/79
Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*
U.S. Cl. 403—405 14 Claims



1. A jointing or clamping device for releasably snap joining two parts, comprising a plug element insertable into one of said parts, and a bush element insertable into the other of said parts, wherein said plug element comprises:

a stem or shank portion having a zone shaped for engagement with the walls of a hole formed in said one part;

a body portion connected to said stem portion;

a head portion connected to said body portion and formed with legs resiliently movable toward one another and defined by at least one longitudinal slit, at least a part of the slitted head portion protruding from said one part when said plug element is inserted in the hole in said one part;

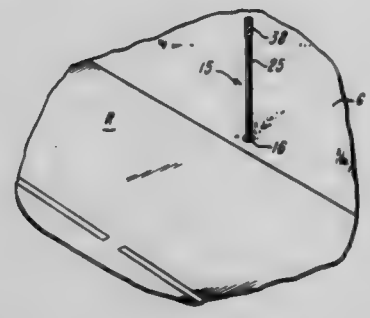
a notch extended from said longitudinal slit within said body portion;

a slider slidable from a position at least partially extended in said longitudinal slit between the said legs, thereat preventing said legs from resiliently flexing towards each other, and a retracted position in said notch wherein said legs are resiliently movable toward one another.

4,343,567
SELF-ERECTING ROADWAY MARKING POST

Robert B. Sarver, Carson City, Nev., and W. Eugene Arthur, Foster City, Calif., assignors to Robert D. Cunningham and Byron F. West, both of Hayward, Calif., a part interest to each

Filed Feb. 27, 1980, Ser. No. 125,244
Int. Cl.³ E01F *9/00*
U.S. Cl. 404—10 12 Claims

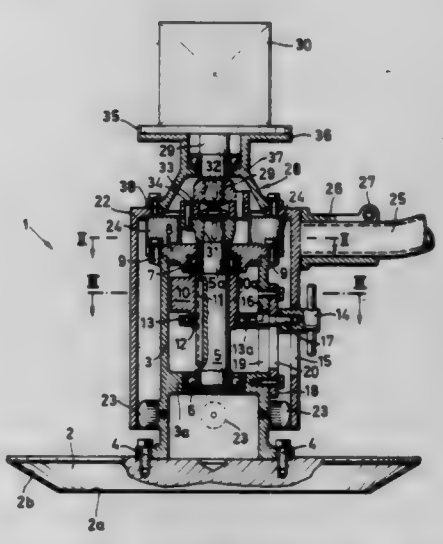


1. A self-erecting roadway marking post comprising an elongated flexible and resilient marking tube of plastics material and having an annular cross-sectional configuration, said marking tube having a lower end portion adapted to project downwardly into a hole defined within the ground and an upper portion projecting substantially above the ground, means no said upper portion of said marking tube for reflecting light, said upper portion of said marking tube being capable of bending above the ground through an angle of ninety degrees in response to being accidentally impacted by a motor vehicle, an elongated tube erecting member of resilient flexible material, said erecting member extending with said upper and lower portions of said marking tube and being completely surrounded by said marking tube, said erecting member having an intermediate portion disposed for bending within said marking tube when impacted by the motor vehicle, and said erecting member and the surrounding said marking tube being cooperatively effective to provide said marking post with a substantial number of self-erections in response to vehicle impacts on said marking post while minimizing the damage of said marking post.

4,343,568
ROAD GRADING AND TAMPING APPLIANCE

Benno Kaltenegger, Via Rasc 2a, Capione near Lugano, Italy

PCT No. PCT/EP79/00097, § 371 Date Aug. 11, 1980, § 102(e) Date Jun. 10, 1980
PCT Filed Dec. 7, 1979, Ser. No. 205,323
Claims priority, application Switzerland, Dec. 11, 1978, 12584/78
Int. Cl.³ E01C *19/38*
U.S. Cl. 404—133 14 Claims



1. Soil compaction and tamping apparatus having

a bottom plate (2) having an essentially circular bottom surface (2*a*);

a vertical support means (3, 22);

means (4) for securing the vertical support means to the bottom plate;

motor means (30);

and comprising, in accordance with the invention

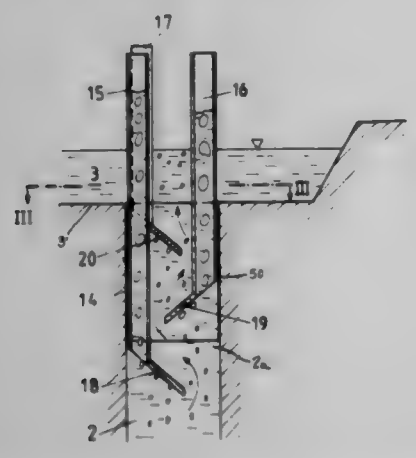
means for applying a rocking or tilting movement to the bottom plate in a circular orbit of the bottom surface (2*a*) with respect to soil to be compacted comprising a rotatable shaft (5) extending in a vertical direction from at least approximately the center of the bottom plate, and drivingly coupled to the motor means;

and an eccentric weight or mass (10) secured to the rotatable shaft to revolve therewith, at a predetermined height above the bottom plate (2) to generate, upon rotation of the shaft, a force moment acting on the bottom surface of the bottom plate by the lever arm formed by the distance of the weight, or mass above said bottom surface plate and thereby effect said tilting of the bottom plate and wobbling and tilting motion thereof.

4,343,569
APPARATUS FOR PREVENTING BLOWING OUT OF THE WATER SUPPLY OF CONSTANT PRESSURE AIR STORAGE INSTALLATIONS OF GAS TURBINE POWER PLANTS

Alfred Schwarzenbach, Wettingen, Switzerland, assignor to BBC Brown Boveri & Co. Ltd.,, Baden, Switzerland

Filed Sep. 30, 1980, Ser. No. 192,375
Claims priority, application Switzerland, Dec. 14, 1979, 11088/79
Int. Cl.[3] B65G *5/00*
U.S. Cl. 405—53 5 Claims



1. An apparatus for preventing the blowing-out of the water supply of constant pressure air storage installations of gas turbine power plants containing a subterranean cavern for the storage of the compressed air and connection lines between the cavern and a compressor and a gas turbine, respectively, a compensation basin, and a riser tube interconnecting the compensation basin with the cavern, the improvement which comprises:

a plurality of vent tubes;

each of said vent tubes having an upper end and a lower end;

the upper ends of said vent tubes, when mounted in the riser tube, extending beyond the highest water level of the compensation basin;

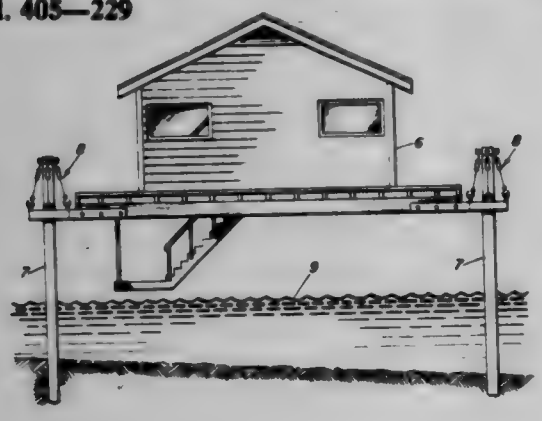
the lower ends of said vent tubes being offset with respect to one another in the lengthwise direction of the vent tubes; and

guide elements inclined with respect to the lengthwise axis of the vent tubes.

4,343,570
SELF-DRIVING SUPPORT ASSEMBLY

Charles R. Myer, II, 868 Hale St., Beverly Farms, Mass. 01915

Filed Feb. 6, 1980, Ser. No. 119,158
Int. Cl.[3] E02B *17/00;* E02D *21/00*
U.S. Cl. 405—229 25 Claims



1. A self-driving support assembly for a structure over a penetrable substrate, said assembly comprising:

(a) a support member secured to said structure and having a passage therethrough;

(b) a column extending through said passage in said support member;

(c) a plurality of over two suspension members for suspending said structure from said column, each of said suspension members secured at its upper end to said column and at its lower end to said support member, and extending angularly and nonvertically from the axis of the column, the weight of said structure being applied to said column as tensile forces acting along said suspension members, the components of said tensile forces parallel to the axis of said column serving to drive said column into said substrate in a predetermined direction, and any net component of said tensile forces which is perpendicular to said axis serving to resist the movement of said column out of alignment with said predetermined direction; and

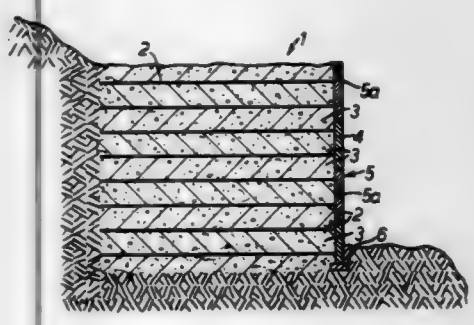
(d) first adjusting means operatively associated with said suspension members for adjusting the relative magnitudes of the tensile forces in each suspension member, to return to the predetermined direction of said column

whereby, by adjusting the magnitude of the tensile force to maintain the predetermined direction, the column is self-driven by the weight of the structure into the penetrable substrate.

4,343,571
REINFORCED EARTH STRUCTURES

Derrick I. Price, London, England, assignor to Soil Structures International Limited, London, England

Filed Jul. 12, 1979, Ser. No. 56,916
Claims priority, application United Kingdom, Jul. 13, 1978, 29712/78
Int. Cl.[3] E02D *29/02*
U.S. Cl. 405—284 20 Claims



1. A structure comprising a mass of particulate material and stabilizing members, said structure having at least one pair of opposite sides each member being elongated relative to its width with at least some of said members being integrally connected to each other and extending in zig-zag fashion in a substantially horizontal plane between opposite sides of the structure, the members being arranged in vertically spaced layers separated by layers of particulate material, said members being made of flexible material which is substantially unresilient, and means tensioning said members separately and independently of any tension exerted thereon by said particulate material.

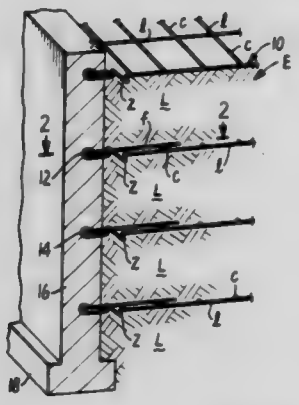
4,343,572
APPARATUS AND METHOD FOR ANCHORING THE RIGID FACE OF A RETAINING STRUCTURE FOR AN EARTHEN FORMATION

William K. Hilfiker, Eureka, Calif., assignor to Hilfiker Pipe Co., Eureka, Calif.

Filed Mar. 12, 1980, Ser. No. 129,602
Int. Cl.[3] E02D *29/02*
U.S. Cl. 405—284 5 Claims

1. In a retaining structure for an earthen formation wherein longitudinally extending anchoring elements are embedded in the formation and a substantially rigid face member is supported on a foundation at the face of the formation and secured to the anchoring elements; the improvement comprising de-

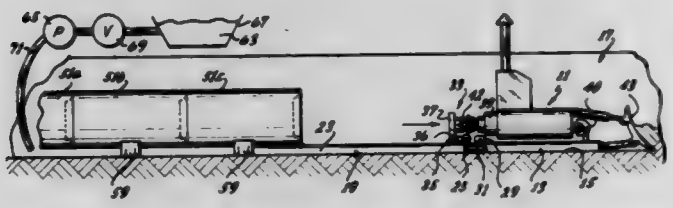
formable zigzag sections in the longitudinally extending elements, said sections being located only adjacent the face member and being elongatable with destruction thereof to permit relative movement between the face member and portions of said elements spaced from the face member in response to relative movement between the formation and the face member, while maintaining a secured connection between the elements and face member to maintain the face member in place at the face of the earthen formation, said portions spaced from the face member comprising the majority of the anchoring elements and being so placed as not to move in the absence of movement of the formation within which they are embedded.



4,343,573
METHOD AND APPARATUS FOR MAKING AN UNDERGROUND PIPELINE

Thomas K. Breitfuss, 17541 Orange Tree La., Tustin, Calif. 92680

Filed Aug. 18, 1980, Ser. No. 178,894
Int. Cl.[3] E02D *29/10*; E02F *5/10*
U.S. Cl. 405—155 18 Claims



1. A method of forming a pipeline which is at least partially underground and which includes, at least during construction of the pipeline, a plurality of inner component sections at least partially enclosed by a formable outer component, said method comprising:

providing an apparatus for at least assisting in installing the inner component sections with such apparatus being on a surface which is to support the pipeline;

depositing a first of the inner component sections on at least a portion of said apparatus;

at least partially supporting the first inner component section on the apparatus;

providing inner component section supporting means with such supporting means being supported by said surface;

forcing the first inner component section at least partially from the apparatus to the supporting means to transfer at least some of the support of the inner component section to the inner component section supporting means;

depositing a second of the inner component sections on said apparatus;

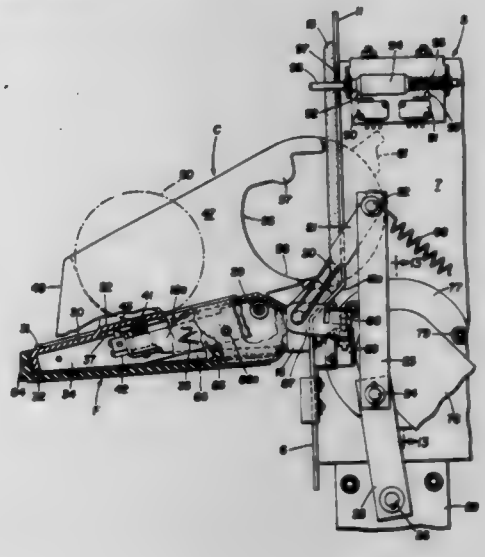
repeating said step of forcing for said second inner component section; and

placing the outer component at least beneath the first component section subsequent to said step of forcing for the second inner component section.

4,343,574
PNEUMATIC TUBE SYSTEM CUSTOMER TERMINAL CONSTRUCTION

Walter G. Anders, Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed Jun. 5, 1980, Ser. No. 156,690
Int. Cl.[3] B65G *51/26*
U.S. Cl. 406—13 34 Claims



1. In a single conveyor tube banking service pneumatic tube system of a type having a conveyor tube extending between a teller terminal and a remote customer terminal supplied with vacuum or pressure from system blower and air shifter units to transport a carrier between such terminals; the improvement in which the customer terminal includes:

(1) walls forming a terminal housing, and an access opening formed in one of the housing walls;

(2) means connecting a horizontally extending axis end of a system conveyor tube to an opening in another housing wall;

(3) a door, a cradle pivotally mounted on the door on a horizontal axis, the cradle-door assembly being pivotally mounted on the housing on a horizontal axis spaced from and parallel with both the cradle pivot axis and the conveyor tube axis to form a closure for the access opening movable between closed and open positions;

(4) the cradle having a bottom ramp wall, and having first and second spaced side walls and first and second spaced end walls projecting from the bottom ramp wall to form a cradle pocket on said ramp wall, said first side wall being located adjacent the cradle pivot axis and having a semicircular shape in cross section formed on an axis coinciding with the conveyor tube axis when the cradle-door assembly is closed, said cradle end walls being perpendicular to said semicircular side wall axis, a circular carrier entrance opening formed in said first cradle end wall on a center lying in the coinciding semicircular wall and conveyor tube axes when the cradle-door assembly is closed, and an opening of reduced size with respect to said carrier entrance opening formed in said second cradle end wall aligned with said carrier entrance opening;

(5) a clamshell-like closure member pivotally mounted in said housing having a generally semicircular wall extending in one direction from said pivot mounting and having an internal curved surface formed on a diameter approximating that of the inner surface curvature of said semicircular cradle side wall, the closure member pivot mounting being spaced from but parallel with the cradle-door assembly pivot axis, said closure member having a portion extending in a second direction from said pivot mounting engaging said semicircular cradle wall when the cradle-door assembly is closed, holding said closure member in position to complete the formation inside the housing of a tubular extension of said conveyor tube, and means biasing said closure member away from said tube extending posi-

tion when the cradle is disengaged from the closure member during opening movement of said cradle-door assembly;

(6) power means for moving the cradle-door assembly between open and closed positions;

(7) the cradle ramp wall extending downwardly at an angle with respect to the horizontal from said access opening when the cradle-door assembly is in open position;

(8) a carrier discharged from the conveyor tube through said carrier entrance opening into the cradle pocket when the cradle-door assembly is in closed position rolling along said ramp wall in said pocket to said second side wall when the cradle-door assembly is moved from closed to open position;

(9) said second pocket side wall acting as a carrier retainer wall when cradle-door assembly is in open position; and

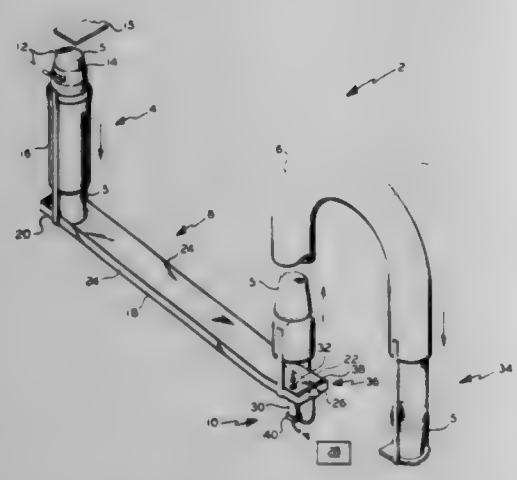
(10) a carrier when placed in said cradle pocket resting against said retainer wall when the cradle-door assembly is in open position rolling along said ramp wall to said semicircular cradle side wall as the cradle-door assembly is moved from open to closed position.

4,343,575

APPARATUS FOR TRANSPORTING CONTAINERS

Paul A. Kimball, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 16, 1980, Ser. No. 140,897
Int. Cl.³ B65G *51/02*
U.S. Cl. 406—19 **3 Claims**



1. Apparatus comprising:

(a) a first tubular member having an inlet and an outlet and an inside diameter sufficiently large to allow the passage of a container therethrough;

(b) a second tubular member having an upper end and a lower end and an inside diameter sufficiently large to allow the passage of the container therethrough;

(c) an inclined ramp having an upper end and a lower end with the upper end of the inclined ramp being in alignment with and beneath the lower end of the second tubular member and the lower end of the inclined ramp having an aperture therethrough which is in alignment with and beneath the inlet of the first tubular member; and

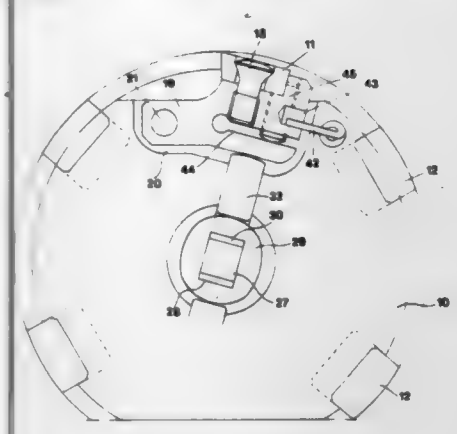
(d) a fluid source aligned with the aperture so that the aperture establishes a communication path between the fluid source and the inlet of the first tubular member.

4,343,576

BORING DEVICE

Kurt Lagerholm, Hirschberg-Grossachsen, Fed. Rep. of Germany, and Kurt H. A. E. Faber, Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Mar. 18, 1980, Ser. No. 131,372
Claims priority, application Sweden, Mar. 23, 1979, 7906920
Int. Cl.³ B73B *9/034*
U.S. Cl. 408—155 **14 Claims**



1. A boring device comprising:

a boring head,

at least one guide pad arranged on said head to abut and slide along the surface of a bore to be machined,

at least one insert holder mounted on said head for radial adjustment, and

adjustment means for said tool holder comprising:

a shaft,

means mounting said shaft for rotation within said head,

a bushing having a non-circular outer periphery mounted on said shaft for common rotation therewith, there being radial clearance between said bushing and shaft to enable said bushing to shift radially relative to said shaft, and

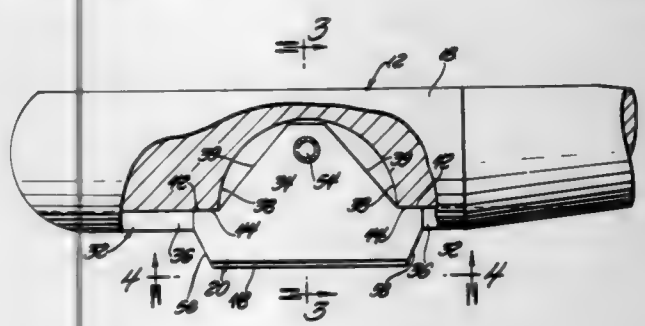
pushing means interposed between said insert holder and said non-circular outer periphery of said bushing in the vicinity of said radial clearance to follow said outer periphery as said shaft rotates, to radially position said insert holder.

4,343,577

DEBURRING TOOL

Jerome R. Purdon, 3677 E. Washington Rd., Carsonville, Mich. 48419

Filed Jul. 14, 1980, Ser. No. 168,051
Int. Cl.³ B23B *51/10*
U.S. Cl. 408—226 **7 Claims**



1. A deburring tool comprising an axially elongated tool holder having a longitudinal axis of rotation, said tool holder having a first body portion adapted for attachment to a rotatable driving means to rotate said tool holder about said axis and a second body portion extending axially from said first body portion and including seating means for seating a cutting blade, said first and second body portions being joined by a flexible neck portion allowing said second body portion to flex in cantilever fashion relative to said first body portion as said tool

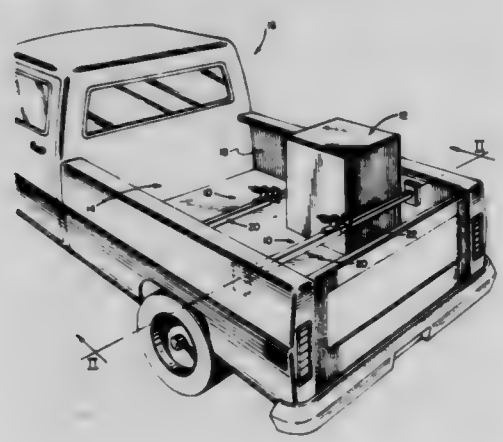
holder is rotated in use, said seating means comprising axially and radially inwardly extending slot means communicating with the exterior of said second body portion and having a pair of axially spaced radially outwardly facing seating shoulders, a cutting blade having a pair of axially spaced seating shoulders, and means for removably mounting said blade in said seating means with said seating shoulders of said cutting blade seated against said seating shoulders of said slot means.

4,343,578

LOAD BRACE STABILIZING ASSEMBLY

Burris P. Barnes, c/o Lee Richards, Rte. 5, Box 136, Tyler, Tex. 75706

Filed Jun. 6, 1980, Ser. No. 157,038
Int. Cl.³ B60P *7/08, 7/16;* B61D *45/00*
U.S. Cl. 410—151 **1 Claim**



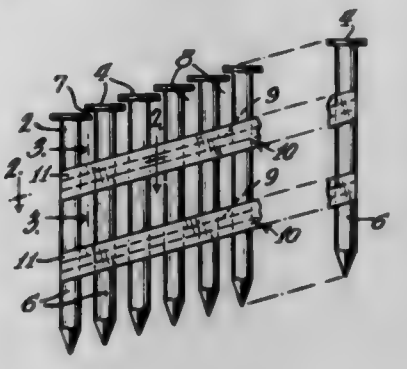
1. In combination, a pickup truck having a load bed and upstanding sidewalls on opposite sides of the load bed, a load resting on the load bed, and first and second stabilizer assemblies spanning the load bed and engaging said upstanding sidewalls, with the load being lodged between said stabilizer assemblies and restrained thereby against shifting movement, each stabilizer assembly including first and second tubular beam members coupled in mutually telescoping engagement wherein said second tubular beam member is slidable within said first tubular beam member; each tubular beam member having a plurality of elongated, substantially flat sides extending substantially the entire length of the assembly with one flat side engaging said load; load plates attached to opposite ends of the mutually coupled beam members, and a resilient pad attached to the load transmitting surface of each load plate engaging said upstanding sidewalls; a slip collar encircling said second tubular beam member and movable along said second tubular beam member to a position adjacent the end of said first tubular beam member, said slip collar being mounted on said second tubular beam member for limited pivotal movement with respect to the longitudinal axis of said second tubular beam member, whereby said slip collar is movable from a substantially upright position in which it is freely displaceable along said second tubular beam member to an inclined position wherein said slip collar is seized in binding engagement with said second tubular beam member; and, means mounted on the first tubular beam member for transmitting a driving force against said slip collar whereby compression loading is induced within said beam members as said beam members are driven into engagement with the opposite sidewalls of the load bed in response to the driving force, said driving means including a guide plate mounted on said first tubular beam member, and a lock bolt received in threaded engagement with said guide plate and being disposed for positive engagement with said lock plate to effect said driving force.

4,343,579

NAIL STACK

Lawrence S. Shelton, Morton Grove; Dieter G. Boigk, Skokie, and William L. Gabriel, Schaumburg, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Sep. 7, 1979, Ser. No. 73,935
Int. Cl.³ F16B *15/00*
U.S. Cl. 411—442 **8 Claims**



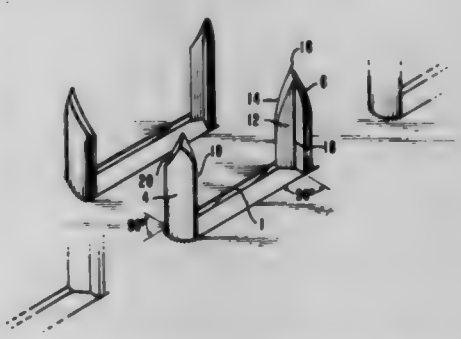
1. An adhered strip of nails for a rapid-acting driving tool magazine comprising a plurality of nails, each having a full head and a cylindrical shank, said nails being disposed in stepped relationship with the head of one nail being located in overlapping relationship with the head of an adjacent nail, and said shanks being spaced apart from each other to define an open area between adjacent shanks, means for connecting said nails to form a strip comprising at least one adhesive tape extending across a first portion of the shank of each adjacent nail and adhered to the nail shanks under tension in tangential contact therewith to keep the nails together, filament means having a width that is a fraction of the width of said tape and disposed under compression between said nail shanks and adhered to the tape to maintain the requisite spacing between said shanks while minimizing clogging problems and the shear force necessary to separate nails from the strip, which leaves said open area void of material other than said filament, said tape including a heat-responsive adhesive to provide a connection between said tape and said nails when said tape is pressure-applied to the nails while the nails are in a heated condition.

4,343,580

STRUCTURAL JOINT CONNECTOR

Anthony M. Moyer, Hollywood, and Robert H. Kelly, Miramar, both of Fla., assignors to Gang Nail Systems, Inc., Miami, Fla.

Filed Aug. 30, 1980, Ser. No. 71,551
Int. Cl.³ F16B *5/00, 15/00*
U.S. Cl. 411—468 **28 Claims**



1. A connector plate comprising a metal plate, said metal plate having: a plurality of pairs of elongated teeth struck from said metal plate so as to project in a direction substantially perpendicular to said metal plate; each of said pairs of teeth being struck from said metal plate so as to leave a corresponding longitudinally extending slot between said teeth of said pair of teeth; each of said teeth having a pointed tip; and each of said teeth having a knife edge portion extending from said metal plate, said knife edge portion of each said tooth have a cross-sectional thickness thinner than the remaining portion of said tooth and having a sharp edge with a cross-sectional angle

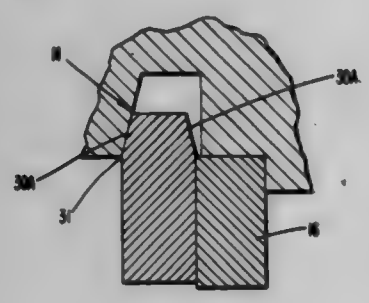
of less than 20° and said sharp edge of each said knife portion extending from said pointed tip of each of the respective said teeth along a continuous substantially arcuate path to said metal plate for facilitating penetration of each of said teeth into a member to which said connector plate is to be attached.

4,343,581

DOUBLE-BEVEL SPRING RETAINING RING

Melvin Millheiser, North Bellmore, N.Y., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.

Filed May 21, 1979, Ser. No. 40,748
Int. Cl.[3] F16B *21/18*
U.S. Cl. 411—517 6 Claims



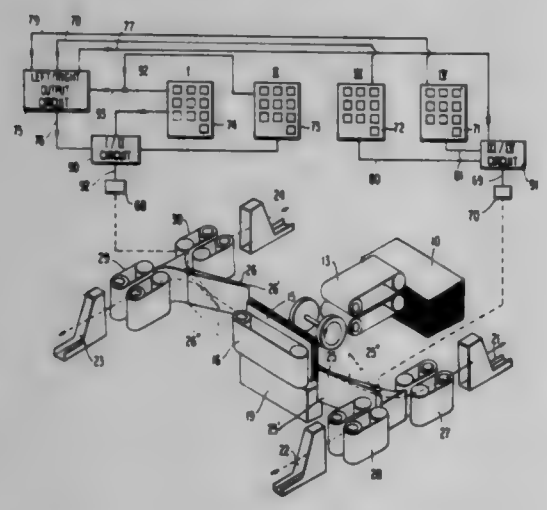
1. A spring retaining ring of the type adapted for assembly within a groove in a housing bore or shaft or the like, thereupon to form an artificial shoulder for axially locating a machine part, said ring comprising an open-ended ring body of spring material, said body including opposite side surfaces, each surface including a generally radial shoulder-forming portion and a groove-seating portion which is inclined at an acute angle relative to said shoulder-forming portion, either of said groove-seating portions being adapted to engage a correspondingly inclined wall of the groove to take-up axial play of the machine part, the length of each groove-seating surface portion being from 80% to 120% of the minimum groove penetration depth for said ring.

4,343,582

BANKNOTE DISPENSING APPARATUS

Leif J. I. Lundblad, Huddinge, and Jan-Olof Ek, Alvsjo, both of Sweden, assignors to Inter Innovation AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 950,115, Oct. 10, 1978, abandoned. This application Apr. 11, 1980, Ser. No. 139,525
Claims priority, application Sweden, Oct. 11, 1977, 7711412
Int. Cl.[3] G07D *1/00;* B65H *3/04*
U.S. Cl. 414—32 6 Claims



1. An apparatus for dispensing an ordered number of banknotes from a banknote storage means to a customer, said apparatus comprising:

(a) a plurality of customer receipt openings;

(b) means for ordering a given number of banknotes to be dispensed from the storage means to a selected one of said customer receipt openings;

(c) first conveying means co-operating with said ordering means for feeding said ordered number of banknotes to at least one collector station;

(d) second conveying means co-operating with said first conveying means for feeding the banknotes located in the collector station to the selected customer station;

(e) switching means responsive to said ordering means for determining the direction of feed of said second conveying means such that said ordered number of banknotes is fed to the selected one of said customer receipt openings; and

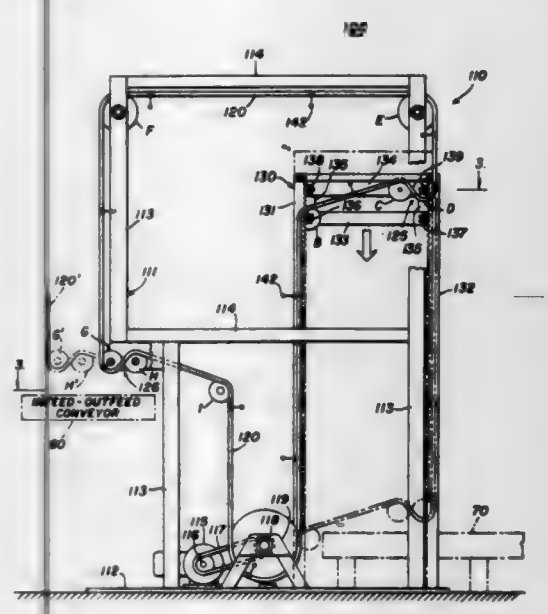
(f) electronic devices for controlling the sequence of dispensing operations.

4,343,583

CONTINUOUS CHAIN STACKER/UNSTACKER

Maynard R. Euverard, Williamsburg, Va.; Henry A. Heide, Addison, and James J. Diver, South Holland, both of Ill., assignors to Velten & Pulver, Inc., Chicago Ridge, Ill.

Division of Ser. No. 839,456, Oct. 5, 1977, Pat. No. 4,303,365.
This application Jul. 16, 1980, Ser. No. 169,444
Int. Cl.[3] B65G *67/04;* B65H *29/18*
U.S. Cl. 414—75 11 Claims



1. A machine for feeding articles into a stack and removing articles from a stack, said machine comprising a continuous conveyor for conveying articles to the top of the stack and away from the top of the stack, said conveyor being movable along a path which includes a transfer portion defining an arc of a circle, an article carrier mounted on said conveyor for rotation about the axis of a pivot which is fixed on said conveyor for movement therewith, the pivot axis being parallel to the axis of said circle and spaced from said conveyor path a distance equal to the radius of said circle so as to be coaxial with said circle when the adjacent part of said conveyor is in the transfer portion of the path, said carrier including a frame and magnetic means carried by said frame for movement with respect thereto between a support condition for supporting engagement with a magnetizable portion of an associated article and a release condition, said frame being engageable with the supported article when said magnetic means is moved to its release condition for releasing the article from said means, said transfer portion of said conveyor path being disposed adjacent to the top of the stack so that as the part of said conveyor adjacent to said carrier moves through said transfer portion of said path said carrier and any article supported thereby remain stationary in a transfer position at the top of the stack, and control means for causing said magnetic means and said release means to act between the support and release conditions thereof when said carrier is in the transfer position for deposit-

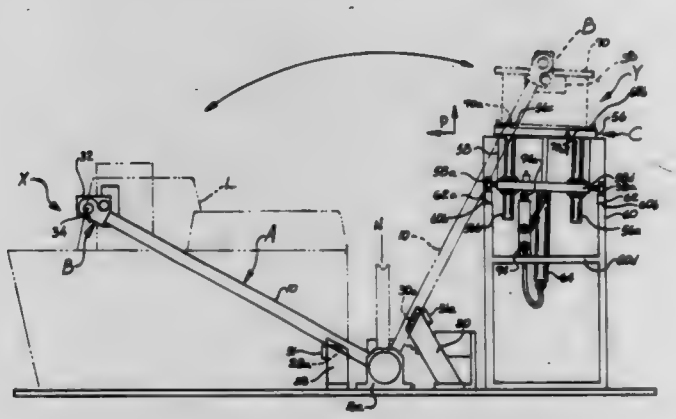
ing a conveyed article at the top of the stack or picking up an article from the top of the stack.

4,343,584

APPARATUS FOR SEQUENTIALLY TRANSPORTING CONTAINERS

Jerry L. Hudgins, Guntersville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 11, 1980, Ser. No. 168,944
Int. Cl.[3] B65G *65/02*
U.S. Cl. 414—222 13 Claims



1. Apparatus for manipulating and sequentially transferring containers between a first station at which a container is loaded with silicon wafers and a second station at which said container is initially picked up empty and subsequently returned loaded, said apparatus comprising:

a movable arm member movable between said first and second stations;

a gripping device carried adjacent an end of said arm for picking up and securely gripping said container in a stable manner for transportation thereof;

said second station processing a plurality of said containers in sequence including a fixed pickup position from which said containers are picked up individually;

pedestal means upon which said containers are placed having variable positions for supporting said containers individually for pickup and return at said pickup position;

means for properly positioning said containers at said pickup position on said pedestal means for positive engagement by said gripping device of said arm member;

carriage means supporting said pedestal means;

said carriage means being movable between first and second positions to vary said position of said pedestal means and place said containers individually at said pickup position; and

said pedestal means including an elevator platform for supporting a first individual container and lowering said container below the level of a second container when said second container is placed at said pickup position by said carriage means, means, said lowered container affording access for engagement of said second container by said gripping device of said movable arm member.

4,343,585

ARTICLE HANDLING METHODS INCLUDING REORIENTING RANDOMLY MISORIENTED ARTICLES

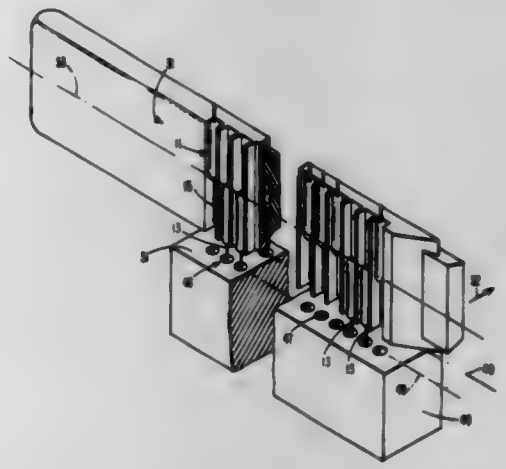
Anthony Tedeschi, Raytown, Mo., assignor to Western Electric Co., Inc., New York, N.Y.

Filed May 5, 1980, Ser. No. 146,719
Int. Cl.[3] B65B *1/04*
U.S. Cl. 414—403 10 Claims

1. A method of handling a plurality of randomly oriented, elongated articles, each of such articles having nonuniform magnetic properties including a region of least magnetic reluctance which is longitudinally offset from the center of such article, comprising:

linearly arranging such articles in substantially parallel alignment and with a random longitudinal orientation of said nonuniform magnetic properties in either one of two mutually opposite directions;

subjecting each of the linearly arranged articles to a magnetic field which is concentrated in a linear region along said linearly arranged articles and is oriented in a direction parallel to the longitudinal extent of such articles for longitudinally translating such arranged articles and for



drawing such region of least magnetic reluctance of each such article in the one or the other of the two mutually opposite directions toward the concentrated region of said field, whereby ends of the articles of relatively greater magnetic reluctance extend away from such linear arrangement in the one or the other of said mutually opposite directions;

transferring to a magazine those of the articles extending in the one longitudinal direction;

reversing the longitudinal orientation of the remaining articles; and

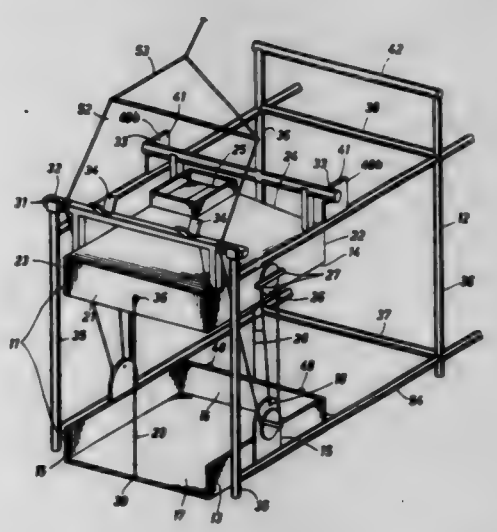
transferring such remaining articles to the magazine.

4,343,586

DUMPING APPARATUS AND METHOD

Othel D. Easley, Jr., Houston, and Merlin G. Hoiseth, Alvin, both of Tex., assignors to Reactor Services International, Inc., Alvin, Tex.

Filed Sep. 24, 1980, Ser. No. 190,347
Int. Cl.[3] B65G *65/34*
U.S. Cl. 414—414 20 Claims



1. An improved container dumping apparatus comprising a container press and a press frame adapted to hold the press where (I) the container press comprises a bottom container support closure and a top container hopper closure, (a) the bottom container support closure having a back, bottom and

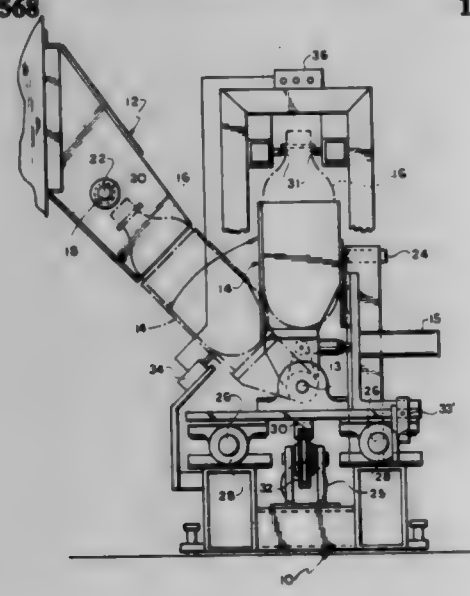
two sides, each side of the support closure having a line or cable attachment means for attaching a line or cable, a support closure pulley below the cable attachment means and a channel stop means, forming a channel next to the support closure pulley, located at the pulley's side closest to the back of the container support closure for securing the cable on the pulley and stopping the press rotation, the hopper closure having a front, back, two sides, and a top, the top being conical or pyramidal and having at its highest point a valve means for emptying the hopper closure, each side of the hopper closure having a hopper closure pulley, and a cable or line guide means for securing the line or cable to the hopper closure pulley; (b) the hopper closure having at least one hopper support means for supporting the hopper closure on the frame above the support closure and a first hopper pivot means for initiating the inverting of the press/container upon lifting the press off the frame and completing the righting upon lowering the press onto the frame and a second hopper pivot means for completing the inverting of the press upon lifting the press off of the frame and initiating the righting upon lowering the press onto the frame; (II) the frame having at least one frame support means for interacting with the hopper closure support means and supporting the hopper closure on the frame above the container support closure, a first frame pivot means for interacting with the first hopper closure pivot means and initiating the the inverting of the press upon lifting and completing the righting of the press upon lowering and a second frame pivot means for interacting with the second hopper closure pivot means for completing the inverting of the press upon lifting and initiating the righting of the press upon lowering.

4,343,587

MACHINE FOR HORIZONTAL TRANSPORTATION OF CONTAINERS

Stephen H. Aidlin, West Hempstead, and Michael Tartokowsky, Rego Park, both of N.Y., assignors to Aidlin Automation, Inc., Brooklyn, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,597
Int. Cl.³ B66B *17/00*
U.S. Cl. 414—568 **10 Claims**



1. A machine including a frame and means for cyclically receiving a plurality of containers from an unloading station, and for transporting them to a discharge region, said discharge region being spaced apart from said unloading station by a predetermined distance, comprising in combination:

a platform connected to said frame, being operable in a first position thereof adjacent said unloading station for accepting said containers,

pivoting means, including pivotal movement means for tilting said platform from an upright position to a tilted position, and righting it from said tilted position to said upright position,

linear movement causing means for moving said platform between said first position and a position linearly spaced from said unloading station, said platform being pivotably movable after having accepted said containers by said pivotal movement means about an axis to a second position angularly spaced away from said unloading station, movable subsequently from said second position by said linear movement causing means linearly to a third position adjacent said discharge region for temporarily storing said containers thereat, said platform being operable thereafter by said linear movement causing means, and upon having temporarily stored said containers at said third position, to linearly move to a fourth position spaced away from said discharge region and similar to said second position, and operable thereafter by said pivotal movement means to execute a pivotable return movement from said fourth position to said first position, and

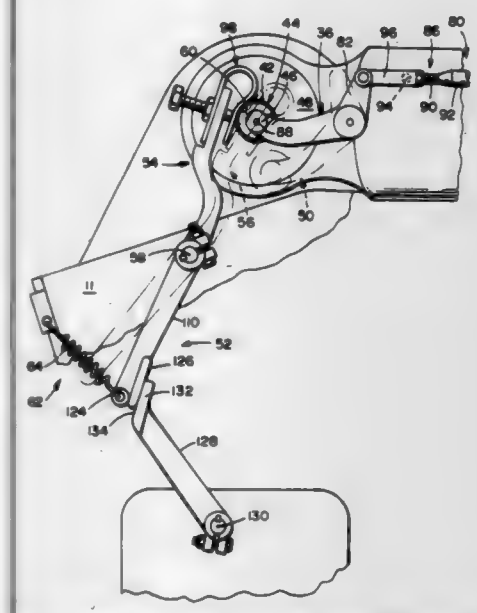
control means connected to said platform for controlling the operation thereof.

4,343,588

KICKOUT BUCKET POSITIONER

Wayne G. Styck, Bettendorf, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00885, § 371 Date Jul. 10, 1980, § 102(e) Date Jul. 10, 1980, PCT Pub. No. WO82/00310, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 10, 1980, Ser. No. 250,748
Int. Cl.³ E02F *3/86*
U.S. Cl. 414—701 **7 Claims**



1. In an apparatus (19) having first (20) and second (11) members (20, 11) pivotally mounted relative to one another about a pivot axis (21), said first member (20) having first (32) and second (34) operating conditions, and having linkage means (30) for transmitting a mechanical signal across said pivot axis (21), said linkage means (30) having a first link structure (36) pivotally mounted relative to said first member (20) and defining a generally circular cam surface (42), said first link structure (36) being pivotable to first (48) and second (50) positions (48, 50) relative to said first member (20) and a second link structure (52) having first (54) and second (56) positions (54, 56) and being pivotally mounted relative to said second member (11), said second link structure (52) defining a coacting surface (60) which said cam surface (42) contacts with said first link structure (46) in its first position (48) to define said first position (54) of said second link structure (52), means (62) for moving said second link structure (52) to its second position (56) in response to movement of said first link structure (36) to its second position (50) and mechanical signal originating means (66) for moving said first link structure (36) to its first (48) and second (50) positions (48, 50) in response to said first member (20) being respectively in said first (32) and second

(34) operating conditions (32, 34), the improvement comprising:

a roller (44) having a center (88) and being mounted at said center (88) to said first link structure (36), said roller (44) defining said cam surface (42);

a generally U-shaped member (98) having a pair of legs (100, 102) having outfacing sides (104, 106) and being mounted to said second link structure (52), one (106) of said outfacing sides (104, 106) defining said coating surface (60); and

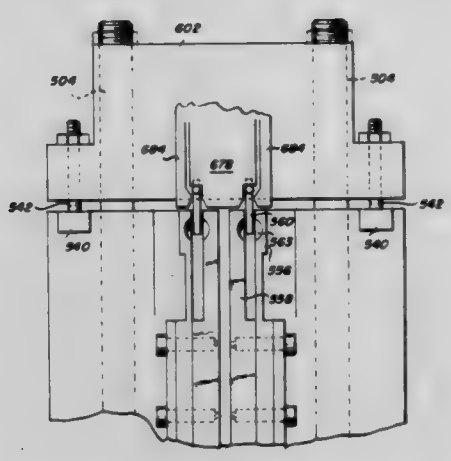
means (122) for adjusting said one side (106) of said generally U-shaped member (98) tangentially and radially relative to said roller (44).

4,343,589

LINEAR LOADER FOR HIGH SPEED RADIAL LEAD COMPONENT SEQUENCING AND INSERTING MACHINE

Michael D. Snyder, Binghamton, N.Y., and Crawford A. Matson, Wyalusing, Pa., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Apr. 18, 1980, Ser. No. 142,136
Int. Cl.³ B65G *25/04*
U.S. Cl. 414—751 6 Claims



1. An apparatus for cyclical transfer of radial lead components from a receive position laterally to a discharge position, said apparatus comprising:

pusher means for engaging a component;

pusher support means for supporting said pusher for forward and return lateral travel parallel to a centerline;

clamping means attached to a laterally movable carriage for clamping said component and moving with said pusher during a portion of said foward and return travel of said pusher;

stop means for halting forward travel of said carriage while said pusher continues forward to push said component out of clamping engagement with said clamping means to said discharge position; and reciprocator means for providing different forward and return travel speeds to said pusher support means.

4,343,590

LOADER FOR A MACHINE TOOL

Elio F. D'Aloisio, East Hartford, Conn., assignor to Litton Industrial Products, Inc., New Britain, Conn.

Filed Sep. 17, 1980, Ser. No. 188,056
Int. Cl.³ B65G *37/00*
U.S. Cl. 414—753 4 Claims

1. A loader for a machine tool comprising:

horizontal track means,

shuttle means mounted on said track means for relative horizontal displacement,

support means including

rigidly secured top, front and back walls, said front and back walls each including a pair of horizontally spaced bores,

a pair of shafts selectively sized for insertion into said bores, and

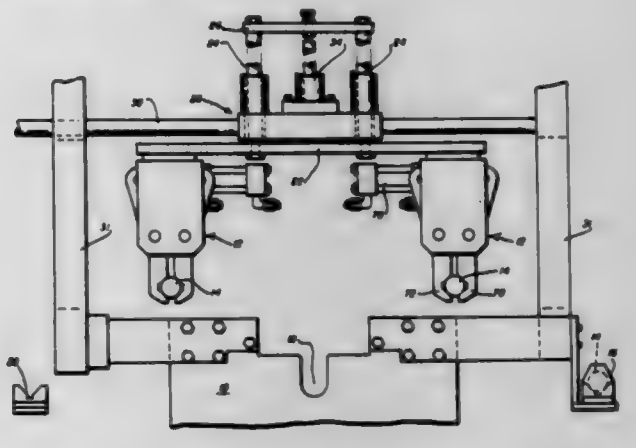
means for releasably securing said shafts to said front and back walls to define the bottom wall of said support means,

gripper assembly means including

first and second gear means each having a central bore for matingly receiving one of said shafts,

first and second gripper arm means each having a bore for matingly receiving one of said shafts,

means for rigidly securing said first and second gear means to said first and second gripper arm means, respectively,



hydraulic cylinder means having a housing including coaxial boss means extending outwardly from the front and back walls thereof and having a selectively advanceable rod means,

said first gripper arm means further including a slot at one end,

means for pivotally connecting the end of said rod means to the slotted end of said first arm,

said second gripper arm means including,

first and second portions defining a slotted end, each including a bore for receiving one of said bosses and,

means for releasably securing said first portion to said second portion, and

means for mounting said support means on said shuttle means for relative vertical displacement.

4,343,591

TURBOMACHINE SEAL SYSTEM

William F. Hannan, III, Pittsburgh, and Charles C. Czuszak, Greensburg, both of Pa., assignors to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Dec. 26, 1979, Ser. No. 106,781
Int. Cl.³ F01D *11/00*
U.S. Cl. 415—169 R 1 Claim

1. A turbomachine seal system for preventing oil from migrating into a first portion of a turbomachine having process gas flowing therethrough comprising:

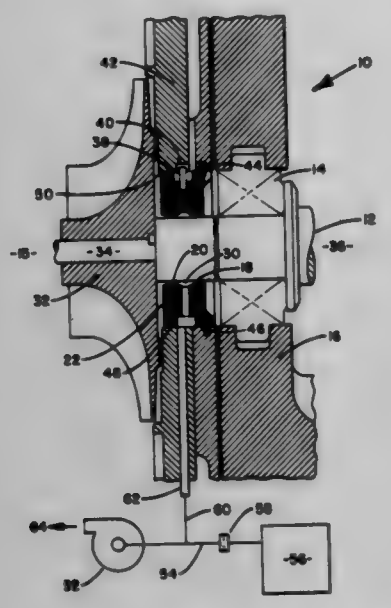
a first seal provided about a shaft of the turbomachine for limiting the flow of oil from a second portion of the turbomachine towards the first portion thereof;

a second seal provided about the shaft and axially spaced from the first seal for limiting the flow of process gas from the first portion towards the second portion of the turbomachine, said first and second seals defining an annular chamber therebetween;

lubrication means for supplying lubricant to the parts of the turbomachine requiring same, said lubrication means including a reservoir for storing lubricant and a pump for delivering lubricant from the reservoir; and

means connecting the lubricant pump to the annular chamber for reducing the pressure therein below the pressure in the first and second portions of the turbomachine for preventing oil from the second portion from migrating into the first portion, said means including a first conduit connecting the annular chamber with the inlet to the

pump, a second conduit connected to the first conduit extending to the chamber and a pressure reducing device



disposed between the pump inlet and the reservoir upstream of the connection between the first and second conduits.

4,343,592

STATIC SHROUD FOR A ROTOR

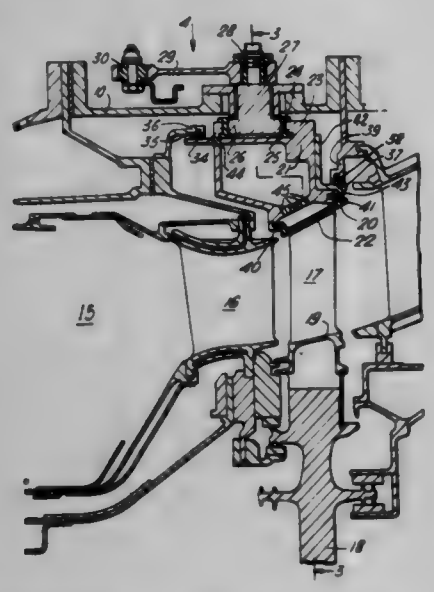
Gordon C. May, Allestree Park, England, assignor to Rolls-Royce Limited, London, England

Filed May 5, 1980, Ser. No. 147,269

Claims priority, application United Kingdom, Jun. 6, 1979, 7919728

Int. Cl.³ F01D *11/08*

U.S. Cl. 415—171 13 Claims



1. A static shroud for a rotor comprising an axially movable and tiltable shroud ring having a frusto-conical inner surface arranged to co-operate with a peripheral portion of said rotor to define a small clearance therebetween, and a plurality of actuators operatively connected to move the ring axially to vary said clearance in a predetermined manner, said actuators also being operatively connected to tilt said shroud ring out of a radial plane when necessary so as to compensate for eccentricity between said rotor and said ring.

4,343,593

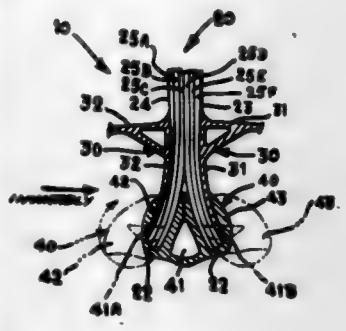
COMPOSITE BLADE FOR TURBOFAN ENGINE FAN

David J. Harris, Fairfield, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 25, 1980, Ser. No. 115,516

Int. Cl.³ F01D *5/30*

U.S. Cl. 416—193 A 7 Claims



1. A turbofan engine fan blade, comprising:

a. an airfoil section having a tip end, a root end, and a first and a second surface therebetween, wherein said first surface is essentially convex and said second surface is essentially concave, and wherein said airfoil section comprises a plurality of bonded plies of composite material which are splayed and are in a staggered condition at said root end;

b. a platform section which includes:

(1) a first member complementary to, and disposed in abutting contact with, said convex first surface of said airfoil section at said root end thereof; and

(2) a second member complementary to, and disposed in abutting contact with, said concave second surface of said airfoil section at said root end thereof; and

c. a metal outsert section holding and securing said platform section of said airfoil section at said root end thereof, and means within said outsert section for defining a cavity therein, with said cavity located at said root end of said airfoil section and simultaneously also positioned between said splayed and staggered plies of said plurality of plies of said airfoil section.

4,343,594

BLADED ROTOR FOR A GAS TURBINE ENGINE

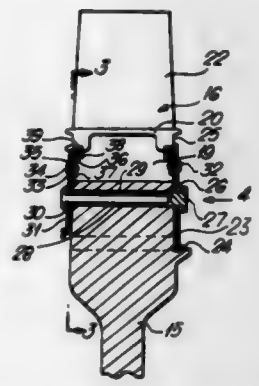
Derick A. Perry, Derbyshire, England, assignor to Rolls-Royce Limited, London, England

Filed Feb. 22, 1980, Ser. No. 123,776

Claims priority, application United Kingdom, Mar. 10, 1979, 7908517

Int. Cl.³ F01D *5/32*

U.S. Cl. 416—193 A 10 Claims



1. A bladed rotor for a gas turbine engine comprising a rotor disc having axially extending blade retention slots in its periphery, a plurality of rotor blades each having a root which engages with one said slot to support the blade and at least one annular assembly of sealing plates adapted to provide a seal

between the blade platforms and the disc, a retaining member associated with each said plate, each said retaining member extending through the plate and through that portion of the periphery of the disc lying between said blade retention slots, said retaining member assuming loads of its respective plate and distributing such loads across the thickness of said disc thereby eliminating localized stress build-up in said disc from the respective one of said plates and also eliminating loads from the respective one of said plates on said blades, said retaining member restraining the respective plate against axial, radial and circumferential motion.

4,343,595

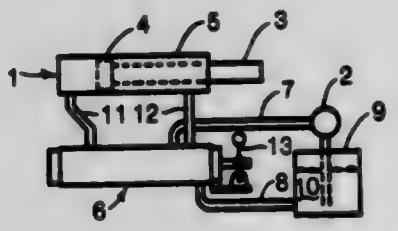
HYDRAULIC POWER BOOSTER APPARATUS

David L. Wells, 5077 Hwy. 45 S., and Allen M. Johnson, 5069 Hwy. 45 S., both of West Bend, Wis. 53095

Division of Ser. No. 752,630, Dec. 20, 1976, abandoned. This application Dec. 6, 1979, Ser. No. 100,860

Int. Cl.[3] F04B *17/00*

U.S. Cl. 417—225 12 Claims



1. A hydraulic power apparatus including a power amplifying pump unit having a pumping means movable between first and second positions within a pump housing means, said pumping means having opposite sides and dividing the housing means into first and second pump chambers to the opposite sides of the pumping means, the pumping means having a larger cross-sectional area in the first chamber than in said second chamber, a fluid supply means connected to said first chamber, an exhaust means, a control means having an operating means coupled to said pumping means to form a first valve means between the opposite sides of the pumping means and movable with said pumping mean, a second and a third control valve means, said operating means including a valve operator movable relative to said pumping means to operate said first valve means and controlling said second and third control valve means in response to movement with said pumping means to control the movement of the valve operator and thereby opening and closing of said first valve means to supply fluid from the supply means to opposite sides of said pumping means and to exhaust fluid from the opposite sides of said pumping means, said second chamber includes a first portion adjacent the pumping means and an extension high pressure chamber of a reduced cross-section, said pumping means includes a power piston having a small area high pressure member disposed within said high pressure chamber, a passageway in said power piston connecting the first portion of the second chamber to said high pressure chamber, a check valve in said passageway, said second and third control valve means including a control valve body connected to the pump housing means, and said valve body having a stepped end recess defining an inner exhaust chamber an an outer control chamber of a greater area than the exhaust chamber, said control chamber forming an extension of said first chamber, said operating means including a plurality of interconnected pistons including an intermediate diameter spool projecting into said power piston and a small diameter spool located in said exhaust chamber and a large diameter spool in said control chamber.

4,343,596

CONSTANT FLOW RATE LIQUID SUPPLY PUMP

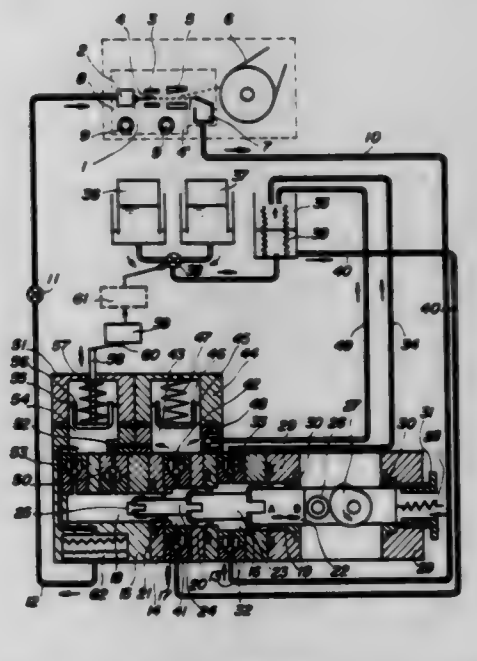
Yoichi Shimazawa, and Toshiaki Kawamoto, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 25, 1979, Ser. No. 51,395

Claims priority, application Japan, Jun. 29, 1978, 53/79865; Jun. 29, 1978, 53/79866

Int. Cl.[3] F04B *25/00, 25/04;* G01D *15/00*

U.S. Cl. 417—252 6 Claims



1. A three-stage pump for an ink liquid supply system for an ink jet system printer, said ink jet system printer comprising a nozzle for emitting an ink liquid supplied from said ink liquid supply system and a beam gutter for collecting waste ink droplets emitted from said nozzle and for recovering the ink liquid toward said ink liquid supply system, said ink liquid supply system comprising:

an ink liquid reservoir for containing the ink liquid therein; and

a constant flow rate pump comprising:

a cylinder including at least a large diameter section, an intermediate diameter section and a small diameter section;

a reciprocating piston disposed in said cylinder;

at least two resilient sealing means disposed between said cylinder and said reciprocating piston for defining first, second and third variable volume pressure chambers;

a first inlet valve formed in said cylinder for communicating said first pressure chamber to said beam gutter;

a first outlet valve formed in said cylinder for communicating said first pressure chamber to said ink liquid reservoir;

a second inlet valve formed in said cylinder for introducing the ink liquid from said ink liquid reservoir into said second pressure chamber;

a second outlet valve formed in said cylinder for developing the ink liquid from said second pressure chamber;

a third inlet valve formed in said cylinder for introducing the ink liquid developed from said second outlet valve into said third pressure chamber;

a third outlet valve formed in said cylinder for communicating said third pressure chamber to said nozzle;

said piston being movable relative to said cylinder to vary the volume of said first, second and third variable volume pressure chambers to pump ink liquid from said first pressure chamber through said first outlet valve, from said second pressure chamber through said second outlet valve, and from said third pressure chamber through said third outlet valve in a forward direction of piston reciprocation and for introducing ink liquid into said first pressure chamber through said first inlet valve, to said second pressure chamber through said second inlet valve, and to said third pressure chamber through

said third inlet valve in a reverse direction of piston reciprocation; and

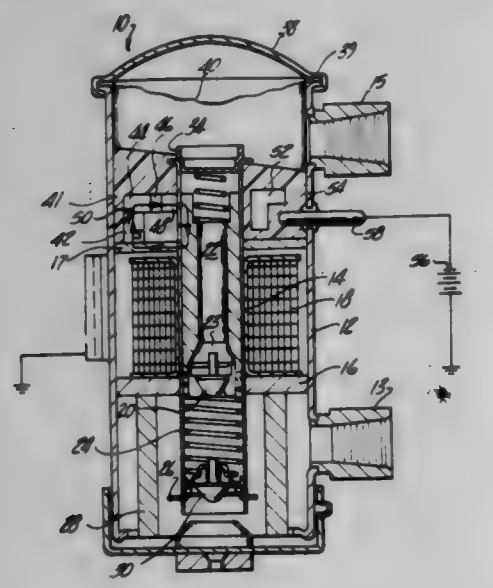
accumulator means operatively connected to said second outlet valve and said third inlet valve for maintaining a higher pressure in said third pressure chamber than the pressure in said second pressure chamber.

4,343,597

RECIPROCATING FLUID PUMP HAVING A HALL SWITCH

Ralph V. Brown, Cayuta, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Apr. 11, 1980, Ser. No. 139,516
Int. Cl.³ F04B *17/04*; H02K *33/02*
U.S. Cl. 417—417 **13 Claims**



1. An electromagnetic fluid pump comprising:

an enclosed housing having an inlet port and an outlet port;

a non-magnetic cylindrical guide disposed in said housing defining a fluid flow path through said housing, said guide having one end proximate said inlet port and the other end proximate said outlet port;

a magnetically permeable hollow piston member disposed in said guide and free to reciprocate therein;

valve means for providing a unidirectional fluid flow through said guide proximate said outlet port;

biasing means for urging said piston member towards the end of said guide proximate to said outlet port;

solenoid coil means disposed concentrically about said guide for moving said piston member towards the end of said guide proximate said inlet port against the force of said biasing means;

magnetic circuit means disposed adjacent to the end of said guide proximate said outlet port, said magnetic circuit means completed by said piston member when said piston member is at the end of its pumping stroke;

Hall effect switch means disposed in series relationship with said magnetic circuit means for generating a signal in response to the magnitude of the magnetic flux flowing through said magnetic circuit means; and

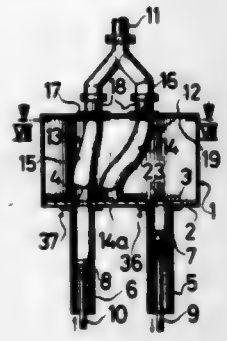
electronic switch means for energizing said solenoid means to move said piston member towards the end of said guide means proximate said inlet port in response to said signal having a predetermined magnitude.

4,343,598

VISCOUS MATERIAL PUMP, PARTICULARLY FOR CONCRETE

Friedrich Schwing, and Gerhard Schwing, both of Herne, Fed. Rep. of Germany, assignors to Friedrich Wilh. Schwing GmbH, Herne, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,438
Int. Cl.³ F04B *7/00, 15/02*
U.S. Cl. 417—517 **2 Claims**



1. An improved valve structure for a viscous material pump, said pump having a material reservoir, a pair of alternately operable material conveying cylinders communicating with the reservoir at spaced locations and having pistons for withdrawing material from the reservoir during a suction cycle and for discharging same during a supply cycle, discharge conduit means, and control means coupled to the valve structure and to the material conveying cylinders, said valve structure comprising a pair of movable swivel pipes extending between the conveying cylinders and the discharge conduit means, each of said swivel pipes having an opening movable over one of the conveying cylinders to receive the contents discharged therefrom and a plate movable over said conveying cylinder to block same, said plates being mounted on said pipes to extend away from each other in opposite directions, each of said swivel pipes being alternately movable by said valve control means to a first position between the spaced locations of the conveying cylinders and in which its associated conveying cylinder is open to said reservoir to receive viscous material therefrom during the suction cycle of the cylinder, to a second position moved outwardly from said first position toward its associated conveying cylinder such that its associated plate blocks said conveying cylinder during a portion of the supply cycle of the cylinder to precompress the viscous material, and to a third position outwardly from said second position such that said opening communicates with said cylinder for receiving the contents discharged therefrom during the remainder of the supply cycle.

4,343,599

SCROLL-TYPE POSITIVE FLUID DISPLACEMENT APPARATUS HAVING LUBRICATING OIL CIRCULATING SYSTEM

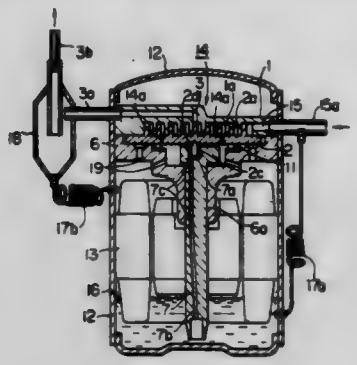
Hirokatu Kousokabe, Totsukamachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1980, Ser. No. 120,885
Claims priority, application Japan, Feb. 13, 1979, 54-14229
Int. Cl.³ F01C *1/02, 21/04*; F04C *18/02, 29/02*
U.S. Cl. 418—55 **10 Claims**

1. A scroll-type fluid displacement apparatus having a scroll-type fluid displacement means including a stationary scroll and a revolving scroll, an electric motor for driving said revolving scroll, a closed container containing said fluid displacement and said electric motor, and lubricating oil circulating means for said fluid displacement means, and means provided in in one of the stationary scroll and revolving scroll for enabling a pressure in the closed container to be maintained at a pressure intermediate a suction and discharge pressure of the apparatus, wherein said lubricating oil circulating means include:

means provided in said container and adapted for storing said lubricating oil;

a first lubricating oil passage opened at its one end into said lubricating oil stored in the lubricating oil storing means in said closed container and connected at its other end to the suction side of said scroll-type fluid displacement means so as to enable lubricating oil to be drawn into the scroll type



fluid displacement means and form a sealing oil film between the stationary and revolving scrolls;

a second lubricating oil passage connected at its one end to the discharge side of said scroll-type fluid displacement means and opening at its other end to the space inside said closed container; and

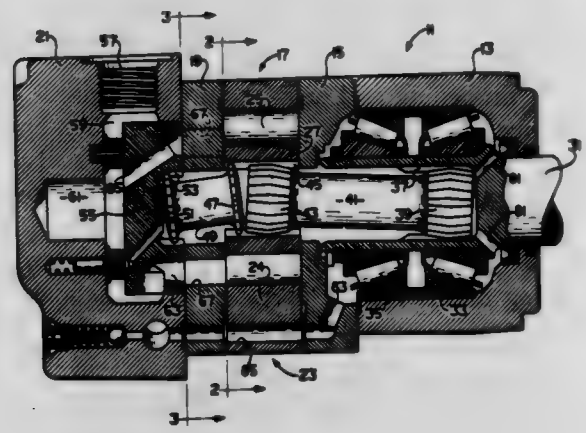
an oil separating means disposed at an intermediate portion of said second lubricating oil passage.

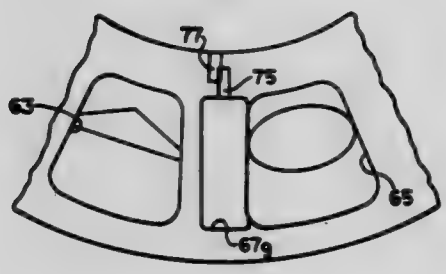
4,343,600

FLUID PRESSURE OPERATED PUMP OR MOTOR WITH SECONDARY VALVE MEANS FOR MINIMUM AND MAXIMUM VOLUME CHAMBERS

Clayton W. Thorson, Edina, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 4, 1980, Ser. No. 118,264
Int. Cl.[3] F01C *1/10, 21/12;* F03C *2/08;* F04C *2/10*
U.S. Cl. 418—61 B 10 Claims





1. A rotary fluid pressure device comprising:

(a) housing means defining fluid inlet means and fluid outlet means;

(b) an internal gear set associated with said housing means and including an internally-toothed member, and an externally-toothed member eccentrically disposed within said externally-toothed member for relative movement therebetween, the teeth of said members interengaging to define expanding and contracting volume chambers during said relative movement, one of said members having rotational movement about its own axis and one of said members having orbital movement about the axis of the other of said members;

(c) first and second relatively movable valve elements having respective first and second slidably engaging valve surfaces, one of said valve elements being movable in synchronism with one of said movements of one of said toothed members, said first valve element defining a plurality N of fluid passages in fluid communication with said expanding and contracting volume chambers and having passage openings in said first valve surface arranged circumferentially relative to the axis thereof, said second valve element defining a plurality of valve ports having openings in said second valve surface arranged circumferentially relative to the axis thereof, said plurality of valve ports including a first group of valve ports having constant fluid communication with said fluid inlet means, and a second group of valve ports having constant fluid communication with said fluid outlet means, at least a portion of said first valve element passage openings being in fluid communication with at least a portion of said second valve element port openings during said relative movement to direct fluid from said fluid inlet means to said expanding volume chambers, and to direct fluid from said contracting volume chambers to said fluid outlet means; and

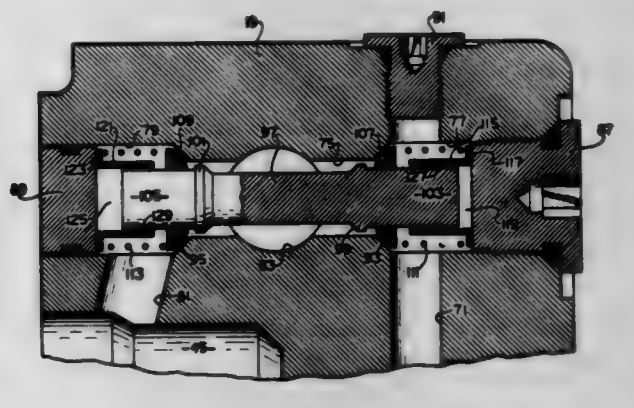
(d) secondary valve means associated with at least one of said first and second valve elements and being operable to permit fluid communication between each of said volume chambers and a source of relatively lower pressure fluid, said permitted communication occurring as each volume chamber is at approximately its minimum volume position and fluid communication is blocked between the respective first valve element passage opening and both of the adjacent second valve element port openings.

4,343,601

FLUID PRESSURE DEVICE AND SHUTTLE VALVE ASSEMBLY THEREFOR

Clayton W. Thorson, Edina, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 21, 1980, Ser. No. 142,493
Int. Cl.[3] F01C *21/16;* F03C *2/08;* G05D *11/00;* F16K *31/122*
U.S. Cl. 418—61 B 9 Claims



1. A rotary fluid pressure device, comprising:

(a) housing means defining a high pressure fluid port, a low pressure fluid port and a shuttle port;

(b) a fluid pressure actuated displacement mechanism including a movable member, said mechanism defining expanding and contracting fluid volume chambers during movement of said movable member, said movement of said member including a rotational component;

(c) output shaft means operable to transmit said rotational component of movement of said movable member;

(d) valve means disposed within said housing means, and cooperating therewith to define first fluid passage means providing fluid communication between said high pressure port and said expanding volume chambers, and second fluid passage means providing fluid communication between said low pressure port and said contracting volume chambers;

(e) shuttle valve means including means defining a shuttle bore in fluid communication with said shuttle port, a high pressure chamber in fluid communication with said first fluid passage means, and a low pressure chamber in fluid communication with said second fluid passage means, said low pressure chamber and said shuttle bore intersecting in a valve seat, said shuttle valve means including an axially movable shuttle piston assembly including a piston member having a first end normally extending into said high pressure chamber and a second end normally extending into said low pressure chamber;

(f) said shuttle valve means including dampening means disposed within said high pressure chamber and being radially movable therein, in a direction transverse to the longitudinal axis of the shuttle bore, said dampening means defining an interior surface adapted to receive said first end of said shuttle piston member and be closely spaced apart therefrom to define a dampening orifice therebetween, said interior surface of said dampening means and said first end of said shuttle piston member cooperating to define an included fluid pocket, the fluid pressure in said pocket being effective to bias said shuttle piston assembly toward a position in which said shuttle piston assembly is disengaged from said valve seat permitting fluid communication between said low pressure chamber and said shuttle port, and said dampening orifice providing substantially restricted fluid communication between said high pressure chamber and said fluid pocket.

4,343,602

GEAR WHEEL PUMP WITH REDUCED POWER REQUIREMENT

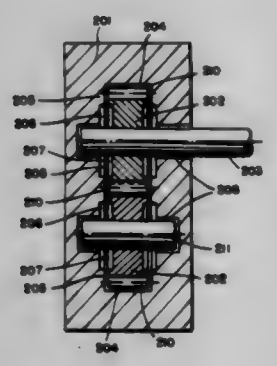
Volker Meywald, Arolsen-Mengeringhausen; Karl Ostertag, and Klaus Schneider, both of Erlenbach, all of Fed. Rep. of Germany, assignors to Akzo, N.V., Arnhem, Netherlands

Continuation of Ser. No. 815,436, Jul. 13, 1977, abandoned. This application May 17, 1979, Ser. No. 39,968

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1976, 2631341; Oct. 22, 1976, 2647765

Int. Cl.³ F04C *2/18, 13/00, 15/00*

U.S. Cl. 418—77 17 Claims



1. A gear pump with reduced power requirement for the conveyance of viscous liquids, especially thermoplastic fiber-forming polymers or a viscose spinning liquid, said pump comprising meshed gear wheels mounted rotatably on parallel shafts in a pump housing circumscribing the gear wheels with liquid inlet means leading into the meshing point where the gear wheels disengage and liquid outlet means leading away from the meshing point where the gear wheels engage, a normal pressuresealing gap space between the gears and the housing being enlarged by means of axial recesses in the side faces of the gears or in the adjacent internal facing surfaces of the gear housing which extend perpendicular to the gear axes, each of said enlarged axial recesses being formed only circularly or as a circular segment with each such circular recess being arranged concentrically to the axis of its gear wheel and extending radially inwardly up to a collar around the shaft of its gear wheel.

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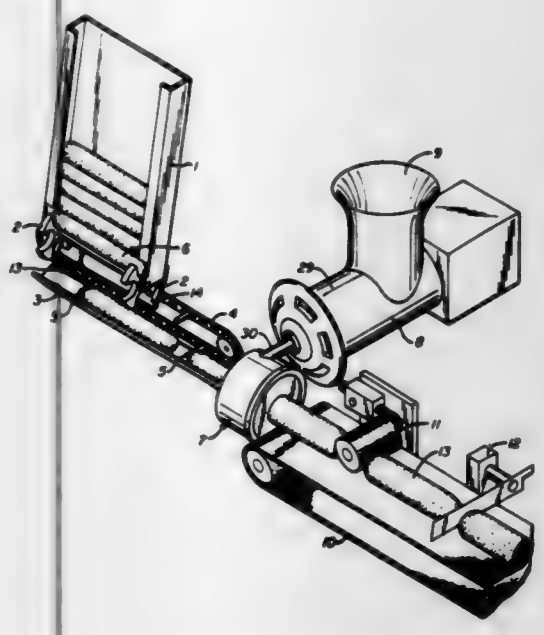
MACHINE FOR ENCAPSULATING FOOD IN DOUGH

Roger Pavlow, 1560 Fourth St., San Rafael, Calif. 94901, and Herman E. Frentzel, Kentfield, Calif., assignors to Roger Pavlow, San Rafael, Calif.

Filed Jul. 16, 1980, Ser. No. 170,312

Int. Cl.³ A21C *3/04;* A23L *1/10, 1/31*

U.S. Cl. 425—114 5 Claims



1. Apparatus for extruding dough about elongate food articles comprising:

an extruding means having means defining a central passage for serially receiving said elongate articles;

means for sequentially dispensing elongate food articles to said central passage;

means for propelling said articles into said central passage, said propelling means including an endless belt conveyor, means positioned for engaging each one of said elongate articles and means for conveyor said elongate articles into said passage;

means for supplying dough to said extruding means, said extruding means further including a continuous annular extruding port concentric about said central passage and in communication with said dough supplying means;

means for sequentially commencing said dough to cover said elongate articles with extruded dough;

means for sensing position of said elongate articles; and

means for severing said extruded dough about said elongate articles in response to said sensing means.

4,343,604

DIE FOR EXTRUDING CERAMIC MATERIAL TO FORM A BODY OF CELLULAR STRUCTURE, AND A METHOD OF OBTAINING SAID DIE

Louis Minjolle, Tarbes, France, assignor to Ceraver, Paris, France

Filed Oct. 14, 1980, Ser. No. 196,982

Claims priority, application France, Oct. 15, 1979, 79 25557

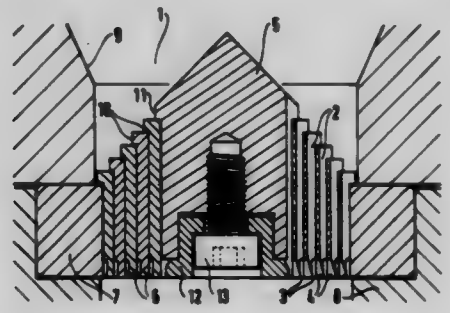
Int. Cl.³ B29F *3/00*

U.S. Cl. 425—192 R 10 Claims

1. A die for extruding a ceramic material to manufacture a body of cellular structure, said die comprising a succession of elongated thin wall tubular coaxial components fitted one around another, said elongated thin wall tubular coaxial com-

ponents including integrally radial shoulders at their upstream ends projecting radially outwardly and overlying the upstream ends of the immediately adjacent tubular coaxial components radially outwardly thereof, means forming between successive radially adjacent components, longitudinal ducts, means defining annular ducts communicating with the downstream ends of said longitudinal ducts, the bottoms of said coaxial components being fitted, one around another, and having essentially radial notches level with the annular ducts, and the width of said notches being less than that of the longitudinal ducts, so that the ceramic material which flows through said longitudinal ducts is evenly distributed in the annular ducts and in the radial notches to form a body of cellular structure directly on extrusion, and wherein the coaxial components which are fitted one around another include an inner, central component bearing a radially outwardly projecting shoulder at the upstream end thereof overlying the upstream end of the immediately adjacent elongated thin wall tubular coaxial component with a succession of intermediate components radially fitted successively one around another from said central component up and to an outer radial component and wherein said outer radial component forms a support nozzle, and wherein said radial notches are provided exclusively at the downstream ends of said intermediate components.

8. A method of manufacturing a die for extruding a ceramic material to produce a body of cellular structure, said die comprising a succession of elongated thin wall coaxial components concentrically fitted one around another, successive radially adjacent components defining between them longitudinal ducts, annular ducts communicating with the downstream ends



of said longitudinal ducts, the bottoms of said coaxial components being fitted, one around another, and having essentially radial notches level with the annular ducts, and the width of said notches being less than that of the longitudinal ducts, so that the ceramic material which flows through the longitudinal ducts is evenly distributed in the annular ducts and in the radial notches to form a cellular structure directly on extrusion, said method comprising:

forming a radially outwardly directed shoulder on the upstream end of a first, inner tubular component,

forming an annular groove at the downstream end of said first, inner tubular component,

forming a series of longitudinal grooves at circumferentially spaced positions around the radial outer surface of said first tubular component extending the length thereof and through said radially outwardly directed shoulder,

forming a radially outwardly directed shoulder on a second tubular component and fitting said second tubular component concentrically about said first tubular component,

subsequently machining said second tubular component to provide an annular groove and longitudinal grooves analogous to those on said first component, and

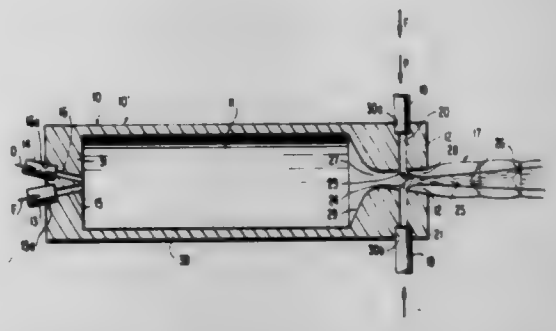
progressing in similar steps regarding said successive radially adjacent components to create said die capable of extruding a body of cellular structure directly from the downstream end of said die, and wherein said radial shoulders fix the positions of said succession of said elongated thin wall tubular coaxial components concentrically about each other while permitting free flow of ceramic material through said longitudinal grooves passing through said shoulders.

4,343,605

METHOD OF DUAL FUEL OPERATION OF AN INTERNAL BURNER TYPE ULTRA-HIGH VELOCITY FLAME JET APPARATUS

James A. Browning, Hanover, N.H., assignor to Browning Engineering Corporation, Hanover, N.H.

Filed May 23, 1980, Ser. No. 152,963
Int. Cl.[3] F23C *5/00;* F23M *3/02*
U.S. Cl. 431—8 3 Claims



1. In a method of burning a primary fuel with an oxydizer within a combustion chamber bearing a venturi type jet nozzle at one end remote from the opposite end in which the primary fuel and oxydizer is ignited to form a flame jet exiting from the nozzle, and wherein small particles of metal or ceramic are fed radially to the venturi for particle spraying at jet velocity, the improvement comprising the step of:

reacting a secondary fuel with higher reactivity than that of said primary fuel with the "free oxygen" within the flame jet exiting from said burner to reduce oxidation of sprayed prticles and increase the static temperature of the flame jet bearing said particles.

4,343,606

MULTI-STAGE PROCESS FOR COMBUSTING FUELS CONTAINING FIXED-NITROGEN CHEMICAL SPECIES

David W. Blair, Princeton; William Bartok, Westfield, both of N.J.; John P. Longwell, Cambridge, and Adel F. Sarofim, Belmont, both of Mass., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,651
Int. Cl.[3] F23M *1/00*
U.S. Cl. 431—10 17 Claims

1. A multi-stage process for combusting a fuel containing fixed-nitrogen chemical species which comprises the steps of:

(a) mixing said fuel which is preheated with at least one first oxidizing agent which is preheated in amounts such that the equivalence ratio of said fuel to said oxidizing agent is at least about 1.6;

(b) partially combusting the mixture resulting from step (a) in at least one first stage at a first temperature of about 1850° to about 2150° K., with a residence time of at least 0.03 second;

(c) mixing the combustion products resulting from step (b) with at least one second oxidizing agent in an amount such that the equivalence ratio of combustion products to the total amount of oxidizing agents in the mixture will be about 1.0 or less, such mixing taking place under nonadiabatic means such that the temperature of the mixture will not exceed about 1800° K.; and

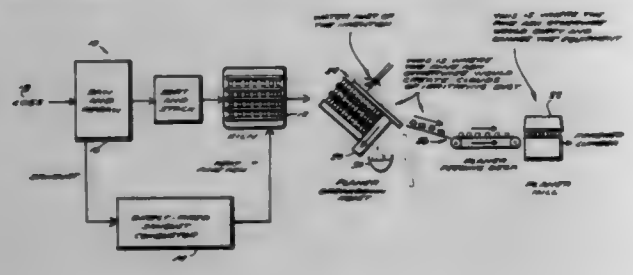
(d) completely combusting the mixture resulting from step (c) in at least one second stage at a second temperature of less than about 1800° K.

4,343,607

SPRAY SYSTEM FOR BREAKDOWN HOIST

Cecil A. Coleman, Thomasville, Ga., assignor to Balfour Lumber Company, Thomasville, Ga.

Filed Feb. 10, 1981, Ser. No. 233,112
Int. Cl.³ F26B 9/12, 7/00
U.S. Cl. 432—18 7 Claims



1. An improved timber processing system, comprising:
sawing timber to produce lumber and consequentially producing sawdust;
stacking the lumber in a multi-course pile with several generally parallel lengths in each course and adjacent courses are each spaced apart by a respective course of spacer sticks which run at generally right angles to the lengths of lumber in said adjacent courses;
placing the pile in a direct fired kiln;
collecting said sawdust and combusting the collected sawdust to produce an ash-laden hot gas stream, feeding the ash-laden hot gas stream to the kiln for kilning the lumber in said pile, whereby ash from the hot gas stream settles on the lumber during said kilning; and
removing the pile of kilned lumber from the kiln and breaking down said pile course-by-course and serially placing each course on a feeding deck to a downstream work station; and
spraying the pile of kilned lumber, as it is being broken down course-by-course with a fine mist of water from above, so that before each course leaves said pile substantially all the ash settled thereon during kilning has been wetted.

4,343,608

COMPOUND AND METHOD FOR PRESERVING DENTAL PULP

Milton Hodosh, 72 Overhill Rd., Providence, R.I. 02906

Filed Mar. 3, 1980, Ser. No. 126,433
Int. Cl.³ A61C 5/02
U.S. Cl. 433—224 5 Claims

1. The method of treating pulpitis so as to prevent abscess formation, comprising the following steps:
(A) removing any decay that exists
(B) capping the pulp with a viscous mixture that will harden to a cementlike consistency, the essential ingredient of said mixture being potassium nitrate
(C) permitting said mixture to substantially harden, and
(D) placing a permanent restoration over said mixture.

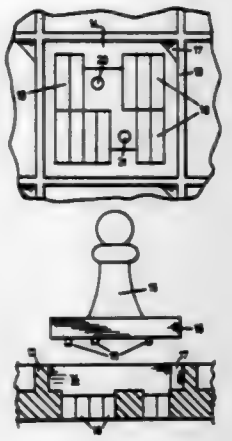
4,343,609

CHESS INSTRUCTION APPARATUS

David V. Cardinal, 1536 Applewood Rd., Mississauga, Ontario, Canada (L5E 2M3)

Filed Apr. 24, 1981, Ser. No. 257,337
Int. Cl.³ G09B 19/22; A63F 3/02
U.S. Cl. 434—128 11 Claims

1. A chess instruction apparatus comprising:
means defining a playing area consisting of an array of playing squares,
each playing square containing a spacial configuration of switches, the configuration being the same in the square,
a plurality of playing pieces of opposing colors,
each playing piece providing a set of switch actuating members positioned to engage selected ones of said switches when the playing piece is placed on the square, the switch actuating members being arranged in a coded configuration corresponding uniquely to the color and function of the playing piece,
a display system consisting of a plurality of display circuits, each display circuit being assigned to a respective playing square and being operable to denote control of the square by a playing piece,
a circuit network controlled by said switches, said circuit



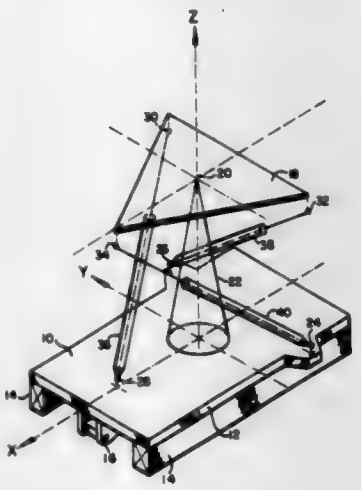
network providing a network of unidirectional current paths interconnecting said display circuits with a current supply,
said switches being selectively operable by said playing pieces for closing selected current paths through the network whereby to activate selected display circuits according to the squares on which playing pieces are placed and the configurations of switch actuating members of such playing pieces.

4,343,610

MOTION SYSTEMS PROVIDING THREE OR FOUR DEGREES OF FREEDOM

Richard C. Chou, Willingboro, N.J., assignor to The Franklin Institute, Philadelphia, Pa.

Filed Jan. 30, 1980, Ser. No. 116,956
Int. Cl.³ G09B 9/08
U.S. Cl. 434—58 15 Claims



1. A motion system capable of motion in three degrees of freedom, specifically roll, yaw and pitch, or any combination thereof, comprising:
a platform providing four points of connection at least three of which lie generally in a plane;
a support base providing three points of connection in another plane;
a support column extending from a generally center position in the base to a connection point in the platform and having coupling means permitting rotational movement of any type about that point;

three and only three powered and controlled extensible members, one each being connected between a different one of the remaining three connection points on the platform and a different one of the three connection points on the support base by joints permitting any relative movement between the extensible members but so that the extensible members within the limits of their movement must remain at acute angles to the platform so that the structure is a statically determined system; and

a control system for actuating the selective changes in the length of extensible members producing a motion.

4,343,611

MARINE PROPULSION

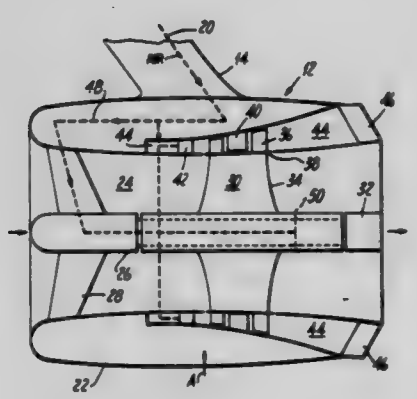
John L. Scott-Scott, Bulkington, England, assignor to Rolls-Royce Limited, London, England

Filed Dec. 27, 1979, Ser. No. 107,634

Claims priority, application United Kingdom, Jan. 5, 1979, 7900360

Int. Cl.³ B63H *11/08, 11/02*

U.S. Cl. 440—45 8 Claims



1. A marine propulsion unit comprising:

a housing;

a duct extending through said housing and through which water is capable of flowing, said duct having an open upstream end and an open downstream end;

a ventilated flow rotor rotatably mounted in said duct to cause water to flow through said duct;

an exhaust passage in said housing external of said duct, said exhaust gas passage having a downstream end adjacent to but separated from the downstream end of said duct;

combustion means arranged to receive a flow of compressed air and fuel, said combustion means communicating with said exhaust gas passage;

a velocity compounded impulse turbine in said exhaust gas passage and driven by products of combustion from said combustion means, said velocity compound impulse turbine having blading directly connected to said rotor for driving said rotor;

a source of gas under pressure;

and means for discharging a flow of the gas from said source into said duct adjacent said rotor in a quantity just sufficient to cause said rotor to operate in a ventilated flow field.

4,343,612

OUTBOARD MOTOR INCLUDING A TWO SPEED TRANSMISSION

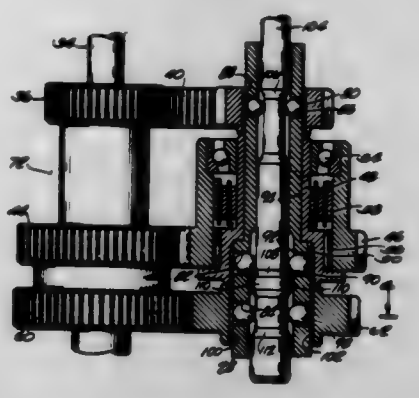
Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 11, 1980, Ser. No. 158,118

Int. Cl.³ B63H *21/28*

U.S. Cl. 440—75 18 Claims

17. A transmission comprising an input shaft, a drive shaft, a first drive gear coaxial with said input shaft, a second drive gear coaxial with said input shaft, a first driven gear coaxial with said drive shaft and in mesh with said first drive gear, a second driven gear coaxial with said drive shaft and in mesh with said second drive gear, one of said input shaft and said drive shaft being rotatable relative to said gears coaxial therewith, the other of said input shaft and said drive shaft being fixed to said gears coaxial therewith for common rotation, a sleeve member between said one shaft and said second gear



coaxial therewith, an overrunning one-way clutch between said sleeve member and said second gear coaxial with said one shaft, and means for selectively operably connecting said one said shaft to said first gear coaxial therewith and to said sleeve member.

4,343,613

DERAILLER SYSTEM

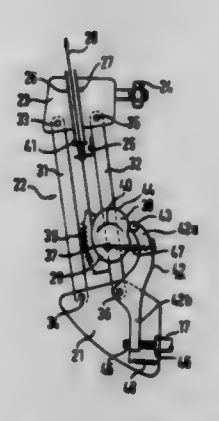
Berndt Leiter, Hergolshausen; Josef Keller; Kurt Schuller, both of Schweinfurt, and Ewald Eisend, Grafenrheinfeld, all of Fed. Rep. of Germany, assignors to Fichtel and Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 5, 1980, Ser. No. 175,540

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933362

Int. Cl.³ F16H *7/22*

U.S. Cl. 474—82 21 Claims



1. A derailling system for a bicycle including a sprocket system having a plurality of drive sprockets and a chain for driving a wheel of said bicycle at different speeds comprising: a movable carrier member having an idler sprocket rotatably mounted thereon for selectively shifting said chain into engagement individually with said sprockets; a guide system for guiding movement of said carrier member along a path essentially parallel with the axis of said driven wheel to urge the chain between individual sprockets; a shifting mechanism including a shift lever for enabling shifting of said movable carrier to a plurality of shifting positions corresponding with said drive sprockets; a cam follower member including a cam follower rotatably mounted on a first part of said guide system; a cam member mounted on a second part of said guide system, said first part and said second part of said guide system being movable relative to each other; transmission means for effecting rotation of said cam member relative to said second part by operation of said shift lever; first spring means connected to urge said cam follower into contact with said cam member thereby to move said movable carrier member along its path of travel whenever said cam member is rotated; and second

spring means biasing said cam follower member to a position relative to said first part, said relative position being defined by a stop member on said cam follower member and a cooperating counterstop member on said first part.

4,343,614

DRIVE SPROCKET WHEEL

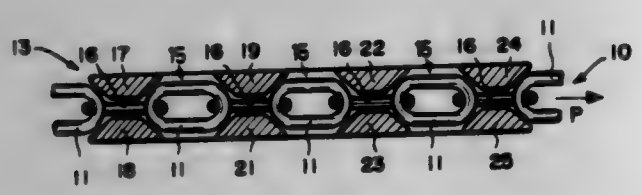
Heinrich Schulte, Witten, Fed. Rep. of Germany, assignor to Klockner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,526

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856099

Int. Cl.³ F16H 7/06

U.S. Cl. 474—155 5 Claims



1. In a drive sprocket wheel of the type having drive chain link receiving pockets formed between sprocket teeth thereof and a circumferential groove dividing the teeth into a pair of tooth sections with the outer tips at the flanks or sides thereof being cupped for the reception of curved chain links of circular configuration, the wheel being rotatable about its central axis for moving the chain in first and opposite directions, the improvement wherein a first pair of said flanks of each of the teeth, against which the chain links exert pressure during movement of the chain in said first direction, slope toward said first direction for establishing points of contact between said chain links and said first pair of flanks so that said contact points lie approximately midway between opposed outer ends and inner edges of said first pair of flanks, and bottoms of said cupped outer tips are concavely curved in a direction perpendicular to the sloping direction of said flanks.

4,343,615

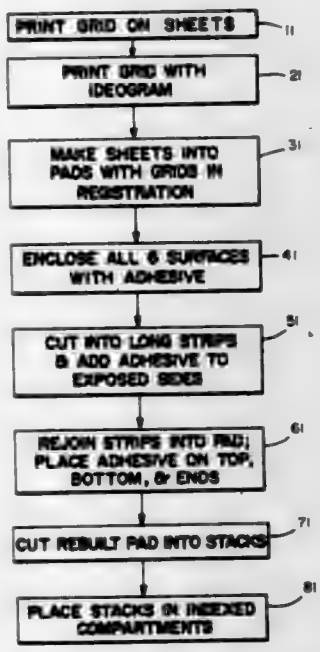
PROCESS FOR FORMING PRINTING CHARACTERS

David S. Shaw, 1402 Powell St., San Francisco, Calif. 94133

Filed Sep. 2, 1980, Ser. No. 183,073

Int. Cl.³ B32B 31/00; B26D 7/06; A44C 3/00

U.S. Cl. 493—325 4 Claims



1. The method of forming printing characters suitable for photographing, comprising the steps, causing to be formed a grid of crossed lines defining a plurality of generally rectangular fields on a surface of sheet material with the lines formed of a marking material rendered invisible when photographed, causing characters to be printed on the surface of the sheet material with a character placed within each rectangular field and the characters being formed by a marking material which is visible when photographed, stacking a plurality of sheets with like indicia thereon so that the grids on the stacked sheets are in substantial registration thus forming a pad from the sheets, wrapping the pad by covering the surfaces thereof with a transparent adhesive material, cutting the pad along parallel grid lines to form strips each one field wide and having a length and thickness equal to that of the pad, treating the surfaces of the strips exposed in the cutting operation with an adhesive material, placing the strips together such that the fields on adjacent strips are aligned to substantially reconstitute the pad, wrapping the reconstituted pad with a transparent adhesive material along the end and top portions, cutting the reconstituted pad along the other parallel grid lines 90° to the initial cuts to form stacks of like print characters adhesively connected in a stack-form along two opposite sides and placing the stacks of characters into a type selector board.

4,343,616

LUBRICANT COMPOSITIONS FOR FINISHING SYNTHETIC FIBERS

Quintin W. Decker, St. Albans, and Erich Marcus, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 22, 1980, Ser. No. 219,217
Int. Cl.[3] D06M *13/20, 15/44*
U.S. Cl. 8—115.6 18 Claims

13. Method of lubricating synthetic yarns which comprises contacting said synthetic yarns with an aqueous emulsion containing about 10 to about 20 percent based on the weight of the total solution of a spin finish consisting essentially of:

(a) About 50–90% by weight of a thermally stable lubricant selected from the group consisting of (1) esters of fatty acids having about 12 to 18 carbons and saturated aliphatic alcohols having about 8 to 18 carbons; (2) triglycerides of fatty acids having 12 to 18 carbons; (3) esters of a polyhydric alcohol and an alkanoic acid having about 8 to 12 carbons where the polyhydric alcohol has the formula

$$(R')_y—C—(CH_2OH)_x$$

wherein x is an integer having values of 3 or 4, R′ is an alkyl having 1 to 3 carbons, y is an integer having values of 0 or 1 and y=0 when x=4; and (4) esters of dibasic fatty acids having 2 to 18 carbons and saturated aliphatic alcohols having about 4 to 18 carbons; and

(b) about 10–50% by weight of a surfactant having the formula

$$R—O—(A_aB_b)—H$$

wherein R is an alkyl having 6 to 14 carbons A is

$$CH_2—\underset{\displaystyle CH_3}{\underset{|}{CH}}—O—,$$

B is $—CH_2CH_2—O—$, a and b are integers having values of about 4 to 15 and 5 to 10 respectively.

4,343,617

SUTURE AND PROSTHESIS MATERIAL

Paul S. Baur, Jr., 208 Pecan Dr., League City, Tex. 77573

Filed Mar. 16, 1981, Ser. No. 243,871
Int. Cl.[3] D06M *3/02, 3/12;* D02G *2/00*
U.S. Cl. 8—127.6 12 Claims

1. Material for suture and prosthesis comprising silk fibers, the proteins of which have been crosslinked by fixing in a dialdehyde fixative solution for a time sufficient to produce said crosslinking, said fixative solution including a fixative agent selected from one or more of the dialdehyde group consisting of glutaraldehyde, glyoxal and hydroxyadipaldehyde.

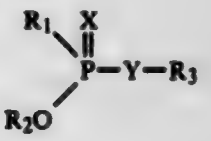
4,343,618

MOTHPROOFING AGENTS

Francis W. Jones; Robert J. Mayfield; Gary J. O'Loughlin, and Ian M. Russell, all of Geelong, Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

Division of Ser. No. 938,253, Aug. 30, 1978, Pat. No. 4,303,652. This application Aug. 11, 1981, Ser. No. 291,999
Claims priority, application Australia, Sep. 6, 1977, PD1533
Int. Cl.[3] D06M *3/02, 13/32*
U.S. Cl. 8—128 R 7 Claims

1. A method of increasing the resistance of keratinous materials to attack by keratin-eating insects which comprises treating the materials with a compound of the general formula:



(1)

wherein:

X and Y are independently O or S;

R_1 is an alkyl, alkoxy, alkylamino, dialkylamino or alkylmercapto radical having 1 to 6 carbon atoms; an amino or aryl radical;

R_2 is an alkyl radical having 1 to 6 carbon atoms;

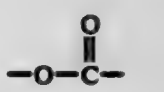
R_3 is a radical of the general formula:

$$—J—(K—L)_n \quad (2)$$

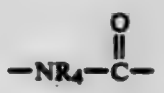
wherein:

J is an aliphatic radical, or radical containing an aromatic or heterocyclic ring;

K is one of the following radicals:



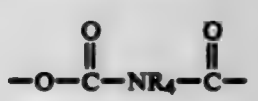
(3)



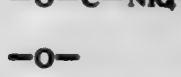
(4)



(5)



(6)



(7)

linked to J through the oxygen atom in the case of (3), (5) or (6), and through the nitrogen atom in the case of (4), and in which the carbonyl oxygen atom of (3), (4) or (5), or one or both carbonyl oxygen atoms of (6) may be replaced by sulphur; R_4 is hydrogen, an aryl radical, or an alkyl radical of 1 to 6 carbon atoms;

L is a halogenated alkyl or alkenyl radical; an alkyl radical (having 1 to 4 carbon atoms) or aryl radical substituted with a vinylsulphonyl group, vinylsulphonamido group or precursors thereof; or a heterocyclic radical containing 1 to 4 halogen atoms attached to carbon atoms adjacent to a nitrogen atom of the ring, the ring being linked directly to K or through an alkylene group having 1 to 4 carbon atoms;

n is 1 to 3.

4,343,619

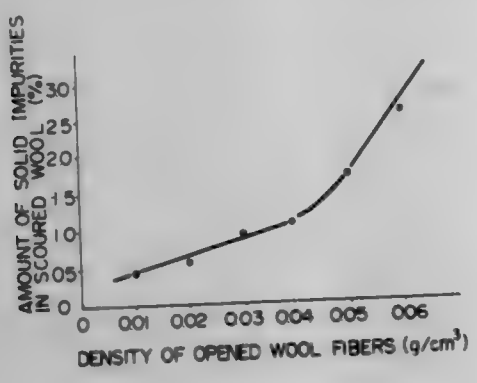
METHOD OF PREPARING A SCOURED ANIMAL HAIR MATERIAL

Ken Kazama, Kamakura; Ikuo Muramoto, Yokohama; Kenji Ozaki, Gifu, and Yoshinobu Kusunoki, Kyoto, all of Japan, assignors to Asahi-Dow Limited, Tokyo and Toa Wool Spinning & Weaving Co., Ltd., Osaka, both of, Japan

Continuation-in-part of Ser. No. 134,321, Mar. 26, 1980, abandoned. This application Mar. 24, 1981, Ser. No. 247,146
Claims priority, application Japan, Mar. 30, 1979, 54-37915; Mar. 30, 1979, 54-37916
Int. Cl.[3] D01C *1/00*
U.S. Cl. 8—139 8 Claims

1. A method for preparing a scoured animal hair material in which the animal hair retains therein 1 to 3% by weight of a residual soapy substance and 0.3 to 5.0% by weight of a residual fatty substance, which method comprises opening a greasy animal hair material to cause it to be in the form of opened loose fibers having a density of from 0.007 to 0.04 g/cm^3, and;

scouring said opened loose fibers with a scouring liquid comprising at least one organic solvent selected from the group consisting of 1,1,1-trichloroethane and methylene chloride, and 0.1 to 10%, based on the entire weight of



said scouring liquid, of a raw animal hair grease which has been extracted from the same type of greasy animal hair as that to be scoured, while moving either one or both of said animal hair material and said scouring liquid in relation to each other at a relative speed of from 3 to 60 m/min.

4,343,620

PROPYLENE OXIDE POLYADDUCTS CONTAINING CARBOXYL GROUPS AND THEIR SALTS

Heinz Abel, Reinach, and Paul Schäfer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 117,912, Feb. 4, 1980, abandoned, which is a continuation of Ser. No. 870,902, Jan. 19, 1978, abandoned. This application Dec. 22, 1980, Ser. No. 219,202

Claims priority, application Luxembourg, Jan. 24, 1977, 76633

Int. Cl.³ C09B *67/00*

U.S. Cl. 8—557 **38 Claims**

1. A process for dyeing fibrous material made of or containing wool with anionic dyes, which comprises applying, before or during dyeing, to said material an aqueous liquor containing a preparation which contains

(1) a propylene oxide polyadduct containing carboxyl groups, or a salt thereof, obtained from

(a) an adduct of propylene oxide and a trihydric to hexahydric alcohol having 3 to 6 carbon atoms,

(b) a saturated or ethylenically unsaturated aliphatic dicarboxylic acid or the anhydride thereof having 4 to 10 carbon atoms

(c) an aliphatic diol of the formula $HO—(CH_2CH_2O)_nH$, wherein n is 1 to 40

(d) a fatty acid having 8 to 22 carbon atoms and

(e) a monocyclic or dicyclic aromatic dicarboxylic acid or the anhydride thereof having 8 to 12 carbon atoms, which component (e) is condensed with the reaction product of components (a), (b), (c) and (d), and

(2) a non-ionic, surface-active alkylene oxide adduct of a monoalcohol having at least 8 carbon atoms, a trihydric to hexahydric aliphatic alcohol, phenol, a phenol which is substituted by alkyl or phenyl, a fatty acid having 8 to 22 carbon atoms or a dicarboxylic acid having 3 to 10 carbon atoms.

4,343,621

PROCESS FOR THE PRODUCTION OF AQUEOUS SOLUTIONS OF SODIUM CHLORIDE FROM ROCK SALT

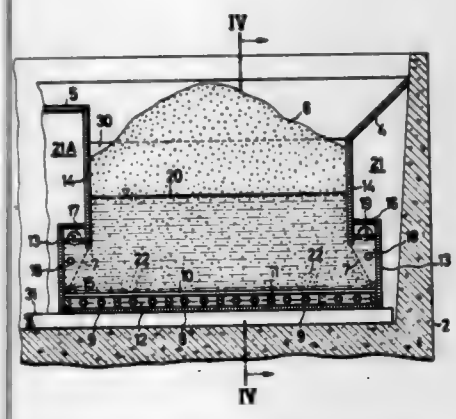
Siegfried Benninger, Schwalbach; Karl Reining, Kelkheim, and Werner Krasel, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,317

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 3008563

Int. Cl.³ B01J *8/02*

U.S. Cl. 23—293 R **3 Claims**



1. A process for the vapor-free production of concentrated aqueous sodium chloride crude brine comprising the steps of

introducing unsaturated crude brine into the base of a rock salt mound in an open dissolving chamber to form a saturated brine containing suspended rock salt particles;

maintaining the level of the saturated crude brine in the dissolving chamber below the top of the rock salt mound and above a vertical or inclined separation screen in the chamber; and

removing suspended rock salt particles from the saturated brine by withdrawing the saturated brine from the dissolving chamber through the separation screen.

4,343,622

METHOD OF MAKING GRANULES BUILT UP FROM A CORE AND AN ENVELOPE

Jean P. Bruynseels, Brussels, Belgium, assignor to Compagnie Neerlandaise de l'Azote, Brussels, Belgium

Filed May 8, 1981, Ser. No. 261,453

Claims priority, application Netherlands, May 12, 1980, 8002738

Int. Cl.³ B01J *8/18*

U.S. Cl. 23—313 FB **2 Claims**

1. A method of making granules built up from a core and an envelope, which method is characterized in that in a bed of solid particles, which by means of a fluidization-gas stream distributed through a perforated, flat, horizontal or slightly slanting bottom plate is kept in the fluidized state, a liquid material containing the substance for the envelope in the molten, dissolved and/or suspended condition is sprayed onto the fluidized nuclei within the fluidized bed from the bottom in the upward direction in the form of droplets having such a small diameter that a droplet can only cover a portion of the surface of a nucleus, by means of at least one vertically disposed hydraulic sprayer, through which the liquid material is sprayed under hydraulic pressure in the desired drop size, and which sprayer is surrounded by a coaxial, annular, converging auxiliary-gas aperture, through which auxiliary gas is passed at such a vertical exit velocity that the conical stream of droplets issuing from the sprayer is narrowed by said auxiliary gas stream to a stream having an apex angle of less than 20°, and in such a quantity that a cavity of dilute fluidized phase, located entirely within the fluidized bed, is formed by said auxiliary gas stream above each sprayer, and the liquid material thus depos-

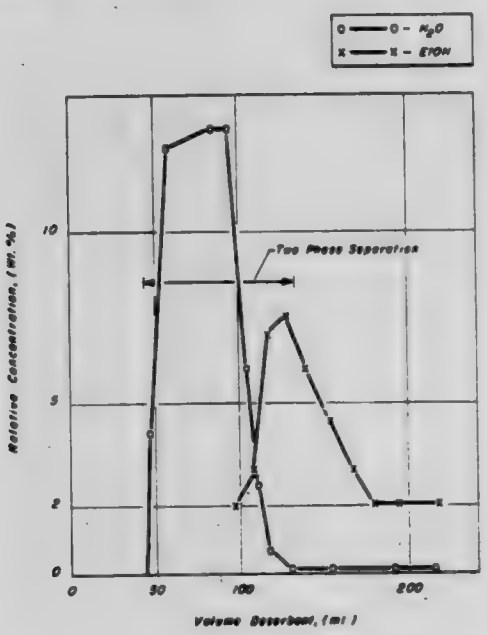
ited on the nuclei is solidified by cooling and/or evaporation of liquid to form granules having a desired size.

4,343,623

USE OF ESTERIFIED SILICA FOR SEPARATION OF ETHANOL FROM WATER

Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 22, 1980, Ser. No. 219,121
Int. Cl.[3] C07C *29/76;* C10L *1/02*
U.S. Cl. 44—53 11 Claims



1. A process for separating ethanol from a feed mixture comprising ethanol and water which process comprises contacting at adsorption conditions said mixture with an adsorbent consisting essentially of esterified silica which process comprises the steps of:

(a) maintaining net fluid flow through a column of said adsorbent in a single direction, which column contains at least three zones having separate operational functions occurring therein and being serially interconnected with the terminal zones of said column connected to provide a continuous connection of said zones;

(b) maintaining an adsorption zone in said column, said zone defined by the adsorbent located between a feed inlet stream at an upstream boundary of said zone and a raffinate outlet stream at a downstream boundary of said zone;

(c) maintaining a purification zone immediately upstream from said adsorption zone, said purification zone defined by the adsorbent located between an extract outlet stream at an upstream boundary of said purification zone and said feed inlet stream at a downstream boundary of said purification zone;

(d) maintaining a desorption zone immediately upstream from said purification zone, said desorption zone defined by the adsorbent located between a desorbent inlet stream at an upstream boundary of said zone and said extract outlet stream at a downstream boundary of said zone;

(e) passing said feed stream into said adsorption zone at adsorption conditions to effect the selective adsorption of said ethanol by said adsorbent in said adsorption zone and withdrawing a raffinate outlet stream from said adsorption zone;

(f) passing a desorbent material into said desorption zone at desorption conditions to effect the displacement of said ethanol from the adsorbent in said desorption zone;

(g) withdrawing an extract stream comprising said ethanol and desorbent material from said desorption zone; and

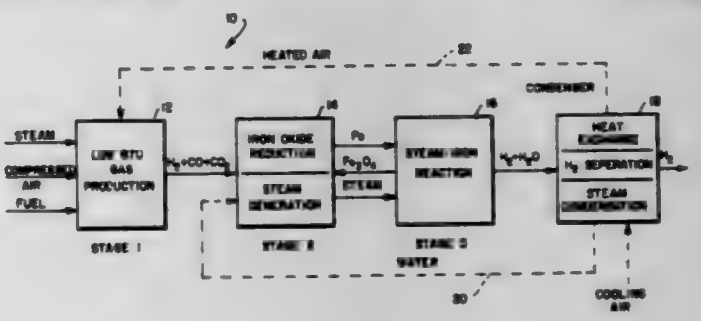
(h) periodically advancing through said column of adsorbent in a downstream direction with respect to fluid flow in said adsorption zone the feed inlet stream, raffinate outlet stream, desorbent inlet stream, and extract outlet stream to effect the shifting of zones through said adsorbent and the production of extract outlet and raffinate outlet streams.

4,343,624

ROTATING FLUIDIZED BED HYDROGEN PRODUCTION SYSTEM

William H. Belke, Peoria, and George B. Grim, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/01089, § 371 Date Dec. 10, 1979, § 102(e) Date Dec. 10, 1979
PCT Filed Dec. 10, 1979, Ser. No. 145,064
Int. Cl.[3] C10J *3/56*
U.S. Cl. 48—61 33 Claims



1. A multi-stage hydrogen generation system (10) comprising:

a. means (12) for producing a relatively low BTU gas comprising carbon monoxide and hydrogen;

b. first reacting means (14) for exothermically reacting said relatively low BTU gas with ferric oxide to produce relatively pure iron and to generate steam;

c. second reacting means (16) for reacting said generated steam with relatively pure iron to produce hydrogen gas;

d. means (18) for recovering said hydrogen gas;

e. at least one of said producing (12) and first and second reacting means (14,16) comprising a rotating fluidized bed, said rotating fludized bed including

(1) an outer substantially cylindrical, elongated perforated wall;

(2) an inner substantially cylindrical, perforated wall spaced apart and substantially coaxial and co-extensive with said outer perforated wall;

(3) enclosing walls defining within said outer and inner perforated walls a substantially annular fluid-ization chamber;

(4) a fluidizable bed of pulverulent solid particles in said chamber;

(5) means for rotating said chamber about the axis to cause the particles to centrifugally gravitate toward said outer perforated wall;

(6) means for feeding a gaseous agent stream into said chamber through said outer perforated wall, said gas stream fluidizing said particles in said chamber, at least a portion of said gaseous stream exiting said chamber through said inner perforated wall; and

(7) means for directing said exiting gaseous stream away from said chamber.

4,343,625

HIGH TEMPERATURE SOLIDS GASIFICATION APPARATUS WITH SLAG REDUCTION MEANS

Walter C. Gates, Jr., Carmel, N.Y., assignor to Texaco Inc., White Plains, N.Y.

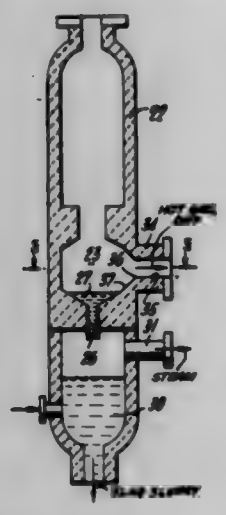
Filed Jan. 19, 1981, Ser. No. 225,881
Int. Cl.[3] B01J *3/00*
U.S. Cl. 48—62 R 7 Claims

1. In combination with a high temperature solids gasification apparatus where finely divided solids are reacted in a down flow generator and liquid slag with gas products are downwardly discharged from said generator through a constriction

and into a plenum chamber therebelow, said plenum chamber having an inside and an outside radius, means for reducing the slag carry-over with the effluent gas from said plenum chamber, comprising

a restricted outlet at the bottom of said plenum chamber for causing a pool of liquid slag to form and assist in coalescence of said slag, and

a lateral outlet from said plenum chamber and located above said pool of slag for carrying said effluent gas,



said lateral outlet having a frusto conical portion connecting said plenum chamber to a nozzle section of said lateral outlet and narrowing from said plenum chamber to form a throat at the intersection of the frustro conical portion and said nozzle,

said throat being offset relative to the vertical axis of said plenum chamber a distance greater than the inside radius of said plenum chamber, whereby said liquid slag carry-over is reduced.

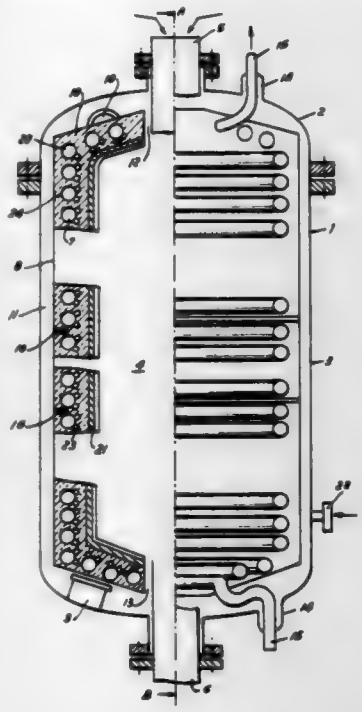
4,343,626

REACTOR FOR PRODUCING A CARBON MONOXIDE AND HYDROGEN CONTAINING GAS

Helmut Peise, Freiberg; Wolfgang Heinrich, Freiberg; Peter Göhler, Freiberg; Friedrich Berger, Brand-Erbisdorf; Klaus Lucas, Freiberg; Manfred Schingnitz, Freiberg; Dieter König, Freiberg, all of German Democratic Rep.; Aleksander Jegorow, Moskwa, U.S.S.R.; Vasilij Fedotov, Moskwa, U.S.S.R.; Vladimir Gavrilin, Moskwa, U.S.S.R.; Ernest Gudumov, Moskwa, U.S.S.R.; Vladimir Semenov, Moskwa, U.S.S.R.; Igol Achmatov, Moskwa, U.S.S.R.; Nikolaj Majdurov, Moskovsk, U.S.S.R., and Evgenij Abraamov, Moskwa, U.S.S.R., assignors to Braunstoffinstitut Freiberg, Freiberg, German Democratic Rep. and Gosudarstwennyi Nautschno-Issledowatelskij i Projektnyi Institut Astonoj Promyschlennosti i Produktow Organitscheskogo Sintesa, Moscow, U.S.S.R.

Filed Feb. 19, 1980, Ser. No. 122,686
Int. Cl.³ C10J 3/72
U.S. Cl. 48—67 6 Claims

1. A reactor for partial oxidation under increased pressure of a powderized and/or liquid fuel, comprising: an outer pressure vessel; a gas-tight housing arranged in said vessel; said housing being spaced apart from the inner wall of said vessel to bound an interspace therewith; a cooling wall adjoining the inner surface of said housing and enclosing a reaction chamber, said cooling wall including coiled cooling pipes embedded in a lining of tamped refractory material; circumferential webs connected to the inner surface of said housing and projecting into said refractory material, the length of each web corresponding substantially to one winding of the coiled pipes to prevent propagation of leaking currents of hot gas from the reaction chamber beyond sections of the inner surface delimited by the webs; at least one passage in said cooling wall and said housing for establishing communication between said reaction chamber and said interspace; at least one connecting conduit opening into said interspace to introduce an inert gas therein; said cooling wall having a cylindrical configuration and including a cooling coil formed of a plurality of adjoining pipes; each of said circumferential webs being in the form of a helix with ends vertically spaced from each other and at least



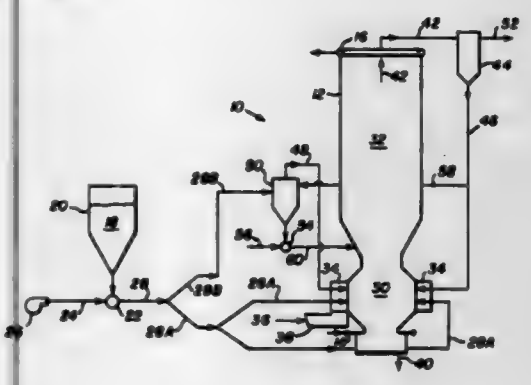
one additional vertical web section secured to the inner surface of said housing and projecting into said refractory material, the outer edge of said vertical additional web section including a plurality of semicircular recesses to fit said pipes and the ends of said additional vertical web interconnecting the vertically spaced ends of respective circumferential webs.

4,343,627

METHOD OF OPERATING A TWO-STAGE COAL GASIFIER

Michael C. Tanca, Tariffville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 28, 1980, Ser. No. 210,899
Int. Cl.³ C10J 3/46
U.S. Cl. 48—202 2 Claims



1. In a method of operating of an entrained flow coal gasifier, of the type wherein coal is burned in a combustion zone with near stoichiometric air to generate combustion products, the combustion products are conveyed from the combustion zone into a reduction zone, and additional coal is injected into the combustion products in the reduction zone to react with the combustion products therein to form a combustible gas, the improvement in supplying coal to the gasifier comprising:

a. establishing a dilute phase mixture of pulverized coal and air;

b. splitting said dilute phase mixture of pulverized coal and air into a first and a second portion;

c. conveying the first portion of said dilute phase mixture of

pulverized coal and air to the combustion zone of the gasifier;
d. separating the pulverized coal from the air of the second portion of said dilute phase mixture;
e. conveying the air of the second portion of said dilute phase mixture to the combustion zone of the gasifier;
f. mixing the pulverized coal separated from the air of the second portion of said dilute phase mixture with steam to establish a dense phase mixture thereof having coal-to-steam weight ratio of approximately ten to one; and
g. conveying said dense phase mixture of pulverized coal and steam to the reduction zone of the gasifier.

4,343,628
FLUORINATED DIAMOND BONDED IN FLUOROCARBON RESIN

Gene W. Taylor, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

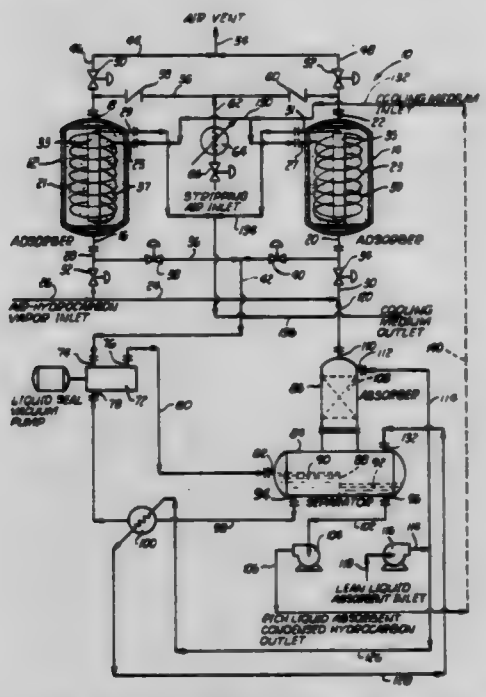
Filed Jan. 27, 1981, Ser. No. 228,837
Int. Cl.³ C08K 3/16
U.S. Cl. 51—298 17 Claims

1. An article of manufacture which comprises fluorinated diamond bonded in fluorocarbon resin.

4,343,629
PROCESS AND APPARATUS FOR RECOVERING HYDROCARBONS FROM AIR-HYDROCARBON VAPOR MIXTURES

Harold L. Dinsmore; Robert E. Schwartz, and Willard N. Tuttle, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Feb. 5, 1981, Ser. No. 231,917
Int. Cl.³ B01D 53/04, 53/14
U.S. Cl. 55—28 19 Claims



1. A process for recovering hydrocarbons from an inlet air-hydrocarbon vapor mixture comprising the steps of:
(a) flowing said inlet mixture through a first bed of solid adsorbent having an affinity for hydrocarbons whereby hydrocarbons are adsorbed on said bed and a residue gas stream comprised of substantially hydrocarbon-free air is produced;
(b) venting said substantially hydrocarbon-free air to the atmosphere;
(c) evacuating a second bed of solid adsorbent having hydrocarbons adsorbed thereon by vacuum pumping whereby a major portion of said hydrocarbons are desorbed from said bed and a hydrocarbon-rich air-hydrocarbon mixture is produced;
(d) contacting the air-hydrocarbon mixture produced in step (c) in an absorber with a liquid absorbent having an affinity for hydrocarbons whereby a major portion of the hydrocarbons are removed therefrom and a residue gas stream comprised of air and a minor portion of hydrocarbons is produced;
(e) combining said residue gas stream produced in step (d) with said inlet air-hydrocarbon mixture of step (a) whereby hydrocarbons contained therein are adsorbed on said first bed of solid adsorbent;
(f) periodically changing the flow patterns of said inlet air-hydrocarbon mixture and changing the bed of solid adsorbent being evacuated whereby when the bed through which the inlet air-hydrocarbon mixture is flowing becomes loaded with adsorbed hydrocarbons, the inlet air-hydrocarbon mixture is caused to flow through the bed which has just been evacuated; and
(g) cooling said beds of solid adsorbent to thereby prevent said beds from runaway overheating, the cooling of said beds being accomplished by flowing the liquid absorbent of step (d) through heat transfer coils disposed in said beds of solid adsorbent after contacting said air-hydrocarbon mixture therewith in accordance with step (d).

14. Apparatus for recovering hydrocarbons from air-hydrocarbon vapor mixtures comprising:
(a) a pair of adsorbers containing beds of solid adsorbent having an affinity for hydrocarbons and having first and second connections on opposite sides of said beds;
(b) a pair of heat transfer coils, one disposed in each of said adsorbers for cooling the beds of solid adsorbent disposed therein having inlet and outlet connections;
(c) first conduit means connected to the first connections of said adsorbers for conducting said air-hydrocarbon vapor mixture to said adsorbers and for evacuating said adsorbers;
(d) valve means disposed in said first conduit means for selectively causing said air-hydrocarbon vapor mixture to flow through one or the other of said adsorbers;
(e) second conduit means connected to the second connections of said adsorbers for conducting residue gas exiting said adsorbers to the atmosphere;
(f) second valve means disposed in said second conduit means for selectively causing the second connections of one or the other of said adsorbers to be open to the atmosphere;
(g) a vacuum pump having a suction connection and a discharge connection;
(h) third conduit means connected between the suction connection of said vacuum pump and the first conduit means connected to said adsorbers;
(i) third valve means disposed in said third conduit means for selectively communicating one or the other of said adsorbers with the suction connection of said vacuum pump;
(j) an absorber for contacting an air-hydrocarbon vapor mixture with a liquid absorbent having an air-hydrocarbon vapor mixture inlet connection, a residue gas outlet connection, a lean liquid absorbent inlet connection and a rich liquid absorbent outlet connection;
(k) fourth conduit means connected between the air-hydrocarbon vapor mixture inlet of said absorber and the discharge connection of said vacuum pump;
(l) fifth conduit means connected between the residue gas outlet connection of said absorber and said first conduit means;
(m) a rich liquid absorbent pump having a suction connection and a discharge connection;
(n) sixth conduit means connected between the rich liquid absorbent outlet connection of said absorber and the suction connection of said rich liquid absorbent pump; and
(o) seventh conduit means connected between the discharge connection of said rich liquid absorbent pump and the inlet connections of said heat transfer coils.

4,343,630
LIQUID DE-GASSING UNIT

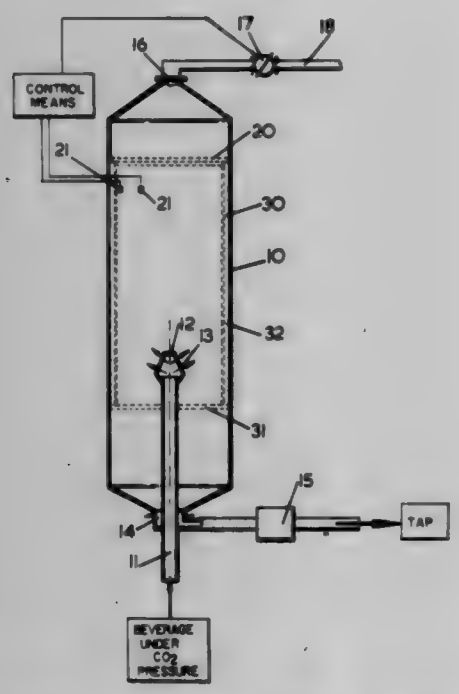
Anthony Grant, Teddington, England, assignor to Spikeville Limited, Surrey, England

Continuation of Ser. No. 35,546, May 3, 1979, abandoned. This application Aug. 22, 1980, Ser. No. 180,403

Claims priority, application United Kingdom, May 9, 1978, 18578/78

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—170 3 Claims



1. An apparatus for use in dispensing from a selectively operable tap-like dispensing outlet a carbonated beverage in discontinuous increments and with a minimum of froth comprising, in combination, a storage chamber, said storage chamber being adapted to hold therein when filled to a predetermined level a predetermined volume of carbonated liquid beverage, said chamber having an inlet through which a carbonated liquid beverage enters said chamber, said inlet being located below said predetermined level, said inlet being adapted to be connected exteriorly and said chamber to a container for containing said beverage under gas pressure, said inlet terminating in a nozzle means within said chamber, said nozzle means including at least one discharge opening positioned to direct incoming liquid carbonated beverage from said container into agitating relation to liquid carbonated beverage in said chamber above said nozzle means, said agitating relation being effective to release excess gas from said beverage, a beverage outlet in the lower end of said chamber beneath the level of said nozzle means and adapted to communicate with said tap-like dispensing outlet to permit dispensing from said dispensing outlet beverage having excess gas released therefrom, said beverage being flowable through said beverage outlet of said chamber and through said tap-like dispensing outlet when said tap-like dispensing outlet is open to cause the volume of carbonated liquid beverage in said chamber to drop below said predetermined level, a gas outlet communicating with said chamber above said predetermined liquid level, a valve controlling said gas outlet, and flow control means including liquid level sensing means for opening said valve when liquid beverage in said chamber falls below said predetermined level and for closing said valve when liquid beverage in said chamber rises to said predetermined level, whereby said pressurized beverage flows from said container through said inlet and into said chamber under reduced chamber pressure when said valve is open, and whereby when said valve is closed gas pressure above the liquid in said chamber rises until there is pressure equalisation between said gas pressure and the gas pressure in said container, whereby further inflow of beverage from said container into said chamber ceases when said pressure equalisation is reached.

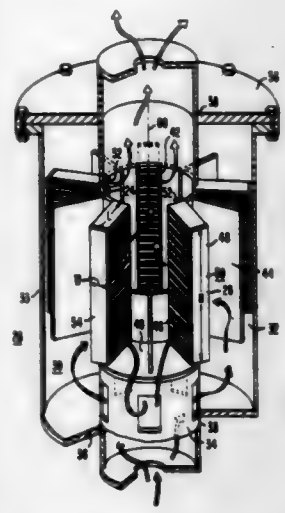
4,343,631
HOT GAS PARTICULATE REMOVAL

David F. Ciliberti, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 30, 1981, Ser. No. 230,142

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—302 23 Claims



1. Apparatus for filtering particulates from a mixture of particulates in a high temperature gas, comprising:

a vessel having an internal volume;

a duct fixed to and disposed within said vessel, said duct having interior space;

a plurality of filter elements affixed to and extending outwardly from said duct, said elements having inlet channels in fluid communication with said vessel internal volume and outlet channels in fluid communications with said duct interior space, said inlet and outlet channels being separated by a ceramic membrane permeable to said high temperature gas and impermeable to said particulates;

means for conducting said mixture to said vessel internal volume;

means for conducting said high temperature gas out of said duct to a point external to said vessel; and

means for conducting said particulates removed from said high temperature gas from said vessel.

4,343,632
GAS DUST-REMOVING FILTERS

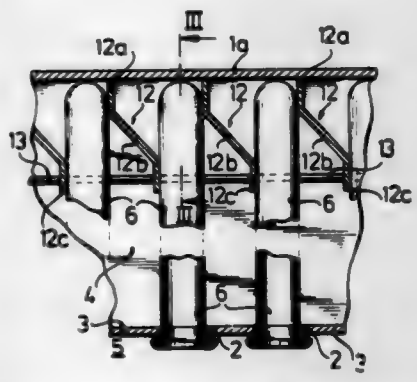
Adolf Margraf, Am Schleplingsbach 46, Stadthagen, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,231

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009596

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—341 HM 3 Claims



1. In a gas dust-removing filter of the kind including a filter casing provided with a vertical perforated partition which divides the casing into a clean gas chamber and a gas dust-removing chamber, and filter bags inserted horizontally into

the gas dust-removing chamber through the perforations of said partition, each of said filter bags having an open end sealed at the clean gas side of said partition and a closed end supported on a rear wall of the casing, each of said filter bags being spaced apart from adjacent filter bags, said filter bags being provided with internal spacing elements for keeping apart the plane and parallel surfaces of each of said filter bags during the dust-removing operation, the improvement which comprises, parallel vertical guide members disposed in said gas dust-removing chamber and engaging the closed ends of said filter bags, each guide member being disposed between two adjacent filter bags, each guide member having a surface which slopes with respect to the rear wall of the casing and being secured to the rear wall of the casing, and support members which engage said guide members and are disposed so as to support the closed ends of said filter bags adjacent to the rear wall of the casing, the projection of said surface on the rear wall of the casing corresponding to the spacing between two adjacent filter bags, so that said filter bags are being held in a fixed position by said guide members and twisting thereof is substantially eliminated or reduced.

4,343,633

HIGH PRESSURE PURIFICATION OF HYDROGEN

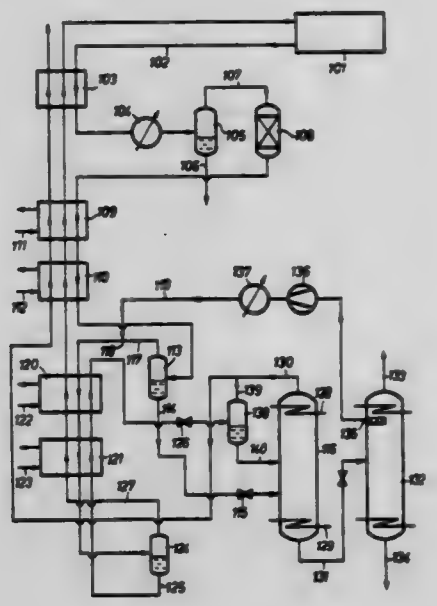
Helmut Kick; Hans Kistenmacher; Walter Schramm; Berndt Hoerner, and Udo Lang, all of Munich, Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,619

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947239; Dec. 24, 1979, 2952347

Int. Cl.³ F25J *3/00*

U.S. Cl. 62—23 **18 Claims**



1. In a process for the purification of a hydrogen stream contaminated with at least methane and ethane, said process comprising subjecting the hydrogen stream to multistage partial condensation and separation of the respectively formed condensates, the improvement which comprises subjecting the hydrogen stream to the multistage partial condensation under a pressure above about 100 bar and adjusting said process so as to yield in the final condensate 5–40 molar percent of ethane with a predominating amount of methane thereby ensuring extensive condensation of the methane contained in the hydrogen stream to produce a hydrogen stream of high purity.

4,343,634

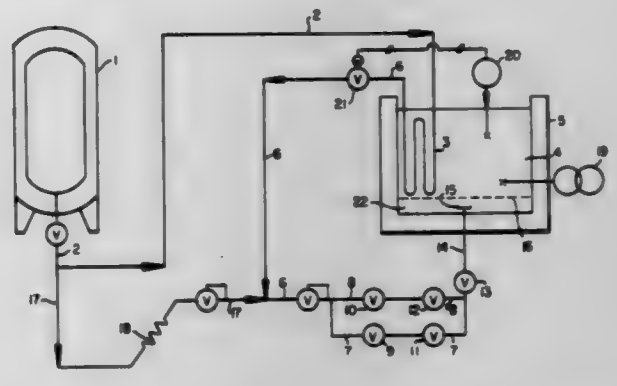
PROCESS FOR OPERATING A FLUIDIZED BED

Robert B. Davis, Nyack, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 23, 1981, Ser. No. 246,916

Int. Cl.³ F17C *7/02*; F25D *25/00*

U.S. Cl. 62—62 **2 Claims**



1. In a process for operating a fluidized bed, wherein the bed particles have a Reynolds number of less than 20, at a predetermined cryogenic temperature comprising (i) bringing a cryogenic fluid into indirect contact with the bed; (ii) permitting the fluid to vaporize at the area of indirect contact whereby the bed is cooled; and (iii) utilizing the vapor from step (ii) to fluidize, and further cool, the bed, said cooling in steps (ii) and (iii) being from ambient temperature to the predetermined cryogenic temperature, the improvement comprising changing, continuously or stepwise, the minimum fluidizing mass flow of vapor as the temperature of the bed changes in accordance with the following equation:

$$A = 1.1 \times \frac{(BC)^2}{150} \times \left(\frac{D-E}{F}\right) \times g \times \left(\frac{H^3}{1-H}\right) \times J \times E$$

wherein:

A = minimum fluidizing mass flow of vapor in grams per second

B = sphericity of bed particles

C = largest particle diameter in centimeters

D = bulk density of particles in grams per cubic centimeter

E = vapor density at temperature of the bed in grams per cubic centimeter

F = viscosity of the vapor at temperature of the bed in grams per centimeter per second

g = 980 centimeters per second squared

H = voidage

J = bed area in square centimeters

4,343,635

GLASS FIBER-FORMING APPARATUS

Kwan Y. Kim, Pickerington, and Clarence E. Fracker, Frazeyburg, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

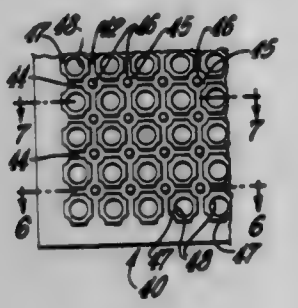
Filed Dec. 29, 1980, Ser. No. 221,113

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—1 **9 Claims**

1. An orifice plate for a glass fiber drawing bushing of the type having a flat undersurface and a plurality of orifices formed therethrough, the improvement comprising at least two sets of grooves formed on said undersurface, said grooves extending in intersecting relationship to divide said undersur-

face into a plurality of sections, said orifices being located within said sections, and a rod member at an intersection of



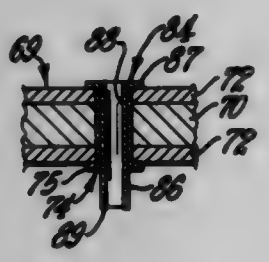
two of said grooves, said rod member projecting outwardly beneath the depth of the intersecting grooves.

4,343,636

METHOD AND APPARATUS FOR FORMING GLASS FIBERS

Mohinder S. Bhatti, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 20, 1981, Ser. No. 255,987
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—1 **16 Claims**



14. The method of forming glass fibers comprising:

providing a feeder for supplying molten streams of inorganic material to be attenuated into fibers, said feeder comprising:

a refractory metal core having an oxygen impervious, precious metal sheath intimately bonded thereto by hot isostatic pressing to form a laminate, said laminate having at least one aperture extending therethrough;

a first element positioned in said aperture, said first element having a flange in abutting engagement with one side of said sheath and an orifice extending therethrough;

a second element positioned in said orifice of said first element, said second element having a flange in abutting engagement with an opposite side of said sheath and a passageway adapted to permit said molten glass to pass therethrough; said first element being sealed to said laminate to prevent the oxidation of said core at elevated temperatures; and

attenuating the streams of molten glass into fibers.

4,343,637

METHOD AND APPARATUS FOR MONITORING THE DIAMETER OF FIBERS

Frederick M. Shofner, Knoxville, Tenn.; Nell E. Greene, Granville, and Terry J. Hanna, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 15, 1980, Ser. No. 178,269
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 **16 Claims**

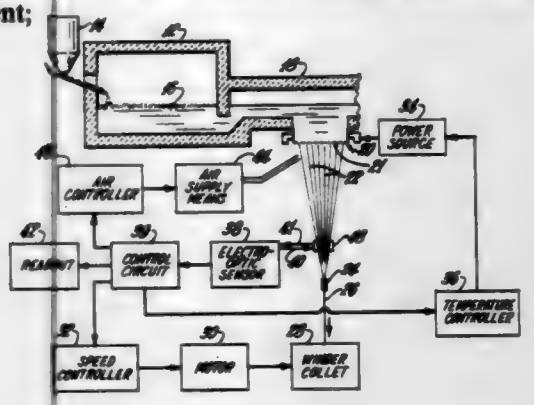
1. A method of controlling the average diameter of a plurality of glass fibers, said method comprising the steps of:

(a) illuminating a predetermined portion of said fibers in a fiber fan with electromagnetic radiation;

(b) sensing all of the electromagnetic radiation scattered backwards from said fibers which passes through a predetermined reflection zone;

(c) generating a first signal, V_f, responsive to the amount of electromagnetic radiation sensed when the fibers are present;

(d) generating a second signal, V_b, responsive to the amount of electromagnetic radiation sensed when no fibers are present;



(e) generating a third signal, V_{cal}, by means of a calibration device which interconnects the electromagnetic illuminating device of (a) above and the electromagnetic radiation sensing device of (b) above;

(f) inputting a fourth signal, V_{ref}, by suitable exterior switching devices;

(g) using a microcomputer to generate a fifth signal, V_f, from the above signals one through four based upon the equation:

$$V_f = (V_f - V_b)\frac{V_{ref}}{V_{cal}}$$

which is an indication of the average diameter of said fibers;

(h) comparing this fifth signal by means of the microcomputer to a previously stored sixth signal to produce an error signal which is indicative of a change in fiber diameter;

(i) using the error signal by means of the microcomputer located in the control circuit to control a fiber forming process for producing said glass fibers in order to maintain the diameter of the fiber constant by maintaining signal number five, V_f, constant.

4,343,638

METHOD FOR MANUFACTURING GLASS FIBERS FROM AN INFRARED RAY-TRANSMITTING GLASS FIBER MATERIAL

Seiko Mitachi; Shuichi Shibata; Terutoshi Kanamori; Toyotaka Manabe, all of Mito, and Mitsuho Yasu, Katsuta, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,716
Claims priority, application Japan, Feb. 4, 1980, 55-11531
Int. Cl.³ C03B *37/07, 37/075*
U.S. Cl. 65—2 **7 Claims**

1. A method for manufacturing glass fibers using an infrared ray-transmitting glass fiber material, comprising the steps of

(1) mixing BaF_2, GdF_3 and ZrF_4 in a ratio of 28 mol% to 38 mol%, 2 mol% to 7 mol% and 58 mol% to 69 mol%, respectively, to obtain a mixture;

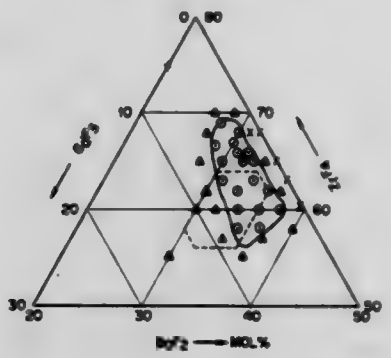
(2) melting the mixture to provide a melt;

(3) casting the melt in a metal mold with a hollow section which is preheated at a temperature of 100° C. or more, but at a temperature less than a glass deformation temperature;

(4) annealing said melt in said metal mold to form a glass rod, said glass rod forming step including heating the melt in the

temperature range of about 200° C. to less than the glass deformation temperature and cooling said melt;

(5) removing said glass rod from said metal mold and optically polishing it at the ends and the sides;



and drawing the tip of the glass rod while applying tension to the tip of said glass rod, said drawing step including heating the tip of said glass rod and drawing the heated portion of said glass rod into a glass fiber while maintaining the temperature of the end portion of said glass rod constant.

4,343,639

PROCESS FOR PRODUCTION OF FIBER MATS

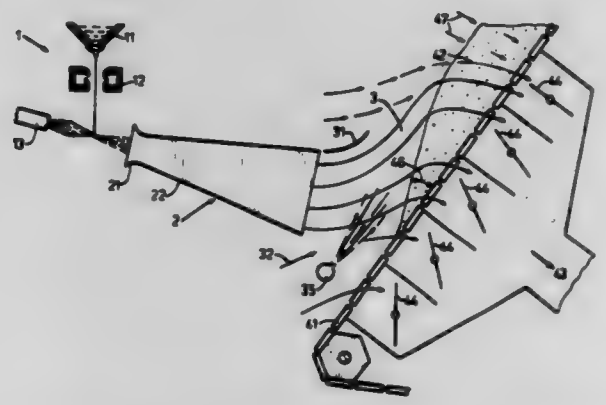
Edgar Muschelknautz, Leverkusen, and Norbert Rink, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 7, 1981, Ser. No. 251,807

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016114; Jun. 20, 1980, 3023016

Int. Cl.³ C03B *37/06*

U.S. Cl. 65—4.4 **6 Claims**



1. In a process for the production of mats made of organic or inorganic fibers, comprising dispersing fibers in a flowing gas so as to issue together from a channel, depositing the fibers on a perforated conveyor belt for the formation of the mat, and removing the gas by suction below the conveyor belt, the improvement which comprises

(a) disposing the conveyor belt so as to form an angle of about 90° to 150° with the direction of gas flow at the outlet of the channel;

(b) deflecting the gas flow on one side of the channel in the direction of the conveyor belt such that the gas flow is deflected in the direction of the conveyor belt by the Coanda-effect after issuing from the channel;

(c) the deflected gas flow entraining ambient air or recirculated gas from the surroundings in the direction of the conveyor belt downstream of the deflection;

(d) on the opposite side of the channel ambient air flowing into the region of the fiber deposit between the conveyor belt and the lower edge of the channel in the direction of movement of the conveyor belt, at an angle of about 45° to 90° to the direction of gas flow at the channel outlet; and

(e) removing the total flow by suction on the conveyor belt such that the gas carrying the fibers takes an S-shaped path to the conveyor belt with a double deflection, whereby the direction of flow is at an angle of from 0° to about 30° with the conveyor belt at the turning point.

4,343,640

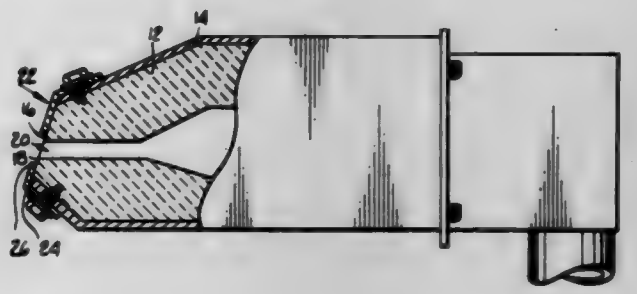
ATTENUATION BURNER FOR FORMING FIBERS

Thomas L. Dale, Englewood, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Mar. 20, 1981, Ser. No. 245,861

Int. Cl.³ C03B *37/06*

U.S. Cl. 65—16 **5 Claims**



1. A burner for use in the flame attenuation of filaments, comprising:

a combustion chamber, said combustion chamber including a metal casing and a refractory lining, said casing at least partially surrounding the refractory lining and said lining having an inlet opening and an outlet opening, said outlet opening being formed in an inclined front surface of said refractory lining and defining upper and lower front faces, said combustion chamber having a pair of substantially parallel surfaces, a first intermediate surface positioned between and inclined relative to both one of said substantially parallel surfaces and said upper front face, a second intermediate surface positioned between and inclined relative to both the other of said substantially parallel surfaces and said lower front face, said metal casing enclosing said pair of substantially parallel surfaces and said first and second intermediate surfaces but leaving said inclined front surface exposed;

means for supplying a fuel/air mixture to said chamber;

means for igniting said mixture; and protective means attached to at least one of said intermediate surfaces which overlaps the metal casing enclosing said surface, and partially covers said inclined front surface to protect it from engagement by improperly attenuated filaments.

4,343,641

ARTICLE HAVING A SCRATCH RESISTANT LUBRICATED GLASS SURFACE AND ITS METHOD OF MANUFACTURE

Addison B. Scholes, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

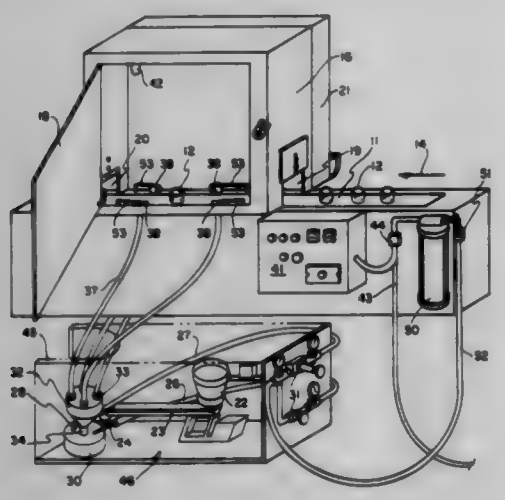
Filed Mar. 2, 1981, Ser. No. 239,241

Int. Cl.³ C03C *17/00*

U.S. Cl. 65—60.2 **15 Claims**

1. A method of preventing initial surface damage effects to glassware after its formation and during annealing thereof so that abrasion resistance and strength characteristics are maintained, said method comprising shaping molten glass to form glassware, adhering over the surface of said glassware a discontinuous distribution of discrete fusible particulate matter such that optical coupling occurs, transporting in close prox-

imity the glassware, said glassware being subject to stress-strain conditions, and annealing said glassware and fusing said



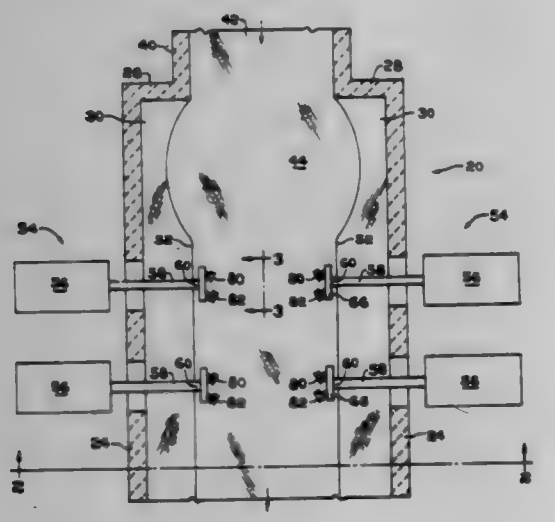
discrete particulate matter to its surface so that the fused matter is in relief thereon and provides interstitial spacings.

4,343,642

METHOD FOR ATTENUATING FLOAT GLASS

Charles K. Edge, Sarver, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1980, Ser. No. 174,481
Int. Cl.³ C03B *18/06*
U.S. Cl. 65—99.5 **6 Claims**



1. In a method of attenuating a ribbon of glass by a plurality of opposed pairs of attenuating devices spaced longitudinally within an attenuating zone of a flat glass forming chamber, each of said attenuating devices engaging adjacent marginal edge portions of the ribbon as the ribbon advances downstream through the attenuating zone upon a pool of molten metal toward a discharge end of said chamber, the ribbon having internal forces which tend to maintain the ribbon in an equilibrium condition and resist attempts to attenuate the ribbon from its equilibrium condition, wherein said attenuating devices are spaced and actuated to exert longitudinal and lateral attenuation forces on the ribbon which act against the internal forces of the ribbon to generate non-uniform longitudinal and lateral stresses in the ribbon within the attenuating zone, which non-uniform longitudinal and lateral stresses detrimentally affect the optical quality of the final ribbon, the improvement comprising practicing the steps of:

longitudinally spacing said plurality of opposed pairs of attenuating devices in such proximity relative to one another in said attenuating zone such that the width of the ribbon is maintained between adjacent pairs of attenuating devices at least about 95 percent of the average ribbon width measured at said adjacent opposed pairs of attenuating devices; and

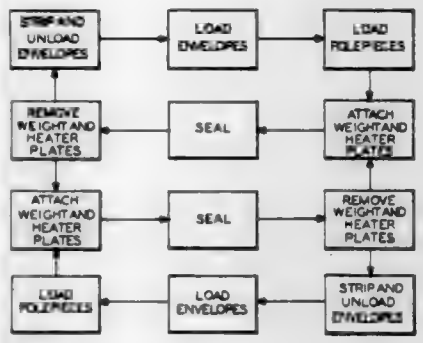
rotating said plurality of opposed pairs of attenuating devices with progressively increasing rotational speeds relative to the preceding opposed pair to accelerate the engaged portions of said ribbon with each of said plurality of opposed pairs of attenuating devices, wherein each of said plurality of opposed pairs of attenuating devices is rotated with a rotational speed which has a corresponding longitudinal component of velocity which is a predetermined amount ΔV greater than the longitudinal velocity of the ribbon as measured immediately upstream from each of said opposed pairs wherein, the predetermined amount ΔV is maintained substantially equal for each of said plurality of opposed pairs of attenuating devices to minimize non-uniformities in the longitudinal stresses in the ribbon in the attenuating zone.

4,343,643

SEALING ARTICLES INTO A GLASS ENVELOPE AND COMPOUND HOLDER THEREFOR

Elmo D. Miller, Kansas City, Mo., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,437
Int. Cl.³ C03B *23/09, 23/13, 23/18*
U.S. Cl. 65—103 **8 Claims**



1. A holder for positioning a plurality of envelopes relative to a plurality of electrodes during a heat sealing operation, which comprises:

a base including a plurality of extensions mounted in a precise array;

a stripper plate mounted adjacent to the base, said stripper plate including a plurality of openings arranged in said array with the stripper plate having an alignment relative to said base, such that said extensions of said base extend through said openings in the stripper plate, the stripper plate having a seat for one of said envelopes formed about each of the openings, each of the extensions having at least one reference surface for mounting at least one of said electrodes in reference thereto, whereby said at least one electrode becomes positioned relative to said envelope positioned on said seat;

a heater plate being releasably mounted relative to said stripper plate adjacent ends of said envelopes for heating said envelopes and said electrodes thereby forming a seal between said ends of said envelopes and said electrodes; and

a heat shield positioned between said base and said heater plate for protecting said base from heat radiated from said heater plate during the heat sealing operation.

8. An improved method of sealing, in each of a number of successive cycles, ends of a plurality of cylindrical articles, which involves at least two plate assemblies, each such plate assembly adapted to hold a plurality of said articles wherein, after an initial startup cycle, the method comprises:

loading one plurality of said articles onto a first plate assembly having a plurality of seats arranged in an array on said first plate assembly; removing a previously heated heater plate from a previously loaded, second plate assembly,

said heater plate and said second plate assembly being at a temperature higher than the temperature of said first plate assembly;

removably mounting said removed heater plate to said first plate assembly to position a heating zone of said heater plate about each of said ends of said articles loaded onto said first plate assembly;

placing said first plate assembly and said heater plate into a sealing chamber;

heating said heater plate within said sealing chamber to seal the ends of said one plurality of said articles;

unloading a previously heated plurality of said articles from said second plate assembly; and

allowing said second plate assembly to cool down from said temperature higher than the temperature of the first plate assembly upon removal of the heater plate from the second plate assembly before loading in a subsequent cycle a subsequent plurality of said articles onto such second plate assembly prior to removably mounting said removed heater plate to such second plate assembly and heating the heater plate in such subsequent cycle to seal the ends of such subsequent plurality of the articles.

4,343,644

APPARATUS FOR MAKING HOLLOW GLASSWARE AND METHOD OF OPERATING THE APPARATUS

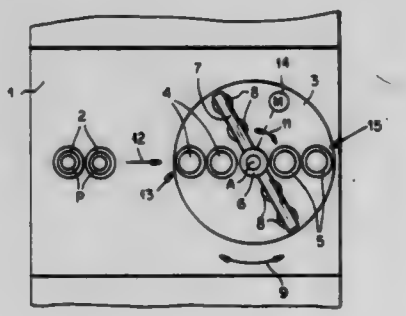
Helmut Hüllen, and Werner-Dieter Knoth, both of Essen, Fed. Rep. of Germany, assignors to Veba-Glas AG, Essen, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,699

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950280

Int. Cl.³ C03B *9/36, 9/40*

U.S. Cl. 65—241 **8 Claims**



1. An apparatus for making hollow glassware, said apparatus comprising:

at least one stationary preform mold;

a turntable rotatable about an upright axis adjacent said preform mold and having for each preform mold at least two angularly spaced final molds;

means for rotating said turntable about said axis and thereby orbiting each of said final molds through a transfer position close to said preform mold and a takeout position angularly offset from said transfer position and remote from said preform mold;

at least one arm above said turntable and final molds and carrying at least two respective mold heads, said arm being pivotal about said axis with said mold heads vertically alignable with the respective final molds;

means for pivoting said arm and said mold heads about said axis independently of said turntable; and

a source of air at a pressure different from ambient connected to said mold heads.

4,343,645

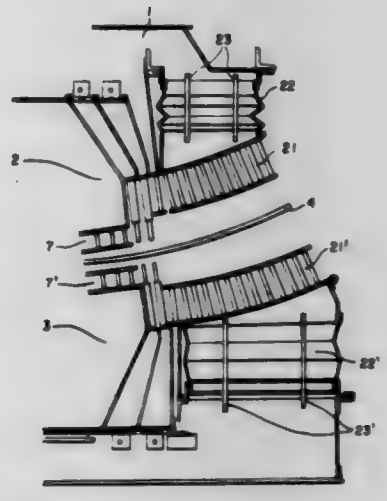
QUENCHING APPARATUS FOR TEMPERING CURVED GLASS PLATES

Kenzo Abe, Tokyo, Japan, assignor to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 766,369, Feb. 7, 1977, abandoned, which is a continuation of Ser. No. 640,892, Dec. 15, 1975, abandoned. This application Apr. 4, 1978, Ser. No. 893,399

Int. Cl.³ C03B *27/04*

U.S. Cl. 65—348 **8 Claims**



1. A quenching apparatus for tempering a curved glass plate, which comprises:

an upper blower head device and a lower blower head device for quenching said curved glass plate by means of air blown out of said devices and toward opposite surfaces of said plate which is interposed between said devices;

each of said upper and lower devices including a central blower head having blower nozzles disposed therein, and independent and separated side blower heads, having blower nozzles disposed therein, and disposed upon both sides of said central head wherein said side blower heads include inner blower boxes which are provided with side walls;

means for axially expandably adjusting said side walls so as to correspondingly adjust said side blower heads to the curvature of the curved portions of said curved glass plate, and means for exchanging said side blower heads so as to alternatively likewise correspond to the curvature of the curved portions of said curved glass plate wherein said side blower heads are operatively connected to blower box means, said side walls of said side blower heads comprise an axially expandably adjustable bellows component so as to in turn adjust the relative angle and length of said blower heads with respect to the apparatus and wherein different type nozzles are disposed upon said central blower heads so as to impart partial tempering to said plates and said partial temper nozzles are exchangeable so as to impart full surface tempering to said plate.

4,343,646

METHOD FOR PRODUCING FERTILIZER FROM WASTE PAPER

Richard P. Leonard, West Seneca, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,181

Int. Cl.³ C05F *11/00*; C08B *5/02*

U.S. Cl. 71—25 **16 Claims**

1. A method for producing a fertilizer and soil conditioner including the steps of:

a. adding dilute nitric acid to a shredded or particulate cellulosic material to form a reaction mixture and to initiate nitration of the cellulosic material whereby nitrogen is organically bound to the cellulosic material;

b. allowing said nitration to take place for a sufficient length

of time to achieve approximately a 5–10% nitrogen content dry weight for the reaction products;

c. neutralizing the reaction mixture to stabilize the reaction products at said approximately 5–10% nitrogen content dry weight; and

d. drying the reaction products to produce a nitrogen fertilizer and soil conditioner.

4,343,647

SUBSTITUTED BENZYLTRIALKYLAMMONIUM SALTS AND THEIR USE AS PLANT GROWTH REGULATORY CONTROL AGENTS

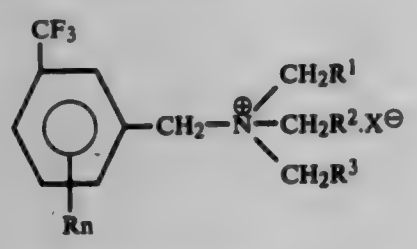
Joseph Dunbar, Midland, Mich.; Theodore W. Holmsen, Clayton, Calif., and Herman O. Senkbeil, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 11,746, Feb. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 950,202, Oct. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 742,170, Nov. 15, 1976, abandoned. This application Jun. 9, 1980, Ser. No. 157,755

Int. Cl.³ A01N *33/04*; C07C *87/30*

U.S. Cl. 71—76 **46 Claims**

1. A compound corresponding to the formula



wherein R represents hydrogen, chloro, bromo or trifluoromethyl; n represents an integer of from 1 or 2, with the proviso that when R is trifluoromethyl, n is 1; R^1, R^2 and R^3 each independently represent ethyl, n-propyl, n-butyl, isobutyl, ethynyl, vinyl or ethoxymethyl and X represents a non-phytotoxic anion.

4,343,648

HERBICIDES

Gerhard Hamprecht, Weinheim; Rolf-Dieter Acker, Leimen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

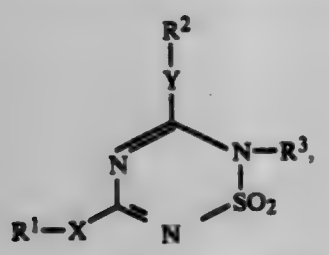
Filed Apr. 7, 1981, Ser. No. 251,921

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016825

Int. Cl.³ C07D *285/00*; A01N *43/72*

U.S. Cl. 71—91 **2 Claims**

1. A 6H-1,2,4,6-thiatriazine-1,1-dioxide of the formula



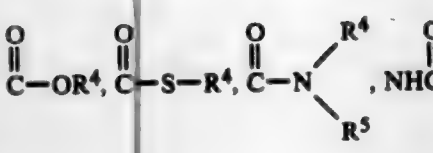
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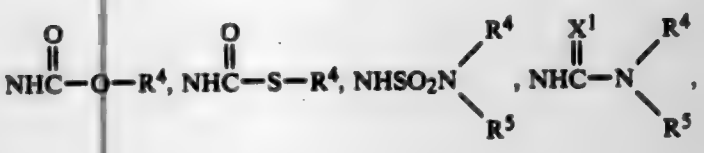
where

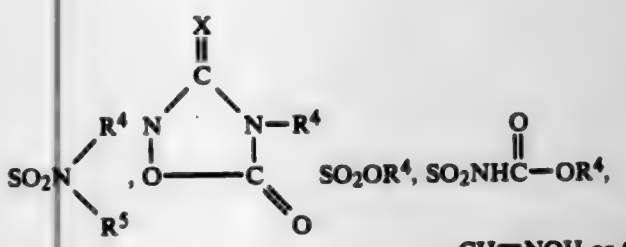
R^1 and R^2 independently of one another are a saturated or unsaturated straight-chain aliphatic radical of 1 to 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a branched saturated or unsaturated aliphatic radical of 3 to 10 carbon atoms, a halogen-, alkoxy- or alkylmercapto-substituted aliphatic radical of 2 to 10 carbon atoms or a cycloalkoxy-substituted aliphatic radical of 4 to 10 carbon atoms,

R^1 may also be unsubstituted or halogen-, lower alkyl- or lower alkoxy-substituted phenyl, unsubstituted or halogen-substituted benzyl or tetrahydrofurylmethyl,

R^2 may also be a halogen-, alkoxy-, dialkylketone- or alkylmercapto-substituted unsaturated aliphatic radical or a dialkylketone-substituted aliphatic radical of 3 to 10 carbon atoms, lower alkoxy-carbo-lower alkoxy, lower alkylmercapto-carbo-lower alkoxy, lower alkoxy-carbo-lower alkylmercapto, lower alkylmercapto-carbo-lower alkylmercapto, aryl which is unsubstituted or substituted by halogen, lower alkyl, halo-lower alkyl, lower alkoxy, halo-lower alkoxy, lower alkylmercapto, halo-lower alkylmercapto, lower alkylsulfinyl, halo-lower alkylsulfinyl, lower alkylsulfonyl, halo-lower alkylsulfonyl, nitro, cyano, azido, carboxyl, SCN,



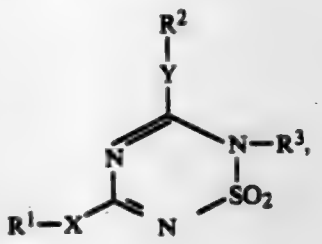




CH=NOH or CHO,

or by lower alkoxy-carbo-lower alkoxy, lower alkylmercapto-carbo-lower alkoxy, lower alkoxy-carbo-lower alkylmercapto or lower alkylmercapto-carbo-lower alkylmercapto; or R^2 may also denote benzyl which is unsubstituted or substituted by halogen, lower alkyl, halo-lower alkyl, lower alkoxy, halo-lower alkoxy or halo-lower alkylmercapto, R^3 is hydrogen, a straight-chain aliphatic radical of 1 to 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a branched aliphatic radical of 3 to 10 carbon atoms or halogen- or alkoxy-substituted alkyl of 2 to 10 carbon atoms, R^4 and R^5 are lower alkyl and R^5 may also be hydrogen, X and Y are oxygen, sulfur, sulfinyl or sulfonyl and X^1 is oxygen or sulfur.

2. A process for combating the growth of unwanted plants, which comprises applying to the plants or the locus of the plants a herbicidally effective amount of a 6H-1,2,4,6-thiatriazine-1,1-dioxide of the formula



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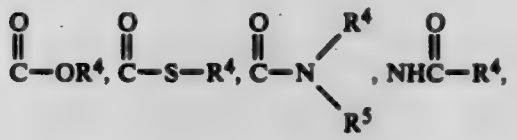
where

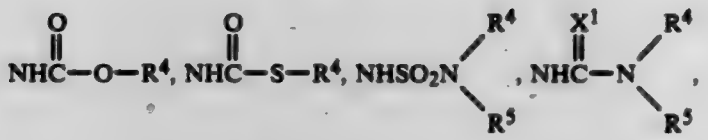
R^1 and R^2 independently of one another are a saturated or unsaturated straight-chain aliphatic radical of 1 to 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a branched saturated or unsaturated aliphatic radical of 3 to 10 carbon atoms, a halogen-, alkoxy- or alkylmercapto-substituted aliphatic radical of 2 to 10 carbon atoms or a cycloalkoxy-substituted aliphatic radical of 4 to 10 carbon atoms,

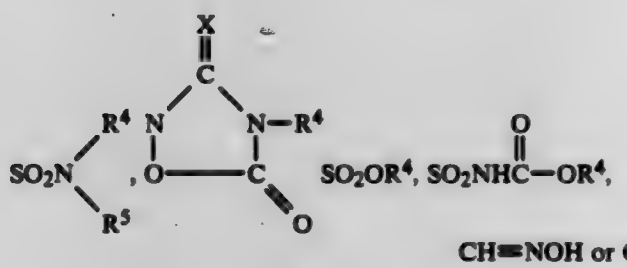
R^1 may also be unsubstituted or halogen-, or lower alkyl- or lower alkoxy-substituted phenyl, unsubstituted or halogen-substituted benzyl or tetrahydrofurylmethyl,

R^2 may also be a halogen-, alkoxy-, dialkylketone- or alkylmercapto-substituted unsaturated aliphatic radical or a dialkylketone-substituted aliphatic radical of 3 to 10 car-

bon atoms, lower alkoxy-carbo-lower alkoxy, lower alkylmercapto-carbo-lower alkoxy, lower alkoxy-carbo-lower alkylmercapto, lower alkylmercapto-carbo-lower alkylmercapto, aryl which is unsubstituted or substituted by halogen, lower alkyl, halo-lower alkyl, lower alkoxy, halo-lower alkoxy, lower alkylmercapto halo-lower alkylmercapto, lower alkylsulfinyl, halo-lower alkylsulfinyl, lower alkylsulfonyl, halo-lower alkylsulfonyl, nitro, cyano, azido, carboxyl, SCN,







CH=NOH or CHO,

or by lower alkoxy-carbo-lower alkoxy, lower alkylmercapto-carbo-lower alkoxy, lower alkoxy-carbo-lower alkylmercapto or lower alkylmercapto-carbo-lower alkylmercapto; or R^2 may also denote benzyl which is unsubstituted or substituted by halogen, lower alkyl, halo-lower alkyl, lower alkoxy, halo-lower alkoxy or halo-lower alkylmercapto,

R^3 is hydrogen, a straight-chain aliphatic radical of 1 to 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a branched aliphatic radical of 3 to 10 carbon atoms or halogen- or alkoxy-substituted alkyl of 2 to 10 carbon atoms,

R^4 and R^5 are lower alkyl and R^5 may also be hydrogen,

X and Y are oxygen, sulfur, sulfinyl or sulfonyl and

X^1 is oxygen or sulfur.

4,343,649

HERBICIDE ANTIDOTES

Philip B. Sweetser, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 17, 1980, Ser. No. 207,734

Int. Cl.³ A01N *25/32*

U.S. Cl. 71—93 **15 Claims**

1. An herbicidal composition comprising an herbicidally effective amount of an herbicidal compound selected from 2-chloro-N-[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)aminocarbonyl]benzenesulfonamide and 2,5-dichloro-N-[(4,6-dimethoxypyrimidin-2-yl)aminocarbonyl]benzenesulfonamide and a non-phytotoxic antidotally effective amount of an antidotal compound selected from 1,8-naphthalic anhydride, α-(cyanomethoxyimino)benzacetonitrile, and N,N-diallyl-2,2-dichloroacetamide.

4,343,650

METAL BINDER IN COMPACTION OF METAL POWDERS

Ronald D. Rivers, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed Apr. 25, 1980, Ser. No. 143,405

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—213 **10 Claims**

1. The method of making a superalloy compact from a substantially noncompactable metal powder, comprising the steps of: providing a substantially noncompactable metal powder; optionally milling said powder: blending said powder with a softer metal-bearing powder; sinterbonding said blended powders; crushing said sinterbonded powders; and compacting said crushed powders said softer metal comprising an element required in the final superalloy.

4,343,651

SINTERED COMPACT FOR USE IN A TOOL

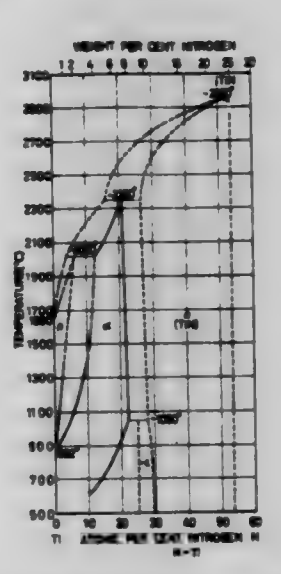
Shuji Yazu, and Akio Hara, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 31, 1980, Ser. No. 136,459

Claims priority, application Japan, Mar. 29, 1979, 54-37984; Dec. 29, 1979, 54-171512; Mar. 10, 1980, 55-31786

Int. Cl.³ B22F *3/14*

U.S. Cl. 75—238 **6 Claims**



1. A sintered compact for use in a tool consisting essentially of:

80 to 95 volume % of high pressure form boron nitride having an average particle size of less than 10 microns,

the balance being a matrix comprising at least one binder material selected from the group consisting of a carbide, a nitride, and a carbonitride of a IVb and Vb transition metal in the Periodic Table, mixtures thereof and their solid solution compounds; and aluminum compounds, wherein the content of aluminum in said matrix is 5 to 30 weight %, and wherein the particles in said matrix are of a size of less than one micron.

4,343,652

CHROMOGEN SOLUTIONS FOR PRESSURE-SENSITIVE MARK-RECORDING SYSTEMS

Pierre J. Allart, Brussels, and Claude A. Guillaume, Jodoigne, both of Belgium, assignors to Monsanto Europe S.A., Brussels, Belgium

Filed Aug. 18, 1980, Ser. No. 179,415

Claims priority, application United Kingdom, Aug. 24, 1979, 7929566

Int. Cl.³ B41M *5/16, 5/22*; C09D *11/00*

U.S. Cl. 106—21 **4 Claims**

1. A solution for use in a pressure-sensitive mark-recording system comprising:

a. a chromogen that is a derivative of diphenylmethanol or diphenylmethylamine; and

b. a diester solvent having the formula

$$ROOC(C_nH_{2n})COOR'$$

wherein R is a benzyl or alkylbenzyl group, R′ is an aliphatic or cycloaliphatic hydrocarbon group or a benzyl or alkylbenzyl group, and n has a value of from 1 to 10.

4,343,653

COMPLETELY OXIDIZED SULFUR BLACK 1 FOR INK

Bradley L. Beach, Lexington, Ky.; Paul D. Gates, San Francisco, Calif., and Vaughn J. Schum, Jr., Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 17, 1981, Ser. No. 255,075
Int. Cl.[3] C09D *11/02*
U.S. Cl. 106—22 8 Claims

1. Water soluble Sulfur Black 1 substantially completely oxidized at the solubilizing groups, substantially free of other Sulfur Black 1, and suitable for incorporation in an aqueous printing ink to provide an imaging capability to said aqueous printing ink.

2. An aqueous jet ink having dye consisting essentially of at least one dye of said completely oxidized Sulfur Black 1 as described in claim 1.

4,343,654

PROCESS FOR THE PRODUCTION OF CORRUGATED PAPERBOARD ADHESIVE

Franklyn O. Ware, Danville, Ill., and William S. McDonald, Statesville, N.C., assignors to MPW Tech. Associates, Danville, Ill.

Filed Feb. 8, 1980, Ser. No. 119,904
Int. Cl.[3] C08L *3/10, 3/20;* C09J *3/06*
U.S. Cl. 106—213 10 Claims

1. A method for the production in the starch kitchen of a corrugating plant of a Stein-Hall composite adhesive whose carrier portion has the high solids content conventionally achieved only with a high amylose starch, employing a starch having a substantial amylopectin content, which comprises (a) employing in the cooked portion a starch having a substantial amylopectin content; (b) employing an amount of the starch in the slurry used to produce the cooked portion in excess of that which would produce a viscosity low enough, if the slurry were cooked conventionally, to be acceptable for use in a Stein-Hall composite adhesive; and (c) cooking the slurry at an alkaline pH, in the presence of an amount of hydrogen peroxide, in a weight ratio to the starch of from about 300:1 to 600:1, which is sufficient to lower the viscosity of the cooked carrier to that of conventional Stein-Hall carriers and in the presence of an amount of a catalyst, in a weight ratio of H_2O_2 to catalyst of about 15:1 to 40:1, which is effective to reduce the cooking time required to reach that viscosity to about 15 minutes or less.

4,343,655

INSOLUBILIZERS FOR BINDERS FOR PAPER COATING COMPOSITIONS

John A. Dodd, and Robert L. Lane, both of Rock Hill, S.C., assignors to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 92,631, Nov. 8, 1979, abandoned. This application May 20, 1981, Ser. No. 265,609
Int. Cl.[3] C08B *31/00;* C08L *3/00*
U.S. Cl. 106—214 7 Claims

1. A paper coating composition comprising a pigment, a binder, and as an insolubilizer for the binder the partially or wholly alkylated product of the reaction of approximately stoichiometric amounts of glyoxal and at least one cyclic urea.

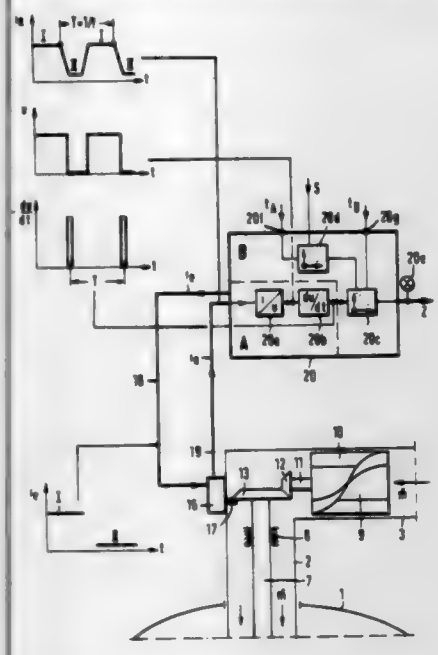
4,343,656

PROCESS FOR MONITORING TANK INSIDE CLEANERS DRIVEN BY CLEANSERS

Otto A. P. Tuchenhagen, Berliner Strasse 10, D-2059 Büchen, Fed. Rep. of Germany

Filed Apr. 23, 1980, Ser. No. 142,993
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916468
Int. Cl.[3] B08B *9/04*
U.S. Cl. 134—18 7 Claims

1. In a process for monitoring of cleanser-powered tank interior cleaners including a revolving rotary element forming part of a cleanser feed path to at least one discharge nozzle and indicating the completion of each full revolution of the rotary element, the improvement comprising positively driving the rotary element by driving the blades of a turbine with flowing solvent and by drive means interconnecting the turbine and the



rotary element within the cleanser feed path and simultaneously monitoring the solvent quantity made available per unit of time and rate of revolution of the rotary element by sensing the rate of rotation in the cleanser feed path of the drive means between the turbine and the rotary element.

4,343,657

PROCESS FOR PRODUCING A SEMICONDUCTOR DEVICE

Takashi Ito, Kawasaki; Hajime Ishikawa, Yokohama, and Masaichi Shinoda, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 31, 1980, Ser. No. 174,134
Claims priority, application Japan, Jul. 31, 1979, 54-97659
Int. Cl.[3] H01L *21/22*
U.S. Cl. 148—1.5 27 Claims

1. A process for producing a semiconductor device comprising the steps of:

selectively forming a silicon nitride film on a silicon semiconductor body by a direct reaction with nitrogen in a nitrogen-containing atmosphere;

selectively forming a covering layer on said silicon nitride film the covering layer comprising one of silicon and a metal silicide; and

exposing said covering layer and said silicon nitride film to a gaseous oxidation medium.

4,343,658

INHIBITION OF CARBON ACCUMULATION ON METAL SURFACES

Rees T. K. Baker, Murray Hill, and James J. Chludzinski, Rahway, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 14, 1980, Ser. No. 139,843
Int. Cl.[3] C23C *9/00*
U.S. Cl. 148—6.3 8 Claims

1. A method for protecting one or more surfaces of a metal substrate against carbon accumulation wherein the metal surface is one which is susceptible to carbon accumulation when exposed to an environment wherein carbon-containing gases are undergoing decomposition, which method comprises:

(a) depositing, on the metal substrate surfaces to be protected, one or more materials selected from the group consisting of tungsten, tantalum, or a compound which

will decompose at the temperature at which the metal substrate is heated in (b) below, to leave tungsten or tantalum on the metal substrate; and

(b) heating the metal substrate to a temperature of from about 600° C. to 1200° C., in an oxidizing atmosphere, for an effective amount of time, thereby driving tungsten and/or tantalum into the substrate surface, so that the growth of carbon filaments on the substrate surface is inhibited by a factor of at least four, relative to an unprotective surface of the same substrate, when the substrate is exposed to an environment wherein carbon-containing gases are undergoing decomposition,

(c) and after step (b) exposing the protected substrate surfaces to a carbon accumulating environment.

4,343,659

PROCESS FOR PRODUCING COPPER BARRIER TYPE, NUCLEAR FUEL CLADDING

Kanji Murakami; Motoyo Wajima, and Tetsuo Ishikawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,439
Claims priority, application Japan, Oct. 26, 1979, 54/137760
Int. Cl.³ C23C *3/02*
U.S. Cl. 148—6.3 **13 Claims**

1. In a process for producing a copper barrier type, nuclear fuel cladding which comprises forming an oxide layer on the inner wall surface of a tube of zirconium or zirconium alloy, and then applying electroless copper plating to the oxide layer with a plating solution containing at least a copper salt, a complexing agent, and a reducing agent, the improvement wherein the plating solution also contains 2,2'-dipyridyl at a concentration of at least about 2.5 mg/l and the copper plating is applied to a thickness greater than 5 μm.

4,343,660

CORROSION INHIBITING SYSTEM

Richard L. Martin, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Apr. 7, 1978, Ser. No. 894,292
Int. Cl.³ C23F *7/00*
U.S. Cl. 148—6.14 R **8 Claims**

1. A process of inhibiting copper corrosion of buried copper transmission cable which comprises treating the copper with a composition containing a barrier corrosion inhibitor and a copper complexing agent, where the barrier corrosion inhibitor is a substantially water-insoluble organic sulfonate and the copper complexing agent is a sulfur, nitrogen, or sulfur-nitrogen compound capable of complexing with copper, said barrier corrosion inhibitor being present in an amount sufficient to coat the copper to a thickness of from about 0.0001" to 0.100" and the weight ratio of barrier corrosion inhibitor to copper complexing agent is from about 100:1 to 1:100.

4,343,661

METHOD OF MAKING A LOW TEMPERATURE BAINITE STEEL ALLOY GEAR

Stuart L. Rice, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

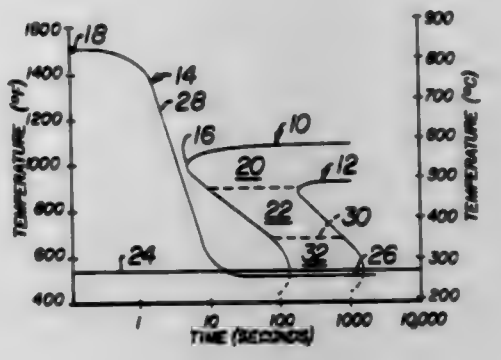
Division of Ser. No. 965,534, Nov. 15, 1978, Pat. No. 4,225,365. This application Apr. 21, 1980, Ser. No. 142,326
Int. Cl.³ C21D *1/20, 9/32*
U.S. Cl. 148—134 **6 Claims**

1. A method of making a low temperature bainite steel alloy gear comprising:

Step (a) forming a gear having a plurality of gear teeth thereon of alloy steel consisting essentially of carbon in the range of 0.60 to 0.80 wt. %, manganese in the range of 0.45 to 1.00 wt. %, silicon in the range of 0.15 to 2.20 wt. %, and molybdenum in the range of 0.40 to 0.70 wt. %, preferably but not essentially boron, and the balance substantially iron;

Step (b) heating the gear to a preselected first temperature forming a substantially complete austenite morphology;

Step (c) quenching the gear toward a preselected second temperature at a rate sufficient to avoid transformation until a preselected lower range of temperatures is reached; and



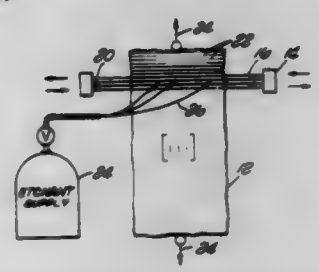
Step (d) holding the gear at the second temperature for less than about two hours and transforming the morphology thereof directly from austenite to substantially complete lower temperature bainite.

4,343,662

MANUFACTURING SEMICONDUCTOR WAFER DEVICES BY SIMULTANEOUS SLICING AND ETCHING

Charles F. Gay, Tujunga, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 31, 1981, Ser. No. 249,321
Int. Cl.³ H01L *21/22, 21/304, 21/306*
U.S. Cl. 148—187 **15 Claims**



8. A method of manufacturing semiconductor devices, comprising the steps of:

providing an ingot of semiconductor material;

mechanically slicing partially through said ingot at a plurality of locations therealong to form a plurality of cuts in the material; and

etching material from said ingot in the region of said slicing during said slicing.

9. The method as defined in claim 8 wherein said semiconductor material is of a first conductivity type, and including the additional step of:

diffusing an active impurity of an opposite conductivity imparting type into said ingot to form ingot material of the opposite conductivity type.

10. The method as defined in claim 9 including the additional step of removing ingot material of said opposite conductivity type from the outside surface of said ingot.

4,343,663

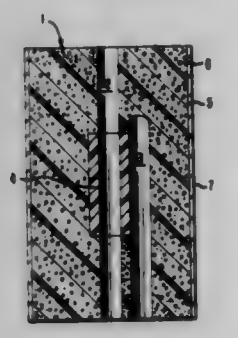
RESIN-BONDED WATER-BEARING EXPLOSIVE

Cyril J. Breza, deceased, late of Hagerstown, Md. (by Therese H. Breza, executrix), and William E. Schaefer, Hagerstown, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1980, Ser. No. 164,143
Int. Cl.³ C06B *45/18*
U.S. Cl. 149—4 **31 Claims**

1. A self-supporting water-bearing explosive product comprising

(a) a mass of crosslinked organic resin as a fuel component forming a continuous matrix;
(b) an aqueous solution of at least one salt of an inorganic oxidizing acid as an oxidizer component forming a discontinuous phase emulsifyingly dispersed within, and encapsulated by, said continuous matrix, said salt being derived



from nitric or perchloric acid and a base selected from the group consisting of ammonia, amines, and alkali and alkaline-earth metal hydroxides; and
(c) dispersed in said matrix and/or said aqueous solution, a sensitizer adapted to induce or enhance the detonability of said solution-containing resin matrix; said product having a density of at least about 1.0 gram per cubic centimeter.

4,343,664

PRODUCTION OF POLYMER BONDED NITRAMINE EXPLOSIVE AND PROPELLANT COMPOSITIONS

Sury Iyer, Randolph, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,635
Int. Cl.³ C06B *45/22*
U.S. Cl. 149—11 **9 Claims**

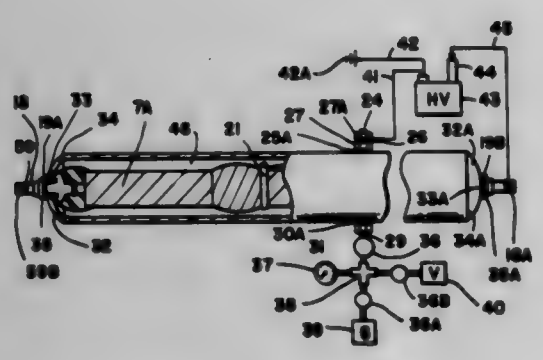
1. A process for producing a polymer bonded nitramine explosive or propellant composition by radiation polymerization of a polymer precursor in mixture with a particulate nitramine component which inhibits or retards such radiation polymerization, which comprises coating the nitramine particles with an effective amount of a liquid polyhydric alcohol for overcoming the action of the nitramine to inhibit or retard such radiation polymerization.

4,343,665

METHOD FOR MANUFACTURING SF_6 PRESSURIZED GAS CONTINUOUS SPACER CABLE

Paul F. Pugh, 4082 Sequoyah Rd., Oakland, Calif. 94605

Filed Oct. 15, 1979, Ser. No. 67,062
Int. Cl.³ H01B *13/08, 17/36*
U.S. Cl. 156—48 **2 Claims**



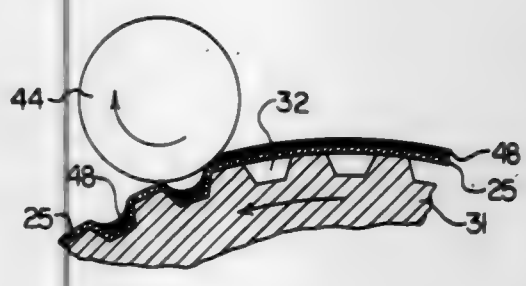
1. A method for manufacturing a pre-finished continuous non-impregnated paper spacer gas pressurized cable, including a conduit and terminations, comprising the steps of:
wrapping said continuous spacer around a conductor;
wrapping a metallic electrical shielding material around said spacer;
inserting said conductor, said spacer, and said shielding material into a fixed long length of non-metallic conduit;
sealing said conduit at each end about said conductor to form said terminations;
and then filling said conduit and said continuous spacer with said gas.

4,343,666

METHOD OF MAKING TOOTHED BELT

Robert E. Wetzel, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 110,032, Jan. 7, 1980, abandoned, which is a division of Ser. No. 957,280, Nov. 2, 1978, Pat. No. 4,235,119. This application Dec. 16, 1980, Ser. No. 217,261
Int. Cl.³ B29H *7/22*
U.S. Cl. 156—138 **6 Claims**



1. A method for making a positive drive power transmission belt having a plurality of alternating grooves and teeth which comprises the steps of:
(a) wrapping a tooth covering fabric around a cylindrical mold which has circumferentially spaced alternating axial grooves and ridges;
(b) wrapping a layer of fiber-loaded elastomeric material around said covering fabric;
(c) applying pressure in helical fashion against said elastomeric layer with a pressure-applying member to force at least a portion of both said fiber-loaded elastomeric material and said fabric into said axial grooves and to move a portion of said fiber-loaded elastomeric material away from said fabric in the area of said ridges to allow a later-wound load-carrying cord to lie against said fabric in said area of said ridges;
(d) winding a load-carrying cord in helical fashion and in a plurality of turns against said layer of said fiber-loaded elastomeric material;
(e) wrapping a layer of elastomeric material over said load-carrying cord to define an assembly; and
(f) vulcanizing the assembly under heat and pressure,
wherein said pressure applying step (c) and said winding step (d) are carried out simultaneously with said cord being helically wound on a next succeeding turn following said application of pressure in said helical fashion.

4,343,667

METHOD FOR MAKING AN INDEFINITE LENGTH COMPOSITE SHEET OF VERY LARGE PREDETERMINED WIDTH FROM INDEFINITE LENGTH SHEET STOCK OF RELATIVELY SMALL WIDTH

Jack L. Hollis, Mechanicsburg, Pa., assignor to Carlisle Tire & Rubber Company, Div. of Carlisle Corp., Carlisle, Pa.

Division of Ser. No. 140,815, Apr. 16, 1980, which is a continuation-in-part of Ser. No. 20,133, Mar. 13, 1979, abandoned. This application Apr. 20, 1981, Ser. No. 255,894
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—157 **35 Claims**

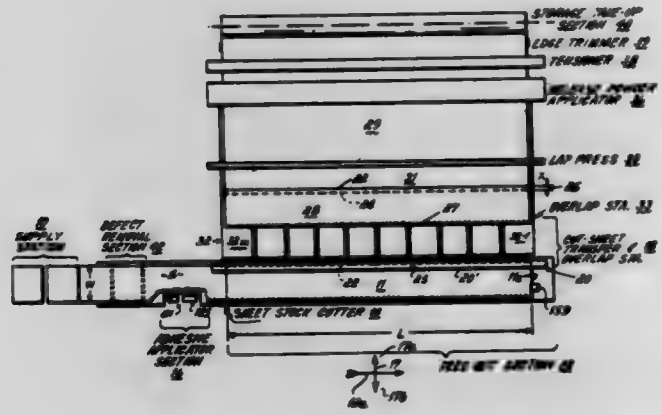
1. A method for automatically manufacturing composite

sheets of predetermined selective width and indefinite length, from stock sheet of known width and indefinite length, which includes:

(a) feeding in a first horizontal direction along a first path stock sheet of known width and indefinite length from a supply thereof, said first path being in nonoverlapping relation to said composite sheet and spaced therefrom in a direction parallel to the length of said composite sheet,

(b) thereafter preparing from said fed stock, while horizontally disposed along said first path in said first direction, a horizontally disposed predetermined length of said stock sheet having adhesive properties in a zone on a face of the length of stock sheet along an edge thereof, said predetermined length being a substantial multiple of said known width of said stock and at least equal to said predetermined selective width of said composite sheet,

(c) moving said horizontally disposed predetermined length of sheet a predetermined distance along a second path in a second horizontal direction which is transverse to said



first horizontal direction of feeding of said stock sheet to an overlap station which is transversely horizontally displaced from said first path a distance at least equal to said predetermined distance, said predetermined distance at least exceeding said known width of said indefinite length stock sheet, said moving of said predetermined length sheet occurring subsequent to feed-out thereof along said first path in said first direction and prior to preparing a successive predetermined length sheet,

(d) repeating steps (a), (b) and (c) to form a composite sheet, the movement of only step (c) being such that the second length of cut sheet overlaps and contacts the first length of sheet along an overlap zone to form a lap joint with the prior cut length of sheet, said lap joint including the adhesive zone of at least one of said overlapping sheets,

(e) moving said first and second overlapped lengths of sheets in unison further in said transverse direction along a third path by an incremental distance equal to about the width of said stock sheet less the width of said zone, and

(f) thereafter repeating steps (b) and (c) and (e).

4,343,668

METHOD OF PRODUCING BUNDLES OF HOLLOW FIBRES POTTED AT THEIR ENDS

Jacques Francisoud, Oullins, and Christian Ollivier, Vienne, both of France, assignors to Hospal Sodip SA, Meyzieu, France

Filed Jun. 1, 1981, Ser. No. 269,380
Claims priority, application France, Jun. 4, 1980, 80 12699
Int. Cl.³ B65H *54/02, 81/00*
U.S. Cl. 156—172 **10 Claims**

1. A method of simultaneously producing a plurality of bundles of hollow fibres potted at their ends, said method comprising the steps of:

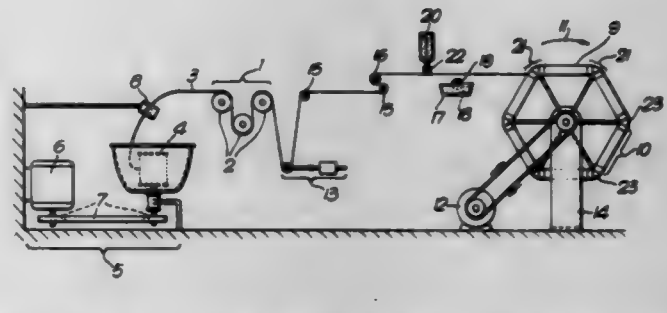
(a) providing a wheel having a polygonal periphery;

(b) mounting a channel on each side of the wheel, with the open side of the channel facing radially outwardly;

(c) rotating the wheel about its axis;

(d) feeding at least one hollow fibre, so that it is engaged in each channel as the wheel rotates and a bundle of fibres is built up in each channel;

(e) applying glue at spaced intervals to said at least one fibre upstream of the point at which it engages in the first channel mounted on the wheel, the glue applied to the



fibres serving to pot the fibres at at least one point in each channel as the fibres build up in each channel; and

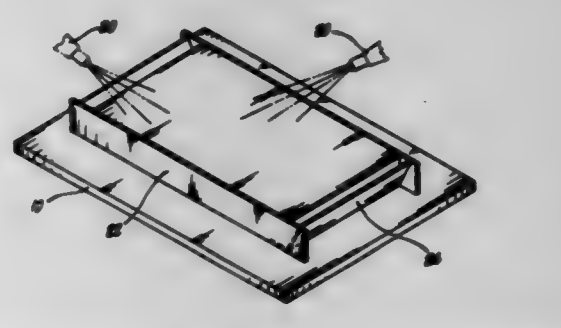
(f) after the desired number of fibres has been built up in each channel, cutting the fibres at points near to where the fibres have been potted.

4,343,669

BUILDING COMPONENT AND METHOD OF MAKING THE SAME

John C. Prior, c/o Industrial Salvage, Centralia, Ill. 62801

Division of Ser. No. 826,323, Aug. 22, 1977, abandoned. This application Oct. 17, 1979, Ser. No. 85,581
Int. Cl.³ B29C *17/02;* B32B *1/06*
U.S. Cl. 156—212 **1 Claim**



1. A method of making a building component comprising the steps of:

(a) placing a bottom layer on a work surface,

(b) preforming a sidewall form,

(c) placing said sidewall form on top of the bottom layer,

(d) placing core material in the sidewall form,

(e) placing a top layer on the sidewall form,

(f) applying a plastic binder reinforced with fiber strand particles to the upper, lower and side surfaces to provide a substantially rigid exterior skin completely sealing and adhering the parts together,

(g) providing a flat sheet for the bottom layer,

(h) extending portions of the bottom sheet outwardly of the sidewall form,

(i) folding the outwardly extending sheet portions into overlapping relation with the sidewall form, and

(j) applying plastic binder reinforced with fiber strand particles to the folded portions.

4,343,670

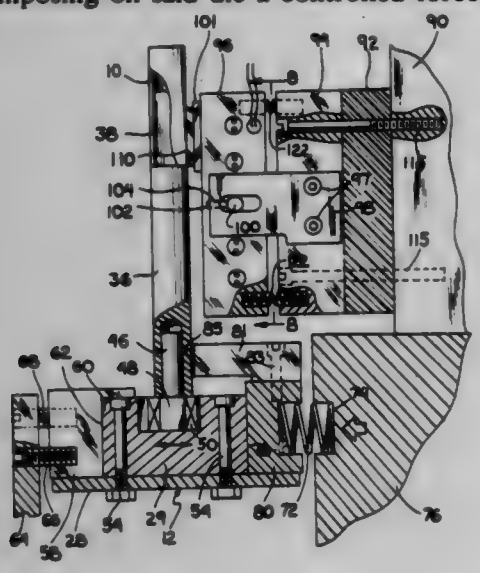
APPARATUS AND PROCESS FOR HOT-STAMPING CONTAINERS

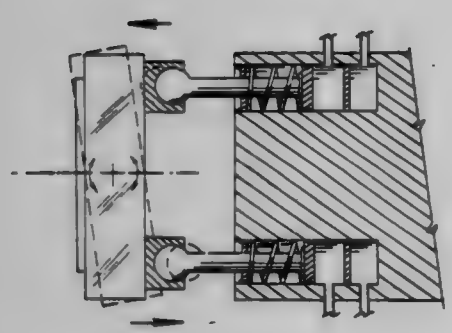
Robert Brown, New York, N.Y., assignor to Rheological Systems, Inc., West Babylon, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,334
Int. Cl.³ B44C *31/00;* B32B *31/00;* C09J *5/00*
U.S. Cl. 156—233 **11 Claims**

1. A method for hot-die transfer of metal or pigmented foil

material onto circular plastic containers, comprising the steps of: mounting for individual rotation a series of such plastic containers onto spaced mandrels, indexing a substantially continuous sheet foil of predetermined length past a heated die which includes a die plate having means providing a substantially free universal movement of said die, said die plate providing information intended to be transferred as a permanent foil lamination onto the confronting surface of the plastic container, imposing on said die a controlled force matrix ef-





fecting substantially linear engagement between the plastic container and opposing die as the two are engaged under critical temperature and pressure to effect viscoelastic conditions on the surface of the container, said foil being compressed between the plastic container and die during such critical viscoelastic conditions, translating the container on the mandrel across the face of the die while permitting relatively free rotation thereof, and hot pressing the foil permanently onto the confronting surface of the container.

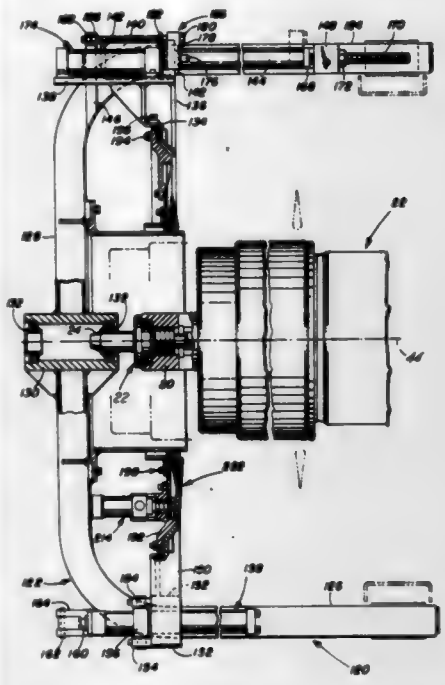
4,343,671

TIRE BUILDING MACHINE

George E. Enders, Salem, Ohio, assignor to NRM Corporation, Akron, Ohio

Filed Jul. 18, 1980, Ser. No. 170,021
Int. Cl.³ B29H *17/26*
U.S. Cl. 156—401 31 Claims

1. A tire building machine comprising a tire building drum adapted to receive tire plies wrapped thereabout with the edges of the plies extending beyond the ends of the drum, an inflatable annular bladder extending axially outwardly from one end of said drum, an annular support for said bladder, and a bead setter and bladder pusher mechanism at said one end of said drum and movable axially of said drum selectively to set a bead in proper position on said drum and to push the bladder when inflated to cause the ply edges to be wrapped around the bead and stitched securely; said mechanism including a bead setting and bladder pushing ring, said ring having an axially inner face adapted for selective engagement with the tire bead and bladder, a short radially inner annular surface extending axially outwardly from said face for restricting expansion of a portion of the bladder rearwardly of said face when inflated, and a rounded inner peripheral edge forming a bead projecting beyond said annular surface at said face adapted to grip the



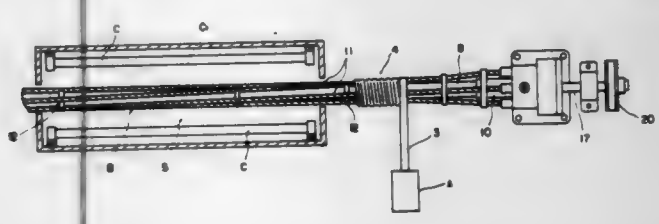
bladder when inflated to prevent relative sliding movement of the bladder and ring during bladder push.

4,343,672

METHOD AND APPARATUS FOR PRODUCING TUBE

Shiro Kanao, 32-460, Nanpeidai, Takatsuki-shi, Osaka-fu, Japan

Continuation of Ser. No. 776,033, Mar. 9, 1977, abandoned. This application Dec. 22, 1980, Ser. No. 219,275
Claims priority, application Japan, May 14, 1976, 51-55605; May 14, 1976, 51-55608
Int. Cl.³ B31C *1/00*
U.S. Cl. 156—428 17 Claims



1. An apparatus for continuously producing a tube comprising:

a former (B) supported by a frame (9) in the manner of a cantilever for helically winding thereon a strip (3) of synthetic resin and unvulcanized rubber incorporating a vulcanizing agent to shape the strip (3) into a tubular body (4) and send the tubular body (4) toward a free end of said former (B),

heating means (C1 and C2) for heat-treating the tubular body (4) to 170° C. to 220° C. during movement of said strip toward said free end,

characterized in that said heating means (C1 and C2) are disposed at least inside and outside said former (B) extending along its length and constructed to heat the tubular body (4) from inside and outside to a temperature of from about 170° C. to about 220° C. for vulcanization thereof, said heating means comprising a nichrome wire heater (21) incorporated in a metal core (8) of the former (B),

the former (B) including a plurality of feed rollers (11) helically arranged and retained by a plurality of retainers (12) secured to the metal core (8) and arranged from a supported end of the metal core toward a free end thereof,

said retainers (12) being formed with recesses (13) for retaining said feed rollers (11) and are arranged from the supported end of the metal core (8) toward the free end thereof with the phase of each of the retainers (12) dis-

placed by a specified angle (θ) from retainer to retainer, the retainers being securable to the metal core in the displaced positions, whereby the helical pitch of the feed rollers (11) is freely determinable, and

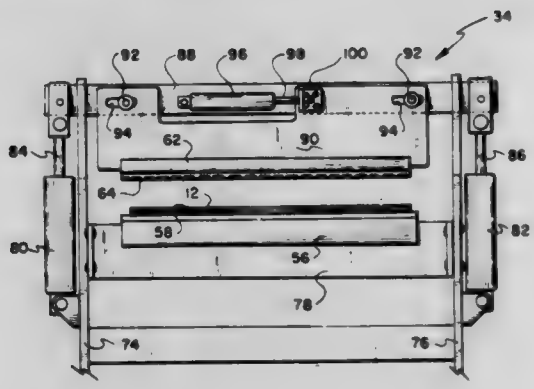
a cooling water nozzle (6) disposed on one side of the heating means (C1) toward which the tubular body (4) is sent out to thereby cool the tubular body (4) immediately after the vulcanization heat treatment.

4,343,673

BINDING APPARATUS AND METHOD

Robert C. Smith, Jr., and James A. McGlen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 22, 1979, Ser. No. 13,869
Int. Cl.³ B30B *7/04*
U.S. Cl. 156—583.4 **13 Claims**



1. Binding apparatus for securing together a plurality of sheets having a heat-sealable material between adjacent surfaces of the sheets, the apparatus comprising:

means for supporting the sheets with the material between adjacent sheets;

a heating bar having a surface;

means for heating the surface of said bar;

means for moving said bar relative to said supporting means a plurality of times between (1) a first position wherein the bar is spaced from said supporting means by a distance that allows movement of sheets into and out of said supporting means and (2) a second position wherein the bar is located with respect to said supporting means to transfer sufficient heat to material between sheets supported by the supporting means to secure sheets together; and

means for shifting the heating bar laterally relative to the supporting means while the bar is in its first position so that the heating bar can transfer heat to two different portions of the material between sheets in the supporting means when the bar is moved between its two positions a plurality of times.

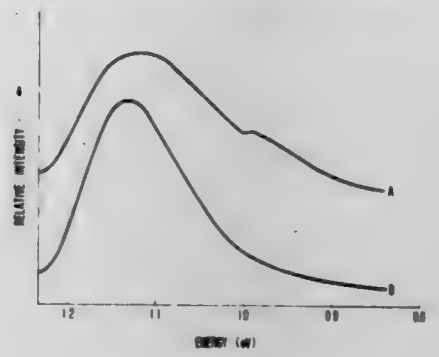
4,343,674

MONITORING INDIUM PHOSPHIDE SURFACE COMPOSITION IN THE MANUFACTURE OF III-V SEMICONDUCTOR DEVICES

Bulusu V. Dutt, Parsippany; Vassilis G. Keramidas, Warren, and Henryk Temkin, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 16, 1981, Ser. No. 244,130
Int. Cl.³ C30B *19/10*
U.S. Cl. 156—601 **9 Claims**

1. A process for manufacturing III-V semiconductor devices, said process including the production of material which consists essentially of n-type indium phosphide, said process including determining indium-to-phosphorus ratio in at least a portion of a surface of said material by (1) irradiating said portion of a surface with electromagnetic radiation which is here designated as first electromagnetic radiation and which has a spectral component whose energy is larger than the energy of the bandgap of indium phosphide, and (2) monitoring the intensity of electromagnetic radiation which is here designated as second electromagnetic radiation and which



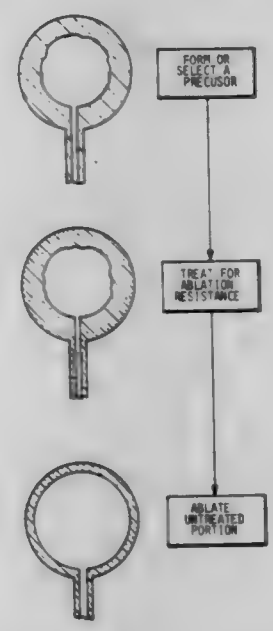
emanates from said portion, monitoring being in at least a portion of the energy interval from 0.90 to 1.05 electron volt.

4,343,675

METHOD OF MANUFACTURING HOLLOW MEMBERS HAVING UNIFORM WALL THICKNESS THROUGH USE OF ABLATION

Paul R. Anderson, Toledo, Ohio; Raymond L. Downs, and Timothy M. Henderson, both of Ann Arbor,, Mich., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 30, 1980, Ser. No. 192,272
Int. Cl.³ C03C *15/02*
U.S. Cl. 156—628 **29 Claims**



1. A method of producing hollow objects having interior and exterior wall surfaces of predetermined uniform geometry separated by material of uniform desired thickness extending between said surfaces, said method comprising the steps of:

(a) selecting as a precursor a hollow object having one said wall surface of desired geometry and dimension, and a thickness between said one surface and the other of said surfaces at all points no less than said desired thickness,

(b) treating a portion of said precursor consisting of said one surface and a uniform depth of material beneath said one surface corresponding to said desired thickness so as to increase resistance of said portion to ablation, and then

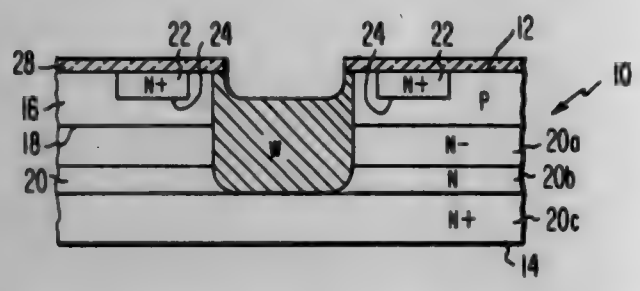
(c) removing the remainder of said precursor unaffected in said step (b) by subjecting said other surface to an ablation process to leave a product having a uniform thickness corresponding to said depth of material beneath said one surface and a uniform geometry corresponding to said desired geometry of said one wall surface and said uniform thickness.

4,343,676

ETCHING A SEMICONDUCTOR MATERIAL AND AUTOMATICALLY STOPPING SAME

Ming L. Tarng, Mercerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1981, Ser. No. 248,035
Int. Cl.³ H01L *21/306;* C23F *1/02*
U.S. Cl. 156—628 10 Claims



1. A method of etching material from one surface of a silicon substrate formed with a first region adjacent said one surface and a second region spaced from said one surface, said second region being doped with N type impurity atoms in a concentration high enough to significantly retard a chemical reaction between the silicon and a refractory metal hexafluoride, said method comprising:

masking said one of said surfaces to expose a surface area of said substrate where said silicon is to be etched;

exposing said substrate to a gaseous refractory metal hexafluoride at a temperature of at least about 550° C. whereby said hexafluoride reacts with the silicon in said first region to replace the silicon with the refractory metal of said hexafluoride, and maintaining said reaction until all of the silicon in said first region has been replaced with the refractory metal of said hexafluoride; and

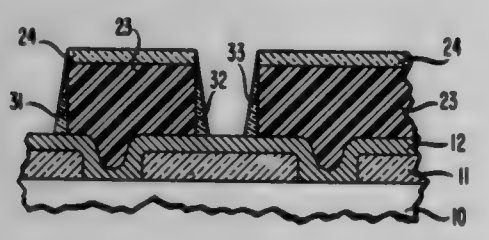
etching said refractory metal from said first region of said substrate with an etchant that does not substantially react with the semiconductor material.

4,343,677

METHOD FOR PATTERNING FILMS USING REACTIVE ION ETCHING THEREOF

Eliezer Kinsbron, Highland Park; Hyman J. Levinstein, Berkeley Heights, and William E. Willenbrock, Jr., Manchester Township, Ocean County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 23, 1981, Ser. No. 246,690
Int. Cl.³ B44C *1/22;* H01L *21/306;* C03C *15/00;* C23F *1/02*
U.S. Cl. 156—643 22 Claims



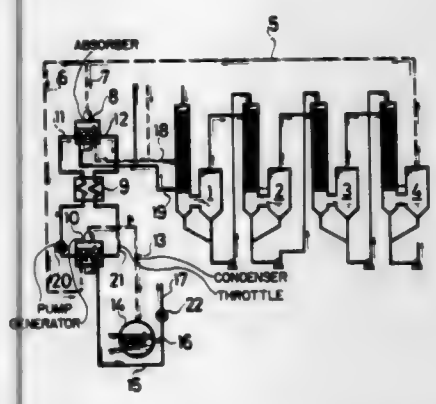
1. In a method of processing a film, said film having a major surface coated with a layer of substance and said method including selectively etching the film using as a selective etch mask a patterned organic layer which has been patterned with windows, said windows formed by means of a first reactive ion etching step whereby said windows penetrate through the organic layer to the layer of substance, the step of removing build-ups of compounds of the substance from sidewalls of the windows prior to said selectively etching the layer of substance.

4,343,678

MULTI-STAGE EVAPORATING APPARATUS WITH INTEGRATED HEAT REGENERATING SYSTEM

Paul Franzen, Koblenz, Fed. Rep. of Germany, assignor to Maschinenfabrik Buckau R. Wolf AG, Grevenbroich, Fed. Rep. of Germany

Filed Dec. 12, 1980, Ser. No. 216,604
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951557
Int. Cl.³ B01D *1/26*
U.S. Cl. 159—24 A 14 Claims



1. An apparatus for evaporating with heat regeneration, comprising evaporating means arranged to produce vapor; absorbing means accommodating a multi-component mixture and connected with said evaporating means so that the vapor is admitted into said absorbing means and absorbed by said mixture with generation of heat; means for supplying the heat generated in said absorbing means to a consumer; an expeller communicating with said absorbing means so that the mixture, after the absorption of the vapor, is supplied into said expeller, regenerated in the latter by evaporation of the absorbed vapor and supplied back to said absorbing means, said expeller also communicating with said evaporating means so as to utilize condensation heat of the vapor from said evaporating means for regeneration of the mixture in said expeller; and means for liquefying the evaporated vapor from said expeller under the action of low temperature.

4,343,679

PROCESS FOR RECLAIMING WASTE PAPER

Jean De Ceuster, Vilvoorde, and Paul Duprez, Brussels, both of Belgium, assignors to Interox (Societe Anonyme), Brussels, Belgium

Filed Oct. 23, 1980, Ser. No. 199,815
Claims priority, application France, Oct. 23, 1979, 79 26581
Int. Cl.³ D21C *5/02*
U.S. Cl. 162—4 10 Claims

1. Process for reclaiming waste paper comprising pulping without deinking the waste paper in the presence of water whose hardness is less than 2 degrees of German hardness and then adding to the pulp thus obtained a compound capable of liberating, in aqueous solution, ions with a positive charge equal to or greater than 2, the adding being to a pulp which is substantially free from anionic surface active agents.

4,343,680

HYDROPHOBIC OLEOPHILIC WOOD PULP

Jasper H. Field, Goshen, and Robert W. Hicks, Warwick, both of N.Y., assignors to International Paper Company, New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,337
Int. Cl.³ B01D *39/04*
U.S. Cl. 162—100 11 Claims

1. Hydrophobic, oleophilic pulp derived from high yield wood pulp by a process consisting essentially of:

(a) treating high yield wood pulp having at least 3.0% ether extractive content at temperatures of greater than 100° C.

for at least sufficient time until said pulp exhibits 30% or less water absorption when tested by Tappi test T491-Su 63; and

(b) mechanically fluffing the pulp of step a above.

10. A process for the preparation of hydrophobic, oleophilic wood pulp derived from high yield wood pulp which consists essentially of:

(a) treating high yield wood pulp having at least 3.0% ether extractive content at temperatures of greater than 100° C. for at least sufficient time until said pulp exhibits 30% or less water absorption by Tappi Test T491-Su 673; and

(b) mechanically fluffing the pulp of step a above.

11. A process for the removal of oil pollutants from at least a portion of the surface of a body of water which comprises dispersing a fluff pulp as described in claim 1 over at least a portion of the surface of a body of water, said portion of said surface being at least partly covered by oil pollutants, and thereafter removing the pulp with absorbed oil pollutants from the surface of the body of water.

4,343,681

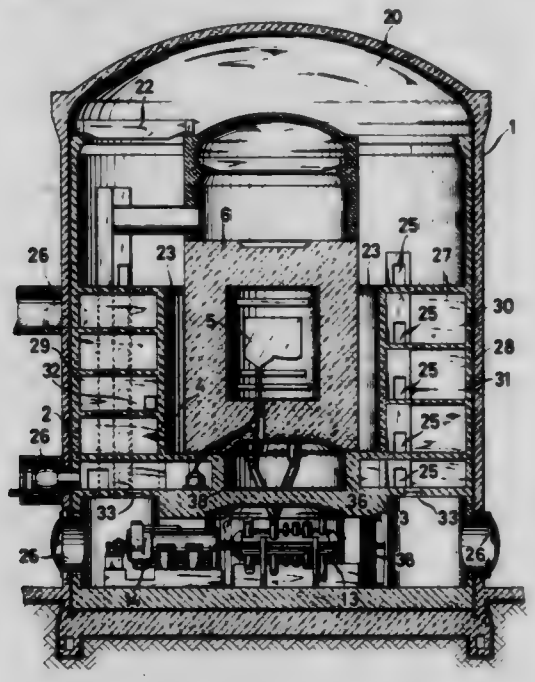
CORE ENERGY PLANT WITH CLOSED WORKING GAS CIRCUIT

Heinrich Clermont, Jülich; Siegfried Förster, Alsdorf; Jürgen Heil, Bensberg; Peter Quell, Haaren; Jasbir Singh, Jülich; Berthold Sack, and Bruno Schröder, both of Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 769,793, Feb. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 598,345, Jul. 23, 1975, abandoned. This application Jul. 3, 1979, Ser. No. 54,608

Int. Cl.³ G21C *3/56*

U.S. Cl. 376—293 **6 Claims**



1. A nuclear energy plant having a closed working gas circuit with which the working gas heated up in a reactor core becomes supplied directly to energy generating working turbine machines in which the working gas flows through the turbines as well as the compressors that together with the turbines as a turbo-set form a unitary machine system, which includes the improvement in combination therewith comprising: an outer safety container consisting of prestressed concrete for heating the working gas, and an inner container particularly of economical unprestressed steel concrete and said inner container having an outer cylindrical wall adjacent said outer container and an inner cylindrical wall forming a central recess in which a separate container only of prestressed concrete with a nuclear reactor core is received and supported, said inner container comprising a chamber below said recess housing a working gas driven turbo-set and a plurality of accessible chambers formed by radial walls between said outer and inner cylindrical walls communicating with each other to allow flow of gases between said chambers and surrounding the recess on all sides above the chamber housing the turbo-set in which are located components of the working gas circuit, including heat exchangers, post heat discharge systems, precoolers and gas storage means, heat transferring means, intermediate coolers, and other components, and a horizontal wall closing the tops of said accessible chambers, said wall forming the bottom of an assembly chamber above said accessible chambers and said recess, said horizontal wall having gas-tight closures in said accessible chambers, said closures being movable to allow access to said accessible chambers and removal of components in said chambers to said assembly chamber and out of said outer safety container.

4,343,682

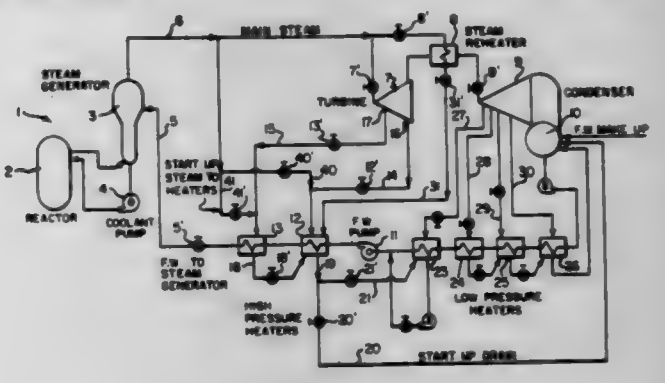
PLANT HAVING FEED WATER HEATING MEANS FOR NUCLEAR UNITS DURING PLANT START UP AND METHOD OF OPERATING THE SAME

Arthur S. Grimes, 148 Wicks Rd., Commack, N.Y. 11725, and Robert S. Hunter, 814 Hudson St., Hoboken, N.J. 07030

Filed Aug. 20, 1980, Ser. No. 179,803

Int. Cl.³ G21C *19/28*

U.S. Cl. 376—214 **5 Claims**



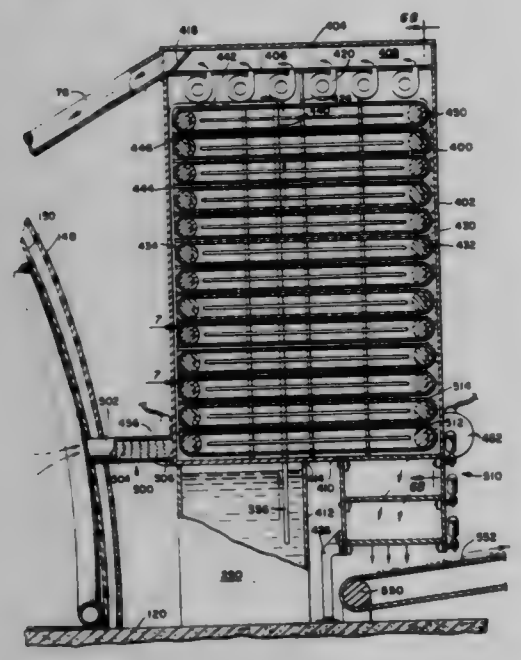
1. A plant having feed water heating means for a nuclear steam supply unit during plant start up where said plant has a nuclear steam supply unit for changing water to steam, a turbine, a main steam delivery line connecting said turbine with said unit, a condenser connected to a discharge of said turbine, a feed water delivery line extending from said condenser to said unit, a feed water pump in said feed water delivery line, at least one high pressure heater in said feed water delivery line between said feed water pump and said unit, a high pressure heater steam delivery line extending between a steam extraction point on said turbine and said high pressure heater, a heater operation valve in said high pressure heater steam delivery line and a drain extending from said high preasure heater; the improvement comprising in having a start up steam line extending from said main steam delivery line to said high pressure heater, and a start up valve in said start up steam line whereby when said start up valve is opened, steam from said main steam delivery line will be admitted to said high pressure heater to heat feed water entering the unit during a plant start up and whereby when said start up valve is closed after plant start up, said operation valve may be opened to admit steam to said high pressure heater from said extraction point.

4,343,683

METHOD FOR DESALINATING WATER

Richard E. Diggs, 12A Rd., Carthage, Mo. 64836

Division of Ser. No. 869,015, Jan. 12, 1978, Pat. No. 4,235,680, which is a division of Ser. No. 625,850, Oct. 28, 1975, Pat. No. 4,118,283. This application May 7, 1980, Ser. No. 147,367
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.³ C02F *1/14*
U.S. Cl. 203—2 **2 Claims**



1. A process for distilling water and separating the water from solids dissolved therein, comprising the steps of:
withdrawing contaminated water from a body of water having solid contaminants dissolved therein;
flowing contaminated water from said body of water into a header which is fluidly connected to an outer peripheral edge of a grid;
flowing contaminated water from said header onto said grid via said header;
transferring solar energy to said water flowing across said grid;
flowing contaminated water into a trough which is located on said grid inner peripheral edge which is fluidly attached to said grid, from said grid;
flowing contaiminated water from said grid via said trough into a water storage means having a side wall attached to said grid trough and having a heat exchange structure connected thereto;
removing contaminated water from said storage means;
transferring water from said trough to said water storage means;
monitoring temperature of water in said water storage means;
transferring only water having a temperature which equals or exceeds a predetermined temperature to said water storage means;
recirculating said water from said trough back to said header prior to transferring water from said trough into said water storage means when the temperature of said water in said trough falls below a predetermined temperature;
flowing water from said heat exchange structure into a vaporizer means connected to said heat exchange structure, and for separating said water from said solid contaminants dissolved therein;
concentrating solar energy on the contaminated water flowing from said heat exchange structure into said vaporizer means;
using solar energy, raising to a second predetermined temperature said contaminated water flowing from said heat exchange structure into said vaporizer;
vaporizing said contaminated water in said vaporizer under vacuum conditions to form water vapor, said vaporizing process comprising the steps of:
providing a vacuum in a chamber,
heating the contaminated water to a predetermined temperature,
spraying said heated water into said chamber, said predetermined temperature being above the saturation temperature corresponding to the pressure in said chamber,
vaporizing said water in said chamber to separate said water from said solid contaminants dissolved therein,
removing said water vapor from said chamber, and
removing said solids from said chamber, whereby said water vapor and said solids are totally separated from each other;
separating said water from solid contaminants in said vaporizer means;
removing said solid contaminants from said vaporizer means;
removing water vapor from said vaporizer means;
transferring said water vapor to a condensing means;
exposing said contaminated water in the vaporizing means to said water vapor and transferring heat from said water vapor to such contaminated water to preheat same;
circulating such preheated contaminated water in a circuitous path;
condensing water vapor and forming distilled water which is free of solid contaminants; and
withdrawing condensed water from the proximity of said water vapor.

4,343,684

METHOD OF ELECTROFORMING AND PRODUCT

Stanley Lechtzin, 7705 Woodlawn Ave., Melrose Park, Pa. 19126

Filed Dec. 19, 1980, Ser. No. 218,275
Int. Cl.³ C25D *1/20, 3/62, 5/50*
U.S. Cl. 204—4 **11 Claims**

1. The method of gold electroforming utilizing an acid electrolyte containing gold or an alkaline electrolyte containing gold at a temperature above 100 degrees F. comprising the steps of
forming a non-metallic substrate to a desired configuration;
applying a metallic shell over at least portions of the substrate;
placing the substrate with shell into the electrolyte;
electroforming at a current density of between approximately eleven amperes per square foot and approximately twenty-five amperes per square foot a self-supporting gold deposit of a first karat over the metallic shell; and
annealing the gold deposit at a temperature in excess of room temperature for a period of at least four hours to remove stresses and brittleness.

4,343,685

PROCESS FOR PREPARING A CHEMICAL COMPOUND ENRICHED IN ISOTOPE CONTENT

Edward D. Michaels, Spring Valley, Ohio, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

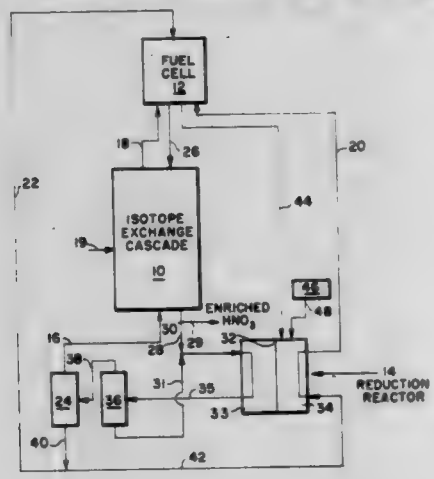
Filed Feb. 25, 1981, Ser. No. 238,711
Int. Cl.³ B01D *59/32*; C25B *1/02, 1/22*
U.S. Cl. 204—101 **6 Claims**

1. An energy-efficient process capable of yielding a chemical compound enriched in isotope content without forming waste by-products, said process comprising the steps of:
(a) countercurrently contacting a first chemical compound with a second chemical compound in a chemical exchanger region to produce an isotopically enriched first compound at one end of the chemical exchange region and an isotopically depleted second compound at the other end of the chemical exchange region, said first and

second chemical compounds being capable of interconversion by oxidation and reduction reactions;

(b) converting the first compound to the second compound at the enriched end of the chemical exchange region, and removing a small portion of the flow as product, while returning the bulk of the flow to the chemical exchange region as reflux;

(c) converting the second compartment to the first compound at the depleted end of the chemical exchange region and removing a small portion of this flow as spent material, while returning the bulk of the flow to the chemical exchange region as reflux, wherein one of said conversion steps is an oxidation reaction and the other of said



conversion steps is a reduction reaction; wherein the oxidation reaction yields energy that serves to drive the reduction reaction; and wherein a solid polymer electrolyte electrolytic reactor is used to carry out the reduction reaction which yields the reduced form of the isotope containing chemical compound and additional chemical products that are subsequently separated from the reduced compound;

(d) cycling the first and second chemical compounds produced by steps (c) and (b), respectively, to the chemical exchange region; and

(e) cycling the additional chemical reduction products to the oxidation reaction for consumption therein.

4,343,686

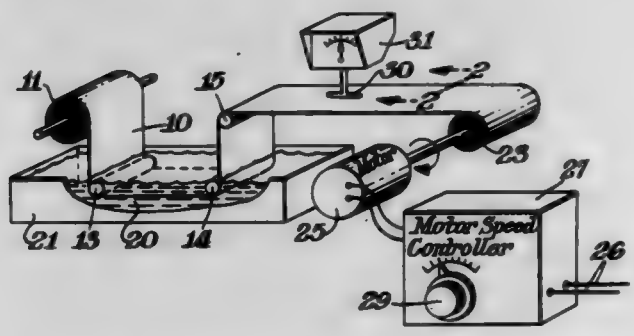
METHOD FOR CONTROLLING ETCHING OF ELECTROLYTIC CAPACITOR FOIL

John R. Hebert, Jr., North Adams; Joseph H. Silveira, Cheshire, and Robert W. Herzig, North Adams, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Feb. 27, 1981, Ser. No. 239,093

Int. Cl.³ C25F *3/02*; H01L *21/306*; B44C *1/22*

U.S. Cl. 204—129.2 **12 Claims**



11. A method for controlling in a foil etching process the ratio of the actual etched surface area to the apparent surface area of a valve metal foil that is intended for use in electrolytic capacitor, comprising:

drawing said foil through an etch station and etching said foil therein by a process having at least one process parameter that affects said actual etched surface area;

electrically exciting a test coil that is adjacent said etched foil near the point of exit from said etching station to generate eddy currents in said etched foil producing an electrical signal having an amplitude that is a fixed function of the magnitude of said eddy currents;

comparing said signal with a predetermined signal representing the desired actual surface area of said etched foil; and

adjusting said at least one parameter, according to the result of said comparing step, in a direction that tends to reduce the difference between said compared signals to control the ratio of said actual to said apparent surface areas.

4,343,687

PRODUCTION OF CHAIN REACTIONS BY LASER CHEMISTRY

Avigdor M. Ronn, Great Neck, N.Y., assignor to Research Foundation of City University of New York, New York, N.Y.

Filed May 27, 1980, Ser. No. 153,170

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—157.1 R **6 Claims**

1. A process for initiating chain reactions by laser chemistry which comprises mixing in a bounded space at least two compounds of a kind and in amounts capable of sustaining a chain reaction and initiating a reaction therebetween by irradiating the mixture with an infrared laser beam having a frequency not absorbed by said compounds and insufficient to create a spark.

4,343,688

METHOD OF MAKING HUMIDITY SENSORS

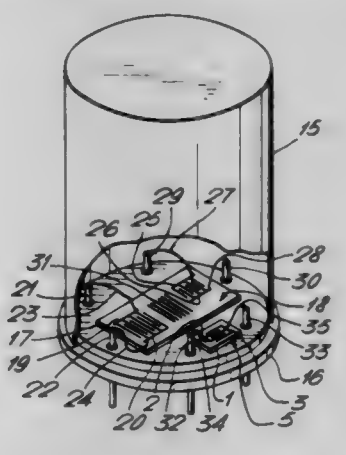
Mervyn G. Harwood, Bromley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,485

Claims priority, application United Kingdom, Nov. 22, 1979, 7940446; Jul. 28, 1980, 8024630

Int. Cl.³ G01N *27/28, 27/42*

U.S. Cl. 204—195 W **4 Claims**



1. A method of making a humidity sensor comprising the steps of:

providing an alumina substrate;

providing a pair of noble metal electrodes on the substrate; and

forming an electrically conductive, moisture-sensitive layer on the substrate between and electrically contacting the electrodes;

characterized in that the moisture-sensitive layer is formed by:

heating the alumina substrate to a temperature in the range of 100° to 750° C. for from 30 hours to ½ hour in order to activate the alumina;

coating at least a portion of the substrate between the electrodes with orthophosphoric acid or phosphorus pentoxide, said coating contacting the electrodes; and

heating the coated substrate to a temperature in the range of 50° to 500° C. for from 30 hours to ½ hour so as to form the electrically conductive, moisture-sensitive layer by a reaction between the alumina and the orthophosphoric acid or phosphorus pentoxide.

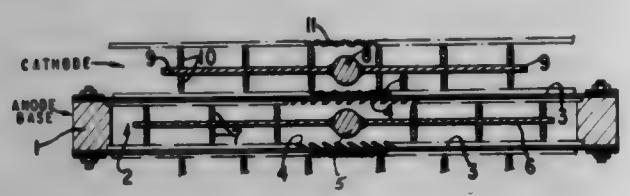
4. A humidity sensor made by the method of claim 1, 2, or 3.

4,343,689

NOVEL ELECTROLYSIS CELL

Oronzio de Nora, Milan, Italy, and Placido M. Spaziante, Lugano, Switzerland, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Jul. 12, 1979, Ser. No. 57,255
Claims priority, application Italy, Jul. 27, 1978, 26171 A/78
Int. Cl.³ C25B *13/00, 11/00, 1/26*
U.S. Cl. 204—253 **44 Claims**



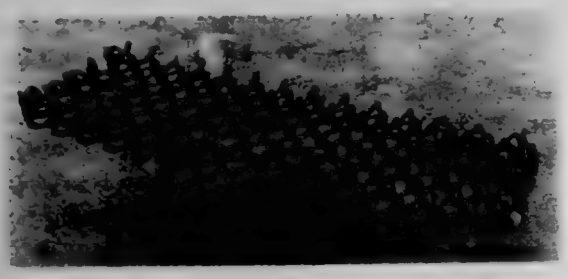
1. An electrolytic cell unit which comprises a flexible ion permeable diaphragm sheet having an anode bonded to one side thereof and a cathode bonded to the other side thereof, flexible anode and cathode foraminous sheets engaging the outer sides respectively of the anode and cathode, said sheets having greater rigidity than the diaphragm, at least one pressure element engaging the anode foraminous sheet to press the assembly together, said anode pressure element being offset with respect to the cathode pressure element.

4,343,690

NOVEL ELECTROLYSIS CELL

Oronzio de Nora, Milan, Italy, assignor to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Dec. 11, 1979, Ser. No. 102,629
Claims priority, application Italy, Aug. 3, 1979, 24919 A/79
Int. Cl.³ C25B *9/00*
U.S. Cl. 204—263 **47 Claims**



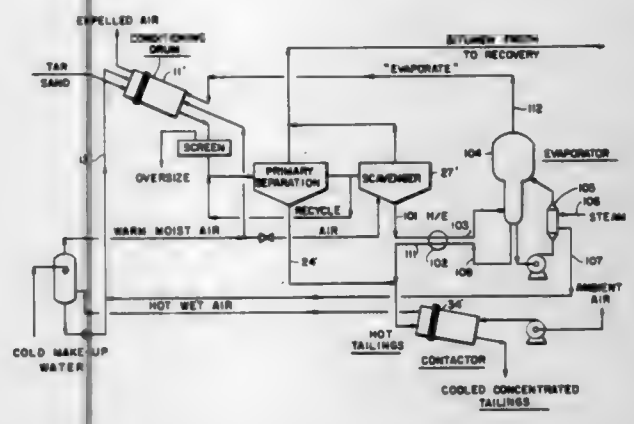
1. An electrolytic cell which comprises a flexible ion permeable diaphragm having at least one compliant electrode layer bonded to or otherwise incorporated on one side thereof, a current distributor bearing against the layer, said distributor having an electroconductive surface adapted to impart polarity to the layer, and a cooperating counter electrode disposed at the other side of the diaphragm, said current distributor or said counter electrode comprising a resiliently compressible mat coextensive with said electrode layer dimensions, said mat being capable of being compressed in the direction of the diaphragm and to exert an elastic reaction force towards the diaphragm at a multiplicity of pressure points and capable to transfer excess resilient force acting on one or more pressure points to other neighbouring pressure points in a lateral direction along a major dimension of the mat whereby compressing pressure can be effectively distributed over the entire surface of the layer, said mat being open to permit flow of electrolyte through it means slideable with respect to the mat to compress the mat toward the diaphragm and a rigid support on the other side of the flexible diaphragm to restrain diaphragm displacement.

4,343,691

HEAT AND WATER RECOVERY FROM AQUEOUS WASTE STREAMS

Ari A. Minkkinen, Versailles, France, assignor to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 92,908, Nov. 9, 1979, abandoned. This application Mar. 5, 1981, Ser. No. 240,722
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **8 Claims**



1. In a process for the hot water extraction of bitumen from tar sands wherein the tar sands is conditioned with hot water and bitumen is separated from tar sands tailings containing water and sand, the improvement for recovering heat and water values, comprising:

evaporating a portion of the water from a portion of the tar sands tailings, heat requirements for the evaporating being provided by indirect heat transfer with steam;

recovering from the evaporating a water evaporate, a remaining tar sands concentrate and a steam condensate; and

employing steam condensate and water evaporate in the hot water conditioning to provide heat and water make up to the hot water conditioning.

4,343,692

CATALYTIC DEWAXING PROCESS

Bruce H. C. Winquist, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 27, 1981, Ser. No. 248,653
Int. Cl.³ C10G *48/18*
U.S. Cl. 208—111 **9 Claims**

1. In the process for catalytically hydrodewaxing a petroleum feedstock selected from the group consisting of distillates and residual fractions by contact of said feedstock and hydrogen with a catalyst, the improvement wherein said catalyst is a synthetic ferrierite zeolite having incorporated therewith at least one metal selected from the group consisting of Group VI B, Group VII B and Group VIII metals.

4,343,693

METHOD OF REMOVING CONTAMINANT FROM A FEEDSTOCK STREAM

Eric O. Holland, Borger, Tx. Marvin M. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 80,600, Oct. 1, 1979, Pat. No. 4,269,694. This application Mar. 31, 1981, Ser. No. 249,548
Int. Cl.³ C10G *25/05, 29/04*
U.S. Cl. 208—244 **10 Claims**

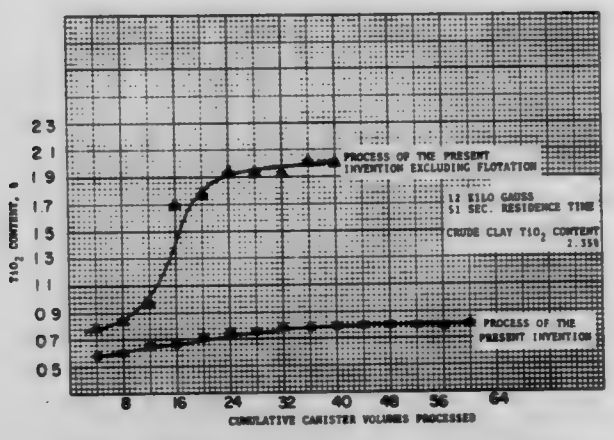
1. A method of removing feedstock stream contaminants including at least one of petroleum sulfonate and silicone oils from a contaminated feedstock stream comprising contacting said contaminated feedstock stream with an adsorbent comprising bauxite, thereby removing at least a portion of said contaminants from said contaminated feedstock stream.

4,343,694

MAGNETIC BENEFICIATION OF CLAYS UTILIZING MAGNETIC SEEDING AND FLOTATION

Jerry A. Cook, Tennille, and Gary L. Cobb, Davisboro, both of Ga., assignors to Anglo-American Clays Corporation, Sandersville, Ga.

Filed Aug. 25, 1980, Ser. No. 180,976
Int. Cl.[3] B03B 1/00
U.S. Cl. 209—9 19 Claims



1. A method for separating titaniferous and iron-containing discolorants from a crude kaolin clay, comprising the steps of:

forming a dispersed aqueous slurry of said clay, containing a deflocculant, and a fatty acid collecting agent; and conditioning said slurry to coat said discolorants with said collecting agent, to thereby render same hydrophobic;

adding to said slurry a system of sub-micron sized magnetic ferrite seeding particles, the surfaces of which have been rendered hydrophobic;

mixing said seeded slurry to coalesce said hydrophobic surfaced discolorants with said hydrophobic-surfaced seeding particles;

subjecting said seeded slurry to a froth flotation to remove substantial quantities of said discolorants and seeding particles coalesced therewith, and to remove excess seeding particles and coalesced seeding particles, and to remove excess of the fatty acid collecting agent; and

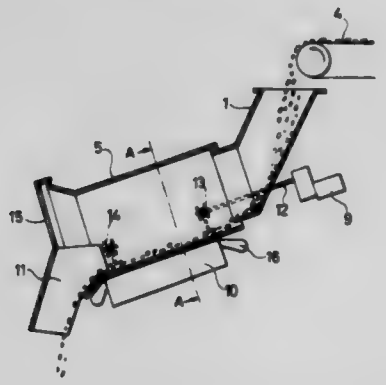
subjecting the flotation-beneficiated clay slurry to a magnetic separation to remove further quantities of the discolorants and seeding particles associated therewith, and to remove seeding particles unassociated with said discolorants.

4,343,695

SYSTEM FOR NON-MAGNETIC METAL SELECTION

Yasuo Watabe, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 964,018, Nov. 27, 1978, abandoned.
This application Nov. 7, 1980, Ser. No. 204,977
Claims priority, application Japan, Nov. 28, 1977, 52-142379
Int. Cl.[3] B03C 1/10
U.S. Cl. 209—212 7 Claims



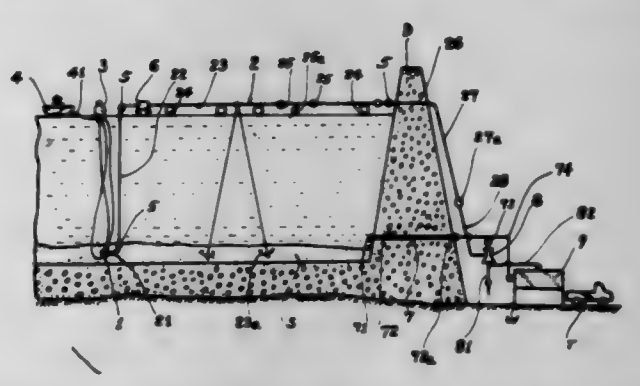
1. Apparatus for selection of non-magnetic metals comprising a hollow drum inclined at an angle and having an elevated upstream end and a downstream end respectively, means contacting the outside of said drum for rotating said drum in a first direction, a shifting electromagnetic field generator disposed to cover the lower part of the periphery of the drum for generating a shifting electromagnetic field in a second direction opposite to said first direction of rotation of said drum, means for supplying a mixture including non-magnetic metal particles to the elevated upstream end of said drum, said drum having an unrestricted internal passage circumferentially and extending throughout its entire length to permit separation of particles along the lower part of the inner periphery of the drum adjacent to said electromagnetic field generator with non-magnetic particles on one side and the remainder of the mixture on the other side, and a movable separation plate mounted at the downstream end of said drum in contact with the inner surface of the drum, said movable separation plate slidable on the inner peripheral surface of the drum for positioning at a boundary between non-magnetic metal particles and the remainder of the mixture to separate non-magnetic metal particles to one side of said plate and the remainder of said mixture separated to the other side of said plate.

4,343,696

SYSTEM FOR REMOVING SLUDGE FROM DAM RESERVOIR

Pai-Yen Hung, No.3-1, Alley 4, Lane 81, Kuang-Chou St., Taipei, Taiwan

Filed Feb. 3, 1981, Ser. No. 231,115
Int. Cl.[3] B01D 21/24
U.S. Cl. 210—85 10 Claims



1. An improved system for removing sludge from dam reservoir comprising a suction port, a delivery pipe, a float, a tug boat, several universal joints connected within said delivery pipe, a concentration alarming indicator, a boosting pipe, an ejector and a sludge consolidating means, being characterized in that said boosting pipe may deliver a high pressure stream into nozzles of said ejector to suck the air and water in said delivery pipe connected to the throat of said ejector to start a syphon effect so as to automatically discharge the sludge or sand laden in the fluid through said delivery pipe.

4,343,697

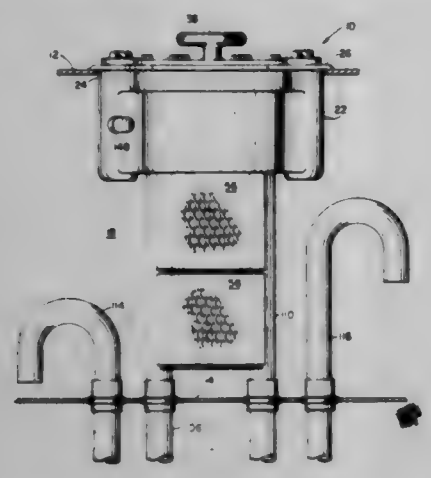
COMBINED HYDRAULIC FLUID RESERVOIR AND RETURN FLUID FILTER SUPPORT STRUCTURE

Wayne R. Miller, and Cyril W. Von Fumetti, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 21, 1978, Ser. No. 917,479
Int. Cl.[3] B01D 27/10
U.S. Cl. 210—90 13 Claims

1. A combined hydraulic fluid reservoir and filter support assembly, comprising: a walled reservoir defining at least a first walled, generally tubular filter insertion-withdrawal passage extending thereinto from a top of the reservoir and having a lower terminal end located at approximately a predetermined full level to which the reservoir is adapted to be filled; an access cover releasably mounted in closing relationship to a top end of the passage; a vertically shiftable plate located in closing relationship to said passage adjacent the terminal lower end thereof; said plate forming part of a filter mounting means fixed to the access cover and holding an upper end of a filter

element assembly in sealed engagement with the plate; said plate cooperating with the passage and access cover to define a return fluid cavity separate from a remaining portion of the



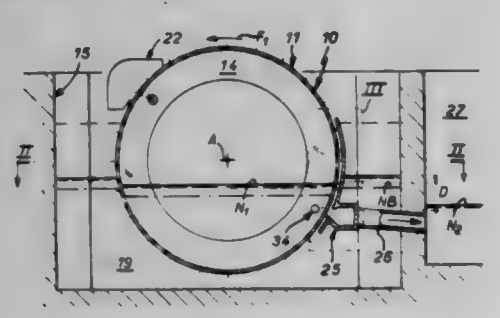
reservoir; a filter inlet port provided in the plate for conveying fluid from the cavity to the filter element assembly and a return fluid conduit connected to the cavity at approximately said full level.

4,343,698

WATER INTAKE

Philip Jackson, Paris, France, assignor to E. Beaudrey & Cie, Societe Anonyme, Paris, France

Filed Jan. 23, 1981, Ser. No. 227,670
Claims priority, application France, Feb. 5, 1980, 80 02424
The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.
Int. Cl.³ B01D *33/02*
U.S. Cl. 210—107 **8 Claims**



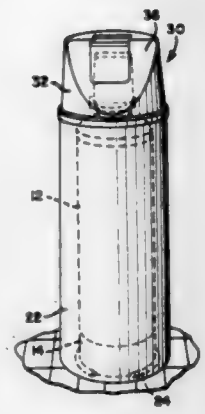
1. A water screen for a water intake, said water screen comprising an endless filter element having a surface constructed and arranged for movement generally about an axis and for the general radial flow of water therethrough, means defining a water flow zone with an inlet thereinto in which water being filtered may flow through said filter element surface, said safeguarding means associated with said filter element surface for safeguarding living matter particularly fish in water to be screened, said safeguarding means including a recovery channel having an open end located adjacent said filter element surface remote from said water flow zone inlet and generally facing said filter element surface with said open end being arranged to be immersed during the operation of said water screen, suction means attached to said recovery channel for effecting water flow through said filter element surface into said recovery channel in a direction through said filter element reverse to the intended direction of flow of water to be filtered through said filter element, a shield member extending upwardly from said recovery channel open end adjacent to said filter element surface, said shield member being of a configuration complimentary to the shape and path of movement of said filter element surface and being generally uniformly spaced from said filter element surface, whereby living matter entrained against said filter element surface is directed into said recovery channel open end without being directed up and around said filter element surface, and means for generating an electrical field associated with said recovery channel and inducing said electrical field at right angles to the recovery channel in the water to be tapped.

4,343,699

CONVERTIBLE DUAL CONTAINER STORAGE SYSTEM

Stephen H. Davis, Dayton, Ohio, assignor to Water Refining Company, Inc., Middletown, Ohio

Continuation of Ser. No. 21,738, Mar. 19, 1979, abandoned. This application May 19, 1980, Ser. No. 150,865
Int. Cl.³ B01D *29/38*
U.S. Cl. 210—190 **5 Claims**



1. A convertible dual container storage system of the type wherein a fluid stored in one container is periodically required for use in the other container comprising:

a first vertically upstanding, generally cylindrical tank, said first tank having means located near the base thereof to maintain itself in a freestanding, upright position and adapted to be positioned next to or within a second larger tank and easily convertible from one such position to the other;

a second vertically upstanding, generally cylindrical tank having a diameter larger than said first tank and having a circular ridge extending upwardly from the base thereof adapted to partially surround and position said first tank in said second tank, said second tank being capable of storing the fluid which is periodically required for use in said first tank, said first and second tanks being in fluid connection with each other so that liquid may be removed from said second tank and passed into said first tank; and

a hollow, generally cylindrical cover means having a tapered, upstanding wall portion spanned by a flat lid portion, and having an open end of slightly larger diameter than the upper rim portion of said second tank, whereby said open end of said cover means is adapted to sealingly engage said upper rim of said second tank, said upstanding wall portion of said cover means having sufficient height such that when said first tank is disposed within said second tank, said cover means fits over the top of said first tank and sealingly engages said upper rim of said second tank.

4,343,700

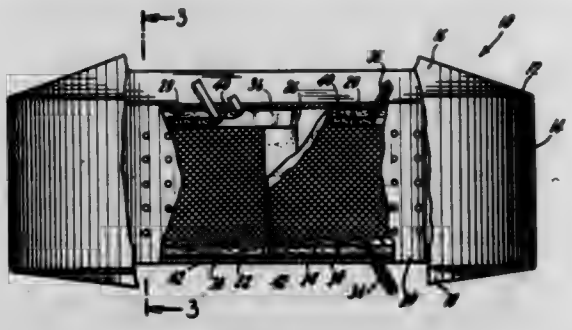
CENTRIFUGE FILTER

Edward A. Daubman, Fallbrook, and William G. Owler, Jr., Escondido, both of Calif., assignors to Ametek, Inc., New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,286
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—232 **2 Claims**

1. A filtration assembly for use in a centrifuge filter comprising a filter drum, a backing screen having a front and back surface and upper and lower edges adapted to fit about the inner periphery of said filter drum, a filter element attached to and covering said front surface of said backing screen, sealing strips located on said back surface of said backing screen along said upper and lower edges, and complementary releasable mating members located adjacent said sealing members on said

back surface of said backing screen and on said filter drum requiring no adjustment to permit the selective attachment and



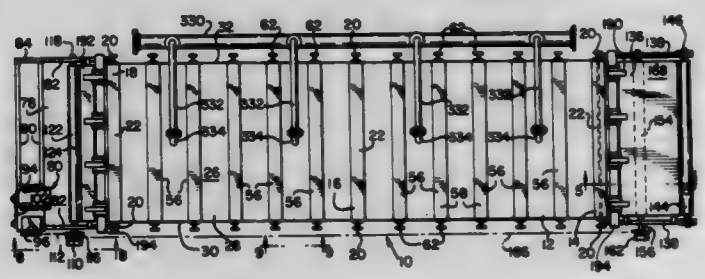
removal of said backing screen and filter media element to and from said filter drum.

4,343,701

HIGH PRESSURE FLAT BED FILTER

David G. Parshall, Northville, Mich., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Apr. 10, 1981, Ser. No. 253,029
Int. Cl.[3] B01D *29/02*
U.S. Cl. 210—387 8 Claims



1. In a filtering device for receiving a batch of a liquid-particulate mixture to separate said liquid and said particulate into discrete portions, an improvement in said filtering device comprising,

a filter body having a cover positioned over and affixed to a permeable grid panel to define an inner chamber,

door frames carried by said filter body at ends of said inner chamber, each said frame having an inner sealing surface,

doors pivotally carried one each by an upper member of a supporting means attached to said body adjacent to said door frame, each said door having an inflatable gasket with an inner cavity operatively connected to a source of a pressurized incompressible liquid for forcing a sealing strip of said gasket against said door frame sealing surface and forming a seal therewith,

a filter media belt having ends connected to selectively rotatable spools carried by said filter body exterior of said inner chamber ends, said belt extending through said chamber in said body and carried therein by said permeable grid panel, and

inflatable gaskets carried one each on inner sidewalls of said cover, each said gasket extending between said door frames and positioned over a respective edge of said filter media belt, each said gasket having an inner cavity operatively connected to said incompressible liquid source to force a sealing lip of said gasket against said filter media belt and form a seal between said gasket sealing lip, said filter media belt, and said grid panel,

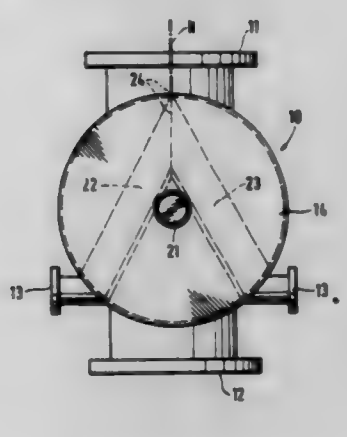
wherein with said doors closed and sealed within said door frame and said elongated gaskets inflated, a batch of said liquid-particulate liquid may be introduced into said filter body inner chamber and subjected to a substantial pressure in said chamber, said pressure causing said liquid portion to flow through said filter media belt and grid panel with said particulate portion being retained by said filter media belt to effect said separation.

4,343,702

APPARATUS FOR CLEANING THE INSIDE FACES OF PIPES OR TUBES

Erich O. Riedel, Haan, Fed. Rep. of Germany, assignor to Riedel-Technik GmbH, Haan, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,839
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945287
Int. Cl.[3] B01D *29/02*
U.S. Cl. 210—391 3 Claims



1. An apparatus for cleaning the inside faces of pipes from foreign particles sticking thereto by means of flexible cleaning elements which are oversized relative to the pipe inside diameter to be cleaned, and which are forced through the pipes under hydraulic pressure, comprising:

a drum-shaped rotatable hollow body having a flow inlet, a flow outlet and at least one flexible cleaning element outlet port which body has its axis of rotation disposed in a plane generally normal to the liquid stream direction of flow; and

a V-shaped screen body disposed inside said drum-shaped body arranged at an angle relative to the direction of flow so as to separate the cleaning elements from the liquid, said V-shaped screen body has at least two screen faces joined by an elongated central trough alignable with said outlet port, said V-shaped screen body being rotatably supported by means of a shaft extending generally centrally through said faces which is rotatably supported in said hollow body.

4,343,703

APPARATUS FOR CLEANING THE INTERIOR FACES OF PIPES OR TUBES

Erich O. Riedel, Haan, Fed. Rep. of Germany, assignor to Riedel-Technik GmbH, Haan, Fed. Rep. of Germany

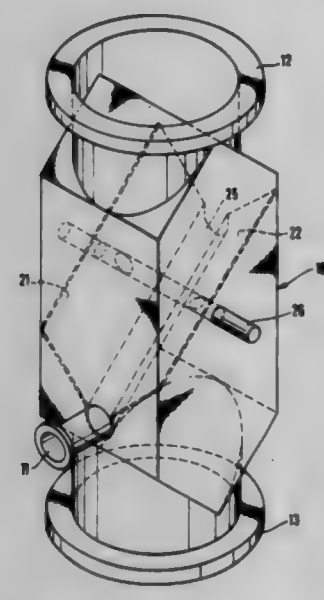
Filed Nov. 10, 1980, Ser. No. 205,543
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945286
Int. Cl.[3] B01D *29/02*
U.S. Cl. 210—391 6 Claims

1. An apparatus for cleaning the inside faces of pipes from foreign particles sticking thereto by means of flexible cleaning elements which are oversized relative to the pipe inside diameter to be cleaned, and which are forced through the pipes under hydraulic pressure, comprising:

an enclosure having a fluid inlet and an opposite fluid outlet and a cleaning element outlet port disposed therebetween; and

an elongated, generally V-shaped screen body having two screen faces disposed inside said enclosure at an acute angle relative to the centerline of the incoming liquid

stream, said screen body also having a longitudinal axis obliquely disposed relative to the throughflow direction



of said liquid stream, and a lower end alignable with said outlet port.

4,343,704

CERAMIC FOAM FILTER

Jerry W. Brockmeyer, Hendersonville, N.C., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 22, 1981, Ser. No. 227,134
Int. Cl.³ B01D *39/20*
U.S. Cl. 210—509 **8 Claims**

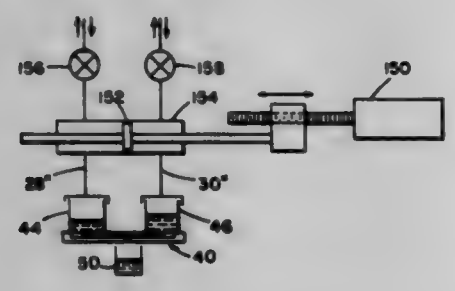
1. A ceramic foam filter for use in filtering molten metal having an open cell structure characterized by a plurality of interconnected voids surrounded by a web of ceramic, said foam consisting essentially of the following composition: 55 to 70% Al_2O_3, 2 to 10% micron-sized reactive alumina, 1 to 5% montmorillonite and 1 to 10% ceramic fibers wherein said micron-sized reactive alumina acts in synergism with said montmorillonite to achieve a homogeneously distributed bonding phase and a suitable slurry rheology whereby the compressive and bending strengths of the ceramic foam filter is substantially increased as compared with alumina-chromia filter elements.

4,343,705

BIOLOGICAL LIQUID FRACTIONATION USING ALTERNATE OPPOSITE FLOW DIRECTIONS ACROSS A MEMBRANE

Kenneth D. Legg, Wellesley, Mass., assignor to Instrumentation Laboratory, Lexington, Mass.

Filed Oct. 31, 1980, Ser. No. 202,478
Int. Cl.³ B01D *13/00, 31/00*
U.S. Cl. 210—637 **13 Claims**



11. A process for separating blood plasma from other components of whole blood without visible hemolysis comprising the steps of

providing two spaced reservoir chambers that are connected by flow channel structure, said flow channel structure being bounded by filtration membrane structure that has a multiplicity of pores, the pores having a width dimension of less than one micron,

disposing whole blood in said reservoirs and said flow channel so that a surface of the whole blood in each reservoir is exposed to gas,

applying gas at a pressure not exceeding ten psi alternately to the exposed surfaces of the whole blood in said reservoir chambers to produce reciprocating flow of whole blood between said reservoir chambers through said flow channel structure with resulting flow of a plasma fraction free from visible hemolysis from said whole blood through said filtration membrane structure, and

collecting said plasma fraction at a location below said membrane structure.

4,343,706

METHOD OF REMOVING HEAVY METALS FROM INDUSTRIAL WASTE STREAMS

James E. Etzel, and Praveen Anand, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 4, 1980, Ser. No. 174,987
Int. Cl.³ C02F *1/52*
U.S. Cl. 210—667 **6 Claims**

1. A method of treating an industrial aqueous waste stream containing one or more ionized heavy metal compounds of the type releasable from a ferric hydroxide flocculant at a pH of about 3.2 to 3.7 to remove such ionized heavy metal compounds comprising the steps of:

(a) adding a source of ferric ions and an alkaline material to said waste stream in amounts sufficient to raise the pH of the stream to about 10.2 or above and mixing to form a ferric hydroxide flocculent, whereby said flocculent binds said heavy metal compounds to yield a flocculated material containing said heavy metal compounds,

(b) settling and separating the flocculated material from the stream,

(c) acidifying said flocculated material by addition of an acid in an amount sufficient to lower the pH to about 3.2 to 3.7 and mixing whereby heavy metals bound by said flocculent are released into solution,

(d) removing the heavy metal containing solution from said flocculent,

(e) regenerating said flocculent by addition of an acid in an amount sufficient to lower the pH to about 3 or less and mixing to dissolve the flocculent and

(f) recycling said dissolved flocculent to step (a).

6. The method of claim 1 including the step of passing the removed heavy metals from step (d) through a packed bed of vermiculite particles having a cation-exchange capacity in order to capture said heavy metals on said vermiculite particles.

4,343,707

METHOD AND APPARATUS FOR SEPARATING OUT SOLIDS SUSPENDED IN FLOWING, PURE WATER SYSTEMS

Robert G. Lucas, Stanford, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 10, 1980, Ser. No. 129,402
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—695 **13 Claims**

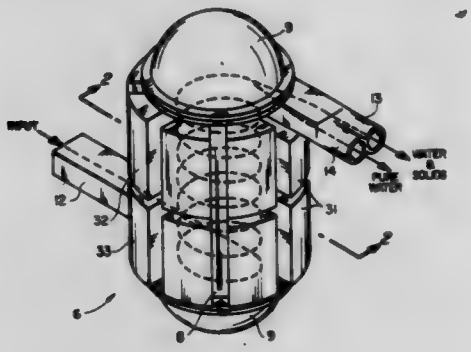
1. Apparatus for separating out strongly magnetic, slightly magnetic and non-magnetic solids suspended in a stream of flowing, substantially pure water, comprising:

(a) a pressure vessel having an inlet for receiving said stream and first and second outlet nozzles;

(b) a conduit within the pressure vessel forming a helical flow path extending between and in fluid communication with said inlet and said outlets between opposing radially inner and outer side walls respectively aligned with said first and second outlet nozzles for directing said stream

from said inlet to said outlets between said side walls, said helical flow path subjecting the solids suspended in the stream of water to a centrifugal force in the direction of said outer side wall;

(c) magnet means for subjecting the solids suspended in the water flowing through the apparatus to a magnetic force; and



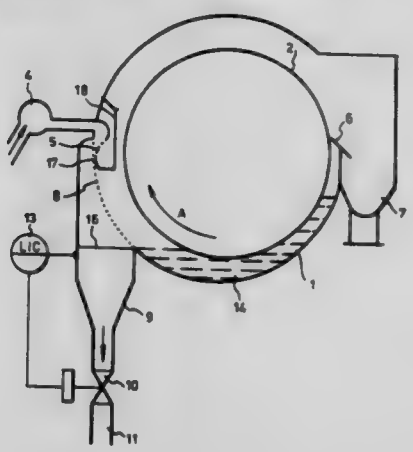
(d) means for mounting said magnet means along the helical flow path so that said magnetic force causes the magnetic particles in said stream to be drawn towards said outer side wall, whereby said centrifugal force and said magnetic force co-act to direct the suspended solids in sufficiently close proximity to said outer side walls so as to pass out of said second outlet nozzle along with some of the water from said stream while the remaining water flows out of the first outlet nozzle.

4,343,708

METHOD AND EQUIPMENT FOR THICKENING OF SUSPENSION OR PULP

Mikko Rantanen, Noormarkku; Alpo Tuomi, and Reino Laiho, both of Pori, all of Finland, assignors to Rauma-Repola Oy, Finland

Filed May 5, 1981, Ser. No. 260,743
Claims priority, application Finland, May 28, 1980, 801735
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—744 **7 Claims**



1. A method for thickening various suspensions or slurries, comprising the steps of passing a sludge or slurry into a basin, rotating a filter unit partly submerged in the sludge or slurry, gathering the thickened sludge or slurry onto the surface of said filter unit from the sludge or the slurry in the basin, passing the sludge or slurry from the basin to above a surface level of the sludge or slurry level, prethickening the sludge or slurry prior to passing the sludge or slurry into a lower portion of the basin by removing a portion of the liquid contained therein through screening means located in an inclined wall of the basin, said inclined wall being located between a feeding-in point of the sludge or slurry and the surface level of the sludge or slurry, and collecting the liquid passing through the screening means in a receiver located below the screening means.

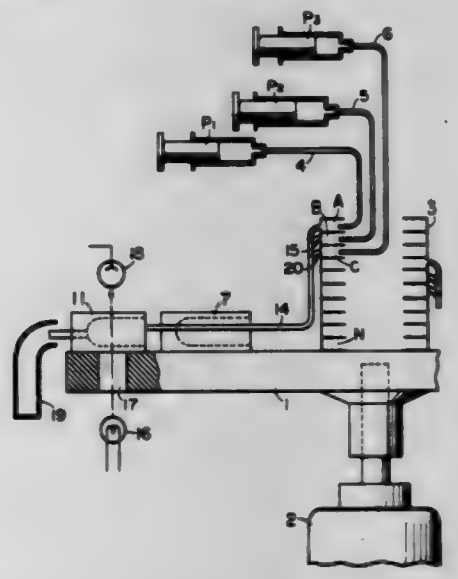
2. A method as claimed in claim 1, further comprising the step of controlling the thickness of the sludge or slurry coming to the filter unit by changing the level of the liquid surface level on the screening means through which the liquid is removed.

4,343,709

METHOD AND DEVICE FOR SEPARATELY COLLECTING AND DISCHARGING COMPONENTS OF LIQUID IN CENTRIFUGAL ROTOR

Akira Okumura, Takarazuka, Japan, assignor to Tetsuo Matsumoto and Eiko Okumura, both of Hyogo, Japan

Filed Dec. 9, 1980, Ser. No. 214,651
Claims priority, application Japan, Dec. 28, 1979, 54-172111
Int. Cl.³ B01D *21/26*
U.S. Cl. 210—782 **3 Claims**



1. A method for separating components of a liquid and separately collecting one said components in a continuously rotating centrifuge device having a rotor, a first container for holding a liquid sample, a second container disposed radially outward of said first container, said containers arranged for rotation with said rotor, each said container having a radially outer end, and a cylindrical liquid receiver mounted at the center of said rotor for rotation therewith, said receiver having a plurality of discrete annular sections, comprising the steps of:

rotating said centrifuge device;

introducing a liquid sample into an annular section of said liquid receiver and from said receiver into said first container;

holding said sample in said first container for a sufficient time to separate said liquid sample into components, including a supernatant, under centrifugal action;

withdrawing a predetermined portion of the supernatant through an overflow pipe having one end opening in said first container at a distance from said outer end, wherein the withdrawing step is effected by introducing additional liquid into an annular section of said liquid receiver, and from said receiver into said first container while said centrifuge device is rotating to cause said predetermined portion to flow out said overflow pipe;

collecting said predetermined portion of the supernatant, withdrawn through said overflow pipe while said centrifuge device is rotating, in the rotating second container for analysis;

introducing another liquid into an annular section of said liquid receiver and from said receiver into the rotating second container for mixing with said predetermined portion, wherein said liquid sample and the said other liquid are introduced into said receiver and thereafter into said first and second containers, respectively, through independent liquid flowstreams, each communicating with a separate source of liquid and having a liquid feeding pipe arranged for delivering fluid to an annular section of said liquid receiver;

optically measuring the mixed liquids while holding said mixed liquids in the rotating second container; and

introducing a washing liquid into at least one annular section of said receiver, and from said receiver into said rotating first and second containers, and withdrawing said washing liquid through a syphon associated with each container to flush said containers, in which each syphon has a first conduit portion communicating with, and extending radially inwardly from, the outer end of the respective container, a second conduit portion extending radially outwardly, and a bend portion connecting the first and second conduit portions, in which the bend portion is disposed radially inwardly of the said one end of the overflow pipe, wherein said predetermined portion is caused to flow out said outlet pipe by introducing said additional liquid to a level below the respective syphon bend, and wherein the flushing is effected by introducing a quantity of said washing fluid to a level higher than each said bend to actuate the syphons.

4,343,710

FILTER PRESSES AND A METHOD OF CLEANING SAME

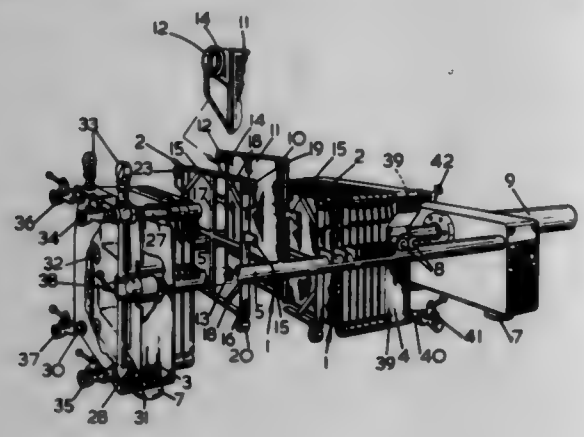
Ronald Shackleton, Broad Oak, Park Rd., Disley, Stockport SK12 2NA; Christopher J. Woodruff, 17 Meadway, Mottram Rise, Stalybridge, Cheshire, both of England, and Ian M. Fletcher, Regency Manor, 2153 C. Bedell Rd., Grand Island, N.Y. 14070

Filed Sep. 4, 1980, Ser. No. 183,799

Claims priority, application United Kingdom, Sep. 4, 1979, 7930555

Int. Cl.³ B01D *25/32*

U.S. Cl. 210—797 **15 Claims**



1. A method of cleaning a plate and frame filter press which has two or more liquid inlet pipes for receiving a liquid to be filtered and a filtrate outlet pipe for discharging filtrate during a filtering operation, the method comprising the steps of obturating the filtrate outlet pipe, isolating one of the inlet pipes from each other inlet pipe to form out of said inlet pipes two separate channels into and out of the press, and flushing out any filtrated out residue contained within the press by feeding a cleaning fluid into the press down one of said channels and recovering the fluid with the residue from the other channel.

4,343,711

SURFACTANT FLUID SUITABLE FOR USE IN WATERFLOOD OIL RECOVERY METHOD

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,908

The portion of the term of this patent subsequent to Mar. 4, 1997, has been disclaimed.

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **14 Claims**

1. An aqueous surfactant-containing fluid suitable for recovering petroleum from a subterranean formation containing water having salinity of from 50,000 to 200,000 parts per million total dissolved solids said fluid comprising water of about the same salinity as the formation water having dissolved therein from 0.1 to 6.0 percent by weight of a sulfonated ethoxylated alkyl or alkylarylthiol having the following formula:

$$R—S—(R'O)_nR''SO_3^-M^+$$

wherein R is an alkyl having from 6 to 26 carbon atoms, or an alkylaryl having from 5 to 24 carbon atoms in the alkyl chain, S is sulfur, O is oxygen, R' is ethylene or a mixture of ethylene and propylene with relatively more ethylene than propylene, n is a number from 1 to 12, and M is a monovalent cation.

4,343,712

PROCESS FOR SECONDARY RECOVERY

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 75,635, Sep. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 916,985, Jun. 19, 1978, abandoned. This application Feb. 11, 1981, Ser. No. 233,428

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **15 Claims**

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

(A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of a copolymer of acrylamide and styrene sulfonic acid or the sodium, potassium or ammonium salt thereof alkoxylated with about 2 to about 150 weight percent of a material selected from the group consisting of ethylene oxide and a mixture of ethylene oxide and propylene oxide wherein the weight percent of ethylene oxide in the said mixture is about 60 to about 95, wherein in the said copolymer the weight percent of acrylamide derived units ranges from about 70 to about 95 with the balance being styrene sulfonic acid derived units, and wherein the number average molecular weight of the acrylamide-styrene sulfonic acid copolymers will range from about 50,000 to about 5,000,000.

(B) forcing the said fluid through the formation, and

(C) recovering hydrocarbons through the production well.

4,343,713

PARTICULATE COMPOSITION

Rodney M. Wise, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 29, 1980, Ser. No. 202,038

Int. Cl.³ B01J *1/04*; C11D *3/12, 9/18, 11/00*

U.S. Cl. 252—92 **10 Claims**

1. A free-flowing particulate water-softening composition in an intimate mixture comprising:

(a) from about 10 parts to about 95 parts of an aluminosilicate selected from the group consisting of:

(i) an amorphous compound of the formula

$$Na_x(_zAlO_2.ySiO_2)$$

wherein x has a value of from 1 to 1.2 and y is 1, said amorphous material being further characterized by an Mg^{++} exchange capacity of at least about 50 mg. eq. $CaCO_3/g$;

(ii) a compound of the formula

$$Na_z[(AlO_2)_z.(SiO_2)_j]kH_2O$$

wherein z and j are integers of at least 6; the molar ratio of z to j is in the range of from 1.0 to about 0.5 and k is an integer from about 15 to 264; said aluminosilicate ion exchange material having a particle size diameter from about 0.1 micron to about 100 microns; a calcium ion

exchange capacity of at least about 200 mg eq./g; and a calcium ion exchange rate of at least about 2 grains/gallon/minute gram and mixtures thereof;

(b) from about 0.3 part to about 5 parts of an organic agglomerating compound and soap curd dispersant having a melting point of from about 10° C. to about 100° C.; and

(c) from about ¼ part to about 5 parts of a inorganic salt;

(d) from about ¼ to about 5 parts of a water soluble soap of a fatty acid containing from about 12 to about 22 carbon atoms with no more than about a quarter of said soap being saturated; and

(e) balance water.

10. A detergent composition comprising from about 5% to about 80% of the agglomerate of claim 1 and from about 20% to about 95% of a spray-dried detergent granule containing a surfactant.

4,343,714

PROCESS FOR TREATING CATHODE MATERIAL

Ashok V. Joshi, Bombay, India, and Nehemiaha Margalit, Chester, N.Y., assignors to Ray-O-Vac Corporation, Madison, Wis.

Filed Dec. 3, 1980, Ser. No. 212,699
Int. Cl.³ H01M *4/08, 4/58*
U.S. Cl. 252—182.1 **10 Claims**

1. A process for treating non-stoichiometric, solid cathode materials adapted to be used in electrochemical cells containing an active metal anode, said treatment effecting said non-stoichiometric, solid cathode materials in a manner to cause them, in said cell, to exhibit their substantially equilibrium open-circuit potential while minimally sacrificing energy density, said process comprising exposing said cathode materials to a solution of a compound of an active metal to reduce active impurities in said cathode material and a small amount of said cathode material on the solid surface and thereafter removing said solution, the active metal in said compound being in a state wherein it is capable of forming a compound with Y derived from the material M_aY_b.

4,343,715

IMMOBILIZED HEMOGLOBIN, AND PROCESSES FOR EXTRACTING OXYGEN FROM FLUIDS USING THE SAME

Joseph Bonaventura, and Celia Bonaventura, both of Beaufort, N.C., assignors to Duke University, Durham, N.C.

Filed Oct. 10, 1980, Ser. No. 196,036
Int. Cl.³ C01B *13/00;* A61M *16/00*
U.S. Cl. 252—186 **9 Claims**

1. An oxygen carrier, capable of reversibly binding and releasing oxygen, immobilized in a polymer matrix selected from the group consisting of compounds having urethane linkage, acrylic gels, maleic anhydride containing polymers, epoxy type polymers, glutaronic aldehyde type polymers and mixtures thereof.

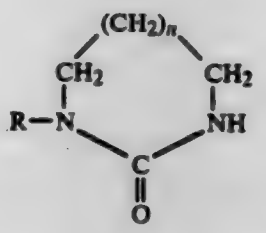
4,343,716

1-SECONDARY OR 1-TERTIARY ALKYL OR CYCLOALKYL-HEXAHYDRO-2-PYRIMIDINONES AND 1-SECONDARY OR 1-TERTIARY ALKYL OR 1-CYCLOALKYL-2-IMIDAZOLIDINONES AND THEIR USE AS ANTIFOAMING AGENTS

Michael T. Melchior, Scotch Plains; George E. Milliman, Fanwood, and Guido Sartori, Linden, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 930,222, Aug. 2, 1978, Pat. No. 4,183,903. This application Jun. 25, 1979, Ser. No. 51,873
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—192 **10 Claims**

1. An acid gas scrubbing composition having a reduced tendency to foam comprising an alkaline material comprising an alkali metal salt or an alkali metal hydroxide and an amino compound, and an antifoaming agent of the following general formula:



wherein R is a secondary or tertiary alkyl or cycloalkyl or alkyl-substituted cycloalkyl radical having from 4 to 20 carbon atoms and n is 0–2, said antifoaming agent being present in an amount ranging from about 1 to about 1000 ppm by weight of said composition.

4,343,717

PROCESS FOR THE PREPARATION OF STABLE SILICA SOL

Brent M. Lok, New City, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 8, 1980, Ser. No. 119,649
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—313 S **12 Claims**

1. A process for the preparation of stable colloidal silica sol which comprises the steps of:

(a) forming an aqueous slurry of calcium silicate,

(b) vigorously mixing said slurry while adding thereto, a dilute acid having a pK_a value of less than about 8, said acid having an anion which forms a precipitate with the calcium ion,

(c) heating said slurry at a temperature up to about 100° C., and for a period of time until precipitation is complete,

(d) filtering said slurry and contacting the filtrate obtained therefrom with at least one ion exchange resin,

(e) recovering therefrom a silica sol, and

(f) stabilizing and concentrating said sol.

4,343,718

AQUEOUS FOAMING AGENT SOLUTION

James H. Williams, Louisville, Ky., assignor to Borden, Inc., Columbus, Ohio

Division of Ser. No. 63,823, Aug. 6, 1979, which is a continuation of Ser. No. 7,482, Jan. 29, 1979, abandoned. This application Apr. 17, 1980, Ser. No. 141,018
Int. Cl.³ B01F *17/12*
U.S. Cl. 252—352 **4 Claims**

1. An aqueous foaming agent solution for making foam which is characterized by very low shrinkage comprising, in parts by weight, the following components in the indicated relative amounts:

15–30 parts of a surfactant selected from salts of mono- and disubstituted diphenyl oxide sulfonates, said substituents being selected from C_6 to C_{16} linear and branched carbon chains and the salts being selected from alkali metal and alkaline earth metal salts, and mixtures thereof,

10–25 parts of 85% phosphoric acid, and

15–25 parts of urea.

4,343,719

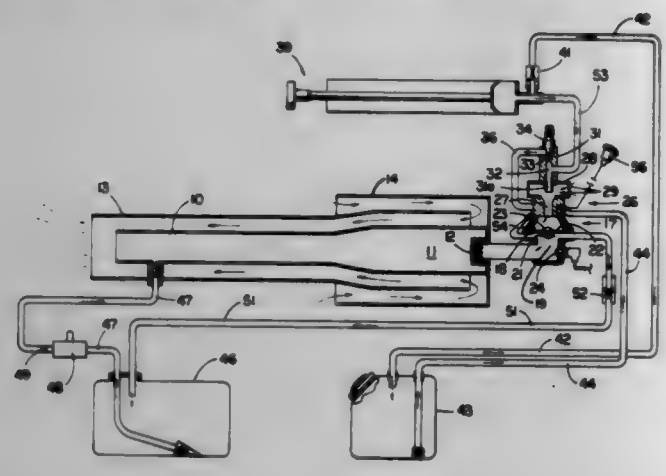
PULSE FOG GENERATOR

Robert E. Stevens; John H. Stowe, and Jeremiah M. Emerich, all of Westfield, Ind., assignors to Curtis Dyna-Products, Westfield, Ind.

Filed Dec. 31, 1980, Ser. No. 221,892
Int. Cl.³ B01F *3/02, 3/04;* B01J *13/00*
U.S. Cl. 252—359 CG **2 Claims**

1. A pulse fog generator including a combustion device of the resonant intermittant combustion type having a fuel-air inlet valve in which passage of air and fuel to a combustion

antechamber is controlled by a conventional petal-type check valve, a carburetor supplying a fuel air mixture to the inlet valve, said carburetor having a throat through which intake air flows at a velocity dependent upon the combustion rate in the combustion device, fuel control means for presenting fuel under pressure at said carburetor throat for aspiration into said intake air flow, said means comprising an aspirating passage opening into said throat and a fuel inlet valve controlling the flow of fuel through said passage, pressure responsive means for varying the flow of fuel through said fuel inlet valve in directly proportional response to the velocity of said intake air flow through the carburetor throat, said pressure responsive means comprising means forming a chamber with said fuel inlet valve providing an inlet for fuel to said chamber and said



aspirating passage providing a fuel outlet from said chamber, and a diaphragm forming one wall of said chamber operatively connected to said fuel inlet valve to control the flow of fuel into said chamber in response to the pressure therein, and starting means for altering the response of said pressure responsive means during a start-up interval to thereby present fuel at the junction of said aspirating passage and said throat independently of the air flow therethrough, said starting means comprising means forming a further chamber on the side of said diaphragm opposite said first mentioned chamber, and air supply means for supplying air under pressure for a brief starting interval to said further chamber to thereby temporarily move said diaphragm to open said fuel inlet valve independently of the fuel pressure in said first mentioned chamber.

4,343,720

QUATERNARY ALKYNOXYMETHYL AMINES

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 556,330, Mar. 7, 1975, abandoned. This application Nov. 24, 1978, Ser. No. 963,606

Int. Cl.[3] C09K *3/00*

U.S. Cl. 252—390 16 Claims

1. A process of inhibiting corrosion which comprises treating a system with a quaternary alkynoxymethyl amine halide having one to two quaternary nitrogen atoms to each of which are attached up to two alkynoxymethyl moieties, the groups directly attached to the quaternary nitrogen atoms in the said quaternary amines being said alkynoxymethyl groups and being R and R′ groups when there is but one quaternary nitrogen atom present per molecule and being said alkynoxymethyl groups and being R and Z groups when there are two quaternary nitrogen atoms present per molecule, the Z groups constituting bridging groups linking the two quaternary nitrogen atoms, the R groups being monovalent hydrocarbon, hydroxy substituted alkyl, or furfuryl groups, the R′ groups being monovalent hydrocarbon, and Z groups being divalent alkylene, alkenylene, alkynylene, alkaralkylene, or alkyleneether groups, and said alkynoxymethyl groups having the formula $HC{\equiv}CR''OCH_2{-}$, where R″ is alkylidene.

4,343,721

OLEFIN POLYMERIZATION CATALYST COMPONENTS AND POLYMERIZATION PROCESS

Brian L. Goodall, and Jacob C. van der Sar, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 18, 1980, Ser. No. 207,848

Claims priority, application United Kingdom, Nov. 20, 1979, 7940131

Int. Cl.[3] C08F *4/64*

U.S. Cl. 252—429 B 20 Claims

1. A process for the preparation of an olefin polymerization catalyst component which comprises contacting a solid composition obtained by combining a magnesium halide, an electron donor and a tetravalent titanium halide, this composition being substantially free from aluminum compounds, with a liquid medium comprising a halide of B, Al, Ga, In, Tl, Sn or Sb, these elements being present in their highest valency state or a halide of tetravalent Te, and removing from the catalyst component substantially all metal halide originating from the liquid medium.

4,343,722

PROCESS FOR PRODUCING CATALYST

Masao Saito, Niigata; Yuuzi Onda, Kawasaki, and Yuko Murayama, Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 31, 1981, Ser. No. 249,506

Claims priority, application Japan, Apr. 3, 1980, 55-44427

Int. Cl.[3] B01J *31/12, 31/02*

U.S. Cl. 252—431 N 8 Claims

1. A process for producing a catalyst for hydrogenation of nitriles, which comprises heating dicobalt octacarbonyl together with an aromatic nitrile at a temperature of 100°–200° C. in the absence of oxygen gas.

4,343,723

CATALYTIC COMPOSITE FROM PARTIALLY CRYSTALLIZED CLAY

Edward S. Rogers, Glen Ellyn, Ill., and Hosheng Tu, Lake Forest, Calif., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 130,306, Mar. 14, 1980, abandoned. This application May 26, 1981, Ser. No. 267,238

Int. Cl.[3] B01J *29/06, 21/16*

U.S. Cl. 252—455 Z 18 Claims

1. A catalytic composite comprising a crystalline aluminosilicate zeolite and an inorganic oxide comprising silica and alumina, said zeolite comprising between about 10% and about 90% by weight of said composite, said composite having pores with diameters within the range of between 25 and 250 angstroms, more than half the volume of said pores having a diameters greater than about 70 angstroms.

10. The catalytic composite of claim 1 manufactured by a method comprising:

(a) contacting an inorganic oxide containing alumina and silica with an acid;

(b) preparing a reaction mixture by mixing the contacted inorganic oxide from step (a) with water and an alkali metal hydroxide; and,

(c) reacting said reaction mixture for a period sufficient to produce from about 10% to about 90% by weight of the crystalline zeolite which may be produced theoretically from said reaction mixture.

4,343,724

HYDROCARBON DEHYDROGENATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 80,639, Oct. 1, 1979, Pat. No. 4,256,608, which is a continuation-in-part of Ser. No. 18,811, Mar. 7, 1979, Pat. No. 4,210,524, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Nov. 24, 1980, Ser. No. 209,552

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.³ B01J *23/64*

U.S. Cl. 252—466 B 13 Claims

1. A nonacidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of an alkali or alkaline earth component, an iron component and a platinum group component which is maintained in the elemental metallic state.

4,343,725

CLEANSERS FOR WINDOWS, MIRRORS AND REFLECTING SURFACES CONTAINING A HIGH MOLECULAR WEIGHT POLYOXYETHYLENE GLYCOL POLYMER

Eva Kiewert, Düsseldorf; Karlheinz Disch, Haan, and Jürgen Wegner, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,120

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840464

Int. Cl.³ C11D *1/58, 1/72*

U.S. Cl. 252—542 10 Claims

1. Aqueous-based cleansers for windows, mirrors and reflecting surfaces, free of builder salts and organic solvents consisting essentially of:

from 0.01% to 0.5% by weight of a water-soluble, nonionic polyoxyethylene glycol polymer having a molecular weight of between 300,000 and 4,000,000,

from 0.1% to 5% by weight of at least one water-soluble, synthetic surface-active compound selected from the group consisting of synthetic anionic surface-active compounds, nonionic surface-active compounds, cationic surface-active compounds, and compatible mixtures thereof,

from 0 to 5% by weight of water-soluble, alkaline-reacting compounds selected from the group consisting of alkali metal and ammonium hydroxides, alkali metal and ammonium carbonates, alkali metal and ammonium bicarbonates, monoalkylamines having 1 to 4 carbon atoms, dialkylamines having 1 to 4 carbon atoms in each alkyl, trialkylamines having 1 to 4 carbon atoms in each alkyl, mono-, di- and tri-alkylolamines having 2 to 4 carbon atoms in each alkylol, cycloalkylamines and morpholine,

from 0 to 1% by weight of customary auxiliary agents selected from the group consisting of odorants, colorants and preservatives,

and the remainder to 100% by weight of demineralized water.

4,343,726

LOW IRRITATING HIGH VISCOSITY DETERGENT COMPOSITION

Richard R. Egan, Worthington, and Phillip L. Cotrell, Urbana, both of Ohio, assignors to Sherex Chemical Company, Inc., Dublin, Ohio

Continuation-in-part of Ser. No. 36,706, May 7, 1979, Pat. No. 4,247,425, which is a continuation of Ser. No. 742,075, Sep. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 848,978, Nov. 7, 1977, abandoned, and a continuation-in-part of Ser. No. 49,835, Jun. 18, 1979, Pat. No. 4,256,611, which is a continuation of Ser. No. 942,074, Sep. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 795,342, May 9, 1977, abandoned. This application Feb. 7, 1980, Ser. No. 119,260

The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.

Int. Cl.³ C11D *1/12, 1/83*

U.S. Cl. 252—547 56 Claims

1. A detergent composition having low eye and skin irritation properties and capable of forming a high viscosity composition in water when the solids content is at least about 10% by weight comprising:

(a) adduct of ethylene oxide or mixtures of ethylene oxide and propylene oxide and a partial glycerol ester of a carboxylic fatty acid; wherein at least about 50% of said fatty acids have at least 16 carbon atoms, and wherein said adduct is from at least about 50 moles of ethylene oxide per mole of said glycerol ester; and provided that said adduct is from at least about 70 moles of ethylene oxide per mole of said glycerol ester when a mixture of ethylene oxide and propylene oxide containing less than about 85 mole percent of ethylene oxide based on the total of ethylene oxide and propylene oxide is employed; and

(b) anionic surface active agent, wherein the weight ratio of (a) to (b) is about 1:1 to about 4:1, respectively, and wherein said anionic surface-active agent is selected from the group of salts of higher alkyl sulfates, salts of higher alkyl ether sulfates, salts of higher alkyl benzene sulfonates, salts of higher alkyl sulfonates, and mixtures thereof.

4,343,727

POLYVINYL CHLORIDE SHOE SOLE MOLDING COMPOSITION CONTAINING CELLULOSIC FIBROUS FLOCK

Arnold Cohen, Cohasset, Mass., assignor to Reichhold Chemicals Incorporated, White Plains, N.Y.

Filed Oct. 24, 1979, Ser. No. 87,712

Int. Cl.³ C08L *1/02, 1/08*

U.S. Cl. 524—41 13 Claims

1. A polyvinyl chloride shoe sole injection molding composition for use in producing a flexible molded shoe sole having as a primary feature a dull non-glossy surface appearance, consisting of a polyvinyl chloride homopolymer resin containing from about 5 to about 30 parts of a natural organic cellulosic fibrous flock homogeneously dispersed therein having an average length of from about 30 to about 300 microns, and from about 75 to about 100 parts of plasticizer and from about 0.5 to about 1.5 parts of a stabilizer, all based upon 100 parts of polyvinyl chloride homopolymer resin.

4,343,728

PROCESS FOR PREPARING SOLUTION POLYMERIZATES OF ACRYLIC AND METHACRYLIC ESTERS AND THEIR USE AS FLOW-PROMOTING AGENTS IN LACQUERS

Helmut Eschwey, Michelstadt-Odenwald; Bernd Wegemund, Haan, and Wolfgang Gress, Wuppertal-Elberfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,555

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940042

Int. Cl.[3] C08K *5/05, 5/10*

U.S. Cl. 523—456 12 Claims

1. A process for improving the flow properties of a lacquer selected from the group consisting of two-component polyurethane or epoxy lacquers, lacquers based upon alkyd resins, and lacquers based upon polyvinyl chloride which comprises adding to said lacquer a flow improving amount of a solution polymerizate prepared by polymerizing acrylate or methacrylate monomers in a batch comprising said monomers and a solvent comprising a high-boiling alcohol of from 8 to 40 carbon atoms and from 1 to 6 hydroxyl group, said batch containing from about 15 to 85 percent by weight of said monomers, based upon the weight of the total batch.

4,343,729

ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

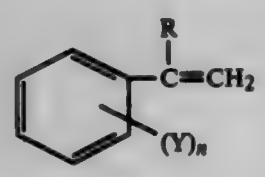
Division of Ser. No. 106,607, Dec. 26, 1979, Pat. No. 4,281,082, which is a division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Jan. 21, 1981, Ser. No. 227,005

Int. Cl.[3] C08L *33/24*

U.S. Cl. 524—529 12 Claims

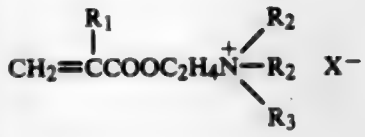
7. A process for preparing a latex of graft copolymer particles which comprises graft copolymerizing in aqueous media and in the presence of a free-radical initiator (1) at least one ethylenically unsaturated monomer (a) and at least one polyethylenically unsaturated monomer (b) in an amount at least sufficient to provide cross-linked graft copolymer particles, and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.),

said monomer (a) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alphachloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, said monomer (b) being selected from the group consisting of divinylbenzene; diallyl phthalate; ethylene glycol dimethacrylate; 1,3-butylene glycol dimethacrylate; 1,6-hexanediol dimethacrylate; polyethylene glycol dimethacrylate; polypropylene glycol dimethacrylate; trivinylbenzene; divinylnaphthalene; diallyl maleate; diallyl fumarate; trimethylol propane trimethacrylate; and pentaerythritol tetraacrylate, and said prepolymer (2) being the addition polymerization product of

(i) about 5 mole percent to 100 mole percent of a cationic monomer having the formula

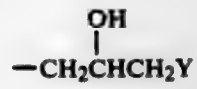


wherein

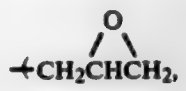
R_1 is hydrogen or methyl,

R_2 is hydrogen, or a C_1–C_4 alkyl,

R_3 is hydrogen, a C_1–C_4 alkyl,



where Y is hydroxyl or halogen,



or $+CH_2CH_2O)_nH$ where n is an integer 1 or more and X^- is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomers (1) employed.

4,343,730

WATER-IN-OIL EMULSIONS OF POLYMERS OF QUATERNARY AMMONIUM COMPOUNDS OF THE ACRYLAMIDO TYPE

Harold L. Becker, and Rudolf S. Buriks, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 9, 1981, Ser. No. 241,967

Int. Cl.[3] C08K *5/01*

U.S. Cl. 524—551 25 Claims

1. A stable emulsion of an aqueous internal phase in a non-aqueous external phase, said aqueous internal phase containing a homo- or a copolymer of an acrylamido alkylene quaternary ammonium salt.

4,343,731

EPOXY RESIN COMPOSITION AND PROCESS FOR PRODUCTION

Donald G. Pucci, Lafayette, and Ralph T. Everly, Coshocton, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1980, Ser. No. 221,004

Int. Cl.[3] C08K *5/05*

U.S. Cl. 523—427 9 Claims

1. An epoxy resin composition comprising the fusion product of:

(a) a diglycidyl ether of bisphenol A and

(b) a diglycidyl ether of bisphenol A containing a fusion catalyst with

(c) tetrabromobisphenol A, said glycidyl ethers (a) and (b) being in a weight ratio of from 2:1 to 2.5:1, respectively, said fusion product having an average molecular weight of between 500 and 700.

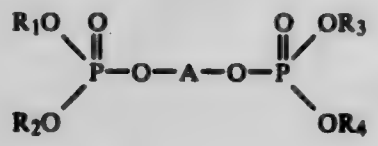
4,343,732

STABILIZED HALOGEN-CONTAINING RESIN COMPOSITIONS

Takashi Zama, Kawasaki; Koji Takeuchi, Yokohama; Masuo Yukutomi, Ayase, and Fumiyuki Ito, Kawaguchi, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Oct. 15, 1980, Ser. No. 197,157
Claims priority, application Japan, Oct. 24, 1979, 54/137246
Int. Cl.³ C08K *5/52*
U.S. Cl. 524—114 3 Claims

1. A stabilized composition, comprising:
a halogen-containing resin;
an organic phosphate ester having the formula:



wherein R_1, R_2, R_3, and R_4 independently represent a phenyl, C_1 to C_{10} alkyl-substituted phenyl, cyclohexyl, phenoxyethyl, or phenylethyl radical and A is the hydrocarbon residue of bisphenol A; and
a calcium-zinc or barium-zinc salt of a C_6 to C_{22} fatty acid,
wherein said organic phosphate ester is present in an amount of from 0.01 to 10 parts by weight per 100 parts by weight of said halogen-containing resin.

4,343,733

STABILIZED POLYMER COMPOSITIONS

Melvin F. Maringer, Cincinnati, Ohio, and Fred K. Morgan, Cold Springs, Ky., assignors to National Distillers & Chemical Corp., New York, N.Y.

Continuation-in-part of Ser. No. 38,957, May 14, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,487
Int. Cl.³ C08K *3/20, 3/26, 5/18, 5/34*
U.S. Cl. 524—87 11 Claims

1. A synergistic mixture for protecting polymers against heat degradation which comprises, by weight,
(a) about 5 to 25% of a N,N'-disubstituted-p-arylene diamine;
(b) about 15 to 60% of a 1,2-dihydro-2,2,4-trialkyl quinoline and polymers thereof; and
(c) about 25 to 75% of magnesium oxide, hydroxide or carbonate.

4. A polymer composition with improved protection against heat degradation containing a stabilizing amount of the synergistic mixture of claim 1 and wherein the polymer is selected from the group consisting of polyolefins, vinyls, olefinvinyl copolymers, polyamides, cellulosics and polyesters.

4,343,734

PROTEIN DIAGNOSTIC FOR ATHEROSCLEROSIS

Jane B. Lian, N. Weymouth; Robert J. Levy, Newton, and Paul M. Gallop, Chestnut Hill, all of Mass., assignors to The Children's Hospital Medical Center, Boston, Mass.

Filed Jan. 10, 1980, Ser. No. 111,115
Int. Cl.³ A61K *35/14, 37/02, 49/02;* C07G *7/00*
U.S. Cl. 260—112 B 16 Claims

1. A process of purifying a protein diagnostic for atherosclerosis, said protein having an amino residue composition as set forth in Table I, being derived from primate atherosclerotic tissue, having a molecular weight of about 80,000 as determined by SDS disc-gel electrophoresis at 14° C. with 15% acrylamide vertical slab gels, and having an isoelectric point between 4.16 and 4.30 as determined by isoelectric focusing at 2° C. on a horizontal slab isoelectric focusing apparatus using 4% acrylamide gels and an ampholyte mixture, at pH 4–6, while maintaining constant power at 8.0 watts for three hours, said process comprising the steps of
obtaining primate atherosclerotic tissue, and
separating out of said tissue a Gla-containing protein having a molecular weight of about 80,000.

14. A purified protein diagnostic for atherosclerosis, said protein having an amino residue composition as set forth in Table I, being derived from primate atherosclerotic tissue, having a molecular weight of about 80,000 as determined by SDS disc-gel electrophoresis at 14° C. with 15% acrylamide vertical slab gels, and having an isoelectric point between 4.16 and 4.30 as determined by isoelectric focusing at 2° C. on a horizontal slab isoelectric focusing apparatus using 4% acrylamide gels and an ampholyte mixture, at pH 4–6, while maintaining constant power at 8.0 watts for three hours.

4,343,735

PROCESS FOR THE PURIFICATION OF INTERFERON

Ulrich Menge; Michael Morr, both of Brunswick; Maria-Regina Kula, and Kristin Anastassiadis, both of Wolfenbüttel, all of Fed. Rep. of Germany, assignors to Gesellschaft fur Biotechnologische Forschung mbH (GBF), Braunschweig-Stockheim, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 200,015
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2943016
Int. Cl.³ C07C *103/52;* A61K *45/02*
U.S. Cl. 260—112 R 16 Claims

1. A process for the purification of interferon consisting essentially of (1) partitioning interferon in an aqueous multiphase system in the presence of at least one ion exchanger which is soluble in said system selected from the group consisting of (a) polyoxyalkylene glycols and (b) reaction products of polyhydric alcohols with alkylene oxides, which ion exchanger contains at least one carbon-bound group $—S_{0-1}—Z$, wherein —S—Z is a member selected from the group consisting of:
$—NH—(CH_2)_{1-14}—Z$,
$—O—(CH_2)_{1-14}—Z$,
$—NH—CO—(CH_2)_{1-14}—Z$,
$—NH—(CH_2)_{1-14}—NH—CO—(CH_2)_{1-3}—Z$,
$—NH—CH_2—CH_2—(O—CH_2—CH_2)_{1-4}—Z$ and
$—O—CO—(CH_2)_{1-13}—Z$ and
—Z is a member selected from the group consisting of:
$—P(O)(OH)_2$,
$—O—P(O)(OH)_2$,
$—O—P(S)(OH)_2$,
$—S—P(O)(OH)_2$ and
their salt forms, (2) separating the phases including an interferon containing phase and (3) recovering purified interferon from said interferon containing phase.

4,343,736

PROCESS FOR RECOVERING INTERFERON

Yahiro Uemura, Hirakata; Hirofumi Arimura, Toyonaka; Hiroshi Morise, Hirakata; Satoshi Funakoshi, Katano, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Division of Ser. No. 175,744, Aug. 6, 1980, Pat. No. 4,314,935. This application Jul. 6, 1981, Ser. No. 280,687
Claims priority, application Japan, Oct. 5, 1979, 54-128513
Int. Cl.³ A61K *45/02;* C07G *7/00*
U.S. Cl. 260—112 R 7 Claims

1. A process for recovering interferon, which comprises contacting a solution containing interferon produced by the induced cells of human origin with a water-insolubilized heparin to allow the interferon to be adsorbed on the water-insolubilized heparin and then eluting the interferon with an aqueous solution containing an inorganic salt and chondroithin sulfate.

4,343,737

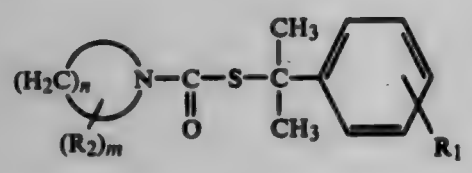
PROCESS FOR PRODUCTION OF THIOLCARBAMATES AND THE THIOLCARBAMATES OBTAINED BY SAID PROCESS

Kazuhiko Konno; Atsushi Goh, and Kunio Uchimura, all of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Japan

Filed Mar. 25, 1981, Ser. No. 247,502
Claims priority, application Japan, Mar. 31, 1980, 55/40307
Int. Cl.³ C07D *211/60, 207/24, 209/32;* C07C *155/02*
U.S. Cl. 260—239 BF 16 Claims

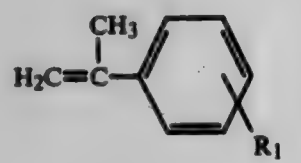
1. A process for producing a thiolcarbamate compound of the following formula

(IV)



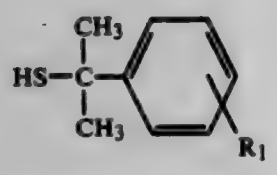
wherein R_1 represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a halogen atom or a nitro group, R_2 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, m is 1 or 2, and n is an integer of 4 to 6, which comprises reacting an α-methylstyrene of the following formula

(I)



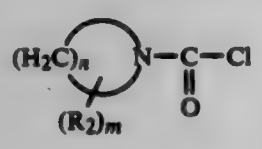
wherein R_1 is as defined above,
or its dimer with hydrogen sulfide in the presence of P_2S_5 or P_4S_7 as a catalyst to form a mercaptan of the following formula

(II)



wherein R_1 is as defined above,
and reacting the mercaptan of formula (II) with a carbamoyl chloride of the following formula

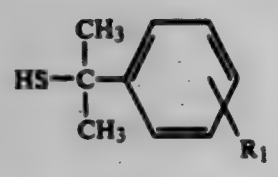
(III)



wherein R_2, m and n are as defined.

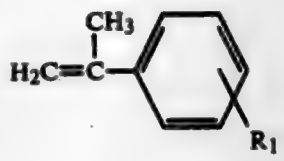
16. A process for producing a mercaptan of the formula

(II)



wherein R_1 represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a halogen atom or a nitro group, R_2 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, m is 1 or 2, and n is an integer of 4 to 6, which comprises reacting an α-methylstyrene of the following formula

(I)



wherein R_1 is as defined above,
or its dimer with hydrogen sulfide in the presence of P_2S_5 or P_4S_7 as a catalyst.

4,343,738

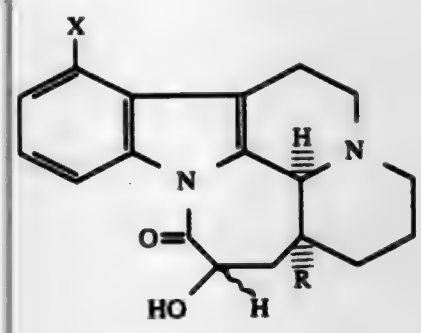
HALOGENATED 15-HYDROXY-E-HOMOEBURANE DERIVATIVES

Csaba Szantay; Lajos Szabo; György Kalaus; Lajos Dancsi; Tibor Keve, and Ferenc Drexler, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

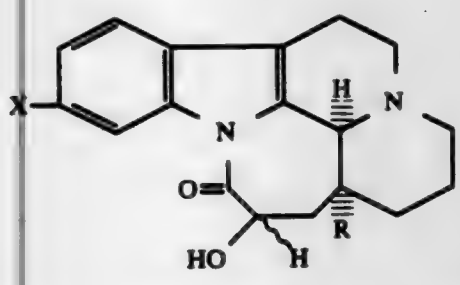
Continuation-in-part of Ser. No. 175,385, Aug. 5, 1980, Pat. No. 4,285,865, and a continuation-in-part of Ser. No. 168,560, Jul. 14, 1980, Pat. No. 4,314,939. This application Dec. 16, 1980, Ser. No. 216,903
Claims priority, application Hungary, Aug. 6, 1979, RI-721
The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.
Int. Cl.³ C07D *471/22*
U.S. Cl. 260—239.3 P 5 Claims

1. A halogenated 15-hydroxy-E-homoeburnane of the formulae (Ia) or (Ib),

(Ia)



(Ib)



wherein R is a C_{1-6} alkyl group and X is halogen, or an acid addition salt or optically active isomer thereof.

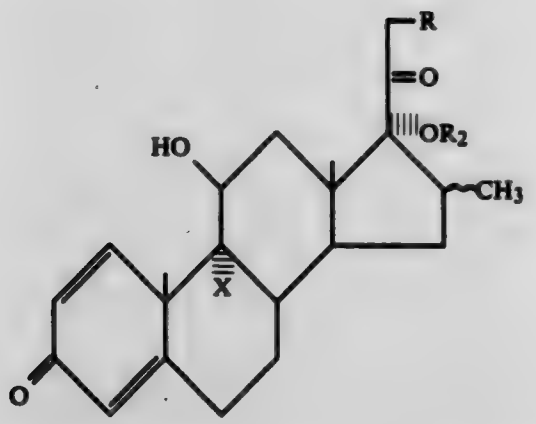
4,343,739

PROCESS OF SELECTIVE SOLVOLYSIS

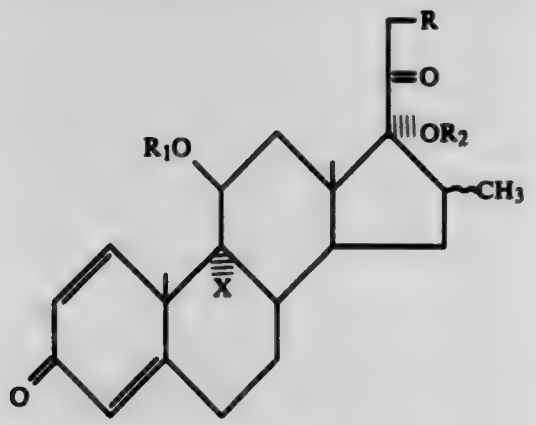
Ivan Villax, Lisbon, and Philip R. Page, Parede, both of Portugal, assignors to Plurichemie Anstalt, Vaduz, Liechtenstein

Filed May 27, 1981, Ser. No. 267,553
Claims priority, application Portugal, May 27, 1980, 71309
Int. Cl.³ C07J *5/00*
U.S. Cl. 260—397.45 9 Claims

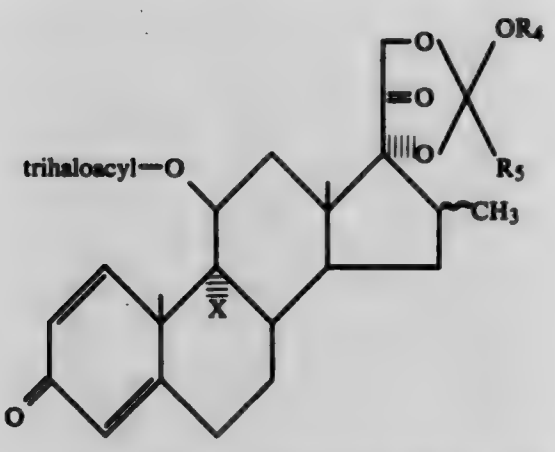
1. A process for the solvolysis at 11 of an 11β-trihaloacyl-16-methylcorticosteroid to form an ester of the formula



wherein the methyl group is in the 16α- or 16β-position, R is hydrogen or OR_3, X is hydrogen or fluorine, R_2 is acyl and R_3 is a hydrogen or an aliphatic acyl group of 2 to 5 carbon atoms which comprises solvolysing an ester of the formula



or a cyclic ortho-ester thereof of the formula



wherein R_1 is hydrogen or a trihaloacyl group, R_4 is alkyl of 1 to 3 carbon atoms and R_5 is alkyl of 1 to 16 carbon atoms, aralkyl of 7 or 8 carbon atoms or phenyl with a catalytic quantity of sodium methoxide in an anhydrous medium.

4,343,740

HYDROXYLALKYL HYDROXY-AROMATIC CONDENSATION PRODUCTS AS FUEL AND LUBRICANT ADDITIVES

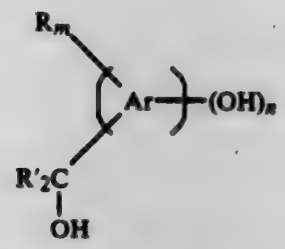
Charles P. Bryant, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 123,613, Feb. 22, 1980, Pat. No. 4,285,824, which is a continuation-in-part of Ser. No. 5,623, Jan. 22, 1979, Pat. No. 4,205,960, which is a division of Ser. No. 901,173, Apr. 28, 1978, Pat. No. 4,163,730, which is a division of Ser. No. 678,101, Apr. 19, 1976, Pat. No. 4,108,784, which is a continuation-in-part of Ser. No. 459,750, Apr. 9, 1974, abandoned. This application Jul. 1, 1981, Ser. No. 279,399

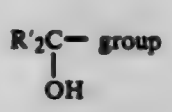
Int. Cl.³ C07D *207/00*

U.S. Cl. 260—326.5 FM **13 Claims**

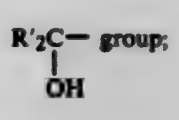
1. An additional concentrate comprising about 20 to 90 percent of a condensation product made by the process comprising reacting (A) at least one alpha hydroxyalkyl hydroxy-aromatic compound of the general formula



wherein Ar is a hydrocarbyl aromatic nucleus of 6 to about 30 carbon atoms, said aromatic nucleus substituted with 1 to 3 lower alkoxy, lower alkylthio, chloro, or nitro substituents, each R is a nonfused hydrocarbyl group of about 25 to about 700 carbon atoms, each R′ is independently a hydrogen atom, an alkyl group of 1 to 36 carbon atoms, or a halogen-substituted alkyl group of 1 to about 36 carbon atoms, n is 1 to 3 and m is 1 to 5 with the provisos that (i) the total number of carbon atoms in the R′ groups does not exceed 36 and (ii) where m exceeds 1, one of the R groups can also be a



with (B) at least one hydrocarbyl, alpha-beta olefinically unsaturated compound selected from the group consisting of C_{2-40} nitriles, and ammonium and metal salts of C_{2-40} carboxylic acids, the reaction of (A) with (B) resulting in the formation of a carbon-to-carbon bond, said bond including the carbon of at least one



and an inert solvent/diluent.

4,343,741

CHIRAL PHOSPHINES

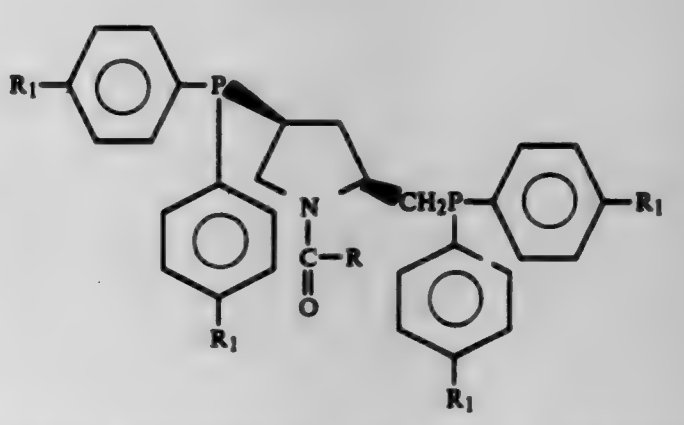
John M. Townsend, Morris, Conn., and Donald Valentine, Jr., Santa Clara, Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 22, 1981, Ser. No. 256,378

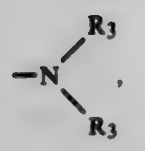
Int. Cl.³ C07D *207/10, 307/32*

U.S. Cl. 548—412 **15 Claims**

1. A compound of the formula:

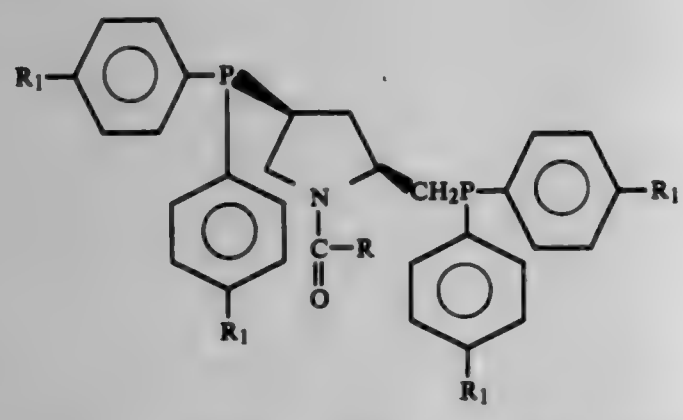


wherein R is tertiarybutoxy, and R_1 is lower alkyl, lower alkoxy or

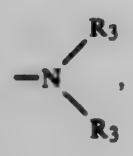


and R_3 is lower alkyl.

5. A complex of rhodium with an optically active phosphine of the formula:

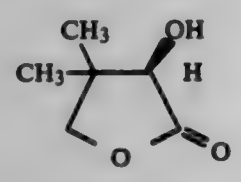


wherein R is tertiarybutoxy and R_1 is lower alkyl, lower alkoxy or

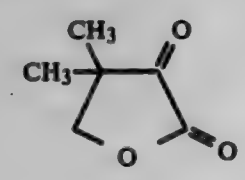


and R_3 is lower alkyl.

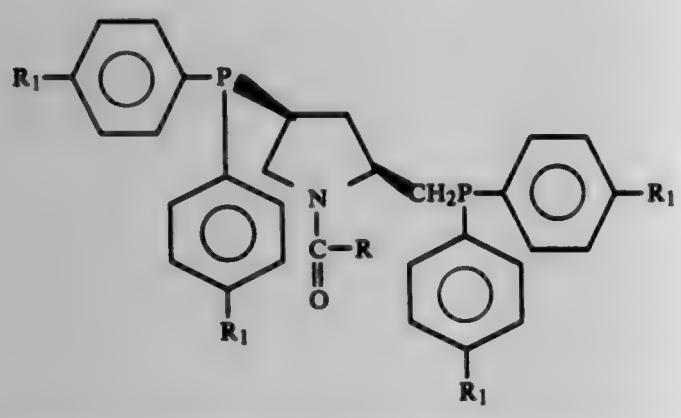
9. A process of enantioselectively producing a compound of the formula:



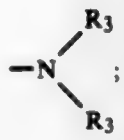
comprising hydrogenating in an organic solvent medium a compound of the formula:



in the presence of a catalyst wherein said catalyst is a rhodium complex of a phosphine of the formula:



wherein R is tertiarybutoxy and R_1 is lower alkyl, lower alkoxy or



and R_3 is lower alkyl.

4,343,742

PROCESS FOR THE MANUFACTURE OF 2,3-PERFLUORO-1,4-DIOXANES AS WELL AS SOME SPECIAL REPRESENTATIVES OF COMPOUNDS OF THIS CLASS

Herbert Muffler, Frankfurt am Main; Günter Siegemund, Hofheim am Taunus, and Werner Schwertfeger, Butzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main

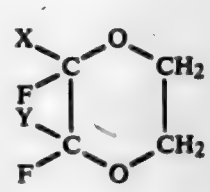
Continuation-in-part of Ser. No. 167,404, Jul. 11, 1980, abandoned. This application Jan. 14, 1981, Ser. No. 225,150

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928602

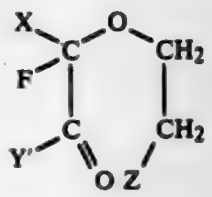
Int. Cl.³ C07D *319/12*

U.S. Cl. 549—380 **6 Claims**

1. A process for the manufacture of a 2,3-perfluoro-1,4-dioxane of the formula



wherein each of X and Y independently of the other is F or CF_3, which comprises reacting a carbonyl compound of the formula



wherein

X has the same meaning as above,

Y′ is F, CF_3 or Cl, and

Z is Cl, OSO_2CH_3 or $OSO_2C_6H_4—CH_3$(-p) with at least one alkali metal fluoride, ammonium fluoride or combination thereof in an amount of at least about 1 mol of fluoride or combination of fluorides/mol of carbonyl compound if Y′ is F or CF_3 or of at least about 2 mols of fluoride or combination of fluorides/mol of carbonyl compound if Y′ is Cl, at a temperature of from about 20 to about 200° C. and normal or elevated pressure in an aprotic polar solvent for a time of from about 5 to 35 hours.

4,343,743

NOVEL POLYESTERAMIDES HAVING LOW GLASS TRANSITION TEMPERATURES

Jean Coquard, Grezieu la Varenne, and Jean Goletto, Ecully, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 5, 1980, Ser. No. 213,472

Claims priority, application France, Dec. 10, 1979, 79 30650

Int. Cl.³ C09J *3/16*

U.S. Cl. 260—404.5 **19 Claims**

1. A random or regularly recurring block polyesteramide having a glass transition temperature of −30° C. or less, which comprises the polymerization product of (i) essentially difunctional monomers comprising at least one carboxylic acid func-

tion, or ester/amide-forming derivative thereof, at least 1 mol % of which comprising dicarboxylic acids or such derivatives thereof and having from 20 to 60 carbon atoms, with the amount of monofunctional carboxylic acids comprising said carboxyl monomers being less than about 1% by weight and the amount of carboxylic acids having in excess of two functional groups being less than about 5% by weight, and (ii) a member selected from group consisting of dihydroxyl and diamino comonomers therefor, or aminoalcohol comonomers, or mixtures of diamino and aminoalcohol comonomers.

4,343,744

PROCESS FOR SEPARATING A SPECIFIED COMPONENT CONTAINED IN A MIXTURE OF MULTIPLE FATTY COMPONENTS FROM THE MIXTURE THEREOF

Jun Kawai, Hachioji; Hidekazu Bessyo, Yokohama, and Hidehiko Hibino, Tokyo, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,742
Claims priority, application Japan, Jan. 7, 1980, 55-29
Int. Cl.³ C11B *7/00*
U.S. Cl. 260—412.1 **10 Claims**

1. A process for fractionating a starting mixture of crystallizable fatty components, which comprises the steps of:

(a) cooling the entirety of said starting mixture, free of solvent, with an ultra-low temperature refrigerant to solidify the entirety of said starting mixture and produce a brittle, solid, granular product;

(b) raising the temperature of said granular product to a first temperature which corresponds to or is slightly higher than the freezing point of the component of said starting mixture having the lowest freezing point, thereby melting a first fraction containing, as its main component, said component of said starting mixture that has the lowest freezing point, while retaining the remainder of said granular product as a first solid phase; and

(c) then separating said molten, first fraction from said first solid phase and recovering said first fraction.

4,343,745

PROCESS FOR SOLUBILIZING ORGANIC OR MINERAL SALTS IN ORGANIC SOLVENTS

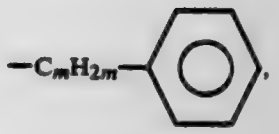
Gerard Soula, Meyzieu, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Feb. 29, 1980, Ser. No. 125,775
Claims priority, application France, Mar. 2, 1979, 79 05438
Int. Cl.³ C07F *5/06*; C07C *85/16, 87/20*
U.S. Cl. 260—429 J **49 Claims**

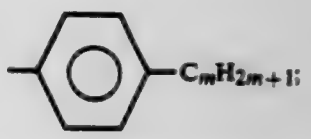
1. A process for solubilizing an organic or mineral salt in an organic solvent in which the organic or mineral salt is initially not soluble, or for increasing the solubility of an organic or mineral salt in an organic solvent, said process comprising contacting said organic or mineral salt of the formula A^-M^+, wherein A^- is a mineral or organic anion and M^+ is a cation selected from the group consisting of the cation NH_4^+ and its derivatives, and the cations derived from the metals of the groups I_A, II_A, III_A, IV_A, V_A, VI_A, VII_A, VIII, I_B, II_B, III_B, IV_B and V_B of the periodic table, with at least one sequestering agent, said sequestering agent being soluble in said organic solvent and having the formula:

$$N[CHR_1—CHR_2—O—(CHR_3—CHR_4—O)_n—R_5]_3 \quad (I)$$

wherein n is an integer from 0 to 10 inclusive; R_1, R_2, R_3 and R_4, which can be the same or different, are each a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms; R_5 is a radical selected from the group consisting of an alkyl radical having 1 to 12 carbon atoms, a cycloalkyl radical having 3 to 12 carbon atoms, a phenyl radical, a radical of the formula



and a radical of the formula



and m is an integer from 1 to 12 inclusive; said sequestering agent of formula (I) and said organic or mineral salt forming a complex of the formula:

$$[N—[CHR_1—CHR_2—O—(CHR_3—CHR_4—O)_n—R_5]_3](M^+A^-) \quad (II)$$

wherein y is greater than or equal to 1 and less than or equal to 3, and R_1, R_2, R_3, R_4, R_5, n, M^+ and A^- are defined as above, said complex of formula (II) being soluble in said organic solvent.

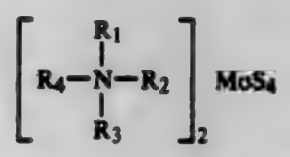
4,343,746

QUATERNARY AMMONIUM THIOMOLYBDATES

James R. Anglin, Gibsonia; Yumi P. Ryu, Murrysville, and Gary M. Singerman, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 10, 1980, Ser. No. 214,972
Int. Cl.³ C07F *11/00*
U.S. Cl. 260—429 R **11 Claims**

1. The quaternary ammonium thiomolybdate having the formula



wherein R_1 is alkyl or alkenyl having from one to about 30 carbon atoms; R_2 and R_3 are independently selected from alkyl and alkenyl having from about 8 to about 30 carbon atoms; R_4 is alkyl or alkenyl having from one to about 20 carbon atoms and the total number of carbon atoms in R_1, R_2, R_3 and R_4 is between about 25 and about 80.

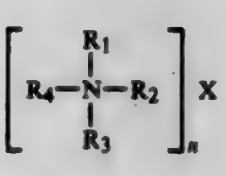
4,343,747

PREPARATION OF QUATERNARY AMMONIUM THIOMOLYBDATES

Yumi P. Ryu, Murrysville; Gary M. Singerman, Monroeville, and James R. Anglin, Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 5, 1980, Ser. No. 213,676
Int. Cl.³ C07F *11/00*
U.S. Cl. 260—429 R **10 Claims**

1. The method of making quaternary ammonium thiomolybdates in a two-phase reaction system which comprises contacting an aqueous solution of a water-soluble thiomolybdate salt with a solution of a quaternary ammonium salt having the formula



where R_1, R_2 and R_3 are independently selected from alkyl or alkenyl having from one to about 30 carbon atoms; R_4 is se-

lected from alkyl or alkenyl having from about 5 to about 30 carbon atoms, and benzyl; the total number of carbon atoms in R_1, R_2, R_3 and R_4 is between about 20 and about 80; n is the valence of X; and X is selected from chlorine, bromine, iodine, sulfate, hydrogen sulfate and lower alkyl sulfate; in a water-immiscible organic solvent selected from aliphatic hydrocarbons having from about five to about 20 carbon atoms, halogenated aliphatic hydrocarbons having from about one to about two carbon atoms, aromatic hydrocarbons and halogenated aromatic hydrocarbons having from six to about eight carbon atoms, alkyl esters of aliphatic carboxylic acids having from about four to about seven carbon atoms, aliphatic ketones having from about five to about ten carbon atoms, alkyl ethers having from about four to about eight carbon atoms, and mixtures thereof; wherein the solubility of said quaternary ammonium salt in said organic solvent is at least about five times its solubility in water; and recovering the quaternary ammonium thiomolybdate produced thereby in the said organic solvent and the by-product salt in the aqueous solution.

4,343,758
Patent Not Issued For This Number

4,343,749

PROCESS FOR THE PREPARATION OF MONOHYDROPERFLUOROALKANE-SULFONIC ACID HALIDES AND SOME SPECIFIC REPRESENTATIVES OF THIS CLASS OF COMPOUND

Günter Siegemund, Hofheim am Taunus, and Werner Schwertfeger, Butzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 300,918
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034537
Int. Cl.³ C07C *143/70*
U.S. Cl. 260—543 F **5 Claims**

1. A process for the preparation of a monohydroperfluoroalkanesulfonic acid halide of the formula I

$$R_f-\underset{\underset{H}{|}}{CF}-(CF_2)_n-SO_2X \qquad (I)$$

in which R_f denotes F or perfluoroalkyl with 1–10, preferably 1–8 and in particular 1–3, C atoms, X denotes Cl or F and n denotes a number from 1 to 7, which comprises

(a) reacting a monohydroperfluoroalkanesulfonic acid of the formula II

$$R_f-\underset{\underset{H}{|}}{CF}-(CF_2)_n-SO_3H \qquad (II)$$

in which R_f and n have the same meaning as in formula I, with pyrocatechol-phosphorus trichloride to give the monohydroperfluoroalkanesulfonic acid chloride of the formula I in which X=Cl, and

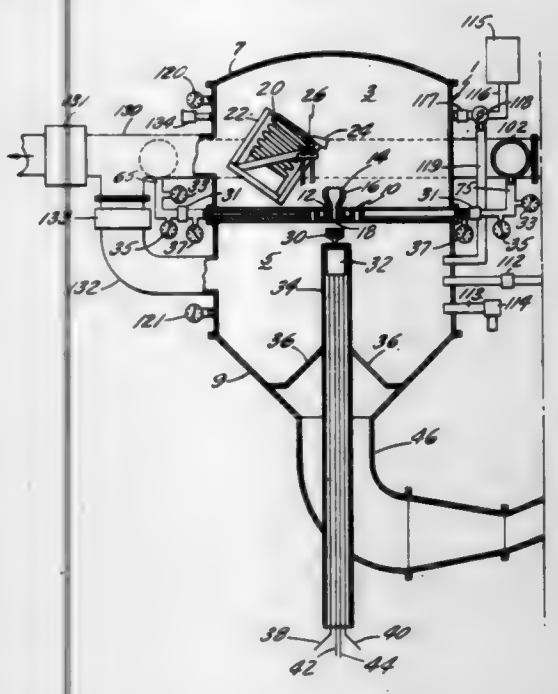
(b) if desired, then reacting this compound further with at least one alkali metal fluoride and/or an alkali metal hydrogen fluoride, preferably in an aprotic, polar solvent, to give the monohydroperfluoroalkanesulfonic acid fluoride of the formula I in which X=F.

4,343,750

METHOD FOR PRODUCING METAL POWDER

Paul R. Holiday, Palm Beach Gardens, and Robert J. Patterson, II, Lake Park, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 853,077, Nov. 21, 1977, abandoned, which is a continuation of Ser. No. 654,247, Jan. 30, 1976, abandoned. This application Apr. 25, 1979, Ser. No. 33,272
Int. Cl.³ B01J *2/04*
U.S. Cl. 264—8 **10 Claims**



1. A method of producing metal particulate including the steps of:

(1) forming a continuous annular flow of gaseous cooling fluid, said annular flow of gaseous cooling fluid being made up of a plurality of annular adjacent flow sections of gaseous cooling fluid at different annular locations with each having a mass flow;

(2) melting metal to form a supply of molten metal;

(3) projecting the molten metal outwardly from within said annular flow of said gaseous cooling fluid as liquid droplets into said annular flow of gaseous cooling fluid solidifying said liquid droplets into metal particles, each projected liquid droplet and resulting metal particle having a cooling rate as it passes through each annular adjacent flow section of gaseous cooling fluid;

(4) individually controlling the mass flow of each of a plurality of said individual annular adjacent flow sections of gaseous cooling fluid so that the annular flow has a plurality of its individual annular flow sections each with a selected mass flow to control the cooling rate of each projected liquid droplet and resulting solidified metal particle at different annular locations as it passes through the annular flow of gaseous cooling fluid; and

(5) collecting said solidified metal particles.

4,343,751

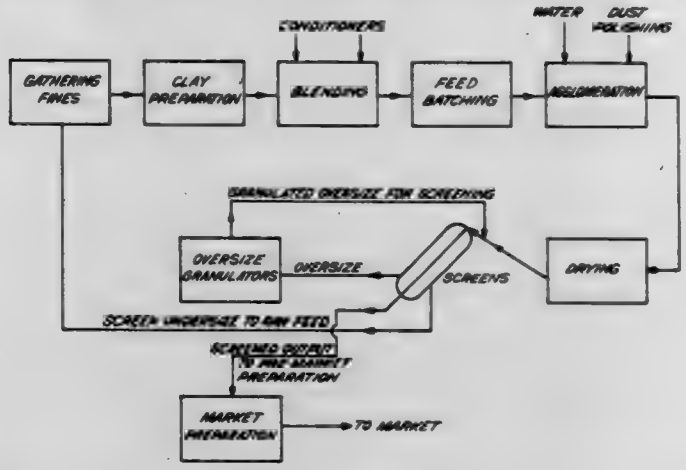
CLAY AGGLOMERATION PROCESS

Naresh Kumar, Cassopolis, Mich., assignor to Lowe's, Inc., South Bend, Ind.

Filed Sep. 15, 1980, Ser. No. 186,836
Int. Cl.³ B01J *2/12*
U.S. Cl. 264—37 **28 Claims**

1. An agglomeration process for producing clay pellets from clay fines material, comprising the steps of preparing the clay fines material for agglomeration, mixing said prepared clay fines material and water to form a wet aggregate of discrete particles, subjecting said aggregate to a rolling action for a time sufficient to form soft pellets therefrom of a predetermined size and of a general spherical shape, subjecting said pellets to an elevated temperature for a period of time suffi-

cient to remove most of the water added in forming said aggregate, thereby to form a mass of substantially dry, firm and



frangible pellets, and screening said mass of pellets to separate the pellets of predetermined size from other size pellets present in said mass.

4,343,752

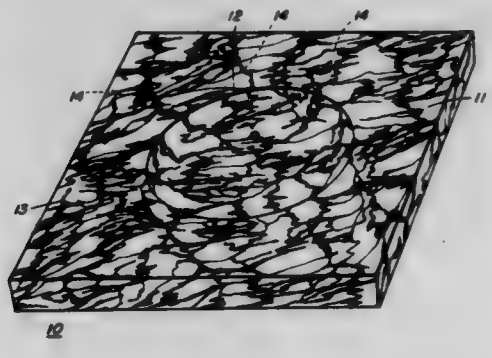
SYNTHETIC ONYX AND METHOD

Irving Cann, c/o Roman Marble, Inc., 15 Rustfield St., Boston, Mass. 02119

Continuation of Ser. No. 965,078, Nov. 30, 1978, abandoned. This application Aug. 22, 1980, Ser. No. 180,461

Int. Cl.[3] B29C *9/00*

U.S. Cl. 264—71 5 Claims



1. The method of preparing decorative material, comprising:

(A) preparing a matrix of a mixture of filler particles, polymerizable resin and polymerization catalyst, tending to polymerize said resin,;

(B) depressing coloring material into said matrix;

(C) placing separate portions of said colored matrix in mounds on the surface of a mold, said mounds being separated from each other;

(D) vibrating said mounds to cause them to flow together, said matrix portions extending over said mold surface; and

(E) allowing said extended matrix to harden to produce said decorative material with colored markings formed in veins within said matrix in a wavy, smoothly flowing, variegated pattern contrasting with said matrix.

4,343,753

METHOD FOR FINISHING A TUBULAR FELTED SLEEVE

Michael A. Winson, Bury, England, assignor to Webron Products Limited, Rossendale, England

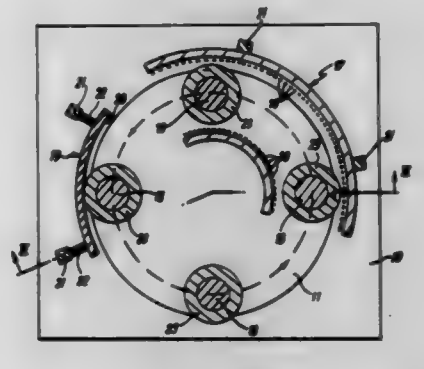
Continuation-in-part of Ser. No. 20,700, Mar. 15, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,314

Claims priority, application United Kingdom, Dec. 24, 1977, 53910/77

Int. Cl.[3] D04H *5/00*

U.S. Cl. 264—119 4 Claims

1. A method of finishing a needle-felted tubular sleeve having exposed outer fibres, comprising placing the sleeve over a cylindrical support mounted for rotation relative to a base, rotating the support and sleeve while moving the base to cause the sleeve to pass a heat source and have its outside surface



uniformly heated by the heat source to cause partial melting of the outer fibres of its outside surface, allowing the sleeve to cool, and removing it from the support.

4,343,754

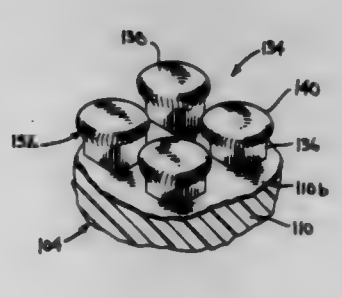
PROCESS AND APPARATUS FOR MOLDING LINERS IN CONTAINER CLOSURES

Sheldon L. Wilde; Thomas J. McCandless, both of Crawfordsville, and Robert M. Saunders, Ladoga, all of Ind., assignors to H-C Industries, Inc., Crawfordsville, Ind.

Filed Sep. 21, 1979, Ser. No. 77,584

Int. Cl.[3] B29D *9/08, 7/16*

U.S. Cl. 264—154 56 Claims



1. A process of making a composite closure for a container, comprising the steps of:

forming a plastic cap having a top wall portion with a depending annular skirt and a plurality of plastic liner-engaging pedestals integrally extending from said top wall portion in the direction of said skirt, each of said plastic liner-engaging pedestals being spaced from each other to define liner-receiving passageways therebetween, said plastic liner-engaging pedestals including a series of pedestals extending generally across said top wall portion of said cap;

depositing molten liner-forming plastic into said liner-receiving passageways of said plastic cap;

compression molding said liner-forming plastic against said plastic liner-engaging pedestals and said top wall portion of said cap so that said liner-forming plastic flows upon and engages said pedestals and said top wall portion of said cap to form a plastic liner in said plastic cap.

4,343,755

PROCESS FOR EXTRUDING ETHYLENE POLYMERS

John C. Miller, Piscataway, and Archibald L. Burnett, Warren, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 940,005, Sep. 6, 1978, abandoned. This application Aug. 8, 1979, Ser. No. 64,399

Int. Cl.[3] B28B *3/20*

U.S. Cl. 264—176 R 16 Claims

1. A process comprising forming an extrudate from a rapidly

melting ethylene polymer which experiences slow shear thinning by melt extruding said polymer through an extruder



having an extrusion screw with a length to diameter ratio of between about 15:1 to 21:1.

4,343,756

PROCESS FOR THE PRODUCTION OF CAST FILMS FROM POLYARYL SULPHONE/POLYCARBONATE MIXTURES

Hans-Leo Weber, Rommerskirchen; Eckart Reese, Dormagen; Hans Kaloff, Dormagen, and Hans-Josef Fausten, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,583

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948673

Int. Cl.³ B29D *7/02*

U.S. Cl. 264—216 **2 Claims**

1. In the process for the production of cast films from mixtures of 90 to 60% by weight of a linear polyaryl sulphone having weight-average molecular weight of 15,000 to 55,000 and 10 to 40% by weight of a linear polycarbonate having a weight average molecular weight of 65,000 to 120,000, the improvement comprising

(i) stabilizing the solution of the polymer mixture by adding thereto 5 to 30% by weight, relative to the weight of the solid polymer mixture, a solubilizing agent selected from the group consisting of ethylene-glycol-monomethylether and toluene said solution of the polymer mixture comprising a mixture of a solution of said polyaryl sulphone in a solvent selected from the group consisting of methylene chloride, ethylene chloride, trichloroethane and chloroform and a solution of said polycarbonate in a solvent selected from the group consisting of methylene chloride, ethylene chloride, trichlorethane, chloroform, m-cresol and pyridine; and

(ii) stretching the dried cast film at a stretching ratio between 1:2 and 1:5 at a temperature above the glass transition temperature of said polyaryl sulphone/polycarbonate mixture.

4,343,757

METHOD OF MAKING GAME RACKET FRAME

Frank W. Popplewell, Saffron Walden, England, assignor to Dunlop Limited, London, England

Filed Aug. 12, 1980, Ser. No. 177,401

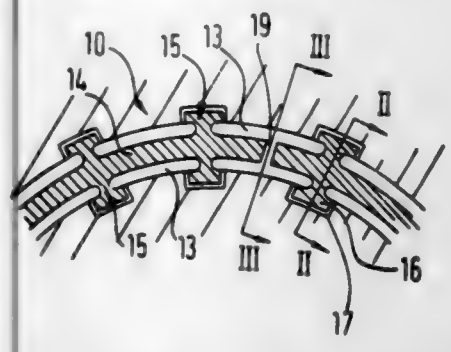
Claims priority, application United Kingdom, Aug. 24, 1979, 7929590

Int. Cl.³ B29C *1/14*; B29D *23/02, 12/00*

U.S. Cl. 264—221 **11 Claims**

1. A method of making a frame for a games racket, the frame comprising a head and a shaft, in which at least said head is formed by the method comprising:

positioning a fusible core inside a suitable mould whereby a space is defined between said core and the internal walls of the mould, said space corresponding to said head, injecting into said space thermoplastics material reinforced by short discrete lengths of fiber material randomly dispersed therein, said core having a melting point below the injection temperature, shaping said core to have a plurality of locating lugs which abut against said internal walls of the mould and hold said core in the desired position against the injection pressures, allowing the moulding to set and then raising the temperature to an amount sufficient to melt said fusible core but insufficient to melt or deform the moulding.



4,343,758

CUT GLASS WINDOW PANE

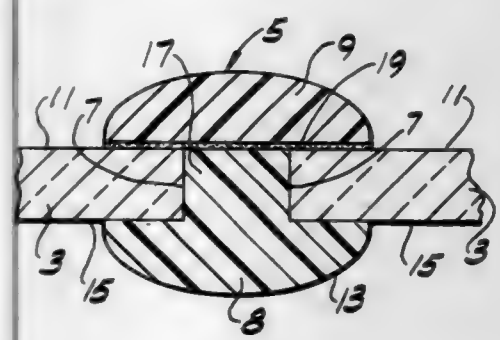
Charles D. Goralnik, 200 Brynwyck Pl., St. Louis County, Mo. 63141

Continuation-in-part of Ser. No. 54,169, Jul. 2, 1979, Pat. No. 4,217,326. This application Feb. 20, 1980, Ser. No. 123,018

The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.

Int. Cl.³ B29C *9/00*; B44F *1/06*

U.S. Cl. 264—254 **12 Claims**



1. A method of making a window pane comprising a cut glass panel including a plurality of glass pieces and cames of synthetic resin arranged in a predetermined pattern between adjacent edges of the glass pieces and having flanges on both sides of the window pane; said method comprising:

providing a mold of an elastomeric material which is nonreactive with the synthetic resin, the mold having grooving in its upper surface in the pattern of the cames,

introducing moldable synthetic resin into the grooving in the mold to fill the grooving, the grooving being of a cross sectional shape corresponding to the cross sectional shape of the flanges;

allowing the synthetic resin to set in the mold to form the flanges for one side of the window pane;

removing said flanges from the mold;

thereafter positioning the glass pieces on the same mold with the edges of each glass piece spaced from the edges of the adjacent glass pieces in the predetermined pattern, the spaces between adjacent glass pieces being in register with the grooving;

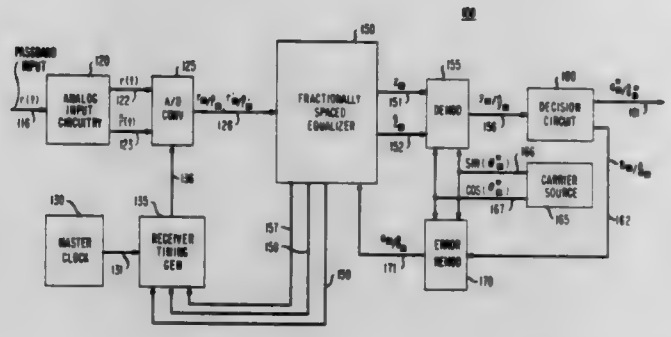
introducing sufficient moldable synthetic resin between the edges of the glass pieces to fill the grooving and to fill the spaces between the adjacent glass pieces; and

allowing the synthetic resin to set in the grooving to form the flanges for the other side of the window pane, and to set in the spaces between the glass pieces to form the webs of the cames, the flanges for said one side of the window pane being bonded in place on said one side of the window pane in register with the flanges on the other side of the window pane.

4,343,759
EQUALIZER SECTION

George J. Kustka, Ocean, and Steven J. Sipek, Brick, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 10, 1980, Ser. No. 196,158
Int. Cl.³ H04L *25/03*
U.S. Cl. 375—14 11 Claims



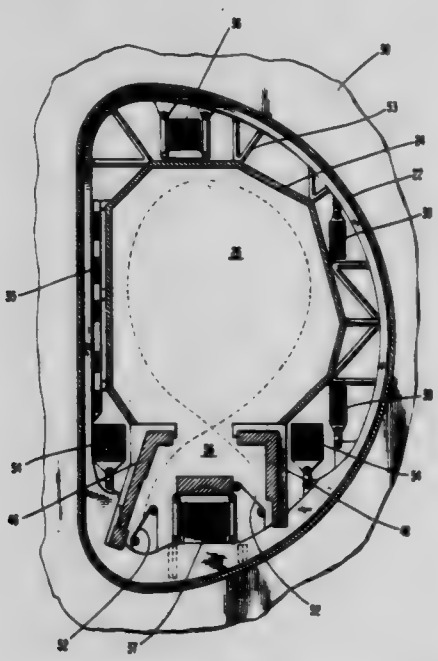
1. Data receiver circuitry of the type which generates an equalized signal in response jointly to an input signal and the values of an ordered plurality of coefficients, said circuitry generating at least a first control signal which is a function of the location in said ordered plurality of an individual one of said coefficients which meets a predetermined criterion, said circuitry including a plurality of sections (220, 240, 260, 280) each of which stores respective ones of said coefficients,

characterized in that each section includes means (600, 680) for making a determination as to whether said one coefficient is stored in that section and means (500 or 620, 640, 661) for generating said control signal if said one coefficient is determined to be stored in that section.

4,343,760
DIVERTOR TARGET FOR MAGNETIC CONTAINMENT DEVICE

Theodore E. Luzzi, Jr., Garden City, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 14, 1979, Ser. No. 93,952
Int. Cl.³ G21B *1/00*
U.S. Cl. 376—134 6 Claims



1. In a magnetic field containing device of the type including a toroidal-shaped vacuum vessel adapted to contain a plasma, first electromagnetic coil means distributed in proximity to said vessel for shaping the plasma within said vessel, and second electromagnetic coil means for diverting a scrape-off flux from an outer region of said plasma to a divertor region for removal by a vacuum producing means of impurities within the plasma; the improvement comprising:

toroidal vacuum vessel means having contained therein a vacuum including a divertor region and a magnetically diverted scrape-off plasma flux;

input and output parallel headers having fluid coolant means forming modules circumferentially coupled together within the vacuum vessel vacuum of the divertor region and:

a target, comprising an array of spaced-apart, swirl tube means in the vacuum vessel vacuum of the divertor region arranged in a plane to form a ladder configuration between the input and output parallel headers;

said swirl tube means being positioned within the path of the scrapeoff plasma flux and transverse thereto so that plasma flux impinges on the outside of the spaced-apart swirl tube means at an acute angle of incidence θ such that only one side of each swirl tube is exposed to plasma flux;

the plane of the spaced-apart swirl tube means being oriented at an acute angle θ with respect to the flux path so that plasma flux impinges directly on said spaced-apart swirl tube means in the vacuum vessel vacuum of the diverter region;

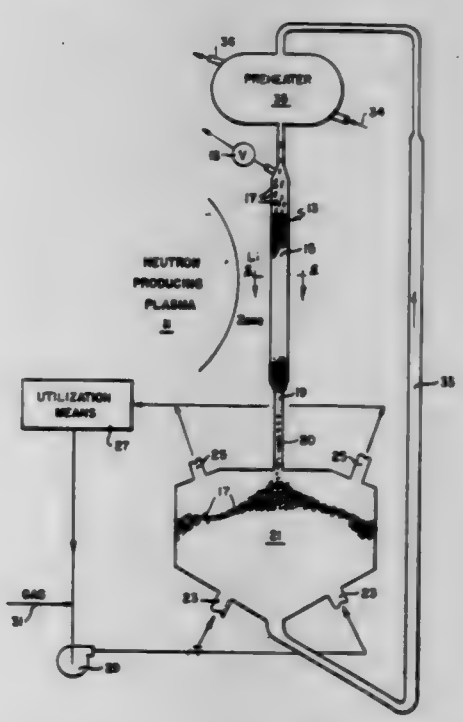
said headers for circulating a fluid coolant through the vacuum vessel vacuum of the divertor region and through said spaced–apart swirl tube means from the inlet header to the outlet header;

the respective ends of the swirl tubes being formed to the input and output parallel headers.

4,343,761
HEAT TRANSPORT SYSTEM

Samuel D. Harkness, McMurray, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 16, 1979, Ser. No. 94,993
Int. Cl.³ G21B *1/00;* G21C *15/00;* G21G *1/06*
U.S. Cl. 376—148 9 Claims



1. A heat transport and tritium breeding system in combination with a neutron-producing plasma comprising:

a vertical duct having an inlet disposed above its outlet for passing a flow of ceramic particles through a central region exposed to neutron radiation from said plasma to directly heat said particles, said vertical duct comprises outer walls of metal provided with passageways for liquid flow and inner walls of ceramic, heat insulative material selected from alumina, magnesia, silica and combinations thereof, said inner and outer walls being spaced apart over a portion of their length to provide a heat insulative gap therebetween;

lithium-containing material disposed outside both the inner and outer walls of said vertical duct between its central region and said neutron-producing plasma for breeding and recovering tritium gas resulting from the reaction of lithium and neutrons;

globular ceramic particles of about 0.5 to 1.5 cm diameter selected from the group consisting of magnesia, alumina, silica and combinations thereof forming a falling bed within the inner walls of said duct, said bed being substantially free of material other than magnesia, alumina and silica;

preheater means connected to the inlet of said vertical duct for receiving said ceramic particles at a first temperature and preheating said particles to a second temperature greater than said first temperature;

a heat exchanger vessel connected to the outlet of said vertical duct and having means for passing a flow of coolant fluid into direct heat exchange contact with said ceramic particles;

utilization means communicating with said flow of coolant fluid outside said heat exchanger vessel for using heat removed from said heat exchanger vessel and including means for circulating said coolant fluid therethrough; and

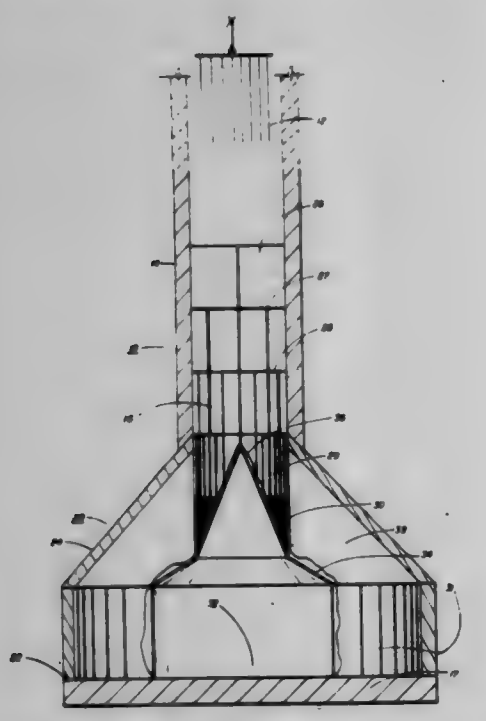
conveyor means connected to the lower portion of said heat exchanger vessel for upwardly transporting said ceramic particles to above the inlet of said vertical duct and permitting said particles to flow by gravity through said duct into said heat exchanger vessel.

4,343,762

SAFETY DEVICE FOR NUCLEAR FISSION REACTORS

Morris L. Brownlee, 4728 Jefferson Hwy., Jefferson, La. 70121

Filed Jun. 27, 1980, Ser. No. 163,593
Int. Cl.[3] G21C *9/00*
U.S. Cl. 376—280 5 Claims



1. A safety device for a nuclear fission reactor having suspended fuel assembly cores and comprising:

(a) a bottle positioned in said reactor to receive a fuel assembly core in its neck;

(b) a plurality of bottle neck baffle sets mounted in vertical, congruent succession in said bottle neck, each set having a multiple of the number of baffles of the set immediately above it for progressively and unblockably dividing the critical mass of the fuel assembly core into less than critical masses as they pass through said sets; and

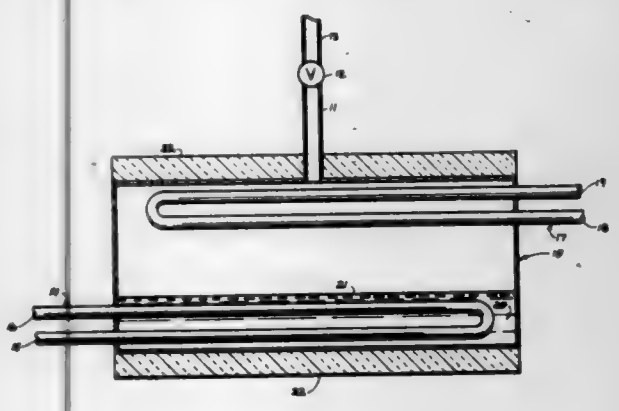
(c) a plurality of bottle body baffle sets mounted in said bottle body and in alignment with said bottle neck baffle sets, the upper body baffle set being congruent to the lower of said bottle neck baffle sets, and being engaged with around a center cone for dispersing said divided mass of the fuel assembly core outwardly and downwardly into a gas expansion space and thence into an annular lower body baffle set supported on the base of said bottle.

4,343,763

HEAT TRANSFER SYSTEM

Joseph C. McGuire, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 7, 1980, Ser. No. 128,203
Int. Cl.[3] G21C *19/00*; F28D *15/00*
U.S. Cl. 376—314 3 Claims



1. A method for operating a nuclear reactor having a primary reactor coolant loop and a secondary liquid loop comprising:

(a) providing a sealed vapor chamber including a bottom interior portion and an adjacent upper interior portion in vertical communication and close physical proximity with one another;

(b) exhausting all noncondensible gases at ambient temperature from the interior of the vapor chamber;

(c) placing heat transfer medium within the vapor chamber having a melting point below the design heat tranfer temperature in an amount sufficient to maintain a two phase liquid-vapor-liquid system within the vapor chamber at the design heat transfer temperature;

(d) operatively arranging a first heat transfer means in the primary reactor coolant loop and physically positioned within the bottom interior portion of the vapor chamber for transferring heat from the primary reactor coolant loop to the heat transfer medium;

(e) operatively arranging a second heat transfer means in the secondary liquid loop and physically positioned within the upper interior portion of the vapor chamber for transferring heat from the heat transfer medium to the secondary liquid loop; and

(f) selectively withdrawing tritium from an extension in open communication with the vapor chamber.

2. An intermediate heat exchanger unit for a nuclear reactor that includes a primary reactor coolant loop and a secondary liquid loop consisting of:

a plurality of vertically stacked vapor chambers, wherein;

each vapor chamber includes a bottom interior portion and an adjacent upper interior portion in vertical communication and close physical proximity with one another;

the interior of the vapor chamber is exhausted of all noncondensible gases at ambient temperature;

heat transfer medium is contained within the vapor chamber and has a melting point below the design heat transfer temperature, the amount of heat transfer medium being such as to maintain a two phase liquid-vapor-liquid system within the vapor chamber at the design heat transfer temperature; and

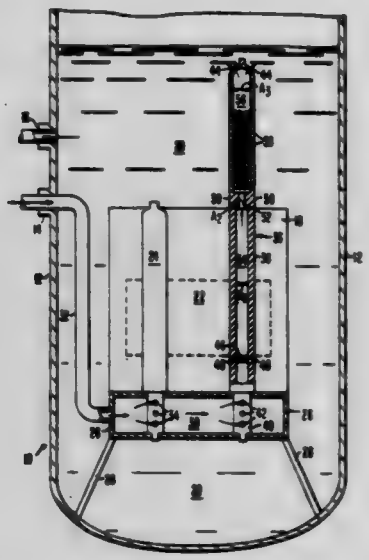
first heat transfer means is operatively arranged in a primary reactor coolant loop and physically positioned within the bottom interior portion of the vapor chamber for transferring heat from the primary reactor coolant loop to the heat transfer medium.

4,343,764

NUCLEAR REACTOR CONTROL COLUMN

Dennis M. Bachovchin, Plum Borough, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 28, 1980, Ser. No. 144,748
Int. Cl.³ G21C 7/16
U.S. Cl. 376—338 5 Claims



1. In a nuclear reactor having a reactor core and a control column, said control column comprising:

a generaly cylindrical housing capable of being disposed within a nuclear reactor core and having a plurality of openings in the top thereof;

an inlet nozzle attached to the lower end of said housing and having a plurality of holes therein for conducting a reactor coolant therethrough;

a plurality of neutron absorbing balls disposed in said housing and capable of being supported by the flow of reactor coolant;

a first plate having orifices therein and disposed within said housing near the lower end thereof;

a second plate having a channel therethrough and disposed within said housing above said first plate thereby defining a first section between said first plate and said second plate and a second section between said second plate and the top of said housing, said second section having a cross-sectional area larger than said first section with said first section having a cross-sectional area larger than the cross-section area of said channel and with the volume of said second section being approximately 2.5 times the volume of said first section, the flow of reactor coolant through said housing being sufficient to suspend said plurality of neutron absorbing balls in said second section in a fluidized bed fashion when said reactor cooling flow is above a predetermined limit and whereby said neutron absorbing balls fall into said first section when said reactor coolant flow falls below said predetermined limit thereby effecting a shutdown of the nuclear reactor.

4,343,765

METHOD FOR DEODORIZING AND DISINFECTING AIR

Lewis W. Elston, Atlanta, and David R. Hurst, Norcross, both of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Dec. 11, 1980, Ser. No. 215,269
Int. Cl.³ A61L 9/015
U.S. Cl. 422—3 2 Claims

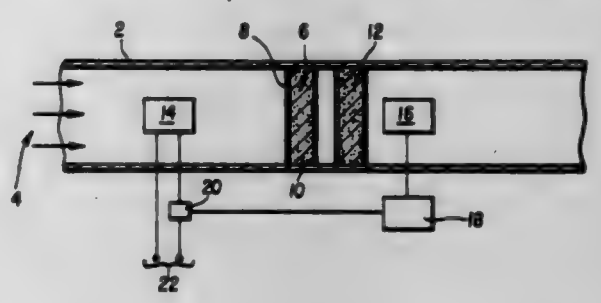
1. A method for disinfecting and deodorizing the air of inhabitable enclosures, comprising the steps of:

passing a stream of said air in a flow direction through conduit means;

positioning at least one bed of support material in said conduit means, said support material being at least one from the group consisting of chemically inert granular material and adsorbing type filter material;

loading an oxidant from the group consisting of iodine and chlorine on said at least one bed of support material;

introducing ozone into said air stream at a first point upstream from said at least one bed of support material, whereby said air stream is purified by said ozone and said oxidant on said support material and whereby said oxidant on said support material is regenerated by said ozone;



providing means in said air stream at a second point downstream from said at least one bed of support material and prior to returning the air stream to the enclosure for detecting the ozone concentration at said second point and;

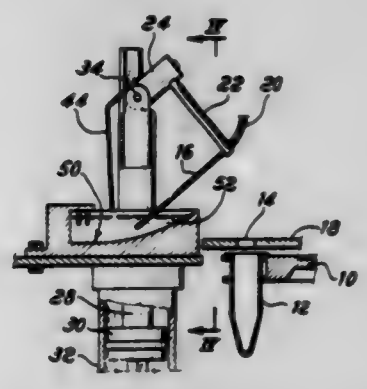
terminating said ozone introduction when the concentration of ozone at said second point exceeds a predetermine level, whereby the build up of ozone in said enclosure is prevented.

4,343,766

DEVICE FOR SAMPLE PICKUP AND WASHING

Giorgio Sisti, Melzo; Bruno Tosi, Carate Brianza, and Adriano Trisciani, Monza, all of Italy, assignors to Carlo Erba Strumentazione S.p.A., Italy

Filed Mar. 2, 1981, Ser. No. 239,175
Claims priority, application Italy, Mar. 7, 1980, 20413 A/80
Int. Cl.³ G01N 1/12, 1/14
U.S. Cl. 422—63 11 Claims

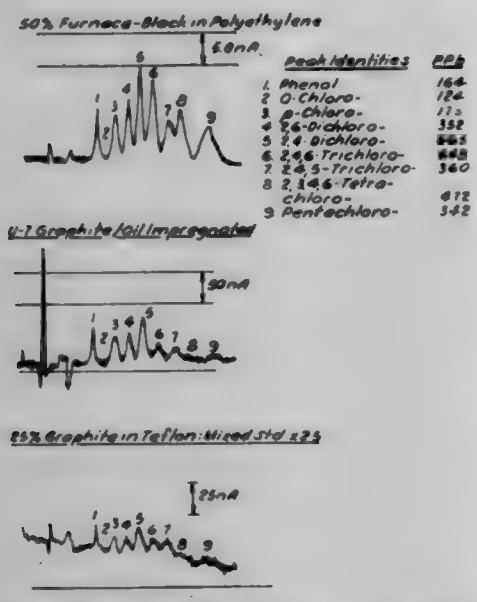


1. A device for automatic sample pick-up and washing, said device comprising a washing trough for washing fluid; a control rod reciprocally movable in a first direction between a control rod sampling position and a control rod washing position; a support component supporting a needle fluidically connected to a suction pump; pivot means mounted with respect to said control rod and said support component for pivoting said support component about an axis along a second direction different from said first direction so that, as the control rod moves to and from its washing position, said support component pivots to and from a support component washing position to move at least the tip of said needle into and out of said washing trough; and means for moving said control rod between said control rod sampling and washing positions to provide a support component sampling position and said support component washing position.

4,343,767
CHROMATOGRAPHY APPARATUS WITH ELECTROCHEMICAL DETECTOR HAVING CARBON-BLACK CONTAINING WORKING ELECTRODE

Merton W. Long; James D. McLean; David N. Armentrout, and Harold H. Gill, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 870,554, Jan. 18, 1978, abandoned. This application Apr. 9, 1981, Ser. No. 252,665
Int. Cl.³ G01N *31/08*
U.S. Cl. 422—70 15 Claims

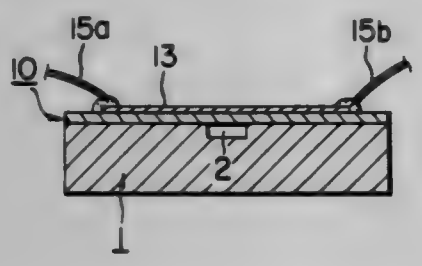


1. Chromatography apparatus which comprises a liquid chromatography column, and as a detector for measuring electro-active sample species in the liquid effluent of the column, an improved electro-chemical cell which comprises a working electrode, a reference electrode, the working electrode communicating with a flow passageway defined by the cell whereby the liquid effluent of the chromatography column is caused to make flow contact with a surface of the working electrode, the electrochemical cell being of the type generally which detects electro-oxidizable and electro-reducible species over a potential range of about ±1.5 volts applied to the working electrode vs. the reference electrode, the improvement which comprises a working electrode of an electrically conductive carbon black powder dispersed within a generally inert, electrically nonconductive binder matrix, said working electrode being electrically conductive and characterized by suitability for trace analysis of electro-active phenolic and halogenated phenolic species generally, but not limited thereto.

4,343,768
GAS DETECTOR

Mitsuteru Kimura, Tagajyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1980, Ser. No. 171,387
Claims priority, application Japan, Jul. 25, 1979, 54-93638
Int. Cl.³ G01N *27/06*
U.S. Cl. 422—97 17 Claims

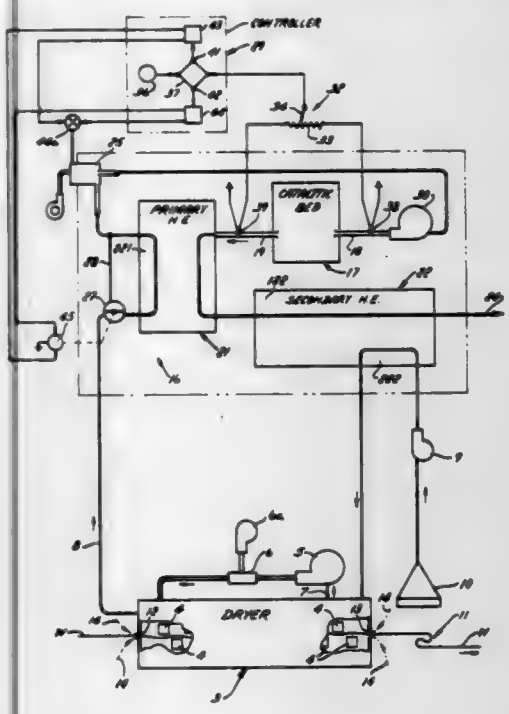


1. A gas detector of the type using an electric heater in which a substrate comprises an upper film and a lower film, said upper film being made of an electrically insulating substance having a resistance to heat while said lower film is made of a substance different from that of said upper film; a recess is formed under said upper film by removing part of said lower film; and an electrically conductive substance is disposed on said upper film at a portion immediately above said recess, thereby providing a heating element, characterized in that the heating element consists of a film of a substance having catalytic effects in the presence of a gas to be detected, or a material responsive to a gas to be detected, deposited on said electrically conductive substance, or consists of said electrically conductive substance having catalytic effects in the presence of a gas to be detected or a substance containing said substance having catalytic effects in the presence of a gas to be detected or a substance responsive to a gas to be detected, and said heating element is exposed to a gas to be detected.

4,343,769
CATALYTIC SOLVENT VAPOR INCINERATING APPARATUS

Gary L. Henkelmann, Green Bay, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,065
Int. Cl.³ G05D *23/22*; F01N *3/10*; B01J *8/00*
U.S. Cl. 422—109 8 Claims



1. Apparatus comprising a dryer at which solvent vapors are released and from which they are collected in a gas stream of varying vapor concentration, a catalyst bed having an inlet and an outlet and through which said gas stream is passed for oxidation of its vapor content, controllable heating means for producing a controllably variable heat output, duct means for conducting the gas stream from the dryer successively to said heating means and the inlet of the catalyst bed so that the gas stream can reach said inlet at a temperature high enough for substantially complete oxidation of its vapor content in the catalyst bed, and a constant volume fan by which the gas stream is drawn out of the dryer and caused to flow through the duct means and the catalyst bed, said apparatus being characterized by:

A. a pair of temperature sensors, each of which produces a temperature output that varies with temperature at the sensor,
   (1) one located to respond to the temperature of the gas stream substantially at the inlet of the catalyst bed, and
   (2) the other located to respond to the temperature of the gas stream substantially at the outlet of the catalyst bed;

B. control output means comprising
   (1) summing means connected with both of said sensors

for producing a combined output having a magnitude corresponding to a function of the sum of the temperatures to which said sensors are responding,

(2) a demand value generator for producing a demand value output having a magnitude comparable with said combined output, and p2 (3) comparison means connected with said summing means and with said demand value generator and whereby a control output is produced that has a magnitude dependent upon the relationship between said combined output and said demand value output; and

C. control means for said heating means, connected with said control output means to receive the output thereof and whereby the heat output of said heating means is so controlled as to tend to maintain said magnitude of said control output substantially constant.

4,343,770

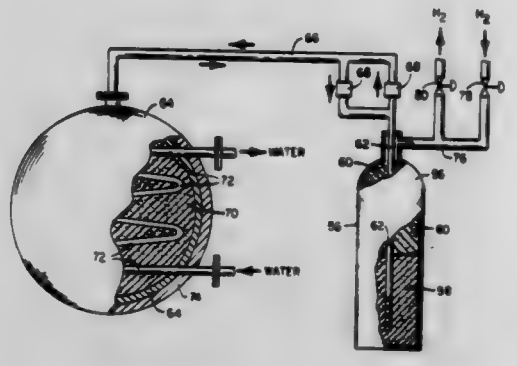
SELF-REGENERATING SYSTEM OF REMOVING OXYGEN AND WATER IMPURITIES FROM HYDROGEN GAS

Harold M. Simons, Orem, Utah, assignor to Billings Energy Corporation

Division of Ser. No. 861,895, Dec. 19, 1971, Pat. No. 4,216,198. This application Mar. 7, 1980, Ser. No. 128,246

Int. Cl.³ B01J *8/04, 12/00;* **F17C** *11/00, 13/00*

U.S. Cl. 422—112 **3 Claims**



1. A hydrogen storage system having a self-cleaning filter means for removing oxygen and water from hydrogen which is being charged to storage tanks containing a hydride-forming, metallic alloy, said system comprising:

(a) a composite filter means comprising a catalyst section containing a catalyst adapted to convert oxygen in the presence of hydrogen to water and an adsorption section containing an adsorbent adapted to adsorb water from hydrogen gas, said catalyst section and adsorption section being in flow communication with each other,

(b) a storage tank containing a hydride-forming metallic reactant which absorbs hydrogen by reacting therewith to form hydrogen-loaded metallic hydride,

(c) flow communicating means connecting the adsorption section of the filter means with the storage tank for flow of hydrogen gas between the filter means and the storage tank, and

(d) manifold means connected in flow communication with the catalyst section of the filter means, said manifold means adapted to deliver hydrogen gas to the catalyst section of the filter means when the storage tank is being filled and to accept hydrogen gas from the catalyst section of the filter means during discharge of the tank, whereby oxygen and water impurities are removed from the hydrogen gas being charged to the storage tank, oxygen being converted to water as the hydrogen passes through the catalyst section of the filter means and water being adsorbed by the adsorbent as the hydrogen passes through the adsorption section of the filter means, and whereby the water is cleaned from the filter as hydrogen is discharged from the storage tank,

the catalyst and the adsorbent in step (a) being contained in an enclosed chamber having top, bottom and side walls, with the adsorbent and the catalyst occupying the lower and the upper portions of the chamber, respectively, and the flow communicating means consisting of:

(1) a dip-tube extending through the top wall of the chamber, through the catalyst section, and at least through the major portion of the adsorption section so that the open, lower end of the dip-tube is positioned within the chamber and the upper end of the dip-tube is open to the outside of the chamber, and

(2) coupling means connecting the upper end of said dip-tube to said storage tank for flow of hydrogen gas between the dip-tube and the storage tank, and manifold means being connected to the top of said chamber to be in flow communication with the top of the catalyst section of the filter means.

4,343,771

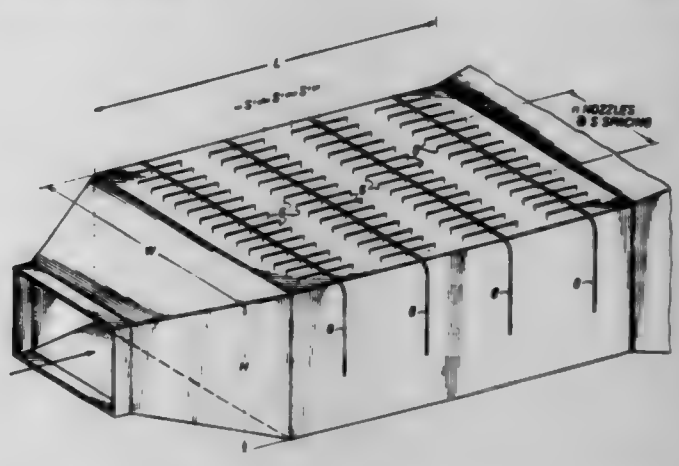
HORIZONTAL CROSS-FLOW SCRUBBER

William M. Edwards, and C. Peter Huang, both of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Division of Ser. No. 61,225, Jul. 27, 1979, Pat. No. 4,269,812. This application Dec. 4, 1980, Ser. No. 212,922

Int. Cl.³ B01D *53/18, 53/34;* **B01J** *10/00, 19/04*

U.S. Cl. 422—168 **2 Claims**



1. An apparatus for removing sulfur dioxide from industrial waste gas comprising:

(a) a horizontal, elongate, gas-liquid contacting chamber having a substantially unrestricted flow path, a waste gas inlet means at one end, and a cleaned gas outlet means at the opposite end;

(b) a plurality of spray nozzles for aqueous absorbent positioned at the top of the chamber to direct a corresponding plurality of interfering cones of spray droplets substantially vertically downward, the spray nozzles being horizontally spaced apart a minimum distance of about 0.4 meters to form spray droplets having a maximum interfering spray density at any horizontal plane less than about 100 liters per second per square meter; and

(c) liquid collection and discharge means disposed proximate the bottom of the chamber.

4,343,772

THERMAL REACTOR

Robert A. Frosch, Administrator of the National Aeronautics and Space Administation, with respect to an invention of; Harry Levin, Woodland Hills, and Larry B. Ford, Pasadena, both of Calif.

Filed Feb. 29, 1980, Ser. No. 126,063

Int. Cl.³ C22B *26/00*

U.S. Cl. 422—200 **14 Claims**

1. A thermal reactor apparatus for pyrolytically decomposing a precursor gas containing a single decomposable compound into a liquid product and a by-product gas comprising:

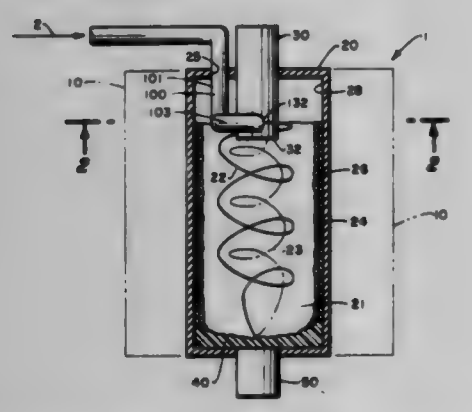
a reactor having walls defining a reaction chamber;

means for heating said reaction chamber to a temperature above the melting point of said liquid product and for

heating chamber to a temperature above the decomposition temperature of the precursor gas;

injector means disposed within the interior of said reaction chamber for vortically introducing said precursor gas into said reaction chamber to form a first outer, forwardly moving vortex containing said precursor gas and said liquid product and a second inner, rearwardly moving vortex containing said by-product gas;

cooling means for cooling said injector portion within the



interior of said chamber to a temperature substantially below the decomposition temperature of the precursor gas;

first means associated with the forward end of said reaction chamber for removing said liquid product from said reaction chamber; and

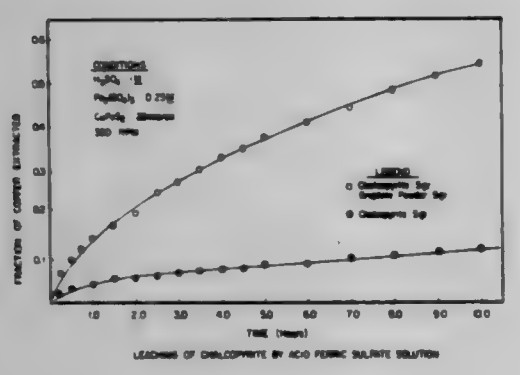
second means associated with the rearward end of said reaction chamber in communication with said second vortex for removing by-product gas from said reaction chamber.

4,343,773

ENHANCED LEACHING OF MINERALS WHICH FORM PRODUCT LAYERS

Jan D. Miller, Salt Lake City, Utah, and George Simkovich, State College, Pa., assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Jan. 29, 1981, Ser. No. 229,379
Int. Cl.³ C01G *1/00*; C22B *3/00*
U.S. Cl. 423—1 **16 Claims**



1. A process for enhancing dissolution of metal values from minerals comprising:

obtaining a mineral, the mineral being characterized by the tendency for a reaction product layer to form about particles of mineral during leaching;

selecting a particulate modifier for suitably altering electronic conductivity characteristics of the reaction product layer;

altering the electronic conductivity characteristics of the reaction product layer by intimately mixing the particulate modifier with the mineral thereby forming particle aggregates;

leaching the particle aggregates, the leaching process solubilizing metal values in the mineral while forming a reaction product layer about particles of the mineral ore; and

enhancing dissolution of metal values in the mineral surrounded by the reaction product layer by increasing electron transport processes across the reaction product layer with the particulate modifier.

4,343,774

METHOD FOR RECOVERING VALUABLE METALS FROM DEACTIVATED CATALYSTS

George L. Tilley, Newport Beach, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 20, 1979, Ser. No. 67,661
Int. Cl.³ C01G *51/10, 53/10, 39/00, 31/00*
U.S. Cl. 423—53 **20 Claims**

1. A process for recovering valuable metals from spent catalyst particles comprising cobalt components intimately composited with a substantial amount of an aluminum-containing refractory oxide, which process comprises:

(1) contacting the catalyst particles with an aqueous sulfuric acid solution,

(2) subsequently subjecting the catalyst particles to conditions of elevated temperature in an oxidizing atmosphere comprising oxygen, and

(3) again contacting the catalyst particles with an aqueous, liquid leaching solution under conditions such that cobalt is extracted into said solution.

4,343,775

ENTRAINED-FLOW CHLORINATION OF FINE TITANIFEROUS MATERIALS

James P. Bonsack, Aberdeen, Md., assignor to SCM Corporation, New York, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,183
Int. Cl.³ C01G *23/02*
U.S. Cl. 423—78 **5 Claims**

1. A flow process for chlorinating an iron-containing titaniferous material which comprises reacting discrete powdered particles of titaniferous material and a chlorine-providing material selected from the group consisting of chlorine gas, organochlorides, and mixtures thereof in the presence of a powdered porous anthracite coal reductant said powdered titaniferous material and said powdered anthracite coal reductant each having a particle size smaller than about-140 mesh, said particles of said titaniferous material and said powdered anthracite coal being entrained in and flowing downwardly through a chlorination reaction zone at a temperature of at least about 800° C., until both the iron and the titanium contents of said titaniferous material are substantially chlorinated, said porous anthracite coal reductant being characterized in that it has micropores having a pore diameter of less than about 20 Å and internal surface area within said micropores of at least about 10 m^2/g.

4,343,776

OZONE ABATEMENT CATALYST HAVING IMPROVED DURABILITY AND LOW TEMPERATURE PERFORMANCE

William F. Carr, Monmouth Junction, and James M. Chen, Rahway, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Dec. 22, 1980, Ser. No. 218,374
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—210 **17 Claims**

1. A method for catalytically decomposing ozone comprising contacting ozone or an ozone-containing medium with a precious metal catalyst containing as active material:

(a) at least one platinum group metal or catalytically active compound thereof; and

(b) at least one nonprecious Group VIII metal oxide or aluminate;

the arrangement of active material favoring exposure to ozone

of the platinum group over the nonprecious metal oxide or aluminate.

4,343,777

METHOD OF SCRUBBING ACID GASES CONTAINING POLYMERIZABLE ORGANIC COMPONENTS

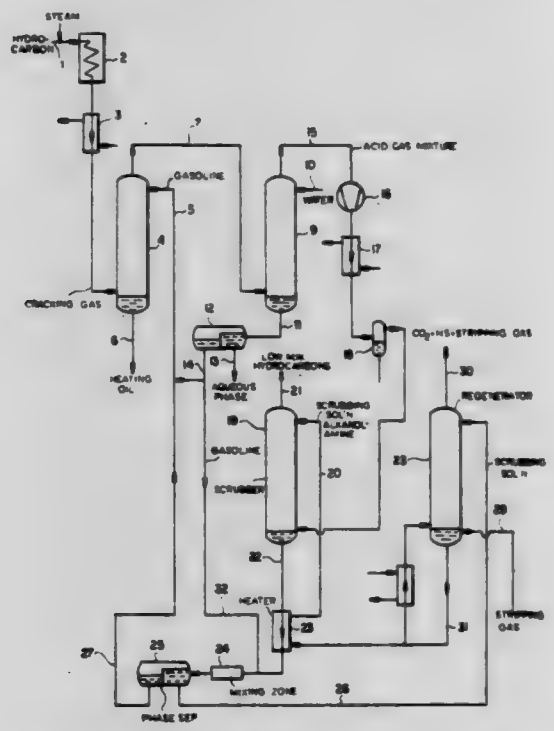
Erich Dannhorn, Wolfratshausen, and Karl Baur, Buchenhain, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 73,087

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2839055

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—228 5 Claims



1. A method of scrubbing acid gases, comprising carbon dioxide and hydrogen sulfide, from a cracking gas mixture resulting from the cracking of a hydrocarbon mixture subjected to cooling and removal of higher boiling components in contact with a liquid gasoline fraction, a gaseous component being separated from said fraction to constitute said mixture and containing polymerizable organic components, which comprises the steps of:

(a) scrubbing the gas mixture, from which condensible substances have been removed by cooling, with an aqueous alkanolamine scrubbing solution;

(b) heating the scrubbing solution following step (a) to an extraction temperature above 60° C. by indirect heat exchange;

(c) treating the heated scrubbing solution of step (b) with a water immiscible organic solvent to extract polymerizable components from the scrubbing liquid at a temperature above 60° C. but below the boiling point of the resulting mixture of the scrubbing liquid and organic solvent, said solvent being a portion of said liquid gasoline fraction;

(d) regenerating the scrubbing liquid following step (c);

(e) cooling the regenerated scrubbing liquid;

(f) recycling the regenerated scrubbing liquid from step (e) to step (a); and

(g) returning the liquid gasoline fraction following extraction in step (c) to the separation stage of the high boiling component from the cooled cracking gas.

4,343,778

PROCESS FOR THE PURIFICATION OF RESIDUAL INDUSTRIAL GASES CONTAINING SMALL QUANTITIES OF SULFUR COMPOUNDS

Jacques Batteux, Serres Morlaas; Claude Blanc, and Pierre Grancher, both of Pau, all of France, assignors to Societe Nationale Elf Aquitaine, Paris, France

Division of Ser. No. 39,384, May 15, 1979, Pat. No. 4,291,003.

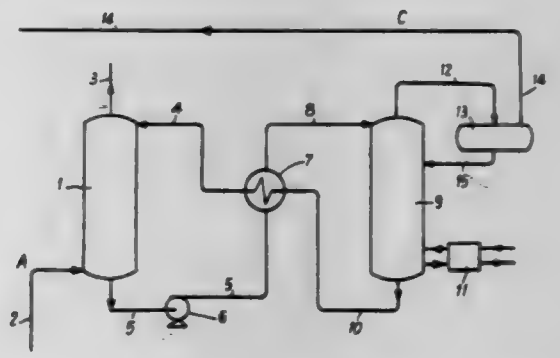
This application Feb. 9, 1981, Ser. No. 232,689

Claims priority, application France, May 15, 1978, 78 14427

The portion of the term of this patent subsequent to Sep. 15, 1981, has been disclaimed.

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—228 4 Claims



1. A purification process for residual industrial gases containing small quantities of H_2S, SO_2, CS_2, COS or sulfur vapor, as well as large quantities of H_2O, CO_2 and N_2, comprising subjecting the residual gases to a catalytic reduction to transform the sulfur containing compounds in said residual gases into H_2S, washing the residual gases with an aqueous amine solution to form a H_2S enriched aqueous amine solution and effluent gases substantially free of H_2S, burning said effluent gases and discharging the burnt effluent gases to the atmosphere, regenerating the H_2S enriched aqueous amine solution by heating to produce gases comprising H_2S and CO_2 and regenerated aqueous amine solution, and, returning said gases comprising H_2S and CO_2 to a sulfur manufacturing unit; characterized in that the temperature of the gases in the process are permanently maintained at a level higher than the dew point of the water contained in the gases at each point in the process such that the H_2O contained in the residual gases is discharged into the atmosphere with said burnt effluent gases.

4,343,779

PROCESS FOR THE CONDENSATION OF PHOSPHATE SOLIDS

Klaus Sommer, Heidelberg; Walter Kleam, Weinheim Ortsteil Rippenweier; Hermann Weber, Hemsbach; Frederich Meinhardt, Birkenheide; Gerhard Schönmann, Ludwigshafen, and Wilhelm Spatz, Ober-Kainsbach, all of Fed. Rep. of Germany, assignors to Benckiser-Knapsack GmbH, Ladenburg, Fed. Rep. of Germany

Division of Ser. No. 123,754, Feb. 22, 1980, Pat. No. 4,293,526.

This application Mar. 3, 1981, Ser. No. 239,975

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907453

Int. Cl.³ C01B *15/16, 23/26*

U.S. Cl. 423—305 13 Claims

1. A process for condensing solid phosphate materials which tend to sinter or adhere during condensation in a heated reactor comprising the steps of: introducing a solid phosphate-containing material to be condensed into a reactor; contacting the exterior wall of the reactor with a hot heat transfer medium in order to heat the phosphate material to be condensed in the reactor; agitating the phosphate material in the reactor and pressing the phosphate material in a thin layer against the reactor wall; said thin layer of phosphate material sintering and adhering to the reactor wall; stripping the sintered layer from

the reactor wall; and returning the hot sintered phosphate material to the interior region of said reactor.

4,343,780

PROCESS FOR THE SEPARATION OF SOLIDS FROM PHOSPHORIC ACID

Friedrich Wolstein, Essen; Egbert Hoffmann, Bochum, and Wolfgang Epper, Bergheim-Kenten, all of Fed. Rep. of Germany, assignors to UHDE GmbH, Dortmund, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 228,895

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003250

Int. Cl.³ C01B *25/16*

U.S. Cl. 423—321 R 3 Claims

1. A process for separating solids from phosphoric acid produced by the wet digestion process which includes the steps of concentrating the phosphoric acid to about 54% thereby increasing. the solids concentration in the acid to approximately 7% feeding the concentrated acid of increased solids content to a separator, where it is separated into a thickened effluent which has a solids concentration of approximately 15%, and a filtrate which has a solids concentration of less than 0.5, and feeding the thickened effluent from the separator to a bowl centrifuge which is operated to produce a withdrawn slurry having a solids concentration of about 50–60%, and a centrifuged effluent having a solids concentration of about 1 to 6%.

4,343,781

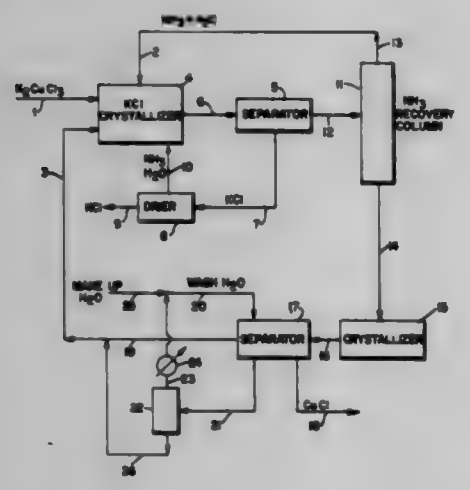
DECOMPOSITION OF 2KCl.CuCl TO PRODUCE CUPROUS CHLORIDE AND POTASSIUM CHLORIDE

John B. Sardisco, Shreveport, La., assignor to Pennzoil Company, Houston, Tex.

Filed Jun. 9, 1981, Ser. No. 272,025

Int. Cl.³ C01G *3/05;* C01D *3/04*

U.S. Cl. 423—493 13 Claims



1. A method for the recovery of cuprous chloride and potassium chloride from a complex salt containing these components in aqueous solution which comprises the steps of:

(a) reacting an aqueous solution of the complex salt of potassium chloride and cuprous chloride with ammonia;

(b) separating the resulting solid potassium chloride from a solution containing the cuprous chloride and ammonia;

(c) removing the ammonia from the solution to cause precipitation of solid cuprous chloride, and

(d) recovering the cuprous chloride.

4,343,782

CYTOLOGICAL ASSAY PROCEDURE

Howard M. Shapiro, 238 Highland Ave., West Newton, Mass. 02165

Continuation-in-part of Ser. No. 898,153, Apr. 20, 1978, abandoned. This application Apr. 6, 1979, Ser. No. 27,736

Int. Cl.³ G01N *1/30, 13/00, 21/25, 33/48, 33/52, 33/54, 33/74*

U.S. Cl. 424—3 51 Claims

1. A bioassay method for one or more non-excitable cells, said method comprising the steps of:

A. determining a characteristic of individual ones of said non-excitable cells representative of the membrane potential thereof by a non-intrusive method, and

B. comparing said cell characteristic to a reference characteristic to detect differences in the membrane potential of said individual cells,

wherein step A comprises the sub-steps of:

(i) incubating said cells with a cell membrane-permeant ionic dye, and

(ii) detecting an optical property of said individual cells, said optical property being representative of the intracellular dye level in the respective ones of said cells, and determining said cell characteristic from said optical property, and

wherein step B comprises the step of:

comparing said determined cell characteristic with said reference characteristic for said cells, and identifying differences in said determined cell characteristic with respect to said reference characteristic, said differences being representative of corresponding differences in cell membrane potential.

19. A bioassay method for one or more non-excitable cells, said method comprising the steps of:

A. determining a characteristic of individual ones of said non-excitable cells representative of the membrane potential thereof by a non-intrusive method, and

B. comparing said cell characteristic to a reference characteristic to detect differences in the membrane potential of said individual cells,

wherein step A includes the sub-steps of:

(a) incubating the cells with a dye which associates with individual cells, and

(b) detecting an optical characteristic of dye associated with the respective ones of said individual cells, said detected optical characteristics being indicative of the cell membrane potential of the respective ones of said individual cells.

4,343,783

DISPOSABLE ARTICLE

David C. Hooper, Ashford; George A. Johnson, and Donald Peter, both of Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,320

Claims priority, application United Kingdom, Jan. 13, 1978, 1479/78; May 16, 1978, 19843/78

Int. Cl.³ A61K *9/70;* A61L *15/03*

U.S. Cl. 424—28 14 Claims

1. A deodorant disposable porous article for use in contact with human skin, comprising a porous substrate impregnated with from 0.001 to 10% by weight of a deodorant composition having a deodorant value of from 0.50 to 3.5 as measured by the Deodorant Value Test; said deodorant composition comprising from 45 to 100% by weight of deodorant components, said components having a lipoxidase-inhibiting capacity of at least 50% or a Raoult variance ratio of at least 1.1, said components being classified into six classes consisting of:

Class 1: phenolic substances

Class 2: essential oils, extracts, resins and synthetic oils

Class 3: aldehydes and ketones

Class 4: polycyclic compounds

Class 5: esters

Class 6: alcohols, provided that where a component can be

classified into more than one class, it is placed in the lower or lowest numbered class;

said components being so selected that

(a) the deodorant composition contains at least five components of which at least one must be selected from each of class 1, class 2 and class 4;

(b) the deodorant composition contains components from at least 4 of the 6 classes; and

(c) any component present in the deodorant composition at a concentration of less than 0.5% by weight of said composition is eliminated from the requirements of (a) and (b).

4,343,784

COMPOSITION AND METHOD EMPLOYING EXTRACTS OF HANSENULA AS A MEDICAMENT

Jacqueline O. Massot, Pontault-Combault, and Jacques N. Astoin, Paris, both of France, assignors to Univablot, Paris, France

Filed Mar. 9, 1981, Ser. No. 241,550

Claims priority, application France, Mar. 10, 1980, 80 05302

Int. Cl.³ A61K *35/78, 31/70, 35/72*

U.S. Cl. 424—45 7 Claims

1. A therapeutic composition for the treatment of infection which contains as active ingredient a therapeutically effective amount of an extract of water-insoluble Hansenula glucans prepared by extracting cells of Hansenula with alkali to remove proteins, lipids, and mannans and with acid to remove glycogens and soluble glucans, as well as a pharmaceutically acceptable excipient.

5. A composition according to claim 1 in aerosol form.

4,343,785

GEL DENTIFRICE COMPOSITIONS

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 10, 1981, Ser. No. 291,263

Int. Cl.³ A61K *7/16, 7/18, 7/22*

U.S. Cl. 424—49 10 Claims

1. A gel dentifrice comprising at least about 15 percent by weight of a polyoxybutylene-polyoxyethylene block copolymer, an effective amount of an essential additive and less than about 85 percent by weight of water, said block copolymer being a cogeneric mixture of conjugated polyoxybutylene-polyoxyethylene compounds containing in their structure oxybutylene groups, oxyethylene groups and an organic radical derived from a water-soluble organic compound containing a plurality of reactive hydrogen atoms and 2 to 12 carbon atoms; the compounds being characterized in that all of the oxybutylene groups are present in polyoxybutylene chains that are attached to the organic radical at the site of a reactive hydrogen atom thereby constituting a polyoxybutylene polymer; the oxyethylene groups being attached to the polyoxybutylene polymer in polyoxyethylene chains; the average molecular weight of the polyoxybutylene polymers in the mixture being at least 1200, as determined by hydroxyl number, and the oxyethylene groups present constituting 50 to 80 percent by weight of the mixture, with the provisos that:

(a) when the hydrophobe molecular weight is about 1200, when the minimum polyoxyethylene content is about 60 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 25 percent by weight of the aqueous gel compositions;

(b) when the hydrophobe molecular weight is about 1800, when the minimum polyoxyethylene content is about 55 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 20 percent by weight of the aqueous gel composition;

(c) when the hydrophobe molecular weight is about 2400, then the minimum polyoxyethylene content is about 50 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 16 percent by weight of the aqueous gel composition;

(d) when the hydrophobe molecular weight is about 3000, then the minimum polyoxyethylene content is about 45 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 16 percent by weight of the aqueous gel composition.

4,343,786

DENTIFRICES CONTAINING ALPHA-ALUMINA TRIHYDRATE

Eric Baines, Flixton, and John F. Carr, Knutsford, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 50,935, Jun. 21, 1979, which is a continuation of Ser. No. 871,677, Jan. 23, 1978, which is a continuation of Ser. No. 766,658, Feb. 8, 1977, abandoned, which is a continuation of Ser. No. 640,663, Dec. 15, 1975, abandoned.

This application Apr. 24, 1980, Ser. No. 143,067

The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 5 Claims

1. A toothpaste characterized in that the toothpaste contains abrasive particles of milled alpha-alumina trihydrate, alkali metal monofluorophosphate and alkali metal fluoride, the mol ratio of said monofluorophosphate to said alkali metal fluoride being about 1.5:1 to 5:1 the total amount of said monofluorophosphate and fluoride corresponding to about 500 to 1500 ppm F, and said alpha-alumina trihydrate being reactive with said alkali metal fluoride.

4,343,787

SHAPED OPHTHALMIC INSERTS FOR TREATING DRY EYE SYNDROME

Irving M. Katz, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 769,766, Feb. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 600,168, Jul. 29, 1975, abandoned. This application Dec. 28, 1978, Ser. No. 973,975

Int. Cl.³ A61K *31/74, 31/79;* A61M *31/00, 7/00*

U.S. Cl. 424—78 26 Claims

1. A solid sterile ophthalmic insert comprising as the sole therapeutically active agent a water soluble solid polymer; said insert having a dissolution time in lacrimal fluids of less than 24 hours and having a surface area of from about 5 to about 800 sq. mm., a length of from about 1–30 mm. and a width and height of from about 0.25 mm. to about 30 mm., said polymer being selected from the group consisting of a cellulose derivative, starch derivative, dextrose, polyalkylene glycol, polyvinylmethyl ether, polyethylene oxide, carboxyvinyl, and mixtures thereof.

4,343,788

ANTIMICROBIAL POLYMER COMPOSITIONS

Robert V. Mustacich; Donald S. Lucas, and Roger L. Stone, all of Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 29, 1979, Ser. No. 53,619

Int. Cl.³ A61K *31/74*

U.S. Cl. 424—78 4 Claims

1. A composition of matter, comprising: a toxicologically-acceptable, medical-grade elastomeric polymer, said polymer having releasably incorporated within the polymer matrix a safe and effective amount of one or more free n-alkane monocarboxylic acid antimicrobial agents or salts thereof, having from about 4 to about 10 carbon atoms, said polymer containing from about 0.1% to about 40% by weight of a substantially non-antimicrobial proton donor selected from the group consisting of citric acid, tartaric acid, malic acid, fumaric acid, maleic acid, malonic acid, ascorbic acid, barbituric acid, and mixtures thereof.

4,343,789

SUSTAINED RELEASE PHARMACEUTICAL COMPOSITION OF SOLID MEDICAL MATERIAL

Hiroitsu Kawata, Kawagoe; Masayoshi Aruga, Ageo; Tadayoshi Ohmura, Niiza; Takashi Sonobe, Saitama; Satoru Yoneya, Omiya, and Chiharu Sone, Matsudo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1980, Ser. No. 165,244

Claims priority, application Japan, Jul. 5, 1979, 54/85209; Mar. 22, 1980, 55/36514

Int. Cl.³ A61K *9/14, 9/16, 9/20, 31/74*

U.S. Cl. 424—78 13 Claims

1. A sustained release pharmaceutical composition comprising a coronary and cerebral vascular dilating-effective amount of an amorphous form of nicardipine or a salt thereof, and polyethylene oxide in the form of a fine powder or fine particle granules.

4,343,790

CONTROLLED RELEASE ACRYLIC POLYMER COATED GRANULAR PESTICIDAL COMPOSITIONS WITH ATTENDANT REDUCED DERMAL TOXICITY

Nunzio R. Pasarela, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 9,883, Feb. 6, 1979, abandoned. This application Aug. 4, 1980, Ser. No. 174,951

Int. Cl.³ A01N *25/10, 57/00, 25/00;* A61K *31/78*

U.S. Cl. 424—81 9 Claims

1. A solid particulate composition comprising particles of an inert sorptive or non-sorptive granular carrier impregnated or coated with a pesticidally effective amount of a phosphorus pesticide which is O,O-diethyl-S-(ethylthio)methylphosphorodithioate or O,O-diethyl-S-{[(1,1-dimethylethyl)thio]-methyl} phosphorodithioate, and wherein the impregnated or coated carrier is coated with a finely divided sorptive substrate and an acrylic polymer of a (1) hard, thermoplastic acrylic polymer having an intrinsic viscosity of from 0.75 dl/g to 3.1 dl/g at 30° C. in tetrahydrofuran, (2) hard, self-crosslinking thermoplastic acrylic polymers having an intrinsic viscosity of from 1.0 dl/g to 2.0 dl/g at 30° C. in dimethylformamide or (3) acrylic polymers having an intrinsic viscosity of from 0.05 dl/g to 0.1 dl/g at 30° C. in butanol, wherein the thus-obtained composition is characterized by decreased mammalian dermal toxicity and sustained pesticidal activity.

4,343,791

CYCLOHEXYL PHENETHYLETHER DERIVATIVES FOR COMBATTING TOBACCO BEETLES

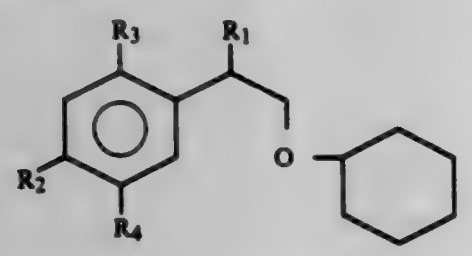
Jacob Kiwala, Brooklyn, N.Y.; Richard J. Tokarzewski, Keyport, N.J.; Frederick L. Schmitt, Holmdel, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 235,844, Feb. 19, 1981, Pat. No. 4,324,923, which is a continuation-in-part of Ser. No. 192,238, Sep. 30, 1980, Pat. No. 4,306,096. This application Sep. 25, 1981, Ser. No. 305,539

Int. Cl.³ A01N *25/00, 31/00*

U.S. Cl. 424—84 3 Claims

1. A method of attracting and destroying *Lasioderma sericorne* (*F.*) comprising applying to an area contaminated with said *Lasioderma sericorne* (*F.*) at least one compound defined according to the structure:



wherein R_1, R_2, R_3 and R_4 are the same or different and each represents methyl or hydrogen with the proviso that one of R_1, R_2, R_3 and R_4 is methyl and the other three of R_1, R_2, R_3 and R_4 are hydrogen, said attractant being applied to said area in an amount sufficient to attract said *Lasioderma sericorne* (*F.*).

4,343,792

ANIMAL VACCINE, AGAINST COLIBACILLOSIS, PREPARATION AND USE

Philippe Gouet, Beaumont; Michel G. Contrepois; Henri-Charles Dubourguier, both of Clermont-Ferrand; Jean-Pierre Girardeau, Romagnat; Hubert L. J. Goby; Therese M. Goby, both of Nevers; Anne M. Goby, Varennes Vauzelles, and Genevieve Goby, La Chapelle St Ursin, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Filed Oct. 3, 1980, Ser. No. 193,449

Claims priority, application France, Mar. 10, 1979, 79 24665

Int. Cl.³ A61K *39/00, 39/108*

U.S. Cl. 424—92 7 Claims

1. Animal anti-colibacillary vaccine characterized in that it contains at least one antigen originating from strains of *E. coli* selected among the Y^{30}, $31A^+$ and $47A^+$ strains.

6. A method for the protection of newborn animals against diarrhea comprising applying an effective amount of the vaccine or vaccinal preparation according to any one of claims 1, 2 and 5 to gestating dams.

4,343,793

PROCESS FOR OBTAINING INTACT AND VIABLE LEUCOCYTES AND THROMBOCYTES FROM BLOOD

Josef H. Wissler, Bad Nauheim, Fed. Rep. of Germany, assignor to Max-Planck Gesellschaft zur Forderung der Wissenschaften, Gottingen, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,703

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1980, 3009126

Int. Cl.³ A61K *35/14;* A01N *1/02*

U.S. Cl. 424—101 11 Claims

1. A process for recovering leucocytes and thrombocytes from blood, which comprises:

(a) contacting the blood with an erythrocyte-aggregating substance to produce a liquid component and aggregated erythrocytes and separating the aggregated erythrocytes from the liquid component;

(b) centrifuging the liquid component at a speed having an average force of at most about 400×g and at a temperature of about 0° to 37° C. for about 5 to 15 min to produce a thrombocyte-containing supernatant and sedimented leucocytes and separating the sedimented leucocytes from the supernatant;

(c) suspending the sedimented leucocytes in water or up to a 0.4% sodium chloride solution at a pH of about 6.0 to 8.5, and at a maximum temperature of about +8° C. for about 20 to 60 seconds, and thereafter readjusting the suspension to physiological concentration and separating the leucocytes from the suspension.

4,343,794

METHOD OF REDUCING INTRAOCULAR PRESSURE WITH SALTS OF VANADIC ACID

Steven Podos, New York, N.Y.; Theodore Krupin, Creve Coeur, and Bernard Becker, University City, both of Mo., assignors to Mt. Sinai, New York, N.Y. and Washington University, St. Louis, Mo.

Filed May 6, 1980, Ser. No. 147,172

Int. Cl.³ A61K *33/24, 31/28*

U.S. Cl. 424—131 6 Claims

1. A method of reducing intraocular pressure in mammals which comprises applying topically to the eye a salt of vanadic acid, in which the vanadium has a valence of from 3 to 5, in an amount effective to reduce intraocular pressure.

4,343,795

BIOLOGICALLY ACTIVE AMIDES

Samuel Wilkinson, Beckenham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 927,271, Jul. 24, 1978, Pat. No. 4,244,944. This application Sep. 25, 1980, Ser. No. 190,704

Claims priority, application United Kingdom, Nov. 24, 1977, 48980/77

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 8 Claims

1. Tyr. D-Met(O). Gly. Phe(4NO_2). ProNH_2.

4,343,796

2,3-BIS-HYDROXYBENZYL-DERIVATIVES

Marinus B. Groen, Schayk, Netherlands, assignor to AKZO NV, Oss, Netherlands

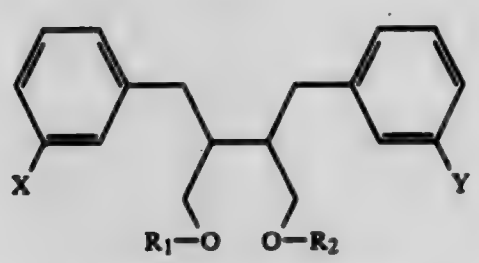
Filed Jun. 11, 1981, Ser. No. 272,727

Claims priority, application United Kingdom, Jun. 24, 1980, 8020688

Int. Cl.³ A61K *31/695*; C07C *69/773*; A61K *31/35*; C07C *69/017*

U.S. Cl. 424—184 4 Claims

1. A compound of the formula



wherein X and Y are the same or different and are selected from the group consisting of hydroxy, alkoxy having 1 to 10 carbon atoms, trimethylsilyloxy, tetrahydropyranyl-2-oxy, (C_{1-6})-alkanoyloxy, (C_{7-10})-aroyloxy, (C_{7-10})-aralkanoyloxy, and a (C_{7-10})-aralkenoyloxy R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, (C_{1-6})-alkanoyl, (C_{7-10})-aroyl, (C_{7-10})-aralkanoyl, and a (C_{7-10})-aralkenoyl, and R_1 and R_2, when taken together with the oxygen atoms to which they are attached, represent an acetal group.

4. An anti-inflammatory pharmaceutical composition containing, as active ingredient, an anti-inflammatory effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier or diluent.

4,343,797

SYNTHETIC WHOLE BLOOD AND A METHOD OF MAKING THE SAME

Charles S. Ecanow, 4118 Skokiana Ter., Skokie, Ill. 60076

Continuation-in-part of Ser. No. 146,029, May 2, 1980, abandoned, which is a continuation of Ser. No. 47,021, Jun. 11, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,364

Int. Cl.³ A61K *31/685, 45/00*

U.S. Cl. 424—199 19 Claims

1. A method of making a synthetic whole blood which comprises the steps of:

(A) preparing a solution by dispersing from 5 to 15% weight to volume of powdered albumin in distilled water containing 0.9% weight to volume sodium chloride, 1 to 5% weight to volume urea and 0.1 to 10% weight to volume of a phospholipid;

(B) Storing the solution, undisturbed at 4 degrees C. for 12 hours, thereby producing a two phase coacervate system;

(C) Removing said coacervate system from refrigeration and adding such amount of distilled water at ambient temperature to the coacervate system as will result in a 5% weight to volume of albumin;

(D) Adding such amount of sodium chloride to the two phase coacervate system as will render the said system isotonic with whole human blood; and

(E) Emulsifying the two phase coacervate system to produce droplets ranging in size from 2 to 9 microns in size.

4,343,798

TOPICAL ANTIMICROBIAL ANTI-INFLAMMATORY COMPOSITIONS

Mahdi B. Fawzi, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 23, 1981, Ser. No. 276,556

Int. Cl.³ A01N *45/00*

U.S. Cl. 424—240 16 Claims

1. A topical pharmaceutical composition, having a pH no greater than about 5, comprising a safe and effective amount of an antimicrobial agent selected from C_5-C_{12} fatty acids and mixtures thereof, together with a safe and effective amount of a corticosteroid component.

2. A composition according to claim 1 wherein the corticosteroid component is selected from the group consisting of beclomethasone dipropionate, clobetasol propionate, diflucortolone valerate, fluocinolone acetonide, betamethasone benzoate, betamethasone dipropionate, betamethasone valerate, desonide, desoxymethasone, diflorasone diacetate, fluclorolone acetonide, fluocinonide, fluocortolone, fluprednidene (fluprednylidene) acetate, flurandrenolone, halcinonide, hydrocortisone butyrate, triamcinolone acetonide, clobetasone butyrate, flumethasone pivalate, fluocortin butylester, hydrocortisone with urea, dexamethasone, hydrocortisone alcohol or acetate, methylprednisolone, and mixtures thereof.

4,343,799

USE OF DERIVATIVES OF 6α-METHYLPREDNISOLONE FOR THE PREVENTION OR REDUCTION OF ADRIAMYCIN-INDUCED CARDIOTOXICITY

Jay W. Heckler, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 20, 1981, Ser. No. 245,575

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—243 8 Claims

1. A method for the prevention of Adriamycin-induced cardiotoxicity which comprises administering intravenously to a patient expecting Adriamycin chemotherapy, a formulation comprising a compound selected from the group consisting of water soluble 21-dibasic esters of 1-dehydro-6α-methylhydrocortisone and their salts in a pharmaceutically acceptable carrier.

4,343,800

1-ARYLOXY-2-HYDROXY-3[(HETEROCYCLIC-SUBSTITUTED ALKYL)-AMINO]PROPANES AND SALTS THEREOF

Herbert Köpe, Ingelheim am Rhein; Anton Mentrup, Mainz-Kastel; Ernst-Otto Renth; Kurt Schromm, both of Ingelheim am Rhein; Wolfgang Hoefke, Budenheim, and Gojko Muacevic, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

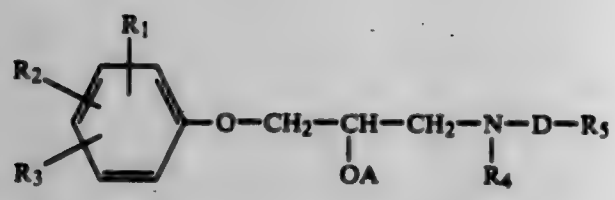
Division of Ser. No. 112,640, Jan. 16, 1980, Pat. No. 4,296,117, which is a division of Ser. No. 4,279, Jan. 17, 1979, Pat. No. 4,256,756, which is a continuation-in-part of Ser. No. 838,450, Oct. 3, 1977, abandoned. This application Apr. 20, 1981, Ser. No. 255,751

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1976, 2644833

Int. Cl.³ C07D *265/36, 215/22*; A61K *31/415, 31/47, 31/535*; C07D *233/36*

U.S. Cl. 424—248.5 7 Claims

1. A compound of the formula



wherein

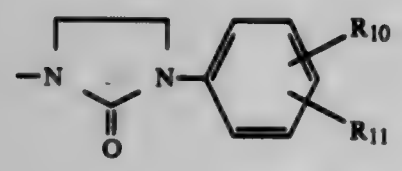
R_1 is hydrogen; halogen; trifluoromethyl; nitro; alkyl of 1 to 8 carbon atoms; alkoxy of 1 to 4 carbon atoms; alkoxyalkyl of 2 to 8 carbon toms; alkenyl of 2 to 5 carbon atoms; alkynyl of 2 to 5 carbon atoms; alkenyloxy of 3 to 6 carbon atoms; alkynyloxy of 3 to 6 carbon atoms; $-(CH_2)_x-A'$, where x is 1, 2 or 3 and A′ is cyano, amino, carboxamido or hydroxyl; phenoxy; benzyloxy; or $-CH_2-SO_2-CH_3$;

R_2 is hydrogen, halogen; alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; aralkoxy of 7 to 14 carbon atoms; alkenyl of 2 to 4 carbon atoms; nitro; or, together with R_3, $-CH=CH-CH=CH-$, which is attached to carbon atoms of the phenyl ring in o-position with respect to each other;

R_3 is hydrogen, halogen; alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; or aralkoxy of 7 to 14 carbon atoms;

R_4 is hydrogen; alkyl of 1 to 5 carbon atoms; or aralkyl of 7 to 14 carbon atoms;

R_5 is

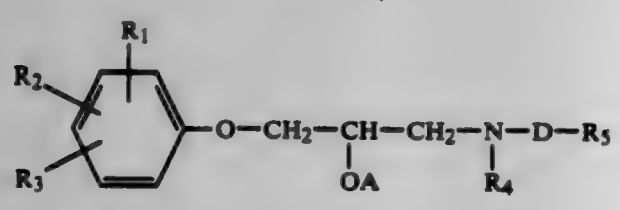


where R_{10} and R_{11} are each hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, carboxamido or, together with each other $-O-(CH_2)_y-O-$, where y is 1 or 2, attached to carbon atoms of the phenyl ring in o-position with respect to each other;

D is alkylene of 1 to 12 carbon atoms; and

A is lower alkanoyl; or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4. A compound of the formula



wherein

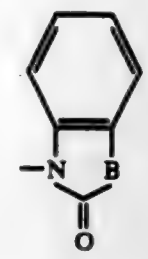
R_1 is hydrogen; halogen; trifluoromethyl; nitro; alkyl of 1 to 8 carbon atoms; alkoxy of 1 to 4 carbon atoms; alkoxyalkyl of 2 to 8 carbon atoms; alkenyl of 2 to 5 carbon atoms; alkynyl of 2 to 5 carbon atoms; $-(CH_2)_x-A'$, where x is 1, 2 or 3 and A′ is cyano, amino, carboxamido or hydroxyl; phenoxy; benzyloxy; or $-CH_2-SO_2-CH_3$;

R_2 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; aralkoxy of 7 to 14 carbon atoms; alkenyl of 2 to 4 carbon atoms; nitro; or, together with R_3, $-CH=CH-CH=CH-$, which is attached to carbon atoms of the phenyl ring in o-position with respect to each other;

R_3 is hydrogen; halogen; alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; or aralkoxy of 7 to 14 carbon atoms;

R_4 is hydrogen; alkyl of 1 to 5 carbon atoms; or aralkyl of 7 to 14 carbon atoms;

R_5 is



where B is $-O-CH_2-$, where the oxygen atom is attached to the phenyl ring, or $-(CH_2)_2-$;

D is alkylene of 1 to 12 carbon atoms; and

A is hydrogen or lower alkanoyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

7. The method of blocking the α- and β-adrenergic receptors in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective amount of a compound of claim 4.

4,343,801

1,2,4-TRIAZINE DERIVATIVES, AND THEIR PRODUCTION AND USE

Hideo Agui, Sonehigashi; Katsumi Tamoto, Hyogo; Shunji Aono, Osaka, and Takao Okuda, Sonehigashi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

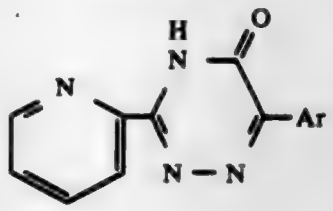
Filed Dec. 3, 1980, Ser. No. 212,442

Claims priority, application Japan, Dec. 3, 1979, 54/157249; Sep. 27, 1980, 55/133348

Int. Cl.³ C07D *401/04*; A01N *43/64*; C07D *401/14*; A01N *43/10*

U.S. Cl. 424—249 **18 Claims**

1. A compound of the formula:



wherein Ar is a phenyl group substituted with a member selected from the group consisting of halogen, C_1-C_8 alkyl, C_1-C_8 alkoxy, C_1-C_8 alkylthio, trihalomethyl, cyano, and phenoxy, or a thienyl group substituted with halogen.

16. A method of destroying fungi which comprises applying a fungicidal amount of the compound of claim 1 to fungi.

4,343,802

2-(3-SUBSTITUTED AMINO-2-HYDROXYPROPOXY)-3-PIPERIDINO PYRAZINES FOR USE IN TREATING HYPERTENSION

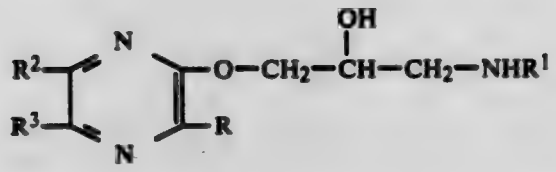
Burton K. Wasson, Valois, Canada, and Leonard M. Weinstock, Belle Mead, N.J., assignors to Merck, Sharp & Dohme (I.A.) Corp., Rahway, N.J.

Continuation of Ser. No. 861,807, Dec. 19, 1977, abandoned, which is a division of Ser. No. 775,678, Mar. 8, 1977, Pat. No. 4,193,995, which is a division of Ser. No. 584,439, Jun. 6, 1975, Pat. No. 4,042,586, which is a division of Ser. No. 408,032, Oct. 19, 1973, Pat. No. 3,946,009, which is a continuation-in-part of Ser. No. 341,241, Mar. 15, 1973, abandoned. This application Jul. 3, 1980, Ser. No. 165,577

Int. Cl.³ A61K *31/495*; C07D *241/18*

U.S. Cl. 424—250 **7 Claims**

1. A pyrazine compound having the structure



I

or a pharmacologically acceptable salt thereof wherein

R represents piperidino;

R^1 represents a straight or branched chain C_{3-6}alkyl, a straight or branched chain hydroxy substituted C_{3-6}alkyl, a straight or branched chain C_{3-6}alkinyl, phenyl-C_{1-6}alkyl or indolyl-C_{1-6}alkyl;

R^2 and R^3 can represent the same or different substituents and represent hydrogen, C_{1-3}alkyl, C_{5-7}cycloalkyl, C_{1-3}alkoxy, phenoxy, phenyl, substituted phenyl wherein the substituent is C_{1-3}alkyl, C_{1-3}alkoxy, amino, acylamino, nitro or halo.

2. A pharmaceutical composition for use in hypertension in unit dosage form comprising a pyrazine of claim 1 and a carrier.

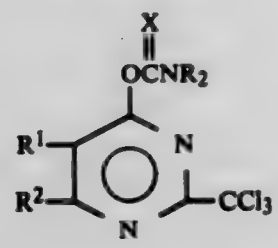
4,343,803

2-TRICHLOROMETHYL-4-PYRIMIDINYL CARBAMATES AND THEIR USE AS FUNGICIDES

Lawrence E. Katz, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

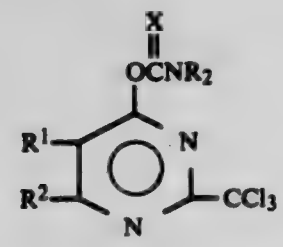
Filed May 4, 1981, Ser. No. 259,792
Int. Cl.³ A01N *43/54*; C07D *239/34*
U.S. Cl. 424—251 26 Claims

1. A compound having the formula:



wherein X is an atom selected from the group consisting of oxygen and sulfur; R is a lower alkyl group having 1 to 4 carbon atoms or a phenyl group or R_2 is $-(CH_2)_n-$, where n is 4 or 5; R^1 is hydrogen, a lower alkyl group having 1 to 4 carbon atoms, halo or nitro; and R^2 is a lower alkyl group having 1 to 4 carbon atoms or a haloalkyl group having 1 to 4 carbon atoms.

21. A method of controlling fungi which comprises contacting said fungi with a fungicidally effective amount of a compound having the formula:



wherein X is an atom selected from the group consisting of oxygen and sulfur; R is a lower alkyl group having 1 to 4 carbon atoms or a phenyl group or R_2 is $-(CH_2)_n-$, where n is 4 or 5; R^1 is hydrogen, a lower alkyl group having 1 to 4 carbon atoms, halo or nitro; and R^2 is a lower alkyl group having 1 to 4 carbon atoms or a haloalkyl group having 1 to 4 carbon atoms.

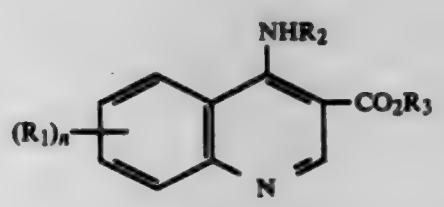
4,343,804

4-AMINO-3-QUINOLINECARBOXYLIC ACIDS AND ESTERS-ANTISECRETORY ANTI-ULCER COMPOUNDS

Harry R. Munson, Jr., and Reevis S. Alphin, both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 23,981, Mar. 26, 1979, abandoned. This application Mar. 4, 1980, Ser. No. 127,153
Int. Cl.³ A61K *31/47*
U.S. Cl. 424—258 104 Claims

1. A method of inhibiting secretion of gastric acid and/or treating peptic ulcers in mammals which comprises administering to a mammal an effective amount of a compound having the formula:



wherein;

R_1 is selected from the group consisting of loweralkyl, phenyl, O-loweralkyl, S-loweralkyl, halogen, trifluoromethyl, cyano and dialkylamino,

R_2 is selected from the group consisting of loweralkyl, phenyl, phenylloweralkyl or phenyl substituted by 1-3 radicals taken from among loweralkyl, O-loweralkyl, S-loweralkyl, halogen, cyano, hydroxy, carbamoyl, carboxy, acetyl, trifluoromethyl and nitro,

R_3 is selected from the group consisting of hydrogen, loweralkyl, loweralkyldimethylamino, loweralkyl-loweralkoxy, and allyl,

n is 0, 1 or 2, and

the pharmaceutically acceptable addition salts thereof.

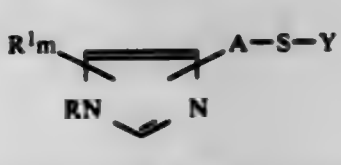
4,343,805

HETEROCYCLIC COMPOUNDS

Roger Crossley, and Kay H. Dickinson, both of Reading, England, assignors to John Wyeth & Brother Limited, Maidenhead, England

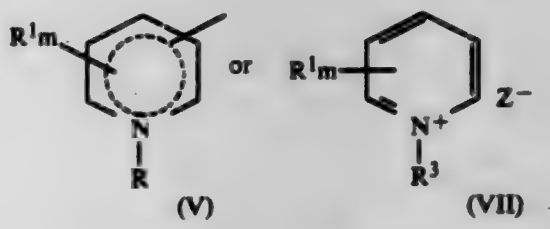
Continuation of Ser. No. 98,421, Nov. 29, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,925
Claims priority, application United Kingdom, Dec. 16, 1978, 48813/78
Int. Cl.³ C07D *401/12*; A61K *31/435*
U.S. Cl. 424—263 11 Claims

1. A compound of the formula I



I

wherein Y is a heterocyclic radical of the formula



(V) (VII)

wherein R is hydrogen or lower alkyl, R^1 is hydrogen, lower alkyl, hydroxylower alkyl, loweralkoxyloweralkyl, loweralkoxy, halogen, formyl, phenyl, phenylalkyl or acetal, m is 1 or 2, R^3 is lower alkyl, phenyl or aralkyl of 7 to 12 carbon atoms, Z^- is an anion, and the dotted lines in formula V represent an optional double bond in one of the indicated positions, A is a saturated or unsaturated alkylene radical having from 1 to 6

carbon atoms, which may be substituted by lower alkyl of 1 to 6 carbon atoms, S is sulphur, and acid addition salts thereof, with the provisos that (1) when Y is a radical of formula VII then A is CH_2 and (2) when more than one R^1 radical is present in the molecule then the R^1 radicals may be the same or different.

4,343,806

BENZYLAMINO CLAVULANATES AND THEIR PRODUCTION

John B. Harbridge, Coulsdon, England, assignor to Beecham Group Limited, England

Filed Oct. 11, 1979, Ser. No. 83,838

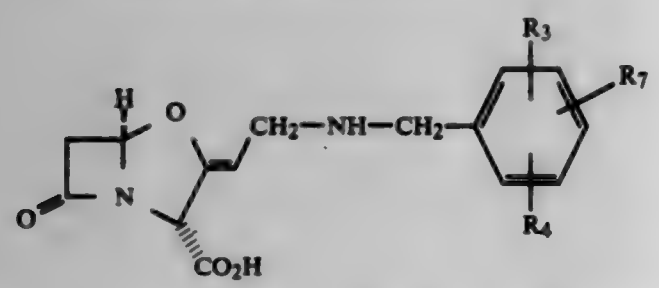
Claims priority, application United Kingdom, Oct. 25, 1978, 41957/78

Int. Cl.³ C07D *498/04;* A61K *31/42*

U.S. Cl. 424—272 **76 Claims**

1. A compound of the formula (II):

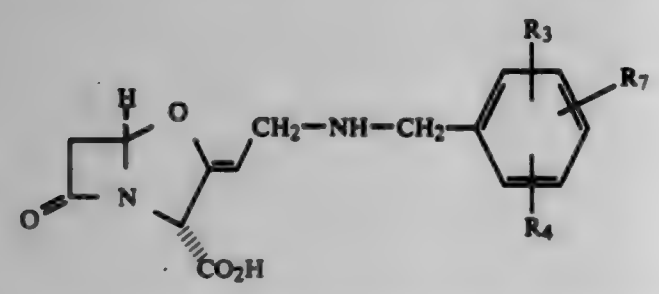
(II)



wherein R_3 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms, alkoxyl of 1–3 carbon atoms or alkanoyloxy of 1–3 carbon atoms, R_4 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms or alkoxy of 1–3 carbon atoms, and R_7 is nitro, cyano, amino or aminomethyl.

25. A pharmaceutical composition useful for treating bacterial infections in humans or domestic mammals which comprises an antibacterially effective amount of a compound of the formula (II):

(II)



wherein R_3 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms, alkoxyl of 1–3 carbon atoms or alkanoyloxy of 1–3 carbon atoms, R_4 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms or alkoxy of 1–3 carbon atoms, and R_7 is nitro, amino or aminomethyl as the sole antibacterial agent, in combination with a pharmaceutically acceptable carrier.

4,343,807

DERIVATIVES OF CLAVULANIC ACID, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Irene Stirling, Reigate, and Brian P. Clarke, Kingswood, both of England, assignors to Beecham Group Limited, England

Filed Sep. 24, 1980, Ser. No. 190,463

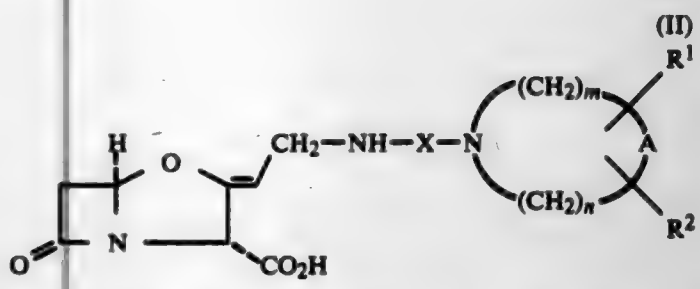
Claims priority, application United Kingdom, Sep. 27, 1979, 7933447; Oct. 6, 1979, 7934761

Int. Cl.³ C07D *498/04;* A61K *31/42*

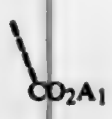
U.S. Cl. 424—272 **114 Claims**

1. A compound of the formula (II):

(II)



a pharmaceutically acceptable salt thereof, an ester thereof of the formula:



wherein A_1 is alkyl of 1 to 6 carbon atoms unsubstituted or monosubstituted by alkoxy of 1 to 7 carbon atoms or alkanoyloxy of 1 to 7 carbon atoms, or A_1 is a moiety of the sub-formula (a):

$$CHA_2A_3 \quad (a)$$

wherein A_2 is alkenyl of up to 5 carbon atoms, alkynyl of up to 5 carbon atoms, or phenyl unsubstituted or mono-substituted by a fluorine, chlorine or bromine atom or by a nitro, alkyl of up to 4 carbon atoms or alkoxyl of up to 4 carbon atoms moiety; and A_3 is hydrogen, alkyl of up to 4 carbon atoms or phenyl unsubstituted or mono-substituted by a fluorine, chlorine or bromine atom or by a nitro, alkyl of up to 4 carbon atoms or alkoxyl of up to 4 carbon atoms moiety or A_1 is ethoxycarbonyloxymethyl, methoxycarbonyloxyethyl, ethoxycarbonyloxyethyl, or a moiety of the formula (b), (c) or (d):

$$—CH_2—OA_5 \quad (b)$$

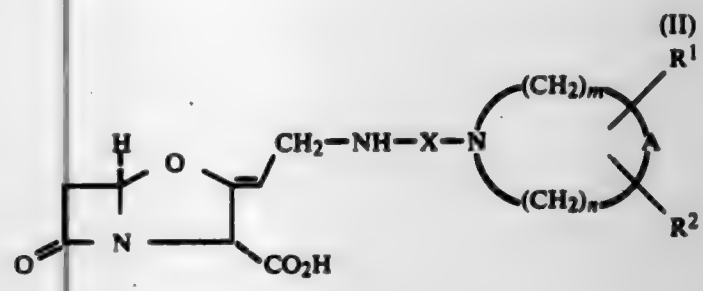
$$—CH_2—COA_5 \quad (c)$$

$$—CHA_4—COOA_5 \quad (d)$$

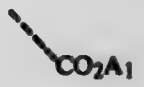
wherein A_4 is hydrogen or methyl, A_5 is phenyl or benzyl, either of which is unsubstituted or mono-substituted by 1 or 2 alkyl or alkoxyl moieties of up to 3 carbon atoms or either of which is substituted by a fluorine, chlorine or bromine atom or a nitro moiety and in formulae (c) and (d) is also alkyl of up to 4 carbon atoms; or A_4 and A_5 together with the —CH—O—CO moiety form an orthophenylene moiety which is unsubstituted or substituted by one or two alkyl or alkoxyl moieties of up to 3 carbon atoms, or by a fluorine, chlorine or bromine atom or a nitro moiety, or an acid addition salt of said ester wherein X is alkylene of 1 to 6 carbon atoms; m is 1, 2, or 3; n is 1, 2 or 3; A is oxygen or sulphur; R^1 is hydrogen, oxo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy or phenyl; and R^2 is hydrogen, oxo, alkyl of 1 to 6 carbon atoms or phenyl; with the proviso that if m and n are both 1, then A is $—CH_2—$ and R^2 is not oxo.

39. A pharmaceutical composition useful for treating bacterial infections in mammals including humans which comprises an antibacterially effective amount of a compound of the formula (II):

(II)



a pharmaceutically acceptable salt thereof, an ester thereof of the formula:



wherein A_1 is alkyl of 1 to 6 carbon atoms unsubstituted or mono-substituted by alkoxy of 1 to 7 carbon atoms or alkanoyloxy of 1 to 7 carbon atoms, or A_1 is a moiety of the sub-formula (a):

$$CHA_2A_3 \quad (a)$$

wherein A_2 is alkenyl of up to 5 carbon atoms, alkynyl of up to 5 carbon atoms, or phenyl unsubstituted or mono-substituted by a fluorine, chlorine or bromine atom or by a nitro, alkyl of up to 4 carbon atoms or alkoxyl of up to 4 carbon atoms moiety; and A_3 is hydrogen, alkyl of up to 4 carbon atoms or phenyl unsubstituted or mono-substituted by a fluorine, chlorine or bromine atom or by a nitro, alkyl of up to 4 carbon atoms or alkoxyl of up to 4 carbon atoms moiety or A_1 is ethoxycarbonyloxymethyl, methoxycarbonyloxyethyl, ethoxycarbonyloxyethyl, or a moiety of the formula (b), (c) or (d):

$$—CH_2—OA_5 \quad (b)$$

$$—CH_2—COA_5 \quad (c)$$

$$—CHA_4—COOA_5 \quad (d)$$

wherein A_4 is hydrogen or methyl, A_5 is phenyl or benzyl, either of which is unsubstituted or mono-substituted by 1 or 2 alkyl or alkoxyl moieties of up to 3 carbon atoms or either of which is substituted by a fluorine, chlorine or bromine atom or a nitro moiety and in formulae (c) and (d) is also alkyl of up to 4 carbon atoms; or A_4 and A_5 together with the —CH—O—CO moiety form an orthophenylene moiety which is unsubstituted or substituted by one or two alkyl or alkoxyl moieties of up to 3 carbon atoms, or by a fluorine, chlorine or bromine atom or a nitro moiety, or an acid addition salt of said ester wherein X is alkylene of 1 to 6 carbon atoms; m is 1, 2 or 3; n is 1, 2 or 3; A is oxygen or sulphur; R^1 is hydrogen, oxo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy or phenyl; and R^2 is hydrogen, oxo, alkyl of 1 to 6 carbon atoms or phenyl, with the proviso that if m and n are both 1 then A is $—CH_2—$ and R^2 is not oxo as the sole antibacterial agent, in combination with a pharmaceutically acceptable carrier.

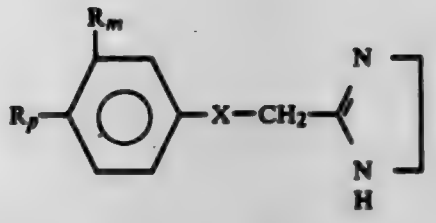
4,343,808

METHOD OF INHIBITING SICKLING OF SICKLE ERYTHROCYTES

Robert J. Broersma, Jr., Noblesville, Ind., and Gayle A. Spittka, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 88,427, Oct. 25, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,245
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R **9 Claims**

1. A method for inhibiting the sickling of red blood cells prone to sickle in blood containing said cells which comprises introducing into said blood an effective sickle inhibiting amount of a compound of the formula:



or a pharmaceutically-acceptable salt thereof wherein X represents sulfur, oxygen or imino; and R_m and R_p each independently represent hydrogen, cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkyl or trifluoromethyl.

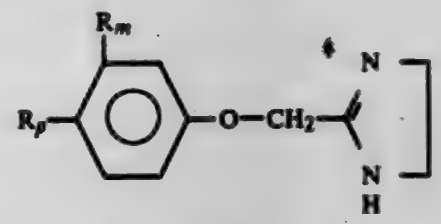
4,343,809

METHOD OF INHIBITING SICKLING OF SICKLE ERYTHROCYTES EMPLOYING 2-((HALOPHENOXY)METHYL)-2-IMIDAZOLINES

Robert J. Broersma, Jr., Noblesville, Ind., and Gayle A. Spittka, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 24, 1980, Ser. No. 200,247
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R **3 Claims**

1. A method for inhibiting the sickling of red blood cells prone to sickle in blood containing said cells which comprises introducing into said blood an effective sickle inhibiting amount of a compound of the formula:



or a pharmaceutically-acceptable salt thereof, wherein R_m represents hydrogen or alkyl; and R_p represents chloro, bromo, fluoro or iodo.

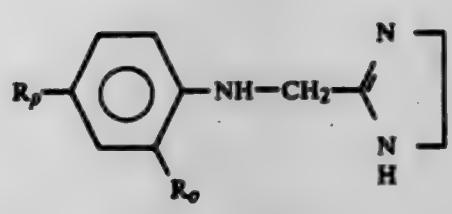
4,343,810

METHOD OF INHIBITING SICKLING OF SICKLE ERYTHROCYTES USING 2-((HALOANILINO)METHYL)-2-IMIDAZOLINES

Robert J. Broersma, Jr., Noblesville, Ind., and Gayle A. Spittka, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 24, 1980, Ser. No. 200,248
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R **3 Claims**

1. A method for inhibiting the sickling of red blood cells prone to sickle in blood containing said cells which comprises introducing into said blood an effective sickle inhibiting amount of a compound of the formula:



or a pharmaceutically-acceptable salt thereof, wherein R_o represents chloro, bromo, fluoro or iodo; and R_p represents hydrogen, chloro, bromo, fluoro or iodo.

4,343,811
2[3-(4-CHLOROPHENYL)-1,2-DIMETHYL-1H-INDOL-5-YLOXY]-2-METHYL PROPANOIC ACID AND HYPERLIPIDEMIC OR ATHEOSCLEROTIC USE THEREOF

Rudolf Hurnaus; Gerhart Griss; Wolfgang Greil, all of Biberach; Robert Sauter, Laupheim; Bernhard Eisele; Nikolaus Kaubisch, both of Biberach; Eckhard Rupprecht, Winterstettenstadt, and Joachim Kähling, Biberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Feb. 29, 1980, Ser. No. 126,006

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 2909779

Int. Cl.³ C07D *209/04;* A61K *31/40*

U.S. Cl. 424—274 **5 Claims**

1. The compound 2-[3-(4-chlorophenyl)-1,2-dimethyl-1H-indol-5-yloxy]-2-methyl-propanoic acid or a non-toxic, pharmacologically acceptable acid addition salt thereof.

5. The method of treating hyperlipidemia or atherosclerotic alteration of the vessel system in a warm-blooded animal, which comprises perorally, parenterally, or rectally administering to said animal an effective lipid-level lowering amount of a compound of claim 1, 2, or 3.

4,343,812
ANTIDEPRESSANT 2-AMINO-AND-2-(SUBSTITUTED AMINO)-CIS-HEXAHYDRO-CARBAZOLES, COMPOSITIONS AND USE

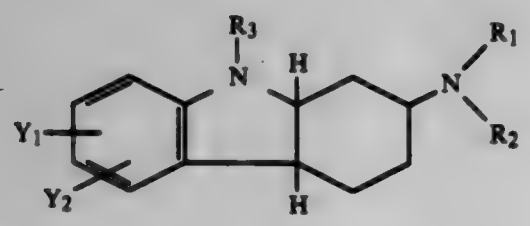
Leonard J. Fliedner, Jr., Point Lookout, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 887,779, Mar. 17, 1978, Pat. No. 4,254,134. This application Jun. 3, 1980, Ser. No. 155,977

Int. Cl.³ A61K *31/40;* C07D *209/88*

U.S. Cl. 424—274 **24 Claims**

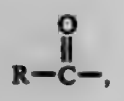
1. A compound of the formula



(I)

wherein

R_1 is hydrogen, methyl, ethyl, or



where R is hydrogen, or C_1–C_4 alkyl;

R_2 is hydrogen or methyl;

R_3 is hydrogen, methyl or ethyl;

Y_1 is hydrogen, fluorine, chlorine, bromine, hydroxy, methyl, benzyloxy or C_1–C_6 alkoxy;

Y_2 is hydrogen or chlorine; with the proviso that Y_2 can be chlorine only when Y_1 is chlorine;

or a pharmaceutically suitable salt thereof.

9. A pharmaceutical composition consisting essentially of a suitable pharmaceutical carrier and an effective antidepressant amount of a compound of claim 1.

4,343,813
CARBOXAMIDE COMPOUNDS AS SRS-A ANTAGONISTS

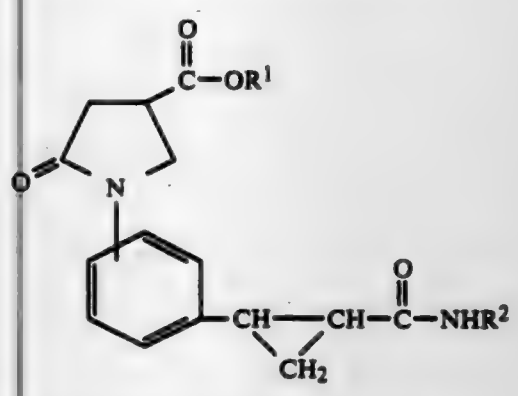
Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 182,162, Aug. 28, 1980, Pat. No. 4,296,120. This application May 18, 1981, Ser. No. 264,736

Int. Cl.³ A61K *31/40;* C07D *207/277*

U.S. Cl. 424—274 **15 Claims**

1. A carboxamide compound of the formula

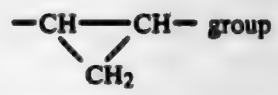


or a pharmaceutically-acceptable salt thereof;

wherein R^1 is selected from the group consisting of hydrogen, alkyl having 1 to 4 carbons and $—CH_2—CH_2—NR^3R^4$, wherein R^3 and R^4 are each alkyl having 1 to 3 carbons;

and R^2 is selected from the group consisting of alkyl having 8 to 15 carbons and cycloalkyl having from 6 to 12 carbons;

with the proviso that the two groups attached to the



group

have a trans relationship to each other.

4,343,814
HYPOCHOLESTEROLEMIC FERMENTATION PRODUCTS

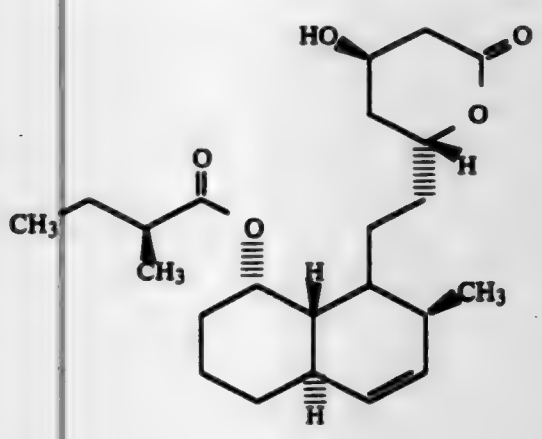
Vincent P. Gullo; Tony Y. K. Lam, both of Edison, and Richard L. Monaghan, Somerset, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 17, 1980, Ser. No. 207,508

Int. Cl.³ C07D *309/30;* A61K *31/365*

U.S. Cl. 424—279 **2 Claims**

1. A compound of structural formula I in substantially pure form:



I

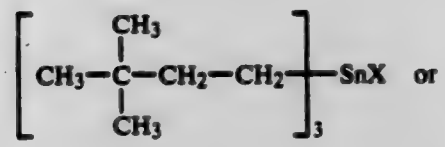
4,343,815

METHOD FOR COMBATING FUNGI AND MITES USING CERTAIN TRIORGANOTIN COMPOUNDS

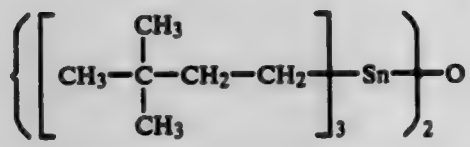
Melvin H. Gitlitz, Edison, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

Continuation of Ser. No. 392,960, Aug. 30, 1973, abandoned. This application Feb. 27, 1978, Ser. No. 881,248
Int. Cl.[3] A01N *55/04*
U.S. Cl. 424—288 1 Claim

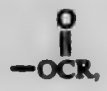
1. A non-phytotoxic composition for combating mites, said composition comprising a liquid or solid carrier and a miticidally effective amount of a compound of the general formula



or



wherein X represents a radical selected from the group consisting of chlorine, bromine, fluorine, hydroxyl and carboxylate



wherein R represents an alkyl radical containing from 1 to 12 carbon atoms.

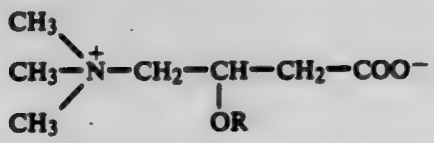
4,343,816

PHARMACEUTICAL COMPOSITION COMPRISING AN ACYL-CARNITINE, FOR TREATING PERIPHERAL VASCULAR DISEASES

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

Filed Feb. 5, 1980, Ser. No. 118,835
Claims priority, application Italy, Feb. 12, 1979, 47976 A/79
Int. Cl.[3] A61K *31/205*
U.S. Cl. 424—316 6 Claims

1. Therapeutical method for the treatment of peripheral vascular diseases characterized by the fact of administering to a patient affected by chronic arterial occlusions of the extremities, functional arterial diseases and ischaemias an effective amount as to achieve in said patient an anti-ischaemic effect of an acyl-derivative of carnitine representable by the formula



(1)

where R is an acyl radical of fatty acid having 2 to 20 carbon atoms, or a pharmacologically acceptable salt thereof.

4,343,817

NATURAL CHEESE ANALOG

Arthur M. Swanson, 308 Kensington Dr., Madison, Wis. 53704; Robert J. Swanson, Sun Prairie, Wis.; James K. Seibel, Deerfield, Wis., and Frank L. Pavelec, Beloit, Wis., assignors to Arthur M. Swanson, Madison and ChemVen, Inc., Sun Prairie, both of, Wis.

Filed Feb. 24, 1978, Ser. No. 881,001
Int. Cl.[3] A23C *19/02, 11/00*
U.S. Cl. 426—36 16 Claims

10. A method of producing a coagulated curd comprising the steps of:

(a) introducing a quantity of dry material consisting essentially of casein into a quantity of liquid cheese whey, and adding during or after the addition of said material calcium hydroxide in an amount sufficient to raise and maintain the pH of the resultant casein and whey mixture to between 6.8 and 7.3 whereby the casein is dissolved in the whey;

(b) acidifying the casein and whey mixture;

(c) adding a coagulating enzyme to the mixture and holding the mixture under conditions to produce a continuous coagulum; and

(d) processing the coagulum by (i) cutting the continuous coagulum to form small curd particles, (ii) heating the curds to draw out whey from the curds, and (iii) drawing off the whey to separate the curds and whey.

4,343,818

COCOA PRODUCT AND PROCESS OF PREPARATION

Ingmar B. Eggen, New Milford, Conn., assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation of Ser. No. 933,967, Aug. 15, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 142,123
Int. Cl.[3] A23G *1/02*
U.S. Cl. 426—45 12 Claims

1. A process for making a cocoa product which consists essentially of:

(a) mixing a low fat cocoa, obtained from roasted cocoa beans, with water to form a cocoa slurry;

(b) enzymatically hydrolysing the cocoa slurry with an amylase-containing enzyme;

(c) adding alkali to the resulting hydrolysed slurry; and

(d) heating the alkali containing slurry.

4,343,819

QUICK-DISSOLVING POWDERED DRINK AND METHOD THEREFORE

Robert W. Wood, West Milford, N.J.; Andrew C. Hoefler, Warwick, and Deborah S. Brody, Kew Gardens Hills, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,280
Int. Cl.[3] A23L *2/38, 2/40*
U.S. Cl. 426—96 10 Claims

1. A quick-dissolving, sugar-containing powdered drink mix comprised of at least 60% by weight sucrose, an edible acidulent and a dry, particulate CO_2-generator, wherein the CO_2-generator has an average particle size less than one-half that of the sucrose particles and is bound to the surface of the sucrose particles by means of a non-aqueous binding agent selected from the group consisting of polyhydric alcohols, vegetable oils, fluid monoglycerides, fluid diglycerides and combinations thereof and wherein the amount of CO_2-generator is insufficient and to produce a carbonated beverage, and is in the range of 1% and less than 6% by weight of the sugar.

4,343,820

FREE-FLOWING, SWEETENED, HYDRATED, COCONUT PARTICLES AND METHOD FOR PREPARING SAME

Arnold S. Roseman, Glen Ellyn, Ill., assignor to CFS Continental, Inc., Chicago, Ill.

Filed Sep. 4, 1981, Ser. No. 299,305
Int. Cl.[3] A23L *1/36*
U.S. Cl. 426—103 25 Claims

7. A method of preparing a particulate free-flowing, sweetened, hydrated, coconut product comprising the steps of:

providing desiccated coconut particles;

admixing an aqueous solution containing water, an edible polyol having about 3 to about 6 carbon atoms and sodium chloride with said coconut particles and agitating said admixture to form hydrated coconut particles, said water

comprising about 10 to about 50 percent of the weight of said desiccated coconut;

admixing with agitation a sweetener at about 20 to about 120 percent of the weight of said desiccated coconut with said hydrated coconut particles and continuing the agitation for a time period sufficient to form a sweetened, hydrated, particulate coconut admixture; and

admixing and agitating cellulose powder at about 1.5 to about 8 percent of the weight of said desiccated coconut with the sweetened coconut admixture to prepare said product.

4,343,821

PROCESS FOR PREPARING MEAT PRODUCTS HAVING REDUCED SHRINKAGE

Peter W. Rose, R.R. 3 Covered Bridge Rd., South Barrington, Ill. 60010

Continuation-in-part of Ser. No. 165,850, Jul. 7, 1980, Pat. No. 4,276,313, which is a continuation-in-part of Ser. No. 139,795, Apr. 14, 1980, Pat. No. 4,264,632, which is a continuation-in-part of Ser. No. 129,727, Mar. 12, 1980, Pat. No. 4,264,631. This application Aug. 28, 1980, Ser. No. 182,329

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ A23B *4/02*; A23L *3/32*

U.S. Cl. 426—247 **55 Claims**

1. A process for preparing a meat product with reduced shrinkage comprising the steps of:

providing meat;

providing an aqueous solution containing an edible chloride salt present at a concentration of at least about 0.2 molal;

passing a direct electric current through said aqueous solution to form an electrolyzed moisturizing solution having moisturizing activity, said current passing through said aqueous solution at about 2 to about 20 amperes;

cooling said electrolyzed moisturizing solution to a temperature of no higher than about 30° F., after passage of said direct electric current through said electrolyzed moisturizing solution has ceased, while maintaining said moisturizing activity to form an electrolyzed moisturizing composition;

thereafter combining said meat and said electrolyzed moisturizing composition to contact said meat with said electrolyzed moisturizing composition to form an admixture;

maintaining said contact for a time period sufficient for said electrolyzed moisturizing composition to penetrate said meat and enhance the moistuure content thereof to form moisturized meat; and

recovering said moisturized meat.

4,343,822

PROCESS FOR PREPARING COOKED MEAT PRODUCTS HAVING REDUCED SHRINKAGE AFTER REFRIGERATION

Peter W. Rose, R.R. 3 Covered Bridge Rd., South Barrington, Ill. 60010

Continuation-in-part of Ser. No. 182,329, Aug. 28, 1980, which is a continuation-in-part of Ser. No. 165,850, Jul. 7, 1980, Pat. No. 4,276,313, which is a continuation-in-part of Ser. No. 139,795, Apr. 14, 1980, Pat. No. 4,264,632, which is a continuation-in-part of Ser. No. 129,727, Mar. 12, 1980, Pat. No. 4,264,631. This application Mar. 19, 1981, Ser. No. 245,636

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ A23B *4/02*; A23L *3/32*

U.S. Cl. 426—247 **27 Claims**

1. A process for preparing a cooked meat product having reduced shrinkage after refrigeration comprising the steps of:

providing hot meat;

providing an aqueous solution containing an edible chloride salt present at a concentration of at least about 0.5 percent by weight;

passing a direct electric current through said aqueous solution to form an electrolyzed moisturizing solution having moisturizing activity, said current passing therethrough at about 2 to about 20 amperes;

cooling said electrolyzed moisturizing solution to a temperature of no higher than about 30° F., after passage of said direct electric current through said electrolyzed moisturizing solution has ceased, while maintaining said moisturizing activity, to form an electrolyzed moisturizing composition;

combining said hot meat and said electrolyzed moisturizing composition to contact said meat with said electrolyzed moisturizing composition, while maintaining said moisturizing activity, to form an admixture;

maintaining said contact for a time period sufficient to lower the external meat temperature of said hot meat to about 70°–110° F. to form externally cooled meat;

thereafter refrigerating said externally cooled meat; and

recovering said refrigerated meat.

4,343,823

LIQUID SEASONING COMPOSITIONS IV

Paul H. Todd, Jr., and Howard E. Haley, both of Kalamazoo, Mich., assignors to Kalsec, Inc., Kalamazoo, Mich.

Filed Apr. 3, 1981, Ser. No. 250,721

Int. Cl.³ A23L *1/226*

U.S. Cl. 426—250 **19 Claims**

1. A homogeneous liquid condimental composition, useful in flavoring or coloring foods and beverages and which is dispersible in both oil and water, consisting essentially of

(1) monoglyceride of caproic and/or caprylic and/or lauric acid,

(2) polyglycerol ester of at least one fatty acid, and

(3) one or more condiments selected from edible flavorings and edible colorings,

the ratio by weight of (1) plus (2) to (3) being at least 1:4.

4,343,824

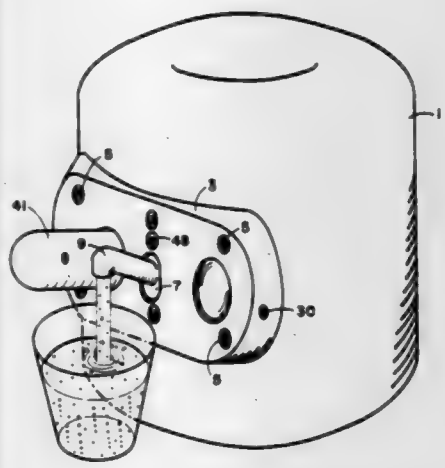
METHOD FOR CARBONATING LIQUIDS IN SITU

Michael C. Caldwell, 352 N. Caswell Rd., Charlotte, N.C. 28204

Division of Ser. No. 7,438, Jan. 29, 1979, Pat. No. 4,222,972. This application Sep. 12, 1980, Ser. No. 186,639

Int. Cl.³ A23L *2/40*

U.S. Cl. 426—477 **2 Claims**



1. A method of carbonating liquid comprising the steps of:

(a) providing a container

(b) providing an air bag of resilient impervious material within the container and defining a carbonating chamber exteriorly of the air bag within the container,

(c) introducing liquid into the carbonating chamber,

(d) introducing carbon dioxide into the carbonating chamber to carbonate said liquid,

(e) introducing atmospheric air into the air bag to exert a predetermined pressure against liquid in the carbonating chamber, and

(f) introducing air into the air bag to maintain the predetermined pressure against liquid in the carbonating chamber.

4,343,825

PROCESS FOR THE PREPARATION OF AN AEROSOL TYPE WHIPPING CREAM

Moritaka Takada, Yokohama, and Hiroshi Kanda, Zushi, both of Japan, assignors to Nisshin Oil Mills Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 187,035
Claims priority, application Japan, Sep. 14, 1979, 54-117407
Int. Cl.[3] A23L *1/19;* B65D *85/72, 83/14*
U.S. Cl. 426—570 2 Claims

1. A process for the preparation of an aerosol type whipping cream which comprises homogenizing an aqueous phase containing a partially enzymolyzed soybean protein of 1–6% by weight based on the composition of cream with an oil phase containing an edible oil and fat and an edible emulsifier, charging the resulting emulsified composition to an aerosol container and charging under pressure a gas consisting of CO_2 in an amount sufficient by itself to function as the whipping agent and propellant, wherein said partially enzymolyzed soybean protein has such a hydrolysis degree that a weight ratio of protein dissolving in a 10% aqueous solution of trichloroacetic acid to the total of soybean protein is within the range of 20–90%.

4,343,826

PROCESS FOR PREPARING BEADS OF FAT

John P. McNaught, Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,499
Int. Cl.[3] A23D *5/02;* A23L *1/00*
U.S. Cl. 426—601 8 Claims

1. A non-spray process for preparing solidified beads of fat comprising:

(a) melting a fat which contains at least 20% solids at room temperature at a temperature below about 175° F.;

(b) cooling the melted fat to a temperature about 3°–8° F. below the clear point of the fat;

(c) allowing the formation of an amount of solids sufficient to permit the fat to hold its shape when formed into drops at least 3 mm in diameter at the temperature described in step (b);

(d) forming the melted fat containing the solids into drops having a diameter of at least 3 mm; and

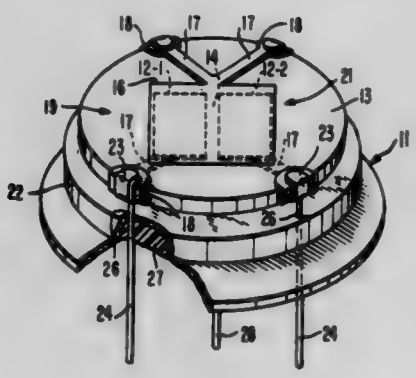
(e) cooling and collecting the solidified drops.

4,343,827

METHOD OF FINE-TUNING A MONOLITHIC CRYSTAL FILTER

Edwin C. Thompson, West Epping, N.H., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,528
Int. Cl.[3] H01P *11/00;* H03H *3/02*
U.S. Cl. 427—8 5 Claims



1. A method of fine-tuning a monolithic crystal filter having a solid electrode on one side of a crystal wafer and a pair of split electrodes on an opposite side of the wafer, to define a pair of resonators, which comprises the steps of

plating additional electrode material on a selected portion of the solid electrode to balance open circuit resonant frequencies of the resonators of the filter; and

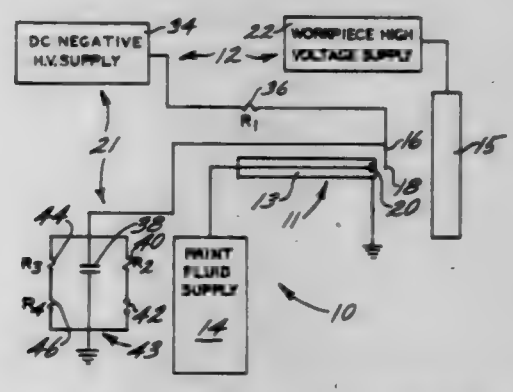
plating additional electrode material on substantially the entire solid electrode to adjust the filter to a desired mid-band frequency.

4,343,828

ELECTRODYNAMIC PAINTING SYSTEM AND METHOD

Robert G. Smead, St. Charles; Thomas J. Richards, and Charles E. Lanchantin, Jr., both of Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01740, § 371 Date Dec. 24, 1980, § 102(e) Date Dec. 24, 1980 PCT Pub. No. WO 82/02/54, PCT date Jul. 8, 1982
PCT Filed Dec. 24, 1980, Ser. No. 273,888
Int. Cl.[3] B05D *1/04*
U.S. Cl. 427—27 29 Claims



1. In an electrodynamic coating apparatus (10) for coating a workpiece (15) with a coating material, said apparatus (10) having first means (13) for propelling a plurality of atomized particles of said coating material through space in a preselected spray pattern (26), said first means (13) having a gun body (30) and a nozzle (24) connected to the gun body (30), the improvement comprising:

a second means (16,34) including an electrically chargeable electrode (16) for establishing an electric field intermediate the nozzle (24) and the electrode (16) for imparting an initial electrical charge of one polarity to the plurality of atomized particles at the nozzle (24), and for establishing, in response to the electrode (16) being charged to a sufficiently great first level, a zone of ions of an opposite polarity to said one polarity in the pathway of at least a portion of the preselected spray pattern (26), said zone of ions being adapted to neutralize and reverse the polarity of a portion of the charged particles yielding a plurality of diversely charged particles; and,

third means (21) for continuously varying the charge applied to said electrode (16) over a range that includes said first level and a second level of a magnitude insufficient for maintaining said zone of ions.

13. A method for coating a workpiece (15) with a coating material, comprising the steps of:

establishing a cyclically varying first electric field proximate a spary nozzle (24), said spray nozzle (24) being adapted to accept a surface charge, said surface charge being of a strength and polarity dependent upon said electric field;

spraying said coating material from said nozzle (24) toward said workpiece (15); and

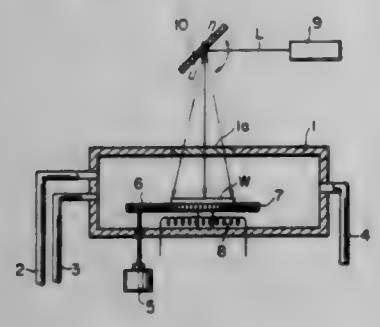
creating a periodic corona in the path of at least a portion of said coating material.

4,343,829

METHOD OF FABRICATING SINGLE-CRYSTALLINE SILICON FILMS

Hiroo Tochikubo, Tokyo, and Akira Kanai, Hachiohji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,561
Claims priority, application Japan, Apr. 4, 1980, 55-43577
Int. Cl.³ B05D 3/06; H01L 21/203, 21/263, 21/268
U.S. Cl. 427—35 7 Claims



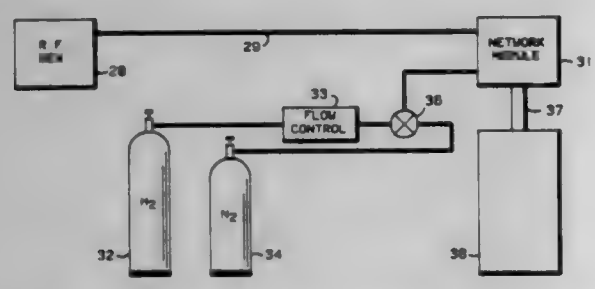
1. A method of fabricating a single-crystalline silicon film comprising depositing a material of polycrystalline silicon on a substrate; and, at the same time as said material is deposited, irradiating said deposited material of polycrystalline silicon with a laser or electron beam to single-crystallize said material of polycrystalline silicon and to form a single crystalline silicon film.

4,343,830

METHOD FOR IMPROVING THE EFFICIENCY OF SOLAR CELLS HAVING IMPERFECTIONS

Kalluri R. Sarma, Tempe, and Ronald N. Legge, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1980, Ser. No. 206,422
Int. Cl.³ H01L 31/18; B05D 1/38, 5/12
U.S. Cl. 427—38 16 Claims



1. A method for minimizing deleterious effects of structural imperfections in polycrystalline silicon solar cells, comprising:

diffusing a junction on a polycrystalline silicon substrate to form a p-n junction; passivating the p-n junction in a high pressure hydrogen plasma; applying an anti-reflection coating to the diffused portion of the p-n junction; defining a metallization pattern on the anti-reflection coating; and forming a metal conductor in the metallization pattern.

4,343,831

PROCESS FOR PRODUCING MAGNETIC RECORDING MEDIUM

Nobuo Tsuji; Goro Akashi; Masaaki Fujiyama, and Yasuyuki Yamada, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 13, 1981, Ser. No. 243,666
Claims priority, application Japan, Mar. 13, 1980, 55/32085
Int. Cl.³ B05D 3/06
U.S. Cl. 427—44 9 Claims

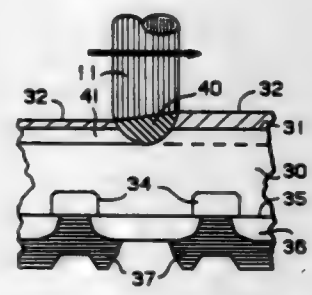
1. A process for producing a magnetic recording medium comprising applying to a support a coating solution containing ferromagnetic particles dispersed in a solution including a binder curable by electron beam radiation and a lowboiling point solvent, irradiating the support with electron beam radiation while the particles remain dispersed uniformally prior to any substantial evaporation of the solvent, and then evaporating the solvent to dryness.

4,343,832

SEMICONDUCTOR DEVICES BY LASER ENHANCED DIFFUSION

James N. Smith, Tempe, and Arthur D. Thompson, III, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 2, 1980, Ser. No. 193,235
Int. Cl.³ B05D 3/06
U.S. Cl. 427—53.1 11 Claims



1. A process utilizing a laser beam of wavelength λ for doping a region of area A and depth d, wherein d is measured perpendicular to A, in a semiconductor body while the average temperature T of said semiconductor body during doping remains within a small range $T-T_A$ of initial ambient temperature T_A of said semiconductor body, comprising the steps of:

forming a dopant source of thickness t on said semiconductor body, wherein $t \leqq d$ and said dopant source and semiconductor body form a combination;

choosing said wavelength λ so that at said ambient temperature T_A, more than 90% of the energy of said laser beam is absorbed within said combination in a depth $D \leqq n(t+d)$ where $n \leqq 10$, and D is measured perpendicular to A from an exterior surface of said dopant source means;

placing said combination in a path of said laser beam;

energizing said laser beam to an energy density Q which exceeds a melting threshold Q_m but is less than a boiling threshold Q_B so as to melt a small local surface region of said combination substantially immediately beneath a spot within area A where said laser beam impinges on said combination so that the depth of melting in said semiconductor body corresponds substantially to d;

moving said combination and said laser beam relative to each other so that other small local surface regions newly illuminated by said laser beam are successively melted, and local surface regions no longer illuminated successively refreeze;

continuing until substantially the entire area A has been melted and refrozen.

4,343,833

METHOD OF MANUFACTURING THERMAL HEAD

Tetsunori Sawae; Hiromi Yamashita; Takafumi Endo, and Toshio Tobita, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,572
Claims priority, application Japan, Jun. 26, 1979, 54-82337; Jun. 26, 1979, 54-82338; Jul. 20, 1979, 54-93605; Jul. 20, 1979, 54-93606
Int. Cl.³ H05K 3/06
U.S. Cl. 427—96 4 Claims

1. A method of manufacturing a thermal head, comprising the steps of:

attaching a plurality of electrically conductive strips on a surface of an electrically insulating substrate;

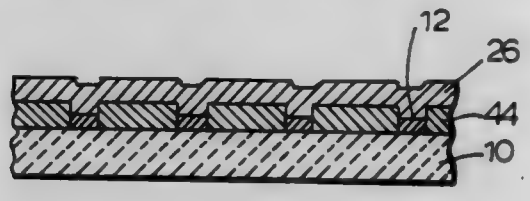
providing viscous organic coating on a supporting film and

forming at least one opening of predetermined shape in said coating;

applying said viscous organic coating having said opening to said surface of the substrate which has attached thereon said electrically conductive strips with said opening over at least part of said strips, and removing said supporting film and leaving said viscous organic coating on said substrate;

filling said opening with a thick film paste material including an electrically resistive material;

heating said viscous organic coating and said thick film paste material, thereby burning and removing said viscous organic coating and sintering and converting said thick film paste material into a resistive heater;



forming at least one second opening in a second viscous organic coating disposed on a second supporting film, said second opening having a form corresponding to said opening in the first organic coating;

applying said second viscous organic coating having said second opening to said surface of the substrate so that said second opening registers with said resistive heater, and removing said second supporting film and leaving said viscous organic coating on said resistive heater;

filling said second opening with a second thick film paste material including an electrically resistive material; and

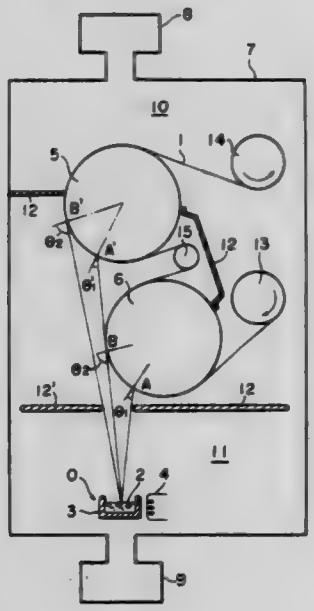
heating said second viscous organic coating and said second thick film paste material, thereby burning and removing said viscous organic coating and sintering and converting said second thick film paste material into a second resistive heater superposed on the first resistive heater.

4,343,834

PROCESS FOR PREPARING MAGNETIC RECORDING MEDIUM

Seitoku Saito; Toshiaki Izumi; Hiroshi Sugihara; Takayoshi Kobuke, and Kazuo Takada, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,753
Claims priority, application Japan, May 26, 1980, 55/68885
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—132 **1 Claim**



1. A process for preparing a magnetic recording medium by a tilt vapor deposition of magnetic particles on a substrate, said process comprising:

positioning a source of magnetic particle vapor within an evacuated housing;

positioning a first cylindrical can in said housing such that the circumferential surface of said can is in opposed relationship to said source;

positioning a partition having an aperture between said source and said first can;

locating said aperture such that lines extending from said source intersect said circumferential surface of said first can along an arc so as to form acute angles with a normal to the point of said intersection, said angles formed by said arc consisting of the angles between 60 and 85 degrees;

positioning a second cylindrical can in said housing such that the circumferential surface of said second can is in opposed relationship to said source;

locating said second can on the side of said first can opposite said source such that lines extending from said source are limited by said partition and said first can to intersect said circumferential surface of said second can along an arc so as to form acute angles to a normal to the point of intersection, said angles formed by said arc consisting of the angles between 60 and 85 degrees; and

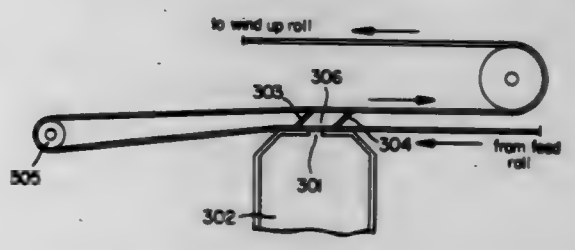
heating said source such that vapors from said source intersect said first and second cans at said acute angles.

4,343,835

METHOD AND APPARATUS FOR TREATING OPEN-WEAVE SUBSTRATES WITH FOAM

Allen P. Jones, Charleston, and Charles J. Cunningham, Elkview, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 17, 1980, Ser. No. 217,437
Int. Cl.³ B05D *1/26*; B05C *3/152*
U.S. Cl. 427—209 **6 Claims**



1. In an apparatus for the treatment of an open-weave substrate with a foam, which apparatus comprises means for conveying said open-weave substrate, foam generating means, foam conduit means, foam applicator means, and orifice means in the top of said foam applicator means to provide exit of the foam for contact thereof with said open-weave substrate as the open-weave substrate travels across said orifice; the improvement of having situated above said orifice means an auxiliary component means, said auxiliary component means comprising two or more angled shear strips to shear said foam spaced apart from each other and enclosed at each end by end means, said shear strips straddling said orifice and together with said end means defining a chamber spaced above said orifice having open top and bottom sides for sequential contact of both sides of said open-weave substrate with the foam as said open-weave substrate travels across said orifice and both open top and bottom sides of said chamber of said auxiliary component means; said angled shear strips positioned (a) essentially parallel with the length of said orifice and at an angle of from 3° to 90° to the plane of the top of said foam applicator means and (b) defining a space between said angled shear strips and the surface of said foam applicator means to permit passage of the open-weave substrate therebetween.

5. A method for treating an open-weave substrate with foam delivered through the orifice of foam applicator means by continuously conveying said substrate between the orifice of the foam applicator means and an auxiliary component means

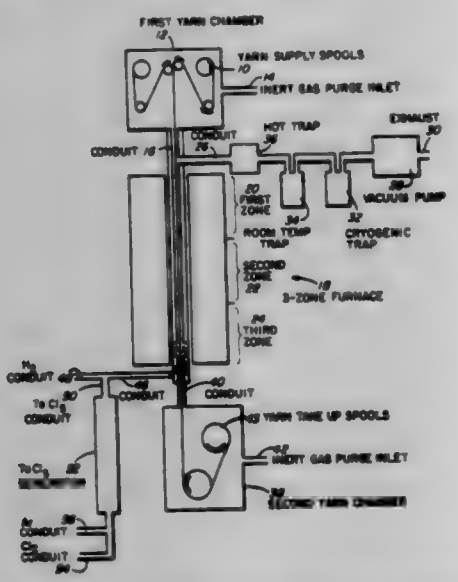
having angled shear strips to shear said foam so as to essentially uniformly apply the foam composition to both sides of said substrate, which method comprises conveying said substrate between the orifice and the edges of the angled shear strips of the auxiliary component meas closest to the orifice to uniformly apply foam to the side of the substrate facing the orifice and then conveying the opposite side of said substrate across the opposite edges of the angled shear strips of the auxiliary component means to uniformly apply foam to said opposite side of the substrate, said auxiliary component means comprising two or more of said angled shear strips essentially parallel to each other and enclosed at each end by end means, said shear strips straddling said orifice and together with said end means defining a chamber above said orifice having open too and bottom sides, whereby there is achieved sequential contact of both sides of said open-weave substrate with the foam as said open-weave substrate travels across said orifice and both open sides of said chamber of said auxiliary component means; said angled shear strips (a) defining an angle of from 3° to 90° with the plane of the substrate and positioned essentially parallel with the length of said orifice and (b) defining a space between said angled shear strips and the surface of said foam applicator means to permit passage of the open-weave substrate therebetween.

4,343,836

ONE-DIRECTIONAL UNIFORMLY COATED FIBERS, METHOD OF PREPARATION, AND USES THEREFOR

Lawrence R. Newkirk, Los Alamos; Flavio Valencia, Santa Fe; Robert E. Riley, and Terry C. Wallace, Sr., both of Los Alamos, all of N. Mex., assignors to United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 26, 1979, Ser. No. 61,152
Int. Cl.³ C23C *11/08*
U.S. Cl. 427—249 **12 Claims**



1. A method of coating long lengths of at least one multifilamentary yarn with a first metal selected from the group consisting of tantalum, niobium, tungsten, molybdenum, and rhenium, said multifilamentary yarn being made up of a bundle of individual filaments and being made of a material selected from the group consisting of graphite, carbon, ceramics, and metals, so as to produce yarn which is substantially uniformly coated on all filaments throughout each yarn bundle, said method comprising:

(a) passing said at least one multifilamentary yarn continuously through a coating chamber into which a mixture of a gaseous halide of said first metal and H_2 gas is being continuously introduced and then passed along a line which is substantially parallel to said yarn, said coating chamber being heated to a chosen temperature which is sufficiently high to enable said halide of said first metal and said hydrogen to react to form said first metal, said chosen temperature being lower than about 1100° C. and said coating chamber being operated at a total pressure within the range from about 1 to about 300 torr,

(b) allowing said gaseous halide of said first metal and said H_2 gas to react at said chosen temperature to form said first metal at the surfaces of said yarn filaments, thus producing at least first metal-coated fibers and an acid halide gas,

(c) separating said first metal-coated fibers from said acid halide gas and from all reactants and other gaseous reaction products in said coating chamber by passing an inert gas purge over said first metal-coated fibers so as to minimize contact by back-diffusion of said first metal-coated fibers with said reactants, said acid halide gas and said other gaseous reaction products, and then

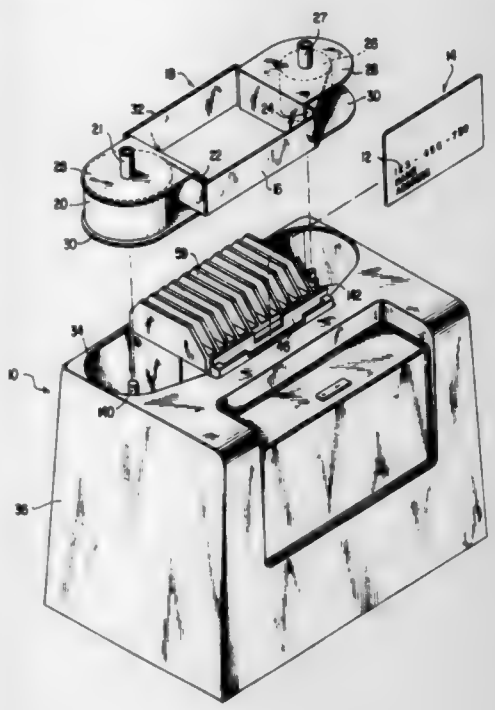
(d) allowing said first metal-coated fibers to cool.

4,343,837

TIPPER FOR EMBOSSED CARDS AND REMOVABLE CASSETTE FOR USE THEREWITH

Dana J. DeLorenzo, Brockton, Mass., assignor to DBS, Inc., Randolph, Mass.

Filed Mar. 27, 1980, Ser. No. 134,499
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—275 **18 Claims**



1. An improvement in a device for tipping the relief faces on an embossed printing plate, such as a credit card, with pigmented material, said device being of the type having a frame supporting a stationary bed for receiving said printing plate adjacent thereto and a heated platen reciprocally driven between spaced-apart portions of said support frame through a cycle toward and away from said bed in response to insertion of said printing plate adjacent said bed, said improvement comprising:

(a) a cassette containing a ribbon treated with said pigmented material, a portion of said ribbon extending an unsupported distance between a supply spool of said ribbon and a takeup spool for said ribbon, said cassette having a mounting frame for said supply spool and said takeup spool, said mounting frame defining an opening for straddling said spaced-apart portions of said support frame when said unsupported portion of said ribbon is positioned intermediate said platen and said bed to provide a more compact device, and

(b) means secured to said housing adjacent said platen for removably mounting said cassette such that upon engagement of said treated ribbon with said relief faces of said printing plate by movement of said heated platen, said pigmented material is transferred to said relief faces.

4,343,838

PREPARATION OF A SURFACE FOR ADHESIVE BONDING

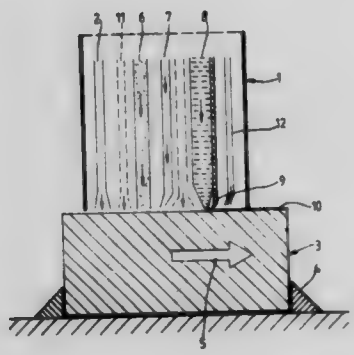
Francis S. Baker, Old Harlow, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 9, 1980, Ser. No. 138,797

Claims priority, application United Kingdom, Apr. 11, 1979, 7912865

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—292 6 Claims



1. A process for preparing a metal surface for adhesive bonding to a second surface having the steps of abrasion cleaning the metal surface by bombardment of the metal surface with particulate matter followed by removal of said particulate matter and then applying an adhesive to the cleaned metal surface, wherein the improvement comprises the continual purging of atmospheric gases from the metal surface by supplying a dry inert gas to said surface throughout said process.

6. An apparatus for preparing a metal surface for adhesive bonding to a second surface comprising ducted container means disposed adjacent the metal surface, means within said ducted container means for bombarding the metal surface with particulate material to clean said surface, means within said ducted container means for removing excess particulate material from said surface following said bombardment, adhesive applicator means within said ducted container means for applying a layer of adhesive to said cleaned surface, and means for injecting an inert gas into said container means to continually purge air from said container means and to effect the exclusion of atmospheric gases from the region adjacent said metal surface during the operations of said bombarding means, said removing means and said adhesive applicator means.

4,343,839

VAPOR PERMEATION CURABLE POLYESTER RESIN COATING COMPOSITIONS FOR FLEXIBLE SUBSTRATES

James R. Biegen, Worthington, Ohio, assignor to Ashland Oil, Inc., Dublin, Ohio

Filed Dec. 15, 1980, Ser. No. 216,323

Int. Cl.³ B05D *3/10*

U.S. Cl. 427—340 16 Claims

1. A method for coating a flexible substrate with a coating composition which comprises:

(I) applying said coating composition to said flexible substrate, said coating composition having a pot life of at least about 4 hours in an open pot and comprising:

(A) an aromatic hydroxyl-functional condensation product having an acid number of less than about 10, having an aromatic hydroxyl-functionality of at least 2, and containing substantially no aliphatic hydroxyl groups, said condensation product made by condensing the following ingredients in the indicated molar proportions or double thereof except for the phenol-functional carboxylic acid:

(1) between about 3 and 8 moles of a mixture of diols which include a sterically hindered diol, and a diol or mono-epoxide which provides a pendant C_8–C_{22} hydrocarbyl group; and

(2) between about 3 and 6 moles of a mixture of a linear aliphatic dibasic acid and an ortho or meta aromatic dicarboxylic acid, and a phenol-functional carboxylic acid having at least one carbon atom between said phenol group and said carboxyl group;

(B) a multi-isocyanate cross-linking agent comprising a mixture of aromatic and aliphatic multi-isocyanates, wherein the ratio of aromatic hydroxyl equivalents from said condensation product to the isocyanate equivalents of said multi-isocyanate agent ranges from between about 1:1 and 1:1.7;

(C) a volatile organic solvent for said condensation product and for said multi-isocyanate; and

(D) a mar-resisting agent of an organic long chain fatty compound physically incompatible in said coating composition and having an effective chain length of at least 12 carbon atoms; and

(II) exposing said coated flexible substrate to a vaporous tertiary amine catalyst to rapidly cure said coating at about room temperature;

said cured coating having a film thickness of between about 0.1 and about 0.5 mils;

said cured film of said coating composition possessing a flexibility sufficient for a zero-T bend on metal and a mar resistance of at least about 2,000 grams as borne by the edge of a nickel passed over said cured film.

4,343,840

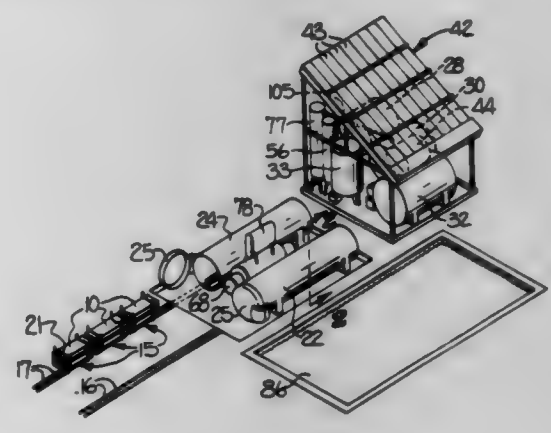
METHOD AND APPARATUS FOR TREATING CELLULOSIC PRODUCTS

Ben E. Edwards, Blowing Rock, and Clyde M. Marr, Greensboro, both of N.C., assignors to Old-North Manufacturing Company, Inc., Lenoir, N.C.

Filed Feb. 27, 1981, Ser. No. 238,835

Int. Cl.³ C23C *13/08*; B05D *1/18, 3/12*

U.S. Cl. 427—351 26 Claims



1. A method of treating sheets of relatively low density cellulosic fiberboard material with a preservative solution, or the like, and characterized by relatively low production costs, conservation of resources, and the substantial absence of the release of pollutants to the environment, and comprising the sequential steps of

placing the sheets to be treated in a treatment chamber,

flooding the treatment chamber with a treating solution comprising a preservative and solvent and so as to fully immerse the sheets,

removing the solution from the treatment chamber,

heating the treated sheets by injecting live steam into the treatment chamber, and then

drawing a partial vacuum within the treatment chamber and including withdrawing vapors therefrom, while condensing and separating any solvent and water vapor in the withdrawn vapors, to permit the separate reuse thereof, and then

removing the treated sheets from the treatment chamber.

4,343,841

NOVEL FLUOROELASTOMER FILM COMPOSITIONS CONTAINING PHENOXY RESINS AND METHOD FOR THE PREPARATION THEREOF

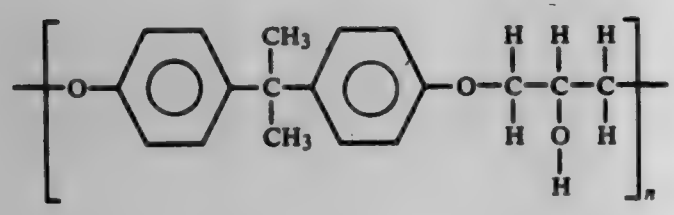
Donald Close, Stow, Ohio, assignor to David Hudson, Inc., Stow, Ohio

Filed Aug. 18, 1980, Ser. No. 178,789
Int. Cl.³ B05D *3/02*; C08L *63/00*
U.S. Cl. 427—386 14 Claims

1. A method for preparing fluoroelastomer film compositions comprising the steps of:

dissolving a fluoroelastomer gum selected from the group consisting of copolymers of vinylidene fluoride and hexafluoropropylene, and terpolymers of vinylidene fluoride, hexafluoropropylene and tetrafluoroethylene in a solvent; and

adding a phenoxy resin to said gum solution, having the general formula



where n is about 100; and

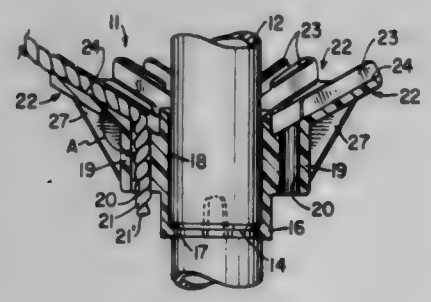
evaporating said solvent and baking the resulting film.

4,343,842

ARTIFICIAL CHRISTMAS TREE

Ascher Chase, Virginia Beach, Va., assignor to General Foam Plastics Corp., Norfolk, Va.

Continuation of Ser. No. 42,099, May 24, 1979, Pat. No. 4,248,916. This application Oct. 3, 1980, Ser. No. 193,745
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.³ A47G *33/06*
U.S. Cl. 428—8 9 Claims



1. A branch holder for mounting groups of twisted wire branches of predetermined diameter and having inner ends bent at a predetermined angle, comprising:

(a) a unitary tubular sleeve;

(b) a plurality of bosses connected to outer surface portions of said sleeve and arranged substantially equidistantly thereabout;

(c) each of said bosses defining an elongated generally axial bore therein;

(d) integral cantilevered channel means extending outwardly and upwardly from each boss;

(e) the diameter of said bores and the width of said channel means being substantially that of the diameter of said twisted wire and being adapted to receive and to support said inner bent ends of said branches;

(f) said bores and said channel means intersecting at said predetermined angle to provide angularly related branch support surfaces.

4,343,843

FIBER REINFORCED EPOXY RESIN ARTICLE

Junior L. Johnson, Mabelvale, and Leonard E. Pikey, Benton, both of Ark., assignors to A. O. Smith-Inland, Inc., Milwaukee, Wis.

Filed Aug. 28, 1980, Ser. No. 181,970
Int. Cl.³ B65H *81/00*
U.S. Cl. 428—36 10 Claims

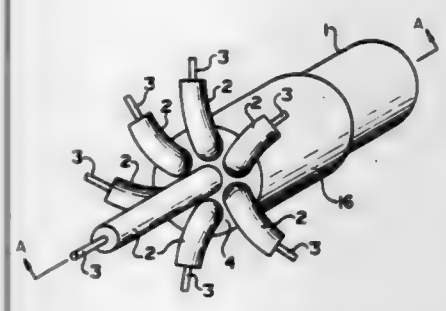
1. A fiber reinforced epoxy resin article, comprising a cured epoxy resin system, and a plurality of fibers embedded in said resin system, said resin system being produced by reacting in the presence of a Lewis base, an epoxy resin with a compound which contains polyfunctional hydroxyl groups selected from the class consisting of phenolic hydroxyl groups, alcoholic hydroxyl groups and mixtures thereof, said resin system comprises 100 parts by weight of said epoxy resin, 2 to 15 parts by weight of said compound, and 0.1 to 5 parts by weight of said Lewis base.

4,343,844

SHRINKABLE SLEEVE ADAPTED FOR CABLE AND TUBING GAS FLOW BLOCKING

Richard S. Thayer, Bainbridge; William J. Herbert, Mantua, and Gary S. Klein, Bedford Heights, all of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 17, 1980, Ser. No. 207,851
Int. Cl.³ B32B *1/08*; H02G *15/02*
U.S. Cl. 428—36 17 Claims



1. A compact one-piece shrinkable unbranched sleeve made from a recoverable material having an elastic memory and having an outer wall extending along the entire length thereof and which, while in an expanded state, is able to be secured to the end of a bundle having one or more components extending from the end thereof to provide a barrier of minimal outside dimension to the flow of gas or vapors through the bundle, said sleeve in the expanded state having an opening disposed at one end thereof that is adapted to permit insertion of the end of the bundle into a cavity disposed within the sleeve communicating with the opening, said cavity enclosed by the outer wall of the sleeve and in said expanded state adapted to receive the end of the bundle and having a length thereof extending along the length of the sleeve that is sufficient to insure the securement of the sleeve to the bundle;

A plurality of channels disposed internally within the outer wall of the sleeve that extend along the length thereof between the cavity and the end of the sleeve opposite to the end into which the bundle is inserted, said channels having an opening at one end thereof communicating with the cavity and an opening at the opposite end, said channels surrounded by the outer wall of the sleeve and enclosed by inner walls of the sleeve that are integrally related directly or indirectly with the outer wall forming the remainder of the sleeve, said channels in the expanded state adapted to receive the components from the cavity in the combinations thereof desired and having sufficient length to permit the components to extend therethrough and emerge from the opening thereof at the opposite end; and

said sleeve dimensionally adapted such that when the sleeve is caused to shrink from the expanded state onto the end of

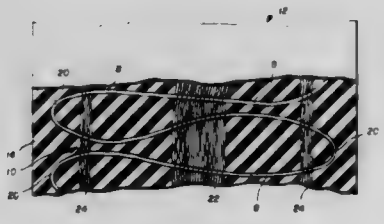
the bundle the outer wall of the sleeve surrounding the cavity is able to contract against the outer surface of the bundle to secure the engagement therebetween and the remainder of the outer wall of the sleeve surrounding the channels in combination with the inner walls enclosing the channels are able to constrict against the outer surface of the components contained therein to provide a barrier to the flow of gas or vapors through the bundle.

4,343,845

ELASTOMERIC STRIP AND METHOD OF MANUFACTURING SAME

Martin J. Burden, Fort Mill, S.C., and Richard C. Williams, Pittsford, N.Y., assignors to Schlegel Corporation, Rochester, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,485
Int. Cl.³ B32B *15/08*; E06B *7/22*
U.S. Cl. 428—122 **17 Claims**



1. A method of manufacturing an elastomeric strip of improved flexibility comprising the steps of:

reinforcing regions of longitudinally displaceable frame portions of a support frame with a degradable material to inhibit longitudinal displacement of the frame portions during the coating operation;

arranging the reinforced support frame in a position to be coated with elastomeric material;

coating the reinforced support frame with an elastomeric material to form an elastomeric strip without degrading the degradable material; and then

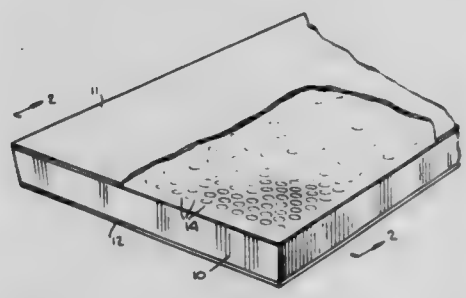
degrading selective regions of the degradable reinforcing material after the support frame is coated so that longitudinal displacement of the selected regions of the frame portions is no longer inhibited resulting in an elastomeric strip of improved flexibility and limited elongation or stretching.

4,343,846

BALSA-CORE SANDWICH LAMINATE

Henri A. Kohn, Northvale, N.J., assignor to Baltek Corporation, Northvale, N.J.

Filed May 12, 1980, Ser. No. 148,690
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—138 **1 Claim**



1. A structural sandwich laminate formed of thin facing sheets bonded to a core panel, said facings being constituted by aluminum sheets whose surfaces bonded to the core panel are etched whereby the surfaces are free of oxide film, said panel being formed of end-grain balsa having an array of closely spaced clear-through holes punched therein to define a reticulated balsa core of high strength and exceptionally low weight, said end grain balsa being composed of substantially parallel fibers which are at right angles to the faces of core panel whereby the holes punched therein have removed therefrom a phalanx of said fibers without disrupting the surrounding fibers and substantially degrading the strength of the panel, said array of holes being formed by alternative rows of equi-spaced holes in staggered relation, the holes having their centers at the apexes of a diamond, making possible a high concentration of holes with an adequate separation therebetween,

said aluminum sheets being bonded to said panel by a heat-curable exoxy resin which cures at a relatively high temperature causing volatilization of moisture, and said balsa panel has a moisture content of about 2 to 3% whereby vapors will not be produced to interfere with curing.

4,343,847

SEALING MEMBRANE WITH INCORPORATED LIMITED-SLIP SHEET AND ITS METHOD OF MANUFACTURE

Jean-Yves Meynard, Mondoubleau, France, assignor to Siplast S.A., Paris, France

Filed Nov. 14, 1980, Ser. No. 207,020
Claims priority, application France, Mar. 18, 1980, 80 05994
Int. Cl.³ B32B *3/10, 3/08*
U.S. Cl. 428—139 **18 Claims**



1. A sealing membrane intended for application to a support subject to cracking and having at least one carrier enveloped in a suitable adhesive, said sealing membrane being characterized in that

upon that face which is adapted to be in contact with the support subject to cracking, there is united an assembly comprising a film and a sheet of material which is not fusible or only slightly fusible and nontraversable by the hot adhesive,

said film and sheet being superposed and having aligned perforations and being such that they do not bond to each other,

said sheet being positioned toward the outside of the sealing membrane, and

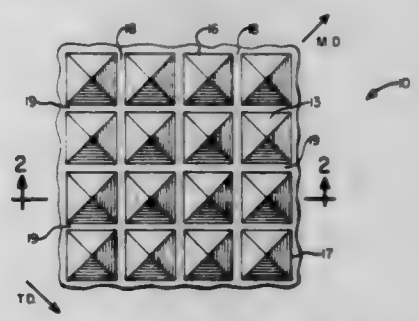
the adhesive extending through said perforations in both film and sheet.

4,343,848

EMBOSSED THERMOPLASTIC MATERIAL

Erving A. Leonard, Jr., Terre Haute, Ind., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 15, 1980, Ser. No. 216,127
Int. Cl.³ B32B *3/30, 3/28*
U.S. Cl. 428—156 **7 Claims**

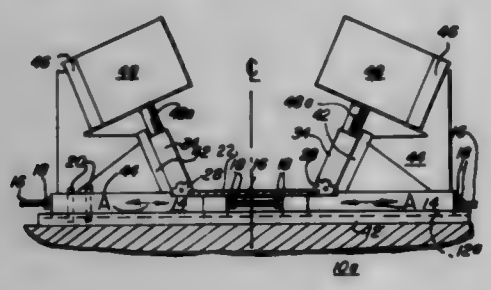


1. An embossed length of thermoplastic film, said film having a plurality of rows of pyramid-shaped protuberances intersecting the longitudinal and transverse axis of said length of film at an angle of about 45 degrees, the rows of protuberances aligned with one each of said axes being separated by continuous flat valleys extending from one side of said film to the other side of said film.

4,343,849
EDGE TREATMENT FOR FIBREBOARD PANELS AND THE LIKE

Roger F. Sutton, St. Charles; Robert O. Blomquist, Mt. Prospect, and Allan J. Luck, Marengo, all of Ill., assignors to Masonite Corporation, Chicago, Ill.

Division of Ser. No. 848,142, Nov. 3, 1977, Pat. No. 4,197,078.
This application Mar. 15, 1979, Ser. No. 21,245
Int. Cl.[3] B32B *3/02*
U.S. Cl. 428—157 11 Claims



1. A panel of compressed wood fibreboard having a plurality of profiled edge surfaces formed by:

cutting to mechanically pre-shape said edge surfaces of said blank to approximate a finished edge profile shape desired rendering said profiled edge surfaces porous and therein more liquid absorbant and less uniform liquid absorbant condition than in the prior un-cut condition;

elevating the surface temperature of said preshaped edge surfaces to a temperature of at least 500° F. to heat sear the fibres of substantially only said preshaped edge surfaces of said wood fibreboard; and

pressurizing said heat seared edge profile while at said elevated temperature to sufficient forming pressure for sealing together adjacent wood fibres of substantially only said preshaped edge surfaces into a permanent set of the desired edge profile, said profiled edge surfaces having a reduced liquid absorption and more uniform capacity for liquid absorption therein.

4,343,850
DECORATED LAMINATE HAVING INDICIA APPLIED PHOTOELECTROGRAPHICALLY AND METHOD OF MAKING SAME

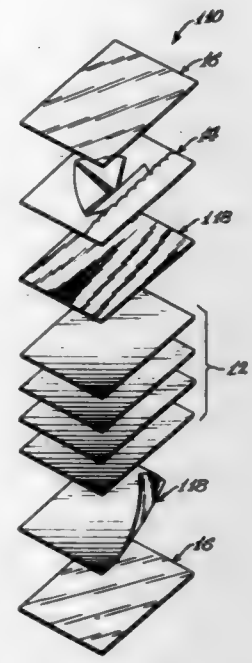
Hal C. Kravig, Bartlett, and John T. Van Drie, Memphis, both of Tenn., assignors to The Vollrath Company, Sheboygan, Wis.

Filed Mar. 21, 1980, Ser. No. 132,614
Int. Cl.[3] B32B *3/00, 23/08*
U.S. Cl. 428—203 10 Claims

5. A decorated, heat and pressure cured laminate, said laminate comprising before said cure,

(a) a core impregnated throughout with a thermosetting phenolic resin; and

(b) at least one sheet selected from paper having basis weights of about 20 to about 100 pounds, said paper bearing photoelectrographically indicia on at least one surface thereof applied by a film forming thermoplastic resin, said laminate being unitary after cure.



4,343,851
MULTI-PLY LAMINAE

Nicholas Sheptak, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Apr. 14, 1980, Ser. No. 139,656
Int. Cl.[3] B32B *7/02, 27/16*
U.S. Cl. 428—212 10 Claims



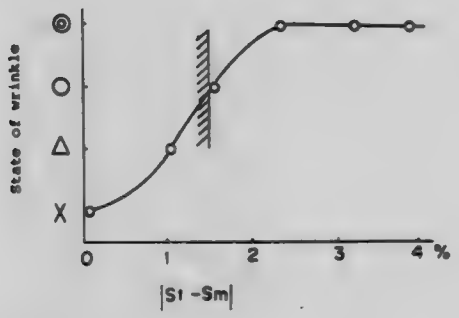
1. Multi-ply laminae characterized in defibrillation of a layer thereof upon delamination, comprising: (a) an outer layer of a thermoplastic material selected from the group consisting of polyethylene glycol ester of terephthalic acid, oriented polyamide, oriented polypropylene, acrylonitrile and polycarbonate; (b) at least one layer of a uniaxially oriented polymer material having a with-grain to cross-grain tensile strength ratio greater than about 4 to 1 and a maximum elongation in both directions of less than 150% selected from the group consisting of high density polyethylene, polypropylene, polyacrylonitrile, acrylonitrile-butadiene-styrene terpolymer and polyvinylchloride; (c) at least one heat sealant or heat bonding material effective to bond said uniaxially oriented film layer to said outer layer and (d) at least one heat sealant or heat bonding material effective to bond said uniaxially oriented film layer to a core comprising an information-bearing substrate, said laminae being heat bonded after uniaxial orientation so that said uniaxially oriented layer defibrillates upon delamination.

4,343,852

COMPOSITE FILM AND PACKAGING MATERIAL OF POLYPROPYLENE BASE AND SURFACE POLYMER COMPOSITION

Tsutomu Isaka; Kazuyoshi Ohashi, and Yukinobu Miyazaki, all of Inuyama, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka-fu, Japan

Filed Jul. 14, 1980, Ser. No. 167,736
Claims priority, application Japan, Jul. 13, 1979, 54-89579
Int. Cl.³ B32B *7/02, 27/08*
U.S. Cl. 428—216 33 Claims



1. A composite film comprising a base film and a surface film provided on at least one surface of the base film,

said composite film having the following shrinkage characteristics:

$SFm \geqq 3.5$

$SFt \geqq 3.5$

$|St\text{-}Sm| \geqq 1.5$

$SFt\text{-}St \geqq 1.15$

$SFm\text{-}Sm \geqq 1.15$

wherein SF is a heat shrinkage at 120° C. under a free state (%), S is a heat shrinkage at 120° C. under a restrained state (%), m indicates a machine direction and t indicates a transverse direction,

said base film being made of a resin composition comprising a propylene polymer, and

said surface film being made of a polymer composition comprising at least two of (A) a copolymer of propylene and ethylene in a weight proportion of 99.5:0.5 to 90:10, (B) a copolymer of propylene and an α-olefin having 4 to 10 carbon atoms in a weight proportion of 70:30 to 95:5 and (C) a copolymer of butene and any other α-olefin having 2 to 10 carbon atoms in a weight proportion of 70:30 to 99:1, each of the copolymers being in an amount of 10 to 90% by weight on the total weight of the copolymers.

4,343,853

ANTIMICROBIALLY TREATED FABRIC CONSTRUCTION

Willard L. Morrison, 1896 Meadowbrook Dr., Winston-Salem, N.C. 27104

Filed Mar. 6, 1980, Ser. No. 127,558
Int. Cl.³ B32B *5/26*
U.S. Cl. 428—233 6 Claims

1. A fabric construction including a face fabric and a backing fabric and wherein:

(a) said backing fabric being formed from a first synthetic yarn comprising fiber-forming polymers having an antimicrobial agent incorporated therein in an amount equalling at least 0.1% by weight of the polymer, said antimicrobial agent being characterized by its ability to be stored in the intermolecular structure of the polymer and to migrate to the surface;

(b) said face fabric being formed from a second yarn including untreated fibers only;

(c) said face fabric and said backing fabric being in plated relationship;

whereby said antimicrobial agent transfers to said second face to inhibit antimicrobial growth thereon.

4,343,854

FLAME RETARDANT COMPOSITION

David S. Moorman, Houston, Tex., assignor to Witco Chemical Corporation, New York, N.Y.

Filed Mar. 12, 1981, Ser. No. 243,018
Int. Cl.³ C09K *3/28*
U.S. Cl. 428—290 10 Claims

1. A substantially non-aqueous liquid flame retardant composition consisting essentially of

(A) polybrominated diphenyloxide containing about 4 to 9 nuclearly substituted bromine atoms, and

(B) a $C_{10\text{-}24}$ aliphatic hydrocarbon polybrominated and polychlorinated to contain about 10 to about 50 wt. % of bromine and about 5 to about 60 wt. % of chlorine;

the weight ratio of (A) to (B) ranging from about 5:1 to about 1:5.

4,343,855

TRANSFER FILM

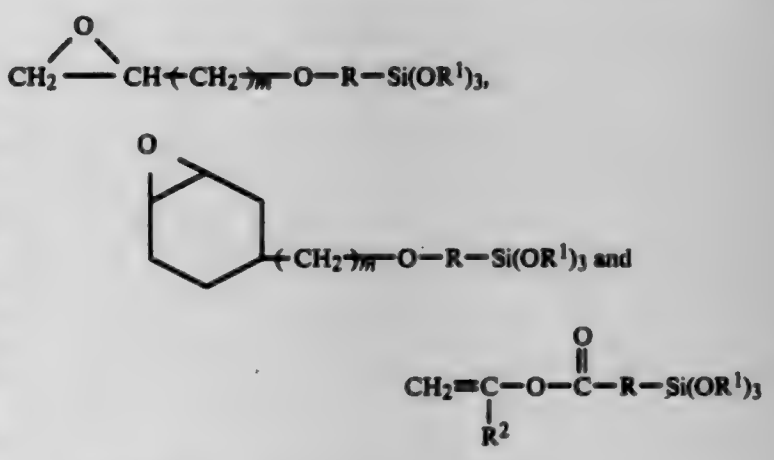
Terrence M. Conder, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 30, 1978, Ser. No. 956,081
Int. Cl.³ C09J *7/02*
U.S. Cl. 428—332 3 Claims

3. A transfer film sequentially comprising:

(1) a strippable layer

(2) an abrasion resistant film layer of from 3 to 25 microns in thickness comprising the reaction product of a monomer selected from the class consisting of



wherein

R is a divalent aliphatic nonhydrolyzable group of from 1 to 18 carbon atoms the backbone of which is composed of C, O, S, and N atoms with no adjacent heteroatoms and having terminal carbon atoms,

R^1 is an aliphatic group of 1 to 10 carbon atoms,

R^2 is H or CH_3, and

m is 1 to 6, and

(3) a thermoplastic coating which is chemically bonded to said abrasion resistant coating layer wherein said thermoplastic coating is a thermoplastic adhesive selected from polymers of the class consisting of vinyl resin, poly(2,5-oxolene), polyacrylate, and polyhydroxyether.

4,343,856

POLYMERIC MARKING FILM

Jagadish C. Goswami, New City, N.Y.; Whiteford D. Grimes, Weston, Conn., and Richard A. Rehder, Mahopac, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 9, 1981, Ser. No. 241,869
Int. Cl.³ B32B *27/08, 27/30;* C09J *7/02*
U.S. Cl. 428—332 8 Claims

1. A polymeric marking film consisting essentially of:

(a) a film component containing an internally plasticized vinyl chloride copolymer resin; and

(b) a layer of pressure sensitive adhesive attached to one side of the film.

2. A marking film as claimed in claim 1 where the film component has a thickness of from about 50 to about 125 microns.

4,343,857

COATINGS FOR OPTICAL SYSTEMS

John Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Aug. 23, 1978, Ser. No. 936,320
Int. Cl.[3] B32B *27/08*; G02B *1/04, 1/10*; G02C *7/02*
U.S. Cl. 428—336 8 Claims

1. A hydrolytically stable, hard, transparent coating on an acrylic or polycarbonate optical member comprising an optical member having a coating of 1 to 10 microns thereon, said coating comprising a cured composition formed from a dispersion coating of a mixture by weight of 0 to about 30 parts of prehydrolyzed alkyl silicate, where said alkyl radical contains 1 to 10 carbon atoms, 0 to about 30 parts of polysilicic acid, 0 to about 50 parts of a monocarboxylic acid having 1 to 2 carbon atoms, 0 to about 50 parts of water, 1 to 5 parts of a silane, 0 to about 3 parts of a filler selected from the class consisting of fumed silica and alumina, in a binder system composed of epoxy resin and an acidified aminoethylated vinyl interpolymer having interpolymer pendant groups of carboxyloxy (polyalkylamine) wherein the number of alkylamine groups ranges from 1 to about 2.5 and the interpolymer has aminoethylation containing at least 3 percent by weight of pendant carboxylic groups, said aminoethyl groups being reacted with sufficient acid to impart water solubility to said interpolymer, said silane being selected from the class consisting of chloropropyltrimethoxysilane, vinyltrichlorosilane, vinyltriethoxysilane, vinyltris(2-methoxyethoxy)silane, gamma-methacryloxypropyl-tris-(2-methoxyethoxy)silane, beta-(3,4-epoxycyclohexyl)-ethyltrimethoxysilane, gamma-glycidoxypropyltrimethoxysilane, vinyltriacetoxysilane, gamma-mercaptopropyltrimethoxysilane, gamma-aminopropyltriethoxysilane, N-beta(aminoethyl)-gamma-aminopropyltrimethoxysilane, methyl[2-(gamma-trimethoxysilypropylamino)ethylamino]3-propionate in methanol, modified amino-organosilane, ureido-silane and mercaptoethyltriethoxysilane.

4,343,858

PIGMENTED COATED PAPERBOARD

Kenneth P. Thompson, Canton, N.C., assignor to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 255,099, Apr. 17, 1981, abandoned. This application Jul. 17, 1981, Ser. No. 284,391
Int. Cl.[3] B32B *5/16, 15/02, 15/20, 27/10*
U.S. Cl. 428—342 11 Claims

1. A pigmented coated paperboard comprising a paperboard substrate on which are coextruded a top film of polyethylene terephthalate and an intermediate layer of a polymer or copolymer of a lower alkyl (C_1 to C_4) ester of acrylic acid, methacrylic acid or ethacrylic acid that contains from about ½ to about 15 weight percent of pigment.

4,343,859

FIBERS OF IONIC POLYMERS

Robert D. Lundberg, Bridgewater, and Henry S. Makowski, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 17,543, Mar. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 855,730, Nov. 29, 1977, abandoned. This application Aug. 21, 1980, Ser. No. 179,997
Int. Cl.[3] D02G *3/00*
U.S. Cl. 428—364 8 Claims

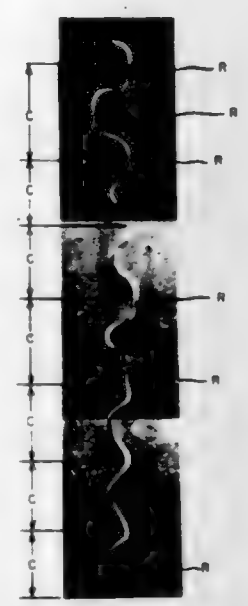
1. An elastomeric fiber having a tenacity of at least about 0.12 grams/denier, which consisting essentially of a sulfonated elastomeric Butyl Rubber or EPDM terpolymer having about 10 to about 50 meq. sulfonate groups per 100 grams of said sulfonated elastomeric polymer, said sulfonate groups being neutralized with an amine, ammonia, quanadine, or a metal counterion being selected from the group consisting of antimony, lead, aluminum, iron and Groups I-A, II-A, I-B and II-B of the Periodic Table of Elements and mixtures thereof, said fiber not containing any polyolefinic resin.

4,343,860

SELF-CRIMPING POLYAMIDE FIBERS

George A. Fernstrom; Harold H. Hebeler; Perry H. Lin, and Robert R. Moneymaker, all of Seaford, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 57,973, Jul. 16, 1979, Pat. No. 4,301,102. This application Jun. 15, 1981, Ser. No. 273,943
Claims priority, application Taiwan, Jul. 14, 1980, 6911913
Int. Cl.[3] D02G *3/00*
U.S. Cl. 428—371 14 Claims



1. A self-crimpable, monocomponent, nonbulbous, drawn fiber of polyhexamethylene adipamide or of polycaproamide, having a crystal perfection index of no greater than 70, a tenacity of at least 1.3 grams per denier and a break elongation of no greater than 120%, which upon being subjected to a relaxed heat treatment develops a substantially helical, frequently reversing crimp with at least 6 filament crimp index.

4,343,861

FLUOROELASTOMER/POLYEPICHLOROHYDRIN ELASTOMER ARTICLES

David A. Stivers, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 87,501, Oct. 23, 1979, Pat. No. 4,293,663. This application Jun. 8, 1981, Ser. No. 271,251
Int. Cl.[3] B32B *27/38, 27/00*
U.S. Cl. 428—413 10 Claims

1. A layered article, comprising:

(a) a first layer which is

(i) a laminated layer having a first sublayer of curable gum stock consisting essentially of fluoropolymer gum and curing components, and a second sublayer of curable gum stock consisting essentially of polyepichlorohydrin gum and curing components, or

(ii) a blended layer of curable gum stock comprising fluoropolymer gum, polyepichlorohydrin gum, and curing components; and

(b) one or more second layers each of which is a curable gum stock comprising

(i) fluoropolymer gum, polyepichlorohydrin gum, or a blend of fluoropolymer gum and polyepichlorohydrin gum, and

(ii) curing components;

each said second layer being the same as or different from said first layer and any other of said second layers; said fluoropolymer gum being a copolymer of (1) terminally ethylenically

unsaturated olefin which has 2 to 4 carbon atoms and can be homopolymerized by emulsion polymerization in the presence of a water soluble free radical catalyst such as $K_2S_2O_8$, and (2) at least one terminally unsaturated fluoromonoolefin, each of the doubly bonded chain carbon atoms of said fluoromonoolefin being bonded to at least one fluorine atom substituent and any remaining valence of any chain carbon atom of said fluoromonoolefin being satisfied by hydrogen, fluorine, chlorine, bromine, or a fluoralkyl or fluoroalkoxy radical of 1 to 4 carbon atoms, with at least 10 percent of the chain carbon atoms of said copolymer being $-CH_2-$ units, at least 10 percent of the chain carbon atoms of said copolymer being bonded to alkyl or alkoxy radicals with the proviso that only one such radical is bonded to a given carbon atom, and with at least 50 percent of the total number of carbon-bonded moieties in said copolymer being fluorine, but with no chain carbon atom of said copolymer being bonded to more than one chlorine or bromine atom; said curing components being

(1) polyphenol curing agent;

(2) organo-onium occuring agent selected from compounds of the formulas

$$(R^1)_4Q^{+1}(X^{-m})_{1/m}$$

$$(R^1)_3QR^2Q(R^1)_3^{+2}(X^{-m})_{2/m}$$

wherein Q is a nitrogen, arsenic or phosphorus atom; X is an anion of valence m; each R^1 is a monovalent organic radical containing 1 to 20 carbon atoms, is the same as or different from any other R^1, and can combine with another R^1 to form a cyclic structure containing a Q atom; and R^2 is a divalent organic radical containing 2 to 12 carbon atoms;

$$(R^3)_3S^{+1}(X^{-m})_{1/m}$$

or

$$(R^3)_2SR^4S(R^3)_2^{+2}(X^{-m})_{2/m}$$

wherein S is sulfur; X is an anion of valence m; each R^3 is a monovalent organic radical containing 1 to 20 carbon atoms, is the same as or different from any other R^3, and can combine with another R^3 to form a cyclic structure containing an S atom; R^4 is a divalent organic radical containing 2 to 12 carbon atoms; and at least one R^3 or R^4 group is aromatic; and

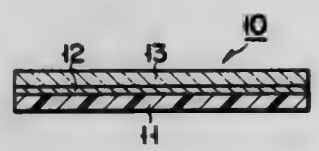
(3) an acid acceptor, the resulting layered article, when cured, having a layer-to-layer bond formed without the need for an adhesion promoting coating at the interface between contiguous layers or sublayers.

4,343,862

OPTICAL RECORDING ELEMENT AND A METHOD OF MANUFACTURING THE SAME

Nobuaki Yasuda, Zushi; Yoshinori Fujimori, Kawasaki, and Masaaki Morita, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 23, 1980, Ser. No. 171,288
Claims priority, application Japan, Aug. 1, 1979, 54/97196
Int. Cl.³ B32B *27/00, 15/08;* G01D *15/34*
U.S. Cl. 428—421 **3 Claims**



1. An optical recording element which comprises:

a heat-resistant organic resin substrate consisting of polyimide resins or fluorine-containing resins;

a recording layer formed on said substrate; and

a transparent organic resin protective layer mounted on said recording layer and consisting of fluorine-containing resins.

4,343,863

DRAG REDUCING SKI WAX

Rodney G. Lawrence, Howell, Mich., and Patrick T. Morelli, Denver, Colo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed May 27, 1980, Ser. No. 153,382
Int. Cl.³ B32B *9/04*
U.S. Cl. 428—485 **18 Claims**

1. A ski wax containing effective amounts of microcrystalline and paraffin waxes as a wax base and a poly(alpha-olefin) in an amount which enhances the effective temperature-condition range of the particular base wax.

4,343,864

METHOD OF SEALING AN ITEM IN A COVERING COMPRISING A COMPOSITION OF A POLYETHYLENE AND ISOBUTYLENE COPOLYMER

Anthony J. Berejka, Huntington, N.Y., assignor to Radiation Dynamics, Inc., Melville, N.Y.

Division of Ser. No. 137,079, Apr. 3, 1980, Pat. No. 4,310,367, which is a division of Ser. No. 38,062, May 11, 1979, Pat. No. 4,264,490. This application Aug. 20, 1981, Ser. No. 294,698
Int. Cl.³ B29C *27/22;* B32B *31/26, 31/28*
U.S. Cl. 428—500 **4 Claims**

1. Articles formed by heat sealing or ultrasonic welding sheets or films of a composition comprising a cross-linkable polyethylene and a copolymer of isobutylene and conjugated diene wherein a sufficient quantity of isobutylene copolymer to render the sheet or film heat sealable or sealable onto itself or other polyolefin compositions.

4,343,865

HARD METAL BODY AND METHOD OF MAKING SAME

Donald E. Graham, St. Clair Shores, Mich., assignor to General Electric Company, Columbus, Ohio

Filed Jun. 24, 1981, Ser. No. 276,918
Int. Cl.³ B22F *7/02;* C23C *11/02*
U.S. Cl. 428—552 **8 Claims**

1. An article with improved bond strength comprising:

a substrate formed from a cemented sintered metal carbide material;

a bonding layer disposed over said substrate, said bonding layer being formed from boron; and

a wear resistant outer coating disposed over said bonding layer, said outer coating being formed from titanium boride.

4,343,866

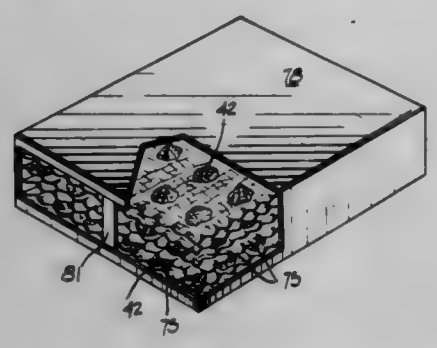
DEEPLY EMBOSSED SHEET PRODUCT

Nathan Oser, Perrineville, and Edmund J. Niedzinski, Somerville, both of N.J., assignors to Manville Service Corporation, Denver, Colo.

Division of Ser. No. 622,930, Oct. 16, 1975, abandoned, which is a continuation of Ser. No. 521,829, Nov. 7, 1974, abandoned. This application Oct. 26, 1976, Ser. No. 735,643
Int. Cl.³ B32B *15/01, 15/18*
U.S. Cl. 428—593 **9 Claims**

1. A sheet material having on the surface thereof a continuous small scale relief pattern of a plurality of hills and valleys extending in a plurality of directions across at least one of the surfaces of said sheet material, said hills and valleys extending in a plurality of directions across at least one of the surfaces of said sheet material, said hills and valleys extending outwardly from at least one of the surfaces of said sheet material not more than 1 cm, and also having on the surface thereof and superim-

posed on said continuous small scale relief pattern a deep embossment pattern, said deep embossment pattern consisting of a plurality of large spaced apart discrete protuberances, each of said protuberances being of a scale sufficiently large relative to the relief features of said small scale relief pattern to



encompass at least portions of several said hills and valleys, said large protuberances being present in a number sufficient to prevent adjacent sheets of said sheet material from touching except at the points of said protuberances when at least two sheets of said sheet material are stacked in vertical array.

4,343,867

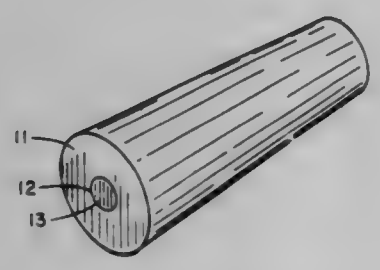
SUPERCONDUCTING WIRE WITH IMPROVED STRAIN CHARACTERISTICS

Thomas Luhman, Westhampton Beach; Carl J. Klamut, E. Patchogue; Masaki Suenaga, Bellport, and David Welch, Stony Brook, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 105,439, Dec. 19, 1979, which is a continuation-in-part of Ser. No. 966,709, Dec. 5, 1978, abandoned. This application Jul. 20, 1981, Ser. No. 284,858

Int. Cl.³ B32B *15/01*

U.S. Cl. 428—614 **4 Claims**



1. A superconductor wire having improved resistance to loss of current-carrying capacity when subjected to strain, said superconductor wire comprising at least one filament of a material possessing superconducting properties, said filament being encased in a matrix consisting essentially of up to about 0.2 beryllium and gallium-copper alloy having a coefficient of thermal expansion greater than that of said filament, said matrix containing beryllium in an effective concentration sufficient to induce and maintain said filament under greater radial and axial compression than that provided by such matrix without the beryllium addition, said filament further comprising a film of vanadium-gallium providing said superconducting properties.

4,343,868

HYDROGEN ION-PRODUCING CELL AND TECHNIQUE FOR CONTROLLING THE PH OF BATTERY ELECTROLYTES

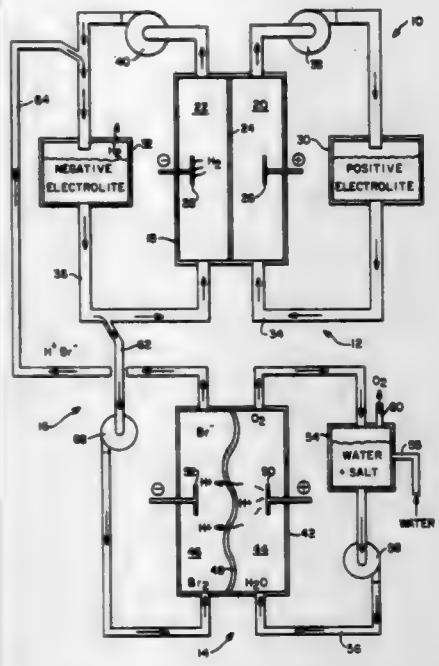
Ronald A. Putt, Palatine, Ill., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 31, 1980, Ser. No. 221,932

Int. Cl.³ H01M *8/06, 10/36*

U.S. Cl. 429—17 **8 Claims**

6. In a battery assembly of the type including a battery in which hydrogen ions are present in and lost from its electrolyte solution during operation, a method for replacing at least some of said lost ions, said method comprising the steps of providing a supply of hydrogen ions independent of those present in or



lost from said solution by electrochemically decomposing water in a cell separate from said battery to produce hydrogen gas, and introducing hydrogen ions in the form of said hydrogen gas from said supply into said electrolyte solution.

4,343,869

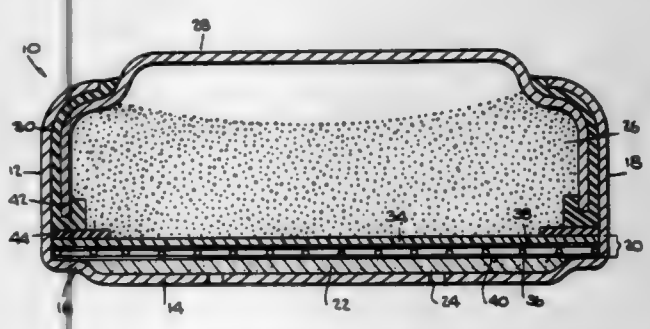
SEAL FOR METAL-AIR BATTERIES

John E. Oltman, Mt. Horeb, and Robert B. Dopp, Madison, both of Wis., assignors to Ray-O-Vac Corporation, Madison, Wis.

Filed Feb. 9, 1981, Ser. No. 233,074

Int. Cl.³ H01M *2/14*

U.S. Cl. 429—27 **6 Claims**



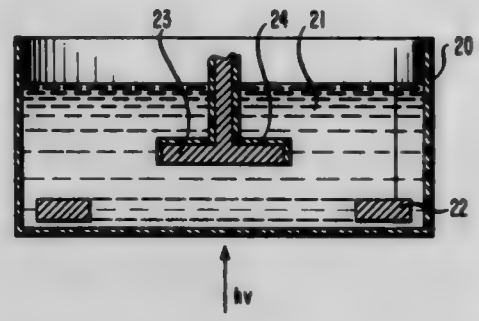
1. An improved metal-air button cell including a conductive metal can having a shoulder at the periphery of the bottom of the can, means for permitting introduction of oxygen into the cell, a cathode disposed within the can and a portion thereof supportedly registered against the shoulder of the can, a separator disposed above the cathode assembly, an anode disposed within the cell, a J-shaped grommet adhesively bonded to the inner surface of the can and a conductive cover sealingly inserted into the grommet, wherein the improvement comprises a thermoplastic annular ring sandwiched between the separator and the grommet.

4,343,870

SEMICONDUCTOR LIQUID JUNCTION PHOTOCELL HAVING A P-TYPE PHOTOACTIVE ELECTRODE

Adam Heller, Bridgewater; Hans J. Lewerenz, Maplewood, and Barry Miller, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 8, 1980, Ser. No. 184,925
Int. Cl.[3] H01M 6/36
U.S. Cl. 429—111 11 Claims



1. A photocell comprising a counterelectrode, a photovoltaic junction between a p-type semiconductor electrode, said p-type semiconductor being selected from the group consisting of InP and Si, and a liquid electrolyte, said electrolyte comprising a redox couple

characterized in that

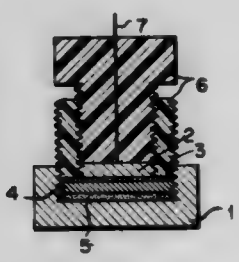
said redox couple is selected from the group consisting of V^{2+}/V^{3+} and Nb^{4+}/Nb^{5+} cations.

4,343,871

LIGHT WEIGHT BATTERY

Shinichi Tobishima; Junichi Yamaki, and Akihiko Yamaji, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,042
Claims priority, application Japan, Dec. 18, 1979, 54-163621; Dec. 18, 1979, 54-163622; Dec. 18, 1979, 54-163623; Jan. 17, 1980, 55-3801; Feb. 25, 1980, 55-21575
Int. Cl.[3] H01M 10/40
U.S. Cl. 429—197 15 Claims



1. A light weight battery which comprises:

an anode containing one metal selected from the Group Ia metals;

a cathode containing one compound selected from the group consisting of organic compounds having a π-electron conjugated system; and

an electrolyte which does not chemically react with the anode and cathode materials, and permits the migration of the ions of the anode material to the cathode for electrochemical reaction with the cathode-active material.

4,343,872

CALCIUM-STRONTIUM-LEAD GRID ALLOY FOR USE IN LEAD-ACID BATTERIES

John Nees, Wyomissing, and Dale A. Bailey, Hamburg, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 954,930, Oct. 26, 1978, which is a division of Ser. No. 802,182, May 31, 1977, Pat. No. 4,137,378. This application Aug. 1, 1980, Ser. No. 174,768
Int. Cl.[3] H01M 4/66
U.S. Cl. 429—245 3 Claims

1. A battery grid alloy for use in forming the battery grids of lead-acid storage batteries, consisting essentially of 0.01 to 0.09 wt-% calcium; 0.01 to 0.10 wt-% strontium; 0.1 to 1.0 wt-% tin; aluminum not to exceed 0.03 wt-%; with the remainder being lead.

4,343,873

PHOTOGRAPHIC LIGHT-SENSITIVE SILVER HALIDE ELEMENTS

Senzo Sasaoka, Minami-ashigara, Japan, assignor to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed Oct. 15, 1980, Ser. No. 197,358
Claims priority, application Japan, Oct. 15, 1979, 54-132538
Int. Cl.[3] G03C 5/04, 1/76
U.S. Cl. 430—1 31 Claims

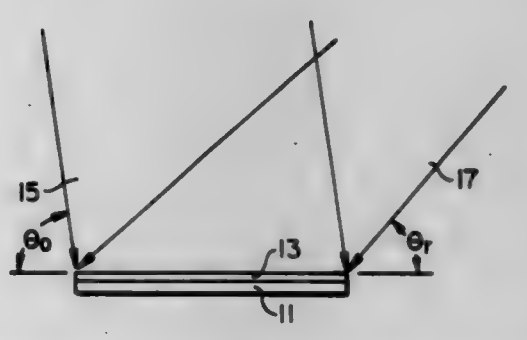
1. A laser-sensitive photographic light-sensitive silver halide element for use in the formation of a dot image by a photographic exposure using a laser light, comprising a support, at least one layer of a light-sensitive silver halide emulsion providing a gamma value of at least 10, and a light-scattering layer provided in such a manner that the light-sensitive silver halide emulsion layer is exposed to the laser light through the light-scattering layer, wherein the light-scattering layer contains substantially light-insensitive light-scattering particles capable of being dissolved and removed in a development step and the diameter of light-scattering particles is from 50% to 150% of the wavelength of the laser light for use for the exposure.

4,343,874

METHOD OF CONSTRUCTING A HOLOGRAM ON A PHOTORESIST DETECTOR

Kenneth A. Haines, San Jose, Calif., assignor to Eidetic Images, Inc., Santa Clara, Calif.

Filed Nov. 19, 1980, Ser. No. 208,246
Int. Cl.[3] G03C 5/00
U.S. Cl. 430—1 11 Claims



1. In the method of constructing a surface relief hologram on a positive photoresist detector wherein the detector is selectively altered by exposure to object modified and reference coherent beams that are coherent with each other and which intersect at a finite angle at the detector, and thence the detector is developed by etching to remove altered portions of the photoresist, the improvement wherein the step of exposing the photoresist includes setting the relative intensity of the object modified and reference beams with a significant number of peaks in intensity across the object modified beam at the detector being greater than the reference beam intensity at the location of those peaks, and wherein the step of developing the exposed photoresist includes application of an etching solution

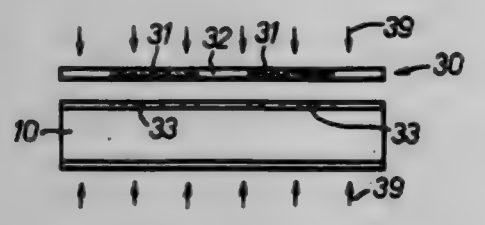
thereto for a short time to etch a maximum of 0.7 microns into the photoresist surface, whereby a desired depth of etch of the altered material is accomplished while minimizing undesired etching of unaltered material.

4,343,875

METHOD FOR THE ETCHING OF SILICON SUBSTRATES AND SUBSTRATE FOR THE EXECUTION OF THE METHOD

Dieter Spickenreuther, Wettingen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jun. 20, 1980, Ser. No. 161,447
Claims priority, application Switzerland, Jul. 4, 1979, 6230/79
Int. Cl.³ G03F *9/00*; H01L *21/312*; B44C *1/22*; C03C *15/00*
U.S. Cl. 430—5 32 Claims



1. A method for etching a silicon substrate (Si-substrate), comprising:

forming a protective layer of mineral glass adhering to the substrate and serving as a mask on at least some portions of said Si-substrate which are not to be etched, said mineral glass protective layer having local openings through which surface areas of the substrate are exposed to an etchant for etching of exposed surface areas;

etching said substrate after formation of said mineral glass protective layer;

wherein said mineral glass protective layer forming step comprises:

applying to the Si-substrate a mixture containing finely dispersed mineral glass particles having a size of about 1–100 μm a component which can be polymerized by actinic radiation and fixing agents, or of a compound which is heat-fusable into mineral glass;

exposing the applied mixture to actinic radiation to polymerize said applied mixture

removing portions of said polymerized mixture from those portions of the Si-substrate to be etched;

heating the non-removed portions of said polymerized mixture for the purpose of forming said etching mask of mineral glass adhering to such Si-substrate.

31. A silicon-substrate (Si-substrate) provided with an etching mask to cover selected surface areas of the Si-substrate not to be etched, comprising:

said etching mask at least partially consisting of a mixture suitable for the formation of a layer of mineral glass adhering to the Si-substrate;

said substrate at least over parts of its surface area being covered by a layer consisting of a mixture containing finely dispersed mineral glass and a component which is polymerizable by actinic radiation.

4,343,876

DOT-ENLARGEMENT PROCESS FOR PHOTOPOLYMER LITHO MASKS

Robert B. Heiart, Middletown, and James W. O'Neil, Howell, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 21, 1980, Ser. No. 209,202
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—5 20 Claims

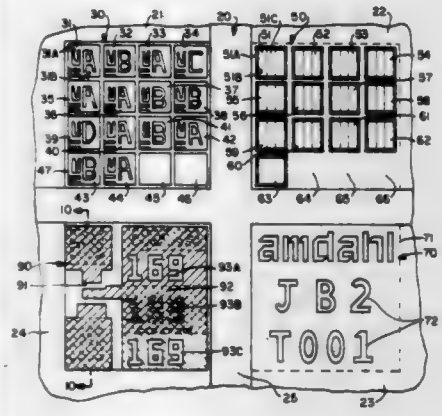
1. A process of permanently enlarging the area covered by a polymeric relief image containing crosslinkable moieties useful as a polymer mask, which process consists essentially of contacting the image area with a solution containing a swelling agent to effect image enlargement, and a crosslinking agent to react with and link the crosslinkable moieties of said polymeric relief image, whereby the image is enlarged and is fixed in its enlarged state.

4,343,877

SYSTEM FOR DESIGN AND PRODUCTION OF INTEGRATED CIRCUIT PHOTOMASKS AND INTEGRATED CIRCUIT DEVICES

Ping-Wang Chiang, Los Gatos, Calif., assignor to Amdahl Corporation, Santa Clara, Calif.

Filed Jan. 2, 1981, Ser. No. 222,253
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—5 19 Claims



1. In a method for providing mask sequence and mask alignment information on a set of photomasks designed to be used in processing semiconductor wafers into integrated circuits wherein said photomasks are to be used in a prearranged sequence during sequential photolithography steps and a topography pattern on each photomask except the first is required to be aligned to the wafer topography pattern created by use of at least one prior photomask in accordance with a predetermined mask alignment formula, the steps of:

selecting prior to photomask design and generation a plurality of common corner subareas of each circuit topography pattern area on each photomask to be used as designated information locations, one of said designated information locations being adapted to contain a two-dimensional rectangular array of locations for use as a mask sequence array and another of said designated information locations being adapted to contain a two-dimensional rectangular array of locations for use as an alignment key pattern array;

forming in each said mask sequence array on each photomask a mask sequence indicia positioned in a unique one of said mask sequence array locations; and

forming in said alignment key pattern array on each photomask an alignment key pattern in the form of one or both of alignment and aligning keys positioned in prearranged ones of said key locations.

4,343,878

SYSTEM FOR PROVIDING PHOTOMASK ALIGNMENT KEYS IN SEMICONDUCTOR INTEGRATED CIRCUIT PROCESSING

Ping-Wang Chiang, Los Gatos, Calif., assignor to Amdahl Corporation, Santa Clara, Calif.

Filed Jan. 2, 1981, Ser. No. 222,257
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—5 9 Claims

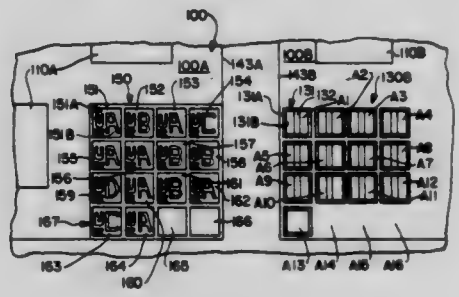
1. In a method for providing self-instructing mask alignment information on a set of photomasks designed to be used in number sequence during sequential photolithography steps in processing semiconductor wafers into integrated circuits wherein the topography pattern on each photomask in said set except the first one is required to be aligned to the wafer

topography pattern created by use of at least one predetermined lower number photomask in accordance with a predetermined mask alignment formula for said set, the steps of:

selecting prior to photomask design and generation a common photomask subarea to be used as an alignment key pattern area on each photomask in said set, said alignment key pattern area having an array of sequential key locations;

designating for each photomask after the first one an alignment key location which is either the same alignment key location as the immediately preceding photomask or the next alignment key location in said array;

forming on the first photomask of said set a mask key pattern comprising aligning keys for all associated higher number photomasks designed in accordance with said mask alignment formula to be aligned to the topography created by use of said first photomask, each of said aligning keys



being formed at key locations corresponding to said designated alignment key location for said associated photomask;

forming on each of the remaining photomasks of said set a mask key pattern comprising an alignment key at said designated alignment key location and aligning keys for any associated higher numbered ones of said photomasks designed in accordance with said mask alignment formula to be aligned to topography created by use of each said photomask, each of said aligning keys being formed at a key location corresponding to said designated key location for said associated photomask; and

forming on each photomask having a mask sequence number greater than two and being the first photomask in said set to have a particular designated alignment key location, a used key pair blot mark at a key location immediately preceding said designated alignment key location for said mask.

4,343,879

MULTIPLE LAYER OPTICAL DATA STORAGE AND RECORDING MEDIA

Jerome Drexler, Los Altos Hills, and Eric W. Bouldin, Woodside, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Filed Aug. 22, 1980, Ser. No. 181,378

Int. Cl.³ G03C *1/02, 1/76, 1/84;* G01D *15/14*

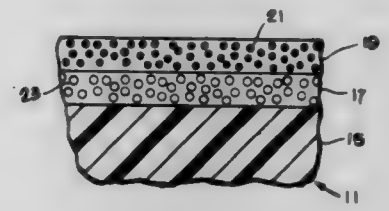
U.S. Cl. 430—14 **8 Claims**

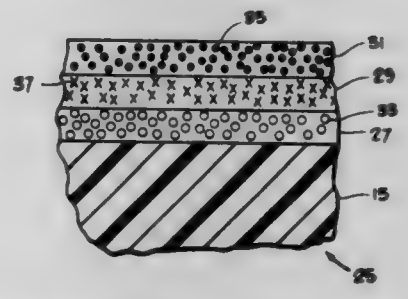
1. An optical data storage and recording medium, comprising

a supporting substrate,

at least a first layer of low melting temperature suspensive colloid disposed on said substrate, said layer for recording and storing optically written data, wherein said suspensive colloid contains a uniform areawise distribution of very small, non-filamentary, reflective silver particles dispersed in said suspensive colloid, having a diameter primarily less than 350 angstroms and greater than 50 angstroms, said layer being 20% to 80% reflective of light and being electrically non-conducting, and

at least one layer of low melting temperature suspensive colloid disposed atop said silver metal layer, containing dispersed, very small reflective metal particles having a diameter primarily less than 350 angstroms and larger than 50 angstroms, said metal particles comprising at least one metal other than silver which is solid at ambient tempera-





tures, said layer having a particle concentration for reducing the reflectivity of said first layer to a desired degree.

4,343,880

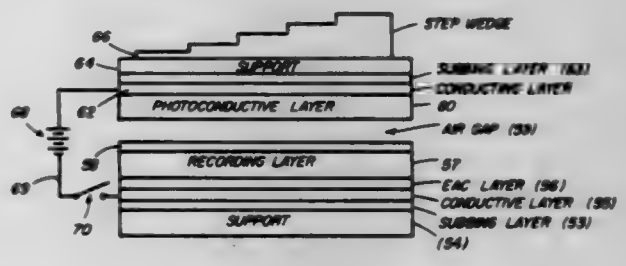
DYE-FORMING ELECTRICALLY ACTIVATABLE RECORDING MATERIAL AND PROCESS

Mark Lelental, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 55,945, Jul. 9, 1979, abandoned. This application Jun. 20, 1980, Ser. No. 161,626

Int. Cl.³ G03G *15/24, 13/22*

U.S. Cl. 430—42 **23 Claims**



1. In an electrically activatable recording element comprising an electrically conductive support having thereon, in sequence:

(a) an electrically activatable recording layer comprising an organic silver salt and a reducing agent,

(b) a photoconductive layer separated from (a) by an air gap of up to 20 microns, and

(c) and electrically conductive layer on (b), the improvements comprising, as said recording layer, the following, in reactive association:

(I) (A) a dye-forming coupler, and

(B) an oxidation-reduction combination comprising

(i) an organic silver salt oxidizing agent, with

(ii) a reducing agent which, in its oxidized form, forms a dye with said dye-forming coupler; and

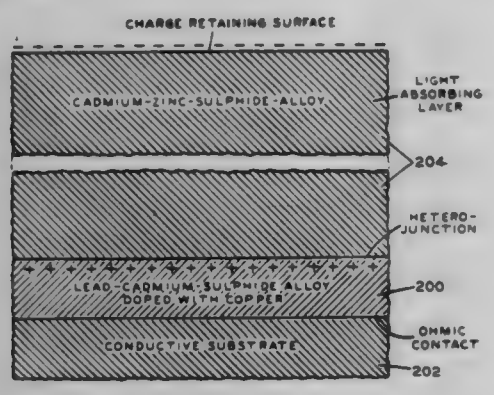
(II) an electrically active conductive layer on said electrically conductive support.

4,343,881

MULTILAYER PHOTOCONDUCTIVE ASSEMBLY WITH INTERMEDIATE HETEROJUNCTION

Arden Sher, Belmont, and John B. Mooney, Saratoga, both of Calif., assignors to Savin Corporation, Valhalla, N.Y.

Filed Jul. 6, 1981, Ser. No. 281,223
Int. Cl.³ G03G *5/082*
U.S. Cl. 430—57 **14 Claims**



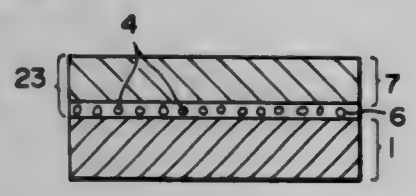
1. A photoconductive assembly including in combination a conductive substrate, a first semiconductive layer of a type of one carrier polarity, said first layer having a band gap, said first layer being in low-resistance contact with said conductive substrate, and a light-absorbing second semiconductive layer of a type of opposite carrier polarity to the carrier polarity of said first layer, said second layer having a band gap wider than the band gap of said first layer, said first and second layers forming a rectifying heterojunction therebetween.

4,343,882

ELECTROPHOTOGRAPHIC BISAZO PHOTOCONDUCTOR

Mitsuru Hashimoto, Numazu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 244,984
Claims priority, application Japan, Apr. 11, 1980, 55-47668
Int. Cl.³ G03G *5/06, 5/14*
U.S. Cl. 430—58 **7 Claims**



1. An electrophotographic photoconductor wherein said photoconductive layer comprises a charge carrier producing layer comprising said bisazo pigment, formed on said electroconductive support material, and a charge transporting layer formed on said charge carrier producing layer, containing a charge transporting material, the thickness of said charge carrier producing layer being not more than 5 μm and that of said charge transporting layer being in the range of about 3 μm to 50 μm.

4,343,883

METHOD FOR PRODUCING AN ELECTROPHOTOGRAPHIC RECORDING MATERIAL HAVING DUAL LAYER OF AMORPHOUS AND CRYSTALLIZED SE

Karl-Heinz Kassel; Manfred Lutz, both of Warstein; Josef Stuke, Marburg, and Hubert Walsdorfer, Warstein, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 30, 1980, Ser. No. 221,445
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1980, 3000305
Int. Cl.³ B05D *5/12*
U.S. Cl. 430—128 **13 Claims**

1. In a method for producing an electrophotographic recording material composed of a dual layer of amorphous and crystallized selenium applied to an electrically conductive substrate, the improvement comprising the steps of:

vapor-depositing tellurium in a vacuum onto the surface of the conductive substrate to a layer thickness of about 0.5 to about 5 nanometers to form a tellurium layer; and

vapor-depositing selenium onto said tellurium layer to a layer thickness of about 20 to about 100 microns to form the dual layer of amorphous and crystallized selenium.

4,343,884

DIAZOTYPE DEVELOPING PROCESS AND ACIDIC DEVELOPER WITH AMINE BASE SALT

Peter Muller, and Henry Mustacchi, both of Port Washington, N.Y., assignors to Andrews Paper & Chemical Co., Inc., Port Washington, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,423
Int. Cl.³ G03C *5/34*
U.S. Cl. 430—149 **13 Claims**

1. A liquid developer for the moist development of a latent image on a light-sensitive and exposed diazotype material, which comprises;

(a) an azodye coupler;

(b) a non-volatile salt of an amine base and a carboxylic acid having a molecular weight of from 46 to about 210; and

(c) a liquid, non-volatile organic dilutant for (a) and (b) described above, selected from the group consisting of polyhydric alcohols and polyhydric alcohol-ethers;

said developer having a pH within the range of from about 5.5 to about 7.0.

10. A process of developing the latent image on a light-sensitive and exposed diazotype material, which comprises;

applying the developer of claim 1 to said diazotype material.

4,343,885

PHOTOTROPIC PHOTOSENSITIVE COMPOSITIONS CONTAINING FLUORAN COLORFORMER

Edward J. Reardon, Jr., El Toro, Calif., assignor to Dynachem Corporation, Tustin, Calif.

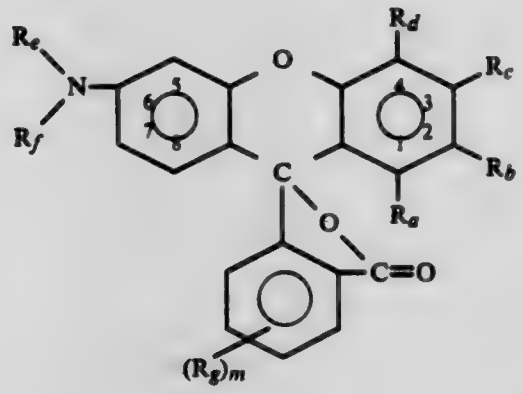
Continuation of Ser. No. 97,096, Nov. 23, 1979, abandoned, which is a continuation of Ser. No. 904,145, May 9, 1978, abandoned. This application Oct. 8, 1980, Ser. No. 195,285
Int. Cl.³ G03C *1/52, 1/68*
U.S. Cl. 430—177 **46 Claims**

1. A stable phototropic photosensitive composition which comprises:

a. at least one component capable of curing, crosslinking or polymerizing upon suitable initiation,

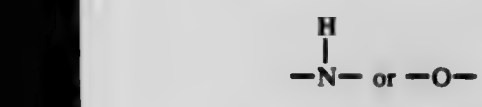
b. an initiator for said component that is potentiated by actinic radiation,

c. a fluoran colorformer compound capable of becoming more intensely colored upon contact with a color activator, said fluoran compound having the structural formula



where

R_a is hydrogen or an aliphatic group of one to 12 carbon atoms that is unsubstituted or optionally substituted and that may be interrupted by



and that is bound directly via carbon or oxygen;

R_b is an amino group where one or both hydrogen atoms are optionally replaced by unsubstituted or substituted aliphatic groups, cycloaliphatic groups, aromatic groups or mixed aliphatic-aromatic groups or R_b is a heterocyclic group of 3 to 12 ring members bound via a ring nitrogen and containing in addition to nitrogen, one or more of oxygen and sulfur as hetero ring members

or R_a and R_b together form a condensed aromatic nucleus;

R_c is hydrogen, halogen, an aliphatic group of one to 12 carbon atoms that is unsubstituted or substituted and that may be interrupted by nitrogen or oxygen and that is bound directly via carbon or oxygen, or R_c is an amino group where one or both hydrogen atoms are optionally replaced by unsubstituted or substituted aliphatic groups, cycloaliphatic groups, aromatic groups, mixed aliphatic-aromatic groups or where R_c is a heterocyclic group with three to twelve ring members containing one or more of nitrogen, oxygen and sulfur as hetero ring members or R_c is an aromatic group that is unsubstituted or optionally substituted or a mixed aliphatic-aromatic group or an aromatic ether or aliphatic-aromatic ether group;

R_d is hydrogen, lower aliphatic or an amino group where one or both hydrogen atoms are optionally replaced by unsubstituted or substituted aliphatic groups, cycloaliphatic groups, aromatic groups, mixed aliphatic-aromatic groups or R_d is a heterocyclic group of 3 to 12 ring members containing one or more of nitrogen, oxygen and sulfur as hetero ring members;

R_e and R_f each independently is hydrogen, unsubstituted or substituted aliphatic of one to 12 carbon atoms which may be interrupted by oxygen or nitrogen, and which is be bound directly via carbon, cycloaliphatic groups, aromatic groups, mixed aliphatic-aromatic groups, or R_e and R_f, together with the nitrogen atom form a heterocyclic group of 3 to 12 ring members, optionally containing, in addition to nitrogen, one or more of sulfur and oxygen as hetero ring members;

$(R_g)_m$ represents one to 3, independently, of hydrogen, lower aliphatic bound directly via carbon or oxygen, or is halogen, acetamido or optionally substituted amino

and provided that at least one of R_b, R_c and R_d is an amino group, as defined, and

d. a latent activator for the fluoran color-former that is capable of activating the fluoran compound under the influence of actinic light and is capable of generating or facilitating the production of an acidic substance which can react with said fluoran compound to activate a color change.

4,343,886

METHOD FOR STABILIZING DYE IMAGES IN COLOR PHOTOGRAPHIC SENSITIVE MATERIALS USING A LIGAND AS A DYE IMAGE STABILIZER PRECURSOR IN COMBINATION WITH METAL IONS

Kotaro Nakamura; Seiiti Kubodera; Satoru Sawada; Hiroshi Hara; Yoshiaki Suzuki, and Shigeru Oono, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

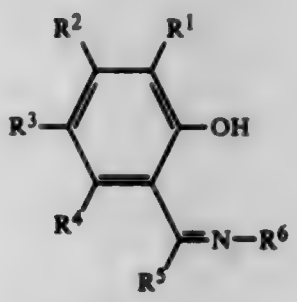
Filed Oct. 17, 1980, Ser. No. 198,026

Claims priority, application Japan, Oct. 18, 1979, 54-134433

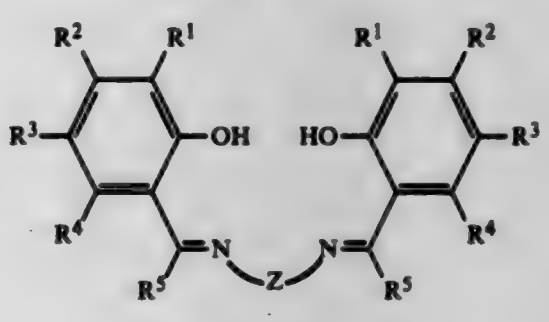
Int. Cl.³ G03C *1/40, 7/00, 1/84, 1/10*

U.S. Cl. 430—237 **26 Claims**

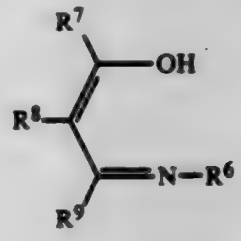
1. A process for processing a silver halide color photographic sensitive material containing at least one compound selected from the compounds represented by the following general formulae (I), (II), (III) and (IV) and alkali metal salts, alkaline earth metal salts, borates, aluminium salts and zinc salts thereof with a solution containing divalent ions of at least one metal selected from the group consisting of copper, cobalt, nickel, palladium and platinum:



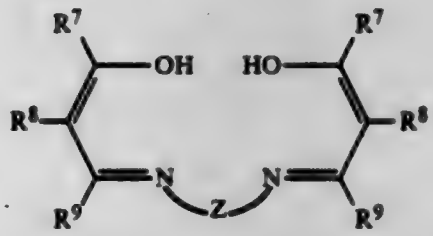
(I)



(II)



(III)



(IV)

wherein the formulae (II) and (IV) include the tautomers; R^1, R^2, R^3 and R^4 each represent a hydrogen atom, a halogen atom, a cyano group, or an alkyl group, an aryl group, a cycloalkyl group or a heterocyclic group bonded to the benzene nucleus directly or through a divalent connecting group, or R^1 and R^2, R^2 and R^3 or R^3 and R^4 may combine and represent a non-metallic atomic group necessary to form a 6 member ring; R^5, R^8 and R^9 each represent a hydrogen atom, an alkyl group or an aryl group, R^6 represents a hydrogen atom, an alkyl group, an aryl group or a hydroxyl group, R^7 represents an alkyl group or an aryl group, or R^7 and R^8 or R^8 and R^9 may

combine and represent a non-metallic atomic group necessary to form a 5 member to 8 member ring; and Z represents a divalent connecting group consisting of non-metallic atoms.

4,343,887

SENSITIZING BATH FOR SILVER CONTAINING RESIST

Adam Heller, Bridgewater, and Richard G. Vadimsky, Somerville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 14, 1981, Ser. No. 263,684
Int. Cl.³ G03C 5/00
U.S. Cl. 430—272 12 Claims

1. A method of fabricating an article comprising forming a silver containing layer of material on a layer of glassy material, said glassy material being disposed on a substrate, said silver containing material consisting essentially of at least one chemical compound consisting of the reaction product of a silver complex and at least one component of the material, said forming being by immersion of said glassy material in a sensitizing bath comprising a silver cyanide complex and a metal cyanide complex which introduces into the solution a CN^- ion concentration exceeding that of the cyanide ion concentration from $Ag(CN)_2 \rightleftarrows CN^- + AgCN$ at equilibrium.

4,343,888

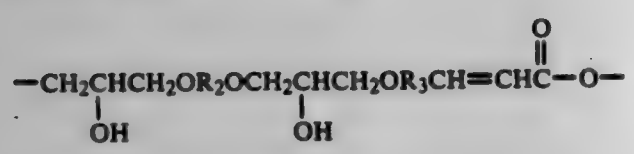
USE OF RADIATION CROSSLINKABLE POLYESTERS AND POLYESTERETHERS IN PRINTING PLATES

Marion Burg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 145,755, May 1, 1980, Pat. No. 4,284,710.
This application Jan. 21, 1981, Ser. No. 226,882
Int. Cl.³ G03C 5/00
U.S. Cl. 430—302 4 Claims

1. A process of preparing a lithographic printing plate which comprises coating a polyester or polyesterether, as hereinafter defined, or a dicarboxylic semi-ester thereof, onto an aluminum or other metal support, drying the coating, imagewise exposing the coating to actinic radiation, whereby the coating is crosslinked in the exposed areas, and then treating the coated support with a developer to selectively remove the unexposed areas, said developer being selected from the group consisting of an organic solvent, an aqueous organic solvent, and an aqueous alkaline solvent;

said polyester or polyesterether being selected from a class of condensation polymers composed of radiation-sensitive, film-forming, linear polyesters and polyesterethers having within the polymeric backbone a multiplicity of repeating units of the formula:



wherein R_2 is a divalent aryl, alkyl, aralkyl, or cycloalkyl radical having two to twenty carbon atoms, which radical may be substituted with a C_1 to C_{10} alkyl or cycloalkyl, aryl, or halogen group; and wherein R_3 is a divalent aryl, aroyl, arylacryloyl, furylacryloyl, pyridylacryloyl, or thienylacryloyl group in which the aromatic unit for aryl is phenyl, biphenyl, or naphthyl and wherein one of the R_3 cyclic carbon atoms is directly attached to the β-carbon of the α,β-ethylenic ester group of the repeating unit, and wherein the aromatic unit of the R_3 group can be substituted with a C_1 to C_8 alkyl or cycloalkyl, aryl, aralkyl, or halogen group.

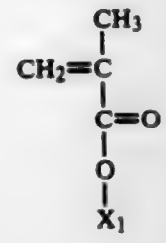
4,343,889

PROCESS OF EXPOSING AND DEVELOPING TERPOLYMER PHOTOSENSITIVE BODIES

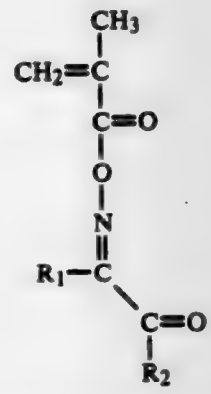
Elsa Reichmanis, Piscataway, and Cletus W. Wilkins, Jr., Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 19, 1981, Ser. No. 236,114
Int. Cl.³ G03C 5/00
U.S. Cl. 430—311 6 Claims

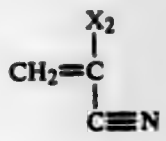
1. A process for producing an image in a photosensitive body comprising the steps of causing short wavelength ultraviolet radiation to be incident on a photosensitive region of said photosensitive body, maintaining said incident exposure for a time sufficient to cause a chemical change essentially through the thickness of said photosensitive region, and developing said photosensitive body characterized in that said photosensitive body comprises a photosensitive material, comprising an organic polymer, said organic polymer being formed from the monomers comprising (1) a methacrylate ester compound represented by the formula



where X_1 is an alkyl, (2) a 3-oximino-2-butanone methacrylate based compound represented by the formula



where R_1 is chosen from the group consisting of methyl, ethyl and propyl, R_2 is chosen from the group consisting of methyl, ethyl and propyl or R_1 and R_2 are connected to form a 5 or 6 member ring, and (3) an acrylonitrile based compound represented by the formula



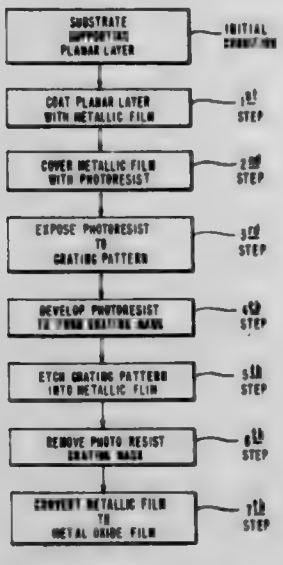
where X_2 is CH_3 or Cl, whereby said chemical reaction takes place essentially through said photosensitive region by use of less than 200 millijoules per cm^2 of said short wavelength ultraviolet radiation.

4,343,890

METHOD FOR MAKING PLANAR OPTICAL WAVEGUIDE COMPRISING THIN METAL OXIDE FILM INCORPORATING A RELIEF PHASE GRATING

William Phillips, Princeton, N.J.; Clyde C. Neil, Levittown, Pa., and Jacob M. Hammer, Plainsboro, N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 927,513, Jul. 24, 1978, Pat. No. 4,227,769.
This application Mar. 27, 1980, Ser. No. 134,657
Int. Cl.[3] G02B *5/14*; B05D *3/06, 3/02*
U.S. Cl. 430—321 5 Claims



1. A method for fabricating an optical-coupling relief phase grating on a planar optical waveguide initially comprising a substrate of a first dielectric material supporting a planar layer of a second dielectric material, said second dielectric material exhibiting an index of refraction greater than that of said first dielectric material and both said first and second dielectric materials remaining stable at a given temperature at which a given metal oxidizes into a metal oxide having a third index of refraction greater than that of said second index of refraction, said method comprising the steps of:

(a) coating the surface of said layer with a film of said given metal having a thickness in the range of 20–200 nanometers

(b) covering said metal film with photoresist,

(c) exposing said photoresist with a grating pattern of light defining said relief pattern,

(d) developing the exposed photoresist to form a photoresist mask of said grating pattern of the surface of said metallic filter,

(e) etching said grating pattern into said metallic film,

(f) removing said photoresist mask, and then

(g) annealing at least said film of said waveguide at said given temperature for a sufficient time in an oxygen-containing atmosphere to convert substantially said entire metallic film into a metal oxide film having said relief phase grating on the surface of said metal oxide film.

4,343,891

FIXING OF TETRA (HYDROCARBYL) BORATE SALT IMAGING SYSTEMS

Steven M. Aasen, Lakeland, Minn.; Rex J. Dalzell, Somerset, Wis.; Edward J. Goettert, Lake Elmo, Minn.; Brian N. Holmes, Oakdale, Minn., and George V. D. Tiers, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 23, 1980, Ser. No. 152,615
Int. Cl.[3] G03C *5/24*
U.S. Cl. 430—337 26 Claims

1. A method for desensitizing a radiation sensitive imaging system comprising a dye and a tetra(hydrocarbyl)borate in a binder which method comprises converting the tetra(hydrocarbyl)borate to a compound having fewer than four carbon-to-boron bonds after said radiation sensitive imaging system has been imagewise exposed to radiation, said converting being effected by introducing into reactive association with said borate a material selected from the group consisting of acids, aldehydes, peroxides, quinones, iodine or readily reducible metal ions.

4,343,892

METHOD AND APPARATUS FOR SILVER RECOVERY DURING PHOTOGRAPHIC PROCESSING

Kazushige Uenaka; Shinichi Kashiwagi; Toshiro Tahara; Kazuo Shirasu, all of Minami-ashigara; Yoshio Usui, Tokyo; Akira Abe, Tokyo; Fumio Nakagawa, Tokyo, and Tetsuya Masuda, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 12, 1980, Ser. No. 148,608
Claims priority, application Japan, May 11, 1979, 54-58300
Int. Cl.[3] G03C *5/26*
U.S. Cl. 430—398 4 Claims

1. A method for recovering silver from a processing fluid carried by a photographic material that has been transported through a silver-containing photographic processing fluid, wherein a silver recovery means comprising a plurality of adjacent cascade water tanks is provided between a tank for said silver-containing processing fluid and a water wash tank, and supplying water by cascade method to said silver recovery means independently of supplying water to said water wash tank based on the amount of photographic materials processed so that the amount of water supplied maintains the silver concentrations in said silver recovery water tanks substantially constant.

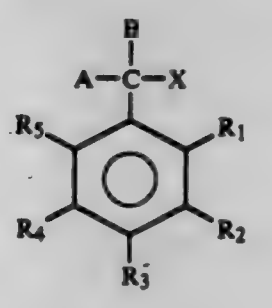
4,343,893

MASKED DEVELOPMENT/IMAGE MODIFIER COMPOUNDS OF SILVER PHOTOGRAPHIC SYSTEMS

Dennis S. Donald, Mendenhall, Pa., and Ross A. Lee, Webster, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 25, 1980, Ser. No. 172,999
Int. Cl.[3] G03C *5/26, 1/02*
U.S. Cl. 430—401 11 Claims

3. A process wherein a photographic element comprising a support and a photosensitive silver halide emulsion on said support is prepared, and is used to produce a silver image by a process which includes imagewise exposure followed by a development step, characterized in that the silver halide emulsion as prepared contains a compound of the formula



wherein

A=hydrogen, alkyl, or alkylcarboxyalkyl;

B=hydrogen, alkyl, or carboxyalkyl

R_1-R_5=hydrogen, halogen, $-CF_3$, cyano, or nitro;

X is a radical which, after release, forms either 1-phenyl-5-mercaptotetrazole, 5-nitroindazole, 3,4,5,6-tetrahydro-2-pyrimidinethiol, or phenidone;

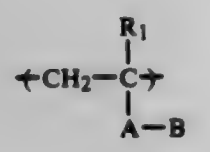
which compound remains inactive prior to the time of development.

4,343,894
PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT WITH ANTISTATIC PROTECTIVE LAYER

Junji Minamizono; Shinzo Kishimoto, and Masakazu Yoneyama, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

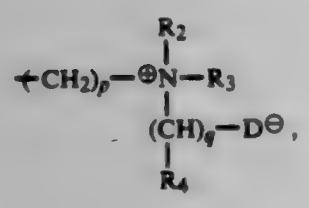
Filed Oct. 15, 1980, Ser. No. 197,355
Claims priority, application Japan, Oct. 15, 1979, 54-132537
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—528 **22 Claims**

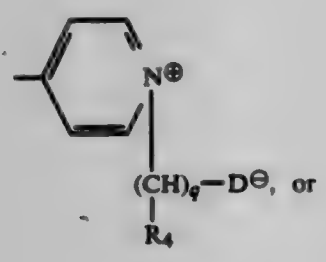
1. A photographic element comprising:
a support;
a light-sensitive silver halide layer; and
a protective layer wherein said protective layer is comprised of a polymer or copolymer in an amount of 0.005 to 5 grams per square meter of said element, said polymer or copolymer having a repeating unit represented by the formula (I)

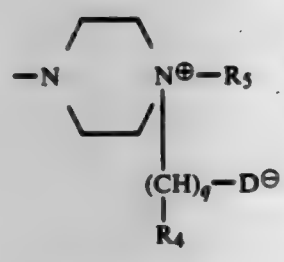


(I)

wherein R1 represents hydrogen or a methyl group, A represents a —COO— or —CONH— group, and B represents







wherein R_2 and R_3 represent an alkyl group containing from 1 to 6 carbon atoms; R_4 represents hydrogen or a methyl group; R_5 represents an alkyl group containing from 1 to 3 carbon atoms; p is an integer of from 2 to 6; when R_4 is hydrogen, q is an integer of from 1 to 4, and, when R_4 is a methyl group, q is 1; and D^- represents a $—COO^-$ or $—SO3^-$ group,
the compound of formula (I) being present in said copolymer in an amount sufficient to effect the antistatic properties of the photographic element.

4,343,895
ENCAPSULATED ANTIGENIC TUMOR SPECIFIC SUBSTANCES AND METHODS FOR DETECTING CANCER USING SAID SUBSTANCES

Stephen Sugaar, 21 Louis St., Staten Island, N.Y. 10304

Filed May 23, 1980, Ser. No. 152,535
Int. Cl.³ C12Q *1/68*; G01N *33/54*
U.S. Cl. 435—6 **3 Claims**

1. A process for the detection of cancer of defined pathohistological type comprising obtaining a blood or tissue sample of viable lymphocytes from a host,
contacting said lymphocyte sample with a liposome composition comprising an encapsulated aqueous phase which contains antigenic tumor-specific substances which comprises antigenic (i) macromolecular tumor-specific substances extracted from cancer cells or separated from cancer cells, or (ii) cancer cell material or membranes separated from cancer cells, characterized by a degree of antigenic activity such that when said composition is (i) contacted with a composition of sensitized lymphocytes taken from a host having cancer of the pathohistologic type as the cancer cells from which the antigenic tumor-specific substances were obtained, and (ii) in the presence of a suspension of macrophage cells prepared from pulmonary alveolar macrophages freshly obtained from rabbits, and the mixed composition cultured in a CO_2 incubator at 37° C. in a humidified atmosphere for between 24 and 72 hours, at least one multinucleated giant macrophage cell containing in excess of five nuclei will have formed; and
examining the reaction of said lymphocyte sample and said antigenic tumor-specific substances and comparing said reaction with the reaction of said antigenic tumor-specific substances which have been contacted with a sample of viable lymphocytes from a host free from cancer,
whereby when there is a difference in said two reactions, it is indicative that the lymphocyte sample taken from the host being tested is sensitized to cancer of the pathohistologic type as the cancer cells from which the antigenic tumor-specific substances were obtained.

4,343,896
METHOD AND TEST PACK FOR THE DEMONSTRATION AND DETERMINATION OF AN ANTIGEN OR ANTIBODY

Gerrit Wolters, and Leonardus P. C. Kuypers, both of Oss, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 653,579, Jan. 29, 1976, abandoned. This application May 1, 1980, Ser. No. 145,297
Claims priority, application Netherlands, Feb. 1, 1975, 7501215
Int. Cl.³ G01N *33/54*
U.S. Cl. 435—7 **37 Claims**

1. A process for the detection or determination of an at least bivalent antigen in a liquid sample, said process comprising the steps of:
(a) providing a given quantity of a first antibody against said at least bivalent antigen to be detected or determined, which first antibody is or has been labeled;
(b) providing a given quantity of a second antibody against said at least bivalent antigen to be detected or determined, said second antibody being produced in a different animal species than said first antibody;
(c) providing a given quantity of an insolubilized third antibody against said second antibody;
(d) contacting and incubating a sample of a liquid containing said at least bivalent antigen to be detected or determined with the components of steps (a), (b), and (c) to form a reaction mixture having a liquid phase and a solid phase;
(e) separating the liquid phase from the solid phase; and
(f) detecting or determining the labeled component in either the liquid phase or the solid phase, which detection or determination is a measure of the presence of quantity of said at least bivalent antigen to be detected or determined.

10. A test pack for the detection or determination of an at least bivalent antigen in a fluid sample comprising:
a. a given amount of a first antibody against the at least bivalent antigen to be detected or determined;
b. a given amount of a labelled second antibody against said at least bivalent antigen, said second antibody being produced in a different animal species than the first antibody;

c. a given amount of an insolubilized third antibody against said first antibody.

4,343,897

REAGENT FOR THE DETERMINATION OF LIPASE AND PROCESS FOR PREPARING SAME

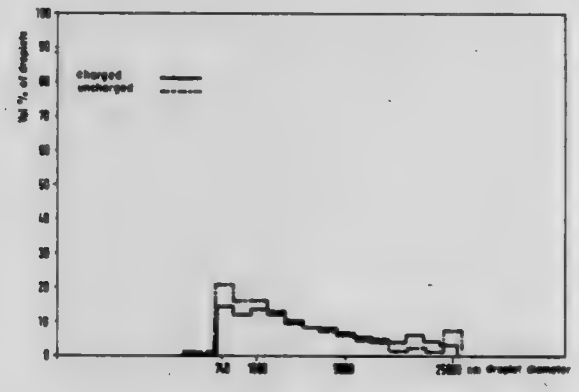
Ulrich Neumann, Peissenberg; Karl-Wolfgang Knitsch, Andechs; Joachim Ziegenhorn, Starnberg; Albert Röder; Werner Zwez, both of Seeshaupt, and Werner Krämer, Bernried, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 115,864

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904305

Int. Cl.[3] C12Q *1/44*

U.S. Cl. 435—19 18 Claims



1. A reconstitutable dry reagent for the turbidimetric determination of lipase, which reagent forms an emulsion upon adding water and comprises substrate oil, protective colloid, emulsifier and an activator for lipase, said reagent containing:

0.2 to 10% by weight of liquid triglyceride,

20 to 90% by weight of protective colloid,

5 to 60% by weight of an alkali metal salt of bile acid,

0.001 to 0.1% by weight of colipase,

0.1 to 2.0% by weight of preserving agent,

5 to 20% by weight of urea,

3 to 50% by weight of buffer substance for pH 6.0 to 10.5 and

0.5 to 5% by weight of said activator.

4,343,898

PROCESS FOR PREPARING ESTERS OF HUMAN INSULIN

Jan Markussen, Herlev, Denmark, assignor to Novo Industri A/S, Denmark

Filed Feb. 10, 1981, Ser. No. 233,051

Claims priority, application Denmark, Feb. 11, 1980, 574/80; Aug. 28, 1980, 3662/80

Int. Cl.[3] C12P *21/04*

U.S. Cl. 435—71 10 Claims

1. In a process for preparing human insulin, the improvement which comprises transpeptidizing into a human insulin Thr^{B30}-ester in high yield an insulin compound or a salt or complex thereof convertible into a human insulin Thr^{B30}-ester by reacting a non-Thr^{B30}-ester insulin compound or salt or complex thereof with an L-threonine ester or a salt thereof in a mixture of water and a water miscible organic solvent, in the presence of trypsin, and in the optional presence of up to 10 equivalents of acid per equivalent of the L-threonine ester, the content of water in the reaction solution exceeding about 10% and being less than 50% v/v, and the reaction temperature being below 50° C.

4,343,899

PROCESS FOR PRODUCING STABLE AQUEOUS SOLUTION OF ACRYLAMIDE OR METHACRYLAMIDE

Ichiro Watanabe, and Yoshiaki Satoh, both of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1980, Ser. No. 120,960

Claims priority, application Japan, Feb. 13, 1979, 54/14276

Int. Cl.[3] C12P *13/02*

U.S. Cl. 435—129 9 Claims

1. A process for producing a stable aqueous solution of acrylamide or methacrylamide by subjecting acrylonitrile or methacrylonitrile in water to the action of microorganisms having a nitrilasic activity, selected from the genus Corynebacterium, the genus Nocardia, the genus Bacillus, and genus Bacteridium in the sense of Prevot, the genus Micrococcus or the genus Brevibacterium in the sense of Bergey, which comprises treating said microorganisms with a water soluble dialdehyde before reaction with the nitrile to thereby inhibit polymerization of the acrylamide or methacrylamide produced.

4,343,900

PROCESS FOR THE PRODUCTION OF ACRYLAMIDE USING MICROORGANISM

Ichiro Watanabe, Yokohama, Japan, assignor to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1980, Ser. No. 194,653

Claims priority, application Japan, Oct. 4, 1979, 54/127389; Oct. 4, 1979, 54/127390

Int. Cl.[3] C12P *13/02;* C12N *11/08;* C12R *1/15, 1/365*

U.S. Cl. 435—129 14 Claims

1. A process for preparing acrylamide from acrylonitrile in an aqueous medium containing a microorganism having nitrilasic activity, which comprises adding from 0.01% to 0.5% by weight, based on the weight of the aqueous medium containing the acrylonitrile, of at least one compound selected from the group consisting of alkali metal carbonates and bicarbonates to the aqueous medium, wherein pH is from 6.5 to 9.5 and said process is conducted for a period of time sufficient to convert said acrylonitrile to said acrylamide.

4,343,901

MAGNETIC SUPPORT MATRIX FOR ENZYME IMMOBILIZATION

Louis J. DeFilippi, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 22, 1980, Ser. No. 199,161

Int. Cl.[3] C12N *11/14*

U.S. Cl. 435—176 17 Claims

1. A magnetic support matrix comprising a porous, refractory inorganic oxide selected from the group consisting of alumina, thoria, magnesia and combinations thereof, through the interior of which are dispersed particles, from about 0.05 micron to about 0.5 mm in size, of ferromagnetic materials in an amount from about 1 to about 40 percent by weight with less than about 10 percent of said particles on the surface of the oxide, said oxide being impregnated with a polyamine cross-linked with an excess of a bifunctional reagent so as to furnish pendant functional groups.

4,343,902

PRODUCTION OF IMMOBILIZED GLUCOSE ISOMERASE

Soichiro Ushiro, Kokubunji, Japan, assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Dec. 19, 1980, Ser. No. 217,976

Claims priority, application Japan, Feb. 5, 1980, 55-12111

The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.

Int. Cl.³ C12N *11/02;* C12P *19/24;* C12N *9/92*

U.S. Cl. 435—177 **4 Claims**

1. A method for the production of immobilized glucose isomerase comprising:

(a) culturing a glucose-isomerase producing microorganism in a suitable medium to produce cells of the microorganism;

(b) treating an aqueous suspension of the cells of said microorganism at a pH of from about 5 to about 8 and at a temperature from about 30° C. to about 70° C. with from about 0.1% to about 20% by weight, based on the dry weight of the cells, of a non-ionic surfactant that solubilizes the glucose isomerase without solubilizing the polysaccharides in the cells, for a sufficient time to solubilize the glucose isomerase and give a glucose isomerase solution;

(c) separating the glucose isomerase solution from the cells; and

(d) adsorbing the glucose isomerase from said glucose isomerase solution on an ion exchange resin capable of adsorbing said polysaccharides.

4,343,903

PROCESS FOR OBTAINING CHOLESTEROL ESTERASE FROM MICRO-ORGANISMS

Klaus Beaucamp; Michael Nelboeck; Helmgard Gauhl; Hans Seidel, all of Tutzing; Wolfgang Gruber, Tutzing-Unterzeismering, and Herwig Brunner, Weilheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,808

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1979, 2933646

Int. Cl.³ C12N *9/18*

U.S. Cl. 435—197 **5 Claims**

1. Process for obtaining cholesterol esterase from micro-organisms, which process comprises culturing a micro-organism capable of cholesterol esterase formation in a nutrient medium, in the presence of lecithin as an inducer, and then obtaining the enzyme from the culture medium or the cells.

4,343,904

PROCESS AND APPARATUS FOR GROWING ANIMAL CELLS

John R. Birch, High Wycombe; Terence Cartwright, Benson, and John A. Ford, Wallingford, all of England, assignors to G. D. Searle & Co., Skokie, Ill.

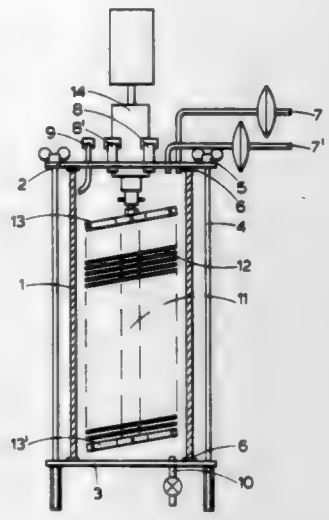
Filed Aug. 21, 1980, Ser. No. 180,063

Claims priority, application United Kingdom, Aug. 24, 1979, 7929567

Int. Cl.³ C12N *5/00;* C12M *1/14, 1/06*

U.S. Cl. 435—240 **3 Claims**

1. A process for growing animal cells by incubation with growth medium in a multi-plate growth apparatus which comprises substantially filling a vertically disposed cylindrical vessel with a mixture of cells and growth medium, which vessel is closed by top and bottom plates, the top plate being provided with a plurality of inlets and the bottom plate with an outlet, and the vessel is provided with a stack of parallel spaced-apart discs inclined at the angle of at least 5° from the horizontal fixedly mounted to a vertically disposed rotatable axial shaft within the vessel, while the vessel is vertically disposed allowing the cells to settle on the disc surfaces while maintaining the vessel contents at an optimum growth temperature and while infusing the vessel contents with a mixture of oxygen and carbon dioxide and thereafter while maintaining the vessel vertically disposed rotating the axial shaft at a speed



of at least 5 rpm for a period of time to allow optimum growth to occur and continuously circulating the vessel contents from the bottom to the top of the vessel through an external loop.

4,343,905

CONCENTRATED GTF CHROMIUM COMPLEX BREWERS YEAST AND PROCESS FOR PRODUCING SAME

Andrew Szalay, 99 Buckingham Dr., Hackensack, N.J. 07601

Filed Jul. 7, 1980, Ser. No. 166,454

Int. Cl.³ C12N *1/16, 1/18;* A61K *35/78*

U.S. Cl. 435—256 **7 Claims**

1. A method for concentrating the naturally occurring GTF chromium complex in a Brewer's yeast compound by reacting a Brewer's yeast solution with a nutritional media solution including chromium oxide and amino acids selected from the group consisting of nicotinic acid, glycine, L-glutamic acid and L-cystein.

2. A method for concentrating the naturally occurring GTF chromium complex in a Brewer's yeast compound, said method comprising the steps of:

preparing a nutritional and complex media including:

between about 29% and about 32% by weight of solids of nicotinic acid;

between about 17% and about 20% by weight of solids of glycine;

between about 17% and about 20% by weight of solids of L-glutamic acid;

between about 11% and about 14% by weight of solids of chromium oxide; and

between about 18% and about 21% by weight of L-cystein;

preparing a solution of Brewer's yeast wherein the yeast solids are diluted in water;

admixing the media and yeast solution and permitting the admixed yeast solution to react with the media; and

killing the yeast cells and spray drying the yeast solution to create a powder form.

4,343,906

HYBRID PLASMID OF PBR322 AND STREPTOMYCES PLASMID AND *E. COLI* CONTAINING SAME

Fritz Reusser, Portage, and Vedpal S. Malik, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 21, 1979, Ser. No. 68,418

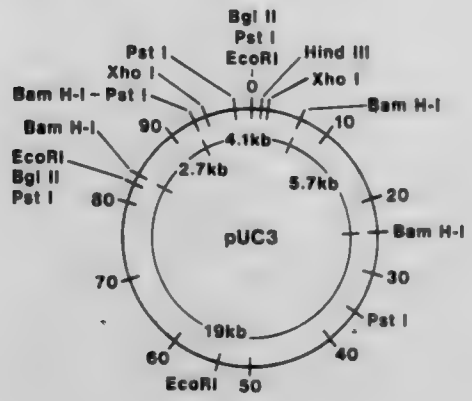
Int. Cl.³ C12N *1/20*

U.S. Cl. 435—253 **6 Claims**

4. Hybrid plasmid pUC1009 characterized as follows:

(a) it is a hybrid plasmid which has the entire nucleotide

sequence of plasmid pBR322 and a foreign DNA insert at the BamH-1 site of pBR322;



(b) said DNA insert being the 19 kb fragment of plasmid pUC3 shown in the drawing.

4,343,907

APPARATUS FOR PREPARING HIGH GRADE FERTILIZER

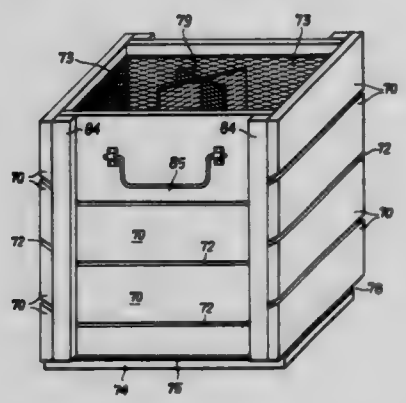
Gernot Graefe, Donnerskirchen, Austria

Division of Ser. No. 812,856, Jul. 5, 1977, Pat. No. 4,211,545. This application Jan. 9, 1980, Ser. No. 110,631

Claims priority, application Austria, Jul. 7, 1976, 4977/76; May 18, 1977, 3581/77

Int. Cl.³ C12M *1/04, 1/06*

U.S. Cl. 435—313 **7 Claims**



1. An apparatus for carrying out the aerobic decay of pressing residues from wine making to produce a high grade fertilizer, heat, carbon dioxide, and moisture which comprises a chamber for confining the residues in a loose mass, the walls of the chamber being composed of a metal mesh, the solid portions of the mesh having a cross section which slopes downwardly towards the interior of the chamber so that moisture condensing on the mesh is directed back to the mass, wherein the mesh walls are supported by a grating which is exterior of the chamber and wherein the supporting grating is composed of horizontally placed boards, the boards being spaced apart from one another to provide aeration spaces for air to enter the chamber and wherein the cross section of the spaces thus formed slopes downwardly towards the interior of the chamber so that moisture collecting therein is directed back towards the interior of the chamber.

4,343,908

OPTICAL GLASS HAVING $N_D=1.63\pm(1.5\times10^{-2})$, $V_D=59.5\pm1.0$ WITH A HIGH CHEMICAL STABILITY AND A LOW TENDENCY TO CRYSTALLIZATION

Marga Faulstich, Mainz, and Volmar Geiler, Mainz-Finthen, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mains, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 221,110

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952705

Int. Cl.³ C03C *3/08*

U.S. Cl. 501—78 **10 Claims**

1. An optical glass having $n_D=1.63\pm(1.5\times10^{-2})$, $v_D=59.5\pm1.0$, a high chemical stability and a low tendency to crystallization, and consisting of (in percent. by weight):

SiO_2	23–27
B_2O_3	24–30
SrO	18–31
La_2O_3	10–16
Al_2O_3	2–4
BaO	0–10
CaO	0–5
ZnO	0–6
Y_2O_3	0–5
ZrO_2	0–2
Li_2O, Na_2O and/or K_2O	0–1.5
As_2O_3 and/or Sb_2O_3	0–1
F and/or Cl	0–1,
wherein the sum of	
$SiO_2 + B_2O_3$ is	50–53,
the weight ratio	
SiO_2:B_2O_3 is	0.8–1.0,
the sum	
SrO + BaO is	26–31,
and the sum	
ZnO + La_2O_3 is	12–17.

4,343,909

HIGH TOUGHNESS CERAMIC CUTTING TOOL

James H. Adams, Rochester; Dennis J. Rich, Troy, and Frederick C. Holtz, Jr., Birmingham, all of Mich., assignors to The Valeron Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 141,103, Apr. 17, 1980, abandoned. This application May 1, 1981, Ser. No. 259,581

Int. Cl.³ C04B *35/48, 35/58, 35/49*

U.S. Cl. 501—98 **14 Claims**

1. An insert for a cutting tool consisting essentially of:
from about 1 to about 15% zirconia;
up to about 2% magnesia;
from about 5% to about 20% titanium diboride;
up to about 10% titanium dioxide; and
from about 60% to about 94% alumina.

4,343,910

COMPOSITIONS, ARTICLES AND METHODS FOR POLISHING SURFACES

Francis W. Busch, Jr., Southbury; Thomas J. Pallone, Monroe; Gene R. Berube, Cheshire, all of Conn.; Ambrish H. Vyas, Greenville, N.C.; Joseph R. Faryniarz, Ansonia, and John A. Russo, Westport, both of Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Apr. 22, 1980, Ser. No. 142,831

Int. Cl.³ C08G *18/14*

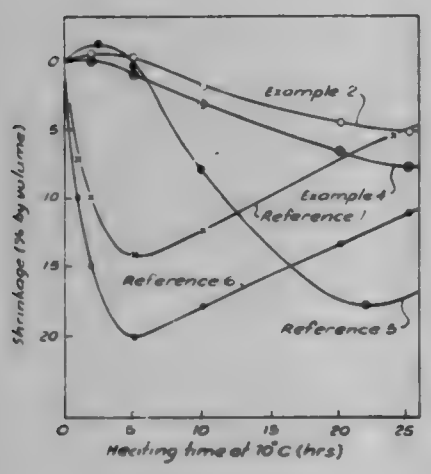
U.S. Cl. 521—82 **4 Claims**

1. A foamed polishing composition which comprises:
(a) a foamed polymer; and having distributed throughout
(b) a particulate abrasive compound, said compound having a particle size (in micrometers) and a valley abrasion number the product of which yields a number which falls in the range between 300 and 1650.

4,343,911
FOAMED THERMOPLASTIC RESIN ARTICLES AND FOAMABLE COMPOSITIONS AND FOAMING PROCESSES FOR THE PREPARATION THEREOF

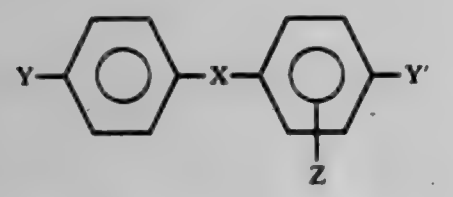
Tsuneo Hoki, and Yutaka Matsuki, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Jul. 17, 1981, Ser. No. 284,264
Claims priority, application Japan, Jul. 17, 1980, 55/96833
Int. Cl.³ C08J 9/14
U.S. Cl. 521—88 9 Claims

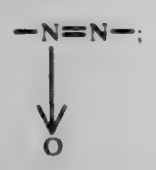


1. A foamable thermoplastic resin composition, comprising a thermoplastic synthetic resin, a blowing agent, and from about 0.01 to about 5 percent by weight, based on said thermoplastic synthetic resin, of at least one compound represented by the following Formula (I) or (II):

(I)

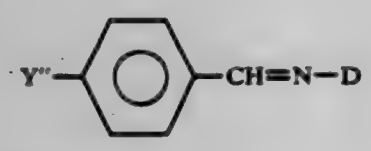


wherein X is a radical to be selected out of a group consisting of —CH=N—, —N=N— and

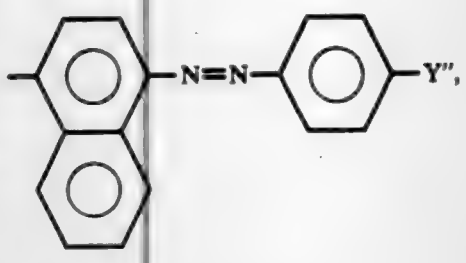


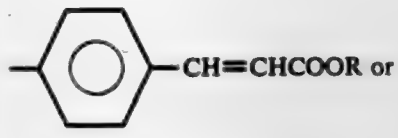
Y and Y' represent, respectively, a radical belonging to a group A consisting of —CN, —COOR, —OCOR, —NO_2, —SO_3H and —SO_3M and a radical belonging to a group B consisting of —OH, —OR, —OR—OCH_3, —NH_2, —NHR' and R or visa versa, or Y and Y' represent the same radical or different radicals belonging to said group B, with R being an aliphatic hydrocarbon group, R' being an aliphatic hydrocarbon group or a phenyl group, and M being a metal ion belonging to the Group 1*a* or 2*a* of the periodic table; and Z represents a hydrogen atom or a radical to be selected out of said group A;

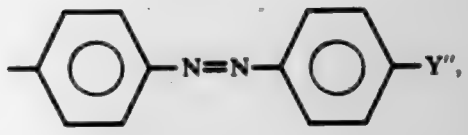
(II)



wherein D represents







and wherein Y'' represents a radical to be selected out of a group consisting of —H, —OH, —OR, —OR—OCH_3, —NH_2 and —NHR'; R represents an aliphatic hydrocarbon group; and R' represents an aliphatic hydrocarbon group or a phenyl group.

4,343,912
NOVEL METHOD FOR REDUCING THE PROCESSING TEMPERATURE OF THERMOPLASTIC POLYMERS AND NOVEL BLOWING AGENT CONCENTRATES PRODUCED THEREBY

In C. Lim, Pittsburgh, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 49,834, Jun. 18, 1979, Pat. No. 4,313,873, which is a continuation-in-part of Ser. No. 921,529, Jul. 3, 1978, abandoned. This application Sep. 21, 1981, Ser. No. 304,398
Int. Cl.³ C08J 9/06; C08L 91/00
U.S. Cl. 521—90 5 Claims

1. A process for producing a chemical blowing agent concentrate comprising a polycarbonate, a compound having a softening temperature of about 20° to 200° C. lower than the softening temperature of the polycarbonate and a chemical blowing agent at a temperature of at most about 180° C. comprising extruding a polycarbonate in powder form having a maximum particle size diameter of less than about 1000 microns with a chemical blowing agent and said compound.

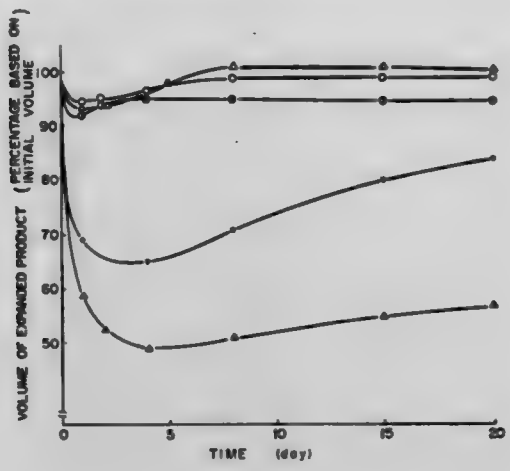
4,343,913
EXPANDED THERMOPLASTIC SYNTHETIC RESIN AND COMPOSITION THEREFOR

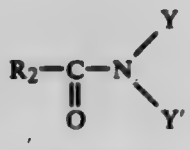
Seizaburo Watanabe, and Yutaka Matsuki, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 92,255, Nov. 7, 1979, abandoned, which is a division of Ser. No. 952,865, Oct. 19, 1978, Pat. No. 4,214,054. This application Jul. 28, 1980, Ser. No. 172,743
Claims priority, application Japan, Oct. 21, 1977, 52-125839; Dec. 23, 1977, 52-155401; Dec. 24, 1977, 52-156201; Feb. 20, 1978, 53-17698; Feb. 20, 1978, 53-17699; Feb. 20, 1978, 53-17700; Mar. 28, 1978, 53-35709; May 12, 1978, 53-55545
The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.
Int. Cl.³ C08J 9/14
U.S. Cl. 521—94 5 Claims

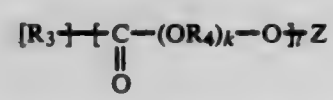
1. An expandable olefin polymer composition comprising an olefin polymer, a volatile organic blowing agent and at least one shrinkage reducing compound selected from the group represented by the formulas II or III as set forth below, said compounds being contained in said olefin polymer composi-

tion in an amount of from 0.1 to 10 weight percent based upon the weight of said olefin polymer:




(I)

wherein R_2 is an alkly group having 9 to 23 carbon atoms, Y and Y′ each is a hydrogen atom, an alkyl having 1 to 24 carbon atoms, an acyl having 10 to 24 carbon atoms or a substituent of the formula $-(R_4O)_mA_2$ wherein R_4 is an alkylene group having 1 to 5 carbon atoms, m an integer of 1 to 10 and A_2 is a hydrogen atom, an alkyl group of 1 to 24 carbon atoms or an acyl of 10 to 24 carbon atoms;


(II)

wherein $[R_3]$ means plural alkyl or hydroxyalkyl groups corresponding in number to the integer l, which may be the same or different, each having 9 to 23 carbon atoms, R_4 an alkylene group having 1 to 5 carbon atoms, k an integer of 0 to 7, l an integer of 2 to 8 and Z a l-valent residue of l-valent polyhydric alcohol from which l hydroxyl groups are eliminated.

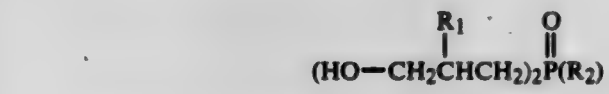
4,343,914

FLAME RETARDANT POLYURETHANE CONTAINING ALKYL BIS(3-HYDROXYPROPYL) PHOSPHINE OXIDE

Fui-Tseng H. Lee, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jul. 22, 1981, Ser. No. 285,888
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—168 **14 Claims**

1. A polyurethane composition rendered flame retardant by having combined therewith an effective amount of an alkyl bis(3-hydroxypropyl) phosphine oxide having the formula:



wherein R_1 may be the same or different radicals selected from the group consisting of hydrogen and the methyl radicals and R_2 is an alkyl radical of 2 to 8 carbon atoms.

4,343,915

POLYSPIROLACTONE POLYMERS

Kirk J. Abbey, Cleveland, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,297
Int. Cl.³ C08G *59/42, 63/00, 63/76*
U.S. Cl. 523—414 **18 Claims**

1. A composition comprising on a weight basis between about 1% and 99% polyspirolactone polymer containing at least one spirolactone ring structure in the polymer structure and having a molecular weight between about 350 and 30,000, and between about 1% and 99% polyfunctional amine, whereby said amine is adapted to coreact upon heating and cross-link with said polyspirolactone polymer to form a thermoset cross-linked polymer.

4,343,916

POLYURETHANE OLIGOMER IMPACT AND SHRINKAGE MODIFIERS FOR THERMOSET POLYESTERS

James M. O'Connor, Clinton; Donald D. Lickei, Wallingford, and Willie J. Sessions, New Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 16,857, Mar. 2, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 210,076
Int. Cl.³ C08L *67/06, 67/02*
U.S. Cl. 525—28 **19 Claims**

1. In a thermoset polyester resin composition comprising a polyester resin, a catalyst, and at least one of a reinforcing agent or a filler; the improvement comprising the addition of an effective proportion of a polyurethane oligomer modifier, said oligomer prepared by reacting:

(a) an isocyanate-terminated prepolymer which is the reaction product of an organic diisocyanate with a polyol having an average equivalent weight of about 300 to about 4,000, in an equivalent ratio of NCO to OH ranging from about 1.02/1 to about 1.6/1 with

(b) an isocyanate reactive group-containing unsaturated monomer to result in an oligomer product having terminal reactive unsaturation and a final free NCO content of from 0 to about 1 percent.

4,343,917

WATER CURABLE, AMINO SILANE MODIFIED ALKYLENE-ALKYL ACRYLATE COPOLYMERS

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

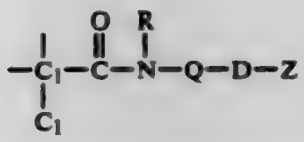
Continuation-in-part of Ser. No. 70,785, Aug. 29, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Apr. 2, 1981, Ser. No. 250,443
Int. Cl.³ C08L *23/36;* H01B *7/28*
U.S. Cl. 525—106 **10 Claims**

1. Water curable, amino silane modified alkylene-alkyl acrylate copolymers, free of halide salts and halide ions, which contain at least 50 percent by weight alpha olefin units having the formula:



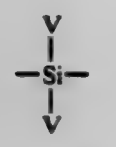
wherein A is hydrogen or an alkyl radical having one to 16 carbon atoms;

at least 0.1 percent by weight of polymerized units containing the radical having the formula:

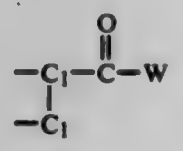


wherein: C_1 is a carbon atom in the main polymer chain, R

is hydrogen or a hydrocarbon radical having one to 18 carbon atoms; Q is a hydrocarbon radical having one to 18 carbon atoms, bonded to —N— and —D— through carbon atoms; D is a silicon containing radical having the formula:



wherein V is hydrogen, a hydrocarbon radical having one to 18 carbon atoms or a hydrolyzable group and Z is a hydrolyzable group; and polymerized units having the formula:



wherein C_1 is a carbon atom in the main polymer chain and W is an alkoxy radical having one to 18 carbon atoms.

4,343,918

THERMOPLASTIC ELASTOMER BLENDS

Georg G. A. Bohm, Akron; Gary R. Hamed, Uniontown, and Lee E. Vescelius, Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 1,623, Jan. 8, 1979, Pat. No. 4,250,273, which is a continuation-in-part of Ser. No. 879,308, Feb. 21, 1978, abandoned, which is a division of Ser. No. 806,036, Jun. 13, 1977, abandoned. This application Aug. 4, 1980, Ser. No. 175,094

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—194 **3 Claims**

1. A process for making a thermoplastic elastomer blend composition, comprising the steps of:

providing a blend of a 1-olefin polymer, a random styrene-butadiene rubber copolymer and a highly saturated elastomer,

the amount of said 1-olefin homopolymer, ranging from about 10 to about 50 parts by weight, the amount of said styrene-butadiene rubber ranging from about 80 to about 15 parts by weight, the amount of said highly saturated elastomer ranging from about 5 to about 55 parts by weight,

said 1-olefin polymer selected from the group consisting of a homopolymer and a copolymer made from 1-olefin monomers having from 2 to about 20 carbon atoms, said homopolymer or said copolymer having a melting point of at least 90° C.,

wherein said highly saturated elastomer is selected from the group consisting of hydrogenated polymer made from dienes having from 4 to 10 carbon atoms and a hydrogenated diblock or triblock copolymer made from conjugated dienes having from 4 to 10 carbon atoms and vinyl substituted aromatics having from 8 to 12 carbon atoms, the amount of said saturation of said elastomer being at least 70%, and

mixing said blend at a temperature at or above the melting point of said crystalline 1-olefin polymer so that a reprocessable thermoplastic elastomer blend is formed.

4,343,919

ADDITION POLYMERIZABLE POLYETHYLENIC POLYMERS HAVING PENDANT ACRYLOYL URETHANE GROUPS

Nancy B. Tefertiller, and Robert F. Harris, both of Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 10, 1980, Ser. No. 128,422

Int. Cl.³ C08F *120/36*

U.S. Cl. 525—278 **8 Claims**

1. A radiation curable coating formulation comprising

(a) a polymer of 2-isocyanatoethyl methacrylate, the isocyanate moieties of which have been reacted with a hydroxyalkyl acrylate; and

(b) a photoinitiator sufficient to initiate radiation cure of the formulation upon exposure to actinic radiation.

4,343,920

POLYMERIC POLYDENTATE COMPLEXONS AND A METHOD FOR THEIR PREPARATION

Jaroslav Kahovec, Prague, Czechoslovakia, assignor to Cexkoslovenska akademie ved, Prague, Czechoslovakia

Filed Dec. 19, 1980, Ser. No. 218,125

Claims priority, application Czechoslovakia, Dec. 22, 1979, 9318-79

Int. Cl.³ C08F *8/30*

U.S. Cl. 525—328.2 **2 Claims**

2. The preparation of the polymeric complexons of general formulae I and II, wherein the polymeric compound (P) -XH, where (P) is a polymeric skeleton and X is —O— or



while R is H, alkyl with 1–6 carbon atoms, phenyl or phenyl substituted with 1–2 alkyl or alkoxyl groups with 1–6 carbon atoms, reacts with 4,4'-ethylene-bis(2,6-morpholinedione) in the presence of an inert solvent.

4,343,921

ADHESIVE COMPOSITION

Gerhard Piestert, Schriesheim, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed Nov. 2, 1979, Ser. No. 90,513

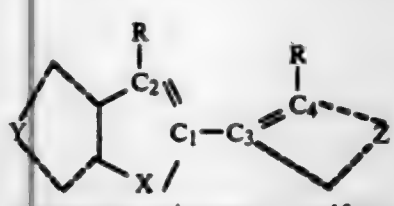
Claims priority, application United Kingdom, Nov. 6, 1978, 43370/78

Int. Cl.³ C08F *4/00, 20/20, 20/26*

U.S. Cl. 525—310 **21 Claims**

1. An adhesive composition formed by combining two parts, one part including one or more polymerizable materials comprising one or more acrylate or methacrylate groups per molecule, a source of free radicals comprising an organic peroxide, hydroperoxide, perester or peracid, and the other part includes an activator which can cooperate with the source of free radicals to initiate addition polymerization of the polymerizable materials and where the said activator comprises an organic material having a structure shown in FORM 1 below:

FORM 1



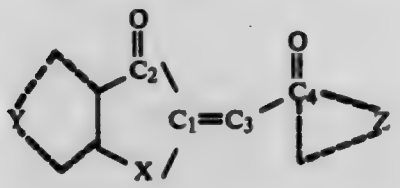
where X represents a nitrogen or sulfur atom;

Y represents the atoms necessary to complete a substituted or unsubstituted aromatic ring system;

Z represents the atoms necessary to complete a substituted or unsubstituted ring system or a substituted or unsubstituted five membered heterocyclic ring system in which C_3 is bonded to a nitrogen or sulfur atom and

R represents the same or different substituent which under adhesive forming conditions and in the presence of free radicals provide a structure of FORM 2 below:

FORM 2



4,343,922

POLYMERS CONTAINING CHEMICALLY BONDED METAL ATOMS

Robert C. Shaffer, Playa del Ray, Calif., assignor to HITCO, Irving, Calif.

Division of Ser. No. 84,310, Dec. 12, 1979, which is a continuation-in-part of Ser. No. 893,622, Apr. 5, 1978, Pat. No. 4,185,043, which is a continuation-in-part of Ser. No. 714,403, Aug. 16, 1976, Pat. No. 4,087,482. This application Jul. 31, 1980, Ser. No. 174,188

Int. Cl.[3] C08G *79/00, 63/00;* C08L *85/00*

U.S. Cl. 525—389 20 Claims

1. A polymer containing tungsten and/or molybdenum metal atoms chemically bonded in the polymer chain obtained by reacting either a saturated or an ethylenically unsaturated dicarboxylic acid or anhydride with a metal complex which is a reaction product of tungsten carbonyl and/or molybdenum carbonyl with pyrrolidine.

4,343,923

PROCESS FOR REDUCING THE ACID DYE UPTAKE OF POLYAMIDE TEXTILE MATERIALS WITH N-ACYLIMIDAZOLE COMPOUND

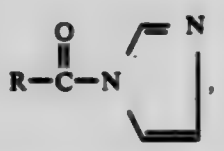
Ronald S. Lenox, Lancaster, and Anne L. Schwartz, Columbia, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 7, 1980, Ser. No. 176,017

Int. Cl.[3] C08G *69/48*

U.S. Cl. 525—426 19 Claims

1. A process for significantly decreasing the acid dye uptake of a polyamide article having free amine end groups which polyamide article is susceptible to acid dyes which comprises reacting the polyamide article with a compound of the formula:



wherein R represents alkyl, haloalkyl, aryl, cycloalkyl, alkynyl, alkenyl, or a heterocyclic radical.

4,343,924

STABILIZED PHENOLIC RESINS FOR USE IN VAPOR PERMEATION CURING

Gary L. Linden, Upper Arlington, Ohio, assignor to Ashland Oil, Inc., Dublin, Ohio

Filed Sep. 14, 1981, Ser. No. 302,184

Int. Cl.[3] C08G *8/28, 8/32, 8/36;* C08J *5/12*

U.S. Cl. 525—440 14 Claims

1. A method for coating a substrate with a film of a coating composition rapidly curable at room temperature in the presence of a vaporous tertiary-amine catalyst and possessing a pot life of at least 4 hours in an open pot, which comprises:

(A) coating said substrate with said film of said coating composition, said coating composition comprising:

(1) a phenol-functional condensation product of

(a) a phenol-aldehyde reaction product bearing a plurality of methylol and phenol groups, and

(b) a polyol, polycarboxylic acid, or polyepoxide, said condensation product then being reacted with a selective transmethylolating agent for substantially transforming residual methylol groups into non-active hydrogen groups, said condensation product also being rid of substantially all water content;

(2) a multi-isocyanate cross-linking agent, where the molar ratio of phenol groups of said condensation product to said isocyanate groups of said cross-linking agent ranges between about 1:1 and 1:2; and

(3) an organic solvent for said condensation product and for said cross-linking agent; and

(B) exposing said coated substrate to a vaporous tertiary-amine catalyst to rapidly cure said film at about room temperature.

4,343,925

COATING COMPOSITIONS BASED ON POLYOL-CONTAINING FILM FORMING COMPONENTS AND ORGANIC ALCOHOLIC REACTIVE DILUENTS

Wen-Hsuan Chang; James B. O'Dwyer, both of Gibsonia, and John R. Peffer, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 7, 1979, Ser. No. 101,397

Int. Cl.[3] C08L *67/00*

U.S. Cl. 525—440 23 Claims

4. A coating composition capable of liquid application to a substrate, the vehicle portion of the composition consisting essentially of:

(a) from about 60 percent to about 97 percent of a curable film forming component, wherein said component is (1) an organic polyol having a hydroxyl equivalent weight of from about 40 to about 500 and a hydroxyl functionality of at least 2.0 and (2) a crosslinking agent, and the ratio of the polyol to the crosslinking agent ranges from about 80:20 to about 20:80; and

(b) from about 3 percent to about 40 percent of an organic reactive diluent capable of chemically combining with the curable film forming component, said reactive diluent having one primary or secondary hydroxyl group and selected from the group consisting of amides, esters, urethanes, ureas, sulfur-containing compounds and mixtures thereof, and further characterized by having a retained solids value of greater than about 80 percent, a hydroxyl equivalent weight of from about 180 to about 800 and a liquid viscosity of less than about 10 poises at 60° C.

4,343,926

FLUIDIZED BED TERPOLYMERIZATION OF ETHYLENE, PROPYLENE AND NON-CONJUGATED DIENE

Francois Caumartin; Jean L. Vidal, and Pierre Mangin, all of Martigues, France, assignors to NAOHTACHIMIE Societe Anonyme, Courbevoie, France

Filed Jul. 2, 1980, Ser. No. 165,359

Claims priority, application France, Jul. 6, 1979, 79 17547

Int. Cl.[3] C08F *2/34*

U.S. Cl. 526—68 10 Claims

1. A process for the production of elastomeric terpolymers of ethylene, propylene and a non-conjugated diene wherein the proportions by weight of units derived from propylene and units derived from diene are respectively from 25 to 80% and from 0.5 to 5%, the process being characterized as a continuous process in that a gaseous mixture of ethylene, propylene and the diene is brought momentarily into contact in a dry fluidized state, in the absence of liquid hydrocarbon, with a catalytic system comprising

one or more solid compounds of titanium produced by the reduction of titanium tetrachloride by means of an or-

gano-aluminum compound at a temperature of from −10° to 80° C. and then by heating of the resulting precipitate, in the presence of an excess of titanium tetrachloride at a temperature up to 115° C., both steps being carried out in the presence of an electron donor compound,

one or more organo-metallic compounds of the mean formula $AlR_xZ_{(3-x)}$, wherein R represents an alkyl group containing from 2 to 12 carbon atoms, Z represents a hydrogen atom or a halogen and X represents an integer or a fraction which can be of any value of from 1 to 3,

recycling the unreacted gaseous monomers after removal of entrained solid particles,

adding fresh monomer to the recycled unreacted monomers, in an amount to maintain relatively constant the ratio of the monomers brought into contact with the catalyst, and which includes the step of introducing a prepolymer for fluidization with the monomer, in which the prepolymer contains the catalyst.

4,343,927

HYDROPHILIC, SOFT AND OXYGEN PERMEABLE COPOLYMER COMPOSITIONS

Sing-Hsiung Chang, 6, Buckskin Heights Dr., Danbury, Conn. 06810

Continuation-in-part of Ser. No. 740,128, Nov. 8, 1976, Pat. No. 4,182,822. This application Jul. 17, 1978, Ser. No. 925,640

The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.

Int. Cl.³ C08F *20/10, 26/06, 30/08, 220/26*

U.S. Cl. 526—262 **11 Claims**

1. A composition of matter specially adapted for use as a prosthetic device having the characteristics of increased hydrophilicity, and oxygen permeability, said composition being a copolymer of comonomers consisting essentially of:

(A) about 15 to about 65% by weight of at least one amide group containing monomer being selected from a group consisting essentially of:

(a) heterocyclic amide group containing monomers consisting essentially of:

(1) N-(olefin containing group)-2-pyrrolidone,

(2) N-(olefin containing group)-2-piperidone,

(3) N-(olefin containing group)-2-imidazolidone, and

(4) N-(olefin containing group) succinimide,

wherein said olefin containing group is selected from a group consisting essentially of vinyl, acryloxy, methacryloxy, acrylatoalkyl, methacrylatoalkyl, acrylamidoalkyl and methacrylamidoalkyl groups, wherein the alkyl group contains from one to 4 carbon atoms, and

(b) noncyclic amide group containing monomers consisting essentially of N-alkyl acrylamide, N-alkyl methacrylamide, N,N-dialkyl acrylamide and N,N-dialkyl methacrylamide, wherein the alkyl group is individually selected from a group consisting of unsubstituted and substituted monovalent hydrocarbon radicals having from one to 6 carbon atoms, and

(B) about 10 to about 75% by weight of at least one organosilicon compound, wherein the essential constituent units of each molecular compound have the formulas:

$$M,\ CH_2{=}CRCOO(CH_2)_nR'_aSiO_{\frac{3-a}{2}} \text{ and}$$

$$N,\ R''_bSiO_{\frac{4-b}{2}}$$

wherein each molecular compound contains one M group and the molar ratio of from about 1 to 99 to about 99 to 1; R is selected from a group consisting of hydrogen and methyl group; R′ and R″, which may be the same or different, are monovalent hydrocarbon groups selected from a group consisting of C_1–C_4 alkyl groups, cyclohexyl groups and phenyl groups; n is an integer of from one to three inclusive; a is an integer selected from a range of 0 to 2 inclusive and b is an integer selected from a range of zero to three inclusive.

4,343,928

TRANSPARENCIES PRODUCED FROM EPOXY RESINS CURED WITH ADDUCTS OF BOROXINES AND INTERLAYERS OF MERCAPTAN RESINS

John R. Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 70,390, Aug. 28, 1979, Pat. No. 4,294,886, and a continuation-in-part of Ser. No. 204,424, Nov. 6, 1980, which is a continuation-in-part of Ser. No. 70,390, Aug. 28, 1979, Pat. No. 4,294,886. This application Feb. 5, 1981, Ser. No. 232,054

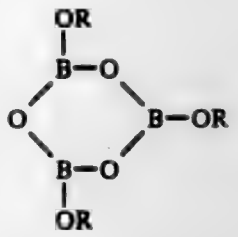
Int. Cl.³ C08G *59/40*

U.S. Cl. 528—108 **11 Claims**

1. A transparent composition curable to a product having resistance to intense heat, comprising: p1 a transparent blend having

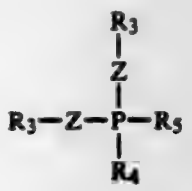
(a) from about 80 to about 100 parts by weight of an epoxy resin;

(b) from about 5 to about 30 parts by weight of a boroxine having the formula:



where R is a compound having from 1 to 18 carbon atoms, and

(c) from about 1 part to about 40 parts by weight of an organic phosphorus compound having the following formula:



where R_3 is selected from the group consisting of hydrocarbon radicals having from 1 to 24 carbon atoms, halo-substituted organic radicals having from 1 to 24 carbon atoms, and multihalo-substituted organic radicals having from 1 to 24 carbon atoms; and where R_3 may be the same or different radicals

where R_4 is selected from the group consisting of all the radicals of R_3, oxygen, and radicals of the formula: —O—R_6, where R_6 is selected from the group consisting of all the radicals of R_3, organo-phosphorus polymeric radicals, and organo-phosphorus esters;

where R_5 is selected from the group consisting of hydrogen, hydroxy, oxygen, sulfur, halogens or no radical at all; and

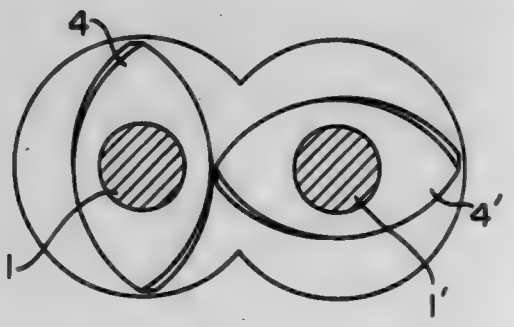
where Z is selected from the group consisting of oxygen, sulfur, or no radical at all.

4,343,929

PROCESS FOR CONTINUOUSLY POLYMERIZING TRIOXANE

Akitoshi Sugio, Ohmiya; Kazuyoshi Taka, Yokkaichi; Akira Amemiya, Tokyo; Tomotaka Furusawa, Matsudo; Mutsuhiko Takeda, Yokkaichi; Katsumasa Tanaka, Yokkaichi; Toshikazu Umemura, Yokkaichi, and Yoshihiro Ono, Yokkaichi, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 200,065
Claims priority, application Japan, Oct. 23, 1979, 54-135868
Int. Cl.³ C08G *2/10*
U.S. Cl. 528—241 24 Claims



1. In a process for producing a polyacetal homopolymer or copolymer which comprises continuously feeding a liquid starting mixture containing molten trioxane and a catalyst and optionally a comonomer through a feed opening of a reactor, said reactor being a continuously stirring type mixer comprising a hollow barrel having in spaced-apart relationship said feed opening for the starting materials and a discharge opening for the reaction product, said barrel having a cross-sectional surface corresponding to two overlapping eccentric circles having the same diameter, a jacket provided on the periphery of the barrel for temperature control, and stirring shafts disposed within the hollow barrel parallel to each other and extending longitudinally of the barrel through the central parts of said circles, said stirring shafts having a plurality of plate-like paddles fixed thereto in such a manner that the paddles fixed to one stirring shaft are kept in contact with each other, the cross-section of each of said paddles taken perpendicularly of the axial direction of the stirring shaft having a shape of a convex lens, an ellipse or a quasipolygon inscribing a phantom circle at each vertex, one of said paddles facing another paddle fixed to the other stirring shaft and said one paddle being positioned such that it rotates while the edges thereof keep a slight clearance from the inner surface of the barrel and the other paddle; polymerizing the starting mixture while moving it toward the discharge opening by the rotation of the paddles; and withdrawing the reaction product in the form of a finely divided solid from the discharge opening; the improvement wherein the arrangement of the paddles is changed continuously or stepwise such that with respect to one paddle on the same stirring shaft, a paddle adjacent thereto on the discharge opening side of the reactor is deviated by an angle of less than 180° in a direction opposite to the rotating direction of the stirring shaft, so that the transportability of the reaction mixture becomes progressively smaller from the feed opening toward the discharge opening of the reactor.

4,343,930

POLYMERIZED POLYOLS OF TETRAHYDROPYRIMIDINES

Bernardus A. Oude Alink, St. Louis, and Benjamin T. Outlaw, Webster Groves, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Sep. 29, 1980, Ser. No. 192,128
Int. Cl.³ C08G *12/28*
U.S. Cl. 528—252 17 Claims

1. Polymerized methylol derivatives of 2,3,4,5-tetrahydropyrimidines.

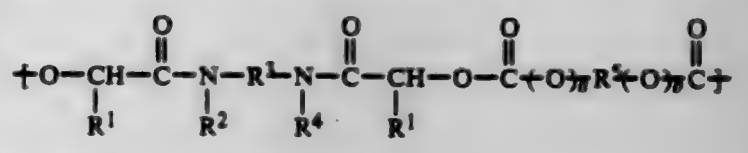
4,343,931

SYNTHETIC ABSORBABLE SURGICAL DEVICES OF POLY(ESTERAMIDES)

Thomas H. Barrows, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 17, 1979, Ser. No. 103,915
Int. Cl.³ C08G *63/68*
U.S. Cl. 528—291 12 Claims

1. A body absorbable polymeric material comprising a plurality of units of the general formula:



in which R^1 is hydrogen or methyl;

R^3 and R^5 are identical or different and are selected from the group consisting of the following, which are linear or branched, alkylene, alkylene having 1 or 2 nonadjacent catenary oxygen or sulfur atoms, alkenylene, cycloalkylene and arylene; said members of the group having up to 25 carbon atoms in the cyclic compounds and from 2 to 25 carbon atoms in the non-cyclic compounds;

R^2 and R^4 are hydrogen or alkyl having 1 to 4 carbon atoms or R^2 and R^4 together are linear or branched alkylene having one to four carbons forming with N-R^3-N a heterocyclic group having 5 or 6 ring atoms; and a and b are independently zero or one.

4,343,932

UNSATURATED POLYESTER COMPOSITION

Jacob J. Prooi, Zwolle; Waltherus J. Sep, Doorn, and Wilhelmina Westerhof, Zwolle, all of Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" BV, Rotterdam, Netherlands

Filed Dec. 10, 1980, Ser. No. 214,981
Claims priority, application Netherlands, Dec. 14, 1979, 79 09040
Int. Cl.³ C08F *283/00;* C08G *63/52*
U.S. Cl. 528—303 10 Claims

1. Unsaturated polyester having an acid value between 5 and 60, and a hydroxyl value between 0 and 30, the molecules of which have been built up predominantly from groups derived from a diol component and a dicarboxylic acid component, characterized in that terminal 1,2-alkene dicarboxylic acid is present in an amount of 1–25 mol-percent, calculated on the total amount of dicarboxylic acid, and that the dicarboxylic acid groups in the chain consist for 1 to 8 mol-percent of trans-1,2-alkene dicarboxylic acid.

4,343,933

PROCESS FOR THE ANIONIC POLYMERIZATION OF 2-PYRROLIDONE WITH FAST FREEZING STEP

Jan Roda, and Jaroslav Kralicek, both of Prague, Czechoslovakia, assignors to Vysoka skola chemicko-technologicka, Prague, Czechoslovakia

Filed Sep. 26, 1980, Ser. No. 191,147
Claims priority, application Czechoslovakia, Dec. 5, 1979, 8446-79
Int. Cl.³ C08G *69/24*
U.S. Cl. 528—312 5 Claims

1. A process for producing fiber forming poly 2-pyrrolidone by the anionic polymerization of 2-pyrrolidone monomer, comprising

(1) forming a polymerization mixture of the monomer, anionic polymerization catalyst and carbon dioxide activator,

(2) polymerizing said monomer at a temperature of 25° to 70° C. for 1 to 100 minutes,

(3) quickly cooling the resulting polymerization mixtures to a temperature of −50° to −190° C. for 1 to 100 minutes,

(4) thereafter completing the polymerization at a temperature of 15° to 75° C.

4,343,934

CRYSTALLINE 4,1′,6′-TRICHLORO-4,1′,6′-TRIDEOXY-GALACTOSUCROSE

Michael R. Jenner, Pangbourne, and David Waite, Reading, both of England, assignors to Tates Development (N.A.) N.V., Netherlands Antilles

Filed Dec. 4, 1980, Ser. No. 212,897

Claims priority, application United Kingdom, Dec. 18, 1979, 7943495; Jul. 21, 1980, 8023819

Int. Cl.³ C07H *3/04, 5/02*

U.S. Cl. 536—122 **7 Claims**

1. Crystalline 4,1′,6′-trichloro-4,1′,6′-trideoxygalactosucrose.

4,343,935

CHIRAL COMPOUNDS

Dale A. Laidler, Huntington, and David J. Milner, Manchester, both of England, assignors to Imperial Chemical Industries Limited, London, England

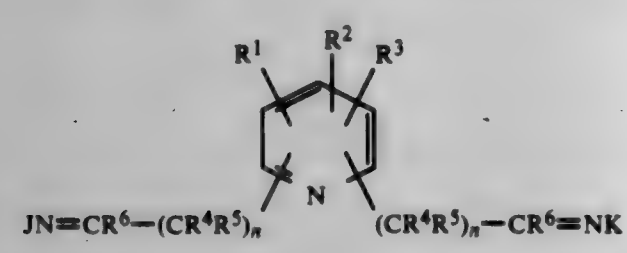
Filed Jul. 8, 1980, Ser. No. 166,837

Claims priority, application United Kingdom, Jul. 13, 1979, 7924520

Int. Cl.³ C07D *213/53*

U.S. Cl. 542—414 **15 Claims**

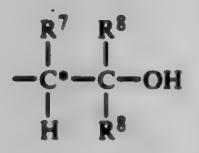
1. A chiral Schiff base according to the general formula:



wherein R^1, R^2 and R^3, which may be the same or different, are hydrogen, alkyl, aralkyl, aryl, alkaryl, hydroxyl, OR^{16}, $OCOR^{16}$, CHO, COR^{16}, CO_2R^{16}, CN, $CONH_2$, NH_2, NHR^{16}, NR_2^{16}, $NHCOR^{16}$, NO_2, SH, SR^{16}, SOR^{16}, SO_3H, SO_3R^{16} wherein R^{16} is alkyl, aralkyl or aryl, and halogen,

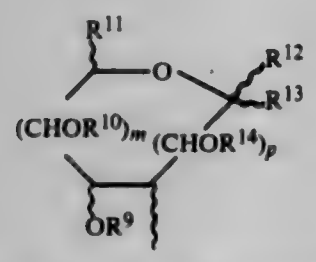
R^4 and R^5, which may be the same or different, are hydrogen, lower alkyl,

R^6 is hydrogen, alkyl, aralkyl, aryl or alkaryl, n is 0, 1 or 2 and J and K, which may be the same or different, are groups of the formulae:



in which C* is an asymmetric carbon atom, R^7 and R^8 which may be the same or different, are alkyl, aralkyl, aryl or alkaryl

or



in which at least the ring carbon atom to which the iminyl nitrogen atom is attached is asymmetric, at least one of the carbon atoms adjacent the said carbon atom bears a hydroxyl group, R^9 and R^{14}, which may be the same or different, are hydrogen or lower alkyl,

R^{10} is hydrogen or lower alkyl or, where m is 1 and R^{11} is $—CH_2OR^{15}$, OR^{10} and OR^{15} together form an acetal residue,

R^{11} is hydrogen or $—CH_2—OR^{15}$ in which R^{15} is hydrogen, lower alkyl or where m is 1, OR^{10} and OR^{15} together form an acetal residue,

R^{12} is hydrogen or $—CH_2—OR^{15a}$ in which R^{15a} is hydrogen, or a lower alkyl,

R^{13} is hydrogen or OR^1,

provided that both R^{12} and R^{13} are not hydrogen,

m is 0, 1 or 2

p is 0 or 1 provided that m plus p is 0, 1, 2 or 3; and the corresponding compounds having an oxygen atom attached to the nitrogen atom of the pyridine ring.

4,343,936

PROCESS FOR THE PREPARATION OF CATIONIC DYESTUFFS

Harald Gleinig, Odenthal; Bernd Berger-Lohr, Leverkusen, and Kurt Breig, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

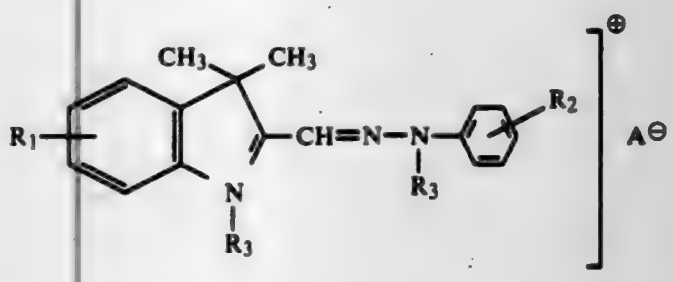
Filed Mar. 19, 1981, Ser. No. 245,411

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013273

Int. Cl.³ C07D *209/40*

U.S. Cl. 542—417 **7 Claims**

1. Process for the preparation of cationic dyestuffs of the general formula



wherein

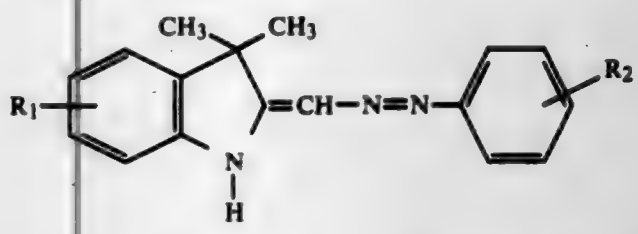
R_1 represents hydrogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, nitro or halogen,

R_2 represents hydrogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, halogen or phenylazo,

R_3 represents C_1- to C_3-alkyl and

$A^{\ominus}$ represents an anion,

by reacting azo bases of the general formula



or salts thereof with inorganic or organic acids, with dialkyl sulphates of the general formula

$$(R_3—O—)_2SO_2$$

in the absence of organic solvents and in the presence of water and, if desired, by replacing the alkylsulphate anion with another anion, characterised in that the weight ratio of azo base to water is 100:20–300 and the molar ratio of azo base to dialkyl sulphate is 1:3.5–5.0.

4,343,937
3-SUBSTITUTED-7-METHOXY-7-AMINO-3-CEPHEM-4-CARBOXYLIC ACIDS

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,160
Int. Cl.³ C07D *501/18*
U.S. Cl. 544—021 4 Claims

1. The compound 3-A-7-methoxy-7-amino-3-cephem-4-carboxylic acid wherein A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzoyl)-oxymethyl, (p-methylbenzoyl)oxymethyl, pivaloyloxy-methyl, (1-adamantyl)carboxymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)oxymethyl, (N-ethylcarbamoyl)oxymethyl, [N-(2-chloroethyl)-carbamoyl]oxymethyl, (N-phenylcarbamoyl)oxymethyl, (N-p-sulfophenylcarbamoyl)oxymethyl, p-carboxymethyl-phenylcarbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbamoylthiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethylpiperzinium-1-thiocarbonylthiomethyl, 2-furoylthiomethyl, isothiouroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxymethyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R:2S-epoxypropylphosphonyloxymethyl, or pyridinium methyl; and the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin.

4,343,938
7-[Dα-(COUMARIN-3-CARBOXAMIDO)ARYLACETAMIDO]-CEPHALOSPORANIC ACIDS OR SALTS

Martin L. Sassiver, Monsey, N.Y., and James H. Boothe, Montvale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 889,675, Mar. 24, 1978, Pat. No. 4,317,774. This application Sep. 23, 1981, Ser. No. 304,757
Int. Cl.³ C07D *501/56*
U.S. Cl. 544—27 2 Claims

1. A compound selected from the group consisting of 7-[D-α-(coumarin-3-carboxamido)phenylacetamido]cephalosporanic acid and the pharmacologically acceptable cationic salts thereof.

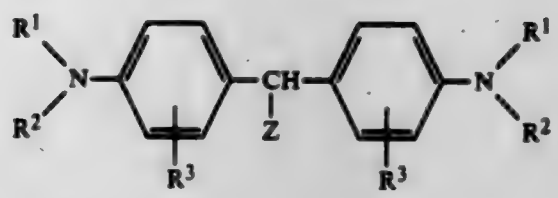
2. A compound selected from the group consisting of 7-[D-α-(coumarin-3-carboxamido)phenylacetamido]-3-[(1-methyltetrazole-5-thio)methyl]ceph-3-em-4-carboxylic acid and the pharmacologically acceptable cationic salts thereof.

4,343,939
GLYCOLIC ACID ESTERS AND AMIDES OF BIS(P-DISUBSTITUTEDAMINOPHENYL)CARBINOL

Frank F. Cesark, Bridgewater; Robert J. Manfre, Somerville, and Daniel W. Thomas, Bridgewater, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

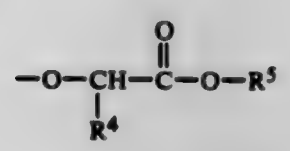
Filed Apr. 22, 1981, Ser. No. 256,353
Int. Cl.³ C07D *295/18*
U.S. Cl. 544—165 6 Claims

1. A compound represented by the Formula (1):

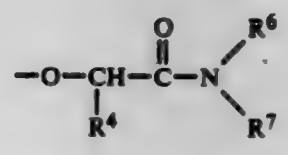


(1)

wherein R^1 and R^2, which may be the same or different, represent hydrogen, alkyl containing from about 1 to 4 carbon atoms, which may be substituted by a nitrile, hydroxyl or a 2 to 8 carbon alkoxy group, phenyl or alkyl (C_1-C_4) substituted phenyl, benzyl or alkyl (C_1-C_4) substituted benzyl; R^3 represents hydrogen or alkyl containing about 1 to 5 carbon atoms; and Z represents an ester or amide group represented by Formula (2) and (3), respectively:



(2)



(3)

wherein R^4 represents hydrogen, alkyl containing about 1 to 5 carbon atoms, phenyl or alkyl (C_1-C_4) substituted phenyl, or benzyl or alkyl (C_1-C_4) substituted benzyl; R^5 represents alkyl containing about 1 to 12 carbon atoms, either in a straight or branched chain, which chain may be interrupted by a hetero atom, phenyl or alkyl (C_1-C_4) substituted phenyl, or benzyl or alkyl (C_1-C_4) substituted benzyl; R^6 and R^7, which may be the same or different, represent hydrogen, alkyl containing about 1 to 12 carbon atoms in either a straight or branched chain, which chain may be interrupted by a hetero atom, phenyl or alkyl (C_1-C_4) substituted phenyl, benzyl, or alkyl (C_1-C_4) substituted benzyl, or wherein R^6 and R^7, taken together with the nitrogen atom to which they are attached, combine to form a morpholine ring.

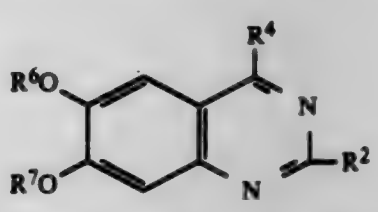
4,343,940
ANTI-TUMOR QUINAZOLINE COMPOUNDS

William E. Kreighbaum, and William T. Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 11,819, Feb. 13, 1979, Pat. No. 4,314,943. This application Mar. 6, 1981, Ser. No. 241,317
Int. Cl.³ C07D *405/12;* A61K *31/505;* C07D *405/14*
U.S. Cl. 544—283 3 Claims

1. A compound having Formula I

Formula I



wherein one of R^6 and R^7 is oxiranylmethyl, and the other is methyl or oxiranylmethyl, and R^2 and R^4 are independently selected from the group consisting of hydrogen, alkyl having from 1 to 5 carbon atoms, phenyl, substituted phenyl, phenylalkyl having up to 8 carbon atoms, substituted phenylalkyl having up to 8 carbon atoms apart from the substituents, wherein said substituted phenyl and substituted phenylalkyl have one or two ring attached groups independently selected from halogen, methyl, or methoxy groups.

4,343,941

POLYOLS OF TETRAHYDROPYRIMIDINES

Bernardus A. Oude Alink, St. Louis, and Benjamin T. Outlaw, Webster Groves, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Oct. 4, 1979, Ser. No. 81,748
Int. Cl.³ C07D *239/06*
U.S. Cl. 544—335 8 Claims

1. Methylol derivatives of 2,3,4,5-tetrahydropyrimidines where there is a methylol substitution at two or more of the following positions:

(1) the ring-N at the 3 position;

(2) the ring carbon at the 5 position; and

(3) 1 or 2 hydrogens of the α-methyl group at the 6 position.

4,343,942

QUINOXALINE DERIVATIVES

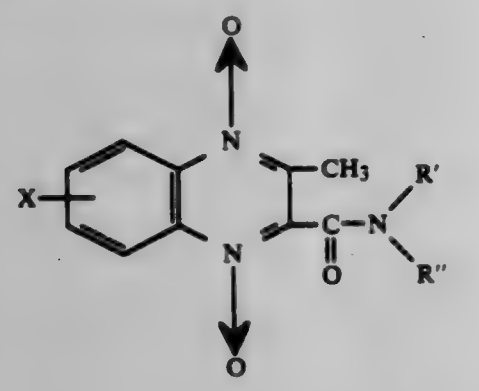
Costas H. Issidorides, Lexington, Ky., and Makhluf J. Haddadin, Beirut, Lebanon, assignors to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 691,252, Dec. 18, 1967, abandoned, which is a continuation-in-part of Ser. No. 592,729, Nov. 8, 1966, abandoned. This application Dec. 9, 1969, Ser. No. 883,577

Claims priority, application Netherlands, Nov. 2, 1967, 6714882

Int. Cl.³ C07D *241/40*
U.S. Cl. 544—354 17 Claims

1. A compound of the formula:



wherein X is trifluoromethyl, sulfonamide, N-methylsulfonamide and N,N-dimethylsulfonamide; and each of R′ and R″ is selected from the group consisting of hydrogen and lower alkyl.

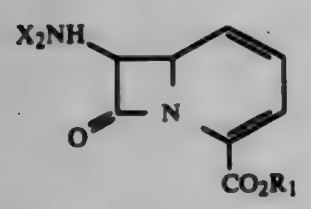
4,343,943

CEPHALOSPORIN ANALOGS

Tadashi Hirata, Yokohama; Hiromitsu Saito, and Nobuhiro Nakamizo, both of Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

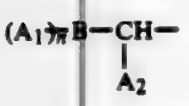
Filed Jun. 25, 1979, Ser. No. 51,758
Claims priority, application Japan, Jun. 24, 1978, 53-7690
Int. Cl.³ C07D *211/80*
U.S. Cl. 546—183 33 Claims

1. Cephalosporin analogs represented by the formula



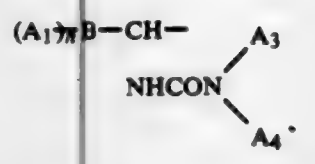
wherein X_2 represents an acyl group represented by the formula X^1CO wherein X^1 represents:

(a) cyanomethyl group or a group represented by the formula

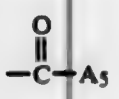


wherein B represents an unsaturated six membered carbocycle which is selected from cyclohexenyl group, cyclohexadienyl group and phenyl group or a five or six membered heterocycle selected from the groups consisting of furyl group, thienyl group, pyrrolyl group, thiazolyl group, oxazolyl group, isothiazolyl group, isoxazolyl group, imidazolyl group, pyrazolyl group, triazolyl group, tetrazolyl groups, pyridinyl group, pyrimidinyl group, pyrazinyl group, pyridazinyl group, triazinyl group and 5,6-dihydro-1,4-dithiin-2-yl group, A_1 represents a substituent which is selected from hydrogen atom, hydroxyl group, a lower alkoxy group having 1 to 4 carbon atoms, a halo group, nitro group, amino group, aminomethyl group, methylsulfonamido group and a lower acyloxy group having 2 to 4 carbon atoms selected from the groups consisting of acetyloxy group, propyloxy group and butyloxy group, n is a number from 0 to 5, and A_2 represents hydrogen atom, amino group, hydroxyl group, carboxyl group or sulfoxyl group,

(b) a group represented by the formula



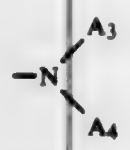
wherein A, B and n have the same significance as defined above, A_3 and A_4 are the same or different and represent (1) hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms, (2) a group represented by the formula



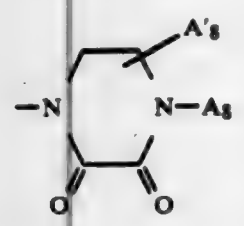
wherein A_5 represents a lower alkyl group having 1 to 4 carbon atoms or (3) a group represented by the formula



wherein A_6 and A_7 are the same or different and represent hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms or an alkali metal or

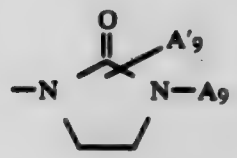


also represents a group represented by the formula



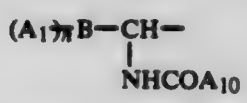
wherein A_8 and A'_8 are the same or different and represent

hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms or a group represented by the formula

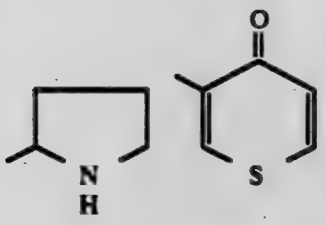


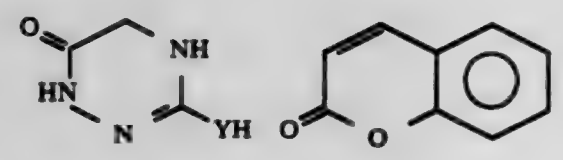
wherein A_9 represents hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms, methylsulfonyl group or furfurylideneimimo group and A'_9 represents hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms,

(c) a group represented by the formula

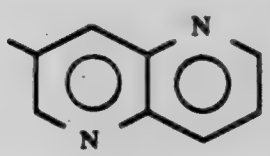


wherein A_1, B and n have the same significance as defined above, and A_{10} represents an aryl group or a mono-, bi- or tricyclic hetercycle(s) selected from a group represented by the formula

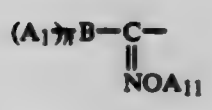




wherein Y is an oxygen or sulfur atom and

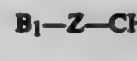


(d) a group represented by the formula

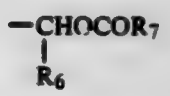


wherein A_1, B and n have the same significance as defined above and A_{11} represents hydrogen atom, a lower alkyl group having 1 to 6 carbon atoms, a lower alkenyl group having 2 to 6 carbon atoms, a lower alkinyl group having 2 to 6 carbon atoms, a cycloalkyl group having 3 to 6 carbon atoms selected from the groups consisting of cyclopropyl group, cyclobutyl group and cyclohexyl group, those groups being unsubstituted or substituted with substituents selected from carboxyl group, cyano group, a halo group, carbamoyl group and a lower alkyloxycarbonyl group having 1 to 4 carbon atoms,

(e) a group represented by the formula



wherein B_1 represents trifluoromethyl group, cyanomethyl group, a group represented by the formula $(A_1)_nB$- wherein A_1, n and B have the same significance as defined above and Z represents oxygen atom or sulfur atom, R_1 represents hydrogen atom or a protecting group of carboxylic acid, which is selected from an alkyl group having 1 to 5 carbon atoms, a halogenated alkyl group having 1 to 5 carbon atoms, an aryl methyl group having 7 to 20 carbon atoms which may be substituted on the phenyl ring, a substituted silyl group, wherein the substituent is selected from a lower alkyl group having 1 to 5 carbon atoms and an aryl group having 6 to 10 carbon atoms and a group enzymatically or nonenzymatically readily eliminable in vivo selected from groups represented by the formula



wherein R_6 represents a hydrogen atom or a lower alkyl group having 1 to 6 carbon atoms, and R_7 represents a lower alkyl group having 1 to 6 carbon atoms, a lower alkoxy group having 1 to 6 carbon atoms or a phenyl group and the pharmaceutically acceptable salts thereof.

4,343,944

INDOLINOSPIROPYRANE COMPOUNDS

Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

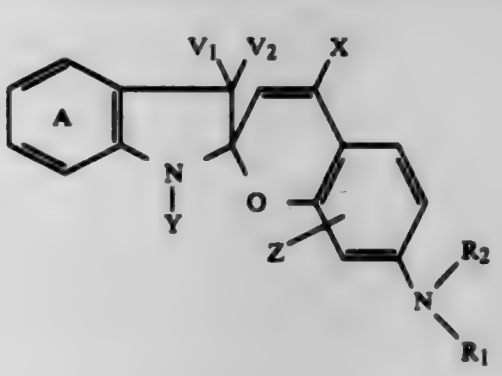
Division of Ser. No. 109,741, Jan. 4, 1980, which is a division of Ser. No. 761,042, Jan. 21, 1977, Pat. No. 4,210,591. This application Dec. 5, 1980, Ser. No. 213,298

Claims priority, application Switzerland, Jan. 30, 1976, 1175/76; Sep. 7, 1976, 11326/76

Int. Cl.³ C07D *213/04, 209/04*

U.S. Cl. 546—15 **5 Claims**

1. An indolinospiropyrane compound of the formula



(1)

wherein

R_1 represents alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, hydroxyl, cyano, lower alkoxy or lower alkyl-carbonyloxy, or cyclopentyl or cyclohexyl, or phenyl or benzyl which are unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy,

R_2 represents hydrogen, alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, hydroxyl, cyano, lower alkoxy or lower alkyl-carbonyloxy, or cyclopentyl or cyclohexyl, or benzyl which is unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy,

X represents a thienyl, furyl, pyrrolyl, pyridyl, benzothiophene, indolyl, quinolinyl or coumarin radical which is unsubstituted or substituted by halogen, hydroxyl, cyano, nitro, lower alkyl, lower alkoxy or lower alkoxy-carbonyl,

Y represents alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, cyano or lower alkoxy, or benzyl which is unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy,

Z represents hydrogen, halogen or lower alkyl and

V_1 and V_2 each represent lower alkyl, cyclopentyl, cyclohexyl or benzyl, or conjointly represent alkylene of 4 or 5 carbon atoms, and the ring A is unsubstituted or substituted by halogen, nitro, cyano, trifluoromethyl, lower alkyl, lower alkoxy, lower alkoxy-carbonyl, phenoxy,

amino, lower alkylamino or N-lower alkyl-carbonylamino.

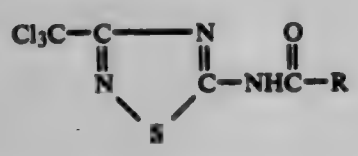
4,343,945

5-BENZAMIDO-3-TRICHLOROMETHYL-1,2,4-THIADIAZOLES AND THEIR USE AS HERBICIDES, FUNGICIDES AND INSECTICIDES

Walter A. Gay, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 6,302, Jan. 23, 1979. This application Aug. 13, 1981, Ser. No. 292,451
Int. Cl.³ A01N *43/82*; C07D *285/08*
U.S. Cl. 548—128 7 Claims

1. A compound of the formula:



wherein R is phenyl which is unsubstituted or substituted by at least one member selected from the group consisting of lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, nitro and halo.

4,343,946

PURIFICATION OF 2-MERCAPTOBENZOTHIAZOLE

Sameeh S. Toulan, Phoenixville, and Piero Nannelli, King of Prussia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 23, 1980, Ser. No. 161,824
Int. Cl.³ C07D *277/72*
U.S. Cl. 548—177 4 Claims

1. In a process for purifying crude molten 2-mercaptobenzothiazole, prepared by reacting aniline carbon disulfide and sulfur at elevated temperature and pressure, in which the purification includes the steps of separating dissolved alkali metal salt of 2-mercaptobenzothiazole from undissolved impurities, treating the dissolved alkali metal salt of 2-mercaptobenzothiazole with an excess of a non-oxidizing mineral acid to precipitate a slurry of purified 2-mercaptobenzothiazole, separating the purified 2-mercaptobenzothiazole solids from the slurry to obtain 2-mercaptobenzothiazole solids, washing the solids with water, and drying the purified 2-mercaptobenzothiazole, the improvement comprising; forming said dissolved alkali metal salt at 2-mercaptobenzothiazole and said dissolved impurities by the steps of

slowly adding crude molten 2-mercaptobenzothiazole into an aqueous alkali metal hydroxide solution, using vigorous agitation, said alkali hydroxide being at a concentration of about 3 to 20 percent by weight alkali metal hydroxide and the amount of alkali metal hydroxide being at about 5 to 20 percent molar excess based upon the content of the pure 2-mercaptobenzothiazole in the crude molten 2-mercaptobenzothiazole; and

heating, while agitating, the mixture of said crude molten 2-mercaptobenzothiazole and aqueous alkali metal hydroxide solution at a temperature of about 70° to 90° C. for about 0.5 to 4 hours to dissolve the 2-mercaptobenzothiazole as the alkali metal salt.

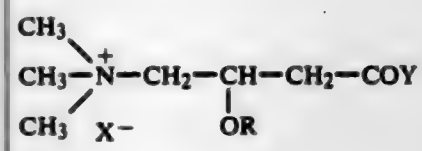
4,343,947

CARNITINAMIDES OF OPTICALLY ACTIVE AMINOACIDS

Paolo De Witt, and Maria O. Tinti, both of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Filed Dec. 29, 1980, Ser. No. 220,492
Claims priority, application Italy, Jan. 29, 1980, 47749 A/80
Int. Cl.³ C07D *233/58*; C07C *101/30, 101/32, 101/26*
U.S. Cl. 548—344 3 Claims

1. Carnitinamide having formula:



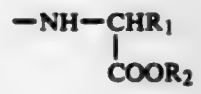
(I)

wherein:

X is a halogen anion;

R is either hydrogen or an acyl radical selected from the group comprising acetyl, propionyl and butyryl;

Y is the residue of an optically active, esterified amino-acid having formula:

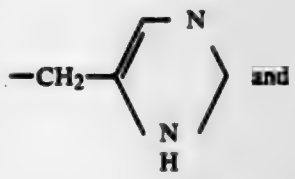


(II)

wherein

R_1 is:

$-CH_2COOR_2$
$-(CH_2)_2COOR_2$
$-CH_2S_2CH_2CH(NH_2)COOR_2$
$-CH_3$
$-CH(CH_3)_2$
$-CH_2CH(CH_3)_2$
$-CH(CH_3)CH_2CH_3$
$-(CH_2)_2SCH_3$
$-C_6H_5$
$-CH_2C_6H_5$
$-CH_2CONH_2$
$-(CH_2)_2CONH_2$



and

R_2 is: an alkyl radical having 1 to 4 carbon atoms.

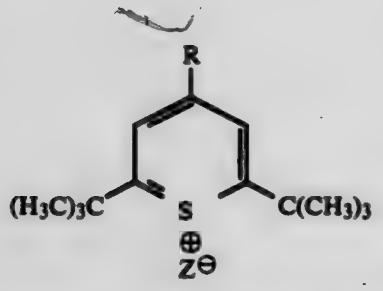
4,343,948

2,6-DI-TERT-BUTYL-4-METHYL THIOPYRYLIUM SALT

Kouichi Kawamura; Harumi Katsuyama, and Hideo Sato, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

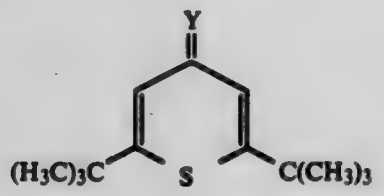
Filed Mar. 28, 1980, Ser. No. 135,030
Claims priority, application Japan, Mar. 28, 1979, 54-37249; Jun. 29, 1979, 54-81523; Jun. 29, 1979, 54-81524; Jun. 29, 1979, 54-81525 R
Int. Cl.³ C07D *333/08, 333/32, 333/34*
U.S. Cl. 549—13 7 Claims

1. A compound of the formula:



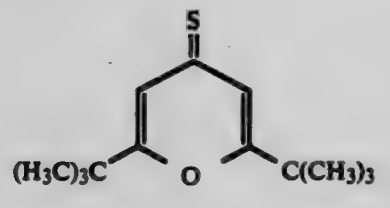
where R is $-SCH_3$ or $-CH_3$ and $Z^{\ominus}$ is an anionic function wherein the acid represented by HZ is a strong acid.

6. A compound of the formula:



where Y is O or S.

7. A compound of the formula:



4,343,949

NOVEL 2-SUBSTITUTED-3,4-EPOXYCYCLOPENTAN-1-ONES, 2-SUBSTITUTED-3,4-EPOXYCYCLOPENTAN-1-OLS, AND VARIOUS 2-SUBSTITUTED-CYCLOPENTENONES

Karel F. Bernady; Middleton B. Floyd, Jr., both of Suffern; John F. Poletto, Nanuet, all of N.Y.; Robert E. Schaub, Upper Saddle River, and Martin J. Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

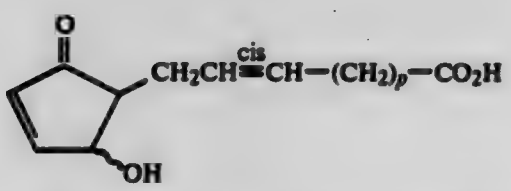
Continuation of Ser. No. 835,613, Sep. 22, 1977, Pat. No. 4,179,574, which is a division of Ser. No. 737,941, Nov. 2, 1976, abandoned, which is a division of Ser. No. 603,467, Aug. 11, 1975, abandoned, which is a division of Ser. No. 355,101, Apr. 27, 1973, abandoned. This application Oct. 12, 1979, Ser. No. 84,237

The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.

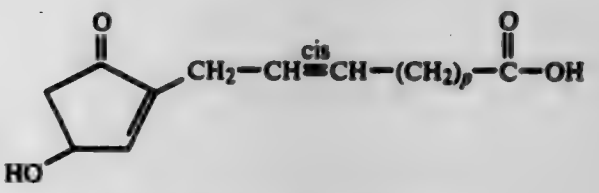
Int. Cl.[3] C07C *51/353, 177/00*

U.S. Cl. 562—503 3 Claims

1. A method comprising rearranging the compound of the formula:



wherein p is an integer from 3 to 6 inclusive, by treating said compound at room temperature with an aqueous medium having a pH of about 10.3 to 10.6 to provide the compound of the formula:



wherein p is an integer from 3 to 6 inclusive.

4,343,950

RHODIUM-CATALYZED OXIDATION PROCESS FOR PRODUCING CARBOXYLIC ACIDS

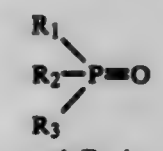
Rocco A. Fiato, Charleston, W. Va., and Roy L. Pruett, New Providence, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 159,859, Jun. 6, 1980, Pat. No. 4,273,936, which is a continuation-in-part of Ser. No. 79,884, Sep. 28, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,527

Int. Cl.[3] C07C *51/235*

U.S. Cl. 562—531 10 Claims

1. A process for preparing at least one of a carboxylic acid and its anhydride comprising reacting and oxidizing an aldehyde having from 3 to about 21 carbon atoms with an oxygen-containing gas in the presence of a rhodium complex catalyst consisting essentially of rhodium stabilized by a pentavalent Group V ligand represented by the formula



wherein each of R_1, R_2 and R_3 is a straight-chain saturated hydrocarbon group having from 5 to 8 carbon atoms, said reaction being conducted at a temperature of from about 40 to about 90° C. and at a superatmospheric pressure of from about 1 to about 2 atmospheres gauge.

4,343,951

METHOD FOR THE PREPARATION OF FLUOROANILINE

Michael J. Fifolt, Grand Island, N.Y., and Arthur M. Foster, Birmingham, Mich., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

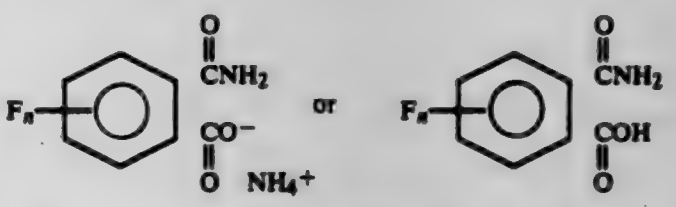
Filed Dec. 29, 1980, Ser. No. 220,671

Int. Cl.[3] C07C *85/00, 85/12, 85/24*

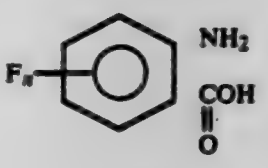
U.S. Cl. 564—414 19 Claims

1. A process for the preparation of fluoroaniline compounds comprising the steps of

(A) reacting an ammonium fluorophthalamate or a fluorophthalamic acid of the formula

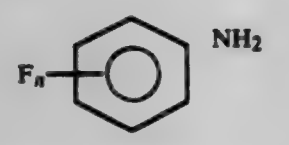


where n is 1 or 2 with an alkali metal or alkali earth metal hypochlorite to form the corresponding fluoroanthranilic acid of the formula



where n is as previously defined, and

(B) decarboxylating the fluoroanthranilic acid by reaction with a mineral acid to form the corresponding fluoroaniline of the formula



where n is as previously defined.

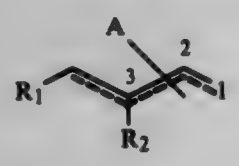
4,343,952

PROCESS FOR THE PREPARATION OF UNSATURATED SULPHONES

Marc Julia, and Lucien Saussine, both of Paris, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

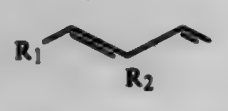
Filed Oct. 8, 1980, Ser. No. 195,003
Claims priority, application France, Oct. 11, 1979, 79 25319
Int. Cl.[3] C07C *147/04*
U.S. Cl. 568—28 14 Claims

1. A process for the preparation of sulphones or of a mixture of sulphones corresponding to Formula I:



I

in which the broken line represents a single double bond in the 1, 2 or 3 position, A represents a substituted sulphonyl radical placed in the alpha position relative to the double bond, the substituents on said sulphonyl radical being selected from the group consisting of alkyl groups of 1 to 30 carbon atoms, alkenyl or alkynyl groups of 2 to 30 carbon atoms, or a phenyl group, said alkynyl, alkenyl, alkynl or phenyl groups being unsubstituted or substituted with one or more hydroxy, oxo, methyl, or cycloalkyl or cycloalkenyl groups containing 6 carbon atoms in the ring which can be unsubstituted or substituted with one or more methyl groups and R_1 and R_2 represent hydrogen, a substituted or unsubstituted alkyl radical of 1 to 30 carbon atoms or, alkenyl or alkynyl radical of 2 to 30 carbon atoms, the substituents on said alkyl, alkenyl or alkynl radicals being one or more hydroxy or oxo functions or one or more cycloalkyl or cycloalkenyl groups containing 6 carbon atoms in the ring which is unsubstituted or substituted with one or more methyl groups, which comprises sulphonating, in the presence of a palladium catalyst and in a solvent, a diene compound corresponding to Formula II:



II

in which R_1 and R_2 have the meanings given above, using at least one agent capable of introducing the substituted sulphonyl radical A selected from sulphinic acids and sulphinates in the presence of a weak acid, and separating the sulphones.

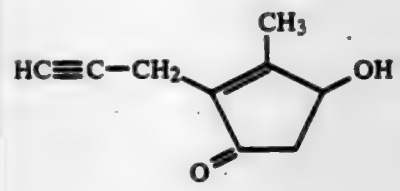
4,343,953

METHOD FOR PREPARING 4-HYDROXY-3-METHYL-2-(2-PROPYNYL)-2-CYCLOPENTENOLONE

Noritada Matsuo, Itami; Nobushige Itaya, Nishinomiya; Kohichi Aketa, Kawanishi; Osamu Magara, Osaka, and Toshio Nishioka, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

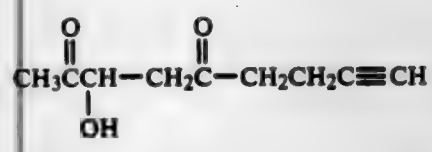
Filed Jun. 16, 1980, Ser. No. 159,497
Claims priority, application Japan, Jun. 22, 1979, 54-79311; Jul. 16, 1979, 54-90778; Aug. 6, 1979, 54-100550
Int. Cl.[3] C07C *45/45*
U.S. Cl. 568—347 21 Claims

1. A process for producing cyclopentenolone of the formula (I),



(I)

which comprises ring-closure reaction of γ- diketone of the formula (V),



(V)

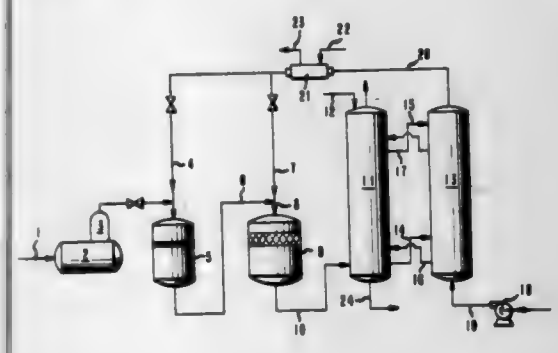
under alkaline conditions, at a temperature of −30° C. to room temperature.

4,343,954

FORMALDEHYDE PROCESS

David J. Hoene, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 28, 1981, Ser. No. 258,382
Int. Cl.[3] C07C *47/052*
U.S. Cl. 568—473 4 Claims



1. A process comprising feeding the effluent from a primary reactor for converting methanol to formaldehyde along with air and recycled methanol, water and formaldehyde to an adiabatic seconary reator utilizing a metal oxide catalyst comprising an oxide or oxides of vanadium, iron, molybdenum, magnesium or manganese, maintaining said secondary reactor at from 300° to 400° C., to provide an overall conversion of 94 to 98%, feeding the effluent from said secondary reactor to an absorber, feeding water to said absorber to absorb formaldehyde, feeding air to a stripper, recycling formaldehyde solution from the bottom section of said absorber to the bottom section of said stripper, recycling formaldehyde solution from the top section of said absorber to the top section of said stripper, recycling air saturated with water, methanol and formaldehyde from said stripper to said secondary reactor, and removing product formaldehyde and water solution from said absorber.

4,343,955

METHOD FOR THE PREPARATION OF CIS-ALKYLCYCLOHEXANOLS

Mituyoshi Oshima, Joetsu, and Jun Yoshimoto, Odawara, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd. and Sankio Chemical Co., Ltd., both of Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 17,892
Claims priority, application Japan, Mar. 13, 1978, 53-28524
Int. Cl.³ C07C *35/08*
U.S. Cl. 568—834 7 Claims

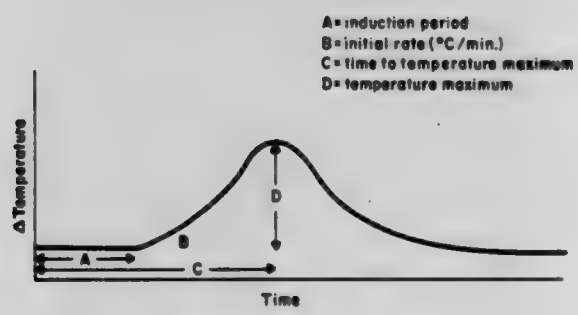
1. A method for preparing cis-4-tert-butylcyclohexanol which comprises hydrogenating 4-tert-butylphenol with hydrogen in the presence of a catalyst containing ruthenium supported on an alumina carrier under a superatmospheric pressure of hydrogen and at an elevated temperature.

4,343,956

STABILIZATION DIBROMOSTYRENE

Philip F. Jackisch, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 130,118, Mar. 13, 1980, abandoned.
This application Jun. 18, 1981, Ser. No. 274,829
Int. Cl.³ C07C *17/42*
U.S. Cl. 570—105 4 Claims



Representative Differential Thermal Analysis Curve of Polymerization

1. Dibromostyrene stabilized with a polymerization inhibiting quantity of a lower alkyl ester of gallic acid and a synergistic quantity of N,N,N′,N′-tetramethyl-p-phenylenediamine.

4,343,957

PROCESS FOR THE PRODUCTION OF CUMENE

Emanuele Sartorio, Messina; Benedetto Calcagno; Fulvio Trombetti, both of Milan, and Marcello Ghirga, Bresso, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

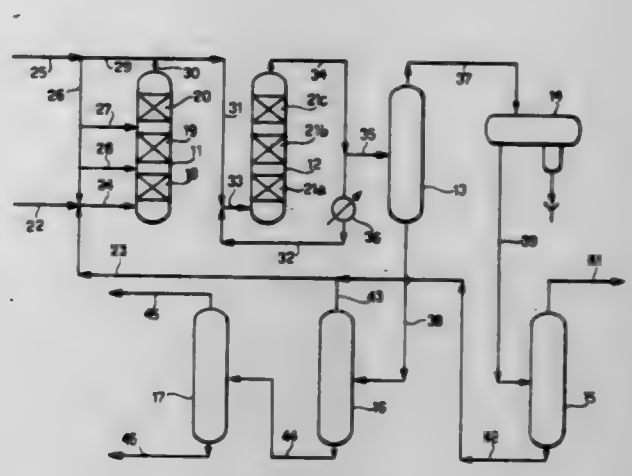
Filed Dec. 19, 1980, Ser. No. 218,333
Claims priority, application Italy, Dec. 19, 1979, 28219 A/79
Int. Cl.³ C07C *2/68*
U.S. Cl. 585—449 12 Claims

1. A continuous process for the production of cumene by alkylation of benzene with propylene on a solid phosphoric acid catalyst, comprising the steps of:

providing a two reaction step series wherein a first step is comprised of a plurality of catalyst beds in fluid connection in series and a second step in fluid connection with said first step comprised of a catalyst bed having a volume substantially equal to the overall volume of the catalyst beds of the first step;

providing an amount of liquid benzene and liquid propylene to the two reaction step series wherein the benzene/propylene molar ratio is at least 5:1;

operating the two reaction step series in the liquid phase, at a temperature of from 170° C. to 270° C., at a pressure of



30 to 50 Kg/sq. cm. wherein the whole of the benzene in liquid form is continuously delivered to a first catalyst bed of the first step, and a series of streams of the liquid propylene at a temperature of 15°–50° C. are continuously delivered respectively to the first catalyst bed of the first step and between each pair of contiguous bed in the first and second steps;

carrying out a partial recycle of reaction products of the second step whereby a cold stream of the reaction product of the second step is cooled to a temperature of 30° to 100° C. and recycled between the first and the second step in an amount such that the benzene/propylene molar ratios at an inlet of the catalyst bed of the second step is higher than about 25:1; and

recovering cumene from reaction products discharged from the second step.

4,343,958

HYDROCARBON ISOMERIZATION PROCESS

Steve A. Gewartowski, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

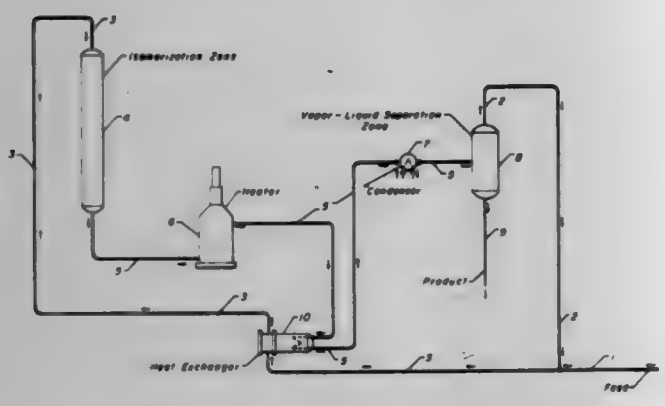
Continuation-in-part of Ser. No. 78,403, Sep. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 866,663, Jan. 3, 1978, Pat. No. 4,190,520. This application Apr. 28, 1981, Ser. No. 258,334
The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.
Int. Cl.³ C07C *5/22, 5/13*
U.S. Cl. 585—477 7 Claims

1. A hydrocarbon isomerization process which comprises the steps of:

(a) vaporizing the liquid phase portion of a mixed-phase isomerization zone feed stream which comprises a C_5–C_{12} hydrocarbon and also heating the isomerization zone feed stream to an isomerization temperature by indirect heat exchange against a vapor-phase process stream;

(b) passing the isomerization zone feed stream into a hydrocarbon isomerization zone containing an isomerization catalyst and maintained at isomerization conditions and

thereby forming a vapor-phase isomerization zone effluent stream which comprises two different hydrocarbons;



(c) heating at least a portion of the isomerization zone effluent stream in a fired heater; and,

(d) cooling the heated portion of the isomerization zone effluent stream by indirect heat exchange against the feed stream as the vapor-phase process stream of step (a).

4,343,959

PROCESS FOR THE PRODUCTION OF TERTIARY OLEFIN

Kōichi Kida, Toyosaka; Yoshio Kawai, Niigata; Yutaka Tamura, Niigata, and Yoshiharu Suzuki, Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 280,071

Claims priority, application Japan, Jul. 25, 1980, 55/102074

Int. Cl.³ C07C *1/20, 11/08*

U.S. Cl. 585—640 **11 Claims**

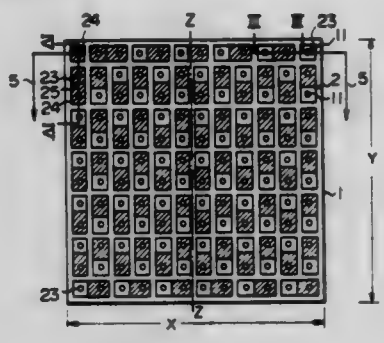
1. In a process to produce a corresponding tertiary olefin from a tertiary ether as the raw material, a process to produce a tertiary olefin which comprises making a gaseous tertiary ether contact a catalyst obtained by calcining a silica-alumina compound at 700°–1100° C. in order to carry out cracking of the tertiary ether.

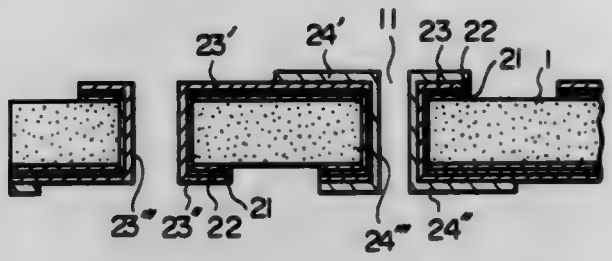
4,343,960

THERMOPILE AND PROCESS FOR MANUFACTURING SAME

Kazuo Eguchi, Ibaraki; Tadashi Kobayashi, Gifu, and Yukiharu Miyake, Tama, all of Japan, assignors to Building Research Institute, Ministry of Construction; Ryoko Electronic Industries Ltd. and Eko Instruments Trading Co., Ltd., all of Tokyo, Japan

Filed Nov. 12, 1980, Ser. No. 206,257
Claims priority, application Japan, Nov. 20, 1979, 54-149464
Int. Cl.[3] H01L *35/28*
U.S. Cl. 136—225 6 Claims





1. A thermopile comprising a plurality of thermocouples which are composed of segments of a first metal and segments of a second metal, said segments of different metals being connected to one another alternately so that the thermocouples are arranged in series on a heat-resistant, electrically non-conductive substrate, wherein each segment comprises a portion plated on one surface of the substrate, a portion plated on the other surface of the substrate and a portion plated on the inner wall of through holes formed in the substrate to connect the two portions plated on the two surfaces of the substrate with each other.

4. A process for manufacturing a thermopile comprising a plurality of thermocouples which are composed of segments of a first metal and segments of a second metal, said segments of different metals being connected to one another alternately so that the thermocouples are arranged in series on a heat-resistant, electrically non-conductive substrate, wherein each segment comprises a portion plated on one surface of the substrate, a portion plated on the other surface of the substrate and a portion plated on the inner wall of through holes formed in the substrate to connect the two portions plated on the two surfaces of the substrate with each other, which process comprises the steps of:

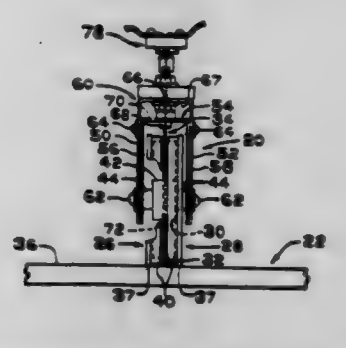
(a) forming a plurality of through holes in the heat-resistant, electrically non-conductive substrate at predetermined positions;
(b) subjecting the inner walls of said through holes and both the surfaces of the substrate to electroless plating;
(c) plating the entire surface of said electroless plating layer with the first metal;
(d) forming on the plating layer of the first metal a plating resist covering the plating layer of the first metal except regions corresponding to the portions of the segments of the second metal to be formed thereon and to the openings of the plated through holes opening in said portions;
(e) plating the resist-formed substrate with the second metal by using the plating resist as a mask;
(f) removing the plating resist;
(g) forming on the composite plating layer of the two metals an etching resist covering only regions corresponding to the portions of the segments of the two metals to be formed on the surfaces of the substrate and to the openings of the plated through holes opening in said portions;
(h) performing etching by using the etching resist as a mask; and,
(i) removing the etching resist.

4,343,961

TEMPERATURE SENSING DEVICE HAVING A ROTATING REFERENCE MEMBER

W. Jack Norton, Kittanning, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 31, 1980, Ser. No. 135,836
Int. Cl.[3] G01K *7/08*; H01L *35/02*
U.S. Cl. 136—230 8 Claims



1. A device for sensing temperature of a moving substrate, comprising:

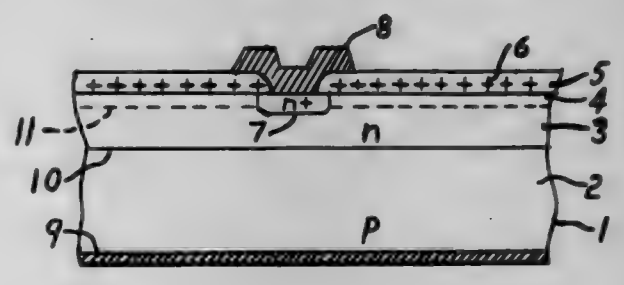
an axle;
at least one wheel having a rim portion mounted on said axle for free rotation to circumscribe a circular path defining a spatial area;
a thermocouple having a temperature sensing junction;
means for mounting said thermocouple to said axle with said temperature sensing junction relative to said rim portion of said at least one wheel in a substantially fixed relationship to a point along the circular path and within the spatial area circumscribed by said at least one wheel;
means mounting said axle for positioning said at least one wheel in a relationship to the substrate to be measured; and
means mounting said axle and said positioning means for preventing relative motion therebetween.

4,343,962

OXIDE CHARGE INDUCED HIGH LOW JUNCTION EMITTER SOLAR CELL

Arnost Neugroschel; Shing-Chong Pao; Fred A. Lindholm; Jerry G. Fossum, all of Dept. of Electrical Engineering, U. of F., Gainesville, Fla. 32611, and Chin-Tang Sah, 403 Pon Ridge La., Urbana, Ill. 61801

Continuation of Ser. No. 57,648, Jul. 16, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 230,682
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—255 1 Claim



1. An accumulation high-low emitter n^+-n-p solar cell comprising an n-p silicon wafer having a thin oxide surface layer of the n-type emitter layer for suppression of the dark emitter recombination current, a positive charge in said oxide layer, a high-low-junction induced in said emitter layer by said charge,

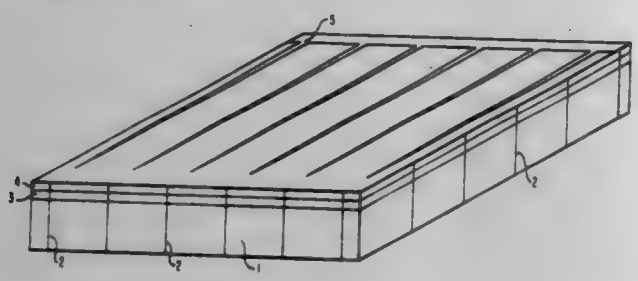
a metal conductor extending through an opening in said oxide layer, and an n^+contact diffusion formed in said emitter layer and in contact with said conductor, said n^+contact diffusion forming with said emitter layer an n^{30}-n high low junction beneath said conductor for suppression of the hole recombination current thereat.

4,343,963

SUBSTRATE FOR SILICON SOLAR CELLS

Donald E. Thomas, Mt. Lebanon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 2, 1979, Ser. No. 16,766
Int. Cl.[3] H01C *31/06*
U.S. Cl. 136—258 7 Claims



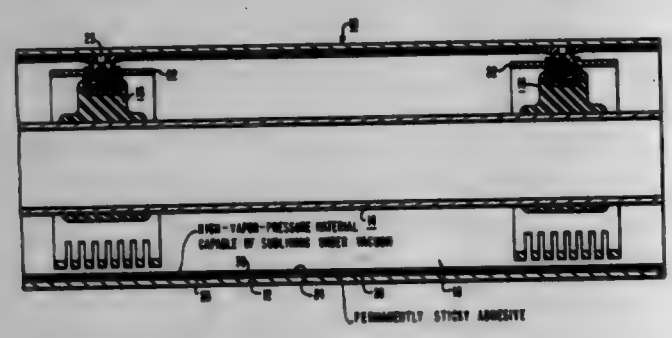
1. An article comprising:
(a) a sheet of large-grained silicon steel;
(b) a layer of epitaxial tungsten deposited on said substrate; and
(c) a layer of epitaxial doped silicon on said layer of tungsten.

4,343,964

ADHESIVE COATED ELECTRICAL APPARATUS HAVING SUBLIMABLE PROTECTIVE COVERING AND AN ASSEMBLY METHOD

Roy E. Wootton, Murrysville, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 19, 1981, Ser. No. 226,330
Int. Cl.[3] H01B *9/06, 9/04;* H02G *1/00, 5/06*
U.S. Cl. 174—10 13 Claims



3. Electrical apparatus comprising:
an enclosure;
an electrode disposed within and spaced apart from said enclosure;
means for insulatably supporting said electrode within said enclosure;
a permanently sticky adhesive material disposed on the interior surface of said enclosure; and
a high-vapor-pressure material disposed on said permanently sticky adhesive material, said high-vapor-pressure material capable of subliming away under vacuum.

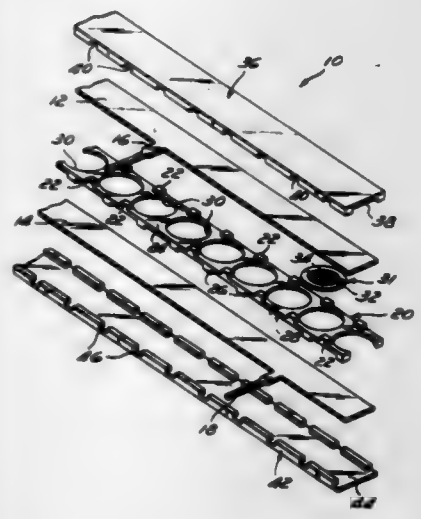
10. A method for assembling electrical apparatus of the type including an enclosure and an electrode insulatably supported within said enclosure comprising:
depositing a permanently sticky adhesive material on the interior surface of an enclosure;
depositing a high-vapor-pressure, sublimable cover material on said permanently sticky adhesive material;
placing an electrode within said enclosure in insulated relationship with respect thereto;
creating a vacuum in said enclosure which vacuum sublimes away said cover material; and
inserting an insulating gas in said enclosure.

4,343,965

BUS BAR ASSEMBLY

Paul M. Deters, Manhattan Beach; Harold D. Dove, and Mickey E. Billings, both of Anaheim, all of Calif., assignors to Bussco Engineering, Inc., El Segundo, Calif.

Filed Apr. 14, 1980, Ser. No. 139,653
Int. Cl.[3] H01B *5/00;* H02G *5/00*
U.S. Cl. 174—72 B 6 Claims



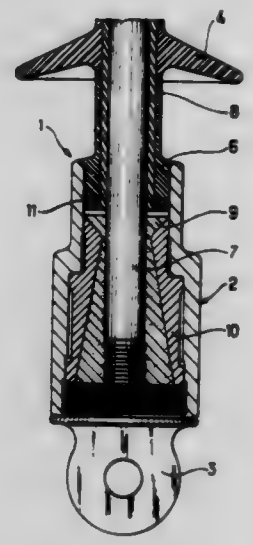
1. A bus bar assembly comprising:
a first elongated electrical conducting member, a second elongated electrical conducting member, both said first and second conducting members being constructed of sheet material, each of said conducting members having electrical connectors adapted to electrically connect with electrical circuitry;
a separation member being located between said first member and said second member, said separation member being non-electrically conductive to electrically insulate said first and second members, an opening assembly formed within said separation member;
a capacitor assembly located within said opening assembly, said capacitor assembly to provide an electrical capacitance between said first and said second members, said capacitor assembly being connected only by direct physical contact with both said elongated electrical conducting members to establish an electrical connection therebetween;
a covering assembly exteriorly encasing said elongated members, said covering assembly electrically insulating said elongated members to the ambient, said covering assembly including a pair of elongated plates, one of said elongated plates to be located directly adjacent the exterior surface of said first elongated electrical conducting member with the other of said elongated plates being located directly adjacent the exterior surface of said second elongated electrical conducting member; and
interlocking means located between each of said elongated plates and said separation member, said interlocking means functioning to lock together said plates and said separation member as well as said first and second elongated members into a single substantially integral unit, said interlocking means comprising a mating protuberance and groove assembly.

4,343,966

ELECTRIC LINE INSULATOR MADE OF ORGANIC MATERIAL AND HAVING AN INNER SEMI-CONDUCTIVE PART EXTENDING BETWEEN END ANCHOR FITTINGS

Laurent Pargamin, Vichy, France, assignor to Ceraver, Paris, France

Division of Ser. No. 961,163, Nov. 16, 1978, Pat. No. 4,267,403.
This application Oct. 3, 1980, Ser. No. 193,690
Claims priority, application France, Dec. 14, 1977, 77 37652
Int. Cl.³ H01B *17/02, 17/42*
U.S. Cl. 174—140 S 5 Claims



1. An electric line insulator comprising:

a bar with high mechanical resistance to traction made of a composite material comprising mineral or organic fibers or threads bonded by a hardenable synthetic resin;

a protective sheath fixed over the entire surface of the bar with the exception of the ends of the bar, said ends being embedded in anchoring fittings by means of a sealant material which directly surrounds the ends of said bar, said sheath being composed of a semi-conductive elastomer and being in electrical contact at each of its ends with said anchoring fittings; and

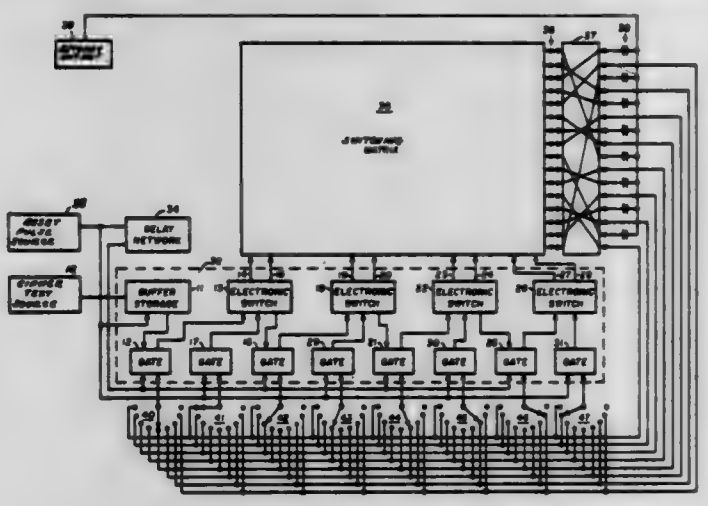
fins of an insulating elastomer fixed onto said sheath with no surface of the sheath directly exposed to the outside; thus, the sheath remains completely protected from contact with electrolytes and obviates the disadvantages due to electrochemical corrosion, while providing suitable distribution of the electric field.

4,343,967

AUTOKEY CODE GENERATOR

Beryl L. McArdle, Rochester, N.Y., assignor to General Dynamics Corporation Electronics Division, San Diego, Calif.

Filed Feb. 28, 1950, Ser. No. 146,871
Int. Cl.³ H04L *9/04*
U.S. Cl. 178—22.19 5 Claims



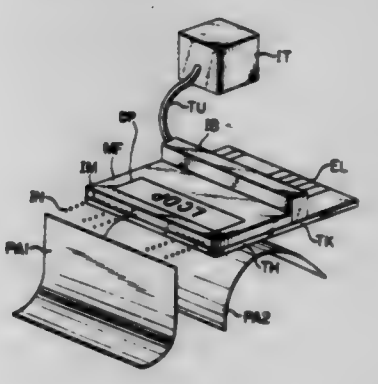
1. In an autokey code generator for use in secret communication systems, the combination of a source of cipher text code in pulse form; a source of reset pulses having a repetition period equal to the cipher text code interval; a dynamic pulse storage network including an input connected to said source of cipher text code, a plurality of stages connectable in sequence to step the pulses of said cipher text code along said sequence under control of said reset pulses; each said stage except the first having at least one output, matrix means having a plurality of inputs and a plurality of outputs for obtaining at any given instant a signal at one of said outputs, the particular one of said outputs at which said signal is present being dependent on the combination of voltage applied to said inputs, said inputs of said matrix means being respectively connected to said outputs of said stages; each said stage except the first having first and second gate means, said first gate means being connected to transfer the output of the preceding stage to the stage connected thereto, said second gate means being connected to supply reset pulses from said source of reset pulses to the stage individual to said second gate means; said outputs of said matrix means being divided into first and second groups; said outputs in said first group being connected together to form an autokey code output and said outputs in said second group being connected to individual ones of said first and second gate means for the control thereof, whereby the operation of said stages from said cipher text code fed into said input of said network is modified as determined by the signal configuration present at said outputs of said matrix means.

4,343,968

ELECTRONIC DEVICE HAVING UNITARY DISPLAY AND PRINTING SECTIONS

Shigeru Toyomura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,489
Claims priority, application Japan, Mar. 27, 1979, 54-36039
Int. Cl.³ H05B *1/00;* G06F *3/12*
U.S. Cl. 178—23 R 4 Claims



1. An electronic device comprising:

a base plate;

a display part disposed on a surface of said base plate;

a first group of signal lead wirings provided on the surface of said base plate and connected to said display part;

a row of a group of dot shape thermal elements provided on an opposite surface of said base plate;

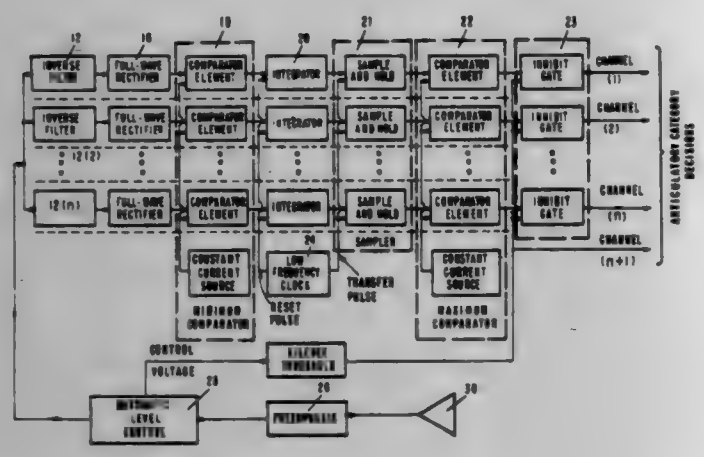
a second group of signal lead wirings provided on the opposite surface of said base plate and connected to said thermal elements; and

flexible wiring boards connected to each of said first and second groups of lead wirings.

4,343,969
APPARATUS AND METHOD FOR ARTICULATORY SPEECH RECOGNITION

Henry G. Kellett, Atkinson, N.H., assignor to Trans-Data Associates, Fallington, Pa.

Continuation-in-part of Ser. No. 947,944, Oct. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 781,715, Mar. 28, 1977, abandoned. This application Aug. 1, 1980, Ser. No. 174,662
Int. Cl.[3] G10L *1/00*
U.S. Cl. 179—1 SD 20 Claims



1. An apparatus, for the classification of speech according to successive articulatory conditions thereof and substantially independent of the pitch thereof, comprising:

a bank of electronic filters, in which:

the input of each filter is connected to a common input for connection to an electrical signal representing the speech to be classified;

each electronic filter is designed to have a transfer function that approximates the inverse of the complex transfer function of one articulatory condition of a vocal tract, whereby input into such filter of a non-zero signal representing the specified articulatory condition produces an output from such filter approximating a series of one or more source impulses and approximating zero output between such impulses;

a comparator for determining repeatedly which of the filters has the best recovery of source impulses over successive durations that are sufficiently short so as to involve the filter's response to a speech signal representing the presence of only one articulatory condition, said comparator including means for determining instantaneously which of the filters has the smallest absolute value output in response to a speech signal input, said means for determining instantaneously which of the filters has the smallest absolute value output in turn including a bank of amplifying devices wherein:

each amplifying device (such as a transistor) comprises an input element (such as a base), an element common to the input and the output (such as an emitter), and and output element (such as a collector), the current through the output element is a function of the voltage on the input element with respect to the common element;

all common elements of the amplifying devices in the bank are connected to a constant current source;

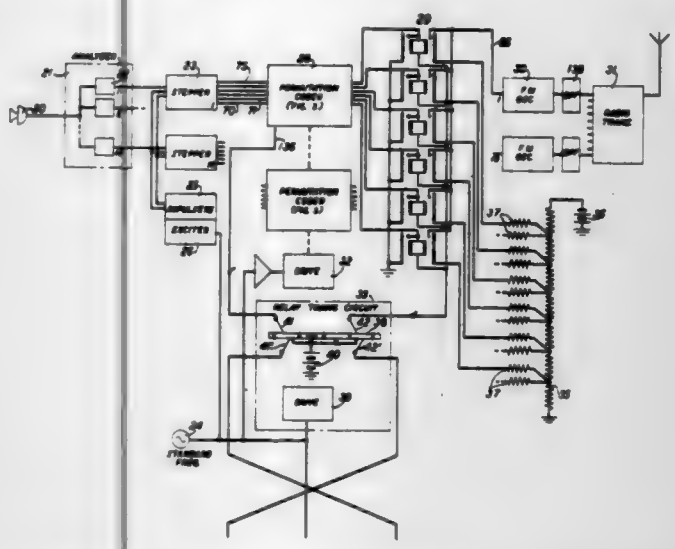
each input element is connected to a filter channel output signal to be compared;

so that the output element contains a signal indicative of whether a given amplifying device is conducting and therefore receiving on its input element the minimum of the signals being compared.

4,343,970
SIGNALING SYSTEM

Walter Koenig, Jr., Clifton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 19, 1953, Ser. No. 337,749
Int. Cl.[3] H04K *1/06*
U.S. Cl. 179—1.5 R 5 Claims

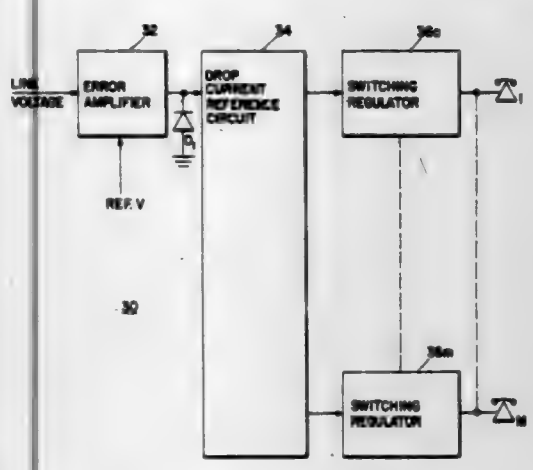


1. In electrical signaling in which the signal varies in amplitude from instant to instant, and at any one instant has an amplitude equal to one of a limited number of values having a total range in excess of two, means to disguise the signal preparatory to transmission comprising means in each instant to establish for transmission under control of said signal a voltage having with substantially equal probability any one of a like limited number of amplitude values having a total range in excess of two, means to transmit said established voltages, and means at a receiving point to retranslate the transmitted voltages into the clear signal.

4,343,971
SUBSCRIBER DROP CIRCUIT FOR CONTROLLING DROP CURRENT WITH LOAD AND MAXIMIZING POWER USAGE

Gerald W. Beene, Arlington, Tex., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Feb. 17, 1981, Ser. No. 234,711
Int. Cl.[3] H04M *19/00*
U.S. Cl. 179—70 20 Claims



1. A circuit for use in the remote terminal of a central office powered multi-subscriber telecommunications system for generating a drop current proportional to a predetermined reference current to a subscriber connected to said terminal by a drop loop of predetermined length to thereby control the power consumed by said subscriber as a function of said loop length said circuit comprising:

(a) switching means having a controllable conduction time for generating said drop current;

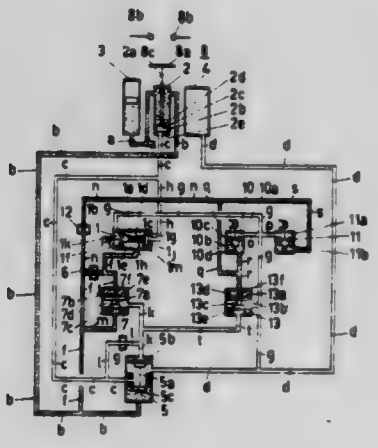
(b) means for generating a voltage proportional to said drop current;
(c) means for generating a voltage proportional to said reference current; and
(d) means responsive to said drop current proportional voltage and said reference current proportional voltage for controlling said conduction time of said switching means such that said drop current proportional voltage is made substantially equal to said reference current proportional voltage whereby the power consumed by said subscriber is controlled as a function of said loop length.

4,343,972

HYDRAULIC DRIVE FOR ELECTRICAL SWITCHES

Walter Bischofberger, Niederweningen, and Norbert Zeller, Ennetbaden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Oct. 28, 1980, Ser. No. 201,523
Claims priority, application Switzerland, Nov. 1, 1979, 9799/79
Int. Cl.³ H01H *35/38*
U.S. Cl. 200—81 R 11 Claims



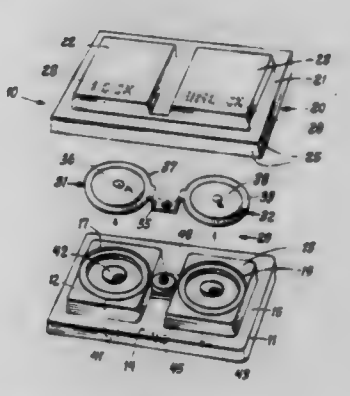
1. A hydraulic drive for electrical switches comprising:
a drive cylinder;
a drive piston dividing the drive cylinder into first and second chambers and being connected to an electric switch, said drive piston being arranged for reciprocation within the drive cylinder for opening and closing the electric switch and having first and second end faces having different effective areas;
a smaller end face of the piston being arranged in the first chamber and being constantly exposed to a pressure medium pressurized in a hydraulic reservoir and connected to the first chamber of the cylinder by a first pipe;
a switch-over control valve for actuating movement of the drive piston for opening or closing the switch is connected to the first chamber of the drive cylinder by a second pipe, said switch-over control valve having a first position for closing the switch by selectively exposing a larger end face of the piston arranged in the second chamber to the pressure medium through a third pipe and having a second position for opening the switch by selectively relieving the pressure medium on the larger end face by a fourth pipe connected between the switch-over control valve and a hydraulic medium container;
a control signal organ for initiating movement of the switch-over control valve toward the first position for closing the switch including
a central space exposed to the pressure medium through the second pipe, a fifth pipe and a first restrictive orifice,
the central space being selectively connected to the hydraulic medium container to relieve the pressure within the space through a sixth pipe and the fourth pipe by movement of a switchable control signal organ part to open position,
the central space being selectively isolated from the container when said organ part is in a closed position, and
first resetting means for hydraulically resetting the control signal organ part to the closed position, said first resetting means being exposed to pressure medium at approximately the same time as the larger end face of the drive piston is exposed to the pressure medium through the switch-over control valve, the third pipe and a seventh pipe.

4,343,973

LOW COST ELECTRICAL SWITCH

Robert T. Main, Arlington Heights, Ill., assignor to Cherry Electrical Products Corp., Waukegan, Ill.

Filed Aug. 13, 1980, Ser. No. 177,786
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—159 B 10 Claims



1. An electrical switch comprising:
at least one electrically conductive contact means having an extending conductive strip with an aperture formed therethrough;
a base having a top surface and a bottom surface;
at least one electrically conductive switching terminal extending through the base and having an electrically conductive head portion exposed on said top surface;
at least one electrically conductive common terminal extending through the base and having an upstanding electrically conductive post extending above a portion of said top surface;
means for supporting a contact portion of said at least one electrically conductive contact means in spaced relation over at least one switching terminal with the upstanding electrically conductive post passing through the aperture of said extending conductive strip and the strip contacting the head of the common terminal; and
an insulative cover extending over the top surface of the base, the cover including at least one flexible, resilient face plate portion for flexing downwardly relative to the base in response to applied pressure and pressing the contact portion of said at least one electrically conductive contact means against at least one underlying switching terminal, the face plate and the contact portion of the conductive contact means returning to respective unflexed positions when the pressure is removed.

4,343,974

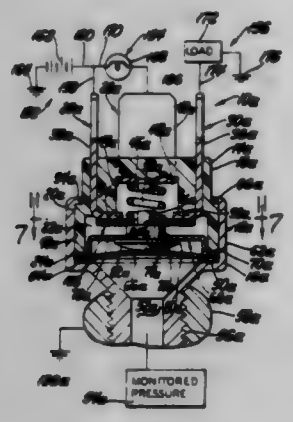
MULTI-CIRCUIT ELECTRICAL SWITCH

Charles J. Hire, and Gary L. Deppe, both of Mansfield, Ohio, assignors to Hi-Stat Manufacturing Company, Inc., Lexington, Ohio

Division of Ser. No. 42,771, May 29, 1979, Pat. No. 4,255,630. This application Sep. 2, 1980, Ser. No. 183,248
Int. Cl.³ H01H *1/20, 35/34*
U.S. Cl. 200—243 14 Claims

1. An electrical switching arrangement, comprising first and second electrical contact means spaced from each other, third electrical contact means spaced from both of said first and second electrical contact means, and fourth electrical contact means movable to and from at least two operating positions, said fourth electrical contact means when in one of said two

operating positions being electrically operatively engaged with said first and second electrical contact means, said fourth electrical contact means when in the other of said two operating positions being electrically operatively engaged with said third electrical contact means, said fourth electrical contact means comprising at least first, and second separate electrically conductive path means, said first and second electrically conductive path means being fixed with respect to each other as to thereby prevent movement of said path means relative to each other during all conditions of operation, said fourth electrical contact means when in said one of said operating positions



causing said first separate electrically conductive path means to complete an electrical circuit as between said first and second contact means, said fourth electrical contact means when in said other of said operating positions causing said second separate electrically conductive path means to complete an electrical circuit with said third electrical contact means, wherein whenever said fourth contact means is in said one of said operating positions the said electrical circuit with said third electrical contact means is open, and wherein whenever said fourth contact means is in said other of said operating positions the said electrical circuit with said first and second contact means is open.

4,343,975

KEY BOARD SWITCH UNIT WITH ILLUMINATION

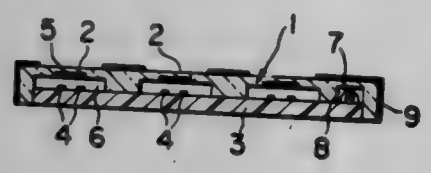
Ryoichi Sado, Saitama, Japan, assignor to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,781

Claims priority, application Japan, Dec. 7, 1979, 54-170217[U]

Int. Cl.³ H01H *9/18*

U.S. Cl. 200—314 **6 Claims**



1. A key board switch unit with illumination which comprises:

(a) a base plate,

(b) at least one fixed contact provided on the surface of the base plate,

(c) a switch panel member mounted on the base plate and having at least one pushing area carrying at least one moveable contact positioned above the fixed contact point on the base plate for engagement with said fixed contact, at least a portion of the pushing area thereof being made of a transparent or translucent material,

(d) at least one light source installed in a lamphouse between the base plate and the switch panel member at such a position that the light emitted therefrom is not directly visible from above through the transparent or translucent portion of the pushing area of the switch panel member, and

(e) wherein said switch panel is an optical conductor constructed of a transparent or translucent material to conduct the light emitted from the light source to the pushing area.

4,343,976

ENERGY FEED SYSTEM FOR A MICROWAVE OVEN

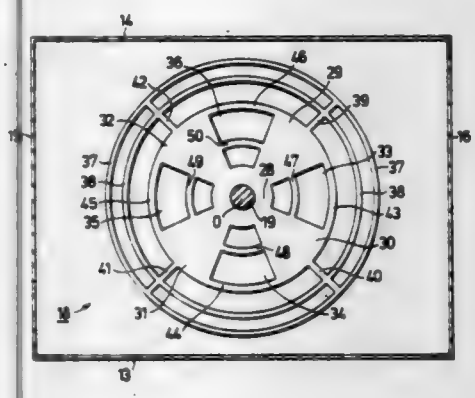
Mänsur A. Nasretdin, and Sten A. E. Ohlander, both of Norrköping, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1980, Ser. No. 132,469

Claims priority, application Sweden, Mar. 19, 1979, 7902407

Int. Cl.³ H05B *6/72*

U.S. Cl. 219—10.55 F **18 Claims**



1. A microwave oven comprising, an oven cavity limited by a plurality of conductive walls, and an energy feed system coupling energy from a microwave energy source to the interior of the oven cavity comprising, a substantially symmetrical planar radiating conductor system of the microstrip-line type arranged within the oven cavity close to a conductive ground plane and coupled to the microwave energy source at a central energy feed point for feeding microwave energy into the conductor system, a conductive central plate surrounding the central feed point on all sides and arranged in the plane of the conductor system and having a plurality of radially extending conductive plates at its circumference, openings which widen outwardly being formed between said conductive plates, and at least one annular closed conductor enclosing the radial conductive plates so as to receive energy from said radial plates.

4,343,977

ELECTRONIC CONTROLLED HEAT COOKING APPARATUS

Hideaki Koyama, Otsu, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Sep. 23, 1980, Ser. No. 189,587

Claims priority, application Japan, Sep. 26, 1979, 54-124309; Sep. 28, 1979, 54-126063

Int. Cl.³ H05B *9/06*

U.S. Cl. 219—10.55 B **11 Claims**

1. An electronic controlled cooking apparatus, comprising:

heating energy generating means for providing heating energy to a material being cooked,

timer means for defining a cooking time period of a cooking operation by said heating energy generating means,

said timer means comprising

a displacement member provided to be displaceable over any section of a predetermined range from an origin point for setting an initial timer time period, said predetermined range being divided into a plurality of sections each of which corresponds to a different timer time period,

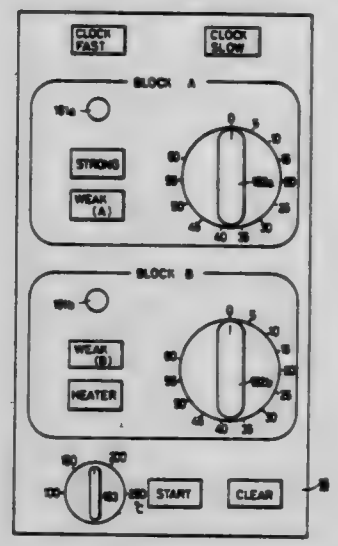
means responsive to displacement of said displacement member for generating a unique code signal for each said section associated with the displacement amount of said displacement member from said origin point,

timer time period information storing means for storing the

code signals generated by said code signal generating means,

control means responsive to said timer time period information stored in said timer time period information storing means for controlling said heating energy generating means,

first displacement detecting means for providing a first output only upon said displacement member having been first displaced by more than a first predetermined amount from the point as set by the initial setting of said displacement member,



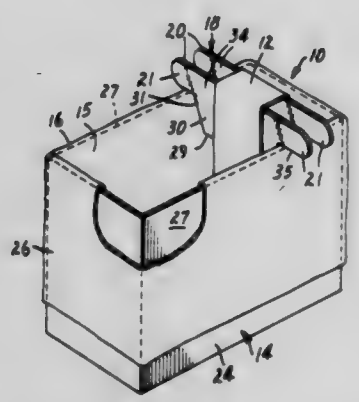
said timer time period information storing means responsive to said first output for storing new timer time period information determined by said unique code signal obtained from said code signal generating means.

4,343,978

STRUCTURE FOR USE IN MICROWAVE COOKING

James F. Kubiatowicz, 1630 Rice Creek Rd., Minneapolis, Minn. 55432

Continuation of Ser. No. 14,304, Feb. 21, 1979, abandoned. This application Nov. 18, 1980, Ser. No. 208,050
Int. Cl.[3] H05B *6/80*
U.S. Cl. 219—10.55 E 8 Claims



1. A disposable structure adapted for cooking strips of food of a predetermined length such as bacon that give off liquids in the cooking process in a microwave oven, said structure comprising:

a nonmetallic base portion having a top surface and a cavity recessed from said top surface of a size adapted to at least contain liquid released from the strips; said base portion comprising a stiff paper support structure having side walls defining the shape of said cavity, and a flexible bag adapted to contain high temperature liquids removably lining the support structure to define the inside surface of said cavity; and

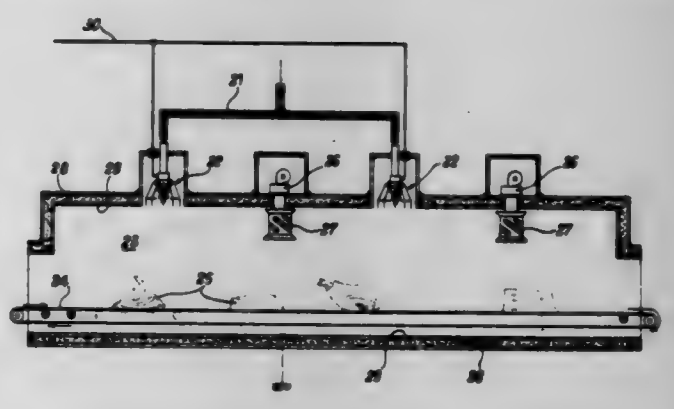
a stiff paper support portion separable from said base portion, having a narrow support surface, and having parts adapted to engage and be supported on said base portion with said narrow support surface generally horizontal and positioned over and spaced from the bottom of the cavity at a distance of at least about one half said predetermined length so that a strip of food may be hung over said support surface with its end portions extending into said cavity to cause liquid released in the cooking process to be directed into and contained in said cavity.

4,343,979

DEVICE FOR RAPID DEFREEZING OF FROZEN OR DEEP-FROZEN PRODUCTS

Spartacus Barbini, Chaville, and Michel Jolion, Avon, both of France, assignors to Electricite de France (Service National), Paris, France

Continuation-in-part of Ser. No. 821,922, Aug. 4, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,206
Int. Cl.[3] H05B *6/78*; A23L *3/36*
U.S. Cl. 219—10.55 A 3 Claims



1. A device for defreezing frozen or deep-frozen products comprising:

a furnace;

a conveyor system comprising a grounded metal support on which the products to be defrozen are mounted and on which said products are passed through said furnace by means of said conveyor system;

a generator for producing high-frequency radiation and radiating elements connected to said generator, said radiating elements being distributed in said furnace around the conveyor;

means for electrostatic spraying of said products with a cryogenic liquid, said means comprising a cryogenic liquid supply, a sprayer including a cryogenic liquid duct connected to said supply, the distal portion of said duct constituting a bent metallic rod with an opening provided with a spraying cone, a metallic disc being mounted in front of said cone on the downstream side, said rod, said cone, and said disc being connected to a high electrostatic voltage source, said opening being adapted to receive a substantially liquid flow of the cryogenic liquid, said disc cooperating with said cone to disperse the cryogenic liquid into a substantially uniform jet of droplets, said sprayer being mounted at the entrance of said furnace.

4,343,980

CONTROL OF WELDING ENERGY FLUX DENSITY

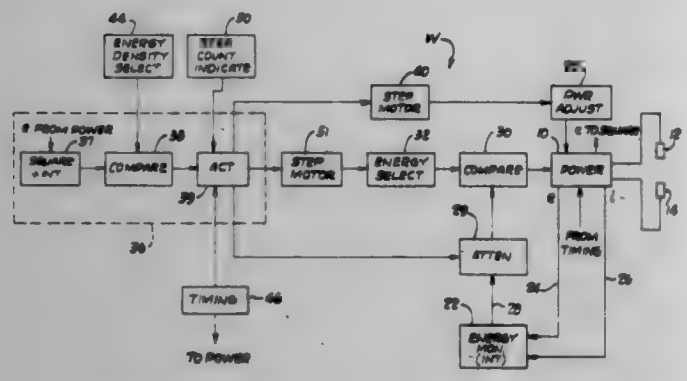
Andrew Stanya, North Royalton; Joseph E. Franklin, Medina, and David W. Dickinson, Hinckley, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Apr. 2, 1980, Ser. No. 136,518
Int. Cl.[3] B23K *11/24*
U.S. Cl. 219—110 13 Claims

1. A welding system comprising:

(a) apparatus including electrodes and power circuitry for applying heating energy to a welding site to effect a weld between two workpieces in accordance with a cyclically repeatable welding process;

(b) means for monitoring the amount of heating energy applied in the welding process;
(c) circuitry for producing an electrical signal which is a function of the energy density applied per unit weld site



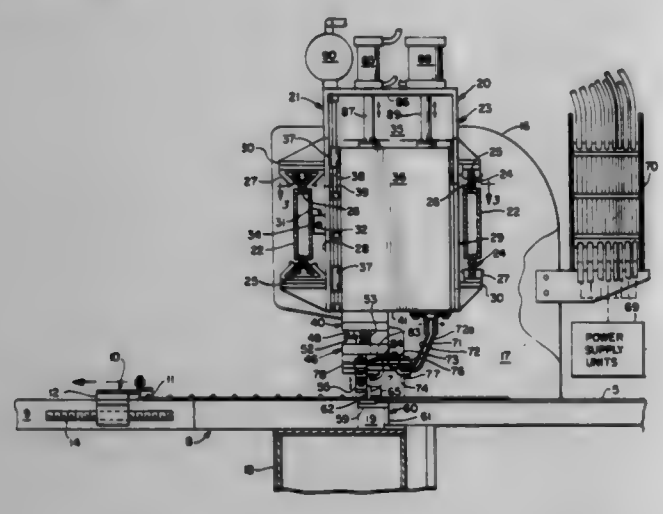
area, said signal being a function of substantially only the voltage between the electrodes and
(d) circuitry responsive to said electrical signal for controlling the amount of energy per unit weld site area applied by the power circuitry during a weld process cycle.

4,343,981

RESISTANCE WELDING MACHINE

James D. Connolly, P.O. Box 1238, Princeton, W. Va. 24740

Filed Sep. 8, 1980, Ser. No. 184,982
Int. Cl.[3] B23K *11/32, 37/04;* B21F *15/08, 27/10*
U.S. Cl. 219—56 17 Claims



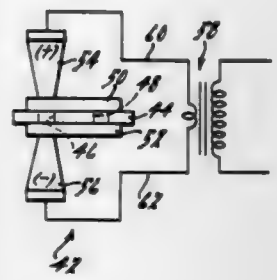
1. A resistance welding machine for welding one set of members in succession and spaced relation to another member at a welding station extending transversely of the other member, comprising welding means including a welding unit having a carriage intermittently and incrementally drivable above and along the welding station, a transformer mounted for relative reciprocal vertical movement in said carriage, ram means suspended from said transformer for movement in unison therewith, welding electrode meand depending from said ram means and normally spaced above a member of the one set in the welding station and engageable therewith in an advance stroke of said ram means for applying welding pressure during welding of said member of the one set to the other member, and power means mounted on said carriage and acting through said transformer for powering advance and retract strokes of said ram.

4,343,982

METHOD OF JOINING METAL TO GRAPHITE BY SPOT WELDING

Stephan Schwartz, Vaxholm; Roland Söderström, Akersberga, and Ake Bjareklint, Vallentuna, all of Sweden, assignors to Energy Development Associates, Inc., Madison Heights, Mich.

Filed Mar. 23, 1981, Ser. No. 246,841
Int. Cl.[3] B23K *11/16*
U.S. Cl. 219—118 23 Claims



1. A method of joining two metal members to a graphite member to form a structure having a low-transition resistance, comprising the steps of:
(a) providing a plurality of openings in said graphite member;
(b) interposing said graphite member between said metal members and positioning said metal members to cover said openings in said graphite member; and
(c) resistance spot welding said metal members to said graphite member at said openings in said graphite member.

4,343,983

NON-CONSUMABLE COMPOSITE WELDING ELECTRODE

Urban A. Schneider, St. Petersburg, and Robert L. Nelson, Tampa, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 20, 1979, Ser. No. 77,209
Int. Cl.[3] B23K *35/04, 35/32*
U.S. Cl. 219—145.21 5 Claims



1. A tungsten inert gas-shielded, non-consumable welding electrode comprising a solid tungsten rod center and a concentric outer sleeve substantially lower in electrical resistivity than the tungsten rod, adhesively and cohesively bonded to the tungsten by thermal spraying so that the surface irregularities of the mating surface areas of the tungsten and outer sleeve mechanically interlock with some oxide-to-oxide bonding without alloying of the tungsten rod center and sleeve material.

5. A tungsten inert gas-shielded welding torch comprising:
a gas nozzle;
an electrical contactor for transferring welding current affixed at one end of the nozzle; and
an elongated non-consumable welding electrode, over three inches in length, in electrical contact with and extending from the electrical contactor through and beyond the opposite end of the nozzle, wherein the electrode comprises a solid tungsten rod center and a concentric outer sleeve substantially lower in electrical resistivity than the tungsten rod, adhesively and cohesively bonded to the tungsten by thermal spraying so that the surface irregular-

ities of the mating surface areas of the tungsten and outer sleeve mechanically interlock with some oxide-to-oxide bonding without alloying of the tungsten rod center and sleeve material.

4,343,984

GAS-SHIELDED FLUX-CORED WIRE ELECTRODES FOR HIGH IMPACT WELDMENTS

Ronald B. Smith, Jefferson; Edward J. Galda, Ashtabula, and Masahiro Nakabayashi, Jefferson, all of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 19, 1978, Ser. No. 897,825
Int. Cl.³ B23K *35/30*
U.S. Cl. 219—146.3 **4 Claims**

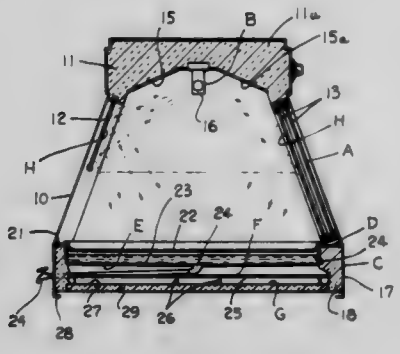
1. In a consumable wire electrode for out of position gas shielded electric arc welding comprising a hollow sheath of mild steel and a flux core comprising essentially from about 10 to about 20 weight percent of the total electrode, said core material containing rutile, a sodium or potassium bearing arc stabilizer; a metal of from about 1 to about 7 weight percent of said core material taken from the class consisting of magnesium and magnesium-aluminum alloys, from about 3 to 10 weight percent of said core material of manganese oxide, wherein the improvement comprises said core material containing from 5 to about 20 weight percent nickel and from about 5 to 15% by weight ferromanganese-silicon.

4,343,985

COUNTER TOP FOOD WARMER AND DISPLAY CASE

Robert G. Wilson, 10 Chisolm Trail, Greenville, S.C. 29607, and Raymond W. Rogers, Greenville, S.C., assignors to Robert G. Wilson, Mauldin, S.C.

Continuation of Ser. No. 849,432, Nov. 7, 1977. This application Jan. 29, 1980, Ser. No. 116,819
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—214 **3 Claims**



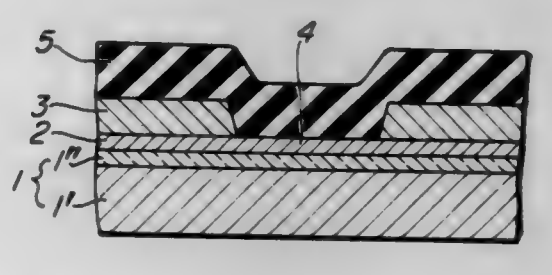
1. A counter top food warmer and display case comprising:
a glass enclosure including a display window;
heating means carried within an insulated upper portion of said enclosure;
a compact lower housing carrying said glass enclosure thereon;
said lower housing including spaced end walls, front and back side walls, and a bottom wall defining a housing structure having an open interior;
opposing ledge means integral with said side walls of said lower housing defining an upper portion of said lower housing;
a water carrying receptacle contiguous with said opposing ledge means of said housing coextending generally across said open interior for humidifying said enclosure;
a food carrying tray means extending between and carried by said opposing ledge means above said water carrying receptacle;
said tray means forming a bottom of said glass enclosure adjacent an upper portion of said housing;
a heating element disposed in said housing below said water carrying receptacle and closely adjacent thereto for heating water carried therein;
an insulated base carried on the bottom wall of said housing, said heating element being carried on said insulated base affording protective placement of said food warmer on the surface of an associated counter top;
said lower housing providing a compact low profile structure for housing said food tray means, water receptacle means, heating element, and insulated base in a closely stacked configuration; and
said glass enclosure having a height at least twice that of said compact lower housing;
whereby said food warmer can be placed on a counter top utilizing a minimum amount of space while affording a maximum exposure of the interior of said food warmer.

4,343,986

THERMAL PRINTHEAD

Masao Mitani; Toyoji Tsunoda; Tsuneyoshi Kawahito, all of Yokahoma; Tsuneaki Kamei, Kanagawa, and Akira Yabushita, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,511
Claims priority, application Japan, Mar. 19, 1980, 55/33890
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—216 **5 Claims**



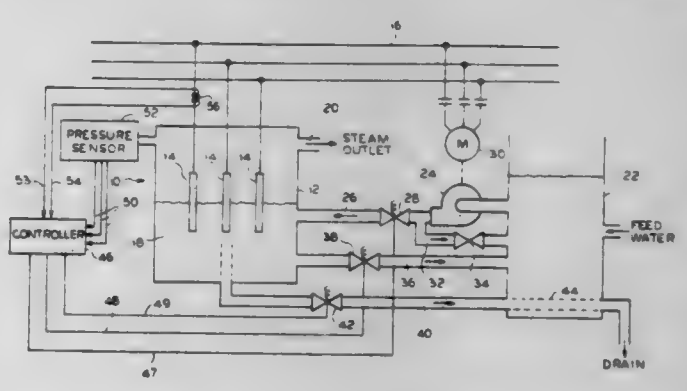
1. A thermal printhead comprising a substrate, heat generating thin film resistor bodies formed on said substrate and electric conductors for supplying said heat generating thin film resistor bodies with electric power, characterized in that said heat generating thin film resistor bodies are made of a Cr-Si alloy subjected to a stabilization aging heat treatment.

4,343,987

ELECTRIC BOILER

Paul A. Schimbke, Milwaukee, Wis., and Stanley A. Williams, Poole, England, assignors to Aqua-Chem, Inc., Milwaukee, Wis.

Filed May 14, 1979, Ser. No. 38,891
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—287 **11 Claims**



1. An electric boiler having a first vessel adapted to contain a quantity of water and electrodes disposed within said first vessel for heating said water to generate steam,
pressure sensing and control means coupled to said first vessel for sensing the pressure therein for producing a first signal when said pressure falls below a first predetermined value, a

second signal when said pressure rises above a second predetermined value after the occurrance of said first signal, a third signal when said pressure rises above a third value above said first and second values and a fourth signal when said pressure thereafter falls to a fourth value between said second and third values,

said boiler also including a second vessel for containing a quantity of water,

discharge means coupled to said first vessel and having a discharge mode for discharging water therefrom,

timing means coupled to said discharge means and to said pressure sensing and control means and operative upon the receipt of said first signal to place the discharge means in its discharge mode and for maintaining the same in said mode for a predetermined time interval,

transfer means interconnecting said first and second vessels and being operative to transfer water therebetween, said timing means being coupled to said transfer means and being operative to actuate said transfer means for the transfer of a second quantity of water from said second vessel to said first vessel after said predetermined time interval,

said transfer means also being coupled to said pressure sensing and control means and being responsive to said second signal for terminating the transfer of water from said second vessel to said first vessel, said transfer means being responsive to said third signal for transferring water from said first vessel to said second vessel when the pressure in said first vessel exceeds said third predetermined value, said transfer means being operative to terminate the transfer of water from said first vessel upon the occurrence of said fourth signal.

4,343,988

ELECTRICAL RESISTANCE WATER HEATING DEVICE, PARTICULARLY FOR BEVERAGE PREPARATION MACHINES

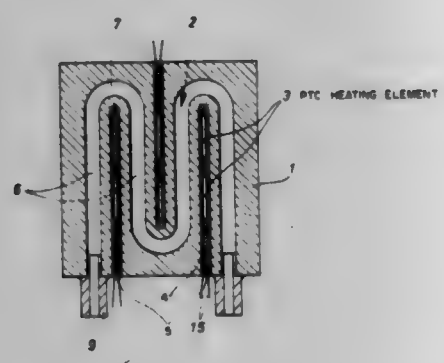
Hanno Roller; Helmut Ohnmacht, both of Kandel; Ludwig Lieber, Steinweiler, and Karl-Heinz Nauerth, Erlenbach, all of Fed. Rep. of Germany, assignors to Firma Fritz Eichenauer, Kandel, Fed. Rep. of Germany

Filed Jan. 16, 1979, Ser. No. 3,917

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804784

Int. Cl.³ H05B *3/02*; F24H *1/12*; A47J *31/44*

U.S. Cl. 219—302 11 Claims



1. An electrical resistance heating device suitable for use in a hot-plate or the like comprising a solid metal heating plate having a plate-shaped body and planar upper and lower surfaces, and a fluid throughflow duct formed therein between said upper and lower surfaces, said duct including at least two elongated, spaced side-by-side branches having corresponding ends interconnected by a connecting conduit to form a continuous fluid flow path in a single plane from a fluid inlet to a fluid outlet of said body, an elongated slot being formed in said plate between each pair of side-by-side branches, and at least one plate-shaped planar heating element being accommodated within each respective elongated slot with each of the opposing major surfaces thereof directed toward a respective one of the pair of side-by-side branches of said duct between which the slot is formed.

4,343,989

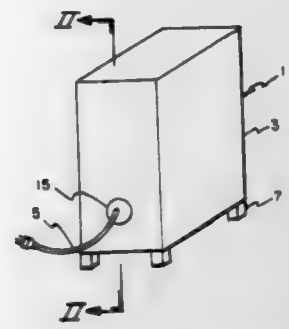
MAGNESIUM OXIDE BASED HEAT STORAGE DEVICE

Denis A. Brosnan, 217 Avondale Dr., Tullahoma, Tenn. 37388

Filed Nov. 24, 1980, Ser. No. 209,692

Int. Cl.³ C04B *35/04*; F24H *7/00*; H05B *3/02*

U.S. Cl. 219—378 12 Claims



1. A magnesium oxide based heat storage device, comprising:

a heat source; and a

cast magnesium oxide based heat storage material surrounding said heat source, said cast magnesium oxide based heat storage material comprising magnesium oxide in an amount greater than 35 percent by weight bonded with from 5 to 40 percent by weight of calcium aluminate cement.

4,343,990

HEATING APPARATUS SAFETY DEVICE USING VOICE SYNTHESIZER

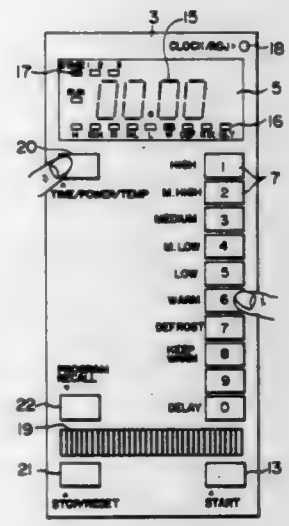
Shigeki Ueda, Nara, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Oct. 15, 1980, Ser. No. 197,204

Claims priority, application Japan, Oct. 18, 1979, 54-134943; Oct. 18, 1979, 54-134944; Oct. 18, 1979, 54-134945; Oct. 18, 1979, 54-134946

Int. Cl.³ H05B *9/06*

U.S. Cl. 219—492 5 Claims



1. A heating apparatus comprising:

a heating chamber for housing an object to be heated;

heating means for supplying heat to said heating chamber;

input means for programming a desired operation, said input means including at least one multi-command key for accomplishing a multiplicity of functions;

a main control section having a random access memory (RAM) for storing a current operating condition, said main control section

selecting a function to be performed among said multiplicity of functions by checking said RAM to determine the current operation condition when said multi-command key is depressed, and

producing a voice select signal corresponding to the selected function;

a time control section controlled by a control signal from said main control section for controlling the supply of power to said heating means;

output switching means for varying the output of said heating means in response to a control signal from said main control section;

a voice memory for storing a plurality of voice data;

a voice synthesizer section for reading out selected voice data from said voice memory and synthesizing said selected voice data into a voice; and

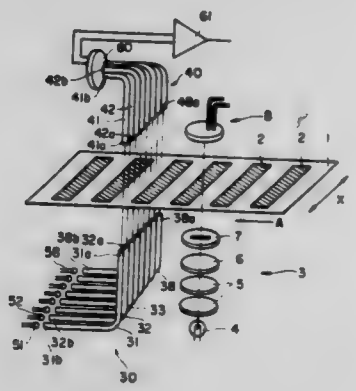
means for producing an address signal for a predetermined voice data in response to the voice select signal from said main control section in order to read out the voice data stored in said voice memory, said voice synthesizer section announcing said selected function to be performed together with a procedure to be operated subsequently.

4,343,991

SAMPLE DETECTOR

Toshihide Fujiwara, Fuchu, and Nobutaka Kaneko, Hachiouji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 21, 1980, Ser. No. 151,888
Claims priority, application Japan, May 25, 1979, 54-64817
Int. Cl.³ G01D *21/04*
U.S. Cl. 250—227 **3 Claims**



1. A sample detector for monitoring a moving carrier, comprising:

a first optical fiber group including a plural number of optical fibers arranged in a direction perpendicular to the moving direction of said carrier and having exit end surfaces adjacent to said carrier,

a second optical fiber group including a plural number of optical fibers having entrance end surfaces arranged opposite to the exit end surfaces of said first optical fiber group and bundled exit end surfaces,

a plural number of light emitting elements arranged in the vicinity of the entrance end surfaces of the individual optical fibers of said first optical fiber group,

a photodetector element arranged in the vicinity of the bundled exit end surfaces of said second optical fiber group,

a preamplifier connected to the output side of said photodetector element,

said sample detector being so adapted as to detect the presence of samples applied onto said carrier based on outputs from said preamplifier, and

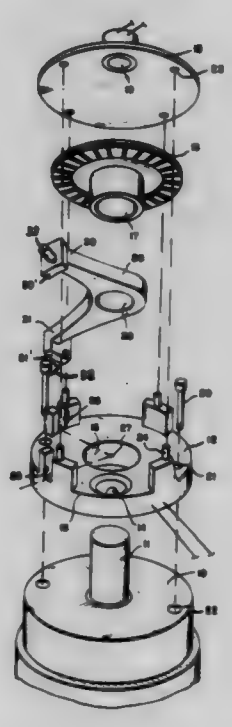
photometric means arranged adjacent to said first and second optical fiber groups and being operative when a time determined by the spacing between said first and second optical fiber groups and said photometric means has passed after the position of a sample on said carrier has been detected.

4,343,992

V-SHAPED CENTERING FIXTURE FOR OPTICAL ENCODERS

Anton J. Blaser, 700 E. Mason, Santa Barbara, Calif. 93103

Filed Sep. 8, 1980, Ser. No. 185,142
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 SE **4 Claims**



1. An optical encoder assembly and centering fixture to be used on a motor shaft of given diameter, including, in combination:

(a) a mounting member having a circular periphery with a light source adjacent to a point on said periphery and having a central opening of larger size than said given diameter of said shaft so as to surround such shaft without touching the shaft when the mounting member is secured to the motor, and wherein said light source is positioned at a proper radial distance from the axis of said shaft so as to fall into alignment with the remaining components of the assembly only when said mounting member is centered on the motor with said shaft extending through said central opening in exact concentric relationship with said circular periphery, said circular periphery having first and second circumferentially spaced radial slots in exact radial alignment with the geometrical center of said circular periphery and defining a given angle between radial lines drawn from said center to said slots; and

(b) a centering fixture comprising a V-shaped element having a bore at the vertex at the V of diameter corresponding to said given diameter of said shaft to receive said shaft in a friction fit, said arms of the V-shape extending radially in alignment with the center of said bore at said given angle and for a radial distance at least equal to the radius of said circular periphery

whereby when said motor shaft is received in said bore and the ends of the arms of the V-shaped received in said slots of said mounting member, said mounting member is centered and its circular periphery precisely concentric with said shaft so that it may be then secured to said motor with assurance that it will be in proper alignment with the remaining components of said encoder when the same are assembled after removing said centering fixture.

4,343,993

SCANNING TUNNELING MICROSCOPE

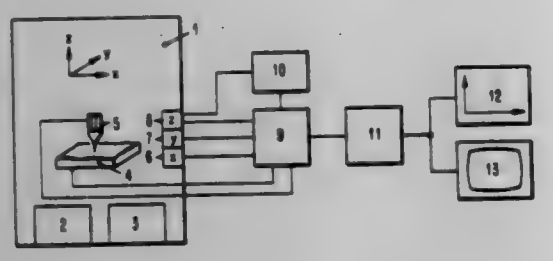
Gerd Binnig, and Heinrich Rohrer, both of Richterswil, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,923

Claims priority, application Switzerland, Sep. 20, 1979, 8486/79

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—306 12 Claims



1. Apparatus for investigating surface structures utilizing the vacuum tunnel effect, comprising:

an ultra-high vacuum chamber which can be cooled down to a temperature close to absolute zero;

a fine conducting tip in said chamber;

means for positioning a conductive sample surface in said chamber sufficiently close to said conducting tip that tunnelling current flows between said tip and the sample surface;

means for scanning said tip across the sample surface at a tunneling distance while tunnelling current flows between said tip and the sample surface;

means for measuring a tunnel effect variable between said tip and the sample surface while said tip is scanned across the surface;

means for automatically controlling the separation distance between said tip and the sample surface in response to the measured tunnel effect variable such that the measured tunnel effect variable remains substantially constant during scanning; and

means for graphically displaying the spatial coordinates of said scanning tip to produce a topological map of said surface.

4,343,994

PARTICLE DETECTOR AND ITS PRODUCTION PROCESS

Paul Farcy, Clamart, France, assignor to Commissariat a l'Energie Atomique, Paris, France

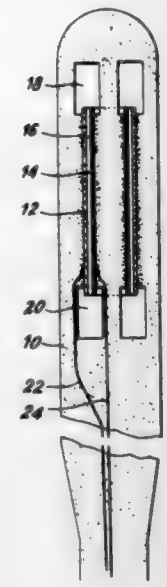
Filed Mar. 21, 1980, Ser. No. 132,403

Claims priority, application France, Mar. 29, 1979, 79 07924

Int. Cl.³ G01T *3/00;* H01J *47/12*

U.S. Cl. 250—390 18 Claims

1. A detector, for neutrons and the like, comprising a closed ceramic body in a single part within which are sealingly embedded two concentric tubular electrodes which define between them an annular chamber filled with pressurized gas,



and electrical wires connecting the electrodes to the outside of the body.

4,343,995

METHOD AND APPARATUS FOR AUTOMATICALLY CENTERING AN OBJECT FOR TOMODENSITOMETRIC EXAMINATION

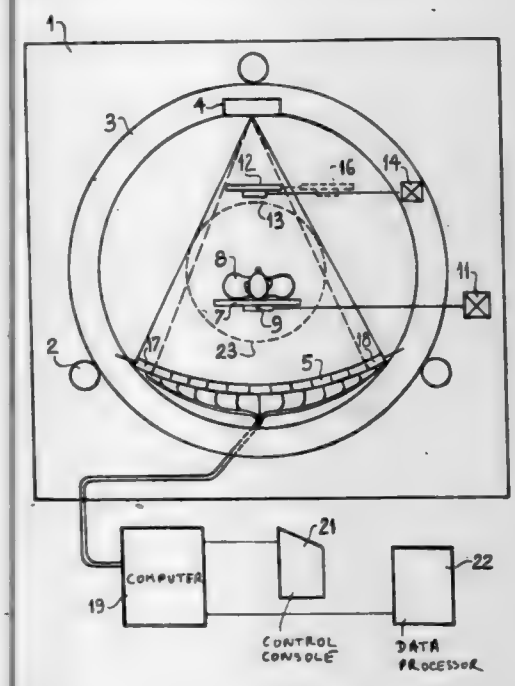
Remy Klausz, Paris, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Jul. 20, 1979, Ser. No. 58,980

Claims priority, application France, Jul. 27, 1978, 78 22268

Int. Cl.³ A61B *6/00, 6/02;* G06F *15/42*

U.S. Cl. 278—21 5 Claims



1. A method for positioning an object to be examined in a tomodensitometric apparatus, said apparatus including a source of a fan-shaped beam of radiation and a plurality of radiation detectors disposed along a line, said source and said detectors being located on a rotatable mount which is capable of rotation about an axis normal to a plane defined jointly by said source and said detectors, said apparatus further including a support for said object to be examined, said support being capable of motion in any direction as urged by a control element under the control of a controller which receives control information from a computer programmed by a control console and by an internal program and connected to receive signals from said detectors, and wherein, according to the invention, said method comprises the steps of:

placing said object on said movable support;

positioning between said object and said source an opaque screen which prevents the radiation from said source from striking any except at least one of the two outermost-lying detectors along said line;

programming said computer so as to generate a control schedule which defines the direction and magnitude of displacements to be given to said movable support in dependence of the degree of attenuation of signals from said at least one of the two outermost-lying detectors during a rotation of said rotatable mount in a test cycle; and

executing a test cycle in which said rotatable mount is turned through one revolution; whereby said object is centered within the effective beam of said source for all relative angular positions thereof.

4,343,996

MEDICAL APPARATUS WITH CABLE GUIDE

Jan Kuipers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

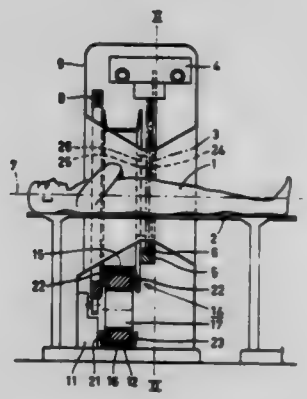
Filed Dec. 30, 1977, Ser. No. 866,006

Claims priority, application Netherlands, Jul. 7, 1977, 7707541

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—21

1 Claim



1. Medical apparatus comprising:

an X-ray radiation source which is rotatable relative to a fixed frame;

an electrical power supply;

a flexible cable connecting the source to the power supply;

a guide for the flexible cable, including a cylindrical inner drum, a cylindrical outer drum disposed concentric to and rotatable relative to the cylindrical inner drum, a rotatable cylindrical cable guide roller disposed between the concentrically disposed drums, the axis of the roller being parallel to the axes of the drums, the flexible cable passing around the roller, the cable being attached near one of its ends to one of the drums, the cable guide roller being retained between an outer surface of the inner drum and an inner surface of the outer drum and being positioned to roll along geometrical paths which are concentric with the inner drum and the outer drum;

an elastic material which is disposed on and at least partially covers the surface of the cable guide roller and which functions to stabilize the operation of the guide;

a second movable frame suspended on the inner drum and movable, with respect thereto, in a direction perpendicular to the axis of the drums, in which frame the radiation source is mounted;

a detector secured on the movable frame opposite the radiation source, a central ray from the radiation source intersecting the axes of the two drums and being parallel to the direction of movement of the frame;

wherein each of the two drums is shaped as a sector of a circular cylinder and includes a sector-shaped opening, the two openings being angularly aligned to define a free area, the radiation source being movable into the free area when the frame is moved relative to the inner drum.

4,343,997

COLLIMATOR ASSEMBLY FOR AN ELECTRON ACCELERATOR

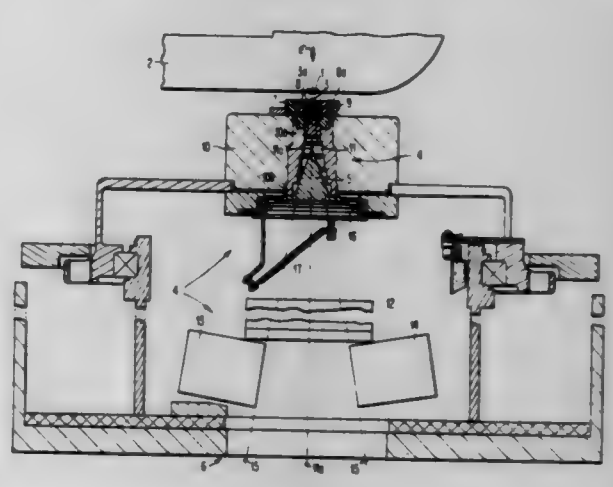
Lothar Heinz, Neunkirchen, Fed. Rep. of Germany, assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Jul. 14, 1980, Ser. No. 168,169

Int. Cl.³ A61N *5/10*; G21K *1/02*; H05H *7/00*

U.S. Cl. 250—505.1

6 Claims



1. In an electron accelerator including a target exposed to an electron beam for the purpose of producing X-ray radiation, a collimator assembly for providing a flattened dose rate characteristic over the central region of the cross-section of the transmitted X-ray beam cone, a collimator shielding block in said collimator assembly for blocking undesired X-rays, at least two inserts comprising a material of high atomic number, one of said inserts being inserted into said collimator shielding block, each of said inserts having a stepped central opening and inner wall surfaces at the margin of the X-ray cone, said inner surfaces having annular grooves transverse to the X-ray radiation for providing a dose rate at the margin of the transmitted X-ray radiation cone which is relatively uniform and matched to the dose rate at the central region of the transmitted cone, whereby said grooves in said inner wall surfaces are cylindrical grooves, the diameter thereof increasing in the direction of said X-ray radiation, and whereby the width of said grooves in said X-ray radiation direction is between one and two centimeters, and means for easily interchanging said inserts in said collimator shielding block.

4,343,998

METHOD AND APPARATUS FOR DETECTING SEWING DEFECTS ON A STOCKING TOE CLOSER

Sukeo Mori, 17-2, Zeze 1-chome, Otsu-shi, Singa-ken, Japan, assignor to Sukeo Mori, Japan

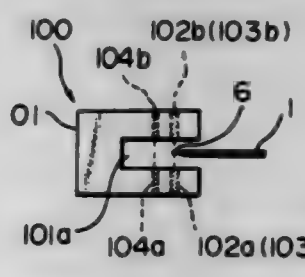
Filed Feb. 25, 1980, Ser. No. 124,540

Claims priority, application Japan, Feb. 23, 1979, 54-020963

Int. Cl.³ G01N *21/88*

U.S. Cl. 250—563

6 Claims



1. Improved apparatus for detecting sewing defects on a stocking toe closer comprising a pair of photoelectric sensors arranged at spaced positions to define a detection area, said

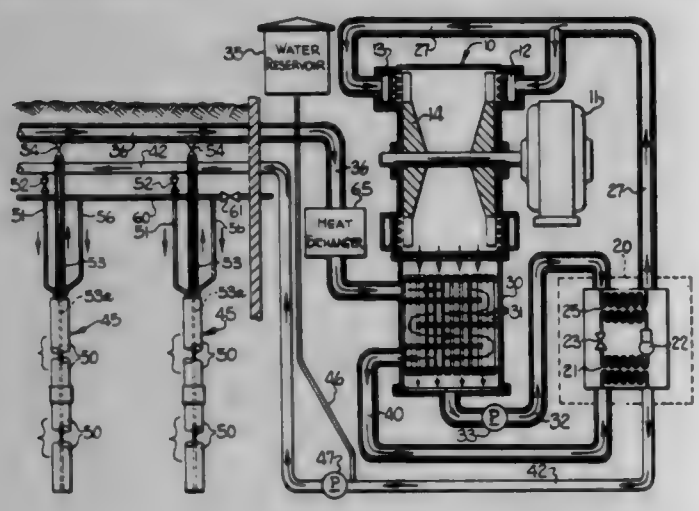
detection area aligned along the path of travel of the sew line on the toe section of a stocking, each of said photoelectric sensors including a light emitter arranged on one surface side of said toe section and a light receiver arranged on the other surface side of said toe section in axial alignment with said light emitter, said light emitters being activated when the leading end of said toe section arrives at the positions of said light emitters within said detection area, said light receivers photoelectrically converting the incident beams of light from said light emitters into electric detection signals whose magnitudes corresponds to the intensity of said incident beams, and a control circuit electrically connected to said light receivers and enabled to compare beginning portions of the electric detection signals from said photoelectric sensors to generate an operation signal when any difference in magnitude between the electric detection signals is sensed.

4,343,999

STEAM-ELECTRICAL GENERATING SYSTEM USING GEOTHERMAL HEAT SOURCE

Herman B. Wolf, Pineville, N.C., assignor to Duke Power Company, Charlotte, N.C.

Filed Nov. 4, 1980, Ser. No. 204,000
Int. Cl.[3] F01K *7/38*; F03G *7/04*
U.S. Cl. 290—2 **8 Claims**



1. A system for generating electrical power characterized by a more efficient utilization of available energy supplemented by geothermal energy, said system comprising

(a) a steam turbine;

(b) an electric generator connected to said steam turbine and adapted to be rotated by said steam turbine for generating electricity;

(c) liquid-to-liquid heat pump means including a first heat exchanger for adding heat to a refrigerant circulating within the heat pump and a second heat exchanger for supplying heat from the refrigerant to a liquid to be heated;

(d) means for supplying steam to said turbine including steam conduit means connected to said second heat exchanger of said heat pump for receiving steam therefrom and to said steam turbine for supplying steam thereto, a condenser connected to said steam turbine for receiving steam therefrom and condensing such steam to a liquid, liquid conduit means connecting said condenser to said second heat exchanger of said heat pump, and pressure raising pump means in said liquid conduit means for supplying condensate to said heat pump for generation of steam therefrom; and

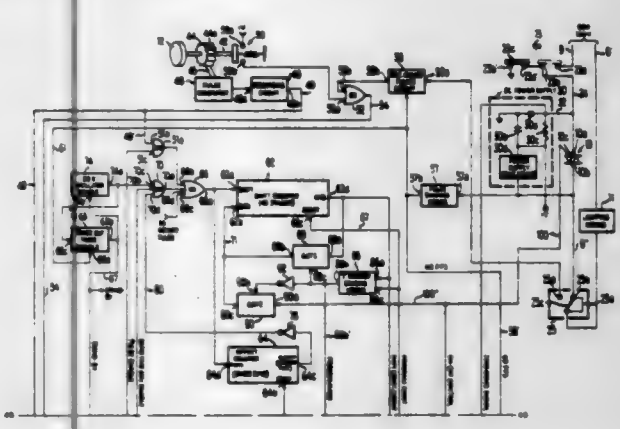
(e) liquid circulating means for supplying liquid coolant to said condenser for condensing steam from said steam turbine and for supplying heat to said first heat exchanger of said heat pump comprising a closed liquid circulating system including a source of liquid of sufficient volume to maintain the system substantially filled with liquid, first conduit means connected to said condenser for supplying liquid coolant to said condenser and connecting said condenser to said first heat exchanger of said heat pump for supplying said heat pump with liquid which has been heated by the condensation of the steam, second conduit means connected to said first heat exchanger of said heat pump for withdrawing liquid which has been cooled in said first heat exchanger of said heat pump, a plurality of heat sinks buried in the earth to a sufficient depth so as to be in heat exchange relationship with the subterranean water system of the earth and connected to said second conduit means for receiving cooled liquid therefrom for the addition of geothermal heat thereto and connected to said first conduit means for supplying liquid thereto, and means for circulating the liquid through said conduit means, said condenser, said first heat exchanger, and said heat sinks; whereby the heat transferred to the coolant during condensation of the steam from said turbine is recovered and is supplemented by geothermal heat from the earth for regeneration of the steam needed to operate said steam turbine.

4,344,000

POWER CIRCUIT CONTROL PROGRAMMABLE TIMER

Louis W. Schornack, Niles, and Richard Goldstein, Northbrook, both of Ill., assignors to Dynascan Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 22,453, Mar. 21, 1979. This application Mar. 20, 1980, Ser. No. 132,088
Int. Cl.[3] H01H *43/04*
U.S. Cl. 307—132 E **38 Claims**

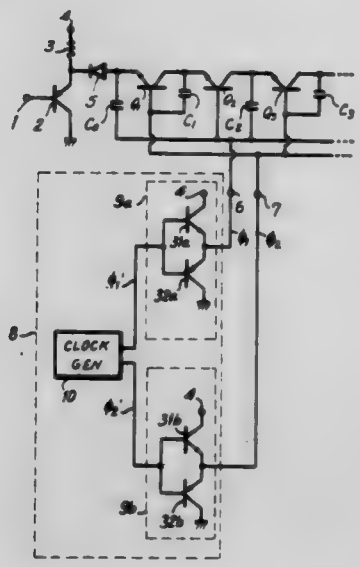


22. In a programmable timer for controlling the operation of a controlled means, said timer including storage means having respective storage locations assigned to various time intervals where switch means turn-on or turn-off markers can be stored or retained to control said switch means, manually operable programming means for setting or retaining said turn-on and turn-off markers in storage locations corresponding to the desired time intervals involved, and means following the completion of the setting or retention of said markers in all of said storage locations for operating the timer in an automatic mode where the storage locations are automatically and synchronously accessed to control the operation of said controlled means in accordance with said markers, the improvement comprising automatic programming completion means which, upon the failure of the user to set or retain turn-on or turn-off markers in all of the storage locations of said storage means after a given time period, automatically sets turn-off markers in the remaining storage locations of said storage means and automatically operates the timer in said automatic mode of operation where said controlled means is controlled by the markers in said storage locations of the storage means assigned to the time intervals involved.

4,344,001
CLOCKING SIGNAL DRIVE CIRCUIT FOR CHARGE TRANSFER DEVICE

Takao Tsuchiya, and Mitsuo Soneda, both of Fujisawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,839
Claims priority, application Japan, Dec. 19, 1978, 53-157131; Dec. 19, 1978, 53-157134; Dec. 26, 1978, 53-163705; Apr. 23, 1979, 54-49946
Int. Cl.³ G11C *19/28;* H03K *17/60, 17/56, 5/00*
U.S. Cl. 307—221 D
21 Claims

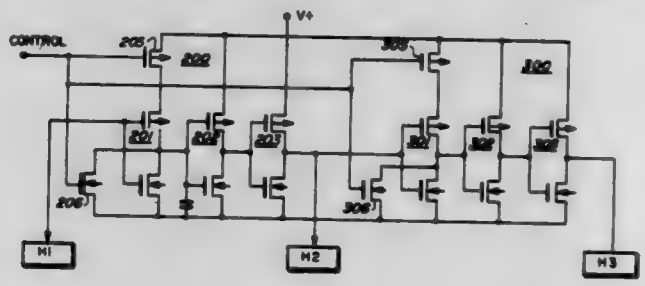


1. In a charge transfer device having clocking signal drive means for supplying a plurality of clocking signals, a plurality of successive capacitive storage means for sequentially holding a charge level representing a time sampled input signal, each of said capacitive storage means having a clocking electrode for receiving one of said clocking signals, and said charge level being transferred from one to another of said capacitive storage means in succession in response to said clocking signals; said clocking signal drive means comprising at least one clocking signal drive circuit which includes a clocking signal generator having an output at which said generator provides a clocking control signal, a pair of complementary transistors each having first, second and control electrodes, means for connecting control electrodes of said complementary transistors together and to said output of said clocking signal generator, and means for connecting the first electrodes of said complementary transistors together and to the clocking electrode of at least one of said capacitive storage means.

4,344,002
DETECTION CIRCUIT AND STRUCTURE THEREFOR

Robert L. Chao, Sunnyvale, Calif., assignor to Supertex, Inc., Sunnyvale, Calif.

Division of Ser. No. 880,035, Feb. 22, 1978, Pat. No. 4,215,281. This application Nov. 13, 1979, Ser. No. 93,516
Int. Cl.³ H03K *5/02*
U.S. Cl. 307—270
3 Claims

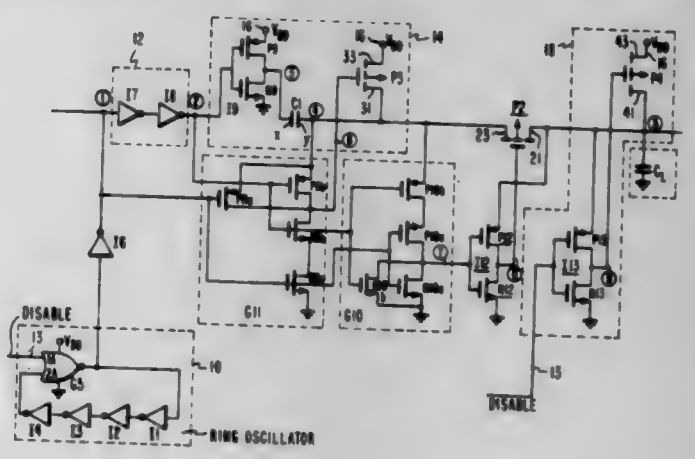


1. An output driver circuit formed as an integral part of a CMOS circuit chip including, in combination:
first and second high gain CMOS circuit amplifier sets, each including three pairs of first and second complementary field effect transistors, each pair connected in series between first and second voltage supply terminals, and means connecting a common junction of the transistors of each pair, except the third pair, to the common interconnected gates of the next succeeding pair of transistors in each set;
means for applying input signals in common to the gates of the first pair of transistors of the first set,
a common junction of the third pair of transistors of the first set being connected in common to the gates of the transistors of the first pair of the second set;
means for obtaining output signals from a common junction of the transistors of the third pair of transistors in said second set and the common junction of the transistors of the third pair of transistors of said first set; and
control means responsive to a control signal and coupled to the first pairs of transistors in each amplifier set for disabling said first pairs when said control signal is in a first condition and for enabling said first pairs when said control signal is in a second condition.

4,344,003
LOW POWER VOLTAGE MULTIPLIER CIRCUIT

Joseph W. Harmon, East Brunswick, N.J., and James H. Atherton, Freeport, Ill., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,928
Int. Cl.³ H02M *3/155;* H03K *5/02, 17/687*
U.S. Cl. 307—296 A
8 Claims



1. The combination comprising:
a capacitor having first and second terminals;
an inverter having first and second power terminals for the application thereto of first and second operating voltages, respectively, and having an input and an output;
means connecting the output of the inverter to said first terminal of said capacitor;
input means for applying input signals to said input of said inverter for switching the voltage produced at its output between two levels corresponding to said first and second voltages;
first and second transistors; each transistor having first and second electrodes defining the ends of a conduction path and a control electrode;
means connecting the conduction path of said first transistor between the second terminal of said capacitor and said second power terminal;
means connecting the conduction path of said second transistor between said second terminal of said capacitor and a circuit output terminal;
means responsive to said input signals, said means being coupled to the control electrodes of said first and second transistors for: (a) in response to input signalsof one transition, first turning-off said first transistor, and then, secondly, switching the voltage produced at said output of said inverter from said first to said second level, and concurrently, turning-on said second transistor; and (b) in response to said input signals making a second transition

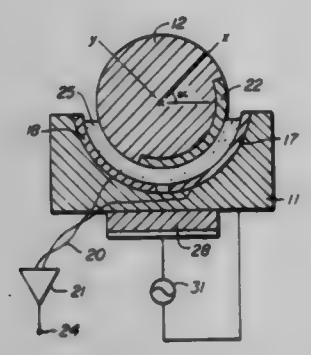
opposite to said one transition, turning-off said second transistor and then turning-on said first transistor.

4,344,004

DUAL FUNCTION TRANSDUCER UTILIZING DISPLACEMENT CURRENTS

Shigeo Okubo, Menlo Park, Calif., assignor to Design Professionals Financial Corp., San Francisco, Calif.

Filed Sep. 22, 1980, Ser. No. 189,546
Int. Cl.³ H04R *19/00*
U.S. Cl. 307—400 **11 Claims**



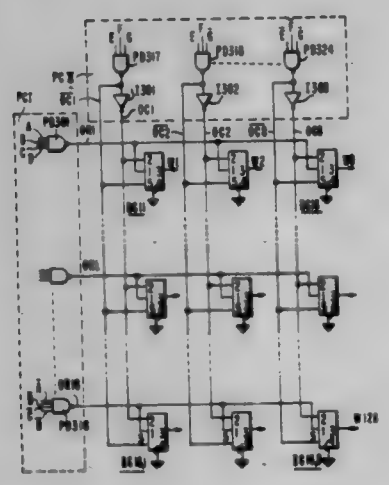
1. Apparatus for detecting the position of a mass comprising:
a base;
a mass disposed above the base and ohmically separated from the base;
means for periodically inducing relative motion between the mass and the base;
at least one field means disposed on one of the base or the mass for generating an electric field; and
a plurality of electrically conductive means at least one of which is disposed on the other of the base or the mass to interact with the field means, the interaction of the at least one electrically conductive means with the field means inducing a displacement current in at least one of the electrically conductive means, the displacement current being related to the position of the mass.

4,344,005

POWER GATED DECODING

Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,363
Claims priority, application United Kingdom, Jul. 18, 1978, 30169/78
Int. Cl.³ H03K *19/177, 19/094, 19/21*; G11C *7/00*
U.S. Cl. 307—463 **13 Claims**



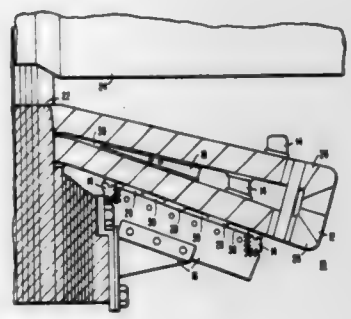
1. In a matrix decoder for decoding N variables wherein X of the N variables are decoded separately to produce Q outputs and the remaining N−X variables are decoded separately to produce P outputs, an improved buffer decoder stage for logically combining a selected one of the Q outputs with selected one of the P outputs comprising:
a first insulated-gate field-effect transistor (IGFET) of first conductivity type, and second and third IGFETs of second conductivity type, each IGFET having a conduction path and a control electrode;
means connecting the conduction path of said first IGFET between a first power terminal and an output terminal;
means connecting the conduction paths of said second and third IGFETs in parallel between said output terminal and a second power terminal;
means connecting the control electrodes of said first and second IGFETs to an input terminal;
means for applying said selected Q output to said input terminal;
means for applying said selected P output to said first power terminal;
means for applying a reference potential to said second power terminal; and
means for applying to the control electrode of said third IGFET the complement of the signal applied to said first power terminal.

4,344,006

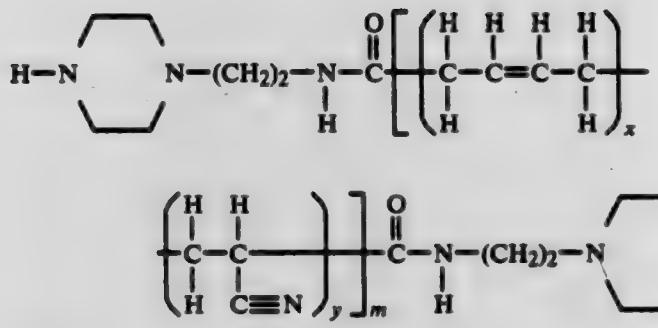
EPOXY-ELASTOMER LOW TEMPERATURE CURABLE, SOLVENTLESS, SPRAYABLE, STATOR WINDING ADHESIVE-BRACING COMPOSITIONS

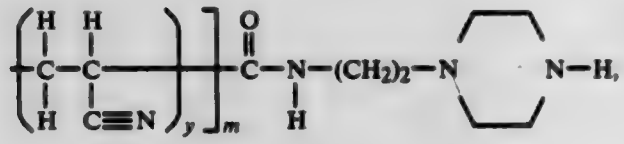
Morris A. Mendelsohn, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 134,730, Mar. 28, 1980, Pat. No. 4,298,656. This application Jun. 29, 1981, Ser. No. 278,523
Int. Cl.³ H02K *15/12*
U.S. Cl. 310—43 **7 Claims**



6. A turbine generator comprising a stator core assembly, a rotor assembly mounted to rotate within the stator core assembly, and a coated stator end winding assembly, the improvement consisting of the stator end winding assembly coating, which is effective to brace the end winding assembly, said coating comprising the cured admixture of:
(1) 100 parts by weight of diglycidyl ether of bisphenol A epoxy resin having an epoxy equivalent weight of between about 160 and about 260;
(2) 0 to about 30 parts by weight of a diglycidyl ether of an aliphatic diol having from 2 to 12 carbon atoms and a viscosity of between about 5 cps. and about 100 cps. at 25° C.;
(3) 0 to about 8 parts by weight of a coloring pigment;
(4) about 0.5 to about 4.0 parts by weight of SiO_2 thixotropic agent;
(5) about 100 to about 200 parts by weight of a secondary amine terminated butadiene/acrylonitrile reactive liquid polymer having a viscosity at 27° C. of between 150,000 cps. and 200,000 cps., and having the chemical formula:





where x=3 to 7, y=1, and m=7 to 13;

(6) 0 to about 40 parts by weight of a plasticizer for the butadiene/acrylonitrile polymer, having a molecular weight of over about 200;

(7) about 20 to about 40 parts by weight of an amine terminated curing agent not containing cyanoethylene chain segments; and

(8) 0 to about 8 parts by weight of a BF_3-amine complex curing agent.

4,344,007

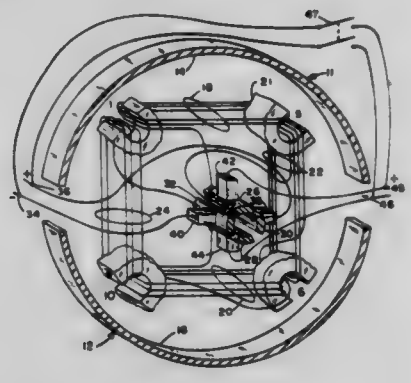
DIRECT CURRENT MOTOR AND GENERATOR

Dallas B. Brown, 1416 Pratt Ave., Huntsville, Ala. 35801

Continuation-in-part of Ser. No. 926,894, Jul. 21, 1978, abandoned. This application Jun. 27, 1980, Ser. No. 163,864

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—46 **1 Claim**



1. A direct current device comprising:

at least one pair of oppositely positioned, stationary, magnetic field poles:

a rotatable circular armature frame and an even number of at least four equal angularly spaced winding slots positioned about said frame;

a circular commutator rigidly connected to said armature frame, and having a like number of insulated commutator segments equally angularly oriented around said commutator;

at least two pairs of coils of first and second coils to the pair;

the first and second coils of a pair being positioned generally in parallel planes, lying on opposite sides of the center line of said commutator and armature frame, and each coil being wound through a pair of said slots, the coils of a said pair being electrically connected together and to a pair of commutator segments lying diametrically on opposite sides of of said commutator, said last-named segment lying along a line which intersects said planes at approximately equal angles;

a first pair of diametrically opposed brushes adapted to make sliding contacts with at least one commutator segment per brush, and means for applying a source of direct current potential between said brushes; and

a second set of diametrically opposed brushes positioned angularly between said first-named brushes and adapted to make sliding contacts with at least one commutator segment per brush, and means for obtaining an output potential from across said second set of brushes.

4,344,008

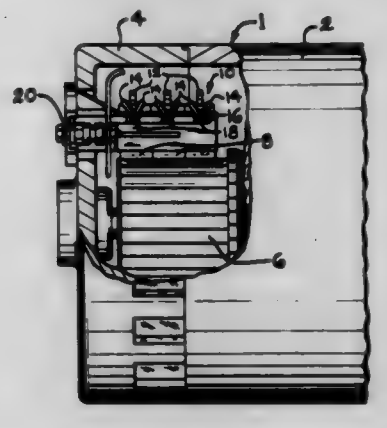
BRUSH SPRING TENSION ADJUSTMENT FOR DYNAMOELECTRIC MACHINE

Jeffrey T. Major, Cygnet; Nelson S. Gibson, III, and Jerry L. Young, both of Toledo, all of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Apr. 30, 1980, Ser. No. 145,112

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—242 **10 Claims**



1. A removable brush holder for use in a dynamoelectric machine having an end frame and an armature contact surface and means for retaining said brush holder in operative position adjacent to said armature contact surface, comprising:

means for making electrical contact to said brush holder;

a bus bar for making electrical contact from said brush holder to brushes of said brush holder;

a brush box for slidably retaining said brushes;

adjustable spring means for urging said brushes against said armature contact surface;

said adjustable spring means including wound spring mounted upon a shaft of a lever and adapted to press against said brushes;

said shaft being rotatably mounted in said brush holder and having a portion cooperating with an intermost coil of said wound spring;

said shaft being provided with means for retaining said shaft in one of at least two angularly spaced positions.

4,344,009

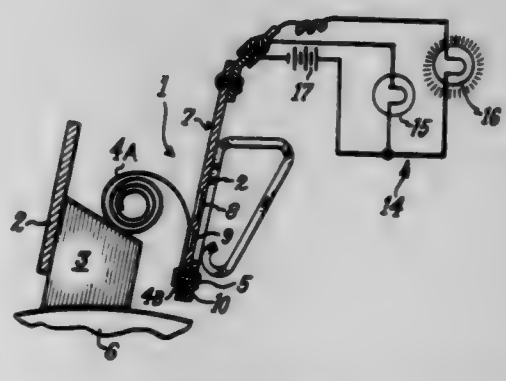
BRUSH WEAR INDICATOR FOR A DYNAMOELECTRIC MACHINE BRUSH

Kenneth R. Reynolds, North East, Pa., assignor to General Electric Co., Schenectady, N.Y.

Filed Sep. 4, 1980, Ser. No. 183,896

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—242 **6 Claims**



1. A brush wear indicator comprising a brush holder for supporting a brush in sliding relationship thereto, a self-winding spring having one of its ends mounted in fixed position relative to the brush holder and having a coiled portion that is operable to apply a biasing force to a brush supported in said holder thereby biasing one end of the brush into engagement with a rotatable electrical conductor positioned adjacent to the

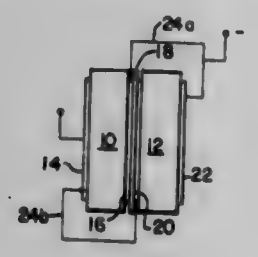
holder, in combination with a circuit board comprising a dielectric member, a plurality of electrical contacts mounted at spaced points on said dielectric member, a plurality of electric terminals mounted at spaced points on said dielectric member, and electric circuit means connected to complete separate circuits between each of said contacts and a respective one of said terminals associated therewith, all of said contacts being positioned to be engaged by said spring responsive to the spring being extended to apply a biasing force to a relatively unworn brush supported in said holder and at least some of said contacts being positioned to be sequentially disengaged from the spring responsive to predetermined degrees of brush wear occurring that enable the spring to wind up and bend away from said contacts, and signal means electrically connected to said terminals and operable to indicate a different predetermined degree of brush wear responsive to said spring moving out of engagement with each of the respective contacts.

4,344,010

ACCELERATION RESISTANT COMBINATION OF OPPOSITE-HANDED PIEZOELECTRIC CRYSTALS

John R. Vig, Colts Neck, and Arthur D. Ballato, Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 19, 1979, Ser. No. 86,504
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—361 19 Claims



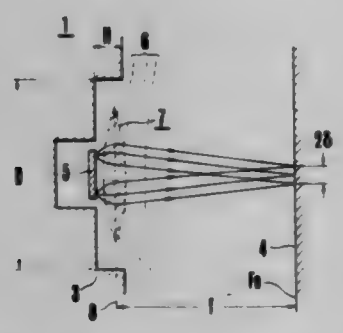
1. A composite crystal structure comprising a left and right handed pair of crystals positioned adjacent one another and electrically coupled to each other, one of said crystals having three axes disposed in anti-parallel relationship with respect to the corresponding axes of the other crystal whereby the effect of acceleration in all directions on the resonant frequency of the composite structure is minimized.

4,344,011

X-RAY TUBES

Tadashi Hayashi, Mobara, and Setsuo Nomura, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,268
Claims priority, application Japan, Nov. 17, 1978, 53-141157
Int. Cl.[3] H01J *35/00, 29/46*
U.S. Cl. 313—57 5 Claims



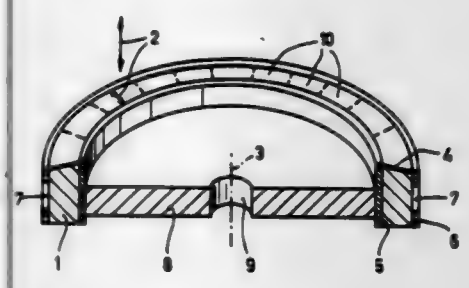
1. An X-ray tube for producing a minute focused spot of high current density comprising a cathode electrode including a filament for emitting electrons and a focusing electrode having a focusing groove adapted to contain said filament, and an anode electrode opposing said cathode electrode adapted to be maintained at a high potential which is positive relative to said filament, wherein a relatively large electron emitting region of said filament facing said anode electrode is formed as a substantially flat surface, and wherein said filament is disposed at a predetermined depth of said focusing groove, the depth being determined as relatively small compared to the width of said focusing groove, a portion of said anode electrode upon which electrons collide being positioned in a focal plane of a cathode lens which is formed by said filament, said focusing electrode and said anode electrode, said cathode lens having a weak focusing action with a focal length substantially equal to the distance between said anode electrode and said filament to produce a minute focused spot of high current density.

4,344,012

ANODE DISC FOR A ROTARY-ANODE X-RAY TUBE

Horst Hübner, Kesselstrasse 40; Bernhard Lersmacher, Schloßweiherstrasse 31, both of 5100 Aachen; Hans Lydtin, Am Goepelschacht 9, 5190 Stolberg, and Rolf Wilden, Brandstrasse 56, 5106 Roetgen, all of Fed. Rep. of Germany

Filed Mar. 11, 1980, Ser. No. 129,501
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910138
Int. Cl.[3] H01J *35/04*
U.S. Cl. 313—60 11 Claims



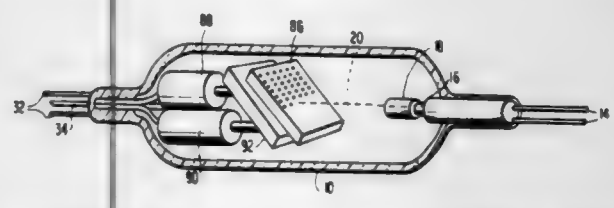
1. An anode disc for a rotary-anode X-ray tube, comprising a supporting body connected to a ring of pyrographite which is concentric with an axis about which the disc is rotated in operation, said ring having a surface forming a focal path and surfaces of higher and lower thermal conductivity, characterized in that the surfaces of higher thermal conductivity extend parallel to the axis of rotation.

4,344,013

MICROFOCUS X-RAY TUBE

Robert S. Ledley, 1022 Lagrande Rd., Silver Spring, Md. 20903

Continuation-in-part of Ser. No. 87,374, Oct. 23, 1979, Pat. No. 4,281,269, which is a continuation-in-part of Ser. No. 791,328, Apr. 27, 1977, abandoned. This application Jul. 27, 1981, Ser. No. 286,827
Int. Cl.[3] H01J *35/08*
U.S. Cl. 313—60 32 Claims



1. In a reusable microfocus X-ray tube adapted to generate a relatively large number of X-rays in a relatively short period of time using a narrowly focused electron beam, said microfocus X-ray tube comprising:

(a) first means for producing a dense, narrow electron beam;

(b) a target anode; and

(c) second means for moving said target anode so that it is stationary during production of X-rays but a fresh portion of the surface of said target anode is presented to the

electron beam each time the X-ray tube is used, the improvement wherein said X-ray tube further comprises:

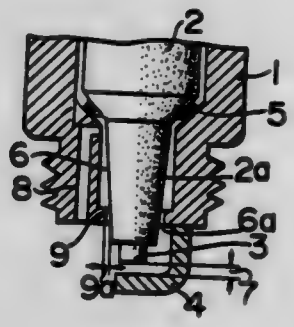
(d) third means for collecting charged particles boiled off said target anode by the electron beam.

4,344,014

IGNITION SPARK PLUG

Toshiharu Iwata, Aichi, and Tadashi Hattori, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Division of Ser. No. 892,137, Mar. 31, 1978, Pat. No. 4,267,482.
This application Dec. 8, 1980, Ser. No. 214,029
Claims priority, application Japan, Apr. 7, 1977, 52-40128; Apr. 21, 1977, 52-46533; Aug. 5, 1977, 52-94426
Int. Cl.³ H01T *13/20*
U.S. Cl. 313—143 **5 Claims**



1. A spark plug for use with a spark ignition-type internal combustion engine which has a combustion chamber,

said spark plug comprising:

a tubular metal plug body having a longitudinal bore with an open end;

an insulator having a leg portion extending centrally within said plug body and out through said open end;

a ring of packing mounted in said plug body distally of said open end, said insulator leg portion extending through said ring of packing and being supported upon said plug body via said ring of packing material;

said plug body bore, axially outwardly of said ring of packing to said open end being radially oversize relative to said insulator leg portion axially outwardly of said ring of packing to said open end, thereby defining an annular space within said plug body bore, extending from said ring of packing to said open end;

a center electrode extending from within said insulator leg portion to axially outwardly of said open end so as to be directly exposed, in use, to said combustion chamber;

a ground electrode mounted on said plug body and extending therefrom axially outwardly of said open end and laterally into gapped adjacency with said center electrode;

means defining at least one passageway formed in said plug body, said at least one passageway having:

a first portion extending parallely of said center electrode, one end thereof being positioned for open communication, in use, with said engine combustion chamber,

and

a second portion extending transversely of said center electrode, one end thereof communicating with a respective other end of said first portion and another end thereof being in open communication with said annular space adjacent said ring of packing; and

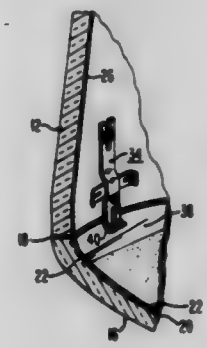
a restrictor of ring shape provided at said open end for restricting the flow of a fresh mixture for combustion to said annular space from said open end, said open end being restricted by a restriction gap thereby defined between said center electrode and said restrictor which, in use, causes some burned gas to remain within said annular space near the restriction gap when such fresh mixture for combustion is introduced to said annular space through said at least one passageway.

4,344,015

SCREEN CONTACT MEANS FOR A CATHODE RAY TUBE

Frank D. Marschka, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 18, 1980, Ser. No. 179,154
Int. Cl.³ H01J *29/28, 29/88, 29/90*
U.S. Cl. 313—466 **5 Claims**



1. A cathode ray tube including an envelope comprising a funnel portion and a faceplate sealed together with a frit seal,

an electron gun within a neck portion of said funnel,

an electrical terminal extending through said funnel adjacent to said seal,

a conductive coating on the interior surface of said funnel,

a phosphor screen layer on a first portion only of said faceplate,

an aluminum conductive layer on said phosphor screen layer and on at least a portion of the remaining area of said faceplate not covered by said phosphor screen, that portion of said aluminum layer on said remaining faceplate portion constituting a contact area for said phosphor screen,

a screen contact assembly comprising:

(a) a relatively stiff conductive strip member attached at a proximal end thereof to said terminal with a distal end thereof being disposed adjacent to said contact area of said aluminum layer,

(b) a first relatively flexible contact member attached at a proximal end thereof to said distal end of said strip member, and

(c) a second relatively flexible contact member comprising an elongated element disposed orthogonally to and attached at its midpoint to said strip member, said second contact member having two distal ends which are in spring pressure contact with said conductive coating on said funnel; and

a foil member attached to said screen contact assembly and pressed against said contact area of said aluminum layer by spring pressure of said first flexible contact member.

4,344,016

FLUORESCENT LAMP WITH SILICON DIOXIDE COATING

Roland Hoffmann, and Ernst Panofski, both of Augsburg, Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft fur elektrische Gluhampen mbH, Munich, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 123,962
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908890
Int. Cl.³ H01J *61/35;* B05D *5/06*
U.S. Cl. 313—489 **8 Claims**

1. An improved low pressure mercury vapor discharge lamp, comprising a glass envelope having an electrode at each end with an inner wall phosphor coating substantially completely covering a coating of silicon dioxide SiO_2 which is between the phosphor coating and the envelope,

the improvement comprising the SiO_2 in said coating being in the form of SiO_2 particles having a particle size between

about 2 and 100 nm and said SiO_2 particles containing coating being in an amount between 0.05 and 0.7 mg of



SiO_2 particles in said coating per square centimeter of glass envelope which is coated.

4,344,017

CATHODE RAY TUBE USED AS LIGHT SOURCE

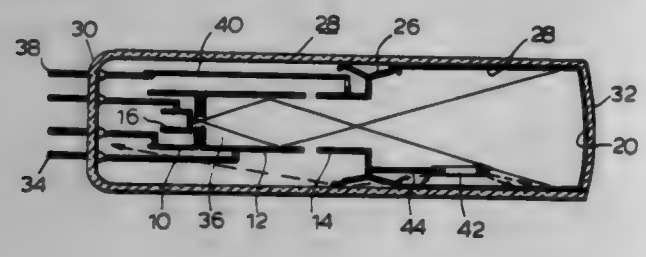
Eisyo Nosaka, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,544

Claims priority, application Japan, May 8, 1979, 54-55918; Dec. 17, 1979, 54-175223[U]

Int. Cl.³ H01J *29/46, 29/56*

U.S. Cl. 315—16 **4 Claims**



1. A cathode ray tube for use as a light source, comprising an electron gun formed of a cathode electrode for emitting an electron beam, a first grid electrode, a second grid electrode having an axial length greater than the inside diameter thereof, and a third grid electrode, and an envelope means enclosing said electron gun and grid electrodes and having a phosphor screen constituting one end of said envelope means opposed to said electron gun downstream of said grid electrodes, said third grid electrode being electrically connected to said phosphor screen, a first voltage supply means connected to said cathode electrode for causing said cathode to emit a current sufficient to cause said phosphor screen to luminesce with the desired luminescence, a further voltage supply means connected to said second and third grid electrodes for applying to said third grid electrode a voltage as high as possible for the desired luminescence of said screen and for applying to said second grid electrode a voltage substantially less than the voltage applied to said third grid electrode, the length of said second grid electrode being sufficient for, at the voltages of said second and third grid electrodes, forming with said third grid electrode an electron lens for focussing said electron beam one before said beam reaches said phosphor screen and then diverging said beam for just filling a predetermined area of said screen with the diverged beam at the desired luminescence.

4,344,018

HIGH PRESSURE METAL VAPOR DISCHARGE LAMP

Akio Inada, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,542

Claims priority, application Japan, Jun. 18, 1979, 54-75716

Int. Cl.³ H01J *7/44, 13/46, 19/78, 29/96*

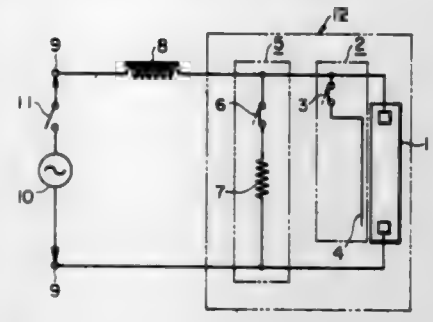
U.S. Cl. 315—47 **6 Claims**

1. A starting device for a high pressure metal vapor discharge lamp which includes an inner envelope containing therein spaced electrodes, and an outer envelope surrounding said inner envelope, comprising:

(a) a first starting aid for lowering the starting voltage comprising a conductor disposed adjacent to the outer wall of said inner envelope;

(b) a first thermal switch coupling said conductor to one of said electrodes;

(c) and a second starting aid for generating a high voltage pulse comprising a resistive element and a second thermal switch coupled between said electrodes;



(d) both of said first and second starting aid circuits disposed within said outer envelope; and

(e) the reset time of said first thermal switch selected to be shorter than the reset time of said second thermal switch, whereby said second starting aid will not be able to generate a high voltage pulse at a time when said first starting aid is not operating, thereby avoiding the dangers of dielectric breakdown within said discharge lamp.

4,344,019

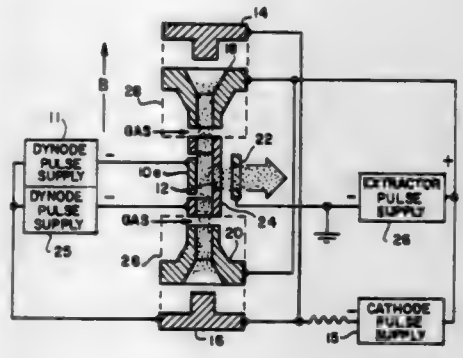
PENNING DISCHARGE ION SOURCE WITH SELF-CLEANING APERTURE

Basil F. Gavin, Berkeley; Robert A. MacGill, Richmond, and Raymond K. Thatcher, El Cerrito, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 10, 1980, Ser. No. 205,398

Int. Cl.³ H01J *27/04*

U.S. Cl. 315—111.81 **14 Claims**



3. In apparatus adapted for producing an ion beam from a source of selected material that is normally in a solid state, said apparatus being adapted for operation in a magnetic field to produce a Penning discharge, the combination comprised of

first and second dynodes disposed opposite each other to define a space in between, said first dynode having said material and said second dynode having an aperture for said beam to exit from said space,

means for maintaining a support gas in said space,

two opposing cathodes one at each end of said space for producing high power pulsed electron beams directed into said space,

two accelerating anodes, one adjacent each cathode for accelerating said electron beams into said space,

means for supplying an operating pulse to said cathodes for a predetermined period,

means for supplying an operating pulse to said first dynode for a first major part of said predetermined period,

means for supplying an operating pulse to said second dy-

node for a second minor part of said predetermined period,

whereby said second dynode functions as a sputtering electrode during said second minor part of said predetermined period for removal of material sputtered from said first dynode and deposited on said second dynode during said second minor part of said predetermined period.

4,344,020

ELECTRONIC FLASH DEVICE CAPABLE OF AUTOMATIC FLASH DURATION ADJUSTMENT

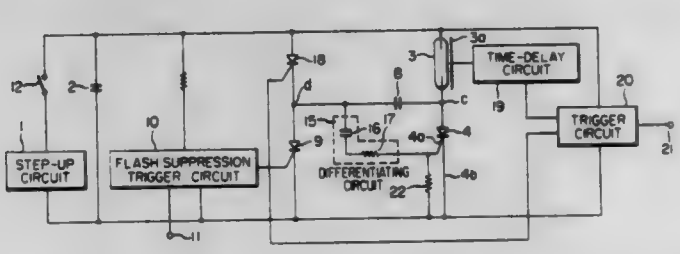
Katsumi Horinishi, Hashimoto, Japan, assignor to West Electric Co., Ltd., Osaka, Japan

Filed Sep. 4, 1980, Ser. No. 184,043

Claims priority, application Japan, Sep. 4, 1979, 54-113730; Sep. 4, 1979, 54-113731

Int. Cl.³ H05B *41/34*

U.S. Cl. 315—241 P **3 Claims**



1. An electronic flash device capable of automatic flash duration adjustment comprising

a flash lamp for converting the energy stored on a main capacitor into light,

a main switching element connected in series to said flash lamp and having a gate terminal,

a gate circuit connected to said gate terminal on said main switching element for controlling the conduction of said main switching element,

a commutation capacitor for commutating said main switching element so as to interrupt the discharge through said flash lamp after said flash lamp has been lighted,

a first auxiliary switching element connected to said commutation capacitor and adapted to be switched into the conduction state in response to the triggering signal produced when said flash lamp is lighted, thereby discharging said commutation capacitor so as to commutate said main switching element,

a time-delay circuit interconnected between a trigger gate for triggering said flash lamp and a trigger electrode of said flash lamp, and

a second auxiliary switching element connected in series to said main discharge capacitor through said commutation capacitor and said main switching element and adapted to be switched into the conduction state in response to the trigger signal from said trigger circuit, thereby switching said main switching element into the conduction state so as to recharge said commutation capacitor.

4,344,021

SYSTEM FOR COMPENSATING FOR TRANSFER CHARACTERISTIC VARIATIONS OF ELECTRON GUNS

Loren B. Johnston, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

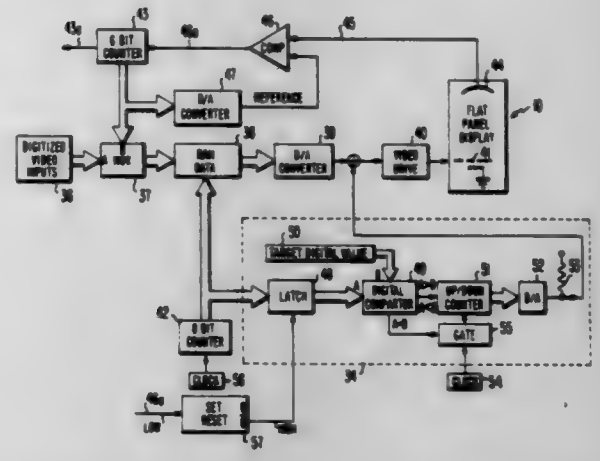
Filed Jul. 21, 1980, Ser. No. 170,742

Int. Cl.³ H01J *29/52*

U.S. Cl. 315—383 **16 Claims**

1. In a system for biasing the grids of electron guns in a display device by providing digital signals representative of brightness levels for biasing said electron guns, a circuit for establishing the values of the limits of said brightness levels to compensate for variations in the transfer characteristics of said guns comprising:

means for receiving said digital signals and at least one target signal representative of at least one of said brightness levels and for providing a control signal having a polarity representative of the polarity of the difference between said digital signal and said target signal;



and means for providing an adjustment signal having a polarity in accordance with the polarity of said control signal and applying said adjustment signal to said grid so that said grid is biased in accordance with said selected brightness level.

4,344,022

LINEAR MOTOR

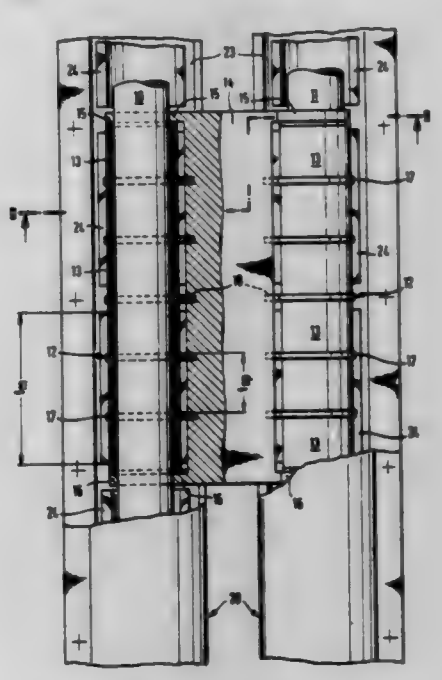
Johann von der Heide, Mönchsweiler, Fed. Rep. of Germany, assignor to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,122

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912531

Int. Cl.³ H02K *7/06*

U.S. Cl. 318—38 **12 Claims**



1. A linear motor unit comprising a stator, an armature mounted for travel along the length of said stator, said stator including an inner flux-carrying structure and an outer flux-carrying structure, said inner flux-carrying structure having an elongated rod; a plurality of pole areas (pitches/domains) constituted by sets of permanent magnets concentrically positioned within said outer flux-carrying structure and juxtapositioned in the direction of elongation of said rod, said permanent magnets of said sets within one pole area being radially magnetized in the same direction, the magnetic polarity of said successive pole areas alternating proceeding in the direction of armature travel from one of said pole areas to the next; and said armature being slidably positioned on said rod and carrying a plurality of coils spaced one from another in said direction of

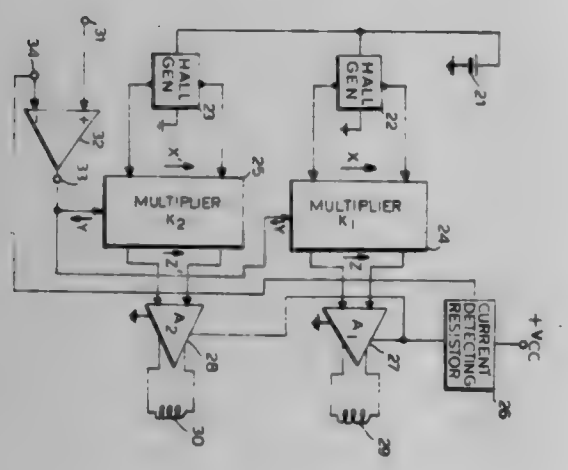
elongation and concentrically positioned within said sets of permanent magnets, said coils being energized periodically and in a cyclical sequence to provide a motive force for the movement of said armature along said rods.

4,344,023

DRIVE SYSTEM FOR A BRUSHLESS DC MOTOR

Nobuyoshi Yokobori, Osaka; Yoshiaki Igarashi, Ikoma, and Tetsuo Maeda, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 19, 1980, Ser. No. 208,477
Claims priority, application Japan, Nov. 24, 1979, 54-152325
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 6 Claims



1. A drive system for a brushless dc motor, comprising:

first and second generator means electrically displaced by 90° for generating position signals in differential mode by sensing an angular position of a permanent magnet rotor of said motor in such a manner that said position signals vary sinusoidally with respect to the position of said rotor;

first multiplier means having a first input terminal differentially coupled to said first generator means and a second input terminal for multiplying said position signal of said first generator means and a signal applied to said second input terminal thereof;

second multiplier means having a first input terminal differentially coupled to said second generator means and a second input terminal for multiplying said position signal of said second generator means and a signal applied to said second input terminal thereof;

a first driver amplifier for amplifying an output signal of said first multiplier means and applying an armature current to a first armature winding of said motor;

a second driver amplifier for amplifying an output signal of said second multiplier means and applying an armature current to a second armature winding of said motor;

current detector means for detecting a sum total of an absolute value of said armature current of said first and second armature windings; and

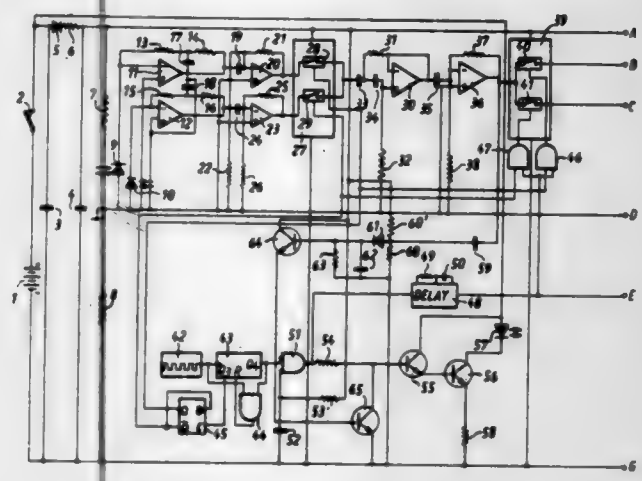
error amplifier means for amplifying the difference between an output signal of said current detector means and a torque control input, said error amplifier means being coupled to said second input terminals of said first and second multiplier means in parallel, whereby the magnitude of said armature current in total is determined by said torque control input, and the sharing rate of said armature current in total among said first and second armature windings is determined by said first and second generator means in accordance with said position signals.

4,344,024

DIGITAL CONTROL SYSTEM FOR AUTOMATIC-FOCUS CAMERAS

Istvan Cocron, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 166,093, Jul. 3, 1980, Pat. No. 4,314,187.
This application Jun. 11, 1981, Ser. No. 272,557
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2928142
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—640 7 Claims



1. In a digital automatic focusing system for use in cameras and the like which utilizes

a clocked radiation transmitter emitting pulses of radiation with a fixed frequency, amplitude and pulse duration,

like first and second radiation receivers receiving the pulses and generating first and second received signals corresponding thereto, and

a signal processing network processing the first and second received signals so as to make them distinguishable from background radiation and electrical noise,

an improvement for converting the first and second received signals to digital signals comprising:

a first integrator connected to the signal processing network and responding to the first received signal after it has been processed therein and producing a first analog signal which is a time-integrated transformation of the first received signal;

a second integration connected to the signal processing network and responding to the second received signal after it has been processed therein and producing a second analog signal which is a time-integrated transformation of the first received signal;

a first comparator stage connected to the first integrator and having a first threshold value which is large as compared to pulse amplitude, the first comparator stage operating in a manner that a first digital input signal is produced which is characteristic of the first analog signal, with the first digital input signal being logically high when the first analog signal exceeds the first threshold value and being logically low otherwise;

a second comparator stage connected to the second integrator and having a second threshold value which is large as compared to pulse amplitude, the second comparator stage operating in a manner that a second digital input signal is produced which is characteristic of the second analog signal, with the second digital input signal being logically high when the second analog signal exceeds the second threshold value and being logically low otherwise;

a first means cooperating with the first integrator so as to define an integration period over which time-integration takes place, which integration period is long as compared with pulse duration of the pulse emitted by the radiation transmitter;

a second means cooperating with the second integration so as to define a like integration period; and

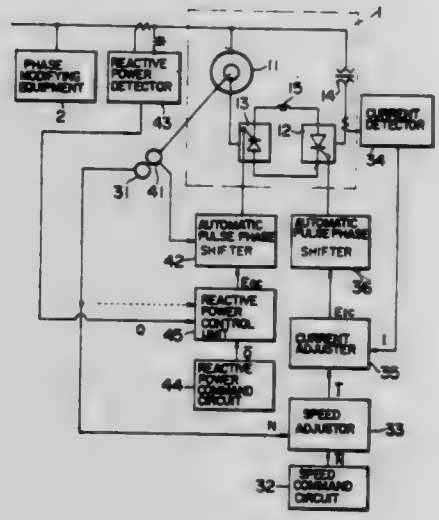
a secondary clock which is clocked in a fixed place and frequency relationship with respect to the transmitter, the secondary clock cooperating with the first means and the second means so as to clock the first digital input signal and the second digital input signal.

4,344,025

MOTOR CONTROL SYSTEM

Toshiaki Okuyama; Yuzuru Kubota; Hiroshi Nagase, all of Hitachi, and Katsunori Suzuki, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,725
Claims priority, application Japan, Sep. 4, 1978, 53-107617
Int. Cl.[3] H02P *5/40*
U.S. Cl. 318—729 9 Claims



1. A motor control system comprising:

a motor load equipment connected to an AC power source having a motor consuming power supplied from the AC power source and means connected to said motor including first and second converters connected in series for controlling the power to be consumed by the motor through control of the firing angle of said first and second converters;

phase modifying equipment connected to the power source and consuming a leading reactive power for compensating for a lagging reactive power at rated load running consumed by said motor load equipment;

a speed detector for detecting the speed of the motor;

a speed command circuit for providing a speed command signal for controlling the speed of the motor;

a speed adjustor for producing a current command value in accordance with a signal representing the difference between the speed detector output and the speed command signal;

a current detector for detecting the current flowing through said first and second converters;

a current adjustor for producing a first firing phase command signal in accordance with a signal representing the difference between the output of said current detector and the current command value;

a first automatic pulse phase shifter for controlling the firing phase of said first converter in response to said first firing command signal;

a second automatic pulse phase shifter for controlling the firing phase of said second converter;

a reactive power detector for producing an electrical signal corresponding to the reactive power consumed by said motor load equipment and/or said phase modifying equipment;

a reactive power command circuit for providing an electrical signal of a reactive power command value corresponding to that consumed by said motor load equipment in the rated load operation;

a reactive power control unit for applying a second firing phase command signal to said second automatic pulse phase shifter in accordance with a signal representing the difference between an electrical signal corresponding to said reactive power and said lagging reactive power command; and

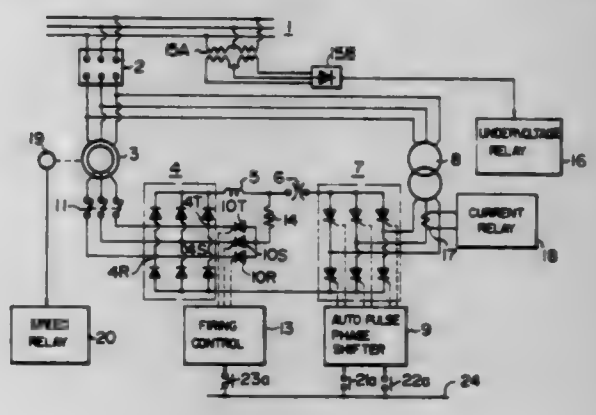
phase detector means for detecting a reference phase synchronized with the induced voltage of said motor, said second automatic pulse phase shifter being connected to receive the outputs of said reactive power control unit and said phase detector means to control the firing phase of said second converter.

4,344,026

STATIC SCHERBIUS SYSTEM

Takayuki Yoshioka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,558
Claims priority, application Japan, Mar. 5, 1980, 55/26648
Int. Cl.[3] H02M *1/18*
U.S. Cl. 318—806 5 Claims



1. A static Scherbius system comprising:

(a) an induction motor supplied with power from an AC power source;

(b) a multi-phase full-wave rectifier circuit of Gratz connection for rectifying the secondary voltage of said induction motor;

(c) an inverter converting the DC output from said full-wave rectifier circuit into an AC equivalent to feed back the same to said AC power source;

(d) a DC intermediate circuit connecting said full-wave rectifier circuit to said inverter;

(e) a smoothing reactor disposed in one of DC buses of said DC intermediate circuit for smoothing the direct current;

(f) at least two series circuits each including series connected resistor means and thyristor means and connected between an inverter-side terminal of said smoothing reactor and at least two of AC-side terminals of said full-wave rectifier circuit;

(g) service interruption detecting means for detecting service interruption by continuously monitoring the state of the AC power supply voltage of said AC power source; and

(h) a firing control circuit applying a DC gate signal to said thyristor means upon detection of service interruption by said service interruption detecting means and ceasing application of the DC gate signal in a predetermined period of time after recovery of said AC power supply voltage after the service interruption.

4,344,027

FREQUENCY REGULATOR FOR SYNCHRONOUS GENERATORS

Robert F. Karlicek, 1920 Camino Centroloma, Fullerton, Calif. 92633

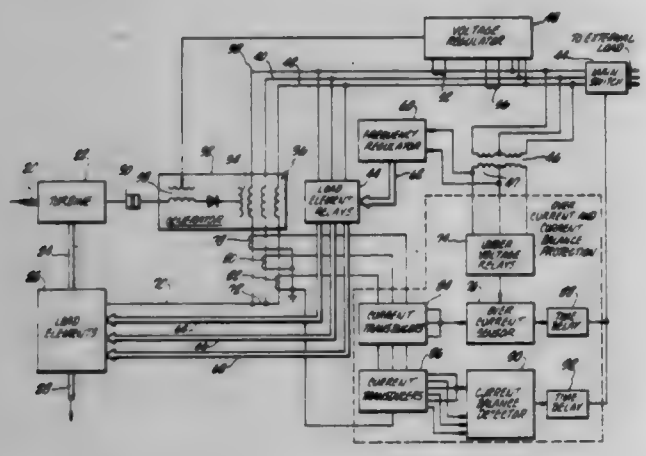
Filed Feb. 7, 1980, Ser. No. 119,581
Int. Cl.[3] H02P *9/00*
U.S. Cl. 322—7 11 Claims

1. A method for regulating the frequency of an alternating

current generator which is adapted to receive input mechanical power from a prime mover and which is adapted to provide output power to a variable remote load and to a controlled load, including the steps of:

determining the frequency of the generator output;

comparing the generator output frequency to a predetermined nominal frequency, said nominal frequency being fixed within a predetermined bandwidth range having an upper limit and a lower limit, the upper and lower limits being fixed with respect to generator output voltage, and



adjusting the power consumed by the controlled load by increasing the power consumption when the generator output frequency reaches said upper limit and by decreasing the power consumed by the controlled load when the generator output frequency reaches said lower limit, to thereby maintain the generator output frequency substantially at the nominal frequency within said predetermined bandwidth, said adjusting of the controlled load being after a predetermined applied time interval when the generator output frequency is outside the bandwidth range.

4,344,028

TESTING DEVICE FOR LOW-FREQUENCY AMPLIFIERS

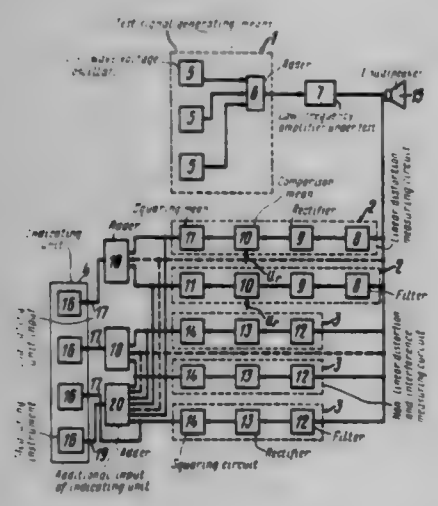
Mikhail U. Bank, ulitsa Sofiiskaya, 40, korpus 1, kv. 128, Leningrad; Valery I. Prozorov, ulitsa Sovetskaya, 94, kv. 21, Sarapul, and Nikolai A. Rubichev, pochtovoe otdelenie Mendeleeva, ulitsa Pionerskaya, 2, kv. 50, Moskovskaya oblast, all of U.S.S.R.

Filed Oct. 24, 1980, Ser. No. 200,599

Claims priority, application U.S.S.R., Oct. 24, 1979, 2824000

Int. Cl.³ G01R *27/00*

U.S. Cl. 324—57 N **2 Claims**



1. A testing device for low-frequency amplifiers, comprising:

sine-wave voltage oscillators having outputs intended for connection to the input of a low-frequency amplifier under test in order to generate a test signal including a plurality of components;

a first set of circuits intended for measuring linear distortion, said circuits of said first set comprising each a filter connected to an output of said low-frequency amplifier under test and tuned to the frequency of one of said components of said test signal, a rectifier, a comparison means designed for generating a signal proportional to the value of deviation of said component at this frequency from the desired value and a squaring means having an output, all of them connected in series;

a second set of circuits intended for measuring non-linear distortion and interference, said circuits of said second set comprising each a filter connected to the output of said low-frequency amplifier under test, a rectifier and a squaring means having an output, all of them connected in series;

said filters of said circuits of said second set being tuned to frequencies differing from said frequency components of said test signal;

an indicating unit having a plurality of inputs whose number is equal to the total number of parameters of said low-frequency amplifiers, that are to be checked, said inputs of said indicating unit being respectively connected to said outputs of said squaring means of said respective circuits of said first and second sets of circuits; and

adders whose number is equal to the number of parameters of said low-frequency amplifier, evaluated with the use of a member of components of its output signal, the outputs of said squaring means that are included into those of said circuits whose filters are tuned to the frequency components of the low-frequency amplifier output signal, characterizing one and the same parameter being connected to the respective inputs of said plurality of the inputs of said indicating unit through said adders.

4,344,029

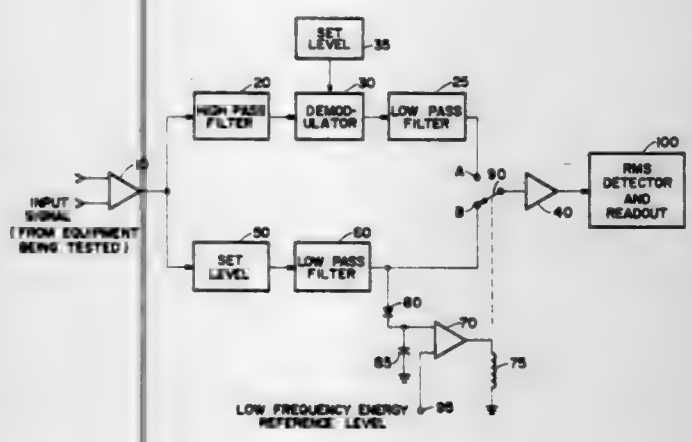
AUTOMATIC IM DISTORTION TEST SELECTOR

Richard C. Cabot, and Bruce E. Hofer, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 139,939, Apr. 11, 1980. This application May 11, 1981, Ser. No. 262,107

Int. Cl.³ G01R *27/00*

U.S. Cl. 324—57 R **16 Claims**



1. Apparatus for measuring distortion produced by electrical circuitry to which one of a plurality of different distortion test signals is applied, comprising

a plurality of distortion analyzers coupled to receive an output signal from the circuitry under test, each of said analyzers being configured for processing of a different one of said plurality of distortion test signals,

means coupled to the output of one distortion analyzer for determining the presence of a certain one of said test signals, and

means for switching the outputs of said analyzers in response to a determination that said certain test signal is present.

4,344,030

REMOTE DETECTOR OF FLAWS IN SURFACES USING MICRO-WAVES

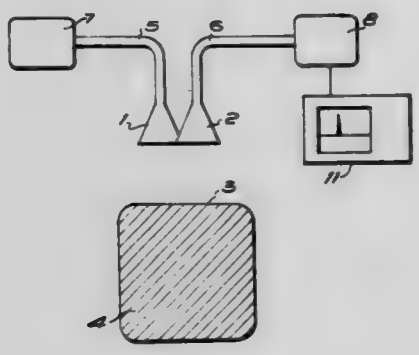
Alan P. Anderson, Sheffield, and John C. Jackson, Newark Notts, both of England, assignors to Lambda Industrial Science Limited, England

Filed Jan. 21, 1980, Ser. No. 113,970

Claims priority, application United Kingdom, Jan. 20, 1979, 7902132

Int. Cl.³ G01R *27/04*

U.S. Cl. 324—58.5 B 8 Claims



1. A non-destructive testing means for detecting flaws in a material surface moving relative to said testing means comprising

a transmitter of plane-polarised microwave radiation directing said radiation as an incident beam for scanning said surface therewith,

a receiver of plane-polarised microwave radiation selectively detecting beamed plane-polarised microwave radiation reflected from said surface in response to said incident beam on said surface,

said transmitter and receiver in their operative arrangement having their polarisation directions disposed perpendicular to each other such that the presence and absence of said flaws are indicated by, respectively, presence and absence of detection by said receiver of beamed reflected radiation plane-polarised perpendicular to said plane-polarisation of said incident beam.

4,344,031

METHOD AND DEVICE FOR VERIFYING SIGNALS, ESPECIALLY SPEECH SIGNALS

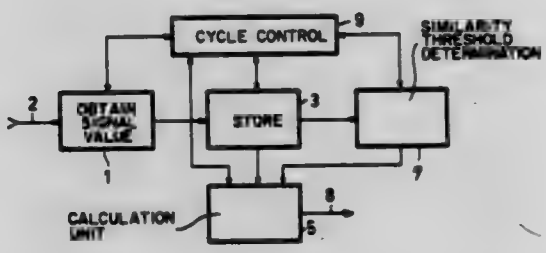
Michael Kuhn, Hamburg, and Ernst Bunge, Rheinbach, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 14, 1980, Ser. No. 149,869

Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920041

Int. Cl.³ G01R *23/16*

U.S. Cl. 324—77 R 12 Claims



1. A method of verifying a finite signal pattern with various features, each subject to quantitative variability, involving the following steps;

a. in a learning phase, supplying a predetermined number of signal patterns and for each characteristic drawing up a histogram giving the number of times that the characteristic concerned had a value within a range of values of a collection of adjacent value ranges applicable to the feature;

b. in a test phase, supplying the signal pattern to be verified and detecting the value for each of said characteristics in order to indicate the value range belonging to said feature within the collection appropriate to said feature;

c. multiplying the histogram values of the value ranges thus indicated for all said features of the signal to be verified to give an end product wherein every factor of said end product is different from zero; wherein said step further comprises:

d. in order to standarize a signal pattern supplied, multiplying the detected value of each feature by a factor $(1+e)$ where $e<<1$ to give a corrected value, and repeating this each time for all corrected values thus found until an aggregate value derived from the corrected values applying exceeds an aggregate threshold;

e. comparing said end product with a standard value in order to signal verification only if the standard value is exceeded.

4,344,032

METHOD AND ARRANGEMENT FOR TESTING THE CHARACTERISTICS OF INDUCTIVE PULSE GENERATORS

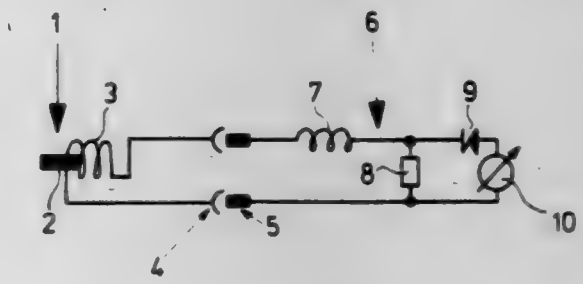
Jürgen Anlauf, Goppingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,901

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841289

Int. Cl.³ G01R *31/00, 1/38*

U.S. Cl. 324—158 MG 12 Claims



1. A device for testing the sensitivity of inductive pulse generators relative to a reference value within a low frequency range such as used to generate rpm feedback signals and the like, the device comprising inductive impedance connectable to such an inductive pulse generator and operative for deriving from the output voltage pulses produced by the inductive pulse generator an auxiliary signal whose value is proportional to the ratio of the amplitude and the frequency of the output voltage pulses produced by the inductive pulse generator; and indicator means connected to receive the auxiliary signal and operative in dependence upon the reference value for generating a quality characterization signal which is indicative of the sensitivity of the pulse generator.

4,344,033

VACUUM-ACTUATED TEST FIXTURE FOR PRINTED CIRCUIT BOARDS

Jeffrey P. Stowers, Mt. Sidney; Robert E. Stickle, Raphine, and Herbert B. Cash, Waynesboro, all of Va., assignors to Virginia Panel Corporation, Waynesboro, Va.

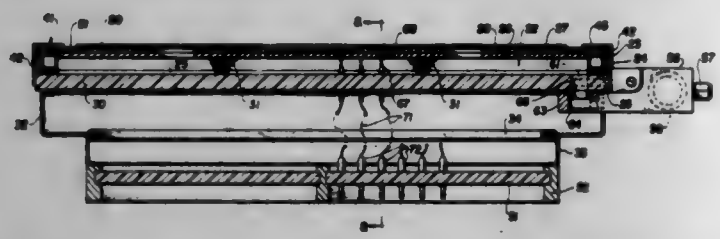
Filed Sep. 12, 1980, Ser. No. 186,462

Int. Cl.³ G01R *31/02, 15/12*

U.S. Cl. 324—158 F 14 Claims

1. A vacuum-actuated test fixture for a printed circuit board comprising a diaphragm assembly, said assembly including an elastic diaphragm body and a marginal rigid frame for said body, the diaphragm body having marginal edge portions

engaging around the top, sides and bottom of said frame and being secured thereto, a base plate supporting the diaphragm assembly and having a top face in contact with the portions of said diaphragm body engaged with the bottom of said frame, there being a vacuum chamber between the top of the base plate and the diaphragm body inwardly of said frame, means



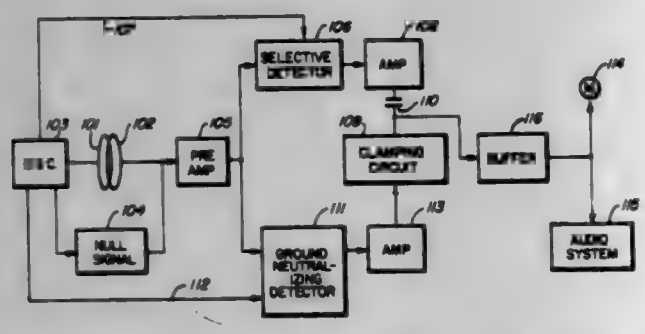
for establishing a partial vacuum within said chamber, and a diaphragm assembly capturing frame engageable over and around said assembly adjacent to said frame and serving to compress said portions of the diaphragm body engaging around the top, sides and bottom of the frame, and releasable means to secure said capturing frame in operative relationship with the diaphragm assembly.

4,344,034

SELECTIVE/GROUND NEUTRALIZING METAL DETECTOR

Byron B. Randolph, Jr., Phoenix, Ariz., assignor to Robert F. Gardiner, Phoenix, Ariz.

Filed May 5, 1980, Ser. No. 146,455
Int. Cl.³ G01V *3/11*
U.S. Cl. 324—329 **7 Claims**



1. A metal detecting system for detecting metal objects near the surface of the earth comprising:

a. an oscillator for generating an oscillator signal having a predetermined frequency;

b. transmitting means connected to said oscillator;

c. receiving means for receiving the signal transmitted by said transmitting means;

d. a first detector circuit connected to said oscillator and to said receiving means, said first detector circuit responsive to the detection of a metal object for producing at an output thereof a first detection signal having a polarity depending upon the Q of the object being detected;

e. a capacitor connected to said detector circuit to receive said first detection signal;

f. indicator means connected to said capacitor on a side thereof opposite said detector circuit;

g. a ground neutralizing detector circuit connected to said oscillator and to said receiving means, said ground neutralizing detector circuit responsive to the detection of a metal object, and adjusted to minimize the effects of ferromagnetic minerals, for producing a second detection signal;

h. a clamping circuit connected to the junction of said capacitor and said indicator means for clamping the output of said first detector circuit and preventing said first detection signal from being transmitted to said indicator means; and

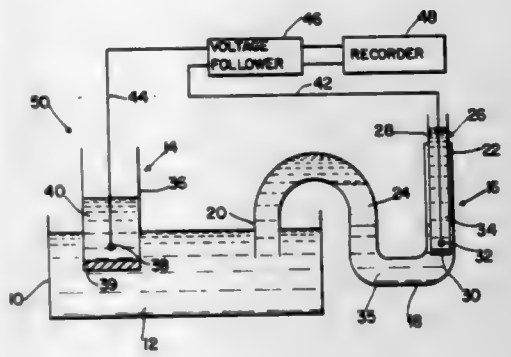
i. said clamping circuit also connected to said ground neutralizing detector and responsive to said second detection signal for unclamping the output of said first detector circuit to permit said first detection signal to be applied to said indicator means.

4,344,035

METHOD AND APPARATUS FOR DETERMINATION OF CHANGES IN THE SURFACE CHARGE OF MATERIALS

James C. Conti, East Northport; Eugene Findl, Amityville, and William Wang, Forest Hills, all of N.Y., assignors to Bi-oResearch Inc., Farmingdale, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,188
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—453 **4 Claims**



1. A method for detecting variations in the electrolytic composition of a liquid comprising

placing a conductive solid material in the liquid whereby a double layer is formed between the material and the bulk of the fluid;

placing a first passive sensor electrode in electrical communication with one side of said material and hence on one side of the double layer;

placing a second passive reference electrode in electrical communication with the bulk of the liquid on the other side of the double layer, but out of any contact with the liquid that would affect the double layer formed on said reference electrode at the same time there is an affect on the double layer formed on said solid material when the electrolytic composition of the liquid is changed;

determining the electrical potential between said electrodes at a reference time to establish a reference potential between said electrodes; and

comparing said reference potential with a later determined electrical potential and thereby obtaining the change to the transbarrier potential.

4,344,036

SKIP COUNT CLOCK GENERATOR

Housan Dakroub, Dearborn Heights, and David J. Concannon, Ypsilanti, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 24, 1980, Ser. No. 114,984
Int. Cl.³ H03K *3/72, 21/30*
U.S. Cl. 328—61 **7 Claims**

1. A clock generator for providing clock pulses at any of a plurality of frequencies by skipping selected pulses in a train of pulses, in which the desired train of clock pulses has a frequency

$$f_o = \frac{(N - M)}{N} f_1,$$

where N represents a number of pulses in a predetermined clockpulse cycle, M represents a number of pulses to be skipped, f_1 is the basic frequency of an independent oscillator and f_o is the desired frequency, comprising:

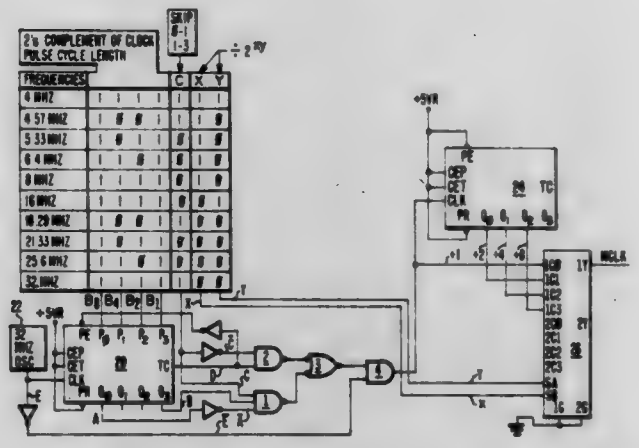
means for generating clock pulses at a basic frequency corresponding to f_1;

counting means coupled to count a number of clock pulses N

above a preset minimum value to establish a clock pulse cycle and provide an output pulse when said N pulses are counted;

means coupling said output pulse to reset said counter to said minimum value and thereby enable a count of N pulses to be repeated to establish N as the number of pulses in said clock pulse cycle;

a source of pulse place skip signals to establish the value M indicating the number of pulses to be skipped;



gating means coupled responsive to said output pulse and said pulse place skip signal to provide a logic pulse designating a pulse to be skipped; and

additional gating means coupled responsive to said logic pulse and to said clock pulses at said basic frequency f_1 to cause a pulse from among said N pulses to be skipped in order to generate a train of pulses having said desired frequency f_o.

4,344,037

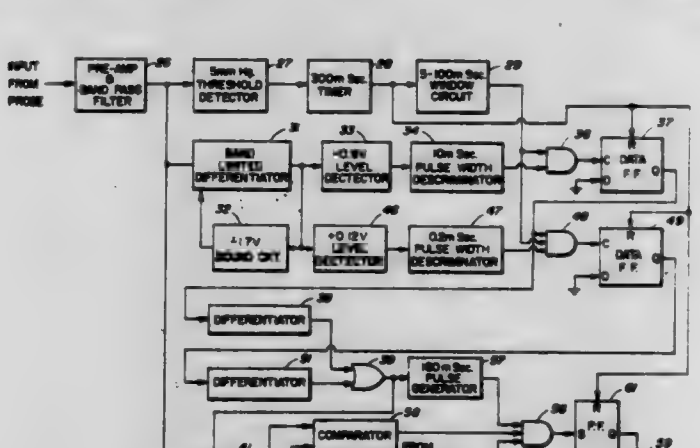
SYSTEM AND METHOD FOR ANALYZING TONOSIGNALS

Charles W. Ragsdale, Garden Grove, Calif., assignor to Cavitron Corporation, Palo Alto, Calif.

Division of Ser. No. 839,584, Oct. 5, 1977, Pat. No. 4,164,863. This application Feb. 2, 1979, Ser. No. 8,945

Int. Cl.³ H03K *5/153*; G01R *19/165*

U.S. Cl. 328—114 **7 Claims**



1. In a system for analyzing the waveform of an input signal: a threshold detector, means for coupling said input signal to said threshold detector, a timer coupled to the output of said threshold detector, a time window circuit coupled to the output of said timer, a differentiator circuit for producing an output signal corresponding in level to the magnitude of the slope of said input signal, means for coupling said input signal to said differentiator, level detector means coupled to the output of said differentiator for detecting a change of slope of said waveform beyond a predetermined value, a pulse width discriminator coupled to the output of said level detector means, and means responsive to the outputs of both said time window circuit and said pulse width discriminator for providing a utilization signal corresponding substantially to the level of said input signal at the time of said change in slope.

4,344,038

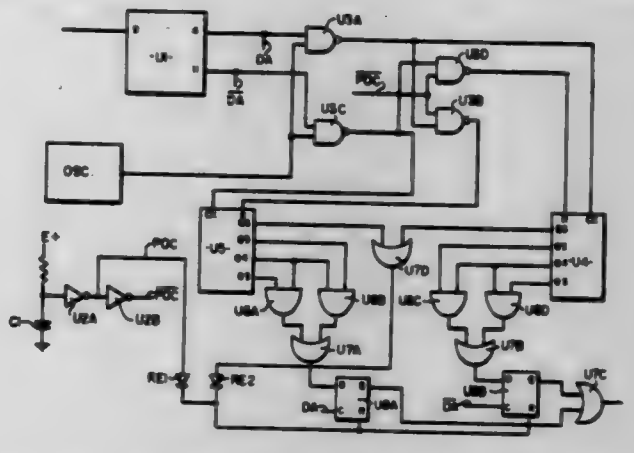
LOW FREQUENCY TONE DETECTOR

Robert D. Streeter, Fort Wayne, Ind., assignor to The Magnavox Company, New York, N.Y.

Filed May 27, 1980, Ser. No. 153,813

Int. Cl.³ H03K *5/26*

U.S. Cl. 328—138 **8 Claims**



1. Apparatus for detecting the presence in a circuit of a plurality of signals including a signal having a predetermined low frequency and a signal with half the frequency of said predetermined low frequency signal, said apparatus comprising,

signal generating means generating a signal of a known frequency; and

detection signal means connected to said signal generating means and said circuit for producing a detection signal, said detection signal means producing said detection signal in response to receiving both an output signal from said signal generating means and a signal from said circuit indicating the end of a half cycle of either said predetermined low frequency signal or said signal having half said predetermined low frequency.

4,344,039

DEMODULATING CIRCUIT FOR SELF-CLOCKING-INFORMATION

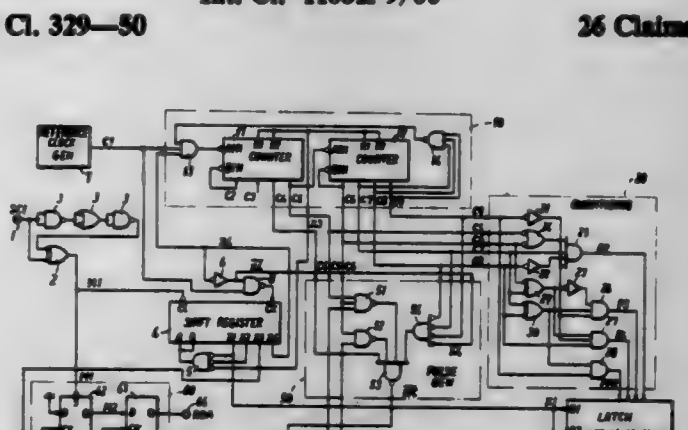
Youji Sugiura, Gifu, and Satoshi Nishimura, Kagamihara, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 5, 1980, Ser. No. 127,432

Claims priority, application Japan, Mar. 13, 1979, 54-29661; Aug. 31, 1979, 54-111920

Int. Cl.³ H03K *9/06*

U.S. Cl. 329—50 **26 Claims**



1. A circuit for demodulating a self-clocking-information

signal comprising a rectangle wave pulse train obtained by modulating a digital data signal of the logics one and zero such that the signal reversion periods become two or more predetermined different lengths, comprising:

period determining means for determining which one of said two or more different length periods by measuring each said signal reversion period of said rectangle wave pulse train,

pulse generating means responsive to the output of said period determining means for generating pulses which correspond to and uniquely identify said two or more predetermined different length periods, and

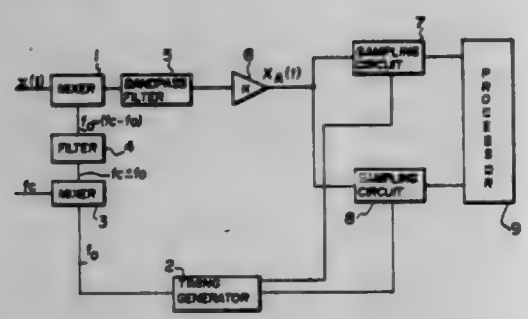
clock pulse regenerating means responsive to the pulses from said pulse generating means for regenerating clock pulses for demodulating said digital data.

4,344,040

METHOD AND APPARATUS FOR PROVIDING THE IN-PHASE AND QUADRATURE COMPONENTS OF A BANDPASS SIGNAL

James P. Reilly, Hamilton, and Simon Haykin, Ancaster, both of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Mar. 26, 1980, Ser. No. 133,911
Int. Cl.[3] H03D *3/18*
U.S. Cl. 329—50 15 Claims



1. A method of determining the in-phase (I) and quadrature (Q) components of a bandpass signal x(t) having a center frequency f_c and a bandwidth 2 w comprising:

(a) heterodyning the signal x(t) from its center frequency f_c to an intermediate frequency f_o;

(b) dividing the heterodyned signal into first and second substantially identical signals;

(c) sampling the first divided signal at an instant during successive periods T_s where $T_s=m/f_o$ and m is an integer, to provide an output which represents the I component;

(d) sampling the second divided signal during the successive periods T_s wherein the sampling instants are shifted by $b/4f_o$ with respect to the sampling instant of the first divided signal, where b is an odd integer, to provide an output which represents the Q component; and

(e) making a time shift correction of $b/4f_o$ to the output representing the Q component when f_o21 20 w.

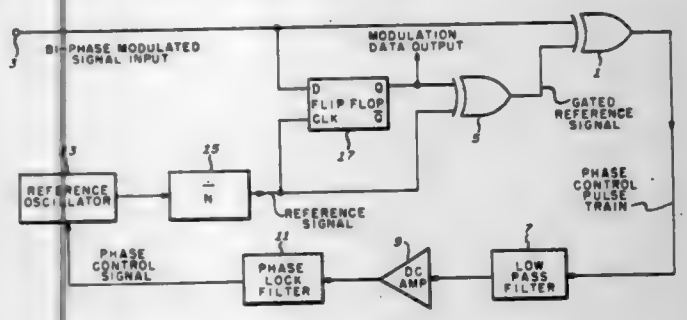
4,344,041

BIPHASE DETECTOR

Reuben E. Maine, Charlottesville, Va., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 239,084
Int. Cl.[3] H03D *3/18;* H03K *9/00;* H04L *27/22*
U.S. Cl. 329—50 8 Claims

1. A circuit for demodulating biphase modulated input signals comprising voltage controlled oscillator means for providing a reference signal having a nominal frequency equal to that of the input signal, sensing means for detecting the binary level of the input signal during a specified interval of each cycle of the reference signal, selective reference signal inverting means coupled to said sensing means for passing direct and inverted reference signals when said sensing means responds to input signals having high and low binary levels, respectively, gating means connected to receive said input signals and the signals from said inverting means, said gating means being constructed to provide a unipolar pulse train having a high level only when one but not both of the signals applied to the gating means is at a high level, filter means to apply a phase control signal representative of the average level of said pulse train to said voltage controlled oscillator, said filter means being adjusted to provide a phase control signal having a value that causes the



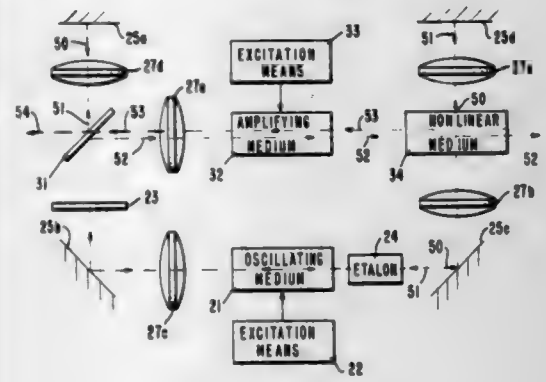
oscillator to operate at said nominal frequency when the average level of the phase control signal is at a specified value, said reference oscillator being constructed so that deviations in the average level of the phase control signal cause the phase of the oscillator to shift towards its nominal value, and output means for providing modulation data output signals indicative of the response of said sensing means.

4,344,042

SELF-REGENERATIVE LASER OSCILLATOR-AMPLIFIER

David T. Hon, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 3, 1980, Ser. No. 126,592
Int. Cl.[3] H01S *3/098*
U.S. Cl. 330—4.3 5 Claims



1. Laser apparatus for providing an amplified single-mode output beam, said apparatus comprising:

laser oscillator means disposed along a first optical path for providing light of a single lasing mode therealong;

coupling means disposed along said first optical path for transmitting a portion of the light incident thereupon along said first optical path, and for reflecting the remainder of said light along a second optical path;

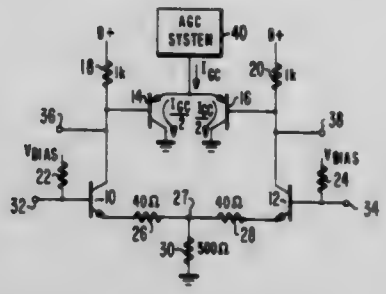
laser amplifier means disposed along in said second optical path for amplifying light of said single lasing mode made incident thereupon; and

nonlinear medium means, disposed in said first and second optical paths so as to intercept light provided by said laser amplifier means and said laser oscillator means, for providing phase conjugate light in response to the light intercepted thereby in a four-wave mixing manner, said phase conjugate light being transmitted along said second optical path through said laser amplifier means to said coupling means which transmits a portion of the light incident thereupon to provide an amplified single-mode output beam of said apparatus, and reflects the remainder of the light along said first optical path.

4,344,043
VARIABLE LOAD IMPEDANCE GAIN-CONTROLLED AMPLIFIER

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,032
Int. Cl.³ H03F 3/45
U.S. Cl. 330—254 16 Claims

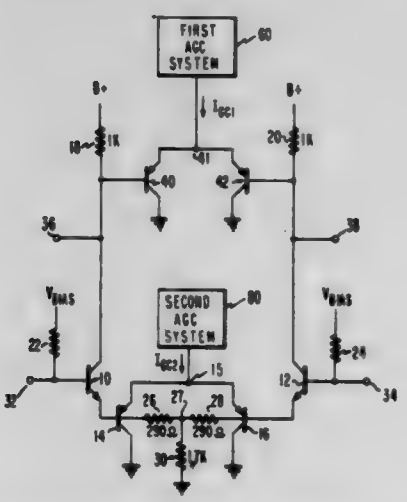


1. A gain-controlled amplifier comprising:
an amplifying transistor having a base electrode coupled to an input terminal, a collector electrode coupled to an output terminal, and an emitter electrode;
means, coupled to said base, collector and emitter electrodes, for applying bias voltages to said electrodes;
a source of gain controlling current; and
means, having a first electrode coupled to said collector electrode, a second electrode coupled to a point of reference potential, and a third electrode coupled to said source of gain controlling current, and having a main current-conducting path between said second and third electrodes, the current conducted by said first electrode being substantially less than the current of said main current-conducting path when said main path is conductive, and responsive to said gain controlling current for developing a gain controlling resistance between said first and third electrodes which is a function of the magnitude of said gain controlling current and is applied to said collector electrode by said first electrode.

4,344,044
GAIN-CONTROLLED AMPLIFIER UTILIZING VARIABLE EMITTER DEGENERATION AND COLLECTOR LOAD IMPEDANCE

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,034
Int. Cl.³ H03F 3/45
U.S. Cl. 330—254 14 Claims

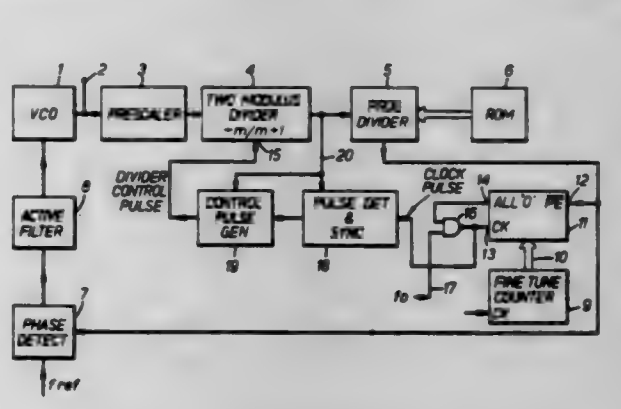


1. A gain-controlled amplifier comprising:
an amplifier transistor having a base electrode coupled to receive input signals, a collector electrode at which output signals are derived, and an emitter electrode;
means, coupled to said base, collector, and emitter electrodes for biasing said transistor;
a first source of control current;
a second source of control current;
a first controlled impedance device, having first and second electrodes connected by a main DC current path and a third electrode through which a significantly lesser DC current flows when said main DC current path is conductive, said first source of control current being coupled to said first electrode and said third electrode being coupled to said collector electrode of said amplifying transistor and presenting a gain controlling impedance thereat which is a function of the magnitude of the control current supplied by said first source; and
a second controlled impedance device, having fourth and fifth electrodes connected by a main DC current path and a sixth electrode through which a significantly lesser DC current flows when said main DC current path of said second device is conductive, said second source of control current being coupled to said fourth electrode and said sixth electrode being coupled to said emitter electrode of said amplifying transistor and presenting a gain controlling impedance thereat which is a function of the magnitude of the control supplied by said second source.

4,344,045
PHASE LOCKED LOOP FREQUENCY SYNTHESIZER WITH FINE TUNING

Tapan K. Das, and Martin A. Fryer, both of Swindon, England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Oct. 24, 1979, Ser. No. 87,723
Claims priority, application United Kingdom, Nov. 2, 1978, 43000/78
Int. Cl.³ H03L 7/18
U.S. Cl. 331—1 A 12 Claims



1. A frequency synthesiser arrangement, comprising:
a controlled oscillator providing oscillation signals;
divider means for dividing said oscillation signals provided by the oscillator to produce divider output signals, said divider means including a two modulus divider providing two modulus divider output signals comprising a waveform having positive and negative going edges;
comparator means for comparing said divider output signals from the divider means with a reference signal so as to provide a control signal for controlling the controlled oscillator;
fine tuning means for providing a fine tuning control signal comprising at least one clock pulse; and
pulse generator means responsive to the fine tuning control signal from the fine tuning means for providing a control pulse in response to each said at least one clock pulse and for synchronizing each said control pulse with one of said positive going edge or said negative going edge, whereby to control the two modulus divider to divide by one of two factors for a first period dependent upon the number of control pulses provided by the pulse generator means, and to control the two modulus divider to divide by the other of the two factors for a second period of time.

4,344,046

SIGNAL GENERATOR INCLUDING HIGH AND LOW FREQUENCY OSCILLATORS

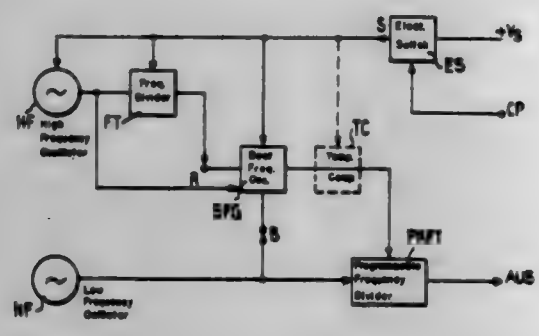
Alphonse E. Zumsteg, Solothurn, Switzerland, assignor to Societe Suisse pour L'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Feb. 29, 1980, Ser. No. 126,154

Claims priority, application Switzerland, Mar. 9, 1979, 2267/79

Int. Cl.³ H03B 5/04, 5/32

U.S. Cl. 331—158 5 Claims



1. A signal generator having reduced current consumption, comprising:

a high frequency crystal oscillator;

a low frequency crystal oscillator;

means connected to said high and said low frequency oscillators for producing a frequency correction signal;

a programmable frequency divider connected to said low frequency oscillator and controlled by said frequency correction signal for dividing the frequency of said low frequency oscillator to produce an output signal of the signal generator; and

an electronic switch connected to said high frequency oscillator to periodically switch said high frequency oscillator on and off, whereby current consumption in the signal generator is reduced.

4,344,047

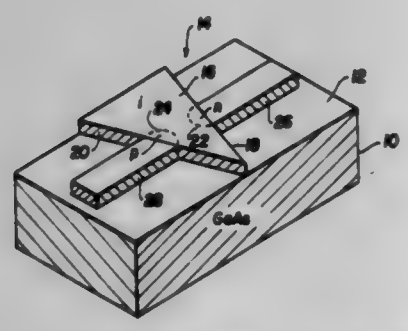
MILLIMETER-WAVE POWER LIMITER

Samuel Dixon, Jr., Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 12, 1981, Ser. No. 233,751

Int. Cl.³ H01P 1/15, 3/16; H01L 27/06

U.S. Cl. 333—17 L 13 Claims



1. An RF power limiter for millimeter and sub millimeter waves, comprising:

an image transmission line structure capable of propagating millimeter and sub-millimeter waves;

a semiconductor PIN diode formed on one outer surface of said image transmission line structure, said image transmission line structure also being the substrate for said PIN diode;

said PIN diode having a planar configuration consisting of a generally flat wedge-shaped region of intrinsic semiconductor material having adjoining edges including mutually opposing regions of oppositely doped semiconductor material separated by an intervening region of intrinsic material of said wedge-shaped region; and

circuit means coupled to said intrinsic region and said oppositely doped regions for the application of operating potentials which cause a predetermined non-avalanche current to flow but achieving avalanche breakdown upon the propagation of a predetermined level of millimeter and sub-millimeter wave power along said image transmission line structure causing a portion of the propagating energy to be reflected in the opposite direction to propagation and thereby provide a limiting action.

4,344,048

FOUR-PORT NETWORK FOR SEPARATING TWO SIGNALS COMPRISED OF DOUBLY POLARIZED FREQUENCY BANDS

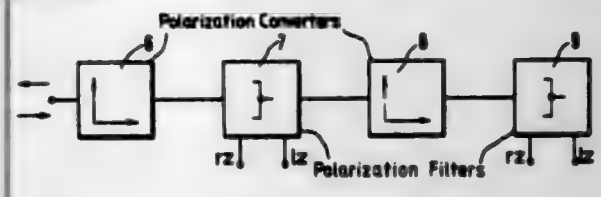
Günter Morz, Ludwigsburg, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.h., Frankfurt am Main, Fed. Rep. of Germany

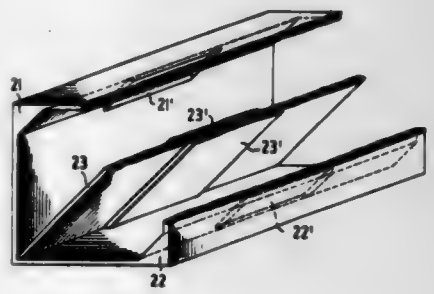
Filed Aug. 11, 1980, Ser. No. 177,449

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932626; Aug. 11, 1979, 7923001[U]

Int. Cl.³ H01P 1/161, 1/213

U.S. Cl. 333—135 5 Claims





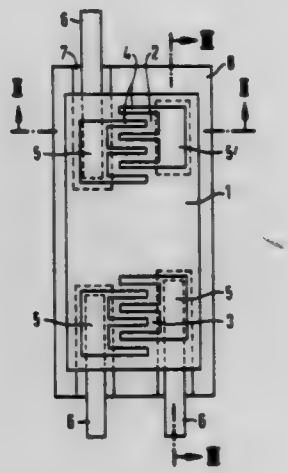
1. In a four-port network for separating signals comprised of two doubly polarized frequency bands for an antenna feeder system in directional or satellite radio operation, including a first polarization converter for converting linear polarization to circular polarization and vice versa and for providing the lowest inherent ellipticity in the lower frequency band, a symmetric polarization filter for the lower frequency band connected in series with said first polarization filter, and a second polarization converter, which compensates the remaining ellipticity in the upper frequency band, connected between said symmetrical polarization filter and a further polarization filter for the upper frequency band; the improvement wherein in order to provide the compensation for the remaining ellipticity in the upper frequency band, said second polarization converter includes: a first type of wavecoupling means for reducing the frequency dependence of the remaining ellipticity while simultaneously increasing the amount of the remaining ellipticity; and a second different type of wavecoupling means for producing the resultant effect that the amount of the remaining ellipticity and additionally its frequency dependence are reduced to a minimum.

4,344,049

SURFACE WAVE COMPONENT

Friedrich Grobe, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,825
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 2938542
Int. Cl.³ H03H 9/145, 9/25, 9/64, 9/42
U.S. Cl. 333—154 16 Claims



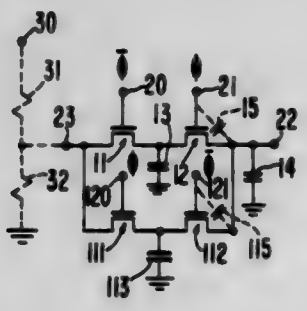
1. A surface wave component comprising:
a base plate;
a substrate including a first surface, and a second surface carried on and attached to said base plate;
a first transducer and a second transducer carried spaced apart on said first surface, each of said transducers including an interdigital structure comprising a pair of rear portions and internested fingers extending therefrom; and
first and second coupling means for coupling a signal into or out of said component, each of said coupling means located adjacent a respective transducer and each of said coupling means comprising an electrical lead carried on said second surface opposite a respective rear portion and capacitively coupled to the respective rear portion via said substrate, to provide a pair of coupling capacitances.

4,344,050

DUAL CHANNEL DIGITALLY SWITCHED CAPACITOR FILTER

Kent R. Callahan, Lynwood, Wash., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Sep. 22, 1980, Ser. No. 189,709
Int. Cl.³ H03H 19/00; H03K 4/00
U.S. Cl. 333—173 5 Claims



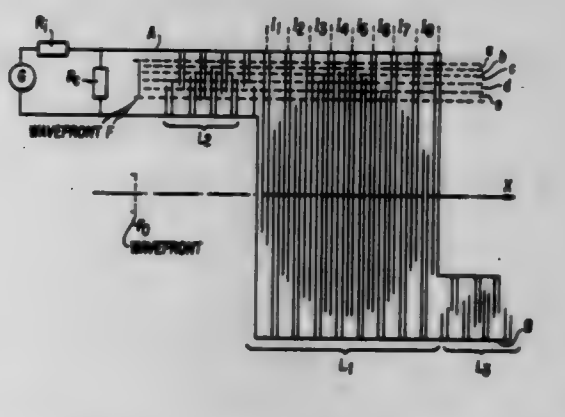
1. A dual channel digitally switched capacitor filter comprising:
an input terminal for receiving a reference voltage;
an output terminal;
an output storage capacitor connected between said output terminal and ground; and
a first and a second switched capacitor resistor equivalent connected in parallel, each having an input lead and an output lead, wherein said switched capacitor resistor equivalent input leads are connected to said input terminal and said switched capacitor resistor equivalent output leads are connected to said output terminal, wherein each said switched capacitor resistor equivalent comprises:
a first switch means connected between said input terminal and a first plate of an intermediate storage capacitor having two plates, said other plate of said intermediate storage capacitor being connected to ground; and
a second switch means connected between said first plate of said intermediate storage capacitor and said output terminal, and
wherein said first switch means of said first switched capacitor resistor equivalent and said second switch means of said second switched capacitor resistor equivalent are controlled by a first of two non-overlapping clock pulses and said second switch means of said first switched capacitor resistor equivalent and said first switch means of said second switched capacitor resistor equivalent are controlled by a second of two nonoverlapping clock pulses.

4,344,051

ELASTIC SURFACE WAVE TRANSDUCER AND FILTER INCORPORATING SUCH A TRANSDUCER

Gerard Cousset, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 24, 1980, Ser. No. 115,095
Claims priority, application France, Jan. 26, 1979, 79 02100
Int. Cl.³ H03H 9/145, 9/64
U.S. Cl. 333—194 4 Claims



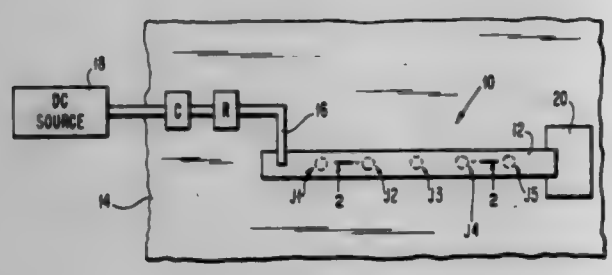
1. An elastic surface wave transducer with a pulse response having at least one major lobe and one minor lobe positioned upstream of the major lobe, said transducer having two interdigitated transducer elements with fingers of unequal length in such a way as to form a succession of radiating intervals transmitted by surface waves in a direction X according to a design reproducing the envelope of the said pulse response, each finger being formed by two parallel metal strips spaced by $\lambda/4$, λ being the wavelength corresponding to the central frequency of the transmission spectrum of the transducer, whereby the zone of interdigitated transducer elements which synthesize the minor lobe and the zone of the interdigitated transducer elements which synthesize the major lobe are displaced perpendicular to the transmission direction in such a way that the waves transmitted by the minor lobe essentially encounter fingers belonging to the same transducer element in the region of the major lobe.

4,344,052

DISTRIBUTED ARRAY OF JOSEPHSON DEVICES WITH COHERENCE

Arthur Davidson, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,603
Int. Cl.[3] H01P 7/08; H01L 39/22
U.S. Cl. 333—222 29 Claims



1. A distributed array of Josephson devices, said array exhibiting coherence effects, comprising:

a plurality of devices exhibiting Josephson currents therethrough and capable of having a zero voltage state and a non-zero voltage state, said devices being electrically connected in series along a waveguide type structure, each said device being coupled to all of the other Josephson devices by an electromagnetic wave,

a waveguide type structure connecting said devices in series, said waveguide structure being capable of controllably supporting and sustaining electromagnetic waves along its entire length, said waves being coupled to each of said devices,

a source of current through said devices in said series array for biasing said devices, and

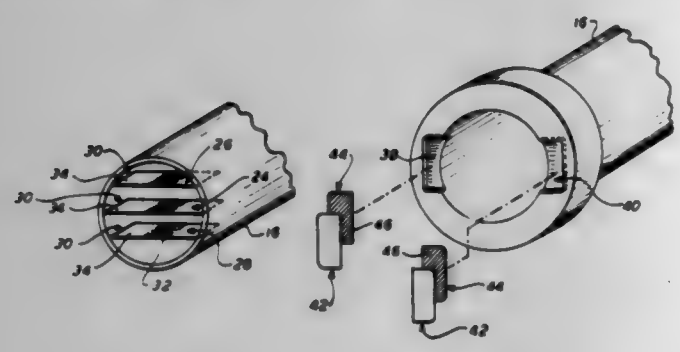
means for producing said electromagnetic wave along the entire length of said waveguide type structure.

4,344,053

MODE SUPPRESSOR FOR CIRCULAR WAVEGUIDES UTILIZING A PLURALITY OF RESISTANCE CARDS

Tore N. Anderson, Brookfield, Conn., assignor to Litton Systems, Inc., Morris Plains, N.J.

Filed Feb. 12, 1981, Ser. No. 234,067
Int. Cl.[3] H01P 1/162
U.S. Cl. 333—251 7 Claims



1. A mode suppressor for use in combination with a circular waveguide having a circular sidewall and a longitudinal axis for suppressing unwanted modes of a microwave signal having an electric field perpendicular to the longitudinal axis of said circular waveguide, said mode suppressor comprising:

a first resistance means lying in a plane including the longitudinal axis of said circular waveguide with the plane of said resistance means being substantially perpendicular to the electric field of the TE_{11} mode of said microwave signal, said resistance means having an electrically conducting resistive film for suppressing the TM mode but not the TE_{11} mode of microwave signals;

a pair of second resistance means lying in respective planes above and below the plane of said first resistance means and generally parallel to the plane of said first resistance means, each of said second resistance means having an electrically conducting resistive film on the central portions thereof for suppressing the TE_{on} modes of microwave signals where n is an integer of 1 or more;

a pair of secondary waveguides electrically coupled to said circular waveguide, said secondary waveguides having slots contained in planes perpendicular to the longitudinal axis of said circular waveguide; and

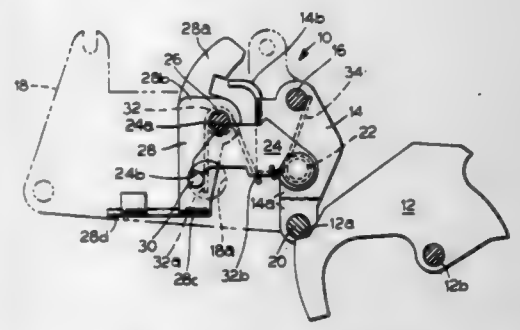
third resistance means contained in each of said secondary waveguides, said third resistance means having an electrically conducting resistive film for suppressing microwave signals in at least the TE_{21} and TE_{31} modes.

4,344,054

LATCH ASSEMBLY FOR STATIC TRIP CIRCUIT BREAKERS

Roger N. Castonguay, Terryville; Charles L. Jencks, Avon, and Peter P. Clickner, Bristol, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,442
Int. Cl.[3] H01H 73/02, 75/02
U.S. Cl. 335—169 4 Claims



1. A trip latch assembly for releasably latching the pivotally mounted cradle of an automatic electric circuit breaker in a reset position against the bias of operating mechanism springs, said latch assembly comprising, in combination:

A. a primary latch lever pivotally mounted adjacent one of its ends by a first pivot pin and mounting adjacent its other end a primary latch pin for engaging a primary latch shoulder formed on the cradle to sustain the cradle in its reset position, the cradle exerting a first moment on said primary latch lever about said first pivot pin, said first moment having a relatively short first moment arm;

B. an intermediate latch lever pivotally mounted adjacent its one end by a second pivot pin carried by said primary latch lever, said intermediate latch lever including an intermediate latch shoulder and a secondary latch shoulder separately formed at its other end;

C. an intermediate latch pin fixedly positioned for engagement by said intermediate latch shoulder to translate said first moment to a second moment on said primary latch lever about said first pivot pin having a second moment arm at least several times greater than said first moment arm, the force component of said second moment being opposed by an equal and opposite force component of a third moment exerted on said intermediate latch lever about said second pivot pin and having a relatively short third moment arm;

D. a pivotally mounted secondary latch lever; and

E. a secondary latch pin carried by said secondary latch lever in position to engage said secondary latch shoulder to translate said third moment to a fourth moment on said intermediate latch lever about said second pivot pin having a fourth moment arm at least several times longer than said third moment arm, whereby an exceptionally light trip force exerted on said secondary latch is effective in swinging said secondary latch pin out of engagement with said secondary latch shoulder to then permit said intermediate latch shoulder to disengage said intermediate latch

pin and, in turn, said primary latch pin to swing out of engagement with the cradle primary latch shoulder.

4,344,055

AUTOMATIC TRIP DEVICE FOR CIRCUIT INTERRUPTER

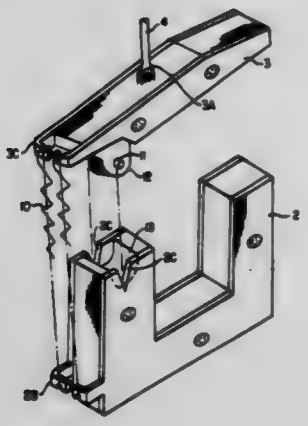
Haruhisa Toda, and Yoshiaki Matsumoto, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,206

Claims priority, application Japan, Apr. 24, 1979, 54-57272[U]

Int. Cl.³ H01H *9/20*

U.S. Cl. 335—174 **6 Claims**



1. Circuit breaker automatic trip apparatus of the type adapted to enclose a current carrying conductor and operatively connect to a releasable circuit breaker switching mechanism, comprising:

a stationary core of magnetic material disposed about an associated current-carrying conductor, said stationary core comprising a pair of recessed bearing surfaces and means defining a recess between said bearing surfaces;

a movable core of magnetic material comprising a projecting member, rotatable support means, and means adapted for connection to an associated circuit breaker switching mechanism, said rotatable support means being supported by said recessed bearing surfaces and rotatably positioning said movable core such that said projecting member cooperates with said recess to complete a magnetic circuit with said stationary core, said movable core being rotatable between first and second positions, rotation to said second position being operable to actuate an associated circuit breaker switching mechanism; and

means biasing said moveable core toward said first position.

4,344,056

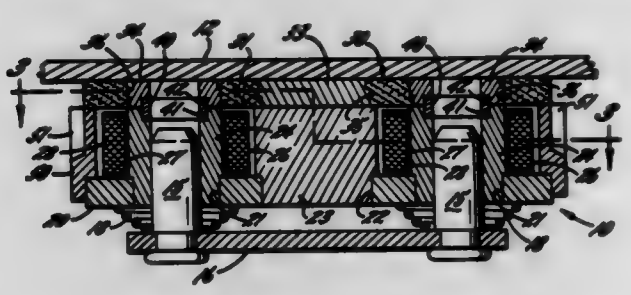
ELECTROMAGNET WITH REPLACEABLE FRICTION FACE

Edward R. Kroeger, and Philip E. Myers, both of Beloit, Wis., assignors to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Jul. 31, 1980, Ser. No. 174,213

Int. Cl.³ H01F *7/06*

U.S. Cl. 335—219 **12 Claims**



6. An electromagnet for use with a brake or the like, said electromagnet comprising a plate made of low reluctance magnetic material, three spaced openings formed in said plate, three studs made of low reluctance magnetic material and fixed within said openings, said studs extending outwardly from and being disposed substantially perpendicular to said plate and having outer ends which are disposed in a common plane, two of said studs being outboard studs and being located on opposite sides of the third stud, and annular coils telescoped over said outboard studs and each having means adapted for connection to a voltage source, the improvement in said electromagnet comprising, a sheet of friction material having parallel inner and outer faces and having holes coaxial with said studs and extending between said faces, inserts made of low reluctance magnetic material fixed within said holes and having ends which are substantially flush with the faces of said friction material, the inner ends of said inserts being disposed in end-to-end engagement with the outer ends of said studs, and means restricting said friction material from shifting edgewise relative to said studs.

4,344,057

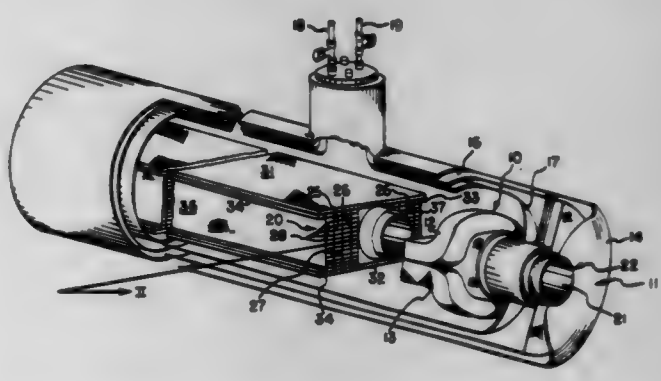
TRANSVERSE MAGNETIC LOAD CONTAINMENT STRUCTURE FOR USE IN MHD MAGNETS

Zdenek J. J. Stekly, Wayland, and Robert D. Pillsbury, Jr., Natick, both of Mass., assignors to Magnetic Corporation of America, Waltham, Mass.

Filed Jan. 28, 1980, Ser. No. 115,935

Int. Cl.³ H01F *5/00*

U.S. Cl. 335—299 **19 Claims**



1. An integral magnetic load containment structure comprising

a. a pair of first and second magnet winding assemblies positioned to define a bore there between, each of said winding assemblies including at least one channel throughout its length to engagingly receive at least one magnet conductor,

b. at least one pair of tension members spanning bore space and operably connected to the first and second assemblies of the respective pair to receive transverse forces transmitted from each pair of first and second assemblies to the respective tension member; and

c. a first backing means connected to the first magnet winding assemblies of said pair and a second backing means connected to the second magnet winding assemblies of said pair, each of said backing means being adapted to take shear forces transmitted from said winding assemblies.

4,344,058

LOW VOLTAGE CARTRIDGE FUSE DESIGN

Edward J. Knapp, Jr., Salisbury, and Richard J. Perreault, Amesbury, both of Mass., assignors to Gould, Inc., Rolling Meadows, Ill.

Filed Sep. 2, 1980, Ser. No. 183,493

Int. Cl.³ H01H *71/20*

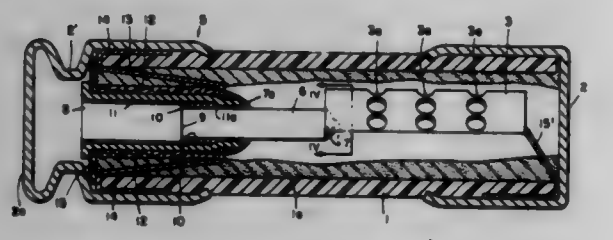
U.S. Cl. 337—148 **13 Claims**

1. An electric fuse comprising a casing of electric insulating material closed on both ends thereof by a pair of terminal caps; separate means for interrupting major fault currents and for

interrupting overload currents arranged in said casing and serially connected to each other; said means for interrupting major fault currents including a fusible element of sheet metal having serially arranged points of reduced cross-section; said means for interrupting overload currents including a spring-biased contact inserted into the circuit by one or more solder joints; and a pulverulent arc-quenching filler inside said casing wherein the improvement comprises

(a) a contact in the form of a plunger soldered by a first solder joint to one of the ends of said fusible element and acted upon by a helical spring tending to break said first solder joint;

(b) a tubular metal sleeve surrounding said plunger with a clearance between said metal sleeve and said plunger;



(c) a second solder joint precluding entry of said arc-quenching filler into said metal sleeve by way of said clearance between said metal sleeve and said plunger;

(d) a heating element of sheet metal extending along the outer surface of said metal sleeve for heating said metal sleeve and said plunger, said heating element having current-carrying tab means interposed between the outer surface of said casing and one of said pair of terminal caps; and

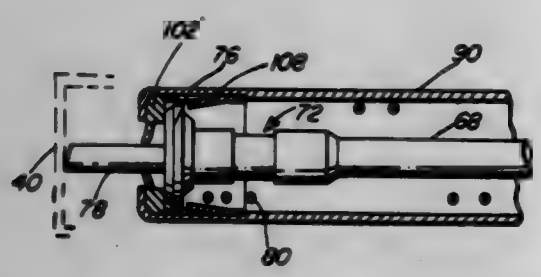
(e) electric insulating means interposed between said heating element of sheet metal and said metal sleeve for insulating said heating element from said metal sleeve, said insulating means including an insulating sleeve surrounding said metal sleeve.

4,344,059

ARCING ROD CATCHER FOR HIGH VOLTAGE FUSE

Roy T. Swanson, North Riverside, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Nov. 11, 1976, Ser. No. 741,027
Int. Cl.[3] H01H *71/20*
U.S. Cl. 337—174 3 Claims



1. In a high voltage fuse of the type having an arcing rod moveable within the fuse under the urging of a spring to one end of the fuse when a fusible element melts so that an end of the arcing rod engages a fuse release assembly to cause the fuse to disengage a fuse mounting, an improvement comprising:

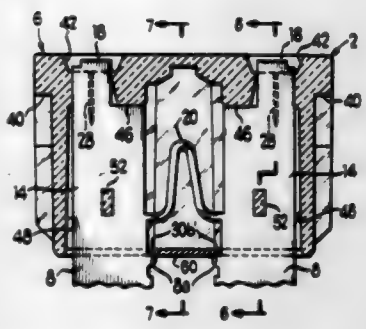
means for engaging the arcing rod only after it moves to the end of the fuse to prevent the arcing rod from moving back away from the end of the fuse, wherein the arcing rod includes a flange arranged to first pass, then be engaged by said finger.

4,344,060

ENCLOSED PLUG-IN FUSE ASSEMBLY

Allen L. Clesemier, Palatine; Robert J. Tait, Arlington Heights, and Leonard A. Smith, Streamwood, all of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Filed Sep. 19, 1980, Ser. No. 188,870
Int. Cl.[3] H01H *85/16*
U.S. Cl. 337—260 5 Claims



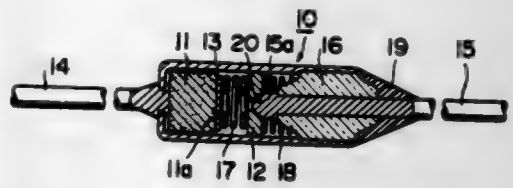
1. In a fuse assembly comprising a fuse unit and a housing for said fuse unit made of insulating material and having an initially fully open side through which said plug-in fuse unit was inserted into said housing, said fuse unit having a pair of confronting spaced terminals projecting to the exterior of said housing through spaced openings in said initially fully open side of said housing, and a fuse link interconnecting extensions of said pair of terminals, said fuse link being positioned to pass through the entry portion of said initially fully open side of said housing as the fuse link entered said housing, the improvement wherein said fuse link entry portion of said initially fully open side of said housing is closed between said spaced openings by a closure flap extending from said housing and folded, after at least partial insertion of said fuse unit into said housing, into a position closing said portion of said initially fully open side of said housing, said folded closure flap and the relationship between said terminals of the fuse unit and the housing openings preventing the passage of pieces of blown fuse link to the exterior of the housing, and means for holding said closure flap in the folded condition comprising a shoulder on at least one of the said plug-in fuse unit terminals.

4,344,061

TEMPERATURE-SENSITIVE FUSE

Yoshio Niwa, Kawasaki, Japan, assignor to Showa Electric Wire & Cable Co., Ltd., Kanagawa, Japan

Filed Sep. 5, 1980, Ser. No. 184,357
Claims priority, application Japan, Sep. 11, 1979, 54-116594
Int. Cl.[3] H01H *37/76*
U.S. Cl. 337—407 4 Claims



1. A temperature-sensitive fuse comprising a cylindrical, tubular, electrically and thermally conductive casing; a first electric conductor which is electrically connected to one end of said casing; a second electric conductor which is connected to the other end of said casing through an electrically insulating material in such a manner so as to be electrically insulated therefrom; a temperature-sensitive, fusible pellet disposed in the end portion of said casing containing said first conductor; a movable disc member which is disposed in contact with the top portion of said second conductor within said casing and in such a manner that the outer peripheral surface thereof is in slidable contact with the inner wall of said casing; a hold-spring which normally urges said movable disc so as to bring said movable disc into pressure contact with the top portion of

said second conductor; and a pressure-spring for moving said movable disc in the direction away from the top portion of said second conductor when said fusible pellet melts and collapses; the top portion of said second conductor, which is in contact with a central portion of said movable disc, being rounded or formed in the shape of a circular cone, and in the central portion of said disc, a tapered, pierced opening being formed in the axial direction of said tubular casing, into which the top portion of said second conductor can be substantially, fitted, and in one portion of said disc a slit open from said tapered opening to an outer peripheral portion of said disc being formed.

4,344,062

HUMIDITY SENSOR ELEMENT

Giichi Sudoh, Chichibu; Keiichi Minegishi, Kumagaya; Tokuji Akiba, Kumagaya; Tadao Kato, Kumagaya, and Norio Ogawa, Kumagaya, all of Japan, assignors to Chichibu Cement Co., Ltd., Japan

Filed Jun. 3, 1980, Ser. No. 156,192
Claims priority, application Japan, Jun. 7, 1979, 54-70608
Int. Cl.[3] H01L *7/00*
U.S. Cl. 338—35 2 Claims



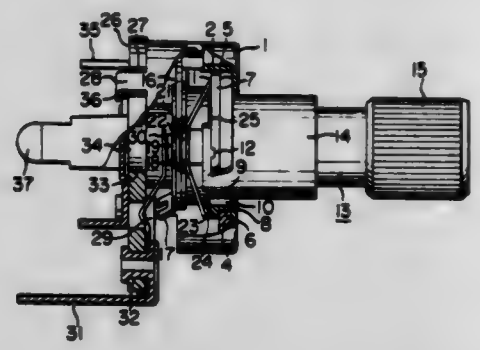
1. A humidity sensor element comprising a metal oxide semiconductor sintered member composed of a composition of TiO_2 as a principal material and containing 0.1 to 10 mole % of V_2O_5, said member being provided with electrodes.

4,344,063

CLICK SETTING VARIABLE RESISTOR

Tadashi Nishimoto, Yawata, and Shunzo Oka, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jan. 14, 1981, Ser. No. 225,124
Claims priority, application Japan, Jan. 25, 1980, 55-8061[U]
Int. Cl.[3] H01C *10/30*
U.S. Cl. 338—160 5 Claims



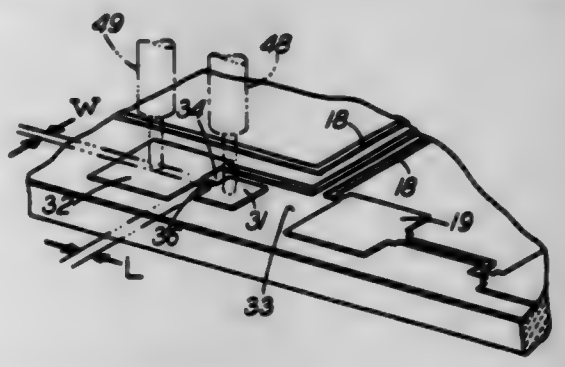
1. A click setting variable resistor of the type comprising:
a cover;
a base plate mounted on said cover so as to close the open end thereof, said cover and base plate cooperating to form a housing;
a resistor and a contactor mounted on said base plate, said resistor and contactor having arcuate portions;
an operating shaft substantially perpendicular to said baseplate and rotatably extended through a wall of said housing;
a wiper arm mounting member interposed between the closed end of said cover and said base plate adjacent said shaft;
a wiper arm mounted on said wiper arm mounting member for rotation by said shaft in such a way that finger means extending from said wiper arm electrically bridges between the arcuate portions of said resistor and said contactor;
a click disk or plate fitted into said cover and provided with a click slot; and
a click spring mounted on said wiper arm mounting member and provided with a projection adapted to engage with said click slot of said click disk, whereby when said projection of said click spring drops into said click slot of said click disk, said operating shaft is click set;
said click disk being rotatably fitted into said cover in such a way that the torque required for rotating said click disk relative to said cover is greater than a first torque for releasing said projection of said click spring out of said click slot of said click disk when said operating shaft is in a first position, but is lower than a second torque required for releasing said projection of said click spring out of said click slot of said click disk when said operating shaft is in a second position;
all of said torques being produced when said operating shaft is rotated; and
said operating shaft being shifted axialiy between said first and second positions.

4,344,064

ARTICLE CARRYING A DISTINCTIVE MARK

Joel R. Bitler, Allentown; Michael W. Bodnar, Macungie; Raymond H. Booth, Walnutport; Daniel J. Roman, Bethlehem; Fred J. Schneider, Northampton; Philip W. Seitzer, Bethlehem, and George F. Wilkinson, Jr., Northampton, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 6, 1979, Ser. No. 101,042
Int. Cl.[3] H01C *13/00*
U.S. Cl. 338—334 5 Claims

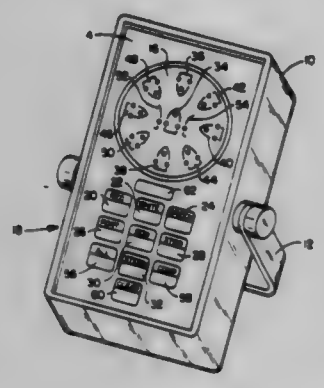


1. An electronic article, which comprises:
a substrate;
circuit elements supported by the substrate, said circuit elements including conductive leads connecting said elements into a circuit component capable of performing a circuit function with characteristic values within ranges of values, and first type terminals coupled to selected ones of such conductive leads and located in predetermined, spaced locations on said substrate, said first type terminals being adapted to connect said electronic article into a selected electric circuit; and
at least one resistive element supported by said substrate, said at least one resistive element having one of two characteristic resistance value states separated by a predetermined threshold value, the value of said at least one resistive element indicating said circuit elements as having a functional output in a certain, predetermined range of values of at least two predetermined ranges of values, said at least one resistive element being coupled between two terminals supported by the substrate, at least one of said two terminals being a second type terminal which is not adapted to become coupled into said selected electric circuit, whereby the range of values of said functional output is embodied in the value of said at least one resistive element and is ascertainable by electrical measurement of said at least one resistive element without coupling said circuit elements into an electric measuring circuit for ascertaining said value of said at least one resistive element.

4,344,065
CONVERGENCE INDICATOR FOR MARINE AND FLIGHT VEHICLES

Dennis C. Erwin, 6715 Riverside, Powell, Ohio 43065; Joseph A. Bowman, and Joseph P. Marsalka, both of Columbus, Ohio, assignors to Dennis C. Erwin, Powell, Ohio

Filed Jul. 21, 1980, Ser. No. 170,939
Int. Cl.[3] G08G 3/02; G06G 7/78
U.S. Cl. 340—29 1 Claim



1. An improved apparatus for signalling to an operator of a first vehicle the existence of a potential collision condition with respect to a second vehicle having navigation lights, said apparatus having: a plurality of input switches each associated with indicia indicating a relative position of said second vehicle with respect to said first vehicle said position indicia comprising ahead, astern, starboard and port or equivalent indicia; a plurality of input switches each associated with indicia indicating a navigation light color; visual display means for signalling a potential collision condition, said display means comprising indicia in the form of schematic representations of eight boats having, with respect to a central boat, different relative positions of ahead, astern, off the starboard bow, off the starboard beam, off the starboard quarter, off the port bow, off the port beam and off the port quarter, each of said eight boat indicia having a red, a white and a green running light thereon; collision detecting logic circuit means connected to said switches and said running lights on said eight boats for energizing each selected light of the selected boat position in response to a potential collision condition; wherein the improvement comprises:

(a) parallel boat forming indicia as a part of said display means in the form of schematic representations of at least a portion of a boat on each side of and parallel to said central boat, the parallel boat on the port side of said central boat having green and white running lights and the parallel boat on the starboard side having red and white running lights; and

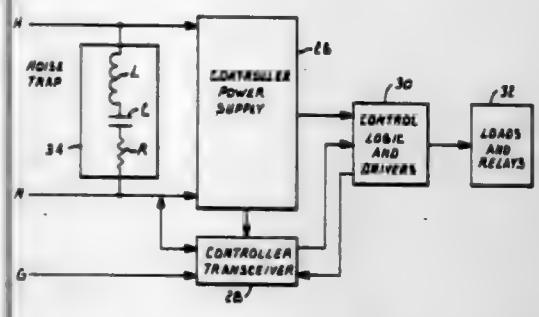
(b) a parallel boat logic circuit means having inputs connected to said collision detecting logic circuit means and outputs connected to the running lights of said parallel boats for actuating the lights of the parallel boat on the starboard side of said central boat in response to actuation of the starboard, stern, red, white and no other switches and in response to actuation of the starboard, red, white and no other switches and for actuating the lights of the parallel boat on the port side of said central boat in response to actuation of the port, green, white and no other switches and in response to actuation of the port, stern, green, white and no other switches.

4,344,066
NOISE TRAP ARRANGEMENT FOR AC POWER LINE COMMUNICATION SYSTEMS

James H. Beggs, Clark County, Nev., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 27, 1980, Ser. No. 201,159
Int. Cl.[3] H04M 11/04
U.S. Cl. 340—310 A 10 Claims

1. In a communication system operable to transmit encoded room status information and other data on neutral and ground lines included in an AC power line which also includes a hot line and which extends between separate areas in a building

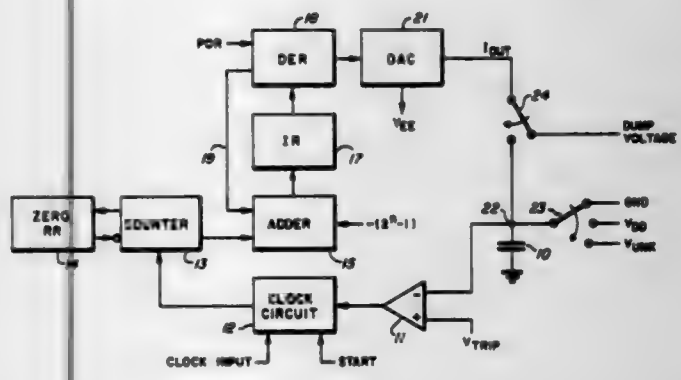


complex such as the rooms of a hotel, motel, or hospital, the improvement comprising noise trap means connected between the hot and neutral lines of the AC power line for attenuating noise on the hot and neutral lines.

4,344,067
ANALOG TO DIGITAL CONVERTER AND METHOD OF CALIBRATING SAME

Robert D. Lee, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 21, 1979, Ser. No. 96,276
Int. Cl.[3] H03K 13/20
U.S. Cl. 340—347 CC 11 Claims



11. A single slope a/D converter using a DAC for controllably discharging a capacitor, comprising:

a comparator having a first and a second input and an output, the first input being coupled to the capacitor, the second input being coupled to a reference level;

clock means having an output and an input coupled to the output of the comparator which inhibits the output from the clock means;

a counter coupled to the output of the clock means;

a conversion register coupled to the counter for converting a binary count from the counter into a converter count and coupling the converted count to the counter; and

means for controlling the DAC using counts in the counter and coupling the counter to the DAC.

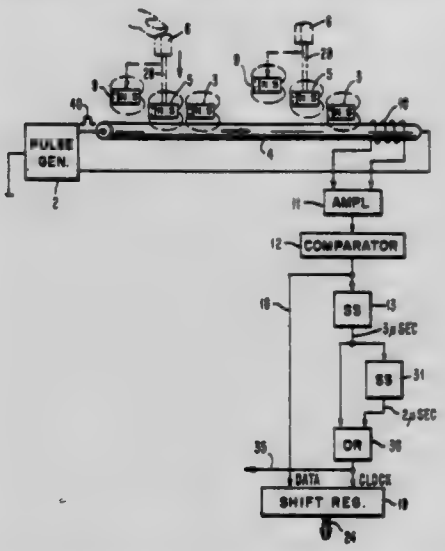
4,344,068
CODING SCHEMES FOR ACOUSTIC DELAY LINE DATA COLLECTION SYSTEM

David A. Thompson, South Salem, and Thomas K. Worthington, Tarrytown, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1979, Ser. No. 43,610
Int. Cl.[3] G06F 3/02
U.S. Cl. 340—365 L 10 Claims

5. In a magnetoacoustic sensor delay line system including a delay line, the improvement comprising provision of at least a pair of position magnets at each data position with a first of said magnets in a fixed position and a second data magnet thereof movable with respect to said delay line, whereby said first fixed magnet provides a synchronization signal and each of

said data magnets can, as a function of key actuation, provide a data signal adjacent to said synchronization signal, wherein a plurality of said second movable data magnets are associated with each data position, and a key is associated with each of said data positions, and said data magnets for each of said data



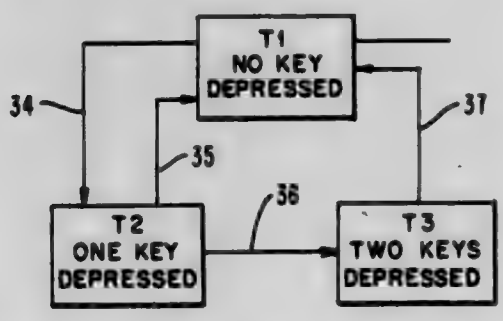
positions are differentially movable by mechanical interconnection with a said key, a pickup coil coupled with said delay line of said delay line system and means for receiving a plurality of said data signals for each synchronization signal, said means for receiving being coupled to the output of said pickup coil.

4,344,069

METHOD AND APPARATUS FOR CHARACTER GENERATION

Eric S. Prame, Lidingo, Sweden, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,897
Claims priority, application Sweden, Nov. 21, 1978, 7811983
Int. Cl.³ G08C 9/00; B41J 5/06
U.S. Cl. 340—365 S **6 Claims**



1. A method of generating character codes by means of a keyboard having a plurality of keys arranged spatially in rows and columns, an electronic scanning means for scanning said keys to detect actuations thereof, and to produce key identification codes for said actuated keys, each of said keys bearing a plurality of potential symbols to be generated by depression of that key, said symbols being arranged in a spatial array on the face of said key, said keyboard also having an encoding means for generating character codes in response to the detection of actuated key codes produced by said scanning means, said method comprising steps of:

selecting a first key for depression from among the spatial array of said keys on said keyboard, said selection being in accordance with the relative spatial position in said array that said first key bears to the other keys on said keyboard, which relative spatial position corresponds to the relative position of the desired character symbol in its said spatial array of possible character symbols on the face of a second said key in said array;

depressing said first key and generating a key code therefor as the result of said scanning;

depressing said second key and generating a key code therefor in response to said scanning, said second key being the one on which said desired character symbol appears in the relative spatial relationship to other possible character codes on the face of said key, said relative spatial position corresponding to the relative spatial position of said first depressed key in said array of keys on said keyboard, said first key being maintained in a depressed state contemporaneously with the depression of said second key;

detecting the coincidence of contemporaneous depression of said first and second keys; and

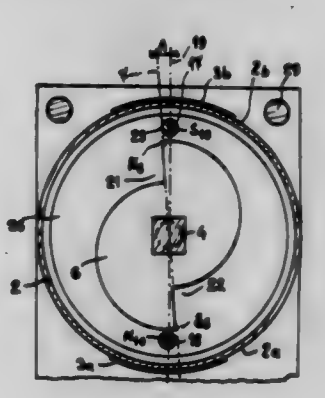
encoding a character code corresponding to the desired said character selected by the combined said codes produced by the depressions of said first and second keys.

4,344,070

PERMANENT MAGNET FOR A BISTABLE ELEMENT AND BISTABLE ELEMENT AND DATA DISPLAY UNITS WITH AT LEAST ONE SUCH ELEMENT

Jean-Pierre Forest, Chemin Ste. Barbe, 59126 Linselles, and Jean Y. Rabette, 4 Allee du cloitre, 59910 Bondues, both of France

Filed Jun. 26, 1980, Ser. No. 163,402
Int. Cl.³ G08B 5/14
U.S. Cl. 340—815.08 **7 Claims**



1. Permanent magnet (6) for bistable element (1+8) activated by magnetic means (10) and constituting one of the components of a data display unit (2+30+31); said element (1+8) comprising:

a rotor, (1) a body (2) for said rotor on the outside of which are delimited two opposite surfaces (2*a*+2*b*) which bear different indications (3*a*+3*b*) from each other;

a permanent magnet (6) rotating with the body (2) of the rotor (1) and to which it is attached in a position such that a line (7) passing through North and South poles of the permanent magnet is radial to an axis of rotation (4) of the rotor (1);

a stator (8) having a support (9);

an electromagnet (10) attached to said support (9) in such a position that its North and South poles are simultaneously and substantially symmetrically arranged with respect to the axis of rotation (4) of the rotor (1) and in a plane in which the poles of the permanent magnet (6) revolve around the axis (4) of the rotor;

means for connecting the electromagnet (10) to a direct current source for short-term feeds with reversible polarity;

said permanent magnet (6) comprising:

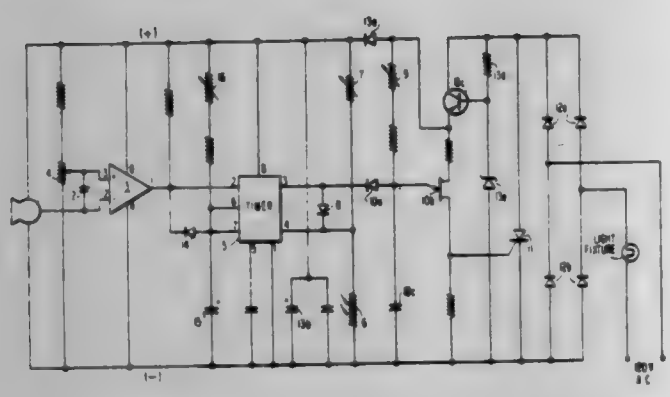
when seen in profile, polar zones having abruptly cut away contours such that they delimit, in each of said zones, very precisely on one side and the other of the line (7) passing through the poles of the permanent magnet, fractions of polar areas whose respective distances from the axis (4) of rotation of the permanent magnet (6) are different; and

diametrically opposed to the axis (4) one of the fractions of each of the polar zones, because of the contouring, is closest to the axis (4) and the other of the fractions is farthest away.

4,344,071
LIGHT SWITCHING MECHANISM

Glenn R. Allen, Thornhill, Canada, assignor to Roger A. Heller, Houston, Tex.

Filed Jul. 10, 1980, Ser. No. 168,234
Int. Cl.³ G08B *13/22*
U.S. Cl. 340—566 16 Claims



1. A switch apparatus for automatically turning an electrical device on and off in response to a sensed condition comprising:

receiver means for sensing a particular condition and for providing a first signal in response to said particular condition;

timer means responsive to said first signal for providing a second signal having a duration lasting a predetermined time following initiation of said first signal;

main switch means receiving said second signal for turning said electrical device on and off in response to said second signal; and

power-providing circuitry connected on one hand to an A.C. power supply and on the other hand to said main switch means for providing operating power to said receiver means, said timer means, said main switch means, and said electrical device; said power-providing circuitry comprising:

bridge means for rectifying the voltage from said A.C. power supply to provide a rectified voltage;

capacitive means for storing a charge from said rectified voltage; and

first switch means for applying a portion of said rectified voltage to said capacitive means, whereby said receiver means and said timer means are powered by said capacitive means.

4,344,072
WORN BRUSH INDICATOR

Harold L. Harper, Jr., 4517 Dennis Way, Las Vegas, Nev. 89121

Filed Dec. 10, 1979, Ser. No. 101,887
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—648 2 Claims



1. A worn brush indicator for an electrical machine having a rotating commutator, at least one brush holder, and a carbon brush member in said brush holder, each brush member having a conductive body and face end for effecting a sliding and conductive contact with said commutator comprising:

a cavity in said brush member extending through said brush member from an end region opposite to said face end of said brush member and toward said face end for a selected distance;

an insulating sleeve in said cavity;

a conductive member extending through said insulating sleeve to a point which is a selected distance from the face of said brush and having an essentially non-abrasive terminating surface; and

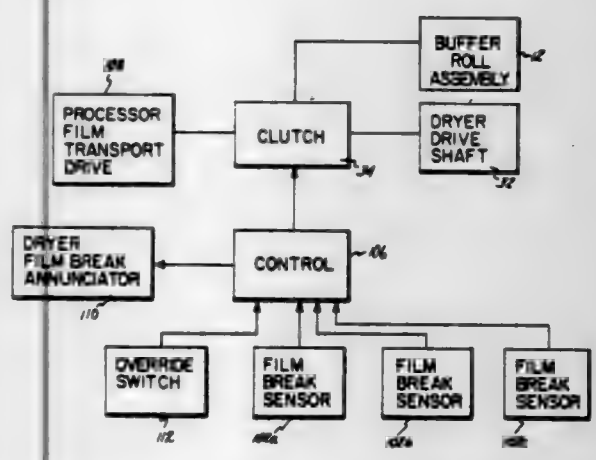
signal detection means electrically connected between the body of a said brush member and a said conductive member, and including means for signalling a worn brush member when an electrical circuit is completed between a said conductive member, through said commutator, and to the body of a said brush member;

whereby, when said brush member is worn to a selected degree, said conductive member electrically engages said commutator and thereby signals a worn brush condition.

4,344,073
FILM BREAK DETECTOR

Robert M. Rawlings, Brooklyn Park, Minn., assignor to Padco, Inc., Minneapolis, Minn.

Filed Sep. 8, 1980, Ser. No. 185,275
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—675 10 Claims



1. In combination with a photographic film dryer through which a photographic film web is transported under tension and dried, a film break detection system for detecting photographic film breaks within the dryer, the break detection system comprising:

first and second substantially horizontal shaft means in a spaced relationship wherein the photographic film web traverses a serpentine path between the first and second shaft means, the second shaft means being spatially movable with respect to the first shaft means wherein the first shaft means includes a plurality of first shafts all approximately at the same vertical position and wherein the second shaft means includes a plurality of second shafts all at approximately the same vertical position, each second shaft being located below a corresponding first shaft;

roller means on the first and second shaft means movably engaging the photographic film web as the web traverses the serpentine path between the first and second shaft means;

biasing means for applying a bias force to each second shaft in a direction opposite to a force applied to the second shaft by the film tension, thereby suspending the second shaft with respect to the corresponding first shaft; and

means for sensing a change of spatial position of the second shaft as a result of a film break and providing an alarm signal indicating that the film break occurred in the dryer, the means for sensing a change of spatial position being positioned within the dryer and wherein the means for sensing includes a plurality of switch means and each second shaft being positioned with a corresponding switch means such that when the film break has occurred, an individual second shaft physically engages the corre-

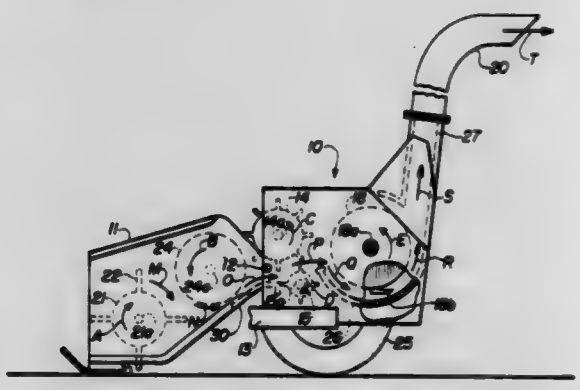
sponding switch means to indicate that the film break occurred in the dryer.

4,344,074

MAGNETIC FIELD PRODUCING APPARATUS

Richard P. Strosser, Akron; Mark K. Chow, Leola, and Carl E. Bohman, New Holland, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 2, 1981, Ser. No. 250,510
Int. Cl.[3] G08B 21/00
U.S. Cl. 340—684 3 Claims



1. In a metal detector suitable for protecting rotatable machine elements in harvesting machines comprising means for generating a magnetic field in a material flow path, at least one sensing coil in which an electrical signal is induced when the magnetic field is altered by the presence of metallic material, and a signal processor to initiate a control sequence to limit damage to the elements when the presence of undesirable metal is detected, the improvement comprising:

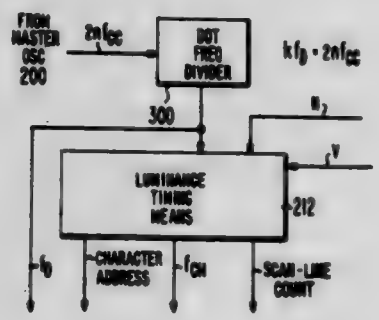
means for producing a pattern of magnetic fields in the material flow path, portions of said fields being other than parallel to each other, said means being a magnet configuration having a plurality of magnet members, one of said magnet members being in a first row, others of said magnet members being in a second row, said rows being traverse to the material flow path and said magnet members of said first row being in staggered relationship with the magnet members of the second row.

4,344,075

TIMING CIRCUIT FOR THE DIGITAL GENERATION OF COMPOSITE LUMINANCE AND CHROMINANCE VIDEO SIGNAL FOR NON-INTERLACED TELEVISION RASTER SCAN-LINE PATTERN

John E. Rudy, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 181,984
Int. Cl.[3] G09G 1/28
U.S. Cl. 340—703 11 Claims



1. In a system incorporating generating means for digitally generating a composite video signal defining luminance and chrominance information that is to be displayed in color on a color display device that at a field frequency exhibits successive fields of a given non-interlaced television raster scan-line pattern, wherein each field is composed of a predetermined even whole number of scan lines of which an ordinal subset of certain consecutive scan lines of each field comprises a display portion of that field and a subset comprising the remainder of the scan lines of each field constitutes a non-display portion of that field, and wherein said composite video signal includes a specified color-carrier frequency that is substantially equal in value to one-half a certain odd harmonic of that scan-line frequency which exists during the entire display portion of that field, the improvement wherein said generating means comprises:

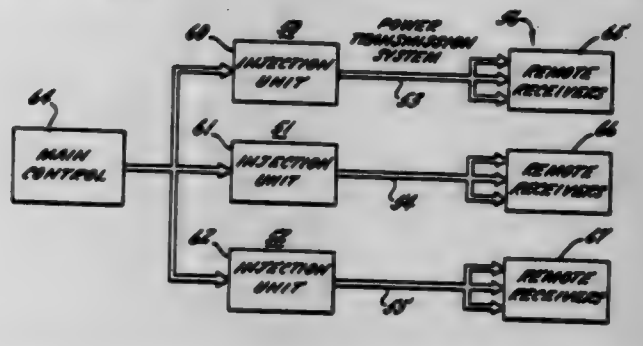
timing control means operative only during a selected single scan line of the non-display portion of each field for altering the beginning of the display portion of the next successive field by an amount substantially equal to a given odd number of half-cycles of said specified color-carrier frequency.

4,344,076

FEEDBACK SENSOR FOR REMOTE RECEIVER IN A POWER TRANSMISSION SYSTEM

Terence O. Lewis, Roswell, Ga., assignor to Sangamo-Weston, Inc., Atlanta, Ga.

Filed Jun. 29, 1979, Ser. No. 53,252
Int. Cl.[3] H04Q 9/00
U.S. Cl. 340—825.17 2 Claims



1. In a power transmission system of the type in which pulse coded messages are injected onto the power lines for signaling control functions, said system having a plurality of receivers connected to the power lines, each receiver being coded to respond to particular ones of the pulses in the messages, said receivers including means for detecting the pulses for which they are coded and for actuating mechanical means in response thereto, an improved signal injection monitor comprising a receiver coded to respond to substantially all of the pulses in the messages, an optical coupler mounted on the receiver and a shutter mounted on the receiver, one of said elements being mounted on the mechanical means so as to define a first position wherein the shutter interrupts the optical coupler and a second position where the optical coupler is not interrupted, said first and second positions being defined by the actuated and unactuated conditions of the mechanical means, and means monitoring the optical coupler to detect the response of the receiver to pulses as they are injected onto the power lines.

4,344,077

ADAPTIVE SPATIAL MICROWAVE FILTER

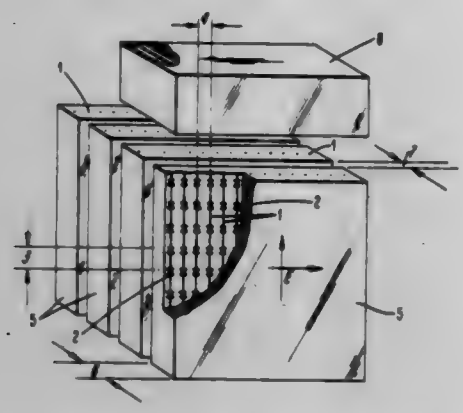
Claude Chekroun, Bures sur Yvette; Yves C. Michel, Massy, and Henri Sadones, Paris, all of France, assignors to Societe d'Etude du Radant, Orsay, France

Filed Jan. 31, 1980, Ser. No. 117,243
Claims priority, application France, Feb. 5, 1979, 79 02918
Int. Cl.[3] H01Q 17/00
U.S. Cl. 343—754 12 Claims

1. A process of adaptive coherent side lobe cancellation of a radiation pattern of a microwave antenna emitting linearly polarized microwaves without beam shifting said pattern comprising the steps of:

placing as a filter, in front of said antenna, a network of conductors, said conductors being loaded with variable

resistances whose values vary according to the intensity of current in said conductors, and



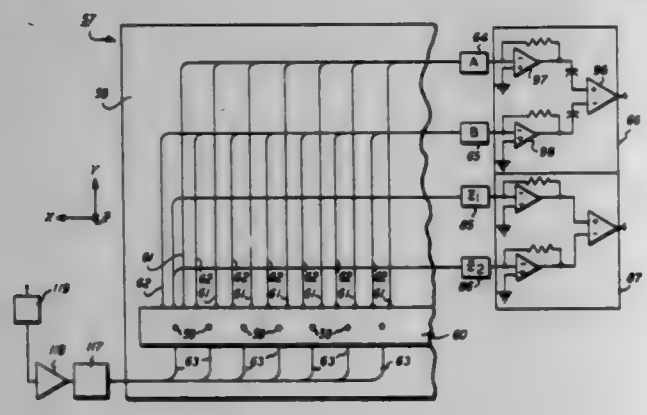
modulating the intensity of said currents in said conductors to vary the values of said resistances and thereby attenuate selected side lobes of said radiation pattern.

4,344,078

INTEGRATED WAVEGUIDE DROP SENSOR ARRAY AND METHOD FOR INK JET PRINTING SYSTEM

Robert D. Houston, Marion, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 6, 1980, Ser. No. 204,433
Int. Cl.³ G01D *18/00*
U.S. Cl. 346—75 24 Claims



22. In an ink jet printer of the type wherein multiple ink nozzles spaced across a droplet generator direct multiple droplet streams toward a print medium, apparatus for sensing the movement of said droplet streams past sensing sites spaced across a printing width comprising

multiple cooperating light carrying fiber pairs (A,B) spaced across said width with the number of pairs equal to the number of sensing sites, each fiber having an input end facing a sensing site and extending away from the site to an output location, the two fibers comprising each pair having their centers spaced along the direction of droplet travel to facilitate routing of said fiber pairs away from the sensing site without intersecting, and further having their centers spaced along a direction orthogonal to said path of travel,

means for transmitting a light signal through said sensing sites to the input ends of the fiber pairs spaced across said width, and

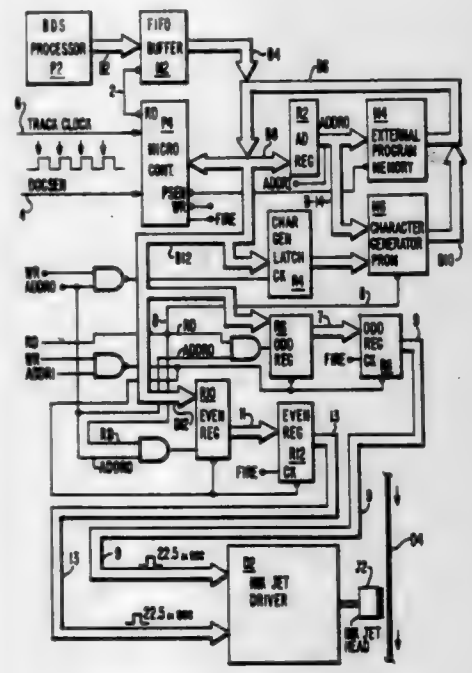
means for determining the position of droplets passing through said sensing site including means for converting light intensities transmitted by each cooperating fiber pair to electrical signals, means for storing said electrical signals and means for comparing said stored signals.

4,344,079

SYSTEM FOR MATRIX PRINTING

John M. Chambors, Canton, and Harry L. Wallace, Livonia, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 2, 1980, Ser. No. 145,780
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 2 Claims



1. A system for controlling the generation of printed characters by a drop-on-demand ink jet printer, in which an array of ink jet nozzles is employed to eject drops of ink selectively on demand and form patterns on objects moving past the nozzles, the system employing control signals from outside the system to determine what characters are to be printed, when they are to be printed and where they are to be printed, the system comprising:

an ink jet head supporting a plurality of ink jet nozzles arrayed in two columns, designated even and odd columns, said ink jet nozzles in the even column being positioned so that horizontal lines through each of them will be oriented parallel to horizontal lines through the jet nozzles in the odd column;

said ink jet head supporting said columns of ink jet nozzles in a position perpendicular to said horizontal lines;

means for receiving signals designating a character to be printed and routing those signals via intermediate means to a memory device;

said memory device responding to the signals to provide dot designating signals establishing how each of the dots is to be placed to make up a designated character in accordance with the requirements of a preferred character font;

said dot placement being selected to ensure the generation of dots in adjacent print positions by different ink jet nozzles, whereby successive dots generated by any two ink jet elements will appear on different horizontal lines and successive dots generated by any one ink jet element will appear along a horizontal line with a blank space between dots;

means routing said dot designating signals to first registers for storage; and

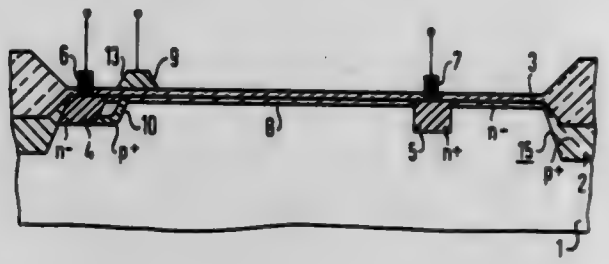
means routing said dot designating signals to second registers for storage;

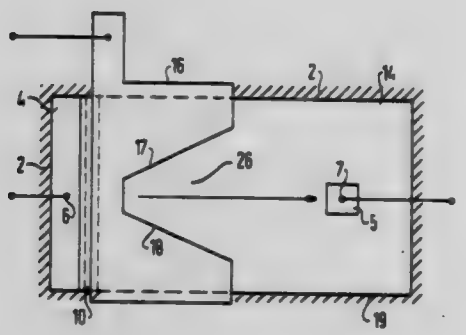
said second registers responding to the receipt of fire signals indicating the precise time to form each dot by providing fire pulses to drive ink jet driver means and eject a drop of ink.

4,344,080
FIELD EFFECT TRANSISTOR

Jenö Tihanyi, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,605
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1978, 2852621
Int. Cl.³ H01L *29/72*
U.S. Cl. 357—23
9 Claims



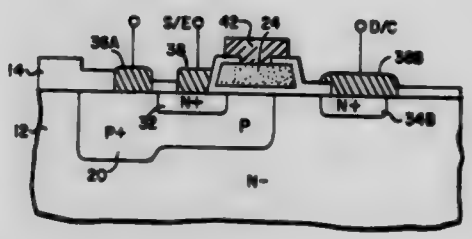


1. Field effect transistor having a semiconductor substrate with a predominant region of a first conduction type, a source and a drain of a conduction type opposite the first conduction type, a zone of the opposite conduction type disposed between the source and the drain and surrounded by another region of the first conduction type and doped more heavily than the predominant region of the substrate and a control electrode insulated from the surface of the semiconductor substrate comprising a drift section for charge carriers forming part of the zone disposed between the source and the drain and located between the control electrode and the drain, said drift section having a substantially constant doping and widening from the control electrode towards the drain to a width which is a plurality of times greater than the width thereof at the control electrode.

4,344,081
COMBINED DMOS AND A VERTICAL BIPOLAR TRANSISTOR DEVICE AND FABRICATION METHOD THEREFOR

Henry C. Pao; Richard A. Blanchard, both of Los Altos, and Benedict C. K. Choy, Campbell, all of Calif., assignors to Supertex, Inc., Sunnyvale, Calif.

Filed Apr. 14, 1980, Ser. No. 139,793
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—43
4 Claims



1. A combined MOS-bipolar semiconductor device comprising, in combination,

a semiconductor body having at least one major surface including a surface portion of one conductivity type;

first and second spaced regions of opposite conductivity type formed in said body and abutting said major surface, third and fourth regions of said one conductivity type formed in said first and second regions, respectively, abutting said major surface and defining at least one channel region and at least one bipolar transistor;

an insulating layer on said major surface;

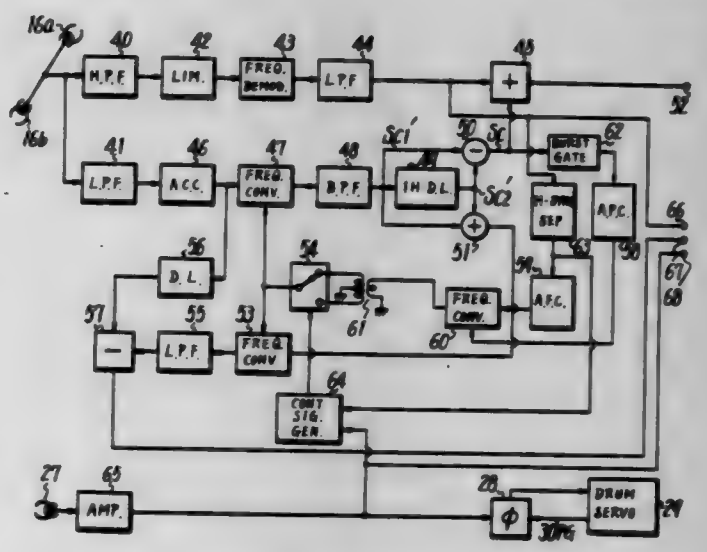
gate electrode means formed on said insulating layer over said channel region for forming an MOS transistor,

separate electrical contact means to said first region, said third region, and said gate electrode means for permitting separate turn-on of said MOS transistor and said bipolar transistor.

4,344,082
APPARATUS FOR RECOVERING A FREQUENCY-CONVERTED CHROMINANCE COMPONENT THAT IS SUBSTANTIALLY FREE OF CROSS-TALK COMPONENTS

Makoto Ishiodori, Ebina, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 14, 1980, Ser. No. 168,026
Claims priority, application Japan, Jul. 17, 1979, 54-90616
Int. Cl.³ H04N *5/78*
U.S. Cl. 358—8
19 Claims



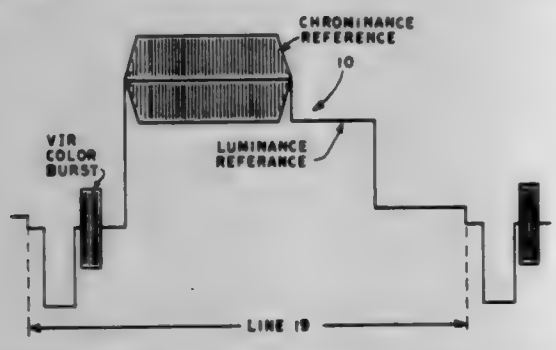
1. Apparatus for recovering a frequency-converted chrominance component, substantially free of cross-talk components, from a composite video signal reproduced from successive record tracks on a record medium, the composite video signal in adjacent tracks having frequency-converted chrominance components whose chrominance carriers exhibit a frequency interleaved relationship with respect to each other, said apparatus comprising reproducing means for reproducing at least the frequency-converted chrominance component from respective tracks, together with an accompanying cross-talk component picked up from an adjacent track; cross-talk separating means, including comb filter means, coupled to said reproducing means for separating the cross-talk component from the reproduced frequency-converted chrominance component; combining means for combining said separated cross-talk component and said reproduced frequency-converted chrominance component to produce a frequency-converted chrominance component substantially free of cross-talk components; and an output terminal coupled to said combining means for receiving the cross-talk free frequency-converted chrominance component and for supplying said cross-talk free frequency-converted chrominance component to further means.

4,344,083

VIR GAIN AND PHASE CORRECTION NETWORK

Gopal K. Srivastava, Buffalo Grove, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 22, 1980, Ser. No. 219,104
Int. Cl.[3] H04N 9/535
U.S. Cl. 358—21 V 6 Claims



1. In a VIR correction system which processes a color signal composed of standard color bursts, video chrominance, a VIR color burst and a VIR chrominance reference to develop a phase error signal and an amplitude error signal, a phase and amplitude correction network for utilizing the error signals to selectively modify the color signal, comprising:

a phase shifting network receiving the color signal at a vector angle A for providing a phase shifted color signal at a vector angle B;

a phase control having a first input port receiving the color signal at vector angle A, having a second input port receiving the phase shifted color signal at vector angle B, and having a third input port receiving the phase error signal, said phase control being responsive to the state of the phase error signal for combining the color burst portions of the color signals at vector angles B and A-B so as to provide an uncorrected color burst output at vector angle A when the phase error signal indicates that no phase correction is desired, and to provide a corrected color burst output whose phase differs from vector angle A when the phase error signal indicates that phase correction is required;

a gain control receiving the color signal and responsive to the amplitude error signal for operating on the VIR chrominance reference and the video chrominance portion of the color signal to develop a chrominance output signal whose amplitude is modified only when the amplitude error signal indicates that amplitude correction is required; and

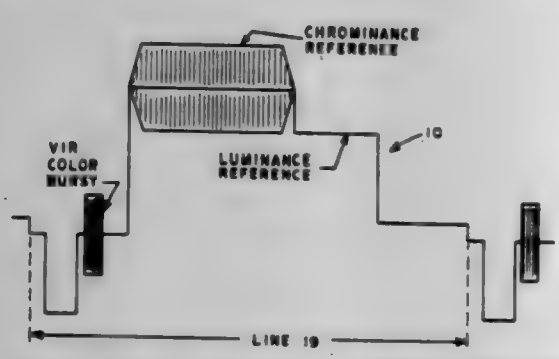
means for combining the chrominance output of said gain control and the color burst output of said phase control to provide a composite corrected color signal.

4,344,084

VIR CORRECTION SYSTEM

Christopher M. Engel, Arlington Heights; Gopal K. Srivastava, Buffalo Grove, and George J. Tzakis, Glenview, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 4, 1981, Ser. No. 231,635
Int. Cl.[3] H04N 9/535
U.S. Cl. 358—21 V 13 Claims



1. In a system which processes a television signal which includes a plurality of video lines each having a standard color burst and video chrominance, and at least one line carrying a VIR signal composed of a VIR color burst and a VIR chrominance reference, a VIR correction system for automatically controlling the phase of the standard color burst and the amplitude of the video chrominance, comprising:

phase control means receiving at least the standard color burst portion of the television signal for correcting the phase of the standard color burst in response to a phase error signal;

gain control means receiving at least the video chrominance portion of the televison signal for correcting the amplitude of the video chrominance in response to an amplitude error signal;

an amplitude comparator receiving the VIR signal for sensing the amplitude reference between the VIR color burst and the VIR chrominance reference and for applying, to said gain control means, an amplitude error signal indicative of the sensed amplitude difference; and

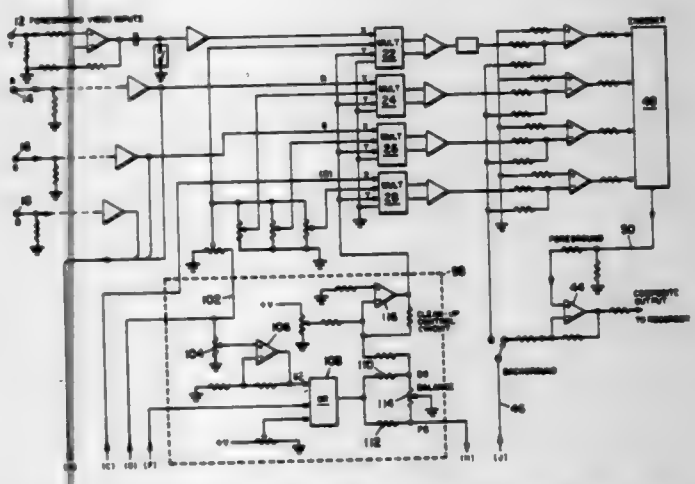
a phase comparator receiving the VIR signal for sensing the phase difference between the VIR color burst and the VIR chrominance reference and for applying, to said phase control means, a phase error signal indicative of the sensed phase difference.

4,344,085

COMPREHENSIVE ELECTRONIC COMPOSITING SYSTEM

Petro Vlahos, Tarzana, Calif., assignor to Vlahos-Gottschalk Research Corp., Reseda, Calif.

Filed Dec. 4, 1980, Ser. No. 212,971
Int. Cl.[3] H04N 9/535
U.S. Cl. 358—22 33 Claims



1. An improved comprehensive electronic system for compositing foreground and background signals of the so-called "blue-screen type" wherein the foreground signals are formed against a uniform color background comprising:

a source of red, green, and blue foreground signals;

a source of background signals;

means for developing a basic varying background control signal for varying the intensity of the background signal, including intermediate levels of background signals for use in the case of transparent foreground objects and the edges of rapidly moving foreground objects, including means for varying said basic background control signal substantially linearly as a function of the red, green and blue foreground signals in accordance with the transparency of said foreground objects;

means modifying said basic linear background control signal into a significantly non-linear modified background control signal; said modifying means including means for producing a clean-up signal by amplifying the basic background control signal and raising it to full intensity in areas approaching and close to full transparency, and concurrently reducing the intensity of the foreground signals in these areas, whereby semi-transparent objects

are made fully transparent at such levels, and dust, footprints and the like on the uniform color background of the foreground scene are eliminated;

means for controlling the intensity of the background picture elements in accordance with said modified background control signal; and

means for combining the resultant foreground and background signals to produce high quality composite images.

4,344,086

ENCODER FOR ENCODING A MULTILEVEL PEL SIGNAL SEQUENCE WITH PROBABILITY REPRESENTATIVE MODE CODES ALLOTTED TO PREDICTION ERROR CODES FOR EACH PEL SIGNAL AND A DECODER THEREFOR

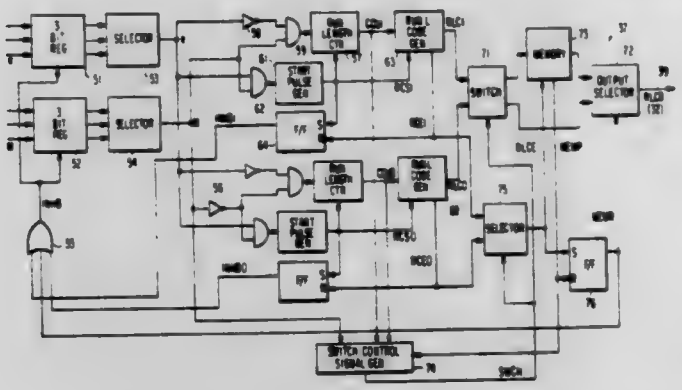
Shoji Mizuno, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1980, Ser. No. 207,500

Claims priority, application Japan, Nov. 20, 1979, 54-150349; Apr. 4, 1980, 55-44306; Apr. 4, 1980, 55-44307; Apr. 9, 1980, 55-46673; Apr. 9, 1980, 55-46674

Int. Cl.³ H04N *1/40, 7/12*

U.S. Cl. 358—78 14 Claims



1. A multilevel picture element signal encoder-decoder system comprising an encoder and a decoder;

said encoder being for encoding a sequence of original picture element signals into a compression encoded signal, each picture element signal x being capable of taking each of a plurality of levels, more than two in number, with a first probability dependent on an original reference signal S consisting of those of the picture element signals in said sequence which precede said each picture element signal x in a predetermined relationship with respect to said each picture element signal x, said levels being assigned with serial numbers, respectively, according to the respective first probabilities, said encoder comprising:

prediction error code producing means responsive to said reference signal S and said each picture element signal x for producing a predetermined number of prediction error codes which are so dependent on the serial number assigned to the level actually taken by said each picture element signal x as to represent a prediction error;

mode code producing means responsive to said reference signal S and said prediction error codes for producing a plurality of mode codes allotted to the respective prediction error codes, each mode code being representative of a second probability that the prediction error code allotted therewith represents zero;

grouping means for grouping the prediction error codes produced for the picture element signals in said sequence in accordance with the mode codes allotted thereto; and

compression encoding means for compression encoding the grouped prediction error codes into said compression encoded signal;

said decoder being for expansion decoding said compression encoded signal into a sequence of reproduced picture element signals by reproducing the mode codes for each reproduced picture element signal in response to a reproduced reference signal consisting of those of the reproduced picture element signals in said reproduced picture element signal sequence, which precede said each reproduced picture element signal in said predetermined relationship with respect to said each reproduced picture element signal, and in response to those reproductions of the prediction error codes into which said compression encoded signal is expansion decoded as regards said each reproduced picture element signal with reference to the reproduced mode codes.

4,344,087

METHOD OF PROCESSING VIDEO SIGNALS FOR TIME BASE CORRECTION

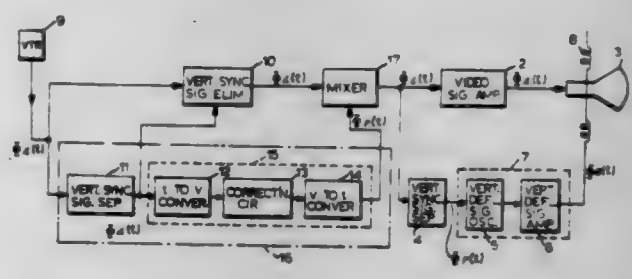
Masao Tomita, Neyagawa; Takenobu Isaka, Moriguchi; Kiyoji Fujisawa, Nara, and Mineo Mino, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 27, 1979, Ser. No. 98,199

Claims priority, application Japan, Dec. 1, 1978, 53-149331

Int. Cl.³ H04N *5/76, 5/795*

U.S. Cl. 358—127 6 Claims



1. A method of processing video signals, comprising: processing vertical synchronous signals in a composite video signal to be monitored by a television receiver, the time periods between adjacent ones of said vertical synchronous signals being variable; and supplying to the television receiver the composite video signal having substituted therein the thus processed vertical synchronous signals, said processing of the vertical synchronous signals being performed by a vertical synchronous signal processing apparatus comprising: a separation circuit for performing the step of separating the vertical synchronous signals from the composite video signal; a time-to-voltage conversion circuit for performing the step of converting the separated vertical synchronous signals to converted signals having amplitudes corresponding to the time periods between the vertical synchronous signals; a correction circuit for performing the step of correcting amplitudes and phases of the converted signals in accordance with the frequencies of the converted signals; and a voltage-to-time conversion circuit for performing the step of converting the information corresponding to the thus corrected amplitudes to time information; the composite video supplied to the television receiver formed by mixing a composite video signal without any vertical synchronous signals with the processed vertical synchronous signals.

4,344,088

VARIABLE-VELOCITY FILM EXPOSING AND DEVELOPING APPARATUS

Stephen L. Corsover, Philadelphia, Pa.; Lawrence W. Dobbins, Woodlynne, and Paul B. Pierson, Delran, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 19, 1980, Ser. No. 179,424

Int. Cl.³ H04N *5/86*

U.S. Cl. 358—132 11 Claims

1. The combination of,

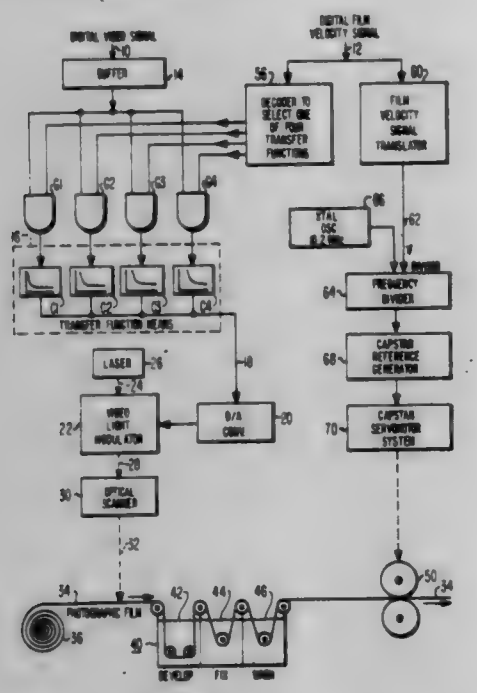
a photographic film exposing apparatus including a radiation source for exposing the film,

variable transfer function means to translate received video

density signals to corresponding exposure signals to control said radiation source,

a photographic film developing apparatus,

variable-velocity film transport means to transport said film at the same velocity through both said exposing apparatus and said developing apparatus,



means responsive to a received film velocity signal to control said variable-velocity film transport means, whereby the time period each element of the film is in the developer varies inversely with film velocity, and

means responsive to said received film velocity signal to modify said variable transfer function means to provide exposure signals appropriate for the time period each element of the film is in the developer.

4,344,089

GHOST CANCELLING SYSTEM

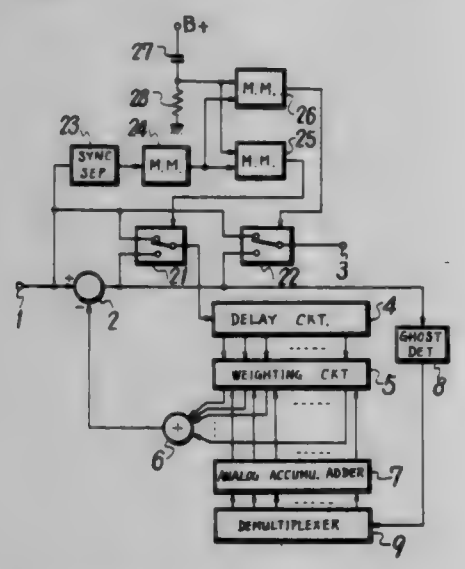
Kimitake Utsunomiya, Sagamihara; Hisafumi Yamada, Tohshin, and Choei Kuriki, Urawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,687

Claims priority, application Japan, Jan. 12, 1980, 55/2296

Int. Cl.³ H04N *5/21*

U.S. Cl. 358—167 **8 Claims**



1. A ghost cancelling system comprising:

an input terminal applied with a video signal including a ghost signal component;

a ghost cancelling circuit connected to said input terminal;

an output terminal connected to said ghost cancelling circuit for deriving an output video signal in which said ghost signal component is substantially suppressed; and

switching means included in said ghost cancelling circuit for making said ghost cancelling circuit operable between a feed-forward type circuit and a feedback type circuit.

4,344,090

TELEVISION SET WITH PICTURE-STORAGE MEANS

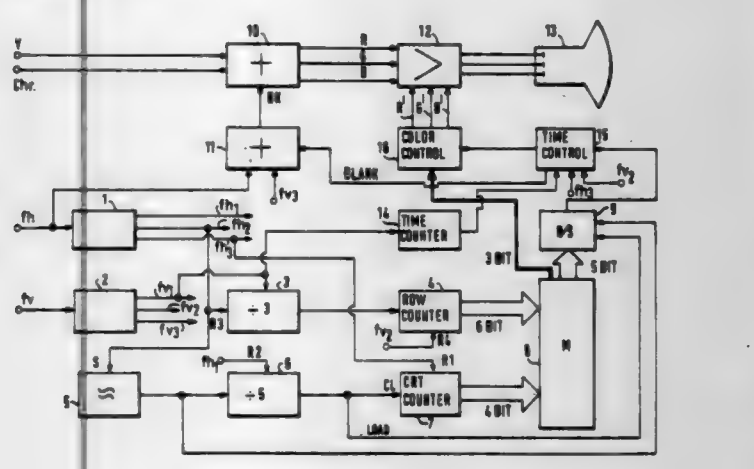
Pietro Belisomi, Pinerolo, and Attilio Farina, Turin, both of Italy, assignors to Indesit Industria Elettrodomestici Italiana S.p.A., Italy

Filed Sep. 13, 1979, Ser. No. 75,274

Claims priority, application Italy, Sep. 25, 1978, 69195 A/78

Int. Cl.³ H04N *5/44, 9/535*

U.S. Cl. 358—183 **10 Claims**



1. A television set, comprising:

picture display means for displaying an image responsive to a signal applied thereto;

first means for receiving a broadcast television signal and generating a first electrical signal representative thereof;

non-volatile memory means for storing coded data representative of at least one predetermined image which is independent of said broadcast television signal for display on said display means;

second means for reading data stored in said memory and for generating a second electrical signal representative thereof;

switching means for selectively applying at least one of said first and second electrical signals to said display means so as to operate said television set in either a first mode of operation, in which only an image represented by said broadcast television signal received by said first means is displayed on said display means, and a second mode of operation, in which only an image represented by data stored in said non-volatile memory is displayed on said display means;

said switching means including a manual three position switch movable between first, second and third positions, said switch means operating said television set in said first mode of operation when said three position switch is in said first position, said switch means operating said television set in said second mode of operation when said three position switch is in a second position, and said switching means alternately operating said television set in said first and said second modes of operation according to a predetermined time pattern, when said three position switch is in said third position.

4,344,091

RANDOM ACCESS MEMORY IMAGING SYSTEM

Harry N. Gardner, and John P. Petty, both of Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio

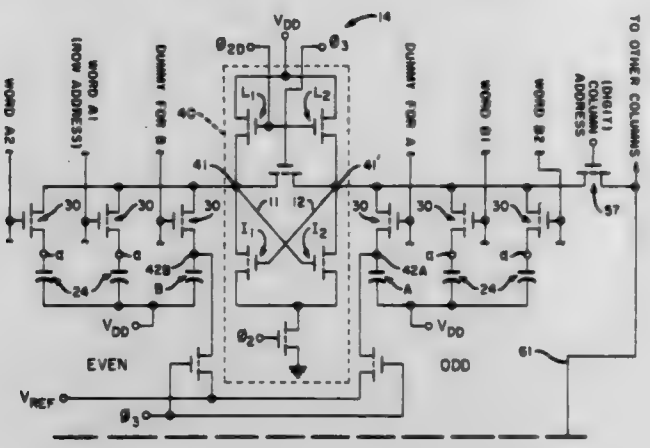
Filed May 17, 1979, Ser. No. 40,009

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **7 Claims**

1. In a solid state imaging system of the type including means for sensing incident radiation and responsively supplying elec-

trical signals controlled by the incident radiation, and means for utilizing the controlled electrical signals, the improvement wherein the sensing means is a random access memory for



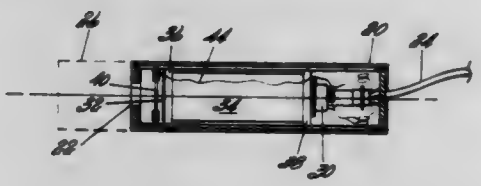
providing digital electrical signals controlled by a threshold value of incident radiation and comprising a digital data pattern of the incident radiation.

4,344,092

MINIATURE VIDEO CAMERA MEANS FOR VIDEO SYSTEM

Frederick A. Miller, Santa Barbara, Calif., assignor to Circon Corporation, Santa Barbara, Calif.

Filed Oct. 21, 1980, Ser. No. 199,380
Int. Cl.³ H04N 5/26, 5/34
U.S. Cl. 358—217 **11 Claims**



1. A video camera means for use in a video system comprising

a video imaging means having an imaging surface for receiving an optical image thereon and for generating a video signal representing a said optical image;

a housing having an optical device coupling end enclosing and supporting said video imaging means and including means defining an opening in said optical device coupling end, said housing enclosing and supporting said video imaging means at distance from said opening which distance is determined by the space between the imaging surface and the optical device coupling end to pass a said optical image from an optical device operatively coupled to the housing, through the opening in the optical device coupling end and distance located between each opening and imaging surface onto the imaging surface;

circuit means operatively coupled to said video imaging means and formed into a predetermined geometrical shape which defines a passageway adapted to pass a said optical image, said circuit means being positioned in said distance located between said opening and said imaging surface with said passageway positioned relative to the opening and said imaging surface to permit a said optical image to pass from said opening through said passageway and said distance located between said opening and imaging surface onto said imaging surface, said circuit means including

means responsive to said electrical video signal and for producing a preamplified electrical video signal therefrom having signal to noise ratio which is at least 40 decibels; and

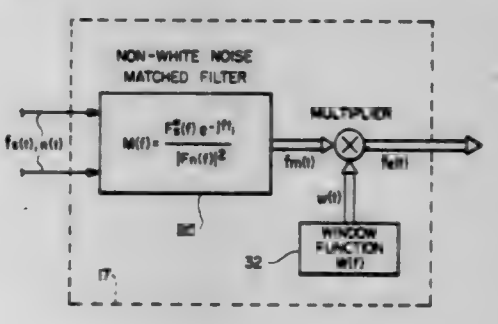
driving circuit means electrically connected to said preamplifying means and to an output circuit for applying a said amplified video signal having a signal to noise ratio of at least 40 decibels to said output circuit.

4,344,093

DELAY AND OPTIMUM AMPLITUDE EQUALIZERS FOR A READBACK CIRCUIT

William D. Huber, San Jose, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,365
Int. Cl.³ G11B 5/09, 5/02
U.S. Cl. 360—45 **8 Claims**



1. In a magnetic recording readback system, pulse improvement circuitry comprising in combination;

transducer circuit means for producing signals which vary in pulse width to be greater and alternatively lesser than a predetermined time duration and each of which includes data characteristics, noise characteristics and a signal to noise ratio,

equalizer means coupled to receive the output signals from said transducer circuit means implemented in accordance with a final transfer function wherein said final transfer function is a mathematical convolution of first and second transfer functions,

said first transfer function comprising a matched filter function which enables said equalizer means to operate on said signals from said transducer circuit means to improve said signal to noise ratio thereof,

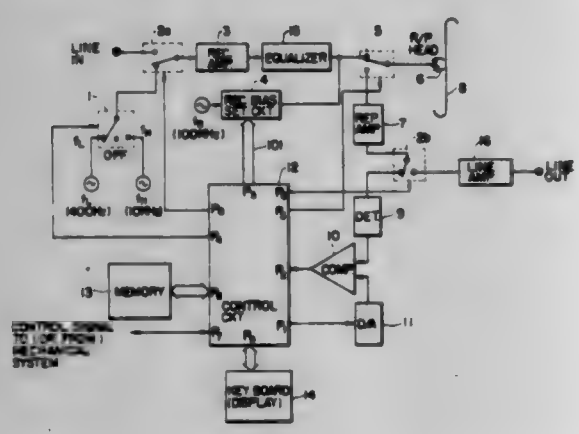
said second transfer function comprising a window function which further enables said equalizer means to operate on said signals from said transducer circuit means to limit the pulse widths of said signals to be less than said predetermined time duration.

4,344,094

METHOD AND APPARATUS DETECTING AND SETTING OPTIMUM TAPE RECORDING BIAS

Yasushi Ohtake, and Tsunao Hasegawa, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,265
Claims priority, application Japan, Nov. 24, 1978, 53-145059
Int. Cl.[3] G11B *5/47, 27/36*
U.S. Cl. 360—66 8 Claims



1. A method for detecting and setting optimum recording bias levels in a magnetic recording and reproducing device comprising the steps of:

recording a plurality of test signals of predetermined levels on a recording medium with a variable recording bias applied to said test signals;

varying said recording bias applied to said recording medium while said test signals are being recorded;

reproducing said test signals once; and

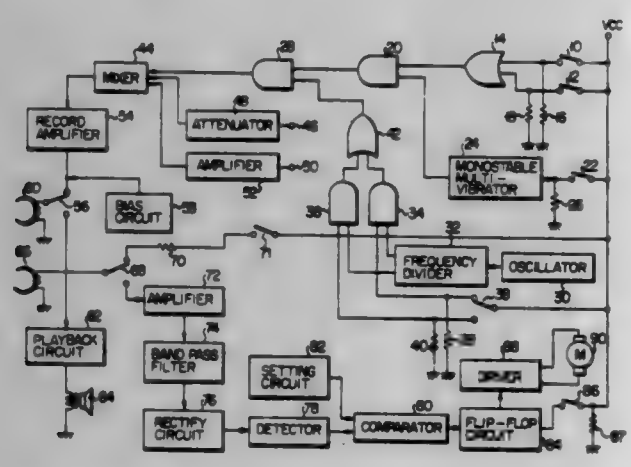
comparing the reproduced test signals with each other to determine when a predetermined level relationship exists among said reproduced test signals.

4,344,095

RECORDED-SIGNAL POSITION DETECTING CIRCUIT

Kenzi Furuta, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1980, Ser. No. 134,122
Claims priority, application Japan, Apr. 10, 1979, 54-47067[U]
Int. Cl.[3] G11B *15/52, 27/28*
U.S. Cl. 360—73 5 Claims



1. In a magnetic tape recording and reproducing device having a multi-speed recording mode which is settable to carry out recording at a selected one of a plurality of different tape recording speeds, a reproducing mode arranged to have the same tape speeds as that of the recording mode and a detecting mode in which a magnetic head contacts with a magnetic tape which is caused to travel at a speed higher than the tape speed in the recording mode by the rotation at a prescribed speed of a reel shaft serving to wind up the tape, said prescribed speed being higher than the rotation speed of the reel shaft in the recording mode and in the reproducing mode,

an improved recorded-signal position detecting circuit comprising:

a signal generating means for generating an output cue signal having one of a plurality of frequencies, each of said output cue signal frequencies being lower than the frequency of an aural signal and in proportion to a given one of said plurality of tape recording speeds, the output cue signal generated by the generating means being in proportion to the set tape recording speed of the recording mode;

recording means coupled to the signal generating means for recording the output cue signal of said signal generating means on a magnetic tape at a predetermined position on the tape in the recording mode;

reproducing means coupled to the magnetic tape for reproducing from the magnetic tape, in the detecting mode, an output cue signal of said signal generating means which was previously recorded on said magnetic tape, the reproducing means comprising a single bandpass filter whose frequency pass band is lower than the frequency band of said aural signal, the signal reproduced from said magnetic tape being passed through said single bandpass filter for extracting from the signals on said magnetic tape the output cue signal of said signal generating means which was previously recorded in said magnetic tape; and

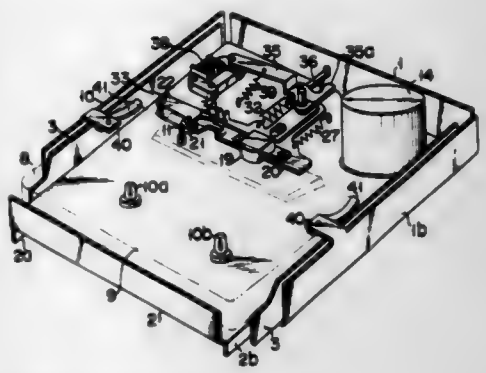
detecting means coupled to said reproducing means for detecting, in the detecting mode, the number of signals reproduced by said reproducing means and for producing a coincidence signal when said number of reproduced signals coincides with a predetermined number of signals.

4,344,096

CASSETTE TAPE RECORDER

Shinsaku Tanaka, Tokyo, and Kunio Kido, Wako, both of Japan, assignors to Tanashin Denki Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,371
Claims priority, application Japan, Nov. 9, 1979, 54/145116
Int. Cl.[3] G11B *15/66, 5/54*
U.S. Cl. 360—96.5 4 Claims



1. A cassette tape recorder comprising:

a fixed case;

a cassette holding board having a cassette loading section for detachably supporting a tape cassette;

at least one reel shaft mounted to said cassette holding board;

at least one capstan shaft mounted to said cassette holding board;

said cassette holding board being slidably mounted to said fixed case for movement in a direction perpendicular to the axes of said reel shaft and said capstan shaft between a first position wherein said holding board is drawn from said fixed case for supporting a cassette and a second position wherein said holding board is inserted in said fixed case;

a magnetic head and pinch roller movably mounted to said holding board for movement toward and away from said cassette loading section;

means for moving said magnetic head and pinch roller toward said cassette loading section when said holding board moves from said first position to said second position and away from said cassette loading position when said holding board moves from said second position to said first position; and

a cassette-pressing plate spring mounted within said fixed case for fixing said tape cassette to said cassette loading section when said cassette loading board moves from said first position to said second position, with said tape cassette being supported on said cassette loading section.

4,344,097

LOCK MECHANISM FOR USE IN TAPE PLAYER

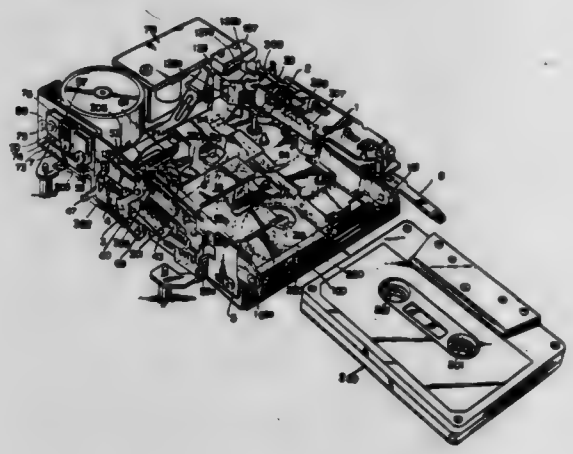
Kazuki Takai, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1980, Ser. No. 129,635

Claims priority, application Japan, Mar. 14, 1979, 54/031643[U]; Mar. 14, 1979, 54/031644[U]

Int. Cl.³ G11B *15/00, 19/18*

U.S. Cl. 360—96.6 1 Claim



1. In a tape player including a frame; the improvement in lockable mechanisms responsive to the insertion of a tape cassette into the player, said mechanisms comprising a slide member provided so as to slide relative to said frame; an actuating member rotatably fitted to said slide member; a lock-operating member mounted for movement relative to said actuating member in response to the insertion of a cassette into the tape player; an engaging member provided on said actuating member so as to engage with and disengage from said slide member; a projection formed on said lock-operating member for operating said engaging member, said projection being adapted to engage with and move said engaging member when said engaging member is operated in one direction; first guide means for guiding said engaging member into a locking position; means for resetting said lock-operating member; and a second guide means for guiding said engaging member and letting said projection pass over said engaging member when said lock-operating member is reset, said projection having on one side face thereof tow edges for changing over a guiding direction for the engaging member and, on another side face thereof, an inclined edge for pushing said engaging member into said second guide means to reset said projection.

4,344,098

CASSETTE TAPE PLAYER

Teturo Kamimura; Masahiro Komatsubara; Shizuo Ando, and Takugi Inanaga, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 21, 1980, Ser. No. 151,978

Claims priority, application Japan, May 22, 1979, 54-062910; May 22, 1979, 54-067724[U]

Int. Cl.³ G11B *5/008*

U.S. Cl. 360—96.6 6 Claims

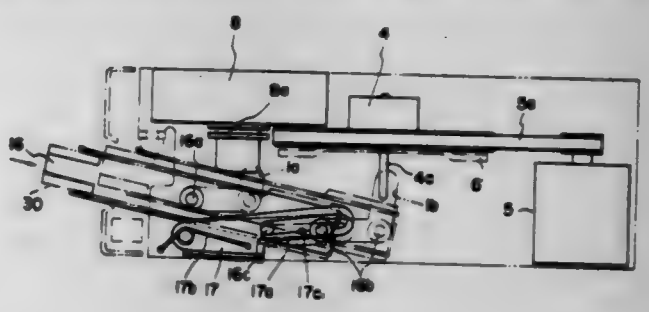
1. A cassette tape player comprising

a chassis having upper and bottom surfaces,

a capstan extending downward from the upper surface of the chassis,

a box-like receptacle for receiving a cassette therein, movably mounted in the chassis at an oblique position with respect to the chassis bottom, the trailing edge of said receptacle being more remote from the chassis bottom than the leading edge, and

guide means for first translating the receptacle in the oblique position, and then turning the receptacle approximately about its trailing edge to place the receptacle in a position parallel to the chassis bottom, said guide means including, at least one pair of guide grooves each formed in the chassis and consisting of a first portion extending parallel to the chassis bottom and a second portion following the first portion and forming an angle slightly larger than 90°



with the first portion, and at least one pair of guide members mounted on either side of said cassette receptacle and mated with said pair of guide grooves, wherein when said guide member reaches the intersection between the first and second portions of said guide grooves, the cassette in the receptacle is positioned with its capstan receiving opening aligned with the capstan, and when said guide member is advanced along the second portion to pivot the cassette receptacle from the oblique position to the parallel position, the capstan receiving opening of the cassette is maintained in alignment with said capstan,

said guide means being such that the capstan receiving opening in the cassette in said receptacle is maintained in constant alignment with said capstan during turning of the receptacle from the oblique position to the parallel position.

4,344,099

HEAD VERTICAL ALIGNMENT MEANS FOR A TAPE RECORDER

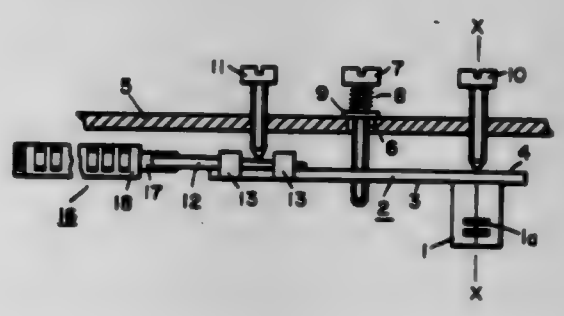
Hideo Kawachi, Ichikawa, and Niro Nakamichi, Higashikurume, both of Japan, assignors to Nakamichi Corporation, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,212

Claims priority, application Japan, Jun. 18, 1979, 54-83130[U]

Int. Cl.³ G11B *21/24, 5/56*

U.S. Cl. 360—109 4 Claims



1. Azimuth adjustment means for a magnetic head in which a head base having a magnetic head securely mounted thereon is pivotally moved relative to a chassis by a rotary motion of an azimuth adjustment screw so as to adjust the azimuth of said magnetic head, comprising a slidable member having an in-

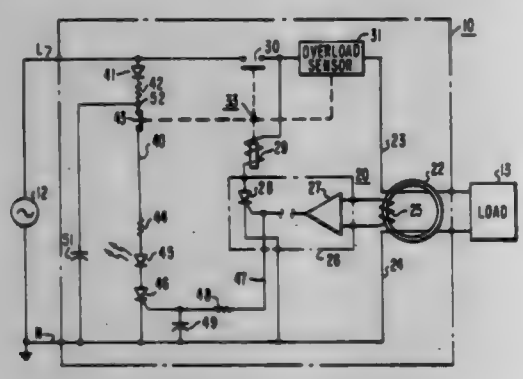
clined surface engaging said azimuth adjustment screw to be slidably interposed between said head base and said azimuth adjustment screw whereby both the rotary motion of said azimuth adjustment screw and the sliding motion of said slidable member cause said head base to move pivotally.

4,344,100

GROUND FAULT CIRCUIT BREAKER WITH GROUND FAULT TRIP INDICATOR

Ronnie D. Davidson, Bridgeport, and John J. Misencik, Shelton, both of Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 7, 1980, Ser. No. 175,976
Int. Cl.³ H02H *3/33*
U.S. Cl. 361—45 **3 Claims**



1. A ground fault circuit breaker, with a trip indicator for ground fault trips that is not actuated by overload trips, comprising:

a differential current transformer including a magnetic core, a plurality of primary windings on said core, each being arranged for connection with respective ones of the conductors of an AC electrical distribution system between a supply and a load, and a secondary sensing winding on said core for sensing current imbalance between said primary windings;

breaker contacts, operated by a trip mechanism, in series with at least one of the system conductors;

first means for actuating said trip mechanism upon occurrence of a predetermined sensed signal on said sensing winding;

second means for actuating said trip mechanism upon occurrence of an overload through said at least one of the system conductors;

ground fault trip indication means for indicating a trip due to operation of said first means for actuating said trip mechanism comprising a circuit branch connected between the conductors which includes a mechanical switch and a non-mechanical switch connected in series, said mechanical switch being arranged to close upon the opening of said contacts in series with at least one of the system conductors, said non-mechanical switch being arranged to become conductive upon occurrence of a predetermined sensed signal on said sensing winding,

and a static illuminating indicating device that is apparent external to the breaker providing an indication of the occurrence of both the closing of said mechanical switch and the conduction of said non-mechanical switch.

4,344,101

TESTERS

Yasuo Oishi, and Imao Ushimaru, both of Uedashi, Japan, assignors to Kaise Electric Works Ltd., Uedashi, Japan

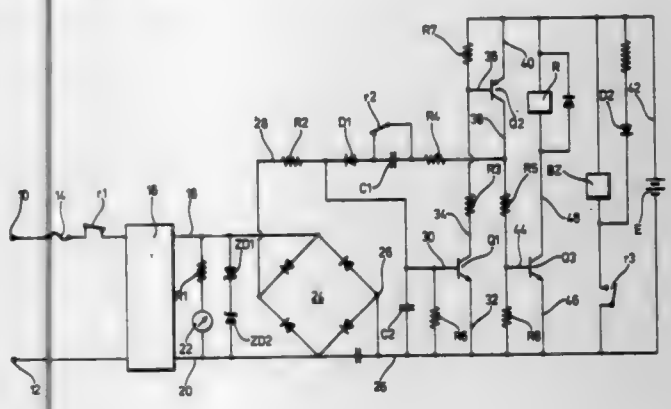
Filed Jul. 3, 1980, Ser. No. 165,665
Claims priority, application Japan, Sep. 18, 1979, 54-119643
Int. Cl.³ H02H *3/06*
U.S. Cl. 361—75 **9 Claims**

1. A circuit tester having input terminals for receiving an electrical signal having a parameter to be tested, comprising:

current measuring means for quantizing a current flowing therethrough;

means for converting a parameter of said electrical signal to be tested into a current for application to said current measuring means;

overcurrent detection means responsive to said current measured by said current measuring means for determining if said current flowing into said current measuring means exceeds a predetermined value and generating an output signal when said current exceeds said predetermined value; and



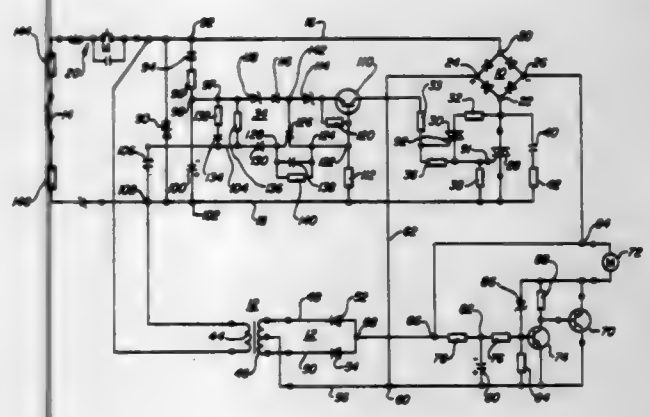
input current cut-off means responsive to said output signal from said overcurrent detection means for open-circuiting one of said input terminals and terminating the flow of said current to said current measuring means and said overcurrent detection means, said overcurrent detection means terminating said output signal after a period of time elapses following open-circuiting of said one of said input terminals to thereby cause said input current cut-off means to close circuit said one of said input terminals to reinstate the flow of current to said current measuring means.

4,344,102

ANTI-TELEGRAPH CONTROL CIRCUIT FOR ELECTROMAGNET COIL

Julian C. Kampf, Grafton; James T. Libert, Waukesha, and Winfred R. Lemke, Mequon, all of Wis., assignors to Square D Company, Palatine, Ill.

Filed Sep. 18, 1980, Ser. No. 188,407
Int. Cl.³ F16K *17/36;* H01H *47/32*
U.S. Cl. 361—154 **2 Claims**



1. A circuit for controlling the energization of an electromagnetically operated device having a stationary magnet, an armature and a coil positioned to induce magnetic flux in the magnet and armature for causing the armature to move from a first position where the armature is spaced from the magnet to a second position where the armature engages the magnet when the coil is energized by a direct current, said circuit comprising:

an alternating current source;

a pair of circuits connected between said source and coil for providing a combined but unequal output of direct current

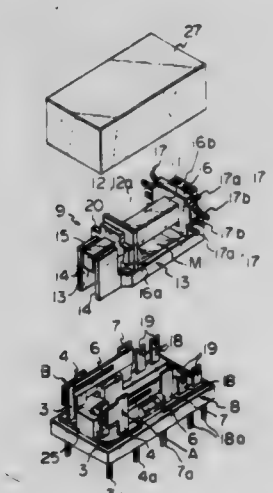
to said coil for moving the armature from its first to second position, one of said circuits of lesser potential supplying sufficient direct current to only maintain the armature in its second position when the other circuit of greater potential is de-energized; and,

means for switching out said other circuit responsive to the armature in its second position and for locking out said other circuit from re-energization so that, if the one circuit loses potential causing the armature to move back to its first position, the other circuit remains de-energized and unable to move the armature back to its second position.

4,344,103
ELECTROMAGNETIC RELAY

Mitsuki Nagamoto, Tsu, and Nobuo Kobayashi, Ise, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan and Hans Sauer, Deisenhofen, Fed. Rep. of Germany

Filed Dec. 24, 1980, Ser. No. 219,832
Claims priority, application Japan, Apr. 10, 1980, 55-47226
Int. Cl.³ H01H *51/22*
U.S. Cl. 361—160 **13 Claims**



1. An electromagnetic relay comprising:

a switching block including an insulative base and at least two sets of terminal means, each set of terminal means comprising:

a pair of fixed contact terminals each carrying a fixed contact, and

a movable contact terminal from which a resilient movable contactor extends between said pair of fixed contacts,

said sets of terminal means being integrally held by said base along a respective side edge of said base,

said pair of fixed contact terminals of each said set being in opposed relation to each other at their ends carrying said fixed contacts, while disposed out of said opposed relation at their ends embedded in said base, and

an electromagnetic block mounted on said switching block and including:

an elongated magnetic circuit forming at least one magnetic gap at one longitudinal end,

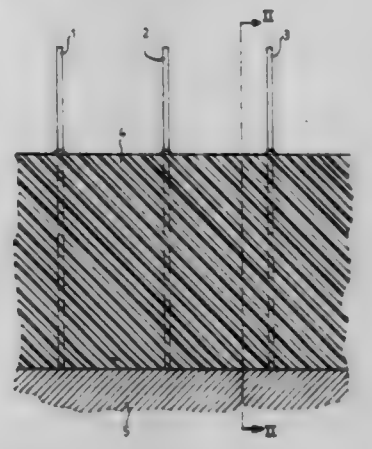
exciting coil means including a bobbin of non-metallic insulative material and a coil winding on said bobbin, one end of said bobbin including non-metallic insulative projections extending toward one another, and

an armature having one end disposed between said projections and held thereby for rocking movement such that another end of said armature reciprocates within said gap, said armature arranged to selectively engage one of said resilient contactors when rocked by said coil means to move said engaged contactor from one position to another relative to the associated fixed contacts.

4,344,104
CORONA DEVICE

Antonius H. M. Habets, Venlo, and Henricus C. M. Krijnen, Asten, both of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Oct. 6, 1980, Ser. No. 194,090
Claims priority, application Netherlands, Oct. 10, 1979, 7907492
Int. Cl.³ H05F *3/06*
U.S. Cl. 361—230 **3 Claims**

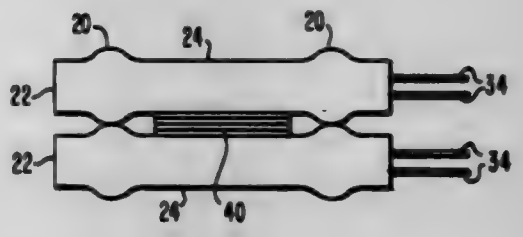


1. A corona device suitable for use in an electrophotographic apparatus, comprising as ion-generating means a multiplicity of electrode pins provided at the same mutual spacing each from another in a body of insulating material, all the said pins having the same diameter and projecting to the same extent beyond the surface of said body, wherein said electrode pins have a diameter of between 10 and 100 microns and are spaced apart mutually by a distance of between 0.3 and 2.5 mm, and they project a distance of between 0.7 and 3 mm beyond the body of insulating material, the ratio of the length of said pins to their diameter being between 10 and 300 and the ratio of the distance between the pins to their diameter being between 4 and 250.

4,344,105
POWER CAPACITOR STRUCTURE AND METHOD OF ASSEMBLY

Barry L. Holtzman, Richland Township, Monroe County; George E. Mercier, Bloomington; Peter H. Thiel, Bloomington, and James N. Santilli, Bloomington, all of Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 12, 1980, Ser. No. 216,215
Int. Cl.³ H01G *4/38*
U.S. Cl. 361—328 **4 Claims**



1. A power capacitor comprising:

a plurality of capacitor sections stacked together in an enclosure with a set of electrical interconnections between sections and terminals extending through said enclosure to the exterior thereof, said enclosure containing an insulating fluid that fills space around said sections and impregnates said sections;

each of said sections comprising a capacitor winding including first and second foil electrodes with first and second dielectric layers on respective sides of said electrodes, said dielectric layers each including one or more sheets of film

material, said first foil electrode having rolled edges so a double thickness of said first electrode occurs in the wound sections at the rolled edges;

said electrical interconnections between said sections comprising conductive tabs located within said sections and making solely pressure contact with said foil electrodes,

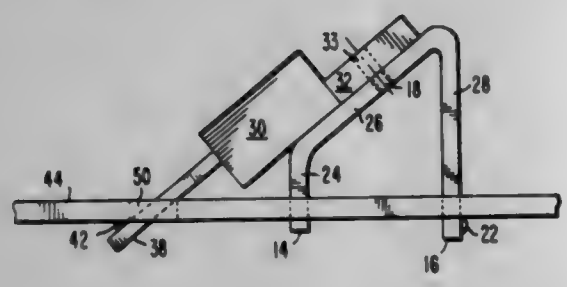
means for lessening pressure differences on portions of said stacked together capacitor sections as would otherwise result from the extra thickness of said first electrode edges, said means including by locating one or more pieces of sheet material between adjacent sections intermediate the electrode edge portions thereof, said sheet material being so dimensioned in accordance with its compressibility to result in said stacked capacitor sections having a pressure thereon at said electrode edge portions that is sufficiently light so said insulating fluid substantially completely impregnates said dielectric layers throughout the sections and a pressure thereon intermediate said electrode edge portions that is sufficiently greater so said conductive tabs within sections are in reliable pressure contact with their adjacent foil electrodes.

4,344,106

TRANSISTOR HEAT SINK ASSEMBLY

Charles E. West, Brownsburg, and Robert J. Ramspacher, Jr., Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1980, Ser. No. 210,838
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **4 Claims**



1. A thermally protected semiconductor assembly suitable for mounting on a printed circuit board comprising:

a heat sink comprising a rectangular sheet of metal folded at two fold lines which are substantially parallel to each other and to first and second opposing edges of said sheet, the distance between one of said fold lines and the nearest one of said opposing edges being greater than the distance between the other one of said fold lines and the other one of said opposing edges, with a first region of said sheet between said one of said fold lines and said nearest one of said opposing edges being disposed in a plane which is substantially parallel to the plane of a second region of said sheet between said other one of said fold lines and said other one of said opposing edges, said two fold lines being separated by a third region of said sheet which forms an acute angle with said first region at said one of said fold lines, and which forms an obtuse angle with said second region at said other one of said fold lines, said first and second opposing edges including means for securing said heat sink to a printed circuit board; and

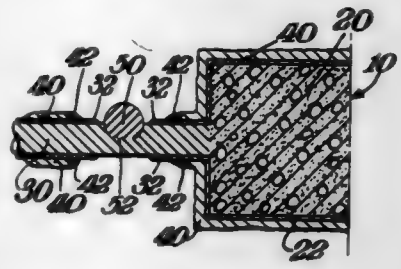
a semiconductor device including a semiconductor element encapsulated by a body of insulating material, with a heat sink tab extending from a first end of said body of insulating material and lead terminals extending from a second end of said body of insulating material, said heat sink tab being secured to said third region of said heat sink such that said first end of said body of insulating material is closer to said one of said fold lines than said second end.

4,344,107

SOLID TANTALUM CAPACITOR WITH CLEAN RISER

Dean A. Webber, Waterboro, and Peter S. Bosse, Sanford, both of Me., assignors to Sprague Electric Company, North Adams, Mass.

Filed Apr. 25, 1980, Ser. No. 143,692
Int. Cl.³ H01G *9/00, 9/05*
U.S. Cl. 361—433 **2 Claims**



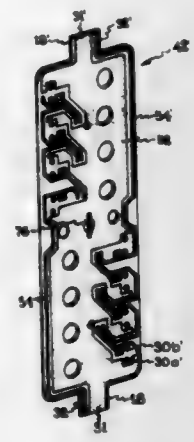
1. A solid tantalum capacitor having a tantalum anode with a riser extending therefrom, an external lead welded to said riser, a dielectric layer on said anode and said riser, and a manganese dioxide solid electrolyte layer on said dielectric layer, wherein the improvement comprises the weld between said riser and said lead being bare metal to bare metal, an area of said riser at the site of said weld being free of said dielectric layer and said solid electrolyte layer, and the solid electrolyte layer adjacent said area being a low conductivity manganese oxide.

4,344,108

FLASH LAMP ARRAY HAVING PRINTED CIRCUIT

Edward J. Collins, Mentor-on-the-Lake; Mary E. Suster, Chagrin Falls, and Vincent H. Weber, Parma, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,916
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—13 **10 Claims**



1. A flash lamp array comprising a plurality of flash lamps in a planar configuration, a plurality of reflectors respectively behind said flash lamps, a circuit board behind and parallel to said reflectors, a conductive shield behind and parallel to said circuit board, said circuit board including an integral connector tab at an end thereof, and terminals on said connector tab, wherein the improvement comprises circuit runs on said board of a material having an electrical resistance substantially greater than metal conductors, said circuit runs comprising a common circuit run connected between a first one of said terminals and a lead-in wire of a plurality of said lamps, said circuit runs comprising another circuit run connected between a second one of said terminals and sequential flashing circuitry, and means electrically connecting said common circuit run to said shield, said common circuit run being substantially wider than said other circuit run.

4,344,109

FLASH LAMP ARRAY HAVING PRINTED CIRCUIT

Mary E. Suster, Chagrin Falls, and Vincent H. Weber, Parma, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,917
Int. Cl.³ G03B 15/02
U.S. Cl. 362—13 5 Claims



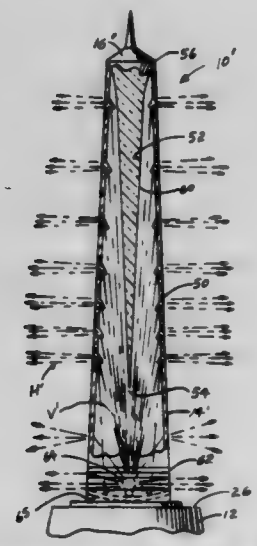
1. A flash lamp array comprising a plurality of flash lamps in a planar configuration, a plurality of reflectors respectively behind said flash lamps, a circuit board behind and parallel to said reflectors, a conductive shield behind and parallel to said circuit board, said circuit board including first and second integral connector tabs respectively at opposite ends thereof, and a plurality of terminals on each of said connector tabs, wherein the improvement comprises circuit runs on said board of a material having an electrical resistance substantially greater than metal conductors, said circuit runs comprising a common circuit run connected to a first terminal of each of said connector tabs and also connected to a lead-in wire of each of said lamps, said circuit runs comprising a run connected between a second terminal of said first connector tab and sequential firing circuitry of a first group of said lamps and a run connected between a second terminal of said second connector tab and sequential firing circuitry of a second group of said lamps, and means connecting said common circuit run to said shield adjacent to each end of said common circuit run.

4,344,110

SUPPLEMENTAL IDENTIFICATION SYSTEM FOR CHANNEL AND SIMILAR MARKER LIGHTS

Dennis W. Ruediger, Slipp 111 Keehi Marina, Honolulu, Hi. 96819

Filed Dec. 31, 1979, Ser. No. 108,442
Int. Cl.³ F21Y 7/04; F21P 1/02; B63B 21/52
U.S. Cl. 362—32 41 Claims



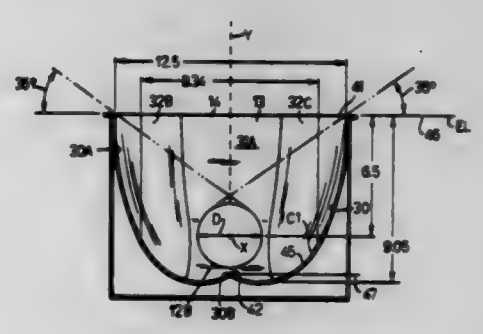
1. A marker comprising a base, an upright elongate main body mounted on said base, and signaling means in said body, said signaling means being disposed in an elongate vertical column within said body, said signaling means emitting original light uniformly from said main body continuously throughout 360 degrees in discrete visibly discernable spaced planes which are essentially horizontal so that the identity of the marker is readily apparent even against background lighting.

4,344,111

HIGH EFFICIENCY LIGHTING UNITS AND SYSTEMS USING SAME

Alan J. Ruud, West Allis, Wis., and Ian Lewin, Scottsdale, Ariz., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Division of Ser. No. 862,579, Dec. 20, 1977, Pat. No. 4,229,782.
This application Aug. 8, 1980, Ser. No. 176,717
Int. Cl.³ A61G 13/00
U.S. Cl. 362—33 7 Claims



1. In a lighting system:

a room having a floor and a ceiling:

and a lighting unit comprising a lamp and a reflector having a plurality of curved reflector surfaces, said reflector having an opening in a frontal plane defined by the edges of said curved reflector surfaces, said frontal plane being substantially parallel to said floor of said room;

said lighting unit being positioned on said floor in said room for projecting a cone of light emanating from said opening upwardly toward said ceiling for reflection downwardly therefrom;

said lighting unit being located so that said frontal plane is positioned at a distance above said floor which is about that of the average eye level of a standing human being;

said cone of light emanating from opening defining an angle of about 35° between the edge thereof and said frontal plane thereby to minimize glare to human beings present in said room.

4,344,112

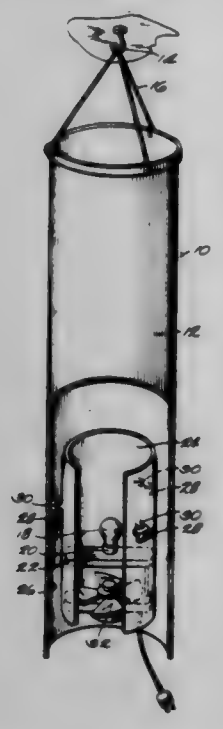
ENVIRONMENTAL LAMP

Robert L. Brown, 1923 W. Greenfield, Apt. 1, Milwaukee, Wis. 53204

Filed Oct. 6, 1980, Ser. No. 193,929
Int. Cl.³ F21V 33/00
U.S. Cl. 362—96 9 Claims

1. An ornamental lamp adapted to cause circulation of air in a room between the floor and the ceiling of the room, the ornamental lamp comprising means for providing a generally vertical air flow conduit from a zone of the room adjacent the floor to a zone of the room adjacent the ceiling, said air flow conduit means including a hollow elongated cylindrical light preamble structure having a length at least several times its diameter and having an open upper end adapted to be positioned adjacent the ceiling of a room, and an open lower end adapted to be positioned adjacent the floor of a room, and said hollow elongated cylindrical structure having an inner surface, a light source supported in said hollow structure, and means for shielding a portion of said inner surface surrounding said light source from said light source, said shielding means comprising a sleeve having an open upper end and an open lower

end and providing a vertical air flow passage within said hollow structure, said sleeve being spaced inwardly from said



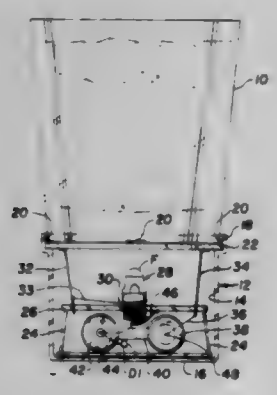
inner surface of said hollow structure and defining an air flow passage between said sleeve and said hollow structure.

4,344,113

APPARATUS TO ILLUMINATE A LIQUID DRINK

Donald R. Ditto, Rte. 2, Box 60F2, Winnsboro, Tex. 75494, and John R. Sparks, Winnsboro, Tex., assignors to Donald R. Ditto, Winnsboro, Tex.

Filed Dec. 18, 1979, Ser. No. 104,972
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—101 **6 Claims**



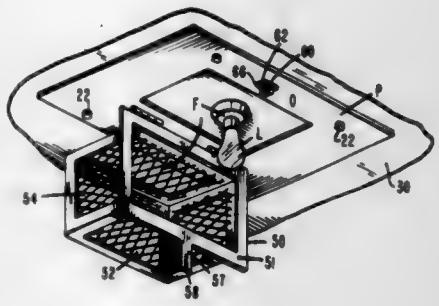
1. Apparatus to illuminate a liquid drink contained in a transparent receptacle comprising: a cylindrical hollow base having a lip formed about the upper periphery to grip the bottom portion of a transparent receptacle; an electric power source secured within said base; an electrical light source forming a columnated beam of light positioned to shine through the bottom of the transparent receptacle; an annular, conductive ring secured to the bottom of said transparent receptacle; and a pair of flexible contacts, one contact secured to one pole of said power source and the other contact secured between said light source and extending upwardly to an upper edge of said base, and arranged such that said contacts engage said ring when the transparent receptacle to form a complete circuit in energize the light source such that a columnated beam of light is shining through the bottom of the transparent receptacle to illuminate the liquid contained therein.

4,344,114

TAMPER-PROOF SECURITY DEVICE FOR SURFACE MOUNTED ELECTRICAL OUTLETS AND THE LIKE

Norbert J. Denhart, 2845 Westonridge Dr., Cincinnati, Ohio 45239

Continuation of Ser. No. 901,302, May 1, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,791
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—147 **3 Claims**



1. In combination with a building structure including a pair of spaced support members, a tamper-proof security device comprising:

(a) a flat mounting plate spanning a pair of spaced support members, the mounting plate having a central opening therethrough dimensioned to accommodate an electrical fixture which is secured relative to and carried by said spaced support members and a plurality of peripheral aperatures spaced to register with the pair of spaced support members;

(b) a plurality of anchoring elements extending through the peripheral aperatures into support members for securely positioning the plate relative to the support members, said anchoring elements being secured relative to said mounting plate against removal or withdrawal from said spaced support members;

(c) a building surface interposed between said support members and said mounting plate;

(d) a housing defined by upper, lower, side and end areas, the periphery of each of which is defined by a framework of material which is substantially cut-resistant and distortion free and see-through panels of material which is characterized by it's inherent resistance to breakage, distortion, and ease of cutting secured to and carried by said framework for defining an enclosed area, the interior of which is clearly visible, said housing including an upper open end and a flat, peripheral lip which projects outwardly of and circumscribes the upper open end of said housing, a surface of said lip being adapted to abut against those portions of a surface of the mounting plate which circumscribes the central opening therein during those periods of time when the housing is disposed in a closed position for procluding the unauthorized or malicious insertion of a pry-tool between the adjacent surfaces of said housing and mounting plate;

(e) means for hingedly securing the housing to the mounting plate to permit pivotal movement of the housing between an open position which allows access to the central opening in the mounting plate and a closed position in which access to the central opening is blocked; and

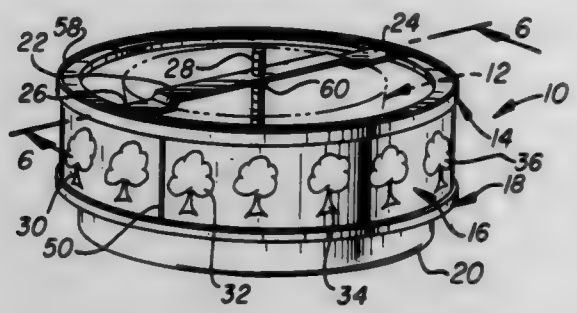
(f) means for securely, though releasably, securing the housing in the closed position for preventing unauthorized access to the interior of the housing and the opening in the mounting plate.

4,344,115

TRANSLUCENT PLASTIC LAMPSHADE

Jay W. Pickens, Fort Worth, and Linton G. Warren, Crowley, both of Tex., assignors to Rangaire Corporation, Cleburne, Tex.

Continuation of Ser. No. 5,397, Jan. 22, 1979, abandoned. This application Aug. 11, 1981, Ser. No. 177,099
Int. Cl.³ F21S *5/00*
U.S. Cl. 362—216 **4 Claims**



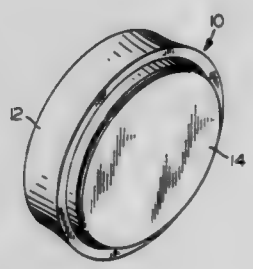
1. A lampshade in combination with a fluorescent lamp for attachment to a mounting bracket suspended from a ceiling comprising:
a circular translucent shade formed from a flexible, thin-walled sheet of plastic, and dimensioned to fit about the fluorescent lamp for diffusing the light from the lamp,
a circular upper flange formed from an integral plastic body,
said flange having upper and lower surfaces,
a circular groove formed on said lower surface and having the same diameter as said shade,
a lip formed on said lower surface and located on the outer peripheral edge of said flange,
said shade rigidly attached to said upper flange,
means for attaching said upper flange to the mounting bracket,
a circular lower flange formed from an integral plastic body,
said flange having an upper surface,
a circular groove formed on said upper surface and having the same diameter as said shade,
a lip formed on said upper surface and located on the outer peripheral edge of said flange,
said shade rigidly attached to said lower flange in said groove, and
a translucent, circular, plastic lens having a diameter less than said shade and dimensioned to rest upon said upper surface of said lower flange for diffusing the light from the lamp.

4,344,116

FLAT FACE NIGHT LIGHT

Robert L. Martin, Coventry, R.I., assignor to General Electric Company, New York, N.Y.

Filed Aug. 30, 1978, Ser. No. 937,910
Int. Cl.³ H01R *33/00*
U.S. Cl. 362—226 **10 Claims**



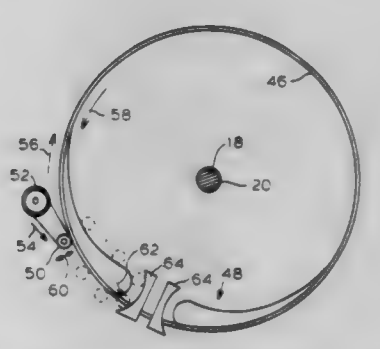
1. A night light comprising
a shallow cylindrical dished housing having an open and a closed face, said housing having an internal annular latching ledge,
a pair of electric power blades mounted through the closed face of said housing and fixed in said face to permit said housing to be supported by said blades,
an electrically powered light source electrically connected to the external ends of said power blades,
a shallow cylindrical dished lens,
said lens having an open face and a closed face and a diameter slightly smaller than that of said housing to permit the open face of said lens to be nested in the open face of said housing,
the lens having an external latching rim of diameter slightly larger than the internal diameter of said latching ledge,
and the lens being nested in the housing with the latching ledge latched over the latching rim to prevent removal of said lens.

4,344,117

SEARCHLIGHT REVERSING MECHANISM

Richard Niccum, 1554 W. 25th St., Upland, Calif. 91786

Filed Sep. 11, 1980, Ser. No. 186,239
Int. Cl.³ F21V *21/14*
U.S. Cl. 362—250 **9 Claims**

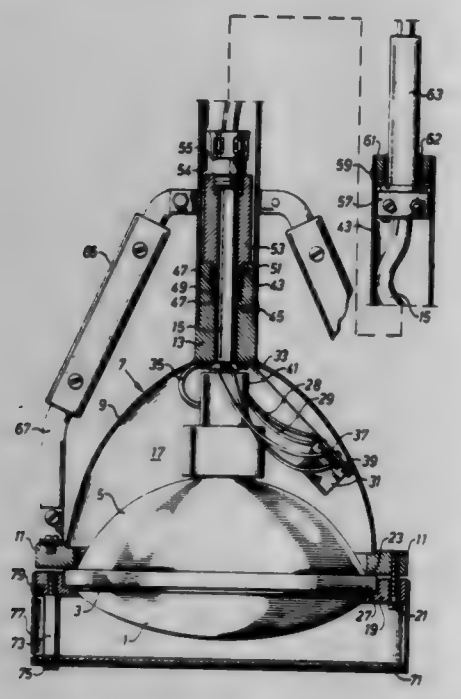


1. In a searchlight assembly having a turret including one or more searchlights mounted thereon and carried by a base member for rotation about a turret axis to rotate the searchlights, the improved mechanism for smoothly revolving the turret in an oscillating pattern of less than 360° arc comprising:
(a) a partial cylindrical track member disposed concentrically about the turret axis and connected to the turret adjacent the base member, said track member extending over an arc equal to the desired arc of oscillation, the ends of said track member being tear-drop shaped in the plane of said track member to smoothly fold back upon itself, said tear-drop shaped ends each having a maximum radius of curvature such that a driving wheel engaging said track to rotate said turret thereby will be delayed in the transition between driving in one direction and the other a sufficient time to allow the turret to smoothly decelerate and then smoothly accelerate the turret in the opposite direction;
(b) a mounting assembly carried by the base member adjacent said member track and including a swing-arm attached at one end for rotation about an axis parallel to the turret axis;
(c) a drive shaft journal-mounted to the unattached end of said swing-arm parallel to the turret axis;
(d) a drive wheel mounted on said drive shaft to contact said track;
(e) drive motor means mounted to said mounting assembly for rotating said drive shaft;
(f) first bias means attached to said swing-arm for holding said drive wheel against said track when said drive wheel is on the side of said track towards the turret axis;
(g) second bias means attached to said swing-arm for holding said drive wheel against said track when said drive wheel is on the side of said track away from turret axis; and,
(h) means for holding said drive wheel against said track in the tear-drop shaped portions during the transition between said first and second bias means holding said drive wheel against said track.

4,344,118
LAMP DEVICE FOR UNDERWATER USE

Hans M. Rundquist, and Tore G. Sköld, both of Nyköping, Sweden, assignors to Studsvik Energiteknik AB, Nyköping, Sweden

Filed Mar. 31, 1980, Ser. No. 135,862
Claims priority, application Sweden, Mar. 20, 1979, 7902877
Int. Cl.[3] F21V *29/00*
U.S. Cl. 362—267 7 Claims



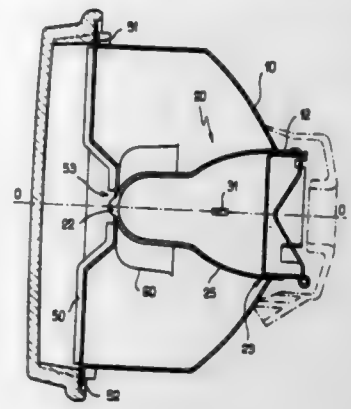
1. A lamp assembly for underwater use, comprising:
a sealed beam lamp including a front lens, a back side, and a flange surrounding the adjacent edges of said lens and back side;
said flange including a front surface and a rear surface,
a casing disposed over said back side of said sealed lamp and forming therewith a water-tight pressure chamber,
said casing including a groove facing said rear surface of said flange,
a sealing ring disposed in said groove in sealing relationship with said casing and said rear surface of said flange to seal said chamber,
a pressing ring forming a gap with said casing and including a portion facing said front surface of said flange,
a pressure balancing packing interposed between said portion of said pressing ring and said front surface of said flange, and
means for releasably interconnecting and drawing together said pressing ring and said casing such that said pressing ring presses said flange against said seal ring, and
electrical connecting means disposed in said chamber and connected to said sealed lamp.

4,344,119
HEADLAMPS HAVING SEALED OPTICAL UNITS AND REPLACEABLE LIGHT BULBS

Thierry Bergot, Paris, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Jul. 1, 1980, Ser. No. 164,999
Claims priority, application France, Jul. 19, 1979, 79 18697
Int. Cl.[3] F21V *29/00*
U.S. Cl. 362—267 6 Claims

1. In a headlamp of the type having a sealed optical unit comprising a reflector having front and rear openings, a front lens closing said front opening of said reflector, and a transparent cup-shaped pocket closing said rear opening of said reflector and projecting into the interior of said sealed optical unit, said headlamp also including a light source removably fitted within said transparent pocket, the improvement comprising:
said transparent pocket having a portion flared outwardly towards said rear opening of said reflector, at least in the part of said pocket closest to said light source, such that any rays from said light source which are reflected from said flared portion of said pocket are directed to pass out

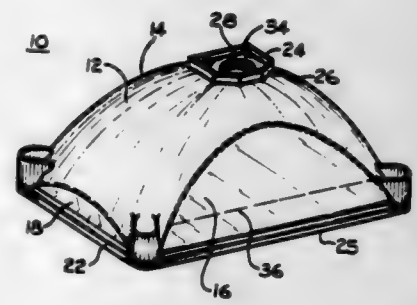


of said rear opening of said reflector, rather than being reflected by said reflector.

4,344,120
PLASTIC PAR LAMP CONSTRUCTION WITH TAPERED REINFORCEMENT

Irving Bradley, Novelty, and James M. Hanson, Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,911
Int. Cl.[3] F21V *7/00*
U.S. Cl. 362—349 8 Claims



1. An improved rectangular shaped plastic reflector member having a parabolic shaped cavity, one pair of opposing generally parallel planar walls which intersect the parabolic cavity to form the longer sides of said rectangular shape, a second pair of opposing generally parallel planar walls which intersect the parabolic cavity to form the shorter sides of said rectangular shape, all said planes terminating at a rectangular shaped sealing rim, and receptacle means disposed on the rear side of said reflector which accommodates a prefocused mount construction to locate a light source at the focus of said reflector, the improvement wherein the wall thickness of said planar walls is sufficiently greater adjacent to the sealing rim than in the adjoining wall region of said parabolic cavity to avoid mechanical and heat distortion, and wherein said greater thickness region is produced by varying the wall draft angle for said molded construction.

4,344,121
CLOCKED LOGIC POWER SUPPLY

Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corp., Bedford, Mass.

Filed Nov. 20, 1980, Ser. No. 208,824
Int. Cl.[3] G05F *1/56;* H02P *13/32*
U.S. Cl. 363—16 24 Claims

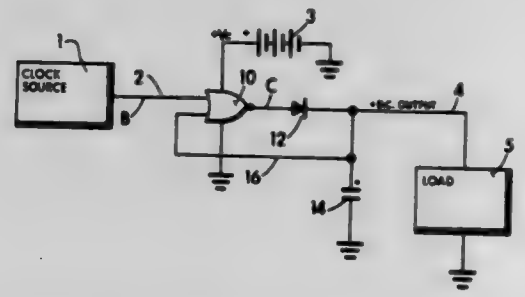
4. Power supply means whereby an electric potential is produced therefrom which is electrically regulated through the combination of:
a. a source of electric, clock pulse signal;
b. gating means having an output and at least two effective

control inputs thereto, whereby one said input is coupled with said clock pulse signal as an input thereto;

c. at least a second said input to said gating means which is substantially bilevel value voltage responsive, whereby when said voltage level is of a first level value said clock pulses coupled with said first input are enabled to actively couple with said gating means output as a signal therefrom, and further when said voltage level is of a second level value said clock pulses coupled with said first input are decoupled with said gating means output resulting in substantially no effective signal therefrom;

d. unilateral element means coupled with said gating means output and effective therewith to effectively rectify the output signal obtained therefrom;

e. charge accumulator means having two effective terminals, whereby the first terminal couples with said unilateral



element means for receiving unipolar current flow pulses therefrom as an integratively accumulated charge, whilst the second terminal couples with a common return circuit;

f. load impedance means effectively coupled between the first and the second terminal of the said charge accumulator for receiving at least some accumulated charge therefrom;

g. feedback coupling means effective to couple a signal which is a sample of the electric potential value effectively appearing at the said accumulator first terminal with the said gating means second input, thereby serving to control the flow of clock pulses between the first input and the output thereof in proportion to the effective instantaneous electric charge potential across the accumulator terminals; and,

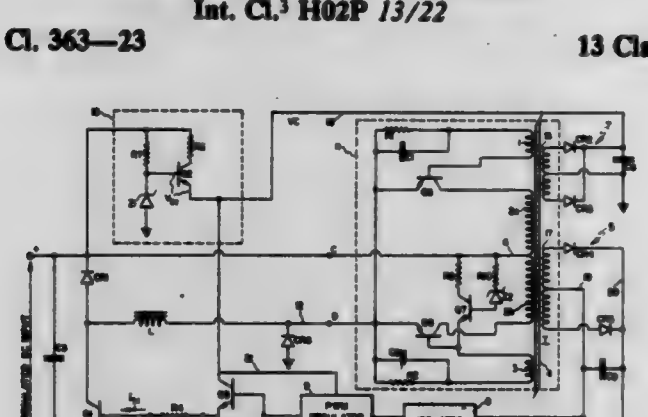
h. a source of electric d.c. power coupled with at least the said gating means and the said common return circuit.

4,344,122

CURRENT SOURCED INVERTER WITH SATURATING OUTPUT TRANSFORMER

Dwight V. Jones, Baldwinsville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 5, 1980, Ser. No. 184,212
Int. Cl.³ H02P *13/22*
U.S. Cl. 363—23 **13 Claims**



1. A converter for converting an unregulated input voltage from a voltage source having a common terminal, to a regulated output voltage comprising:

a square wave inverter including an output transformer having primary and secondary windings;

a constant current source coupled to said inverter and supplying current to said inverter so that a substantially square wave alternating current flows in said primary winding;

control circuit means for sensing said output voltage and providing a control signal when said output voltage varies by more than a predetermined amount;

a transistor switch coupled in series with said constant current source, said transistor switch being responsive to said control signal for controlling the voltage on said primary winding so that said output voltage is maintained within predetermined limits, said transistor switch and said constant current source being coupled in the current return line of said inverter; and

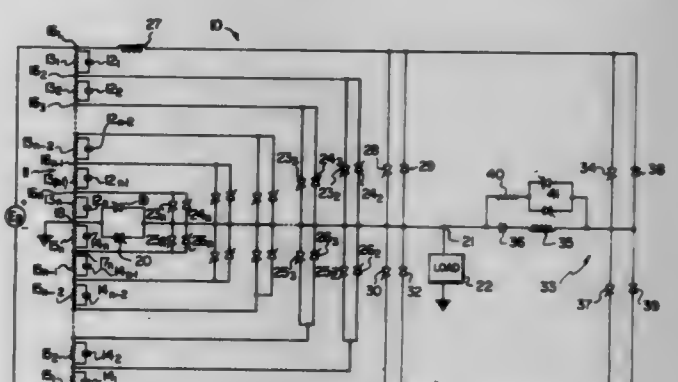
circuit means coupled between the voltage source common terminal and the emitter of said transistor switch for maintaining the emitter voltage of said transistor switch near the voltage on the common terminal of said input voltage source, allowing said control signal to be applied directly to said transistor switch.

4,344,123

MULTILEVEL PWM INVERTER

Pradeep Bhagwat, Baltimore, Md., and Victor R. Stefanovic, Charlottesville, Va., assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sep. 14, 1981, Ser. No. 301,755
Int. Cl.³ H02M *1/12*
U.S. Cl. 363—43 **5 Claims**



1. A multilevel inverter comprising:

a voltage divider for connection across a dc source E_D for providing voltages at terminals in a decreasing sequence from $+E_D$ to $-E_D$;

a first set of controlled ac switches connected between the positive voltage terminals and a load terminal for applying selected positive voltages to the load terminal, the main ac switch connected to the potential $+E_D$ being a controlled rectifier and a reverse connected diode;

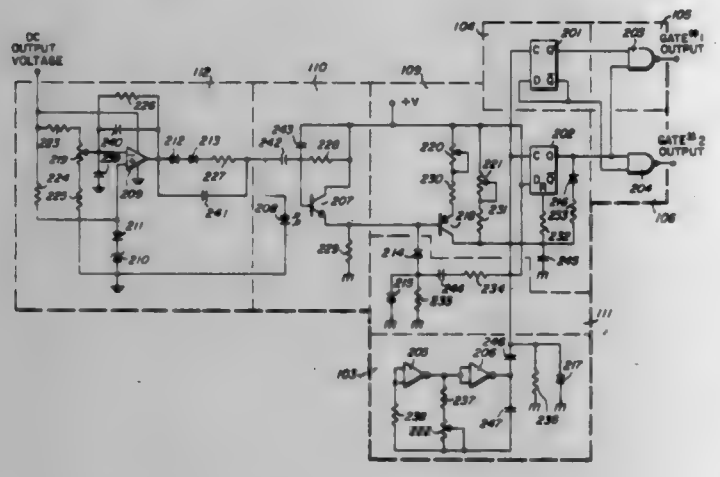
a second set of controlled ac switches connected between the negative voltage terminals and the load terminal for applying selected negative voltages to the load terminal, the main ac switch connected to the potential $-E_D$, being a controlled rectifier and a reverse connected diode; and

commutation means for turning off either of the main ac switches connected between the $+E_D$ terminal or the $-E_D$ terminal, the commutation means having a pair of series-connected commutation controlled rectifiers connected in parallel with the pair of main controlled rectifiers, a diode connected in reverse polarity across each of the commutation controlled rectifiers, capacitance means connected between the load terminal and a juncture between the commutation controlled rectifiers, and inductance means connected between the load terminal and the dc source.

4,344,124
START-UP TIMER FOR A SWITCHING POWER SUPPLY

Natalino Panicali, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 22, 1979, Ser. No. 22,756
Int. Cl.³ H02P *13/22*
U.S. Cl. 363—49 **7 Claims**



1. A switching power supply adapted to provide a DC output voltage from an AC input voltage supplied by an AC voltage source, comprising:

transformer inverting means responsive to a pulse-width modulated gating signal for providing a DC output voltage;

means coupled to the DC output voltage for generating a reference voltage therefrom;

comparing means for comparing the DC output voltage to the reference voltage and providing an error signal proportional to the difference therebetween;

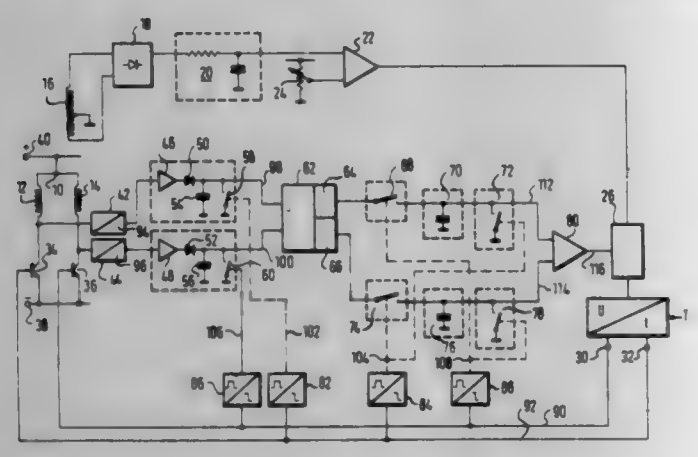
control means for providing a gating signal and pulse-width modulating the gating signal in response to the error signal; and

start-up means responsive to an interruption of the AC input voltage for enabling the control means to pulse-width modulate the gating signal at a predetermined maximum duty cycle for a predetermined time interval following reapplication of the AC input voltage.

4,344,125
SYSTEM FOR PRECISE REGULATION OF THE OUTPUT VOLTAGE OR CURRENT OF A PUSH-PULL INVERTER HAVING LARGE VARIATIONS OF INPUT VOLTAGE

Reinhard Kalfhaus, Mainring 10, D-6451 Mainhausen, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,553
Int. Cl.³ H02P *13/00*
U.S. Cl. 363—80 **18 Claims**



1. A method for maintaining precise regulation of the output of a push-pull inverter having primary winding means for generating said output, said primary winding means controlled by first and second alternately switched transistors, comprising the steps of:

determining the voltage time areas of the transistor output signals in each of the transistor conduction periods;

producing differential signals from the voltage time areas in consecutive transistor conduction periods;

deriving a regulation fluctuation signal from the output generated by the primary winding means;

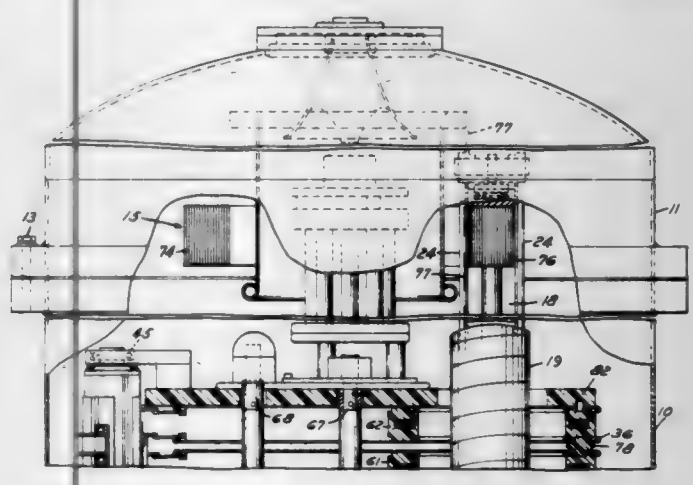
superimposing the differential signals on the regulation fluctuation signal to produce transistor control signals; and,

coupling the transistor control signals to the alternately switched transistors to vary the conduction periods in accordance with the differential signals, thereby reducing fluctuation of the output of the push-pull inverter and maintaining precise regulation.

4,344,126
LOW RIPPLE D.C. POWER SUPPLY

Berthold W. Schumacher, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1980, Ser. No. 193,565
Int. Cl.³ H02M *7/06*
U.S. Cl. 363—126 **18 Claims**



1. A transformer for converting a polyphase a.c. electrical power supply to a d.c. power source comprising:

a core having a plurality of legs, the plurality corresponding in number to the number of phases of the power supply;

a primary winding having a portion thereof wound around each of the core legs;

a secondary circuit magnetically coupled to said primary winding having segments thereof connected to produce a phase shift of the output voltage with respect to the output voltage of other secondary circuit segments;

means adapted to rectify the output voltage of said secondary circuit segments whereby a d.c. voltage is produced;

means interconnecting the output of said secondary winding segments whereby power is supplied to the load at a voltage whose magnitude depends on the interconnections made among the secondary winding segments.

4,344,127
MICROPROCESSOR BASED PROCESS CONTROL SYSTEM

George H. McDaniel, Northville; Thomas W. Hartford, Livonia; William R. Hungerford, Detroit; William J. Perzanowski, Troy, and Reno V. Benaglio, Bloomfield Hills, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 28, 1980, Ser. No. 182,201
Int. Cl.³ G05B *19/403*
U.S. Cl. 364—130 **11 Claims**

10. A microprocessor process control system comprising:

bus means, including system data, address and control buses for communicating data, address and control information to the below specified components of the system;

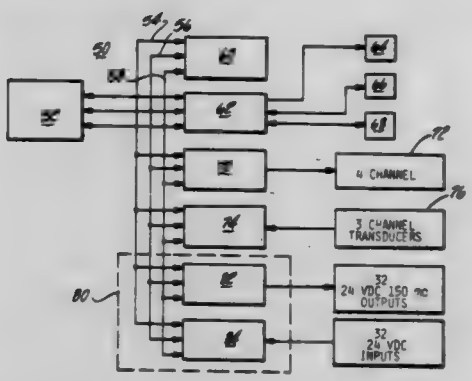
operating systems means for storing program instructions;

interactive data means for communicating input and output data to said system;

central processor means comprising processor means communicating with said operating systems means, and said interactive means for generating digital command signals and for displaying process and character information to said interactive data means, said processor means further including means for generating a predetermined number of bits of data and address information and means for multiplexing the data and the address information on an internal bus; said central processor further including

address transfer means, including latch means, communicating with said internal bus and said system address bus, for temporarily storing the address information and including buffer means for communicating the address information to said systems address bus;

data transfer means including byte swap means communicating with said internal bus and buffer means communicating with said byte swap means for transferring data to said system data bus, wherein said byte swap means contains first means for selectively transferring half of said predetermined number of bits of data information, corresponding to the low order bits, generated by said processor means to the low order bit locations of said system data bus, and for transferring half of said predetermined number of bits of data information corresponding to the high order bits generated by said processor means to the low order bit locations of said system data bus;



control bus means, responsive to status signals from said processor means for indicating when said processor means has placed address or data information on the internal bus and for communicating the status of said processor means to said system control bus;

memory means, communicating with said address and said internal bus for constant and process indicative data.

4,344,128

AUTOMATIC PROCESS CONTROL DEVICE

Robert C. Frye, Rte. 2, Box 255, Winchester, Ky. 40391

Filed May 19, 1980, Ser. No. 150,935

Int. Cl.³ G06G *7/66*; G05B *5/00, 7/02, 11/40*

U.S. Cl. 364—183 **23 Claims**

1. Automatic process control device comprising, in combination:

first input means for receiving a first signal proportional to a measured variable;

second input means for receiving a second signal proportional to the desired set point of said measured variable;

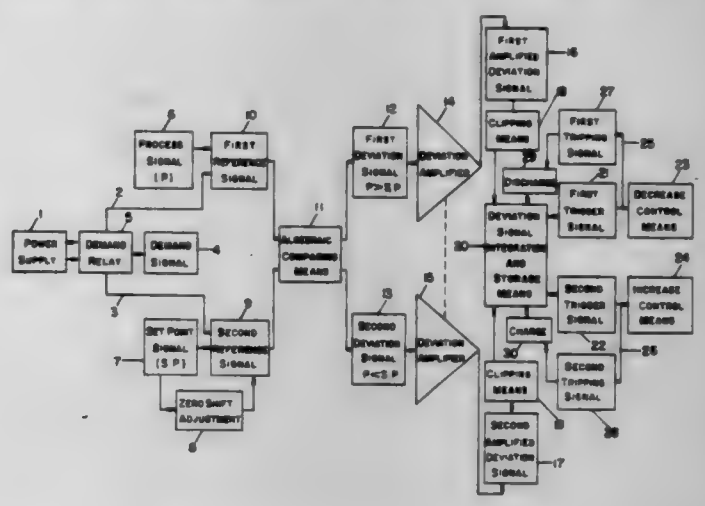
control means to selectively urge said measured variable toward a pre-selected desired value;

reference signal generating means to provide a reference signal reflective of the difference between said first signal and said second signal;

deviation signal generating means to receive said reference signal and produce a first or a second deviation signal, each proportional to the reference signal;

voltage clipping means having input means adapted to receive said first and second deviation signals to limit said first and second deviation signals to selected maximum values;

deviation signal time-integration and storage means to receive said first and second limited deviation signals and to integrate said first and second limited deviation signals on a time basis and provide a first signal from said deviation signal time-integration and storage means when said time integration of said first and second limited deviation signals is between a pre-selected minimum and a pre-selected maximum value, a second signal from said deviation signal time-integration and storage means when said time integration of said first and second limited deviation signals exceeds said pre-selected maximum value, and a third signal from said deviation signal time-integration and storage means when said time-integration of said first and second limited deviation signals is below said minimum value; and



switching means responsive to said second and third signals from said deviation signal time-integration and storage means and operably connected to said control means to operate said control means to adjust said measured variable to minimize the difference between said first and second signals and simultaneously urge said time-integration of said first and second limited deviation signals toward a mid-point between said pre-selected maximum and minimum values of said time integration of said first and second deviation signals to produce said first signal from said deviation signal time-integration and storage means.

4,344,129

DATA PROCESSOR SYSTEM CAPABLE OF PROVIDING BOTH A COMPUTER MODE AND A SEQUENCER MODE OF OPERATION

Kazuyoshi Asada, Hitachi; Hajime Yasuda, Katsuta, and Kunihiko Ohnuma, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 746,001, Nov. 30, 1976, abandoned. This application Aug. 16, 1979, Ser. No. 67,119

Claims priority, application Japan, Dec. 5, 1975, 50-144035

Int. Cl.³ G06F *9/30, 15/46*

U.S. Cl. 364—200 **6 Claims**

1. A data processor system capable of providing both a computer mode and a sequencer mode of operation comprising;

a processor unit including a main memory unit for storing data, a train of computer mode instructions and a train of sequencer mode instructions, including mode change instructions; a controlling unit for sequentially reading out the instructions in said main memory unit and for outputting a series of controlling signals for use in executing said instructions; and a data section responsive to said controlling signals from said controlling unit for performing computer mode and sequencer mode operations; and

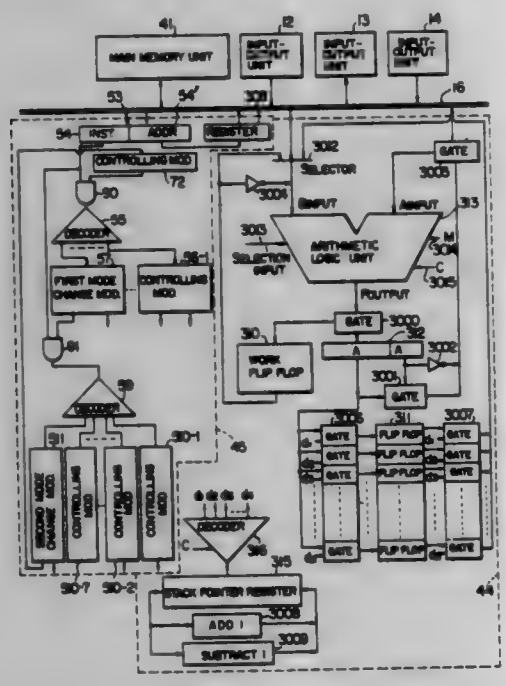
a plurality of input-output units connected with said proces-

sor unit for sending and receiving data between an external apparatus and said processor unit;

said controlling unit including;

an instruction register composed of an instruction code part and an address part for retaining an instruction having an instruction code portion and an address portion read out from said main memory;

a first controlling section operated only in response to computer mode instructions and including, a first instruction decoder connected to said instruction code part of said instruction register through a first selecting gate opened when said computer mode instructions are to be executed, for generating a selecting signal in response to the instruction code portion of said computer mode instruction retained by said instruction register; a plurality of instruction control modules each of which generates controlling signals for use in executing a computer mode instruction when selected by said selecting signal of said first instruction decoder; and a first mode change module responsive to the selecting signal of said first instruction decoder for generating a signal for opening a second selecting gate connected to the instruction code part of said instruction register in response to a first mode change instruction in said instruction register instructing that the mode of operation of the system is to be changed from the computer mode to the sequencer mode;



a second controlling section operated only in response to a sequencer mode instruction, including a second instruction decoder connected to said instruction code part of said instruction register through said second selecting gate which is opened when said sequencer mode instructions are to be executed, for generating a selecting signal in response to the instruction code portion of said sequencer mode instruction retained by said instruction register; a plurality of instruction control modules each of which generates controlling signals for use in executing a sequencer mode instruction when selected by said selecting signal of said second instruction decoder; and a second mode change module responsive to the selecting signal of said second instruction decoder for generating a signal for opening said first selecting gate in response to a second mode change instruction in said instruction register instructing that the mode of operation of the system is to be changed from the sequencer mode to the computer mode; and

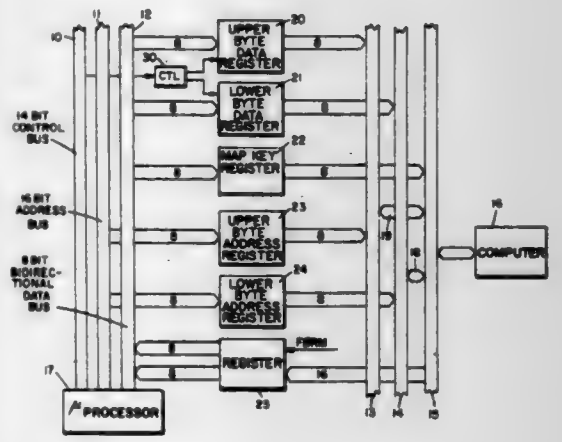
said data section including arithmetic logic means responsive to the controlling signals from said controlling unit and data from said input-output units for controlling an input-output unit designated by the address portion of an instruction word.

4,344,130

APPARATUS TO EXECUTE DMA TRANSFER BETWEEN COMPUTING DEVICES USING A BLOCK MOVE INSTRUCTION

Anthony K. Fung, Fountain Valley, and Roger G. Mintzlaff, Tustin, both of Calif., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 26, 1979, Ser. No. 79,209
Int. Cl.³ G06F *15/16, 13/00*
U.S. Cl. 364—200 **16 Claims**



1. In combination,

first computing means having memory means associated therewith,

said first computing means including a "block move instruction" capability,

second computing means having memory means associated therewith,

first register means for selectively transferring data from said first computing means to said second computing means,

second register means for selectively transferring data from said second computing means to said first computing means,

first bus means connected to said first computing means and each of said first and second register means for transferring data,

second bus means connected to said second computing means and each of said first and second register means for transferring data, and

control means for controlling the operation of said first and second register means and said first and second computing means,

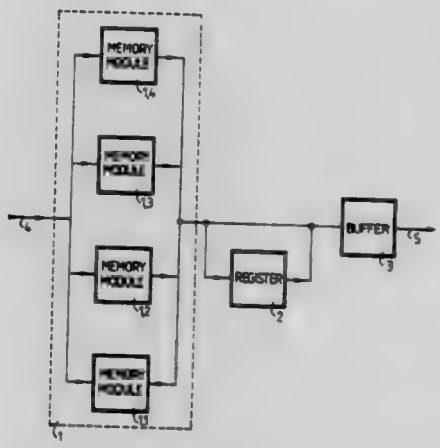
said control means includes means responsive to signals from said first computing means to provide an indication signal to indicate that said "block move instruction" is being performed by said first computing means,

said control means further includes means responsive to signals from said second computing means and to said indication signal to indicate to said control means that said second computing means desires to transfer information to or from said first computing means when said "block move instruction" is being performed by said first computing means, whereby data in said first computing means is transferred directly to said second computing means, or vice versa, depending upon which of said first and second register means is enabled for transferring data without the requirement of request and acknowledge signals.

4,344,131
DEVICE FOR REDUCING THE TIME OF ACCESS TO INFORMATION CONTAINED IN A MEMORY OF AN INFORMATION PROCESSING SYSTEM

Paul Girard, Versailles, France, assignor to Compagnie Internationale pour l' Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 6, 1979, Ser. No. 100,856
Claims priority, application France, Dec. 6, 1978, 78 34414
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 2 Claims



1. A circuit arrangement for reducing access time to information contained in a memory system of an information processing system, wherein the said memory system includes at least a memory block capable of containing a plurality of information bits and having associated therewith means for reading the information bits contained in said memory block, the improvement comprising a register connected to successively receive each information bit read from said memory block said register having at least one output and two inputs, the said output being connected to the input of the register receiving each information bit read by reading means and the other input being connected to receive at the beginning of the reading cycle of said memory block an initialization signal enabling said output into a predetermined state, said circuit arrangement being such that each information bit read by the reading means is directly available at the output of the said reading means without passing through said register.

4,344,132
SERIAL STORAGE INTERFACE APPARATUS FOR COUPLING A SERIAL STORAGE MECHANISM TO A DATA PROCESSOR INPUT/OUTPUT BUS

Jerry D. Dixon, Boca Raton; Robert H. Farrell, Coral Springs, and Francis R. Koperda, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,782
Int. Cl.³ G06F *3/00, 5/06*
U.S. Cl. 364—200 16 Claims

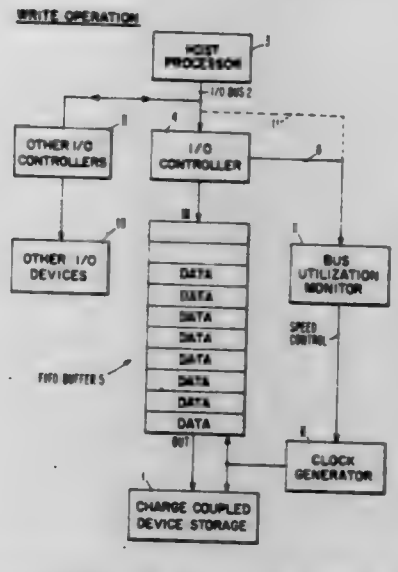
5. Serial storage interface apparatus for coupling a serial storage mechanism to an input/output (I/O) bus of a data processor and comprising:

a first-in-first-out (FIFO) buffer storage mechanism;

first data transfer circuitry for coupling the FIFO buffer storage mechanism to the data processor I/O bus;

second data transfer circuitry for coupling the FIFO buffer storage mechanism to the serial storage mechanism;

bus utilization monitoring circuitry responsive to the data transfer activity of the first data transfer circuitry for generating signals representing values of I/O bus availability; and speed control circuitry responsive to the signals representing values of I/O bus availability for causing the serial storage mechanism to operate at different speeds for different values

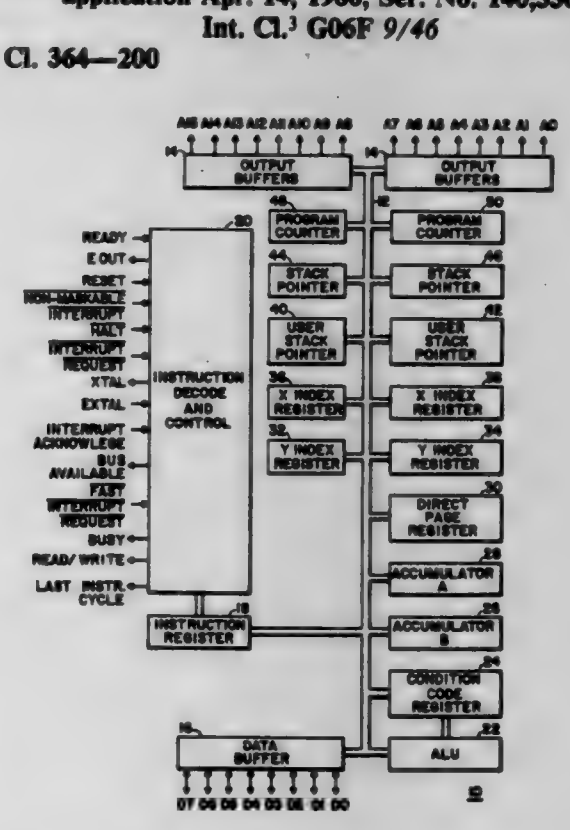


of I/O bus availability to the serial storage interface apparatus.

4,344,133
METHOD FOR SYNCHRONIZING HARDWARE AND SOFTWARE

William C. Bruce, Jr.; Fuad H. Musa, and Terry F. Ritter, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 929,628, Jul. 31, 1978, which is a continuation-in-part of Ser. No. 872,857, Jan. 27, 1978. This application Apr. 14, 1980, Ser. No. 140,336
Int. Cl.³ G06F *9/46*
U.S. Cl. 364—200 6 Claims

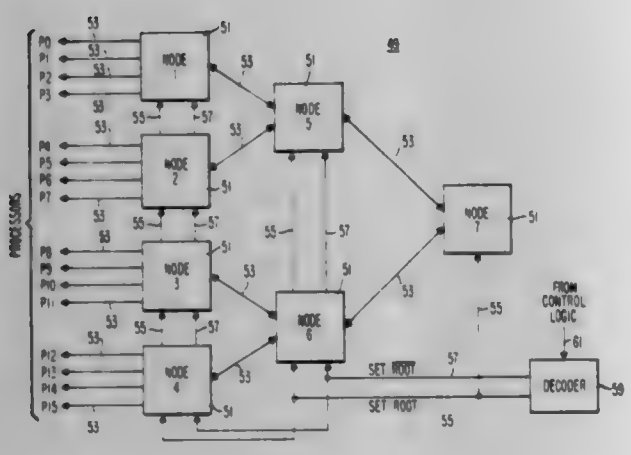


1. A method of providing high-speed synchronization between hardware and software in a digital processing system, comprising: performing a sync instruction to cause the digital processing system to assume a stopped state; waiting for an interrupt to occur; receiving an interrupt; and vectoring to an interrupt address to service the interrupt or fetching an op code which is next in sequence when the interrupt received is masked.

4,344,134
PARTITIONABLE PARALLEL PROCESSOR

George H. Barnes, Wayne, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 30, 1980, Ser. No. 164,097
Int. Cl.[3] G06F *9/00*
U.S. Cl. 364—200 4 Claims



1. A partitionable parallel processor control network for a plurality of parallel processors wherein each processor therein emits a ready signal when it is ready to execute a parallel processing task and initiates said parallel processing task upon receipt of an initiate signal, said partitionable parallel processor control network comprising:

a single root control node means having a plurality of processor side data lines for receiving on each a ready signal and sending back on each an initiate signal when each processor side data line in said plurality thereof is receiving a ready signal;

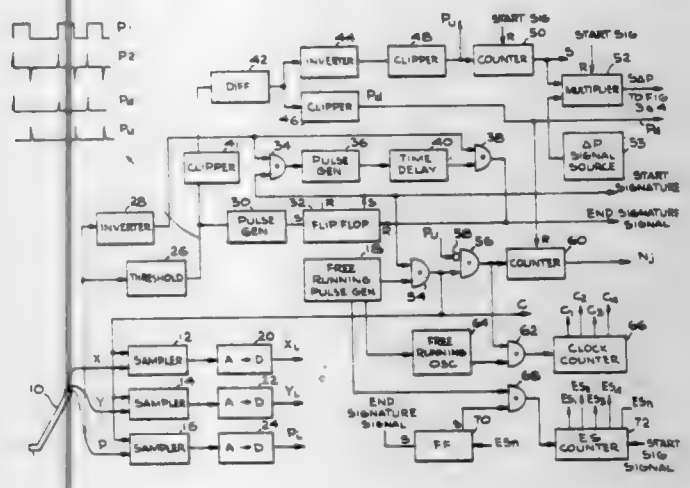
a control node tree having a plurality of bi-mode control node means, each bi-mode control node means therein having a plurality of processor side data lines, a single root control node means side data line, and a control input for designating a non-root operating mode wherein a ready signal is outputted on said signal root control node means side data line when a ready signal is being received on each processor side data line in said plurality thereof, and for designating a root operating mode wherein an initiate signal is outputted back on each processor side data line in said plurality thereof when a ready signal is being received on each processor side data line in said plurality thereof, said control node tree being configured with a first level and a lesser level of pluralities of bi-mode control node means, each said first level bi-mode control node means therein having each processor side data line in its said plurality thereof connected to an individual processor in said plurality thereof for receiving therefrom a ready signal and for sending thereto an initiate signals, said first level plurality and lesser level pluralities of bi-mode control node means being coupled in a tree-like fashion to a last level bi-mode control node means therein having each said root side data line thereof connected to an individually associated processor side data line of said single root control node means; and

designating means connected to said control input of each bi-mode control node means for designating an operating mode means of each bi-mode control node in said plurality thereof.

4,344,135
DYNAMIC CREATION OF SIGNATURES

Hewitt D. Crane, Portola Valley, and Daniel E. Wolf, Menlo Park, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Continuation of Ser. No. 633,032, Nov. 18, 1975, Pat. No. 4,156,911. This application Sep. 7, 1978, Ser. No. 940,434
The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.
Int. Cl.[3] G06K *5/00, 9/00*
U.S. Cl. 364—419 9 Claims



1. A method of processing signature signals to display a signature over an area having predetermined horizontal and vertical dimensions, the steps comprising:

producing a signature which is to be displayed over said area;

generating, while producing said signature, a succession of signals xi, representative of forces in the horizontal direction, and a succession of signals yi representative of forces in the vertical direction;

programming a general purpose computer to successively integrate said xi signals to form successive Xij signals;

programming said general purpose computer to successively integrate said yi signals to form successive Yij signals;

programming said general purpose computer to scale said Xij signals in accordance with said horizontal dimension, to provide Xij coordinate signals, to fit within said horizontal dimension;

programming said general purpose computer to scale said Yij signals in accordance with said vertical dimension to provide Yij coordinate signals to fit within said vertical dimension; and

utilizing said Xij and Yij coordinate signals to produce a signature which is displayable within said area, having said predetermined horizontal and vertical dimensions.

4,344,136
DEVICE FOR INDICATION OF OPERATIONAL AND COMPUTED VALUES

Ferdinand Panik, Fellbach, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 161,321
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925131
Int. Cl.[3] G08B *19/00;* G06F *15/20*
U.S. Cl. 364—424 22 Claims

1. A device for processing operational data for vehicles having a multiposition ignition lock means, comprising

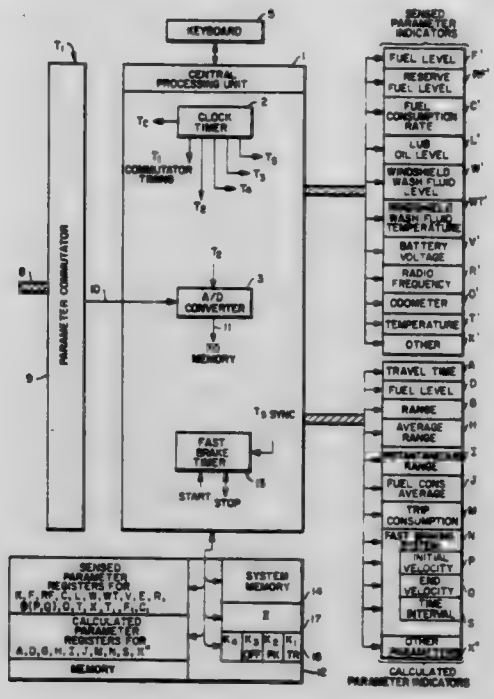
sensing means to pick up the operational data,

data processing means for receiving said sensed operational data,

means receiving processed data for display of said data,

a switch means for switching an indicator on or off when threshold values are exceeded or the value goes below the threshold in accordance with at least one of ignition lock

means positions OFF, PARK, TRIP, and START and the operational states of the vehicle, and



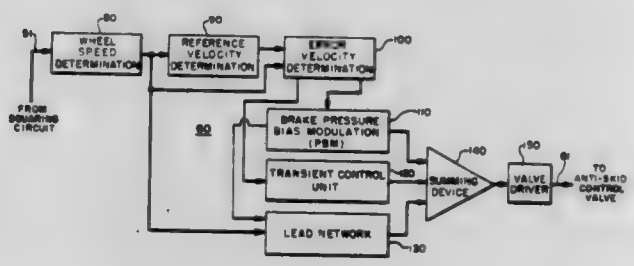
means for storage and clearing of values of a specific sequence of ignition lock means actuations.

4,344,137

APPARATUS FOR GENERATING A LEAD SIGNAL IN AN ANTISKID SYSTEM

Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,617
Int. Cl.[3] B60T *8/00*; G06F *15/20*
U.S. Cl. 364—426 14 Claims



1. In an antiskid system including a wheel, a brake coupled to the wheel, means for generating a wheel signal indicative of a selected time derivative of the angular position of the wheel, means responsive to the wheel signal for generating a brake control signal, and means responsive to the brake control signal for reducing braking action of the brake, the improvement comprising:

means for generating an input signal indicative of a predetermined time derivative of the angular position of the wheel, said predetermined time derivative corresponding to a higher order time derivative of the angular position of the wheel than the selected time derivative of the angular position of the wheel;

means for generating a gain signal in response to the input signal such that the gain signal is set to a first gain value when the input signal is within a first range of values and to a second gain value when the input signal is within a second range of values;

means, responsive to the input signal and the gain signal, for generating a lead signal which varies as a function of both the input signal and the gain signal; and

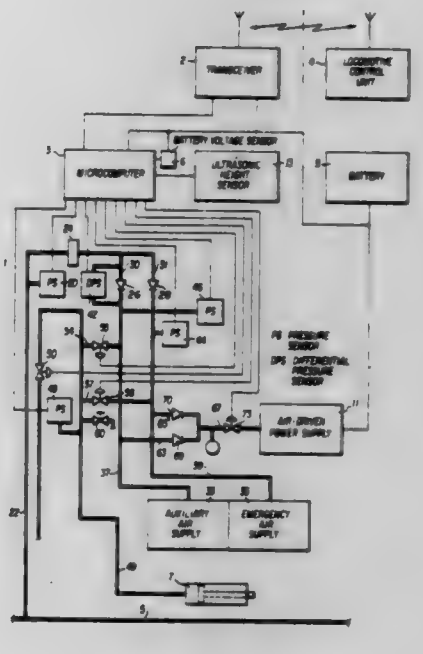
means for modifying the brake control signal as a function of the lead signal to provide lead compensation.

4,344,138

DIGITAL AIR BRAKE CONTROL SYSTEM

Cline W. Frasier, 336 Hayward Mill Rd., Concord, Mass. 01742

Filed Nov. 5, 1980, Ser. No. 203,556
Int. Cl.[3] B60T *13/68*; G06F *15/20*
U.S. Cl. 364—426 7 Claims



1. An air brake control system for controlling the air brakes of a railroad car of the type including a train air line connected to at least one air reservoir, wherein said air reservoir is in turn connected to the brake cylinder of the railroad car, comprising:

(a) a first check valve connected between said train air line and said air reservoir for impeding the flow of air from said air reservoir back to said train air line,

(b) a differential pressure sensor connected on both sides of said check valve for measuring the difference in air pressure between said train air line and said brake cylinder,

(c) a first electropneumatic valve pneumatically connected between said air reservoir and said brake cylinder for controlling the flow of pressurized air from said reservoir into said brake cylinder,

(d) a first pressure sensor connected between said first electropneumatic valve and said brake cylinder for measuring the air pressure in said brake cylinder,

(e) a second electropneumatic valve pneumatically connected to said brake cylinder for controllably venting said brake cylinder, and

(f) a microcomputer including a radio operated transceiver unit and electrically connected to said differential pressure sensor and said first pressure sensor and said first and second electropneumatic valves for receiving electropneumatic braking signals through said transceiver and pneumatic braking signals through said train air line and opening said first electropneumatic valve to both place said brake cylinder in fluid communication with said air reservoir and lower the pressure of the air reservoir to a point where said check valve admits additional air to said air reservoir from said train air line thereby applying said air brakes and pneumatically propagating said braking signal.

4,344,139
METHOD AND APPARATUS FOR CONTROLLING DIFFERENTIALLY DRIVEN WHEEL SLIP

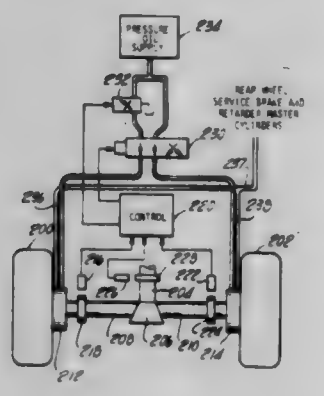
Robert G. Miller, East Peoria; Allen D. Myers, Decatur; Weldon L. Phelps, Dunlap, and Alfred W. Sieving, Venedy, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00540, § 371 Date May 7, 1980, § 102(e) Date May 7, 1980, PCT Pub. No. WO81/03153, PCT Pub. Date Nov. 12, 1981

PCT Filed May 7, 1980, Ser. No. 245,245

Int. Cl.³ G06F *15/20*; B60T *8/10*

U.S. Cl. 364—426 11 Claims



1. In an anti-slip apparatus for balancing the power transfer between a pair of driven wheels (200,202) when one of the wheels loses traction and rotates faster than the other, said apparatus having first means (212,214) for braking the wheels and second means (216, 222, 220) for generating a slip signal corresponding to any difference in the rotational speeds between the wheels (200, 202), the improvement comprising:

third means (230,232, 242) for actuating the first means (212, 214) on the faster rotating wheel (200, 202) to a degree which is variably incrementally modulated in proportion to the difference in rotational speeds between the wheels (200, 202) in response to the slip signal.

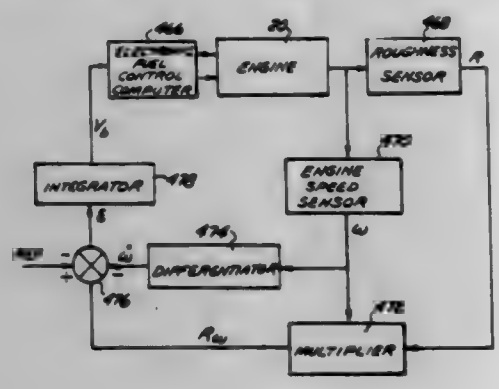
4,344,140
CLOSED LOOP ENGINE ROUGHNESS CONTROL

Chun-Keung Leung, Farmington, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 15, 1980, Ser. No. 187,394

Int. Cl.³ F02D *5/02*; F02M *51/00*; F02B *3/08*

U.S. Cl. 364—431.08 13 Claims



1. A closed loop engine roughness control for an internal combustion engine having at least one combustion chamber, means for delivering a quantity of fuel to the engine in response to a fuel delivery signal, and a member receiving a torque impulse each time the fuel is burned in said at least one combustion chamber, comprising:

position reference signal generating means for generating a position reference signal indicative of incremental positions within an engine revolution correlated with an engine event;

first sensor means for generating first signals indicative of the instantaneous rotational velocity of the member relative to said position reference signal;

means for generating roughness signals in response to said first signals, said roughness signals having a value indicative of the difference in magnitude between two generated torque impulses;

second sensor means for generating second signals indicative of the average rotational speed of the engine;

means for multiplying said second signals with said roughness signals to generate a speed corrected roughness signal;

second reference signal generating means;

means for summing said speed corrected roughness signal with said second reference signal to generate a roughness correction signal;

means for integrating said roughness correction signal to generate a roughness bias signal;

third sensor means for generating a third signal indicative of at least one other operational parameter of the engine; and

fuel control means for generating said fuel delivery signals in response to said third signal and said roughness bias signal, said fuel delivery signal modified by said roughness bias signal activating said fuel delivery means to deliver a quantity of fuel to the engine maintaining said roughness signal at a predetermined value.

4,344,141
GAS-TURBINE ENGINE CONTROL

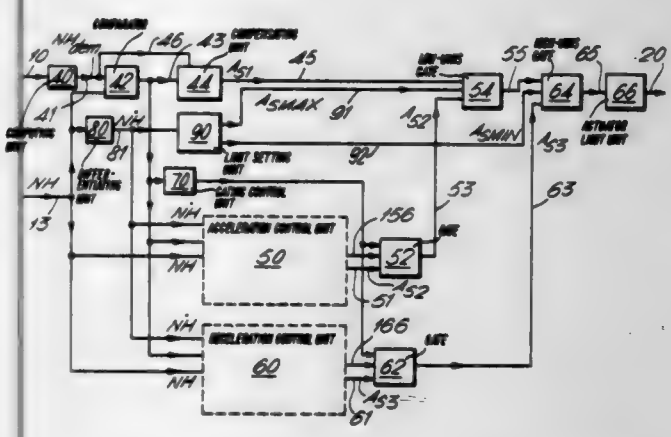
Michael S. Yates, Andover, England, assignor to Smiths Industries Limited, London, England

Filed Jun. 24, 1980, Ser. No. 162,545

Claims priority, application United Kingdom, Jun. 29, 1979, 7922683

Int. Cl.³ F02C *9/08*

U.S. Cl. 364—442 15 Claims



1. A control system for controlling fuel flow to a gas-turbine engine, the system including: first means for receiving first input signals in response to demanded speed of said engine; second means for receiving second input signals in response to the actual speed of the engine; memory means storing information concerning rate of change with speed of a maximum or minimum desired fuel flow function at different engine speeds; computing means; means supplying engine speed function signals from said first and second means to said computing means; means supplying signals from said memory means to said computing means, said computing means providing an output signal indicative of rate of change with time of the fuel flow function in accordance with said signals supplied to said computing means; and means supplying said output signal to control fuel flow to the engine in predetermined circumstances.

4,344,142

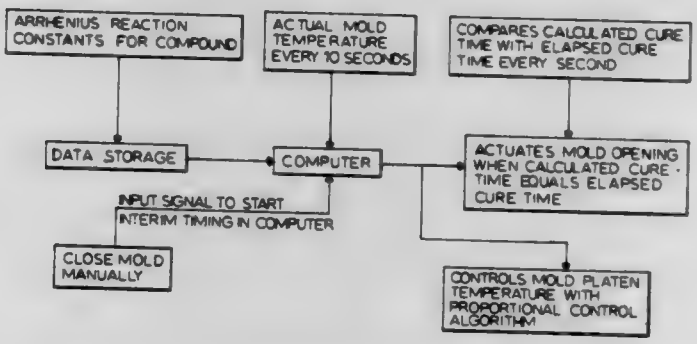
DIRECT DIGITAL CONTROL OF RUBBER MOLDING PRESSES

James R. Diehr, II, Troy, and Theodore A. Lutton, Birmingham, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Continuation of Ser. No. 472,595, May 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 401,127, Sep. 26, 1973, abandoned. This application Aug. 6, 1975, Ser. No. 602,463

Int. Cl.³ G06F *15/46*; B29H *5/02*

U.S. Cl. 364—473 **11 Claims**



1. A method of operating a rubber-molding press for precision molded compounds with the aid of a digital computer, comprising:

providing said computer with a data base for said press including at least,

natural logarithm conversion data (ln),

the activation energy constant (C) unique to each batch of said compound being molded, and

a constant (x) dependent upon the geometry of the particular mold of the press,

initiating an interval timer in said computer upon the closure of the press for monitoring the elapsed time of said closure,

constantly determining the temperature (Z) of the mold at a location closely adjacent to the mold cavity in the press during molding,

constantly providing the computer with the temperature (Z),

repetitively performing in the computer, at frequent intervals during each cure, integrations to calculate from the series of temperature determinations the Arrhenius equation for reaction time during the cure, which is

$$\ln v = CZ + x$$

where v is the total required cure time,

repetitively comparing in the computer at frequent intervals during the cure each said calculation of the total required cure time calculated with the Arrhenius equation and said elapsed time, and

opening the press automatically when a said comparison indicates completion of curing.

4,344,143

DIGITAL TYPE DISTANCE RELAY SYSTEM

Yasuhiro Kurosawa, Hino, and Tetsuo Matsushima, Fuchu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 26, 1980, Ser. No. 134,075

Claims priority, application Japan, Mar. 27, 1979, 54-36130

Int. Cl.³ G06F *15/20*; H02H *3/26*

U.S. Cl. 364—492 **12 Claims**

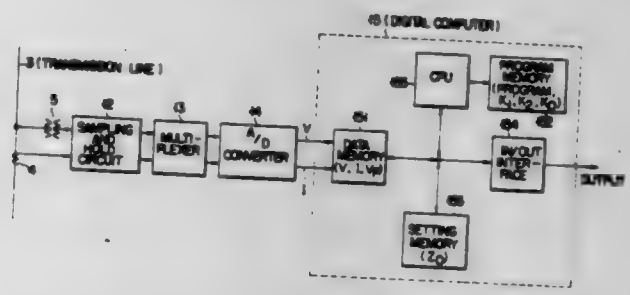
1. A digital type distance relay system comprising a sampling and hold circuit for sampling and holding the current in and voltage on a power transmission line, an analog-to-digital converter for receiving the outputs of said sampling and hold circuit through a multiplexer and converting the received analog quantities into corresponding digital quantities I and V, and a digital computer for arithmetically processing the outputs of said analog-to-digital converter on the basis of a predetermined arithmetic operation formula and producing a determination output as to whether or not to take an action for protecting said power transmission system in accordance with the result of the arithmetic processing,

said digital computer including:

a data memory for memorizing said current I and voltage V and also a digital voltage V_P having a predetermined relation to said voltage V;

a protection range setting memory for memorizing a setting value Z_0 for setting a range of protection of said power transmission system by said digital type distance relay system;

a program memory for memorizing constant values K_1 and



K_2, minimum sensitivity value K_0 of said distance relay system and a program for executing an arithmetic operation on a formula represented by

$$|I \cdot Z_0 + K_1 V_P| - |I \cdot Z_0 - V - K_2 V_P| \geq K_0;$$

an input/output interface; and

a central processor unit coupled to said data memory, protection range setting memory, program memory and input/output interface and serving to execute said program dealing with said arithmetic operation formula and produce an output commanding an action of protecting said power transmission system if said formula is satisfied while producing an output commanding no protective action if said formula is not satisfied.

4,344,144

APPARATUS FOR CREATING GAS FLOW CYCLES

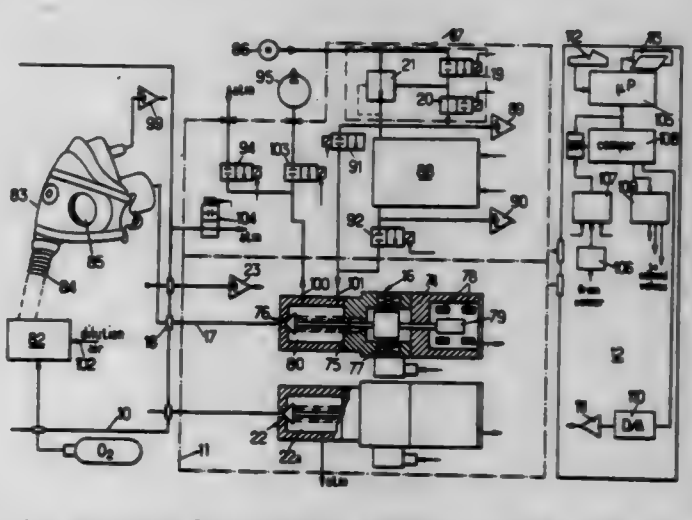
Pierre Damico, Villepreux, and Georges Jaco, Maurepas, both of France, assignors to Intertechnique, Plaisir, France

Filed May 1, 1980, Ser. No. 145,841

Claims priority, application France, May 2, 1979, 79 11071

Int. Cl.³ A16M *17/00*; G05D *11/00*

U.S. Cl. 364—510 **9 Claims**



1. An apparatus for producing predetermined gas flow cycles comprising in combination:

a housing defining an inner chamber including a gas flow opening;

a movable unit having a throttling member which cooperates with said gas flow opening so that movement of said

throttling member will effect a variance of the cross-sectional area of said gas flow opening;

at least one valve means for selectively coupling in response to a first control signal said chamber to at least one of a plurality of gas sources having predetermined differing pressures;

motor means in operative communication with said movable unit for controlling the position of said movable unit in response to a second control signal;

sensor means operatively associated with said movable unit for detecting the position of said movable unit in said housing and for transmitting a position signal representative of said position; and

control means for generating at least said first and second control signals and for receiving at least said position signal to effect predetermined movement of said valve means and said throttling member so that predetermined cyclical gas flow through said gas flow opening is produced.

4,344,145

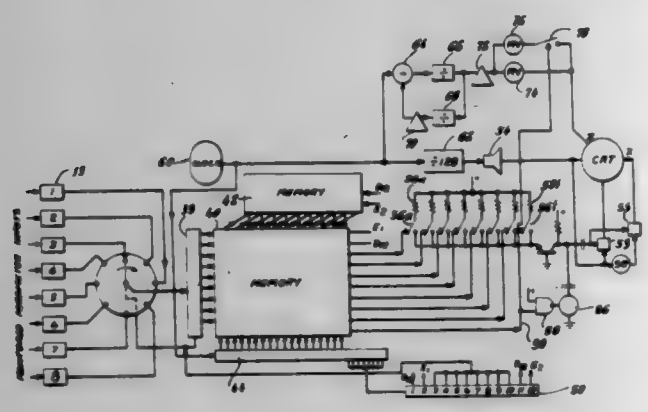
DISPLAY METHOD AND APPARATUS FOR EFFICIENTLY COMMUNICATING THE STATUS OF AN ONGOING PROCESS OR SYSTEM BY THE SIMULTANEOUS DISPLAY OF MANY NORMALIZED PARAMETER DEVIATIONS

Norman E. Chasek, 24 Briar Brae Rd., Stamford, Conn. 06903

Filed Oct. 12, 1979, Ser. No. 84,369

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—551 **14 Claims**



1. A display or multiple measured parameters that is comprised of real time plotted deviations, from an acceptable mean level, of a number of measured parameters; each plot being located in an assigned wedge-like sector; said sectors being arranged in a circular display area, with the respective points of the sectors being located at the center of said circular display area; said plots using relative angular displacement, within each sector, to represent time and using radial distance from the periphery of the display area to represent the normalized magnitude of the deviation of the respective parameters from their respective mean levels; said plots presenting the normalized magnitude of recent past deviations of the respective parameters from their mean levels as well as the present deviations thereof; whereby the viewer can see the present and recent past deviations of each respective parameter for enabling the viewer to form judgments of the particular trends of the respective parameters being measured and whereby as the deviations of a parameter become larger the plot approaches closer to the point of its wedge-like sector, thereby approaching nearer to the center of the circular pattern where it is closer to the center of the viewer's gaze.

4,344,146

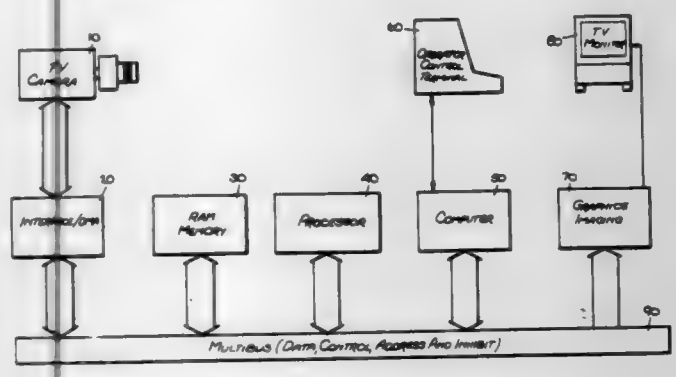
VIDEO INSPECTION SYSTEM

Ray E. Davis, Jr., Old Lyme; Richard J. Becker, Madison; Robert G. Foster, Clinton; Michael J. Westkamper, Oakdale; Earle J. Timothy, Clinton, and Richard H. Johnson, Ivoryton, all of Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed May 8, 1980, Ser. No. 148,451

Int. Cl.³ H02N *7/02*; G06F *15/20*

U.S. Cl. 364—552 **61 Claims**



29. A video inspection system comprising:

(a) a TV camera for producing digital video images of a subject, said TV camera comprising a two-axis array of picture elements, each picture element having at least sixteen levels of grey shade resolution;

(b) an interface connected to said TV camera for capturing and structuring the four most significant bits of data corresponding to each picture element, said interface having a direct memory access channel;

(c) a high speed random access memory connected to said interface by means of a multibus arrangement, said random access memory comprising a memory array comprising a series of pages for storing said digital data;

(d) a bus oriented processor connected to said interface and said random access memory by means of said multibus for performing high speed processing of said digital data stored in said memory array;

(e) a computer connected to said interface, said random access memory and said processor by means of said multibus for controlling the operation of said system; and

(f) a terminal connected to said computer and adapted to permit an operator to communicate with said computer.

4,344,147

ELECTRONIC CALCULATOR WITH PRINTER

Ichiro Sado, Tokyo; Mitsuo Cho, Ina; Juji Kishimoto, Tokyo, and Masayuki Sasaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1979, Ser. No. 87,706

Claims priority, application Japan, Nov. 10, 1978, 53-138441; Nov. 14, 1978, 53-140109

Int. Cl.³ G06K *15/02*; G06F *3/12*

U.S. Cl. 364—710 **2 Claims**

1. An electronic calculator for calculating a result from numerical data operated on thereby and having a printer for printing information about the calculation on a print sheet; said calculator comprising:

an input section having numerical keys for entering numerical data, arithmetic operator keys and an equals (=) key;

means for shifting the print sheet relative to the printer to print on succeeding rows; and

a control section including

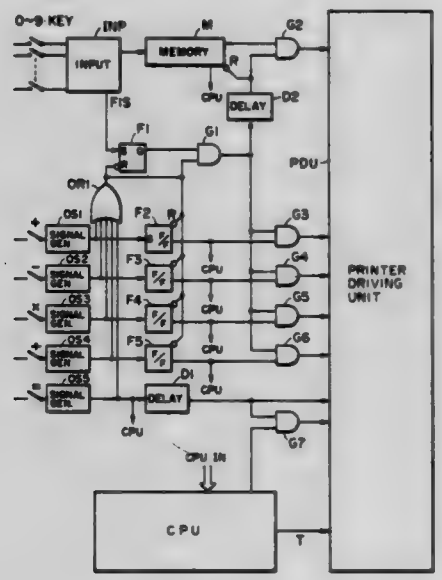
means for storing numerical data entered by said numerical keys;

means, responsive to actuation of any one of said operator keys, for operating the printer to print the first numerical data, entered into said storing means immediately prior to actuation of said one operator key, on the right-hand side of one row of the print sheet;

first delay means for operating said shifting means, after the first numerical data has been printed, to shift the print sheet relative to the printer to print on the row next succeeding said one row;

second delay means for operating the printer, only after the print sheet has been shifted relative to the printer, to print the symbol of said one of said operator keys on the left-hand side of the next succeeding row of the print sheet;

means, responsive to actuation of said equals (=) key, for operating the printer to print the last numerical data, entered into said storing means immediately prior to



actuation of said equals (=) key, on the right-hand side of the print sheet of the last row on which the symbol of an operator key has been printed;

third delay means for operating said shifting means after the last numerical data has been printed to shift the print sheet relative to the printer to print on the row succeeding the last row; and

fourth delay means for operating the printer, only after the print sheet has been shifted relative to the printer, to print the symbol (=) and the result of the calculation respectively on the left-hand and right-hand sides of the row of the print sheet succeeding the last row.

4,344,148

SYSTEM USING DIGITAL FILTER FOR WAVEFORM OR SPEECH SYNTHESIS

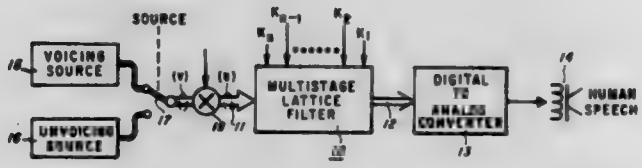
George L. Brantingham, Plano, and Richard H. Wiggins, Jr., Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 905,328, May 12, 1978, Pat. No. 4,209,844, which is a continuation of Ser. No. 807,461, Jun. 17, 1977, abandoned. This application Feb. 25, 1980, Ser. No. 124,174

The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.

Int. Cl.³ G06F *15/34*; G10L *1/00*

U.S. Cl. 364—724 **30 Claims**



1. A system for synthesizing human speech in response to a plurality of digital filter codes and digital excitation signals, said system comprising:

first digital storage means for storing said plurality of digital filter codes;

generator means for generating said digital excitation signals;

digital filter means for implementing a lattice filter coupled to said first digital storage means and said generator means for producing digital signals representative of human speech in response to said plurality of digital filter codes and said digital excitation signals, said digital filter means comprising:

only one arithmetic unit, said arithmetic unit comprising a multiplier, a digital adder, and selective feedback circuitry coupling said adder and said multiplier, said selective feedback circuitry including second digital storage means for storing data outputted from said adder and circuit means selectively coupling the outputs of said adder and said second digital storage means to an input of said multiplier and to an input of said adder, the output of said adder being directly line-coupled to the input of said multiplier in one condition of said selectively coupling circuit means, and the output of said adder being directly coupled to said second digital storage means in another condition of said selectively coupling circuit means;

digital-to-analog converter means coupled to said digital filter means for converting said digital signals representative of human speech into analog signals; and

audio means coupled to said digital-to-analog converter means for converting said analog signals into audible sounds.

4,344,149

DECIMATION, LINEAR PHASE, DIGITAL FIR FILTER

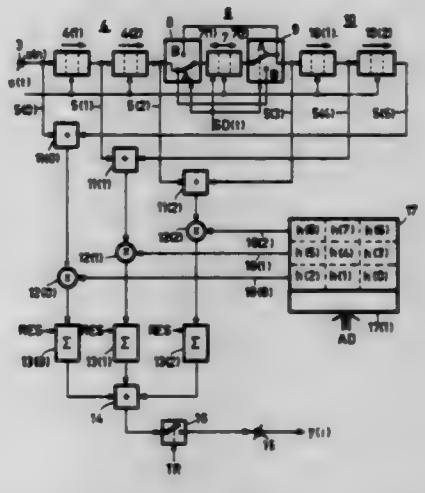
Leendert van de Meeberg, and Daniël J. G. Janssen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 8, 1980, Ser. No. 166,888

Claims priority, application Netherlands, Jul. 9, 1979, 7905332

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—724 **5 Claims**



1. A decimation, non-recursive digital linear phase FIR filter with length N and decimation factor q, wherein N and q are integers, characterized by:

a filter input to which components of a digital input signal are applied at a rate 1/T, and a filter output;

a first digital delay line connected to the filter input;

a second digital delay line, said first and second digital delay lines each being provided by a cascade arrangement of a number of auxiliary delay lines, each having a time delay qT, individual distribution lines being connected, respectively, to the inputs of said first and second digital delay lines as well as to the outputs of the auxiliary delay lines forming said first and second digital delay lines;

a control circuit having means for generating first and second control pulses, wherein every two consecutive first

control pulses defines a control interval having a length qT;

a sequence reversing device, for coupling the output of the first digital delay line to the input of the second digital delay line, comprising storage means for storing those q components which occur sequentially in a control interval at the output of the first digital delay line, and means, in response to said first control pulses, for applying sequentially and in the reverse order these q components in the next control interval, to the input of the second digital delay line;

first adder means for respectively coupling distribution lines which are located symmetrically relative to a symmetry line, for forming sum components;

means for producing in each control interval a plurality of filter coefficients;

multiplying means coupled respectively to the first adder means and to the means producing the filter coefficients, for generating product components each one of which is formed by the product of a sum component and a filter coefficient associated therewith;

second adder means for adding together the product components produced in a control interval; and

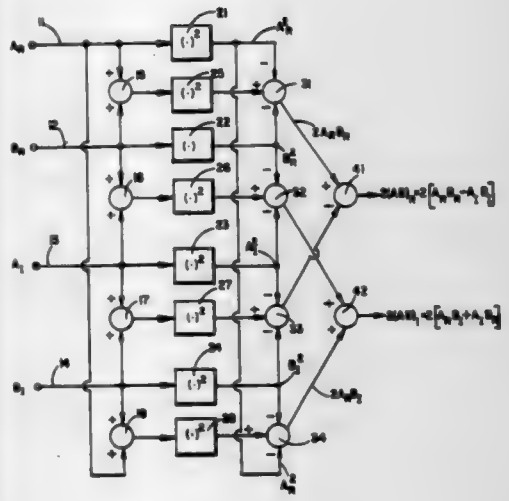
means controlled by the said second control pulses for periodically coupling, with a period qT, the filter output to the second adder means.

4,344,151

ROM-BASED COMPLEX MULTIPLIER USEFUL FOR FFT BUTTERFLY ARITHMETIC UNIT

Stanley A. White, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 21, 1980, Ser. No. 142,594
Int. Cl.[3] G06F *7/52, 1/02*
U.S. Cl. 364—754 12 Claims



1. A digital arithmetic device for processing data and performing multiplication of two complex values, $A=(A_R+jA_I)$ and $B=(B_R+jB_I)$ and comprising:

four data input ports designated A_R, B_R, A_I and B_I, respectively, and organized as four pairs of components of both said component values as four pairs of input ports, (A_R, B_R), (A_I, B_R), (A_R, B_I), (A_I, B_I);

eight square function memories;

a first, second, third and fourth one of said memories responsively coupled to at least a respective one of said input ports as memory inputs for providing values indicative of the respective squares of said memory inputs;

a fifth, sixth, seventh and eighth one of said memories responsively coupled to a mutually exclusive pair of the four input pairs of said input ports for providing values indicative of the respective squares of a preselective combination of said mutually exclusive input pairs;

a first digital combining means responsively coupled to the outputs of at least said first and fifth memories for providing an output indicative of the product A_RB_R;

a second digital combining means responsively coupled to the outputs of at least said second and sixth memories for providing an output indicative of the product A_IB_R;

a third digital combining means responsively coupled to the outputs of at least said third and seventh memories for providing an output indicative of the product A_IB_I;

a fourth digital combining means responsively coupled to the outputs of at least said fourth and eighth memories for providing an output indicative of the product A_RB_I;

a first digital combiner responsively coupled to the outputs of said first and third digital combining means for providing an output indicative of the real component of the complex product AB; and

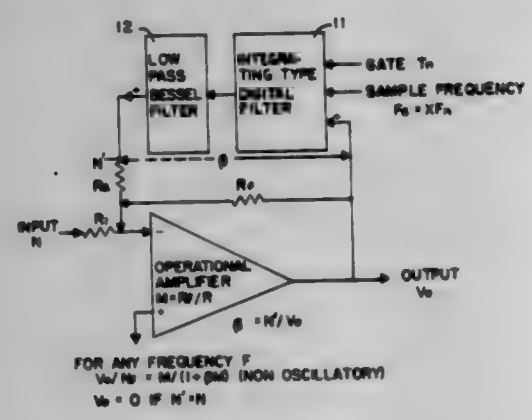
a second digital combiner responsively coupled to the output of said second and fourth digital combining means for providing an output indicative of the imaginary component of the complex product AB.

4,344,150

COHERENT NOISE CANCELLING FILTER

George H. McLaughlin, Tucson, Ariz., assignor to Newmont Mining Corporation, New York, N.Y.

Filed Jul. 10, 1980, Ser. No. 168,190
Int. Cl.[3] G06F *15/31*
U.S. Cl. 364—724 29 Claims



1. In a coherent noise cancelling filter, the combination of:

means defining a circuit input and a circuit output;

an operational amplifier connected between said circuit input and circuit output;

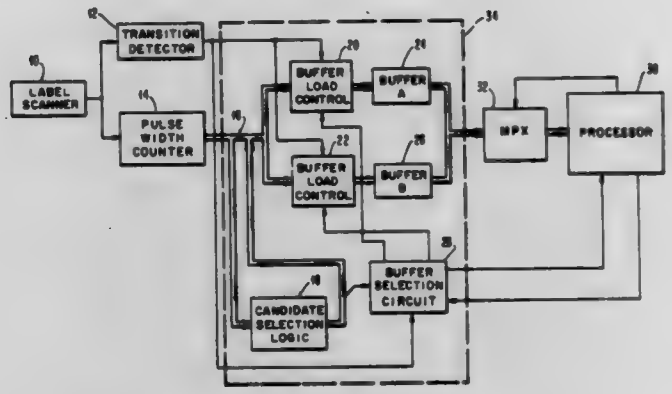
a feedback circuit connected from the output of said operational amplifier to the input thereof, said feedback circuit including a digital filter and a low pass filter connected in series between said operational amplifier output and input, said digital filter including memory means and first switching means for connecting said operational amplifier to said memory means; and

timing means for operating said first switching means to interconnect said operational amplifier output and said memory means during a predetermined time.

4,344,152
BUFFER MEMORY CONTROL CIRCUIT FOR LABEL SCANNING SYSTEM

George J. Laurer, and Charles M. Pierce, both of Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,461
Int. Cl.³ G06F *7/28*
U.S. Cl. 364—900 9 Claims



1. A data storage control circuit including:

a plurality of data storage devices for storing serially-received units of incoming data;

gating means for connecting a selected one of said devices to a source of incoming data units;

a counter connected to the source, said counter having a maximum count capacity related to the storage capacity of each of said data storage devices;

candidate select logic means connected to the source for generating a candidate signal when a first number of serially-received data units satisfies predetermined criteria;

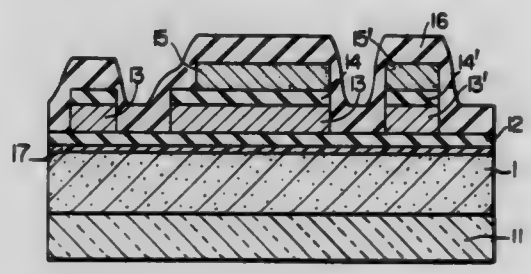
counter control means connected to said counter and to said candidate select logic means for enabling said counter to count each data unit up to the first number and to count each unit beyond the first number only when a candidate signal has been generated during the current count cycle; and

switching means connected to said counter and responsive to attainment of the maximum count therein for causing said gating means to direct subsequently received data units to a different one of said data storage devices.

4,344,153
MAGNETIC BUBBLE MEMORY DEVICE AND METHOD OF FABRICATING THE SAME

Hideki Nishida, Tokyo; Hirozi Yamada; Hiroshi Umezaki, both of Hachioji; Yutaka Sugita, Tokorozawa, and Norikazu Tsumita, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1979, Ser. No. 29,933
Claims priority, application Japan, Apr. 14, 1978, 53-43222
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—39 10 Claims

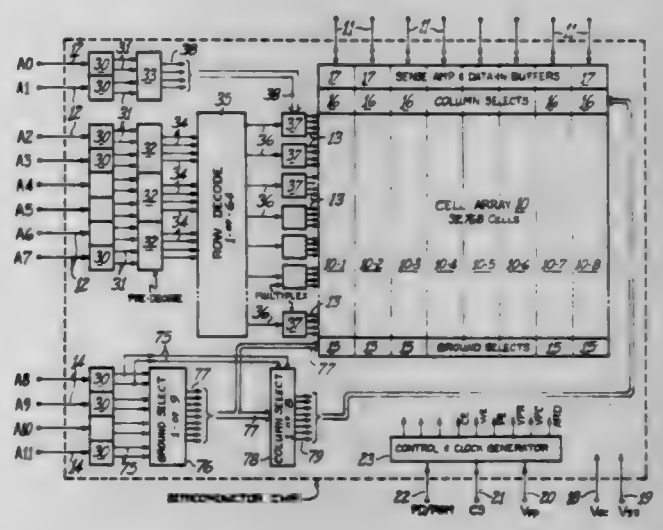


1. A magnetic bubble memory device comprising a non-magnetic monocrystalline substrate, a magnetic film capable of maintaining magnetic bubbles therein, a conductor pattern for bubble control, a dummy conductor pattern, and soft magnetic material patterns, wherein said conductor patterns lie at least between said magnetic film and said soft magnetic material and wherein the entirety of said soft magnetic material patterns overlie at least portions of said conductor patterns so as to be maintained in one plane thereby.

4,344,154
PROGRAMMING SEQUENCE FOR ELECTRICALLY PROGRAMMABLE MEMORY

Jeffrey M. Klass, Rosenberg; Paul A. Reed, and Isam Rimawi, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,288
Int. Cl.³ G11C *7/02*
U.S. Cl. 365—194 8 Claims



1. An electrically programmable memory device comprising: an array of rows and columns of floating gate memory cells; each cell having a source-to-drain path, a control gate and a floating gate; the control gates of all cells in each row being connected to a row line; one end of the source-to-drain path of each cell in each column being connected to a column line and the other end being connected to a ground line whereby a continuous series path of said source-to-drain paths is provided for all cells in a row; means for selectively applying logic voltages to said lines for read operations and for selectively applying programming voltages to said lines for program operations, the programming voltages being much higher than the logic voltages; said means including delay circuitry to prevent application of said programming voltages to a column line until a time period after programming voltage is applied to a selected row line whereby a selected row line has programming voltage thereon so that the voltages of all source-to-drain paths of all cells in the selected row are equallized before programming voltage is applied to the selected column line.

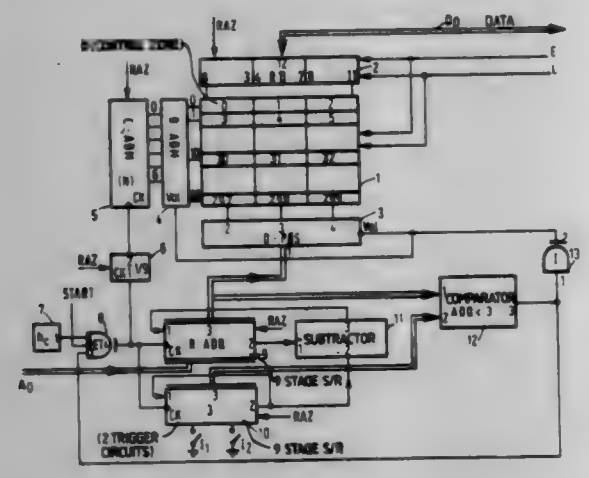
4,344,155
METHOD OF AND APPARATUS FOR INSCRIBING A CONTROL CHARACTER IN A MEMORY

Jean H. Mollier, Bougival, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 31, 1979, Ser. No. 108,337
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—200 10 Claims

1. A method for enabling determination to be made as to whether binary data bit values stored in an erasable memory matrix are reliable, comprising dividing the matrix into a plurality of addressable zones, each zone including a plurality of cells for storing binary bit values, the zones being arranged so that an undesirable change in bit value in a cell of one zone due to undesirable ambient conditions is likely to be accompanied by an undesirable change in bit values in cells of other zones,

certain of said zones being normally operative during reading and writing so data changes occur therein during normal writing operations, another of said zones being a reference zone for storing a predetermined binary bit sequence but incapable of being changed during normal writing operations, writing a predetermined binary bit sequence into the cells of the reference zone, then isolating the cells of said reference zone during writing of bit values into the cells of the certain zones so that



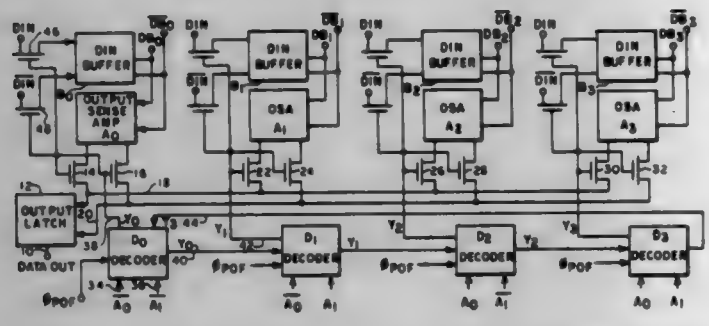
changes in the bit values of the cells in said reference zone can occur only in response to the undesirable ambient conditions, writing in and reading out binary bit values from the cells of the certain zones during normal operation of the memory matrix in connection with operation of a data processor, and reading out the binary bit values from the cells of the reference zone to enable an indication to be derived as to whether the data stored in the normally operative zones are reliable or have been affected by an undesirable change.

4,344,156

HIGH SPEED DATA TRANSFER FOR A SEMICONDUCTOR MEMORY

Sargent S. Eaton, Jr., and David R. Wooten, both of Colorado Springs, Colo., assignors to Inmos Corporation, Colorado Springs, Colo.

Filed Oct. 10, 1980, Ser. No. 195,729
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—203 **9 Claims**



1. In a semiconductor memory, a system for rapidly transferring data between a plurality of successive memory locations and a data output buss in response to a single address input, comprising:

a plurality of N data latches for storing data associated with N successive memory locations which are defined by a plurality of bits of the address input;

a corresponding plurality of N serially connected decoders each associated with one of said data latches, each adapted to be enabled for causing its associated data latch to output its stored data to the data buss, and each receiving selected bits of the address input such that one of the decoders is initially enabled, in response to said selected bits having a given logic state, for causing its associated data latch to output its stored data to the data buss,

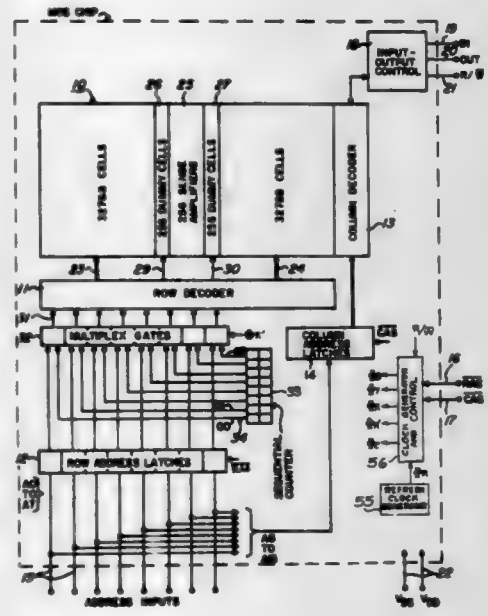
the enabled decoder being adapted to then disable itself and to enable a successive decoder, the latter decoder and each remaining decoder being adapted to disable itself after having been enabled and to enable a successive decoder so as to cause the data latches to output, to the data buss, N successive bits of data in response to a single address input.

4,344,157

ON-CHIP REFRESH ADDRESS GENERATOR FOR DYNAMIC MEMORY

Lionel S. White, Jr., and G. R. Mohan Rao, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 918,891, Jun. 26, 1978, Pat. No. 4,207,618. This application Mar. 28, 1980, Ser. No. 135,048
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—222 **9 Claims**



1. A semiconductor memory device comprising an array of rows and columns of memory cells in a single integrated circuit formed in a semiconductor body, the memory cells storing data on capacitors which discharge with time, the memory device having a refresh address counter included within said body for generating row addresses along with means for changing the address in the counter to produce a sequence of row addresses including all of the rows within a refresh period during which said capacitors have not substantially discharged, and the memory device having addressing means for alternatively receiving an address from inputs to the device or from the counter and for accessing the rows of the array using said address.

4,344,158

NOISE-SUPPRESSION METHOD

Ralph A. Landrum, Jr.; Juan B. Vallhonrat, and Paul M. Perry, all of Houston, Tex., assignors to Western Geophysical Co. of America, Houston, Tex.

Continuation of Ser. No. 34,093, Apr. 27, 1979, abandoned. This application Jan. 8, 1981, Ser. No. 223,447
Int. Cl.³ G01V *1/36*
U.S. Cl. 367—73 **12 Claims**

1. A method for improving the signal-to-noise ratio of a train of received seismic signals comprising the steps of:

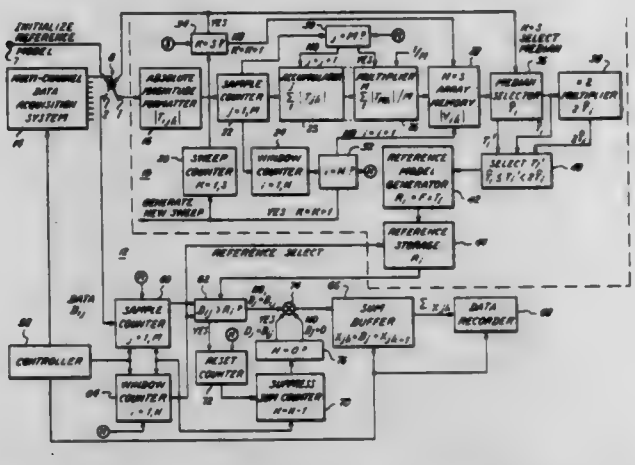
(a) generating a plurality of seismic-signal time-scale recordings at a desired location;

(b) separating each said time-scale recording into a series of consecutive time windows;

(c) averaging the absolute amplitudes of the seismic signals within the corresponding time windows of the respective time-scale recordings thereby providing a set of averaged absolute amplitudes for each said time window;

(d) choosing a desired one of the averaged absolute amplitudes from each said set;

(e) augmenting the chosen averaged absolute amplitudes by a preselected coefficient thereby generating a reference-model of expected substantially noisless valid seismic signals within each said time window;
(f) initiating a normal recording cycle to generate and receive a seismic signal train in response to an excitation of the earth at a first location;



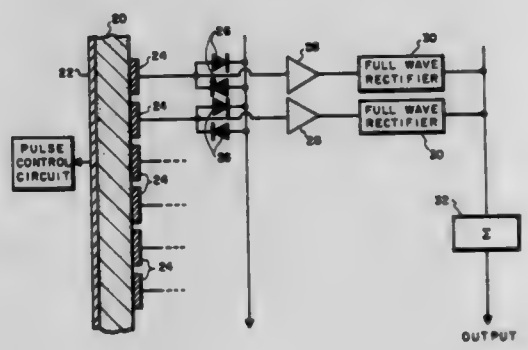
(g) comparing the amplitudes of signals from the received seismic signal train, embrased within consecutive time windows, with the corresponding reference-models; and
(h) rejecting as noise spikes those offending signals in said seismic signal train whose amplitudes exceed the amplitude of the reference model.

4,344,159

ULTRASONIC TRANSDUCER

Dale O. Ballinger, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 8, 1981, Ser. No. 261,998
Int. Cl.[3] G01S *15/02*
U.S. Cl. 367—87 5 Claims



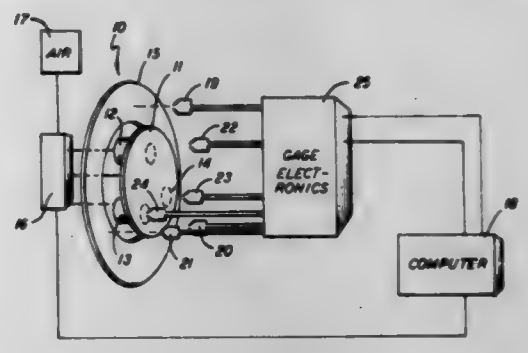
1. A phase insensitive ultrasonic transducer assembly comprising:
a piezoelectric transducer element having a unitary electrode on one major face thereof and a plurality of electrically independent electrodes on an opposite major face of said transducer element;
input pulse control means connected to said unitary electrode to excite said piezoelectric transducer element to produce a series of ultrasonic pulses for transmission into an object for study, said piezoelectric transducer element being responsive to echo pulses from within said object in accordance with discontinuities within said object;
signal responsive means connected, respectively, to each of said electrically independent electrodes to detect echo signals produced in said piezoelectric transducer element in response to said echo pulses, said signal responsive means each including full-wave rectifying means to convert said echo signals to unidirectional signals; and
means for additively combining said unidirectional signals.

4,344,160

AUTOMATIC WAFER FOCUSING AND FLATTENING SYSTEM

Fred C. Gabriel, Stamford, and David A. Markle, Norwalk, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 2, 1980, Ser. No. 146,532
Int. Cl.[3] G01S *15/88*
U.S. Cl. 367—96 10 Claims



1. A system for automatically positioning a wafer within the focal plane of an optical system comprising in combination,
platen means for holding the wafer,
a source of frequency,
sensor means providing output signals indicative of the position of the wafer,
said sensor means comprising,
a plurality of ultrasonic displacement gages disposed adjacent said platen means,
each of said gages comprising a transmitting and receiving element,
means connecting each of said transmitting elements to said source of frequency for transmitting acoustic waves for reflection by the wafer back to said receiving elements,
each of said transmitting elements having an aperture size to insure that the reflected waves are received by said receiving elements,
storage means storing data representative of the focal plane,
comparator means connected to said sensor means and said storage means providing first output signals representative of deviation of the wafer from the focal plane,
first actuator means connected to said platen means and said comparator means for moving said platen means until said first signals fall below a predetermined amount.

4,344,161

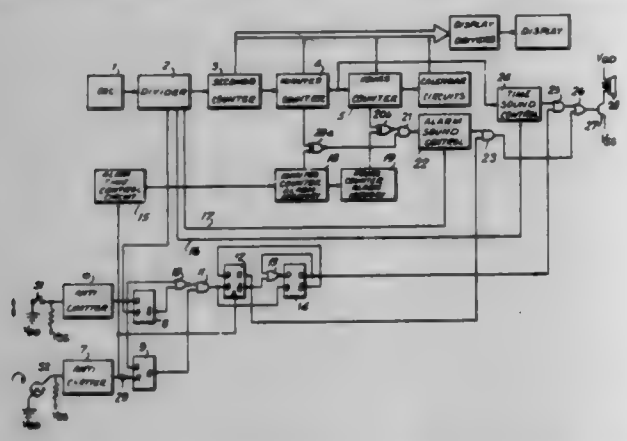
ELECTRONIC TIMEPIECE

Yoichi Wakai, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 5, 1980, Ser. No. 118,707
Claims priority, application Japan, Feb. 9, 1979, 54/13990; Dec. 21, 1979, 54/167140
Int. Cl.[3] G04C *17/00;* G04B *23/02;* G04C *9/00*
U.S. Cl. 368—69 21 Claims

1. An electronic timepiece including an oscillator circuit generating a standard frequency signal, divider network receiving said standard frequency signal and outputting lower-frequency timekeeping signals, timekeeping circuits accumulating said timekeeping signals and outputting signals representative of units of time, display driver means for outputting driving signals, said display driver means receiving said time unit signals from said timekeeping circuits, and a display, said display being driven by signals from said display driver means, comprising:
means for performing at least one supplemental function;
control circuit means for regulating the performance of said at least one supplemental function;
an external member, said external member, when actuated,

inputting signals to said control circuit means to modify and select modes of performance, said external member including first and second switch devices, the first said switch device being operated by a linear motion of said external member, the second said switch device being operated by a rotational motion of said external member, said linear switch device being capable of performing an independent control function when said rotational switch device is not operated, said rotational device, when actu-



ated, operating in cooperation with said linear switch device; and

means for detecting rotation or non-rotation of said second switch device, said detecting means disabling the performance of said independent control function of said first linear switch device when said second switch device is rotated and enabling performance of said independent control function when said second switch device is not rotated.

4,344,162

AUTOMATIC RECORD CHANGING APPARATUS

Jean Foufounis, Denens s Morges, Vaud, Switzerland (CH-1141)

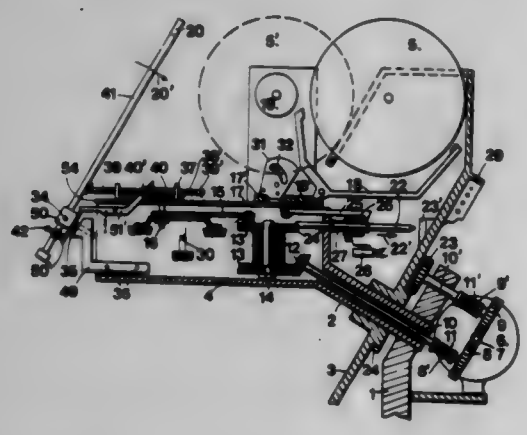
PCT No. PCT/CH79/00114, § 371 Date Apr. 30, 1980, § 102(e) Date Apr. 22, 1980, PCT Pub. No. WO80/00508, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 29, 1979, Ser. No. 196,047

Claims priority, application Switzerland, Aug. 30, 1978, 9156/78

Int. Cl.³ G11B *17/24*

U.S. Cl. 369—37 **6 Claims**



1. Automatic record changing apparatus, comprising means (20) for playing a record, a rotating magazine (3) having slots to receive the records (5), said slots formed so that the plane of each record (5) passes through the axis of rotation of said magazine (3), the assembly of the records (5) and magazine occupying a space of generally toric shape, means (6,9,23) for controlling angular displacements of the magazine (3) in order to voluntarily bring each of the records (5) into a selection position, a control mechanism (6,8,10,12,13,14,15,17 and 18) allowing the extraction of a record (5) occupying the selection position in order to bring it to a position (5') to be played by said playing means (20), then to replace it in its slot, characterized in that said apparatus comprises a base (1), a motor (6) mounted on said base for driving said rotating magazine (3) and actuating said control mechanism, a hollow pivot (2) connected to said base and extending at an angle to a horizontal plane and through the center of the toric shaped space defined by said assembly of records and magazine, said magazine rotatably mounted on said pivot so that the axis of rotation of said magazine is also inclined relative to said horizontal plane, said control mechanism mounted on the free end of said pivot, a drive shaft (10) passing through said pivot and connected to said motor (6) at one of its ends and connected to said control mechanism at its other end, said selection position located at the upper part of said toric shaped space above said pivot, said control mechanism being located substantially in the central area of the toric shaped space such that it is partly below the record in selection position and partly above the lower part of said toric shaped space below said pivot.

4,344,163

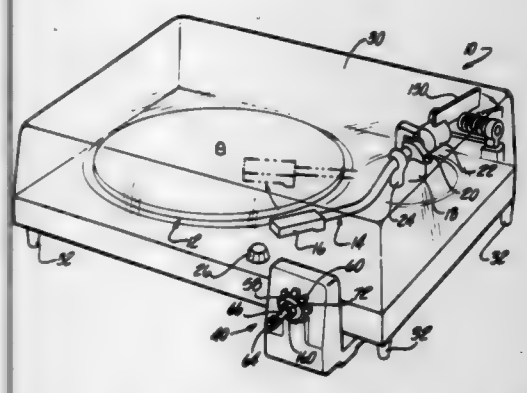
RECORD CUEING APPARATUS FOR TURNTABLE TONE ARM

Robert S. Madalinski, 5911 Argyle, Dearborn, Mich. 48126

Filed Sep. 22, 1980, Ser. No. 188,776

Int. Cl.³ G11B *3/10*

U.S. Cl. 369—40 **5 Claims**

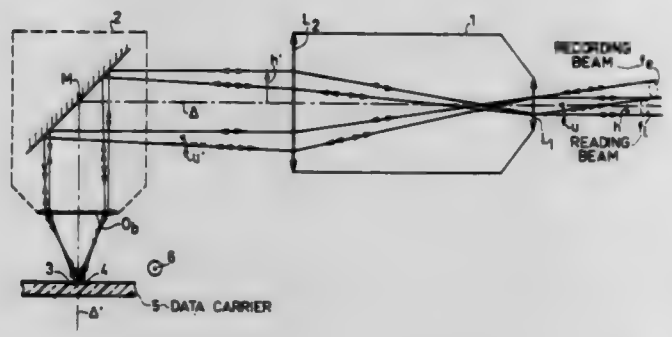


1. For use with a phonograph turntable unit of the type comprising a turntable, a tone arm having a forward end with a stylus for engaging a phonograph record on said turntable and a rearward end, means mounting said tone arm to pivot both vertically and laterally with respect to said turntable about axes intermediate said forward and rearward ends, and means for selectively pivoting said tone arm vertically with respect to said turntable between a raised position of said forward end about said turntable and a lowered position for engaging a phonograph record on said turntable, cueing apparatus for laterally positioning said forward end of said tone arm in said raised position comprising an elongated base adapted to extend beneath a turntable unit from a forward edge to a rearward edge beneath said rearward end of said tone arm, a first support upstanding from said forward edge and a second support upstanding from said rearward edge, a first knob rotatably mounted on an outer side of said first support and a first pulley mounted on an inner side of said first support, cam means comprising a coil spring, means mounting said coil spring on said rear support to rotate about an axis transverse to the elongated dimension of said base and a second pulley rotatably coupled to said spring, means extending along said base beneath the turntable rotatably coupling said first and second pulleys for selectively rotating said coil spring in either direction about said axis, and cam follower means mounted on said rearward end of said tone arm for operatively engaging said cam means in said raised position of said forward end so as to translate said rearward end and thereby pivot said forward end laterally with respect to said turntable and being spaced from said cam means in said lowered position of said forward end so as to permit free lateral movement of said forward end in said lowered position.

4,344,164
OPTICAL DEVICE FOR ACCESS TO A TRACK CARRIED BY A DATA CARRIER AND OPTICAL MEMORY SYSTEM INCORPORATING SUCH A DEVICE

Claude Bricot, and Dominique Leterme, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 4, 1980, Ser. No. 174,564
Claims priority, application France, Aug. 3, 1979, 79 19973
Int. Cl.³ G11B *7/08*
U.S. Cl. 369—44 8 Claims

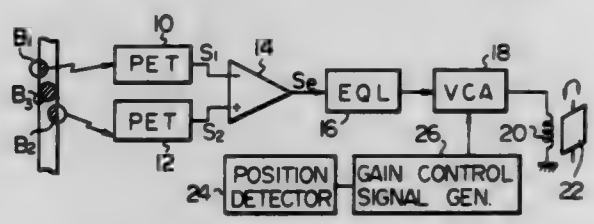


1. An optical device for access to a track on a moving data carrier, which can be optically recorded or read by focused radiation, incorporating a fixed light energy source having at least one radiating element producing a beam of parallel rays centered about an axis and collected by a moving element which moves with respect to the data carrier parallel to said axis of said beam, the moving element incorporating a deviating mirror and an objective which focuses the beam onto a predetermined track on the carrier, wherein fixed afocal optical magnifying means are inserted between the moving element and the light energy source, the magnification of said optical means being sufficient to ensure that the emergent beam substantially covers the entrance pupil of the objective, wherein the energy source comprises first and second laser emitters respectively producing the first and second parallel beams polarized in linear manner in accordance with a first and a second direction, the respective polarization directions being orthogonal to one another, the propagation direction of said first beam also coinciding with the optical axis of the afocal optical means in order to penetrate the same at a normal incidence and the direction of the second beam of parallel rays forming a predetermined small angle with the optical axis.

4,344,165
METHOD AND SYSTEM FOR A DISC PLAYER TRACKING SERVO

Toru Akiyama, Tokorozawa, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Nov. 12, 1980, Ser. No. 205,969
Claims priority, application Japan, Nov. 17, 1979, 54-159704[U]
Int. Cl.³ G11B *7/00, 21/10*
U.S. Cl. 369—44 6 Claims



1. A method of reducing the deviation of an information detecting spot of a pickup device with respect to a target track of a rotating recording disc from which information recorded at the detecting spot on said target track is read by means of said pickup device in a recording-disc information reading and reproducing apparatus, comprising the steps of:

detecting an amount of deviation of the detecting spot from said target track;

producing a tracking error signal which is continuously variable in magnitude with the detected amount of deviation;

amplifying the tracking error signal with a variable gain;

controlling, by the amplified tracking error signal, the position of the detecting spot with respect to said target track so as to reduce said amount of deviation;

detecting the radial position of said pickup device with respect to the axis of rotation of the recording disc;

producing a detecting signal representative of the detected radial position of the pickup device;

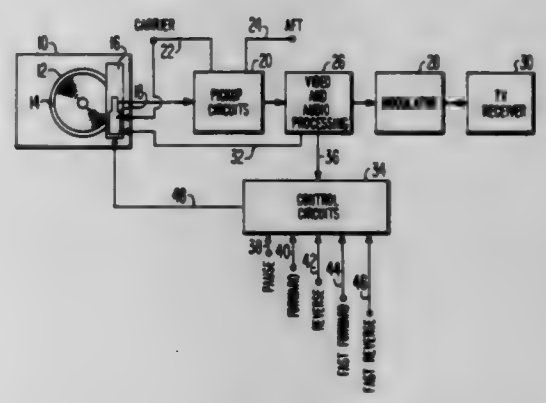
producing a gain control signal variable with the detecting signal; and

varying said gain in accordance with the gain control signal so that said gain is larger when the pickup device takes an outer radial position of the recording disc than when the pickup device takes an inner position.

4,344,166
DRIVER ARRANGEMENT FOR STYLUS LIFTING/LOWERING APPARATUS

John C. Bleazey, Trenton, and Joseph Guarracini, Lawrenceville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 5, 1980, Ser. No. 204,384
Int. Cl.³ G11B *3/10*
U.S. Cl. 369—216 7 Claims



1. In apparatus for use with a disc record, said apparatus being of the type comprising: a turntable for rotatably supporting said disc record, said disc record having signals recorded thereon; a signal pickup device for recovering said signals from said disc record; and means for selectively translating said arm whereby said pickup device may be selectively made to engage and disengage said disc record, said selective translating means comprising:

means responsive to an apparatus control signal for translating said pickup device at a first rate; and

means responsive to a condition of a given signal recovered from said disc record for translating said pickup device at a second rate.

4,344,167
PICKUP DEVICE

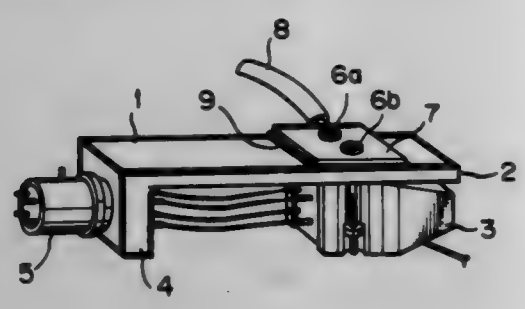
Tadashi Iwasawa, 5-26-8, Himonya, Meguro-ku, Tokyo, Japan

Continuation of Ser. No. 965,893, Dec. 4, 1978, abandoned. This application Feb. 25, 1980, Ser. No. 124,633
Int. Cl.³ G11B *21/16*
U.S. Cl. 369—247 7 Claims

1. In a pickup device comprising a head shell having a head shell base member (1) made of single crystals or polycrystalline materials containing very hard ceramics as a main component thereof, a pickup cartridge (3) fixed directedly to a surface portion of the head shell base plate member (1), and a vibration-absorbing member (9);

the improvement wherein:

said vibration-absorbing member (9) is in the shape of a thin plate and is firmly attached directly to a part of the surface of said head shell base plate member (1) different from the surface portion of said head shell base plate member to which said pickup cartridge (3) is fixed, to absorb harmful vibrations generated in the pickup cartridge (3) through the head shell;



said vibration-absorbing member (9) is composed mainly of polydiorganosiloxane and inorganic fine powders, said polydiorganosiloxane having an average molecular weight of not less than 15,000; and

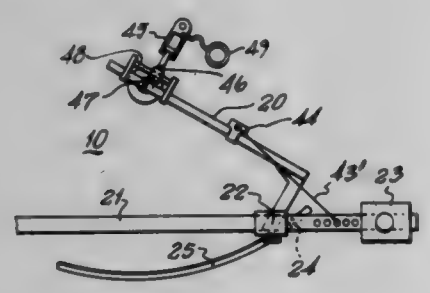
the hardness of said vibration-absorbing member (9) is within the range of from about 8 to about 30.

4,344,168

EQUIPMENT FOR PLAYING GRAMOPHONE RECORDS AND METHOD OF OPERATION THEREOF

Richard G. Enston, Bwlch Mawr Farm, Conway, North Wales, Wales

Filed Jul. 16, 1979, Ser. No. 57,798
Int. Cl.[3] G11B *3/38*
U.S. Cl. 369—250 12 Claims



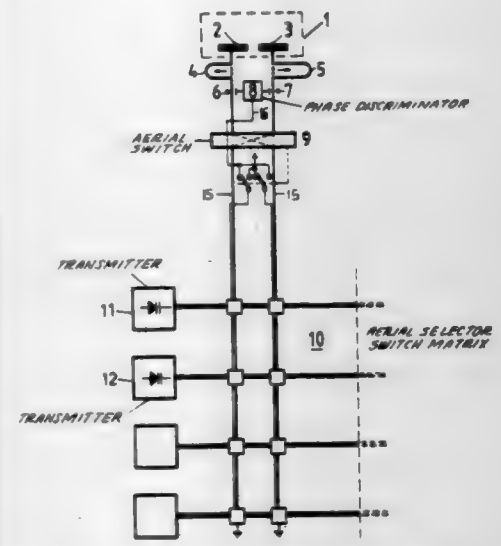
1. Equipment for playing gramophone records, in association with a turntable deck having a rotatable record supporting turntable thereon, comprising a tone arm, means for mounting the tone arm adjacent the turntable on the deck such that the arm can pivot about a vertical axis thereon, and, at least a part of the arm can pivot about a horizontal axis, a free end of the tone arm carrying a stylus disposed to track across a rotating record on the turntable, means imparting a component of linear movement of at least a part of the tone arm thus to impart to the stylus during play a degree of forward movement away from the point of pivotal attachment of the tone arm to the deck, a first guide member connected to the tone arm, and a second guide member slidably engaging said first guide member such that the first guide member is constrained and caused to advance forwardly through the second guide member as the stylus tracks across the record, thus to determine and control the track of the stylus, whereby the center line of the stylus maintains alignment with a line drawn at right angles to the record radius at the point of stylus contact therewith.

4,344,169

METHOD OF CONNECTING TWO SHORT-WAVE TRANSMITTERS IN PARALLEL

Ole Snedkerud, Windisch, Switzerland, assignor to Patelhold Patentverwertungs- & Elektro-Holding AG, Glarus, Switzerland

Continuation of Ser. No. 912,305, Jun. 5, 1978, abandoned. This application Apr. 23, 1980, Ser. No. 143,103
Claims priority, application Switzerland, Jun. 15, 1977, 7380/77
Int. Cl.[3] H04B *7/00, 1/50*
U.S. Cl. 370—40 14 Claims



1. A method for connecting first and second transmitters, each containing its own oscillator, in parallel with one another and to first and second aerial halves, respectively, said first and second transmitters generating first and second signals, respectively, said method comprising the steps of:

applying said first and second signals to said first and second aerial halves, respectively;

generating third and fourth signals respectively representative of the phase of said first and second signals;

applying said third and fourth signals to a phase difference signal generator by means of first and second bypasses, respectively;

generating, in said phase difference signal generator, a phase difference signal representative of the phase difference between said first and second signals generated by said transmitters and applied to said respective aerial halves;

adjusting the phase of said first signal generated by said first transmitter, by means of a reactance circuit electrically connected to said oscillator of said first transmitter, as a function of said phase difference signal while said oscillator of said second transmitter is permitted to oscillate and generate said second signal independently of said phase difference signal; and

adjusting the length of at least one of said bypasses when it is desired to change the angle of said transmitters.

4,344,170

TIME DIVISION SWITCHING CIRCUIT WITH TIME SLOT INTERCHANGE

Takemi Arita, Inagi, Japan, assignor to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

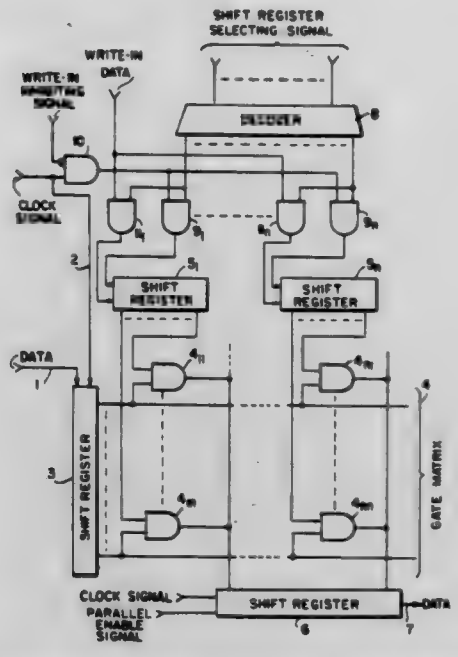
Filed Oct. 1, 1979, Ser. No. 80,679
Claims priority, application Japan, Oct. 19, 1978, 53-128710
Int. Cl.[3] H04Q *11/04*
U.S. Cl. 370—68 4 Claims

1. A time division switching circuit with time slot interchange comprising:

an input shift register for converting one-frame binary coded data of time division multiplex type from an incoming line into a parallel bit output;

a gate matrix having cross points connected to bit output lines of said input shift register;

a plurality of control shift registers connected to the gates of said gate matrix such that each control shift register corresponds to a respective bit of an output frame, and having predetermined contents for achieving on/off control of the respective gates; and



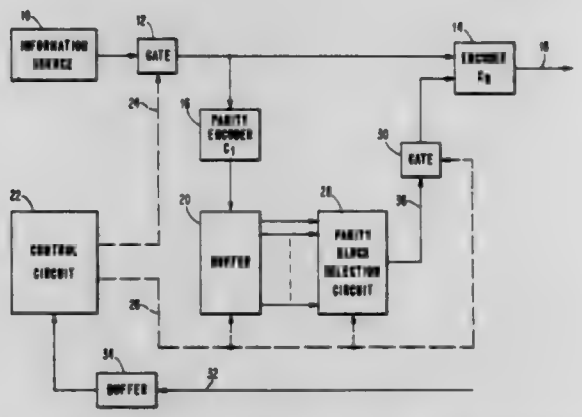
an output shift register coupled to said gate matrix for simultaneously receiving parallel bit outputs from said gate matrix, the bit array of which have been statically changed from the input data by said gate matrix, and for transmitting the parallel bit output data thus exchanged to an outgoing line as binary coded output data of time division multiplex type.

4,344,171

EFFECTIVE ERROR CONTROL SCHEME FOR SATELLITE COMMUNICATIONS

Shu Lin, Honolulu, Hi., and Philip S. Yu, Pleasantville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1980, Ser. No. 215,489
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—35 **18 Claims**



1. A method for controlling transmission errors in digital data communication systems, comprising:

sending, at a transmitter, data blocks with parity digits for error detection,

detecting, at a receiver, the presence of errors in received data blocks, sending a negative acknowledgement to said transmitter, and storing the erroneous data block, and

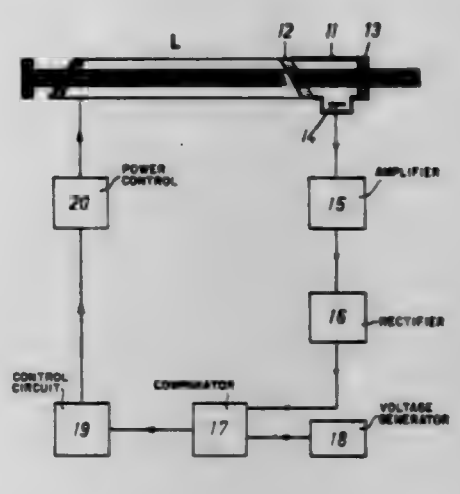
retransmitting properly selected parity blocks, and not the erroneously received data block, to said receiver for correcting errors in said erroneously received data block.

4,344,172

SYSTEM FOR MEASURING THE RADIATION POWER OF POWER-MODULATED TRANSMITTERS, IN PARTICULAR OF LASERS

Gerhard Busse, No. 14, Rosenheimer Landstrasse, 8012 Ottobrunn, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,632
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908157; Dec. 10, 1979, 2949564
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—29 **10 Claims**



1. Apparatus for measuring the power of laser radiation transmitted along a predetermined path comprising:

(a) a housing defined by walls and containing a gas which is absorption-free with respect to the laser radiation to be measured, said housing including a first transparent window in one wall thereof and a second transparent window or a reflecting body in a wall opposite said first transparent window whereby when said housing is positioned in said path of said laser radiation said laser radiation will pass through said first and second transparent windows or pass through said first transparent window and be reflected by said reflecting body; and

(b) transducer means in said housing for sensing pressure variations in said gas and for emitting an electrical signal indicating said pressure variations, said pressure variations being proportional of the power of said laser radiation;

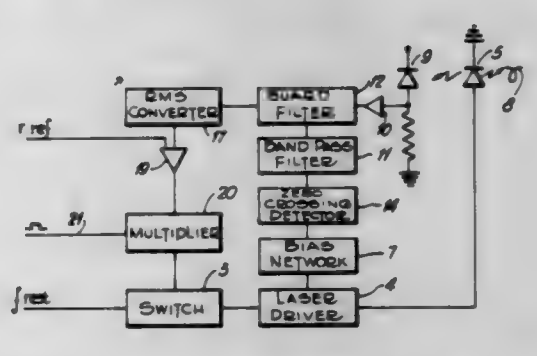
(c) whereby the power of said laser radiation transmitted along said predetermined path may be determined from the signal emitted by said transducer means.

4,344,173

STABILIZATION CIRCUIT FOR A DIGITALLY OPERATED LASER

Joseph Straus, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 945,326, Sep. 25, 1978. This application Aug. 28, 1980, Ser. No. 182,098
Int. Cl.³ H01S *3/13*
U.S. Cl. 372—38 **13 Claims**



1. A method of operating an injection laser for digital transmission, the method comprising:

directing a d.c. bias current through the laser;

directing through said laser a low amplitude electrical test signal having a fundamental frequency, wherein said test signal is pulsed at a predetermined pulse repetition frequency;

monitoring light emitted from the laser in response to the bias current and said test signal;

generating an electrical analog of such monitored light;

directing the electrical analog through a filter network for passing a predetermined harmonic distortion component of said test signal;

analyzing the filter output at an analyzing network to determine a magnitude of d.c. bias current at which variation of the predetermined harmonic distortion component magnitude reaches a point corresponding to the lasing threshold current, said point being either a maximum value or a minimum value, depending on whether said predetermined harmonic distortion component is even or odd, respectively;

and

using a feedback loop, feeding an output from the analyzing network to a bias current generating means thereby to set the d.c. bias current applied to the laser to a value close to and below said threshold current.

4,344,174

GAS LASERS

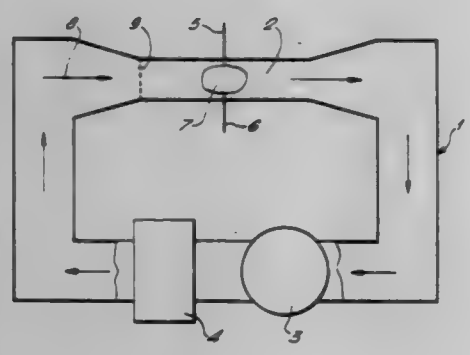
Ian J. Spalding, Didcot; Adrian C. Selden, Clifton Hampten, and Errico Armandillo, Abingdon, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 16,023, Feb. 23, 1979, abandoned, which is a continuation of Ser. No. 782,842, Mar. 30, 1977, abandoned. This application Aug. 28, 1980, Ser. No. 182,082

Claims priority, application United Kingdom, Apr. 2, 1976, 13508/76

Int. Cl.³ H01S *3/09*

U.S. Cl. 372—91 **9 Claims**



1. A method of operating, in a pulsed mode, a transversely excited gas laser including a carbon dioxide containing lasing medium including the steps of cooling the lasing medium to a temperature such that the thermal population of the lower energy level of an output lasing transition between an upper energy level and a lower energy level of the carbon dioxide molecule is reduced, and, in each pulse, initially exciting the lasing medium to create the population inversion which results in the lasing transition at a rate which is slow enough to ensure that significant thermal population of the lower energy level is avoided during the initial excitation of the lasing medium, the lasing medium being at a pressure such that the product $\alpha_o C\tau$ exceeds a value of approximately 30 where α_o is the small signal gain per centimeter length of the optical length of the laser, C is the velocity of light, and τ is the lifetime of the transient population immersion which results in the lasing transition.

4,344,175

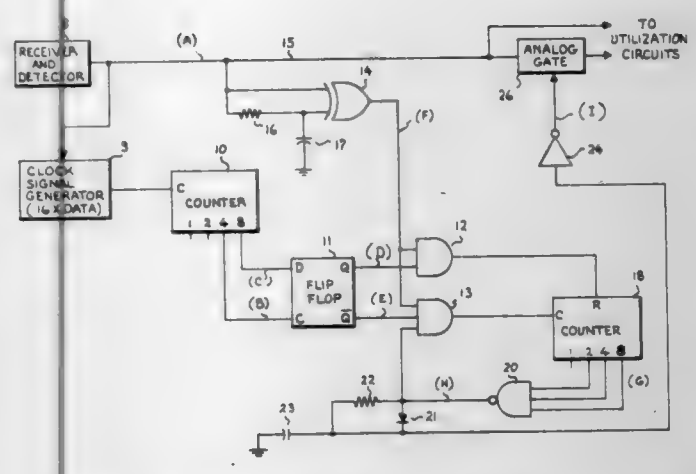
MUTING CIRCUIT

Samuel A. Leslie, Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Dec. 22, 1980, Ser. No. 218,855

Int. Cl.³ H04M *11/06*

U.S. Cl. 375—5 **11 Claims**



1. A circuit for detecting the presence of data or signals having a relatively constant frequency for a predetermined time comprising:

a. a detector for indicating transitions in the state of said data or signals;

b. a synchronizing circuit for producing window signals at said frequency;

c. logic means coupled to said detector and to said synchronizing circuit for producing a count signal in response to each occurrence of an indicated transition during a window signal and for producing a reset signal in response to each occurrence of an indicated transition outside a window signal;

d. and counting means coupled to said logic means for counting in one direction in response to each count signal and for resetting said counting means in response to each reset signal.

4,344,176

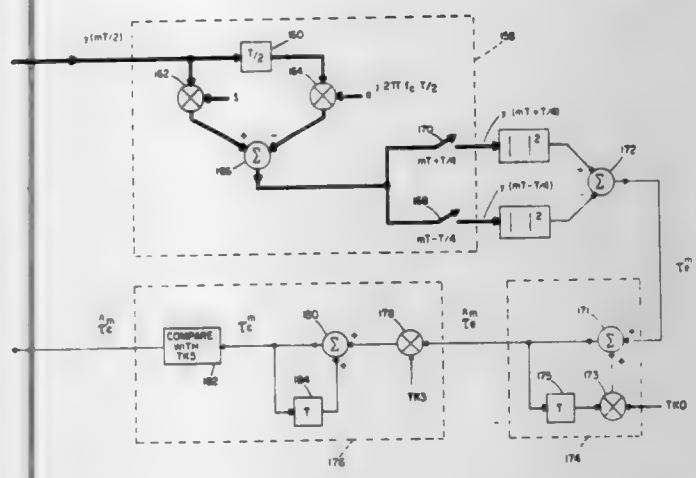
TIME RECOVERY CIRCUITRY IN A MODEM RECEIVER

Shahid U. H. Qureshi, Natick, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Apr. 3, 1980, Ser. No. 136,921

Int. Cl.³ H04B *3/04*

U.S. Cl. 375—15 **9 Claims**



1. Modem receiver apparatus having means for receiving, demodulating, and decoding, at a first rate of 1/T bauds per second, a modulated double sideband carrier signal encoded to represent digital bits, wherein the received signal is converted to a stream of digital samples, said samples occurring at a

sample rate higher than 1/T per second, and having timing recovery circuitry comprising

phase-splitting filter circuitry connected to split said modulated double-sideband carrier signal sample stream into a pair of modulated carrier signal sample streams, the carrier frequencies associated with said pair of streams being equal but 90° apart in phase,

first means connected to the output of said filter circuitry for generating a timing signal, and

second means connected in parallel with said first means to the output of said filter circuitry for demodulating said output of said filter circuitry,

said first means comprising

first circuitry for additionally filtering said output of said filter circuitry and providing, at a second rate at least as high as 2/T per second, successive values representative of the absolute value of said additionally filtered output, and

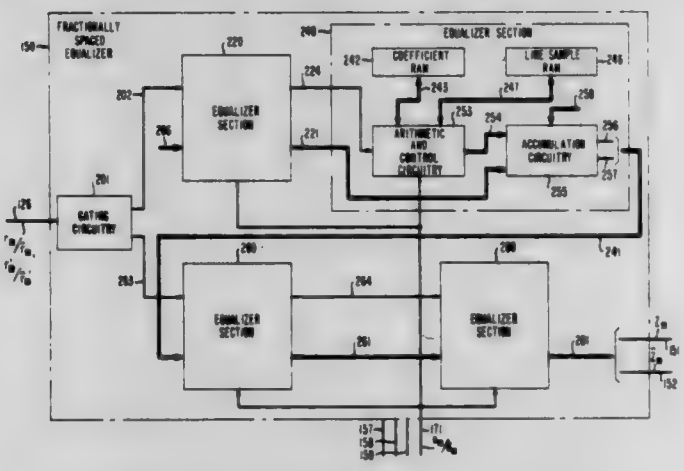
second circuitry for generating said timing signal from said successive values provided by said first circuitry.

4,344,177

EQUALIZER COMPRISED OF EQUALIZER SECTIONS WHICH INCLUDE INTERNAL ACCUMULATION CIRCUITS

George J. Kustka, Ocean, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 9, 1980, Ser. No. 195,367
Int. Cl.³ H04L *25/03*
U.S. Cl. 375—16 5 Claims



1. An equalizer comprised of at least first and second equalizer sections, each of said equalizer sections being adapted to multiply each of a plurality of line samples with respective coefficients to form a plurality of products,

said first equalizer section including means for generating an accumulation signal which represents the sum of the products formed in said first equalizer section and means for applying said accumulation signal to said second equalizer section,

said second equalizer section including means operative for combining the products formed in said second equalizer section with said accumulation signal and means for initiating the operation of said combining means in response to receipt by said second equalizer section from said first equalizer section of said accumulation signal.

4,344,178

COSTAS LOOP QPSK DEMODULATOR

George W. Waters, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

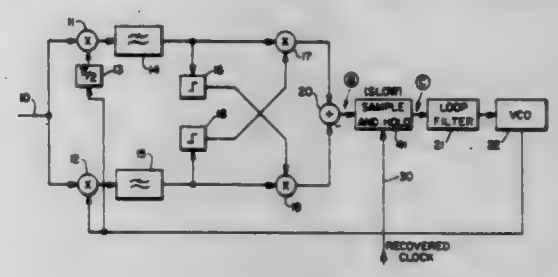
Filed Sep. 26, 1980, Ser. No. 190,914
Int. Cl.³ H03D *3/18, 3/24;* H04L *27/22*
U.S. Cl. 375—81 8 Claims

1. For use in a multiphase shift keying demodulator of the type including a phase adjustable reference carrier source, and means for demodulating an incoming signal with said reference carrier to provide first and second signals respectively representing the in-phase and quadrature components of said incoming signal,

an improved phase synchronization system for controlling said reference carrier comprising, in combination:

first means, responsive to said first and second signals, for detecting the polarities thereof and producing in-phase and quadrature signal signals;

second means, coupled to receive said first signal and said quadrature sign signal, for producing a first product signal, and coupled to receive said second signal and said in-phase sign signal, for producing a second product signal,



third means, coupled to said second means, and responsive to said first and second product signals, for producing and error signal representative of the difference between said first and said second product signals, and

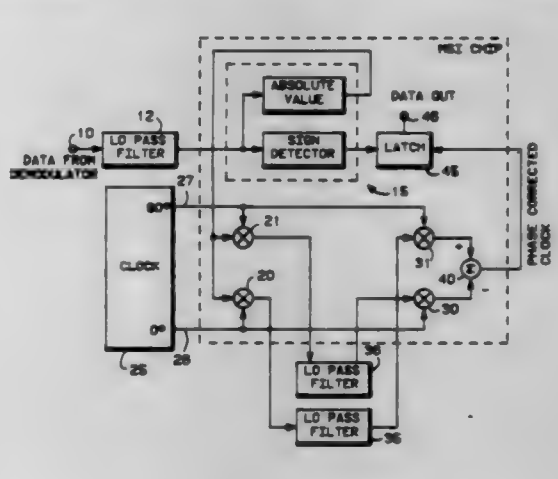
fourth means, coupled to said third means, for sampling said error signal and holding the sampled error signal, said sampled and hold signal being coupled to said adjustable reference carrier source to control the phase thereof.

4,344,179

CLOCK SYNCHRONIZER AND DATA DETECTOR

Carl R. Ryan, Gilbert, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 7, 1980, Ser. No. 205,063
Int. Cl.³ H04L *7/02*
U.S. Cl. 375—110 10 Claims



1. In a system adapted to receive a stream of data having specific switching points defining the data, a clock synchronizer and data detector comprising:

(a) a source of clock pulses having first and second outputs with first and second reference signals available at the outputs, respectively, said reference signals being separated in phase by a predetermined number of electrical degrees;

(b) first multiplying means connected to multiply the received stream of data by each of the first and second reference signals and provide first and second products;

(c) low pass filter means connected to receive the two products from said first multiplying means and substantially reduce the noise content therein;

(d) second multiplying means connected to receive the filtered first and second products from said filter means and

the first and second reference signals from said clock source for multiplying the first product by the second reference signal and the second product by the first reference signal and providing a pair of products;

(e) combining means connected to receive the pair of products from said second multiplying means for combining the products into a single stream of clock pulses having a predetermined phase relationship with respect to the switching points of the stream of data; and

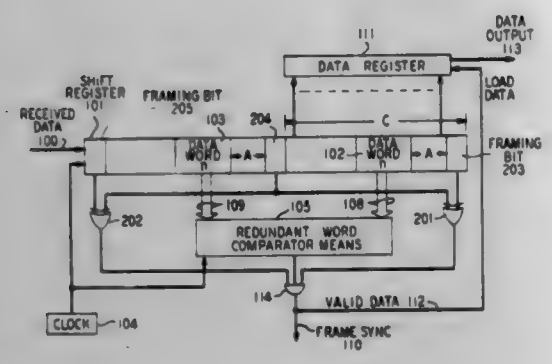
(f) sampling means connected to receive the stream of data and the stream of clock pulses from said combining means for sampling the data approximately at each of the switching points in response to the stream of clock pulses.

4,344,180

REDUNDANT WORD FRAME SYNCHRONIZATION CIRCUIT

Peter Cummiskey, Clark, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 19, 1980, Ser. No. 161,170
Int. Cl.³ H04L *7/00*
U.S. Cl. 375—116 8 Claims



1. A frame synchronization arrangement for use in a data communication system, said communication system arranged to transit data words in a frame format including first and second identical data words having a first bit separation therebetween, said first data word having a second bit separation from a data frame boundary

CHARACTERIZED IN THAT

said frame synchronization arrangement comprises:

means for serially storing a number of successive data words including the data word immediately following said data frame boundary and said first and second identical data words for a preselected time and then serially outputting all of said stored data words except said second identical data word; and

means for comparing data words in said storing means having both said first bit separation therebetween and said second bit separation to said data frame boundary and generating a valid comparison signal therefrom when the compared data words are the same, which valid comparison signal enables the serial outputting of data words from said storing means and is synchronous with the outputted data word immediately following said data frame boundary.

4,344,181

METHOD AND APPARATUS FOR MEASURING THE CONTENT OR QUANTITY OF A GIVEN ELEMENT BY MEANS OF X-RAY RADIATION

Nils J. Baecklund, Sunnevik, Oskarshamn, Sweden (S-572 00)

Continuation of Ser. No. 48,232, Jun. 13, 1979, abandoned. This application Dec. 9, 1980, Ser. No. 214,862
Claims priority, application Sweden, Jun. 21, 1978, 7807078
Int. Cl.³ G01N *23/22*
U.S. Cl. 378—45 4 Claims

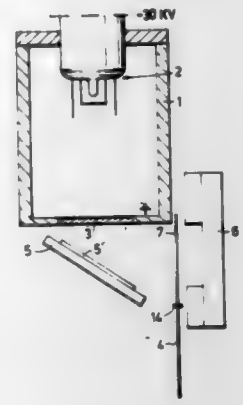
1. A method of measuring the content or amount of a given element in a sample by means of X-ray radiation comprising the steps of:

utilizing a low-power X-ray tube having an anode fabricated of anode material with characteristic X-ray lines of substantially equal to but shorter waver-length than the corresponding characteristic X-ray lines of the element to be measured, the anode comprising a thin layer of said anode material coated on a beryllium plate of a characteristic such as to provide efficient cooling;

utilizing a battery as the power supply for said low-power X-ray tube;

causing electrons from a cathode of the low-power X-ray tube to be directed onto one side of the anode of the tube such that the electrons excite primary X-ray radiation in the anode material including the radiation from the characteristic X-ray lines of the anode material;

causing the X-ray lines of the anode material, taken out as transmission radiation through the opposite side of the anode and including characteristic radiation having a wave-length which is shorter than the absorption edge of



the given element, to impinge on the sample containing the element to be measured thereby generating X-ray lines characteristic of the sample by fluorescence;

isolating the characteristic fluorescence lines of the given element from the fluorescence radiation of the sample by means of two filter elements having absorption edges which lie at different wave-lengths but which have the same absorption properties for those wave-lengths which are shorter than the shortest wave-length absorption edge of the two filter elements and for those wave-lengths which are longer than the longest wave-length absorption edge of the two filter elements, respectively; and

measuring the intensity of the characteristic X-ray lines of the element to determine the content or amount of the element, the intensity in the part of the spectrum lying between the absorption edges of the filters being determined by subtracting the intensity obtained by the filter element having the absorption edge of longer wave-length from the intensity obtained with the filter element having the absorption edge of shorter wavelength.

4,344,182

X-RAY FILM HOLDER

John S. Bostic, Parma Heights, Ohio, assignor to Joseph E. Belavich, Plant City, Fla.

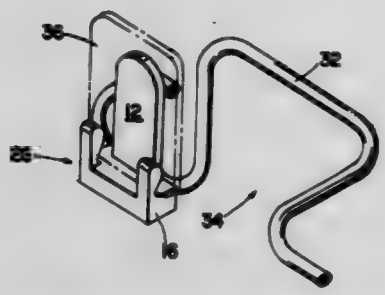
Filed Sep. 15, 1980, Ser. No. 187,441
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—170 7 Claims

1. A holder for supporting a piece of X-ray film properly in position within the mouth of a patient during dental operations, comprising:

(a) a spine forming a central portion of the holder;

(b) a first clip projecting outwardly of the spine, the first clip

adapted for attachment to a saliva ejector and tongue guard; and,



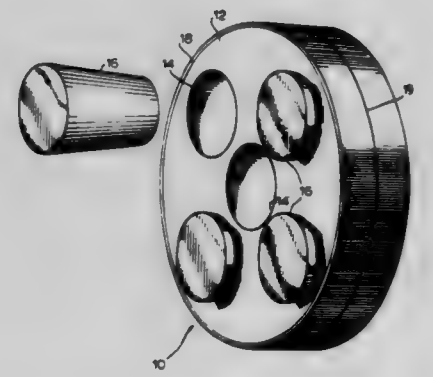
(c) a second clip projecting outwardly of the spine, the second clip adapted to hold a piece of X-ray film.

4,344,183

MEASURING TOOL FOR COMPUTER ASSISTED TOMOGRAPHIC SCANNER

Donald R. Jacobson, Madison, Wis., assignor to Radiation Measurements, Inc., Middleton, Wis.

Filed Apr. 14, 1980, Ser. No. 140,152
Int. Cl.[3] G01D *18/00*
U.S. Cl. 378—207 10 Claims



1. A measuring tool for determining the thickness and positioning of the X-ray beam of a computer assisted tomographic scanner comprising:

a phantom (12) constructed of a material having low attenuation to X-rays and having at least two receptacles (14) formed therein;

reference line means (19) on the exterior of the phantom (12) for defining a reference plane extending therethrough;

at least two inserts (16) also formed of a material having low attenuation to X-rays and each shaped so as to fit into a one of the receptacles (14) in the phantom (12);

an image creating means for measuring the thickness and position of the X-ray beam including at least one image creating pattern (20) formed of a material having high attenuation to X-rays embedded in one of the inserts (16), the image creating pattern (20) including a center indicator (24) positioned in the reference plane and a helical pattern (22) of a preselected pitch so that the thickness and position of the X-ray beam can be measured from a tomographic image taken of the tool; and

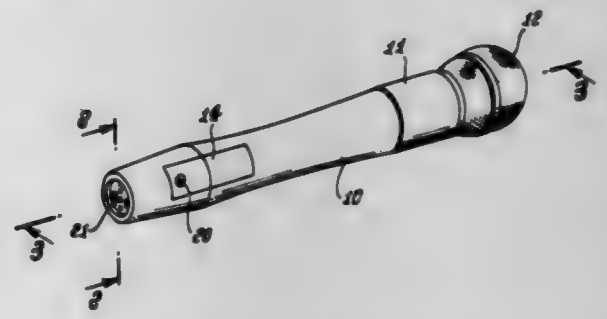
tilt detection means for detecting any tilt of the reference plane relative to the plane of the X-ray beam, including at least one other image creating pattern (20) in an insert (16), the image creating pattern (20) including a center indicator (24) and a helical pattern (22) so that any tilt in the beam can be detected by comparing the images of the two image creating patterns (20) in a tomographic image of the tool.

4,344,184

WIRELESS MICROPHONE

Robert R. Edwards, Los Alamitos, Calif., assignor to Cetec Corporation, El Monte, Calif.

Filed Jul. 31, 1980, Ser. No. 174,153
Int. Cl.[3] H04B *1/034, 1/04*
U.S. Cl. 455—95 10 Claims



1. In a wireless microphone, the combination of:

an elongated housing of electrically nonconducting material;

a microphone unit mounted in one end of said housing;

a first electrical circuit including an audio amplifier;

a second electrical circuit including a radio frequency amplifier;

a plurality of radio frequency chokes interconnecting said first and second electrical circuits;

a conductor connecting the output of said radio frequency amplifier to said audio amplifier; and

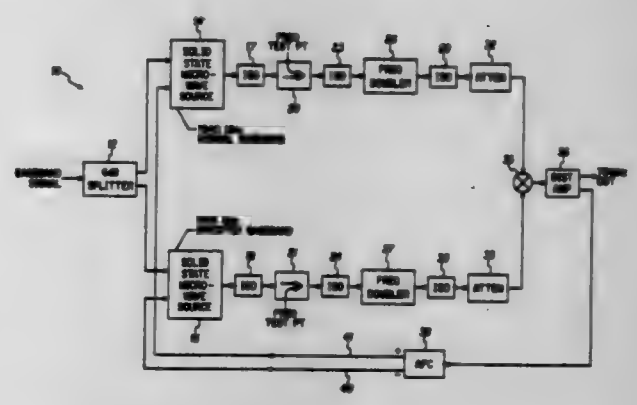
means for mounting said first and second circuits in said housing spaced from each other with said chokes positioned in the space between said circuits, with said first circuit mounted intermediate said microphone unit and said second circuit, with the electrical components of said first circuit comprising at least part of one radiator of a dipole and the electrical components of said second circuit comprising at least part of the other radiator of said dipole.

4,344,185

LOW NOISE HIGH STABILITY FM TRANSMITTER

Carroll J. Cook, Plano, and Timothy K. Heathorn, Allen, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 28, 1980, Ser. No. 172,737
Int. Cl.[3] H04B *1/04;* H03C *3/02*
U.S. Cl. 455—110 3 Claims



1. An FM transmitter comprising:

means, including a microwave oscillator, for generating a carrier, at a first frequency, frequency modulated with a baseband signal;

means, including a microwave oscillator, for generating a carrier, at a second frequency, frequency modulated with said baseband signal inverted;

means for multiplying the frequency of the modulated carrier of said first frequency by a constant factor;

means for multiplying the frequency of the modulated carrier of said second frequency by said factor;

a mixer receiving each of said frequency multiplied modulated carriers,

whereby the output of said mixer is a carrier, at a third frequency equal to said factor multiplied by the difference of said first and second frequencies, frequency modulated by said baseband signal.

4,344,186

TUNING CIRCUIT

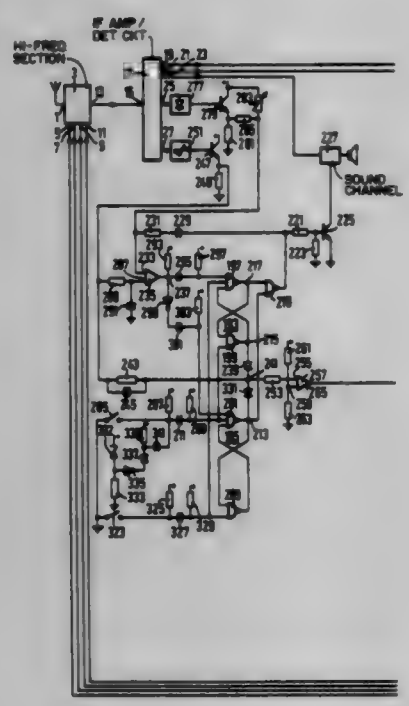
Kian K. Ong, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

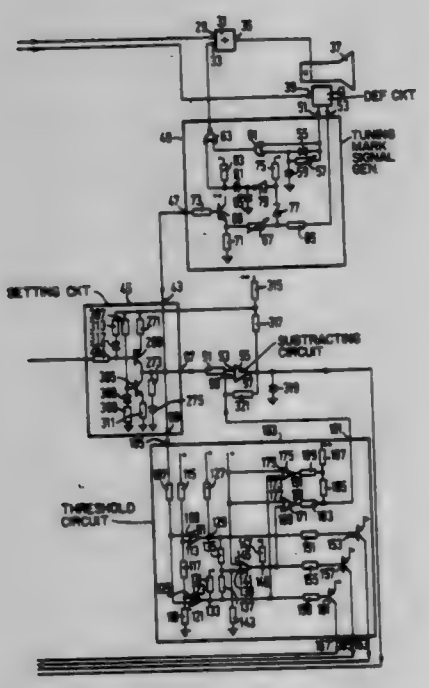
Filed Sep. 2, 1980, Ser. No. 182,930

Claims priority, application Netherlands, Sep. 3, 1979, 7906578

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—168 5 Claims





1. A tuning circuit for providing a tuning signal to a tunable device, said device including a wave range change-over circuit, said tuning circuit comprising a setting circuit for generating a setting signal for consecutively tuning over a plurality of wave ranges, a threshold circuit, to which the said setting signal is applied, for providing a changeable d.c. voltage signal, which depends on the setting signal, said d.c. voltage signal having different, constant values corresponding, respectively, to each of said wave ranges and being switchable for each wave range at preselected amplitude levels of said setting signal by means of the threshold circuit, and further comprising a subtracting circuit responsive to said setting signal and said changeable d.c. voltage signal for providing said tuning signal.

4,344,187

RADIO RECEIVER WITH SYSTEM FOR MAINTAINING OPTIMUM TUNING

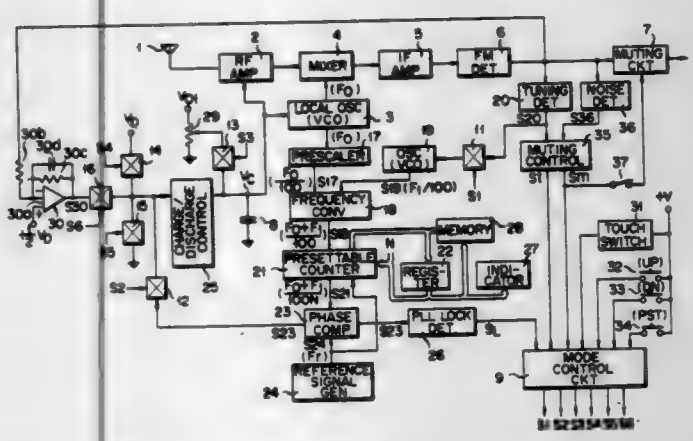
Minoru Ogita, and Shigenobu Kimura, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 9, 1980, Ser. No. 195,474

Claims priority, application Japan, Oct. 18, 1979, 54-134682; Jan. 12, 1980, 55-2324

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—182 11 Claims



1. A radio receiver comprising:

broadcast signal receiving circuit means arranged to be selectively tuned to one of a plurality of broadcast signals of different frequencies;

a voltage-controlled local oscillator coupled to said receiving circuit means for producing a local oscillator frequency to cause said receiving circuit means to tune to a broadcast signal;

a capacitor coupled to said voltage-controlled local oscillator for supplying a control voltage to said voltage-controlled local oscillator to control the local oscillator frequency;

charge/discharge control circuit means coupled to said capacitor for controlling the magnitude of the voltage across said capacitor, the voltage across said capacitor being said control voltage;

broadcast station selection circuit means selectively coupled to an input of said charge/discharge control circuit means for causing said charge/discharge control circuit means to vary the magnitude of said control voltage across said capacitor to automatically select a broadcast signal;

tuning error detecting means coupled to said signal receiving circuit means for detecting the tuning error of said signal receiving circuit means for a received broadcast signal, said tuning error detecting means being selectively coupled to said charge/discharge control circuit means to control the local oscillator frequency to that said receiving circuit means is exactly tuned to the received broadcast signal;

signal receiving condition detection means coupled to said receiving circuit means for detecting a signal receiving condition of a broadcast signal received by said receiving circuit means; and

control means responsive to said signal receiving condition detecting means for coupling said broadcast station selection circuit means to said charge/discharge control circuit means when a broadcast signal is selected and coupling said tuning error detecting means to said charge/dis-

charge control circuit means only when the selected broadcast signal is satisfactorily received in a good signal receiving condition.

4,344,188

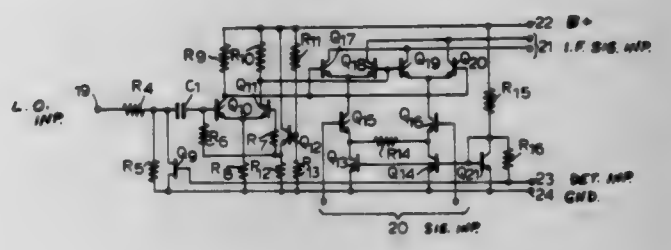
BALANCED MODULATOR

Kenzo Tanabe, Katano; Junji Suzuki, Neyagawa, and Masashi Kanno, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 9, 1980, Ser. No. 195,653

Int. Cl.[3] H03D 7/14; H03C 1/54, 1/62

U.S. Cl. 455—326 1 Claim



1. A balanced modulator characterized in that said modulator is provided with a transistor balanced modulation circuit of a double balanced type using a plurality of emitter coupled transistor pairs, means for increasing bias current in said balanced modulation circuit correspondingly to an increase in an input signal level, and means for reducing local oscillation signal applied to said balanced modulation circuit, correspondingly to an increase in the input signal level, so that distortion in said balanced modulation circuit may be reduced throughout a wide range of said input signal level.

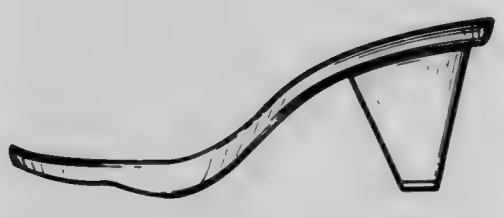
DESIGNS

AUGUST 10, 1982

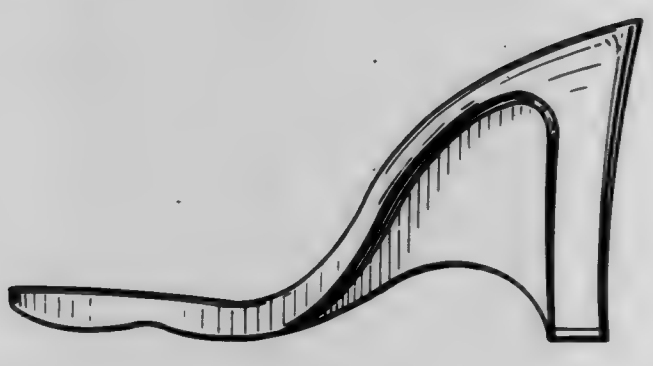
265,690
SHOE BOTTOM
Joseph P. Famolare, Jr., 4 E. 54th St., New York, N.Y. 10022
Filed Sep. 25, 1980, Ser. No. 190,839
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



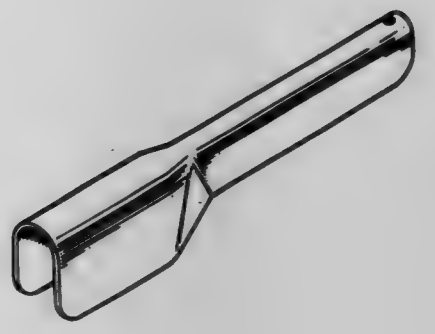
265,691
SHOE BOTTOM
Joseph P. Famolare, Jr., 4 E. 54th St., New York, N.Y. 10022
Filed Sep. 25, 1980, Ser. No. 190,840
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



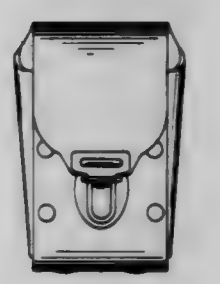
265,692
SHOE BOTTOM
Joseph P. Famolare, Jr., 4 E. 54th St., New York, N.Y. 10022
Filed Sep. 25, 1980, Ser. No. 190,841
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



265,693
BOOT BUCKLE TIGHTENER
Ronald R. Reagan, 3547 Windmill Way, Concord, Calif. 94518
Filed Sep. 22, 1980, Ser. No. 189,785
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—378.2

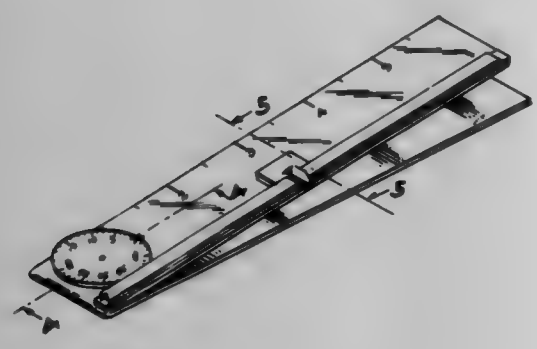


265,694
BELT-MOUNTABLE CIGARETTE CASE
Tig Sogoian, 2521 K St., and Marc B. Blake, 2192 Yosemite Pkwy., both of Merced, Calif. 95340
Filed Jan. 28, 1980, Ser. No. 115,707
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400

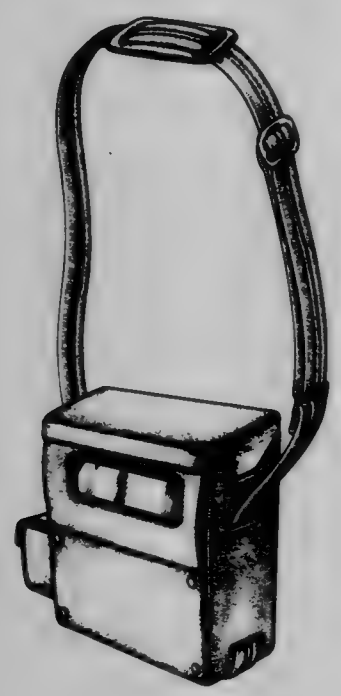




265,695
COMBINED PATTERN READER AND PLACE MARKER
Josephine L. Ciavarella, 3229 Main St., Mineral Ridge, Ohio 44440
Filed Sep. 29, 1980, Ser. No. 191,862
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D3—18



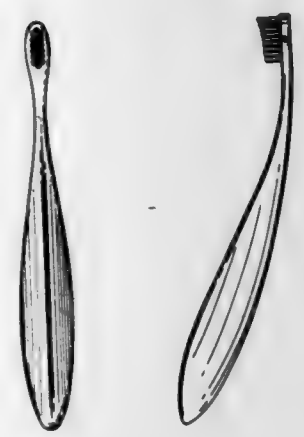
265,696
CASE FOR A VIDEO RECORDER
Andre Koszegi, South Bend, Ind., assignor to Koszegi Leather & Vinyl Products, Inc., South Bend, Ind.
Filed Jul. 30, 1980, Ser. No. 173,676
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—33



265,697
WHISK BROOM SHROUD
Robert J. Libman, and William Libman, both of Champaign, Ill., assignors to Libman Broom Company, Inc., Arcola, Ill.
Filed Aug. 21, 1980, Ser. No. 179,995
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—04



265,698
TOOTHBRUSH
Peter H. Roth, Moreland Hills, Ohio, assignor to Cook Coffee Company, Cleveland, Ohio
Filed May 11, 1981, Ser. No. 262,949
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



265,699
CHAIR

Gillis L. A. Lundgren, Lönashult, Sweden, assignor to Inter-Ikea A/S, Humlebaek, Denmark

Division of Ser. No. 80,166, Sep. 28, 1979. This application Jun. 26, 1981, Ser. No. 277,618

Claims priority, application Denmark, Mar. 28, 1979, 269/79

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—37



265,700
TOILET PAPER DISPENSER

Carl-Arne Breger, Malmö, and Per-Olof Landgren, Nacka, both of Sweden, assignors to Fiskeby Aktieboleg, Norrkoping, Sweden

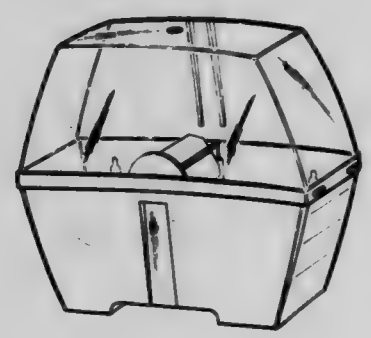
Filed Aug. 5, 1980, Ser. No. 175,502

Claims priority, application Sweden, Feb. 6, 1980, 80-0265

Term of patent 14 years

Int. Cl. D23—*02*

U.S. Cl. D6—95



265,701
MODULAR WALL UNIT

Ross M. Colquhoun, 412 Richmond St. East, Toronto M5A 1P8, Ontario, Canada

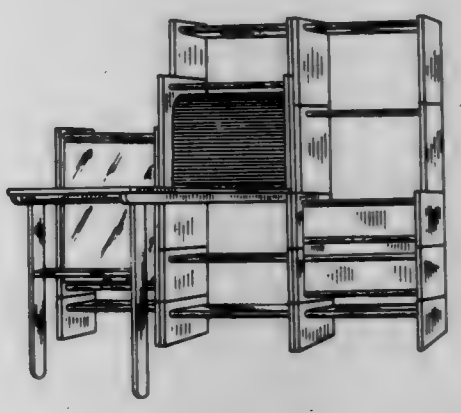
Filed Feb. 13, 1980, Ser. No. 121,194

Claims priority, application Canada, Aug. 27, 1979, 2708796

Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—164



265,702
SHEET DISPLAY UNIT

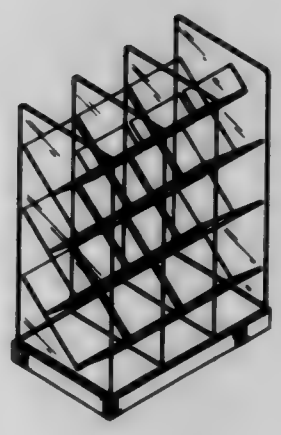
Nedim Savas, Wheaton, Md., assignor to Russell William, Ltd., Columbia, Md.

Filed Apr. 2, 1980, Ser. No. 136,463

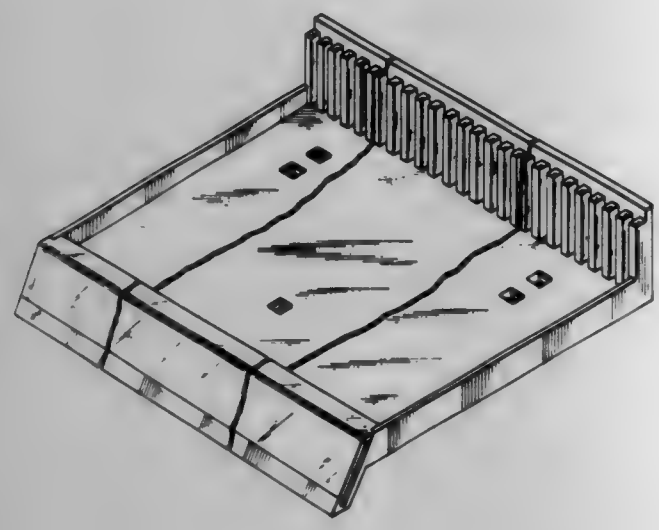
Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—189



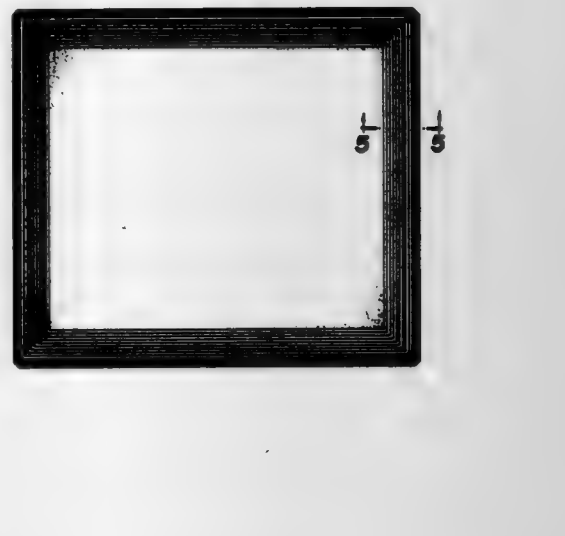
265,703
ADJUSTABLE SHELF UNIT
Marvin Zaro, New York, N.Y., assignor to Advertising Displays Company, Englewood, N.J.
Continuation-in-part of Ser. No. 7,744, Jan. 30, 1979, abandoned. This application Feb. 1, 1980, Ser. No. 117,672
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—199



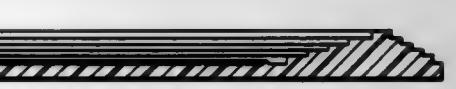
265,704
DOOR MAT BASE PLATE OR SIMILAR ARTICLE
Yosuke Yamamoto, Toyonaka; Takehisa Kinoyama, Suita, and Kinichi Sasagawa, Takatsuki, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan
Filed May 8, 1980, Ser. No. 147,719
Claims priority, application Japan, Dec. 13, 1979, 54-52171
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



265,705
DOOR MAT BASE PLATE OR SIMILAR ARTICLE
Ken Yamazaki, Kobe; Yosuke Yamamoto, Toyonaka; Takehisa Kinoyama, Suita, and Kinichi Sasagawa, Takatsuki, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Oyodo-Osaka, Japan
Filed Aug. 11, 1980, Ser. No. 176,964
Claims priority, application Japan, Feb. 14, 1980, 55-5080
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—219

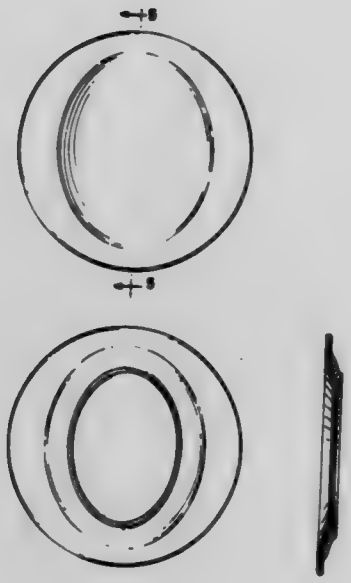


265,706
DISPLAY FRAME
Thomas L. Heithaus, 200 Pemberwick Rd., Greenwich, Conn. 06830
Filed Nov. 1, 1979, Ser. No. 90,445
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234

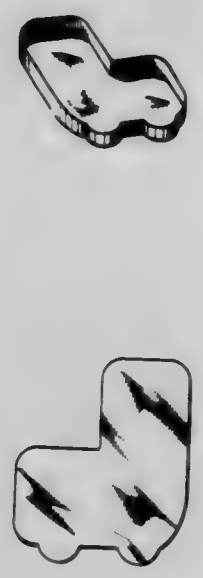




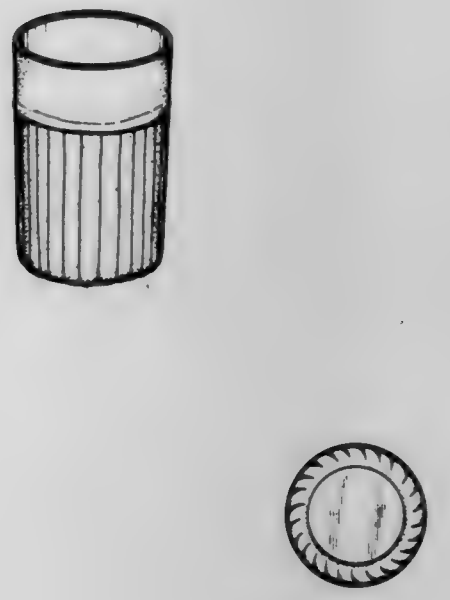
265,707
PLATE HAVING AN OVAL CENTER
Henry A. Pickard, Kenilworth, Ill., assignor to Pickard Incorporated, Antioch, Ill.
Filed Nov. 13, 1980, Ser. No. 206,458
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—23



265,708
CAKE PAN
Dorothy O'Dell, 10932 Jean St., Anaheim, Calif. 92804
Filed Sep. 19, 1980, Ser. No. 188,622
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—43



265,709
WINE BUCKET IN FORM OF A CHEF'S HAT
Paul Bocuse, Collonges Au Mont D Or, Quai de la Plage -n° 50, Rhone, France
Filed Jun. 20, 1980, Ser. No. 161,223
Claims priority, application France, Dec. 21, 1979, 315
Term of patent 14 years
Int. Cl. D07—*01, 06*
U.S. Cl. D7—70



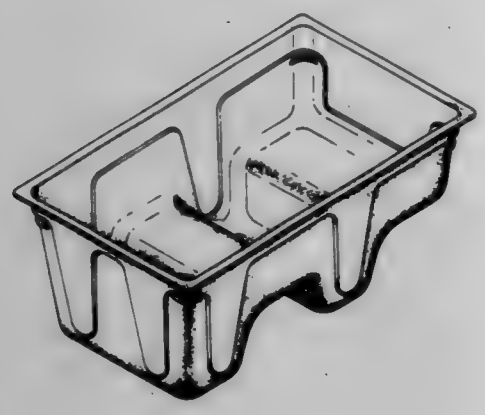
265,710
NAPKIN HOLDER
Peter Stein, 47 Stager St., Nutley, N.J. 07110
Filed Oct. 16, 1978, Ser. No. 952,529
Term of patent 7 years
Int. Cl. D07—*06*
U.S. Cl. D7—72

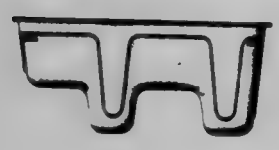


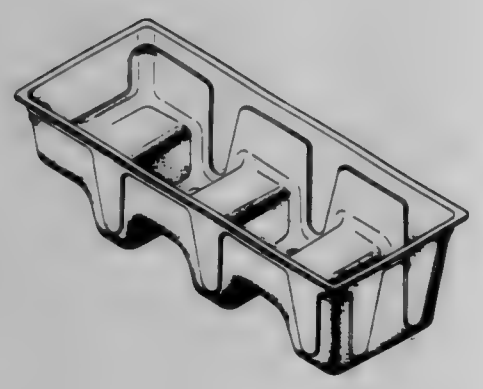
265,711
CONTAINER FOR FREEZING AND STORING FOOD PRODUCTS

Walter J. Dunden, Eugene, Oreg., assignor to Chef Francisco, Inc., Eugene, Oreg.

Filed Oct. 29, 1980, Ser. No. 201,717
Term of patent 14 years
Int. Cl. D07—*07*; D15—*07*
U.S. Cl. D7—76



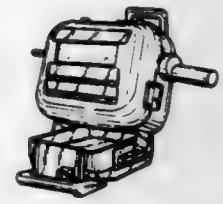


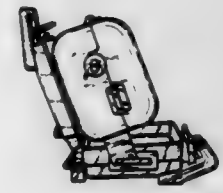


265,712
GRILL

Rudolf Maass, Solingen, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. AG, Solingen, Fed. Rep. of Germany

Division of Ser. No. 872,796, Jan. 27, 1978, abandoned. This application Jan. 30, 1980, Ser. No. 116,807
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1977, 5 MR 811
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—88

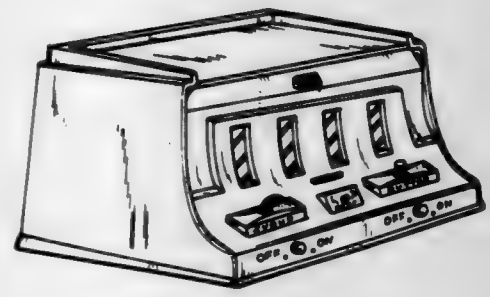


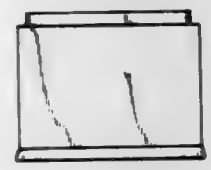


265,713
TOASTER UNIT

Eugene C. Schmidli, 136 Avery, Mt. Clemens, Mich. 48043

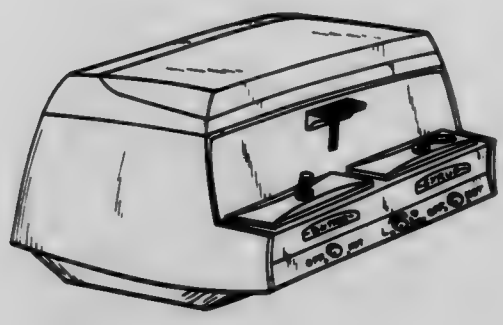
Filed Jul. 14, 1980, Ser. No. 168,092
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—91







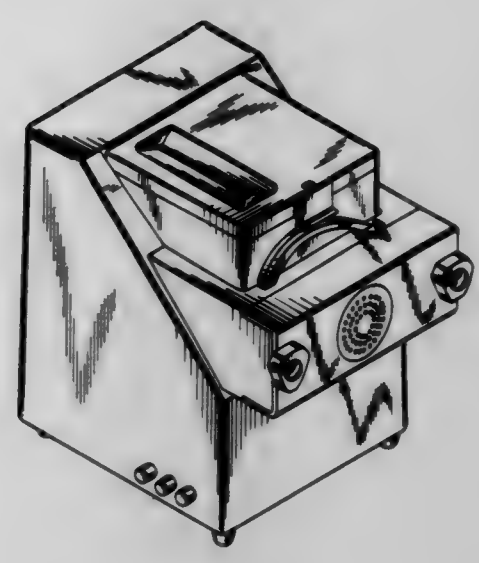
265,714
TOASTER
Eugene C. Schmidli, 136 Avery, Mt. Clemens, Mich. 48043
Filed Jul. 10, 1980, Ser. No. 168,440
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—91

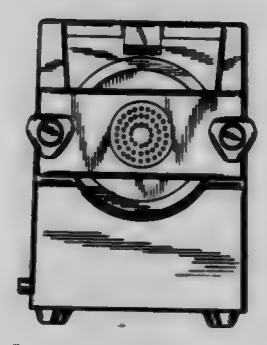


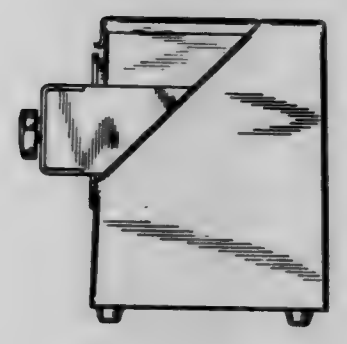




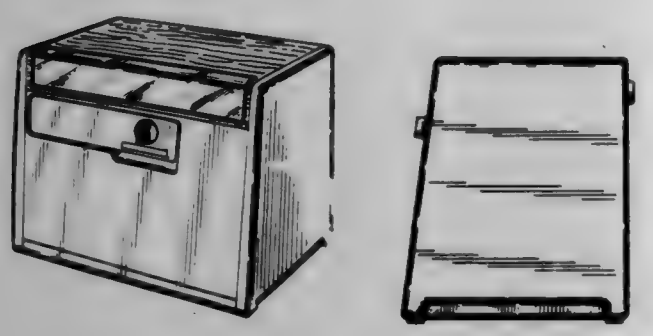
265,715
KITCHEN APPLIANCE FOR MAKING FARINACEOUS PRODUCTS
Harold Osrow, Dix Hills; Armando A. Araujo, Jr., Freeport, and Gordon R. Perry, New York, all of N.Y., assignors to Osrow Products Corporation, Old Bethpage, N.Y.
Filed Sep. 5, 1980, Ser. No. 184,350
Term of patent 14 years
Int. Cl. D07—*04*; D15—*08*
U.S. Cl. D7—153



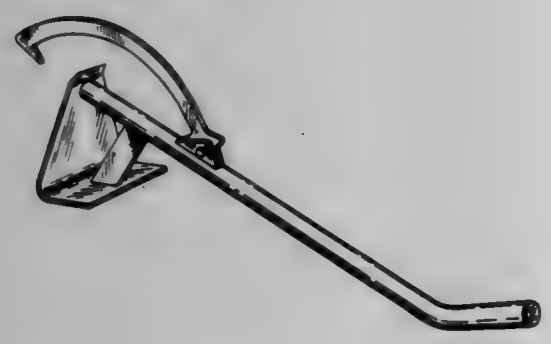




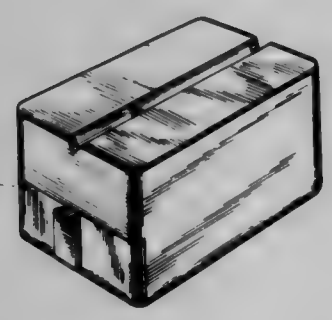
265,716
FOOD PROCESSOR
Donald E. Necas, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 3, 1980, Ser. No. 203,711
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—153



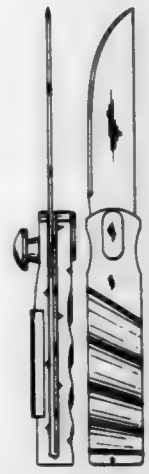
265,717
LOG LIFTER
David J. Weisgerber, Gresham, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.
Filed Aug. 4, 1980, Ser. No. 174,902
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—210



265,718
ENVELOPE OPENER
Oscar W. Stoeckli, 2 Hughes Ave., Rye, N.Y. 10580
Filed Sep. 24, 1980, Ser. No. 190,489
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D8—61



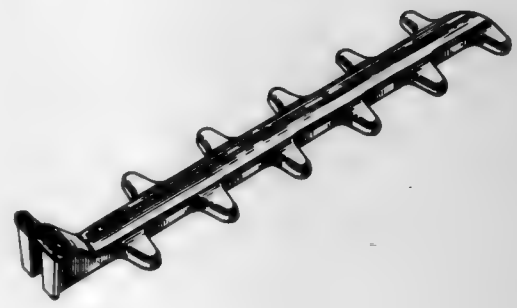
265,719
OUTDOORSMAN'S KNIFE
Lloyd F. Dowdy, 92476 Pioch La., Springfield, Oreg. 97477
Filed Jun. 26, 1980, Ser. No. 163,169
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99



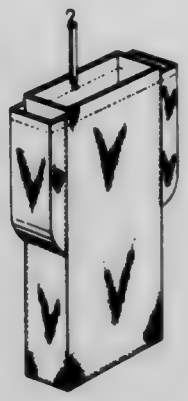
265,720
SHIELD FOR THE BOLT OF A DOOR LOCK
James D. Harrison, 623 Del Paso, Apt. #156, Euless, Tex. 76039
Filed Jul. 14, 1980, Ser. No. 168,175
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—346



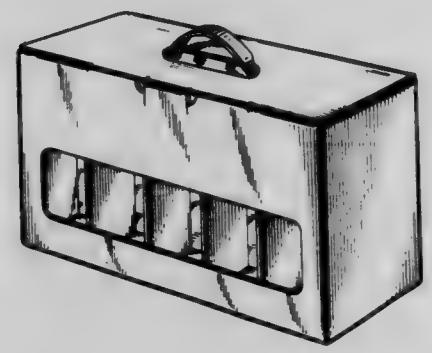
265,721
CARRYING ARM
Lennart Emgard, and Christer Löfqvist, both of Helsingborg, Sweden, assignors to Frigoscandia Contracting AB, Sweden
Filed Jun. 18, 1980, Ser. No. 160,712
Claims priority, application Sweden, Dec. 21, 1979, 79-2805
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—363



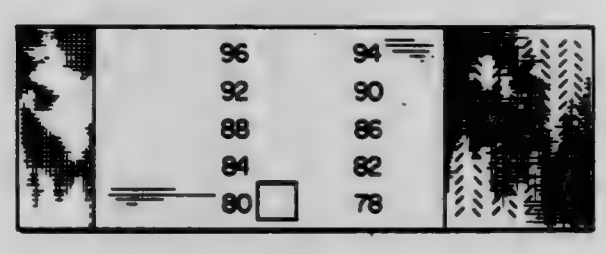
265,722
INSULATION PANEL DISPENSING BAG
Thomas G. Pace, Box 74, Bagley, Wis. 53801
Filed Jun. 4, 1980, Ser. No. 156,492
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—305



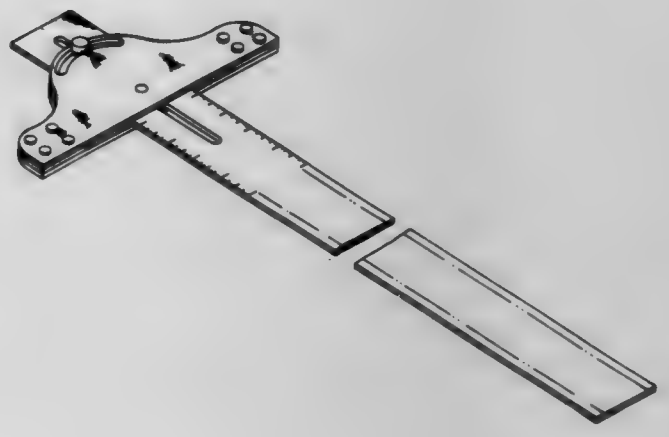
265,723
CARRYING CASE
Steven Rosenthal, Armonk, N.Y., assignor to Jonas Tobacco Corp., Great Neck, N.Y.
Filed Jul. 3, 1980, Ser. No. 165,600
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—346



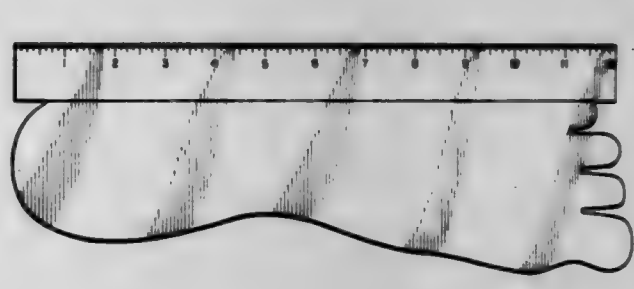
265,724
THERMOCHROMIC FINGER THERMOMETER
Kailash C. Khemka, Indianapolis, Ind., assignor to Bio-Temp Products, Inc., Indianapolis, Ind.
Filed Apr. 17, 1980, Ser. No. 140,458
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



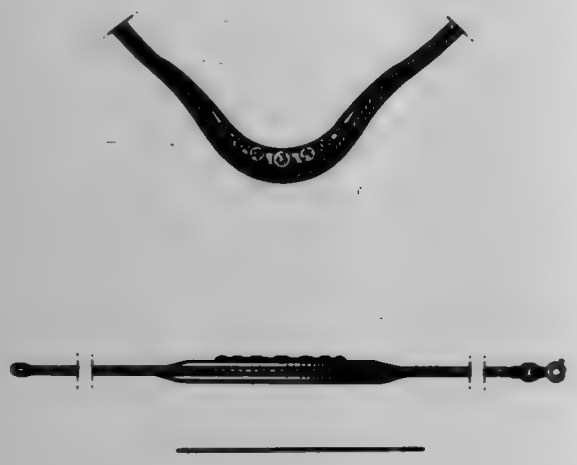
265,725
PITCH AND ANGLE SQUARE
Jerry L. Ingram, 7029 Holland Ave., Citrus Heights, Calif. 95610
Filed Jun. 9, 1980, Ser. No. 157,967
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65



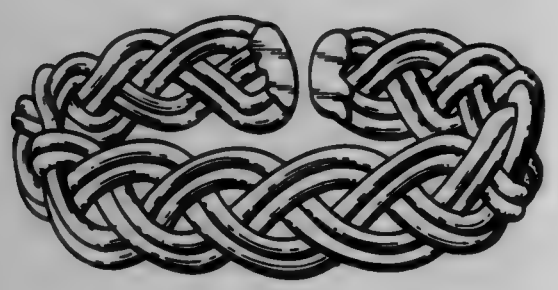
265,726
NOVELTY RULER
Joseph R. Farrell, 2601 Park Center Dr., Alexandria, Va. 22302
Filed Jul. 1, 1980, Ser. No. 165,204
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71



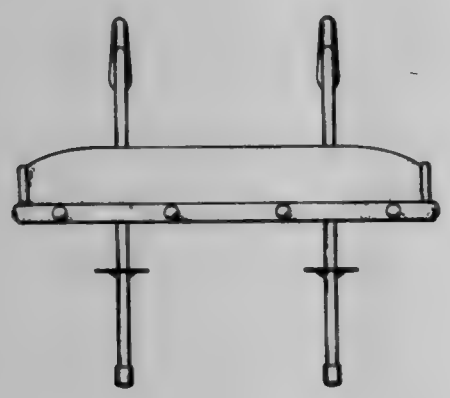
265,727
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed May 8, 1980, Ser. No. 148,192
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6



265,728
RING OR THE LIKE
Lewis C. Bales, P.O. Box 182, Cloverdale, Ind. 46120
Filed Mar. 24, 1980, Ser. No. 132,856
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—27



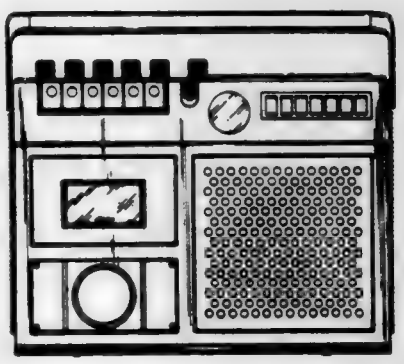
265,729
ADJUSTABLE ARM REST FOR AUTOMOBILES
Franz N. Rexroat, 229 E. Minnesota, Indianapolis, Ind. 46225
Filed Jun. 30, 1980, Ser. No. 164,152
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



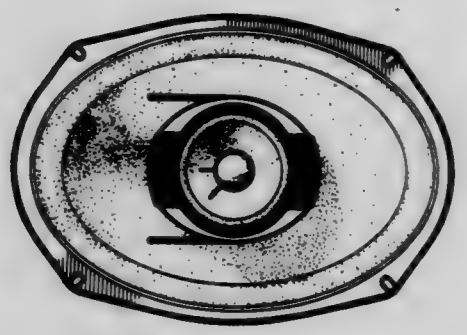
265,730
DIALING PAD
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1979, Ser. No. 93,174
Claims priority, application Japan, May 21, 1979, 54-020289
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



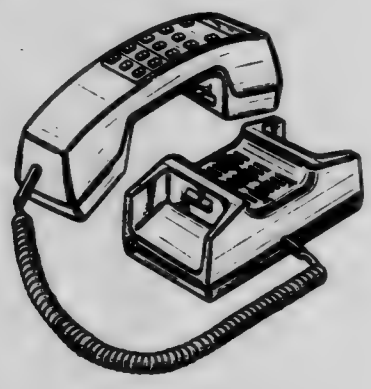
265,731
COMBINED CASSETTE RECORDER AND CLOCK RADIO
Yiu C. Mino, Kowloon, Hong Kong, assignor to Mino Corporation, Hong Kong, Hong Kong
Filed Aug. 27, 1979, Ser. No. 69,786
Claims priority, application United Kingdom, Feb. 26, 1979, 988721
Term of patent 14 years
Int. Cl. D14—*01, 03 E;* D10—*01*
U.S. Cl. D14—5



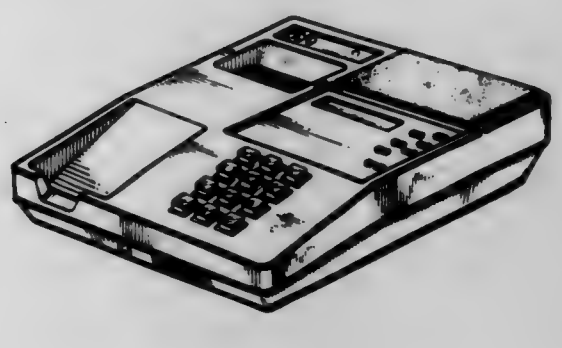
265,732
LOUDSPEAKER
Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 5, 1980, Ser. No. 184,234
Claims priority, application Japan, Apr. 21, 1980, 55-15712
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30



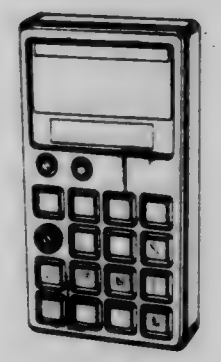
265,733
TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Apr. 28, 1980, Ser. No. 144,283
Claims priority, application Japan, Nov. 8, 1979, 54-46618
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



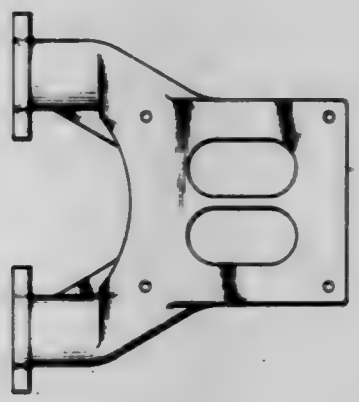
265,734
TELEPHONE SET BASE
John A. Mahan, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Dec. 8, 1980, Ser. No. 213,858
Claims priority, application Canada, Oct. 22, 1980, 47728
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



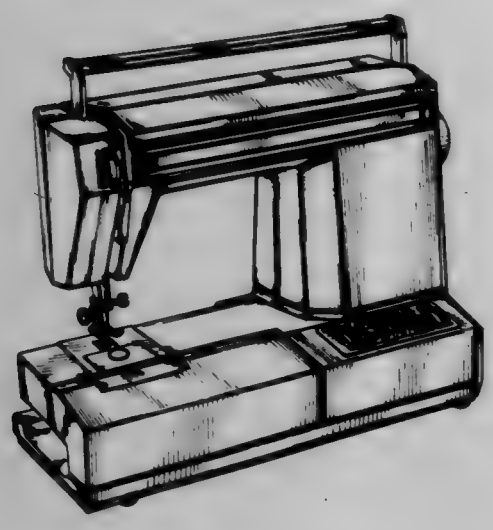
265,735
DIALING PAD FOR A CAR TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 17, 1980, Ser. No. 160,832
Claims priority, application Japan, Dec. 28, 1979, 54-055050
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



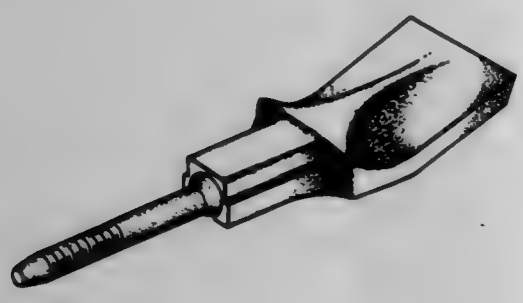
265,736
INTAKE MANIFOLD
Anthony J. Pappas, Indianapolis, Ind., assignor to AJP International, Indianapolis, Ind.
Filed Jun. 20, 1980, Ser. No. 161,290
Term of patent 14 years
Int. Cl. D15—*1*
U.S. Cl. D15—5



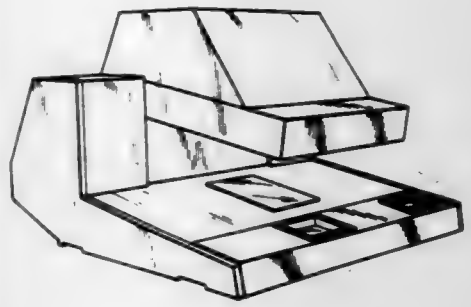
265,737
SEWING MACHINE
Nobufusa Kuroki, Koganei, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed May 19, 1980, Ser. No. 151,105
Claims priority, application Japan, Feb. 22, 1980, 55-6129
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—70



265,738
CUTTER TOOTH
Geoffrey A. Williames, 337 Normanby St., Warragul, Victoria, Australia (3820)
Filed May 23, 1980, Ser. No. 152,687
Claims priority, application Australia, Dec. 23, 1979, 79649
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139



265,739
MICRO FILM CAMERA
Masahiro Koyama; Kosuke Miki, both of Kawasaki, and Masahiko Suzuki, Sagamihara, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jun. 13, 1980, Ser. No. 159,278
Claims priority, application Japan, Dec. 28, 1979, 54-55029
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—2



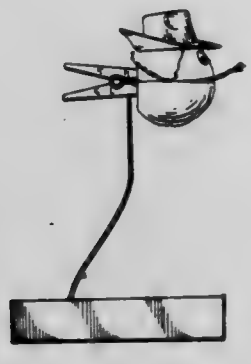
265,740
WATER SQUIRTING BALL POINT PEN
Peter D. Pook, Minneapolis, Minn., assignor to Leisure Dynamics, Inc., Minneapolis, Minn.
Filed Sep. 11, 1980, Ser. No. 186,282
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—36



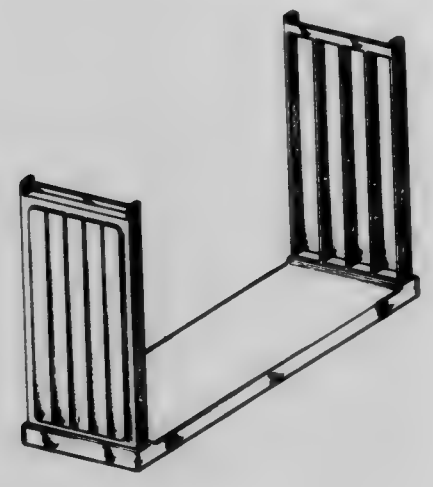
265,741
FELT PEN
Tatsuro Funahashi, Komaki, Japan, assignor to Shachihata Industrial Co., Ltd., Aichi, Japan
Filed Nov. 14, 1980, Ser. No. 206,977
Claims priority, application Japan, May 15, 1980, 55-19091
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—49



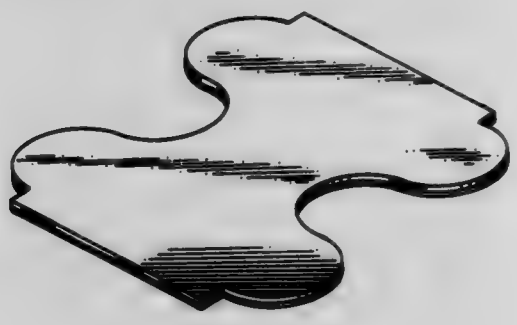
265,742
PAPER HOLDER
Victor H. Wilcox, 1526 Westover Ave. SW., Roanoke, Va. 24015
Continuation-in-part of Ser. No. 31,696, Apr. 20, 1979, abandoned. This application Jul. 7, 1980, Ser. No. 166,240
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—86



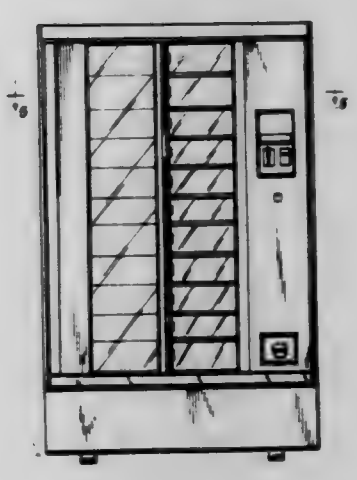
265,743
HANGING FILE RACK
Stephen T. Meyer, and C. Rodger Meyer, both of Carmel, Ind., assignors to Deflecto Corporation, Indianapolis, Ind.
Filed Jul. 17, 1980, Ser. No. 169,879
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—90



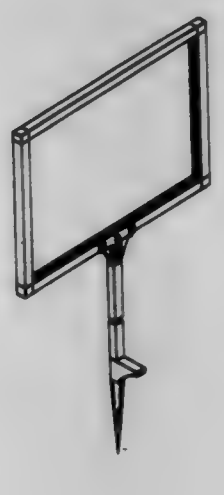
265,744
REINFORCEMENT TAB
Steven J. Kristof, 6757 Eastridge-#3047, Dallas, Tex. 75231
Filed Jun. 23, 1980, Ser. No. 161,854
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—100



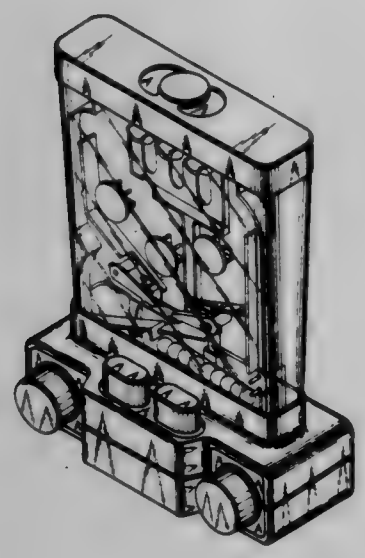
265,745
MERCHANDISING MACHINE
Merrill Krakauer, 1 Deer Path, Short Hills, N.J. 07078
Filed May 16, 1980, Ser. No. 150,346
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—4



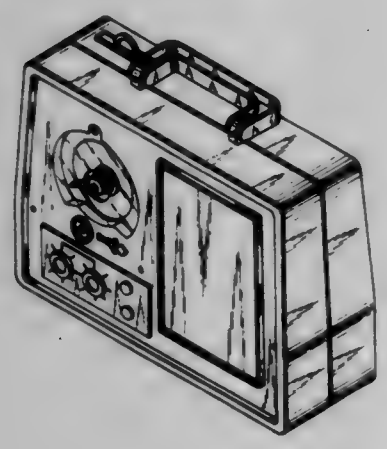
265,746
SIGN FRAME
Richard P. Robillard, 2101 Shoreline Dr. #252, Alameda, Calif. 94501
Filed May 28, 1980, Ser. No. 154,008
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—41



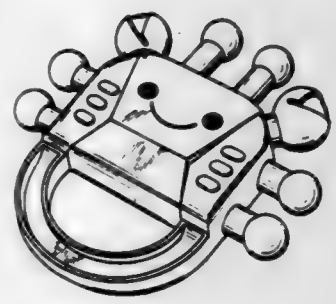
265,747
VERTICAL PINBALL-TYPE GAME HOUSING
Hiromi Takahashi, Tokyo, Japan, assignor to Tomy Kogyo Company, Inc., Tokyo, Japan
Filed May 27, 1980, Ser. No. 153,719
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—12



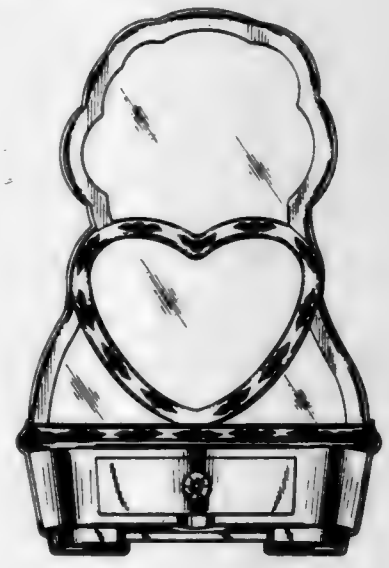
265,748
TOY MEDICAL KIT
Toshinori Tabata, Tokyo, Japan, assignor to Tomy Kogyo Company, Inc., Tokyo, Japan
Filed Jun. 17, 1980, Ser. No. 160,239
Claims priority, application Japan, Dec. 20, 1979, 54-53515
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



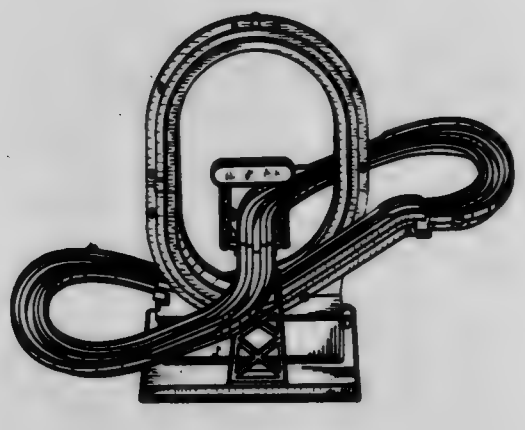
265,749
TOY RATTLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Masako Mizugami, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Apr. 24, 1980, Ser. No. 143,255
Claims priority, application Japan, Nov. 19, 1979, 54-48468
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65



265,750
TOY VANITY
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Jun. 13, 1980, Ser. No. 159,043
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—121



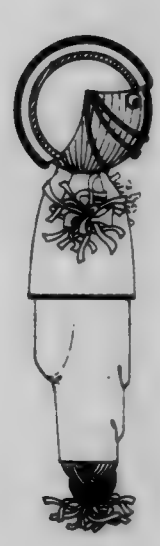
265,751
TOY VEHICLE TRACK
Yoshio Udagawa, Tokyo, Japan, assignor to Blue Box Toy Factory Limited, Hong Kong
Filed Mar. 6, 1980, Ser. No. 127,623
Claims priority, application United Kingdom, Sep. 10, 1979, 991490
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—143



265,752
DOLL
Diane F. Miller Stoll, Roselle, and Jo Anne Kaczmarek, Carpentersville, both of Ill., assignors to Chimney Sweeps of America, Ltd., Medinah, Ill.
Filed Sep. 5, 1980, Ser. No. 184,626
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—171



265,753
DOLL
Ruth Kleinpeter, and Evelyn Kirk, both of Baton Rouge, La., assignors to Punters Club, Inc., Baton Rouge, La.
Filed Aug. 18, 1980, Ser. No. 178,956
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—177



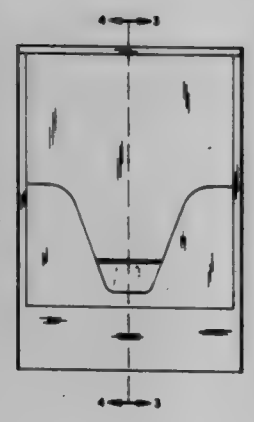
265,754
TOY FIGURE
George W. Lucas, Jr., San Anselmo; Ralph McQuarrie, Berkeley; Joseph E. Johnston, Fairfax, all of Calif., and Stuart Freeborn, Esher, England, assignors to Lucasfilm, Ltd., San Rafael, Calif.
Filed Apr. 18, 1980, Ser. No. 141,597
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—180



265,755
ANIMAL HEAD
Kathryn A. Haines, 82 Millside Dr., Milton, Ontario, Canada (L9T 4A1), and Barbara A. Haines, 95 Main St., Milton, Ontario, Canada (L9T 1N4)
Filed Jul. 21, 1980, Ser. No. 170,944
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—188



265,756
COMBINED BATHTUB AND SHOWER ENCLOSURE
James H. Ballard, 513 Bexar Ave., Hamilton, Ala. 35570
Filed Sep. 8, 1980, Ser. No. 185,362
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



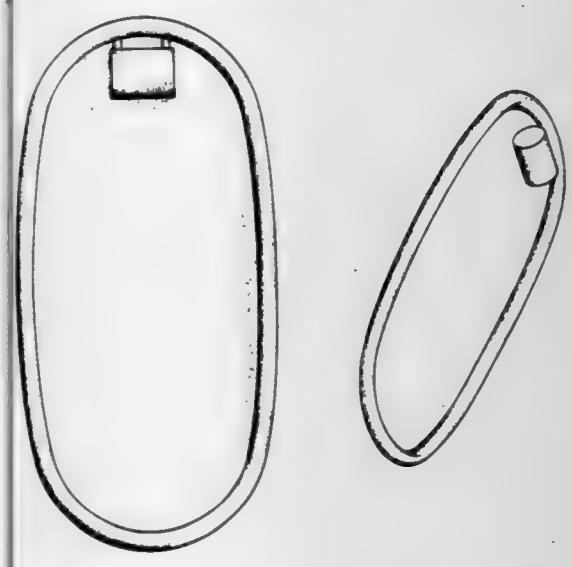
265,757
CONTACT LENS STERILIZER HOUSING
Michael D. Thomas, and Francis E. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.
Filed Jun. 12, 1980, Ser. No. 158,941
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—9



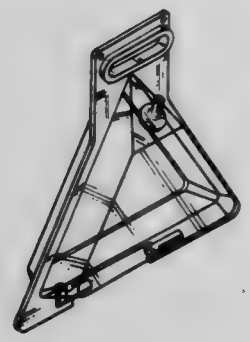
265,758
MICRO SURGICAL INSTRUMENT
Mark Beale, 751 Illinois Ave., McDonald, Ohio 44437
Filed Feb. 25, 1980, Ser. No. 124,267
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—26



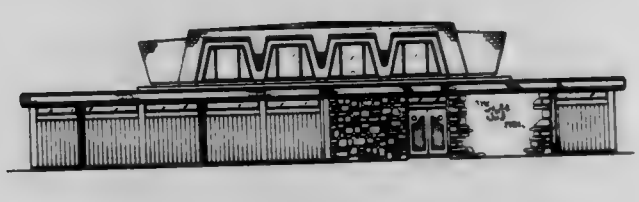
265,759
TANNING POOL
Bettie L. Weber, 9605 E. 950 N., Brownsburg, Ind. 46112
Filed May 9, 1980, Ser. No. 148,199
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—39



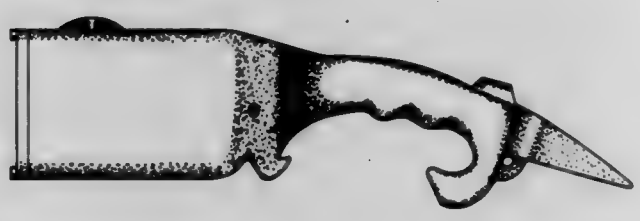
265,760
URINE COLLECTION DEVICE OR THE LIKE
Charles A. Lahay, Fayette, Ala., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 19, 1980, Ser. No. 131,603
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—59



265,761
RESTAURANT BUILDING
Louis J. Jenn, and Joseph J. Cerola, both of Indianapolis, Ind., assignors to Atrium Structures, Inc., Indianapolis, Ind.
Filed Aug. 21, 1980, Ser. No. 180,156
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—17
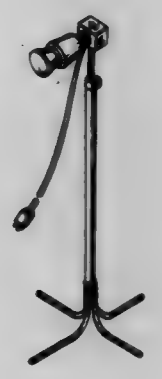


265,762
COMBINATION FLASHLIGHT AND SPANNER WRENCH
Johnnie R. Gibbon, Jr., 1221 NW. 104, Oklahoma City, Okla. 73114
Filed Oct. 6, 1980, Ser. No. 194,162
Term of patent 14 years
Int. Cl. D26—*02;* D8—*05*
U.S. Cl. D26—38



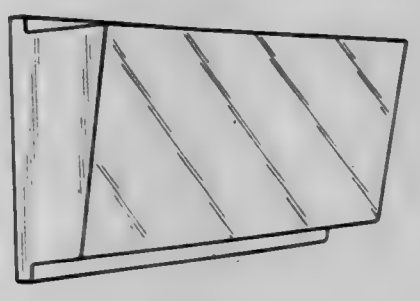
265,763
PORTABLE FLOODLIGHT
Douglas G. K. Franks, 6926 N. Kimberly Dr., Peoria, Ill. 61614
Filed Jan. 7, 1980, Ser. No. 110,334
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—64



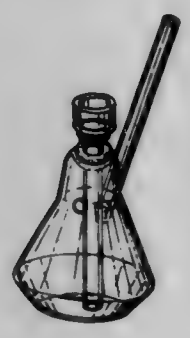
265,764
PORTABLE FLOODLIGHT
Douglas G. K. Franks, 6926 N. Kimberly Dr., Peoria, Ill. 61614
Filed Jan. 7, 1980, Ser. No. 110,335
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—64



265,765
LUMINAIRE OR SIMILAR ARTICLE
Kenneth R. Hawkins, 1190 S. River Rd., Gurnee, Ill. 60031
Filed May 5, 1980, Ser. No. 146,708
Term of patent 7 years
Int. Cl. D26—*05;* D20—*03*
U.S. Cl. D26—85



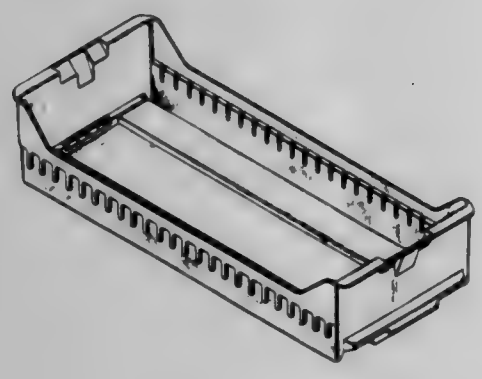
265,766
PIPE
Robert B. Sher, 609 Lochmor, Danville, Calif. 94526
Filed Mar. 31, 1981, Ser. No. 249,623
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03



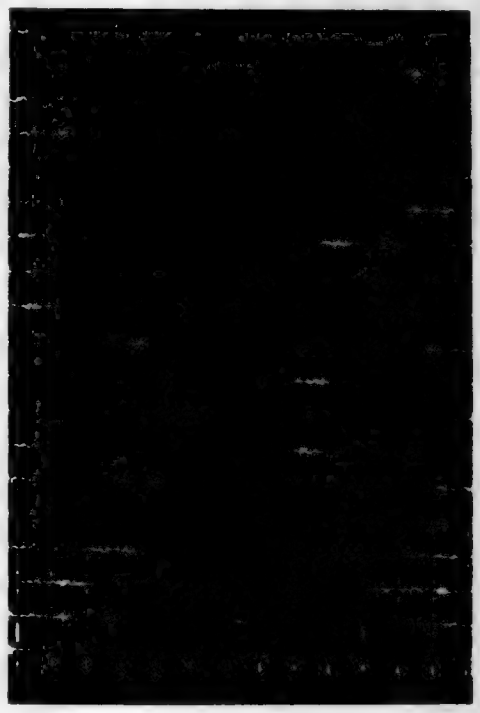
265,767
DRYER
James B. Stewart, Randolph, N.J., and John Almond, London, England, assignors to Clairol Incorporated, New York, N.Y.
Filed Aug. 13, 1980, Ser. No. 178,221
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13



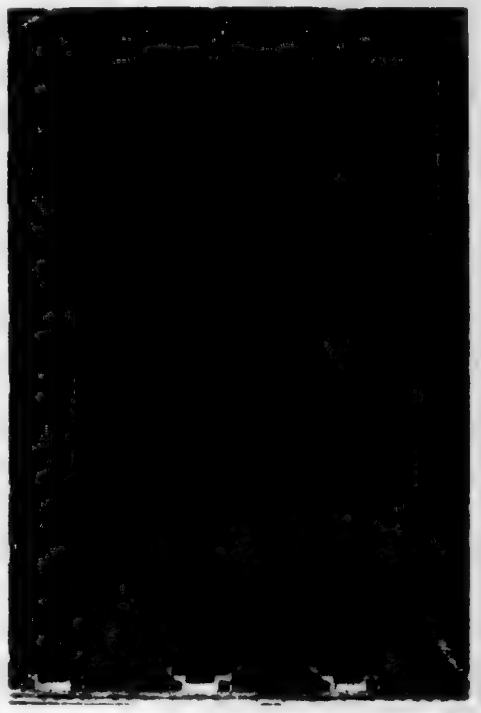
265,768
DOCUMENT TRAY
Eugene W. Howley, 2789 Dunbarton Dr., NW., Canton, Ohio 44708
Filed Jul. 10, 1980, Ser. No. 168,387
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D34—40



265,769
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,486
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, 1193/79
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



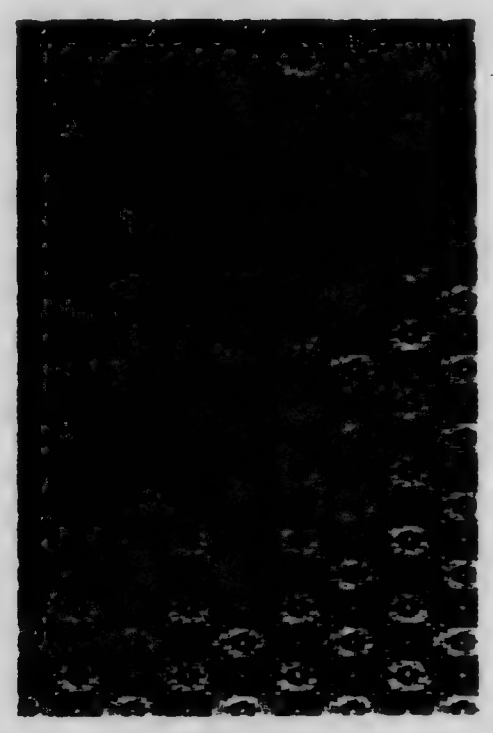
265,770
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,487
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, URA 1193/79
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



265,771
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,509
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, URA 1193/79
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



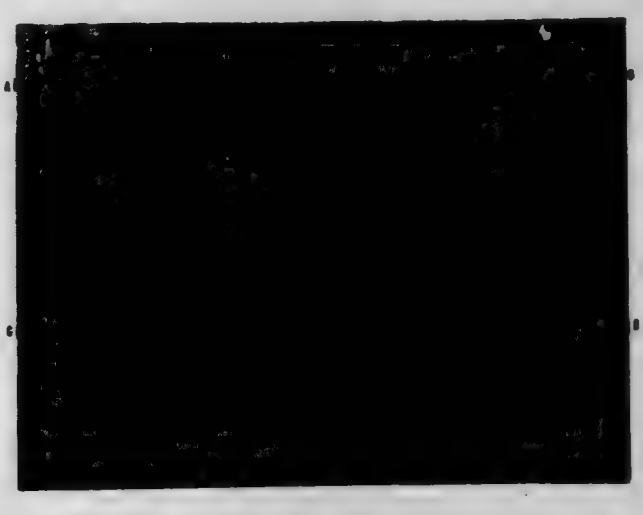
265,772
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,789
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, URA 1193/79
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



265,773
SKIRT FABRIC OR SIMILAR ARTICLE
Miguel Vidal, 601 W. 160th St., New York, N.Y. 10032
Filed Dec. 26, 1979, Ser. No. 106,743
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 R



265,774
CAMOUFLAGE FABRIC OR SIMILAR ARTICLE
James H. Crumley, Arlington, Va., assignor to Bowing Enterprises, Arlington, Va.
Filed Jun. 25, 1980, Ser. No. 162,926
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See—*
Munson, Harry R., Jr.; and Alphin, Reevis S., 4,343,804, Cl. 424-258.000.

A. O. Smith-Inland, Inc.: *See—*
Johnson, Junior L.; and Pikey, Leonard E., 4,343,843, Cl. 428-36.000.

A/S Akers Mek. Verksted: *See—*
Almeland, Inge-Bertin; and Lefranc, Marc, 4,343,562, Cl. 403-171.000.

A/S Norsk Viftefabrikk: *See—*
Bockman, Ole K.; and Rydland, Kjell, 4,343,352, Cl. 165-104.160.

Aaland, Kristian: *See—*
Hawke, Ronald S.; Scudder, Jonathan K.; and Aaland, Kristian, 4,343,223, Cl. 89-8.000.

Aasen, Steven M.; Dalzell, Rex J.; Goettert, Edward J.; Holmes, Brian N.; and Tiers, George V. D., to Minnesota Mining and Manufacturing Company. Fixing of tetra (hydrocarbyl) borate salt imaging systems. 4,343,891, Cl. 430-337.000.

AB Volvo: *See—*
Lundstrom, Gustaf B., 4,343,230, Cl. 98-2.050.

Abbey, Kirk J., to SCM Corporation. Polyspirolactone polymers. 4,343,915, Cl. 523-414.000.

Abbott, David D., to Exxon Research & Engineering Co. Chemical print element. 4,343,555, Cl. 400-144.200.

Abe, Akira: *See—*
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,343,892, Cl. 430-398.000.

Abe, Kenzo, to Asahi Glass Company, Ltd. Quenching apparatus for tempering curved glass plates. 4,343,645, Cl. 65-348.000.

Abe, Ryoji: *See—*
Hataishi, Osamu; Momma, Yoshinobu; and Abe, Ryoji, 4,343,080, Cl. 29-571.000.

Abel, Heinz; and Schafer, Paul, to Ciba-Geigy Corporation. Propylene oxide polyadducts containing carboxyl groups and their salts. 4,343,620, Cl. 8-557.000.

Abraamov, Evgenij: *See—*
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Abthoff, Jorg; Schuster, Hans-Dieter; Langer, Hans-Joachim; and Gabler, Rolf, to Daimler-Benz Aktiengesellschaft. Soot filter in the exhaust gas stream of air-compressing internal combustion engines. 4,343,149, Cl. 60-311.000.

Abu Aktiebolag: *See—*
Andersson, Jan-Ake, 4,343,442, Cl. 242-84.20A.

Achmatov, Igol: *See—*
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Acker, Rolf-Dieter: *See—*
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, 4,343,648, Cl. 71-91.000.

Adams, James H.; Rich, Dennis J.; and Holtz, Frederick C., Jr., to Valeron Corporation, The. High toughness ceramic cutting tool. 4,343,909, Cl. 501-98.000.

Adamson, Jerome E. Safety ski pole grip. 4,343,490, Cl. 280-821.000.

Addare Corp.: *See—*
Emmert, Joseph W.; and Sweeney, Lawrence J., 4,343,394, Cl. 198-616.000.

Aden, Michael L., to Ingersoll-Rand Company. Cutter bit assembly. 4,343,516, Cl. 299-86.000.

Advanced Machine Design Company: *See—*
Moelbert, Heinrich, 4,343,209, Cl. 83-16.000.

AES Technology Systems, Inc.: *See—*
Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, 4,343,392, Cl. 198-484.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Julia, Marc; and Saussine, Lucien, 4,343,952, Cl. 568-28.000.

AGFA-Gevaert AG: *See—*
Cocron, Istvan, 4,344,024, Cl. 318-640.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Dabringhaus, Wilfried; Glotzbach, Helmut; and Voss, Karl, 4,343,422, Cl. 226-197.000.

Agri-Bio Corporation: *See—*
DuBose, Ronald A.; and Woolsey, William D., 4,343,309, Cl. 128-303.140.
DuBose, Ronald A.; and Woolsey, William D., 4,343,310, Cl. 128-303.140.

Agui, Hideo; Tamoto, Katsumi; Aono, Shunji; and Okuda, Takao, to Sumitomo Chemical Company, Limited. 1,2,4-Triazine derivatives, and their production and use. 4,343,801, Cl. 424-249.000.

Aho, Yrjo, to Exel Oy. Snow disk for a ski stick. 4,343,491, Cl. 280-824.000.

Aichi Steel Works Ltd.: *See—*
Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, 4,343,167, Cl. 72-8.000.

Aidlin Automation, Inc.: *See—*
Aidlin, Stephen H.; and Tartokowsky, Michael, 4,343,587, Cl. 414-568.000.

Aidlin, Stephen H.; and Tartokowsky, Michael, to Aidlin Automation, Inc. Machine for horizontal transportation of containers. 4,343,587, Cl. 414-568.000.

Air Products and Chemicals, Inc.: *See—*
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,343,133, Cl. 53-431.000.
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,343,403, Cl. 206-812.000.
Davidowich, George; and Miller, Gerald D., 4,343,134, Cl. 53-431.000.

Aiso, Katsuyoshi: *See—*
Satoh, Mitsuharu; and Aiso, Katsuyoshi, 4,343,077, Cl. 29-568.000.

Ajinomoto Company Incorporated: *See—*
Zama, Takashi; Takeuchi, Koji; Yukutomi, Masuo; and Ito, Fumiyuki, 4,343,732, Cl. 524-114.000.

Akabane, Yukihiro; Satoh, Hisashi; Shiraiwa, Yukio; and Tsuchiya, Shuyou, to Nippon Seiko Kabushiki Kaisha. Ball bearing. 4,343,521, Cl. 308-193.000.

Akashi, Goro: *See—*
Tsuji, Nobuo; Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,343,831, Cl. 427-44.000.

Aketa, Kohichi: *See—*
Matsuo, Noritada; Itaya, Nobushige; Aketa, Kohichi; Magara, Osamu; and Nishioka, Toshio, 4,343,953, Cl. 568-347.000.

Akiba, Tokuji: *See—*
Sudoh, Giichi; Minegishi, Keiichi; Akiba, Tokuji; Kato, Tadao; and Ogawa, Norio, 4,344,062, Cl. 338-35.000.

Akiyama, Nobuyuki: *See—*
Nakagawa, Yasuo; Makihira, Hiroshi; Oshida, Yoshitada; and Akiyama, Nobuyuki, 4,343,553, Cl. 356-376.000.

Akiyama, Toru, to Universal Pioneer Corporation. Method and system for a disc player tracking servo. 4,344,165, Cl. 369-44.000.

Aktiebolaget SKF: *See—*
Bergling, Gunnar, 4,343,055, Cl. 441-3.000.
Hallerback, Stig L., 4,343,565, Cl. 403-370.000.

AKZO NV: *See—*
Groen, Marinus B., 4,343,796, Cl. 424-184.000.
Meywald, Volker; Ostertag, Karl; and Schneider, Klaus, 4,343,602, Cl. 418-77.000.

Akzona Incorporated: *See—*
Wolters, Gerrit; and Kuypers, Leonardus P. C., 4,343,896, Cl. 435-7.000.

Alfa-Laval AB: *See—*
Wehling, Holger, 4,343,431, Cl. 233-20.00A.

Allart, Pierre J.; and Guillaume, Claude A., to Monsanto Europe S.A. Chromogen solutions for pressure-sensitive mark-recording systems. 4,343,652, Cl. 106-21.000.

Allen, Dan V. Spring type arm wrestling device. 4,343,465, Cl. 272-67.000.

Allen, David R. Apparatus having a variable attitude work implement. 4,343,142, Cl. 56-377.000.

Allen, Glenn R., to Heller, Roger A. Light switching mechanism. 4,344,071, Cl. 340-566.000.

Allen Group, The: *See—*
Scourtes, George, 4,343,348, Cl. 165-1.000.

Allibert, S.A.: *See—*
Faucillon, Michel, 4,343,400, Cl. 206-507.000.

Allied Corporation: *See—*
Francis, Philip L., 4,343,444, Cl. 242-107.40A.
Ocker, Klaus F.; Jodts, Richard J.; and Pfeiffer, Robert C., 4,343,445, Cl. 242-107.700.
Stephenson, Robert L., 4,343,488, Cl. 280-802.000.

Almeland, Inge-Bertin; and Lefranc, Marc, to A/S Akers Mek. Verksted. Joint for trusses. 4,343,562, Cl. 403-171.000.

Alphin, Reevis S.: *See—*
Munson, Harry R., Jr.; and Alphin, Reevis S., 4,343,804, Cl. 424-258.000.

Altra Corporation: *See—*
Anderson, George C., 4,343,450, Cl. 248-454.000.

Alworth, James; Kennedy, John C.; La Barre, Berger; and Sandin, Gus. Reversing attachment for diamond thread screw. 4,343,200, Cl. 74-57.000.

Ambille, Georges; Bacconnet, Eugene; and Ragot, Philippe, to Commissariat a l'Energie Atomique. Collector for solar boiler with linear concentration. 4,343,298, Cl. 126-450.000.

Amdahl Corporation: *See*—
Chiang, Ping-Wang, 4,343,877, Cl. 430-5.000.
Chiang, Ping-Wang, 4,343,878, Cl. 430-5.000.

Amemiya, Akira: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.

American Can Company: *See*—
Hahn, Kurt L.; Padgett, Howard J.; and Rao, Manjeshwar S., 4,343,174, Cl. 72-349.000.
Sheptak, Nicholas, 4,343,851, Cl. 428-212.000.

American Cyanamid Company: *See*—
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,343,949, Cl. 562-503.000.
Cesark, Frank F.; Manfre, Robert J.; and Thomas, Daniel W., 4,343,939, Cl. 544-165.000.
Pasarela, Nunzio R., 4,343,790, Cl. 424-81.000.
Sassiver, Martin L.; and Boothe, James H., 4,343,938, Cl. 544-27.000.

American Microsystems, Inc.: *See*—
Callahan, Kent R., 4,344,050, Cl. 333-173.000.

Ames, Adolf: *See*—
Wagner, Alfred; and Ames, Adolf, 4,343,425, Cl. 228-117.000.

Ametek, Inc.: *See*—
Daubman, Edward A.; and Owler, William G., Jr., 4,343,700, Cl. 210-232.000.

AMP Incorporated: *See*—
Bright, Edward J.; Dittmann, Larry E.; and Webster, Van K., 4,343,524, Cl. 339-74.00R.
Lucius, John E.; and Ritchie, Leon T., 4,343,085, Cl. 29-866.000.
Lucius, John E.; and Ritchie, Leon T., 4,343,528, Cl. 339-198.00G.
Reavis, Robert P., Jr.; and Weisenburger, Lawrence P., 4,343,529, Cl. 339-198.00R.

AMSTED Industries Incorporated: *See*—
Parshall, David G., 4,343,701, Cl. 210-387.000.

Anand, Praveen: *See*—
Etzel, James E.; and Anand, Praveen, 4,343,706, Cl. 210-667.000.

Anastassiadis, Kristin: *See*—
Menge, Ulrich; Morr, Michael; Kula, Maria-Regina; and Anastassiadis, Kristin, 4,343,735, Cl. 260-112.00R.

Anders, Walter G., to Diebold, Incorporated. Pneumatic tube system customer terminal construction. 4,343,574, Cl. 406-13.000.

Anderson, Alan P.; and Jackson, John C., to Lambda Industrial Science Limited. Remote detector of flaws in surfaces using micro-waves. 4,344,030, Cl. 324-58.50B.

Anderson, George C., to Altra Corporation. Plate holder. 4,343,450, Cl. 248-454.000.

Anderson, Paul R.; Downs, Raymond L.; and Henderson, Timothy M., to United States of America, Energy. Method of manufacturing hollow members having uniform wall thickness through use of ablation. 4,343,675, Cl. 156-628.000.

Anderson, Tore N., to Litton Systems, Inc. Mode suppressor for circular waveguides utilizing a plurality of resistance cards. 4,344,053, Cl. 333-251.000.

Andersson, Jan-Ake, to Abu Aktiebolag. Arrangement in fishing reels for compensating for the line retrieval in relation to the brake force on line withdrawal. 4,343,442, Cl. 242-84.20A.

Anderton, Ronald V.; and Atwood, Donald S. Fire hydrant diffuser. 4,343,435, Cl. 239-499.000.

Ando, Shizuo: *See*—
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, 4,344,098, Cl. 360-96.600.

Andrews Paper & Chemical Co., Inc.: *See*—
Muller, Peter; and Mustacchi, Henry, 4,343,884, Cl. 430-149.000.

Andrzejewski, Heinz: *See*—
Kruschwitz, Werner; and Andrzejewski, Heinz, 4,343,121, Cl. 52-208.000.

Angelica Corporation: *See*—
Zebell, Diane, 4,343,046, Cl. 2-105.000.

Anglin, James R.; Ryu, Yumi P.; and Singerman, Gary M., to Gulf Research & Development Company. Quaternary ammonium thiomolybdates. 4,343,746, Cl. 260-429.00R.

Anglin, James R.: *See*—
Ryu, Yumi P.; Singerman, Gary M.; and Anglin, James R., 4,343,747, Cl. 260-429.00R.

Anglo-American Clays Corporation: *See*—
Cook, Jerry A.; and Cobb, Gary L., 4,343,694, Cl. 209-9.000.

Anlauf, Jurgen, to Robert Bosch GmbH. Method and arrangement for testing the characteristics of inductive pulse generators. 4,344,032, Cl. 324-158.0MG.

Antos, George J., to UOP Inc. Hydrocarbon dehydrogenation with an attenuated superactive multimetallic catalytic composite for use therein. 4,343,724, Cl. 252-466.00B.

Aono, Shunji: *See*—
Agui, Hideo; Tamoto, Katsumi; Aono, Shunji; and Okuda, Takao, 4,343,801, Cl. 424-249.000.

Applied Power Inc.: *See*—
Junger, Eugene E., 4,343,328, Cl. 137-491.000.

Aqua-Chem, Inc.: *See*—
Chronowski, Robert A., 4,343,247, Cl. 110-245.000.
Schimbke, Paul A.; and Williams, Stanley A., 4,343,987, Cl. 219-287.000.

Arai, Yasuyuki: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,343,376, Cl. 181-167.000.

Argo Engineering Ltd.: *See*—
Loblick, Norton M., 4,343,058, Cl. 14-71.700.

Arimura, Hirofumi: *See*—
Uemura, Yahiro; Arimura, Hirofumi; Morise, Hiroshi; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,343,736, Cl. 260-112.00R.

Arita, Takemi, to Nippon Telegraph & Telephone Public Corporation. Time division switching circuit with time slot interchange. 4,344,170, Cl. 370-68.000.

Armandillo, Errico: *See*—
Spalding, Ian J.; Selden, Adrian C.; and Armandillo, Errico, 4,344,174, Cl. 372-91.000.

Armentrout, David N.: *See*—
Long, Merton W.; McLean, James D.; Armentrout, David N.; and Gill, Harold H., 4,343,767, Cl. 422-70.000.

Armstrong, John L., to Burroughs Corporation. Sensor retaining system. 4,343,451, Cl. 248-500.000.

Armstrong World Industries, Inc.: *See*—
Lenox, Ronald S.; and Schwartz, Anne L., 4,343,923, Cl. 525-426.000.

Arthur, W. Eugene: *See*—
Sarver, Robert B.; and Arthur, W. Eugene, 4,343,567, Cl. 404-10.000.

Aruga, Masayoshi: *See*—
Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, 4,343,789, Cl. 424-78.000.

Asada, Kazuyoshi; Yasuda, Hajime; and Ohnuma, Kunihiko, to Hitachi, Ltd. Data processor system capable of providing both a computer mode and a sequencer mode of operation. 4,344,129, Cl. 364-200.000.

Asahi-Dow Limited: *See*—
Hoki, Tsuneo; and Matsuki, Yutaka, 4,343,911, Cl. 521-88.000.
Kazama, Ken; Muramoto, Ikuo; Ozaki, Kenji; and Kusunoki, Yoshinobu, 4,343,619, Cl. 8-139.000.
Watanabe, Seizaburo; and Matsuki, Yutaka, 4,343,913, Cl. 521-94.000.

Asahi Glass Company, Ltd.: *See*—
Abe, Kenzo, 4,343,645, Cl. 65-348.000.

Asano, Masaharu, to Nissan Motor Co., Ltd. Control device for an internal combustion engine. 4,343,278, Cl. 123-425.000.

Ashland Oil, Inc.: *See*—
Blegen, James R., 4,343,839, Cl. 427-340.000.
Linden, Gary L., 4,343,924, Cl. 525-440.000.

Assmann, John J.; Knox, James L.; Kueny, Martin J.; and Smith, James W., to Interco Incorporated. Tensionless fabric feeding apparatus. 4,343,421, Cl. 226-113.000.

Astero, Ulf J. E., to Asthausbolagen HB Astero & Stockhaus. Projector. 4,343,538, Cl. 353-64.000.

Asthausbolagen HB Astero & Stockhaus: *See*—
Astero, Ulf J. E., 4,343,538, Cl. 353-64.000.

Astoin, Jacques N.: *See*—
Massot, Jacqueline O.; and Astoin, Jacques N., 4,343,784, Cl. 424-45.000.

Astrom, Gota L.; and Johansson, Sigvard N. Utility pole hardness tester. 4,343,179, Cl. 73-81.000.

Atherton, James H.: *See*—
Harmon, Joseph W.; and Atherton, James H., 4,344,003, Cl. 307-296.00A.

Atlantic Richfield Company: *See*—
Gay, Charles F., 4,343,662, Cl. 148-187.000.

Atleliers de la Motobecane: *See*—
Jaulmes, Christian, 4,343,184, Cl. 73-299.000.

Atwood, Donald S.: *See*—
Anderton, Ronald V.; and Atwood, Donald S., 4,343,435, Cl. 239-499.000.

Bacconnet, Eugene: *See*—
Ambille, Georges; Bacconnet, Eugene; and Ragot, Philippe, 4,343,298, Cl. 126-450.000.

Bachovchin, Dennis M., to United States of America, Energy. Nuclear reactor control column. 4,343,764, Cl. 376-338.000.

Baecklund, Nils J. Method and apparatus for measuring the content or quantity of a given element by means of X-ray radiation. 4,344,181, Cl. 378-45.000.

Bahnfleth, William A., to Caterpillar Tractor Co. Beveled lobe anti-skid grating. 4,343,119, Cl. 52-180.000.

Bailey, Charles H.; De Palma, Ted V.; and Dillon, James E., to UOP Inc. Method of making a catalytic converter. 4,343,074, Cl. 29-157.00R.

Bailey, Dale A.: *See*—
Nees, John; and Bailey, Dale A., 4,343,872, Cl. 429-245.000.

Baines, Eric; and Carr, John F., to Colgate-Palmolive Company. Dentifrices containing alpha-alumina trihydrate. 4,343,786, Cl. 424-52.000.

Baker, Francis S., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Preparation of a surface for adhesive bonding. 4,343,838, Cl. 427-292.000.

Baker, Rees T. K.; and Chludzinski, James J., to Exxon Research & Engineering Co. Inhibition of carbon accumulation on metal surfaces. 4,343,658, Cl. 148-6.300.

Baker, William, III; Garner, Lloyd L.; and Harris, Charles R., to Smith International, Inc. Hybrid rock bit. 4,343,371, Cl. 175-329.000.
Baker, William E. Fluid pressure indicating apparatus. 4,343,188, Cl. 73-706.000.
Bako, Lazlo, to Presto Lock, Inc. Combination locks. 4,343,164, Cl. 70-312.000.
Bako, Lazlo, to Presto Lock, Inc. Combination locks. 4,343,165, Cl. 70-312.000.
Bako, Lazlo: *See*—
Scelba, Stephen S.; and Bako, Lazlo, 4,343,163, Cl. 70-312.000.
Baldwin Piano & Organ Company: *See*—
Uetrecht, Dale M., 4,343,219, Cl. 84-1.240.
Balfour Lumber Company: *See*—
Coleman, Cecil A., 4,343,607, Cl. 432-18.000.
Ball Corporation: *See*—
Scholes, Addison B., 4,343,641, Cl. 65-60.200.
Ballato, Arthur D.: *See*—
Vig, John R.; and Ballato, Arthur D., 4,344,010, Cl. 310-361.000.
Balligand, Pierre; Corfa, Yves; Lemercier, Pierre; Marchal, Paul; and Vertut, Jean, to Commissariate a l'Energie Atomique. Apparatus for mining nodules beneath the sea. 4,343,098, Cl. 37-54.000.
Ballinger, Dale O., to Honeywell Inc. Ultrasonic transducer. 4,344,159, Cl. 367-87.000.
Baltek Corporation: *See*—
Kohn, Henri A., 4,343,846, Cl. 428-138.000.
Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten: *See*—
Winkler, Otto, 4,343,455, Cl. 251-58.000.
Bank, Mikhail U.; Prozorov, Valery I.; and Rubichev, Nikolai A. Testing device for low-frequency amplifiers. 4,344,028, Cl. 324-57.00N.
Banner, John G.: *See*—
Murphy, Norman A.; Banner, John G.; Fletcher, Edwin; and Brown, Arthur, 4,343,116, Cl. 51-284.00R.
Barbini, Spartacus; and Jolion, Michel, to Electricite de France (Service National). Device for rapid defreezing of frozen or deep-frozen products. 4,343,979, Cl. 219-10.55A.
Bares, Jan; and Maher, James C., to Xerox Corporation. Control system for regulating the concentration of toner particles within a developer mixture. 4,343,548, Cl. 355-3.0DD.
Barmag Barmer Maschinenfabrik: *See*—
Bremer, C. Hermann, 4,343,378, Cl. 184-6.260.
Barnes, Burris P. Load brace stabilizing assembly. 4,343,578, Cl. 410-151.000.
Barnes, George H., to Burroughs Corporation. Partitionable parallel processor. 4,344,134, Cl. 364-200.000.
Barro, Giovanni, to Officine Savio S.p.A. Rotating ring. 4,343,145, Cl. 57-124.000.
Barrows, Thomas H., to Minnesota Mining and Manufacturing Company. Synthetic absorbable surgical devices of poly(esteramides). 4,343,931, Cl. 528-291.000.
Bartok, William: *See*—
Blair, David W.; Bartok, William; Longwell, John P.; and Sarofim, Adel F., 4,343,606, Cl. 431-10.000.
Base, Leonard C. Wood toter. 4,343,483, Cl. 280-47.260.
BASF Aktiengesellschaft: *See*—
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, 4,343,648, Cl. 71-91.000.
BASF Wyandotte Corporation: *See*—
Schmolka, Irving R., 4,343,785, Cl. 424-49.000.
Basford, James A.; Mathis, John E.; and Wright, Harlan C., to United States of America, Energy. Long-life leak standard assembly. 4,343,176, Cl. 73-1.00G.
Basily, Basily B.; Das, Mihir K.; Price, Clifford G.; and Tobias, Stephen A., to National Research Development Corporation. Method and apparatus for shearing metal billets. 4,343,208, Cl. 83-13.000.
Basrai, Habil S.: *See*—
Rajagopal, Ganesh; and Basrai, Habil S., 4,343,365, Cl. 172-4.000.
Batt, Richard A., to Trico Products Corporation. Windshield wiper assembly. 4,343,063, Cl. 15-250.420.
Batteux, Jacques; Blanc, Claude; and Grancher, Pierre, to Societe Nationale Elf Aquitaine. Process for the purification of residual industrial gases containing small quantities of sulfur compounds. 4,343,778, Cl. 423-228.000.
Bauer, Fritz, to Suspa Federungstechnik Fritz Bauer & Shone Ohg. Spring support strut for drum-type washing machine. 4,343,452, Cl. 248-565.000.
Bauer Kaba AG.: *See*—
Hofmann, Rudolf, 4,343,166, Cl. 70-358.000.
Baumgartner, August, to Zellweger, Ltd. Binding for fiber bundles, a method for the production of the binding and an apparatus for carrying out the method. 4,343,143, Cl. 57-22.000.
Baur, Karl: *See*—
Dannhorn, Erich; and Baur, Karl, 4,343,777, Cl. 423-228.000.
Baur, Paul S., Jr. Suture and prosthesis material. 4,343,617, Cl. 8-127.600.
Bayer Aktiengesellschaft: *See*—
Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, 4,343,936, Cl. 542-417.000.
Muschelknautz, Edgar; and Rink, Norbert, 4,343,639, Cl. 65-4.400.
Schwindt, Jurgen; Ganster, Otto; and Meiners, Hans-Joachim, 4,343,339, Cl. 152-209.00R.
Weber, Hans-Leo; Reese, Eckart; Kaloff, Hans; and Fausten, Hans-Josef, 4,343,756, Cl. 264-216.000.
BBC Brown, Boveri & Company, Ltd.: *See*—
Bischofberger, Walter; and Zeller, Norbert, 4,343,972, Cl. 200-81.00R.
Schwarzenbach, Alfred, 4,343,569, Cl. 405-53.000.
Spickenreuther, Dieter, 4,343,875, Cl. 430-5.000.
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Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, to Boehringer Mannheim GmbH. Process for obtaining cholesterol esterase from micro-organisms. 4,343,903, Cl. 435-197.000.
Beauchet, Jean, to Societe Nouvelle de Roulements. Method of manufacturing composite rings for bearings. 4,343,072, Cl. 29-149.5DP.
Becker, Bernard: *See*—
Podos, Steven; Krupin, Theodore; and Becker, Bernard, 4,343,794, Cl. 424-131.000.
Becker, Harold L.; and Buriks, Rudolf S., to Petrolite Corporation. Water-in-oil emulsions of polymers of quaternary ammonium compounds of the acrylamido type. 4,343,730, Cl. 524-551.000.
Becker, Richard J.: *See*—
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,344,146, Cl. 364-552.000.
Beecham Group Limited: *See*—
Harbridge, John B., 4,343,806, Cl. 424-272.000.
Stirling, Irene; and Clarke, Brian P., 4,343,807, Cl. 424-272.000.
Beene, Gerald W., to Reliance Electric Company. Subscriber drop circuit for controlling drop current with load and maximizing power usage. 4,343,971, Cl. 179-70.000.
Beggs, James H., to Robertshaw Controls Company. Noise trap arrangement for AC power line communication systems. 4,344,066, Cl. 340-310.00A.
Belavich, Joseph E.: *See*—
Bostic, John S., 4,344,182, Cl. 378-170.000.
Belenguer, Frank J. Guideway for continuous welded rail. 4,343,432, Cl. 238-2.000.
Belisomi, Pietro; and Farina, Attilio, to Indesit Industria Elettrodomestici Italiana S.p.A. Television set with picture-storage means. 4,344,090, Cl. 358-183.000.
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Cummiskey, Peter, 4,344,180, Cl. 375-116.000.
Dutt, Bulusu V.; Keramidas, Vassilis G.; and Temkin, Henryk, 4,343,674, Cl. 156-601.000.
Heller, Adam; Lewerenz, Hans J.; and Miller, Barry, 4,343,870, Cl. 429-111.000.
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Koenig, Walter, Jr., 4,343,970, Cl. 179-1.50R.
Kustka, George J.; and Sipek, Steven J., 4,343,759, Cl. 375-14.000.
Kustka, George J., 4,344,177, Cl. 375-16.000.
Lepselter, Martin P.; and Sze, Simon M., 4,343,082, Cl. 29-576.00B.
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Belleli, Riccardo. Counterflow heat exchanger. 4,343,351, Cl. 165-81.000.
Belschner, Elmer. Brush for grooming animals. 4,343,265, Cl. 119-83.000.
Belvedere, Mark. Boat bumpers. 4,343,258, Cl. 114-219.000.
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Vardi, Isaih; Kimchi, Yigal; and Ben-Dror, Jonathan, 4,343,159, Cl. 62-475.000.
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McDaniel, George H.; Hartford, Thomas W.; Hungerford, William R.; Perzanowski, William J.; and Benaglio, Reno V., 4,344,127, Cl. 364-130.000.
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Sommer, Klaus; Klemm, Walter; Weber, Hermann; Meinhardt, Frederich; Schonmann, Gerhard; and Spatz, Wilhelm, 4,343,779, Cl. 423-305.000.
Bendix Corporation, The: *See*—
Leung, Chun-Keung, 4,344,140, Cl. 364-431.080.
Luscomb, Douglas A., 4,343,280, Cl. 123-459.000.
McDaniel, George H.; Hartford, Thomas W.; Hungerford, William R.; Perzanowski, William J.; and Benaglio, Reno V., 4,344,127, Cl. 364-130.000.
Runkle, Dean; Wilson, Robert K.; and Monroe, William E., 4,343,225, Cl. 91-52.000.
Benedicto, John S. J.: *See*—
Hallberg, Frederick C.; and Benedicto, John S. J., 4,343,287, Cl. 125-23.00R.
Benninger, Siegfried; Reining, Karl; and Krasel, Werner, to Hoechst Aktiengesellschaft. Process for the production of aqueous solutions of sodium chloride from rock salt. 4,343,621, Cl. 23-293.00R.
Bensley, Douglas W. Method of making footwear. 4,343,057, Cl. 12-142.00D.
Berdat, Henry F., to Gerber Scientific Instrument Company, The. Plotting apparatus and method utilizing encoded optical means. 4,343,540, Cl. 354-4.000.

Berejka, Anthony J., to Radiation Dynamics, Inc. Method of sealing an item in a covering comprising a composition of a polyethylene and isobutylene copolymer. 4,343,864, Cl. 428-500.000.
Berger, Friedrich: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.
Berger-Lohr, Bernd: *See*—
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Bergkvist, Lars A. Suspension device for angle indicator. 4,343,090, Cl. 33-275.00R.
Bergland, Paul W., to Bobst Champlain, Inc. System for controlling emissions of a solvent from a printing press. 4,343,096, Cl. 34-47.000.
Bergling, Gunnar, to Aktiebolaget SKF. Roller suspension. 4,343,055, Cl. 441-3.000.
Bergot, Thierry, to Cibie Projecteurs. Headlamps having sealed optical units and replaceable light bulbs. 4,344,119, Cl. 362-267.000.
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., to American Cyanamid Company. Novel 2-substituted-3,4-epoxycyclopentan-1-ones, 2-substituted-3,4-epoxycyclopentan-1-ols, and various 2-substituted-cyclopentenones. 4,343,949, Cl. 562-503.000.
Bernhagen, James R., to Caterpillar Tractor Co. Tapered spline and method of manufacturing same. 4,343,563, Cl. 403-282.000.
Bertone, Enrico, to RIV-SKF Officine di Villar Perosa S.p.A. Rolling bearing. 4,343,520, Cl. 308-178.000.
Berube, Gene R.: *See*—
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., 4,343,910, Cl. 521-82.000.
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Kawai, Jun; Bessyo, Hidekazu; and Hibino, Hidehiko, 4,343,744, Cl. 260-412.100.
Bhagwat, Pradeep; and Stefanovic, Victor R., to Canadian Patents & Development Limited. Multilevel PWM inverter. 4,344,123, Cl. 363-43.000.
Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass fibers. 4,343,636, Cl. 65-1.000.
Bilhartz, James R.: *See*—
Riggs, Emmet D.; Brownscombe, Eugene R.; and Bilhartz, James R., 4,343,356, Cl. 166-60.000.
Billings Energy Corporation: *See*—
Simons, Harold M., 4,343,770, Cl. 422-112.000.
Billings, Mickey E.: *See*—
Deters, Paul M.; Dove, Harold D.; and Billings, Mickey E., 4,343,965, Cl. 174-72.00B.
Binnig, Gerd; and Rohrer, Heinrich, to International Business Machines Corporation. Scanning tunneling microscope. 4,343,993, Cl. 250-306.000.
BioResearch Inc.: *See*—
Conti, James C.; Findl, Eugene; and Wang, William, 4,344,035, Cl. 324-453.000.
Birch, John R.; Cartwright, Terence; and Ford, John A., to G. D. Searle & Co. Process and apparatus for growing animal cells. 4,343,904, Cl. 435-240.000.
Bischofberger, Walter; and Zeller, Norbert, to BBC Brown, Boveri & Company, Ltd. Hydraulic drive for electrical switches. 4,343,972, Cl. 200-81.00R.
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., to Western Electric Co., Inc. Article carrying a distinctive mark. 4,344,064, Cl. 338-334.000.
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Schwartz, Stephan; Soderstrom, Roland; and Bjareklint, Ake, 4,343,982, Cl. 219-118.000.
Blades, Frederick K., to PureCycle Corporation. Nephelometer. 4,343,552, Cl. 356-339.000.
Blair, David W.; Bartok, William; Longwell, John P.; and Sarofim, Adel F., to Exxon Research & Engineering Co. Multi-stage process for combusting fuels containing fixed-nitrogen chemical species. 4,343,606, Cl. 431-10.000.
Blanc, Claude: *See*—
Batteux, Jacques; Blanc, Claude; and Grancher, Pierre, 4,343,778, Cl. 423-228.000.
Blanchard, Clarence E., to Outboard Marine Corporation. Outboard motor including a two speed transmission. 4,343,612, Cl. 440-75.000.
Blanchard, Richard A.: *See*—
Pao, Henry C.; Blanchard, Richard A.; and Choy, Benedict C. K., 4,344,081, Cl. 357-43.000.
Blaser, Anton J. V-Shaped centering fixture for optical encoders. 4,343,992, Cl. 250-231.0SE.
Blaser, Richard F. Charge forming device for internal combustion engine. 4,343,279, Cl. 123-445.000.
Blawert, Dieter: *See*—
Stadler, Eberhard; and Blawert, Dieter, 4,343,373, Cl. 177-50.000.
Bleazey, John C.; and Guarracini, Joseph, to RCA Corporation. Driver arrangement for stylus lifting/lowering apparatus. 4,344,166, Cl. 369-216.000.
Blegen, James R., to Ashland Oil, Inc. Vapor permeation curable polyester resin coating compositions for flexible substrates. 4,343,839, Cl. 427-340.000.
Bleha, William P., Jr., to Hughes Aircraft Company. Liquid crystal light valve. 4,343,535, Cl. 350-342.000.
Blomquist, Robert O.: *See*—
Sutton, Roger F.; Blomquist, Robert O.; and Luck, Allan J., 4,343,849, Cl. 428-157.000.
Bobst Champlain, Inc.: *See*—
Bergland, Paul W., 4,343,096, Cl. 34-47.000.
Bockman, Ole K.; and Rydland, Kjell, to A/S Norsk Viftefabrikk. Heat exchanger for gases. 4,343,352, Cl. 165-104.160.
Bodkin, Robert E.: *See*—
Rosen, Howard N.; Bodkin, Robert E.; and Gaddis, Kenneth D., 4,343,095, Cl. 34-16.500.
Bodnar, Endre: *See*—
Ross, Donald N.; Bodnar, Endre; and Hoskin, William J., 4,343,048, Cl. 3-1.500.
Bodnar, Michael W.: *See*—
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.
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Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.
Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,343,800, Cl. 424-248.500.
Boehringer Mannheim GmbH: *See*—
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Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.
Boeing Company, The: *See*—
Dumar, William L., Jr.; and Ledlow, Jimmie E., 4,343,499, Cl. 285-263.000.
Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., to Firestone Tire & Rubber Company, The. Thermoplastic elastomer blends. 4,343,918, Cl. 525-194.000.
Bohman, Carl E.: *See*—
Strosser, Richard P.; Chow, Mark K.; and Bohman, Carl E., 4,344,074, Cl. 340-684.000.
Boigk, Dieter G.: *See*—
Shelton, Lawrence S.; Boigk, Dieter G.; and Gabriel, William L., 4,343,579, Cl. 411-442.000.
Bokelman, Gordon H., to Philip Morris Incorporated. Method of treating green tobacco. 4,343,317, Cl. 131-290.000.
Boliden Aktiebolag: *See*—
Sunna, G. Sigvard, 4,343,199, Cl. 73-863.430.
Bonaventura, Celia: *See*—
Bonaventura, Joseph; and Bonaventura, Celia, 4,343,715, Cl. 252-186.000.
Bonaventura, Joseph; and Bonaventura, Celia, to Duke University. Immobilized hemoglobin, and processes for extracting oxygen from fluids using the same. 4,343,715, Cl. 252-186.000.
Bonnel, Madeleine: *See*—
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Bonsack, James P., to SCM Corporation. Entrained-flow chlorination of fine titaniferous materials. 4,343,775, Cl. 423-78.000.
Booth, Raymond H.: *See*—
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.
Boothe, James H.: *See*—
Sassiver, Martin L.; and Boothe, James H., 4,343,938, Cl. 544-27.000.
Borda, William F.; Fry, Thomas M.; and Rist, Charles A., Jr., to Dolfin Corporation. Stretchable speed swim suit. 4,343,044, Cl. 2-67.000.
Borden, Inc.: *See*—
Williams, James H., 4,343,718, Cl. 252-352.000.
Bosse, Peter S.: *See*—
Webber, Dean A.; and Bosse, Peter S., 4,344,107, Cl. 361-433.000.
Bostic, John S., to Belavich, Joseph E. X-Ray film holder. 4,344,182, Cl. 378-170.000.
Bot, Jean-Yves, to Framatome. Fixed point device between pipework and a support. 4,343,497, Cl. 285-61.000.
Bouldin, Eric W.: *See*—
Drexler, Jerome; and Bouldin, Eric W., 4,343,879, Cl. 430-14.000.
Bowers, James R.: *See*—
Victor, Michael; and Bowers, James R., 4,343,195, Cl. 73-861.660.
Bowman, Joseph A.: *See*—
Erwin, Dennis C.; Bowman, Joseph A.; and Marsalka, Joseph P., 4,344,065, Cl. 340-29.000.
Bradley, Irving; and Hanson, James M., to General Electric Company. Plastic PAR lamp construction with tapered reinforcement. 4,344,120, Cl. 362-349.000.
Brammer, Hartmut; and Leiber, Heinz, to Robert Bosch GmbH. Contactless ignition system of unitary construction. 4,343,285, Cl. 123-647.000.
Brantingham, George L.; and Wiggins, Richard H., Jr., to Texas Instruments Incorporated. System using digital filter for waveform or speech synthesis. 4,344,148, Cl. 364-724.000.
Braun Aktiengesellschaft: *See*—
Caranicas, John C., 4,343,321, Cl. 132-48.00A.
Breig, Kurt: *See*—
Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, 4,343,936, Cl. 542-417.000.

Breitfuss, Thomas K. Method and apparatus for making an underground pipeline. 4,343,573, Cl. 405-155.000.
Bremer, C. Hermann, to Barmag Barmer Maschinenfabrik. Method and apparatus for lubricating bearings. 4,343,378, Cl. 184-6.260.
Brems, John H. Base support for transfer machines. 4,343,073, Cl. 29-38.00C.
Brenik, Wenzel; and Rudhard, Heinz, to Linde Aktiengesellschaft. Method of endothermic fermentation of tobacco. 4,343,318, Cl. 131-300.000.
Brenneman, Richard S.: *See—*
Snyder, Robert G.; Clancy, John J.; and Brenneman, Richard S., 4,343,398, Cl. 206-219.000.
Brennstoffinstitut Freiberg: *See—*
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.
Breza, Cyril J., deceased (by Breza, Therese H., executrix); and Schaefer, William E., to Du Pont de Nemours, E. I., and Company. Resin-bonded water-bearing explosive. 4,343,663, Cl. 149-4.000.
Breza, Therese H., executrix: *See—*
Breza, Cyril J., deceased; and Schaefer, William E., 4,343,663, Cl. 149-4.000.
Bricot, Claude; and Leterme, Dominique, to Thomson-CSF. Optical device for access to a track carried by a data carrier and optical memory system incorporating such a device. 4,344,164, Cl. 369-44.000.
Bridges, Charles D., to Combustion Engineering, Inc. Sealing device with thermal expansion pressure accumulator. 4,343,477, Cl. 277-73.000.
Bright, Edward J.; Dittmann, Larry E.; and Webster, Van K., to AMP Incorporated. Zero insertion force connector. 4,343,524, Cl. 339-74.00R.
Brighton, Walter A.: *See—*
Stang, John H.; Brighton, Walter A.; and Ruthmansdorfer, David A., 4,343,268, Cl. 123-90.400.
Brinkman, Willem, to Holec, N.V. Electromagnetically actuated pumps. 4,343,275, Cl. 123-382.000.
British Petroleum Company Limited, The: *See—*
Math, Friedrich C., 4,343,124, Cl. 52-226.000.
Brockmeyer, Jerry W., to Swiss Aluminium Ltd. Ceramic foam filter. 4,343,704, Cl. 210-509.000.
Brody, Deborah S.: *See—*
Wood, Robert W.; Hoefler, Andrew C.; and Brody, Deborah S., 4,343,819, Cl. 426-96.000.
Brody, Reid. Dual mode guitar. 4,343,217, Cl. 84-1.160.
Broersma, Robert J., Jr.; and Spittka, Gayle A., to Dow Chemical Company, The. Method of inhibiting sickling of sickle erythrocytes. 4,343,808, Cl. 424-273.00R.
Broersma, Robert J., Jr.; and Spittka, Gayle A., to Dow Chemical Company, The. Method of inhibiting sickling of sickle erythrocytes employing 2-((halophenoxy)methyl)-2-imidazolines. 4,343,809, Cl. 424-273.00R.
Broersma, Robert J., Jr.; and Spittka, Gayle A., to Dow Chemical Company, The. Method of inhibiting sickling of sickle erythrocytes using 2-((haloanilino)methyl)-2-imidazolines. 4,343,810, Cl. 424-273.00R.
Bron, Dan. Adjustable-rate, constant output infusion set. 4,343,305, Cl. 128-214.00R.
Brosius, Klaus; Lindenthal, Hans; and Zaunberger, Franz X., to Voith Getriebe KG. Hydrodynamic torque transmitting unit, particularly for a hydrodynamic brake. 4,343,383, Cl. 188-296.000.
Brosnan, Denis A. Magnesium oxide based heat storage device. 4,343,989, Cl. 219-378.000.
Brouwer, Hendrik L.: *See—*
Cals, Guillaume L. M.; Wittkampf, Frederik H. M.; Mensink, Kornelis A.; and Brouwer, Hendrik L., 4,343,312, Cl. 128-419.0PG.
Brown, Arthur: *See—*
Murphy, Norman A.; Banner, John G.; Fletcher, Edwin; and Brown, Arthur, 4,343,116, Cl. 51-284.00R.
Brown, Dallas B. Direct current motor and generator. 4,344,007, Cl. 310-46.000.
Brown, Ralph V., to Facet Enterprises, Inc. Reciprocating fluid pump having a hall switch. 4,343,597, Cl. 417-417.000.
Brown, Robert, to Rheological Systems, Inc. Apparatus and process for hot-stamping containers. 4,343,670, Cl. 156-233.000.
Brown, Robert L. Environmental lamp. 4,344,112, Cl. 362-96.000.
Brown & Williamson Tobacco Corporation: *See—*
Cantrell, Daniel V., 4,343,319, Cl. 131-336.000.
Browning Engineering Corporation: *See—*
Browning, James A., 4,343,605, Cl. 431-8.000.
Browning, James A., to Browning Engineering Corporation. Method of dual fuel operation of an internal burner type ultra-high velocity flame jet apparatus. 4,343,605, Cl. 431-8.000.
Brownlee, Morris L. Safety device for nuclear fission reactors. 4,343,762, Cl. 376-280.000.
Brownscombe, Eugene R.: *See—*
Riggs, Emmet D.; Brownscombe, Eugene R.; and Bilhartz, James R., 4,343,356, Cl. 166-60.000.
Bruce, William C., Jr.; Musa, Fuad H.; and Ritter, Terry F., to Motorola, Inc. Method for synchronizing hardware and software. 4,344,133, Cl. 364-200.000.
Brugger, Gottfried. Process of applying a titanium dioxide coating to a centrifugal casting mold. 4,343,345, Cl. 164-33.000.
Brunner, Herwig: *See—*
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, 4,343,903, Cl. 435-197.000.
Bruynseels, Jean P., to Compagnie Neerlandaise de l'Azote. Method of making granules built up from a core and an envelope. 4,343,622, Cl. 23-313.0FB.
Bryant, Charles P., to Lubrizol Corporation, The. Hydroxylalkyl hydroxy-aromatic condensation products as fuel and lubricant additives. 4,343,740, Cl. 260-326.5FM.
Buck, Alan C. Devices for supplementing conventional liquid fuels in internal combustion engines with gaseous fuel supplements. 4,343,272, Cl. 123-297.000.
Buckley, Galen L.; and Martin, Harold W. Universally adjustable ranging target and retro-reflector housing bracket. 4,343,550, Cl. 356-5.000.
Building Research Institute, Ministry of Construction: *See—*
Eguchi, Kazuo; Kobayashi, Tadashi; and Miyake, Yukiharu, 4,343,960, Cl. 136-225.000.
Bulso, Joseph D., Jr.; and Lewers, William R., to Redicon Corporation. Double action cupper having improved can removal means. 4,343,173, Cl. 72-345.000.
Bunge, Ernst: *See—*
Kuhn, Michael; and Bunge, Ernst, 4,344,031, Cl. 324-77.00R.
Burden, Martin J.; and Williams, Richard C., to Schlegel Corporation. Elastomeric strip and method of manufacturing same. 4,343,845, Cl. 428-122.000.
Burg, Marion, to Du Pont de Nemours, E. I., and Company. Use of radiation crosslinkable polyesters and polyesterethers in printing plates. 4,343,888, Cl. 430-302.000.
Burgin, Kermit H. Apparatus for producing and collecting a liquid extract and a dry by-product from a mash. 4,343,233, Cl. 100-116.000.
Buriks, Rudolf S.: *See—*
Becker, Harold L.; and Buriks, Rudolf S., 4,343,730, Cl. 524-551.000.
Burnett, Archibald L.: *See—*
Miller, John C.; and Burnett, Archibald L., 4,343,755, Cl. 264-176.00R.
Burri, Peter, to Ciba-Geigy Corporation. Indolinospiropyrane compounds. 4,343,944, Cl. 546-15.000.
Burroughs Corporation: *See—*
Armstrong, John L., 4,343,451, Cl. 248-500.000.
Barnes, George H., 4,344,134, Cl. 364-200.000.
Chambors, John M.; and Wallace, Harry L., 4,344,079, Cl. 346-140.00R.
Dakroub, Housan; and Concannon, David J., 4,344,036, Cl. 328-61.000.
Urquhart, Roderick M., 4,343,546, Cl. 354-281.000.
Burroughs Wellcome Co.: *See—*
Wilkinson, Samuel, 4,343,795, Cl. 424-177.000.
Busch, Charles H., Jr. Heat pipe device and heat pipe fabricating process. 4,343,349, Cl. 165-1.000.
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., to Chesebrough-Pond's Inc. Compositions, articles and methods for polishing surfaces. 4,343,910, Cl. 521-82.000.
Bussco Engineering, Inc.: *See—*
Deters, Paul M.; Dove, Harold D.; and Billings, Mickey E., 4,343,965, Cl. 174-72.00B.
Busse, Gerhard. System for measuring the radiation power of power-modulated transmitters, in particular of lasers. 4,344,172, Cl. 372-29.000.
Butscher, Franz, to MTU Motoren - und Turbinen-Union Friedrichshafen GmbH. Injection pump control arrangement. 4,343,274, Cl. 123-357.000.
C. D. Sparling Company: *See—*
Guenther, Torbett B., 4,343,052, Cl. 4-254.000.
C. R. Bard, Inc.: *See—*
Jespersen, Chris A., 4,343,316, Cl. 128-771.000.
C & T Line Construction, Inc.: *See—*
Grounds, Thomas M., 4,343,443, Cl. 242-86.700.
Cabot Corporation: *See—*
Rivers, Ronald D., 4,343,650, Cl. 75-213.000.
Cabot, Richard C.; and Hofer, Bruce E., to Tektronix, Inc. Automatic IM distortion test selector. 4,344,029, Cl. 324-57.00R.
Cairenius, Runo M. J. Fluid flow meter. 4,343,191, Cl. 73-861.050.
Cairns, Thomas M.; and Connors, David G., to Ford Motor Company. Printed circuit board edge connector. 4,343,523, Cl. 339-59.00M.
Calcagno, Benedetto: *See—*
Sartorio, Emanuele; Calcagno, Benedetto; Trombetti, Fulvio; and Ghirga, Marcello, 4,343,957, Cl. 585-449.000.
Caldwell, Michael C. Method for carbonating liquids in situ. 4,343,824, Cl. 426-477.000.
Callahan, Kent R., to American Microsystems, Inc. Dual channel digitally switched capacitor filter. 4,344,050, Cl. 333-173.000.
Cals, Guillaume L. M.; Wittkampf, Frederik H. M.; Mensink, Kornelis A.; and Brouwer, Hendrik L., to Vitafin N.V. Pacemaker output circuit. 4,343,312, Cl. 128-419.0PG.
Calspan Corporation: *See—*
Leonard, Richard P., 4,343,646, Cl. 71-25.000.
Calvert, Murray B. Pentagonal puzzle. 4,343,471, Cl. 273-157.00R.
Cama, Lovji D.: *See—*
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,343,937, Cl. 544-021.000.
Campanini, Sergio. Swivel hose coupling. 4,343,498, Cl. 285-174.000.
Campanini, Sergio. Slack adjuster. 4,343,561, Cl. 403-97.000.

Campbell, Bonnie J.; Counts, Thomas G.; Cunningham, James L.; and Youtsey, Karl J., to UOP Inc. Double wall tubing assembly and method of making same. 4,343,350, Cl. 165-11.00R.
Campbell, June H. Portable pouch for insulin. 4,343,158, Cl. 62-372.000.
Campbell, Willis R.: *See—*
Oellig, Franklin A.; and Campbell, Willis R., 4,343,141, Cl. 56-341.000.
Canada, Her Majesty the Queen in Right of: *See—*
Lazowski, James C.; Katz, Sharron; and Winship, John A., 4,343,047, Cl. 2-411.000.
Canada Post Corporation/Societe Canadienne de Postes: *See—*
Martineau, Jean-Claude P., 4,343,430, Cl. 229-69.000.
Canadian Patents & Development Limited: *See—*
Bhagwat, Pradeep; and Stefanovic, Victor R., 4,344,123, Cl. 363-43.000.
Reilly, James P.; and Haykin, Simon, 4,344,040, Cl. 329-50.000.
Caney, Steven. Multiple game device. 4,343,474, Cl. 273-237.000.
Cann, Irving. Synthetic onyx and method. 4,343,752, Cl. 264-71.000.
Canon Kabushiki Kaisha: *See—*
Nagashima, Nao, 4,343,547, Cl. 355-14.00R.
Sado, Ichiro; Cho, Mitsuo; Kishimoto, Juji; and Sasaki, Masayuki, 4,344,147, Cl. 364-710.000.
Tateoka, Masamichi; and Tsuji, Takao, 4,343,531, Cl. 350-6.500.
Toyomura, Shigeru, 4,343,968, Cl. 178-23.00R.
Cantrell, Daniel V., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,343,319, Cl. 131-336.000.
Caranicas, John C., to Braun Aktiengesellschaft. Hair clip. 4,343,321, Cl. 132-48.00A.
Cardinal, David V. Chess instruction apparatus. 4,343,609, Cl. 434-128.000.
Carlisle Tire & Rubber Company, Div. of Carlisle Corp.: *See—*
Hollis, Jack L., 4,343,667, Cl. 156-157.000.
Carlo Erba Strumentazione S.p.A.: *See—*
Sisti, Giorgio; Tosi, Bruno; and Trisciani, Adriano, 4,343,766, Cl. 422-63.000.
Carlon, Hugh R.; and Gerber, Bernard V., to United States of America, Army. Flow compensated gas comparison probe. 4,343,177, Cl. 73-23.000.
Carlson, Gene D.: *See—*
Ehrhardt, Gerry H.; and Carlson, Gene D., 4,343,494, Cl. 282-27.500.
Carr, John F.: *See—*
Baines, Eric; and Carr, John F., 4,343,786, Cl. 424-52.000.
Carr, William F.; and Chen, James M., to Engelhard Corporation. Ozone abatement catalyst having improved durability and low temperature performance. 4,343,776, Cl. 423-210.000.
Cartwright, Terence: *See—*
Birch, John R.; Cartwright, Terence; and Ford, John A., 4,343,904, Cl. 435-240.000.
Cash, Herbert B.: *See—*
Stowers, Jeffrey P.; Stickle, Robert E.; and Cash, Herbert B., 4,344,033, Cl. 324-158.00F.
Castonguay, Roger N.; Jencks, Charles L.; and Clickner, Peter P., to General Electric Company. Latch assembly for static trip circuit breakers. 4,344,054, Cl. 335-169.000.
Caterpillar Tractor Co.: *See—*
Bahnfleth, William A., 4,343,119, Cl. 52-180.000.
Belke, William H.; and Grim, George B., 4,343,624, Cl. 48-61.000.
Bernhagen, James R., 4,343,563, Cl. 403-282.000.
Goloff, Alexander; and Grim, George B., 4,343,355, Cl. 165-166.000.
Habiger, Cyril W., 4,343,152, Cl. 60-452.000.
Hart, Cullen P., 4,343,338, Cl. 152-153.000.
Hollandsworth, Larry A., 4,343,374, Cl. 180-69.00R.
Klekamp, William H.; and Tullis, Philip H., 4,343,101, Cl. 37-129.000.
Lorimor, Larry W., 4,343,151, Cl. 60-422.000.
Miller, Robert G.; Myers, Allen D.; Phelps, Weldon L.; and Sieving, Alfred W., 4,344,139, Cl. 364-426.000.
Rice, Stuart L., 4,343,661, Cl. 148-134.000.
Shuler, Lucien B.; and Spivey, William J., Jr., 4,343,150, Cl. 60-399.000.
Smead, Robert G.; Richards, Thomas J.; and Lanchantin, Charles E., Jr., 4,343,828, Cl. 427-27.000.
Stinson, Robert A., 4,343,155, Cl. 60-586.000.
Styck, Wayne G., 4,343,588, Cl. 414-701.000.
York, Lyle E., 4,343,100, Cl. 37-126.0AE.
Caumartin, Francois; Vidal, Jean L.; and Mangin, Pierre, to NAOHTA-CHIMIE Societe Anonyme. Fluidized bed terpolymerization of ethylene, propylene and non-conjugated diene. 4,343,926, Cl. 526-68.000.
Cavanagh, Kenneth M., to Marshall & Williams Company. Narrow fabric blocker. 4,343,439, Cl. 242-41.000.
Cavazza, Claudio. Pharmaceutical composition comprising an acyl-carnitine, for treating peripheral vascular diseases. 4,343,816, Cl. 424-316.000.
Cavitron Corporation: *See—*
Ragsdale, Charles W., 4,344,037, Cl. 328-114.000.
Celtite, Inc.: *See—*
Patel, Natvarlal K.; and Plaisted, Anthony C., 4,343,399, Cl. 206-222.000.
Central Plastics Company: *See—*
Pourchot, Melvin E., 4,343,518, Cl. 308-4.00A.
Ceraver: *See—*
Minjolle, Louis, 4,343,604, Cl. 425-192.00R.
Pargamin, Laurent, 4,343,966, Cl. 174-140.00S.
Weber, Jean, 4,343,354, Cl. 165-165.000.
Cesark, Frank F.; Manfre, Robert J.; and Thomas, Daniel W., to American Cyanamid Company. Glycolic acid esters and amides of bis(p-disubstitutedaminophenyl)carbinol. 4,343,939, Cl. 544-165.000.
Cetec Corporation: *See—*
Edwards, Robert R., 4,344,184, Cl. 455-95.000.
Cexkoslovenska akademie ved: *See—*
Kahovec, Jaroslav, 4,343,920, Cl. 525-328.200.
CFS Continental, Inc.: *See—*
Roseman, Arnold S., 4,343,820, Cl. 426-103.000.
Chalmers, Wallace G. Spigot joint. 4,343,560, Cl. 403-13.000.
Chambors, John M.; and Wallace, Harry L., to Burroughs Corporation. System for matrix printing. 4,344,079, Cl. 346-140.00R.
Champion International Corporation: *See—*
Thompson, Kenneth P., 4,343,858, Cl. 428-342.000.
Champion Spark Plug Europe S.A.: *See—*
van den Berg, Johan H., 4,343,062, Cl. 15-250.320.
van den Berg, Johan H.; and Maiocco, Guiseppe, 4,343,064, Cl. 15-250.320.
Chang, Sing-Hsiung. Hydrophilic, soft and oxygen permeable copolymer compositions. 4,343,927, Cl. 526-262.000.
Chang, Wen-Hsuan; O'Dwyer, James B.; and Peffer, John R., to PPG Industries, Inc. Coating compositions based on polyol-containing film forming components and organic alcoholic reactive diluents. 4,343,925, Cl. 525-440.000.
Chao, Robert L., to Supertex, Inc. Detection circuit and structure therefor. 4,344,002, Cl. 307-270.000.
Chase, Ascher, to General Foam Plastics Corp. Artificial Christmas tree. 4,343,842, Cl. 428-8.000.
Chasek, Norman E. Display method and apparatus for efficiently communicating the status of an ongoing process or system by the simultaneous display of many normalized parameter deviations. 4,344,145, Cl. 364-551.000.
Chatard, Michel; Sonnet, Alain; and Thiery, Jean, to Commissariat a l'Energie Atomique. Turbo-coring device equipped with a following pipe. 4,343,370, Cl. 175-107.000.
Chatzipetros, Johann; and Helten, Manfred, to Kernforschungsanlage Julich GmbH. Double-wall vessel especially Dewar flasks, with wall spacer. 4,343,413, Cl. 220-425.000.
Chekroun, Claude; Michel, Yves C.; and Sadones, Henri, to Societe d'Etude du Radant. Adaptive spatial microwave filter. 4,344,077, Cl. 343-754.000.
ChemVen, Inc.: *See—*
Swanson, Arthur M.; Swanson, Robert J.; Seibel, James K.; and Pavelec, Frank L., 4,343,817, Cl. 426-36.000.
Chen, James M.: *See—*
Carr, William F.; and Chen, James M., 4,343,776, Cl. 423-210.000.
Cherry Electrical Products Corp.: *See—*
Main, Robert T., 4,343,973, Cl. 200-159.00B.
Cherry, James H., to Weyerhaeuser Company. Octagonal bulk bin. 4,343,429, Cl. 229-38.000.
Chesebrough-Pond's Inc.: *See—*
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambresh H.; Faryniarz, Joseph R.; and Russo, John A., 4,343,910, Cl. 521-82.000.
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,344,146, Cl. 364-552.000.
Chesnut, Ronald D.; and Tepper, James M. Electrical box cover. 4,343,411, Cl. 220-242.000.
Chiang, Ping-Wang, to Amdahl Corporation. System for design and production of integrated circuit photomasks and integrated circuit devices. 4,343,877, Cl. 430-5.000.
Chiang, Ping-Wang, to Amdahl Corporation. System for providing photomask alignment keys in semiconductor integrated circuit processing. 4,343,878, Cl. 430-5.000.
Chichibu Cement Co., Ltd.: *See—*
Sudoh, Giichi; Minegishi, Keiichi; Akiba, Tokuji; Kato, Tadao; and Ogawa, Norio, 4,344,062, Cl. 338-35.000.
Children's Hospital Medical Center, The: *See—*
Lian, Jane B.; Levy, Robert J.; and Gallop, Paul M., 4,343,734, Cl. 260-112.00B.
Chludzinski, James J.: *See—*
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Cho, Mitsuo: *See—*
Sado, Ichiro; Cho, Mitsuo; Kishimoto, Juji; and Sasaki, Masayuki, 4,344,147, Cl. 364-710.000.
Chou, Richard C., to Franklin Institute, The. Motion systems providing three or four degrees of freedom. 4,343,610, Cl. 434-58.000.
Chow, Mark K.: *See—*
Strosser, Richard P.; Chow, Mark K.; and Bohman, Carl E., 4,344,074, Cl. 340-684.000.
Choy, Benedict C. K.: *See—*
Pao, Henry C.; Blanchard, Richard A.; and Choy, Benedict C. K., 4,344,081, Cl. 357-43.000.
Chr. Eisele Machinenfabrik GmbH. & Co. KG: *See—*
Drixler, Karl, 4,343,213, Cl. 83-397.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, to Merck & Co., Inc. 3-Substituted-7-methoxy-7-amino-3-cephem-4-carboxylic acids. 4,343,937, Cl. 544-021.000.
Chronowski, Robert A., to Aqua-Chem, Inc. Fluidized bed combustion method and apparatus. 4,343,247, Cl. 110-245.000.
Ciba-Geigy Corporation: *See—*
Abel, Heinz; and Schafer, Paul, 4,343,620, Cl. 8-557.000.
Burri, Peter, 4,343,944, Cl. 546-15.000.

Cibie Projecteurs: *See—*
Bergot, Thierry, 4,344,119, Cl. 362-267.000.
Ciesemier, Allen L.; Tait, Robert J.; and Smith, Leonard A., to Littelfuse, Inc. Enclosed plug-in fuse assembly. 4,344,060, Cl. 337-260.000.
Ciliberti, David F., to Westinghouse Electric Corp. Hot gas particulate removal. 4,343,631, Cl. 55-302.000.
Circon Corporation: *See—*
Miller, Frederick A., 4,344,092, Cl. 358-217.000.
Claas OHG: *See—*
Hegger, Josef, 4,343,140, Cl. 56-17.100.
Clancy, John J.: *See—*
Snyder, Robert G.; Clancy, John J.; and Brenneman, Richard S., 4,343,398, Cl. 206-219.000.
Clarion Co., Ltd.: *See—*
Takai, Kazuki, 4,344,097, Cl. 360-96.600.
Clarke, Brian P.: *See—*
Stirling, Irene; and Clarke, Brian P., 4,343,807, Cl. 424-272.000.
Clausen, Robert L. Friction heat generator. 4,343,291, Cl. 126-247.000.
Clayton Dewandre & Company Limited: *See—*
Levington, Henry J., 4,343,517, Cl. 303-7.000.
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Core energy plant with closed working gas circuit. 4,343,681, Cl. 376-293.000.
Clickner, Peter P.: *See—*
Castonguay, Roger N.; Jencks, Charles L.; and Clickner, Peter P., 4,344,054, Cl. 335-169.000.
Close, Donald, to David Hudson, Inc. Novel fluoroelastomer film compositions containing phenoxy resins and method for the preparation thereof. 4,343,841, Cl. 427-386.000.
Club Car Inc.: *See—*
Samuelson, Donald G.; and Farris, Paul R., 4,343,503, Cl. 296-84.00D.
Coal Industry (Patents) Limited: *See—*
Higgs, Robert H.; and Jones, John M., 4,343,515, Cl. 299-75.000.
Cobb, Gary L.: *See—*
Cook, Jerry A.; and Cobb, Gary L., 4,343,694, Cl. 209-9.000.
Cocron, Istvan, to AGFA-Gevaert AG. Digital control system for automatic-focus cameras. 4,344,024, Cl. 318-640.000.
Codex Corporation: *See—*
Qureshi, Shahid U. H., 4,344,176, Cl. 375-15.000.
Cohen, Arnold, to Reichhold Chemicals Incorporated. Polyvinyl chloride shoe sole molding composition containing cellulosic fibrous flock. 4,343,727, Cl. 524-41.000.
Coleman, Cecil A., to Balfour Lumber Company. Spray system for breakdown hoist. 4,343,607, Cl. 432-18.000.
Colgate-Palmolive Company: *See—*
Baines, Eric; and Carr, John F., 4,343,786, Cl. 424-52.000.
Collins, Edward J.; Suster, Mary E.; and Weber, Vincent H., to General Electric Company. Flash lamp array having printed circuit. 4,344,108, Cl. 362-13.000.
Combustion Engineering, Inc.: *See—*
Bridges, Charles D., 4,343,477, Cl. 277-73.000.
Tanca, Michael C., 4,343,627, Cl. 48-202.000.
Comer, William T.: *See—*
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Commissariat a l'Energie Atomique: *See—*
Ambille, Georges; Bacconnet, Eugene; and Ragot, Philippe, 4,343,298, Cl. 126-450.000.
Chatard, Michel; Sonnet, Alain; and Thiery, Jean, 4,343,370, Cl. 175-107.000.
Farcy, Paul, 4,343,994, Cl. 250-390.000.
Commissariate a l'Energie Atomique: *See—*
Balligand, Pierre; Corfa, Yves; Lemercier, Pierre; Marchal, Paul; and Vertut, Jean, 4,343,098, Cl. 37-54.000.
Commonwealth Scientific and Industrial Research Organization: *See—*
Jones, Francis W.; Mayfield, Robert J.; O'Loughlin, Gary J.; and Russell, Ian M., 4,343,618, Cl. 8-128.00R.
Compagnie Generale de Radiologie: *See—*
Klausz, Remy, 4,343,995, Cl. 278-21.000.
Compagnie Internationale de Participation et d'Investissement "Cipari" S.A.: *See—*
Devreux, Andre F., 4,343,231, Cl. 99-277.200.
Compagnie Internationale pour l' Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Girard, Paul, 4,344,131, Cl. 364-200.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Mollier, Jean H., 4,344,155, Cl. 365-200.000.
Compagnie Neerlandaise de l'Azote: *See—*
Bruynseels, Jean P., 4,343,622, Cl. 23-313.0FB.
Concannon, David J.: *See—*
Dakroub, Housan; and Concannon, David J., 4,344,036, Cl. 328-61.000.
Conder, Terrence M., to Minnesota Mining and Manufacturing Company. Transfer film. 4,343,855, Cl. 428-332.000.
Cone, Richard E., to Questor Corporation. Child car seat and restraining system. 4,343,510, Cl. 297-250.000.
Connecticut Valley Paper & Envelope Co., Inc.: *See—*
Isaacson, Robert, 4,343,105, Cl. 40-155.000.
Connolly, James D. Resistance welding machine. 4,343,981, Cl. 219-56.000.
Connors, David G.: *See—*
Cairns, Thomas M.; and Connors, David G., 4,343,523, Cl. 339-59.00M.
Conti, James C.; Findl, Eugene; and Wang, William, to BioResearch Inc. Method and apparatus for determination of changes in the surface charge of materials. 4,344,035, Cl. 324-453.000.
Contrepois, Michel G.: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.
Cook, Carroll J.; and Henthorn, Timothy K., to Rockwell International Corporation. Low noise high stability FM transmitter. 4,344,185, Cl. 455-110.000.
Cook, Jerry A.; and Cobb, Gary L., to Anglo-American Clays Corporation. Magnetic beneficiation of clays utilizing magnetic seeding and flotation. 4,343,694, Cl. 209-9.000.
Coppola, Patrick S.: *See—*
Kure-Jensen, Jens; and Coppola, Patrick S., 4,343,454, Cl. 251-26.000.
Coquard, Jean; and Goletto, Jean, to Rhone-Poulenc Industries. Novel polyesteramides having low glass transition temperatures. 4,343,743, Cl. 260-404.500.
Corbier, Wierd, to U.S. Philips Corporation. Coffee maker. 4,343,232, Cl. 99-299.000.
Corfa, Yves: *See—*
Balligand, Pierre; Corfa, Yves; Lemercier, Pierre; Marchal, Paul; and Vertut, Jean, 4,343,098, Cl. 37-54.000.
Cornelis, Christiaan A.; and De Keizer, Cornelis, to IHC Holland N.V. Method for adapting the operation of a dredging apparatus. 4,343,102, Cl. 37-195.000.
Corsette, Douglas F. Dispensing pump locking means. 4,343,417, Cl. 222-153.000.
Corsover, Stephen L.; Dobbins, Lawrence W.; and Pierson, Paul B., to RCA Corporation. Variable-velocity film exposing and developing apparatus. 4,344,088, Cl. 358-132.000.
Costa, Laurent: *See—*
Virte, Jean; and Costa, Laurent, 4,343,405, Cl. 211-88.000.
Cotrell, Phillip L.: *See—*
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Coulter Systems Corp.: *See—*
Weber, Harold J., 4,344,121, Cl. 363-16.000.
Counts, Thomas G.: *See—*
Campbell, Bonnie J.; Counts, Thomas G.; Cunningham, James L.; and Youtsey, Karl J., 4,343,350, Cl. 165-11.00R.
Coussot, Gerard, to Thomson-CSF. Elastic surface wave transducer and filter incorporating such a transducer. 4,344,051, Cl. 333-194.000.
CPC International Inc.: *See—*
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Crane Co.: *See—*
Skarvada, Thomas, 4,344,137, Cl. 364-426.000.
Crane, Hewitt D.; and Wolf, Daniel E., to Stanford Research Institute. Dynamic creation of signatures. 4,344,135, Cl. 364-419.000.
Creusot-Loire: *See—*
Haulotte, Georges, 4,343,379, Cl. 187-18.000.
Crossley, Roger; and Dickinson, Kay H., to John Wyeth & Brother Limited. Heterocyclic compounds. 4,343,805, Cl. 424-263.000.
Crothers, William R. Folding cart. 4,343,487, Cl. 280-654.000.
Crutcher Corporation: *See—*
Paysinger, Joseph R., 4,343,207, Cl. 82-4.00R.
Csaszar, Ernest J., to General Kap (P.R.) Corporation. Tamper-evident plastic closure. 4,343,408, Cl. 215-258.000.
Cucuiat, Marius: *See—*
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Cummins Engine Company, Inc.: *See—*
Jaliwala, Salim A.; and Day, Eric, 4,343,276, Cl. 123-383.000.
Shaw, Terrence M., 4,343,267, Cl. 123-41.810.
Stang, John H.; Brighton, Walter A.; and Ruthmansdorfer, David A., 4,343,268, Cl. 123-90.400.
Cummiskey, Peter, to Bell Telephone Laboratories, Incorporated. Redundant word frame synchronization circuit. 4,344,180, Cl. 375-116.000.
Cunningham, Charles J.: *See—*
Jones, Allen P.; and Cunningham, Charles J., 4,343,835, Cl. 427-209.000.
Cunningham, James L.: *See—*
Campbell, Bonnie J.; Counts, Thomas G.; Cunningham, James L.; and Youtsey, Karl J., 4,343,350, Cl. 165-11.00R.
Cunningham, Robert D.: *See—*
Sarver, Robert B.; and Arthur, W. Eugene, 4,343,567, Cl. 404-10.000.
Currin, Cedric G.; and Van Wert, Bernard, to Dow Corning Corporation. Solar radiation reflector with a cellulosic substrate and method of making. 4,343,533, Cl. 350-288.000.
Curtis Dyna-Products: *See—*
Stevens, Robert E.; Stowe, John H.; and Emerich, Jeremiah M., 4,343,719, Cl. 252-359.0CG.
Czelen, John C. Condiment grinder. 4,343,437, Cl. 241-169.100.
Czuszak, Charles C.: *See—*
Hannan, William F., III; and Czuszak, Charles C., 4,343,591, Cl. 415-169.00R.
Dabringhaus, Wilfried; Glotzbach, Helmut; and Voss, Karl, to Agfa-Gevaert Aktiengesellschaft. Apparatus for deflecting a moving web of material. 4,343,422, Cl. 226-197.000.

Daimler-Benz Aktiengesellschaft: *See—*
Abthoff, Jorg; Schuster, Hans-Dieter; Langer, Hans-Joachim; and Gabler, Rolf, 4,343,149, Cl. 60-311.000.
Panik, Ferdinand, 4,344,136, Cl. 364-424.000.
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Dakroub, Housan; and Concannon, David J., to Burroughs Corporation. Skip count clock generator. 4,344,036, Cl. 328-61.000.
Dale, Thomas L., to Manville Service Corporation. Attenuation burner for forming fibers. 4,343,640, Cl. 65-16.000.
D'Aloisio, Elio F., to Litton Industrial Products, Inc. Loader for a machine tool. 4,343,590, Cl. 414-753.000.
Dalzell, Rex J.: *See—*
Aasen, Steven M.; Dalzell, Rex J.; Goettert, Edward J.; Holmes, Brian N.; and Tiers, George V. D., 4,343,891, Cl. 430-337.000.
Damico, Pierre; and Jaco, Georges, to Intertechnique. Apparatus for creating gas flow cycles. 4,344,144, Cl. 364-510.000.
Dancsi, Lajos: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,343,738, Cl. 260-239.30P.
Daniel, Jack H. Solar collector assembly. 4,343,294, Cl. 126-424.000.
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., to Air Products and Chemicals, Inc. Polyvinyl acetate latex impregnated towelette. 4,343,133, Cl. 53-431.000.
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., to Air Products and Chemicals, Inc. Polyvinyl acetate latex impregnated towelette. 4,343,403, Cl. 206-812.000.
Danko, Michael J.; Randall, Leslie L.; Smith, Ray J.; and Walsh, James E., to Monsanto Company. Moving die rheometer, method of testing materials therewith, and die for use therein. 4,343,190, Cl. 73-846.000.
Dannhorn, Erich; and Baur, Karl, to Linde Aktiengesellschaft. Method of scrubbing acid gases containing polymerizable organic components. 4,343,777, Cl. 423-228.000.
Das, Mihir K.: *See—*
Basily, Basily B.; Das, Mihir K.; Price, Clifford G.; and Tobias, Stephen A., 4,343,208, Cl. 83-13.000.
Das, Tapan K.; and Fryer, Martin A., to Plessey Handel und Investments AG. Phase locked loop frequency synthesizer with fine tuning. 4,344,045, Cl. 331-1.00A.
Daubman, Edward A.; and Owler, William G., Jr., to Ametek, Inc. Centrifuge filter. 4,343,700, Cl. 210-232.000.
David Hudson, Inc.: *See—*
Close, Donald, 4,343,841, Cl. 427-386.000.
Davidowich, George; and Miller, Gerald D., to Air Products and Chemicals, Inc. Flushable towelette. 4,343,134, Cl. 53-431.000.
Davidowich, George: *See—*
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,343,133, Cl. 53-431.000.
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,343,403, Cl. 206-812.000.
Davidson, Arthur, to International Business Machines Corporation. Distributed array of Josephson devices with coherence. 4,344,052, Cl. 333-222.000.
Davidson, Ronnie D.; and Misencik, John J., to Westinghouse Electric Corp. Ground fault circuit breaker with ground fault trip indicator. 4,344,100, Cl. 361-45.000.
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., to Chesebrough-Pond's Inc. Video inspection system. 4,344,146, Cl. 364-552.000.
Davis, Robert B., to Union Carbide Corporation. Process for operating a fluidized bed. 4,343,634, Cl. 62-62.000.
Davis, Stephen H., to Water Refining Company, Inc. Convertible dual container storage system. 4,343,699, Cl. 210-190.000.
Dawson, Raymond W.; Stevenson, Anthony W.; and Manners, Ernest, to Dawson, Raymond Winston. Fluid flow measuring apparatus. 4,343,193, Cl. 73-861.610.
Dawson, Raymond Winston: *See—*
Dawson, Raymond W.; Stevenson, Anthony W.; and Manners, Ernest, 4,343,193, Cl. 73-861.610.
Day, Eric: *See—*
Jaliwala, Salim A.; and Day, Eric, 4,343,276, Cl. 123-383.000.
Dayco Corporation: *See—*
Wetzel, Robert E., 4,343,666, Cl. 156-138.000.
DBS, Inc.: *See—*
DeLorenzo, Dana J., 4,343,837, Cl. 427-275.000.
De Ceuster, Jean; and Duprez, Paul, to Interox (Societe Anonyme). Process for reclaiming waste paper. 4,343,679, Cl. 162-4.000.
Decker, Quintin W.; and Marcus, Erich, to Union Carbide Corporation. Lubricant compositions for finishing synthetic fibers. 4,343,616, Cl. 8-115.600.
Deere & Company: *See—*
Miller, Wayne R.; and Von Fumetti, Cyril W., 4,343,697, Cl. 210-90.000.
DeFilippi, Louis J., to UOP Inc. Magnetic support matrix for enzyme immobilization. 4,343,901, Cl. 435-176.000.
Dehart, Marv L.; Kloostra, M. Leon; and Straub, Harold E., to Environmental Elements Corporation. Flow sensing apparatus. 4,343,194, Cl. 73-861.650.
Dehmel, Werner: *See—*
Heitkamp, Herbert; and Dehmel, Werner, 4,343,512, Cl. 299-1.000.
De Keizer, Cornelis: *See—*
Cornelis, Christiaan A.; and De Keizer, Cornelis, 4,343,102, Cl. 37-195.000.
DeLorenzo, Dana J., to DBS, Inc. Tipper for embossed cards and removable cassette for use therewith. 4,343,837, Cl. 427-275.000.
Denhart, Norbert J. Tamper-proof security device for surface mounted electrical outlets and the like. 4,344,114, Cl. 362-147.000.
de Nora, Oronzio; and Spaziante, Placido M., to Oronzio de Nora Impianti Elettrochimici S.p.A. Novel electrolysis cell. 4,343,689, Cl. 204-253.000.
de Nora, Oronzio, to Oronzio de Nora Impianti Elettrochimici S.p.A. Novel electrolysis cell. 4,343,690, Cl. 204-263.000.
De Palma, Ted V.: *See—*
Bailey, Charles H.; De Palma, Ted V.; and Dillon, James E., 4,343,074, Cl. 29-157.00R.
Deppe, Gary L.: *See—*
Hire, Charles J.; and Deppe, Gary L., 4,343,974, Cl. 200-243.000.
Design Professionals Financial Corp.: *See—*
Okubo, Shigeo, 4,344,004, Cl. 307-400.000.
Deters, Paul M.; Dove, Harold D.; and Billings, Mickey E., to Bussco Engineering, Inc. Bus bar assembly. 4,343,965, Cl. 174-72.00B.
Deutsche Forschungs- und Versuchsanstalt fur Luft- u. Raumfahrt: *See—*
Tersteegen, Johannes, 4,343,331, Cl. 137-625.650.
Devreux, Andre F., to Compagnie Internationale de Participation et d'Investissement "Cipari" S.A. Brewing apparatus having sampling means delivering suspension to fermenting vessel. 4,343,231, Cl. 99-277.200.
de Vries, Jochem J.; and Trees, Ferdinand M., to U.S. Philips Corporation. Shaving apparatus. 4,343,086, Cl. 30-43.600.
De Witt, Paolo; and Tinti, Maria O., to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Carnitinamides of optically active aminoacids. 4,343,947, Cl. 548-344.000.
Dexion-Comino International Limited: *See—*
George, Alan L., 4,343,396, Cl. 198-781.000.
Dickinson, David W.: *See—*
Stanya, Andrew; Franklin, Joseph E.; and Dickinson, David W., 4,343,980, Cl. 219-110.000.
Dickinson, Kay H.: *See—*
Crossley, Roger; and Dickinson, Kay H., 4,343,805, Cl. 424-263.000.
Diebold, Incorporated: *See—*
Anders, Walter G., 4,343,574, Cl. 406-13.000.
Diehr, James R., II; and Lutton, Theodore A., to Federal-Mogul Corporation. Direct digital control of rubber molding presses. 4,344,142, Cl. 364-473.000.
Diggs, Richard E. Method for desalinating water. 4,343,683, Cl. 203-2.000.
Dillon, James E.: *See—*
Bailey, Charles H.; De Palma, Ted V.; and Dillon, James E., 4,343,074, Cl. 29-157.00R.
Dillon, Michael J. Shell reloading machine. 4,343,222, Cl. 86-27.000.
Dillon, Richard S. Promoting circulation of blood. 4,343,302, Cl. 128-24.00R.
Dinsmore, Harold L.; Schwartz, Robert E.; and Tuttle, Willard N., to John Zink Company. Process and apparatus for recovering hydrocarbons from air-hydrocarbon vapor mixtures. 4,343,629, Cl. 55-28.000.
Disch, Karlheinz: *See—*
Kiewert, Eva; Disch, Karlheinz; and Wegner, Jurgen, 4,343,725, Cl. 252-542.000.
Dittmann, Larry E.: *See—*
Bright, Edward J.; Dittmann, Larry E.; and Webster, Van K., 4,343,524, Cl. 339-74.00R.
Dittmann, Norbert: *See—*
Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.
Ditto, Donald R.; and Sparks, John R., to Ditto, Donald R. Apparatus to illuminate a liquid drink. 4,344,113, Cl. 362-101.000.
Diver, James J.: *See—*
Euverard, Maynard R.; Heide, Henry A.; and Diver, James J., 4,343,983, Cl. 414-75.000.
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., to International Business Machines Corporation. Serial storage interface apparatus for coupling a serial storage mechanism to a data processor input/output bus. 4,344,132, Cl. 364-200.000.
Dixon, Samuel, Jr., to United States of America, Army. Millimeter-wave power limiter. 4,344,047, Cl. 333-17.00L.
Dobbins, Lawrence W.: *See—*
Corsover, Stephen L.; Dobbins, Lawrence W.; and Pierson, Paul B., 4,344,088, Cl. 358-132.000.
Dodd, John A.; and Lane, Robert L., to Sun Chemical Corporation. Insolubilizers for binders for paper coating compositions. 4,343,655, Cl. 106-214.000.
Dolfin Corporation: *See—*
Borda, William F.; Fry, Thomas M.; and Rist, Charles A., Jr., 4,343,044, Cl. 2-67.000.
Dominico, James W.: *See—*
Skrypek, John P.; Williams, Robert; and Dominico, James W., 4,343,391, Cl. 198-438.000.
Donald, Dennis S.; and Lee, Ross A., to Du Pont de Nemours, E. I., and Company. Masked development/image modifier compounds of silver photographic systems. 4,343,893, Cl. 430-401.000.
Dopp, Robert B.: *See—*
Oltman, John E.; and Dopp, Robert B., 4,343,869, Cl. 429-27.000.
Dorr-Oliver Incorporated: *See—*
Jukkola, Walfred W.; and Heath, Thomas D., 4,343,246, Cl. 110-222.000.
Doryokuro Kaku Nenryo Kaihatsu Jigyodan: *See—*
Otsuka, Katsuyuki; Todokoro, Akio; Takahashi, Yoshiharu; Hiroe, Kazuhito; and Ishikawa, Yoshinobu, 4,343,426, Cl. 228-170.000.

Dose, Curtis R. Playground slide and shelter. 4,343,464, Cl. 272-56.50R.
Douglass, Spivey S.; and Green, Walter L., to United States of America, Energy. Slide system for machine tools. 4,343,206, Cl. 82-2.00R.
Dove, Harold D.: *See—*
Deters, Paul M.; Dove, Harold D.; and Billings, Mickey E., 4,343,965, Cl. 174-72.00B.
Dow Chemical Company, The: *See—*
Broersma, Robert J., Jr.; and Spittka, Gayle A., 4,343,808, Cl. 424-273.00R.
Broersma, Robert J., Jr.; and Spittka, Gayle A., 4,343,809, Cl. 424-273.00R.
Broersma, Robert J., Jr.; and Spittka, Gayle A., 4,343,810, Cl. 424-273.00R.
Dunbar, Joseph; Holmsen, Theodore W.; and Senkbeil, Herman O., 4,343,647, Cl. 71-76.000.
Long, Merton W.; McLean, James D.; Armentrout, David N.; and Gill, Harold H., 4,343,767, Cl. 422-70.000.
Tefertiller, Nancy B.; and Harris, Robert F., 4,343,919, Cl. 525-278.000.
Dow Corning Corporation: *See—*
Currin, Cedric G.; and Van Wert, Bernard, 4,343,533, Cl. 350-288.000.
Downs, Raymond L.: *See—*
Anderson, Paul R.; Downs, Raymond L.; and Henderson, Timothy M., 4,343,675, Cl. 156-628.000.
Draft Systems, Inc.: *See—*
Fallon, Merton R., 4,343,325, Cl. 137-212.000.
Draftex Development AG: *See—*
Kruschwitz, Werner; and Andrzejewski, Heinz, 4,343,121, Cl. 52-208.000.
Dresser Industries, Inc.: *See—*
Kimmel, Loren L., 4,343,459, Cl. 266-243.000.
Drexler, Ferenc: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,343,738, Cl. 260-239.30P.
Drexler, Jerome; and Bouldin, Eric W., to Drexler Technology Corporation. Multiple layer optical data storage and recording media. 4,343,879, Cl. 430-14.000.
Drexler Technology Corporation: *See—*
Drexler, Jerome; and Bouldin, Eric W., 4,343,879, Cl. 430-14.000.
Drilling Development, Inc.: *See—*
Lyons, William C.; Scurlock, Scot L.; and Zublin, Edward A., 4,343,369, Cl. 175-75.000.
Drixler, Karl, to Chr. Eisele Machinenfabrik GmbH. & Co. KG. Blade protection in tiltable circular saw machines. 4,343,213, Cl. 83-397.000.
Dubicki, Robert. Solar energy system. 4,343,295, Cl. 126-425.000.
Du Bois, Loring E.; and Simpson, Lawrence D., to Western Electric Co., Inc. Apparatus for sorting articles. 4,343,388, Cl. 193-47.000.
DuBose, Ronald A.; and Woolsey, William D., to Agri-Bio Corporation. Method for removing appendages from avian species. 4,343,309, Cl. 128-303.140.
DuBose, Ronald A.; and Woolsey, William D., to Agri-Bio Corporation. Apparatus for removing appendages from avian species. 4,343,310, Cl. 128-303.140.
Dubourguier, Henri-Charles: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.
Duewag Aktiengesellschaft: *See—*
Heuer, Wolfgang; and Gerhardinger, Wilhelm, 4,343,507, Cl. 296-208.000.
Duke Power Company: *See—*
Wolf, Herman B., 4,343,999, Cl. 290-2.000.
Duke University: *See—*
Bonaventura, Joseph; and Bonaventura, Celia, 4,343,715, Cl. 252-186.000.
Dumar, William L., Jr.; and Ledlow, Jimmie E., to Boeing Company, The. Ball joint flexible wear ring and seal. 4,343,499, Cl. 285-263.000.
Dunbar, Joseph; Holmsen, Theodore W.; and Senkbeil, Herman O., to Dow Chemical Company, The. Substituted benzyltrialkylammonium salts and their use as plant growth regulatory control agents. 4,343,647, Cl. 71-76.000.
Dunlop Limited: *See—*
Jackson, William L., 4,343,341, Cl. 152-353.00R.
Popplewell, Frank W., 4,343,757, Cl. 264-221.000.
Du Pont de Nemours, E. I., and Company: *See—*
Breza, Cyril J., deceased; and Schaefer, William E., 4,343,663, Cl. 149-4.000.
Burg, Marion, 4,343,888, Cl. 430-302.000.
Donald, Dennis S.; and Lee, Ross A., 4,343,893, Cl. 430-401.000.
Fernstrom, George A.; Hebeler, Harold H.; Lin, Perry H.; and Moneymaker, Robert R., 4,343,860, Cl. 428-371.000.
Fliedner, Leonard J., Jr., 4,343,812, Cl. 424-274.000.
Heiart, Robert B.; and O'Neil, James W., 4,343,876, Cl. 430-5.000.
Hoene, David J., 4,343,954, Cl. 568-473.000.
Nelson, Thomas L., 4,343,146, Cl. 57-208.000.
Sweetser, Philip B., 4,343,649, Cl. 71-93.000.
Duprez, Paul: *See—*
De Ceuster, Jean; and Duprez, Paul, 4,343,679, Cl. 162-4.000.
Durkoppwerke GmbH: *See—*
Goldbeck, Heinz; and Frodermann, Helmut, 4,343,251, Cl. 112-221.000.
DuRoss, Robert M.; and Stuhler, Robert J., to SCM Corporation. Spacebar touch control apparatus. 4,343,557, Cl. 400-496.000.
Dutt, Bulusu V.; Keramidas, Vassilis G.; and Temkin, Henryk, to Bell Telephone Laboratories, Incorporated. Monitoring indium phosphide surface composition in the manufacture of III-V semiconductor devices. 4,343,674, Cl. 156-601.000.
Duvernay, Roger: *See—*
Tourasse, Marc; and Duvernay, Roger, 4,343,114, Cl. 51-165.710.
Dyckerhoff & Widmann Aktiengesellschaft: *See—*
Wlodkowski, Johann; and Jungwirth, Dieter, 4,343,122, Cl. 52-223.00L.
Dynachem Corporation: *See—*
Reardon, Edward J., Jr., 4,343,885, Cl. 430-177.000.
Dynascan Corporation: *See—*
Schornack, Louis W.; and Goldstein, Richard, 4,344,000, Cl. 307-132.00E.
Dysthe, Sven I. Ski binding. 4,343,486, Cl. 280-615.000.
Dzida, Jan, to Politechnika Lodzka; and Fabryka Samochodow Rolniczych "POLMO". Differential. 4,343,205, Cl. 74-711.000.
E. Beaudrey & Cie, Societe Anonyme: *See—*
Jackson, Philip, 4,343,698, Cl. 210-107.000.
EA Industries, Incorporated: *See—*
McCormick, Lloyd G.; and Score, Robert E., 4,343,131, Cl. 53-397.000.
Eadens, Richard L. Plumb tool. 4,343,093, Cl. 33-373.000.
Easley, Othel D., Jr.; and Hoiseth, Merlin G., to Reactor Services International, Inc. Dumping apparatus and method. 4,343,586, Cl. 414-414.000.
Eastman Kodak Company: *See—*
Lelental, Mark, 4,343,880, Cl. 430-42.000.
Smith, Robert C., Jr.; and McGlen, James A., 4,343,673, Cl. 156-583.400.
Eaton Corporation: *See—*
Keister, Bernard, 4,343,333, Cl. 138-125.000.
Thayer, Richard S.; Herbert, William J.; and Klein, Gary S., 4,343,844, Cl. 428-36.000.
Thorson, Clayton W., 4,343,600, Cl. 418-61.00B.
Thorson, Clayton W., 4,343,601, Cl. 418-61.00B.
Eaton, Sargent S., Jr.; and Wooten, David R., to Inmos Corporation. High speed data transfer for a semiconductor memory. 4,344,156, Cl. 365-203.000.
Ecanow, Charles S. Synthetic whole blood and a method of making the same. 4,343,797, Cl. 424-199.000.
Edge, Charles K., to PPG Industries, Inc. Method for attenuating float glass. 4,343,642, Cl. 65-99.500.
Edwards, Alwilda N. Support unit for shelving system. 4,343,245, Cl. 108-111.000.
Edwards, Ben E.; and Marr, Clyde M., to Old-North Manufacturing Company, Inc. Method and apparatus for treating cellulosic products. 4,343,840, Cl. 427-351.000.
Edwards, Robert R., to Cetec Corporation. Wireless microphone. 4,344,184, Cl. 455-95.000.
Edwards, William M.; and Huang, C. Peter, to Pullman Incorporated. Horizontal cross-flow scrubber. 4,343,771, Cl. 422-168.000.
Egan, Richard R.; and Cotrell, Phillip L., to Sherex Chemical Company, Inc. Low irritating high viscosity detergent composition. 4,343,726, Cl. 252-547.000.
Eggen, Ingmar B., to Societe d'Assistance Technique pour Produits Nestle S.A. Cocoa product and process of preparation. 4,343,818, Cl. 426-45.000.
Eguchi, Kazuo; Kobayashi, Tadashi; and Miyake, Yukiharu, to Building Research Institute, Ministry of Construction; Ryoko Electronic Industries Ltd.; and Eko Instruments Trading Co., Ltd. Thermopile and process for manufacturing same. 4,343,960, Cl. 136-225.000.
Ehrhardt, Gerry H.; and Carlson, Gene D., to Frye Copysystems, Inc. Carbonless copy paper system. 4,343,494, Cl. 282-27.500.
Eidetic Images, Inc.: *See—*
Haines, Kenneth A., 4,343,874, Cl. 430-1.000.
Eisele, Bernhard: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.
Eisend, Ewald: *See—*
Leiter, Berndt; Keller, Josef; Schuller, Kurt; and Eisend, Ewald, 4,343,613, Cl. 474-82.000.
Eisert, Wolfgang G., to Gesellschaft fur Strahlen- und Umweltforschung mbH Munchen. Apparatus for counting and classifying particles. 4,343,551, Cl. 356-335.000.
Ek, Jan-Olof: *See—*
Lundblad, Leif J. I.; and Ek, Jan-Olof, 4,343,582, Cl. 414-32.000.
Eko Instruments Trading Co., Ltd.: *See—*
Eguchi, Kazuo; Kobayashi, Tadashi; and Miyake, Yukiharu, 4,343,960, Cl. 136-225.000.
Electric Power Research Institute, Inc.: *See—*
Lucas, Robert G., 4,343,707, Cl. 210-695.000.
Putt, Ronald A., 4,343,868, Cl. 429-17.000.
Electricite de France (Service National): *See—*
Barbini, Spartacus; and Jolion, Michel, 4,343,979, Cl. 219-10.55A.
Elgin Sweeper Company: *See—*
Hildebrand, Donald L.; and Prescott, Ernest F., 4,343,060, Cl. 15-84.000.
Elliott Turbomachinery Co., Inc.: *See—*
Hannan, William F., III; and Czuszak, Charles C., 4,343,591, Cl. 415-169.00R.
Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, to AES Technology Systems, Inc. Method and apparatus for feeding envelopes. 4,343,392, Cl. 198-484.000.
Elston, Lewis W.; and Hurst, David R., to Georgia Tech Research Institute. Method for deodorizing and disinfecting air. 4,343,765, Cl. 422-3.000.

Eltra Corporation: *See*—
Kern, Calvin V.; and Mitton, Bruce W., 4,343,153, Cl. 60-460.000.
Major, Jeffrey T.; Gibson, Nelson S., III; and Young, Jerry L., 4,344,008, Cl. 310-242.000.

Emerich, Jeremiah M.: *See*—
Stevens, Robert E.; Stowe, John H.; and Emerich, Jeremiah M., 4,343,719, Cl. 252-359.0CG.

Emmert, Joseph W.; and Sweeney, Lawrence J., to Addare Corp. Apparatus for handling fluent material. 4,343,394, Cl. 198-616.000.

Enders, George E., to NRM Corporation. Tire building machine. 4,343,671, Cl. 156-401.000.

Endo, Takafumi: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; and Tobita, Toshio, 4,343,833, Cl. 427-96.000.

Endruhn, Dieter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for manufacturing cable harnesses and printer therefor. 4,343,237, Cl. 101-11.000.

Energy Development Associates, Inc.: *See*—
Schwartz, Stephan; Soderstrom, Roland; and Bjareklint, Ake, 4,343,982, Cl. 219-118.000.

Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., to Zenith Radio Corporation. VIR Correction system. 4,344,084, Cl. 358-21.00V.

Engel, Robert W.; and Grube, John R. Playing piece for a board game. 4,343,476, Cl. 273-289.000.

Engelhard Corporation: *See*—
Carr, William F.; and Chen, James M., 4,343,776, Cl. 423-210.000.

Engineering Industries, Inc.: *See*—
Snyder, Robert G.; Clancy, John J.; and Brenneman, Richard S., 4,343,398, Cl. 206-219.000.

Engl, Rupert, to Zanders Feinpapiere AG. Additional device for rolling installations and procedures for rolling of pressure-sensitive materials. 4,343,440, Cl. 242-67.10R.

Enston, Richard G. Equipment for playing gramophone records and method of operation thereof. 4,344,168, Cl. 369-250.000.

Environmental Elements Corporation: *See*—
Dehart, Marv L.; Kloostra, M. Leon; and Straub, Harold E., 4,343,194, Cl. 73-861.650.

Epper, Wolfgang: *See*—
Wolstein, Friedrich; Hoffmann, Egbert; and Epper, Wolfgang, 4,343,780, Cl. 423-321.00R.

Ermilov, Nikolai P.: *See*—
Fadeev, Vladimir Y.; Fadeeve, Petr Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,343,368, Cl. 173-139.000.

Ernst, Walter; Giger, Hans; and Sigrist, Ernst, to Rieter Machine Works Ltd. Control arrangement for a textile machine. 4,343,144, Cl. 57-86.000.

Erwin, Dennis C.; Bowman, Joseph A.; and Marsalka, Joseph P., to Erwin, Dennis C. Convergence indicator for marine and flight vehicles. 4,344,065, Cl. 340-29.000.

Eschwey, Helmut; Wegemund, Bernd; and Gress, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Process for preparing solution polymerizates of acrylic and methacrylic esters and their use as flow-promoting agents in lacquers. 4,343,728, Cl. 523-456.000.

Esselte Pendaflex Corporation: *See*—
Koch, Ulf; and Nagel, Gerhard, 4,343,238, Cl. 101-85.000.

Etheredge, Benjamin F.; and Larson, Richard I., to General Electric Company. Container for nuclear fuel powders. 4,343,416, Cl. 222-1.000.

Ethyl Corporation: *See*—
Jackisch, Philip F., 4,343,956, Cl. 570-105.000.
Leonard, Erving A., Jr., 4,343,848, Cl. 428-156.000.

Etzel, James E.; and Anand, Praveen, to Purdue Research Foundation. Method of removing heavy metals from industrial waste streams. 4,343,706, Cl. 210-667.000.

Euteco Impianti S.p.A.: *See*—
Sartorio, Emanuele; Calcagno, Benedetto; Trombetti, Fulvio; and Ghirga, Marcello, 4,343,957, Cl. 585-449.000.

Euverard, Maynard R.; Heide, Henry A.; and Diver, James J., to Velten & Pulver, Inc. Continuous chain stacker/unstacker. 4,343,583, Cl. 414-75.000.

Evans, Roger C. Frictional resistance type exerciser and method of forming an exercising device. 4,343,466, Cl. 272-133.000.

Everly, Ralph T.: *See*—
Pucci, Donald G.; and Everly, Ralph T., 4,343,731, Cl. 523-427.000.

Exel Oy: *See*—
Aho, Yrjo, 4,343,491, Cl. 280-824.000.

Exergen Corporation: *See*—
Pompei, Francesco, 4,343,182, Cl. 374-31.000.

Exxon Research & Engineering Co.: *See*—
Abbott, David D., 4,343,555, Cl. 400-144.200.
Baker, Rees T. K.; and Chludzinski, James J., 4,343,658, Cl. 148-6.300.
Blair, David W.; Bartok, William; Longwell, John P.; and Sarofim, Adel F., 4,343,606, Cl. 431-10.000.
Lundberg, Robert D.; and Makowski, Henry S., 4,343,859, Cl. 428-364.000.
Melchior, Michael T.; Milliman, George E.; and Sartori, Guido, 4,343,716, Cl. 252-192.000.
Pelov, Iran P.; and Penman, Brian R., 4,343,326, Cl. 137-454.000.

Faber, Kurt H. A. E.: *See*—
Lagerholm, Kurt; and Faber, Kurt H. A. E., 4,343,576, Cl. 406-155.000.

Fabryka Samochodow Rolniczych "POLMO": *See*—
Dzida, Jan, 4,343,205, Cl. 74-711.000.

Facchini, Libero. Continuous movement capsule filling and closing machine, particularly for packaging powder or granulated loose products. 4,343,130, Cl. 53-272.000.

Facet Enterprises, Inc.: *See*—
Brown, Ralph V., 4,343,597, Cl. 417-417.000.

Fadeev, Vladimir Y.; Fadeeve, Petr Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P. Idle stroke braking unit for an impact device. 4,343,368, Cl. 173-139.000.

Fadeeve, Petr Y.: *See*—
Fadeev, Vladimir Y.; Fadeeve, Petr Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,343,368, Cl. 173-139.000.

Falk, David O.: *See*—
Norton, Charles J.; and Falk, David O., 4,343,363, Cl. 166-281.000.

Fallon, Merton R., to Draft Systems, Inc. Valve assembly and coupler therefor. 4,343,325, Cl. 137-212.000.

Farcy, Paul, to Commissariat a l'Energie Atomique. Particle detector and its production process. 4,343,994, Cl. 250-390.000.

Farina, Attilio: *See*—
Belisomi, Pietro; and Farina, Attilio, 4,344,090, Cl. 358-183.000.

Farley, Dewey R.; and Holden, Vernon K., to Western Electric Co., Inc. Precision trimming device. 4,343,088, Cl. 30-273.000.

Farrell, Robert H.: *See*—
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., 4,344,132, Cl. 364-200.000.

Farris, Paul R.: *See*—
Samuelson, Donald G.; and Farris, Paul R., 4,343,503, Cl. 296-84.00D.

Faryniarz, Joseph R.: *See*—
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., 4,343,910, Cl. 521-82.000.

Faucillon, Michel, to Allibert, S.A. Container crate that can be stacked or nested. 4,343,400, Cl. 206-507.000.

Faulstich, Marga; and Geiler, Volmar, to Schott Glaswerke. Optical glass having $n_D=1.63\pm(1.5\times10^{-2})$, $v_D=59.5\pm1.0$ with a high chemical stability and a low tendency to crystallization. 4,343,908, Cl. 501-78.000.

Fausten, Hans-Josef: *See*—
Weber, Hans-Leo; Reese, Eckart; Kaloff, Hans; and Fausten, Hans-Josef, 4,343,756, Cl. 264-216.000.

Fawzi, Mahdi B., to Procter & Gamble Company, The. Topical antimicrobial anti-inflammatory compositions. 4,343,798, Cl. 424-240.000.

Federal-Mogul Corporation: *See*—
Diehr, James R., II; and Lutton, Theodore A., 4,344,142, Cl. 364-473.000.

Fedotov, Vasilij: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Feichtinger, Gerhard: *See*—
Skatsche, Othmar; and Feichtinger, Gerhard, 4,343,271, Cl. 123-198.00E.

Fernstrom, George A.; Hebeler, Harold H.; Lin, Perry H.; and Moneymaker, Robert R., to Du Pont de Nemours, E. I., and Company. Self-crimping polyamide fibers. 4,343,860, Cl. 428-371.000.

Ferrari, Gino. Shoulder garment. 4,343,045, Cl. 2-92.000.

Fettel, Bruce E.; Morris, Paul E.; and Lichte, Leo J., to Shiley, Inc. Electro-chemically machined ring and strut structure for prosthetic heart valves. 4,343,049, Cl. 3-1.500.

Fetterolf Corporation: *See*—
Williams, James W., 3rd; and Fetterolf, John S., 4,343,332, Cl. 138-94.300.

Fetterolf, John S.: *See*—
Williams, James W., 3rd; and Fetterolf, John S., 4,343,332, Cl. 138-94.300.

Fiato, Rocco A.; and Pruett, Roy L., to Union Carbide Corporation. Rhodium-catalyzed oxidation process for producing carboxylic acids. 4,343,950, Cl. 562-531.000.

Fichtel and Sachs AG: *See*—
Leiter, Berndt; Keller, Josef; Schuller, Kurt; and Eisend, Ewald, 4,343,613, Cl. 474-82.000.

Fiddler, Maurice K. Portable sun shelter. 4,343,322, Cl. 135-5.00R.

Field, Jasper H.; and Hicks, Robert W., to International Paper Company. Hydrophobic oleophilic wood pulp. 4,343,680, Cl. 162-100.000.

Fifolt, Michael J.; and Foster, Arthur M., to Hooker Chemicals & Plastics Corp. Method for the preparation of fluoroaniline. 4,343,951, Cl. 564-414.000.

Figge, Irving E. Solar energy collector. 4,343,297, Cl. 126-449.000.

Fijitsu Limited: *See*—
Hataishi, Osamu; Momma, Yoshinobu; and Abe, Ryoji, 4,343,080, Cl. 29-571.000.

Findl, Eugene: *See*—
Conti, James C.; Findl, Eugene; and Wang, William, 4,344,035, Cl. 324-453.000.

Fink, Heiner: *See*—
Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.

Firestone Tire & Rubber Company, The: *See*—
Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., 4,343,918, Cl. 525-194.000.
McDonald, Peter, 4,343,342, Cl. 152-353.00R.

Fischer, Karlheinz: *See*—
Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; and Hefftler, Victor, 4,343,241, Cl. 101-231.000.
Fitzgibbons, Gary W., to UARCO Incorporated. Multiple ply adhesive business form. 4,343,492, Cl. 282-11.50R.
Flatte, James W. Hot air furnace. 4,343,290, Cl. 126-110.00E.
Fletcher, Edwin: *See*—
Murphy, Norman A.; Banner, John G.; Fletcher, Edwin; and Brown, Arthur, 4,343,116, Cl. 51-284.00R.
Fletcher, Ian M.: *See*—
Shackleton, Ronald; Woodruff, Christopher J.; and Fletcher, Ian M., 4,343,710, Cl. 210-797.000.
Fliedner, Leonard J., Jr., to Du Pont de Nemours, E. I., and Company. Antidepressant 2-amino-and-2-(substituted amino)-cis-hexahydrocarbazoles, compositions and use. 4,343,812, Cl. 424-274.000.
Floyd, Middleton B., Jr.: *See*—
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,343,949, Cl. 562-503.000.
FMC Corporation: *See*—
Larsen, Gregory J., 4,343,393, Cl. 198-533.000.
Lee, Fui-Tseng H., 4,343,914, Cl. 521-168.000.
Folsom, Jeffrey A. Portable bicycle repair rack. 4,343,404, Cl. 211-17.000.
Ford, John A.: *See*—
Birch, John R.; Cartwright, Terence; and Ford, John A., 4,343,904, Cl. 435-240.000.
Ford, Larry B.: *See*—
United States of America, National Aeronautics and Space Administration; Levin, Harry; and Ford, Larry B., 4,343,772, Cl. 422-200.000.
Ford Motor Company: *See*—
Cairns, Thomas M.; and Connors, David G., 4,343,523, Cl. 339-59.00M.
Fox, David H.; and Kostan, Charles C., 4,343,269, Cl. 123-146.50A.
Rajagopal, Ganesh; and Basrai, Habil S., 4,343,365, Cl. 172-4.000.
Schumacher, Berthold W., 4,344,126, Cl. 363-126.000.
Silver, David S., 4,343,409, Cl. 220-72.000.
Forest, Jean-Pierre; and Rabette, Jean Y. Permanent magnet for a bistable element and bistable element and data display units with at least one such element. 4,344,070, Cl. 340-815.080.
Forster, Siegfried: *See*—
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, 4,343,681, Cl. 376-293.000.
Fossum, Jerry G.: *See*—
Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chin-Tang, 4,343,962, Cl. 136-255.000.
Foster, Arthur M.: *See*—
Fifolt, Michael J.; and Foster, Arthur M., 4,343,951, Cl. 564-414.000.
Foster, Robert G.: *See*—
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,344,146, Cl. 364-552.000.
Foufounis, Jean. Automatic record changing apparatus. 4,344,162, Cl. 369-37.000.
Four Star Corporation: *See*—
Mareydt, Ray G., 4,343,419, Cl. 224-326.000.
Fox, David H.; and Kostan, Charles C., to Ford Motor Company. Ignition distributor rotor alignment and lock-down assembly. 4,343,269, Cl. 123-146.50A.
Fracker, Clarence E.: *See*—
Kim, Kwan Y.; and Fracker, Clarence E., 4,343,635, Cl. 65-1.000.
Framatome: *See*—
Bot, Jean-Yves, 4,343,497, Cl. 285-61.000.
Franchina, Antonino, to Wojcik, Karl, a part interest. Solar heating system. 4,343,296, Cl. 126-436.000.
Francis, Philip L., to Allied Corporation. Tilt compensating pendulum for seat mounted retractor. 4,343,444, Cl. 242-107.40A.
Francis, Roderick M., to Stackpole Components Company. Rotatable member rigidly mounted on an undersize shaft. 4,343,564, Cl. 403-362.000.
Francisoud, Jacques; and Ollivier, Christian, to Hospal Sodip SA. Method of producing bundles of hollow fibres potted at their ends. 4,343,668, Cl. 156-172.000.
Franklin Institute, The: *See*—
Chou, Richard C., 4,343,610, Cl. 434-58.000.
Franklin, Joseph E.: *See*—
Stanya, Andrew; Franklin, Joseph E.; and Dickinson, David W., 4,343,980, Cl. 219-110.000.
Franzen, Paul, to Maschinenfabrik Buckau R. Wolf AG. Multi-stage evaporating apparatus with integrated heat regenerating system. 4,343,678, Cl. 159-24.00A.
Frasier, Cline W. Digital air brake control system. 4,344,138, Cl. 364-426.000.
Frentzel, Herman E.: *See*—
Pavlow, Roger; and Frentzel, Herman E., 4,343,603, Cl. 425-114.000.
Friedrich Wilh. Schwing GmbH: *See*—
Schwing, Friedrich; and Schwing, Gerhard, 4,343,598, Cl. 417-517.000.
Frischmann, Peter G.: *See*—
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,343,347, Cl. 164-463.000.
Fritz Eichenauer, Firma: *See*—
Roller, Hanno; Ohnmacht, Helmut; Lieber, Ludwig; and Nauerth, Karl-Heinz, 4,343,988, Cl. 219-302.000.
Fritz Gegauf AG Bernina-Nachmaschinenfabrik: *See*—
Neuweiler, Armin; and Stillhard, Otmar, 4,343,256, Cl. 112-275.000.
Frodermann, Helmut: *See*—
Goldbeck, Heinz; and Frodermann, Helmut, 4,343,251, Cl. 112-221.000.
Fry, Thomas M.: *See*—
Borda, William F.; Fry, Thomas M.; and Rist, Charles A., Jr., 4,343,044, Cl. 2-67.000.
Frye Copysystems, Inc.: *See*—
Ehrhardt, Gerry H.; and Carlson, Gene D., 4,343,494, Cl. 282-27.500.
Frye, Robert C. Automatic process control device. 4,344,128, Cl. 364-183.000.
Fryer, Martin A.: *See*—
Das, Tapan K.; and Fryer, Martin A., 4,344,045, Cl. 331-1.00A.
Fuchs, Henry O., to United States of America, Treasury. Perforating cylinder. 4,343,215, Cl. 83-670.000.
Fuji Electric Co., Ltd.: *See*—
Watabe, Yasuo, 4,343,695, Cl. 209-212.000.
Fuji Photo Film Co., Ltd.: *See*—
Kawamura, Kouichi; Katsuyama, Harumi; and Sato, Hideo, 4,343,948, Cl. 549-13.000.
Minamizono, Junji; Kishimoto, Shinzo; and Yoneyama, Masakazu, 4,343,894, Cl. 430-528.000.
Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, 4,343,886, Cl. 430-237.000.
Sasaoka, Senzo, 4,343,873, Cl. 430-1.000.
Tsuji, Nobuo; Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,343,831, Cl. 427-44.000.
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,343,892, Cl. 430-398.000.
Fujimori, Yoshinori: *See*—
Yasuda, Nobuaki; Fujimori, Yoshinori; and Morita, Masaaki, 4,343,862, Cl. 428-421.000.
Fujimura, Toshiro: *See*—
Hanyu, Susumu; Takenoya, Hideaki; and Fujimura, Toshiro, 4,343,248, Cl. 112-158.00E.
Fujisawa, Kiyoji: *See*—
Tomita, Masao; Isaka, Takenobu; Fujisawa, Kiyoji; and Mino, Mineo, 4,344,087, Cl. 358-127.000.
Fujita, Kazuo: *See*—
Kobayashi, Hisao; and Fujita, Kazuo, 4,343,335, Cl. 140-71.00C.
Fujitsu Limited: *See*—
Ito, Takashi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,343,657, Cl. 148-1.500.
Fujiwara, Masashichi, to Yugen Kaisha Tokyo Kinzoku Seisakusho. Mechanical pencil. 4,343,558, Cl. 401-67.000.
Fujiwara, Toshihide; and Kaneko, Nobutaka, to Olympus Optical Co., Ltd. Sample detector. 4,343,991, Cl. 250-227.000.
Fujiyama, Masaaki: *See*—
Tsuji, Nobuo; Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,343,831, Cl. 427-44.000.
Fukuoka, Tatsuhiko; and Takenaka, Akira, to Taiho Kogyo Co., Ltd. Mechanical seals. 4,343,479, Cl. 277-96.200.
Funakoshi, Satoshi: *See*—
Uemura, Yahiro; Arimura, Hirofumi; Morise, Hiroshi; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,343,736, Cl. 260-112.00R.
Fung, Anthony K.; and Mintzlaff, Roger G., to Sperry Corporation. Apparatus to execute DMA transfer between computing devices using a block move instruction. 4,344,130, Cl. 364-200.000.
Furusawa, Tomotaka: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Furuta, Kenzi, to Olympus Optical Co., Ltd. Recorded-signal position detecting circuit. 4,344,095, Cl. 360-73.000.
Furuta, Osamu: *See*—
Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, 4,343,167, Cl. 72-8.000.
Futamase, Tsuyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,343,218, Cl. 84-1.210.
G.B.R., Ltd.: *See*—
Gunther, William H., Jr.; Golicz, Roman M.; and Hough, James W., 4,343,129, Cl. 53-206.000.
G. D. Searle & Co.: *See*—
Birch, John R.; Cartwright, Terence; and Ford, John A., 4,343,904, Cl. 435-240.000.
G. Siempelkamp GmbH & Co.: *See*—
Huydts, Eduard J. C., 4,343,236, Cl. 100-214.000.
Gabler, Rolf: *See*—
Abthoff, Jorg; Schuster, Hans-Dieter; Langer, Hans-Joachim; and Gabler, Rolf, 4,343,149, Cl. 60-311.000.
Gabriel, Fred C.; and Markle, David A., to Perkin-Elmer Corporation, The. Automatic wafer focusing and flattening system. 4,344,160, Cl. 367-96.000.
Gabriel, William L.: *See*—
Shelton, Lawrence S.; Boigk, Dieter G.; and Gabriel, William L., 4,343,579, Cl. 411-442.000.

Gaddis, Kenneth D.: *See—*
Rosen, Howard N.; Bodkin, Robert E.; and Gaddis, Kenneth D., 4,343,095, Cl. 34-16.500.
Galda, Edward J.: *See—*
Smith, Ronald B.; Galda, Edward J.; and Nakabayashi, Masahiro, 4,343,984, Cl. 219-146.300.
Gale, Charles. Outboard motor lock. 4,343,161, Cl. 70-14.000.
Gallo, Mario: *See—*
Wirth, Johannes; and Gallo, Mario, 4,343,196, Cl. 73-862.620.
Gallop, Paul M.: *See—*
Lian, Jane B.; Levy, Robert J.; and Gallop, Paul M., 4,343,734, Cl. 260-112.00B.
Galtek Corporation: *See—*
Zitzloff, Wayne D., 4,343,456, Cl. 251-255.000.
Gang Nail Systems, Inc.: *See—*
Moyer, Anthony M.; and Kelly, Robert H., 4,343,580, Cl. 411-468.000.
Ganster, Otto: *See—*
Schwindt, Jurgen; Ganster, Otto; and Meiners, Hans-Joachim, 4,343,339, Cl. 152-209.00R.
Gardiner, Robert F.: *See—*
Randolph, Byron B., Jr., 4,344,034, Cl. 324-329.000.
Gardner, Harry N.; and Petty, John P., to NCR Corporation. Random access memory imaging system. 4,344,091, Cl. 358-213.000.
Garner, Lloyd L.: *See—*
Baker, William, III; Garner, Lloyd L.; and Harris, Charles R., 4,343,371, Cl. 175-329.000.
Garnett, Frederick W.: *See—*
Kelly, James C.; and Garnett, Frederick W., 4,343,255, Cl. 112-262.300.
Gates, Paul D.: *See—*
Beach, Bradley L.; Gates, Paul D.; and Schum, Vaughn J., Jr., 4,343,653, Cl. 106-22.000.
Gates, Walter C., Jr., to Texaco Inc. High temperature solids gasification apparatus with slag reduction means. 4,343,625, Cl. 48-62.00R.
Gauhl, Helmgard: *See—*
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, 4,343,903, Cl. 435-197.000.
Gauthier, Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Re-heating cryogenic fluids. 4,343,156, Cl. 62-52.000.
Gavin, Basil F.; MacGill, Robert A.; and Thatcher, Raymond K., to United States of America, Energy. Penning discharge ion source with self-cleaning aperture. 4,344,019, Cl. 315-111.810.
Gavrilin, Vladimir: *See—*
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.
Gay, Charles F., to Atlantic Richfield Company. Manufacturing semiconductor wafer devices by simultaneous slicing and etching. 4,343,662, Cl. 148-187.000.
Gay, Walter A., to Olin Corporation. 5-Benzamido-3-trichloromethyl-1,2,4-thiadiazoles and their use as herbicides, fungicides and insecticides. 4,343,945, Cl. 548-128.000.
Geiler, Volmar: *See—*
Faulstich, Marga; and Geiler, Volmar, 4,343,908, Cl. 501-78.000.
Gema AG Apparatebau: *See—*
Lehmann, Ernst, 4,343,436, Cl. 239-696.000.
Gende, Joseph J. Force-receiving and applying device. 4,343,460, Cl. 267-151.000.
General Battery Corporation: *See—*
Nees, John; and Bailey, Dale A., 4,343,872, Cl. 429-245.000.
General Dynamics Corporation Electronics Division: *See—*
McArdle, Beryl L., 4,343,967, Cl. 178-22.190.
General Dynamics, Pomona Division: *See—*
Palmer, John P., 4,343,532, Cl. 350-96.190.
General Electric Company: *See—*
Bradley, Irving; and Hanson, James M., 4,344,120, Cl. 362-349.000.
Castonguay, Roger N.; Jencks, Charles L.; and Clickner, Peter P., 4,344,054, Cl. 335-169.000.
Collins, Edward J.; Suster, Mary E.; and Weber, Vincent H., 4,344,108, Cl. 362-13.000.
Etheredge, Benjamin F.; and Larson, Richard I., 4,343,416, Cl. 222-1.000.
Graham, Donald E., 4,343,865, Cl. 428-552.000.
Jones, Dwight V., 4,344,122, Cl. 363-23.000.
Kure-Jensen, Jens; and Coppola, Patrick S., 4,343,454, Cl. 251-26.000.
Leslie, Samuel A., 4,344,175, Cl. 375-5.000.
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,343,347, Cl. 164-463.000.
Martin, Robert L., 4,344,116, Cl. 362-226.000.
Pucci, Donald G.; and Everly, Ralph T., 4,343,731, Cl. 523-427.000.
Reynolds, Kenneth R., 4,344,009, Cl. 310-242.000.
Suster, Mary E.; and Weber, Vincent H., 4,344,109, Cl. 362-13.000.
General Foam Plastics Corp.: *See—*
Chase, Ascher, 4,343,842, Cl. 428-8.000.
General Foods Corporation: *See—*
Wood, Robert W.; Hoefler, Andrew C.; and Brody, Deborah S., 4,343,819, Cl. 426-96.000.
General Kap (P.R.) Corporation: *See—*
Csaszar, Ernest J., 4,343,408, Cl. 215-258.000.
Gentry, Dorothy I.; and Ludwig, Walter F., to Gentry, Dorothy I. Printer for imprinting zip codes and the like. 4,343,243, Cl. 101-96.000.
George, Alan L., to Dexion-Comino International Limited. Roller conveyors with clutch drives. 4,343,396, Cl. 198-781.000.
Georgia-Pacific Corporation: *See—*
Greve, Dale R.; and Lehnert, Charles W., 4,343,127, Cl. 52-785.000.
Georgia Tech Research Institute: *See—*
Elston, Lewis W.; and Hurst, David R., 4,343,765, Cl. 422-3.000.
Gerber, Bernard V.: *See—*
Carlon, Hugh R.; and Gerber, Bernard V., 4,343,177, Cl. 73-23.000.
Gerber Scientific Instrument Company, The: *See—*
Berdat, Henry F., 4,343,540, Cl. 354-4.000.
Gerhardinger, Wilhelm: *See—*
Heuer, Wolfgang; and Gerhardinger, Wilhelm, 4,343,507, Cl. 296-208.000.
Gesellschaft fur Biotechnologische Forschung mbH (GBF): *See—*
Menge, Ulrich; Morr, Michael; Kula, Maria-Regina; and Anastassiadis, Kristin, 4,343,735, Cl. 260-112.00R.
Gesellschaft fur Strahlen- und Umweltforschung mbH Munchen: *See—*
Eisert, Wolfgang G., 4,343,551, Cl. 356-335.000.
Gewartowski, Steve A., to UOP Inc. Hydrocarbon isomerization process. 4,343,958, Cl. 585-477.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Heitkamp, Herbert; and Dehmel, Werner, 4,343,512, Cl. 299-1.000.
Ghirga, Marcello: *See—*
Sartorio, Emanuele; Calcagno, Benedetto; Trombetti, Fulvio; and Ghirga, Marcello, 4,343,957, Cl. 585-449.000.
Giacometti, Antonio, to Siac Industria Accessori Cavaria S.p.A. Lock with a resilient element acting both as the ejector and as the slider return spring, for bags, brief-cases, shoulder bags and the like. 4,343,162, Cl. 70-67.000.
Gibson, Nelson S., III: *See—*
Major, Jeffrey T.; Gibson, Nelson S., III; and Young, Jerry L., 4,344,008, Cl. 310-242.000.
Giger, Hans: *See—*
Ernst, Walter; Giger, Hans; and Sigrist, Ernst, 4,343,144, Cl. 57-86.000.
Gill, Harold H.: *See—*
Long, Merton W.; McLean, James D.; Armentrout, David N.; and Gill, Harold H., 4,343,767, Cl. 422-70.000.
Ginsburgh, Irwin; and Hall, Robert D., to Standard Oil Company (Indiana). Method for controlling underground combustion. 4,343,360, Cl. 166-251.000.
Ginsburgh, Irwin; and Hall, Robert D., to Standard Oil Company (Indiana). Method for controlling underground combustion. 4,343,361, Cl. 166-251.000.
Giovannetti, Fiorello. Clamping device for releasably snap joining two pieces or panels. 4,343,566, Cl. 403-405.000.
Girard, Paul, to Compagnie Internationale pour l' Informatique CII-Honeywell Bull (Societe Anonyme). Device for reducing the time of access to information contained in a memory of an information processing system. 4,344,131, Cl. 364-200.000.
Girardeau, Jean-Pierre: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.
Gitlitz, Melvin H., to M&T Chemicals Inc. Method for combating fungi and mites using certain triorganotin compounds. 4,343,815, Cl. 424-288.000.
Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, to Bayer Aktiengesellschaft. Process for the preparation of cationic dyestuffs. 4,343,936, Cl. 542-417.000.
Glenn, Joseph G. Liquid tower carburetor. 4,343,282, Cl. 123-523.000.
Glinecke, Hermann R., to Globe Fire Equipment Company. Sprinkler head construction. 4,343,364, Cl. 169-38.000.
Globe Fire Equipment Company: *See—*
Glinecke, Hermann R., 4,343,364, Cl. 169-38.000.
Gloggler, Martin. Side wall structure for an animal stall. 4,343,263, Cl. 119-27.000.
Glotzbach, Helmut: *See—*
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Goby, Anne M.: *See—*
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Goby, Genevieve: *See—*
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Goby, Hubert L. J.: *See—*
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Goby, Therese M.: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.
Godbersen, Gary L., to Gomaco, Inc. Method and power transmission system for operating a road planar machine. 4,343,513, Cl. 299-1.000.

Goettert, Edward J.: *See—*
Aasen, Steven M.; Dalzell, Rex J.; Goettert, Edward J.; Holmes, Brian N.; and Tiers, George V. D., 4,343,891, Cl. 430-337.000.
Goh, Atsushi: *See—*
Konno, Kazuhiko; Goh, Atsushi; and Uchimura, Kunio, 4,343,737, Cl. 260-239.0BF.
Gohler, Peter: *See—*
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Goldbeck, Heinz; and Frodermann, Helmut, to Durkoppwerke GmbH. Sewing machine. 4,343,251, Cl. 112-221.000.
Goldstein, Richard: *See—*
Schornack, Louis W.; and Goldstein, Richard, 4,344,000, Cl. 307-132.00E.
Goletto, Jean: *See—*
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Golicz, Roman M.: *See—*
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Goloff, Alexander; and Grim, George B., to Caterpillar Tractor Co. Low stress heat exchanger and method of making the same. 4,343,355, Cl. 165-166.000.
Gomaco, Inc.: *See—*
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Goodall, Brian L.; and van der Sar, Jacob C., to Shell Oil Company. Olefin polymerization catalyst components and polymerization process. 4,343,721, Cl. 252-429.00B.
Goodyear Aerospace Corporation: *See—*
Uram, John, Jr., 4,343,857, Cl. 428-336.000.
Uram, John R., Jr., 4,343,928, Cl. 528-108.000.
Goodyear Tire & Rubber Company, The: *See—*
Reuter, Rene F., 4,343,343, Cl. 152-359.000.
Goralnik, Charles D. Cut glass window pane. 4,343,758, Cl. 264-254.000.
Gosudarstwennyi Nautschno-Issledowatelskij i Projektnyi Institut Astonoj Promyschlennosti i Produktow Organitscheskogo Sintesa: *See—*
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.
Goswami, Jagadish C.; Grimes, Whiteford D.; and Rehder, Richard A., to Stauffer Chemical Company. Polymeric marking film. 4,343,856, Cl. 428-332.000.
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, to Institut National de la Recherche Agronomique. Animal vaccine, against colibacillosis, preparation and use. 4,343,792, Cl. 424-92.000.
Gould, Inc.: *See—*
Knapp, Edward J., Jr.; and Perreault, Richard J., 4,344,058, Cl. 337-148.000.
Welk, Steven, 4,343,242, Cl. 102-201.000.
Gradco/Dendoki, Inc.: *See—*
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Graefe, Gernot. Apparatus for preparing high grade fertilizer. 4,343,907, Cl. 435-313.000.
Graham, Donald E., to General Electric Company. Hard metal body and method of making same. 4,343,865, Cl. 428-552.000.
Graham, Scot M., to International Business Machines Corporation. Magnetic tape reel clamp with extended center pole. 4,343,441, Cl. 242-68.100.
Grancher, Pierre: *See—*
Batteux, Jacques; Blanc, Claude; and Grancher, Pierre, 4,343,778, Cl. 423-228.000.
Grant, Anthony, to Spikeville Limited. Liquid de-gassing unit. 4,343,630, Cl. 55-170.000.
Green Cross Corporation, The: *See—*
Uemura, Yahiro; Arimura, Hirofumi; Morise, Hiroshi; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,343,736, Cl. 260-112.00R.
Green, Walter L.: *See—*
Douglass, Spivey S.; and Green, Walter L., 4,343,206, Cl. 82-2.00R.
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Grell, Wolfgang: *See—*
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Greve, Dale R.; and Lehnert, Charles W., to Georgia-Pacific Corporation. Fire door. 4,343,127, Cl. 52-785.000.
Grey-Mac Fitness, Ltd.: *See—*
O'Leary, John B., 4,343,315, Cl. 128-689.000.
Griffin, Ernest E.: *See—*
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Grifhorst, Norman J. Ball rolling game. 4,343,470, Cl. 273-123.00R.
Grim, George B.: *See—*
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Grimes, Arthur S.; and Hunter, Robert S. Plant having feed water heating means for nuclear units during plant start up and method of operating the same. 4,343,682, Cl. 376-214.000.
Grimes, Whiteford D.: *See—*
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Griss, Gerhart: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.
Grobe, Friedrich, to Siemens Aktiengesellschaft. Surface wave component. 4,344,049, Cl. 333-154.000.
Groen Division/Dover Corporation: *See—*
Kells, Edward L.; and Narowski, Robert L., 4,343,292, Cl. 126-378.000.
Groen, Marinus B., to AKZO NV. 2,3-Bis-hydroxybenzyl-derivatives. 4,343,796, Cl. 424-184.000.
Gross, Robert D. Surgical ground detector. 4,343,308, Cl. 128-303.130.
Grounds, Thomas M., to C & T Line Construction, Inc. Wiring apparatus. 4,343,443, Cl. 242-86.700.
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Gruber, Wolfgang: *See—*
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, 4,343,903, Cl. 435-197.000.
Gruskin, Kenneth A. Simulated camera viewer for video productions. 4,343,534, Cl. 350-319.000.
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Guarracini, Joseph: *See—*
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Guenther, Torbett B., to C. D. Sparling Company. Toilet support. 4,343,052, Cl. 4-254.000.
Guillaume, Claude A.: *See—*
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Gulf Research & Development Company: *See—*
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Gullo, Vincent P.; Lam, Tony Y. K.; and Monaghan, Richard L., to Merck & Co., Inc. Hypocholesterolemic fermentation products. 4,343,814, Cl. 424-279.000.
Gunderson, Dennis E., to United States of America, Agriculture. Method and apparatus for edgewise compression testing of flat sheets. 4,343,189, Cl. 73-822.000.
Gunther, William H., Jr.; Golicz, Roman M.; and Hough, James W., to G.B.R., Ltd. Mechanism of making an envelope. 4,343,129, Cl. 53-206.000.
Guntherodt, Hans-Joachim; Pfluger, Peter; and Kunzi, Hans-Ulrich, to Hoffmann-La Roche Inc. Electro-optical cell. 4,343,537, Cl. 350-357.000.
Guptill, Robert H.; and Penrod, Raymond G., to Guptill, Robert H. Tool for disassembly of automotive universal joints. 4,343,075, Cl. 29-251.000.
Gurries Company, The: *See—*
Gurries, Raymond A., 4,343,514, Cl. 299-37.000.
Gurries, Raymond A., to Gurries Company, The. Resonant tool driving system with gap. 4,343,514, Cl. 299-37.000.
H-C Industries, Inc.: *See—*
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,343,754, Cl. 264-154.000.
Habets, Antonius H. M.; and Krijnen, Henricus C. M., to Oce-Nederland B.V. Corona device. 4,344,104, Cl. 361-230.000.
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Hahn, Kurt L.; Padgett, Howard J.; and Rao, Manjeshwar S., to American Can Company. Beading die for can bodies. 4,343,174, Cl. 72-349.000.
Haines, Kenneth A., to Eidetic Images, Inc. Method of constructing a hologram on a photoresist detector. 4,343,874, Cl. 430-1.000.
Haley, Howard E.: *See—*
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Hall, Robert D.: *See—*
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Ginsburgh, Irwin; and Hall, Robert D., 4,343,361, Cl. 166-251.000.

Hallberg, Frederick C.; and Benedicto, John S. J., to United States of America, National Aeronautics and Space Administration. Crystal cleaving machine. 4,343,287, Cl. 125-23.00R.

Hallerback, Stig L., to Aktiebolaget SKF. Fastening sleeve. 4,343,565, Cl. 403-370.000.

Hallstein, Robert R., to United States of America, Navy. Pressure responsive, manually opening valve. 4,343,327, Cl. 137-464.000.

Hamed, Gary R.: *See*—
Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., 4,343,918, Cl. 525-194.000.

Hamilton, Thomas R. Golf putter with alignment system. 4,343,472, Cl. 273-164.000.

Hamkins, Clark J.: *See*—
Schaefer, David V.; and Hamkins, Clark J., 4,343,386, Cl. 192-54.000.

Hammer, Jacob M.: *See*—
Phillips, William; Neil, Clyde C.; and Hammer, Jacob M., 4,343,890, Cl. 430-321.000.

Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Herbicides. 4,343,648, Cl. 71-91.000.

Hanazono, Yoko. Body washing implement for bathing. 4,343,061, Cl. 15-244.00B.

Hanna, Terry J.: *See*—
Shofner, Frederick M.; Greene, Neil E.; and Hanna, Terry J., 4,343,637, Cl. 65-2.000.

Hannan, William F., III; and Czuszak, Charles C., to Elliott Turbomachinery Co., Inc. Turbomachine seal system. 4,343,591, Cl. 415-169.00R.

Hanson, James M.: *See*—
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Hanyu, Susumu; Takenoya, Hideaki; and Fujimura, Toshiro, to Janome Sewing Machine Co. Ltd. Pattern selecting system of an electronic sewing machine. 4,343,248, Cl. 112-158.00E.

Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, to Janome Sewing Machine Co. Ltd. Lock stitching and over-lock stitching sewing machine. 4,343,250, Cl. 112-168.000.

Hanyu, Susumu, to Janome Sewing Machine Co. Ltd. Free arm sewing machine. 4,343,252, Cl. 112-258.000.

Hara, Akio: *See*—
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Hara, Hiroshi: *See*—
Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, 4,343,886, Cl. 430-237.000.

Hara, Kazumasa: *See*—
Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, 4,343,250, Cl. 112-168.000.

Haraikawa, Tetsuo; and Tamura, Koichi, to Tokico Ltd. Disc brake friction pad retaining means and guide seal. 4,343,381, Cl. 188-73.450.

Harbridge, John B., to Beecham Group Limited. Benzylamino clavulanates and their production. 4,343,806, Cl. 424-272.000.

Harford, Jack R., to RCA Corporation. Variable load impedance gain-controlled amplifier. 4,344,043, Cl. 330-254.000.

Harford, Jack R., to RCA Corporation. Gain-controlled amplifier utilizing variable emitter degeneration and collector load impedance. 4,344,044, Cl. 330-254.000.

Harkness, Samuel D., to United States of America, Energy. Heat transport system. 4,343,761, Cl. 376-148.000.

Harmon, Joseph W.; and Atherton, James H., to RCA Corporation. Low power voltage multiplier circuit. 4,344,003, Cl. 307-296.00A.

Harper, Harold L., Jr. Worn brush indicator. 4,344,072, Cl. 340-648.000.

Harrington, Patrick C.; Levin, Milton I.; Shope, Walter H.; and Wilson, Max K., to Western Electric Company, Inc. Telephone connecting device. 4,343,527, Cl. 339-125.00R.

Harris, Charles R.: *See*—
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Harris Corporation: *See*—
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Harris, David J., to United States of America, Air Force. Composite blade for turbofan engine fan. 4,343,593, Cl. 416-193.00A.

Harris, Robert F.: *See*—
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Hart, Cullen P., to Caterpillar Tractor Co. Tire cooling system and method. 4,343,338, Cl. 152-153.000.

Hartford, Thomas W.: *See*—
McDaniel, George H.; Hartford, Thomas W.; Hungerford, William R.; Perzanowski, William J.; and Benaglio, Reno V., 4,344,127, Cl. 364-130.000.

Haruch, James, to Spraying Systems Company. Air efficient atomizing spray nozzle. 4,343,434, Cl. 239-390.000.

Harwood, Mervyn G., to U.S. Philips Corporation. Method of making humidity sensors. 4,343,688, Cl. 204-195.00W.

Hasegawa, Tsunao: *See*—
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Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, to Aichi Steel Works Ltd. Roller-dies-processing method and apparatus. 4,343,167, Cl. 72-8.000.

Hashiguchi, Makoto: *See*—
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Hashimoto, Mitsuru, to Ricoh Company, Ltd. Electrophotographic bisazo photoconductor. 4,343,882, Cl. 430-58.000.

Hasuike, Fumio: *See*—
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Hataishi, Osamu; Momma, Yoshinobu; and Abe, Ryoji, to Fijitsu Limited. Method of producing a semiconductor device. 4,343,080, Cl. 29-571.000.

Hattori, Kiyoshi, to Taisei Kogyo Kabushiki Kaisha. Refrigerator. 4,343,157, Cl. 62-160.000.

Hattori, Shinichiro, to Olympus Optical Co., Ltd. Data transmission system for an endoscope apparatus. 4,343,300, Cl. 128-6.000.

Hattori, Tadashi: *See*—
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Haulotte, Georges, to Creusot-Loire. Platform lift mechanism. 4,343,379, Cl. 187-18.000.

Hawke, Ronald S.; Scudder, Jonathan K.; and Aaland, Kristian, to United States of America, Energy. Multiple stage railgun. 4,343,223, Cl. 89-8.000.

Hay, William D.: *See*—
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Hayashi, Tadashi; and Nomura, Setsuo, to Hitachi, Ltd. X-ray tubes. 4,344,011, Cl. 313-57.000.

Haykin, Simon: *See*—
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Hebeler, Harold H.: *See*—
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Hebert, John R., Jr.; Silveira, Joseph H.; and Herzig, Robert W., to Sprague Electric Company. Method for controlling etching of electrolytic capacitor foil. 4,343,686, Cl. 204-129.200.

Heckler, Jay W., to Upjohn Company, The. Use of derivatives of 6α-methylprednisolone for the prevention or reduction of adriamycin-induced cardiotoxicity. 4,343,799, Cl. 424-243.000.

Hefftler, Victor: *See*—
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Hegger, Josef, to Claas OHG. Sugar-cane harvester. 4,343,140, Cl. 56-17.100.

Heiart, Robert B.; and O'Neil, James W., to Du Pont de Nemours, E. I., and Company. Dot-enlargement process for photopolymer litho masks. 4,343,876, Cl. 430-5.000.

Heide, Henry A.: *See*—
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Heil, Jurgen: *See*—
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Heinz, Lothar, to Siemens Medical Laboratories, Inc. Collimator assembly for an electron accelerator. 4,343,997, Cl. 250-505.100.

Heitkamp, Herbert; and Dehmel, Werner, to Gewerkschaft Eisenhutte Westfalia. Cutter drive regulation apparatus for a tunnelling machine. 4,343,512, Cl. 299-1.000.

Heling, Dennis H.; Lyszczarz, Walter; and Sposite, Frank J., to Lear Siegler, Inc. Latch mechanism for vehicle seat convertible to bed. 4,343,508, Cl. 297-114.000.

Heller, Adam; Lewerenz, Hans J.; and Miller, Barry, to Bell Telephone Laboratories, Incorporated. Semiconductor liquid junction photocell having a P-type photoactive electrode. 4,343,870, Cl. 429-111.000.

Heller, Adam; and Vadimsky, Richard G., to Bell Telephone Laboratories, Incorporated. Sensitizing bath for silver containing resist. 4,343,887, Cl. 430-272.000.

Heller, Roger A.: *See*—
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Helten, Manfred: *See*—
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Henderson, Timothy M.: *See*—
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Henkel Kommanditgesellschaft auf Aktien: *See*—
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Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
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Henkelmann, Gary L., to W. R. Grace & Co. Catalytic solvent vapor incinerating apparatus. 4,343,769, Cl. 422-109.000.

Henthorn, Timothy K.: *See*—
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Herbert, William J.: *See*—
Thayer, Richard S.; Herbert, William J.; and Klein, Gary S., 4,343,844, Cl. 428-36.000.

Hercules Incorporated: *See*—
Maslanka, William W.; and Spence, Gavin G., 4,343,729, Cl. 524-529.000.

Herden, Werner; and Neu, Hans, to Robert Bosch GmbH. Apparatus for furnishing a signal indicative of the load of an internal combustion engine. 4,343,180, Cl. 73-115.000.

Herzig, Robert W.: *See*—
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Heuer, Wolfgang; and Gerhardinger, Wilhelm, to Duewag Aktiengesellschaft. Mounting arrangement for a ventilation or heating system for vehicles. 4,343,507, Cl. 296-208.000.

Hi-Stat Manufacturing Company, Inc.: *See*—
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Hibino, Hidehiko: *See*—
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Hickmann, Horst R. Veterinary inhalation therapy apparatus. 4,343,304, Cl. 128-200.140.

Hicks, Robert W.: *See*—
Field, Jasper H.; and Hicks, Robert W., 4,343,680, Cl. 162-100.000.

Higgs, Robert H.; and Jones, John M., to Coal Industry (Patents) Limited. Device for rotating a body. 4,343,515, Cl. 299-75.000.

Hildebrand, Donald L.; and Prescott, Ernest F., to Elgin Sweeper Company. Hydraulic control system for a street sweeper. 4,343,060, Cl. 15-84.000.

Hilfiker Pipe Co.: *See*—
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Hilfiker, William K., to Hilfiker Pipe Co. Apparatus and method for anchoring the rigid face of a retaining structure for an earthen formation. 4,343,572, Cl. 405-284.000.

Hiraiwa, Nobuo: *See*—
Numasawa, Akio; Kizu, Ryouhei; Naka, Mitsuru; and Hiraiwa, Nobuo, 4,343,330, Cl. 137-625.480.

Hirata, Tadashi; Saito, Hiromitsu; and Nakamizo, Nobuhiro, to Kyowa Hakko Kogyo Co., Ltd. Cephalosporin analogs. 4,343,943, Cl. 546-183.000.

Hire, Charles J.; and Deppe, Gary L., to Hi-Stat Manufacturing Company, Inc. Multi-circuit electrical switch. 4,343,974, Cl. 200-243.000.

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Otsuka, Katsuyuki; Todokoro, Akio; Takahashi, Yoshiharu; Hiroe, Kazuhito; and Ishikawa, Yoshinobu, 4,343,426, Cl. 228-170.000.

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Asada, Kazuyoshi; Yasuda, Hajime; and Ohnuma, Kunihiko, 4,344,129, Cl. 364-200.000.
Hayashi, Tadashi; and Nomura, Setsuo, 4,344,011, Cl. 313-57.000.
Inada, Akio, 4,344,018, Cl. 315-47.000.
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Mitani, Masao; Tsunoda, Toyoji; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; and Yabushita, Akira, 4,343,986, Cl. 219-216.000.
Murakami, Kanji; Wajima, Motoyo; and Ishikawa, Tetsuo, 4,343,659, Cl. 148-6.300.
Nakagawa, Yasuo; Makihira, Hiroshi; Oshida, Yoshitada; and Akiyama, Nobuyuki, 4,343,553, Cl. 356-376.000.
Nishida, Hideki; Yamada, Hirozi; Umezaki, Hiroshi; Sugita, Yutaka; and Tsumita, Norikazu, 4,344,153, Cl. 365-39.000.
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,344,025, Cl. 318-729.000.
Tochikubo, Hiroo; and Kanai, Akira, 4,343,829, Cl. 427-35.000.
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Sasaki, Yoshitaka, 4,343,234, Cl. 100-158.00R.

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Shaffer, Robert C., 4,343,922, Cl. 525-389.000.

Hobson Bros., Inc.: *See*—
Hobson, Ervin J.; and Leitmann, William J., 4,343,526, Cl. 339-90.00R.

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Hodosh, Milton. Compound and method for preserving dental pulp. 4,343,608, Cl. 433-224.000.

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Benninger, Siegfried; Reining, Karl; and Krasel, Werner, 4,343,621, Cl. 23-293.00R.
Muffler, Herbert; Siegemund, Gunter; and Schwertfeger, Werner, 4,343,742, Cl. 549-380.000.
Schulze, Christian; and Plein, Hans-Joachim, 4,343,334, Cl. 139-420.00R.
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Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,343,800, Cl. 424-248.500.

Hoefler, Andrew C.: *See*—
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Hoene, David J., to Du Pont de Nemours, E. I., and Company. Formaldehyde process. 4,343,954, Cl. 568-473.000.

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Kick, Helmut; Kistenmacher, Hans; Schramm, Walter; Hoerner, Berndt; and Lang, Udo, 4,343,633, Cl. 62-23.000.

Hofbauer, Peter, to Volkswagenwerk Aktiengesellschaft. Device for automatic actuation of an automobile clutch. 4,343,387, Cl. 192-0.076.

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Cabot, Richard C.; and Hofer, Bruce E., 4,344,029, Cl. 324-57.00R.

Hoffmann, Egbert: *See*—
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Hoffmann-La Roche Inc.: *See*—
Guntherodt, Hans-Joachim; Pfluger, Peter; and Kunzi, Hans-Ulrich, 4,343,537, Cl. 350-357.000.
Townsend, John M.; and Valentine, Donald, Jr., 4,343,741, Cl. 548-412.000.

Hoffmann, Roland; and Panofski, Ernst, to Patent-Treuhand-Gesellschaft fur elektrische Gluhampen mbH. Fluorescent lamp with silicon dioxide coating. 4,344,016, Cl. 313-489.000.

Hofmann, Rudolf, to Bauer Kaba AG. Cylinder lock with associated flat key. 4,343,166, Cl. 70-358.000.

Hoiseth, Merlin G.: *See*—
Easley, Othel D., Jr.; and Hoiseth, Merlin G., 4,343,586, Cl. 414-414.000.

Hoki, Tsuneo; and Matsuki, Yutaka, to Asahi-Dow Limited. Foamed thermoplastic resin articles and foamable compositions and foaming processes for the preparation thereof. 4,343,911, Cl. 521-88.000.

Holcroft & Co.: *See*—
Lippert, Charles; Nowak, Leonard G.; and Shefsiek, Paul K., 4,343,395, Cl. 198-781.000.

Holden, Vernon K.: *See*—
Farley, Dewey R.; and Holden, Vernon K., 4,343,088, Cl. 30-273.000.

Holec, N.V.: *See*—
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Holiday, Paul R.; and Patterson, Robert J., II, to United Technologies Corporation. Method for producing metal powder. 4,343,750, Cl. 264-8.000.

Holland Company: *See*—
Murphy, Richard F., 4,343,407, Cl. 213-51.000.

Hollandsworth, Larry A., to Caterpillar Tractor Co. Muffler mounting structure. 4,343,374, Cl. 180-69.00R.

Hollis, Jack L., to Carlisle Tire & Rubber Company, Div. of Carlisle Corp. Method for making an indefinite length composite sheet of very large predetermined width from indefinite length sheet stock of relatively small width. 4,343,667, Cl. 156-157.000.

Holly, James A. Method and apparatus for unidirectional formation of a plug-formed patty with cleanout feature. 4,343,068, Cl. 17-45.000.

Holmes, Brian N.: *See*—
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Holmsen, Theodore W.: *See*—
Dunbar, Joseph; Holmsen, Theodore W.; and Senkbeil, Herman O., 4,343,647, Cl. 71-76.000.

Holmstrom, Sven N. H., to Tetra Pak International AB. Parallelepipedic packing container provided with an opening arrangement. 4,343,402, Cl. 206-622.000.

Holtkamp, Reinhold. Capillary disc and support therefor. 4,343,109, Cl. 47-81.000.

Holtz, Frederick C., Jr.: *See*—
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Holtzman, Barry L.; Mercier, George E.; Thiel, Peter H.; and Santilli, James N., to Westinghouse Electric Corp. Power capacitor structure and method of assembly. 4,344,105, Cl. 361-328.000.

Hon, David T., to Hughes Aircraft Company. Self-regenerative laser oscillator-amplifier. 4,344,042, Cl. 330-4.300.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
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Kawaguchi, Takeshi, 4,343,380, Cl. 188-18.00A.
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Honeywell Inc.: *See*—
Ballinger, Dale O., 4,344,159, Cl. 367-87.000.

Honeywell Information Systems Inc.: *See*—
Leger, Laurie J., 4,343,530, Cl. 339-220.00R.

Hoofe, William J., III. Interlocking panels. 4,343,126, Cl. 52-313.000.

Hooker Chemicals & Plastics Corp.: *See*—
Fifolt, Michael J.; and Foster, Arthur M., 4,343,951, Cl. 564-414.000.

Hooper, David C.; Johnson, George A.; and Peter, Donald, to Lever Brothers Company. Disposable article. 4,343,783, Cl. 424-28.000.

Horiniahi, Katsumi, to West Electric Co., Ltd. Electronic flash device capable of automatic flash duration adjustment. 4,344,020, Cl. 315-241.00P.

Hoshi, Norio; and Tagami, Tomoyuki, to Honda Giken Kogyo Kabushiki Kaisha. Operating pedal for power transmission in motorcycle. 4,343,204, Cl. 74-594.700.

Hoskin, William J.: *See*—
Ross, Donald N.; Bodnar, Endre; and Hoskin, William J., 4,343,048, Cl. 3-1.500.

Hospal Sodip SA: *See*—
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Hough, James W.: *See*—
Gunther, William H., Jr.; Golicz, Roman M.; and Hough, James W., 4,343,129, Cl. 53-206.000.

Houston, Robert D., to Xerox Corporation. Integrated waveguide drop sensor array and method for ink jet printing system. 4,344,078, Cl. 346-75.000.

Huang, C. Peter: *See—*
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Huber, William D., to Sperry Corporation. Delay and optimum amplitude equalizers for a readback circuit. 4,344,093, Cl. 360-45.000.
Hubner, Horst; Lersmacher, Bernhard; Lydtin, Hans; and Wilden, Rolf. Anode disc for a rotary-anode X-ray tube. 4,344,012, Cl. 313-60.000.
Hudgins, Jerry L., to United States of America, National Aeronautics and Space Administration. Apparatus for sequentially transporting containers. 4,343,584, Cl. 414-222.000.
Hufton, Peter F., to Northern Engineering Industries Limited. Apparatus for expanding tubular members. 4,343,170, Cl. 72-61.000.
Hughes Aircraft Company: *See—*
Bleha, William P., Jr., 4,343,535, Cl. 350-342.000.
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Kinzer, Donald L., 4,343,372, Cl. 175-374.000.
Hullen, Helmut; and Knoth, Werner-Dieter, to Veba-Glas AG. Apparatus for making hollow glassware and method of operating the apparatus. 4,343,644, Cl. 65-241.000.
Hung, Pai-Yen. System for removing sludge from dam reservoir. 4,343,696, Cl. 210-85.000.
Hung, William M.: *See—*
Schmidt, Paul J.; and Hung, William M., 4,343,493, Cl. 282-27.500.
Hungerford, William R.: *See—*
McDaniel, George H.; Hartford, Thomas W.; Hungerford, William R.; Perzanowski, William J.; and Benaglio, Reno V., 4,344,127, Cl. 364-130.000.
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Hunter, Walter D., to Texaco Development Corp. Process for secondary recovery. 4,343,712, Cl. 252-8.55D.
Hunziker, John, Jr., to United States of America, Health and Human Services. Laboratory rat feeder. 4,343,262, Cl. 119-18.000.
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, to Boehringer Ingelheim GmbH. 2[3-(4-Chlorophenyl)-1,2-dimethyl-1H-indol-5-yloxy]-2-methyl propanoic acid and hyperlipidemic or atheosclerotic use thereof. 4,343,811, Cl. 424-274.000.
Hurst, David R.: *See—*
Elston, Lewis W.; and Hurst, David R., 4,343,765, Cl. 422-3.000.
Huydts, Eduard J. C., to G. Siempelkamp GmbH & Co. Prestressed press frame. 4,343,236, Cl. 100-214.000.
Iannarone, Ronald C., to Singer Company, The. Lid and hinge arrangement for a convertible sewing machine. 4,343,253, Cl. 112-260.000.
Igarashi, Yoshiaki: *See—*
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IHC Holland N.V.: *See—*
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Ilich, Daniel F. Support frame and method of making and packaging the same. 4,343,135, Cl. 53-444.000.
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Imperial Chemical Industries Limited: *See—*
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Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, 4,344,098, Cl. 360-96.600.
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Inoue-Japax Research Incorporated: *See—*
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Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Ultrasonic machining method and apparatus. 4,343,111, Cl. 51-59.0SS.
Institut National de la Recherche Agronomique: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.
Institutul de Cercetari si Proiectari Pentru Petrol si Gaze: *See—*
Turta, Alexandru; and Cuciuat, Marius, 4,343,362, Cl. 166-267.000.
Instrumentation Laboratory: *See—*
Legg, Kenneth D., 4,343,705, Cl. 210-637.000.
Inter-Hydraulik GmbH, Firma: *See—*
Ribeiro de Almeida, A. A., 4,343,226, Cl. 91-171.000.
Inter-ikea A/S: *See—*
Lundgren, Gillis, 4,343,509, Cl. 297-232.000.
Inter Innovation AB: *See—*
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Interco Incorporated: *See—*
Assmann, John J.; Knox, James L.; Kueny, Martin J.; and Smith, James W., 4,343,421, Cl. 226-113.000.
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Graham, Scot M., 4,343,441, Cl. 242-68.100.
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Seifert, Hans-Gordon, 4,343,239, Cl. 101-93.340.
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International Paper Company: *See—*
Field, Jasper H.; and Hicks, Robert W., 4,343,680, Cl. 162-100.000.
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Prooi, Jacob J.; Sep, Waltherus J.; and Westerhof, Wilhelmina, 4,343,932, Cl. 528-303.000.
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Persson, Nils C., 4,343,051, Cl. 4-111.100.
Isaacson, Robert, to Connecticut Valley Paper & Envelope Co., Inc. Envelope-display device and method. 4,343,105, Cl. 40-155.000.
Isaka, Takenobu: *See—*
Tomita, Masao; Isaka, Takenobu; Fujisawa, Kiyoji; and Mino, Mineo, 4,344,087, Cl. 358-127.000.
Isaka, Tsutomu; Ohashi, Kazuyoshi; and Miyazaki, Yukinobu, to Toyo Boseki Kabushiki Kaisha. Composite film and packaging material of polypropylene base and surface polymer composition. 4,343,852, Cl. 428-216.000.
Ishida, Yoshikatsu: *See—*
Kunita, Yoshisuke; Ishida, Yoshikatsu; and Kuwabara, Masaharu, 4,343,469, Cl. 273-185.00A.
Ishikawa, Hajime: *See—*
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Ishikawa, Norikatsu: *See—*
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Ishiodori, Makoto, to Sony Corporation. Apparatus for recovering a frequency-converted chrominance component that is substantially free of cross-talk components. 4,344,082, Cl. 358-8.000.
Issidorides, Costas H.; and Haddadin, Makhluf J., to Research Corporation. Quinoxaline derivatives. 4,343,942, Cl. 544-354.000.
Itaya, Nobushige: *See—*
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Ito, Takashi; Ishikawa, Hajime; and Shinoda, Masaichi, to Fujitsu Limited. Process for producing a semiconductor device. 4,343,657, Cl. 148-1.500.
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Meeks, Alan M. G., 4,343,501, Cl. 292-336.300.
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Iwasawa, Tadashi. Pickup device. 4,344,167, Cl. 369-247.000.
Iwata, Toshiharu; and Hattori, Tadashi, to Nippon Soken, Inc. Ignition spark plug. 4,344,014, Cl. 313-143.000.
Iyer, Sury, to United States of America, Army. Production of polymer bonded nitramine explosive and propellant compositions. 4,343,664, Cl. 149-11.000.
Izumi, Toshiaki: *See—*
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, 4,343,834, Cl. 427-132.000.
Jackisch, Philip F., to Ethyl Corporation. Stabilization dibromostyrene. 4,343,956, Cl. 570-105.000.
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Anderson, Alan P.; and Jackson, John C., 4,344,030, Cl. 324-58.50B.
Jackson, Philip, to E. Beaudrey & Cie, Societe Anonyme. Water intake. 4,343,698, Cl. 210-107.000.

Jackson, William L., to Dunlop Limited. Pneumatic tire and wheel rim assemblies. 4,343,341, Cl. 152-353.00R.

Jaco, Georges: *See*—
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Jacobson, Donald R., to Radiation Measurements, Inc. Measuring tool for computer assisted tomographic scanner. 4,344,183, Cl. 378-207.000.

Jacobson, Peter E.; and Rustenburg, Conrad M., to Sperry Corporation. Rotor structure for gyroscopic apparatus. 4,343,203, Cl. 74-5.00R.

Jaliwala, Salim A.; and Day, Eric, to Cummins Engine Company, Inc. Turbocharger boost feedback control for engine governor. 4,343,276, Cl. 123-383.000.

Janome Sewing Machine Co. Ltd.: *See*—
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Janssen, Daniel J. G.: *See*—
van de Meeberg, Leendert; and Janssen, Daniel J. G., 4,344,149, Cl. 364-724.000.

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Jarret, Jean M.; and Jarret, Jacques H., 4,343,154, Cl. 60-527.000.

Jarret, Jean M.; and Jarret, Jacques H. Motive device for converting a variation in temperature into mechanical energy. 4,343,154, Cl. 60-527.000.

Jarrett, Tracy C. Apparatus for grinding metallographic specimens. 4,343,112, Cl. 51-131.300.

Jaulmes, Christian, to Atleliers de la Motobecane. Device for displaying the level of fluid contained in a tank. 4,343,184, Cl. 73-299.000.

Jegorow, Aleksander: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Jencks, Charles L.: *See*—
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Jendrzejczyk, Joseph A., to United States of America, Energy. Fluid force transducer. 4,343,198, Cl. 73-862.650.

Jenner, Michael R.; and Waite, David, to Talres Development (N.A.) N.V. Crystalline 4,1',6'-trichloro-4,1',6'-trideoxy-galactosucrose. 4,343,934, Cl. 536-122.000.

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Jespersen, Chris A., to C. R. Bard, Inc. Electronic urine flow monitor. 4,343,316, Cl. 128-771.000.

Jochems, Pieter J. W., to U.S. Philips Corporation. Self-registering method of manufacturing an insulated gate field-effect transistor. 4,343,079, Cl. 29-571.000.

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Johansson, Sigvard N.: *See*—
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John Wyeth & Brother Limited: *See*—
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John Zink Company: *See*—
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Johne, Hans: *See*—
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Johnson, Allen M.: *See*—
Wells, David L.; and Johnson, Allen M., 4,343,595, Cl. 417-225.000.

Johnson, Donald W., to United States of America, Air Force. All radial construction for continuous ribbon parachutes. 4,343,448, Cl. 244-145.000.

Johnson, George A.: *See*—
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,343,783, Cl. 424-28.000.

Johnson, Junior L.; and Pikey, Leonard E., to A. O. Smith-Inland, Inc. Fiber reinforced epoxy resin article. 4,343,843, Cl. 428-36.000.

Johnson, Marvin M., to Phillips Petroleum Company. Method of removing contaminant from a feedstock stream. 4,343,693, Cl. 208-244.000.

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Osborn, Charles, 4,343,202, Cl. 74-476.000.

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Ohe, Takeshi; and Okamoto, Haruo, 4,343,324, Cl. 137-117.000.

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Kagawa, Tokiyoshi, to Sanwa Shutter Corporation. Apparatus for manufacturing a slat for a shutter. 4,343,171, Cl. 72-181.000.

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Kaji, Kiyokane, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sensor with inner protective chamber. 4,343,187, Cl. 73-654.000.

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Kanao, Shiro. Method and apparatus for producing tube. 4,343,672, Cl. 156-428.000.
Kanda, Hiroshi: *See*—
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Kao Soap Company, Ltd.: *See*—
Kobayashi, Hisao; and Fujita, Kazuo, 4,343,335, Cl. 140-71.00C.
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Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,343,937, Cl. 544-021.000.
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Kato, Tadao: *See*—
Sudoh, Giichi; Minegishi, Keiichi; Akiba, Tokuji; Kato, Tadao; and Ogawa, Norio, 4,344,062, Cl. 338-35.000.
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Katz, Irving M., to Merck & Co., Inc. Shaped ophthalmic inserts for treating dry eye syndrome. 4,343,787, Cl. 424-78.000.
Katz, Lawrence E., to Olin Corporation. 2-Trichloromethyl-4-pyrimidinyl carbamates and their use as fungicides. 4,343,803, Cl. 424-251.000.
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Lazowski, James C.; Katz, Sharron; and Winship, John A., 4,343,047, Cl. 2-411.000.
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Kawai, Jun; Bessyo, Hidekazu; and Hibino, Hidehiko, to Nippon Oil and Fats Co., Ltd. Process for separating a specified component contained in a mixture of multiple fatty components from the mixture thereof. 4,343,744, Cl. 260-412.100.
Kawai, Yoshio: *See*—
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, 4,343,959, Cl. 585-640.000.
Kawamoto, Toshiaki: *See*—
Shimazawa, Yoichi; and Kawamoto, Toshiaki, 4,343,596, Cl. 417-252.000.
Kawamura, Kouichi; Katsuyama, Harumi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. 2,6-Di-tert-butyl-4-methyl thiopyrylium salt. 4,343,948, Cl. 549-13.000.
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Tambe, Shinichi; Yamamoto, Hitoshi; and Uda, Ryoji, 4,343,377, Cl. 184-6.500.
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Kazama, Ken; Muramoto, Ikuo; Ozaki, Kenji; and Kusunoki, Yoshinobu, to Asahi-Dow Limited; and Toa Wool Spinning & Weaving Co., Ltd. Method of preparing a scoured animal hair material. 4,343,619, Cl. 8-139.000.
Keister, Bernard, to Eaton Corporation. Fatigue resistant high pressure hose. 4,343,333, Cl. 138-125.000.
Keller, Josef: *See*—
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Kellett, Henry G., to Trans-Data Associates. Apparatus and method for articulatory speech recognition. 4,343,969, Cl. 179-1.0SD.
Kells, Edward L.; and Narowski, Robert L., to Groen Division/Dover Corporation. Vapor jacketed cooking vessel. 4,343,292, Cl. 126-378.000.
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Kelly, Robert H.: *See*—
Moyer, Anthony M.; and Kelly, Robert H., 4,343,580, Cl. 411-468.000.
Kelman, Charles D. Intraocular lenses. 4,343,050, Cl. 3-13.000.
Kemmler, Lothar, to Samson Aktiengesellschaft. Automatic control system. 4,343,224, Cl. 91-47.000.
Kenichi, Yoshida, to Nissan Motor Company, Limited. Knocking detector. 4,343,178, Cl. 73-35.000.
Kennedy, John C.: *See*—
Alworth, James; Kennedy, John C.; La Barre, Berger; and Sandin, Gus, 4,343,200, Cl. 74-57.000.
Keogh, Michael J., to Union Carbide Corporation. Water curable, amino silane modified alkylene-alkyl acrylate copolymers. 4,343,917, Cl. 525-106.000.
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Dutt, Bulusu V.; Keramidas, Vassilis G.; and Temkin, Henryk, 4,343,674, Cl. 156-601.000.
Kern, Calvin V.; and Mitton, Bruce W., to Eltra Corporation. Anti-supercharge pressure valve. 4,343,153, Cl. 60-460.000.
Kernforschungsanlage Julich GmbH: *See*—
Chatzipetros, Johann; and Helten, Manfred, 4,343,413, Cl. 220-425.000.
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, 4,343,681, Cl. 376-293.000.
Kessick, Michael A.; and St. Denis, C. Earl, to Research Council of Alberta. Pipeline transportation of heavy crude oil. 4,343,323, Cl. 137-13.000.
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Kiewert, Eva; Disch, Karlheinz; and Wegner, Jurgen, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Cleansers for windows, mirrors and reflecting surfaces containing a high molecular weight polyoxyethylene glycol polymer. 4,343,725, Cl. 252-542.000.
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Kim, Kwan Y.; and Fracker, Clarence E., to Owens-Corning Fiberglas Corporation. Glass fiber-forming apparatus. 4,343,635, Cl. 65-1.000.
Kimball, Paul A., to Phillips Petroleum Company. Apparatus for transporting containers. 4,343,575, Cl. 406-19.000.
Kimchi, Yigal: *See*—
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Kimmel, Loren L., to Dresser Industries, Inc. Basic oxygen furnace construction. 4,343,459, Cl. 266-243.000.
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Kinsbron, Eliezer; Levinstein, Hyman J.; and Willenbrock, William E., Jr., to Bell Telephone Laboratories, Incorporated. Method for patterning films using reactive ion etching thereof. 4,343,677, Cl. 156-643.000.
Kinzer, Donald L., to Hughes Tool Company. Gage row structure of an earth boring drill bit. 4,343,372, Cl. 175-374.000.
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Klaas, Jeffrey M.; Reed, Paul A.; and Rimawi, Isam, to Texas Instruments Incorporated. Programming sequence for electrically programmable memory. 4,344,154, Cl. 365-194.000.

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Luhman, Thomas; Klamut, Carl J.; Suenaga, Masaki; and Welch, David, 4,343,867, Cl. 428-614.000.

Klausz, Remy, to Compagnie Generale de Radiologie. Method and apparatus for automatically centering an object for tomodensitometric examination. 4,343,995, Cl. 278-21.000.

Klein, Gary S.: *See*—
Thayer, Richard S.; Herbert, William J.; and Klein, Gary S., 4,343,844, Cl. 428-36.000.

Klekamp, William H.; and Tullis, Philip H., to Caterpillar Tractor Co. Scraper bowl structure. 4,343,101, Cl. 37-129.000.

Klemm, Walter: *See*—
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Klockner-Werke AG: *See*—
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Kloostra, M. Leon: *See*—
Dehart, Marv L.; Kloostra, M. Leon; and Straub, Harold E., 4,343,194, Cl. 73-861.650.

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Knickerbocker, Robert H., to Siemon Company, The. Electrical panel connector hold-down adapter. 4,343,525, Cl. 339-75.00P.

Knitsch, Karl-Wolfgang: *See*—
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.

Knoth, Werner-Dieter: *See*—
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Assmann, John J.; Knox, James L.; Kueny, Martin J.; and Smith, James W., 4,343,421, Cl. 226-113.000.

Knute, Wallace L., to Ivac Corporation. Temperature sensing probe and disposable probe cover. 4,343,185, Cl. 374-158.000.

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Kobayashi, Takao, to Shinshuseiki Kabushiki Kaisha. Ink ribbon cartridge. 4,343,556, Cl. 400-196.100.

Kobuke, Takayoshi: *See*—
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, 4,343,834, Cl. 427-132.000.

Koch, Ulf; and Nagel, Gerhard, to Esselte Pendaflex Corporation. Counting or printing mechanism for consecutive counting numbering. 4,343,238, Cl. 101-85.000.

Koenig, Walter, Jr., to Bell Telephone Laboratories, Incorporated. Signaling system. 4,343,970, Cl. 179-1.50R.

Kohn, Henri A., to Baltek Corporation. Balsa-core sandwich laminate. 4,343,846, Cl. 428-138.000.

Komatsu, Fumito; and Orii, Makoto, to Kabushiki Kaisha Sankyo Seki Seisakusho. Acoustic sound generating device. 4,343,221, Cl. 84-404.000.

Komatsubara, Masahiro: *See*—
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Kondo, Masatoshi: *See*—
Takemura, Katsuyoshi; Kondo, Masatoshi; Hasuike, Fumio; and Okada, Yoshifumi, 4,343,083, Cl. 29-832.000.

Kondo, Tadasige; Ono, Susumu; and Takata, Kenichi, to Kioritz Corporation. Ignition system with overrun prevention. 4,343,273, Cl. 123-335.000.

Konig, Dieter: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Konno, Kazuhiko; Goh, Atsushi; and Uchimura, Kunio, to Mitsubishi Petrochemical Co., Ltd. Process for production of thiolcarbamates and the thiolcarbamates obtained by said process. 4,343,737, Cl. 260-239.0BF.

Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muscevic, Gojko, to Boehringer Ingelheim GmbH. 1-Aryloxy-2-hydroxy-3[(heterocyclic-substituted alkyl)-amino]propanes and salts thereof. 4,343,800, Cl. 424-248.500.

Koperda, Francis R.: *See*—
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Kostan, Charles C.: *See*—
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Kosuda, Toru; and Matsui, Takeshi, to Nippon Soken, Inc. Automatic drive mechanism for vehicles. 4,343,385, Cl. 192-0.02R.

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Kralicek, Jaroslav: *See*—
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Kramer, Werner: *See*—
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Kravig, Hal C.; and Van Drie, John T., to Vollrath Company, The. Decorated laminate having indicia applied photoelectrographically and method of making same. 4,343,850, Cl. 428-203.000.

Kreighbaum, William E.; and Comer, William T., to Mead Johnson & Company. Anti-tumor quinazoline compounds. 4,343,940, Cl. 544-283.000.

Krijnen, Henricus C. M.: *See*—
Habets, Antonius H. M.; and Krijnen, Henricus C. M., 4,344,104, Cl. 361-230.000.

Kroeger, Edward R.; and Myers, Philip E., to Warner Electric Brake & Clutch Company. Electromagnet with replaceable friction face. 4,344,056, Cl. 335-219.000.

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Kubiatowicz, James F. Structure for use in microwave cooking. 4,343,978, Cl. 219-10.55E.

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Wolters, Gerrit; and Kuypers, Leonardus P. C., 4,343,896, Cl. 435-7.000.

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Hirata, Tadashi; Saito, Hiromitsu; and Nakamizo, Nobuhiro, 4,343,943, Cl. 546-183.000.

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Langley, Kenneth R., to Rolls Royce Limited. V/STOL Aircraft. 4,343,446, Cl. 244-12.500.

Lankheet, Jay A. Removable swimming pool construction. 4,343,118, Cl. 52-169.700.

Lark, Wayne W.; Jennings, Marvin D.; and Madeksho, Marvyn J., to International Harvester Co. Seed planter drum drive system. 4,343,414, Cl. 221-13.000.

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Larson, Richard I.: *See*—
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Laursen, Paul D. Golf swing trainer. 4,343,473, Cl. 273-186.00A.

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Legg, Kenneth D., to Instrumentation Laboratory. Biological liquid fractionation using alternate opposite flow directions across a membrane. 4,343,705, Cl. 210-637.000.

Legge, Ronald N.: *See*—
Sarma, Kalluri R.; and Legge, Ronald N., 4,343,830, Cl. 427-38.000.

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Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.

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Lenda, Donald E., to Warehouse Bus Parts, Inc. Anti-siphon device. 4,343,410, Cl. 220-86.0AT.

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Lersmacher, Bernhard: *See*—
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Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,343,783, Cl. 424-28.000.
McNaught, John P., 4,343,826, Cl. 426-601.000.

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Levy, Robert J.: *See*—
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Roller, Hanno; Ohnmacht, Helmut; Lieber, Ludwig; and Nauerth, Karl-Heinz, 4,343,988, Cl. 219-302.000.

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Lin, Perry H.: *See—*
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Kick, Helmut; Kistenmacher, Hans; Schramm, Walter; Hoerner, Berndt; and Lang, Udo, 4,343,633, Cl. 62-23.000.

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Lindholm, Fred A.: *See—*
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List, Hans: *See—*
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Longwell, John P.: *See—*
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Lundblad, Leif J. I.; and Ek, Jan-Olof, to Inter Innovation AB. Banknote dispensing apparatus. 4,343,582, Cl. 414-32.000.

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Lutton, Theodore A.: *See—*
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MacGill, Robert A.: *See—*
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Manning, Donald L. Vehicle drive wheel suspension. 4,343,375, Cl. 180-73.00R.
Manville Service Corporation: *See*—
Dale, Thomas L., 4,343,640, Cl. 65-16.000.
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Marathon Oil Company: *See*—
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Mareydt, Ray G., to Four Star Corporation. Article carrier tie-down and end piece. 4,343,419, Cl. 224-326.000.
Margalit, Nehemiaha: *See*—
Joshi, Ashok V.; and Margalit, Nehemiaha, 4,343,714, Cl. 252-182.100.
Margraf, Adolf. Gas dust-removing filters. 4,343,632, Cl. 55-341.0HM.
Maringer, Melvin F.; and Morgan, Fred K., to National Distillers & Chemical Corp. Stabilized polymer compositions. 4,343,733, Cl. 524-87.000.
Markle, David A.: *See*—
Gabriel, Fred C.; and Markle, David A., 4,344,160, Cl. 367-96.000.
Markowitz, H. Toby, to Medtronic, Inc. Atrial refractory control for R-wave rejection in pacemakers. 4,343,311, Cl. 128-419.0PG.
Markussen, Jan, to Novo Industri A/S. Process for preparing esters of human insulin. 4,343,898, Cl. 435-71.000.
Marr, Clyde M.: *See*—
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Marsalka, Joseph P.: *See*—
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Marschka, Frank D., to RCA Corporation. Screen contact means for a cathode ray tube. 4,344,015, Cl. 313-466.000.
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Cavanagh, Kenneth M., 4,343,439, Cl. 242-41.000.
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Buckley, Galen L.; and Martin, Harold W., 4,343,550, Cl. 356-5.000.
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Martin, Robert L., to General Electric Company. Flat face night light. 4,344,116, Cl. 362-226.000.
Martineau, Jean-Claude P., to Canada Post Corporation/Societe Canadienne de Postes. Envelope assembly for manufacture as a prestuffed continuous form. 4,343,430, Cl. 229-69.000.
Martinez-Delgado, Nicolas. Anti-pollution system for internal combustion and diesel engines. 4,343,284, Cl. 123-568.000.
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Franzen, Paul, 4,343,678, Cl. 159-24.00A.
Mashimo, Toru, to Toyo Kogyo Co., Ltd. Drilling machine positioning arrangement. 4,343,367, Cl. 173-43.000.
Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,343,729, Cl. 524-529.000.
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Sutton, Roger F.; Blomquist, Robert O.; and Luck, Allan J., 4,343,849, Cl. 428-157.000.
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Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,343,892, Cl. 430-398.000.
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Matsuo, Noritada; Itaya, Nobushige; Aketa, Kohichi; Magara, Osamu; and Nishioka, Toshio, to Sumitomo Chemical Company, Limited. Method for preparing 4-hydroxy-3-methyl-2-(2-propynyl)-2-cyclopentenolone. 4,343,953, Cl. 568-347.000.
Matsushima, Tetsuo: *See*—
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Max-Planck Gesellschaft zur Forderung der Wissenschaften: *See*—
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Jones, Francis W.; Mayfield, Robert J.; O'Loughlin, Gary J.; and Russell, Ian M., 4,343,618, Cl. 8-128.00R.
McArdle, Beryl L., to General Dynamics Corporation Electronics Division. Autokey code generator. 4,343,967, Cl. 178-22.190.
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McConnel, Ronald J., to Weyerhaeuser Company. Apparatus for applying adhesive in corrugated board manufacture. 4,343,259, Cl. 118-44.000.
McCormick, Lloyd G.; and Score, Robert E., to EA Industries, Incorporated. Method and apparatus for producing bales. 4,343,131, Cl. 53-397.000.
McDaniel, George H.; Hartford, Thomas W.; Hungerford, William R.; Perzanowski, William J.; and Benaglio, Reno V., to Bendix Corporation, The. Microprocessor based process control system. 4,344,127, Cl. 364-130.000.
McDonald, Charles D. Man-overboard rescue apparatus for sailboats. 4,343,056, Cl. 441-84.000.
McDonald, Peter, to Firestone Tire & Rubber Company, The. Unified modular indicia marking for rubber articles. 4,343,342, Cl. 152-353.00R.
McDonald, William S.: *See*—
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McGuire, Joseph C., to United States of America, Energy. Heat transfer system. 4,343,763, Cl. 376-314.000.
McLaughlin, George H., to Newmont Mining Corporation. Coherent noise cancelling filter. 4,344,150, Cl. 364-724.000.
McLean, James D.: *See*—
Long, Merton W.; McLean, James D.; Armentrout, David N.; and Gill, Harold H., 4,343,767, Cl. 422-70.000.
McLuskie, Albert; Ratjen, Johann; and Vehling, Ernst, to Neumuenstersche Maschinen- und Apparatebau GmbH (NEUMAG). Fiber cutting machine. 4,343,069, Cl. 19-0.600.
McNaught, John P., to Lever Brothers Company. Process for preparing beads of fat. 4,343,826, Cl. 426-601.000.
Mead Johnson & Company: *See*—
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Medtronic, Inc.: *See*—
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Meeks, Alan M. G., to ITW Limited. Door handle assembly. 4,343,501, Cl. 292-336.300.

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Melchior, Michael T.; Milliman, George E.; and Sartori, Guido, to Exxon Research & Engineering Co. 1-Secondary or 1-tertiary alkyl or cycloalkyl-hexahydro-2-pyrimidinones and 1-secondary or 1-tertiary alkyl or 1-cycloalkyl-2-imidazolidinones and their use as antifoaming agents. 4,343,716, Cl. 252-192.000.

Mena, Edouard, to Publimepharm. Method and circular transfer apparatus for automatized conditioning of pharmaceutical phials. 4,343,128, Cl. 53-167.000.

Mendelsohn, Morris A., to Westinghouse Electric Corp. Epoxy-elastomer low temperature curable, solventless, sprayable, stator winding adhesive-bracing compositions. 4,344,006, Cl. 310-43.000.

Menge, Ulrich; Morr, Michael; Kula, Maria-Regina; and Anastassiadis, Kristin, to Gesellschaft fur Biotechnologische Forschung mbH (GBF). Process for the purification of interferon. 4,343,735, Cl. 260-112.00R.

Mensink, Kornelis A.: *See—*
Cals, Guillaume L. M.; Wittkampf, Frederik H. M.; Mensink, Kornelis A.; and Brouwer, Hendrik L., 4,343,312, Cl. 128-419.0PG.

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Merck & Co., Inc.: *See—*
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Gullo, Vincent P.; Lam, Tony Y. K.; and Monaghan, Richard L., 4,343,814, Cl. 424-279.000.
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Merck, Sharp & Dohme (I.A.) Corp.: *See—*
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Mericle, Gerald E. Cleaning device for syringe type needles. 4,343,306, Cl. 128-218.00N.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
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Meyer, Carl R.: *See—*
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Meyer, Carol S.: *See—*
Witte, Donald H., 4,343,120, Cl. 52-184.000.

Meynard, Jean-Yves, to Siplast S.A. Sealing membrane with incorporated limited-slip sheet and its method of manufacture. 4,343,847, Cl. 428-139.000.

Meywald, Volker; Ostertag, Karl; and Schneider, Klaus, to Akzo, N.V. Gear wheel pump with reduced power requirement. 4,343,602, Cl. 418-77.000.

Michaels, Edward D., to United States of America, Energy. Process for preparing a chemical compound enriched in isotope content. 4,343,685, Cl. 204-101.000.

Michel, Yves C.: *See—*
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Miller, Barry: *See—*
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Miller, Elmo D., to Western Electric Co., Inc. Sealing articles into a glass envelope and compound holder therefor. 4,343,643, Cl. 65-103.000.

Miller, Frederick A., to Circon Corporation. Miniature video camera means for video system. 4,344,092, Cl. 358-217.000.

Miller, Gerald D.: *See—*
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Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,343,403, Cl. 206-812.000.
Davidowich, George; and Miller, Gerald D., 4,343,134, Cl. 53-431.000.

Miller, Jan D.; and Simkovich, George, to University of Utah Research Foundation. Enhanced leaching of minerals which form product layers. 4,343,773, Cl. 423-1.000.

Miller, John C.; and Burnett, Archibald L., to Union Carbide Corporation. Process for extruding ethylene polymers. 4,343,755, Cl. 264-176.00R.

Miller, Robert G.; Myers, Allen D.; Phelps, Weldon L.; and Sieving, Alfred W., to Caterpillar Tractor Co. Method and apparatus for controlling differentially driven wheel slip. 4,344,139, Cl. 364-426.000.

Miller, Wayne R.; and Von Fumetti, Cyril W., to Deere & Company. Combined hydraulic fluid reservoir and return fluid filter support structure. 4,343,697, Cl. 210-90.000.

Millheiser, Melvin, to Waldes Kohinoor, Inc. Double-bevel spring retaining ring. 4,343,581, Cl. 411-517.000.

Milliken Research Corporation: *See—*
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Milliman, George E.: *See—*
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Milner, David J.: *See—*
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Minamizono, Junji; Kishimoto, Shinzo; and Yoneyama, Masakazu, to Fuji Photo Film Co., Ltd. Photographic light-sensitive element with antistatic protective layer. 4,343,894, Cl. 430-528.000.

Minegishi, Keiichi: *See—*
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Minjolle, Louis, to Ceraver. Die for extruding ceramic material to form a body of cellular structure, and a method of obtaining said die. 4,343,604, Cl. 425-192.00R.

Minkkinen, Ari A., to Lummus Company, The. Heat and water recovery from aqueous waste streams. 4,343,691, Cl. 208-11.0LE.

Minnesota Mining and Manufacturing Company: *See—*
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Barrows, Thomas H., 4,343,931, Cl. 528-291.000.
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Mino, Mineo: *See—*
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Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, to Nippon Telegraph & Telephone Public Corporation. Method for manufacturing glass fibers from an infrared ray-transmitting glass fiber material. 4,343,638, Cl. 65-2.000.

Mitani, Masao; Tsunoda, Toyoji; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; and Yabushita, Akira, to Hitachi, Ltd. Thermal printhead. 4,343,986, Cl. 219-216.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; and Tobita, Toshio, 4,343,833, Cl. 427-96.000.
Toda, Haruhisa; and Matsumoto, Yoshiaki, 4,344,055, Cl. 335-174.000.

Mitsubishi Gas Chemical Co., Inc.: *See—*
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Mitsubishi Petrochemical Co., Ltd.: *See—*
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Mitsui Toatsu Chemicals, Inc.: *See—*
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Mitton, Bruce W.: *See—*
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Miyagi, Isamu, to Nippon Electric Co., Ltd. IGFET Forming method. 4,343,078, Cl. 29-571.000.

Miyake, Yukiharu: *See—*
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Miyazaki, Yukinobu: *See—*
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Mizokami, Kazunori, to Olympus Optical Co., Ltd. Reflection photometric apparatus for camera including focal plane shutter. 4,343,541, Cl. 354-51.000.

Mizokami, Kazunori, to Olympus Optical Company Ltd. Diaphragm control apparatus for combined use of an electronic flash with a camera. 4,343,544, Cl. 354-149.000.

Mizuno, Shoji, to Nippon Electric Co., Ltd. Encoder for encoding a multilevel pel signal sequence with probability representative mode codes allotted to prediction error codes for each pel signal and a decoder therefor. 4,344,086, Cl. 358-78.000.

Mobay Chemical Corporation: *See—*
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Moelbert, Heinrich, to Advanced Machine Design Company. Zone heating and shearing system, and method. 4,343,209, Cl. 83-16.000.

Moeller, Brian J. Pig holding device. 4,343,266, Cl. 119-98.000.

Mohan Rao, G. R.: *See—*
White, Lionel S., Jr.; and Mohan Rao, G. R., 4,344,157, Cl. 365-222.000.

Mollier, Jean H., to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Method of and apparatus for inscribing a control character in a memory. 4,344,155, Cl. 365-200.000.

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Moneymaker, Robert R.: *See*—
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Monroe, William E.: *See*—
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Monsanto Company: *See*—
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Allart, Pierre J.; and Guillaume, Claude A., 4,343,652, Cl. 106-21.000.
Montemarano, Thomas W.; and Wells, Michael E., to United States of America, Navy. Crack susceptibility test utilizing an airport restraint specimen. 4,343,424, Cl. 228-104.000.
Mooney, John B.: *See*—
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Moore, Douglas: *See*—
Swain, Richard S.; and Moore, Douglas, 4,343,216, Cl. 84-1.010.
Moorman, David S., to Witco Chemical Corporation. Flame retardant composition. 4,343,854, Cl. 428-290.000.
Moreau, Marc, to Trefimetaux. Process for continuous hydrostatic extrusion of metals therefor. 4,343,169, Cl. 72-45.000.
Morelli, Patrick T.: *See*—
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Morgan, Fred K.: *See*—
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Morgan, J. Giles; Rennich, Mark J.; and Whatley, Marvin E., to United States of America, Energy. Face seal assembly for rotating drum. 4,343,478, Cl. 277-90.000.
Mori, Sukeo, to Mori, Sukeo. Method and apparatus for detecting sewing defects on a stocking toe closer. 4,343,998, Cl. 250-563.000.
Moriarty, Frederick J.; and Paquette, Edmund T., to Wright Line Inc. Periodical shelf. 4,343,244, Cl. 108-1.000.
Morin, Francois; and Bonnel, Madeleine, to L'Etat Francais represente par le Secretaire d'Etat aux Postes et Telecommunications et a la Telediffusion (Centre National d'Etudes des Telecommunications). Process for making semi-conductor devices. 4,343,081, Cl. 29-571.000.
Morise, Hiroshi: *See*—
Uemura, Yahiro; Arimura, Hirofumi; Morise, Hiroshi; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,343,736, Cl. 260-112.00R.
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Morrison, Willard L. Antimicrobially treated fabric construction. 4,343,853, Cl. 428-233.000.
Morz, Gunter, to Licentia Patent-Verwaltungs-G.m.b.H. Four-port network for separating two signals comprised of doubly polarized frequency bands. 4,344,048, Cl. 333-135.000.
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Sarma, Kalluri R.; and Legge, Ronald N., 4,343,830, Cl. 427-38.000.
Smith, James N.; and Thompson, Arthur D., III, 4,343,832, Cl. 427-53.100.
Moyer, Anthony M.; and Kelly, Robert H., to Gang Nail Systems, Inc. Structural joint connector. 4,343,580, Cl. 411-468.000.
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Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,343,800, Cl. 424-248.500.
Muffler, Herbert; Siegemund, Gunter; and Schwertfeger, Werner, to Hoechst Aktiengesellschaft. Process for the manufacture of 2,3-perfluoro-1,4-dioxanes as well as some special representatives of compounds of this class. 4,343,742, Cl. 549-380.000.
Muller, Peter; and Mustacchi, Henry, to Andrews Paper & Chemical Co., Inc. Diazotype developing process and acidic developer with amine base salt. 4,343,884, Cl. 430-149.000.
Munson, Harry R., Jr.; and Alphin, Reevis S., to A. H. Robins Company, Inc. 4-Amino-3-quinolinecarboxylic acids and esters-antisecretory anti-ulcer compounds. 4,343,804, Cl. 424-258.000.
Murakami, Kanji; Wajima, Motoyo; and Ishikawa, Tetsuo, to Hitachi, Ltd. Process for producing copper barrier type, nuclear fuel cladding. 4,343,659, Cl. 148-6.300.
Muramoto, Ikuo: *See*—
Kazama, Ken; Muramoto, Ikuo; Ozaki, Kenji; and Kusunoki, Yoshinobu, 4,343,619, Cl. 8-139.000.
Murashima, Kumiko. Fabric stretcher. 4,343,103, Cl. 38-102.000.
Murayama, Yuko: *See*—
Saito, Masao; Onda, Yuuzi; and Murayama, Yuko, 4,343,722, Cl. 252-431.00N.
Murphy, Norman A.; Banner, John G.; Fletcher, Edwin; and Brown, Arthur, to Pilkington Brothers Limited. Processes for finishing glass surfaces. 4,343,116, Cl. 51-284.00R.
Murphy, Richard F., to Holland Company. Coupler lubricating bearing wear liner channel shaped support plate. 4,343,407, Cl. 213-51.000.
Musa, Fuad H.: *See*—
Bruce, William C., Jr.; Musa, Fuad H.; and Ritter, Terry F., 4,344,133, Cl. 364-200.000.
Muschelknautz, Edgar; and Rink, Norbert, to Bayer Aktiengesellschaft. Process for production of fiber mats. 4,343,639, Cl. 65-4.400.
Mustacchi, Henry: *See*—
Muller, Peter; and Mustacchi, Henry, 4,343,884, Cl. 430-149.000.
Mustacich, Robert V.; Lucas, Donald S.; and Stone, Roger L., to Procter & Gamble Company, The. Antimicrobial polymer compositions. 4,343,788, Cl. 424-78.000.
Muto, Rudolph. Cigarette filter with oblique partitions. 4,343,320, Cl. 131-339.000.
Mutter, Alfred, to Wampfler GmbH. Connector apparatus for electrically conductive guide rails. 4,343,384, Cl. 191-22.00R.
Myer, Charles R., II. Self-driving support assembly. 4,343,570, Cl. 405-229.000.
Myers, Allen D.: *See*—
Miller, Robert G.; Myers, Allen D.; Phelps, Weldon L.; and Sieving, Alfred W., 4,344,139, Cl. 364-426.000.
Myers, Philip E.: *See*—
Kroeger, Edward R.; and Myers, Philip E., 4,344,056, Cl. 335-219.000.
N.I.S.E., Inc.: *See*—
Jonker, Roelof R.; and Webb, Dennis A., 4,343,542, Cl. 354-76.000.
Nagamoto, Mitsuki; and Kobayashi, Nobuo, to Matsushita Electric Works, Ltd.; and Sauer, Hans. Electromagnetic relay. 4,344,103, Cl. 361-160.000.
Nagase, Hiroshi: *See*—
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,344,025, Cl. 318-729.000.
Nagashima, Nao, to Canon Kabushiki Kaisha. Image forming apparatus. 4,343,547, Cl. 355-14.00R.
Nagel, Gerhard: *See*—
Koch, Ulf; and Nagel, Gerhard, 4,343,238, Cl. 101-85.000.
Naka, Mitsuru: *See*—
Numasawa, Akio; Kizu, Ryouhei; Naka, Mitsuru; and Hiraiwa, Nobuo, 4,343,330, Cl. 137-625.480.
Nakabayashi, Masahiro: *See*—
Smith, Ronald B.; Galda, Edward J.; and Nakabayashi, Masahiro, 4,343,984, Cl. 219-146.300.
Nakagawa, Fumio: *See*—
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,343,892, Cl. 430-398.000.
Nakagawa, Yasuo; Makihira, Hiroshi; Oshida, Yoshitada; and Akiyama, Nobuyuki, to Hitachi, Ltd. Shape testing apparatus. 4,343,553, Cl. 356-376.000.
Nakajima, Shunichi: *See*—
Tomimori, Kiyoshi; and Nakajima, Shunichi, 4,343,461, Cl. 271-22.000.
Nakamichi Corporation: *See*—
Kawachi, Hideo; and Nakamichi, Niro, 4,344,099, Cl. 360-109.000.
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Kawachi, Hideo; and Nakamichi, Niro, 4,344,099, Cl. 360-109.000.
Nakamizo, Nobuhiro: *See*—
Hirata, Tadashi; Saito, Hiromitsu; and Nakamizo, Nobuhiro, 4,343,943, Cl. 546-183.000.
Nakamura, Hideo: *See*—
Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, 4,343,167, Cl. 72-8.000.
Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, to Fuji Photo Film Co., Ltd. Method for stabilizing dye images in color photographic sensitive materials using a ligand as a dye image stabilizer precursor in combination with metal ions. 4,343,886, Cl. 430-237.000.
Nanjo, Yasuyuki, to Dainippon Screen Seizo Kabushiki Kaisha. Box type contact printer. 4,343,549, Cl. 355-113.000.
Nannelli, Piero: *See*—
Toukan, Sameeh S.; and Nannelli, Piero, 4,343,946, Cl. 548-177.000.
NAOHTACHIMIE Societe Anonyme: *See*—
Caumartin, Francois; Vidal, Jean L.; and Mangin, Pierre, 4,343,926, Cl. 526-68.000.
Narowski, Robert L.: *See*—
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Nasretdin, Mansur A.; and Ohlander, Sten A. E., to U.S. Philips Corporation. Energy feed system for a microwave oven. 4,343,976, Cl. 219-10.55F.

National Distillers & Chemical Corp.: *See—*
Maringer, Melvin F.; and Morgan, Fred K., 4,343,733, Cl. 524-87.000.
National Research Development Corporation: *See—*
Basily, Basily B.; Das, Mihir K.; Price, Clifford G.; and Tobias, Stephen A., 4,343,208, Cl. 83-13.000.
National Steel Corporation: *See—*
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Nauerth, Karl-Heinz: *See—*
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NCR Corporation: *See—*
Gardner, Harry N.; and Petty, John P., 4,344,091, Cl. 358-213.000.
Nees, John; and Bailey, Dale A., to General Battery Corporation. Calcium-strontium-lead grid alloy for use in lead-acid batteries. 4,343,872, Cl. 429-245.000.
Neil, Clyde C.: *See—*
Phillips, William; Neil, Clyde C.; and Hammer, Jacob M., 4,343,890, Cl. 430-321.000.
Nelboeck, Michael: *See—*
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, 4,343,903, Cl. 435-197.000.
Nelson, Kenneth R., to Ingersoll-Rand Company. Doorknob construction. 4,343,502, Cl. 292-356.000.
Nelson, Robert L.: *See—*
Schneider, Urban A.; and Nelson, Robert L., 4,343,983, Cl. 219-145.210.
Nelson, Thomas L., to Du Pont de Nemours, E. I., and Company. Bulked continuous filament yarn with color-point heather. 4,343,146, Cl. 57-208.000.
Neu, Hans: *See—*
Herden, Werner; and Neu, Hans, 4,343,180, Cl. 73-115.000.
Neuerburg, Horst, to Kuhn S.A. Supporting structure for an agricultural machine. 4,343,138, Cl. 56-15.900.
Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chin-Tang. Oxide charge induced high low junction emitter solar cell. 4,343,962, Cl. 136-255.000.
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, to Boehringer Mannheim GmbH. Reagent for the determination of lipase and process for preparing same. 4,343,897, Cl. 435-19.000.
Neumuenstersche Maschinen- und Apparatebau GmbH (NEUMAG): *See—*
McLuskie, Albert; Ratjen, Johann; and Vehling, Ernst, 4,343,069, Cl. 19-0.600.
Neuweiler, Armin; and Stillhard, Otmar, to Fritz Gegauf AG Bernina-Naehmaschinenfabrik. Sewing machine. 4,343,256, Cl. 112-275.000.
Neuzil, Richard W.: *See—*
Kulprathipanja, Santi; and Neuzil, Richard W., 4,343,623, Cl. 44-53.000.
Newcomb, Nelson F.; and Newcomb, Nelson F., Jr. Short hitting baseball bat. 4,343,467, Cl. 273-26.00B.
Newcomb, Nelson F., Jr.: *See—*
Newcomb, Nelson F.; and Newcomb, Nelson F., Jr., 4,343,467, Cl. 273-26.00B.
Newkirk, Lawrence R.; Valencia, Flavio; Riley, Robert E.; and Wallace, Terry C., Sr., to United States of America, Energy. One-directional uniformly coated fibers, method of preparation, and uses therefor. 4,343,836, Cl. 427-249.000.
Newmont Mining Corporation: *See—*
McLaughlin, George H., 4,344,150, Cl. 364-724.000.
Niccum, Richard. Searchlight reversing mechanism. 4,344,117, Cl. 362-250.000.
Niedzinski, Edmund J.: *See—*
Oser, Nathan; and Niedzinski, Edmund J., 4,343,866, Cl. 428-593.000.
Nigro, Joseph P.: *See—*
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Nippon Electric Co., Ltd.: *See—*
Miyagi, Isamu, 4,343,078, Cl. 29-571.000.
Mizuno, Shoji, 4,344,086, Cl. 358-78.000.
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Futamase, Tsuyoshi, 4,343,218, Cl. 84-1.210.
Kunita, Yoshisuke; Ishida, Yoshikatsu; and Kuwabara, Masaharu, 4,343,469, Cl. 273-185.00A.
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Nippon Oil and Fats Co., Ltd.: *See—*
Kawai, Jun; Bessyo, Hidekazu; and Hibino, Hidehiko, 4,343,744, Cl. 260-412.100.
Nippon Seiko Kabushiki Kaisha: *See—*
Akabane, Yukihiro; Satoh, Hisashi; Shiraiwa, Yukio; and Tsuchiya, Shuyou, 4,343,521, Cl. 308-193.000.
Nippon Soken, Inc.: *See—*
Iwata, Toshiharu; and Hattori, Tadashi, 4,344,014, Cl. 313-143.000.
Kosuda, Toru; and Matsui, Takeshi, 4,343,385, Cl. 192-0.02R.
Nippon Telegraph & Telephone Public Corporation: *See—*
Arita, Takemi, 4,344,170, Cl. 370-68.000.
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, 4,343,638, Cl. 65-2.000.
Tobishima, Shinichi; Yamaki, Junichi; and Yamaji, Akihiko, 4,343,871, Cl. 429-197.000.
Nishida, Hideki; Yamada, Hirozi; Umezaki, Hiroshi; Sugita, Yutaka; and Tsumita, Norikazu, to Hitachi, Ltd. Magnetic bubble memory device and method of fabricating the same. 4,344,153, Cl. 365-39.000.
Nishimoto, Tadashi; and Oka, Shunzo, to Matsushita Electric Industrial Co. Ltd. Click setting variable resistor. 4,344,063, Cl. 338-160.000.
Nishimura, Satoshi: *See—*
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Nishimura, Yosaku, to Vital Kogyo Kabushiki Kaisha. Trolley. 4,343,240, Cl. 105-154.000.
Nishioka, Toshio: *See—*
Matsuo, Noritada; Itaya, Nobushige; Aketa, Kohichi; Magara, Osamu; and Nishioka, Toshio, 4,343,953, Cl. 568-347.000.
Nissan Motor Co., Ltd.: *See—*
Asano, Masaharu, 4,343,278, Cl. 123-425.000.
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Nisshin Oil Mills Ltd.: *See—*
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Nitto Boseki Co., Ltd.: *See—*
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Nitto Chemical Industry Co., Ltd.: *See—*
Watanabe, Ichiro; and Satoh, Yoshiaki, 4,343,899, Cl. 435-129.000.
Watanabe, Ichiro, 4,343,900, Cl. 435-129.000.
Nittobo Itamikako Co., Ltd.: *See—*
Yajima, Mikiharu; Masumiya, Masuki; and Obe, Sadao, 4,343,260, Cl. 118-204.000.
Niwa, Yoshio, to Showa Electric Wire & Cable Co., Ltd. Temperature-sensitive fuse. 4,344,061, Cl. 337-407.000.
Nobileau, Philippe C.; and Jones, Darrell L., to Vetco Offshore, Inc. Conductor tieback connector. 4,343,495, Cl. 285-23.000.
Noly, Jean, to Potain. Control apparatus for a distribution crane equipped with a cable bucket. 4,343,406, Cl. 212-225.000.
Nomura, Setsuo: *See—*
Hayashi, Tadashi; and Nomura, Setsuo, 4,344,011, Cl. 313-57.000.
Nordlund, Sven P., to Svenor Modul-System AB. Tool holders and a method of their manufacture. 4,343,172, Cl. 72-339.000.
Norlin Industries, Inc.: *See—*
Swain, Richard S.; and Moore, Douglas, 4,343,216, Cl. 84-1.010.
Northern Engineering Industries Limited: *See—*
Hufton, Peter F., 4,343,170, Cl. 72-61.000.
Northern Telecom Limited: *See—*
Ostapovitch, Harold J., 4,343,076, Cl. 29-426.500.
Straus, Joseph, 4,344,173, Cl. 372-38.000.
Norton, Charles J.; and Falk, David O., to Marathon Oil Company. Process for cleaning a subterranean injection surface and for selectively reducing the permeability of a subterranean formation. 4,343,363, Cl. 166-281.000.
Norton, W. Jack, to PPG Industries, Inc. Temperature sensing device having a rotating reference member. 4,343,961, Cl. 136-230.000.
Nosaka, Eisyo, to Mitsubishi Denki Kabushiki Kaisha. Cathode ray tube used as light source. 4,344,017, Cl. 315-16.000.
Novo Industri A/S: *See—*
Markussen, Jan, 4,343,898, Cl. 435-71.000.
Nowak, Leonard G.: *See—*
Lippert, Charles; Nowak, Leonard G.; and Shefsiek, Paul K., 4,343,395, Cl. 198-781.000.
Nozawa, Takamitsu; and Tazaki, Takaharu, to Yoshino Kogyosho Co., Ltd. Compact having stay-open lid structure. 4,343,397, Cl. 206-37.000.
NRM Corporation: *See—*
Enders, George E., 4,343,671, Cl. 156-401.000.
Numasawa, Akio; Kizu, Ryouhei; Naka, Mitsuru; and Hiraiwa, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Power steering device. 4,343,330, Cl. 137-625.480.
Obe, Sadao: *See—*
Yajima, Mikiharu; Masumiya, Masuki; and Obe, Sadao, 4,343,260, Cl. 118-204.000.
Oce-Nederland B.V.: *See—*
Habets, Antonius H. M.; and Krijnen, Henricus C. M., 4,344,104, Cl. 361-230.000.
Ocker, Klaus F.; Jodts, Richard J.; and Pfeiffer, Robert C., to Allied Corporation. Dual spool seat belt retractor with comfort feature. 4,343,445, Cl. 242-107.700.
O'Connor, James M.; Lickei, Donald D.; and Sessions, Willie J., to Olin Corporation. Polyurethane oligomer impact and shrinkage modifiers for thermoset polyesters. 4,343,916, Cl. 525-28.000.
O'Connor, Nicholas E. Disposable bedpan liner. 4,343,053, Cl. 4-452.000.
O'Dwyer, James B.: *See—*
Chang, Wen-Hsuan; O'Dwyer, James B.; and Peffer, John R., 4,343,925, Cl. 525-440.000.
Oellig, Franklin A.; and Campbell, Willis R., to Sperry Corporation. Baling machine with improved arm assembly for controlling expansion of the upper apron. 4,343,141, Cl. 56-341.000.
Officine Savio S.p.A.: *See—*
Barro, Giovanni, 4,343,145, Cl. 57-124.000.
Ogawa, Hisashi: *See—*
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,343,489, Cl. 280-804.000.
Ogawa, Norio: *See—*
Sudoh, Giichi; Minegishi, Keiichi; Akiba, Tokuji; Kato, Tadao; and Ogawa, Norio, 4,344,062, Cl. 338-35.000.
Ogita, Minoru; and Kimura, Shigenobu, to Nippon Gakki Seizo Kabushiki Kaisha. Radio receiver with system for maintaining optimum tuning. 4,344,187, Cl. 455-182.000.

Ohashi, Kazuyoshi: *See*—
Isaka, Tsutomu; Ohashi, Kazuyoshi; and Miyazaki, Yukinobu, 4,343,852, Cl. 428-216.000.
Ohe, Takeshi; and Okamoto, Haruo, to Judosha Kiki Co., Ltd. Flow control valve. 4,343,324, Cl. 137-117.000.
Ohlander, Sten A. E.: *See*—
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Ohmura, Tadayoshi: *See*—
Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, 4,343,789, Cl. 424-78.000.
Ohnaka, Hidemi; and Ishikawa, Norikatsu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Throttle valve opening controller. 4,343,277, Cl. 123-389.000.
Ohnmacht, Helmut: *See*—
Roller, Hanno; Ohnmacht, Helmut; Lieber, Ludwig; and Nauerth, Karl-Heinz, 4,343,988, Cl. 219-302.000.
Ohnuma, Kunihiko: *See*—
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Ohtake, Yasushi; and Hasegawa, Tsunao, to Pioneer Electronic Corporation. Method and apparatus detecting and setting optimum tape recording bias. 4,344,094, Cl. 360-66.000.
Oishi, Yasuo; and Ushimaru, Imao, to Kaise Electric Works Ltd. Testers. 4,344,101, Cl. 361-75.000.
Oka, Shunzo: *See*—
Nishimoto, Tadashi; and Oka, Shunzo, 4,344,063, Cl. 338-160.000.
Okada, Yoshifumi: *See*—
Takemura, Katsuyoshi; Kondo, Masatoshi; Hasuike, Fumio; and Okada, Yoshifumi, 4,343,083, Cl. 29-832.000.
Okamoto, Haruo: *See*—
Ohe, Takeshi; and Okamoto, Haruo, 4,343,324, Cl. 137-117.000.
Okubo, Shigeo, to Design Professionals Financial Corp. Dual function transducer utilizing displacement currents. 4,344,004, Cl. 307-400.000.
Okuda, Takao: *See*—
Agui, Hideo; Tamoto, Katsumi; Aono, Shunji; and Okuda, Takao, 4,343,801, Cl. 424-249.000.
Okumura, Akira, to Matsumoto, Tetsuo; and Okumura, Eiko. Method and device for separately collecting and discharging components of liquid in centrifugal rotor. 4,343,709, Cl. 210-782.000.
Okumura, Eiko: *See*—
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Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, to Hitachi, Ltd. Motor control system. 4,344,025, Cl. 318-729.000.
Old-North Manufacturing Company, Inc.: *See*—
Edwards, Ben E.; and Marr, Clyde M., 4,343,840, Cl. 427-351.000.
O'Leary, John B., to Grey-Mac Fitness, Ltd. Method of and apparatus for measuring the physical condition of a person. 4,343,315, Cl. 128-689.000.
Olin Corporation: *See*—
Gay, Walter A., 4,343,945, Cl. 548-128.000.
Katz, Lawrence E., 4,343,803, Cl. 424-251.000.
O'Connor, James M.; Lickei, Donald D.; and Sessions, Willie J., 4,343,916, Cl. 525-28.000.
Ollivier, Christian: *See*—
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O'Loughlin, Gary J.: *See*—
Jones, Francis W.; Mayfield, Robert J.; O'Loughlin, Gary J.; and Russell, Ian M., 4,343,618, Cl. 8-128.00R.
Oltman, John E.; and Dopp, Robert B., to Ray-O-Vac Corporation. Seal for metal-air batteries. 4,343,869, Cl. 429-27.000.
Olympus Optical Co., Ltd.: *See*—
Fujiwara, Toshihide; and Kaneko, Nobutaka, 4,343,991, Cl. 250-227.000.
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Mizokami, Kazunori, 4,343,544, Cl. 354-149.000.
Onda, Yuuzi: *See*—
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O'Neil, James W.: *See*—
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O'Neil, Paul T., to National Steel Corporation. Jumper cable system for railway trains. 4,343,522, Cl. 339-10.000.
Ong, Kian K., to U.S. Philips Corporation. Tuning circuit. 4,344,186, Cl. 455-168.000.
Ono, Susumu: *See*—
Kondo, Tadasige; Ono, Susumu; and Takata, Kenichi, 4,343,273, Cl. 123-335.000.
Ono, Yoshihiro: *See*—
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Onogi, Kenji, to Nippon Kogaku K.K. Apparatus for stopping the motor of a motor drive mechanism in a camera. 4,343,545, Cl. 354-173.000.
Oono, Shigeru: *See*—
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Orii, Makoto: *See*—
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Oronzio de Nora Impianti Elettrochimici S.p.A.: *See*—
de Nora, Oronzio; and Spaziante, Placido M., 4,343,689, Cl. 204-253.000.
de Nora, Oronzio, 4,343,690, Cl. 204-263.000.
Osborn, Charles, to JSJ Corporation. Pull-type lockout actuator for transmission shifters. 4,343,202, Cl. 74-476.000.
Oser, Nathan; and Niedzinski, Edmund J., to Manville Service Corporation. Deeply embossed sheet product. 4,343,866, Cl. 428-593.000.
Oshida, Yoshitada: *See*—
Nakagawa, Yasuo; Makihira, Hiroshi; Oshida, Yoshitada; and Akiyama, Nobuyuki, 4,343,553, Cl. 356-376.000.
Oshima, Mituyoshi; and Yoshimoto, Jun, to Shin-Etsu Chemical Co., Ltd.; and Sankio Chemical Co., Ltd. Method for the preparation of cis-alkylcyclohexanols. 4,343,955, Cl. 568-834.000.
Ostapovitch, Harold J., to Northern Telecom Limited. Apparatus, and a method, for removing terminal pins from a bandolier. 4,343,076, Cl. 29-426.500.
Ostertag, Karl: *See*—
Meywald, Volker; Ostertag, Karl; and Schneider, Klaus, 4,343,602, Cl. 418-77.000.
Osthus, Ramon L., to Triad Service & Marketing, Ltd. Portable sign. 4,343,449, Cl. 248-156.000.
Otsuka, Katsuyuki; Todokoro, Akio; Takahashi, Yoshiharu; Hiroe, Kazuhito; and Ishikawa, Yoshinobu, to Doryokuro Kaku Nenryo Kaihatsu Jigyodan. Method of fabricating an annular tank. 4,343,426, Cl. 228-170.000.
Ottewell, Gerald A., to Lucas Industries Limited. Friction pad assemblies for rail vehicle brakes. 4,343,382, Cl. 188-242.000.
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., to Petrolite Corporation. Polymerized polyols of tetrahydropyrimidines. 4,343,930, Cl. 528-252.000.
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., to Petrolite Corporation. Polyols of tetrahydropyrimidines. 4,343,941, Cl. 544-335.000.
Outboard Marine Corporation: *See*—
Blanchard, Clarence E., 4,343,612, Cl. 440-75.000.
Outlaw, Benjamin T.: *See*—
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,343,930, Cl. 528-252.000.
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,343,941, Cl. 544-335.000.
Owens-Corning Fiberglas Corporation: *See*—
Bhatti, Mohinder S., 4,343,636, Cl. 65-1.000.
Kim, Kwan Y.; and Fracker, Clarence E., 4,343,635, Cl. 65-1.000.
Shofner, Frederick M.; Greene, Neil E.; and Hanna, Terry J., 4,343,637, Cl. 65-2.000.
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Oy Tampella AB: *See*—
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Padco, Inc.: *See*—
Rawlings, Robert M., 4,344,073, Cl. 340-675.000.
Padgett, Howard J.: *See*—
Hahn, Kurt L.; Padgett, Howard J.; and Rao, Manjeshwar S., 4,343,174, Cl. 72-349.000.
Page, Philip R.: *See*—
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Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., 4,343,910, Cl. 521-82.000.
Palmer, John P., to General Dynamics, Pomona Division. Dual directional wavelength demultiplexer. 4,343,532, Cl. 350-96.190.
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Panofski, Ernst: *See*—
Hoffmann, Roland; and Panofski, Ernst, 4,344,016, Cl. 313-489.000.
Pao, Henry C.; Blanchard, Richard A.; and Choy, Benedict C. K., to Supertex, Inc. Combined DMOS and a vertical bipolar transistor device and fabrication method therefor. 4,344,081, Cl. 357-43.000.
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von der Heide, Johann, 4,344,022, Cl. 318-38.000.
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Parshall, David G., to AMSTED Industries Incorporated. High pressure flat bed filter. 4,343,701, Cl. 210-387.000.

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Snedkerud, Ole, 4,344,169, Cl. 370-40.000.

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Holiday, Paul R.; and Patterson, Robert J., II, 4,343,750, Cl. 264-8.000.

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Paulyson, John T., to United States Lines, Inc. Automobile containerized shipment support kit. 4,343,401, Cl. 206-577.000.

Pavelec, Frank L.: *See*—
Swanson, Arthur M.; Swanson, Robert J.; Seibel, James K.; and Pavelec, Frank L., 4,343,817, Cl. 426-36.000.

Pavlow, Roger; and Frentzel, Herman E., to Pavlow, Roger. Machine for encapsulating food in dough. 4,343,603, Cl. 425-114.000.

Paysinger, Joseph R., to Crutcher Corporation. Tool for spiral machining. 4,343,207, Cl. 82-4.00R.

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Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, to Brennstoffinstitut Freiberg; and Gosudarstwennyi Nautschno-Issledowatelskij i Projektnyi Institut Astonoj Promyschlennosti i Produktow Organitscheskogo Sintesa. Reactor for producing a carbon monoxide and hydrogen containing gas. 4,343,626, Cl. 48-67.000.

Pelov, Iran P.; and Penman, Brian R., to Exxon Research & Engineering Co. Apparatus for dispensing a liquid additive. 4,343,326, Cl. 137-454.000.

Penman, Brian R.: *See*—
Pelov, Iran P.; and Penman, Brian R., 4,343,326, Cl. 137-454.000.

Pennsylvania Crusher Corporation: *See*—
Slikas, Anthony W.; and Nigro, Joseph P., 4,343,438, Cl. 241-196.000.

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Jurecic, Anton; and Romano, James V., 4,343,418, Cl. 222-386.000.
Toukan, Sameeh S.; and Nannelli, Piero, 4,343,946, Cl. 548-177.000.

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Sardisco, John B., 4,343,781, Cl. 423-493.000.

Penrod, Raymond G.: *See*—
Guptill, Robert H.; and Penrod, Raymond G., 4,343,075, Cl. 29-251.000.

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Gabriel, Fred C.; and Markle, David A., 4,344,160, Cl. 367-96.000.

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Knapp, Edward J., Jr.; and Perreault, Richard J., 4,344,058, Cl. 337-148.000.

Perry, Derick A., to Rolls-Royce Limited. Bladed rotor for a gas turbine engine. 4,343,594, Cl. 416-193.00A.

Perry, Paul M.: *See*—
Landrum, Ralph A., Jr.; Vallhonrat, Juan B.; and Perry, Paul M., 4,344,158, Cl. 367-73.000.

Persson, Karl R., to Sprinter System AB. Tray with handles. 4,343,428, Cl. 229-31.00R.

Persson, Nils C., to Inventor Invest AB. Decomposition container, especially a decomposition latrine. 4,343,051, Cl. 4-111.100.

Perzanowski, William J.: *See*—
McDaniel, George H.; Hartford, Thomas W.; Hungerford, William R.; Perzanowski, William J.; and Benaglio, Reno V., 4,344,127, Cl. 364-130.000.

Peter, Donald: *See*—
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,343,783, Cl. 424-28.000.

Peter, Gunter: *See*—
Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; and Hefftler, Victor, 4,343,241, Cl. 101-231.000.

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Schafer, Kenneth L.; and Peterson, Maurice L., 4,343,264, Cl. 119-73.000.

Petranto, Joseph J., to United States of America, Energy. Split gland. 4,343,496, Cl. 285-39.000.

Petrolite Corporation: *See*—
Becker, Harold L.; and Buriks, Rudolf S., 4,343,730, Cl. 524-551.000.
Lawrence, Rodney G.; and Morelli, Patrick T., 4,343,863, Cl. 428-485.000.
Martin, Richard L., 4,343,660, Cl. 148-6.14R.
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,343,930, Cl. 528-252.000.
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,343,941, Cl. 544-335.000.
Quinlan, Patrick M., 4,343,720, Cl. 252-390.000.

Petrov, Alexander S., to Vmei "Lenin" - Centar Po Robotika. Power press. 4,343,175, Cl. 72-452.000.

Petty, John P.: *See*—
Gardner, Harry N.; and Petty, John P., 4,344,091, Cl. 358-213.000.

Pfeiffer, Robert C.: *See*—
Ocker, Klaus F.; Jodts, Richard J.; and Pfeiffer, Robert C., 4,343,445, Cl. 242-107.700.

Pfizer Inc.: *See*—
Kadin, Saul B., 4,343,813, Cl. 424-274.000.

Pfluger, Peter: *See*—
Guntherodt, Hans-Joachim; Pfluger, Peter; and Kunzi, Hans-Ulrich, 4,343,537, Cl. 350-357.000.

Phelps, Weldon L.: *See*—
Miller, Robert G.; Myers, Allen D.; Phelps, Weldon L.; and Sieving, Alfred W., 4,344,139, Cl. 364-426.000.

Philip Morris Incorporated: *See*—
Bokelman, Gordon H., 4,343,317, Cl. 131-290.000.

Phillips Petroleum Company: *See*—
Johnson, Marvin M., 4,343,693, Cl. 208-244.000.
Kimball, Paul A., 4,343,575, Cl. 406-19.000.

Phillips, William; Neil, Clyde C.; and Hammer, Jacob M., to RCA Corporation. Method for making planar optical waveguide comprising thin metal oxide film incorporating a relief phase grating. 4,343,890, Cl. 430-321.000.

Pickens, Jay W.; and Warren, Linton G., to Rangaire Corporation. Translucent plastic lampshade. 4,344,115, Cl. 362-216.000.

Pierce, Charles M.: *See*—
Laurer, George J.; and Pierce, Charles M., 4,344,152, Cl. 364-900.000.

Pierson, Paul B.: *See*—
Corsover, Stephen L.; Dobbins, Lawrence W.; and Pierson, Paul B., 4,344,088, Cl. 358-132.000.

Piestert, Gerhard, to USM Corporation. Adhesive composition. 4,343,921, Cl. 525-310.000.

Pikey, Leonard E.: *See*—
Johnson, Junior L.; and Pikey, Leonard E., 4,343,843, Cl. 428-36.000.

Pilkington Brothers Limited: *See*—
Murphy, Norman A.; Banner, John G.; Fletcher, Edwin; and Brown, Arthur, 4,343,116, Cl. 51-284.00R.

Pillsbury, Robert D., Jr.: *See*—
Stekly, Zdenek J. J.; and Pillsbury, Robert D., Jr., 4,344,057, Cl. 335-299.000.

Pioneer Electronic Corporation: *See*—
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, 4,344,098, Cl. 360-96.600.
Ohtake, Yasushi; and Hasegawa, Tsunao, 4,344,094, Cl. 360-66.000.
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,343,376, Cl. 181-167.000.

Plaisted, Anthony C.: *See*—
Patel, Natvarlal K.; and Plaisted, Anthony C., 4,343,399, Cl. 206-222.000.

Plapp, Gunther, to Robert Bosch GmbH. Apparatus for measuring air flow in the air intake manifold of an internal combustion engine. 4,343,183, Cl. 73-204.000.

Platignum Limited: *See*—
Silver, Derrick J., 4,343,559, Cl. 401-109.000.

Plein, Hans-Joachim: *See*—
Schulze, Christian; and Plein, Hans-Joachim, 4,343,334, Cl. 139-420.00R.

Plessey Handel und Investments AG: *See*—
Das, Tapan K.; and Fryer, Martin A., 4,344,045, Cl. 331-1.00A.

Plurichemie Anstalt: *See*—
Villax, Ivan; and Page, Philip R., 4,343,739, Cl. 260-397.450.

Podos, Steven; Krupin, Theodore; and Becker, Bernard, to Mt. Sinai; and Washington University. Method of reducing intraocular pressure with salts of vanadic acid. 4,343,794, Cl. 424-131.000.

Poletto, John F.: *See*—
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,343,949, Cl. 562-503.000.

Politechnika Lodzka: *See*—
Dzida, Jan, 4,343,205, Cl. 74-711.000.

Pompei, Francesco, to Exergen Corporation. Radiation heat loss detector. 4,343,182, Cl. 374-31.000.

Ponstein, William M. Mobile conveyor. 4,343,389, Cl. 198-316.000.

Ponthus born Turquet, Jacqueline. Row counter for knitting instrument. 4,343,160, Cl. 66-1.00A.

Poppendiek, Heinz F., to United States of America, Energy. Method for determining thermal conductivity and thermal capacity per unit volume of earth in situ. 4,343,181, Cl. 73-154.000.

Popplewell, Frank W., to Dunlop Limited. Method of making game racket frame. 4,343,757, Cl. 264-221.000.

Potain: *See*—
Noly, Jean, 4,343,406, Cl. 212-225.000.

Pourchot, Melvin E., to Central Plastics Company. Rod guide apparatus. 4,343,518, Cl. 308-4.00A.

PPG Industries, Inc.: *See*—
Chang, Wen-Hsuan; O'Dwyer, James B.; and Peffer, John R., 4,343,925, Cl. 525-440.000.
Edge, Charles K., 4,343,642, Cl. 65-99.500.
Norton, W. Jack, 4,343,961, Cl. 136-230.000.
Sickles, James E., 4,343,433, Cl. 239-3.000.

Prame, Eric S., to International Business Machines Corp. Method and apparatus for character generation. 4,344,069, Cl. 340-365.00S.

Prescott, Ernest F.: *See*—
Hildebrand, Donald L.; and Prescott, Ernest F., 4,343,060, Cl. 15-84.000.

Presto Lock, Inc.: *See*—
Bako, Lazlo, 4,343,164, Cl. 70-312.000.
Bako, Lazlo, 4,343,165, Cl. 70-312.000.
Scelba, Stephen S.; and Bako, Lazlo, 4,343,163, Cl. 70-312.000.

Price, Clifford G.: *See*—
Basily, Basily B.; Das, Mihir K.; Price, Clifford G.; and Tobias, Stephen A., 4,343,208, Cl. 83-13.000.

Price, Derrick I., to Soil Structures International Limited. Reinforced earth structures. 4,343,571, Cl. 405-284.000.

Prime Marketing Group, Inc.: *See*—
Paule, Helmut, 4,343,340, Cl. 160-232.000.

Prior, John C. Building component and method of making the same. 4,343,669, Cl. 156-212.000.

Procter & Gamble Company, The: *See*—
Fawzi, Mahdi B., 4,343,798, Cl. 424-240.000.
Mustacich, Robert V.; Lucas, Donald S.; and Stone, Roger L., 4,343,788, Cl. 424-78.000.
Wise, Rodney M., 4,343,713, Cl. 252-92.000.

Prohaska, Raymond J.: *See*—
Wahl, Robert O.; Hay, William D.; and Prohaska, Raymond J., 4,343,092, Cl. 33-169.00R.

Prooi, Jacob J.; Sep, Waltherus J.; and Westerhof, Wilhelmina, to Internationale Octrooi Maatschappij "Octropa" BV. Unsaturated polyester composition. 4,343,932, Cl. 528-303.000.

Prozorov, Valery I.: *See*—
Bank, Mikhail U.; Prozorov, Valery I.; and Rubichev, Nikolai A., 4,344,028, Cl. 324-57.00N.

Pruett, Roy L.: *See*—
Fiato, Rocco A.; and Pruett, Roy L., 4,343,950, Cl. 562-531.000.

Publimepharm: *See*—
Mena, Edouard, 4,343,128, Cl. 53-167.000.

Pucci, Donald G.; and Everly, Ralph T., to General Electric Company. Epoxy resin composition and process for production. 4,343,731, Cl. 523-427.000.

Pugh, Paul F. Method for manufacturing SF_6 pressurized gas continuous spacer cable. 4,343,665, Cl. 156-48.000.

Pullman Incorporated: *See*—
Edwards, William M.; and Huang, C. Peter, 4,343,771, Cl. 422-168.000.

Purdon, Jerome R. Deburring tool. 4,343,577, Cl. 408-226.000.

Purdue Research Foundation: *See*—
Etzel, James E.; and Anand, Praveen, 4,343,706, Cl. 210-667.000.

PureCycle Corporation: *See*—
Blades, Frederick K., 4,343,552, Cl. 356-339.000.

Putt, Ronald A., to Electric Power Research Institute, Inc. Hydrogen ion-producing cell and technique for controlling the pH of battery electrolytes. 4,343,868, Cl. 429-17.000.

Quell, Peter: *See*—
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, 4,343,681, Cl. 376-293.000.

Questor Corporation: *See*—
Cone, Richard E., 4,343,510, Cl. 297-250.000.

Quik-to-Fix Products, Inc.: *See*—
Shelton, Charles L., 4,343,067, Cl. 17-26.000.

Quinlan, Patrick M., to Petrolite Corporation. Quaternary alkynoxymethyl amines. 4,343,720, Cl. 252-390.000.

Qureshi, Shahid U. H., to Codex Corporation. Time recovery circuitry in a modem receiver. 4,344,176, Cl. 375-15.000.

Rabette, Jean Y.: *See*—
Forest, Jean-Pierre; and Rabette, Jean Y., 4,344,070, Cl. 340-815.080.

Radek, John R., to Ready Metal Manufacturing Company. Napkin dispenser. 4,343,415, Cl. 221-59.000.

Radiation Dynamics, Inc.: *See*—
Berejka, Anthony J., 4,343,864, Cl. 428-500.000.

Radiation Measurements, Inc.: *See*—
Jacobson, Donald R., 4,344,183, Cl. 378-207.000.

Ragot, Philippe: *See*—
Ambille, Georges; Bacconnet, Eugene; and Ragot, Philippe, 4,343,298, Cl. 126-450.000.

Ragsdale, Charles W., to Cavitron Corporation. System and method for analyzing tonosignals. 4,344,037, Cl. 328-114.000.

Rajagopal, Ganesh; and Basrai, Habil S., to Ford Motor Company. Electrically operated hydraulic power lift system. 4,343,365, Cl. 172-4.000.

Rampf KG Formen GmbH & Co.: *See*—
Rodon, Guenter, 4,343,453, Cl. 249-120.000.

Ramspacher, Robert J., Jr.: *See*—
West, Charles E.; and Ramspacher, Robert J., Jr., 4,344,106, Cl. 361-386.000.

Randall, Leslie L.: *See*—
Danko, Michael J.; Randall, Leslie L.; Smith, Ray J.; and Walsh, James E., 4,343,190, Cl. 73-846.000.

Randolph, Byron B., Jr., to Gardiner, Robert F. Selective/ground neutralizing metal detector. 4,344,034, Cl. 324-329.000.

Rangaire Corporation: *See*—
Pickens, Jay W.; and Warren, Linton G., 4,344,115, Cl. 362-216.000.

Rantanen, Mikko; Tuomi, Alpo; and Laiho, Reino, to Rauma-Repola Oy. Method and equipment for thickening of suspension or pulp. 4,343,708, Cl. 210-744.000.

Rao, Manjeshwar S.: *See*—
Hahn, Kurt L.; Padgett, Howard J.; and Rao, Manjeshwar S., 4,343,174, Cl. 72-349.000.

Ratjen, Johann: *See*—
McLuskie, Albert; Ratjen, Johann; and Vehling, Ernst, 4,343,069, Cl. 19-0.600.

Rauma-Repola Oy: *See*—
Rantanen, Mikko; Tuomi, Alpo; and Laiho, Reino, 4,343,708, Cl. 210-744.000.

Rawlings, Robert M., to Padco, Inc. Film break detector. 4,344,073, Cl. 340-675.000.

Ray-O-Vac Corporation: *See*—
Joshi, Ashok V.; and Margalit, Nehemiaha, 4,343,714, Cl. 252-182.100.
Oltman, John E.; and Dopp, Robert B., 4,343,869, Cl. 429-27.000.

RCA Corporation: *See*—
Bleazey, John C.; and Guarracini, Joseph, 4,344,166, Cl. 369-216.000.
Corsover, Stephen L.; Dobbins, Lawrence W.; and Pierson, Paul B., 4,344,088, Cl. 358-132.000.
Harford, Jack R., 4,344,043, Cl. 330-254.000.
Harford, Jack R., 4,344,044, Cl. 330-254.000.
Harmon, Joseph W.; and Atherton, James H., 4,344,003, Cl. 307-296.00A.
Johnston, Loren B., 4,344,021, Cl. 315-383.000.
Marschka, Frank D., 4,344,015, Cl. 313-466.000.
Phillips, William; Neil, Clyde C.; and Hammer, Jacob M., 4,343,890, Cl. 430-321.000.
Rudy, John E., 4,344,075, Cl. 340-703.000.
Stewart, Roger G., 4,344,005, Cl. 307-463.000.
Tarng, Ming L., 4,343,676, Cl. 156-628.000.
West, Charles E.; and Ramspacher, Robert J., Jr., 4,344,106, Cl. 361-386.000.
Wilmarth, Paul C., 4,343,084, Cl. 29-843.000.

Reactor Services International, Inc.: *See*—
Easley, Othel D., Jr.; and Hoiseth, Merlin G., 4,343,586, Cl. 414-414.000.

Ready Metal Manufacturing Company: *See*—
Radek, John R., 4,343,415, Cl. 221-59.000.

Reardon, Edward J., Jr., to Dynachem Corporation. Phototropic photosensitive compositions containing fluoran colorformer. 4,343,885, Cl. 430-177.000.

Reavis, Robert P., Jr.; and Weisenburger, Lawrence P., to AMP Incorporated. Terminal block with self locking terminal. 4,343,529, Cl. 339-198.00R.

Reda, Emil T. Flushing nozzle and dilater for colostomy irrigation. 4,343,307, Cl. 128-239.000.

Redicon Corporation: *See*—
Bulso, Joseph D., Jr.; and Lewers, William R., 4,343,173, Cl. 72-345.000.

Reed, Geoffrey R.: *See*—
Laws, William R.; and Reed, Geoffrey R., 4,343,168, Cl. 72-10.000.

Reed, Paul A.: *See*—
Klaas, Jeffrey M.; Reed, Paul A.; and Rimawi, Isam, 4,344,154, Cl. 365-194.000.

Reed, Wilmer H., III, to United States of America, National Aeronautics and Space Administration. Decoupler pylon: wing/store flutter suppressor. 4,343,447, Cl. 244-137.00R.

Reese, Eckart: *See*—
Weber, Hans-Leo; Reese, Eckart; Kaloff, Hans; and Fausten, Hans-Josef, 4,343,756, Cl. 264-216.000.

Rehder, Richard A.: *See*—
Goswami, Jagadish C.; Grimes, Whiteford D.; and Rehder, Richard A., 4,343,856, Cl. 428-332.000.

Reichhold Chemicals Incorporated: *See*—
Cohen, Arnold, 4,343,727, Cl. 524-41.000.

Reichmanis, Elsa; and Wilkins, Cletus W., Jr., to Bell Telephone Laboratories, Incorporated. Process of exposing and developing terpolymer photosensitive bodies. 4,343,889, Cl. 430-311.000.

Reilly, James P.; and Haykin, Simon, to Canadian Patents & Development Limited. Method and apparatus for providing the in-phase and quadrature components of a bandpass signal. 4,344,040, Cl. 329-50.000.

Reining, Karl: *See*—
Benninger, Siegfried; Reining, Karl; and Krasel, Werner, 4,343,621, Cl. 23-293.00R.

Reliance Electric Company: *See*—
Beene, Gerald W., 4,343,971, Cl. 179-70.000.

Rennich, Mark J.: *See*—
Morgan, J. Giles; Rennich, Mark J.; and Whatley, Marvin E., 4,343,478, Cl. 277-90.000.

Renth, Ernst-Otto: *See*—
Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,343,800, Cl. 424-248.500.

Reppisch-Werke AG: *See*—
Ubezio, Lorenzo, 4,343,094, Cl. 33-430.000.

Republic Steel Corporation: *See*—
Stanya, Andrew; Franklin, Joseph E.; and Dickinson, David W., 4,343,980, Cl. 219-110.000.

Research Corporation: *See*—
Issidorides, Costas H.; and Haddadin, Makhluf J., 4,343,942, Cl. 544-354.000.

Research Council of Alberta: *See*—
Kessick, Michael A.; and St. Denis, C. Earl, 4,343,323, Cl. 137-13.000.

Research Foundation of City University of New York: *See—*
Ronn, Avigdor M., 4,343,687, Cl. 204-157.10R.
Reusser, Fritz; and Malik, Vedpal S., to Upjohn Company, The. Hybrid plasmid of pBR322 and Streptomyces plasmid and *E. coli* containing same. 4,343,906, Cl. 435-253.000.
Reuter, Rene F., to Goodyear Tire & Rubber Company, The. Elongatable reinforcement cord for an elastomeric article. 4,343,343, Cl. 152-359.000.
Reynolds, Kenneth R., to General Electric Co. Brush wear indicator for a dynamoelectric machine brush. 4,344,009, Cl. 310-242.000.
Rheological Systems, Inc.: *See—*
Brown, Robert, 4,343,670, Cl. 156-233.000.
Rhone-Poulenc Industries: *See—*
Coquard, Jean; and Goletto, Jean, 4,343,743, Cl. 260-404.500.
Soula, Gerard, 4,343,745, Cl. 260-429.00J.
Ribeiro de Almeida, A. A., to Inter-Hydraulik GmbH, Firma. Arrangement for hydraulic presses and bending presses. 4,343,226, Cl. 91-171.000.
Rice, Stuart L., to Caterpillar Tractor Co. Method of making a low temperature bainite steel alloy gear. 4,343,661, Cl. 148-134.000.
Rich, Dennis J.: *See—*
Adams, James H.; Rich, Dennis J.; and Holtz, Frederick C., Jr., 4,343,909, Cl. 501-98.000.
Richards, Thomas J.: *See—*
Smead, Robert G.; Richards, Thomas J.; and Lanchantin, Charles E., Jr., 4,343,828, Cl. 427-27.000.
Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,343,738, Cl. 260-239.30P.
Ricoh Company, Ltd.: *See—*
Hashimoto, Mitsuru, 4,343,882, Cl. 430-58.000.
Kimura, Mitsuteru, 4,343,768, Cl. 422-97.000.
Riedel, Erich O., to Riedel-Technik GmbH. Apparatus for cleaning the inside faces of pipes or tubes. 4,343,702, Cl. 210-391.000.
Riedel, Erich O., to Riedel-Technik GmbH. Apparatus for cleaning the interior faces of pipes or tubes. 4,343,703, Cl. 210-391.000.
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Riedel, Erich O., 4,343,702, Cl. 210-391.000.
Riedel, Erich O., 4,343,703, Cl. 210-391.000.
Rieter Machine Works Ltd.: *See—*
Ernst, Walter; Giger, Hans; and Sigrist, Ernst, 4,343,144, Cl. 57-86.000.
Riggs, Emmet D.; Brownscombe, Eugene R.; and Bilhartz, James R., to Sonics International, Inc. Method and apparatus for treating subsurface boreholes. 4,343,356, Cl. 166-60.000.
Rikis, Vitolds: *See—*
Schiff, Otto M.; and Rikis, Vitolds, 4,343,543, Cl. 354-124.000.
Riley, Robert E.: *See—*
Newkirk, Lawrence R.; Valencia, Flavio; Riley, Robert E.; and Wallace, Terry C., Sr., 4,343,836, Cl. 427-249.000.
Rimawi, Isam: *See—*
Klaas, Jeffrey M.; Reed, Paul A.; and Rimawi, Isam, 4,344,154, Cl. 365-194.000.
Rink, Norbert: *See—*
Muschelknautz, Edgar; and Rink, Norbert, 4,343,639, Cl. 65-4.400.
Rist, Charles A., Jr.: *See—*
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Ritchie, Leon T.: *See—*
Lucius, John E.; and Ritchie, Leon T., 4,343,085, Cl. 29-866.000.
Lucius, John E.; and Ritchie, Leon T., 4,343,528, Cl. 339-198.00G.
Ritter, Terry F.: *See—*
Bruce, William C., Jr.; Musa, Fuad H.; and Ritter, Terry F., 4,344,133, Cl. 364-200.000.
RIV-SKF Officine di Villar Perosa S.p.A.: *See—*
Bertone, Enrico, 4,343,520, Cl. 308-178.000.
Rivers, Ronald D., to Cabot Corporation. Metal binder in compaction of metal powders. 4,343,650, Cl. 75-213.000.
Robert Bosch GmbH: *See—*
Anlauf, Jurgen, 4,344,032, Cl. 324-158.0MG.
Brammer, Hartmut; and Leiber, Heinz, 4,343,285, Cl. 123-647.000.
Herden, Werner; and Neu, Hans, 4,343,180, Cl. 73-115.000.
Plapp, Gunther, 4,343,183, Cl. 73-204.000.
Schadlich, Fritz, 4,343,214, Cl. 83-543.000.
Stabler, Manfred; and Schadlich, Fritz, 4,343,115, Cl. 51-268.000.
Robertshaw Controls Company: *See—*
Beggs, James H., 4,344,066, Cl. 340-310.00A.
Rockwell International Corporation: *See—*
Cook, Carroll J.; and Henthorn, Timothy K., 4,344,185, Cl. 455-110.000.
White, Stanley A., 4,344,151, Cl. 364-754.000.
Roda, Jan; and Kralicek, Jaroslav, to Vysoka skola chemicko-technologicka. Process for the anionic polymerization of 2-pyrrolidone with fast freezing step. 4,343,933, Cl. 528-312.000.
Roder, Albert: *See—*
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.
Rodon, Guenter, to Rampf KG Formen GmbH & Co. Mould for producing concrete mouldings. 4,343,453, Cl. 249-120.000.
Rogers, Edward S.; and Tu, Hosheng, to UOP Inc. Catalytic composite from partially crystallized clay. 4,343,723, Cl. 252-455.00Z.
Rogers, Raymond W.: *See—*
Wilson, Robert G.; and Rogers, Raymond W., 4,343,985, Cl. 219-214.000.
Rohrer, Heinrich: *See—*
Binnig, Gerd; and Rohrer, Heinrich, 4,343,993, Cl. 250-306.000.
Roller, Hanno; Ohnmacht, Helmut; Lieber, Ludwig; and Nauerth, Karl-Heinz, to Fritz Eichenauer, Firma. Electrical resistance water heating device, particularly for beverage preparation machines. 4,343,988, Cl. 219-302.000.
Rolls Royce Limited: *See—*
Langley, Kenneth R., 4,343,446, Cl. 244-12.500.
May, Gordon C., 4,343,592, Cl. 415-171.000.
Perry, Derick A., 4,343,594, Cl. 416-193.00A.
Scott-Scott, John L., 4,343,611, Cl. 440-45.000.
Roman, Daniel J.: *See—*
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.
Romano, James V.: *See—*
Jurecic, Anton; and Romano, James V., 4,343,418, Cl. 222-386.000.
Ronn, Avigdor M., to Research Foundation of City University of New York. Production of chain reactions by laser chemistry. 4,343,687, Cl. 204-157.10R.
Rose, Peter W. Process for preparing meat products having reduced shrinkage. 4,343,821, Cl. 426-247.000.
Rose, Peter W. Process for preparing cooked meat products having reduced shrinkage after refrigeration. 4,343,822, Cl. 426-247.000.
Roseman, Arnold S., to CFS Continental, Inc. Free-flowing, sweetened, hydrated, coconut particles and method for preparing same. 4,343,820, Cl. 426-103.000.
Rosen, Howard N.; Bodkin, Robert E.; and Gaddis, Kenneth D., to United States of America, Agriculture. Pressure dryer for steam seasoning lumber. 4,343,095, Cl. 34-16.500.
Rosenberry, George M., Jr.: *See—*
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,343,347, Cl. 164-463.000.
Ross, Donald N.; Bodnar, Endre; and Hoskin, William J. Stent for a cardiac valve. 4,343,048, Cl. 3-1.500.
Rowan, Robert A.; and Mathis, Leroy. Silage wagon. 4,343,511, Cl. 298-6.000.
Rowland, Stanley P.: *See—*
Wade, Clinton P.; and Rowland, Stanley P., 4,343,070, Cl. 19-40.000.
Rubichev, Nikolai A.: *See—*
Bank, Mikhail U.; Prozorov, Valery I.; and Rubichev, Nikolai A., 4,344,028, Cl. 324-57.00N.
Ruderman, Stephen: *See—*
Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, 4,343,392, Cl. 198-484.000.
Rudhard, Heinz: *See—*
Brenik, Wenzel; and Rudhard, Heinz, 4,343,318, Cl. 131-300.000.
Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; and Hefftler, Victor, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Control device for suction gripper systems in sheet guiding cylinders. 4,343,241, Cl. 101-231.000.
Rudy, John E., to RCA Corporation. Timing circuit for the digital generation of composite luminance and chrominance video signal for non-interlaced television raster scan-line pattern. 4,344,075, Cl. 340-703.000.
Ruediger, Dennis W. Supplemental identification system for channel and similar marker lights. 4,344,110, Cl. 362-32.000.
Rundquist, Hans M.; and Skold, Tore G., to Studsvik Energiteknik AB. Lamp device for underwater use. 4,344,118, Cl. 362-267.000.
Runkle, Dean; Wilson, Robert K.; and Monroe, William E., to Bendix Corporation, The. Fluid actuator. 4,343,225, Cl. 91-52.000.
Rupprecht, Eckhard: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.
Russell, Ian M.: *See—*
Jones, Francis W.; Mayfield, Robert J.; O'Loughlin, Gary J.; and Russell, Ian M., 4,343,618, Cl. 8-128.00R.
Russo, John A.: *See—*
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., 4,343,910, Cl. 521-82.000.
Rustenburg, Conrad M.: *See—*
Jacobson, Peter E.; and Rustenburg, Conrad M., 4,343,203, Cl. 74-5.00R.
Ruthmansdorfer, David A.: *See—*
Stang, John H.; Brighton, Walter A.; and Ruthmansdorfer, David A., 4,343,268, Cl. 123-90.400.
Ruud, Alan J.; and Lewin, Ian, to McGraw-Edison Company. High efficiency lighting units and systems using same. 4,344,111, Cl. 362-33.000.
Ryan, Carl R., to Motorola Inc. Clock synchronizer and data detector. 4,344,179, Cl. 375-110.000.
Rydland, Kjell: *See—*
Bockman, Ole K.; and Rydland, Kjell, 4,343,352, Cl. 165-104.160.
Ryoko Electronic Industries Ltd.: *See—*
Eguchi, Kazuo; Kobayashi, Tadashi; and Miyake, Yukiharu, 4,343,960, Cl. 136-225.000.
Ryu, Yumi P.; Singerman, Gary M.; and Anglin, James R., to Gulf Research & Development Company. Preparation of quaternary ammonium thiomolybdates. 4,343,747, Cl. 260-429.00R.
Ryu, Yumi P.: *See—*
Anglin, James R.; Ryu, Yumi P.; and Singerman, Gary M., 4,343,746, Cl. 260-429.00R.

S&C Electric Company: *See*—
Swanson, Roy T., 4,344,059, Cl. 337-174.000.
Sack, Berthold: *See*—
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, 4,343,681, Cl. 376-293.000.
Sado, Ichiro; Cho, Mitsuo; Kishimoto, Juji; and Sasaki, Masayuki, to Canon Kabushiki Kaisha. Electronic calculator with printer. 4,344,147, Cl. 364-710.000.
Sado, Ryoichi, to Shin-Etsu Polymer Co., Ltd. Key board switch unit with illumination. 4,343,975, Cl. 200-314.000.
Sadones, Henri: *See*—
Chekroun, Claude; Michel, Yves C.; and Sadones, Henri, 4,344,077, Cl. 343-754.000.
Sah, Chin-Tang: *See*—
Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chin-Tang, 4,343,962, Cl. 136-255.000.
St. Denis, C. Earl: *See*—
Kessick, Michael A.; and St. Denis, C. Earl, 4,343,323, Cl. 137-13.000.
Saito, Hiromitsu: *See*—
Hirata, Tadashi; Saito, Hiromitsu; and Nakamizo, Nobuhiro, 4,343,943, Cl. 546-183.000.
Saito, Masao; Onda, Yuuzi; and Murayama, Yuko, to Mitsubishi Gas Chemical Company, Inc. Process for producing catalyst. 4,343,722, Cl. 252-431.00N.
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, to TDK Electronics Co., Ltd. Process for preparing magnetic recording medium. 4,343,834, Cl. 427-132.000.
Sakamoto, Kohichiro: *See*—
Suzuki, Seiji; Sakamoto, Kohichiro; and Kitagawa, Tohru, 4,343,197, Cl. 73-862.650.
Salmi, Pekka: *See*—
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Saltzman, Edwin J., to United States of America, National Aeronautics and Space Administration. Low-drag ground vehicle particularly suited for use in safely transporting livestock. 4,343,506, Cl. 296-1.005.
Samson Aktiengesellschaft: *See*—
Kemmler, Lothar, 4,343,224, Cl. 91-47.000.
Samuelson, Donald G.; and Farris, Paul R., to Club Car Inc. Snap-on windshield for golf carts and like vehicles. 4,343,503, Cl. 296-84.00D.
Sandin, Gus: *See*—
Alworth, James; Kennedy, John C.; La Barre, Berger; and Sandin, Gus, 4,343,200, Cl. 74-57.000.
Sandvik Aktiebolag: *See*—
Lagerholm, Kurt; and Faber, Kurt H. A. E., 4,343,576, Cl. 408-155.000.
Sangamo-Weston, Inc.: *See*—
Lewis, Terence O., 4,344,076, Cl. 340-825.170.
Sankio Chemical Co., Ltd.: *See*—
Oshima, Mituyoshi; and Yoshimoto, Jun, 4,343,955, Cl. 568-834.000.
Sansbury, Jerry F., to Sonoco Products Company. Composite container with balloon fold. 4,343,427, Cl. 229-4.500.
Santilli, James N.: *See*—
Holtzman, Barry L.; Mercier, George E.; Thiel, Peter H.; and Santilli, James N., 4,344,105, Cl. 361-328.000.
Sanwa Shutter Corporation: *See*—
Kagawa, Tokiyoshi, 4,343,171, Cl. 72-181.000.
Sanyo Electric Co., Ltd.: *See*—
Koyama, Hideaki, 4,343,977, Cl. 219-10.55B.
Sugiura, Youji; and Nishimura, Satoshi, 4,344,039, Cl. 329-50.000.
Sardisco, John B., to Pennzoil Company. Decomposition of 2KCl.CuCl to produce cuprous chloride and potassium chloride. 4,343,781, Cl. 423-493.000.
Sarma, Kalluri R.; and Legge, Ronald N., to Motorola, Inc. Method for improving the efficiency of solar cells having imperfections. 4,343,830, Cl. 427-38.000.
Sarofim, Adel F.: *See*—
Blair, David W.; Bartok, William; Longwell, John P.; and Sarofim, Adel F., 4,343,606, Cl. 431-10.000.
Sartori, Guido: *See*—
Melchior, Michael T.; Milliman, George E.; and Sartori, Guido, 4,343,716, Cl. 252-192.000.
Sartorio, Emanuele; Calcagno, Benedetto; Trombetti, Fulvio; and Ghirga, Marcello, to Euteco Impianti S.p.A. Process for the production of cumene. 4,343,957, Cl. 585-449.000.
Sartorius GmbH: *See*—
Stadler, Eberhard; and Blawert, Dieter, 4,343,373, Cl. 177-50.000.
Sarver, Robert B.; and Arthur, W. Eugene, to Cunningham, Robert D.; and West, Byron F., a part interest to each. Self-erecting roadway marking post. 4,343,567, Cl. 404-10.000.
Sasaki Co., Ltd.: *See*—
Sasaki, Kyozo, 4,343,097, Cl. 36-3.00A.
Sasaki, Kyozo, to Sasaki Co., Ltd. Shoes. 4,343,097, Cl. 36-3.00A.
Sasaki, Masayuki: *See*—
Sado, Ichiro; Cho, Mitsuo; Kishimoto, Juji; and Sasaki, Masayuki, 4,344,147, Cl. 364-710.000.
Sasaki, Yoshitaka, to Hitachi Metals, Ltd. Pressure-fixation apparatus. 4,343,234, Cl. 100-158.00R.
Sasaoka, Senzo, to Fuji Photo Film Company, Ltd. Photographic light-sensitive silver halide elements. 4,343,873, Cl. 430-1.000.
Sassiver, Martin L.; and Boothe, James H., to American Cyanamid Company. 7-[Dα-(Coumarin-3-carboxamido)arylacetamido]-cephalosporanic acids or salts. 4,343,938, Cl. 544-27.000.
Sato, Hideo: *See*—
Kawamura, Kouichi; Katsuyama, Harumi; and Sato, Hideo, 4,343,948, Cl. 549-13.000.
Satoh, Hisashi: *See*—
Akabane, Yukihiro; Satoh, Hisashi; Shiraiwa, Yukio; and Tsuchiya, Shuyou, 4,343,521, Cl. 308-193.000.
Satoh, Mitsuharu; and Aiso, Katsuyoshi, to Toshiba Kikai Kabushiki Kaisha. Automatic tool exchanging apparatus of machine tool. 4,343,077, Cl. 29-568.000.
Satoh, Yoshiaki: *See*—
Watanabe, Ichiro; and Satoh, Yoshiaki, 4,343,899, Cl. 435-129.000.
Sauer, Hans: *See*—
Nagamoto, Mitsuki; and Kobayashi, Nobuo, 4,344,103, Cl. 361-160.000.
Sauermilch, Otto, to William Prym-Werke KG. Machine with finger protection guard. 4,343,423, Cl. 227-1.000.
Saunders, Robert M.: *See*—
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,343,754, Cl. 264-154.000.
Saussine, Lucien: *See*—
Julia, Marc; and Saussine, Lucien, 4,343,952, Cl. 568-28.000.
Sauter, Robert: *See*—
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.
Savin Corporation: *See*—
Sher, Arden; and Mooney, John B., 4,343,881, Cl. 430-57.000.
Sawada, Satoru: *See*—
Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, 4,343,886, Cl. 430-237.000.
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; and Tobita, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing thermal head. 4,343,833, Cl. 427-96.000.
Scelba, Stephen S.; and Bako, Lazlo, to Presto Lock, Inc. Combination lock with scramble feature. 4,343,163, Cl. 70-312.000.
Schadlich, Fritz, to Robert Bosch GmbH. Arrangement for fastening a circular saw blade on a trunnion axially projecting from a drive shaft. 4,343,214, Cl. 83-543.000.
Schadlich, Fritz: *See*—
Stabler, Manfred; and Schadlich, Fritz, 4,343,115, Cl. 51-268.000.
Schaefer, David V.; and Hamkins, Clark J., to Tenneco Inc. Ball movement coordinator and cam member for torque responsive hub clutch. 4,343,386, Cl. 192-54.000.
Schaefer, William E.: *See*—
Breza, Cyril J., deceased; and Schaefer, William E., 4,343,663, Cl. 149-4.000.
Schafer, Kenneth L.; and Peterson, Maurice L. Animal watering apparatus. 4,343,264, Cl. 119-73.000.
Schafer, Paul: *See*—
Abel, Heinz; and Schafer, Paul, 4,343,620, Cl. 8-557.000.
Schaub, Robert E.: *See*—
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,343,949, Cl. 562-503.000.
Schiff, Otto M.; and Rikis, Vitolds, to Schiff Photo Mechanics. Multiple image roll film camera. 4,343,543, Cl. 354-124.000.
Schiff Photo Mechanics: *See*—
Schiff, Otto M.; and Rikis, Vitolds, 4,343,543, Cl. 354-124.000.
Schimbke, Paul A.; and Williams, Stanley A., to Aqua-Chem, Inc. Electric boiler. 4,343,987, Cl. 219-287.000.
Schingnitz, Manfred: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.
Schlegel Corporation: *See*—
Burden, Martin J.; and Williams, Richard C., 4,343,845, Cl. 428-122.000.
Schmidt, Paul J.; and Hung, William M., to Sterling Drug Inc. Duplicating and marking systems. 4,343,493, Cl. 282-27.500.
Schmitt, Frederick L.: *See*—
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,343,791, Cl. 424-84.000.
Schmolka, Irving R., to BASF Wyandotte Corporation. Gel dentifrice compositions. 4,343,785, Cl. 424-49.000.
Schnapp, Herbert, to Interatom Internationale Atomreaktorbau GmbH. Vibration pickup. 4,343,186, Cl. 73-649.000.
Schneider, Fred J.: *See*—
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.
Schneider, Klaus: *See*—
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Schneider, Urban A.; and Nelson, Robert L., to Westinghouse Electric Corp. Non-consumable composite welding electrode. 4,343,983, Cl. 219-145.210.
Scholes, Addison B., to Ball Corporation. Article having a scratch resistant lubricated glass surface and its method of manufacture. 4,343,641, Cl. 65-60.200.

Schonmann, Gerhard: *See*—
Sommer, Klaus; Klemm, Walter; Weber, Hermann; Meinhardt, Frederich; Schonmann, Gerhard; and Spatz, Wilhelm, 4,343,779, Cl. 423-305.000.

Schornack, Louis W.; and Goldstein, Richard, to Dynascan Corporation. Power circuit control programmable timer. 4,344,000, Cl. 307-132.00E.

Schott Glaswerke: *See*—
Faulstich, Marga; and Geiler, Volmar, 4,343,908, Cl. 501-78.000.

Schramm, Walter: *See*—
Kick, Helmut; Kistenmacher, Hans; Schramm, Walter; Hoerner, Berndt; and Lang, Udo, 4,343,633, Cl. 62-23.000.

Schroder, Bruno: *See*—
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, 4,343,681, Cl. 376-293.000.

Schroder, William J., to Milliken Research Corporation. Air treatment jet for yarn. 4,343,071, Cl. 28-254.000.

Schromm, Kurt: *See*—
Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muscevic, Gojko, 4,343,800, Cl. 424-248.500.

Schuller, Kurt: *See*—
Leiter, Berndt; Keller, Josef; Schuller, Kurt; and Eisend, Ewald, 4,343,613, Cl. 474-82.000.

Schulte, Heinrich, to Klockner-Werke AG. Drive sprocket wheel. 4,343,614, Cl. 474-155.000.

Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Bearing for the cylinders of printing machines. 4,343,519, Cl. 308-37.000.

Schulze, Christian; and Plein, Hans-Joachim, to Hoechst Aktiengesellschaft. Jeans fabric comprising open sheath core friction spun yarns and process for its manufacture. 4,343,334, Cl. 139-420.00R.

Schum, Vaughn J., Jr.: *See*—
Beach, Bradley L.; Gates, Paul D.; and Schum, Vaughn J., Jr., 4,343,653, Cl. 106-22.000.

Schumacher, Berthold W., to Ford Motor Company. Low ripple D.C. power supply. 4,344,126, Cl. 363-126.000.

Schuster, Hans-Dieter: *See*—
Abthoff, Jorg; Schuster, Hans-Dieter; Langer, Hans-Joachim; and Gabler, Rolf, 4,343,149, Cl. 60-311.000.

Schwartz, Anne L.: *See*—
Lenox, Ronald S.; and Schwartz, Anne L., 4,343,923, Cl. 525-426.000.

Schwartz, Robert E.: *See*—
Dinsmore, Harold L.; Schwartz, Robert E.; and Tuttle, Willard N., 4,343,629, Cl. 55-28.000.

Schwartz, Stephan; Soderstrom, Roland; and Bjareklint, Ake, to Energy Development Associates, Inc. Method of joining metal to graphite by spot welding. 4,343,982, Cl. 219-118.000.

Schwarzenbach, Alfred, to BBC Brown Boveri & Co. Ltd.,. Apparatus for preventing blowing out of the water supply of constant pressure air storage installations of gas turbine power plants. 4,343,569, Cl. 405-53.000.

Schwertfeger, Werner: *See*—
Muffler, Herbert; Siegemund, Gunter; and Schwertfeger, Werner, 4,343,742, Cl. 549-380.000.
Siegemund, Gunter; and Schwertfeger, Werner, 4,343,749, Cl. 260-543.00F.

Schwindt, Jurgen; Ganster, Otto; and Meiners, Hans-Joachim, to Bayer Aktiengesellschaft. Process for the production of tires comprising vulcanized elastomers containing urethane groups. 4,343,339, Cl. 152-209.00R.

Schwing, Friedrich; and Schwing, Gerhard, to Friedrich Wilh. Schwing GmbH. Viscous material pump, particularly for concrete. 4,343,598, Cl. 417-517.000.

Schwing, Gerhard: *See*—
Schwing, Friedrich; and Schwing, Gerhard, 4,343,598, Cl. 417-517.000.

SCM Corporation: *See*—
Abbey, Kirk J., 4,343,915, Cl. 523-414.000.
Bonsack, James P., 4,343,775, Cl. 423-78.000.
DuRoss, Robert M.; and Stuhler, Robert J., 4,343,557, Cl. 400-496.000.

Score, Robert E.: *See*—
McCormick, Lloyd G.; and Score, Robert E., 4,343,131, Cl. 53-397.000.

Scott, Robert F. Retrieval and storage device for flexible elements. 4,343,420, Cl. 226-49.000.

Scott-Scott, John L., to Rolls-Royce Limited. Marine propulsion. 4,343,611, Cl. 440-45.000.

Scourtes, George, to Allen Group, The. Apparatus and methods for simulating varying atmospheric conditions. 4,343,348, Cl. 165-1.000.

Scudder, Jonathan K.: *See*—
Hawke, Ronald S.; Scudder, Jonathan K.; and Aaland, Kristian, 4,343,223, Cl. 89-8.000.

Scurlock, Scot L.: *See*—
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Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

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Shackleton, Ronald; Woodruff, Christopher J.; and Fletcher, Ian M. Filter presses and a method of cleaning same. 4,343,710, Cl. 210-797.000.

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Shaw, Terrence M., to Cummins Engine Company, Inc. Cylinder block for an internal combustion engine. 4,343,267, Cl. 123-41.810.

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Shekleton, Jack R., to Solar Turbines Incorporated. Combustors and combustion systems. 4,343,147, Cl. 60-39.060.

Shekleton, Jack R., to Solar Turbines Incorporated. Liquid fueled combustors with rotary cup atomizers. 4,343,148, Cl. 60-39.060.

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Goodall, Brian L.; and van der Sar, Jacob C., 4,343,721, Cl. 252-429.00B.
Winquist, Bruce H. C., 4,343,692, Cl. 208-111.000.

Shelton, Andrew B. Tie back holder with pleat support. 4,343,344, Cl. 160-349.00D.

Shelton, Charles L., to Quik-to-Fix Products, Inc. Meat cutlet tenderizing machine. 4,343,067, Cl. 17-26.000.

Shelton, Lawrence S.; Boigk, Dieter G.; and Gabriel, William L., to Signode Corporation. Nail stack. 4,343,579, Cl. 411-442.000.

Shem Safe Incorporated: *See*—
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Shepherd, Clarence R. Diesel engine fuel preheating system. 4,343,283, Cl. 123-557.000.

Sheptak, Nicholas, to American Can Company. Multi-ply laminae. 4,343,851, Cl. 428-212.000.

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Egan, Richard R.; and Cotrell, Phillip L., 4,343,726, Cl. 252-547.000.

Shew, David S. Process for forming printing characters. 4,343,615, Cl. 493-325.000.

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Shimano Industrial Company Limited: *See*—
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Shimano, Keizo, to Shimano Industrial Company Limited. Speed control device. 4,343,201, Cl. 74-475.000.

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Shimomura, Takao, to Mitsui Toatsu Chemicals, Inc. Flow rate measuring instrument. 4,343,192, Cl. 73-861.210.

Shin-Etsu Chemical Co., Ltd.: *See*—
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Shin-Etsu Polymer Co., Ltd.: *See—*
Sado, Ryoichi, 4,343,975, Cl. 200-314.000.
Shinoda, Masaichi: *See—*
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Shinta, Jouji: *See—*
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Shofner, Frederick M.; Greene, Neil E.; and Hanna, Terry J., to Owens-Corning Fiberglas Corporation. Method and apparatus for monitoring the diameter of fibers. 4,343,637, Cl. 65-2.000.
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Shope, Walter H.: *See—*
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Show-Pak Incorporated: *See—*
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Showa Electric Wire & Cable Co., Ltd.: *See—*
Niwa, Yoshio, 4,344,061, Cl. 337-407.000.
Shubow, Calvin. Building block module and method of construction. 4,343,125, Cl. 52-236.800.
Shuler, Lucien B.; and Spivey, William J., Jr., to Caterpillar Tractor Co. Sequential preconditioning circuit for hydrostatic transmission. 4,343,150, Cl. 60-399.000.
Siac Industria Accessori Cavaria S.p.A.: *See—*
Giacometti, Antonio, 4,343,162, Cl. 70-67.000.
Siano, James C. Rail jack adaptor. 4,343,457, Cl. 254-43.000.
Sickles, James E., to PPG Industries, Inc. Internal-atomizing spray head with secondary annulus suitable for use with induction charging electrode. 4,343,433, Cl. 239-3.000.
Siegemund, Gunter; and Schwertfeger, Werner, to Hoechst Aktiengesellschaft. Process for the preparation of monohydroperfluoroalkane-sulfonic acid halides and some specific representatives of this class of compound. 4,343,749, Cl. 260-543.00F.
Siegemund, Gunter: *See—*
Muffler, Herbert; Siegemund, Gunter; and Schwertfeger, Werner, 4,343,742, Cl. 549-380.000.
Siemens Aktiengesellschaft: *See—*
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Silver, David S., to Ford Motor Company. Large high temperature plastic vacuum reservoir. 4,343,409, Cl. 220-72.000.
Silver, Derrick J., to Platignum Limited. Retractable mechanism for a writing element. 4,343,559, Cl. 401-109.000.
Simkovich, George: *See—*
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Simon, Francois. Supports of boom end sheaves or similar for a lifting and/or handling machine. 4,343,458, Cl. 254-399.000.
Simon, Wayne E. Pattern cutting apparatus. 4,343,087, Cl. 30-241.000.
Simons, Harold M., to Billings Energy Corporation. Self-regenerating system of removing oxygen and water impurities from hydrogen gas. 4,343,770, Cl. 422-112.000.
Simpson, Lawrence D.: *See—*
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Simpson, William E., to United States of America, Energy. Radioactive hot cell access hole decontamination machine. 4,343,059, Cl. 15-21.00E.
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Sisti, Giorgio; Tosi, Bruno; and Trisciani, Adriano, to Carlo Erba Strumentazione S.p.A. Device for sample pickup and washing. 4,343,766, Cl. 422-63.000.
Skarvada, Thomas, to Crane Co. Apparatus for generating a lead signal in an antiskid system. 4,344,137, Cl. 364-426.000.
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Skrypek, John P.; Williams, Robert; and Dominico, James W., to Sun Chemical Corporation. Takeoff and restacking device for cup-like containers. 4,343,391, Cl. 198-438.000.
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Smead, Robert G.; Richards, Thomas J.; and Lanchantin, Charles E., Jr., to Caterpillar Tractor Co. Electrodynamic painting system and method. 4,343,828, Cl. 427-27.000.
Smith International, Inc.: *See—*
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Smith, James N.; and Thompson, Arthur D., III, to Motorola, Inc. Semiconductor devices by laser enhanced diffusion. 4,343,832, Cl. 427-53.100.
Smith, James W.: *See—*
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Smith, Ronald B.; Galda, Edward J.; and Nakabayashi, Masahiro, to Union Carbide Corporation. Gas-shielded flux-cored wire electrodes for high impact weldments. 4,343,984, Cl. 219-146.300.
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Snyder, Michael D.; and Matson, Crawford A., to Universal Instruments Corporation. Linear loader for high speed radial lead component sequencing and inserting machine. 4,343,589, Cl. 414-751.000.
Snyder, Robert G.; Clancy, John J.; and Brenneman, Richard S., to Engineering Industries, Inc. Emulsion package and method of mixing the emulsion. 4,343,398, Cl. 206-219.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
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Sommer, Klaus; Klemm, Walter; Weber, Hermann; Meinhardt, Frederich; Schonmann, Gerhard; and Spatz, Wilhelm, to Benckiser-Knapsack GmbH. Process for the condensation of phosphate solids. 4,343,779, Cl. 423-305.000.
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Soula, Gerard, to Rhone-Poulenc Industries. Process for solubilizing organic or mineral salts in organic solvents. 4,343,745, Cl. 260-429.00J.
Spalding, Ian J.; Selden, Adrian C.; and Armandillo, Errico, to United Kingdom Atomic Energy Authority. Gas lasers. 4,344,174, Cl. 372-91.000.
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Maine, Reuben E., 4,344,041, Cl. 329-50.000.
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Broersma, Robert J., Jr.; and Spittka, Gayle A., 4,343,809, Cl. 424-273.00R.
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Sramek, Bohumir. Non-invasive real time blood pressure measurement system. 4,343,314, Cl. 128-680.000.
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Stader, Irvin S. Earthquake game device. 4,343,475, Cl. 273-276.000.
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Standard Oil Company (Indiana): *See—*
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Stang, John H.; Brighton, Walter A.; and Ruthmansdorfer, David A., to Cummins Engine Company, Inc. Energy conserving exhaust passage for an internal combustion engine. 4,343,268, Cl. 123-90.400.
Stanya, Andrew; Franklin, Joseph E.; and Dickinson, David W., to Republic Steel Corporation. Control of welding energy flux density. 4,343,980, Cl. 219-110.000.
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Stephens, Peter H. Three-dimensional drawing tool. 4,343,091, Cl. 33-18.00R.
Stephenson, Robert L., to Allied Corporation. Seat belt system with reduced spooling. 4,343,488, Cl. 280-802.000.
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Stowers, Jeffrey P.; Stickle, Robert E.; and Cash, Herbert B., to Virginia Panel Corporation. Vacuum-actuated test fixture for printed circuit boards. 4,344,033, Cl. 324-158.00F.
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Streeter, Robert D., to Magnavox Company, The. Low frequency tone detector. 4,344,038, Cl. 328-138.000.
Strosser, Richard P.; Chow, Mark K.; and Bohman, Carl E., to Sperry Corporation. Magnetic field producing apparatus. 4,344,074, Cl. 340-684.000.
Studsvik Energiteknik AB: *See—*
Rundquist, Hans M.; and Skold, Tore G., 4,344,118, Cl. 362-267.000.
Stuhler, Robert J.: *See—*
DuRoss, Robert M.; and Stuhler, Robert J., 4,343,557, Cl. 400-496.000.
Stuke, Josef: *See—*
Kassel, Karl-Heinz; Lutz, Manfred; Stuke, Josef; and Walsdorfer, Hubert, 4,343,883, Cl. 430-128.000.
Styck, Wayne G., to Caterpillar Tractor Co. Kickout bucket positioner. 4,343,588, Cl. 414-701.000.
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Suenaga, Masaki: *See—*
Luhman, Thomas; Klamut, Carl J.; Suenaga, Masaki; and Welch, David, 4,343,867, Cl. 428-614.000.
Sugaar, Stephen. Encapsulated antigenic tumor specific substances and methods for detecting cancer using said substances. 4,343,895, Cl. 435-6.000.

Sugihara, Hiroshi: *See*—
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, 4,343,834, Cl. 427-132.000.
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, to Mitsubishi Gas Chemical Co., Inc. Process for continuously polymerizing trioxane. 4,343,929, Cl. 528-241.000.
Sugita, Yutaka: *See*—
Nishida, Hideki; Yamada, Hirozi; Umezaki, Hiroshi; Sugita, Yutaka; and Tsumita, Norikazu, 4,344,153, Cl. 365-39.000.
Sugiura, Youji; and Nishimura, Satoshi, to Sanyo Electric Co., Ltd. Demodulating circuit for self-clocking-information. 4,344,039, Cl. 329-50.000.
Sumitomo Chemical Company Limited: *See*—
Agui, Hideo; Tamoto, Katsumi; Aono, Shunji; and Okuda, Takao, 4,343,801, Cl. 424-249.000.
Matsuo, Noritada; Itaya, Nobushige; Aketa, Kohichi; Magara, Osamu; and Nishioka, Toshio, 4,343,953, Cl. 568-347.000.
Sumitomo Electric Industries, Ltd.: *See*—
Yazu, Shuji; and Hara, Akio, 4,343,651, Cl. 75-238.000.
Sun Chemical Corporation: *See*—
Dodd, John A.; and Lane, Robert L., 4,343,655, Cl. 106-214.000.
Skrypek, John P.; Williams, Robert; and Dominico, James W., 4,343,391, Cl. 198-438.000.
Sunna, G. Sigvard, to Boliden Aktiebolag. Sampling device. 4,343,199, Cl. 73-863.430.
Supertex, Inc.: *See*—
Chao, Robert L., 4,344,002, Cl. 307-270.000.
Pao, Henry C.; Blanchard, Richard A.; and Choy, Benedict C. K., 4,344,081, Cl. 357-43.000.
Suspa Federungstechnik Fritz Bauer & Shone Ohg: *See*—
Bauer, Fritz, 4,343,452, Cl. 248-565.000.
Suster, Mary E.; and Weber, Vincent H., to General Electric Company. Flash lamp array having printed circuit. 4,344,109, Cl. 362-13.000.
Suster, Mary E.: *See*—
Collins, Edward J.; Suster, Mary E.; and Weber, Vincent H., 4,344,108, Cl. 362-13.000.
Sutton, Roger F.; Blomquist, Robert O.; and Luck, Allan J., to Masonite Corporation. Edge treatment for fibreboard panels and the like. 4,343,849, Cl. 428-157.000.
Suyama, Tadakazu: *See*—
Uemura, Yahiro; Arimura, Hirofumi; Morise, Hiroshi; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,343,736, Cl. 260-112.00R.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt system. 4,343,489, Cl. 280-804.000.
Suzuki, Junji: *See*—
Tanabe, Kenzo; Suzuki, Junji; and Kanno, Masashi, 4,344,188, Cl. 455-326.000.
Suzuki, Katsunori: *See*—
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,344,025, Cl. 318-729.000.
Suzuki, Seiji; Sakamoto, Kohichiro; and Kitagawa, Tohru, to Tokyo Electric Co., Ltd. Load-cell balance. 4,343,197, Cl. 73-862.650.
Suzuki, Tadashi; and Tugimura, Sinichiro, to Matsushita Electric Works, Ltd. Outer blade of electric shavers. 4,343,089, Cl. 30-346.510.
Suzuki, Yoshiaki: *See*—
Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, 4,343,886, Cl. 430-237.000.
Suzuki, Yoshiharu: *See*—
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, 4,343,959, Cl. 585-640.000.
Svenor Modul-System AB: *See*—
Nordlund, Sven P., 4,343,172, Cl. 72-339.000.
Swain, Richard S.; and Moore, Douglas, to Norlin Industries, Inc. Serial interface circuit for an electronic musical instrument. 4,343,216, Cl. 84-1.010.
Swanson, Arthur M.; Swanson, Robert J.; Seibel, James K.; and Pavelec, Frank L., to Swanson, Arthur M.; and ChemVen, Inc. Natural cheese analog. 4,343,817, Cl. 426-36.000.
Swanson, Robert J.: *See*—
Swanson, Arthur M.; Swanson, Robert J.; Seibel, James K.; and Pavelec, Frank L., 4,343,817, Cl. 426-36.000.
Swanson, Roy T., to S&C Electric Company. Arcing rod catcher for high voltage fuse. 4,344,059, Cl. 337-174.000.
Sweeney, Lawrence J.: *See*—
Emmert, Joseph W.; and Sweeney, Lawrence J., 4,343,394, Cl. 198-616.000.
Sweetser, Philip B., to Du Pont de Nemours, E. I., and Company. Herbicide antidotes. 4,343,649, Cl. 71-93.000.
Swiss Aluminium Ltd.: *See*—
Brockmeyer, Jerry W., 4,343,704, Cl. 210-509.000.
Wagner, Alfred; and Ames, Adolf, 4,343,425, Cl. 228-117.000.
Szabo, Andrea. Display of articles. 4,343,104, Cl. 40-10.00R.
Szabo, Lajos: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,343,738, Cl. 260-239.30P.
Szalay, Andrew. Concentrated GTF chromium complex brewers yeast and process for producing same. 4,343,905, Cl. 435-256.000.
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, to Richter Gedeon Vegyeszeti Gyar Rt. Halogenated 15-hydroxy-E-homoeburane derivatives. 4,343,738, Cl. 260-239.30P.
Sze, Simon M.: *See*—
Lepselter, Martin P.; and Sze, Simon M., 4,343,082, Cl. 29-576.00B.
Tadiran Israel Electronics Industries, Ltd.: *See*—
Vardi, Isaih; Kimchi, Yigal; and Ben-Dror, Jonathan, 4,343,159, Cl. 62-475.000.
Tagami, Tomoyuki: *See*—
Hoshi, Norio; and Tagami, Tomoyuki, 4,343,204, Cl. 74-594.700.
Tahara, Toshiro: *See*—
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,343,892, Cl. 430-398.000.
Taiho Kogyo Co., Ltd.: *See*—
Fukuoka, Tatsuhiko; and Takenaka, Akira, 4,343,479, Cl. 277-96.200.
Taisei Kogyo Kabushiki Kaisha: *See*—
Hattori, Kiyoshi, 4,343,157, Cl. 62-160.000.
Tait, Robert J.: *See*—
Ciesemier, Allen L.; Tait, Robert J.; and Smith, Leonard A., 4,344,060, Cl. 337-260.000.
Taiyo Chuki Co., Ltd.: *See*—
Tawara, Koji, 4,343,554, Cl. 366-65.000.
Taka, Kazuyoshi: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Takada, Kazuo: *See*—
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, 4,343,834, Cl. 427-132.000.
Takada, Moritaka; and Kanda, Hiroshi, to Nisshin Oil Mills Ltd. Process for the preparation of an aerosol type whipping cream. 4,343,825, Cl. 426-570.000.
Takahashi, Yoshiharu: *See*—
Otsuka, Katsuyuki; Todokoro, Akio; Takahashi, Yoshiharu; Hiroe, Kazuhito; and Ishikawa, Yoshinobu, 4,343,426, Cl. 228-170.000.
Takai, Kazuki, to Clarion Co., Ltd. Lock mechanism for use in tape player. 4,344,097, Cl. 360-96.600.
Takata, Kenichi: *See*—
Kondo, Tadasige; Ono, Susumu; and Takata, Kenichi, 4,343,273, Cl. 123-335.000.
Takatori Machinery Works Ltd.: *See*—
Takatori, Osho, 4,343,254, Cl. 112-262.200.
Takatori, Osho, to Takatori Machinery Works Ltd. Method and apparatus for closing the toe end of a hose. 4,343,254, Cl. 112-262.200.
Takeda, Mutsuhiko: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Takemura, Katsuyoshi; Kondo, Masatoshi; Hasuike, Fumio; and Okada, Yoshifumi, to Matsushita Electric Industrial Co. Ltd. Method of manufacturing flexible printed circuit sheets. 4,343,083, Cl. 29-832.000.
Takenaka, Akira: *See*—
Fukuoka, Tatsuhiko; and Takenaka, Akira, 4,343,479, Cl. 277-96.200.
Takenoya, Hideaki; and Shomura, Eiichi, to Janome Sewing Machine Co. Ltd. Stitch-length correcting sewing machine and stitch-length measuring presser foot assembly used therein. 4,343,249, Cl. 112-158.00E.
Takenoya, Hideaki: *See*—
Hanyu, Susumu; Takenoya, Hideaki; and Fujimura, Toshiro, 4,343,248, Cl. 112-158.00E.
Takeuchi, Koji: *See*—
Zama, Takashi; Takeuchi, Koji; Yukutomi, Masuo; and Ito, Fumiyuki, 4,343,732, Cl. 524-114.000.
Talres Development (N.A.) N.V.: *See*—
Jenner, Michael R.; and Waite, David, 4,343,934, Cl. 536-122.000.
Tamba, Shinichi; Yamamoto, Hitoshi; and Uda, Ryoji, to Kawasaki Jukogyo Kabushiki Kaisha. Crank mechanism lubricating system. 4,343,377, Cl. 184-6.500.
Tamoto, Katsumi: *See*—
Agui, Hideo; Tamoto, Katsumi; Aono, Shunji; and Okuda, Takao, 4,343,801, Cl. 424-249.000.
Tamura, Koichi: *See*—
Haraikawa, Tetsuo; and Tamura, Koichi, 4,343,381, Cl. 188-73.450.
Tamura, Yutaka: *See*—
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, 4,343,959, Cl. 585-640.000.
Tanabe, Kenzo; Suzuki, Junji; and Kanno, Masashi, to Matsushita Electric Industrial Co., Ltd. Balanced modulator. 4,344,188, Cl. 455-326.000.
Tanahashi, Toshio: *See*—
Tsuzuki, Yoshihiko; Uchida, Kiyoshi; and Tanahashi, Toshio, 4,343,229, Cl. 92-212.000.
Tanaka, Katsumasa: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Tanaka, Shinsaku; and Kido, Kunio, to Tanashin Denki Co., Ltd. Cassette tape recorder. 4,344,096, Cl. 360-96.500.
Tanashin Denki Co., Ltd.: *See*—
Tanaka, Shinsaku; and Kido, Kunio, 4,344,096, Cl. 360-96.500.
Tanca, Michael C., to Combustion Engineering, Inc. Method of operating a two-stage coal gasifier. 4,343,627, Cl. 48-202.000.
Tarng, Ming L., to RCA Corporation. Etching a semiconductor material and automatically stopping same. 4,343,676, Cl. 156-628.000.

Tartokowsky, Michael: *See*—
Aidlin, Stephen H.; and Tartokowsky, Michael, 4,343,587, Cl. 414-568.000.
Task, Harry L., to United States of America, Air Force. Vibration stabilized image projection system. 4,343,539, Cl. 353-122.000.
Tateoka, Masamichi; and Tsuji, Takao, to Canon Kabushiki Kaisha. Light beam scanning device with constant spot intensity and scan speed related modulating means. 4,343,531, Cl. 350-6.500.
Tawara, Koji, to Taiyo Chuki Co., Ltd. Kneader for particulate to granular materials. 4,343,554, Cl. 366-65.000.
Taylor, Gene W., to United States of America, Energy. Fluorinated diamond bonded in fluorocarbon resin. 4,343,628, Cl. 51-298.000.
Tazaki, Takaharu: *See*—
Nozawa, Takamitsu; and Tazaki, Takaharu, 4,343,397, Cl. 206-37.000.
TDK Electronics Co., Ltd.: *See*—
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, 4,343,834, Cl. 427-132.000.
Tedeschi, Anthony, to Western Electric Co., Inc. Article handling methods including reorienting randomly misoriented articles. 4,343,585, Cl. 414-403.000.
Tefertiller, Nancy B.; and Harris, Robert F., to Dow Chemical Company, The. Addition polymerizable polyethylenic polymers having pendant acryloyl urethane groups. 4,343,919, Cl. 525-278.000.
Tektronix, Inc.: *See*—
Cabot, Richard C.; and Hofer, Bruce E., 4,344,029, Cl. 324-57.00R.
Temkin, Henryk: *See*—
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Tenneco Inc.: *See*—
Schaefer, David V.; and Hamkins, Clark J., 4,343,386, Cl. 192-54.000.
Tepper, James M.: *See*—
Chesnut, Ronald D.; and Tepper, James M., 4,343,411, Cl. 220-242.000.
Tersteegen, Johannes, to Deutsche Forschungs- und Versuchsanstalt fur Luft- u. Raumfahrt. Electro-hydraulic actuating device and a fast-switching magnetic valve for use therein. 4,343,331, Cl. 137-625.650.
Tetra Pak International AB: *See*—
Holmstrom, Sven N. H., 4,343,402, Cl. 206-622.000.
Texaco Development Corp.: *See*—
Hunter, Walter D., 4,343,712, Cl. 252-8.55D.
Texaco Inc.: *See*—
Gates, Walter C., Jr., 4,343,625, Cl. 48-62.00R.
Kalfoglou, George, 4,343,711, Cl. 252-8.55D.
Texas Instruments Incorporated: *See*—
Brantingham, George L.; and Wiggins, Richard H., Jr., 4,344,148, Cl. 364-724.000.
Klaas, Jeffrey M.; Reed, Paul A.; and Rimawi, Isam, 4,344,154, Cl. 365-194.000.
White, Lionel S., Jr.; and Mohan Rao, G. R., 4,344,157, Cl. 365-222.000.
Textron Inc.: *See*—
Turansky, Clement J.; and LeBlanc, Gerard J., 4,343,329, Cl. 137-625.440.
Thacker, Bobby J. Archery bow. 4,343,286, Cl. 124-24.00R.
Thatcher, Raymond K.: *See*—
Gavin, Basil F.; MacGill, Robert A.; and Thatcher, Raymond K., 4,344,019, Cl. 315-111.810.
Thayer, Richard S.; Herbert, William J.; and Klein, Gary S., to Eaton Corporation. Shrinkable sleeve adapted for cable and tubing gas flow blocking. 4,343,844, Cl. 428-36.000.
Thiel, Peter H.: *See*—
Holtzman, Barry L.; Mercier, George E.; Thiel, Peter H.; and Santilli, James N., 4,344,105, Cl. 361-328.000.
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Chatard, Michel; Sonnet, Alain; and Thiery, Jean, 4,343,370, Cl. 175-107.000.
Thomas, Daniel W.: *See*—
Cesark, Frank F.; Manfre, Robert J.; and Thomas, Daniel W., 4,343,939, Cl. 544-165.000.
Thomas, Donald E., to Westinghouse Electric Corp. Substrate for silicon solar cells. 4,343,963, Cl. 136-258.000.
Thomas, William R. Animal caging system. 4,343,261, Cl. 119-15.000.
Thomason, Harry E.; and Thomason, Harry J. L., Jr. Solar domestic water heater. 4,343,293, Cl. 126-400.000.
Thomason, Harry J. L., Jr.: *See*—
Thomason, Harry E.; and Thomason, Harry J. L., Jr., 4,343,293, Cl. 126-400.000.
Thompson, Arthur D., III: *See*—
Smith, James N.; and Thompson, Arthur D., III, 4,343,832, Cl. 427-53.100.
Thompson, David A.; and Worthington, Thomas K., to International Business Machines Corporation. Coding schemes for acoustic delay line data collection system. 4,344,068, Cl. 340-365.00L.
Thompson, Edwin C., to Western Electric Company, Inc. Method of fine-tuning a monolithic crystal filter. 4,343,827, Cl. 427-8.000.
Thompson, Eileen. Weather stripping apparatus. 4,343,110, Cl. 49-477.000.
Thompson, Kenneth P., to Champion International Corporation. Pigmented coated paperboard. 4,343,858, Cl. 428-342.000.
Thomson-CSF: *See*—
Bricot, Claude; and Leterme, Dominique, 4,344,164, Cl. 369-44.000.
Cousset, Gerard, 4,344,051, Cl. 333-194.000.
Thorson, Clayton W., to Eaton Corporation. Fluid pressure operated pump or motor with secondary valve means for minimum and maximum volume chambers. 4,343,600, Cl. 418-61.00B.
Thorson, Clayton W., to Eaton Corporation. Fluid pressure device and shuttle valve assembly therefor. 4,343,601, Cl. 418-61.00B.
Thunderbolt Corporation: *See*—
Steiner, John W., 4,343,500, Cl. 292-175.000.
Thune-Eureka A/S: *See*—
Volle, Frode I., 4,343,211, Cl. 83-177.000.
Tiers, George V. D.: *See*—
Aasen, Steven M.; Dalzell, Rex J.; Goettert, Edward J.; Holmes, Brian N.; and Tiers, George V. D., 4,343,891, Cl. 430-337.000.
Tihanyi, Jeno, to Siemens Aktiengesellschaft. Field effect transistor. 4,344,080, Cl. 357-23.000.
Tilley, George L., to Union Oil Company of California. Method for recovering valuable metals from deactivated catalysts. 4,343,774, Cl. 423-53.000.
Timothy, Earle J.: *See*—
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,344,146, Cl. 364-552.000.
Tinti, Maria O.: *See*—
De Witt, Paolo; and Tinti, Maria O., 4,343,947, Cl. 548-344.000.
Tjosvold, David C. Furnace. 4,343,288, Cl. 126-112.000.
Toa Wool Spinning & Weaving Co., Ltd.: *See*—
Kazama, Ken; Muramoto, Ikuo; Ozaki, Kenji; and Kusunoki, Yoshinobu, 4,343,619, Cl. 8-139.000.
Tobias, Stephen A.: *See*—
Basily, Basily B.; Das, Mihir K.; Price, Clifford G.; and Tobias, Stephen A., 4,343,208, Cl. 83-13.000.
Tobishima, Shinichi; Yamaki, Junichi; and Yamaji, Akihiko, to Nippon Telegraph & Telephone Public Corporation. Light weight battery. 4,343,871, Cl. 429-197.000.
Tobita, Toshio: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; and Tobita, Toshio, 4,343,833, Cl. 427-96.000.
Tochikubo, Hiroo; and Kanai, Akira, to Hitachi, Ltd. Method of fabricating single-crystalline silicon films. 4,343,829, Cl. 427-35.000.
Toda, Haruhisa; and Matsumoto, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Automatic trip device for circuit interrupter. 4,344,055, Cl. 335-174.000.
Todd, Paul H., Jr.; and Haley, Howard E., to Kalsec, Inc. Liquid seasoning compositions IV. 4,343,823, Cl. 426-250.000.
Todokoro, Akio: *See*—
Otsuka, Katsuyuki; Todokoro, Akio; Takahashi, Yoshiharu; Hiroe, Kazuhito; and Ishikawa, Yoshinobu, 4,343,426, Cl. 228-170.000.
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Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,343,791, Cl. 424-84.000.
Tokico Ltd.: *See*—
Haraikawa, Tetsuo; and Tamura, Koichi, 4,343,381, Cl. 188-73.450.
Tokyo Electric Co., Ltd.: *See*—
Suzuki, Seiji; Sakamoto, Kohichiro; and Kitagawa, Tohru, 4,343,197, Cl. 73-862.650.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Kurosawa, Yasuhiro; and Matsushima, Tetsuo, 4,344,143, Cl. 364-492.000.
Tomimori, Kiyoshi; and Nakajima, Shunichi, 4,343,461, Cl. 271-22.000.
Yasuda, Nobuaki; Fujimori, Yoshinori; and Morita, Masaaki, 4,343,862, Cl. 428-421.000.
Tomimori, Kiyoshi; and Nakajima, Shunichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Paper feeding cassette. 4,343,461, Cl. 271-22.000.
Tomioka, Hirotaka; and Yamagata, Shuji, to Nissan Motor Co., Ltd. All glass rear door assembly for an automotive vehicle. 4,343,504, Cl. 296-76.000.
Tomita, Masao; Isaka, Takenobu; Fujisawa, Kiyoji; and Mino, Mineo, to Matsushita Electric Industrial Co., Ltd. Method of processing video signals for time base correction. 4,344,087, Cl. 358-127.000.
Toshiba Kikai Kabushiki Kaisha: *See*—
Satoh, Mitsuharu; and Aiso, Katsuyoshi, 4,343,077, Cl. 29-568.000.
Tosi, Bruno: *See*—
Sisti, Giorgio; Tosi, Bruno; and Trisciani, Adriano, 4,343,766, Cl. 422-63.000.
Toukan, Sameeh S.; and Nannelli, Piero, to Pennwalt Corporation. Purification of 2-mercaptobenzothiazole. 4,343,946, Cl. 548-177.000.
Tourasse, Marc; and Duvernay, Roger. Apparatus for machining cams at a constant cutting speed. 4,343,114, Cl. 51-165.710.
Townsend, John M.; and Valentine, Donald, Jr., to Hoffmann-La Roche Inc. Chiral phosphines. 4,343,741, Cl. 548-412.000.
Toyo Boseki Kabushiki Kaisha: *See*—
Isaka, Tsutomu; Ohashi, Kazuyoshi; and Miyazaki, Yukinobu, 4,343,852, Cl. 428-216.000.
Toyo Kogyo Co., Ltd.: *See*—
Mashimo, Toru, 4,343,367, Cl. 173-43.000.
Toyomura, Shigeru, to Canon Kabushiki Kaisha. Electronic device having unitary display and printing sections. 4,343,968, Cl. 178-23.00R.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kaji, Kiyokane, 4,343,187, Cl. 73-654.000.
Numasawa, Akio; Kizu, Ryoubei; Naka, Mitsuru; and Hiraiwa, Nobuo, 4,343,330, Cl. 137-625.480.
Ohnaka, Hidemi; and Ishikawa, Norikatsu, 4,343,277, Cl. 123-389.000.
Suzuki, Ichiro; Motonami, Masaneo; and Ogawa, Hisashi, 4,343,489, Cl. 280-804.000.

Tsuzuki, Yoshihiko; Uchida, Kiyoshi; and Tanahashi, Toshio, 4,343,229, Cl. 92-212.000.

Trans-Data Associates: *See—*
Kellett, Henry G., 4,343,969, Cl. 179-1.0SD.

Trees, Ferdinand M.: *See—*
de Vries, Jochem J.; and Trees, Ferdinand M., 4,343,086, Cl. 30-43.600.

Trefimetaux: *See—*
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Triad Service & Marketing, Ltd.: *See—*
Osthus, Ramon L., 4,343,449, Cl. 248-156.000.

Trico Products Corporation: *See—*
Batt, Richard A., 4,343,063, Cl. 15-250.420.

Trisciani, Adriano: *See—*
Sisti, Giorgio; Tosi, Bruno; and Trisciani, Adriano, 4,343,766, Cl. 422-63.000.

Trombetti, Fulvio: *See—*
Sartorio, Emanuele; Calcagno, Benedetto; Trombetti, Fulvio; and Ghirga, Marcello, 4,343,957, Cl. 585-449.000.

Trygg, Lars E. Liquid dispensing device. 4,343,336, Cl. 141-218.000.

Tsopelas, John. Automobile radiator filter. 4,343,353, Cl. 165-119.000.

Tsuchida, Yutaka: *See—*
Hishinuma, Takehiro; and Tsuchida, Yutaka, 4,343,212, Cl. 83-303.000.

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Davis, Robert B., 4,343,634, Cl. 62-62.000.
Decker, Quintin W.; and Marcus, Erich, 4,343,616, Cl. 8-115.600.
Fiato, Rocco A.; and Pruett, Roy L., 4,343,950, Cl. 562-531.000.
Jones, Allen P.; and Cunningham, Charles J., 4,343,835, Cl. 427-209.000.
Keogh, Michael J., 4,343,917, Cl. 525-106.000.
Lok, Brent M., 4,343,717, Cl. 252-313.00S.
Miller, John C.; and Burnett, Archibald L., 4,343,755, Cl. 264-176.00R.
Smith, Ronald B.; Galda, Edward J.; and Nakabayashi, Masahiro, 4,343,984, Cl. 219-146.300.
Virte, Jean; and Costa, Laurent, 4,343,405, Cl. 211-88.000.

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Tilley, George L., 4,343,774, Cl. 423-53.000.

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Spalding, Ian J.; Selden, Adrian C.; and Armandillo, Errico, 4,344,174, Cl. 372-91.000.

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Baker, Francis S., 4,343,838, Cl. 427-292.000.

United States Lines, Inc.: *See—*
Paulyson, John T., 4,343,401, Cl. 206-577.000.

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Agriculture: *See—*
Gunderson, Dennis E., 4,343,189, Cl. 73-822.000.
Rosen, Howard N.; Bodkin, Robert E.; and Gaddis, Kenneth D., 4,343,095, Cl. 34-16.500.
Wade, Clinton P.; and Rowland, Stanley P., 4,343,070, Cl. 19-40.000.

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Harris, David J., 4,343,593, Cl. 416-193.00A.
Johnson, Donald W., 4,343,448, Cl. 244-145.000.
Task, Harry L., 4,343,539, Cl. 353-122.000.

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Carlon, Hugh R.; and Gerber, Bernard V., 4,343,177, Cl. 73-23.000.
Dixon, Samuel, Jr., 4,344,047, Cl. 333-17.00L.
Iyer, Sury, 4,343,664, Cl. 149-11.000.
Vig, John R.; and Ballato, Arthur D., 4,344,010, Cl. 310-361.000.

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Anderson, Paul R.; Downs, Raymond L.; and Henderson, Timothy M., 4,343,675, Cl. 156-628.000.
Bachovchin, Dennis M., 4,343,764, Cl. 376-338.000.
Basford, James A.; Mathis, John E.; and Wright, Harlan C., 4,343,176, Cl. 73-1.00G.
Douglass, Spivey S.; and Green, Walter L., 4,343,206, Cl. 82-2.00R.
Gavin, Basil F.; MacGill, Robert A.; and Thatcher, Raymond K., 4,344,019, Cl. 315-111.810.
Harkness, Samuel D., 4,343,761, Cl. 376-148.000.
Hawke, Ronald S.; Scudder, Jonathan K.; and Aaland, Kristian, 4,343,223, Cl. 89-8.000.
Jendrzejczyk, Joseph A., 4,343,198, Cl. 73-862.650.
Luhman, Thomas; Klamut, Carl J.; Suenaga, Masaki; and Welch, David, 4,343,867, Cl. 428-614.000.
Luzzi, Theodore E., Jr., 4,343,760, Cl. 376-134.000.
McGuire, Joseph C., 4,343,763, Cl. 376-314.000.
Michaels, Edward D., 4,343,685, Cl. 204-101.000.
Morgan, J. Giles; Rennich, Mark J.; and Whatley, Marvin E., 4,343,478, Cl. 277-90.000.
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Poppendiek, Heinz F., 4,343,181, Cl. 73-154.000.
Simpson, William E., 4,343,059, Cl. 15-21.00E.
Taylor, Gene W., 4,343,628, Cl. 51-298.000.
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Levin, Harry; and Ford, Larry B. Thermal reactor. 4,343,772, Cl. 422-200.000.

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Hallberg, Frederick C.; and Benedicto, John S. J., 4,343,287, Cl. 125-23.00R.
Hudgins, Jerry L., 4,343,584, Cl. 414-222.000.
Reed, Wilmer H., III, 4,343,447, Cl. 244-137.00R.
Saltzman, Edwin J., 4,343,506, Cl. 296-1.00S.

Navy: *See—*
Hallstein, Robert R., 4,343,327, Cl. 137-464.000.
Montemarano, Thomas W.; and Wells, Michael E., 4,343,424, Cl. 228-104.000.
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Fuchs, Henry O., 4,343,215, Cl. 83-670.000.

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Corbier, Wierd, 4,343,232, Cl. 99-299.000.
de Vries, Jochem J.; and Trees, Ferdinand M., 4,343,086, Cl. 30-43.600.
Harwood, Mervyn G., 4,343,688, Cl. 204-195.00W.
Jochems, Pieter J. W., 4,343,079, Cl. 29-571.000.
Kuhn, Michael; and Bunge, Ernst, 4,344,031, Cl. 324-77.00R.
Kuipers, Jan, 4,343,996, Cl. 378-21.000.
Nasretdin, Mansur A.; and Ohlander, Sten A. E., 4,343,976, Cl. 219-10.55F.
Ong, Kian K., 4,344,186, Cl. 455-168.000.
van de Meeberg, Leendert; and Janssen, Daniel J. G., 4,344,149, Cl. 364-724.000.

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Holiday, Paul R.; and Patterson, Robert J., II, 4,343,750, Cl. 264-8.000.

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Snyder, Michael D.; and Matson, Crawford A., 4,343,589, Cl. 414-751.000.

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Akiyama, Toru, 4,344,165, Cl. 369-44.000.

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Miller, Jan D.; and Simkovich, George, 4,343,773, Cl. 423-1.000.

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Antos, George J., 4,343,724, Cl. 252-466.00B.
Bailey, Charles H.; De Palma, Ted V.; and Dillon, James E., 4,343,074, Cl. 29-157.00R.
Campbell, Bonnie J.; Counts, Thomas G.; Cunningham, James L.; and Youtsey, Karl J., 4,343,350, Cl. 165-11.00R.
DeFilippi, Louis J., 4,343,901, Cl. 435-176.000.
Gewartowski, Steve A., 4,343,958, Cl. 585-477.000.
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Wahl, Robert O.; Hay, William D.; and Prohaska, Raymond J., 4,343,092, Cl. 33-169.00R.

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Heckler, Jay W., 4,343,799, Cl. 424-243.000.
Reusser, Fritz; and Malik, Vedpal S., 4,343,906, Cl. 435-253.000.

Uram, John, Jr., to Goodyear Aerospace Corporation. Coatings for optical systems. 4,343,857, Cl. 428-336.000.

Uram, John R., Jr., to Goodyear Aerospace Corporation. Transparencies produced from epoxy resins cured with adducts of boroxines and interlayers of mercaptan resins. 4,343,928, Cl. 528-108.000.

Urquhart, Roderick M., to Burroughs Corporation. Latch mechanism for use with removable media. 4,343,546, Cl. 354-281.000.

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Oishi, Yasuo; and Ushimaru, Imao, 4,344,101, Cl. 361-75.000.

Ushiro, Soichiro, to CPC International Inc. Production of immobilized glucose isomerase. 4,343,902, Cl. 435-177.000.

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Piestert, Gerhard, 4,343,921, Cl. 525-310.000.

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Valencia, Flavio: *See—*
Newkirk, Lawrence R.; Valencia, Flavio; Riley, Robert E.; and Wallace, Terry C., Sr., 4,343,836, Cl. 427-249.000.

Valentine, Donald, Jr.: *See—*
Townsend, John M.; and Valentine, Donald, Jr., 4,343,741, Cl. 548-412.000.

Valeron Corporation, The: *See—*
Adams, James H.; Rich, Dennis J.; and Holtz, Frederick C., Jr., 4,343,909, Cl. 501-98.000.

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Landrum, Ralph A., Jr.; Vallhonrat, Juan B.; and Perry, Paul M., 4,344,158, Cl. 367-73.000.

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Van Drie, John T.: *See—*
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Vassallo, Efrain D. Pipe bell and gasket. 4,343,480, Cl. 277-207.00A.

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Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; and Hefftler, Victor, 4,343,241, Cl. 101-231.000.
Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.
Weisbach, Gunter; and Lucius, Gunter, 4,343,462, Cl. 271-267.000.

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Vehling, Ernst: *See—*
McLuskie, Albert; Ratjen, Johann; and Vehling, Ernst, 4,343,069, Cl. 19-0.600.

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Euverard, Maynard R.; Heide, Henry A.; and Diver, James J., 4,343,583, Cl. 414-75.000.

Vertut, Jean: *See—*
Balligand, Pierre; Corfa, Yves; Lemercier, Pierre; Marchal, Paul; and Vertut, Jean, 4,343,098, Cl. 37-54.000.

Vescelius, Lee E.: *See—*
Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., 4,343,918, Cl. 525-194.000.

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Nobileau, Philippe C.; and Jones, Darrell L., 4,343,495, Cl. 285-23.000.

Victor, Michael; and Bowers, James R. Flow measuring device. 4,343,195, Cl. 73-861.660.

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Caumartin, Francois; Vidal, Jean L.; and Mangin, Pierre, 4,343,926, Cl. 526-68.000.

Vig, John R.; and Ballato, Arthur D., to United States of America, Army. Acceleration resistant combination of opposite-handed piezoelectric crystals. 4,344,010, Cl. 310-361.000.

Villax, Ivan; and Page, Philip R., to Plurichemie Anstalt. Process of selective solvolysis. 4,343,739, Cl. 260-397.450.

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Stowers, Jeffrey P.; Stickle, Robert E.; and Cash, Herbert B., 4,344,033, Cl. 324-158.00F.

Virte, Jean; and Costa, Laurent, to Union Carbide Corporation. Universal mountable display tray. 4,343,405, Cl. 211-88.000.

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Cals, Guillaume L. M.; Wittkampf, Frederik H. M.; Mensink, Kornelis A.; and Brouwer, Hendrik L., 4,343,312, Cl. 128-419.0PG.

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Nishimura, Yosaku, 4,343,240, Cl. 105-154.000.

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Vlahos, Petro, 4,344,085, Cl. 358-22.000.

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Petrov, Alexander S., 4,343,175, Cl. 72-452.000.

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Hofbauer, Peter, 4,343,387, Cl. 192-0.076.

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von der Heide, Johann, to Papst Motoren KG. Linear motor. 4,344,022, Cl. 318-38.000.

Von Fumetti, Cyril W.: *See—*
Miller, Wayne R.; and Von Fumetti, Cyril W., 4,343,697, Cl. 210-90.000.

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Vyas, Ambrish H.: *See—*
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Henkelmann, Gary L., 4,343,769, Cl. 422-109.000.

Wade, Clinton P.; and Rowland, Stanley P., to United States of America, Agriculture. Removal of lint from cottonseed. 4,343,070, Cl. 19-40.000.

Wagner, Alfred; and Ames, Adolf, to Swiss Aluminium Ltd. Process and device for the production of a composite section. 4,343,425, Cl. 228-117.000.

Wahl, Robert O.; Hay, William D.; and Prohaska, Raymond J., to UPA Technology, Inc. Probe guide and holder. 4,343,092, Cl. 33-169.00R.

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Jenner, Michael R.; and Waite, David, 4,343,934, Cl. 536-122.000.

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Wakai, Yoichi, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 4,344,161, Cl. 368-69.000.

Waldes Kohinoor, Inc.: *See—*
Millheiser, Melvin, 4,343,581, Cl. 411-517.000.

Walker, Robert. Rotor tiller with reversely directed plow. 4,343,366, Cl. 172-41.000.

Wallace, Harry L.: *See—*
Chambors, John M.; and Wallace, Harry L., 4,344,079, Cl. 346-140.00R.

Wallace, Terry C., Sr.: *See—*
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Wallis, Bernard J. Hydraulic cylinder arrangement. 4,343,228, Cl. 91-457.000.

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Kassel, Karl-Heinz; Lutz, Manfred; Stuke, Josef; and Walsdorfer, Hubert, 4,343,883, Cl. 430-128.000.

Walsh, James E.: *See—*
Danko, Michael J.; Randall, Leslie L.; Smith, Ray J.; and Walsh, James E., 4,343,190, Cl. 73-846.000.

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Mutter, Alfred, 4,343,384, Cl. 191-22.00R.

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Conti, James C.; Findl, Eugene; and Wang, William, 4,344,035, Cl. 324-453.000.

Ware, Franklyn O.; and McDonald, William S., to MPW Tech. Associates. Process for the production of corrugated paperboard adhesive. 4,343,654, Cl. 106-213.000.

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Lenda, Donald E., 4,343,410, Cl. 220-86.0AT.

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Kroeger, Edward R.; and Myers, Philip E., 4,344,056, Cl. 335-219.000.

Warren, Linton G.: *See—*
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Washington University: *See—*
Podos, Steven; Krupin, Theodore; and Becker, Bernard, 4,343,794, Cl. 424-131.000.

Wasson, Burton K.; and Weinstock, Leonard M., to Merck, Sharp & Dohme (I.A.) Corp. 2-(3-Substituted amino-2-hydroxypropoxy)-3-piperidino pyrazines for use in treating hypertension. 4,343,802, Cl. 424-250.000.

Watabe, Yasuo, to Fuji Electric Co., Ltd. System for non-magnetic metal selection. 4,343,695, Cl. 209-212.000.

Watanabe, Ichiro; and Satoh, Yoshiaki, to Nitto Chemical Industry Co., Ltd. Process for producing stable aqueous solution of acrylamide or methacrylamide. 4,343,899, Cl. 435-129.000.

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Watanabe, Koichi: *See—*
Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, 4,343,250, Cl. 112-168.000.

Watanabe, Seizaburo; and Matsuki, Yutaka, to Asahi-Dow Limited. Expanded thermoplastic synthetic resin and composition therefor. 4,343,913, Cl. 521-94.000.

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Water Refining Company, Inc.: *See—*
Davis, Stephen H., 4,343,699, Cl. 210-190.000.

Waters, George W., to Harris Corporation. Costas loop QPSK demodulator. 4,344,178, Cl. 375-81.000.

Webb, Dennis A.: *See—*
Jonker, Roelof R.; and Webb, Dennis A., 4,343,542, Cl. 354-76.000.

Webber, Dean A.; and Bosse; Peter S., to Sprague Electric Company. Solid tantalum capacitor with clean riser. 4,344,107, Cl. 361-433.000.

Weber, Hans-Leo; Reese, Eckart; Kaloff, Hans; and Fausten, Hans-Josef, to Bayer Aktiengesellschaft. Process for the production of cast films from polyaryl sulphone/polycarbonate mixtures. 4,343,756, Cl. 264-216.000.

Weber, Harold J., to Coulter Systems Corp. Clocked logic power supply. 4,344,121, Cl. 363-16.000.

Weber, Hermann: *See—*
Sommer, Klaus; Klemm, Walter; Weber, Hermann; Meinhardt, Frederich; Schonmann, Gerhard; and Spatz, Wilhelm, 4,343,779, Cl. 423-305.000.

Weber, Jean, to Ceraver. Static cylindrical monolithic structure having a large area of contact. 4,343,354, Cl. 165-165.000.

Weber, Vincent H.: *See—*
Collins, Edward J.; Suster, Mary E.; and Weber, Vincent H., 4,344,108, Cl. 362-13.000.
Suster, Mary E.; and Weber, Vincent H., 4,344,109, Cl. 362-13.000.

Webron Products Limited: *See—*
Winson, Michael A., 4,343,753, Cl. 264-119.000.

Webster, Van K.: *See—*
Bright, Edward J.; Dittmann, Larry E.; and Webster, Van K., 4,343,524, Cl. 339-74.00R.

Wegemund, Bernd: *See—*
Eschwey, Helmut; Wegemund, Bernd; and Gress, Wolfgang, 4,343,728, Cl. 523-456.000.

Wegner, Dieter F. Wheelchair. 4,343,482, Cl. 280-42.000.

Wegner, Jurgen: *See—*
Kiewert, Eva; Disch, Karlheinz; and Wegner, Jurgen, 4,343,725, Cl. 252-542.000.

Wehling, Holger, to Alfa-Laval AB. Centrifugal separator. 4,343,431, Cl. 233-20.00A.

Weinstock, Leonard M.: *See—*
Wasson, Burton K.; and Weinstock, Leonard M., 4,343,802, Cl. 424-250.000.

Weisbach, Gunter; and Lucius, Gunter, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Rocking auxiliary gripper system for sheet processing machines. 4,343,462, Cl. 271-267.000.

Weisenburger, Lawrence P.: *See—*
Reavis, Robert P., Jr.; and Weisenburger, Lawrence P., 4,343,529, Cl. 339-198.00R.

Weiss, Martin J.: *See—*
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,343,949, Cl. 562-505.000.

Welch, David: *See—*
Luhman, Thomas; Klamut, Carl J.; Suenaga, Masaki; and Welch, David, 4,343,867, Cl. 428-614.000.

Welk, Steven, to Gould Inc. Laser-triggered chemical actuator for high voltage isolation. 4,343,242, Cl. 102-201.000.

Wells, David L.; and Johnson, Allen M. Hydraulic power booster apparatus. 4,343,595, Cl. 417-225.000.

Wells, Michael E.: *See—*
Montemarano, Thomas W.; and Wells, Michael E., 4,343,424, Cl. 228-104.000.

West, Byron F.: *See—*
Sarver, Robert B.; and Arthur, W. Eugene, 4,343,567, Cl. 404-10.000.

West, Charles E.; and Ramspacher, Robert J., Jr., to RCA Corporation. Transistor heat sink assembly. 4,344,106, Cl. 361-386.000.

West Electric Co., Ltd.: *See—*
Horinishi, Katsumi, 4,344,020, Cl. 315-241.00P.

Westerhof, Wilhelmina: *See—*
Prooi, Jacob J.; Sep, Waltherus J.; and Westerhof, Wilhelmina, 4,343,932, Cl. 528-303.000.

Western Electric Co., Inc.: *See—*
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.
Du Bois, Loring E.; and Simpson, Lawrence D., 4,343,388, Cl. 193-47.000.
Farley, Dewey R.; and Holden, Vernon K., 4,343,088, Cl. 30-273.000.
Harrington, Patrick C.; Levin, Milton I.; Shope, Walter H.; and Wilson, Max K., 4,343,527, Cl. 339-125.00R.
Miller, Elmo D., 4,343,643, Cl. 65-103.000.
Tedeschi, Anthony, 4,343,585, Cl. 414-403.000.
Thompson, Edwin C., 4,343,827, Cl. 427-8.000.

Western Geophysical Co. of America: *See—*
Landrum, Ralph A., Jr.; Vallhonrat, Juan B.; and Perry, Paul M., 4,344,158, Cl. 367-73.000.

Westinghouse Electric Corp.: *See—*
Ciliberti, David F., 4,343,631, Cl. 55-302.000.
Davidson, Ronnie D.; and Misencik, John J., 4,344,100, Cl. 361-45.000.
Holtzman, Barry L.; Mercier, George E.; Thiel, Peter H.; and Santilli, James N., 4,344,105, Cl. 361-328.000.
Mendelsohn, Morris A., 4,344,006, Cl. 310-43.000.
Schneider, Urban A.; and Nelson, Robert L., 4,343,983, Cl. 219-145.210.
Thomas, Donald E., 4,343,963, Cl. 136-258.000.

Westkamper, Michael J.: *See—*
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,344,146, Cl. 364-552.000.

Wetzel, Robert E., to Dayco Corporation. Method of making toothed belt. 4,343,666, Cl. 156-138.000.

Weyerhaeuser Company: *See—*
Cherry, James H., 4,343,429, Cl. 229-38.000.
McConnel, Ronald J., 4,343,259, Cl. 118-44.000.

Whatley, Marvin E.: *See—*
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White, Lionel S., Jr.; and Mohan Rao, G. R., to Texas Instruments Incorporated. On-chip refresh address generator for dynamic memory. 4,344,157, Cl. 365-222.000.

White, Stanley A., to Rockwell International Corporation. ROM-Based complex multiplier useful for FFT butterfly arithmetic unit. 4,344,151, Cl. 364-754.000.

Wiggins, Richard H., Jr.: *See—*
Brantingham, George L.; and Wiggins, Richard H., Jr., 4,344,148, Cl. 364-724.000.

Wilcox, Donald G.; and Zambrano, Nobile, to Show-Pak Incorporated. Hinge for carrying case. 4,343,412, Cl. 220-342.000.

Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., to H-C Industries, Inc. Process and apparatus for molding liners in container closures. 4,343,754, Cl. 264-154.000.
Wilden, Rolf: *See*—
Hubner, Horst; Lersmacher, Bernhard; Lydtin, Hans; and Wilden, Rolf, 4,344,012, Cl. 313-60.000.
Wilkins, Cletus W., Jr.: *See*—
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Wilkinson, George F., Jr.: *See*—
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.
Wilkinson, Samuel, to Burroughs Wellcome Co. Biologically active amides. 4,343,795, Cl. 424-177.000.
Willenbrock, William E., Jr.: *See*—
Kinsbron, Eliezer; Levinstein, Hyman J.; and Willenbrock, William E., Jr., 4,343,677, Cl. 156-643.000.
William Prym-Werke KG: *See*—
Sauermilch, Otto, 4,343,423, Cl. 227-1.000.
Williams, James H., to Borden, Inc. Aqueous foaming agent solution. 4,343,718, Cl. 252-352.000.
Williams, James W., 3rd; and Fetterolf, John S., to Fetterolf Corporation. Line blind. 4,343,332, Cl. 138-94.300.
Williams, L. Benton. Stimulating apparatus. 4,343,303, Cl. 128-32.000.
Williams, Richard C.: *See*—
Burden, Martin J.; and Williams, Richard C., 4,343,845, Cl. 428-122.000.
Williams, Robert: *See*—
Skrypek, John P.; Williams, Robert; and Dominico, James W., 4,343,391, Cl. 198-438.000.
Williams, Stanley A.: *See*—
Schimbke, Paul A.; and Williams, Stanley A., 4,343,987, Cl. 219-287.000.
Wilmarth, Paul C., to RCA Corporation. Method for making printed circuit boards with connector terminals. 4,343,084, Cl. 29-843.000.
Wilson, Max K.: *See*—
Harrington, Patrick C.; Levin, Milton I.; Shope, Walter H.; and Wilson, Max K., 4,343,527, Cl. 339-125.00R.
Wilson, Robert G.; and Rogers, Raymond W., to Wilson, Robert G. Counter top food warmer and display case. 4,343,985, Cl. 219-214.000.
Wilson, Robert K.: *See*—
Runkle, Dean; Wilson, Robert K.; and Monroe, William E., 4,343,225, Cl. 91-52.000.
Winkler, Otto, to Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten. High vacuum valve construction. 4,343,455, Cl. 251-58.000.
Winquist, Bruce H. C., to Shell Oil Company. Catalytic dewaxing process. 4,343,692, Cl. 208-111.000.
Winship, John A.: *See*—
Lazowski, James C.; Katz, Sharron; and Winship, John A., 4,343,047, Cl. 2-411.000.
Winson, Michael A., to Webron Products Limited. Method for finishing a tubular felted sleeve. 4,343,753, Cl. 264-119.000.
Wirth, Gallo & Co.: *See*—
Wirth, Johannes; and Gallo, Mario, 4,343,196, Cl. 73-862.620.
Wirth, Johannes; and Gallo, Mario, to Wirth, Gallo & Co. Mass and force meter. 4,343,196, Cl. 73-862.620.
Wise, Rodney M., to Procter & Gamble Company, The. Particulate composition. 4,343,713, Cl. 252-92.000.
Wissler, Josef H., to Max-Planck Gesellschaft zur Forderung der Wissenschaften. Process for obtaining intact and viable leucocytes and thrombocytes from blood. 4,343,793, Cl. 424-101.000.
Witco Chemical Corporation: *See*—
Moorman, David S., 4,343,854, Cl. 428-290.000.
Witte, Donald H., to Meyer, Carl R.; and Meyer, Carol S. Stair structure for swimming pools. 4,343,120, Cl. 52-184.000.
Wittkampf, Frederik H. M.: *See*—
Cals, Guillaume L. M.; Wittkampf, Frederik H. M.; Mensink, Kornelis A.; and Brouwer, Hendrik L., 4,343,312, Cl. 128-419.0PG.
Wlodkowski, Johann; and Jungwirth, Dieter, to Dyckerhoff & Widmann Aktiengesellschaft. System for anchoring a tendon in a structural concrete unit. 4,343,122, Cl. 52-223.00L.
Wojcik, Karl: *See*—
Franchina, Antonino, 4,343,296, Cl. 126-436.000.
Wolf, Daniel E.: *See*—
Crane, Hewitt D.; and Wolf, Daniel E., 4,344,135, Cl. 364-419.000.
Wolf, Herman B., to Duke Power Company. Steam-electrical generating system using geothermal heat source. 4,343,999, Cl. 290-2.000.
Wolstein, Friedrich; Hoffmann, Egbert; and Epper, Wolfgang, to UHDE GmbH. Process for the separation of solids from phosphoric acid. 4,343,780, Cl. 423-321.00R.
Wolters, Gerrit; and Kuypers, Leonardus P. C., to Akzona Incorporated. Method and test pack for the demonstration and determination of an antigen or antibody. 4,343,896, Cl. 435-7.000.
Wood, Robert W.; Hoefler, Andrew C.; and Brody, Deborah S., to General Foods Corporation. Quick-dissolving powdered drink and method therefore. 4,343,819, Cl. 426-96.000.
Woodruff, Christopher J.: *See*—
Shackleton, Ronald; Woodruff, Christopher J.; and Fletcher, Ian M., 4,343,710, Cl. 210-797.000.
Woolsey, William D.: *See*—
DuBose, Ronald A.; and Woolsey, William D., 4,343,309, Cl. 128-303.140.
DuBose, Ronald A.; and Woolsey, William D., 4,343,310, Cl. 128-303.140.
Wooten, David R.: *See*—
Eaton, Sargent S., Jr.; and Wooten, David R., 4,344,156, Cl. 365-203.000.
Wootton, Roy E., to United States of America, Energy. Adhesive coated electrical apparatus having sublimable protective covering and an assembly method. 4,343,964, Cl. 174-10.000.
Worthington, Thomas K.: *See*—
Thompson, David A.; and Worthington, Thomas K., 4,344,068, Cl. 340-365.00L.
Wright, Harlan C.: *See*—
Basford, James A.; Mathis, John E.; and Wright, Harlan C., 4,343,176, Cl. 73-1.00G.
Wright Line Inc.: *See*—
Moriarty, Frederick J.; and Paquette, Edmund T., 4,343,244, Cl. 108-1.000.
Wuerzer, Bruno: *See*—
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, 4,343,648, Cl. 71-91.000.
Xerox Corporation: *See*—
Bares, Jan; and Maher, James C., 4,343,548, Cl. 355-3.0DD.
Houston, Robert D., 4,344,078, Cl. 346-75.000.
Yabushita, Akira: *See*—
Mitani, Masao; Tsunoda, Toyoji; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; and Yabushita, Akira, 4,343,986, Cl. 219-216.000.
Yajima, Mikiharu; Masumiya, Masuki; and Obe, Sadao, to Nitto Boseki Co., Ltd.; and Nittobo Itamikako Co., Ltd. Apparatus for applying liquid state material onto a surface of a cloth or the like. 4,343,260, Cl. 118-204.000.
Yamada, Hirozi: *See*—
Nishida, Hideki; Yamada, Hirozi; Umezaki, Hiroshi; Sugita, Yutaka; and Tsumita, Norikazu, 4,344,153, Cl. 365-39.000.
Yamada, Hisafumi: *See*—
Utsunomiya, Kimitake; Yamada, Hisafumi; and Kuriki, Choei, 4,344,089, Cl. 358-167.000.
Yamada, Yasuyuki: *See*—
Tsuji, Nobuo; Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,343,831, Cl. 427-44.000.
Yamagata, Shuji: *See*—
Tomioka, Hirotaka; and Yamagata, Shuji, 4,343,504, Cl. 296-76.000.
Yamaji, Akihiko: *See*—
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Yamaki, Junichi: *See*—
Tobishima, Shinichi; Yamaki, Junichi; and Yamaji, Akihiko, 4,343,871, Cl. 429-197.000.
Yamamoto, Hitoshi: *See*—
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Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, 4,343,789, Cl. 424-78.000.
Yamashita, Hiromi: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; and Tobita, Toshio, 4,343,833, Cl. 427-96.000.
Yanmar Diesel Engine Co., Ltd.: *See*—
Kawabe, Toshihiko, 4,343,270, Cl. 123-196.00V.
Yasu, Mitsuho: *See*—
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, 4,343,638, Cl. 65-2.000.
Yasuda, Hajime: *See*—
Asada, Kazuyoshi; Yasuda, Hajime; and Ohnuma, Kunihiko, 4,344,129, Cl. 364-200.000.
Yasuda, Nobuaki; Fujimori, Yoshinori; and Morita, Masaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical recording element and a method of manufacturing the same. 4,343,862, Cl. 428-421.000.
Yates, Michael S., to Smiths Industries Limited. Gas-turbine engine control. 4,344,141, Cl. 364-442.000.
Yazu, Shuji; and Hara, Akio, to Sumitomo Electric Industries, Ltd. Sintered compact for use in a tool. 4,343,651, Cl. 75-238.000.
Yeates, Robert D. Downhole surge tools. 4,343,357, Cl. 166-154.000.
Yokobori, Nobuyoshi; Igarashi, Yoshiaki; and Maeda, Tetsuo, to Matsushita Electric Industrial Co., Ltd. Drive system for a brushless DC motor. 4,344,023, Cl. 318-254.000.
Yokozeki, Shinichi: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,343,376, Cl. 181-167.000.
Yoneya, Satoru: *See*—
Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, 4,343,789, Cl. 424-78.000.
Yoneyama, Masakazu: *See*—
Minamizono, Junji; Kishimoto, Shinzo; and Yoneyama, Masakazu, 4,343,894, Cl. 430-528.000.
York, Lyle E., to Caterpillar Tractor Co. Floor support for mobile scraper. 4,343,100, Cl. 37-126.0AE.
Yoshimoto, Jun: *See*—
Oshima, Mituyoshi; and Yoshimoto, Jun, 4,343,955, Cl. 568-834.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Nozawa, Takamitsu; and Tazaki, Takaharu, 4,343,397, Cl. 206-37.000.

Yoshino, Toshikazu: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,343,376, Cl. 181-167.000.

Yoshioka, Takayuki, to Hitachi, Ltd. Static Scherbius system. 4,344,026, Cl. 318-806.000.

Young, Jerry L.: *See*—
Major, Jeffrey T.; Gibson, Nelson S., III; and Young, Jerry L., 4,344,008, Cl. 310-242.000.

Youtsey, Karl J.: *See*—
Campbell, Bonnie J.; Counts, Thomas G.; Cunningham, James L.; and Youtsey, Karl J., 4,343,350, Cl. 165-11.00R.

Yu, Philip S.: *See*—
Lin, Shu; and Yu, Philip S., 4,344,171, Cl. 371-35.000.

Yugen Kaisha Tokyo Kinzoku Seisakusho: *See*—
Fujiwara, Masashichi, 4,343,558, Cl. 401-67.000.

Yukutomi, Masuo: *See*—
Zama, Takashi; Takeuchi, Koji; Yukutomi, Masuo; and Ito, Fumiyuki, 4,343,732, Cl. 524-114.000.

Zama, Takashi; Takeuchi, Koji; Yukutomi, Masuo; and Ito, Fumiyuki, to Ajinomoto Company Incorporated. Stabilized halogen-containing resin compositions. 4,343,732, Cl. 524-114.000.

Zambrano, Nobile: *See*—
Wilcox, Donald G.; and Zambrano, Nobile, 4,343,412, Cl. 220-342.000.

Zanders Feinpapiere AG: *See*—
Engl, Rupert, 4,343,440, Cl. 242-67.10R.

Zaunberger, Franz X.: *See*—
Brosius, Klaus; Lindenthal, Hans; and Zaunberger, Franz X., 4,343,383, Cl. 188-296.000.

Zebell, Diane, to Angelica Corporation. Plural-size article of wearing apparel. 4,343,046, Cl. 2-105.000.

Zeller, Norbert: *See*—
Bischofberger, Walter; and Zeller, Norbert, 4,343,972, Cl. 200-81.00R.

Zellweger, Ltd.: *See*—
Baumgartner, A gust, 4,343,143, Cl. 57-22.000.

Zenith Radio Corporation: *See*—
Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., 4,344,084, Cl. 358-21.00V.
Srivastava, Gopal K., 4,344,083, Cl. 358-21.00V.

Ziegenhorn, Joachim: *See*—
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.

Ziegler AG: *See*—
Ziegler, Mario; and Ziegler, Ulrich, 4,343,099, Cl. 37-103.000.

Ziegler, Mario; and Ziegler, Ulrich, to Ziegler AG. Apparatus for the parallel guidance of the bucket of a hydraulic excavator. 4,343,099, Cl. 37-103.000.

Ziegler, Ulrich: *See*—
Ziegler, Mario; and Ziegler, Ulrich, 4,343,099, Cl. 37-103.000.

Zimmerman, Valentine J. Wood burning stove. 4,343,289, Cl. 126-77.000.

Zitzloff, Wayne D., to Galtek Corporation. Plastic control valve. 4,343,456, Cl. 251-255.000.

Zublin, Edward A.: *See*—
Lyons, William C.; Scurlock, Scot L.; and Zublin, Edward A., 4,343,369, Cl. 175-75.000.

Zumsteg, Alphonse E., to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Signal generator including high and low frequency oscillators. 4,344,046, Cl. 331-158.000.

Zwez, Werner: *See*—
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barber, Franklin D., to Standard Car Truck Company. Dampened railway car truck. Re. 31,008, Cl. 105-197.0DB.

Best, John S., to Dow Chemical Company, The. Roof construction and method thereof. Re. 31,007, Cl. 52-408.000.

Chem Systems Inc.: *See*—
Gelbein, Abraham P., Re. 31,010, Cl. 560-233.000.

Dow Chemical Company, The: *See*—
Best, John S., Re. 31,007, Cl. 52-408.000.

Gelbein, Abraham P., to Chem Systems Inc. Preparation of carboxylic acid esters with BF_3 complex catalyst. Re. 31,010, Cl. 560-233.000.

Standard Car Truck Company: *See*—
Barber, Franklin D., Re. 31,008, Cl. 105-197.0DB.

LIST OF DESIGN PATENTEES

Advertising Displays Company: *See*—
Zaro, Marvin, 265,703, Cl. D6-199.000.

AJP International: *See*—
Pappas, Anthony J., 265,736, Cl. D15-5.000.

Almond, John: *See*—
Stewart, James B.; and Almond, John, 265,757, Cl. D28-13.000.

Araujo, Armando A., Jr.: *See*—
Osrow, Harold; Araujo, Armando A., Jr.; and Perry, Gordon R., 265,715, Cl. D7-153.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Koyama, Masahiro; Miki, Kosuke; and Suzuki, Masahiko, 265,739, Cl. D16-2.000.

Atrium Structures, Inc.: *See*—
Jenn, Louis J.; and Cerola, Joseph J., 265,761, Cl. D25-17.000.

Bales, Lewis C. Ring or the like. 265,728, 8-10-82, Cl. D11-27.000.

Ballard, James H. Combined bathtub and shower enclosure. 265,756, 8-10-82, Cl. D23-49.000.

Barr, Josef J. Diamond necklace. 265,727, 8-10-82, Cl. D11-6.000.

Beale, Mark. Micro surgical instrument. 265,758, 8-10-82, Cl. D24-26.000.

Bio-Temp Products, Inc.: *See*—
Khemka, Kailash C., 265,724, Cl. D10-57.000.

Blake, Marc B.: *See*—
Sogoian, Tig; and Blake, Marc B., 265,694, Cl. D2-400.000.

Blue Box Toy Factory Limited: *See*—
Udagawa, Yoshio, 265,751, Cl. D21-143.000.

Bocuse, Paul. Wine bucket in form of a chef's hat. 265,709, 8-10-82, Cl. D7-70.000.

Bowing Enterprises: *See*—
Crumley, James H., 265,774, Cl. D92-1.00R.

Breger, Carl-Arne; and Landgren, Per-Olof, to Fiskeby Aktiebolag. Toilet paper dispenser. 265,700, 8-10-82, Cl. D6-95.000.

Cerola, Joseph J.: *See*—
Jenn, Louis J.; and Cerola, Joseph J., 265,761, Cl. D25-17.000.

Chef Francisco, Inc.: *See*—
Dunden, Walter J., 265,711, Cl. D7-76.000.

Chimney Sweeps of America, Ltd.: *See*—
Miller Stoll, Diane F.; and Kaczmarek, Jo Anne, 265,752, Cl. D21-171.000.

Ciavarella, Josephine L. Combined pattern reader and place marker. 265,695, 8-10-82, Cl. D3-18.000.

Clairol Incorporated: *See*—
Stewart, James B.; and Almond, John, 265,767, Cl. D28-13.000.

Colquhoun, Ross M. Modular wall unit. 265,701, 8-10-82, Cl. D6-164.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Mizugami, Masako, 265,749, Cl. D21-65.000.

Cook Coffee Company: *See*—
Roth, Peter H., 265,698, Cl. D4-25.000.

Crumley, James H., to Bowing Enterprises. Camouflage fabric or similar article. 265,774, 8-10-82, Cl. D92-1.00R.

Dart Industries Inc.: *See*—
Lahay, Charles A., 265,760, Cl. D24-59.000.

Deflecto Corporation: *See*—
Meyer, Stephen T.; and Meyer, C. Rodger, 265,743, Cl. D19-90.000.

Dowdy, Lloyd F. Outdoorsman's knife. 265,719, 8-10-82, Cl. D8-99.000.

Dunden, Walter J., to Chef Francisco, Inc. Container for freezing and storing food products. 265,711, 8-10-82, Cl. D7-76.000.

Duskin Franchise Kabushiki Kaisha: *See*—
Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 265,704, Cl. D6-209.000.
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Famolare, Joseph P., Jr. Shoe bottom. 265,692, 8-10-82, Cl. D2-322.000.

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Iijima, Takekazu, to Pioneer Kabushiki Kaisha. Loudspeaker. 265,732, 8-10-82, Cl. D14-30.000.

Ingram, Jerry L. Pitch and angle square. 265,725, 8-10-82, Cl. D10-65.000.

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Krakauer, Merrill. Merchandising machine. 265,745, 8-10-82, Cl. D20-4.000.

Kristof, Steven J. Reinforcement tab. 265,744, 8-10-82, Cl. D19-100.000.

Kuroki, Nobufusa, to Janome Sewing Machine Co. Ltd. Sewing machine. 265,737, 8-10-82, Cl. D15-70.000.

Lahay, Charles A., to Dart Industries Inc. Urine collection device or the like. 265,760, 8-10-82, Cl. D24-59.000.

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Mahan, John A., to Northern Telecom Limited. Telephone set base. 265,734, 8-10-82, Cl. D14-60.000.

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Mino, Yiu C., to Mino Corporation. Combined cassette recorder and clock radio. 265,731, 8-10-82, Cl. D14-5.000.

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Necas, Donald E., to Whirlpool Corporation. Food processor. 265,716, 8-10-82, Cl. D7-153.000.

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O'Dell, Dorothy. Cake pan. 265,708, 8-10-82, Cl. D7-43.000.

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Orenstein, Henry. Toy vanity. 265,750, 8-10-82, Cl. D21-121.000.

Osrow, Harold; Araujo, Armando A., Jr.; and Perry, Gordon R., to Osrow Products Corporation. Kitchen appliance for making farinaceous products. 265,715, 8-10-82, Cl. D7-153.000.

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Pace, Thomas G. Insulation panel dispensing bag. 265,722, 8-10-82, Cl. D9-305.000.

Pappas, Anthony J., to AJP International. Intake manifold. 265,736, 8-10-82, Cl. D15-5.000.

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Pickard, Henry A., to Pickard Incorporated. Plate having an oval center. 265,707, 8-10-82, Cl. D7-23.000.

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Roth, Peter H., to Cook Coffee Company. Toothbrush. 265,698, 8-10-82, Cl. D4-25.000.

Russell William, Ltd.: *See—*
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Savas, Nedim, to Russell William, Ltd. Sheet display unit. 265,702, 8-10-82, Cl. D6-189.000.

Schmidli, Eugene C. Toaster unit. 265,713, 8-10-82, Cl. D7-91.000.

Schmidli, Eugene C. Toaster. 265,714, 8-10-82, Cl. D7-91.000.

Shachihata Industrial Co., Ltd.: *See—*
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Sher, Robert B. Pipe. 265,766, 8-10-82, Cl. D27-03.000.

Sogoian, Tig; and Blake, Marc B. Belt-mountable cigarette case. 265,694, 8-10-82, Cl. D2-400.000.

Stein, Peter. Napkin holder. 265,710, 8-10-82, Cl. D7-72.000.

Stewart, James B.; and Almond, John, to Clairol Incorporated. Dryer. 265,767, 8-10-82, Cl. D28-13.000.

Stocker, Hans, to Gardisette International AG. Curtain material. 265,769, 8-10-82, Cl. D47-6.00E.

Stocker, Hans, to Gardisette International AG. Curtain material. 265,770, 8-10-82, Cl. D47-6.00E.

Stocker, Hans, to Gardisette International AG. Curtain material. 265,771, 8-10-82, Cl. D47-6.00E.

Stocker, Hans, to Gardisette International AG. Curtain material. 265,772, 8-10-82, Cl. D47-6.00E.

Stoeckli, Oscar W. Envelope opener. 265,718, 8-10-82, Cl. D8-61.000.

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Tabata, Toshinori, to Tomy Kogyo Company, Inc. Toy medical kit. 265,748, 8-10-82, Cl. D21-59.000.

Takahashi, Hiromi, to Tomy Kogyo Company, Inc. Vertical pinball-type game housing. 265,747, 8-10-82, Cl. D21-12.000.

Thomas, Michael D.; and Ryder, Francis E., to Ryder International Corporation. Contact lens sterilizer housing. 265,757, 8-10-82, Cl. D24-9.000.

Tomy Kogyo Company, Inc.: *See—*
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Udagawa, Yoshio, to Blue Box Toy Factory Limited. Toy vehicle track. 265,751, 8-10-82, Cl. D21-143.000.

Vidal, Miguel. Skirt fabric or similar article. 265,773, 8-10-82, Cl. D92-1.00R.

Weber, Bettie L. Tanning pool. 265,759, 8-10-82, Cl. D24-39.000.

Weisgerber, David J., to Omark Industries, Inc. Log lifter. 265,717, 8-10-82, Cl. D7-210.000.

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Wilcox, Victor H. Paper holder. 265,742, 8-10-82, Cl. D19-86.000.

Williames, Geoffrey A. Cutter tooth. 265,738, 8-10-82, Cl. D15-139.000.

Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, to Duskin Franchise Kabushiki Kaisha. Door mat base plate or similar article. 265,704, 8-10-82, Cl. D6-209.000.

Yamamoto, Yosuke: *See*—
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Zaro, Marvin, to Advertising Displays Company. Adjustable shelf unit. 265,703, 8-10-82, Cl. D6-199.000.

LIST OF PLANT PATENTEES

Corrin, Allan A. Grape vine. 4,873, 8-10-82, Cl. 47.000.

Corrin, Allan A. Grape vine. 4,874, 8-10-82, Cl. 47.000.

Gessellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA": *See*—
Holtkamp, Reinhold, 4,875, Cl. 69.000.

Holtkamp, Reinhold, to Gessellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA". African violet plant. 4,875, 8-10-82, Cl. 69.000.

CLASSIFICATION OF PATENTS

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18	4,343,262
27	4,343,263
73	4,343,264
83	4,343,265
98	4,343,266

CLASS 123

41.81	4,343,267
90.4	4,343,268
146.5 A	4,343,269
196 V	4,343,270
198 E	4,343,271
297	4,343,272
335	4,343,273
357	4,343,274
382	4,343,275
383	4,343,276
389	4,343,277
425	4,343,278
445	4,343,279
459	4,343,280
519	4,343,281
523	4,343,282
557	4,343,283
568	4,343,284
647	4,343,285

CLASS 124

24 R	4,343,286

CLASS 125

23 R	4,343,287

CLASS 126

77	4,343,289
110 E	4,343,290
112	4,343,288
247	4,343,291
378	4,343,292
400	4,343,293
424	4,343,294
425	4,343,295
436	4,343,296
449	4,343,297
450	4,343,298

CLASS 128

1 R	4,343,299
6	4,343,300
24 A	4,343,301
24 R	4,343,302
32	4,343,303
200.14	4,343,304
214 R	4,343,305
218 N	4,343,306
239	4,343,307
303.13	4,343,308
303.14	4,343,309
	4,343,310
419 PG	4,343,311
	4,343,312
505	4,343,313
680	4,343,314
689	4,343,315
771	4,343,316

CLASS 131

290	4,343,317
300	4,343,318
336	4,343,319
339	4,343,320

CLASS 132

48 A	4,343,321

CLASS 134

18	4,343,656

CLASS 135

5 R	4,343,322

CLASS 136

225	4,343,960
230	4,343,961
255	4,343,962
258	4,343,963

CLASS 137

13	4,343,323
117	4,343,324
212	4,343,325
454	4,343,326
464	4,343,327
491	4,343,328
625.44	4,343,329
625.48	4,343,330
625.65	4,343,331

CLASS 138

94.3	4,343,332
125	4,343,333

CLASS 139

420 R	4,343,334

CLASS 140

71 C	4,343,335

CLASS 141

218	4,343,336
226	4,343,337

CLASS 148

1.5	4,343,657
6.14 R	4,343,660
6.3	4,343,658
	4,343,659
134	4,343,661
187	4,343,662

CLASS 149

4	4,343,663
11	4,343,664

CLASS 152

153	4,343,338
209 R	4,343,339
353 R	4,343,341
	4,343,342
359	4,343,343

CLASS 156

48	4,343,665
138	4,343,666
157	4,343,667
172	4,343,668
212	4,343,669
233	4,343,670
401	4,343,671
428	4,343,672
583.4	4,343,673
601	4,343,674
628	4,343,675
	4,343,676
643	4,343,677

CLASS 159

24 A	4,343,678

CLASS 160

232	4,343,340
349 D	4,343,344

CLASS 162

4	4,343,679
100	4,343,680

CLASS 164

33	4,343,345
463	4,343,347

CLASS 166

1	4,343,348
	4,343,349
11 R	4,343,350
81	4,343,351
104.16	4,343,352
119	4,343,353
165	4,343,354
166	4,343,355

CLASS 166

60	4,343,356
154	4,343,357
227	4,343,358
233	4,343,359
251	4,343,360
	4,343,361
267	4,343,362
281	4,343,363

CLASS 169

38	4,343,364

CLASS 172
4 4,343,365
41 4,343,366

CLASS 173
43 4,343,367
139 4,343,368

CLASS 174
10 4,343,964
72 B 4,343,965
140 S 4,343,966

CLASS 175
75 4,343,369
107 4,343,370
329 4,343,371
374 4,343,372

CLASS 177
50 4,343,373

CLASS 178
22.19 4,343,967
23 R 4,343,968

CLASS 179
1 SD 4,343,969
1.5 R 4,343,970
70 4,343,971

CLASS 180
69 R 4,343,374
73 R 4,343,375

CLASS 181
167 4,343,376

CLASS 184
6.26 4,343,378
6.5 4,343,377

CLASS 187
18 4,343,379

CLASS 188
18 A 4,343,380
73.45 4,343,381
242 4,343,382
296 4,343,383

CLASS 191
22 R 4,343,384

CLASS 192
0.02 R 4,343,385
0.076 4,343,387
54 4,343,386

CLASS 193
47 4,343,388

CLASS 198
316 4,343,389
429 4,343,390
438 4,343,391
484 4,343,392
533 4,343,393
616 4,343,394
781 4,343,395
4,343,396

CLASS 200
81 R 4,343,972
159 B 4,343,973
243 4,343,974
314 4,343,975

CLASS 203
2 4,343,683

CLASS 204
4 4,343,684
101 4,343,685
129.2 4,343,686
157.1 R 4,343,687
195 W 4,343,688
253 4,343,689
263 4,343,690

CLASS 206
37 4,343,397
219 4,343,398
222 4,343,399
507 4,343,400
577 4,343,401
622 4,343,402
812 4,343,403

CLASS 208
11 LE 4,343,691
111 4,343,692
244 4,343,693

CLASS 209
9 4,343,694
212 4,343,695

CLASS 210
85 4,343,696
90 4,343,697
107 4,343,698
190 4,343,699
232 4,343,700
387 4,343,701
391 4,343,702
4,343,703
509 4,343,704
637 4,343,705
667 4,343,706
695 4,343,707
744 4,343,708
782 4,343,709
797 4,343,710

CLASS 211
17 4,343,404
88 4,343,405

CLASS 212
225 4,343,406

CLASS 213
51 4,343,407

CLASS 215
258 4,343,408

CLASS 219
10.55 A 4,343,979
10.55 B 4,343,977
10.55 E 4,343,978
10.55 F 4,343,976
56 4,343,981
110 4,343,980
118 4,343,982
145.21 4,343,983
146.3 4,343,984
214 4,343,985
216 4,343,986
287 4,343,987
302 4,343,988
378 4,343,989
492 4,343,990

CLASS 220
72 4,343,409
86 AT 4,343,410
242 4,343,411
342 4,343,412
425 4,343,413

CLASS 221
13 4,343,414
59 4,343,415

CLASS 222
1 4,343,416
153 4,343,417
386 4,343,418

CLASS 224
326 4,343,419

CLASS 226
49 4,343,420
113 4,343,421
197 4,343,422

CLASS 227
1 4,343,423

CLASS 228
104 4,343,424
117 4,343,425
170 4,343,426

CLASS 229
4.5 4,343,427
31 R 4,343,428
38 4,343,429
69 4,343,430

CLASS 233
20 A 4,343,431

CLASS 238
2 4,343,432

CLASS 239
3 4,343,433
390 4,343,434
499 4,343,435
696 4,343,436

CLASS 241
169.1 4,343,437
196 4,343,438

CLASS 242
41 4,343,439
67.1 R 4,343,440
68.1 4,343,441
84.2 A 4,343,442
86.7 4,343,443
107.4 A 4,343,444
107.7 4,343,445

CLASS 244
12.5 4,343,446
137 R 4,343,447
145 4,343,448

CLASS 248
156 4,343,449
454 4,343,450
500 4,343,451
565 4,343,452

CLASS 249
120 4,343,453

CLASS 250
227 4,343,991
231 SE 4,343,992
306 4,343,993
390 4,343,994
505.1 4,343,997
563 4,343,998

CLASS 251
26 4,343,454
58 4,343,455
255 4,343,456

CLASS 252
8.55 D 4,343,711
4,343,712
92 4,343,713
182.1 4,343,714
186 4,343,715
192 4,343,716
313 S 4,343,717
352 4,343,718
359 CG 4,343,719
390 4,343,720
429 B 4,343,721
431 N 4,343,722
455 Z 4,343,723
466 B 4,343,724
542 4,343,725
547 4,343,726

CLASS 254
43 4,343,457
399 4,343,458

CLASS 260
112 B 4,343,734
112 R 4,343,735
4,343,736
239 BF 4,343,737
239.3 P 4,343,738
326.5 FM 4,343,740
397.45 4,343,739
404.5 4,343,743
412.1 4,343,744
429 J 4,343,745
429 R 4,343,746
4,343,747
543 F 4,343,749

CLASS 264
8 4,343,750
37 4,343,751
71 4,343,752
119 4,343,753
154 4,343,754
176 R 4,343,755
216 4,343,756
221 4,343,757
254 4,343,758

CLASS 266
243 4,343,459

CLASS 267
151 4,343,460

CLASS 271
22 4,343,461
267 4,343,462
293 4,343,463

CLASS 272
56.5 R 4,343,464
67 4,343,465
133 4,343,466

CLASS 273
26 B 4,343,467
67 A 4,343,468
123 R 4,343,470
157 R 4,343,471
164 4,343,472
185 A 4,343,469
186 A 4,343,473
237 4,343,474
276 4,343,475
289 4,343,476

CLASS 277
73 4,343,477
90 4,343,478
96.2 4,343,479
207 A 4,343,480

CLASS 278
21 4,343,995

CLASS 280
5 C 4,343,481
42 4,343,482
47.26 4,343,483
479 A 4,343,484
609 4,343,485
615 4,343,486
654 4,343,487
802 4,343,488
804 4,343,489
821 4,343,490
824 4,343,491

CLASS 282
11.5 R 4,343,492
27.5 4,343,493
4,343,494

CLASS 285
23 4,343,495
39 4,343,496
61 4,343,497
174 4,343,498
263 4,343,499

CLASS 290
2 4,343,999

CLASS 292
175 4,343,500
336.3 4,343,501
356 4,343,502

CLASS 296
1 S 4,343,505
4,343,506
76 4,343,504
84 D 4,343,503
208 4,343,507

CLASS 297
114 4,343,508
232 4,343,509
250 4,343,510

CLASS 298
6 4,343,511

CLASS 299
1 4,343,512
4,343,513
37 4,343,514
75 4,343,515
86 4,343,516

CLASS 303
7 4,343,517

CLASS 307
132 E 4,344,000
221 D 4,344,001
270 4,344,002
296 A 4,344,003
400 4,344,004
463 4,344,005

CLASS 308
4 A 4,343,518
37 4,343,519
178 4,343,520
193 4,343,521

CLASS 310
43 4,344,006
46 4,344,007
242 4,344,008
4,344,009
361 4,344,010

CLASS 313
57 4,344,011
60 4,344,012
4,344,013
143 4,344,014
466 4,344,015
489 4,344,016

CLASS 315
16 4,344,017
47 4,344,018
111.81 4,344,019
241 P 4,344,020
383 4,344,021

CLASS 318
38 4,344,022
254 4,344,023
640 4,344,024
729 4,344,025
806 4,344,026

CLASS 322
7 4,344,027

CLASS 324
57 N 4,344,028
57 R 4,344,029
58.5 B 4,344,030
77 R 4,344,031
158 F 4,344,033
158 MG 4,344,032
329 4,344,034
453 4,344,035

CLASS 328
61 4,344,036
114 4,344,037
138 4,344,038

CLASS 329
50 4,344,039
4,344,040
4,344,041

CLASS 330
4.3 4,344,042
254 4,344,043
4,344,044

CLASS 331
1 A 4,344,045
158 4,344,046

CLASS 333
17 L 4,344,047
135 4,344,048
154 4,344,049
173 4,344,050
194 4,344,051
222 4,344,052
251 4,344,053

CLASS 335
169 4,344,054
174 4,344,055
219 4,344,056
299 4,344,057

CLASS 337
148 4,344,058
174 4,344,059
260 4,344,060
407 4,344,061

CLASS 338
35 4,344,062
160 4,344,063
334 4,344,064

CLASS 339
10 4,343,522
59 M 4,343,523
74 R 4,343,524
75 P 4,343,525
90 R 4,343,526
125 R 4,343,527
198 G 4,343,528
198 R 4,343,529
220 R 4,343,530

CLASS 340
29 4,344,065
310 A 4,344,066
347 CC 4,344,067
365 L 4,344,068
365 S 4,344,069
566 4,344,071
648 4,344,072
675 4,344,073
684 4,344,074
703 4,344,075
815.08 4,344,070
825.17 4,344,076

CLASS 343
754 4,344,077

CLASS 346
75 4,344,078
140 R 4,344,079

CLASS 350
6.5 4,343,531
96.19 4,343,532
288 4,343,533
319 4,343,534
342 4,343,535
355 4,343,536
357 4,343,537

CLASS 353
64 4,343,538
122 4,343,539

CLASS 354
4 4,343,540
51 4,343,541
76 4,343,542
124 4,343,543
149 4,343,544
173 4,343,545
281 4,343,546

CLASS 355
3 DD 4,343,548
14 R 4,343,547
113 4,343,549

CLASS 356
5 4,343,550
335 4,343,551
339 4,343,552
376 4,343,553

CLASS 357
23 4,344,080
43 4,344,081

CLASS 358
8 4,344,082
21 V 4,344,083
4,344,084
22 4,344,085
78 4,344,086
127 4,344,087
132 4,344,088
167 4,344,089
183 4,344,090
213 4,344,091
217 4,344,092

CLASS 360
45 4,344,093
66 4,344,094
73 4,344,095
96.5 4,344,096
96.6 4,344,097
4,344,098
109 4,344,099

CLASS 361
45 4,344,100
75 4,344,101
154 4,344,102
160 4,344,103
230 4,344,104
328 4,344,105
386 4,344,106
433 4,344,107

CLASS 362
13 4,344,108
4,344,109
32 4,344,110
33 4,344,111
96 4,344,112
101 4,344,113
147 4,344,114
216 4,344,115
226 4,344,116
250 4,344,117
267 4,344,118
4,344,119
349 4,344,120

CLASS 363
16 4,344,121
23 4,344,122
43 4,344,123
49 4,344,124
80 4,344,125
126 4,344,126

CLASS 364
130 4,344,127
183 4,344,128
200 4,344,129
4,344,130
4,344,131
4,344,132
4,344,133
4,344,134
419 4,344,135
424 4,344,136
426 4,344,137
4,344,138
4,344,139
431.08 4,344,140
442 4,344,141
473 4,344,142
492 4,344,143
510 4,344,144
551 4,344,145
552 4,344,146
710 4,344,147
724 4,344,148
4,344,149
4,344,150
754 4,344,151
900 4,344,152

CLASS 365
39 4,344,153
194 4,344,154
200 4,344,155
203 4,344,156
222 4,344,157

CLASS 366
65 4,343,554
CLASS 367
73 4,344,158
87 4,344,159
96 4,344,160
CLASS 368
69 4,344,161
CLASS 369
37 4,344,162
40 4,344,163
44 4,344,164
4,344,165
216 4,344,166
247 4,344,167
250 4,344,168
CLASS 370
40 4,344,169
68 4,344,170
CLASS 371
35 4,344,171
CLASS 372
29 4,344,172
38 4,344,173
91 4,344,174
CLASS 374
31 4,343,182
158 4,343,185
CLASS 375
5 4,344,175
14 4,343,759
15 4,344,176
16 4,344,177
81 4,344,178
110 4,344,179
116 4,344,180
CLASS 376
134 4,343,760
148 4,343,761
214 4,343,682
280 4,343,762
293 4,343,681
314 4,343,763
338 4,343,764
CLASS 378
21 4,343,996
45 4,344,181
170 4,344,182
207 4,344,183
CLASS 400
144.2 4,343,555
196.1 4,343,556
496 4,343,557
CLASS 401
67 4,343,558
109 4,343,559
CLASS 403
13 4,343,560
97 4,343,561
171 4,343,562
282 4,343,563
362 4,343,564
370 4,343,565
405 4,343,566
CLASS 404
10 4,343,567
133 4,343,568
CLASS 405
53 4,343,569
155 4,343,573
229 4,343,570
284 4,343,571
4,343,572
CLASS 406
13 4,343,574
19 4,343,575
CLASS 408
155 4,343,576
226 4,343,577
CLASS 410
151 4,343,578
CLASS 411
442 4,343,579
468 4,343,580
517 4,343,581
CLASS 414
32 4,343,582
75 4,343,583
222 4,343,584
403 4,343,585
414 4,343,586
568 4,343,587
701 4,343,588
751 4,343,589
753 4,343,590
CLASS 415
169 R 4,343,591
171 4,343,592
CLASS 416
193 A 4,343,593
4,343,594
CLASS 417
225 4,343,595
252 4,343,596
417 4,343,597
517 4,343,598
CLASS 418
55 4,343,599
61 B 4,343,600
4,343,601
77 4,343,602
CLASS 422
3 4,343,765
63 4,343,766
70 4,343,767
97 4,343,768
109 4,343,769
112 4,343,770
168 4,343,771
200 4,343,772
CLASS 423
1 4,343,773
53 4,343,774
78 4,343,775
210 4,343,776
228 4,343,777
4,343,778
305 4,343,779
321 R 4,343,780
493 4,343,781
CLASS 424
3 4,343,782
28 4,343,783
45 4,343,784
49 4,343,785
52 4,343,786
78 4,343,787
4,343,788
4,343,789
81 4,343,790
84 4,343,791
92 4,343,792
101 4,343,793
131 4,343,794
177 4,343,795
184 4,343,796
199 4,343,797
240 4,343,798
243 4,343,799
248.5 4,343,800
249 4,343,801
250 4,343,802
251 4,343,803
258 4,343,804
263 4,343,805
272 4,343,806
4,343,807
273 R 4,343,808
4,343,809
4,343,810
274 4,343,811
4,343,812
4,343,813
279 4,343,814
288 4,343,815
316 4,343,816
CLASS 425
114 4,343,603
192 R 4,343,604
CLASS 426
36 4,343,817
45 4,343,818
96 4,343,819
103 4,343,820
247 4,343,821
4,343,822
250 4,343,823
477 4,343,824
570 4,343,825
601 4,343,826
CLASS 427
8 4,343,827
27 4,343,828
35 4,343,829
38 4,343,830
44 4,343,831
53.1 4,343,832
96 4,343,833
132 4,343,834
209 4,343,835
249 4,343,836
275 4,343,837
292 4,343,838
340 4,343,839
351 4,343,840
386 4,343,841
CLASS 428
8 4,343,842
36 4,343,843
4,343,844
122 4,343,845
138 4,343,846
139 4,343,847
156 4,343,848
157 4,343,849
203 4,343,850
212 4,343,851
216 4,343,852
233 4,343,853
290 4,343,854
332 4,343,855
4,343,856
336 4,343,857
342 4,343,858
364 4,343,859
371 4,343,860
413 4,343,861
421 4,343,862
485 4,343,863
500 4,343,864
552 4,343,865
593 4,343,866
614 4,343,867
CLASS 429
17 4,343,868
27 4,343,869
111 4,343,870
197 4,343,871
245 4,343,872
CLASS 430
1 4,343,873
4,343,874
5 4,343,875
4,343,876
4,343,877
4,343,878
14 4,343,879
42 4,343,880
57 4,343,881
58 4,343,882
128 4,343,883
149 4,343,884
177 4,343,885
237 4,343,886
272 4,343,887
302 4,343,888
311 4,343,889
321 4,343,890
337 4,343,891
398 4,343,892
401 4,343,893
528 4,343,894
CLASS 431
8 4,343,605
10 4,343,606
CLASS 432
18 4,343,607
CLASS 433
224 4,343,608
CLASS 434
58 4,343,610
128 4,343,609
CLASS 435
6 4,343,895
7 4,343,896
19 4,343,897
71 4,343,898
129 4,343,899
4,343,900
176 4,343,901
177 4,343,902
197 4,343,903
240 4,343,904
253 4,343,906
256 4,343,905
313 4,343,907
CLASS 440
45 4,343,611
75 4,343,612
CLASS 441
3 4,343,055
84 4,343,056
CLASS 455
95 4,344,184
110 4,344,185
168 4,344,186
182 4,344,187
326 4,344,188
CLASS 474
82 4,343,613
155 4,343,614
CLASS 493
325 4,343,615
CLASS 501
78 4,343,908
98 4,343,909
CLASS 521
82 4,343,910
88 4,343,911
90 4,343,912
94 4,343,913
168 4,343,914
CLASS 523
414 4,343,915
427 4,343,731
456 4,343,728
CLASS 524
41 4,343,727
87 4,343,733
114 4,343,732
529 4,343,729
551 4,343,730
CLASS 525
28 4,343,916
106 4,343,917
194 4,343,918
278 4,343,919
310 4,343,921
328.2 4,343,920
389 4,343,922
426 4,343,923
440 4,343,924
4,343,925
CLASS 526
68 4,343,926
262 4,343,927
CLASS 528
108 4,343,928
241 4,343,929
252 4,343,930
291 4,343,931
303 4,343,932
312 4,343,933
CLASS 536
122 4,343,934
CLASS 542
414 4,343,935
417 4,343,936
CLASS 544
27 4,343,938
021 4,343,937
165 4,343,939
283 4,343,940
335 4,343,941
354 4,343,942
CLASS 546
15 4,343,944
183 4,343,943
CLASS 548
128 4,343,945
177 4,343,946
344 4,343,947
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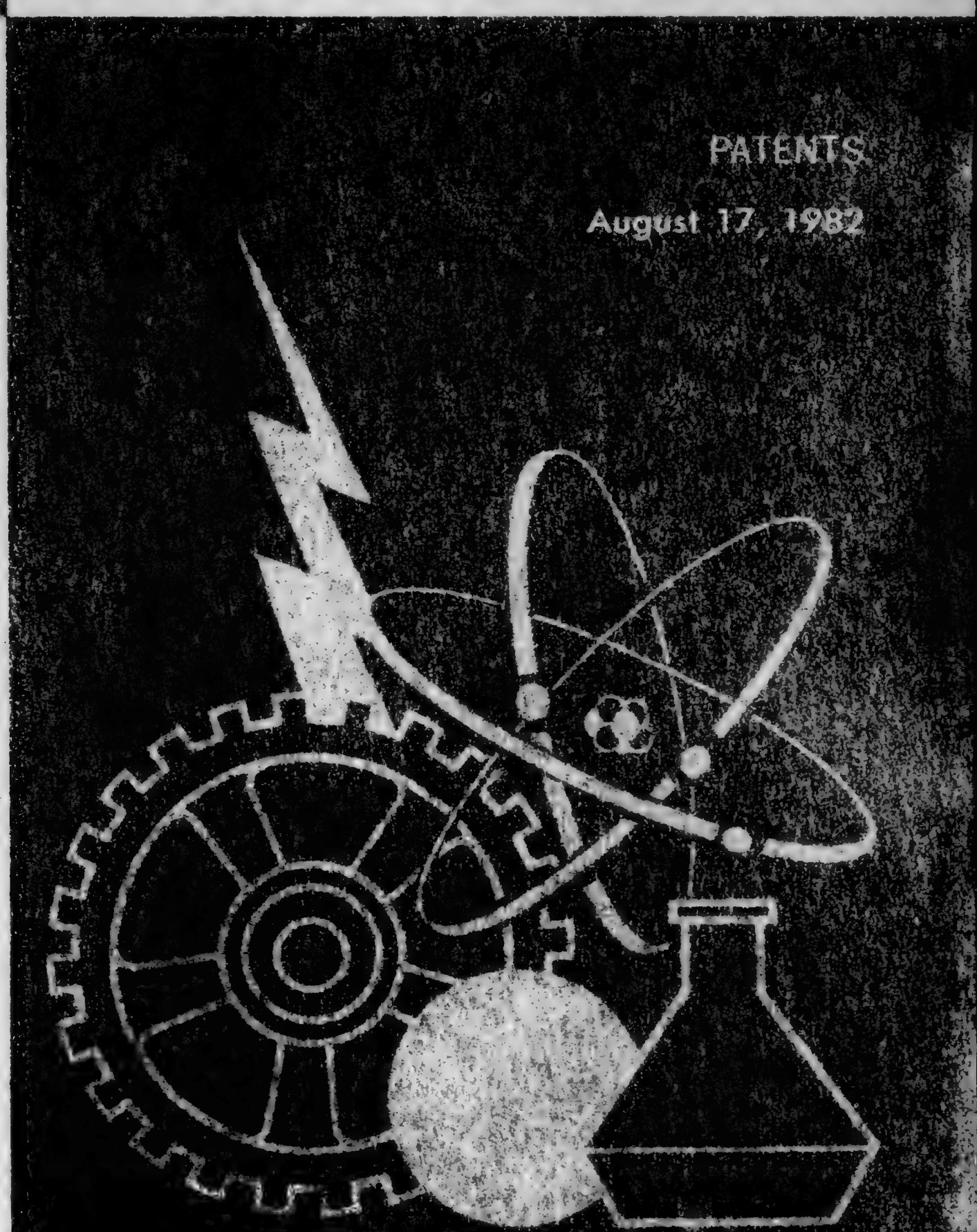
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Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

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Search fee	300.00
International Fees	
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Basic Supplemental Fee (for each sheet over 30)	6.00
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GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,859,437, Re. S.N. 376,917, Filed May 10, 1982, Cl. 424/238, REDUCING CHOLESTEROL LEVELS, Alan H. Weigand, Owner of Record: *Intellectual Property Development Corp., New Rochelle, N.Y.*, Attorney or Agent: William H. Saltzman, Ex. Gp.: 125

4,256,969, Re. S.N. 320,337, Filed Nov. 12, 1981, Cl. 250/566, GRAPHICAL REPRESENTATION TRANSDUCING, Thomas A. Lianza, Owner of Record: *Inventor*, Attorney or Agent: Charles Hieken, Ex. Gp.: 252

4,257,844, Re. S.N. 354,033, Filed Mar. 2, 1982, Cl. 162/305, PRESS SECTION ARRANGEMENT, Arnold J. Schmitt, et al., Owner of Record: *Beloit Corp., Beloit, Wis.*, Attorney or Agent: James Van Santen, et al., Ex. Gp.: 173

4,296,623, Re. S.N. 382,595, Filed May 27, 1982, Cl. 72/227, SEMI-CONTINOUS HOT ROLLING OF METAL STRIP AND PLATES, Werner W. Eibe, Owner of Record: *White Consolidated Industries, Inc., Pittsburgh, Pa.*, Attorney or Agent: Gordon R. Harris, et al., Ex. Gp.: 321

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

There are no publications this issue.

Acknowledgement of Receipt of a Patent or Trademark Application

When early notification of the serial number of newly filed application papers is desired, a *stamped, self-addressed post card* should be submitted with each application. Immediately after the mail has been opened in the Patent and Trademark Office, the post card will be stamped with both the receipt date and the serial number, and then returned to the addressee.

Within recent months, hundreds of cards could not be successfully returned because of insufficient postage or incomplete or nonexistent forwarding addresses. Accurate and complete addresses, including ZIP codes, are necessary to ensure prompt acknowledgement of the receipt of patent and trademark applications.

To assist in easy identification once the post card has been returned, it is suggested that the post card include applicant's names and title of invention.

When more than one set of application papers is filed under one cover, a return post card should be attached to each set of papers for which a receipt is desired.

THERESA A. BRELSFORD,
Acting Assistant Comissioner for Adminstration.

July 19, 1982.

Errata

In the Official Gazette of Oct. 20, 1981 under TRADEMARK REGISTRATIONS CANCELLED, Section 8, on page TM 477, "1,011,635. MISCELLANEOUS DESIGN. (Int. Cl. 29). Reg. 5-27-75." should be deleted.

In the Official Gazette of Nov. 17, 1981, on page TM 8, line 51, "Fisher and Co., Newark, N.J. 702,225, ren. 11-17-81. U.S. Cl. 28. (Int. Cl. 14)." should be deleted and "Robert S. Fisher & Co., Inc., Newark, N.J. 702,225, ren. 11-17-81. U.S. Cl. 28. (Int. Cl. 14)." should be inserted

In the Official Gazette of Nov. 24, 1981, under TRADEMARK REGISTRATIONS-NEW CERTIFICATES, on page TM 525, "1,012,141. PRINCE OF LIGHT. (Int. Cl. 11). David Pletz, Bellflower, Calif. Reg. 6-3-75. New Cert. Sec. 7(c) to David J. Pletz, Bellflower, Calif." should be deleted and "1,012,141. PRINCE OF LIGHT. (Int. Cl. 11). David Pletz & Daniel L. Stefani, Bellflower, Calif. Reg. 6-3-75. New Cert. Sec. 7(c) to David J. Pletz, Bellflower, Calif." should be inserted.

In the Official Gazette of Dec. 1, 1981, on page TMI 13, line 20, "Paul Metz, a.k.a. Metz Apparatewerke, Ritterstrasse, Fed. Rep. of Germany. 716,099, ren. 12-1-81. U.S. Cl. 26. (Int. Cl. 9)." should be deleted and "Paul Metz, a.k.a Metz Apparatewerke, Fuerth/Bayern, Fed. Rep. of Germany. 716,099, ren. 12-1-81. U.S. Cl. 26. (Int. Cl. 9)." should be inserted.

In the Official Gazette of Apr. 20, 1982, on page TMI 1, line 47, "Berol Co., Eagle Pencil Co., Danbury, Conn. 728,846, ren. 4-20-82. U.S. Cl. 37. (Int. Cl. 16)." should be deleted and "Berol Corp., Eagle Pencil Co., Danbury, Conn. 728,846, ren. 4-20-82. U.S. Cl. 37. (Int. Cl. 16)." should be inserted.

Adverse Decisions in Interference

In the designated interference involving the indicated

claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,758,764, Kermit I. Harner, TURBINE POWER PLANT CONTROL WITH AN ON-LINE OPTIMIZATION, Interference No. 100,445, decided May 5, 1982, claims 1 & 3.

Patent No. 3,764,785, Kermit I. Harner and Roy Schneider, TURBINE POWER PLANT CONTROL SYSTEM, Interference No. 100,444, decided May 5, 1982, claims 1-4.

Patent No. 3,901,732, Tibor Kalnoki Kis and Thomas A. Reilly, THIN FLAT CELL CONSTRUCTION HAVING A GAS-PERMEABLE COATED PERFORATED ANODE, Interference No. 99,859, decided Mar. 4, 1982, claims 1, 2, 5, 6, 9, 10, 13, 14, 17, 18, 21 & 22.

Patent No. 3,902,922, Tibor Kalnoki Kis, CONDUCTIVE COATED VENTED CATHODE COLLECTOR FOR THIN FLAT CELLS, Interference No. 99,858, decided Mar. 4, 1982, claims 1, 4, 5, 6, 9, 10, 11, 14 & 15.

Patent No. 3,986,423, David Philip Rossum, POLYPHONIC MUSIC SYNTHESIZER, Interference No. 100,097, decided June 16, 1982, claim 16.

Patent No. 4,161,221, Carl-Gustaf Carlin and Stefan Mikael Bertil Skyllermark, METHOD AND APPARATUS FOR PRETENSIONING SCREW JOINTS. Interference No. 100,527, decided May 11, 1982, claims 1, 2 & 6.

Patent No. 4,233,490, Alexander N. Shalai, Mikhail D. Nikitin, Nikulai I. Zakharov and Anatoly P. Bratchenko, METHOD OF REINFORCING ALUMINIUM ALLOY PISTON RING GROOVE, Interference No. 100,774, decided May 25, 1982, claims 1 & 3.

Patent No. 4,256,063, Masaharu Sumiyoshi, Setsuro Sekiya and Katsuhiko Motosugi, INTAKE SYSTEM OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE, Interference No. 100,770, decided May 25, 1982, claims 1-3, 8-10 & 14-20.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-132,597. (Patent 4,333,757) MUSHROOM-GROWING MEDIUM. Dept. of Agriculture.

SN 6-115,651. (Patent 4,335,432) OPTIMAL VEHICLE FOLLOWING CONTROL SYSTEM. Dept. of Transportation.

SN 6-193,877. (Patent 4,331,881) FIELD CONTROL FOR WIND-DRIVEN GENERATORS. Dept. of Agriculture.

SN 6-174,239. (Patent 4,331,054) ELECTRIC GEL SLICER. Dept. of Health & Human Services.

SN 6-190,064. (Patent 4,331,648) N-ACETYL-CYSTEINE PROTECTS AGAINST CARDIAC DAMAGE FROM SUBSEQUENTLY-ADMINISTERED CARDIO-TOXIC ANTHRA-CYCLINE IN CANCER THERAPY. Dept. of Health & Human Services.

SN 6-195,539. (Patent 4,331,975) INSTRUMENTATION FOR SURVEYING UNDERGROUND CAVITIES. Dept. of the Interior.

SN 6-186,381. (Patent 4,331,021) CONTRAST RESOLUTION TISSUE EQUIVALENT ULTRASOUND TEST OBJECT. Dept. of Health & Human Services.

SN 6-195,188. (Patent 4,332,244) MASK FOR THE SAFE DELIVERY OF INHALATION GASES TO SMALL LABORATORY ANIMALS. Dept. of Health & Human Services.

SN 6-370,018. PREPARATION OF ACYLUREA COMPOUNDS. Dept. of Agriculture.

SN 6-356,865. PROCESS AND COMPOSITIONS FOR PRESERVING FRESH HIDES AND SKINS. Dept. of Agriculture.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 17, 1982

D. 256,021	4,275,314	4,315,346	4,327,180
D. 258,677	4,275,427	4,315,392	4,327,227
D. 263,869	4,276,311	4,315,514	4,327,274
D. 264,103	4,276,529	4,315,656	4,327,553
D. 264,793	4,278,748	4,315,901	4,327,797
D. 264,844	4,280,005	4,315,921	4,327,828
3,609,300	4,282,812	4,317,676	4,327,941
3,823,749	4,282,845	4,318,491	4,328,235
4,029,629	4,284,395	4,318,583	4,328,327
4,029,681	4,288,619	4,318,597	4,328,390
4.073,468	4,290,644	4,318,902	4,328,471
4,105,766	4,290,763	4,319,473	4,329,439
4,126,620	4,290,936	4,319,606	4,329,490
4,208,690	4,294,911	4,320,879	4,329,752
4,209,817	4,297,891	4,321,114	4,330,306
4,210,937	4,298,261	4,321,131	4,330,489
4,218,749	4,298,655	4,321,297	4,330,564
4,221,350	4,298,684	4,321,601	4,330,648
4,222,963	4,298,709	4,321,847	4,330,719
4,230,403	4,298,803	4,321,850	4,330,757
4,231,790	4,298,822	4,321,851	4,331,521
4,234,565	4,298,906	4,322,325	4,331,577
4,235,724	4,299,441	4,322,333	4,331,800
4,236,978	4,300,958	4,322,665	4,331,912
4,238,500	4,301,033	4,322,801	4,332,037
4,244,964	4,303,487	4,322,870	4,332,189
4,247,163	4,303,720	4,322,941	4,332,271
4,247,517	4,303,816	4,323,112	4,332,396
4,248,002	4,305,260	4,323,296	4,332,453
4,248,712	4,305,274	4,323,577	4,332,461
4,250,051	4,305,745	4,323,606	4,332,466
4,250,464	4,305,808	4,323,624	4,332,597
4,251,353	4,305,870	4,323,733	4,332,766
4,253,620	4,305,945	4,323,771	4,332,785
4,254,647	4,305,971	4,323,864	4,332,822
4,255,281	4,305,972	4,324,515	4,333,377
4,255,430	4,306,773	4,325,094	4,333,552
4,256,163	4,307,810	4,325,741	4,333,852
4,256,855	4,308,598	4,325,987	4,333,913
4,258,145	4,309,369	4,326,034	4,333,997
4,264,630	4,309,720	4,326,067	4,334,780
4,264,631	4,309,826	4,326,076	4,334,958
4,264,632	4,311,312	4,326,124	4,335,081
4,264,661	4,313,483	4,326,238	4,335,154
4,268,570	4,313,834	4,326,980	4,335,183
4,270,531	4,314,070	4,327,009	4,335,356
4,272,446	4,314,098	4,327,145	4,336,229
4,272,862	4,314,215	4,327,147	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 26, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-09-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-18-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-05-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-11-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	6-30-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-30-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	9-26-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-02-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-25-80

Expiration of patents: The patents within the range of numbers indicated below expire during June 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,186,004 to 3,192,535, inclusive

Plant Patents ..... Numbers 2,522 to 2,542 inclusive

REISSUES

AUGUST 17, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

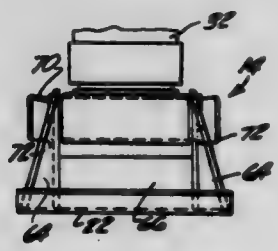
Re. 31,011
LANDING GEAR CONSTRUCTION

Jack T. Belke, Grand Rapids, Mich., assignor to Westran Corporation, Muskegon, Mich.

Original No. 4,004,830, dated Jan. 25, 1977, Ser. No. 599,051, Jul. 25, 1975. Continuation of Ser. No. 877,564, Feb. 13, 1978, now Re. 30,487. Application for reissue Jun. 27, 1979, Ser. No. 52,666

Int. Cl.[3] B60S *9/02*

U.S. Cl. 280—763 1 Claim



5. In a trailer landing gear assembly having a tubular housing, means for securing said housing to said trailer, a landing gear foot adapted to engage the ground, and an extension assembly having a downwardly depending axle adapted to be received in two registering apertures in said foot, the improvement comprising vertical load supporting means comprising a pair of spaced apart wall members, each wall member comprising a substantially vertical central portion disposed parallel to the opposing central portion, and including one of said two registering apertures and a substantially vertical end portion aligned at each end of each central portion so as to intersect the plane of said central portion and secured to the end of said central portion to thereby provide lateral support to said central portion, and each said wall member further comprising a cylindrical portion integral and of unitary construction therewith formed by deforming a portion of said wall member around the periphery of its registering aperture to extend coaxially from one side of its registering aperture and further comprising a transversely extending support wall integrally connected at its ends to said pair of spaced apart wall members, said support wall being positioned below said apertures and running parallel to the axis of said aligned apertures.

Re. 31,012
FITMENT FOR A VESSEL

John D. Allen, 5005 Zahm Rd., Belding, Mich. 48809

Original No. 4,236,735, dated Dec. 2, 1980, Ser. No. 901,416, May 1, 1978. Application for reissue May 14, 1981, Ser. No. 263,490

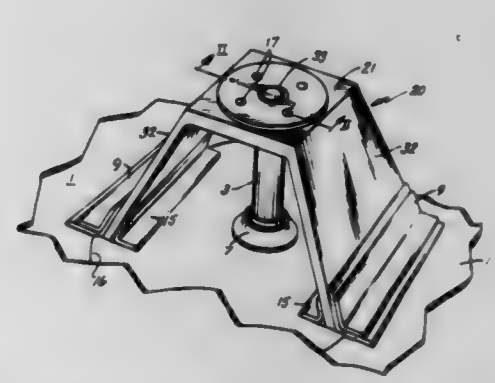
Int. Cl.[3] F16L *13/04*

U.S. Cl. 285—114 15 Claims

14. A fitment for a vessel wall, said fitment comprising:

a top wall for receiving a flange of a hose or the like to be coupled to the vessel wall, said top wall having a pair of generally opposing rectilinear sides, said top wall having a pipe opening;

a pair of generally planar, trapezoidally shaped support legs extending downwardly from said generally opposing sides to form an obtuse angle between said top wall and each of said legs and supporting said top wall at a position spaced from the vessel wall, the area between said legs being readily accessible and laterally bounded by substantially only said legs thereby facilitating connection of said support legs to the vessel wall and facilitating cleaning of the vessel wall and said fitment in the area between said legs; and



a pipe means for carrying a substance from said pipe opening to the vessel wall and into the interior of the vessel, said pipe means being attached to said top wall at said pipe opening.

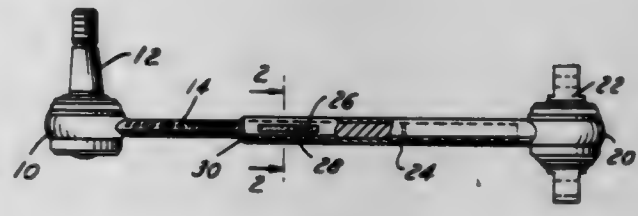
Re. 31,013
CALIBRATED REPLACEMENT TORQUE ROD

Joseph E. Smith, Jr., Birmingham, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Original No. 4,146,340, dated Mar. 27, 1979, Ser. No. 848,944, Nov. 7, 1977. Application for reissue May 19, 1980, Ser. No. 151,479

Int. Cl.[3] B62D *7/16*

U.S. Cl. 403—27 4 Claims



4. A vehicle rod replacement assembly consisting of

(a) a pair of movable joint assemblies;

(b) a single tube permanently secured to and extending from one of said joint assemblies, said tube having an open end and an axial bore of constant diameter from end to end;

(c) a single rod permanently secured to and extending from the other of said joint assemblies, said rod having in assembly a portion introduced in said tube through said tube open end disposed in freely slidable unrestrained fit within the axial bore of said tube;

(d) at least one aperture through a wall of said tube, said aperture being disposed proximate the open end of said tube; and

(e) a puddle weld in said aperture welding said tube to said rod and a single encircling weld between the open end of said tube and a corresponding peripheral surface area of said rod.

Re. 31,014
SEPARATION OF MULTICOMPONENT GAS MIXTURES

Shivaji Sircar, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Original No. 4,171,206, dated Oct. 16, 1979, Ser. No. 935,435, Aug. 21, 1978. Application for reissue Mar. 30, 1981, Ser. No. 248,774

Int. Cl.[3] B01D *53/04*

U.S. Cl. 55—26 27 Claims

1. In the separation of a multicomponent feed gas mixture with the individual recovery of a primary key component and

a secondary key component present in such mixture, by selective sorption, wherein said secondary key component is more strongly sorbed than the primary key component and there is present in said mixture at least one minor dilute tertiary gas component less strongly sorbed than the secondary key component; the method which comprises, in an adiabatic adsorption pressure swing cycle the steps of:

(a) passing such multicomponent gas mixture at initial superatmospheric pressure and in selected flow direction through a first sorbent bed (A) selective for preferential retention of said secondary key component and then passing the effluent from said first bed through a second sorbent bed (B) selective for retention of said tertiary component(s) as opposed to said primary key component, and discharging from said second sorbent bed unadsorbed primary key component, said passing of the multicomponent gas mixture being continued for a controlled time period until or short of breakthrough of said secondary key component from said first sorbent bed, while retaining all of the said tertiary components in said second sorbent bed;

(b) thereafter discontinuing gas flow communication between said first and second sorbent beds, and

(i) rinsing said first bed by flowing a stream of relatively pure secondary key component therethrough at substantially the initial feed pressure level for a controlled time period effective to purge most of the void and displaced gases from the said first bed, and during this time period (b),

(ii) lowering the pressure in said second bed to an intermediate level by withdrawing a gas stream therefrom including void and desorbed gases, and thereafter;

(iii) further depressuring said second bed to near ambient pressure [followed by;]

[(iv) purging the second bed at near ambient pressure with a stream of primary key component];

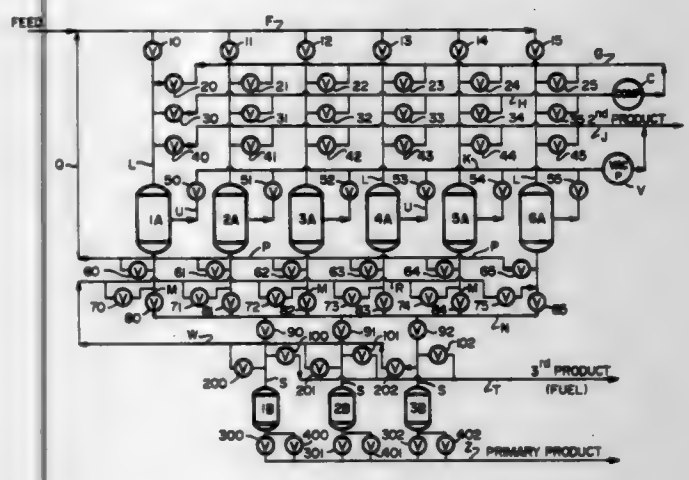
(c) after said rinsing step in (b) above reducing the pressure in said first bed to an intermediate level by desorption of gas therefrom including previously sorbed secondary key component and during this step (c),

(iv) purging the second bed at near ambient pressure with a stream of primary key component and repressuring the second bed to an [immediate] *intermediate* pressure level by flow thereinto of gas essentially free of the secondary key component;

(d) following step (c) above further desorbing gas from said first bed to lower the pressure therein to substantially ambient level, and thereafter;

(e) evacuating said first bed to subatmospheric level;

(f) after attaining the subatmospheric level in the said first bed, introducing thereinto a gas stream substantially free



of the secondary key component to bring said first bed to an intermediate pressure level, and thereafter;

(g) further repressurizing said first bed to initial superatmospheric feed pressure level by flowing thereinto primary key product gas via a second bed already pressurized to the intermediate pressure level (step c), thereby bringing both beds to the feed pressure level and making them ready to repeat the defined sequence of steps beginning with the reintroduction of the multicomponent feed gas mixture into the said first sorbent bed.

PLANT PATENTS

GRANTED AUGUST 17, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,876

ROSE PLANT

Fred A. Mungia, Sr., P.O. Box 338, McFarland, Calif. 93250

Filed Dec. 8, 1980, Ser. No. 213,910
Int. Cl.[3] A01H 5/00
U.S. Cl. Plt.—6 1 Claim

1. A new and distinct variety of rose plant of the climbing hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by its general similarity to its parent variety, "Dame de Coeur", but different therefrom by its pronounced climbing growth habit.

4,877

ALMOND TREE

Fred B. Urline, 2058 Fay Dr., Atwater, Calif. 95301, assignor to Fred B. Urline and Adele Urline, both of Atwater, Calif.

Filed Dec. 5, 1980, Ser. No. 213,738
Int. Cl.[3] A01H 5/00
U.S. Cl. Plt.—30 1 Claim

1. A new and distinct variety of almond tree, substantially as illustrated and described, particularly characterized by heart-shaped, non-gummy nuts having sweet-flavored kernels; and by blooming with the Nonpareil and Merced, and harvesting with the Merced.

4,878

ILEX PLANT—MESOG VARIETY

Kathleen K. Meserve, St. James, N.Y., assignor to Conard-Pyle Company, West Grove, Pa.

Filed Jun. 26, 1980, Ser. No. 163,069
Int. Cl.[3] A01H 5/00
U.S. Cl. Plt.—65 1 Claim

1. A new and distinct variety of Ilex, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of:

(a) a well-branched, symmetrical, compact, medium-sized shrub having a vigorous habit of growth which is well-adapted to a wide range of landscape uses,

(b) a profusion of dull, scarlet fruit which is produced in spring and which attains its full scarlet coloration in mid to late fall, lasting on the bush into spring of the following year,

(c) the ability to be sheared and trimmed to be kept within prescribed limits or shaped to a particular form,

(d) cold tolerance which is superior to the species *Ilex cornuta* as well as most cultivars of that species, as evidenced by the fact that the present variety has survived with no visible damage temperatures of −15° F., whereas the species *Ilex cornuta* and most of its cultivars are listed as hardy to 0° F.,

(e) good heat tolerance which is characteristic of *Ilex cornuta* and which is much improved over *Ilex rugosa*, and,

(f) green, semi-glossy to glossy foliage which is less quadrangular in shape as well as less glossy in appearance than *Ilex cornuta*.

PATENTS

GRANTED AUG. 17, 1982

ERRATA

For CLASS	See PATENT NO.
464–085	4,344,304
464–169	4,344,305
464–034	4,344,306
374–044	4,344,315
089–001	4,344,592
524–159	4,344,767
528–058	4,344,873
524–296	4,344,874
424–078	4,344,875
524–091	4,344,876
524–102	4,344,877
524–409	4,344,878
549–229	4,344,881
549–387	4,344,882
549–467	4,344,883
549–273	4,344,884
549–291	4,344,885
549–408	4,344,886
549–531	4,344,887
373–027	4,345,106
378–019	4,345,157
378–005	4,345,158

PATENTS

GRANTED AUGUST 17, 1982

GENERAL AND MECHANICAL

4,344,189

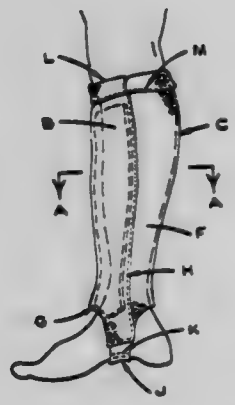
LIMB PROTECTOR FOR ATHLETES

Albert L. Futere, 4901-17th Ave. South, and Michael J. Kelly, 808 NE. 82nd, both of Seattle, Wash. 98108

Continuation-in-part of Ser. No. 850,712, Nov. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 757,246, Jan. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 552,551, Feb. 24, 1975, Pat. No. 4,001,953, which is a continuation-in-part of Ser. No. 461,156, Apr. 15, 1974, abandoned. This application Nov. 6, 1978, Ser. No. 957,992

Int. Cl.[2] A41D *13/08, 17/00*

U.S. Cl. 2—16 5 Claims



1. An arm guard, comprising:

a generally cylindrical sleeve-like element which is tapered from one end to the other and otherwise configured to substantially conform to the shape of a human forearm, wherein said sleeve has first and second closed pockets defined therein which extend substantially from said one end thereof to said other end, each pocket extending around approximately one-half of the circumference of said sleeve-like element; and

first and second protective pads enclosed in said first and second pockets, wherein said protective pads are tapered from one end thereof to the other end and extend substantially the length of said sleeve-like element, each protective pad extending around approximately one-half of the circumference of the user's forearm, and wherein said protective pads are sufficiently flexible that they conform substantially to the circumferential outline of the user's forearm, and wherein said sleeve-like element, when stretched to fit over the user's forearm, is sufficiently elastic that said sleeve-like element and said protective pad are held in place on the user's arm even during violent movement thereof, including contact with another object.

4,344,190

PLUGS FOR THE MEDULLARY CANAL OF A BONE

Alan J. C. Lee, and Robin S. M. Ling, both of Exeter, England, assignors to University of Exeter, Devon, England

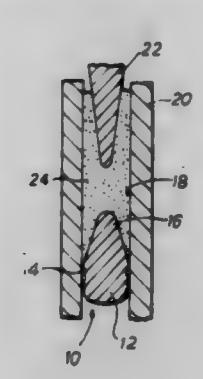
Filed Jul. 23, 1980, Ser. No. 171,309

Claims priority, application United Kingdom, Jul. 25, 1979, 7925892

Int. Cl.[3] A61F *1/00, 1/24*

U.S. Cl. 3—1.9 14 Claims

1. A plug for the medullary canal of a bone, said plug being adapted to be a push fit in a medullary canal and comprising a first elongate portion having elongate sides and a second elongate portion extending from one end of said first portion and tapering gradually inwardly along its length in the direction away from said first portion, said plug being adapted to be push fit into a medullary canal of a bone with said first portion leading such that said second portion extends into the portion of the canal into which bone cement can be introduced for locating an implant in the medullary canal whereby, when bone cement is introduced into the canal, the gradually tapering portion of said plug forms a mould so that there is a gradually increasing thickness in cement in contact with the bore along the length of the tapering portion in the direction away from said first elongate portion.



4,344,191

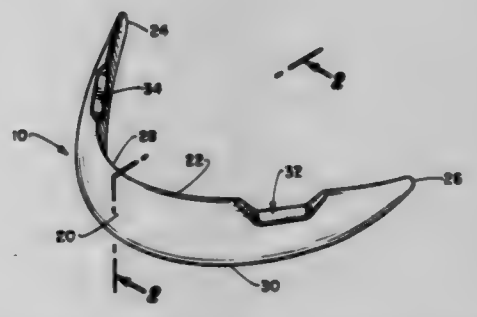
CHIN IMPLANT

Kurt J. Wagner, 14050 Valley Vista Blvd., Sherman Oaks, Calif. 91423

Filed Jan. 15, 1981, Ser. No. 225,216

Int. Cl.[3] A61F *1/24*

U.S. Cl. 3—1.9 5 Claims



1. A chin implant for cosmetic surgery in a human mandible which comprises:

a solid, crescent-shaped implant having a front face and a back face, each said face tapering bilaterally to form respective tails of the implant, and each face merging to form an upper edge and a lower edge;

said back face having a flat surface for placement adjacent to the mental protuberance of the mandible;

said front face having a curved projection surface for protruding from the chin to create a natural chin profile after implanting; and

said upper edge having a pair of notches placed laterally thereon and adjacent to each mental foramen of said mandible for allowing a space between said implant and mental nerves.

4,344,192

FULL DUAL ELEMENT PROSTHESIS DESIGNED FOR THE FEMORO-PATELLAR JOINT

Jean C. Imbert, Les Flaches, Route de St Heand, 42580 l'Etrat, France

Filed Jul. 14, 1980, Ser. No. 168,137

Int. Cl.[3] A61F *1/24*

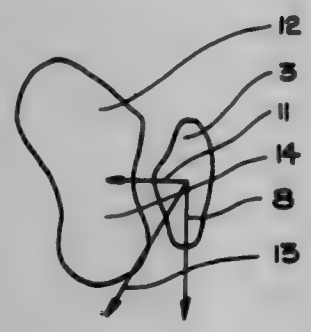
U.S. Cl. 3—1.91 6 Claims

1. In combination with a prosthetic implant for a knee joint wherein a patellar component has an anterior surface adapted to be secured within a resection in the patella, a posterior surface having a convex portion defining a central axis, a

femoral trochlear component having a posterior portion adapted to be secured within a resection of the femur, the improvement comprising:

a frusto-conical sector portion mounted opposite said posterior portion of the femoral trochlear component, said frusto-conical sector portion having an outer surface adapted to communicate with said convex portion of the patellar component defining the anterior surface of the femoral component, an inner surface and a pair of parallel side edges;

said posterior portion of the femoral trochlear component further defining a rail portion extending along said inner surface of the frusto-conical sector portion; a narrowed



body portion contiguous said rail portion and means for securing said frusto-conical sector portion within a resection of the femur;

said femoral trochlear component further being sized and shaped for mounting to one bank of the trochlear of the femur a predetermined offset distance from said central axis of the convex portion of the posterior surface of the patellar component such that the resultant force of the forces applied to the patella by the patellar tendo and the quadriceps muscles is directed against and is substantially normal to the anterior surface of the femoral component whereby arthrosis of the femoro-patellar joint are substantially eliminated.

4,344,193

MENISCUS PROSTHESIS

Charles H. Kenny, 276 South St., Pittsfield, Mass. 01201

Filed Nov. 28, 1980, Ser. No. 211,292
Int. Cl.[3] A61F *1/24*
U.S. Cl. 3—1.911 17 Claims



1. A meniscus prosthetic device to prevent and reverse degenerative changes in a human knee comprising:

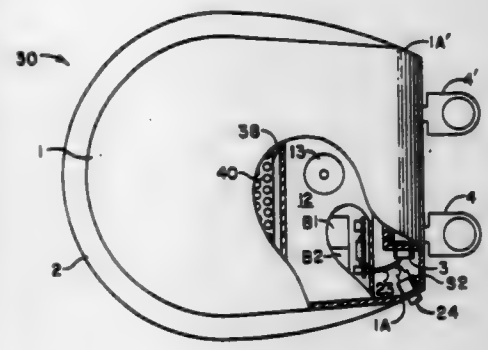
means for replacing natural components of a condylar joint so that the articular cartilage therein remains intact, and comprising a body including means for encouraging rotary and anterior-posterior translation of said prosthetic device when in direct communication with the condyle joint of a human knee during motion; and means for providing elastic deformation of said body to conform to changing condylar profiles of a human knee during motion.

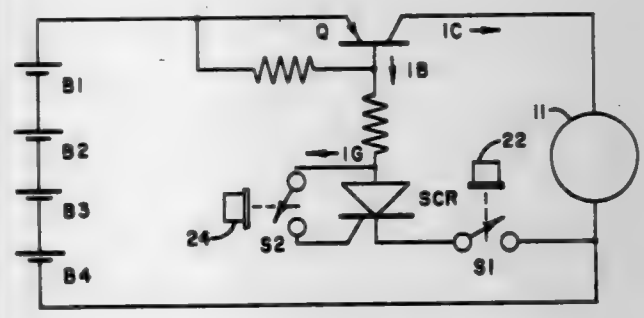
4,344,194

TOILET SEAT AND LID UNIT WITH CONCEALED AIR DEODORIZER

Raymond H. Pearson, 627 Sherwood Dr., Richardson, Tex. 75080

Filed Dec. 12, 1980, Ser. No. 215,801
Int. Cl.[3] E03D *9/04*
U.S. Cl. 4—213 6 Claims



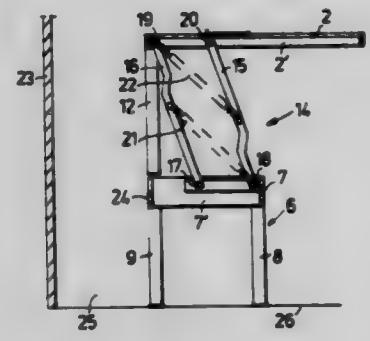


1. A toilet seat and air deodorizing unit for an upwardly opening water closet bowl, comprising a toilet seat adapted to be positioned on said bowl and pivotally mounted about a horizontal axis at the rear of said bowl for swinging movement between raised and lowered positions, a toilet seat lid pivotally mounted independently of said seat for swinging movement about a horizontal axis at the rear of said bowl, enabling said lid to be swung between a lowered position where it covers the central opening in said seat and a raised position where it is raised from the seat, said seat being formed with at least one air passage having an open air intake end located to open into and to be in air communication with the interior of said bowl, said lid having a hollow, interior, air chamber space and at least one air discharge vent opening into said interior space and establishing air communication between said interior space and the ambient atmosphere exteriorly of said lid and said bowl, there being means establishing air communication between said interior space and said air passage remote from said air intake end for establishing air communication between the interior of said bowl and the ambient atmosphere by way of said air passage, said interior space and said vent in seriatim, a motor-driven fan mounted in said space between said means and said vent for inducing the flow of air from said bowl to the ambient atmosphere by way of said air passage, said means, said interior space and said vent in seriatim, and an air-deodorizing filter mounted in said interior space in seriatim with said fan for removing odors from the air induced from said bowl by said fan and to thereby provide for the discharge of deodorized air through said vent to the ambient atmosphere outside said bowl and said lid, said means comprising at least one hollow, horizontally mounted pintle on which said lid and said seat are pivotally mounted for swinging movement between their raised and lowered positions, said pintle being open to said air passage and to said interior space to establish air communication between said air passage and said space.

4,344,195
BED HAVING TWO MUTUALLY DISPLACEABLE FRAMES FOR WALL SIDE ACCESS

Hans H. Gustafson, Trädgardsgatan 22, S-172 38 Sundbyberg, Sweden

PCT No. PCT/SE79/00044, § 371 Date Nov. 2, 1979, § 102(e) Date Sep. 4, 1979, PCT Pub. No. WO79/00689, PCT Pub. Date Sep. 20, 1979
PCT Filed Mar. 1, 1979, Ser. No. 186,022
Claims priority, application Sweden, Mar. 2, 1978, 7802353
Int. Cl.³ A47C *19/04*
U.S. Cl. 5—11 5 Claims



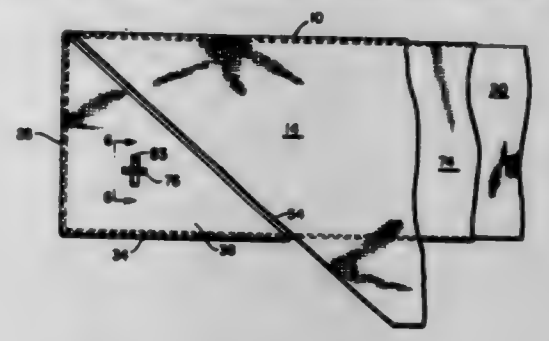
1. A bed having a first, upper frame structure (5, 12,12'; 27,28, 32,33,34,35) including a rectangular mattress or bedding support surface (2) whose length is greater than its width; a second, lower frame structure (6; 36) adapted to be mounted on a floor (26); and at least one pivot-arm mechanism (14; 37) disposed between said first and second frame structures and connected to pivot locations (17-20; 41,43,49,51) mounted on respective ones of said frame structures, said pivot-arm mechanism being swingable between a first, downward position and a second, upward position, said pivot-arm mechanism altering, during said swinging movements, the vertical distance between the two frame structures and simultaneously displacing the first frame structure laterally relative to the second frame structure, characterized by: the rectangular support surface having an outer contour exceeding that of said second frame support, the outer contour of said second frame structure in the downward position of the first frame structure lying within the outer contour of the first frame structure, the pivot-arm mechanism being configured to lift and laterally displace the first frame structure, when swung upwardly, at least in the width direction of the support surface to a raised position in which the outer contour of the second frame structure still does not extend horizontally outwardly beyond the outer contour of the lifted and displaced support surface, to thereby form, when the support surface has a long side adjacent a wall, a space between the wall and the bed which permits easy access and passage by an attendant.

4,344,196
FITTED TOP CONTOUR SHEET

Helen F. Large, 25 A Center St., Rumson, N.J. 07760

Continuation-in-part of Ser. No. 94,326, Nov. 14, 1979, Pat. No. 4,245,365. This application Sep. 26, 1980, Ser. No. 190,961
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.³ A47G *9/02, 9/04*
U.S. Cl. 5—496 7 Claims

1. A fitted contour top sheet for use on a mattress comprising: a top panel having a front, a rear, and length and width dimensions approximately the same as the mattress with which the sheet is used, said top panel having opposed, rear corners; side panels along opposed sides of said top panel and terminating at the respective said corners, each said side panel having rear edges angled at about 45° from said rear corner, forwardly to an outboard edge of said side panel; a pocket formed at the rear of said top panel comprising a vertical panel joined to said top panel, interconnecting said top panel rear corners, and having a height approximately the same as the thickness of the mattress with which the sheet is used, said vertical panel having a width generally equal the width of said top panel, a horizontal bottom panel having a width dimension generally the same as that of said vertical panel and having a rear elongate edge joined to said vertical panel at a lower, rear edge thereof, a pair of side, generally triangular gusset members

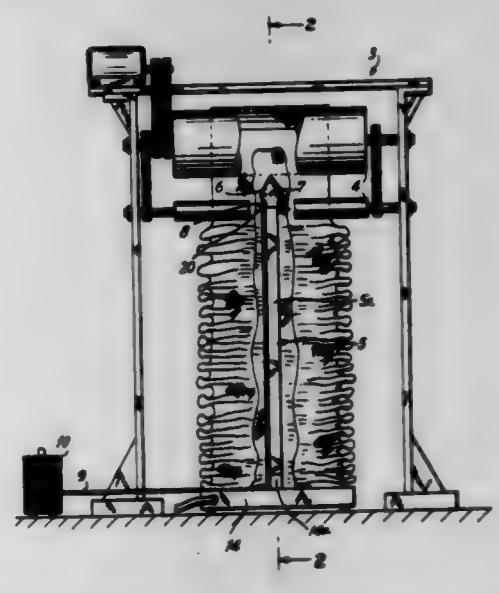


joined to adjacent side edges of said vertical and horizontal bottom members to thereby form a pocket which is fitted over the foot and a part of the bottom of the mattress with which the sheet is used; and means on said pair of gusset members cooperating with means attachable to the mattress for releasably attaching said top sheet to the mattress.

4,344,197
METHOD TO LESSEN THE ENTANGLEMENT OF TUBULAR FABRICS

Larry D. Sterling, and Wilbert Melvin, Jr., both of Dover, Del., assignors to International Playtex, Inc., Stamford, Conn.

Division of Ser. No. 8,986, Feb. 5, 1979, Pat. No. 4,288,999. This application Jun. 4, 1981, Ser. No. 270,325
Int. Cl.³ D06B *23/00;* B65B *11/58, 67/08*
U.S. Cl. 8—150 5 Claims



1. A method for lessening the entanglement of tubular fabrics during processing of, including the steps of:

positioning a flexible length of hooping material having two ends, along an axis;

delivering a tubular extent of fabric along said axis of said hooping material so that said ends of said hooping material extend beyond said ends of said tubular extent of fabric;

collapsing said tubular extent of fabric along said axis of said hooping material so that said ends of said hooping material extend beyond said ends of said tubular extent of fabric;

securing said ends of said hooping material to each other to form an endless hoop about said collapsed tubular extent of fabric; and

processing said collapsed tubular extent of fabric with said hoop in place.

4,344,198

PROCEDURE FOR WASHING CLOTHES

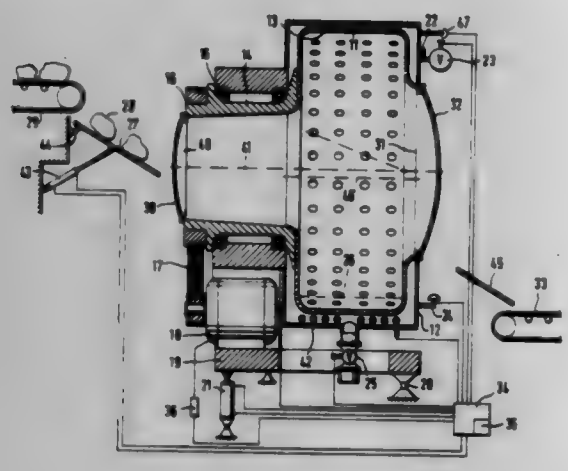
Hans F. Arendt, Sersheim, and Ernst H. Hoffmann, Dortmund, both of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 149,116

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919248

Int. Cl.³ D06F *23/02*

U.S. Cl. 8—158 19 Claims



1. A process for the washing of clothes through a wash and rinse cycle in a washing machine with a horizontal, perforated, driven tub arranged inside a housing, wherein the tub has at its rotating periphery a tangential area, in which during the washing and rinsing cycles as the tub rotates, the clothes are repeatedly lifted up and then fall in a trajectory path onto the lower portion of the tub and are then distributed without unbalance to the tub, as the tub velocity is gradually increased, and are then centrifuged as the velocity is increased further, the improvement comprising the steps of wetting the clothes with an amount of suds that gives a "doughy" consistency to the clothes by filling the tub with suds until the level of suds does not significantly rise above the tangential area of the tub by maintaining in the tub during washing an aqueous medium level of at least about 5% of the tub's diameter, whereby the dry clothes are loaded individually into the tub which rotates at a speed at which the centrifugal velocity at the tub case is about 0.3–0.8 g, then increasing the tub speed to about 1 g, then gradually changing the speed to a spin speed and after the spinning, reducing the speed again to a velocity in keeping with the loading speed, and following the process with a rinse cycle which is similar to the washing cycle.

4,344,199

MACHINE FOR STIFFENING SHEET MATERIAL

George J. Bouzianis, Ipswich; John G. Hollick, Beverly; Donald B. McIlvin, Danvers, and Frederick S. Sillars, Beverly, all of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Jun. 26, 1980, Ser. No. 163,220

Int. Cl.³ A43D *11/00*; B05B *7/06*; B28B *3/00*

U.S. Cl. 12—54.3 29 Claims

24. In combination with complimentary shaped male and female molds, said female mold having a generally V-shaped internal construction, said molds being arranged to shape, stiffen and laminate selected portions of flexible sheets of material, the improvement which comprises:

means to dispose at least one of said sheets within said female mold and means to tension one of said sheets while said sheet is disposed within said female mold; and

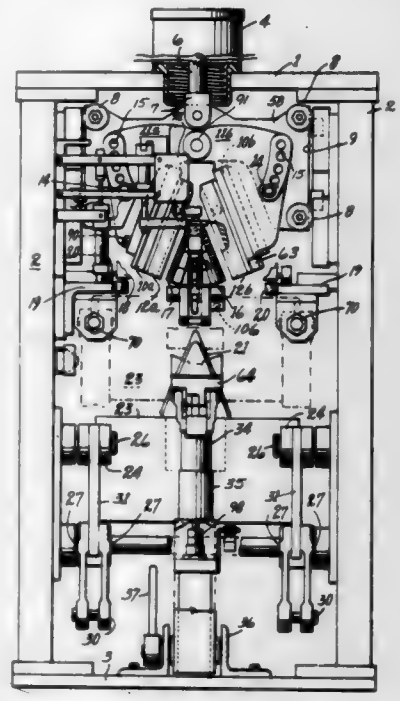
means to soften a resin into a flowable state; and

a reciprocable extruder with a nozzle disposed on the end thereof and arranged to enter said female mold and deposit a quantity of said resin upon portions of the tensioned sheet; and

means connecting said extruder to said softening means; and

means to pivot said nozzle around said extruder; and

means disposed on the extruder to urge one side of the untensioned sheet and move it from the path of the extruder during an entry stroke and means on said extruder to draw the other side of the untensioned sheet and re-



place the untensioned sheet adjacent to the tensioned sheet during the withdrawal stroke of the extruder; and

means connecting said extruder to said softening means; and

means to pivot said applicator around said extruder during the withdrawal stroke of said applicator.

4,344,200

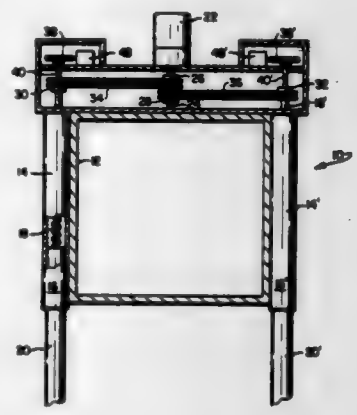
BRIDGE BRAKE SYSTEM

Aaron V. Farr, Logan, and Robert L. Saunders, Ogden, both of Utah, assignors to Abex Corporation, New York, N.Y.

Filed Sep. 25, 1980, Ser. No. 190,685

Int. Cl.³ E01D *1/00*

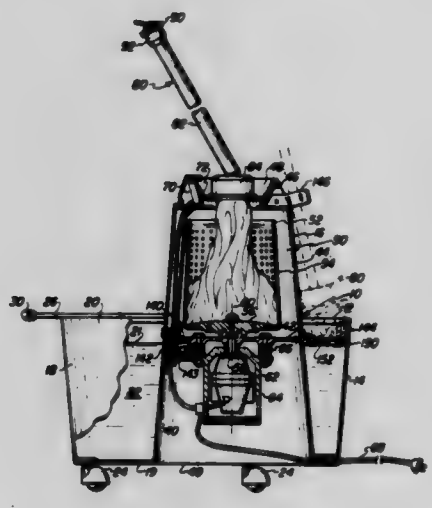
U.S. Cl. 14—71.5 3 Claims



1. A passenger loading bridge having a movable end comprising: means connected to the bridge for driving the movable end; brake means mounted adjacent the driving means for engaging and locking the driving means when actuated, means mounted on the bridge for sensing the rate of movement of the driving means; first means mounted adjacent the driving means for producing a signal at a rate proportional to the rate of movement of the driving means characterized by: second means mounted on the bridge for producing a signal during a preset time window; comparator means operatively connected to the first and second signal producing means for determining whether the signal from the first signal producing means occurs during the time a signal is produced by the second signal producing means and means operatively connected to the drive means for interrupting said driving means and actuating

the brake means to engage and lock the driving means when the signal from the first signal producing means occurs outside of the time the signal is produced by the second signal producing means.

4,344,201
CLEANING APPARATUS
George S. Trisolini, Via Donatello 5, Palagino, Italy
Filed Dec. 3, 1980, Ser. No. 212,634
Int. Cl.[3] B08B *11/02*
U.S. Cl. 15—3 11 Claims



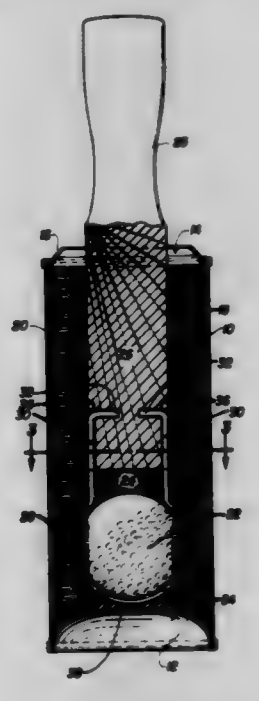
1. Cleaning apparatus comprising:
a mop having
a handle; and
a wiper mounted on the handle for rotation relative thereto; and
a mop wringer for extracting from the wiper of the mop matter carried by the wiper, the mop wringer having
a housing;
an opening in the housing for passing at least a portion of the wiper of the mop therethrough;
a basket within the housing and juxtaposed with the opening for receiving said portion of the wiper of the mop, the basket having an axially-extending perforated wall;
means mounting the basket for rotation in the housing about an axis extending in the same general direction as the axially-extending perforated wall of the basket; and
a motor coupled with the basket for rotating the basket and, consequently, the wiper of the mop when said portion of the wiper is in the basket, about said axis such that the wiper is forced against the perforated wall of the basket and matter in the wiper is extracted therefrom through the perforated wall of the basket.

4,344,202
ELECTRIC TOOTHBRUSH
Victor Hayat, 169 Bd Malesherbes, 75017 Paris, France
Filed Feb. 6, 1980, Ser. No. 119,011
Claims priority, application France, Feb. 22, 1979, 79 04512
Int. Cl.[3] A46B *13/02*
U.S. Cl. 15—4 4 Claims



1. An electric toothbrush comprising a rotatable brush, a shaft mounting said brush, means for rotating said brush continuously about its longitudinal axis, means for conferring a reciprocal movement to said brush, and a tip mounted at the end of the shaft of said brush, said tip being conical in shape with a sharply pointed apex and an apex angle sized to permit said tip to be introduced into and through the interdental space for massaging the papilla and cleaning the mesial and distal faces of the teeth.

4,344,203
PORTABLE GOLF BALL WASHER
Richard L. Gerrick, 125 Woodland View, York, Pa. 17402
Filed Feb. 2, 1981, Ser. No. 230,878
Int. Cl.[3] A63B *47/04*
U.S. Cl. 15—21 A 2 Claims

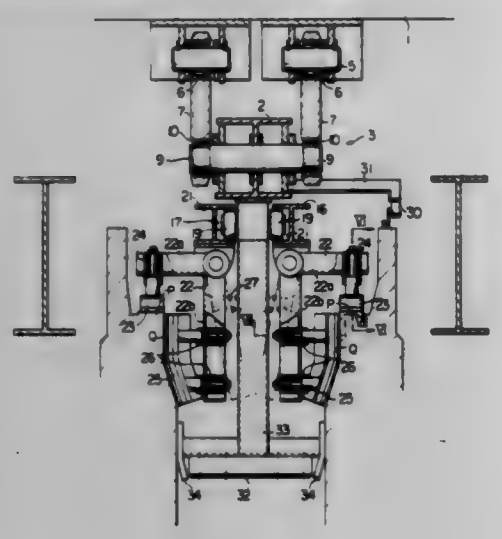


1. A portable golf ball washer comprising an elongated cylindrical container closed at one end comprising a bottom and open at the opposite end normally comprising the top, scrubbing bristles extending a predetermined uniform distance inwardly from the entire inner surface of said container, the tips of which in repose define a core hole of a diameter less than that of a golf ball to be scrubbed by said bristles, an elongated plunger having a length greater than that of said container and a cross-sectional area similar to that of said core hole and a transverse dimension less than the diameter of a golf ball, one end of said plunger being a handle projecting beyond the open end of said container when said plunger is inserted to maximum extent therein and is manually engageable for operation of the washer, and the opposite end of said plunger having a U-shaped bail-like ball-retaining member substantially circular for more than 180° of the circumference thereof and dimensioned to closely but loosely surround a golf ball to effect movement thereof relative to said bristles when said plunger is reciprocated axially, and the legs of said bail-like member being parallel and fixed to said opposite end of said plunger within grooves formed longitudinally in the opposite sides thereof to maintain said member in axial alignment with said plunger and the diameter of the portion of said bail-like member which is circular having a diameter greater than the transverse dimension of said opposite end of said plunger to effect efficient exposure to the surface of a ball within said member to the bristles within said container.

4,344,204
APPARATUS FOR CLEANING DOOR FRAMES OF COKE OVENS

Kenji Fujita; Kazuo Korehisa; Hirosi Asaba; Hideo Harada, all of Yokosuka, and Tsuneo Shibuya, Yokohama, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,307
Claims priority, application Japan, Sep. 7, 1979, 54-114884
Int. Cl.[3] C10B *43/04*
U.S. Cl. 15—93 A 5 Claims



1. An apparatus for cleaning door frames of a coke oven comprising:

a main frame movable toward or away from a door frame;

a supporting frame so disposed in front of said main frame that said supporting frame is movable laterally relative to said main frame in parallel therewith;

a movable frame so disposed in front of said supporting frame that said movable frame is vertically reciprocable relative to said supporting frame;

at least one pair of L-shaped levers horizontally pivotably mounted on said movable frame, the pivotal points of said L-shaped levers being horizontally laterally spaced apart from each other by a suitable distance, each L-shaped lever having a forwardly extended arm and a laterally outwardly extended arm;

a front surface scraper mounted on said laterally outwardly extended arm;

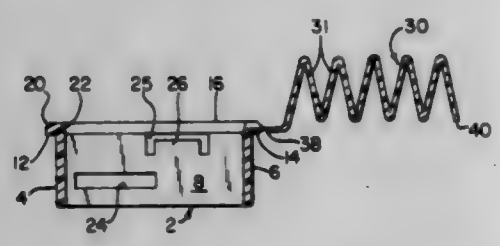
an inner surface scraper mounted on said forwardly extended arm; and

a bias means so loaded that said forwardly extended arms of said pair of L-shaped levers are normally moved toward each other.

4,344,205
CABLE BUSHING

Richard M. Latino, Worcester, and Edmund T. Paquette, Shrewsbury, both of Mass., assignors to Wright Line Inc., Worcester, Mass.

Filed Apr. 11, 1980, Ser. No. 139,286
Int. Cl.[3] F16L *5/00*
U.S. Cl. 16—2 11 Claims

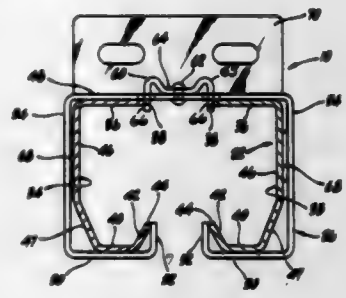


1. A cable bushing comprising a frame portion, and a filler portion connected to said frame portion, said filler portion being pivotally movable between a first position in which said filler portion is remote from the interior of said frame portion and a second position in which said filler portion is disposed substantially within said frame portion, said frame portion being adapted to occupy an opening in a partition structure and being further adapted to receive a cable therethrough, said filler portion while in said second position being extendable to substantially close said frame portion, and being compressible so as to form an opening between it and the frame portion so as to permit the cable to be received therethrough.

4,344,206
BRACKET AND DOOR TRACK ASSEMBLY

Lars Hermanson, Scarborough, Canada, assignor to Clark Door Company, Inc., Cranford, N.J.

Filed Feb. 21, 1980, Ser. No. 123,262
Int. Cl.[3] E05D *15/06*
U.S. Cl. 16—94 R 6 Claims



1. A bracket and track assembly comprising:

(a) a track including at least one track member, said track member including:

1. a transverse upper portion having a longitudinal margin portion,
2. a transverse lower portion, and
3. a web portion interconnecting said upper and lower portions of the track member,

(b) a bracket member disposed in embracing relation about said track member and including:

1. a transverse upper portion extending beyond said track upper portion longitudinal margin portion,
2. a transverse lower portion supporting said track member lower portion,
3. at least one web portion interconnecting said upper and lower portions of the bracket member, and
4. locking means rotatably mounted to said upper portion of the bracket member, said locking means including engagement means rotatable into lateral engagement with said track upper portion longitudinal margin portion and tending to urge said track member into engagement with said bracket member,

(c) said track member web portion being spaced from said bracket member web portion, and

(d) at least one pad being disposed between said web portions of the track member and bracket member intermediate said upper and lower portions of the track member and bracket member tending to move said track lower portion laterally in one direction into engagement with said bracket lower portion when said track upper portion is moved laterally in the opposite direction upon lateral engagement of the locking engagement means with the longitudinal margin portion of the track upper portion.

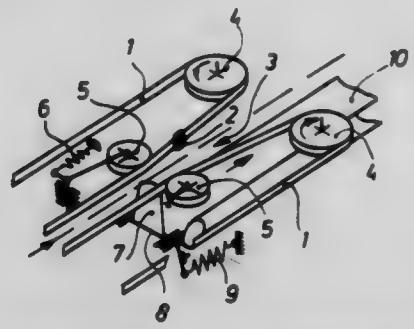
4,344,207
APPARATUS FOR ALIGNING FISH

Harald Rosenberg, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lübeck, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 243,378
Int. Cl.[3] A22C *25/08, 25/14*
U.S. Cl. 17—63 8 Claims

1. Apparatus for aligning fish, said fish having a head end, a tail end, flanks, a rump portion intermediate said head end and

said tail end and a longitudinal axis extending between said head end and said tail end, said apparatus including two first conveying means, said two first conveying means being adapted to engage said flanks of said fish and thereby to convey said fish in a conveying direction essentially transverse to said longitudinal axis with said longitudinal axis of said fish extending substantially vertically and said tail end lowermost, said apparatus further including a pivotable flap, and a biasing means connected to said pivotable flap, said flap being positioned below said first conveying means and extending up-



wards to point where, in use, it is engaged by said rump portion of said fish, said flap being pivotable in said conveying direction about a pivotal axis extending transverse to said conveying direction by engagement of said flap with said rump portion of said fish against a force exerted by said biasing means, said two first conveying means extending substantially parallel to one another up to said flap but diverging downstream of said flap in said conveying direction, resilient support means being associated with the divergent portions of said two first conveying means.

4,344,208

NEEDLE PLATE FOR NEEDLE BARS OF NEEDLE BAR DRAWING DEVICES

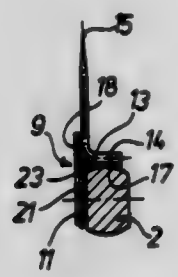
Helmut Kunig, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lübeck, Fed. Rep. of Germany

Filed Jul. 22, 1980, Ser. No. 171,190

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1979, 2934431

Int. Cl.³ D01G *19/00, 5/14*

U.S. Cl. 19—129 R **9 Claims**



1. Needle rod for mounting on needle bars of needle bar drawing devices, said needle rod including a carrier rod, said carrier rod having a first surface and a second surface, said second surface extending substantially perpendicular to said first surface, and at least one row of needles, said needles each having a shaft, a free end and a tip, said shaft comprising a first portion terminating in said free end and a second portion terminating in said tip, said first portion extending substantially perpendicular to said second portion whereby said shaft includes a substantially right angle bend, at least a part of the length of each of said first and second portions of said shafts being connected to a respective one of said first and second surfaces of said carrier rod, said carrier rod being formed with a middle web and two side webs, the first and second surfaces of said carrier rod being afforded by said middle web and one of said side webs, the other of said two side webs constituting a limb for securing said needle rod to said needle bars.

4,344,209

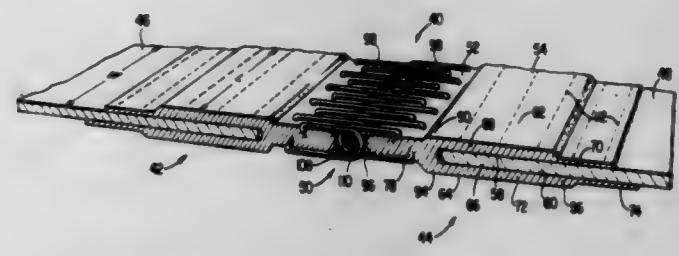
IN-LINE CLIPPER SEAM

William J. Harwood, Waycross, Ga., assignor to Scapa Dryers, Inc., Waycross, Ga.

Filed Oct. 22, 1979, Ser. No. 86,792

Int. Cl.³ F16G *3/02*

U.S. Cl. 24—31 R **13 Claims**



1. A clipper seam for use with a pintle in joining adjacent ends of a papermakers belt or the like, said seam comprising:

(A) a plurality of machine direction and cross-machine direction yarns interwoven to form a one-piece seam webbing including

(a) first and second flaps, each of said flaps having an inner surface and an outer surface, wherein the outer surfaces of said flaps each taper in a stepped relationship in a direction away from said tongue to said one of said ends of said papermakers belt, said inner surfaces being in a spaced relationship to define a pocket adapted to receive one of said ends of said papermakers belt,

(b) a tongue portion, said flaps being integral with said tongue portion in said spaced relationship, said tongue portion defining a top surface which is coplanar with a portion of the outer surface of said first flap and a bottom surface which is coplanar with a portion of the outer surface of said second flap,

(c) a first recessed margin on the top surface of said tongue, and

(d) a second recessed margin on the bottom surface of said tongue; and

(B) a plurality of clipper hooks secured to said tongue within said first and second recessed margins, said hooks being adapted to receive a pintle.

4,344,210

ADJUSTABLE DRAPERY SUPPORT ASSEMBLY

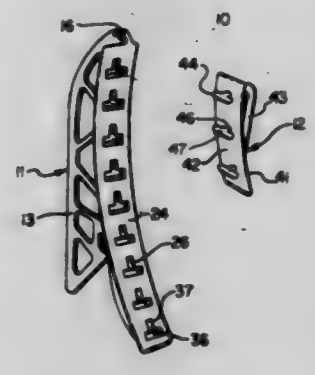
Richard B. Ryan, 1205 Deertrail La., Libertyville, Ill. 60048

Continuation-in-part of Ser. No. 73,668, Sep. 10, 1979, Pat. No. 4,261,080. This application Jul. 28, 1980, Ser. No. 172,835

Claims priority, application Fed. Rep. of Germany,

Int. Cl.³ A44B *13/00*

U.S. Cl. 24—369 **6 Claims**



1. An adjustable support assembly for a drapery or the like comprising:

a first elongated plate member adapted to be inserted into a fold of a drapery;

a second elongated plate member having a first edge substantially aligned with an edge of said first plate member;

hinge means interconnecting an upper end of both said first and second plate members;

interlocking means on said first and second plate members, said interlocking means being spaced from said hinge means and adapted to interlock said plates, said means including prong means affixed to one of said plates adapted to penetrate said drapery fold positioned between said plates and latch means affixed to the other of said plates;

gripping means on at least one of said aligned edges of said plates for gripping said drapery fold;

a hook assembly including hook means for engaging a traverse rod or the like, said assembly being adapted to be removably attached to said second plate at a desired point along a second edge thereof opposite said first edge, said second edge tapering toward said first edge in a direction toward said hinge means; and

attaching means for detachably securing said hook assembly to said second plate.

4,344,211

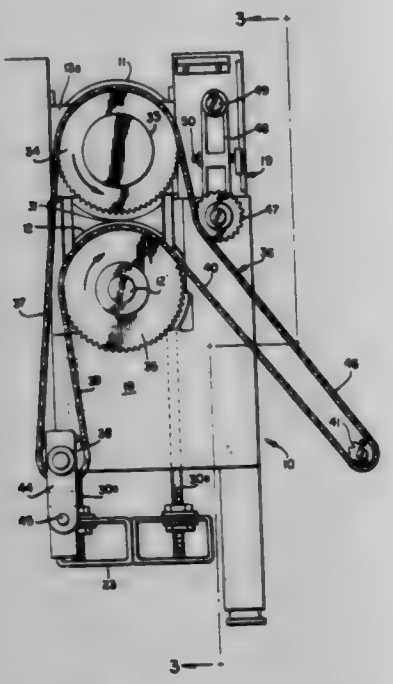
HIGH PRESSURE SIZING APPARATUS AND METHOD

Charlie R. Christian, Lafayette; Jack C. Gaskins, Lanett, both of Ala.; Jack Hamrick, West Point, Ga., and Norman L. Reed, Lanett, Ala., assignors to West Point Foundry & Machine Co., West Point, Ga.

Filed Jun. 23, 1980, Ser. No. 161,702

Int. Cl.³ D06B *3/04, 15/02*

U.S. Cl. 28—183 **16 Claims**



1. Apparatus for squeezing a slippery wet material web to remove at least some of the liquid from the material as the web moves along a path, comprising:

a first roll across which the material web passes;

a second roll disposed to press against the first roll with the material web squeezed between said two rolles;

means operative to drive said first roll at a predetermined speed related to the movement of the web along the path, so as to tend to rotate said second roll by surface contact with the first roll subject to increasing slippage of the second roll as the squeeze force increases;

drive means operative to rotate said second roll at a certain angular velocity bearing a predetermined relation to the drive speed of said first roll so as to compensate for said slippage in drive imparted to said second roll by surface contact from said first roll; and

the surface speed of said second roll is less than the surface speed of said first roll by a predetermined amount so that surface contact with said first roll at squeezing force less than an initial amount tends to drive the second roll at an angular velocity slightly greater than said angular velocity of said drive means, thereby reducing the driving torque supplied by said drive means to said second roll when said surface contact slips due to squeezing forces exceeding said initial amount.

11. Apparatus for squeezing a warp of wet yarn to remove at least some of the moisture from the yarn, comprising:

a first roll across which the warp passes;

a second roll disposed to press against said first roll with the warp yarns squeezed between the two rolls;

means movably mounting said second roll along a predetermined path for selectably variable spacing between the two rolls, so as to selectably vary the squeeze loading applied to the warp yarns;

drive means connected to supply drive torque to said second roll; and

said drive means being operatively interconnected to move along said predetermined path with said mounting means as the position of said second roll varies, so that the squeeze loading is unaffected by variations in the drive torque supplied to said second roll by said drive means.

4,344,212

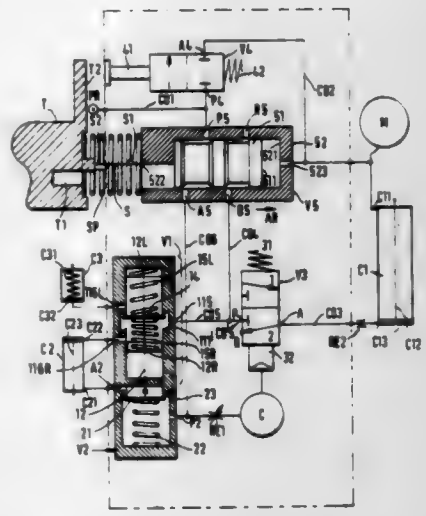
VALVE AND A WIRE CUTTING, SKINNING AND WRAPPING TOOL EMPLOYING THE VALVE

Frans P. J. Bolssens, Heide Kalmthout; Guy C. J. L. G. G. M. Franck, Borsbeek, and Henri Dehertefelt, Niel, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 892,573, Apr. 3, 1978, abandoned. This application Jan. 15, 1981, Ser. No. 225,272

Int. Cl.³ B21F *3/04*; B25B *27/00*; F16K *11/07*; H01R *43/00*

U.S. Cl. 29—33 F **6 Claims**



5. A pneumatic control system controlling a number of successive cutting, skinning and wrapping operations of a wire cutting, skinning and wrapping tool comprising:

a first three-way valve including

an inlet port,

two outlet ports, and

first and second valve members independently displaceable by fluid pulses at said inlet port to cause said fluid pulses to appear alternately at said two outlet ports, said fluid pulses at said inlet port directly reappearing at said two outlet ports and directly causing said first and second valve members to pass through at least three successive positions for every two of said fluid pulses at said inlet port;

a first two-way valve mechanically coupled to said first three-way valve controlled by said second valve member;

a second three-way valve hydraulically coupled to said first three-way valve;

a four-way valve hydraulically coupled to said first three-way valve and said first two-way valve;

a second two-way valve hydraulically coupled to said four-way valve and a source of pressurized air;

a vessel hydraulically coupled to said second three-way valve;

a restrictor coupled between said four-way valve and said vessel to provide a delay mechanism for said second three-way valve; and

a trigger mechanism to mechanically act upon said four-way valve and said second two-way valve when triggered;

said first and second two-way valves, said second three-way valve and said four-way valve being able to collaborate with said first three-way valve in order to control said successive cutting, skinning and wrapping operations;

said source being connected to one port of said second two-way valve and one port of said four-way valve, an outlet port of said four-way valve being connected to one inlet port of said first two-way valve and to said vessel via said restrictor, said second three-way valve being actuated in the rest condition of said pneumatic control system and its exhaust port is coupled via its other port to an inlet of a wire skinning cylinder capable of operating a skinning mechanism of said tool, a third port of said second three-way valve being connected to an outlet port of said four-way valve which is not connected to said source of pressurized air in said rest condition and to an inlet port of said first three-way valve, one of said two outlet ports of said first three-way valve being connected to an inlet port of a double acting cylinder of a wire feeding mechanism of said tool, said double acting cylinder having an outlet port connected to another port of said first two-way valve, the other of said two outlet ports of said first three-way valve being connected to a wire cutting cylinder of a wire cutting mechanism of said tool, another port of said second two-way valve being connected to a wrapping motor of said tool, another outlet of said wire skinning cylinder and said four-way valve to bring the piston of said four-way valve to its rest condition so that when said trigger mechanism is operated a first time said four-way valve is activated and pressurized air is supplied to said wire feeding cylinder with said first valve members in a first given position to connect said one of said two outlet ports of said first three-way valve to said inlet port thereof and to said wire skinning cylinder a predetermined time interval thereafter, when said trigger mechanism is triggered a second time said second two-way valve is actuated so that pressurized air is supplied to said wire wrapping motor, to said wire skinning cylinder to bring its piston into its rest condition after a second predetermined time interval and to said four-way valve to bring this valve into its rest position so that said pressurized air to said first three-way valve is cut off and the next operation is prepared due to said first valve member being displaced into a second given position to connect said inlet port of said first three-way valve to said other of said two outlet ports thereof, when said trigger mechanism is pulled a third time and said four-way valve is actuated only, pressurized air is supplied to said wire cutting cylinder and to said wire skinning cylinder a predetermined time interval thereafter and when finally said trigger mechanism is pulled a fourth time, actuating said second two-way valve, said wire wrapping motor is actuated and the piston of said wire skinning cylinder returns to its rest position.

4,344,213

RIVET GUIDING APPARATUS

Winston C. Pray, Lombard, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.

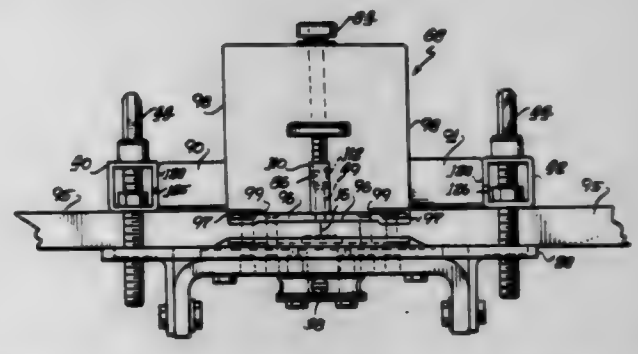
Continuation-in-part of Ser. No. 948,971, Oct. 5, 1978, Pat. No. 4,258,461. This application Jan. 25, 1980, Ser. No. 115,367

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—243.5 **17 Claims**

1. An apparatus for holding and the aligning plurality of elongated rivet fasteners for driving through apertures in an upper belt fastener plate and through a belt and into apertures in a lower belt fastener plate, said apparatus comprising:

a base means for supporting the belt and a row of belt fasteners thereon and having anvil means thereon for deforming the lower ends of said rivet fasteners, a guide block shorter in length than said base means for positioning over the upper belt plate fasteners and moveable laterally on said base means through a plurality positions on said base means, a plurality of elongated vertically extending passageways in said guide block, each for receiving an elongated fastener and for guiding the same in vertical move-



ment into the apertures in the upper plate fasteners and through the belt to the apertures in the lower plate fastener, means for registering said guide block in each of a plurality of positions relative to said base means and for interconnecting said base means and said guide block to locate said guide block in alignment with the anvil means on said base means in each position and in alignment with the apertures in the upper plate fasteners and thereby with respect to apertures in said lower plate fasteners.

4,344,214

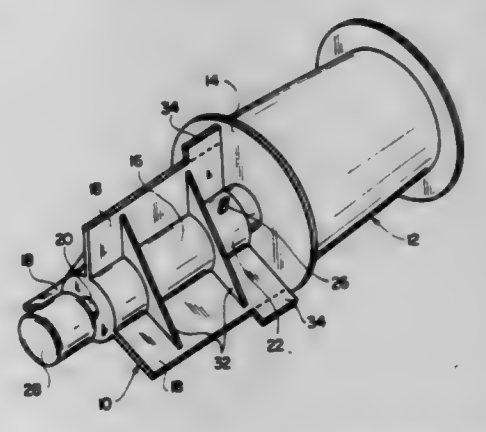
INTERNAL PIPE LINE DELIVERY DEVICE

Lawrence J. White, San Jose, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 31, 1980, Ser. No. 174,289

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—252 **18 Claims**



1. A remotely thermally activatable device for delivering a payload to a predetermined location within a pipe comprising:

carrier means for radially and axially supporting a payload;

driver means connected to said carrier means to axially move said carrier means within a pipe, said driver means extending axially and moving said carrier means when activated;

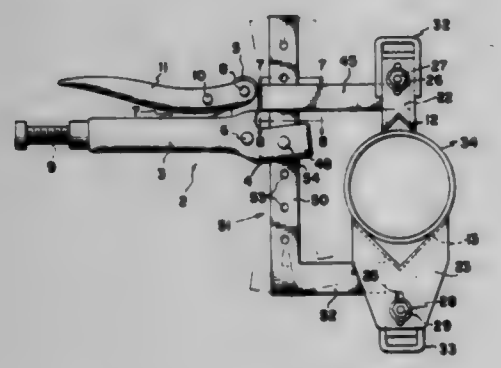
support means connected to said driver means to support said driver means within a pipe; and

thermally activatable trigger means connected to said driver means to actuate said driver means, said driver means moving said carrier means within the pipe with respect to said support means.

4,344,215
PIPEFITTER'S TOOL

Timothy C. Dearman, 3002 S. Main St., P.O. Box 937, Pearland, Tex. 77581

Continuation-in-part of Ser. No. 77,859, Sep. 21, 1979, Pat. No. 4,306,345. This application May 9, 1980, Ser. No. 148,417
Int. Cl.[3] B25H *7/00;* B23K *37/04*
U.S. Cl. 29—281.5 7 Claims

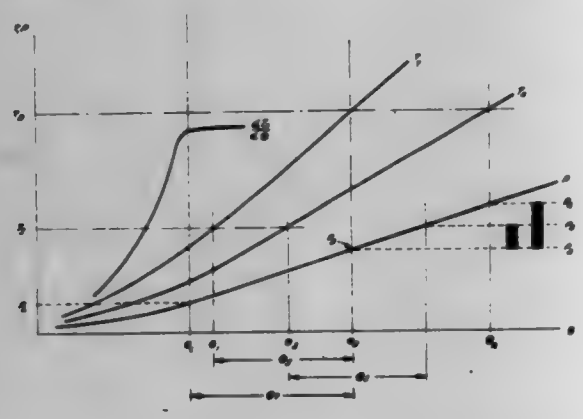


1. In a tool for use in joining a pipe to a fitting wherein one end of the pipe is to be accommodated in a bore at one end of the fitting and spaced a predetermined distance from a shoulder spaced inwardly from said one end of the fitting, said tool comprising a pair of arm members pivotally connected to one another for rotary movement about a first axis; a first clamp jaw; a second clamp jaw; means mounting a respective one of said jaws on each of said arm members for relative movement toward and away from one another into and out of clamping engagement with said pipe; and spacing means carried by at least one of said jaws for movements out of and into engagement with said pipe and having a thickness corresponding to said predetermined distance, the improvement wherein the mounting means for at least one of said jaws includes an elongate support joined at one end to said one of said jaws, and means coupling said support to one of said arms for bodily slidable adjustment relative thereto and for rocking movements of said support about a second axis parallel to and fixedly spaced from said first axis.

4,344,216
APPARATUS AND METHOD FOR TIGHTENING AN ASSEMBLY

Robert J. Finkelston, Colmar, Pa., assignor to SPS Technologies, Inc., Jenkintown, Pa.

Filed Dec. 10, 1979, Ser. No. 101,975
Int. Cl.[3] B23P *19/06*
U.S. Cl. 29—407 12 Claims



1. Apparatus for tightening an assembly including a threaded fastener comprising:

driving means for imparting torque and rotation to the fastener to tighten the assembly, the torque-rotation curve which could be plotted for the assembly having a non-linear tightening portion followed by a substantially linear tightening portion;

means for supplying (1) a first preload signal representative of a predetermined preload which is to be induced in the fastener when the assembly has been tightened to a desired degree, (2) a second preload signal representative of the preload at the onset of said substantially linear tightening portion, and (3) a tension rate signal representative of the tension rate of the assembly;

torque sensing means responsive to said driving means for developing a torque signal representative of the torque imparted to the fastener;

angle sensing means responsive to said driving means for developing a first angle signal representative of the rotation imparted to the fastener;

means responsive to said torque signal and said first angle signal for developing a gate signal at said onset of said substantially linear tightening portion;

processing means reponsive to said first preload signal, said second preload signal, and said tension rate signal for developing a second angle signal representative of a tightening angle between said onset of said substantially linear tightening portion and said predetermined preload, said tightening angle being related to the difference between said predetermined preload and said preload at said onset of said substantially linear tightening portion divided by said tension rate;

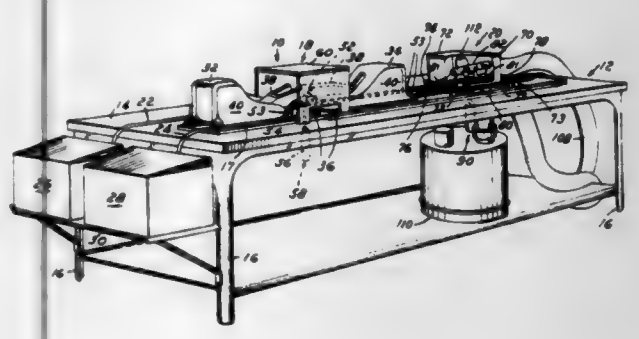
comparison means responsive to said first angle signal, said second angle signal, and said gate signal for comparing the rotation imparted to the fastener after said onset of said substantially linear tightening portion with said tightening angle and for developing a control signal when said rotation imparted to the fastener after said onset of said substantially linear tightening portion is equal to said tightening angle;

and control means for supplying said control signal to said driving means to stop said driving means from imparting torque and rotation to the fastener.

4,344,217
AUTOMATIC STAPLING AND CUTTING MACHINE

Joseph W. Katona, Walled Lake, Mich., assignor to Mills Products, Inc., Farmington, Mich.

Filed Nov. 30, 1979, Ser. No. 98,934
Int. Cl.[3] B23P *17/00, 11/00*
U.S. Cl. 29—417 7 Claims



1. Apparatus for producing a plurality of bands each formed of two flexible strands secured to one another at the ends thereof but free of connection between said ends from two lengths of strand material, comprising connecting means for connecting together said two lengths of the strand material at two closely longitudinally spaced points, cutting means for cutting said strand material between said two closely longitudinally spaced points, and means for supporting said connecting means and said cutting means in spaced relation to one another so that said two lengths of strand material may be connected together by said connecting means at two closely longitudinally spaced points at one location along the length of said two lengths of strand material and subsequently connected together by said connecting means at two closely longitudinally spaced points at other locations along the length of said two lengths of strand material and also may be cut by said cutting means between said two closely longitudinally spaced points at all

said locations to produce a plurality of said bands secured to one another at the ends thereof but free of connection between said ends, said connecting means comprising two staplers.

4,344,218

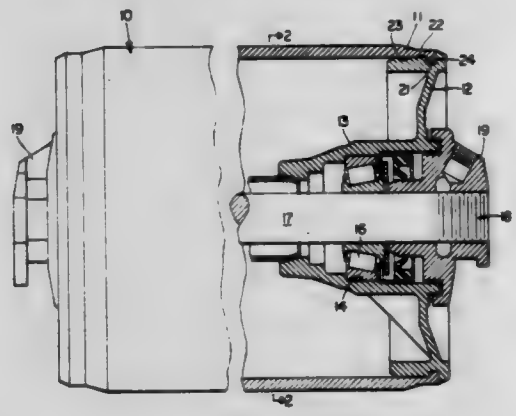
CONVEYOR IDLER ROLL ASSEMBLY AND METHOD OF PRODUCING SAME

Homer Hooper, Winfield, and R. B. Holland, Hodges, both of Ala., assignors to Continental Conveyor & Equipment Company, Inc., Winfield, Ala.

Continuation of Ser. No. 45,195, Jun. 4, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,100

Int. Cl.³ B65G *39/10*

U.S. Cl. 29—516 **1 Claim**



1. A method for securing an idler roll cylinder of an idler roll assembly for a conveyor to a pair of laterally spaced roll heads mounted within the respective ends of said roll cylinders comprising the steps of:

(a) forming a circumferentially extending outwardly opening groove in and around the outer periphery of each said roll head axially inward of the outer end thereof and facing the end of said roll cylinder adjacent thereto,

(b) forming a plurality of circumferentially spaced, outwardly opening recesses in the outer periphery of each said roll head facing the inner surface of said roll cylinder and extending laterally of said circumferentially extending outwardly opening groove, and

(c) spin forming the outer end portions of said roll cylinder adjacent each end thereof to form concomitantly inwardly projecting abutments as lock elements which are pressed into said circumferentially spaced recesses and an integral inwardly extending, annular abutment as a lock member at each end thereof which is forced into the confines of said groove with the outer ends of said roll cylinder terminating axially inward of the outer ends of said roll heads and defining smooth contoured ends for said roll heads with the outer surfaces of said roll heads extending beyond the ends of said roll cylinder.

4,344,219

APPARATUS FOR ARRANGING PARTS

Tetsuo Tanabe, Nagaokakyo; Kazumi Takamori, Takatsuki; Akira Matueda, Ibaraki; Kiyoshi Matsui, Ibaraki; Junichi Omura, Ibaraki, and Hitoshi Miyamoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 26, 1979, Ser. No. 106,843

Claims priority, application Japan, Aug. 3, 1978, 53-95335

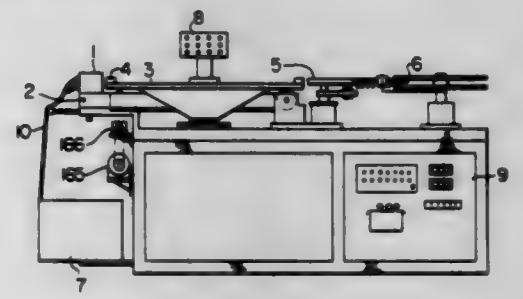
Int. Cl.³ B21F *45/00*

U.S. Cl. 29—564.6 **5 Claims**

1. An apparatus for arranging various kinds of electric parts in a predetermined order, each electric part having leads extending in one direction therefrom, comprising:

a plurality of cutter mechanisms for cutting primary taped parts associated therewith, wherein said primary taped parts include primary electric parts of one kind which are arranged at a constant pitch with their leads adhesively held between a pair of tapes, and wherein said cutter mechanisms each cut their associated primary taped parts at spaces between adjacent primary part to form tape pieces having a width corresponding to said constant pitch and which carry said electric parts by said leads;

a plurality of carrier mechanisms for holding said electric parts by retaining said tape pieces thereon, and for carrying said tape pieces;



means for transferring said tape pieces from said cutter mechanisms to said carrier mechanisms; and

means for attaching said tape pieces from said carrier mechanisms to secondary adhesive tapes in said predetermined order at said constant pitch so as to obtain secondary taped parts arranged in said predetermined order.

4,344,220

TOOL EXCHANGE APPARATUS FOR BORING MILLS AND METHOD FOR EXCHANGING TOOLS

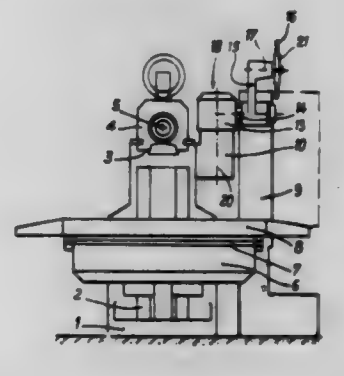
Michel E. Sachot, Orsay, France, assignor to Societe Hure S.A., Bagneux, France

Filed Nov. 28, 1978, Ser. No. 964,174

Claims priority, application France, Nov. 30, 1977, 77 36028

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **15 Claims**



1. In an improved apparatus for exchanging tools on milling machines of the type having a spindle carriage horizontally slidable on a support which is mounted to a frame, a spindle mounted to said carriage, a magazine in which said tools are disposed said magazine having a tool exchange position and means for transferring said tools from said magazine to said spindle, said transfer means having a rotatable pincer arm and at least two pincers situated on the terminal edge of said pincer arm wherein the improvement comprises:

a head rotatable about a vertical axis fixed relative to said magazine;

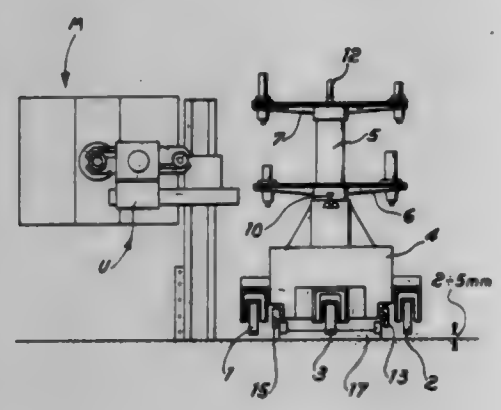
a crank having first and second horizontal axes, said crank mounted to said head for rotation about said first horizontal axis and for translation along said first horizontal axis;

said pincer arm mounted to said crank for rotation about said second horizontal axis, and said magazine presenting said tool to an exchange station in horizontal orientation.

4,344,221
MACHINE TOOL WITH PORTABLE TOOL RECEIVING CARRIAGE

Giacomo Pagani, Piacenza, Italy, assignor to JOBS S.p.A., Italy

Filed Jul. 3, 1980, Ser. No. 165,752
Claims priority, application Italy, Feb. 29, 1980, 20308 A/80
Int. Cl.³ B23Q *3/157*; B23B *3/36*
U.S. Cl. 29—568 4 Claims

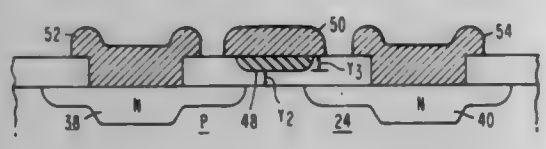


1. An apparatus for receiving a tool from a tool transferring means comprising a platform mounted adjacent to the transferring means, a portable tool magazine carriage mounted on said platform for alignment with the platform, means for movably coupling said carriage to said platform, and means for movably positioning said carriage relative to said platform, and wherein said carriage comprises a base member, a column vertically mounted to said base member, and a plurality of tool discs horizontally connected to said column in a vertically spaced and aligned relationship; and wherein said coupling means comprises alongated counterguides fixed to opposite sides of said platform, guide members depending from said carriage adapted to engage said counterguides, a plate member connected to a lower portion of said column, a sleeve member mounted on said platform for rotation, and a key member connected to said sleeve member adapted to engage said plate member.

4,344,222
BIPOLAR COMPATIBLE ELECTRICALLY ALTERABLE READ-ONLY MEMORY

David L. Bergeron, Winooski, and Paul H. Smith, Colchester, both of Vt., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 40,805, May 21, 1979, abandoned. This application Oct. 22, 1980, Ser. No. 199,179
Int. Cl.³ H01L *21/26, 21/28*
U.S. Cl. 29—571 9 Claims



1. A process for forming an electrically alterable charge storage node on a semiconductor substrate of a first conductivity type, having a silicon dioxide insulating layer on the surface of the substrate, comprising the steps of:

depositing a first layer of metal on the surface of said silicon dioxide layer, having a thickness which, in combination with the thickness of the silicon dioxide layer, will serve to mask a subsequent ion-implantation step;

ion implanting a conductivity enhancing impurity of a second conductivity type through said silicon dioxide layer adjacent to said metal layer, to form an ion-implanted region having a terminal portion aligned with the edge of said metal;

sintering said metal layer to initiate a solid state reaction between said metal and said silicon dioxide layer, forming a metal oxide charge storage region in said silicon dioxide layer which is substantially aligned with said terminal portion of said ion-implanted region and said metal layer;

stripping said metal layer; and

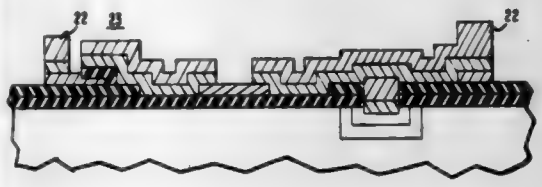
depositing a second metal layer over said metal oxide charge storage region, as a programming gate for said electrically alterable storage node;

whereby an electrically alterable charge storage node is formed.

4,344,223
MONOLITHIC HYBRID INTEGRATED CIRCUITS

Gary A. Bulger, Coplay; Lyle D. Heck, Reading; Robert D. Huttemann, Wescosville; Joseph M. Morabito, Bethlehem; Raymond C. Pitetti, Wescosville, all of Pa.; Burton A. Unger, Berkeley Heights, N.J., and Donald J. Vallere, Reading, Pa., assignors to Western Electric Company, Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 26, 1980, Ser. No. 210,730
Int. Cl.³ H01L *21/18*
U.S. Cl. 29—577 C 12 Claims



1. A method for fabricating thin film resistor (16) and capacitor (23) components on an insulating layer (11,12) formed over a semiconductor substrate (10) where said substrate includes semiconductor devices (13) formed therein and ohmic contacts (14) to said devices characterized in the steps of defining a capacitor anode (15′) selectively on said insulating layer from a first metal layer; depositing a layer of resistive material over the resulting structure and defining a resistor (16) in a selected area; forming a mask (17) and a first interconnect pattern (17′) for selective oxidation of the capacitor anode by depositing a second metal layer and etching selected areas; forming a dielectric (18) on the capacitor anode by anodization in an electrolyte at a low voltage; removing the second metal layer; forming the capacitor counter electrode and a second interconnect conductor pattern by depositing a third metal layer (19,20) and etching selected areas; and stabilizing said resistor and capacitor by heating the resulting structure in an atmosphere comprising steam at high pressure.

4,344,224
METHOD OF MAKING HERMETICALLY SEALED SWITCH ASSEMBLY

Albert F. Ditzig, Hoffman Estates, Ill., assignor to Molex Incorporated, Lisle, Ill.

Division of Ser. No. 6,566, Jan. 26, 1979, Pat. No. 4,302,637. This application Nov. 17, 1980, Ser. No. 207,224
Int. Cl.³ H01H *11/00*
U.S. Cl. 29—622 7 Claims

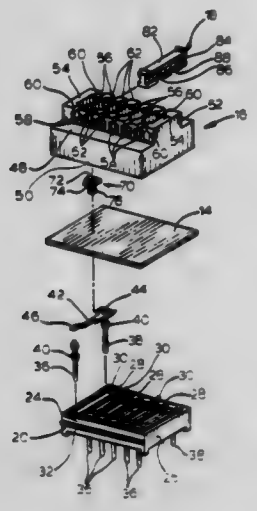
1. A method of making a switch assembly including forming a base member with a contact receiving cavity open at the top and defined by a floor that is laterally enclosed by side wall means, forming first terminal means and mounting said first terminal means in the cavity, forming second terminal means with a resilient contact blade portion and mounting said second terminal means in the cavity so that an end of the blade portion is spaced from said first terminal means, said contact blade portion being movable between a normally open position wherein said end contacts said first terminal means, forming a cover with means for mounting an actuator assembly thereon, and forming an actuator assembly including a push member mounted on the mounting means of the cover for moving the

contact blade portion between its open and closed positions, the improvement in said method comprising:

providing a thin, stretchable, resilient, impermeable sealing gasket;

placing said sealing gasket on top of the base member so that it overlies said cavity;

forming said cover and said base member to include interengaging means to lock said cover to said base member;



placing said cover over the base member so that it engages the periphery of said sealing gasket;

locking said cover and gasket to said base member by means of said interengaging means to form a hermetic seal over said cavity; and

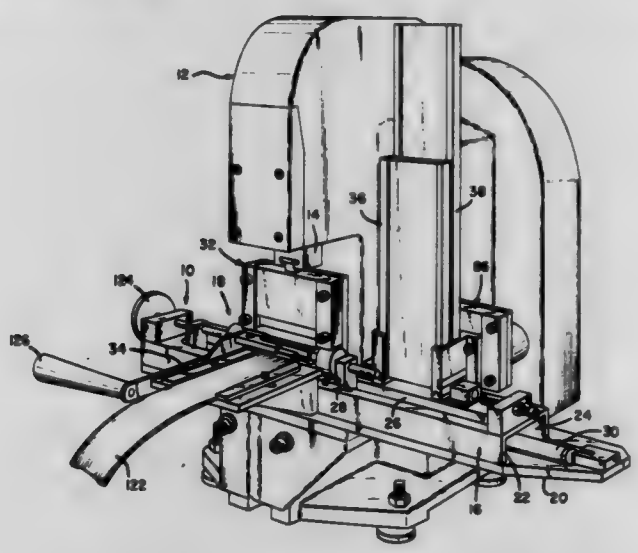
mounting said push member in a manner so that it engages the gasket and is movable against the resilient force thereof to push the contact blade portion between its open and closed positions.

4,344,225

PRE-ASSEMBLY AND TERMINATING APPARATUS

Keith Johnson, Jr., Manheim, and Robert A. Long, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 25, 1980, Ser. No. 124,661
Int. Cl.³ H01R *43/00*; B23P *19/00*
U.S. Cl. 29—857 **9 Claims**



1. A method of terminating multi-conductor cable comprising the steps of:

dispensing a cover and a housing preloaded with a plurality of terminals in a preassembly station;

preassembling said cover and said housing;

transporting said preassembled cover and housing to a terminating station;

inserting a multi-conductor cable into said preassembled cover and housing; and

pressing the cover against the housing to effect termination of the cable and final assembly of the cover and housing.

3. An apparatus for preassembling components in a first station, transporting and finally assembling them in a second station comprising:

means for dispensing first and second units in said first station;

means for aligning said units for preassembly;

means for assembling said units into a single preassembly;

transport means adapted to receive said preassembled units and move and align them for final assembly in said second station; and

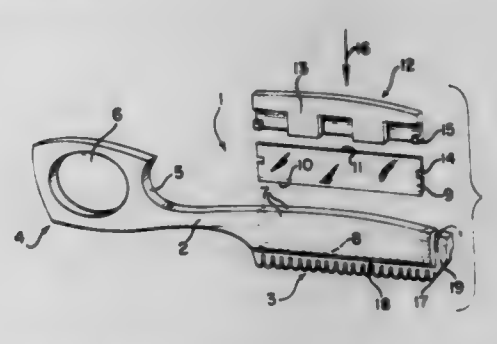
means for effecting final assembly of said preassembled units at said second station.

4,344,226

DISPOSABLE SAFETY RAZOR

Joseph W. Blake, III, R.R. #2, Box 106, Kitchewan Rd., South Salem, N.Y. 10590

Filed Apr. 17, 1980, Ser. No. 140,452
Int. Cl.³ B26B *21/12*
U.S. Cl. 30—31 **8 Claims**



1. A disposable razor, comprising

a razor body, having an upper side and a lower side, a rear portion constituting a handle and a front portion provided with a slot having an open end adjacent said lower side and extending towards said upper side;

a bladeguard extending lengthwise of said slot at said open side and having a comb-shaped edge portion;

a razor blade in said slot and having a cutting edge extending out of said open side and located opposite said comb-shaped edge portion; and

means for retaining said blade in said slot, said bladeguard being connected to said body at spaced locations by break-way portions and including a gripping portion engageable by the fingers of a user so as to effect relative twisting of said bladeguard and body and cause said break-way portions to break with resultant detaching of the bladeguard from the body.

4,344,227

CLEAN-OUT MECHANISM FOR TWIN BLADE SHAVING UNIT

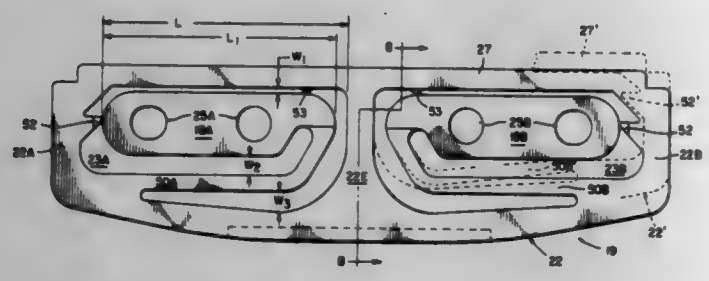
Evan N. Chen, Fairfield; James S. Emmett, Ansonia; Frank A. Ferraro, Trumbull, and Anthony J. Peleckis, Trumbull, all of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 971,170, Dec. 20, 1978, abandoned, which is a continuation of Ser. No. 866,127, Dec. 30, 1977, abandoned. This application Aug. 25, 1980, Ser. No. 180,756
Int. Cl.³ B26B *21/22*
U.S. Cl. 30—41 **10 Claims**

1. In a razor blade system including a seat portion, a cap portion, and a pair of razor blades with cutting edges on the forward edges thereof fixedly positioned between the seat and cap portions, the blades being in spaced relation to each other, the improvement comprising:

integral means interposed between said pair of razor blades defining spacer means for maintaining said blades in said spaced relation and ejector means resiliently connected to

said spacer means for ejecting shaving debris from therebetween, said spacer means and said resiliently connected ejector means including an ejector bar being molded in unitary fashion to define a single piece-part all fabricated



from the same starting material said single piece-part including breakaway tabs to afford temporary rigidity to facilitate handling during manufacture of the blade system.

4,344,228

SHAVING APPARATUS

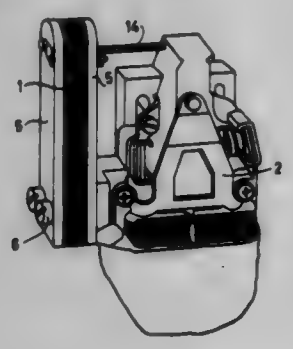
Freddy Haes; Cornelis M. Reynhout; Guillaume M. P. G. Hermes, all of Eindhoven, and Ebbe Boiten, Assen, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,614

Claims priority, application Netherlands, Jul. 3, 1979, 7905157

Int. Cl.³ B26B *19/12*

U.S. Cl. 30—43.9 **5 Claims**



1. A shaving apparatus comprising an external cutting element; an internal cutting element cooperating with said external cutting element and being drivable with a reciprocating movement relative to the external cutting element; and a connecting element securing the internal cutting element to the external cutting element, said connecting element being flexible in the direction of driving and rigid in directions extending substantially transversely of the direction of driving; the external cutting element together with two legs constituting a U-shaped part of a sheet material and the internal cutting element together with the connecting element constituting a strip also made of a sheet material and positioned between the legs of the U-shaped part; the internal cutting element being situated at the end of the strip near the transverse portion of the U-shaped part and the other end of the strip being connected to the legs of the U-shaped part.

4,344,229

FLEXIBLE TREE SAW

Robert M. Johnson, 11 Jana Dr., Weston, Conn. 06883

Filed Feb. 6, 1980, Ser. No. 119,167

Int. Cl.³ B27B *21/00, 33/14*

U.S. Cl. 30—166 R **7 Claims**

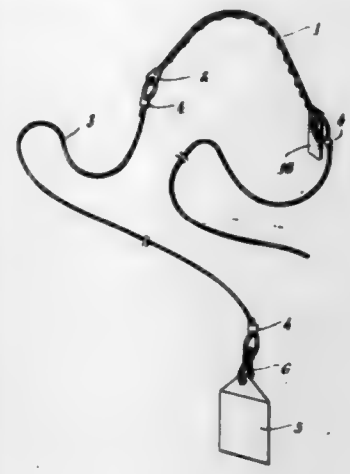
1. A flexible saw for sawing high branches from trees comprising:

a flexible cutting area; and

flexible holding means on each end of the flexible cutting area for oscillating the cutting area against a branch of a tree to be cut,

said cutting area including:

a flexible base member comprising a chain made from a plurality of links pivotably connected to each other and a series of spaced apart cutting teeth secured thereto, at least some of said spaced apart cutting teeth facing in one direction along the flexible member and some of said cutting teeth being interspersed between said teeth facing in said one direction and facing in the other direction along the flexible base member, whereby each tooth facing in said one direction will cut when the cutting area is drawn in said one direction, and the teeth facing in the



other direction will be cleared of debris, and when cutting action is reversed, vice-a-versa,

said cutting teeth extending along one edge of said flexible base member, and

means connected to said flexible base member for orienting said member so that said one edge is in contact with the tree branch to be cut,

said orienting means including a counterweight on one end of said flexible base member.

4,344,230

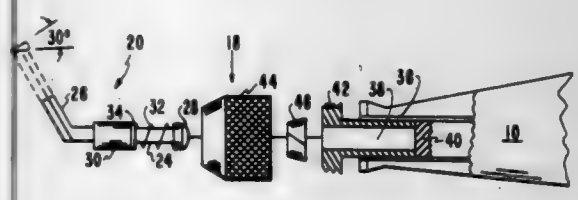
LEATHER TOOLING APPARATUS

Donald A. Olander, 3555 E. County Rd. 14, Loveland, Colo. 80537

Continuation of Ser. No. 941,868, Sep. 13, 1978, abandoned. This application Aug. 27, 1981, Ser. No. 297,019

Int. Cl.³ B26B *7/00*

U.S. Cl. 30—272 R **1 Claim**



1. A cutting tool comprising:

a shank portion terminated in a shoulder member;

an angularly extending knife portion;

a sleeve member positioned over said shank portion for rotational and translational movement with respect to said shank portion; and

compressible spring means coaxially positioned with respect to said shank portion and retained between said sleeve member and said shoulder member.

4,344,231

AREA MAPPING APPARATUS

Donald G. Martinez, P.O. Box 584, Calistoga, Calif. 94515

Filed Mar. 19, 1981, Ser. No. 245,415

Int. Cl.³ G01B *3/02*

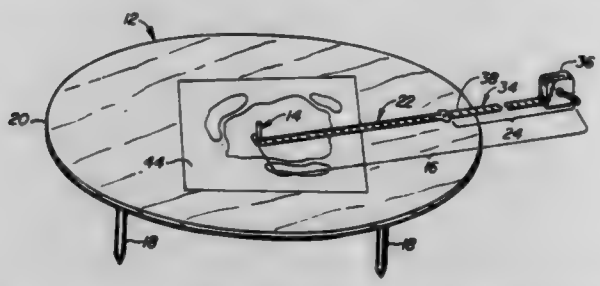
U.S. Cl. 33—1 G **3 Claims**

1. Apparatus for mapping a portion, such as the green, of a

land surface area, such as a golf course, onto a sheet of paper comprising:

a generally planar board having a bottom and a top and having a plurality of depending supports attached to said bottom, said supports located about the center of said board near the periphery thereof and configured to provide stable support for said board on said land surface area;

a unitary, extendible measuring element including an inner, realtively stiff, proportional measuring segment and an outer, full scale, flexible tape measuring segment, said inner measuring segment attached at its outer end to an inner end of said flexible measuring segment providing a common measurement axis for said measuring segments of said measuring element when said measuring element is



pulled taut during use, said inner measuring segment having a pivot point at is inner end, said inner and outer measuring segments having respective distance scales marked thereon, said distance scales having generally coincident zero points at the pivot point of said inner measuring segments; and

means for pivotally attaching said inner measuring segment at said pivot point thereof to a central portion of said top for movement of said inner and outer measuring segments about said pivot point in a plane generally parallel with said top;

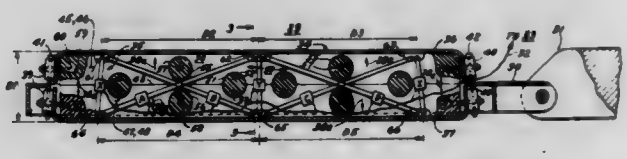
whereby the outline of the surface area portion can be mapped onto the sheet of paper mounted to the board by transferring actual surface measurements from said outer full-scale measuring segment to the paper at a reduced scale using said inner, proportional measuring segment.

4,344,232

METHOD AND APPARATUS FOR MEASURING ROLL GAP AND ALIGNMENT FOR CONTINUOUS CASTERS

Ernest H. Kihlstrom, Valparaiso, Ind., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Sep. 9, 1980, Ser. No. 185,474
Int. Cl.³ G01B 7/00
U.S. Cl. 33—143 L **23 Claims**



12. Apparatus for measuring roll position between roll faces of a series of oppositely spaced pairs of conveyor rolls which define a strand travel path, comprising:

(a) strand-like carrier means movable to plural roll locations along an axis of said path, said carrier means having resiliently deformable parallel sensing surfaces exerted outwardly and extending between two or more pairs of roll faces; and

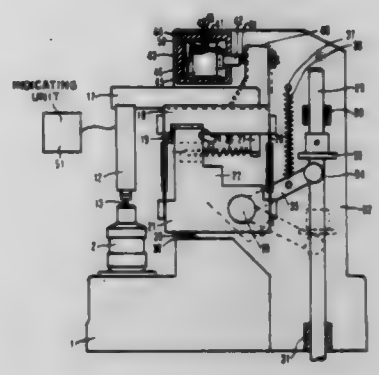
(b) distance measuring means pivotally linked to sense a dimension including lateral and diagonal distance between said carrier means sensing surfaces for generating a signal representing roll position of opposite roll faces, said distance measuring sensed independently of a neutral or reference plane.

4,344,233

APPARATUS FOR CHECKING DIAMETRAL DIMENSIONS

Gastone Albertazzi, Bologna, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Sep. 15, 1980, Ser. No. 186,891
Claims priority, application Italy, Sep. 14, 1979, 3490 A/79
Int. Cl.³ G01B 7/12
U.S. Cl. 33—178 E **10 Claims**



1. An apparatus for checking diametral dimensions of a cylindrical surface of a mechanical part, comprising: a base; measuring means including two probes adapted to cooperate, along a measurement axis, with two points of the cylindrical surface, the measuring means providing measurement signals; processing circuits connected with the measuring means; support and positioning means coupled to the base for supporting and positioning the part to be checked and the measuring means; and control means connected to the support and positioning means for displacing the probes in cooperation with the cylindrical surface and for obtaining a relative motion between the probes and the cylindrical surface, wherein the control means are adapted to control said relative motion as a scanning motion with a displacement of the relative position of the measurement axis, with respect to the base and the cylindrical surface geometric axis, having a component perpendicular to the measurement axis, for arranging the measurement axis and the geometric axis both in coplanar and in non-coplanar positions, the processing circuits being adapted to process the measurement signals obtained during the scanning motion for detecting the diametrical dimension of the cylindrical surface.

7. An apparatus for checking a diameter of a cylindrical surface of a mechanical part, comprising measuring means including two probes adapted to cooperate, along a measurement axis, with two points of the cylindrical surface, the measuring means providing measurement signals; processing circuits connected with the measuring means; support and positioning means for supporting and positioning the part to be checked and the measuring means, the support and positioning means including a movable arm for supporting the part; and control means connected to the support and positioning means for displacing the probes in cooperation with the cylindrical surface and for obtaining a relative motion between the probes and the cylindrical surface, wherein the control means are adapted to displace said arm with respect to the measuring means for permitting the probes to scan a portion of the contour of the cylindrical surface and to obtain said relative motion as a scanning motion with a relative displacement of the position of the measurement axis, with respect to the cylindrical surface geometric axis, having a component perpendicular to the measurement axis, for arranging the measurement axis and the geometric axis both in coplanar and in non-coplanar positions, the processing circuits being adapted to process the measurement signals obtained during the scanning motion for detecting the diameter of the cylindrical surface.

10. An apparatus for checking the diameter of a cylindrical surface of a mechanical part, the cylindrical surface defining a geometric axis, comprising:

spindle means rotatable about a rotation axis for at least 180°;

the spindle means including an eccentric clamping device

adapted to clamp the part with a pre-set eccentricity between said geometric axis and rotation axis; and

measuring and processing means including two movable probes adapted to cooperate, along a substantially stationary measurement axis, with two points of the cylindrical surface, the measuring means providing a measurement signal responsive to the distance of said points,

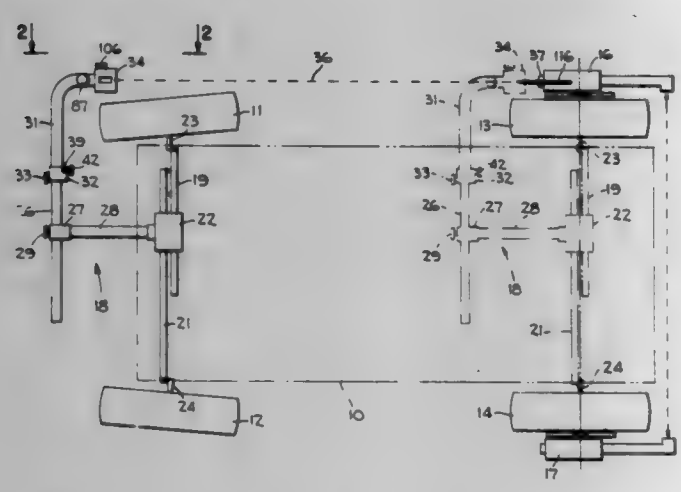
wherein said pre-set eccentricity has a value sufficient to permit the probes to reach, during rotation of the spindle means, a diametral position with respect to the cylindrical surface and wherein said measuring and processing means are adapted to detect the maximum value of said measurement signal during the rotation of the spindle means.

4,344,234

APPARATUS AND METHOD FOR MEASURING REAR WHEEL TOE WITH RESPECT TO CHASSIS CENTERLINE

Melvin H. Lill, San Jose, and Thomas E. Roberts, Jr., Saratoga, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 4, 1980, Ser. No. 184,431
Int. Cl.³ G01B *11/275*
U.S. Cl. 33—228 **17 Claims**



1. Apparatus for measuring the toe of one of a pair of nonsteerable wheels on a vehicle relative to the centerline of the vehicle chassis, wherein an alignment head is mounted on the one nonsteerable wheel casting a light beam forwardly of the chassis in a direction substantially parallel to the plane of rotation of the one wheel, wherein a light beam detector is provided in a vertical plane through the projector extending parallel to the chassis centerline, and wherein a centering gage is adapted to extend between any pair of vehicle wheels, said centering gage comprising

a housing,

means for maintaining said housing in a constant position relative to the center point between the any pair of vehicle wheels,

a laterally extending arm mounted on said housing having an outer end reaching outboard of one of the wheels in the pair,

a centering gage head attached to said outer end of said arm and having an aperture thereon operating to receive a portion of the light beam,

means for adjusting the length of said laterally extending arm to place said aperture in the aforesaid vertical plane parallel to the chassis centerline,

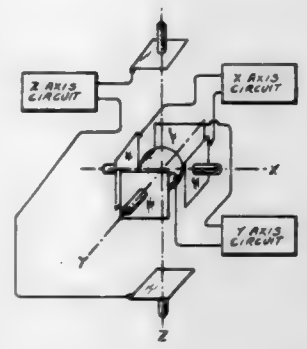
said aperture being in optical communication with the light beam detector, whereby a signal indicative of the toe of the one nonsteerable wheel relative to the chassis centerline is provided in response to sensing of said light beam portion.

4,344,235

LEVITATED BALL INCLINOMETER

Thomas E. Flanders, Houston, Tex., assignor to General Electric Co., Philadelphia, Pa.

Filed Dec. 29, 1980, Ser. No. 223,381
Int. Cl.³ G01C *9/06, 9/16*
U.S. Cl. 33—366 **4 Claims**



1. A levitated ball inclinometer comprising:

a housing having a cavity therein and a longitudinal axis;

a ferromagnetic ball contained in said housing;

a first pair of opposed electromagnets positioned to have pole faces extending into said cavity but spaced from said ball;

a second pair of opposed electromagnets positioned to have pole faces extending into said cavity but spaced from said ball;

said first and second pairs of electromagnets also positioned to be orthogonal to said longitudinal axis and to each other;

means for applying a high frequency alternating current to said ball;

means for detecting the difference in currents flowing from the ball to the pole faces of the first pair of electromagnets and for producing an output signal proportional thereto;

means for detecting the difference in currents flowing from the ball to the pole faces of the second pair of electromagnets and for producing an output signal proportional thereto; and

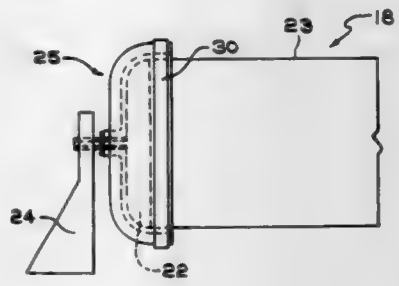
means for applying currents proportional to said output signals to the electromagnets to maintain the ball centered between said pairs of pole faces.

4,344,236

WEB DRYING APPARATUS

Gale E. Lindeen, Greenville, S.C., assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Dec. 17, 1980, Ser. No. 217,479
Int. Cl.³ F26B *13/08*
U.S. Cl. 34—110 **1 Claim**



1. A drying apparatus for drying a traveling web comprising a hollow cylinder, said cylinder having a pair of end portions and an intermediate cylindrical portion, means connected to said cylinder for rotating said cylinder about its central axis, heating means connected to said cylinder for heating the interior of said cylinder, heat insulating end caps mounted on the respective end portions of said cylinder for restricting the flow of heat energy from said end portions, each of said end caps are

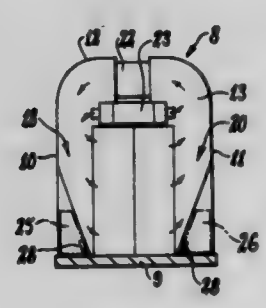
made from an inner layer of insulating material and an outer layer of rubber with a layer of foil interposed between said inner layer and said outer layer of rubber, and a circumferentially extending strap around the periphery of said cylinder to secure said cap to said cylinder.

4,344,237

WOOD DRYING KILN

John M. Willington, Mount Eliza, Australia, assignor to A.P.M. Wood Products Pty. Ltd., Tumut, Australia

Filed Dec. 9, 1980, Ser. No. 214,683
Claims priority, application Australia, Dec. 13, 1979, PE1707
Int. Cl.³ F26B *9/06*
U.S. Cl. 34—191 **6 Claims**



1. A kiln for drying timber comprising:

an elongated housing having a base, two side walls and a top wall and two end walls defining a timber treatment zone;

a gas circulation passageway having a top passageway portion extending over said timber treatment zone, a side passageway portion extending down one side of said timber treatment zone, a treatment passageway portion extending through said timber treatment zone, and a side passageway portion extending up the other side of said timber treatment zone merging with said top passageway portion, each said side wall being sloped whereby each of said side passageway portions is broad at the top of the kiln and narrower at the bottom of the kiln thereby to provide a substantially even rate of flow of gases at various levels within said treatment zone, said top passageway portion forming a rounded junction with each said side passageway portion;

reversible gas circulation means within said top passageway portion for maintaining the circulation of treatment gas in said other direction through said gas passageway thereby enabling the direction of gas flowing through said treatment zone to be reversed; and

at least one inlet duct for hot air and other gases for timber treatment, said inlet duct extending longitudinally beneath said top passageway portion and above said treatment zone, said inlet duct having one or more inlet ports between said duct and said gas circulation passageway for injecting gas into said gas circulation passageway in the vicinity of said top passageway portion, said inlet duct having an internal baffle means providing a lumen in said inlet duct which decreases in lateral cross-sectional area from the end of introduction of treatment gas to the end remote therefrom.

4,344,238

MULTI-PURPOSE CRAMPON

Leonard F. Peyser, Old Sleepy Hollow Rd., Briarcliff Manor, N.Y. 10510

Filed Jul. 15, 1980, Ser. No. 169,105
Int. Cl.³ A43B *3/10*; A43C *15/00*
U.S. Cl. 36—7.6 **12 Claims**

1. A multi purpose crampon for detachable securement to hiking boots or the like, comprising,

respective sole and heel creeper plates, each of said plates having a substantially planar upper surface to permit desired positioning thereof beneath a boot sole and heel, and a plurality of gripper points extending from the lower surface thereof,

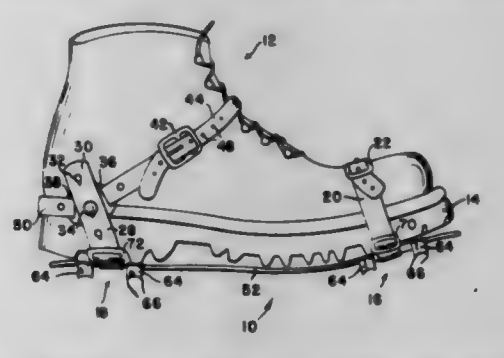
flexible sole strap means interconnecting said sole and heel plates,

toe securing means including a flexible strap extending from said sole plate to secure the sole plate to a toe portion of a boot,

heel securing means including a flexible strap extending from either side of said heel plate,

slide members adjustably connected to said straps on either side of both said toe plate and heel plate,

means interconnecting end portions of said heel securing



means for extending forwardly to overly the instep portion of a boot, and,

further means interconnecting said end portions for extending rearwardly around the heel portion of a boot,

said instep and heel interconnecting means thereby together securing said heel plate to a boot,

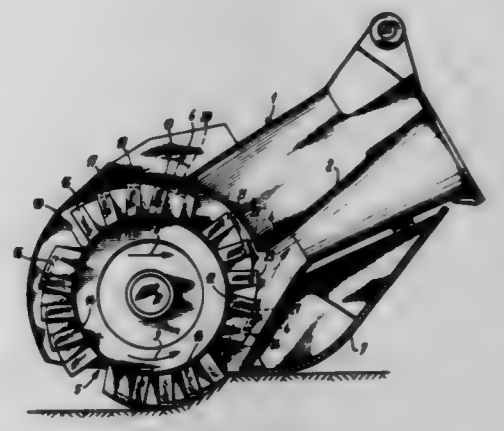
whereby said sole and heel plates may be positioned with respect to a given boot, and the said slide members adjusted with respect to the respective straps to an adjacent edge portion of the boot, and the several straps means and securing means connected thereby to secure the crampon with respect to any given hiking boot or the like to impart traction thereto in hiking.

4,344,239

DRAGGING TYPE HEAD FOR A SUCTION DREDGER

Pieter Verboom, Alblasserdam, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands

Filed Jul. 15, 1980, Ser. No. 169,208
Claims priority, application Netherlands, Jul. 17, 1979, 7905566
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—66 **3 Claims**



1. In a dragging type suction head of a suction dredger, said head being provided with a cylindrical cutting device comprising a cylindrical drum rotatably supported within the suction head, said drum having upon its outer surface a plurality of cutting blades, said suction head having the form of a cap surrounding at least the upper portion of the cutting device and connected to a suction conduit; the improvement in which the cutting device is driven in a direction of rotation such that the force exerted by the cutting blades upon the soil is directed in

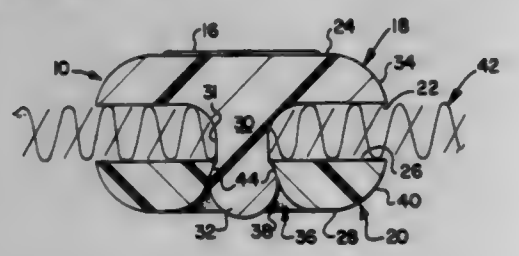
the direction of dragging, the cutting blades being arranged upon the drum surface in several sets following each other in the circumferential direction of rotation of the drum, each set of blades having a leading blade and two rows of separate blades arranged according to the legs of a V extending rearwardly from said leading blade with respect to the direction of rotation, said leading blade being disposed in the central plane of the drum perpendicular to its axis and formed by a flat plate in said plane as well as a blade perpendicular to said flat plate, whilst the other individual and spaced apart blades of each set are at an acute angle to a plane perpendicular to the axis of the drum, each blade having its leading edge at a greater distance from the central plane than its trailing edge.

4,344,240

IDENTIFICATION SNAP

Karl H. Schiller, Dayton, Ohio, assignor to S and S Associates, Dayton, Ohio

Filed Jan. 16, 1981, Ser. No. 225,486
Int. Cl.³ G09F *3/08;* A44B *1/18, 1/38*
U.S. Cl. 40—20 R **9 Claims**



1. An identification snap for attachment to woven material comprising:

a first plate member having first inner and outer faces;

post means projecting from said first inner face;

said post means including a shank portion and a bulbous tip of larger diameter than said shank portion;

a second plate member having second inner and outer faces;

said second plate member including a centrally disposed orifice extending from said second inner face to said second outer face for receiving said post means therein;

said orifice being defined by a substantially frusto-conical wall which extends from said second outer face to said second inner face and converges toward said second inner face;

said frusto-conical wall being shaped such that, when said first and second plate members are joined such that their respective inner faces oppose each other, said wall engages said bulbous tip only at a posterior portion thereof in an interference fit which tends to draw said first and second plate members toward each other such that posterior portion may engage said wall at varying locations between said second inner and outer faces thereby permitting woven materials of varying thicknesses to be clamped between said first and second plate members; and

means associated with at least one of said plate members for distinguishing one of said snaps from another of said snaps.

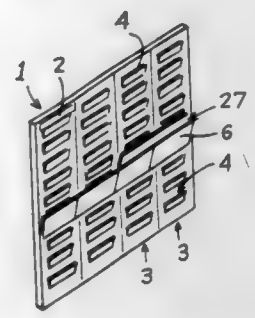
4,344,241

PLATE FOR CARD DISPLAY BOARD

Raymond Tourre, Orange, France, assignor to S.A. VAL-REX, Orange, France

Filed Apr. 23, 1981, Ser. No. 256,817
Claims priority, application France, Apr. 28, 1980, 80 10113
Int. Cl.³ G09F *1/10*
U.S. Cl. 40—124.2 **7 Claims**

1. A plate adapted to be mounted on a display board, said plate comprising a plane body provided on its rear face with a bar set back from the lower edge of said body, said plate being adapted to be mounted on a board designed for the display of T-shaped cards, said board being of the type which includes vertical and parallel lines of superposed horizontal slots, said plate including a plane body having a horizontal dimension at least of equal size to the length of the slots, said plate comprising on its vertical side edges two mutually complementary assembling parts, an attachment rib on the rear face of said body, a bar projecting rearwardly from said rib, said bar being directed toward the lower edge of said body and being of a height smaller than the distance between the lower edge of said body and the upper edge of said bar, said bar being disposed



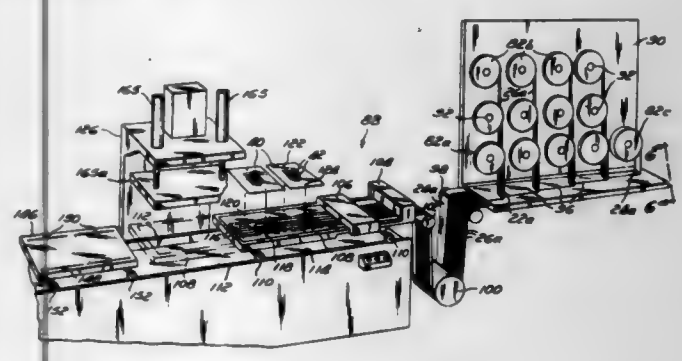
parallel to and a distance above the lower edge of said body, said bar including a rabbit and a rearwardly directed face portion at the junction of said bar and rib, said face portion diverging forwardly and downwardly relative to the plane of said body at an acute angle, said body including on its rear face adjacent the vertical side edges thereof a pair of rearwardly projecting heels, the rearmost face of said heels extending forwardly and downwardly at an angle substantially identical to said acute angle of said rearwardly directed face portion.

4,344,242

MACHINE FOR MANUFACTURE OF PANEL TILE

Arthur T. Spees, Tustin, Calif., assignor to Visu-Flex Corporation, Orange, Calif.

Division of Ser. No. 906,917, May 16, 1978, Pat. No. 4,232,463.
This application Oct. 6, 1980, Ser. No. 194,218
Int. Cl.³ G09F *1/10;* A47G *7/06;* B26D *7/06*
U.S. Cl. 40—373 **22 Claims**



1. Apparatus for the manufacture of a storage device for flat, flexible data elements, comprising:

means for cutting one or more sheets of flexible resilient material into a plurality of strips;

means for aligning said strips in a parallel overlapping relationship;

first attaching means for attaching said strips to each other proximate the ends thereof to form a layered panel of overlapping pocket entrances; and

second attaching means for attaching a pocket forming sheet to the side of said panel opposite said pocket entrances, the pockets formed by said pocket forming sheet being of depth substantially greater than the width of said strips.

4,344,243

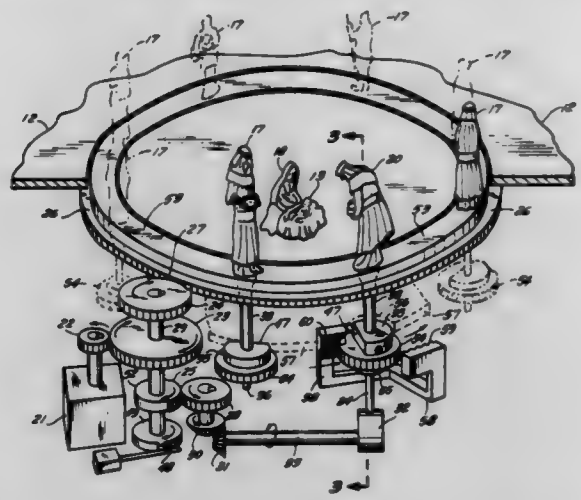
ANIMATED CHRISTMAS DISPLAY DEVICE

Leon Reszka, 49 Huber Pl., Yonkers, N.Y. 10704

Filed Jul. 7, 1980, Ser. No. 166,480
Int. Cl.³ G09F *19/08;* A63H *11/00, 13/02*
U.S. Cl. 40—415 **5 Claims**

1. An animated display device comprising means for moving

a plurality of human figures in sequence past a reference location, bowing means for causing each of said figures to bow towards said reference location when it reaches a predetermined position, rotation means for causing each of said figures to turn towards said reference location before bowing, turn



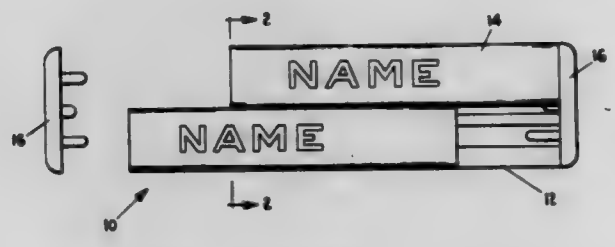
away after bowing, and then to move away from said position, said rotation means including a plurality of gears, each of said figures being secured to one of said gears, and first and second racks positioned in the path of movement of said gears so as to engage them and rotate each gear first in one direction, and then in the other direction.

4,344,244

SIGNAGE SYSTEM AND METHOD OF MAKING SAME

Charles R. Tyke, 7427 Leyton, SE., Ada, Mich. 49301

Filed Jun. 12, 1980, Ser. No. 158,987
Int. Cl.³ G09F *7/02, 7/22, 11/00*
U.S. Cl. 40—611 **15 Claims**



1. A signage system comprising:

a frame including a vertical support plate having horizontal frame mounting flange means on at least one side thereof, the frame mounting flange means having ends facing the side edges of the support plate;

at least one removable plate-shaped lettering insert mountable on the frame, the lettering insert having signage on the front surface thereof and insert mounting flange means on the back surface thereof, the insert mounting flange means mating with the mounting flange means on the support plate to hold the lettering insert on the frame, the lettering inserts being mountable on the frame by mating the ends of the insert mounting flange means with the ends of the sign mounting flanges on the frame and sliding the lettering insert horizontally across the frame;

removable end caps that cover the ends of the frame and lettering inserts, the end caps comprising at least two opposed resilient fingers that fit over and press resiliently against opposite sides of the support plate to hold the end caps on the frame, the end caps being removable by manually pulling the end caps horizontally away from the frame, thus exposing the ends of the lettering inserts and permitting removal of lettering inserts by sliding them horizontally off the mounting flange means through the opened end; and

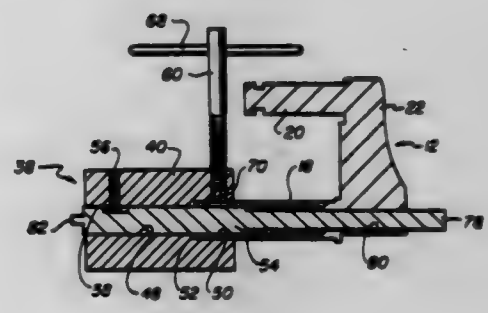
frame mounting means attachable to the frame for mounting the sign for visual display.

4,344,245

REVOLVER CRANE BARREL EXTENDER AND ALIGNMENT TOOL

Fred R. Miller, 2620 E. 32nd St., Davenport, Iowa 52807

Filed Jun. 26, 1980, Ser. No. 163,039
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—1 R **7 Claims**



1. A revolver crane barrel extender and alignment tool comprising:

a tool body **40**,

an alignment stud **54**, and

a stylus **60**,

said body having an opening of a first diameter to receive said alignment stud,

said stud being inserted therein,

said stud being of such size as to fit within a crane barrel to be extended,

said body opening having a larger diameter section into which said crane barrel may be inserted when mounted onto said stud,

said body having a stylus receiving threaded aperture communicating with said larger diameter section,

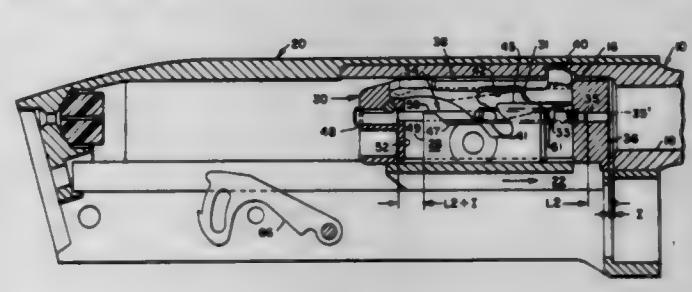
said stylus upon rotation in said aperture engaging the outer surface of said barrel, whereby rotation of said crane barrel about said stud causes said stylus to wear a groove about the outer barrel surface, thus causing said barrel to elongate.

4,344,246

FIRING PIN BLOCK FOR FIREARM HAVING A RECIPROCATING BREECH BOLT

Thomas G. Bauman, and Jack L. Kast, both of Ilion, N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Feb. 14, 1980, Ser. No. 121,436
Int. Cl.³ F41C *11/02*
U.S. Cl. 42—69 B **8 Claims**



1. A firearm including a receiver; a barrel secured to said receiver, and having a rearwardly-open breech; said firearm being formed with a locking recess;

a breech bolt reciprocable longitudinally in said receiver, and having a front face adapted to close said breech;

a locking block received in said bolt for longitudinal reciprocation therewith, said locking block being arranged for pivotal movement, transverse to the longitudinal recipro-

cation of said bolt, to and from a locked position engaged in said recess to lock said bolt to said firearm;

a firing pin received in said bolt for longitudinal sliding motion between a position retracted behind said bolt face and a position protruding forwardly therefrom, and having an enlarged abutment formed rearwardly thereon;

and a unitary slide block movable forwardly and rearwardly in said receiver; a rearward portion of said slide block being aligned with said abutment in the direction of longitudinal motion of said firing pin; said bolt being movable forwardly to close and arrest said bolt face against said breech by forward movement of said slide block into a first position, and movable rearwardly to open said breech by rearward movement of said slide block;

said slide block and said locking block being formed with mutually-engageable cam surfaces constructed and arranged for pivoting said locking block into full engagement with said recess in response to movement of said slide block relative to said bolt into a second position advanced forwardly from said first position, and for retracting said locking block from said recess in response to retracting movement of said slide block into said first position;

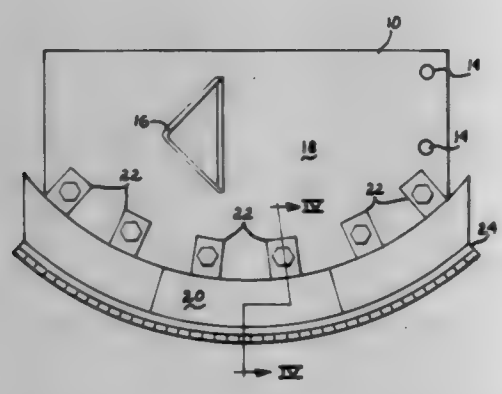
said rearward portion of said slide block extending rearwardly toward said abutment to a length effective, in said second position of said slide and all positions rearward thereof, to block any forward movement of said abutment sufficient to cause said firing pin to protrude forwardly of said bolt face.

4,344,247

OTTERBOARD

Benedick J. Howard, Toronto, and Emil Lill, Mississauga, both of Canada, assignors to Kennametal Inc., Latrobe, Pa.

Filed Jul. 27, 1977, Ser. No. 819,393
Int. Cl.³ A01K *73/045*
U.S. Cl. 43—9 **7 Claims**



1. An otterboard for use in trawling and comprising; a plate member with means thereon for connecting to a trawling net and also having means for connection to a tow line so as to be towed through the water, a shoe member comprised of an austenitic manganese wear resistant steel material and releasably attached to a bottom side of said plate member, and a substantially rectangular steel sole plate having a bottom side with longitudinal grooves formed therein and segmented inserts comprised of cemented hard metal carbide material held in said grooves.

4,344,248

AUTOMATIC HOOKSETTING FISHING ROD HOLDER

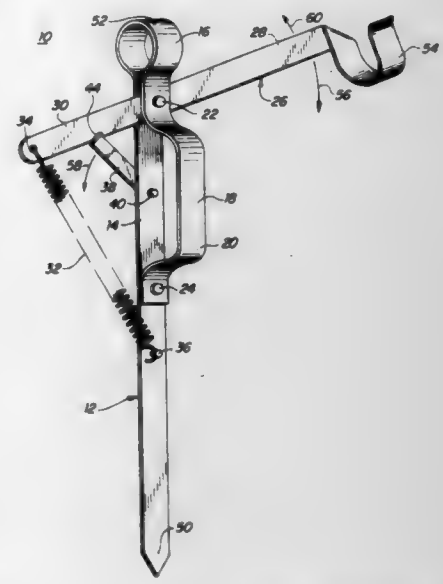
Hugh J. Brophy, Sr., and Hugh J. Brophy, Jr., both of 9 Garrison Ave., West Somerville, Mass. 02144

Filed Jun. 16, 1980, Ser. No. 159,929
Int. Cl.³ A01K *97/10*
U.S. Cl. 43—15 **1 Claim**

1. An automatic hooksetting fishing rod holder comprising:

a mounting member formed of a single continuous strap including a stake section, a first loop section at the top of said stake section for providing a handgrip for inserting and removing said stake section, and a return section extending from said first loop section along said stake section, pivot means carried by said mounting member and a second loop formed integrally in said strap below said pivot means for receiving a portion of the fishing rod handle;

a holder arm member pivotably connected to said mounting member at said pivot means and including a forward



portion extending on one side of said mounting member for engaging a fishing rod handle;

spring means interconnected between said mounting member and said holder arm member to urge said forward portion of said holder arm upwardly; and

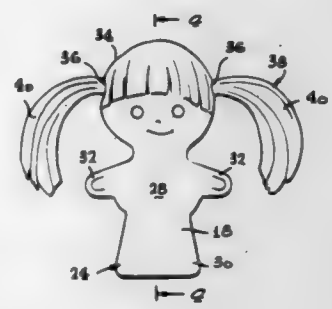
latching means including a pawl pivotably attached to one of said members for restraining upward motion of said forward portion of said holder arm member until a downward force on said forward portion disengages said pawl and seat.

4,344,249

PLAY SET

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Elonne Dantzer, 28030 Palos Verdes Dr. E., Rancho Palos Verde, Calif. 90274

Continuation-in-part of Ser. No. 11,445, Feb. 12, 1979, Pat. No. 4,227,340. This application Oct. 14, 1980, Ser. No. 196,839
Int. Cl.³ A63H *3/00*
U.S. Cl. 46—151 **1 Claim**



1. A play set comprising:

(a) a three-dimensional doll figure having a front surface which is contoured and bears indicia to represent the figure, said front surface having a peripheral edge;

(b) a plurality of flexible, resilient, three-dimensional pieces for releasably attaching to said doll figure, each of said pieces having a contoured portion for overlying a major portion of the contoured front surface of the doll figure, each of said pieces also including retaining means for engaging said peripheral edge to releasably attach the piece to the doll figure, said retaining means for each of

said pieces comprising a pair of spaced apart rearwardly extending portions that are positioned, when the piece is assembled on the doll figure, to interengage with said peripheral edge at opposite sides of the doll figure, each of said pieces and the associated engaging portions being integrally formed as a single molded plastic part that includes a three-dimensional representation of at least a portion of a limb of the doll figure,

said doll figure being hollow and comprised of a front section providing the contoured front surface and a rear section providing a generally flat rear surface,

said doll figure including an elongated collection of simulated hair protruding from either side of the head of the doll figure, said simulated hair collection being provided by a single elongated bundle of simulated hair, at least one of said sections being provided with an opening at either side for extension therethrough of said bundle,

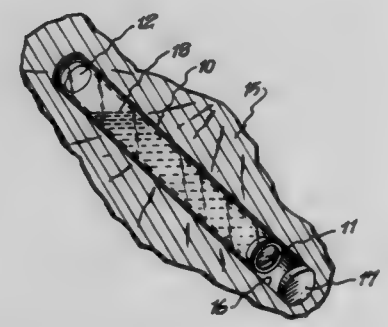
said play set further including means to retain said bundle in place, said retaining means comprising a band secured to an intermediate portion of said bundle, and a spaced apart pair of stop means on at least one of said sections and on opposite sides of said band each defining an opening large enough to receive the bundle therethrough but not large enough to receive the band therethrough.

4,344,250

METHOD FOR TREATMENT OF WOOD USING A REACTIVE CLOSURE MEANS TO PROVIDE A TIME DELAYED RELEASE OF THE TREATING AGENT

George B. Fahlstrom, Mission Viejo, Calif., assignor to Osmose Wood Preserving Co. of America, Inc., Buffalo, N.Y.

Filed Dec. 10, 1980, Ser. No. 215,034
Int. Cl.[3] A01G *7/06*
U.S. Cl. 47—57.5 16 Claims



1. In a method of applying a chemical treatment agent to a wood structure wherein a hole is formed within the wood structure to be treated and a container enclosing the treatment agent is positioned within the hole such that the container is substantially confined and enclosed within the wood structure, the improvement characterized by:

(A) placing the treatment agent into a container having at least one open end, which container is fabricated out of a material which is essentially non-reactive when placed in contact with said treatment agent or the vapors of said treatment agent,

(B) sealing the open end of said container with a suitable closure means substantially fabricated out of a material which undergoes an interaction when contacted with said treatment agent or the vapors of said treatment agent, such that after a sufficient period of time has elapsed for the interaction to occur, an opening will spontaneously be provided through said closure means to permit the chemical treatment agent and vapors to pass out of said container and into the wood structure.

4,344,251

SELF-IRRIGATING POT FOR PLANTS

Robert J. Edling, Baton Rouge, La., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 57,303, Jul. 13, 1979, abandoned. This application Jan. 23, 1981, Ser. No. 227,814
Int. Cl.[3] A01G *25/00*
U.S. Cl. 47—80 4 Claims



1. A kit adapted to form an irrigator together with a standard horticultural pot, comprising:

a disc formed of material impermeable to water and having a diameter larger than the bottom inner diameter of standard pots and smaller than the inner diameter of the top of standard pots;

said disc having edges beveled to conform with the angle of the inner wall of standard tapered pots;

a central aperture in said disc;

a cylindrical ceramic porous material having an outer diameter substantially equal to the inner diameter of said central aperture;

a first radial aperture;

a first cylindrical tube having walls impermeable to water and an outer diameter substantially equal to the inner diameter of said first aperture;

a second cylindrical aperture radially offset from said central aperture of said disc;

a second cylindrical tube having walls impermeable to water and of substantially the same size as said second circular aperture;

said central ceramic plug having an outer diameter which is less than 30 percent of the outer diameter of said divider disc; and

said first tube having an outer diameter less than 5 percent of the outer diameter of said divider disc.

4,344,252

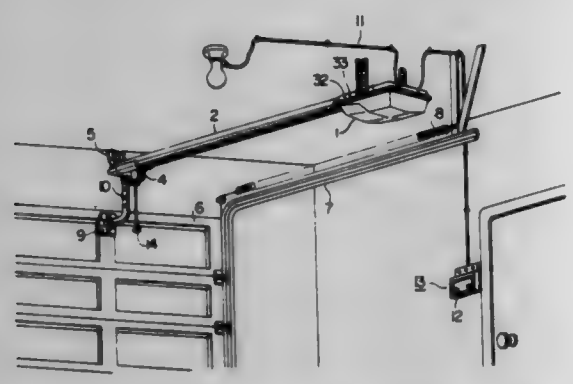
GARAGE DOOR OPERATION CONTROL APPARATUS

Mitsuo Suzuki; Takeshi Tokunaga; Seiji Yonekura; Shigeru Matsuoka, and Kenji Nakamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 28, 1980, Ser. No. 134,867
Claims priority, application Japan, Feb. 21, 1979, 54-19392
Int. Cl.[3] E05F *11/00*
U.S. Cl. 49—199 10 Claims

1. In a garage door operation control apparatus having a driving system including a motor for operating the door between open and closed positions, a door stop position control system comprising: a switch operating member connected to said driving system through a transmission means so as to be moved in proportion to the amount of operation of said driving system, and a door stop switch operated at a predetermined door stop position in response to said switch operating member, said transmission means including means for releasing the interlocked relation between said driving system and said switch operating member, and said switch operating member

being supported in such a manner as to be movable to a position actuating said door stop switch under the condition where



the interlocked relation between said driving system and said switch operating member is released.

4,344,253

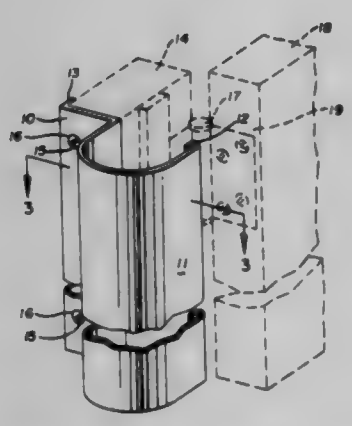
DOOR EDGE AND HINGE GUARD

Robert Stiles, 515 Fifth St., Niles, Ohio 44446

Continuation of Ser. No. 54,656, Jul. 3, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,767

Int. Cl.³ E06B *7/28*

U.S. Cl. 49—383 **4 Claims**



1. A door edge and hinge guard for attachment to a door frame and jamb to which one edge of a door is hinged, and comprising a cross sectionally U-shaped elongated body member having a half circular curved base section and spaced parallel arms extending therefrom, the ends of said arms lying on a common vertical plane, a right angular flange formed continuously on the end of one of said arms and outturned with respect to said U-shaped body member and means for attaching said right angular flange to said door frame and jamb so as to position said U-shaped body member in spaced relation to the hinged edge of said door with said half circular curved base section offset outwardly from said right angular flange and said door.

4,344,254

THERMALLY INSULATED ALUMINUM DOOR OR WINDOW FRAME

Giovanni Varlonga, Milan, Italy, assignor to Feal S.p.A., Milan, Italy

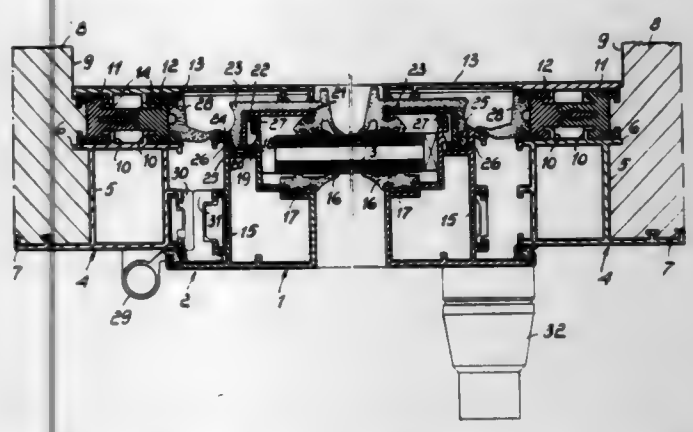
Filed Mar. 24, 1980, Ser. No. 133,058

Claims priority, application Italy, May 2, 1979, 21463/79[U]

Int. Cl.³ E05D *7/00*; E06B *1/22*

U.S. Cl. 49—401 **1 Claim**

1. A metal door or window frame comprising a fixed framework for its fixing to a rim contour of an opening in a wall of a room into which the door or window frame is to be mounted, a mobile framework for framing therein one or more panes of glass and the like and heat insulating gasket elements cooperating therewith, said rim contour lying in a plane of the opening, the frame having a width extension extending perpendicular to the rim contour of said opening and parallel to said plane and a depth extension extending perpendicular to said plane, wherein the fixed framework and the mobile framework are constituted by a fixed and a mobile subframe respectively, formed from a substantially tubular section arranged on that side of the frameworks facing the room interior, and a fixed and a mobile cover section respectively arranged on that side of the frameworks facing outwards, said gasket elements of heat insulating material being arranged between the subframes and the cover sections for providing an uninterrupted heat insulating barrier therebetween, at least some of said gasket elements having connection formations cooperating in the connection between the cover sections and the subframes, wherein said fixed cover section for the fixed subframe is substantially flat and extends parallel to said plane and substantially over the entire width extension of said frame and has profiled lugs in engagement with said connection formations of said gasket elements and arranged offset at a distance from said mobile cover section to provide a first interspace therebetween, when said mobile framework is in the closed position, and wherein said mobile cover section has a flange portion extending perpendicular to said width extension and a web portion extending parallel to said width extension when said mobile framework is in closed position and parallel to said panes, said web portion having an end zone overlapping an edge portion of said panes at a distance therefrom to provide a second interspace therebetween, said mobile subframe has on the side facing said mobile cover section a channel-shaped formation formed of a pair of spaced apart ribs extending from



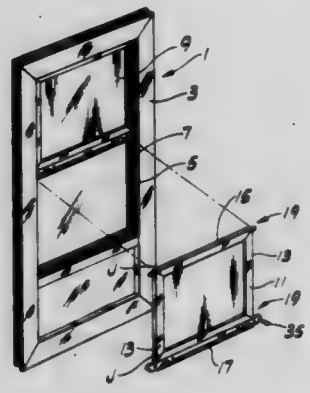
said mobile subframe side perpendicular to said web portion and a bottom portion between said ribs, a first of said ribs nearest to said panes having an abuttment edge in engagement with said web portion, said flange portion extending into the channel space defined by said channel formation and at a distance from a second of said ribs to provide a third interspace between said second rib and said flange portion, said flange portion having a nose formation on an end thereof facing said bottom portion and said first rib having a shoulder formation near said bottom portion adapted to engage said nose formation thereby said abuttment edge and said shoulder formation defining two spaced apart points of engagement between said mobile cover section and said mobile subframe, a channel shaped gasket element having a gasket web portion extending over said web portion of said mobile cover section and spaced apart gasket flange portions, one of said gasket flange portion being at a distance from said panes and inserted into said third interspace, the other of said gasket flange portions having an inwardly bent extension towards said channel defined space thereby to embrace said end zone of said web portion and be inserted into said second interspace in engagement with said edge portion of said panes, said gasket inwardly bent extension and said gasket flange portion having surface formation for a forcible insertion in said second and said third interspace thereby to firmly hold in position said mobile cover section in cooperation with said spaced apart points of engagement of said mobile cover section and to firmly hold in position said frames.

4,344,255

WINDOW SASH

Harold H. Knoll, Freeburg, Mo., assignor to Quaker Window Products Co., Freeburg, Mo.

Filed Aug. 18, 1980, Ser. No. 179,072
Int. Cl.[3] E06B *3/00*
U.S. Cl. 49—501 12 Claims



1. A sash adapted to be received in an opening in a window or the like having channels constituting tracks for the sash at opposite sides of the opening, the sash comprising:

a pair of side members;

a pair of cross members; and

means for securing the side and cross members together at joints, said securing means comprising a pair of screws at the joints at the ends of a cross member of the sash, each screw having a threaded shank and a head of generally uniform circular section throughout its length, the shank extending through a hole in one of said side members and being received in threaded engagment in an opening in the end of said cross member, the head projecting laterally outwardly from the side member, having an inner face in engagement with the side member and means at its outer end adapted to be engaged by means for turning the screw, the head being adapted to extend for substantially its entire length within the respective track thereby enabling the window sash to be fitted in the window with its side members closely adjacent the channels of the window and thus with no substantial gap between the side members and the channels, and having its generally cylindrical outer surface in sliding engagement with the respective track thereby enabling both sliding movement of the sash in the tracks and swinging movement of the sash in the window opening about the outer surfaces of the heads of said screws.

4,344,256

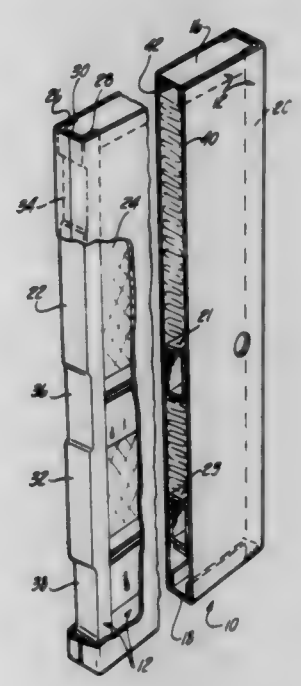
DOOR WITH VARIABLE HINGE LOCATIONS

Clarence H. King, Grosse Pointe Woods, Mich., assignor to Copco Door Company, Warren, Mich.

Filed Dec. 17, 1980, Ser. No. 217,476
Int. Cl.[3] E06B *3/00*
U.S. Cl. 49—501 11 Claims

1. A door structure which accomodates hinges of a given length spaced at a wide variety of spacings on a door jamb, said door comprising:

a frame including at least one continuous hinge channel member having a major outer surface, a plurality of offset sections inboard of said major surface spaced along the length of said member, said offset sections being substantially longer than the length of said hinges and spanning the range of normally encountered locations of the hinges on the door jamb, front and rear skins connected to the frame, with edges of said skins being supported by the major surface of said member whereby segments of said skins in alignment with existing hinge locations may be



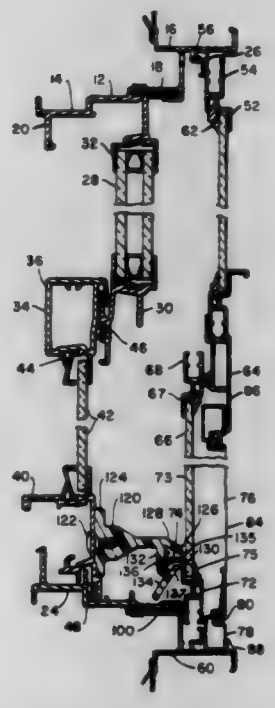
removed to expose selected portions of said offset sections for substantially flush mounting of the hinges.

4,344,257

WINDOW STRUCTURE

Richard N. Anderson, 1572 Oak Park Dr., Owensboro, Ky. 42301

Filed Jun. 21, 1979, Ser. No. 50,817
Int. Cl.[3] E06B *1/04*
U.S. Cl. 49—504 13 Claims



1. Thermal break window structure including a generally rectangular outer frame portion, a generally rectangular inner frame portion, and an insulating member positioned between the inner and outer frame portions and cooperable therewith for rigidly securing the frame portions together without contact between the frame portions, said insulating member having a cross section including an elongated straight central portion extending transversely of the plane of the window structure, said insulating member extending through the frame parallel to the plane of the window only in off set locations separated by the extent of the elongated central portion of the insulating member and defined by the frame portions and said insulating member including an H-shaped portion at both ends

of the central portion having opposite parallel parts in common with the central portion and the frame members have a cross section including a pair of parallel spaced parts, one of which is longer than the other, the longer of which parts extend on opposite sides of the central portion of the H-shaped cross section of the insulating member and between the parallel parts of the H-shaped portions of the insulating member at the inner ends thereof.

4,344,258

DEVICE FOR MOUNTING A DOOR LEAF IN A DOOR OPENING

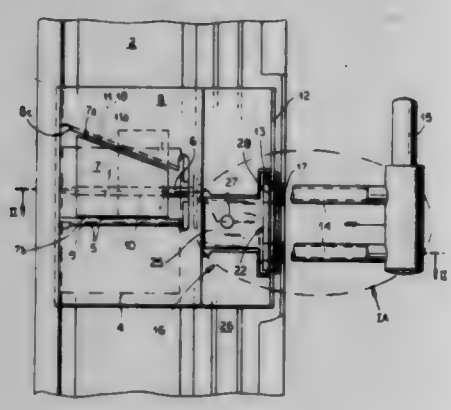
Günter Langenhorst, Bad Sassendorf, Fed. Rep. of Germany, assignor to Top-Element Bauelemente für Innenausbau & Raumgestaltung GmbH & Co. KG, Hamm, Fed. Rep. of Germany

Filed Jan. 6, 1981, Ser. No. 222,764

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1980, 3000454

Int. Cl.³ E06B *1/04*

U.S. Cl. 49—504 **10 Claims**



1. A door mounting device for a door leaf in a door opening of a wall having an edge turned toward said opening, said device comprising:

at least one mounting element on said edge having a clamping surface projecting transversely from said edge;

a profiled frame element enclosing said edge and said mounting element, said frame element being formed with a door rabbet;

a retainer disposed in said frame element in the region of said mounting element and formed with a counter-surface extending parallel to said clamping surface;

first clamping means in said frame element including a wedge displaceable relative to said retainer for clamping said clamping surface against said counter-surface, and a clamping screw traversing a wall of said rabbet, threaded directly into said wedge and rotatable to actuate said wedge, said retainer having an anchor flange extending transversely to said edge and provided with at least one recess;

a door-suspending member having at least one bolt passing through said frame element and said recess; and

second clamping means in said frame element operable by a further screw traversing a wall of said rabbet for locking said bolt.

4,344,259

ROCKER ARM AND PIN HOLDER ASSEMBLY FOR A LENS SURFACING MACHINE

Nestor E. Barolin, 39 Eight St., Hicksville, N.Y. 11801

Filed Jul. 21, 1980, Ser. No. 171,014

Int. Cl.³ B24B *13/02*

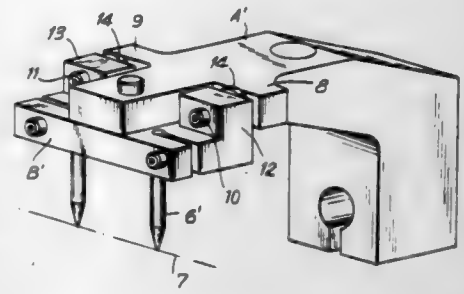
U.S. Cl. 51—216 LP **4 Claims**

1. In a rocker arm assembly for use in a lens grinding machine for producing toric lenses in which the rocker arm assembly includes a rocker arm that is movable relative to the lap axis of the lens grinding machine, the improvement comprising

said rocker arm having a planar projection with a flat face normally disposed substantially vertical and extending horizontally outward from the lateral sides thereof,

a support having a flat face normally disposed substantially vertical and extending horizontally in facing relationship with said flat faces of said rocker arm,

fastening means engaging said rocker arm and said support



for releasably maintaining at least the flat face of said support in substantial vertical facing with and to adjust the same in spaced relationship from the faces of said rocker arm and for adjustment of said support about an axis perpendicular to the plane of said rocker arm projection,

and a plurality of relatively spaced lens engaging means on said support.

4,344,260

METHOD FOR PRECISION SHAPING OF WAFER MATERIALS

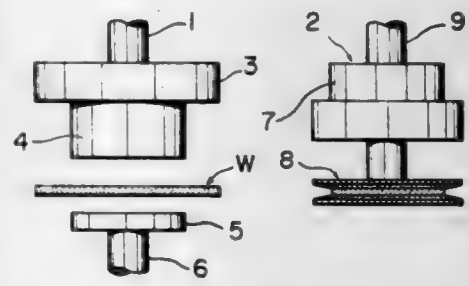
Kesami Ogiwara, Nagano, Japan, assignor to Nagano Electronics Industrial Co., Ltd. and Shin-Etsu Chemical Co., Ltd., both of, Japan

Filed Jul. 1, 1980, Ser. No. 165,191

Claims priority, application Japan, Jul. 13, 1979, 54-89146; Oct. 26, 1979, 54-138308

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—283 E **1 Claim**



1. A method for shaping a wafer material with accurate dimensions from a single crystal rod which comprises the steps of

(a) grinding the single crystal rod so that the rod has a diameter 0.5 to 1.5 mm. larger than the finished wafer material as a grinding margin,

(b) slicing the single crystal rod into margined wafers, and

(c) subjecting the margined wafer to contour grinding tracing a prototype having a cross section exactly in conformity with the wafer material to be finished.

4,344,261

SKYLIGHT

Kent A. Weisner, Orlando, and Lester L. Walls, Jr., Deltona, both of Fla., assignors to Kennedy Sky-Lites, Inc., Orlando, Fla.

Division of Ser. No. 12,822, Feb. 16, 1979, Pat. No. 4,278,414. This application Jul. 14, 1980, Ser. No. 168,536

Int. Cl.³ E04B *7/18*

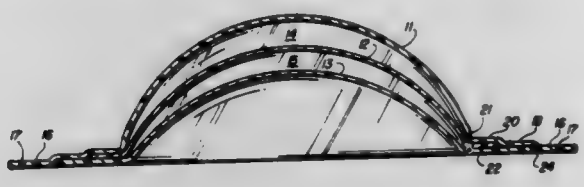
U.S. Cl. 52—200 **6 Claims**

1. A skylight comprising in combination:

a first dome having two step ledges around its perimeter and

a vertical portion adjacent one step extending substantially perpendicular to said step and connected to the central dome area;

a second dome having a perimeter sized to fit into one step formed in the perimeter of said first dome and adhesively attached thereto and having a central dome area extending into said first dome; and



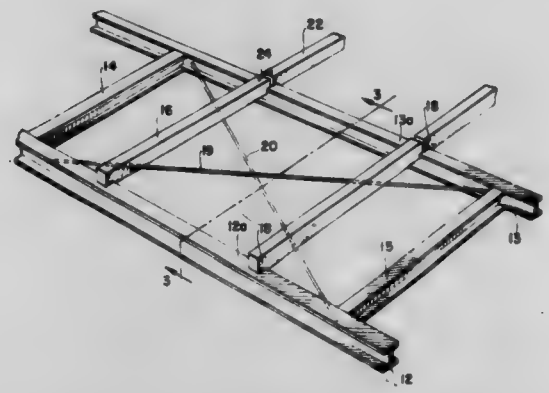
a third dome having a perimeter sized to fit a second step of said first dome and adhesively attached thereto and having a dome portion extending into said second dome to form a triple dome skylight having two insulated air spaces.

4,344,262

LONG SPAN STRUCTURAL FRAME

Herbert M. Berman, 300 E. 74th St., New York, N.Y. 10021, and Ira Hooper, 510 E. 23rd St., New York, N.Y. 10010

Continuation of Ser. No. 313,490, Dec. 8, 1972, abandoned. This application Aug. 12, 1976, Ser. No. 713,804
Int. Cl.³ E04C *3/02*
U.S. Cl. 52—227 **4 Claims**



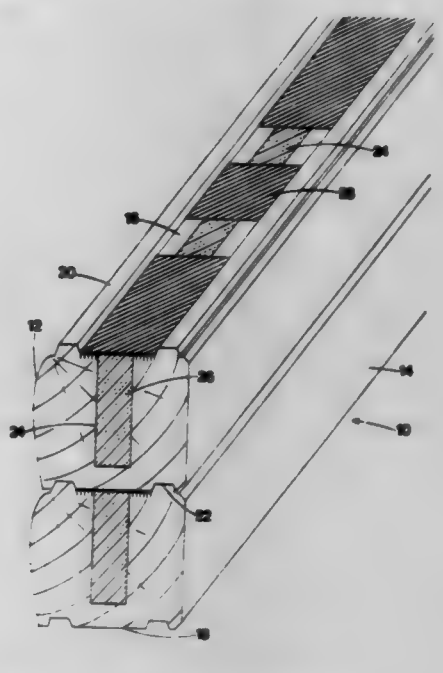
1. A stable building structure comprising a plurality of horizontally disposed, spaced, structural members, each of said structural members being in an elevated position and secured to base supports; a series of spaced parallel beams extending transversely between adjacent pairs of said structural members and connected thereto so as to form a plurality of bays across a portion only of said structure, at least one truss member extending diagonally across each of said bays and means to connect the distal ends of said truss members to said adjacent pair of said structural members so as to form horizontal trusses; a plurality of parallel concrete joists supported by and transversely extending between said structural members, said joists being spaced from each other and from said parallel beams; each end portion of said joists engaging a structural member and adjacent end portions of said joists being tied together across said structural members or bonded to said structural members, so as to form continuous tension or compression ties which extend horizontally from said horizontal trusses across said building structure, including that portion of said building structure in which said bays have not been formed.

4,344,263

BUILDING LOG WITH HIGH THERMAL INSULATION CHARACTERISTICS

Johann H. Farmont, 433 Golden Gate Ave., Belvedere, Calif. 94920

Filed Jul. 28, 1980, Ser. No. 172,522
Int. Cl.³ E04B *1/10*
U.S. Cl. 52—233 **4 Claims**



1. A wood log of substantial thickness;

said log having complementary top and bottom surfaces adapted to stack with complementary surfaces on other logs;

one of said surfaces including:

a pair of parallel tongues formed thereon to extend along the length thereof adjacent the edges thereof; and

a planar surface between said tongue;

the other of said surfaces including:

a pair of complementary parallel grooves formed therein to extend along the length thereof adjacent the edges thereof to receive the parallel tongues of an adjacent one of stacked logs; and

a planar surface between said tongues;

at least one vertical slot along the length of said log;

each slot opening into one of said top and bottom planar surfaces;

thermal insulation material in each of said slots;

said slots extending through the major portion of the top to bottom thickness of said log; and

at least one metal reinforcing plate nailed to, and extending substantially across, said one planar surface along the length thereof to span said vertical slot.

4,344,264

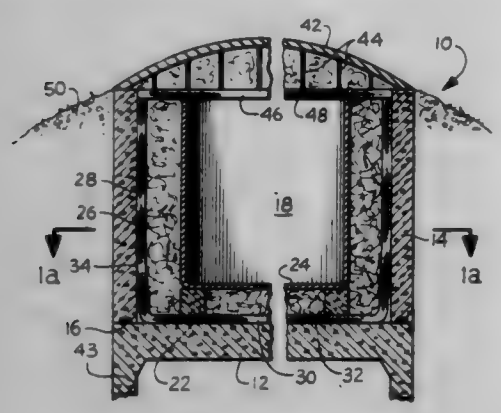
FLEXIBLE CORNER SEAL STRUCTURE FOR CRYOGENIC CONTAINER

Dale A. Smith, Newport Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 9, 1980, Ser. No. 157,789
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—247 **15 Claims**

1. In a cryogenic container comprising a concrete floor slab, a concrete wall moveably supported on said floor slab, insulation positioned within the container adjacent the floor slab and the concrete wall; and a metal liner positioned around the inner surface of said container adjacent the inner surface of the floor slab and said concrete wall and supporting said insulation, and forming an inner seal around the container; the improvement which comprises providing said liner with an inclined lower portion at a corner above said floor slab, and means connecting said inclined lower portion at its upper end to said concrete wall at a predetermined distance above said floor slab, and

forming a gap between said liner and said concrete wall at said corner, and permitting inward lateral motion of said concrete



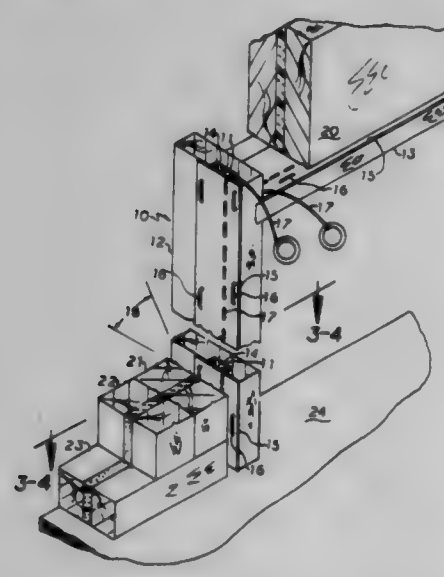
wall with respect to said floor slab at said corner, while permitting said metal liner and said insulation supported by said liner to flex and maintain a seal at said corner.

4,344,265

ENERGY CONSERVING BUILDING STRUCTURAL ELEMENTS NORMALLY CALLED WINDOW OR DOOR FRAMES

James D. Davidson, P.O. Box 1293, Pontiac, Mich. 48056

Filed Jul. 14, 1980, Ser. No. 168,594
Int. Cl.³ E02D *35/00*
U.S. Cl. 52—741 **6 Claims**



1. An improved energy conserving structural element normally used in combination with other structural components in a manner such that a relatively narrow air gap that should be thermally insulated is created between elements, said element comprising a structural member having thermal insulation means secured thereon the side therefore that will define the air gap, said insulation means comprising compressed expandable thermal insulation means having enveloping means retaining same in a compressed state, said enveloping retaining means being capable of being rendered inoperative so as to allow said insulation material to expand, said insulation material in its expanded state, having thickness to substantially fill said air gap,

wherein the improvement comprises:

means for recessing and enveloping said compressible expandable insulation into said structural elements outer periphery surface, said recess being used to substantially provide said envelope means;

means for maintaining said compressible expandable insulation in a compressed mode in said recess enveloping means; and

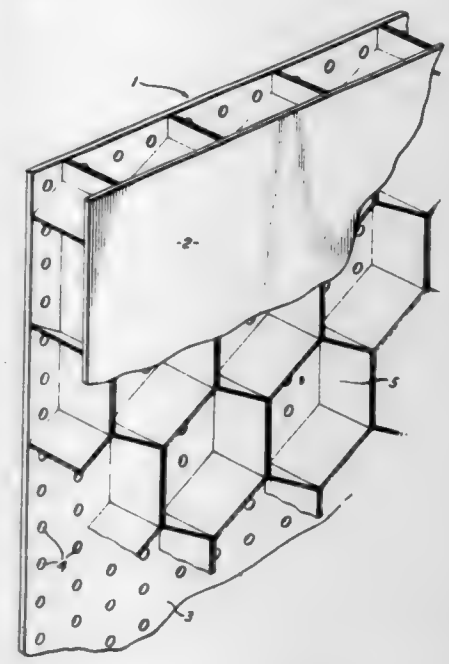
until said maintaining means is rendered inoperative.

4,344,266

COLLAPSIBLE STRUCTURE AND METHOD OF BUILDING USING SUCH A STRUCTURE

Paul D. Gray, Billericay, England, assignor to Magnex Limited, Douglas, Isle of Man

Continuation of Ser. No. 959,178, Nov. 9, 1978, abandoned. This application Aug. 15, 1980, Ser. No. 178,543
Int. Cl.³ B32B *3/12*
U.S. Cl. 52—742 **2 Claims**



1. A method of constructing a castable flooring atop subsoil subject to swelling when moistened comprising, providing a vertically collapsible composite board assembly including normally spaced apart upper and lower sheets having a separating structure of poor wet strength sandwiched therebetween, selecting said separating structure having a plurality of spaced apart components of sufficient initial dry strength to rigidly support said upper sheet in a manner spaced above said lower sheet and against the weight of a poured castable flooring during its setting period, said lower sheet allowing passage of moisture therethrough from said moistened subsoil to said spacing separating structure, laying said board assembly with said lower sheet over said subsoil, pouring a castable flooring atop said board assembly upper sheet whereby, following setting of said flooring, moisture from said subsoil penetrates said lower sheet causing disintegration and permanent collapse of said separating structure while allowing displacement of said lower sheet toward said upper sheet and into the space formerly occupied by at least a portion of said separating structure as said moistened subsoil swells upwardly.

4,344,267

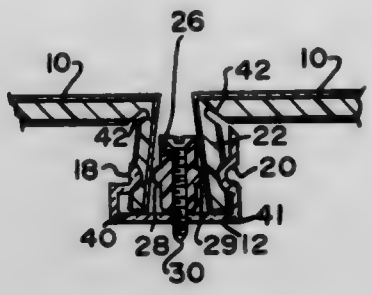
APPARATUS FOR JOINING WALL PANELS

Ronald D. Sukolics, St. Louis, Mo., assignor to Carl Dunmon & Associates, Inc., St. Louis, Mo.

Filed Apr. 10, 1980, Ser. No. 139,004
Int. Cl.³ E06B *3/54*
U.S. Cl. 52—762 **11 Claims**

1. An apparatus for joining panel members together comprising a channel having a substantially semi-cylindrical interlocking means extending from the inner walls of the sides into the channel for pivotally engaging a substantially semi-cylindrical interlocking means on the inner face of the turned down edges of panel members designed to be located side by side in said channel, insert means operable for insertion into said channel between the side-by-side edges of panels in said channel, and means protruding from the sides of said insert means

for wedging the edges of panel members into said interlocking means and allowing pivotal movement of edges of panel members positioned in said channel about said interlocking means thereby permitting thermal expansion of said panel members.

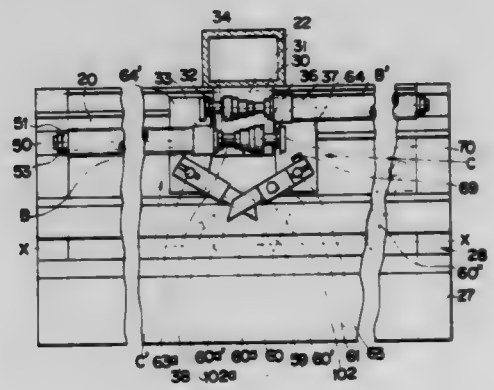


4,344,268

BAG SLITTING APPARATUS

Atsuyuki Wakamatsu, Shimizu, and Keisuke Tonooka, Shizuoka, both of Japan, assignors to Daiwa Can Company, Japan

Filed Oct. 23, 1980, Ser. No. 200,058
Claims priority, application Japan, Mar. 14, 1980, 55/33397
Int. Cl.³ B65B *69/00*
U.S. Cl. 53—384 **12 Claims**



1. Apparatus for opening an elongated bag enclosing an article, said apparatus comprising:

(a) bag support means including structure defining an elongated, horizontally extensive groove open at the top to dispose a portion of the wall of a supported bag thereabove;

(b) means for engaging such portion of the bag wall adjacent the middle of the bag and pulling the engaged wall portion in a direction transverse to the longitudinal axis of the bag so that the engaged wall portion extends in such transverse direction away from the article enclosed in the bag;

(c) two blades; and

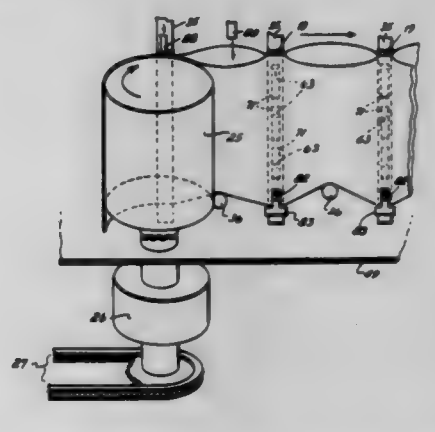
(d) blade movement means for forcing said blades through the wall of the bag adjacent the engaged wall portion thereof to puncture the bag and then moving said blades in opposite directions towards the ends of the bag to slit the wall of the bag, said blade movement means including a pair of carriages connected to said structure for movement relative thereto in direction generally parallel to said groove an disposed on the same side of said groove, means for moving each such carriage between a centered position in which such carriage is adjacent the middle of the groove and a displaced position in which such carriage is adjacent an end of said groove, said displaced positions being adjacent respective opposite ends of said groove, each of said blades being movably mounted to one of said carriages and disposed above said groove, and blade extension means for moving each of said blades relative to the associated one of said carriages between a retracted position in which such blade is remote from the vertical longitudinal medial plane of said groove and an extended position in which such blade is adjacent such medial plane, said blades being generally flat and disposed in horizontally extensive planes, each of said blades being pivotally mounted to the associated one of said carriages for movement relative thereto about a generally vertical blade pivot axis, said blade extension means being operative to swing each of said blades about the associated blade pivot axis.

4,344,269

POUCH FORMING AND FILLING MECHANISM WITH PROVISION FOR INCREASING THE CAPACITY OF THE POUCHES

Paul E. Dieterlen, Covington, Ky., and Harold T. Benner, Jr., Cincinnati, Ohio, assignors to R. A. Jones & Co. Inc., Covington, Ky.

Division of Ser. No. 914,426, Jun. 12, 1978, Pat. No. 4,232,504.
This application Jul. 18, 1980, Ser. No. 169,944
Int. Cl.³ B65B *1/06, 1/24*
U.S. Cl. 53—459 **2 Claims**



1. The method of filling a flexible pouch which has sealed lateral edges, a closed bottom and an open top, comprising the steps of,

supporting the lateral edges of the pouch in a generally vertical attitude,

reducing the width of the pouch by moving the lateral edges toward each other,

applying a force to the bottom of the pouch to form a tuck therein,

maintaining said force against the bottom of said pouch to hold the tuck in the pouch,

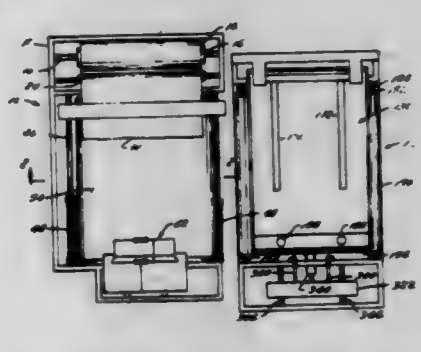
and filling the pouch while said force is maintained against the bottom of said pouch in the bottom of the pouch.

4,344,270

METHOD AND APPARATUS FOR PACKAGING COMMODITIES

Sture Andersson, Boraas, Sweden, assignor to Tex Innovation AB, Vastra Frolunda, Sweden

Continuation of Ser. No. 73,340, Sep. 7, 1979, abandoned. This application Jun. 18, 1981, Ser. No. 274,738
Claims priority, application Canada, Sep. 11, 1978, 311069
Int. Cl.³ B65B *9/14, 31/04*
U.S. Cl. 53—511 **4 Claims**



1. Apparatus for packaging and sealing a commodity in a bag

comprising: a packaging unit and a vacuum packaging and sealing unit; the packaging unit having a support bed, the support bed comprising an endless belt; means on one side of the belt for storing a supply of tubing; a commodity loading funnel fixed on the other side of the belt, reciprocating means for opening up the leading end of the tubing and for drawing a length of the tubing in one direction across the belt from the one side to the other side and over the funnel so that a commodity can be loaded into the tubing on the belt through the funnel, the reciprocating means having means thereon to cut and seal the length of tubing at the one side of the belt to form an open-mouth bag, means for moving the belt in a direction transverse to the one direction to laterally transfer the commodity loaded bag from the packaging unit to the vacuum packaging and sealing unit, the vacuum packaging and sealing unit having a support bed to receive the commodity loaded bag, means on the packaging and sealing unit movable in one direction for use in opening up the mouth of the bag, separate means movable in a second direction to enter the open mouth of the bag and to tension it, and means to vacuum seal the bag.

4,344,271

HEAD ASSEMBLY FOR A COTTON HARVESTER

Francis E. Schlueter, and Brian E. Kent, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 26, 1981, Ser. No. 266,875
Int. Cl.[3] A01D *55/26, 46/08*
U.S. Cl. 56—13.6 **25 Claims**



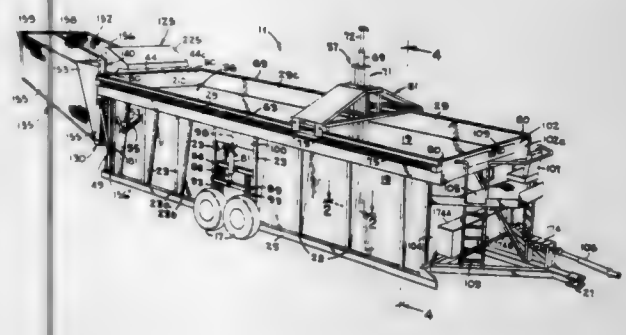
1. In a framed crop harvester adapted for forward movement over a field of row crops, a transverse harvesting head assembly comprising: a main cross auger frame supported by the harvester frame and having first and second transversely spaced ends; first and second bearings supported by the main cross auger frame adjacent the first and second ends, respectively; a main cross auger journalled for rotation about a generally horizontal axis by the bearings between the first and second ends; a transverse extension frame selectively attachable to and removable from the second end of the main cross auger frame; means for releasably securing the extension frame to the second end and extending the width of the harvesting head assembly beyond the width of the main cross auger frame; a third bearing supported by the extension frame adjacent its outermost end; a transverse auger extension; means for journalling the auger extension in the second and third bearings, when the extension frame is secured to the second end, for rotation with the main cross auger; and row harvesting means selectively attachable to, and transversely adjustable with respect to the main cross auger frame and extension frame, wherein the main frame includes row unit support structure and the row harvesting means comprises a plurality of individual vertically adjustable row units slidably supported by the unit support structure for transverse adjustment to accommodate different row spacings, and wherein the extension frame includes complementary support means for forming an extension of the unit support structure, when the extension frame is attached, and permitting the row units to be slid transversely between the main cross auger frame and the extension frame.

4,344,272

COMBINED COTTON MODULE BUILDER AND SEED COTTON TRASH EXTRACTOR

Andrew J. Gaudette; Dave A. Dana, both of Livermore, and Donald Haney, San Jose, all of Calif., assignors to Cotton Machinery Company, Inc., Livermore, Calif.

Filed Sep. 4, 1980, Ser. No. 184,078
Int. Cl.[3] A01D *61/00*
U.S. Cl. 56—16.6 **27 Claims**



1. In seed cotton processing equipment, a lifting conveyor comprising:

(a) an upper sprocket;

(b) a lower sprocket disposed below said upper sprocket in a generally vertical plane;

(c) endless conveyor means trained around said upper sprocket and said lower sprocket to be advanced thereby;

(d) means for advancing said endless conveyor means by at least one of said sprockets;

(e) a plurality of transversely extending members mounted in succession on said endless conveyor means for movement therewith; and

(h) a plurality of outwardly directed lifting members projecting from each of said transverse members for lifting seed cotton to be carried by said lifting conveyor; and

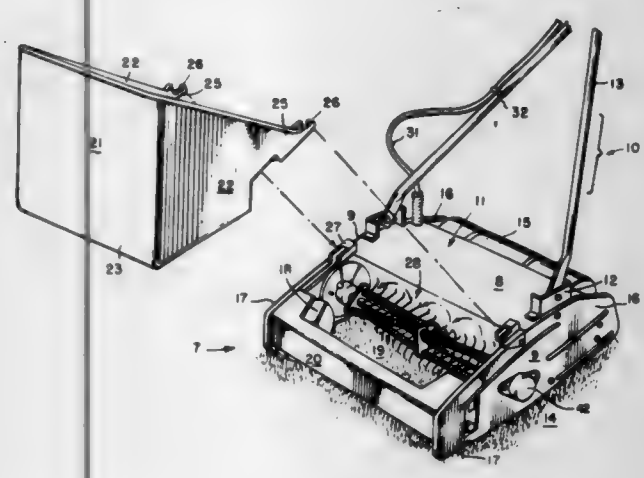
(i) a hopper in which seed cotton is deposited, said hopper including angularly disposed walls directing the seed cotton deposited therein toward said lifting conveyor.

4,344,273

LAWN SCARIFIER AND RAKE

Alan V. Jobling, Reading, and David J. Crisp, London, both of England, assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 22, 1980, Ser. No. 180,463
Int. Cl.[3] A01D *35/12*
U.S. Cl. 56—16.7 **24 Claims**



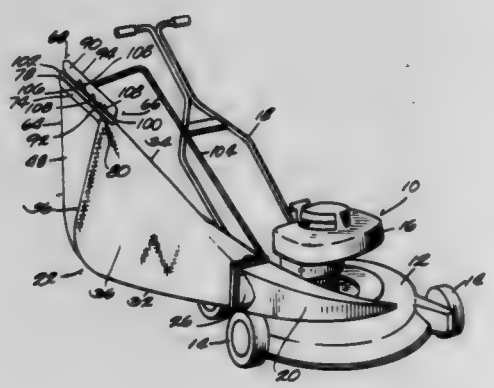
1. A lawn device, comprising:

a carriage supported for movement over a lawn;
a handle connected to the carriage and by which the device is manipulated over the lawn by an operator;
a motor supported by the carriage;
a tine assembly mounted in said carriage for rotation therein by said motor about an axis transverse to the direction of travel of the device over the lawn;
said tine assembly comprising a central axle, a plurality of rods supported by and radially spaced from said axle, and a plurality of tine members carried by each rod and defining a cylindrical configuration in use;
said tine members each comprising a portion encircling its respective rod and a tine extending outwardly from said portion, whereby each said tine is deflectable relative to its respective rod; and
said rods being symmetrically and helically positioned about said axle, whereby in use the helix arrangement contributes to a more constant torque resistance to the rotation of said tine assembly by causing the tines along each individual rod to successively engage the lawn.

4,344,274
GRASS CATCHER BAG

Richard A. Heismann, Knoxville, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 16, 1980, Ser. No. 197,484
Int. Cl.³ B65D *33/16*
U.S. Cl. 56—202 **10 Claims**

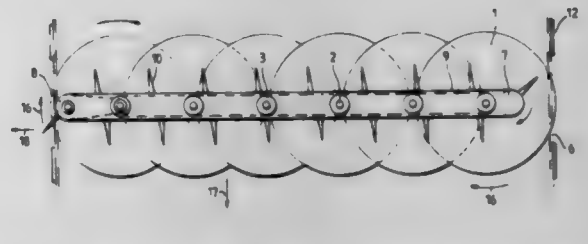


1. A grass collection bag comprising an elongated main body portion having a first access opening adapted for connection to a grass discharge outlet of a lawn mower and means defining a generally elongated second access opening having a pair of adjacently spaced first and second side edges extending at an angle to the length of the bag and having corresponding first and second ends, a first end panel having a first edge portion connection along a first fold line to said first side edge of said main body portion and a second edge portion extending outwardly from said main body portion and from adjacent to said first end of said first side edge, said first end panel being foldable upon itself along a second fold line extending from said first end of said first said edge to bring said second edge portion into a position overlying said first edge portion, a second end panel having a first edge portion connected along a third fold line to said second side edge of said main body portion and a second edge portion extending outwardly from said main body portion and from adjacent to said first end of said second side edge, said second end panel beiang foldable upon itself along a forth fold line extending from said first end of said second side edge to bring said second edge portion thereof into a position overlying said first edge portion thereof, means joining said second edge portions of said first and second end panels along a folding junction leaving an outer end remote from said first ends of said first and second side edges, and closure means on said main body portion, on said first end panel, and on said second end panel for folding each of said first and second end panels upon itself to bring said junction of said second edge portions of said first and second end panels into a position overlying and closing said second access opening and with said outer end of said junction located in adjacent relation to said second ends of said first and second side edges.

4,344,275
MUSHROOM HARVESTING MACHINE

Wilhelmus G. M. Kateman, 5, Hoogriebroekseweg, 5088 AA Oirlo, Netherlands

Filed Jan. 8, 1981, Ser. No. 223,323
Claims priority, application Belgium, Jan. 11, 1980, 881104
Int. Cl.³ A01D *45/00*
U.S. Cl. 56—327 R **5 Claims**

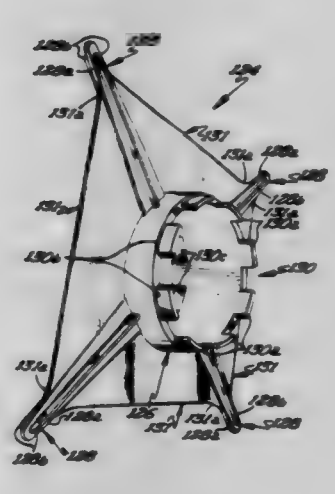


1. Mushroom harvesting machine, characterized in that it is provided with rotary knives which are positioned in stepped formation sequentially one below the other and with an upright conveyor belt provided with carriers, and wherein said upright conveyor belt is provided above said rotary knives and disposed substantially in line therewith, and said carriers are disposed spaced above and substantially upright from the rotary knives so that said carriers and the stepped rotary knives can transport the mushrooms.

4,344,276
GRAIN PICKUP

Lloyd P. Sund, Newburg, N. Dak. 58762

Continuation-in-part of Ser. No. 127,093, Mar. 4, 1980, abandoned. This application May 8, 1981, Ser. No. 261,982
Int. Cl.³ A01D *89/00*
U.S. Cl. 56—364 **3 Claims**



1. In a grain pickup for picking up windrowed grain for conveyance into a combine, the improvement comprising:
a driven rotating cylinder located transversely at the front of said pickup;
a plurality of plastic pickup teeth modules mounted on said cylinder, each of said modules comprising:
a cylindrical portion having two ends and a bore sized to snugly fit over said cylinder;
a plurality of integrally molded pickup teeth projecting radially outwardly from said cylindrical portion with said cylindrical portion having a thickness relatively thin compared to the diameter of said driven of said driven cylinder, each of said cylindrical portion ends having interlocking castellations thereon; and
a plurality of integrally molded web portions extending radially outward from said cylindrical portion between

said pickup teeth and in the plane thereof said web portions being thinner than said teeth and terminating radially inwardly of the outward ends of said teeth; and

means for preventing movement of said modules relative to said cylinder.

4,344,277

METHOD AND APPARATUS FOR CONNECTING AN UPPER THREAD WITH A LOWER THREAD

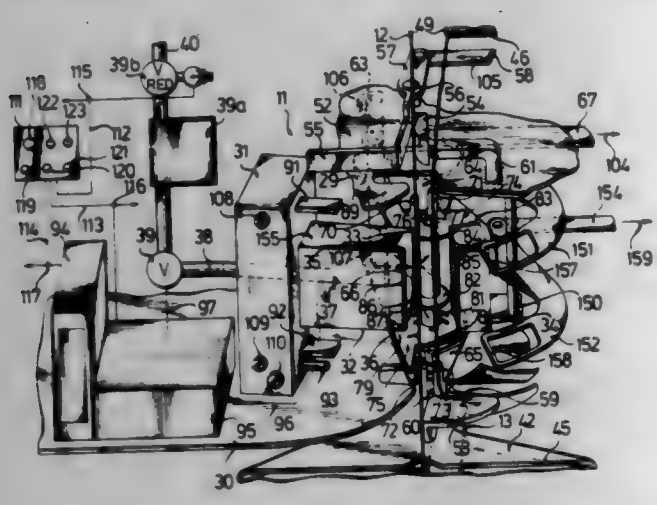
Joachim Rohner; Heinz Zumfeld, and Reinhard Mauries, all of Mönchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchengladbach, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,219

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922694

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **25 Claims**



1. Method for connecting an upper thread to a lower thread, which comprises inserting the threads into a longitudinal groove formed in a chamber for connecting the threads with a thread feeder being movable from a thread receiving position to a thread delivery position, splicing the threads together in the chamber using compressed air acting on the threads from the side, securely holding the threads up to the application of the compressed air when the threads are inserted into the chamber uncrossed, securely holding the threads which are inserted into the chamber during the splicing in the immediate vicinity of the chamber when the threads are crossed during movement of the thread feeder, elastically pressing the threads against the outer surface of the chamber and wrapping the threads around rims of the groove formed in the chamber at an angle of approximately 90°.

4,344,278

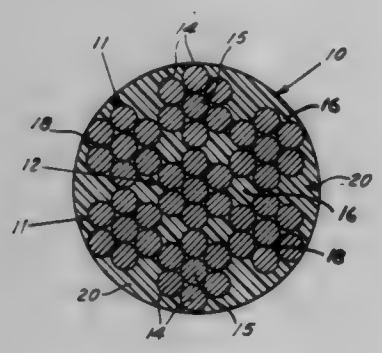
LUBRICATED WIRE ROPE

Warren E. Jamison, Evergreen, and James J. McVeigh, Lakewood, both of Colo., assignors to Projected Lubricants, Inc., Denver, Colo.

Filed May 30, 1980, Ser. No. 155,156

Int. Cl.³ D07B *1/10, 1/16*

U.S. Cl. 57—221 **6 Claims**



1. A wire rope comprising a plurality of strands of wire rope elements wound around a core, and a lubricant, characterized in that said lubricant comprises a polymeric lubricating medium having a carrier and a lubricant incorporated therein such that said lubricant is expelled from said medium when compressive forces are applied to said medium by said strands of wire rope during use of said rope, and said lubricant is drawn back into said medium when said compressive forces are removed from said medium.

4,344,279

HOLLOW STRINGS CONTAINING GELATINOUS OIL

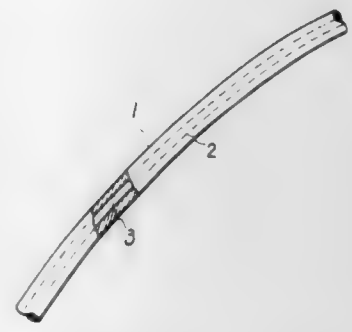
Tamanosuke Ohara, 254 Yura Yuracho, Sumoto-city, Hyogo-Prefecture, Japan

Filed Jul. 9, 1980, Ser. No. 167,214

Claims priority, application Japan, Jul. 13, 1979, 54/89628

Int. Cl.³ D02G *3/36;* D01H *13/30;* D02G *3/40, 3/44*

U.S. Cl. 57—232 **4 Claims**



1. A hollow string comprising a hollow core containing gelatinous oil and a wrapping thread helically wound thereabout, said hollow core being a hollow cavity through the central portion of said string, substantially along the whole length thereof and said gelatinous oil being a cyclic hydrocarbon of the formula C_nH_{2n-2} and being of high viscosity with a melting point of 30° C. or higher and fluidity at a temperature of 50° C. or higher, said gelatinous oil exhibiting a gel-like consistency at normal temperature.

4,344,280

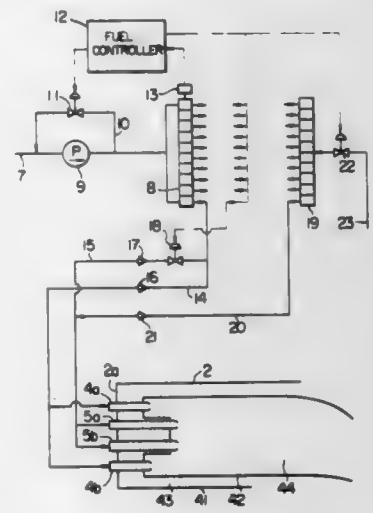
COMBUSTOR OF GAS TURBINE

Yoshimitsu Minakawa; Yoji Ishibashi; Isao Sato; Yoshihiro Uchiyama, and Kazuyoshi Takahashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1980, Ser. No. 114,970

Int. Cl.³ F23R *3/34;* F02C *7/22*

U.S. Cl. 60—39.09 F **14 Claims**



1. A combuster of a gas turbine comprising:

fuel distributing and supplying means including:

a plurality of fuel nozzles provided to said combustor; and

a plurality of fuel supply systems connected to said plurality of fuel nozzles, each of said fuel supply systems supply

fuel to one fuel nozzle or a set of fuel nozzles, the number of the fuel supply systems for handing fuel being increased or reduced depending on the volume of fuel,

said combustor being one of a plurality of combustors of said gas turbine comprising a fuel distributor for distributing fuel in equal volume to all the combustors, and wherein said plurality of fuel supply systems of said fuel distributing and supplying means of each combustor are connected to said distributor so that the fuel supply systems of all the combustors can be actuated simultaneously, and

wherein said fuel distributing and supplying means further includes a purging air supply system for supplying air to the fuel nozzles and the fuel supply system which is handling no fuel, and further comprising

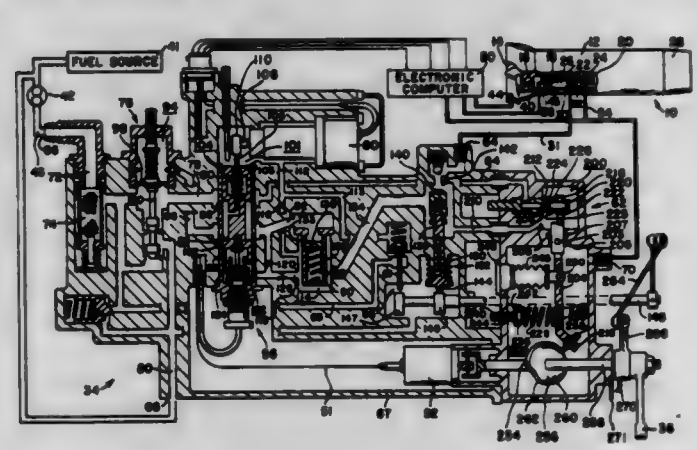
purging air pressure control means provided to said purging air supply system which is handling purging air to follow up the pressure in the fuel supply system which is handling fuel.

4,344,281

MANUALLY OPERATED METERING VALVE FOR A FUEL CONTROL

Robert W. Schuster, and Gerald C. Mittendorf, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 7, 1980, Ser. No. 137,659
Int. Cl.³ F02C 9/08
U.S. Cl. 60—39.28 R **14 Claims**



1. In a fuel control having an operational metering valve through which fuel is scheduled from a source to an engine in response to an electrical input signal and a transfer valve activated by an operator during a back-up operational condition in the absence of said electrical input signal to manually schedule fuel to the engine, the improvement comprising:

a back-up metering valve having a housing with a first chamber and a second chamber therein, said first chamber having a first port connected to said source of fuel and a second port connected to said engine, said second chamber having a third port connected to said engine for receiving an operational signal corresponding to the discharge pressure of a compressor in the engine; and

lever means responsive to said operational signal for limiting the flow of fuel through the first chamber to the engine as a function of compressor discharge to prevent surging during acceleration in response to a manually applied operational input.

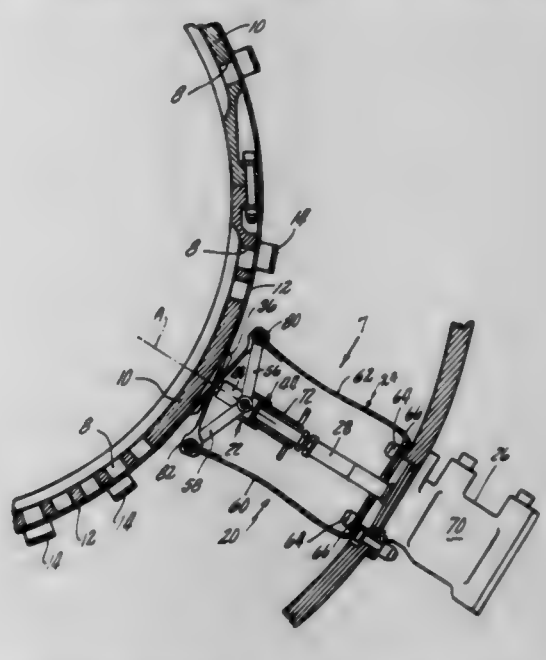
4,344,282

COMPRESSOR BLEED SYSTEM

Larry E. Anders, Palm Springs, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 16, 1980, Ser. No. 217,071
Int. Cl.³ F02C 3/06
U.S. Cl. 60—226 R **4 Claims**

1. A fan engine having a core engine with a fan duct thereabout, said core engine having a compressor section with a compressor housing, a plurality of compressor bleed ports located in said compressor housing around a circumference thereof, a seal strap positioned around said compressor section aligned with said bleed ports, said seal strap being movable between an open position where it is spaced from said bleed ports and a closed position where it is placed against said bleed ports, an actuating means for said seal strap being positioned between said compressor housing and said fan duct, one end of said seal strap being forked, the other end of said seal strap



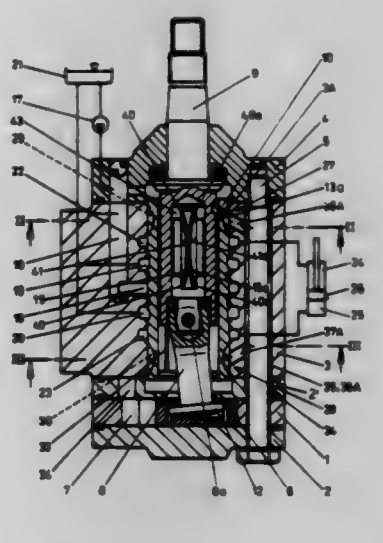
being a single member sized to fit between said forked end, a U-shaped flexible member, means connecting the bottom of said U-shaped flexible member to the interior of said fan duct, one leg of said U-shaped flexible member having its end attached to the forked end of said seal strap, the other leg of said U-shaped flexible member having its end attached to the single member end of said seal strap, said U-shaped flexible member biasing said seal strap to its open position, actuating means for moving said seal strap to its closed position.

4,344,283

HYDROSTATIC AUXILIARY POWER STEERING

Karl-Heinz Liebert, Schwabisch Gmund; Werner Tischer, Bobingen, and Christoph Deppenbrock, Schwabisch Gmund, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed May 7, 1980, Ser. No. 147,601
Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2919051
Int. Cl.³ B62D 5/08; F15B 13/04
U.S. Cl. 60—384 **9 Claims**



1. In a device of the kind described having a housing with flow passage means controlled by a valve means comprising a

valve sleeve, and a steering spindle coaxial with the valve sleeve, including means operative for axially shifting said valve sleeve responsive to spindle rotation bidirectionally for flow control to pressurize and exhaust chambers of a servomotor, and further including a metering pump articulated to said steering spindle; and having actuator means for return to neutral position of said valve sleeve wherein said metering pump initially holds said actuator means against return movement of said valve sleeve permitting rotation of said steering spindle and said valve sleeve responsive to rotation of said steering spindle to effect rotational drive of said metering pump by said steering spindle along with continued rotation of said valve sleeve without further axial shift;

the improvement which comprises:

said actuator means comprising a pair of contiguous arched leaf springs having lengthwise longitudinal curvatures disposed back to back, and comprising means whereby said leaf springs are coupled at one end with said steering spindle and the other end being connected with said metering pump, said valve sleeve being held stationary thereby during initial rotational movement of said steering spindle in axially shifting said valve sleeve for flow control; wherein the curvatures of said leaf springs are compressively flattened against each other by rotation of said steering spindle; said leaf springs being disposed lengthwise longitudinally of the axis of said steering spindle and within said steering spindle.

4,344,284

HYDRAULIC AUXILIARY POWER STEERING

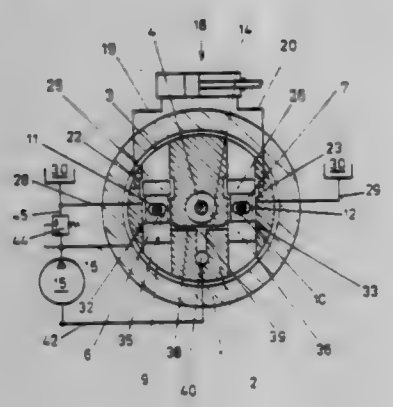
Armin Lang, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Jan. 22, 1980, Ser. No. 114,389

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2903988

Int. Cl.³ B62D *5/08;* F15B *13/04*

U.S. Cl. 60—433 **10 Claims**



1. In a hydraulic power steering system of the kind described having a suction regulatable pump, a tank, a servomotor and actuatable inlet and exhaust control valve means, including respective flow passage means, all operable for controlling pressure and return flow for pressurizing and exhausting said servomotor;

wherein said flow passage means comprises inlet flow feed means communicable between pump and said tank;

the improvement wherein said inlet and exhaust control valve means has elements movable therewith controlling inlet flow to the suction side of said pump whereby said pump effects no output for pressurizing said servomotor until said valve means is actuated for steering and wherein continuous increase of pump inlet flow is effected during a steering actuation of said valve means.

4,344,285

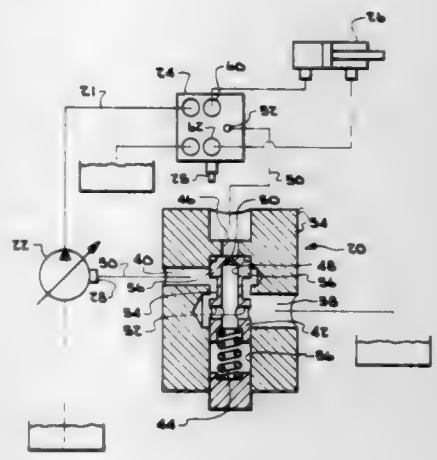
SIGNAL BLEED-DOWN VALVE

William A. Ridge, Inman, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Feb. 4, 1980, Ser. No. 118,254

Int. Cl.³ F04B *49/08;* F15B *13/04*

U.S. Cl. 60—452 **6 Claims**



1. A load responsive system including a variable displacement pressure flow compensated pump supplying a directional control valve which in turn supplies one or more motors, the compensator of the pump is controlled by a signal through a sensing line connecting the signal port of the control valve with the compensator, the improvement comprising a signal bleed-down valve positioned in said sensing line between the compensator and the signal port comprising:

a valve body having a bore therein with the control valve sensing line connected to the upper end of the bore;

a drain cavity intersecting said bore;

valve spool means positioned in the bore; spring-biasing means urging the spool means against signal line pressure in the upper end of the bore toward a first position connecting the pump compensator to the drain cavity and blocking signal pressure to said compensator; and the spool means having a second position blocking the compensator from drain and communicating signal pressure to the compensator; and

a fixed orifice in the valve spool means passing pilot flow from the signal port to said drain cavity and a variable orifice in the valve spool means downstream of the fixed orifice which maintains a constant flow across the fixed orifice regardless of signal pressure.

4,344,286

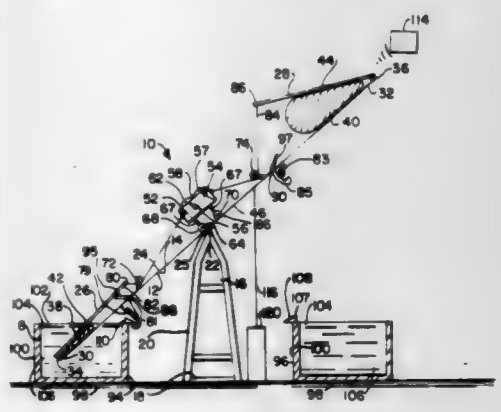
ENERGY CONVERTER MACHINE

Norman S. Warner, Apartado 118, Heredia, Costa Rica

Filed Apr. 10, 1980, Ser. No. 139,057

Int. Cl.³ F03C *5/00*

U.S. Cl. 60—531 **6 Claims**



1. An energy convertor machine which comprises:

(a) a see-saw device having a stand with an elongated member centered balanced on said stand;
(b) two sets of elastomeric bag members, each said set having at least one of said elastomeric bag members;
(c) a liquid having a low vaporization temperature, said liquid being disposed in each of said elastomeric bag member, one said bag members affixed to one end of said elongated member, the other said bag members affixed to another end of said elongated member;
(d) a means for selectively independently heating and cooling each said set of said elastomeric bag members thereby causing expansion of said elastomeric bag members when heated and causing contraction of said elastomeric bag members when cooled, said means for heating and cooling including a pair of tank members, each of said pair of tank members including a fluid disposed therewithin;
(e) said heating of one of said sets of said elastomeric bag members occurring simultaneously with said cooling of said other set of said elastomeric bag members; and
(f) means for pivoting said elongated member, said pivoting means being activated by said expansion and contraction of said elastomeric bag members, said means for pivoting including a movable object movably disposed on said elongated member, said movable object movable between two said bag members on an upper surface of said elongated member, means for controlling the movement of said movable object of said elongated member, said controlling means being in communication with said cooling and heating means, said ends of said elongated member alternately moving upwardly and downwardly as said movable object moves between said bag members on said elongated member, and an elongated rod member affixed to said elongated member, a dolly member having a body with a chamber therein, a plurality of bearing members affixed to said body, at least two axle rods journalled for rotation through said bearing members, a plurality of wheel members, said wheel members being affixed onto said axle members, a track assembly having at least two rails, said track assembly affixed on said upper surface of said elongated member, said wheels of said dolly member movably disposed on said rails of said track assembly, a pair of elongated elements, one said elongated element hinged to one end of said elongated member and engaging an upper surface of one of said bag members, the other said elongated element hinged to the other end of said elongated member and engaging an upper surface of the other bag member, a pair of pulley elements mounted on said upper surface of said elongated member, one of such pulley elements disposed between said first bag member and one end of said track assembly, the other said pulley element being disposed between said second bag member and said other end of said track assembly, a pair of pulley members mounted on such upper surface of said elongated member, one of said pulley members disposed between said first pulley element and said one end of said track assembly, the other said pulley member being disposed between said second pulley element and said other end of said track assembly.

4,344,287

VOLUME COMPENSATION FOR HYDRAULIC CIRCUITS

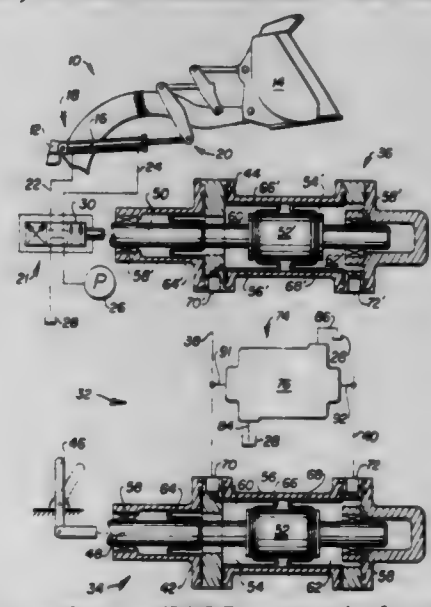
Ernest C. Sindelar, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 99,135, filed Aug. 23, 1979, as PCT/US79/06645, § 102(e) date Aug. 23, 1979, § 371 date Aug. 23, 1979, published Mar. 5, 1981 as WO 81/00599, now abandoned. This application Aug. 28, 1980, Ser. No. 182,293

Int. Cl.³ F15B 7/10

U.S. Cl. 60—572 **7 Claims**

1. A hydraulic circuit (32), comprising:
a tank (28);
first, second, third and fourth pathways (38,40,84,86), said third and fourth fluid pathways (84,86) being positioned in fluid communication with said tank (28) and being positionable in fluid communication with said first and second fluid pathways, respectively;
first means (34) for receiving an input signal and controllably passing a predetermined fluid pressure signal through one of said fluid pathways (38,40) in response to said input signal;
second means (36) for receiving said fluid signal in said one of said fluid pathways (38,40) and automatically, controllably delivering an output signal corresponding to said input signal in response to said fluid pressure signal; and
a control valve (76) having flow control means (98) including first and second check valves (100,102) each having a chamber (104,106), said flow control means automatically, controllably positioning said first and second fluid pathways (38,40) in fluid communication with said third and



fourth fluid pathways (84,86), respectively, through the related one of said chambers (104,106) of said first and second check valves (100,102), respectively, in response to said first and second fluid pathways (38,40) being free from said fluid pressure signal and automatically, controllably blocking said second and fourth fluid pathways (40,86) from fluid communication one with the other through their related one of the chambers (104,106) in response to said fluid pressure signal passing in said second fluid pathway (40) and acting on said flow control means (98) and automatically, controllably blocking the first and third fluid pathways (38,84) from fluid communication one with the other through their related one of the chambers (106,104) in response to said fluid pressure signal passing in said first fluid pathway (38) and acting on said flow control means (98).

4,344,288

INTERNAL COMBUSTION ENGINE

William C. Heaton, 150 E. Ponce de Leon Ave., Decatur, Ga. 30030

Filed Jun. 9, 1980, Ser. No. 157,517

Int. Cl.³ F02B 71/06

U.S. Cl. 60—595 **8 Claims**

1. An internal combustion engine comprising:
a frame;
a piston housing mounted on said frame, said piston housing defining a first primary cylinder and a second primary cylinder therein parallel to one another;
a first double acting piston means and a second double acting piston means slidably positioned within said first and second primary cylinders, respectively; each of said piston means including:
a primary double acting piston slidably movable within said primary piston cylinder and defining a secondary piston cylinder therein;
a secondary double acting piston slidably movable within

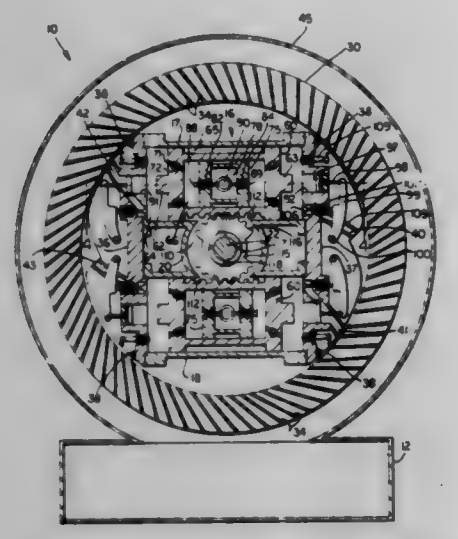
said secondary piston cylinder parallel to the movement of said primary piston;

means for conducting vaporized fuel into said secondary piston cylinder, said fuel being compressed by said secondary piston;

means for conducting said pressurized fuel from said secondary piston cylinder into said primary piston cylinder; and

means for igniting fuel in said primary piston cylinder;

means interconnecting said first and second piston means for



limiting the sliding movement thereof within said first and second primary cylinders to recriprocation at the same speed in opposite directions; and

a turbine surrounding said primary cylinders and mounted on said frame for rotation about an axis at right angles to the plane of said primary cylinders, said turbine including a plurality of vanes;

said housing defining exhaust openings therein alternately directing exhaust gases from each of the ends of each of said primary cylinders to impinge upon the vanes of said turbine and cause rotation thereof.

4,344,289

TWO-STAGE SUPERCHARGING APPARATUS

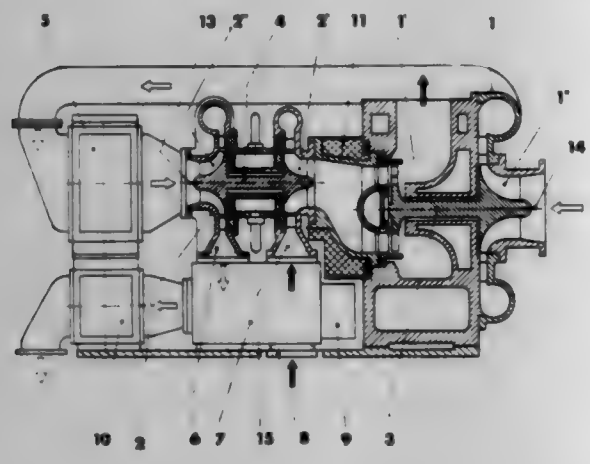
Georg Curiel, Wettingen, and Moustafa M. Naguib, Nussbaumen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Feb. 11, 1980, Ser. No. 120,482

Claims priority, application Switzerland, Feb. 19, 1979, 1609/79

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—612 **13 Claims**



1. A supercharger for an internal combustion engine comprising:

a high-pressure compressor and turbine arranged on a first axis, the high-pressure turbine being directly driven by exhaust gas from an internal combustion engine;

a low-pressure compressor and turbine arranged on a second axis, the low-pressure turbine being driven by exhaust from the high-pressure turbine;

the low-pressure compressor and turbine has greater exterior dimensions than the high-pressure compressor and turbine; and

the first axis being arranged radially offset from the second axis such that the exterior dimensions of the high-pressure compressor and turbine will be substantially within an extension of the exterior dimensions of the low-pressure compressor and turbine.

4,344,290

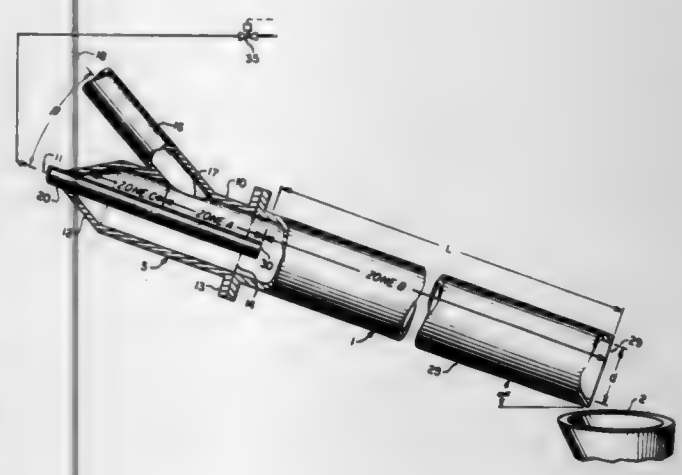
PROCESS AND APPARATUS FOR IN-LINE SLUSH MAKING FOR CONCRETE COOLING

John F. Boyle, Emmaus; Barry J. Halper, Allentown; James C. Link, Bethlehem, and John C. Mullane, Jr., Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 24, 1981, Ser. No. 295,939

Int. Cl.³ F17C *11/00*

U.S. Cl. 62—48 **12 Claims**



1. In an apparatus for producing a flowable liquid-solid mixture comprising a continuous liquid phase mixed with a discrete, discontinuous solid phase of frozen particles of the liquid, which apparatus comprises a manifold having a body portion having at one end thereof a sealed head and at the other end an opening, first inlet adjacent to the sealed head to receive a liquid, a second inlet in sealing engagement with the sealed head and having its longitudinal axis substantially aligned with that of said body portion for introducing a cryogen within said manifold downstream of said first inlet; and a hollow lance having its longitudinal axis substantially aligned with that of said body portion and having an open end connected to the opening of said body portion and an outlet at its other end to discharge the liquid-solid mixture,

the improvement which comprises said first inlet being connected to said body portion so that its longitudinal axis is at an acute angle with respect to the longitudinal axis of said second inlet.

4,344,291

CRYOGENIC CABINET FREEZER

Lewis Tyree, Jr., 145 Briarwood Ave. N., Oak Brook, Ill. 60521; James R. Missig, Joliet, and George D. Rhoades, LaGrange, both of Ill., assignors to Liquid Carbonic Corporation, Chicago, Ill., by said James R. Missing and George D. Rhoades

Filed Apr. 28, 1980, Ser. No. 144,594

Int. Cl.³ F25D *25/00*

U.S. Cl. 62—62 **16 Claims**

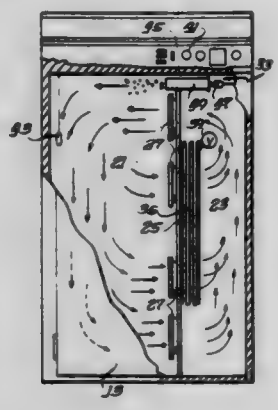
1. A method of refrigerating product within a first vertically extended cooling region, which method comprises

employing fan means to establish a primary circulation of gas throughout said first region,

expanding liquid CO_2 through orifice means having inducer

means with a substantially completely open flared entrance located in generally surrounding relationship to said orifice means so that the expanding liquid creates CO_2 snow and vapor and induces a secondary circulation of gas within said first region that effects rapid sublimation of the snow created plus distribution of the cold vapor throughout said cabinet,

said fan means being located so as to cause a flow of gas



through said inducer means even when liquid CO_2 is not being expanded,

sensing the temperature within said cabinet,

modulating the continuous flow of liquid CO_2 through said orifice means in response to changes sensed in the temperature, and

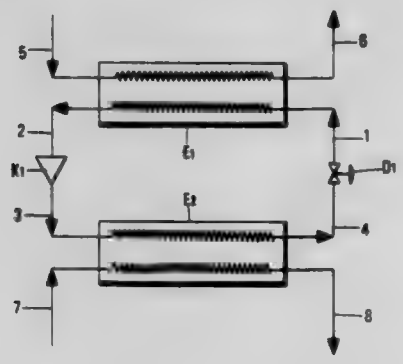
removing CO_2 vapor from said cabinet, whereby efficient cooling of said product is accomplished without build-up of CO_2 snow at the bottom of said first region.

4,344,292

PROCESS FOR HEAT PRODUCTION BY MEANS OF A HEAT PUMP OPERATED WITH A SPECIFIC MIXTURE OF FLUIDS AS THE WORKING AGENT

Alexandre Rojey, Garches, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 21, 1981, Ser. No. 226,984
Claims priority, application France, Jan. 21, 1980, 80 01371
Int. Cl.³ F25B *00/00*
U.S. Cl. 62—114 **17 Claims**



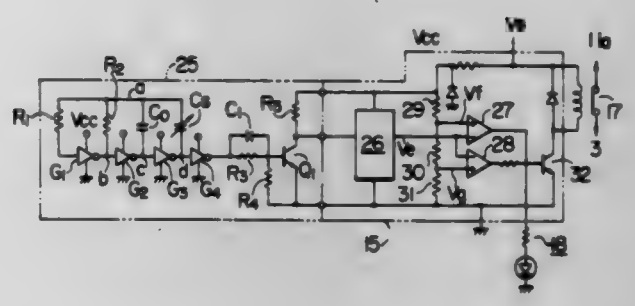
1. In a process for producing heat by means of a heat pump, comprising the steps of (a) circulating a vaporizable working fluid under superatmospheric pressure in counter-current heat exchange with an external fluid which acts as a heat source to progressively increase the temperature of the working fluid to cause progressive vaporization thereof, and simultaneously progressively cooling the external fluid, (b) compressing the vaporized working fluid, (c) circulating the compressed working fluid in counter-current heat exchange with a heating medium for simultaneously heating said medium and condensing the compressed working fluid, and (d) expanding the condensed working fluid and recycling it to step (a), the improvement wherein said process is conducted with a vaporizable working fluid which is a non-azeotrope forming mixture of at least two distinct constituents, including a major basic constituent and at least a second constituent making up 0.5 to 20% by molar concentration of the mixture, and wherein the critical temperature of the major basic constituent differs from that of the at least a second constituent by at least 20° C.

4,344,293

APPARATUS RESPONSIVE TO THE AMOUNT OF REFRIGERANT FLOW IN A REFRIGERANT FLOW IN A REFRIGERANT CIRCULATING SYSTEM

Toshitaka Fujiwara, Toyota; Teiichi Nabeta; Sigeyuki Akita, both of Okazaki, and Junji Kitagawa, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Feb. 23, 1981, Ser. No. 237,262
Claims priority, application Japan, Feb. 25, 1980, 55-23012
Int. Cl.³ F25B *49/00*; G01R *27/26*
U.S. Cl. 62—126 **5 Claims**



1. An apparatus responsive to the amount of flow of a refrigerant in a refrigerant circulating system, said apparatus comprising:

sensing capacitor means including a pair of electrodes and disposed in a portion of a refrigerant passage of said refrigerant circulating system;

a resistance-capacitance oscillator circuit including said sensing capacitor means as a displacement capacitor, said resistance-capacitance oscillator circuit forming a ring oscillator including a plurality of inverters, a plurality of resistors and first and second capacitors, said first capacitor forming said sensing capacitor means and said second capacitor having a predetermined capacitance value being biased in opposite directions to each other by input and output voltages of at least one of said inverters; and

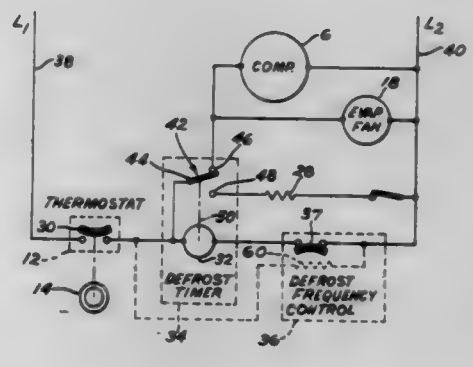
output means responsive to oscillation frequencies of said resistance-capacitance oscillator circuit.

4,344,294

THERMAL DELAY DEMAND DEFROST SYSTEM

Robert B. Gelbard, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jul. 31, 1980, Ser. No. 174,054
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—155 **8 Claims**



1. A defrost control system including a timing circuit for a refrigerator of the type having a cabinet containing feezer and fresh food storage compartments separated by a partition;

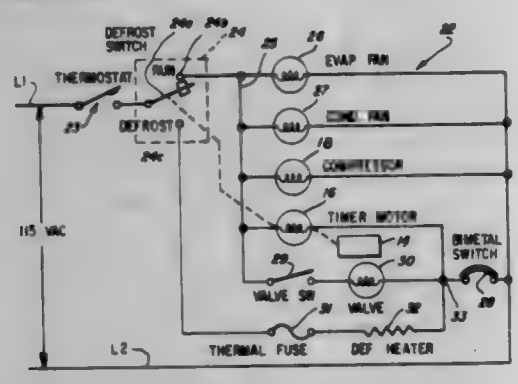
an inlet and outlet passageway in said partition;
an evaporator chamber associated with said freezer compartment including an evaporator;
air supply means circulating freezing compartment air over said evaporator and for directing a portion of said air through said fresh food compartment between said inlet and outlet passageways;
a refrigerator compressor;
a defrost heater;
a thermostatic switch responsive to the temperature in said fresh food compartment for energizing said compressor;
a defrost timing motor connected in series with said thermostatic switch;
a defrost switch means in series with said thermostatic switch being operable by said defrost timer after a normal period of timer operation from a first switch position to complete a circuit to said compressor to a second switch position to complete a circuit to said defrost heater;
a defrost frequency control means arranged in the path of air passing through said partition outlet for sensing the temperature of air passing therethrough, including a temperature responsive switch means in said defrost frequency control being operable when said thermostatic switch is closed and said air supply means is circulating relatively warm fresh food compartment air through said outlet to energize said defrost timer, and being inoperable when said thermostatic switch is open and said air supply means is inoperative to open as colder freezer air back flows through said outlet to delay energization of said defrost timer motor during initial operation of said fan means to alter said normal period of timer operation until said temperature responsive switch once again senses the relatively warm fresh food compartment air passing through said outlet.

4,344,295

CONTROL FOR TIMED OPERATION OF ICE MAKER

William J. Linstromberg, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 22, 1981, Ser. No. 227,264
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—155 **19 Claims**



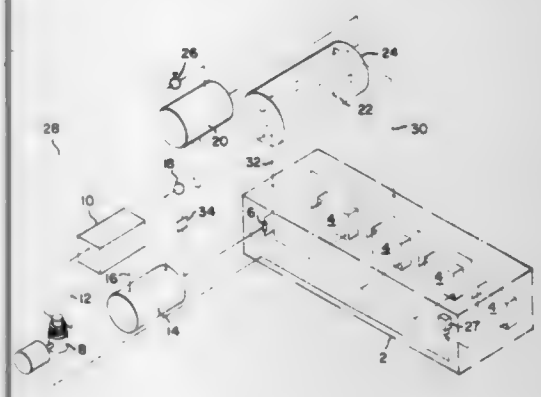
18. In a refrigeration apparatus having an ice making mechanism and common timing means for controlling the initiation of defrosting operations and the operation of said ice making mechanism, an improved control circuit comprising:
a source of electrical power having first and second terminals;
a defrost switch having a moving contact receiving power from said first power source terminal and movable between a run contact and a defrost contact;
refrigeration means connected between said run contact and said second power source terminal;
a timer motor operatively connected to said movable defrost switch contact and arranged to control the cyclic operation of said ice making mechanism, said timer motor having a first terminal connected to said run contact and having a second terminal;
a normally closed temperature responsive switch arranged to open at a temperature indicative of the completion of a defrosting operation and being connected between said second timer motor terminal and said second power source terminal; and,
a defrost heater connected between said defrost contact and said second timer motor terminal.

4,344,296

EFFICIENT SECOND STAGE COOLING SYSTEM

Jack W. Staples, 655 Keys Rd., Yakima, Wash. 98901, and James X. Norris, 507 Harris Ave., Selah, Wash. 98942

Continuation of Ser. No. 926,852, Jul. 21, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,151
Int. Cl.³ F25B *7/00*; F25D *17/00*
U.S. Cl. 62—175 **7 Claims**



1. A two stage cooling system for use in conjunction with a closed food storage room, comprising:
a first or primary cooling stage located entirely outside the room to be cooled and including a compressor, condenser and evaporator, all functionally interconnected, said first stage containing a caustic but efficient refrigerant at a predetermined pressure,
temperature control means for the first stage, said control means located within the room such that the control of the primary circuit is responsive solely to the condition created by the secondary circuit,
a second cooling stage having its condenser and in thermal communication with the evaporator of the first stage within the heat exchanger, said second stage having at least one evaporator within the room and containing an inert refrigerant at a pressure higher than that of the primary stage whereby any leakage within the heat exchanger will result in a flow of refrigerant from the second to the first stage, thereby preventing any of the refrigerant from the first stage from entering the food storage room, enabling use of the caustic refrigerant in the first stage and any leakage within the room itself will not be harmful to the product.

4,344,297

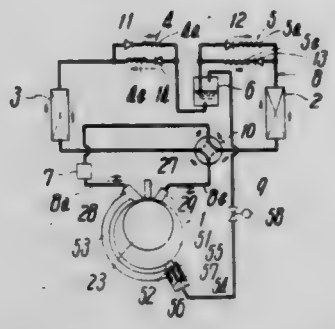
REFRIGERATION SYSTEM

Fumito Ueno, Shiga, and Kunio Fukuhara, Kusatsu, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 23, 1981, Ser. No. 246,857
Claims priority, application Japan, Mar. 20, 1980, 55-41044; Mar. 12, 1981, 56-36207
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—196 C **3 Claims**

1. A refrigeration system comprising a rotary compressor for compressing a low pressure refrigerant gas to a high pressure; a refrigeration pipe line system having a fluid input and fluid output respectively connected with a discharge port and a suction port of said compressor and further having therein a pair of heat exchangers; a pair of expansion mechanisms; a gas-liquid separator provided at an intermediate position between said expansion mechanisms; and a gas injection passage channel extending from a gas zone at said gas-liquid separator

and connecting with an injection pressure port of said compressor; said compressor comprising a rotor and a cylinder block which has a cylinder chamber housing therein said rotor, said suction port and said discharge port being open at said cylinder chamber, and said injection pressure port opening at a pumping chamber between said suction port and said discharge port, said cylinder block being provided with a valve chamber communicating with said injection pressure port and with a by-pass passage channel extending from said valve chamber to a suction port side of said chamber, said valve chamber having a control valve for opening and closing a passage channel



extending from said injection pressure port to said by-pass passage channel, a spring for biasing said control valve in the direction of being always open, and a back chamber at the rear side of said control valve, said control valve having a communicating aperture through which said back chamber communicates with said injection pressure port to permit the injection of an injection pressure gas from said injection pressure port to said pumping chamber, said gas injection passage channel communicating with said back chamber and having at an intermediate portion thereof an open-close valve which opens and closes said gas injection passage channel.

4,344,298

ICE CUBE FORMING TRAY FOR ICE MAKING MACHINE

John E. Biemiller, 1 Black Oak La., Westminster, Md. 21157

Filed Sep. 24, 1980, Ser. No. 190,204
Int. Cl.[3] F25C *1/06*
U.S. Cl. 62—347 20 Claims



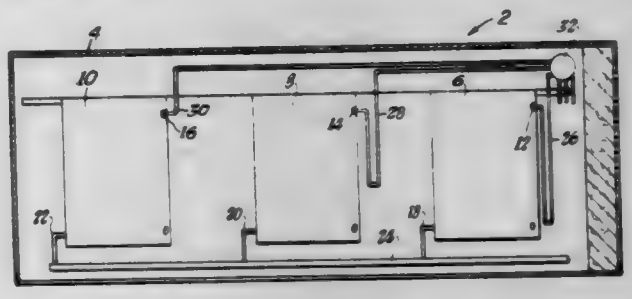
1. An ice cube forming tray for an ice making machine comprising a plurality of members each formed to provide a plurality of aligned openings with alternating openings facing in opposite directions, first plate means located between adjacent members to provide first side walls, second plate means located at opposite outer sides of said plurality of members to provide second side walls, and a plurality of refrigerant-receiving evaporator tubes passing through said first and second plate means and being located in and forming the bottoms of said openings to provide direct engagement with water in said openings.

4,344,299

TRANSPORTABLE COMPARTMENT REFRIGERATION PANEL SYSTEM AND METHOD OF INSTALLING

Latzer John B., 1010 E. Cypress Dr., Pompano Beach, Fla. 33060

Filed Aug. 5, 1980, Ser. No. 156,567
Int. Cl.[3] F25D *19/02*
U.S. Cl. 62—448 3 Claims



1. A refrigeration system for conversion of a transportable shipping container into a transportable refrigeratable container including a compressor, an expansion valve which receives compressed coolant from said compressor through a compressor output conduit and distributes the coolant to one or more refrigeration panels through one or more refrigeration panel inlet conduits and a compressor input conduit connected to each said refrigeration panel outlet at a predetermined point along its surface, each said refrigeration panel comprising:

a protective liner means for protecting an internal refrigeration conduit and for connecting with said refrigeration conduit as a heat exchanger;

an internal refrigeration conduit connected to said protective liner for heat exchange;

a means for connecting said internal refrigeration conduit to said protective liner for bonding said refrigeration conduit to said protective liner and for increasing the heat exchange contact surface area between said refrigeration conduit and said protective liner;

an insulation layer means fitted between the surface of said protective liner and the interior surface of a container wall for encapsulating and insulating said refrigeration conduit;

a means for bonding said insulation layer to said protective liner for securing said protective liner, refrigeration conduit and insulation layer together into a unified self-contained panel;

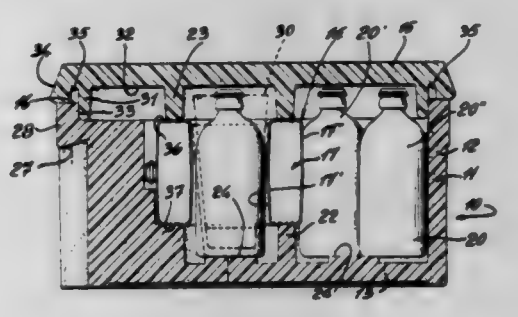
a means for attaching said refrigeration panel to an interior wall of said refrigeration compartment at a predetermined location.

4,344,300

CHILLERWELL COOLER

Frank Taylor, 9415 Central St., LaSalle, Quebec, Canada H8R 2K4

Filed Aug. 25, 1980, Ser. No. 180,852
Int. Cl.[3] F25D *3/08*
U.S. Cl. 62—457 12 Claims



1. A cooler enclosure comprising a hollow base member having thermal insulating properties and defined by a continuous side wall, a bottom wall and an open top end; a lid engageable over said open top end and also having thermal insulating

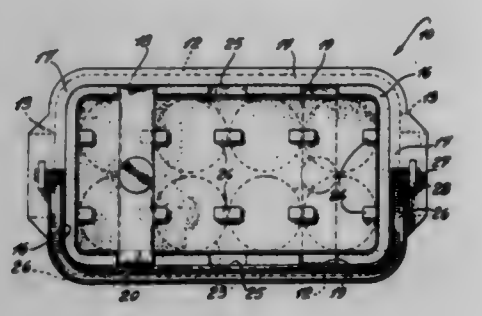
properties, a cooling container disposable in said base member for cooling air therein, said cooling container having a continuous outer and inner side wall, an inner cooling well intermediate said inner side wall for receiving one or more beverage containers therein, and one or more outer cooling compartments in said base member adjacent said outer wall of said cooling container.

4,344,301

BEVERAGE COOLER CONSTRUCTION

Frank Taylor, 9415 Central St., LaSalle, Quebec, Canada H8R 2K4

Filed Aug. 25, 1980, Ser. No. 180,853
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—457 **10 Claims**



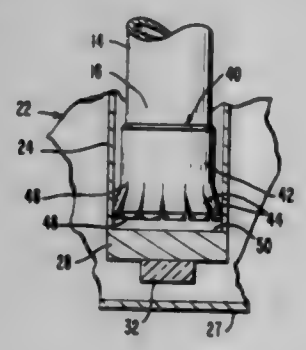
1. A portable beverage cooler comprising a hollow body having a bottom wall, opposed side walls and an open end; a lid for closing said open end, said hollow body and lid being formed of a material having thermal insulating properties, engagement means in opposed ones of a pair of said side walls for vertically supporting a coolant container spaced adjacent a respective one of said other two opposed side walls of said body and in an upper portion of said body above said bottom wall whereby a plurality of beverage containers may be placed in a lower level portion of said body with said coolant containers held thereabove and defining between them an upper level portion for containment of further beverage containers resting on said containers in said lower level portion, such disposition of said beverage containers providing for convection of cooled air by said coolant containers to all said beverage containers to maintain them at substantially the same temperature during a given period of time.

4,344,302

THERMAL COUPLING STRUCTURE FOR CRYOGENIC REFRIGERATION

Harold M. Jarrett, Jr., Los Angeles, and Thomas P. Cotter, Cypress, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 8, 1981, Ser. No. 271,746
Int. Cl.³ F25D *19/00*
U.S. Cl. 62—514 R **11 Claims**



1. A thermal coupling structure for thermal interconnection between a cryogenic cold finger having a side wall and the inner wall of a dewar surrounding the cold finger, said thermal coupling structure comprising:

a collar thermally engaged around said cold finger on the side wall thereof for mechanical support thereby and for thermal connection therewith, said collar being engaged on said spring finger by structure selected from the group consisting of adhesive, solder and interference fit;

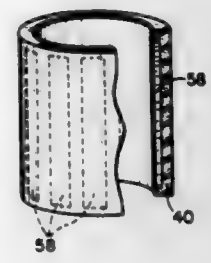
a plurality of spring fingers mounted on said collar and in thermal connection therewith, said spring fingers extending outward from said collar to resiliently engage upon the inner wall of the dewar and away from the end wall of the dewar surrounding the cold finger so that heat is transferred from the inner wall of the dewar through said spring fingers and through said collar to the side wall of said cold finger.

4,344,303

BEVERAGE CONTAINER COOLER

C. Brantley Kelly, Jr., 2615 Elk Grove Rd., Carrollton, Tex. 75006

Filed Dec. 1, 1980, Ser. No. 212,074
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—530 **8 Claims**



1. A flexible cooling device capable of conforming to irregular shaped surfaces comprising:

an elastic insulating layer having a cooling surface;

a plurality of discrete sealed cavities spaced from each other with sufficient portions of the elastic layer between the spaced cavities to provide sufficient flexibility to allow the cooling surface to conform to irregular shaped surfaces and imbedded in the insulating layer adjacent the cooling surface; and

a cooling fluid for freezing within the cavities.

4,344,304

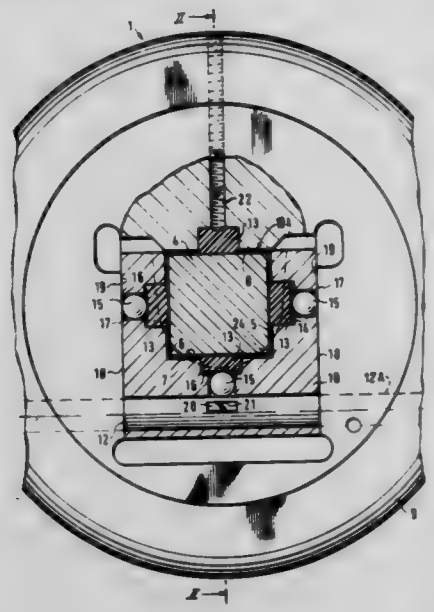
COUPLING FOR MANDRELS OR THE LIKE

Hans Eiche, Lörrach, Fed. Rep. of Germany, assignor to Kunz Maschinen- u. Apparatebau GmbH, Lorrach-Hauingen, Fed. Rep. of Germany

Filed Nov. 28, 1979, Ser. No. 97,963
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1978, 2852510
Int. Cl.³ F16D *3/58*
U.S. Cl. 464—85 **48 Claims**

1. A coupling for separably connecting a mandrel having a multi-facetted end portion of polygonal cross-sectional outline with a rotary torque-transmitting component, comprising a socket rotatable with the torque-transmitting component, said socket having a cavity for receiving the end portion of the mandrel with at least some clearance, and said socket further having internal surfaces which bound said cavity and are complementary to the facets of the end portion of the mandrel, said socket also having a portion which is movable between an operative and an inoperative position in which the end portion of the mandrel is respectively confined in and removable from said cavity; means for compensating for the clearance of the end portion of the mandrel in said cavity, said compensating means including at least one cushioning element disposed between one of said internal surfaces and the corresponding facet of the end portion of the mandrel in said cavity, and at least a portion of said cushioning element being movable between an extended position in which said cushioning element

extends beyond the respective internal surface of said socket and a retracted position; and means for maintaining said cushioning element in said extended position when said movable portion of said socket is in said operative position.



4,344,305

TORQUE SHAFT COUPLING

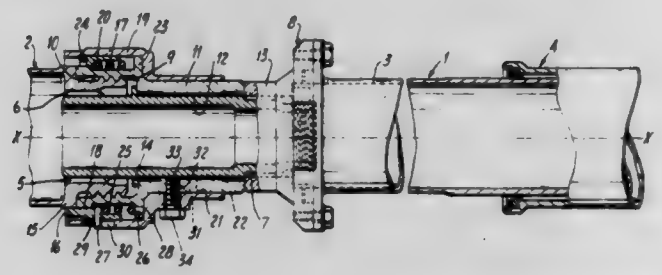
Frederick H. Holmes, Blackpool, England, assignor to British Aerospace, Weybridge, England

Filed Mar. 14, 1980, Ser. No. 130,338

Claims priority, application United Kingdom, Mar. 22, 1979, 7910091

Int. Cl.³ F16D *3/06*

U.S. Cl. 464—169 **8 Claims**



1. Coupling means for two coaxial torque transmitting shafts including:

torque transmitting joint means capable of sliding axial movement into and out of a torque transmitting condition, relatively rotatable means for effecting said sliding axial movement of said joint means upon relative rotation of said rotatable means,

means for preventing said rotational movement, said preventing means being axially movable into and out of a locking condition wherein, when in said locking condition, rotatable movement of said relatively rotatable means is prevented,

detent means for preventing inadvertent axial movement of said relatively rotatable means from the said locked condition,

said coupling means further including a housing member capable of both rotational and axial movement, said housing member being operatively associated with said detent means such that limited rotational movement of said housing member places said detent means into a condition in which axial movement of said housing member is allowed or prevented, with said means for preventing said rotational movement so that axial movement of said housing member axially moves said means for preventing said rotational movement into or out of said locking condition, and with said relatively rotatable means for effecting said sliding axial movement such that, when said means for preventing said rotational movement is out of the locking condition, rotation of said housing member effects the drawing of said joint means into or out of the torque transmitting condition.

4,344,306

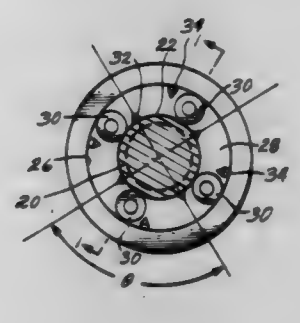
OVERLOAD CLUTCH

Manning Citron, 1895 Warwick Rd., San Marino, Calif. 91108

Filed Jun. 30, 1980, Ser. No. 164,690

Int. Cl.³ F16D *7/02*

U.S. Cl. 464—34 **5 Claims**



1. An overload clutch or the like, comprising:

a rotatable drive member, a rotating driven member coaxial with the drive member, said members forming an annular chamber having concentric inner and outer cylindrical surfaces which are rotated respectively by the drive and driven members about their common axis, and a plurality of cylindrical rollers of elastomeric material in said annular chamber between said inner and outer cylindrical surfaces, both members including angularly spaced radial teeth projecting into the annular chamber from said cylindrical surfaces a distance less than half the radial distance between said surfaces, each of the rollers being positioned between a pair of teeth projecting into the annular chamber respectively from the two members, the arcuate spacing between adjacent teeth projecting from one of said members being slightly different from the arcuate spacing of the opposing teeth projecting from the other member, whereby the rollers positioned between adjacent pairs of teeth are in a different state of compression when transmitting torque.

4,344,307

THREAD CONTROL MEANS IN A TEXTILE MACHINE

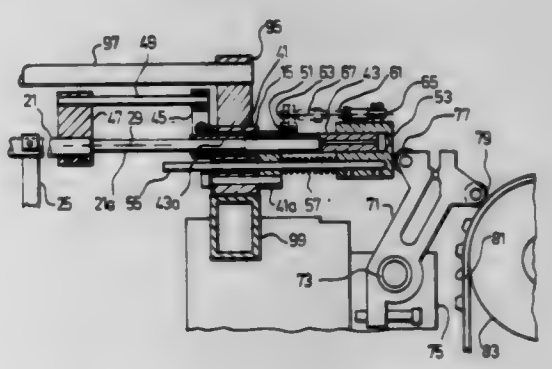
Robert R. Bucher, and Felix Riner, both of Frick, Switzerland, assignors to Textilma AG, Switzerland

Filed Jul. 11, 1980, Ser. No. 168,662

Claims priority, application Switzerland, Jul. 12, 1979, 6497/79

Int. Cl.³ D04B *23/06*

U.S. Cl. 66—84 R **18 Claims**



1. In a machine for producing textile material, a thread control means comprising thread guide device mounted for pivotation about a pivot axis, a crank operatively connected to said thread guide means to be pivotable therewith about said pivot axis but restrained against movement parallel to said axis,

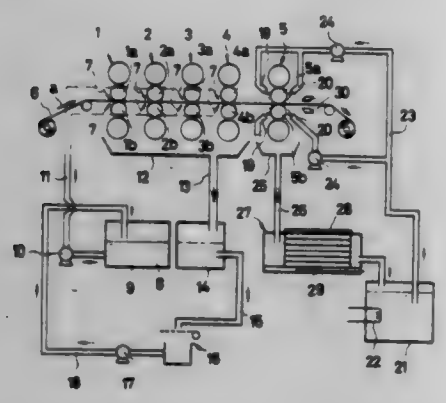
drive transmission means mounted for reciprocating motion in a plane parallel to said pivot axis, and connecting means so connecting said drive transmission means to said crank as to convert said reciprocating motion of said drive transmission means into oscillatory pivotation of said crank and thereby of said thread guide means about said pivot axis, said connecting means comprising a link element, a first pivot joint connecting said link element to said crank and a second pivot joint connecting said link element to said drive transmission means, said pivot joints being arranged to permit pivotation of said link element relative to said crank and drive transmission means in three dimensions and being disposed on a straight line which extends at an inclination relative to said axis.

4,344,308

METHOD FOR COLD ROLLING AND CLEANING STEEL PLATES

Shoji Shimada, Kamakura; Sakae Sonoda, Yokohama, and Kimio Yokoyama, Kawasaki, all of Japan, assignors to Nihon Parkerizing Co., Ltd., Japan

Filed Jul. 23, 1980, Ser. No. 171,397
Claims priority, application Japan, Jul. 25, 1979, 54-94556
Int. Cl.³ B21B *45/02, 45/06*
U.S. Cl. 72—39 **7 Claims**



1. In a method of cold rolling and cleaning metal strip characterized in that a pressurized cleaning solution is sprayed on both opposite planar surfaces of a metal strip immediately before and after at least a final rolling step, wherein the improvement comprises maintaining the relationship between the temperature and the pressure of said cleaning solution in accordance with the inequality;

$$(T)^3 \times P > 3.5 \times 10^5,$$

wherein T is the temperature of said cleaning solution in °C., and P is the pressure of said cleaning solution in kg/cm².

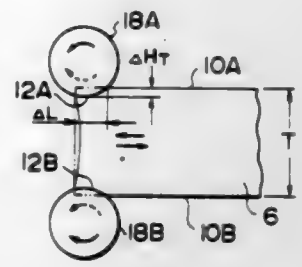
4,344,309

PROCESS FOR PREVENTING GROWTH OF FISHTAILS DURING SLABBING

Minoru Matsuzaki, Chiba, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan

Continuation-in-part of Ser. No. 953,170, Oct. 20, 1978, abandoned. This application Sep. 12, 1980, Ser. No. 186,750
Int. Cl.³ B21B *1/00*
U.S. Cl. 72—199 **4 Claims**

1. A process for preventing growth of fishtails during slabbing of a steel ingot effected by a reversible rolling mill, including a step of forming recesses at least on a pair of opposite surfaces at least at either the top or bottom of said steel ingot by use of rolling rolls, wherein said process further includes a method of forming recesses in the thicknesswise and widthwise directions, and the ratio between the widthwise reduction value and the thicknesswise reduction value for forming said recesses is regulated to 0.40~0.65 in a region where the side profile of the material due to the thicknesswise reduction presents a double barrelling and the value in a region where



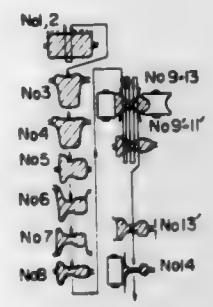
said side profile presents a single barrelling is regulated to 0.3 or less.

4,344,310

METHOD OF ROLLING RAILROAD-RAILS AND STEELS OF SIMILAR SHAPE BY UNIVERSAL ROLLING

Haruo Kozono, and Hiroshi Higashinaka, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 25, 1980, Ser. No. 172,443
Claims priority, application Japan, Aug. 3, 1979, 54/98663
Int. Cl.³ B21B *13/10*
U.S. Cl. 72—225 **2 Claims**



1. A method for multiple pass rolling of blanks into shapes having unequally thick flanges, one of said flanges being a base flange and another of said flanges being a head flange, said head flange being thicker than said base flange, in a universal rolling mill comprising a pair of horizontal rolls and a pair of vertical rolls, said universal rolling mill performing precise repetitive rolling in the same rolling stand, making said universal rolling possible with less number of stands having a conventional screw down mechanism, compensating vertical roll-set-up inaccuracy because of the horizontal roll axial displacement during rolling due to the imbalance of vertical-roll forces, even under the rolling condition of uniform longitudinal elongation generally meant for minimizing bending of a blank, said imbalance of vertical roll forces caused by the unequal contact area of the flange width and unequal deformation resistance resulting from the non-uniform temperature of the unequal flange thickness; said method comprising the steps of:

determining axial displacement of said horizontal rolls and radial displacement of vertical rolls based upon a reduction schedule when said blank passes through a specific roll pass surrounded by said horizontal and vertical rolls;

analyzing the displacements in terms of roll force so as to determine the non-linear relationship between the axial displacement of horizontal rolls and the roll-force difference acting on each of the two vertical rolls;

setting the base flange roll gap for each pass to correspond to the base flange outgoing thickness minus the base flange vertical roll mill spring minus the corresponding axial displacement of the horizontal rolls; and

setting the head flange roll gap for each pass to correspond to the head flange outgoing thickness minus the head flange vertical roll mill spring plus the corresponding axial displacement of the horizontal rolls, said base and head flange vertical roll mill springs being determined in accordance with the base and head vertical roll force, respec-

tively, divided by the base and head vertical roll mill modulus, respectively, and said corresponding axial displacement being determined by said non-linear relationship using a predicted difference of said two vertical roll forces; and

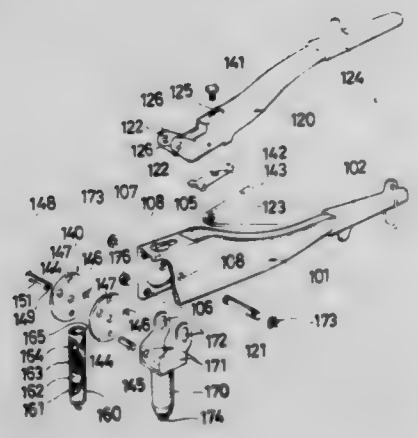
repeatedly passing said blank through said universal rolling mill with the successive roll gaps set for each pass of the multiple-pass roll schedule in accordance with said setting steps, thereby allowing actual multiple precise rolling of the universal rolling mill without any augmenting roll stand.

4,344,311

RIVETER

Tadashi Inoue, Osaka, Japan, assignor to Lobster Tool Co., Ltd., Osaka, Japan

Filed Jan. 7, 1981, Ser. No. 223,079
Claims priority, application Japan, Mar. 19, 1980, 55-36032
Int. Cl.³ B21J *15/34*
U.S. Cl. 72—391 **3 Claims**



1. A riveter having a lever (120, 220, 320) pivoted to a frame main body (101) and reciprocally turnable relative to the frame to reciprocate a jaw case (160, 460), the riveter comprising a turnable jaw case actuating support member (140, 240, 340, 440) disposed within a forward end portion of the frame main body (101) and mounted on a pivot for supporting the lever (120, 220, 320) on the frame main body (101), coupling means capable of locking the actuating support member (140, 240, 340, 440)

in a plurality of positions relative to the lever (120, 220, 320) and displaced from each other through a predetermined angle (θ), the jaw case (160, 460) being turnably supported by the actuating support member (140, 240, 340, 440) eccentrically of the pivot and reciprocally movable straight by reciprocal turn of the lever (120, 220, 320) through reciprocal turn of the actuating support member (140, 240, 340, 440) connected thereto, and a jaw case tubular housing (170) turnably supported by the forward end portion of the frame main body (101) and lockable in a plurality of positions angularly spaced from each other by the same angle as the angle of displacement (θ).

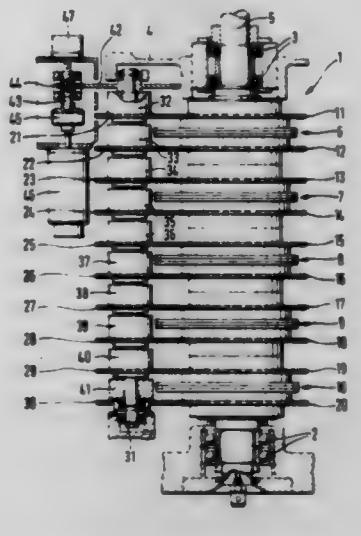
4,344,312

FORMING PRESS WITH A CAM ARRANGEMENT

Walter Flamme, Wegberg-Beeckerheide, and Oskar Rahn, Kempen, both of Fed. Rep. of Germany, assignors to Peltzer & Ehlers GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 116,211
Int. Cl.³ B21J *9/10*
U.S. Cl. 72—452 **7 Claims**

1. A multistage forming press having means for selectively controlling the operation of a plurality of work handling elements associated with said press, said controlling means comprising a camshaft having at least one releasable cam disc member mounted thereon for actuating a cam follower associated with said cam disc member and connected to at least one of said work handling elements, means for drivingly coupling said cam disc member and said camshaft in response to a supplied pressure medium under pressure, and adjusting motor means couplable to said cam disc member for rotating said cam



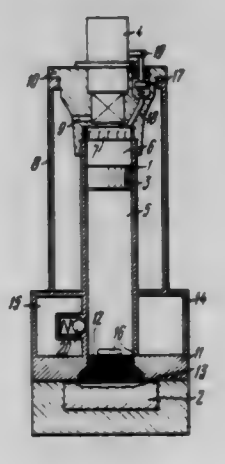
disc member relative to said camshaft for varying the duration and timing of said cam disc member and thereby controlling said work handling elements.

4,344,313

HYDROPUNCH FOR USE IN A PRESS

Viktor N. Chachin, ulitsa Kulmana, 15, kv. 91; Vladimir K. Kolos, ulitsa Kulmana, 26, kv. 50; Viktor V. Botyan, ulitsa Lenina, 11/35, kv. 11; Vladimir I. Luzgin, ulitsa Plekhanova, 63, kv. 52, and Igor K. Antonenkov, Izmailovsky pereulok, 47, kv. 2, all of Minsk, U.S.S.R.

Filed Jan. 3, 1980, Ser. No. 109,296
Int. Cl.³ B21J *7/38*
U.S. Cl. 72—453.1 **3 Claims**



1. A hydropunch for use in a press including a die having a working surface for receiving a piece to be worked, comprising: a cylinder having a wall body with two ends, a first end facing the working surface of the die, and a second end facing in the opposite direction from said first end; a ram accommodated within said cylinder for movement therealong so as to form therein an above the-ram chamber and a below-the-ram chamber; means for actuating said ram, said means being arranged on the second end of said cylinder; a compressed gas receiver selectively communicable with the above-the-ram chamber of said cylinder, said means for actuating controlling fluid communication between said compressed gas receiver and said above-the-ram chamber in such manner that said ram is moved from an original raised position towards the first end of said cylinder when fluid communication is established; a cover for closing both said cylinder and receiver; and means for returning the ram to said original position, said means including a closed chamber communicating with the below-the-ram chamber of said cylinder, a valve adapted to communicate the above-the-ram chamber of said cylinder with the

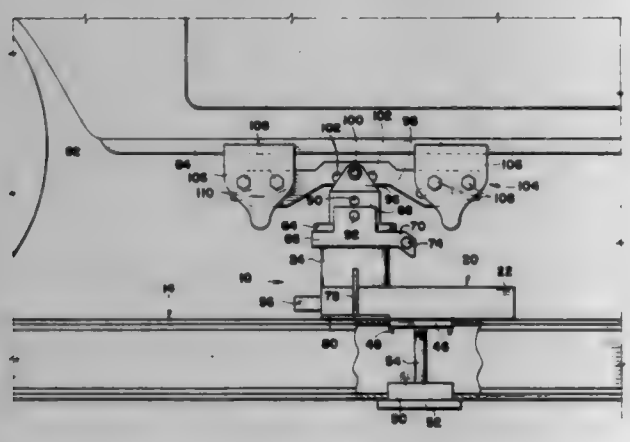
atmosphere, said valve being built in an opening provided in said cover, and a non-return valve for admitting used gas into said closed chamber, said non-return valve being built in a wall of said cylinder at a distance, from the one end thereof facing the die, approximately equal to the height of the ram so that said above-the-ram chamber is in fluid communication with said closed chamber through said non-return valve when said ram is in the lowest position thereof, and a high pressure chamber containing an elastic fluid positioned at the end of cylinder between the ram and the working surface of the die.

4,344,314

ALIGNMENT APPARATUS

Roger B. Aldrich, and Gary R. White, both of Grand Island, Nebr., assignors to Chief Industries, Inc., Grand Island, Nebr.

Filed Jun. 6, 1980, Ser. No. 157,015
Int. Cl.³ B21D *1/14*
U.S. Cl. 72—461 **26 Claims**



1. In a treadway upon which a vehicle, whose structure is to be realigned, is positioned, said treadway including a plurality of spaced openings arranged in a predetermined array, the improvement in means to interconnect the treadway and a selected portion of the vehicle structure comprising:

a base assembly having an elongated horizontal leg and a vertical member, said horizontal leg including an upper and lower portions spaced to define a horizontal opening therebetween, said lower portion of said elongated horizontal leg adapted to rest on the treadway;

a hold down bar receivable within said horizontal opening;

means positionable within the spaced openings of the treadway to interconnect said hold down bar to the treadway; and

attachment means secured to said vertical member for attachment to the selected portion of the vehicle structure;

whereby said means to interconnect may be securely fastened to said treadway to prevent movement relative thereto of said base assembly and said hold down bar or fastened to said treadway to prevent movement relative thereto of said base assembly and said hold down bar or fastened to said treadway to allow movement of said base assembly with that selected portion of the vehicle structure being realigned.

4,344,315

METHOD AND DEVICE FOR DISTINGUISHING MATERIAL BY THERMAL CONDUCTIVITY

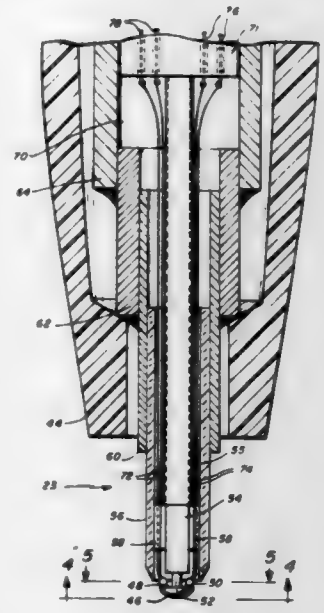
Edwin C. Moxon, Boxboro, and Wilson P. Menashi, Lexington, both of Mass., assignors to Ceres Electronics Corporation, Waltham, Mass.

Continuation of Ser. No. 974,649, Dec. 29, 1978, abandoned.
This application Dec. 5, 1980, Ser. No. 213,560
Int. Cl.³ G01N *25/18, 27/18*
U.S. Cl. 374—44 **30 Claims**

1. A thermal conductivity testing probe including means for subjecting a sample to heat flow relative to the probe, the probe comprising:

a sample contacting head of high thermal conductivity of at least about two watts per centimeter per degree Kelvin and of low thermal mass, the thermal conductivity and thermal mass of the head being such that the head time constant for temperature change is in the order of one second, the sample contacting head having a rounded end surface;

heat flow and temperature sensing means mounted to and in thermal contact with a back surface of the sample contacting head opposite to the rounded end surface; and



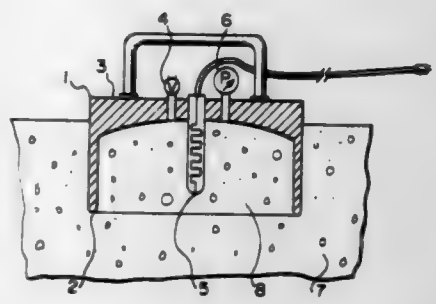
a head supporting neck extending between the sample contacting head, from the back surface thereof, and a relatively large thermal mass, the thermal resistance of the head supporting neck being such that it allows for heat flow from the head to the relatively large thermal mass which is substantially greater than the heat flow from the head to the surrounding environment, but that heat flow to the large thermal mass being substantially less than that of a contacted diamond sample.

4,344,316

METHOD AND APPARATUS FOR INDICATING THE AIR CONTENT OF CONCRETE IN SITU

Karim W. Nasser, Saskatoon, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Sep. 29, 1980, Ser. No. 191,832
Claims priority, application Canada, Oct. 30, 1979, 338752
Int. Cl.³ G01N *7/16*
U.S. Cl. 73—19 **4 Claims**



1. A method for indicating the air content of fresh concrete in situ, comprising;

providing a chamber having an open end and an opposite closeable end, said chamber provided with heating means and pressure measuring means;

inserting the open end of the chamber into the concrete, with opposite end opened;

closing said opposite end and heating the contents of the chamber with a predetermined energy input at a temperature less than the boiling point, and

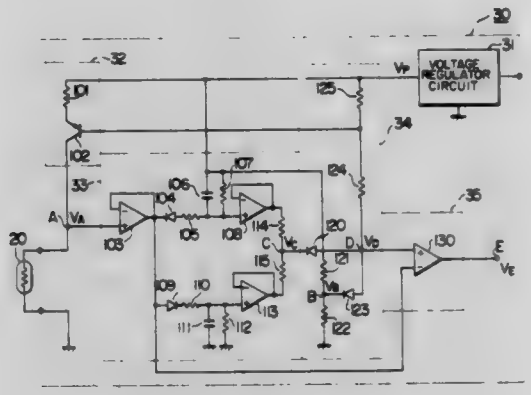
determining the pressure increase in the chamber, wherein the pressure increase is a function of the air content.

4,344,317

AIR-FUEL RATIO DETECTING SYSTEM

Tadashi Hattori, Okazaki, and Yoshiki Ueno, Aichi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 1, 1980, Ser. No. 174,446
Claims priority, application Japan, Sep. 14, 1979, 54-118154
Int. Cl.³ G01N *27/12*
U.S. Cl. 73—23 **7 Claims**



1. An air-fuel ratio detecting system for internal combustion engines comprising:

an air-fuel sensor for sensing the composition of exhaust gases from an engine to determine the ratio of air to fuel, said sensor having an electric resistance value varying in accordance with said air-fuel ratio;

a current control circuit for controlling the operating current of said air-fuel ratio sensor;

means for producing an average voltage of a varying voltage at a junction point of said air-fuel ratio sensor and said current control circuit;

a bias control circuit responsive to the value of said average voltage to adjust a current control amount of said current control circuit; and

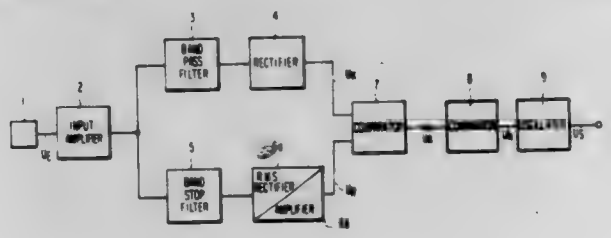
a comparison circuit for producing an air-fuel ratio detection signal in accordance with the voltage at said junction point and the value of said average voltage, wherein said average voltage generating means includes means for detecting a rich peak value means for detecting a lean peak voltage, and means for generating a voltage intermediate between said peak voltages.

4,344,318

UNDESIRABLE COMBUSTION CHARACTERISTIC DETECTOR FOR SPARK-IGNITED INTERNAL COMBUSTION ENGINES

Ingo Düdeck, Weinstadt, and Manfred Maass, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,404
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948856
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **7 Claims**



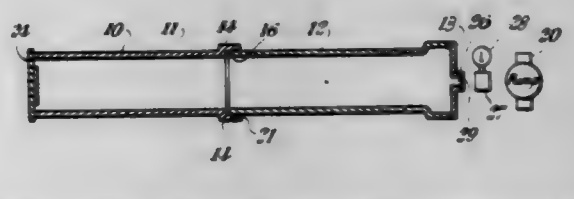
1. An apparatus for detecting of unesirable combustion characteristics in a spark-ignited internal combustion engine, the apparatus including a sensor means for sensing a solid-borne sound signal and for providing an output signal thereof, and a band-pass filter means tuned to an engine knock vibration frequency, the output signal of the sensor means being fed to the by-pass filter means, a rectifier means for rectifying a signal received from the band-pass filter means to an engine knock signal, means for converting the output signal from the sensor means into an engine knock reference signal, and a comparator means for comparing the engine knock signal with the engine knock reference signal and for providing an output signal if the knock signal exceeds the knock reference signal, characterized in that comparing means are provided for receiving the output signal from the comparator means and for providing an output signal of a predetermined time duration if a time duration of the output signal of the comparator means is longer than a specific preset time duration of the comparing means.

4,344,319

PIPE JOINT SEALED TEST METHOD

Dane R. Hancock, 516 Bontona Ave., Fort Lauderdale, Fla. 33301, and Burgess F. Rand, 2621 SW. 15th Ct., Fort Lauderdale, Fla. 33315

Filed Mar. 7, 1980, Ser. No. 128,278
Int. Cl.³ G01M *3/28*
U.S. Cl. 73—40.5 R **2 Claims**



1. A method of quickly testing the sealing integrity of pipes layed in a pipe string underwater by utilizing a pump in a bulkhead to connect one to the other comprising the steps of:

connecting a pump and bulkhead to the open end of the pipe string;

pumping liquid from within said pipe string creating a pressure differential between the pressure within said pipe string and the pressure outside of said pipes,

measuring the flow from within said pipes through said pump for a reasonable period of time,

detecting zero displacement of liquid from said pump by monitoring said flow to determine a zero flow rate through said pump to test for good sealing integrity.

4,344,320

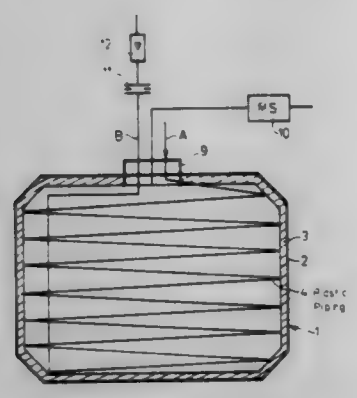
CRACK INDICATOR FOR MONITORING THE INSULATION OF LIQUEFIED GAS TANKS

Walter Haupt, Leverkusen; Heinz Warncke, Cologne; Heinz W. Friebe, Ludwigshafen, and Dieter Reimold, Heddesheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Rheinhold & Mahla GmbH, Mannheim, both of, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 139,953
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917255
Int. Cl.³ G01M *3/22, 3/26*
U.S. Cl. 73—40.7 **13 Claims**

1. In an apparatus for indicating a crack in the internal insulation of a gas container for low boiling, liquefied gases having a piping system within the insulation, the improvement wherein: the piping system consists of cold-embrittled plastic pipes which are embedded in and rigidly connected to the insulating material; means for applying a gas into the piping system which is under an excess pressure greater than the maximum pressure of the liquefied gas at the bottom of the

container with maximum filling; and indicator means for producing an electrical alarm signal in response to the excess



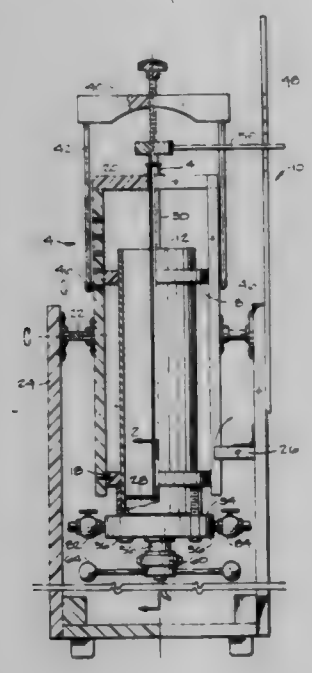
pressure gas flowing out into the tank interior in the event of a crack in the piping system.

4,344,321

SLURRY MEASURING APPARATUS

Pertti Haapamäki, Beaconsfield, Canada, assignor to Rauma-Repola Oy, Finland

Filed Aug. 4, 1980, Ser. No. 175,007
Claims priority, application Canada, Aug. 24, 1979, 334392
Int. Cl.³ G01N *15/04*
U.S. Cl. 73—61.4 **3 Claims**



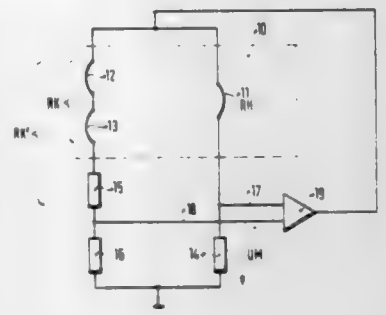
1. Apparatus comprising a cylinder suitably adapted to be tilted from a vertical to a horizontal position and beyond; a piston slidably positioned in the cylinder; said piston having a porous face to retain solids but to provide communication for liquid between the face of the piston and the rear thereof; a porous member positioned to cover one end of the cylinder; a chamber secured to the cylinder outwardly of said porous member; and the end wall of the cylinder outwardly of the porous member being mounted in said chamber with its surface being in juxtaposition to the surface of said porous member and adapted for linear movement within the chamber toward and away from fully closed or fully opened positions relative to said porous member; and means for selectively positioning the end wall of said cylinder relative to the porous member; and valve means in the chamber for drainage thereof or admission of liquids therein.

4,344,322

DEVICE FOR AIR FLOW RATE MEASUREMENT IN THE AIR INTAKE TUBE OF AN INTERNAL COMBUSTION ENGINE

Günther Plapp, Filderstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 156,956
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929427
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—118 **4 Claims**



1. A device for measuring the air flow rate of the air flowing in the air intake tube of an internal combustion engine, comprising a bridge circuit having:

at least two hot wire resistors located in different branches of the bridge circuit, and identically positioned but spatially separated in the air intake tube; and

means for providing closed-loop electric current control and maintaining the temperature difference between the resistors constant, wherein;

(i) The temperature of each hot wire is maintained above the temperature of the air flow; and

(ii) The temperature coefficients of the branches containing the hot wires have the following relationship:

$$\alpha KO' = \frac{\alpha HO}{1+\alpha HO(T\ddot{u}1 - T\ddot{u}2)}$$

where

$\alpha KO'$ is the temperature coefficient of one of said branches of the bridge circuit;

αHO is the temperature coefficient of the other of said branches of the bridge circuit;

Tü1 is the excess temperature of a hot wire in said one bridge branch over the air flow temperature; and

Tü2 is the excess temperature of at least one hot wire in said other bridge branch over the air flow temperature.

4,344,323

DYNAMIC TIMING ADJUSTMENT TOOL

Ronald D. Richardson, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 19, 1980, Ser. No. 122,230
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A **5 Claims**

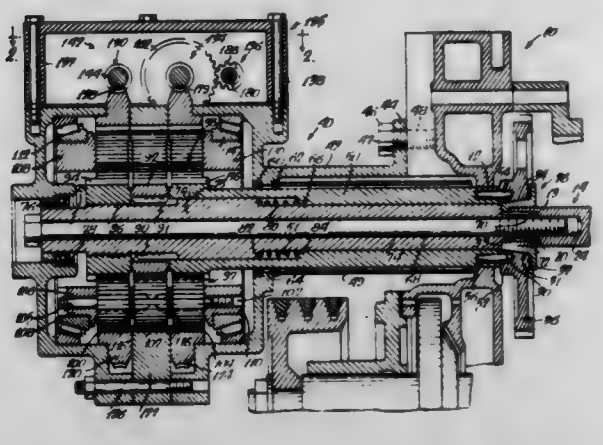
1. A tool **(40)** for adjusting the relative angular positions of a camshaft **(14)** and a mainshaft, said camshaft **(14)** having a radial gear **(36)** engaging and driven by said mainshaft, said camshaft gear **(36)** being rotatably received and axially adjustable on a tapered sleeve **(26)** carried on said camshaft **(14)** intermediate said camshaft **(14)** and said camshaft gear **(36)**, said tool **(40)** comprising:

a first hollow shaft **(50)** adapted to abut and to be coupled to said camshaft gear **(36)** for rotation therewith;

a second shaft **(66)** reciprocably and rotatably received within said first shaft **(50)**, said second shaft **(66)** being adapted to abut said tapered sleeve **(26)** and to be coupled to said camshaft **(14)** for rotation therewith, said first and second shafts **(50,66)** having means **(92–94, 97–104)** coupling said second shaft **(66)** to said first shaft **(50)** for rotatable driving of said second shaft **(66)** at the same rate

of rotation as said first shaft (**50**) in response to said rotation of said first shaft (**50**);

means (**90, 92, 102, 104, 124, 134**) for intermittently adjusting the rate of rotation of said second shaft (**66**) relative to that of said first shaft (**50**) to adjust the relative angular positions of said first and second shafts (**50, 66**); and



means (**94, 100, 120, 130**) for adjusting the axial position of said first shaft (**50**) relative to that of said second shaft (**66**) to urge said camshaft gear (**36**) into locking engagement of said tapered sleeve (**26**).

4,344,324

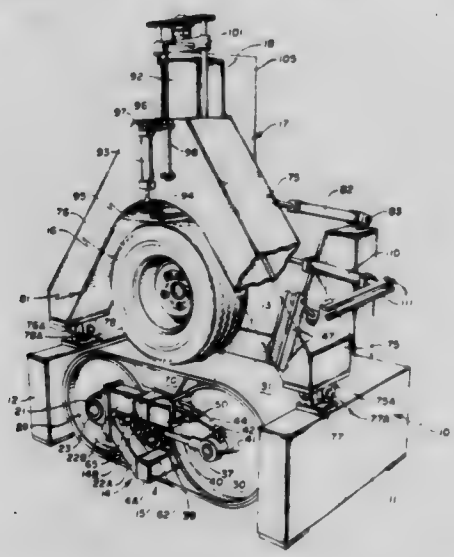
FLAT BELT TIRE TESTER

William J. Langer, Eden Prairie, Minn., assignor to MTS Systems Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 14,436, Feb. 23, 1979, Pat. No. 4,238,954. This application Dec. 11, 1980, Ser. No. 215,428

Int. Cl.[3] **G01M** *17/02;* **B65G** *15/64*

U.S. Cl. 73—146 **10 Claims**



1. A machine having a pair of drums for mounting a road simulation belt thereon for movement as said drums are driven, comprising a frame member for supporting said drums with the surfaces of the drums closely spaced from each other;

means to rotatably mount a first of said drums on said frame member,

means to rotatably mount a second of said drums relative to said frame member about an axis generally parallel to the axis of the first drum;

said drums being positioned with the sides thereof generally aligned, and there being first and second planes tangent to the drums extending between said drums, and along which planes any belt mounted on said drum moves;

said frame member including first and second portions on opposite sides of said second drum;

said means to rotatably mount said second drum including;

a link universally pivotally connected to said first portion of the frame and connected to support said second drum adjacent one side thereof,

a lever arm pivotally mounted to the second frame portion about a lever axis generally perpendicular to the axis of rotation of said second drum,

means coupling said lever arm to the second drum on the opposite side of the drum from the link to permit the second drum to rotate relative to said lever arm, and

support link means mounted relative to the frame to guide movement of said second drum to cause said second drum to tilt about a tilt axis lying along one of said planes and generally perpendicular to the axis of rotation of said second drum when said lever arm is moved about its lever axis.

4,344,325

MECHANISM FOR SETTING SLIP AND/OR CAMBER ANGLES IN TIRE TESTING MACHINE

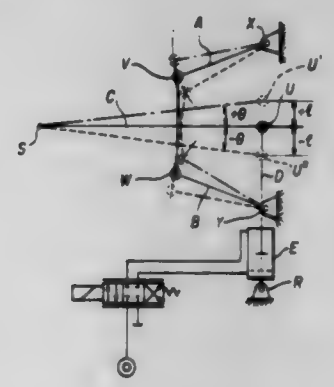
Atsuaki Iwama, Kobe, Japan, assignor to Kobe Steel, Ltd., Kobe, Japan

Filed Apr. 29, 1980, Ser. No. 144,885

Claims priority, application Japan, May 4, 1979, 54-055117

Int. Cl.[3] **G01M** *17/02*

U.S. Cl. 73—146 **3 Claims**



1. A mechanism for setting slip and/or camber angles in a tire testing machine having a movable frame and a rotating wheel serving a substitutional road, the angle setting mechanism comprising:

a support shaft adapted to support a tire rotatably at the center thereof for contact with the rotating wheel;

a swingable linkage provided between said tire support shaft and the movable frame of said tire testing machine and comprising four trapezoidally connected link levers including a pair of outwardly converging side link levers, an outer link lever having opposite ends thereof pivotably connected to outer converging ends of said side link levers and centrally fixed to an inner end portion of said tire support shaft, and an inner link lever having opposite ends thereof pivotably connected to inner end portions of said side link levers and securely supported on said movable frame of said testing machine; and

means for swinging said outer link lever back and forth for tilting said tire support shaft with respect to the surface of said movable frame.

4,344,326

NON-DESTRUCTIVE TESTING OF A LAMINATED CERAMIC CAPACITOR

Sherwin R. Kahn, South Brunswick Township, Middlesex County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jul. 23, 1980, Ser. No. 171,585

Int. Cl.[3] **G01N** *29/04*

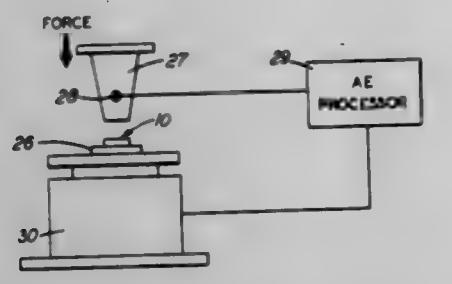
U.S. Cl. 73—587 **11 Claims**

1. A method of testing a substantially planar capacitor having alternate laminations of metal and ceramic material, comprising the steps of:

placing the capacitor on a planar base;

applying a load to the laminated capacitor in a direction perpendicular to the laminations;

monitoring acoustic emission signals emanating from the capacitor during the application of the load; and



comparing the acoustic emission signals to previously developed acousic emission signals from physically acceptable capacitors to determine the acceptability of the capacitor.

4,344,327

ELECTRONIC SCANNING ULTRASONIC DIAGNOSTIC SYSTEM

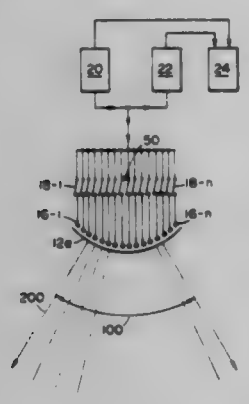
Yoshihiro Yoshikawa; Takao Katabami; Katsumi Fujinaga, and Yoshiaki Kobayashi, all of Mitaka, Japan, assignors to Aloka Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1980, Ser. No. 219,578

Claims priority, application Japan, Dec. 28, 1979, 54-170408; Dec. 28, 1979, 54-170409

Int. Cl.³ G01N *29/04;* A61B *10/00*

U.S. Cl. 73—626 **3 Claims**



1. An electronic scanning ultrasonic diagnostic system comprising:

a probe havng ultrasonic beam emitting surface which is pressed to contact the surface of a body to be examined and in which plural ultrasonic wave transducers are convexly arranged at equal distances, said probe emitting desired sector scanning ultrasonic beams into the body without intermediate medium material; and

means for energizing to drive selected ultrasonic wave trasducers out of said plural ultrasonic wave transducers according to the predetermined program at every timing of transmitting and receiving waves.

4,344,328

FREQUENCY DETECTOR

Royal R. Hawkins, Bloomington, Minn., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 14, 1979, Ser. No. 94,137

Int. Cl.³ G01H *13/00*

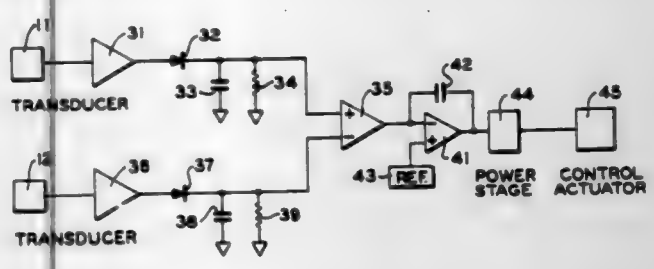
U.S. Cl. 73—651 **19 Claims**

1. A frequency detector for detecting the frequency of vibration of an apparatus comprising:

first vibration sensing means for providing a first output having a first frequency response to said frequency of vibration;

second vibration sensing means for providing a second output having a second frequency response to said frequency of vibration;

difference sensing means connected to said first and second vibration sensing means for providing a third output dependent upon the difference between said first and second outputs; and,



load means having a reset amplifier connected to said difference sensing means for being responsive to the output from said difference sensing means.

4,344,329

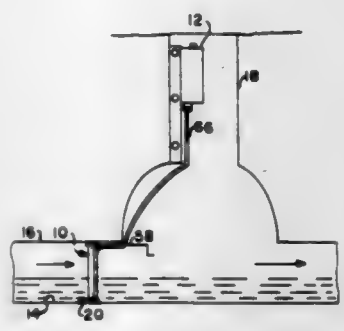
FLOW ANALYZER

Peter D. Petroff, Penthouse No. 2, Marbella Del Caribe, Este, Isla Verde, P.R. 00913

Division of Ser. No. 104,540, Dec. 17, 1979, Pat. No. 4,295,197, which is a division of Ser. No. 905,196, May 12, 1978, Pat. No. 4,211,111, which is a division of Ser. No. 811,557, Jun. 30, 1977, Pat. No. 4,116,061, which is a division of Ser. No. 602,974, Aug. 8, 1975, Pat. No. 4,070,563. This application May 18, 1981, Ser. No. 264,644

Int. Cl.³ G01F *1/52*

U.S. Cl. 73—861 **8 Claims**



1. A system of measurement of flow rates occurring in a sewer system having at least two, first and second, manholes located within the system, and there being a first sewer pipe with an exit end at said first manhole, and a second sewer pipe having an exit at said second manhole, said system of measurement comprising:

at least first and second monitoring assemblies, said first monitoring assembly being located at said first manhole, and said second monitoring assembly being located at said second manhole, and wherein each monitoring assembly comprises:

liquid height sensing means comprising a pressure-to-electrical signal transducer for sensing liquid height in a pipe and providing as an output a signal which is a function of such liquid height,

mounting means for positioning said transducer in a said exit end-region in a said sewer pipe and adjacent the bottom of that sewer pipe,

timing means, synchronized with timing means in each other said monitoring assemblies, for providing time signals,

analog-to-digital conversion means responsive to timing signals from said timing means and signals from said liquid height sensing means for periodically, at a selected rate, converting said height signals into digitally encoded, time identified, liquid height representative signals, and

memory means responsive to said analog-to-digital conversion means for storing discrete time identifiable said

digitally encoded height representative signals covering periodic measurements over a selected period of time;

transfer storage means including a storage medium, and responsive to said first and second monitoring assemblies, for storing height signals of said memory means of said first and second monitoring assemblies; and

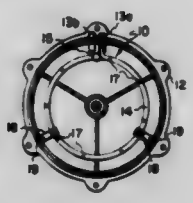
conversion means responsive to said transfer storage means for converting said digitally encoded signals derived from said monitoring assemblies to timewise relatable liquid flow rates.

4,344,330

AVERAGE FLUID FLOW SENSOR

Michael J. Renken, Chaseburg, and Billy P. Simmons, La Crosse, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Feb. 13, 1981, Ser. No. 234,284
Int. Cl.³ G01F *1/46*
U.S. Cl. 73—861.66 **6 Claims**





1. A sensor for providing a differential pressure signal indicative of the average relative flow velocity of a fluid through a duct and adapted for connection to a device which is responsive to differential pressure as an indication of fluid flow rate, said sensor comprising

a. first and second tubular members disposed with in the duct, each of which is generally formed in a loop oriented transverse to the direction of fluid flow through the duct; wherein the first and second tubular members comprise a single continuous tubular member each end of which is in fluid communication with the device responsive to differential pressure, said continuous member being sealed at an intermediate point along its length to separate the first and second tubular members defined thereby from fluid communication with each other;

b. means for supporting said first and second tubular members within the duct; and

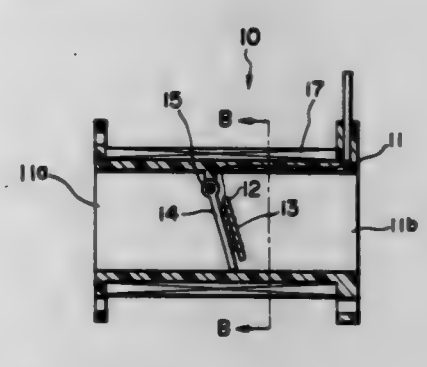
c. a plurality of orifices disposed in spaced apart relationship along the length of each of the tubular members, wherein the orifices in the first tubular member face toward fluid flow impinging from upstream of the duct and the orifices in the second tubular member are disposed facing generally downstream of the fluid flow in the duct, such that the impact fluid pressure developed in the first tubular member is relatively greater than the fluid pressure developed in the second tubular member as a result of the respective orientation of the orifices in each of said tubular members, and the magnitude of this differential pressure is indicative of the average fluid flow rate in the duct.

4,344,331

FLUID FLOW METER

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Limited, Kariya, Japan

Filed Aug. 29, 1980, Ser. No. 182,585
Int. Cl.³ G01F *1/28*
U.S. Cl. 73—861.76 **12 Claims**



11. A fluid flow meter comprising:

a body means having a passage therein for the fluid to flow therethrough;

a movable member pivotably mounted in said passage in said body means and tiltable to open and close said passage in response to the flow rate of the fluid flowing through said passage;

a magnetically soft member fixed onto said movable member and wound with a coil; and

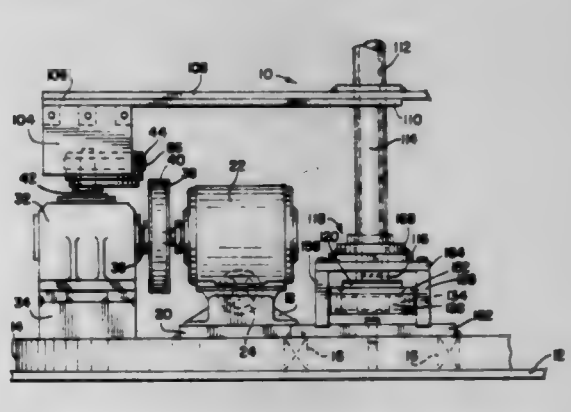
a magnetic field generating means provided on said body means and adapted to generate magnetic flux in a predetermined direction in a range in which said movable member is tiltable.

4,344,332

LOAD BEARING OSCILLATOR DRIVE

Henry A. Schuricht, Pontiac, Mich., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Oct. 14, 1980, Ser. No. 196,686
Int. Cl.³ F16H *25/08, 25/16*
U.S. Cl. 74—54 **1 Claim**



1. An oscillator drive particularly adapted to support a vertically imposed load and oscillate such in a cycle having a selective frequency and amplitude, an improvement in said drive comprising:

a source of rotary power,

rotational rate reduction means connected to an output of said power source to produce a rotary output having a substantially reduced rotational rate,

eccentric cam assembly means operatively connected to said rate reduction means rotary output to convert said output to an oscillating output, said means comprising a hub portion having an eccentrically located aperture for disposition of an output shaft of said rate reduction means, a flange portion having an eccentrically located aperture for disposition of an upper post of said hub portion, a bearing carried by said flange portion and a retainer plate fastened to said hub to secure said bearing to said flange,

an angular position of said flange portion relative to said hub portion being adjustable to set an eccentric position of said bearing at varying increments,

a load bearing column operatively connected to said cam assembly means by an elongated member having spaced guide plates in contact with said cam assembly bearing, said column carried by a support journal assembly means to maintain a position of said column in proximate alignment with said load while allowing a free oscillation of said column about a longitudinal axis of said column,

said support journal assembly means including,

a pilot insert having an upper and lower boss connected to a flange and spaced apart by said flange, said upper boss insertable into an open end of said column with a top surface of said flange in contact with a bottom of said column,

a thrust-type bearing having an upper portion in contact with a lower surface of said insert flange,

a housing to carry said bearing, said housing having a circular sidewall forming a lower inner offset to receive a lower portion of said bearing with a loose fit to provide a space for self-centering of said bearing within said lower inner offset, and a retaining ring fastened to said housing sidewall, said ring formed with an aperture for disposition of said insert flange with said aperture having a chamfered edge portion to facilitate a lubricant addition to said housing for said thrust-type bearing, and

a flange-type bearing in contact with said column above said bottom of said column, said flange-type bearing carried by a horizontal support member located above said housing and carried by spaced uprights positioned on each side of said housing,

wherein energization of said power source causes said output shaft of said rate reduction means to rotate said cam assembly at a rate substantially less than a rate of said power source, said cam assembly interacting with said member guide plate to oscillate said column about its longitudinal axis,

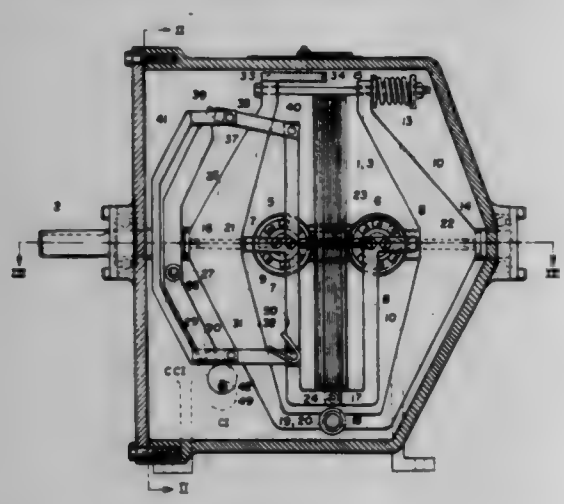
wherein said thrust-type bearing supports said load imposed on said column with said thrust-type bearing adjusting in position to align with said load while allowing said column to freely oscillate about its longitudinal axis and said flange-type bearing maintains said longitudinal axis of said column in alignment with said load while allowing said column to freely oscillate about said longitudinal axis.

4,344,333

VARIABLE SPEED TRANSMISSION

Stanley J. Mikina, 4782 Coquina Key Dr. SE., St. Petersburg, Fla. 33705

Continuation of Ser. No. 956,084, Oct. 30, 1978, abandoned.
This application Jun. 26, 1980, Ser. No. 163,339
Int. Cl.³ F16H *15/08, 15/00, 13/10*
U.S. Cl. 74—199 **7 Claims**



1. In a frictionally driven, continuously variable speed transmission comprising stacks of interleaved laminations mounted on input and output drive shafts, improved means for squeezing together said interleaved laminations so as to develop interlaminar surface friction forces for torque transmission and for setting and controlling the speed ratio, said means comprising a pair of opposed bearing supported, convex surfaced rollers mounted on roller bearing shafts for applying squeezing forces on opposite ends of said lamination stacks and in a direction parallel to said drive shafts on which squeezing forces are applied to said lamination stacks, frames supporting each roller bearing shaft, swivel shafts on which said frames are rotatable on axes parallel to said drive shafts and perpendicular to said roller bearing shafts and intersecting the centers of contact of the convex surfaces of said rollers with end laminations of said interleaved torque transmitting laminations, thrust bearings acting on the end of said shafts and through which said swivel shafts apply the squeezing forces, loading arms in which said swivel shafts and roller bearing shafts are retained and supported, a roller loading spring and its reaction forces acting on one end of said loading arms while the other end terminates in an axially slideable bearing mounted on a guide rod extending in a direction at right angles to said drive shafts and lying in a plane parallel to the plane in which said drive shafts lie, two link members for additionally trying together said roller swivel shafts, said link members extending over the outer rims of said interleaved laminations and engaging each other on one end in a pivoted joint that forces said swivel shafts to move in unison and in the same angular direction, a control bar on a rotating screw movable in a direction perpendicular to said drive shafts and parallel to the planes of laminations for determining the angular displacement of said swivel shafts and attached link members, a U frame serving as the connection between said link members and control member, said U frame straddling said loading arms and being pivoted on a link at one end and having a pin shaft at the other end that engages a slot in the control member, said slot permitting the link and swivel shaft to swivel as said control member that engages sais pin shaft is rectilinearly displaced by said rotating screw, said slot in said control member permitting said swivel shaft to swivel in the direction of reducing the initial angle of swivel as the roller moves to follow the control member displacement, said swivel angular displacement being so chosen that said roller is caused to follow stable negative exponential approach to the final command position of the control member, said follower response being caused by the friction forces arising between the rollers and contacted laminations as a result of the triangle of vector velocities of (a) the peripheral velocity of the laminations, (b) the peripheral velocity of the swivelled contacting roller, and (c) the translation velocity of the link and roller swivel shaft in the direction of the command displacement of said control member.

4,344,334

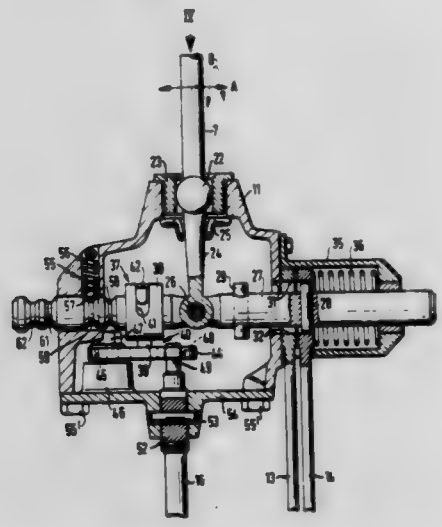
CHANGE-SPEED TRANSMISSION WITH SPEED-RANGE SELECTION MEANS FOR MOTOR VEHICLES, PARTICULARLY FOR FARM TRACTORS

Klaus Schmittbetz, Cologne, and Karl D. S. Struchtrup, Kettwig, both of Fed. Rep. of Germany, assignors to International Harvester Co., Chicago, Ill.

Filed Sep. 11, 1980, Ser. No. 185,861
Int. Cl.³ G05G *9/12*
U.S. Cl. 74—473 R **11 Claims**

1. A gear-shift mechanism for a change-speed transmission equipped with speed-range selection means for motor vehicles, said mechanism (6) comprising: a multi-speed gear-shift transmission unit and a range-shift transmission unit; a shift control lever (7) actuating via a gear-selector passage (21) and via several gear-shift passages a gear-shift shaft (27) rotatively supported and axially moveable inside a housing (11); gear-shift levers (13, 14) loosely supported on said shaft and lockable in a non-revolving manner; said gear-shift shaft (27) including two coupling elements (28, 29) co-axially and spatially disposed thereon and alternately moveable into a non-revolving engagement with said gear-shift levers (13, 14); said range-

shift transmission unit being operated by a shifting mechanism (40) controlled by a shift finger (37) mounted on and axially



moveable together with said gear-shift shaft; and said finger limitedly rotating about said gear-shift shaft (27) and axially immobile relative thereto.

4,344,335

POWER DISTRIBUTING DEVICE FOR VEHICLES

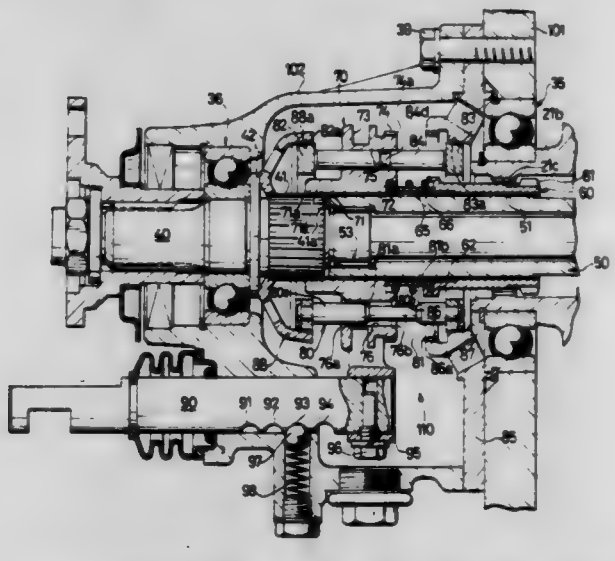
Shunichi Kawai, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 19, 1979, Ser. No. 86,308

Claims priority, application Japan, Oct. 24, 1978, 53/131139

Int. Cl.³ F16H *37/06, 37/08, 3/38;* F16D *11/00*

U.S. Cl. 74—674 **2 Claims**



1. A power distributing device for a vehicle comprising:

a nonrotary casing having a stationary internal member;

gear teeth disposed upon said stationary internal portion of said casing;

a plane planetary gear set mounted within said casing;

said planetary gear set comprising a sun gear, a ring gear, a planet carrier and planet gears wherein said planet carrier carries said planet gears such that said planet gears engage said sun gear and said ring gear;

a journal having a plurality of gear teeth provided therein and operatively associated with said planet carrier;

a shaft member operatively associated with said sun gear;

an input shaft drivably engaged with said planet carrier;

a first output shaft connected with said ring gear;

a second output shaft arranged coaxially with said sun gear;

spline teeth peripherally disposed upon said second output shaft;

power train changing means disposed within said nonrotary casing and operatively associated with said planetary gear set;

sliding sleeve means mounted upon and movably engaged with said shaft member and operatively associated with said power train changing means;

first internal spline teeth disposed axially along an inner surface portion of said sliding sleeve means such that said first internal spline teeth selectively engage said spline teeth peripherally disposed upon said second output shaft;

first peripheral gear teeth disposed on an end portion of said sliding sleeve means such that said first peripheral gear teeth selectively engage said gear teeth disposed upon said stationary internal portion of said casing;

said sliding sleeve means having at least a first and second hole formed therein, said first hole defining first and second countersunk end portions adjacent respective surface portions of said sliding sleeve means;

second peripheral gear teeth disposed at an end portion of said sliding sleeve means such that said second peripheral gear teeth selectively engage said gear teeth formed within said journal;

synchronizing means disposed within said nonrotary casing and operatively associated with said power train changing means and which further comprises:

a first contacting surface disposed upon said stationary internal portion of said casing;

a second contacting surface mounted upon said second output shaft;

at least one guide pin loosely mounted within said first hole formed in said sliding sleeve means,

a first contacting element fixed on a first end of said at least one guide pin for selectively contacting said first contacting surface,

a second contacting element fixed on a second end of said guide pin opposite said first end of said guide pin for selectively contacting said second contacting surface;

at least one thrust pin loosely mounted within said second guide hole formed in said sliding sleeve means for selectively pushing said first and second contacting elements against said first and second contacting surfaces, respectively, upon selective movement of said sliding sleeve means;

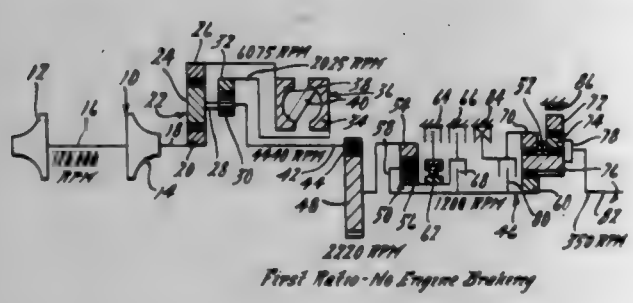
said guide pin comprising first and second end portions having unequal axial lengths for effecting selective engagement of said first and second contacting elements with said first and second contacting surfaces, respectively, during movement of said sliding sleeve means about said guide pin, an inner axial portion disposed between said end portions and having a diameter less than said end portions, and first and second tapered axial portions disposed between said inner axial portion and said end portions of said guide pin such that said first and second tapered axial portions define a boundary between said inner axial portion and said first and second end portions wherein said first and second tapered axial portions selectively contact said first and second countersunk end portions of said first hole formed in said sliding sleeve means such that movement in a first axial direction of said sliding sleeve means from a neutral non-contacting position effects frictional coupling between said first contacting element and said first contacting surface via engagement of said first tapered axial portion of said guide pin with said first countersunk end portion of said first hole formed in said sliding sleeve means and wherein engagement of said first peripheral gear teeth disposed on said sliding sleeve means with said gear teeth disposed upon said stationary internal portion of said casing locks said sun gear upon further movement of said sliding sleeve in a first direction such that said second output shaft rotates freely without receiving power from said power distributing device, and such that power is transmitted to said second output shaft from said power distributing device, and wherein first movement of said sliding sleeve means from a neutral non-contacting position in a second axial direction opposite said first axial direction effects frictional coupling between said second contacting element and said second contacting surface via engagement of said

second tapered axial portion of said guide pin with said second countersunk end portion of said sliding sleeve means, and effects engagement of said first internal spline teeth with said spline teeth on said second output shaft and couples said sun gear with said second output shaft such that said planet carrier rotates freely, and wherein further movement of said sliding sleeve means in said second axial direction beyond said first movement in a second axial direction effects engagement of said second peripheral gear teeth disposed on said sliding sleeve means with said gear teeth provided within said journal of said planet carrier and fixes said sun gear with said planet carrier while said sun gear is fixed with said second output shaft such that said first end portion of said guide pin coacts with said sliding sleeve means during said further movement of said sliding sleeve means in a second axial direction such that engagement of said second tapered axial portion of said guide pin with said second countersunk end portion of said sliding sleeve means is prevented by said unequal axial length of said first end portion of said guide pin.

4,344,336
DIFFERENTIAL TRACTION DRIVE WITH EXTREME OVERALL TORQUE RATIOS FOR USE IN A GAS TURBINE ENGINE DRIVELINE

Donald L. Carriere, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 23, 1979, Ser. No. 59,848
Int. Cl.³ F16H *37/06, 37/00*
U.S. Cl. 74—690 6 Claims



1. A differential split torque driveline adapted to deliver torque from a high speed driving shaft to a driven member, comprising:

a planetary gear unit having a sun gear, a ring gear and a planet pinion, said planet pinion engaging drivably said sun gear and said ring gear, said sun gear being connected to said driving shaft, a carrier for said pinion, a secondary pinion connected drivably to said first pinion and supported rotatably on said carrier, a second ring gear engaging said second pinion,

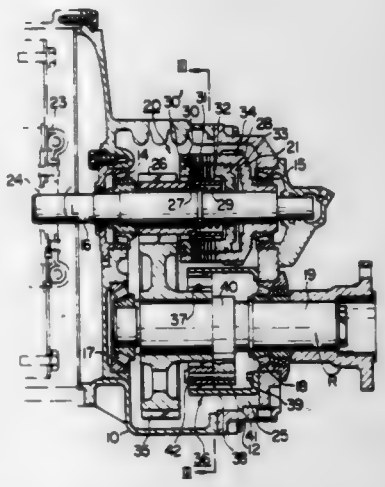
a differential torque delivery gear unit with infinitely variable torque ratio characteristics having an input member and an output member with means for establishing a driving relationship therebetween, said first mentioned ring gear being connected to one driving member of said differential unit and said second ring gear being connected to the other member of said differential unit whereby the speed relationship between said ring gears is determined by the speed ratio relationship of the differential unit members, and

a driven member connected drivably to said carrier.

4,344,337
REDUCTION AND REVERSING GEAR FOR MARINE PROPULSION SYSTEMS

Michisuke Nagasaki, Toyonaka, and Kinichi Aso, Yao, both of Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Nov. 13, 1979, Ser. No. 93,812
Int. Cl.³ F16H *37/00, 3/44, 57/10*
U.S. Cl. 74—740 5 Claims



1. A reduction and reversing gear for marine propulsion systems, the reduction and reversing gear having: a clutch case, an input shaft mounted on an upper portion of said clutch case, an output shaft mounted at a lower portion of said clutch case and extending in parallel with said input shaft, an ahead unit including a multiple disc clutch mounted on said input shaft and having a clutch housing adapted to rotate unitarily with said input shaft and a small gear mounted on said input shaft and adjacent to said multiple disc clutch, said small gear being adapted to be connected to and disconnected from said input shaft in accordance with the state of said multiple disc clutch, a large gear mounted on said output shaft for engagement with said small gear, and an astern unit disposed in parallel with said ahead unit and including a multiple disc clutch having a clutch housing operatively connected to said clutch housing of said ahead unit and a small gear for engagement with said large gear; wherein the improvement comprises a planetary gear type reduction gear disposed in the space below said multiple disc clutch of said ahead unit, the planetary gear type reduction gear being connected at its one side to said large gear and to said output shaft at its other side, whereby it becomes possible to provide a reduction and reversing gear of a large variety of reduction ratios by making use of a common clutch case for small reduction ratios.

4,344,338
POWER TRANSMISSION DEVICE

Yoshiyuki Hattori, Toyoake; Kazuma Matsui, Toyohashi, and Hiroji Kinbara, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 30, 1979, Ser. No. 71,102
Claims priority, application Japan, Sep. 4, 1978, 53-108434
Int. Cl.³ F16H *3/74, 3/44;* F16D *31/04*
U.S. Cl. 74—752 C 4 Claims

1. A power transmission device comprising:

a casing with means for connection to an output member;

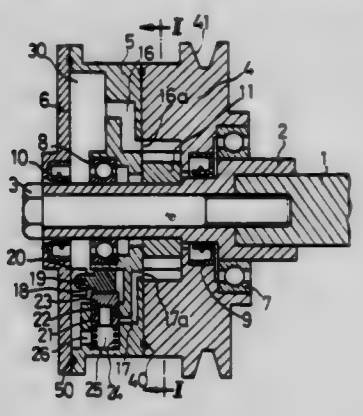
a driving shaft with means for connection to an input member and coaxially disposed within said casing so as to be relatively rotated with said casing;

a driving gear disposed within said casing and coaxially fixed to said driving shaft;

at least two driven gears rotatably supported by said casing and engaged with said driving gear within said casing;

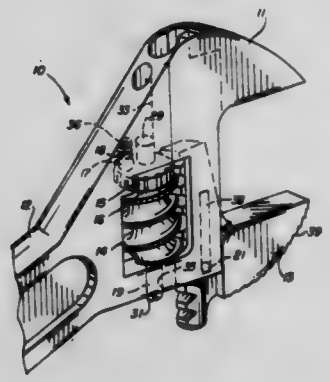
at least two fluid inlet chambers and at least two fluid outlet

chambers formed within said casing with said driving gear and with said at least two driven gears within said casing;
a fluid storage chamber formed within said casing;
a fluid inlet passage and a fluid outlet passage of which one ends are communicated with said at least two fluid inlet chambers and said at least two fluid outlet chambers, respectively and the other ends thereof being communicated with said fluid storage chamber; and
a discharged fluid control device disposed in said fluid outlet passage, said discharged fluid control device being provided with a valve means which closes said fluid outlet



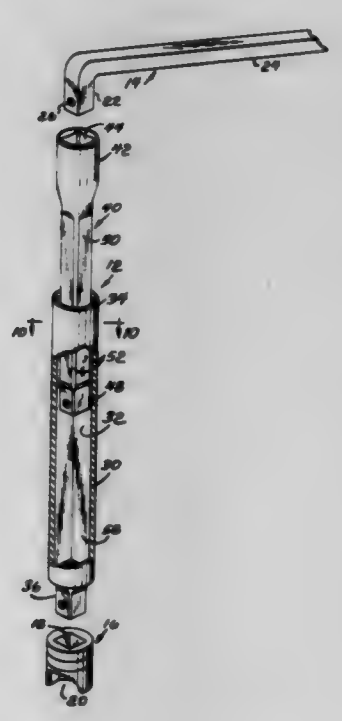
passage at a rotative speed of said casing under a predetermined speed and opens said fluid outlet passage at a rotative speed of said casing above the predetermined speed;
a non-return device disposed in an opening portion of said fluid inlet passage into said fluid storage chamber for preventing the fluid from flowing out of said fluid inlet passage reversely, said non-return device including centrifugal force-activated means for substantially instantaneously opening and closing said fluid inlet passage in dependence upon whether said casing is rotating faster or slower than a predetermined speed.

4,344,339
ADJUSTABLE WRENCH
John Penner, P.O. Box 1348, Avondale, Ariz. 85323
Filed Oct. 6, 1980, Ser. No. 194,081
Int. Cl.³ B25B *13/16*
U.S. Cl. 81—157 **6 Claims**



1. An adjustable wrench comprising:
a handle,
a pair of cooperating jaws mounted on said handle,
one of said jaws being fixedly attached to said handle,
the other of said jaws being movably mounted on said handle for cooperating with said one of said jaws and having a toothed edge,
a first opening provided in said handle juxtapositioned to said jaws,
a cylinder having a spiral thread arranged along its outer periphery,
a second opening provided in said cylinder and extending longitudinally therethrough,
a mandrel,
said mandrel comprising a cylindrical portion for fitting into said second opening and a collar at one end thereof positioned off center from the longitudinal axis of said cylindrical portion and extending outside of said second opening,
a third opening extending through said collar and axially aligned with said second opening,
means for mounting said cylinder with said mandrel positioned therein in said first opening with said cylindrical portion being rotatively attached axially along said second opening to said handle at one end and said collar at its other end being rotatively attached axially along said third opening to said handle,
said collar when rotated causing said spiral thread to selectively engage or disengage with said tooth edge on said other of said jaws.

4,344,340
EXTENSIBLE SOCKET WRENCH
Wayne Erickson, Rte. 2, Marseilles, Ill. 61431
Filed Oct. 20, 1980, Ser. No. 198,721
Int. Cl.³ B25G *1/04*
U.S. Cl. 81—177 A **6 Claims**



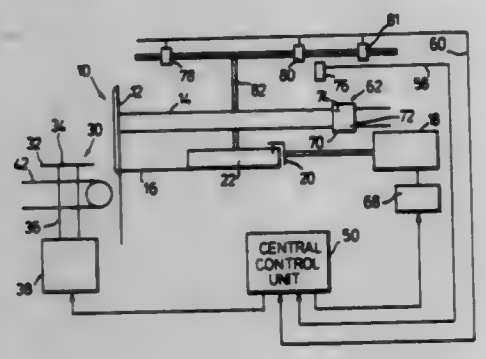
1. An extensible socket wrench comprising, in combination,
a sleeve having a polygonal bore which opens through one end thereof, the opposite end of the sleeve embodying a solid attachment portion which detachably and non-rotatably seats in a complementary sized and shaped attachment recess of each of a series of socket members;
a polygonal solid rod which fits and is axially slidable in said polygonal bore of the sleeve through the open end thereof;
said polygonal solid rod having an enlarged end portion containing an attachment recess in which is non-rotatably received the complementary sized and shaped terminal end of a driver;
the opposite end of the polygonal solid rod containing a spring-biased ball detent which yieldably engages an interior side of the sleeve bore and automatically secures the polygonal solid rod to the sleeve in all positions to which it is adjustable in the sleeve between a maximum and minimum; and
said opposite end of the polygonal rod having an attachment portion of a size and shape complementing the attachment recess of the socket members such that the polygonal solid rod may itself be detachably connected to the socket member and serve to transmit the rotational force of the driver exerted thereon to the socket member.

4,344,341

SLICING APPARATUS

Walter E. Lotz, 904 Atlantic Dr. SE., Pt. Manalapan, Lantana, Fla. 33462

Filed Sep. 4, 1980, Ser. No. 183,874
Int. Cl.³ B26D 5/00
U.S. Cl. 83—29 9 Claims



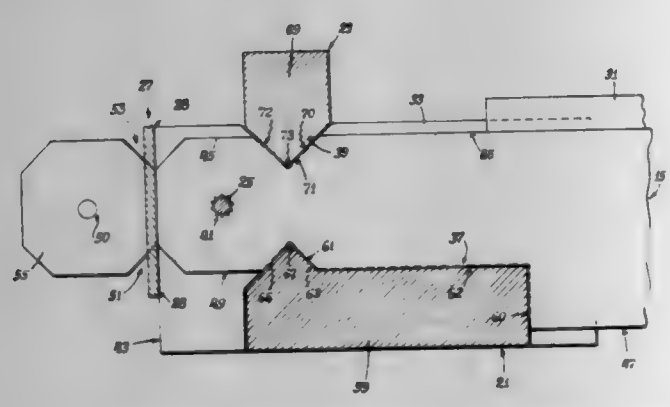
8. A method of thinly slicing friable meat products to produce a stack of slices comprising providing an acircular rotary cutting blade, feeding said product forwardly a preset distance for slicing by said cutting blade, arresting the forward feeding during the time the rotary cutting blade is in substantial contact with said product, and automatically increasing said preset distance for cutting the first slice of each stack, whereby the settling time of said first slice is decreased in comparison to remaining slices of the stack.

4,344,342

METHOD FOR THE MANUFACTURE OF WASHERS AND THE LIKE

George R. Garvin, River Forest, Ill., assignor to Sam Garvin & Company, Chicago, Ill.

Filed Aug. 27, 1980, Ser. No. 181,710
Int. Cl.³ B21D 28/00, 53/00
U.S. Cl. 83—45 7 Claims



1. A method for the manufacture of washers and the like from a strip of sheet material having one straight edge, said method comprising:

positioning said straight edge along a guide means;

notching said sheet by die cutting a pair of opposing V notches through the thickness of said sheet material in such a manner that the legs of one such V notch extend from its vertex to one edge of said sheet material and the legs of the other V notch extend from its vertex to the opposite edge of said sheet material;

simultaneously with said notching step, trimming said sheet material to a predetermined width;

said trimming being carried out by die cutting material from the edge opposite said straight edge to produce a sheet of desired width having parallel edges;

advancing said sheet material in a direction parallel to said straight edge, and

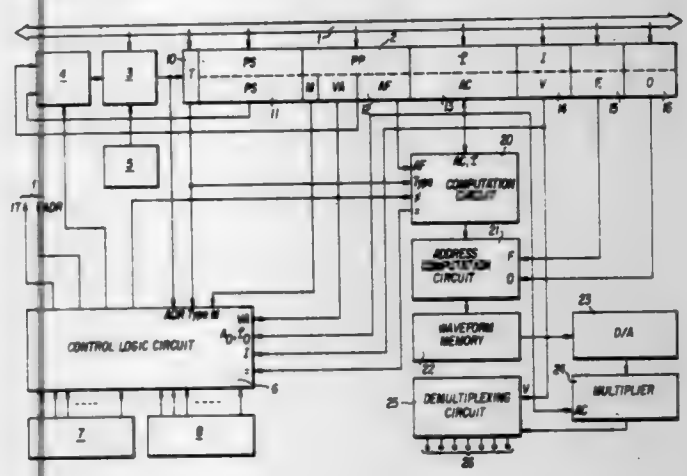
shearing said sheet material at a line joining the vertices of each pair of V notches.

4,344,343

POLYPHONIC DIGITAL SYNTHESIZER OF PERIODIC SIGNALS

Christian T. Deforeit, 202 rue des Joncs-Marins, 91620 La Ville Du Bois, France

Filed Jun. 10, 1980, Ser. No. 158,251
Claims priority, application France, Jun. 15, 1979, 79 15337
Int. Cl.³ G10H 1/00
U.S. Cl. 84—1.01 7 Claims



1. A polyphonic digital synthesizer of periodic signals comprising:

plural generators for generating binary signals of predetermined frequencies;

a set of memory blocks containing amplitude data including current amplitude data and final amplitude data;

control means for reading the memory blocks according to a set sequence as a function of said binary signals;

means for producing analog samples of periodic signals from data read from the memory blocks, comprising;

means for automatic development of the amplitude of each periodic signal, comprising computing means for periodically replacing each current amplitude datum with an updated current amplitude datum computed by interpolation from a current amplitude data and a final amplitude data read from said memory blocks;

each memory block further comprising a validation datum M, and said control means comprising means for disabling the automatic development of the updated current amplitude data of the corresponding periodic signal in case of absence of the validation datum M; and

said computing means comprising means for producing an updated current amplitude datum which is a quasilogarithmic interpolation between the current amplitude datum and the final amplitude datum read in the corresponding block.

4,344,344

ELECTRONIC MUSICAL INSTRUMENT HAVING MUSICAL PERFORMANCE TRAINING SYSTEM

Akira Nakada; Toshio Sugiura, both of Hamamatsu; Eisaku Okamoto, Hamakita, and Kiyoshi Yoshida, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 18, 1980, Ser. No. 179,261
Claims priority, application Japan, Aug. 31, 1979, 54-111435
Int. Cl.³ G10F 1/00
U.S. Cl. 84—1.03 12 Claims

1. An electronic musical instrument comprising:

memory means having memory addresses for storing in the respective addresses performance data constituting the progression of a music piece to be played;

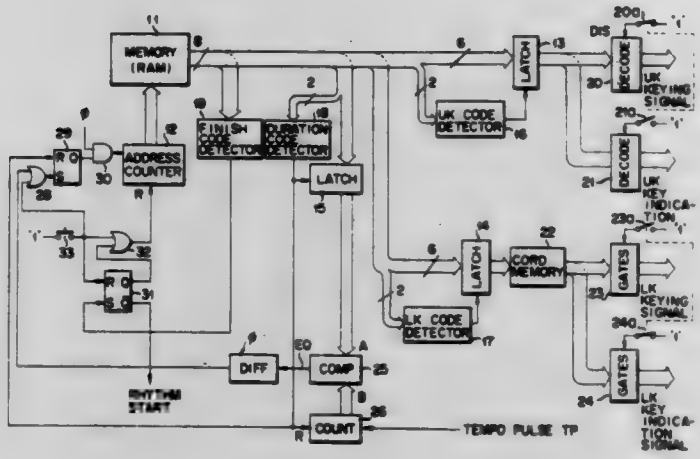
readout control means coupled to said memory means for

reading out, by designating a plurality of respective address locations of said memory means, said performance data at a selectable tempo;

keyboard means having keys and means responsive to depression of a key to produce a keying signal corresponding to the depressed key;

key indicating means coupled to said memory means and being responsive to a part of said performance data read out of said memory means to indicate a key to be depressed on said keyboard means;

tone signal producing means coupled to said keyboard means and responsive to said keying signal to produce a musical tone signal corresponding to said depressed key of



said keyboard means so that a musical performance is effected on said keyboard means by depressing keys indicated by said key indicating means;

automatic tone signal forming means coupled to said memory means and being responsive to a part of said performance data read out of said memory means for effecting an automatic musical performance of a different type from said musical performance effected on said keyboard means by depression of keys indicated by said key indicating means; and

means coupled to said key indicating means and to said automatic tone signal forming means for operating said key indicating means and said automatic tone signal forming means in timed relation to each other.

4,344,345

AUTOMATIC RHYTHM ACCOMPANIMENT SYSTEM

Shigenori Sano, Higashiyamato, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,756
Claims priority, application Japan, Dec. 26, 1979, 54-169561
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **6 Claims**

1. An automatic rhythm accompaniment system comprising:

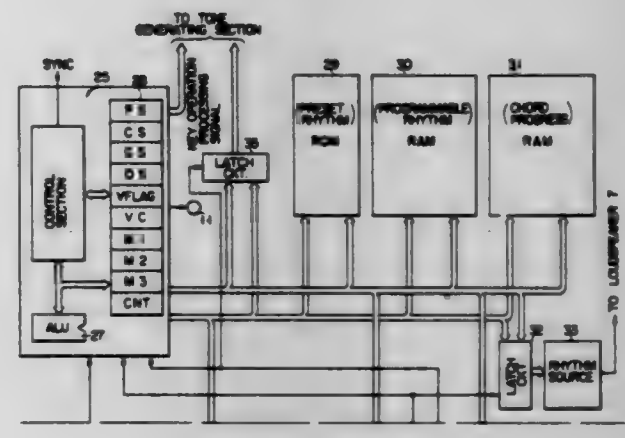
first memory means for storing a plurality of rhythm pattern data items;

selecting means for selecting one of the rhythm pattern data items stored in said first memory means;

rhythm sound generating means coupled with said first memory means for generating rhythm sounds in accordance with a rhythm pattern data item selected by said selecting means and read out from said first memory means;

second memory means for storing chord progress data and control data, said control data being stored in said second memory means in accordance with said chord progress data;

accompaniment sound generating means coupled with said second memory means for generating accompaniment sounds according to said chord progress data; and



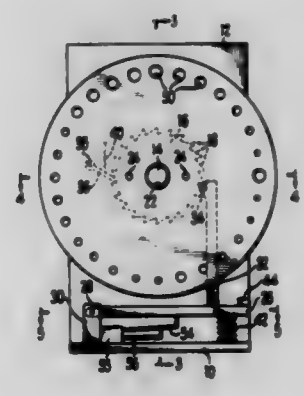
control means coupled to said first and second memory means and being responsive to stored control data derived from said second memory means for reading out from said first memory means a rhythm pattern data item other than said rhythm data item selected by said selecting means, and for supplying said other rhythm pattern data item to said rhythm sound generating means to generate rhythm sounds according to said other rhythm pattern data item.

4,344,346

MUSICAL LIGHT TOY

Erick E. Erickson, Chicago, and Gunars Licitis, Sr., Lombard, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 192,085
Int. Cl.³ G10H *3/06, 3/03*
U.S. Cl. 84—1.18 **12 Claims**



1. A musical toy, comprising a rotatably mounted disc having a series of openings therethrough which are equally spaced

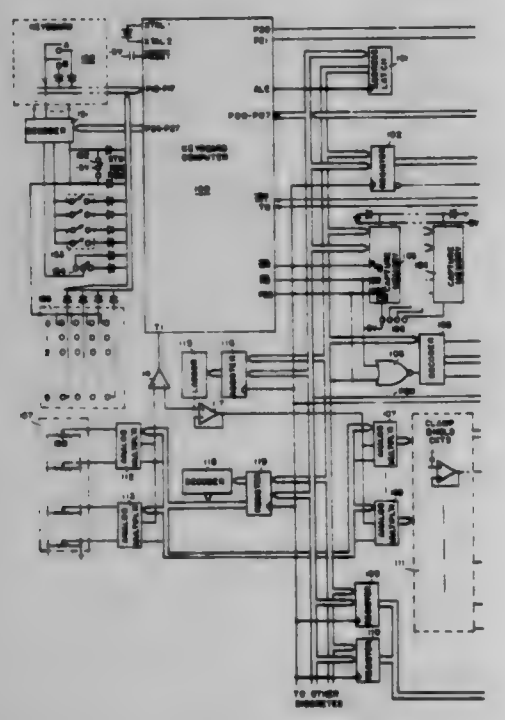
apart at a common radius from the center thereof, the cross-sectional area of successive ones of said openings corresponding to the pitch of successive notes of a musical selection when said disc is rotated in a predetermined direction, means for advancing said disc by successive increments equal to the space between successive ones of said openings, light sensitive means mounted to receive light through successive ones of said openings as said disc is successively advanced by said advancing means, and means connected to said light sensitive means for generating an audible tone having a pitch which varies in accordance with the cross-sectional area of successive ones of said openings.

4,344,347

DIGITAL ENVELOPE GENERATOR

Alfred H. Faulkner, 1324 Portesuello Ave., Santa Barbara, Calif. 93105

Filed Mar. 26, 1980, Ser. No. 134,248
Int. Cl.[3] G10H *1/02*; G06F *1/02*
U.S. Cl. 84—1.26 13 Claims



1. A keyboard musical instrument including;
a first preset control for selecting an envelope attack rate,
a second preset control for selecting a first envelope decay rate,
a third preset control for selecting a second envelope decay rate,
a fourth preset control for selecting an envelope breakpoint level,
a fifth preset control for selecting a third envelope decay rate, and
a digital envelope generator comprising;
a first programmatic means activated in response to operation of a playing key to generate an envelope having the selected attack rate,
a second programmatic means activated by said first means upon termination of the attack phase to continue generation of the envelope at the selected first decay rate,
a third programmatic means activated in response to the envelope reaching the selected breakpoint level to continue generation of the envelope at the selected second rate, and
a fourth programmatic means activated in response to release of the playing key to complete generation of the envelope at the selected third decay rate.

4,344,348

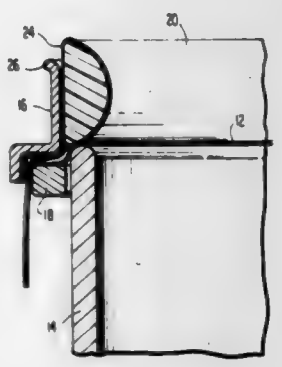
Patent Not Issued For This Number

4,344,349

RIM SHOT SEGMENT

Charles P. Cordes, 27 Kenneth Pl., Clark, N.J. 07066

Filed Jun. 24, 1981, Ser. No. 276,744
Int. Cl.[3] G10D *13/02*
U.S. Cl. 84—411 R 4 Claims



1. A rim shot segment adapted to be attached to a drum in contact with the drum head and internal circumferential surface of the drum hoop comprising an arcuate segment of plastics material having a semi-cylindrical cross-sectional configuration including a flat surface and a rounded surface and means for securing said arcuate segment to a drum with said flat surface bearing against the internal circumferential surface of the drum hoop and a portion of the rounded surface bearing against the drum head where the drum head engages the drum shell.

4,344,350

CROSSFEEDER

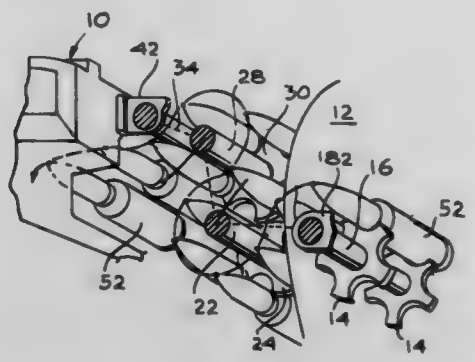
Michael D. Golden, Costa Mesa, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Nov. 13, 1979, Ser. No. 93,727
Int. Cl.[3] F41D *10/42*
U.S. Cl. 89—33 E 30 Claims

1. A crossfeeder unit capable of constant supply rate and variable output rate of serially provided items comprising:
a support structure;
discharge means for discharging items from the unit;
input means means for item input to the unit;
intermediate means for accumulation of a variable number of items between the input and discharge means, the intermediate means including at least one pivotable accumulating

means mounted to pivot about the axis of at least one of the input and discharge means in accordance with differences between the supply rate and the output rate;

guide means for guiding said items from the input means to the output means via the intermediate means; and



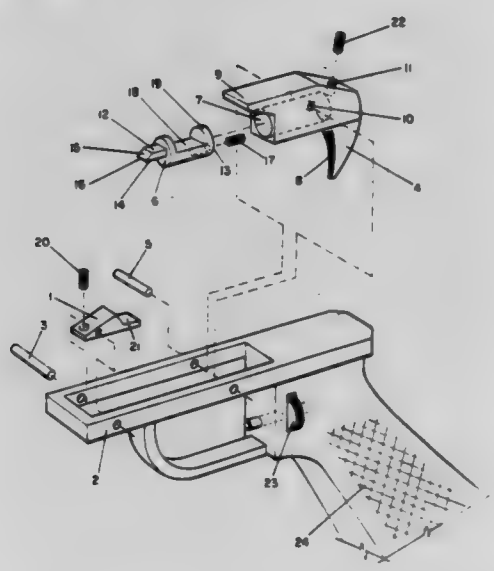
control means responsive to the position of the accumulating means relative to the pivot axis and effective to control the feed of items to said crossfeeder.

4,344,351

TRIGGER MECHANISM PROVIDING A SHORT BURST OF FIRE CAPABILITY FOR SUBMACHINE GUNS

Sidney J. McQueen, 414 Coors Rd. SW., Albuquerque, N. Mex. 87105

Filed Feb. 2, 1981, Ser. No. 230,740
Int. Cl.³ F41D *11/02, 11/10*
U.S. Cl. 89—129 B **2 Claims**



1. A trigger mechanism providing a burst capability in automatic weapons comprising:

a trigger pivotally mounted in a trigger frame, said trigger having a sear lever, a finger lever, and a transverse pivot hole; and

said trigger having a finger bore essentially parallel to and adjacent to the sear lever, said finger bore intersecting the pivot hole; and

said trigger having a spring hole extending from the top of the trigger down into the finger lever; and

a burst finger sized to slideably fit the finger bore; said burst finger having a sear tip which has a lower flat surface, and a beveled upper surface, forming a relatively sharp edge at the sear tip; and

said burst finger having a butt end; and said burst finger having a longitudinal cavity in the upper portion of the body of the burst finger, adjacent to the butt end, said longitudinal cavity being sized to slideably permit a trigger pin to be installed in the transverse pivot hole; and

a sear being pivotally mounted in the trigger frame, said sear having a trigger tang; and

a biasing spring installed in the burst finger said biasing spring bearing on the bottom of the finger bore, and said burst finger extending toward the trigger tang on the sear sufficiently to engage said trigger tang on the sear, and

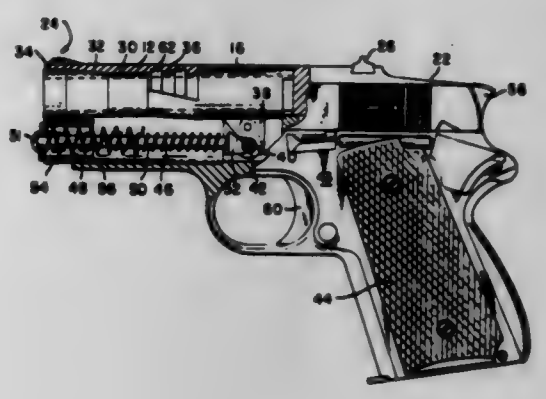
a return spring installed in the spring hole said return spring biasing the trigger to return to the non-firing position.

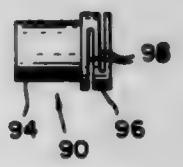
4,344,352

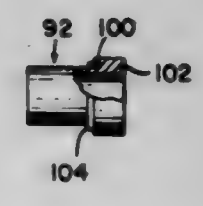
SEMI-AUTOMATIC FIREARM

Patrick Yates, P.O. Box 5779, China Lake, Calif. 93555; Sydney H. Woodcock, 3rd & University, Penthouse Seattle Tower, Seattle, Wash. 98101, and Jeffrey R. Beals, 11216 Phinney Ave., N., Seattle, Wash. 98133

Division of Ser. No. 794,738, May 9, 1977, Pat. No. 4,173,169, which is a continuation-in-part of Ser. No. 692,297, Jun. 3, 1976, abandoned. This application Nov. 5, 1979, Ser. No. 91,187
Int. Cl.³ F41D *11/12*
U.S. Cl. 89—198 **3 Claims**







1. In a semi-automatic firearm having a firing chamber, a barrel, a frame, a slide movable with respect to said barrel and said frame between battery and full recoil positions, means for sequentially ejecting a spent cartridge and loading a fresh cartridge during each recoil stroke, and a firing mechanism for selectively initiating said cartridge when said slide is in battery, the improvement comprising a recoil mechanism for allowing the recoil of said cartridge to carry said slide rearwardly toward said full recoil position, and for subsequently returning said slide to its battery position, said recoil mechanism including a first recoil spring extending between said frame and slide to urge said slide toward its battery position, and a second, larger diameter, recoil spring extending between said frame and slide to urge said slide toward its battery position, said second spring concentrically surrounding said first recoil spring, said first and second springs being helically wound in opposite direction such that said first spring forms a guide for said second spring while allowing said springs to deform without interfering with each other, the forward ends of said recoil springs being received by a cylindrical cap having a rear face that contacts a portion of said frame when said slide is in full recoil position, said cap including resilient means for allowing limited relative movement between the front face of said cap and said slide when said slide is in full recoil position.

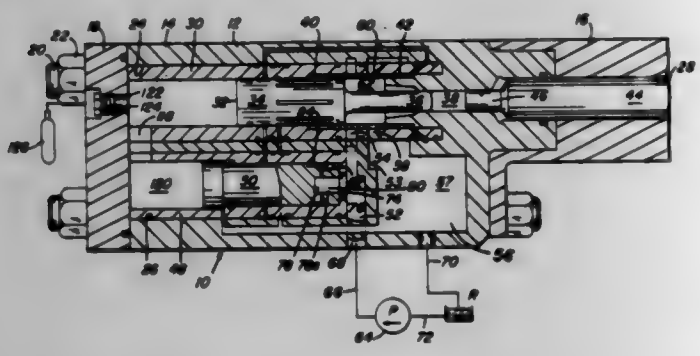
4,344,353
HAMMER

John Duff, and Peter McFarlane, both of North Bay, Canada, assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 39,051, May 14, 1979, abandoned. This application May 18, 1981, Ser. No. 264,495

Int. Cl.[3] F01L *17/00, 25/06*

U.S. Cl. 91—165 19 Claims



1. In a fluid operable impactor assembly including a reciprocably movable hammer, an independent bias means which continuously exerts on said movable hammer a bias of a magnitude determined solely by the position of said movable hammer in its reciprocal movement and a motive fluid flow control valve means cooperable with a pressure fluid flow source for selectively supplying motive fluid flow to act on said hammer wherein said hammer is responsive to the pressure impetus of the selectively supplied motive fluid flow to move in an upstroke direction against the bias of said bias means and subsequently is responsive to the impetus of said bias means to move in an impact stroke direction opposite said upstroke direction and wherein said control valve means includes a main valve which is actuatable to selectively admit motive fluid flow to said hammer for such upstroke and to vent motive fluid from said hammer to permit said continuous bias means to drive said hammer in said impact stroke direction, the improvement comprising: actuator valve means operable to actuate said main valve in conjunction with the reciprocal movement of said hammer wherein said actuator valve means is operable solely in response to the pressure of such motive fluid from such fluid flow source and the independent, continuous bias of said bias means.

4,344,354
VALVE ARRANGEMENT FOR CONTROLLING THE STROKE OF A TELESCOPING PROP

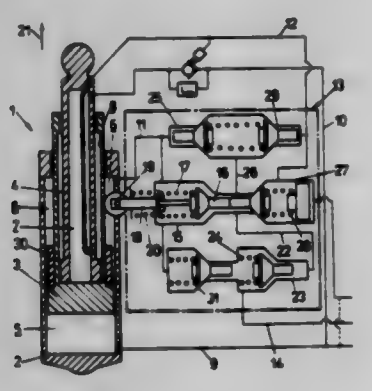
Heinrich Suessenbeck, Zeltweg; Gottfried Siebenhofer, Vienna; Rienhard Neuper, Judenburg, and Alfred Zitz, Zeltweg, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Feb. 14, 1980, Ser. No. 121,583

Claims priority, application Austria, Mar. 14, 1979, 1919/79

Int. Cl.[3] F15B *11/18*

U.S. Cl. 91—168 9 Claims



1. Valve arrangement for controlling the stroke of a telescoping prop comprising a stationary base prop, an intermediate prop guided in said base prop, said intermediate prop having a consolidating space and a deconsolidating space and being capable of effecting a mine roof consolidating stroke, at least one top prop guided in said intermediate prop, said top prop having a consolidating space and a deconsolidating space, at least one first valve controlled in dependence on the shifting path of the intermediate prop, said valve being provided in a first conduit leading to the deconsolidating space of the intermediate prop and functioning to delimit the mine roof consolidating stroke of the intermediate prop prior to attaining the maximum consolidating stroke thereof, said valve also releasing the lifting stroke of the top prop, and a second valve controlled by the pressure of the pressurized fluid interpositioned in a second conduit coming from the deconsolidating space of the top prop for becoming closed when the pressure within the consolidating space of the top prop exceeds a predetermined value, said second valve functioning to open the valve controlled by the shifting path of the intermediate prop and to provide for the possibility to subject the intermediate prop to a mine roof supporting pressure exceeding the predetermined pressure of said second valve.

4,344,355
CONTROL ARRANGEMENT FOR A HYDRAULICALLY OPERATED IMPLEMENT

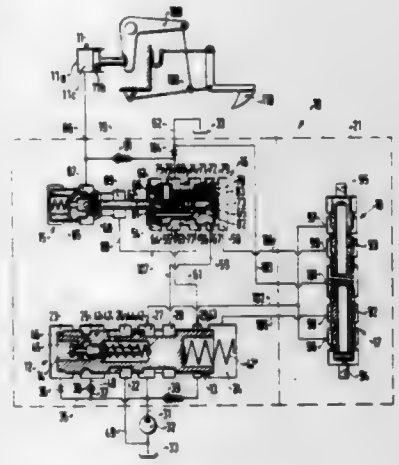
Günter Schwerin, Möglingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 167,320

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929232

Int. Cl.[3] F15B *13/042, 13/043*

U.S. Cl. 91—445 8 Claims



1. A control arrangement for lifting and lowering an implement comprising a cylinder and a piston movable in said cylinder and defining in said cylinder to one side of said piston a compartment; linkage means between said piston and said implement for lifting the latter upon feeding of pressure fluid into said compartment and for lowering said implement upon discharge of pressure fluid from said compartment; a source of pressure fluid; a tank; first valve means; second valve means arranged downstream of said first valve means; conduit means comprising an inlet conduit leading from said source to said first valve means, a working conduit leading from said first valve means to said second valve means, a consumer conduit leading from said second valve means to said compartment, a discharge conduit leading from said first valve means to said tank and a return conduit leading from said second valve means likewise to said tank, said first valve means comprising a reversing valve having a reversing slide movable between a first position connecting said inlet conduit to said working conduit and a second position connecting said inlet conduit to said discharge conduit, said second valve means comprising a releasing valve and a stop valve coordinated therewith, said releasing valve having a damping chamber at one end, a control space at the other end and a releasing piston movable between a first position permitting flow of pressure fluid over

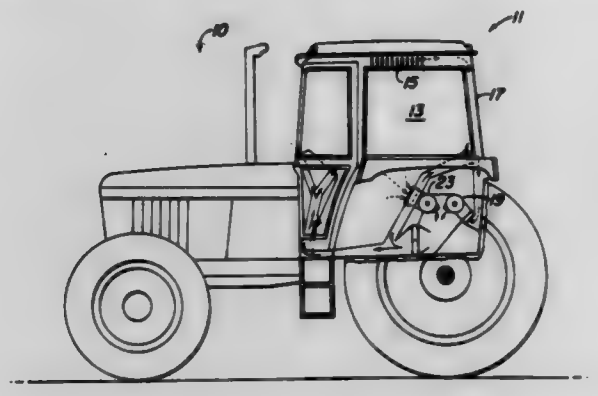
a section of said working conduit downstream of said releasing valve to said stop valve and from the latter through said consumer conduit to said compartment to lift said implement and a second position connecting said compartment to said return conduit to lower said implement; a throttle means connecting said damping chamber to said return conduit; first and second control valve means respectively connected to said reversing and releasing valves for controlling movement of said reversing slide and of said releasing piston between the positions thereof; and pressure peak preventing means for preventing pressure peaks in the conduit means upstream of said releasing piston and comprising passage means connecting a portion of said working conduit upstream of said releasing valve with said damping chamber only when said releasing piston is in said second position and a pressure responsive valve in said passage means controlled in dependence on the pressure prevailing in said working conduit upstream of said releasing valve to communicate fluid from said working conduit to said damping chamber.

4,344,356

AIR DISTRIBUTION SYSTEM

Robert H. Casterton; Larry J. Phippen, and Darrell L. Wright, all of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 23, 1980, Ser. No. 162,402
Int. Cl.³ B60H *3/06*
U.S. Cl. 98—2.11 **10 Claims**



1. An air distribution system for a vehicle cab comprising:

(a) a pair of spaced-apart hollow members contained in said cab, each having two separate chambers, one chamber structure providing support for said cab and the second chamber providing an air channel for incoming air and which communicates with an opening in said cab;

(b) a partition dividing an internal area of said cab into a first compartment and an air mixing zone;

(c) constant-volume blower means for drawing fresh air through said second chamber of each of said hollow members and into said mixing zone and maintaining a positive pressure therein;

(d) a first air filter positioned upstream of said constant volume blower means for filtering the incoming air;

(e) hollow ductwork extending through said partition for routing air from said mixing zone to said first compartment;

(f) variable-speed blower means for recirculating the air from said first compartment into said mixing zone wherein the air is mixed with the incoming fresh air;

(g) a second air filter positioned upstream of said variable-speed blower means for filtering the air from said first compartment; and

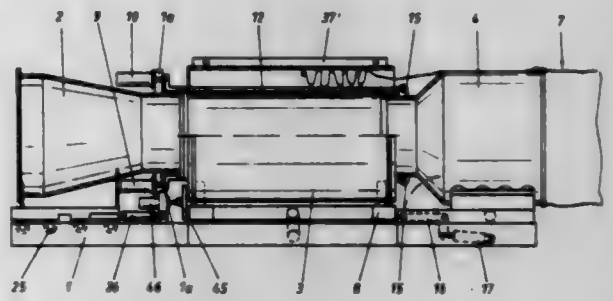
(h) a temperature controller positioned downstream of both said constant-volume blower means and said variable-speed blower means and adjacent to an entrance to said hollow ductwork for conditioning the air passing therethrough.

4,344,357

APPARATUS FOR EXTENDING VENTILATING CONDUITS

Alfred Mittelkötter, Witten, Fed. Rep. of Germany, assignor to Ruhrkohle AG and Maschinenfabrik Korfmann GmbH, both of, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,032
Claims priority, application Fed. Rep. of Germany, May 27, 1980, 3020121
Int. Cl.³ E21F *1/08*
U.S. Cl. 98—50 **29 Claims**



1. Apparatus for guiding and extending ventilating conduits, said apparatus comprising: a replaceable ventilating pipe store having an upstream end and a downstream end and being exchangeable when empty with a full ventilating pipe store, a funnel guide releasably connected to said upstream end of said ventilating pipe store, an outlet nozzle releasably connected to said downstream end of said ventilating pipe store, a flexible ventilating pipe withdrawably accommodated in a folded condition on said ventilating pipe store and having an upstream end connectable to a ventilating conduit, and a main frame carrying said ventilating pipe store and said funnel guide to enable said flexible ventilating pipe to be progressively withdrawn from said ventilating pipe store and extended along an axial line of said apparatus and guided over said funnel guide during advancement of said apparatus and to enable said store to be exchanged when empty for a full store, said main frame having means for carrying said ventilating pipe store except during those periods when said ventilating pipe store is being exchanged and having means for carrying said funnel guide only during said periods.

4,344,358

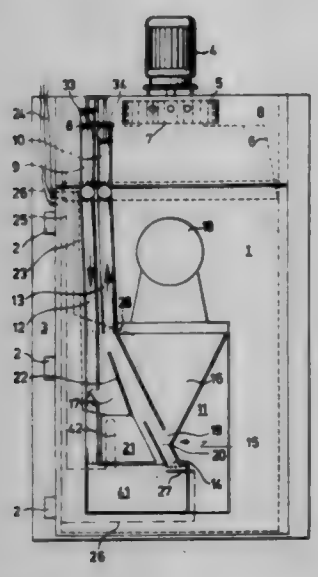
PROCESSING CHAMBER, IN PARTICULAR SMOKING CHAMBER

Siegfried Maurer, Forellenweg 1, 7752 Insel Reichenau, Fed. Rep. of Germany

Continuation of Ser. No. 60,386, Jul. 25, 1979, abandoned. This application Jun. 10, 1981, Ser. No. 272,175
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2833949; Jan. 2, 1979, 2900012; Apr. 20, 1979, 2915960
Int. Cl.³ A23B *4/04*
U.S. Cl. 99—476 **12 Claims**

1. Apparatus for the processing of food by means of at least smoke, comprising a housing; a partition within said housing separating the interior thereof into a distribution region and a food processing chamber; fluid circulating means mounted in said housing and having an inlet and outlet communicating with said distribution region and said food processing chamber; a door pivotably carried by said housing and sufficiently large for introduction and removal of food; means for generating smoke carried by said door for pivotal movement therewith; a first pair of conduit means carried by said housing and having one end extending therefrom outwardly of said housing, a second pair of conduit means carried by said door and having one end extending into said means for generating smoke, the other ends of said first and second pairs of conduit means being connectable on closing of said door to form two passages for the inlet of air to and the outlet of air from said smoke generating means; in said first pair of conduit means the conduit forming the air inlet passage having a section open

adjacent the outlet of said fluid circulating means and the conduit forming the exhaust passage having a section open adjacent the inlet of said fluid circulating means, whereby the



smoke is circulatable by said fluid circulating means from said smoke generating means through said food processing chamber and is recycled to said smoke generating means.

4,344,359

AUTOMATIC MACHINE FOR PEELING HARD-BOILED EGGS

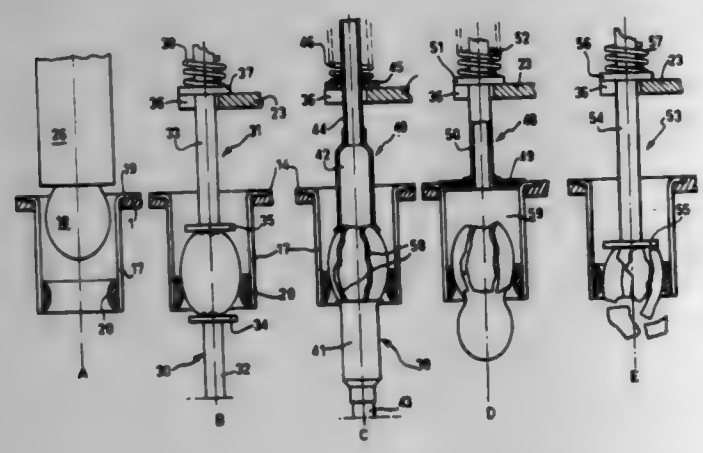
Jerome Frechou, 17 Quai de l'Ile du Bac, 78700 Conflans Saint Honorine, and Gilles Isambert, 65 Bis Rue de Marolles, 94470 Boissy Saint Leger, both of France

Filed May 7, 1980, Ser. No. 147,605

Claims priority, application France, May 15, 1979, 79 12326

Int. Cl.³ A23N *5/00*; A47J *43/14*

U.S. Cl. 99—580 **17 Claims**



1. An automatic machine for peeling hard-boiled eggs comprising

(A) a carrier frame;

(B) a plurality of hard-boiled egg receiver cups, each of said cups having an inlet orifice and a bottom defining a constricted circular opening whose diameter is slightly less than that of the largest diameter egg;

(C) a source of compressed fluid;

(D) a movable stand carrying said cups;

(E) drive means for driving said stand;

(F) a feeding station provided with dispenser means for delivering a hard-boiled egg to one of said cups presented thereto;

(G) break means for breaking the shell of the egg at each end thereof;

(H) shattering means operatively connected to said source of compressed fluid for injecting said compressed fluid under pressure inside the shell between the membrane and the white of the egg to shatter the shell;

(I) ejection means operatively connected to said source of compressed fluid for hermetically sealing off the inlet orifice of said cup and putting the interior thereof under sufficient pressure to drive the white of the egg out of its shattered shell through said constricted circular opening of said cup, and

(J) a cleaning station provided with cleaner means for driving the shattered shell out of said cup.

4,344,360

INK DUCT FOR OFFSET OR LETTERPRESS PRINTING MACHINES

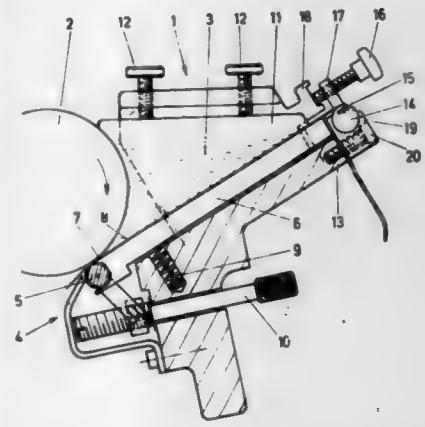
Willi Jeschke, Heidelberg, and Rudi Jünghans, Wilhelmsfeld, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,401

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928125

Int. Cl.³ B41F *31/02*

U.S. Cl. 101—363 **2 Claims**



1. Ink duct assembly for offset or letterpress printing machines having an ink duct and a duct roller defining an ink gap therebetween and an ink metering unit for adjusting the ink gap, respectively, zonewise in axial direction of the duct roller, comprising an elastic foil, the ink metering unit being engageable through the intermediary of said elastic foil with the duct roller, said elastic foil covering the ink metering unit and being removably fastened to the ink duct at an upper edge thereof, and means for tangentially displacing said elastic foil relative to the duct roller to a position wherein a new and unworn part of the surface of said elastic foil engages with the duct roller, said means for tangentially displacing said elastic foil including a plurality of parallel strips disposed in an upper region of the ink duct and extending over the length of the latter for respectively securing an end of said elastic foil.

4,344,361

AUTOMATIC BLANKET CYLINDER CLEANER

John MacPhee, Rowayton, Conn.; Charles R. Gasparrini, Rye, N.Y., and Karlheinz E. H. Arnolds, Stamford, Conn., assignors to Baldwin-Gegenheimer Corporation, Stamford, Conn.

Filed Apr. 19, 1979, Ser. No. 31,511

Int. Cl.³ B41F *35/06*; B41L *41/06*

U.S. Cl. 101—425 **12 Claims**

1. A device for cleaning the rotating blanket cylinder of a printing press with a cleaning fabric comprising:

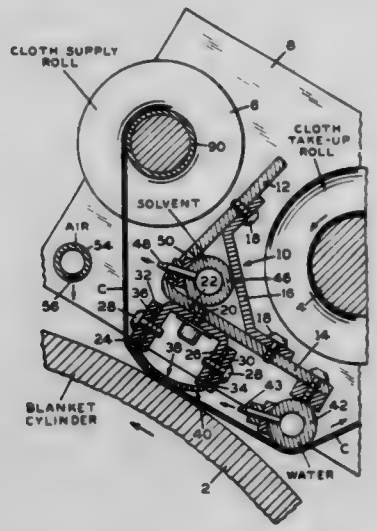
(a) frame means adjacent said blanket cylinder;

(b) means supported by said frame including a cloth supply roll and a cloth take-up roll for mounting the cleaning cloth adjacent said blanket cylinder;

(c) feeding means cooperating with said take-up roll for incrementally feeding substantially the same amount of cloth during each incremental feeding of the fabric regardless of the amount of cloth on the take-up roll;

(d) means for moving the cloth in a direction opposite from the blanket cylinder;

(e) an expandable bladder on said frame which causes the cleaning fabric to contact the blanket cylinder when in the expanded condition;
(f) pneumatic means for expanding said bladder;
(g) said feeding means including power means attached to said frame;
(h) one-way clutch means operatively associated with said power means to drive said take-up roller in one direction;
(i) control means in engagement with the cleaning cloth on said take-up roll, said control means controlling the amount of angular movement of said take-up roll depending on the amount of cleaning cloth on said cleaning cloth take-up roll;



(j) said control means including a crank arm operatively associated with said one-way clutch adapted to rotate with the shaft driven by said one-way clutch;
(k) carrier means on said crank arm and adapted to move radially with respect to the axis of said take-up roll along said crank arm;
(l) travelling pin means operatively associated with said carrier, said travelling pin being maintained in engagement with the cleaning cloth on said take-up roll and being adapted more radially with respect to the axis of said take-up roll with said carrier means and being adapted to be move in an arcuate path with said carrier means about the axis of said take-up roll; and
(m) stop means on said frame adapted to engage said travelling pin and to limit rotational movement.

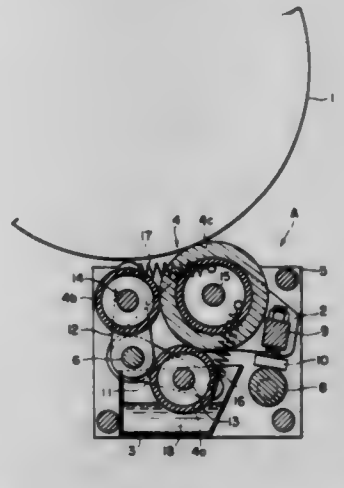
4,344,362

IMPRESSION CYLINDER CLEANING DEVICE FOR PRINTING MACHINE

Koji Ishii, Fuchu, Japan, assignor to Ryobi Ltd., Hiroshima, Japan

Filed Jan. 2, 1981, Ser. No. 222,225
Claims priority, application Japan, Jan. 8, 1980, 55-842[U]
Int. Cl.³ B41F *35/00*
U.S. Cl. 101—425 **7 Claims**

1. A printing machine having an impression cylinder cleaning device comprising:
a cleaning mechanism having a cleaning tank, a group of rollers and auxiliary frames, said group of rollers being rotatably supported by said auxiliary frames and said rollers being in contact with one another, said group of rollers including a cleaning roller; main frames for rotatably supporting said auxiliary frames; a first lever for rotating said auxiliary frames relative to said main frames so that said cleaning roller is brought into or out of engagement with an impression cylinder of said printing machine by operating said first lever;
a printing machine frame having a window formed therein below said impression cylinder; a plurality of guide bars, one of said guide bars extending below said window supported by said printing machine frame; a bracket coupled to said printing machine frame adapted to receive a portion of said main frame; a shaft and a second lever coupled to said shaft, said shaft being coupled to said printing machine frame for detachably positioning said cleaning mechanism below said impression cylinder; and
a cleaning mechanism positioning device having a first adjusting screw adapted to support a lower edge of one of said main frames, a lifting lever having one end pivotally



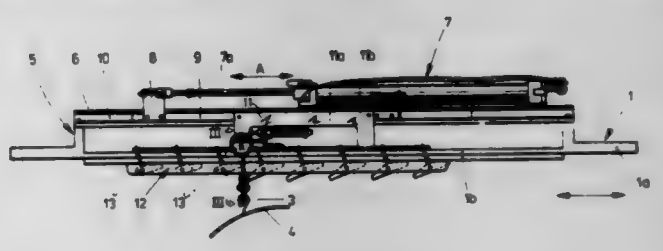
secured to said printing machine frame and said first adjusting screw being threadably engaged with the other end thereof so that said portion of said main frame is fixedly abutted against a lower surface of said bracket or released therefrom; and an arm fixedly secured to said shaft at one end and rotatably coupled through a link to said lifting lever.

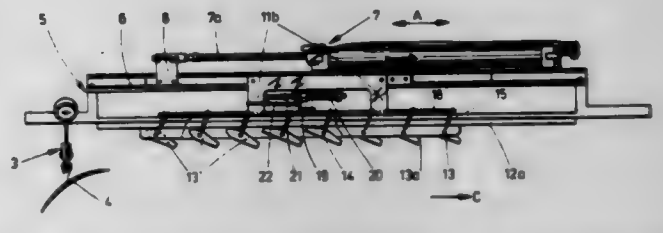
4,344,363

CONVEYOR APPARATUS, PARTICULARLY FOR OVERHEAD CONVEYANCE

Gustav G. Veith, Munich, Fed. Rep. of Germany, assignor to Gustav Georg Veith GmbH & Co., KG and Veith Transpo GmbH, both of Munich, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 140,318
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2915095
Int. Cl.³ B61B *13/12*
U.S. Cl. 104—162 **6 Claims**





1. A conveyor apparatus particularly for intra-plant conveyance in the garment industry, comprising conveyor tracks, carrier units travelling on said conveyor tracks and having each at least one stirrup member straddling a conveyor track from below and provided with rollers resting on the top surface of said track, and at least one drive unit for actively conveying said carrier units, characterized in that said drive unit (2) comprises a conveying bar (12) actuatable to reciprocate along a track section (1*a*) and carrying a plurality of drive transmitting members (13) for engagement with said carrier

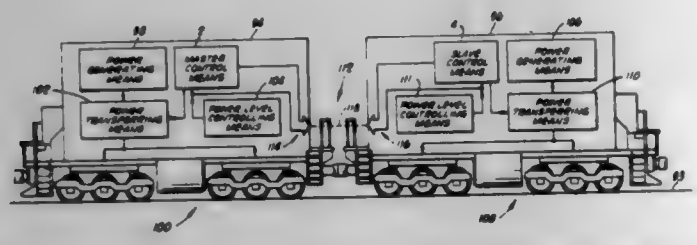
units (3), said drive transmitting members being operative when moving in one working stroke direction to convey said carrier units while being able to pass said carrier units without engagement therewith when moving in the return stroke direction, said track section (1*c*, 1*a*) being adapted to receive said carrier units (3) from only one end thereof and said conveying bar (12) being provided with one or more one-armed pawls (13') at the end portion of the conveying bar facing towards the said one end of said track section, the one arm of said one-armed pawls being located at the end of the pawls facing away from said one track section end.

4,344,364

APPARATUS AND METHOD FOR CONSERVING FUEL IN THE OPERATION OF A TRAIN CONSIST

Stephen K. Nickles, and Suzanne M. T. Beaird, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 9, 1980, Ser. No. 148,523
Int. Cl.³ B61C *5/00*
U.S. Cl. 105—62 R **30 Claims**



1. An apparatus, responsive to the setting of a throttle means in a master locomotive, for controlling a throttle means of a slave locomotive in a train consist including the master locomotive and the slave locomotive, said apparatus comprising:

means for detecting the setting of the throttle means of the master locomotive; and

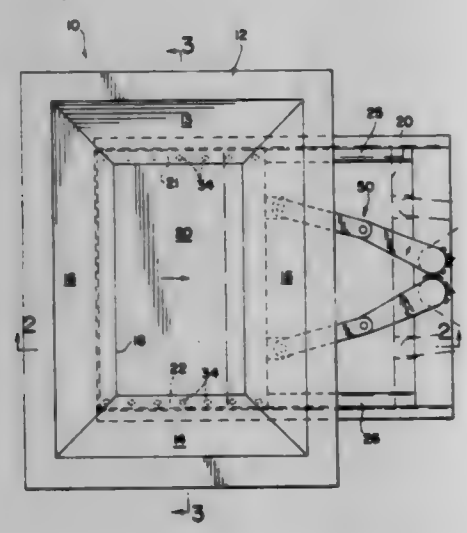
means, responsive to said detecting means, for operating the throttle means of the slave locomotive at an optimum power output-to-fuel consumption ratio within a predetermined range of power levels.

4,344,365

RAILWAY HOPPER CAR GATE ANTI-FRICTION SEAL

William E. Fritz, Naperville, and Thomas C. Soddy, Downers Grove, both of Ill., assignors to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Nov. 1, 1979, Ser. No. 90,301
Int. Cl.³ B61D *7/20, 7/22, 7/26;* F16C *17/26*
U.S. Cl. 105—282 A **7 Claims**



1. In a discharge outlet assembly including in combination: a hopper having downwardly inclined side and end walls defining a discharge opening, a discharge chute having inclined side walls and end walls secured to said hopper and extending below said discharge opening, a gate for closing said discharge opening having upturned inclined side margins underlying the lower portions of said side walls of said hopper, the improvement comprising:

elongated low-friction bodies secured parallel to the direction of travel of the gate between the underside of the upturned inclined side margins of the gate and the top sides of the inclined side walls of the discharge chute to enhance selective relative sliding movement of the gate between its open and closed positions;

said elongated low-friction bodies having a plurality of integral stud portions extending transversely to their lengths;

said upturned inclined side margins of said gate including a plurality of corresponding opening defining surfaces through which extend said integral stud portions of said elongated low-friction bodies;

said integral stud portions including integral flange portions for engagement with the upper surfaces of said inclined side margins of said gate of sufficient width to overlie said integral stud portions and their corresponding opening defining surfaces; and

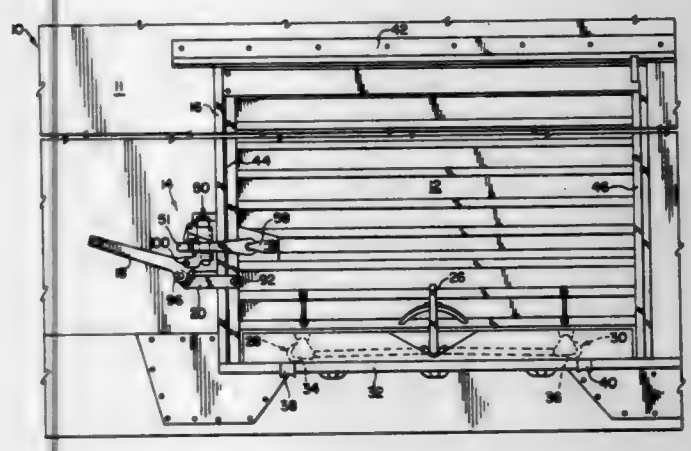
said integral flange portions of said elongated bodies having surfaces defining openings in register with the openings defined in said inclined side margins of said gate and the ends of said integral stud portions are of sufficient length to extend through the openings defined in both said inclined side margins of said gate and said integral flange portions of said bodies, such that said integral flange portions of said stud portions are in engagement with the surfaces of said integral flange portions of said bodies remote from said inclined side margins of said gate to prevent their free passage through the openings of both said inclined side margins of said gate and said integral flange portions of said bodies.

4,344,366

RAILWAY CAR DOOR DRIVER

Thorvald Madland, Arlington Hts., Ill., assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Nov. 28, 1979, Ser. No. 98,297
Int. Cl.³ B61D *3/00, 17/00, 19/00;* E05F *13/02*
U.S. Cl. 105—378 **6 Claims**



1. A door driver in combination with a door lock for a railway house car door including:

a door lock hasp having a vertical opening therethrough mounted on the railway house car door,

door lock upper and lower brackets mounted on a house car adjacent to the railway house car door having vertical openings therethrough to register with the vertical opening of said hasp,

a locking pin for common engagement with said upper and lower brackets and said door lock hasp when the railway house car door is in a closed position and the vertical openings therethrough define a common substantially vertical passageway through which said locking pin extends to lock the door in a closed position,

the improved door driver comprising:

a lever pivotally mounted at a point to the lower bracket of the door lock adjacent to the railway house car door such that with the railway house car door in a closed position, said lever is in a substantially horizontal position;

said lever having a crank arm extending therebelow to provide a mechanical advantage upon pivotal movement of said lever through a substantially acute angle; and

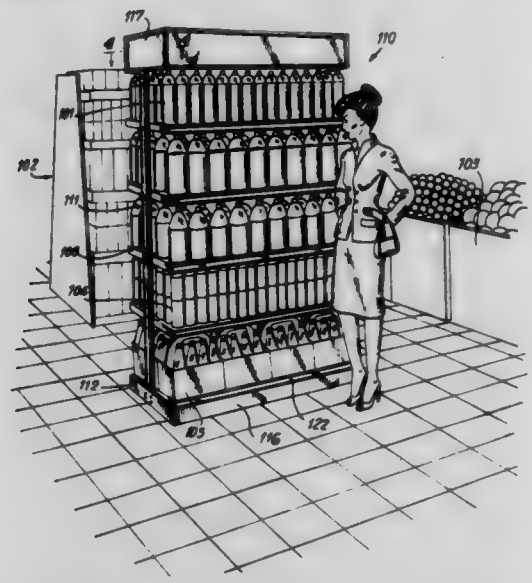
an horizontal door latch member pivotally connectable to the railway house car door and to said lever at pivot points spaced below the pivot point of said lever for driving the railway house car door longitudinally upon counter-clockwise rotational movement of said lever between closed and partially open positions.

4,344,367

MODULAR PRODUCT DISPLAY SYSTEM

Milton J. Merl, New City, N.Y., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Aug. 5, 1980, Ser. No. 175,559
Int. Cl.³ A47F *5/12*
U.S. Cl. 108—1 **44 Claims**



1. A modular product display system comprising:

a base assembly;

at least two spaced apart upright supporting webs detachably connected to said base assembly;

a plurality of shelf assemblies positioned for support between said webs;

bracket means detachably connected to said webs for adjustably supporting said shelf assemblies between said webs, and means carried by said brackets for detachably engaging said shelf assemblies;

said webs including an arrangement of keyhole slots on at least one side thereof including a row of central keyhole slots having their axes aligned with each other and parallel to the longitudinal axis of said webs, and at least a first row of side keyhole slots having their axes parallel to each other and oriented at an angle of between 5° and 15° with respect to the longitudinal axis of said web; and

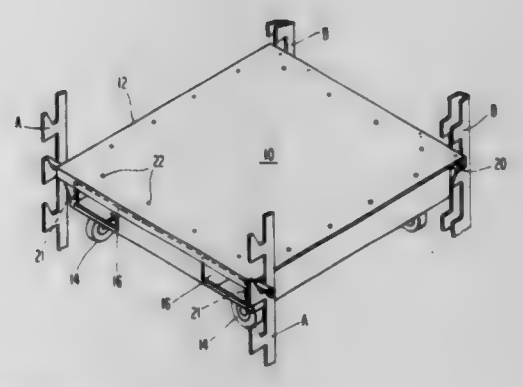
said bracket means including a mounting plate, upper and lower connector elements carried by said mounting plate for coupling with said keyhole slots to support said bracket on said web, and at least one upwardly extending tab member for detachably engaging a support element of said shelf, said upper and lower connector elements being positionable in either said central or side keyhole slots for supporting said shelf assemblies in a horizontal or tilted condition.

4,344,368

UNIVERSAL PALLET

John L. Remington, Coplay, and Robert W. Moyer, Allentown, both of Pa., assignors to The Stanley Works, New Britain, Conn.

Filed Jul. 2, 1980, Ser. No. 165,278
Int. Cl.³ B65D *19/28, 19/44*
U.S. Cl. 108—51.1 **9 Claims**



1. In combination:

a stationary support means, and

a universal pallet for the storage of goods, said pallet comprising:

a generally planar upper surface, comprising means for affixation of selected superstructure means chosen for the convenient storage of classes of goods; and

a base, said base comprising hook and bar means adapted to mate with said support means for storing said pallet, and means for mating with transport means;

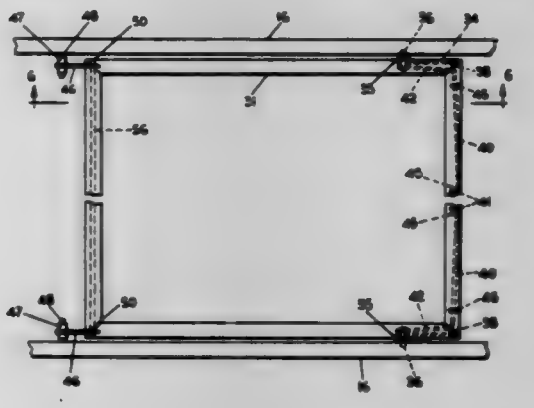
said support means comprising front and rear upright support means, said front upright support means comprising a plurality of spaced vertically opening notches for mating with said hook means on said pallet, and said rear upright support means comprising a plurality of similarly spaced horizontally opening notches for engagement with said bar means.

4,344,369

TABLE WITH EXTENSIBLE TOP

Andrew J. Van Noord, 1434 Hillsboro, SE., Grand Rapids, Mich. 49506

Filed Mar. 31, 1980, Ser. No. 135,876
Int. Cl.³ A47B *1/00*
U.S. Cl. 108—84 **12 Claims**



1. A table having an extensible top surface comprising:

a frame;

a top surface including end leaves slidably mounted to said frame;

said end leaves slidable between a closed position wherein said leaves are positioned adjacent each other to form said top surface and an open position wherein said leaves are spaced apart to permit insertion of an extension surface;

said extension surface including a center leaf carried on said frame and displaceable between a down position wherein

said center leaf is stored below said top surface when the end leaves are in the closed position and an up position wherein said center leaf forms a portion of said top surface when said end leaves are in the open position;

linkage means for operatively connecting said center leaf to said frame, whereby said center leaf is rotatable through a selected arc about a pivot point on said linkage means between said down position at a first portion of said arc and said up position at a second portion of said arc; and

spring means for biasing said center leaf for pivotable movement about the selected arc to said up position;

said spring means providing a rotational moment towards said second arc portion less than an opposite rotational moment generated by the center leaf when said center leaf is in the first arc portion and a rotational movement greater than an opposite rotational movement generated by the center leaf when said center leaf is in the second portion of said arc;

wherein said center leaf is maintained in said down position by the difference between the moments generated by the spring means and the center leaf in the first portion of said arc and is maintained in said up position by the difference between the moments generated by the spring means and the center leaf in the second portion of said arc, wherein said spring means includes at least one torsion bar mounted between said frame and said center leaf;

said torsion bar including a first arm portion operatively connected to said frame and extending along said linkage means and an elongated second arm portion operatively connected to said center leaf and extending from said first arm portion at generally right angles thereto;

said first arm portion providing a levering force for lifting said center leaf and said second arm portion providing a rotational moment for lifting said center leaf;

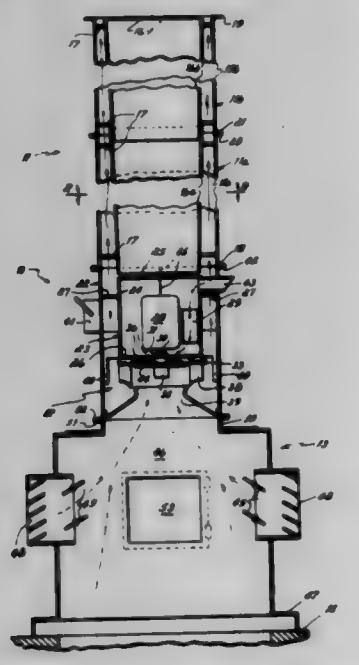
whereby said at least one torsion bar raises said center leaf to the up position when said end leaves are in the open position.

4,344,370

APPARATUS FOR DISCHARGING EXHAUST GAS AT HIGH VELOCITY

W. Christen Smith, Terrace Park; Terry J. McGill, Cincinnati, and Herbert L. Spangler, Bethel, all of Ohio, assignors to Industrial Air, Inc., Amelia, Ohio

Filed Jul. 24, 1980, Ser. No. 172,015
Int. Cl.³ F23L *17/02*
U.S. Cl. 110—162 **10 Claims**



1. An apparatus for discharging exhaust gas at high velocity comprising:

a cylindrical stack, said stack including,

(a) an outer wall and

(b) a coaxial inner wall forming an annular, substantially cylindrical passage for gasses,

one of said outer and inner walls being a substantially cylindrical wall and the other of said outer and inner walls being tapered toward said cylindrical wall from the bottom to the top of said stack so that said stack has a tapered annular cross-section,

said cylindrical passage at its upper end being free from obstruction to the high velocity vertical discharge of exhaust gasses,

an in-line fan for impelling exhaust gas admitted to the inlet of said fan to the outlet of said fan; the outlet of said fan being in communication with the bottom of said cylindrical passage,

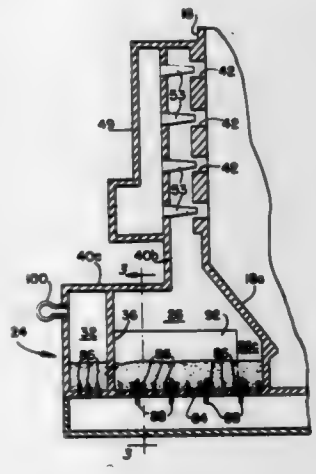
whereby said stack achieves a relatively high discharge velocity for exhaust so that the effective height of said stack is equivalent to that of a considerably taller cylindrical chimney.

4,344,371

VAPOR GENERATING SYSTEM HAVING INTEGRALLY FORMED GASIFIERS EXTENDING TO EITHER SIDE OF THE HOPPER PORTION OF THE GENERATOR

Robert J. Zoschak, Rutherford, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Mar. 31, 1981, Ser. No. 249,567
Int. Cl.³ C10K *3/00*; F22B *1/00*
U.S. Cl. 110—229 **11 Claims**



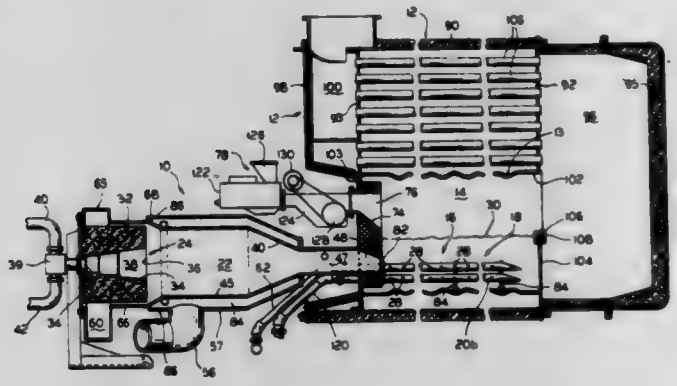
1. An integral generator/gasifier system comprising a vapor generator including a furnace section formed by four upright walls, the lower portion of two opposed walls being slanted inwardly to form a hopper portion, a plurality of openings formed in each of said opposed walls immediately above its slanted portion, at least two gasifiers extending adjacent said opposed wall portions, respectively, and surrounding the respective slanted wall portions and openings, so that the respective interiors of said gasifiers communicate with said openings, means for introducing fuel to each gasifier, means in each gasifier for supporting a bed of adsorbent material for the sulfur generated as a result of the gasification of said fuel, and means for passing air through said bed of adsorbent material to fluidize said material so that, upon gasification of said fuel, a substantially sulfur-free product gas is produced which passes from said gasifier, through said openings and into said furnace section, such that combustion of the gas and unreacted carbon occurs.

4,344,372

FLUIDIZED BED COMBUSTION DEVICE

Robert A. Chronowski, Great Falls, Va., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Jun. 30, 1980, Ser. No. 164,034
Int. Cl.[3] F23G 5/00
U.S. Cl. 110—245 3 Claims



1. A fluidized bed combustion device, including means defining a container,

a unitary bed of fluidizable particulate material disposed within said container and defining a bed,

a plurality of elongate, tubular gas distributing members arranged in a row and disposed within said container, at least a portion of said particulate material being disposed above said row of tubular members,

the tubular members which define the central portion of said row comprising a first gas distributing means and the tubular members at the lateral sides of said row comprising respectively second and third gas distributing means,

said second and third gas distributing means being disposed between said first gas distributing means and said container,

said tubular gas distributing members each having a plurality of spaced apart perforations formed therein for distributing fluidizing gases along their length and into plural zones within said bed,

first gas delivery means coupled to said first gas distributing means for delivering fluidizing gas to said first gas distributing means and air delivery means coupled to said second and third gas distributing means for delivering fluidizing air thereto in a path separate from said first gas delivery means,

control means coupled to said first gas delivery means and to said air delivery means and having a first mode to effect delivery of fluidizing gas to said first gas delivery means and for preventing the flow of fluidizing air to said second and third gas delivery means whereby the central portion of the bed will be fluidized while the side portions between said central portion and said container will remain quiescent, said control means also having a second mode for effecting the simultaneous delivery of fluidizing gas to the first gas delivery means and air to said second and third gas delivery means to simultaneously fluidize the entire bed,

said combustion device further including a start-up burner and a combustion chamber having a first end and an opposite end, said start-up burner being disposed at the first end of said combustion chamber and said first gas delivery means being coupled to the opposite end of said combustion chamber whereby heated combustion products are delivered therefrom to said first gas distributing means, and,

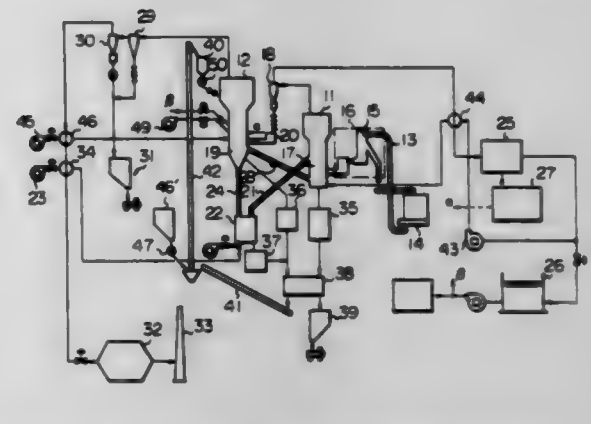
said air delivery means including a fan and a jacket surrounding said combustion chamber and having openings formed therein, the inlet of said fan being connected to said jacket for drawing air through said openings and into the space between said jacket and said combustion chamber and then into the inlet of said fan.

4,344,373

METHOD FOR PYROLYZING

Yoshiaki Ishii; Tsutomu Kume; Naoyoshi Ando, and Shosaku Fujinami, all of Yokohama, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,543
Claims priority, application Japan, Oct. 30, 1979, 54/139271; Oct. 30, 1979, 54/139272
Int. Cl.[3] F23D 1/00
U.S. Cl. 110—347 12 Claims



1. A method for effecting a pyrolyzing operation, said method comprising:

providing a two-bed pyrolysis system including a pyrolysis reacctor, a combustion reactor, and sand as a fluidized medium in said system;

introducing material to be pyrolized into said pyrolysis reactor and therein pyrolyzing said material while removing heat from sand herein, thus forming pyrolysis gas and char;

transferring cooled sand and said char from said pyrolysis reactor to said combustion reactor;

providing a sand lifting conduit between lower and upper portions of said combustion reactor;

providing a nozzle at the lower end of said sand lifting conduit and injecting pressurized gas through said nozzle and through said sand lifting conduit, thereby to lift sand to said upper portion of said combustion reactor;

combusting said char in said combustion reactor and thereby heating sand therein;

transferring heated sand from said combustion reactor to said pyrolysis reactor;

providing an annular ring having therein an annular air gap to surround said nozzle, and supplying air through said gap to increase the amount of said sand lifted through said sand lifting conduit;

determining a stable range of operation of said system with respect to physical factors thereof comprising the amount of sand in said system, the circulation rate of said sand, the pressure difference between the free boards of said reactors, and the superficial velocity in said pyrolysis reactor;

determining actual values of said physical factors; and

comprehensively regulating said physical factors using said actual values as parameters to effect operation of said system within said stable range, said regulating including controlling said circulation rate of said sand by regulating the amount of said pressurized air injected through said nozzle and the amount of said air supplied through said air gap.

4,344,374

HEAVY DUTY SEEDLING PLANTER

Joseph A. Gangluff, Rte. 1, Hattieville, Ark. 72063, and Wayne F. Charton, Rte. 2, Box 182 A, Morrilton, Ark. 72110

Filed Feb. 2, 1981, Ser. No. 231,046
Int. Cl.[3] A01C 11/02
U.S. Cl. 111—2 6 Claims

1. A heavy duty seedling planting device comprising:

elongated, rigid frame means comprising a pair of elongated,

parallel channel members; said frame means having a front and a rear;

furrow cutting means secured to said frame means for opening a furrow in which seedlings are to be planted, said furrow cutting means comprising:

coulter wheel means rotatably secured between said frame channel members for cutting a furrow; and,

plow means secured to said frame means and depending downwardly therefrom for widening said furrow, said plow means comprising rigid, spaced-apart plates forwardly converging in a lower point adjacent said coulter wheel means;

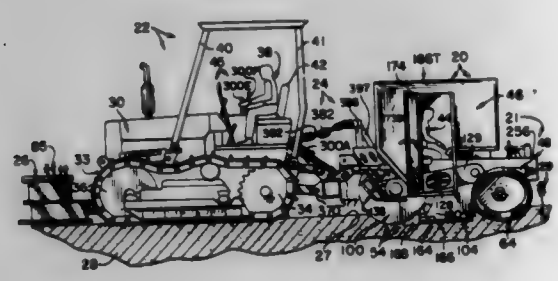
feed wheel means for inserting said seedlings into said furrow, said feed wheel means comprising:

rotatable hub means mounted for rotation with respect to said frame means in a plane generally perpendicular to ground;

a plurality of planting hands secured to said hub means at radially spaced-apart intervals thereon and revolved thereby; the planting hands operable to receive seedlings and to afterwards insert them into said furrow; and,

one way clutch means for preventing reverse rotation of said hub means while facilitating limited slip in response to overload;

compression pathway means for temporarily closing said planting hands after they receive a seedling to be planted



whereby to retain said seedling within said hand until the seedling is appropriately positioned for insertion into said furrow and for subsequently releasing said hand to effectuate seedling release;

chain means coupled between said feed wheel means and said coulter wheel means for rotating said planting hands between seedling receptive and seedling inserting positions; and,

compaction means for repacking said furrow after insertion of a seedling, said compaction means comprising:

a pair of elongated, rigid mounting bars disposed on opposite sides of said frame means, said mounting bars pivotally coupled to said frame means at the rear end thereof for rotation in a plane generally perpendicular to the ground and parallel to said coulter means;

a rotatable, rigid, metallic compacting wheel mounted on each of said mounting bars by inclination means pivotally secured to said mounting bars, said inclination means permitting user selectable variance in the inclination of each compacting wheel;

elongated, rigid rod means extending between said mounting bars for synchronizing same, said rod means extending through said frame means within an arcuate travel limiting slot provided therein; and,

hydraulic ram means coupled to said last mentioned rod means for pivoting said mounting bars to engage or disengage the compaction wheels.

4,344,375

SEWING MACHINE WITH A LOOPER ARRANGED ABOVE THE POINT OF STITCH FORMATION

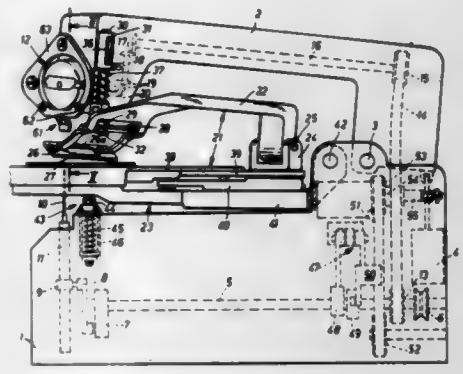
Günter Tölle, Bruchsal, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Oct. 31, 1977, Ser. No. 846,989

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1976, 2650352

Int. Cl.³ D05B *57/14, 57/26, 29/06, 3/06*

U.S. Cl. 112—131 **2 Claims**



1. A sewing machine for sewing workpieces with a needle which reciprocates in a needle operational plane and penetrates the workpieces in an area of stitch formation, comprising a stationary bottom part, an arm having one end pivotally mounted on said bottom part and an opposite arm end overlying said bottom part, said arm being movable from a fixable sewing position to an inoperative position away from the area of stitch formation, a revolving looper having an axis about which it is rotatable and being rotatably mounted on said opposite arm end and having a thread exit opening, said needle being mounted for upward and downward movement on said bottom part for cooperation with said looper, means on said bottom part for clamping a workpiece between said needle and said looper at the area of stitch formation, said needle traversing the workpiece upwardly to effect the stitch formation, a looper thread guide member mounted on said opposite arm end adjacent said looper having a thread deflector located between the needle and said thread exit opening of said looper and extending above the area of stitch formation directly laterally of the needle operational plane and crosswise to said axis of said looper, said deflector including a downwardly extending work hold-down member directed downwardly from the thread deflector and wherein said means for clamping a workpiece comprises a lower clamping part overlying said bottom part and an upper clamp part pivoted to said bottom part and having a front arm portion with a tensioning frame forming an opening through which the needle passes, said hold-down member protruding through said tensioning frame to directly above said tensioning frame on the work.

4,344,376

MECHANISM GENERATING ELLIPTICAL MOTION

Chandrakant Bhatia, Buffalo Grove; George M. Toman, Chicago, and Thomas J. Boek, Schaumburg, all of Ill., assignors to Union Special Corp, Chicago, Ill.

Filed May 9, 1978, Ser. No. 904,204

Int. Cl.³ D05B *57/36*

U.S. Cl. 112—200 **4 Claims**

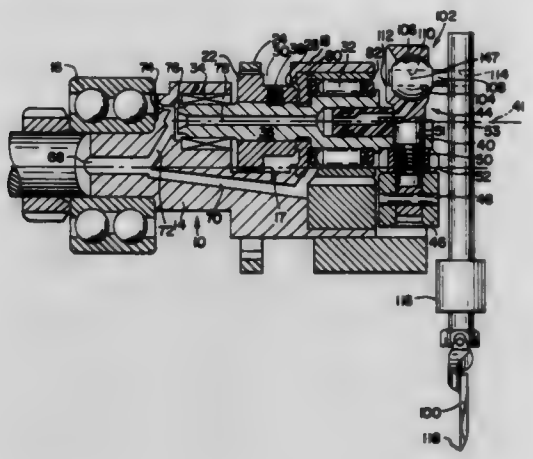
1. A sewing machine assembly including at least one stitch forming means comprising:

drive means including a Cardan gear means having a main bearing means subjected to a generally constant load vector, an output centerpoint means and a double speed bearing means carrying an output means;

a looper bar means;

means operative having an output center point means the same as that of said Cardan gear means to convert elliptical two dimensional motion into elliptical like three di-

mensional motion connecting said output means to said looper bar means; and



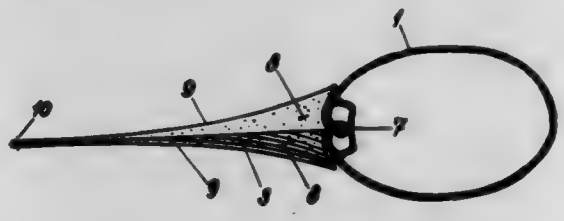
a looper means carried by said looper bar means and activated by said driving means.

4,344,377

SAIL CRAFT

Knud F. Gram, Tibberup Alle 28, Espergaerde 3060, Denmark

PCT No. PCT/DK79/00014, § 371 Date Jan. 16, 1980, § 102(e) Date Jan. 11, 1980, PCT Pub. No. WO79/01077, PCT Pub. Date Dec. 13, 1979
PCT Filed May 14, 1979, Ser. No. 190,868
Claims priority, application Denmark, May 16, 1978, 2134/78
Int. Cl.³ B63H *9/04*; B63B *15/00*
U.S. Cl. 114—103 5 Claims



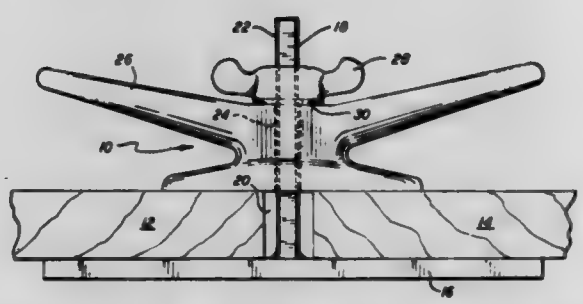
1. A sail craft having a mast and a thin flat sail attached thereto, a buoyancy body fastened to as least the upper portion of said sail, the buoyancy body being made of flexible foam material attached to both sides of the sail with the foam material being flush with the mast but having no connection with the mast, the foam material being shaped such as to form together with the sail and the mast an air foil profile having a smooth uninterrupted surface, with the foam material tapering from the mast towards the aft end of the sail.

4,344,378

PORTABLE CLEAT FOR MARINE USE

Edson J. Martin, Box 309, Canton, N.Y. 13617

Filed Apr. 28, 1980, Ser. No. 144,420
Int. Cl.³ B63B *21/04*
U.S. Cl. 114—218 2 Claims



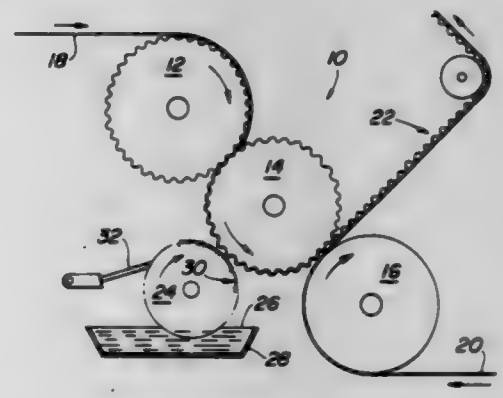
1. A portable cleat assembly for boat mooring lines, the cleat assembly being adapted to be temporarily mounted on a dock or pier comprised of a plurality of spaced apart planks, the cleat assembly comprising in combination an elongated, relatively narrow bottom plate adapted to be passed downwardly between a pair of adjacent planks for engagement with the underside of the planks, the plate when so engaged being transversely disposed with respect to the length of the planks, a rod member rigidly secured at one end to the approximate mid-point of the bottom plate so as to project upwardly therefrom in substantially perpendicular relation thereto, the rod member having a square cross section with at least the upper portion thereof being threaded, the rod member being arranged to extend upwardly between adjacent planks and project above the upper sides thereof, a cleat element engageable with the upper side of the dock planking, the cleat element having a central bore for receiving the rod member, the cleat element bore having a cross section conforming to that of the rod member to prevent relative rotation therebetween, and a wing nut threaded onto the rod member above the cleat element and adapted to force the cleat element into clamping engagement with the dock planking when the nut is tightened down.

4,344,379

BONDING MACHINE AND GRAVURE APPLICATOR ROLL

Webster C. Roberts, Cherry Hill, N.J., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Feb. 2, 1981, Ser. No. 230,770
Int. Cl.³ B05C *1/08*
U.S. Cl. 118—44 12 Claims



1. A system for applying a selectively variable amount of liquid bonding agent to the crests of a web of corrugated paperboard comprising a frame, a vessel associated with the frame for holding a supply of liquid bonding agent, an applicator roll associated with the vessel for transferring a bonding agent from the vessel to crests of a corrugated medium, the surface of the applicator roll being provided with successive patterns of different size cells, each pattern of cells comprising axially extending rows of cells of different volume, all cells in a row being of substantially equal volume, and means for rotating said applicator roll so as to change the phase of the cells relative to the crests of the corrugated paper to vary the amount of bonding agent transferred to the crests from said cells.

4,344,380

APPARATUS FOR APPLYING PHOTO RESIST ON BOTH SURFACES OF SEMICONDUCTOR WAFER

Ritsuo Matsumiya, and Mitsuaki Osawa, both of Omiya, Japan, assignors to M. Setek Company Limited, Tokyo, Japan

Filed Dec. 17, 1980, Ser. No. 217,544
Claims priority, application Japan, Dec. 18, 1979, 54-163926
Int. Cl.³ B05C *13/02*
U.S. Cl. 118—66 6 Claims

1. Apparatus for applying photo resist on two opposite surfaces of a semiconductor wafer comprising:

a first conveying section defining a first conveying path for

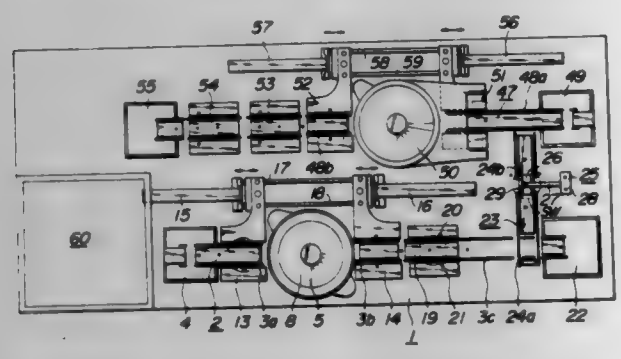
individually successively conveying semiconductor wafers into said apparatus;

a first photo resist application section located within said first conveying path of said first conveying section for applying photo resist material to one side of said wafers;

a first drying section located within said first conveying path of said first conveying section in sequence after said first photo resist application section for drying said wafers;

a second conveying section arranged in operative association with said first conveying section for receiving wafers therefrom, said second conveying section defining a second conveying path for individually successively conveying semiconductor wafers therethrough;

a reversing section provided within said second conveying



path of said second conveying section for turning said wafers upside down;

a third conveying section arranged in operative association with said second conveying section for receiving wafers therefrom, said third conveying section defining a third conveying path for individually successively conveying semiconductor wafers therethrough;

a second photo resist application section located within said third conveying path of said third conveying section for applying photo resist material to the side of said wafers opposite said one side; and

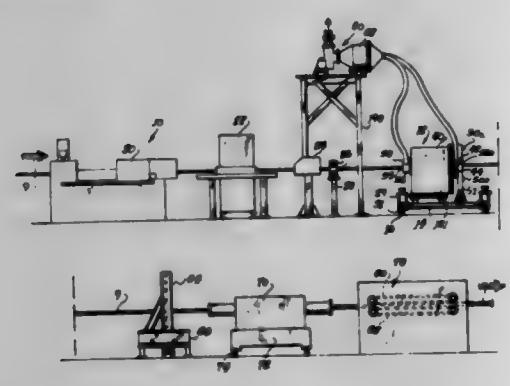
a second drying section located within said third conveying path of said third conveying section in sequence after said second photo resist application section for drying said wafers.

4,344,381

APPARATUS FOR CONTINUOUSLY ELECTROSTATICALLY COATING AN ELONGATED OBJECT

Arthur E. Ostrowski, Valparaiso, Ind., and Joseph M. Polich, Chicago, Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Dec. 29, 1980, Ser. No. 220,710
Int. Cl.³ B05B *5/02*
U.S. Cl. 118—626 **13 Claims**



1. Apparatus for electrostatically coating, with liquid coatings including organic solvent-based coatings, an electrically grounded, elongated object of indefinite length moving along a straight-line path, said apparatus comprising;

a substantially closed chamber having an inlet port through which the elongated object enters said chamber, an outlet port through which the elongated object exits said chamber, and means electrically insulating said chamber from ground;

a coating supply system;

electrostatic coating applicator means to atomize and charge said supplied coating material;

mounting means to direct said applicator means at a portion of the elongated object within said chamber;

means electrically isolating said applicator means from said chamber to prevent charging of said chamber;

means for providing combustibly inert carrier gas to said chamber; and

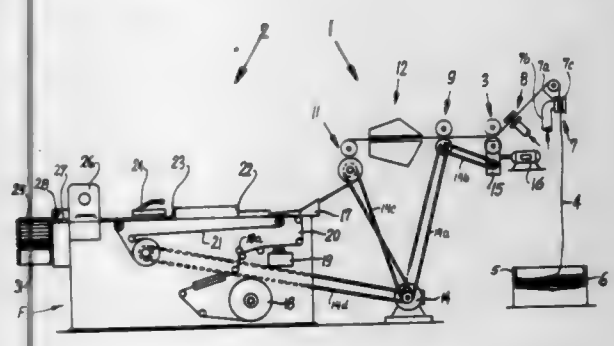
exhaust means for removing coating-laden carrier gas from said chamber, said inert-gas-providing-means and said exhaust means maintaining a non-combustible atmosphere within said chamber.

4,344,382

APPARATUS FOR APPLYING ATOMIZED PLASTICIZER TO A RUNNING TOW OF FILAMENTARY FILTER MATERIAL

Nikolaus Haüsler, Oststeinbek, and Adolf Helms, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,521
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014807
Int. Cl.³ B05B *13/02*
U.S. Cl. 118—674 **14 Claims**



1. Apparatus for applying liquid plasticizer to a running tow of filamentary filter material, particularly in a filter rod making machine, comprising a source of liquid plasticizer; means for transporting the tow of filamentary material along a predetermined path having a predetermined width; an ultrasonic atomizing device adjacent to said path and operable to spray atomized plasticizer onto successive increments of the tow in said path, comprising a flexural resonator having a substantially rectangular atomizing surface extending substantially along the full width of said path, piezoceramic means connected with said resonator and a source of a-c potential connected with said piezoceramic means to effect expansion and contraction of said piezoceramic means and corresponding movements of said flexural resonator; and means for supplying plasticizer from said source to said atomizing device, including means for delivering liquid plasticizer to said atomizing device.

4,344,383

RETAINER RING FOR SECURING SUBSTRATES IN A VACUUM DEPOSITION SYSTEM

Walter W. Salt, Jr., Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 10, 1980, Ser. No. 215,004
Int. Cl.³ B05C *13/02*
U.S. Cl. 118—730 **1 Claim**

1. An assembly for securing a wafer in an aperture of a planet member wherein the planet member is arranged for rolling and orbiting motion about a vacuum deposition system axis, comprising:

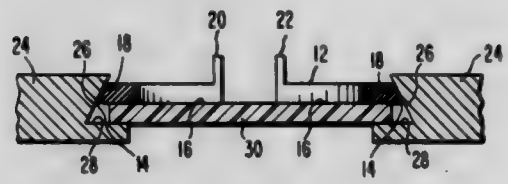
a circular bearing wall;

a support surface affixed to one end of the bearing wall for

supporting the wafer, the bearing wall and support surface mounted in the planet member to define an outwardly tapered aperture therein, the diameter of the bearing wall at the one end thereof being larger than the diameter at the opposite end;

a substantially flat, resilient member arranged as an open-ended annulus, the annulus having an outer side wall of a given diameter greater than the diameter of the bearing wall at the one end thereof;

a beveled surface between the top surface and the outer side wall of the annulus; and



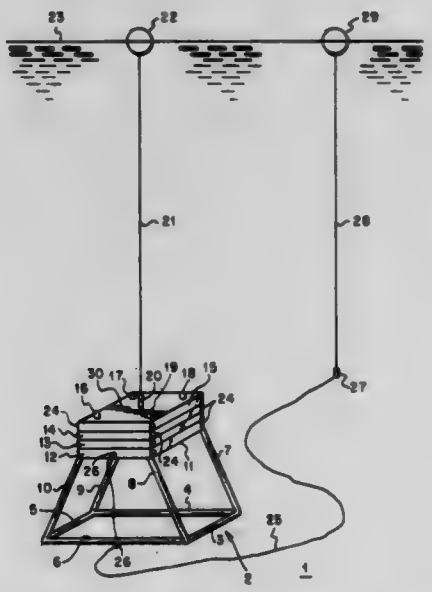
engaging means affixed to each end of the annulus for engaging and applying compressive forces to the annulus and for inserting the annulus into the aperture, whereby when the annulus is inserted in the aperture and the compressive forces released, the annulus expands to position the beveled surface thereof in parallel coplementary mating engagement with the bearing wall of the aperture and the annulus is forced in a direction toward the support surface.

4,344,384

SEA LIFE HABITAT

Paul R. Rowley, Goleta, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 2, 1981, Ser. No. 250,344
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—4 **3 Claims**



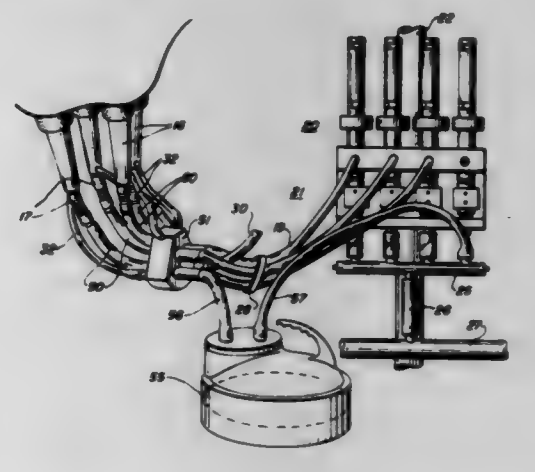
1. Apparatus for growing sea life in an enclosed habitat module in the sea comprising a base means adapted to rest on the sea floor, said base means carrying a support means for receiving and supporting at least one module, guide means carried by said base and/or support means for guiding said at least one module to said support means as said module is lowered through the water toward said support means, said guide means comprising a plurality of upstanding members spaced apart from one another over said support means, and at least one enclosed habitat module for holding said sea life, said module carrying receiving means for mating with and following said guide means, said module receiving means comprising a plurality of apertures which extend through said modules from top to bottom, said apertures being sized so that a guide member will pass therethrough, said apertures being spaced apart across said module so as to correspond with the spacing of said guide members so that said receiving means will mate with said guide members as said module is lowered toward said support means, said guide means being of a height so that their top ends just protrude from the top surface of the upper module carried by said support means, said module also carrying conduit connection means for communicating with the interior of said module for feeding purposes, and conduit means operably connected to said connection means, said conduit means being of a length adequate at least to reach the surface of the water.

4,344,385

MILKER

Harold V. Swanson, Downers Grove, and Duncan M. Thompson, Warrenville, both of Ill., assignors to Babson Bros. Co., Oak Brook, Ill.

Continuation-in-part of Ser. No. 902,331, May 3, 1978, abandoned. This application Aug. 15, 1979, Ser. No. 66,866
Int. Cl.³ A01J *5/04, 7/00*
U.S. Cl. 119—14.08 **11 Claims**



1. An independent quarter milker for use in the stall of a milking parlor, the stall confining a cow during milking, and having an evacuated milk pipeline adjacent thereto comprising:

four double action teat cups, one for connection with each of the cow's teats;

four milk conduit means including a flexible hose, one connected with each teat cup to direct the milk to said milk pipeline, the milk from each quarter being isolated from the milk from the other quarters;

means measuring the electrical current flow through the milk in each conduit means for sensing flow through each conduit;

an electrically actuated shutoff valve in each conduit means; and

means responsive to said flow sensing means for closing each shutoff valve in the absence of milk flow through the associated conduit means, said shutoff valves, flow sensing means and valve closing means being mounted on the stall structure adjacent the cow.

4,344,386

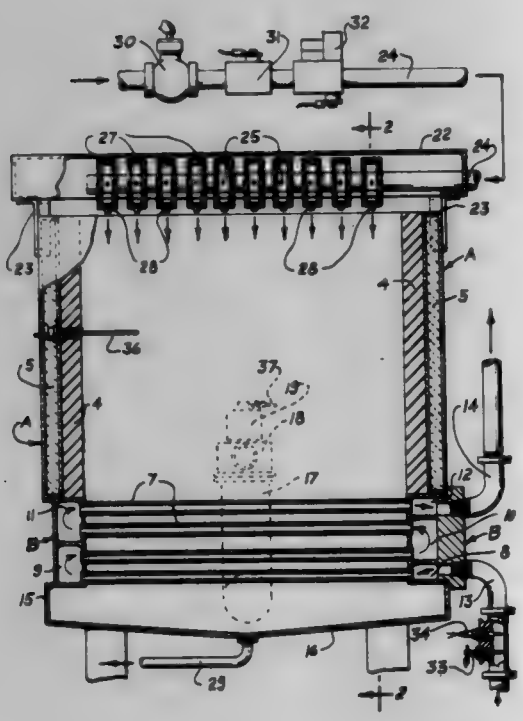
HEAT TRANSFER EQUIPMENT AND METHOD

Robert B. Black, 2925 Denver St., Corpus Christi, Tex. 78404

Continuation-in-part of Ser. No. 46,240, Jun. 7, 1979, Pat. No. 4,271,789, and a continuation-in-part of Ser. No. 58,779, Jul. 19, 1979, abandoned, said Ser. No. 46,240, is a continuation-in-part of Ser. No. 813,667, Jul. 7, 1977, Pat. No. 4,197,831, which is a continuation of Ser. No. 620,327, Oct. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 462,094, Apr. 18, 1974, Pat. No. 4,025,291, which is a division of Ser. No. 192,262, Oct. 26, 1971, Pat. No. 3,844,270, said Ser. No. 58,779, is a continuation-in-part of Ser. No. 794,044, May 5, 1977, abandoned, which is a division of Ser. No. 568,699, Apr. 16, 1975, abandoned, which is a division of Ser. No. 369,084, Jun. 11, 1973, abandoned. This application Sep. 5, 1980, Ser. No. 184,655

Int. Cl.[3] F22B *5/02*

U.S. Cl. 122—19 10 Claims



1. Heat transfer equipment comprising a combustion chamber, means for introducing a mixture of gaseous fuel and air into an upper region of the combustion chamber, a group of spaced externally finned tubes in a lower region of the combustion chamber and being upwardly exposed to the combustion chamber substantially throughout the length of the tubes, and the tubes having header means providing for flow of a fluid to be heated through the tubes, an exhaust manifold below the tubes for receiving gaseous products of combustion delivered downwardly between the tubes substantially throughout the length of the tubes of said group, and the exhaust manifold having a discharge opening for delivery of gaseous products of combustion, and a blower for establishing a flow of the mixture of fuel and air in a path extended downwardly through the combustion chamber and in a direction downwardly between the tubes substantially throughout the length thereof, the blower providing for delivery of products of combustion downwardly through the spaces between the tubes and into the manifold, the tubes being extended transversely of the path of flow of the products of combustion with the tube fins lying in planes generally paralleling said path of flow substantially throughout the length of the tubes.

4,344,387

DEVICE FOR SEPARATING WATER FROM STEAM AT THE VAPORIZATION VESSEL OUTLET OF A STEAM GENERATOR

Jean-Claude Yazidjian, Bougival, France, assignor to Framatome, Courbevoie, France

Filed Apr. 8, 1981, Ser. No. 251,850

Claims priority, application France, Apr. 18, 1980, 80 08734

Int. Cl.[3] F22B *1/02*

U.S. Cl. 122—34 10 Claims



1. In a device for separating water from steam at the vaporization vessel outlet of a recycling steam generator, such as a steam generator used in a nuclear power station, constituted by a set of vertical cylindrical tubes within which deflector elements are arranged, called cyclones, giving the steam a helical path enabling separation of the water by centrifugal force when the steam, charged with water before emerging from the upper part of the generator, traverses these tubes arranged above the vaporization vessel placed in the outer envelope resistant to the pressure of the steam generator in which the vaporization of the water occurs, the improvement whereby the cyclones are grouped in sub-assemblies, each of the cyclones of one sub-assembly being fixed to the upper part of the support structure common to all the cyclones of the sub-assembly, comprising from below upwards a tubular column fixed vertically to the upper part of the vaporization vessel extending the latter upwards and in communication through its inner portion with the inside of this vessel and a structure in the shape of an upwardly flared vessel, in communication on the one hand with the inner portion of the tubular column and on the other hand the cyclones fixed at its upper portion, the flared vessel and the cyclones of the corresponding sub-assembly constituting a module of the separating device.

4,344,388

VAPOR GENERATING SYSTEM UTILIZING INTEGRAL SEPARATORS AND ANGULARLY ARRANGED FURNACE BOUNDARY WALL FLUID FLOW TUBES HAVING RIFLED BORES

William D. Stevens, North Caldwell, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

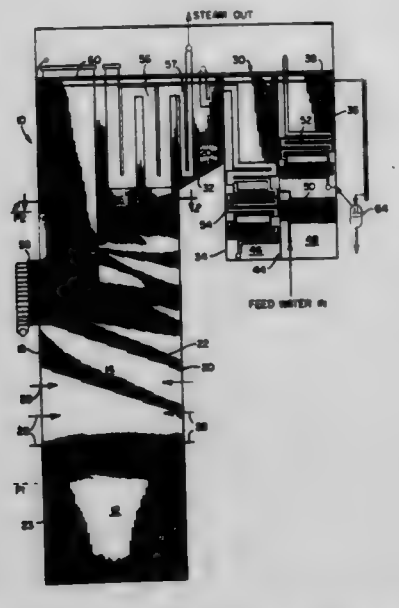
Continuation of Ser. No. 849,273, Nov. 7, 1977, Pat. No. 4,191,133. This application Dec. 28, 1979, Ser. No. 108,054

Int. Cl.[3] F22B *21/34*

U.S. Cl. 122—235 R 37 Claims

1. A vapor generating system comprising an upright furnace section the boundary walls of which are formed by a plurality of tubes having fins extending outwardly from diametrically opposed portions thereof, with the fins of adjacent tubes being welded together to form a gas-tight structure, burner means associated with said furnace section, said tubes extending vertically in the plane of each boundary wall in the upper portion of said furnace section walls and extending at an acute angle with

respect to a horizontal plane in at least a portion of said boundary walls extending below said upper portion, means for simultaneously passing water through the tubes of all said boundary



walls to add heat from said burner means to said water to convert said water to steam, and a rifled bore formed in said acute-angularly extending tubes.

4,344,389

FUEL/AIR MIXING DEVICE

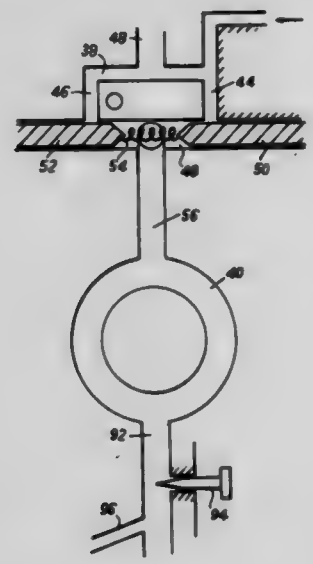
Anizio G. R. Nunes, Johannesburg, South Africa, assignor to Automotive Invention Researchers (Pty) Limited, Johannesburg, South Africa

Filed Mar. 10, 1980, Ser. No. 128,898

Claims priority, application South Africa, Jan. 21, 1980, 80/0328

Int. Cl.³ F02D *19/00*

U.S. Cl. 123—25 B **13 Claims**



1. A fuel/air mixing device comprising:

a body;

an air passage passing through the body and being adapted to be connected to supply a fuel/air mixture to the inlet manifold of an internal combustion engine;

chamber means in which gasoline and water can be mixed;

separate fuel and water lines to the chamber means;

liquid inlet nozzle means adjacent the periphery of said air passage through which the fuel/liquid mixture from said chamber means may be supplied to said air passage when in use;

first valve means for controlling the passage of the fuel/air mixture from said air passage to the inlet manifold of an internal combustion engine; and

second valve means for controlling the fuel supply to said air passage via said chamber means, which defines two apertures through which fuel can pass, such passage of fuel being controlled respectively by needle valves, the opening and closing of one said needle valve being determined by the vacuum created in said air passage and the other needle valve being controlled by the position of said first valve means.

4,344,390

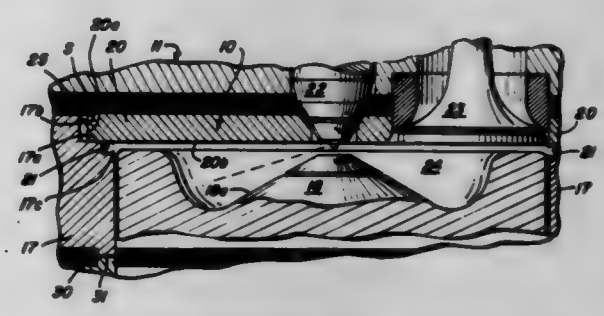
PISTON-CYLINDER ASSEMBLY OF AN INTERNAL COMBUSTION ENGINE

Hans Heydrich, Phoenix, Ariz.; Melvin E. Woods, Columbus, Ind., and William C. Geary, Balston Lake, N.Y., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1979, Ser. No. 108,833

Int. Cl.³ F02B *75/08*

U.S. Cl. 123—41.82 A **14 Claims**



1. A piston-cylinder assembly of an internal combustion engine comprising an engine block having a bore formed therein; a cylinder liner having an inner diameter mounted within said bore; a cylindrical spacer having one end disposed in closely spaced relation to an end of said liner, said spacer having a cylinder-forming surface comprising an inner bore extending therethrough and having an inner diameter substantially equal to the inner diameter of said liner, said spacer extending axially from said liner end and coacting with said liner to form together an elongated cylinder; a piston mounted for reciprocatory movement within the elongated cylinder; an end piece overlying and being supported by a recessed shoulder within a second end of said spacer opposite said liner end, said end piece coacting with said spacer to substantially close one end of the elongated cylinder, so as to create a top cylinder-forming surface, said piston when at one stroke limit being in close proximity to a surface of said end piece adjacent said cylinder and coacting therewith and the cylinder-forming surface of said spacer to define a combustion chamber axially spaced from said liner end whereby the latter is substantially shielded by said spacer from the heat and pressure of combustion generated within said combustion chamber during operation of the engine; first means spaced from said combustion chamber for securing said end piece in assembled relation with said spacer; and thermal insulating second means coacting with said end piece, said first means, said spacer ends and said liner end to substantially impede the transfer of the heat of combustion from said combustion chamber to said block, liner and first means during operation of the engine.

4,344,391

IGNITION TIMING CONTROL MEANS FOR INTERNAL COMBUSTION ENGINES

Masashi Mizutani, and Shiro Nakamura, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

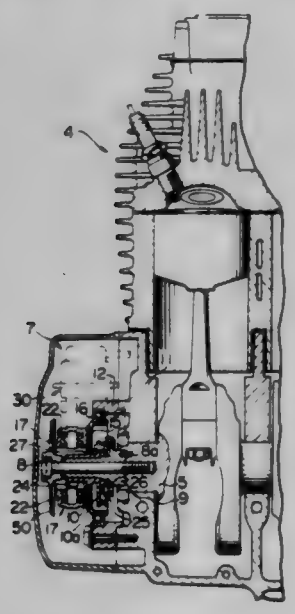
Division of Ser. No. 915,237, Jun. 13, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 109,988

Int. Cl.³ F02P *5/10, 5/06;* B62M *7/04;* F01C *1/30*

U.S. Cl. 123—146.5 A **10 Claims**

1. In a motor cycle including front and rear wheels, a frame carried by the wheels, and a multi-cylinder internal combustion engine having a body portion and a crankshaft disposed transversely of the frame; ignition timing control means for

controlling ignition timing, and comprising a base adapted to be mounted on the body portion of the engine, a control disc rotatably mounted on said base, driving shaft means provided at one end of the crankshaft of the engine for being driven thereby and arranged coaxially with respect to the control disc, ignition signal generating means provided on the control disc for generating an ignition signal, further means provided on said driving shaft means for making the generating means produce an ignition signal at a predetermined angular phase of the driving shaft means, intake pressure responsive means mounted on the base and responsive to intake pressure for determining positioning of the control disc, and connecting



means between the intake pressure responsive means and the control disc for rotating the control disc by an angular extent corresponding to engine intake pressure so as to change the angular phase of the driving shaft means at which the ignition signal is generated;

the improvement wherein said intake pressure responsive means is disposed above said driving shaft means and at a position rearwardly offset from said driving shaft means, whereby interference between the ground and the intake pressure responsive means is avoided and interconnection of the intake pressure responsive means is provided efficiently and with a minimum amount of material.

4,344,392

SPARK-IGNITION INTERNAL COMBUSTION ENGINE

Tamotsu Hjima, and Yasuo Takagi, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jan. 10, 1980, Ser. No. 111,074

Claims priority, application Japan, Jan. 18, 1979, 54-545890[U]

Int. Cl.³ F02N *11/08*

U.S. Cl. 123—179 G **16 Claims**

1. A fuel supply system for a spark-ignition internal combustion engine comprising:

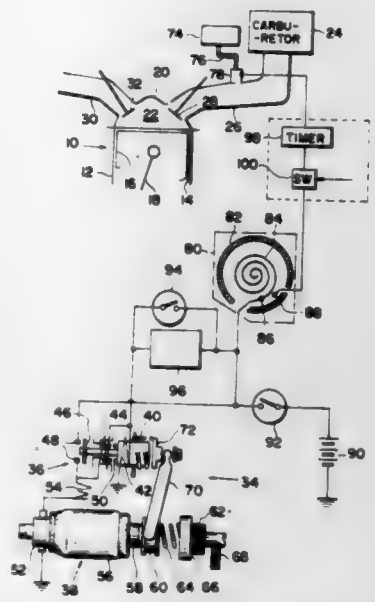
a primary mixture supply system including a primary fuel delivery circuit;

an electrically-operated cranking device operative to crank the engine to start when actuated;

an auxiliary mixture supply system including an auxiliary fuel delivery circuit which has one end opening into said primary mixture supply system;

an electrically operated valve provided in said auxiliary fuel delivery circuit for controlling delivery rate of the auxiliary fuel through said auxiliary fuel delivery circuit; and

an electric control circuit responsive to at least one preselected operational parameter of the engine during starting for actuating said valve and thereafter, following a predetermined time delay, actuating said cranking device to start the engine, said control circuit including a starter switch electrically connected between said cranking device and a power source, a main control switch electrically connected between said valve and said power source across said starter switch and responsive to said preselected parameter, a delay circuit electrically connected



between said cranking device and said power source across said starter switch, and an auxiliary control switch connected in shunt across said delay circuit and operative conversely to said main control switch in response to said preselected operational parameter.

4,344,393

INTERNAL COMBUSTION ENGINE

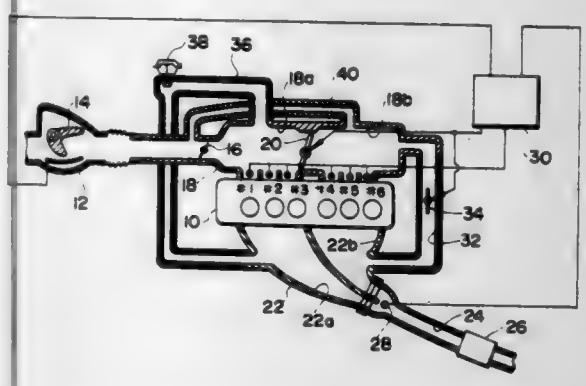
Yukihiro Etoh, Yokohama; Toshiaki Tanaka, Fujisawa; Fukashi Sugasawa, Yokohama, and Haruhiko Iizuka, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 20, 1980, Ser. No. 161,369

Claims priority, application Japan, Jun. 22, 1979, 54-78699

Int. Cl.³ F02B *77/00;* F02D *17/02*

U.S. Cl. 123—198 F **5 Claims**



1. An internal combustion engine comprising:

(a) first and second cylinder units each including at least one cylinder;

(b) an intake passage provided therein with a throttle valve and divided downstream of said throttle valve into first and second branches leading to said first and second cylinder units, respectively;

(c) a stop valve provided at or near an entrance of said intake passage second branch;

(d) an exhaust passage leading from said first and second cylinder unit;

(e) an air/fuel ratio sensor located in said exhaust passage for providing a signal indicative of the air/fuel ratio sensed from the engine exhaust;

(f) a three-way catalytic converter located in said exhaust passage downstream of said air/fuel ratio sensor;

(g) an EGR passage connecting said exhaust passage to said

intake passage second branch downstream of said stop valve;

(h) an EGR valve provided in said EGR passage;

(i) control means, responsive to low engine load conditions, for disabling said second cylinder unit, closing said stop valve to disconnect said intake passage second branch from said intake passage, and opening said EGR valve to permit recirculation of exhaust gases into said second cylinder unit, said control means also being responsive to said air/fuel ratio sensor, for maintaining the air/fuel ratio at which said engine is operating at a desired value; and

(j) a bypass passage opening at its one end into said intake passage upstream of said throttle valve and at the other end into said intake passage second branch downstream of said stop valve for introducing air into said intake passage second branch and mixing air with exhaust gases recirculated into said intake passage second branch at low engine load conditions.

4,344,394

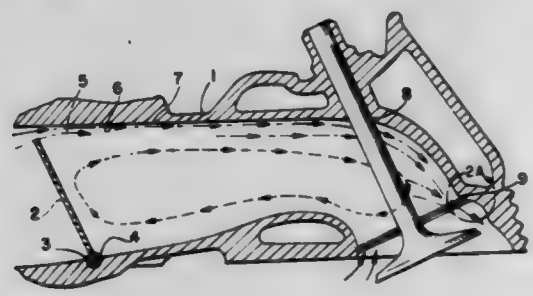
HIGH SWIRL VERY LOW POLLUTION PISTON ENGINE EMPLOYING OPTIMIZABLE VORTICITY

Merle R. Showalter, Madison, Wis., assignor to Automotive Engine Associates, Madison, Wis.

Continuation-in-part of Ser. No. 914,857, Jun. 12, 1978, abandoned, which is a continuation of Ser. No. 791,422, Apr. 27, 1977, abandoned, which is a continuation of Ser. No. 547,040, Feb. 4, 1975, abandoned. This application Jun. 11, 1979, Ser. No. 47,472

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—306 **12 Claims**



1. A piston type homogeneous charge engine for achieving stable and rapid dilute combustion to produce very low NO_x output, wherein the engine includes an engine head, an air throttle, fuel input means, an intake volume in an intake manifold fluidly connected between said air throttle and an intake port in the engine head, said head being mounted on a cylinder block including a cylindrical passage in which a piston reciprocates, a combustion chamber defined by the geometrical combination of said head and said cylinder and said piston,

said intake port being connected to the combustion chamber,

an intake poppet valve opening and closing fluid connection between said intake port and the combustion chamber in phase relation to the piston reciprocations to control flow from the intake port to the combustion chamber,

exhaust valve means fluidly connecting the combustion chamber to an exhaust passage and opening and closing in specific phase relation to piston reciprocation,

ignition means inside the combustion chamber firing in phase to piston reciprocation,

said engine operating on the four cycle principle comprising an intake stroke, a compression stroke, a power stroke and an exhaust stroke;

a variable restriction element to variably restrict flow in the intake port to produce a high velocity intake flow structured as "Coanda" flow in the intake port, said variable restriction element in the intake port being capable of a full opening position whereby said variable restriction element does not materially restrict the flow capacity of the intake poppet valve, and wherein in the closed position said element restricts the flow capacity of the intake port, poppet valve system to less than ¼ of the unrestricted flow volume for a given pressure drop,

the variable restriction element and that portion of the intake port between said variable restriction element and the intake poppet valve being shaped so that when said variable restriction element is in a restricted position the flow-pattern system downstream of the variable restriction element forms a flow pattern one, wherein the flow past said variable restriction element separates smoothly from said variable restriction element in a manner whereby said flow attaches to a wall of said intake port to form a "Coanda" wall attached flow and whereby the volume of said intake port between said variable restriction element and said poppet valve not occupied by said wall attached "Coanda" flow is filled with a fluid mechanically stable recirculating vortex system, where said vortex system smoothly interacts with said "Coanda" flow to minimize the turbulent dissipation of said "Coanda" flow, where the high speed stream of the "Coanda" flow passes by the intake poppet valve into the combustion chamber in a structured three dimensional flow, a flow pattern two, said flow pattern two having high angular momentum with respect to the center of the engine cylinder and where said flow passes predominantly over less than 180 degrees of the face of said intake poppet valve, where said flow pattern two is arranged so that in interaction with said combustion chamber surfaces flow pattern two induces and forms a three dimensional in-cylinder flow pattern, a flow pattern three, said in-cylinder flow pattern three having velocity gradients such that any fluid element located outside of combustion chamber boundary layers is by the end of the compression stroke stretched, distorted and spread within the combustion chamber volume so that said fluid element is widely distributed spatially over said combustion chamber volume prior to ignition time, so that the concentration gradients of fuel within the interior of said combustion chamber volume are substantially increased by said structured flow causing substantial increase in the speed and completeness of mixing for a set turbulence level within the combustion chamber volume to produce substantially homogenious air-fuel-residual microscale volume mixing statistics in the combustion chamber by ignition firing time,

wherein the variable restriction element is adjusted with sufficient flow restriction so that a sufficient flow kinetic energy is delivered from said port to said combustion chamber so that the in-cylinder three dimensional flow pattern, flows so that the interaction of the initial flow energy pattern with the combustion chamber walls and the turbulent flow energy decay rates leaves sufficient turbulence levels in the chamber at combustion time to produce a turbulent to laminar flame speed ratio high enough so that cycle efficiency losses due to long combustion durations do not outweigh the thermodynamic and pumping loss advantages of dilute combustion compared to combustion cycle efficiencies of a low residual fraction mixture with an equivalence ratio of 0.9 stoichiometric in said engine,

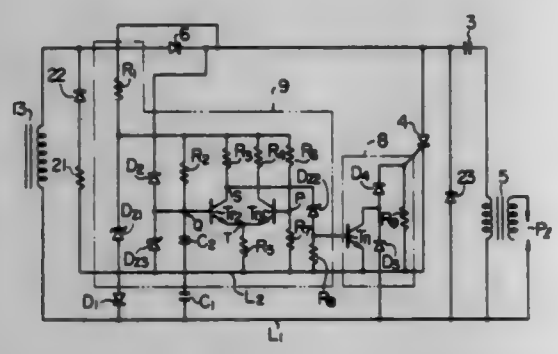
control means for the throttle opening, variable restriction element and fuel input means, so that for the rotation speed, intake manifold volume displacement, and inlet and outlet valve timing for said engine, the masses of fuel, air and products of combustion in the cylinder during the compression stroke form ratios and gross concentrations such that before ignition firing time, a lean combustible mixture is formed having sufficient dilution so as to inhibit NO formation.

4,344,395

IGNITION SYSTEM WITH IGNITION TIMING RETARDING CIRCUIT FOR INTERNAL COMBUSTION ENGINE

Tadashige Kondo; Susumu Ohno, both of Tokyo; Kenichi Takata, Mitaka, and Hisashi Inaga, Tokyo, all of Japan, assignors to Kioritz Corporation, Japan

Filed May 14, 1980, Ser. No. 149,884
Int. Cl.[3] F02D *5/04*; F02P *1/00*; F02D *11/10*
U.S. Cl. 123—335 1 Claim



1. An ignition system with an ignition retard circuit for an internal combustion engine comprising:

a magneto coupled to a crank shaft of said engine;

an ignition coil having primary and secondary windings;

a charging capacitor charged from one half-cycle of a.c. voltage generated by said magneto;

an ignition control thyristor connected in parallel with a series circuit of said charging capacitor and the primary winding of said ignition coil, said ignition control thyrsitor being rendered conductive by receiving the opposite half-cycle of said a.c. voltage from said magneto as an ignition signal;

a switching transistor connected in parallel to a gate-cathode circuit of said ignition control thyristor, said switching transistor being adapted to become conductive upon receiving a switching signal and to bypass said ignition signal without applying to the gate of said ignition control thyristor;

a series circuit of a first resistor and a first Zener diode connected in parallel to the series circuit of said charging capacitor and the primary winding of said ignition coil, said first Zener diode maintaining a predetermined constant voltage thereacross during said charging capacitor being held charged;

a voltage divider circuit including a series of two resistors connected in parallel to said first Zener diode for establishing a reference voltage at a junction point of said two resistors;

a time constant circuit including a series of a resistor and a capacitor connected in parallel with said first Zener diode for developing a voltage at a junction point of said resistor and said capacitor increasing in accordance with a time constant of said time constant circuit;

a parallel circuit of first and second transistors connected in parallel with said first Zener diode, said first and second transistors having bases respectively connected to the junction point of said time constant circuit and the junction point of said voltage divider circuit, said first and second transistors having collectors connected to the cathode of said first Zener diode respectively via second and third resistors and having emitters connected to the cathode of said first Zener diode via a common resistor

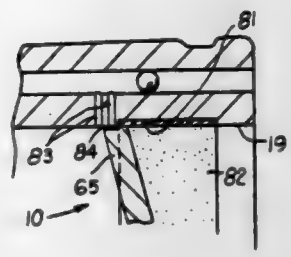
a junction point between the collector of said first transistor and said first resistor being connected to the base of said switching transistor via a second Zener diode, said second transistor being conductive during a period in which said reference voltage established in said voltage divider circuit is higher than said voltage developed in said time constant circuit, and said switching signal being supplied to said switching transistor through said junction point between the collector of said first transistor and said first resistor and through said second Zener diode, whereas said first transistor being rendered conductive when the voltage at the junction point of said time constant circuit is higher than said reference voltage thereby to cut off the supply of said switching signal to said switching transistor.

4,344,396

INDUCTION SYSTEM OF MULTI-CYLINDER ENGINE

Minoru Yamada, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 965,485, Dec. 1, 1978, Pat. No. 4,243,000.
This application Apr. 18, 1980, Ser. No. 141,284
Int. Cl.[3] F02M *13/06*
U.S. Cl. 123—337 4 Claims



1. An improved arrangement for effecting the sealing of a butterfly-type throttle valve in an induction system for an internal combustion engine or the like comprising an induction passage and a throttle valve supported for rotation in said induction passage to control the flow therethrough, said throttle valve and said induction passage having adjacent surfaces juxtaposed to each other when said throttle valve is in its closed position, the improvement comprising means providing a seal between said surfaces when said throttle valve is closed to effectively preclude any leakage past said throttle valve, said throttle valve being mounted upon a shaft, said shaft having a slot through which said throttle valve extends, the seal comprising a split resilient metal ring carried by said throttle valve, the gap provided by the slit ends of said ring being positioned within said shaft.

4,344,397

METHOD FOR OPERATION OF A SPARK-IGNITED INTERNAL COMBUSTION ENGINE AND ARRANGEMENT FOR EXECUTION OF THE METHOD

Istvan Geiger, Muhlenring, and Heinz Theuerkauf, AM Sundern, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

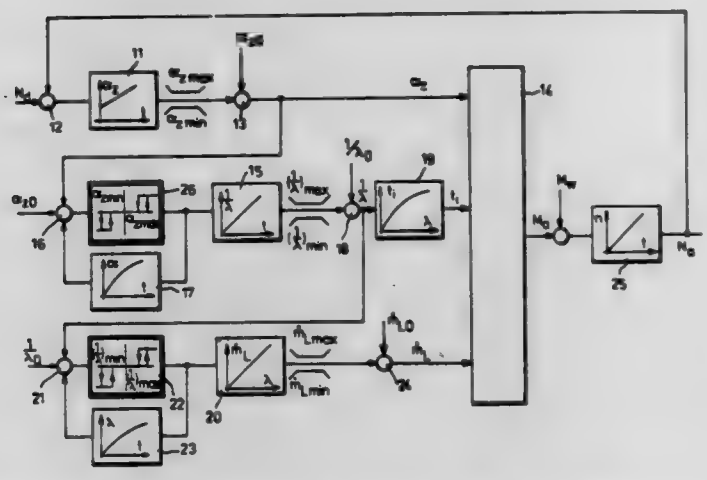
Filed May 2, 1980, Ser. No. 146,075
Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918135
Int. Cl.[3] F02P *5/04*; F02D *11/10*
U.S. Cl. 123—339 12 Claims

1. A method for operating a spark-ignited internal combustion engine to stabilize the actual idle speed to be approximately equal to a desired idle speed, said method comprising:

supplying said engine with a lean fuel-air mixture having a high air ratio, exceeding the air ratio corresponding to maximum mean indicated pressure;

controlling the ignition timing of said engine within a pair of

selected ignition timing limits to bring said actual idle speed toward said desired idle speed;



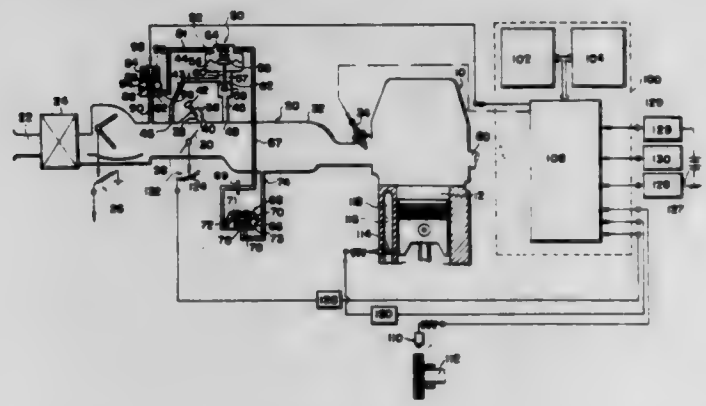
and initiating a controlling of said air ratio of said mixture only when said ignition timing attains one of said limits, to bring said actual idle speed toward said desired idle speed.

4,344,398

IDLE SPEED CONTROL METHOD AND SYSTEM FOR AN INTERNAL COMBUSTION ENGINE OF AN AUTOMOTIVE VEHICLE

Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed May 28, 1980, Ser. No. 154,048
Claims priority, application Japan, May 29, 1979, 54-65661
Int. Cl.³ F02M *7/00*; F02D *1/04, 5/02*; G06F *7/70*
U.S. Cl. 123—339 **17 Claims**



1. A method for controlling idle air flow rate flowing through an idle air passage in an intake air flow rate control system for an internal combustion engine in which either one of closed loop control and open loop control is carried out selectively, said system including an idle control valve with an actuator being operative in response to a pulse signal that varies the ratio of an energized period and a deenergized period of said actuator according to the duty cycle of the pulse signal, said actuator having a normal duty cycle range in which it accurately follows variations of the duty cycle of said pulse signal without substantial delay, and dead bands in which said actuator causes substantial response delay with respect to variations of the duty cycle of the pulse signal, said dead bands defined by the duty cycle being higher than a predetermined maximum value or lower than a predetermined minimum value,

said method comprising the steps of;

determining engine speed;

determining engine temperature;

determining an open loop control value based on a determined engine temperature;

determining a reference engine speed based on the determined engine temperature;

determining a closed loop control value based on the determined engine speed and a difference between the determined engine speed and a reference engine speed;

producing said pulse signal having said duty cycle representative of a predetermined relationship involving the determined open loop and closed loop control values for operation in open loop control;

presetting maximum and minimum values of said duty cycle of said pulse signal, the range between said maximum and minimum values defining said normal duty cycle range corresponding to said dead bands of said actuator; and

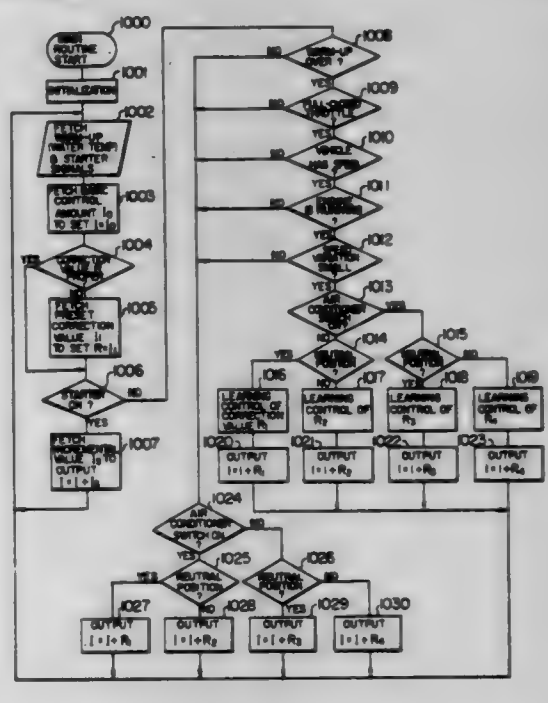
correcting the duty cycle of said pulse signal to maintain same within said normal duty cycle range.

4,344,399

METHOD AND APPARATUS FOR CONTROLLING ENGINE IDLING SPEED

Toshimi Matsumura, Ohbu; Norio Omori, and Hisamitsu Yamazoe, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 12, 1980, Ser. No. 186,449
Claims priority, application Japan, Sep. 14, 1979, 54-118155
Int. Cl.³ F02D *9/02, 31/00*
U.S. Cl. 123—339 **8 Claims**



1. In a method of controlling the idling speed of a throttle valve equipped engine of an automobile having an air conditioner system and a transmission, including the steps of preliminarily establishing a control amount which determines an idle air flow for providing a basic idling speed and adjusting said idle air flow in accordance with said control amount, the improvement comprising the steps of:

computing said control amount from a basic control amount and a variable correction value being maintained to a constant value during the warm-up of the engine;

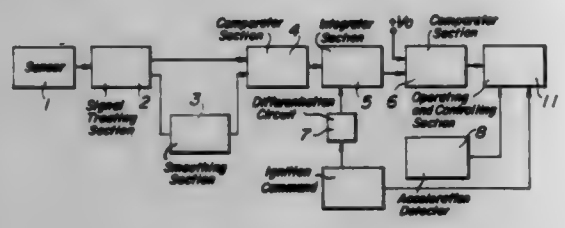
computing a difference value between a target idle speed and an actual idle speed of the engine, computing the correction value from the difference value so that the actual idle speed is adjusted to the target idle speed, memorizing the computed correction value and computing the control amount from the memorized correction value and the basic control amount after the termination of warm-up of the engine; and

adjusting said idle air flow in accordance with said memorized correction value and said basic control amount under all the operating conditions of said engine including the idling operation thereof.

4,344,400
CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Masaharu Asano, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 30, 1980, Ser. No. 173,756
Claims priority, application Japan, Jul. 31, 1979, 54-97939
Int. Cl.[3] F02D *5/04;* F02P *5/04;* F02M *7/00*
U.S. Cl. 123—425 9 Claims



1. A control device for an internal combustion engine comprising:

a sensor for detecting pressure variations in a combustion chamber of the engine or vibrations resulting from the pressure variations;

first detecting means for detecting a knocking state produced in the engine from the output signal of said sensor and for producing a knocking detection pulse signal;

operating and controlling means for generating a control signal in response to the knocking detection signal from said first detecting means and for feedback controlling, in response to said control signal, at least one of ignition timing, exhaust gas recirculation flow rate, fuel injection amount and fuel injection timing as control variables, said operating and controlling means further being operable to generate a voltage signal which decreases in amplitude at a predetermined rate in response to said knocking detection pulse signal and then gradually increases at a predetermined rate lower than said decreasing rate and controls at least one of said control variables in proportion to the value of said voltage signal at trailing edge of an ignition command pulse synchronized with the rotation of the crank shaft;

second detecting means for detecting a transitional driving condition of the engine; and

means for varying the gain factor of said feedback control in response to the detection signal from said second detecting means.

4,344,401
ELECTROSTATIC FUEL INJECTOR

Kenji Masaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

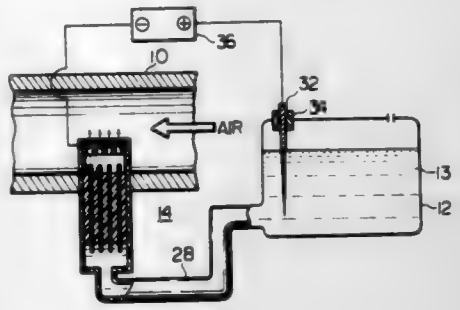
Division of Ser. No. 778,944, Mar. 18, 1977, Pat. No. 4,173,206.
This application Jan. 3, 1979, Ser. No. 711
Claims priority, application Japan, Mar. 24, 1976, 51/31450; May 29, 1976, 51/61785
Int. Cl.[3] F02B *51/04, 33/00;* F02M *27/04, 29/00*
U.S. Cl. 123—536 13 Claims

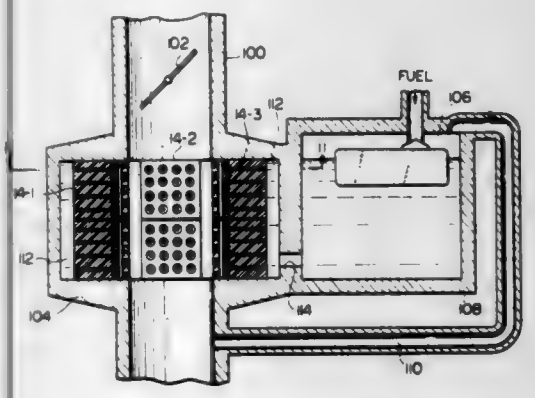
1. A fuel injection apparatus for combustion system, comprising:

a fuel supply container;

means for electrostatically charging said fuel;

a plurality of open-ended threadlike tubes arranged parallel with each other and connected at one end to said fuel supply container to allow said fuel to pass therethrough for delivery of fuel from the opposite end of each of said tubes; and



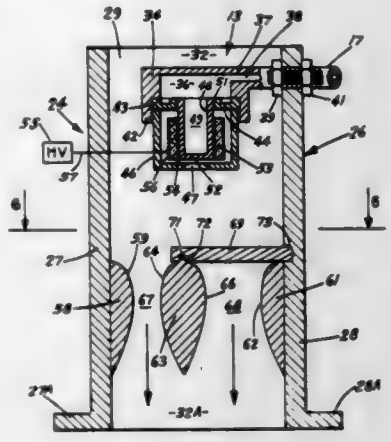


means for electrostatically attracting and accelerating the fuel delivered from said threadlike tubes.

4,344,402
FUEL SUPPLY SYSTEM

Francis W. Child, Eagle Bend, Minn. 56446, and Richard O. Bartz, 7017 Mark Terrace Dr., Edina, Minn. 55435

Division of Ser. No. 736,709, Oct. 29, 1976, Pat. No. 4,209,472.
This application Dec. 13, 1979, Ser. No. 103,278
Int. Cl.[3] F02B *3/00;* F02M *7/00;* F02B *33/00*
U.S. Cl. 123—538 18 Claims



1. An apparatus for supplying an air and fuel particle mixture to a means for using the mixture comprising: a housing having a passage adapted to carry an air and fuel particle mixture to the means for using the mixture, first means for introducing particles of fuel into the passage, said particles of fuel being mixed with air in said passage, said first means having a member surrounding a chamber accommodating liquid fuel and ultrasonic vibration means mounted on the member to vibrate the member and liquid fuel therein, said member having at least one orifice open to the chamber through which particles of fuel are introduced into the passage, said member of the first means is a cup-shaped member having a first wall and a second wall surrounding a chamber for accommodating liquid fuel, said orifice being located in said first wall, said ultrasonic vibration means including a collar mounted on the second wall operable to vibrate the liquid fuel in the chamber and the

member, a cap surrounding the collar, said cap having an orifice aligned with the orifice of the bottom wall whereby, when the ultrasonic vibrating means is operated, liquid fuel is dispensed through the orifices of the bottom wall and the cap as small particles of fuel into the passage, and second means mounted on the housing and located in the passage forming a venturi throat, said air and particles of fuel flow through the venturi throat to the means for using the mixture.

4,344,403

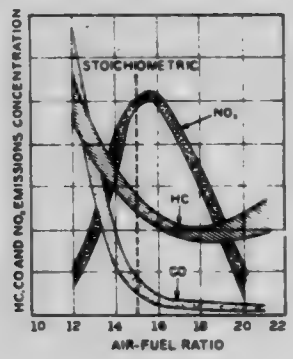
FUEL SUPPLY SYSTEM

Frances W. Child, Eagle Bend, Minn. 56446, and Richard O. Bartz, 7017 Mark Terrace Dr., Edina, Minn. 55435

Division of Ser. No. 736,709, Oct. 29, 1976, Pat. No. 4,209,472. This application Dec. 13, 1979, Ser. No. 103,411

Int. Cl.³ F02B *33/00, 3/00*

U.S. Cl. 123—538 **10 Claims**



1. An apparatus for supplying an air and liquid fuel particle mixture to a means for using the mixture comprising: a housing having a passage adapted to carry an air and liquid fuel particle mixtue to the means for using the air and liquid fuel particle mixture, first means for introducing particles of liquid into the passage, said particles of liquid fuel being mixed with air in said passage, said first means having a member surrounding a chamber accommodating liquid fuel and a body having a passage for carrying liquid fuel to the chamber, said member being mounted on the body, ultrasonic vibration means surrounding and mounted on the member to vibrate the member and liquid in said chamber, said member having at least one orifice through which particles of liquid fuel are introduced into the passage, said ultrasonic vibration means causing the breakup of liquid moving through said orifice into liquid particles, cover means surrounding the ultrasonic means, said cover means having an opening aligned with the orifice of said member and being attached to the body and engageable with the member to hold the member on the body, and second means comprising with the housing to direct the air and liquid fuel particle mixture to the means for using the air and liquid fuel mixture.

4,344,404

FUEL SUPPLY SYSTEM

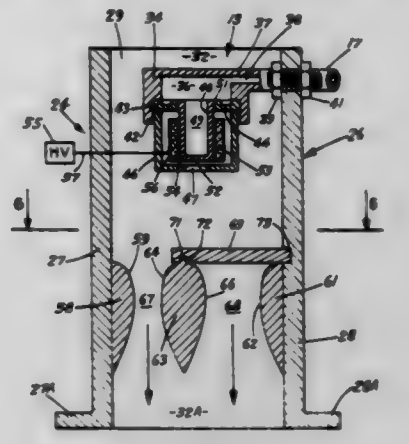
Francis W. Child, Eagle Bend, Minn. 56446, and Richard O. Bartz, 7017 Mark Ter. Dr., Edina, Minn. 55435

Division of Ser. No. 736,709, Oct. 29, 1976, Pat. No. 4,209,472. This application Dec. 21, 1979, Ser. No. 105,978

Int. Cl.³ F02B *3/00*; F02M *29/00*

U.S. Cl. 123—538 **9 Claims**

1. An apparatus for supplying an air and liquid fuel particle mixture to a means for using the mixture comprising: nebulizer means for receiving liquid fuel from a source of said fuel, said nebulizer means including a member having a chamber for carrying liquid fuel and ultrasonic vibration means cooperating with the member to subject the liquid fuel in said chamber of the member to ultrasonic vibratory energy, a pump for receiving liquid fuel from the nebulizer means, liquid fuel discharge means receiving liquid fuel under pressure from the pump and discharging the liquid as liquid fuel particles, and nozzle means for receiving the liquid fuel particles from the discharge means and mixing the liquid fuel particles with air, and discharging the liquid fuel particles and air mixture to the means for using the mixture, said nozzle means having means forming a first venturi throat and a second venturi throat, said first venturi throat being unobstructed and smaller than said second venturi throat, said first and second venturi throats receiving air and



the liquid fuel particles from the discharge means and directing the mixture of air and liquid fuel particles to the means for using said mixture, and control means for controlling the flow of air and liquid fuel particles only through said second venturi throat, said first venturi throat remaining open at all times.

4,344,405

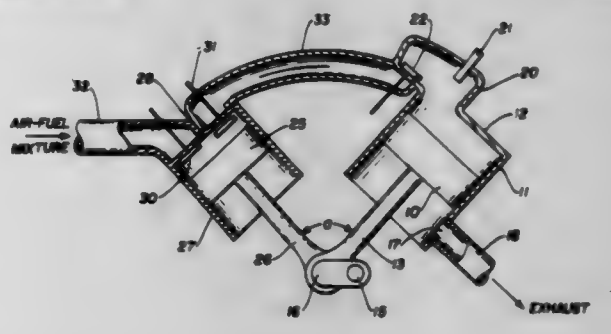
INTERNAL COMBUSTION ENGINE

Edward J. Zaharis, 18728 Bollinger Canyon Rd., San Ramon, Calif. 94583

Filed Dec. 22, 1980, Ser. No. 218,350

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—568 **7 Claims**



1. An internal combustion engine having a piston connected to reciprocate in a cylinder and to operate a work device, with the cylinder having an inlet for a combustible mixture of air and fuel and an outlet for exhaust, comprising said inlet adapted to maintain said combustible mixture as a substantially undiluted body of gas, means to fill the cylinder with one of said combustible mixture and said exhaust gas before the compression stroke of said piston begins, and a pump for supplying the other of said combustible mixture and said exhaust gas to the interior of the cylinder and adapted to supply half of said other gas after the outlet for exhaust is closed.

4,344,406

FUEL SAVER

Robert N. Minor, Stafford Springs, Conn., and Edward J. F. Cloutier, Sturbridge, Mass., assignors to Gasaver Corp., New Britain, Conn.

Continuation-in-part of Ser. No. 62,521, Aug. 2, 1979, abandoned. This application Jul. 22, 1980, Ser. No. 167,860

Int. Cl.³ F02M *23/08*

U.S. Cl. 123—587 **25 Claims**

1. A device responsive to a vacuum in an intake manifold of an internal combustion engine for improving fuel economy by controlling said intake manifold vacuum during a plurality of

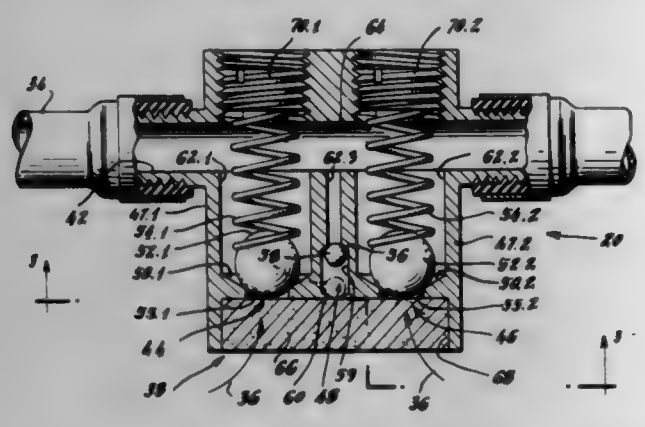
different engine operating modes, each of which has a characteristic range of vacuum levels, comprising:

a first normally closed control valve adapted when opened to provide a first supplemental air source to said intake manifold during at least a first engine mode;

a second normally open control valve adapted when opened to provide a second supplemental air source to said intake manifold during at least a second engine mode; and

means for pneumatically coupling said first and second control valves to said intake manifold;

said first control valve being constructed and arranged to open when the vacuum in said intake manifold exceeds a predetermined upper limit of the characteristic vacuum range for said first engine mode to deliver a controlled quantity of air to said intake manifold thereby reducing the amount of fuel being drawn from a carburetor into said intake manifold during at least said first engine mode;



said second normally open control valve being constructed and arranged to close when the vacuum in said intake manifold exceeds a predetermined lower limit of the characteristic vacuum range for said second engine mode and to open when the vacuum in said intake manifold drops below said predetermined lower limit of the characteristic vacuum range for said second engine mode to deliver a controlled quantity of air to said intake manifold thereby reducing the amount of fuel being drawn from said carburetor into said intake manifold during at least said second engine mode, said predetermined upper limit of the characteristic vacuum range for said first engine mode being greater than said predetermined lower limit of the characteristic vacuum range for said second engine mode to provide a vacuum range wherein both said valves are closed.

4,344,407

CYLINDER HEAD, PORTS, AND PISTON CONFIGURATION

Masami Konishi, Toyota; Akio Kuramoto, Okazaki; Yorishige Maeda, Toyota; Norikatsu Ishikawa, Mishima, and Makoto Suzuki, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 7, 1979, Ser. No. 101,236

Claims priority, application Japan, Mar. 5, 1979, 54-25364

Int. Cl.³ F02B *23/08*

U.S. Cl. 123—661 **3 Claims**

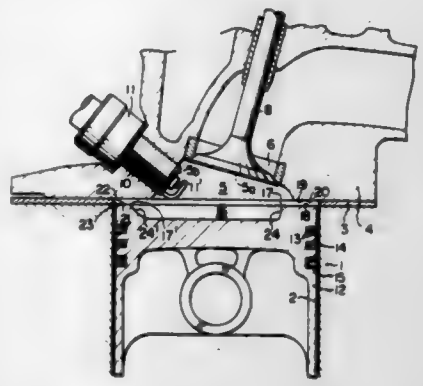
1. In an internal combustion engine having a cylinder block with a cylinder bore therein, a piston reciprocatingly movable within the cylinder bore, a cylinder head comprising a surface facing and closing one end of the bore, and inlet and exhaust ports and a spark plug in the cylinder head, the combination comprising:

first and second planar regions on the surface of the cylinder head facing the cylinder bore, the first and second regions being on opposite sides of a phantom plane that includes the axis of the cylinder bore;

first and second planar regions on the end surface of the piston facing the first and second portions of the surface of the cylinder head to form therewith first and second squish areas, respectively;

a piston depression in the end surface of the piston between the first and second regions of the end surface, the piston depression comprising a contour that includes a portion on one side thereof substantially coincident with the peripheries of the inlet and exhaust ports, the remainder of the surface of the piston depression on an opposite side thereof comprising an arcuate surface substantially coaxial with the periphery of the piston; and

a cylinder head recess between the first and second regions of the surface of the cylinder head, the cylinder head recess being substantially opposite the piston depression to



form therewith a combustion chamber that extends on opposite sides of the planar regions of the cylinder head and the planar regions of the piston, the inlet and exhaust ports having axes located toward the same side of the phantom plane as the first squish area, the spark plug extending through the cylinder head on the opposite side of the phantom plane from the inlet and exhaust port axes and having an igniting tip close to the axis of the cylinder bore and close to the planes of the planar regions defining the squish areas, the first squish area on the same side of the phantom plane as the axes of the ports being larger than the second squish area on the same side of the phantom plane as the spark plug.

4,344,408

CYLINDER HEAD, SPARK PLUG, AND PISTON CONFIGURATION

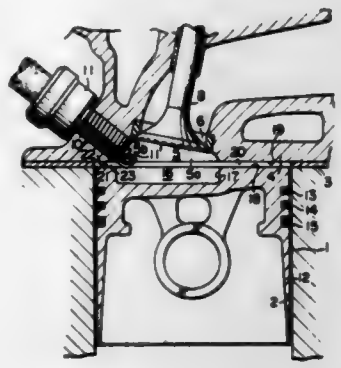
Tokuta Inoue, Mishima; Kiyoshi Nakanishi; Mutsumi Kanda, bot' of Susono; Masahiko Nakada, Okazaki, and Toshiharu Matsuura, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 7, 1979, Ser. No. 101,238

Claims priority, application Japan, Mar. 5, 1979, 54-25363

Int. Cl.³ F02B *23/08*

U.S. Cl. 123—661 **10 Claims**



1. In an internal combustion engine having a cylinder bore: the combination of a cylinder head which closes an end of said cylinder bore and has a plane surface facing the bore, a piston with a plane end surface opposing the cylinder head which reciprocates within the bore to such an extent

that at one end of its travel its said plane end surface comes in close proximity to said plane surface of the cylinder head, at least an inlet valve having a valve head, and a spark plug with an igniting tip;

the piston being formed with a piston depression delimited by said plane end surface of the piston, and the cylinder head being formed with a cylinder head depression at least partly delimited by said plane surface of the cylinder head and at least partially opposing said piston depression, the volume of either one of the piston depression and the cylinder depression being not more than 50 percent greater than the volume of the other;

the spark plug being mounted in the cylinder head so as to project into the cylinder head depression with its igniting tip substantially in said plane surface of the cylinder head in a position offset from the axis of the cylinder bore, said valve head being inclined upwardly toward the side of said cylinder head depression where said spark plug is located; and

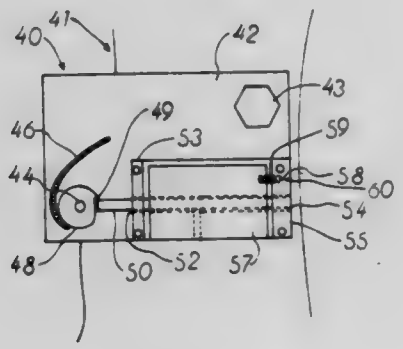
said plane surface of the cylinder head and said plane end surface of the piston defining between them a main squish area of crescent shape when the piston is at said one end of its travel, said main squish area being generally on the opposite side of the axis of the cylinder bore from said igniting tip of the spark plug.

4,344,409

ARROW REST APPARATUS

Roland K. Barner, 119 Sunset Blvd., Bozeman, Mont. 59715

Filed Jul. 25, 1980, Ser. No. 172,386
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—24 R **14 Claims**



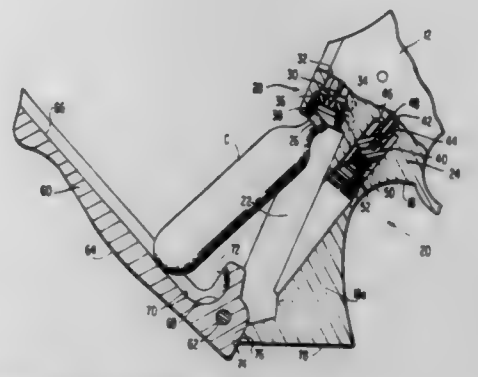
1. Arrow rest apparatus capable of being mounted on an archery bow adjacent the point of contact of an arrow with said bow, said arrow rest apparatus including support means for aiding in mounting said arrow rest apparatus on an archery bow, said arrow rest apparatus further including a shaft member rotatably carried by said support means, said shaft member being oriented so that the axis thereof is substantially perpendicular to the axis of said arrow, first biasing means urging rotation of said shaft member in one direction, arrow supporting means affixed to said shaft member for supporting an arrow in a position to be propelled, latch means operatively connected to said shaft member, second biasing means urging said latch means into a position to retain said shaft member against rotation in said one direction, an arm portion moveably mounted on said support means, said arm portion including a weighted section, said weighted section resisting movement of said arm portion upon release of an arrow allowing relative movement between said latch means and said arm portion and said latch means will release said shaft member for rotation in said one direction, and means for releasably mounting said support means on an archery bow.

4,344,410

GAS-FIRED GUN WITH GAS CARTRIDGE LOADING AND EXTRACTION ASSEMBLY

Roger J. Curran, Stratford, Conn., assignor to Victor United, Inc., Rogers, Ark.

Continuation of Ser. No. 96,119, Nov. 20, 1979, abandoned, which is a continuation of Ser. No. 930,275, Aug. 2, 1978, abandoned. This application Feb. 27, 1981, Ser. No. 238,860
Int. Cl.³ F41B *11/06*
U.S. Cl. 124—80 **18 Claims**



9. A gas-fired gun comprising:

a gun frame having a barrel and a handgrip including a fixed body portion;

means defining an elongated chamber in said handgrip body portion for receiving a gas-containing cartridge;

means carried by the gun adjacent one end of said chamber for releasably retaining one end of the gas cartridge within said chamber and including means for piercing said one end of the cartridge,

a gas cartridge extraction assembly forming a part of said handgrip and including a lever coupled to said handgrip body portion for pivotal movement about an axis adjacent the opposite end of said chamber and movable between a position closing said chamber and a position opening said chamber enabling extraction of the gas cartridge from the chamber,

said gas cartridge extraction assembly further including surface means at the opposite end of said chamber on said lever and movable therewith laterally outwardly from the chamber about said axis for engaging the opposite end of the gas cartridge in response to pivotal movement of said lever from its chamber closing position toward its chamber opening position to displace the cartridge outwardly of said chamber and enable release of the one cartridge end from said releasable retaining means,

said surface means being located on the inboard side of an imaginary line extending between said pivotal axis and said piercing means when the lever is in said position closing the chamber, said lever moving away from said imaginary line in the outboard direction as the lever moves from the chamber closing to the chamber opening position, said chamber being open and unobstructed from said one end thereof to said surface means when the lever is in said chamber closing position whereby to define an area for the acceptance of a cartridge that extends from said one end of the chamber to said surface means.

4,344,411

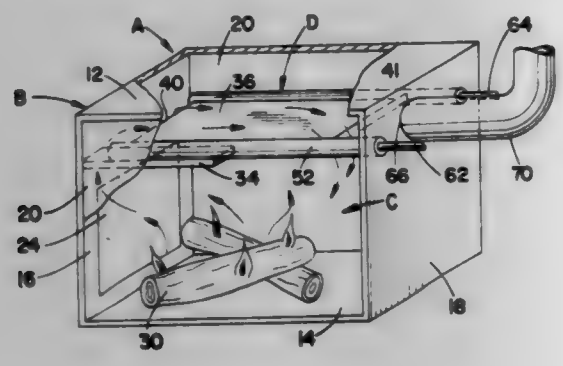
HEAT EXCHANGER FOR SPACE HEATERS

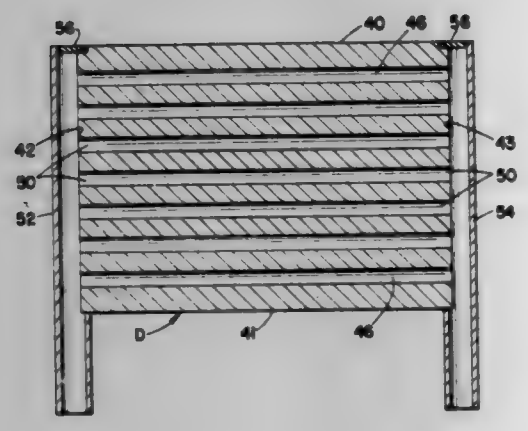
Howard K. Dearborn, 80 Portland St., Fryeburg, Me. 04037

Filed Jun. 7, 1979, Ser. No. 46,347
Int. Cl.³ F24C *13/00*; F28F *3/12*
U.S. Cl. 126—34 **16 Claims**

1. A heat exchanger for fuel burning heating stoves comprising: a plate having substantially parallel opposite faces and an outer periphery, a plurality of individual spaced-apart substantially parallel elongated holes entering said plate at said outer periphery and extending between said opposite faces substantially parallel thereto, said holes being spaced-apart in a direc-

tion extending substantially parallel to said faces, said holes being of substantially the same diameter and being spaced-apart substantially equidistantly, said plate having a thickness not greater than two times the diameter of one said hole, said holes being spaced from one another such that the plate material between adjacent holes has a width at least as great as the diameter of one said hole and not greater than approximately two times the diameter of one said hole, inlet and outlet openings for said holes, manifold means attached to said plate for





circulation of liquid through said holes between said inlet and outlet openings, said plate being mountable to structure defining at least part of a solid fuel burning space heater in heat exchange relationship with the heat produced by combustion of such fuel therein for heating liquid circulating through said holes between said inlet and outlet openings, and said plate having reduced areas at each end relative to said manifold means whereby upon installation combustion products may circulate about said reduced areas.

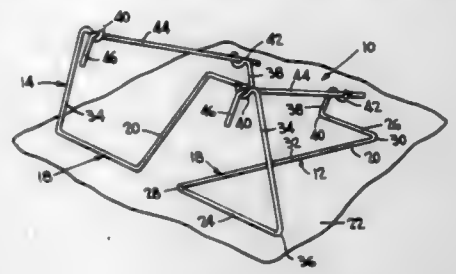
4,344,412

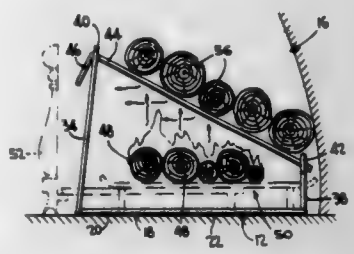
LOG SUPPORTING RACK FOR USE IN A FIREPLACE

James Perrin, 3700 Prince William Dr., Fairfax, Va. 22031

Filed Jan. 13, 1981, Ser. No. 224,497
Int. Cl.³ F24B *13/00*
U.S. Cl. 126—298 **6 Claims**

1. A rack for supporting logs in a rearwardly declined pattern over a burning fire on the hearth of a fireplace comprising a pair of frames composed of rods and being arranged in a selectively spaced part, side by side, structurally unconnected relation, single substantially z-shaped rod adapted to rest flat on the hearth and having opposing front and rear end portions and vertical sections upstanding from the base, one of said vertical sections being the front section upstanding from the front end portion of the base rod and the other being the rear section upstanding from the rear end portion of the base rod with the front section being higher than the rear section and rod members extending between and supported by said sections, wherein upon which logs can be placed in a rearwardly declined pattern above the furning fire with the logs being suspended over the burning fire to char and burn and, thus,





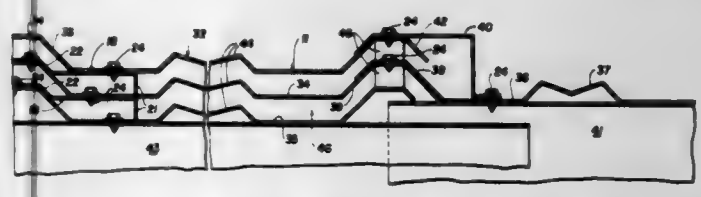
radiate their heat both into the room and back down at the fire underneath.

4,344,413

SOLAR HEATING PANEL FOR METAL BUILDINGS

Neil A. Watkins, and Clayton H. Richardson, Jr., both of Starkville, Miss., assignors to Gulf States Manufacturers, Inc., Starkville, Miss.

Filed Apr. 21, 1980, Ser. No. 142,219
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **3 Claims**



1. In a corrugated metal building wall having a structural corrugated metal panel including recurring laterally spaced parallel corrugations extending from top to bottom thereof in a regular pattern, and including horizontal girt means to which the structural corrugated metal panel is attached for support, an integrated solar heating panel section in said building wall comprising an intermediate solar heat absorbing sheet, an interior structural sheet, and an exterior solar energy transmitting sheet, all of said sheets being in spaced superposed parallel relationship and each sheet having spaced recurring corrugations extending from top to bottom thereof in the same pattern as the corrugations of said structural corrugated metal panel, girt means for the support of the solar panel heating section attached to the interior sheet thereof, the intermediate sheet forming effectively an uninterrupted continuation of said structural corrugated metal panel and the intermediate sheet and structural corrugated metal panel having overlapping and interfitting end corrugations, fastener means attaching said end corrugations in interfitting relationship, the exterior sheet of the integrated solar heating panel section being spaced forwardly of the structural corrugated metal panel and having an end corrugation adjacent to said interfitting corrugations, and a transition flashing extending from top to bottom of said building wall at the vertical juncture of the structural corrugated metal panel with said solar heating panel section, the transition flashing being attached to the structural corrugated metal panel near said juncture and including a forward wall which overlaps said end corrugation of the exterior sheet and being attached to such end corrugation, the transition flashing serving to cover and conceal said juncture, and continuous top to bottom closure strips disposed between said end corrugation of the exterior sheet and said interfitting corrugations and

between the interfitting corrugations and an adjacent end corrugation of said interior structural sheet of the solar panel heating section, said interior structural sheet being spaced inwardly of the structural corrugated metal panel at said juncture.

4,344,414

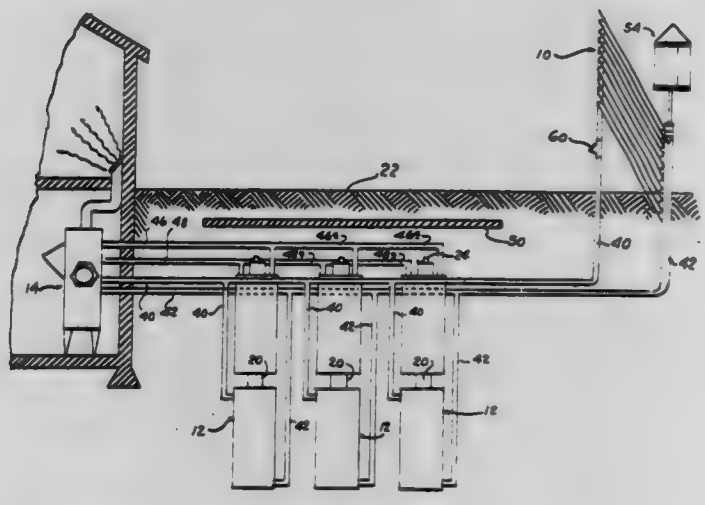
SOLAR-EARTH THERMAL SYSTEM

Joseph C. Balch, S.R. Box 90550, Fairbanks, Ak. 99701

Continuation-in-part of Ser. No. 898,864, Apr. 21, 1978, Pat. No. 4,205,718. This application Feb. 6, 1980, Ser. No. 119,185

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—434 **4 Claims**



1. A heating system comprising:

(a) means for collecting and transfering heat to a fluid medium,

(b) at least one fluid thermal unit comprising an elongated thermal tube for conducting heat from one end thereof to the other end thereof, and a heat transfer jacket at said one end of said thermal tube for receiving said fluid and for conducting said heat to said one end,

(c) duct means for conducting said fluid from said means for collecting to said heat transfer jacket and wherein said fluid thermal element is buried in the earth so that said one end of said elongated thermal tube is below the other end of said elongated thermal tube and said heat transfer jacket receives said fluid from said means for collecting and transfering heat,

whereby heat from said means for collecting and transferring may be transmitted to the earth for storage thereof or for the thawing of permanfrost.

4,344,415

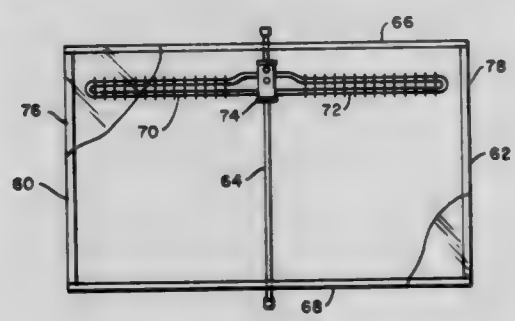
SOLAR COLLECTOR

Edward W. Bottum, 9357 Spencer Rd., Brighton, Mich. 48116

Filed Apr. 8, 1980, Ser. No. 138,294

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—434 **6 Claims**



1. A solar collector comprising a generally rectangular enclosure having parallel, horizontally extending, vertically spaced apart top and bottom, two parallel, vertically extending, horizontally spaced apart sides, and parallel, vertically extending, horizontally spaced apart front and back, said back having a heat absorbing surface facing the inside of the enclosure, a single transfer conduit for a heat exchange medium extending into the bottom and out of the top of the collector enclosure, a U-shaped collector coil having opposite ends in the same plane in communication with said transfer conduit within the collector enclosure adjacent the top thereof and extending substantially horizontally therein, and an accumulator positioned in the transfer conduit adjacent the top of the collector enclosure through which the collector coil is connected to the transfer conduit.

4,344,416

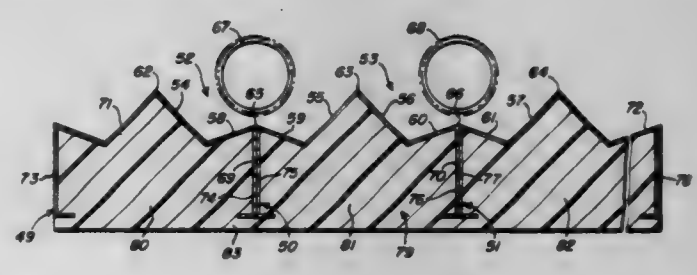
SOLAR ENERGY COLLECTOR

Charles R. Kemper, 3487 Far Hills Ave., Kettering, Ohio 45429

Filed Jan. 25, 1980, Ser. No. 115,334

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **2 Claims**



1. A solar energy collector having a heat absorbing medium, a thermally conductive chamber for housing said medium and structure for exposing said chamber to solar rays, wherein the improvement comprises means for reflecting and re-reflecting solar rays not directly striking said chamber on to the surfaces thereof not directly struck by solar rays wherein said means are in the form of a reflective surface characterized by a compound angular cross section, said reflective surface comprises at least one trough defined by upwardly divergent sidewalls spanned at their base by tented bottom wall segments, said chamber is at least one hollow tube at least partially nested within said trough and said trough is formed by at least two channels each having a compound angular upper surface comprising a pair of interior strips converging at their upper edges in a high peak and a pair of exterior marginal strips from the outer edge of each of which depends a web, said channels being held together in side-by-side abutting relationship whereby their high peaks define the trough whereof the sidewalls are the opposing interior strips and the tented bottom wall segments are the adjacent marginal strips.

4,344,417

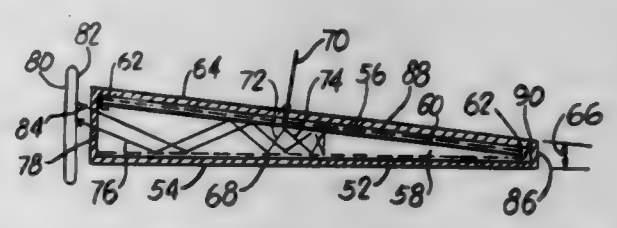
SOLAR ENERGY COLLECTOR

Jan Malecek, 245 E. 77th St., New York, N.Y. 10021

Filed Oct. 21, 1980, Ser. No. 199,155

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—439 **8 Claims**



1. A solar energy collector comprising a generally wedge-shaped body, said wedge-shaped body having a pair of adjacent lateral surfaces separated by a discrete angle, a heat activated energy absorbing apparatus, said energy absorbing apparatus being disposed outwardly of said body and opposite said discrete angle, means to receive light rays into said body passing through one of said pair of surfaces, means to convert said light rays into heat energy impinging on said energy absorbing

apparatus, means to direct the heat energy contained within said light rays passing through said first surface towards said energy absorbing apparatus, wherein said means to direct comprises said body being a housing, said one of said pair of surfaces having an interior side thereof being coated with a light transmissive heat reflecting material, said housing having a cavity, said cavity containing a light absorbing heat generating surface of material therein, said heat generating surface being disposed parallel to the other of said pair of surfaces.

4,344,418

SOLAR COLLECTOR

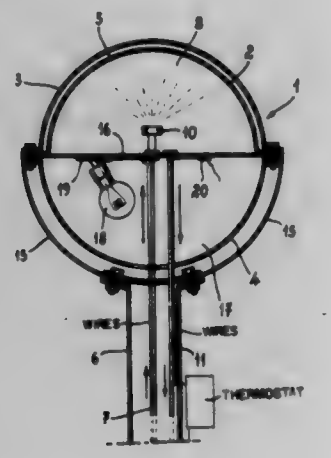
Claude Leroy, Marseilles, France, assignor to Cosmos Investigations and Research Societe Francaise a Responsabilite Limitee, Levallois-Perret, France

Filed Jul. 9, 1980, Ser. No. 167,013

Claims priority, application France, Jul. 16, 1979, 79 18336; Mar. 31, 1980, 80 07224

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—443 **6 Claims**



1. A solar collector comprising an outer semisphere and an inner semisphere having an inner wall surface, said outer semisphere and said inner semisphere being concentric with one another and having bases, said outer semisphere being permeable to solar radiation, and said inner semisphere being absorbent of the solar radiation; inlet means and outlet means for fluid to be heated, said inlet means including a duct prolongated upwardly inside an inner semispherical chamber defined by said inner semisphere; a spray head carried by said duct on its end and capable of projecting fluid to be heated onto said inner wall surface of said inner semisphere so that the fluid flows while being heated along said inner wall surface before being collected at said outlet means, said outlet means being positioned in a lowestmost point of said inner semispherical chamber; a substantially horizontal wall extending over the bases of said outer semisphere and said inner semisphere which, with said wall, defines said inner semispherical chamber, in which is sprayed fluid to be heated, in combination with a further semispherical chamber fixed beneath said wall and inside which is disposed at least one electric light bulb, a support post on top of which is mounted at some height above the ground said further semispherical chamber through which extends inlet means and said outlet means and also supply wires for said at least one light bulb, so as to form a solar collector combined with a street light.

4,344,419

ACRYLOOPTIC TONGUE DEPRESSOR AND HANDLE THEREFOR

Kermit Burgin, R.R. #1, Box 334, Whitestown, Ind. 46075

Filed Dec. 20, 1979, Ser. No. 105,509

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—18 **7 Claims**

5. An examination instrument, comprising

a base unit having a handle portion providing a hand grip and a head portion;

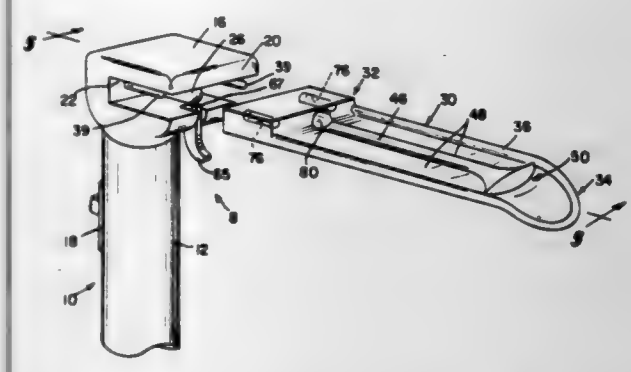
a light source mounted in the head portion for providing light in the head portion of said base unit;

a light-transmissive examination member having a proximal end for engaging the head portion of the base unit and a distal end for contacting a body surface to be examined;

a lens formed on the examination member for directing light onto the body surface being examined;

a means for removably attaching the proximal end of the examination member to the head portion of the base unit such that said examination member is attached adjacent the light source;

attachment means including a post member provided on the



head portion and extending therefrom, said post being sized and positioned to be received by a complementary interfitting opening on the examination member for guiding, positioning, and maintaining the examination member upon the head portion of the base unit;

means for selectively disengaging said examination member from the head portion of said base unit, said selective disengagement means including a trigger movably mounted on the head, a cam means coupled to the trigger, said cam means being actuable by the trigger to disengage said member from said head,

said trigger and cam means being positioned on the base unit so that actuation of the trigger causes the cam to apply pressure to the examination member in substantially the same direction as the post extends.

4,344,420

SURGICAL RETRACTOR

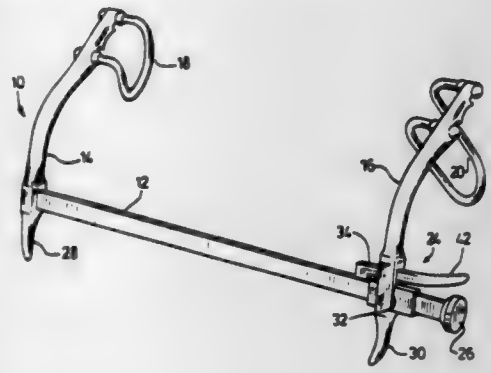
William C. F. Forder, 33 Rosehill Ave., Apt. 1903, Toronto, Ontario, Canada M4T 1G4

Filed May 15, 1980, Ser. No. 150,083

Claims priority, application Canada, May 2, 1980, 351176

Int. Cl.³ A61B *17/02, 1/32*

U.S. Cl. 128—20 **13 Claims**



1. A surgical retractor for renal surgery consisting essentially of a pair of arm means mounted on a single, generally rectangular in cross section, elongated cross member, a first arm means of the pair being generally fixed to the cross member adjacent one end thereof, the second arm means of the pair being generally fixed to a rectangular sleeve member slidably

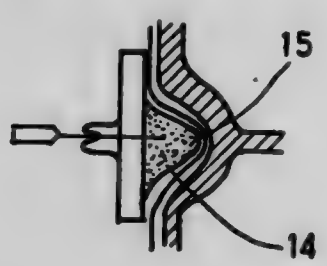
mounted on said cross member, each of the arm means having blade means extending therefrom adjacent their free ends away from said cross member for engaging the opposite edges of a surgical wound and separating such edges by sliding the second arm means along the cross member away from the first arm means, a plurality of aligned holes being spaced along said cross member, and pin-nosed pawl locking means for securely retaining the second arm means in a selected one of a plurality of positions along the cross member in spaced relationship to a selected one of said plurality of aligned holes, said pin-nosed pawl locking means comprising a pawl pivotably mounted on the second arm means, said pawl member having a projecting pin portion adapted to be engagingly received in one of said holes and a digitably engageable trigger portion for releasing said pin portion from engaging reception in said one of said holes, said pawl member being spring loaded to bias the pin portion against said cross member, a first side of said rectangular cross bar lying against the patient during surgical use, a second side of said rectangular cross bar having said arm means extending therefrom at generally right angles to said first side, said plurality of aligned holes and said pin-nosed pawl locking means being located on said second side, said first and second arm means being curved in a direction which is generally toward said first side of said cross member, and in the direction in which the blade means extend into the surgical wound, so that the renal retractor lies generally adjacent to and in contact with the patient's flank during use in renal surgery, a third side of said rectangular cross member being located generally opposite said first side of said cross member being substantially free of projections extending beyond said sleeve member so as to permit greater accessibility to the wound and reduce accidental contact by operating room personnel with said renal retractor during use, said second arm means, said cross member, said sleeve member, and said locking means cooperating to provide a smooth, very sensitive, and non-obstructing translation of said second arm means along said cross bar, combined with a positive self-locking yet easily released locking mechanism for easy positioning and retention of the instrument in said surgical wound in that said second arm may be secured in the selected locked position along the cross member by holding the trigger portion of said pawl locking means to disengage the projecting pin portion from said holes and sliding said second arm means, said sleeve member, and pin-nosed pawl locking means along said cross member to a desired position, whereupon digital release of said trigger portion causes the pin portion to become engaged in the first of the holes the pin portion reaches after such release to securely retain said second arm means in the thus locked position against pressure of the incision against the arm means until the trigger portion is digitally engaged.

4,344,421

APPARATUS FOR THE FAST, PAINLESS TREATMENT OF VARICOSE ULCERS

Raoul Bareiss, 2, rue de la gare, 68 500 Saint Amarin, France

Filed Jun. 24, 1980, Ser. No. 162,617
Claims priority, application France, Jun. 29, 1979, 79 17435
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—24 R **3 Claims**



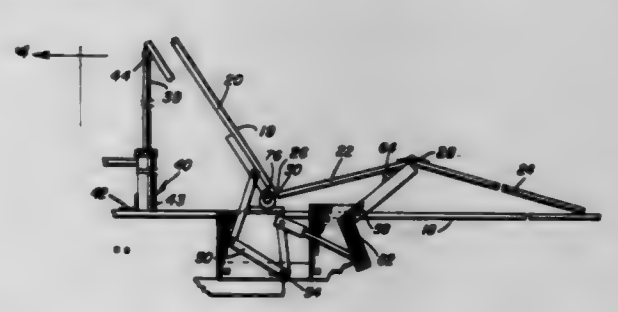
1. A mechanical device for the ambulatory treatment of varicose ulcers, comprising a support body attached to the skin of the patient over the varicose ulcer, pressure establishing means on said support body for applying a continuous localized external inwardly applied pressure only in the area of the perforating varix for forcing the blood back to the deep venous system by the application of pressure applied from the exterior to the interior of the dehiscense of the tissues occupied by the perforating varix, wherein said support body includes a base portion, and further including an impermeable film overlying the base and peripherally sealed to the support body, a peripheral adhesive applied to external portions of the impermeable film overlying said base portion for holding the device on the leg skin of the patient and means traversing the body of the support body for injecting fluid between the base portion and the external film to cause the external film to bulge outwardly from the base portion to effect the application of pressure applied from the exterior to the interior of the dehiscense of the tissues occupied by the perforating varix.

4,344,422

ORTHOPEDIC BED

Joseph D. Immel, 4809 Green Acres Rd., St. Joseph, Mo. 64506

Filed Jun. 5, 1980, Ser. No. 156,696
Int. Cl.³ A61H *1/00*; A47C *20/08*
U.S. Cl. 128—33 **9 Claims**



1. An orthopedic bed comprising a frame, a mattress support structure mounted on said frame, said mattress support structure including three hinged sections, said hinged sections comprising a head support section, intermediate section and foot support section; a pivot tube connected to said frame, said pivot tube also being attached to said head support and intermediate sections for limiting movement thereof to pivotable movement about said tube; linkage means connected to said head support section and said intermediate section for causing pivotal movement of said intermediate section upon pivotal movement of said head support section; said linkage means including a first bell crank, a first control arm extending from said head support section to one side of said first bell crank, a second bell crank, a second control arm extending from said first bell crank to said second bell crank, a support rod extending from said second bell crank, said intermediate section resting upon said support rod, an eccentric shaft disposed in said pivot tube and having a motor attached to said eccentric shaft for causing rotation thereof thereby vibrating said mattress support structure, and power lift means attached to said head support section for lifting said head support section.

4,344,423

ORTHOPEDIC BANDAGE HAVING IMPROVED CATALYST SYSTEM

Anthony Evans, Teaneck; John M. Lesniak, and Franklin Boardman, both of Englishtown, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

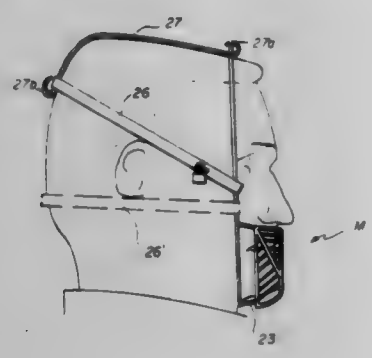
Filed Sep. 6, 1977, Ser. No. 830,731
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—90 **9 Claims**

1. An orthopedic bandage comprising a flexible carrier having a cast forming composition adhered thereto, said cast forming composition comprising a redox catalyst system consisting essentially of cupric acetylacetonate in combination with a reducing agent, and a monomer, selected from the group consisting of diacetone acrylamide, N-isopropylacrylamide and mixtures thereof, which is polymerizable by means of said redox catalyst system.

4,344,424
ANTI-EATING FACE MASK

Lucy L. Barmby, 9550 Jackson Rd., Sacramento, Calif. 95826

Filed Mar. 27, 1980, Ser. No. 134,557
Int. Cl.[3] A61F *5/56*
U.S. Cl. 128—136 2 Claims



1. A face mask for preventing the introduction of substances into the mouth of the wearer comprising in combination;

a cup shaped member conforming generally to the shape of the mouth and chin area of the wearer's face below the nose, said cup shaped member formed of rigid material with openings to allow breathing therethrough,

means for mounting said cup shaped member over the mouth including plural straps extending from said cup over the head of the wearer,

one of said straps provided with a means for separation to allow for placement and removal of said face mask, and a lock at said separation means to prevent removal of said face mask, said mounting means further including a hoop member of rigid material adapted to extend over the user's head and chin and a flexible strap having end portions connected to said hoop member for extending around the back of the user's head and a strap member adapted to extend over the top of the user's head, said strap member being connected at opposite ends to said hoop member and to said strap intermediate the ends of said strap, said separation means including a staple adjacent one end portion of said strap, and an aperture in said strap one end portion in longitudinally spaced relationship with said staple, said strap one end portion arranged to be looped around said hoop member for insertion of said staple in said aperture and said lock engageable with said staple extending through said aperture for locking said strap one end portion to said hoop member, wherein said hoop member is attached to said cup shaped member by plural rods extending therebetween, two of said rods attached to opposed sides of said cup shaped member, a third said rod attached to a lowermost portion of said hoop member.

4,344,425
EARPLUGS

Richard H. Strauss, 1501 Doone Rd., Columbus, Ohio 43221

Filed Jun. 10, 1980, Ser. No. 158,276
Int. Cl.[3] A61F *11/02*
U.S. Cl. 128—152 6 Claims

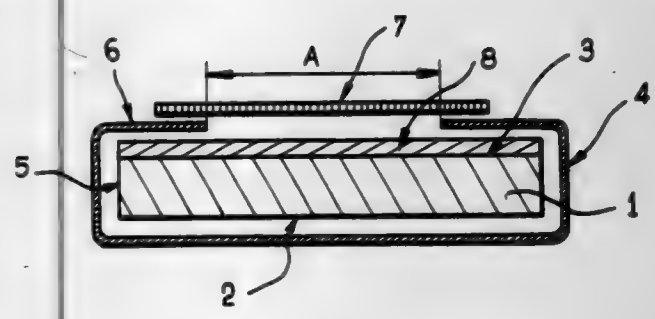


1. An earplug comprised of a preformed concave-convex imperforate disc of pliable stretchable film of a size and shape such that the convex surface thereof is adapted to conform to and cover the opening of the ear canal and such that the disc is adapted to reside within the external ear when positioned over the ear canal opening, and a layer of pressure-sensitive adhesive on the convex surface for releasably adhering the disc to the periphery of the ear canal opening.

4,344,426
STERILIZABLE SURGICAL PAD

Jean-Francois Caumont, Brionne, France, assignor to Tempo Sanys, Paris, France

Filed Jun. 30, 1980, Ser. No. 164,462
Claims priority, application France, Dec. 10, 1979, 79 30253
Int. Cl.[3] A61L *15/00*
U.S. Cl. 128—156 7 Claims



1. A sterilizable surgical pad comprising:

a flat core made from an absorbent material held in shape by means of a sheet of a natural or artificial textile material;

said textile sheet surrounding the inner and side surfaces of the core and folded over the edges of the outer surface of said core;

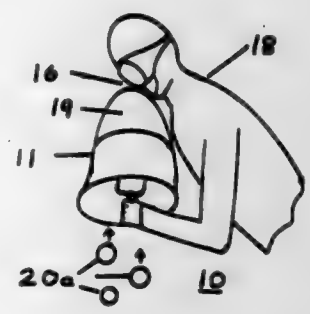
said textile sheet being held around the core by means of an impermeable co-extruded thermoplastic film adhered to both the outer surface of the core and the outer surface of the edges of the textile sheet which have been folded over the outer surface of the core;

said film being able to withstand temperatures necessary to effect heat-sterilization.

4,344,427
UNDERWATER BREATHING DEVICE

Mark C. Marvin, 25 Floral Rd., Peekskill, N.Y. 10566

Filed Mar. 24, 1980, Ser. No. 133,336
Int. Cl.[3] B63C *11/00*
U.S. Cl. 128—200.25 3 Claims



1. An underwater breathing device comprising:

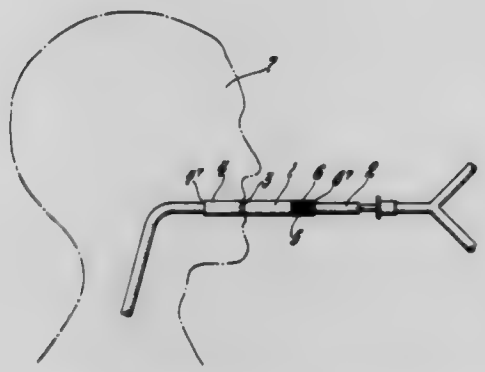
a non-rigid umbrella-like shaped reservoir which is capable of collecting rising gas from a liquid medium, said reservoir having a wide gas intake opening at one end and at essentially the apex end, a reservoir exhaust port through which gas is extracted from said reservoir, said exhaust port terminating in a breathing tube means.

4,344,428

ORAL ENDOTRACHEAL TUBE PROTECTOR, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Stanley Sherman, 2543 Wickfield Rd., West Bloomfield, Mich. 48033

Filed Feb. 20, 1980, Ser. No. 122,872
Int. Cl.[3] A61M *25/00*
U.S. Cl. 128—207.14 10 Claims



1. A tube member for removably receiving an endotracheal tube having a proximal end portion adapted to be inserted into a trachea of a patient and a distal end portion adapted to extend exterior to the mouth of a patient, comprising:

cylinder means having a bore extending therethrough for removably receiving and passing an endotracheal tube therethrough;

said cylinder means having a proximal end portion, an intermediate portion and distal end portion;

said proximal end portion and intermediate portion having a continuous, uninterrupted constant diameter, cylindrical outer surface;

said distal end portion of said cylinder means having first means integral therewith for securing said distal end portion to the distal end portion of said endotracheal tube, said first means comprising said distal end portion of said cylinder means having an uneven outer surface to which tape may be attached; and

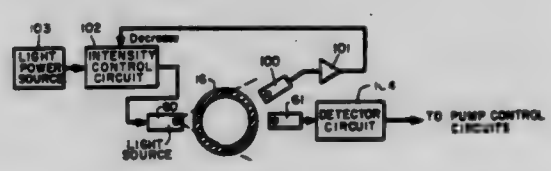
said cylinder means having a length with respect to said endotracheal tube such that, when said endotracheal tube is inserted with the trachea and said cylinder means is in its operative position on said endotracheal tube with said distal end portion of said cylinder means secured to the distal end portion of said endotracheal tube, said proximal end portion of said cylinder means is disposed within the mouth and terminates substantially forwardly of the throat of a patient and said intermediate portion and distal end portion extend exterior to the mouth of the patient.

4,344,429

BUBBLE DETECTOR WITH FEEDBACK CIRCUIT FOR IMPROVED SENSITIVITY

John E. Gupton, Vernon Hills, and Norman Shim, Glenview, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 13, 1979, Ser. No. 103,057
Int. Cl.[3] A61M *5/14*; G08B *21/00*
U.S. Cl. 128—214 R 7 Claims



1. A bubble detector for signaling the occurrence of a fluid absence in a fluid administration set, of the type having a transparent tubing segment of generally cylindrical cross section, said bubble detector comprising, in combination:

a light source arranged at one side of the tubing segment:

a first light detector generally arranged at the opposite side of the tubing segment opposite said light source and defining in conjunction with said light source a light path through the tubing segment, said first detector generating a first output signal indicative of the intensity of light from said light source incident thereon, the intensity of said incident light increasing in the presence of fluid within the lumen of the tubing segment as a result of the focusing effect thereof;

a second light detector generally arranged at an angle to said light path, said second detector generating a second output signal indicative of the intensity of light from said light source incident thereon, the intensity of said incident light decreasing in the presence of fluid within the lumen of the tubing segment as a result of the focusing effect thereof;

detector circuit means responsive to said first detector output signal for providing an alarm signal upon the intensity of the light incident on said first light detector falling below a predetermined minimum level; and

intensity control means responsive to said second detector output signal for decreasing the light output of said light source upon the light incident on said second detector increasing to increase the effectiveness of said control circuit means in responding to the absence of fluid in the lumen

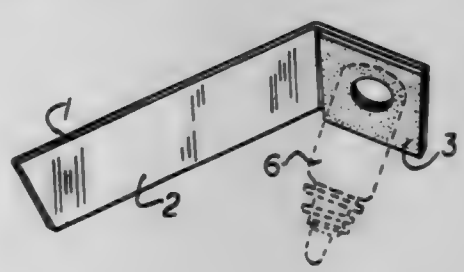
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4,344,430

MEDICATION DIRECTING AID

Edgar Astrove, 35 Stratton Rd., Scarsdale, N.Y. 10583

Division of Ser. No. 90,330, Nov. 1, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 246,117
Int. Cl.[3] A61M *1/00*
U.S. Cl. 128—233 9 Claims



1. A medication directing aid characterized by:

(a) a carrier having a mirror arm and a medication dispenser clamping arm formed of self-supporting flexible material at an obtuse angle;

(b) a mirror viewing surface on the mirror arm of said carrier (a); and

(c) clamping means associated operatively with the medication dispenser clamping arm of said carrier, to clamp a medication dispenser in place, comprising adhesive material disposed about a locating point on said clamping arm so as to present an adhesive clamping face on said carrier (a).

4,344,431

POLYMERIC ARTICLE FOR DISPENSING DRUGS

Seymour Yolles, Newark, Del., assignor to University of Delaware, Newark, Del.

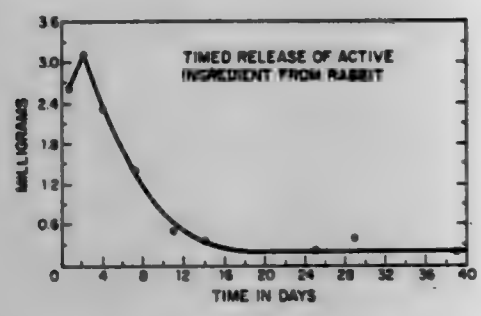
Continuation of Ser. No. 798,535, Dec. 12, 1974, abandoned, which is a division of Ser. No. 102,432, Dec. 29, 1970, Pat. No. 3,880,991, which is a continuation-in-part of Ser. No. 809,946, Mar. 24, 1969, abandoned. This application Aug. 4, 1980, Ser. No. 175,309
Int. Cl.[3] A61M *7/00*
U.S. Cl. 128—260 8 Claims

1. An article for controllably dispensing drugs, comprising:

a. crystalline polyethylene having a melting point of at least

100° C. formed into a solid shape which has structural integrity; and

b. from about 0.5% to about 50% by weight based on said polyethylene of an addictive drug antagonist present in an antagonistically effective amount and substantially uniformly and intimately dispersed throughout portions of said shaped polyethylene with an outer surface of said solid shape comprising means for diffusing said drug antagonist therethrough with said drug antagonist exuding to said outer surface.

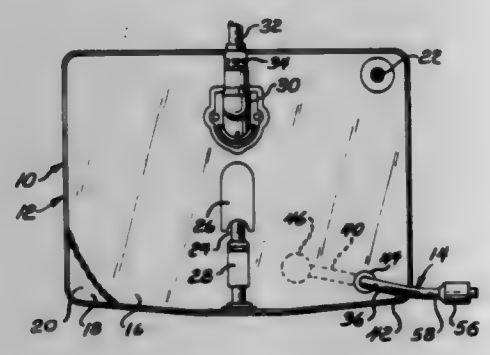


4,344,432

DEVICE FOR COLLECTING BODY FLUIDS

Edward F. Pankau, Park Ridge, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jan. 7, 1981, Ser. No. 223,186
Int. Cl.³ A61F 5/44
U.S. Cl. 128—275 18 Claims



12. A device for collecting body fluids from a patient's body, comprising:

a receptacle having a chamber to receive said body fluids;

a conduit having a portion located in said chamber, said conduit having a lumen extending along the conduit, a diffusion opening communicating with said lumen, and an inflation opening communicating with said lumen;

a membrane secured to the conduit in said chamber and closing the diffusion opening, said membrane being slightly permeable to liquid; and

an inflatable balloon of elastic material secured to the conduit and defining a cavity communicating with the inflation opening.

4,344,433

OSTOMATES APPLIANCE

Francis C. Smith, Fort Worth, Tex., assignor to Smith's Ostomy Products, Inc., Fort Worth, Tex.

Filed Sep. 10, 1980, Ser. No. 186,144
Int. Cl.³ A61F 5/44
U.S. Cl. 128—283 15 Claims

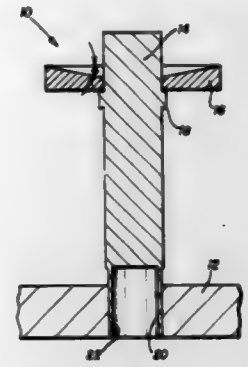
1. Apparatus for facilitating preassembly and attachment of a face plate and adhesive sealing ring around a stoma, comprising:

elongate post means having an open end and a closed end, the open end being adapted for receiving absorbent material;

the open end of said post means being dimensioned for placement in predetermined surrounding relationship over the stoma;

collar means mounted on said post means for supporting the face plate during attachment of the adhesive sealing ring thereto; and

base means for releasably supporting said post at either end thereof remotely from the stoma.

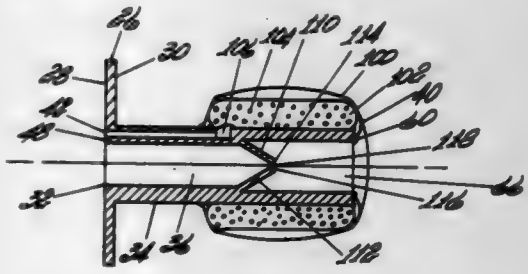


4,344,434

ILEOSTOMY APPLIANCE AND METHOD FOR IMPLANTING THE SAME

William G. Robertson, Santa Barbara, Calif., assignor to Santa Barbara Medical Foundation Clinic, Santa Barbara, Calif.

Filed Jun. 1, 1981, Ser. No. 268,879
Int. Cl.³ A61F 5/44
U.S. Cl. 128—283 20 Claims



1. An ileostomy appliance comprising

a support housing including an elongated central member having a predetermined axial length and which communicates with an attachment plate having opposed parallel surfaces, said support housing having an aperture extending axially therethrough forming a passageway which terminates in a first opening adjacent said attachment plate and a second opening which terminates at the remote end of the elongated central member;

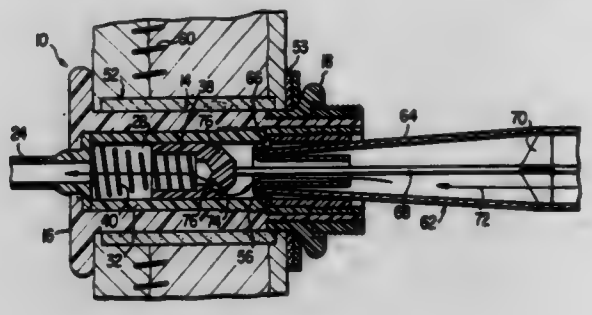
a preshaped collapsible member having a fluid tight, outer surface, two ends and an interior cavity, said preshaped collapsible member being positioned around said elongated central member with the ends of the preshaped, collapsible member in fluid tight sealing engagement with the exterior outer surface of said elongated central member with one end of the preshaped collapsible member being spaced a predetermined distance from the end of the elongated central member adjacent the attachment plate and the other end of which is adjacent the second opening of the elongated central member; and

means for withdrawing fluid from the interior cavity of said preshaped collapsible member to create a reduced pressure therein enabling ambient atmosphere pressure to collapse said collapsible member to reduce the geometrical dimension thereof and for enabling fluid to be drawn into the interior cavity of a deflated preshaped collapsible member at ambient atmospheric pressure to expand said preshaped collapsible member back to its original shape.

4,344,435
METHOD AND SURGICALLY IMPLANTABLE APPARATUS FOR PROVIDING FLUID COMMUNICATION WITH THE INTERIOR OF THE BODY

Norbert T. Aubin, P.O. Box 982, Loma Linda, Calif. 92324

Filed Dec. 15, 1978, Ser. No. 969,835
Int. Cl.[3] A61M *27/00*
U.S. Cl. 128—350 R 13 Claims



1. A surgically implantable apparatus for a gastronomy, comprising:

a hollow, generally cylindrical elongated body for insertion through a surgical opening in the abdominal wall and stomach wall of the patient, said cylindrical body having a radially outwardly extending concentric flange for location at the interior side of the stomach wall to inhibit movement of the cylindrical body out of the patient; and a concentric radially inwardly extending flange which narrows the bore of the cylindrical body;

means, attached around the circumferential surface of the cylindrical body, for facilitating fixation of the tissue of the abdominal wall to the cylindrical body;

a flange member, threaded concentrically on the cylindrical body for tightening against the external surface of the abdominal wall to inhibit movement of the cylindrical body into the patient and to permit adjustment of the apparatus for variations in thickness of the abdominal wall;

a flexible cannula for insertion in the gastrointestinal tract of the patient, said cannula having radially outwardly extending flange for engaging the inwardly extending flange of the cylindrical body;

a first threaded sleeve for engaging corresponding threads in the bore of the cylindrical body and for selectively securing the flange of the cannula in sealing engagement with the cylindrical body and alternatively, selectively releasing the flange of the cannula to permit the cannula to be withdrawn through the bore of the cylindrical body;

a valve seat;

a second threaded sleeve concentric with the cylindrical body for selectively securing the valve seat in position and alternatively, selectively releasing the valve seat from the cylindrical body; and

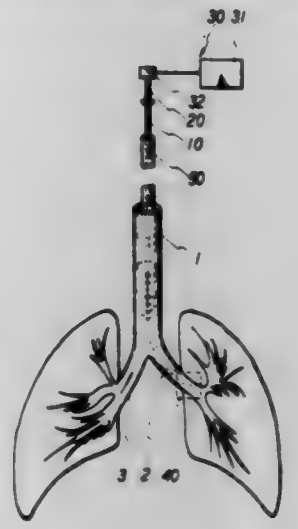
a valve body, moveable along the axis of the cylindrical body away from the valve seat responsive to the insertion into the apparatus of the couping of a extracorporeal conduit.

4,344,436
DEVICE FOR DETERMINING LOCATION OF THE TIP OF CATHETER

Yukio Kubota, No. 1-12, Uenohigashi 1-chome, Toyonaka-shi, Osaka-fu, Japan

Filed Oct. 23, 1980, Ser. No. 200,017
Claims priority, application Japan, Jan. 16, 1980, 55-5259[U]; Mar. 31, 1980, 55-42705
Int. Cl.[3] A61M *25/00*
U.S. Cl. 128—350 R 5 Claims

1. An apparatus for determining the location of the tip of a catheter in the bronchi, said apparatus comprising catheter tube means for insertion into the bronchi and for removing matter from the bronchi, said catheter tube means including a curved tip at one end thereof and guide mark means extending along the length of said catheter tube means on one side thereof for providing an indication of the direction of said curved tip; a sound signal generator means coupled to the other end of said catheter tube means for generating a sound signal in said cathe-

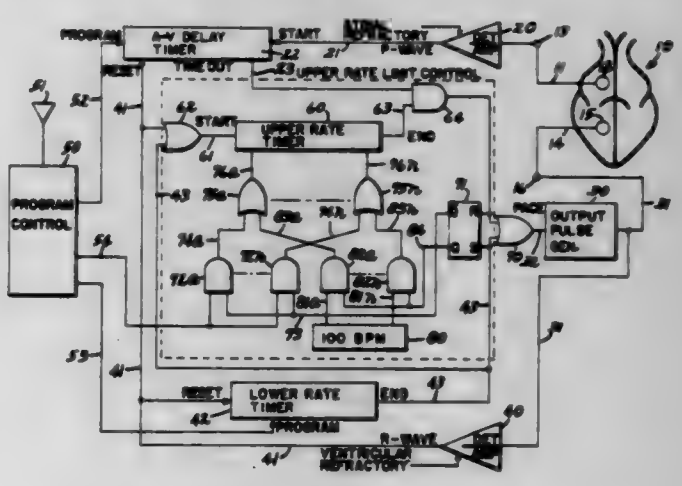


ter tube means such that the sound signal travels through said catheter tube means and exits from said one end thereof; and sound signal receiver means, external to the body, for receiving the sound signal exiting from said one end of said catheter tube means and thereby determining the position of said one end of said catheter tube means within the bronchi.

4,344,437
PACEMAKER TRIGGERING COUPLING CIRCUIT

H. Toby Markowitz, Anoka, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1980, Ser. No. 145,051
Int. Cl.[3] A61N *1/30*
U.S. Cl. 128—419 PG 7 Claims



1. A heart pacemaker having atrial synchronous and minimum rate ventricular pacing modes and including means for preventing closely coupled ventricular stimulation pulses, comprising:

atrial terminal means and ventricular terminal means for connection, respectively, to the atrium and ventricle of a patient's heart;

output pulse generating means for selectively delivering ventricular electrical stimulation pulses to said ventricular terminal means;

ventricular sense amplifier means connected to said ventricular terminal means for sensing ventricular beats of the heart and for producing a corresponding ventricular signal;

atrial sense amplifier means connected to said atrial terminal means for sensing atrial contractions of the heart and for producing a corresponding atrial signal;

control means connected to receive said atrial and ventricular signals and connected to control said output pulse generating means, said control means for causing delivery of delayed synchronized ventricular stimulation pulses in response to atrial signals occurring faster than a predetermined minimum rate, and for causing delivery of ventricular stimulation pulses to maintain the ventricular rate at the predetermined minimum rate in the absence of atrial signals above the minimum rate; and

said control means including means for preventing delivery of a ventricular stimulation pulse at a pacing rate in excess of a predetermined maximum rate limit with respect to a proceding spontaneous or stimulated ventricular contraction, and further including means for increasing said predetermined maximum rate limit during atrial synchronous pacing and reducing to a lower maximum rate limit when pacing at said predetermined minimum pacing rate.

4,344,438

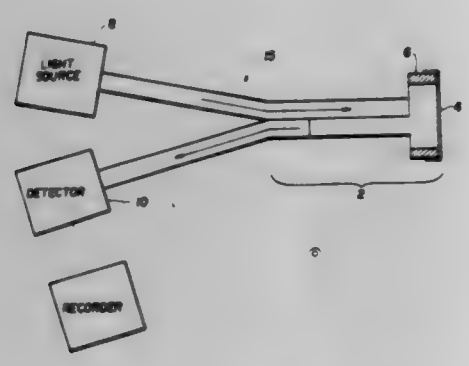
OPTICAL SENSOR OF PLASMA CONSTITUENTS

Jerome S. Schultz, Ann Arbor, Mich., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Continuation-in-part of Ser. No. 930,659, Aug. 2, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,043

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—634 **14 Claims**



1. A device to optically measure the concentration of low molecular weight assay ligand, such as a plasma constituent, comprising:

a chamber insertable into a blood vessel including a selection means, in a wall of said chamber, for allowing at least one low molecular weight assay ligand to enter said chamber;

at least one competing ligand, inside said chamber, each said at least one competing ligand having a different identifiable optical property from the assay ligand to be measured, a quantitative measurement of said optical property being proportional to the concentration of said competing ligand, each said at least one competing ligand being a material which will not pass through said selection means;

at least one binding means having binding sites, confined inside said chamber in a selected region, for reversibly binding with the low molecular weight assay ligand to form a first complex of the binding means and assay ligand, and for reversibly binding with said competing ligand to form a second complex of the binding means and competing ligand, said competing ligand competing with the assay ligand for binding sites on said binding means;

a light source means in optical contact with the interior of said chamber for illuminating the unbound competing ligand and/or the second complex within said chamber; and

a detecting means in optical contact with said chamber for quantitatively measuring the indentifiable optical property of substantially only the unbound competing ligand or of substantially only the second complex.

4,344,439

CATHETER FOR USE IN LOCALIZING THE ORIGIN OF IDIOPATHIC MICROSCOPIC HEMATURIA

Ulrico Jacobellis, Via Andrea Da Bari 128, 70121 Bari, Italy

Filed Oct. 20, 1980, Ser. No. 198,711

Int. Cl.³ A61M *25/00*; A61B *10/00*

U.S. Cl. 128—636 **4 Claims**



1. For use with a conventional cystoscope a ureteral catheter comprising an elongated tubular member having an insertion tip, said tip having opening means therein and including means therein for detecting the presence of blood or hemoglobin in the urine from one of the ureters or kidney at the mouth of the ureters into the bladder upon insertion of the tip into the bladder, said catheter being sized for coaxial insertion through the cystoscope said detecting means comprising a color reactive agent material mounted adjacent said opening means within said tip.

4,344,440

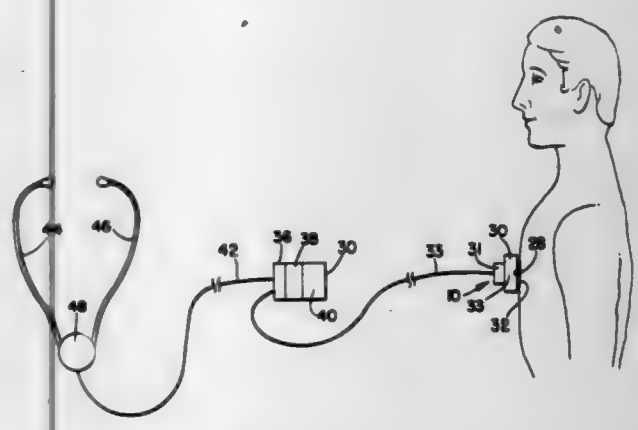
MICROPROBE FOR MONITORING BIOPHYSICAL PHENOMENA ASSOCIATED WITH CARDIAC AND NEURAL ACTIVITY

Trygve Aaby, 312 S. Hayford St., Lansing, Mich. 48910, and Barnett Rosenberg, 2687 Ramparte Path, Holt, Mich. 48824

Filed Apr. 1, 1980, Ser. No. 136,317

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—653 **28 Claims**

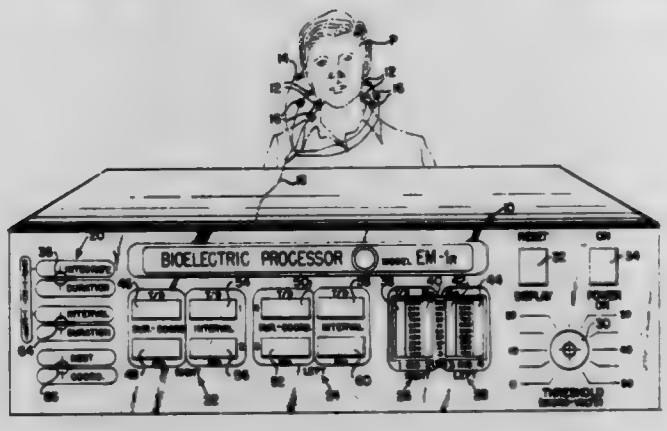


14. A microwave diagnostic instrument for monitoring biophysical activity associated with cardiac and neural activity of a life system comprising a casing, a source of low power microwaves within said casing, means within said casing and coupled to said source for concentrating and directing the radiation into a localized beam of radiation from said source through an exit opening provided in said casing, detecting means disposed at said opening for detecting modulated backscattered radiation from the life system of interest and means connected to said detecting means for developing a signal modulated in accordance with the detected modulated backscattered radiation.

4,344,441
MANDIBULAR ELECTROMYOGRAPH

John C. Radke, Seattle, Wash., assignor to Myo-Tronics Research, Inc., Seattle, Wash.

Filed Jul. 3, 1980, Ser. No. 165,794
Int. Cl.³ A61B 5/04
U.S. Cl. 128—733 20 Claims



1. An electromyograph having a plurality of electrode channels receiving input signals from respective electrodes, each positioned to receive an electrical signal from a masticatory muscle, comprising:

threshold means for each electrode receiving respective input signals from said electrodes and generating respective actuating signals when the amplitude of said input signals exceeds a predetermined value;

first detector means receiving all of said actuating signals and generating an enabling signal for each electrode channel responsive to an actuating signal from any of said threshold means;

respective second detector means for each electrode channel, said second detector means terminating the enabling signal for said channel responsive to an actuating signal from the corresponding threshold means;

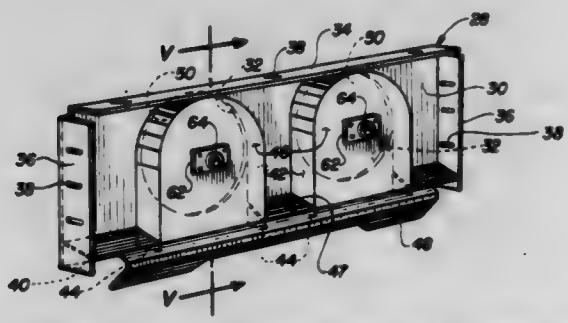
timer means for each electrode channel, said timer means recording the duration of the enabling signal for the corresponding electrode channel; and

display means for each electrode channel receiving an output from the corresponding timer means indicative of the duration of the enabling signal for the corresponding electrode channel whereby said display means indicate the time elapsing between contraction of the first-to-contract masticatory muscle and the contraction of each of the remaining masticatory muscles.

4,344,442
ANTI-WRAP APPARATUS

Peter J. Torland, New Holland, and Robert R. Todd, Leola, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 24, 1981, Ser. No. 257,025
Int. Cl.³ A01F 7/06, 7/00
U.S. Cl. 130—27 T 9 Claims



1. In a combine having a frame on which is mounted at least one rotor supported in a rotor bearing plate for rotational movement about an axis of rotation, said rotor having a cylindrical axially aligned outer wall terminating at a first end adjacent said rotor bearing plate, crop conveying elements attached to said outer wall for conveying crop material away from said first end, and a shaft forming said axis of rotation and projecting outwardly from said first end for supporting said rotor within said rotor bearing plate, said outer wall of said rotor having a first diameter, an improved rotor bearing plate assembly comprising:

a first planar portion extending generally transverse to said axis of rotation;

means for connecting said first planar portion to said frame;

a recessed portion formed in said first planar portion to correspond to each said rotor, said recessed portion having an arcuate side wall affixed to said first planar portion and positioned in axial alignment with said axis of rotation of said rotor so as to have a second diameter slightly larger than said first diameter of said rotor outer wall, said recessed portion further having an end wall affixed to said arcuate side wall and positioned generally parallel to said first planar portion at a spaced relationship thereto;

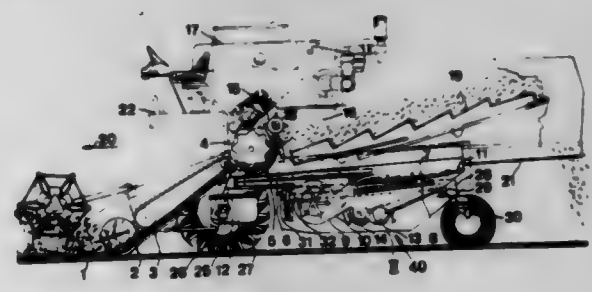
a shaft support mounted in said end wall of said recessed portion; and

a bearing mounted in said shaft support in said end wall for rotatably supporting said rotor shaft such that said rotor outer wall extends into said recessed portion with said first end of said rotor being positioned between said first planar portion and said end wall.

4,344,443
CLEANING APPARATUS OF COMBINE HARVESTERS

Cyriel R. J. De Busscher, Sijsele-Damme; Walter V. Deleu, Torhout, and Francois Van Herpe, Houtem, all of Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Jul. 1, 1980, Ser. No. 165,161
Claims priority, application United Kingdom, Jul. 4, 1979, 7923326
Int. Cl.³ A01F 12/24
U.S. Cl. 130—272 10 Claims



1. In a combine harvester:

threshing, separating and cleaning devices operably mounted in said harvester, said cleaning device having a grain pan, a cleaning sieve and a cleaning fan; and

means for leveling said cleaning device to a transverse generally horizontal position in response to said harvester being inclined relative to the horizontal, said means for leveling including said grain pan, sieve and cleaning fan of said cleaning device being pivotable in unison about an axis extending in the direction of travel of said harvester, said cleaning device being connected to a subframe pivotally mounted in said harvester.

4,344,444
CIGARETTE HOLDER WITH NICOTINE EXTRACTOR

Noriyoshi Miura, 1-5, Takashimadaira 4-chome, Itabashi-ku, Tokyo, Japan 175

Filed Nov. 13, 1980, Ser. No. 206,361
Claims priority, application Japan, Nov. 28, 1979, 54/164399
Int. Cl.³ A24F 13/06
U.S. Cl. 131—201 3 Claims

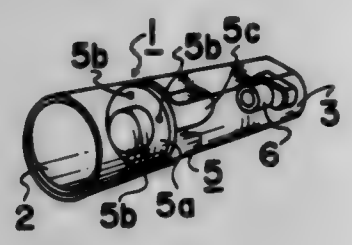
1. A cigarette holder comprising:

(a) a hollow cylindrical body made of transparent synthetic resin having a cigarette insertion opening at one end with a mouth section at the other end, said body being tapered

at least in said mouth section, a central section in said body;

(b) a flue (4) extending in said body from said central section towards said mouth section, said flue having a step section towards said one end;

(c) a nicotine extractor (5) made of a colored synthetic resin in said flue (4) said nicotine extractor having a disc portion



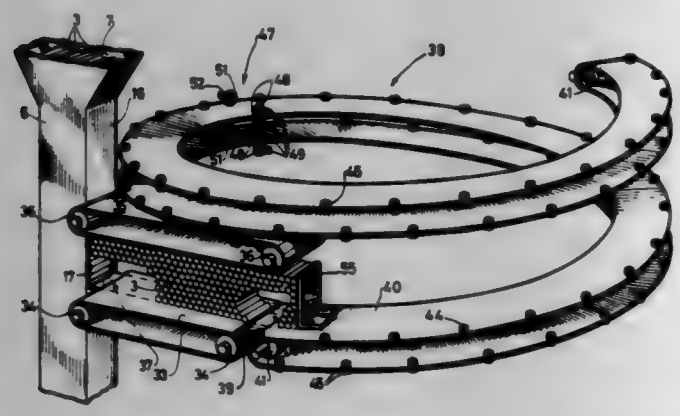
disposed to engage said step section and an elongated body portion extending toward said mouth section with a small gap between said body portion and said hollow cylindrical body inner wall, said extractor having a plurality of apertures of small size in at least one of said portions whereby smoke flowing out of said small apertures collides with the inner surface of said flue and the nicotine and tar attach to said flue inner surface.

4,344,445

APPARATUS FOR DIRECTLY LINKING ONE OR MORE CIGARETTE MAKING MACHINES TO ONE OR MORE CIGARETTE PACKING MACHINES

Enzo Seragnoli, Bologna, Italy, assignor to G. D Societa per Azioni, Bologna, Italy

Filed Nov. 24, 1980, Ser. No. 210,043
Claims priority, application Italy, Dec. 11, 1979, 3566 A/79
Int. Cl.[3] A24C *5/35*
U.S. Cl. 131—282 5 Claims



1. Apparatus including at least one cigarette making machine and at least one cigarette packing machine, and means for directly linking said at least one cigarette making machine to said at least one cigarette packing machine comprising: at least one line for transferring a mass of cigarettes from said at least one making machine to said at least one packing machine, means to place cigarettes horizontally and parallel one with the other on said transferline and to move said cigarettes in a direction crosswise to their axes; said direct linking means comprising at least one storage chamber to compensate for production imbalances between said machines, said direct linking means comprising a channel that runs into said line and comprising a conveyor, running along the full path thereof on which the cigarettes are supported and carried along, and comprising a wall, integral with and substantially vertical with respect to said conveyor, that is movable between two positions of extremity of said storage chamber corresponding to conditions in which said storage chamber is completely full and one in which it is completely empty, respectively; a reversible motor means driving the said conveyor longitudinally to and fro in two directions opposite one another, essential features of said apparatus including that said direct linking means is formed with a constant radius of curvature around a vertical axis, said conveyor being constituted by a continuous endless belt mounted on truncated cone shape rollers placed in the region of the extremities of said storage chamber, said cone shaped rollers being mounted on axes that pass through said vertical axis, at least one of said cone shaped rollers being drivingly connected to said reversible motor means, said storage chamber comprising, furthermore, fixed means for sustaining said conveyor belt at least in the region on which the cigarettes are supported and carried along, and turnbuckle means for stretching said conveyor in directions radial with respect to said vertical axis.

4,344,446

COMBINED SCALP AND HAIR CARE PRODUCTS AND METHOD

Horst Ehrhardt, Canoga Park, Calif., assignor to Susan Bjurman and Barbara Babcock, both of Los Angeles, Calif.

Filed Mar. 17, 1980, Ser. No. 131,274
Int. Cl.[3] A45D *7/00*
U.S. Cl. 132—7 4 Claims

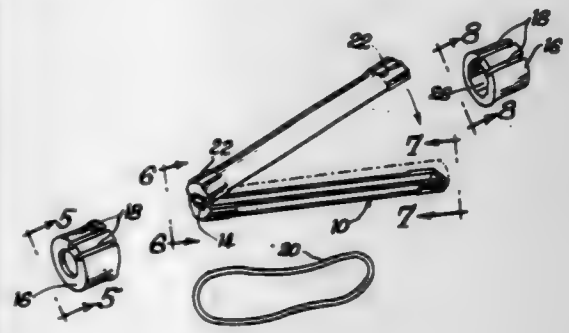
2. A solid waxy stick-like scalp cleanser comprising alkali metal fatty acid soap, amphoteric detergent, antimicrobial agent and emulsifier in a substantially anhydrous humectant solvent.

4,344,447

DOUBLE TWIST HAIR ROLLER

Willie L. Morrow, 4167 Market St., San Diego, Calif. 92102

Filed Dec. 23, 1980, Ser. No. 219,848
Int. Cl.[3] A45D *2/14*
U.S. Cl. 132—42 R 5 Claims



1. A hair curler comprising:

(a) an elongated body;

(b) an elastic band extendable to the substantial length of said body;

(c) end caps engageable on the ends of said body to stretch said band therebetween; and

(d) the ends of said body being polygonal and the inside of said end caps being polygonal to mate with the ends of said body such that said end caps can be removed from said body and twisted to define a helical curve in said band around said body and be locked in said twisted position to tighten said band against said body.

4,344,448

MACHINE FOR CLEANING RECEPTACLES

Roger F. Potts, Georgetown, Canada, assignor to Convey Systems Div. of Export Tool & Welding Co. Ltd., Ontario, Canada

Filed May 7, 1980, Ser. No. 147,622
Claims priority, application Canada, Jul. 31, 1979, 332924
Int. Cl.[3] B08B *3/02*
U.S. Cl. 134—73 23 Claims

1. An apparatus for cleaning dirty objects with a cleaning solution comprising:

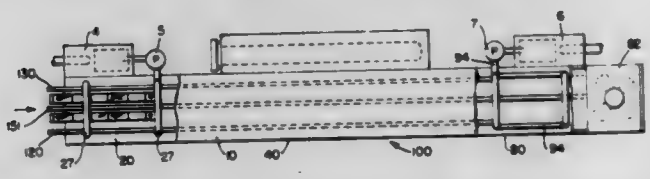
an immersion bath filled with cleaning fluid so that dirty

objects passing through said immersion bath are completely immersed in the cleaning fluid;

first high pressure means, mounted adjacent to said immersion bath, for spraying cleaning fluid on the dirty objects before operation by said immersion bath;

second high pressure means, mounted adjacent to said immersion bath, for spraying rinse fluid on the dirty objects after operation by said immersion tank, said first and second high pressure means extending in a plane disposed above said immersion bath;

a third high pressure means, mounted in said immersion bath, for agitating the cleaning fluid in said immersion bath to effect the loosening and removal of dirt from the dirty objects passing through said immersion bath;



means for moving the dirty objects serially through said first high pressure means, said immersion bath and said second high pressure means;

means for heating the cleaning fluid in said immersion bath at an elevated temperature and for maintaining the cleaning fluid at said elevated temperature; and

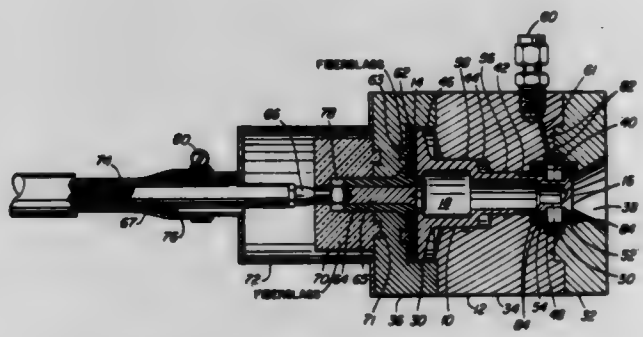
moving means, extending between said first high pressure spraying means and said second high pressure spraying means, for guiding the dirty objects along a bypass path whereby lightly soiled objects are directed along said bypass path to bypass the cleaning operation in said immersion bath.

4,344,449

FAST-ACTING VALVE AND USES THEREOF

James A. Meyer, Espanola, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 16, 1980, Ser. No. 150,393
Int. Cl.³ F16K *31/06, 21/06*
U.S. Cl. 137—1 15 Claims



1. A valve comprising:

a. a valve housing;

b. a valve stem having a coil end and a muzzle end and being able to reciprocate within said valve housing so that said valve has a fully open position, a plurality of partially open positions, and a fully closed position, said valve stem having a size and shape relative to said valve housing such that at least one air cushion space is formed between said valve stem and said valve housing;

c. a sealing means for sealing said at least one air cushion space so as to provide an air-tight fit in order to pressurize air located within said at least one air cushion space, thus providing a first restoring force to help close the valve and thus protecting said valve from destruction; and

d. a gas reservoir located within said valve housing, said gas reservoir being in open communication with a space exterior to said valve when said valve is in an open position and being sealed off from said space exterior to said valve when said valve is in its fully closed position,

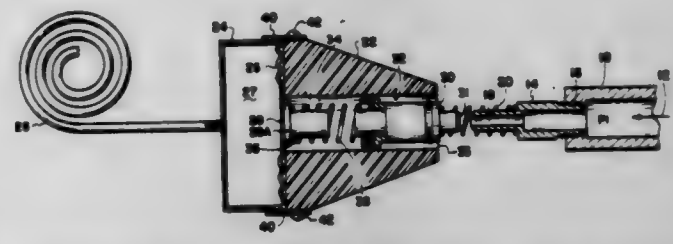
wherein said valve stem has x consecutively numbered portions, each portion of which has a particular largest diameter and x being an integer greater than 3, wherein said first portion has a surface corresponding to said muzzle end which is exposed to said space exterior to said valve, wherein said xth portion has a surface corresponding to said coil end which is exposed to an actuating means, wherein said first portion has a largest diameter a, wherein said second portion has a largest diameter b, wherein said third portion has a largest diameter c, wherein c is greater than a, and wherein a is greater than b, so that when said valve is in its fully open position or a partially open position, gas is released from said gas reservoir to said space exterior to said valve so as to exert a larger force in the axial direction on said third portion than on said first portion, thus providing a second restoring force tending to restore said valve to its closed position.

4,344,450

ICING PREVENTOR

William R. Walters, 910 W. Caddo, Cleveland, Okla. 74020

Filed Apr. 8, 1980, Ser. No. 138,584
Int. Cl.³ E03B *7/12*
U.S. Cl. 137—62 3 Claims



1. Apparatus for connection to an outdoor water line carrying water at a selected pressure, for producing a selected low flow rate of water from said water line, when the outdoor temperature drops below a selected temperature, comprising:

(a) a single orifice of selected small diameter in the end of said water line;

(b) body means comprising a closed chamber and a housing for a valve closure means, said closed chamber means having an expansible portion, said chamber means filled with a selected condensible gas for which the vapor pressure varies with temperature in a known manner;

(c) said closure means being positioned adjacent said single orifice, a portion of said closure means extending beyond and exteriorly of the housing in all positions of said closure means;

(d) means connecting said expansible portion of said chamber means to said closure means;

(e) said means connecting said expansible portion of said chamber to said closure means including series compliant means; and

(f) helical spring means being positioned between said closure means and said orifice, said helical spring means surrounding said orifice and said exterior portion of said closure means;

whereby when the outdoor temperature is above a selected value, said expansible portion will move outwardly to press said exterior portion of said closure means against said orifice, to close off said flow; and

when the outdoor temperature is below said selected value said expansible portion will move inwardly away from said exterior portion of said closure means permitting water flow through said orifice.

4,344,451
PRESSURE RESPONSIVE DISTRIBUTING VALVE DEVICE

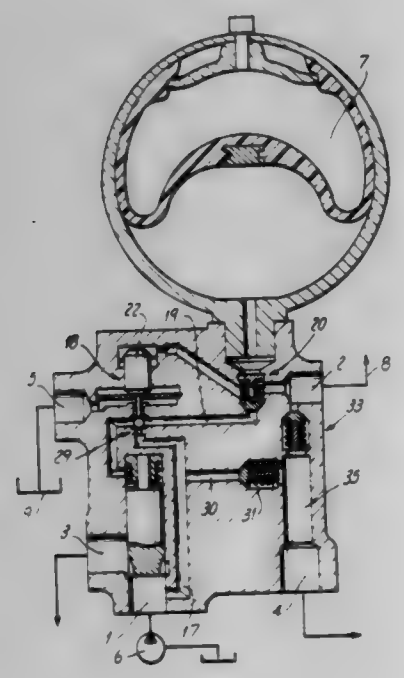
Lüdwig Büdecker, Frankfurt am Main, and Bernd Schütt, Oberursel, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,555

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935949

Int. Cl.³ G05D *15/00*

U.S. Cl. 137—101 2 Claims



1. A valve device comprising:

a pressure port connected to a pump;

a first user port in communication with a pressure accumulator and a first user component, said first user port being connectible to said pressure port through a conduit having a throttle and a first check valve disposed therein;

a second user port in communication with a second user component and connectible with said pressure port through a by-pass valve including a by-pass piston having a first effective surface adjacent said pressure port adapted to be subjected to pressure at said pressure port in the opening direction of said by-pass valve and a second effective surface spaced from said first effective surface adapted to be subjected to pressure from said pressure port in the closing direction of said by-pass valve, said second effective surface being disposed in a control chamber, said control chamber being connected to said pressure port through said throttle and an accumulator-pressure-responsive pilot valve when the pressure of said accumulator is below a predetermined limit and to a return line when the pressure of said accumulator reaches said predetermined limit; and

a third user port in communication with a third user component requiring a large amount of pressure transmitting fluid on demand only and connectible with said pressure port through a control valve whose valve passageway is open when said third user component demands fluid, said control valve being a second check valve disposed in a first channel connecting said first user port to said third user port, said second check valve being opened by pressure at said first user port when said third user component is operated and pressure in said first channel decreases.

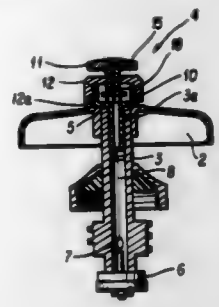
4,344,452
WATER FEED VALVE WITH SPRINKLING HOLES

Matsuo Sato, No. 3-47, Nishinagasu-Higashidori, Amagasaki, Japan

Filed Mar. 5, 1981, Ser. No. 240,944

Int. Cl.³ F16K *51/00*

U.S. Cl. 137—238 2 Claims



1. A water feed valve comprising:

a handle;

a valve operating shaft having a water passage formed therein along the longitudinal axis of the valve operating shaft and a flow-in hole formed at the lower side of said operating shaft so as to be communicated with a side of a water supply passage, said water passage being opened at approximately the central portion of a top surface of said handle which is mounted at the upper portion of the valve operating shaft; and

a water sprinkling member mounted to said opened portion to thereby form water streams on the upper surface of the handle from said water sprinkling member at the same time the supply water is started by operation of said water feed valve wherein said water sprinkling member is provided with a water exiting orifice communicated with said water passage of said operating shaft and also formed with a plurality of water discharge distribution holes at the upper peripheral surface thereof, wherein said water sprinkling member further comprises a water discharge distribution pipe having said plurality of discharge water distribution holes formed at a junction with respect to the operating shaft and the peripheral surface thereof and located concentrically surrounding said valve operating shaft and overlying said handle, and a cap member for blocking the top portion of said distribution pipe and wherein said cap member comprises a cap with an open/-close valve which includes a valve shaft having a valve element selectively contacting the water exiting orifice of the water sprinkling member so as to selectively control flow of water to said discharge water distribution holes, said cap further including means to deflect the flow of water through said discharge water distribution holes onto said handle.

4,344,453
PIPELINE SWITCH WITH LEAKAGE CONTROL AND CLEANABLE LEAKAGE CAVITY

Otto A. P. Tuchenhagen, Büchen; Hans O. E. Mieth, Hamburg, and Herbert R. Coüra, Büchen, all of Fed. Rep. of Germany, assignors to Otto Tuchenhagen GmbH & Co. KG, Buchen, Fed. Rep. of Germany

Filed Jan. 27, 1978, Ser. No. 873,068

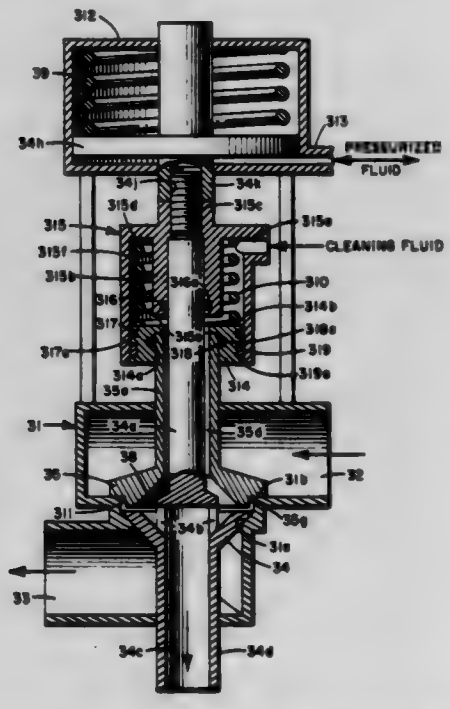
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703792; Nov. 14, 1977, 2750833

Int. Cl.³ F16K *1/44*

U.S. Cl. 137—240 6 Claims

1. Apparatus for cleaning a liquid connection and securing a stroke and spring abutment for double seat pipeline switches with leakage control, comprising a pipeline switch housing, a pipeline switch drive mounted within said switch housing, two valve disks of different sizes, two concentrically mounted valve rods of different lengths, one of said valve rods being hollow, the one of longer length fitting within the other of

shorter length, said inside valve rod connected to said pipeline switch drive and the smaller of the two valve disks and defining a discharge bore leading to the atmosphere, said inside valve rod upon being lifted by said drive carrying along said valve disk of larger size, said valve disks in both the closed position and the open position enclosing between themselves a leakage cavity which is connected via openings with said discharge bore, a pressing and guide part fitting over an end of the hollow valve rod, a housing surrounding a portion of the



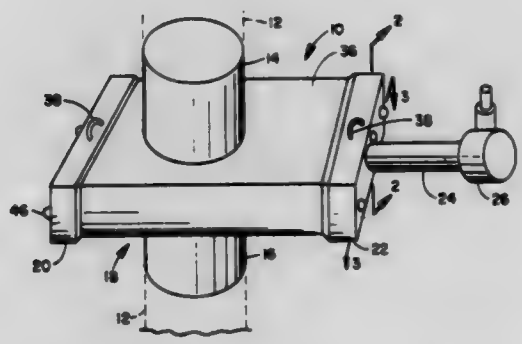
longer valve rod and defining an upper spring abutment, an upper stop surface for said pressure and guide part and a connecting opening adapted to receive a cleaning fluid, said housing and said pressing and guide part together forming a spring chamber and a spring within said spring chamber tightly closed off from the atmosphere, said spring chamber communicating through said leakage chamber with said discharge bore to provide a fluid passageway for said cleaning fluid through said apparatus.

4,344,454

VALVE BONNET FOR HIGH TEMPERATURE SERVICE

John C. H. Chan, Houston, Tex., assignor to Houston Systems Manufacturing Co., Inc., Houston, Tex.

Filed Jun. 1, 1981, Ser. No. 268,824
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 **7 Claims**



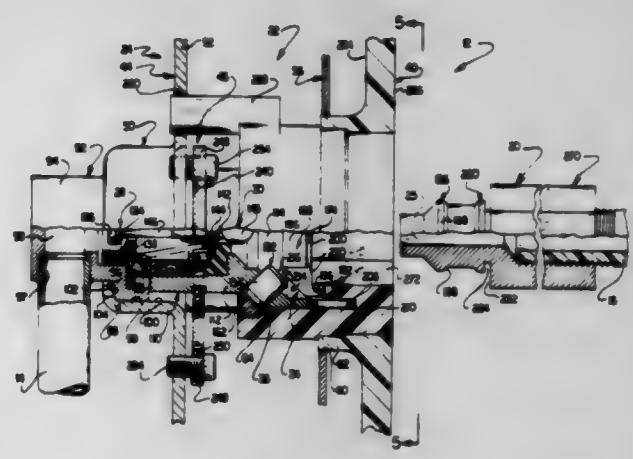
1. A bonnet connection on the body of a valve used to control the flow of hot fluids comprising: a lateral opening through the body wall connecting with the valve bore; a laterally extended portion of the body wall formed around the lateral opening; the opening being sufficient to allow for the removable installation of valve seat means and valve closure means within the valve bore; a valve bonnet comprising a substantially rigid end portion and a substantially flexible flange formed to be positioned relative to the laterally extended portion of the valve body so as to allow for proper operation of the valve closure means; the flange depending from the end portion and extending around and adjacent to the laterally extended portion of the body wall such that the laterally extended portion of the body wall may be attached to the flange by welding so as to seal between the bonnet and the body and retain the bonnet with the body for proper operation of the valve, the flange being substantially thinner than the extended portion of the body wall and a space being defined between the flange and the body wall such that substantial differential thermal expansion of the body wall may occur without causing substantial movement of the end portion.

4,344,455

COUPLING ASSEMBLY

James F. Norton, Berea; Richard J. Silagy, Parma, and Walter W. Antoniw, Lakewood, all of Ohio, assignors to Tuthill Corporation, Cleveland, Ohio

Filed Aug. 18, 1980, Ser. No. 178,866
Int. Cl.³ F16K *43/00*; F16L *37/28*
U.S. Cl. 137—329.4 **67 Claims**



1. A coupling assembly for use in connecting a pair of conduits in fluid communication, said coupling assembly comprising a plug adapted to be connected with one of the conduits, said plug having a central axis which extends along a fluid flow path through said plug, and socket means adapted to be connected with the other conduit and adapted to telescopically receive said plug, said plug being axially movable from a disengaged position spaced from said socket means to a storage position in which said plug is supported by said socket means and is telescopically disposed in said socket means to a first extent and being axially movable from the storage position to an engaged position in which said plug is telescopically disposed in said socket means to a second extent which is greater than the first extent and in which the conduits are connected in fluid communication through said plug and said socket means, said socket means including locking means which is operable between a locking condition holding said plug against axial movement from the engaged position toward the storage position and a release condition in which said locking means is ineffective to hold said plug against axial movement, said locking means including a circular array of locking elements and retainer means for holding said locking elements in engagement with said plug when said locking means is in the locking condition and said plug is in the engaged position with a holding action which is sufficient to prevent said plug from being manually moved from the engaged position to the storage position, said retainer means being ineffective to hold said locking elements in engagement with said plug when said locking means is in the release condition to enable said plug to be moved from the engaged position to the storage position, said socket means further including gripper means for holding said plug against axial movement from the storage position to the disengaged position with a gripping action which can be overcome by manually pulling said plug away from said socket means, said gripper means including a circular array of detents

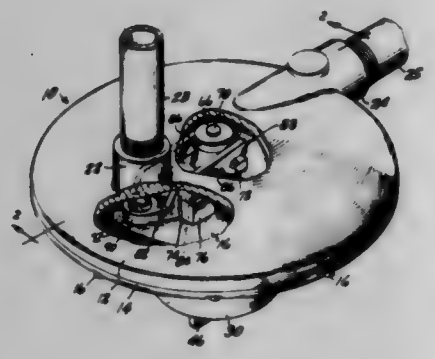
which is disposed in a coaxial relationship with said circular array of locking elements and is spaced from said circular array of locking elements when said locking means is in the engaged condition.

4,344,456

PRESSURE RESPONSIVE LIQUID FLOW REGULATOR

Eldon Hostetler, 15110 County Rd. 20, Middlebury, Ind. 46540

Filed Sep. 26, 1977, Ser. No. 836,387
Int. Cl.³ F16K *21/18*
U.S. Cl. 137—403 **1 Claim**



1. A regulator for controlling the liquid level in a system having a discharge part located at an elevation higher than the elevation of the regulator comprising

a housing,

a diaphragm spanning said housing to define an upper liquid chamber and an opposed lower chamber,

liquid supply and liquid discharge means carried by said housing and communicating only with said upper liquid chamber,

said liquid chamber containing a fulcrum support and a valve seat associated with said supply means and spaced from said fulcrum support,

adjustable spring means in said opposed chamber bearing on said diaphragm,

a lever fulcrumed on said support in said liquid chamber having one end connected to and responsive to variations in the position of said diaphragm incident to changes of the weight of liquid acting on said diaphragm, and

a valve element carried by the opposite end of said lever and adapted in one position of said lever to abut said valve seat and seal said water supply means,

said diaphragm mounting a lever-actuating stem including a rotatable collar having laterally projecting lever abutment means, said lever including a bifurcated end portion fitting freely around said collar and slotted to receive said projecting lever abutment means with slight clearance.

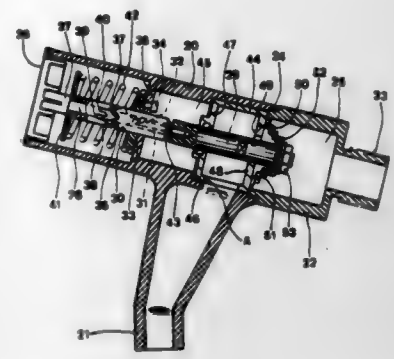
4,344,457

TAP AND MIXER FOR THE DELIVERY OF WATER

Celso Caroli, Via Sardegna, 16, Savignano sul Panaro (Modena), Italy

Filed Apr. 18, 1980, Ser. No. 141,677
Claims priority, application Italy, Apr. 19, 1980, 28948/79[U]; Apr. 19, 1980, 28949/79[U]; Apr. 19, 1980, 40051 A/79
Int. Cl.³ F16K *13/00*
U.S. Cl. 137—597 **15 Claims**

1. In a mixing tap for the delivery of water in sanitary plants, of the type having an outflow opening in a wall thereof and operated by at least one push-button and including at least one water-tight shutter, an end of which is fastened to a shaft which slides in aligned bore holes drilled into support diaphragms inside the body of the tap and controlled by application of an adequate pressure on the push-button in order to obtain opening of the shutter against action of a spring, the improvement wherein said shutter consists of a strip of elastic metallic material lined with rubber or plastic material, wound up to form a spiral having a plurality of turns and with continuous partial covering of the width of the strip, that turn of said spiral having the smallest diameter being fastened at its end to



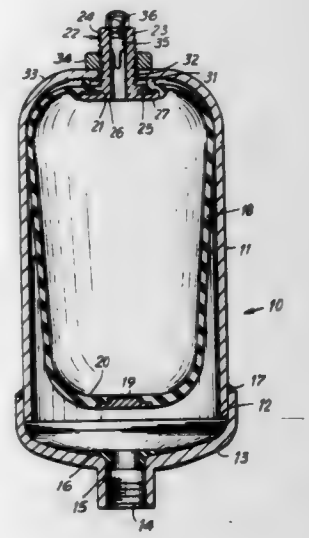
said shaft of said shutter, and that turn of said spiral with the largest diameter surrounding completely said water outflow opening and lying freely on the wall surrounding said water outflow opening, without being attached thereto.

4,344,458

ACCUMULATOR DEVICE WITH IMPROVED BLADDER SEAL

Abdus Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Incorporated, Los Angeles, Calif.

Filed Aug. 13, 1980, Ser. No. 177,795
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **2 Claims**



1. An accumulator device comprising a pressure vessel having end portions, said vessel including a gas charging port at one end and an oil port at the other end, a bladder assembly mounted in said gas port, said assembly including a stem member having an externally threaded cylindrical body portion extending outwardly through said gas port and a mounting portion within said vessel, said mounting portion including a stop flange in proximate spaced relation to the inner end of said stem and adapted to seal against said one end about the gas port and a compression flange of greater diameter than said stop flange at the inner end of said stem, said compression flange including an upwardly extending annular peripheral rim directed toward said one end, said flanges defining therebetween an annular groove having radially directed substantially parallel upper and lower walls, an elastomeric bladder member including an annular lip extending into, completely filling, and bonded to said groove, said bladder member including an upwardly projecting integral annular bead portion which, in the unstressed condition of said bladder member, projects above said stop flange, the outer diameter of said bead portion being greater than that of said stop flange and less than the diameter of said rim, and a jam nut mounted on said threaded portion of said stem and reacting against the outer wall por-

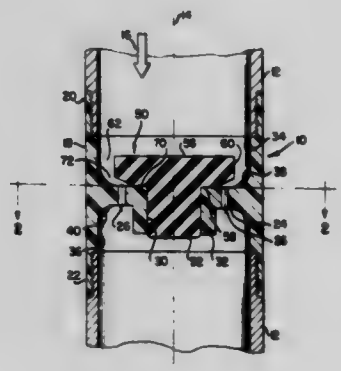
tions of said vessel surrounding said gas port, said nut clampingly compressing said bead portion into conforming alignment with the inner walls of said vessel surrounding said stop flange and extruding increments of said elastomeric bladder member radially inwardly into said groove increasing the density therein.

4,344,459

FLOW CONTROL DEVICE EMPLOYING ELASTOMERIC ELEMENT

Walter R. Nelson, 7914 Grand Ave., Yucca Valley, Calif. 92284

Filed Nov. 3, 1980, Ser. No. 203,456
Int. Cl.³ F15D 1/02
U.S. Cl. 138—45 9 Claims



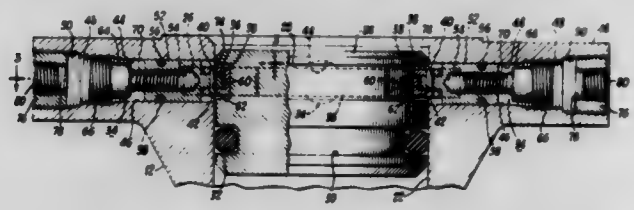
1. A flow control device for a fluid flow conduit, said device including a cylindrical housing having a chamber defined by a cylindrical side wall and a transverse plate, said plate having a flat surface facing said chamber and a plurality of flow passages arranged in a circle; and an elastomeric element having a circular flange disposed within said chamber, said flange having a seat engaging the flat surface of said plate and a beveled surface in confronting relationship with the flat surface of said plate and being progressively spaced apart therefrom, said beveled surface overlying said flow passages, said beveled surface and said plate defining between them a variable flow area, said plate including a central opening and said elastomeric element being generally T-shaped and including a stem received by said opening, said flange projecting from said stem.

4,344,460

APPARATUS FOR PLUGGING A PRESSURE PIPING SYSTEM

Imre Galos, Downers Grove, Ill., assignor to Advance Valve Installations, Hinsdale, Ill.

Filed Nov. 28, 1980, Ser. No. 211,423
Int. Cl.³ F16L 55/10
U.S. Cl. 138—89 23 Claims



1. Apparatus for securing a plug within a pressurized piping system comprising:

a segment for holding a plug in position in said piping system;

a segment engaging element coupled to said segment and slidably mounted in said piping system for engaging and locking said segment in position relative to said piping system; and

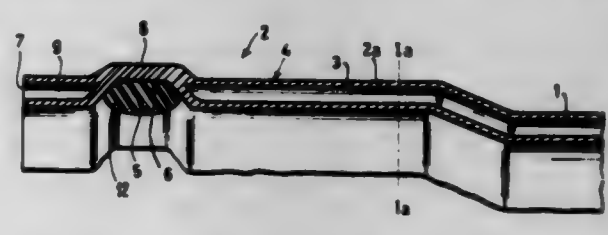
an actuating member having threads formed thereon threadedly mounted in said piping system for slidingly actuating said segment engaging member for moving said segment into and out of engagement with said plug, said actuating member having a first set of threads engaging said piping system and a second set of threads engaging said segment engaging element, said first and second sets of threads being threaded in opposite directions and cooperating to move said segment engaging element a distance greater than the distance moved by the actuating member upon rotation thereof.

4,344,461

PIPE PART WITH SOCKET PROVIDED WITH LONGITUDINALLY EXTENDING CHANNELS

Joannes H. Beune, Hardenberg, and Roelof H. Marissen, Bergentheim, both of Netherlands, assignors to Wavin B.V., Em Zwolle, Netherlands

Filed Dec. 28, 1979, Ser. No. 108,049
Claims priority, application Netherlands, Jan. 9, 1979, 7900172
Int. Cl.³ F16L 9/18, 21/02, 47/06
U.S. Cl. 138—109 15 Claims



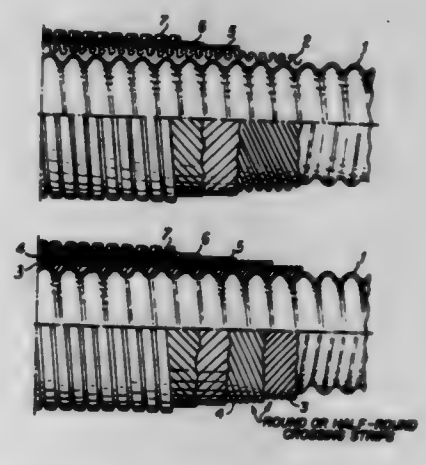
1. A pipe part comprising a socket, the wall of said pipe part being provided with longitudinally extending channels, said channels extending into the wall of the socket, said socket being provided with an annular recess located at a distance from a free end of the socket and obtained by radially pressing the walls of the channels towards each other over a certain distance.

4,344,462

FLEXIBLE TUBULAR CONDUIT

Jean-Paul Aubert, Puteaux, and Maurice Genini, Creteil, both of France, assignors to COFLEXIP, Puteaux, France

Filed May 23, 1980, Ser. No. 152,555
Claims priority, application France, May 30, 1979, 79 13814
Int. Cl.³ F16L 9/04, 9/18
U.S. Cl. 138—130 8 Claims



1. A flexible tubular conduit comprising an internal metallic undulating tube and an external metallic protection covering of interlocked strip, characterized by the fact that around said undulating tube is an interior covering of at least one metallic layer to provide resistance to bursting, and a sheath resistant to traction and to the effect of internal head pressure, said sheathing comprising at least two crossing superposed layers of metallic strips wound with opposite pitch, respectively.

4,344,463

RIBBON-TYPE FABRIC AND METHOD OF MAKING

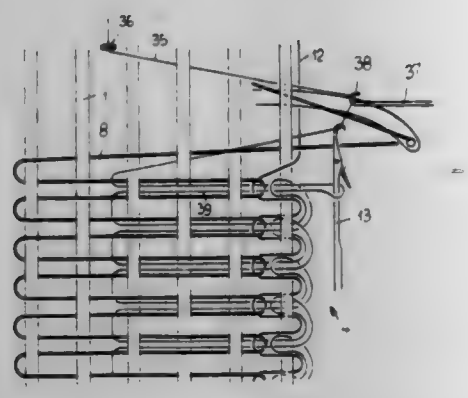
Jakob Müller, Stansstad, and Ferdinand Diesner, Murg-Hänner, both of Fed. Rep. of Germany, assignors to Textilma AG, Hergiswil, Switzerland

Filed Nov. 21, 1979, Ser. No. 98,142

Claims priority, application Switzerland, Dec. 5, 1978, 12400/78

Int. Cl.[3] D03D *5/00*

U.S. Cl. 139—383 R 37 Claims



1. A ribbon type fabric with weft-yarn loops inserted at both sides of the run of the warp yarn, the weft-yarn loops being held together between the two edges of the ribbon by at least one auxiliary yarn, comprising at least said one auxiliary yarn running parallel to the weft yarn loops over at least part of the width of the ribbon type fabric, and being tied off with itself, the weft-yarn loops of one side of the fabric being drawn through the respective weft-yarn loops of the other side of the fabric by respective auxiliary-yarn loops.

4,344,464

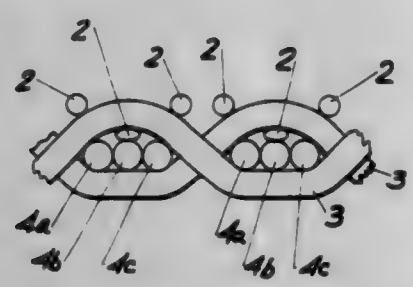
ENDLESS FORMING FABRICS WITH BI-CRIMP CHARACTERISTICS

Charles E. Thompson, Guilderland, and Samuel H. Herring, Rensselaer, both of N.Y., assignors to Huyck Corporation, Wake Forest, N.C.

Filed Jul. 11, 1980, Ser. No. 168,942

Int. Cl.[3] D21F *1/10*; D03D *15/00*

U.S. Cl. 139—383 A 6 Claims



1. A double layer endless woven papermaking fabric having two functional sides, the first layer comprising a sheet surface structure having non-load-bearing machine direction and cross-machine direction yarns woven with substantially uniform crimp in both directions, the second layer of the fabric comprising a relatively coarse wear surface fabric structure having yarns larger than said yarns of said first layer, said larger yarns including woven load-bearing machine direction yarns and cross-machine direction yarns, said non-load-bearing machine direction yarns of said sheet surface fabric structure having elongation greater than the elongation of the machine direction yarns in the wear surface fabric structure, the two structures being joined together by interlacing the cross-machine direction yarns of the wear surface fabric structure with the machine yarns of the sheet surface fabric structure, whereby to provide a double layer fabric characterized by a sheet side exhibiting bi-crimp characteristics and a machine side exhibiting enhanced wear characteristics and stretch resistance.

4,344,465

METHOD AND APPARATUS FOR JETTING AUXILIARY FLUID IN JET LOOM

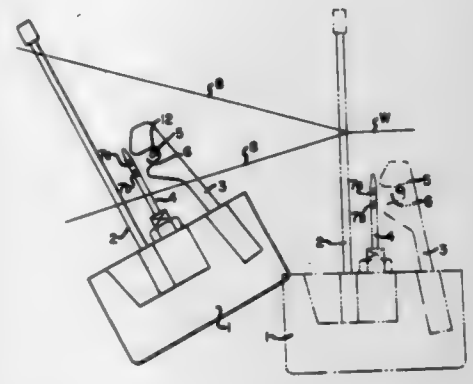
Junzo Hasegawa, Oobu; Susumu Kawabata, Aichi; Kazunori Yoshida, Nagoya; Fuzio Suzuki, Toyota; Yusuke Itoh, Oobu; Hajime Suzuki, Anjo; Hiroshi Arakawa, Kariya, and Akira Kobayashi, Oobu, all of Japan, assignors to K.K. Toyoda Jidoshokki Seisakusho and K.K. Toyota Chuo Kenkyusho, both of Aichi, Japan

Filed Sep. 12, 1979, Ser. No. 74,755

Claims priority, application Japan, Sep. 15, 1978, 53-127290[U]

Int. Cl.[3] D03D *47/30*

U.S. Cl. 139—435 7 Claims



1. In a jet loom comprising a transverse fluid and weft guide passage formed on a sley and extended in the filling direction, said guide passage being defined by a plurality of cooperating guide walls and having an opening extending in said filling direction and subtending a given dimension in a vertical direction substantially perpendicular to said sley, said opening also extending in a longitudinal warp direction, a plurality of auxiliary nozzles disposed at predetermined intervals in said filling direction and substantially transversely directed to confront the opening of said guide passage, each of said auxiliary nozzles having a fluid jetting opening directed toward at least one of said cooperating guide walls defining said guide passage, an improved method comprising positively covering each of said at least one of said guide walls along the entire given direction of the adjacent part of said guide passage opening in said vertical direction by a diverging stream of an effective auxiliary fluid jetted from the fluid jetting opening of the cooperating auxiliary nozzle.

4,344,466

FLEXIBLE TYPE RAPIER LOOM

Junzo Hasegawa, Obu; Susumu Kawabata, Aichi; Kiichi Kono, Toyota, and Tetsuzo Inoue, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Apr. 24, 1980, Ser. No. 143,335

Claims priority, application Japan, May 2, 1979, 54-54261

Int. Cl.[3] D03D *47/12*

U.S. Cl. 139—449 15 Claims

1. A flexible type rapier loom comprising:

a loom body having a plurality of warp threads in which a shed is formed in said warp threads;

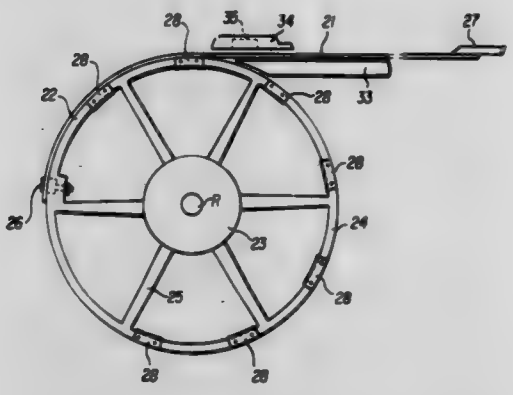
a wheel rotatably mounted on said loom body and oscillatedly driven back and forth and having an outer circumference;

a flexible tape which comprises an elastic and magnetic material fixed at one end thereof to said circumference of said wheel and fitted upon said circumference of said wheel and carrying a weft holder at the other end thereof;

means for inserting said flexible tape into said shed and

withdrawing said flexible tape from said shed such that a weft is inserted into said shed; and

a plurality of magnetic attracting means mounted on said circumference of said wheel to form a closed circuit mag-



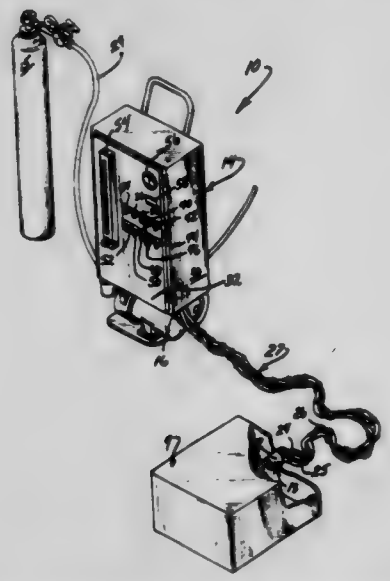
netic path between said flexible tape along said circumference of said wheel and each of said magnetic attracting means, for attracting said flexible tape to said circumference of said wheel by magnetic forces.

4,344,467

DEVICE FOR CHARGING CONTAINERS WITH AN INERT GAS

Frank U. Lahde, 966 Hemlock, Rochester, Mich. 48063

Filed Oct. 1, 1980, Ser. No. 192,724
Int. Cl.[3] B65B *31/04*
U.S. Cl. 141—66 8 Claims



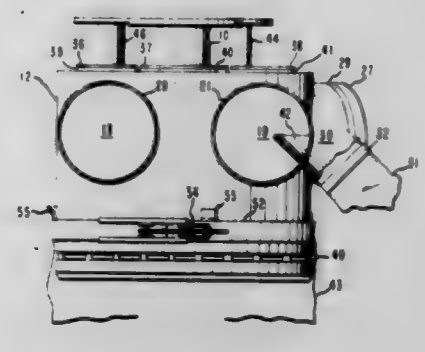
1. A device for charging a flexible receptacle containing deteriorative material with an inert gas comprising, in combination, a nozzle adapted for insertion in the receptacle, a control unit, a source of inert gas and a pump; said nozzle having a plurality of fittings, said fittings being associated with sensors to determine gas content and pressure within the receptacle, said pump being operable to selectively pressurize or evacuate said receptacle, said pump being connected to said nozzle by a vacuum hose for removing oxygen therethrough and to a conduit connected to said inert gas source and to an inert gas charging hose for filling said receptacle with an inert gas, said control unit having electric connections with said sensors and said pump, said control unit including sensor-responsive switch means for selectively operating the pump in gas charging or evacuating operation.

4,344,468

PROCESS AND APPARATUS FOR PACKAGING

Harry W. Sandberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 45,960, Jun. 6, 1979, Pat. No. 4,308,710.
This application Mar. 27, 1981, Ser. No. 248,346
Int. Cl.[3] B65B *1/28*
U.S. Cl. 141—69 10 Claims



1. A bag-filling apparatus comprising, in combination:

(a) a housing having an open lower end, a side portion and a top portion, said side portion having three openings therein, and a plurality of apertures circumferentially arranged around the side portion adjacent the lower edge;

(b) a pair of gloves attached to two of the openings in said side portion, the third opening adaptable for attaching a bag thereto;

(c) means for securing a bag in a filling position around the open lower end, said means circumferentially disposed around the housing below the three openings and above the apertures;

(d) a product fill pipe extending into the housing and having a discharge end extending into the open end of the housing;

(e) means for applying a vacuum to the interior of the housing; and

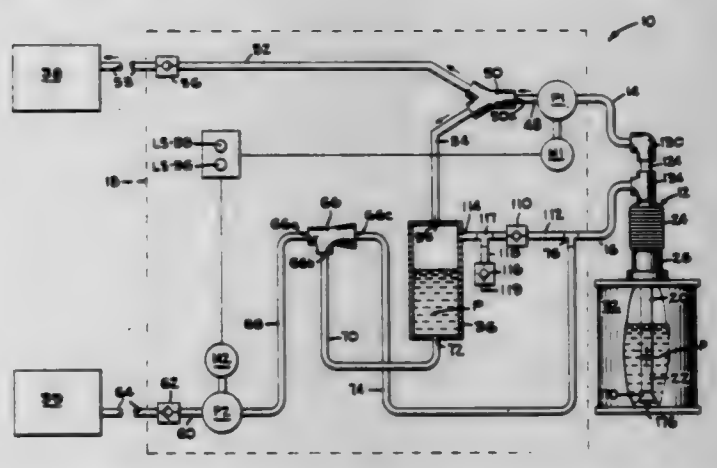
(f) means for applying a vacuum through the apertures from inside said housing.

4,344,469

LIQUID TRANSFER APPARATUS

Gregory J. Brown, San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Jun. 9, 1980, Ser. No. 157,599
Int. Cl.[3] B08B *9/08*; B65B *3/04*
U.S. Cl. 141—90 16 Claims



1. An apparatus for transferring a selected volume of a first liquid from a first container to a second container and for rinsing the first container with a rinse liquid after the first container has been emptied comprising: means for supplying the rinse liquid; a nozzle assembly that is insertable into the first container including a suction tube for withdrawing liquid from

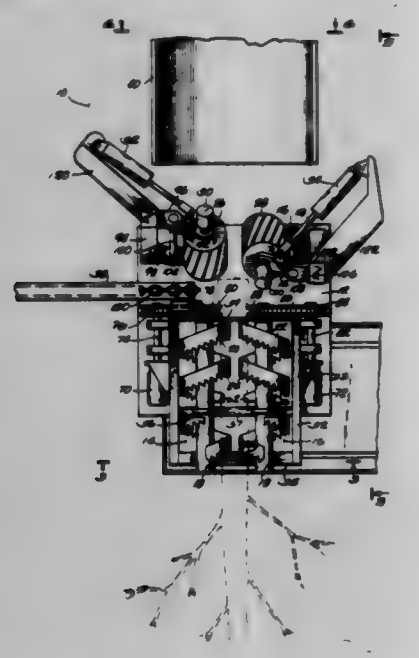
the first container and a rinse tube for spraying the interior of the first container with the rinse liquid; rinse pump means communicating between said rinse tube and said rinse liquid supplying means for selectively pumping rinse liquid from said supplying means into said rinse tube; a measuring vessel; suction pump means communicating between said suction tube of the nozzle assembly, said measuring vessel and the second container to which the first liquid is to be transferred for withdrawing liquid into the suction tube and directing such liquid in part to the measuring vessel and in remaining part to the second container; means associated with the measuring vessel for indicating the total volume of liquid directed to the measuring vessel and the second container; and means communicating between said measuring vessel and said rinse tube for withdrawing the first liquid within the measuring vessel and mixing with the rinse liquid as the rinse liquid is pumped from said supplying means, said last-mentioned means being adapted to withdraw liquid from said measuring vessel at a flow rate which is greater than the flow rate of liquid concurrently directed into the measuring vessel.

4,344,470

DELIMBING APPARATUS

Dennis Dubey, Menominee, Mich., assignor to Forest Country Engineering Co., Menominee, Mich.

Filed Nov. 24, 1980, Ser. No. 209,849
Int. Cl.³ A01G *23/02*
U.S. Cl. 144—2 Z **15 Claims**



1. A machine for removing limbs from trees, the machine comprising a frame, a saw supported by the frame for rotation about a longitudinal axis, said saw having a forward end and a rearward end, and including a helical blade surrounding said axis, said blade being spaced radially outwardly from said axis and having a radially outer surface, a radially inner surface and a rearward edge, said rearward edge of said saw including saw teeth projecting rearwardly, said saw teeth each including a cutting edge defining a line being generally parallel to said longitudinal axis, and said saw being adapted to engage a tree with the tree being generally parallel to the longitudinal axis of the saw, means for causing rotation of the saw about its axis whereby said cutting edge of each of said saw teeth will engage the limbs of the tree to cut said limbs, and means adjacent said forward end of said saw for clampingly engaging a tree, for pulling the tree in the direction of said longitudinal axis of the saw, and for rotating the tree as it is pulled along the saw, said means for pulling and rotating including a pair of rollers adapted to clampingly engage the tree, means for moving one of the rollers toward the other roller and into clamping engagement with the tree, and means for causing rotation of one of the rollers.

4,344,471

REINFORCED VENEER SHEET AND THE METHOD OF MANUFACTURING THE REINFORCED VENEER SHEET

Yasuhiro Ibuki, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Aichi, Japan

Division of Ser. No. 118,905, Feb. 6, 1980, Pat. No. 4,323,616.
This application Oct. 24, 1980, Ser. No. 200,150
Int. Cl.³ B32B *21/10*
U.S. Cl. 144—345 **12 Claims**



1. A method of manufacturing a reinforced veneer sheet comprising the steps of

(1) cutting into a veneer sheet from one side of said sheet completely through to the other side thereof and across the grain of said sheet to form a closed cut therein;

(2) laying a length of cord on one side of the sheet such that an intermediate portion of the cord is positioned on said cut;

(3) forcing said cord intermediate portion through said closed cut to protrude outside the other side of the sheet so that said intermediate portion is clasped only by said closed cut extending across said grain; and

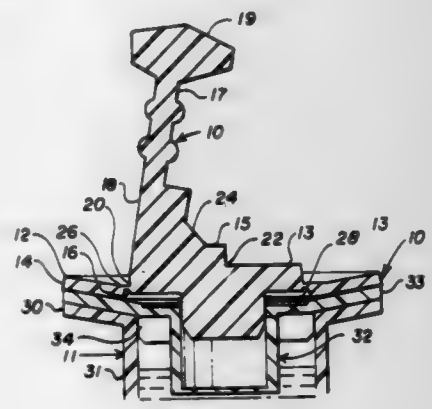
(4) repeating the steps of (1) to (3).

4,344,472

PULL TAB TEAR CAP FOR CONTAINER PORT

Mark E. Larkin, Lindenhurst, and Thomas W. Balistreri, Lake Bluff, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 13, 1981, Ser. No. 253,339
Int. Cl.³ B65D *33/16*
U.S. Cl. 150—8 **14 Claims**



1. An easily tear open closure for sealing the port structure of a container comprising:

a base portion defining a skirt member for securing to said port structure;

means defining a weakened tear path to provide removal of a section of said base portion;

a pull member extending away from said base portion;

a force directing means constructed and arranged between said pull member and said base portion at the junction therebetween to direct a pulling force into said tear path;

said removal section in said base portion being flexible so that said section can be pulled away from said base portion prior to a tearing away therefrom;

whereby a pulling force of substantially not more than 12 pounds will concentrate said force at said junction to initiate the tearing away of said removal section.

4,344,473
MEANS FOR SEPARATING LIGHT REFLECTIVE FABRICS

Ronald H. Shore, P.O. Box 130, Snowmass, Colo. 81654 (Jill Shore, conservator)

Continuation-in-part of Ser. No. 833,581, Sep. 15, 1977, and a continuation-in-part of Ser. No. 907,707, May 19, 1978. This application Oct. 22, 1979, Ser. No. 86,654
Int. Cl.[3] E06B *9/08*
U.S. Cl. 160—121 R 20 Claims

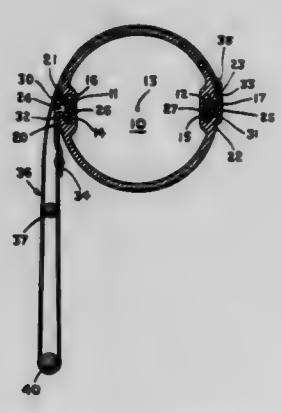


1. A curtain for dynamically insulating an area, said curtain comprising a hanging plurality of spaced parallel sheets closed around the perimeter thereof to form an air bag with a variable volume, means in the bottom of at least one of said hanging sheets for admitting or expelling air in an inhalation or exhalation process, means for rolling and unrolling said hanging sheets to enable said curtain to be emplaced in front of or removed from said area, said rolling means including a shield-like member with a deflation groove in a lower region of said shield-like member, said curtain passing through said deflation groove as it is rolled and unrolled, and separator means passing between said hanging plurality of sheets in the vicinity of the deflation groove, whereby said curtain must pass said separator means as said curtain is raised or lowered and thus preclude a clinging together of said sheets.

4,344,474
INSULATED SHADE

Joel Berman, 1470 Hewlett Ave., Hewlett, N.Y. 11557

Filed Nov. 16, 1979, Ser. No. 94,694
Int. Cl.[3] A47G *5/02;* A47H *1/00*
U.S. Cl. 160—121 R 3 Claims

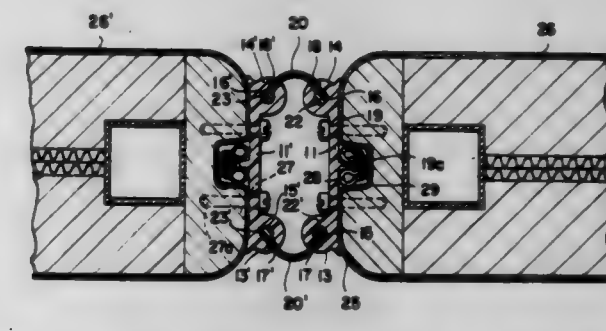


1. A thermal insulating shade that has several layers of shade fabric comprising, a cylindrical shade roller having at least one longitudinal slot formed in the surface thereof, said slot having flanges that establish a gap therebetween, said flanges extending over a respective portion of the slot base, a snap fastener having a base and a pair of resilient generally radially protruding arms which each bear against a respective adjacent one of said flanges to retain said snap fastener within said slot, and a shade attachment member on only one of said arms and extending toward the shade fabric for fastening a layer of shade fabric thereto.

4,344,475
OFFICE PARTITION INTERCONNECTOR ASSEMBLY

Fred J. Frey, 2307 Foxdale Ter., Long Beach, Michigan City, Ind. 46360

Continuation of Ser. No. 935,041, Aug. 18, 1978, abandoned, which is a continuation of Ser. No. 829,386, Aug. 31, 1977, abandoned, which is a continuation of Ser. No. 673,492, Apr. 5, 1976, abandoned. This application May 5, 1980, Ser. No. 146,739
Int. Cl.[3] A47G *5/00;* E05D *7/00*
U.S. Cl. 160—135 38 Claims



1. Office partition interconnector assembly comprising

a solid unitary support member having a main web means defining a continuous enclosing main boundary surface of selective cross-sectional profile provided along one surface portion thereof constituted as a rearward continuous surface portion with partition panel engaging means for fixedly mounting the support member on one partition panel and provided at another surface portion thereof constituted as a forward continuous surface portion with selectively positioned edge retaining external channel means including a pair of cooperating spaced apart individual wall means each independently projecting externally forwardly outwardly from the main boundary surface of the main web means at such forward surface portion and remotely from such rearward surface portion and terminating in corresponding substantially uniform thickness free edge portions in self disposed relation to the remainder of such support member and extending beyond the profile of the adjacent surface portion of the support member thereat and defining an open channel insert slot therebetween, and

a flexible web having an enlarged edge at one side thereof in continuous integral coextensive relation therewith for operative insertion between the cooperating wall means of the edge retaining channel means of the support member and attachment means at the other side thereof for attaching the web to another partition panel thereby to provide an interposed connection between such panels to form an office partition.

4,344,476
SUPERCOOL METHOD FOR PRODUCING SINGLE CRYSTAL MERCURY CADMIUM TELLURIDE

Edward Y. Sutcliffe, Santa Barbara, and Roger A. Cole, Goleta, both of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Continuation-in-part of Ser. No. 71,149, Aug. 30, 1979, abandoned. This application Dec. 8, 1980, Ser. No. 214,382
Int. Cl.[3] B22D *27/04, 27/08;* H01L *21/34*
U.S. Cl. 164—76.1 6 Claims

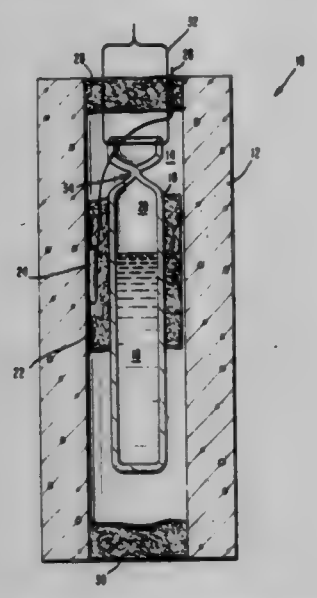
1. A process for producing single crystal $Hg_{1-x}Cd_xTe$ comprising the steps of:

(a) producing an ingot of $Hg_{1-x}Cd_xTe$ having a large number of crystallites with small grain boundaries by the steps of:

(1) adding predetermined amounts of mercury, cadmium and tellurium to a container to produce a stoichiometric mixture thereof of cadmium telluride molefraction x,

(2) heating said mixture to a predetermined temperature above liquidus,

(3) rocking said container at the same time to produce a homogeneous mixture of $Hg_{1-x}Cd_xTe$,
(4) discontinuing the application of heat to said container,
(5) terminating the rocking at +45° with respect to the vertical when the temperature of the mixture has dropped to about 8° C. above liquidus,
(6) supercooling said mixture by maintaining said container at the vertical until the temperature of said mixture drops an amount below liquidus which is a predetermined function of x, and



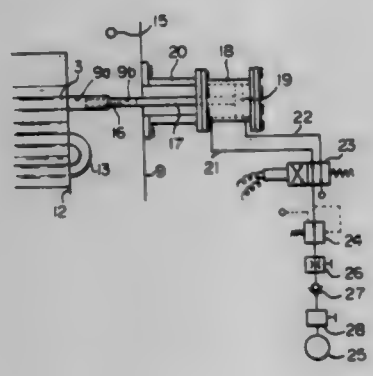
(7) quenching said mixture by exposing said container to ambient air temperature by rapidly withdrawing from the furnace so that there is produced an ingot of $Hg_{1-x}Cd_xTe$ having a large number of crystallites with small grain boundaries; and
(b) applying heat to said ingot so that a solid state recrystallization process yielding a large amount of single crystal $Hg_{1-x}Cd_xTe$ is achieved.

4,344,477

METHOD OF DIE CASTING A METALLIC CAST PRODUCT HAVING A METALLIC HOLLOW MEMBER EMBEDDED THEREIN

Isao Miki, Shimizu; Takeshi Kishihara, Fuji; Toshiyuki Kawai, Shimizu, and Naoyuki Furumaki, Shizuoka, all of Japan, assignors to Nippon Light Metal Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1980, Ser. No. 138,895
Claims priority, application Japan, Apr. 16, 1979, 54-45468
Int. Cl.³ B22D *19/12*
U.S. Cl. 164—98 **7 Claims**



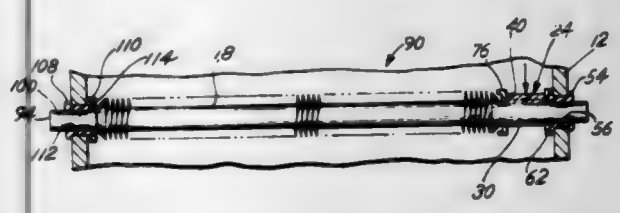
1. A method of die casting a metallic cast product having a hollow metallic member embedded therein utilizing a damping mechanism comprising:
sealingly enclosing a pressure resisting fluid medium within the interior of said hollow member;
placing said hollow member in position in a cavity formed between a pair of metallic die casting moulds;
injecting molten metal into the cavity;
generating internal pressure within the hollow member by thermal expansion of the fluid medium due to heat transmitted by the molten metal wherein said step of sealingly enclosing said pressure resisting fluid medium comprises:
sealingly mounting a slidable sealing plug to at least one open end of said hollow member so as to seal said pressure resisting fluid medium within the interior of said hollow member; and
relieving the internal pressure of the hollow member by allowing the sealing plug to slide against a resisting force of said damping mechanism when the internal pressure rises excessively.

4,344,478

HEAT EXCHANGE APPARATUS

Glen E. Petaja, and Charles E. Cedar, both of Hibbing, Minn., assignors to L & M Radiator, Inc., Hibbing, Minn.

Filed Jul. 31, 1980, Ser. No. 174,159
Int. Cl.³ F28F *9/06*
U.S. Cl. 165—69 **21 Claims**



1. In a heat exchange apparatus of the type having a support member, at least one heat exchange tube having two ends and a central portion, and means for securing the tube at each of its ends within the support member, said heat exchange tube having at least one heat exchange fin means attached to the outer periphery of the central portion and outwardly extending therefrom, the improvement comprising:
an elongated heat exchange tube retainer having an internal cross-section and an axial length, said cross-section defining means for attaching to one end of said heat exchange tube along the entire axial length of said retainer, the elongated tube retainer being mounted on an end of said heat exchange tube to provide means for securing the heat exchange tube within the support member and being of sufficient length to prevent longitudinal movement of the heat exchange tube within the support member.

4,344,479

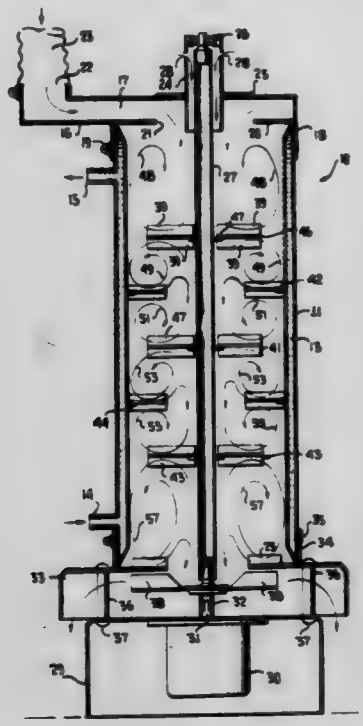
PROCESS AND APPARATUS UTILIZING COMMON STRUCTURE FOR COMBUSTION, GAS FIXATION, OR WASTE HEAT RECOVERY

Frank W. Bailey, New York, N.Y., assignor to Fuelsaver Company, Potomac, Md.

Filed Jul. 28, 1978, Ser. No. 928,811
Int. Cl.³ F28F *13/12*
U.S. Cl. 165—109 R **46 Claims**

1. In a thermal system, apparatus for increasing convection efficiency, comprising:
an enclosure having an inlet opening, an outlet opening, and a predetermined longitudinal axis;
means for supplying a substantially gaseous primary fluid at said inlet opening;
means for establishing a static pressure differential between said inlet and outlet openings to establish a continuous net flow of primary fluid longitudinally through said enclosure;
a thermal transfer wall exposed to said primary fluid in said enclosure;
means containing a secondary fluid in flow isolation from said primary fluid and in thermal conduction relationship with said primary fluid through said thermal transfer wall; and
rotatable means for mechanically stirring said primary fluid in said enclosure, said rotatable means including drive means and blade means driven by said drive means for

imparting at least one rotative flow component to said primary fluid along said thermal transfer wall with a flow



rate substantially greater than the primary fluid net flow rate from said inlet opening to said outlet opening caused by said pressure differential.

4,344,480

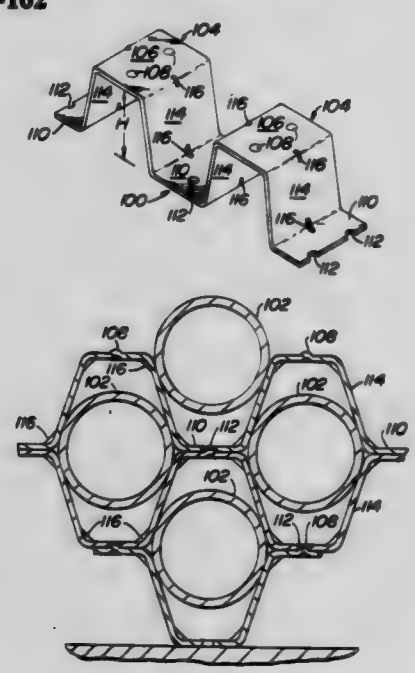
SUPPORT FOR HEAT EXCHANGE TUBES

Robert C. Boyer, Emmaus, and George J. Williams, Chalfont, both of Pa., assignors to Ecolaire Incorporated, Malvern, Pa.

Continuation-in-part of Ser. No. 891,677, Mar. 30, 1978, Pat. No. 4,210,202. This application Jun. 27, 1980, Ser. No. 163,543

Int. Cl.³ F28F *1/32*

U.S. Cl. 165—162 **5 Claims**



1. In a heat exchanger tube bundle assembly having a plurality of juxtaposed horizontally disposed tubes which comprises at least two sinusoidal tube support strips each having a plurality of members interconnected end to end, releasable interlock means on a plurality of said members to facilitate interlocking said strips with another in a manner so that a plurality of openings are provided therebetween for accommodating said horizontally disposed heat exchange tubes, said means including a plurality of projections on one strip and mating holes on an adjacent strip, each projection being integral in one piece with its associated strip, the improvement comprising said members being U-shaped so as to define a square pitch pattern of non-regular hexagon shaped openings whose converging sides are longer than horizontally disposed bights, said projections and holes being on the bights.

4,344,481

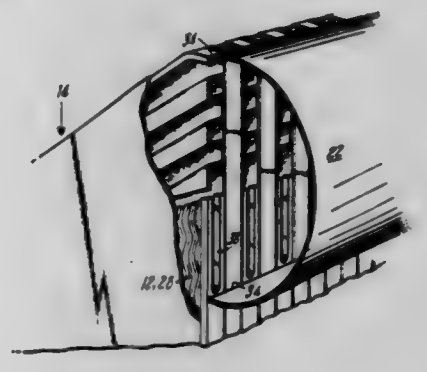
COUNTERFLOW HEAT EXCHANGER CONSTRUCTION

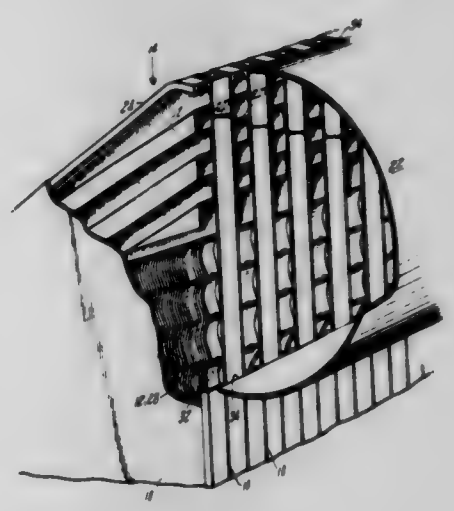
Robert G. Urie, Hartford, Conn., and John F. Kowinski, Springfield, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 23, 1980, Ser. No. 114,470

Int. Cl.³ F28F *9/02*

U.S. Cl. 165—166 **3 Claims**





1. A heat exchanger comprising:

a stack of air flow layers, each layer containing an arrangement of cooling fins;

rigid closure bars associated with each layer for containing air flow within the layer;

a manifold which is attached to the closure bars on one side of the stack, through which air is directed to the layers and which spans each layer for a distance D; and

characterized in that:

on one of the layers the manifold is attached to a closure bar that completely closes off access to the layer from the manifold;

in second and third layers adjacent said first layer there is an arrangement of thin cooling fins for directing air flow from the manifold through the layer and a second closure bar, to which the manifold is attached, to define a first opening to the layer from the manifold; and

said arrangement comprises at least one pliant, thin ribbon-like serpentine fin that extends along the edge of the layer from the point at which the second closure bar is attached to the manifold to define, within said first opening, a second smaller opening to the other fins in the arrangement.

4,344,482

MULTIPLE FLOW CONDENSER FOR AIR CONDITIONING UNITS OF MOTOR VEHICLES

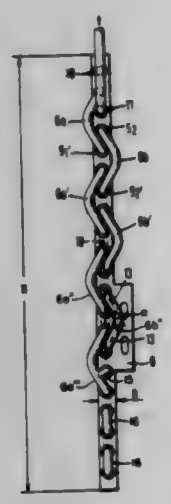
Kurt Dietzsch, Leonberg-Eltingen, Fed. Rep. of Germany, assignor to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 221,326

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952736

Int. Cl.³ F28F 9/22, 9/26

U.S. Cl. 165—172 13 Claims



1. A multiple flow heat exchanger comprising a heat exchanger body, a plurality of tube forks arranged in the heat exchanger body, some of said tube forks defining a first flow path for a heat exchange medium and the remaining tube forks defining at least one further flow path for the heat exchange medium, each of the tube forks has a substantially U-shape and include a pair of legs with each leg terminating in a free end, and elbow means for connecting free ends of respective tube forks with free ends of tube forks located downstream, as viewed in a flow direction of the heat exchange medium, so as to enable a flow of the heat exchange medium in the respective flow paths, characterized in that the plurality of tube forks are arranged in the heat exchanger body in such a manner that the legs of all of the tube forks are arranged in one plane, the elbow means includes tube sections, and in that the tube sections bridge at least two free ends of adjacent tube forks and extend laterally past each other.

4,344,483

MULTIPLE-SITE UNDERGROUND MAGNETIC HEATING OF HYDROCARBONS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada H3H 1T1, and Sidney T. Fisher, 53 Morrison Ave., Montreal, Quebec, Canada H3R 1K3

Filed Sep. 8, 1981, Ser. No. 300,188

Int. Cl.³ E21B 43/24, 43/243

U.S. Cl. 166—248 8 Claims

1. The method of producing hydrocarbon fluids from a part of one or more second underground deposits of hydrocarbons with a relatively small proportion of uncombined carbon, which comprises:

injecting a conducting liquid into a first part of a first underground deposit of hydrocarbons with a substantial proportion of uncombined carbon, and

heating said first part of said first deposit by a varying magnetic field, under conditions of controlled pressure and temperature, and

recovering substantially all fluid hydrocarbons present in and released from said first part of said deposit by said heating by said varying magnetic field, and

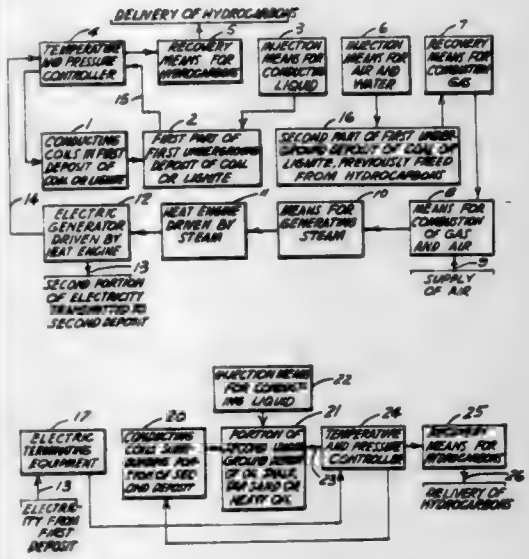
injecting air and water into a second part of said first deposit from which substantially all hydrocarbon fluids have been previously recovered by the method of this claim, and

combusting said air injected into said second part of said first deposit with substantially all of said uncombined carbon, in the presence of steam, so as to produce and deliver to the surface a combustible gas, and

combusting said combustible gas with air to generate electricity, and

using a first portion of said electricity to heat said first part of said first deposit by magnetic induction, and

transmitting a second portion of said electricity to one or more of said second deposits of hydrocarbons, and



using said second portion of said electricity to generate a varying magnetic field in at least a part of one of said second deposits of hydrocarbons, and

injecting a conducting liquid into said part of said second deposits subjected to said varying magnetic field, and

heating said part of said second deposits subjected to said varying magnetic field, under conditions of controlled pressure and temperature, and

recovering at the earth's surface said fluid hydrocarbons released by said magnetic heating of said part of said second deposits.

4,344,484

DETERMINING THE LOCUS OF A PROCESSING ZONE IN AN IN SITU OIL SHALE RETORT THROUGH A WELL IN THE FORMATION ADJACENT THE RETORT

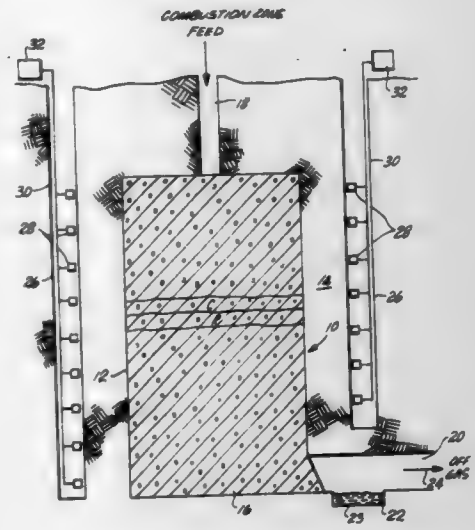
Richard D. Ridley, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation of Ser. No. 934,625, Aug. 17, 1978, abandoned.

This application Dec. 18, 1980, Ser. No. 217,992

Int. Cl.³ E21B 43/243, 43/247, 47/06

U.S. Cl. 166—251 20 Claims



20. A method for measuring a condition affected by a processing zone advancing through a fragmented permeable mass of formation particles containing oil shale in an in situ retort in

a subterranean formation containing oil shale, the retort having a processing zone advancing therethrough affecting at least one condition within the retort, the method comprising the steps of:

forming at least one monitoring well for monitoring in such well at least one condition affected by the processing zone advancing through the fragmented mass, such monitoring well extending through the subterranean formation adjacent the retort and separated from the retort by a zone of unfragmented formation;

providing means for fluid communication through the unfragmented formation between the fragmented mass and such a monitoring well; and

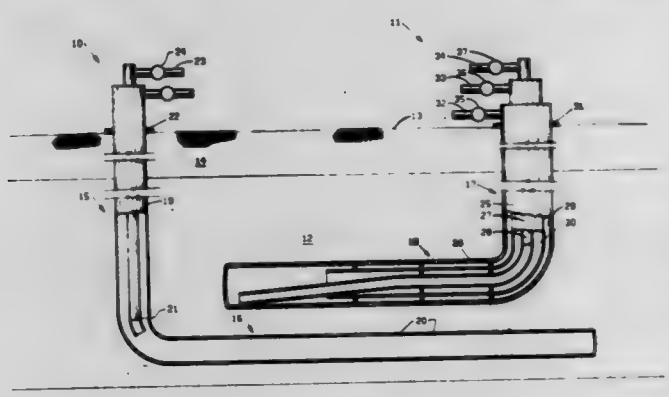
monitoring in the monitoring well for changes in at least one condition affected by the processing zone in the fragmented mass in the retort and communicated to such a monitoring well via the means for fluid communication.

4,344,485

METHOD FOR CONTINUOUSLY PRODUCING VISCOUS HYDROCARBONS BY GRAVITY DRAINAGE WHILE INJECTING HEATED FLUIDS

Roger M. Butler, Calgary, Canada, assignor to Exxon Production Research Company, Houston, Tex.

Filed Jun. 25, 1980, Ser. No. 162,720
Claims priority, application Canada, Jul. 10, 1979, 331464
Int. Cl.³ E21B *43/24, 43/26*
U.S. Cl. 166—271 **21 Claims**



16. A process for producing normally immobile bitumen from a tar sand deposit which comprises:

(a) penetrating said deposit with a first wellbore for injecting steam and a second wellbore for producing bitumen, said first and second wellbores lying along a fracture trend of said deposit;

(b) completing said first and second wellbores such that during the production of bitumen, a predetermined level of bitumen builds up in said second wellbore with throttled production, said level being calculated so as to assure that in the deposit mobilized bitumen flows substantially separate from the steam injected into said deposit;

(c) injecting steam into said first wellbore initially at fracture pressure or above to create a fracture between said wellbores and a steam chamber surrounding said fracture,

(d) continuing to inject steam at a reduced rate to heat said bitumen thereby causing said steam chamber to gradually expand in said formation as said bitumen becomes heated by conduction, mobilizes, and flows downward by gravity towards said second wellbore substantially separate from any steam condensate;

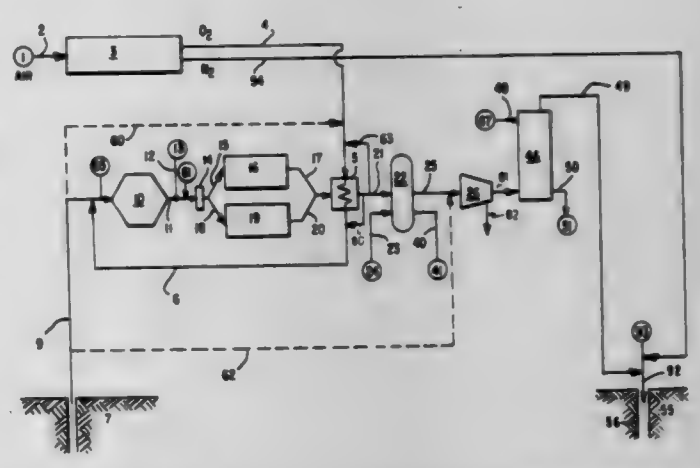
(e) producing said bitumen at rates which establish said predetermined level of mobilized bitumen in said wellbore.

4,344,486

METHOD FOR ENHANCED OIL RECOVERY

David R. Parrish, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 27, 1981, Ser. No. 238,874
Int. Cl.³ E21B *43/24, 43/40*
U.S. Cl. 166—272 **12 Claims**



1. A method for the enhanced recovery of liquid hydrocarbons from underground formations comprising:

recovering a mixture comprising carbon dioxide and about 5 to about 90 mol percent contaminants comprising hydrocarbon, hydrogen sulfide, or mixtures thereof, from an underground formation;

combusting said mixture with an oxygen enriched gas to form a concentrated carbon dioxide stream containing less than about 10 mol percent nitrogen, oxygen, oxides of nitrogen, hydrocarbon, hydrogen sulfide, carbon monoxide, or mixtures thereof; and

injecting at least a portion of said concentrated carbon dioxide stream into an underground formation to enhance recovery of liquid hydrocarbon.

4,344,487

MODIFIED LIGNOSULFONATES AS ADDITIVES IN OIL RECOVERY PROCESSES INVOLVING CHEMICAL RECOVERY AGENTS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 901,165, Apr. 28, 1978, abandoned, and a continuation-in-part of Ser. No. 807,948, Jun. 20, 1977, abandoned, and a continuation-in-part of Ser. No. 745,505, Nov. 26, 1976, abandoned, and a continuation-in-part of Ser. No. 745,496, Nov. 26, 1976, abandoned, and a continuation-in-part of Ser. No. 745,495, Nov. 26, 1976, abandoned, and a continuation-in-part of Ser. No. 745,494, Nov. 26, 1976, abandoned. This application Mar. 17, 1980, Ser. No. 130,911
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—274 **9 Claims**

1. In a method for recovering oil from a subterranean formation containing oil and having an injection well and a production well wherein an aqueous surfactant solution is injected into the injection well in order to drive the oil to the production well wherein it is produced the improvement which comprises:

injecting into the injection well in admixture with the surfactant solution lignosulfonates modified by oxidation with oxygen or ozone and sulfomethylation wherein the methylene sulfonate radical is added to the lignosulfonate wherein the lignosulfonates are present in an amount effective for reducing the extent of adsorption of the surfactant by the formation matrix.

2. In a method for recovering oil from a subterranean formation containing oil and having an injection well and a production well wherein an aqueous surfactant solution is injected into the injection well in order to drive the oil to the production well wherein it is produced the improvement which comprises:

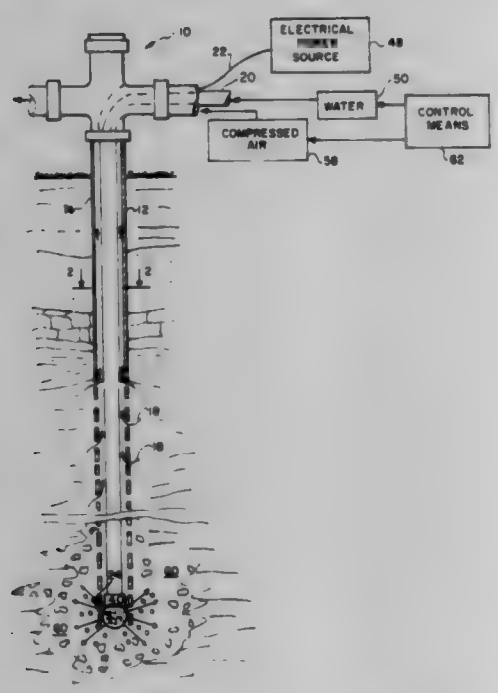
injecting into the injection well in admixture with the surfactant solution lignosulfonates modified by oxidation with oxygen or ozone and reaction with chloroacetic acid whereby said chloroacetic acid reacts with phenolic, hydroxyl and sulfonate groups in said lignosulfonates to yield carboxylate groups wherein the lignosulfonates are present in an amount effective for reducing the extent of adsorption of the surfactant by the formation matrix.

4,344,488

CHARGED AEROSOL PETROLEUM RECOVERY METHOD AND APPARATUS

Alvin M. Marks, 153-16 10th Ave., Whitestone, N.Y. 11357

Filed Aug. 18, 1980, Ser. No. 178,916
Int. Cl.³ E21B *43/24, 43/243*
U.S. Cl. 166—303 **7 Claims**



1. Apparatus for removing petroleum from a well having a well pipe which extends from an oil-bearing formation to the surface, comprising:

(a) means for delivering a liquid to the bottom of the well;

(b) means for controlling the amount of liquid delivered to the bottom of the well;

(c) means for delivering a gaseous fluid to the bottom of the well;

(d) means for controlling the amount of said gaseous fluid delivered to the bottom of the well;

(e) a charged aerosol generator for generating from said liquid fine droplets at the bottom of the well; and

(f) means for generating heat at the bottom of the well to vaporize said fine droplets of liquid.

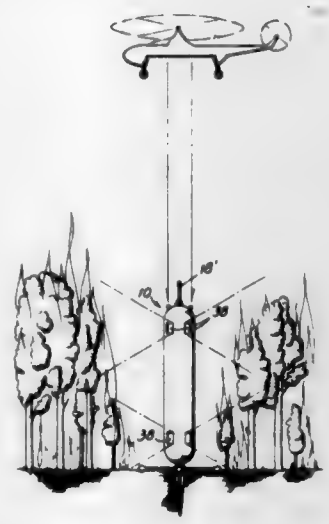
4,344,489

AERIAL FOREST FIRE EXTINGUISHING DEVICE

Al Bonaparte, 180 Luckie St., Atlanta, Ga. 30303

Filed Sep. 22, 1980, Ser. No. 190,013
Int. Cl.³ A62C *3/02*
U.S. Cl. 169—70 **2 Claims**

1. An aerial forest fire extinguishing device which disperses its contents on impact with the ground, comprising: an elongated, hollow body having an interior surface and having a plurality of ports therethrough, a bottom and an opposed end and capable of storing an inert gas under pressure; a shaft longitudinally extending through said body and having opposed ends which are external of said body, said shaft being slideably received through said body; a point capable of penetrating the ground and formed at the termination of the end of said shaft adjacent said bottom; means for preventing the penetration of said body into the ground upon said impact; closure means for said ports which are moveable between a closed position and an open position; means for maintaining said closure means in said closed position prior to said impact and said shaft is coupled to the closure means so that as the point impacts with the ground the shaft is moved upwardly causing the closure means to move to the open position, and a plurality



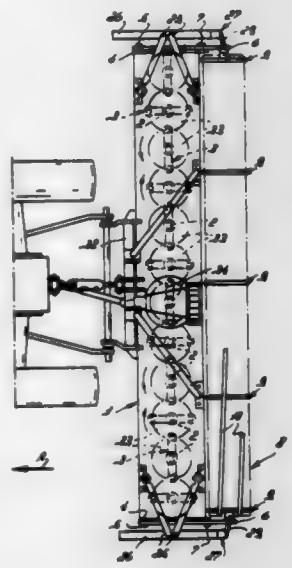
of rings which are radially spaced along said shaft within said body and which have outer peripheries which are secured to said interior surface to provide an internal brace for said device, said shaft being slideable through the center of said rings.

4,344,490

SOIL CULTIVATING IMPLEMENT

Ary van der Lely, Maasland, Netherlands, assignor to C. Van der Lely N.V., Maasland, Netherlands

Filed Aug. 26, 1980, Ser. No. 181,422
Claims priority, application Netherlands, Sep. 5, 1979, 7906631
Int. Cl.³ A01B *29/04*
U.S. Cl. 172—253 **11 Claims**



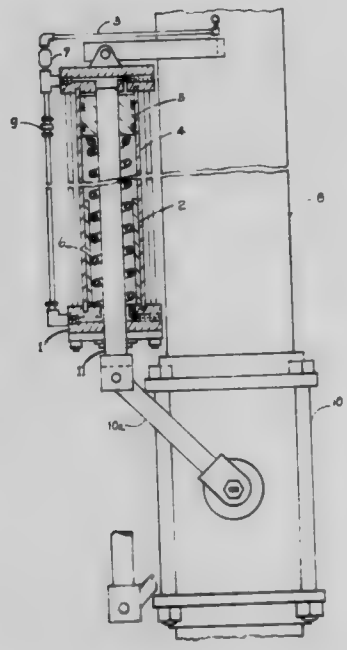
1. A soil cultivating implement comprising a frame and soil-working means supported on said frame, including a supporting roller connected to said frame, said roller comprising elongate elements that extend generally transverse to the direction of implement travel and said elements being permanently secured to the peripheries of spaces apart supporting discs, at least one auxiliary element being detachably secured to said discs, said peripheries defining crescent-shaped recesses and matchingly sector shaped stops along the length of the auxiliary element being received in said recesses, quick release means detachably securing said auxiliary element to the outer two discs in operative position, said elements and auxiliary element forming a ground-engaging surface of said roller.

4,344,491

APPARATUS FOR ACTUATING DOWNHOLE FLOW CONTROL VALVES

James J. Nolan, Brielle, and John E. Coakley, Westfield, both of N.J., assignors to Slurry Mining Engineering Inc., Westfield, N.J.

Division of Ser. No. 136,283, Apr. 1, 1980. This application Jul. 13, 1981, Ser. No. 282,913
Int. Cl.[3] E21C *45/00*
U.S. Cl. 175—317 4 Claims



1. An apparatus for actuating downhole flow control valves in the discharge conduit of a borehole mining tool with a hydraulic power cylinder actuated by the fluid supply pressure to the mining tool comprising:

(a) a control or lever arm attached to the valve stem of a flow control valve in its normal position in a fluid supply conduit;

(b) a hydraulic power cylinder with a piston within the cylinder and a piston rod attached thereto and extending through the cylinder and pivotally attached to the flow control valve arm or lever while the head end of the cylinder is pivotally attached to a structural support to permit arcuate movement of the control valve lever arm;

(c) a spring within the cylinder at the rod end and holding the piston at the head end when subjecting both ends of the cylinder to drilling pressure;

(d) a piston stop within the rod end of the cylinder to stop movement of the piston after a change in valve position;

(e) piping connecting the fluid supply conduit of the drill string to each end of the actuating cylinder and with the position of the piston being held at the head end of the cylinder by the internal spring which is capable of resisting movement of the piston while drilling system pressure is applied to both ends of the cylinder;

(f) means for increasing the fluid supply pressure to mining system pressure and applying the pressure to each end of the cylinder which forces the piston opposed by the spring against the stop with the piston rod actuating the control valve arm changing the position of the valve.

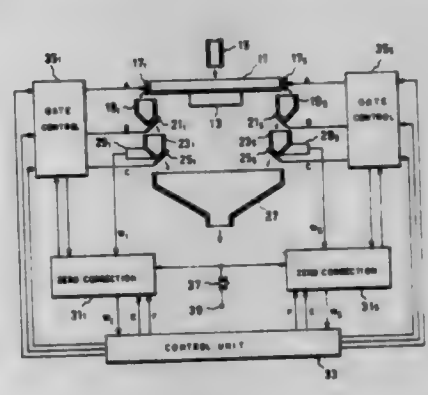
4,344,492

AUTOMATIC COMBINATION WEIGHING MACHINE WITH IMPROVED ZERO-POINT CORRECTION

Takashi Hirano, Kobe, Japan, assignor to Yamato Scale Co. Ltd., Hyogo, Japan

Filed Jan. 12, 1981, Ser. No. 224,444
Claims priority, application Japan, Apr. 14, 1980, 55-2895
Int. Cl.[3] G01G *19/04, 19/00, 13/14;* B07C *5/16*
U.S. Cl. 177—25 4 Claims

1. An automatic combination weighing machine, comprising a plurality of weighing units each including a weighing cradle for carrying articles to be weighed and weight sensing means for producing an electric signal indicative of the weight of said articles, said weighing cradle having an exhaust gate controlled by a first control signal for exhausting the content into collecting means, supply means having a plurality of discharge gates facing respectively said weighing cradles of said weighing units and controlled by a second control signal for supplying said articles from a source of articles to said weighing cradles, means for transferring the output signals of said weight sensing means through normally-open switches each having a control terminal, respectively, to a common summing device for summing up the incoming signals to produce a sum signal, means coupled to said summing device for comparing said sum signal with a predetermined range of weight to produce a comparison output when the sum is within said range, combination control means having a plurality of output terminals coupled respectively to the control terminals of said normally-open switches for producing outputs at said output terminals in accordance with a predetermined set of combinations to close the corresponding normally-open switches successively, memory means having a plurality of input terminals coupled respectively to the output terminals of said combination control means, corresponding output terminals and a control input terminal for receiving said comparison output, for responding to said comparison output to store the outputs of said combination control means and, at the same time, discharge the content from the corresponding output terminals for a predetermined period of time, and gate control means for responding to the outputs of said memory means to supply said first and second control signals to the corresponding ones of said weighing units, a plurality of zero-point correction devices inserted respectively in the signal paths for transferring the outputs of said weight sensing means to said summing device, for responding to an energizing signal to cancel its input level to produce a zero-level output, means for producing a zero-point correction command signal, and correction control means coupled to said gate control means and said zero-point correction devices for responding to said zero-point correction command signal to inhibit application of said second control signal and to sense application of said first control signal to apply said energizing signal to said zero-point correction devices.



4,344,493

HIGH-SPEED WEIGHING AND CONVEYING APPARATUS

Andrew R. Salmonsen, Pennsauken, N.J., and William J. Feehery, Jr., Ardmore, Pa., assignors to Campbell Soup Company, Camden, N.J.

Filed Mar. 6, 1981, Ser. No. 241,121
Int. Cl.[3] G01G *13/00, 19/00;* B07C *5/16*
U.S. Cl. 177—52 24 Claims

16. Apparatus for the high-speed conveying and weighing of open-topped containers, comprising:

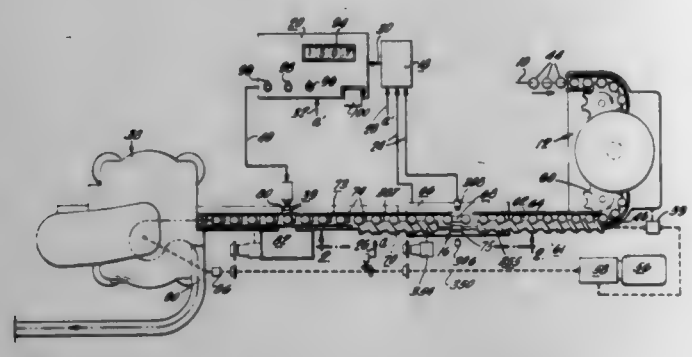
a filler station for filling open-topped containers with product;

a weighing station comprising a high-speed weigher for weighing the filled open-topped containers;

a container-closing station for closing the tops of said container;

track means for slidingly supporting said containers in a sequential train, and extending from said filler station to said container-closing station;

said conveyor means comprising means for establishing



guiding and controlling contact with each of said containers leaving said filling station and for maintaining such contact from said filler station to said container-closing station to control the position of each of said containers at all times.

4,344,494

MEASURING SYSTEM HAVING A BALANCE WITH DIGITAL DISPLAY HAVING DIGIT APPEARANCE MODIFYING CIRCUIT

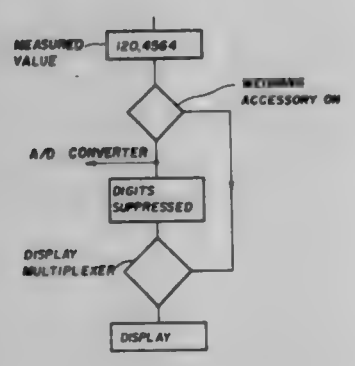
Erich Knothe, Bovenden; Christoph Berg, Adelebsen, and Franz-Josef Melcher, Hardegsen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Goettingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 900,642, Apr. 25, 1978. This application May 5, 1980, Ser. No. 146,399

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1977, 2718769

Int. Cl.³ G01G *3/14*

U.S. Cl. 177—210 R **28 Claims**



1. In a measuring system adapted to weigh changing amounts of material, the system which includes a balance, analog-to-digital converter means responsive to output signals from the balance for producing digital signals representative of weight, counter means responsive to said output signals from said converter means, a measuring display device for continuously showing measured values and circuit means coupled between said counter means and said display device for transferring measured values at at least one predetermined frequency to the display device, the improvement wherein said circuit means includes accessory circuit means for modifying at least the last digit appearing on said display device to distinguish it optically from the other digits, switch means coupled to said accessory circuit means for selectively activating said accessory circuit means, and said circuit means comprising means to change said frequency in accordance with the speed at which the amount of material being weighed is changing as the weighing is being done.

4,344,495

EQUIPMENT FOR THE MEASUREMENT OF MINUTE WEIGHT FORCES

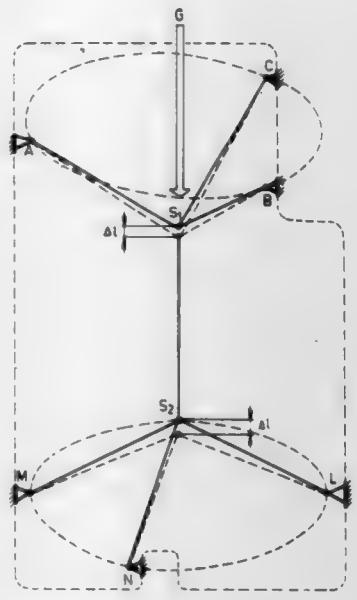
Sandor Kovacs, Budapest, Hungary, assignor to Vasipari Kutato Intezet, Hungary

Filed Jun. 17, 1980, Ser. No. 160,355

Claims priority, application Hungary, Nov. 6, 1979, VA 1556

Int. Cl.³ G01G *3/14, 21/24*

U.S. Cl. 177—211 **17 Claims**



1. Equipment for the measurement of small weight forces, characterized by having two units each containing three measuring arms, each measuring arm having a first end connected with each other in one point, where the connection points (S_1, S_2) of the measuring arms of each unit are attached to an extension bar and the second ends of the measuring arms are attached to a single rigid element in such a way that the connection points at said first ends of the measuring arms in the units are outside the planes defined by the second ends of the measuring arms that are attached to the rigid elements.

4,344,496

INTEGRAL PARALLELOGRAM LOAD RECEIVER

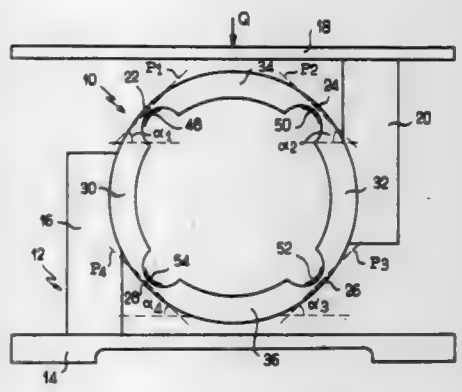
Jacques F. Langlais, Coudray Monteraux, and Jean-Claude Valadier, Paris, both of France, assignors to Testut-Aequitas, Paris, France

Filed Nov. 13, 1980, Ser. No. 206,387

Claims priority, application France, Nov. 16, 1979, 79 28300

Int. Cl.³ G01G *3/14, 3/08;* G01L *5/12*

U.S. Cl. 177—211 **9 Claims**



1. A load receiver comprising a fixed upright assembly including an arcuate section integral with a frame, a loaded upright assembly including an arcuate section integral with a load-carrying plate and two arcuate arms hinged onto the arcuate sections to form therewith a deformable parallelogram, the two arcuate sections and the two arcuate arms together forming a circular ring-shaped integral structure comprised between a circular internal profile and a circular external

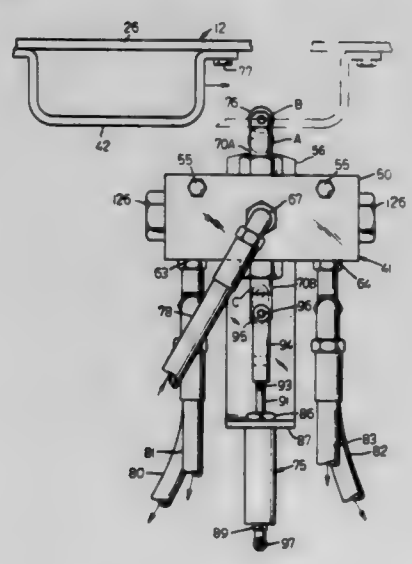
profile and provided with constrictions in the internal and/or external circular profile which define the hinges of the deformable parallelogram, and a load transducer provided to detect the deformation of the parallelogram under the effect of a load applied on the plate, at least some of the constrictions having in their flexion zone a neutral line, the slope of which is inclined to the horizontal.

4,344,497

OVERRIDE CONTROL FOR AXLE LOCKING APPARATUS OF MOBILE CRANE

Ram N. Rathi, and Ronald E. Nelson, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Oct. 19, 1979, Ser. No. 86,661
Int. Cl.³ B60G *17/00*; B66C *13/12, 23/04*
U.S. Cl. 180—41 **5 Claims**



1. In a mobile crane comprising:

a lower carrier frame, an upper crane section pivotally mounted on said carrier frame for rotation thereon about a vertical axis;

an oscillatable axle assembly with ground engaging means attached thereto, means pivotally mounting said axle assembly to said carrier frame for rotation about a horizontal axis;

locking fluid cylinder means including a cylinder housing with an extendable/retractable piston rod therein, means pivotally mounting either of said piston rod or said cylinder housing to said axle assembly and the other of said piston rod or said cylinder housing rigidly to said carrier frame;

locking valve means mounted on said carrier frame for controlling said fluid cylinder means, conduit means connecting said locking valve means to said fluid cylinder means, said locking valve means including a housing, a plurality of check valves therein and first and second independently movable valve stem means extending from said housing and operative to open and close said check valve means;

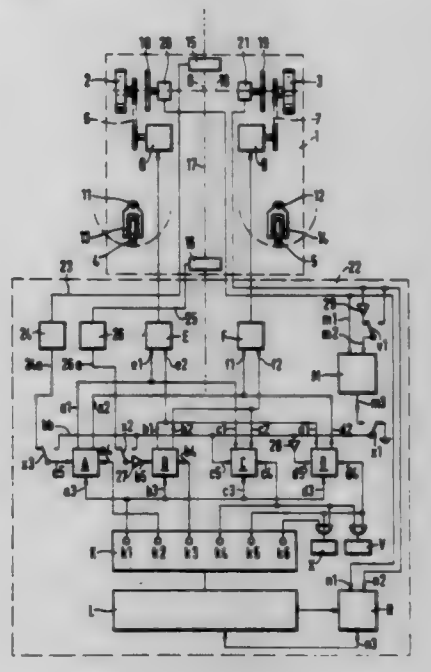
cam means mounted on said upper section and engageable with said first valve stem means when said upper section is rotated to a predetermined position to open said check valve means for permitting said axle assembly to pivot about said horizontal axis, power means connected to said second valve means, manually operated control means operatively connected to said power means to selectively actuate said second valve stem to open said check valve means when said upper section is in any of its rotatable position other than said predetermined position.

4,344,498

AUTOMATIC STEERING MEANS FOR A DRIVERLESS CARRIAGE

Olof H. Lindfors, Vegagatan 32, S-413 09 Göteborg, Sweden

Filed Dec. 27, 1979, Ser. No. 107,601
Claims priority, application Sweden, Jan. 2, 1979, 7900011
Int. Cl.³ B62D *1/28*
U.S. Cl. 180—168 **6 Claims**



1. In a driverless carriage comprising

a carriage chassis,

at least three wheels for supporting said chassis,

motor means and transmission means for driving at least one of said wheels,

first bearing means for not more than two of said wheels, said first bearing means being arranged to define a single geometrical axis of said wheel or wheels which extends in a fixed horizontal direction with respect to the chassis,

second bearing means for the remaining at least one supporting wheel, said second bearing means being pivotably connected to the chassis to allow adjustment of the direction of said at least one supporting wheel with respect to the chassis and thus to enable the carriage to turn about a vertical slewing axis intersecting said single geometrical axis, and,

steering means for adjusting the position of said slewing axis with respect to the chassis,

the improvement comprising

means for monitoring the position of said slewing axis including

at least one non-driven measuring wheel arranged to engage the surface supporting the carriage, said measuring wheel having a horizontal geometrical axis extending in the same vertical plane as said single geometrical axis, and,

signal generating means arranged to be operated by said at least one measuring wheel for generating a signal representing the rate of rotation of the measuring wheel,

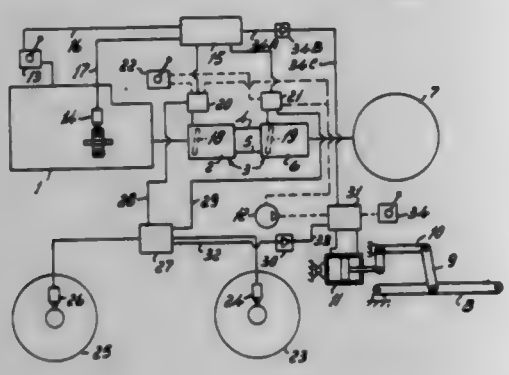
said monitoring means being arranged to provide an output signal derived from the signal generated by said signal generating means so as to have a sign representing forward and backward movement respectively and a magnitude representing the rate of speed, with respect to the surface supporting the carriage, of a predetermined point of said single geometrical axis, said point defining a desired position of said slewing axis, and,

means controlled by said output signal for operating said steering means in such a way as to cause said steering means to adjust the slewing axis into said desired position.

4,344,499
TRACTOR WITH ANTI-SLIPPING AND OVERLOADING CONTROLS

Ary van der Lely, Maasland; Cornelis J. G. Bom, Rozenburg, and Arie Kuipers, Brielle, all of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Dec. 3, 1979, Ser. No. 99,732
Claims priority, application Netherlands, Dec. 8, 1978, 7811964
Int. Cl.[3] B60K *31/00*
U.S. Cl. 180—197 15 Claims

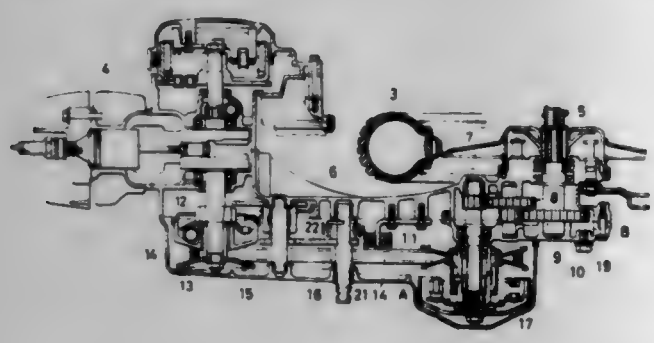


1. A tractor comprising an engine, a torque converter including means for adjusting its transmission ratio, a wheel driven by said engine through said torque converter, at least one further wheel rotated by its contact with the underlying ground, and a lifting device for attachment to an implement, the tractor further comprising control means adapted to adjust automatically the transmission ratio of said torque converter in dependence on slipping of said driven wheel with respect to the ground compared to the rotation of said further wheel, said control means comprising counters which operatively count the revolutions of said driven wheel and the revolutions of said further wheel and a comparator which provides a signal when there is a predetermined difference between the respective revolutions of said driven wheel and said further wheel, said control means adjusting said transmission ratio to decrease the speed of said tractor in response to said signal.

4,344,500
POWER TRANSMISSION CASING APPARATUS IN MOTORIZED TWO-WHEELED VEHICLE

Noboru Kurata, Kamifukuoka; Kunio Miyazaki, Oi, and Kuniyuki Yamamoto, Kodaira, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,942
Claims priority, application Japan, Aug. 21, 1979, 54-105543
Int. Cl.[3] B62M *9/06*
U.S. Cl. 180—230 3 Claims



1. A power transmission casing apparatus in a motorized two-wheeled vehicle comprising

a case main body extending from one lateral side of an internal combustion engine to one lateral side of a rear wheel positioned rearwardly of said engine, said case main body rotatably supporting a wheel axle of said rear wheel and partially housing in a rear portion a reduction gear means which comprises the wheel axle, an input shaft, and a gear train operatively interconnecting the input shaft to the wheel axle, said casing apparatus also housing V-belt means comprising a rear pulley on the input shaft, a forward pulley on an output shaft of the engine and a V-belt operatively connecting the pulleys, each of the pulleys having a circumferential periphery;

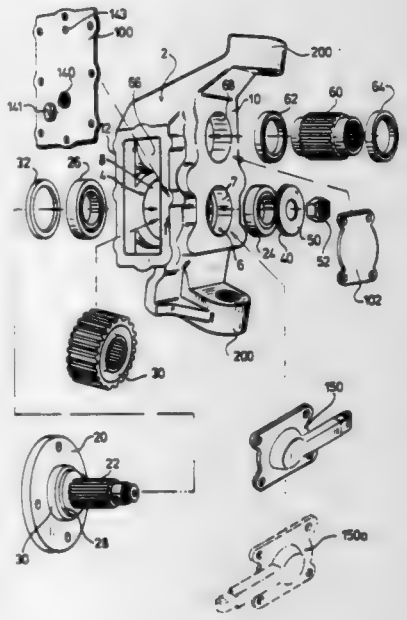
a transmission cover member sealingly engaging with said case main body in a fluid tight manner and extending to enclose said reduction gear means, said input shaft extending through said transmission cover member; and

a V-belt cover sealingly engaging with the case main body and extending from beyond the forwardmost portion of the periphery of the forward pulley to beyond the rearmost portion of the periphery of the rear pulley to enclose the V-belt means.

4,344,501
GEARED HUB

James H. Jerry, and Ira A. Dickie, both of Goderich, Canada, assignors to Gearco Limited, Goderich, Canada

Filed Aug. 18, 1980, Ser. No. 179,003
Int. Cl.[3] B60K *17/30*
U.S. Cl. 180—253 18 Claims



1. A geared hub for driving wheel of a vehicle comprising a one-piece cast housing having an elongated gear chamber, a wheel spindle extending through said chamber and generally perpendicular thereto, an output gear and an input pinion, said output gear driving said wheel spindle and in mesh with said input pinion; said housing having first access means for receiving and supporting said wheel spindle, second access means for receiving an input shaft associated with said input pinion and third access means in a sidewall of said housing for inserting said output gear, said first and second access means being in the end walls of said gear chamber, and including means for closing said access means, said one-piece housing including means for mounting said housing to a vehicle.

4,344,502
PASSIVE SEATBELT SYSTEM

Gosaku Terabayashi, Aichi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 5, 1979, Ser. No. 90,918
Claims priority, application Japan, Nov. 6, 1978, 53-136548
Int. Cl.[3] B60R *21/10*
U.S. Cl. 180—268 16 Claims

1. A passive seatbelt system of the type wherein an occupant of a vehicle engages a part of the seatbelt webbing with a convenience holder provided on the vehicle when he gets out of the vehicle, said system comprising:

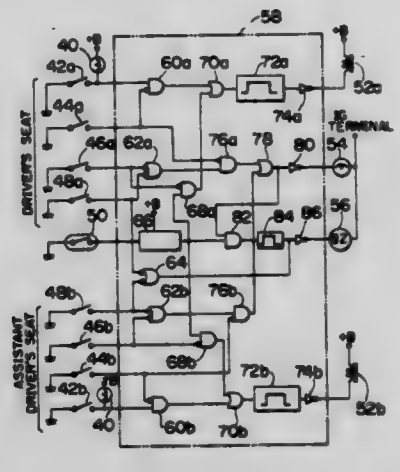
seated condition detecting means for detecting the seated condition of the occupant and providing a signal;

closed door detecting means for detecting the condition of the vehicle door being closed and providing a signal;

withdrawn webbing detecting means for detecting the condition of the seatbelt webbing being withdrawn and providing a signal;

vehicle speed detecting means for detecting that the running speed of the vehicle exceeds a predetermined speed;

automatic release means for releasing the seatbelt webbing



from the convenience holder by being activated for a predetermined time, thereby automatically fastening the seatbelt webbing over the occupant; and

control circuit means for activating said automatic release means for a predetermined time when said seated condition detecting means and said closed door detecting means are activated and when said withdrawn webbing detecting means and said vehicle speed detecting means are activated, whereby the seatbelt webbing is automatically fastened over the occupant with the convenience holder being released by said automatic release means.

4,344,503

DIAPHRAGM FOR ELECTRO-ACOUSTIC TRANSDUCER

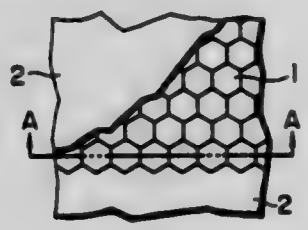
Akira Nakamura, Shizuoka, and Takao Nakaya, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 23, 1981, Ser. No. 227,713

Claims priority, application Japan, Feb. 1, 1980, 55-9994; Feb. 1, 1980, 55-9995

Int. Cl.³ H04R *7/00*

U.S. Cl. 181—170 **17 Claims**



1. A diaphragm for an electro-acoustic transducer, comprising:

a core member; and

a skin member disposed to at least one side of said core member and being made with a layer of ceramics material which covers substantially the entire surface of the core member, wherein said ceramics material is a metal oxide selected from the group consisting of berrylia (BeO), alumina (Al_2O_3), magnesia (MgO), silicon dioxide (SiO_2) and titania (TiO).

4,344,504

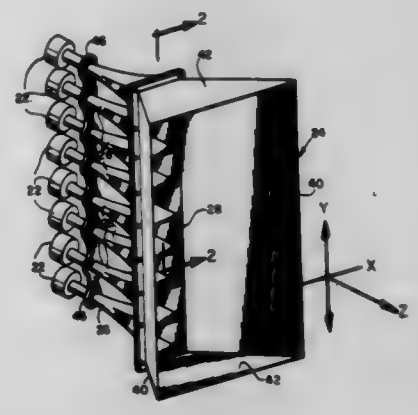
DIRECTIONAL LOUDSPEAKER

Bruce Howze, Springfield, Pa., assignor to Community Light & Sound, Inc., Philadelphia, Pa.

Filed Mar. 27, 1981, Ser. No. 248,504

Int. Cl.³ G10K *11/02*

U.S. Cl. 181—187 **14 Claims**



1. A loudspeaker, having controlled planar sound dispersion characteristics, comprising:

a plurality of individual electroacoustical drivers, having horns expanding in cross-section, said horns having exit apertures aligned and joined to form an elongated line source, defining an axis of projection for sound energy; and,

a waveguide having an elongated input portion corresponding to and parallel with said line source and side walls defining an expanding cross-section from said input portion to an exit aperture of said waveguide, whereby sound dispersion off said axis is minimized.

4,344,505

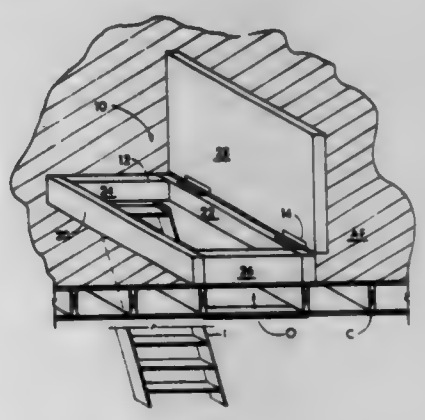
INSULATION CAP FOR DISAPPEARING STAIRWELLS

E. Eugene Waters, 107 E. Westwood Dr., and Gordon E. Harrell, Rte. 6, Box 130, both of Goldsboro, N.C. 27530

Filed Aug. 14, 1980, Ser. No. 177,990

Int. Cl.³ E06C *9/06*

U.S. Cl. 182—47 **5 Claims**



1. An insulating cap for attic openings which receive disappearing staircases of the type in which a casement mounted in the attic opening supports a folddown staircase with the ladder portion of the staircase extending up into the attic area above the opening when said staircase is in the folded position, said cap comprising:

(a) a stationary rectangular frame formed substantially in its entirety of rigid insulative material having length and width dimensions greater than the corresponding dimensions of the opening in the attic floor; said frame including a pair of spaced sidewalls and a pair of spaced end walls secured together to form said rectangular frame, said side walls and said end walls being separate from said folddown staircase and when assembled surround said attic

opening to form a recess for receiving, but not supporting said staircase in the folded position;

(b) a cover member formed substantially in its entirety having length and width dimensions greater than said attic floor opening and removably supported by the upper surface of said rectangular frame;

(c) said rigid insulative material from which said frame and cover are formed having an R value of at least 19 through the thickness thereof;

(d) said cover being so positioned with respect to said rectangular frame that said cover is movable between a first normally closed position to a second open position providing access through said opening by a person standing on said staircase while said frame remains stationary.

4,344,506

ARRANGEMENTS FOR DRAINAGE OF LUBRICATING OIL FROM BEARING ASSEMBLIES

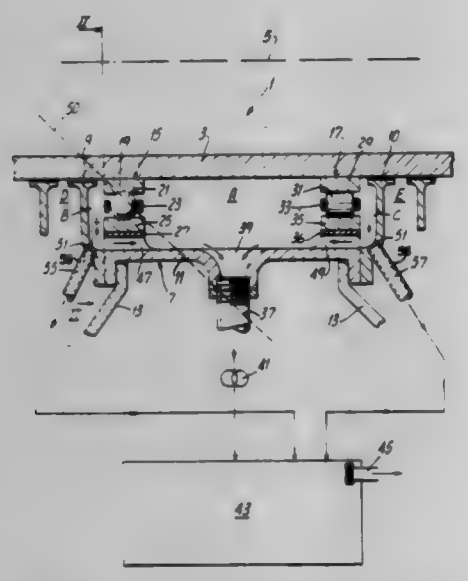
Stanley Smith, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed Feb. 25, 1980, Ser. No. 124,277

Claims priority, application United Kingdom, Mar. 5, 1979, 7907710

Int. Cl.³ F02G 7/06

U.S. Cl. 184—6.11 **9 Claims**



1. A lubrication drainage system for draining lubricant which has collected in a chamber, said chamber encircling a shaft and enclosing a bearing on said shaft, said drainage system comprising:

a main drainage duct in said chamber disposed on one side of the bearing, a main scavenge pump pumping lubricant from said main drainage duct, auxiliary drainage ducting in the chamber disposed on the opposite side of the bearing to the main drainage duct, and means for the lubricant flowing through said auxiliary drainage ducting to bypass said scavenge pump.

4,344,507

SELF-LUBRICATING MACHINING APPARATUS

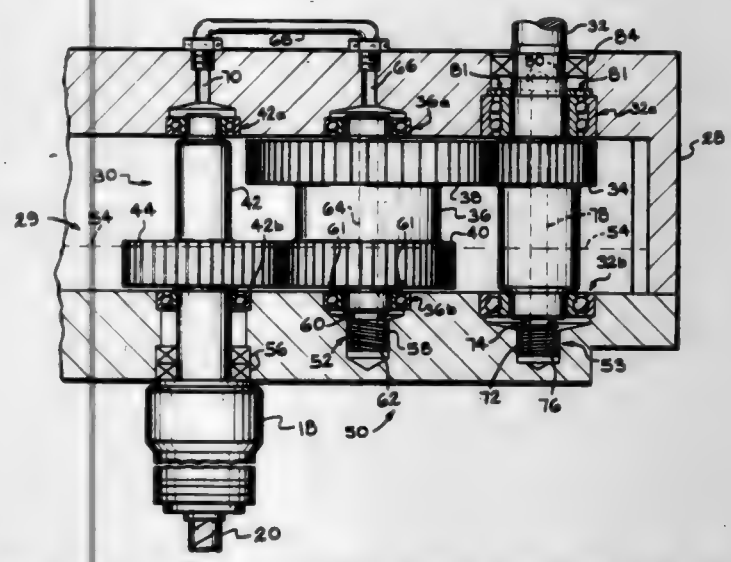
Robert L. Osborne, Mount Clemens, Mich., assignor to LaSalle Machine Tool, Inc., Troy, Mich.

Filed Nov. 27, 1979, Ser. No. 97,642

Int. Cl.³ F01M 9/00

U.S. Cl. 184—6.18 **1 Claim**

1. In machining apparatus comprising a work-performing tool and transmission means for actuating said work-performing tool to machine a workpiece, a lubricating system for supplying lubricating fluid to select portions of said transmission means, said lubricating system comprising a housing in which said transmission means is located, said housing forming a reservoir in which lubricating fluid is contained, means forming a passage having an inlet in fluid communication with said reservoir to admit lubricating fluid into said passage, a rotatable threaded member disposed in said passage in close fitting relationship therewith and being operatively associated with said transmission means, and discharge conduit means in fluid communication with said passage and extending above the level of said lubricating fluid in said reservoir to a position where lubricating fluid can be supplied to said selected portions of said transmission means, said threaded member being rotatable in response to operation of said transmission means to force lubricating fluid from the reservoir through said discharge conduit means onto said selected portions of said transmission means, said transmission means including a rotary input shaft, at least one idler shaft and a spindle shaft on which said work-performing tool is mounted, and coacting means on said shafts for transmitting the rotation of said input shaft to said spindle shaft, bearing means including a plurality of bearing assemblies supporting said shafts for rotational movement, at least some of said bearing assemblies being located above the level of lubricating fluid in said reservoir, said passage means and said threaded member being operatively associated with



one of said shafts, said conduit means extending from said passage to a selected bearing assembly above said lubricating fluid to supply lubricating fluid thereto, said bearing assemblies including a spindle bearing assembly located above said lubricating fluid and supporting said spindle shaft, an idler bearing assembly supporting said idler shaft, and an input shaft bearing assembly, said conduit means being in fluid communication with said spindle bearing assembly whereby rotation of said input shaft forces lubricating fluid onto said spindle bearing assembly, said passage means and said threaded member being operatively associated with said idler shaft, said threaded member being an integral portion of said idler shaft, a second passage having an inlet in fluid communication with said reservoir and a second threaded member disposed in said passage in close fitting relationship therewith and being an integral portion of said input shaft, and second conduit means in fluid communication with said second passage and said input shaft bearing assembly whereby rotation of said input shaft causes the lubricating fluid to be forced through said conduit means to lubricate said bearing assemblies.

4,344,508

LIFT MECHANISM FOR A VEHICLE TAIL-BOARD OR OTHER LOAD PLATFORM

Albert W. Peck, Goldington, England, assignor to Alcan Research and Development Limited, Montreal, Canada

Filed Jul. 29, 1980, Ser. No. 173,337

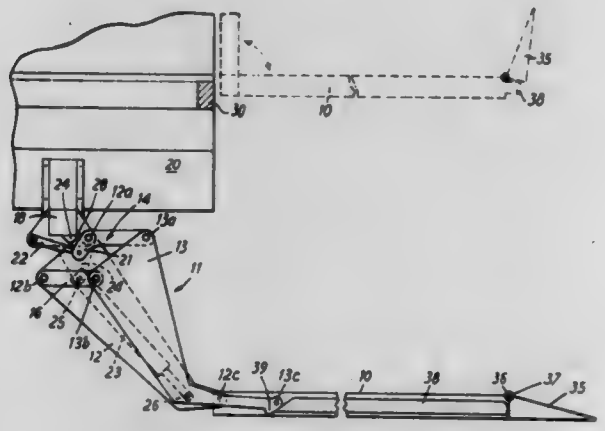
Claims priority, application United Kingdom, Aug. 3, 1979, 7927159

Int. Cl.³ B66B 9/20

U.S. Cl. 187—9 R **9 Claims**

1. A lift mechanism for a load-carrying platform comprising at least one parallelogram linkage constituted by two main levers each having three non-colinear pivots and the pivots on the two levers defining substantially identical triangles, and the

levers being horizontally offset from each other in a direction towards and away from the platform, one pair of corresponding pivots on the two levers being respectively connected to the platform at two fixed points which are spaced apart a predetermined distance in the direction of the length of the platform, the pivots constituting the second pair being spaced apart by said predetermined distance and interconnected by a synchronising link, and the pivots constituting the third pair



being spaced apart by said predetermined distance and interconnected by a tilting lever, one of the pivots of the third pair having a fixed mounting on the vehicle, means for rotating the main levers about their respective pivots constituting the third pair, and means for selectively moving the tilting lever about the fixed mounting into a first position in which the pivots constituting the third pair are disposed one vertically above the other and into a second position in which the said pivots constituting the third pair are substantially in horizontal alignment.

4,344,509

FRICTION LINING WEAR INDICATORS FOR SHOE-DRUM BRAKES

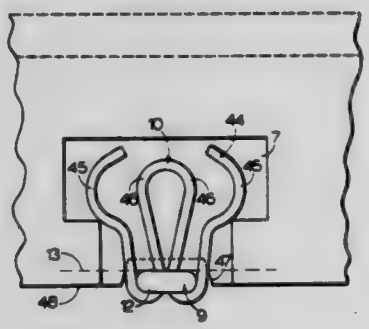
George A. Harmer, West Midlands, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 29, 1980, Ser. No. 116,668

Claims priority, application United Kingdom, Feb. 15, 1979, 7905321

Int. Cl.³ F16D *66/02*

U.S. Cl. 188—1.11 **4 Claims**



1. A friction lining wear indicator for a brake shoe of a shoe-drum brake, said brake shoe including a platform having axial edges and a T-shaped depression formed in one of said axial edges by displacement of a portion of said one edge in a radial direction, and a friction lining carried by said platform for engagement with a rotatable drum, said friction lining wear indicator comprising a sensor mounted on said brake shoe, an indicating means adapted to be actuated when the thickness of said friction lining is less than a predetermined value, mounting means for mounting said sensor on said shoe, said mounting means comprising a resilient clip and said sensor comprising a loop of wire separate from said clip, said resilient clip being located in said T-shaped depression in said platform, and being so shaped as to co-operate with said shoe so that it is retained in said depression by its resilience in order to retain said sensor in a position of use adjacent said lining.

4,344,510

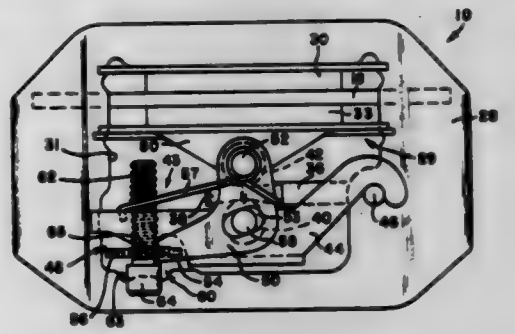
DISC BRAKE AND IMPROVED ADJUSTER THEREFOR

Donald D. Johannesen, and Andrew F. Kazmierzak, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 22, 1980, Ser. No. 180,290

Int. Cl.³ F16D *65/56*

U.S. Cl. 188—71.9 **4 Claims**



1. In a disc brake assembly comprising a frame formed of a continuous, movable plate member having a closed loop with a central opening receiving a pair of friction elements therein adjacent a rotor, an actuator operable during a brake application to urge the pair of friction elements into engagement with the rotor, an adjustment means cooperating with the frame and the pair of friction elements to maintain a running clearance between the rotor and the pair of friction elements, said adjustment means including a lever extending into the central opening and pivotally engaging said frame and including an extendible assembly cooperating with said lever and frame to control the pivotal movement of said lever, characterized in that a pawl is pivotally engaged with one of said pair of friction elements, said pawl engaging the lever and the extendible assembly so as to impart movement to said extendible assembly in response to movement of said one friction element, and said pawl being carried by said one friction element and said lever to substantially remain within the central opening in spaced relation to said frame.

4,344,511

FLOATING CALIPER-SPOT-TYPE DISC BRAKE

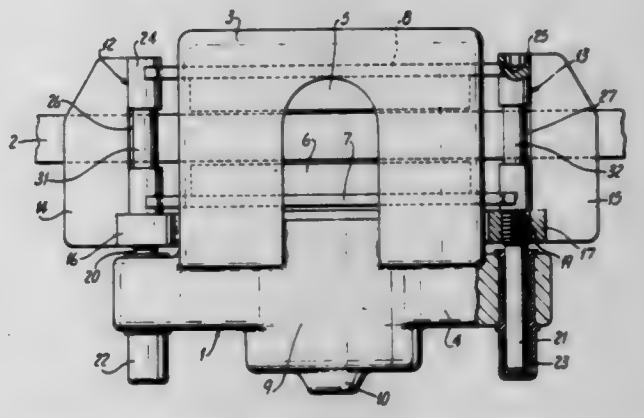
Roberto Stoka, Nauheim, and Ulrich Lötzsch, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,960

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916244

Int. Cl.³ F16D *65/14*

U.S. Cl. 188—73.45 **15 Claims**



1. A floating caliper-spot-type disc brake comprising:

a brake support disposed on one side of a brake disc having a pair of spaced arms parallel to the axis of rotation of said brake disc and extending over the edge of said brake disc,

said pair of arms each having an inner surface thereon facing one another;

a pair of brake shoes each disposed adjacent and parallel to a different side of said brake disc and having lateral supporting edges thereof adjacent and in opposing relationship to said inner surfaces of said pair of arms;

a brake caliper embracing the edge of said brake disc and said pair of brake shoes having in one leg thereof a brake actuating device abutting an adjacent one of said pair of brake shoes and the other leg thereof abutting the other of said pair of brake shoes; and

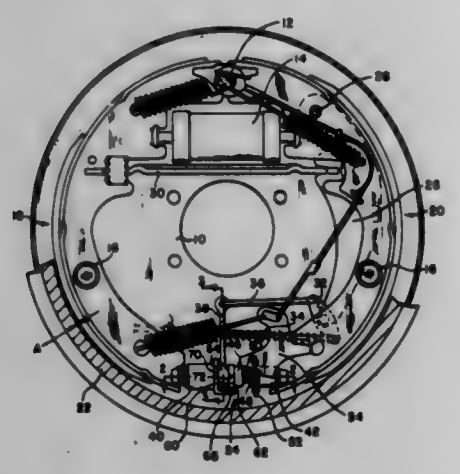
a pair of elongated cylindrical guide pins each parallel to said axis of said brake disc, detachably secured to a different one of said pair of arms in a mid section thereof adjacent said one leg of said brake caliper, having one end section thereof coextensive with an associated one of said inner surface of said pair of arms and disposed between and bearing against each of said associated one of said inner surface of said pair of arms and an associated one of said lateral supporting edges of said pair of brake shoes to axially slidably guide and support only said pair of brake shoes and the other end section thereof engaging a different one of two spaced bores in said one leg of said brake caliper to axially slidably guide said brake caliper at only said one leg thereof, said one end section of said pair of guide pins transmitting braking force from said pair of brake shoes to said pair of arms and said pair of brake shoes only partially encompass said pair of guide pins.

4,344,512

DUO SERVO DRUM BRAKE AND PARKING MECHANISM THEREFOR

Ji Y. Woo, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 20, 1980, Ser. No. 122,942
Int. Cl.³ F16D *51/20, 65/56*
U.S. Cl. 188—79.5 GE **3 Claims**



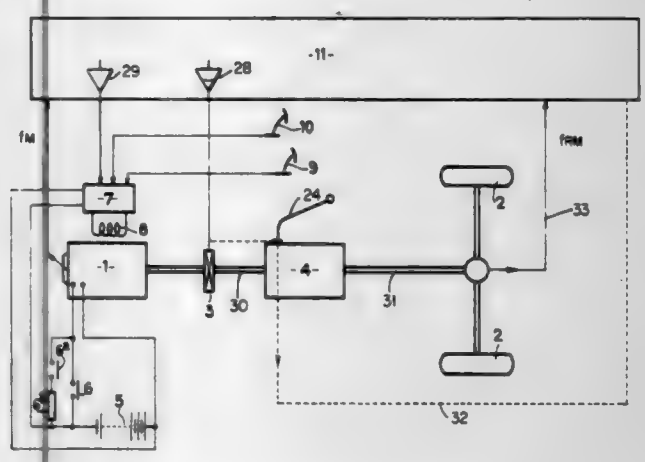
1. A duo servo drum brake and parking mechanism therefor comprising a pair of brake shoes (18, 20) cooperating with a hydraulic actuator (14) during service braking to retard rotation of a drum (22), a parking lever (26) pivotally coupled to one of the pair of brake shoes and cooperating with a strut (30) to move that portion of the pair of brake shoes (18, 20) adjacent the hydraulic actuator (14) into frictional engagement with the drum (72) during a parking brake application, an extendible assembly (24) engaging the pair of brake shoes (18, 20) opposite the hydraulic actuator (14), the extendible assembly (24) being extendible in a first mode in response to an excessive clearance between the pair of brake shoes (18, 20) and the drum (22) during the service braking application in order to substantially maintain a predetermined clearance between the pair of brake shoes (18, 20) and the drum (22), and connecting means (32, 36, 38) extending between the parking lever (26) and the extendible assembly (24), characterized by said connecting means including a cam (38) engageable with said extendible assembly, a link (32) pivotally carried by said parking lever (26) and a rod (36) connecting said cam (38) with said link (32), said extendible assembly (24) defining a pair of flanges (60, 62) forming a spacing therebetween for receiving said cam (38), said link (32) pivoting relative to said parking lever (26) during the parking brake application to bias said parking lever (26) to pivot relative to one of said pair of brake shoes and also to move said cam (38) relative to said extendible assembly via said rod (36), movement of said cam (18) relative to said extendible assembly (24) biasing said pair of flanges (60, 62) to separate from each other to define a second mode of extension for said extendible assembly (24) and move that portion of said pair of brake shoes (18, 20) adjacent said extendible assembly (24) into frictional engagement with the drum (22) simultaneously with the cooperation of the parking lever (26) and the strut (30), said extendible assembly comprising a first sleeve engageable with one of the pair of brake shoes, a second sleeve engageable with the other brake shoe, a threaded member rotatable relative to said sleeves and a cylindrical member telescoping into one of said sleeves and threadably engaging said threaded member, said cylindrical member and said one sleeve defining said pair of flanges which are normally spaced from each other.

4,344,513

TRANSMISSION MECHANISM COMPRISING A CLUTCH AND A GEAR BOX HAVING A PLURALITY OF SPEED RATIOS

Michel Etienne, Valmondois, France, assignor to Automobiles Peugeot and Societe Anonyme Automobiles Citroen, both of Paris, France

Filed May 30, 1980, Ser. No. 154,990
Claims priority, application France, Jun. 8, 1979, 79 14729
Int. Cl.³ B60K *41/28*
U.S. Cl. 192—.02 R **4 Claims**



1. A transmission arrangement including:

(a) a motor;

(b) a gear box having a plurality of speed ratios;

(c) a receiving means connected to the output of the gear box;

(d) a clutch having an input and an output, said input connected to said motor, said output connected to said gear box;

(e) means for detecting the actual speed of the motor;

(f) means for detecting the actual speed of the receiving means;

(g) means for altering the speed of the motor;

(h) a digital means for calculating the theoretical speed of the receiving means as a function of the actual speed of the motor as detected by said means for detecting the actual speed of the motor, and also as a function of the engaged speed ratio of the gear box;

(i) means for comparing said theoretical speed and the detected speed of the receiving means;

(j) means for connecting the output of the comparing means to the motor speed altering means;

(k) said digital calculating means including:

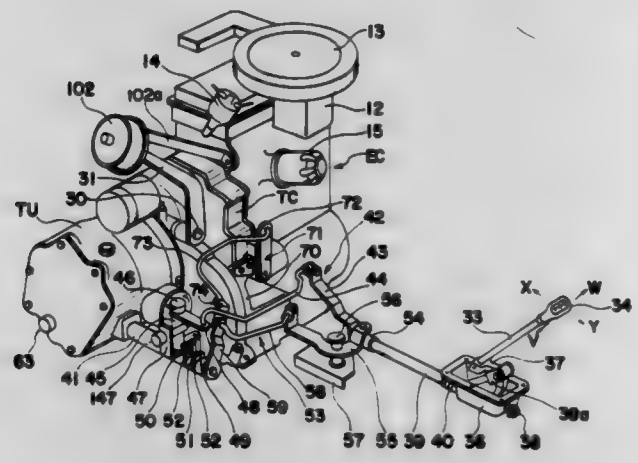
(l) a plurality of binary memories;
(m) a plurality of multiplexer means for obtaining, as a function of the engaged speed ratio, predetermined digital calculation co-efficients entered into the memories, the multiplexer means being connected to the memories;
(n) at least two binary multipliers, connected in series, for multiplying the signal corresponding to said actual speed of the motor by said calculation co-efficients, said multipliers being connected to said multiplexers and to said comparator.

4,344,514

ELECTRIC SWITCH APPARATUS FOR AUTOMOBILE POWER TRAIN CLUTCH

Youji Fujihara, Ikeda; Masami Shiba, Osaka; Toshio Hazama, Toyonaka, and Shozo Kito, Nagoya, all of Japan, assignors to Daihatsu Motor Co., Ltd., Osaka and Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, both of, Japan

Filed Aug. 15, 1980, Ser. No. 178,632
Claims priority, application Japan, Mar. 11, 1980, 55-31263
Int. Cl.[3] B60K *41/00*
U.S. Cl. 192—3.58 15 Claims



1. An electric switch apparatus for use in association with an automotive power train including a manually shiftable transmission unit, which comprises a gearshift lever movable in first and second gear-shifting directions opposite to each other, said gearshift lever when moved in the first gear-shifting direction being shiftable to any one of different gear positions of one group and, when moved in the second gear-shifting direction, shiftable to any one of different gear positions of another group including a reverse gear position, and an automatically controlled clutch unit intervening between the transmission unit and an automobile engine and capable of assuming coupled and uncoupled positions one at a time, said clutch unit when in the coupled position establishing a power transmission between an automobile engine and the transmission unit and, when in the uncoupled position, interrupting such power transmission, said electric switch apparatus comprising, in combination:

an actuator means including an electromagnetic control electrically connected to a source of electric power and operable to bring the clutch unit into the uncoupled and coupled positions when the electromagnetic control is energized and deenergized, respectively;

a control circuit for selectively opening and completing an electric circuit between the electromagnetic control and the electric power source; and

a switching circuit including a stroke switch assembly and a knob switch assembly and operable to control the operation of the control circuit,

said stroke switch assembly including normally opened first, second and third switches, said first switch being closed in response to the movement of the gearshift lever in the first gear-shifting direction, said second switch being closed in response to the movement of the gearshift lever in the second gear-shifting direction and said third switch being closed in response to the movement of the gearshift lever in any one of the first and second gear-shifting directions, all of said first to third switches being connected in parallel to each other, and

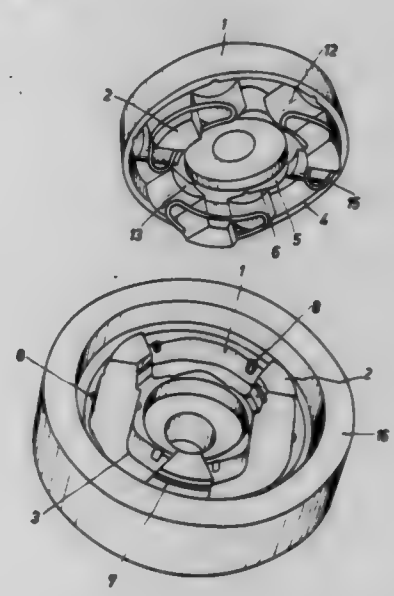
said knob switch assembly being incorporated in a manipulatable knob assembly mounted on the gearshift lever for pivotal movement in first and second switching directions opposite for each other and includes a normally closed fourth switch connected with the second switch, a normally closed fifth switch connected with the first switch and a normally closed sixth switch connected in series with the third switch, said fourth and sixth switches being opened in response to the pivotal movement of the knob assembly in the first switching direction resulting from the application of an external manipulative force required to move the gearshift lever in the first gear-shifting direction, said fifth switch being opened in response to the pivotal movement of the knob assembly in the second switching direction resulting from the application of another external manipulative force required to move the gearshift lever in the second gear-shifting direction.

4,344,515

CLAW CLUTCH

Hugo Grote, Wetter; Heinz Hasselmann, Hagen; Volkmar Kunze, Wetter; Karl Zacharias, Schwerte; Robert Küelpmann, and Paul Mueller, both of Wetter, all of Fed. Rep. of Germany, assignors to Mannesmann DeMag AG, Duisburg, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,665
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913483; Dec. 1, 1979, 2948430; Dec. 1, 1979, 2948431
Int. Cl.[3] F16D *11/04*
U.S. Cl. 192—67 R 22 Claims



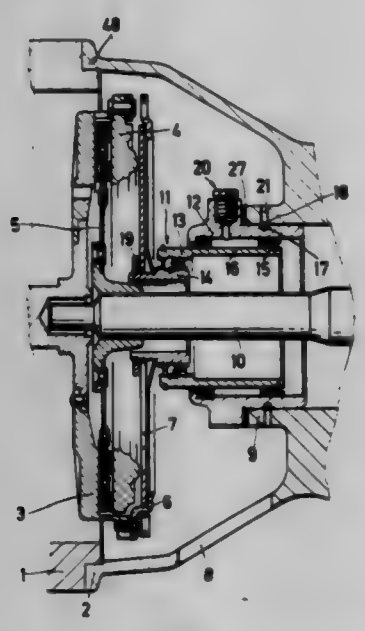
1. In a claw clutch of the type having opposed clutch halves, each having angularly distributed, axially projecting claws, and generally cylindrical elastic bumpers positioned between adjacent claws of the respective clutch halves, the improvement characterized by

(a) said clutch halves being formed of die-cast aluminum,
(b) the base areas of the respective claws being of rounded contour generally corresponding to the cylindrical contours of said elastic bumpers; and
(c) said clutch halves include an outer retaining ring and an inner guide ring connecting said claws and confining said elastic bumpers therebetween, said claws projecting beyond said outer retaining ring and inner guide ring.

4,344,516
DISENGAGING DEVICE

Dieter Kolb, Bad Kissingen, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,586
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915989
Int. Cl.³ F15B *21/00*; F16B *21/14, 21/16*
U.S. Cl. 192—114 R 5 Claims

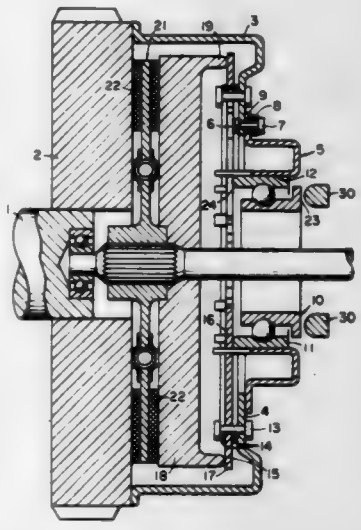


1. Disengaging device for a friction clutch to be attached to the motor of a vehicle, the friction clutch including a rotating member to be displaced in the axial direction along the axis of rotation of the rotating member for disengaging the clutch, a gear case, and means extending between said rotating member and said gear case for providing a connection therebetween, said means including a releasable locking connection, wherein the improvement comprising that said connection means comprises a first part coaxial with the axis of rotation of said rotating member, a second part coaxial with the axis of rotation and laterally enclosing said first part, said second part have a circumferentially extending outside surface and inside surface and said first part having a circumferentially extending outside surface, said second part having at least one opening extending therethrough from the outside surface to the inside surface thereof, a locking member removably insertable through the opening in said second part into locking engagement with said first part for locking said first and second parts against relative movement therebetween in the direction of the axis of rotation of said rotating member, said first part has a circumferentially extending groove in the outside surface thereof extending for at least a part of the circumferentially extending outside surface, said opening extends chordally of said second part so that a portion of the opening extends through the inside surface of said second part and the least dimension from the axis of said second part to the base of said opening being approximately equal to the diameter of the base of the circumferential groove in said first part so that the base of the opening in said second part extends approximately tangentially of the base of said circumferential groove, said locking member comprises a locking clamp having a pair of substantially parallel legs and a bight portion extending transversely between and interconnecting one end of each of said legs, a pair of said openings located on diametrically opposite sides of said second part, each of said legs of said locking clamp being guided through a different one of said openings in said second part and extending into the portion of said openings which open through the inside surface of said second part into the circumferential groove in said first part, wherein each of said legs at the opposite ends from the bight portion are bent inwardly toward one another forming a curved portion so that in the locked position the inwardly bent ends of said legs engage the outside surface of said second part for securing said clamp in the locked position, projections being formed on said second part and each said projection extending over and being located outwardly from one end of one of said openings through said second part, and the ends of said legs spaced from the ends connected to said bight portion being bent into a hook shape so that each hook-shaped end engages one of said projections when said clamp is displaced into the locked position for securing said clamp in the locked position.

4,344,517
CLUTCH RELEASE DEVICE

Takeshi Nakamura, Hiratsuka, and Akihiko Tanaka, Fujisawa, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1980, Ser. No. 171,252
Claims priority, application Japan, Aug. 24, 1979, 54-115892[U]; Sep. 27, 1979, 54-132624[U]
Int. Cl.³ F16D *23/14*
U.S. Cl. 192—98 5 Claims

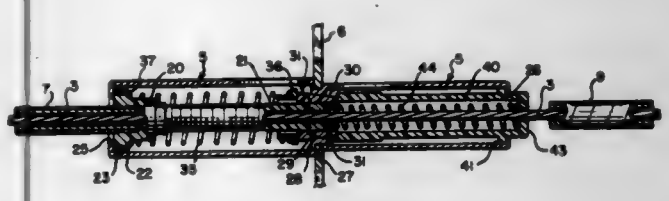


1. A clutch assembly comprising a clutch device including a clutch plate adapted to cooperate with a fly-wheel, a pressure plate, and a clutch cover fixed to the fly-wheel to cover the clutch plate and the pressure plate; a clutch release device including a release bearing; holding means for the release bearing connected to the clutch device; and a self-centering means compensating for eccentricity between the clutch device and the clutch release device and for holding the clutch release device in a self-centered position, the self-centering means being provided between the clutch device and the holding means so that the clutch release device and the holding means may be moved together to the self-centered position.

4,344,518
SELF-ADJUSTING CABLE CONDUIT MECHANISM

William J. Gilmore, Manitou Beach, Mich., assignor to Acco Industries Inc., Trumbull, Conn.

Filed Sep. 22, 1980, Ser. No. 189,362
Int. Cl.³ F16D *13/75*
U.S. Cl. 192—111 A 4 Claims



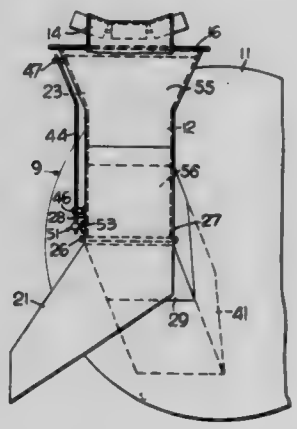
1. A self-adjusting cable conduit mechanism for automatically compensating for wear in a control cable system where the system includes a movable control cable adapted to connect a controlled member with an actuation member; the improvement comprising in having a housing adapted to be anchored with respect to said control cable, a first cable conduit surrounding said control cable having an end terminating in

said housing and adapted to extend from said housing towards said controlled member, a serrated portion on the end of said first cable conduit within said housing, a spring activated locking means within said housing adapted to engage and lock with said serrated portion to limit movement of said first cable conduit into said housing, a first spring means operatively positioned between said first cable conduit and said locking means to urge said locking means into locking engagement with said serrated portion, locking release means adapted to be operatively positioned between said actuation member and said locking means, second spring means operatively positioned between the end of said first cable conduit and said locking release means for urging said first cable conduit outwardly of said housing towards said controlled member whereby when said locking release means is moved by said actuation member against the force of said first and second springs, said locking means will unlock to allow the first cable conduit to move with respect to said housing under the influence of said second spring means to adjust its effective length with respect to said control cable.

4,344,519
AUTO-SAMPLER AND FEED CHUTE FOR AN ASPHALT PLANT

Donald L. Murray, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 11, 1980, Ser. No. 167,405
Int. Cl.³ B65G *65/32*
U.S. Cl. 193—2 R **7 Claims**



1. A sampler feed chute assembly for an asphalt plant having a mixing drum and an aggregate conveyor for supplying said mixing drum with aggregate, said assembly comprising:

a feed chute (12) for receiving the aggregate from the conveyor;

a discharge chute (41) having an inlet (56) operatively connected to said feed chute to communicate with the interior of said feed chute to direct the aggregate into said drum mixer; and said feed chute having a bottom wall (55) defining a sampler discharge opening (33);

a sampler chute (21) connected to said feed chute to enclose said sampler discharge opening and establish feed flow communication from the interior of said feed chute to said sampler chute to receive aggregate from said feed chute;

a selectively operable diverter means (23) within said feed chute operable to be moved to a first stationary position in which said diverter means closes said sampler discharge opening and directs the flow of aggregate to said discharge chute, and operable to be moved to a second stationary position in which said diverter means closes said discharge chute inlet (56) and diverts the aggregate to said sampler chute;

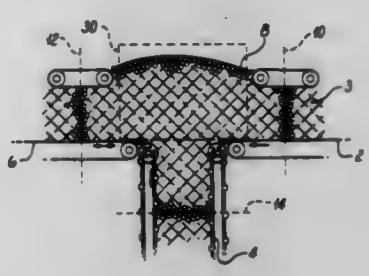
means for selectively moving said diverter means between said first and second stationary positions; and

whereby the aggregate flowing from said feed chute into the drum mixer may be selectively diverted to said sampler chute for obtaining a representative sample of the aggregate flowing through said feed chute.

4,344,520
MONITORING FLOW OF ROD-LIKE ARTICLES

Jerzy W. Czoch, and Douglas J. W. Seagrove, both of London, England, assignors to Molins Limited, London, England

Continuation of Ser. No. 872,872, Jan. 27, 1978, abandoned. This application Feb. 26, 1980, Ser. No. 124,802
Claims priority, application United Kingdom, Feb. 5, 1977, 4856/77
Int. Cl.³ B65G *1/04*
U.S. Cl. 198—347 **34 Claims**

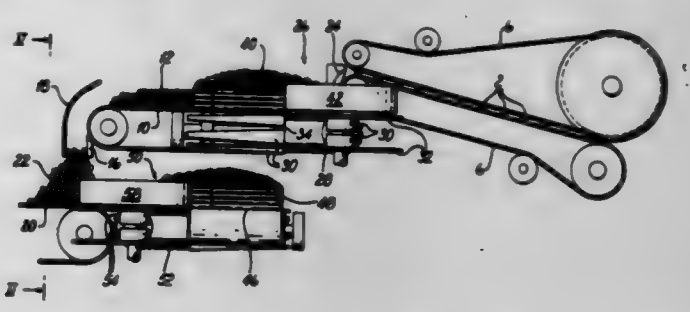


1. Apparatus for monitoring the flow conditions of cigarettes or similar rod-like articles moving as a multilayer stack in a conveyor stream, comprising sensor means arranged adjacent the ends of said articles for detecting the presence of those articles appearing along at least one line extending substantially over the height of the stack transverse to a direction of movement of said stack; electrical circuit means for repeatedly scanning said sensor means so as to produce an electrical signal representative of the articles appearing along said line; and processor means responsive to said electrical signal for producing an output signal indicative of the quantity of said articles which passes said sensor means per unit time.

4,344,521
APPARATUS FOR CONVEYING ROD-LIKE ARTICLES

David S. Bennett, and Grantley R. Heath, both of High Wycombe, England, assignors to Molins Limited, High Wycombe, England

Filed May 21, 1980, Ser. No. 151,984
Claims priority, application United Kingdom, May 22, 1979, 7917752
Int. Cl.³ B65G *15/00, 47/24, 47/12*
U.S. Cl. 198—404 **12 Claims**



1. Apparatus for conveying rod-like articles, comprising conveyor means for conveying first and second streams of rod-like articles in generally parallel directions transverse to the lengths of the articles, the articles in one stream having corresponding ends at one side of the stream relative to its direction of movement and the articles in the other stream having corresponding ends at the other side of the stream relative to its direction of movement, and transfer conveyor means for conveying articles from at least one stream to a position at which articles from both streams are formed into a

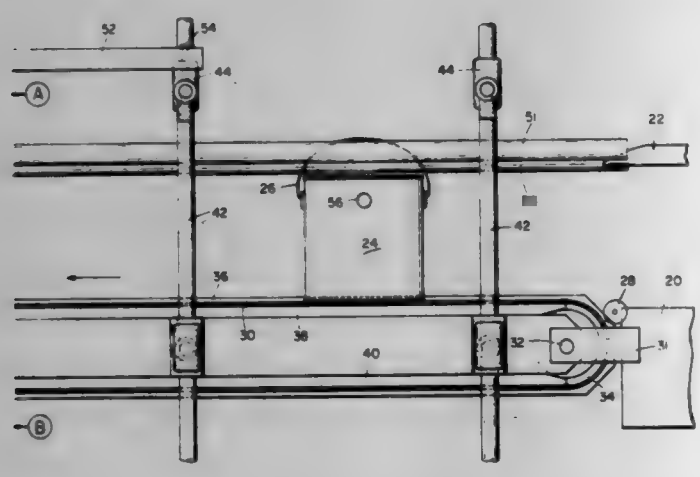
combined stream in which corresponding ends of the articles are all at the same side of the stream, the transfer conveyor means including two transfer conveyors arranged in sequence with a down-drop disposed therebetween to move articles in stack formation in a direction transverse to their lengths on two separate generally horizontal curved paths at different levels respectively in opposite directions about axes generally perpendicular to said directions and to articles on said paths.

4,344,522

APPARATUS FOR SENSING, ORIENTATING AND DELIVERING CANS TO SUBSEQUENT CONVEYOR

Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes, N.J. 07417

Filed May 27, 1980, Ser. No. 153,069
Int. Cl.[3] B65G *47/26*
U.S. Cl. 198—419 5 Claims



1. A bailed container merge apparatus and stop means adapted to receive bailed containers with the affixed bails carried in a substantially vertical manner, said merge apparatus and stop means including:

(a) means for advancing bailed containers from plural first conveyors and to merge these bailed containers into a single file array on a second conveyor whereat they are advanced;

(b) metering apparatus for receiving the single file array of advancing containers carried on said second conveyor and alternately feeding these bailed containers to and onto a pair of like third conveyors and with each of said third conveyors travelling at substantially like speeds;

(c) a timing circuit disposed to initiate a signal to a first pin, said first pin movable from a non-engaging condition to a condition where said first pin is moved so as to come in way of advancing bailed containers on an associated third conveyor, and means provided in and by said timing circuit to count and pass a determined number of bailed containers carried by said associated third conveyor and to move said first pin into impeding condition and position when a selected number of bailed containers have been passed and counted;

(d) a series of sensing means each adapted to be actuated by the presence of a bailed container at a selected position on said associated third conveyor and upstream of said first pin;

(e) circuit means adapted to "read" the presence of a bailed container at each of said sensing means and to evaluate the period of time in which the containers are in way of the associated sensing means, and after a selected duration of time an actuating signal is sent to a container stop means upstream of said second conveyor, the actuating signal causing the stop means to be actuated, and when the time duration is less than said selected duration the stop means is not actuated, and

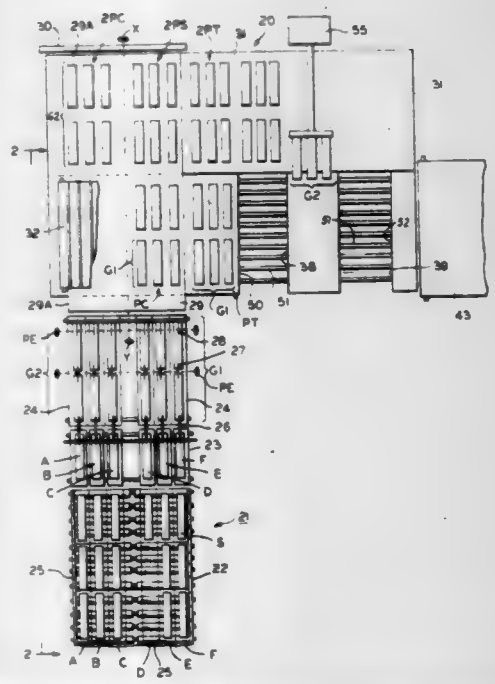
(f) a pair of second pins providing said container stop means, said pair of second pins arranged so that each is adapted to be brought in way of a lower rim of an advancing bailed container as said bailed container is advanced along said first conveyors while maintaining the attached bail in a substantially vertical attitude, this pair of second pins reciprocated from and in way of an advancing container and in response to the actuated signal from the circuit means.

4,344,523

APPARATUS FOR ACCUMULATING AND STACKING ARTICLES

Kenneth D. May, Buffalo Grove, and John T. Bell, St. Charles, both of Ill., assignors to Container Corporation of America, Chicago, Ill.

Filed Apr. 14, 1980, Ser. No. 139,853
Int. Cl.[3] B65G *47/26*
U.S. Cl. 198—424 3 Claims



1. A conveyor for stacking articles in tiers comprising:

(a) a conveying reach having spaced article conveying carriers movable therewith;

(b) each of said carriers having a front wall and a rear wall, the front wall being shorter than the rear wall;

(c) each of said walls having slots therein, the slots in the front wall being aligned with like slots in the rear wall;

(d) stationary ramp members extending into said slots and providing support and guidance for a group of articles to be arranged in stacks in said carriers;

(e) each ramp member having a holding surface for a group of articles while an adjacent group is moving along another surface for deposition of the articles into the carrier;

(f) other ramp members disposed in a position in the direction of movement of the conveying reach and having a holding surface for a second group of articles positioned to be engaged by the rear wall of a carrier and to be deposited upon the articles already placed in said carrier.

3. An apparatus for accumulating and stacking articles comprising:

infeed conveyor means having a plurality of lanes thereon for moving the articles in end-to-end relationship;

first sensing means for sensing the presence of articles in said plurality of lanes of said infeed conveyor means;

first endless conveyor means having a conveying reach disposed upon a support surface responsive to said first sensing means for receiving a portion of a group of said articles from said infeed conveyor means and for moving same in the end-to-end relationship to a first position on said first endless conveyor means;

second sensing means for sensing the presence of articles in said first position on said first endless conveyor means;

second endless conveyor means being responsive to said second sensing means and moving transversely to said

infeed and first endless conveyor means, said second endless conveyor means having article engaging flights for moving the group portion to a second position on said first endless conveyor means, said second endless conveyor means being indexed to move said groups of articles to successive positions on said support surface;

said infeed and first endless conveyor means moving the remaining portion of the group of said articles to a position on said first endless conveyor means adjacent to the group portion for subsequent movement by said second conveyor means to a position on said first endless conveyor means spaced from the position adjacent said group portion on said first endless conveyor means;

endless carrier conveyor means being operable in a timed relation with respect to said second conveyor means, said endless carrier conveyor means being disposed beneath said support surface for receiving said remaining group portion from a position on said support surface and for subsequently receiving the group portion of said articles from a position on said support surface so that said articles are placed in said endless carrier conveyor means and stacked in tiers;

separating means disposed on said support surface including first openings to receive the groups for placement on said endless carrier means as a lower tier of the stack and second openings to receive the remaining groups for placement on said endless carrier means as an upper tier of the stack; and

actuating means for moving the group portion into a position of alignment with said remaining group portion for subsequent movement into position of said second openings for placement on said endless carrier means.

4,344,524

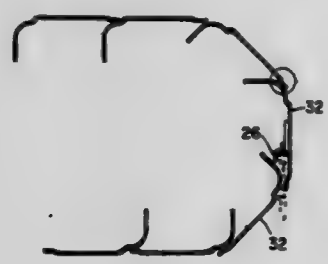
FINES REMOVAL IN HORIZONTAL COOLERS

Glenn H. Falck, and James R. Boose, both of Montgomery, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Aug. 21, 1980, Ser. No. 180,160

Int. Cl.³ B65G *17/32, 45/00*

U.S. Cl. 198—494 **20 Claims**



11. Apparatus for removing fines from a foraminous, endless conveyor having a load run, a return run, a discharge end and a turn-around end which collectively define the conveyor path and its interior and exterior periphery and in which said apparatus is adapted to remove fines that fall through said load run and accumulate on said return run, said apparatus comprising:

means to collect said fines on said return run and to convey said collected fines on said load run to the discharge end of the conveyor; and

means to permit passage of said collected fines through said conveyor at said discharge end.

4,344,525

SCRAPER DEVICE

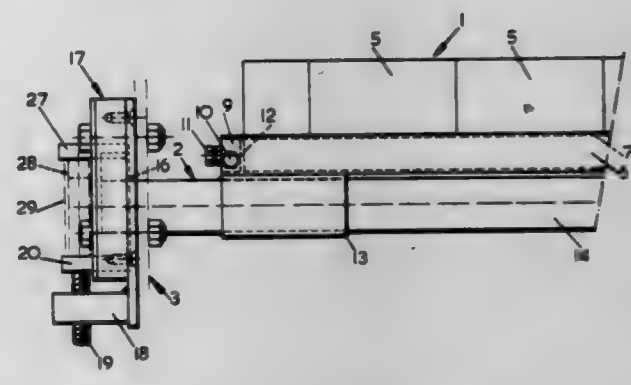
John Bancroft, Blackburn; John L. Greenhalgh, Accrington, and Ronald Smith, Oswaldtwistle, all of England, assignors to J. H. Fenner & Co. Ltd., Hull, England

Filed Aug. 13, 1980, Ser. No. 177,551

Claims priority, application United Kingdom, Aug. 15, 1979, 7928410

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—499 **14 Claims**



1. A scraper device for a conveyor belt, comprising: a support unit including an elongate bar, a scraper blade mounted on said bar, a framework comprising a pair of longitudinally spaced slide blocks apertured to rotatably receive ends of the elongate bar, means for resiliently loading said slide blocks, and a shear connection between the support unit and framework to resist relative rotation therebetween until excessive torque is applied to the scraper blade.

4,344,526

TOBACCO STREAM BUILDING CHANNEL FOR USE IN CIGARETTE ROD MAKING MACHINES OR THE LIKE

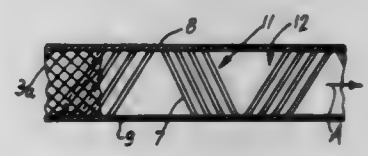
Guido Quarella, Escheburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 909,535, May 25, 1978, abandoned. This application Aug. 1, 1980, Ser. No. 174,539

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727572

Int. Cl.³ B65G *15/28*

U.S. Cl. 198—689 **7 Claims**



1. In a machine for producing a stream of tobacco or other particulate material, the combination of an elongated channel having two spaced-apart side walls and an air-permeable third wall between said side walls, said third wall having a first and a second side; a suction chamber adjacent to one side of said third wall; an endless foraminous belt having a stretch adjacent to the other side of said third wall; means for moving said belt lengthwise in a predetermined direction, said belt having filaments extending substantially at right angles to said direction; and means for feeding particulate material into said channel whereby the material is attracted to and transported by said stretch in said direction, said third wall comprising alternating first and second portions extending between said side walls and each including at least one elongated substantially rod-shaped member, said members extending between said side walls and each making an oblique angle with said predetermined direction and with said filaments, the inclination of members of each first portion being opposite to the inclination of members of each second portion and each of said members having a front

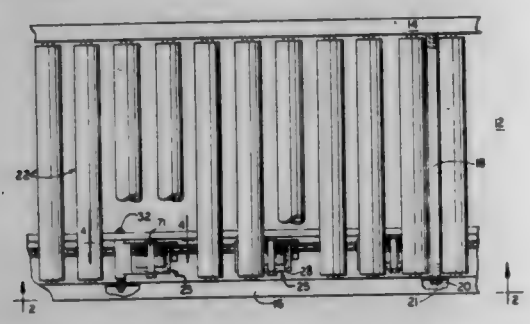
end and a rear end, as considered in said direction, the front and rear ends of each member of each first portion being respectively adjacent to one of said side walls and the opposite side wall, and the front and rear ends of each member of each second portion being respectively adjacent to said opposite side wall and said one side wall.

4,344,527

ROLLER CONVEYOR WITH FRICTION ROLL DRIVE

Robert K. Vogt, and Martin A. Heit, both of Cincinnati, Ohio, assignors to The E. W. Buschman Company, Cincinnati, Ohio

Continuation of Ser. No. 914,851, Jun. 12, 1978, which is a continuation-in-part of Ser. No. 710,442, Aug. 2, 1976, Pat. No. 4,108,303. This application Jul. 22, 1981, Ser. No. 284,760
The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.
Int. Cl.³ B65G *13/06*
U.S. Cl. 198—781 **2 Claims**



1. A live roller conveyor of the type including a frame, a plurality of rollers mounted in said frame, and drive means for at least some of said rollers, wherein said drive means comprises

a plurality of separate power transmission devices each including a supporting assembly having rotationally mounted therein a drive unit including a drive wheel and a driving sprocket therefor,

means mounting said assembly on said frame for movement between a retracted non-driving position and a position of driving relation between said drive wheel and at least one of said rollers,

a flexible drive chain including a driving run extending below and in driving engagement with all of said sprockets,

a chain retaining member forming a part of each said movably mounted assembly in underlying relation with the associated said sprocket for retaining said chain in driving engagement with said sprocket in both of said driving and retracted positions of said assembly, and

means forming a separable connection between each said chain retaining member and another part of the associated said assembly wherein said drive unit is supported to effect release of the associated said sprocket from said chain.

4,344,528

PROJECTILE LOCK ASSEMBLY

Ayyala Perisastry, Dover; Richard A. Vishe, and Peter J. Hoet, both of York, all of Pa., assignors to Harsco Corporation, Camp Hill, Pa.

Filed Oct. 23, 1980, Ser. No. 200,093
Int. Cl.³ F42B *37/00, 39/00*
U.S. Cl. 206—3 **20 Claims**

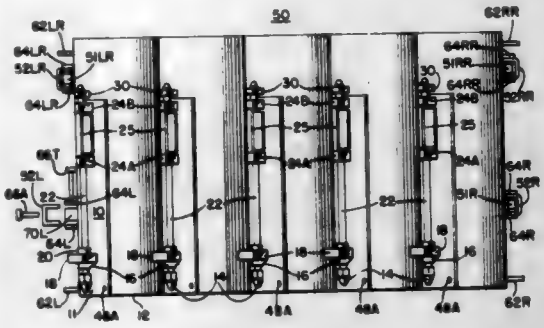
1. A locking assembly for securely holding an elongated article within an associated cylindrical tube comprising:

a cylindrical tube defining an interior space and an axial center line;

a control rod extending lengthwise parallel to the center line of said cylindrical tube and selectively rotatably disposable in a locked position and an unlocked position;

a shoe assembly including an engagement surface;

and a camming surface cooperating with said control rod and said shoe assembly; whereby rotation of said control rod to a locked position moves said engagement surface of said shoe assembly towards said interior space, said engagement surface thereby serving to clamp and frictionally secure one of said elongated articles whenever such article is disposed within said cylindrical tube.

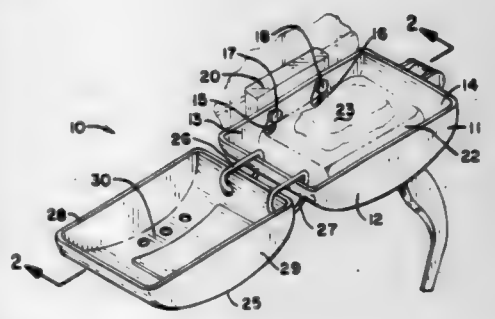


4,344,529

COMBINED SOAP HOLDER AND PRESS

Joe A. Ibarzabal, 15546 Chase St., #18, Sepulveda, Calif. 91343

Filed Jan. 19, 1981, Ser. No. 225,869
Int. Cl.³ A47K *5/08*
U.S. Cl. 206—77.1 **10 Claims**



1. A combined soap holder and soap press for use in saving soap pieces by reforming remnants with a new soap bar comprising the combination of:

a base dish for holding a soap bar and remnants;

a lid hingably coupled to one end of said base dish;

cam means operably carried on said base dish for bearing against said lid to forcibly urge said lid to compress said soap bar and remnants together into a unity soap cake; and

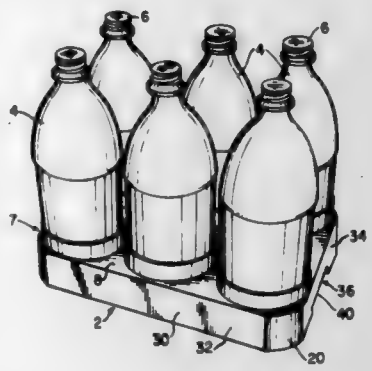
means carried on said end of said base dish hingably connected to said lid for supporting said lid in a side-by-side relationship with said base dish so as to serve as an additional holder when not in use as a soap press.

4,344,530

CASE FOR BEVERAGE BOTTLES

Pierre J. deLarosiere, Lisbon, Portugal, assignor to International Container Systems, Inc., Tampa, Fla.

Filed Sep. 17, 1980, Ser. No. 188,252
Int. Cl.³ B65D *75/00*
U.S. Cl. 206—203 **12 Claims**



1. A case for transporting bottles, the bottles having a longi-

tudinal symmetry axis and having a top closure for sealing the bottle and a base portion contoured to permit the bottle to stand on a flat surface, the base portion having a bottom which contacts the surface on which the bottle stands, the bottom being defined generally between an outer wall of the base portion of the bottle and an indentation in the base portion, the case being molded from a plastic material and comprising:

(a) an outer shell;

(b) a plurality of support elements connected to and generally disposed within the outer shell for reinforcing the shell, the outer shell and support elements being shaped to define a plurality of bottle pockets, a square lattice of vertex points being defined in fixed geometric relationship to the outer shell, the bottle pockets being located at vertex points of squares of the lattice, the outer shell being shaped relative to the lattice of vertex points to permit a plurality of such cases with bottles inserted in the bottle pockets to be arranged in a multilayered cross-stacked structure;

(c) bottle seating means associated with each of the bottle pockets for orienting and supporting bottles inserted into the pockets, each bottle seating means including:

(c.1) a bottle side-wall gripper connected to at least one of the outer case and the support elements, the gripper being configured to grip a radially outer wall of a base portion of a bottle inserted in the bottle pocket to position the bottle, and

(c.2) a bottle base support connected to at least one of the outer case and the support elements, the bottle base support being spaced apart along a pocket centerline from the bottle side-wall gripper, the bottle base support being positioned and configured to fit within the indentation in the base portion of a bottle inserted into the bottle pocket to support the bottle and, in cooperation with the bottle side-wall gripper, to orient the bottle so that the symmetry axis of the bottle substantially coincides with the pocket centerline; and

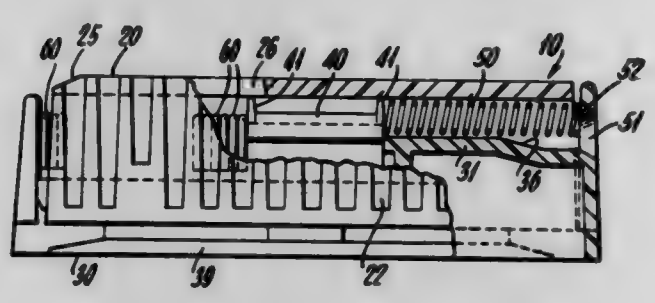
(d) stacking/cross-stacking case rests associated respectively with each of the bottle pockets, each case rest being connected to one of the outer shell and the support elements and located generally coaxially with respect to the pocket centerline spaced apart from the bottle base support in a direction opposing the corresponding bottle side-wall gripper, each case rest being configured to locate a closure of a bottle oriented generally coaxially with the pocket center line, so that cases of bottles can be stacked one on top of the other with the bottles of a lower case being positioned and oriented by the bottle seating means of the lower case to locate the closures of the bottles within the stacking/cross-stacking case rests of an upper case, weight of the upper case thereby being transmitted to closures of bottles in the lower case by way of case rests of the upper case.

4,344,531

HEMOSTATIC CLIP CARTRIDGE

Robert V. C. Giersch, Raleigh, N.C., assignor to Edward Weck & Company, Inc., Research Triangle Park, N.C.

Filed Sep. 8, 1980, Ser. No. 185,095
Int. Cl.³ B65D *83/00, 85/24, 85/62*
U.S. Cl. 206—339 **4 Claims**



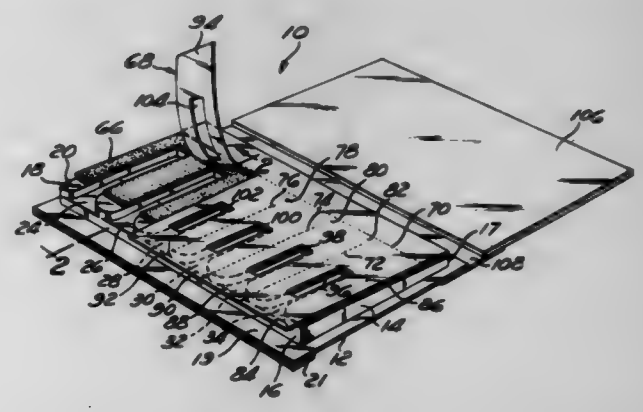
1. A clip cartridge adapted to contain hemostatic clips in serial arrangement comprising a cover, a base including a track connecting front and rear end walls of said base, said track shaped to accommodate said clips in serial arrangement thereon and permit said clips to be moved along said track toward the front end wall of said base, a slider shaped to fit on said track and adapted to move along said track, and means to bias said slider toward the front end wall of said base; said cover having an inside surface contoured to fit on said base and over said track to enclose said track for a major part of track length in a manner retaining said clips and said slider on said track while permitting said clips and said slider to move on said track, said cover being positioned on said base to provide a delivery station at an unenclosed portion of said track between outside surface of forward end of said cover and inside surface of front end wall of said base to permit removal of individual clips from said cartridge by a separate retrevial device.

4,344,532

SURGICAL BLADE REMOVER

John D. Eldridge, Jr., Balboa Island, and Milton W. Cohen, Orange, both of Calif., assignors to Instranetics, Inc., Tustin, Calif.

Filed Aug. 11, 1980, Ser. No. 177,123
Int. Cl.³ B65D *83/10*
U.S. Cl. 206—370 **19 Claims**



1. A device for removing a blade having an opening therethrough from a tang of a blade holder, said tang having an upraised projection which extends through said opening to mount said blade on said tang comprising:

a support surface for supporting a blade flat against said surface;

means defining an elongate channel open to said support surface and extending a substantial distance along said support surface, said channel being open at one end and having a width less than the width of said blade and more than the width of said tang, said channel being of sufficient depth to receive said tang with the end of said projection toward said channel open end disposed below said support surface while said blade is held flat against said support surface to permit said tang to be pressed down and pivoted away from said support surface and thereby released from said blade,; and

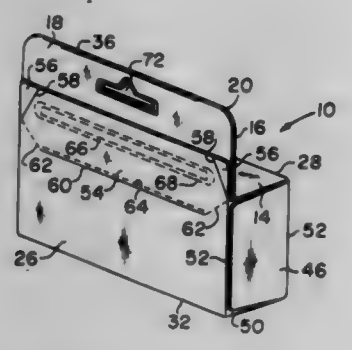
means for holding the blade against said support surface when the tang is placed in said channel and pulled longitudinally relative to the blade out the open end of the channel after the blade is released from the tang but remains flat on said support surface.

4,344,533

FIFTH PANEL RECLOSABLE PACKAGE

Peter R. Olsen, Suffern, N.Y., assignor to Grinnell Lithographic Co., Inc., Islip, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,537
Int. Cl.[3] B65D *5/54, 5/64*
U.S. Cl. 206—459 20 Claims



1. A package comprising connected front, bottom, rear and top panels and side flaps to form a closed compartment,

a fifth panel comprising front and rear members extending upward from said top and rear panels,

an instruction panel integral with one of said panels and extending downward into the interior of and contained within said closed compartment,

a removable strip connected with one of said panels to complete the closure of said compartment,

said removable strip being separable from said one of said panels to open said compartment and to expose to view said instruction panel,

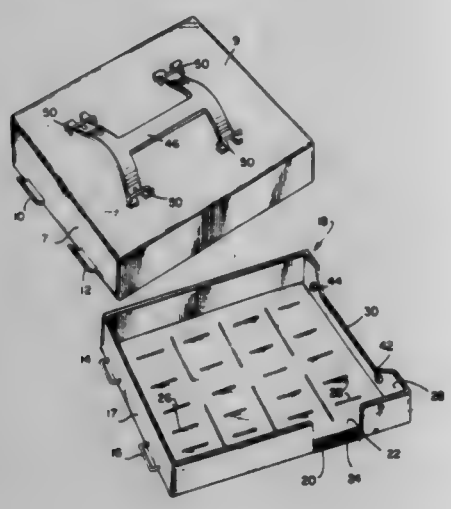
and said exposed instruction panel, when being exposed to view, obstructs access to said compartment to require the instructions on said instruction panel to be viewed before removing contents from said compartment.

4,344,534

PIZZA CARRIER

Bernard Sutton, Bldg. No. 10, Glenn Hollis Cir., Decatur, Ga. 30034

Filed Nov. 28, 1980, Ser. No. 211,466
Int. Cl.[3] B65D *11/10*
U.S. Cl. 206—545 3 Claims



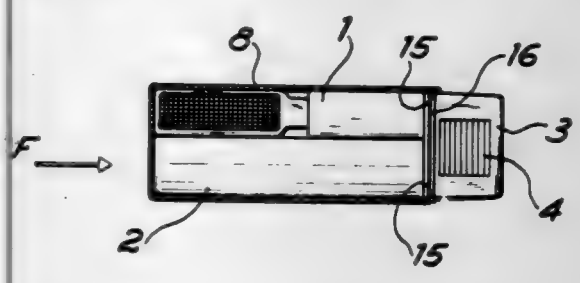
1. An insulated hot food carrier for hot pizza and other hot foods in a hot or warm state; comprising a tray having a front wall and a rear wall and side walls, an outer bottom wall and an inner bottom wall spaced from the outer bottom wall, a heat insulating substance interposed between said outer and inner bottom walls, a cover provided with insulating means for enclosing said tray, means for detachably securing said cover in intimate engagement with said tray and means for carrying said carrier detachably secured to said cover, said cover insulating means comprises a chamber formed by inner walls spaced from said outer walls and heat insulating materials in said chamber, said means for detachably securing said cover to said tray consists of a pair of leaf springs secured to one said tray consists of a pair of leaf springs secured to one side of said cover with one end, a pin secured to the free end of each of said leaf springs said pin normally extending through aligned holes in an outer side wall, adjacent inner walls of said chamber and said tray, said means for securing said cover to said tray further including a pair of hooks secured to the rear wall of said cover and engageable with extending from the rear wall of said tray.

4,344,535

POCKET ACCESSORY FOR ORAL HYGIENE

Ernesto Cagnazzi, Monza, Italy, assignor to Meka S.N.C. di P. Merati & C., Monza, Italy

Filed Jun. 19, 1980, Ser. No. 160,878
Claims priority, application Italy, Jun. 20, 1979, 21901/79[U]
Int. Cl.[3] B65D *69/00;* A44D *44/18;* A63H *27/00;* A46B *11/00*
U.S. Cl. 206—581 7 Claims



1. A pocket accessory for oral hygiene comprising, a case open at one end, a single support element slidable in said case, a pocket tooth-brush and a pocket dentrifice container each projecting from one end of said support, said support element, when said brush and container are introduced into said case, being adapted to constitute a closure element of said open end of said case, and said support element, when said brush and container are in the withdrawn position, being adapted to be inserted into said open end of said case, said case forming a handle of the accessory.

4,344,536

AIR CUSHION FOIL FOR PACKAGING PURPOSES

Dieter Oberhuber, 8000 Me,uml/u/ nchen 40, BRD, Stengelstrasse 1, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 150,036
Claims priority, application Fed. Rep. of Germany, May 21, 1979, 7914659[U]
Int. Cl.[3] B65D *81/14, 85/30*
U.S. Cl. 206—594 7 Claims

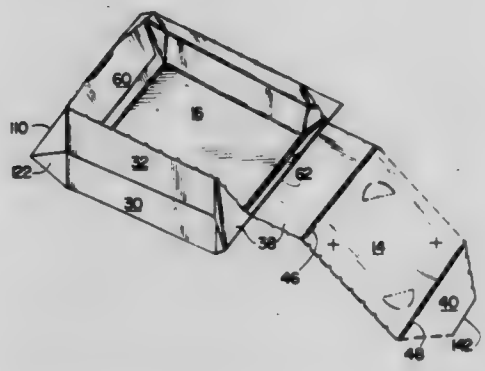


1. Air cushion foil, suitable for packaging purposes, comprising a first smooth foil of synthetic material and a second foil having pocket-like depressions; with said first and second foils being so connected with one another that the first foil closes the pocket-like depressions of the second foil; each said pocket-like depression comprises a pocket base, a pocket side wall and a curved transition region between the pocket base and the pocket side wall, each said pocket base and transition region having been subjected to a corona discharge pre-treatment to increase the microsurface area thereof; and an adhesive layer applied to said foil solely to said pre-treated pocket bases and transition regions whereby the entire adhesive layer is strongly adhered to said foil.

4,344,537
EXPANDABLE CARTON AND BLANK FOR FORMING SAME

John J. Austin, Elkhart, Ind., assignor to Champion International Corporation, Stamford, Conn.

Filed Feb. 27, 1980, Ser. No. 125,153
Int. Cl.³ B65D 17/20, 17/24
U.S. Cl. 206—611 11 Claims

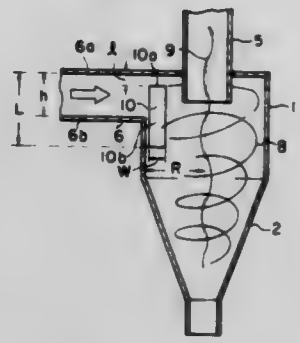


1. An expandable carton, comprising:
a top panel having first and second side edges and first and second end edges;
a bottom panel having first and second side edges and first and second end edges;
self-locking expandable means for coupling said first and second side edges and said first end edge of said top panel to said first and second side edges and said first end edge of bottom panel, respectively;
a bottom closure flap hingedly coupled to said bottom panel at said second end edge thereof along a fold line; and
a top closure flap hingedly coupled to said top panel at said second end edge thereof along a fold line.

4,344,538
CYCLONE SEPARATOR WITH INFLUENT GUIDE BLADE

Tetsuo Fujisawa, Kobe, and Takashi Tanioka, Osaka, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 22, 1981, Ser. No. 266,176
Claims priority, application Japan, Jun. 11, 1980, 55-82184[U]; Jul. 16, 1980, 55-98123
Int. Cl.³ B04C 5/04, 5/103
U.S. Cl. 209—144 4 Claims

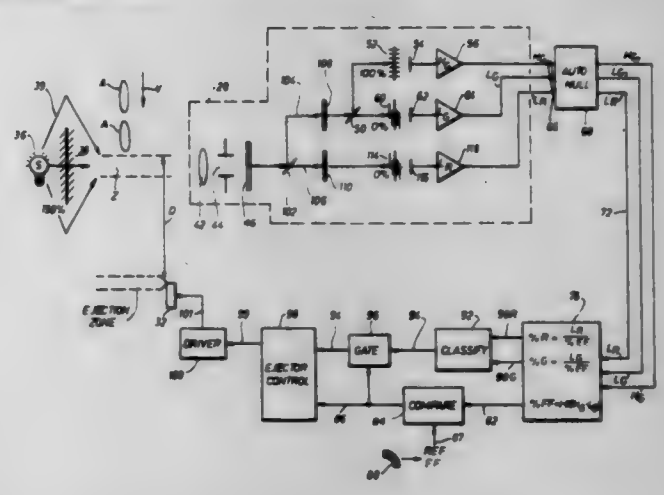


1. A cyclone separator for separating or collecting solid particles from a fluid, comprising:
a vertically disposed straight cylindrical portion having an inlet duct for introducing thereinto a fluid in a circumferential or tangential direction and receiving an exhaust duct through the top or ceiling wall thereof;
a separating portion of inverted conical shape formed contiguously below the straight cylindrical portion and having an outlet for separated particles at the converged bottom thereof; and
an influent guide blade projected into said straight cylindrical portion of said cyclone along an extension line of the inner side wall of said inlet duct and having a width of 0.1 to 0.5 in dimensional ratio to the radius of said straight cylindrical portion, the upper end of said influent guide blade being located at a position lower than the ceiling wall surface of said inlet duct by a distance of 0.05 to 0.5 in dimensional ratio to the height of said inlet duct.

4,344,539
UNIVERSAL SORTING APPARATUS

James F. Lockett, 7410 Tours, Houston, Tex. 77036

Filed May 5, 1978, Ser. No. 903,050
Int. Cl.³ B07C 5/342
U.S. Cl. 209—564 63 Claims



1. Apparatus for sorting articles comprising:
a viewer element adapted to view a viewed zone through which an article to be sorted passes;
an electrical signal generator arrangement associated with the viewer element and adapted to respond to light energy incident thereon to generate a first and a second electrical signal representation of the light energy reflected from the same portion of the article to be sorted as detected against a first and a second background respectively, the first background having a reflectivity characteristic greater than the reflectivity characteristic of the second background; and,
means for generating a third electrical signal functionally related to the difference between the signal representations of reflected light energy as detected against the first and second backgrounds, the third electrical signal being representative of the portion of the viewed area occupied by the article.

4,344,540
DISPLAY DEVICE

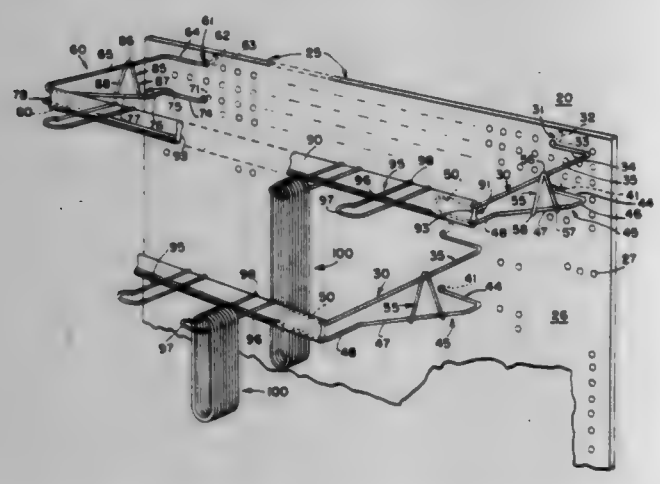
Howard J. Marschak, 865 W. North Ave., Chicago, Ill. 60622

Filed Jan. 5, 1981, Ser. No. 222,302
Int. Cl.³ A47F 5/01
U.S. Cl. 211—106 14 Claims

1. A display unit used with an apertured support for displaying a plurality of elongated objects, comprising a plurality of open-ended vertically spaced-apart sleeves each connected to the apertured support by two brackets, each of said brackets being a one-piece member having two engagement prongs for insertion into the apertured support to maintain said brackets thereon, each of said brackets when mounted on the support having a bracing portion thereof extending parallel to and proximate the apertured support and having a closed end portion parallel to said bracing portion and spaced therefrom and from the support, and a leg portion interconnecting said bracing portion and said closed end portion, each of said tubular sleeves being constructed and arranged to receive within said open ends thereof the closed end portion of facing brackets to be supported thereby and to position said sleeves for retaining and displaying a plurality of elongated objects.

10. A bracket for use with an apertured support, comprising a one-piece wire having two free ends thereof formed into

vertically spaced-apart engagement prongs for extending through apertures in the apertured support, the end of said bracket away from said prongs being a closed end constructed to support a sleeve thereon and lying in a plane parallel to the apertured support when said bracket is mounted thereon, the



closed end being connected to said engagement prongs by two legs respectively extending therebetween, each of said legs having a bracing portion thereof parallel to said closed end and proximate the apertured support when said bracket is mounted for use.

4,344,541

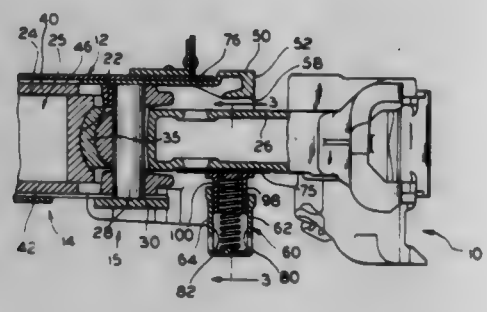
COUPLER CARRIER ARRANGEMENT FOR RAILROAD CARS

Osvaldo F. Chierici, Elmhurst, Ill., assignor to Holland Company, Aurora, Ill.

Continuation of Ser. No. 20,438, Mar. 14, 1979, abandoned, which is a continuation of Ser. No. 828,237, Aug. 26, 1977, abandoned. This application Aug. 4, 1980, Ser. No. 175,318

Int. Cl.³ B61G *7/10*

U.S. Cl. 213—61 **5 Claims**



1. In a railroad car wheeled for riding on track rails and having a car underframe including a center sill projecting from the car end and equipped with a coupler striker casting, a draft gear rigging including a draft gear applied within a draft gear pocket between stops spaced longitudinally of the car and within the center sill, and a yoke embracing the draft gear, said strikerr casting including a striker portion having a striking face disposed in a vertical plane and transversely of the car center line of draft and a window opening disposed transversely of and aligned with the car center line of draft, and a coupler having a coupler head disposed outside of the striker casting window and a shank extending through the striker casting window inwardly of the striker casting and operably connected to the yoke for transmitting buff and draft forces to the car, and having swinging movement sidewise of the car and limited movement longitudinally of the car under gravity as the car ascends and descends sloping track grades, and with a striker casting striker portion defining below said window thereof an upwardly opening socket forming the striker casting cage and defining spaced apart inner and outer upright walls extending generally parallel to said vertical plane, and a coupler carrier resiliently supported in said cage for limited vertical movement, on which the coupler shank rests, with said cage walls each defining a coupler carrier movement limiting wear surface for limiting movement of the coupler carrier longitudinally of the car when the coupler moves longitudinally of the car under gravity as the car ascends and descends sloping track grades,

the improvement wherein:

said coupler carrier comprises a body formed from polyethylene of dry self lubricating characteristics having a molecular weight in the range of from approximately 3,000,000 to approximately 9,000,000,

said body being shaped to define an upper platform portion defining a planar upwardly facing load support surface formed by said polyethylene across the top of same on which the coupler shank rests and which spans the width of the striker casting window,

said body further defining below said load support surface a forward side wall forming an outwardly facing slide surface formed by said polyethylene and opposing the cage outer upright wall movement limiting wear surface, and a rear side wall forming an inwardly facing slide surface formed by said polyethylene and opposing the cage inner upright wall movement limiting wear surface,

said body outwardly facing slide surface bearing against the cage outer upright wall movement limiting wear surface when gravity induces said coupler longitudinal movement outwardly of the striker casting window, and said body inwardly facing slide surface bearing against the cage inner upright wall movement limiting wear surface when gravity induces said coupler longitudinal movement inwardly of the striker casting window,

said body being characterized by having said slide surfaces thereof effecting during transit of the car resurfacing of the cage respective movement limiting wear surfaces they engage under gravity and under vertical vibrations of said body induced by vibration of the coupler shank as the car is moved along a track having a sloping grade, to have a wear free finish over the portions of same that are respectively engaged by the respective body slide surfaces, with said slide surfaces and said finishes tending to harden in use, whereby said cage movement limiting surfaces become effectively resistant to wear under said vertical vibrations of said body.

4,344,542

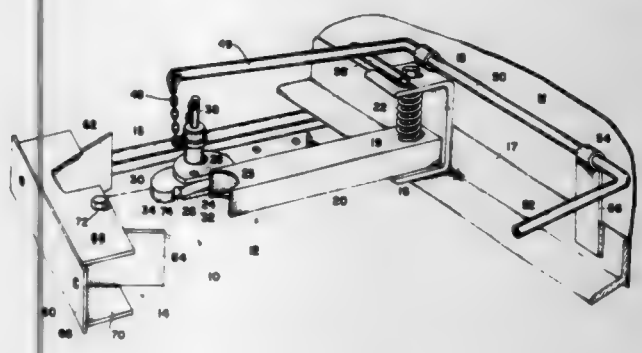
RAILWAY GANG CAR COUPLER

Pete L. Knight, 2036 Mustang La., Arcata, Calif. 95521

Filed Jul. 14, 1980, Ser. No. 168,510

Int. Cl.³ B61G *1/14, 5/00, 7/00*

U.S. Cl. 213—188 **3 Claims**



1. A coupling assembly for a pair of railway cars comprising:

a pair of base members adapted to be mounted on a trailing end of a pulling car and a forward end of a pulled car, respectively;

a tongue having an end is carried on one of said base members;

a receptacle is carried on the other of said base members;

said receptacle having an inwardly angled side wall and a transverse back wall;

an upright coupling pin extending across said receptacle from top to bottom;

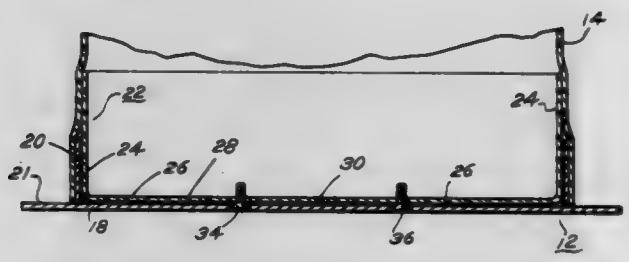
a cam member pivoted on the end of said tongue;
a hook-like recess on one side of said cam member of a size to nest around said lock pin;
a cam surface across a leading end and other side of said cam member adapted to engage said side and back walls to pivot said cam member around behind said coupling pin into engagement therewith;
a spring-biased lock pin carried on said tongue to ride on the top surface of said cam member adjacent the trailing edge thereof until one edge passes therebeneath;
a shaft rotatable on said one base member;
a release arm on one end of said shaft;
an operating lever on the other end of said shaft; and
a tension member secured between said release arm and said lock pin so that upward pivotal movement of said lever will lift said lock pin.

4,344,543

REINFORCED PLASTIC TANK

John J. Hoffman, South Bend, Ind., assignor to Jackel, Inc., South Bend, Ind.

Filed Jun. 19, 1980, Ser. No. 161,056
Int. Cl.[3] B65D *90/02*
U.S. Cl. 220—1 B 8 Claims



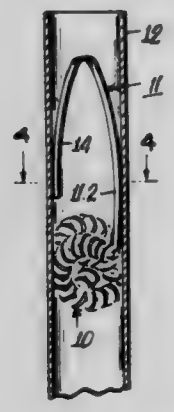
1. A reinforced plastic tank comprising a base plate composed of substantially rigid material and extending throughout the bottom of the tank, an annular flange attached to the upper surface of said plate and extending upwardly therefrom, a cup shaped member disposed within said flange, said cup shaped member having a bottom covering the portion of said plate within the area enclosed by said flange and a side wall extending past the upper edge of said flange, and a tank wall of fiberglass covering and seating on the exposed outer surfaces of said flange and the side wall of the cup shaped member, and extending from the upper surface of said plate past said cup side wall to the desired height of said tank.

4,344,544

FLUID PIPE GUARD DEVICE

Victor L. Austin, 9648 Cain Dr. NE., Warren, Ohio 44484

Filed Nov. 24, 1980, Ser. No. 209,745
Int. Cl.[3] B67C *3/00*
U.S. Cl. 220—86 AT 6 Claims



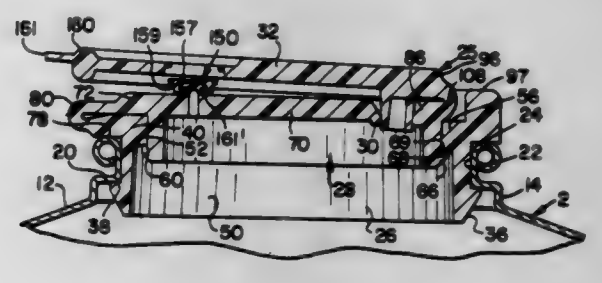
1. An antisiphoning device for the filler tube of a gasoline tank, comprising,
a normally-rectilinear, helically-coiled spring and a flexible tape having a head and a band portion extending from said head, said head having slot for passing said band portion,
said band portion being inserted into said spring at one end thereof and coming out of said spring in the space between convolutions of said spring at a place spaced some distance from said spring one end,
said tape being assembled with said spring in the manner specified and inserted through the opening into said filler tube and inwardly of the latter with said spring one end outermost,
whereby when a pulling force is applied to said band portion to pull the latter through the slot in said head while said spring one end is held against longitudinal movement, said band portion is foreshortened to cause portions of said spring to overlap and crisscross the interior of said filler tube and thereby form an obstruction to restrict the passage of a siphon tube and the like but permitting sufficient openings by reason of the convolutions of said spring to permit gasoline to flow past said obstruction.

4,344,545

PILFERPROOF CLOSURE WITH MECHANICAL INTERLOCK

Anton A. Aschberger, Downers Grove, and John Walter, Evergreen Park, both of Ill., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Apr. 13, 1981, Ser. No. 254,006
Int. Cl.[3] B65D *39/00*
U.S. Cl. 220—307 10 Claims



1. A closure for a container having a wall member with an aperture, said closure comprising a sleeve member having a seal-tight fit within said aperture and having a bore providing a pour opening, a flexible plastic plug having a seal-tight fit within said opening, a lift lever connected to said plug, a combination pour lip and fulcrum projecting from one of said members for fulcruming engagement by said lever and lifting the plug out of the pour opening, a tearable anti-pilfer means on said lever, and limited-movement-permitting means connecting said anti-pilfer means to said plug, said anti-pilfer means being torn away from said lever upon lifting of said lift lever beyond the permitted limited movement.

4,344,546

REUSABLE TIGHT HEAD DRUM BY CONVERSION TO OPEN HEAD DRUM

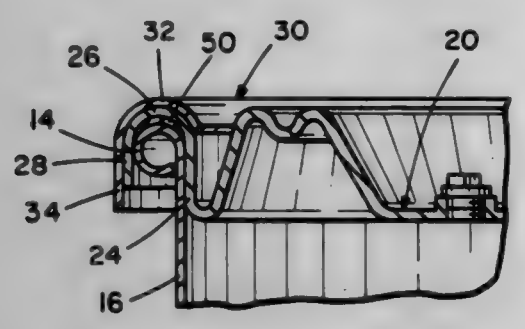
Sidney Dry, Chicago, Ill., assignor to Natico, Inc., Chicago, Ill.

Filed Mar. 31, 1981, Ser. No. 249,694
Int. Cl.[3] B65D *45/32*
U.S. Cl. 220—320 16 Claims

1. A tight head drum embodying features for convertability for reuse as an open head drum comprising
a drum having an outwardly extending curl at its upper end,
a top head dimensioned to span the open upper end of the drum,
an annular looped portion extending curvilinearly outwardly from the edge of the top head having an interior curvature corresponding to the curvature of the curl for enabling the curl to rest within the looped portion,
an annular skirt extending downwardly from the outer edge of the looped portion and spaced in substantially parallel

relation to the outer wall of the drum and for a distance to extend to a level below the curl,

and a banding member having an upper curvilinear portion



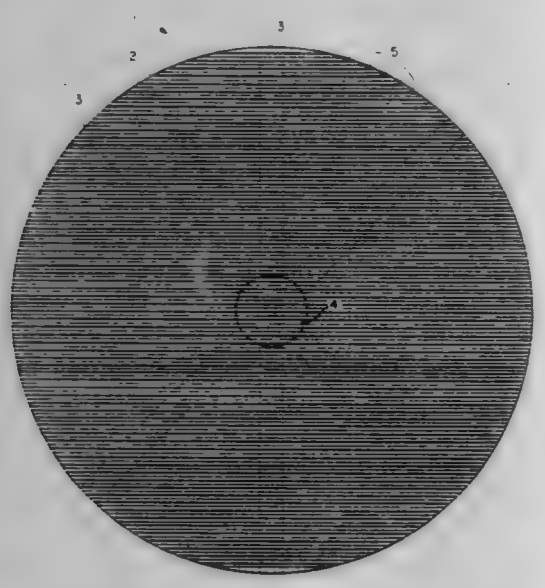
shaped to receive the looped portion in nesting relation and a leg portion extending downwardly from the outer edge of the curvilinear portion dimensioned to have a length greater than the length of the skirt of the top head.

4,344,547

INTEGRAL HEATER FOLLOWER PLATE

Leo M. Moore, Box 103, Rte., 4, Ashland, Va. 23005

Filed Feb. 27, 1980, Ser. No. 125,119
Int. Cl.³ B67D *5/62*
U.S. Cl. 222—146 HE **6 Claims**



1. An integrally fabricated heater follower plate for use with hot melt dispensing apparatus, comprising:

a biscuit of heat conducting material shaped to fit inside a container of hot melt material;

a plurality of fins machined out of the bottom surface of said biscuit of heat conducting material;

a single vertical hole cut from the top surface of said biscuit of heat conducting material down toward said bottom surface into communication with the spaces between said plurality of fins;

heating means in intimate heat contact relationship with said biscuit of heat conducting material; and,

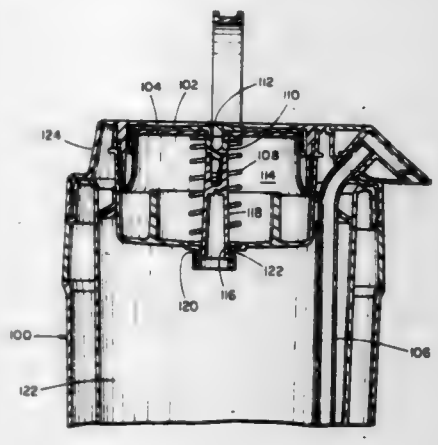
a plurality of spaced apart horizontal holes cut from the edge surface of said biscuit through said fins into communication with said single vertical hole.

4,344,548

PUMP DISPENSERS FOR CONTAINERS

Albert A. Frazier, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Continuation of Ser. No. 973,752, Dec. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 901,297, May 1, 1978, abandoned. This application Sep. 26, 1980, Ser. No. 191,325
Int. Cl.³ F04B *43/02;* B65D *47/34;* B67D *5/42, 5/54*
U.S. Cl. 222—209 **4 Claims**



1. A pump dispenser suitable for attachment to the pouring opening of a hot or cold liquid container to dispense liquids from the container interior comprising:

(a) an air chamber,

(b) means for pumping air from said chamber through an opening therein into the container interior, said pumping means including a diaphragm and means for displacing said diaphragm,

(c) valve means positioned in liquid sealing relation over said opening and operatively connected to said displacing means for displacement away from said opening only during pumping of air from said chamber into said container whereby said chamber is normally sealed against the entry of liquid from said container through said opening wherein said valve means includes:

a valve stem disposed within said air chamber, one end thereof connected to said displacing means,

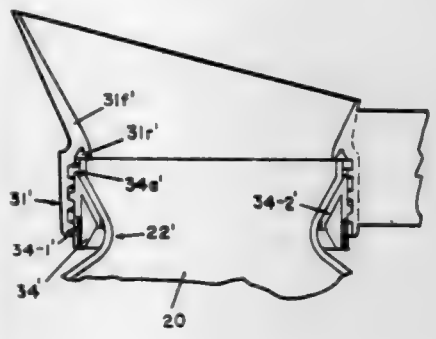
a removable valve assembly which is adapted to be selectively extended through said opening into said air chamber to permit said assembly to be secured to the other end of said valve stem, said assembly when secured, except during pumping, being positioned in sealing relation over said opening, but when said assembly is not secured to said valve stem a venting path through said air chamber is provided to permit the storing of hot liquids.

4,344,549

CLOSE FITTINGS FOR FRANGIBLE OBJECTS

Joseph R. Paradis, Holden, and Edward W. Kaleskas, Jefferson, both of Mass., assignors to Nypro Inc., Clinton, Mass.

Filed May 27, 1980, Ser. No. 153,756
Int. Cl.³ A47G *19/14*
U.S. Cl. 222—465 A **18 Claims**



1. A fitting for a frangible object having an inclined neck

having an outer rim extending directly from said object, comprising:

a collar for the neck of said object, said collar having interior screw threads;

a split-ring member engageable with said collar and threadable thereinto, said split ring member having a tapered inner wall which is complementary to said inclined neck;

and a gasket between said collar and said rim of said neck of said object which is drawn tightly against said neck by the threading of said member into said collar;

thereby to provide a close fitting for said frangible object with reduced danger of breakage.

4,344,550

SELF-ADJUSTING ARRANGEMENT FOR REFRACTORY PLATES OF SLIDE GATE MECHANISM

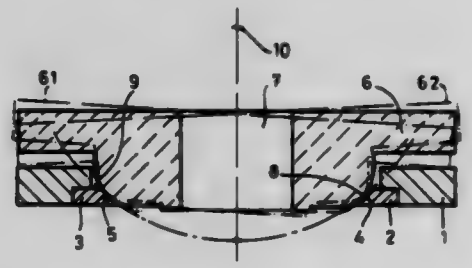
Stanislav Szadkowski, Brussels, Belgium, assignor to Vesuvius International Corporation, Wilmington, Del.

Filed Jul. 7, 1980, Ser. No. 166,203

Claims priority, application United Kingdom, Jul. 17, 1979, 7924902

Int. Cl.³ B22D *41/08*

U.S. Cl. 222—600 **10 Claims**



1. An arrangement for supporting a refractory plate in a supporting frame of a slide gate of a pouring vessel, comprising: a seat defined on said supporting frame having at least two sliding bearing surfaces, and two corresponding sliding bearing surfaces defined on said refractory plate to form two pairs of sliding surfaces between the supporting frame and the refractory plate, at least one sliding surface of each pair having a curved shape to allow the refractory plate to freely oscillate with respect to the supporting frame.

4,344,551

TRANSPORTABLE APPARATUS FOR CUTTING AND DISPENSING ROLL MATERIAL

Michael J. Albin, Miami, Fla., assignor to Equipment Company of America, Hialeah, Fla.

Filed Jun. 19, 1980, Ser. No. 161,105

Int. Cl.³ B26F *3/02*; B26D *1/02*

U.S. Cl. 225—86 **10 Claims**

1. An apparatus for cutting and dispensing sheet material from a roll of sheet material comprising:

a rectangular base frame;

front and rear upright standards mounted on the front and rear ends of said base frame, respectively, in a longitudinally aligned manner;

a cutting and dispensing table assembly extending longitudinally between the upper ends of said front and rear upright standards;

means associated with each said standard to receive and support opposite ends of a sheet roll axle shaft such that said axle shaft is longitudinally disposed intermediate said base frame and said table assembly;

said table assembly including a table having an upper bearing surface including a longitudinally extending feed edge over which a length of sheet material is drawn from a roll supported on said axle shaft;

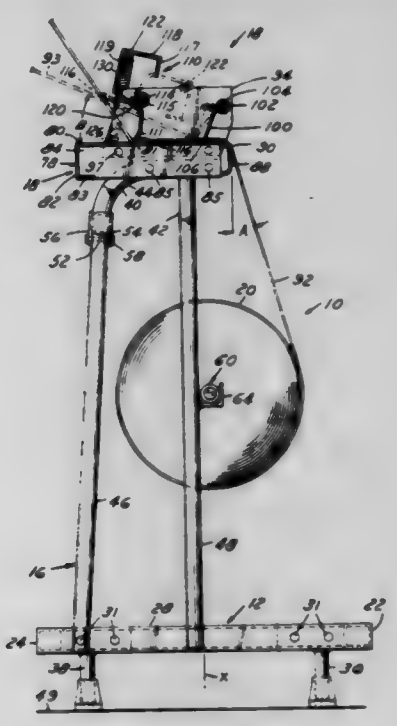
said table having front and rear support means adjacent each end thereof;

said upright standards being mounted asymmetrically on said base frame entirely on one side of a given vertical plane which includes the longitudinal center line of said base frame, and wherein said receiving and support means being operative to dispose said shaft axle on the inboard side of said front and rear standards substantially on the longitudinal center line of said base frame;

pivotal sheet retaining brake means extending longitudinally between said front and rear support means adjacent said one feed edge operative for rotational gravity biased movement in a first retaining direction toward said one feed edge into an engaged position with said bearing surface with the sheet material from a roll supported on said axle shaft retained therebetween, and said brake means operative for rotational movement in a second sheet material dispensing direction away from said bearing surface one feed edge;

said retaining brake means being in the form of a retaining plate extending longitudinally between said front and rear support means and mounted thereto by pivotal means aligned along its one longitudinal side, said retaining plate including a retaining edge at it other longitudinal side which is operative for rotational movement in said first direction into engagement with said bearing surface;

pivotal sheet cutting blade means extending longitudinally between said front and rear support means operative for



resiliently biased, snap-action, rotational movement in either said first or second direction to first cutting and second dispensing overcenter positions;

said blade means first overcenter cutting position resulting in engagement by said blade means with said bearing surface intermediate the bearing surface other longitudinally extending edge and said brake means;

said blade means second overcenter dispensing position locating said blade means a predetermined distance above said bearing surface;

the arrangement characterized in that with said blade means in said second overcenter dispensing position the sheet material, upon being lifted upwardly from said bearing surface operative for releasing said brake means by rotating same in said second dispensing direction allowing a desired length of sheet material to be drawn over said one feed edge onto said bearing surface, with the sheet material being retained thereon by said brake means returning to its engaged position, whereby with said blade means returned to said cutting position, and the desired length of sheet material cut thereby from the roll the cut end is retained by said brake means in a readily accessible manner for the next desired length to be dispensed and cut;

said cutting blade means being in the form of plate means

extending longitudinally between said end support means and mounted thereto by pivotal means aligned along an intermediate portion of said plate means, said plate means having a cutting blade portion including a cutting edge at its one longitudinal side for rotational movement in said first or second directions;

said plate means having an overcenter plate portion positioned radially outwardly from its pivotal means in substantially 180° opposed relation to said cutting blade portion, and spring means interconnected between said table and said overcenter plate portion providing said snap-action rotational movement to said first cutting and second dispensing overcenter positions.

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INDEPENDENT DRIVE FOR A ROLLER CAVITY SUCTION APPARATUS

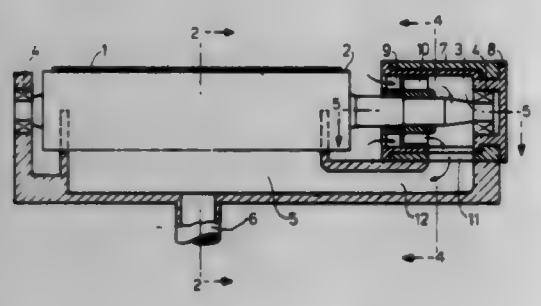
Hans Gref, Cologne, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 141,136

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915804

Int. Cl.³ B65H *17/28, 23/22*

U.S. Cl. 226—95 **3 Claims**



1. A device for driving rollers of roller cavity suction apparatus for conveying or braking material webs of, for example, photographic film webs or paper webs, wherein the web lies on at least two rollers with a front side in contact with the rollers and a pressure difference exists in the region of the rollers between the front and the reverse side of the web, characterized in that motors are provided for driving at least one of the rollers, the power output of the motors is brought about by the pressure drop between the front and reverse side of the web.

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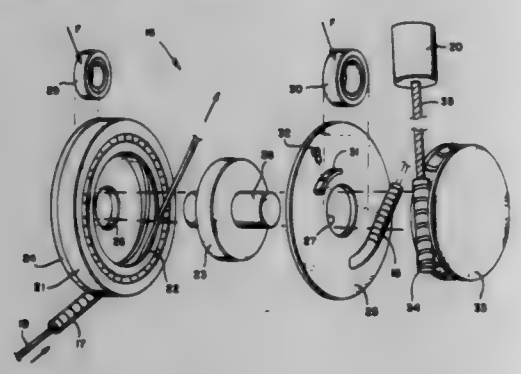
WELDING WIRE FEED DEVICE

Howard D. Lesher, Woodland Hills, and James T. Taff, Simi Valley, both of Calif., assignors to Dimetrics, Inc., Diamond Springs, Calif.

Filed Feb. 17, 1981, Ser. No. 234,614

Int. Cl.³ B65H *51/02*

U.S. Cl. 226—168 **7 Claims**



1. A welding wire feed device including, in combination:

(a) a ball bearing having an inside rotatable race; and

(b) side plates defining an entrance guide and an exit guide respectively tangential to said race at opposite side points spaced circumferentially as measured about the inside of the race

whereby a welding wire passing through said entrance guide and about the inside of the race and out said exit guide will have a bend formed therein as the wire is urged through the inside race, the inside race turning with movement of the wire so that friction is minimized.

4,344,554

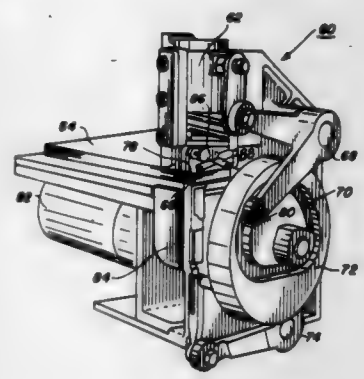
STAPLING APPARATUS

Thomas R. Cross, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 2, 1978, Ser. No. 948,060

Int. Cl.³ B27F *7/17*

U.S. Cl. 227—30 **5 Claims**



1. An apparatus for stapling a plurality of articles to one another, including:

means for clamping the articles together;

means for driving a staple through the clamped articles;

means for clinching the portion of the staple legs protruding through the articles;

a common member; and

means for coupling said common member to said clamping means, said driving means and said clinching means to enable said common member to activate sequentially said clamping means, said driving means, and said clinching means.

4,344,555

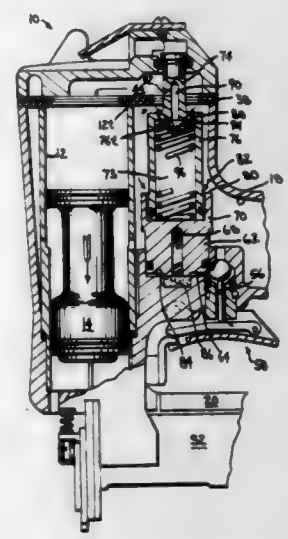
SELF-CYCLING PNEUMATIC FASTENER APPLYING TOOL

Robert Wolfberg, Skokie, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Feb. 19, 1980, Ser. No. 122,526

Int. Cl.³ B25C *5/13*

U.S. Cl. 227—130 **7 Claims**



1. In a fastener applying device having a housing joined to a supply of fluid under pressure and including a working cylin-

der having a fastener driver means reciprocable therein in a cycle including one working and one return stroke, a first means for biasing said fastener driver means to the end of said return stroke, a means for feeding a fastener into position to be driven after each return stroke of said fastener driver means, a main valve means for controlling the flow of said fluid under pressure into said working cylinder above said fastener driver means and, an exhaust valve means for venting to atmosphere that portion of said working cylinder above said fastener driver means, an improved control structure comprising:

(a) a control cylinder having one end closed and one end opened to said supply of fluid pressure in said housing;

(b) a control piston movable within said control cylinder from a first position to a second position effective to open said main valve means and to close said exhaust means, said control piston being integral to said main valve means, said control piston and the closed end of said control cylinder defining a control chamber, the first side of said control piston being defined as that side of said control piston continuously exposed to the air pressure in said housing, said housing pressure thus biasing said control piston to said second position;

(c) a first flow means in said control piston for effecting flow communication between said control chamber and said supply of fluid under pressure;

(d) a second flow means in said control piston for effecting flow communication between said control chamber and the atmosphere;

(e) means responsive to the pressure above said fastener driver means for sequentially closing said second flow means and opening said first flow means, and closing said first flow means and opening said second flow means to the effect that said control piston is cycled between said first and said second positions with said fastener driver means being cycled through said working and return strokes in response thereto.

4,344,556

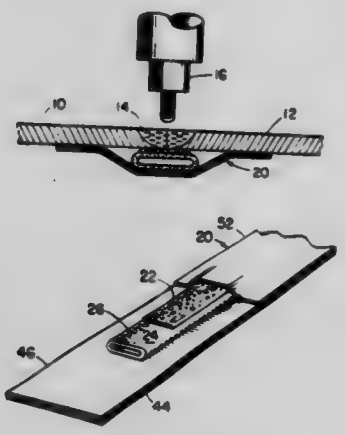
WELDING BACKUP TAPE AND ITS METHOD OF MANUFACTURE

Donald K. Knapp, 16802 SE. 28th St., Bellevue, Wash. 98008

Continuation of Ser. No. 43,311, May 29, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,834

Int. Cl.³ B23K *5/22, 9/02;* C09J *7/02*

U.S. Cl. 228—50 **8 Claims**



1. A welding backup tape, comprising:

(a) a heat treated, braided, substantially finely woven fiberglass material of sleeve like cross section having a high temperature fired on refractory coating on its upper portion, freed of all matter which would otherwise later cause outgasing, which is derived from mixing solutions of two parts of colloidal silica solution and one part of a titanium dioxide refractory coating;

(b) a silicone adhesive coated fiberglass carrier tape positioned below and centered against the lower portion of the refractory coated fiberglass material; and

(c) a thin polyethylene film release material ranging in thickness from 3 to 6 mils pressed down over the coated fiberglass material and into adhesive contact with the said fiberglass carrier tape.

3. A method of manufacturing a welding backup tape, comprising:

(a) mixing into solution a colloidal silica solution with a titanium dioxide refractory coating solution;

(b) applying this resulting solution as a coating to the upper portion of a heat treated, braided, finely woven fiberglass material;

(c) heating this coated fiberglass material at a sufficiently high temperature to activate its binding capability, to burn off all its organic matter from both the fiberglass material and coating, and to remove all water;

(d) bringing together from respective supply sources, this coated fiberglass material, a silicone adhesive coated fiberglass carrier tape, and a release material;

(e) pressing the fiberglass material, coated side up, down upon the center of the carrier tape, adhesive side up; and

(f) pressing the release material down on both the coated fiberglass material and the carrier tape, to affix itself to the exposed adhesive of the carrier tape at either side of the affixed fiberglass material.

4,344,557

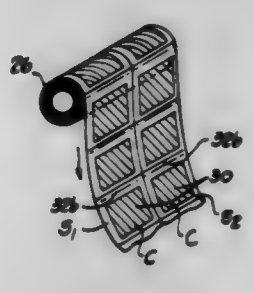
DETACHABLY CONNECTED CONTAINER STRIPS

Bernard Lerner, Hudson, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Division of Ser. No. 897,752, Apr. 17, 1978, abandoned, which is a continuation of Ser. No. 749,234, Dec. 10, 1976, abandoned, which is a division of Ser. No. 612,462, Sep. 11, 1975, Pat. No. 4,041,845. This application Jun. 18, 1980, Ser. No. 160,656

Int. Cl.³ B65D *30/00*

U.S. Cl. 229—53 **11 Claims**



1. A strip of flexible thermoplastic film material for use in packaging articles comprising:

(a) a first elongated strip portion defined by first and second confronting film plies having attached longitudinally extending side edges;

(b) said plies defining a series of longitudinally spaced apart transversely extending lines of ply weakness rendering said plies separable to provide longitudinally spaced separable contents receiving zones between said lines, one of said plies defining a contents receiving opening in each said zone, said contents receiving opening extending transversely of said strip portion;

(c) a second elongated strip portion defined by first and second confronting film plies having attached longitudinally extending side edges;

(d) said film plies of said second strip portion defining a series of longitudinally spaced apart transversely extending lines of ply weakness rendering said plies of said second strip portion separable to provide longitudinally spaced apart contents receiving zones between said lines, a film ply of said second strip portion defining a contents receiving opening in each of said zones extending transversely of said second strip portion;

(e) said first and second strip portions coextending with each other, with each of said lines of weakness, contents receiving opening and contents receiving zones of one strip portion registered with a respective line of weakness,

contents receiving opening and contents receiving zone of the other strip;

(f) a longitudinal edge portion of one strip portion adjoining a longitudinal edge portion of said other strip portion;

(g) said adjoining edge portions defined by longitudinally extending heat seal beads between the respective first and second plies of said strip portions; and,

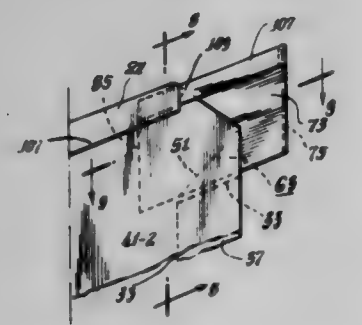
(h) bridge structure detachably connecting said beads together along said strip portions, said bridge structure defined by material integral with said beads and having a thickness substantially less than the thickness of said beads whereby said adjoining strip edge portions are readily separable by breaking said bridge structure.

4,344,558

PINCH BOTTOM VALVE BAG

Donald O. Newton, Pensacola, and Fred B. Wilharm, Cantonment, both of Fla., assignors to St. Regis Paper Company, New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,171
Int. Cl.³ B65D *30/24*
U.S. Cl. 229—62.5 **4 Claims**



1. A gusseted stepped end pinch bottom valve bag having a multi-ply tubular body, said bag comprising:

an inner ply of flexible sheet material and an outer ply of flexible sheet material;

a front wall formed from said plies and having a terminal edge;

a rear wall formed from said plies and having a terminal edge at which said inner and outer plies are in stepped relation to one another;

a pair of first gusset panels formed from said plies and foldably connected to said front wall along a first pair of longitudinal fold lines;

a pair of second gusset panels formed from said plies and foldably connected to said first panels along a second pair of longitudinal fold lines and to said rear wall along a third pair of longitudinal fold lines;

a valve opening formed from an infolded portion of said bag at a corner thereof adjacent said terminal edges, said infolded portion including portions of the inner and outer plies of said front and rear walls;

a valve sleeve sandwiched within said infolded portion, said valve sleeve comprising front and rear rectangular panels, said rear panel being adjacent an infolded portion of the outer ply of said rear wall and said front panel being adjacent an infolded portion of the outer ply of said front wall, said rear panel having a lip portion extending beyond an edge of said front panel and the adjacent terminal edge of said front wall, said lip portion being folded over said front panel and front wall edges and secured to said front panel and front wall by adhesive means;

said stepped terminal edge of said rear wall extending beyond the terminal edge of said front wall and being, folded-over said lip portion and said front wall and secured to said front wall by adhesive means; and

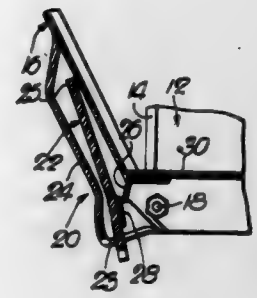
a slit in the outer ply of said rear wall, said slit separating the infolded portion of said rear wall outer ply, which is part of said valve opening, from the portion of said rear wall outer ply which is part of the folded-over rear wall terminal edge.

4,344,559

SIGNAL DEVICES FOR RURAL MAILBOXES

Ernest G. Widham, 145 Great Neck Rd., Waterford, Conn. 06385

Filed Oct. 6, 1980, Ser. No. 194,138
Int. Cl.³ B65B *91/00*
U.S. Cl. 232—35 **4 Claims**



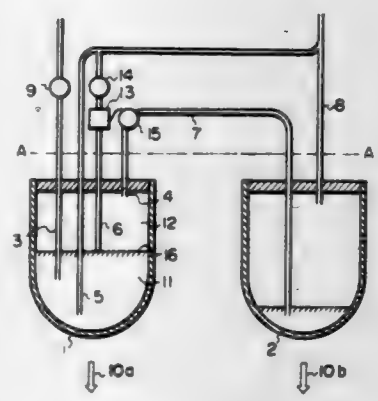
1. In a mailbox, the combination with a box having a bottom and front end; a gate hinged at its bottom to the bottom of the box and provided with a longitudinal casing having a bottom with an aperture and opposite shoulders; a longitudinal signal flag having opposite side ears at the top and being received in said casing with lateral play and for longitudinal movement into raised and lowered positions, with said flag in its raised position being retracted in said casing, and in said lowered position being with its ears suspended from said shoulders and gravitating through said aperture; a pair of ferromagnetic strips of which at least a certain strip is a permenant magnet, with said strips being carried by said flag and by the bottom of said box at said front end, respectively, and so coordinated that the strip on the box extends in an upright plane and is in substantial planar magnetic engagement with the other strip on said flag in said raised position, and said strip on the box is further spaced forwardly and upwardly from the hinge axis of the gate so that on opening the latter the strip on the flag will turn on the other strip as a fulcrum and thus gradually weaken and finally break the magnetic bond between them for release of the flag for its gravitational drop to its lowered position.

4,344,560

CONTAINER, APPARATUS AND METHOD FOR SEPARATING PLATELETS

Norio Iriguchi, Fuji; Hiroshi Unno, Shizuoka, and Nobuaki Tsuda, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 20, 1980, Ser. No. 198,741
Claims priority, application Japan, Nov. 2, 1979, 54-141190; Sep. 10, 1980, 55-124674
Int. Cl.³ B04B *11/02, 3/00*
U.S. Cl. 233—19 A **10 Claims**



1. A container for continuously separating platelets component in blood, comprising: a first closed chamber and a second closed chamber adaptable to be rotated around a rotation axis, means for continuously introducing whole blood into said first chamber, means defining a first outlet port opened to said first

chamber at a relatively short distance from said rotation axis for discharging platelet-rich plasma being obtained as supernatant in said first chamber, means defining a second outlet port opened to said first chamber at a relatively long distance from said rotation axis for discharging precipitation in said first chamber, means for monitoring the consistency of the blood in said first chamber, said monitoring means containing a sensor means, with one end of the monitoring means being at a predetermined position which differs from the opened position of said first outlet port and which predetermined position is located between a position "60" and a position "95", assuming an equal divisional scale of 100 provided between the opened position of said first outlet port means, which is the position "100", and the opened position of said second outlet port means, which is the position "0", with respect to the distance from said rotation axis, means for connecting said first outlet port means with said second chamber, and means defining a third outlet port opened to said second chamber for discharging supernatant in said second chamber, whereby platelets component in blood are obtained as precipitation in said second chamber upon rotation of the second chamber around the rotation axis.

4,344,561

CENTRIFUGAL TYPE OIL FILTER FOR AN ENGINE

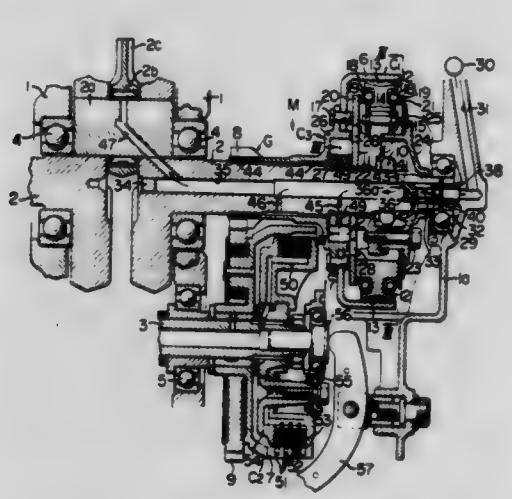
Yoshitoku Iizuka, Urawa, and Kiyokazu Ohkubo, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1980, Ser. No. 177,376

Claims priority, application Japan, Aug. 15, 1979, 54-112219[U]; Aug. 17, 1979, 54-113215[U]; Aug. 21, 1979, 54-115113[U]; Aug. 24, 1979, 54-116604[U]

Int. Cl.³ B04B *9/08*

U.S. Cl. 233—24 **16 Claims**



1. In combination with an engine transmission system comprising a crank shaft of the engine having an oil passage axially formed therein; a first clutch having a driving plate concentrically mounted on the crank shaft for rotation therewith; and transmission means operatively associated with said first clutch to transfer power from said crank shaft to wheels of a vehicle; a centrifugal type oil filter comprising a filter cap concentrically secured to one side of said driving plate interiorly defining therewith an annular centrifugal separating chamber in communication with said oil passage.

4,344,562

CENTRIFUGE CELL COLLECTOR APPARATUS

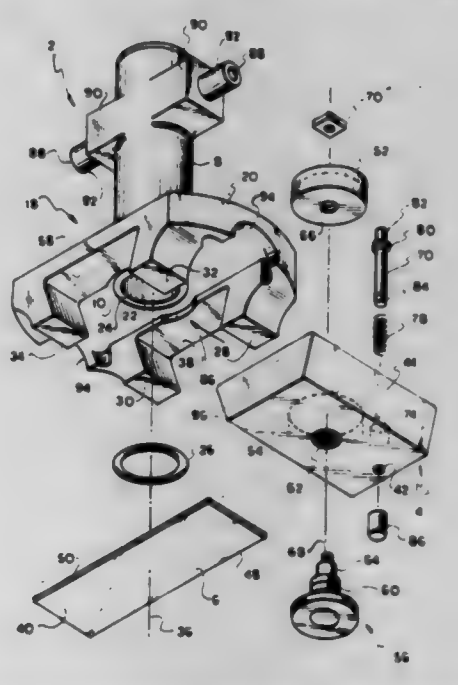
Andrew Ricci, 1450 E. 95th St., Brooklyn, N.Y. 11236

Continuation-in-part of Ser. No. 8,384, Feb. 1, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,230

Int. Cl.³ B04B *15/00*

U.S. Cl. 233—26 **8 Claims**

1. An apparatus for the preparation of samples for microscopic examination by deposition of centrifuged cells upon a conventional glass slide, comprising: a hollow elongated reservoir with an open bottom and an open top; a lower body attached to the bottom of the reservoir and having a recess for accommodating a conventional glass slide transversely to the reservoir to cause the slide to abut the open bottom thereof, said body having first, second, third and fourth projections integral with the lower body and extended downwardly therefrom and arranged to form a channel between said projections; an elongated holder adapted to slide into and out of said channel and cooperating with the lower body so that said holder is detachably received therein to lock a slide in said body and to



allow a slide to be removed from said lower body; and studs attached to the housing near its top for detachably securing the reservoir to a centrifuge, the projections being so located that the first and third projections will be adjacent a first side of the holder and the second and fourth projections will be adjacent a second side of the holder when the holder is received in the channel, and further being so located that the first and second projections will be adjacent a first side of the slide and the third and fourth projections will be adjacent a second side of the slide when the slide is accommodated in the recess.

4,344,563

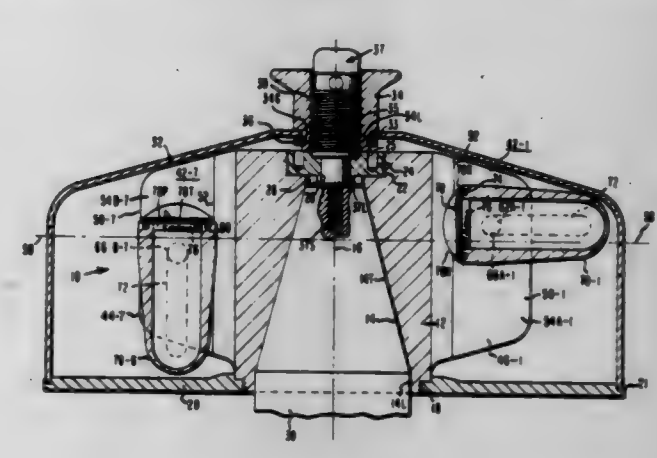
CENTRIFUGE ROTOR HAVING VERTICALLY OFFSET TRUNNION PINS

William A. Romanauskas, Saulsbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 23, 1980, Ser. No. 220,199

Int. Cl.³ B04B *9/12*

U.S. Cl. 233—26 **10 Claims**



1. In a centrifuge rotor of the type having a hub from which a plurality of arms radiate outwardly, each arm having a first and a second vertically-extending surface on opposite sides thereof and a trunnion-receiving bore extending into the arm from each surface, characterized in that the axis of the bore

extending into the arm from the first surface lies above a horizontal plane extending through the arm while the axis of the bore extending into the arm from the second surface lies below the horizontal plane and that the bores on confronting surfaces of angularly adjacent arms each lie on the same side of the horizontal plane.

4,344,564

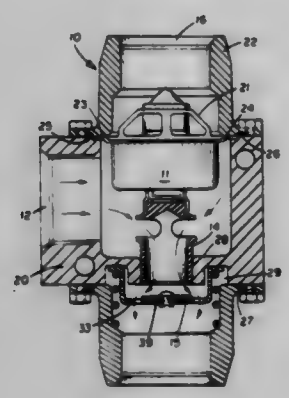
THERMAL BY-PASS VALVE WITH INTEGRAL PRESSURE RELIEF

Ruel D. Magnuson, Eagle, Nebr., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Feb. 23, 1981, Ser. No. 237,543

Int. Cl.³ F01P *7/16*

U.S. Cl. 236—34.5 **8 Claims**



5. A thermal by-pass valve with integral pressure relief comprising a body with an annular guiding shoulder having a generally linear flow passage therein with first and second outlet ports adjacent each end of said passage, a movably mounted valve seat in said passage adjacent said first outlet port and a fixed valve seat in said passage adjacent said second outlet port, an inlet port in said body communicating with said passage between said valve seats, said body including a block-like part providing a T-shaped passage, the bar of said T terminating adjacent said outlet ports and the stem of said T terminating adjacent said inlet port, and a pair of generally similar fittings secured to said body each defining an outlet port, a temperature sensitive valve element slidably mounted in said passage, said temperature sensitive valve element being equipped with a hollow sleeve extending toward said movable seat and being in guided relationship with said shoulder, said sleeve presenting a relatively small annular force area as compared to said temperature sensitive valve element to facilitate shift of said temperature sensitive valve element even under pressure, said sleeve being equipped with fluid inlet means adjacent the end spaced from said movable seat, said temperature sensitive valve element when fluid entering said inlet port is below a predetermined temperature being seated against said fixed valve seat and spaced from said movable valve seat and when fluid entering said inlet port is above said predetermined temperature said temperature sensitive valve element being spaced from said fixed valve seat and in seating engagement with said movable valve seat except when pressure in said passage exceeds a predetermined value.

4,344,565

CONTROL METHOD AND APPARATUS FOR AIR CONDITIONERS

Yasuhumi Kojima, Gifu; Atsunori Saito, and Akiro Yoshimi, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

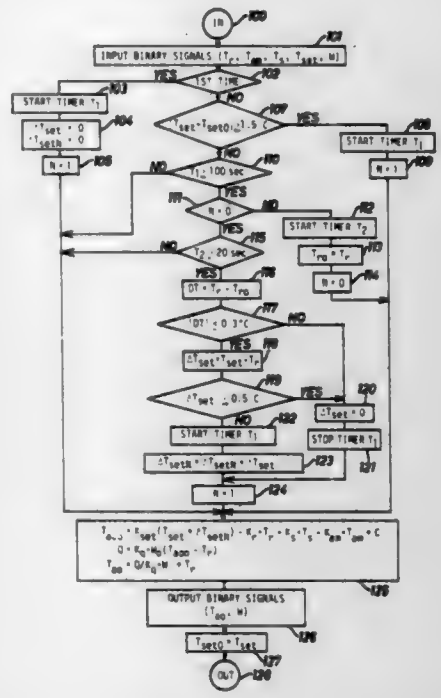
Filed Jul. 23, 1980, Ser. No. 171,407

Claims priority, application Japan, Aug. 1, 1979, 54-98529

Int. Cl.³ G05D *23/00*

U.S. Cl. 236—46 R **7 Claims**

1. A method of controlling an air conditioner which supplies an air flow into a compartment or other region, the air conditioner comprising air flow quantity control means and air flow temperature control means, the method comprising the steps of detecting the quantity of heat necessary for adjusting the actual temperature of air in said compartment or other region to a desired value and to maintain it at said desired value, and controlling said air flow temperature control means in such manner that the air flow temperature is such as to enable the air flow at a desired air flow quantity to supply said necessary heat quantity, said necessary heat quantity and said air flow temperature being determined employing electric signals in the form of a first electric signal indicative of the actual air temperature in said compartment or other region and a second electric signal indicative of a desired air temperature in said compartment or other region, wherein the improvement comprises the steps of:



detecting a first deviation between values of the preceding and following first electric signals at a predetermined time interval;

detecting a second deviation between values of the first and second electric signals when said first deviation is smaller than a predetermined value;

determining a third deviation related to said second deviation when said second deviation is larger than a predetermined value; and

compensating said necessary heat quantity in accordance with said third deviation.

4,344,566

THERMOSTATIC EXPANSION VALVE

Rudibert Götzenberger, Remseck, Fed. Rep. of Germany, assignor to Ernst Flitsch GmbH & Co., Fellbach, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,491

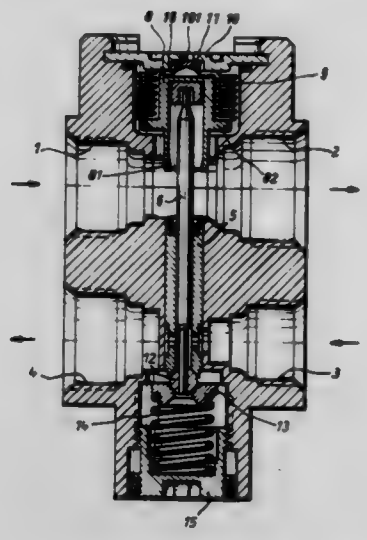
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1979, 2922872

Int. Cl.³ F25B *41/04*

U.S. Cl. 236—92 B **2 Claims**

1. A thermostatic expansion valve assembly for a refrigerant cycle including a compressor, a condensor and an evaporator and operating in response to suction gas of said cycle comprising: a valve housing defining a suction line for passage of said suction gas through said valve assembly; valve means including a valve tappet acted upon by said suction gas for actuation of said valve means; a control member responsive to pressure and temperature receiving the upper end of said valve tappet through which said suction gas acts on said valve tappet; said control member being formed in a cup-shaped configuration opening toward said suction line and including a rim region projecting into said suction line and a circumferential region

having a greater wall thickness than said rim region; an annular shoulder formed on said control member; a cover plate for said valve housing; and a corrugated tube surrounding said circumferential region of said control member; said corrugated tube



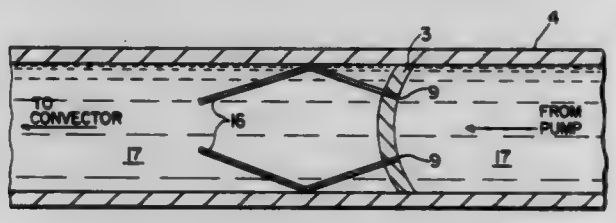
having one end connected to said annular shoulder and another end connected to said cover plate; with a spring being arranged on the outer surface of the bottom of said control member, said spring operating to press a sealing disc against a bore of said cover plate.

4,344,567

HYDRAULIC HEATING SYSTEM

C. James Horne, Box 184, Rte. 113, Lederach, Pa. 19450, and Edward A. Duffy, P.O. Box 100, Kulpsville, Pa. 19443

Filed Dec. 31, 1980, Ser. No. 221,593
Int. Cl.³ F28C *3/00*
U.S. Cl. 237—1 R **9 Claims**



1. A hydraulic heating system comprising:

A. a closed conduit defining an hydraulic pressurizing section and a depressurized return section;

B. a baffle supported perpendicularly within said conduit intermediate said pressurizing section and said return section, said baffle including a plurality of orifices in the size range 0.094–0.098″ and said orifices being disposed with respect to the longitudinal axis of said conduit at an angle in the range 30°–71°;

C. an oil pressurizing pump supported in said conduit on the anterior side of said baffle, so as to flow oil through said orifices at a pressure in the range 70–220 p.s.i.;

D. a liquid oil medium supported within said conduit and flowed through said baffle by means of said pump, said oil being heated both by the frictional impact of restricted flow through said orifices and the shear of flowing oil against non-flowing oil on the posterior side of said baffle.

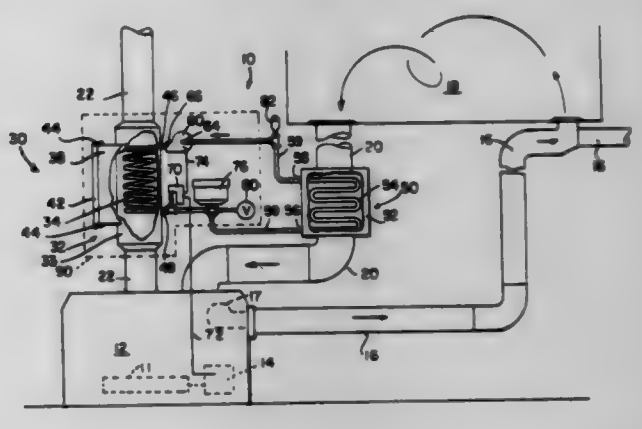
4,344,568

CLOSED-LOOP HEAT-RECLAIMING SYSTEM

Owen E. Stewart, R.R. #1, Cambridge City, Ind. 47327, and Carl W. Stewart, P.O. Box 317, Dublin, Ind. 47335

Filed Mar. 10, 1980, Ser. No. 128,661
Int. Cl.³ F24D *3/00*
U.S. Cl. 237—8 R **9 Claims**

1. In a forced-air heating system which includes means for burning fuel to heat air, means for circulating air in proximity to the fuel-burning means to transfer heat therefrom to the air and for circulating the heated air through a heated air duct, a cold-air return duct, a chimney flue for venting gases produced by the burning fuel, and a control system for energizing the fuel-burning means in response to a demand for heat, and for de-energizing the fuel-burning means when the demand is met, the improvement comprising a closed-loop heat-transfer apparatus for reclaiming heat from gases in the chimney flue of the heating system, the heat-transfer apparatus including a first heat-exchanger chamber positioned in series with the chimney flue, the first chamber including a fluid inlet opening and a fluid outlet opening, a coiled conduit positioned interior to the chamber, the conduit having one end connected to the fluid inlet opening and another end connected to the fluid outlet opening, means allowing access to the interior of the first chamber for cleaning and servicing, a second heat-exchanger chamber positioned in series with the cold-air duct, the second chamber including a fluid inlet opening and a fluid outlet opening, means coupling the fluid openings of the first and



second chambers to form a closed circulatory loop, a predetermined quantity of heat-transferring fluid contained in the loop, means for circulating the predetermined quantity of fluid through the loop between the first and second chambers to heat the quantity of fluid, transfer the heat therefrom to the cold air in the return duct, and reheat the same quantity of fluid, a temperature-actuated control coupled in the loop in proximity to the fluid outlet opening of the first heat-exchanger chamber to sense maximum temperatures of the fluid, the temperature-actuated control including a high limit control and a low limit control, means electrically connecting the low limit control to the fluid circulating means, the fluid circulating means being activated when the maximum temperature of the fluid exceeds a first predetermined temperature, and means electrically connecting the high limit control to the control system for activating and deactivating the fuel-burning means, heat production by the fuel-burning means being reduced when the maximum temperature of the fluid reaches a second predetermined temperature.

4,344,569

STEAM POWERED STOVE

James J. Gardner, 210 Sherman Ave., Lancaster, Ohio 43130

Filed Jan. 17, 1980, Ser. No. 112,735
The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.
Int. Cl.³ B60H *1/02*; F24D *1/04, 5/00*
U.S. Cl. 237—12.1 **1 Claim**

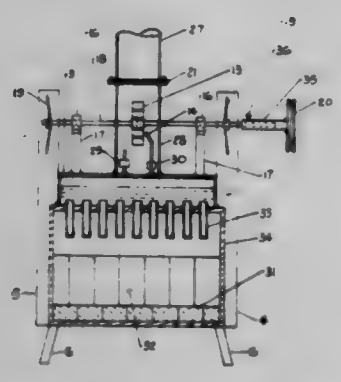
1. A Steam Powered Stove comprising:

A. a stove means having a liquid containing portion therein, a means for feeding said liquid containing portion, a means of exhausting steam, and a steam pressure safety valve means,

B. a steam pressure regulator means having a long stemmed hand wheel thereon whereby steam pressure may be conveniently adjusted and set at various pressures, said regulator means further consisting of a nozzle attached thereto whereby steam pressure may be directed to a turbine,

C. a turbine means having a body with a plurality of blades extending therefrom said body being centered about a shaft such that said turbine blades are equidistant from said shaft's centerline said body being securely mounted on said shaft and generally centered thereon whereby torque may be transmitted to a plurality of fan means positioned on said shaft, said shaft being supported from a plurality of support blocks having bearings mounted thereon said fan means being securely mounted on said shaft and are positioned and designed to blow hot air from heater boxes,

D. a plurality of heater boxes positioned adjacent to the firebox and liquid containing portion of said stove means and in thermal communication therewith whereby the



heat of conduction, convection, and radiation may be transferred therethrough, said heater boxes having a plurality of secreened cold air openings near the bottom portions thereof and hot air discharge openings near the upper portions thereof, said hot air discharge openings being in alignment with said fan means, said heater boxes rising to a vertex at the approximated centerline and above said shaft,

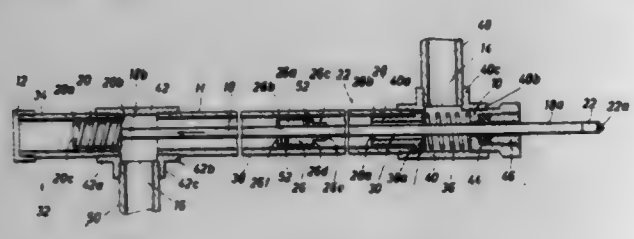
E. and a removable torque transfer means or pulley whereby other equipment may be driven by said stove means, said torque transfer means being securely mounted to said shaft in such a manner that it may be conveniently removed and replaced.

4,344,570

APPARATUS FOR CLEANING THE INTERIOR OF TUBES

Richard R. Paseman, 5517 Newport, Houston, Tex. 77023

Filed Aug. 11, 1980, Ser. No. 176,999
Int. Cl.[3] B05B *3/04, 3/18*
U.S. Cl. 239—67 **7 Claims**



1. An improved apparatus for cleaning the interior of pipes, tubes and like elongated tubular objects with pressurized fluid of the type having a housing capable of containing fluid under pressure with a front end, a back end, a fluid inlet adjacent said front end adapted to receive fluid under pressure, and a fluid outlet adjacent said back end in fluid communication with said fluid inlet; a hollow lance, with a forward end and a rearward end, mounted for reciprocal sliding motion through said housing front end responsive to fluid pressure; a piston for causing reciprocal motion of said lance responsive to fluid pressure mounted to said lance adjacent said lance rearward end within said housing; a cleaning nozzle mounted on said lance forward end outside of said housing in fluid communication with said housing through said hollow lance; wherein the improvement comprises:

a forward motion arresting means mounted in said housing to arrest the forward motion of said lance, said forward motion arresting means comprising:

a plug member mounted with said lance adapted to allow fluid flow within said housing between said plug member and an inner surface of said housing

a body member with a fluid passage, loosely mounted about said lance between said plug member and said fluid inlet adapted to allow fluid flow through said fluid passage; and

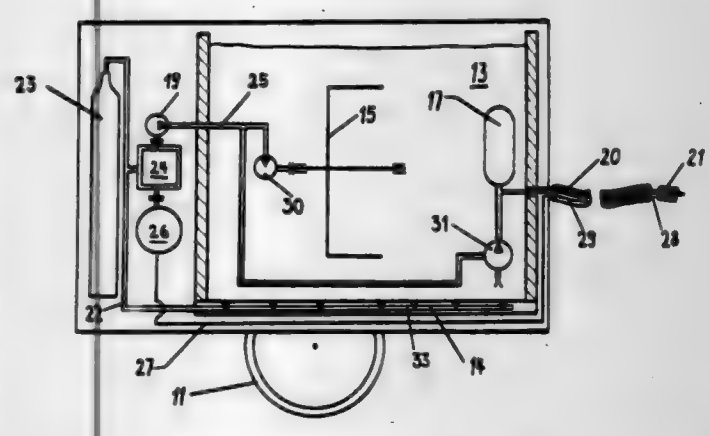
said plug member when in contact with said body member comprising blocking means for substantially preventing fluid flow within said housing thereby dampening the forward motion of said lance.

4,344,571

SELF-CONTAINED DEVICE FOR SPRAYING A HEATED SPRAY MATERIAL

Armin Kündig, Eichstr. 4, 8620 Wetzikon, Switzerland

Continuation of Ser. No. 33,415, Apr. 26, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 211,455
Int. Cl.[3] B05B *1/24*
U.S. Cl. 239—130 **6 Claims**



1. A movable self-contained device for melting and spraying a heated sprayable material on a desired surface, the sprayable material at normal temperatures being in a solid state, comprising: a portable body support member having positioned thereon a heatable container adapted to hold the sprayable material; a main pump means; an engine means operatively connected to said main pump means for driving said main pump means, said main pump means being operatively connected to a discharge pump means and a stirring apparatus, both positioned in said container for agitating the heated sprayable material when heated and discharging the heated material from said container; a flexible electrically heatable conduit having a spraying nozzle at the free end thereof and being connected at its other end to said discharge pump means, said discharge pump means being adapted to force said heated material through said conduit and nozzle when said material is in a heated condition; a fluid fuel supply means for supplying a fluid medium both for heating said container to change said solid material to a sprayable state and for driving said engine means; and an electric generator means operatively connected to and drivable by said engine means, said generator means being electrically connected to said heatable conduit to electrically energize said heatable conduit and heat it during the operation of said device.

4,344,572

POSITIONING APPARATUS FOR BOOM STRUCTURES

Loren E. Tyler, 1165 Oakwood Ave., Benson, Minn. 56215

Filed Jun. 18, 1980, Ser. No. 160,677
Int. Cl.[3] A01C *3/04*
U.S. Cl. 239—168 **18 Claims**

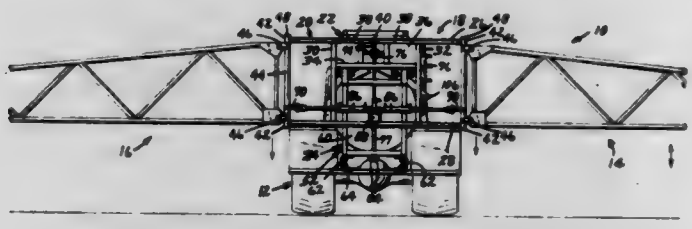
1. A positioning apparatus comprising:

a boom structure;

frame means for supporting said boom structure;

means for attaching said frame means to a vehicle;

means for mounting said boom structure on said frame means for movement about a pivotal axis, said boom structure being mounted with the center of gravity of said boom structure beneath the pivotal axis of said mounting means when the vehicle is on level ground whereby said



boom structure automatically seeks an orientation perpendicular to the gravitational force regardless of the orientation of said frame means; and

means for yieldably counteracting the pivotal movement of said boom structure to maintain said boom structure substantially level with respect to the ground.

4,344,573

SPRAY APPLICATOR

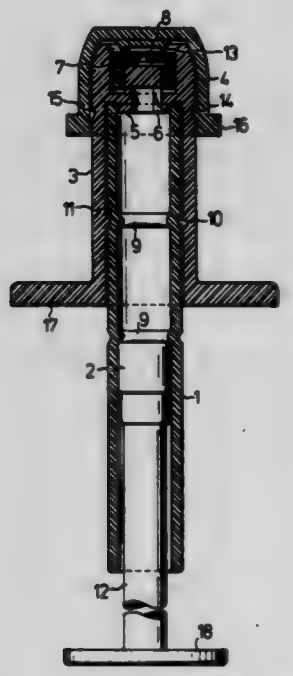
Wilfried De Felice, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 156,922

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 7916475[U]

Int. Cl.³ B05B *9/04*

U.S. Cl. 239—320 **5 Claims**



1. A disposable spray applicator for liquid or pulverulent medicaments comprising a receptacle cylinder divided axially into one or more dosing chambers, a piston plug disposed in said receptacle cylinder, spray head means disposed at one end of said receptacle cylinder, the spray head means surrounding the cylinder at said one end and having sealing means disposed therein sealably contacting the one end of the receptacle cylinder, and nozzle means connecting to the outside; at least one annular torus girdling said receptacle cylinder to divide the same into said dosing chambers and having an inner torus face and an outer torus face on the interior and exterior sides of said receptacle cylinder, respectively; at least one mating torus in said piston plug to catch said inner torus face at the end of a predetermined dosage; and at least one mating torus in said spray head means mating with said outer torus face to ensure that the receptacle cylinder, when inserted into said spray head means, is secured therein.

4,344,574

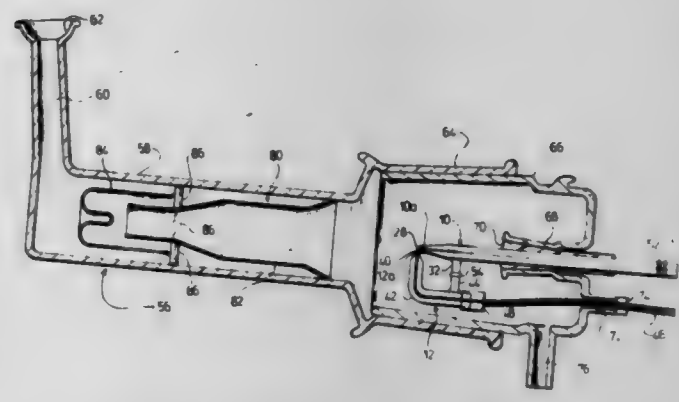
CROSS-FLOW NEBULIZER

Basil Meddings, Edmonton, and Heinz Kaiser, Fort Saskatchewan, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Oct. 26, 1979, Ser. No. 88,491

Int. Cl.³ B05B *7/26*

U.S. Cl. 239—338 **14 Claims**



1. A method of making a cross-flow nebulizer comprising providing first and second deformable glass tubular members each having a substantially constant external diameter and a central passage of substantially constant diameter extending from a forward end to a rearward end, said external diameter being from about 5 mm to about 7 mm and said passage diameter being from about 0.5 mm to about 1.0 mm, deforming a forward end portion of each tubular member to provide the forward end with an orifice of reduced diameter from about 0.02 mm to about 0.4 mm, positioning the forward end portions of the tubular members in an angular spaced relationship with the orifices closely adjacent, connecting one tubular member to a source of liquid and passing a gas through the other tubular member to cause a spray to be emitted from said one tubular member, adjusting the relative positions of the orifices to a spacing from about 0.01 mm to about 0.15 mm to provide a satisfactory spray, and integrally connecting the glass tubular members by fusion to maintain the forward ends in the adjusted position.

4,344,575

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

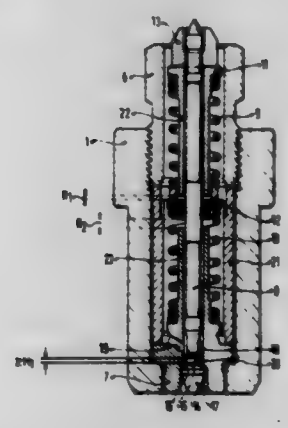
Kurt Seifert, Esslingen-Zollberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 24,818, Mar. 28, 1979, abandoned. This application Nov. 26, 1980, Ser. No. 210,638

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2825982

Int. Cl.³ B05B *1/30*

U.S. Cl. 239—533.5 **4 Claims**



1. A fuel injection nozzle for internal combustion engines comprising a nozzle body, a bore in said nozzle body, an insert

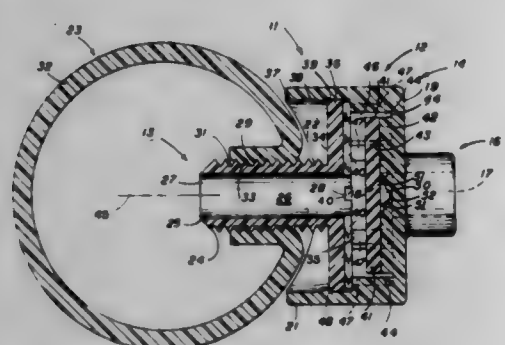
including a valve seat disposed in said nozzle body on an outer end of said bore, said insert including a tubular body extension, a valve needle guided by said tubular body extension, said valve needle having a terminal head portion which cooperates with said valve seat for fuel passage, said valve needle adapted to open in the fuel flow direction against the force of a closing spring means, said valve needle further including an annual cylindrical shoulder positioned upstream of said terminal head portion in cooperation with said tubular body extension to form a throttle point for controlling fuel flow in accordance with the stroke of said valve needle, said throttle point being effective in an initial opening stroke and subsequently made ineffective, said valve needle further being arranged to be loaded by said closing spring means, said closing spring means including at least two mutually associated pre-stressed closing springs for causing a sudden increase in closing force of said valve needle subsequent to an initial opening stroke, each of said closing springs being supported in axial alignment in a stationary manner on one end thereof, and said valve needle head portion cooperates with said valve seat for predetermining the initial position of said closing springs.

4,344,576

TRICKLE FLOW IRRIGATION VALVE

Allan L. Smith, 26591 Rd. 196, Exeter, Calif. 93221

Filed Sep. 15, 1980, Ser. No. 187,057
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—542 **5 Claims**



1. A pressure compensating emitter for fluid comprising a housing having inlet and outlet ports communicating with a pressurizable internal chamber having a predetermined dimension, a wall containing said outlet port facing said chamber and having a channel therein interconnecting the outlet port and the periphery of the wall at an entrance for the channel and being of a shorter length than said predetermined dimension of the chamber; and an unattached flexible wafer within said chamber having a corresponding dimension less than said predetermined dimension of the chamber and sufficiently greater than the length of the channel to be movable within the chamber in response to fluid pressure to free the emitter of foreign substances while overlaying said channel and outlet port in all positions when the chamber is pressurized to define with said channel a passage for fluid to the outlet port of constant length.

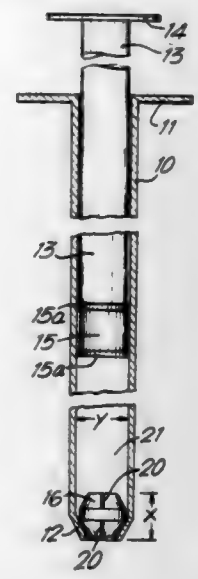
4,344,577

CONSTRUCTION OF NOZZLE

James J. Gilson, Dublin Rd., Skerries, County Dublin, and Richard B. Barrett, Inishduff, Dargle Rd., Bray, County Wickow, both of Ireland

Filed Jun. 27, 1980, Ser. No. 163,636
Claims priority, application Ireland, Jun. 29, 1979, 465/79; Sep. 26, 1979, 1831/79
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—546 **7 Claims**

1. A nozzle device for providing a high discharge velocity of a fluid fed to the nozzle, comprising: a pipe having an orifice at one end, at least the portion of the pipe adjacent said one end being internally tapered towards the orifice, and an unattached and freely displaceable insert member having an externally tapered portion defining one of a truncated cone and a conical surface adapted to mate with a correspondingly configured internally tapered surface of the nozzle orifice, at least one of the internally tapered end portion of the pipe and the externally tapered portion of the insert member having at least one surface groove establishing fluid communication between the



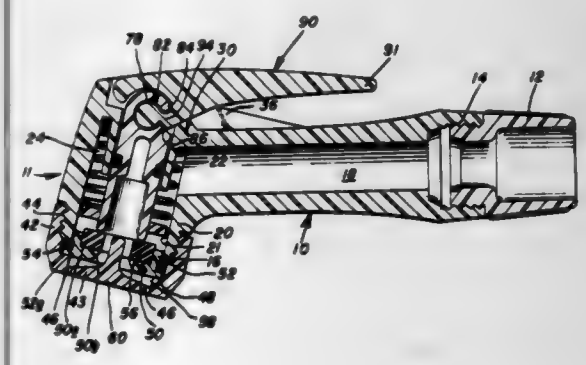
interior of the pipe and the exterior thereof, wherein the pipe is of circular cross-section and the insert member comprises a pair of cone portions extending in opposite directions longitudinally of the pipe, the angle of taper of each cone portion being complementary to the angle of taper of the end portion of the pipe, and the insert member being located in the pipe with one of the cone portions engaging the internally tapered end portion.

4,344,578

HANDLED SPRAY

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Nov. 25, 1980, Ser. No. 210,310
Int. Cl.³ B05B *1/30*
U.S. Cl. 239—583 **9 Claims**



1. In a handled spray that is provided with a lever operated flow control, the improvement comprising, in combination:

an elongated tubular molded body shaped to define thereon upstream and downstream concentric sleeves, with molded thread attachment means on said downstream sleeve;

a molded elongated flow control spool member shaped at its upstream end to provide means for cooperation with said lever, and shaped at its downstream terminus to provide thereon an annular rigid seal element;

an O-ring seal carried on the flow control spool member spaced downstream of said means for cooperation with said lever for effecting a slidable seal with the inner wall of said upstream sleeve;

abutment means on said flow control spool member adjacent

to but spaced upstream of said downstream terminus of said spool member and extending radially outwardly of a downstream projection of the upstream sleeve;

an elongated compression coil spring surrounding the upstream sleeve with one end in force transfer relation to said molded body and the other end engaging said abutment means on the flow control spool member to normally bias said spool member downstream;

a cup-shaped closure for the discharge end of the molded body shaped to provide in the cup's bottom wall a plurality of spaced, discrete, jet-forming apertures, and attachment means on the cup's sidewall adapted for selective connection to said attachment means on the downstream sleeve of said molded body;

an annular rigid insert carried in said cup-shaped closure and spaced from said cup's bottom wall to provide a radially enlarged flow chamber whose inlet is the central opening of the annular insert and whose outlets are said plurality of jet-forming apertures; and

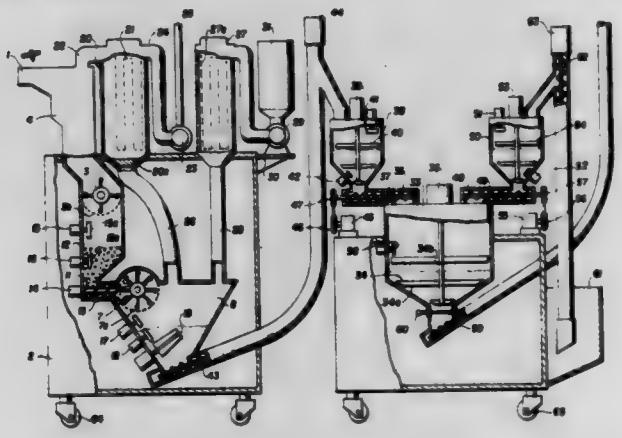
said annular insert carrying a pair of concentric seals, the outer one of said concentric seals being positioned to effect resilient sealing engagement between the insert and the cup-shaped closure and between said insert and the downstream terminus of the molded body when the closure is secured to the molded body, and the inner one of said concentric seals being an annular body positioned to receive thereagainst, in sealing engagement, the downstream edge of the spool member under the bias of said coil spring.

4,344,579

APPARATUS FOR RECLAIMING AND RECYCLING THERMOSETTING SCRAP

Riyozo Morita, and Yutaka Honjyo, both of Nagoya, Japan, assignors to Kabushiki Kaisha Meiki Seisakusho, Aichi, Japan

Filed Sep. 6, 1977, Ser. No. 830,893
Claims priority, application Japan, Sep. 3, 1976, 51/106057
Int. Cl.[3] B02C *13/286*
U.S. Cl. 241—34 6 Claims



1. An improved apparatus for reclaiming and recycling thermosetting plastic scrap which comprises:

a pulverizer for grinding said scrap to provide pulverized scrap material,

an atomizer for grinding said pulverized scrap material to provide atomized material,

a feeding means to supply said pulverized material to said atomizer,

a dust collecting device which collects the dust generated in the air during the grinding process in said pulverizer,

a purifying means for noxious gases generated,

a conveying means for conveying said atomized material to a first hopper,

a first feed cylinder beneath said first hopper containing a feed screw and means to run said feed screw at a constant speed,

a second hopper for virgin material,

a second feed cylinder beneath said second hopper containing a variable speed feed screw,

a third hopper for receiving a mixture of said atomized material from said first feed cylinder and said virgin material from said second feed cylinder, and

means to control the ratio of atomized material and virgin material discharged into said third hopper by controlling the speed of said variable speed feed screw;

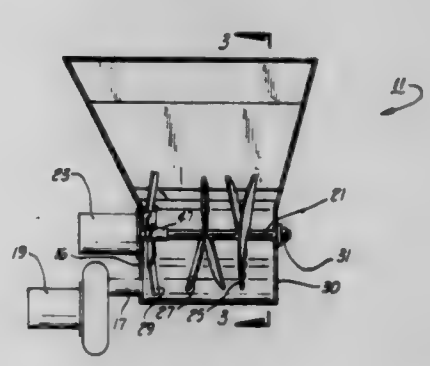
further comprising means to hold material which has passed through said pulverizer and before being fed to said atomizer; retaining means for material which has passed through said atomizer located upstream of said conveying means for conveying atomized material to said first hopper.

4,344,580

FIBROUS MATERIAL APPARATUS

Thomas C. Hoshall, 4005 N. Pennsylvania, Oklahoma City, Okla. 73112; LaVern L. Hicks, 117 Parkland Dr., Yukon, Okla. 73099, and Larry Renth, 4825 NW. 75th, Oklahoma City, Okla. 73132

Filed Apr. 14, 1980, Ser. No. 139,885
Int. Cl.[3] B02C *18/00*
U.S. Cl. 241—60 6 Claims



1. A device for dispensing fibrous material comprising:

centrifugal blower means having a radially offset inlet port and an outlet port;

a housing having a reservoir disposed therein for containing the fibrous material to be dispensed and a lower passageway which communicates said reservoir to said blower means inlet port;

at least one auger disc consisting of a sliced and spread disc having a toothed edge rotatably mounted and disposed in said reservoir approximately adjacent said passageway;

a bar extending across said reservoir parallel to the axis of rotation of said at least one auger disc and spaced adjacent said auger disc such that, as gravity urges fibrous material toward said auger disc and said auger disc rotatingly encounters said fibrous material, said bar presents an obstacle to fibrous material which is carried by said auger disc;

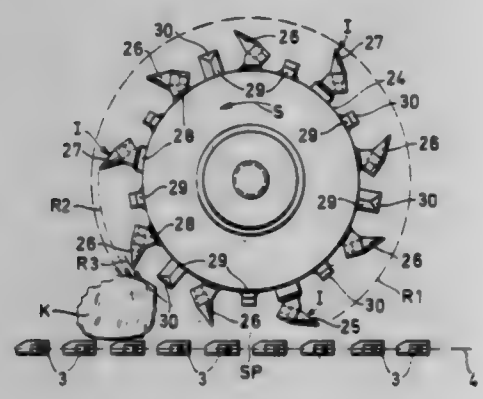
a ramp member extending from said bar upward to a side of said reservoir such that fibrous material above said bar is urged by gravity downwardly toward said auger disc; and

means for rotating said auger disc such that insulation material encountered by said rotating auger disc is urged toward said passageway.

4,344,581
CRUSHING APPARATUS

Richard Redemann, Lunen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 97,111
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852662
Int. Cl.[3] B02C *19/00*
U.S. Cl. 241—88.4 16 Claims



1. Apparatus for crushing mineral material, the apparatus comprising:

(a) a rotary crusher disposed above, and cooperating with, a floor plate,

(b) the rotary crusher including a cylindrical body and a plurality of chisels detachably fixed thereto,

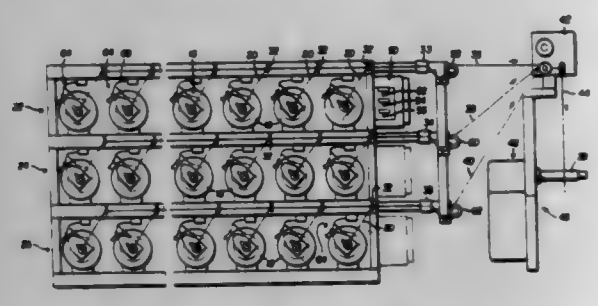
(c) the chisels being arranged in rows with at least one row of the chisels having a first radial reach followed by two adjacent rows of the chisels having a radial reach shorter than the first radial reach,

(d) in each row having chisels of the longer first radial reach, said chisels having differing radial reaches with respect to each other.

4,344,582
MICROPROCESSOR-CONTROLLED PRODUCT ROVING SYSTEM

Kenneth L. Rapp, Granville, and Walter Zolnerovich, Jr., Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 958,582, Nov. 7, 1978, Pat. No. 4,269,368. This application Jul. 24, 1980, Ser. No. 171,767
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.[3] B65H *54/02, 59/00*
U.S. Cl. 242—45 5 Claims



1. A method of controlling the winding of products in a roving process with a microprocessor wherein a creel contains a plurality of operating strands which are wound together in a group on a collet to form a product, said method comprising the steps of:

(a) storing a plurality of desired winding data sets in a microprocessor, each of said sets of desired winding data corresponding to a different product required to be formed by the roving process, a desired set of winding data including:

(1) a first rate of change of velocity or acceleration to accelerate the collet from an initial zero velocity to a first predetermined velocity for a given product to be wound;

(2) a second rate of change of velocity or acceleration to accelerate the collet from the first predetermined velocity to a second or normal desired operating speed for a given product to be wound;

(3) a differential speed error value at which the microprocessor cannot correct the collet speed to produce an acceptable formed product and should stop the winding process; and

(4) the number of strands required for a given product to be wound;

(b) selecting particular desired set of winding data from the microprocessor based upon the particular product to be formed;

(c) sensing the number of strands available to be wound and comparing this number with the number of strands previously stored in the microprocessor as part of a desired winding data set for the particular product to be formed;

(d) indicating by means of the microprocessor that the number of strands are incorrect for the product being wound or that the number of strands are correct and the winding process can be started;

(e) starting the winding process and accelerating the collet with a first rate of change of velocity previously stored in the microprocessor to a first predetermined velocity;

(f) sensing the winding speed of the winder;

(g) comparing in the microprocessor the sensed winding speed of the winder with the first predetermined velocity previously stored in the microprocessor;

(h) changing the acceleration of the collet by means of the microprocessor to a second rate of change of velocity when the first predetermined velocity has been reached;

(i) comparing in the microprocessor the sensed winding speed of the winder with the second or normal desired operating speed;

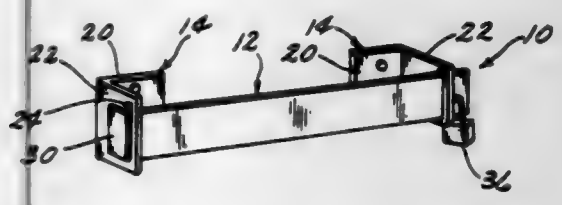
(j) maintaining by means of the microprocessor the second or normal desired operating speed and modifying the winding speed when the difference between the sensed winding speed and the second or normal desired winding speed exceeds a predetermined amount; and

(k) stopping the winding process by means of the microprocessor when the difference between the sensed winding speed and the second or final desired winding speed exceeds a differential speed error value previously stored in the microprocessor.

4,344,583
TOILET TISSUE HOLDER

Harry R. Drum, Box 430, Ruthven, Iowa 51358

Filed Aug. 11, 1980, Ser. No. 177,195
Int. Cl.[3] B65H *19/00*
U.S. Cl. 242—55.2 2 Claims



1. A toilet tissue holder comprising,

a pair of substantially identical oppositely disposed spaced apart rigid L-shaped metal plate members and each having one leg adapted to be secured to a wall or other supporting structure in either a righthanded or lefthanded position, with the other leg extending perpendicularly thereto, said other leg having an elongated slot adjacent its outer end, and

a rigid metal plate bar being L-shaped at one end extending through said slots in the other legs of said L-shaped metal plate members with said L-shaped one end engaging the

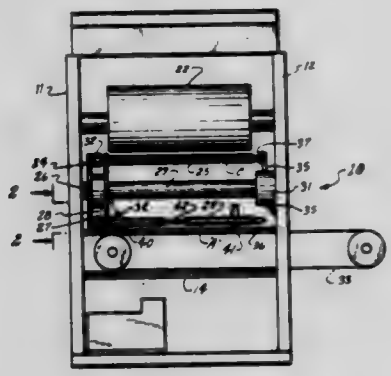
adjacent other leg to limit movement in one direction through said slot, and the opposite end of said bar having an aperture for receiving a lock to limit movement of said bar in the opposite direction, when said holder is in use and when said holder is being refilled, and said lock is removed said bar may be moved in said slots in the opposite direction to disengage said opposite end of said bar from the slot in the adjacent other leg of said L-shaped plate member.

4,344,584

APPARATUS FOR WINDING WEBS

Roger A. Schroeder, Green Bay, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 4, 1981, Ser. No. 240,110
Int. Cl.³ B65H *19/06, 19/26*
U.S. Cl. 242—56 A **11 Claims**



1. In apparatus for winding webs into rolls, wherein a web is fed onto a core carried by one of a plurality of a mandrels, each supported at one end on an incrementally rotatable turret operative to move the mandrels in an orbital travel path between at least core loading, operational, and wound-roll unloading stations, said mandrel having non-supported free ends in said loading and said unloading stations, and support means movable into supporting engagement with said free ends as said mandrels are indexed from said loading station toward said operational stations, and wherein said non-supported mandrels are succeptible of sagging relative to the supported ends, the improvement comprising:

a rotatable shaft having its axis substantially parallel to the axes of said mandrels in said core loading station,

said shaft being disposed in spaced relation to the orbital travel path of said mandrels as they are indexed between said core loading and said operational stations; and a pair of star wheels spaced axially along said shaft in correspondence with the supported ends and the free ends of said mandrels,

each said star wheel including a plurality of equally angularly spaced, generally radially outwardly presented pockets,

said pockets in one rotational position of said shaft being positioned and arranged to receive a mandrel as it is indexed between a core loading station and on operational station,

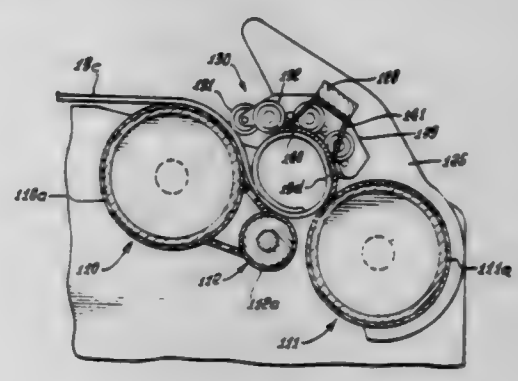
said shaft being rotatable while said mandrel is in said pockets until such position of said mandrel is reached that the sagging free end thereof is elevated by its corresponding star wheel into a position substantially aligned with and to be engaged by provided latching means for holding it in said operational stations, said star wheels being positioned and arranged to release said engaged mandrel and to receive in a successive set of pockets the next successive mandrel as it is moved from the core loading station.

4,344,585

SHEET HANDLING APPARATUS

Robert B. Eglinton, Huntington Beach, Calif., assignor to Paxall, Inc., Chicago, Ill.

Filed Mar. 7, 1980, Ser. No. 128,025
Int. Cl.³ B65H *17/12*
U.S. Cl. 242—66 **10 Claims**



1. In rollable sheet handling apparatus, and wherein a sheet is subject to advancement in a generally longitudinally forward direction,

(a) means to receive the advancing sheet and to roll same,

(b) said means including support means over which the sheet travels, and auxiliary means including swingable arm means and rollers carried by the arm means to be movable between rearwardly collapsed position in which rolling of the sheet extent adjacent the support is initiated, and a series of forwardly extended positions in which rolling of the sheet is guided toward completion, and while the rollers engage the sheet extent being rolled,

(c) said rollers being spaced to extend about, in roll forming relation, a portion of the sheet extent initially being rolled,

(d) said rollers being clustered in groups which are laterally spaced apart, each roller group defining a concave zone facing the sheet as it is initially coiled, to receive and shape the coil,

(e) said support means including multiple elongated rolls to support the sheet as it is initially coiled and subsequently rolled up, one of the rollers in each clustered group holding the sheet against one of the support rolls during initial coiling of the sheet,

(f) said auxiliary means including shields carried by the arm means to be laterally spaced apart and located between and spaced from said clustered roller groups, to project in the path of sheet advancement and co-operate with rollers of said clustered groups in initiating coiling the sheet, the shields being concave toward the sheet,

(g) another of said elongated rolls being spaced forwardly of said one roll and having fixed position, there being sheet gripping annuli on said other roll, and wherein said shields carried by said arm means initially project in the path of sheet advancement toward said other roll and closer to said other roll than the surfaces of said sheet gripping annuli, said shields carried by said arm means to swing about an axis defined by said other roll.

4,344,586

DRAG SPRING FOR FISHING REEL

John W. Puryear, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

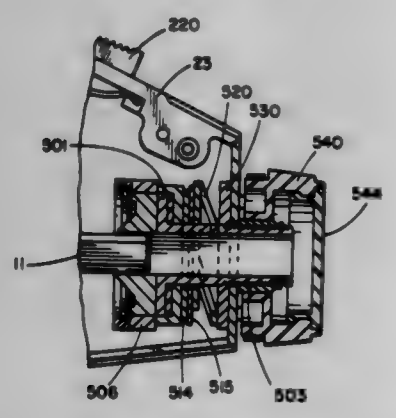
Continuation of Ser. No. 136,379, Apr. 1, 1980, abandoned, which is a continuation of Ser. No. 932,845, Aug. 11, 1978, abandoned. This application Jun. 29, 1981, Ser. No. 278,178
Int. Cl.³ A01K *89/02*
U.S. Cl. 242—84.5 A **1 Claim**

1. In an open face spinning reel used for casting a bait attached to a fishing line and for retrieving the bait and fishing line after casting, the reel having a housing with a hole at the back thereof, a center shaft mounted in the housing a spool mounted on the shaft for holding the fishing line, a handle and

gear train assembly mounted in the housing, a rotor coaxially mounted on the shaft and rotatable by cooperative movement of the handle and assembly, and a movable bail mounted on the rotor having an open casting position and a closed retrieving position, a free-floating drag assembly keyed to the shaft to permit limited rotation thereof, as the drag is tightened the shaft is permitted to rotate less, and as the drag is loosened the shaft is permitted to rotate more freely, the drag having an adjustment screw with a washer portion and an elongated shank, a first disc and an alignment plate disc mounted on the shank, the shank extending through the back housing hole, means on the shank for tightening and for loosening the drag, a drag spring mounted on the shank between the first washer and the plate washer, the improved drag spring comprising:

a center support having a hole therein and mounted on the shank;

an arm having a first leaf spring portion and a second leaf spring portion and a fulcrum positioned therebetween, the first portion secured at a first end to the center support



and extending radially and bent axially therefrom, and a second end secured to the fulcrum, the second leaf spring at a first end secured to the fulcrum with a second end extending freely and axially back toward the center support when the drag is loosened, the fulcrum axially spaced from the center support when the drag is in the loosened position, the center support being in contact with the plate disc and the fulcrum in contact with the first disc creating a light force on the drag in the loosened position; tightening the drag from the loosen position deflects the first portion linearly and creates an increased force on the drag that prevents the shaft from rotating, and continued tightening of the drag causes the second end of the leaf spring to contact the first washer providing for dual spring contact comprising the first and second leaf spring portions coacting to create an increased linear force on the drag thus further limiting the ability of the shaft to rotate; the second leaf spring portion having a linear force independent of the first portion.

4,344,587

AUTOMATIC MOTORIZED FISHING REEL

W. C. Hildreth, 331 NW. Sherbrooke Ave., Port St. Lucie, Fla. 33542

Continuation-in-part of Ser. No. 896,716, Apr. 17, 1978, abandoned. This application Aug. 14, 1979, Ser. No. 66,406

Int. Cl.³ A01K *89/017, 89/02;* **B66D** *1/14*

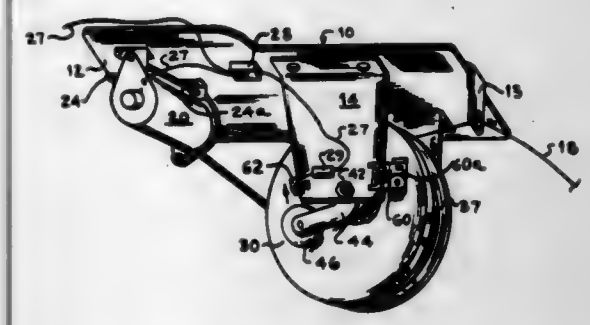
U.S. Cl. 242—106 **12 Claims**

12. An automatic motorized fishing reel comprising in combination:

a spool for receiving fishing line thereon when rotated in a first direction;

drive means for rotating said spool in said first direction;

clutch means, operatively coupled to said spool and to said drive means, for disengaging in a first condition said spool from said drive means, with said clutch means including first and second surfaces thereon for releasibly engaging with each other when said clutch means is in a second condition so as to engage said drive means with said spool for producing rotation thereof in said first direction; and



clutch control means including fluid means juxtaposed between said first and second surfaces for transferring torque therebetween so as to switch said clutch means between said first and second conditions.

4,344,588

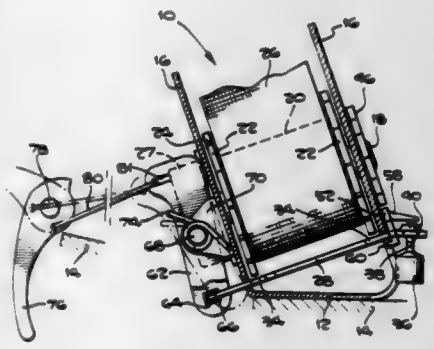
SEAT BELT RETRACTOR ASSEMBLY WITH POST EMERGENCY SPOOL RELEASE

William Hollowell, Pacific Palisades; Akira Tanaka, Northridge; Avraham Ziv, Sepulveda, and Nazareth Stamboulian, Los Angeles, all of Calif., assignors to American Safety Equipment Corp., New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 193,957

Int. Cl.³ A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **11 Claims**



1. In an emergency locking seat belt retractor mechanism including a belt winding spool, at least one spool associated ratchet member having a plurality of ratchet teeth, locking pawl means mounted for engaging the ratchet teeth of said ratchet member on actuation thereof, and emergency responsive means for automatically actuating said pawl means to lock said spool via said ratchet member, the improvement in locking pawl means comprising:

said locking pawl means having a longitudinal axis mounted within said seat belt retractor mechanism for freedom of motion rotationally around the longitudinal axis thereof and freedom of motion transversely along the longitudinal axis thereof,

manual unlocking means,

said emergency responsive means automatically actuating said locking pawl means into said rotational motion to engage said locking pawl means with said ratchet teeth; and

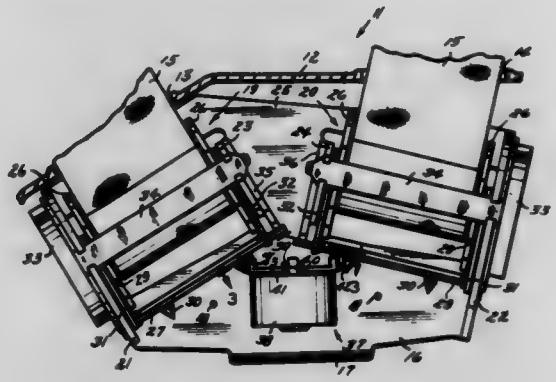
said manual unlocking means manually actuating said locking pawl means into said transverse motion to disengage said locking pawl means from said ratchet teeth, thereby manually unlocking said emergency locking seat belt retractor in a post emergency.

4,344,589

TANDEM DUAL SPOOL RETRACTOR STRUCTURE

Robert J. Rumpf, Grosse Pointe, Mich., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 23, 1980, Ser. No. 200,030
Int. Cl.³ A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A 7 Claims



1. A tandem dual spool retractor having a pair of spaced-apart and non-aligned askew webbing spools each having separate rewind mechanisms and non-aligned pawls projecting generally towards each other and each mounted for tilting movement into lock engagement with its associated spool, the combination comprising:

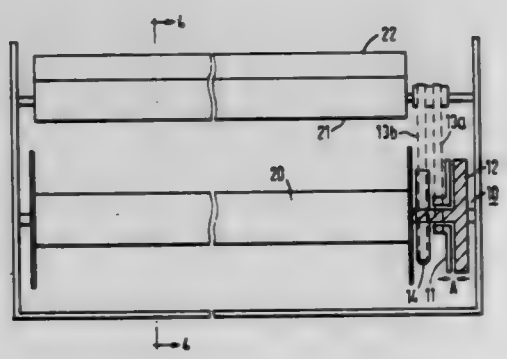
an inertial sensor below and intermediate said spools; a liftable lever element journalled for pivotal and vertical movement in two spaced-apart journals having vertically elongated slots, said sensor upon displacement by inertia elevating said lever element to substantially simultaneous engagement with said pawls and tilting said pawls into lock engagement against said spools.

4,344,590

TORQUE LIMITING DEVICE

Terence F. Dean, High Wycombe, England, assignor to EMI Limited, Hayes, England

Filed Jul. 3, 1980, Ser. No. 165,717
Claims priority, application United Kingdom, Jul. 7, 1979, 7923800
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—201 6 Claims



1. A spooling device for use in a recording apparatus having a drive means for transporting recorded paper or tape to an output location, the device comprising:

a rotary bearing for a spool,

means for supporting the bearing adjacent the output location at a position appropriate for spooling transported paper or tape,

a constant torque clutch and an over-running clutch each having a driving member and a driven member, the driven members being coupled to the bearing and the driving members being adapted to be driven by the drive means,

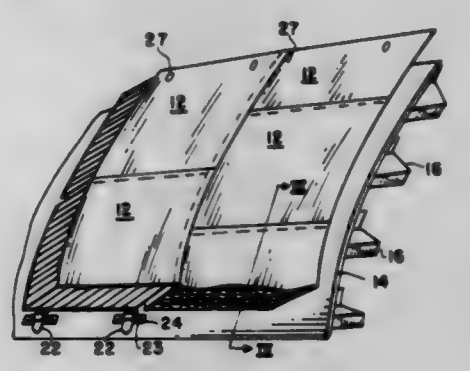
wherein the over-running clutch is capable of transmitting to said bearing a torque substantially greater than the maximum torque provided in operation by the constant torque clutch, and adopts the free-running mode when the transport speed of the paper or tape attains a preselected value substantially less than the maximum attainable transport speed.

4,344,591

MULTIWALL THERMAL PROTECTION SYSTEM

Liam R. Jackson, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 5, 1979, Ser. No. 72,857
Int. Cl.³ B64C *1/58*
U.S. Cl. 244—158 A 15 Claims



1. A thermal protection sandwich panel adapted to serve as an exterior heat shield insulating tile in the thermal protection system of a hypervelocity vehicle or other enclosure comprising:

an outer skin for the sandwich panel,

an inner skin for the sandwich panel spaced from said outer skin,

side skins sealingly attached to said inner and outer skins to form a unitary panel structure,

at least one intermediate thermal protective layer of material confined within the space bounded by said outer skin, said inner skin and said side skins,

said at least one intermediate thermal protective layer of material being attached to at least one of said inner and outer skin,

means secured to said inner skin for mechanically attaching the unitary panel structure to a hypervelocity vehicle or other enclosure

said means secured to said inner skin for mechanically attaching the unitary panel structure to a hypervelocity vehicle including a pair of tab extensions extending one each from adjacent corners of said panel and a pair of open panel clips disposed one each on the corners of said panel opposite to said tabs, and

connecting clips provided on the vehicle surface and equal in number to and adapted to receive said tab extensions, said tab extensions, said tab extensions being of adequate length to extend through said connecting clips and also be received by the said panel clips of an adjacent panel.

4,344,592

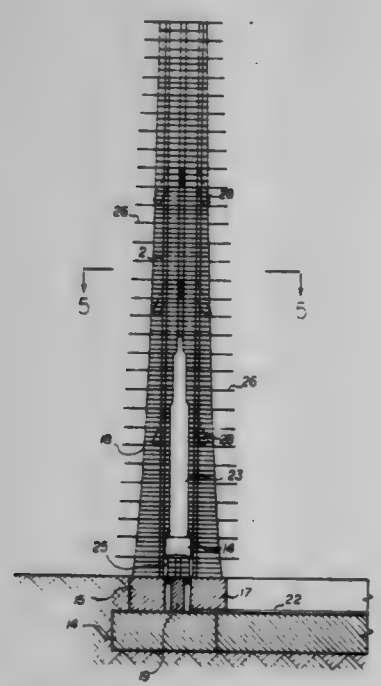
LAUNCHING TOWER FOR HEAVY ROCKETS

Spiridon Constantinescu, 161 Violet Dr., Stoney Creek, Ontario L8E 3J2, Canada

Continuation of Ser. No. 850,227, Nov. 10, 1977, abandoned. This application Jul. 22, 1980, Ser. No. 171,240
Int. Cl.³ B64F *1/04;* F41F *3/04*
U.S. Cl. 89—1.805 2 Claims

1. A launching tower for heavy rockets, comprising in combination steel columns shaping a polygonal structure with a central shaft several times deeper than the height of a heavy rocket; a basement of reinforced concrete having a central chamber and a series of lateral chambers; a reinforced concrete slab over said basement; a plurality of holes in said reinforced

concrete slab above said central chamber; a cluster of liquid-propellant motors mounted inside said central chamber, said liquid-propellant motors having their nozzles aimed upward though said holes of said reinforced concrete slab; said lateral chambers being for storage of liquid-propellants and for control equipments of said liquid-propellant motors; a plurality of series of windows disposed between said columns and all along said launching tower; frames of said windows bracing said columns; a shutter for each said window; rams for each said shutter mounted inside said columns and closing or opening said shutter at command; a piston bearing said heavy rocket inside said shaft of said launching tower; bearings supporting said piston in said shaft at an appointed height from said reinforced concrete slab; said piston having its bottom concave and being framed inside by dyaphragms; a plurality of wheels mounted in a vertical series outside said piston, one series of wheels for each said column; a central part and two equal side-parts of said piston being solidly jointed between them inside said shaft and forming together with a heavy rocket a first couple; said side-parts of said piston being separated by a distance approximately equal to the biggest diameter of a heavy rocket; said central part of said piston forming together with a heavy rocket a second couple; a plurality of wings made of steel plates bracing said columns; said wings being disposed on horizontal planes spaced not more than the height of said



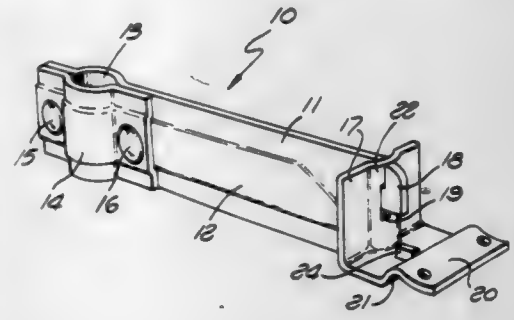
piston and extending outside of said launching tower; a plurality of circular plates being disposed horizontaly inside said shaft one for each said frame of said windows and one for each said wing; said circular plates shaping concentric circles inside said shaft close to the vertical series of wheels of said piston; brushes provided on all said circular plates wiping said piston in its rising movement; rail-ways mounted one on each said column and guiding said series of wheels of said piston; a plurality of clusters of solid-propellant motors mounted inside said columns; each of said cluster of solid-propellant motors having one motor in each said column at the same level and dividing said launching tower in stages of thrust: said solid-propellant motors of one said cluster being aimed upward and providing at their level when necessary a cone of ejecting gases; a tower gate, its height being as big as to receive inside said shaft said second couple at the level of said bearings; a mobile basement of said tower gate provided with wheels; a platform provided with a plurality of rail-ways for moving said mobile basement to cause the opening or closing of said tower gate; a plurality of rolling girders which are temporary setting on the rail-ways of said platform when said tower gate is open; a rolling bridge sliding on said rolling girders between said launching tower and said open tower gate; a turn-table mounted on said rolling bridge receiving said second couple; said turn-table turning around 90 degrees and allowing said second couple to get in said shaft where are awaiting said side-parts of said piston to be solid jointed to said central part of said piston to form said first couple.

4,344,593

SUPPORT FOR HORIZONTAL PIPE OR THE LIKE

Gabriel F. Canto, 11409 Bombardier Ave., Norwalk, Calif. 90650

Filed Sep. 15, 1980, Ser. No. 186,968
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—73 **9 Claims**



1. A support device for horizontal runs of pipe or the like, comprising;

generally flat stip having its width dimension in a vertical plane, said stip being elongated to form a generally horizontal strut having a support end and a cantilevered end;

first means for attaching said strut to a generally vertical support at said support end;

second means comprising a nose projecting longitudinally outward from said strut cantilevered end, said nose being adjacent the top of said strut cantilevered end, said strut further including a notch in the top edge of said strut adjacent to the attachment of said nose to said strut;

third means comprising a bracket having first and second generally perpendicular legs, said first leg being generally vertical and including a generally vertical first slot, said first slot accepting said strut nose, said bracket seating downward into said notch; and

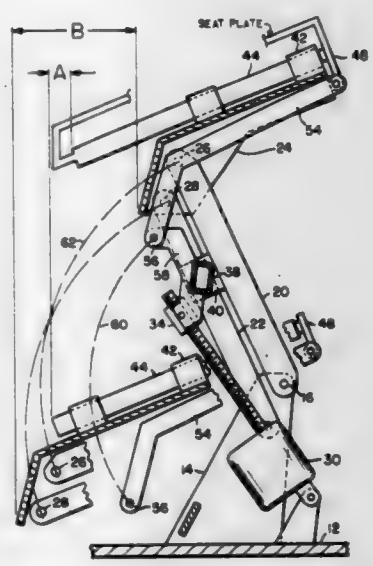
fourth means comprising means within said bracket second leg for mounting at least one elongated horizontal member to be supported, said horizontal member being a pipe or the like.

4,344,594

LIFT MECHANISM FOR DENTAL CHAIR

Emil Hirth, Malsch, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.

Filed May 15, 1980, Ser. No. 149,907
Int. Cl.³ A47C *1/02*; A61G *15/00*
U.S. Cl. 248—421 **6 Claims**



1. In a dental chair having a fixed base, a support frame for

carrying the seat of the chair and a parallel motion linkage including upper and lower parallel members each pivotally connected at their ends to the base and the support frame respectively and motor means operatively connected to the parallel motion linkage for moving the support frame about the base between a low and a high position wherein the frame moves forward with respect to the base as the frame goes to the high position and wherein the frame moves rearward with respect to the base as the frame goes to the low position, the improvement comprising:

(a) spaced front and rear bearings on said support frame;

(b) a rod for carrying the seat of the chair, said rod extending slidably through said bearings for movement relative to said support frame;

(c) drive means for moving said rod relative to said support frame in a forward or rearward direction counter to the motion of said support frame, said drive means including an elongated drive link having a first end pivotally connected to the forward end of said rod and having its second end pivotally connected to one member of said parallel motion linkage intermediate the ends thereof.

4,344,595

AUXILIARY APPARATUS AT A STAND FOR AN OPTICAL OBSERVATION DEVICE

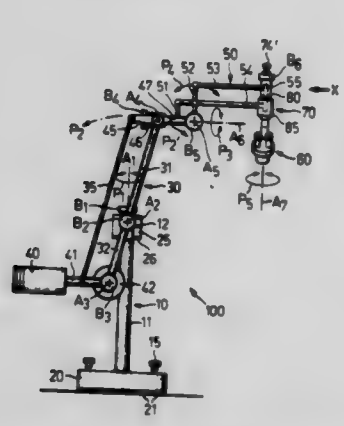
Rudolf Heller, and Walter Schindler, both of Zürich, Switzerland, assignors to Contraves AG, Zürich, Switzerland

Filed Jul. 10, 1980, Ser. No. 167,540

Claims priority, application Switzerland, Jul. 24, 1979, 6849/79

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—542 **6 Claims**



1. An auxiliary apparatus for a stand for an optical observation device, preferably a surgical microscope, comprising:

said stand containing:

a support arm;

a pivotable arm cooperating with said support arm;

hinge parallelogram means rotatable about a first axis;

said hinge parallelogram means being pivotable about a second axis of the support arm which is transversely arranged with respect to the first axis;

a number of rotatary and brake bearings;

the optical observation device being mounted at the stand and being freely adjustable, but fixedly positionable, in a predetermined spatial region as concerns its position and orientation;

said hinge parallelogram means having a front region at which there is arranged one of the brake bearings;

a levelling element provided at said one brake bearing which is arranged at the front region of the hinge parallelogram means;

a head element mounted to be rotatable in relation to the brake bearing about an essentially vertical axis;

said head element having a housing;

a coupling element provided at said head element;

said coupling element serving for receiving and attaching the observation device;

said coupling element being mounted to be freely movable in said housing of said head element;

fixing screw means for fixedly positionally adjusting said coupling element;

ball-and-socket joint means for mounting said coupling element in said housing of said head element;

said fixing screw means serving to fixedly positionally adjust said coupling element which is freely movable within the mobility limits of said ball-and-socket joint means; and

said brake bearing being arranged to be adjustable in horizontal direction, together with the head element and coupling element, in relation to a horizontal axis of the support arm and in vertical direction at the hinge parallelogram means.

4,344,596

ADJUSTABLE ROLLER SUPPORT FOR A ROTARY DRUM

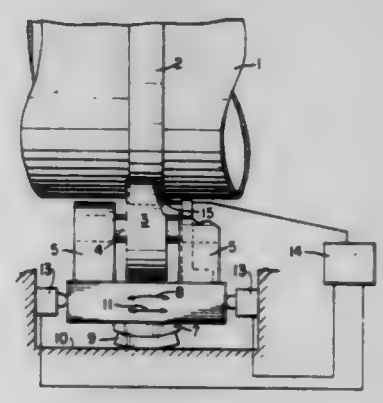
Paul T. Hjaeresen, Hillsdale, N.J., assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed May 5, 1980, Ser. No. 146,222

Claims priority, application United Kingdom, May 9, 1979, 7916050

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—550 **16 Claims**



1. A roller support for supporting a rotary drum on a base support, the rotary drum having a live ring positioned around the rotary drum, comprising at least one roller in supporting engagement with the live ring, weigh beam means, means for mounting the at least one roller on the weigh beam means, rocking bearing means positioned between the weigh beam means and the base support, said rocking bearing means being configured and dimensioned so as to permit rocking movement of said weigh beam means and also longitudinal movement of the roller support generally along the direction of the longitudinal axis of the rotary drum, and means for driving the roller support in accordance with the axial displacement of the live ring.

4,344,597

VEHICLE SEAT WITH FORE-AND-AFT SHOCK ISOLATION

Shawn H. Eimen, Milwaukee, Wis., assignor to Milsco Manufacturing Company, Milwaukee, Wis.

Filed Apr. 21, 1980, Ser. No. 142,339

Int. Cl.³ F16F *15/06*

U.S. Cl. 248—561 **4 Claims**

1. A seat suspension having a seat part supported on a suspension part for fore-and-aft motion relative to the suspension part, said seat suspension being characterized by:

A. a latching member;

B. cooperating means on the seat part and on said latching member connecting the latter with the seat part

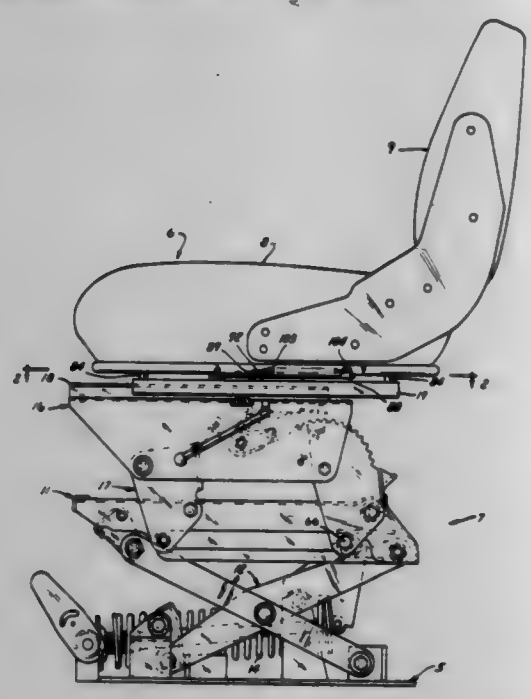
(1) to swing relative thereto about a first axis, between a normal position wherein a latch part on the latching member engages said suspension part to confine the

latching member against fore-and-aft movement relative to the suspension part and a releasing position wherein said latch part is disengaged from the suspension part, and

(2) said cooperating means providing for limited fore-and-aft sliding of the seat part relative to the latching member when the latter is in its normal position;

C. a manually shiftable control member;

D. pivot means connecting said control member with the latching member for swinging relative thereto about a second axis which is spaced from and parallel to said first axis, whereby said control member is carried between an intermediate position and a first limit position which is



spaced in one direction from said intermediate position and wherein the control member leaves the latching member free for fore-and-aft sliding relative to the seat part; and

E. cooperating abutment means on the seat part and on the control member, engaged when the control member is in its said intermediate position to confine the control member against fore-and-aft movement relative to the seat part to thus lock the latter to the latching member, said abutment means providing a fulcrum about which the control member can be swung in the opposite direction, from its intermediate position to the second limit position, while said pivot means constrains the latching member to swing to its releasing position.

4,344,598

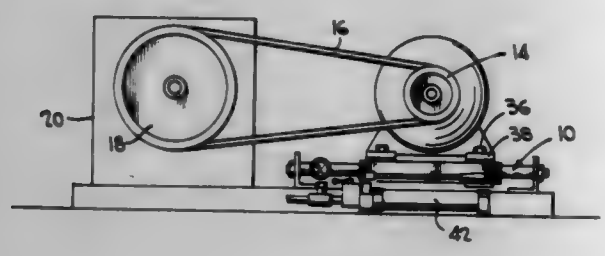
MOTOR SUPPORT

Jerome J. Sloyan, Trenton, N.J., assignor to Joseph File and Seth A. Hubbard, both of Riverhead, N.Y.

Filed Oct. 5, 1978, Ser. No. 948,747

Int. Cl.³ F16M *1/00*

U.S. Cl. 248—651 **2 Claims**



1. A support for a motor having a drive pulley adapted to be connected by a belt to the driven pulley of a piece of machinery or the like comprising a base, a carriage slidable on the base and having an upper surface on which a motor is fixedly mounted, a fixed spring seat carried by the carriage, a hydraulic cylinder mounted on the base and having a piston rod workingly extending therefrom with the cylinder and the piston rod having their longitudinal axes aligned with the direction of sliding movement of the carriage, a movable spring seat carried by the piston rod, a spring assembly mounted between the seats with the movable seat being movable relative to the fixed seat in comprising the spring assembly, said spring assembly including guide rods fixed to the fixed seat and extending between the seats with the movable seat being slidable thereon and compression springs coiled on the guide rods and bearing against both seats, said piston rod having an outer end extension rod which extends lengthwise beyond the fixed seat and slidably passes through an end of the base, and an adjustably mounted stop on the extension rod disposed on the outer face of said base end with said stop engaging the base end to prevent retraction of the piston rod into the cylinder in the event fluid pressure should leak from the cylinder whereby release of compressive force on the spring assembly between the seats would be prevented should fluid pressure leak from the cylinder.

4,344,599

ROCK DRILL BOOM STRUCTURE

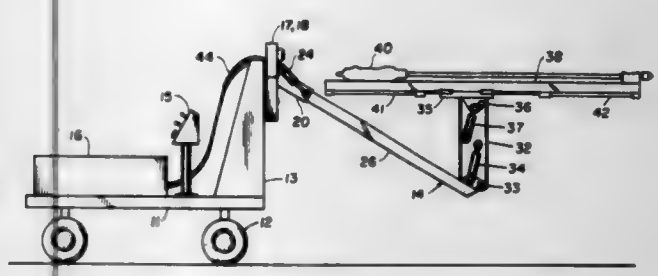
Lorne R. Herron, Saltsjöbaden, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Dec. 20, 1978, Ser. No. 971,446

Claims priority, application South Africa, Dec. 21, 1977, 777581

Int. Cl.³ F16M *1/00*

U.S. Cl. 248—660 **21 Claims**



1. In a rock drill boom structure comprising support means (17), an elongated boom (26) swingably carried by said support means, a feed beam (38) on which a rock drill (40) is mountable to be power displaceable therealong, said feed beam being carried by one end of the boom,

the improvement wherein said support means (17) includes:

an elongated hollow guide means (20) which is of substantially less longitudinal length than the boom (26) and in which the boom is slidably received to project through both ends of said guide means, the boom being arrestable in said guide means;

a rotatable member (19) on which said guide means (20) is pivotally mounted so that said guide means (20) is pivotable relative to said rotatable member about an axis transverse to the axis of rotation of said rotatable member;

first power means (23,24) coupled to said guide means (20) to pivot said guide means; and

second power means (63,77) coupled to said rotatable member (19) to rotate said rotatable member.

4,344,600

MOLD FOR EMBEDDING ONE ARTICLE WITH ANOTHER

Gale E. Shafer, Jr., Rte. 3, Ottawa, Ohio 45875

Filed Feb. 9, 1981, Ser. No. 233,032

Int. Cl.³ B29C *1/14*; B29F *1/022*

U.S. Cl. 249—88 **4 Claims**

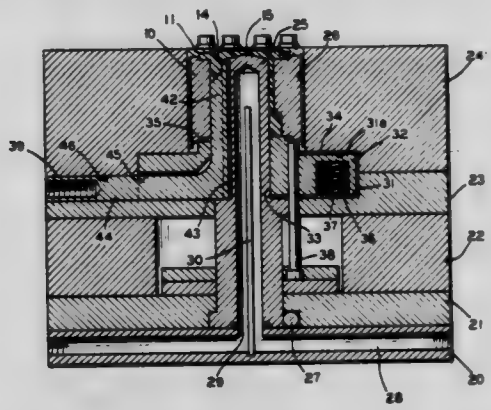
1. In an injection mold of the type having two halves movable toward and away from each other for bonding one member to another member with a matrix of material, one half comprising:

(a) a laminated mold structure having a cavity opening into

one surface thereof for receiving the members to be bonded to each other;

(b) a potting post fixedly connected to said laminated mold structure and projecting into the cavity for positioning the members to be bonded to each other relative to the cavity sufficient space being provided between said post and said member for introduction of molding material;

(c) ring means surrounding an intermediate portion of said potting post and movable relative thereto to define a



closed end of the cavity, said ring means having a portion extending into the cavity for supporting the one member to be bonded relative to the other member, and (d) means for urging said ring means toward the cavity opening in said one surface of said laminated mold structure, said ring means being movable in a direction opposite to said urging means whereby the shut height of the cavity between the opening and the ring means in said laminated mold structure is automatically adjusted to the height of the members, when the two mold halves are moved together.

4,344,601

MOLD APPARATUS WITH ELASTIC CLAMPING MEANS

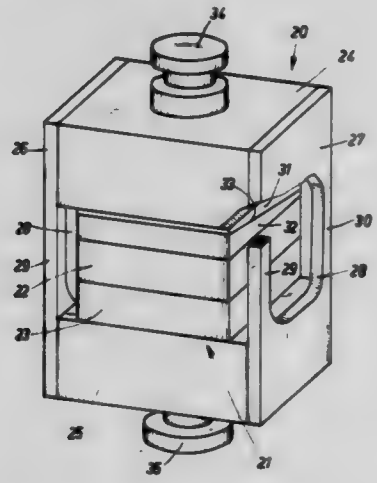
Lothar Fink, Achim-Baden, and Lothar Wojcichowski, Achim, both of Fed. Rep. of Germany, assignors to Klöckner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 244,401

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011200

Int. Cl.³ B29C *1/00*

U.S. Cl. 249—167 **16 Claims**



1. An apparatus for producing molded articles of plastic or rubber, comprising:

(a) a mold assembly including separable upper and lower mating parts defining therebetween a mold cavity,

(b) clamping means for holding the mold parts in an assembled state,

(c) elastically yieldable tensioning means embodied in and integral with the clamping means, and

(d) means for expanding the tensioning means to enable the separation of the mold parts, whereby the tensioning means exerts a closing force on the mold parts upon the release or relaxation of the expanding means.

4,344,602

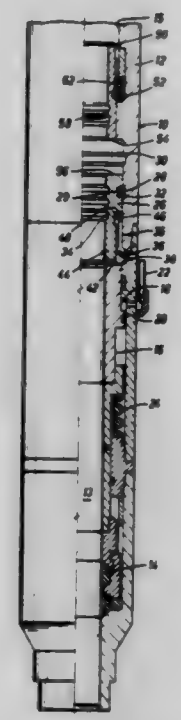
LOCK OPEN MECHANISM FOR SUBSURFACE SAFETY VALVE

Henry P. Arendt, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 16, 1980, Ser. No. 197,669

Int. Cl.³ E21B *43/12*

U.S. Cl. 251—58 **11 Claims**



1. A subsurface safety valve comprising

a tubular housing having a longitudinal bore extending therethrough defining a flow path,

closure means disposed in said bore for controlling flow through said flow path,

operator means longitudinally movable with respect to said tubular housing for moving said closure means and having a first position wherein said closure means closes said flow path and having a second position wherein said closure means opens said flow path,

control fluid pressure responsive means for moving said operator means from said first position to said second position when affected by fluid pressurized above a selected value,

biasing means for urging said operator means to move to its first position,

lock out means disposed in said bore, shiftable to act on said operator means to temporarily hold said operator means in said second position upon release of pressurization acting upon said control fluid pressure responsive means,

profile means on said lock out means for receiving a shifting tool,

a permanent lock out sleeve above said lock out means, and

latch means between said housing and said permanent lock out sleeve permitting downward movement while preventing upward movement of said sleeve,

said permanent lock out sleeve movable downwardly into engagement with said lock out means to permanently hold said lock out means in a position to retain the operator means in said second position.

4,344,603
ELECTROMAGNETIC VALVE APPARATUS WITH A HAND-OPERATED TRANSFER DEVICE

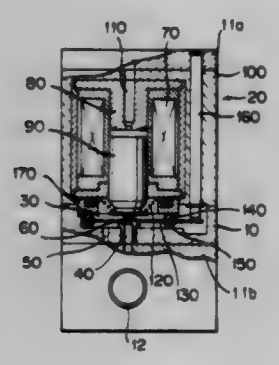
Kazuhiro Hozumi, and Shigeo Tamaki, both of Asahi, Japan, assignors to Kuroda Precision Industries Ltd., Kawasaki, Japan

Filed Aug. 20, 1980, Ser. No. 179,642

Claims priority, application Japan, Aug. 31, 1979, 54-121286[U]

Int. Cl.³ F16K *31/06*

U.S. Cl. 251—130 **11 Claims**



1. In an electromagnetic valve apparatus comprising a valve body, a valve chamber formed in the valve body and having a fluid inflow passage and a fluid discharge passage, a valve seat provided around an opening of the fluid inflow passage into the chamber, an electromagnetic member having a housing, an electromagnetic coil, a fixed iron core in which a fluid passage is provided, and a movable iron core, an end of the movable iron core being movable into contact with the valve seat to close the fluid inflow passage, the improvement comprising a hand-operated apparatus for moving the movable iron core away from the valve seat and comprising:

a flat spring member which comprises a large diameter annular element, an extended element which extends from the large diameter outer annular element and respectively projects to inner and outer sides thereof, and a small diameter inner annular element which is connected to an inner end of the extended element and is positioned within the outer annular element of the spring member;

elastic sealing means for fixedly securing the outer annular element of the spring member in the valve chamber; and

an operative member which operatively contacts with an outer end of the extended element of the spring member for operating the flat spring member to lift up the movable iron core, and said inner annular element being resiliently bent by the extended element to push the movable iron core away from the valve seat, the outer annular element of the spring member operating as a fulcrum for the extended element when the outer end of the extended element is moved by the operative member.

4,344,604
VARIABLE RAKE STAIR RAIL ASSEMBLY

Gene Basey, Rowland Heights, Calif., assignor to Zenith Stairways & Building Products, Inc., Walnut, Calif.

Filed Oct. 27, 1980, Ser. No. 201,259

Int. Cl.³ E04H *17/14*

U.S. Cl. 256—65 **29 Claims**

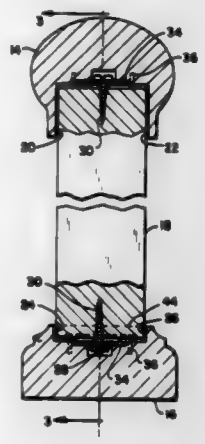
1. A variable rake stair rail assembly which comprises:

a wooden hand rail having an elongated recess;

a wooden shoe rail having an elongated recess;

a plurality of elongated balusters extending in spaced relation intermediate the shoe rail and the hand rail;

means for joining each of said balusters to said hand rail and said shoe rail, said means for joining comprising an elongated member extending into at least one end of each baluster and having a generally enlarged axial extremity disposed in spaced relationship thereto and a flat elongated strip shaped member secured to each of said rails at the bottom of each said recess; said strip shaped member having an opening therein for receiving and accepting said enlarged axial extremity of said elongated member, without removing said elongated member from the end of the baluster, said opening allowing movement of said enlarged axial extremity in and out thereof in at least one relative position of said opening and said enlarged axial extremity; and



means for locking the ends of said balusters in the desired assembled position relative to said hand and shoe rails.

4,344,605
APPARATUS FOR CUTTING THE END OFF A COILED STRIP

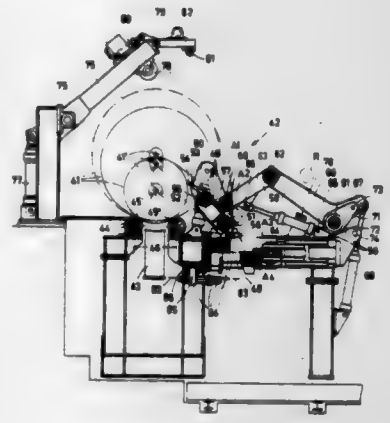
Horst Ganseuer, Kreuztal-Eichen; Dieter Remus, Netphen, and Heinz Gail, Hilchenbach, all of Fed. Rep. of Germany, assignors to Siemag Transplan GmbH, Netphen, Fed. Rep. of Germany

Filed Jul. 27, 1981, Ser. No. 287,044

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1980, 3028538; European Pat. Off., Jun. 5, 1981, 81 104360

Int. Cl.³ B23K *7/10*

U.S. Cl. 266—48 **12 Claims**



1. An apparatus for cutting the end off a strip wound as a coil having a diameter lying between a predetermined maximum diameter and a predetermined minimum diameter, said apparatus comprising

a fixed support;

a substantially horizontal support cradle for said coil on said support;

means on said support defining a vertically open gap spaced from said cradle for cutting said strip along a horizontal cutting plane as said strip passes down through said gap;

a guide on said support above and to one side of said gap between same and said cradle;

an inner pivot arm pivoted on said support about a horizontal inner axis and having an outer end;

an outer pivot arm pivoted on said outer end of said inner arm about a horizontal outer axis and having an outer end carrying a pusher; and

means connected between said arms and said support for displacing said pusher horizontally and vertically above said plane relative to said guide for urging said pusher against said strip at said guide at any of several vertically offset locations therealong.

4,344,606

WELDING AND CUTTING HANDPIECE

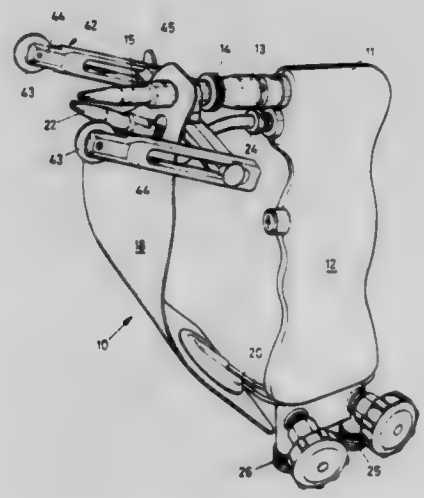
Nicholas T. E. Dillon, 10 East St., Magill, South Australia, Australia

Filed Dec. 29, 1980, Ser. No. 220,263

Claims priority, application Australia, Aug. 29, 1980, 61908/80

Int. Cl.³ B23K *7/10*

U.S. Cl. 266—66 **9 Claims**



1. A welding and cutting handpiece which is useful as an oxy-acetylene torch, having a flame nozzle which is in gas flow communication with a gas mixing chamber,

a cutting nozzle having an oxygen directing aperture extending therethrough and being in gas flow communication with an oxygen conduit in the handpiece,

and means securing the cutting nozzle to be so inclined to the flame nozzle as to direct an oxygen stream from one side of a flame into the flame of combustible gas when a flame issues from the flame nozzle.

4,344,607

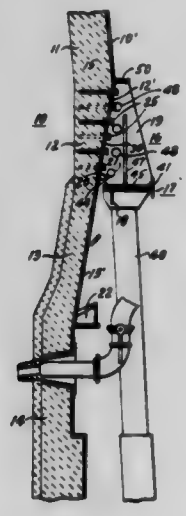
BLAST FURNACE SUPPORT APPARATUS

Marvin O. Smith, Jr., Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 1, 1980, Ser. No. 211,616

Int. Cl.³ C21B *7/00*

U.S. Cl. 266—198 **4 Claims**



1. In a vertically disposed furnace having a stack section, a bosh section and a hearth section joined together and supported on a plurality of columns spaced around the furnace, a truncated cone-shaped jacket enclosing a stack section and extending downward from the top, the improvement comprising:

(a) a bosh jacket enclosing the bosh section,

(b) an annular jacket extending the bosh jacket upward to intersect the truncated cone-shaped jacket,

(c) a mantle ring surrounding the furnace adjacent the bosh jacket and spaced therefrom, and mounted on the tops of the plurality of columns below the intersection of the truncated cone-shaped jacket and the annular jacket, and

(d) a plurality of radially spaced, vertically disposed gusset plates connected to the annular jacket and the mantle ring.

4,344,608

TILT DRIVE COUPLING FOR STEEL MAKING CONVERTER

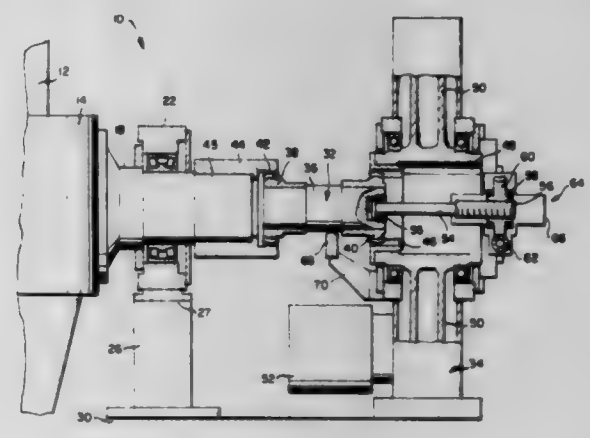
Erwin Mayr, Augsburg, Fed. Rep. of Germany, assignor to Zahnraderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed Nov. 5, 1981, Ser. No. 318,318

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1980, 3043850

Int. Cl.³ C21C *5/50*

U.S. Cl. 266—245 **11 Claims**



1. A drive coupling for selectively interconnecting a crucible vessel and a tilt drive of a converter, the crucible vessel having a pair of trunnions and means journalling the trunnions about a horizontal axis for tilting the crucible to various operative positions, the tilt drive including means for providing a rotative output, the crucible including means for engaging the drive coupling, the coupling including a shaft, the shaft having means for driving the coupling engaging means, the shaft having means for engaging the rotative output means whereby the tilt drive is operable to rotate the crucible about the trunnion journalling means to selected positions, the coupling further including means for selectively disengaging and engaging the coupling engaging means of the crucible, the selective disengaging and engaging means including means for axially moving the shaft away from and toward the crucible coupling engaging means whereby the coupling is disengaged by moving the shaft away from the crucible to permit removal of the crucible and engaged with a crucible to be installed by moving the shaft toward the crucible.

4,344,609

RESILIENT POSITIONING APPARATUS

Harold U. Bond, Vancouver, Canada, assignor to Kockums Industries Limited, Surrey, Canada

Filed Apr. 21, 1980, Ser. No. 142,612

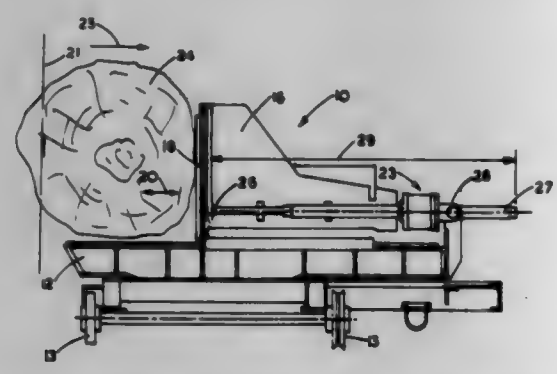
Int. Cl.³ B23Q *3/08*

U.S. Cl. 269—27 **8 Claims**

1. A resilient positioning apparatus for a machine adapted to resiliently absorb force from an object moving thereagainst by moving momentarily relative to a machine datum, the machine having a machine stop means fixed relative to the machine datum, the apparaus including:

(a) a telescoping assembly having extendable and retractable first and second portions which cooperate with power and control means of the machine to position the two portions accurately relative to each other, the first portion cooperating with the object to locate the object, the second portion having an assembly stop means adapted to contact the machine stop means for registration of the second portion,

(b) a gas cylinder assembly having a partition means and a gas cylinder body, the partition means being secured to the second portion of the telescoping assembly so as to move therewith, and being in sealing engagement with the gas cylinder body, the gas cylinder body having first and second ends with sealing means adjacent at least the first end thereof, the gas cylinder body enclosing a length of



the second portion and cooperating with the partition means and the second portion so as to form at least one chamber defined in part by the gas cylinder body, the partition means and the second portion; the chamber being essentially sealed and adapted to receive gas under pressure to generate a pneumatic force on the second portion to establish registration of the assembly stop means of the second portion against the machine stop means so as to register the telescoping assembly relative to the machine datum,

the pneumatic force being overcome when the telescoping assembly is subjected to an excessive force which moves the second portion out of registration to absorb the excessie force, and thereafter the pneumatic force re-establishes registration of the second portion to reposition the telescoping assembly.

4,344,610

FOLDING APPARATUS FOR REEL OR WEB-FED ROTARY PRINTING MACHINES

Willi Jeschke, Heidelberg, and Hans Müller, Leimen, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

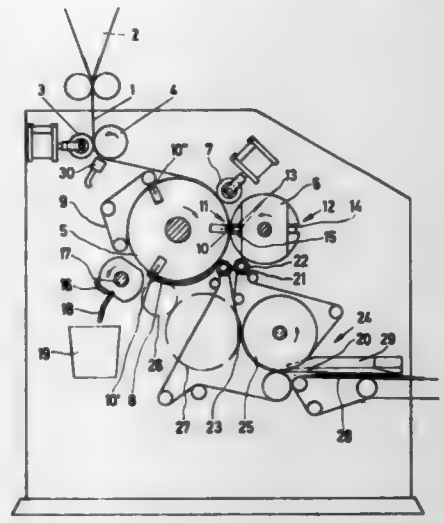
Filed Jul. 6, 1980, Ser. No. 175,638

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931968

Int. Cl.[3] B41F *13/58*

U.S. Cl. 270—6 **8 Claims**

1. Folding machine in web-fed rotary printing machines for longitudinally folding a paper web, for cross-cutting the thus longitudinally folded paper web and for collecting separated copies on a collecting cylinder cooperating with a knife cylinder, the cylinders having respectively parallel axes disposed in a common plane and being disposed substantially tangentially to one another, the collecting cylinder having an odd number of puncture rows on the periphery thereof for securing the paper web to the collecting cylinder and the knife cylinder having an even number of cutting rows spaced about the periphery thereof for securing the paper web to the collecting cylinder and the knife cylinder having an even number of cutting rows spaced about the periphery thereof for cutting the paper web into page-length segments, the cylinders being rotatable in opposite rotary directions, the improvement therein comprising means defining the puncture rows firmly built into the collecting cylinder, said cutting rows formed alternatingly of a single knife for making a single cut in said web at one end of a page-length segment and a double knife for making two substantially simultaneous cuts in said web at an opposite end of said page-length segment, said single knife being disposed at a location whereat it leads the respective



puncture row on the collecting cylinder cooperating therewith and a device for removing from the puncture rows trimmed strips separated from the copies by said double knife on both sides of the puncture rows.

4,344,611

DEVICE FOR FEEDING PLATE MATERIALS

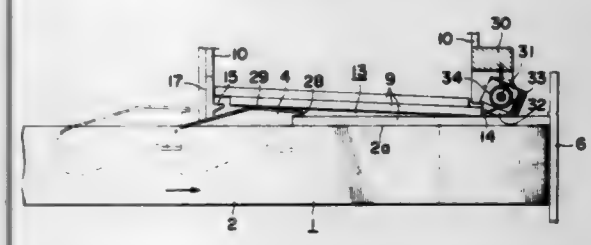
Shigeru Morita, Saitama, Japan, assignor to Nippon Flute Co., Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,402

Claims priority, application Japan, Jun. 26, 1980, 55/86797

Int. Cl.[3] B65H *1/08*

U.S. Cl. 271—129 **4 Claims**



1. A device for feeding plate materials comprising: a magazine containing a number of stacked plate materials and guiding them toward its outlet, the plate materials being urged in the direction perpendicular to their surfaces; a reciprocating member disposed at the outlet of the magazine in such a manner that it can be moved back and forth to receive the plate members from the outlet of the magazine and carry them one by one on its support surface to a predetermined position, the support surface being disposed to face the outlet of the magazine; a kicker retractably fitted to the reciprocating member through a spring so that, when projected from the support surface of the reciprocating member, the kicer engages with the rear edge of the plate material on the support surface as it advances; a rear engagement projection protruding inwardly from the rear wall of the magazine outlet so that it opposes and engages the outer rear surface of the outermost one of the plate materials contained in the magazine; a front engagement projection protruding from the front wall of the magazine outlet toward the support surface of the reciprocating member so that it opposes the front edge of the outermost one of the plate materials contained in the magazine; and a claw projecting from the front end of the kicker so that it catches the rear edge of the plate material pressed against the support surface of the reciprocating member, said kicker being disposed so that the upper surface of the kicker, as it moves forward, comes into sliding frictional engagement with the underside of the plate material whose rear end is engaging with the rear engagement

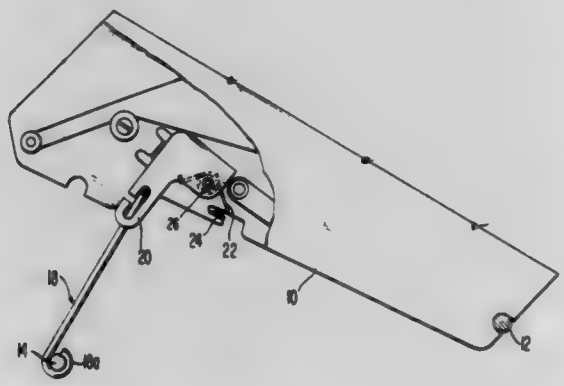
projection of the magazine and moves the last-recited plate material off of said rear engagement projection of the magazine and into position to be fed out of the magazine and thereafter to be caught and moved by said claw of said kicker.

4,344,612

SHEET FEEDER SUPPORT ASSEMBLY

Walter F. Leise, Farmingville, and John J. Darcy, Nesconset, both of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 12, 1980, Ser. No. 149,177
Int. Cl.³ B65H *1/00*
U.S. Cl. 271—162 **8 Claims**



1. A sheet feeder support assembly for use between a sheet feeding apparatus and its mounting frame to a printing mechanism, said support assembly comprising:

a rigid support rod mounted on said mounting frame;

a locking latch member slidably connected to said support rod and pivotably connected to said sheet feeding apparatus to support said sheet feeding apparatus in a raised position; and

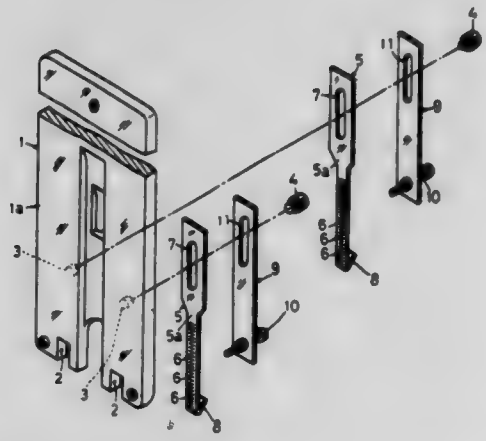
a torsion spring mounted between said locking latch member and said sheet feeding apparatus, one end of said spring connected to said locking latch member, the other end of said spring connected to said sheet feeding apparatus such that a lifting motion on said sheet feeding apparatus enables said spring to pivot said locking latch member and, in turn, causes said support rod to supportably engage the sheet feeding apparatus in said raised position.

4,344,613

DEVICE FOR SUCCESSIVELY STRIPPING SHEET FROM A STACK OF SHEETS

Kingo Isikawa, 33-4, Doichi-cho 2-chome, Mizuho-ku, Nagoya-shi, Aichi-ken, Japan

Filed Apr. 11, 1980, Ser. No. 139,578
Claims priority, application Japan, Apr. 18, 1979, 54-47480
Int. Cl.³ B65H *1/06*
U.S. Cl. 271—165 **8 Claims**



1. In a suction-type feeder for feeding sheets one by one from a stack of sheets having a feeding end, including a sheet immediately removable from said feeding end, and at least an other sheet in contact with the immediately removable sheet, the improvement comprising:

a backplate adapted to be in contact with a lateral side of said stack,

a plurality of flexible sheet-stripping members, each including a base portion secured to said backplate, and a serrated operative portion extending from said base portion, adapted to extend in a direction at least partly over said feeding end of said stack, and being curved inwardly, and

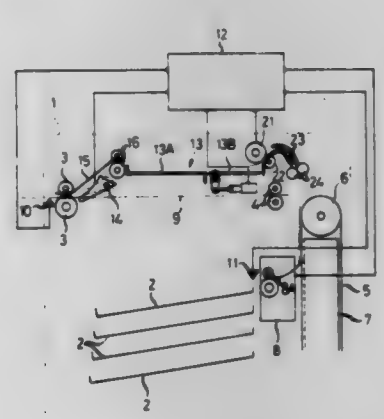
resilient means for urging said stripping members in said direction, the sheets, upon operatively making contact with said serrated operative portions, being induced to vibrate, whereby said other sheet is separated from the immediately removable sheet.

4,344,614

COLLATOR

Tamaki Kaneko, Fujisawa, and Tugio Okuzawa, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Feb. 29, 1980, Ser. No. 125,976
Claims priority, application Japan, Mar. 7, 1979, 54-27870
Int. Cl.³ B65H *39/11, 7/06*
U.S. Cl. 271—288 **5 Claims**



1. An improved collator suitable for collating sheets received from a copying apparatus, printing apparatus or the like of the type having, in combination,

a plurality of bins arranged side by side in spaced parallel relation;

conveying means for conveying the sheets through a sheet conveying path to the plurality of bins;

direction changing means for changing the direction of movement of the sheets conveyed by the conveyor means for selectively delivering the sheets to the plurality of bins;

sheet jam detecting means for detecting a sheet jam occurring in the sheet conveying path; a jam tray disposed adjacent to the sheet conveying path for temporarily storing thereon the sheets following the occurrence of a sheet jam; a deflecting plate for deflecting sheets from the sheet conveying path to the jam tray; and control means operable responsive to said jam detecting means for moving the deflecting plate to a position for directing the sheets from the sheet conveying path to the jam tray; wherein the improvement comprises;

the jam tray including a fixed portion and a sheet pressing portion movably mounted adjacent said fixed portion;

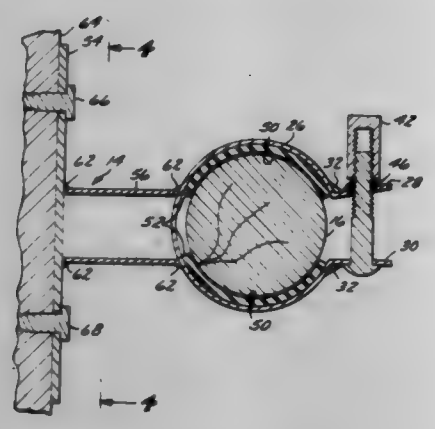
sheet feeding means for feeding one sheet after another from a stack of sheets on said sheet pressing portion of the jam tray to the sheet conveying path; and

said sheet feeding means including sheet feed roller means for engaging a sheet on said sheet pressing portion and directing the sheet therefrom to the sheet conveying path, and means, operably connected to the control means, for moving said sheet pressing portion to engage a sheet on said sheet pressing portion with said sheet feed roller means responsive to said control means.

4,344,615
CONTROLLED FRICTION EXERCISING DEVICE

Charles H. Carlson, 52nd 11th St., Manhattan Beach, Calif. 90266

Filed Apr. 10, 1980, Ser. No. 138,887
Int. Cl.[3] A63B *23/00*
U.S. Cl. 272—67 14 Claims



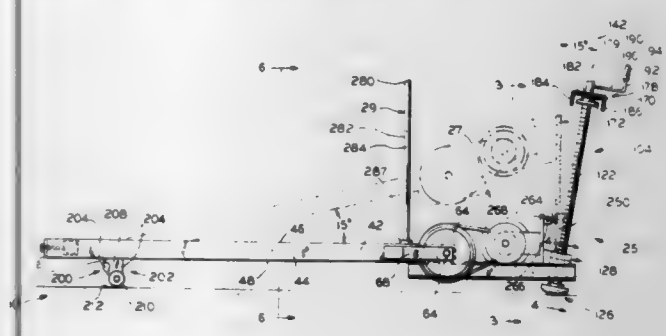
1. An exercise device comprising:
an elongated rotatable member having a central portion with a generally circular cross-section and a gripping portion located on either side of said central portion;
a clamping mechanism which encircles a substantial part of said central portion;
mounting means for preventing rotation of said clamping mechanism when said elongated member is rotated;
a liner disposed between said clamping mechanism and said central portion of said elongated member, said liner including a layer of resilient material adjacent said clamping mechanism and a layer of material having a relatively low coefficient of friction adjacent said central position; and
adjustment means for tightening and loosening said clamping mechanism;
whereby an operator can exercise by grasping said gripping portions and rotating said elongated member with the resistance of rotation being adjustable by way of said adjustment means.

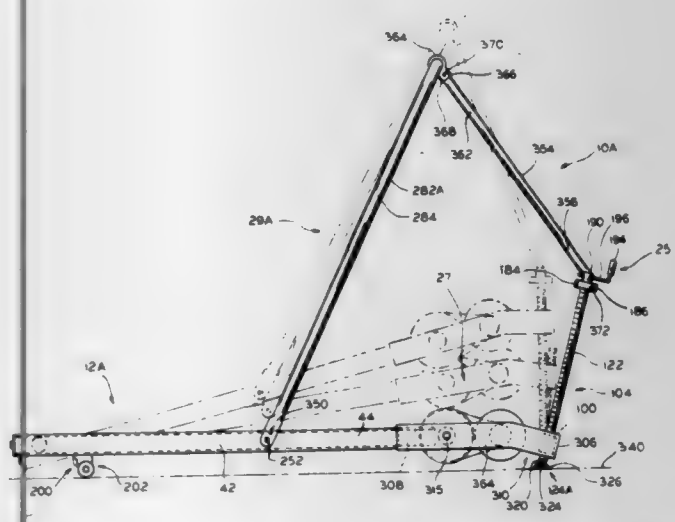
4,344,616
EXERCISE TREADMILL

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321

Filed Aug. 5, 1980, Ser. No. 175,516
Int. Cl.[3] A63B *23/06*
U.S. Cl. 272—69 7 Claims

1. An exercise treadmill comprising:
a generally planar slider bed having a head end, a tail end, and a fabric top surfacing extending substantially between said ends thereof,
an endless belt trained over said slider bed defining an upper belt run overlying said slider bed top surface and a lower run passing under said slider bed,
means for driving said belt for movement of said belt upper run from said head end to said tail end of said slider bed,
said slider bed having secured to same adjacent said head end thereof a cross member extending transversely thereof,
a pair of screw members threadedly mounted in said cross member in spaced apart relation and for rotation about upright axes that are in parallelism and that are inclined at like acute angles off perpendicular relationship relative to the plane of said slider bed,
said axes each lying in a plane extending normally and longitudinally of said slider bed and being angled relative to the plane of said slider bed to extend forwardly of said slider bed upwardly of said slider bed plane,
each of said screw members having a foot journalled thereof,
said slider bed having spaced feet adjacent its tail end,
said screw members each having threaded portions of substantially equal lengths,
and means for simultaneously rotating said screw members in the same direction in forward and reverse directions for threading said cross member longitudinally of said screw member threaded portions to raise and lower said slider bed head end,
said feet being proportioned to support said slider bed with said plane thereof horizontally disposed when said screw members are in their retracted positions relative to said cross member with the screw member threaded portions thereof being largely disposed above said cross member,
said screw member threaded portions being proportioned in length such that when said screw member threaded portions are in their extended positions relative to said cross member, with said screw member threaded portions





thereof being largely disposed below said cross member, said screw members shift relative to the vertical to be disposed substantially vertically and in firm supporting relation to the slider bed with the slider bed disposed at the same said acute angle value with respect to the horizontal so as to be in the maximum grade effect position,
said screw members in their said retracted positions being at said acute angle relative to the off perpendicular relationship to the plane of said slider bed and said screw members in their said extended positions being substantially vertically disposed,
said belt being formed from nylon and said top surfacing being canvas that is free of lubricant.

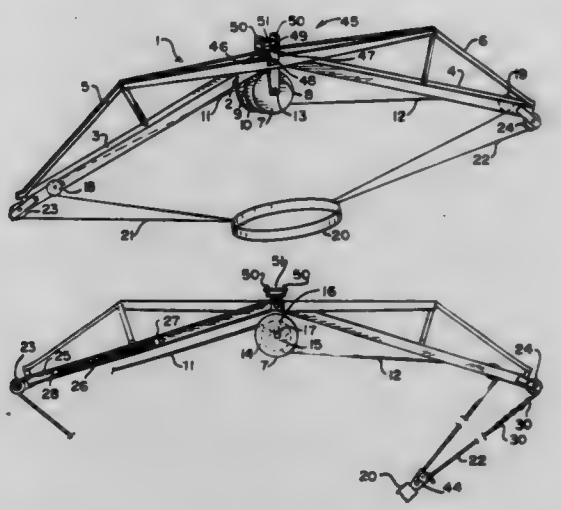
4,344,617
CROSSARM INCLUDING CABLE REWINDING MEANS FOR SUPPORTED GYMNASTIC EQUIPMENT

Raymond J. Murphy, Bonne Terre, Mo. 63628

Continuation-in-part of Ser. No. 135,194, Mar. 28, 1980, which is a division of Ser. No. 842,532, Oct. 17, 1977, Pat. No. 4,204,719. This application Jun. 9, 1980, Ser. No. 157,503
Int. Cl.[3] A63B *7/00*
U.S. Cl. 272—109 2 Claims

1. A crossarm for use in conjunction with gymnastic equipment or the like and for suspending a support for holding a gymnast, said crossarm being arranged for depending from upwardly disposed structure, said crossarm including a length of structural member extending above and laterally to either

side of any supported gymnast, said crossarm structural member comprising a tubular member, a pair of cables, one of each cable operatively associated with each laterally extending tubular member of the crossarm and being connected thereto, each cable extending downwardly for sheaving upon the gymnast's support, a pair of sheaves operatively associated with the proximate ends of the tubular member of the crossarm, each cable further extending around each pair of sheaves operatively associated with each end of the tubular support, each of the cables extending upwardly from the support and being arranged around each of said sheaves and further extending into and partially through the said tubular member, the ends of said cables extending into the tubular member being resiliently



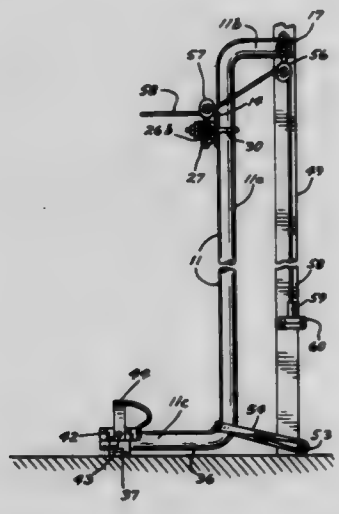
fixed with respect to said tubular member, cable holding means, said cable holding means being secured proximately centrally of the tubular member of the crossarm, said cable holding means being divided for winding and holding each cable separately, said cable holding means comprising a sectionalized reel, one of each cables being wound upon separate reel sections, spiral spring means being located within the cable holding means, said spring at one end being fixed to the cable holding means and its sectionalized reel, said spring at its other end being fixed with respect to the structural member of the crossarm, and said spring means causing a bias tending to effect a retracting of the cables forcefully unwound by the weight of the gymnast and the suspended support during crossarm usage.

4,344,618

EXERCISE APPARATUS

William H. Dudley, 1531 Sheridan Ave. North, Minneapolis, Minn. 55411

Filed Jan. 21, 1980, Ser. No. 114,100
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—117 **16 Claims**



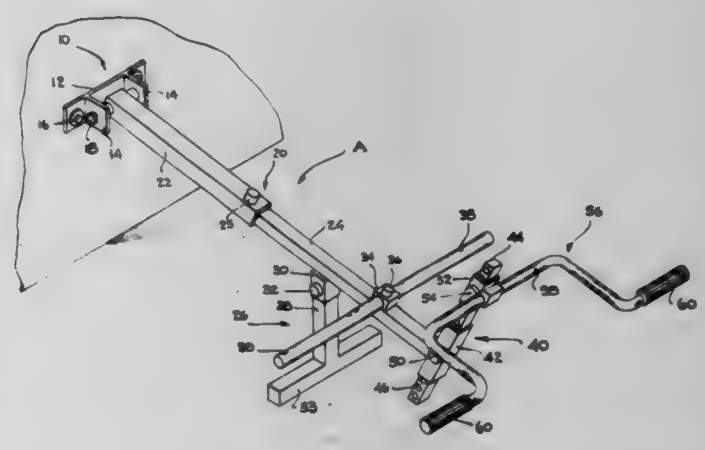
1. Exercise apparatus comprising a main support member having an upper end portion, a vertically elongated intermediate portion having an upper end joined to the upper end portion and a lower end, and a lower end portion joined to the intermediate portion lower end to extend horizontally away therefrom in a given direction, a first and a second foot support, means for mounting the foot supports to and on opposite sides of the lower end portion in relation to said given direction, a first and a second hand grip, means for mounting the hand grips on the intermediate portion on opposite sides thereof in relation to said given direction, the last mentioned means being at a substantially higher elevation than the foot supports, and cross bar means adapted for mountingly engaging the opposite sides of a door frame, said cross bar means being connected to the upper end portion to extend outwardly thereof on opposite sides thereof in relation to said given direction.

4,344,619

PIVOTED WEIGHT LIFTING APPARATUS

William Szabo, 10126 Langmoir Ave., Sunland, Calif. 91040

Continuation-in-part of Ser. No. 79,095, Sep. 26, 1979, Pat. No. 4,323,236. This application Feb. 11, 1980, Ser. No. 120,154
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—117 **15 Claims**



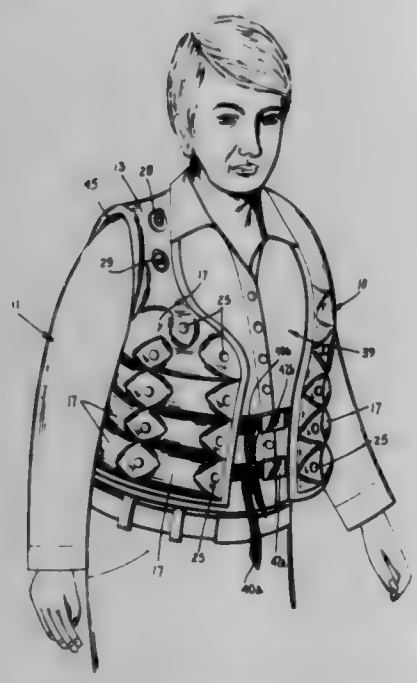
1. A body exercising apparatus comprising:
(a) a lever arm in the form of a single pole-like member having first and second opposite ends,
(b) a mounting means on the first end of said lever arm for pivotal mounting to a relatively stationary structure so that said pole-like member is the only element connected to and extending outwardly from said mounting means,
(c) bar bell weight retaining means on said lever arm for removably retaining bar-bell type weight discs so that weight discs mounted on said weight retaining means are carried by and moveable with said lever arm, said weight retaining means and the weight discs carried thereby being located between the mounting means and the second end of said lever arm,
(d) adjustable positioning means secured to the second end of said lever arm and being located outwardly thereof, said adjustable positioning means comprising a tubular member and a pole vertically shiftable in said tubular member, at least one of said pole or tubular members having pairs of vertically spaced apart holes and the other having at least one pair of holes which are alignable with any of the pairs of spaced apart holes so that a pin element may be inserted in the aligned holes to lock said pole in a selected position with respect to said tubular member, and
(e) handle means secured to said pole of said adjustable positioning means at the second end of said lever arm for engagement by the hands of a user of said body exercising apparatus, so that a user may attempt to lift the lever arm pivotally with respect to the mounting means against the weight placed on said weight retaining means, said adjustable positioning means being manually adjustable so that the height of said handle means is adjustably positionable relative to said lever arm.

4,344,620

EXERCISE VEST

Andre J. Debski, 4256 English Oak Dr., Doraville, Ga. 30340

Filed Nov. 9, 1979, Ser. No. 92,835
Int. Cl.³ A63B *21/12, 21/18*
U.S. Cl. 272—119 **3 Claims**



1. An exercise vest for wearing about the upper torso by a human user, comprising:

a body portion, said body portion comprising an inner sheet and an outer sheet defining an air-tight and water-tight fluid compartment therebetween;

support means for supporting said body portion from the shoulders of the human user and below the shoulders of the user;

means for fastening said body portion about the chest and rib region of the human user;

a fluid inlet formed in said body portion and communicating with said fluid compartment; and

partitioning means for partitioning said fluid compartment into a plurality of interconnected fluid channels, said partitioning means comprising a plurality of parallel line welds each joining together said inner and outer sheets of said body portion, and a passage defined in each of said line welds and communicating between adjacent ones of said fluid channels.

4,344,621

TARGET WITH ENERGY-ABSORBING FOAM MAT

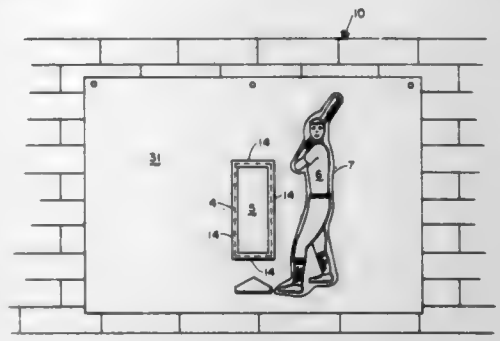
David E. Baker, Zionsville, Ind., assignor to E-A-R Corporation, Indianapolis, Ind.

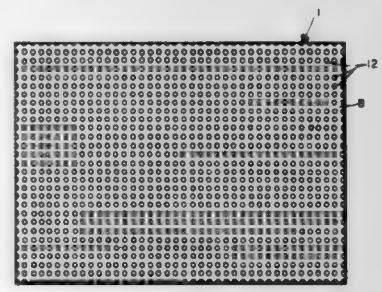
Filed Mar. 3, 1980, Ser. No. 126,341
Int. Cl.³ A63B *69/40*
U.S. Cl. 273—26 A **12 Claims**

2. A practice device for a sporting activity wherein a sport projectile is hurled or struck toward a specified target zone, said device comprising:

(a) an energy absorbing polymeric foam mat element, said mat element being indentable by and fully but slowly recoverable from the impact of a sport projectile thereagainst, said mat element being comprised of an array of apertures through the thickness thereof, said apertures each being of a diameter of at least about ¼ inch (0.635 cm), said apertures being spaced apart so as to define a continuous web of polymeric foam, the total surface area of said apertures being, in the aggregate, between about 40 and about 50 percent of the overall surface area of said mat element;

(b) a continuous and compliant polymeric sheet element having a smooth exterior surface disposed over and bonded continuously to at least one face of said mat element of (a);





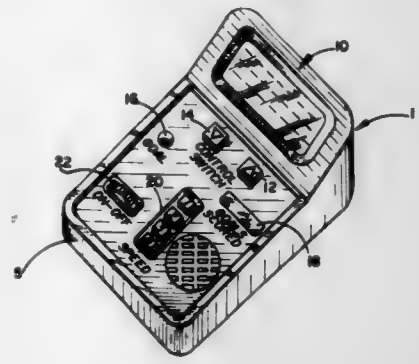
(c) indicia defining a target zone on the exterior surface of said sheet element of (b).

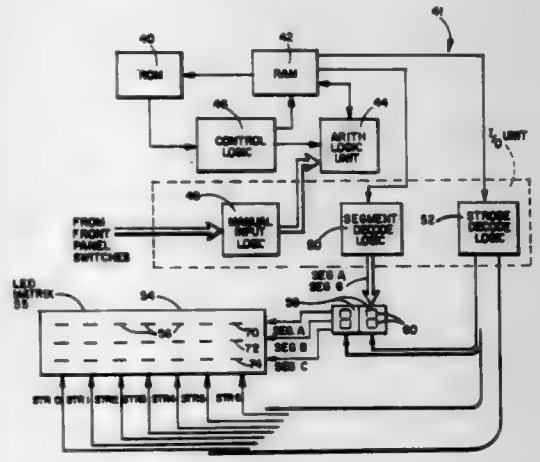
4,344,622

DISPLAY APPARATUS FOR ELECTRONIC GAMES

Joseph Nissim, Huntington Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 916,036, Jun. 16, 1978, abandoned, which is a continuation of Ser. No. 781,807, Mar. 28, 1977, abandoned. This application Sep. 18, 1979, Ser. No. 76,556
Int. Cl.³ A63F *9/00, 9/14*; G06F *3/14*
U.S. Cl. 273—85 G **9 Claims**





1. In a battery powered, hand-held game device having a case, a display supported by said case for emulating the appearance of distinguishable objects in motion along one or more

paths defined by a plurality of spaced path positions, and a programmed controller supported by said case for establishing and controlling operations of said display, said programmed controller being programmed according to game rules whereby a first emulated object is attempted to be moved on said display without reaching a prescribed position relative to a second emulated object, the improved display which comprises:

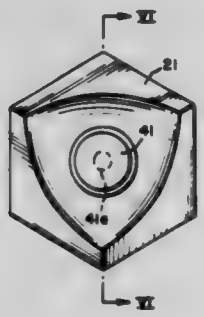
a plurality of selectively energizable chips commonly arranged adjacent each other on a high dielectric supporting material, a single one of said chips disposed at each of said plurality of path positions at spacings for effectively providing perceptible images as said first and second emulated objects, each chip energizable to provide only one emulated object at such path position, each of said chips having an image producing area with a dimension of at least 0.037 inches, adjacent ones of said chips being spaced by a dimension of at least 0.150 inches for providing said image, whereby magnifying lenses for producing said spacings are avoided.

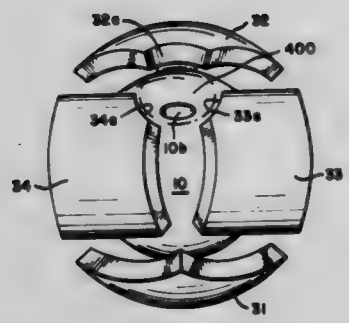
4,344,623

THREE-DIMENSIONAL COMBINATION TOY

Toshiyuki Isobe, Tokyo, Japan, assignor to Daiwa Corporation, Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,030
Claims priority, application Japan, Sep. 1, 1980, 55-120758
Int. Cl.³ A63F 9/08
U.S. Cl. 273—153 S **2 Claims**





1. A three-dimensional combination toy comprising:

a central part having a generally spherical outer surface;

six similarly shaped guide canopies each having four sides and having the general shape of a square portion of a spherical surface of substantially uniform thickness, installed above the outer surface of said spherical central part and spaced therefrom by means of an integrally formed support pole, such that guide spaces are defined between said guide canopies and said central part outer surface, said guide canopies being spaced apart from one another with each of said six guide canopies having its four sides generally aligned with the corresponding four sides of a face of a cube circumscribed about said spherical central part such that the edges of adjacent guide canopies define guide tracks;

seven movable blocks, each of which is provided with a slide piece and each having the general shape of a circular portion of a spherical surface of substantially uniform thickness and dimensioned to slide within and be retained by said guide spaces and which is attached to its respective block via an inwardly projecting slide leg free to move within said guide tracks; and

a fixed block fastened to said central part;

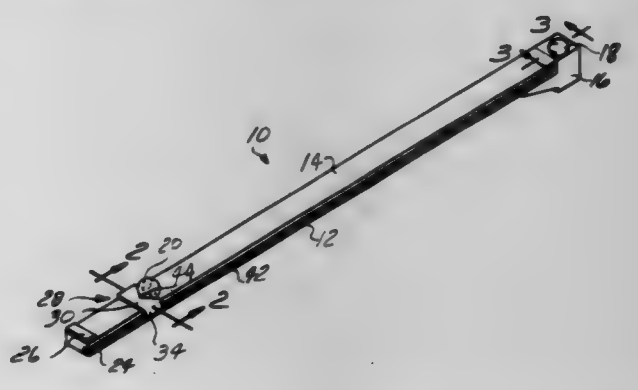
wherein the eight corner spaces formed where any three of said guide canopies are adjacent to one another act as rest positions, and wherein said fixed block is fastened at a predetermined one of said rest positions and each of said slide legs is free to move from a chosen one of the remaining rest positions to a second chosen one of said remaining rest positions via said guide tracks.

4,344,624

PRACTICE PUTTING TRAINER

Paul D. Laursen, 1620 Buckingham, Lincoln Park, Mich. 48146

Filed Jan. 14, 1981, Ser. No. 225,128
Int. Cl.³ A63B 69/36
U.S. Cl. 273—176 F **9 Claims**



1. A practice putting trainer comprising:

an elongated, narrow, planar base having sufficient stiffness to support a golf ball without perceptible deflection;

a flat ball engaging putting surface formed along an upper portion of the base, said putting surface having a width substantially equal to the diameter of a golf ball;

a cup for receiving the golf ball disposed at one end of the base; and

a ball rest including a means for retaining the golf ball on the putting surface until struck by a putter; and

wherein a golf ball rolling along the length of the base from the ball rest to the cup will roll off of the sides of the putting surface if hit improperly.

4,344,625

GAME ENCOURAGING SELF-IMPROVEMENT

Rosalie Frudakis, 2316 Locust St., Philadelphia, Pa. 19103

Filed May 22, 1980, Ser. No. 152,203
Int. Cl.³ A63F 3/00
U.S. Cl. 273—242 **5 Claims**

1. A game for encouraging adherence to a self-improvement program, comprising:

(a) a board having depicted thereon a path to a goal of said program;

(b) a plurality of playing pieces for at least one player, said playing pieces representing stages of development in the self-improvement program, and said playing pieces adapted to mark the current position of said at least one player progressing along the path;

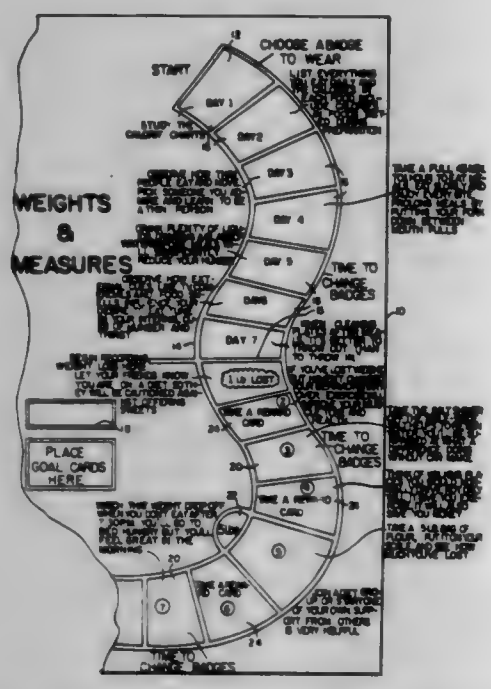
(c) means for allocating rewards for said at least one player for progress toward said goal; and,

(d) means for securing moral support for said at least one player from competing players, from non-players and from internal resources of said at least one player, said means comprising:

legends at spaced intervals along said path directing said at least one player's attention to benefits of adherence to the program;

badges to be worn by said at least one player, said badges soliciting moral support;

caution cards to be read by said at least one player when tempted to give up the program, said caution cards suggesting continued adherence to the program; and,



frustration cards to be read by an unsuccessful player who progresses backwards along the path to the goal, said frustration cards authorizing activities which direct frustration of said unsuccessful player toward harmless objects and away from said program.

4,344,626

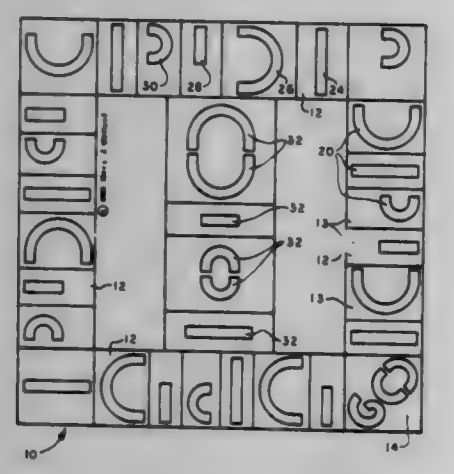
BOARD GAME FOR FORMING ALPHABETIC SYMBOLS

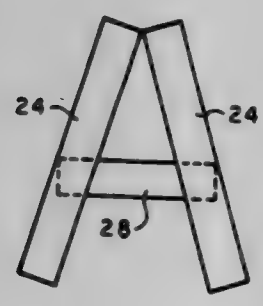
Mary J. Wadland, 635 Maple Ave., Downers Grove, Ill. 60515

Filed Aug. 11, 1980, Ser. No. 176,817

Int. Cl.³ A63F *3/00*; G09B *1/40*

U.S. Cl. 273—243 **5 Claims**





1. An educational board game apparatus for a plurality of young child players to teach them how alphabetic symbols are formed, comprising:

a gameboard having a main course of sequential board positions for player markers;

respective distinctive player markers for each player;

chance means for determining player marker movement along said main course;

a plurality of differing symbol component pieces corresponding in shape to fractionalized prescribed alphabetic symbols, symbol component pieces of the same shape being marked with differing colors;

said main course positions having indicia thereon identifying respective component pieces;

a reference item having indicia thereon depicting said prescribed alphabetic symbols and the manner in which said symbol component pieces may be combined into alphabetic symbols; and

a color chart having groups of indicia thereon conforming in size and shape to said symbol component pieces, each group having a unique color substantially matching one of said differing colors of said symbol component pieces, and each group forming a symbol, whereby a player can place symbol component pieces conforming in size, shape and color upon said color chart to duplicate substantially the symbol of each color chart group, thereby to associate a color with a symbol.

4,344,627

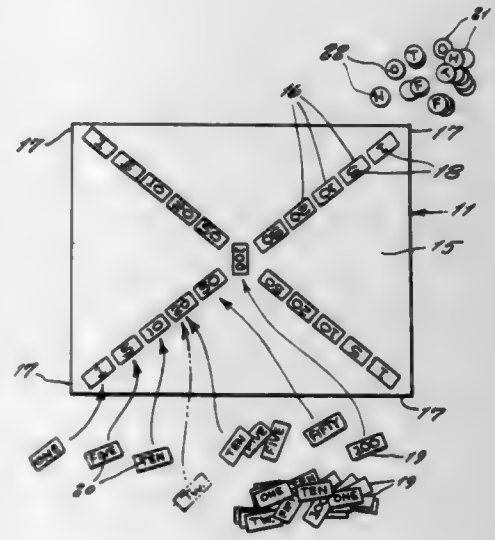
ALPHABET GAME

Jessie L. Jones, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Oct. 20, 1980, Ser. No. 198,776

Int. Cl.³ A63F *3/06*

U.S. Cl. 273—273 **1 Claim**



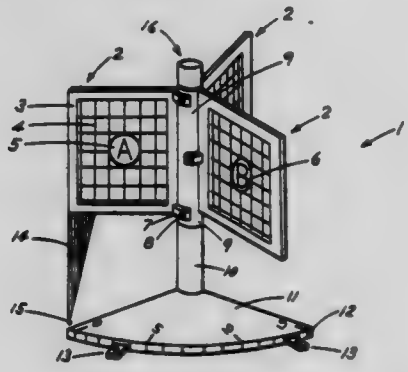
1. An alphabet game comprising in combination, a rectangular gameboard a deck of cards and a set of chips, said gameboard having rows of rectangular spaces marked with numerals, said cards each being printed alphabetically with a word indicating one said numeral, and each said chip being printed with a letter which is a first letter of one said word printed on said cards, wherein there are plurality of chips corresponding to each said word, wherein said rows on said gameboard extend diagonally between opposite corners of said gameboard and wherein said numerals are in ascending order of one to fifty, in combination with a central space with numeral 100 at the intersection of said rows defining one winner of said game, while any section of either said row between any said corner and said central space defines a second winner if said spaces are covered by appropriate said cards.

4,344,628

TURNSTILE GOAL AND GAMES USAGE

Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211

Filed Oct. 30, 1980, Ser. No. 202,188
Int. Cl.[3] A63B *63/06*
U.S. Cl. 273—388 5 Claims



1. Improved turnstile goal and games usage wherein said goal comprises two to five identical readily mountable paddle type elements, a rotatable vertical paddle support sleeve means, a fixed vertical spindle and support column means, a turnstile base support means, a turnstile friction control means, and a turnstile fractional rotation indicating means, with said paddle type elements being attached in vertical positions at equal angular spacing around the peripheral surface of said paddle support sleeve means, said paddle support sleeve means being carried on said spindle and support column means, said spindle and support column means being attached to said base support means and holding assembled said goal in a secure and upright position, said goal being capable of rotation in a responsive direction when either side of any of its said paddle type elements is struck by a game ball or disc propelled by team players, said goal being characterised in that the said paddle type elements of said goal have substantially greater height and width measurements than those of the diameter measurements of the various balls and disc used, said height and width measurements of the said paddle type elements of said goal ranging from 9 to 36 inches (22.9 to 91.4 cms), each side of said paddle type elements of said goal having a specific type of distinguishing marking or designation indicating which side of said paddle type elements of said goal is to be struck by player propelled ball or disc for team play advantage, and said paddle support sleeve means being a pipe body with an elongated sleeve bushing inside of said paddle support sleeve means, with a screw and lug fastening arrangement employed for readily mounting said paddle type elements to said pipe body.

4,344,629

SELF-LAPPING HIGH SPEED SEAL WITH WEAR-IN LIP

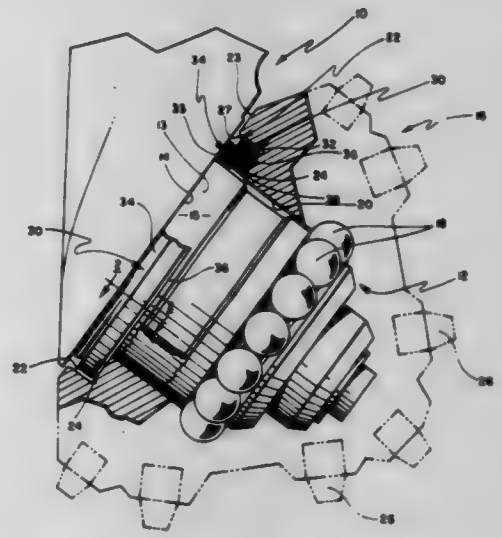
Erwin S. Oelke, Cypress, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Oct. 14, 1980, Ser. No. 196,990
Int. Cl.[3] F16J *15/34;* F16C *33/78;* E21B *10/08*
U.S. Cl. 277—1 10 Claims

1. A seal apparatus for a rock bit, said seal being positioned in a cavity formed between a leg of said rock bit, said leg having a journal extending therefrom, and a rotatable cone mounted on said journal, said seal comprising:

a metal ring, said ring having a diameter that will fit within said cavity, a peripheral surface formed by said ring subsequently serving as part of a metal-to-metal seal,

a resilient material partially encapsulating said metal ring, said resilient material forming an O-ring type of seal in said cavity formed between said leg of said rock bit and said rotatable cone, during initial rotation of said cone on said journal, a portion of said resilient material nearest said metal peripheral surface eventually wears away exposing said peripheral metal surface to an adjacent cavity wall, said metal surface and said cavity wall subsequently forming a lapped sealing surface, said resilient sealing material prevents loss of a lubricant stored within said rock bit during the time said peripheral surface of said metal ring is



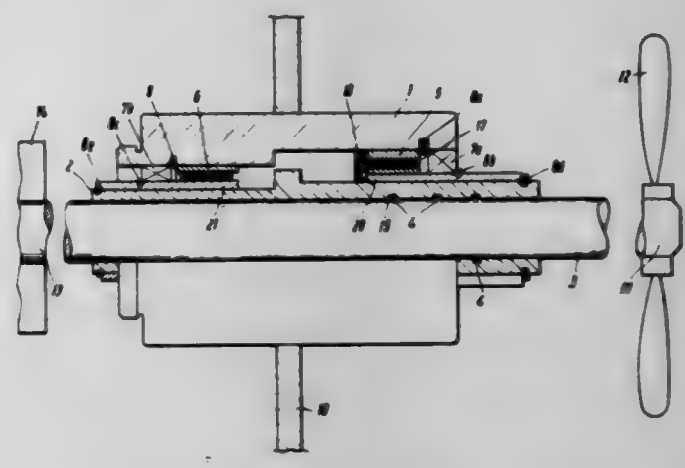
forming a lapped seal against said adjacent wall of said cavity.

4,344,630

SEALINGLY MOUNTING ARRANGEMENT FOR PROPELLER SHAFTS OF WATERCRAFT

Imre Veres, Nienredder 21b, D-2000 Hamburg 54, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,854
Int. Cl.[3] F16J *15/34, 15/54*
U.S. Cl. 277—4 26 Claims



1. An arrangement for sealingly mounting a rotary member, particularly a propeller shaft, in a passage of a support, particularly of a watercraft hull, comprising dynamic sealing means; bearing means; and separating means interposed between and fluid-tightly separating said sealing means and said bearing means; wherein said separating means includes a separating sleeve surrounding the rotary member for relative movement; wherein said sealing means is interposed between said separating sleeve and the rotary member; and further comprising a support sleeve mounted in the passage; and wherein said separating sleeve is received in said support sleeve for rotation relative thereto.

4,344,631

PRESSURE INSENSITIVE LIP SEAL

Leo W. Winn, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Nov. 18, 1980, Ser. No. 207,907
Int. Cl.[3] F16J *15/32, 15/40*
U.S. Cl. 277—29 3 Claims

1. A lip seal for dynamically sealing a low pressure cavity

against entrance of a variable higher pressure fluid between said seal and a rotating shaft, comprising:

a housing within which said shaft rotates;

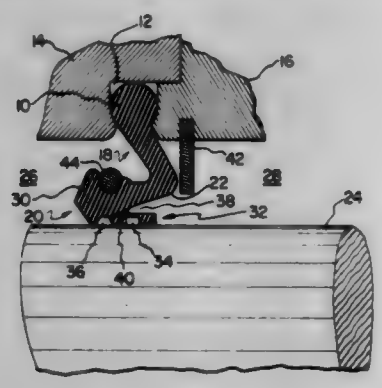
an annular flange extending generally radially and having a radially outside edge which is clamped to said housing and a radially inner edge;

an annular, axially extending resilient bushing having a proximate end attached to said radially inner edge of said flange and a distal end;

an annular foot integrally attached to said distal end of said bushing and extending axially therefrom into said low pressure cavity;

biasing means urging said distal end of said bushing and said foot into contact with the said shaft;

a radially inward facing surface on the bushing and said foot adapted to engage said shaft in a sealing relationship;



a hydrodynamic profile formed in said inwardly facing surface and arranged to generate a pressurized fluid film between said surface and said shaft, which pressure is a function of the variable higher pressure exerted on the radially outward face of said bushing, whereby the fluid film pressure compensates the variable higher pressure so as to maintain said sealing relationship;

an annular pocket located on the axial side of said hydrodynamic profile nearest said variable higher pressure fluid and adjacent the junction of said foot and bushing for providing a pressurized oil containment plenum for said seal; and

duct means extending through said bushing and providing communication between said annular pocket and said oil cavity for relieving excess pressure in said pocket means.

4,344,632

FLUID PRESSURE SEALING RING FOR A VALVE

Norman F. Green, Warrington, and Douglas W. Wilda, West Chester, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

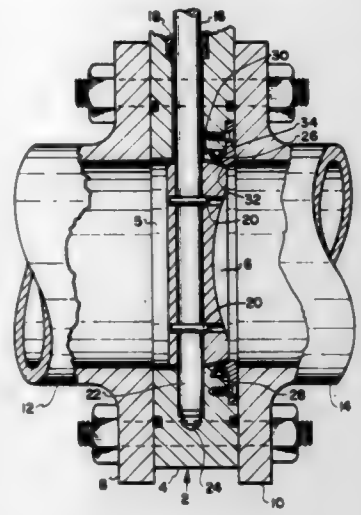
Continuation of Ser. No. 124,305, Feb. 25, 1980, abandoned.
This application Aug. 18, 1981, Ser. No. 293,787
Int. Cl.³ F16K *25/00*
U.S. Cl. 277—152 **10 Claims**

1. A fluid pressure seal comprising

a first member having an annular recess of a polygonal cross-section therein with an exit slit,

a sealing means disposed in said annular recess and having an outer side positioned in contact with an internal corner of said recess, an inner side extending out of said recess through said exit slit, and a concave face between said outer side and said inner side with said concave face being spaced from a respective side of said recess, and

a second member having a fluid sealing peripheral edge in contact with said inner side of said sealing means when said second member is in a position to seal against a fluid exerting said fluid pressure, said fluid pressure acting on said sealing means to urge said concave face against said wall and said outer side into said corner to further extend said inner side of said sealing means out of said exit slit to increase the contact pressure of said inner side against said peripheral edge of said second member, said sealing means including a pair of bowed seal rings arranged with respective convex faces diverging from an area of contact at said



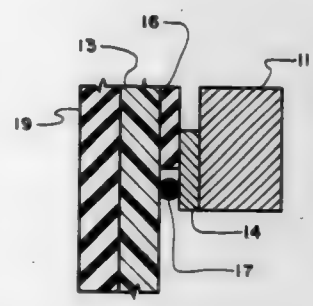
inner side of said seal rings and respective concave faces spaced from respective walls of said recess.

4,344,633

GASKET FOR ELECTROLYTIC CELL

Andrew J. Niksa, Concord, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed May 22, 1981, Ser. No. 266,447
Int. Cl.³ F16J *15/10*; C25B *9/00*
U.S. Cl. 277—228 **11 Claims**



1. A multi-layer gasket structure for an electrode comprising an outboard layer of a material having a combination of a Type A Shore Scale Durometer Hardness (ASTM Specification No. D-2240-7) ranging from about 40 to about 70 and a Compression Set (ASTM Specification D-395-69-Method A) of zero plus to about 40 percent and an inboard barrier layer of a material which is corrosion-resistant, noncontaminating and stable upon contact with chlor-alkali cell anolyte.

4,344,634

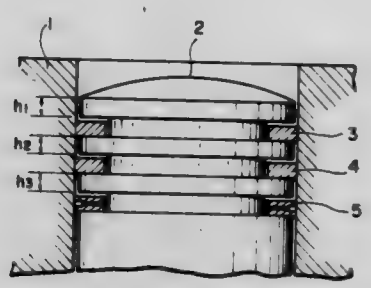
COMPRESSION RINGS

Teruo Onozaki, Tokyo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 212,967
Claims priority, application Japan, Dec. 4, 1979, 54-157294
Int. Cl.³ H01F *1/04*
U.S. Cl. 277—236 **2 Claims**

1. A compression ring for internal combustion engines having excellent heat collapse resistance and excellent wear resistance on upper and lower sides, said ring being composed of stainless steel comprising from 0.6 to 0.7% by weight C, from

0.15 to 0.40% by weight Si, from 0.6 to 0.8% by weight Mn, from 12.0 to 14.0% by weight Cr, and the balance of Fe and



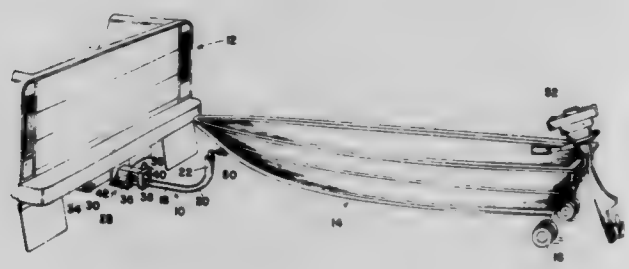
impurities, wherein a running face of the ring which slides against the cylinder wall has a surface treated layer.

4,344,635

SHORT HAUL TOW BAR

Roy E. Welton, 3180 Browns Valley Rd., Napa, Calif. 94558

Filed Nov. 10, 1980, Ser. No. 205,672
Int. Cl.³ B60P *3/10*
U.S. Cl. 280—414.1 5 Claims



1. A short haul tow bar for a motor vehicle on which is mounted a square hitch receiver comprising a rectangular tubular receptacle having aligned holes in the sides thereof and a retainer pin receivable in said aligned holes, for moving over a short distance a boat supported at one end by a pair of wheels, said tow bar comprising:

a tubular tow bar adapted at one end to be received in and to extend generally horizontally from, said square hitch receiver;

restraining means on said one end to receive a retainer pin extended through said aligned holes and prevent withdrawal of said one end from said hitch receiver;

vertical stop portions on said one end engageable with the top and bottom of said hitch receiver to restrict closely vertical oscillation of said bar;

lateral stop portions on said one end engageable with the sides of said hitch receiver to restrict closely horizontal oscillation of said bar;

said tow bar being bent intermediate its ends so that the other end thereof is generally upright; and

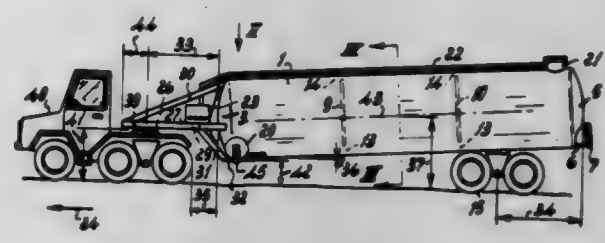
a generally horizontal hook device carried on said other end and adapted to engage an eye on the other end of said boat.

4,344,636

TANK FOR TRANSPORTING LIQUIDS

Cornelis van der Lely, Brüschenrain 7, Zug, Switzerland

Filed May 9, 1980, Ser. No. 148,551
Claims priority, application Netherlands, May 10, 1979, 7903657
Int. Cl.³ B60P *3/22*
U.S. Cl. 280—5 C 14 Claims



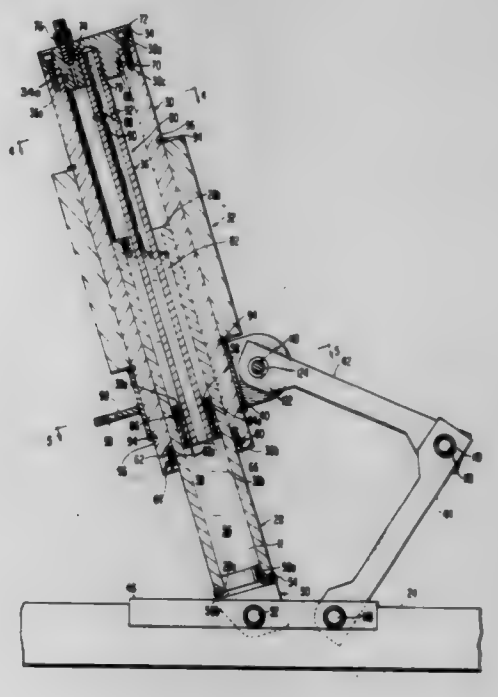
1. An elongated mobile tank for transporting liquid material including at least one set of supporting wheels intermediate the length of the tank and a front draw member for towing and supporting the forward end of the tank, said forward end being inclined downwardly from said wheels in the normal direction of travel and having a forward end wall, said draw member including a draw pin adapted for connection to a towing vehicle, said forward end being located, at least in part, at a lower level than said draw pin and immediately to the rear thereof, said tank comprising internal partition means with at least one restrictive opening that defines an uninterrupted space for liquids.

4,344,637

HYDRAULIC/PNEUMATIC SUSPENSION SYSTEM FOR SNOWMOBILES

Leo M. Williams, Jr., 801 Beeber St., Williamsport, Pa. 17701, and Steven L. Dunkle, P.O. Box 405, Salladasburg, Pa. 17740

Filed Jan. 2, 1980, Ser. No. 109,028
Int. Cl.³ B62B *13/00*
U.S. Cl. 280—21 R 5 Claims



1. A snowmobile suspension system for suspending a snowmobile chassis on an underlying ground contact member, said suspension system comprising:

a pair of telescoping hollow suspension tubes defining a variable volume chamber therebetween, said suspension tubes being closed at their non-telescoping ends,

means for mounting the closed end of one of said telescoping tubes to said chassis, and for mounting the closed end of said other telescoping tube to said underlying ground contact member,

a damping system carried by said telescoping tubes and fixedly borne by one of said tubes, said damping system comprising a hollow rod fixed at one end to the upper end of the vertically upper telescoping hollow suspension tube, said hollow rod opening at its lower end into said variable volume chamber and being positioned within said lower hollow suspension tube and fixedly bearing at its lower end, a damping piston sealably and slidably confronting the inner wall of said lower telescoping hollow suspension tube, first orifice means carried by said damping piston and opening to opposite faces of said piston and to opposite sides of said variable volume chamber,

a hydraulic fluid positioned within said variable volume chamber and filling said chamber to a position along said hollow rod, on opposite sides of said piston,

means for gas pressuring the balance of said variable volume chamber above the level of said hydraulic fluid such that said damping piston forms a stationary floating hydraulic seal between said upper and lower sections of said variable volume chamber on opposite sides of said piston,

and wherein said damping system further comprises second orifice means carried by said hollow rod near its upper end, said second orifice means comprising means for permitting fluid flow from the interior of said hollow rod into said variable volume chamber upper section during compression of said telescoping hollow suspension tubes but preventing fluid from entering the interior of said hollow rod through said second orifice means from said variable volume chamber upper section;

and wherein said second orifice means comprises at least one small diameter hole drilled transversely within said hollow rod and said fluid flow permitting means further comprises a peripheral groove within the outer periphery of said hollow rod at the level of said second orifice means hole, and an elastomeric O-ring disposed within said peripheral groove, overlying said second orifice means hole such that during retraction of said telescoping hollow suspension tubes, fluid may flow from the interior of said hollow rod into the upper chamber section about the elastomeric O-ring, but during extension of said telescoping hollow suspension tubes, fluid is prevented from entering the interior of said hollow rod by said O-ring which functions as a check valve member for said second orifice means hole;

whereby, during contraction of said cylinder and compression of the fluid within said chamber, hydraulic fluid may pass to the upper side of said piston via said first and second orifice means.

4,344,638

Patent Not Issued For This Number

4,344,639

DUAL IMPLEMENT HITCH

Lorne R. Pollard, St. Ann's, Canada, assignor to International Harvester Co., Chicago, Ill.

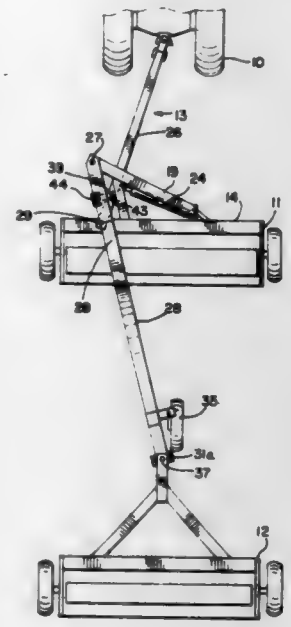
Filed May 29, 1980, Ser. No. 154,206

Int. Cl.³ B60D *1/00*

U.S. Cl. 280—411 C **6 Claims**

1. In combination, an implement and a hitch adapted to be drawn by a tractor, comprising:

an implement, a support mounted on the front of said implement, a hitch, said hitch including a curved beam pivotally mounted on said support and constructed to extend over and rearwardly of said implement, said curved beam being adapted to be pivotally connected adjacent its rearward end to another implement, a caster wheel mounted on said curved beam forward of the connection for the another implement, a hitch tongue adapted to be pivotally connected to a tractor drawbar, said tongue also being pivotally connected to said support, means connecting said



tongue and curved beam for relative motion therebetween, said means being located rearwardly of the pivotal mounting of said curved beam on said support, and hydraulic power means mounted on said support for moving said hitch tongue and said curved beam via said means from a tandem transport implement position wherein the line of pull to the tractor is substantially aligned with the center of said implement and the another implement and an echelon operating position wherein the line of pull of the tractor is substantially aligned with the adjacent ends of said implement and the another implement.

4,344,640

APPARATUS FOR THE PREVENTION OF JACKKNIFING OF ARTICULATED VEHICLES

Istvan Ratsko; Jozsef Ivony; Jeno Madi, and György Karasz, all of Budapest, Hungary, assignors to Autoipari Kutato Intezet and Ikarus Karosszeria es Jarmügyar, both of Budapest, Hungary

Filed Aug. 21, 1980, Ser. No. 180,092

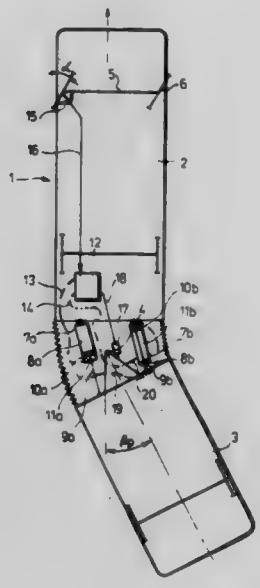
Claims priority, application Hungary, Aug. 21, 1979, AU 428

Int. Cl.³ B62D *53/06*

U.S. Cl. 280—432 **7 Claims**

1. In an anti-jackknifing apparatus for an articulated vehicle having articulation locking means connectable to the pivotally connected vehicle units, means for sensing the steered angle of the front wheels of the front unit and means for evaluating the

deviation from the angle of articulation predetermined by the steered angle of the front wheel at the angle of articulation, the improvement wherein the articulation locking means includes locking actuator means and wherein the evaluating means includes first means for applying a control signal to the locking actuator means corresponding to the deviation sign which is determined as positive at that angle of articulation which is disposed to the right when viewed from above the vehicle in the direction of movement thereof from the angle of articulation corresponding to the wheel steering angle and as negative at that angle of articulation which is disposed to the left from



the angle of articulation corresponding to wheel steering angle and second means for applying another input signal to the locking actuator means representing the direction sign which is predetermined as positive at that change in the angle of articulation at which when the vehicle is viewed from above the articulation of the trailing unit relative to the front unit is in the clockwise direction and as negative at that change in the angle of articulation at which the articulation of the trailing unit relative to the front unit is in the counterclockwise direction, and wherein the locking actuator means actuates the locking means into a locked condition when two opposite sign input signals are applied thereto.

4,344,641

SNOW SKI HAVING AIR CUSHION FORMING UNDERSURFACE

Bertold Lehn, Schenebüelweg 1, CH 8240 Thayngen, Switzerland

Continuation-in-part of Ser. No. 138,916, Apr. 10, 1980, abandoned. This application Jun. 9, 1980, Ser. No. 157,485

Claims priority, application Switzerland, Apr. 4, 1979, 3513/79; Fed. Rep. of Germany, Jul. 17, 1979, 2928106

Int. Cl.³ A63C *5/00*

U.S. Cl. 280—601 **2 Claims**

1. In a ski having upper and side surfaces and a bottom running surface, the improvement comprising

(a) at least one chamber formed in the running surface and open downward, said chamber having means at the side surfaces of the ski to substantially prevent lateral escape of air from said chamber when the ski is situated upon a smooth surface,

(b) at least one air entrance opening formed in a surface other than the running surface, said opening being open toward the travelling direction for the ski, and

(c) a channel communicating said opening to said chamber, said channel comprising a Venturi tube having a converging portion directed toward said opening and a diverging portion open to said chamber.



4,344,642

VEHICLE AXLE MOUNTING ARRANGEMENT

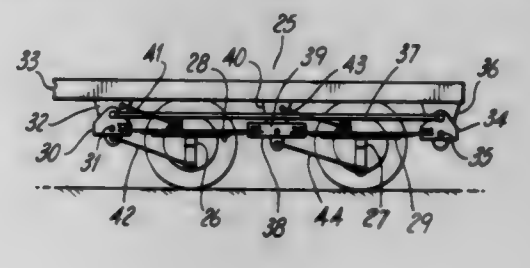
John Goth, 58 Lough St., Guildford, New South Wales, Australia 2161, assignor to John Goth and James Goth, both of New South Wales, Australia, a part interest

Filed Aug. 4, 1980, Ser. No. 175,036

Claims priority, application Australia, Aug. 24, 1979, P30180

Int. Cl.³ B60G *11/02*

U.S. Cl. 280—682 **10 Claims**



1. A mounting arrangement for axles of a vehicle having a multi-axle system, the vehicle having a chassis, which comprises

two leaf spring assemblies connected in series, an axle supporting each spring assembly,

a first rocker non-rigidly connected to a forward end of a leading one of the spring assemblies,

a second rocker non-rigidly connected to a rearward end of a trailing one of the spring assemblies,

a further rocker having a fulcrum and being located intermediate the spring assemblies and non-rigidly connected to a rearward end of the leading spring assembly and at an opposite side of the fulcrum said further rocker being non-rigidly connected to a leading end of a trailing spring assembly,

mounting means for pivotably mounting each rocker to said vehicle chassis,

a motion transfer link mechanism linking the first and second rockers; and torque rods and at least one torque shaft operative for preventing twisting of the axles about their axes,

each torque rod being connected at one end of a respective axle and being connected at the other end to means functionally integral with said chassis,

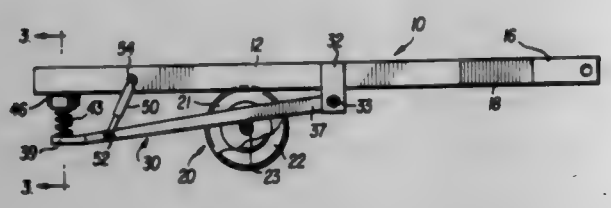
said at least one torque shaft being connected at one end to one of the axles and being connected at the other end to means functionally integral with said chassis so as to constitute a parallel link mechanism with the respective torque rod; whereby up-down movement of one spring assembly causes rectilinear movement of the other spring assembly in an opposite direction.

4,344,643

WHEEL SUSPENSION ASSEMBLY FOR A TRAILER

Earl B. Ray, 103 Glendale Ave., Huntington, W. Va. 25705

Filed Sep. 22, 1980, Ser. No. 188,990
Int. Cl.[3] B60G *11/16*
U.S. Cl. 280—724 4 Claims



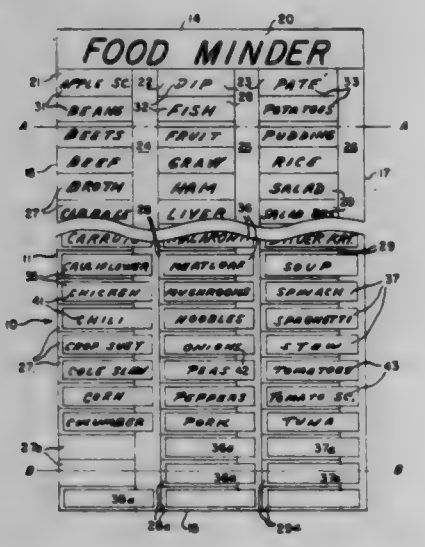
1. A wheel suspension assembly for a trailer having a base frame of longitudinal side members, front and rear end braces, a central cross brace and towing means attached to said front end brace, said wheel suspension assembly comprising: a pair of depending support plates, the upper end portion of each to be attached to said longitudinal side members of said trailer frame, the lower depending end portions being interconnected by a fixed pivot pin; a substantially rectilinear support frame having its forward end pivotally mounted on said pivot and extending rearwardly under said trailer frame to a position beneath the rear end brace thereof to support load cushioning means which will interact with said rear end brace of said trailer frame; and at least one two-wheel-axle assembly secured to said support frame at a position which is one-third the length of said support frame from said forward end of said frame and below said support frame to transfer carried weight to said axle of said axle assembly extending beyond said longitudinal side members to position said wheels of said axle assembly outside said trailer frame; said wheel suspension assembly being attached to said trailer base frame at a position wherein said wheel-axle assembly is under the longitudinal center of said trailer base frame.

4,344,644

DOMESTIC INVENTORY SYSTEM

Paul S. Somogyi, 60 Delwood Rd., Cherry Hill, N.J. 08002

Filed Jun. 13, 1980, Ser. No. 159,210
Int. Cl.[3] G09F *3/00*; B42D *15/00*
U.S. Cl. 283—19 7 Claims



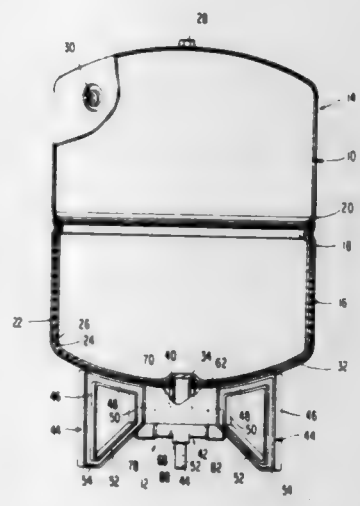
1. A domestic inventory system comprising a board-like display member for mounting on a wall, a vertically aligned series of indicia on said member representing a variety of items of household use, said series of indicia being of a color having a characteristic appearance, and a plurality of markers each corresponding to a respective one of said indicia and removably and replaceably secured to said member in covering relation with the corresponding indicia, said markers being of a color having a second characteristic appearance different from the first mentioned characteristic appearance, and said markers being removably securable to refrigerator food containers for designating the contents thereof upon removal from said member, to thereby present to view said indicia having said first mentioned characteristic appearance as exposed upon marker removal to indicate the current inventory of items of household use.

4,344,645

TEE-TYPE LEG BRACKET

Kenneth L. Kirk, Cranston, R.I., assignor to Amtrol Inc., West Warwick, R.I.

Filed Oct. 6, 1980, Ser. No. 194,280
Int. Cl.[3] F16L *3/00*
U.S. Cl. 285—61 19 Claims



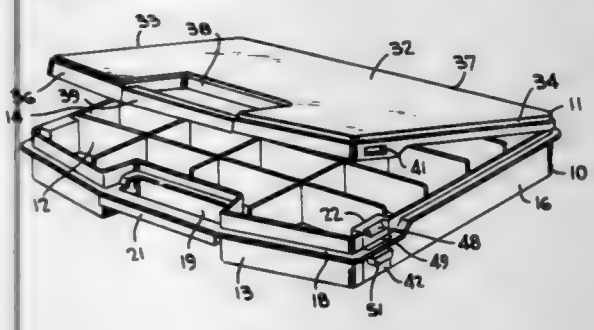
1. Tee-type leg bracket for supporting a tank, which has a hemispherical-type of bottom surface and a short nipple mounted on the bottom surface at substantially a right angle thereto, comprising (i) a central frame, (ii) a short pipe vertically mounted on the central frame, the vertically-mounted short pipe being adapted to mate with the short nipple mounted on the bottom of the tank, and (iii) at least three support legs detachably attached to the central frame, the bottom surface of the tank resting on the top portion of the support legs.

4,344,646

DETACHABLE LATCH

John M. Michel, Coatesville, Pa., assignor to Woodstream Corporation, Lititz, Pa.

Filed May 27, 1980, Ser. No. 153,562
Int. Cl.[3] E05C *19/06*
U.S. Cl. 292—87 10 Claims



1. A closure for a container, comprising:

a container body having a peripheral wall with an external surface and with a latch pocket defined as a recess in said external surface;

a cover member for said container having a slot defined therein, said slot being positioned to overlie said latch pocket when said container member is closed by said cover member; and

an integral detachable flexible latch member attached to said container body in said latch pocket with a snap-fit, said

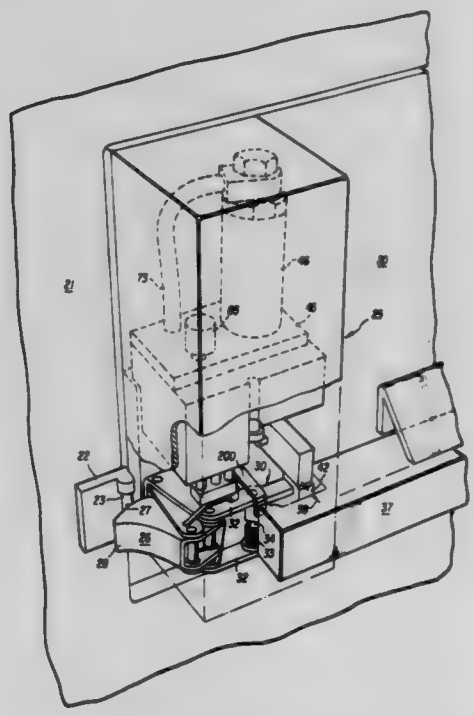
latch member having a bolt member projecting in a first direction from a first surface of said latch member to extend through said cover slot without contacting said cover member when the latch member is attached into said latch pocket and is unflexed and when said container member is closed by said cover, said latch member further including actuating means on said first surface for receiving a force directed to flex said latch member in a direction opposite to said first direction to withdraw said bolt member from said slot.

4,344,647

EXTERIOR OPERATING ARRANGEMENT FOR EMERGENCY EXIT DOORS WITH DELAYED OPENING FEATURE

Roy E. Van Der Linden, New Windsor, Md., assignor to Reliable Security Systems, Inc., Cockeysville, Md.

Filed Jun. 16, 1980, Ser. No. 160,025
Int. Cl.³ E05C *15/02*
U.S. Cl. 292—201 **8 Claims**



1. In combination:

a latch bolt for securing an emergency exit door when the bolt is projected;

a toggle linkage connected to the latch bolt for holding the latch bolt in the projected position when in a dogging mode and for allowing the latch bolt to move to the retracted position when in an undogging mode, wherein the undogging mode is over center from the dogging mode;

a sliding link in engagement with the toggle linkage for shifting the toggle linkage from the dogged mode to the undogged mode upon sliding from a first position to a second position;

a bell crank having one arm connected to the slider for sliding the slider from the first position to the second position upon rotating the other arm of the bell crank;

an interposer positioned adjacent to the other arm of the bell crank and means for mounting the interposer to shift in and out of alignment with the bell crank;

a lock, including: a rotatable tumbler and means on said tumbler for engaging said interposer to move said interposer into alignment with said second arm of said bell crank for unlatching the door from the outside and for moving said interposer out of alignment with said second arm of said bell crank for preventing unlatching of the door from the outside;

means accessible on the outside of the door and in engagement with the interposer to move the interposer against the second arm of the bell crank and to thereby cause the slider to move the toggle from the dogged to the undogged mode, and

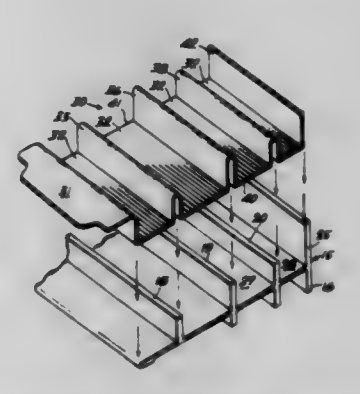
said latch bolt being connected to a delay means for retarding retracting of the latch bolt and further including means for deactivating delay means whereby the latch bolt retracts without delay upon operating the outside operating means.

4,344,648

DUST PAN FOR SLIDING GLASS DOOR

Calvin R. Mapp, 1351 NW. 12th St., Miami, Fla. 33125

Filed Apr. 3, 1981, Ser. No. 250,880
Int. Cl.³ A47L *13/52*
U.S. Cl. 294—55 **4 Claims**



1. A dust pan for door thresholds having a plurality of upstanding tracks to guide sliding door panels and screens comprising, in combination,

an elongate flat handle,

a plurality of U-shaped reversely folded track covers,

a plurality of U-shaped scoop portions joining said track covers,

a flash flange and adjacent U-shaped flash scoop remotely spaced from the handle,

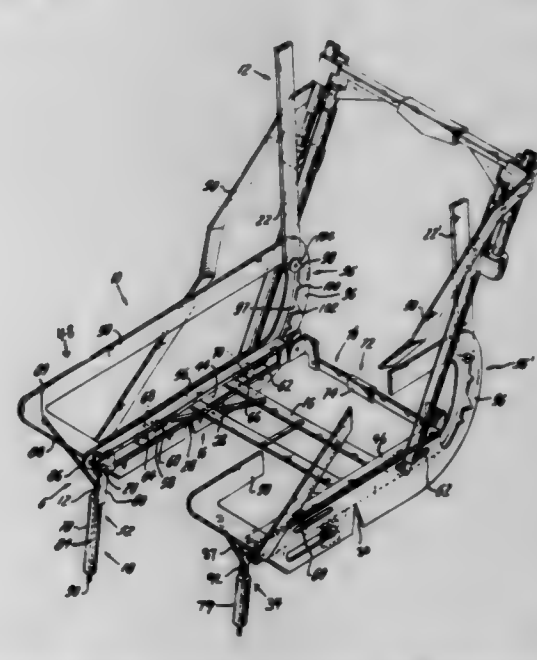
said track covers, flash, and scoops terminating at both ends of the dust pan in end faces essentially parallel to each other and perpendicular to the long axis of the handle.

4,344,649

FOLDING BABY CARRIERS

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Filed Sep. 10, 1979, Ser. No. 73,745
Int. Cl.³ A47C *4/00, 1/02*
U.S. Cl. 297—30 **27 Claims**



1. A carrier for infants capable of being adjustably deployed in a plurality of positions, with or without a frame, comprising, in combination, a head-back portion, a substantially horizontally disposed seat portion pivotally connected to the head-

back portion, and said head-back portion being adapted to be moved between upright and reclining positions relative to said seat portion, said seat portion being applied to slide forward in a direction away from said head-back portion or rearward in a direction toward said head-back portion, in a substantially horizontal attitude, upon movement of said head-back portion, a leg rest portion pivotally connected to said seat portion and responsive to movement of said seat portion and head-back portion and adapted to be moved between reclining and upright positions relative to and upon corresponding movement of said seat portion, and locking means for temporarily locking the position of said head-back portion in a first fixed position at a desired angle to said substantially horizontally disposed seat portion, whereby upon release of said locking means, said head-back portion may be pivoted to a second fixed position with respect to said substantially horizontally disposed seat portion and thereby impart corresponding substantially horizontal movement of said seat portion which in turn imparts pivotal movement of said leg rest portion with respect to said seat portion in a direction opposite to the movement of said head-back portion, said seat portion being substantially horizontally disposed regardless of the position of said head-back and leg rest portions, and further including carrier support means for supporting said seat portion when in a forward position, rearward position or a position therebetween, and said seat portion includes sliding means for slidably engaging said carrier support means and said sliding means of said seat portion comprises at least one slidably engageable member for slidably engaging a corresponding member of said carrier support means, and said carrier support means comprises a seat support frame.

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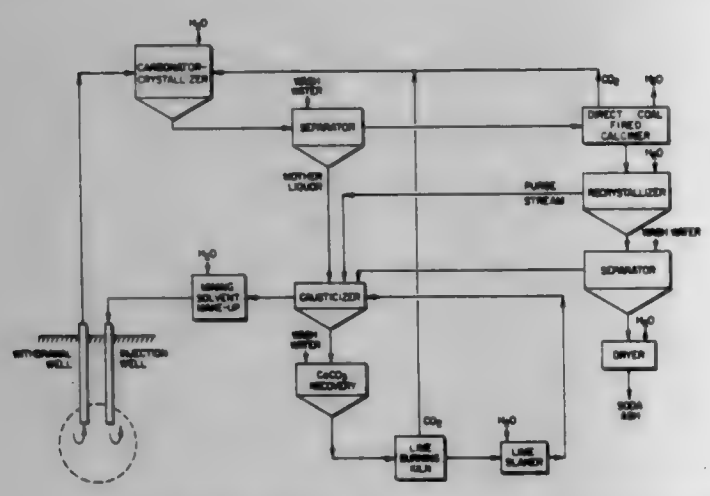
RECOVERY OF ALKALI VALUES FROM TRONA DEPOSITS

Michael L. Pinsky, Mount Holly, and John Walden, Hightstown, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 114,020, Jan. 21, 1980, abandoned. This application Dec. 15, 1980, Ser. No. 216,096

Int. Cl.[3] E21B *43/28*

U.S. Cl. 299—4 **16 Claims**



1. A method for recovering alkali values from underground trona deposits which comprises

(i) introducing into the region of the trona deposit an aqueous mining solvent having dissolved therein from about 2 to 7% by weight sodium hydroxide;

(ii) maintaining the solvent in the region for a period sufficient to solubilize at least a portion of the trona as sodium carbonate;

(iii) withdrawing from the region at least a portion of the resulting mining solution;

(iv) carbonating at least a portion of the withdrawn mining solution to convert the major portion of the sodium carbonate contained therein into sodium sesquicarbonate and/or sodium bicarbonate;

(v) crystallizing the sodium sesquicarbonate and/or sodium bicarbonate;

(vi) separating the crystallized solids from the mining solution mother liquor;

(vii) calcining the crystallized solids in a direct coal fired calciner to form anhydrous sodium carbonate contaminated with impurities;

(viii) recrystallizing the contaminated anhydrous sodium carbonate in water to form sodium carbonate-containing crystals while the contaminants remain in the aqueous liquor;

(ix) separating purified sodium carbonate-containing crystals from the aqueous liquor containing contaminants;

(x) maintaining an aqueous purge of liquor containing said contaminants;

(xi) adding sodium hydroxide and water to at least one of said liquors, the amounts of sodium hydroxide and water being adjusted so as to form an aqueous mining solvent containing from about 2 to 7% by weight sodium hydroxide; and

(xii) reintroducing the resulting aqueous mining solvent into the region of the trona deposit and repeating the cycle of recovery.

4,344,651

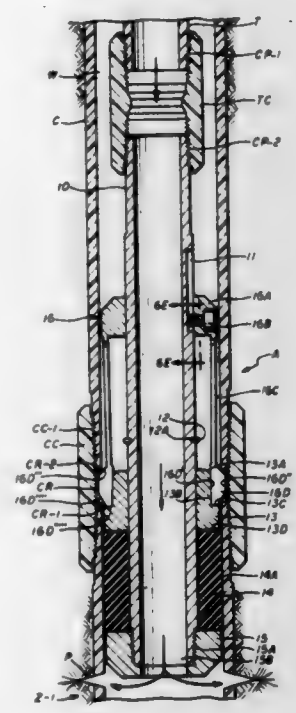
CORROSIVE ENVIRONMENT TENSION PACKER

Kenneth E. Longacre, and Marvin R. Kruschke, Sr., both of Farmington, N. Mex., assignors to Baker International Corporation, Orange, Calif.

Filed Jul. 10, 1980, Ser. No. 167,300

Int. Cl.[3] E21B *23/03, 23/06, 33/138, 43/28*

U.S. Cl. 299—5 **5 Claims**



1. A method of injecting a corrosive liquid into the bore of an injection well during mineral leaching operations, said well being encased by a first conduit having first and second conduit members, said conduit members being interengaged by a coupling element whereby a locking recess is defined within said coupling element and between said conduit members, comprising the steps of:

(1) introducing into said well a packer assembly carried on a second conduit, said packer assembly comprising: a body member communicating to said second conduit; an inwardly flexible, outwardly urged collet assembly exterior of said body; a slotted configuration on said body; control means on said collet assembly and carryable within said slotted configuration; means on said body defining a pocket for selective receipt of said collet assembly relative

to said locking recess; and elastomeric packer body means below said pocket means and carried by said body member, contourably urged into sealing relation which said first conduit subsequent to locking engagement of said collet assembly and said second conduit;

(2) locating said collet assembly effectively below said locking recess;

(3) simultaneously rotating and picking up said second conduit to enable said collet assembly to effectively be received within said locking recess;

(4) continuing manipulation of said second conduit subsequent to step (3), above, whereby said pocket is effectively immediate said collet assembly, whereby the locked relationship between said locking recess, said collet assembly and said pocket prevents relative longitudinal movement between said packer assembly and said first conduit; and

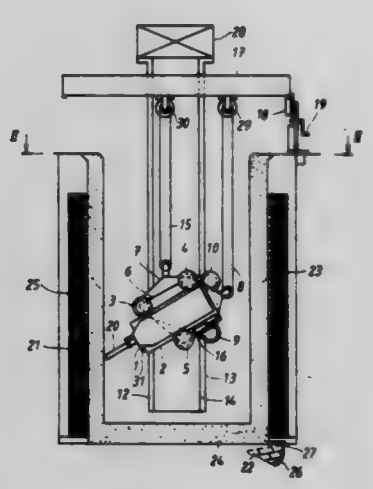
(5) continuing manipulation of said second conduit as in step (3), above, whereby said elastomeric packer body means is urged into sealing engagement with said first conduit.

4,344,652

MEANS FOR REMOVING THE LINING OF A CRUCIBLE FURNACE

Ake Archenholtz, Västeros; Yngve Caisander, and Gustav Haas, both of Helsingborg, all of Sweden, assignors to ASEA Aktiebolag, Västeros, Sweden

Filed Mar. 20, 1980, Ser. No. 132,184
Claims priority, application Sweden, Mar. 23, 1979, 7902619
Int. Cl.³ E21C *3/00*
U.S. Cl. 299—70 **12 Claims**



1. An apparatus for removing the lining of a crucible furnace, said crucible furnace having a central axis, the lining-removing apparatus comprising

a tubular support element extendable substantially along the central axis of said crucible furnace, said tubular support element having an upper end located outside of said crucible furnace and an open lower end locatable within said crucible furnace, said tubular support element including guide means extending longitudinally thereof,

vacuum-generating means attached to said tubular support element to create a vacuum therein for removing debris from the crucible furnace upwardly therethrough,

a hammer drill mounted on the guide means of said tubular support element, said hammer drill including a tool for contacting and breaking up the lining of the crucible furnace, and

drive means connected to said hammer drill for moving said hammer drill along the guide means of said tubular support, said drive means being operable from outside of said crucible furnace.

4,344,653

WHEEL TRIM DEVICE

Leonard W. Sheldon, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 6, 1980, Ser. No. 157,021
Int. Cl.³ B60B *7/00*; B21D *53/26*
U.S. Cl. 301—37 T **12 Claims**



1. An ornamental wheel device for a wheel comprising:

a ring portion being preformed of resilient sheet metal to include an annular wall and inwardly turned first and second flange means respectively at first and second radial extremities of said ring portion to define open channels between said flange means and said annular wall adjacent thereto;

each said flange means having a base joined to said annular wall at said extremity and extending inwardly to terminate at an edge thereof;

said flange means and said channels being disposed of a first side of said annular wall to be adjacent said wheel when said ornamental wheel device is installed on said wheel;

a plurality of clips circumferentially spaced around said first side of said annular wall with each of said clips having an extending toothed member thereon adapted for biting engagement of said wheel;

each said clip having a first end which is making engaging contact with said ring portion at said first extremity thereof and a second end which is frucated to include a space between the fork means thereof; and

said second flange means being received within said space to cause said ring portion to be resiliently elongated and under tension to secure said clip to said ring portion and insure its retention thereon throughout engagement and disengagement of said wheel.

7. An ornamental wheel device for a wheel comprising:

a ring portion being preformed of resilient sheet metal to include an annular wall and inwardly turned first and second flange means respectively at first and second radial extremities of said ring portion to define open channels between said flange means and said annular wall adjacent thereof;

each said flange means having a base joined to said annular wall at said extremity and extending inwardly to terminate at an edge thereof;

said flange means and said channels being disposed at a first side of said annular wall to be adjacent said wheel when said ornamental wheel device is installed on said wheel;

a plurality of clips circumferentially spaced around said first side of said annular wall with each of said clips having an extending toothed member thereon adapted for biting engagement of said wheel;

each said clip having a first end which is making engaging contact with said ring portion at a first extremity thereof and a second end which is frucated to include a space between the fork means thereof;

said second flange means being received within said space to secure said clip to said ring portion for retention thereon throughout engagement and disengagement of said wheel;

said ring portion having a predetermined distance between

the location of said engaging contact with said first end of said clip and said edge of said second flange means when said clip is secured thereto;

said clip having a predetermined length from said location of said engaging contact with said ring portion to an extended end of said fork means located within said channel of said second flange means;

said predetermined length being greater than said predetermined distance;

said ring portion in an unstressed condition having an initial distance between said location of said engaging contact and said edge of said second flange means prior to securing said clip therein which is less than said predetermined distance;

said clip being relatively rigid when compared with said ring portion; and

said ring portion being resiliently elongated and under tension when said second flange means is received within space and said clip is secured to said ring portion to insure said retention of said clip thereon throughout said engagement and said disengagement of said wheel.

4,344,654

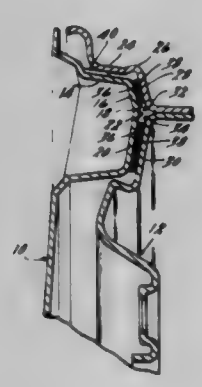
WHEEL TRIM RETENTION

Frederick A. Apezynski, 15602 Parklane, Livonia, Mich. 48154

Continuation of Ser. No. 7,019, Jan. 29, 1979, abandoned, which is a continuation of Ser. No. 792,253, Apr. 29, 1977, abandoned. This application Mar. 6, 1981, Ser. No. 241,257

Int. Cl.³ B60B *7/00*

U.S. Cl. 301—37 R **19 Claims**



15. A wheel trim comprising:

a trim member having means defining a generally axially inwardly facing surface portion and a center portion adapted to overlie and conceal fastener receiving openings provided in said vehicle wheel when said wheel trim is assembled thereto;

a first hook and loop fastener member comprising a base portion having a plurality of outwardly projecting loops per square inch provided thereon; and

a second hook and loop fastener member comprising a base portion having a plurality of outwardly projecting hooks per square inch provided thereon;

one of said first and second members being secured to said axially inwardly facing surface portion and another of said first and second members being disposed thereon with said hooks and said loops being in mutually cooperative releasable retaining engagement;

a radially outwardly extending protrusion provided on said trim member adapted to engage an axially extending portion of a vehicle wheel when said wheel trim is installed thereon so as to assist in positioning said wheel trim with respect to said vehicle wheel;

said another of said first and second members having an adhesive material provided thereon whereby said another of said first and second members may be permanently secured to a vehicle wheel upon initial installation of said wheel trim to said vehicle wheel, said first and second members being thereafter separable so as to enable said wheel trim to be repeatedly removed and reinstalled on said vehicle wheel utilizing the same first and second hook and loop fastener members.

4,344,655

TWO-PART MOULDED WHEEL MADE OF PLASTIC MATERIAL FOR CHILDREN'S VEHICLE

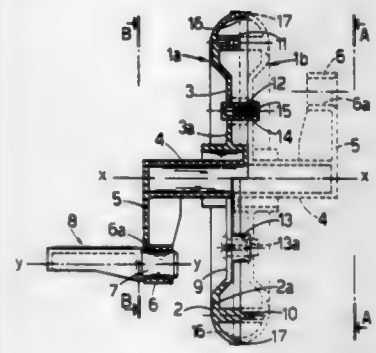
Giuseppe Pellegrino, Via Luca Giordano, 142-Napoli (I), Italy

Filed Jul. 10, 1980, Ser. No. 168,182

Claims priority, application Italy, Jan. 11, 1979, 47588 A/79

Int. Cl.³ B60B *37/00*

U.S. Cl. 301—2.5 **4 Claims**



1. A wheel made of plastic material for a children's vehicle with a pedal-driven wheel consisting of two half-wheels corresponding to the two halves of a shell-like wheel separated by the plane of symmetry perpendicular to the axis thereof, each half-wheel comprising:

a hollow, peripheral semi-toroidal portion connected to a central disc portion;

a first hollow shaft extending outwardly from said central disc portion;

a radial arm integral with said first hollow shaft which serves as a crankshaft of the pedal crank of said pedal-driven wheel;

the outer end of said radial arm being integral in turn with a sleeve having an axial hole parallel to the axis of said first hollow shaft;

a second hollow shaft connected to said pedal crank which is rotatably received in said axial hole;

said central disc portion including an opening facing said radial arm and having a shape complimentary thereto in order to permit the moulding in a single step of each semi-wheel and of all the parts connected thereto; and

each half-wheel having an internal face from which at least one guide pin, at least one guide seat, at least one male member and at least one female member are provided, each pin and guide seat, as well as said male and female members having axes parallel to and diametrically opposed with respect to said half-wheel axis.

4,344,656

AIR SUSPENSION SYSTEM FOR PIGGYBACK TRANSPORTATION OF GOODS

Robert C. Masterson, Jr., Sugar Grove, Ill.; R. Gordon Thomas, Portsmouth, and John G. Johnson, Virginia Beach, both of Va., assignors to Air Rail, Inc., Sugar Grove, Ill.

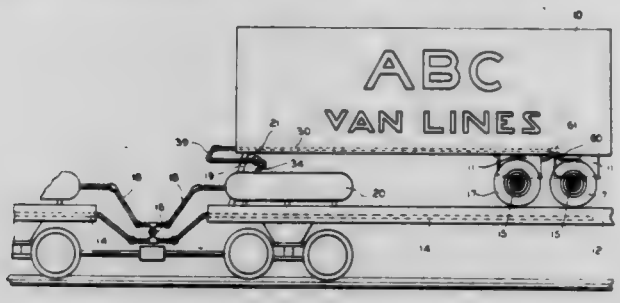
Filed Feb. 4, 1980, Ser. No. 118,642

Int. Cl.³ B60T *13/74*

U.S. Cl. 303—2 **20 Claims**

1. In a multi-car railroad train having an air brake system for supplying air during rail transport from a railroad car having a train air brake line to a conventional air suspension semi-trailer truck loaded on said railroad car, the semi-trailer truck having a conventional tractor and air suspension trailer, said trailer having an air suspension system normally connected to and supplied by air from an air-compressor on said tractor, whereby there is no air supply for the trailer air suspension system when the tractor is disconnected from the trailer during rail transport of the trailer, the combination of said train air

brake system and said trailer air suspension system, said combination comprising air brake means for said railroad car, said brake means being connected to said train air brake line passing between railroad cars and extending to an engine of said train; an air supply line means connected between said trailer air suspension system and said train air brake line; and an air flow



regulator means disposed in said air supply line means for preventing air from flowing from said train air brake line to said trailer air suspension system when the air pressure in said train air brake line drops below a predetermined level and for preventing air from flowing from said trailer suspension system to said train air brake line.

4,344,657

AXIAL/ROTARY GUIDE ELEMENT

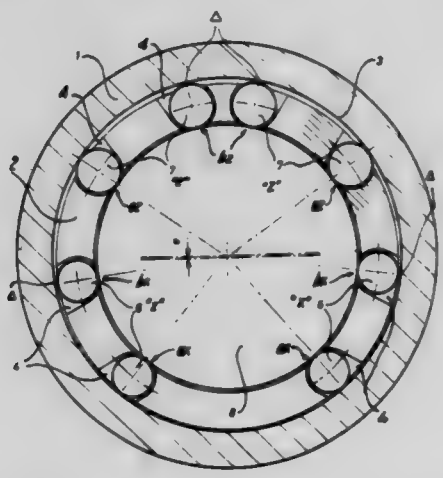
Denis Borel, Matzingen, Switzerland, assignor to SRO Kugellagerwerke J. Schmid-Roost AG, Switzerland

Filed Dec. 27, 1979, Ser. No. 107,544

Claims priority, application Switzerland, Dec. 31, 1978, 13265/78

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C 29 Claims



1. A guide element for ball bearings for permitting linear and rotational movement of a sleeve around a shaft, the guide element comprising:

an external sleeve having a continuous cylindrical bore in its interior;

an internal tubular casing within the sleeve bore that can rotate freely in the sleeve and that is retained axially relative to the sleeve; the casing extending around the shaft;

at least three seatings for receiving ball bearings being defined in the casing, whereby the casing defines a ball race; ball bearings being provided in all of the seatings; the seatings and the ball bearings being sized and shaped for permitting the balls to effect contact between the shaft and the bore of the sleeve;

each seating comprising a closed ball bearing travel circuit, comprising a first and a second neighboring, longitudinally extending rectilinear portion, and the first and second rectilinear portions of the seating being joined to one another by joining portions joining the longitudinal ends of the rectilinear portions, whereby the ball bearings in a seating may move around the entire circuit;

all of the circuits being one of either of a first and a second circuit, and there is at least one first circuit and at least one second circuit; all of the ball bearings of each of the first circuits being of same size relatively larger diameter, and all of the ball bearings of each of the second circuits being of same size relatively smaller diameter;

the casing being eccentric with respect to the sleeve to enable contact between the ball bearings and both of the shaft and the sleeve for both the larger and the smaller diameter ball bearings; the casing having a first side circumferentially around the casing and having an opposite second side circumferentially around the casing; each of the first circuits being at the first side of the casing and each of the second circuits being at the second side of the casing;

the first rectilinear portion of every circuit is located circumferentially around the casing at a location nearer to the second side of the casing having each of the second circuits, whereby the ball bearings in the first rectilinear portion of every circuit are able to contact both the sleeve and the shaft, while the second rectilinear portion of every circuit is located circumferentially around the casing at a location nearer to the first side of the casing having each of the first circuits, whereby the ball bearings in the second rectilinear portion are not able to contact both the sleeve and the shaft.

4,344,658

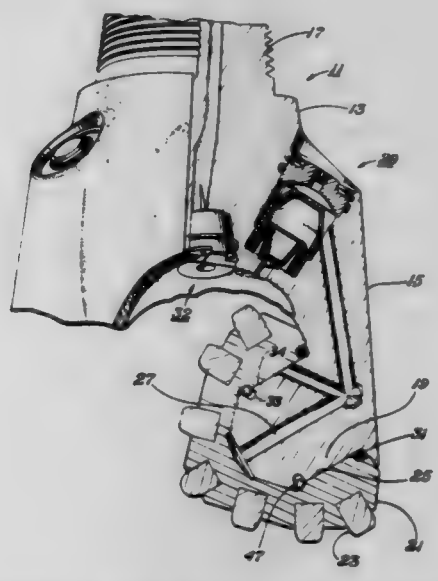
EARTH BORING DRILL BIT WITH SNAP RING CUTTER RETENTION

Leroy W. Ledgerwood, III, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 8,504, Feb. 1, 1979, abandoned, which is a continuation of Ser. No. 846,643, Oct. 28, 1977, abandoned. This application Aug. 1, 1980, Ser. No. 174,483

Int. Cl.³ F16C *17/12*

U.S. Cl. 308—8.2 7 Claims



2. In combination with an earth bring bit having at least one cantilevered bearing shaft rotatably supporting a sealed and lubricated cutter, an improved cutter retention means comprising:

friction bearing means between said cutter and shaft, including an inwardly facing thrust surface and a generally cylindrical bearing surface;

one of said cutter and shaft having an assembly groove with inner and outer sidewalls and the other having a registering, retainer groove;

a snap ring with a portion that engages one of said sidewalls of the assembly groove when the cutter is thrust inward;

the retainer groove having a depth less than the full cross-sectional thickness of the ring measured in the direction of the groove depth;

the assembly groove having a depth at least equal to the cross-sectional thickness of the ring and one of said side-

walls intersecting the cylindrical bearing surface of the shaft to form an annular edge that engages said portion of the ring and confines it in the retainer groove when the cutter is subjected to inward thrust loading.

4. In combination with an earth boring bit having at least one cantilevered bearing shaft rotatably supporting a sealed and lubricated cutter, an improved cutter retention means comprising:

friction bearing means between said cutter and shaft, including an inwardly facing thrust surface and a generally cylindrical bearing surface on the shaft;

a selected one of the shaft and cutter having in the bearing surface an assembly groove with inner and outer sidewalls and the other having a registering, retainer groove;

a snap ring having a portion extending into the retainer groove;

the assembly groove having a depth greater than the cross-sectional thickness of the ring measured in the direction of the depth of the assembly groove;

the retainer groove having a depth less than the cross-sectional thickness of the ring measured in the direction of the depth of the retainer groove;

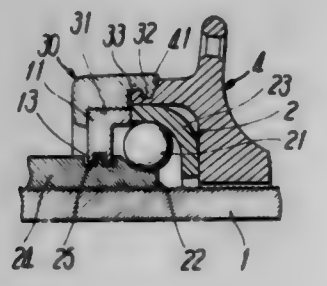
the shortest distance across the opening communicating between the registering assembly and retainer grooves, when the cutter is thrust inward, being less than the cross-sectional thickness of that portion of the snap ring in the retainer groove, measured across the opening communicating between the grooves, to prevent the snap ring from leaving the retainer groove.

4,344,659

SEALING CONSTRUCTION FOR A ROTATING PORTION AT A BICYCLE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jun. 10, 1980, Ser. No. 158,268
Claims priority, application Japan, Jun. 20, 1979, 54-85324[U]
Int. Cl.³ F16C *33/80, 19/06*
U.S. Cl. 308—187.1 **6 Claims**



1. A sealing construction for a rotating portion of a bicycle having a rotary member supported rotatably on a stationary member through at least one bearing, said sealing construction comprising:

a bearing cone forming a ball race of said bearing which is provided on one of said rotary and stationary members, said bearing cone having a cylindrical extension extending axially outwardly of said ball race,

a ring-like shaped sealing member formed by at least two sealing members, each of which forms part of said ring-like shape, said ring-like shaped sealing member being fixed to the other of said rotary and stationary members, and having an inner peripheral surface, formed by the inner peripheral surface of said first and said second sealing members, opposite to and surrounding said extension, the outer peripheral surface of said extension and opposing inner peripheral surface of said ring-like sealing member being provided with ridges and grooves which alternate in an axial direction of said extension and extend circumferentially of said extension and which intermesh with each other with a minimum interval therebetween to form a labyrinth seal; and,

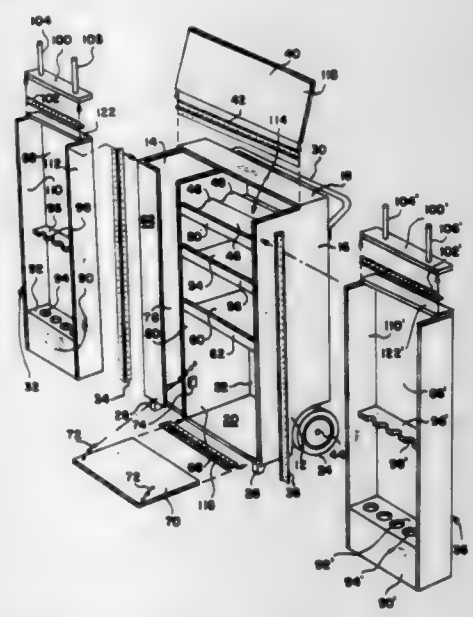
fixing means for holding said first and second sealing members in close contact to form said ring-like shaped sealing member and for fixing said ring-like shaped sealing member to said other of said rotary and stationary members.

4,344,660

BASEBALL EQUIPMENT CABINET

Albert E. Molnar, Ringtown, Pa., and William J. Molnar, Phoenix, Ariz.

Filed Jun. 16, 1980, Ser. No. 159,786
Int. Cl.³ A47B *81/00*; A47F *7/00*
U.S. Cl. 312—250 **6 Claims**



1. In an equipment cabinet, the combination of

a main compartment defined laterally between a left side panel and a right side panel, transversely between a rear wall and front vertical panel and vertically between a top panel and a bottom panel,

the left and right side panels and the bottom panel extending transversely the entire depth of the cabinet,

the top panel being interconnected between the left and right side panels and being rigidly connected to the tops of the left and right side panels and the rear wall,

the top panel extending forwardly from the rear wall a transverse distance that is less than the depth of the cabinet to define a top opening;

the front vertical panel being connected to a side panel and extending laterally toward the other side panel a distance that is less than the lateral distance between the left and right side panels to define a front opening;

a vertical divider of height and depth equal to the side panels and positioned parallel to and intermediate the left and right side panels,

the divider subdividing the main compartment into a helmet compartment and a main storage area,

the said front opening exposing the entire front of the main storage area and only a portion of the front of the helmet compartment,

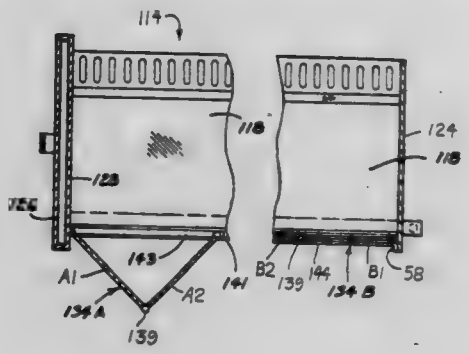
a left storage door hingedly connected to the left side panel and covering a portion of the said front opening; and

a right storage door hingedly connected to the right side panel and covering the remainder of the said front opening.

4,344,661
DRAWER ASSOCIATING CONSTRUCTIONS

John P. Gotberg, Box 551, Franklin, Mich. 48025

Continuation-in-part of Ser. No. 949,076, Oct. 6, 1978. This application Jan. 21, 1980, Ser. No. 115,246
Int. Cl.[3] A47B *47/00*; F16B *12/00*
U.S. Cl. 312—330 R 16 Claims



1. A drawer assembly, comprising:

a first, upper drawer member including two upstanding side walls, an upstanding front wall and an upstanding rear wall;

at least one of said wall of said first, upper drawer member including means for removably securing a floor thereto for said first, upper drawer member;

a second, lower drawer member including two upstanding side walls, an upstanding front wall and an upstanding rear wall;

said second, lower drawer member further including a floor;

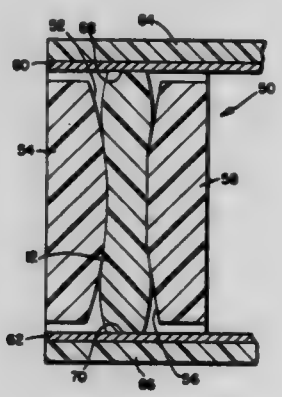
said first, upper drawer member being in vertical juxtaposition with said second, lower drawer member; and

said drawer assembly further including at least one securement member effectively releasably ganging at least one said wall of said first, upper drawer member to at least one said wall of said second, lower drawer member, so that pulling-out and pushing-in of either of said drawer members while said drawer members are so releasably ganged together will serve to pull out and push in both of said drawer members as a unit.

4,344,662
RETAINER FOR ELASTOMERIC ELECTRICAL CONNECTOR

Chris A. Dalamangas, Union, and Thomas P. Piccirillo, North Plainfield, both of N.J., assignors to Technical Wire Products, Inc., Cranford, N.J.

Continuation of Ser. No. 34,954, Apr. 30, 1979, Pat. No. 4,257,661, which is a continuation of Ser. No. 846,344, Aug. 28, 1977, abandoned. This application Jun. 27, 1980, Ser. No. 163,713
Int. Cl.[3] H01R *13/00*
U.S. Cl. 339—59 M 16 Claims



1. Retainer means for retaining an elastomeric electrical connector with layered electrical contacts in operable position between opposed sets of spaced electrically conductive areas, the retainer means comprising:

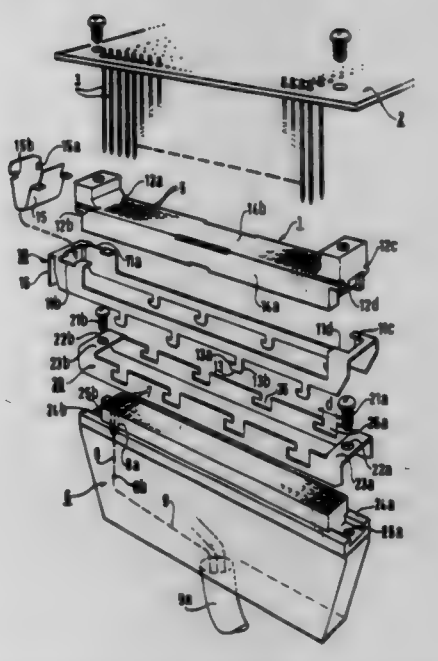
A. a generally planar body of electrically nonconductive material having top and bottom surfaces substantially parallel to said conductive areas,

B. at least one aperture through the body from the top surface to the bottom surface for receiving the elastomeric electrical connector, the at least one aperture being linearly elongated in a planar dimension of the body and having a top region and a bottom region separated by a central region, the opening of the at least one aperture in the central region being smaller than either the top or bottom region the top and bottom regions of the aperture smoothly diverging from the central region.

4,344,663
CONNECTOR-LOCKING DEVICE

Paul Ognier, Lannion, and Bernard Guilchier, Morlaix, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Apr. 8, 1980, Ser. No. 138,313
Claims priority, application France, Apr. 25, 1979, 79 10463
Int. Cl.[3] H01R *13/62*
U.S. Cl. 339—75 M 4 Claims



1. A device for locking an electrical connector having a first part including a face, which is provided with contacts of a first type, and two sides, which are parallel to each other and perpendicular to said face, and a second part including a face, which is provided with contacts of a second type for cooperating with the contacts of the first type when the face of the second part is brought close to the face of the first part, wherein the locking device comprises:

each of said sides of said first part having a groove located at each end and extending parallel to the face of said first part;

a first locking piece consisting of a one-piece channel-shaped member;

means for mounting the first locking piece on said first part for slidable translation in a direction parallel to said face between a locking position and an unlocking position, said means for slidably mounting the first locking piece on the first connector part comprising two pairs of tabs formed integrally with said channel-shaped member, one pair adjacent to each end thereof, the tabs of each pair being inserted into the respective grooves at the corresponding end of the first connector part;

spring means interposed between the first part and the first locking piece for biasing said first locking piece into the locking position;

a second locking piece mounted on said second part, one of said first and second locking pieces having two spaced

apart edges parallel to the corresponding face of the respective part with hooked members extending from said edges perpendicularly to and outwardly of the plane of the corresponding face, and the other of said locking pieces having apertures corresponding to said hooked members, each aperture having a shape complementary to that of the corresponding hooked member;

and

means for fastening the second locking piece in fixed relation to said second connector part.

4,344,664

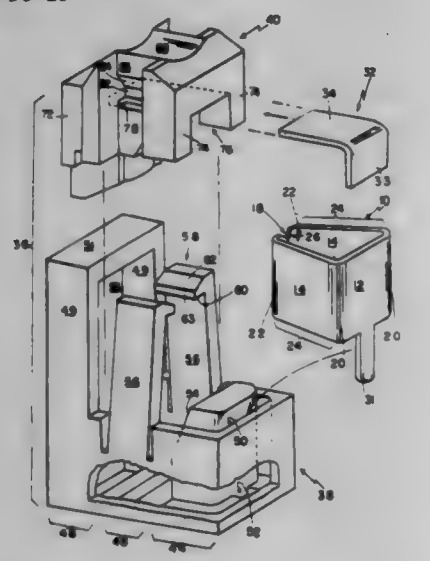
WIDE COMPLIANCE INSULATION DISPLACEMENT TERMINAL BLOCK

William B. Walkup, Southboro, Mass., assignor to Ark-Les Corporation, Watertown, Mass.

Filed Oct. 3, 1980, Ser. No. 193,652

Int. Cl.³ H01R *13/38*

U.S. Cl. 339—99 R **10 Claims**



1. A one-piece, insulation-displacing contact spring terminal adapted to slice the surrounding insulation of a wire comprising an insulation-clad conductor, said conductor having a predetermined diameter and having a central axis, by relative movement of said wire in a direction generally perpendicular to its axis to establish positively-gripping electrical contact with said conductor,

said contact spring terminal being of resilient, electrically conductive sheet metal of at least five times greater width than thickness and having

a generally flat trunk and

a pair of opposing spring arms integrally connected to said trunk at opposite sides thereof, each said spring arm being longer than the length of said trunk, said spring arms having opposed, widthwise-extending, insulation-slicing, generally parallel, wire-contacting edges of reduced thickness remote from said trunk and lying generally in a single plane and spaced from one another to define a wire-receiving slit (18) therebetween narrower than the diameter of said conductor,

the portion of a said spring arm extending between said trunk and said edges having

a rounded trunk corner adjacent said trunk and

a rounded edge corner adjacent said edge

with an longitudinally-extended, generally straight connecting portion therebetween,

said connecting portion being bent at

an included angle with said trunk of less than about ninety degrees and

an included angle with the plane of said opposed edges of greater than about ninety degrees,

said wire-contacting edges having at at least one end thereof opposed beveled corners for receiving, engaging and slicing the surrounding insulation of said wire by movement of said wire relative to said terminal between said corners and into said slit between said opposed edges in a direction generally perpendicular to the axis of said wire and of said plane and through said slit to establish positively-gripping electrical contact between said contact spring terminal and said wire conductor.

4,344,665

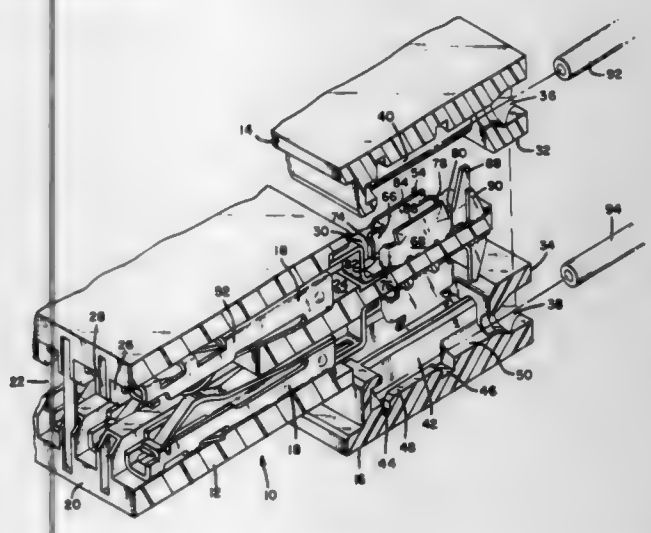
CONNECTOR FOR MASS TERMINATING INDIVIDUAL CONDUCTORS

John J. Racilla, and Robert N. Weber, both of Hummelstown, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 31, 1980, Ser. No. 202,854

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—99 R **6 Claims**



1. A connector for terminating a plurality of individual insulated conductors in gang fashion, said connector comprising:

a housing of insulative material having a front mating face and a rear terminating portion with a plurality of terminal passages extending therebetween in parallel spaced fashion in at least one row, said rear terminating portion of said housing being outwardly and rearwardly open;

a cover mating with said open rear terminating portion of said housing, said cover having an inwardly directed pusher surface and crimp means associated with each said terminal passage and a rear wall enclosing said open rear terminating portion;

a plurality of apertures in said rear wall each opening into a respective one of said passages, and means in said cover aligned with each respective aperture for engaging and restraining a conductor; and

a plurality of terminals each mounted in a respective passage, each said terminal having a mating portion directed towards said front mating face and an insulation piercing conductor engaging portion and strain relief means both lying in said rear terminating portion of said housing, whereby a plurality of conductors received in said cover are driven by said cover pusher surfaces into said insulation piercing conductor engaging portions of respective terminals and said strain relief means is crimped against a conductor by closure of said cover with respect to said housing.

4,344,666

OPTO-MECHANICAL DEVICE TO CONTROL THE DIRECTION OF BEAMS OF VISIBLE LIGHT

Klaus Birgmeir, Munich, and Klaus Stadler, Irschenhausen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,252

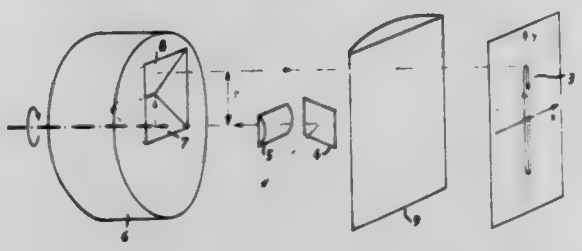
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927199

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.9 **8 Claims**

1. An opto-mechanical device to control the direction of

beams of visible light utilizing a movable optical component and adapted to deflect an incident beam of light in a desired direction and comprising a first optical component by which an incident beam of light can be converted into a rotating beam of light, said first optical element including a rotating mirror assembly having at least two mutually perpendicular reflecting mirrors; a relay mirror and a first cylinder lens which focuses in a Y coordinate direction direct the incident beam of light onto the rotating mirror assembly, whereby the rotating beam



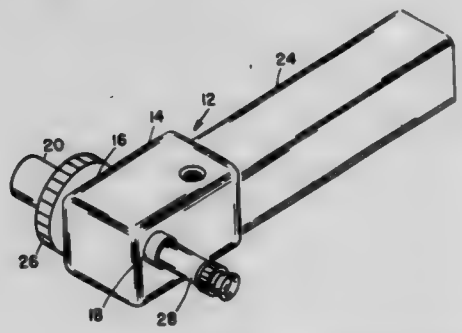
of light is reflected back towards the relay mirror parallel to the axis of rotation of the mirror assembly; and a second optical element, the produced rotating beam of light being focused in only one direction by the second optical element to be projected in a desired region, both optical elements cooperating with each other in a fashion that the deflected beam of light is focused in the desired region; and the second optical element including a second cylinder lens which focuses in a X-coordinate direction and is located after the rotating mirror assembly.

4,344,667

INTEGRATED BEAM SPLITTER AND ADJUSTABLE LIGHT INTENSITY CONTROL ADAPTER

Edward A. Wooff, Jr., Ventura, Calif., assignor to Circon Corporation, Santa Barbara, Calif.

Filed May 30, 1980, Ser. No. 154,874
Int. Cl.³ G02B *7/00, 27/10*
U.S. Cl. 350—80 **12 Claims**



1. An integrated beam splitter and adjustable light intensity control adapter comprising

a housing including a first hollowed-out area located at one end thereof and a pair of axially aligned openings, one of which extends from the exterior of a surface of the housing into the interior of said first hollowed-out area and the other of said opening extending from the interior of said first hollowed-out area to the exterior of an opposed surface of the housing, said housing including a second hollowed-out area which is located substantially perpendicular to and which communicates with said first hollowed-out area, said second hollowed-out area having an aperture which extends from the interior of said second hollowed-out area to the exterior of a planar surface of said housing, which planar surface is substantially perpendicular to said surface and said opposed surface having one of said pair of openings;

means operatively connected to said housing for attaching an optical device, which is adapted to produce an optical image to the housing wherein a said optical image is directed through said one of said pair of openings and into said first hollowed-out area and out through the other of said pair of openings;

viewing means operatively coupled to said housing and positioned in axial alignment with said other one opening of said pair of openings to enable a viewer to observe a said optical image from a said optical device;

a beam splitter positioned within said first hollowed-out area and between said pair of openings to receive through said one opening said optical image and for passing a portion of a said optical image at a light intensity which is less than one-half of the intensity of a said optical image through a first optical path including said other opening and through said viewing means and for deflecting the remainder of said optical image through a second optical path substantially perpendicular to the axis of said axially aligned pair of openings;

a prism positioned within said first hollowed-out area and adjacent said beam splitter and along said second optical path to receive and deflect the remainder of a said optical image from said beam splitter into said second hollowed-out area and through said aperture;

light intensity adjusting means positioned in said second hollowed-out area and along said second optical path between said prism and aperture for controlling the intensity of that portion of a said optical image at the planar surface of the housing; and

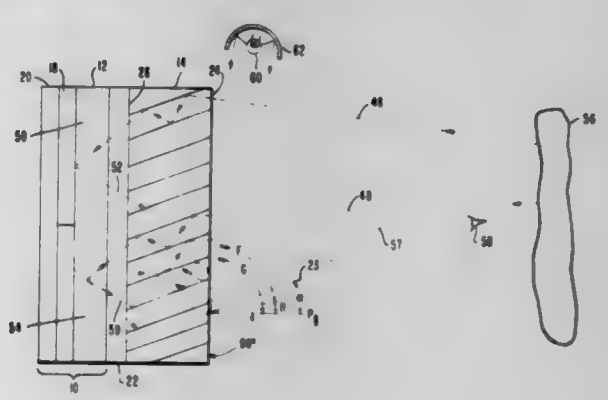
means including a lens operatively coupled to said housing on said planar surface at said aperture for coupling a recording means to said second hollowed-out area along said second optical path to record a said optical image having a controlled intensity.

4,344,668

FIBER OPTIC LIGHT TRAPS FOR ELECTRO-OPTICAL DISPLAY DEVICES

John E. Gunther, Torrance; William R. Lichty, Culver City, and William C. Hoffman, Torrance, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 17, 1980, Ser. No. 130,638
Int. Cl.³ G02B *5/16*
U.S. Cl. 350—96.27 **21 Claims**



1. A display device comprising:

(a) an electro-optical display panel having a specularly reflecting display surface; and

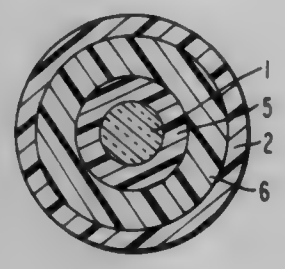
(b) a fiber optic faceplate having a back major surface and a front major surface aligned at a predetermined angle β to one another, wherein said back surface is parallel to and adjacent said display surface, wherein said faceplate has a multiplicity of optical fibers, each of said fibers having an acceptance solid angle which defines exclusively the angular range through which light is transmitted by said fibers, wherein said fibers have longitudinal axes which are parallel to a plane passing through a perpendicular to said back surface and a perpendicular to said front surface, and which are slanted at an acute angle α to said perpendicular to said back surface, and wherein said angle α is selected such that light which enters said front surface and is specularly reflected from said display surface back into said faceplate is directed outside of said acceptance solid angle.

4,344,669

COATED GLASS FIBERS FOR OPTICAL TRANSMISSION

Naoya Uchida, Mito; Masaaki Yoshida, and Toru Yamanishi, both of Yokohama, all of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Nov. 7, 1979, Ser. No. 91,997
Claims priority, application Japan, Nov. 7, 1978, 53/137660
Int. Cl.[3] G02B *5/172*
U.S. Cl. 350—96.30 5 Claims



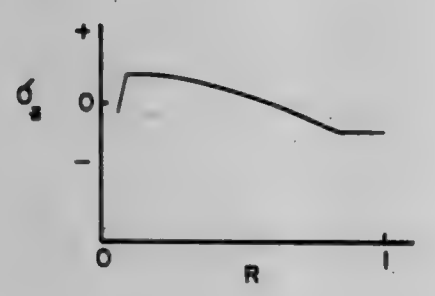
1. A glass fiber for use in optical transmission which comprises a first layer containing an organopolysiloxane having a refractive index higher than that of the glass which forms the outermost layer of the glass fiber, a second layer comprising an organopolysiloxane which is the same or different than the organopolysiloxane in the first layer, and a thermoplastic resin coated on the second layer in a thickness less than about 100 microns.

4,344,670

OPTICAL WAVEGUIDE SOOT PREFORM WITH REDUCED INNER LAYER STRESS AND METHOD OF MAKING

Michael G. Blankenship, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 1, 1980, Ser. No. 145,445
Int. Cl.[3] G02B *5/172*
U.S. Cl. 350—96.31 10 Claims



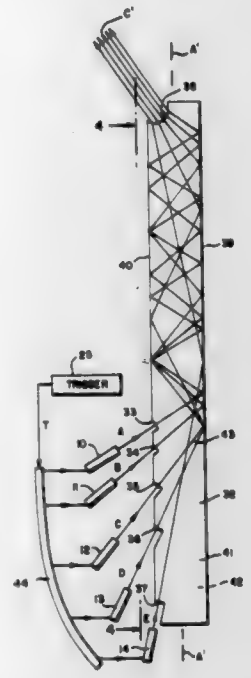
6. A cylindrical optical waveguide soot preform comprising a longitudinal center hole and a surrounding preform body comprising a core portion have a radially varying composition, the core portion being composed of a plurality of concentric core layers of vitreous soot including an inner layer defining the cylindrical surface of the longitudinal center hole and outer layers making up the remainder of the core portion, the soot layers proximate to the inner layer containing higher concentrations of refractive-index-increasing dopants than soot layers positioned exteriorly thereof, and being in a state of tensile stress at ambient temperatures, wherein, following soot deposition but prior to any treatment to remove residual water or consolidated the preform to clear glass, the inner layer defining the center hole of the preform has a thermal expansion coefficient lower than that of at least one of the layers proximate thereto, so as to exhibit a reduced level of tensile stress with respect to said proximate layer at ambient temperatures.

4,344,671

MULTIPLE PULSE LASER ASSEMBLIES

Paul W. Lang, Orange, Calif., assignor to Raymus K. Payton, Newport Beach, Calif.

Filed Dec. 17, 1979, Ser. No. 104,186
Int. Cl.[3] G02B *27/14*
U.S. Cl. 350—174 2 Claims



1. A multiple pulse laser assembly including, in combination:
(a) a plurality of pulse lasers, each generating a giant pulse of coherent light in response to a trigger signal received thereby;
(b) an elongated body of light transmissive material having light entrance means and light exit means, in which said elongated body has a pair of opposite parallel polished side surfaces, said light entrance means comprising a plurality of separate triangular-shaped cut-outs in one of said side surfaces at successively spaced distances from one end of the body, said plurality of lasers being positioned to direct their output pulses into said separate triangular-shaped cut-outs respectively to effect internal reflections from said opposite side surfaces following generally saw-toothed-shaped paths, the spacing of said cut-outs and the angles of entry of said output laser pulses being such that no two paths follow a like direction in said body, said light exit means comprising a single continuous curved cut-out defining a lens intercepting the ends of said paths and directing exiting light along in parallel directions;
(c) a trigger means for providing a trigger signal for said lasers; and,
(d) delay line means connected to said trigger means and having tap off points to said pulse lasers so that said trigger signal travels down said delay line means to trigger successively said pulse lasers at predetermined time intervals such that the output pulses from said lasers exit from said light exit means in said body substantially simultaneously.

4,344,672

TRUCK MIRROR WITH OVERLYING BOTTOM END COVER

Arthur F. Bleiweiss; Dimitru Cotoara, both of Toronto, and Robert J. Wilkes, Caledon, all of Canada, assignors to Dominion Auto Accessories Limited, Toronto, Canada

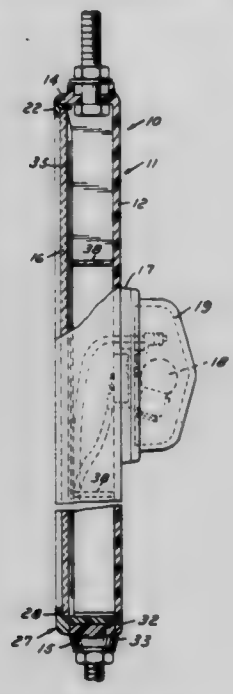
Filed Dec. 29, 1980, Ser. No. 221,062
Int. Cl.[3] G02B *7/18*
U.S. Cl. 350—288 5 Claims

1. A truck mirror comprising a unitary housing having a back wall, side walls and top and bottom walls defining a generally, rectangular opening,
said side walls having inwardly extending spaced flanges,

said bottom wall terminating short of the side walls so that a mirror can be inserted by sliding longitudinally upwardly through the spaced flanges toward the top wall,

a top end cover member interposed between said top edge of said mirror and said top wall,

said member having end portions extending laterally behind said outermost flange along said side walls,



a bottom end cover interposed between the bottom edge of said mirror and said bottom wall of said housing,

said bottom end cover having portions thereof extending upwardly along the outer face of the lower edge of the mirror,

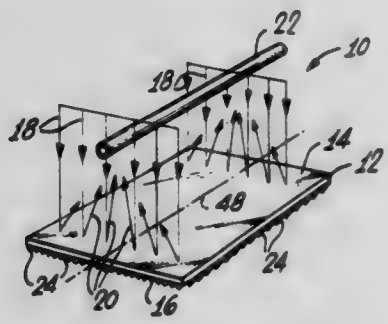
said bottom end cover having portions thereof extending inwardly in overlying relation to said bottom wall of said housing.

4,344,673

FOCUSING REFLECTOR

David W. Holdridge, Fullerton, Calif., assignor to Swedlow, Inc., Garden Grove, Calif.

Filed Sep. 29, 1980, Ser. No. 192,431
Int. Cl.[3] G02B *5/08*
U.S. Cl. 350—292 19 Claims



9. A focusing reflector for redirecting light form a light source to a prescribed focal zone, comprising:

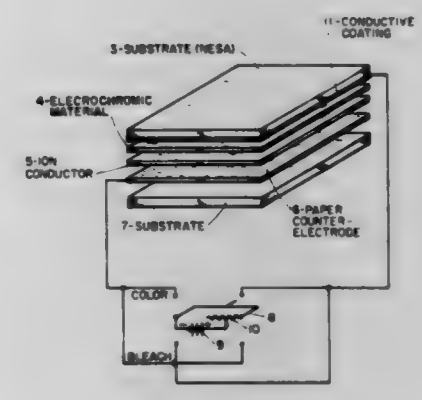
a reflector sheet formed from a transparent material and having an upper face with a generally smooth surface for presentation toward the light source, and a lower face defined by an array of downwardly depending reflective elements each having a pair of reflector facets oriented substantially perpendicular to each other and a focusing facet oriented with respect to said reflector facets at a preselected angle for cooperating with said reflector facets to reflect light incident upon said upper face to the prescribed focal zone, said angular orientation of said focusing facets of adjacent ones of said elements changing progressively with changes in the distance of said elements from the focal zone.

4,344,674

ELECTROCHROMIC DISPLAY DEVICE WITH IMPROVED ERASING CHARACTERISTIC

Robert D. Giglia, Rye, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 18, 1980, Ser. No. 157,612
Int. Cl.[3] G02F *1/17*
U.S. Cl. 350—357 12 Claims



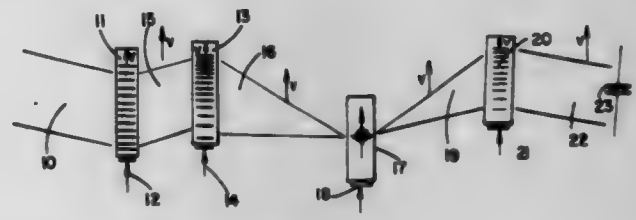
1. An electrochromic device comprising a film of persistant electrochromic inorganic compound, an electrode layer on one side of said film, an electrolyte layer on the opposite side of said film, a conductive counter electrode layer on the opposite side of said electrolyte layer, said counter electrode layer comprising an electrochemically reversible oxidizing agent having oxidizing electrode potential more negative than carbon to increase the open circuit potential of said device when the film of electrochromic material is in its colored state.

4,344,675

OPTICAL SIGNAL PROCESSING DEVICE

Shi-Kay Yao, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 29, 1980, Ser. No. 154,358
Int. Cl.[3] G02F *1/11*
U.S. Cl. 350—358 7 Claims



1. An optical system comprising:

input means for providing a radio frequency input signal;

chirp means for providing a substantially linearly frequency modulated chirp signal of constant amplitude;

a source for emitting a beam of radiation;

first acousto-optical modulation means disposed in the path of said beam, and connected to said input means and driven by said input signal, said first acousto-optical modulation means functioning to modulate said beam with said radio frequency input signal to produce a first modulated beam;

second acousto-optical modulation means disposed in the path of said first modulated beam, and connected to said chirp means and driven by said chirp signal, said acousto-optical modulation means functioning to modulate said beam with said chirp signal to produce a second modulated beam;

means for providing a filter signal representing a predetermined filter function to be applied to said input signal;

acousto-optical filter means disposed in the path of said second modulated beam and functioning to modulate said beam with said filter signal to produce a third modulated beam;

lens means disposed in the path of said third modulated beam for collimating the third modulated beam to produce a fourth collimated modulated beam; and

detector means disposed in the path of said fourth modulated beam for detecting the optical intensity distribution at the focal point thereof.

4,344,676

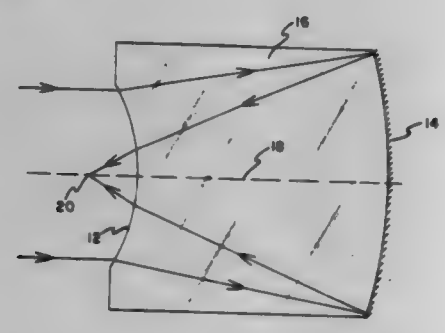
SINGLE ELEMENT SPHERICAL SURFACED OPTICS INSENSITIVE TO WAVELENGTH AND TEMPERATURE

David R. Shafer, Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 82,814, Oct. 9, 1979, Pat. No. 4,331,390. This application Jan. 31, 1980, Ser. No. 117,032

Int. Cl.[3] G02B *17/00*

U.S. Cl. 350—444 2 Claims



1. An optical system comprising,

(A) a single transparent element;

(B) first and second spherical surfaces on said element, said first surface being negatively curved and said second surface being a mirror, each of said surfaces on said element having

(a) a common axis, and

(b) different centers of curvature,

(C) said element being chosen from the group consisting of fused silica and BK-7 and the radius of said first surface is -1.0569, the radius of said second surface is -2.7174, and the thickness of said element along the optical axis is 1.4867,

(D) the radii of said surfaces and the index of refraction of said element being chosen to correct without further optical surfaces for third order spherical aberration and spherochromatism.

4,344,677

LASER PRINTER WITH MULTIPLE SCANNING BEAMS

Paul A. Stuermer, and Richard N. Blazey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 70,230, Aug. 27, 1979, abandoned. This application Apr. 14, 1981, Ser. No. 301,705

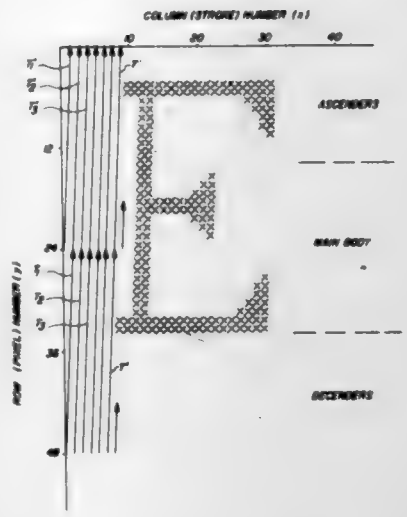
Int. Cl.[3] G06K *15/12;* H04N *1/22*

U.S. Cl. 354—5 7 Claims

1. Laser printer apparatus with an improved resolution/-speed characteristic for scan-imaging an information strip of relatively high transverse pixel density along a linear imaging zone, said apparatus comprising:

(a) means for producing at least two laser beams;

(b) means for simultaneously deflecting said laser beams respectively along adjacent, partial-width, linear regions of said linear imaging zone in both column-wise and row-wise directions so as to scan row-wise spaced sets of tandem, multi-pixel columns, one multi-pixel column of each such set being scanned by each of said beams; and



(c) means for independently imagewise modulating the intensity of each of said laser beams during their simultaneous scans of respective partial-width regions.

4,344,678

DIAPHRAGM CONTROL DEVICE FOR CAMERA

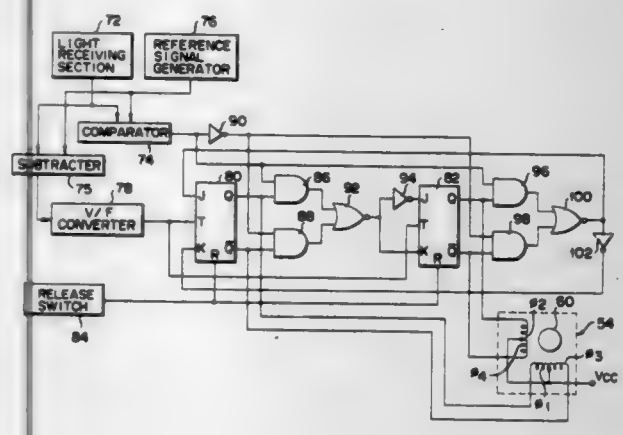
Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,763

Claims priority, application Japan, Sep. 18, 1979, 54/119723

Int. Cl.[3] G03B *7/095*

U.S. Cl. 354—23 D 13 Claims



11. A diaphragm control device for a camera having a shutter, comprising:

stepping motor means comprising a stator having an electromagnet having a plurality of poles, an excitation state of said poles of said electromagnet changing in response to a pulse signal supplied to said stator; and a rotor surrounded by said stator, said rotor comprising a permanent magnet having a plurality of poles, rotating through a predetermined angle every time an excitation state of said stator changes and being balanceable in a plurality of positions at the time of initial excitation of said stator;

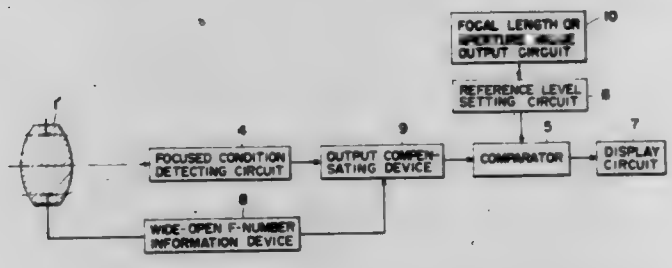
light receiving means for supplying to said stator a pulse signal in accordance with the brightness of a subject, said pulse signal comprising a plurality of pulses, the number of pulses of said pulse signal be supplied to said stator being determined to cause said rotor to rotate through less than half the angle necessary for said rotor to rotate from one balanced position to an adjacent balanced position; and

diaphragm means coupled to said motor means and having its diaphragm opening set in accordance with the rotation angle of said rotor.

4,344,679
CAMERA WITH PHOTOELECTRIC FOCUS DETECTING DEVICE

Michio Yagi, Hachioji, and Hiroshi Sawano, Tokorozawa, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,585
Claims priority, application Japan, Oct. 2, 1978, 53-120441
Int. Cl.³ G03B *13/18, 17/18*
U.S. Cl. 354—25 1 Claim

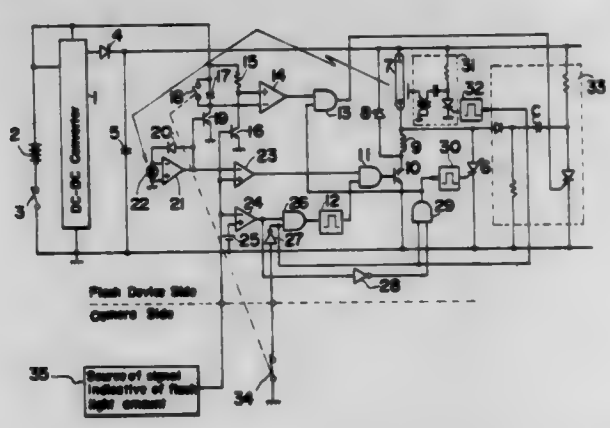


1. A camera including a photoelectric focus detecting device, comprising: a focused condition detecting circuit made receptive of the light coming from an objective lens for generating output signals according to the focused condition; a reference level setting circuit; a comparator circuit for comparing the output of the focused condition detecting circuit and the reference level of the reference level detecting circuit; display circuit for displaying the compared results of the comparator circuit; means for controlling the reference level setting circuit thereby to vary a reference level in accordance with a range of depth of focus or field of the objective lens, a wide-open F-number information device for generating an information indicative of a difference in a wide-open F-number of an interchangeable lens; and an output compensating device connected between the focused condition detecting circuit and the comparator circuit, whereby the output compensating device is controlled by the output of the wide-open F-number information device.

4,344,680
PHOTOGRAPHIC DEVICES FOR CONTROLLING FLASH PHOTOGRAPHY

Tokuji Ishida, Daito; Nobuyuki Taniguchi; Masatoshi Itoh, both of Sakai; Toshiaki Matsumoto, Izumisano; Tatsuro Izumi, and Masatake Niwa, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 31, 1981, Ser. No. 249,404
Claims priority, application Japan, Apr. 9, 1980, 55-47240
Int. Cl.³ G03B *15/05;* H05B *41/34*
U.S. Cl. 354—33 23 Claims

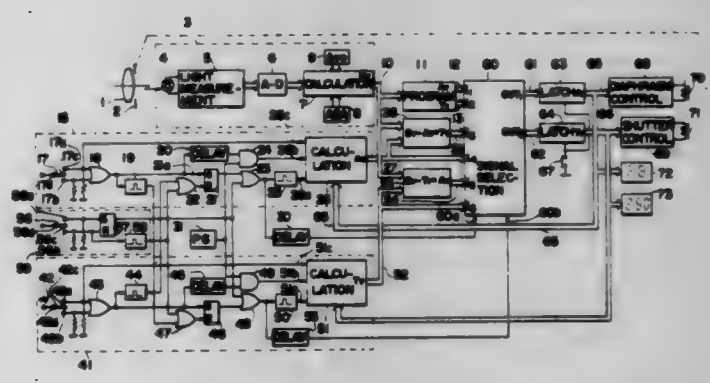


1. Photographic system for flash photography, comprising:
an electronic flash tube;
means for supplying firing current to said electronic flash tube;
means for selectively restricting said firing current;
means for detecting whether or not the flash light amount necessary for a flash photograph is below a predetermined level prior to the firing of said flash tube for photographic exposure;
means for selecting said restricting means to actually restrict said firing current when said detecting means detects that said necessary flash light amount is below said predetermined level; and
means for controlling the operation of said flash tube such that the flash light emission therefrom substantially corresponds to said necessary flash light amount.

4,344,681
SELECTION AND SETTING DEVICE FOR CAMERA EXPOSURE CONTROL

Seiji Yamada, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1981, Ser. No. 238,029
Claims priority, application Japan, Feb. 26, 1980, 55-23892
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—38 7 Claims



1. A multi-mode camera exposure control device for controlling exposure in at least the shutter speed priority, diaphragm aperture priority and program photographic modes, comprising:
light measuring means for detecting the light from a scene to be photographed and generating a light-related output;
program control signal generator means for generating a first diaphragm value signal and a first shutter value signal as a function of said light-related output;
diaphragm aperture setting means including a first manually operative member, means for generating a second diaphragm value signal in dependence on the operation of said first manually operative member, and means for generating a first mode control signal in response to the operation of said first manually operative member;
shutter speed calculation means for generating a second shutter value signal as a function of said light-related output and said second diaphragm value signal;
shutter speed setting means including a second manually operative member, means for generating a third shutter value signal in dependence on the operation of said second manually operative member, and means for generating a second mode control signal in response to the operation of said second manually operative member;
diaphragm aperture calculation means for generating a third diaphragm value signal as a function of said light-related output and said third shutter value signal;
program mode selection means including a third manually operative member and means for generating a third mode control signal in response to the operation of said third manually operative member;
selector means for selecting one pair of said first, second and third diaphragm and shutter value signals in dependence on which of said first, second and third mode control signals is generated;
diaphragm control means for controlling the diaphragm aperture in accordance with the diaphragm control signal selected by said selector means, and
shutter control means for controlling the shutter speed in

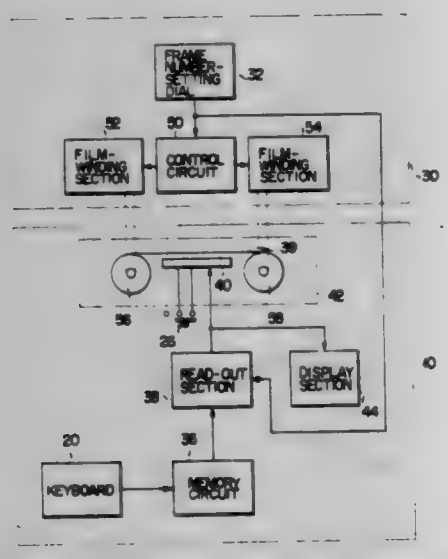
accordance with the shutter control signal selected by said selector means.

4,344,682

DATA RECORDING DEVICE

Shinichiro Hattori, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1980, Ser. No. 217,232
Claims priority, application Japan, Dec. 27, 1979, 54/172005
Int. Cl.³ G03B *1/18, 17/24, 29/00*
U.S. Cl. 354—62 **7 Claims**



1. A data recording device for recording desired data on a desired frame of a film used in a photographic device for a photographing operation, said data recording device comprising:

data generating means having an output for generating data corresponding to a frame of the film and recording data;

memory means having an output and an input connected to the output of said data generating means for storing the data output from said data generating means;

frame-specifying means having an output for outputting a signal corresponding to a desired frame selected from the film frames;

film-driving means having an input connected to the output of said frame-specifying means for positioning the desired frame to a predetermined position in response to the signal from said frame-specifying means;

read-out means having an output and inputs connected to the outputs of said memory means and said frame-specifying means, respectively, for reading out desired recording data from said memory means in response to the signal output from said frame-specifying means;

data recording means having an input connected to the output of said read-out means for copying the recording data output from said read-out means onto the desired frame of the film; and

means for displaying at least the recording data read out by said read-out means.

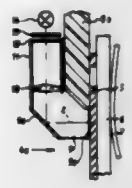
4,344,683

QUALITY CONTROL METHOD AND APPARATUS FOR PHOTOGRAPHIC PICTURES

Otto Stemme, Munich, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,278
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939681
Int. Cl.³ G03B *27/52, 27/32, 17/24*
U.S. Cl. 354—106 **3 Claims**

1. A quality control method for photographic pictures, comprising the steps of imaging a test pattern onto a marginal area of a film frame, the test pattern being a raster pattern having zones of different raster frequency and including a component indicative of image sharpness; upon conversion of the film frame into a negative, printing the test pattern in a marginal area of a positive made from the negative so that, in the event the photographic image on the positive is blurred, the absence or presence of blurring of the printed test pattern indicates whether blurring of the photographic image occurred during picture-tanking or during printing of the positive; and wherein the step of imaging is carried out during manufacture of the photographic film.

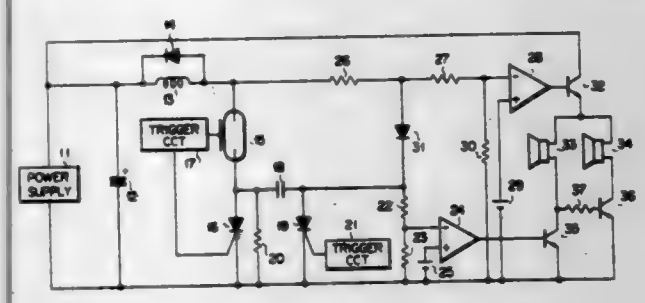


4,344,684

AUTOMATIC PHOTOFLASH DEVICE

Takashi Tsukaya, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1981, Ser. No. 236,903
Claims priority, application Japan, Feb. 27, 1980, 55/23872
Int. Cl.³ G03B *15/02*
U.S. Cl. 354—128 **3 Claims**



1. An automatic photoflash device comprising:

an electronic flash tube;

a source of power;

a main capacitor coupled to said electronic flash tube and coupled to said power source so as to be charged to a predetermined voltage by said power source for supplying a discharge current to said electronic flash tube;

a main thyristor connected in series with said electronic flash tube;

means for rendering said main thyristor conductive to thereby cause said main capacitor to supply said discharge current to said electronic flash tube to emit light;

a quenching circuit for automatically terminating a flash, and including a quenching thyristor coupled to said main thyristor for causing said main thyristor to become non-conductive to thereby cause said electronic flash tube to stop emitting light, said quenching thyristor being rendered conductive responsive to a trigger signal, and a quenching capacitor for applying a backward bias to said main thyristor through said quenching thyristor;

a first detector means coupled to said main capacitor for detecting the charge voltage of said main capacitor and generating a first output signal when the detected charge voltage of said main capacitor is too low to trigger said electronic flash tube;

a second detector means coupled to said quenching capacitor for detecting the charge voltage of said quenching capacitor and generating a second output signal when the detected charge voltage of said quenching capacitor is lower than a predetermined value; and

an alarm means coupled to said first and second detector means for indicating, in response to said first output signal, that said electronic flash tube is unable to emit light, and

for indicating, in response to said second output signal, that automatic flash termination is impossible.

4,344,685

PHOTOGRAPHIC CAMERAS

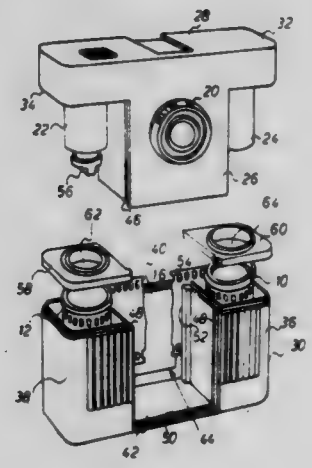
Erhard Milatz, Langenfeld, and Hans Schmidt, Monheim, both of Fed. Rep. of Germany, assignors to Robot Foto & Electronic GmbH & Co. K.G., Dusseldorf, Fed. Rep. of Germany

Filed Sep. 14, 1979, Ser. No. 75,740

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2839910

Int. Cl.³ G03B *1/12, 17/00, 1/00, 17/02*

U.S. Cl. 354—173 6 Claims



1. Photographic camera comprising:

a hollow sleeve-shaped supply spool and a hollow sleeve-shaped take-up spool, a film track and a film engaging plate between said spools,

a camera objective, which is arranged to produce a real image in the plane of the film track,

a film driving motor which is coupled to the take-up spool, an electronic control device and

a battery arranged to supply energy to the film driving motor and to the electronic control device, characterized in that

(a) the camera objective and the film track are provided on a generally block-shaped central housing body on opposite sides (front and read face) thereof,

(b) an upper housing portion is located on the upper side of the central housing body and extends on both sides beyond the central housing body,

(c) a lower housing portion forms a chamber member of substantially rectangular cross section below each of the laterally projecting parts of the upper housing body, said chambers accommodating said supply and take-up spools, respectively, said two chamber members being open towards the top and being interconnected by a rear wall and by a bottom plate, whereby a space is defined between the chamber members and the bottom plate, into which space the central housing body is removably inserted, vertical film passage slots being provided in the chamber members along the rear wall, and the film engaging plate being mounted on the rear wall, and

(d) the film drive motor is attached on one side to one of the projecting parts of the upper housing portion, and the battery is attached to the other one of the projecting parts on the other side of the upper housing portion, said film drive motor and said battery extending therefrom downwardly into the hollow take-up spool and supply spool, respectively, a coupling member mounted on the film drive motor being coupled directly to the take-up spool, when the central housing body is inserted.

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PHOTOGRAPHIC CAMERA WITH STATE-OF-FOCUS INDICATION

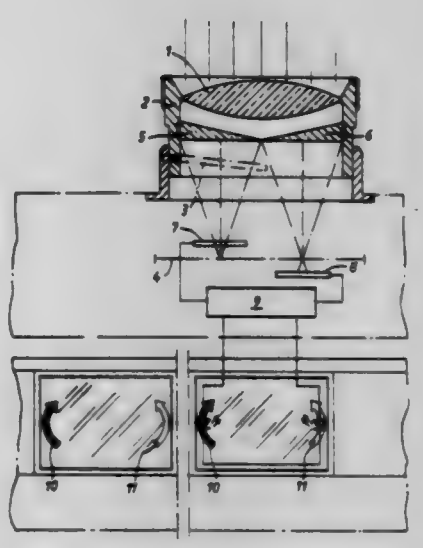
Otto Stemme, Munich; Peter Lermann, Narring, and Istvan Cocron, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 952,264, Oct. 18, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 133,127

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746920

Int. Cl.³ G03B *13/18, 13/02*

U.S. Cl. 354—198 5 Claims



1. An improved system for facilitating manual focussing of a camera objective in a manner that an image of a photographic subject is sharply focussed on a reference plane, the system utilizing displays located in a camera viewfinder in order to inform a user as to a direction in which the objective is to be rotated in order to focus the image, comprising:

a splitter located intermediate the objective and the reference plane, the splitter splitting the image into first and second parts;

a first light detector located in front of the reference plane between the reference plane and the splitter and being aligned with the first part, the first light detector generating a first electrical signal characteristic of light intensity of the first part at the first light detector;

a second light detector located behind the reference plane and being aligned with the second part, the second light detector generating a second electrical signal characteristic of light intensity of the second part at the second light detector;

a first display located in the camera viewfinder, the first display being shaped into an arrow pointing clockwise;

a second display located in the camera viewfinder, the second display being shaped into an arrow pointing counterclockwise; and

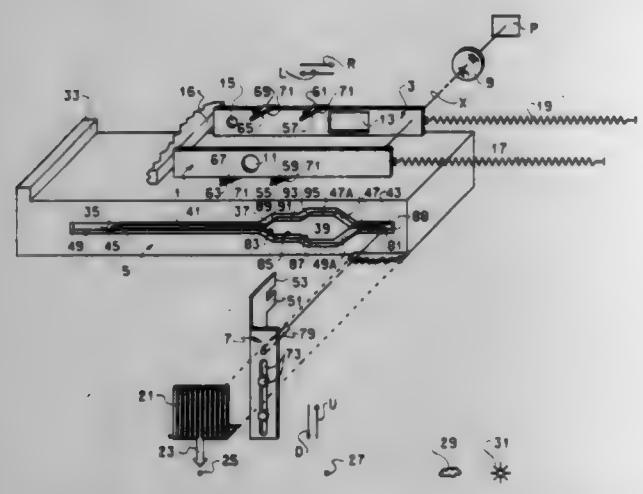
a comparator responding to the electrical signals and being connected to the displays so as to cause the first display to be energized when the objective must be rotated manually clockwise as viewed by a user in order to focus the image on the reference plane and so as to cause the second display to be energized when the objective must be manually rotated counterclockwise as viewed by a user in order to focus the image on the reference plane.

4,344,687

DIAPHRAGM AND SHUTTER MECHANISM

Robert P. Cloutier, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 18, 1981, Ser. No. 235,492
Int. Cl.[3] G03B *9/40*
U.S. Cl. 354—246 10 Claims



1. A diaphragm and shutter mechanism for exposing film in a camera, said mechanism comprising:

first and second blade means operable in a first mode as diaphragm and shutter blades, respectively, for effecting a first aperture-shutter speed combination and operable in a second mode as shutter and diaphragm blades, respectively, for effecting a second aperture-shutter speed combination; and

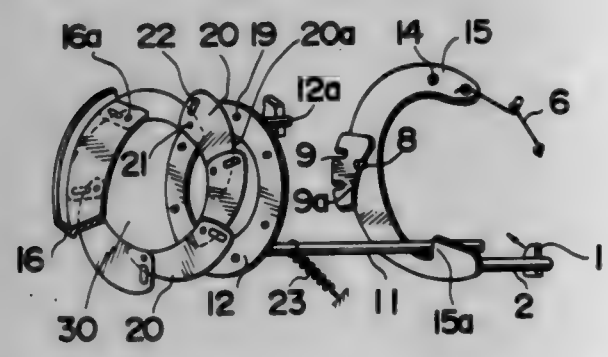
means for operating said first and second blade means selectively in the first and second modes.

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INTERCHANGEABLE LENS ASSEMBLY

Tsuneyo Metabi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 5,747, Jan. 23, 1979, abandoned. This application Mar. 18, 1980, Ser. No. 131,343
Claims priority, application Japan, Jan. 31, 1978, 53-9782
Int. Cl.[3] G03B *9/07, 17/00*
U.S. Cl. 354—272 12 Claims



1. In an interchangeable lens assembly detachably mountable to a camera body including reciprocating means which is displaced from an initial position prior to the commencement of an exposure and returns to the initial position upon the completion of the exposure, the combination comprising:

a diaphragm mechanism including a diaphragm drive ring for forming an adjustable diaphragm aperture;

a control member integrally connected to said diaphragm drive ring and defining therewith a diaphragm control unit for controlling the opening of said diaphragm aperture;

a first spring directly connected to and biasing said control unit in a direction to open said diaphragm aperture;

an actuating member movable between a cocked position and a released position for directly engaging and advancing said control member in a direction to close the diaphragm aperture when said actuating member is displaced to said released position and being drive uncoupled from said control member when said actuating member is moved back to said cocked position;

second biasing means for biasing said actuating member from said cocked to said released position;

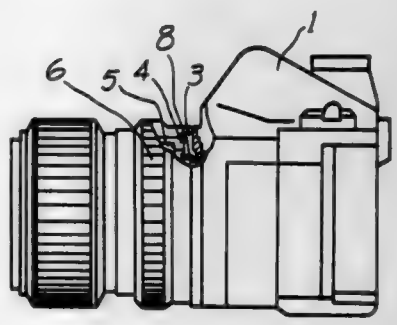
interlocking means for drive intercoupling said actuating member with said reciprocating means when said interchangeable lens is mounted to the camera body whereby said actuating member is maintained in said cocked position when said reciprocating means is in its initial position and said actuating member is permitted to move toward said release position when said reciprocating means is displaced from its initial position; and means for adjustably limiting the amount of the movement of said actuating member.

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LOCKING MECHANISM IN DIAPHRAGM SETTING RING OF SLR CAMERA

Shinsuke Kohmoto, and Yasuyuki Haneishi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1981, Ser. No. 237,986
Claims priority, application Japan, Feb. 25, 1980, 55-24144[U]
Int. Cl.[3] G03B *17/00;* G02B *7/02*
U.S. Cl. 354—286 13 Claims



1. In a camera having a camera body, an interchangeable lens engageable with the camera body, and a rotatable diaphragm setting ring on the lens, the ring being rotatable between an automatic diaphragm control position and a range of diaphragm presetting positions, an improvement comprising:

a first mounting member on the camera body;

a second mounting member on the lens, the second mounting member interlocking with the first mounting member to engage the lens with the camera body;

a hole formed in the second mounting member adjacent to the first mounting member;

a slideable lock pin disposed in the hole;

means responsive to the diaphragm setting ring for retracting the pin to a position approximately flush with the surface of the second mounting member when the diaphragm setting ring is within the range of diaphragm presetting positions; and

means responsive to the diaphragm ring for extending the lock pin outwardly from the surface of the second mounting member to the region occupied by the first mounting member when the diaphragm setting ring is at the automatic diaphragm control position.

4,344,690

ARRANGEMENT FOR TREATING PHOTOGRAPHIC BANDS RUNNING IN PARALLEL PATHS

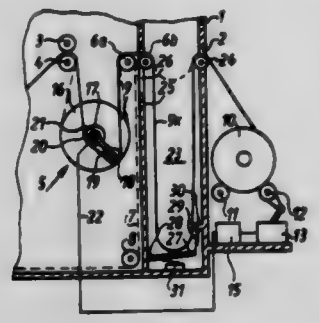
Wolfgang Viehrig, Munich; Viktor Osegowitsch, Taufkirchen, and Thomas Hammer, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 14, 1980, Ser. No. 178,343

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2934984

Int. Cl.[3] G03D *3/13*

U.S. Cl. 354—319 18 Claims



1. An arrangement for treating photographic paper bands which run in parallel paths, comprising means for treating the bands and forming at least one treatment station in which the bands are transported with a predetermined speed and treated; means for winding the bands after treating in said treatment station and located downstream of said treatment station; means for driving said winding means independently of the transportation of the bands in said treatment station and with a speed exceeding the speed of transportation of the bands in said treatment station; means for accumulating the bands between said treatment station and said winding means so that a loop of the bands is formed in said accumulating means; means for switching said driving means on and off in dependence upon a size of the loop of the bands in said accumulating means, said switching means including a microswitch arranged to act in response to the weight of a desirable maximum size of the loop; a pivotable plate against which the loop can abut and which, in turn, acts upon said microswitch so as to actuate the same in an operative position of said plate; and a spring arranged to hold said plate in an inoperative position so that the actuation of said microswitch directly depends upon the loading of said plate by the loop.

4,344,691

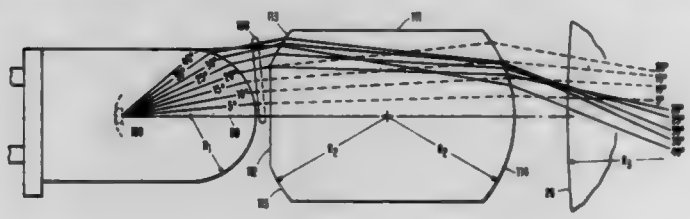
ZONAL CONCENTRATOR FOR ACCURATE ERASURE OF PHOTOCONDUCTOR CHARGE

Duane E. Grant, Boulder, and James R. Walker, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1980, Ser. No. 162,216

Int. Cl.[3] G03B *27/00, 27/54*

U.S. Cl. 355—1 14 Claims



8. In an electrophotographic machine of the transfer type wherein erase mechanisms are included for shaping the charged image area of a moving photoreceptive surface to the dimensions of the image, the improvements comprising:

an array of LEDs for producing light rays to erase charge outside of said image area, said array located adjacent to said surface across the width thereof; and

optical element means located between said photoreceptive surface and said array of LEDs having an end with a first surface formed to a first focal length and a second surface formed to a second focal length.

4,344,692

DEVELOPER TRANSPORTATION DEVICE FOR ELECTROSTATIC COPYING MACHINE

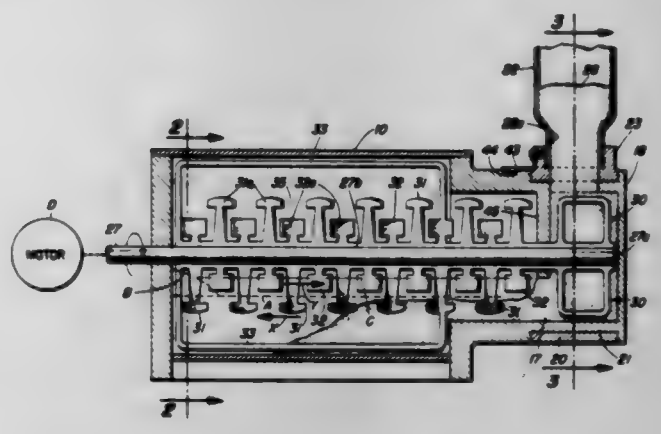
Goro Oda, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 12, 1980, Ser. No. 129,728

Claims priority, application Japan, Mar. 15, 1979, 54-32359[U]; Mar. 15, 1979, 54-32360[U]

Int. Cl.[3] G03G *15/08*

U.S. Cl. 355—3 DD 9 Claims



6. In an electrostatic copying machine having an electrophotographically sensitive member, a developer supply container, a developer supply chamber for storing the developer supplied from the container and having an orifice for permitting the developer to be supplied from the chamber to within a casing, developer transportation means within the casing for transporting the developer from the container through the supply chamber and into the casing, and developer transfer means for transferring developer from the casing to the electrophotographically sensitive member, the improvement wherein said developer transportation means comprises:

(a) a substantially horizontal rotary shaft,

(b) driving means for rotating said shaft,

(c) first blade means mounted on said shaft for contacting said developer at a first zone spaced from said shaft and transporting the developer horizontally through said first zone in a first direction substantially throughout the length of said shaft,

(d) second blade means mounted on said shaft for contacting said developer at a second zone at a lesser distance from said shaft than said first zone and transporting the developer horizontally through said second zone in a second direction contrary to said first direction substantially throughout the length of said shaft, whereby said developer is transported, agitated and evenly distributed such that it is substantially leveled by being moved in diverse horizontal directions throughout said first and second zones by said first and second blade means.

4,344,693

BELT TRACKING SYSTEM

Ralph A. Hamaker, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 14, 1980, Ser. No. 140,342

Int. Cl.[3] G03G *15/04*

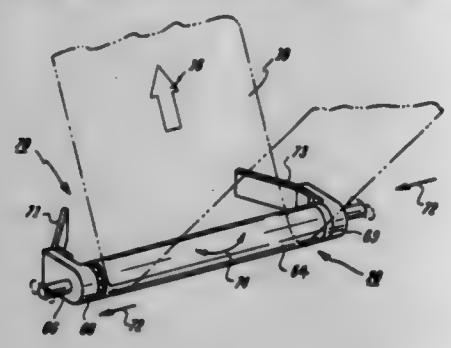
U.S. Cl. 355—3 BE 6 Claims

1. An electrophotographic printing machine of the type having a photoconductive belt arranged to move in a predetermined path through a plurality of processing stations disposed therealong, wherein the improvement includes:

means for supporting the photoconductive belt, said supporting means being frictionally driven by the photoconductive belt to move in unison therewith in at least a

direction substantially normal to the direction of movement along the pre-determined path; and

means for pivotably holding said supporting means so that movement of the photoconductive belt in the direction



substantially normal to the direction of movement along the pre-determined path applies a frictional force on said supporting means to pivot said supporting means in a direction such that the photoconductive belt returns to the pre-determined path of movement.

4,344,694

DEVELOPING EQUIPMENT FOR AN ELECTROPHOTOGRAPHIC COPYING DEVICE

Gerhard Ruh, Wilhelmshaven, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

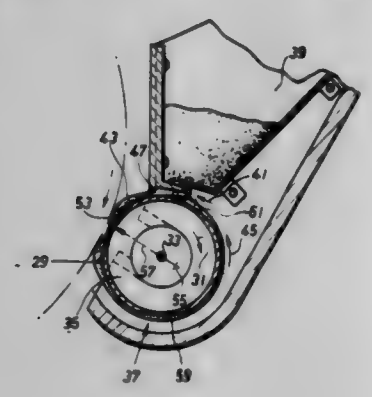
PCT No. PCT/DE79/00025, § 371 Date Nov. 2, 1979, § 102(e) Date Nov. 2, 1979, PCT Pub. No. WO79/00708, PCT Pub. Date Sep. 20, 1979

PCT Filed Mar. 2, 1979, Ser. No. 173,200

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809353

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 DD **4 Claims**



1. Developing apparatus for an electrophotographic copier which includes

an intermediate image carrier;

a developer drum comprising a rotatably mounted magnetic arrangement and a nonmagnetic electrically conductive hollow cylinder fixedly surrounding said magnetic arrangement; and

means for applying at a dosaging gap a magnetic brush of magnetic developer particles onto the electrically conductive surface of said hollow cylinder, the transfer of said developer particles from the magnetic brush onto said intermediate image carrier being effected by the electric field originating from the latent image,

wherein said nonmagnetic hollow cylinder has a reduced wall thickness adjacent said intermediate image carrier, said reduced wall thickness being formed of a flattened portion at the outer circumference of the hollow cylinder adjacent said intermediate image carrier.

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METHOD AND APPARATUS FOR SLITWISE EXPOSURE OF PHOTOSENSITIVE MEMBER IN COPYING MACHINES

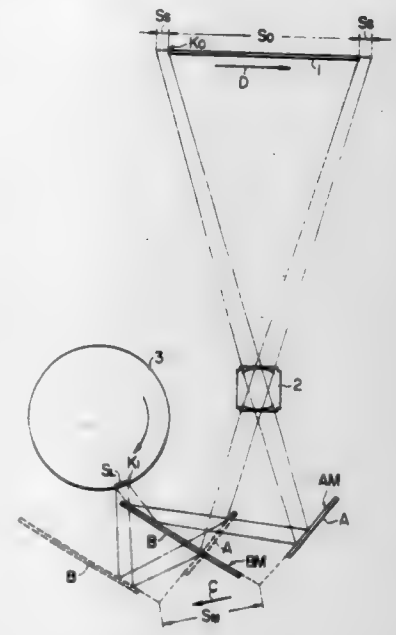
Toyokazu Satomi, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 23, 1980, Ser. No. 143,005

Claims priority, application Japan, Apr. 25, 1979, 54/051186

Int. Cl.³ G03G *15/28*; G03B *27/32*

U.S. Cl. 355—8 **21 Claims**



1. A method of slitwise exposure for a photosensitive member in copying machines comprising the steps of placing an original to be copied at a given position in planar form, disposing a focusing lens at a given location and in a given orientation so as to correspond to a full effective copying region of an original receptable, disposing a pair of rectangular reflecting mirrors on the image side of the focusing lens with their specular surfaces disposed at locations and orientations such that part of the exposing light flux from the focusing lens is successively reflected by the reflecting mirrors to focus a light image of the original on a photosensitive member, and moving the reflecting mirrors in different given directions while moving the surface of the photosensitive member in a direction at a uniform rate, thus effecting a slitwise exposure of the photosensitive member, in which the directions in which the pair of reflecting mirrors are moved are chosen so as to reduce the width of the specular surfaces of the reflecting mirrors, said mirrors being disposed at an obtuse angle relative one another.

4,344,696

MEANS FOR DRIVING RECIPROCATING MEMBERS

Tomoji Murata; Yasuo Goto, both of Toyokawa, and Masamichi Hayashi, Aichi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 8, 1980, Ser. No. 176,636

Claims priority, application Japan, Aug. 10, 1979, 54-102468

Int. Cl.³ G03G *15/28, 15/32*

U.S. Cl. 355—8 **8 Claims**

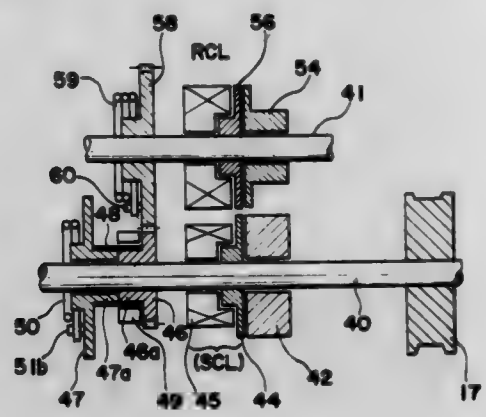
1. Means for driving reciprocating members, which is for use in alternate drives for scanning and return movements of at least one movable member of an electrophotographic copying machine of the scanning exposure type, thereby to cause an original to be scanned, comprising:

clutching means to selectively transmit and interrupt alternate drives, thereby to cause said movable member to be electrically driven for said scanning and return movements, said clutching means including a first clutch member mounted on a first shaft for said return movement and a second clutch member mounted on a second shaft for said scanning movement;

a return gear mounted on said first shaft and a scan gear

mounted on said second shaft, both being meshed with each other;

resilient means for causing said movable member to have a predetermined initial velocity for said return movement subsequent to arrival at an end position of scanning through the resilient energy stored thereby, said resilient means being substantially mounted on said second shaft so that it can function in association with the rotation of said second shaft; and



electric circuit means for sequentially controlling said scanning and return movements of said movable member therewith;

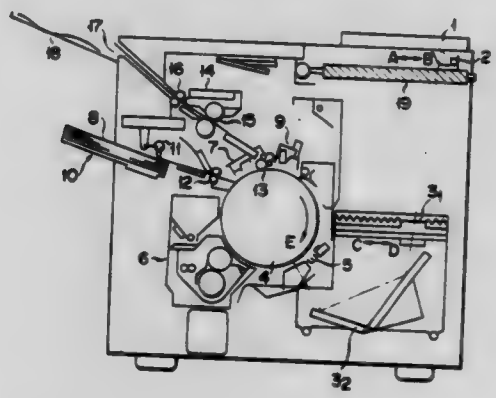
wherein an actuation for said return movement of said movable member is adjustable to correspond to a lengthwise dimension of said original with said clutching means in cooperation with said electric circuit means.

4,344,697

COPYING MACHINE

Hiroshi Matsumoto, Yokohama, and Tomoki Ogura, Ayase, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 8, 1981, Ser. No. 252,193
Claims priority, application Japan, Apr. 11, 1980, 55-47790
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 C **6 Claims**



1. A copying machine capable of being set to a normal mode, a multiple copy mode and an interrupt copy mode, comprising:

(A) a power supply;

(B) data input means including

(a) a pause button for coupling information for switching the multiple copy mode over to the interrupt copy mode,

(b) a print button for coupling information for starting the copying, and

(c) digital keys for coupling the data of the quantity of copies;

(C) display means for displaying the preset quantity of copies and the quantity of copies produced; and

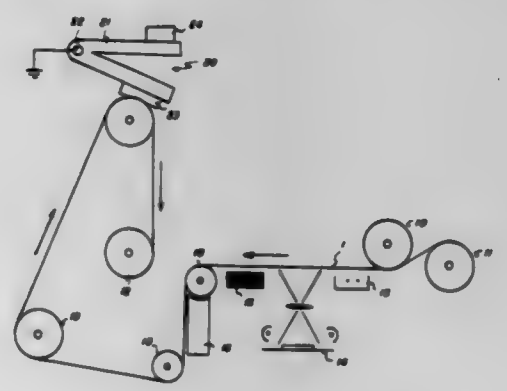
(D) control means including storing means for storing data from said data input means and information displayed on said display means and a timer for counting a predetermined period of time, said control means functioning to store the information displayed on said display means in said storing means while supplying a start signal to said timer for starting the counting thereof in response to interrupt copy mode information coupled from said pause button in the multiple copy mode, read out the information stored in said storing means at the time of the multiple copy mode and display the read-out information on said display means to thereby resume the multiple copy mode if no data is coupled from said data input means during said predetermined period of time counted by said timer, supply the start signal to said timer for starting the counting of said timer, and setting the normal mode if the multiple copy mode is not established or no information is coupled from said data input means during the predetermined period of time counted by said timer.

4,344,698

ELECTROPHOTOGRAPHIC APPARATUS HAVING IMPROVED GROUNDING MEANS

Robert E. Zeman, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1980, Ser. No. 192,769
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—16 **10 Claims**



1. In electrophotographic apparatus of the type having means for feeding an imaging element, including an incisable photoconductive layer overlying a conductive layer on an insulative support, along an operative path for charging, exposure and development, an improved device for electrically coupling the conductive layer of such element to a reference potential, said device being particularly suitable for single-use, web or film type imaging elements and comprising:

(a) electrically-conductive means located along said path for incising, along an edge portion of the imaging element fed thereby, into the conductive layer of such element; and

(b) means for electrically connecting said electrically-conductive means to such reference potential.

4,344,699

EXPOSURE AND CONTRAST DETERMINATION BY PRESCANNING IN ELECTRONIC PHOTOPRINTING SYSTEMS

Walter L. McIntosh, Woodbridge, Va., assignor to Log Etronics, Inc., Springfield, Va.

Filed Jun. 5, 1981, Ser. No. 270,758
Int. Cl.³ G03B *27/16, 27/80*
U.S. Cl. 355—20 **30 Claims**

1. Automatic contrast and density control means for a scanning photographic printer that uses a beamed spot of radiant energy to expose an image receiving media from an image carrying media, said control means comprising:

a. circuit means for providing a prescan of the image carrying media by said beamed spot of energy before the exposure of said image receiving media;

b. photosensor means for measuring a portion of the radiant

energy that is modulated by the image carrying media to generate a density-related signal;

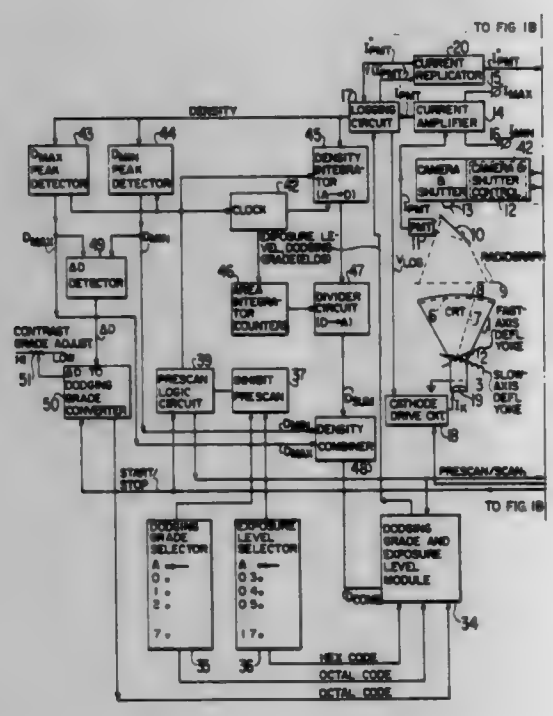
c. circuit means for establishing a D_{min} signal representative of the minimum density of said image carrying media, a D_{max} signal representative of the maximum density of the image carrying media, a ΔD signal representative of the difference between D_{min} and D_{max} and a D_{sum} signal representative of the sum of the densities sampled during the prescan;

d. comparative circuit means for automatically comparing the ΔD signal to a preset value representative of the contrast range of the image receiving media and generating a contrast excursion range signal;

e. control means for modulating said beamed spot of radiant energy, said control means responsive to said D_{sum} density level signal and said contrast range excursion signal to set the exposure level and contrast excursion range applied to said image receiving media during the exposure of the image recording media.

27. A contact printer with automatic exposure control, said printer comprising:

a. a light source, said light source having a pre-exposure measuring mode and an exposure mode;



b. means for supporting an image receiving material and an image carrying material in intimate emulsion to emulsion contact, with said image carrying material placed between said light source and said image receiving material;

c. photo sensor means for measuring the light modulated by said image carrying media during the pre-exposure mode and control means to adjust the intensity or duration of said light source during the exposure mode;

d. a pair of identical filters with opposing movement, said first filter being positioned between said light source and said image receiving material to attenuate said light during the pre-exposure measuring mode, and positioned out of light path when said light source is in its exposure mode; said second filter being mounted between said image receiving media and said light sensor means to attenuate the light falling on said sensor during the exposure mode, and out of the light path during the pre-exposure measuring mode; whereby only the first of said filters attenuates the light between said light source and said photosensor during the pre-exposure measuring mode, and only the second of said filters attenuates the light between said light and said photosensor during the exposure mode.

4,344,700

MECHANISM FOR MOUNTING AND DISMOUNTING A SCREEN-LIKE PHOTOSENSITIVE MEDIUM

Nobuhiro Kasama, and Tadayuki Kitajima, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

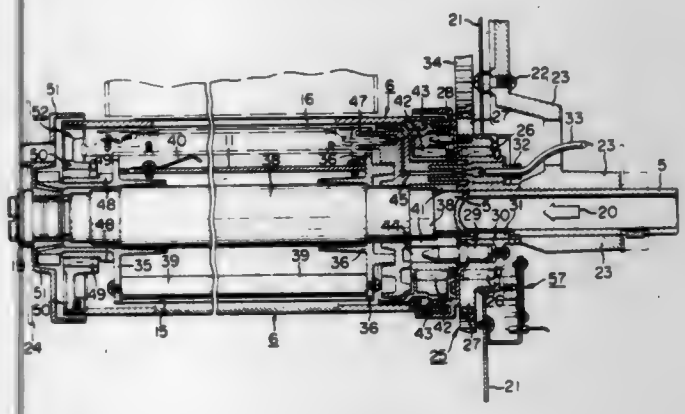
Filed Nov. 30, 1979, Ser. No. 98,762

Claims priority, application Japan, Dec. 8, 1978, 53-151763; Dec. 8, 1978, 53-151766

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SC

5 Claims



1. A construction for enabling a screen-like photosensitive medium, having a number of fine passage openings, to be removably mounted with respect to an apparatus body, comprising:

a photosensitive medium frame member for supporting said photosensitive medium in the form of a drum;

a rotary center shaft for providing the center of rotation of said photosensitive medium frame member, said shaft being rotatably fixed at one end to the apparatus body;

a drive unit mounted adjacent the fixed end of said rotary center shaft;

a frame member side supporting unit for supporting that side of said photosensitive medium frame member which is adjacent to said drive unit, with respect to said rotary center shaft;

an electrical power consuming element provided inside of said photosensitive medium frame member; and

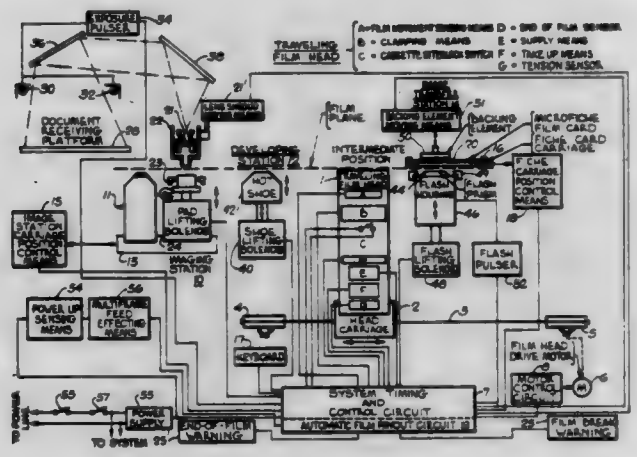
power source means, coupled to said power consuming element, provided on the apparatus body side;

said drive unit having a rotary bearing member, drive force transmitting means disposed radially outward of said rotary bearing member, and a fixed portion for carrying electrical wiring inside of the bearing member, said fixed portion being fixed on said rotary center shaft, said frame member side supporting unit having, outside of the rotary bearing member, a portion for supporting said photosensitive medium frame member and having a fixed portion for carrying electrical wiring disposed inside of said bearing member, said latter fixed portion lying on said rotary center shaft and being slidable relative to said center shaft, said electrical wiring on said drive unit side and said electrical wiring on said side supporting unit side having removable contacts, whereby when said photosensitive medium supporting member is mounted or dismounted with respect to the apparatus body, said power source portion on the body side and said power consuming portion on said supporting member side are connected or disconnected by said contacts.

4,344,701
MICROFICHE RECORDING SYSTEM WITH TRAVELING FILM HEAD

Peter H. Klose, Troy, and Herbert C. Ovshinsky, Oak Park, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jan. 23, 1981, Ser. No. 227,957
Int. Cl.[3] G03B 27/44
U.S. Cl. 355—51 26 Claims



1. In a microfiche film recording system including movable supporting means for supporting an intermediate film strip, film advancing means for advancing a selected area of said film strip into an imaging position thereon, carriage means for moving said supporting means between an imaging station where said selected area of said film strip is exposed and an image transfer station where said image on said selected area is transferred to a microfiche photographic film having frames upon which said image is to be transferred, means for controllably positioning said microfiche photographic film with respect to the selected imaged area of the intermediate film strip, means for transferring said image to a selected frame of said microfiche film, and at least one pressure-applying means which engages with said intermediate film to create tension stresses therein potentially capable of inducing erratic shifting of said film strip and which can cause registration errors in the image transfer to said microfiche photographic film, the improvement comprising film strip holding means movable with said film strip supporting means as said supporting means is moved back and forth by said carriage means between said imaging station and said transfer station and having a film holding condition causing at least one lateral margin of said film strip to be fixed in position at said imaging position and a film releasing condition position, permitting or causing longitudinal movement of the film strip, control means for said holding means for operating said holding means in said holding condition during the exposure of said intermediate film strip and during the movement of said supporting means to said image transfer station and during the transfer of said image thereon to said microfiche photographic film, said control means operating said holding means to said film releasing condition following an image transfer operation, and means for operating said film advancing means for advancing a new unexposed area of said intermediate film to said imaging position during the operation of said holding means in said film releasing condition so that a new area is in position for imaging prior to the next operation of said holding means to said holding condition.

4,344,702
ADAPTER FOR PHOTOGRAPHIC ENLARGER AND METHOD OF ATTACHING SAME

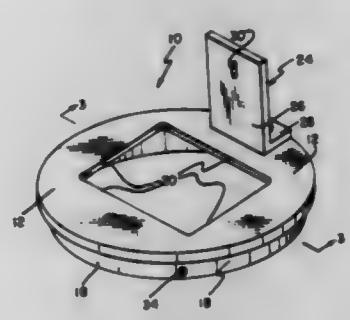
Robert M. Holland, P.O. Box 12364, Wichita, Kans. 67277

Filed Sep. 2, 1980, Ser. No. 183,249
Int. Cl.[3] G03B 27/54, 27/32
U.S. Cl. 355—67 7 Claims

1. An adapter for fitting an Omega C-700 color head to an Omega D type black and white condenser-enlarger comprising a circular plate member with a top and bottom and having a recess with a recess wall along its circumference such that the periphery of the top of said plate defines a flange, said plate member including a structure defining a generally rectangular aperture and a substantially circular recess in said bottom; and a generally L-shaped bracket member including a face and a base, said base of said bracket member being mounted on top of said plate in proximity to said periphery.

7. A process for equipping an Omega D type black and white enlarger having an upper lamphouse to receive and mount an Omega C-700 color head comprising:

(a) attaching an adapter to said color head, said adapter



comprising a circular plate member with a top and a bottom and having a recess with a recess wall along its circumference such that the periphery of the top of said plate defines a flange, said plate member including a structure defining a generally rectangular aperture and a substantially circular recess in said bottom, and a generally L-shaped bracket member including a face and a base, said base of said bracket member being mounted on top of said plate in proximity to said periphery;

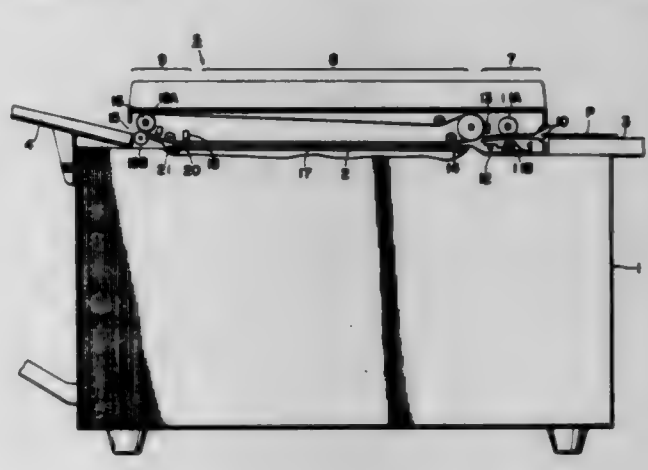
(b) removing said upper lamphouse of said enlarger and subsequently,

(c) installing on said enlarger said attached adapter-color head of step (a).

4,344,703
COPYING MACHINE WITH RETRACTABLE STOPPER

Takao Nezu, Hamura, and Yasuo Turubuchi, Kiyose, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 210,000
Claims priority, application Japan, Nov. 27, 1979, 54-164032
Int. Cl.[3] B65H 9/04
U.S. Cl. 355—76 7 Claims



1. In a copying machine comprising a copy board having an exposure section, and a document feeding apparatus overlying the copy board for supplying the original to be copied on the exposure section and for discharging the original after the exposure is completed, the improvement characterized in that a retractable stopper device including at least one stopper portion which is normally projected is provided on the copy board at an original discharge side of the exposure section in the copying machine, and means mounted on the document

feeding apparatus and engageable with the stopper device whereby the stopper device is retracted forcibly after the exposure is completed.

4,344,704

METHOD OF DETERMINING CORRECTION PARAMETERS FOR USE IN LIGHT-AMOUNT ADJUSTMENT IN A COLOR COPYING OPERATION

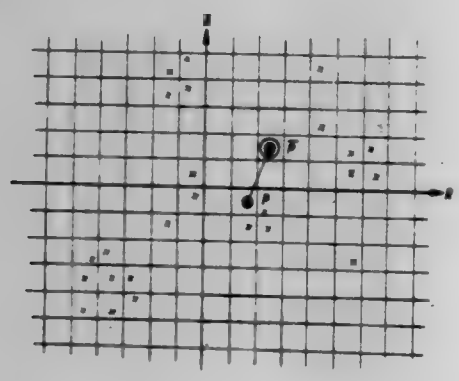
Siegfried Thurm, Voiswinkel, and Konrad Bunge, Cologne, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 160,974

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925264

Int. Cl.³ G03B *27/32*

U.S. Cl. 355—77 **13 Claims**



1. A method of determining a correction parameter for the copying of a colored original, comprising the steps of sensing a characteristic of each of the three primary colors in a plurality of regions of said colored original; establishing a pair of values for each of said regions from the sensed characteristics of said primary colors in the respective regions; classifying said pairs of values into distribution zones which respectively correspond to the spread of said values for an image on said colored original; averaging the pairs of values within the respective distribution zones to obtain an average value for each of said distribution zones, whereby the frequency with which each of said primary colors appears on said colored original is eliminated as a factor in the determination of said correction parameter and all of the sensed color compositions have substantially the same weight in said determination; forming an overall average from said average values; and ascertaining the magnitude and sense of said correction parameter from the difference between said overall average and a like average for a calibrating original.

4,344,705

DISTANCE MEASURING APPARATUS BASED ON THE PULSE TRAVEL TIME METHOD

Günter Kompa, Schopfheim, and Don J. R. Stock, Schopfheim-Langenau, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

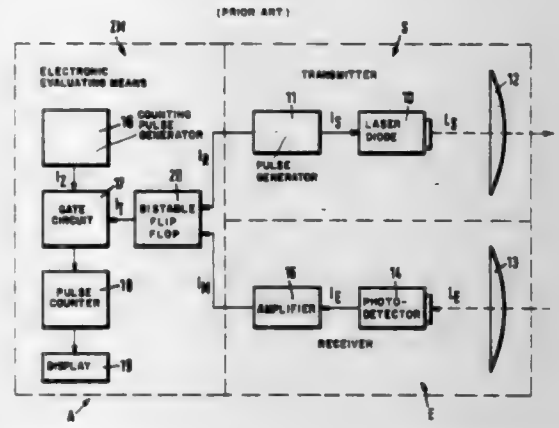
Filed Mar. 7, 1980, Ser. No. 128,174

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 2908854

Int. Cl.³ G01C *3/08*; G01S *13/10*

U.S. Cl. 356—5 **20 Claims**

1. Distance measuring apparatus based on the pulse travel time method comprising a light pulse generator for generating periodic light pulses, a transmitting optical system for transmitting the light pulses, a receiving optical system for receiving the echo pulses produced by reflection of the light pulses at a target object, a photoelectric transducer for converting each echo pulse to an electrical measuring pulse, means for generating electrical reference pulses in predetermined time relationship to the transmitted light pulses, a time transformation stage operating by the sampling method and comprising a sampling pulse generator for generating periodic sampling pulses whose period is slightly different to the period of the transmitted light pulses, a first sampling circuit receiving said sampling pulses and said reference pulses and producing time-transformed reference pulses by periodically sampling a large number of successive reference pulses by means of said sampling pulses, and a second sampling circuit receiving said sampling pulses and said measuring pulses and producing time-transformed measuring pulses by periodically sampling a large number of



successive measuring pulses by means of said sampling pulses, said second sampling circuit being directly connected to the output of said photoelectric transducer to receive said measuring pulses without intervening amplification, and time measuring means for measuring the time interval between corresponding edges of each time-transformed reference pulse and an associated time-transformed measuring pulse.

4,344,706

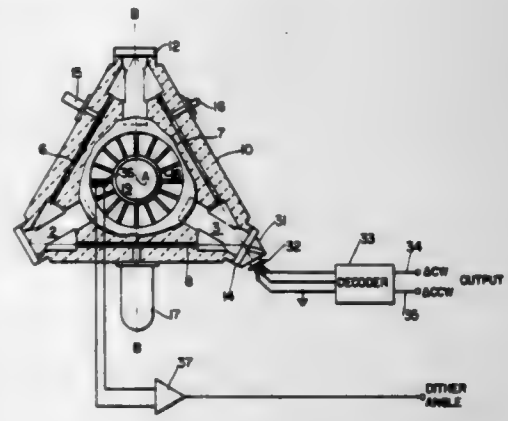
RING LASER GYRO DITHER PULSE ELIMINATOR

Bo H. G. Ljung, and George F. Schroeder, both of Wayne, N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jul. 14, 1980, Ser. No. 168,918

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 **10 Claims**



1. In a dithering ring laser gyro, a system for producing inertial rotation data free of dither, the system comprising:

detecting means for detecting gyro rotation in the clockwise and counterclockwise directions, the rotation including dither components;

means connected to the gyro for tracking the clockwise and counterclockwise components of dither alone;

gating means connected at its input to the outputs from the detecting means and the tracking means for generating first and second signals;

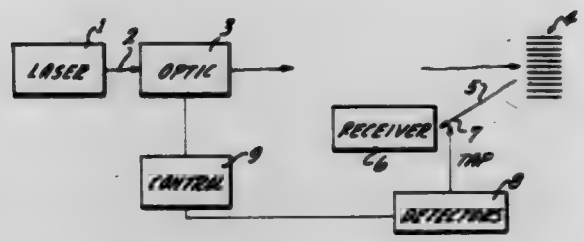
counter means having a count increasing input driven by the first signal and a count decreasing input driven by the second signal for eliminating the effect of dither and accumulating a count corresponding to true inertial gyro rotation data.

4,344,707

MODAL SENSOR

Norbert A. Massie, Westlake Village, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 14, 1980, Ser. No. 149,608
Int. Cl.³ G02B 5/08
U.S. Cl. 356—354 16 Claims



1. In a system which uses a point light source or laser emitting a beam for the purposes of interaction with an object, or of transmission, an apparatus for determining unwanted wavefront distortions, comprising:

means for intercepting said beam for branching off a portion of the beam and deflecting it into a particular path which includes an axis;

means disposed for intercepting the branched-off beam and focusing the entire branched-off beam into a single particular zone along the axis;

means disposed in, or in the vicinity of, the particular zone for detecting a representation of a point-spread function of the focused beam and its distribution in a particular plane transversely to the axis; and

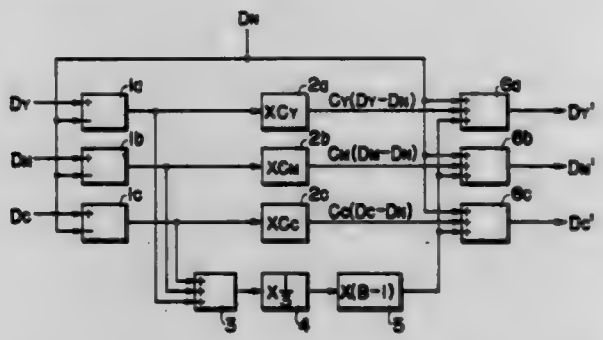
means connected to the means for detecting, for generating signals representing moments of the spread function, those moments being representative of the value of the aberration coefficients of the unwanted wavefront distortions, including tip, tilt, focus, and both astigmatisms.

4,344,708

METHOD AND APPARATUS FOR EXPOSURE QUANTITY CONTROL IN AUTOMATIC COLOR PRINTER

Kanji Tokuda, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 807,994, Jun. 20, 1977, abandoned.
This application Jun. 17, 1981, Ser. No. 274,570
Claims priority, application Japan, Jun. 21, 1976, 51/73684
Int. Cl.³ G03B 27/72
U.S. Cl. 356—404 2 Claims



1. A method of producing a color print from a color film negative, of the type wherein exposure quantity control signals are generated in accordance with the density Dn of a reference negative and the measured color densities of each of the primary colors in light received from said color film negative, and wherein a color print is generated in accordance with said exposure quantity control signals by exposing a photographic paper to predetermined quantities of light of each of said primary colors, said predetermined quantities of light being controlled in accordance with said exposure quantity control signals, said method comprising:

measuring said color densities of said three primary colors of light received from said color film negative;

generating color signals proportional to said measured color densities of each of said primary colors;

logarithmically converting said color signals to obtain color density signals Dy, Dm and Dc;

simultaneously correcting the color densities represented by each of said color density signals and the color balance represented collectively by said color density signals in accordance with the difference between said measured color densities and said reference negative density, and independently correcting the color densities represented by each of said color density signals in accordance with the average difference between said color density signals and said reference negative density, by generating corrected color density signals Dy', Dm' and Dc' defined by:

$$Dy' = Cy(Dy-Dn)+Dn+(B-1)[-(Dy-Dn)+(Dm-Dn)+(Dc-Dn)/3],$$

$$Dm' = Cm(Dm-Dn)+Dn+(B-1)[(Dy-Dn)+(Dm-Dn)+(Dc-Dn)/3],$$

and,

$$Dc' = Cc(Dc-Dn)+Dn-(B-1)[(Dy-Dn)+(Dm--Dn)+(Dc-Dn)/3],$$

wherein Cy, Cm, Cc and B are constants and D_n is the density of a reference film negative;

exponentially converting said corrected color density signals Dy', Dm' and Dc' of the three primary colors to obtain said exposure quantity control signals; and

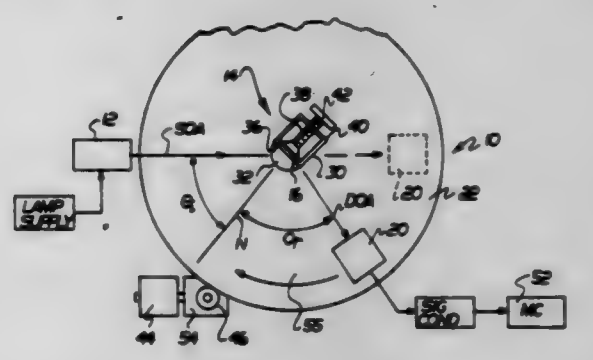
exposing said photographic paper to predetermined quantities of light of each of said primary colors in accordance with said exposure quantity control signals to thereby obtain said color print.

4,344,709

METHOD AND APPARATUS FOR PHOTOGONIOMETRIC ANALYSIS OF SURFACES

Theodore Provder, Olmsted Falls; Richard M. Holsworth, Westlake, and Mark E. Koehler, Middleburg Heights, all of Ohio, assignors to SCM Corporation, Cleveland, Ohio

Filed May 8, 1980, Ser. No. 147,854
Int. Cl.³ G01N 21/55, 21/47
U.S. Cl. 356—445 9 Claims



1. A method of analyzing the specular reflectance characteristics of a test surface comprising the steps of:

illuminating said test surface with a collimated beam of light incident on said surface at a known angle,

measuring the reflectance characteristics of said test surface by measuring the intensity of light reflected from said surface at plural selected angles of reflectance,

providing a mathematical equation relating reflectance intensity to reflectance angle for a standard surface whose reflectance characteristic substantially lacks a spectral peak, and

analyzing the difference between reflectance characteris-

tics of said test surface and said mathematical equation, said difference representing the spectral reflectance characteristic of said surface.

4,344,710

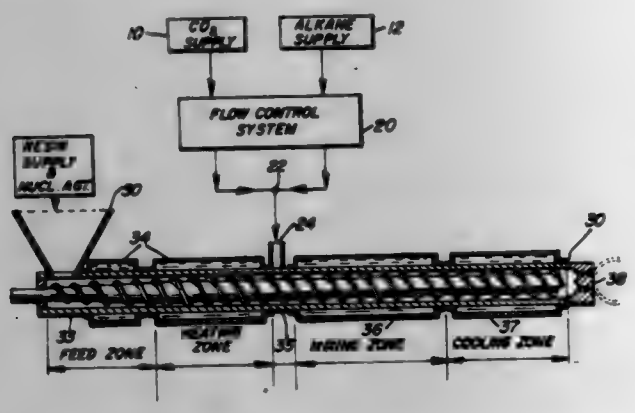
POLYMER FOAM EXTRUSION SYSTEM

D. Emil Johnson, Canandaigua; Charles M. Krutchen, Pittsford, and G. Vincent Sharps, Jr., Fairport, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 158,187, Jun. 10, 1980, abandoned. This application Nov. 10, 1980, Ser. No. 205,353

Int. Cl.³ B29B *3/00, 5/02, 1/06*

U.S. Cl. 366—76 **5 Claims**



1. A system for producing foamable thermoplastic resin mixture comprising:

extruder means for transporting resin under pressure from a feed point to a discharge point through a heating zone, fluid injection zone and mixing zone;

resin supply means for introducing resin to the extruder means at the feed point for melting in the heating zone;

storage means for maintaining a plurality of diverse volatile liquids under the autogeneous pressure of the material, at least one of said volatile liquids being normally gaseous;

fluid handling means for pressurizing said iquids from said storage means to the fluid injection zone of the extruder means;

heat exchange means operatively connected between said storage means and said fluid handling means for cooling the normally-gaseous material to prevent flashing thereof during pumping; and

flow metering means operatively connected with the fluid handling means for supplying predetermined amounts of the diverse volatile liquids.

4,344,711

SELF-WIPING MULTIPLE SCREW ELEMENT MIXER

John A. Kendall, Gananoque; Ernest K. Marchildon, Kingston, and Grant R. Stephenson, Deep River, all of Canada, assignors to Du Pont Canada Inc., Mississauga, Canada

Filed Jan. 21, 1981, Ser. No. 226,883

Claims priority, application Canada, Jan. 29, 1980, 344594

Int. Cl.³ B01F *7/24;* B29B *1/10*

U.S. Cl. 366—83 **16 Claims**

1. In a mixing apparatus including an enclosed vessel having an interior surface throughout its length in the shape of at least two intersecting conical frustums with axes parallel and substantially vertical, the base of the frustums being displaced upward with respect to the apexes, at least two interengaging helical screw elements having multilobal cross-sections and rotatably supported on shafts passing through seals in the base of the vessel, the number of frustums and the number of screw elements being equal, the screw elements when co-rotated conforming to the interior surface of the vessel such that the screw elements effect a complete wiping of the interior surface, and wherein the screw elements interengage uninterruptedly along their lengths such that each element effects a complete wiping of the adjacent element, the bottom portion of the screw elements forming within the vessel a pressure generating zone and the top portion of the screw elements forming a mixing zone having a hollow center described by the co-rotating screw elements, the mixing zone extending above the vessel's liquid level, the improvement comprising:

a continuous rounded-tip transition from a multilobal cross-section to a circular cross-section in each of the screw elements in the mixing zone, the cross-sections throughout the transitions being defined by the equations:

$$R_t = \eta C_L/2$$

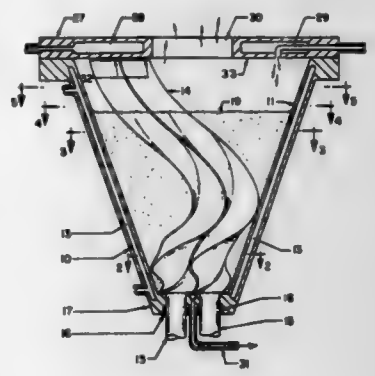
$$D_t = (1-\eta)C_L/(2\cos(\pi/(2n)))$$

$$R_f = (1-\eta/2)C_L$$

$$D_f = D_t$$

$$\alpha = \pi/n$$

wherein



R_t is the tip arc radius of each tip,

η is a "degree of tip rounding" parameter,

C_L is the distance between adjacent parallel axes of the conical frustums (and of the centroids of the cross-sections of the screw elements),

D_t is the distance measured along the tip arc bisector to the tip arc center from the centroid of the cross-section,

n is the number of tips of the multilobal cross-section and is an odd number in the range of 3 to 9,

R_f is the radius of the flank arcs which connect adjacent tip arc radii,

D_f is the distance measured along the flank arc bisector to the flank arc center from the centroid of the cross-section,

α is the angle subtended by each tip arc and by each flank arc, and

wherein

η increases continuously throughout the transition from 0 to 1.

4,344,712

CULTURE PROCESSING APPARATUS AND METHOD

Steven D. Shaffer, Chino; L. Michael Kienitz, Riverside; James N. Pitts, Jr., Corona, and Richard D. Bliss, Beaumont, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 25, 1980, Ser. No. 181,074

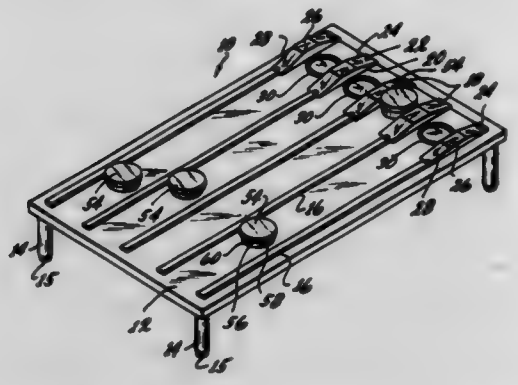
Int. Cl.³ B01F *11/00*

U.S. Cl. 366—108 **12 Claims**

1. Apparatus for providing a solid layer of substantially uniform thickness from liquid material in a covered vessel comprising:

a vibrator member for placing a vessel having a movable cover and containing liquid material for forming a solid layer of substantially uniform thickness, in contact therewith; and

means connected with said vibrator member for lifting the cover of said vessel during placement of said vessel in



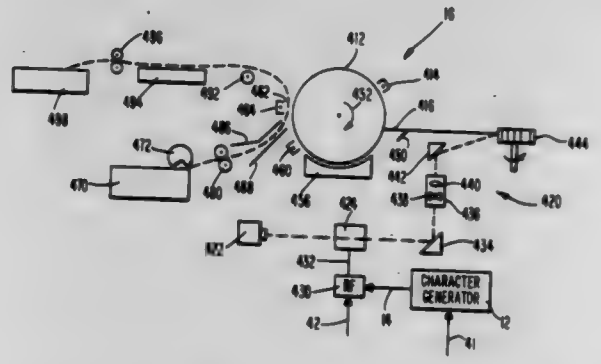
contact with said vibrator member, to permit vibration of the vessel in a substantially vertical direction.

4,344,713

CHARACTER OVERPRINTING METHOD AND APPARATUS IN NON-IMPACT PRINTERS

James H. Cullen, Bensalem, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 9, 1980, Ser. No. 167,071
Int. Cl.[3] B41G *3/00*
U.S. Cl. 400—22 5 Claims



1. A system, to be used with a non-impact printer and a source of data words, to effect overprinting comprising, in combination:

control bit code generating means connected to receive data words from said source of data words and formed to generate control bits indicating whether a data word with which said control bits would be associated is a character shape or space or needs to be underlined when printed;

intermediate data word storage means formed to hold data words which will ultimately be printed;

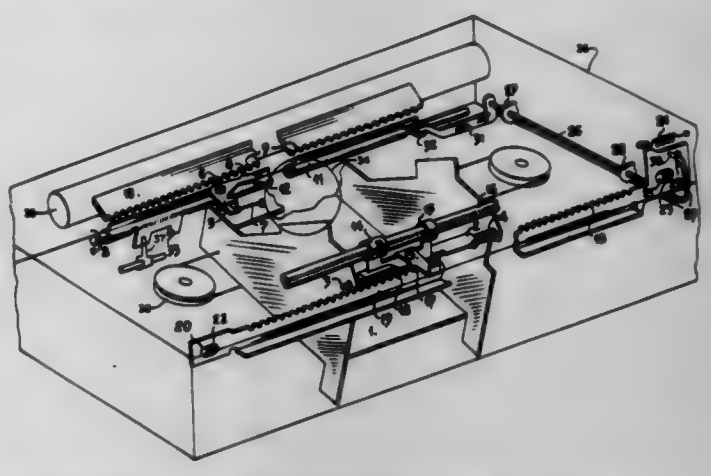
overprinting circuitry means connected to receive second data words and control bits from said control bit generating means and connected to receive first data words and control bits from said intermediate data word storage means to compare said first and second data words and associated control bits to effect a selective merger of said data words and a selected modification of said control bits, and, further, connected to transmit said merged data words and modified control bits back to said intermediate data word storage means whereby certain data words from said second data words may replace certain data words from said first data words and whereby certain modified control bits cause certain data words to be underlined when printed.

4,344,714

DEVICE FOR POSITIONING THE BEGINNING OF A LINE IN A TYPEWRITER

Raymond Clavel, Yverdon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

PCT No. PCT/CH79/00017, § 371 Date Oct. 7, 1979, § 102(e) Date Sep. 7, 1979, PCT Pub. No. W079/00599, PCT Pub. Date Aug. 23, 1979
PCT Filed Feb. 6, 1979, Ser. No. 165,130
Claims priority, application Switzerland, Feb. 7, 1978, 1326/78
Int. Cl.[3] B41J *19/66*
U.S. Cl. 400—334.3 3 Claims



1. Device for positioning the beginning of the line in a typewriter provided with a typing ball carried by a carriage (1) moving parallel to a platen, including at least a margin stop (13) forming a stop for the carriage (1) and capable of being fixed in position in relation to a margin rack (19) to define the beginning of the lines of writing, said margin rack (19) being mounted on a pair of shafts (22,23) and sliding against the action of an elastic element (24) in a direction parallel to that of the movement of the carriage (1), an escapement pawl being carried by the carriage (1) and engageable with a rack bar (10) which is fixed, means holding the pawl (5) in a disengaged position relative to the rack bar (10) during the return of the carriage (1) to the beginning of the line, characterized by the fact that the margin rack (19) engages with means for locking (11,26,29,31,32) the pawl (5) in a disengaged position relative to the rack bar during the movement of said margin rack (19).

4,344,715

MEANS FOR ATTACHING A TRACTOR DRIVE ASSEMBLY TO A PLATEN

Arthur C. Van Horne, Santa Clara, and Russel E. Yarp, Sunnyvale, both of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

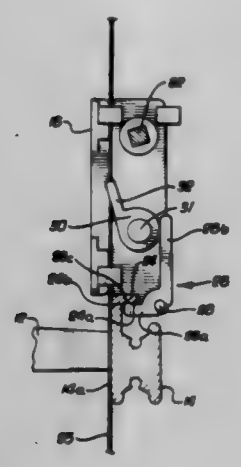
Filed Mar. 3, 1980, Ser. No. 126,651
Int. Cl.[3] B41J *15/00*
U.S. Cl. 400—616.1 12 Claims

1. In a printer or the like having a stationary platen and utilizing a tractor-type incremental paper drive system driven by a rotating drive bar, a system for achieving high accuracy incremental paper motion comprising:

a tractor drive assembly for moving paper across said platen; and

means connected to the tractor drive assembly for locking

said tractor drive assembly directly to said platen, whereby the position of the tractor drive assembly is



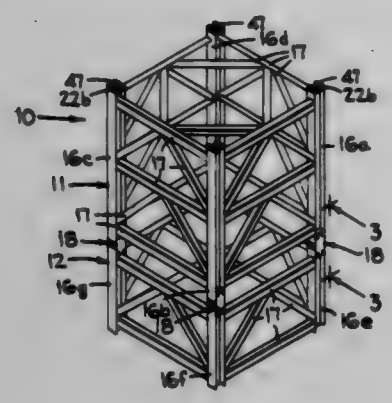
maintained fixed despite any lack of straightness of the drive bar.

4,344,716

BEAM JOINING APPARATUS

Jacob Sigal, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed Dec. 8, 1980, Ser. No. 214,158
Int. Cl.[3] F16D *1/02*
U.S. Cl. 403—13 10 Claims



1. Apparatus for joining a pair of flanged beams in an end-to-end relationship comprising:

a pair of end plates each having a pair of semi-circular notches therein;

means for connecting each of said end plates to an end of a corresponding one of said beams;

a pair of semicylindrical clamps each having a groove which mates with said notches in said pair of end plates, said clamps each having radial flanges on either side of said groove; and

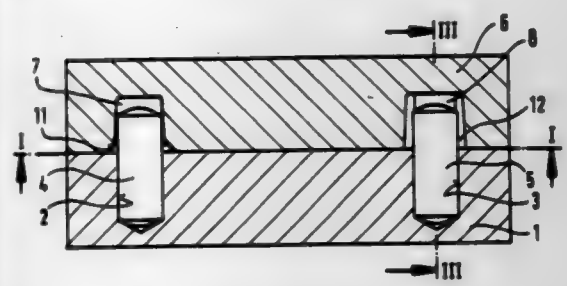
means for securing one of each of said pair of semicylindrical clamps to the other of said pair of semicylindrical clamps with said groove of one of each of said pair of semicylindrical clamps in one of each of said notches of said pair of juxtaposed end plates with the outer edges of said flanges pressing against the outer edges of said end plates and with said radial flanges clamping said pair of end plates in a secure connection.

4,344,717

MEANS FOR MUTUAL POSITIONING OF MEMBERS

Johann Merz, Bopfingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,418
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018651
Int. Cl.[3] F16B *17/00*
U.S. Cl. 403—14 5 Claims



1. Means for positioning a pair of members relative to each other wherein said members have reamed bores to receive locator pins to extend therebetween and having an elongated bore to compensate for misalignment of said members when being positioned;

the improvement which comprises:

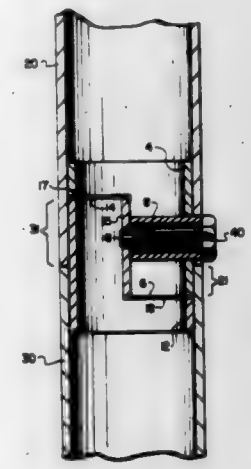
one of said members having die cast therein a box-like bore having a plurality of sides configured to receive an end of a locator pin the other end of which is to be received in a reamed bore, said box-like bore being tapered and having open corners to receive metal extruded as a locator pin is force fitted thereinto, and the elongated bore being likewise die cast, both said latter bores being tapered to provide ready access for entry of locator pins to be force fitted.

4,344,718

COLD WEATHER COUPLING DEVICE

Kenneth R. Taylor, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 2, 1981, Ser. No. 317,215
Int. Cl.[3] F16D *1/02*
U.S. Cl. 403—287 3 Claims



1. A cold weather coupling device for quick joining of two shafts in an end-to-end abutting relation comprising a first coupling means adapted to be carried by a first shaft end and comprising a first hollow cylindrical body having an arcuate cut out portion of said first body removed from a part but not all of the length of said first body and from the outer end of said first body, said outer end being the end furthest removed from said first shaft, an aperture in said first cylindrical body opposite said cut out portion, a hollow, internally threaded stud means which is open at both ends and which has one end

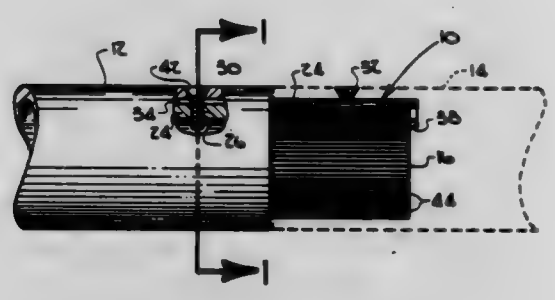
fixed to said first body in registry with said aperture in said first body and extending into the interior of said first body until it reaches said cut out portion, a second coupling means adapted to be carried by a second shaft end and comprising a second hollow cylindrical body having an arcuate cut out portion of said second body removed from a part but not all of the length of said second body and from the outer end of said second body, said outer end being the end furthest removed from said second shaft, said cut out portion of said second body being sized to mate with said cut out portion of said first body to provide a continuous cylindrical body extending from one shaft end to the other shaft end, a plate means extending across the cut out portion of said second body, said plate means having an aperture therein, said plate aperture being located in said plate so that when said first and second bodies are mated to form said continuous body said plate aperture is in registry with the interior open end of said stud means so that a threaded pin means can be screwed into said stud means from outside said first body and said pin means will extend through said stud means and into said plate aperture thereby physically joining said first and second bodies and said first and second shafts to one another.

4,344,719

INTERNALLY EXPANDING RAILING COUPLING

Wenzel W. Thom, Wichita, Kans., assignor to Architectural Art Mfg., Inc., Wichita, Kans.

Filed Jul. 24, 1980, Ser. No. 171,708
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—297 **7 Claims**



1. An internal expanding coupling for tubular pipe railing comprising:

a pair of tubular rail sections abutted end-to-end, each including a lateral opening spaced inwardly from the ends thereof;

coupling means comprising a sleeve member inserted in the ends of each rail section, a longitudinal slot extending the length of the sleeve member, a pair of camming surfaces on said sleeve adjacent the slot converging toward and terminating in the outer diameter of the sleeve;

wedge means having threaded openings therein positioned between said camming surfaces for spreading the sleeve member and locking the sleeve member and pipe sections together; and

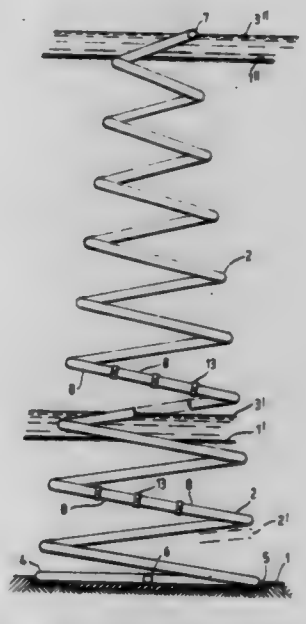
screw fastening means passing through said lateral openings in each rail section and engageable with the threaded openings in the wedge means to draw the wedge means and pipe sections together creating a rigid joint.

4,344,720

DECANTS OF TAILINGS DAMS

David D. A. Piesold, Warwick House, 25 Buckingham Palace Rd., London SW1W OPP, England

Filed Jun. 19, 1980, Ser. No. 160,893
Claims priority, application United Kingdom, Jul. 4, 1979, 7923211
Int. Cl.³ E02B *11/00*
U.S. Cl. 405—41 **8 Claims**



1. A decant for a tailings dam, comprising:

a heavy duty coiled pipe having a bottom and a top, said pipe having a water inlet at an upper end thereof;

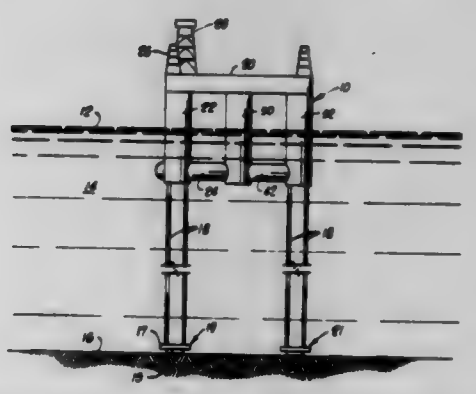
a water outlet duct extending laterally from said bottom of said coiled pipe out of said dam, said coiled pipe comprising a plurality of turns axially spaced apart one above the other, said turns being large and so sized in relation to the cross-section area and wall thickness of said pipe from which said turns are formed that, in use of said dam, said coil is compressed axially as tailings deposited in said dam are consolidated around said decant without said pipe being overstressed by said axial compression.

4,344,721

MULTIPLE ANCHORS FOR A TENSION LEG PLATFORM

Riley G. Goldsmith, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Aug. 4, 1980, Ser. No. 175,105
Int. Cl.³ B63B *35/44*; E02B *17/00*
U.S. Cl. 405—224 **43 Claims**



1. A method of installing an underwater anchor assembly, said method comprising the steps of:

lowering a primary anchor to a floor of a body of water;

ascertaining a final position of said primary anchor upon said floor, said position including at least one of a lateral location upon said floor and an angular orientation about a vertical axis;

comparing said ascertained position of said primary anchor to a desired position of a main anchor;

adjusting a relative position determining means, for determining a position of said main anchor relative to said primary anchor upon engagement of said main anchor with said primary anchor, and thereby correcting as necessary for any difference between said ascertained position of said primary anchor and said desired position of said main anchor; and

lowering said main anchor into engagement with said primary anchor so that a final position of said main anchor is determined by said relative position determining means, said final position being said desired position of said main anchor.

4,344,722

WATERPROOFING BARRIER

Jules M. Blais, Rosemere, Canada, assignor to Bemalux Inc., Montreal, Canada

Filed Jan. 19, 1981, Ser. No. 226,409

Claims priority, application Canada, Jan. 13, 1981, 368420

Int. Cl.³ E02D *3/12, 3/14*

U.S. Cl. 405—270 **36 Claims**



1. A method of constructing a waterproof surface adapted to be substantially impermeable to leaching of chemicals comprising

providing a length of flexible moisture-permeable, thin, synthetic sheet material having an elongation of between 20% to about 100%, a water permeation rate of between 5 and 200 ml./sq.cm./sec. as measured under a water pressure of 35 cm., and a tensile strength of at least 200 Newtons as measured is a substantially dry state;

placing in substantial contact with said surface a first or bottom layer of the material;

forming a second or center layer of expandable Montmorillonite clay by water on top of said first layer so as to substantially cover said first layer or flexible material with the clay;

and placing a third or top layer of the flexible fabric in juxtaposition with said clay layer so as to substantially cover and confine the clay layer within the two layers of fabric;

the fabric being characterized in that it is a flexible material capable of adhesion with the outer surfaces of the clay layer when the clay layer has been activated.

20. A system for waterproofing a desired area, said system comprising a first or bottom layer of flexible moisture-permeable thin synthetic sheet material having an elongation of between 20% to about 100%, a water permeation rate of 5 to 500 ml./sq.cm./sec. as measured under a water pressure of 35 cm., and a tensile strength of at least 200 Newtons as measured in a substantially dry state; a second or center layer of expandable montmorillonite clay actuatable in water lying on top of said first layer and substantially covering the first layer of flexible material; and a third or top layer of the flexible material in juxtaposition with the clay layer substantially covering the clay layer and confining the clay layer within the two layers of fabric, the fabric being characterized as being one capable of adhesion with the clay when the clay is activated.

4,344,723

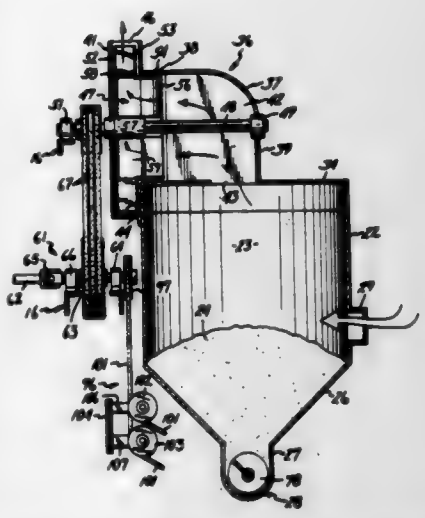
VACUUM GRAIN MOVING APPARATUS

Hartley Ellingson, Wahpeton, N. Dak., assignor to Frontier, Inc., Wahpeton, N. Dak.

Filed Feb. 25, 1980, Ser. No. 124,462

Int. Cl.³ B65G *53/60, 53/58*

U.S. Cl. 406—53 **33 Claims**



21. An apparatus for moving particulate material, such as grain, comprising: tank means having a first chamber for accommodating particulate material, first means having a first passage for carrying air and particulate material from the source of particulate material to the first chamber, second means cooperating with the tank means for removing particulate material from said first chamber, air moving means operable to evacuate air from the first chamber of the tank means to establish a vacuum pressure in said first chamber whereby air and particulate material move through the first passage of the first means to carry particulate material to the first chamber, said air moving means including a housing defining a second chamber having a cylindrical section, an inlet passage open to the first and second chambers, an outlet passage open to the second chamber and atmosphere, and impeller means located in said second chamber operable to move air from the first chamber to the atmosphere, said impeller means having a first blade means, a sleeve surrounding and secured to the first blade means, second blade means located adjacent the first blade means, and plate means secured to the second blade means, said sleeve being located in the cylindrical section of the housing, means rotatably mounting the impeller means on said housing, and means for rotating the impeller means.

4,344,724

CUTTING TOOL ASSEMBLY

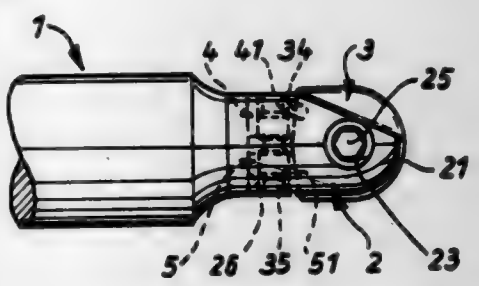
Dieter Kress, Aalen, and Friedrich Häberle, Lauchheim, both of Fed. Rep. of Germany, assignors to MAPAL Fabrik für Prazisionswerkzeuge Dr. Kress KG, Aalen, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 194,431

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1979, 2941179

Int. Cl.³ B26D *1/14*; B23B *29/02, 27/08, 27/16*

U.S. Cl. 407—36 **7 Claims**



1. A cutting tool assembly comprising: a cutter head including a pair of jaws defining a slot therebetween; a knife plate

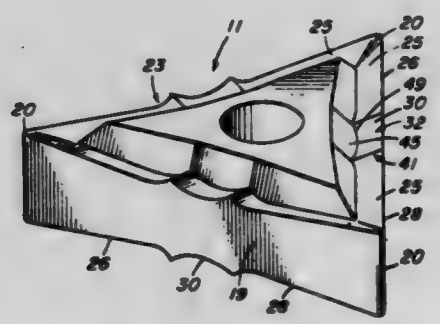
defining a pair of axially symmetrical cutting edges exchangeably mounted on said cutter head in said slot between said jaws; setscrew means adjustably connecting said knife plate on said cutter head; a pair of support members arranged at the base of said slot between said knife plate and said cutter head, said support members acting as abutment means for said knife plate; and bolt means having oppositely threaded portions engaging said support members, respectively, and cooperating with said setscrew means to enable adjustment of said knife plate.

4,344,725

CUTTING INSERT

Heinz H. Seidel, Troy, Mich., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 7, 1980, Ser. No. 166,728
Int. Cl.³ B26D *1/00*
U.S. Cl. 407—114 **2 Claims**



1. A cutting insert comprising a polygonal body having substantially parallel surfaces and peripheral side surfaces substantially normal to said parallel surfaces joining to form corners of said parallel surfaces joining to form corners of said polygon, at least one of said parallel surfaces having grooved recesses merging at and descending from respective corners of said polygon adjacent respective peripheral side surfaces, inner land portions extending downwardly and outwardly from a respective parallel surface toward a respective side surface, each inner land portion comprising a pair of end face portions joining an intermediate face portion, each of said grooved recesses including a respective end face and adjoining outer land portion, said adjoining outer land portion extending inwardly and downwardly at an acute angle from a side surface to form a cutting edge therewith, each side surface having associated therewith a pair of adjoining outer land portions and an intermediate land portion, said intermediate land portion being arcuate and extending inwardly from a respective side surface to said intermediate face portion at an angle of less than ninety degrees to said respective side surface.

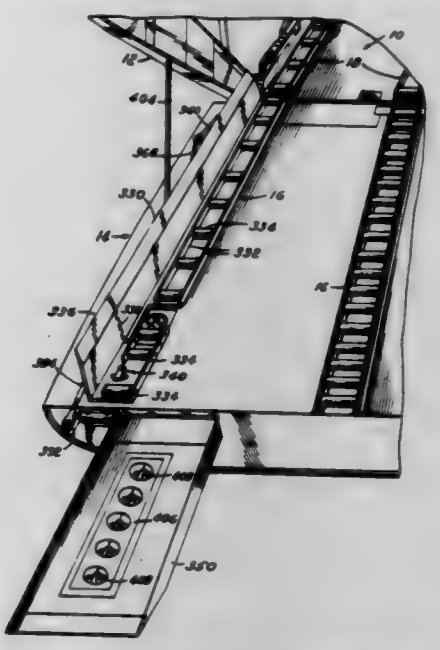
4,344,726

CARGO HANDLING APPARATUS

Faisal A. Naffa, Huntington Beach, Calif., assignor to Brooks & Perkins, Incorporated, Southfield, Mich.

Filed Apr. 2, 1979, Ser. No. 26,426
Int. Cl.³ B60P *7/00*
U.S. Cl. 410—79 **26 Claims**

1. Cargo handling apparatus for aircraft comprising a load restraining rail assembly having a series of lock mechanisms spaced along its length, each said lock mechanism having a load engaging locking element and an operating means individual thereto and operable by a crew member at said lock mechanism to move said locking element to locked position, and linkage means interconnecting the said operating means for said locking elements in such manner that actuation of any intermediate one of such operating means is operable to actuate



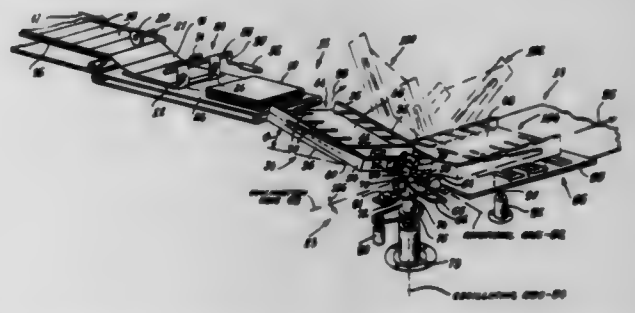
all other said operating means located along the rail assembly from said one operating means.

4,344,727

METHOD AND APPARATUS FOR STACKING AND COLLATING ARTICLES

Premysl G. Chaloupka, Gulf Breeze, Fla., assignor to St. Regis Paper Company, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 188,998
Int. Cl.³ B65G *57/08*
U.S. Cl. 414—36 **13 Claims**



1. Apparatus for stacking and collating similarly configured, generally flat articles, comprising:

structure defining a receptacle adapted for holding a plurality of articles in non-aligned, roughly stacked relationship therewithin, the receptacle having an opening therein through which the articles may pass into the receptacle and being provided with a pair of adjacent sidewalls respectively extending along a corresponding pair of adjacent edges of each of the articles; and

means connected with the receptacle for mounting it for multidirectional movement including

(1) means for rotating the receptacle about a first reference axis extending in a direction essentially parallel to the plane defined by one of said sidewalls, whereby to urge one edge of each of the articles toward said one sidewall by the influence of gravity,

(2) means for tilting the receptacle about a second reference axis extending in a direction generally perpendicular to the first reference axis, whereby to urge the other edge of each of the articles to shift under the influence of gravity toward the other of said sidewalls,

(3) means for revolving the receptacle about a third reference axis extending in a direction perpendicular to the second axis from a loading position to a discharge position; and

(4) means for causing the receptacle to vibrate upon rota-

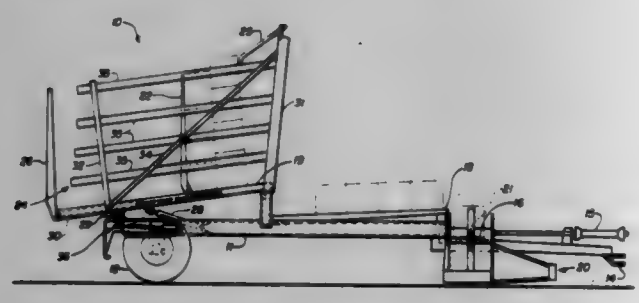
tion and tilting of the receptacle, said last named means cooperating with the rotating means and tilting means to urge each of the articles to shift relative to each other and into contact with said sidewalls whereby to align the pair of edges of each of the articles to produce an aligned stack thereof.

4,344,728

ROLLING RACK CONTROL MEANS

James M. Echols, Selma, and Richard W. Bouwhuis, Reedley, both of Calif., assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 27, 1980, Ser. No. 181,927
Int. Cl.³ A01D *87/12*; B65G *57/32*
U.S. Cl. 414—39 **10 Claims**



1. In a bale wagon having a mobile frame with pick-up means mounted to the frame to pick up bales of crop material from a field and transfer them to a first bale receiving table, a second table mounted to the frame rearwardly of the first table to receive bales from the first table to form a tier of bales, a third table pivotally mounted to the frame rearwardly of the second table of predetermined length having a front end and a rear end to receive the tier of bales from the second table and form a stack, the third table being movable between a first loading position and a second unloading position, and stack supporting means movable by actuator means along the predetermined length of the third table as the stack is formed, the improvement comprising:

control means mounted to the frame and cooperable with the third table and the actuator means of the stack supporting means, said control means being movable between a first position and a second position such that when the third table is in the first loading position the control means is in the first position, the movement of the third table to the second unloading position causing the control means to move to the second position which in turn causes the actuator means to effect a movement of the stack supporting means fully to the rear end of the third table before the stack of bales is unloaded.

4,344,729

BREAK-AWAY DEVICE

Winston A. Orsinger, Nazareth, and George Fallos, Easton, both of Pa., assignors to Bell and Howell Company, Phillipsburg, N.J.

Filed Feb. 8, 1980, Ser. No. 120,014
Int. Cl.³ B65H *3/32*; B66C *1/42*
U.S. Cl. 414—226 **7 Claims**

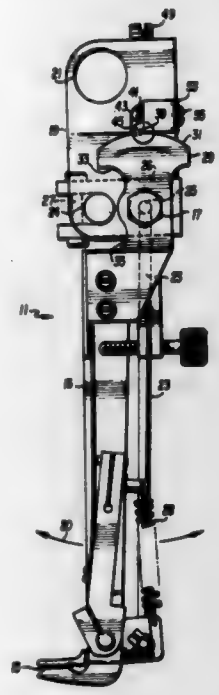
1. A gripper jaw assembly suitable for clockwise and counterclockwise rotation to and from a supply station of an inserting machine, said assembly comprising:

an upper gripper arm having a top portion and a bottom portion, said upper gripper arm being rotatable about an axis passing therethrough;

a lower gripper arm having a top portion, a bottom portion, a front side, and a back side, said front side facing said supply station and said back side being opposite thereto, said lower gripper arm further having gripper jaws at said bottom portion thereof;

a coupling pivotally connecting the top portion of said lower griper arm to the bottom portion of said upper gripper arm; and,

a key member positioned between said upper gripper arm and said lower gripper arm, said key member generally maintaining said upper gripper arm and said lower gripper



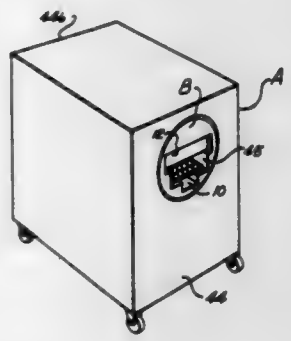
arm in a substantially rigid, colinear relationship but enabling said lower gripper arm to rotate about said coupling and thereby out of said substantially colinear relationship when one of said sides of said lower gripper arm impacts a resistant body.

4,344,730

EGG TRANSFER APPARATUS

Lester I. Dvorak, Rte. 1, Box 90F, Little Mountain, S.C. 29075

Filed Jul. 29, 1980, Ser. No. 173,417
Int. Cl.³ B65G *65/30*
U.S. Cl. 414—405 **10 Claims**



1. Apparatus for transferring eggs from an incubator setter tray having compartments in which eggs are individually contained to a hatcher tray in which said eggs are loosely co-mingled and contained, said apparatus comprising:

main frame means;

secondary frame means carried by said main frame means;

first tray carrier means carried by said secondary frame means for holding said setter tray;

second tray carrier means carried by said secondary frame means for holding said hatcher tray adjacent said setter tray, said hatcher tray having an open top being positioned by said second tray carrier means to generally co-extend with said setter tray;

one of said first and second carrier means being carried by said secondary frame means so as to be movable towards the other of said carrier means;

first drive means for moving said movable carrier means to

an egg transfer position relative to said other carrier means;

said secondary frame means being rotatably carried by said main frame means; and

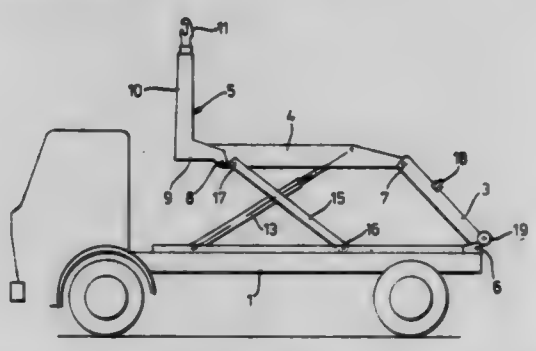
second drive means for rotating said secondary frame means to reverse the respective positions of said setter and hatcher trays following movement of said movable carrier means to said egg transfer position.

4,344,731

EQUIPMENT FOR RAISING AN EXCHANGE PLATFORM OR CONTAINER TO A HORIZONTAL POSITION ABOVE THE LEVEL OF THE TRANSPORT POSITION

Heikki Visa, Vanhalinna, and Heikki Laitinen, Raisio, both of Finland, assignors to Oy Partek AB, Finland

Filed Aug. 26, 1980, Ser. No. 181,364
Claims priority, application Finland, Oct. 19, 1979, 793246
Int. Cl.³ B60P *1/64*
U.S. Cl. 414—471 **5 Claims**



1. Equipment for loading an exchange platform onto a vehicle, removing same from the vehicle, and dumping the exchange platform, comprising:

a rear frame pivotally mounted to the rear end of the frame of the vehicle;

a middle frame pivotally mounted at one of its ends to said rear frame;

an angle piece pivotally mounted proximate the other end of said middle frame, said angle piece including a vertical portion and a grasping component at the upper end of said vertical portion;

a piston and cylinder device connected between the vehicle frame and the middle frame; and

means for maintaining said middle frame in a substantially horizontal raised position when said piston and cylinder device is actuated to move said middle frame and pivot said rear frame relative to the vehicle frame, thereby forming an obtuse angle between said rear and middle frames.

4,344,732

SYSTEM FOR HANDLING HEAVY AND UNWIELDY VEHICLES

Charlie M. Stokes, P.O. Box 1963, Auburn, Ala. 36830

Filed Jan. 29, 1980, Ser. No. 117,643
Int. Cl.³ B66F *9/12*
U.S. Cl. 414—607 **8 Claims**

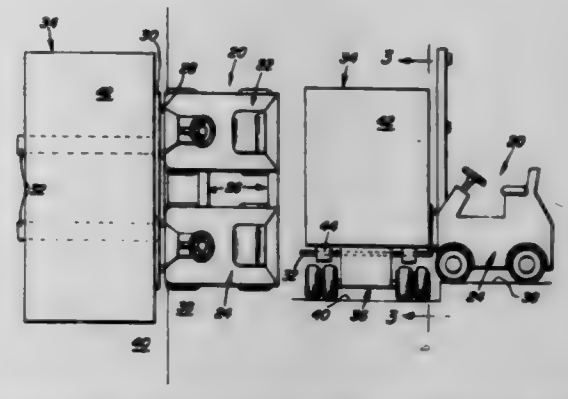
1. In combination, a heavy and unwieldy load vehicle and means for lifting and moving the load vehicle, said load vehicle including means associated with the lower surface thereof by which the load vehicle can be lifted and moved, said means for lifting and moving the load vehicle comprising:

at least two independently maneuverable power driven vehicles interconnected in side-by-side relation to form a single unit,

means detachably connecting the power driven vehicles together to enable independent use,

a lifting assembly solely extending transversely of all of the vehicles forming the unit, spaced from the connecting means and connected to all of said power driven vehicles,

a pair of lifting forks included in the lifting assembly and connected with all of the vehicles forming the unit for lifting and moving the load vehicle, said lifting assembly, said pair of lifting forks and said at least two power driven vehicles constituting said single unit operatively connected to form a large forklift to lift and manipulate the load vehicle from one surface to another at a different



elevation and move the load vehicle from one location to another, and

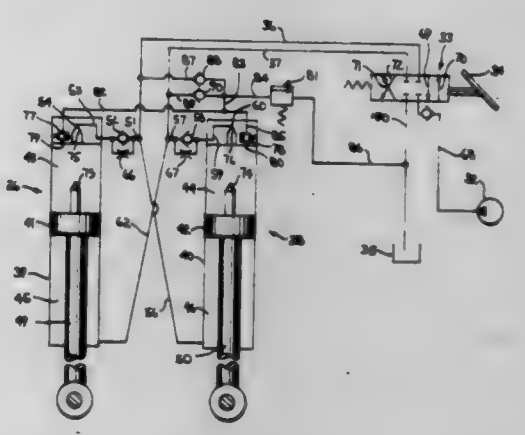
bottom frame means included in said load vehicle being provided with spaced slots receiving said pair of lifting forks, said bottom frame means distributing the weight of the load vehicle and a lifting force over a large area.

4,344,733

HYDRAULIC CONTROL CIRCUIT FOR DECELERATING A SWINGING BACKHOE

Arthur E. Hirsch, Terre Haute, Ind., assignor to J. I. Case Company, Racine, Wis.

Filed Sep. 17, 1979, Ser. No. 76,165
Int. Cl.³ B66C *23/00*
U.S. Cl. 414—694 **3 Claims**



1. In a material handling backhoe with a boom, a hydraulic control circuit for positioning and controlling deceleration of said boom comprising: a hydraulic actuator including a cylinder with a piston slidable therein, a rod connected to the piston extending from the cylinder and operatively connected to said boom, said piston defining first and second opposed expansible and contractible fluid chambers in the cylinder; a manually positionable directional control valve having a neutral first position and second and third positions for porting fluid to stroke the piston in either direction of movement; first conduit means connecting the directional control valve to port fluid to and from the first fluid chamber; second conduit means connecting the directional control valve to port fluid to and from the second fluid chamber; and a deceleration control for cushioning stopping movement of the piston at the end of one of its strokes including

(a) restricting means responsive to movement of the piston at the end of one of its strokes for substantially blocking flow through that one of said first and second fluid conduit

means which is discharging fluid when the piston is at the end of said one stroke;

(b) relief valve means communicating with that one of said first and second fluid chambers which is contracting during said one stroke of said piston, for relieving fluid pressure by discharging fluid from said one chamber, said relief valve means remaining shut during a substantial portion of the stroke of said piston when said control valve is out of its neutral position;

(c) a relief valve conduit joined to said relief valve means downstream thereof and disposed separately from and by-passing said one conduit means, said relief valve conduit by-passing said directional control valve so that movement of the directional control valve to said neutral position at the end of said one stroke of the piston will increase cylinder pressure only a fraction of that amount the pressure in said cylinder would increase if said relief valve means were disposed to discharge to said one conduit means in parallel with said restricting means;

said relief valve means including a relief port in the contracting one of said chambers disposed separately from the discharging one of said first and second conduit means, a first pressure relief valve communicating with said relief port, and a second pressure relief valve downstream of and in series flow relation with said first pressure relief valve so that as the piston approaches the end of said one stroke, substantially all of the fluid discharged out of said cylinder flows through said relief port whereby the first pressure relief valve and the second pressure relief valve have a cumulative effect in controlling cylinder pressure; and

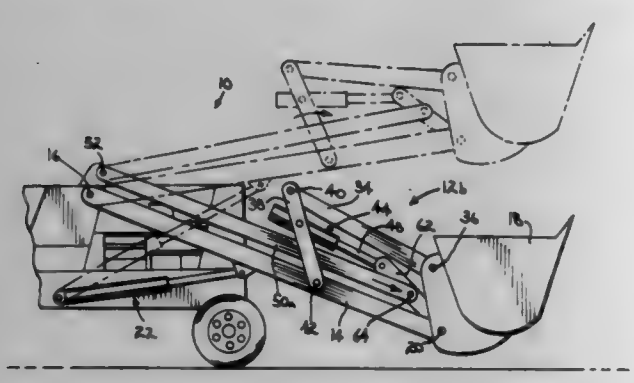
conduit means including one way valve means for interconnecting and providing fluid flow from the first and second fluid conduit means to the second pressure relief valve without cross connecting said first and second conduit means, whereby the second pressure relief valve operates to control piston deceleration when said piston is in mid-stroke if the operator moves the directional control valve to its neutral position.

4,344,734

SELF-LEVELING BUCKET LINKAGE

John F. Shumaker, Mt. Pleasant, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed May 23, 1980, Ser. No. 152,762
Int. Cl.³ E02F *3/70*
U.S. Cl. 414—710 3 Claims



1. A self-leveling loader, comprising:

(a) a frame;

(b) a material handling implement disposed at the front end of said frame;

(c) a lift arm pivoted at one end to said frame and pivoted at the opposite end to said implement, that end of said lift arm pivoted to said implement defining the implement end of said lift arm;

(d) first extensible means, joining said frame and said lift arm, for raising and lowering said implement relative to said frame;

(e) tilting means, carried by said lift arm and coupled to said implement, for rotating said implement about said lift arm between a dumped position and a rolled back position;

(f) driven means, carried by said lift arm and operatively associated with said first extensible means, for moving said tilting means along the implement end of said lift arm simultaneously with the rotation of said lift arm whereby said implement is maintained generally at the same orientation relative to said frame while said lift arm is rotated between raised and lowered positions by said first extensible means

said driven means including a first link having one end operatively connected to said tilting means and having the other end pivotally connected to said frame,

said tilting means including a second link having one end pivotally connected to said lift arm intermediate the ends thereof, the other end of said second link being pivotally connected to one end of a third link, the other end of the third link being pivotally connected to said implement,

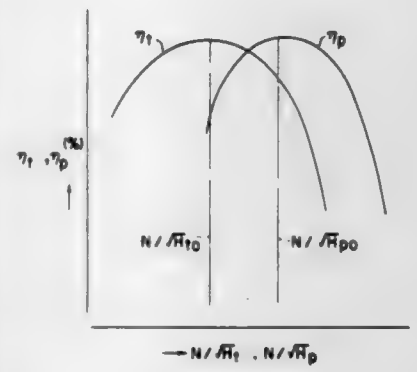
said tilting means further including a fifth link having one end pivotally connected to the implement end of said lift arm, and a fourth extensible link pivotally connected intermediate the ends of said second link and extending therefrom to the other end of said fifth link, the one end of said first link being pivotally connected to said fifth link intermediate the ends thereof.

4,344,735

METHOD OF CONTROLLING TWO-STAGE HYDRAULIC PUMP-TURBINES

Sachio Tsunoda, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Aug. 25, 1980, Ser. No. 180,561
Claims priority, application Japan, Aug. 28, 1979, 54/109288
Int. Cl.³ F01B *17/14*
U.S. Cl. 415—1 4 Claims

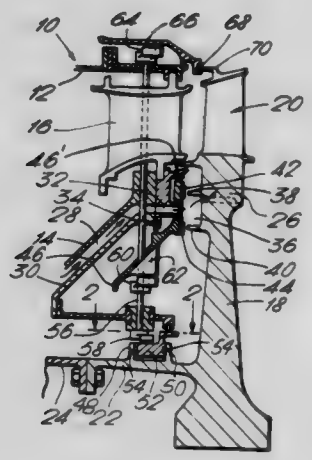


1. In a method of controlling a two-stage hydraulic pump-turbine, rotating at a constant speed under a steady condition, in which high and low pressure stages are connected through a return passage, and degrees of openings of guide vanes of said high and low pressure stages are variable, the improvement which comprises the steps of simultaneously controlling the degrees of openings of said guide vanes of said high and low pressure stages to be the same when said two-stage hydraulic pump-turbine operates as a pump, and independently controlling the degrees of openings of the guide vanes to be different when said pump-turbine operates as a turbine in accordance with a change of an operational condition at the time of the steady operation.

4,344,736
SEALING DEVICE

Willie Williamson, Shelton Lock, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 20, 1980, Ser. No. 198,467
Claims priority, application United Kingdom, Nov. 22, 1979, 7940380
Int. Cl.³ F03B 15/00; F01B 25/00
U.S. Cl. 415—14 6 Claims

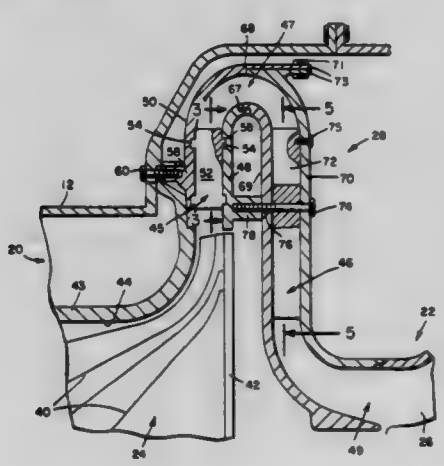


1. A sealing device comprising an annular seal member and a relatively rotatable member which cooperate to seal a gas volume, said relatively rotatable member being movable in a direction normal to the plane of rotation and including means for transmitting said movement to said annular seal member, said movement transmitting means comprising a ring located coaxially on said rotatable member for relative rotation and movable therewith in said direction normal to the plane of rotation, pivotable means and pivot links connecting said ring to said annular seal member via said pivotable means, the arrangement being such that, on said ring and rotatable member moving in a direction normal to the plane of relative rotation thereof some of said links pivot said pivoting means and the pivoting means pivots the remaining links which in turn move the annular seal member in unison with, and in the same direction as said rotatable member, to maintain the gas seal therebetween.

4,344,737
CROSSOVER DUCT

Hsin-Tuan Liu, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jan. 30, 1978, Ser. No. 873,638
Int. Cl.³ F01D 9/02
U.S. Cl. 415—199.1 20 Claims

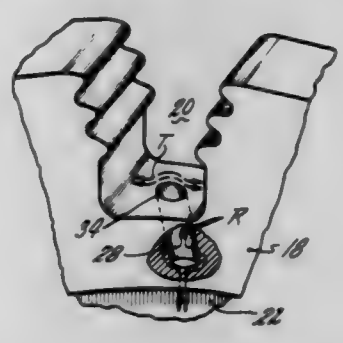


1. A crossover duct for turning radially outward gas flow to a radially inward direction comprising a duct entrance portion forming a radially outward gas flow path; a duct exit portion forming a radially inward gas flow path; and a turning bend of generally semi-elliptical cross section between said entrance and exit portions and having inner and outer walls forming a gas flow path for turning gas flow from a radially outward to a radially inward direction, said inner wall including a pair of generally elliptical quadrants each having a ratio of major to minor axis of at least about 1.20, and said outer wall including a pair of generally elliptical quadrants each having a ratio of major to minor axis of at least 1.15.

4,344,738
ROTOR DISK STRUCTURE

Wallace N. Kelly, Bolton, and Roger D. Breunig, Meriden, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1979, Ser. No. 103,980
Int. Cl.³ F01D 5/08
U.S. Cl. 416—95 6 Claims



1. For a gas turbine engine, a rotor disk having an axis of symmetry and slot means which adapts the disk to receive a plurality of coolable rotor blades comprising:

a rim section having an elongated hole extending outwardly about a longitudinal axis through the rim section which is in gas communication with the slot and which has a plurality of hole sections perpendicular to the longitudinal axis, each hole section having an elliptical shape and having a major axis and a minor axis;

wherein the major axis of each section lies in a plane perpendicular to the axis of symmetry, and the minor axis of each section lies in a plane parallel to the axis of symmetry.

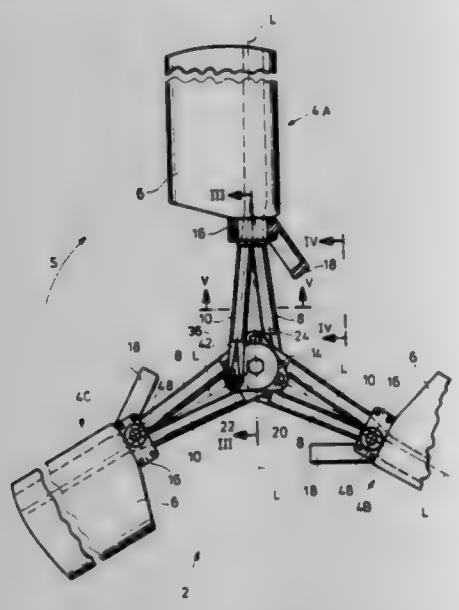
4,344,739
HINGELESS AND BEARINGLESS MULTIBLADE ROTOR FOR ROTARY WING AIRCRAFT

Hans Derschmidt, Putzbrunn, and Hubert Frommlet, Siegertsbrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 25, 1980, Ser. No. 143,628
Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919684
Int. Cl.³ B64C 27/38
U.S. Cl. 416—141 12 Claims

1. A hingeless and bearingless multiblade rotor for rotary wing aircraft, comprising: substantially rigid rotor hub means having a rotational axis and including a plurality of mounting points around the periphery of the rotor hub means; a plurality of lift producing wing means each having a longitudinal wing axis extending substantially radially relative to said rotational axis, each wing means including its respective blade root and at least two spar sections of elastic material for connecting each wing means to respective ones of said mounting points on the rotor hub means with said at least two spar sections, said spar sections being of substantially equal length and elastically bendable and responsive to loads in the torsional direction extending radially and longitudinally of the wing means, to loads in the flapping direction and to loads in the lead-lag direction, each wing means being connected to the rotor hub means at its mounting points all of which are located in or behind, as viewed radially inwardly along the respective longitudinal wing axis, a plane extending perpendicularly to the respective wing axis and in said rotational axis, whereby the

freely twistable length of the spar sections is optimized, said at least two spar sections of a wing means being arranged so that with reference to the direction of rotation of the rotor, the trailing spar section of each rotor blade means overlaps the



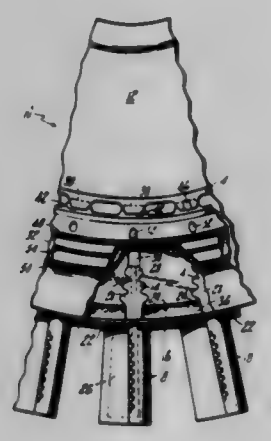
leading spar section of the immediately following rotor blade, said overlapping spar sections being spaced apart in the axial direction of the rotor, said spar sections thereby forming a staggered, overlapping arrangement.

4,344,740

ROTOR ASSEMBLY

Donald R. Trenschel, Lake Park, and Wilho V. Aho, Jr., West Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 28, 1979, Ser. No. 79,915
Int. Cl.³ F01D 5/30
U.S. Cl. 416—221 **4 Claims**



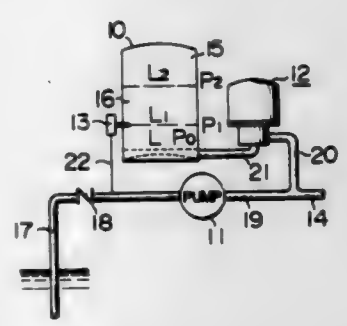
1. A rotor assembly comprising:
a rotor disk formed about an axial centerplane and having
a plurality of attachment slots spaced circumferentially about the periphery of the rotor disk,
a side wall in the region of the attachment slots which is tapered away from the centerplane at the periphery of the disk,
a radially inwardly facing, cylindrical surface at a location radially inwardly of the side surface and of the attachment slots,
a cylindrical arm extending laterally of the disk at a location inward of the inwardly facing cylindrical surface and having a plurality of radially outwardly extending lugs, each lug having an axial surface facing the centerplane;
a plurality of rotor blades equal in number to the number of attachment slots, one blade extending outwardly from each attachment slot and having a root in interlocking engagement with said slot; and
a one-piece sideplate covering the engaged attachment slots and blade roots at one side of the disk, said sideplate having
a ring portion including a radially outwardly facing, cylindrical surface in interference engagement with the inwardly facing, cylindrical surface of the disk,
a plurality of circumferentially spaced lugs equal in number to the number of disk lugs and extending radially inwardly of the ring portion with each lug having an axially facing surface in interference engagement with the axially facing surface of the corresponding disk lug, and
a cover portion having a disk opposing surface which is spaced apart at the radially inner region thereof from the corresponding, tapered side surface of the disk to enable deformation of the cover portion against the corresponding side surface at engagement of the coverplate lugs with the disk lugs.

4,344,741

AUTOMATIC WATER SUPPLY SYSTEM

Tomohiko Taki, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,423
Claims priority, application Japan, Mar. 22, 1979, 54-32374
Int. Cl.³ F04B 49/02
U.S. Cl. 417—28 **7 Claims**



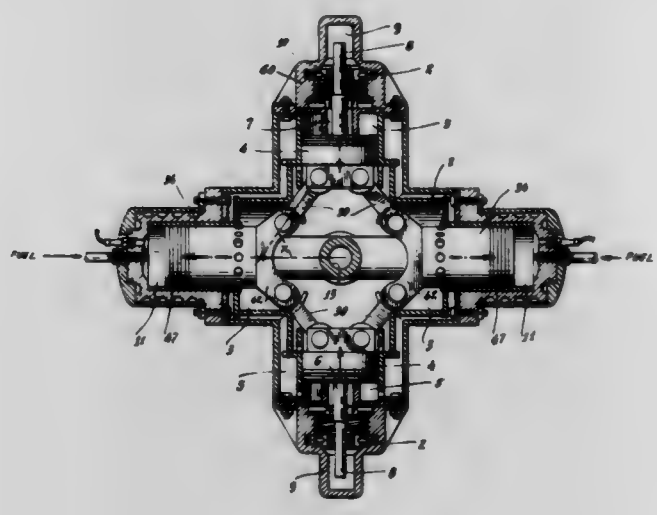
1. An automatic water supplying system comprising:
a pneumatic tank for storing therein and confining compressed air;
a water suction pipe for feeding water to the pneumatic tank;
a pump connected to the water suction pipe and being adapted to suck water through the suction pipe;
a pressure switch operatively connected to said pump and adapted to turn said pump on when internal air pressure in the pneumatic tank is decreased to a first predetermined limit and off when the internal air pressure in said pneumatic tank is increased to a predetermined upper limit;
an air charger operatively connected to said pneumatic tank and adapted to control an air supply to said pneumatic tank such that a constant amount of compressed air is confined in said pneumatic tank;
a water service pipe connected to said pneumatic tank through which the water is discharged;
a pressure responsive valve means for detecting water pressure in said water service pipe and being adapted to shut off a flow of water through said water service pipe when the internal air pressure in the pneumatic tank is decreased to a second predetermined lower limit which is less than the first predetermined lower limit;
a first opening end of said pressure responsive valve means is connected to said pneumatic tank, and a second opening end is connected to a discharge side of said pump and to said water service pipe.

4,344,742

ENGINE APPARATUS

James J. Ferris, 39 N. High St., Clinton, Conn. 06403

Continuation of Ser. No. 644,751, Dec. 29, 1975, Pat. No. 4,140,440, Continuation-in-part of Ser. No. 537,116, Dec. 30, 1974, abandoned. This application Dec. 4, 1978, Ser. No. 966,097
The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.
Int. Cl.³ F04B *17/00, 35/00;* F02B *25/08*
U.S. Cl. 417—343 2 Claims



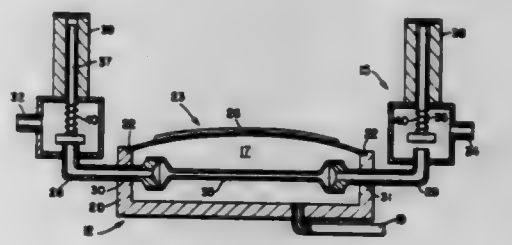
1. An improved fuel-operated device comprising a pair of combustion cylinders having pistons therein each having slidably disposed piston rods extending therefrom operatively arranged in opposing facing relation to each other such that said piston rods are urged through power strokes towards each other along a first movement path, means for admitting a gas-producing type fuel for said combustion cylinders effective to cause an initially maximum pressure expanding gas in said cylinders for powering said piston rods through said power strokes a pair of pressure transfer fluid cylinders having pistons therein each having slidably disposed piston rods extending therefrom operatively arranged in opposing facing relation to each other such that said pressure transfer fluid cylinder piston rods are urged through fluid pressure strokes away from each other along a second movement path oriented perpendicularly and in crossing relation to said first movement path, passage means connected from said pressure transfer fluid cylinders to a storage means for flowing said pressure transfer fluid thereto, an outlet connection from said storage means to a pressure fluid-operated motor for allowing said pressure transfer fluid to power said motor in operation in the performance of work utilizing said pressure transfer fluid energy, and a coupling linkage means strategically located at the intersection of said first and second movement paths operatively interconnected between said piston rods of said combustion and said pressure transfer fluid cylinders so as to produce said fluid pressure strokes in the latter in response to said power strokes of the former said coupling linkage means including pivotally interconnected links in a diamond-shaped configuration effective to initially cause an amplification of said movement occurring along said first movement path in said corresponding extent of movement occurring along said second movement path and subsequently a reversal therein whereby despite an initial maximum pressure in said expanding gas of said fuel there is produced in said fluid a pressure at a desirable starting minimum value which subsequently builds up therein to thereby contribute to the efficiency of the conversion of said fuel energy into usable pressure fluid energy.

4,344,743

PIEZOELECTRIC DRIVEN DIAPHRAGM MICRO-PUMP

Samuel P. Bessman, 7404 Woodrow Wilson Dr., Los Angeles, Calif. 90046, and Lyell J. Thomas, Jr., 1900 Pelican Ave., San Pedro, Calif. 90732

Filed Dec. 4, 1979, Ser. No. 100,094
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—317 2 Claims



1. A pump having an inlet and an outlet and comprising:
a sealed variable volume chamber;
a flexible tube inside said variable volume chamber and connected to said inlet and outlet;
a piezoelectric means forming a wall of said chamber for varying the volume of said chamber;
an essentially non-compressible liquid within said chamber to transmit forces created inside said chamber to said flexible tube during the volume variation of said chamber;
solenoid valve means for controlling the flow of fluid through said inlet and outlet; and
control means connected to said piezoelectric means and said solenoid valve means for electrically activating said piezoelectric means and said solenoid valve means in a desired sequence to pass fluid from said inlet to said flexible tube and to pump fluid from said flexible tube to said outlet, said control means comprising an oscillator means for providing an electric signal output of a selectively fixed frequency, adjustable valve opening duration means for controlling the time duration of activation of said solenoid valve means, a step-up transformer having the secondary connected across said piezoelectric means and the primary adapted to alternately conduct current in opposite directions according to said oscillator output signal, first switch means activated by said oscillator output signal for providing current in alternate, opposite directions to said primary, and second switch means for activating said valve opening duration means according to said oscillator frequency;
whereby the volume of fluid pumped by and through said flexible tube is a function of the selectively fixed oscillator output frequency and the adjustable time duration of activation of said solenoid valve means.

4,344,744

SPRAY PUMP

Wilhelm Schuster, and Jürgen Stahl, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Pfeiffer Zerstäubervertriebsgesellschaft mbH & Co. KG, Fed. Rep. of Germany

Filed Jan. 16, 1980, Ser. No. 112,678
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1979, 2902624
Int. Cl.³ F04B *21/04;* G01F *11/02*
U.S. Cl. 417—550 14 Claims

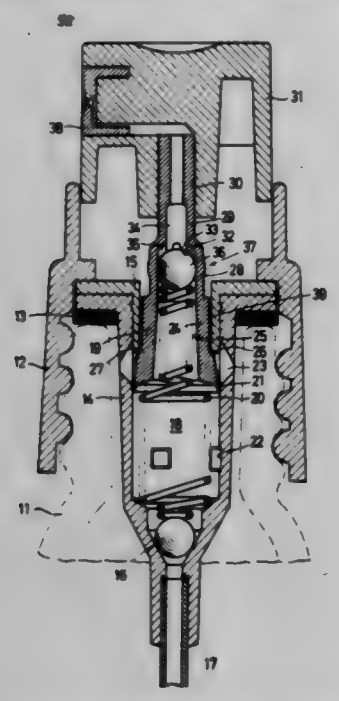
1. A spray pump for liquid in a reservoir, of the type having a pump cylinder defining a pump chamber, a piston movable in the chamber to develop fluid pressure, an actuating pushbutton arranged to move the piston axially in the chamber, an atomization nozzle arranged to receive the liquid from the chamber, and a liquid outlet valve located between the pump chamber and the atomization nozzle, the spray pump adapted to force liquid along a flowpath from the pump chamber to the nozzle when the piston moves in a first direction and to draw liquid

from the reservoir into the chamber when the piston moves in a second, opposite direction, the outlet valve comprising:

a valve body having an arcuate circumferential sealing surface;

a tubular member defining at least a part of the flowpath and having a resilient portion of substantially uniform cross-section for receiving the valve body, the resilient portion being radially deformed into a bulge, along its length, by the arcuate circumferential sealing surface of the valve body, the resilient portion thereby having an inner counter-sealing surface of arcuate form, the sealing and counter-sealing surfaces closing the flowpath when the piston moves in the second direction, the bulge of the resilient portion being further radially deformed and enlarged, along its length, by fluid pressure when the piston moves in the first direction, separating the sealing and counter-sealing surfaces, and opening the flowpath; and,

a stop for holding the valve body against axial movement in the tubular member during movement of the piston in the first direction.



4,344,745

SELF-SEALING GEAR PUMP WITH SEALING PRESSURE DIVIDER

Gert Herrmann, Solingen, Fed. Rep. of Germany, assignor to Pierburg Luftfahrtgeräte Union GmbH, Neuss, Fed. Rep. of Germany

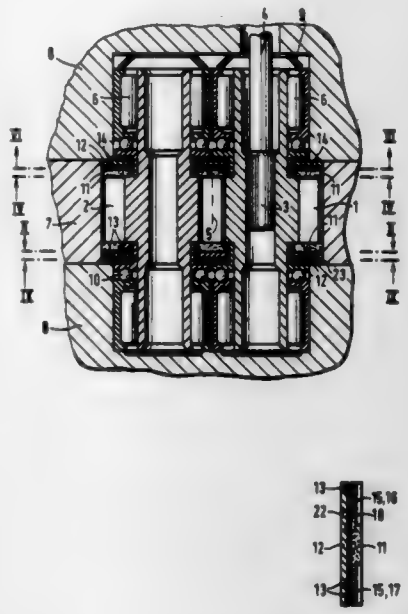
Filed Sep. 19, 1979, Ser. No. 77,137

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846547

Int. Cl.³ F04C *2/18, 15/00*

U.S. Cl. 418—132 15 Claims

1. In a self-sealing gear pump comprising a casing having internal wall surfaces, a pair of meshing gear wheels having two end faces, at least one of said end faces and one of said internal wall surfaces defining a gap and sealing means sealing said gap, said sealing means including a thrust plate interposed between said end face and said wall surface, means defining a cavity on the side of said thrust plate remote from said end face, said cavity extending between a high pressure and a low pressure side of said pump and being of an annular configuration, and first nozzle means communicating said cavity with said high pressure side of said pump to produce a fluid pressure in said cavity, the improvement wherein said thrust plate is resistant to bending and has a first surface area exposed to said fluid pressure within said cavity and a second surface area exposed to a pressure of said fluid on said high pressure side of said pump, said first surface area being greater than said second surface area and means operative together with said cavity and said first nozzle means to form pressure divider means whereby said fluid pressure in said cavity is adjustable in dependence upon operating parameters of said pump, said pressure divider means further comprising second nozzle means communicating said cavity to a low pressure side of said pump, said second nozzle means extending through said sealing means and having a flow cross-sectional area which is smaller than a flow cross-sectional area of said first nozzle means which communicates said cavity with said high pressure side of said pump, said sealing means further comprising a backing plate in said casing between one of said walls and said thrust plate, said second nozzle means being formed through said backing plate, and valve means associated with said second nozzle means, said valve means being responsive to at least one of an increase in pressure and a fall in temperature in said pump, said valve means being provided at a flow outlet of said second nozzle means, said flow outlet being disposed in a face of said backing plate opposite said thrust plate and said valve means including a spring plate covering said outlet and acting as pressure-responsive valve means.



4,344,746

DISTRIBUTOR FOR THE PROGRESSIVE AND REVERSIBLE SUPPLY OF AN AIR MOTOR, IN PARTICULAR FOR HAND-HELD DENTAL INSTRUMENTS

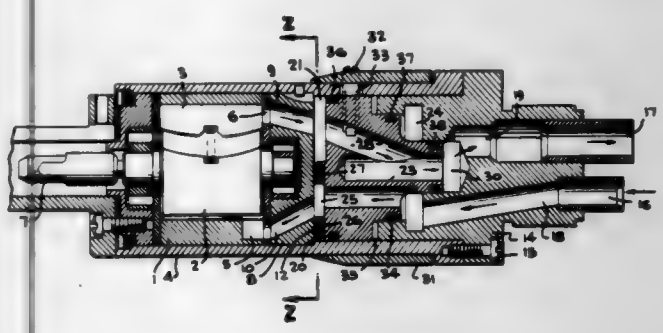
Henri Leonard, Besancon, France, assignor to Societe Micro-Mega S.A., Besancon, France

Filed Apr. 18, 1980, Ser. No. 141,645

Claims priority, application France, Apr. 20, 1979, 79 10720

Int. Cl.³ F01C *13/02, 21/14*

U.S. Cl. 418—270 8 Claims



1. A motor control system comprising:

a casing;

a blade-type motor including a rotor chamber in which a rotor is positioned; said motor being mounted in said casing;

a rotary air distributor positioned inside said casing for both rotation about and movement along its axis;

said distributor being freely slidably movable along its axis to at least a limited extent;

a manually operated actuator positioned externally of said casing and connected to said distributor for permitting the manual rotation of said distributor;

one end of said rotor chamber being defined by an end wall having first, second, and third flow ducts extending through said end wall and positioned with a spacing of 120° between adjacent ones of said flow ducts;

said first flow duct always comprising an outlet opening for discharging exhausted drive air with said second and third flow ducts being of the same size and shape and being alternatively employed as either an inlet opening or an outlet opening in accordance with the rotational direction selected for the motor;

wherein said distributor includes an inner end facing said end wall and which inner end includes an outflow chamber which is in communication with said first flow duct for all rotary positions of adjustment of said distributor;

outlet duct means in said distributor communicating said outflow chamber with the atmosphere;

said distributor additionally including a compressed-air supply duct having an inner end in facing relationship to said end wall and having an outer end connected to a source of compressed air;

a seal joint fixedly mounted on the inner end of the distributor and including a central opening surrounding said inner end of the compressed-air intake duct and having an outer surface facing said end wall to provide a sealed connection of said air supply duct with said one end wall for all positions of adjustment of the distributor;

means for urging said distributor axially toward said end wall; and

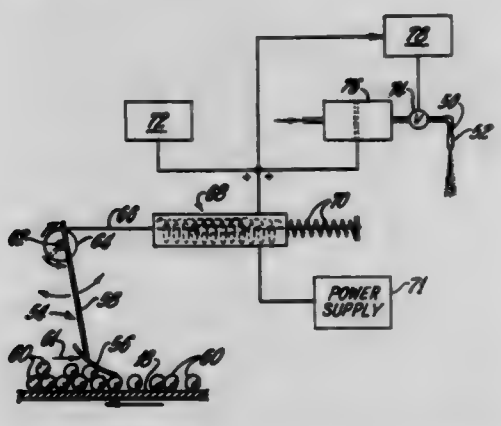
wherein said distributor is capable of rotation from a first position in which the inner end of said compressed-air supply duct is aligned with said second flow duct and said first and third flow ducts communicate with said outflow chamber so as to effect rotation of the motor in a first direction through an intermediate position in which said inner end of said compressed-air supply duct is blocked by said end wall so that the motor does not rotate to a second position in which the inner end of said compressed-air supply duct is aligned with said third flow duct and said first and second flow ducts communicate with said outflow chamber so as to effect rotation of said motor in a second direction opposite to said first direction.

4,344,747

SENSING APPARATUS FOR PELLETIZING PROCESS

Richard K. Henry, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 974,417, Dec. 29, 1978, abandoned. This application Jul. 23, 1980, Ser. No. 171,514
Int. Cl.³ B01J *2/14*
U.S. Cl. 425—140 9 Claims



1. In an apparatus for pelletizing particulate batch material, the apparatus being a pellet forming means having a slanted rotatable member, means for suppyling particulate batch material to the pellet forming means, means for supplying liquid to the pellet forming means, means for rotating the rotatable member in a given direction, the pellet forming means being so arranged and constructed that the liquid and particulate batch material combine to form pellets, the improvements comprising:

(a) pivotably mounted paddle means deflectable in one direction upward and away from the rotatable member by contact with substantially finished pellets and deflectable in an opposite direction towards the rotatable member by a spring or counterbalance biasing means;

(b) a transducer means connected to the paddle means and responsive to the deflection of the paddle to provide an output signal that is indicative of and proportional to the size of the pellets deflecting the paddle means;

(c) a signal generating means to provide a reference signal which is compared to a second signal from a liquid flow measuring means and is then added to the signal from the transducer means to provide a sum signal; and

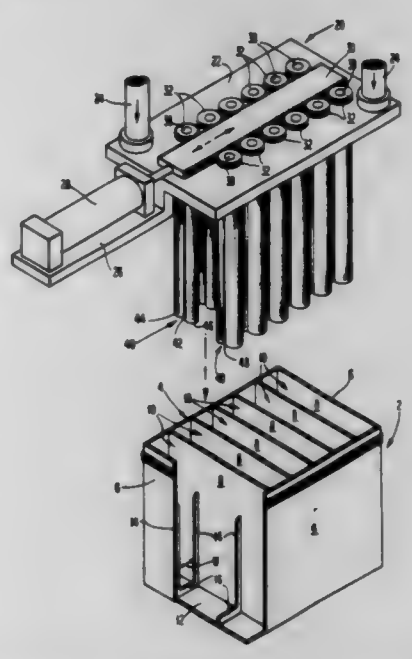
(d) a valve means which is responsive to the sum signal and operable to increase or decrease the liquid flow to adjust the size of the pellets produced.

4,344,748

APPARATUS FOR DEFORMING MOLDED BATTERY CASE

Terry Oxenreider, Wernersville, and William J. Eberle, Reading, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Filed Aug. 7, 1980, Ser. No. 176,254
Int. Cl.³ B29C *24/00*
U.S. Cl. 425—143 14 Claims



1. An apparatus for modifying the between the ribs space of a thermal plastic battery container, said apparatus comprising:

a wiping member for modifying said ribs, said wiping member having a non-circular outer surface;

means for positioning said wiping member within said battery container;

heating means for heating said wiping member to a temperature sufficient for softening said thermal plastic; and

means for rotating said wiping member.

4,344,749
INJECTION STRETCH-BLOW MOLDING APPARATUS FOR THE MANUFACTURE OF BIAXIALLY ORIENTED HOLLOW BODIES FROM THERMOPLASTIC MATERIAL

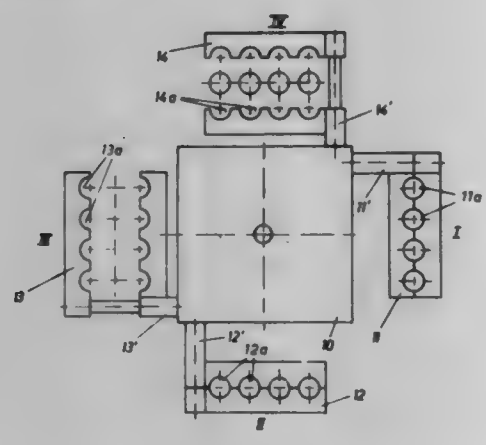
Hans-Gerhard Fritz, Uhingen, and Helmut Scharrenbroich, Neunkirchen-Seelscheid, both of Fed. Rep. of Germany, assignors to Voith Fischer Kunststofftechnik GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,472

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917055

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—174.4 **21 Claims**



1. An injection stretch-blow molding apparatus, comprising:

an injection molding station for injection molding plastic preforms, first and second conditioning stations including means for affecting the condition of injection molded preforms, and a blow mold station for stretch-blowing preforms which have been conditioned at one of the conditioning stations;

rotary transport means for transporting preforms injection molded at the injection molding station to the other stations; and

the transport means being circularly movable back and forth alternately in two opposite directions, and including means for transporting injection molded preforms to the first conditioning station and for simultaneously carrying other preforms from the first conditioning station to the blow mold station while moving in a first circular direction, and including means for transporting preforms from the injection molding station to the second conditioning station and for simultaneously transporting other preforms from the second conditioning station to the blow mold station while moving in the opposite direction.

4,344,750
EDGE GATED INJECTION MOLDING SYSTEM WITH HOLLOW SEALS

Jobst U. Gellert, 7A Prince St., Glen Williams, Ontario, Canada

Filed Apr. 2, 1981, Ser. No. 250,237

Int. Cl.³ B29F *1/03, 1/08*

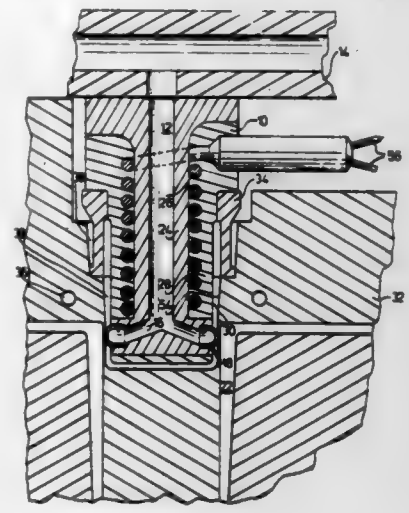
U.S. Cl. 425—548 **4 Claims**

1. A hot runner edge gated injection molding system comprising:

(a) cooled cavity plate means defining at least one openable cavity therein;

(b) a hollow electrically heated sprue bushing securely seated in a well in the cavity plate means, the well having an inner wall which is spaced from the sprue bushing to form an insulative air gap therebetween, the sprue bushing having an elongated central melt passage extending from a melt inlet to at least one channel extending radially outward from the central passage to at least one corresponding edge gate in the cavity plate means, the edge gates leading to said cavity; and

(c) at least one corresponding hollow seal having a central bore extending between an inner end and an outer end which is dome shaped with a central opening therethrough, the seal extending across said air gap with its central bore being in alignment with said radially extending channel and said gate, the inner end being seated in a recess in the sprue bushing and the outer end abutting



against the inner wall of the well in the cavity plate, at least a portion of the wall being slightly inwardly tapered whereby the seal is gradually slightly inwardly deformed as the sprue bushing is inserted into the well and the system heated to operating temperatures to prevent substantial leakage of the pressurized melt into the air gap.

4,344,751
FLARES

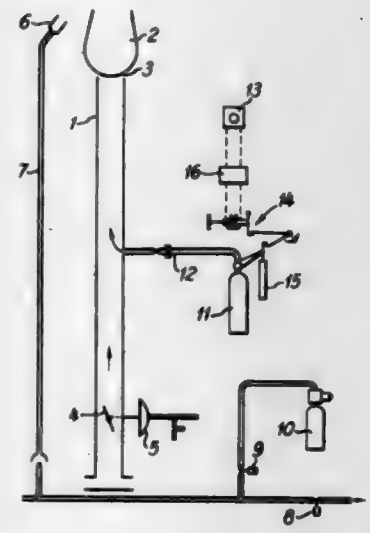
David A. Chesters, Walton-on-Thames, England, assignor to The British Petroleum Company Limited, London, England

Filed Mar. 19, 1980, Ser. No. 132,321

Claims priority, application United Kingdom, Mar. 24, 1979, 7910430

Int. Cl.³ F23D *13/20*; F23B *5/00*

U.S. Cl. 431—202 **8 Claims**



1. An extinguishable flare apparatus for disposing of combustible gases comprising:

(a) a plurality of burner heads,

(b) a supply pipe connected to each burner head for passing combustible gases under pressure to each said burner head,

(c) a pilot light for ignition of the combustible gases at each said burner head,

(d) a supply line connected to each said pilot light for passing pilot gas under pressure to said pilot light,

(e) a source of flame extinguishing material,

(f) connecting means for supplying said flame extinguishing material to the supply pipes and the supply lines and for

terminating the flow of pilot gas to the pilot lights, said connecting means comprising a cylinder connected through a valve and a restriction orifice to an inlet in each of said supply pipes, said inlets being upstream from said burner heads,

(g) actuating means connected to said connecting means comprising a control apparatus for controlling the operation of a synchronisation means, a triggering apparatus triggered by said synchronisation means, and a switching apparatus controlled by said triggering apparatus for opening said valve;

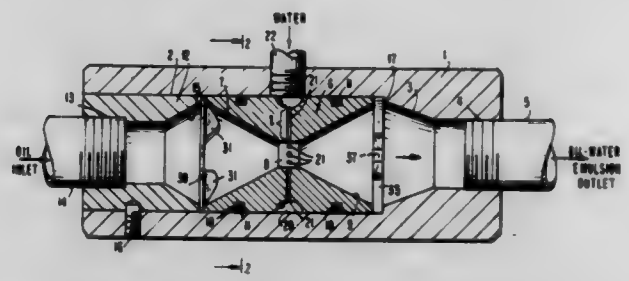
(h) synchronisation means for controlling the operation of said actuating means so as to delay actuation of said connecting means until said supply pipes are depressurized, and to cause the release of said flame extinguishing material to said supply pipes and supply lines when said connecting means activates so that said flame extinguishing material reaches each of said burner heads and pilot lights simultaneously.

4,344,752

WATER-IN-OIL EMULSIFIER AND OIL-BURNER BOILER SYSTEM INCORPORATING SUCH EMULSIFIER

John P. Gallagher, Jr., Pennsauken, N.J., assignor to The Trane Company, La Crosse, Wis.

Filed Mar. 14, 1980, Ser. No. 130,513
Int. Cl.³ F23D *13/14*
U.S. Cl. 431—354 22 Claims



1. Improved method of making a uniformly fine water-in-oil emulsion for use as a clean-burning and efficiently-burning fuel in an oil-burning heat-producing system, by establishing and maintaining a substantially cylindrical oil flow, constrained by a substantially cylindrical internal constraining surface of diameter D in an emulsifier body, and simultaneously injecting a multiplicity of water streams of a smaller diameter d approximately radially into said oil flow; the improvement wherein:

the constraining surface diameter D, the mean velocity V_o of the oil flow and the kinematic viscosity ν_o of the oil are chosen to given an oil flow Reynold's number Re_o much less than 1200, and said internal constraining surface is oil-wettable, whereby said oil flow is 100% laminar macroscopically, with a parabolic velocity profile, having its maximum shear rate at said constraining surface combined with substantially zero oil flow velocity at said constraining surface;

setting the mean velocity $\overline{V}_w$ of each of said water streams comparable with or lower than $\overline{V}_o$; and

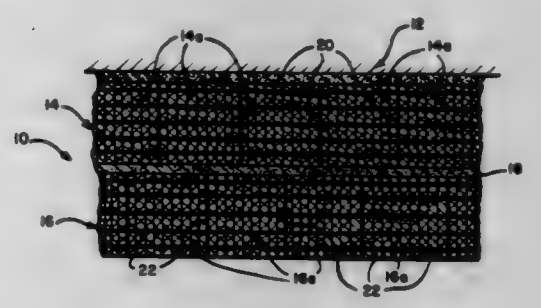
providing a swirl-imparting member in communication with said constraining substantially cylindrical internal surface of diameter D for imparting a swirl to the oil flow prior to said injection of water.

4,344,753

METHOD FOR REDUCING THE THERMAL INERTIA OF A FURNACE OR OVEN WALL AND INSULATED WALL PRODUCED THEREBY

Stanley J. Shelley, Dewsbury, and Harold G. Emblem, Mirfield, both of England, assignors to Clinotherm Limited, Dewsbury, England

Filed Oct. 1, 1980, Ser. No. 192,655
Int. Cl.³ F27D *1/16, 1/00;* B32B *1/04*
U.S. Cl. 432—3 9 Claims



6. In a furnace or oven, an insulating layer secured to the walls for reducing the thermal inertia thereof, comprising

a first insulating layer having a first usable temperature range;

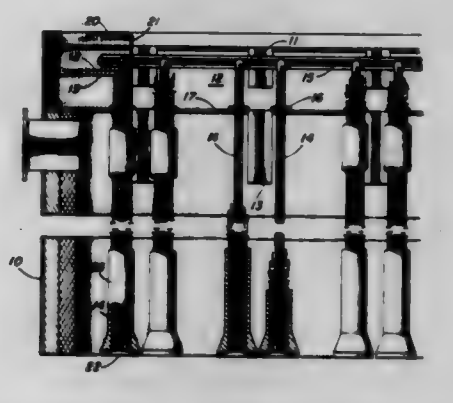
a second insulating layer having a second usable temperature range higher than said first temperature range secured to the first insulating layer and comprising modules of the typed formed with refractory fibers disposed with one end "end-on" to the plane of one end of the module, the module being further composed of a wrapping of thermally combustible material holding the fibers in elastic compression whereby when said wrapping is thermally destroyed, the module is free to expand.

4,344,754

WATER COOLED VERTICAL GAS DISTRIBUTOR

Harlan G. Graf; Harry R. Janssen, and Don L. Edwards, all of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Feb. 20, 1981, Ser. No. 236,422
Int. Cl.³ F27D *1/12;* F22B *37/00;* C21B *7/10*
U.S. Cl. 432—233 1 Claim



1. A gas distributor for injecting gas into a hot process vessel, said distributor comprising:

(a) a central metal conduit having an outlet end, a main longitudinal body section, and an inlet end adapted to be connected to a gas source;

(b) a plurality of cooling water inlet lines extending along and adjacent to the outer surface of said main longitudinal body section;

(c) a plurality of cooling water return lines extending along and adjacent to the outer surface of said main longitudinal body section, said return lines being spaced from said inlet lines;

(d) an insulation layer covering said main longitudinal body section and said water inlet and return lines; and

(e) baffle means attached to the outlet end of said central

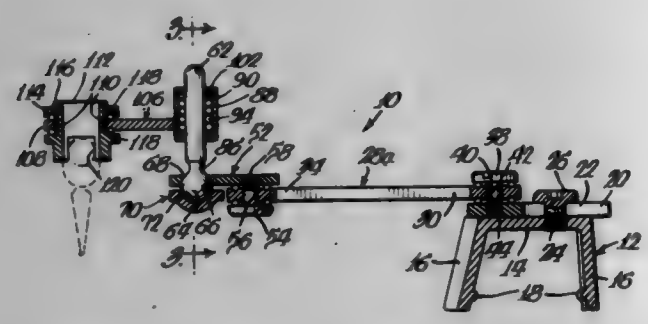
metal conduit, said baffle means being adapted to receive cooling water from said cooling water inlet lines, direct the cooling water around the outlet end of said distributor, and discharge the cooling water to said cooling water return lines.

4,344,755

DENTAL HANDPIECE GUIDE

Henry O. Gold, 1250 Willow Rd., Winnetka, Ill. 60093, and Charles D. Gold, 673 W. Wrightwood Ave., Chicago, Ill. 60614

Filed Sep. 15, 1980, Ser. No. 187,084
Int. Cl.³ A61C 3/02
U.S. Cl. 433—76 **11 Claims**



1. A dental handpiece guide for guiding a cutting instrument to cut parallel surfaces, cuts or holes in the axial direction on teeth in a mouth or on a model, comprising:

a base portion adapted to be secured to the teeth, said base portion having an upper face;

a parallel link assembly rotatably mounted on said base portion at first mounting points, and extending from said base portion and lying in a plane generally parallel to the plane containing the upper face, said parallel link assembly comprising at least one set of two generally parallel arms;

a post carrier assembly rotatably mounted on the distal ends of the arms of said parallel link assembly at second mounting points, said second mounting points being spaced from each other generally the same distance as the first mounting points of said base portion are from each other;

a post mounted on said post carrier assembly;

a sleeve slidably received by said post and adapted to rotate about the post; and

a projecting arm having one end mounted to said sleeve, and having means at the distal end of said projecting arm for receiving a cutting instrument, which comprises a generally circular aperture, and wherein a generally cylindrical basket is received by said projecting arm through its aperture and held from escape by a circular ring and flange on the basket, the central axis of the basket and the central axis of the sleeve are substantially parallel, which basket has a hollowed-out portion defined by its wall to receive the handle of a cutting instrument when a cutting instrument is received by said basket.

4,344,756

WATER RECYCLER FOR DENTAL OPERATORIES

Richard P. Folkenroth, Dover, and Thomas J. Dunn, Red Lion, both of Pa., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Sep. 28, 1981, Ser. No. 305,824
Int. Cl.³ A61C 17/04
U.S. Cl. 433—92 **3 Claims**

1. A dental evacuating system for operatories to withdraw debris and liquids from the oral cavity of dental patients comprising in combination,

a. water seal-type vacuum pump means requiring a supply of water at all times and including inlet and discharge ports,

b. conduit means leading from an operatory to the inlet port of said pump means,

c. an air-water separator unit including a tank having inlet and discharge means, said discharge means being at a level above said inlet ports of said water seal vacuum pump means to provide feed by gravity,

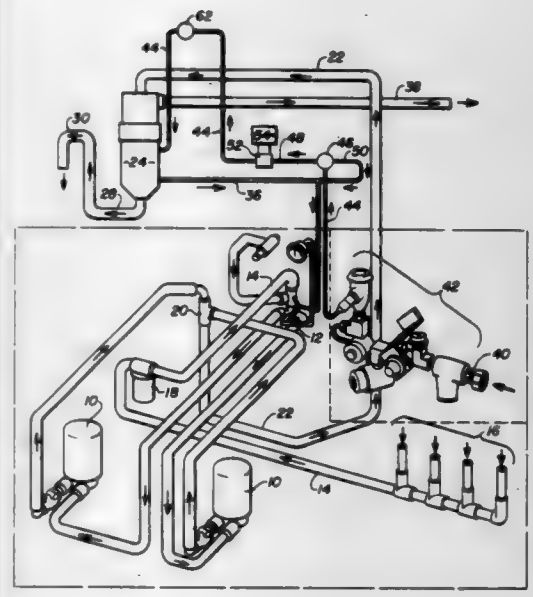
d. exhaust conduit means leading from the discharge port of said pump means to the inlet means of said separator unit,

e. at least the lower portion of said tank serving as a water reservoir to supply sealing water to said pump means by gravity,

f. discharge means on said tank arranged and operable to maintain a minimum amount of water therein at all times,

g. fresh water conduit means connectable to a supply of municipal water,

h. a flow-control valve connected to said fresh water conduit means,



i. a timer connected to said valve and operable to open the same for successive very short predetermined intervals of time to permit limited flow of fresh water therethrough, and

j. delivery conduit means for said fresh water connected at one end to said valve and at the other end to the lower portion of said tank to deliver fresh water intermittently to said tank as controlled by said valve to maintain said minimum amount of water therein at all times,

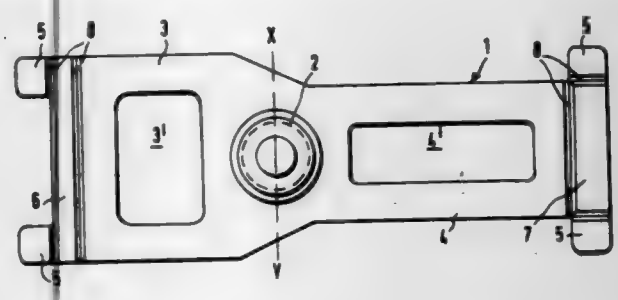
k. whereby only fresh water passes through said flow control valve, thereby obviating any possible clogging of said valve with debris as where "gray water" passes through the valve, and said short intervals of timed delivery of fresh water to said tank affords economy in water consumption.

4,344,757

IMPLANT A GEOMETRY VARIABLE

Robert Streel, rue Leon Mignon 21, 4000 Liege, Belgium

Filed May 9, 1980, Ser. No. 148,308
Claims priority, application Belgium, May 17, 1979, 6/46833
Int. Cl.³ A61C 8/00
U.S. Cl. 433—173 **7 Claims**



1. A variable geometry implant comprising

a base formed with perforations,

a threaded shaft extending from said base,

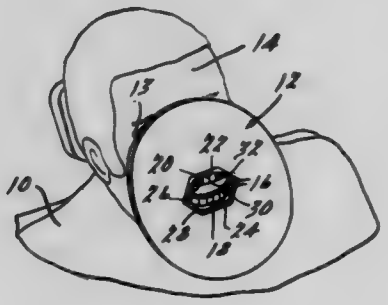
said base is asymmetrically irregular with respect to the shaft, but in perfect balance with respect to said shaft,
the base has surface areas respectively on both sides of the shaft which are equal but different in shape, and
the perforations on both sides of the shaft are equal in area but different in shape.

4,344,758

DENTAL FACE SHIELD

Sandra L. Wielhouwer, Union Lake, and Suzanne M. Fortner, Farmington Hills, both of Mich., assignors to John D. Wielhouwer, Union Lake, Mich.

Filed Apr. 6, 1981, Ser. No. 251,175
Int. Cl.³ A61C *5/14*
U.S. Cl. 433—137 **13 Claims**



1. A face shield for use on a patient's face in dental operations, comprising
means for absorbing moisture providing the exterior surface of said shield directed away from the face;
barrier means disposed adjacent said absorbing means providing an interior protective surface directed towards the face;
adhesive attachment means secured to said barrier means, said adhesive attachment means being substantially unaffected as to its adhesive capacity by moisture;
an aperture disposed through said absorbing means and said barrier means of a size large enough for the patient's open mouth; and
said barrier means and said absorbing means extending outwardly from said aperture and said adhesive attachment means in a direction away from the patient's mouth.

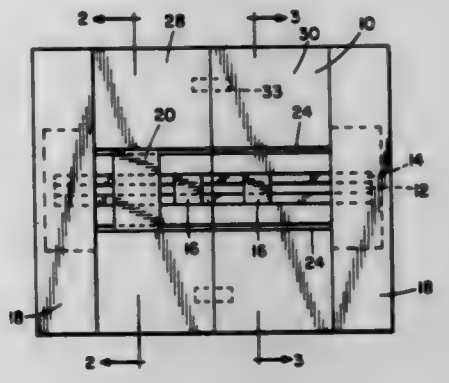
4,344,759

METHOD AND APPARATUS FOR INDUCING PSYCHOLOGICAL RESPONSES

Stuart Albert, 1713 E. Florida Ave., Apt. 201, Urbona, Ill. 61801

Filed Oct. 14, 1980, Ser. No. 196,589
Int. Cl.³ G09B *1/14*
U.S. Cl. 434—236 **4 Claims**

1. An apparatus for eliciting psychological responses from human beings, said apparatus comprising:
(a) a board having a channel extending transversely across the surface thereof;
(b) at least two symbols movably positioned in said channel;
(c) means for supporting and moving said symbols within said channel;
(d) at least one stationary panel secured to said board and spaced therefrom, said stationary panel covering a section of said channel to permit a symbol to be positioned therebehind to remove the symbol from view;
(e) a pair of tracks extending transversely across the surface of said board parallel to said channel, one track disposed on either side of said channel; and
(f) at least one movable panel secured to and movable within said tracks whereby selected portions of said channel can



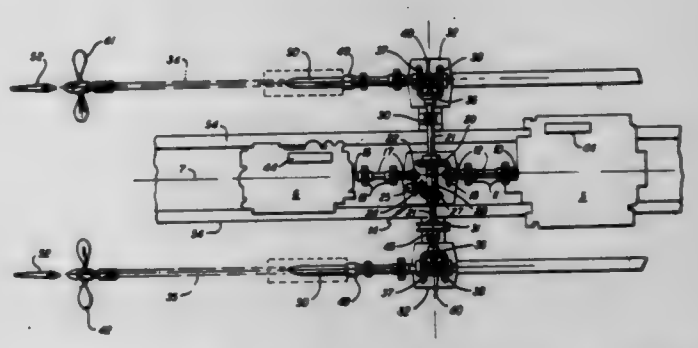
be blocked from view and the symbols movable within said channel can be positioned therebehind.

4,344,760

MARINE PROPULSION SYSTEM

Andrzej S. Kulikowski, 35-221 Ormskirk Ave., Toronto, Ontario, Canada (M6S 1A8)

Filed Aug. 15, 1979, Ser. No. 66,674
Int. Cl.³ B63H *21/00, 23/10*
U.S. Cl. 440—3 **8 Claims**



1. In a propulsion system for a cruising boat or the like, a primary operating engine and a secondary engine having less power than the primary engine, the primary and secondary engines being in line with one another substantially on the fore and aft center line of the boat, a main transmission assembly located between the two engines on said center line, the output shafts of the engines being operably connected to the transmission assembly, an athwartships shaft passing through the transmission assembly and extending outwardly therefrom toward the opposite sides of the boat, a transmission gear case unit operably connected to each end of the athwartships shaft, a pair of laterally spaced propeller shafts disposed in substantially parallel relation to the fore and aft center line of the boat, the inboard end of each propeller shaft being respectively operably connected to one of the transmission gear cases, a double acting clutch in the main transmission assembly for connecting either the primary or secondary engine output shaft to the athwartships shaft, and clutch means in each transmis-

sion gear case operable to drivingly connect its propeller shaft to the athwartships shaft.

4,344,761

SIDE-BAR CHAIN FOR CONE PULLEY TRANSMISSIONS

Herbert K. Steuer, Bad Homburg, Fed. Rep. of Germany, assignor to P.I.V. Antrieb Werner Reimers GmbH & Co. KG, Bad Homburg, Fed. Rep. of Germany

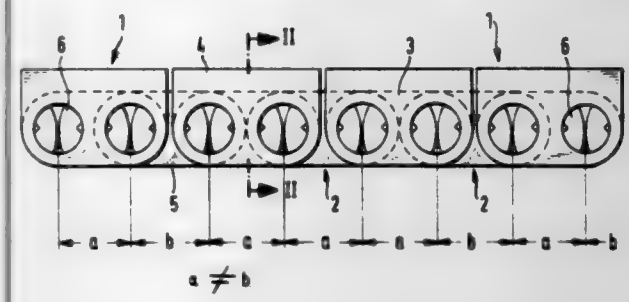
Filed Nov. 2, 1979, Ser. No. 90,587

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1978, 2848167

Int. Cl.³ F16G 5/18

U.S. Cl. 474—245 4 Claims

1. In a side-bar chain for an infinitely variable cone pulley transmission, which is composed of packs of side bars forming successive links which are articulatedly connected with one another, and thrust pieces acting transversely of the longitudinal direction of the chain for friction force transmission between cone pulleys and the side-bar chain, the improvement



wherein the lengths of selected ones of said links, between associated articulations, are different from those of the remainder of said links of said chain for minimizing vibrations between said chain and the associated cone pulleys during operation of the transmission.

4,344,762
SOAKING METHOD

Rolf Monsheimer, Darmstadt, and Ernst Pfleiderer, Darmstadt-Arheilgen, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

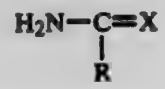
Filed Oct. 27, 1980, Ser. No. 201,048

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944461

Int. Cl.³ C14C *1/04*

U.S. Cl. 8—94.18 14 Claims

1. A method for soaking preserved skins or hides adaptable to the preparation of leather which consists essentially of soaking said skins or hides in an aqueous bath having a pH between 9 and 11 and consisting essentially of water and a compound selected from the group of compounds of the formula



and acid addition salts thereof, wherein R taken alone is —H, —NH_2, —CH_3, or —NHCN, X taken alone is =O, =S, or =NH, and R and X taken together form a five- or six-membered heterocyclic ring having conjugated double bonds and containing only nitrogen as a hetero atom.

4,344,763
REACTIVE SILICONE HAIR SETTING COMPOSITIONS

Eva Tolgyesi, and Ann F. Bresak, both of Rockville, Md., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 15, 1977, Ser. No. 851,748

Int. Cl.³ A61K *7/11*

U.S. Cl. 8—127.51 10 Claims

1. A method of setting hair comprising the steps of:

(a) wetting the hair with water;

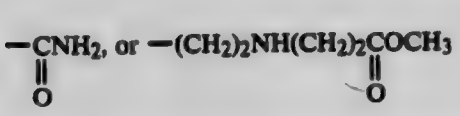
(b) applying to the hair an effective amount of an isopropanol solution containing

(1) from about 0.5% to about 15% by weight of at least one aminoalkylalkoxysilane having the formula

$R_1NH(CH_2)_nSi(OR_2)_3$

wherein

R_1 is —H, —CH_3, —CH_2NH_2, —$(CH_2)_2NH_2$,



R_2 is methyl, ethyl, propyl, isopropyl, butyl, or isobutyl, and

n is selected from the values 2 and 3, and

(2) from about 0.0005% to about 1.5% by weight of a titanate ester having the formula

$(R_3O)_4Ti$

wherein R_3 is methyl, ethyl, propyl, isopropyl, butyl, or isobutyl, and

(c) arranging the hair in a desired configuration.

4,344,764
DESIZING OF TEXTILES CONSISTING OF OR CONTAINING CELLULOSE

Wilfried Kothe, and Heinz-Dieter Angstmann, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,357

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1978, 2814354

Int. Cl.³ D06L *1/14;* D06M *11/04, 15/38;* D06L *1/06*

U.S. Cl. 8—138 2 Claims

1. A process for desizing textiles, consisting of or containing cellulose, in the presence of persulfate, wherein the starch-sized textile is impregnated with a desizing liquor having a pH of from 12 to 14, which contains

(a) from 0.1 to 3 g/l of peroxydisulfate and

(b) from 0.1 to 5 g/l of a water-soluble polymer of acrylic acid which may contain up to 50 mole% of methacrylamide, acrylamide, acrylonitrile, methacrylonitrile, acrylic acid esters, methacrylic acid esters, methacrylic acid or other ethylenically unsaturated monocarboxylic acids or dicarboxylic acids as copolymerized units, their alkali metal salts or ammonium salts, or alkali metal salts or ammonium salts of copolymers of maleic acid and styrene, maleic acid and a vinyl ester or maleic acid and a vinyl ether, and the impregnated textile is then left to dwell for from 1 to 30 minutes at from 20° to 130° C., after which it is rinsed.

4,344,765
PROCESS FOR THE PREPARATION OF TRANSFER PRINTS ON OPTIONALLY REGENERATED CELLULOSE FIBERS AND THEIR MIXTURES WITH POLYESTER FIBERS

Friedrich Reinhardt, Neuenhain, and Helmut Schmidt, Hofheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 741,396, Nov. 12, 1976, abandoned.

This application Jun. 28, 1979, Ser. No. 52,767

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1975, 2551410

Int. Cl.³ D06P *5/00, 3/82*

U.S. Cl. 8—471 24 Claims

1. A process for coloring a fabric containing natural or regenerated cellulose fibers, which comprises contacting said fabric at a temperature of 180° to 220° C. with a carrier sheet which is covered with a layer containing a disperse dyestuff capable of subliming in said temperature range, said fabric being impregnated prior to or after said contacting with a thickening composition consisting essentially of (1) a synthetic polymer having carboxy groups or an alkali metal or ammonium salt thereof, or (2) an aqueous liquor containing, per liter, 10 to 500 g of an aqueous solution or dispersion containing 2 to 10% by weight of a thickening agent and 50 to 200 g of polyalkylene oxide compound.

4,344,766
PROCESS FOR THE MANUFACTURE OF PREPARATIONS WITH A LOW DUST CONTENT

Jurgen Lahrs; Klaus Schubert, both of Cologne; Claus Gosling, Leverkusen; Dorde Jovcic, Leichlingen; Harald Gleinig, Odenthal, and Reiner Skerhut, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 20, 1981, Ser. No. 255,933

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3018029

Int. Cl.³ C09B *67/08;* B32B *7/02*

U.S. Cl. 8—524 3 Claims

1. In a process for the manufacture of pulverulent or granular preparations having a low dust content, by spraying the preparation with a dustproofing agent, the improvement comprising:

adjusting the dustproofing agent spray to an average particle size of less than 10 microns and

applying said agent in an amount of 0.01 to 4%.

4,344,767

PROCESS FOR COLORING LINEAR POLYESTERS IN THE MELT

Gerhard Umsonst, Frenkendorf; Hans P. Kölliker, Münchenstein, and Max Jost, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

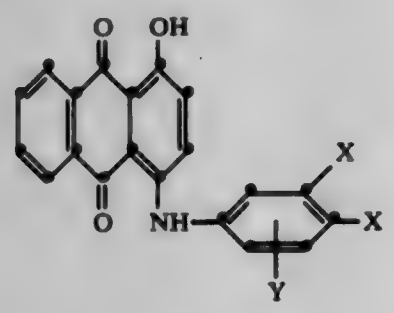
Filed May 20, 1981, Ser. No. 265,472

Claims priority, application Switzerland, May 29, 1980, 4186/80

Int. Cl.³ C09B *1/00*; C08L *67/00*

U.S. Cl. 524—159 9 Claims

1. A process for colouring linear polyesters in the melt, which process comprises the use of a 1-hydroxy-4-phenylaminoanthraquinone of the formula



(I)

wherein one X is a hydrogen atom or methyl group and the other is an alkylsulfonyloxy or chloroalkylsulfonyloxy group and Y is a hydrogen or halogen atom or an alkyl group.

4,344,768

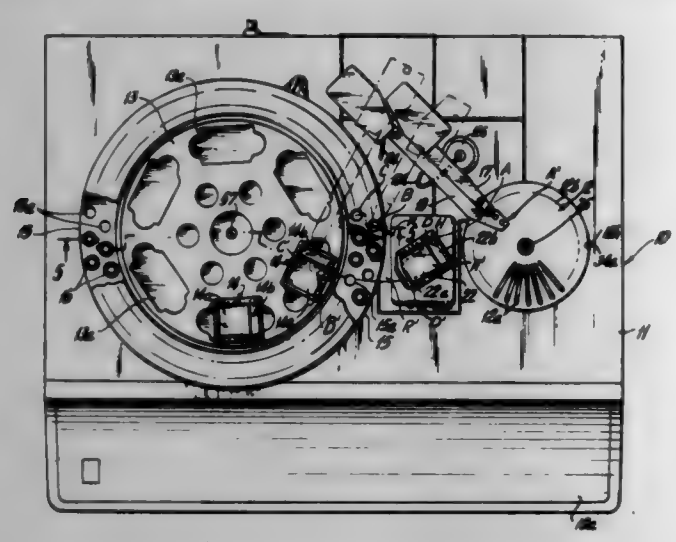
AUTOMATIC PIPETTOR

Bernard Parker, Westport, Conn., and Brian Parsonnet, Mamaroneck, N.Y., assignors to Baker Instruments Corp., Bethlehem, Pa.

Filed Mar. 27, 1981, Ser. No. 248,531

Int. Cl.³ G01N *1/14, 35/06, 33/48*

U.S. Cl. 23—230 R 25 Claims



24. Method for automatically and rapidly transferring accurate and precise multiple quantities of sample and reagent solution to a rotatable transfer disc having a plurality of radial cavities therein, which method comprises;

(a) placing said transfer disc onto a rotatable support member;

(b) randomly loading a predetermined number of receptacles containing sample solution into a rotatable sample ring;

(c) randomly loading a predetermined number of receptables containing reagent solution into a rotatable reagent

(d) providing a first transfer arm having a sample nozzle at one end thereof adapted to move laterally between said transfer disc and said sample ring and to pivot about a point located near the opposite end thereof whereby said sample nozzle is able to selectively move into a predetermined sample receptable for picking up a specific sample solution;

(e) providing a second transfer arm having a reagent nozzle at one end thereof adapted to move laterally between said transfer disc and said reagent tray and to pivot about a point located near its opposite end whereby said reagent nozzle is able to selectively move into a predetermined reagent receptable for picking up a specific reagent solution;

(f) providing a receptacle containing diluent-wash solution at a location intermediate said transfer disc and said sample ring and accessible to said sample and reagent nozzles;

(g) rotating said transfer disc to index a specific radial cavity to be filled at a designated dispense position;

(h) rotating said sample ring to index a specific sample receptacle containing a sample solution to be transferred to said transfer disc at a designated sample pick up position;

(i) rotating said reagent tray to index a specific reagent receptacle containing reagent solution to be transferred to said transfer disc at a designated reagent pick up position;

(j) laterally moving said first transfer arm and said second arm to locate said sample nozzle and said reagent nozzle at said sample and reagent pick up positions, respectively;

(k) lowering said sample nozzle into said sample receptacle and aspirating a predetermined, accurate and precise quantity of sample solution therefrom;

(l) lowering said reagent nozzle into said reagent receptacle and aspirating a predetermined, accurate and precise quantity of reagents solution therefrom;

(m) laterally moving said first and second transfer arms to said predetermined radial cavity in said transfer disc at said dispense position;

(n) moving said sample nozzle and said reagent nozzle into said predetermined radial cavity and dispensing said predetermined quantity of sample and reagent solution therein;

(o) repeating steps (g) to (n) inclusive until the designated number of radial cavities in said transfer disc are filled with multiple quantities of sample and reagent solution.

4,344,769

PROCESS AND INSTALLATION FOR TREATING COKING COAL

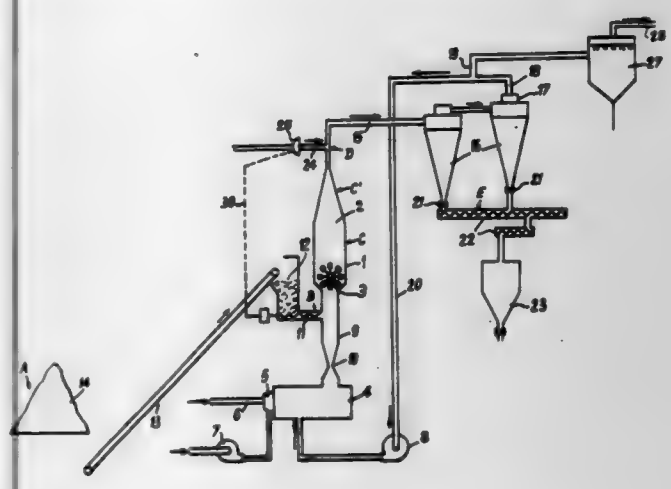
Roger M. Puff, Freyming-Merlebach, and Jean-Claude Kita, Forbach, both of France, assignors to Charbonnages de France, Paris, France

Filed Sep. 2, 1980, Ser. No. 183,416

Claims priority, application France, Sep. 10, 1979, 79 22546

Int. Cl.³ C10L *5/16, 5/22*

U.S. Cl. 44—23 21 Claims



1. A process for treating coal, comprising the steps of:

(a) introducing coal into a preheater chamber;

(b) generating a hot combustion gas in a combustion chamber;

(c) passing said hot gas through the coal in said preheater chamber to preheat and entrain the coal contained therein;
(d) pneumatically conveying the coal by means of said gas along a path from said preheater chamber to a coal/gas separating means;
(e) introducing a hydrocarbon binder in a liquid state into said path by adding said liquid hydrocarbon binder to the coal being pneumatically conveyed in said path;
(f) separating gas from the coal in said separating means; and
(g) removing the coal with hydrocarbon binder thereon from the separating means for further treatment.

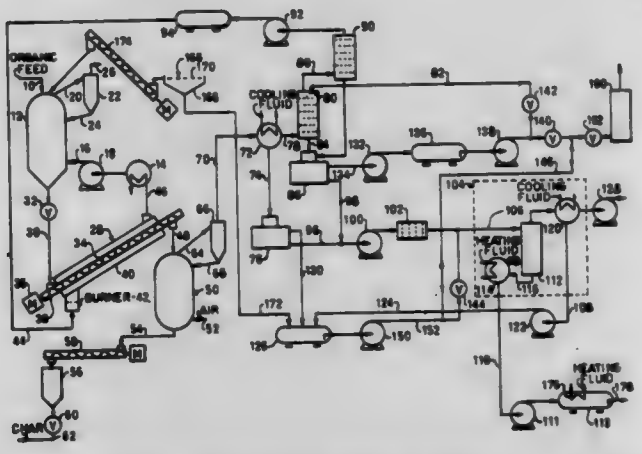
3. A process according to claim 1, wherein the hydrocarbon binder has a softening point of between about 30° C. and 100° C.

10. An apparatus for treating coking coal, comprising:
a heat exchanger chamber for the treatment of the coal;
means for introducing into the said heat exchange chamber coal which is to be treated therein;
combustion chamber means for burning gas in air and generating a heat transfer gas;
means for introducing said heat-transfer gas from said combustion chamber into said heat exchange chamber at an approximately constant rate, to entrain the coal which has been treated in said heat exchange chamber;
separating means for separating the entrained coal from gas;
a pneumatic conveying duct for conveying the gas-entrained coal from the chamber to the separating means; and
means for introducing a hydrocarbon binder into said pneumatic conveying duct.

4,344,770
METHOD AND APPARATUS FOR CONVERTING SOLID ORGANIC MATERIAL TO FUEL OIL AND GAS

Erwin L. Capener, Palo Alto, and James M. Low, Fresno, both of Calif., assignors to Wilwardco, Inc., San Jose, Calif.

Filed Nov. 4, 1977, Ser. No. 848,444
Int. Cl.³ C10L *1/00*
U.S. Cl. 44—50 38 Claims



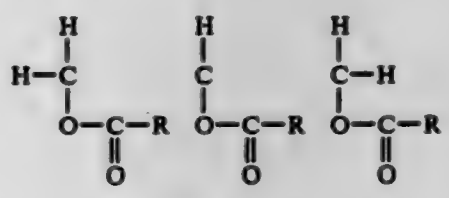
1. A method of converting organic material such as sawdust, wood chips, sewage sludge, agricultural products, and the like, to fuel oil comprising,
heating organic material for at least partial pyrolytic conversion to pyrolytic gases,
separating by condensing means said gases into liquid and gas phases by condensing condensable vapor included in said gases,
separating said liquid phase by first gravity separating means into water and oil fractions,
distilling said water fraction from said first gravity separating means for separation of water soluble oil therefrom, and
combining said water soluble oil from said distillation step with the oil fraction from said first gravity separating means to lower the viscosity and add to the energy content thereof.

4,344,771
FUEL AND LUBRICANT ADDITIVES FROM ACID TREATED MIXTURES OF VEGETABLE OIL DERIVED AMIDES AND ESTERS

Benedict R. Bonazza, and Albert N. DeVault, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 936,308, Aug. 23, 1978, Pat. No. 4,269,606, which is a continuation-in-part of Ser. No. 714,159, Aug. 13, 1976, abandoned. This application Mar. 10, 1981, Ser. No. 242,494
Int. Cl.³ C10L *1/14*
U.S. Cl. 44—63 12 Claims

1. A composition useful as a detergent additive package for lubricants and fuels prepared by reacting multiamine with vegetable oil to obtain a first product mixture, said vegetable oil selected from among triglycerides of long-chain monocarboxylic acids of the formula

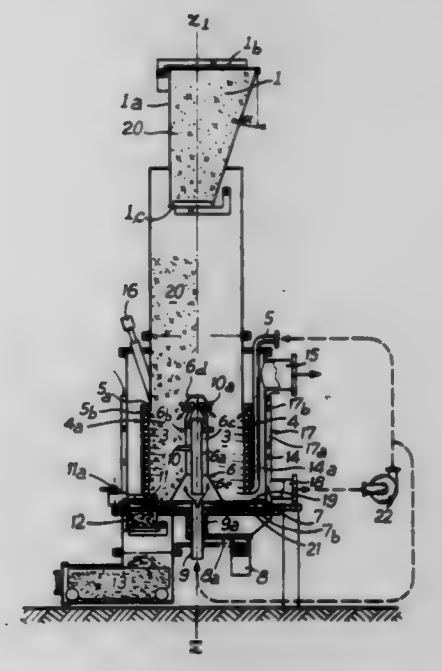


wherein R is an aliphatic radical of about 10 to about 25 carbon atoms said first product mixture further reacted with sulfonic acid to obtain a second product mixture said second product mixture dissolved in an amount of hydrocarbon solvent sufficient to maintain said second product mixture in solution.

4,344,772
GAS GENERATOR WITH FIXED BED AND REVERSE DRAUGHT, TO GASIFY SOLID COMBUSTIBLE MATERIALS

Jean-Claude Pillard, Marseilles, France, assignor to Entreprise Generale de Chauffage Industriel Pillard, Marseilles, France

Filed Nov. 17, 1980, Ser. No. 207,632
Claims priority, application France, Nov. 16, 1979, 79 28661
Int. Cl.³ C10J *3/68*
U.S. Cl. 48—76 11 Claims



1. Gas generator with fixed bed and reverse draught, to gasify solid combustible materials, comprising a cylindrical drying and pyrolysis enclosure of vertical axis, which is equipped at its upper end with a loading compartment, the lower end being opened and communicating with a co-axial combustion chamber the wall of which is composed of a shell-plate which is lined on the inside with one or more coils of which the lower ends are connected to one or more air-inlets

and wherein the upper ends are connected to an annular collector situated on the junction between the said enclosure and the said combustion chamber, the annular collector comprising air outlets inclined downwardly and towards the axis.

4,344,773

APPARATUS FOR THE GASIFICATION OF CARBON AND/OR CARBON-CONTAINING MEDIA

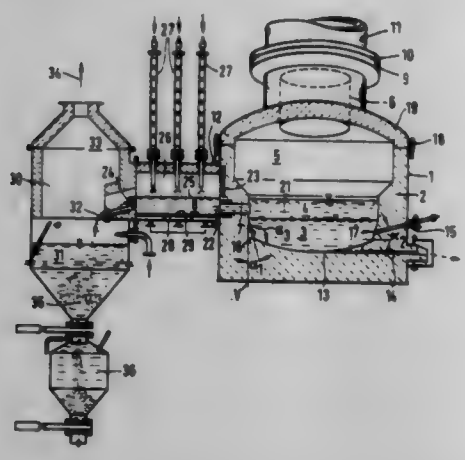
Peter Paschen, Bergisch Gladbach; Roland Pfeiffer, Cologne; Heinz-Dieter Waldhecker, Bergisch Gladbach; Alfred Kryczun, and Rolf Pufal, both of Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,816

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1979, 2950865

Int. Cl.³ C10J *3/20*

U.S. Cl. 48—92 **11 Claims**



1. Apparatus for the gasification of carbon-containing media for the continuous production of a gas essentially containing CO and H_2 and a molten bath of iron-containing metal, comprising:

means defining a reaction chamber including a floor, a side wall and a top for holding the bath;

a feed opening communicating with said reaction chamber for supporting a flow of a carbon-containing medium;

a gas outlet in said top communicating with said reaction chamber and connected gas-tight therewith for carrying of the gas;

a liquid slag outlet communicating with said reaction chamber and sealed gas-tight thereto for supporting a flow of a liquid phase; and

a plurality of nozzles extending through said side walls for feeding gasification media into said reaction chamber, said nozzles located substantially symmetrical with respect to a vertical plane which extends axially through said reaction chamber and said liquid slag outlet to provide a predetermined bath movement obliquely with respect to the lower portion of said side wall.

4,344,774

DEGASSER

Uvon Skipper, 7409 S. Rice Ave., Bellaire, Tex. 77401

Filed Mar. 23, 1981, Ser. No. 246,401

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—41 **10 Claims**

1. A method of degassing drilling mud which comprises the steps of:

(a) arranging an upstanding cylindrical housing having a central passage therethrough which passage terminates at a lower opening through said housing to admit drilling mud having gas therein and an upper opening through said housing;

(b) rotating an auger within said cylindrical housing, said auger incorporating a means for lifting drilling mud for moving mud vertically along said cylindrical housing wherein this step varies the rate at which the mud is lifted along the auger and imposes a centrifugal force on the drilling mud to centrifugally force the heavier components of the mud radially outwardly within said housing during lifting to thereby centrifugally move gas bubbles in the drilling mud radially inwardly relative to the mud and wherein the lifting step is continued so that a selected portion of the mud is lifted from the lower opening in the housing to the upper opening thereof whereupon the mud disengages from the gas bubbles entrained therein;

(c) evacuating the upper end of said housing through a forced gas flow means to remove gas;

(d) collecting the mud that flows from the upper opening in said housing in a chamber means;

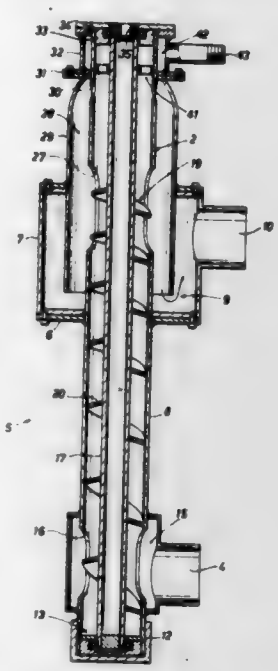
(e) positioning a solid barrier in the chamber means extending from above and toward the chamber means to define a gas free region on one side of the barrier;

(f) filling the chamber means to a depth to extend above the barrier to isolate gas liberated from the mud on one side of the barrier; and

(g) withdrawing degassed drilling mud from the gas free side of the barrier.

7. Apparatus for removing gas from drilling mud which apparatus comprises:

(a) an upstanding cylindrical housing having a wall and having openings at the bottom thereof wherein drilling mud having gas therein is permitted to flow into said



housing and also having an opening in the wall to enable mud to flow out of said housing;

(b) a multi-turn auger having a central support shaft extending along said cylindrical housing between the inlet and outlet openings thereof which auger is positioned for rotating within said housing;

(c) flights on said auger which have a variable pitch from turn to turn thereof wherein the flights of the auger are spaced further apart near the lower end thereof in comparison with the upper end thereof;

(d) means for joining the flights of the auger to the central support shaft inclining the flights radially outwardly downwardly such that the flights of said auger, on rotation about said shaft, causes mud to flow from said inlet opening to said outlet opening and to simultaneously lift the mud while centrifugally forcing the mud toward said cylindrical housing and away from said central shaft supporting said auger wherein the operation of said auger centrifugally separates dissolved gas in the drilling mud;

(e) U-tube means connected to receive mud flow from said outlet openings of said housing to flow the mud toward a U-tube means outlet means and beneath a barrier isolating gas flow from said outlet means; and

(f) gas evacuation means drawing gas from said housing at

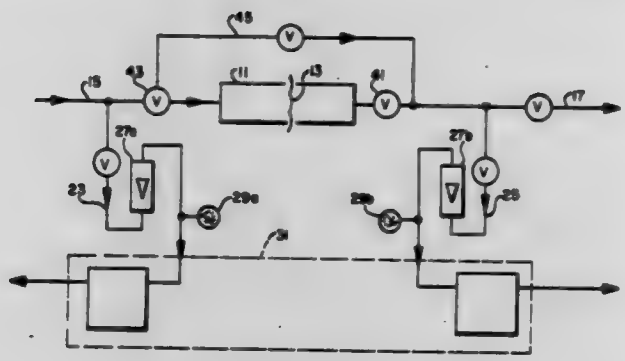
the upper end thereof and from said U-tube means for evacuation of gas liberated from the mud.

4,344,775

METHOD FOR SEPARATING GASES LIQUID DROPLETS AND/OR SOLID PARTICLES FROM GASES OR VAPORS

Max Klein, P.O. Box 3, Dalton, Mass. 01226, assignor to Max Klein, Shrewsbury, N.J.

Continuation-in-part of Ser. No. 18,472, Mar. 8, 1979, which is a continuation-in-part of Ser. No. 877,190, Feb. 13, 1978, abandoned. This application Dec. 16, 1980, Ser. No. 216,953
The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.
Int. Cl.³ B01D *53/02*
U.S. Cl. 55—75 17 Claims



1. A method for separating undesired substances from a gas or vapor containing same, said method comprising passing a stream of said gas or vapor having said undesirable substances entrained therein through a porous medium comprising glass fibers from about 6.35 millimeters long to below a length at which said fibers are prone to roping, and from about 3 to 12 microns in diameter, intermixed with micro-bits of any of an expanded, thermoplastic styrene-polymer, or lower polyolefin, which is the polymer of an ethylenically unsaturated hydrocarbon monomer having from 2 to 6 carbon atoms, each said polymer being non-brittle in its initial expanded form, said polymer micro-bits being from about 40 to about 325 microns long and from about 20 to about 325 microns wide, substantially completely free of intact cells of the expanded polymer from which said micro-bits were produced, substantially without any uniformity in outline of the individual micro-bit particles, and having a density from about 85 percent of, to about substantially the same as, the specific unexpanded polymer from which there was provided the aforesaid expanded thermoplastic polymer from which said micro-bits were produced, said intermixed glass fibers and polymer micro-bits being permeable to a gaseous and/or vaporous fluid stream and held together in sheet or elongated web form by a binding agent selected from (a) a compatible organic binder insoluable in cold water and soluble in hot water and inert to the glass fibers, the micro-bits and any other constituent of said medium, as well as any gas or vapor or entrained droplets or aerosols and fine particles that are to contact said medium, or (b) a cobeat of cotton fibers and any of said micro-bits, or a mixture of binding agents (a) and (b), said binding agent being distributed throughout the micro-bits and glass fibers so as to hold said micro-bits and glass fibers together in said sheet or elongated web form without destroying the permeability thereof; the constituents being in the following proportions, by weight of said medium:

(i) from about 2 to about 50% of said micro-bits;

(ii) from about 2% to about 10% of said binding agent when the organic binder is used, and from about 5.8% to about 11% of said binding agent when the cobeat binder is used, and

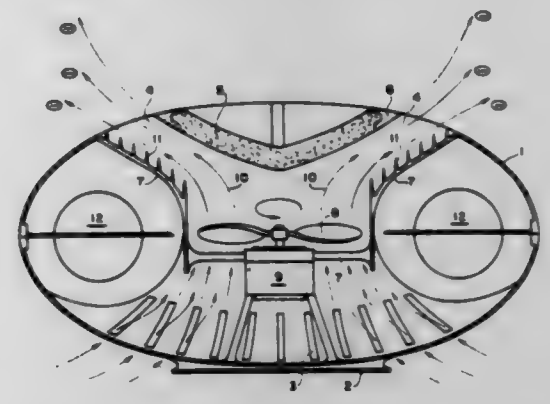
(iii) the balance of said medium being made up of said glass fibers; said medium having tensile strength from about 0.9 to about 5.3 kilograms per centimeter, and thereby separating said undesired substances from said gas or vapor.

4,344,776

ELECTROSTATIC AIR FILTER

Mordechai Yavnieli, Ramat-Hasharon, Israel, assignor to AMCOR Ltd., Tel Aviv, Israel

Continuation of Ser. No. 137,561, Apr. 4, 1980, abandoned. This application May 18, 1981, Ser. No. 264,610
Claims priority, application Israel, Jun. 27, 1979, 57677
Int. Cl.³ B03C *3/12, 3/32*
U.S. Cl. 55—129 5 Claims



1. An electrostatic air filter comprising:

a housing,

air inlet means and air outlet means in the housing,

wall means connecting said air inlet means and said air outlet means and defining an airflow path, said airflow path being substantially Y-shaped in vertical cross-section having a stem portion and a pair of diverging arms ascending from said stem portion,

air transfer means located in the stem portion of said Y-shaped cross-section part of said air flow-path for causing air to flow through the housing from the inlet means to the outlet means along said airflow path,

air ionizing means for generating and introducing charged ions into the throughflowing air,

said air ionizing means located along a first side of each of said diverging arms,

said air ionizing means comprising:

support structure attached along one side of the wall means defining said airflow path from said stem portion to said outlet means,

electro needles extending from said support structure into said airflow path,

a disposable, electrostatically chargeable air filter mat means located along a side opposite said first side of said diverging arms on said wall means spaced apart from and substantially oppositely disposed to said electro needles on a side opposite to the one side,

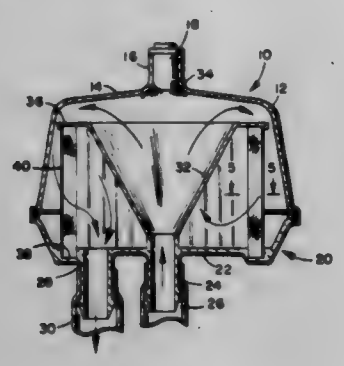
the path for the ions being transverse to said airflow path, and

said main airflow path being constructed and arranged such that through both of said divergent arms it is substantially clear of obstructions and extending in a straight line from said air transfer means to said outlet means without substantially intersecting either said air filter mat means or said electro needles so that said dust particles in said airflow path are ionized by ions produced by said needles and attracted to said oppositely charged air filter mat means as said air flows past said mat means from the air transfer means to the outlet means.

4,344,777
DIRECTED FLOW BUBBLE TRAP FOR ARTERIAL BLOOD

George G. Siposs, 2855 Velasco La., Costa Mesa, Calif. 92626

Filed Jan. 7, 1980, Ser. No. 109,801
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—178 24 Claims



12. A directed flow bubble trap and arterial blood filter comprising:

a housing;

inlet means for permitting and controlling the upward inlet flow of arterial blood into said housing to substantially fill said housing, said inlet means including an upwardly divergent, substantially conical flow control cone for causing flow with a radially outward component at the top of said upwardly divergent flow control cone, said upwardly divergent flow control cone being open to permit generally unobstructed radially outward flow at its larger end for reducing blood velocity so that the blood velocity at the top of said upwardly divergent flow control cone in said housing is lower than in said inlet, said housing top having an outlet therein for the release of air collected within the top of said housing;

an arterial blood filter member in said housing, said arterial blood filter member being a corrugated filter medium of woven monofilament screen having between 20 to 60 microns pore size and having first and second sides, said blood filter member being positioned around to surround said flow cone and being secured to said flow cone and to said housing so that said flow cone serves as a support for the upper edge of said filter member so that arterial blood leaving said upwardly divergent flow control cone flows down around said blood filter member and reaches said first side of said arterial blood filter member; and

an arterial blood outlet on said housing, said arterial blood outlet being connected to said housing so that it is positioned on the second side of said arterial blood filter member.

4,344,778
WATER PRODUCING APPARATUS

Hiromasa Matsuoka, Amagasaki; Kenkoku Azuma, Nagoya, and Enju Nishiyama, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,126
Claims priority, application Japan, May 15, 1979, 54-59857; Feb. 12, 1980, 55-16233
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—180 7 Claims

1. A water producing apparatus comprising:

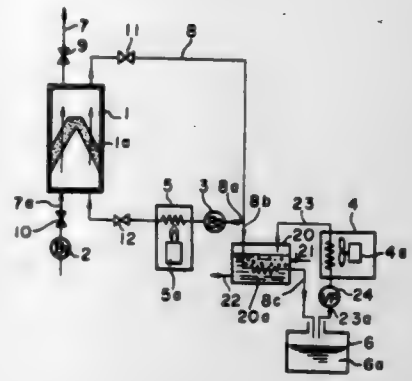
an adsorbent in a confined space;

means communicating with said confined space for contacting said adsorbent with ambient air whereby moisture in said ambient air is adsorbed;

means communicating with said confined space for heating said adsorbent to desorb the moisture adsorbed thereon as steam;

first means communicating with said confined space for condensing said steam;

means, associated with said means for condensing said steam, for evaporating liquid low quality water, whereby the latent heat of condensation of said condensating steam evaporates said liquid low quality water; and

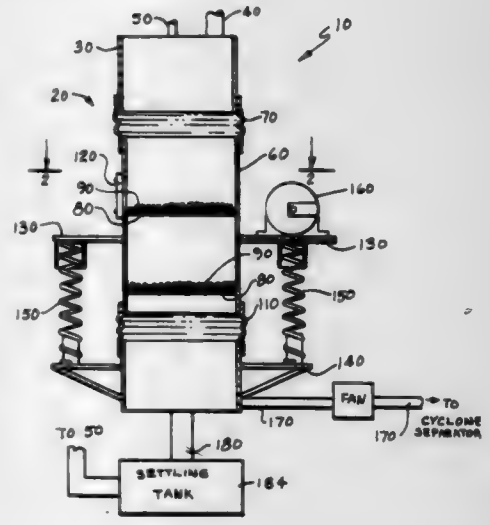


second means, communicating with said means for evaporating, for condensing said evaporated low quality water into liquid water.

4,344,779
AIR POLLUTION CONTROL SYSTEM

Morris D. Isserlis, 3755 Poinciana Dr., Apt. 507, Bldg. 7, Lake Worth, Fla. 33463

Filed Aug. 27, 1980, Ser. No. 181,890
Int. Cl.³ B01D *47/14*
U.S. Cl. 55—233 6 Claims



4. Apparatus for removing undesired matter from dirty gas comprising

a chamber defining a downwardly vertical path for gas and fluid flow,

means for introducing a fluid and a dirty gas substantially simultaneously into an upper portion of said chamber for passage downwardly through said chamber, said dirty gas containing undesired matter to be removed,

means for drawing said gas and fluid downwardly through said chamber,

support means carrying a plurality of small-diameter, generally spherical solids providing a large number of small venturi passages between adjacent solids and impingement surfaces, said support means being disposed across the path of flow of gas and fluid through said chamber so that the gas to be cleaned and fluid impinge upon said solids,

outlet means for separately removing gas and fluid carrying said matter from said chamber, and

means for vibrating said support means for shaking said solids and maintaining them free of adsorbed matter taken out of the gas.

4,344,780

APPARATUS FOR THE SEPARATION OF FLUIDS

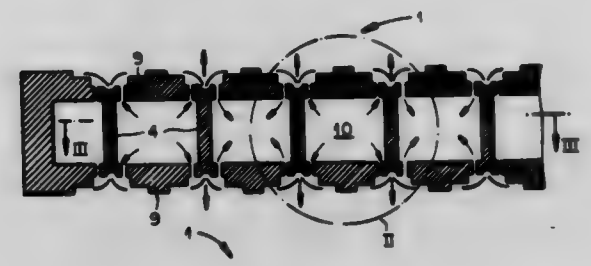
Werner Groszstück, Pforzheim, Fed. Rep. of Germany, assignor to Nustep Trenndüsen Entwicklungs- und Patentverwertungsgesellschaft mbH & Co. KG, Essen, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 230,105

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003266

Int. Cl.³ B01D *53/24*

U.S. Cl. 55—347 5 Claims



1. A device for separating components of a gas or vapor fluid mixture by mass, comprising:

a one-piece monolithic passage-forming body generally in the form of a rectangular parallelepiped, said body being formed unitarily with a plurality of mutually parallel spaced-apart partitions with two adjacent partitions defining an elongated passage between them, respective end walls closing said passages alternately on opposite sides of said body, and said passages being closed laterally by opposite lateral walls perpendicular to said partitions and said end walls and disposed on opposite lateral sides of said body, each of said lateral walls being formed with elongated slots diposed on opposite sides of each partition and communicating with a respective passage adjacent a respective partition and extending parallel thereto, portions of said lateral walls which are coplanar with each partition being formed with an outwardly open flow-deflecting groove of curved cross section, each of said lateral walls being formed with an external mounting surface disposed on opposite sides of each groove outwardly of said slots;

a respective nozzle-forming strip reaching into each groove and disposed on each mounting surface of said lateral walls on one side of each groove so as to intercept said fluid mixture emerging from respective slots and direct said fluid mixture into and along a respective one of said grooves; and

a respective skimming baffle reaching into each groove and mounted on said mounting surface opposite that on which said nozzle-forming strip is disposed so as to deflect a heavy component enriched fraction of said fluid mixture into an adjacent one of said passages through respective slots thereof, said baffle and the respective strip of each of said grooves defining a gap between them so as to permit a light component enriched fraction of said mixture to be discharged.

4,344,781

FILTER BAG WITH PROTECTIVE CUFF

Frank Higgins, New Providence; Gilbert G. Lautenshlager, West Millington, both of N.J., and Billy A. Bunn, Aiken, S.C., assignors to United States Filter Corporation, New York, N.Y.

Filed Feb. 3, 1981, Ser. No. 231,135

Int. Cl.³ B01D *46/02*

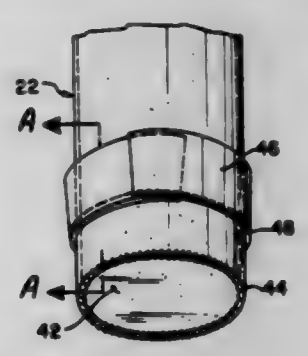
U.S. Cl. 55—379 4 Claims

1. An improved construction for elongate tubular filter bags having one open end and one closed end that are adapted to be supported by an internal elongate rigid gas pervious retainer for use in an assembly for separating particulate matter from a carrier gas stream when such carrier gas stream is directed from a dirty air plenum to a clean air plenum separated by a gas impervious tube sheet having at least one aperture therein providing fluid communication between the dirty and clean air plenums and wherein the open end of such filter bag and retainer is mounted on said aperture and the closed end is disposed remote therefrom and is displaceable together with said retainer transversely of the longitudinal axis of said filter bag, said improved bag comprising:

an elongate tube of permeable fabric filter material having an open end and a second end disposed remote therefrom;

particulate impermeable means for closing said second end of said tube,

means attaching said particulate impermeable means to the second end of said tube to close the same,



an annular band of material having a first and second longitudinal edge and a length at least equal to the circumference of said tube,

means circumferentially attaching said band to the outer surface of the tube with the first longitudinal edge thereof disposed in attached spaced apart relation from the closed end thereof and with the distance of spacing between the first longitudinal edge and the closed end being less than the width of the band so that the second longitudinal edge thereof extends a substantial distance past said closed end of said tube and forms a peripheral protective skirt thereabout.

4,344,782

APPARATUS FOR THE SEPARATION OF FLUID MIXTURES INTO COMPONENTS OF DIFFERENT MASS

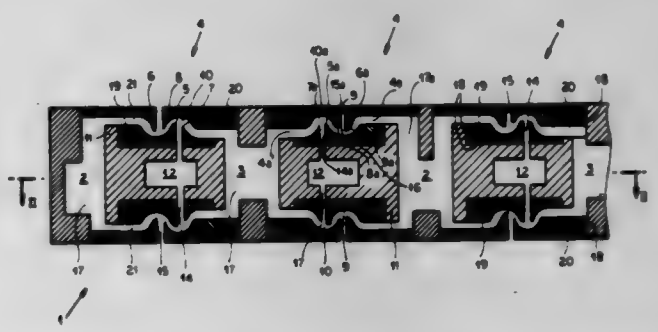
Werner Groszstück, Pforzheim, Fed. Rep. of Germany, assignor to Nustep Trenndüsen Entwicklungs- und Patentverwertungsgesellschaft mbH & Co. KG, Essen, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 230,106

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003202

Int. Cl.³ B01D *57/50*

U.S. Cl. 55—397 4 Claims



1. A device for the trifractional separation of gas mixtures, especially for isotope separation, comprising:

a one-piece body of rectangular plan and cross-sectional configuration formed with partitions subdividing the interior thereof into generally parallel fluid mixture passages, medium fraction discharge passages and heavy fraction discharge passages in succession, wall portions closing one end of each of said passages and means defining openings communicating between said passages, said body

being formed in the region of said openings with fitting surfaces; and

a respective separating element for each group of fluid mixture, medium fraction and heavy fraction passages seated in fitting surfaces and defining in succession between each fluid mixture passage and the heavy fraction discharge passage of the respective group, a first nozzle edge for accelerating the fluid mixture, a first flow-directing groove receiving said first nozzle edge for guiding said fluid mixture in an arcuate path, a first flow splitter for separating components of the fluid mixture guided in said arcuate path, a second nozzle edge for directing a component of the fluid mixture from said arcuate path, a second oppositely curved flow-directing groove receiving the fluid mixture from said second nozzle edge and directing same along a second arcuate path, and a second flow splitter intercepting the fluid mixture along said second arcuate path, said separating element further comprising a first slot formed between said first nozzle edge and said first flow splitter for discharging a light fraction of said mixture and a second slot between said second nozzle edge and said flow medium fraction discharge passage, each of said separating elements comprising an inwardly disposed plate formed with said first nozzle-forming edge, said first flow splitter, said first slot and second groove, and with an outwardly lying plate disposed along the exterior of said devices and formed with said first groove, said second nozzle-forming edge, said second flow splitter and second slot, said plates defining a gap between them generally parallel to the plane of said device.

4,344,783

CYCLONE SEPARATOR

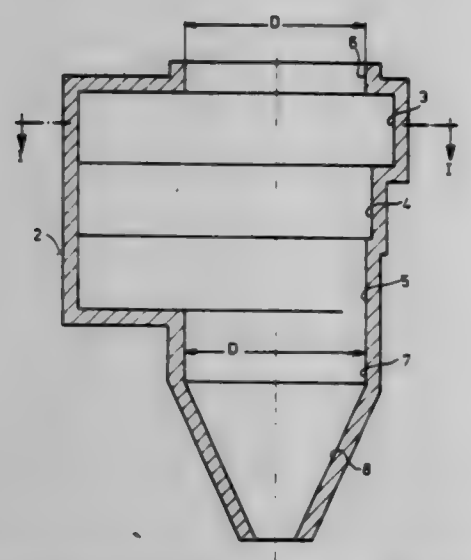
Otto Heinemann, Ennigerloh, and Heinz-Herbert Schmits, Rheda-Wiedenbruck, both of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Apr. 20, 1981, Ser. No. 255,462

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018519

Int. Cl.³ B04C *5/04, 5/081;* B01D *45/16*

U.S. Cl. 55—459 B **8 Claims**



1. A cyclone separator comprising a walled housing having at one end an inlet opening and a gas outlet opening, and at its other end a material discharge opening, said inlet opening communicating with each of a plurality of partial spirals spiraling about a common axis and axially spaced from one another in a direction from said one end of said housing toward said other end thereof, each of said partial spirals being of different length, wherein the partial spiral located adjacent said one end being the longest and the partial spiral located adjacent said other end being the shortest, the longest of said partial spirals extending over a peripheral angle of at least 180° and the shortest extending over a peripheral angle of at least 90°, each of said partial spirals having a terminal end axially remote from said inlet opening and located at a substantially uniform radial distance from said axis.

4,344,784

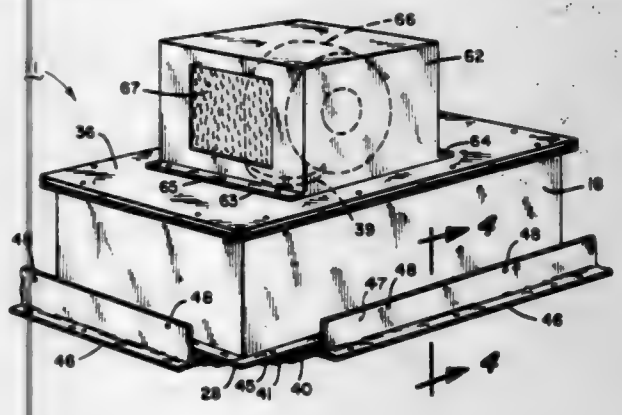
FILTER ASSEMBLY FOR CLEAN AIR ROOMS AND WORK STATIONS

Peter C. Deckas, Edina; James A. Cooper, New Hope, and James V. Leebens, Jr., Minneapolis, all of Minn., assignors to Dexon, Inc., Minneapolis, Minn.

Filed Feb. 27, 1981, Ser. No. 238,769

Int. Cl.³ B01D *46/10;* B24F *3/16*

U.S. Cl. 55—473 **12 Claims**



1. A filter assembly for a clean air installation comprising a block of filter material having axially spaced inlet and outlet surfaces and an outer peripheral side surface extending all around the block between the inlet and outlet surfaces, a supporting frame having a side frame portion comprising imperforate, rigid, thin side walls surrounding and closely fitting the peripheral side surface of the filter block, said side frame portion having open inlet and outlet ends defining respective side frame inlet and outlet openings corresponding to the filter block inlet and outlet surfaces, but spaced axially from each other a distance substantially greater than the distance between the inlet and outlet surfaces of the filter block, a layer of adhesive providing an adhesive bond between the outer peripheral side surface of the filter block and the surrounding walls of the side frame portion with the outlet surface of the filter block in essentially the same plane as the side frame outlet opening and with the side frame inlet opening spaced axially upstream from the filter block inlet surface, portions of said side frame walls thereby enclosing the sides and serving as side walls of a plenum chamber volume upstream of the filter block, and the adhesive layer providing an integral seal preventing leakage of air around the filter block from the plenum chamber volume.

4,344,785

MODULAR MOLTEN GLASS COLUMN

Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

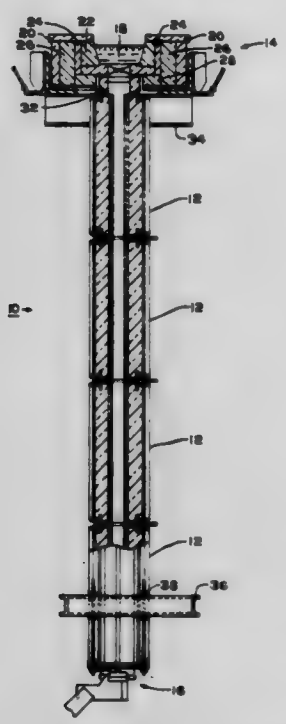
Filed Oct. 2, 1980, Ser. No. 193,194

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—1 **16 Claims**

10. A modular molten glass column for receiving molten glass from a forehearth and to supply the glass to a high pressure glass fiber forming bushing, said column delivering said molten glass to said bushing at high temperatures and pressure, said column comprising at least a first and a second glass modular glass conduit, each of said conduits having a molten glass conveying tube, a ceramic liner surrounding said molten glass conveying tube, heating means secured to said ceramic liner, means to control said heating means, a refractory surrounding

said ceramic liner and an outer housing covering the refractory, means to join the first ends of the modular glass conduits



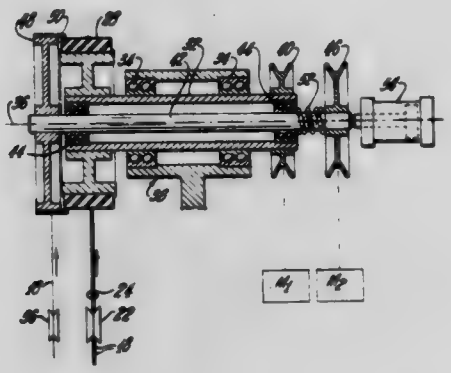
to each other to provide fluid communication with the said conduits to said forehearth and said bushing respectively.

4,344,786

METHOD AND APPARATUS FOR GATHERING STRAND MATERIAL

Alex P. Symborski, and Cecil R. Cunningham, both of Anderson, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 2, 1981, Ser. No. 222,106
Int. Cl.³ C03D *37/025*
U.S. Cl. 65—2 **13 Claims**



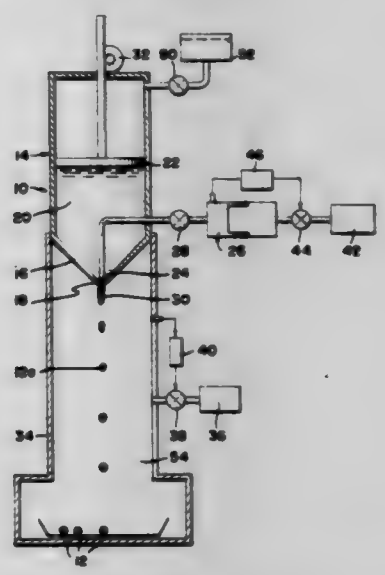
10. A method of gathering strand material comprising gathering strand material from a plurality of sources of strand material to form a combined strand, rotating a roll means at a first rate to pull said combined strand, directing strand material from another source onto a ring means rotating coaxially with said roll means, rotating said ring means at a second rate slower than said first rate to pull said feeder strand, increasing the rotational rate of said ring means to said first rate, moving said ring means axially toward said roll means, and directing said feeder strand onto said roll means.

4,344,787

METHOD AND APPARATUS FOR PRODUCING GAS-FILLED HOLLOW SPHERES

James M. Beggs, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Taylor G. Wang, Glendale, and Daniel D. Elleman, San Marino, both of Calif.

Continuation-in-part of Ser. No. 284,313, Jul. 17, 1981, which is a continuation of Ser. No. 37,072, May 8, 1979, Pat. No. 4,279,632. This application Sep. 18, 1981, Ser. No. 303,671
Int. Cl.³ C03B *19/10*
U.S. Cl. 65—21.4 **6 Claims**



1. Apparatus for forming hollow spheres containing pressured gas, comprising:

a cylinder device having an end, and having a first nozzle at said end;

a second gas nozzle lying in said cylinder near said end thereof and directed in line with said first nozzle;

a gas source connected to said gas nozzle to supply pressured filler gas thereto;

means for supplying a molten solid material to said cylinder device to flow out of said first nozzle;

walls forming an enclosure around an area outside said first nozzle; and

means for maintaining an environment gas at a predetermined pressure of a plurality of atmospheres in said enclosure;

said means for supplying molten material applying a pressure to said molten material which is greater than the pressure of said filler gas supplied by said source and the pressure in said enclosure, whereby to produce a molten gas-filled tube that can break up into hollow sphere-like pieces.

4,344,788

METHOD OF PLANT GROWTH REGULATION

Louis Schneider, Elizabeth; David E. Graham, deceased, late of Westfield, both of N.J., and Fidelity Union Trust Company, Executor, Newark, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jul. 15, 1980, Ser. No. 169,075
Int. Cl.³ A01N *43/36*
U.S. Cl. 71—76 **2 Claims**

1. A method for retarding the growth of bluegrass which comprises applying to said bluegrass an effective growth retarding amount of N-(chloroacetyl)-N-(N'-methylenepyrrolidonyl)-2-isopropoxyaniline.

4,344,789

ACIDS AND ESTERS OF 5-(2-OPTIONALLY SUBSTITUTED-4-TRIFLUOROMETHYL-6-OPTIONALLY SUBSTITUTED PHENOXY)-2-NITRO, -HALO, OR-CYANO ALPHA SUBSTITUTED PHENYL CARBOXY OXIMES, AND METHOD OF CONTROLLING WEEDS WITH THEM

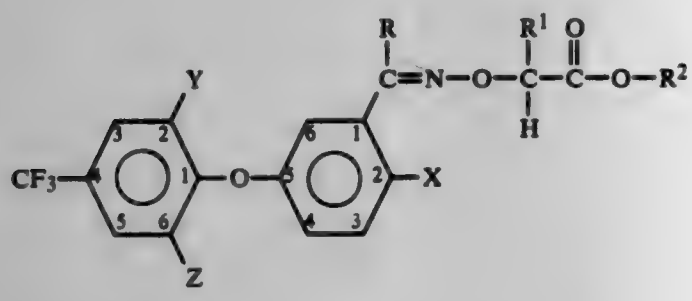
Dennis K. Krass, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 38,043, May 11, 1979, abandoned. This application Apr. 15, 1980, Ser. No. 136,171

Int. Cl.[3] **A01N** *37/42, 37/50;* **C07C** *131/00*

U.S. Cl. 71—105 **28 Claims**

1. A compound represented by Formula I:



(I)

wherein:

X is nitro (—NO_2), a halogen, or cyano (—CN);

Y is hydrogen or chlorine (Cl);

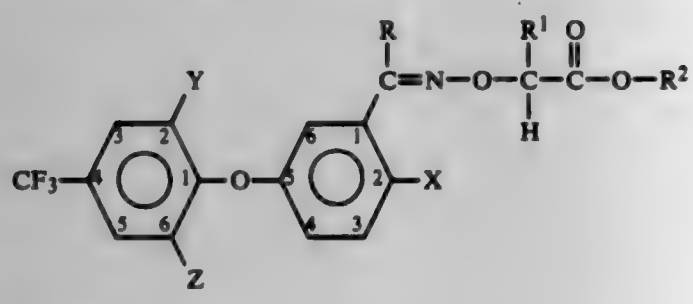
Z is chlorine when Y is chlorine or Z is hydrogen when Y is chlorine or hydrogen;

R is hydrogen or an alkyl of up to three carbon atoms;

R^1 is hydrogen or methyl; and

R^2 is hydrogen, an alkyl of up to ten carbon atoms, or an agronomically soluble salt ion.

15. A method of controlling weeds which comprises contacting the weeds with a herbicidally effective amount of a compound represented by Formula I:



(I)

wherein:

X is nitro (—NO_2), a halogen, or cyano (—CN);

Y is hydrogen or chlorine (Cl);

Z is chlorine when Y is chlorine or Z is hydrogen when Y is chlorine or hydrogen;

R is hydrogen or an alkyl of up to three carbon atoms;

R^1 is hydrogen or methyl; and

R^2 is hydrogen, an alkyl of up to ten carbon atoms, or an agronomically soluble salt ion.

4,344,790

CARBAMINIC ACID ESTERS WITH HERBICIDAL PROPERTIES

Gerhard Boroschewski; Ludwig Nüsslein, and Friedrich Arndt, all of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

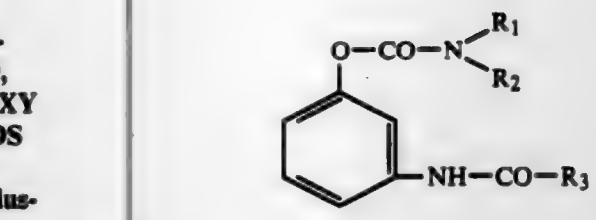
Filed Oct. 23, 1979, Ser. No. 87,637

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844806

Int. Cl.[3] **A01N** *37/44;* **C07C** *125/06*

U.S. Cl. 71—111 **10 Claims**

1. A compound of the formula:



wherein

R_1 is di-C_1-C_2-alkoxy-C_1-C_2-alkyl;

R_2 is phenyl optionally mono- or di-substituted by one or more substituents selected from the group consisting of halogen, methyl and methoxy; and

R_3 is C_1–C_8 alkyl, C_2–C_8-alkenyl, cyclopropyl or trichloromethyl.

9. A herbicidal composition containing a herbicidally effective amount of at least one compound as described in claim 1, further comprising carrier material.

10. A composition as defined in claim 9, further comprising other additives.

4,344,791

MANUFACTURE OF ACICULAR FERROMAGNETIC IRON PARTICLES

Werner Steck, Mutterstadt; Wilhelm Sarnecki, Limburgerhof; Laszlo Marosi, Ludwigshafen; Manfred Ohlinger, Frankenthal, and Werner Loeser, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,267

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935358

Int. Cl.[3] **C22B** *5/12;* **C22C** *1/04*

U.S. Cl. 75—0.5 AA **2 Claims**

1. A process for the manufacture of acicular ferromagnetic iron particles which comprises: coating the surface of acicular particles of iron (III) oxide hydroxide and consisting essentially of goethite with (1) a mixture of an alkaline earth metal compound and a monobasic, dibasic or tribasic aliphatic carboxylic acid of up to 6 carbon atoms, (2) an alkaline earth metal compound and an organic compound which contains two or more groups which can form chelates of the alkaline earth metal cation or (3) an hydrolysis-resistant substance consisting essentially of a phosphorus oxyacid, its ester or its inorganic salt and an aliphatic mono-, di- or tribasic carboxylic acid of 1 to 6 carbon atoms; heating the coated particles at a temperature of from 250° to 450° C. for a period of from 10 minutes to 10 hours in an atmosphere containing water vapor at a partial pressure of from 30 to 1013 mbar; and thereafter heating the particles in the presence of hydrogen at temperatures of from 275° to 425° C. to reduce the particles and thus form acicular ferromagnetic iron particles, whereby the coercivity of the treated particles is higher than the coercivity of the particles prepared by the above process absent said heating of the coated particles in the water vapor containing atmosphere.

4,344,792

REDUCTION SMELTING PROCESS

Charles E. O'Neill, Mississauga, Canada, assignor to Inco Ltd., Toronto, Canada

Filed Feb. 26, 1981, Ser. No. 238,585

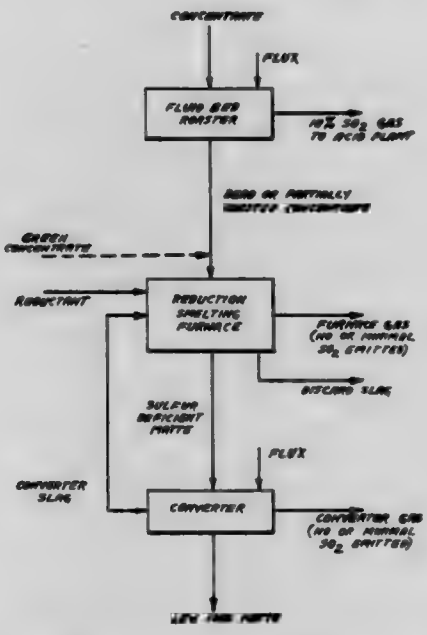
Claims priority, application Canada, Feb. 28, 1980, 346622

Int. Cl.[3] **C22B** *1/10, 1/11, 5/08*

U.S. Cl. 75—9 **9 Claims**

1. A process for recovering base metal values from sulfide concentrates containing iron sulfide and at least one base metal sulfide value from the group consisting of nickel, copper and cobalt which comprises the successive steps of roasting to provide a calcine of reduced sulfur content and a gas having a sulfur dioxide content permitting fixing of sulfur therefrom as sulfuric acid, reduction smelting of the resulting calcine to a

matte containing metallic iron and having a sulfur deficiency with respect to the stoichiometric sulfides Ni_3S_2, Co_9S_8 and



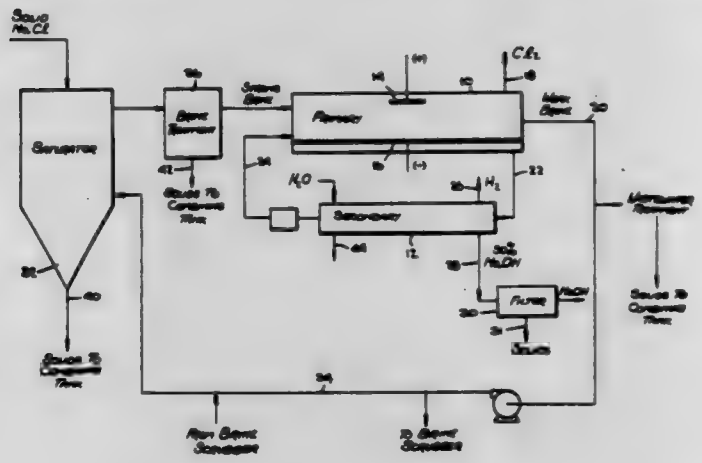
Cu_2S of up to 25%, and then oxidizing and slagging off substantially all of the iron content of the matte with essentially no release of sulfur dioxide during said iron oxidation.

4,344,793

MERCURY REMOVAL PROCESS AND APPARATUS

Ronald J. Burkett, and Luther L. Dunn, both of Westfield, N.J., assignors to Linden Chemicals & Plastics, Inc., Edison, N.J.

Filed Jun. 3, 1980, Ser. No. 156,217
Int. Cl.[3] C22B *43/00*
U.S. Cl. 75—81 7 Claims



1. An apparatus for removing mercury and mercury compounds from a material in the form of a sludge or slurry, comprising a filter for removing liquid from the material; drying means, having an inlet for receiving the material from the filter, for further reducing the quantity of liquid in said material to a relative weight of about 5%; muffle oven means for roasting the dried material to raise its temperature to a level sufficient to vaporize the mercury; and a quench tower coupled to a vapor outlet of said muffle oven for receiving said vaporized mercury for recovery and

4,344,794

SOLDER ALLOY FOR THE DIRECT SOLDERING OF OXIDE CONTAINING SILVER CATALYST ON CATALYST CARRIER

Andreas Szulczyk, Linsengericht, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,940
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948915
Int. Cl.[3] C22C *5/08*
U.S. Cl. 75—173 C 4 Claims

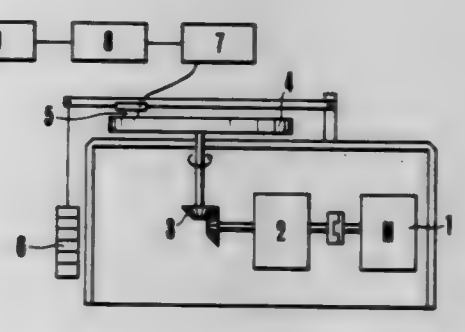
1. A phosphorus free soldering alloy suitable for the direct soldering of an electrical contact of silver containing at least one metal oxide to a contact carrier consisting essentially of a silver-copper alloy consisting of (1) 53% Ag, 21% Cu, 25.8% Cd and 0.2% Li, or (2) 30% Ag, 33% Cu and 37% Cd, or (3) 60% Ag, 27% Cu and 13% In.

4,344,795

IRON-BASED SINTERED SLIDING PRODUCT

Hiroyuki Endo, Abiko, and Yutaka Ikenoue, Matsudo, both of Japan, assignors to Hitachi Powdered Metals Company, Ltd., Matsudo, Japan

Filed Feb. 20, 1980, Ser. No. 123,088
Claims priority, application Japan, Nov. 15, 1979, 54-147020
Int. Cl.[3] B22F *3/00, 5/00*
U.S. Cl. 75—230 11 Claims



1. An iron-based sintered sliding product, wherein 0.1 weight % to 3 weight % free graphite and Fe - P - C ternary alloy phase having a hardness of MHv 300 to 850 and having an area ratio of 3% to 20% are dispersed in an iron-based matrix containing either from 0.1 weight % to 1 weight % Sn or 0.1 weight % to 1 weight % Zn, and 1 weight % to 10 weight % Cu and 0.3 weight % to 1 weight % C.

4,344,796

CEMENTITIOUS COMPOSITIONS AND AGGREGATE DERIVATIVES FROM SAID COMPOSITIONS

L. John Minnick, Box 271, Plymouth Meeting, Pa. 19462, assignor to L. John Minnick, Plymouth Meeting, Pa.

Division of Ser. No. 50,206, Jun. 20, 1979, Pat. No. 4,250,134. This application Nov. 17, 1980, Ser. No. 207,273
Int. Cl.[3] C04B *19/04*
U.S. Cl. 106—84 15 Claims

1. Cementitious composition comprising:

(a) the anhydrous spent residue from a fluidized combustion bed of the type wherein limestone particles are suspended in a dry condition in the presence of a carbonaceous fuel in a fluidized medium and wherein the carbonaceous fuel is ignited within said fluidized medium to capture therein substantial amounts of SO_x which is generated upon ignition of said carbonaceous fuel said residue containing coal ash which is substantially free of finely divided siliceous-alumina glass compounds,

(b) water, and

(c) pozzolanic materials.

4,344,797

SHAPED ARTICLES MADE FROM EXPANDED MINERALS

Franz J. Voetz, Camberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,708

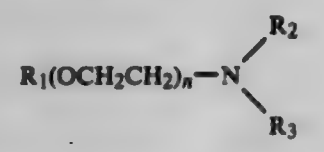
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007738

Int. Cl.[3] C04B *19/04*

U.S. Cl. 106—84 3 Claims

1. Shaped articles made from expanded minerals, obtained by solidification of a mixture of water glass, catalyst and an expanded mineral pretreated with a hydrophobizing agent which comprises substantially

(a) a fatty amine of the formula



in which R_1 is C_8–C_{22}alkyl or -alkenyl, or C_8–C_{22}-alkylphenyl, R_2 and R_3 each are hydrogen, C_1–C_4-alkyl or -alkenyl, phenyl or benzyl, and n is a number of from 0 to 4;

(b) a fatty acid of the formula

$$R_5CO(OCH_2CH_2)_mOH$$

or a fatty alcohol of the formula

$$R_6(OCH_2CH_2)_mOH$$

in which formulae R_5 is C_8–C_{22}alkyl or -alkenyl, R_6 is C_9–C_{23}alkyl or -alkenyl, and m is a number of from 0 to 2; and

(c) a low molecular weight acid, said components (a), (b) and (c) being combined within the following range of molar mixing ratios:

from 1 to 10 moles of component (a) for each 1 to 10 moles of component (c) and 0 to 10 moles of component (b).

4,344,798

ORGANIC POLYISOCYANATE-DIALKYL CARBONATE ADHESIVE BINDER COMPOSITIONS

James M. Gaul, Exton, and Tinh Nguyen, Chaddsford, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 17, 1981, Ser. No. 293,563

Int. Cl.[3] C08L *97/02*

U.S. Cl. 106—123 LC 28 Claims

1. An adhesive binder composition for the preparation of compression moldable lignocellulosic articles which comprises from about 20 to 95 percent by weight of an organic di- or polyisocyanate and from about 5 to 80 percent by weight of a liquid dialkyl carbonate having from 3 to 11 carbon atoms.

11. A compression moldable lignocellulosic composition comprising lignocellulosic particles and from about 1.5 to 12 percent by weight based on oven dried particles of an adhesive binder composition which comprises from about 20 to 95 weight percent organic di- or polyisocyanate and from about 5 to 80 weight percent liquid dialkyl carbonate having from 3 to 11 carbon atoms.

22. A composition board product comprising a compression molded lignocellulosic composition comprising lignocellulosic particles and from about 1.5 to 12weight percent based on oven dried lignocellulosic particles employed of an adhesive binder composition, said binder composition being a mixture of from about 20 to 95 weight percent organic di- or polyisocyanate and from 5 to 80 weight percent liquid dialkyl carbonate having from 3 to 11 carbon atoms.

4,344,799

READILY DISPERSIBLE TiO_2 PIGMENT

Klaus Köhler; Peter Woditsch; Hilmar Rieck, all of Krefeld, and Fritz Rodi, Moers, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,010

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946549

Int. Cl.[3] C09C *1/32, 3/00*

U.S. Cl. 106—300 6 Claims

1. An inorganically after-treated TiO_2 pigment with a coating of hyrophobicizing and hydrophilicizing organic substances, which pigment comprises more than about 95% by weight of TiO_2, shows a loss on annealing of less than about 0.8% (after subtraction of the carbon content) and has a grindometer value smaller than about 30, corresponding to a value of more than about 5.6 on the Hegman scale, the hydrophobicizing organic substance being an organic silicon compound and/or an organic phosphorus compound and the hydrophilicizing organic compound being an amino alcohol.

4,344,800

METHOD FOR PRODUCING HYDROPHOBIC REINFORCING SILICA FILLERS AND FILLERS OBTAINED THEREBY

Michael A. Lutz, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 3, 1980, Ser. No. 156,002

Int. Cl.[3] C04B *31/40;* C09C *1/28, 3/12*

U.S. Cl. 106—308 Q 84 Claims

1. A method for the production of a composition containing a reinforcing silica filler for silicone rubber which comprises the steps of

(I) mixing the following in the presence of a sufficient amount of at least one basic catalyst to render the mixture alkaline:

(A) at least one alkyl silicate selected from the group consisting of methyl orthosilicate, ethyl orthosilicate, methyl polysilicate and ethyl polysilicate wherein said alkyl silicate contains alkoxy radicals,

(B) an amount of water equal to at least 70 percent of one-half of the stoichiometric amount of water required to completely hydrolyze the alkoxy radicals present in said alkyl silicate,

(C) at least one alcohol selected from the group consisting of methanol, ethanol, n-propanol and isopropanol, and

(D) at least one hydrophobe agent selected from the group consisting of R_nSiZ_{4-n}, $(R_3Si)_2NH$, $(R_3Si)_2O$, $(R_2SiO)_x$, $(R_2SiNH)_x$, $R'O(R_2SiO)_yR'$, $(R_3Si)_2NR''$ and $(R_2SiNR'')_x$ wherein each R is selected from the group consisting of aliphatic hydrocarbon radicals of from 1 to 6 inclusive carbon atoms, halogenated alkyl radicals of 1 to 10 inclusive carbon atoms and phenyl radicals, each R′ is hydrogen or R″, each R″ is an alkyl radical of 1 to 4 inclusive carbon atoms, each Z is —OR′, —NHR″, or —NR_2'', n has an average value of from 2 to 3 inclusive, x has an average value of from 3 to 6 inclusive, y has an average value of from 1 to 12 inclusive, the amount of said hydrophobe agent present being sufficient to provide at least 0.05 moles of hydrophobe agent per mole of theoretical SiO_2 units present in said alkyl silicate,

wherein there is a sufficient amount of (A) present to provide at least 3 parts by weight of theoretical SiO_2 units per 100 parts by weight of (A), (B), (C) and any basic catalyst not derived from (D) and wherein the order of mixing is such that (D) is added prior to the occurrence of any gelation of the composition formed upon mixing, and

(II) aging the mixture formed in (I) for a sufficient amount of time to result in a composition containing a hydrophobic reinforcing silica filler for silicone rubber.

43. A composition containing a hydrophobic reinforcing silica filler for silicone rubber obtained in accordance with the method of claim 1.

4,344,801

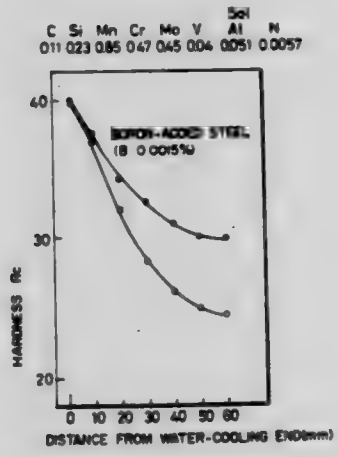
HEAVY THICK HIGH-STRENGTH CASTING HAVING IMPROVED WELDABILITY AND IMPACT PROPERTIES

Tatsuro Kunitake; Hiroo Ohtani; Seiichi Watanabe, all of Amagasaki; Toshiji Takigawa, and Yoshiro Matsumoto, both of Osaka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 109,911, Jan. 7, 1980, abandoned, which is a continuation of Ser. No. 914,225, Jun. 9, 1978, abandoned. This application Feb. 20, 1981, Ser. No. 236,312

Int. Cl.³ C21D *9/00*

U.S. Cl. 148—3 2 Claims



1. A method of manufacturing a heavy, thick, high-strength steel casting having a tensile strength of at least 80 kg/mm^2, a vEo value of at least 8 kg-m/cm^2, a Ceq value of 0.40 to 0.53% for a maximum wall thickness of 50 mm, a Ceq value of 0.50 to 0.63% for a maximum wall thickness of up to 150 mm, and improved weldability, said method comprising the steps of (a) casting a molten steel consisting of 0.07 to 0.20% carbon, 0.01 to 0.60% silicon, 0.50 to 2.00% manganese, 0.03 or less phosphorus, 0.03% or less sulfur, 0.15 to 0.90% molybdenum, 0.01 to 0.10% vanadium, 0.04 to 0.15% sol. aluminum, 0.0005 to 0.0030% boron and 0.002 to 0.015% nitrogen, the remainder being iron, (b) cooling and solidfying the casting, (c) heating the solidified casting to a temperature of 930° C. to 1050° C. for at least one hour, (c) cooling the casting in air, (e) heating the casting to 850° C. to 930° C. for at least one half hour so as to harden the casting, and (f) subjecting the casting to a temperature of 580° C. to 670° C. for at least one hour to temper the casting.

4,344,802

STABLE SLURRY OF INACTIVE MAGNESIA AND METHOD THEREFOR

Michael H. Haselkorn, Carlisle, Ohio, assignor to Armco Inc., Middletown, Ohio

Continuation of Ser. No. 821,595, Aug. 4, 1977, abandoned. This application Dec. 8, 1978, Ser. No. 967,725

Int. Cl.³ B23K *35/24*

U.S. Cl. 148—27 18 Claims

1. A composition for forming an insulative glass film on oriented silicon steel strip and sheet surfaces, comprising an aqueous slurry of magnesia, at least 25% of said magnesia having a citric acid activity greater than 200 seconds, a phosphate-containing compound chosen from the group consisting of calcium phosphates, water soluble ammonium polyphosphate, aluminum phosphate, magnesium phosphates, phosphoric acid, and mixtures thereof, said compound being present within the range of 2% to 25% by weight calculated as P_2O_5, based on the weight of magnesia, and balance essentially water, the magnesia concentration being up to 0.6 gram per cubic centimeter of slurry, said slurry being stable against settling for periods of time up to 10 hours.

10. The method of suspending in water a magnesia at least 25% of which consists of magnesia having a citric acid activity greater than 200 seconds to produce a slurry having increased viscosity and stability against settling, which comprises the step of providing in said slurry a phosphate-containing compound chosen from the group consisting of calcium phosphates, water soluble ammonium polyphosphate, aluminum phosphate, magnesium phosphates, phosphoric acid, and mixtures thereof, said compound being present within the range of 2% to 25% by weight calculated as P_2O_5, based on the weight of magnesia.

4,344,803

PHOTO CATHODE MADE FROM COMPOSITE SEMICONDUCTOR/GLASS MATERIAL

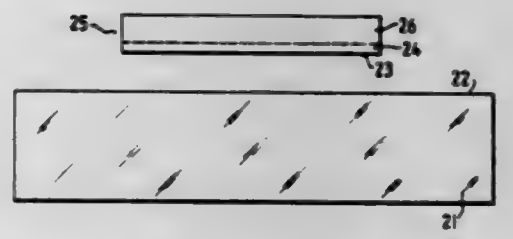
Erich Kasper, Senden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 13, 1980, Ser. No. 130,124

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909956

Int. Cl.³ H01L *29/36, 31/00*

U.S. Cl. 148—33.3 6 Claims



1. A photocathode comprising: a plate-shaped glass substrate; a semiconductor layer having opposed first and second major surfaces with said first major surface being planar and permanently bonded to a surface of said glass substrate through the use of pressure and increased temperature, said semiconductor layer consisting of semiconductor material of a single conductivity type and having a first layer region extending along the entire said second major surface with a homogeneous doping concentration $N=N_o$ and with the remaining portion of said semiconductor layer having a doping concentration which continuously increases with decreasing distance from said first major surface, in a direction normal to same, from said value of $N=N_o$ up to a value of $N=N_s$ at said first major surface, where $N_s>30\ N_o$.

4,344,804

PROCESS AND APPARATUS FOR THE MANUFACTURE OF FIBER-REINFORCED HYDRAULICALLY BOUND ARTICLES SUCH AS CEMENTITIOUS ARTICLES

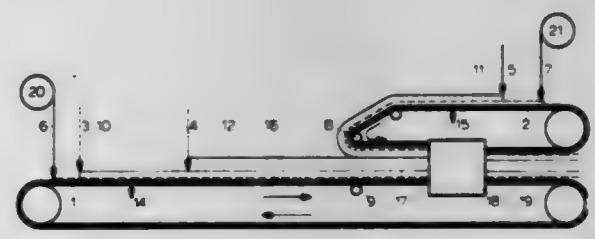
Jan M. J. M. Bijen, Munstergeleen, and Johann J. Jansen, Nieuwstadt, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Nov. 21, 1979, Ser. No. 96,477

Claims priority, application Netherlands, Nov. 21, 1978, 7811434

Int. Cl.³ B28B *1/30, 3/12, 5/02;* B32B *13/02*

U.S. Cl. 156—42 22 Claims



1. A process for manufacturing articles comprised of fiber-reinforced, hydraulically bound materials comprising the steps of forming a first layer by incorporating a hydraulically bindable material into a plurality of continuous plastic networks on a first conveyer, said continuous plastic networks being comprised of a composition of coherent fibers or filaments,

stretched and fibrillated plastic films or perforated sheets of films, continuously forming a second layer by incorporating, a hydraulically bindable material into a plurality of continuous plastic networks on a second conveyor, removing a predetermined quantity of water from each layer and subsequently forming a composite layer structure by depositing the layer formed on one of the conveyors onto the layer formed on the other conveyor so that the one deposited is turned upside down and finishing the article.

4,344,805

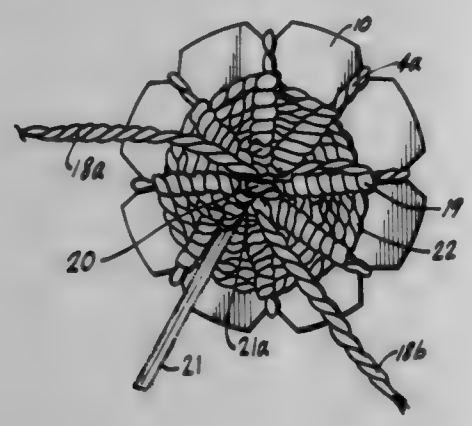
ARTIFICIAL FLOWER MAKING TEMPLATE AND METHOD

Suzanne M. Warde, 424 Ninth Ave., Lindenwold, N.J. 08021

Division of Ser. No. 131,054, Mar. 17, 1980, abandoned. This application Apr. 24, 1981, Ser. No. 257,399

Int. Cl.[3] A41G *1/00*

U.S. Cl. 156—61 3 Claims



1. A method of fashioning artificial flowers from yarn or twine comprising providing an essentially circular template of flat, rigid material having six or other even number of notches equally spaced circumferentially thereof, providing a unitary strand of yarn or twine having a length at least sufficient to complete the formation of a planned artificial flower, wrapping said strand, with a short starting end supported at the geometric center of one, working side of the template, around said template with rotation of the template to provide strand spokes entwined around said starting end of the working side of the template and crossing each other at the center of the reverse side, then spirally lacing said strand around the spokes at said working side by passing the strand under two spokes, back over the second, under it and the next, back over said next and under two, etc., until six or more complete spirals have been completed, then, after looping the strand around the last strand spoke, tieing it at the geometric center of the template to said starting end to a deformable stem-forming member, then cutting the crossed strand spokes centrally of the reverse side of the template, bringing the cut ends around to and joining the stem-forming member in a manner to bring edges of the spirally woven mat as close as possible to the stem forming member, and wrapping together said cut ends and stem forming member to provide a permanent assemblage wherein the woven mat has been converted to a bulbous, pom-pon-like mass closely resembling a natural flower.

4,344,806

METHOD OF MAKING A BEARING

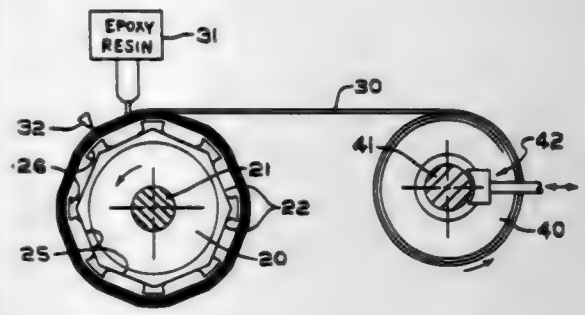
James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,561

Int. Cl.[3] B29C *25/00;* B29H *7/00;* B65H *81/00*

U.S. Cl. 156—154 9 Claims

1. A method of fabricating a bearing assembly comprising the steps of building a flat rectangular sheet of plies of fabric reinforced with an elastomer; abutting a plurality of strips of elastomer in a laterally spaced relationship to said flat sheet; vulcanizing said strips and said flat sheet into an integral unit; wrapping said flat sheet into a circumferential hoop around a mandrel with the laterally spaced strips on the inner periphery and abutting said mandrel in a circumferentially spaced relationship; simultaneously rotating said mandrel while wrapping



a fiber fabric onto the outer circumference of said hoop and impregnating the fiber fabric with a plastic resin; and curing said resin to complete a fiber reinforced outer shell to provide a bearing assembly.

2. A method of fabricating a bearing assembly as set forth in claim 1 wherein said completed bearing assembly is machined to a predetermined diameter.

4,344,807

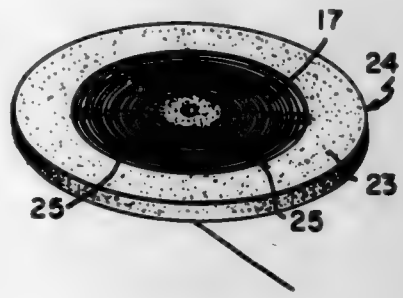
SPIRAL WINDING OF FILAMENTS

Joseph C. Dennesen, 62 Bridge St., Beverly, Mass. 01915, and Francis G. Dennesen, 16 Long Bow Cir., Lynnfield, Mass. 01940

Filed Oct. 23, 1978, Ser. No. 953,912

Int. Cl.[3] B32B *31/00;* H04R *19/00*

U.S. Cl. 156—155 13 Claims



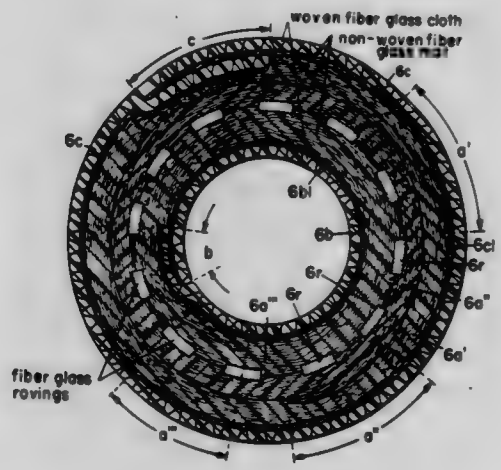
1. A method for spiral winding a filament comprising, contacting a leading portion of said filament with a portion of a spiral-wound groove impressed in a surface of a winding member, pressing or directing said filament into said groove by means of a guide member while said winding member is rotated, to wind said filament into a spiral winding on said winding member, releasably holding said spiral winding in said groove, contacting said spiral winding with bonding material on a backer member to form a spirally wound element and removing said element from the winding member.

4,344,808

METHOD FOR MANUFACTURING SYNTHETIC RESIN LAMINATE TUBING HAVING A HIGH BURSTING STRENGTH

Daniel P. Healey, Jr., 6 Middle Rd., Merrimacport, Mass. 01860, and Delbert L. George, 1708 Bayshore Dr., Englewood, Fla. 33533

Continuation of Ser. No. 659,334, Feb. 19, 1976, abandoned, which is a division of Ser. No. 579,972, May 22, 1975, Pat. No. 3,979,709. This application Dec. 8, 1977, Ser. No. 858,811
Int. Cl.[2] B29D *23/10*
U.S. Cl. 156—166 1 Claim



1. A method of manufacturing electric fuse casings by the pultrusion process including the steps of

(a) wrapping a first composite strip consisting of woven glass fiber cloth having a coextensive liner of non-woven fiber mat material around a mandrel in such a way that said woven glass fiber cloth is on the inside and said liner on the outside, and that the edge regions of said first strip overlap in a direction longitudinally of said mandrel;

(b) wrapping at least one second strip of non-woven glass mat having non-uniformly oriented fibers around said first strip in such a way that the longitudinal edges of said second strip overlap in a direction longitudinally of said mandrel;

(c) depositing a plurality of spaced glass fiber rovings in squirrel cage-like fashion around said mandrel and over said second strip in a direction longitudinally of said mandrel;

(d) wrapping at least one third strip of non-woven glass-mat having non-uniformly oriented fibers around said mandrel and over said rovings in such a way that the longitudinal edges of said third strip overlap in a direction longitudinally of said mandrel;

(e) wrapping a fourth strip consisting of woven glass fiber cloth having a coextensive liner of non-woven fiber mat material around said mandrel in such a way that said woven glass fiber cloth is on the outside and said liner is on the inside and that said edge regions of said fourth strip overlap in a direction longitudinally of said mandrel;

(f) jointly expanding said first strip, said second strip, said rovings, said third strip, and said fourth strip on said mandrel by transferring the same from a region of relatively small diameter to a region of relatively large diameter; and

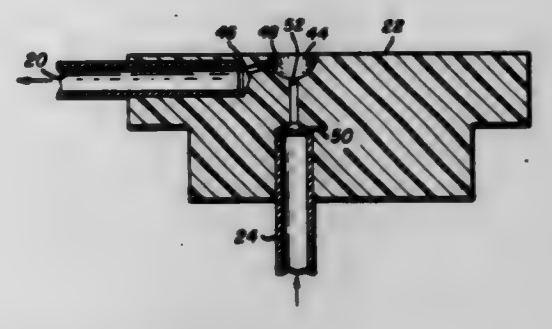
(g) establishing a flow of liquid thermosetting synthetic resin inside said mandrel in a direction longitudinally thereof and allowing said thermosetting synthetic resin to escape from said mandrel in a direction substantially transversely of said mandrel at a point thereof where said first strip, said second strip, said rovings, said third strip, and said fourth strip have been jointly expanded whereupon the same are then jointly impregnated with synthetic resin.

4,344,809

JET ETCH APPARATUS FOR DECAPSULATION OF MOLDED DEVICES

Ben L. Wensink, 1236 Lisa La., Los Altos, Calif. 94022

Filed Sep. 29, 1980, Ser. No. 192,076
Int. Cl.[3] B44C *1/22*; C03C *15/00, 25/06*; B41C *1/00*
U.S. Cl. 156—345 9 Claims



1. A jet etch apparatus comprising:

suction means and a first tube connected to the suction means such that when the suction means are in operation fluid is drawn towards the suction means through said first tube;

an etching block having a shallow recess at one surface, an exit hole extending to said recess and coupled to said first tube, and an intake portal extending between said recess and the exterior of the etching block; and

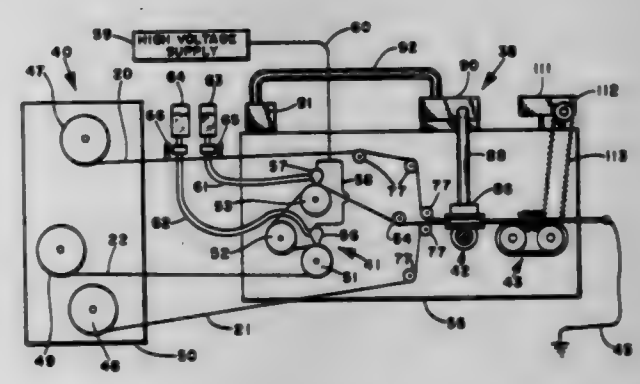
an etchant vessel for holding an etchant solution and including a second tube running from said etchant solution to said intake hole of the etching block.

4,344,810

APPARATUS FOR MAKING TAPE TRANSDUCER

Jon Becker, Milpitas; G. Kirby Miller, Saratoga, and Charles F. Burney, Orland, all of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 16, 1981, Ser. No. 244,491
Int. Cl.[3] H01S *4/00*
U.S. Cl. 156—379.7 12 Claims



1. A machine for making a composite tape transducer, said transducer comprising an inner conductive strip having dielectric layers bonded to and covering opposite sides thereof, a pair of outer conductive strip means having equal widths greater than the width of said inner strip, said machine comprising

means for electrically grounding said inner strip,

first means for storing said covered inner strip,

second and third means for storing said outer strip means, respectively,

a pair of substantially identical electrical charging devices, each of said devices having electrode means adapted to be connected to a source of DC voltage,

means for directing said covered inner strip successively through said charging devices with said dielectric layers in operative contact with said electrode means, respectively, whereby to electrically charge said layers,

a mold having a pair of juxtaposed plates, at least one of said plates having a recess with a width not less than the width of the inner strip,

means for directing said outer strip means towards and generally symmetrical to opposite sides, respectively, of said inner strip and between said mold plates, said outer strip means having marginal edge portions extending beyond the side edges, respectively, of the inner strip, said inner strip being aligned with said plate recess with adjacent parts of the plates engaging said marginal edge portions, respectively, of said outer strip means,

means for resiliently biasing said plates together whereby to seal said marginal edge portions of said outer strip means together, and

means for pulling said outer strip means and the covered inner strip from said storing means, respectively, and successively through said charging devices and through said mold.

2. The machine according to claim 1 with

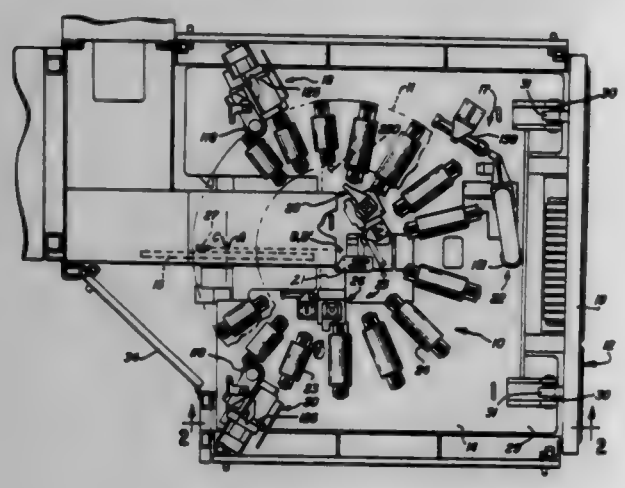
means to heat said outer strips and said plates whereby to heat seal said marginal edge portions of said outer strips together.

4,344,811

BODY POSITIONING AND DRIVING APPARATUS

James E. Carney, Santa Cruz, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 14, 1980, Ser. No. 262,073
Int. Cl.³ B29H *17/32*
U.S. Cl. 156—397 **21 Claims**



1. An apparatus (10) for positioning and for rotating a toroidal body (11) relative to a shuttle (15), said apparatus (10) having a frame (19) and a support table (14) on said frame (19), the shuttle (15) being carried by said frame (19) and rotatable in a plane lying substantially transverse to said support table (14), comprising:

carrier roller means (23,24) for supporting a toroidal body (11) for rotation relative to said support table (14) about a rotational axis (B,B') of the toroidal body (11); said carrier roller means (23,24) being mounted on said support table (14) and having longitudinal axes radiating generally from said rotational axis (B,B');

means (17) for locating the rotational axis (B,B') of the toroidal body (11) relative to a rotational center (A) of said shuttle (15) and for centering a cross section of the toroidal body (11) within the shuttle (15);

means (22) for rotating the toroidal body (11) through the shuttle (15); and

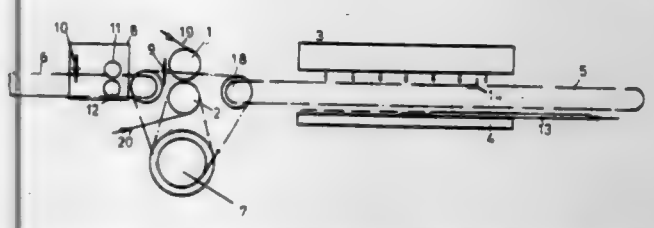
means (106,125,159) for selectively moving said locating means (17) between a plurality of positions accommodating toroidal bodies of different diameters.

4,344,812

DEVICE FOR THE LAMINATION OF INSULATING BOARDS

Erika de Masi, Zeisigweg 44, D 6072 Dreieich, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,446
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935418
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—499 **11 Claims**



1. An apparatus for the automatic lamination of copper-coated insulating boards for circuit boards comprising:

means for transport of an insulating board core toward a laminating station;

a pair of laminating rolls arranged for receiving said insulating board from said first transport means and comprising a laminating station;

a motor operatively attached to said laminating rolls for rotation thereof;

means for heating said insulating board core prior to passage through said laminating rolls;

means for transport of a laminated insulating board away from said laminating rolls operatively attached to said motor;

a cutting blade operatively disposed in a cutting beam and moveable in the direction transverse to the laminated insulating board;

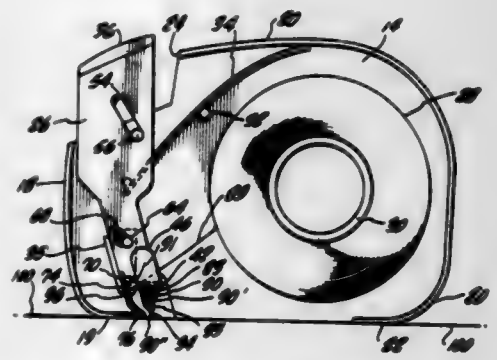
a friction clutch operatively attached to said motor and said cutting beams for synchronized movement and cutting of said laminated insulating board.

4,344,813

TAPE DISPENSER

Manning Holoff, Los Angeles, and James D. Riggins, N. Hollywood, both of Calif., assignors to Manning Holoff Co., Van Nuys, Calif.

Filed Dec. 15, 1980, Ser. No. 216,083
Int. Cl.³ B32B *31/18*; B44C *7/00*
U.S. Cl. 156—527 **13 Claims**



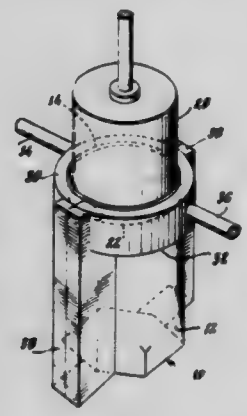
4. A pressure sensitive tape dispenser comprising a housing, means for mounting a roll of pressure sensitive tape within said housing, a tape cutting member disposed within said housing, a manually operative applicator element slidably mounted within said housing, a tape support bar carried by said applicator element, a tape gripping member defining a tape gripping bar, said tape gripping member being mounted for pivotal and limited linear movement on said applicator element such that said tape gripping bar is disposed forwardly and substantially parallel with said tape support bar, biasing means for urging said applicator element upwardly within said housing, and guide means for directing said tape gripping bar from said tape

4,344,814

APPARATUS FOR HEAT SEALING ROUND CONTAINERS

Edwin C. McLaren, Apple Valley, Minn., assignor to Champion International Corporation, Stamford, Conn.

Division of Ser. No. 108,034, Dec. 28, 1979, Pat. No. 4,305,771.
This application Sep. 22, 1981, Ser. No. 304,590
Int. Cl.³ B32B *31/20, 1/08*
U.S. Cl. 156—581 1 Claim



1. Apparatus for sealing together a multi-piece circular rim in a tub shaped container, comprising:

a male plug member adapted to be inserted into the interior of said container and having surface portions for conformingly engaging the surface of said rim inside said container; and

a heated press assembly including:

(1) a multi-piece, annularly shaped, shiftably mounted collar having surface areas adapted to surround the entire periphery of said rim and adapted to conformingly engage the exterior surface of said rim, at least certain of the pieces of said multi-piece collar being shiftable from a standby position spaced from said rim to an operated position in engagement with said rim, and

(2) electrical heating means carried by each of said pieces of said multi-piece collar and adapted to be coupled with a source of thermal energy,

said plug member, said collar and heating means cooperating to apply heat evenly around the entire periphery of said rim when said collar is shifted to said operated position thereof.

4,344,815

METHOD FOR CHARACTERIZING THE OXYGEN CONTENTS OF CZOCHRALSKI GROWN SILICON RODS

Victor Cazarra; Andre Schwab, both of Mennecy, and Patrick Zunino, Evry, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1980, Ser. No. 158,003
Claims priority, application France, Jun. 29, 1979, 79 17302
Int. Cl.³ C30B *15/00*
U.S. Cl. 156—601 12 Claims

1. A method for characterizing the oxygen content of a Czochralski grown silicon rod which is to be cut into wafers, comprising the following steps:

(A) stabilizing the rod by heating;

(B) cutting a first portion of the rod close to a first end of the rod and measuring its resistivity;

(C) annealing said portion in a neutral atmosphere at a temperature in the range of approximately 600° to 900° C. for a period of time sufficient to generate donors; and

(D) cleaning said portion and measuring the resistivity increment to characterize the oxygen concentration from the resistivity increment.

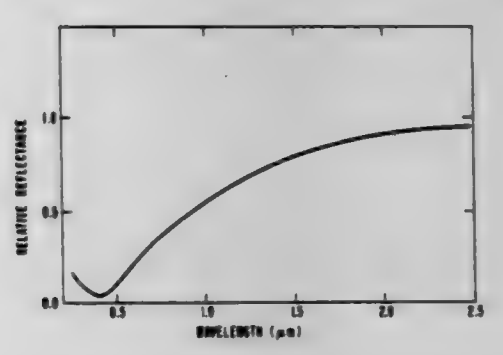
wherein said first end is the rod head and, if the resistivity increment is lower than the critical value corresponding to a significant donor generation, the remaining portion of the rod is selected to be used on bipolar device production lines.

4,344,816

SELECTIVELY ETCHED BODIES

Harold G. Craighead, Fair Haven; Richard E. Howard, Holmdel, and Donald M. Tennant, Freehold, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 19, 1980, Ser. No. 218,089
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—643 12 Claims



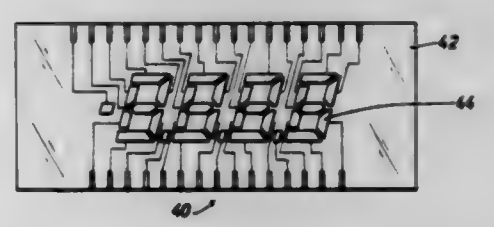
1. A process for producing an article comprising the steps of forming a mask on the surface of a substrate and etching said substrate by anisotropic etching characterized in that said mask is formed by depositing onto said substrate a material that does not substantially wet said surface of said substrate, and wherein said etching produces a ratio of vertical etch rates of said substrate to said mask of greater than 1.

4,344,817

PROCESS FOR FORMING TIN OXIDE CONDUCTIVE PATTERN

Rhodes R. Chamberlin, El Paso, Tex., assignor to Photon Power, Inc., El Paso, Tex.

Filed Sep. 15, 1980, Ser. No. 186,855
Int. Cl.³ C03C *17/10*
U.S. Cl. 156—645 18 Claims



1. A method of manufacture for transparent electrically conductive circuits, comprising the steps of:

forming on a transparent vitreous substrate a layer of polycrystalline material having a first selected range of crystal diameters,

selectively removing portions of said polycrystalline material to define a first desired pattern,

forming a layer of transparent electrically conductive material over an area containing at least said desired pattern, and

removing remaining portions of said polycrystalline material and overlying portions of said transparent conductive material therewith, wherein remaining portions of said transparent electrically conductive material define a first circuit.

support bar as said applicator element is moved downwardly within said housing thereby allowing tape to be withdrawn from said housing and, upon said applicator element being raised by said biasing means, for directing said tape suppport bar against said gripping bar for gripping said tape therebetween and pulling said tape over said cutting member thereby severing said tape from the tape roll.

4,344,818

AIR/WATER HYBRID FORMER

David A. Nuttall, and Sung H. Hong, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 4, 1981, Ser. No. 259,962
Int. Cl.³ D21H *5/24*
U.S. Cl. 162—111 6 Claims

1. A method of forming a multi-layer absorbent web from a single headbox comprising:

(a) forming a first outer layer of papermaking fibers from an aqueous fiber stock slurry provided from a first flow channel of said headbox;

(b) forming a second inner layer of fibers, said fibers in said second inner layer being provided from a second flow channel of said headbox and being entrained in an air stream and having reduced inter-fiber hydrogen bonding therebetween;

(c) forming a third outer layer of papermaking fibers from an aqueous paper stock slurry provided from a third flow channel of said headbox;

(d) dewatering said first and third outer layers of fibers such that significant inter-fiber hydrogen bonds are formed between fibers within each of said first and third layers; and

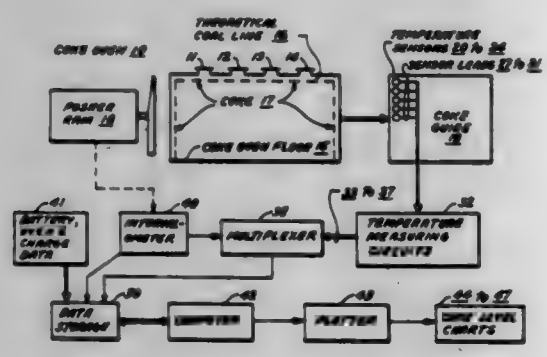
(e) creping at least one of said first or third outer layers of fibers.

4,344,819

METHOD OF DETERMINING COKE LEVEL

John H. Gerdes, Jr., Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jun. 23, 1980, Ser. No. 161,845
Int. Cl.³ C10B *35/00*; G01K *7/00*
U.S. Cl. 201—1 8 Claims



1. A method of determining batch-processed coke level during a cycle of pushing hot coke from an oven through a coke guide, which method comprises:

(a) measuring coke vertical temperature profile data by sensing plural coke temperatures at plural coke guide levels during lengthwise pushing of the coke, said levels being within an expected coke height range referenced to a coke oven floor;

(b) storing in a data matrix plural coke vertical temperature profile data sets with each set measured at a different one of plural intervals related to the coke oven push;

(c) determining observed coke level data at each of said intervals by detecting the highest level at which a temperature sensor was activated by coke in each stored coke vertical temperature profile data set; and

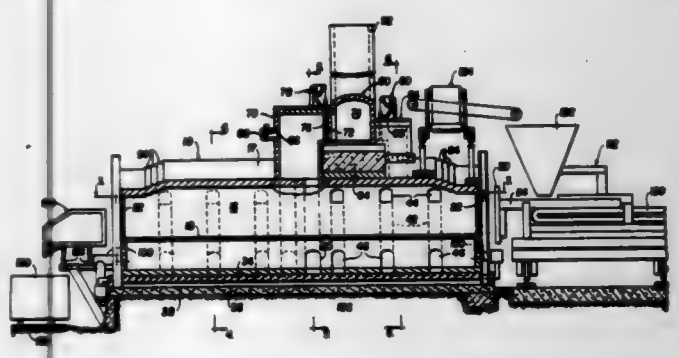
(d) utilizing the determined coke level data to represent hot coke level existent in the coke oven before the pushing cycle.

4,344,820

METHOD OF OPERATION OF HIGH-SPEED COKE OVEN BATTERY

Buster R. Thompson, Louisville, Tenn., assignor to Elk River Resources, Inc., Knoxville, Tenn.

Division of Ser. No. 918,054, Jun. 22, 1980, Pat. No. 4,287,024.
This application Dec. 19, 1980, Ser. No. 218,258
The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.
Int. Cl.³ C10B *21/20, 27/04, 31/08*
U.S. Cl. 201—15 10 Claims



1. In a non-recovery coking operation in which coal is coked in a plurality of individual ovens constructed in side-by-side relation in a battery, the ovens each having an elongated coking chamber with oven doors normally closing the opposed ends of the chamber and a system of sole flues extending beneath the floor and connected with the chamber for burning gases produced during the coking process to supply heat to the chamber, the method of controlling charging gas emissions during charging of the individual ovens comprising,

providing an elongated exhaust gas tunnel connected with the sole flues of each of a plurality of such ovens and simultaneously exhausting hot flue gases from the sole flues of said plurality of ovens into the exhaust gas tunnel,

providing a closeable gas flow bypass between the top portion of the respective coking chambers and the elongated exhaust gas tunnel,

removing one door only and opening the gas flow bypass from the oven to be charged and charging the oven with coal through the removed door while maintaining the gas flow bypass oven,

closing the coking chamber by replacing the removed oven door after the coal has been charged into the chamber, and

closing the gas flow bypass after the oven has been charged and closed, whereby gases and emissions evolved in the coking chamber flow through the gas flow bypass directly into the elongated exhaust gas tunnel to be mixed with and burned by hot flue gases exhausted from the sole flues of other ovens in the battery only during the charging operation.

4,344,821

APPARATUS FOR CONTINUOUSLY CARBONIZING AND ACTIVATING CARBONACEOUS MATERIALS

James F. Angelo, II, P.O. Box 212, Jonesboro, Ark. 72401

Division of Ser. No. 95,366, Nov. 19, 1979, Pat. No. 4,273,619.
This application Dec. 5, 1980, Ser. No. 213,564
Int. Cl.³ C10B *1/10*
U.S. Cl. 201—33 3 Claims

1. A process for carbonizing a carbonaceous raw material to reduce it to a char, and for subsequently activating said char to produce activated carbon, both in a continuous operation in a single retort, consisting of the successive steps of:

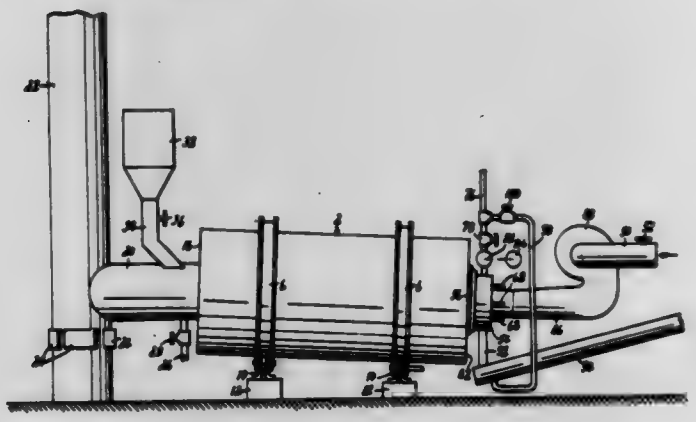
a. introducing said raw material in particulate form into the higher end of an inclined rotary retort, whereby said material is caused by rotation of said retort to advance toward the lower end of said retort in the form of a tumbling bed during processing, and continuously removing the processed material from the lower end of said retort,

b. initially heating said raw material in the upper end zone of

said retort to a temperature sufficient to initiate a self-sustaining carbonization reaction which releases heat and combustible hydrocarbon gases,

c. injecting air into the higher end zone of said retort to burn with said hydrocarbon gases to supply heat for bringing freshly added raw material to carbonization temperature, and so regulating the material and air delivery rates that the carbonization reaction is substantially completed within the higher end zone of the retort,

d. inducing a continuous draft in said retort toward the higher end thereof,



e. pre-heating a non-combustible gaseous oxidizing agent, but not air, exteriorly of said retort to a temperature at least as high as that at which the material of the tumbling bed enters the lower end zone of the retort, and

f. injecting said oxidizing agent into only the lower end zone of the retort, said injection step being performed by directing forcible jets of said oxidizing agent from a position closely adjacent said material bed, directly into said bed, whereby to inhibit free circulation of said agent exteriorly of said bed, and to stir and agitate the bed material to improve heat transfer therebetween.

4,344,822

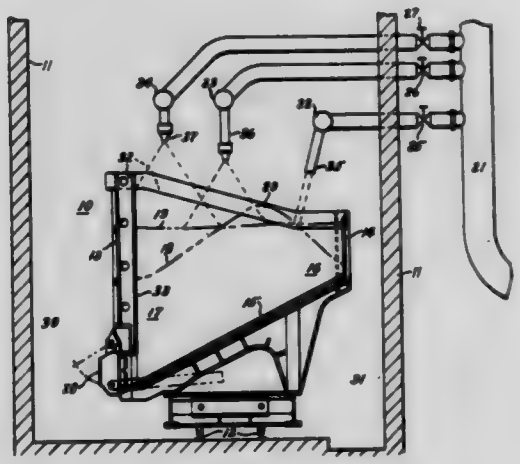
ONE-SPOT CAR COKE QUENCHING METHOD

S. Robert Schwartz, Valparaiso; William E. Swan, Jr.; Robert C. Fetterman, both of Chesterton, all of Ind., and Victor A. Neubaum, deceased, late of Coopersburg, Pa. (by Doris W. Neubaum, administratrix), assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 31, 1979, Ser. No. 89,847

Int. Cl.³ C10B *39/08, 39/14*

U.S. Cl. 201—39 **5 Claims**



1. A process for quenching hot coke in a substantially watertight one-spot quench car having a sloping bottom which slopes downwardly from the bench side of the quench car to the wharf side of the quench car and provides a shallow coke bed portion and a deep coke bed portion and which is positioned in a quenching station beneath independently operable quench headers mounted substantially parallel to the longitudinal axis of the one-spot quench car and substantially coextensive therewith, the sequential steps comprising:

(a) initiating the projection of spaced apart solid streams of quenching liquid from a first quench header onto the surface of the shallow coke bed portion,

(b) commencing the flow of quenching liquid from a plurality of spray nozzles onto the hot coke after the initiating of the solid streams,

(c) ceasing the projection of spaced apart solid streams of quenching liquid onto the surface of the shallow coke bed portion,

(d) ceasing the flow of quenching liquid from the plurality of spray nozzles,

(e) draining from the watertight one-spot coke quench car the quenching liquid which is allowed to accumulate in the bottom of the quench car, and

(f) discharging the coke from the one-spot coke quench car, whereby coke is provided having an average moisture content of between about 4% and about 10% and a standard deviation from average coke moisture of less than about ±4%.

4,344,823

DISCHARGING METHOD AND APPARATUS FOR DRY COKE COOLING CHAMBERS

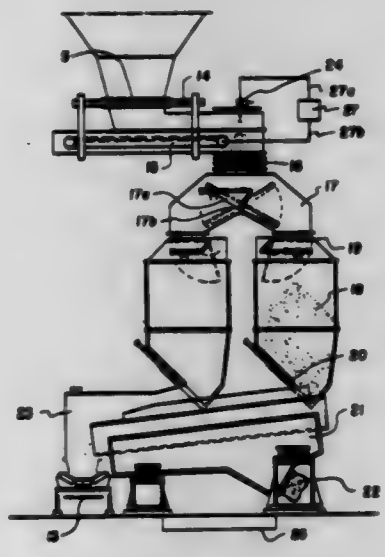
Josef Stratmann, and Klaüs Mrongowiüs, both of Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG., Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,346

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014574

Int. Cl.³ C10B *39/02, 39/12, 45/00*

U.S. Cl. 201—41 **4 Claims**



1. A method of discharging coke from a dry coke cooling chamber having an ante-chamber for receiving coke to be cooled, a cooling space downstream of the ante-chamber and an outlet for the coke downstream of the cooling space, comprising the steps of:

feeding coke from the cooling chamber outlet to an inlet of a breeches chute, continuously on an endless conveyor;

selectively discharging coke fed to the breeches chute to one of a plurality of outlets of the breeches chute;

providing a lock bin at each outlet of the breeches chute having a pair of gastight gates, an upper one of the gates provided with a slighter structure than the lower one so that the lower one only is adapted to support coke thereon;

opening an upper one of the gastight gates only when coke is discharged from the breeches chute into that one of the lock bins having the open upper gastight gate;

holding a lower gastight gate of the lock bin closed as coke fills into the lock bin through the open upper gastight gate; and

opening the lower gate when the upper gate is closed to

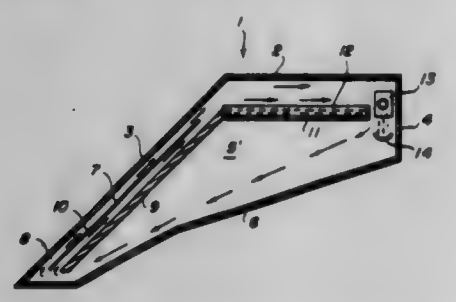
discharge coke from the lock bin which now has a closed upper gate.

4,344,824

RECIRCULATING NATURAL CONVECTION SOLAR STILL

Bertrand S. Soleau, Jr., 4203 Kincaid Ct., Chantilly, Va. 22021

Filed Jun. 27, 1980, Ser. No. 163,523
Int. Cl.[3] B01D *3/00*; F24J *3/02*; C02B *1/04*
U.S. Cl. 202—234 6 Claims



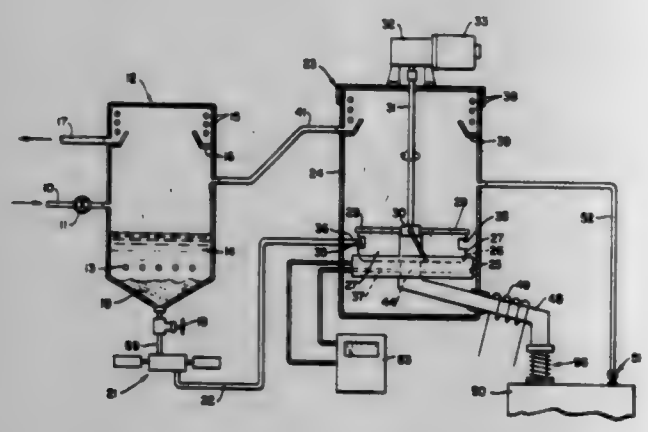
1. A solar still comprising means for defining a natural recirculating air convection loop including means for heating relatively dry air comprising a heat absorber means positioned between a first angularly disposed transparent plate and an air partition means; means for providing relatively moist air from said relatively dry air comprising a horizontally disposed transparent plate positioned over a first trough for containing saline water; and means for removing moisture from said relatively moist air to provide said relatively dry air, comprising a condenser means positioned over a second trough for collecting condensed moisture.

4,344,825

METHODS AND APPARATUS FOR SEPARATING CLEANING SOLVENTS FROM ROSIN FLUX AND OTHER CONTAMINANTS

Darrel R. Colwell, Oklahoma City, Okla., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 22, 1981, Ser. No. 256,427
Int. Cl.[3] B01D *3/02*
U.S. Cl. 203—1 18 Claims



13. A system for removing contaminants from a cleaning fluid, which comprises:

a plate with an annular-shaped trough formed therein;

a first distillation tank for distilling the cleaning fluid and collecting liquid contaminants at the bottom of the tank;

a metering device having an entrance opening and exit opening for compressing and transferring discrete metered charges of contaminant from the entrance opening to the exit opening;

means for flowing the liquid contaminant from the bottom of the first distillation tank to said entrance opening;

means for flowing the metered charges of liquid contaminant from the exit opening to the trough in said plate;

means for cyclically operating the metering device to transfer discrete charges of contaminant to the exit opening to flow said charges through said flowing means to deposit each charge in said trough;

a second distillation tank enclosing said plate for distilling the charges flowed into said trough;

a plurality of blades, each blade having a shape conforming to the shape of said trough, each adjacent pair of blades cooperating with the trough to define a plurality of compartments of equal volume to receive only one of each successive charge;

said plate having a discharge opening formed therein to extend in and across said trough at a position adjacent to but spaced from said discharge opening;

means for rotating said blades to move along said annular trough to advance each compartment to move each deposited discrete charge along a portion of said trough into said discharge opening; and

means for delivering the distilled cleaning fluid from the second distillation tank back into the first distillation tank.

18. A method of separating perchloroethylene from a mixture of perchloroethylene, rosin and other contaminants, which comprises:

placing the mixture in a first still to heat and vaporize a substantial portion of the perchloroethylene while collecting a liquid residue of perchloroethylene, rosin and other contaminants in the bottom of the still;

removing the liquid residue from the bottom of the first still and forming discrete charges of predetermined volume;

cyclically transferring the discrete charges into a trough formed in a plate contained in a second still, each of said discrete charges being transferred into only one of a succession of compartments of equal volumes,

heating the plate to a sufficient temperature to vaporize another substantial portion of the perchloroethylene from the residue mixture without decomposing or charring the perchloroethylene, rosin and other contaminants;

condensing the perchloroethylene in the top portion of the second still;

returning the condensed perchloroethylene to the first still for further distillation;

moving the compartments with the discrete charges of residue mixture along the trough while the perchloroethylene is vaporized;

passing the non-vaporized residue mixture from the trough into a closed receiving receptacle;

heating the residue mixture as it passes from the trough into the receiving receptacle; and

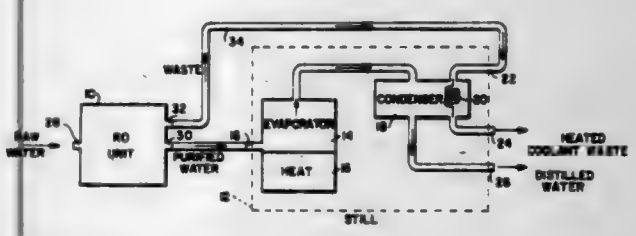
venting any perchloroethylene vapors in the receptacle back into the second still.

4,344,826

DISTILLATION SYSTEM AND PROCESS

Verity C. Smith, Dedham, Mass., assignor to Vaponics, Inc., Plymouth, Mass.

Filed Jun. 20, 1980, Ser. No. 161,338
Int. Cl.[3] C02F *1/04, 1/44*
U.S. Cl. 203—2 10 Claims



1. A distillation system comprising:

an RO unit having a feed water inlet, a treated water outlet, and a waste water outlet;

a still having an evaporator and a condenser, said evaporator having a treated water inlet and a treated water outlet, and said condenser having a treated water inlet, a treated

water outlet and a cooling coil with a feed water inlet and a heated water outlet, and

conduit means for connecting said evaporator to said condenser, for connecting said RO unit waste water outlet to said cooling coil inlet and for connecting said RO unit treated water outlet to said evaporator inlet.

4,344,827

PROCESS FOR WORKING UP NITRIC ACID

Wolfgang Auge, Cologne; Bernd Thelen, Leverkusen, both of Fed. Rep. of Germany; Karl-Werner Thiem, Charleston, S.C., and Rütger Neeff, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 50,906, Jun. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 820,529, Jul. 29, 1977, abandoned. This application Jun. 30, 1980, Ser. No. 164,445

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637734

Int. Cl.³ B01D *1/00, 3/14*

U.S. Cl. 203—13 10 Claims

1. Process for working up aqueous nitric acid which has a concentration of about 70 to about 80% by weight and contains anthraquinone and nitroanthraquinones in solution or suspension, said process comprising (1) feeding the nitric acid containing anthraquinone and nitroanthraquinones into the rectification section of a rectification column, (2) taking off nitric acid which has a concentration above the azeotropic concentration at the top of the column until, in the liquid phase, the azeotrope point for nitric acid has been reached and then (3) completely evaporating this acid in a separate apparatus to obtain the azeotropic nitric acid with the proviso that in step (2) the weight ratio, adjusted to provide a non-explosive mixture of nitric acid plus water to organic compounds is at least 13, 8, 5 and 4 when the nitric acid concentration in the liquid phase is 80, 75 and 70 and 68 by weight, respectively.

4,344,828

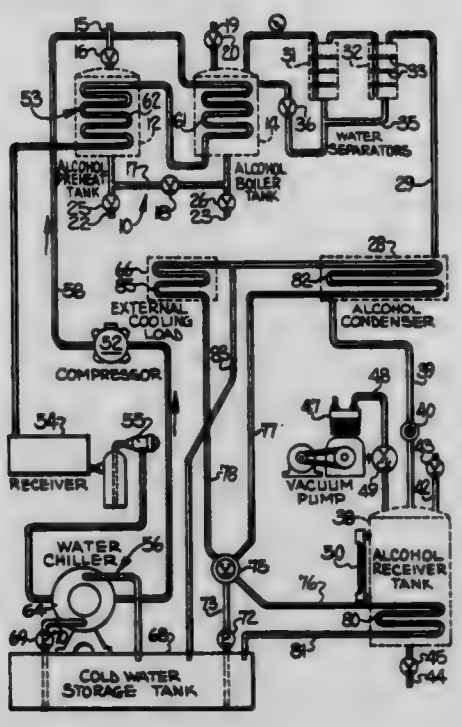
ENERGY EFFICIENT DISTILLATION APPARATUS

James D. Melton, P.O. Drawer 206, Shelby, N.C. 28150

Continuation-in-part of Ser. No. 115,904, Jan. 28, 1980, abandoned. This application Aug. 31, 1981, Ser. No. 297,852

Int. Cl.³ B01D *3/02*

U.S. Cl. 203—19 7 Claims



1. A method of distilling grain mash at a dairy farm or the like and characterized by the ability to efficiently utilize the required energy and the resulting products, and comprising the steps of

providing distilland evaporating receptacle means, distillate condensing receptacle means, and a conduit operatively interconnecting the evaporating receptacle means and condensing receptacle means,

providing a bulk milk container for containing milk,

operating a vapor compression refrigeration system which comprises condenser coil means for producing heat energy and evaporator coil means for producing a cooling potential, and including directing at least a substantial portion of the heat energy of said condenser coil means to said evaporating receptacle means to heat and vaporize the distilland therein, and selectively directing the cooling potential from said evaporator coil means to either one or both of said condensing receptacle means and said bulk milk container, and

recovering an alcoholic distillate from said condensing receptacle means.

4,344,829

PROCESS FOR RECOVERY OF BENZENE AND CHLORINE FROM WASTE PRODUCTS

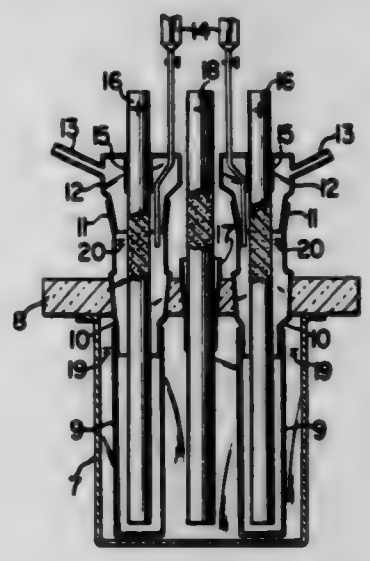
Heinz-Manfred Becher, Bingen, Fed. Rep. of Germany, assignor to Celamerck GmbH & Co. KG, Ingelheim, Fed. Rep. of Germany

Continuation of Ser. No. 164,589, Jun. 30, 1980, abandoned. This application Mar. 13, 1981, Ser. No. 243,386

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926329

Int. Cl.³ C25B *1/26;* C25C *1/16, 3/04*

U.S. Cl. 204—72 4 Claims



1. In the method of recovering benzene and chlorine from a mixture of isomeric hexachlorocyclohexanes obtained as a waste product in the manufacture of lindane, which comprises reacting said mixture with zinc and subjecting the resulting zinc chloride to electrolysis, the improvement which resides in that the reaction is performed with a solution of said mixture of isomeric hexachlorocyclohexanes in a substantially water-immiscible organic solvent which is stable under the reaction conditions in the cathode compartment of a diaphragm electrolysis cell, and the zinc is produced at the cathode of said cell.

4,344,830

UV CURABLE RESINS AND SULFONATE ESTERS OF BENZOTRIAZOLES USED IN SUCH RESINS

Daniel R. Olson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 660,260, Feb. 23, 1976, abandoned. This application May 20, 1980, Ser. No. 151,663

Int. Cl.³ C08K *5/27;* C08F *2/50*

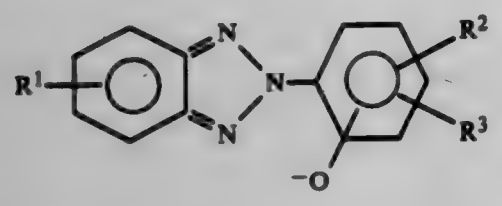
U.S. Cl. 204—159.16 5 Claims

1. A UV curable paintable composition consisting essentially of UV curable material selected from the class consisting of an acrylic monomer-polymer mixture, a polyester resin, an epoxy

resin, and a polythiol-polyene resin, from 1 to 10 parts of a photoinitiator selected from the class consisting of ketones, benzoin ethers, quinones, and a cationic initiator, per 100 parts of the UV curable organic material and 0.1 to 10% by weight of the UV curable composition of a sulfonate ester of the formula,

$$Z\text{-}[SO_2]\text{-}R,$$

where Z is



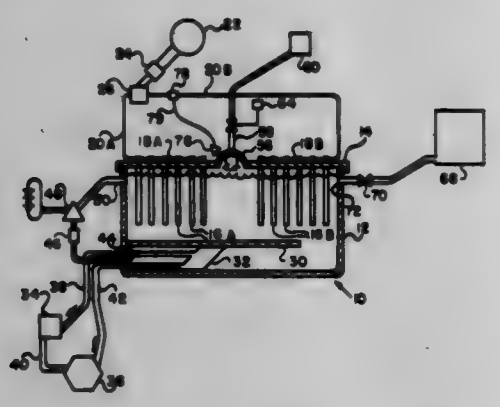
R is selected from $C_{(6-13)}$ aryl radicals and R^1, R^2, and R^3 are the same of different monovalent radicals selected from hydrogen, halogen, $C_{(1-20)}$ alkyl, $C_{(1-20)}$ alkoxy, and R radicals.

4,344,831

APPARATUS FOR THE GENERATION OF GASEOUS FUEL

Charles T. Weber, 11307 Green Bay Ave., Chicago, Ill. 60617

Filed Sep. 12, 1980, Ser. No. 186,607
Int. Cl.³ C25B *9/00*
U.S. Cl. 204—228 5 Claims



1. Apparatus for the electrolytic generation of a hydrogen-oxygen fuel mixture comprising:

an electrolytic tank containing an electrolyte solution and having a plurality of carbon electrodes suspended therein;

a horizontally extending baffle in said tank beneath said electrodes partially dividing said tank into an upper chamber and a lower chamber, said baffle being open at one end;

a recirculating electrolyte line communicating with the upper chamber of said tank and with the closed end of said lower chamber and having solution recirculating means therein;

means connected to said tank for cooling the electrolyte solution;

a dome in the top of said tank for accumulating gases formed in said tank by electrolysis;

a gas outlet in the top of said dome; and

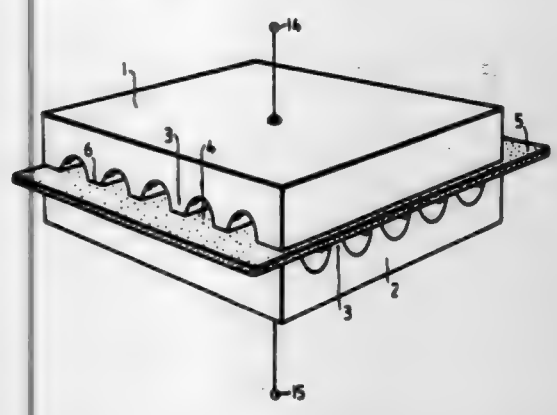
a source of electric power communicating with said electrodes.

4,344,832

ELECTRODE SYSTEM FOR A FUEL OR ELECTROLYSIS CELL ARRANGEMENT

Reinhard Dahlberg, Flein, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,110
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926776
Int. Cl.³ C25B *9/00, 11/02, 11/04;* H01M *2/00*
U.S. Cl. 204—258 10 Claims



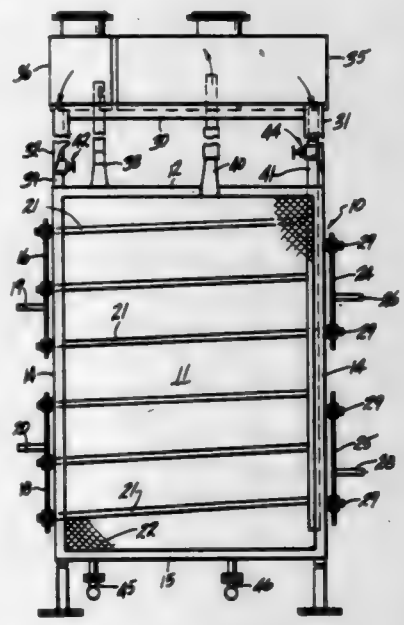
1. An electrode system for a fuel and/or electrolysis cell, in which: two plates or discs made from suitable material are provided as the anode and cathode electrodes; each plate or disc has a thickness of less than 5×10^{-2} cm and a structure of alternating and parallel ridges and grooves at least on one of its two surfaces; the two plates or discs with at least one membrane as an intermediate layer are assembled with their structured surfaces such that all of the ridges in the structure of both plates cross and at the crossing points abut against both sides of the membrane so that the grooves form two crossing systems of semicylinders running in parallel with each other, and separated by the membrane; and the current density through the electrodes is less than 2×10^{-2} amperes/cm^2.

4,344,833

RESTRICTOR APPARATUS FOR ELECTROLYTE FLOW CONDUIT

David B. Wright; Sanders H. Moore, both of Cleveland, Tenn., and Morton S. Kircher, Clearwater, Fla., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 8, 1980, Ser. No. 213,800
Int. Cl.³ C25B *9/00, 15/02, 15/08*
U.S. Cl. 204—258 23 Claims



1. In an electrolytic filter press cell having electrolyte circulated through anode and cathode frames, an anolyte disengager and a catholyte disengager to remove gases from the anolyte

and the catholyte fluids, at least a first flow conduit and a second flow conduit in fluid flow communication with each anode and the anolyte disengager, the improvement comprising in combination:

(a) a feed pipe extending from the anolyte disengager within the first flow conduit a predetermined distance to inject concentrated electrolyte into each anode; and

(b) variable flow restrictor means in the first flow conduit from the anolyte disengager to each anode frame cooperative with the feed pipe to selectively vary the flow rate of electrolyte through the anolyte disengager to thereby control the level of forming in the anolyte within the anolyte disengager to optimize the amount of gas separated out within the anolyte disengager.

4,344,834

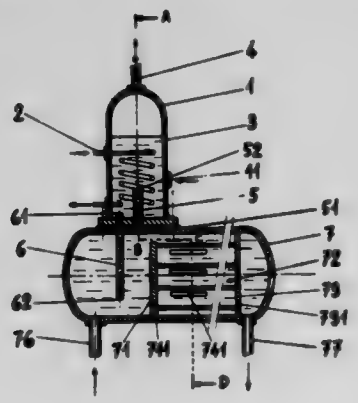
APPARATUS FOR COOLING AND PURIFICATION OF EXIT GASES FROM AN ELECTROLYSIS INSTALLATION

Gerard Pere, Le Breuil, France, assignor to Creusot-Loire, Paris, France

Filed May 1, 1980, Ser. No. 145,752

Int. Cl.³ C25B *9/00*

U.S. Cl. 204—278 **2 Claims**



1. An apparatus for cooling and purifying gases exiting from a conduit of a degasser in an electrolysis installation, said apparatus comprising a chamber for demineralized water connected to said conduit and located above said degasser, at least one exterior inlet for said water, a coil within said chamber, a source of cold water connected to said coil for cooling the water in said chamber, an outlet on said chamber for exit of cooled purified gases and a pipe connecting said chamber to said degasser for return of water to said degasser wherein said exterior inlets constitute the only supply for demineralized water for said electrolysis installation.

4,344,835

METHOD FOR MONITORING AND CONTROLLING HYDROGENATION PRESSURE IN PLANT FOR THE HYDROGENATION OF COAL WITH HYDROGEN TO FORM HYDROCARBONS

Klaus Koch, Laatzen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover Kleefeld, Fed. Rep. of Germany

Division of Ser. No. 151,763, May 21, 1980, Pat. No. 4,288,405. This application Jan. 14, 1981, Ser. No. 225,011

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948550

Int. Cl.³ C10G *1/00*; C10B *47/00, 47/20, 57/12*

U.S. Cl. 208—8 R **4 Claims**

1. A method of monitoring and controlling the hydrogenation pressure in apparatus for the hydrogenation of coal with hydrogen to form hydrocarbons, in which apparatus the coal is fed into a preparation chamber, is compressed and conveyed by means of a rotatable element connected to a drive means through the preparation chamber and plasticized by frictional heating, the plasticized coal is fed through a feed aperture communicating the preparation chamber with the hydrogenation chamber, and said plasticized coal is impinged on with hydrogen and hydrogenated at a pressure of up to 500 bars and a temperature of up to 500° C., after which it is passed to a separator, said method comprising the steps of:

(a) monitoring the pressure in said hydrogenation chamber;

(b) monitoring the pressure in said preparation chamber at the end adjacent said hydrogenation chamber,

(c) comparing said pressures,

(d) closing said feed aperture responsive to said comparison, and

(e) stopping said conveying of said compressed coal in said preparation chamber when said measured pressure in said preparation chamber drops below said measured pressure in said hydrogenation chamber.

4,344,836

METHOD FOR CONVERTING COAL TO HYDROCARBONS BY HYDROGENATION

Klaus Koch, Laatzen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover Kleefeld, Fed. Rep. of Germany

Division of Ser. No. 151,827, May 21, 1980. This application Jan. 14, 1981, Ser. No. 225,013

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943537

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 R **10 Claims**

1. The method of converting coal to hydrocarbons, comprising the steps of:

(a) feeding particles of coal from a pressure-sealed vessel into a feed and preparation chamber,

(b) compressing and shearing said particles in said feed and preparation chamber, thereby agglomerating said particles,

(c) conveying said agglomerated particles to a hydrogenation chamber openly communicating with said feed and preparation chamber,

(d) hydrogenating said agglomerated particles of coal by intensively mixing and shearing said particles in the presence of hydrogen under high pressure, the hydrogen effecting an even distribution and dispersement of the particles throughout the hydrogenation chamber, and

(e) discharging the hydrogenated coal particles through a pressure-sealed outlet.

4,344,837

PROCESS FOR THE DEHYDRATION AND LIQUEFACTION OF WATER-CONTAINING COAL

Tadashi Komiyama, Yokohama; Shoichi Oi; Noriaki Ohnishi, both of Ohmuta; Shinya Mori, Kurume; Tadanobu Takata, Aaro, and Isao Kubo, Tokyo, all of Japan, assignors to Mitsui Coke Co., Ltd., Japan

Filed Mar. 30, 1981, Ser. No. 248,693

Claims priority, application Japan, Apr. 15, 1980, 55-48717; Apr. 18, 1980, 55-50330

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 LE **10 Claims**

1. In a process for the dehydration of water-containing coal wherein a slurry of the water-containing coal and a solvent is heated to a temperature in the range of from 100° to 350° C. and the heated slurry is subjected to vapor-liquid separation by which a gas mixture including water vapor is separated from the dehydrated slurry, the improvement which comprises mixing a part of the dehydrated slurry with an undehydrated slurry of the water-containing coal and the solvent and dehydrating the resulting mixed slurry by heating it to said temperature.

4,344,838

COAL CONVERSION CATALYSTS

Thomas O. Mitchell, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 86,212, Oct. 18, 1979, Pat. No. 4,295,954.
This application Apr. 20, 1981, Ser. No. 255,912
Int. Cl.[3] C10G *1/06*
U.S. Cl. 208—10 4 Claims

1. In a solvent extraction process for coal conversion wherein coal is slurried in an organic solvent and heated to a temperature sufficient to dissolve or liquefy most of the coal, the resulting coal liquefaction product is upgraded by catalytic hydrogenation, and a process-derived recycle solvent is hydrogenated and returned to the initial dissolution stage; the improvement which comprises contacting materials selected from the group consisting of said coal liquefaction product, and said process-derived recycle solvent with a catalyst selected from the group consisting of:

(1) spent hydrogenation catalyst from processes for the hydrogenation of hydrocarbons selected from the group consisting of petroleum, petroleum-derived liquids, Fischer-Tropsch liquids, and shale oils;

(2) spent adsorbent from guard chambers used to demetallize said hydrocarbons; and

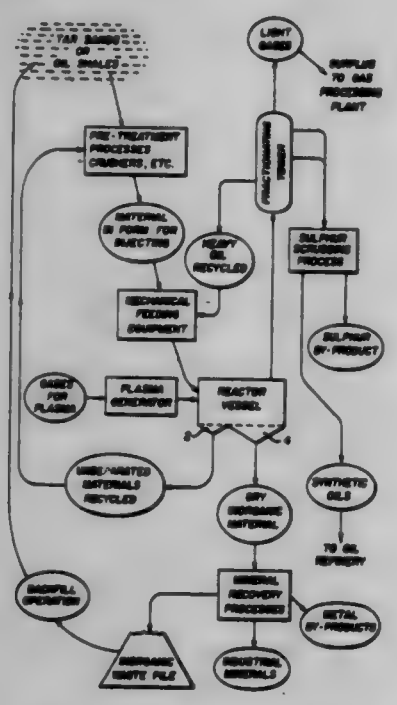
(3) mixtures thereof.

4,344,839

PROCESS FOR SEPARATING OIL FROM A NATURALLY OCCURRING MIXTURE

Michael M. Pachkowski, 23141 - 72nd Ave., Langley, British Columbia, and Howard V. Ross, 620 Montreal Trust Bldg., 789 W. Pender St., Vancouver, British Columbia, both of Canada

Filed Jul. 7, 1980, Ser. No. 166,052
Int. Cl.[3] C10G *1/00*; H05H *1/42*
U.S. Cl. 208—11 R 14 Claims



1. A process for separating hydrocarbons from naturally occurring mixtures comprising minerals and inorganic materials originating from rock admixed with oil, the process comprising introducing particles of such mixtures into a gaseous plasma of a chemically inert gas in a sealed reactor vessel in which the plasma electron temperature is in the range 10,000° F. to 80,000° F. to vaporize the hydrocarbons and thus separate them from the solid particles, allowing the solid particles to drop from the plasma and condensing the vaporized oil as a separate stock, the sealed reactor vessel being equipped with pressure control whereby the plasma is shut off and the vessel purged with an inert gas immediately the pressure drops below two pounds per square inch.

4,344,840

HYDROCRACKING AND HYDROTREATING SHALE OIL IN MULTIPLE CATALYTIC REACTORS

John G. Kunesh, Lawrenceville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Feb. 9, 1981, Ser. No. 232,787
Int. Cl.[3] C10G *47/24*
U.S. Cl. 208—59 8 Claims

1. A process of hydrocracking and hydrotreating heavy hydrocarbon feedstock containing a contaminant compound which precipitates at temperatures below the reaction temperature, which comprises:

(a) preheating the feedstock to temperature below which contaminant precipitation occurs and introducing the heated feed with hydrogen into a first reaction zone containing an ebullated catalyst bed;

(b) reacting the feedstock in the ebullated bed first reaction zone at 700°–860° F. temperature and 1500–3000 psig hydrogen partial pressure conditions, and precipitating the precipitable material in the catalyst in the bed;

(c) passing the reaction zone effluent on to a second reaction zone containing a fixed catalytic bed maintained at 750°–850° F. temperature for further hydrotreating the feed; and

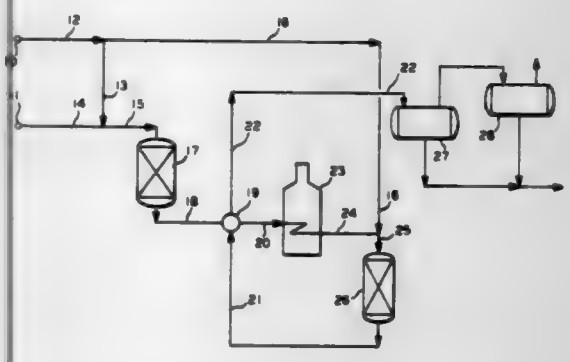
(d) recovering a hydrogen-containing gas stream and a hydrotreated liquid product stream.

4,344,841

METHOD OF REMOVING CONTAMINANT FROM FEEDSTOCK STREAMS

Marvin M. Johnson, and Gerhard P. Nowack, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 1, 1979, Ser. No. 80,604
Int. Cl.[3] B01D *15/00*
U.S. Cl. 208—211 29 Claims



16. A method of hydrodesulfurizing a petroleum feedstock stream comprising:

contacting a petroleum feedstock stream contaminated with at least one of the group consisting of chromates, silicates, phosphates, aldehydes, ketones, thiols, sulfides, carboxylates, sulfonates, sulfates, polyoxyethylenes, carboxylic esters, dimethylsilicone, phenylpolysiloxane, glycols, phthalates, polysaccharides, and cellulosic ethers, with an adsorbent comprising amorphous silica to produce a purified petroleum feedstock stream; and

subsequently contacting the purified petroleum feedstock stream with a hydrosulfurization catalyst under conditions effective for hydrodesulfurization to produce a hydrodesulfurized feedstock stream.

4,344,842

REACTIVE IRON OXIDE AGENTS FOR SCAVENGING HYDROGEN SULFIDE FROM HYDROCARBON LIQUIDS

Irwin Fox, 37 Meadowbrook Country Club Estates, Ballwin, Mo. 63011, assignor to Irwin Fox, Ballwin, Mo.; Alvin Samuels, New Orleans, La. and David Samuels, St. Louis, Mo.

Continuation-in-part of Ser. No. 44,026, May 31, 1979, Pat. No. 4,246,244, which is a continuation-in-part of Ser. No. 963,797, Nov. 27, 1978, Pat. No. 4,246,243. This application Dec. 31, 1980, Ser. No. 221,897

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.³ C10G *29/16*

U.S. Cl. 208—244 4 Claims

1. The process for scavenging hydrogen sulfide from a hydrocarbon liquid containing said sulfide which comprises contacting the hydrogen sulfide in said liquid with dry or substantially dry iron oxide particles having a surface area of at least 3.5 $m^2/_g$ and composed of a crystalline phase of Fe_2O_3, Fe_3O_4 and combinations together with an amorphous Fe_2O_3 moiety, said particles being used in an amount sufficient to reduce the hydrogen sulfide concentration in said liquid to a predetermined level.

4,344,843

APPARATUS AND METHOD FOR SEPARATING DEBRIS FROM TEXTILE FIBER TUFTS

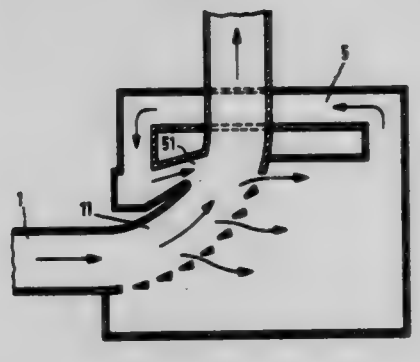
Ferdinand Leifeld, Kempen, Fed. Rep. of Germany, assignor to Trutzschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Feb. 19, 1981, Ser. No. 235,997

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006831

Int. Cl.³ B07B *7/02, 7/06*

U.S. Cl. 209—143 13 Claims



1. Apparatus for separating debris from pneumatically conveyed textile fiber tufts moving through a conduit and comprising

housing means cooperating with said conduit for defining a debris separation chamber,

means cooperating with said conduit for defining a curving deflection area for a stream of air flowing through said conduit and cooperating with said housing means for diverting into said separation chamber from the greater radius of said deflection area a debris laden portion of the stream of air for separating debris from the portion of the stream of air and for thus removing from said conduit debris being pneumatically conveyed with the fiber tufts, and

means cooperating with said conduit for returning the diverted portion of the stream of air from said separation chamber into said conduit after separation of debris therefrom and at a location downstream and adjacent the lesser radius of said deflection area so as to restore the stream of air flowing through said conduit to substantially the original volume.

4,344,844

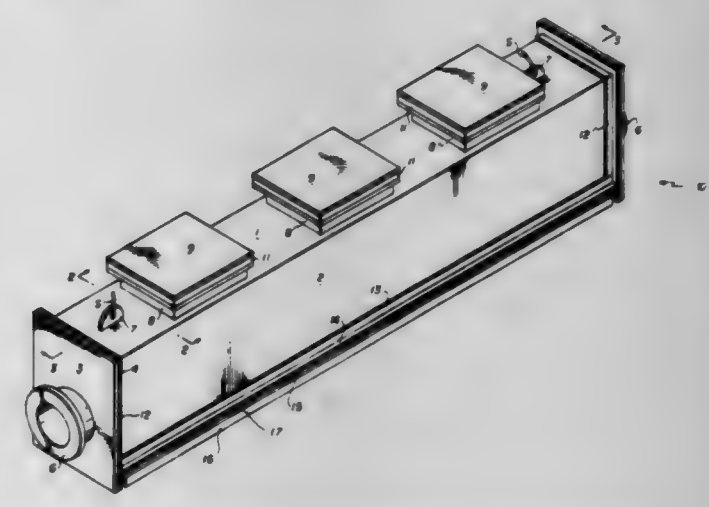
INCLINED STATIC DEOILER AND CONDITIONER FOR TREATING ORE

J. O. Townley, P.O. Box 221, Candler, Fla. 32624

Filed Mar. 17, 1981, Ser. No. 244,601

Int. Cl.³ B03D *1/00*

U.S. Cl. 209—168 9 Claims



1. An inclined static deoiler and conditioner for treating ore in liquid prior to and after froth flotation comprising in combination:

a trough means,

first baffle means oriented to cause turbulence on the liquid-/ore in said trough said first baffle means formed from two ply material provided with an interior air space between said plies,

end walls on said trough having an inlet and an outlet adapted to fasten to piping,

and means to angulate said trough to alter the liquid flow rate.

4,344,845

METHOD AND A DEVICE FOR MAKING FLOTABLE PARTICLES SUSPENDED IN A LIQUID BY MEANS OF GAS BUBBLES

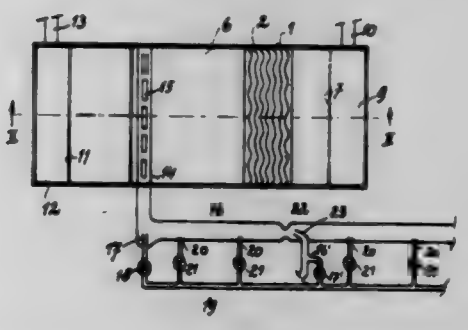
Jacob Pielkenrood, Krommenie, Netherlands, assignor to Pielkenrood-Vinitex B.V., Netherlands

Continuation of Ser. No. 52,748, Jun. 28, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,645

Claims priority, application Netherlands, Jun. 30, 1980, 7807081

Int. Cl.³ B03D *1/24*; B01F *3/04*

U.S. Cl. 210—199 3 Claims



1. In a system for separating by flotation components suspended in a carrier liquid supplied from a source of carrier liquid, the system including a chamber defining a flotation space, a first supply duct for the carrier liquid to be treated opening in an outlet at said space near the bottom thereof, a second liquid source independent of the source of carrier liquid, a second supply duct independent of the first supply duct connected to means for mixing a gas under elevated pressure with a second liquid from the second liquid source in said second supply duct so as to saturate said second liquid with said gas at said elevated pressure, a relief valve in said second

duct adapted for suddenly reducing the pressure of said second liquid so as to supersaturate said second liquid with said gas, said second duct beyond said relief valve terminating in a first nozzle opening near the outlet of said first liquid supply duct so as to create a flow of small gas bubbles in the flow of said carrier liquid to be treated prior to entering said flotation space, at least a part of said bubbles adhering to particles suspended in said carrier liquid to be treated for making these particles flotatable; the improvement comprising at least one additional nozzle opening into said first supply duct upstream of said first nozzle for producing gas bubbles in said carrier liquid upstream of said first nozzle, said additional nozzle being connected to said second supply duct by means including an adjustable relief valve which is set so that the carrier liquid to be treated is saturated with the gas before reaching the point in said first duct where said first nozzle opens into said first duct.

2. The system of claim 1 wherein the improvement further comprises means for adding a flotation-promoting substance to said first liquid supply duct, said means being associated with said one additional nozzle so as to disperse said additional substance into said carrier liquid upstream of said first nozzle by means of the gas bubbles generated by said additional nozzle.

4,344,846

FILTRATION USING EXPANDED STYRENE-POLYMER AND POLYOLEFIN MICRO-BITS

Max Klein, 257 Riveredge Rd., Tinton Falls, N.J. 07724, assignor to Max Klein, Shrewsbury, N.J.

Continuation-in-part of Ser. No. 833,644, Sep. 15, 1977, Pat. No. 4,207,378, which is a continuation-in-part of Ser. No. 342,535, Mar. 16, 1973, abandoned. This application May 19, 1980, Ser. No. 150,736

Int. Cl.³ B01D *39/04, 39/06*

U.S. Cl. 210—503 **6 Claims**

1. A filter aid composition consisting essentially of from about 90 to about 99 parts of an inorganic filter aid material having admixed therewith from about 1 to about 10 parts of polymer micro-bits produced from the group of an expanded styrene-polymer, or an expanded polyolefin, which is the polymer of an ethylenically unsaturated hydrocarbon monomer having from 2 to 6 carbon atoms, each said polymer being non-brittle in the form used to produce said micro-bits, said micro-bits being from about 325 to about 40 microns long and from about 325 to about 20 microns wide in particle size, from substantially completely to entirely completely free of intact cells of the expanded polymer from which said micro-bits are produced, substantially without any uniformity in outline of the individual micro-bit particles, and having a density from about 85 percent of, to substantially the same as, the specific unexpanded polymer from which there was provided the aforesaid expanded polymer from which said micro-bits are produced.

4,344,847

PROCESS FOR OBTAINING ENERGY, SOFT WATER AND BY-PRODUCTS FROM AQUEOUS SUBSTANCES

Edouard P. Grenet, 28, rue Bapst, 92600 Asnieres, France

Filed Feb. 11, 1980, Ser. No. 120,273

Claims priority, application France, Feb. 13, 1979, 79 03584; Jan. 29, 1980, 80 01882

Int. Cl.³ B01D *1/00*

U.S. Cl. 210—600 **10 Claims**

1. A process for the purification of water which comprises the steps of (a) introducing the water source to be purified into a pressure vessel, provided with vapor duct means and residue recovery means; (b) heating said vessel to vaporize the water content from said source while pressurizing same; (c) feeding, via said duct means, at least a fraction of said pressurized water vapor into contact with a bed of iron at about 800° C. to reduce some of the contact water vapor to hydrogen; (d) separating and collecting the generated hydrogen; (e) removing the residue from said pressure vessel via said recovery means; (f) expanding the unreacted water vapor through a turbine-generator to generate electrical energy; (g) utilizing and recovering said generated energy; and (h) condensing the water vapor to pure liquid water.

4,344,848

PROCEDURE FOR PURIFYING WASTE WATER IN A FLOATING LAYER REACTOR

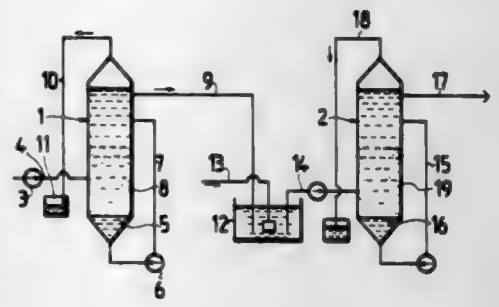
Risto R. Hakulinen, Imatra, Finland, assignor to Enso- Gutzeit Osakeyhtiö , Helsinki, Finland

Filed Dec. 11, 1980, Ser. No. 215,407

Claims priority, application Finland, Dec. 13, 1979, 793914

Int. Cl.³ C02F *3/08*

U.S. Cl. 210—617 **11 Claims**



1. A process for purifying waste water containing chlorinated phenolic compounds comprising passing the waste water upwardly under anaerobic conditions through a bed of particles selected from the group consisting of anionic resin, clay, mud and activated carbon in a reactor so as to fluidize the bed of particles, said particle bed having affixed thereto a bacterial population comprising at least one strain of bacteria growing in trichlorophenol and at least one strain of bacteria growing in tetrachlorophenol and which belong to the bacterial strains deposited at the institute of microbiology of the University of Helsinki with the deposition codes YM 241-268 or YM 134-202, said bacterial population being capable of decomposing chlorinated phenolic compounds, the rate of flow of the waste water being adjusted to allow for decomposition of said chlorinated phenolic compounds, and removing the waste water from the reactor.

4,344,849

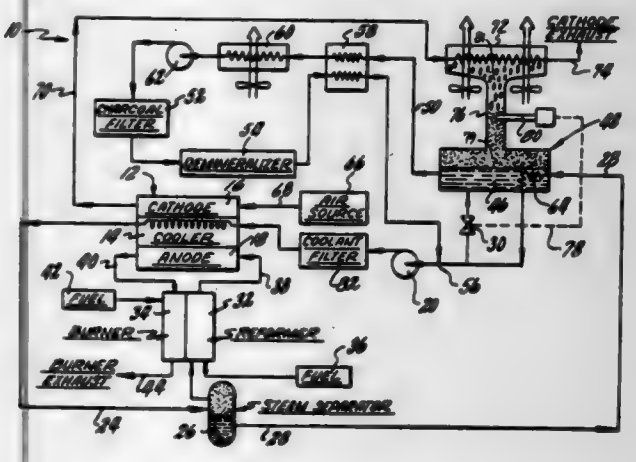
FUEL CELL POWER PLANT SELF-CONTROLLING COOLANT CLEANING PROCESS

Albert P. Grasso, Vernon, and John W. Lane, East Hampton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 19, 1981, Ser. No. 226,267

Int. Cl.³ C02F *1/20, 1/28*

U.S. Cl. 210—662 **4 Claims**



1. In a fuel cell power plant including a stack of fuel cells and coolant water circulating within a coolant loop in heat exchange relationship with the stack to cool the stack, a portion

of said water being removed from the coolant loop for use elsewhere in the power plant, the process for automatically maintaining the circulating coolant water clean and for providing clean make-up water to said coolant loop comprising the steps of:

supplying coolant loop make-up water to a water reservoir by condensing water from at least one of the reactant gas exhaust streams of the stack and conveying the condensed water to the reservoir via a vertically extending deaeration column having an opening at its upper end for receiving the condensate from the reactant gas stream and an opening at its lower end above the water in the water reservoir;

deaerating the water in the water reservoir by heating said water to boiling to produce steam which rises into said deaeration column;

blowing down a portion of the water in the coolant loop and introducing the blowdown into the reservoir to provide at least a portion of the heat for the step of deaerating, wherein said power plant includes a blowdown valve which permits said step of blowing down when open and prevents blowing down when closed;

controlling said blowdown valve by sensing the location of a steam/liquid interface within said deaeration column, comprising closing the valve when the steam/liquid interface is above a certain level and opening the valve when the steam/liquid interface is below a certain level;

removing deaerated water from the reservoir and purifying the removed water by removing suspended and dissolved solids therefrom; and

adding said purified water to the coolant loop at a rate sufficient to maintain the desired rate of coolant flow passing in heat exchange relationship with the stack, wherein the amount of blowdown introduced into the reservoir is a function of the rate at which purified water is added to the coolant loop and is sufficient to maintain an acceptable level of impurities in the circulating coolant water.

4,344,850

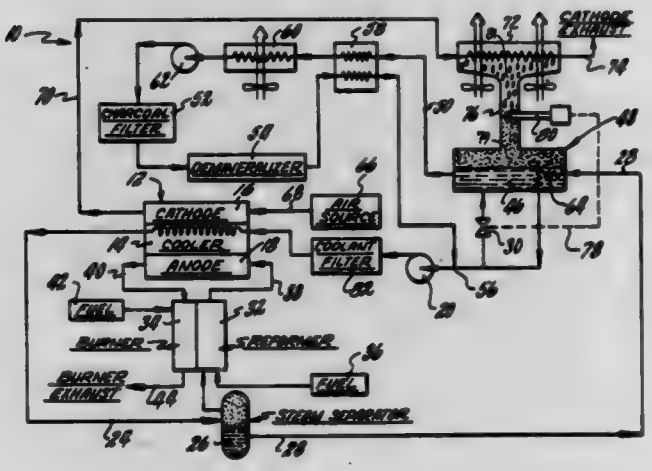
FUEL CELL POWER PLANT COOLANT CLEANING SYSTEM AND METHOD

Albert P. Grasso, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 19, 1981, Ser. No. 226,266

Int. Cl.³ C02F *1/20, 1/28*

U.S. Cl. 210—664 **4 Claims**



3. In a fuel cell power plant including a stack of fuel cells and coolant water circulating within a coolant loop in heat exchange relationship with the stack to cool the stack and to convert at least a portion of the circulating coolant water to steam, a portion of said water being removed from the coolant loop for use elsewhere in the power plant, the process for maintaining the circulating coolant water clean and for providing clean make-up water to said coolant loop comprising the steps of:

using at least a portion of the steam to process fuel for use in the cells of the stack;

supplying coolant loop make-up water to a water reservoir by condensing water from at least one of the reactant gas exhaust streams of the stack and conveying the condensed water to the reservoir;

deaerating the water in the water reservoir by heating said water to boiling;

blowing down a portion of the water in the coolant loop and introducing the blowdown into said reservoir to provide at least a portion of the heat for the step of deaerating;

removing a portion of the deaerated water from said reservoir and purifying said removed portion by removing suspended and dissolved solids therefrom; and

adding said purified water to the coolant loop at a rate sufficient to maintain the desired rate of coolant flow passing in heat exchange relationship with the stack, wherein the amount of coolant water blown down into the reservoir is a function of the rate at which purified water is added to the coolant loop and is sufficient to maintain an acceptable level of impurities in the circulating coolant water.

4,344,851

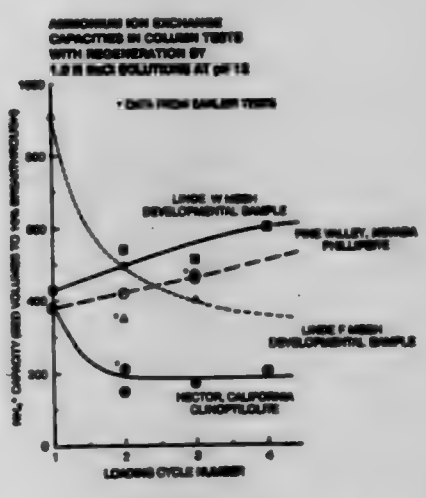
PHILLIPSITE-TYPE ZEOLITES FOR AMMONIA ADSORPTION

John D. Sherman, Chappaqua, and Ronald J. Ross, Upper Nyack, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 828,378, Aug. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 488,503, Jul. 15, 1974, abandoned. This application Jan. 16, 1981, Ser. No. 225,528

Int. Cl.³ C02F *1/42*

U.S. Cl. 210—670 **2 Claims**



1. In the process for removing ammonium ions from an aqueous medium containing calcium ions which includes the steps of:

(a) contacting said aqueous solution with the sodium cation form of a crystalline zeolite whereby ammonium cations and calcium cations are exchanged with sodium cations of the crystalline zeolite, and isolating at least a portion of the ammonium and calcium cation depleted aqueous medium;

(b) regenerating the crystalline zeolite containing the ammonium and calcium cations resulting from step (a) by contacting same with an aqueous solution of sodium cation whereby at least a portion of the zeolitic ammonium and calcium cations are replaced by sodium cations;

(c) repeating the cycle which comprises step (a) followed by step (b) for at least three times so that the crystalline zeolite has undergone a total of at least four cycles;

the improvement which comprises employing as the crystalline zeolite, zeolite W or phillipsite.

4,344,852
Patent Not Issued For This Number

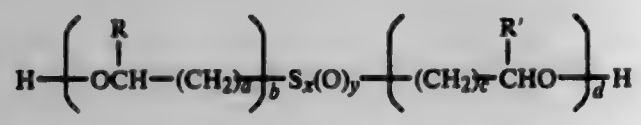
4,344,853

FUNCTIONAL FLUID CONTAINING METAL SALTS OF ESTERS OF HYDROCARBYL SUCCINIC ACID OR ANHYDRIDE WITH THIO-BIS-ALKANOLS AS ANTIOXIDANTS

Antonio Gutierrez, Mercerville; Stanley J. Brois, Westfield; Jack Ryer, East Brunswick, and Harold E. Deen, Cranford, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 194,067, Oct. 6, 1980. This application Jun. 3, 1981, Ser. No. 270,137
Int. Cl.³ C10M *1/54;* C09K *5/00*
U.S. Cl. 252—33.6 **10 Claims**

1. A functional fluid composition having oxidative stability comprising a hydrocarbon mineral oil of lubricating viscosity containing as an oxidation inhibitor, about 0.01 to 1 wt. % of a zinc or nickel salt of ester compound formed by the reaction of: (a) a thio-bis-alkanol of the formula:



wherein R and R′ each independently may be hydrogen, methyl or ethyl, x may be 1–4, y may be 0, 1 or 2 and a, b, c, d each may be independently 1–3, with (b) 1 to 2 moles, per mole of the thio-bis-alkanol, of an aliphatic hydrocarbon substituted succinic acid or anhydride wherein the aliphatic hydrocarbon group contains from about 12 to 50 carbon atoms.

4,344,854

SULFURIZED COMPOSITIONS

Kirk E. Davis, Euclid, and Thomas F. Holden, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 949,285, Oct. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 814,583, Jul. 11, 1977, Pat. No. 4,119,550, which is a continuation-in-part of Ser. No. 666,545, Mar. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 560,676, Mar. 21, 1975, abandoned. This application Jul. 16, 1979, Ser. No. 58,233
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.
Int. Cl.³ C10M *1/38, 3/32;* C07G *17/00;* C09B *49/00*
U.S. Cl. 252—45 **39 Claims**

1. A method for the preparation of a sulfurized composition which comprises the steps of reacting at about 50°–300° C., under superatmospheric pressure and in the absence of catalysts, sulfur and hydrogen sulfide with at least one olefinic compound containing 3 to about 30 carbon atoms to form a sulfurized mixture; about 1.2–3.0 gram-atoms of sulfur and about 0.1–1.5 moles of hydrogen sulfide being used per mole of olefinic compound; and removing from said sulfurized mixture substantially all low boiling materials including unreacted olefin, mercaptan and monosulfide.

4,344,855

PROCESS FOR THE PRODUCTION OF POLYISOCYANATES WHICH CONTAIN CARBODIIMIDE GROUPS AND WHICH ARE STABLE IN STORAGE

Walter Schäfer, Cologne; Kuno Wagner, Leverkusen, and Hans-Dieter Block, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 12, 1976, Ser. No. 741,432
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1975, 2552350
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—182 **10 Claims**

1. A process for preparing a storage stable, catalyst-free, equilibrium mixture of an organic carbodiimide, an organic uretoneimine and an organic isocyanate comprising the steps:
(a) contacting an organic mono- and/or polyisocyanate with a high molecular weight carbodiimidization catalyst which is insoluble in organic isocyanate and which comprises a high molecular weight, insoluble organic matrix and a low molecular weight carbodiimidization catalyst bound to the matrix via covalent bonds, and
(b) removing said high molecular weight catalyst when the desired degree of carbodiimidization has been reached.

4,344,856

CRYSTALLINE-LIQUID SUBSTITUTED 1,3-DIOXANES AND MIXTURES CONTAINING THEM

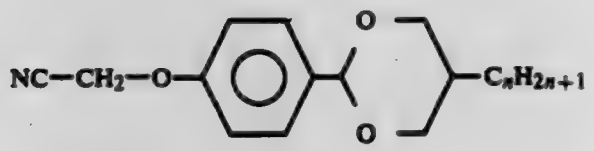
Dietrich Demus; Horst Zaschke, both of Halle; Hans-Mathias Vorbrodt, Quedlinburg; Horst Kresse, and Wolfgang Weissflog, both of Halle, all of German Democratic Rep., assignors to VEB Werk für Fernsehelektronik Berlin im VEB Kombinat Mikroelektronik, Berlin-Oberschoneweide, German Democratic Rep.

Continuation-in-part of Ser. No. 102,944, Dec. 12, 1979. This application Jan. 10, 1980, Ser. No. 110,857
Int. Cl.³ C09K *3/34;* G02F *1/13;* C07D *319/04*
U.S. Cl. 252—299.61 **3 Claims**

1. A compound of the formula:

wherein n=1 to 10.

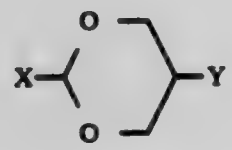
2. A compound of the formula:

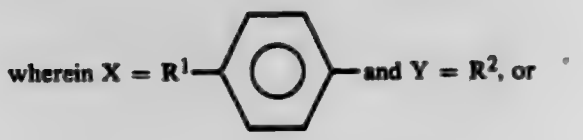


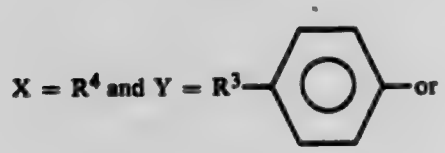
wherein n=1 to 10.

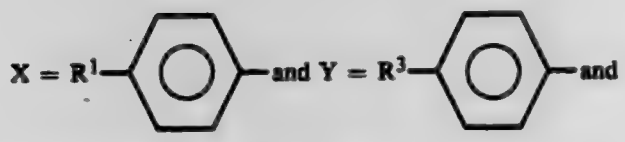
3. A liquid crystalline composition comprising a mixture of at least one compound selected from the group consisting of liquid crystalline substances, non-liquid crystalline substances, and mixtures thereof, and

a compound of the general formula:



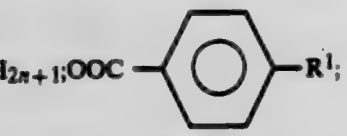






wherein $R^1 = C_nH_{2n+1}$; $C_nH_{2n+1}O$; $C_nH_{2n+1}COO$;

$C_nH_{2n+1}OCOO$; F; Cl; Br; OH;



$R^3 = C_nH_{2n+1}$; $C_nH_{2n+1}O$; CF^3; CN; NO_2;
$R^4 = C_nH_{2n+1}$, and n=1 to 10.

4,344,857

ENCAPSULATION BY ENTRAPMENT

Baruch S. Shasha, Peoria; William M. Doane, Morton, both of Ill., and Charles R. Russell, deceased, late of Peoria, Ill. (by Kathleen G. Russell, heir), assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 733,968, Oct. 19, 1976, Pat. No. 4,277,364, which is a continuation-in-part of Ser. No. 642,836, Dec. 22, 1975, abandoned. This application May 16, 1980, Ser. No. 150,550

Int. Cl.³ B01J *13/02;* A01N *25/26*

U.S. Cl. 252—316 9 Claims

1. A method of encapsulating a chemical biological agent comprising the steps of:

a. preparing a dispersion or solution of a suitable chemical biological agent in a matrix-forming material comprising an aqueous solution of a polyhydroxy polymer xanthate (PPX) having a xanthate degree of substitution (D.S.) of from about 0.1 to 3, wherein said solution has a concentration of PPX of from about 5–70%, and wherein the relative amount of said PPX with respect to said biological agent is sufficient to entrap said agent within a matrix of said PPX;

b. simultaneously adding to said dispersion a strong acid and a coupling agent selected from the group consisting of hydrogen peroxide, ferric sulfate, and ferric chloride, whereby the dispersion is adjusted to a pH of from about 2 to about 7 and whereby said PPX and said coupling agent react from a single phase to form an insolubilized matrix, thereby entrapping said agent; and

c. recovering said entrapped chemical biological agent.

4,344,858

ANTI-FOAMING COMPOSITIONS

Newton Zucker, Pepper Pike, and William M. Ellslager, South Euclid, both of Ohio, assignors to Kalcor Coatings Company, Inc., Willoughby, Ohio

Filed Mar. 23, 1977, Ser. No. 780,667

Int. Cl.³ B01D *19/04*

U.S. Cl. 252—358 4 Claims

1. An aqueous flowable composition for controlling foam in aqueous film-forming compositions consisting essentially of a nonaqueous phase consisting essentially of 5 to 25% by weight of the nonaqueous phase of a finely divided hydrophobic silica, and a hydrophobic liquid carrier therefor having dispersed therein a surfactant to permit the nonaqueous phase to be emulsified in an aqueous phase, said nonaqueous phase being emulsified in an aqueous phase consisting essentially of water with hydrophilic bentonite dispersed therein, in an amount at least about 10% of the weight of the silica, to a maximum amount such that the total composition is still flowable, the composition being characterized by being resistant to settling, and by an anti-foaming effect substantially greater than that of a similar composition without the bentonite.

4,344,859

HOMOGENIZING SYSTEM FOR PRODUCING HIGH POLYMER LATICES

Oliver W. Burke, Jr., Fort Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 539,607, Jan. 8, 1975, Pat. No. 4,243,566, which is a division of Ser. No. 323,381, Jan. 15, 1973, Pat. No. 3,862,078, said Ser. No. 323,381, is a continuation-in-part of Ser. No. 226,419, Feb. 15, 1972, Pat. No. 3,879,327, which is a continuation-in-part of Ser. No. 817,494, Apr. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 784,596, Dec. 18, 1968, Pat. No. 3,644,263, and a continuation-in-part of Ser. No. 767,790, Oct. 15, 1969, Pat. No. 3,622,127, and a continuation-in-part of Ser. No. 691,823, Dec. 10, 1969, abandoned, and a continuation-in-part of Ser. No. 70,949, Sep. 10, 1970, Pat. No. 3,652,482, and a continuation-in-part of Ser. No. 621,994, Mar. 9, 1967, Pat. No. 3,503,917. This application Dec. 19, 1979, Ser. No. 105,151

The portion of the term of this patent subsequent to Aug. 17, 1996, has been disclaimed.

Int. Cl.³ B01F *3/12, 5/08, 5/10, 11/02*

U.S. Cl. 252—359 D 8 Claims

1. An improved apparatus for continuously converting a coarse aqueous emulsion of a solvent/polymer cement to a fine emulsion in which substantially all of the cement particles constituting the discontinuous phase are of precursor latex particle size, said apparatus being of the type comprising:

(a) a number of homogenizing units in which

(b) each of said units comprises an inlet and an outlet chamber with a restricted orifice therebetween and pressure raising means between its inlet and its restricted orifice,

wherein the improvement comprises:

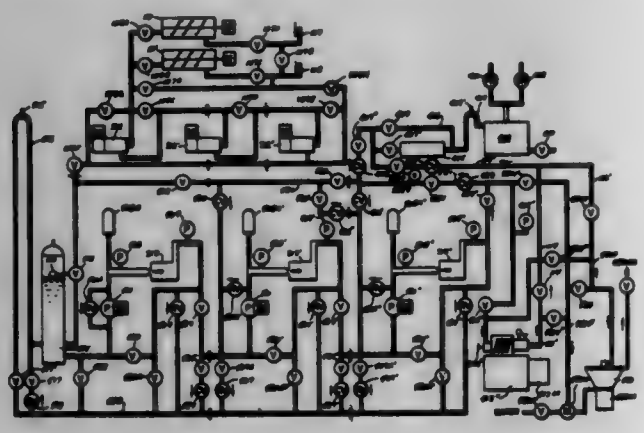
(c) a source of supply of said coarse emulsion,

(d) flow means connecting in series a sufficient number of said units to effect said conversion, with the inlet of the most upstream of said units connected to receive a flow of said coarse emulsion from said source of supply, the outlet chamber of each unit except the last connected to the inlet

of the unit next downstream therefrom, and the outlet chamber of the last, most downstream, unit, connected to a discharge line,

(e) said connecting means between said units each comprising a throttle valve and having connected thereto between said throttle valve and the inlet of the next downstream unit an "in"-check valve opening thereinto and a pressure relief limiting valve opening therefrom,

(f) said "in"-check valves being connected to be supplied with fine emulsion delivered from the outlet chamber of a unit downstream thereof at a pressure to essentially maintain against pressure drop and provide a predetermined feed pressure to said next downstream unit, and



(g) said pressure limiting valves being set to essentially maintain against pressure rise and provide the predetermined feed pressure to said most downstream unit, whereby the throttle valves control the back pressures in said outlet chambers while said in-check and pressure limiting valves control within fixed limits the pressures of the flows to the next succeeding units by adding to the flows between adjacent units, when necessary, minor proportions of fine emulsion from the flow being discharged from a unit downstream thereof and by removing from the flows between adjacent units, when necessary, minor proportions of the emulsion thereat.

4,344,860

STABILIZATION OF SILICATES USING SALTS OF SUBSTITUTED NITROGEN OR SULFUR CONTAINING SILICONATES

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 30, 1981, Ser. No. 248,131

Int. Cl.³ C07F *7/02, 7/08, 7/10;* C09K *3/00*

U.S. Cl. 252—389 R **112 Claims**

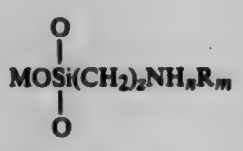
86. A method of inhibiting metal corrosion in an aqueous medium by adding to the aqueous medium a composition consisting of a siliconate selected from a group consisting of

(I) a siliconate having the general formula



and

(II) a siliconate having the general formula

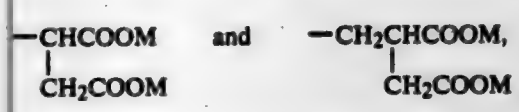


wherein in both formulas, M is selected from a group consisting essentially of

(i) alkali metal cations and

(ii) tetraorganoammonium cations and z has a value of 2 or 3,

wherein in formula (I), R is selected from a group consisting essentially of —CH_2COOM, —CH_2CH_2COOM,



and wherein in formula (II), n has a value of 0 or 1; m has a value of 1 or 2, the sum of n+m is 2 and R is selected from a group consisting essentially of —CH_2COOM, —CH_2CH_2-$COOM$,



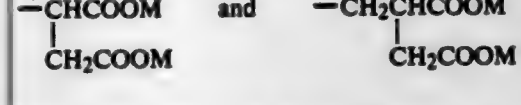
and —$(CH_2)_2N(CH_2COOM)_2$ when n is 0 and m is 2, and R is selected from a group consisting essentially of



and $(CH_2)_zNH_pR'_q$ when n is 1 and m is 1, p has a value of 0 or 1, q has a value of 1 or 2 and the sum of p+q is 2 wherein R' is selected from a group consisting of



when p is 1 and q is 1 and R' is selected from a group consisting of —CH_2COOM, —CH_2CH_2COOM,



when p is 0 and q is 2, wherein M and Z have the same meaning as set forth above.

4,344,861

BIS-AMIDES AS CORROSION INHIBITORS

Joseph Levy, Deerfield Beach, Fla., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 15, 1980, Ser. No. 112,364

Int. Cl.³ C23F *11/12, 11/14, 11/16*

U.S. Cl. 252—391 **23 Claims**

1. A method of inhibiting corrosion of metals in contact with petroleum and petroleum fractions other than gasoline comprising contacting surfaces of said metals with a corrosion inhibiting amount of a corrosion inhibitor consisting of the reaction product of about one mole ratio of an amine with about one equivalent of a dicarboxylic acid.

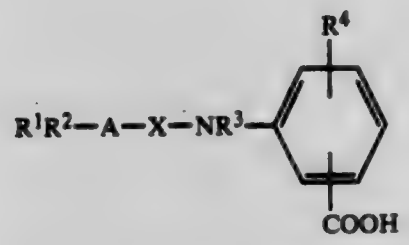
4,344,862

REACTION PRODUCTS OF SULFONAMIDO-CARBOXYLIC ACIDS OR CARBOXAMIDO-CARBOXYLIC ACIDS WITH ALKANOLAMINES, AND THEIR USE AS LOW-FOAMING CORROSION INHIBITORS

Rudi Widder, Leimen; Elmar Getto, Mannheim, and Albert Hettche, Hessheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

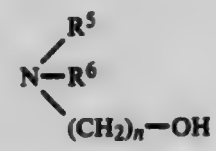
Filed Oct. 20, 1980, Ser. No. 199,059
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947418
Int. Cl.³ C23F *11/16, 11/14, 11/12*
U.S. Cl. 252—391 4 Claims

1. A product which is obtained by reacting an acid of the formula I



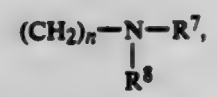
I

where R^1 and R^2 are hydrogen, fluorine, chlorine, bromine or alkyl or alkoxy of 1 to 4 carbon atoms, but the sum of the carbon atoms of R^1 and R^2 is not greater than 7 and preferably not greater than 3, A is a benzene, naphthalene or anthracene radical or a biphenyl structure, R^3 is hydrogen, alkyl of not more than 4 carbon atoms, β-cyanoethyl or hydroxyalkyl of 2 to 4 carbon atoms, R^4 is hydrogen, fluorine, chlorine, bromine, alkyl or alkoxy of 1 to 4 carbon atoms, hydroxyl or carboxyl and X is $—SO_2—$ or —CO—, with an amine of the formula II



II

where R^5 and R^6 are hydrogen, C_1–C_4-alkyl, C_2–C_4-hydroxyalkyl and/or



R^7 and R^8 being hydrogen, C_1–C_4-alkyl or C_2–C_4-hydroxyalkyl and n being an integer from 2 to 4, in the ratio, expressed in terms of equivalents, of from 1:1 to 1:4.

4,344,863

PROCESS FOR DEFOAMING ACID GAS SCRUBBING SOLUTIONS AND DEFOAMING SOLUTIONS

Max L. Robbins, South Orange, and Edwin R. Ernst, Kendall Park, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 930,915, Aug. 4, 1978, Pat. No. 4,208,385. This application Dec. 21, 1979, Ser. No. 105,908
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—192 9 Claims

1. An acid gas scrubbing composition composition having a reduced tendency to foam comprising:

(a) an alkaline material comprising a basic alkali metal salt or alkali metal hydroxide,

(b) one or more amino compounds at least one of which contains a hydrophobic moiety,

(c) water, and

(d) from about 1 to about 1500 parts per million by weight of said composition of at least one antifoaming agent comprising a polyoxyethylene polyoxypropylene block copolymer of the general formula:

$$HO(C_2H_4O)_a(C_3H_6O)_b(C_2H_4O)_cH$$

wherein a and c are integers such that the hydrophile portion represented by (C_2H_4O) constitutes from about 10 to about 30 weight percent of the block copolymer and b is an integer such that the hydrophobe represented by (C_3H_6O) has a molecular weight from about 1000 to about 2150.

4,344,864

METHOD FOR INCREASING SHELF-LIFE OF A SERUM CONJUGATED BILIRUBIN REFERENCE COMPOSITION AND COMPOSITION PRODUCED THEREBY

Allan L. Louderback, Temple City, and Thomas J. Foley, Diamond Bar, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 30, 1980, Ser. No. 202,269
Int. Cl.³ G01N *33/48*
U.S. Cl. 252—408 20 Claims

1. An improved blood serum reference composition of the type comprising blood serum having a conjugated bilirubin constitutent of known value, characterized in that said composition possesses a pH of from about 8.2 to about 9.2 and further comprises:

(a) a sulfhydryl compound in an amount sufficient to further enhance the stability of conjugated bilirubin and

(b) a chelating agent in an amount sufficient to bind the metals present in said blood serum.

4,344,865

STEAM REGENERATION OF RHODIUM CONTAINING HYDROCARBON DEHYDROCYCLIZATION CATALYSTS

Russell R. Reinhard, Hopewell Junction; Tansukhlal G. Dorawala, and Edwin R. Kerr, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 103,302, Dec. 13, 1979, Pat. No. 4,304,658. This application Feb. 5, 1981, Ser. No. 231,820
Int. Cl.³ B01J *23/96;* C10G *35/06, 35/085*
U.S. Cl. 252—420 10 Claims

1. The method of regenerating a spent catalyst, having a pH of less than about 8 containing a porous support bearing a catalytic amount of rhodium, which has been used to steam dehydrocyclize a steam dehydrocyclizable hydrocarbon at steam dehydrocyclization conditions which comprises steaming said spent catalyst at 800° F.–1200° F. for 12–48 hours thereby forming regenerated catalyst; and recovering said regenerated catalyst.

5. The method of claim 1 wherein said catalyst contains chromium.

8. The method of claim 1 wherein said catalyst contains a non-noble Group VIII metal.

4,344,866

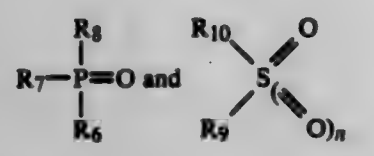
CARBONYLATION OF OLEFINICALLY UNSATURATED COMPOUNDS

Frederick A. Pesa, Aurora, and Thomas A. Haase, Twinsburg, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 89,822, Oct. 31, 1979, Pat. No. 4,313,893, which is a division of Ser. No. 973,069, Dec. 26, 1978, abandoned. This application Jul. 30, 1981, Ser. No. 288,553
Int. Cl.³ B01J *31/02*
U.S. Cl. 252—428 6 Claims

1. A catalyst composition comprising a phosphorus or sulfur oxide promoter ligand and at least one of cobalt carbonyl and

ruthenium carbonyl wherein said promoter ligand has one of the following structures:



wherein R_6, R_7, R_8, R_9, and R_{10} are each independently selected from:

(1) C_{1-10} alkyls;

(2) polynuclear aryls containing up to 12 carbon atoms, optionally substituted with C_{1-10} alkyls; and

(3) $O(CH_2)_tCH_3$, wherein t is 0–10; and

wherein n is 0 or 1.

4,344,867

HYDROPROCESSING CATALYSTS

Neville L. Cull, Baker, and Willard H. Sawyer, Baton Rouge, both of La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 13, 1979, Ser. No. 65,958

Int. Cl.³ B01J *21/04, 23/85, 23/88, 27/04*

U.S. Cl. 252—439 13 Claims

1. A catalyst comprising at least one Group VIB metal component and at least one Group VIII metal component composited with a support, said support having been prepared by the steps which comprise:

(a) treating alpha alumina monohydrate with an acidic solution having a pH of less than about 3, said acid solution comprising a hydrolyzable zirconium salt;

(b) reacting the product resulting from step (a) with a neutralizing agent;

(c) calcining the product resulting from step (b), and

(d) recovering a catalyst comprising a Group VIB metal component, a Group VIII metal component, and a support, said support comprising a zirconium component and gamma alumina.

4,344,868

CATALYST FOR SYNTHESIS GAS CONVERSION TO OXYGENATES

Clarence D. Chang, Princeton, and William H. Lang, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 65,821, Aug. 13, 1979, abandoned. This application Apr. 7, 1980, Ser. No. 137,943

Int. Cl.³ B01J *29/32*

U.S. Cl. 252—455 Z 12 Claims

1. A catalyst composition for use in converting synthesis gas into oxygenate-containing mixtures, which comprises a zeolite which is virtually free of acid sites and which has an acid activity, as measured by the C.P.I. Index, of no greater than 50, and characterized by a silica to alumina mole ratio of at least about 12, a constraint index within the range of 1 to 12, having intimately combined therewith a metal selected from the group consisting of rhodium, platinum, palladium and iridium.

4,344,869

PREPARATION OF ELECTRICALLY CONDUCTIVE HETERO-POLY-PHENYLENES

Gerd Blinne, Bobenheim; Herbert Naarmann, Wattenheim, and Klaus Penzien, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

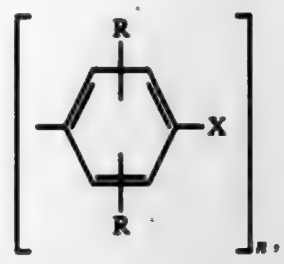
Filed Feb. 24, 1981, Ser. No. 237,635

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009351

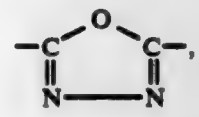
Int. Cl.³ H01B *1/00*

U.S. Cl. 252—517 5 Claims

1. A process for the preparation of electrically conductive hetero-polyphenylenes having conductivities greater than 10^{-2}S/cm which comprises: adding to a hetero-polyphenylene of the formula



where X is S, O, NH, Se, SO_2, or



R is H, CH_3, phenyl or cyclohexyl, and n is an integer of from 2 to 200, in the absence of moisture and of oxygen, from 0.5 to 35% by weight, based on the hetero-polyphenylene, of a strong Lewis acid having a pk_a of from -10 to $+14$.

4,344,870

PREPARATION OF ELECTRICALLY CONDUCTIVE HETERO-POLYAROMATICS

Gerd Blinne, Bobenheim; Herbert Naarmann, Wattenheim, and Klaus Penzien, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

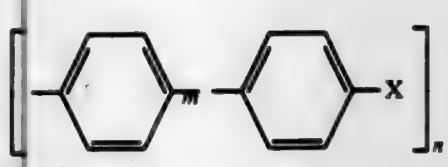
Filed Feb. 24, 1981, Ser. No. 237,636

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009350

Int. Cl.³ H01B *1/00*

U.S. Cl. 252—517 5 Claims

1. A process for the preparation of electrically conductive hetero-polyaromatics having conductivities greater than 10^{-2} S/cm which comprises: adding to a hetero-polyaromatic of the formula

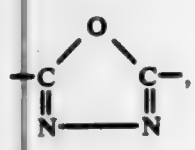


I

ps or the formula

$$[K-X]_m \qquad \text{II}$$

where X is SO_2, S, O, NH, Se or



K is naphthalene, anthracene, perylene or coronene, m is from 1 to 5, preferably from 1 to 2, and n is from 5 to 1,000, preferably from 5 to 500, in the absence of moisture and of oxygen, from 0.5 to 35 percent by weight, based on the weight of the hetero-polyaromatic, of a strong Lewis acid having a pk_a of from -10 to $+4$.

4,344,871

SPRAY-DRIED ALUMINOSILICATE DETERGENTS CONTAINING SILICATE AND METABORATE

Philip N. Allaway; Richard M. Baginski; Don K. K. Liu, and Theodore M. Teixeira, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 23, 1981, Ser. No. 246,824

Int. Cl.[3] C11D *3/02, 3/08, 3/12, 11/00*

U.S. Cl. 252—531 9 Claims

1. A dried granular detergent composition prepared by drying an aqueous slurry comprising:

(a) from about 5% to about 40% of a water-soluble organic surface active agent selected from the group consisting of anionic, nonionic, zwitterionic, and ampholytic detergents, and mixtures thereof;

(b) from about 10% to about 60% of a finely divided aluminosilicate ion exchange material selected from the group consisting of:

(1) crystalline aluminosilicate material of the formula:

$$Na_z[(AlO_2)_z.(SiO_2)_y].xH_2O$$

wherein z and y are at least 6, the molar ratio of z and y is from 1.0 to 0.5 and x is from 10 to 264, said material having a particle size diameter of from about 0.1 micron to about 10 microns, a calcium ion exchange capacity of at least about 200 mg. $CaCO_3$ eq./g. and a calcium ion exchange rate of at least about 2 grains Ca^{++}/gallon/-minute/gram/gallon;

(2) amorphous hydrated alumiosilicate material of the empirical formula:

$$M_z(zAlO_2.ySiO_2)$$

wherein M is sodium, potassium, ammonium, or substituted ammonium, z is from about 0.5 to about 2, y is 1 and said material has a magnesium ion exchange capacity of at least about 50 milligram equivalents of $CaCO_3$ hardness per gram of anhydrous aluminosilicate and a Mg^{++} exchange rate of at least about 1 grain/gallon/-minute/gram/gallon and

(3) mixtures thereof; and a mixture of a water-soluble alkali metal silicate and alkali metal borate equivalent to

(c) from about 2.0% to about 15% of an alkali metal oxide silicate solid having a weight ratio of SiO_2:alkali metal oxide of from about 0.8:1 to about 2.3:1; and

(d) an alkali metal metaborate to provide a B_2O_3:SiO_2 weight ratio of from about 0.1 to about 4.0.

2. The composition of claim 1 wherein water is removed from the slurry by spray drying.

9. The composition of claims 2, 3, or 4 wherein said water-soluble organic surface active agent is selected from the group consisting of linear alkylbenzene sulfonate, alkyl sulfate, alkyl ethoxy ether sulfate, and mixtures thereof, said alkyl groups containing from about 10 to about 20 carbon atoms and said alkyl ethoxy ether sulfate having an average degree of ethoxylation of from about 1 to about 4 moles of ethylene oxide per mole of alkyl sulfate.

4,344,872

METHOD AND APPARATUS FOR REMOVING WASTE PRODUCTS FROM SOLUTIONS OF FISSION PRODUCTS

Dietrich Thiele, Jülich-Stetternich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 56,939

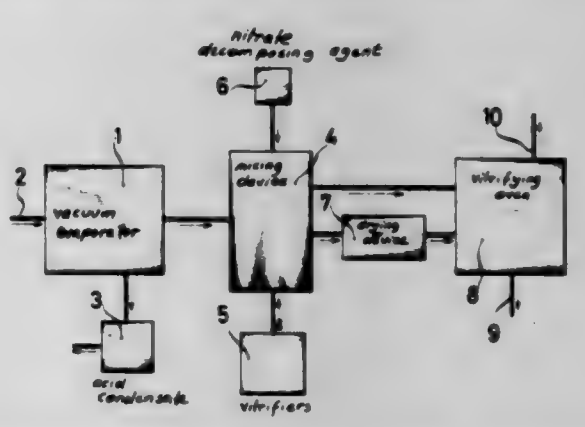
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1978, 2831316

Int. Cl.[3] G21F *9/16, 9/08*

U.S. Cl. 252—629 6 Claims

1. A method of removing fission products from ruthenium-containing nitric acid solutions and thereafter isolating the fission products in a solid mass, the method comprising in combination the steps of:

concentrating said solution by evaporation of the nitric acid therefrom to form a fission products concentrate having a solids content in the range of fifteen to twenty-five percent by exposing the solution to a partial vacuum having a pressure below fifty millimeters of mercury and by maintaining the temperature of the solution at a level sufficient to ensure evaporation of the nitric acid at that pressure whereby the evaporated nitric acid has a ruthenium content below one part per million;



condensing the nitric acid vapor having a ruthenium content below one part per million;

separating the nitric acid condensate from the fission products concentrate;

adding vitrifiers and ammonia derivatives capable of nitrous-free nitrate decomposition to the fission products concentrate to form a fission product-vitrifier mixture with a reduced nitrate content, and

heating in an oven the fission product-vitrifier mixture to vitrify same and to thereby isolate the fission products in a solid mass.

4,344,873

POTTING MEDIUM FROM POLYURETHANES

Gerhard Wick, Obernburg, Fed. Rep. of Germany, assignor to Akzo NV, Arnhem, Netherlands

Filed Mar. 13, 1981, Ser. No. 243,342

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010030

Int. Cl.[3] C08L *91/00*; C08G *18/24, 18/75, 18/77*

U.S. Cl. 528—58 39 Claims

1. A potting medium comprising

a polymer including groups derived from reacting castor oil, trimethylolpropane and a diisocyanate based on a carbon ring compound; and

a dialkyltin compound in a amount of from about 5 to 50 ppm calculated for elementary tin based on the total weight of potting medium.

19. A method for production of a potting medium comprising

adding to at least one of the ingredients employed a dialkyltin compound in an amount resulting in a content of the potting medium of from about 5 to 50 ppm calculated for elementary tin;

reacting a diisocyanate based on a carbon ring compound in stochiometric excess with a mixture of castor oil and trimethylolpropane to a prepolymer having NCO-groups; and mixing the prepolymer with castor oil for crosslinking.

4,344,874

POLYETHYLENE TEREPHTHALATE RESIN COMPOSITIONS

Noriyuki Akagi; Yoshinari Ogawa, and Kouichi Sakai, all of Sagamihara, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 28, 1981, Ser. No. 258,302

Claims priority, application Japan, Apr. 28, 1980, 55/55482; Jun. 4, 1980, 55/74189

Int. Cl.³ C08K *5/12*

U.S. Cl. 524—296 14 Claims

1. A polyethylene terephthalate resin composition consisting essentially of (A) a polyethylene terephthalate resin having an intrinsic viscosity of 0.35 to 0.9 as measured in ortho-chlorophenol at 35° C. and, per 100 parts by weight of the polyethylene terephthalate resin, (B) 5 to 200 parts by weight of an inorganic filler, (C) 0.1 to 20 parts by weight of dimethyl terephthalate or diethyl terephthalate and (D) 0.01 to 5 parts by weight of a salt of a carboxylic acid with a metal of Group I or II in the periodic table or 0.1 to 10 parts by weight of an ionic copolymer of an α-olefin with a salt of an α,β-unsaturated carboxylic acid and containing an ion of a metal of Group I or II in the periodic table.

4,344,875

ORGANOTIN ANTIFOULING COATING WITH EPOXY AND POLYACRYLATE COMPOSITIONS

Albert R. Parks, Glen Burnie, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 26, 1981, Ser. No. 277,455

Int. Cl.³ C08K *3/00*

U.S. Cl. 424—78 5 Claims

1. A marine antifouling coating formulation consisting essentially of, by weight:

from about 20% to about 55% of the esterification product produced by reacting tributylin oxide with a copolymer of styrene and maleic anhydride, wherein from about 0.4 to about 0.8 moles of said oxide are combined with each mole of said copolymer;

from about 5% to about 28% solvent;

from about 25% to about 55% of a diglycidyl ether of Bisphenol A epoxy compound;

from about 7% to about 15% of an acrylic or methacrylic acid ester of an aliphatic polyhydric alcohol;

from about 5% to about 10% of an aliphatic amine curing agent;

from about 2% to about 6% filler; and

from about 2% to about 6% pigment.

4,344,876

STABILIZATION OF ACID CATALYZED STOVING LACQUERS

Godwin Berner, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 47,407, Jun. 11, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 211,480

Claims priority, application Switzerland, Jun. 21, 1978, 6752/78

Int. Cl.³ C09D *3/28, 3/81*

U.S. Cl. 524—91 19 Claims

1. A composition of matter consisting of an acid-catalysed stoving lacquer based on hot crosslinkable acrylic, polyester or alkyd resins and stabilised with a N-substituted 2,2,6,6-tetraalkylpiperidine compound or its acid addition salt.

4,344,877

BICYCLO 4-ACYLOXYPIPERIDINE LIGHT STABILIZERS

Erwin Nikles, Liestal, and Friedrich Karrer, Zofingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

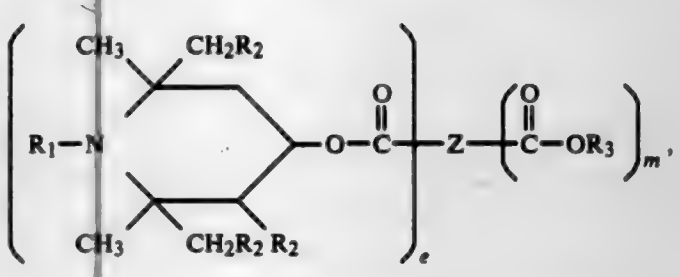
Continuation of Ser. No. 92,890, Nov. 9, 1979, abandoned, which is a continuation of Ser. No. 880,662, Feb. 23, 1978, abandoned. This application Jan. 14, 1981, Ser. No. 224,859

Claims priority, application Switzerland, Feb. 24, 1977, 2309/77

Int. Cl.³ C08K *5/34;* C07D *401/14, 401/12*

U.S. Cl. 524—102 9 Claims

1. A 4-acyloxypiperidine compound of formula I



(I)

in which R_1 denotes C_1–C_{30}-alkyl; C_3–C_{20}-alkenyl; C_3–C_{20}-alkynyl; C_2–C_{30}-cyanoalkyl; C_2–C_{30}-alkoxyalkyl; benzyl, α-phenylethyl, or said benzyl or said α-phenylethyl substituted by C_1–C_8-alkoxy; 2,3-epoxypropyl; C_1–C_{20}-alkanoyl; C_2–C_{20}-alkenoyl; benzoyl, phenylacetyl, phenylpropionyl or said benzoyl, said phenylacetyl or said phenylpropionyl substituted on the phenyl ring by two C_1–C_8-alkyl and by a hydroxyl group; pyridylcarbonyl; or one of the groups $—CH_2COOR_4$, $—CH_2—CH(R_5)—OR_6$, $—COOR_7$ or $—CONHR_7$, in which R_4 is C_1–C_{12}-alkyl, C_3–C_6-alkenyl, phenyl, benzyl, α-phenylethyl or cyclohexyl and R_5 is hydrogen, methyl or phenyl and R_6 denotes hydrogen; C_1–C_{18}-alkanoyl; acryloyl; hexahydrobenzoyl; benzoyl, phenylacetyl, phenylpropionyl, or said benzoyl, said phenylacetyl or said phenylpropionyl substituted on the phenyl ring by chlorine, by C_1–C_4-alkyl, by C_1–C_8-alkoxy, by hydroxyl or by mixtures of said substituents; or cinnamoyl, and R_7 denotes C_1–C_{12}-alkyl, cyclohexyl, phenyl or benzyl, R_2 is hydrogen or C_1–C_8-alkyl, R_3 is C_1–C_{30}-alkyl, C_1–C_{30}-hydroxyalkyl, C_2–C_{30}-cyanoalkyl, C_2–C_{30}-alkoxyalkyl, C_3–C_{30}-alkoxycarbonylalkyl, C_3–C_{20}-alkenyl, C_3–C_{20}-alkynyl, C_3–C_{12}-cycloalkyl, phenyl; or benzyl, α-phenylethyl or said benzyl or said α-phenylethyl substituted by C_1–C_8-alkoxy, Z is a divalent or tetravalent radical of bicyclo[2.2.1]heptane, bicyclo[2.2.1]hept-5-ene, bicyclo[2.2.2]octane or bicyclo[2.2.2]oct-5-ene or said radical substituted by C_1–C_4-alkyl or chlorine, e is 2 or 4, m is 0 or 2, and e+m is 2 or 4.

9. A process for stabilizing a synthetic polymer subject to degradation by the action of ultraviolet light which comprises incorporating therein an effective amount of a stabilizer compound according to claim 1.

4,344,878

FLAME RETARDANT, NON-DRIPPING LINEAR POLYESTER COMPOSITIONS

Thomas J. Dolce, Stirling, N.J., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 125,214, Feb. 27, 1980, abandoned, which is a continuation of Ser. No. 638,806, Dec. 8, 1975, abandoned. This application Feb. 19, 1981, Ser. No. 226,412

Int. Cl.³ C08K *5/59*

U.S. Cl. 524—409 8 Claims

1. A flame retardant, non-dripping thermoplastic molding composition which consists essentially of:

(a) a linear polyester resin;

(b) a flame retardant amount of a flame retardant additive consisting essentially of a halogen containing polycarbonate in admixture with antimony oxide; and

(c) an amount of polytetrafluoroethylene resin that is sufficient to render the composition non-dripping.

4,344,879

QUATERNARY AND BASIC AZAMETHINE COMPOUNDS AND THEIR USE AS COLORANTS

Reinhard Mohr, Offenbach am Main, and Manfred Hähnke, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

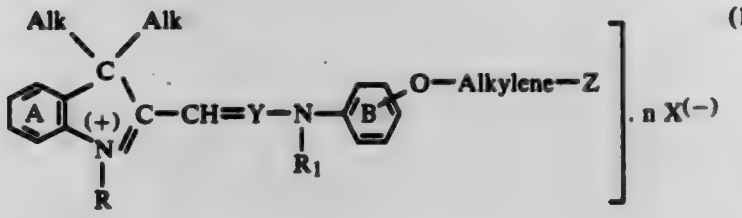
Filed Nov. 5, 1980, Ser. No. 204,323

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945028

Int. Cl.³ C07D *209/14;* C07B *23/16*

U.S. Cl. 260—146 R 6 Claims

1. An azamethine compound of the formula (1)



(1)

in which

R is alkyl of from 1 to 4 C atoms, unsubstituted or substituted by carbamoyl, alkanoyloxy of from 1 to 4 C atoms, carbalkoxy of from 1 to 4 C atoms in the alkyl moiety, hydroxy, cyano or phenyl,

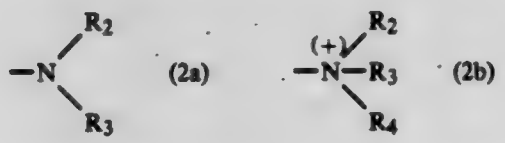
Alk is alkyl of from 1 to 4 C atoms, the two radicals Alk are identical to each other or different from one another,

Y is methine or nitrogen,

R_1 is hydrogen or alkyl of from 1 to 4 C atoms, unsubstituted or substituted by carbamoyl, alkanoyloxy of from 1 to 4 C atoms, carbalkoxy of from 1 to 4 C atoms in the alkyl moiety, hydroxy, cyano or phenyl,

Alkylene is a straight-chain or branched alkylene of from 2 to 6 C atoms,

Z is a group of the formula (2a) or (2b)



in which R_2 is alkyl of from 1 to 4 C atoms, unsubstituted or substituted by carbamoyl, alkanoyloxy of from 1 to 4 C atoms, carbalkoxy of from 1 to 4 C atoms in the alkyl moiety, hydroxy, cyano or phenyl,

R_3 is alkyl of from 1 to 4 C atoms, unsubstituted or substituted by carbamoyl, alkanoyloxy of from 1 to 4 C atoms, carbalkoxy of from 1 to 4 C atoms in the alkyl moiety, hydroxy, cyano or phenyl, or R_3 is phenyl unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of chlorine, alkyl with 1 to 4 C atoms, alkoxy with 1 to 4 C atoms, nitro, carbalkoxy with 1 to 4 C atoms in the alkyl moiety and carbamoyl, and

R_4 is hydrogen, or alkyl of from 1 to 4 C atoms, unsubstituted or substituted by carbamoyl, alkanoyloxy of from 1 to 4 C atoms, carbalkoxy with 1 to 4 C atoms in the alkyl, hydroxy, cyano or phenyl, or

R_2 and R_3, together with the nitrogen atom, form the piperidino, piperazino or morpholino radical, or

R_2 and R_3 or R, R and R, together with the positively charged nitrogen atom, form the piperidinium, morpholinium, piperazinium, 4-N-methylpiperazinium or pyridinium radical,

the benzene nucleus A is unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of halogen, nitro, cyano, sulfamoyl, alkyl with 1 to 4 C atoms, alkoxy with 1 to 4 C atoms and carbalkoxy with 1 to 4 C atoms in the alkyl,

the benzene nucleus B is unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of halogen, nitro, alkyl with 1 to 4 C atoms, alkoxy with 1 to 4 C atoms and carbalkoxy with 1 to 4 C atoms in the alkyl,

n is the number 1 or 2,

and $X^{(-)}$ is the equivalent of a colorless anion.

4,344,880

DISAZO DYESTUFFS HAVING AN ACYLAMINO GROUP AND AN AROMATIC-OXY GROUP ON DIFFERENT TERMINAL MOIETIES

Johannes Dehnert, Ludwigshafen, and Werner Juenemann, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

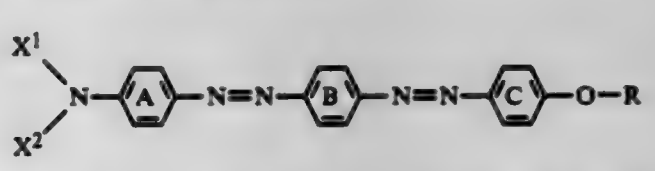
Filed Nov. 3, 1980, Ser. No. 203,809

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948456

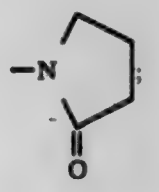
Int. Cl.³ C07C *107/04;* C09B *43/128, 43/132, 43/28*

U.S. Cl. 260—152 9 Claims

1. A disazo dye of the formula:



wherein R is an araliphatic or aromatic radical, X^1 is $-CO-R^1$, $-COOR^1$ or $-CO-N(R^1)_2$, wherein said R^1 radical independently are hydrogen or an aliphatic, cycloaliphatic, araliphatic or aromatic radical; X^2 is hydrogen, phenyl or an aliphatic or araliphatic radical; or X^1 and X^2 form a heterocyclic radical of the formula



rings A, B and C optionally being substituted and rings B and C optionally being fused with a benzo ring.

4,344,881

PROCESS FOR MAKING ALKYLENE CARBONATES

Paul E. Strege, and James M. Renga, both Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 2, 1981, Ser. No. 230,212

Int. Cl.³ C07D *317/38, 317/36*

U.S. Cl. 549—229 11 Claims

1. A process for making a cyclic alkylene carbonate which comprises heating a mixture of a lower alkyl trichloroacetate with about a molar equivalent of a vicinal alkylene diol in the presence of a small but effective amount of a base selected from the group consisting of an alkali metal alkoxide, a salt of a strong base and a weak acid, and a non-nucleophilic organic base at about 100° C.-250° C., thereby causing the formation and substantial distillation of chloroform and lower alkanol from said mixture and separating the alkylene carbonate product from the residual mixture.

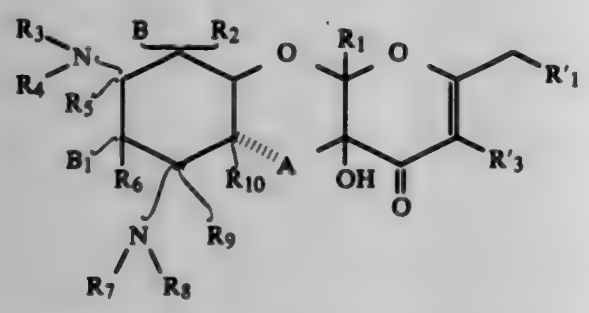
4,344,882

INTERMEDIATE COMPOUNDS IN THE PREPARATION OF SPECTINOMYCIN

David R. White, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 68,926, Aug. 23, 1979, Pat. No. 4,282,152.
This application Dec. 4, 1980, Ser. No. 212,950
Int. Cl.³ C07D *319/24, 327/08*
U.S. Cl. 549—387 3 Claims

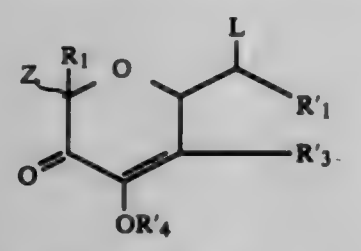
1. A process for preparing a compound having the formula



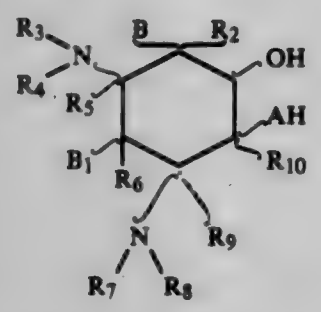
Ia

which comprises

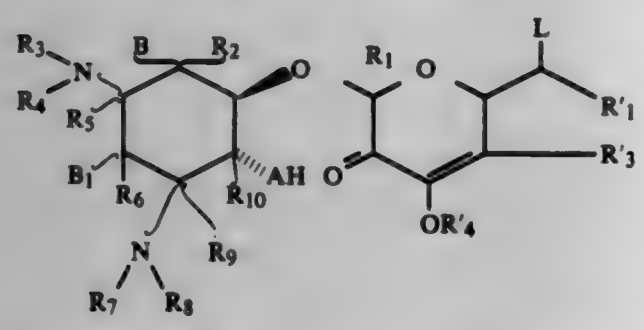
(a) reacting a compound having the formula



with a compound having the formula

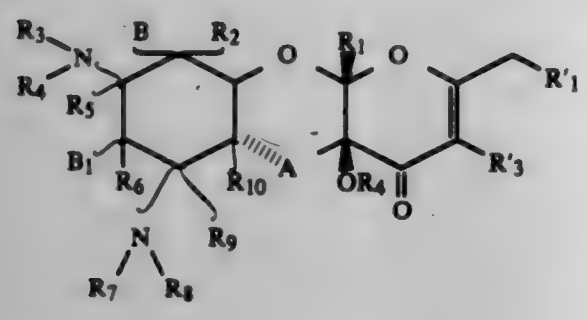


to prepare a compound having the formula



IV

(b) reacting the compound prepared in step A with a base system to prepare a compound having the formula



and

(c) hydrolyzing the compound prepared in step (b) to the compound of formula Ia;

wherein R'_1 through R'_3 may be the same or different and are selected from the group consisting of hydrogen, lower alkyl, acyloxyalkyl, lower haloalkyl, lower aminoalkyl, lower alkenyl, lower alkynyl, —OX and $(CH_2)n$-OX and isomers thereof with the proviso that R'_1, and R'_3 are not hydroxy;

wherein X is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, and lower alkynyl,

n is an integer of from one to four;

R_1 is hydrogen or lower alkyl;

wherein R_2, R_5, R_6, R_9 and R_{10} are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl; R_3, R_4, R_7 and R_8 are selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, and a blocking group consisting of aralkoxycarbonyl, halogenated alkoxycarbonyl and alkoxycarbonyl; with the proviso that one of R_3 and R_4 is always a blocking group and one of R_7 and R_8 is always a blocking group; R'_4 is aroyl, lower alkyl or acyl; A is selected from the group consisting of oxygen and sulfur, B and B_1 are the same or different and are selected from the group consisting of hydrogen, hydroxy, alkoxy, o-lower alkenyl, thio, thio-lower alkyl and thio lower alkenyl; Z is halo and L is a leaving group such as acyloxy, halo, o-sulfonate, nitro and other groups that can generate unsaturation in the ring by elimination.

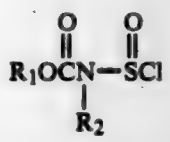
4,344,883

PRODUCTION OF N-CHLOROSULFINYLCARBAMATE ESTERS

Mohamed A. H. Fahmy, and Tetsuo R. Fukuto, both of Riverside, Calif., assignors to The Regents of the University of California, Los Angeles, Calif.

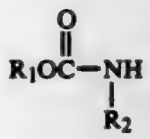
Division of Ser. No. 18,416, Mar. 7, 1979, Pat. No. 4,261,897.
This application Oct. 6, 1980, Ser. No. 194,759
Int. Cl.³ C07D *317/64, 307/86;* C07C *149/437, 131/00*
U.S. Cl. 549—467 19 Claims

1. Process for preparing N-chlorosulfinylcarbamates having the formula:



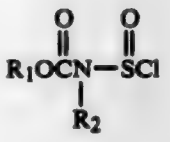
IV

which comprises reacting a compound having the formula:

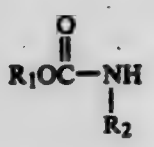


wherein R_1 is selected from the group consisting of a hydrocarbyl group containing from 1 to 20 carbon atoms, a 5 to 6 membered heterocyclic ring containing O or S atoms, and the >C═N— group, and R_2 is a hydrocarbyl group containing from 1 to 12 carbon atoms, with thionyl chloride, the reaction being carried out in the presence of an organic solvent and a hydrogen chloride acceptor.

5. Process for preparing N-chlorosulfinylcarbamates having the formula:



which comprises reacting a compound having the formula:



wherein R_1 is selected from the group consisting of a hydrocarbyl group containing from 1 to 20 carbon atoms, a 5 to 6 membered heterocyclic ring containing O or S atoms, and the >C=N— group, and R_2 is a hydrocarbyl group selected from the group consisting of straight chain, branched and carbocyclic (five or six membered ring) alkyl, or phenylaklyl, and containing from 1 to 12 carbon atoms, with thionyl chloride.

4,344,884

PROCESS FOR PRODUCING CIS-3-(2,2-DISUBSTITUTED-ETHENYL)-2,2-DIMETHYL-CYCLOPROPANECARBOXYLIC ACID AND INTERMEDIATES

Kiyoshi Kondo; Toshiyuki Takashima, and Minoru Suda, all of Kanagawa, Japan, assignors to FMC Corporation, Philadelphia, Pa.

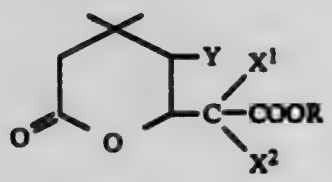
Division of Ser. No. 90,218, Nov. 1, 1979, Pat. No. 4,237,058. This application Jun. 30, 1980, Ser. No. 164,624

The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.

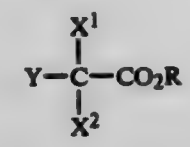
Int. Cl.³ C07D *307/93, 309/30*; C07C *61/04*

U.S. Cl. 549—273 **8 Claims**

1. A process for preparing a compound of the formula



wherein Y is a bromine or chlorine atom, X^1 and X^2 are the same or different and each is a halogen atom, a trichloromethyl group, or a trifluoromethyl group, and R is an alkyl group of 1 to 4 carbon atoms, with the proviso that Y is a bromine atom when at least one of X^1 and X^2 is a bromine atom, which comprises reacting 3,4-dihydro-4,4-dimethyl-2H-pyran-2-one with an alkyl haloacetate of the formula



in the presence of an addition catalyst selected from free radical initiators, light, a transition metal salt, and a transition metal salt/amine complex.

4,344,885

INTERMEDIATE FOR THE PREPARATION OF THIENAMYCIN

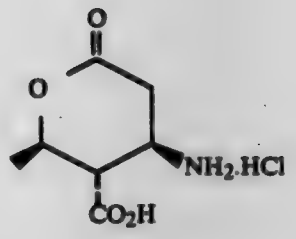
Thomas M. H. Liu, Westfield; David G. Melillo, Scotch Plains; Kenneth M. Ryan, Clark; Ichiro Shinkai, Westfield, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 112,058, Jan. 14, 1980, abandoned. This application Apr. 17, 1981, Ser. No. 255,193

Int. Cl.³ C07D *309/30*

U.S. Cl. 549—291 **1 Claim**

1. A compound having the structure:



4,344,886

PREPARATION OF 2-HYDROXYALKYLCHROMANS

Michael Horner, Neustadt, and Axel Nissen, Leimen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

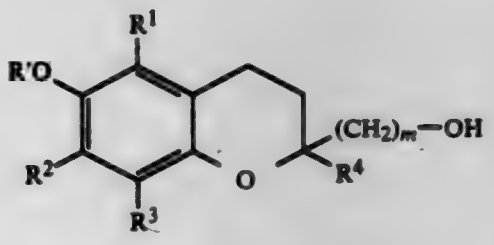
Filed Feb. 26, 1981, Ser. No. 238,608

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010504

Int. Cl.³ C07D *311/72*

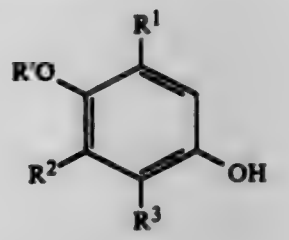
U.S. Cl. 549—408 **2 Claims**

1. A process for the preparation of a 2-hydroxyalkylchroman of the formula I



I

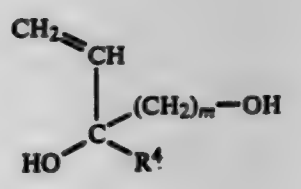
where R^1, R^2, R^3 and R^4 are each H or C_1–C_8-alkyl, R′ is H or an organic radical which can be split off hydrolytically or hydrogenolytically as R′-OH or R′-COOH, and m is 1, 2 or 3, wherein a hydroquinone II



II

is reacted

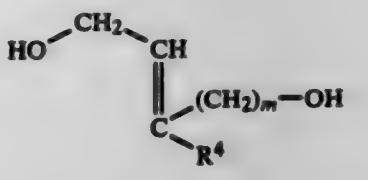
(a) with an alkenediol IIIa



IIIa

or

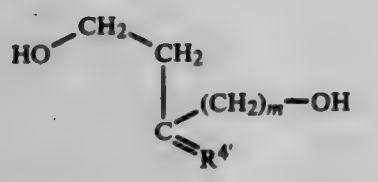
(b) with an alkenediol IIIb



IIIb

or

(c) with an alkenediol IIIc



IIIc

where $R^{4'}$ is methylene, at from −50° C. to 120° C., in an inert solvent, in the presence of from 10 to 300 mole %, based on II, of a Lewis acid or of an adduct of a Lewis acid with a Lewis base which has a lower basicity than compound II.

4,344,887

METHOD FOR EPOXIDIZING OLEFINS

Charles J. Stark, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 107,899, Dec. 28, 1979, abandoned. This application May 15, 1981, Ser. No. 263,839

Int. Cl.³ C07D *301/12*

U.S. Cl. 549—531 **4 Claims**

1. An epoxidation method which comprises,

(1) effecting reaction between an olefinically unsaturated organic material and an aqueous 30–90% by weight hydrogen peroxide solution in the presence of symmetrical tetrachloroacetone, an inert organic solvent and a buffer, where there is used at least 1 mole of tetrachloroacetone per site of olefinic unsaturation in the olefinically unsaturated organic material,

(2) combining the resulting mixture of (1) with an inert $C_{(5-8)}$ aliphatic hydrocarbon solvent,

(3) separating the organic layer from the mixture of (2),

(4) washing the recovered organic layer with an aqueous base solution and

(5) distilling the washed organic layer to effect recovery of the epoxidized organic material from (3).

4,344,888

24,25-DIHYDROXYCHOLESTANS AND PROCESS FOR PREPARING THE SAME

Hiroaki Takayama, Tokyo; Sachiko Yamada, Hachioji, and Masayuki Ohmori, Kanagawa, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

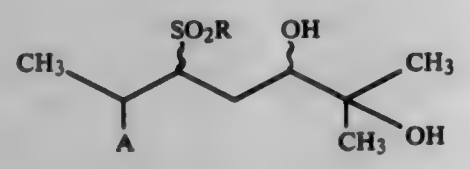
Filed Jul. 27, 1981, Ser. No. 287,052

Claims priority, application Japan, Aug. 5, 1980, 55-106774

Int. Cl.³ C07J *17/00*

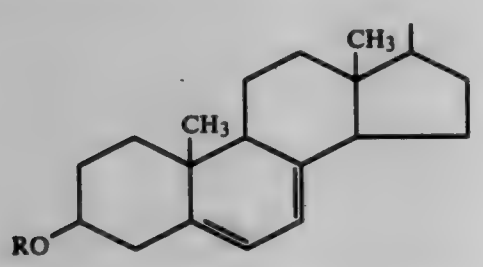
U.S. Cl. 260—397.2 **8 Claims**

1. A 24,25-dihydroxycholestane derivative of the formula:



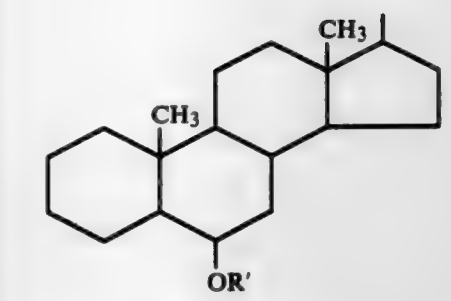
(wherein A is a steroid residue of one of the following formulas (a), (b) and (c), and R is an aryl group)

(a)



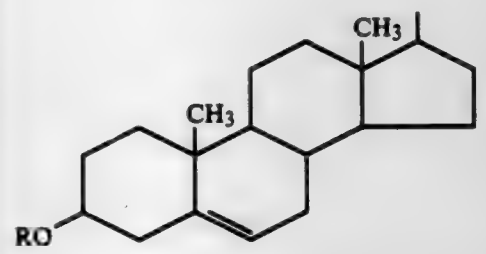
(wherein R is a protecting group for hydroxyl group);

(b)



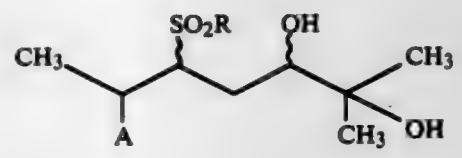
(wherein R′ is a lower alkyl group); and

(c)



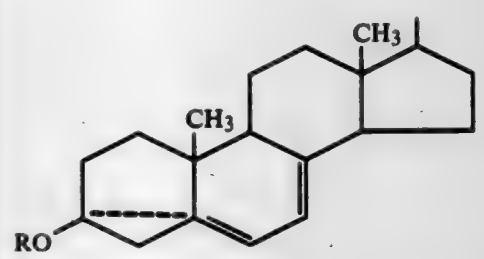
(wherein R is a protecting group for hydroxyl group).

4. A process for producing a 24,25-dihydroxycholestane derivative of the formula:



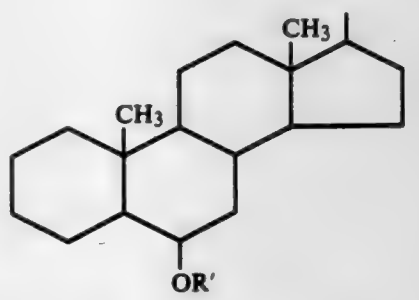
(wherein A is a steroid residue of one of the following formulas (a), (b) and (c), and R is an aryl group)

(a)

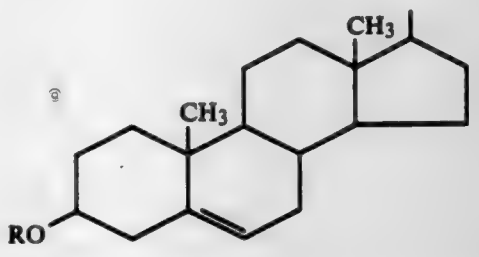


(wherein R is a protecting group for hydroxyl group);

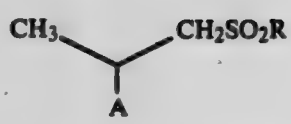
(b)



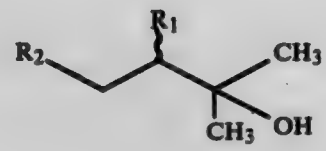
(wherein R′ is a lower alkyl group); and



(wherein R is a protecting group for hydroxyl group) which comprises reacting a compound of the formula:



(wherein A and R are the same as defined above) with a compound of the formula:



4,344,889

PROCESS FOR THE CONTINUOUS PREPARATION OF SULFONATES DERIVED FROM MOLECULES HAVING LONG ALKYL CHAINS AND, MORE PARTICULARLY, SULFONATES DERIVED FROM FATTY ESTERS

Nicolas Inchauspe, Arthez de Bearn, France, assignor to Dumas et Inchauspe, Pau, France

Filed Jan. 9, 1981, Ser. No. 223,750
Claims priority, application France, Jan. 10, 1980, 80 00521
Int. Cl.³ C07C *143/90;* C11D *1/28*
U.S. Cl. 260—400 9 Claims

1. Process for the continuous preparation of sulfonic acids by sulfonating a starting material selected from the group consisting of methyl esters of fatty acids and mixtures thereof, which process comprises the steps of subjecting the said starting material to a sulfonation carried out by sulfo-oxidation under irradiation, degassing the product and extracting the sulfonic acids so obtained by repeated treatment with slightly aqueous methanol in order to obtain, on the one hand, a phase containing the unsulfonated starting material which is returned to the sulfonation step and, on the other hand, a phase which contains the sulfonic acids and which is subjected to evaporation in order to separate the methanol from the sulfonic acids, said extraction being performed at a temperature between 35° and 50° C.

4,344,890

AQUEOUS FUNGICIDAL FORMULATIONS AND THEIR PREPARATION

John B. Adams, Jr., R.D. #2, Box 40, Hockessin, Del. 19707

Continuation of Ser. No. 143,816, Apr. 23, 1980, abandoned. This application May 4, 1981, Ser. No. 259,955
Int. Cl.³ C07F *11/00, 3/06*
U.S. Cl. 260—429 K 9 Claims

1. In a process for preparing a stabilized aqueous composition of maneb by reacting a disodium, dipotassium, or diammonium salt of ethylenebis(dithiocarbamic acid) with a water-soluble manganese(II) salt in aqueous medium to precipitate maneb, and recovering the maneb, the improvement which comprises mixing the maneb in an aqueous medium with about 0.05–5.0% by weight of formaldehyde and about 0.05–5.0% by weight (based on Zn) of a soluble zinc salt.

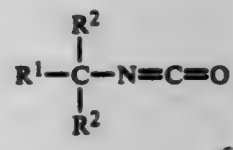
4,344,891

HALOGENATED TERTIARY ALKYL ISOCYANATES AND THEIR PREPARATION

Karl-Heinz Koenig, Frankenthal; Volker Schwendemann, Wiesenbach, and Karl-Heinz Feuerherd, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

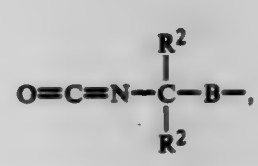
Filed Sep. 8, 1980, Ser. No. 185,404
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2937062
Int. Cl.³ C07C *119/042, 119/045*
U.S. Cl. 260—453 A 8 Claims

1. A process for the preparation of halogenated tertiary alkyl isocyanates of the formula

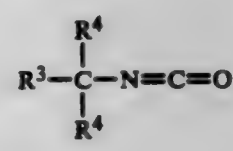


I

where R^1 is R^2 or

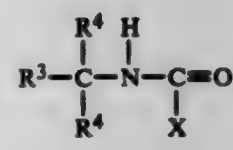


and the individual radicals R^2 are identical or different and each is haloalkyl or halogen-free alkyl of 1 to 6 carbon atoms, and two radicals R^2 bonded to the same carbon atom may also be members of a halogen-free or halogenated alicyclic ring, B is halogen-free alkylene or haloalkylene of 1 to 6 carbon atoms, and one or more of the radicals R^2 possess one or more halogen atoms, by halogenation of isocyanates or carbamic acid chlorides, wherein a tertiary alkyl isocyanate of the formula



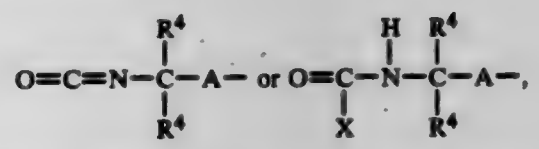
II

or a tertiary carbamic acid halide of the formula



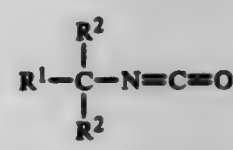
III

where R^3 is R^4- or



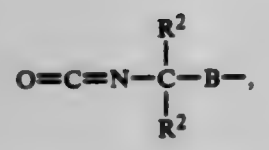
the individual radicals R^4 may be identical or different and each is an aliphatic radical having 1 to 6 carbon atoms and two radicals R^4 bonded to the same carbon atom may also be members of an alicyclic ring, A is alkylene or haloalkylene of 1 to 6 carbon atoms and X is halogen, is reacted with halogen, sulfuryl chloride and/or sulfuryl bromide.

2. A halogenated tertiary alkyl isocyanate of the formula



I

where R^1 is R^2 or



and the individual radicals R^2 are identical or different and each is haloalkyl or halogen-free alkyl of 1 to 6 carbon atoms, and two radicals R^2 bonded to the same carbon atom may also be members of a halogen-free or halogenated alicyclic ring, B is halogen-free alkylene or haloalkylene of 1 to 6 carbon atoms, and one or more of the radicals R^2 possess one or more halogen atoms, and the total number of halogen atoms, if R^1 is R^2- and all 3 radicals R^2 together contain 3 carbon atoms, is not less than 4.

4,344,892

SELF-GRANULATING REACTION PRODUCT OF 4,4'-DIPHENYLMETHANE DIISOCYANATE AND RESORCINOL

Frank Sanns, Jr., Upper St. Clair, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Aug. 14, 1981, Ser. No. 292,967

Int. Cl.³ C07C *119/048*

U.S. Cl. 260—453 AM **8 Claims**

1. A free-flowing, dry, granular powder comprising the reaction product of 4,4'-diphenylmethane diisocyanate and resorcinol, the product having an isocyanate group content of from 27 to 31% by weight.

6. A process for the preparation of a free-flowing, dry, granular powder comprising:

(i) reacting 4,4'-diphenylmethane diisocyanate with resorcinol at a temperature of from 40° to 80° C. in the presence of a catalytic amount of a material which catalyzes the reaction between isocyanate groups and hydroxyl groups,

(ii) allowing the reaction mixture to exotherm to a temperature no higher than 90° C., and

(iii) allowing the resultant product to cool to room temperature.

4,344,893

PESTICIDE COMPOUNDS

Leonard G. Copping; John C. Kerry; Thomas I. Watkins; Robert J. Willis, and Bryan H. Palmer, all of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

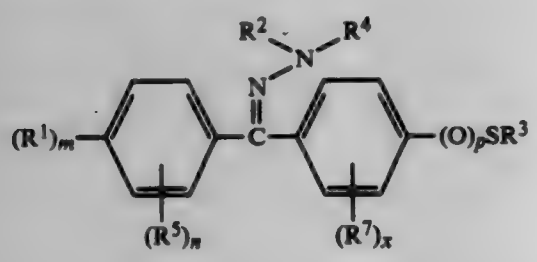
Continuation-in-part of Ser. No. 15,011, Feb. 26, 1979, abandoned. This application Feb. 25, 1980, Ser. No. 124,183

Claims priority, application United Kingdom, Mar. 1, 1978, 8002/78; Mar. 1, 1978, 8003/78

Int. Cl.³ C07C *143/68, 133/04, 133/08, 143/74*

U.S. Cl. 260—456 A **10 Claims**

1. Compounds of formula I



I

in which m is 0 and n is 0 or m is 1 and n is 0 or 1; p is 0 2 or 3, x is 0 or 1; R^1, R^5 and R^7 are halogen, alkyl, haloalkyl or alkoxy or R^1 and an adjacent R^5 group together with the benzene to which they are attached form a naphthyl group: R^2 and R^4 may be the same or different and are hydrogen; alkyl; an ester group of formula R^8XCO, where X is oxygen or sulphur and R^8 is selected from alkyl (optionally substituted by alkoxy, cycloalkyl, halogen, phenyl, substituted phenyl, naphthyl, phenoxy or substituted phenoxy), cycloalkyl, alkenyl, (optionally substituted by phenyl or substituted phenyl), alkynyl, phenyl, substituted phenyl, 2-naphthyl, furyl, thienyl, pyridyl, morpholinyl, piperidyl, and thiamorpholinyl; an acyl group of formula R^9CO where R^9 is selected from hydrogen, alkyl, (optionally substituted by alkoxy, cycloalkyl, halogen, phenoxy or substituted phenoxy), cycloalkyl, alkenyl (optionally substituted by phenyl or substituted phenyl), alkynyl, phenyl, substituted phenyl, 2-naphthyl, morpholinyl, piperidyl and thiamorpholinyl; (wherein when one of R^8 or R^9 contains a substituted phenyl group, the phenyl is substituted by one or more groups selected from C_{1-4} alkyl, C_{1-4} haloalkyl, nitro, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{1-4} dialkylamino, phenyl and halogen); a carbamoyl group of formula $—CONR^{10}R^{11}$ where R^{10} and R^{11} are the same or different and are hydrogen or alkyl; or R^2 and R^4 together with the nitrogen to which they are attached form the group piperidine, pyrrolidine, thiamorpholine or morpholine; R^3 is alkyl, optionally substituted by halogen; alkenyl; N,N-dialkylamino; or phenyl, optionally substituted by alkyl or halogen; with the proviso that when p is 0, R^2 and R^4 are not both hydrogen.

4,344,894

PROCESS FOR THE PREPARATION OF CYCLOPROPANE CARBOXYLIC ACID ESTERS

Dale A. Laidler, Chester, and David J. Milner, Manchester, both of England, assignors to Imperial Chemical Industries Limited, London, England

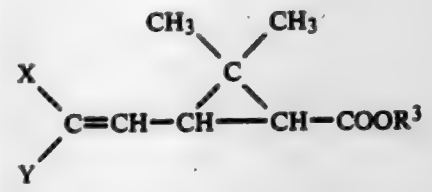
Filed Jun. 2, 1980, Ser. No. 156,076

Claims priority, application United Kingdom, Jul. 13, 1979, 7924522

Int. Cl.³ C07C *120/00, 67/347*

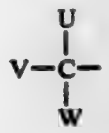
U.S. Cl. 260—465 D **1 Claim**

1. A process for the preparation of a compound of the formula:

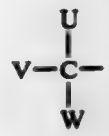


(I)

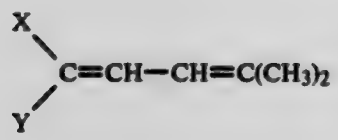
wherein R^3 is lower alkyl, 3-phenoxybenzyl, α-cyano-3-phenoxybenzyl or α-ethynyl-3-phenoxybenzyl group, and X and Y, which may be the same or different, are fluorine, chlorine, bromine, lower alkyl or $Q(CF_2)_m—$, in which Q is hydrogen, fluorine or chlorinne and m is 1 or 2, or



in which each of U, V and W are independently hydrogen, fluorine or chlorine except that where one of X and Y is a group of formula $Q(CF_2)_m—$ where Q is as defined above, the other of X and Y is fluorine, chlorine or bromine or a group



as previously defined, characterised in that a compound having the formula:



(II)

is reacted with an alkyl diazoacetate $N_2CH.COOR^3$, R^3, X and Y having the prevously defined meanings, in the presence of a catalyst which is the transition metal complex of a chiral Schiff base selected from the group consisting of the compound derived from pyridine-2-carboxaldehyde and S-2-amino-1,1-di-(2-methoxyphenyl)-3-phenylpropan-1-ol, the compound derived from pyridine-2,6-dicarboxaldehyde and S-2-amino-1,1-di-(2-methoxyphenyl)-3-phenylpropan-1-ol, methyl N-salicylidene-4,6-O-benzylidene-2-amino-2-deoxy-alpha-D-altropyranoside, methyl N-(2-hydroxy-1-napthylidene)-4,6-O-benzylidene-2-amino-2-deoxy-alpha-D-altropyranoside, methyl N-(2-pyridinylidene)-4,6-O-benzylidene-2-amino-2-deoxy-alpha-D-altropyranoside, methyl N-salicylidene-4,6-O-benzylidene-2-amino-2-deoxy-beta-D-altropyranoside, methyl N-(2-hydroxy-1-naphthylidene)-4,6-O-benzylidene-2-amino-2-deoxy-beta-D-altropyranoside, methyl N-(2-pyridinylidene)-4,6-O-benzylidene-2-amino-2-deoxy beta-D-altropyranoside, methyl N-salicylidene-4,6-O-benzylidene-2-amino-2-deoxy-alpha-D-allopyranoside, methyl N-(2-pyridinylidene)-4,6-O-benzylidene-2-amino-2-deoxy-alpha-D-allopyranoside, methyl N-salicylidene-2-amino-2-deoxy-beta-D-glucopyranoside, methyl N-(2-hydroxy-1-naphthylidene)-2-amino-2-deoxy-beta-D-glucopyranoside, methyl N-(2-pyridinylidene)-2-amino-2-deoxy-beta-D-glucopyranoside, methyl N-salicylidene-2-amino-2-deoxy-alpha-D-glucopyranoside and methyl N-(2-pyridinylidene)-2-amino-2-deoxy-alpha-D-glucopyranoside.

4,344,895

PROCESS FOR THE PREPARATION OF (S) α-CYANO-3-PHENOXY-BENZYL ALCOHOL

Jacques Martel, Bondy; Jean Tessier, Vincennes; Andre Teche, Nanterre, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 973,791, Dec. 28, 1978, Pat. No. 4,273,727. This application Apr. 13, 1981, Ser. No. 253,868

Claims priority, application France, Jan. 3, 1978, 78 02621

Int. Cl.³ C07C *121/75*

U.S. Cl. 260—465 F **4 Claims**

1. A process for the preparation of (S) α-cyano-3-phenoxy-benzyl alcohol comprising reacting in the presence of an acid agent (R,S) α-cyano-3-phenoxy-benzyl alcohol and the lactone of cis 2,2-dimethyl-3S-(dihydroxymethyl)-cyclopropane-1R-carboxylic acid to obtain a mixture of (1R,5S) 6,6-dimethyl-4(R)-[(S)-cyano-(3′-phenoxyphenyl)-methoxy]-3-oxa-bicyclo-(3,1,0)-hexan-2-one and (1R,5S) 6,6-dimethyl-4(R)-[(R)-cyano-(3′-phenoxyphenyl)-methoxy]-3-oxa-bicyclo-(3,1,0)-hexan-2-one, separating the two isomers by physical means and hydrolyzing (1R,5S) 6,6-dimethyl-4(R)-[(S)-cyano-(3′-phenoxyphenyl)-methoxy]-3-oxa-bicyclo-(3,1,0)-hexan-2-one in an acid media to obtain (S) α-cyano-3-phenoxy-benzyl alcohol.

4,344,896

PREPARATION OF 2-CYANOALDEHYDES BY RHODIUM-CATALYZED HYDROFORMYLATION

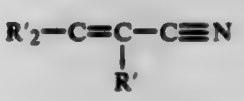
Victor P. Kurkov, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 11,272, Feb. 12, 1979, abandoned. This application Mar. 7, 1980, Ser. No. 128,016

Int. Cl.³ C07C *120/00, 121/34, 121/46*

U.S. Cl. 260—465.1 **8 Claims**

1. A process for preparing 2-cyanoaldehydes by the hydroformylation reaction which comprises contacting an alpha,beta-unsaturated nitrile or mixture of such nitriles with carbon monoxide and hydrogen at a temperature from 130° C. to 250° C. and a combined carbon monoxide-hydrogen pressure of from 50 atmospheres to 500 atmospheres in the presence of a catalytic amount of a catalyst consisting essentially of rhodium in complex combination with carbon monoxide and a ligand; said alpha,beta-unsaturated nitrile being selected from the group consisting of compounds of the structural formula



wherein each R′ is independently selected from the group consisting of hydrogen, saturated alkyl of 1 to 6 carbon atoms or cycloalkyl radicals of 5 to 6 carbon atoms, halide or nitro radicals, said compound having not more than one nitro group; and said ligand being represented by the formula $M[—(O)_n—R]_3$ where M is phosphorus, arsenic or antimony, O is oxygen, n is 0 or 1 and R is a hydrocarbyl radical selected from the group consisting of alkyl of 1 to 20 carbon atoms, aryl of 6 to 14 carbon atoms, alkaryl of 7 to 20 carbon atoms; or aralkyl atoms, and with the proviso that R may optionally be substituted by unreactive substituents; and wherein the molar ratio of 2-cyanoaldehydes to 3-cyanoaldehydes produced is at least of the order of 40 to 1.

4,344,897

PROCESS FOR THE PREPARATION OF PERCARBOXYLIC ACID SOLUTIONS

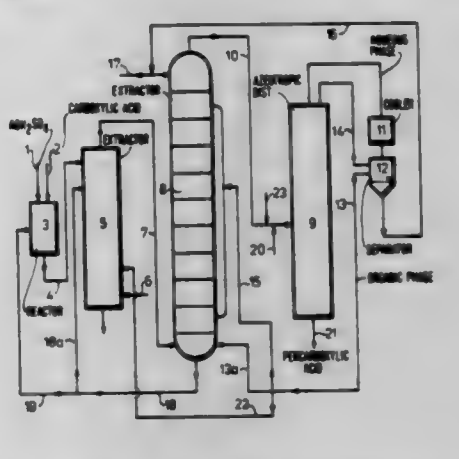
Ralf Goedecke; Willi Hofen, both of Rodenbach; Hermann Seifert, and Gerd Siekmann, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 13, 1979, Ser. No. 102,817

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1978, 2856665

Int. Cl.³ C07C *179/00;* B01D *3/36*

U.S. Cl. 260—502 R **15 Claims**



1. In a process for the continuous preparation of a pure organic solution of a percarboxylic acid having 2 to 5 carbon atoms, which comprises

(a) contacting aqueous hydrogen peroxide with a carboxylic acid containing 2 to 5 carbon atoms in the presence of an acid catalyst at a feed molar ratio of H_2O_2 to carboxylic acid of 0.5:1 to 30:1,

(b) isolating an extract essentially containing the percarboxylic acid and the corresponding carboxylic acid not converted in stage (a), by extracting the reaction mixture obtained according to stage (a) with an organic solvent,

(c) extracting the extract with water or an aqueous solution substantially free of hydrogen peroxide and mineral acid in an extraction unit provided with one to ten theoretical separation stages whereby to obtain an aqueous extract, and

(d) dehydrating the solution of the percarboxylic acid and organic solvent obtained according to (c), by azeotropic distillation to obtain a top product, condensing the top product and separating the resultant condensate into an organic phase and an aqueous phase,

the improvement wherein the organic phase of the top prod-

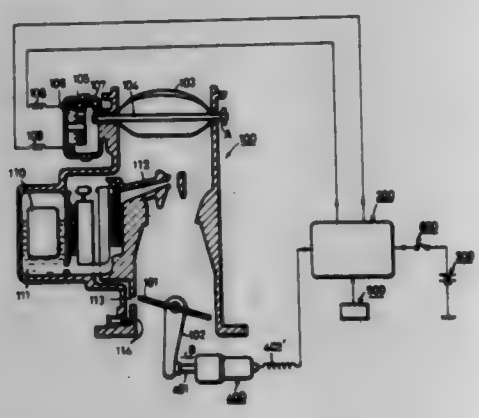
uct of the azeotropic distillation, obtained during the dehydration according to (d), is entirely or partially directly recycled to stage (c) and/or entirely or partially directly recycled to stage (b).

4,344,898

CARBURETOR CONTROLLING SYSTEM

Shigetaka Takada, Obu, and Yoji Satoh, Nagoya, both of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Dec. 10, 1981, Ser. No. 329,588
Int. Cl.³ F02M *1/12*
U.S. Cl. 261—39 E **2 Claims**



1. In combination with a carburetor system having an electrically-heated choke system including a first heat generating member which is heated by the power supplied from a battery and a first thermo-sensitive member which is deformed by the heating operation of said first heat generating member and adapted for controlling an opening and closing operation of a choke valve by the deformation of said first thermo-sensitive member, and a fast idle system adapted for controlling an opening and closing operation of a throttle valve, a carburetor controlling system comprising a second heat generating member which is heated by the power supplied from said battery, a second thermo-sensitive member which is deformed by the heating operation of said second heat generating member and controls an opening and closing operation of said throttle valve, a control circuit connected between said battery and said first and second heat generating members, a thermosensor for detecting an atmospheric temperature, said control circuit comprising a comparator circuit for comparing a compared input voltage corresponding to an output of said thermosensor with a predetermined reference voltage and a power circuit for controlling an amount of power supplied from said battery to said first and second heat generating members in accordance with the compared output of said comparator circuit.

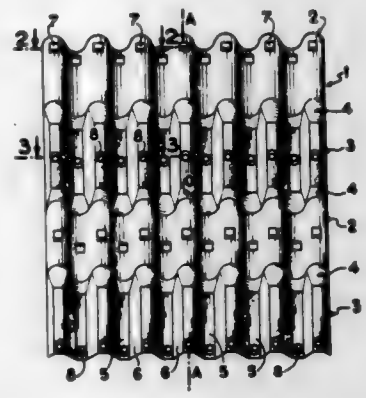
4,344,899

FILL SHEETS FOR GAS AND LIQUID CONTACT APPARATUS

Michel W. J. P. R. Monjoie, Brussels, Belgium, assignor to Hamon Sobelco, S.A., Brussels, Belgium

Filed Oct. 8, 1980, Ser. No. 195,254
Claims priority, application France, Oct. 26, 1979, 79 26636
Int. Cl.³ B01D *47/02*
U.S. Cl. 261—112 **12 Claims**

1. Corrugated fill sheets for a furnishing device comprising liquid fill sheets which are juxtaposed and vertically corrugated and form therebetween passages for a gas, said sheets comprising in succession, in a direction parallel to the crests of the corrugations, at least two regions in which the corrugations have different amplitudes namely a region having corrugations of large amplitude and a region having small amplitude which are interconnected by a transition region, characterized in that said sheets have at intervals along the crests of their corrugations spacer devices by means of which said sheets may be locally fixed to an adjacent sheet and maintained out of contact with the latter except in the region of said spacer devices, further said sheets have a plurality of regions having corrugations of large amplitude alternating with an equal number of regions having corrugations of small amplitude, and said regions having corrugations of small amplitude and corrugations of large amplitude have the same lengths measured in a direction parallel to the crests of the corrugations and said fill sheets further characterized in that the corrugations of large amplitude have a curvilinear profile and the corrugations of small amplitude have an angular profile.



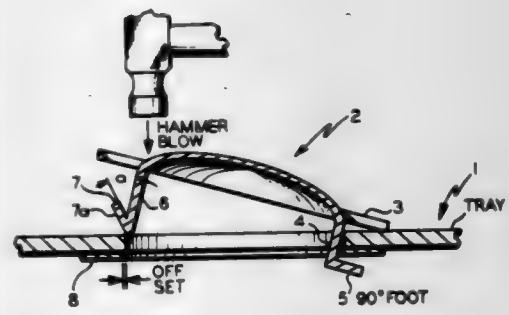
12. A furnishing device for an installation for putting a liquid contact with a gas, characterized in that it comprises a series of sheets according to the claim 1, wherein said sheets are juxtaposed and fixed to each other, the corrugations of large amplitude and small amplitude of each sheet having the same pitch and being in phase.

4,344,900

FRACTIONATOR TRAY VALVE

Ray L. Sonnedecker, Kansas City, Kans., and Ronald P. Martin, Toledo, Ohio, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 16, 1980, Ser. No. 197,454
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—114 VT **2 Claims**



1. A fractionator plate comprising a plurality of openings and a valve adapted to be positioned into and movably retained in one of said openings in said fractionator plate, said valve comprising (a) a cap larger than said opening and (b) at least three legs extending from said cap; wherein said valve is a unitary piece of material; wherein said at least three legs are movably retained in said opening; wherein said cap is movably retained above said plate; wherein a first leg of said at least three legs has a foot that extends outwardly at about 90° from said first leg; wherein a second leg of said at least three legs has a foot that extends outwardly at about 90° from said second leg; wherein a third leg of said at least three legs has an outwardly and upwardly oriented foot that presents a wedged contour such that said outwardly and upwardly oriented foot and said third leg form an acute angle; wherein said feet peripherally define an area greater than that of said opening; wherein said third leg is sufficiently flexible to be deformed to permit said feet to present a momentarily reduced peripherally defined area when said valve is pressed downwardly against said plate thus to permit the legs of said valve to be snapped into said opening; and wherein said outwardly and upwardly oriented foot presenting said wedged contour is adapted to at least fit partly into said opening when said first leg and said

second leg are within said opening and to present a wedged face to the edge of said opening whereby upon application of downwardly directed pressure on said valve said outwardly and upwardly oriented foot will be deformed inwardly from the edge of said opening until said valve has been mounted in said opening by the passing of said outwardly and upwardly oriented foot through said opening to allow said outwardly and upwardly oriented foot to regain its original position.

4,344,901

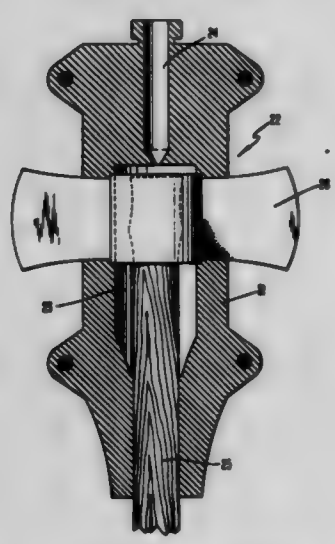
METHOD OF MAKING TOOL HANDLE

Bob N. Keathley, Bernie, Mo., assignor to IXL Manufacturing Co., Inc., Bernie, Mo.

Division of Ser. No. 67,260, Aug. 17, 1979, Pat. No. 4,287,640. This application Jun. 30, 1981, Ser. No. 278,939

Int. Cl.³ B29C *6/04*

U.S. Cl. 264—23 **15 Claims**



1. A method of producing an elongated tool handle, said method comprising:

(a) forming an elongated blank of kiln dried wood,

(b) reducing the moisture level of said kiln dried wood along a delimited length of said elongated blank,

(c) placing said moisture reduced delimited length into a mold cavity, and

(d) injecting a molten, high impact material into said mold cavity to secure said material directly to said wood in the delimited length of said blank,

(e) said molten material having a volumetric mass which gives off an amount of heat in its molten condition effective to drive moisture out of kiln dried wood.

4,344,902

PROCESS FOR MANUFACTURING FLEXIBLE DENSIFIED POLYMETHANE FOAM

Alan H. Milford, Hamden, and Oliver J. Proulx, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

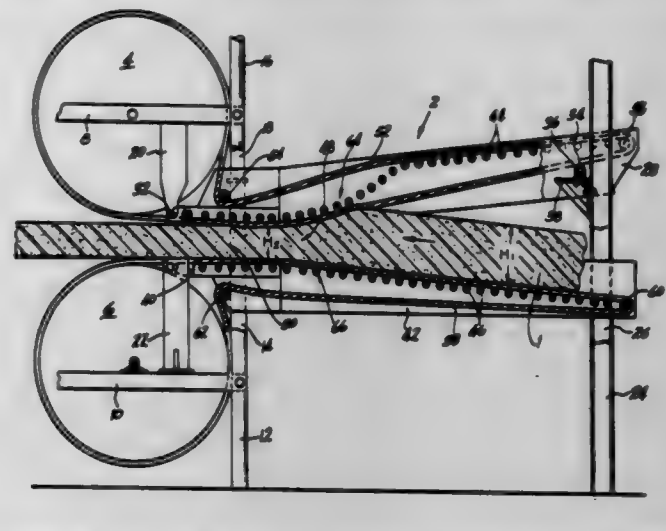
Division of Ser. No. 932,246, Aug. 9, 1978, Pat. No. 4,252,517, which is a continuation-in-part of Ser. No. 738,262, Nov. 2, 1976, Pat. No. 4,134,945. This application Nov. 1, 1979, Ser. No. 90,201

The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.

Int. Cl.³ B29D *27/04*

U.S. Cl. 264—51 **8 Claims**

1. In a process for making flexible densified polyurethane foam wherein a polyurethane foam-forming reaction mixture is allowed to rise and is crushed before being cured, the improvement comprising conveying said partially cured freely risen foam to a crush conveyor and crushing said foam as said foam is being conveyed between upper and lower crushing portions of said crush conveyor, said upper crushing portion being of arcuate configuration having a radius of a dimension such that the ratio of the arc radius to the height of the freely risen foam is greater than 1.1 to 1, and the lower crushing portion being



oppositely disposed from said upper portion and comprising a planar section.

4,344,903

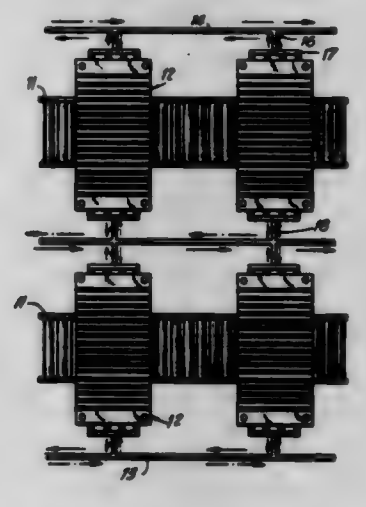
METHOD OF MAKING A CELLULAR POLYMERIC RESIN BODY IN A SELF CONTAINED HIGH-PRESSURE MOLD FORM

Maurice Y. Pascouet, 67-66 108th St., Forest Hills, N.Y. 11375

Continuation of Ser. No. 929,790, Jul. 31, 1978, abandoned. This application Jan. 23, 1981, Ser. No. 227,615

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—55 **11 Claims**



1. The method of producing a cellular synthetic organic polymeric body comprising the steps of depositing into an open high pressure receptacle a foamable polyvinyl chloride plastisol synthetic organic thermoplastic resin composition having dispersed therein in a finely divided state a thermal first gas blowing agent and an isocyanate which functions as a water activatable gas generating composition second blowing agent reactant, closing said receptacle to form a closed, fluid tight self contained mold form resistant to a predetermined internal pressure of at least a few thousand pounds per square inch, in the absence of any external press device, heating said self contained closed mold form from an external source of heat to raise the temperature of the contained composition to the gelation temperature of said resin and the heat activation temperature of said first blowing agent to gel, fuse and expand the foamable polyvinyl chloride plastisol resin composition and thereby produce a high internal pressure in said mold form not exceeding said predetermined internal pressure, cooling said form and the contents thereof, opening said form and removing the resulting embryo cellular thermoplastic body and thereafter exposing said embryo body to and maintaining contact with water to activate said second blowing agent gas generating composition.

4,344,904

SINTERING METHOD OF ZIRCONIA

Koichi Yamada, and Yasuo Shinya, both of Niihama, Japan, assignors to Sumitomo Aluminium Smelting Co., Ltd., Osaka, Japan

Filed Sep. 25, 1980, Ser. No. 190,845
Claims priority, application Japan, Sep. 28, 1979, 54/125589
Int. Cl.³ C04B *35/48*
U.S. Cl. 264—66 7 Claims

1. A method of producing a sintered zirconia article, comprising the steps of mixing 10–50% by weight of a partially stabilized zirconia powder obtained by adding a stabilizing agent to a zirconia powder and admixing, sintering the admixture and pulverizing the sintered admixture, and 90–50% by weight of a zirconia powder and a stabilizing agent; shaping the resulting mixture, sintering the shaped article and then heat treating the sintered article at a temperature of from 1200° to 1500° C., thereby to obtain a sintered zirconia article composed of a cubic phase crystal which has a crystalline structure of not more than 70% by weight and which is made up of 5–40% by weight of particles having a diameter range of 1–30μ and 95–60% by weight of particles having a diameter range of 30–300μ.

4,344,905

GAS LASERS

Arthur L. Chilcot, Aberlady, Scotland, assignor to Ferranti Limited, Hollinwood, England

Division of Ser. No. 840,252, Oct. 7, 1977, abandoned. This application Nov. 2, 1979, Ser. No. 90,510
Int. Cl.³ B22F *3/02*
U.S. Cl. 264—111 4 Claims

1. A method comprising forming a cathode electrode for a gas discharge laser by compressing a quantity of platinum black powder under high pressure to form a solid pellet of electrically conducting material.

4,344,906

PROCESS FOR PRODUCING GLASS FIBER-REINFORCED TRANSPARENT CAST SHEET

Yoshihiko Kitagawa; Masahiro Yuyama; Masahiko Moritani, and Mikio Suzuki, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 69,087, Aug. 23, 1979, abandoned. This application Jan. 6, 1981, Ser. No. 222,919
Claims priority, application Japan, Aug. 24, 1978, 53-103546
Int. Cl.³ C08K *7/14*; D04H *1/64*
U.S. Cl. 264—128 12 Claims

1. A process for producing a glass fiber-reinforced, transparent cast sheet, which comprises impregnating glass fibers with a resin syrup comprising

10 to 50 parts by weight of a copolymer (A) consisting essentially of 20 to 95% by weight of an aromatic vinyl compound and 5 to 80% weight of other polymerization monomer,

1 to 40 parts by weight of an aromatic vinyl compound (B),

50 to 90 parts by weight of other polymerizable monomer (C), and

0.5 to 10 parts by weight of maleic anhydride, and casting the resulting mixture.

4,344,907

METHOD AND APPARATUS PROVIDING UNIFORM RESIN DISTRIBUTION IN A COEXTRUDED PRODUCT

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 30, 1980, Ser. No. 201,688
Int. Cl.³ B29F *3/06*
U.S. Cl. 264—173 10 Claims

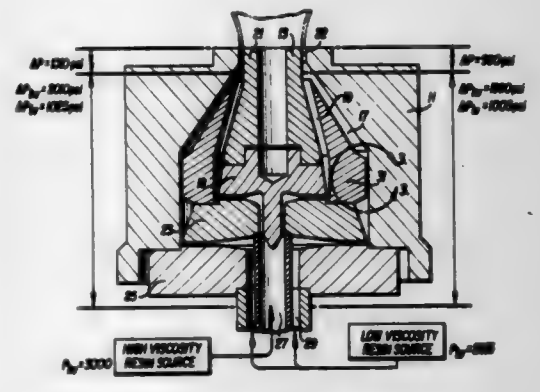
1. A method of coextruding a first molten resin stream of relatively high viscosity or flow rate and a second molten resin stream of relatively low viscosity or flow rate through a tubular die orifice in uniform laminar flow comprising the steps of:

flowing said first stream under pressure from a first molten resin supply through a first die channel to a flow junction region adjacent said die orifice;

flowing said second stream under pressure from a second resin supply through a second die channel to said flow junction region, said second die channel containing a flow restriction for impeding the flow of said second stream and raising the pressure drop of said second molten resin at said junction region to a value considerably larger than the maximum difference in pressure drop of said second molten resin existing at said junction region along the terminus of said second channel in the absence of said flow restriction, said restriction also being sufficient to decrease the pressure differential that would exist from one side of the die to the other in the absence of said flow restriction said decrease being of a magnitude sufficient to prevent non-uniform coextrusion of said first and second resin streams;

joining said first and second molten streams at said junction region;

flowing said joined first and second molten streams from said junction region through said die orifice in laminar flow relationship to obtain a coextruded resin material



having a uniform distribution of first and second resins therein.

5. An apparatus for coextruding a first molten resin stream of relatively high viscosity or flow rate and a second molten resin stream of relatively low viscosity or flow rate comprising:

a source of said first molten resin;

a source of said second molten resin;

a tubular coextrusion die comprising an extrusion orifice for producing a coextruded resin material, a first resin flow channel coupled to said first molten resin source and terminating at a flow junction region adjacent said orifice, a second resin flow channel coupled to said second molten resin source and terminating at said flow junction region, said second flow channel containing a flow restriction therein for impeding the flow of said second molten resin therethrough and raising the pressure drop therein to a value considerably larger than the maximum difference in pressure drop of said second molten resin existing at said junction region along the terminus of said second channel in the absence of said flow restriction, said flow restriction also decreasing the pressure differential that would exist from one side of the die to the other in the absence of said flow restriction said decreasing being of a magnitude sufficient to prevent non-uniform coextruding of said first and second resin streams and, a flow channel coupling said junction region to said orifice.

4,344,908

PROCESS FOR MAKING POLYMER FILAMENTS WHICH HAVE A HIGH TENSILE STRENGTH AND A HIGH MODULUS

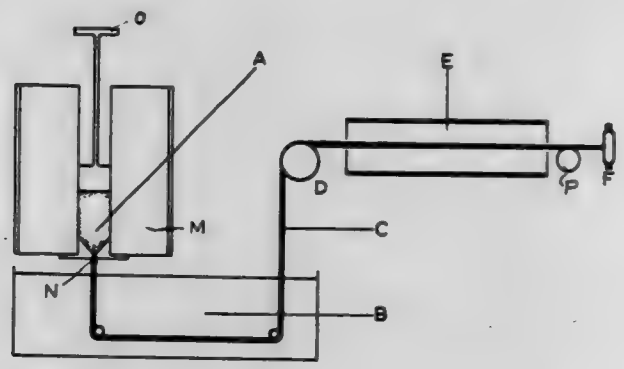
Paul Smith, Sittard, and Pieter J. Lemstra, Brunssum, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Feb. 6, 1980, Ser. No. 119,045

Claims priority, application Netherlands, Feb. 8, 1979, 7900990

Int. Cl.³ D01F *6/00*

U.S. Cl. 264—203 8 Claims



1. A process for making polymer filaments which have a high tensile strength and a high modulus comprising the steps of,

(a) spinning a solution of a polymer, ranging from about 1% to about 5% by weight of polymer to solvent, through a spinning aperture to form a filament,

(b) cooling said filament of step (a) to below the solution temperature of the polymer either in a zone containing a gas without promoting the evaporation of the solvent or with a cooling liquid that does not dilute or extract the solvent in the filament,

(c) bringing said filament to a temperature between the swelling point of the polymer in the solvent and the melting point of the polymer and,

(d) stretching the filament that still contains at least about 25% by weight of solvent relative to the polymer, at a stretching ratio of at least 5.

4,344,909

THERMOCHROMIC COMPOSITION

Francis J. A. M. C. De Blauwe, Lubbeek, Belgium, assignor to N.V. Raychem S.A., Kessle-lo, Belgium

Filed Dec. 20, 1979, Ser. No. 105,587

Claims priority, application United Kingdom, Dec. 22, 1978, 49850/78

Int. Cl.³ C09K *3/00;* C10K *11/12;* C09D *5/08, 5/26*

U.S. Cl. 264—230 21 Claims

1. A heat-recoverable article which is to be heated to a pre-selected temperature during installation or use, which is capable of forming an enclosure about a body, which carries on a surface which will face the interior of the enclosure a meltable composition, and which carries a temperature indicating composition on a surface which will be visible when the article is enclosing the body, the temperature indicating composition comprising decomposable organic material which, on heating of the article to the pre-selected temperature, melts and decomposes substantially irreversibly to provide a visible color change, said pre-selected temperature being a temperature which results in the melting of said meltable composition to effect sealing of the enclosure.

4,344,910

PROCESS FOR THE MANUFACTURE OF WATER-HARDENING MATERIAL

Jan M. J. M. Bijen, Munstergeleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 2, 1979, Ser. No. 26,221

Claims priority, application Netherlands, Apr. 1, 1978, 7803508

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.³ B29H *9/02*

U.S. Cl. 264—257 21 Claims

1. An improved process for the manufacture of reinforced shaped articles from water-hardening materials, said improvement comprising incorporating in said water-hardening materials a plurality of continuous networks of synthetic organic polymer material having at least two meshes per square centimeter, said networks having been prepared by forming said meshes in an unfibrillated film of said synthetic organic polymer material in a manner so as to avoid forming meshes having sharp corners.

4,344,911

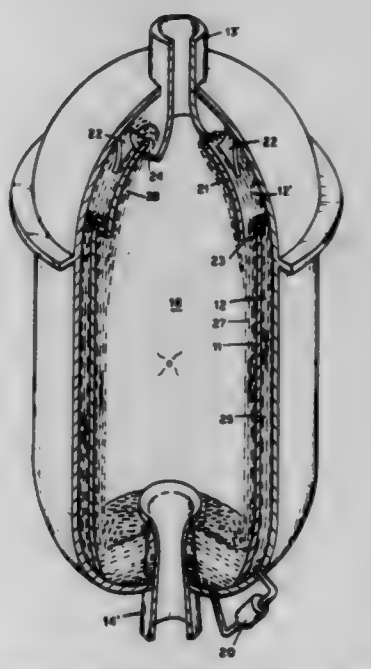
FLUIDIZED WALL FOR PROTECTING FUSION CHAMBER WALLS

James A. Maniscalco, Danville, and Wayne R. Meier, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 851,331, Nov. 14, 1977, abandoned. This application Oct. 25, 1979, Ser. No. 88,222

Int. Cl.³ G21B *1/00*

U.S. Cl. 376—102 9 Claims



1. A method for protecting the inner wall of an inertial confinement fusion chamber from damage by X-rays, neutrons, and debris generated by the implosion of fusion fuel targets in the chamber, comprising the steps of: forming the inner wall of the chamber so as to include an upright cylindrical section, forming an annulus about the exterior of substantially the entire upright cylindrical section of the inner wall, forming at least one annular opening adjacent an upper portion of the upright cylindrical section of the inner wall and in open communication with the annulus, forming a flowing wall of selected material in liquid form which flows along an inner wall surface of substantially the entire upright cylindrical section of the fusion chamber by directing the material through the annulus and through the at least one annular opening in the inner wall, recirculating at least a portion of the material from a lower portion of the fusion chamber upwardly through the annulus and inwardly through the at least one annular opening

so as to produce a waterfall effect forming the flowing wall and to maintain a continuous flowing wall which substantially prevents generated X-rays, neutrons and debris from contacting the wall surface of the fusion chamber, forming a second annulus about the exterior of an upper section of the fusion chamber above the upright cylindrical section thereof and in open communication with the first-mentioned annulus, providing at least one annular opening adjacent an upper end of the fusion chamber between the second annulus and the interior of the fusion chamber, and forming a thin sheet of the selected material which flows from the upper end of said fusion chamber downwardly along the inner wall surface of the upper section of the fusion chamber above the upright cylindrical section thereof and mixes with the flowing wall by directing the material upwardly through the second annulus and inwardly through the at least one annular opening located adjacent the upper end of the fusion chamber.

4,344,912

METHOD OF INCREASING THE DETERRENT TO PROLIFERATION OF NUCLEAR FUELS

Donald S. Rampolla, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 16, 1980, Ser. No. 159,891
Int. Cl.³ G21G *1/00*; G21C *3/02*
U.S. Cl. 376—180 **4 Claims**

1. In a method for increasing the proliferation deterrence of a thorium and uranium-233 nuclear fuel mixture by increasing the radiation level and surface temperature thereof, the improvement comprising: separating the protactinium-231 from the spent fuel and recycling at least a portion of the separated protactinium-231 back into the thorium and uranium-233 fuel mixture, where the recycled protactinium-231 is converted into uranium-232 with a concentration in the fuel mixture of approximately 1.2%.

4,344,913

CONTAINED NUCLEAR EXPLOSION BREEDER REACTOR SYSTEM

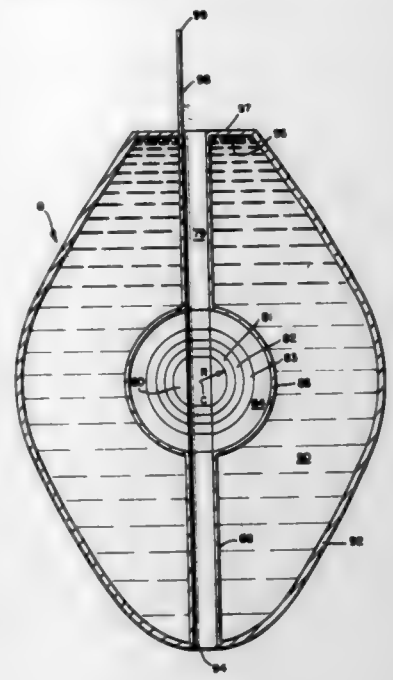
Edward F. Marwick, 5149 W. Morse Ave., Skokie, Ill. 60076

Continuation-in-part of Ser. No. 953,166, Oct. 20, 1978, which is a continuation-in-part of Ser. No. 810,894, Jun. 28, 1977, Pat. No. 4,121,971, which is a continuation-in-part of Ser. No. 544,178, Jan. 27, 1975. This application May 21, 1979, Ser. No. 40,849
Int. Cl.³ G21C *9/00*
U.S. Cl. 376—317 **46 Claims**

1. A method of producing energy and isotopes within a containing chamber, said method comprising the steps of:

introducing a large, sub-critical mass having an opening therethrough into the containing chamber, said mass having an enclosed neutron reflecting slurry means surrounding a layered centroid portion;

propelling first and second sub-critical slugs into said chamber from generally opposite directions for intercepting said mass to cause a reaction for the production of thermal energy and neutrons; and



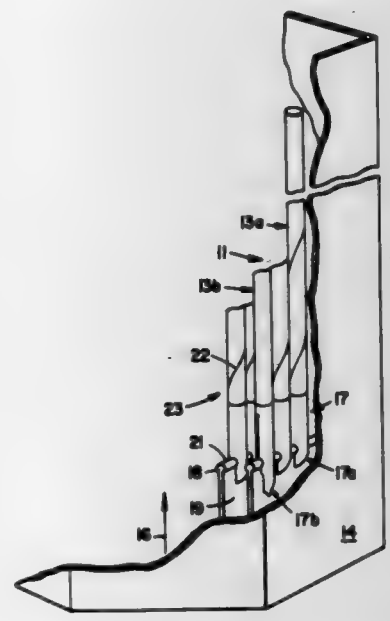
introducing material into the chamber to absorb said thermal energy and isotopes and protect said chamber from damage.

4,344,914

RETRIEVABLE FUEL PIN END MEMBER FOR A NUCLEAR REACTOR

Jerry M. Rosa, Los Gatos, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 6, 1980, Ser. No. 175,814
Int. Cl.³ G21C *3/32*
U.S. Cl. 376—437 **12 Claims**



1. A retrievable and reinsertable nuclear reactor fuel pin having an end member for fastening said fuel pin to a transversely extending rail wherein said end member has a pair of blades having outer ends and facing surfaces defining a longitudinally extending slot therebetween for receiving said rail, said end member being formed at least in part of resilient material and having a configuration which requires wedging apart of said blades by said rail when said fuel pin is pulled away from said rail, the facing surfaces of said blades which define a first region of said slot are spaced apart a distance smaller than the spacing of the facing surfaces of said blades which define a second region of said slot, said first region of said slot being located closer to the outer ends of said blades than said second

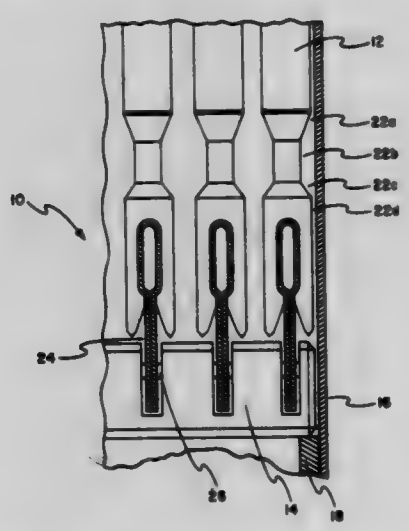
region of said slot, said facing surfaces of said blades defining a third region of said slot, said third region of said slot having a spacing of substantially constant distance between said facing surfaces and greater than the distance between said facing surfaces of said first region and being located closer to the outer ends of said blades than said first region.

4,344,915

NUCLEAR REACTOR FUEL ROD ATTACHMENT SYSTEM

David W. Christiansen, Kennewick, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 17, 1980, Ser. No. 187,913
Int. Cl.³ G21C *3/32*
U.S. Cl. 376—437 11 Claims



1. A system for removably attaching a nuclear reactor fuel rod to a support member comprising:

a. A reusable locking cap, secured to said nuclear reactor fuel rod, having opposing, resiliently deflectable fingers defining a socket having a body, throat, and mouth portion, said socket also having a narrowing decoupling-aiding tapered section from said body portion to said throat portion and a narrowing coupling-aiding tapered section from said mouth portion to said throat portion; and

b. A reusable locking strip, secured to said support member, having an extension which fixedly engages said body portion of said socket, said extension comprising a top section which, upon application of a coupling force, engages said coupling-aiding tapered section to deflect open said fingers to widen said throat portion for receiving said extension into said body portion of said socket, and said extension also comprising a bottom section which, upon application of a decoupling force, engages said decoupling-aiding tapered section to deflect open said fingers without distortion to widen said throat portion for removing said extension from said body portion of said socket.

4,344,916

METHOD FOR SHIPPING AND STORING ETHYLENE OXIDE

Nicholas B. Lorette, Lake Jackson, Tex., and Jerry L. Fosnaugh, Carmel, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 141,236, Apr. 17, 1980, abandoned.
This application Mar. 5, 1981, Ser. No. 240,746
Int. Cl.³ B01J *19/00*; A01N *31/00*; C07D *301/36, 303/00*
U.S. Cl. 422—40 4 Claims

1. A method for transporting liquid ethylene oxide from a place of origin to a remote destination which comprises (1) mixing said ethylene oxide with at least 52% by weight of liquid propylene oxide based on the weight of the total mixture, (2) loading said liquid mixture into a container suitable for transport and (3) transporting said container by suitable means to said remote destination.

4,344,917

SAMPLE INLET FOR ANALYSIS INSTRUMENT AND METHOD OF SAMPLE ANALYSIS

Karl S. Schorno, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 19, 1980, Ser. No. 218,337
Int. Cl.³ G01N *1/22*
U.S. Cl. 422—78 23 Claims



1. An injection system adapter for an analytical instrument for analyzing vapors thermally extracted from a sample selected from solids and liquids, the analytical instrument including at least one detecting means and an internal heat source, the injection system adapter comprising

a first section comprising a sample chamber, means for heating the sample chamber, a carrier gas inlet to the sample chamber, a sample inlet at one end of the sample chamber and an opposing outlet; and

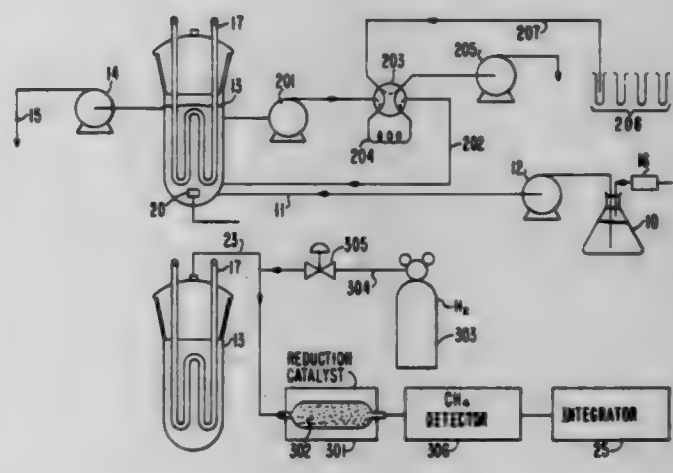
a second ajoining section comprising means for defining a flow path extending from said outlet and for absorbing heat from the internal heat source of the analytical instrument, thereby preventing vapor condensation in said flow path.

4,344,918

DETERMINATION OF TOTAL CARBON IN LIQUID SAMPLES

Yoshihiro Takahashi, San Jose, Calif., assignor to Xertex Corporation, Menlo Park, Calif.

Filed Mar. 5, 1980, Ser. No. 127,333
Int. Cl.³ G01N *31/12, 21/63*
U.S. Cl. 422—80 5 Claims



1. Apparatus for determining total carbon in a liquid sample comprising: a reactor, a flowline leading into said reactor, means defining a source of a liquid containing an oxidizing agent connected to and communicating with said flowline, means for maintaining a continuous flow of said liquid containing said oxidizing agent into said reactor via said flowline, means for introducing a liquid sample into said reactor, a source of electromagnetic radiation positioned inside said reactor so as to be immersed in said liquid containing said oxidizing agent, said electromagnetic radiation causing oxidation of carbonaceous matter in each sample, means for causing gas produced by oxidation of said carbonaceous matter in each sample to be removed from said reactor, means operatively

connected to said last-mentioned removal means for measuring total carbon in said gas, said means for introducing said liquid sample into said reactor comprising means for continuously withdrawing liquid from said reactor, means for introducing a selected quantity of the liquid sample into the liquid removed from the reactor, and means separate from said flowline for continuously recirculating said liquid continuously removed from the reactor together with any selected quantity of sample liquid therein back to the reactor.

4,344,919

PROCESS AND APPARATUS FOR THE COUNTER-CURRENT INJECTION-MIXING OF TWO OR MORE FLUID PLASTIC COMPONENTS WHICH REACT WITH ONE ANOTHER

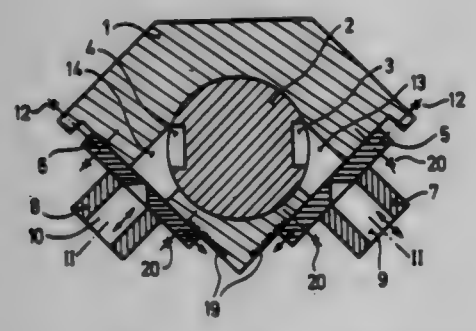
Manfred Kelterbaum, Strasslach, Fed. Rep. of Germany, assignor to Elastogran Maschinenbau GmbH & Co., Strasslach, Fed. Rep. of Germany

Filed Jun. 10, 1980, Ser. No. 158,069

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925173; Jun. 22, 1979, 7917920[U]

Int. Cl.³ B01J *14/00*

U.S. Cl. 422—133 **6 Claims**



1. Apparatus for the counter-current injection mixing of two or more fluid plastic components which react with one another, comprising a mixing chamber which possesses inlet orifices for the individual components and an outlet for the component mixture, injection nozzles so arranged in the orifices relative to the mixing chamber that the jets impinge on one another at an angle in the mixing chamber, the injection nozzles being adjustable so as to allow the point of impingement of the component jets in the mixing chamber to be varied,

wherein said mixing apparatus comprises

a housing having an exterior wall, and

nozzle holding or mounting means located on, and detachably connected to, said exterior wall, said holding or mounting means having a surface cooperating with and slidable along the exterior wall surface in contacting engagement with the last-mentioned surface so as to render the impingement angle adjustable.

4,344,920

AIR POLLUTION CONTROL SYSTEM

Morris D. Isserlis, 3655 Poinciana Dr., Apt. 507, Bldg. 7, Lake Worth, Fla. 33460

Filed Jul. 21, 1981, Ser. No. 285,852

Int. Cl.³ B01D *50/00*

U.S. Cl. 422—169 **2 Claims**

1. A coal burning system including means for cleaning the gases of combustion and removing sulfuric acid therefrom, comprising

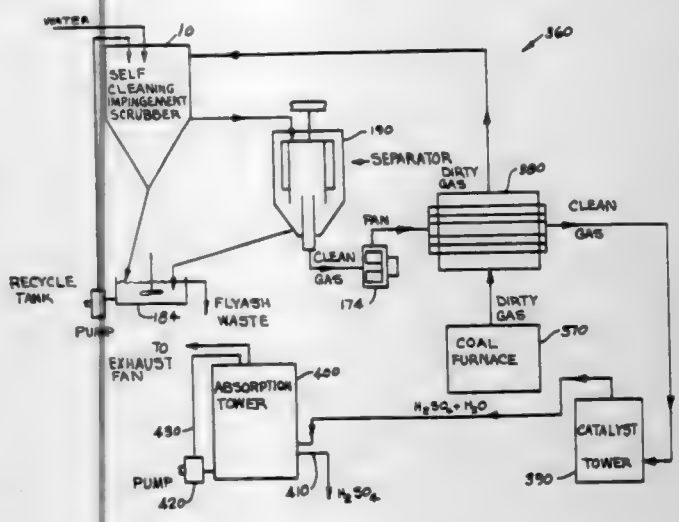
first means for burning coal and producing hot, dirty gas therefrom, the gas containing sulfur dioxide,

a heat exchanger having a first input coupled to the output flue of said first means and receiving hot, dirty gas therefrom,

second means for removing particulate matter from said gas but not removing the sulfur dioxide,

a first output from said heat exchanger for the dirty gas containing sulfur dioxide, said output being coupled to said second means which removes particulate matter from the gas to produce clean gas containing sulfur dioxide,

third means coupled between the output of said second means and a second input of said heat exchanger for directing clean gas containing sulfur dioxide thereto, said clean gas being heated in said heat exchanger and fed to a second output therefrom,



a catalyst tower coupled to said second clean gas outlet from said heat exchanger for receiving said clean gas containing sulfur dioxide and converting the sulfur dioxide to sulfuric acid.

an absorption tower coupled to the output of said catalyst tower for receiving sulfuric acid therefrom, and

means for removing concentrated sulfuric acid from said absorption tower.

4,344,921

CATALYZER FOR DETOXIFYING EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

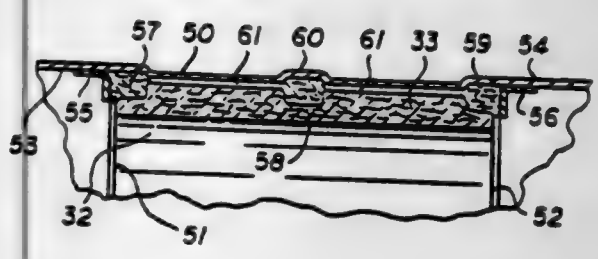
Andres Santiago, and Enrique Santiago, both of Augsburg, Fed. Rep. of Germany, assignors to Zeuna-Staerker KG, Augsburg, Fed. Rep. of Germany

Division of Ser. No. 342,540, Mar. 19, 1973. This application Sep. 6, 1977, Ser. No. 831,044

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1972, 2213539

Int. Cl.³ B01J *35/04, 8/02;* F01N *3/15*

U.S. Cl. 422—179 **3 Claims**



1. In a catalyzer for detoxifying exhaust gases from internal combustion engines, wherein a monolithic catalyst body having an outer surface and facing ends is supported in a housing having an inner surface, by support means arranged between said inner surface of said housing and said outer surface of said monolithic catalyst body, the improvement wherein said support means comprise elastically yielding means, and holding means for locating said elastically yielding means at least partially between each facing end of said monolithic catalyst body and the inner surface of said housing, whereby the monolithic catalyst body is elastically restrained in said housing against movement in all three dimensions of space, wherein said elastically yielding means are elastically deformable damping rings, said holding means comprising inner supporting means located in said housing for holding said rings whereby the damping

rings are securely seated on the respective inner supporting means and thus between the inner housing surface and the respective facing end of the monolithic catalyst body; and wherein said holding means include recesses provided in the periphery of said monolithic catalyst body adjacent each facing end thereof for compressing the elastically deformable damping rings between the inner wall of said housing and the respective facing end of said monolithic catalyst body in a gas tight manner thereby supporting said damping rings at an inner diameter thereof which rests in said recesses; said elastically deformable rings comprising at least two such rings seated in said recesses, one of the two such rings overlapping the upstream end of said monolithic catalyst body and the other such ring overlapping the downstream end of said monolithic catalyst body such that the monolithic catalyst body is held against both axial and radial movement.

2. In a catalyzer for detoxifying exhaust gases from internal combustion engines, wherein a monolithic catalyst body having an outer surface and facing ends is supported in a housing having an inner surface, by support means arranged between said inner surfaces of said housing and said outer surface of said monolithic catalyst body, the improvement wherein said support means comprise elastically yielding means, and holding means for locating said elastically yielding means at least partially between each facing end of said monolithic catalyst body and the inner surface of said housing, whereby the monolithic catalyst body is elastically restrained in said housing against movement in all three dimensions of space, wherein said elastically yielding means are elastically deformable damping rings, said holding means comprising inner supporting means located in said housing for holding said rings whereby the damping rings are securely seated on the respective inner supporting means and thus between the inner housing surface and the respective facing end of the monolithic catalyst body; and wherein said holding means include a protective envelope arranged around said catalyst body and provided with recesses at the upstream and downstream ends thereof for compressing the elastically deformable damping rings between the inner walls of said housing and the respective facing end of said monolithic catalyst body in a gas tight manner thereby supporting said damping rings at an inner diameter thereof which rests in said recesses; said elastically deformable rings comprising at least two such rings seated in said recesses, one of the two rings overlapping the upstream end of said protective envelope and the other such ring overlapping the downstream end of said protective envelope such that the monolithic catalyst body is held against both axial and radial movement.

4,344,922

CATALYZER FOR DETOXIFYING EXHAUST GASES FROM INTERNAL COMBUSTION

Andres Santiago, and Enrique Santiago, both of Augsburg, Fed. Rep. of Germany, assignors to Zeuna-Staerker KG, Augsburg, Fed. Rep. of Germany

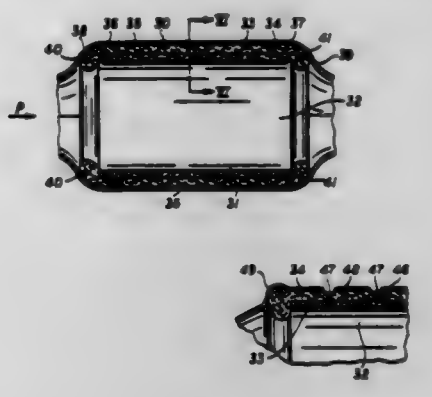
Division of Ser. No. 342,540, Mar. 19, 1973. This application Sep. 6, 1977, Ser. No. 831,045

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1972, 2213539; Apr. 28, 1972, 2220921; May 9, 1972, 2222663; Jan. 26, 1973, 2302789

Int. Cl.³ F01N *3/15*; B01J *8/06*

U.S. Cl. 422—179 **2 Claims**

1. In a catalyzer for detoxifying exhaust gases from internal combustion engines, wherein a monolithic catalyst body having an outer surface and facing ends is supported in a housing having an inner surface, by support means arranged between said inner surface of said housing and said outer surface of said monolithic catalyst body, the improvement wherein said support means comprises a layer of elastically yielding means, said layer extending at least partially between each facing end of said monolithic catalyst body and said housing, whereby the monolithic catalyst body is elastically restrained in said housing against movement in all three dimensions of space, said layer of elastically yielding means extending radially inwardly across said facing ends and then folding radially outwardly towards said inner surface, to form bends which bends are compressed between said facing ends and said housing, the bends in said layer forming elastically deformable damping



means to restrain said catalyst body and form a substantially gas tight barrier, thereby substantially preventing the flow of gas into the space between the catalyst body and the inner surface of the housing.

4,344,923

IN-SITU LEACHING

Brian Martin, Bedford, England, assignor to Interox Chemicals Limited, London, England

Filed Oct. 2, 1979, Ser. No. 81,133

Claims priority, application United Kingdom, Oct. 21, 1978, 41493/78

Int. Cl.³ C01G *43/00*; E21C *41/14*

U.S. Cl. 423—20 **7 Claims**

1. In a process of in-situ leaching of a uranium ore in the ground, which comprises the steps of:

(a) drilling at least one injection well and at least one production well offset from the injection well into an ore body located underground containing uranium and at least one transition metal;

(b) injecting an acid leaching solution containing sulphuric acid and an oxidant into the uranium-containing ore body through the injection wells;

(c) recovering from the production wells a leach liquor containing dissolved uranium salts formed by passage of the leaching solution through the uranium-containing ore body; and

(d) recycling the leach liquor in a cycle comprising the steps of:

(i) passage of the leach liquor through the ore body

(ii) recovery of uranium from the leach liquor;

(iii) make up of the leach liquor and recycle of the liquor to step (i),

said uranium ore containing significant amounts of a transition metal that acts as a catalyst for peroxidant decomposition;

the improvement which comprises:

utilizing peroxomonosulfuric acid as said oxidant in said acid leaching solution; and

introducing said peroxomonosulfuric acid to the process by feeding said peroxomonosulfuric acid with said leach liquor in said step (d) iii.

4,344,924

SOLVENT EXTRACTION OF CHROMIUM AND VANADIUM

Bernard H. Lucas, and Gordon M. Ritcey, both of Ottawa, Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Aug. 11, 1980, Ser. No. 177,103

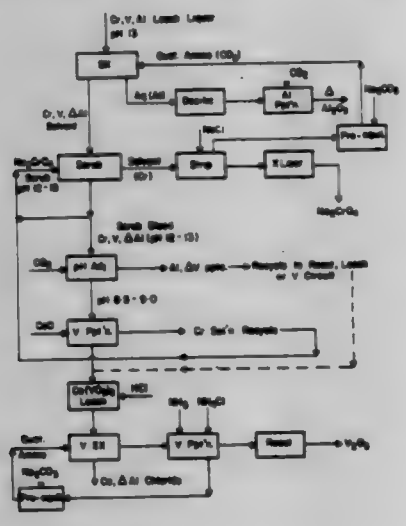
Claims priority, application Canada, Sep. 28, 1979, 337874

Int. Cl.³ C01G *37/00, 31/00*

U.S. Cl. 423—54 **14 Claims**

1. A process for solvent extraction and recovery of chromium and vanadium from aqueous alkaline solutions, waste liquors or leach liquors containing said metals, comprising:

(a) contacting the aqueous solution or liquor, at a pH of about 13 to 13.5, with an immiscible quaternary amine solvent phase, sufficient amine being utilized to cause both Cr and all of the V to be transferred to the solvent phase;
(b) separating the loaded solvent phase from the solution or liquor and scrubbing the solvent with an aqueous chromi-



um-containing solution to remove substantially all metals except Cr from the solvent;
(c) recovering Cr from the scrubbed amine solvent phase by stripping with an aqueous solution and recovering Cr from the aqueous strip liquor; and
(d) recovering V from the scrub liquor by selective precipitation and further purification.

4,344,925

OZONE WHITENING OF SYNTHETIC GYPSUM

Philippe Pichat, Paris, and Robert Sinn, Lens, Michel Neil Annezin, all of France, assignors to Societe Chimique des Charbonnages, Paris, France

Continuation-in-part of Ser. No. 112,023, Jan. 14, 1980, abandoned. This application Jan. 15, 1981, Ser. No. 225,232
Claims priority, application France, Jan. 12, 1979, 79 00772
Int. Cl.³ C04B *11/00, 11/02;* C01F *11/46*
U.S. Cl. 423—170 **9 Claims**

1. A process for whitening a phosphogypsum an aqueous suspension of which has a pH higher than 3, comprising acidifying an aqueous suspension of the phosphogypsum to be bleached to pH 3 or lower, and treating the suspension having a pH of 3 or lower with an amount of ozone equal to at least 150 parts by weight per million parts by weight of phosphogypsum calculated as $CaSO_4.2H_2O$; thereby producing a whiteness grade of phosphogypsum higher than 75, according to French Standard NF 03-038.

4,344,926

FLUID CATALYTIC CRACKING

Randall H. Petty, Nederland, and Burton H. Bartley, Port Arthur, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 22, 1980, Ser. No. 180,357
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—244 **3 Claims**

1. A process for the removal of a gaseous sulfur compound from a mixture of gases comprising sulfur oxides and free oxygen which comprises contacting said mixture of gases at a temperature in the range of 800° to 1500° F. with a composite of alumina and oxides of bismuth wherein said composite comprises 0.1 to 4 weight percent bismuth.

4,344,927

METHOD OF PREPARING CRYSTALLINE SILICA POLYMORPH

Dean A. Young, 4721 Palm Ave., Yorba Linda, Calif. 92686

Continuation-in-part of Ser. No. 12,867, Feb. 16, 1979, abandoned. This application Dec. 17, 1980, Ser. No. 217,238
Int. Cl.³ C01B *33/12*
U.S. Cl. 423—339 **7 Claims**

1. A process for hydrothermally preparing a crystalline silica polymorph which comprises: (1) subjecting an aqueous reaction mixture to high shear mixing for 4 to 100 hours at a temperature of from 250° to 380° F., said reaction mixture containing from 2 to 6 weight percent of sodium oxide, from 8 to 16 weight percent of silicon oxide, from 0.01 to 0.25 weight percent of disodium 4-dodecylated oxydibenzene sulfonate, from 2 to 5 weight percent of anhydrous sulfuric acid, from 0.5 to 3 weight percent of sodium chloride and either from 6 to 13 weight percent of tetrapropyl ammonium bromide or a mixture which comprises from 2 to 4 weight percent of tripropylamine, from 1 to 3 weight percent of 1-bromopropane and from 3 to 6 weight percent of methylethyl ketone, and (2) crystallizing said silica polymorph during said high shear mixing, wherein said crystalline silica polymorph after calcination at 1,000° F. for 16 hours, has as the four strongest d-values of its X-ray diffraction pattern, d=11.05, d=9.96, d=3.82 and d=3.34.

4,344,928

PROCESS FOR PREPARING ALUMINA PARTICULATES, AT LEAST A FRACTION OF WHICH BEING ULTRAFINE BOEHMITE

Thierry Dupin, Garges les Gonesse; Gilbert Bouge, and Laurent Seigneurin, both of Salindres, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Feb. 26, 1980, Ser. No. 124,777
Claims priority, application France, Feb. 26, 1979, 79 04809
Int. Cl.³ C01F *7/02*
U.S. Cl. 423—626 **32 Claims**

1. A process for the preparation of an aqueous suspension of alumina particulates, at least a portion of which comprises ultrafine boehmite, which process comprises maintaining an aqueous formulation comprising water and an alumina powder having a specific surface between about 200 and 400 m^2/g, particle diameters between about 0.1 and 300 microns, ignition loss, measured by calcination at 1000° C., of between about 3 and 15%, and which is selected from the group consisting of poorly crystalline activated alumina, amorphous activated alumina, and admixtures thereof, said aqueous formulation having a pH of less than 9, at a temperature in the range of from about 120° to about 225° C. for a period of time sufficient to effect the transformation of at least 5% of such alumina powder into ultrafine boehmite.

4,344,929

METHOD OF DELIVERING DRUG WITH AID OF EFFERVESCENT ACTIVITY GENERATED IN ENVIRONMENT OF USE

Pieter Bonsen, Los Altos, Calif.; Patrick S. Wong, Kowloon, Hong Kong, and Felix Theeuwes, Los Altos, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 143,644, Apr. 25, 1980, Pat. No. 4,265,874. This application Jan. 26, 1981, Ser. No. 228,091
Int. Cl.³ A61K *9/46;* A61J *1/00*
U.S. Cl. 424—15 **31 Claims**

1. A method for delivering from an osmotic device a drug that is difficult to deliver to an environment of use having a pH of less tha seven, wherein the method comprises:
(1) admitting into the environment an osmotic drug delivery device, which device comprises:
(a) a shaped wall formed of a semipermeable material that is permeable to the passage of fluid present in the environment, and substantially impermeable to the passage

of drugs and compounds, which wall surrounds and forms;

(b) a compartment housing a drug that is difficult to deliver to the environment, and a basic compound having a gas generating moiety, which compound is soluble in fluid that enters the compartment;

(c) a passageway in the wall connecting the compartment and the exterior of the device for dispensing drug from the device; and,

(2) imbibing fluid through the wall into the compartment in a tendency towards osmotic equilibrium at a rate determined by the permeability of the wall and the osmotic pressure gradient across the wall; thereby

(3) forming a solution of the basic compound containing drug, which solution is dispensed from the compartment through the passageway into the environment with the compound reactively;

(4) generating a gas on its contact with the fluid of the environment producing an effervescent suspension that delivers the drug in a finely dispersed form to the environment over a prolonged period of time.

4,344,930

SKIN CARE SPONGE

David M. MacRae, Beecroft, Australia, and Karl H. Roberts, Flemington, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 627,421, Oct. 30, 1975, abandoned. This application Sep. 15, 1980, Ser. No. 187,374

Int. Cl.³ A61K *9/70*; A61L *15/00*

U.S. Cl. 424—28 **10 Claims**

1. A method of preparing hydrophilic open-celled poly (urea/urethane) sponge comprising reacting (a) a prepolymer having an average NCO functionality greater than 2 and produced by reaction of a polyoxyethylene polyol with a stoichiometric excess of an organic polyisocyanate, with (b) about 30 to 200% of water by weight of said prepolymer, said water containing about 6 to 100%, by weight of said prepolymer, of a readily releasable skin care composition, said sponge thereby containing said skin care composition substantially uniformly distributed throughout the pores thereof.

4,344,931

DRY DENTIFRICE POWDERS

Abel Aguilar, Los Capulies No. 270, Lima, Peru (18)

Filed Apr. 13, 1981, Ser. No. 253,386

Claims priority, application Peru, Dec. 18, 1980, 40856

Int. Cl.³ A61K *7/16, 7/18*

U.S. Cl. 424—52 **16 Claims**

1. A method of instantly converting a dry powder dentifrice composition into a homogeneous dental cream comprising:

(a) combining with components common to conventional dry dentifrice compositions, from 2% to 10% by weight, based on the weight of the dry powder dentifrice composition, of at least one readily water-soluble dry powdered gum and an amount of a magnesium or calcium silicate effective as a polishing agent, and

(b) adding an amount of water sufficient to immediately convert the dry powder dentifrice composition into a homogeneous dental cream.

4,344,932

NAIL CLEANSER

Harry W. Gordon, New York, N.Y., assignor to Del Laboratories, Inc., Farmingdale, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,607

Int. Cl.³ A61K *7/04*

U.S. Cl. 424—61 **7 Claims**

1. A nail cleanser for application to human nails to remove stains therefrom, said cleanser constituting a composition essentially comprising as necessary ingredients a first chelating agent, a second chelating agent and a liquid carrier which will solvate or disperse said first and said second chelating agents, said first chelating agent being more effective than said second chelating agent, the second chelating agent also being a solubilizing agent, said first chelating agent being selected from the group consisting of ethylene diamine tetraacetic acid and alkali metal salts thereof, phytol, phytic acid, nitrilo-triacetic acid, diethylene triamino pentacetic acid, sodium tripolyphosphates, sodium metaphosphate, sodium hexamethaphosphate, trisodium phosphate and ethylene diaminotetraacetic acid, and the second chelating agent being selected from the group consisting of urea, allantoin, penthenol and aloe vera extract and urea precursors.

4,344,933

PHARMACEUTICAL COMPOSITION WITH PROLONGED BRONCHOLYTIC AND TOCOLYTIC ACTIVITY

Annemarie Siegl, Linz; Christian Knopp, Graz, and Karl Reithmayr, Linz, all of Austria, assignors to Chemie Linz Aktiengesellschaft, Austria

Filed Jul. 14, 1980, Ser. No. 168,139

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929456

Int. Cl.³ A61K *31/74, 31/135*

U.S. Cl. 424—79 **4 Claims**

1. A pharmaceutical complex with prolonged broncholytic and tocolytic activity consisting of a resinate prepared by reacting N,N'-bis-[2-(3',4'-dihydroxyphenyl)-2-hydroxyethyl]-hexamethylenediamine with a polystyrene resin which is cross-linked with divinylbenzene to a degree of 2-5% and contains sulfonic acid radicals as anchor groups.

3. A pharmaceutical composition for peroral administration having broncholytic and tocolytic activity comprising a broncholytically or tocolytically effective amount of the complex according to claim 1 and a pharmaceutically acceptable carrier.

4,344,934

THERAPEUTIC COMPOSITIONS WITH ENHANCED BIOAVAILABILITY

Frederick H. Martin, West Chazy, and Andrew G. Tsuk, Plattsburgh, both of N.Y., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 962,435, Nov. 20, 1978, abandoned. This application Feb. 21, 1980, Ser. No. 123,143

Int. Cl.³ A61K *31/79, 37/00, 31/74, 9/24, 31/245*

U.S. Cl. 424—80 **23 Claims**

1. A pharmaceutical composition in dry solid form comprising a mixture of a therapeutically effective amount of a poorly water soluble drug and a non-toxic, pharmacologically acceptable, water-soluble polymer; said mixture being the product of a melt mix or of a dried solution and said mixture in dry solid form having been treated with solution comprising water and a minor amount of a wetting agent selected from anionic and cationic surfactants and then dried.

4,344,935

PROCESS FOR THE ISOLATION OF VIRAL GLYCOPROTEIC ANTIGENS AND ITS APPLICATION TO THE PREPARATION OF VACCINES

Jean Leclerc, Libourne, and Jean de Rudder, Versailles, both of France, assignors to Synthelabo, Paris, France

Filed May 19, 1981, Ser. No. 265,084

Claims priority, application France, Jun. 5, 1980, 80 12522

Int. Cl.³ A61K *39/12, 39/145*

U.S. Cl. 424—89 **11 Claims**

1. Process for the isolation of the glycoproteic antigens of a virus by treatment of said virus with an aqeous solution of a nonionic detergent, separation of the viral particles and removal of the detergent, comprising, in order to remove the detergent, effecting a phase separation between an aqueous phase and a phase consisting of a water-insoluble alkanol hav-

ing at least 7 and less than 12 carbon atoms, and recovering the glycoproteic antigens in aqueous phase.

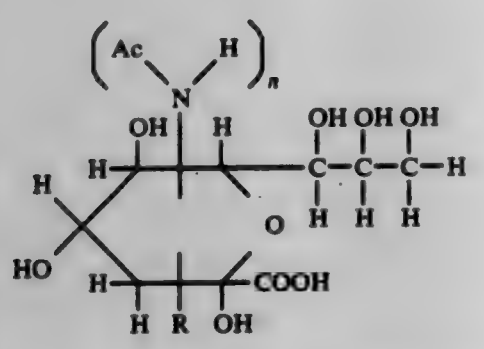
4,344,936

PLATELET COMPOSITION HAVING IMPROVED STORAGE STABILITY AND METHOD THEREFOR

Gerald Soslau, 509 Grandview Ave., Feasterville, Pa. 19047

Filed Sep. 17, 1980, Ser. No. 188,121
Int. Cl.[3] A61K *35/44*
U.S. Cl. 424—101 9 Claims

1. A composition for improving the storage stability of blood platelets comprising (a) said platelets, (b) a container for said platelets, and (c) an effective amount of a sialyl compound having the structural formula (I)



wherein Ac is an acetyl group, R is a carbohydrate group, n is an integer of 1 or more, and the R group replaces an hydroxyl group on the ring and the N-acetyl group replaces hydroxyl groups.

4,344,937

ANTIVIRAL AGENT COMPRISING 1-β-D-ARABINOFURANOSYLTHYMINE

Haruhiko Machida, Choshi, Japan, assignor to Yamasa Shoyu Kabushiki Kaisha, Choshi, Japan

Filed Aug. 28, 1980, Ser. No. 182,001
Claims priority, application Japan, Sep. 5, 1979, 54-112990
Int. Cl.[3] A61K *31/70*
U.S. Cl. 424—180 3 Claims

1. A method of treating DNA viral infections in humans or lower animals which comprises administering a pharmaceutically efficacious quantity of 1-β-D-arabinofuranosylthymine to a human or lower animal in need of such treatment through the alimentary canal thereof.

4,344,938

AGENT FOR THE TREATMENT OF ALLERGIC REACTIONS

Hans-Herald Sedlacek, and Friedrich R. Seiler, both of Marburg, Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Oct. 23, 1979, Ser. No. 87,481
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846412
Int. Cl.[3] A61K *37/00*; C07G *7/00*
U.S. Cl. 424—177 10 Claims

1. A pharmaceutical preparation for the prophylaxis or therapy of allergic reactions, said preparation comprising complex-fixed IgG immunoglobulin modified in the Fc-portion thereof by aggregation or immunological fixing to an antigen, or comprising immunologically active fragments of IgG immunoglobulin obtained by proteolytic fission of IgG immunoglobulin, said fragments being modified in the Fc-portion thereof, together with a pharmaceutically-acceptable carrier therefor.

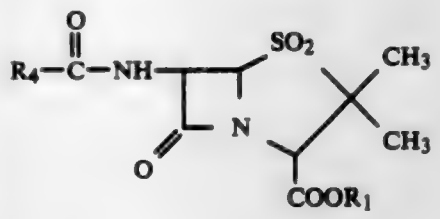
4,344,939

PENICILLIN 1,1-DIOXIDES, COMPOSITIONS THEREOF AND METHODS OF USE

Ekkehard Niemers; Hans-Bodo König; Wilfried Schröck, and Karl G. Metzger, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,541
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923339
The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.
Int. Cl.[3] A61K *31/425, 31/43, 31/44, 31/445, 31/505, 31/535, 31/655*; C07D *499/52, 499/54, 499/60, 499/76*
U.S. Cl. 424—226 8 Claims

1. A penicillin 1,1 dioxide of the formula



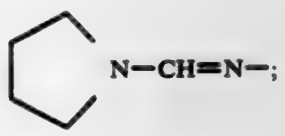
or a salt thereof, wherein

R_1 denotes a hydrogen atom or an ester-forming radical

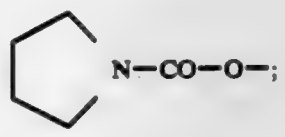
R_4 denotes hydrogen; a naphthyl which is optionally substituted by R_{16}

wherein

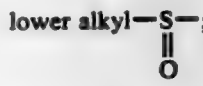
R_{16} denotes halogen; amino; mono-lower alkylamino; di-lower alkylamino; pyrrolidyl; piperidyl; HCO—NH—; lower alkyl—CO—NH—; H—CO—N (lower alkyl); di-lower alkylamino- lower alkyl; lower alkyl—CO—N(-lower alkyl)—; (lower alkyl) $_2C{=}N$—; lower alkyl—SO_2—NH—, lower alkyl—SO_2—N(lower alkyl)—; HO—SO_2—NH—; HO—SO_2—N(lower alkyl)—; amidino; (lower alkyl) $_2$—N—CH=N—;



guanido; nitro; azido; hydroxyl; lower alkoxy; H—CO—O—; lower alkyl—CO—O—; lower alkyl—O—CO—O—; H_2N—CO—O—; lower alkyl —NH—CO—O—; (lower alkyl)$_2$N—CO—O—;



H_2N—SO_2—O—; lower alkyl—NH—SO_2—O—; (lower alkyl)$_2$N—SO_2—O—; HOOC—; H_2N—CO—; (lower alkyl)$_2$N—CO—; OHC—; HO—SO_2—O—; HS—; lower alkyl—S—;



HO_3S—; lower alkyl—SO_2—; H_2N—SO_2—; lower alkyl—NH—SO_2—; (lower alkyl)$_2$N—SO_2—; or

straight-chain or branched alkyl with 1 to 6 carbon atoms and phenyl or phenoxy;

or

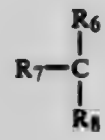


wherein R_5 is H, aryl with 6–10 C-atoms, or heterocyclyl a hetero-paraffinic, hetero-aromatic or hetero-olefinic 5-membered to 7-membered ring with identical or different hetero-atoms selected from the group consisting of oxygen, sulphur and nitrogen and wherein

X is oxygen or R_{13}—N

R_{13} = hydroxy or alkoxy with 1–6 C-atoms optionally substituted by R_{16};

or



R_6 and R_7 independently being C_1–C_4 alkyl optionally substituted with R_{16} or C_1–C_4 alkoxy optionally substituted with R_{16}, or both together with the carbon atom to which they are bonded, denote dioxacyclopentane or dioxacyclohexane

R_8 being optionally substituted C_1–C_4 alkyl or C_1–C_4 alkoxy or a phenyl, furyl, thienyl, methylisoxazolyl or aminothiazolyl.

3. An antibacterial composition containing as an active ingredient an antibacterially effective amount of a compound or salt according to claim 1 in admixture with a diluent.

4,344,940

STEROID FORMULATION CONTAINING DIPOTASSIUM EDTA

Wing-Sun Chow, Upper Montclair, and Donald C. Monkhouse, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 30, 1981, Ser. No. 325,708

Int. Cl.³ A61K *31/58*

U.S. Cl. 424—241 18 Claims

12. The pharmaceutical composition as defined in claim 1 in the form of a lotion wherein said steroid is 21-chloro-9-fluoro-11β-hydroxy-16α,17-[(1-methylethylidene)bis(oxy)]pregn-4-ene-3,20-dione, and said polyol is 80 to 95% aqueous solution of polyethylene glycol having an average molecular weight of about 300.

18. A method of treating dermatitis, which comprises administering topically an effective amount of a composition as defined in claim 12.

4,344,941

ANTIANDROGENIC 17α-SUBSTITUTED STEROIDS

Rudolf Wiechert; Dieter Bittler; Annerose Schleusener, and Manfred Albring, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft (A.G.), Berlin and Bergkamen, Fed. Rep. of Germany

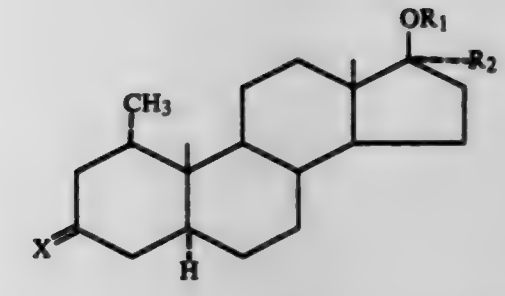
Filed Oct. 20, 1980, Ser. No. 198,383

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943776

Int. Cl.³ A61K *31/56*; C07J *7/00*

U.S. Cl. 424—243 11 Claims

1. A 17α-substituted steroid of the formula



wherein

R_1 is hydrogen, an acyl group of a C_{1-17} optionally substituted, hydrocarbon carboxylic or sulfonic acid, C_{1-5} alkyl, C_{1-5}-alkenyl, C_{1-5}-alkyl or C_{1-5}-alkenyl interrupted by an oxa atom, cyclopentyl or tetrahydropyranyl,

R_2 is C_{2-6}-alkenyl,

X is oxygen or H(OR_3) wherein R_3 is hydrogen, an acyl group of a C_{1-17} optionally substituted, hydrocarbon carboxylic or sulfonic acid, C_{1-5} alkyl, C_{1-5}-alkenyl, C_{1-5}-alkyl or C_{1-5} alkenyl interrupted by an oxa atom, cyclopentyl or tetrahydropyranyl.

5. A method of achieving a topical antiandrogenic effect in a patient suffering from a disease treatable by topical administration of an antiandrogenically active agent, which comprises topically administering to the patient an antiandrogenically effective amount of a compound of claim 1.

4,344,942

PHARMACOLOGICAL USE OF CYPROTERONE ACETATE

Manlio Blandamura, Rome, Italy, assignor to Finchimica S.R.L., Milan, Italy

Filed Jul. 1, 1981, Ser. No. 279,545

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—243 2 Claims

1. The method of treating women having cystic glandular hyperplasia of the endometrium by administering a pharmaceutically-acceptable dosage of cyproterone acetate.

2. The method of claim 1 wherein said dosage is done orally in the range of 200–400 mg daily.

4,344,943

6-CHLORO- OR 6-BROMO-1,2-DIHYDRO-3H-PYRROLO[1,2-a]-PYRROLE-1-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF

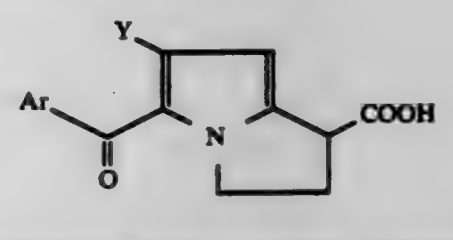
Joseph M. Muchowski, Sunnyvale, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jun. 9, 1980, Ser. No. 157,719

Int. Cl.³ A61K *31/40, 31/52*; C07D *487/04*; C07F *1/08*

U.S. Cl. 424—245 34 Claims

1. A compound selected from the group of those represented by the formula

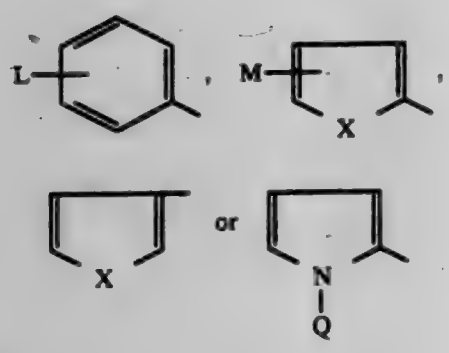


(A)

and the pharmaceutically acceptable, non-toxic alkyl esters having from 1 to 12 carbon atoms and salts thereof, wherein

Y is chloro or bromo and

Ar has the formula



in which

X is sulfur or oxygen;

L is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, Br, Cl, F, CN, CF_3 or $S(O)_nR^3$

wherein R^3 is alkyl having 1 to 4 carbon atoms and n is 0, 1 or 2;

M is hydrogen, methyl, Cl or Br; and

Q is hydrogen or alkyl having 1 to 4 carbon atoms.

28. A composition for treating inflammation, pain or pyrexia in mammals consisting essentially of a pharmaceutically acceptable non-toxic excipient and a therapeutically effective amount of a compound of claim 1.

30. A composition for administration to a pregnant mammal to delay onset of parturition consisting essentially of a pharmaceutically acceptable non-toxic excipient and a therapeutically effective amount of a compound of claim 1.

4,344,944

7-α-METHOXYCEPHALOSPORIN DERIVATIVES, AND ANTIBACTERIAL DRUGS ONCTAINING THE SAME

Yoshimasa Machida, Wako; Isao Saito, Aza-Sori; Seiichiro Nomoto, Tokyo; Shigeto Negi, Kodaira; Hironori Ikuta, Tokyo, and Kyosuke Kitoh, Kawagoe, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

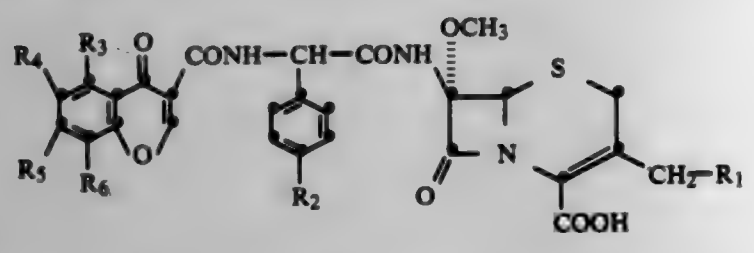
Filed Dec. 29, 1980, Ser. No. 220,723

Claims priority, application Japan, Mar. 4, 1980, 55-26112; Jul. 8, 1980, 55-92199

Int. Cl.³ C07D *501/36*

U.S. Cl. 424—246 **9 Claims**

1. A 7α-methoxycephalosporin derivative represented by the formula:



wherein R_1 represents nitrogen-containing heterocyclic-thio, the nitrogen-containing heterocyclic moiety of which is selected from the group consisting of pyrrolyl, pyridyl and its N-oxide, imidazolyl, pyrazolyl, pyrimidinyl, pyridazinyl, 1H-1,2,4-triazolyl, 4H-1,2,4-triazolyl, 1H-1,2,3-triazolyl, 2H-1,2,3-triazolyl, 1H-tetrazolyl, 2H-tetrazolyl, thiazolyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,3,4-thiadiazolyl, oxazolyl, 1,3,4-oxadiazolyl, 1,2,5-oxadiazolyl, morpholino, benzothiazolyl and benzoxazolyl, said heterocyclic moieties being unsubstituted or substituted by methyl, ethyl, propyl, isopropyl, dimethylaminoethyl, dimethylaminomethyl, diethylaminoethyl, methoxycarbonylmethyl, ethoxycarbonylmethyl, carboxymethyl or carboxyethyl; R_2 represents hydrogen or hydroxy; and R_3, R_4, R_5 and R_6 each represents a group selected from the class consisting of hydrogen, hydroxy, lower alkanoyloxy, methoxy, ethoxy, propoxy, methyl, ethyl, n-propyl, i-propyl, n-butyl, t-butyl, halogen, benzyloxy, phenethyloxy, nitro, methoxycarbonyloxy, ethoxycarbonyloxy and 2,2,2-trichloroethoxycarbonyloxy, or a pharmaceutically acceptable salt thereof.

4,344,945

PIPERIDINE DERIVATIVES

Masayuki Teranishi; Hiroyuki Obase, both of Machida; Haruki Takai, Kawasaki, all of Japan; Kazuhiro Kubo, Berchem, Belgium, and Yutaka Kasuya, Komukainishi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

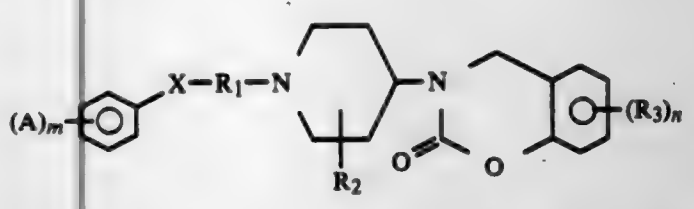
Filed Mar. 9, 1981, Ser. No. 241,727

Claims priority, application Japan, Mar. 10, 1980, 55-29106; May 27, 1980, 55-69619

Int. Cl.³ C07D *413/04*; A61K *31/445, 31/535*; C07D *498/14*

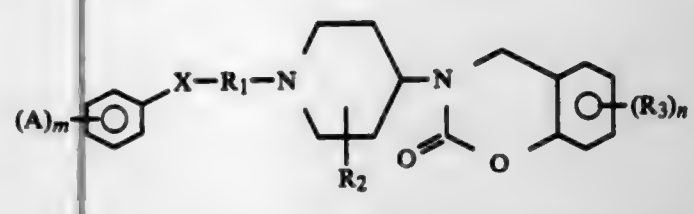
U.S. Cl. 424—248.52 **7 Claims**

1. A compound represented by the formula:



wherein A is hydroxy, halogen, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkinyloxy, lower alkylthio, carboxy, lower alkoxycarbonyl, nitro, amino, lower alkylamino, lower alkanoylamino, sulfamoyl, mono- or di-lower alkylaminosulfonyl, lower alkylsulfonyl, carbamoyl, cyano or trifluoromethyl, m is 0 or an integer of 1–5, and when m is 2 or more, each A is the same group or each A is a different group or two A groups may combine to form lower alkylenedioxy; X is oxygen, sulfur, carbonyl, hydroxymethylene or methylene; R_1 is straight-chain alkylene having 1–4 carbon atoms with or without lower alkyl substituent(s); R_2 is hydrogen or lower alkyl; and R_3 is hydroxy, lower alkoxy, halogen, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, nitro or amino, n is 0 or an integer of 1–4, and when n is 2 or more, each R_3 is the same group or each R_3 is a different group of two R_3 groups may combine to form lower alkylenedioxy and a pharmacologically acceptable acid addition salt thereof.

7. A hypotensive composition which comprises at least one pharmaceutically acceptable carrier, and an effective amount of a compound represented by the formula:



wherein A is hydroxy, halogen, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkinyloxy, lower alkylthio, carboxy, lower alkoxycarbonyl, nitro, amino, lower alkylamino, lower alkanoylamino, sulfamoyl, mono- or di-lower alkylaminosulfonyl, lower alkylsulfonyl, carbamoyl, cyano or trifluoromethyl, m is 0 or an integer of 1–5, and when m is 2 or more, each A is the same group or each A is a different group or two A groups may combine to form lower alkylenedioxy; X is oxygen, sulfur, carbonyl, hydroxymethylene or methylene; R_1 is straight-chain alkylene having 1–4 carbon atoms with or without lower alkyl substituent(s); R_2 is hydrogen or lower alkyl; and R_3 is hydroxy, lower alkoxy, halogen, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, nitro or amino, n is 0 or an integer of 1–4, and when n is 2 or more, each R_3 is the same group or each R_3 is a different group or two R_3 groups may combine to form lower alkylenedioxy or a pharmacologically acceptable acid addition salt thereof.

4,344,946

2,6-DIAMINO-BENZO[1,2-d:5,4-d]BISTHIAZOLES AND SALTS THEREOF

Ernest Cullen, Montreal, Canada; Genus Possanza, Ridgefield, and Patrick B. Stewart, Washington Depot, both of Conn., assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

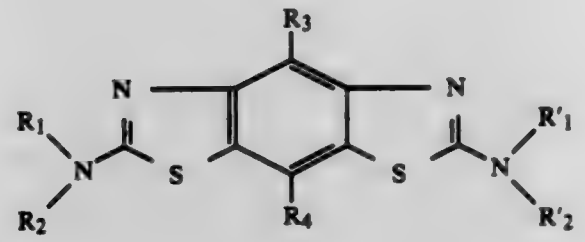
Continuation of Ser. No. 928,827, Jul. 28, 1978, abandoned. This application Aug. 28, 1980, Ser. No. 182,077

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736652

Int. Cl.[3] A61K *31/495;* C07D *521/00*

U.S. Cl. 424—250 20 Claims

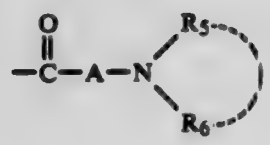
1. A compound of the formula



wherein

R_1 and R_1' are each hydrogen or alkyl of 1 to 2 carbon atoms;

R_2 and R_2' are each hydrogen or



but other than both hydrogen at the same time, where

A is alkylene of 1 to 2 carbon atoms,

R_5 is hydrogen, lower alkyl, lower alkyl-amino-lower alkyl, lower alkoxy-lower alkyl, hydroxycarbonyl-lower alkyl, cycloalkyl of 5 to 8 carbon atoms, lower alkyl-cycloalkyl of 5 to 8 carbon atoms, phenyl or morpholino;

R_6 is hydrogen, lower alkyl, lower alkyl-amino-lower alkyl or lower alkoxy-lower alkyl; or

R_5 and R_6, together with each other and the nitrogen atom to which they are attached, form a piperidino or piperazino ring and said heterocyclic rings may optionally have one or two lower alkyl substituents, a lower alkoxy-carbonyl, a lower alkoxy-carbonyl-methyl, a hydroxy-lower alkyl, a trifluoroethyl, a cycloalkyl of 5 to 7 carbon atoms, a lower alkyl-cycloalkyl of 5 to 7 carbon atoms, a cyclohexylmethyl, a benzyl, a pyridyl, a piperidino, a phenyl, a fluoro-phenyl, a chloro-phenyl, a trifluoromethyl-phenyl, or an acetyl-phenyl substituent attached thereto; and

R_3 and R_4 are each hydrogen, chlorine, bromine, lower alkyl, lower alkoxy, lower alkanoyl, hydroxy-carbonyl, lower alkoxy-carbonyl, amino-carbonyl, phenyl, trifluoromethyl, nitro, cyano or amino;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

20. The method of relieving arthritis or rheumatism in a warm-blooded animal in need thereof, which comprises perorally, parenterally, rectally or topically administering to said animal an effective antiarthritic or antirheumatic amount of a compound of claim 1.

4,344,947

USE OF ISOPROPYLAMINOPYRIMIDINE IN THE CHEMOTHERAPY OF MUSCULAR DYSTROPHY, MYOPATHY AND MYTONIA

Pierre M. Huve, Paris, France, assignor to Societe d'Etudes de Produits Chimiques, France

Filed Oct. 29, 1980, Ser. No. 201,709

Claims priority, application Canada, Nov. 2, 1979, 339073

Int. Cl.[3] A61K *31/505*

U.S. Cl. 424—251 4 Claims

1. A method for the chemotherapy of muscular dystrophy, myopathy and myotonia and/or muscular neurotransmission which comprises:

administering by injection to an animal afflicted with a condition associated with muscular dystrophy, myopathy, myotonia and/or muscular neurotransmission 2 isopropylaminopyrimidine or therapeutically acceptable salts of the same in an amount effective to improve said condition.

4,344,948

PIPERIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Haruki Takai, Kawasaki; Masayuki Teranishi; Nobuhiro Nakamizo, both of Machida; Yutaka Kasuya, Kawasaki, all of Japan, and Kazuhiro Kubo, Berchem, Belgium, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

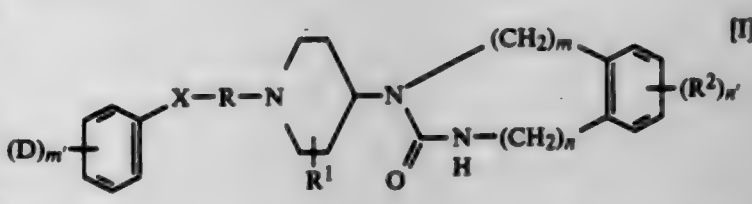
Filed Nov. 21, 1980, Ser. No. 209,284

Claims priority, application Japan, Nov. 21, 1979, 54/150056

Int. Cl.[3] C07D *401/04;* A61K *31/505*

U.S. Cl. 424—251 6 Claims

6. A pharmaceutical composition which comprises a pharmaceutically acceptable carrier, and an effective amount of a compound represented by the formula [I]:



[I]

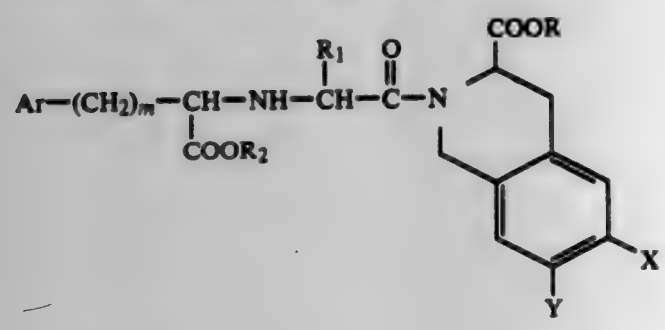
wherein m' is 0 or an integer of 1–5 representing the number of D groups substituted on the ring; D is hydroxy, halogen, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkynyloxy, lower alkylthio, carboxy, lower alkoxycarbonyl, nitro, amino, lower alkylamino, lower alkanoylamino sulfamoyl, mono- or di-lower alkylaminosulfonyl, lower alkylsulfonyl, carbamoyl, cyano or trifluoromethyl, and when m' is 2 or more, each D is the same group or each D is a different group or two D groups may combine to form a lower alkylenedioxy; X is oxygen, sulfur, carbonyl, hydroxymethylene or methylene; R is straight-chain alkylene having 1–4 carbon atoms with or without lower alkyl substituent(s); R^1 is hydrogen or lower alkyl; m and n are 0 or 1, and m and n are different from each other; n' is 0 or an integer of 1–4 representing the number of R^2 groups substituted on the ring; and R^2 is hydroxy, lower alkoxy, halogen, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, nitro or amino, and when n' is 2 or more, R^2 is the same or different or two R^2's may combine to form lower alkylenedioxy or a pharmacologically acceptable acid addition salt thereof.

4,344,949
SUBSTITUTED ACYL DERIVATIVES OF 1,2,3,4-TETRAHYDROISOQUINOLINE-3-CARBOXYLIC ACIDS

Milton L. Hoefle, and Sylvester Klutchko, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 193,767, Oct. 3, 1980, abandoned. This application Feb. 20, 1981, Ser. No. 236,397
Int. Cl.³ A61K *31/47*; C07D *217/16*, *491/048*
U.S. Cl. 424—258 15 Claims

1. A substituted acyl compound of 1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid having the formula



where R is hydrogen, lower alkyl or phenylalkyl; R_1 is hydrogen, lower alkyl, or benzyl; R_2 is hydrogen, or lower alkyl and Ar is phenyl, or substituted phenyl having 1 or 2 substituents selected from the group consisting of fluorine, chlorine, bromine, lower alkyl, lower alkoxy, hydroxy or amino; X and Y are independently hydrogen, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, hydroxy, or X and Y together are methylenedioxy; and m is 0 to 3; wherein lower alkyl, alkyl in the group phenylalkyl; and lower alkoxy has 1 to 4 straight or branched carbon atoms and the pharmaceutically acceptable salts thereof.

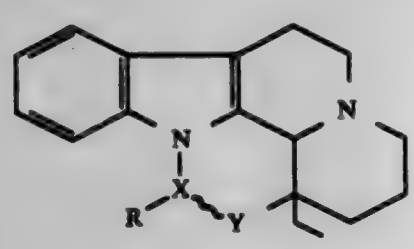
15. A method of treating hypertension by administering an effective amount of a substituted acyl compound of 1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid according to claim 1 or a pharmaceutically acceptable salt thereof.

4,344,950
PARENTERAL SOLVENT AND A PROCESS FOR THE PREPARATION OF STABLE SOLUTIONS CONTAINING SAME

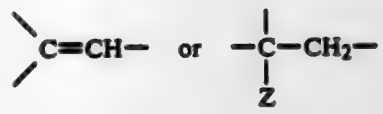
Geza T. Nagy; Gabor Szepesi, and Maria Gazdag, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Oct. 28, 1980, Ser. No. 201,509
Claims priority, application Hungary, Feb. 11, 1979, RI 733
Int. Cl.³ A61K *31/475*, *31/435*
U.S. Cl. 424—262 8 Claims

1. A parenteral pharmaceutical composition which comprises as active ingredient a pharmaceutically effective amount of a compound of the formula (I)



wherein
X ∩ Y is



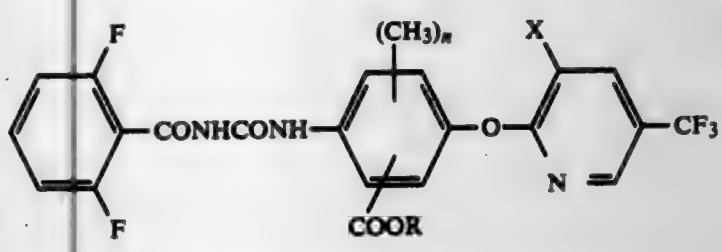
and
Z is hydroxy or cyano, and
R is hydrogen, an alkoxycarbonyl group having 2 to 6 carbon atoms which can be substituted by one or more halogen atoms or hydroxy groups or an aralkoxycarbonyl group, provided that if Z is hydroxy, then R is not simultaneously hdyrogen, along with a parenteral solvent which comprises
(a) a pharmaceutically acceptable buffer or an organic acid having a pK_a equalling 3 to 5capable of adjusting the pH value of the parenteral composition to 2.5 to 5.0;
(b) at least one stabilizing agent selected from the group which consists of parenterally acceptable aliphatic alcohols containing one or more hydroxy groups and water-miscible ethers thereof;
(c) 30–70% by weight water; and
(d) optional preservatives, anaesthetics or antioxidants.

4,344,951
N-BENZOYL N'-PYRIDYLOXY PHENYL UREA

Ryuzo Nishiyama, Takatsuki; Takahiro Haga, Kusatsu; Tadaaki Toki; Tohru Koyanagi, both of Moriyama, and Shigeo Murai, Yookaichi, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 183,650, Sep. 3, 1980, Pat. No. 4,310,530. This application Apr. 1, 1981, Ser. No. 250,077
Claims priority, application Japan, Sep. 7, 1979, 54-114862; Feb. 8, 1980, 55-14430
The portion of the term of this patent subsequent to Jan. 12, 1999, has been disclaimed.
Int. Cl.³ C07D *213/64*; A01N *43/40*
U.S. Cl. 424—263 3 Claims

1. N-benzoyl N'-pyridyloxy phenyl ureas having the formula



(I)

wherein X represents a halogen atom; R represents a C_1–C_4 alkyl group and n is 0, 1 or 2.

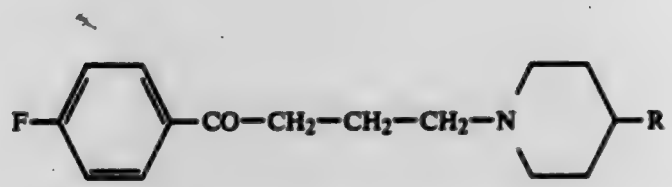
3. An insecticidal composition comprising an effective amount of a N-benzoyl N'-pyridyloxy phenyl urea having the formula (I) according to claim 1 as an active ingredient together with an inert carrier or diluent.

4,344,952
METHOD OF TREATING DIARRHOEA WITH GAMMA-PIPERIDINO-BUTYROPHENONES

Sven E. H. Hernestam, Malmö; Kjell B. Martinsson, Ballingslöv; Erik G. Christensson, Lund, and Nils-Göran E. Olsson, Ödakra, all of Sweden, assignors to AB Ferrosan, Malmö, Sweden

Filed May 30, 1980, Ser. No. 154,863
Int. Cl.³ A61U *31/445*
U.S. Cl. 424—267 6 Claims

1. A method of treating diarrhoea in mammals comprising administration to a mammal having diarrhoea of an effective amount of a compound selected from the group consisting of 4-fluoro-γ-(4-alkylpiperidino)-butyrophenone of the formula



wherein R is lower alkyl having 1 to 6 carbon atoms, or pharmaceutically acceptable acid addition salts thereof.

4,344,953

COMBATING PESTS WITH SUBSTITUTED ALKANYLAZOLYL OXIME-CARBAMATES

Jörg Stetter, Wuppertal; Bernhard Homeyer, Leverkusen, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

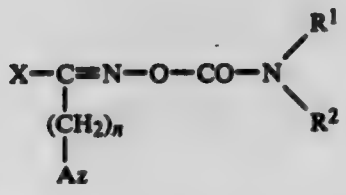
Continuation of Ser. No. 31,098, Apr. 18, 1979, abandoned. This application Aug. 29, 1980, Ser. No. 182,380

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820361

Int. Cl.³ A01N *43/50, 43/64;* C07D *233/61, 249/08*

U.S. Cl. 424—269 11 Claims

1. A substituted alkanyl-azolyl oxime-carbamate of the formula



in which

Az represents an imidazol-1-yl, 1,2,4-triazol-1-yl and 1,3,4-triazol-1-yl radical,

R^1 represents hydrogen or alkyl with 1 to 4 carbon atoms;

R^2 represents hydrogen, alkyl with 1 to 12 carbon atoms, alkenyl with 2 to 4 carbon atoms, alkynyl with 2 to 4 carbon atoms, halogenoalkyl with 2 to 4 carbon atoms and up to 5 halogen atoms or alkoxyalkyl with up to 2 carbon atoms in each alkyl part;

n represents 0 or 1; and

X represents monosubstituted or disubstituted alkyl with 1 to 4 carbon atoms, the substituents being selected from halogen, alkylcarbonyloxy with 1–4 carbon atoms in the alkyl part, carbamoyloxy, alkylcarbamoyloxy and dialkylcarbamoyloxy with in either case 1 to 4 carbon atoms in each alkyl part, alkylsulphonyloxy with 1 to 4 carbon atoms, hydroxyl, nitro, cyano, alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl part and alkoxy and alkylthio with in either case 1 to 4 carbon atoms,

or an acid addition salt or metal salt complex thereof.

4,344,954

2,3-DISUBSTITUTED-2,3,5,6,7,8-HEXAHYDRO-THIAZOLO[3,2-A]-[1,3]DIAZEPIN-3-OLS

Andrew S. Tomcufcik, Old Tappan; William B. Wright, Jr., Woodcliff Lake, both of N.J., and Joseph W. Marsico, Jr., Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

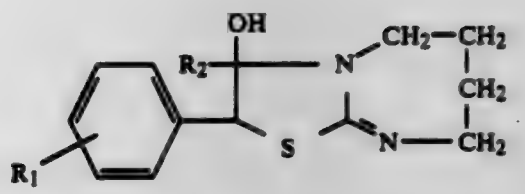
Filed Jul. 9, 1980, Ser. No. 167,088

The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.

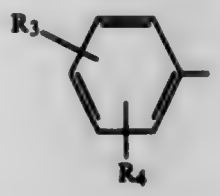
Int. Cl.³ A61K *31/55;* C07D *513/04*

U.S. Cl. 424—270 18 Claims

1. A compound selected from the group consisting of those of the formula:



wherein R_1 is hydrogen, fluoro, chloro or bromo and R_2 is 3,4-methylenedioxyphenyl, 2-furyl, 3-methyl-2-furyl, 5-methyl-2-furyl, 2-thienyl, 3-methyl-2-thienyl, 5-methyl-2-thienyl or a moiety of the formula:



wherein R_3 and R_4 are each individually selected from the group consisting of hydrogen, fluoro, chloro, bromo, alkyl having from 1 to 3 carbon atoms, alkoxy having from 1 to 3 carbon atoms and dimethylamino; and the pharmacologically acceptable acid-addition salts thereof.

18. The method of inducing diuresis in a mammal which comprises administering orally to said mammal an effective amount of a compound according to claim 1.

4,344,955

PENICILLIN 1,1-DIOXIDES

Ekkehard Niemers; Hans-Bodo König; Wilfried Schröck, and Karl G. Metzger, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,975

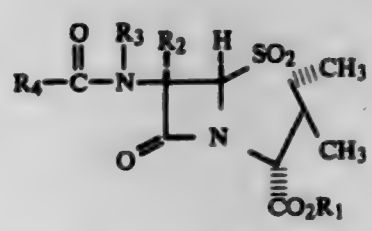
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 2925963

The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

Int. Cl.³ A61K *31/43;* C07D *499/72*

U.S. Cl. 424—271 9 Claims

1. A penicillin 1,1-dioxide of the formula



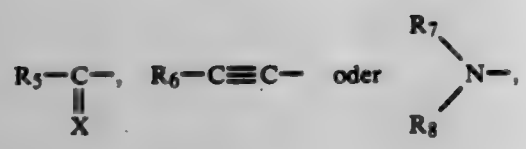
or a pharmaceutically acceptable salt thereof, in which

R_1 denotes a hydrogen atom or an ester-forming radical,

R_2 denotes a hydrogen atom or optionally substituted alkoxy group,

R_3 denotes a hydrogen atom, COR_4, SO_2-alkyl, SO_2-aryl or an optionally substituted alkyl group, but R_2 and R_3 do not simultaneously denote hydrogen atoms, and

R_4 denotes a hydrogen atom, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted cycloalkyl group, an optionally substituted cycloalkenyl group, an optionally substituted cycloalkadienyl or aralkyl group, an optionally substituted alkoxy, aralkoxy, aryl, aryloxy or heterocyclyl radical or a radical of the formula

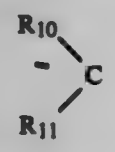


R_5 denotes a hydrogen atom, an optionally substituted alkyl group, an optionally substituted alkoxy, aryloxy or aryl group, an optionally substituted cycloalkyl group, an optionally substituted cycloalkenyl group, an optionally substituted cycloalkadienyl group, or an optionally substituted alkenyl, aralkyl or heterocyclyl radical,

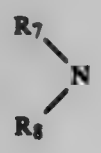
R_6 denotes a hydrogen atom or an optionally substituted alkyl or aryl group,

R_7 and R_8 independently denote a hydrogen atom, an optionally substituted alkyl group, an optionally substituted alkenyl or aryl group, an optionally substituted aralkyl group, an optionally substituted heterocyclyl radical, an optionally substituted cycloalkyl group, an optionally substituted cycloalkenyl group or an optionally substituted cycloalkadienyl group, or R_7 and R_8 together denote a heterocyclyl radical, and

X denotes an oxygen atom, R_9—N or



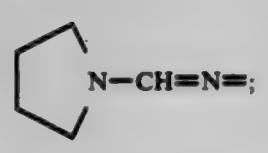
in which R_9 denotes a hydroxyl group, an optionally substituted alkoxy group, a heterocyclyl radical or a radical of the formula



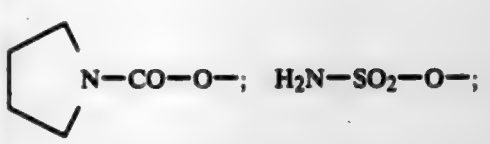
in which

R_{10} and R_{11} independently denote a hydrogen atom, an optionally substituted alkyl, aryl or heterocyclyl radical, a carboxyl group or a functional derivative of a carboxyl group; the heterocyclyl radicals being selected from the group consisting of thienyl, furyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, pyrrolyl, imidazolyl, pyrazolyl, oxdiazolyl, thiadiazolyl, triazolyl, sydnonyl, oxtriazolyl, thiatriazolyl, tetrazolyl, pyridyl, pyrazinyl, pyrimidinyl, tetrahydrofuranyl, dioxanyl, pyrrolidinyl, piperidinyl, morpholinyl, pyron-2-yl and pyron-4-yl, and

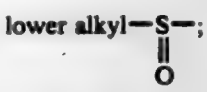
the optional substituents being selected from the group consisting of halogen; amino; mono-lower alkylamino; di-lower alkylamino; pyrrolidyl; piperidyl; HCO—NH—; lower alkyl—CO—NH—; H—CO—N— (lower alkyl); lower alkyl—CO—N(-lower alkyl); $(\text{lower alkyl})_2C{=}N$—; lower alkyl —$SO_2$—NH—; lower alkyl —$SO_2$—N (lower alkyl)—; HO—$SO_2$—NH—; HO—$SO_2$—N (lower alkyl); amidino; $(\text{lower alkyl})_2$—N—CH=N—;



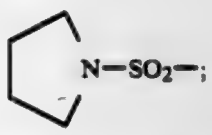
guanido; nitro; azido; hydroxyl; lower alkoxyl; H—CO—O—, lower alkyl—CO—O—; lower alkyl—O—CO—O—; H_2N—CO—O—; lower alkyl—NH—CO—O—; $(\text{lower alkyl})_2$N—CO—O;



lower alkyl—NH—SO_2—O—; $(\text{lower alkyl})_2$N—SO_2—O—; HOOC—; H_2N—CO—; $(\text{lower alkyl})_2$—N—CO—; OHC—; HO—SO_2—O—; HS—; lower alkyl—S—;

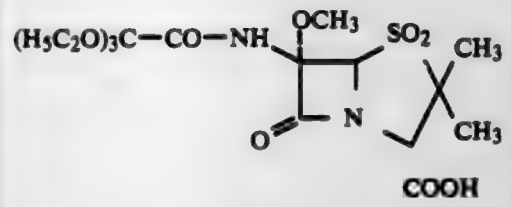


HO_3S—; lower alkyl—SO_2— or H_2N—SO_2—; lower alkyl—NH—SO_2—; $(\text{lower alkyl})_2$ N—SO_2—;



HO—SO_2—S—; phenyl or phenoxy.

3. A compound according to claim 1, wherein such compound is



or a pharmaceutically acceptable salt thereof.

9. A method of combating bacteria which comprises applying to such bacteria or a habitat thereof an anti-bacterially effective amount of a compound or salt according to claim 3.

4,344,956

OXOTETRAHYDROTHIOPHENES

Nicolo Ercoli, Residencia La Hacienda (23 L) Avenida Principal Las Mercedes, Caracas, Venezuela

Filed Apr. 6, 1976, Ser. No. 674,068

Int. Cl.³ A61K *31/42, 31/54;* C07D *333/16;* C09B *23/16*

U.S. Cl. 424—272 **25 Claims**

1. Pharmacologically-active and physiologically-acceptable butyrothiolactonimine which is a Schiff Base of an aminobutyrothiolactone and a penaldate; the butyrothiolactone ring of which is further unsubstituted and the imine nitrogen of which is directly bound to two carbon atoms, one of which is a ring carbon of said butyrothiolactone ring.

4,344,957

BENZ-ACYL-BENZIMIDAZOLE DERIVATIVES AND ANTIALLERGIC COMPOSITIONS

Ernst Habicht, Oberwil; Pier G. Ferrini, Binningen, and Alfred Sallmann, Bottmingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

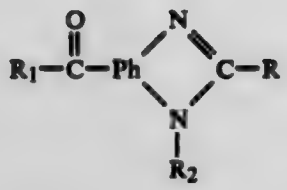
Division of Ser. No. 962,426, Nov. 20, 1978, Pat. No. 4,213,993, which is a division of Ser. No. 825,630, Aug. 18, 1977, Pat. No. 4,141,982. This application Dec. 28, 1979, Ser. No. 107,980

Claims priority, application Luxembourg, Aug. 27, 1976, 75684

Int. Cl.³ A61K *31/415;* C07D *235/12*

U.S. Cl. 424—273 B **5 Claims**

1. A benz-acyl-benzimidazole-2 derivative of the formula



in which R is esterified hydroxymethyl containing, as the esterified hydroxyl group, lower alkanoyloxy or benzoyloxy which is unsubstituted or substituted by lower alkyl, lower alkoxy or halogen, R_1 is lower alkyl which is unsubstituted or substituted by lower alkoxy, lower alkylthio, lower alkylsulphinyl, lower alkylsulphonyl, phenylthio, phenylsulphinyl or phenylsulphonyl, or phenyl or phenyl-lower alkyl which are unsubstituted or substituted in the phenyl radical by lower alkyl, lower alkoxy or halogen, or is lower alkenyl or cycloalkyl having 3 to 8 carbon atoms, R_2 is hydrogen or lower alkyl and Ph is 1,2-phenylene which contains the radical of the formula R_1—C(=O)— and is otherwise unsubstituted or substituted by lower alkyl, lower alkoxy, hydroxyl or halogen with the proviso that R_1 contains at least 2 carbon atoms if Ph is otherwise unsubstituted, R_2 is ethyl and R is acetoxymethyl.

5. A pharmaceutical preparation containing an antiallergically effective amount of a compound as claimed in claim 1 together with a conventional pharmaceutical carrier.

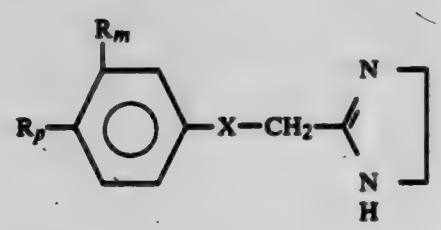
4,344,958

METHOD OF INHIBITING SICKLING OF SICKLE ERYTHROCYTES USING SUBSTITUTED-2-IMIDAZOLINES

Robert J. Broersma, Jr., Noblesville, Ind., and Gayle A. Spittka, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 24, 1980, Ser. No. 200,246
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R 5 Claims

1. A method for inhibiting the sickling of red blood cells prone to sickle in blood containing said cells which comprises introducing into said blood an effective sickle inhibiting amount of a compound of the formula:



or a pharmaceutically-acceptable salt thereof, wherein X represents sulfur, oxygen or imino; R_m represents chloro, bromo, fluoro or iodo; and R_p represents chloro, bromo, fluoro, iodo, hydroxy, amino or alkyl.

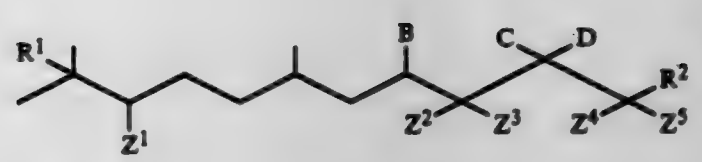
4,344,959

TERPENE DERIVATIVES AND INSECTICIDAL COMPOSITIONS CONTAINING TERPENES

Lajos Novak; Csaba Szantay; Janos Rohaly; Attila Kis-Tamas; Laszlo Varjas, all of Budapest, and Janos Csutak, Kazincbarcika, all of Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Apr. 6, 1981, Ser. No. 251,043
Claims priority, application Hungary, Apr. 11, 1980, 877
Int. Cl.³ A61K *31/365, 31/23;* C07D *307/20*
U.S. Cl. 424—279 11 Claims

1. A compound of the formula (I),



(I)

wherein
R^1 is hydrogen or a lower alkoxy group and
Z^1 is hydrogen, or
R^1 and Z^1 from together a double bond,
Z^2 is hydrogen and
B is hydroxy, or
Z^2 and B form together a double bond,
Z^3 and Z^4 each stand for hydrogen or they form together an ethylene group, or
Z^4 and D form together a double bond,
C is oxygen atom or a lower alkoxy group,
D is a valence bond if C stands for oxygen, or otherwise D forms a double bond together with Z^4 or Z^5,
Z^5 forms a double bond together with D or represents hydrogen, and
R^2 is a group of the formula —$COOR^3$, wherein R^3 is lower alkyl, or
Z^5 and R^2 form together a 1-oxo-2-oxa-tetramethylene group, with the proviso that if Z^3 and Z^4 form together an ethylene group, R^2 may stand only for a —$COOR^3$ group.

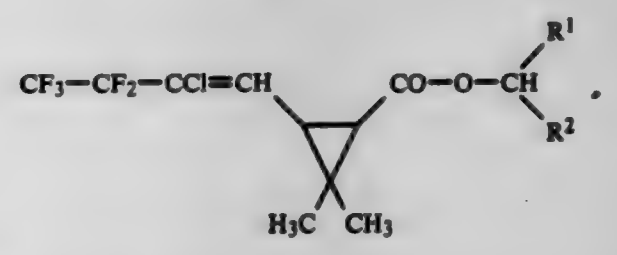
4,344,960

COMBATING INSECTS AND ACARIDS WITH 3-(2-CHLORO-3,3,4,4,4-PENTAFLUORO-1-BUTENYL)-2,2-DIMETHYL-CYCLOPROPANECARBOXYLIC ACID ESTERS

Rainer Fuchs, Wuppertal; Klaus Naumann; Reinhard Lantzsch, both of Leverkusen; Hermann Hagemann; Ingeborg Hammann, both of Cologne; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,645
Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019552
Int. Cl.³ A01N *43/30, 53/00;* C07C *121/75;* C07D *317/44*
U.S. Cl. 424—282 8 Claims

1. A 3-(2,chloro-3,3,4,4,4-pentafluoro-1-butenyl)-2,2-dimethyl-cyclopropanecarboxylic acid ester of the formula



in which
R^1 represents hydrogen, cyano or an alkyl, alkenyl or alkynyl radical with in each case up to 4 carbon atoms, and
R^2 represents a phenyl radical which is substituted by fluorine and/or by optionally fluorine-substituted C_1–C_2-alkylenedioxy and/or by optionally fluorine-substituted phenoxy, with the proviso that the radical R^2 contains a total of at least one fluorine-substituent.

7. A method of combating insects and acarids which comprises applying to the acarids, or to a habitat thereof, an insecticidally and acaricidally effective amount of a compound according to claim 1.

4,344,961

INSECTICIDAL BENZYLFURYLMETHYL ESTERS OF 3-(2,2-DICHLOROVINYL)-2,2-DIMETHYL-CYCLOPROPANE CARBOXYLIC ACIDS

Gerd-Ulrich Schwarz, Mannheim; Karl Kiehs, Lampertheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

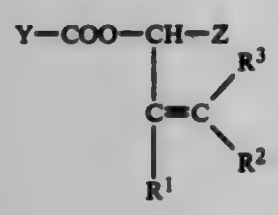
Continuation of Ser. No. 96,520, Nov. 21, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,557

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852275

Int. Cl.³ A01N *43/08;* C07D *307/45*

U.S. Cl. 424—285 6 Claims

1. A carboxylic acid ester of the formula I



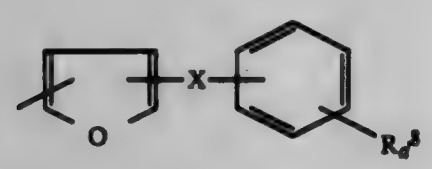
I

where

R^1, R^2 and R^3 are identical or different and each is hydrogen, halogen or alkyl or alkenyl of up to 5 carbon atoms,

Y is 3-(2,2-dihalogenovinyl)-2,2-dimethyl-cyclopropyl,

Z is a radical of the formula



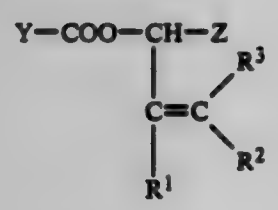
where

X is $-CH_2-$,

R^8 is halogen or alkyl, alkoxy or haloalkyl of up to 5 carbon atoms and

d is from 0 to 3.

6. A process for combating insects and arachnids, wherein the insects or arachnids or the objects to be protected against insect and arachnid attack are treated with an effective amount of a carboxylic acid ester of the formula I



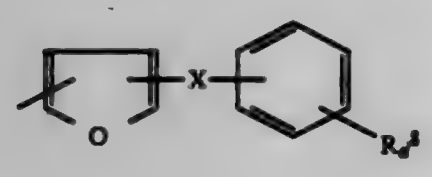
I

where

R^1, R^2 and R^3 are identical or different and each is hydrogen, halogen or alkyl or alkenyl of up to 5 carbon atoms,

Y is 3-(2,2-dihalogenovinyl)-2,2-dimethyl-cyclopropyl,

Z is a radical of the formula



where

X is $-CH_2-$,

R^8 is halogen or alkyl, alkoxy or haloalkyl of up to 5 carbon atoms and

d is from 0 to 3.

4,344,962

SULPHENYLATED ACYLURETHANES AND THEIR USE AS FUNGICIDES

Engelbert Kühle, Bergisch Gladbach; Wilfried Paulus; Hermann Genth, both of Krefeld, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

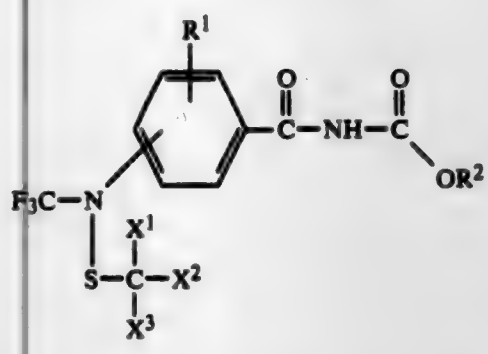
Filed Sep. 8, 1980, Ser. No. 184,676

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938111

Int. Cl.³ C07C *145/02;* A01N *47/20*

U.S. Cl. 424—300 6 Claims

5. A fungicidal composition comprising a fungidical effective amount of a compound of the formula



(I)

wherein

R^1 denotes hydrogen, halogen, nitro, alkyl, alkoxy or halogenomethyl,

R^2 denotes alkyl, alkenyl, alkinyl, cycloalkyl or aralkyl and

X^1, X^2 and X^3 are identical or different and denote halogen and a diluent.

4,344,963

PESTICIDALLY ACTIVE 2-PHENYL-ALK-1-ENYL-CYCLOPROPANE-CARBOXYLIC ACID ESTERS

Rainer Fuchs, Wuppertal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

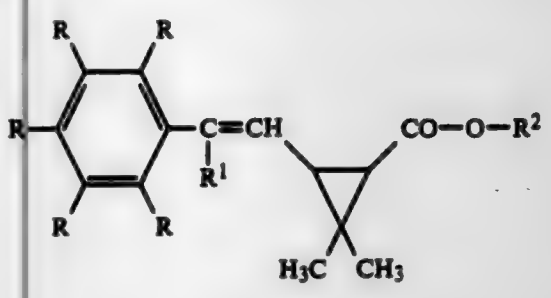
Filed Apr. 25, 1980, Ser. No. 143,958

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920947

Int. Cl.³ A01N *53/00;* C07C *69/743, 121/75*

U.S. Cl. 424—304 11 Claims

1. A 2-phenyl-alk-1-enyl-cyclopropanecarboxylic acid ester of the formula

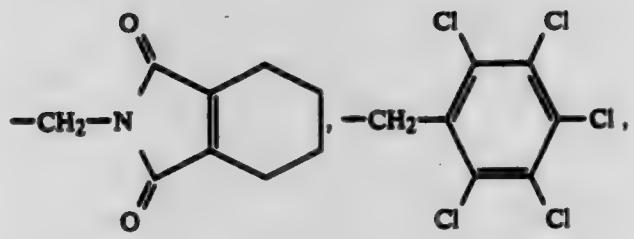


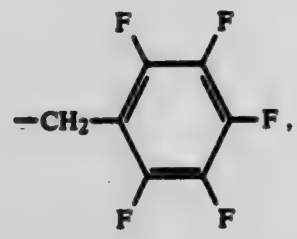
in which

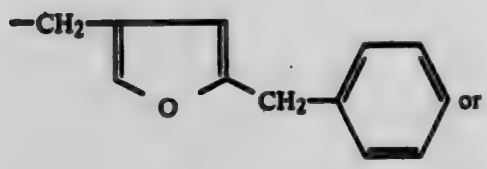
R each independently is hydrogen, halogen, cyano, nitro and, in each case optionally halogen-substituted, alkyl, alkoxy, alkylenedioxy or alkylthio,

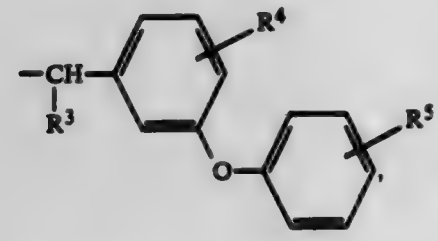
R^1 is optionally halogen-substituted alkyl, and

R^2 is









R^3 is hydrogen, cyano, ethynyl, methyl or ethyl, and

R^4 and R^5 each independently is hydrogen, fluorine, chlorine or bromine.

10. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

4,344,964

1-(ALKANOYLAMINO-ARYLOXY)-2-HYDROXY-3-(ALKINYL-AMINO)-PROPANES AND SALTS THEREOF

Herbert Köppe; Werner Kummer; Helmut Stähle; Gojko Musacevic, all of Ingelheim am Rhein, and Werner Traunecker, Münster-Sarmsheim, all of Fed. Rep. of Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Fed. Rep. of Germany

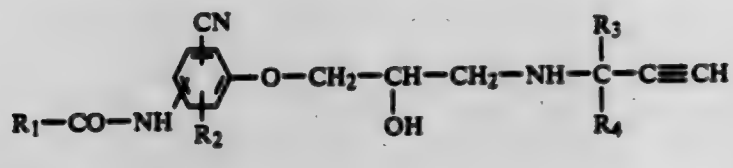
Filed Mar. 9, 1981, Ser. No. 241,519

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009036

Int. Cl.³ A61K *31/275*; C07C *121/78*

U.S. Cl. 424—304 **6 Claims**

1. A compound of the formula



wherein

R_1 is ethyl or isopropyl;

R_2 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or a bivalent radical —CH=CH—CH=CH— or $-(CH_2)_n-$, where n is an integer from 3 to 5, inclusive, and the free bonds of said bivalent radical are attached to adjacent carbon atoms of the phenyl ring; and

R_3 is hydrogen or alkyl or 1 to 3 carbon atoms;

R_4 is alkyl of 1 to 3 carbon atoms; or

R_3 and R_4, together with each other, are $-(CH_2)_p-$, where p is an integer from 4 to 6, inclusive,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

5. A method for the treatment and prophylaxis of diseases of the coronaries, for the treatment of hypertension, or for the treatment of cardiac arrhythmia, which comprises administering to a warm-blooded animal or human an effective amount of a compound of claim 1.

4,344,965

ANESTHETIC COMPOSITIONS CONTAINING BENZOCAINE

Raymond Stone, 177 Woodsdale Ave., Dover, Del. 19901

Continuation of Ser. No. 951,046, Oct. 13, 1978, abandoned. This application Mar. 26, 1980, Ser. No. 134,069

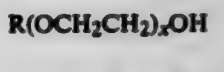
Int. Cl.³ A61K *31/245*

U.S. Cl. 424—310 **6 Claims**

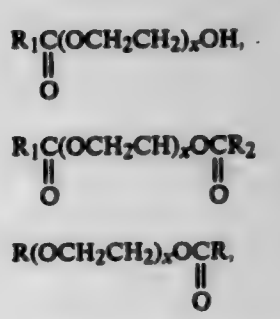
1. An anesthetic composition containing benzocaine, suitable for a pump dispenser and having stability at room temperature and a resistance to low temperature and being relatively non-flammable, said composition comprising:

(1) a solution of at least 10% benzocaine in a nonvolatile solvent, and

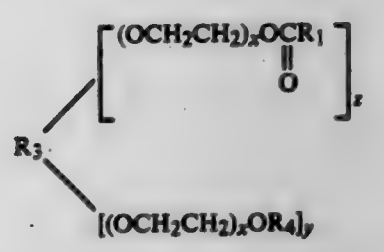
(2) a diluent of a mixture of water and alcohol, said nonvolatile solvent being selected from the group consisting of



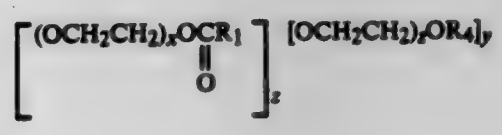
in which R is alkyl containing 7 to 19 carbon atoms and in which the ratio of the total number of ether groups per molecule to the molecular weight of the nonvolatile solvent is not less than 0.0033 or in which R is phenyl or monosubstituted alkyl phenyl or polysubstituted alkyl phenyl in which the number of carbon atoms in each alkyl group (R_5) is 1 to 19, and in which the ratio of the total number of ether groups per molecule to the molecular weight of the nonvolatile solvent is not less than 0.0055,



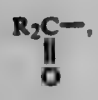
in which R_1 and R_2 are alkyl, containing 7 to 19 carbon atoms, and in which the ratio of the total number of ester groups and ether groups per molecule to the molecular weight of the nonvolatile solvent is not less than 0.0055, and



in which R_3 is a radical remaining after all the hydroxyl groups of a polyhydric alcohol have been removed,



are connected to the positions of R_3 from which the hydroxyl groups were removed, R_4 is selected from the group consisting of hydrogen and



and z are whole numbers and y+z is equal to the original number of hydroxyl groups in the polyhydric alcohol which was the precursor of the radical R_3, in which the ratio of the total number of ether groups per molecule to the molecular weight of the compound is not less than 0.0055, in which x is a whole number such that the minimum value of the ratio of the total number of ethylene oxide groups, (OCH_2CH_2), to the total number of functional groups present of at least one of the group selected from the group of ester groups, phenoxy groups, alkyl phenoxy groups, and terminal alkoxy groups per molecule is 5, and in which the maximum number of ethylene oxide groups per molecule is 135;

said alcohol is selected from the group consisting of isopropanol, n-propanol and ethanol,

the ratio of diluent to benzocaine solution in a nonvolatile solvent is, by weight, from 0.6/1 to 8/1,

and the ratio of water to alcohol is, by weight, from 0.8/1 to 5.6/1.

4,344,966

ANTI-INFLAMMATORY 1-ALKYL-1-PHENYL-BUTANES

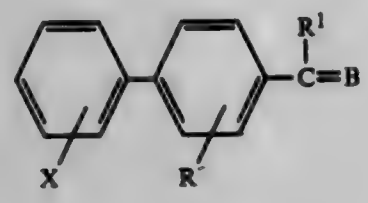
Paul L. Anderson, Dover, N.J., and Darryl A. Brittain, New York, N.Y., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation of Ser. No. 867,789, Jan. 9, 1978, abandoned, which is a division of Ser. No. 633,460, Nov. 19, 1975, Pat. No. 4,081,476, Continuation-in-part of Ser. No. 390,035, Aug. 20, 1973, abandoned. This application Jan. 8, 1980, Ser. No. 110,442

Int. Cl.³ A61K *31/065, 31/085, 31/22*

U.S. Cl. 424—343 **11 Claims**

1. A pharmaceutical composition suitable for use as an anti-inflammatory comprising a compound of the formula:



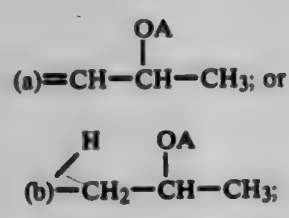
wherein

X is a hydrogen atom; halo having an atomic weight of from about 19 to 80, or alkoxy having from 1 to 4 carbon atoms;

R is a hydrogen atom or halo having an atomic weight of from about 19 to 80;

R^1 is alkyl having from 1 to 3 carbon atoms; and

B is either of the structures:

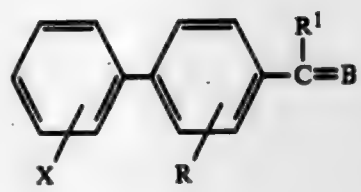


in which

A is a hydrogen atom or alkanoyl having from 2 to 4 carbon atoms, or acetoacetyl;

and a pharmaceutically acceptable carrier for said compound.

7. A method of treating inflammation in an animal in need of such treatment, comprising internally administering to said animal an inflammation-reducing amount of a compound of the formula:



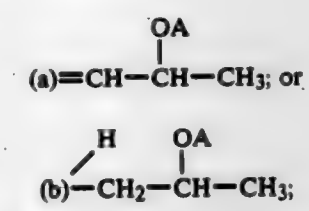
wherein

X is a hydrogen atom, halo having an atomic weight of from about 19 to 80; or alkoxy having from 1 to 4 carbon atoms;

R is a hydrogen atom or halo having an atomic weight of from about 19 to 80;

R^1 is alkyl having from 1 to 3 carbon atoms; and

B is either of the structures:



in which A is a hydrogen atom or alkanoyl having from 2 to 4 carbon atoms, or acetoacetyl.

4,344,967

FILM FORMING COMPOSITION AND USES THEREOF

Ian A. Easton, Glasgow, Scotland; James M. Glen, and Ann G. Kieran, both of Bathurst, Australia, assignors to Devro, Inc., Somerville, N.J.

Filed Aug. 1, 1980, Ser. No. 174,313

Claims priority, application United Kingdom, Aug. 7, 1979, 7927460

Int. Cl.³ A61K *47/00*

U.S. Cl. 424—359 **5 Claims**

1. A non-gelling, film-forming composition comprising a stable aqueous solution containing 25% to 40% by weight of partially hydrolysed collagen protein solids having a molecular weight of from 3,000 to 45,000 and from 1% to 10% by weight glycerol.

4,344,968

PHARMACEUTICAL VEHICLE

Yukio Aoda, Tokyo; Hiroshi Ninomiya, Sayama; Kooichi Yoshida, Soka, and Osamu Koyanagi, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 101,707

Claims priority, application Japan, Dec. 9, 1978, 53-152221

Int. Cl.³ A61K *9/02, 9/22, 9/26, 31/78*

U.S. Cl. 424—365 **5 Claims**

1. A pharmaceutical vehicle comprising (a) a fatty acid glyceride having a melting point higher than 37° C. and being used in an amount of 40 to 80% by weight, (b) (b) one member selected from the group consisting of alamine, glycine, phenylalanine, leucine, isoleucine, valine, lysine, proline, serine, glucose, maltose, mannitol, fructose, galactose, lactose, dextrose, xylitol, sorbitol, mannose, sucrose, dextrin, dextran, xylann, carragheenin, mannan, an alginic acid ester of propyleneglycol, soluble starch, gum arabic, tragacamth gum, α-cyclodextrin, β-cyclodextrin, galactan and inulin: said substances having a particle size smaller than 28 mesh and being used in an amount of 10 to 50% by weight, (c) sodium polyacrylate having a particle size smaller than 28 mesh and being used in an amount of 0.2 to 2% by weight, and (d) a water-soluble surface active agent being used in an amount of 0.05 to 5% by weight.

4,344,969

SINGLE-DOUGH COOKIES HAVING STORAGE STABLE TEXTURE

Rudolph W. Youngquist, and William J. Brabbs, both of Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 29, 1980, Ser. No. 220,603

Int. Cl.[3] A21D *2/00, 8/02, 10/00;* A23L *1/10*

U.S. Cl. 426—18 7 Claims

1. A cookie dough capable of providing, when baked, a crumb-continuous cookie having storage-stable crisp and chewy textures, comprising:

(a) a carbohydrase enzyme;

(b) a buffer system which provides an initial pH in the cookie dough sufficient to inactivate the enzyme;

(c) a readily crystallizable sucrose-containing carbohydrate component, at least a part of the carbohydrate component being a substrate for the enzyme, in amounts sufficient, after the enzyme has acted on the substrate, to produce sufficient quantities of non-sucrose sugars to inhibit the crystallization of the sucrose; and

(d) the balance comprising non-carbohydrate cookie ingredients;

(e) the non-carbohydrate cookie ingredients including shortening having a leavening acid incorporated therein, the leavening acid being capable of reacting with the buffer system when the shortening is melted so as to provide a pH in a portion of the cookie dough sufficient to activate the enzyme.

4,344,970

STABILIZATION OF MILK AND IMPROVED CHEESE YIELDS

Robert R. Zall, and David J. Dzurec, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 18, 1980, Ser. No. 207,861

Int. Cl.[3] A23C *3/02, 19/05*

U.S. Cl. 426—40 3 Claims

1. A process for increasing the yield of cottage cheese or quarg which comprises:

heating fresh milk within a few hours after leaving the cow, under non-pasteurizing conditions of at least about 150° C., to result in a product which is still raw by the phosphatase analysis and which has a reduced level of flavor-affecting bacteria;

aging the heated milk under refrigerated condition for a period between at least two days and the time that noticeable change in flavor occurs;

pasteurizing the milk and processing the pasteurized milk into cottage cheese or quarg.

4,344,971

PRESERVATION OF FRUITS AND VEGETABLES

John T. Garbutt, Muscatine, Iowa, assignor to Grain Processing Corporation, Muscatine, Iowa

Continuation-in-part of Ser. No. 195,525, Oct. 9, 1980, abandoned. This application Mar. 31, 1981, Ser. No. 249,727

Int. Cl.[3] A23L *1/212*

U.S. Cl. 426—102 26 Claims

16. A fruit or vegetable having thereon a preserving coating of a protein obtained by treating a protein-containing liquid with an anionic surface active agent containing not less than 8 carbon atoms to precipitate protein therefrom, said coating being effective to reduce the moisture loss and to extend the shelf life of said fruit or vegetable.

4,344,972

HERBAL CENTER DROP AND PROCESS FOR ITS PREPARATION

Horst Wienecke, Gross-Gerau, Fed. Rep. of Germany, assignor to Richardson GmbH, Gross-Gerau, Fed. Rep. of Germany

Filed May 23, 1980, Ser. No. 152,698

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 2925229

Int. Cl.[3] A23G *3/00;* A23L *1/221*

U.S. Cl. 426—103 3 Claims

1. A process for preparing bonbons with a herbal core comprising the steps of adding ultra-fine comminuted herbal parts having a particle size smaller than 1.0 mm, in an amount sufficient to impart a herbal flavor, to a viscous filling material having a temperature of 85° to 120° C., to form a mixture; cooling the mixture to a temperature of about 80° to 95° C.; and, pumping said mixture into a hard bonbon candy coat.

4,344,973

METHOD FOR CURING AND SMOKING PORK SKINS TO CONDITION THEM FOR RENDERING

Anthony A. Blake, 816 Forest Hills Dr., and Neil W. Blake, 5309 Clear Run Dr., both of Wilmington, N.C. 28403

Continuation-in-part of Ser. No. 203,951, Nov. 4, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 308,123

Int. Cl.[3] A23B *4/02, 4/04*

U.S. Cl. 426—264 9 Claims

1. A method of curing and smoking pork skins preparatory to them being rendered and popped, said method comprising the steps of, prior to rendering or popping said skins, applying a curing solution to the skins; applying a liquid smoke to the skins; continuously passing the skins through an enclosure; blowing heated air over the skins to dry the exposed surface of the skins in a portion of said enclosure; then applying direct heat from a heat source to said skins for a predetermined time in another portion of said enclosure; and regulating the temperature of said heat, the proximity of said skins to the source of heat, and said predetermined time so that the internal temperature of the skins is sufficient to activate the curing solution and the liquid smoke and insufficient to render the skins.

4,344,974

PROCESS FOR DECAFFEINIZING RAW COFFEE

Wolfgang Sirtl, Bad Homburg, Fed. Rep. of Germany, assignor to Kaffee-Veredelungs-Werk Koffeinfrei Kaffee GmbH & Co., Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 819,257, Jul. 27, 1977, abandoned. This application Jun. 13, 1980, Ser. No. 159,356

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634535

Int. Cl.[3] A23F *5/20*

U.S. Cl. 426—271 11 Claims

1. A process of decaffeinizing raw coffee, which comprises:

extracting the caffeine from the raw coffee by circulating humid nitrogen oxide N_2O gas in a hypercritical condition through the raw coffee,

removing the caffeine laden, humid hypercritical nitrogen oxide N_2O gas from the raw coffee,

and immediately separating the caffeine from the humid hypercritical nitrogen oxide N_2O gas by passing the hypercritical nitrogen oxide N_2O gas through an ion exchanger containing functional groups capable of establishing a chemical bond between the ion exchanger and the caffeine thereby allowing the gas to pass away from the ion exchanger while leaving the caffeine with the ion exchanger.

4,344,975

PROCESS FOR THE PRODUCTION OF AGGLOMERATED BREAD CRUMBS

Werner Seiler, Züberwangen, Switzerland, assignor to Gebruder Buhler AG, Uzwil, Switzerland

Filed Mar. 7, 1980, Ser. No. 128,155

Claims priority, application Switzerland, Mar. 15, 1979, 2505/79; Fed. Rep. of Germany, May 16, 1979, 2919845

Int. Cl.[3] A21D *2/00*

U.S. Cl. 426—285 19 Claims

1. Process for the production of bread crumbs, usuable as an instant product, which comprises providing a starch-containing raw material selected from the group consisting of flour, grits, semolina and meal, humidifying said material to a water content of 20 to 50% by weight while subjecting said material to agglomerating conditions resulting in the formation of agglomerates, baking the agglomerates in hot steam until a gelatinization degree of 50 to 100% is achieved, and drying the agglomerates whereby agglomerated bread crumbs are obtained from the dried product.

4,344,976

PROCESS FOR RECOVERING MEAL AND OIL FROM RAW FISH

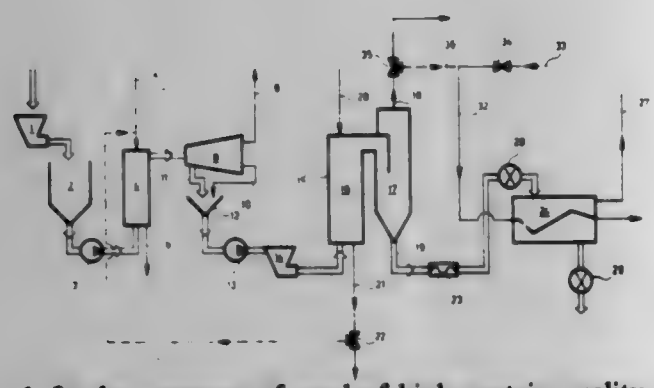
Per Bladh, Jarna, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Nov. 26, 1980, Ser. No. 210,849

Claims priority, application Sweden, Nov. 30, 1979, 7909929

Int. Cl.[3] A23L *1/31, 1/325*

U.S. Cl. 426—472 11 Claims



1. In the recovery of meal of high protein quality and oil from fish, the process which comprises heating a fish mass obtained by disintegrating raw fish, separating and removing oil from the heated fish mass by subjecting said mass to a centrifuging operation and separately discharging a separated oil phase from said operation, discharging stick water and sludge from the centrifuging operation, feeding a mixture of the stick watr and sludge to an evaporating zone and there passing the mixture in plug-flow through indirectly heated tube means while continuously cleaning the inner walls of said tube means by scraping said inner walls, thereby obtaining an evaporated product and steam in said tube means, separating said evaporated sludge-containing product from said steam, and drying said evaporated product.

4,344,977

SMOKED FISH PRODUCTS WHICH INHIBIT THE GROWTH OF *CLOSTRIDIUM BOTULINUM* AND THE FORMATION OF ENTEROTOXIN

John S. Thompson, Wayne, Pa., and Joseph F. Jadlocki, Jr., Mount Holly, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 184,689, Sep. 8, 1980, Pat. No. 4,227,507, which is a continuation-in-part of Ser. No. 140,328, Apr. 14, 1980, Pat. No. 4,282,260. This application Jun. 22, 1981, Ser. No. 275,580

The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.

Int. Cl.[3] A23B *4/02;* A23L *1/325*

U.S. Cl. 426—532 7 Claims

1. A smoked fish product which inhibits the growth of *Clostridium botulinum* and the production of enterotoxin during storage of said fish product, containing an alkali metal nitrite salt, in an amount less than about 120 ppm, and from about 1,000 ppm to about 3,000 ppm of a compound selected from the group consisting of hypophosphorous acid, sodium hypophosphite, potassium hypophosphite, calcium hypophosphite and manganese hypophosphite.

4,344,978

PREPARATION OF HOP EXTRACTS RICH IN PARTICULAR CONSTITUENTS

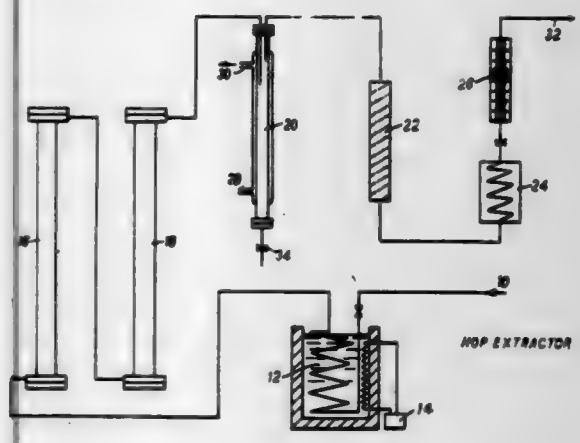
Frederick R. Sharpe, Croydon; Christopher M. Grimmett, East Grinstead, and Derek R. J. Laws, Bexleyheath, all of England, assignors to The Brewing Research Foundation, England

Filed May 19, 1980, Ser. No. 150,987

Claims priority, application United Kingdom, May 24, 1979, 7918075

Int. Cl.[3] C12C *3/00*

U.S. Cl. 426—600 7 Claims



1. A single stage method of forming a hop extract containing a high proportion of a desired constituent selected from hop oil, α-acids and β-acids, which method comprises passing fluid carbon dioxide under superatmospheric pressure through a packed column of hops in comminuted form having a weight average particle diameter in the range 0.25 mm to 1.0 mm, for a period of time to effect the desired extraction, collecting separate fractions of the extract obtained at intervals during the said period, and selecting the fraction having a high proportion of the desired constituent, whereby there is obtained a fraction of the extract containing at least 55% by weight of α-acids and not more than 15% by weight of β-acids and containing at least 25% by weight of the available α-acids in the starting hops.

4,344,979

PROCESS FOR THE PREPARATION OF COATED SEEDS

Ignace Gago, Braine-l'Alleud, and Guillaume Coppens, Brussels, both of Belgium, assignors to Interox (Societe Anonyme), Brussels, Belgium

Filed Apr. 1, 1980, Ser. No. 136,268
Int. Cl.³ A01C *1/06*
U.S. Cl. 427—4 21 Claims

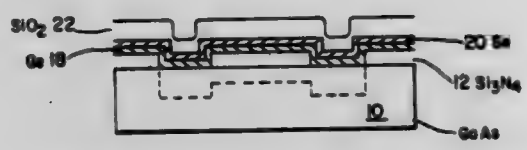
1. Process for the preparation of coated seeds, comprising: (a) treating the seeds with an aqueous phase which is selected from aqueous solutions containing an agent which is capable of limiting the swelling of the seeds and aqueous phases containing an agent which is capable of forming a water impermeable film on the surface of the seeds; (b) coating the treated seeds with a coating agent containing a peroxide compound and a hydrophilic polymer; and (c) drying the coated seeds.

4,344,980

SUPERIOR OHMIC CONTACTS TO III-V SEMICONDUCTOR BY VIRTUE OF DOUBLE DONOR IMPURITY

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1981, Ser. No. 247,423
Int. Cl.³ H01L *21/22, 21/265*
U.S. Cl. 427—38 15 Claims



1. A process for fabricating superior ohmic contacts in group III–V compound semiconductor materials comprising the steps of:

selecting a substrate wafer composed of a III–V compound, III and V designating groups of elements in the periodic table of elements;

implanting the substrate material through one surface with impurity ions from an element from groups II, IV or VI of the periodic table, the element being ionizable to provide charge carriers in the substrate, the impurity element being implanted at a fluence level or under temperature conditions which damage the lattice sites of the substrate material;

coating said one surface with a pair of elements which, when diffused into the substrate material, provide ions which become substitutional on opposite sub-lattice sites and act together to provide charge carriers of the same polarity, either donors or acceptors;

diffusing said pair of elements into a selected portion of the ion-implanted region;

forming an electrode on said surface of said wafer over said selected portion of the ion-implanted region.

4,344,981

METHOD FOR MODIFYING SURFACE PROPERTIES OF A SHAPED ARTICLE OF A SILICONE

Kiyoshi Imada, Omiya; Susumu Ueno, Ibaraki; Yasuhide Nishina, Ibaraki, and Hirokazu Nomura, Ibaraki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1980, Ser. No. 158,407
Claims priority, application Japan, Jun. 18, 1979, 54-76445
Int. Cl.³ B05D *3/06;* B01J *19/08*
U.S. Cl. 427—40 3 Claims

1. A method for modifying the surface properties of a shaped article of a silicone to increase its affinity for water and decrease its electrostatic surface charge which comprises the steps of:

(a) subjecting the surface of the shaped article to exposure to a low temperature plasma of an inorganic gas, and

(b) within 24 hours after completion of step (a), bringing the plasma-treated surface of the shaped article into contact with an aqueous solution containing a surface active agent, wherein the length of time in which the plasma-treated surface of the shaped article is in contact with the aqueous solution containing a surface active agent is at least one second, and the concentration of the surface active agent in the aqueous solution is in the range from about 0.01 to 10% by weight.

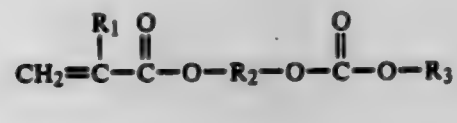
4,344,982

CARBONATE-ACRYLATE OR ALKYLACRYLATE RADIATION CURABLE COATING COMPOSITIONS AND METHOD OF CURING

Albert C. Chen, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,645
Int. Cl.³ B05D *3/06;* C08F *2/46*
U.S. Cl. 427—44 10 Claims

1. A radiation curable composition comprising 20 to 80 weight percent of a monomer of the formula:



in which

R_1 is H or alkyl of 1 to 4 carbons;

R_2 is an alkylene or alkylene ether radical of 2 to 6 carbon atoms;

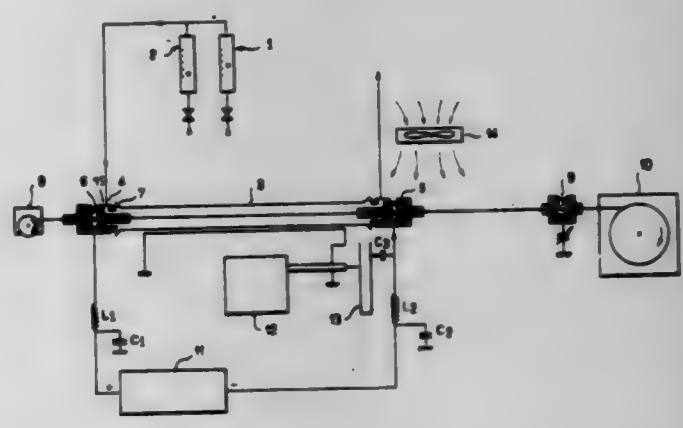
R_3 is alkyl of 1 to 12 carbon atoms; cycloalkyl or substituted cycloalkyl of 5 to 12 carbon atoms; phenyl or substituted phenyl; and 20 to 80 weight percent of a polyfunctional acrylate or polyfunctional alkyl-substituted acrylate cross-linking agent.

4,344,983

PROCESS AND APPARATUS FOR MANUFACTURING FILAMENTS OF A REFRACTORY MATERIAL BY HIGH-FREQUENCY HEATING

Andre A. Grange, Vert le Petit, and Jean A. Corbe, Ballancourt, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Apr. 14, 1980, Ser. No. 140,292
Claims priority, application France, Apr. 24, 1979, 79 10334
Int. Cl.³ C23C *11/00*
U.S. Cl. 427—46 8 Claims



1. Process for continuously depositing a refractory material, in particular boron, from a gaseous mixture, decomposable by pyrolysis, onto a conductive filament which consists of advancing said conductive filament through a tubular reactor, heating said filament by means of the Joule effect, selectively heating said conductive filament by means of a high-frequency current and directly injecting onto the filament said high-frequency current.

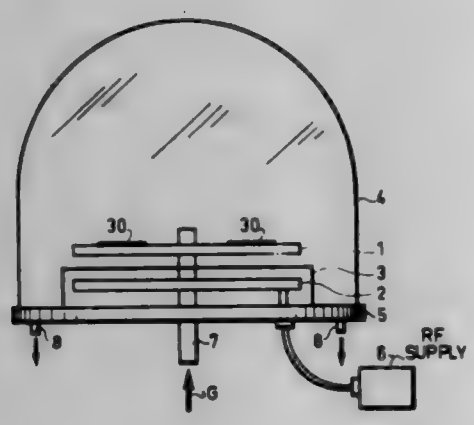
6. Apparatus for depositing a refractory material, in particular boron, from a gaseous mixture, decomposable by pyrolysis, onto a conductive filament, which consists of a tubular reaction chamber, capable of producing by capillarity both a seal and at the same time an electrical contact for the purpose of heating, inlet means for supplying the reactive gaseous mixture to the chamber, an outlet means for discharging the by-products from the pyrolysis and the excess reacting gas and a high-frequency heating means coupled directly to the conductive filament, wherein the length of the conductive filament within the reaction chamber is between ¼ and ½ the wave length of the high frequency power generated by said high frequency generator and the apparatus includes means defining a high frequency ground connection (9) to said conductive filament at a predetermined distance from said outlet means (5), said predetermined distance being about ¼ of said wave length and the apparatus comprises an isolation capacitor which isolates the high frequency current from the direct current.

4,344,984

PROCESS FOR PRODUCING A LAYER CONTAINING SILICON

Daniel Kaplan; Pierre Landouar, and Eric Criton, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 17, 1981, Ser. No. 274,381
Claims priority, application France, Jun. 24, 1980, 80 13968
Int. Cl.³ H01L *31/18, 31/02, 31/06;* C23C *11/06*
U.S. Cl. 427—74 8 Claims



1. A process for producing a layer containing silicon by deposition on a support, wherein it comprises the introduction during deposition of at least one other element of column IVa of the periodic classification in a proportion equal to or below 5% of the number of silicon atoms and equal to or greater than 0.1% of the number of silicon atoms and wherein the deposition temperature is chosen from a predetermined temperature range, whose lower limit is equal to the crystallization temperature T of the said layer.

4,344,985

METHOD OF PASSIVATING A SEMICONDUCTOR DEVICE WITH A MULTI-LAYER PASSIVANT SYSTEM BY THERMALLY GROWING A LAYER OF OXIDE ON AN OXYGEN DOPED POLYCRYSTALLINE SILICON LAYER

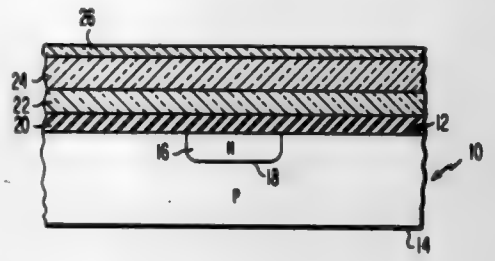
Alvin M. Goodman, Princeton, and Ming L. Tarng, Mercerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,208
Int. Cl.³ H01L *21/316*
U.S. Cl. 427—85 8 Claims

1. A method of forming a multi-layer passivation system on the surface of a semiconductor substrate, said method comprising:

depositing an oxygen doped polycrystalline silicon layer on the surface of the substrate; and

thermally growing a layer of oxide on the exposed surface of the oxygen doped polycrystalline silicon layer, the oxide layer extending partially into the thickness of the oxygen doped polycrystalline silicon layer, while simultaneously annealing the polycrystalline silicon layer.

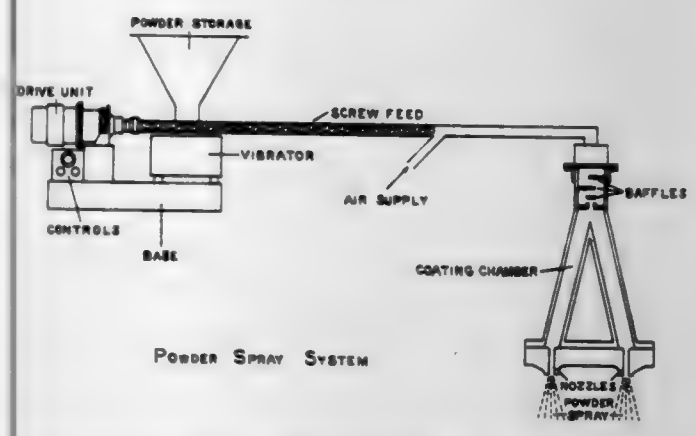


4,344,986

METHOD OF DELIVERING POWDER COATING REACTANTS

Vern A. Henery, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 8, 1980, Ser. No. 176,322
Int. Cl.³ B05D *1/12;* C03C *17/23*
U.S. Cl. 427—180 8 Claims



POWDER SPRAY SYSTEM

1. In a method of coating a substrate with a film by contacting a surface of the substrate with a powder coating reactant which comprises the steps of:

a. dispersing said powder coating reactant in a carrier gas stream;

b. delivering the powder coating reactant/carrier gas mixture to a coating chamber; and

c. delivering the powder coating reactant/carrier gas mixture from the coating chamber to the surface to be coated

the improvement which comprises creating turbulence in the powder/gas mixture by means of at least one baffle at the entrance of the coating chamber.

4,344,987

PREPARATION OF FLAKY MICA PIGMENTS COATED WITH METAL OXIDES, AND USE OF THESE PIGMENTS

Werner Ostertag, Gruenstadt; Knut Bittler, Speyer, and Gustav Bock, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,605
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3030056
Int. Cl.³ C04B *31/26*
U.S. Cl. 427—213 7 Claims

1. A process for the preparation of a flaky mica pigment coated with metal oxide, wherein a vaporizable metal carbonyl is oxidized with oxygen at an elevated temperature in the presence of mica flakes which are kept in motion, with the proviso that the amount of carbonyl introduced into the reaction zone does not exceed 5% by volume, based on the amount of the other gases introduced.

4,344,988

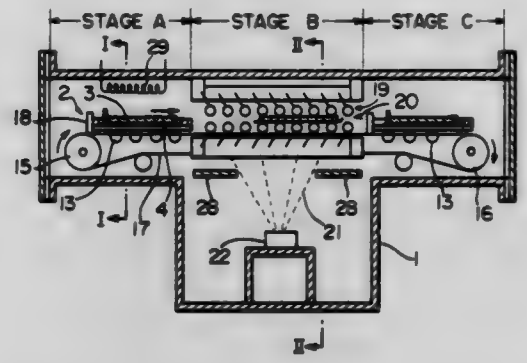
METHOD FOR FORMING PATTERNED COATING

Kenzo Sono, Nishinomiya, and Shiyunji Kuramoto, Kobe, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation of Ser. No. 929,989, Aug. 1, 1978, abandoned. This application Jun. 10, 1981, Ser. No. 272,117

Int. Cl.³ C23C *11/00*

U.S. Cl. 427—255.5 5 Claims



1. A method for forming a coating of a desired pattern on the surface of a substrate which comprises covering the substrate surface with a sheet-like mask having openings corresponding to the desired pattern and directing a film-forming substance from a source toward the substrate surface through the mask, wherein relative to a press member having a plurality of slits, each slit having a width w_2 sufficiently smaller than the width w_1 of the substrate for preventing movement of said mask with respect to said substrate, moving the substrate and the mask in the superimposed state into a deposition stage through a vacuum deposition device in at least the widthwise direction of said plurality of slits in such a manner that the mask is located on the undersurface of the substrate, which mask has a thickness of 300μ or less, said press member being urged against the mask to secure close adherence between the mask and the substrate, and wherein a film-forming substance is directed toward the substrate through said plurality of slits of the press member during this relative movement, said film-forming substance being directed against the bottom of the substrate by means of an evaporant source located at the bottom of the vacuum deposition device; said press member being constructed of a lower and upper part forming a gap therebetween, each of said lower and upper parts being constructed of a plurality of cylindrical rolls aligned in parallel to one another at intervals of w_2 in which w_2 represents a distance of 50 mm or less, whereby said substrate and mask combination pass through the gap formed between said upper and lower parts of the press member and wherein a shield plate for shielding the film-forming substance is provided both at the inlet and outlet of the deposition stage between the lower press member and the evaporation source to avoid deposition of the film at the inlet and outlet ends of the substrate where the contact between the substrate and mask is not close enough.

4,344,989

MULTIZONAL BINDER IMPREGNATION

Alan Thornton, Halifax, and John S. Uttley, Hebden Bridge, both of England, assignors to Bondina Ltd., Yorkshire, England

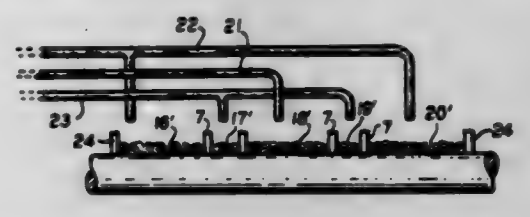
Division of Ser. No. 571,888, Apr. 25, 1975. This application Feb. 25, 1977, Ser. No. 772,056

Claims priority, application United Kingdom, Mar. 1, 1974, 9438/74

Int. Cl.³ B05D *5/00*

U.S. Cl. 427—286 8 Claims

1. A method of making interlining material in which said interlining material comprises a web of non-woven fibers, said web comprising zones which each have substantially uniform binder content and in which adjacent said zones have different binder contents, the method comprising uniformly applying a liquid binder to each said zone so that said zone has a uniform binder content therein, the content of binder which is applied to adjacent zones being different, the binder employed being a liquid binder composition which is a viscous or foam composition and is applied to the web by doctoring as the web passes between a support surface and a doctoring means that confines



the pool of composition of the web across the width of the web and in which this pool is divided into at least two sections by a baffle that prevents or restricts to a controlled amount transfer of composition from one section to another, different compositions being supplied to adjacent sections.

4,344,990

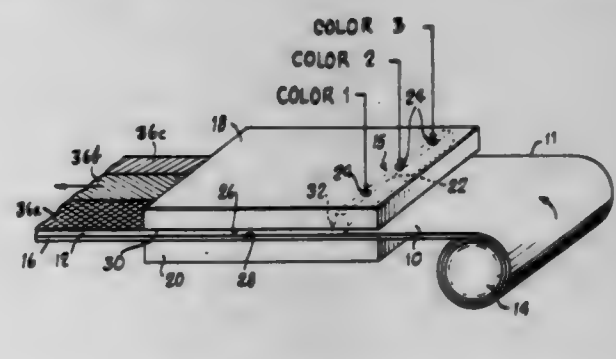
PROCESS AND APPARATUS FOR COATING STRIP ARTICLES AND THE LIKE

Carl A. Wollam, Cortland; J. Lynn Gailey, Newton Falls, and Alexander A. Chalmers, Warren, all of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Jan. 21, 1981, Ser. No. 226,697

Int. Cl.³ B05C *3/02*; B05D *3/02, 3/12, 5/00*

U.S. Cl. 427—286 10 Claims



1. A process for coating a major surface of a strip article of indeterminate length, including the steps of

(a) continuously advancing the article longitudinally past a dam extending transversely of said major surface in adjacent spaced relation thereto while

(b) supplying a wet flowable coating material to said major surface immediately ahead of said dam to establish a continuous layer of said coating material on said major surface, and,

(c) immediately beyond said dam, advancing said article longitudinally past a wall of extended length in the direction of strip advance and facing said major surface and spaced therefrom at all points by said layer of wet coating material while

(d) uniformly restraining the article against movement of said major surface away from said wall beyond a predetermined distance equal to a desired wet thickness of said coating material on said major surface,

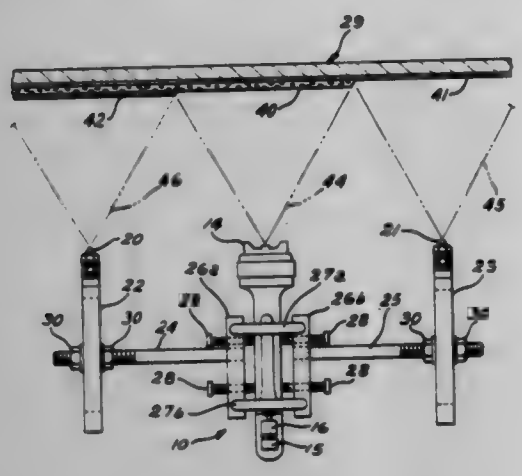
wherein the improvement comprises

(e) restraining said article as aforesaid by an endless surface moving continuously in the same direction and at the same rate as said article.

4,344,991
WATER-BORNE TOPCOAT SPRAY METHOD

Richard L. Gray, Louisville, Ky., assignor to Reliance Universal, Inc., Louisville, Ky.

Filed Jan. 19, 1981, Ser. No. 226,063
Int. Cl.³ B44D *1/08*
U.S. Cl. 427—325 8 Claims



1. Method of applying water-borne emulsion topcoat finishing material to furniture surfaces and the like, namely inflexible, hard wood, wood-based, or plastic prefinished surfaces the method comprising:

projecting an atomized spray of said water-borne emulsion toward the surface to be finished;

and simultaneously projecting at least one spray of atomized water toward said surface, the water spray being adjacent to the emulsion spray but so directed and so spaced therefrom as to avoid substantial intermingling of the emulsion and water sprays in the air space leading to said surface.

4,344,992
PROCESS FOR PRODUCING ORGANO-SILANE COATED ASBESTOS BASE MATERIAL

Sundaresan Ramachandran, North Tonawanda, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1981, Ser. No. 278,963
Int. Cl.³ C07F *7/10*; C09K *7/00*; B05D *1/18*; B32B *9/00*
U.S. Cl. 427—430.1 2 Claims

1. A process for producing organo-silane coated asbestos base material which comprises:

(i) contacting an open chrysotile asbestos with a soluble di or trivalent metallic salt in an aqueous medium,

(ii) adding organo-silane to said aqueous medium to thereby provide an organo-silane coating on said asbestos material, and

(iii) recovering the organo-silane coated asbestos base material from said aqueous medium.

4,344,993
PERFLUOROCARBON-POLYMERIC COATINGS HAVING LOW CRITICAL SURFACE TENSIONS

Donald L. Schmidt; Malcolm E. Pruitt, both of Midland, Mich., and Keith I. Dismuke, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 2, 1980, Ser. No. 182,892
Int. Cl.³ B05D *7/22*; B08B *17/02*; B32B *1/02*
U.S. Cl. 428—35 8 Claims

1. A coating composition comprising (1) a linear hydrophilic polymer, (2) a cyclic sulfonium zwitterion capable of crosslinking the hydrophilic polymer and (3) a perfluorocarbon having a $—CF_3$ group and an ionic or potentially ionic group, said zwitterion being present in an amount sufficient to crosslink the composition to an adherent, nonreactive coating that is insoluble in water and hydrocarbon, said hydrophilic polymer and perfluorocarbon being present in amounts such that the coating has a critical surface tension of wetting less than 15 dynes/cm.

4,344,994
SIGN LETTERING MATERIALS

Mark J. Batty, London, England, and Thomas Groth, Ljan, Norway, assignors to Letraset USA, Inc., Paramus, N.J.

Filed Feb. 21, 1979, Ser. No. 16,601
Claims priority, application United Kingdom, Feb. 17, 1978, 6434/78
Int. Cl.³ A61F *13/02*; G09F *7/16*
U.S. Cl. 428—41 8 Claims

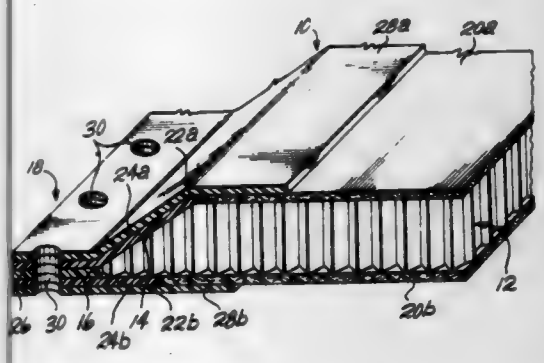


1. A sign lettering material comprising a set of die cut letters each of said letters being individually adhesively mounted on a backing tile, the tile being substantially rectangular and formed in two portions separated by a split running substantially horizontally across the letter and enabling removal of one portion of the tile to leave part of the letter with its adhesive surface exposed and the remainder of the letter adherent to the other portion of the tile, wherein, in the case of at least some of the letters, one portion of the tile has in each corner, constituting a corner of the substantially rectangular tile a stepped notch having one or more steps, and at least some of the letters in the set having at least two steps on the notches of their respective tiles.

4,344,995
HYBRID COMPOSITE STRUCTURES

Robert H. Hammer, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 15, 1980, Ser. No. 187,247
Int. Cl.³ B32B *3/12, 23/02, 3/10*
U.S. Cl. 428—61 6 Claims



1. A lightweight composite structure having a honeycomb core and means for joining to other structures comprising: a honeycomb core, a layer of graphite reinforced on each side of the core with the layer terminating adjacent an area to be joined with a fastener, a layer of aramid reinforced resin abutting the graphite reinforced resin layer on each side of the honeycomb and extending over the join area, a layer of aramid reinforced resin to cover the join area and to overlap the graphite resin layer to form a composite structure, and holes

through the fastening area for accepting fasteners to join the composite to other structures.

4,344,996

SURFACE TEXTURING OF FLUOROPOLYMERS

Bruce A. Banks, Olmsted Township, Lorain County; Michael J. Mirtich, N. Olmsted, and James S. Sovey, Strongsville, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 19, 1980, Ser. No. 218,588

Int. Cl.³ B32B *27/16*; C23C *15/00*; C23F *1/00*

U.S. Cl. 428—141 **14 Claims**



1. A method of treating the surface of a fluoropolymer for improved bonding without altering the chemistry of the same, comprising the steps of

applying a layer of randomly disbursed fine mesh particles of a sputter-resistant material having diameters in the range between about 0.1 μm and 10 μm to said surface thereby masking the same,

placing said fluoropolymer in a vacuum environment of about 4×10^{-5} torr,

exposing said masked surface to a beam of ions having an ion beam current density between 0.1 mA/cm² and 1.0 mA/cm² to texture the same,

moving said fluoropolymer from said vacuum environment to ambient pressure, and

removing said masking particles from said textured surface.

14. A fluoropolymer treated according to the process of claim 1.

4,344,997

ARTISTS' MEDIUM

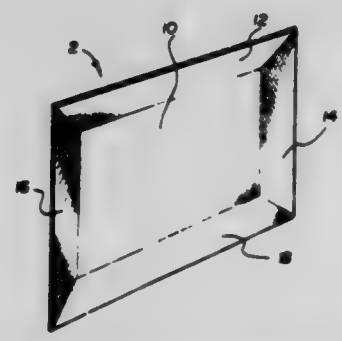
Rolland Paquette, P.O. Box 58 (Hwy. 69 North), Val Caron, Ontario, Canada

Continuation of Ser. No. 816,369, Jul. 18, 1977, abandoned. This application Aug. 14, 1980, Ser. No. 178,219

Claims priority, application Canada, Jun. 7, 1977, 279993

Int. Cl.³ B32B *3/30, 3/28*

U.S. Cl. 428—161 **2 Claims**



1. A laminated artists' medium consisting of:

a rigid non-planar backing ahving a surface contour selected from one of the following shapes: a concave shape, a convex shape, a rectangular base with planar sides adjacent thereto, each side flared integrally from the base above the plane of the surface of the base at an angle thereto so that the base and sides are visible at one time by the viewer, and a triangular base with planar sides adjacent thereto, each side extending integrally from the base above the plane of the surface of the base at an angle thereto so that the base and sides are visible at one time by the viewer;

a flexible artists' canvas worksheet;

adhesive means for securing said worksheet to said rigid backing, applied between the underside of the artists' canvas worksheet and the backing, the canvas worksheet being thereby secured flush and conforming to the entire surface of the backing and forming a laminate in which the canvas worksheet has the same nonplanar contours as the surface of the backing.

4,344,998

METALLIZED COMPOSITE STRUCTURE AND A METHOD OF PREPARING SAME

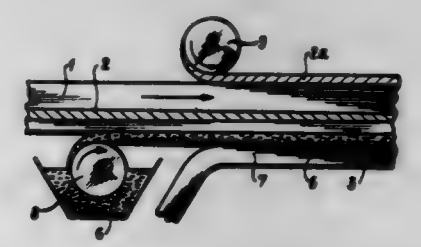
Johannes A. N. de Leeuw, Apeldoorn, and Johannes T. Brugmans, Enkhuizen, both of Netherlands, assignors to Koninklijke Emballage Industrie Van Leer, Amstelveen, Netherlands

Filed Apr. 7, 1980, Ser. No. 137,945

Claims priority, application Netherlands, Feb. 15, 1980, 8000967

Int. Cl.³ B32B *7/12, 15/04*

U.S. Cl. 428—212 **10 Claims**



1. A metallised vapour coated composite structure comprising a non-metallic substrate, a laminating adhesive layer on one face of said substrate, a vapor deposited metal stratum on said adhesive layer, and a lacquer coating on said stratum, said composite structure having a reflectivity of at least 85%, a heat emission of about 8% of the Stefan-Boltzmann constant at 23° C., a mirror reflectivity of at least 4 and dead fold properties that are the same as those of the substrate, said lacquer coating being obtained from a carrier film wherein liquid lacquer has a contact angle of zero degrees after application to the carrier surface.

4,344,999

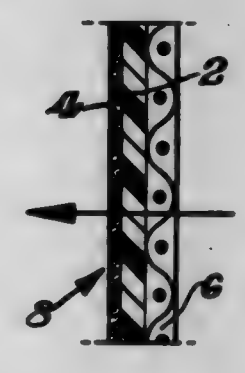
BREATHABLE LAMINATE

Daniel J. Gohlke, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Apr. 22, 1980, Ser. No. 142,628

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—212 **11 Claims**



1. A flexible layered article suitable for use in hospital gowns and the like, or tents, which permits transfer of water vapor preventing build-up of internal moisture comprising:

(a) a flexible inner layer of hydrophobic material having a moisture vapor transmission rate exceeding 1000 gms./m^2. day and an advancing water contact angle exceeding 90 degrees; and

(b) a continuous outer hydrophilic layer attached to the outer face of said inner hydrophobic layer, said hydrophilic layer having a moisture vapor transmission rate exceeding 1000 gms./m^2. day, said outer hydrophilic layer containing a particulate solid pigment and a liquid antistatic agent dispersed throughout said hydrophilic layer to impart color and antistatic properties to said layered article but not impair its moisture vapor transmission property.

4,345,000

TRANSPARENT ELECTRICALLY CONDUCTIVE FILM

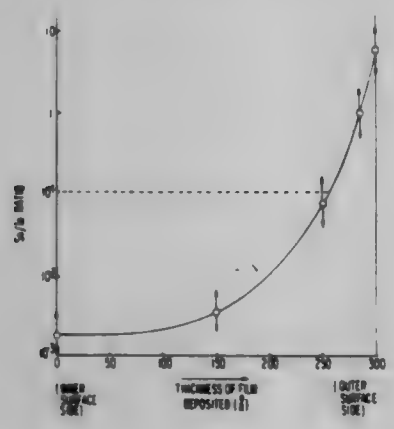
Shozo Kawazoe; Takao Matsui, and Takahiko Moriuchi, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 15, 1980, Ser. No. 216,740

Claims priority, application Japan, Dec. 15, 1979, 54-163211; Dec. 15, 1979, 54-163212

Int. Cl.³ B32B *7/02;* B05D *5/12;* B32B *5/16, 15/08*

U.S. Cl. 428—212 **5 Claims**



1. A transparent electrically conductive film comprising a metallic oxide, wherein the metallic component comprises from 60 to 95 wt% indium and from 40 to 5 wt% tin, formed on the surface of a plastic base, and wherein the weight ratio of the tin to the indium changes continuously from the outer surface to the inner surface in such a manner that the ratio on the inner surface of the film is appreciably lower than the average ratio of the film and the ratio of the outer surface of the film is appreciably higher than the average ratio of the film.

4,345,001

PROCESS FOR THE MANUFACTURE OF WATER-HARDENING MATERIAL REINFORCED WITH OPEN MESHED FILMS

Jan M. J. M. Bijen, Munstergeleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Division of Ser. No. 26,221, Apr. 2, 1979. This application Jul. 24, 1981, Ser. No. 286,679

Claims priority, application Netherlands, Apr. 1, 1978, 7803508

Int. Cl.³ B28B *1/30, 3/12, 5/02;* B22B *13/02*

U.S. Cl. 428—286 **3 Claims**

1. A shaped article comprised of at least one layer of a water-hardening material reinforced with at least five unfibrillated organic films which have been provided with meshes so as to form networks, each having a plurality of said meshes, wherein the number of networks in said layer and the average number of meshes in said networks with a minimum of three per square centimeter are such that the average number of meshes per cubic centimeter of said layer is greater than 200.

4,345,002

NOVEL INTUMESCENT COMPOSITION AND FLAME RETARDANT ARTICLES TREATED THEREWITH

Ray E. Smith, Lake Buena Vista, Fla.; Jayendra G. Shukla, and Richard R. Nicholson, both of Ann Arbor, Mich., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 939,628, Sep. 5, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,041

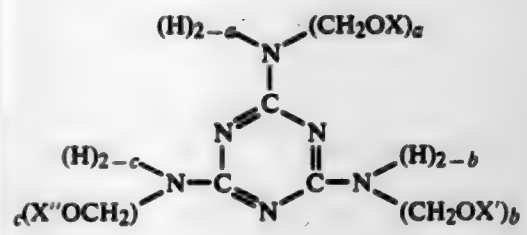
The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.³ C09D *5/18;* D04H *1/58*

U.S. Cl. 428—288 **43 Claims**

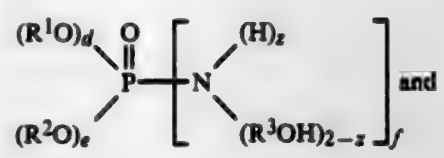
1. An intumescent composition containing a cyclic nitrogen compound, a hydroxy-containing organo-phosphorus compound, an organo-phosphorus acid, and water, wherein:

(a) said cyclic nitrogen compound is:

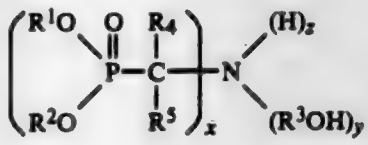


wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, X, X′, and X″ are independently selected from the group consisting of hydrogen and —CH_3;

(b) said hydroxy-containing organo-phosphorus compound is selected from the group consisting of:



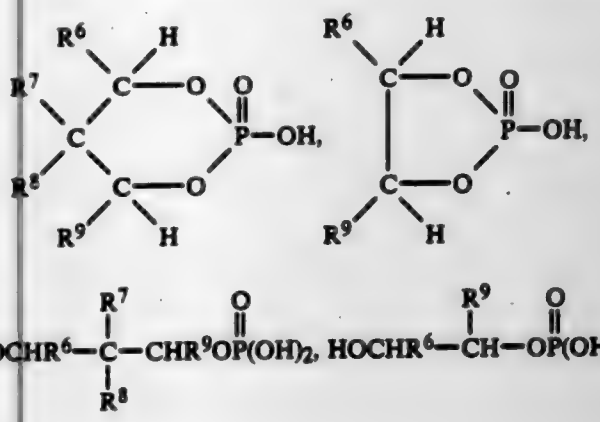
I



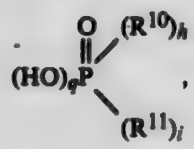
II

and mixtures thereof, wherein d is an integer of from 0 to 2, e is an integer of from 0 to 2, f is an integer of from 1 to 3, and d plus e plus f equal 3; z is an integer of 0 to 1; x is an integer of 1 to 2, y is an integer of 1 to 2, and x plus y plus z equal 3; R^1, R^2, and R^3 are selected from the group consisting of alkyl radicals containing from about 1 to about 6 carbon atoms and haloalkyl radicals containing from about 2 to about 6 carbon atoms, provided that when R^3 is haloalkyl it contains at least 3 carbon atoms; R^4 and R^5 are selected from the group consisting of hydrogen, alkyl radicals, and haloalkyl radicals, wherein said radicals contain from about 1 to about 6 carbon atoms; and the total number of carbon atoms in the R^1, R^2, R^3, R^4, and R^5 groups does not exceed about 14; and

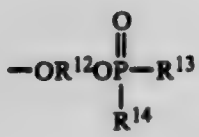
(c) said acid is selected from the group consisting of



-continued



and mixtures thereof, wherein R^6, R^7, R^8 and R^9 are independently selected from the group consisting of hydrogen, alkyl of from about 1 to about 3 carbon atoms, haloalkyl of from about 1 to about 3 carbon atoms, and hydroxyalkyl of from 1 to about 3 carbon atoms, provided that the total number of carbon atoms in the R^6, R^7, R^8, and R^9 groups does not exceed about 5; wherein q is an integer of from 1 to 2, h and i are integers independently selected from the group consisting of 0, 1, and 2, and 9 plus h plus i equals 3; and wherein R^{10} and R^{11} are independently selected from the group consisting of alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from 1 to about 3 halogen atoms, hydroxy-polyalkyleneoxy containing 2 to 6 carbon atoms and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, haloalkoxy of from about 2 to about 6 carbon atoms and from about 1 to about 3 halogen atoms,



wherein R^{12} is selected from the group consisting of alkylene of from about 2 to about 6 carbon atoms, haloalkylene of from about 3 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, polyalkyleneoxy containing 2 to 6 carbon atoms and 1 to 5 oxygen atoms, and hydroxyalkylene of from 3 to about 6 carbon atoms and 1 to 4 hydroxyls, and R^{13} and R^{14} are independently selected from the group consisting of hydrogen, hydroxyl, alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, hydroxy-polyalkyleneoxy containing about 2 to about 6 carbon atoms and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, and haloalkoxy of from about 2 to about 6 carbon atoms and 1 to about 3 halogen atoms, provided that the total number of carbon atoms in the R^{10} and R^{11} groups does not exceed about 8.

41. A flame retardant article comprising fibers bonded together with an adhesively-effective and fire-retardingly effective amount of the intumescent composition of claim 1.

4,345,003

RESOL PHENOLIC RESIN BINDER FOR HOT COATING OF FOUNDRY SAND

Noriaki Matsushima, and Shigeru Nemoto, both of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Japan

Continuation of Ser. No. 29,501, Apr. 12, 1979, abandoned. This application Dec. 4, 1980, Ser. No. 212,936

Claims priority, application Japan, Apr. 18, 1978, 53-44783

Int. Cl.³ B32B *27/14;* B05D *7/00;* C08L *91/06*

U.S. Cl. 428—327 **16 Claims**

1. A phenolic resin binder in the form of discrete, molded particles useful for hot coating foundry sand, said molded particles comprised of a mixture of solid resol phenolic resin and a lubricant substantially homogeneously dispersed therein, said discrete, molded particles being in the form of beads having a diameter of about 1 to 5 mm or rods having a diameter of about 1 to 5 mm and a length of about 1 to 15 mm.

11. A process for producing resin-coated sand which comprises coating heated sand particles with the binder of claim 1.

12. A foundry sand composition useful as a foundry sand core or mold prepared by the process of claim 11.

4,345,004

PROCESS FOR FORMING A COATED FILM OF AN OLEFINIC RESIN

Nobuyoshi Miyata, and Heihachi Murase, both of Hiratsuka, Japan, assignors to Hercules Incorporated, Wilmington, Del.

Filed Apr. 20, 1981, Ser. No. 255,663

Claims priority, application Japan, Apr. 30, 1980, 55-56229

Int. Cl.³ B32B *15/08, 27/38*

U.S. Cl. 428—416 **45 Claims**

1. A process for forming an olefinic resin film on a metal substrate, which comprises

[A] forming a multilayer coated film consisting of an olefinic resin film as a surface layer portion and a cured epoxy resin film as an under layer portion on a metallic substrate by a single coating operation using a multilayer film-forming coating composition comprising as main resinous components

(a) a solid powder containing an olefinic resin having a melt index of 0.3 to 80 g/10 minutes,

(b) a solid powder containing a polar group-containing modified olefinic resin having a melt index of 0.3 to 80 g/10 minutes, and

(c) a film-forming resinous material comprising an epoxy resin having a number average molecular weight of about 350 to about 4,000 and an epoxy equivalent of 150 to 3,800 and a curing agent therefor, and

[B] then heat-bonding an olefinic resin lining material to the olefinic resin surface layer of the multilayer coated film.

45. A metallic article having formed thereon an olefinic resin film by the process of claim 1.

4,345,005

ORIENTED POLYPROPYLENE FILM SUBSTRATE AND METHOD OF MANUFACTURE

Frank E. All, Newark, and Gary L. Duncan, Pittsford, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 53,146

Int. Cl.³ B32B *15/08;* B05D *3/14*

U.S. Cl. 428—461 **7 Claims**

1. A metal coated oriented polypropylene substrate comprising:

a film comprising a homopolymer polypropylene layer which is from about 80% to 100% isotactic and has a melt index of from about 2 to about 10 grams/10 minutes;

a coextruded ethylene propylene copolymer layer on at least one side of said polypropylene layer, said copolymer containing from about 2% to about 4% by weight of ethylene and from 96% to about 98% by weight of propylene, said polypropylene layer and said copolymer layer containing no slip agent and being biaxially oriented;

at least one copolymer layer being corona discharge treated to provide a surface having enhanced adhesion to a metallized coating; and

a metallized coating on said corona discharge treated copolymer layer, said metallized coating being of a metal selected from the group consisting of aluminum, copper, silver and chromium.

7. A method for producing a metal coated oriented polypropylene substrate comprising:

coextruding a homopolymer polypropylene layer which is from about 80% to 100% isotactic and has a melt index of from about 2 to about 10 grams/10 minutes with an ethylene propylene copolymer layer on at least one side of said polypropylene layer, said copolymer containing from about 2% to about 4% by weight of ethylene and from about 96% to about 98% by weight of propylene, said layer containing either no slip agent or no slip agent which

adversely affects the adhesion of the substrate to a metallized coating;

biaxially orienting said film substrate;

subjecting at least one copolymer surface to corona discharge treatment to enhance adhesion of a metallized coating thereto; and

applying a metallized coating to the corona discharge treated surface, said metallized coating being of a metal selected from the group consisting of aluminum, copper, silver and chromium.

4,345,006

METHOD OF TREATING LEATHER

Hans-Peter Loechel, Belper, and Tom Cooper, Hardingstone, both of England, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Aug. 14, 1981, Ser. No. 292,943

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1980, 3031187

Int. Cl.³ B32B 9/04

U.S. Cl. 428—473 **8 Claims**

1. A method for treating tanned leather which comprises contacting the leather with a dispersed acrylate resin comprising

60–85 parts by weight of at least one member selected from the group consisting of esters of acrylic acid and esters of methacrylic acid, the homopolymers or copolymers of which esters have a glass transition temperature less than 0° C.;

10–20 parts by weight of at least one hydroxyalkyl acrylate or methacrylate of the formula



$$H_2C=\underset{\displaystyle R}{\underset{|}{C}}-\overset{\displaystyle O}{\overset{\|}{C}}-O-(CHR_1)_n-OH,$$

wherein R is hydrogen or methyl, R_1 is hydrogen or alkyl having 1 to 2 carbo.. atoms, and n is an integer from 2 to 8,

1–10 parts by weight of an α,β-monounsaturated monobasic or dibasic carboxylic acid having 3 to 5 carbon atoms or of a water soluble salt of such an acid;

0.2–2.5 parts by weight of a crosslinking monomer; and

0–2.5 parts by weight of acrylamide or methacrylamide.

5. A treated tanned leather made by the method of claim 1.

4,345,007

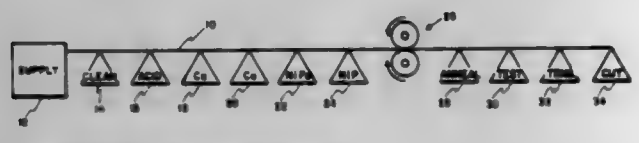
ELECTRO-DEPOSITION OF A NONMAGNETIC CONDUCTIVE COATING FOR MEMORY WIRE PROTECTION

William J. Fahy, Oriskany, and Fred E. Luborsky, Schenectady, both of N.Y., assignors to General Electric Company, Utica, N.Y.

Continuation of Ser. No. 641,457, Dec. 17, 1975, abandoned. This application Sep. 16, 1977, Ser. No. 834,019

Int. Cl.³ B32B 15/00

U.S. Cl. 428—679 **5 Claims**



1. A memory cell comprising:

a metallic substrate;

a magnetic material comprising a nickel-iron permalloy deposited on the surface of said substrate, and

an essentially sound and unstressed layer of electrically conductive nonmagnetic nickel-phosphorous alloy deposited on the surface of said magnetic material and having a phosphorous content between 8 and 15 percent;

made by the process which includes

passing said substrate at a speed of approximately 18 inches per minute with said magnetic material deposited thereon through a plating cell having

a high sulphate electrolyte with a pH in the range of 2.5 to 3.75 maintained at substantially room temperature, said electrolyte having a nickel ion to hypophosphate ion molar ratio of substantially 3 to 1,

an anode disposed in the electrolyte and electrically coupled to the positive terminal of a DC power supply, said DC power supply being adjusted to supply a current density in the range of 20 through 80 milliamps per square centimeter of plating area,

a cathode in electrical and mechanical contact with said passing memory cell and electrically coupled to the negative terminal of said DC power supply.

4,345,008

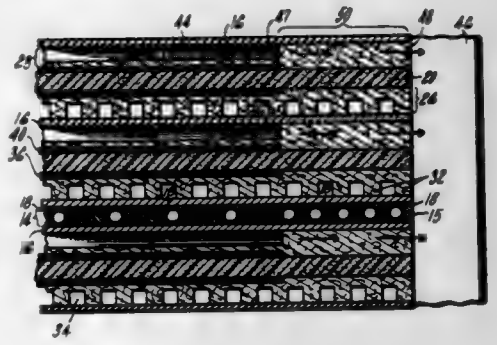
APPARATUS FOR REDUCING ELECTROLYTE LOSS FROM AN ELECTROCHEMICAL CELL

Richard D. Breault, Coventry, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 24, 1980, Ser. No. 219,609

Int. Cl.³ H01M 8/04

U.S. Cl. 429—26 **4 Claims**



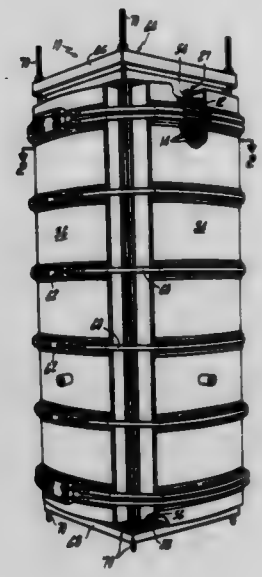
1. An electrochemical cell stack comprising a plurality of cells stacked one on top of the other with gas impervious separator plate means disposed between adjacent cells, each cell comprising a pair of electrodes spaced apart and means for holding a phosphoric acid electrolyte therebetween, wherein the electrolyte evaporates into a reactant gas stream during operation, a first of said electrodes of each cell being made from a first material and being a gas diffusion type porous electrode having a catalyst disposed on a first surface thereof facing said electrolyte holding means and in contact with said electrolyte holding means defining an active zone of said cell, each cell including means for carrying a first reactant gas into operable relationship with said catalyst, and each cell having first reactant gas outlet means on a first side of said stack, said catalyst terminating short of said outlet means, an electrochemically inactive condensation zone being defined within each of said cells between said catalyst and said outlet means, each cell including means for carrying a reactant gas through said active zone and from said active zone into said condensation zone of said cell, the distance between said catalyst and said outlet means being sufficient to effect condensation of electrolyte vapor from the reactant gas as it passes through said condensation zone, said first electrode being constructed and arranged to redistribute the condensed out electrolyte through the active zone of said cell by diffusion or bulk flow within said electrode.

4,345,009

FUEL CELL STACK COMPRESSIVE LOADING SYSTEM

Ronald W. Fahle, Manchester, and Carl A. Reiser, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 17, 1979, Ser. No. 67,577
Int. Cl.³ H01M 2/08
U.S. Cl. 429—37 6 Claims



1. A fuel cell module comprising:

a pair of end blocks, spaced apart;

a large number of fuel cells stacked and under compression between said blocks along an axis perpendicular to the plane of said cells, each cell including a plurality of components, said stack and said blocks forming outwardly facing planar surfaces parallel to said axis;

a reactant gas manifold associated with at least one of said planar surfaces and substantially covering said surface, each manifold including edge means sealed against its respective surface for preventing leakage from said manifold;

constraint means forcing said end blocks toward each other to create a compressive force on said stack of cells in said axial direction, wherein said constraint means and said end blocks are constructed and arranged to result in a stack height of X at room temperature and to prevent any substantial change in stack height due to creep of said fuel cells during the design life of said module;

wherein a stack height Y is the maximum height at which the axial compressive load on said stack still results in acceptable electrical resistance and thermal conductivity through the stack and adequate reactant gas sealing between said cell components;

wherein the thermal expansion characteristics of said module are such that, at maximum operating temperature, the axial distance between said end blocks would increase by an amount ΔX, and $X+\Delta X \leqq Y$ under all conditions;

wherein Z is the lowest axial load on said stack of cells which, at any stack height less than or equal to Y, will ensure acceptable electrical resistance and thermal conductivity through the stack and adequate reactant gas sealing between said cell components; and

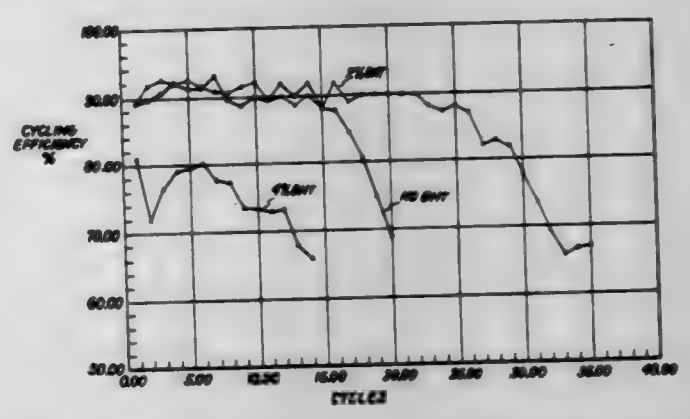
wherein if the compressive force at time zero is F at room temperature, the creep characteristics, thermal expansion characteristics, and spring rate of said stack would result in a reduction of the force F by an amount ΔF over the design life of said module and $F-\Delta F \geqq Z$.

4,345,010

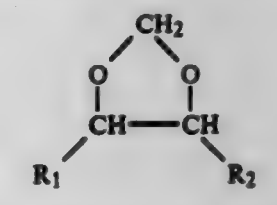
ELECTROLYTE FOR SECONDARY ELECTROCHEMICAL CELL

Paul G. Giugia, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,992
Int. Cl.³ H01M 10/40
U.S. Cl. 429—197 8 Claims



1. In a secondary electrochemical cell wherein the active material of one of the electrodes is lithium metal, the improvement consisting essentially of an electrolyte solution consisting essentially of 2,5-di-tertiary-butyl hydroxytoluene ranging from about 1.5% by weight to less than 4% by weight of a solution consisting essentially of a 1,3-dioxolane or substituted 1,3-dioxolane, which have the formula:



(1)

wherein R_1 and R_2 are the same or different and are hydrogen or alkyl of 1–3 carbon atoms and a lithium salt.

4,345,011

COLOR IMAGING DEVICES AND COLOR FILTER ARRAYS USING PHOTO-BLEACHABLE DYES

Karl H. Drexhage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 873,441, Jan. 30, 1978, Pat. No. 4,247,799.
This application Sep. 11, 1980, Ser. No. 186,105
Int. Cl.³ G03F 5/00
U.S. Cl. 430—7 18 Claims

1. A method of producing a planar array of filter elements comprising the steps of:

(1) forming a layer having a thickness less than 10 microns comprising a transparent binder, a cationic photo-bleachable dye which selectively absorbs radiation in at least one portion of the spectrum, and a sensitizer said dye being present in said layer in an amount sufficient to impart a density to said layer of about 0.5 in that portion of the spectrum in which it selectively absorbs;

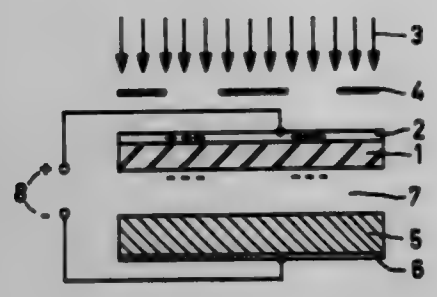
(2) exposing said layer to a pattern representing said filter elements so as to photo-bleach said photo-bleachable dye;

(3) fixing said layer by leaching said sensitizer from said layer.

4,345,012
ELECTROPHOTOGRAPHIC METHOD OF GENERATING ELECTROSTATIC IMAGES ON TWO SIDES OF AN INSULATING FOIL

Hans J. Hirsch, Selfkant-Tüddern, and Horst Dannert, Aachen-Walheim, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,406
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908603
Int. Cl.³ G03G *13/044*
U.S. Cl. 430—48 5 Claims

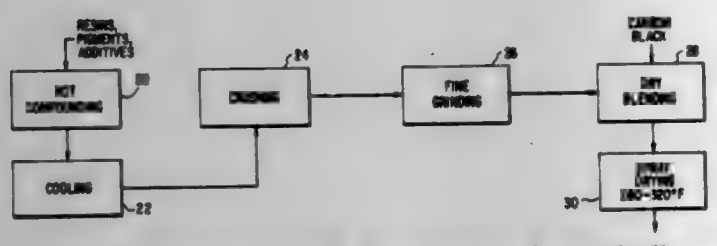


1. An electrophotographic process comprising the steps of:
providing a highly electrically insulating foil, said foil having first and second opposite sides;
generating identical electrostatic charge images of a radiation image on the first and second opposite sides of the foil, respectively, the charge image on the first side having an opposite sign as compared to the charge image on the second side; and
depositing pigment on each side of the foil, said pigment comprising a developer having a charge whose sign is opposite to that of the electrostatic charge image on the side of the foil on which the pigment is being deposited;
Characterized in that:
the electrostatic charge image is generated on the first side of the foil by generating charge pairs, all charges of one sign from each pair being collected on the first side of the foil, said charge pairs being generated by a reaction between radiation-sensitive material and incident radiation;
the electrostatic charge image is generated on the second side of the foil by a charge exchange between the second side of the foil and an electrode adjacent thereto, said charge exchange effectively collecting all of the remaining generated charges, of opposite sign from the charges on the first side, on the second side of the foil; and
further comprising the step of separating the electrode from the foil prior to depositing the pigment.

4,345,013
DUAL PURPOSE MAGNETIC TONER

Arthur S. Diamond, Ventura, and Sydney N. Floersheim, Encino, both of Calif., assignors to Black Copy Company, Inc., Canoga Park, Calif.

Filed Feb. 28, 1977, Ser. No. 772,502
Int. Cl.³ G03G *9/14*
U.S. Cl. 430—106.6 10 Claims

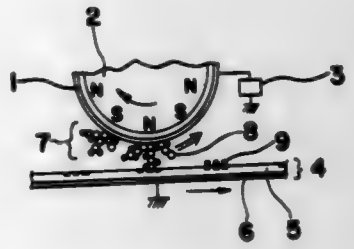


1. A, dual-purpose, single component, electronically-conductive, magnetically-attractable, toner composition consisting essentially of:
fine, fragmentary, aspherical, acicular particles having a diameter from 10 to 40 microns and consisting essentially of an intimate dispersion of 50 to 150 parts per 100 parts by weight of resin blend of magnetic pigment, and 0 to 15 parts per 100 parts by weight of resin blend of conductive pigment in a homogenous blend of resin consisting of a linear polyester resin having a softening point from 95° C. to 115° C. and an ethylene-vinyl acetate copolymer resin containing 5 to 40% vinyl acetate and the ratio of polyester resin to copolymer resin is from 1:1 to 5:1; and
0.5 to 2.0% by weight of conductive pigment having a particle size of from 10 to 80 millimicrons attached to the surface of the particles.

4,345,014
MAGNETIC BRUSH DEVELOPING METHOD FOR USE IN ELECTROGRAPHY EMPLOYING DUAL-COMPONENT DEVELOPING MATERIAL

Tateki Oka; Kenji Tabuchi, and Susumu Tanaka, all of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 12, 1980, Ser. No. 186,558
Claims priority, application Japan, Oct. 24, 1979, 54-138029
Int. Cl.³ G03G *13/09*
U.S. Cl. 430—122 3 Claims



1. A magnetic brush developing method for use in electrography which comprises the steps of providing a dual-component developing material which includes electrically insulative magnetizable particles as carrier mainly composed of magnetizable powder and bonding material, and electrically insulative non-magnetizable particles as toner mainly composed of coloring material, dye and thermoplastic resin for bonding material; attracting said developing material onto a developing sleeve made of non-magnetizable material, by the action of a magnet member provided in said developing sleeve, to form a magnetic brush of said developing material on said developing sleeve; and bringing said magnetic brush into contact with an electrostatic latent image formed on a recording medium under the impression of a toner fogging prevention bias voltage so as to develop said electrostatic latent image into a visible image; said magnetic brush developing method further including the step of causing silica to adhere onto the surfaces of said electrically insulative non-magnetizable particles to reduce the triboelectric charge on said magnetizable particles to make the magnetic attractive force exerted by said magnet member on said electrically insulative magnetizable particles contacting said recording medium larger than the electric repelling force acting on said magnetizable particles in the direction toward said recording medium, thereby to prevent adhesion of said electrically insulative magnetizable particles to said recording medium.

4,345,015

DISPERSION-HEAT PROCESS EMPLOYING HYDROPHOBIC SILICA FOR PRODUCING SPHERICAL ELECTROPHOTOGRAPHIC TONER POWDER

Roelof R. Hendriksma, Panningen, and Wilhelmus J. VanRhijn, Venlo, both of Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Continuation-in-part of Ser. No. 701,211, Jun. 30, 1976, abandoned. This application Mar. 23, 1977, Ser. No. 780,431
Claims priority, application Netherlands, Jul. 7, 1975, 7508056
Int. Cl.³ G03G 9/08
U.S. Cl. 430—137 8 Claims

1. A process for producing spheroidized toner powder, characterized in that irregularly shaped thermoplastic resin particles, or such particles impregnated with additive, and hydrophobic silica particles having sizes below 100 nanometers are dispersed in a carrier liquid, in which liquid the resin of said resin particles does not dissolve, so as to form a dispersion containing less than 500 g. of said resin particles per liter of carrier liquid and hydrophobic silica particles in a small concentration sufficient to inhibit coagulation of said resin particles when softened; the dispersion is heated with stirring to a temperature at which said resin particles do not melt but soften and acquire a spherical or substantially spherical shape, and this temperature is maintained until substantially all the resin particles have become spherical or practically spherical in shape; the dispersion is then cooled down to a temperature at which the resin particles are no longer sticky and, finally, the resin particles are separated from the dispersion liquid, and dried.

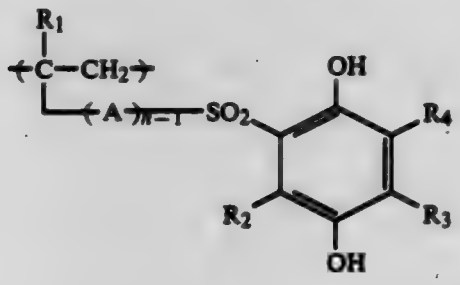
4,345,016

COLOR PHOTOGRAPHIC SENSITIVE MATERIAL

Osamu Takahashi; Nobutaka Ohki, and Kozo Aoki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 1, 1981, Ser. No. 279,382
Claims priority, application Japan, Jul. 4, 1980, 55/91571
Int. Cl.³ G03C 5/54
U.S. Cl. 430—214 22 Claims

16. In a monosheet type film unit unified in a body before, during and after exposure which is developable in the light, the improvement comprising a photosensitive sheet used for a color diffusion transfer process including an internal latent image type silver halide emulsion layer combined with a dye releasing redox compound and a layer containing a polymer having a repeating unit represented by formula (I)



(I)

wherein A represents a divalent group, n is 1 or 2, R_1 represents hydrogen, a halogen atom or an alkyl group, and R_2, R_3 and R_4 each represents hydrogen, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an amino group, an acylamino group, or a sulfonamide group, and R_3 and R_4 together can form an aromatic ring, provided that the total of carbon atoms of R_2, R_3, and R_4 is 60 or less on a base.

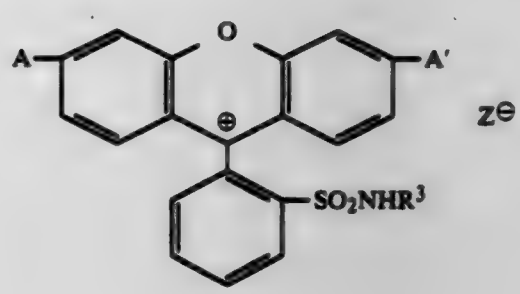
4,345,017

PHOTOGRAPHIC PRODUCTS AND PROCESSES WITH A PH SENSITIVE XANTHENE LIGHT SCREENING DYE

Richard L. Cournoyer, Dorchester, and James W. Foley, Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

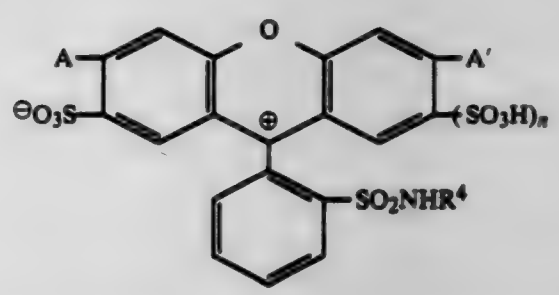
Filed Oct. 6, 1980, Ser. No. 194,468
Int. Cl.³ G03C 7/00, 1/400, 1/84, 5/54
U.S. Cl. 430—221 66 Claims

1. A photographic product comprising a plurality of layers including a support and at least one photosensitive silver halide emulsion layer carried on said support, at least one of said layers containing a colored xanthene compound selected from those having the formulae



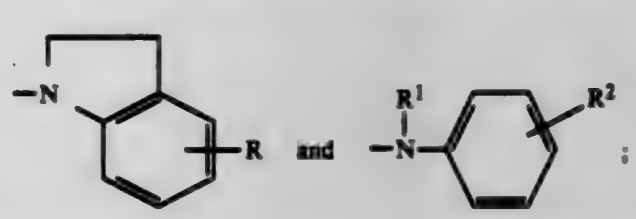
(Ia)

and



(IIa)

wherein A and A′, the same or different, are selected from



each R is hydrogen or an electron-withdrawing group; each R^1 is hydrogen or alkyl; each R^2 is hydrogen, alkyl or an electron-withdrawing group; R^3 is hydrogen or alkyl; R^4 is alkyl; n is 0 or 1; and Z is an anion.

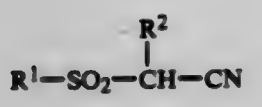
4,345,018

SULFONYL-CYANO ALKANE SILVER HALIDE SOLVENTS

Alan L. Borror, Lexington, and Richard B. Greenwald, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 575,585, May 8, 1975, abandoned. This application Nov. 1, 1976, Ser. No. 737,077
Int. Cl.³ G03C 5/54, 1/48, 5/38
U.S. Cl. 430—234 42 Claims

42. In a photographic silver salt, chemical transfer product comprising (a) a photographic element comprising photographic silver halide, (b) a processing composition, and (c) an image receiving layer comprising development nuclei, said product comprising an organic silver halide complexing agent, the improvement wherein said silver halide complexing agent is a carbon acid of the formula:



wherein R^1 is lower alkyl and R^2 is hydrogen or lower alkyl.

4,345,019

DIFFUSION TRANSFER PROCESS

Isao Kohmura, Nagaokakyo, Japan, assignor to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

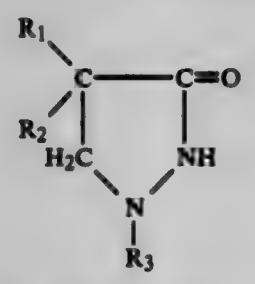
Filed Apr. 17, 1981, Ser. No. 255,287

Claims priority, application Japan, Apr. 23, 1980, 55-53772; Jun. 5, 1980, 55-75961

Int. Cl.³ G03C 5/54

U.S. Cl. 430—234 29 Claims

1. A silver complex diffusion transfer process which comprises imagewise exposing a light sensitive material which comprises a support having thereon at least a carbon black-containing hydrophilic colloid layer and a silver halide emulsion layer contiguous thereto and thereabove, said carbon black-containing layer and/or said silver halide emulsion layer containing a 3-pyrazolidone compound and said silver halide emulsion layer and/or a hydrophilic colloid layer which is permeable to water through or out from the silver halide emulsion layer containing a dihydroxybenzene developing agent, then silver complex diffusion transfer developing thus exposed light sensitive material in contact with an image-receiving material with a processing solution containing at least an alkali agent, a preservative and a silver halide solvent and containing substantially no silver halide developing agent and thereafter separating these materials from each other to form a silver image on the image receiving material, the 3-pyrazolidone compound having the general formula:



wherein R_1 and R_2 are a hydroxyalkyl or an alkyl group of 1–4 carbon atoms, at least one of R_1 and R_2 being a hydroxyalkyl group and R_3 is an aryl group.

4,345,020

POSITIVE RESIST POLYMER COMPOSITION AND METHOD OF FORMING RESIST PATTERN

Yasuhiro Yoneda; Toshisuke Kitakohji, both of Yokohama, and Kenro Kitamura, Fujisawa, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 61,291, filed Nov. 6, 1978 as PCT/JP78/00022, published May 31, 1979 as WO79/00284, § 102(e) date Jul. 2, 1979, § 371 date Jul. 2, 1979, Pat. No. 4,276,365. This application Dec. 3, 1980, Ser. No. 212,609

Claims priority, application Japan, Nov. 7, 1977, 52-13337

Int. Cl.³ G03C 1/69

U.S. Cl. 430—270 8 Claims

1. A cross-linkable positive-working resist polymer composition comprising a blend of at least two copolymers, at least one of which is comprised of the following units (a) and (b) and at least one of which is comprised of the following units (a) and (c):

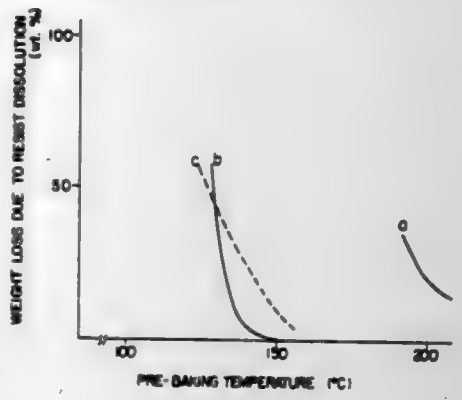
(a) units derived from a methacrylic acid ester of the formula:

$$CH_2=C(CH_3).COOR$$

where R is selected from the group consisting of alkyls having from 1 to 6 carbon atoms, haloalkyls having from 1 to 6 carbon atoms, benzyl and cyclohexyl,

(b) units derived from a monoolefinically unsaturated carboxylic acid having from 3 to 12 carbon atoms and from 1 to 3 carboxyl groups, and

(c) units derived from methacrylic acid chloride; the amount of the units (b) being such that the number of moles of the units (b), multiplied by the number of the carboxyl groups



in each of the units (b), ranges range from about 1 to about 20% based on the total number of moles of the units (a), (b) and (c); the amount of the units (c) ranges from about 0.05 to about 3.0% by mole, based on the total number of moles of the units (a), (b) and (c); and the molar ratio of the units (b), multiplied by the number of the carboxyl groups in each of the units (b), to the units (c) being greater than 2/1 but less than 250/1.

4,345,021

SOLID-STATE IMAGE PICKUP ELEMENT AND PROCESS FOR FABRICATING THE SAME

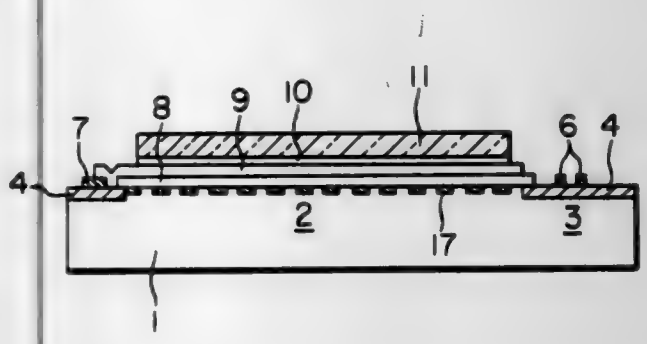
Kazufumi Ogawa, Hirakata; Takao Chikamura, Kyoto, and Takuo Shibata, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 18, 1980, Ser. No. 188,580

Claims priority, application Japan, Sep. 25, 1979, 54/123334; Sep. 25, 1979, 54/123335

Int. Cl.³ G03C 5/00

U.S. Cl. 430—321 8 Claims



1. A process for fabricating solid-state image pickup elements comprising the steps of

preparing a wafer,

forming on said wafer a picture element portion for sensing a light image and transferring and a driving circuit for driving said picture element portion,

forming a photoconductive layer over the whole surface of said wafer on which are formed said picture element portion and said driving circuit, said photoconductive layer being connected to photosensor elements of said picture element portion,

forming a transparent electrode layer over the whole surface of said photoconductive layer,

applying over the whole surface of said transparent electrode layer a photosetting resin which has the optical properties substantially similar or the same as those of an

adhesive agent used for bonding a color filter to said transparent electrode and is transparent to the light in the visible range,

exposing said photosetting resin through a photomask having a predetermined pattern so that the hardened resin pattern is transferred at least to a predetermined portion of said transparent electrode layer corresponding to said picture element portion, and

selectively etching said transparent electrode layer and said photoconductive layer with said hardened resin pattern used as an etching mask.

4,345,022

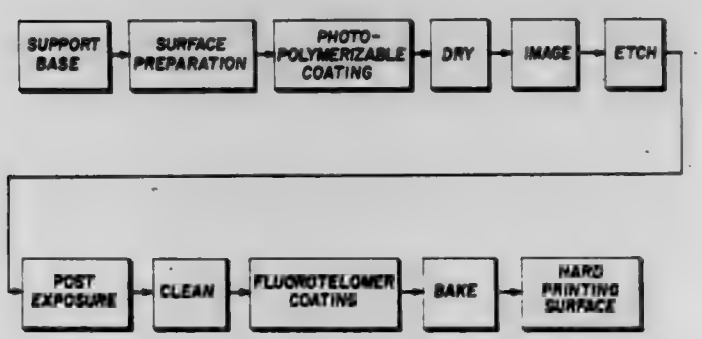
PROCESS OF RECOVERING UNPOLYMERIZED PHOTOPOLYMER FROM PRINTING PLATES

David R. Kress, Rochester, N.Y., assignor to Matrix Unlimited, Inc., Rochester, N.Y.

Division of Ser. No. 93,622, Nov. 13, 1979, Pat. No. 4,269,930. This application Mar. 30, 1981, Ser. No. 249,070

Int. Cl.³ G03C 5/04

U.S. Cl. 430—329 2 Claims



1. A process for preparing a photopolymerizable composition of matter comprising:

a. stripping unpolymerized material from an imagewise exposed and photopolymerized printing plate that contains an alcohol-soluble linear polyamide, photosensitizers, polymerization inhibitors, and a low molecular weight dicarboxylic acid or anhydride with a stripping fluid comprised of a mixture of water and a lower aliphatic alcohol;

b. heating the resulting mixture of stripping fluid and stripped photopolymerizable composition to cause phase separation; and

c. recovering the organic phase, which comprises said photopolymerizable composition of matter.

4,345,023

PROCESS FOR INCREASING THE EFFECTIVE SPEED OF PHOTOGRAPHIC FILMS AND IMPROVED FILM STRUCTURES

Charles W. Wyckoff, Needham, Mass., assignor to The Academy of Applied Science, Inc., Belmont, Mass.

Continuation of Ser. No. 943,319, Sep. 18, 1978, abandoned. This application Jan. 16, 1981, Ser. No. 225,534

Int. Cl.³ G03C 7/00

U.S. Cl. 430—364 5 Claims

1. A process for increasing during development the effective speed of an exposed silver-sensitized photographic film and the like by a factor of at least 4 to 10 times the ASA speed rating, that comprises developing and fixing the exposed film to provide a reduced silver image; re-halogenating or bleaching said reduced silver image to convert the same to a silver halide or soluble silver complex; and re-developing the film in a color-coupling developer in the presence of color-coupling dye units to reduce the image to silver units and proximal color units, each of the last-mentioned silver units having multiple proximal color units associated therewith as the result of (1) providing of the order of 6 color-coupling dye units in the color-coupling developer for every 2 units of color-coupling developer or (2) repeating the re-halogenating or bleaching and subsequent re-developing a sufficient number of times in the presence of sufficient color-coupling dye units to produce the speed increase.

3. The process as claimed in claim 1, wherein the film is washed and dried with the last-mentioned silver units remaining in the film.

4,345,024

PHOTOGRAPHIC DEVELOPMENT INHIBITOR RELEASING COMPOUND

Shigeo Hirano, and Kei Sakanoue, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

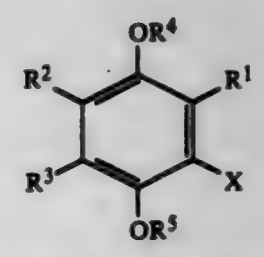
Filed Apr. 30, 1981, Ser. No. 259,278

Claims priority, application Japan, Apr. 30, 1980, 55/57270

Int. Cl.³ G03C 7/00, 1/40

U.S. Cl. 430—382 12 Claims

9. A method of forming an image comprising developing an imagewise exposed silver halide photographic light-sensitive material having thereon at least one light-sensitive silver halide emulsion layer in the presence of the photographic development inhibitor releasing compound of the formula (I):



(I)

wherein X is an indazole residue which may be substituted and which is bonded to the benzene nucleus through the nitrogen atom at the 1-position or 2-position thereof; R^1, R^2 and R^3, which may be the same or different, are each hydrogen, an alkyl group, an aryl group, an alkylthio group, an arylthio group, a halogen atom, a hydroxy group, an alkoxy group, an aryloxy group, an acyl group, an alkoxycarbonyl group, an amido group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, a heterocyclic residue or any of the groups described above for X; further R^2 and R^3 may combine with each other to form a ring; and R^4 and R^5, which may be the same or different, are each hydrogen or a group capable of being hydrolyzed in the presence of an alkali.

4,345,025

COLOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Morio Yagihara, and Yukio Yokota, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 11, 1981, Ser. No. 242,760

Claims priority, application Japan, Mar. 12, 1980, 55-31321

The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.

Int. Cl.³ G03C 7/00, 1/40

U.S. Cl. 430—385 28 Claims

26. A method of forming color images which comprises developing a photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer with a developing solution containing an aromatic primary amine developing agent in the presence of a colorless photographic cyan color forming coupler having, in a position for coupling with the oxidation product of the aromatic primary amine developing agent, a coupling-off group represented by the following general formula (I):

—O—R—SO—R_1

wherein R represents a substituted straight or branched chain alkylene group or a substituted straight or branched chain alkenylene group; R_1 represents a substituted or unsubstituted

straight or branched chain alkyl group, a straight or branched chain alkenyl group, a straight or branched chain aralkyl group, a straight or branched chain aralkenyl group, a cycloalkyl group, an aryl group or a heterocyclic group, and R and R_1 may be bonded to each other directly or through a connecting group to form a ring.

4,345,026

MUTAGENICITY ASSAY

Kenneth K. Lew, Brookline, Mass., assignor to The Children's Hospital Medical Center, Boston, Mass.

Filed Jan. 12, 1981, Ser. No. 224,100
Int. Cl.³ C12Q *1/00*
U.S. Cl. 435—4 14 Claims

1. A mutagenicity assay method comprising

exposing a population of a eukaryotic animal species to a suspected mutagen, said animal species being a species in which mutation can cause an increase or decrease in size and in which said mutation behaves as a single locus mutation, and

scoring the occurrence, in a subsequent generation, of animals of a size different from that of said exposed population as a measure of the mutagenicity of said suspected mutagen.

4,345,027

FLUOROMETRIC METHOD OF QUANTITATIVE CELL MUTAGENESIS

Frank A. Dolbeare, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 12, 1980, Ser. No. 215,767
Int. Cl.³ G01N *1/30*
U.S. Cl. 435—21 10 Claims

1. A method for assaying a cell culture for mutagenesis, comprising:

staining said culture with a histochemical stain, said stain staining only normal cells and not abnormal cells in said culture;

counterstaining said culture with a fluorescent stain, wherein said fluorescent stain transmits wavelengths in the wavelength region absorbed by said histochemical stain;

subjecting said counterstained culture to exciting light; and

detecting the fluorescence from said counterstained culture.

8. A method for assaying bladder cells for an alkaline phosphatase deficiency, comprising:

applying a solution of naphthol AS-BI phosphate with fast blue BBN to a cell culture of bladder cells;

counterstaining said cell culture with a solution of fluorescamine or chromomycin A3;

subjecting said counterstained cell culture to exciting light to produce fluorescence in cells deficient in alkaline phosphatase; and

detecting said fluorescence.

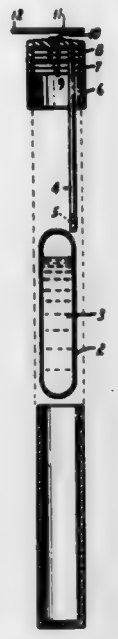
4,345,028

BACTERIA GROWING DEVICE

Robert L. Nelson, Minneapolis, and Michael W. Downing, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 5,149, Jan. 22, 1979, Pat. No. 4,252,904, which is a continuation-in-part of Ser. No. 808,459, Jun. 21, 1977, abandoned. This application Oct. 6, 1980, Ser. No. 193,933
Int. Cl.³ C12Q *1/24*
U.S. Cl. 435—30 7 Claims

1. A wand for picking up a predetermined quantity of bacteria from the surface of at least one growth colony of said bacteria consisting essentially of a rod-like member having a top end, and a lower colony-contacting tip, said lower tip having at least one groove in the lowermost end of said tip into which said bacteria are ingested, said groove being capable of



ingesting said predetermined quantity of bacteria by capillary action.

4,345,029

MYCOBACTERIUM PHLEI MUTANTS CONVERT STEROLS TO ANDROSTA-1,4-DIENE-3,17-DIONE AND ANDROSTA-4-ENE-3,17-DIONE

Merle G. Wovcha, and Candice B. Biggs, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 849,526, Nov. 9, 1977, Pat. No. 4,293,645, and a continuation-in-part of Ser. No. 662,563, Mar. 1, 1976, abandoned. This application Sep. 8, 1980, Ser. No. 184,698
Int. Cl.³ C12P *33/16*
U.S. Cl. 435—55 8 Claims

1. A process for preparing a mixture of androsta-1,4-diene-3,17-dione and androst-4-ene-3,17-dione which comprises cultivating *Mycobacterium phlei* NRRL B-8154 in an aqueous nutrient medium under aerobic conditions in the presence of a steroid containing from 2 to 10 carbon atoms, inclusive, in the 17-alkyl side chain and recovering androsta-1,4-diene-3,17-dione and androst-4-ene-3,17-dione.

8. A process for preparing a mixture of androsta-1,4-diene-3,17-dione and androst-4-ene-3,17-dione which consists of cultivating a mutant microorganism of *Mycobacterium phlei*, said mutant being characterized by its ability to selectively degrade steroids having 17-alkyl side chains of from 2 to 10 carbon atoms, inclusive, and accumulate androsta-1,4-diene-3,17-dione and androst-4-ene-3,17-dione in the fermentation beer, in an aqueous nutrient medium under aerobic conditions in the presence of a steroid containing from 2 to 10 carbon atoms, inclusive, in the 17-alkyl side chain and recovering androsta-1,4-diene-3,17-dione and androst-4-ene-3,17-dione.

4,345,030

MICROORGANISM MUTANT CONVERSION OF STEROLS TO ANDROSTA-4-ENE-3,17-DIONE

Merle G. Wovcha, and Candice B. Biggs, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 849,525, Nov. 9, 1977, Pat. No. 4,293,644, which is a continuation-in-part of Ser. No. 735,075, Oct. 22, 1976, abandoned. This application Sep. 8, 1980, Ser. No. 184,722
Int. Cl.³ C12P *33/16*
U.S. Cl. 435—55 4 Claims

1. A process for preparing androst-4-ene-3,17-dione which consist of cultivating a mutant microorganism selected from the group consisting of Arthrobacter, Bacillus, Brevibacterium, Corynebacterium, Microbacterium, Nocardia, Protaminobacter, Serratia, and Streptomyces, said mutant being char-

acterized by its ability to selectively degrade steroids having 17-alkyl side chains of from 2 to 10 carbon atoms, inclusive, and accumulate androst-4-ene-3,17-dione in the fermentation beer, in an aqueous nutrient medium under aerobic conditions in the presence of a steroid containing from 2 to 10 carbon atoms, inclusive in the 17-alkyl side chain and recovering androst-4-ene-3,17-dione.

4,345,031

PROCESS FOR THE MANUFACTURE OF ALDONIC ACIDS BY AN ENZYMATIC METHOD

Guillaume Coppens, Brussels, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Filed Jan. 15, 1980, Ser. No. 112,348
Claims priority, application France, Jan. 22, 1979, 79 01861
Int. Cl.³ C12P *7/58*
U.S. Cl. 435—137 **5 Claims**

1. A process for the manufacture of gluconic acid from glucose, comprising enzymatically oxidizing the glucose in the presence of glucose oxidase, in a reaction mixture containing water as a solvent, and containing dissolved oxygen in a concentration of between 40 and 10,000 mg/liter, wherein the oxidation is carried out at a temperature of between 0° and 60° C. and at a pH of between 4.2 and 8, and wherein the molar ratio of dissolved oxygen to glucose in the reaction mixture is kept above 0.1 by application of a gas containing oxygen under an oxygen partial pressure of between 1 and 100 bar.

4,345,032

CULTIVATION OF A DEODORIZING LACTOBACILLUS STRAIN, STORAGE THEREOF, AND COMPOSITION CONTAINING LIVING CELLS THEREOF

Kosei Hata, Osaka, Japan, assignor to Seikenkai, Osaka, Japan

Filed May 23, 1977, Ser. No. 799,320
Int. Cl.³ C12N *1/20, 1/04;* C12R *1/225;* A61K *37/00*
U.S. Cl. 435—253 **13 Claims**

1. A deodorizing composition comprising (1) the living cells of a Lactobacillus strain whose growth in enabled or promoted in a culture medium comprising at least one medium selected from the group consisting of S-W medium, S-W medium containing vitamins and S-W medium containing casamino acid, said S-W medium being composed of 1 g of KH_2PO_4, 0.7 g of $MgSO_4.7H_2O$, 1 g of NaCl, 4 g of $(NH_4)_2HPO_4$, 0.03 g of $FeSO_4.7H_2O$, and 5 g of glucose per 1 liter of water, said culture medium further containing at least one substance selected from the group consisting of hydrogen sulphide, sodium sulphide, ammonia, a lower fatty acid and a sulfur-containing amino acid, and (2) a coating substance comprising sulphur-containing amino acids coated on said cells, said cells having been recovered from a culture medium and then coated with said coating substance, said coating substance being present in an amount sufficient to maintain the deodorizing activity of said cells.

4,345,033

MYCOBACTERIUM FORTUITUM MUTANT

Merle G. Wovcha; Candice B. Biggs, both of Kalamazoo, and Thomas R. Pyke, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 849,525, Nov. 9, 1977, Pat. No. 4,239,644, and a continuation-in-part of Ser. No. 735,075, Oct. 22, 1976, abandoned. This application Sep. 8, 1980, Ser. No. 184,723
Int. Cl.³ C12N *1/20*
U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of mutant *Mycobacterium fortuitum* NRRL B-11045.

4,345,034

MYCOBACTERIUM FORTUITUM MUTANT

Merle G. Wovcha, and Kevin E. Brooks, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 931,741, Aug. 7, 1978, Pat. No. 4,293,646. This application Aug. 8, 1980, Ser. No. 184,724
Int. Cl.³ C12P *33/16;* C12N *1/20*
U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of mutant *Mycobacterium fortuitum* NRRL B-11359.

4,345,035

METHOD OF PRODUCING MOLTEN STONE MATERIAL IN A CUPOLA FURNACE

Leif Jensen, Olstykke, Denmark, assignor to Rockwool International A/S, Hovedgaden, Denmark

Filed Feb. 4, 1981, Ser. No. 232,780
Claims priority, application Denmark, Feb. 14, 1980, 631/80
Int. Cl.³ C03C *13/00*
U.S. Cl. 501—29 **3 Claims**

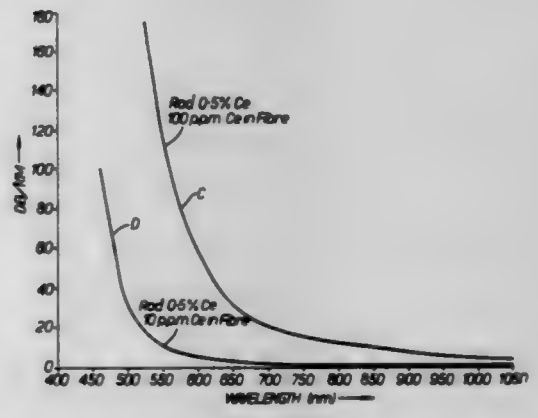
1. A method for producing a melt from briquettes of rocks, slags and/or other silicate materials and minerals, which comprises charging to a cupola furnace a mixture of or alternating layers of coke and said briquettes; characterized in that combustion air is supplied to a melting zone of the cupola furnace at a flow rate corresponding to at least 60 Nm^3/m^2 and that said briquettes have a uniform size, and a prismatic shape with a height not less than twice the average width.

4,345,036

OPTICAL GLASS FIBRES AND METHOD OF FORMING SUCH FIBRES

Charles R. Bamford, Southport; James R. Mellor, Ormskirk, and Bernard Parker, Billinge Nr. Wigan, all of England, assignors to Pilkington Brothers Limited, Merseyside, England

Filed Jan. 16, 1981, Ser. No. 225,818
Claims priority, application United Kingdom, Jan. 28, 1980, 8002834
Int. Cl.³ C03B *37/075;* C03C *1/10, 3/02, 3/04*
U.S. Cl. 501—37 **12 Claims**



1. A method of forming an optical fibre from a high-silica glass which contains at least 85 mol % SiO_2 and which is susceptible to the production of colour centres on drawing into fibres, wherein attenuation due to such drawing-induced colour centres is suppressed or reduced by incorporating from 1 to 100 parts per million of cerium oxide in the glass from which the fibre is drawn, under oxidising conditions such that a significant proportion of the cerium in the glass of the fibre is in the form of ceric ions and the fibre has a total attenuation of not more than 20 dB/Km in the wavelength range from 800 to 900 nm.

11. An optical glass fibre drawn from a glass containing at least 85 mol % silica and from 1 to 50 parts per million by weight of ceric ions, the attenuation characteristics of the fibre being such that the curve of attenuation plotted against wavelength shows no peaks due to drawing-induced colour centres

and the attenuation in the wavelength range from 800 to 900 nm is not more than 20 dB/Km.

4,345,037

ALKALI RESISTANT GLASS FIBRES FOR CEMENT REINFORCEMENT

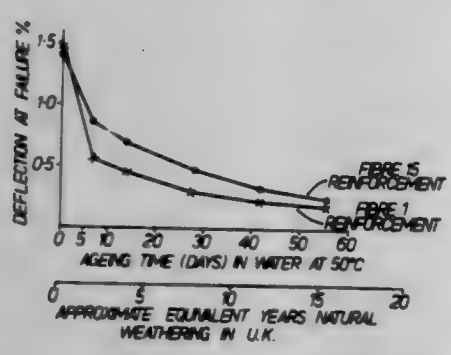
Kenneth M. Fyles, and Peter Shorrock, both of Wigan, England, assignors to Pilkington Brothers Limited, St. Helens, England

Filed Feb. 26, 1981, Ser. No. 238,515

Claims priority, application United Kingdom, Feb. 27, 1980, 8006653

Int. Cl.³ C03C *13/00*

U.S. Cl. 501—38 15 Claims



1. Alkali-resistant glass fibres for use as reinforcement in cementitious products, formed from a composition comprising, in weight percentages:

SiO_2	55 to 75%
R_2O	11 to 23%
ZrO_2	6 to 22%
Cr_2O_3	0.1 to 1%
Al_2O_3	0.1 to 7%
Rare earth oxides + TiO_2	0.5 to 16%

where R_2O is any one or more of Na_2O, K_2O or Li_2O, the content of TiO_2 does not exceed 10%, and the total of the components recited above amounts to at least 88% by weight of the glass, the glass having been melted under non-oxidising conditions such that all or a substantial proportion of the chromium in the glass is in the trivalent state.

4,345,038

CO HYDROGENATION PROCESS USING STEAM AND MOLYBDENUM OXYCARBONITRIDE CATALYST

Larry E. McCandlish, Highland Park; Franklin J. Wright, Watchung, and Edwin L. Kugler, Summit, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 216,139, Dec. 15, 1980, abandoned. This application Sep. 23, 1981, Ser. No. 304,980

Int. Cl.³ C07C *1/10*

U.S. Cl. 518—711 8 Claims

1. A process for preparing paraffinic hydrocarbons including linear and branched C_1–C_{10} carbon chain number comprising contacting a gaseous mixture of CO and steam in a CO/-steam volume ratio of 10:1 to 1:10, respectively, with a catalyst comprised of molybdenum oxycarbonitride, at a temperature in the range of about 100° to 600° C., a pressure of about 0.1 to 100 MPa, and a space velocity of about 100 to 50,000 v/v/hr., and recovering product paraffinic hydrocarbons.

4,345,039

METHOD OF RECOVERING POLYESTER FIBERS AND CELLULOSIC POWDER FROM POLYESTER/COTTON TEXTILE WASTE

Jack C. Cowan, Lafayette, La., and Tommy Thrash, Littlefield, Tex., assignors to Venture Chemicals, Inc., Lafayette, La.

Filed Jun. 1, 1981, Ser. No. 269,492

Int. Cl.³ C08J *11/00, 11/04*

U.S. Cl. 521—48 10 Claims

1. A method for recovering polyester fibers and cellulosic material in useful form from textile wastes containing blended polyester/cellulosic fibers comprising treating the textile waste with from about 0.3% to about 3% by weight of the cellulosic material in the waste of anhydrous hydrochloric acid gas at a temperature in the range from about ambient to about 180° F. for a period from about 5 minutes to about 48 hours, mechanically degrading the reacted cellulosic material to a fine powder, and separating the polyester fibers from the reacted cellulosic material, wherein said cellulosic material is selected from the group consisting of cotton and rayon.

4,345,040

STABILIZATION OF POST-CHLORINATED VINYL CHLORIDE POLYMERS BY PHOSPHATE SALTS

Dale R. Hall, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 16, 1980, Ser. No. 159,532

Int. Cl.³ C08J *9/40*

U.S. Cl. 521—53 15 Claims

1. A process for producing post-chlorinated polymers having increased thermal stability during processing which comprises forming an aqueous solution containing a metal salt of phosphoric acid, contacting a porous post-chlorinated vinyl chloride polymer with said solution while agitating the mixture said polymer containing from about 64% to about 70% by weight of chlorine and from about 5% to about 65% by volume of pore space, evaporating the liquid from said mixture, and drying and recovering said so-treated resin.

4,345,041

FOAMING SYNTHETIC RESIN COMPOSITIONS STABILIZED WITH N-(HIGHER ALKYL) C_1–C_8 AMIDES

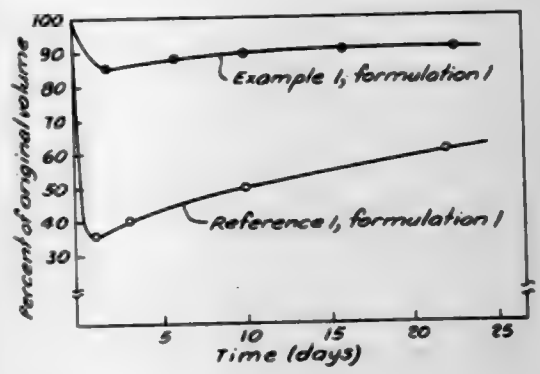
Tsuneo Hoki, and Yutaka Matsuki, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,271

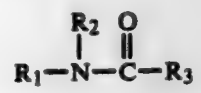
Claims priority, application Japan, Mar. 10, 1980, 55-29099

Int. Cl.³ C08J *9/14*

U.S. Cl. 521—94 6 Claims



1. A foamable synthetic resin composition comprising a normally solid olefin polymer, a volatile organic blowing agent and from 0.1 to 10 percent by weight, based on said olefin polymer of at least one compound of formula I:



(I)

wherein R_1 is an aliphatic hydrocarbon group having 10 to 24

carbon atoms; R_2 is a hydrogen atom, an aliphatic hydrocarbon group having 1 to 24 carbon atoms, or oxyalkylene or polyoxyalkylene group represented by $-R_4-O-_nA$ wherein R_4 is a residual group of an aliphatic polyhydric alcohol having 1 to 5 carbon atoms, A is a hydrogen atom or a residual group of an aliphatic carboxylic acid having 1 to 24 carbon atoms and n is an integer ranging from 1 to 20; and R_3 is a hydrogen atom or an aliphatic hydrocarbon group having 1 to 7 carbon atoms.

4,345,042

POLYURETHANE-MODIFIED POLYISOCYANURATE FOAM AND METHOD FOR PRODUCING THE SAME

Akira Kuroda, Funabashi; Tsutomu Nakamura, Shiraokamachi, and Masatoshi Onishi, Yokohama, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

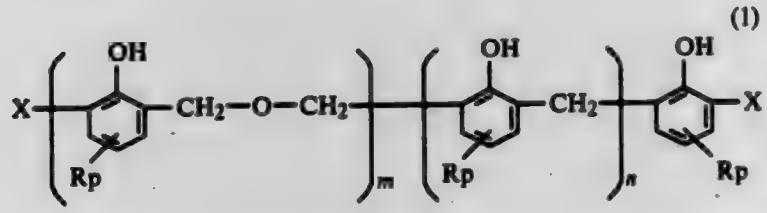
Filed Mar. 6, 1981, Ser. No. 241,439
Claims priority, application Japan, Mar. 21, 1980, 55-34694
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—112 **14 Claims**

1. A polyurethane-modified polyisocyanurate foam comprising a reaction product of a mixture containing

(A) a polyisocyanate component consisting of at least one polyisocyanate compound;

(B) a polyol component containing at least one benzylic ether type phenolic resin of the formula (1):

(1)



wherein R represents a member selected from the group consisting of a hydrogen atom, hydrocarbon radicals, oxyhydrocarbon radicals and halogen atoms; X represents a terminal group selected from the group consisting of a hydrogen atom and methylol radical, the molar ratio of the methylol terminal group to the hydrogen terminal group being at least 1; and m and n represent an integer, respectively, the sum of m and n being at least 2 and the ratio of m to n being at least 1, and p represents an integer from 1 to 3;

(C) a catalyst for trimerizing said polyisocyanate compound, and;

(D) a blowing agent, the ratio of the amount of isocyanate equivalent of said polyisocyanate component to the amount of hydroxyl equivalent of said polyol component, being in the range of from 1.5 to 10.

4,345,043

VINYL CHLORIDE RESIN COMPOSITION

Haruhiko Yusa; Masanori Oota, and Haruki Isaka, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,833
Claims priority, application Japan, Sep. 3, 1979, 54-112601
Int. Cl.³ C08K *9/00*
U.S. Cl. 523—209 **6 Claims**

1. A vinyl chloride resin composition comprising a vinyl chloride resin and modified titanium oxide and having a titanium oxide content of 0.1 to 30% by weight based on the total amount of said vinyl chloride resin and said modified titanium oxide, said modified titanium oxide having a particle size of about 1 to 200μ and having been obtained by suspension copolymerizing a monomer mixture of vinyl chloride and 10-undecenoic acid in the presence of titanium oxide, said modified titanium oxide comprising 30 to 2,000 parts by weight of the resulting copolymer with respect to 100 parts by weight of titanium oxide, said copolymer in said modified titanium oxide comprising 0.1 to 70% by weight of polymerized units of said 10-undecenoic acid based on the weight of said copolymer.

4,345,044

ACRYLIC WOOD FILLER

Peter S. Columbus, Whitestone, and John Anderson, Brooklyn, both of N.Y., assignors to Borden, Inc., N.J.

Continuation-in-part of Ser. No. 819,466, Jul. 27, 1977, abandoned. This application Nov. 24, 1980, Ser. No. 209,502
Int. Cl.³ C08K *3/34, 3/26*
U.S. Cl. 523—220 **18 Claims**

1. Wood filler composition which provides exceptional performance on soft and hard species of wood, which is easily spreadable, resists shrinking on drying and cracking, stains superbly, is highly water resistant, can be sanded easily and which has excellent adhesion to wood, metal and paint, said composition having a viscosity of 120,000 to 250,000 cps. and comprising on solids basis 6 to 14% acrylic resin comprising polymerized acrylate esters, 3 to 10% platy talc having an average particle size of about 9 microns, 3 to 12% clay filler having an average particle size of about 5 microns, 3 to 10% barytes filler, 40 to 65% calcium carbonate filler and 13 to 35% water.

4,345,045

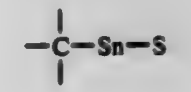
RESIN STABILIZER SYSTEMS OF ORGANOTIN SULFUR-CONTAINING COMPOUNDS AND ORGANIC OVER-BASED COMPLEXES

Thomas C. Jennings, Lyndhurst, and Charles W. Fletcher, Jr., Highland Heights, both of Ohio, assignors to Dart Industries, Inc., Northbrook, Ill.

Division of Ser. No. 353,910, Apr. 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 116,671, Feb. 18, 1971, Pat. No. 3,764,571. This application Nov. 29, 1979, Ser. No. 98,596
Int. Cl.³ C08K *5/58*
U.S. Cl. 524—180 **36 Claims**

6. A vinyl halide resin composition which comprises a vinyl halide resin and, as a heat stabilizer, an effective amount of a composition consisting essentially of,

an organotin sulfur-containing compound having a



group, and

a metal compound selected from the group consisting of an organic over-based complex of an alkali and an alkaline earth metal base, and mixtures of said metal compounds, said organotin and metal compound components in relative amounts which together provide a synergistic stabilizing effectiveness upon said resin.

4,345,046

CALENDERING OF POLYOLEFINS

Adam J. Ejk, Piscataway, and Donald J. Krzywicki, Hopewell, both of N.J., assignors to Tenneco Chemicals, Inc., Piscataway, N.J.

Filed Jun. 5, 1981, Ser. No. 270,757
Int. Cl.³ C08J *3/18*; C08K *5/09, 5/20*
U.S. Cl. 524—223 **30 Claims**

1. A lubricant composition for polyolefins which comprises from about 60 to about 70 parts by weight of at least one N,N'-ethylenebis amide of a fatty acid or hydroxy-substituted fatty acid having from about 10 to about 22 carbon atoms, from about 22 to about 32 parts by weight of at least one free fatty acid or hydroxy-substituted fatty acid having from about 10 to about 22 carbon atoms, and from about 3 to about 13 parts by weight of a least one metal salt of at least one fatty acid or

hydroxy-substituted fatty acid having from about 10 to about 22 carbon atoms.

8. In a polyolefin composition comprising an intimate mixture of at least one polyolefin resin and a lubricant, the amount of said lubricant being from about 0.1 parts by weight to about 5 parts by weight per 100 parts by weight of said polyolefin resin, the improvement wherein said lubricant comprises:

(a) from about 60 to about 70 parts by weight of at least one N,N'-ethylenebis amide of a fatty acid or hydroxy-substituted fatty acid having from about 10 to about 22 carbon atoms,

(b) from about 22 to about 32 parts by weight of at least one free fatty acid or hydroxy-substituted fatty acid having from about 10 to about 22 carbon atoms, and

(c) from about 3 to about 13 parts by weight of at least one metal salt of at least one fatty acid or hydroxy-substituted fatty acid having from about 10 to about 22 carbon atoms.

4,345,047

ADHESIVE COMPOSITION

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Dec. 18, 1980, Ser. No. 217,616
Int. Cl.³ C08L *63/00*
U.S. Cl. 525—108 **5 Claims**

1. An adhesive composition comprising a volatile organic solvent having dispersed therein about 10 to about 70% by weight of a thermoplastic vinyl chloride polymer resin and about 5 to about 30% by weight of a thermosetting epoxy resin normally incompatible with the vinyl chloride polymer resin and an amount of about 20 to about 85 percent by weight of an acrylonitrile/butadiene/styrene copolymer which amount of copolymer is capable of imparting compatibility between the epoxy resin and the vinyl chloride polymer, the copolymer containing about 10 to about 30% by weight acrylonitrile, about 10 to 30% by weight butadiene and about 40 to about 70 percent by weight styrene.

4,345,048

BROMINATED CYCLOALIPHATIC (METH) ACRYLATE COMPOSITIONS

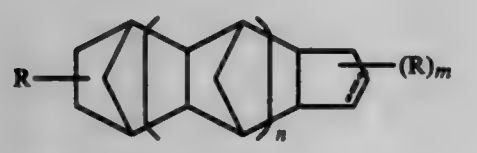
Hans R. Friedli, Lake Jackson, and Clinton J. Boriack, Freeport, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 21, 1980, Ser. No. 113,914
Int. Cl.³ C08F *8/00*
U.S. Cl. 525—192 **3 Claims**

1. A brominated cycloaliphatic (meth) acrylate composition which comprises the reaction product of bromine with a cycloaliphatic (meth) acrylate composition wherein the reaction takes place at a temperature in the range from −30° to 50° C. in the presence of an inert solvent wherein the mol ratio of bromine per mol of cycloaliphatic unsaturation is in the range from 1:1 to 1.1:1 and wherein said composition has

(A) about 60 to 95 percent by weight of dicyclopentadienyl acrylate, dicyclopentadienyl methacrylate, or mixtures thereof,

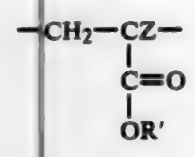
(B) about 2 to 15 percent by weight of a mixture of polycyclopentenyl acrylates of the formula



where
R is CH_2=C(Z)—C(O)—O—
Z is H, or methyl
n is 1, or 2
m is 0 or 1 and when m is 0 there is a double bond present in the cyclopentyl group,

(C) about 0.5 to about 21 percent by weight of a mixture of the copolymers of methacrylic acid or acrylic acid with adducts of cyclopentadiene with isoprene, piperylene methylcyclopentadiene, or mixtures thereof,

(D) about 0.05 to 10 weight percent of a mixture of polyacrylates having the repeating unit:



where
R' is hydrogen or



R is CH_2=CZ—C(O)—O—, Z is hydrogen or methyl, n is 0, 1 or 2. and m is 0 or 1, and when m is 0, there is a double bond present in the cyclopentyl group,

wherein said reaction product has substantially all the original acrylic unsaturation, substantially no remaining cycloolefinic unsaturation and has 1 to 4 bromine atoms attached to the original cyclopentene ring and to the acid moiety.

4,345,049

PREPARATION OF POLYVINYLPYRROLIDONE-IODINE

Walter Denzinger, Speyer; Ferdinand Straub, Hockenheim, and Heinrich Hartmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,462
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1979, 2941387
Int. Cl.³ C08F *8/04*
U.S. Cl. 525—339 **9 Claims**

1. A process for the preparation of polyvinylpyrrolidone-iodine which comprises subjecting a polyvinylpyrrolidone having a K value of from 10 to 50 to a hydrogenation treatment and thereafter reacting the resultant polyvinylpyrrolidone with iodine.

4,345,050

BLOCK COPOLYMERS OF POLYPHENYLENE OXIDES AND POLYFORMALS ON NON-STERICALLY-HINDERED DIHYDRIC PHENOLS

George R. Loucks, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,722
Int. Cl.³ C08G *81/00, 65/40*
U.S. Cl. 525—390 **5 Claims**

1. A block copolymer of polyphenylene oxide and polyformals of a non-sterically-hindered dihydric phenol.

4,345,051

BLOCK COPOLYMERS OF POLYPHENYLENE OXIDES AND POLYFORMALS OF STERICALLY-HINDERED DIHYDRIC PHENOLS

George R. Loucks, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,723
Int. Cl.³ C08G *81/00, 65/40*
U.S. Cl. 525—390 **5 Claims**

1. A block copolymer of a polyphenylene oxide and a polyformal of a sterically-hindered dihydric phenol.

4,345,052

METHOD FOR THE PREPARATION OF POLYETHER ESTER AMIDES

Salih Mumcu, Marl, and Hans J. Panoch, Haltern, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 169,111

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932234

Int. Cl.³ C08L *77/02, 77/12*

U.S. Cl. 525—411 10 Claims

1. A method for preparing polyether ester amides, comprising:

(A) preparing a mixture of polyamides and polyethers selected from the group consisting of

(a) polyamides having carboxyl end groups and polyethers having hydroxyl end groups and amino end groups;

(b) polyamides having carboxyl end groups and polyethers having hydroxyl end groups;

(c) polyamides having carboxyl end groups and polyethers having amino end groups; and

(d) polyamides having amino end groups and polyethers having carboxyl end groups;

(B) treating the mixture of (A) as a hot melt at a temperature between about 200° to 300° C. and under a water vapor pressure of about 5 to 25 bars with mechanical agitation for a period of about 15 minutes to 4 hours;

(C) removing the water from (B) by decompression; and

(D) carrying out a polycondensation of said treated, water free mixture.

4,345,053

SILICON-TERMINATED POLYURETHANE POLYMER

Sidky D. Rizk, Westfield; Harry W. S. Hsieh, Rahway, and John J. Prendergast, Freehold, all of N.J., assignors to Essex Chemical Corp., Clifton, N.J.

Filed Jul. 17, 1981, Ser. No. 284,195

Int. Cl.³ C08L *27/00*

U.S. Cl. 525—440 25 Claims

1. The method of making a moisture-curable silicon terminated polymer which comprises reacting a polyurethane prepolymer having terminal active hydrogen atoms with an isocyanato organosilane having a terminal isocyanate group and at least one hydrolyzable alkoxy group bonded to silicon.

4. A method as in claim 1 wherein said isocyanato organosilane having at least one hydrolyzable alkoxy group bonded to silicon is gamma-isocyanatopropyl triethoxysilane.

5. A moisture-curable silicon terminated organic polymer made by the method of claim 4.

4,345,054

HIGH-MOLECULAR-WEIGHT NOVOLAK TYPES SUBSTITUTED PHENOLIC RESINS AND PROCESS FOR PREPARATION THEREOF

Nobuyuki Takeda, and Tadao Iwata, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

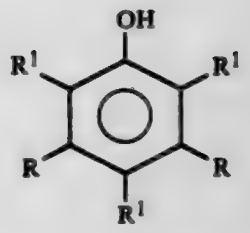
Filed Dec. 29, 1980, Ser. No. 221,333

Claims priority, application Japan, Dec. 27, 1979, 54-169140; Jun. 3, 1980, 55-73754; Jun. 3, 1980, 55-73755; Jun. 3, 1980, 55-73756; Jun. 3, 1980, 55-73757

Int. Cl.³ C08L *61/14*

U.S. Cl. 525—480 56 Claims

1. A process for the preparation of high-molecular-weight novolak type substituted phenolic resins, which comprises reacting (A) a novolak type substituted phenolic resin composed of a phenol comprising 70 to 100 mole % of at least one bifunctional phenol represented by the following general formula (I):



(I)

wherein two of three R^1's are hydrogen atoms and the remaining one R^1 is an alkyl group having 1 to 8 carbon atoms, an aryl group having 6 to 10 carbon atoms, a halogen atom or a hydroxyl group, and two R's, which may be same or different, stand for a member selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, a halogen atom and a hydroxyl group,

and 0 to 30 mole % of a trifunctional phenol and an aldehyde represented by the following general formula:

$$R^2—CHO \quad \text{(II)}$$

wherein R^2 stands for a hydrogen atom or a substituent selected from the group consisting of a methyl group and a halogenated methyl group,

and having an hydroxyaryl unit at the molecule terminal and a number average molecular weight of from 250 to 1200, with (B) at least one dimethylolated product of said bifunctional and/or trifunctional phenol as a chain extender, in the presence of an acid catalyst, so that at least 70 mole % of the phenol component in the final novolak type substituted phenolic resin is occupied by said bifunctional phenol, until the number average molecular weight of the final novolak type substituted phenolic resin is at least 1500 as measured by vapor pressure osmometry in N,N-dimethylacetamide as the solvent, the ratio of the two reactants being such that the amount of the methylol group of the dimethylolated phenol is 0.5 to 1.5 equivalents per equivalent of the terminal hydroxyaryl unit of the starting novolak type substituted phenolic resin (A).

4,345,055

POLYMERIZATION WITH TITANIUM IMPREGNATED SILICA-CHROMIUM CATALYSTS

Gil R. Hawley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 118,838, Feb. 6, 1980, Pat. No. 4,296,001. This application May 20, 1981, Ser. No. 265,477

Int. Cl.³ C08F *4/02, 4/24*

U.S. Cl. 526—96 40 Claims

1. A polymerization process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with a chromium-containing catalyst produced by impregnating a dry silica xerogel, formed by drying a silica hydrogel, with an aqueous solution of a water soluble hydrolysis resistant titanium compound.

26. A polymerization process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms with a chromium-containing catalyst produced by forming a silica hydrogel containing a water soluble hydrolysis resistant titanium compound, and drying said hydrogel to form a xerogel, wherein said hydrogel contains in addition a pore preserving agent selected from organic silicon compounds, oxygen-containing organic compounds, acids, and surfactants.

4,345,056

PROCESS FOR SUSPENSION POLYMERIZATION OF VINYL CHLORIDE EMPLOYING MIXED PROTECTIVE COLLOIDS

Helmut E. Thyret; Thomas Balwe; Gerhard Beier, and Johann Bauer, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 803,655, Jun. 6, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 959,796

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629880

Int. Cl.[3] C08F *2/20*

U.S. Cl. 526—200 2 Claims

1. In the process for the production of polyvinyl chloride comprising the steps of heating an aqueous suspension of monomers selected from the group consisting of vinyl chloride and mixtures of vinyl chloride with up to 20% by weight of monomers copolymerizable with vinyl chloride under suspension polymerization conditions in the presence of from 0.01% to 0.3% by weight, based on the weight of monomers, of at least one monomer-soluble free-radical polymerization catalyst, and from 0.05% to 0.5% by weight, based on the weight of the monomers, of at least two protective colloids, at a pH of from 3 to 8 and the autogenous vinyl chloride pressure, to a temperature of from 30° C. to 70° C. for a time sufficient to effect polymerization and recovering said polyvinyl chloride having a K-value of from 40 to 80, the improvement consisting of utilizing a mixture of a first component of from 20% to 80% of the weight of said mixture of a polyvinyl acetate having a hydrolysis degree of 40 to 50 mol % and a viscosity, measured in a 4% solution of a 1:1 mixture of isopropanol and water at 20° C. by the Höppler falling-ball viscosimeter, of from 5 to 15 mPas, and the remainder of said mixture being a second component of protective colloid being an aminoethyl-hydroxypropyl cellulose having a molar substitution of from 0.05 to 1.5 mols of aminoethyl groups and from 3 to 4 mols of hydroxypropyl groups and a viscosity, measured in a 2% aqueous solution at 20° C. and a pH of 5, of from 50 to 500 mPas, as said at least two protective colloids, whereby said polyvinyl chloride has a low tendency to form specks and a high plasticizer absorption capacity.

4,345,057

CURABLE FLUOROCOPOLYMER

Masaaki Yamabe; Gen Kojima, both of Machida, and Seitoku Kaya, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jul. 14, 1981, Ser. No. 283,239

Claims priority, application Japan, Aug. 8, 1980, 55-108189

Int. Cl.[3] C08F *214/18*

U.S. Cl. 526—247 5 Claims

1. A curable fluorocopolymer which comprises 40 to 60 mol % of fluoroolefin units, 5 to 45 mol % of cyclohexyl vinyl ether units, 5 to 45 mol % of alkyl vinyl ether units and 3 to 15 mol % of hydroxyalkyl vinyl ether units and has an inherent viscosity of 0.05 to 2.0 dl/g. in tetrahydrofuran at 30° C.

4,345,058

URETHANE PREPOLYMER REPAIR SYSTEM

Theodore J. Dettling, 574 Castle Blvd., Akron, Ohio 44313

Filed Jul. 29, 1981, Ser. No. 286,641

Int. Cl.[3] C08G *18/48*

U.S. Cl. 528—48 13 Claims

1. A urethane prepolymer repair system which comprises:

a urethane prepolymer composition capable of curing to an elastomer upon exposure to atmospheric moisture and having:

a total solids of 60–100%,

a cured Durometer hardness of 50–90 Shore A,

a cured 100% modulus of at least 200 psi, and

a shelf life of at least 30 days at 120° F.;

said urethane prepolymer composition containing a urethane prepolymer made essentially from a polytetramethylene ether glycol or mixture of glycols having a hydroxyl equivalent weight of about 300 to 2,000, and a stoichiometric excess of an organic polyisocyanate;

said polytetramethylene ether glycol urethane prepolymer having:

an isocyanate content of about 0.8–2.4%, and

an average molecular weight of about 3,500–10,500;

said urethane prepolymer composition being packaged in and dispensed from a moisture-impermeable container having a closable dispensing orifice and means to reduce the volume of the container and thereby extrude the urethane prepolymer composition through the orifice without introducing ambient air into the container.

4,345,059

FIRE RETARDANT EPOXY RESINS CONTAINING 3-HYDROXYALKYLPHOSPHINE OXIDES

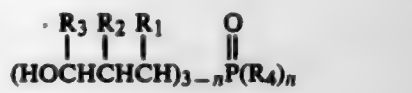
Edward R. Fretz, Jr., East Windsor, and Joseph Green, East Brunswick, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed May 18, 1981, Ser. No. 264,256

Int. Cl.[3] C08G *59/30, 59/62*

U.S. Cl. 528—102 14 Claims

1. A fire retardant epoxy resin containing an effective amount of a 3-hydroxypropylphosphine oxide having the general formula:



wherein R_1 may be the same or a different radical selected from the group consisting of hydrogen, phenyl, hydroxymethyl and alkyl radicals of 1–4 carbon atoms, R_2 may be the same or a different radical selected from the group consisting of hydrogen, hydroxymethyl, and alkyl radicals of 1–4 carbon atoms, R_3 may be the same or a different radical selected from the group consisting of hydrogen and methyl radicals, R_4 is an alkyl radical of 2–8 carbon atoms and n is either 1 or 2.

4,345,060

DIGLYCIDYL ETHERS OF DIPHENYLOL ALKANES, THEIR PREPARATION AND USE IN CURABLE COMPOSITIONS

John Ramsbotham, and Johan van Gogh, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

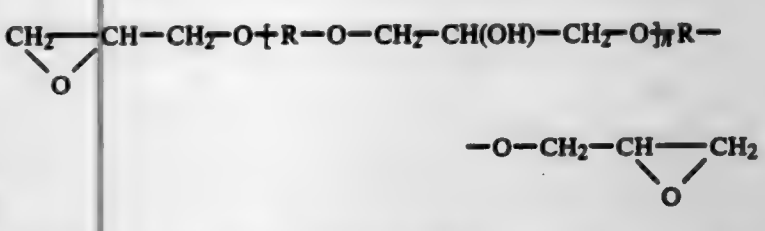
Filed Jun. 15, 1981, Ser. No. 273,704

Claims priority, application United Kingdom, Jul. 8, 1980, 8022299

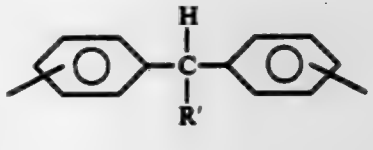
Int. Cl.[3] C08G *59/22*

U.S. Cl. 528—103 5 Claims

1. A diglycidyl ether of isomeric diphenylol alkanes having the formula:



wherein n is a number of from about 0 to about 4, R is the group:



and R' is n-hexyl, the weight ratio of para,para'-isomer to ortho,para'-isomer being from 80:20 to 40:60.

4,345,061

PROCESS FOR THE PREPARATION OF PHENOL-UREA-FORMALDEHYDE CONDENSATION PRODUCTS

Walter Hasselman, Jr., Scarsdale, N.Y., assignor to C.P. Chemical Co., Inc., White Plains, N.Y.

Division of Ser. No. 973,683, Dec. 27, 1978, which is a continuation of Ser. No. 497,738, Aug. 15, 1974, abandoned. This application Dec. 15, 1980, Ser. No. 216,678

Int. Cl.³ C08G *14/08*

U.S. Cl. 528—161 **2 Claims**

1. Process for the preparation of phenol-urea-formaldehyde condensation products utilized in the manufacture of rigid cellular insulating foams which comprises:

(a) reacting phenol with a stoichiometric excess of neutralized formaldehyde in aqueous solution;

(b) reacting urea with the neutralized mixture obtained in (a) and formic acid in amounts such that a condensation product containing from about 1 to about 20 percent by weight phenol and the remainder formaldehyde and urea in the molar ratio of about 1.5:1 to 4:1 is obtained;

(c) discontinuing the reaction in (b) when the condensation product has a viscosity in the range of from about 30 to 36 seconds on a No. 1 Zahn cup; and

(d) neutralizing the resultant condensation product to a pH in the range of about 6 to about 8.

4,345,062

POLYCARBONATE TRANSESTERIFICATION WITH TETRABORATE OR TETRAALUMINATE ANION CONTAINING CATALYST

Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 106,855, Dec. 26, 1979, abandoned. This application May 11, 1981, Ser. No. 262,287

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—198 **12 Claims**

1. In a process for preparing a high molecular weight polycarbonate by reacting at least one bis(aryl)carbonate with at least one dihydric phenol in the presence of a transesterification catalyst containing tetraborate or tetraaluminate anions, the improvement comprising carrying out the process in accordance with the following sequence and parameters:

(1) reacting at a temperature less than about 250° C.

(i) a borohydride of the general formula:

$$MBH_nR_{4-n}$$

or an aluminum hydride of the formula:

$$MAl_nHR_{4-n}$$

wherein M is selected from the class consisting of an alkali metal, an alkaline earth metal, a quaternary hydrocarbon ammonium, a quaternary hydrocarbon phosphonium and a tertiary hydrocarbon sulfonium group, n is a number of from 1 to 4, and R is a hydrocarbon or hydrocarbonoxy group,

(ii) with a phenol or a bis(aryl)carbonate to form a preformed catalyst of the general formulas:

$$MBH_xR_{4-x}$$

$$MAlH_xR_{4-x}$$

$$MB(OR'')_x(OR''')_{4-x} \text{ or}$$

$$MAl(OR'')_x(OR''')_{4-x}$$

wherein x is integer at least a whole number less than n, R''' is an aryl group, and R'' is an alkyl group, and

(2) adding and reacting at least one bis(aryl)carbonate and at least one dihydric phenol at elevated temperatures and reduced pressures to form high molecular weight aromatic polycarbonate.

4,345,063

GLYOXAL/CYCLIC UREA CONDENSATES

Bernard F. North, Rock Hill, S.C., assignor to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 207,248, Nov. 17, 1980, Pat. No. 4,284,758, which is a continuation-in-part of Ser. No. 92,630, Nov. 8, 1979, abandoned. This application May 15, 1981, Ser. No. 264,016

The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.

Int. Cl.³ C08G *4/00*

U.S. Cl. 528—245 **3 Claims**

1. The alkylated product of the reaction of about 1.2–2.0 moles of glyoxal and about 1 mole of one or more cyclic ureas.

4,345,064

PREPARATION OF POLYETHER ESTER AMIDES

Salih Mumcu, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 180,617

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2936977

Int. Cl.³ C08G *69/44, 63/42*

U.S. Cl. 528—288 **8 Claims**

1. A method for preparing polyether ester amides, comprising:

(a) preparing polyamides having carboxyl end groups by melting a mixture of lactams having at least 8 carbon atoms with dicarboxylic acids in a molar ratio of 100/1 to 100/15 in the presence of a polyamide catalyst and in an inert gas atmosphere at atmospheric pressure and in the absence of water, at temperatures from about 230° to 300° C., said melting continuing for sufficient time to react at least 98% of said lactams;

(b) mixing sufficient water and polyether with the reaction product of (a) to form said polyether ester amide;

(c) treating the mixture obtained in (b) at a temperature between about 200° to 300° C. and under the vapor pressure of said water added in (b) to about 5 to 25 bars pressure with mechanical agitation;

(d) removing said water from (c) by decompression; and

(e) polycondensing the product of (d) to form said polyether ester amide.

4,345,065

METHOD FOR POLYMERIZING PYRROLIDONE WITH PREHEATING OF CATALYST SOLUTION

Edmond H. J. P. Bour, Limbricht; Johannes A. L. Brouwers, Echt, and Jean M. M. Warnier, Urmond, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Apr. 8, 1980, Ser. No. 138,454

Claims priority, application Netherlands, Apr. 14, 1979, 7902966

Int. Cl.³ C08G *69/16, 69/24*

U.S. Cl. 528—312 **5 Claims**

1. In a method for polymerizing pyrrolidone monomer, or pyrrolidone mixed with up to 25 mole % of another copolymerizable lactam monomer, with at least one polymerization accelerator, and, as catalyst solution, an alkali metal pyrrolidonate dissolved in pyrrolidone solvent, to produce a solid pyrrolidone polymer,

the improvement wherein the catalyst solution is heated for at least 5 hours at a temperature between 100° C. and 175° C. in the absence of both oxygen and water prior to polymerization.

4,345,066

TRANSPARENT COPOLYAMIDES AND THEIR APPLICATION TO TRANSPARENT, IMPACT RESISTANT MOLDED ARTICLES

Jörn Rüter, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Aug. 26, 1980, Ser. No. 181,413

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936759

Int. Cl.³ C08G *69/02, 69/26*

U.S. Cl. 528—324 8 Claims

1. In a transparent, high molecular weight copolyamide having a high glass transition temperature, based on:

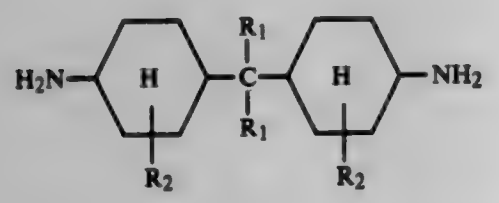
(1) a lactam or an omega-aminocarboxylic acid;

(2) terephthalic acid, isophthalic acid, or mixtures thereof; and

(3) a mixture of diamines; the improvement wherein said copolyamide consists essentially of the polymeric reaction product of

(A) about 25 to 60 mole % of at least one omegaaminocarboxylic acid having at least 11 C atoms in a continuous chain or its lactam;

(B) about 40 to 75 mole % of an equivalent mixture of terephthalic acid, isophthalic acid or a mixture thereof, and a diamine mixture of about 80 to 50 mole % referred to the total diamine mixture, of isophorone diamine and correspondingly about 20 to 50 mole % of diamines having the general formula



where R_1 and R_2 are hydrogen atoms or alkyl groups having 1 to 4 C atoms and the sum of A + B amounts to 100 mole %.

4,345,067

EMULSION POLYMER RECOVERY

Richard H. Wunder, Corunna, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Oct. 16, 1980, Ser. No. 197,627

Claims priority, application Canada, Nov. 26, 1979, 340590

Int. Cl.³ C08C *1/15*

U.S. Cl. 528—485 14 Claims

1. An improved process for the coagulation of a butadiene-styrene polymer prepared by aqueous emulsion free radical polymerization, the process being characterized in that the emulsion of said polymer is coagulated by mixing (i) with aqueous inorganic coagulant which is one of sulphuric acid or sulphuric acid plus sodium chloride, (ii) with an aqueous solution or suspension of an additive of polysaccharide material or a vegetable derived proteinaceous material and (iii) with a water soluble polyamine compound, the amount of said additive being from about 0.5 to about 2.5 parts by weight per 100 parts by weight of said polymer and the amount of said polyamine compound being from about 0.02 to about 0.2 parts by weight per 100 parts by weight of said polymer, the sulphuric acid being in sufficient quantity to maintain the pH during coagulation at below about 4.5.

4,345,068

PROCESS FOR THE PREPARATION OF 4'-EPIDAUNORUBICIN, 3',4'-DIEPIDAUNORUBICIN, THEIR DOXORUBICIN ANALOGS, AND INTERMEDIATES USED IN SAID PROCESS

Antonio Suarato; Sergio Penco, and Federico Arcamone, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Jun. 30, 1980, Ser. No. 164,088

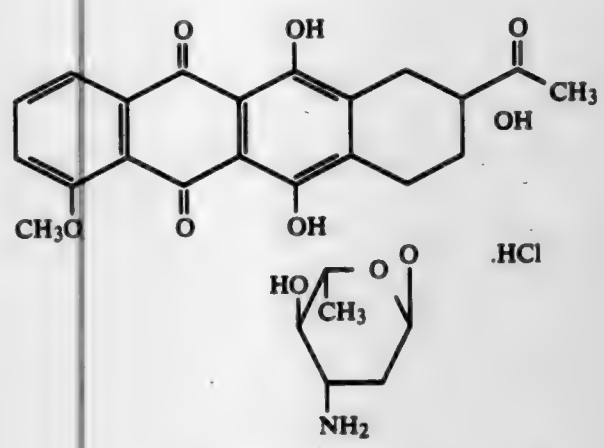
Claims priority, application United Kingdom, Nov. 22, 1979, 7940457

Int. Cl.³ C07H *15/24;* A61K *31/71*

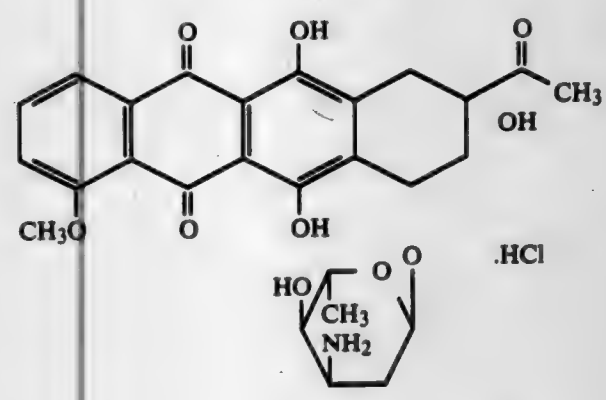
U.S. Cl. 536—17 A 7 Claims

1. A process for preparing 4'-epi-daunorubicin.HCl (VII) and 3',4'-di-epidaunorubicin.HCl (VIII):

VII

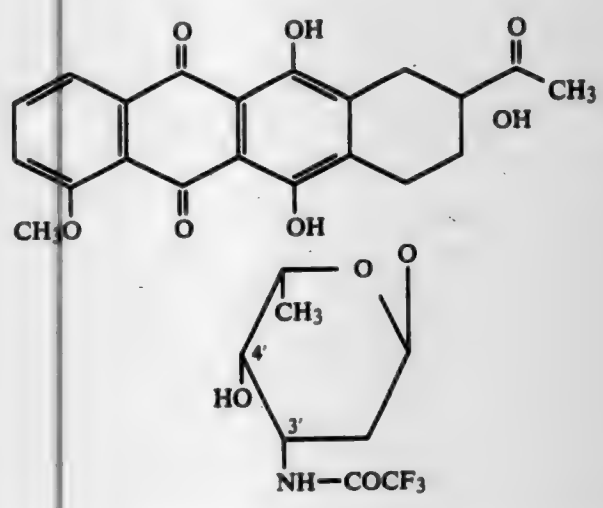


VIII

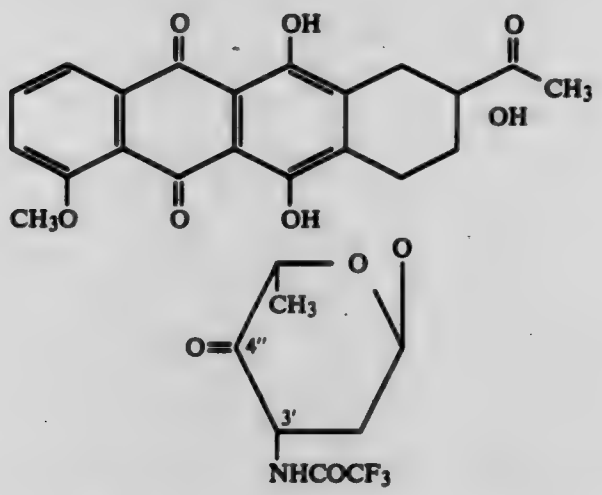


said process comprising subjecting N-trifluoroacetyl daunrorubicin (I):

I

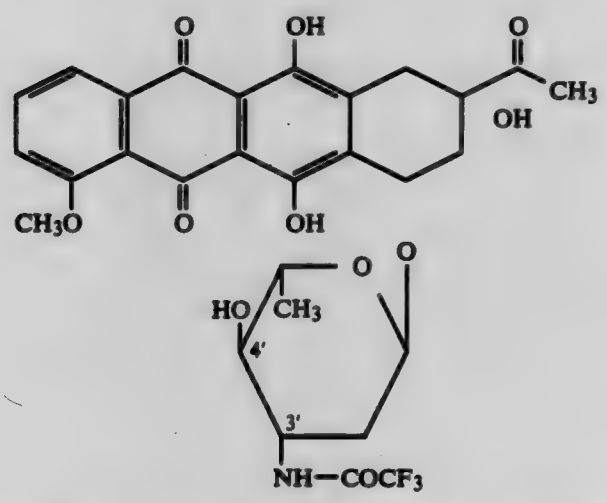


by treatment with dimethylsulfoxide activated by trifluoroacetic anhydride, to oxidation at the C-4' hydroxyl group at a temperature of about −65° to −60° C., followed by basification thereof with 1,5-diazobicyclo (4.3.0)-non-5-ene to form 4'-keto-N-trifluoroacetyl daunorubicin (III a):



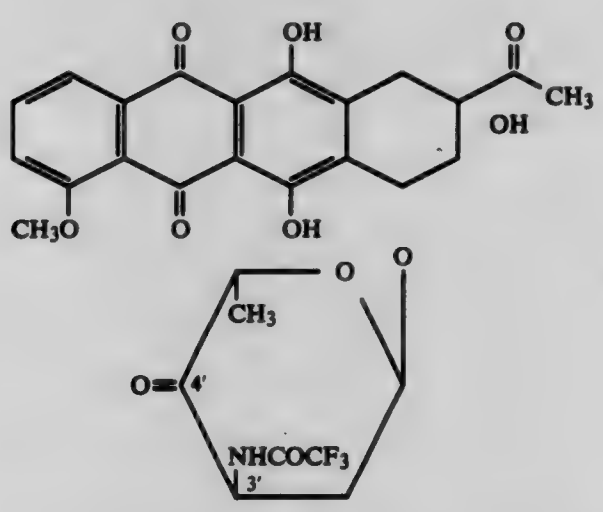
IIIa

subjecting said 4'-keto-N-trifluoroacetyl daunorubicin (IIIa) to selective stereospecific reduction with sodium borohydride at a temperature of about −10° C. to obtain 4'-epi-N-trifluoroacetyl daunorubicin Va:



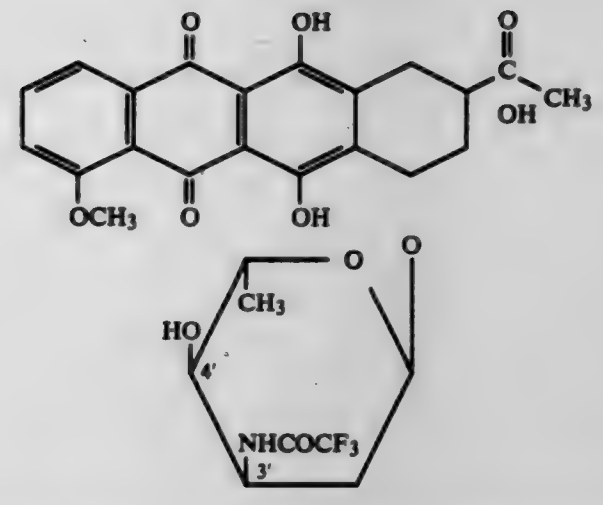
Va

converting said 4'-epi-N-trifluoroacetyl daunorubicin (Va) to 4'-epi-daunorubicin base (VII) by treatment with a mild alkali to remove the N-trifluoroacetyl group and isolating said 4'-epi-daunorubicin as its hydrochloride or alternatively, subjecting said 4'-keto-N-trifluoroacetyl daunorubicin (IIIa) to epimerization by filtering a solution thereof through a column of silica gel buffered at pH 7 with M/15 phosphate buffer to give a 1:1 epimeric mixture of said (IIIa) and 3'-epi-4'-keto-N-trifluoroacetyl daunorubicin (IV a):



IVa

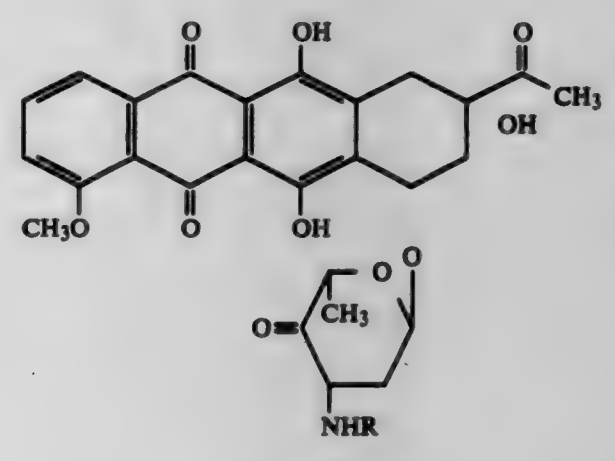
stereospecifically reducing said epimeric mixture with sodium borohydride as hereinabove described to obtain a 1:1 mixture of 4'-epi-N-trifluoroacetyl daunorubicin (Va) and 3'-4'-diepi-N trifluoroacetyl daunorubicin VI a:



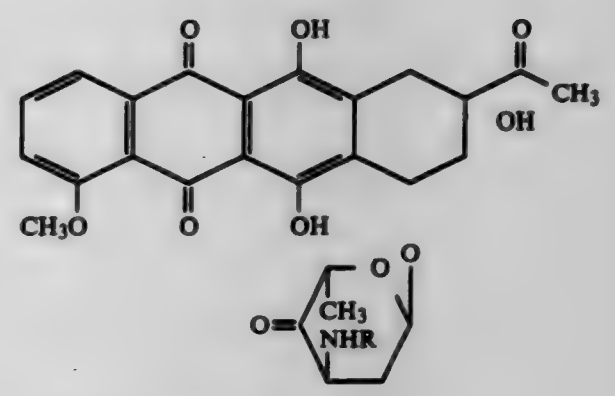
VIa

separating pure (VIa) from said mixture by chromatography on a column of silica gel buffered at pH 7 with M/15 phosphate buffer, removing the N-trifluoroacetyl group therefrom to obtain free 3',4'-diepi-daunorubicin base (VIII) and isolating same as the hydrochloride.

5. A compound of the formulae:



or



wherein R is—$COCF_3$ or —$COOCH_2CCl_3$.

4,345,069

DEFORMYLTYLOSIN DERIVATIVES

Hideo Sakakibara, Mishima; Tatsuro Fujiwara; Osamu Okegawa, both of Shizuoka; Eiichi Honda, Mishima; Susumu Watanabe, and Tetsuo Matsuda, both of Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

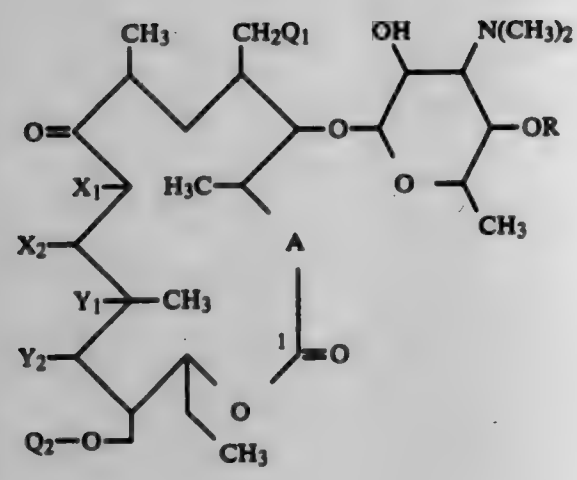
Filed Sep. 5, 1980, Ser. No. 184,375

Claims priority, application Japan, Sep. 19, 1979, 54-120269; Nov. 13, 1979, 54-146642

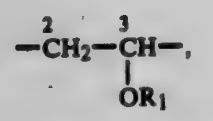
Int. Cl.³ C07H *17/08*

U.S. Cl. 536—7.1 27 Claims

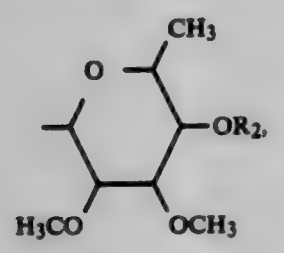
1. A compound of the formula



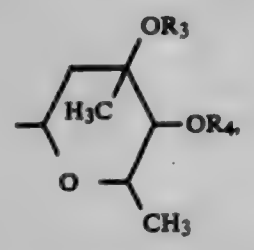
wherein A is



—CH=CH— or —CH_2—CH_2—, R_1 is hydrogen, lower alkanoyl or phenyl-lower alkanoyl, X_1 and X_2 are hydrogen or are connected to form a valence bond, Y_1 and Y_2 are hydrogen or are connected to form a valence bond, Q_1 is hydrogen or methyl, Q_2 is hydrogen or



R_2 is hydrogen or lower alkanoyl, R is hydrogen or



R_3 is hydrogen or C_{2-5} alkanoyl, and R_4 is hydrogen or C_{2-6} alkanoyl, and when R_3 is not hydrogen, then R_4 is not hydrogen, or a pharmaceutically acceptable salt thereof.

4,345,070

PROCESS FOR THE PREPARATION OF 4'-DEOXY-DAUNORUBICIN AND 4'-DEOXY-DOXORUBICIN

Antonino Suarato; Sergio Penco, both of Milan, and Federico Arcamone, Nerviano, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Jun. 5, 1981, Ser. No. 270,877

Claims priority, application United Kingdom, Sep. 29, 1980, 8031382

Int. Cl.³ C07H *15/24*

U.S. Cl. 536—17 A **3 Claims**

1. A process for the synthesis of 4'-deoxydaunorubicin; comprising:

(a) reacting 4'-epi-N-trifluoroacetyldaunorubicin dissolved in methylene dichloride containing anhydrous pyridine with trifluoromethylsulfonic anhydride, thereby obtaining 4'-epi-4'-trifluoromethylsulfonyloxy-N-trifluoroacetyl-daunorubicin as an intermediate;

(b) reacting said intermediate with tetrabutylammonium iodide thereby obtaining 4'-deoxy-4'-iodo-N-trifluoroacetyldaunorubicin; and

(c) reductively dehalogenating said iodo daunorubicin derivative with tributyltin hydride in the presence of alpha, alpha'-azobisisobutyronitrile, thereby yielding said 4'-deoxydaunorubicin product.

3. 4'-Deoxy-4'-iodo-N-trifluoroacetyldaunorubicin.

4,345,071

DERIVATIVES OF PENICILLANIC ACID

Ernst T. Binderup, Tastrup, Denmark, assignor to Leo Pharmaceutical Products, Ltd. A/S, Ballerup, Denmark

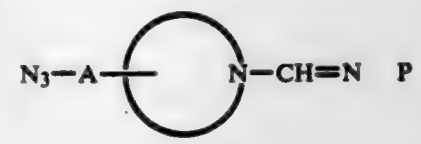
Division of Ser. No. 806,358, Jun. 14, 1977, Pat. No. 4,229,443. This application Jun. 30, 1980, Ser. No. 164,349

Claims priority, application United Kingdom, Jun. 29, 1976, 27107/76; Jul. 26, 1976, 31331/76; Feb. 9, 1977, 5436/77; Feb. 15, 1977, 6348/77

Int. Cl.³ C07D *499/10*

U.S. Cl. 542—420 **13 Claims**

1. A compound of the following general formulae:



I_i



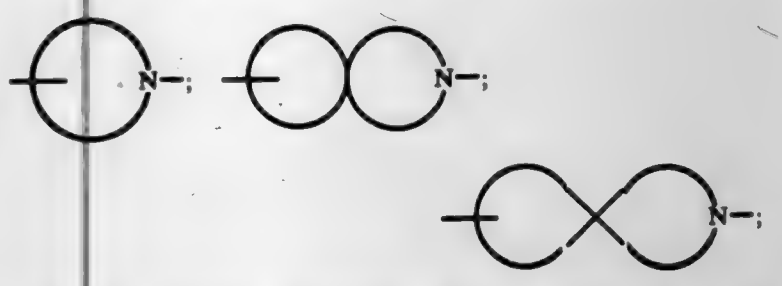
II_i

or

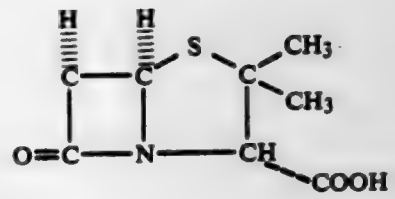


III_i

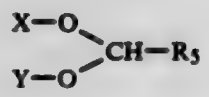
wherein —A— represents a straight or branched, saturated or unsaturated aliphatic hydrocarbon radical having from 1 to 6 carbon atoms, which radical optionally can be substituted with an amino radical; the groupings



represent saturated, monocyclic, bicyclic or spirocyclic ring systems, respectively, having from 4 to 11 carbon atoms in total; P stands for the penicillanic acid radical:



and salts of the compounds of said formulae with pharmaceutically acceptable, non-toxic organic and inorganic acids or bases, and easily hydrolyzable pharmaceutically acceptable, non-toxic esters of the penicillanic acid derivatives of said formulae including diesters of the the formula:



in which X and Y can be the same or different and stand for an acyl radical of one of the compounds of said formulae, and Y furthermore can be the acyl radical of other known β-lactam antibiotics, R_5 stands for hydrogen, methyl, ethyl, or phenyl, and salts of such esters with pharmaceutically acceptable, non-toxic acids or bases.

4,345,072

PROCESS FOR THE PRODUCTION OF 5-ARYLIDENE HYDANTOINS (B)

Axel Kleemann, Hanau; Theodor Lussling, Constance; Wolf Pfeifer, Bruhl, and Paul Scherberich, Constance, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

Filed Apr. 6, 1981, Ser. No. 251,540

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3013647

Int. Cl.³ C07D *233/72, 233/76*

U.S. Cl. 542—442 14 Claims

1. In a process for the production of a 5-arylidene hydantoin which is substituted or unsubstituted in the aromatic nucleus by condensation of the corresponding substituted or unsubstituted aromatic aldehyde with hydantoin the improvement comprising carrying out the condensation in the presence of at least one ammonium salt of an aliphatic or aromatic carboxylic acid.

4,345,073

7,7'-DIAMINO DERIVATIVES OF 2,2'-SPIRODIBENZOPYRANES

Hans Baumann, Wachenheim, and Andreas Oberlinner, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

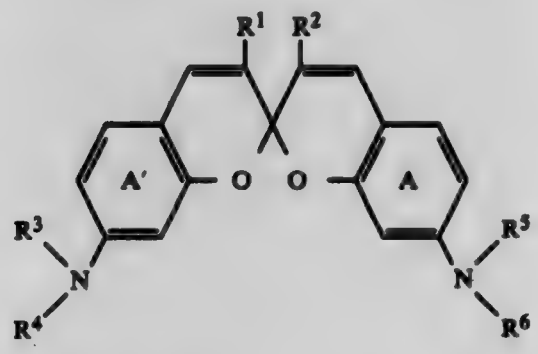
Division of Ser. No. 894,095, Apr. 6, 1978, Pat. No. 4,316,027, which is a division of Ser. No. 773,337, Mar. 1, 1977, Pat. No. 4,110,348. This application Jan. 29, 1981, Ser. No. 229,651

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611600

Int. Cl.³ C07D *273/01, 241/04, 211/18*

U.S. Cl. 544—70 6 Claims

1. A dye intermediate of the formula

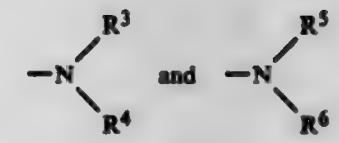


wherein:

R^1 is hydrogen; alkyl of 1 to 12 carbon atoms; phenyl; phenyl substituted by alkyl of 1 to 4 carbon atoms, methoxy, ethoxy, chlorine or bromine; or phenylalkyl of 7 to 10 carbon atoms; R^2 is hydrogen; or

R^1 and R^2 when taken together are dimethylene, trimethylene or tetramethylene, which are unsubstituted or substituted by alkyl of 1 to 12 carbon atoms;

R^3, R^4, R^5, and R^6 may each be alkyl of 1 to 6 carbon atoms, and at least one of the groups



must represent a radical derived from pyrrolidine, piperidine, morpholine, N'-alkylpiperazine in which alkyl has 1 to 4 carbon atoms or isoindoline.

4,345,074

PROCESS FOR THE MANUFACTURE OF A VIOLET ORGANIC PIGMENT, C.I. PIGMENT VIOLET 23

Theobald Hufnagel, Freigericht, and Manfred Hetschko, Rodenbach, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main Fechenheim, Fed. Rep. of Germany

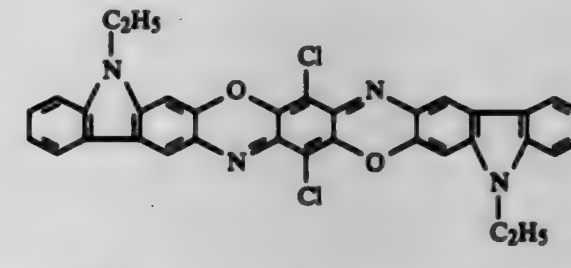
Filed Mar. 16, 1981, Ser. No. 244,034

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010949

Int. Cl.³ C07D *265/34*

U.S. Cl. 544—99 3 Claims

1. In the process for the manufacture of the organic pigment of the formula



by condensing and cyclizing 3-amino-9-ethylcarbazole with excess tetrachlorobenzoquinone in an organic solvent in the presence of acid acceptors, the improvement comprises carrying out the condensation reaction in the presence of 0.1 to 4% of water, relative to the total weight of the reaction mixture.

4,345,075

4-AMINO-6-(2'-CARBOXYETHYL)-3-METHYLTHIO-1,2,4-TRIAZIN-5(4H)-ONE

Richard H. Wiley, 8 Roosevelt Cir., Palo Alto, Calif. 94306

Filed Sep. 10, 1981, Ser. No. 300,906

Int. Cl.³ C07D *253/06*

U.S. Cl. 544—182 1 Claim

1. 4-Amino-6-(2'-carboxyethyl)-3-methylthio-1,2,4-triazin-5(4H)-one.

4,345,076

CERTAIN HERBICIDAL N-(PARA-(6-CHLORO-3-PYRIDAZINYLOXY)PHENYL)-TRIFLUOROMETHANESULFONAMIDES

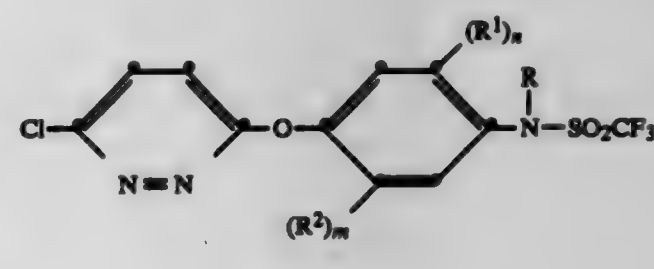
Kurt H. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 4, 1980, Ser. No. 118,353

Int. Cl.³ C07D *237/14*

U.S. Cl. 544—241 1 Claim

1. A compound of the formula:



wherein R is hydrogen or $-SO_2CF_3$, m and n each is zero or one, and R^1 and R^2 each is chlorine, fluorine or methyl.

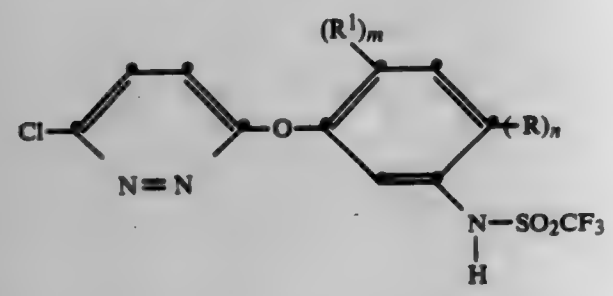
4,345,077

CERTAIN HERBICIDAL N-(META-(6-CHLORO-3-PYRIDAZINYLOXY)PHENYL)-TRIFLUOROMETHANESULFONAMIDES

Kurt H. Pilgram, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 4, 1980, Ser. No. 118,354
Int. Cl.³ C07D *237/14*
U.S. Cl. 544—241 **2 Claims**

1. A compound of the formula



wherein m and n each is zero or one, R is nitro, methyl, chlorine or fluorine, and R^1 is methyl, chlorine or fluorine.

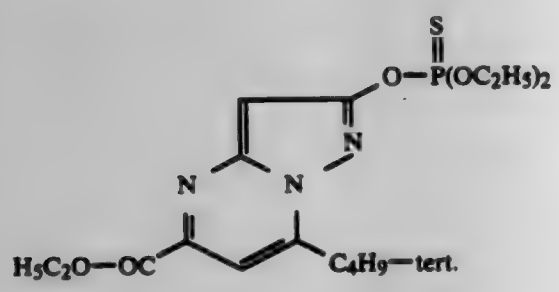
4,345,078

COMBATING ARTHROPODS WITH O-ALKYL-O-[5-CARBALKOXY-7-ALKYL-PYRAZOLO(1,5-α)-PYRIMIDIN-2-YL]-(THIONO) (THIOL)-PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Wolfgang Hofer; Fritz Maurer; Hans-Jochem Riebel, all of Wuppertal; Rolf Schröder, Velbert; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 26, 1977, Ser. No. 836,339
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644642
Int. Cl.³ C07D *487/04*; A01N *9/22*
U.S. Cl. 544—244 **1 Claim**

1. O,O-diethyl-O-[5-carbethoxy-7-tert.-butyl-pyrazolo(1,5-α)-pyrimidin(2)yl]-thionophosphoric acid ester of the formula



4,345,079

SCOOPABLE TRIETHYLENE DIAMINE

Floyd L. Hyman, Wilmington, Del., and Martin H. Ziv, Springfield, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 21, 1980, Ser. No. 142,210
Int. Cl.³ C07D *487/08*; C09K *3/00*
U.S. Cl. 544—351 **11 Claims**

1. The method of improving scoopability properties of stored triethylene diamine which comprises admixing therewith a minor amount of an additive consisting essentially of a normally liquid compound selected from the group consisting of polyethylene glycols, glycol esters, glycol ethers and amino alcohols.

4,345,080

PYRIDINETHIONE SALTS AND HAIR CARE COMPOSITIONS

Raymond E. Bolich, Jr., Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 7, 1980, Ser. No. 119,347
Int. Cl.³ C07D *213/89*; A61K *7/06, 7/08*
U.S. Cl. 546—6 **4 Claims**

1. Heavy metal, magnesium or aluminum salts of N-hydroxy pyridinethione which are predominately flat platelet crystals having a mean sphericity less than about 0.65 and a median equivalent spherical diameter based on volume of at least about 2μ but less than about 15μ.

4,345,081

SPIRO[INDOLINE-3,4'-PIPERIDINE]S

Helen H. Ong, Whippany, N.J., and James A. Profitt, Goshen, Ind., assignors to American Hoechst Corporation, Bridgewater, N.J.

Continuation of Ser. No. 121,824, Feb. 15, 1980, Pat. No. 4,307,235, which is a continuation-in-part of Ser. No. 936,185, Aug. 23, 1978, Pat. No. 4,209,625, which is a continuation-in-part of Ser. No. 789,723, Apr. 21, 1977, abandoned. This application Oct. 17, 1980, Ser. No. 198,233
The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.
Int. Cl.³ C07D *471/10*
U.S. Cl. 546—17 **34 Claims**

1. A compound which is 1-(2-chlorophenyl)-1'-methyl-spiro[indoline-3,4'-piperidine] and a pharmaceutically acceptable salt thereof.

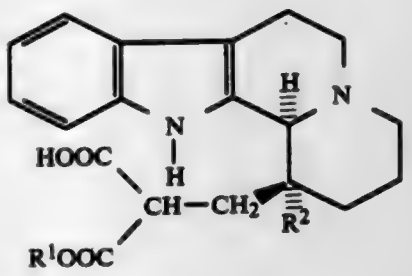
4,345,082

PROCESS FOR THE PREPARATION OF HYDROXYAMINO-EBURNANE DERIVATIVES AND OCTAHYDROINDOLOQUINOLIZINE INTERMEDIATES

Csaba Szantay; Lajos Szabo; György Kalaus; Janos Sapi; Lajos Dancsi; Tibor Keve, and Maria Gazdac, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

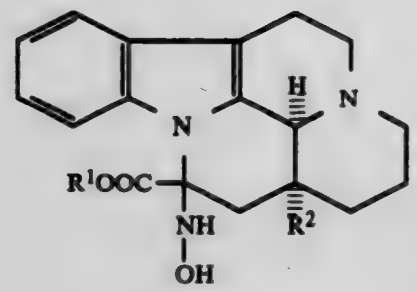
Filed May 29, 1980, Ser. No. 154,329
Claims priority, application Hungary, May 31, 1979, RI 713
Int. Cl.³ C07D *461/00, 455/00*; A61K *31/475*
U.S. Cl. 546—51 **8 Claims**

1. A compound of the formula (VII)



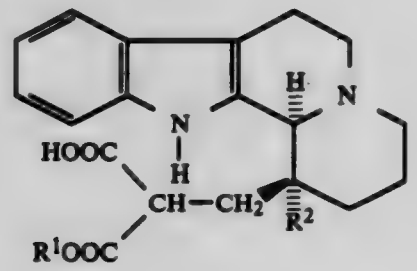
wherein R^1 and R^2 are each C_1 to C_6 alkyl, or a pharmaceutically acceptable salt thereof.

3. A process for the preparation of a compound of the formula (I)



wherein R^1 and R^2 are each C_1 to C_6 alkyl or a pharmaceutically acceptable acid addition salt thereof which comprises the step of:

nitrosating a compound of the formula (VII)



or

a pharmaceutically acceptable salt thereof in the presence of an acid with a compound selected from the group consisting of an alkali nitrite and a C_1 to C_6 alkyl nitrite to yield the desired product.

4,345,083

(1-METHYL-2-QUINOLINYLIDENE) DERIVATIVES OF GUANIDINE

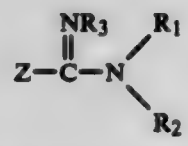
Chris R. Rasmussen, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Continuation of Ser. No. 943,097, Sep. 18, 1978, Pat. No. 4,266,062. This application Dec. 10, 1979, Ser. No. 102,302

Int. Cl.³ C07D *401/12;* A61K *31/47*

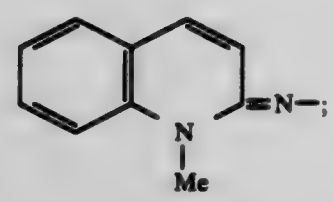
U.S. Cl. 546—163 2 Claims

1. A heterocyclic derivative of guanidine selected from the group consisting of a compound having the formula:



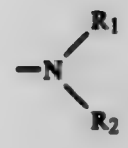
and the pharmaceutically-acceptable acid addition salts thereof wherein:

Z is

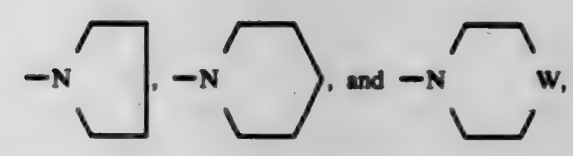


R_1 is a member selected from the group consisting of methyl and ethyl;

R_2 is a member selected from the group consisting of lower-alkyl, cyclopentyl, cyclohexyl and benzyl;



taken together represents a member selected from the group consisting of:



wherein W is a member selected from the group consisting of O, S, N-loweralkyl and N-phenyl; and

R_3 is a member selected from the group consisting of:

alkyl having from 4 to 10 carbons;

phenyl; methylenedioxyphenyl; phenyl substituted with from 1 to 3 substituents each selected from the group consisting of halo, loweralkyl and loweralkoxy; and phenyl substituted with a member selected from the group consisting of hydroxy, benzyloxy, loweralkanoyloxy, nitro; trifluoromethyl and methylthio;

naphthyl; cyclopentyl; cyclohexyl; exo-2-norbornyl; endo-2-norbornyl; 1-adamantyl;

arylalkyl in which the aryl function is phenyl and the alkyl function has from 1 to 4 carbons; and diphenyl in which the alkyl function has from 1 to 2 carbons.

4,345,084

UNSATURATED EICOSANOIC ACIDS

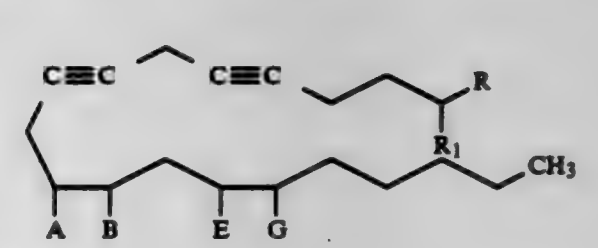
Ka-Kong Chan, Hopatcong; George W. Holland, and Perry Rosen, both of North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 29, 1981, Ser. No. 278,531

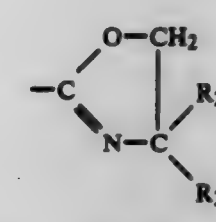
Int. Cl.³ C07D *263/10;* C07C *57/52, 57/00*

U.S. Cl. 548—237 9 Claims

1. A compound of the formula



wherein R is



R_1 is hydrogen or fluoro; A and B are individually hydrogen or taken together from a carbon to carbon bond with a cis configuration; E and G are individually hydrogen or taken together form a carbon to carbon bond with a cis configuration with the proviso that at least one of A and B taken together or E and D taken together form a carbon to carbon bond with a cis configuration; and R_2 and R_3 are hydrogen or lower alkyl; or pharmaceutically acceptable salts thereof.

4,345,085

METHOD FOR PREPARING 2-PYRAZOLIN-5-ONES FROM 1,2,4-OXADIAZOLES

Chang Kyu Kim; Cataldo A. Maggiulli, and Paul A. Zielinski, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,409
Int. Cl.³ C07D *231/52, 407/12*
U.S. Cl. 548—360 14 Claims

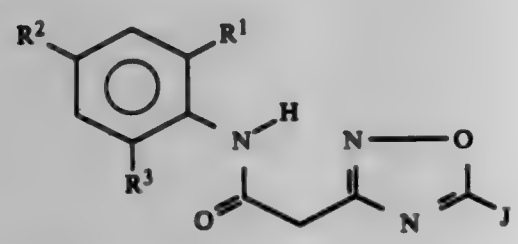
1. A method for preparing a 2-pyrazolin-5-one, which method comprises:

(a) forming a substantially non-aqueous liquid reaction system comprising:

(1) an organic liquid reaction medium,

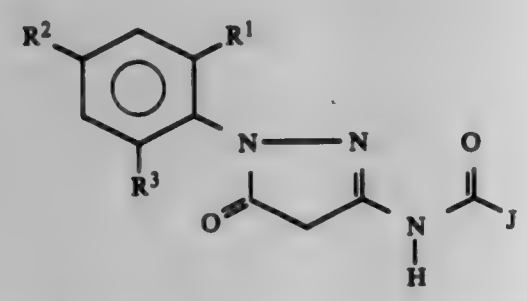
(2) a base catalyst, and

(3) a 1,2,4-oxadiazole represented by the structural formula:



wherein each of R^1, R^2 and R^3 is hydrogen, halo, alkyl having from 1 to 5 carbon atoms, or alkoxy having from 1 to 5 carbon atoms; and J is alkyl having from 1 to 20 carbon atoms, phenoxyalkyl with the alkyl portion thereof having from 1 to 20 carbon atoms, phenyl, alkoxyphenyl, furyl, phenoxyacylaminophenyl, or phenoxyalkyl substituted with one or more nitro radicals in at least one of the para or ortho positions; and

(b) heating said reaction system to a temperature sufficient to cause said 1,2,4-oxadiazole to rearrange to its corresponding 2-pyrazolin-5-one represented by the structural formula:



wherein R^1, R^2, R^3, and J are as defined hereinabove.

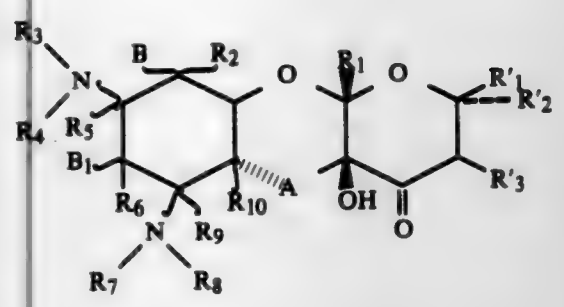
4,345,086

INTERMEDIATE COMPOUNDS IN THE PREPARATION OF SPECTINOMYCIN

David R. White, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 68,926, Aug. 23, 1979, Pat. No. 4,282,152.
This application Dec. 4, 1980, Ser. No. 212,943
Int. Cl.³ C07D *327/08, 319/24*
U.S. Cl. 549—16 1 Claim

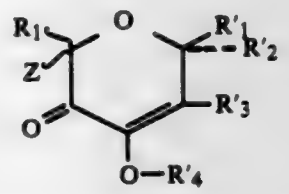
1. A process for preparing anomers and asteric mixtures of a compound having the formula:



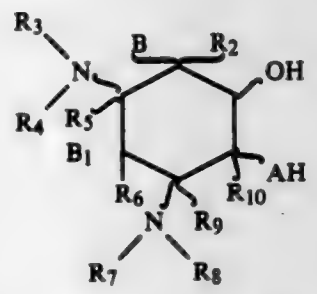
Ia

which comprises

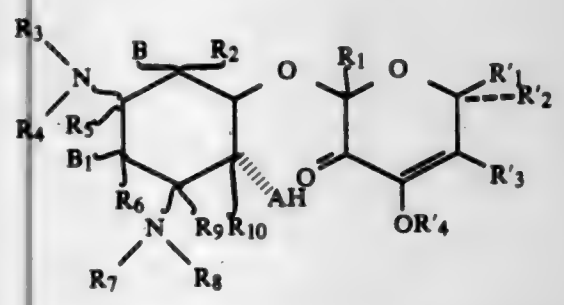
(a) reacting a compound having the formula:



with a compound having the formula

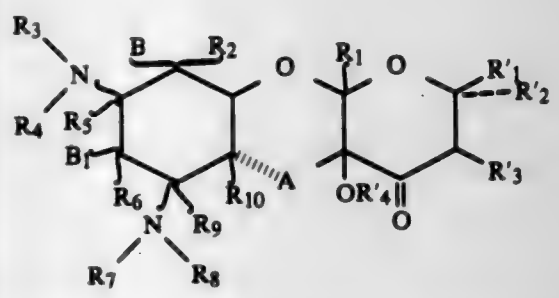


to prepare a compound having the formula

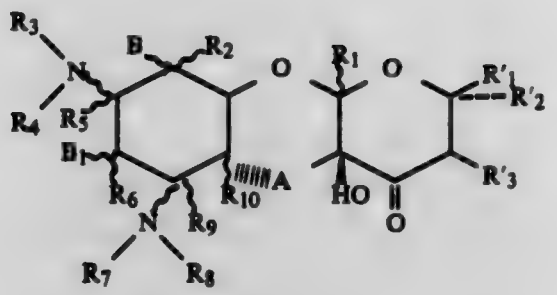


IVa

(b) reacting the compound prepared in Step (a) with silica gel to prepare a compound having the formula



(c) subjecting the compound prepared in Step (b) to alcoholysis to form a compound having the formula



and

(d) hydrolyzing the compound prepared in Step (c) to prepare the compound of Formula Ia;

Wherein R'_1 through R'_3 are the same or different and are selected from the group consisting of hydrogen, lower alkyl, acyloxyalkyl, lower haloalkyl, lower aminoalkyl, lower alkenyl, lower alkynyl, —OX and —(CH_2)n-OX and isomers thereof; with the proviso that R'_1 R'_2 and R'_3 are not hydroxy;

X is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, and lower alkynyl;

n is an integer of from one to four;

R_1 is hydrogen or lower alkyl;

wherein R_2, R_5, R_6, R_9 and R_{10} are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl; R_3, R_4, R_7 and R_8 are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, and a blocking group selected from the group consisting of aralkoxycarbonyl, halogenated alkoxycarbonyl and alkoxycarbonyl; with the proviso that one of R_3 and R_4 is always a blocking group and one of R_7 and R_8 is always a blocking group; R'_4 is aroyl lower alkyl or acyl; A is selected from the group consisting of oxygen and sulfur; B and B_1 are the same or different and are selected from the group consisting of hydrogen, hydroxy, alkoxy, o-lower alkenyl, thio, thio-lower alkyl and thio-lower alkenyl and Z is halo.

4,345,087

PROCESS FOR PREPARING HETEROARYLBENZOXEPIN-ACETIC ACIDS, PRECURSORS AND DERIVATIVES THEREOF

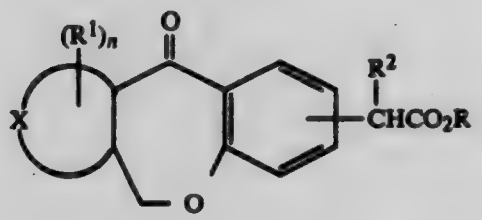
Arthur R. McFadden, East Brunswick, and Daniel E. Aultz, Middlesex, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Continuation of Ser. No. 788,752, Apr. 19, 1977, abandoned, which is a division of Ser. No. 607,926, Aug. 26, 1975, Pat. No. 4,025,640. This application Mar. 7, 1980, Ser. No. 128,252

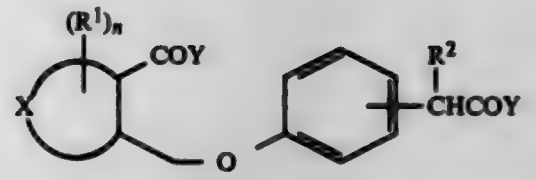
Int. Cl.³ C07D *333/16*

U.S. Cl. 549—44 3 Claims

1. A process for the preparation of a compound of the formula



wherein X together with the carbon atoms to which it attaches is a thienyl radical; R is hydrogen or a straight or branched chain alkyl of from 1 to 5 carbon atoms; R^1 is hydrogen or alkyl of 1 to 4 carbon atoms; R^2 is hydrogen or methyl; n is the integer 1, 2 or 3; and salts prepared from pharmaceutically acceptable bases, which comprises cyclizing under Friedel-Crafts conditions a diacid halide of the formula



wherein X, R^1, R^2 and n are as defined earlier and Y is bromine or chlorine and hydrolyzing.

4,345,088

PREPARATION OF ALKOXYAMINOHYDRIDOSILANES

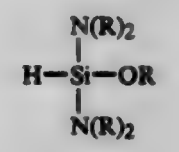
Steven C. Vick, Stormville, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1981, Ser. No. 249,442

Int. Cl.³ C07F *7/10*

U.S. Cl. 556—410 24 Claims

1. A compound of the formula



wherein each R represents an alkyl group of from one to eight carbon atoms.

4,345,089

RECOVERY OF AROMATIC CARBOXYLIC ACID OR ESTER THEREOF FROM RESIDUE FRACTION OF OXIDATION OR ESTERIFICATION REACTION MIXTURE

Kenji Nagura; Shinichi Takeda; Koshi Namie; Takao Fujii; Michio Yamamoto, all of Matsuyama, and Seiichi Yokoyama, Tokyo, all of Japan, assignors to Hercofina, Wilmington, N.C.

Continuation of Ser. No. 870,800, Jan. 19, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,756

Claims priority, application Japan, Jan. 24, 1977, 52-5748, 52-5749

Int. Cl.³ C07C *67/00, 51/42*

U.S. Cl. 560—77 22 Claims

1. In a process for preparing an aromatic carboxylic acid or its methyl ester by oxidizing in the liquid phase with molecular oxygen or a gas containing molecular oxygen in the presence of a heavy metal catalyst at least one aromatic compound having at least one methyl or formyl group bonded to a ring carbon atom of the aromatic ring to form an oxidation product comprising said aromatic carboxylic acid, and, if desired, methyl-esterifying the oxidation product to form a methyl-esterification product comprising the methyl ester of said acid, and separating at least 70% by weight of the acid or the ester from the oxidation product or the methyl-esterification product, whereby a residue comprising by-products having higher molecular weights than the acid or the ester is formed, the improvement which comprises contacting said by-products with hydrogen in the presence of a hydrogenation catalyst to convert at least part of the by-products to the aromatic carboxylic acid or its methyl ester or precursors of said acid or ester, and recovering said acid or ester or precursors.

4,345,090

PROCESS FOR PREPARING MENTHYL ESTERS OF ENANTIOMERS OF CHIRAL 3-(2,2-DICHLORO- AND -DIBROMO-VINYL)-2,2-DIMETHYLCYCLO-PROPANECARBOXYLIC ACIDS

Klaus Naumann, Cologne, and Rudolf Rauchschwalbe, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,361

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928406

Int. Cl.³ C07C *67/52, 69/743*

U.S. Cl. 560—124 5 Claims

1. A process for obtaining a substantially pure compound selected from the group consisting of the d-menthyl esters of 1R-cis/trans, 1S-cis/trans, 1R-cis-, 1S-cis-, 1R-trans- and 1S-trans-3-(2,2-dichloro- and -dibromo-vinyl)-2,2-dimethylcyclopropanecarboxylic acid, the l-menthyl esters of 1R-cis/trans-, 1R-cis, 1S-cis-, 1R-trans-, 1R-cis/trans, 1S-cis/trans, and 1S-trans-3-(2,2-dibromo-vinyl)-2,2-dimethyl-cyclo-propanecarboxylic acid and the l-menthyl esters of 1R-trans-, 1R-cis/-trans, 1S-cis/trans, and 1S-trans-3-(2,2-dichloro-vinyl)-2,2-dimethyl-cyclopropane-carboxylic carboxylic acid, comprising reacting d-menthol or l-menthol with a mixture of 1 RS-cis-, 1RS-trans or a mixture of 1RS-cis- and 1RS-trans-3-(2,2-dichloro- or -dibro-movinyl)-2,2-dimethylcyclopropanecarboxylic acids or acid chlorides of such acids in a solvent selected from the group consisting of an alkane with up to 10 carbon atoms, and an alcohol and a ketone containing up to 8 carbon atoms to form a solution of the menthyl esters, and cooling the solution and/or removing some of the solvent preferentially to crystallize out one or more esters while leaving the solution preferentially enriched in one or more esters.

4,345,091

METHOD OF PRODUCING N-BENZYLOXYCARBONYL-L-ASPARTIC ACID

Katsumi Sugiyama; Hideo Takeda, both of Kawasaki, and Hiroko Sato, Fuchu, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Jan. 12, 1981, Ser. No. 224,477

Claims priority, application Japan, Feb. 4, 1980, 55-12315

Int. Cl.³ C07C *125/06*

U.S. Cl. 560—163 5 Claims

1. In the process of producing N-benzyloxycarbonyl L-aspartic acid by the reaction of a solution of L-aspartic acid or its sodium or potassium salt with a solution of benzyloxycarbonyl chloride, the improvement consisting essentially in carrying out the reaction while the pH is maintained within the range of 12.0 to 13.5 throughout the reaction.

4,345,092

PROCESS FOR ALKYL PERFLUORO(4,7-DIOXA-5-METHYL-8-FLUOROFORMYLNONANOATE

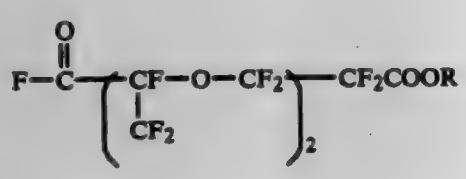
Paul R. Resnick, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 4, 1980, Ser. No. 175,273

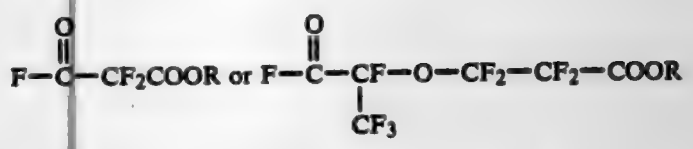
Int. Cl.³ C07C *67/343*

U.S. Cl. 560—182 10 Claims

1. In a process for preparing a product compound of the formula



where R is alkyl of 1-6 carbon atoms, wherein a reactant of the formula



where R is as defined above is contacted with hexafluoropropylene oxide in the presence of a fluoride compound which provides fluoride ion catalyst, the improvement comprising contacting said reactant with hexafluoropropylene oxide and said catalyst in the presence of a medium consisting essentially of two components, component A being 50 to 98% by volume of an aprotic liquid dinitrile in which methyl perfluoro (4-oxa-5-fluoroformylhexanoate) dissolves to the extent of less than 10 g/100 g of A at 20° C. or tetramethylenesulfone, and component B being 50 to 2% by volume of an aprotic liquid glyme, lactone or mononitrile in which said fluoride compound is soluble to the extent of at least 0.001% by weight at 20° C. and in which methyl perfluoro(4-oxa-5-fluoroformylhexanoate) dissolves to the extent of at least 10 g/100 g of B at 20° C., separating a heavier phase which contains said product compound from a lighter phase, and separating said product compound from said heavier phase.

4,345,093

ETHYLENE RECOVERY FROM ETHYL ACRYLATE PROCESS

Howard L. Pilat, Dallas; Jerry D. Moore, Houston, and Jack Chosnek, Corpus Christi, all of Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,547

Int. Cl.³ C07C *69/54, 139/08*

U.S. Cl. 560—205 4 Claims

1. In a continuous process for the production of ethyl acrylate from ethylene and acrylic acid utilizing a sulfuric acid catalyst wherein the reaction products are distilled in a vacuum distillation system at a reduced pressure less than atmospheric to obtain a liquid ethyl acrylate product and also resulting in a first gaseous light ends stream from said vacuum distillation system containing sulfur dioxide and also containing ethylene and other organic light ends, and wherein losses of sulfuric acid catalyst are replenished by continuously passing to the reaction zone of said process a sulfuric acid make-up stream consisting of concentrated sulfuric acid having less than five percent by weight of water therein, the improvement which comprises: continuously and intimately contacting in a gas-liquid contact zone said first gaseous light ends stream with a reactant liquid consisting essentially of said liquid sulfuric acid make-up stream and the hereafter defined liquid recycle stream, said contacting being under such conditions as to cause ethylene in said first gaseous light ends stream to react with sulfuric acid in said reactant liquid so as to form ethyl hydrogen sulfate and diethyl sulfate, the said first gaseous light ends stream being at a temperature within the range of about 25° C. to 150° C. when passed to said contact zone, the initial temperature of said reactant liquid being within the range of about 40° C. to 150° C., and the pressure in said contact zone being maintained at a superatmospheric pressure within the range of about 1.05 atmospheres absolute to 20 atmospheres absolute, said pressure being sufficient to maintain said reactant liquid in the liquid phase but insufficient to cause the gases in said first gaseous light ends stream to dissolve in said reactant liquid; continuously withdrawing as overheads from said contact zone a second gaseous light ends stream containing sulfur dioxide, ethylene and other organic light ends, the amount of ethylene in said second gaseous light ends stream being less than the amount in said first gaseous light ends stream, the amount of sulfur dioxide in said second gaseous light ends stream being substantially the same as the amount of sulfur dioxide contained in said first gaseous light ends stream, the temperature of said second gaseous light ends stream being within the range of about 50° C. to 150° C.; continuously

withdrawing as bottoms from said contact zone a liquid bottoms product consisting essentially of sulfuric acid having ethyl hydrogen sulfate and diethyl sulfate dissolved therein, said liquid bottoms product being substantially free of sulfur dioxide; and continuously recycling a major portion of said liquid bottoms product to said contact zone as a said liquid recycle stream, and continuously passing a minor portion of said liquid bottoms product to said ethyl acrylate process as a source of make-up sulfuric acid.

4,345,094

PROCESS FOR THE PRODUCTION OF 6-HYDROXY-2-NAPHTHOIC ACID

Michael J. Mueller, Parkersburg, W. Va., and Carroll S. Montgomery, Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 127,703, Mar. 6, 1980, Pat. No. 4,287,357. This application Jun. 2, 1981, Ser. No. 269,075

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ C07C *51/15*

U.S. Cl. 562—425 **3 Claims**

1. In a process for preparing 6-hydroxy-2-naphthoic acid by reacting essentially anhydrous potassium 2-naphthoxide with carbon dioxide at an elevated temperature, and recovering 6-hydroxy-2-naphthoic acid therefore, the improvement which comprises forming a mixture of 2-hydroxynaphthalene and a potassium base, using about 0.8 to 1.2 moles of 2-hydroxynaphthalene per equivalent of potassium base; dehydrating said mixture; introducing carbon dioxide into said dehydrated mixture at about 20 psi to 90 psi at about 255° C. to 280° C., while agitating said mixture in a pressure reactor; heating said agitated mixture at said temperature and under said pressure until the ratio of 6-hydroxy-2-naphthoic acid to 3-hydroxy-2-naphthoic acid in the reaction mixture is at least 2, either diluting said reaction mixture with or discharging said reaction mixture into water containing sufficient sulfuric acid to bring the pH to at least 7, thereby form a two-phase mixture; separating the aqueous phase from the organic phase; contacting said aqueous phase with 0.1 gram of acetic acid per gram of expected 6-hydroxy-2-naphthoic acid and additional sulfuric acid to bring the pH to about 4.8–5.2 and recovering said 6-hydroxy-2-naphthoic acid.

4,345,095

PROCESS FOR THE PRODUCTION OF 6-HYDROXY-2-NAPHTHOIC ACID

Michael J. Mueller, Parkersburg, W. Va., and Carroll S. Montgomery, Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 127,703, Mar. 6, 1980, Pat. No. 4,287,357. This application Jun. 11, 1981, Ser. No. 272,607

Int. Cl.³ C07C *51/15*

U.S. Cl. 562—425 **7 Claims**

1. In a process for preparing 6-hydroxy-2-naphthoic acid by reacting essentially anhydrous potassium 2-naphthoxide with carbon dioxide at an elevated temperature, and recovering 6-hydroxy-2-naphthoic acid therefrom, the improvement which comprises forming a mixture of 2-hydroxynapthalene and a potassium base, using about 0.8 to 1.45 moles of 2-hydroxynaphthalene per equivalent of potassium base; dehydrating said mixture; introducing carbon dioxide into said dehydrated mixture at about 20 psi to 90 psi at about 255° C. to 280° C., while agitating said mixture in a pressure reactor; and heating said agitated mixture at said temperature and under said pressure before recovering said 6-hydroxy-2-naphthoic acid.

4,345,096

STEROID DERIVATIVES AND THEIR USE IN RADIOIMMUNOASSAYS

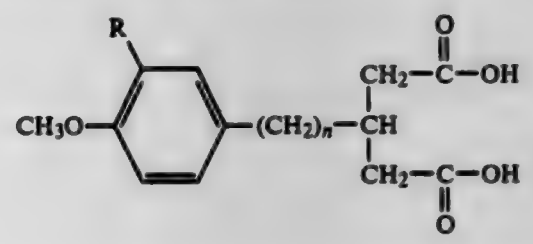
Jack Bernstein, New Brunswick; Ravi K. Varma, Belle Mead, both of N.J.; B. Richard Vogt, Yardley, Pa., and Frank L. Weisenborn, Titusville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 4,092, Jan. 17, 1979, Pat. No. 4,221,725, which is a division of Ser. No. 901,952, May 1, 1978, Pat. No. 4,230,621, which is a continuation-in-part of Ser. No. 824,016, Aug. 12, 1977, abandoned. This application Mar. 10, 1980, Ser. No. 128,346

Int. Cl.³ C07C *59/52, 59/68*

U.S. Cl. 562—465 **4 Claims**

1. A compound having the formula



wherein R is hydrogen or an alkyl group having 1 to 3 carbon atoms and n is 3 or 4.

4,345,097

CHLORINATION OF PHENOLS AND PHENOXYACETIC ACIDS WITH SULFURYL CHLORIDE

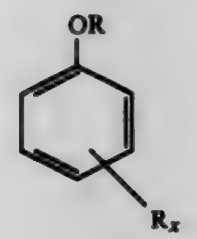
Kenneth J. Howard, North Little Rock, and Albert E. Sidwell, Jacksonville, both of Ark., assignors to Vertac Chemical Corporation, Memphis, Tenn.

Filed Jan. 21, 1980, Ser. No. 113,724

Int. Cl.³ C07C *39/32, 59/148*

U.S. Cl. 562—472 **9 Claims**

1. In the process for the chlorination of aromatic compounds having the formula:



wherein R is a member selected from the group consisting of hydrogen, carboxymethyl, and carboxyethyl and R_x is a member selected from the group consisting of hydrogen, 2-methyl, 2,5-dichloro and 2-chloro, with the proviso that when R is hydrogen, R_x is 2,5-dichloro, consisting of reacting said aromatic compound with sulfuryl chloride, and recovering a para chlorinated compound, the improvement consisting of conducting said reaction with sulfuryl chloride in the presence of elemental sulfur, with or without a like amount of a Friedel-Crafts acid, as a catalyst, and, optionally, an inert organic solvent at a temperature of from 30° C. to 250° C. while passing in a stoichiometric amount of said sulfuryl chloride uniformly over a period of about 30 minutes to 24 hours.

4,345,098

PROCESS FOR PRODUCING BENZENE CARBOXYLIC ACID SALTS AND THEIR ACIDS

Raymond A. Schep, Newport Beach, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 69,466, Aug. 24, 1979, abandoned, which is a continuation of Ser. No. 883,935, Mar. 6, 1978, abandoned. This application Feb. 29, 1980, Ser. No. 126,143

Int. Cl.³ C07C *51/02, 51/353, 51/487*

U.S. Cl. 562—482 23 Claims

1. A process for producing isomerized benzene carboxylic acid salt from aromatic materials comprising:

a. treating a mixture of

i. an aromatic material,

ii. water, and

iii. a water soluble reagent comprising a Group Ia or IIa metal, said reagent producing an alkaline solution by hydrolysis,

with oxygen under conditions of pressure, elevated temperature, and reaction time sufficient to convert at least a portion of said aromatic material to benzene carboxylic acid salts of said Group Ia or IIa metal of said reagent, thereby producing a solution containing dissolved therein said benzene carboxylic acid salts;

b. removing sufficient water from said solution so that said benzene carboxylic acid salts can be isomerized, thereby producing dried benzene carboxylic acid salts;

c. isomerizing said dried benzene carboxylic acid salts by heating to produce an isomerized benzene carboxylic acid salt without converting said benzene carboxylic acid salts to benzene carboxylic acid salts of a different Group Ia or IIa metal prior to isomerizing said benzene carboxylic acid salts, and without converting said benzene carboxylic acis salts to benzene carboxylic acids prior to isomerizing said benzene carboxylic acid salts; and

d. recovering said isomerized benzene carboxylic acid salt.

13. The process of claim 1, 2, 3 or 4 wherein said isomerized benzene carboxylic acid salt comprises dipotassium terephthalate.

4,345,099

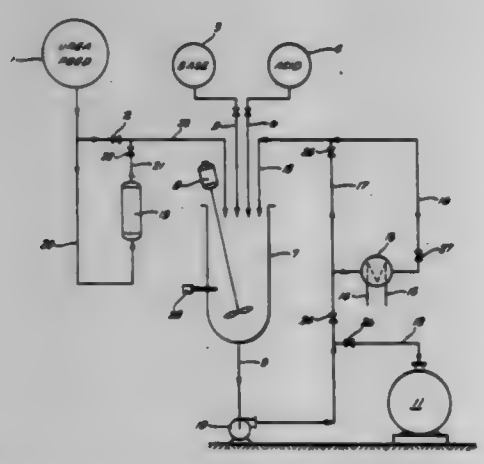
METHOD OF SELECTIVELY REMOVING BIURET FROM UREA AND COMPOSITIONS FOR USE THEREIN

Donald C. Young, Fullerton, and James A. Green, II, Chino, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 10, 1981, Ser. No. 291,428

Int. Cl.³ C07C *127/01, 126/08*

U.S. Cl. 564—63 18 Claims



9. A method for reducing the biuret content of urea containing biuret, which method comprises contacting said urea and biuret in aqueous solution at a temperature between about 0° C. and about 100° C. for a period of at least about four hours with a strong base capable of producing a pH of at least about 12.5, the concentration of said base being sufficient to maintain a pH of at least about 12.5 during said period and to reduce the biuret concentration and decrease and biuret/urea ratio in said solution.

4,345,100

PREPARATION OF α-KETOCARBOXYLIC ACID N-TERT.-BUTYLAMIDES

Gerhard Bonse, Cologne, and Heinz U. Blank, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 2, 1981, Ser. No. 222,222

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002203

Int. Cl.³ C07C *102/08*

U.S. Cl. 564—124 10 Claims

1. A process for the preparation of an -ketocarboxylic acid N-tert.-butylamide of the formula

$$R—CO—CO—NH—C(CH_3)_3$$

in which

R is an aliphatic radical with up to 8 carbon atoms, a cycloalkyl radical with 3 to 6 carbon atoms, a phenyl or naphthyl radical or a morpholinyl, imidazolyl, pyrazolyl, pyrrolyl, isoxazolyl, piperidinyl, oxazolyl, 1,2,4-triazol-1-yl, 1,2,4-triazol-4-yl, 1,2,3-triazolyl, 1,2,4-thiadiazol-2-yl, benzimidazolyl or furanyl radical, comprising reacting an acyl cyanide of the formula

$$R—CO—CN$$

with an approximately equimolar amount of tert.-butyl methyl ether of the formula

$$(CH_3)_3C—O—CH_3$$

at a temperature between about 0° and 80° C. in the presence of an acid which is capable of activating the ether of formula (III) under the reaction conditions to give a tert.-butyl-carbonium ion, and then hydrolyzing the reaction mixture.

4,345,101

PROCESS FOR PURIFYING AN AQUEOUS SOLUTION OF ACRYLAMIDE

Shiro Asano, Takaishi; Kohei Shizuka; Yoshihiko Kambara, both of Chiba; Junji Mikami; Hiroshi Kato, both of Takaishi, and Tadatoshi Honda, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,602

Claims priority, application Japan, Jun. 18, 1980, 55-81384

Int. Cl.³ C07C *103/133*

U.S. Cl. 564—206 9 Claims

1. A process for purifying a crude aqueous acrylamide solution obtained by catalytically hydrating acrylonitrile with water in the presence of a copper-based catalyst, the improvement which comprises subjecting the crude aqueous acrylamide solution, in sequence, to: (a) a step of distilling off substantially all of unreacted acrylonitrile, (b) a step of removing substantially all of copper contained therein, (c) a step of allowing the aqueous acrylamide solution to stand under basic conditions, (d) a step of subjecting the aqueous acrylamide solution to a cation exchange treatment and then (e) a step of subjecting the solution to a weakly basic anion exchange treatment.

4,345,102

PROCESS FOR PRODUCING ETHYLENE GLYCOL MONO-T-BUTYL ETHER

Tadashi Matsumoto; Osamu Kuratani; Yasunori Hirose, all of Soka, and Susumu Tobe, Saitama, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 70,761, Aug. 30, 1979, abandoned. This application Jun. 3, 1980, Ser. No. 156,136
Claims priority, application Japan, Aug. 30, 1978, 53-105814
Int. Cl.³ C07C *41/06*
U.S. Cl. 568—678 15 Claims

1. A process for producing ethylene glycol mono-t-butyl ether which comprises contacting a starting mixture consisting of ethylene glycol di-t-butyl ether, and ethylene glycol with a strongly acidic cation-exchange material to react said ethylene glycol di-t-butyl ether with said ethylene glycol in the presence of the strongly acidic cation-exchange material as a catalyst to produce ethylene glycol mono-t-butyl ether.

4,345,103

HYDROXYMETHYLATION OF THE CARBON RESIDUE OF ORGANOSILICON COMPOUNDS

Leonard Kaplan, Dunbar, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1981, Ser. No. 278,898
Int. Cl.³ C07C *29/00*
U.S. Cl. 568—840 7 Claims

1. The process for making alcohols having one carbon and one oxygen more than the carbon residue of an organosilicon compound comprising reacting in the homogeneous liquid phase an organosilicon compound having bonded to silicon a carbon residue (R) and a group (X) wherein said group (X) is such that a transition metal can add across its bond to silicon, with carbon monoxide and hydrogen in the presence of an effective amount of a ruthenium carbonyl complex at a temperature and pressure sufficient to form alcohol products having one carbon and one oxygen more than the carbon residue (R) of said organosilicon compound.

4,345,104

PROCESS FOR THE PRODUCTION OF ETHYLENE GLYCOL

Jean B. Cropley, Scott Depot, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1981, Ser. No. 278,962
Int. Cl.³ C07C *29/32, 31/20*
U.S. Cl. 568—852 18 Claims

1. A process for the production of ethylene glycol by the oxidative coupling of methanol in the vapor state wherein said process comprises:

(1a) introducing methanol and oxygen into a first reaction zone at a temperature sufficient to form hydroxymethyl radicals in the vapor state and;

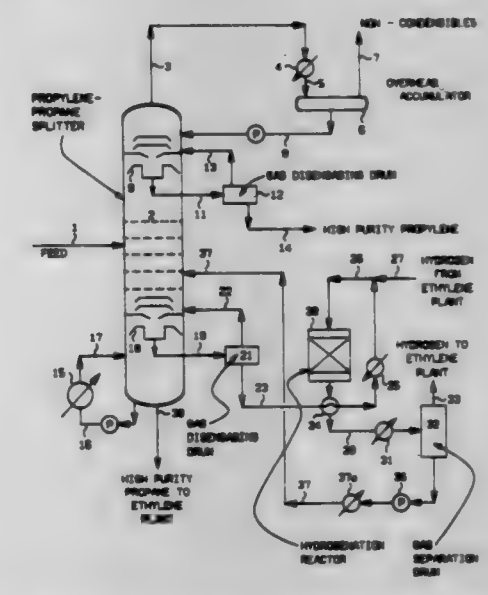
(1b) introducing the hydroxymethyl radicals into a reaction zone wherein said oxidative coupling occurs at a temperature between about 450° C. and 800° C. in the vapor state, said second reaction zone being substantially oxygen free.

4,345,105

REDUCING METHYLACETYLENE CHARGED TO AN ETHYLENE PRODUCTION

David L. Rogers, Demopolis, Ala., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 12, 1980, Ser. No. 177,314
Int. Cl.³ C07C *5/05, 4/02, 2/00, 5/00*
U.S. Cl. 585—271 6 Claims



1. A process for the elimination of methylacetylene which comprises:

(a) in a fractionation zone, fractionating a stream containing propane, propylene and methylacetylene to obtain a fraction of enriched methylacetylene content;

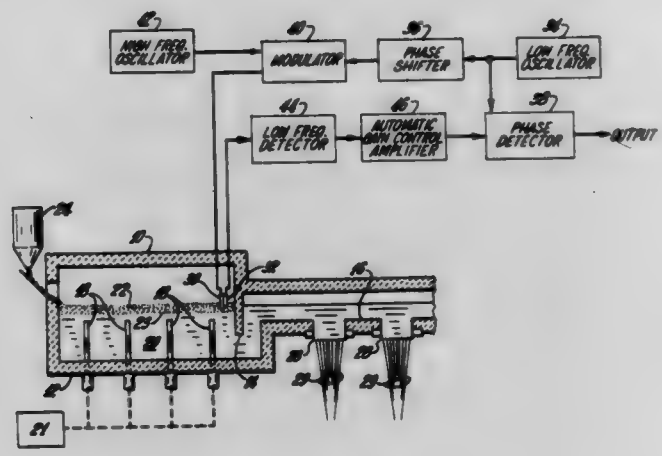
(b) passing said fraction to a hydrogenation zone; and

(c) hydrogenating the methylacetylene in said fraction.

4,345,106
METHOD OF AND APPARATUS FOR DETECTING THE LEVEL OF MOLTEN GLASS IN A GLASS MELTING FURNACE

Sheldon A. Canfield, Newark, and Paul S. Sanik, Westerville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 6, 1980, Ser. No. 194,481
Int. Cl.³ C03B 5/02
U.S. Cl. 373—27 7 Claims



1. A method of detecting the level of molten glass in a furnace having a layer of batch material on the surface of the molten glass comprising the steps of:

a. generating a first electromagnetic wave signal of a known frequency;
b. phase shifting this first electromagnetic wave signal;
c. generating a second electromagnetic wave signal of a frequency higher than the first electromagnetic wave signal;
d. amplitude modulating the second electromagnetic wave signal with the phase shifted first electromagnetic wave signal;
e. transmitting the amplitude modulated second electromagnetic wave signal through the batch material to the molten glass;
f. reflecting the amplitude modulated second electromagnetic wave signal from the surface of the molten glass;
g. demodulating the reflected amplitude modulated second electromagnetic wave signal to produce a third electromagnetic wave signal which is the same frequency as the first electromagnetic wave signal;
h. amplifying this third electromagnetic wave signal;
i. comparing the phase shift or time position of the amplified third electromagnetic wave signal with that of the first electromagnetic wave signal; and
j. generating an output signal in response to this phase shift which is indicative of the level of molten glass in the furnace.

4,345,107
CADMIUM TELLURIDE PHOTOVOLTAIC CELLS

Gabor F. Fulop, King of Prussia; Jacob F. Betz, Quakertown; Peter V. Meyers, Coopersburg, and Mitchell E. Doty, Chalfont, all of Pa., assignors to Ametek, Inc., Paoli, Pa.

Continuation-in-part of Ser. No. 49,728, Jun. 18, 1979, Pat. No. 4,260,427. This application Dec. 15, 1980, Ser. No. 216,362
The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.
Int. Cl.³ H01L 31/06
U.S. Cl. 136—255 44 Claims

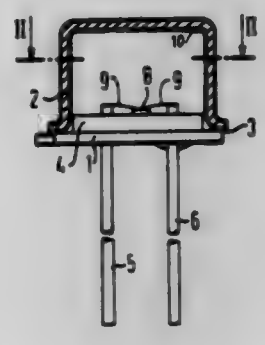
1. A photovoltaic cell comprising an electrodeposited cadmium telluride film and a substrate facing and in intimate contact with one side of said film and forming an ohmic junction at the interface therebetween, said substrate having a rest potential, when initially inserted in an electrodeposition bath as an electrode, which is more positive than the rest potential of cadmium under the same conditions, the surface layer of said substrate forming said ohmic junction with said film comprising one or more metals selected from Group II B and Group III A of the periodic table.



4,345,108
CASE FOR A SEMICONDUCTOR COMPONENT

Joachim Dathe, Munich, and Erich Schmidhuber, Regensburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 13, 1980, Ser. No. 149,341
Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919404
Int. Cl.³ H05K 5/04
U.S. Cl. 174—52 H 2 Claims

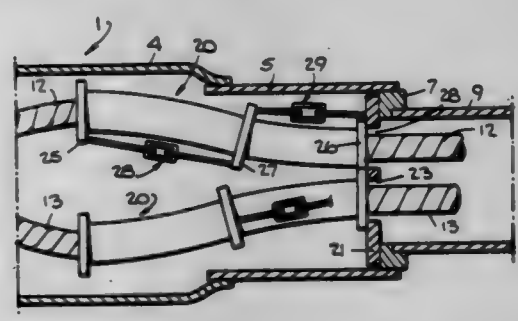


1. Case for a semiconductor component, comprising at least two parts, one of said parts being a cap, at least said cap being formed of a material having a low hydrogen permeability and a weak catalytic effect for an oxyhydrogen gas reaction, said material being an alloy of copper, nickel and zinc.

4,345,109
RESTRAINT APPARATUS FOR PIPE TYPE ELECTRIC CABLES

David A. Silver, Livingston; Attila F. Dima, Piscataway, and George W. Seman, Piscataway, all of N.J., assignors to Pirelli Cable Corporation, Union, N.J.

Filed Nov. 3, 1980, Ser. No. 203,253
Int. Cl.³ H02G 15/18
U.S. Cl. 174—84 R 13 Claims



1. In an electric cable installation in which a portion of an insulated cable is within a casing having an internal size greater than the cross-sectional size of the cable, whereby the cable may be bent into a curved shape within the casing, support means within said casing for restricting axial movement of said cable, said support means comprising a longitudinally curved

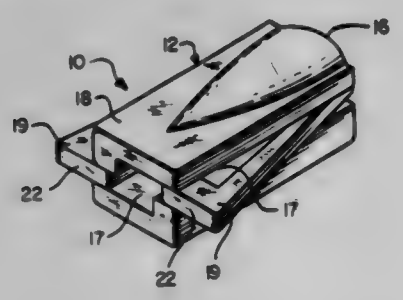
tube of an internal size greater than the cross-sectional size of a portion of the cable within said casing enclosing said last-mentioned portion of said cable, said tube having a radius of curvature at least equal to the minimum bending radius of said last-mentioned portion of said cable and the internal size, curvature and length of said tube being sufficient to substantially restrict axial movement of said cable under normal working conditions, and means securing said tube in said casing in a fixed position with respect to movement axially of said cable.

4,345,110

SCREW-ON ELECTRICAL CONNECTOR

George Ustin, 16V Scenic Dr., Croton-on-Hudson, N.Y. 10520

Filed Feb. 17, 1981, Ser. No. 234,932
Int. Cl.[3] H01R 4/12
U.S. Cl. 174—87 7 Claims



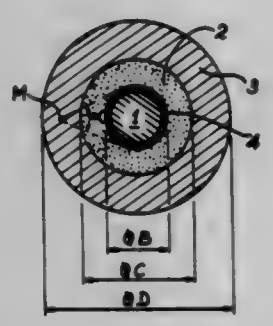
1. In an electrical connector of the screw-on type for joining the ends of two or more electric wires, a cap of stiffly flexible insulating material having a generally central bore open at one end and closed at the other end by an integral end wall, a generally L-shaped longitudinally extending lever having a plain end and a foot end having an integral axially extending and inwardly directed extension, said lever being outwardly pivotally connected at its plain end to said cap at or near said open end thereof and said foot end of said lever being axially slidably connected to said cap at said end wall thereof, and said cap having an inwardly directed longitudinally extending channel, keyed to said lever and so shaped and so disposed as to receive and contain said lever, whereby said lever may be pivoted to a position partially out of said channel, thereby providing leverage for turning said connector down on said wires, and whereby said lever may be pivoted into said channel, in which position said foot end of said lever will lie snugly against said end wall of said cap, thus providing a bulwark against said ends of said wires poking through said connector.

4,345,111

ELECTRIC CONDUCTING CABLE INSENSITIVE TO NUCLEAR RADIATION

Hubert Petitcolas, Sassenage, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 11, 1980, Ser. No. 167,671
Claims priority, application France, Jul. 12, 1979, 79 18123
Int. Cl.[3] H01B 7/18
U.S. Cl. 174—102 A 7 Claims



1. An electrical conducting cable which is insensitive to nuclear radiation comprising at least one electrically conductive core, at least one layer of an electrically insulating substance surrounding said conductive core and at least one electrically conductive sheath surrounding said insulating layer, wherein the diameter ϕ_D of the sheath, the diameter ϕ_B of the conductive core, the diameter of ϕ_C of the insulating layer are linked by the equation:

$$\frac{\phi_B^2}{\phi_D^2 - \phi_C^2} = \frac{F_2}{F_1} \cdot \frac{1}{360} \, 2 \text{ arc sin} \frac{2\phi_B}{\phi_D + \phi_C}$$

F_1 representing the β^- radiation fraction from the core which reaches the sheath, F_2 representing the β^- radiation fraction from the sheath which reaches the core, the insulating substance being constituted by a mixture of at least two metal oxides.

4,345,112

HIGH STRENGTH CABLE USABLE UNDERSEA

Shigeo Sagata, Yokohama; Shigeru Tachigami; Satoru Kikkawa, both of Ichihara; Haruo Umezu, Narashino, and Masanori Ohkubo, Ichihara, all of Japan, assignors to Technical Research and Development Institute, Japan Defence Agency and The Furukawa Electric Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP79/00236, § 371 Date May 6, 1980, § 102(e) Date May 1, 1980, PCT Pub. No. WO80/00635, PCT Pub. Date Apr. 3, 1980
PCT Filed Sep. 5, 1979, Ser. No. 198,951
Claims priority, application Japan, Sep. 6, 1978, 53/109401
Int. Cl.[3] H01B 7/18
U.S. Cl. 174—107 5 Claims



1. A high strength cable usable undersea and comprising an inner sheath provided outside a cable core for transmitting a communication signal or electric power and a tension member of a twisted layer and an outer sheath successively provided outside said inner sheath, characterized in that said tension member comprises a plurality of twisted layers, a lapping tape having a high friction coefficient is provided between said tension member and said outer sheath, and a lapping tape having a high friction coefficient is interposed between the adjacent twisted layers.

4,345,113

AUTOMATIC TELEPHONE MESSAGE INTERCEPTION SYSTEM

Edwin F. Shelley, 339 Oxford Rd., New Rochelle, N.Y. 10804

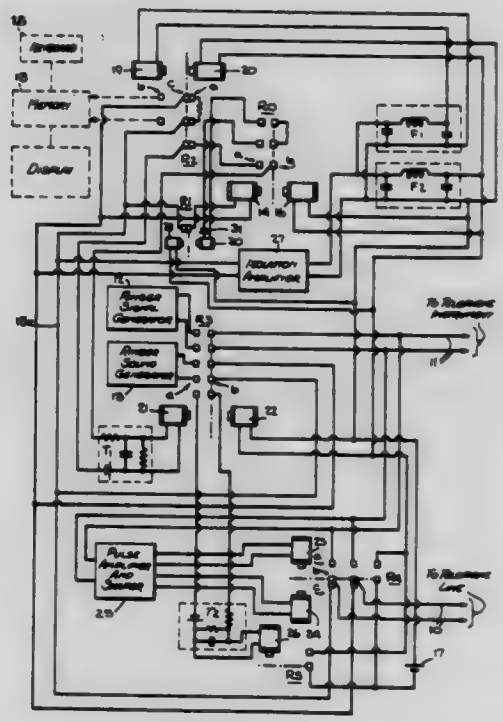
Filed Jan. 14, 1980, Ser. No. 111,989
Int. Cl.[3] H04M 1/64
U.S. Cl. 179—2 A 9 Claims

1. An automatic telephone message interception system adapted to be coupled in series with a telephone transmission line and a telephone instrument for connecting an incoming telephone call on said transmission line to an information storage means without ringing said telephone instrument, comprising

first means, coupled to said transmission line and said telephone instrument, for electrically disconnecting said transmission line from said telephone instrument and normally maintaining said transmission line electrically disconnected from said instrument,

second means, coupled to said first means and to said tele-

phone transmission line, for detecting a first coded transmission signal transmitted on said transmission line during an incoming telephone call and connecting said transmission line to said information storage means in response to the detection of said signal, and



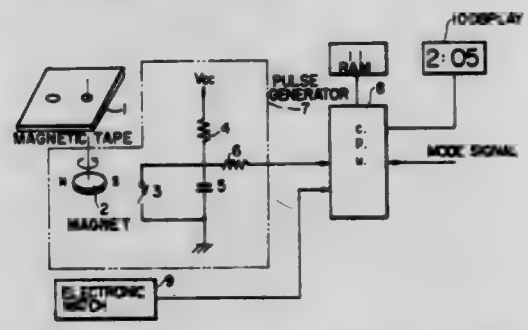
third means, coupled to said first means, second means and said transmission line, for detecting a second coded transmission signal transmitted on said transmission line during said incoming telephone call and disconnecting said transmission line from said information storage means in response to the detection of said second signal.

4,345,114

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING A MESSAGE WITH AN INDICATION OF A TIME OCCURRENCE

Takashi Sato; Tomio Tsuchiya, and Yasuo Matushima, all of Tokorozawa, Japan, assignors to Pioneer Ansafone Manufacturing Corporation, Saitama, Japan

Filed Apr. 28, 1980, Ser. No. 144,096
Claims priority, application Japan, Apr. 27, 1979, 54-51409
Int. Cl.³ H04M *1/65*
U.S. Cl. 179—6.16 **3 Claims**



1. A method of automatically recording and reproducing telephone messages on a tape, comprising the steps of:

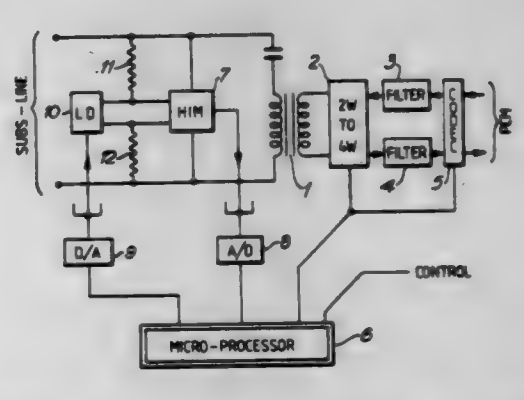
recording a received message on a tape; producing pulses in synchronism with the advance of said tape in both the forward and reverse directions; counting up and down said pulses with the forward and reverse directions, respectively, of said tape advance to maintain a pulse count indicative of the tape position; storing in a memory, at the time of recording of a message, said pulse count corresponding to the tape position of said message along with an actual time indication obtained from an electronic clock; comparing during playback mode said pulse count representing the current position of said tape with said memorized pulse counts; and displaying during said playback mode said memorized time indication which was memorized along with a pulse count that compares equally with the current pulse count, whereby the time of recording of a message is indicated when said message is played back.

4,345,115

TELEPHONE LINE INTERFACE

Anthony W. Sweet, Saffron Walden, England, assignor to Standard Telephones and Cables Limited, London, England

Filed Dec. 8, 1980, Ser. No. 214,326
Claims priority, application United Kingdom, Dec. 13, 1979, 7943074
Int. Cl.³ H04M *1/00*; H04Q *11/04*; H04B *3/36*
U.S. Cl. 179—18 FA **2 Claims**



1. A telephone subscriber's line interface for a system in which the telephone instruments and the connections therefrom to the exchange use analogue techniques while the exchange uses digital techniques such as pulse code modulation, in which the line is coupled to an analog network in said interface and via a two-wire to four-wire conversion circuit to separate GO and RETURN channels, in which the GO channel is coupled from the conversion circuit to analogue-to-digital conversion means which produces the digital output for use in the exchange, in which the RETURN channel is coupled from digital-to-analogue conversion means which re-creates speech for transmission to the subscriber's lines and said two-wire to four-wire conversion circuit, the invention in which said analog network includes a monitoring circuit having a high impendance connected to and individual to one of said analogue lines so as to monitor the line current and/or line voltage, means for coupling the output of the monitoring circuit via further analogue-to-digital conversion means to the input of a microprocessor common to a plurality of line interfaces to react to monitored line change conditions at said plurality of line interfaces under control of the output of the respective monitoring circuits and under a control connection from within the exchange, and further means for coupling the output of the microprocessor via which various signalling and other conditions applied to the line are coupled to said line via further digital-to-analogue conversion means and via a line driver circuit within said analog network.

4,345,116

DYNAMIC, NON-HIERARCHICAL ARRANGEMENT FOR ROUTING TRAFFIC

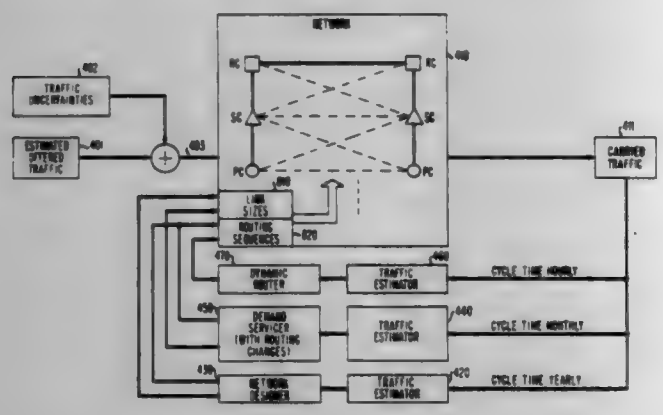
Gerald R. Ash, West Long Branch, N.J., and Richard H. Cardwell, North Andover, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 31, 1980, Ser. No. 221,971
Int. Cl.³ H04M *7/00*
U.S. Cl. 179—18 EA **7 Claims**

1. A method for routing traffic through a network, said network including a plurality of nodes and a plurality of links for interconnecting predetermined nodes according to a predetermined interconnection pattern, a link including one or more servers,

said method including a step of alternate routing traffic

through said network according to a routing sequence, said sequence including a plurality of route choices between an originating node and a terminating node, and characterized in that said routing method further comprises the step of:



controlling the generation of a plurality of dynamic, cost mitigating, alternate routing sequences responsive to traffic demand and subject to a grade of service constraint, each routing choice in a routing sequence being allowed without regard to network hierarchy.

4,345,117

TELEPHONE LINE FEED CIRCUIT

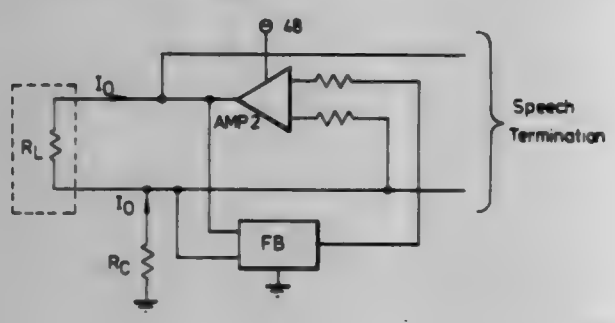
Anthony W. Sweet, Saffron Walden, England, assignor to Standard Telephones and Cables Limited, London, England

Filed Nov. 20, 1980, Ser. No. 208,559

Claims priority, application United Kingdom, Nov. 29, 1979, 7941245

Int. Cl.³ H04M *1/00*; H04B *3/16*

U.S. Cl. 179—77 **2 Claims**



1. A line-feeding arrangement for a telephone subscriber's line, which includes a constant current generator circuit connected to the speech wires of the line so as to supply direct current thereto, the circuit having a high impedance to speech currents, a monitoring circuit also connected to the speech wires of the line so as to monitor the direct voltage between the speech wires, said monitoring circuit also having a high impedance to speech currents, control means associated with the monitoring circuit and the generator circuit to cause the current generated by the generator circuit to be varied in accordance with variations in the line voltage as monitored by the monitoring circuit, in which the monitoring circuit includes an operational amplifier having one of its inputs connected to one of the speech wires, the other speech wire being connected to the output of the amplifier, and a feedback loop connected between the subscriber's line and the other input of the amplifier, which feedback loop provides said control means and in which the feedback loop includes a second operational amplifier having its inputs connected respectively to the two line wires, the second operational amplifier having a feedback resistor connected across it, and a third operational amplifier having one of its inputs resistor-coupled to the output of the second operational amplifier and its other input connected to a reference voltage source, a resistor connected between the output of the second operational amplifier and the first input of the third operational amplifier, and a capacitor connected from said first input to ground.

4,345,118

QUARTZ TUNING FORK ELECTRO-ACOUSTIC TRANSDUCER

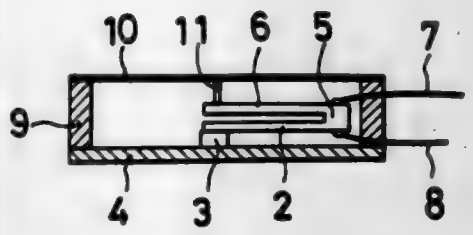
Seinosuke Takemura, Chitoseshi, Japan, assignor to Daiwa Shinku Corporation, Hyogo, Japan

Filed Jun. 19, 1980, Ser. No. 161,152

Claims priority, application Japan, Jun. 22, 1979, 54-79497; Jun. 22, 1979, 54-79498; Jun. 22, 1979, 54-79499

Int. Cl.³ H04R *17/00*

U.S. Cl. 179—110 A **5 Claims**



1. An acousto-electronic transducer including an oscillator of quartz, which comprises:

said oscillator being a tuning fork oscillator having a pair of tines and a shank portion;

said oscillator being located in a sealed casing;

said casing having a ceiling of a vibrant film;

one of said tines of said oscillator being fastened to the bottom of said casing while the other tine is connected to said vibrant film of said casing; and

said oscillator including a pair of electrodes.

4,345,119

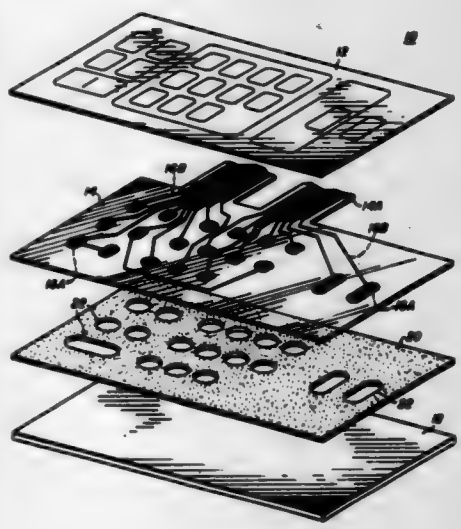
MEMBRANE SWITCH ASSEMBLY WITH IMPROVED SPACER

Leonard Latasiewicz, Hoffman Estates, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Feb. 19, 1981, Ser. No. 236,073

Int. Cl.³ H01H *13/04*

U.S. Cl. 200—5 A **5 Claims**





1. A membrane switch assembly comprising a flexible upper member bearing a plurality of contact areas on a first surface and a bottom member including at least one contact area on a first surface thereof and a foam felt spacer including a plurality of apertures in registration with at least the contact areas on

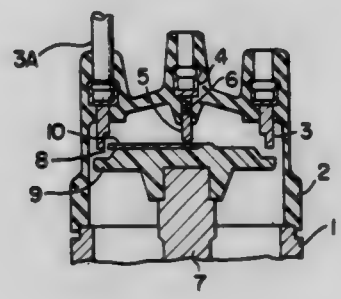
the upper member, and wherein said spacer is adhesively attached to the first surface of the upper member, and to the first surface of the bottom member, and is composed of a resilient, non-conductive, open-cell, non-reticulated foam felt material.

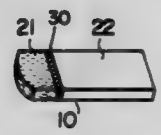
4,345,120

DISTRIBUTOR

Hiroji Sawada, Hitachi; Tatsuo Igawa, Kitaibaraki, and Hiromitsu Nagae, Katsuta, all of Japan, assignors to Nissan Motor Company, Limited and Hitachi, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 938,363, Aug. 31, 1978, abandoned.
This application Sep. 15, 1980, Ser. No. 187,139
Claims priority, application Japan, Sep. 2, 1977, 52-104856
Int. Cl.³ H01H *19/00*
U.S. Cl. 200—19 R 6 Claims





1. A distributor for an internal combustion engine comprising center electrode means, rotor electrode means, side electrode means disposed opposite to said rotor electrode means with a discharge gap defined therebetween, and means for distributing high-voltage pulses generated by an ignition coil to individual ignition plugs through said center electrode means, said rotor electrode means and said side electrode means, wherein at least one of said rotor electrode means and said side electrode means has its discharge-participating area formed from only ferrite, whereby said high-voltage pulses generated by said ignition coil are distributed to said side electrode means which establishes a main-ignition preceded by a pre-ignition which occurs on the surface of said ferrite.

4,345,121

MINIATURE LIGHTED PIVOTED ACTUATOR SWITCH WITH INTEGRAL LOCK

Richard B. Tenner, Oak Creek, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 19, 1981, Ser. No. 245,429
Int. Cl.³ H01H *27/00*
U.S. Cl. 200—42 R 6 Claims

1. A self-enclosed miniature pivoted-actuator switch with an integral lock comprising:

a switch housing;

stationary contact means within said housing electrically continuous with external terminals;

movable contactor means within said housing selectively operable between different operating positions closing and opening at least one circuit with respect to said stationary contact means;

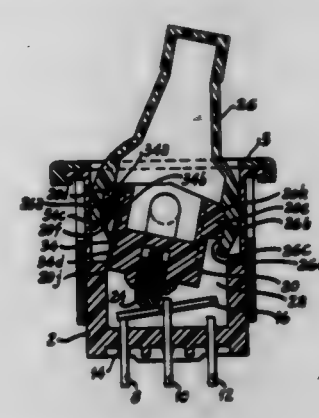
an abutment within said housing;

an opening into said housing;

and a switch operator subassembly extending through said opening into said housing for operating said movable contactor means comprising:

an actuator and means pivotally supporting the same in said housing for reciprocal movement to actuate said contactor means;

a resilient locking member and means mounting the same to said actuator at one end portion so that its other end portion abuts said abutment to prevent pivotal operation of said actuator from one operating position to another;



a removable operating lever having a manually engageable external portion to be grasped for operating said switch;

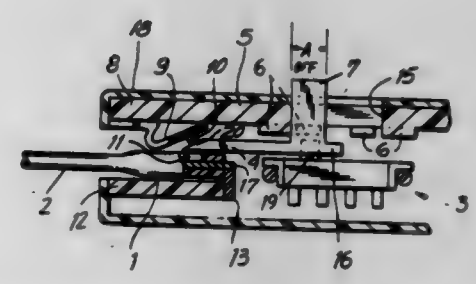
and snap-on means on said operating lever and complemental snap-on means on said actuator for coupling said operating lever and said actuator in an operative relationship, said snap-on means on said operating lever also deflecting said locking member clear of said abutment to allow free operation of said switch operator subassembly from said one operating position to another.

4,345,122

DETACHABLE CORD

Frank Janniello, Stamford, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,063
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—50 B 2 Claims



1. A mechanical interlock system for use with a detachable electric cord for preventing arcing between the contacts comprising:

a female socket, in an electrically powered device requiring high current, said socket having therein female electrical contacts for receiving male electrical contacts of a detachable plug and having on the inside wall thereof a strip of spring metal biased toward the center of the socket, said spring metal having a pin on the surface thereof facing toward the longitudinal axis of the socket;

a switch in said electrically powered device having a sliding control member having a longitudinal extension with respect to said socket which extends into said socket adapted to lift the spring metal radially away from said axis of the socket when the sliding control member is in the "off" position longitudinally toward the front of said socket and to release the spring metal strip when the sliding control member is in an "on" position in a direction longitudinally toward the rear of the socket; a plug with

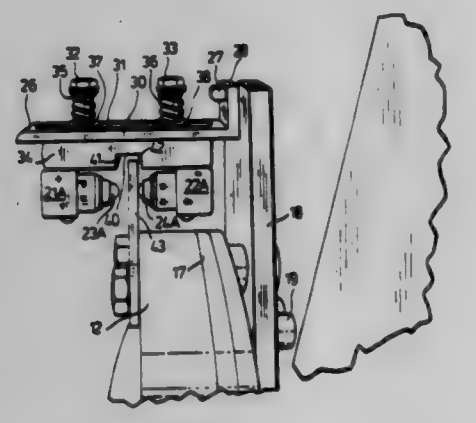
male electrical contacts insertable into said socket to make electrical contact with said female electrical contacts, said plug having a groove in its insulation for receiving said pin on the spring metal strip when said plug is in said socket and said sliding control member is in an "on" position, locking the socket in place, wherein said plug can be inserted or removed from said socket only when the sliding control member is in the "off" position.

4,345,123

SELF-ADJUSTING BRAKE ENGINE LIMIT SWITCH ASSEMBLY

Peter deH. Eastcott; Peter T. Truman, and Serge L. Scuccato, all of Peterborough, Canada, assignors to Canadian General Electric Company Limited, Toronto, Canada

Filed Sep. 24, 1980, Ser. No. 190,216
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—52 R **2 Claims**



1. A self-adjusting limit switch assembly for a brake engine having a brake applying and releasing mechanism which moves inwardly and outwardly in a first predetermined direction for moving at least one brake shoe to a brake applying position and a brake released position, said limit switch assembly comprising

mounting means fixed to said brake engine and having a slot therethrough extending in said first direction,

a slide having a first and second side, said first side being in sliding engagement with said mounting means,

fastening means extending from said first side of said slide through said slot and engaging said mounting means for mounting said slide to said mounting means for slidable movement in said first direction, said fastening means including spring bias means for providing a frictional force tending to resist movement of said slide,

said slide having on said second side first and second surfaces, spaced apart and extending in a second direction at right angles to said first direction, defining a transverse slot,

first and second microswitches mounted on said slide and having a respective actuating member extending slightly past a plane defined by said respective first and second surface,

an actuator arm extending from said brake applying and releasing mechanism and terminating in said transverse slot,

said arm engaging said first surface as the brake applying and releasing mechanism moves outwardly to the brake released position for moving said slide to an adjusted operating position,

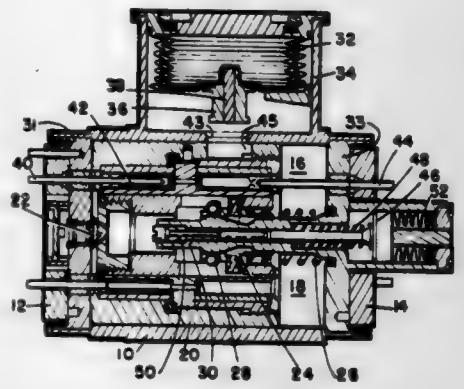
the actuating member of said first microswitch being operated by said arm when said brake applying and releasing mechanism moves to said brake released position, and the actuating member of said second microswitch being operated by said arm when said brake applying and releasing mechanism moves to said brake applying position and said brake shoe is worn sufficiently to require adjustment.

4,345,124

ACCELERATION SWITCH

Joseph P. Abbin, Jr., Albuquerque; Howard F. Devaney, Cedar Crest, and Lewis W. Hake, Albuquerque, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 29, 1979, Ser. No. 70,545
Int. Cl.³ H01H *35/14*
U.S. Cl. 200—61.53 **5 Claims**



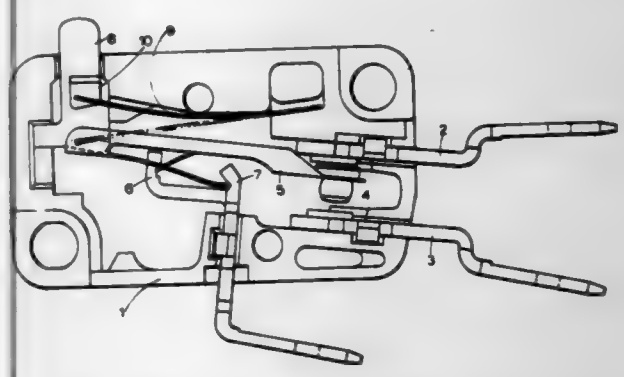
1. An acceleration actuated switch comprising: a generally tubular housing including end portions forming a chamber; a fixed electrical contact within said chamber; a post carried by an end portion and projecting into the chamber, said post having a portion of reduced diameter connected by a tapering portion with a more remote larger diameter portion; a movable mass having a recess therein normally disposed opposite said larger diameter portion of said post; a spring and damping fluid within said chamber, said spring normally maintaining said mass in an initial position, said mass being movable during acceleration along said post toward said fixed electrical contact in opposition to said spring and with transfer of damping fluid past said mass during said movement; a roller contacting said post and projecting into said recess; a collar for transmitting force between said spring and roller; a surface of said recess moving said roller from said larger diameter portion along said taper towards said smaller diameter portion during movement of said mass resulting in decreased rate of opposition by said spring against said mass.

4,345,125

SNAP ACTION SWITCHES

Michael I. Henville, Maidenhead, England, assignor to Unimax Switch Limited, Maidenhead, England

Filed Aug. 28, 1980, Ser. No. 182,223
Claims priority, application United Kingdom, Aug. 31, 1979, 7930346
Int. Cl.³ H01H *13/38*
U.S. Cl. 200—67 D **2 Claims**



1. A snap-action micro-switch comprising:

a casing having a plurality of mounting holes formed therein at preselected locations;

a fixed contact mounted within said casing;

an over-center snap action spring-loaded contact carrier

mounting a movable contact and movable within said casing between a normal rest position occupied in the absence of an externally applied force and an operative position, said fixed contact being engaged by said movable contact in the rest position of said carrier;

an actuating button having first and second ends and guided for linear sliding movement within said casing;

said first end of said actuating button projecting outwards of said casing and said second end of said button engaging said carrier at a point displaced from said movable contact for movement of said carrier from said rest position to said operative position on inward sliding movement of said button in an actuating direction relative to said casing, said movement being effectable against the spring force of said spring-loaded carrier; and

auxiliary spring means acting on said actuating button comprising a leaf spring located wholly within said casing and having first and second ends;

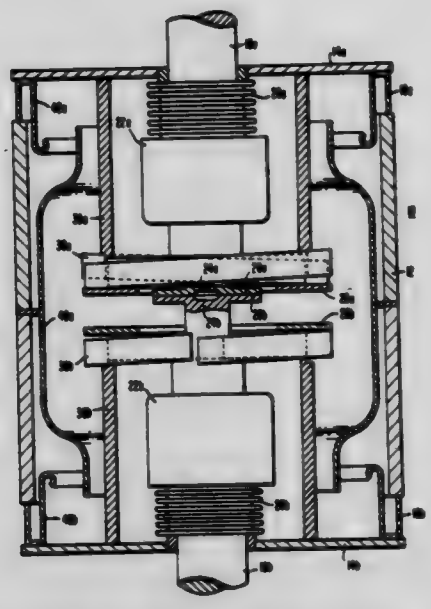
said first end of said spring being anchored in said casing and said second end of said leaf spring engaging said actuating button in the rest position thereof and being stressed such as to apply a force urging said button in said inward actuating direction but said force being insufficient to move said button unaided against the force of said spring-loaded carrier, and said applied force falling, though without changing direction on movement of said button in the actuating direction.

4,345,126

VACUUM INTERRUPTER WITH TRANSFER-TYPE AXIAL MAGNETIC FIELD CONTACTS

Sidney J. Cherry, Elmira, and Paul O. Wayland, Montour Falls, both of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 1, 1980, Ser. No. 136,196
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B **7 Claims**



1. In a vacuum circuit interrupter in which a pair of primary current-carrying electrical contacts are relatively movable into closed position within a hermetically sealed, evacuated, generally cylindrical envelope, and wherein the primary current-carrying electrical contacts in the closed position carry the electrical line current to which the interrupter is connected, and which primary current-carrying electrical contacts are disposed at the extending ends of conductive support rods which are aligned along the cylindrical axis of the envelope and are sealed therethrough to external electrical connection means,

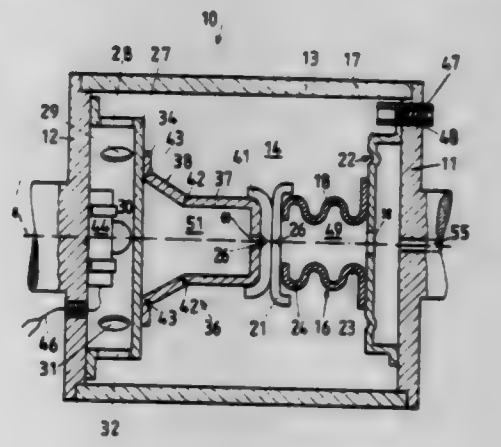
the improvement wherein annular transfer arcing contacts are disposed about each of the primary current-carrying contacts, which annular transfer arcing contacts comprise an annular arcing portion and an axial magnetic field generating portion extending from the back side of the annular arcing portion to a supporting conductive member, whereby when the primary current-carrying contacts are opened the arc which forms between these primary contacts as they are moved apart, transfers to the annular arcing portions of the annular transfer contact, and the arc current flowing through the magnetic field generating means produces an axial magnetic field parallel to the arc path between contacts to maintain the arc diffuse.

4,345,127

HIGH-VOLTAGE, BLAST-ACTUATED POWER SWITCH HAVING A COLLAPSIBLE CONTACT

Lutz Niemeyer, Baden, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Jan. 9, 1980, Ser. No. 110,795
Claims priority, application Switzerland, Jan. 11, 1979, 245/79
Int. Cl.³ H01H *33/70*
U.S. Cl. 200—148 R **10 Claims**



1. A high-voltage, blast-actuated power switch comprising:

a switch casing having first and second electrically conductive external connections electrically insulated from each other and having a hollow chamber, said chamber being substantially filled with a high dielectric strength medium having low compressibility;

first and second switch contacts included in said hollow chamber, said first switch contacts being electrically connected to said first external connection and said second switch contact being electrically connected to said second external connection, said first and second switch contacts being in physical and electrical contact with each other thereby electrically connecting said first external connection to said second external connection; and

blasting cap means for generating and applying a pressure wave to said medium contained in said switch casing and spaced from said switch contacts;

wherein said pressure wave travels through said medium from said blasting cap means to said first and second switch contacts, and being subject to said pressure wave at least one of said first and second switch contacts collapses thereby electrically disconnecting said first external connection from said second external connection.

4,345,128

ELECTRICAL CONTACT POSITIONING ASSEMBLY

Horace J. Buttner, 25222 Broadwell, Harbor City, Calif. 90710, and Thomas E. Buttner, 28134 Ridepoint Ct., Rancho Palos Verdes, Calif. 90274

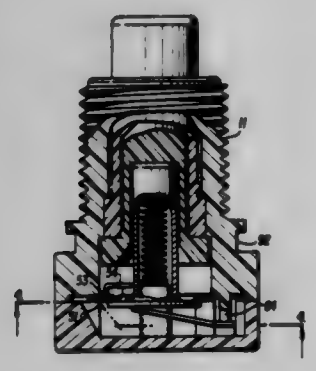
Filed May 15, 1980, Ser. No. 149,817
Int. Cl.³ H01H *3/12, 3/34*
U.S. Cl. 200—153 J **16 Claims**

1. An electrical switch assembly comprising: a first contact means movable between first and second stable positions spaced from one another within said switch assembly;

moving means for moving said first contact means between

said first and second stable positions, said moving means having the characteristic that its travel during the moving of said first contact means from said first stable position to said second stable position causes an extra motion of said first contact means beyond, followed by a return to, said second stable position;

a second contact means positioned to contact said first contact means in said second stable position and having a configuration including a deflectable portion initially extending at least in part in a plane lying generally across the line of travel of said first contact means between said first and second stable positions, whereby said movable



fist contact means contacts and deflects said deflectable portion while moving toward said second stable position;

a third contact means positioned for contacting said movable first contact means when said first contact means is in said first stable position; and,

stop means attached to said switch assembly and including a portion intersecting the line of travel of said deflectable portion for limiting the deflection of said deflectable portion in the direction toward said first stable position to ensure complete separation of said first and second contact means prior to said first contact means reaching said first stable position.

4,345,129

ELECTRICAL SWITCH

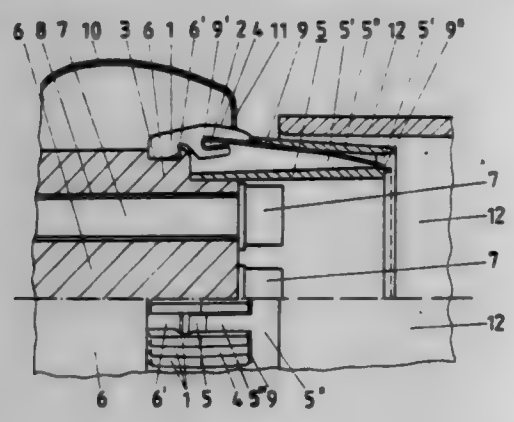
Franz Czech, Niederhasli; Gerhard Mauthe, Birmenstorf, and Hans Pfrötzschner, Wettingen, all of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Mar. 19, 1980, Ser. No. 131,844

Claims priority, application Switzerland, Apr. 3, 1979, 3079/79

Int. Cl.³ H01H *1/38, 1/44*

U.S. Cl. 200—163 **15 Claims**



1. An electric switch comprising:

first and second conductors, at least one of said conductors having a central opening into which the other conductor is inserted during a circuit making operation so that said one conductor overlies said other conductor when the switch is in its circuit-making position;

a plurality of contact elements disposed between said first and second conductors when they are in the circuit-making position to electrically connect said conductors, each of said contact elements including a contact pin having one end disposed on one of said conductors, and a flat spring having one end operatively connected to the other end of said contact pin, said contact pin and spring forming a unit extending in the circuit making/breaking direction of movement of said conductors relative to one another; and

a cage member resiliently held in place on the conductor on which said contact pins are disposed by the other ends of said flat springs.

4,345,130

ELECTRICAL CONTACT

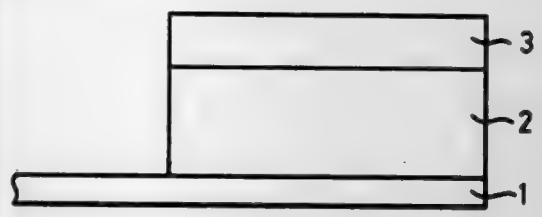
Tsutomu Okutomi, Yokohama; Masachika Iida, Kuwana; Kazuyoshi Kuwabara, Tama; Hisashi Yoshino, Yokohama, and Eiichi Takayanagi, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 3, 1980, Ser. No. 212,412

Claims priority, application Japan, Dec. 21, 1979, 54-165705

Int. Cl.³ H01H *1/02*

U.S. Cl. 200—268 **7 Claims**



1. An electrical contact which comprises an interrupting layer for interrupting a large short-circuit current in a circuit breaker consisting essentially of Cu-W alloy, Cu-WC alloy or Cu-W-WC alloy containing 20 to 60 wt % of Cu and being bonded to the top surface of a base plate, and a contacting layer consisting essentially of Ag-WC alloy, Ag-W alloy or Ag-W-WC alloy containing 20 to 60 wt % of Ag and being bonded to the top surface of said interrupting layer.

4,345,131

METHOD AND APPARATUS FOR ELECTRODE TOOL WEAR COMPENSATION

Georges Semon, and Alain Wavre, both of Geneva, Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Mar. 17, 1980, Ser. No. 130,618

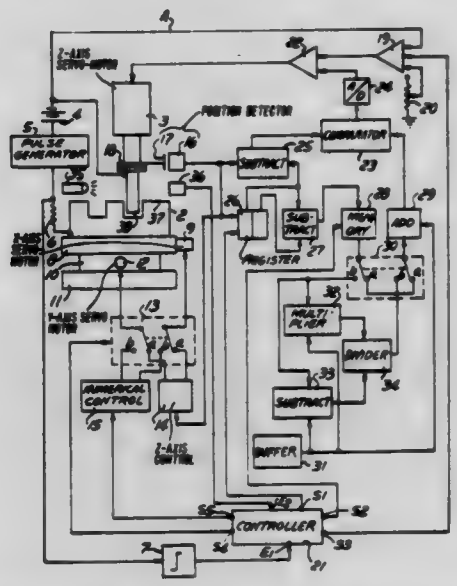
Claims priority, application Switzerland, Mar. 29, 1979, 2897/79

Int. Cl.³ B23P *1/14*

U.S. Cl. 219—69 G **6 Claims**

1. A process for controlling the depth of material removal by an electrode tool from an electrode workpiece in an EDM apparatus, wherein a machining pass is terminated when the electrode tool has penetrated into the workpiece to a pre-established reference position limit, said process comprising bringing said electrode tool prior to effecting a machining pass to a first position whereby one of the active surfaces of the electrode tool reaches a reference location, recording the parameter of said first position, effecting said machining pass to said pre-established reference position limit, subsequently bringing said electrode tool prior to effecting a second machining pass to a second position whereby said active surface of said electrode tool reaches said reference location, recording the parameter of said second position, determining the amount of wear of said electrode tool as a difference between the parame-

ters of said first and second positions, and adjusting the reference position limit in the course of a subsequent machining pass



as a function of the difference between the parameters of said first and second positions.

4,345,132
COOKING APPARATUS

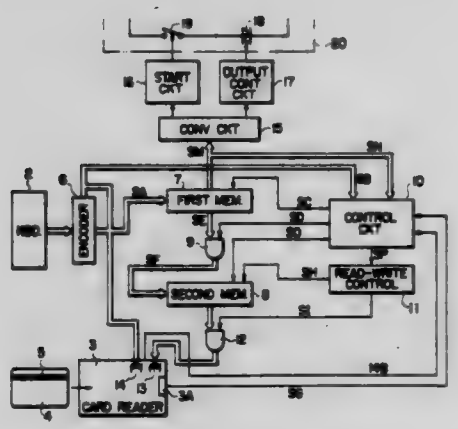
Akio Takase; Hiroshi Horikoshi, and Toshio Kasada, all of Ojima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1979, Ser. No. 98,442

Claims priority, application Japan, Dec. 1, 1978, 53/166185[U]; Dec. 1, 1978, 53/166186[U]; Jan. 16, 1979, 54/3705

Int. Cl.³ H05B 1/02

U.S. Cl. 219—10.55 B 4 Claims



1. A cooking apparatus for performing cooking in accordance with cooking control data supplied thereto by input means comprising:

(a) first and second input means comprising a keyboard for providing cooking control data and a card reader for reading data from a magnetic card;

(b) first memory means for temporarily storing input data from said first and second input means;

(c) second memory means for storing data applied thereto from said first memory means as data to be written exclusively onto said magnetic card;

(d) writing means for writing said data to be written exclusively onto said magnetic card in response to a predetermined signal; and

(e) control means for causing said writing means to perform data writing upon the presence of a data writing instruction signal from said keyboard, and for causing data to be read from said magnetic card when said data writing instruction signal is not present, and for causing transfer of data from said first memory means to said second memory means upon detection of the end of the cooking operation.

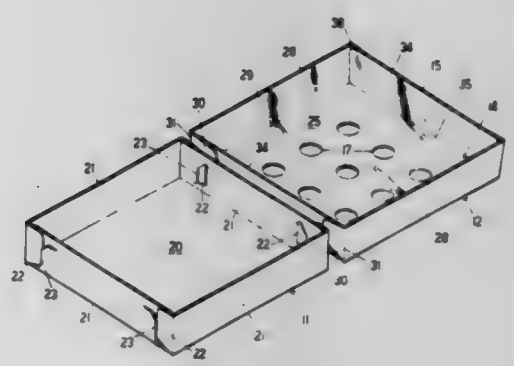
4,345,133
PARTIALLY SHIELDED MICROWAVE CARTON

Jerome A. Cherney, Appleton, and Thomas D. Pawlowski, Neenah, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Mar. 12, 1980, Ser. No. 129,722

Int. Cl.³ H05B 6/64

U.S. Cl. 219—10.55 E 11 Claims



1. A carton adapted to partially shield the contents thereof from microwave radiation, comprising:

(a) a carton receptacle formed of paperboard without shielding, having a bottom panel and vertical side wall panels formed integrally therewith and extending upwardly therefrom, said side wall panels being connected together to form a continuous side wall about said bottom panel; and

(b) a carton cover separate from the receptacle disposed over said receptacle, including:

(1) a cover top panel formed of paperboard and having substantially the same size and shape as said receptacle bottom panel, and having side edges about the periphery thereof,

(2) paperboard cover wall panels integrally connected with and depending downwardly from the side edges of said cover top panel, said cover wall panels being connected together to form a continuous cover wall about said cover top panel,

(3) one entire surface of said cover top panel and of said cover wall panels having a layer of conductive metal in electrical continuity laminated thereto which is selected to substantially inhibit the passage of microwaves therethrough.

(4) means for providing a capacitive electrical connection between the conductive surfaces on adjacent cover wall panels forming said cover wall having low impedance at microwave frequencies, such that arcing between adjacent cover wall panels during microwave heating is inhibited,

(5) the height of said cover wall panels being less than the height of said receptacle wall panels so that the bottom edges of the cover wall panels and laminated conductive metal layer will be spaced above the level of the bottom surface of the bottom panel a distance of at least approximately 1/16 inch to inhibit discoloration of the surface on which the bottom panel rests when the inside surface of the cover top panel rests on the top edges of the receptacle side wall panels and the carton is subjected to microwave radiation, and

(6) all corners formed in said cover wall panels which are in closest proximity to the level of said receptacle bottom panel being rounded to thereby minimize the electric field intensity at such corners.

4,345,134

HIGH FREQUENCY HEATING APPARATUS

Junzo Tanaka, Fujiidera, and Masatomo Orita, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP78/00043, § 371 Date Sep. 11, 1979, § 102(e) Date Sep. 11, 1979, PCT Pub. No. WO79/00562, PCT Pub. Date Aug. 23, 1979

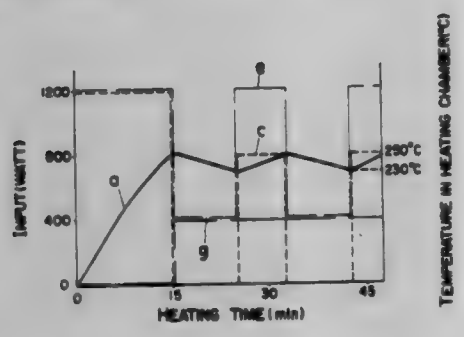
PCT Filed Dec. 8, 1978, Ser. No. 154,418

Claims priority, application Japan, Jan. 30, 1978, 53/9732

Int. Cl.[3] H05B *6/68*

U.S. Cl. 219—10.55 B

2 Claims



1. In a high frequency heating apparatus including a heating chamber, a high frequency generator for radiating high frequency energy into said heating chamber, resistance heating means having low and high heating levels, and temperature detecting means for detecting the temperature within said heating chamber, the combination including

means for initially energizing said resistance heating means at said high heating level, said high frequency generator being deenergized;

means for energizing said high frequency generator and deenergizing said resistance heating means when said temperature detecting means senses that the temperature within said heating chamber has reached a first predetermined temperature, said high frequency generator being thereafter continuously energized; and

means for switching said resistance heating means to said low heating level when said temperature detecting means senses that the temperature within said heating chamber has decreased to a second predetermined temperature below said first predetermined temperature, said resistance heating means being thereafter intermittently energized at said low heating level when said temperature detecting means senses that the temperature within said heating chamber has decreased to said second predetermined temperature, the temperature within said heating chamber being thereby increased gradually to said first temperature and maintained between said first and second predetermined temperatures, the total input power to said high frequency generator and said resistance heating means being maintained within the electrical power capacity of said high frequency heating apparatus.

4,345,135

DELAY-START ARRANGEMENT FOR A MICROWAVE OVEN

Larry R. Harmon, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 28, 1980, Ser. No. 210,942

Int. Cl.[3] H05B *6/68*

U.S. Cl. 219—10.55 B

9 Claims

1. A microwave oven circuit adapted for coupling to a power source comprising:

a magnetron,

a duty cycle controlled switching element,

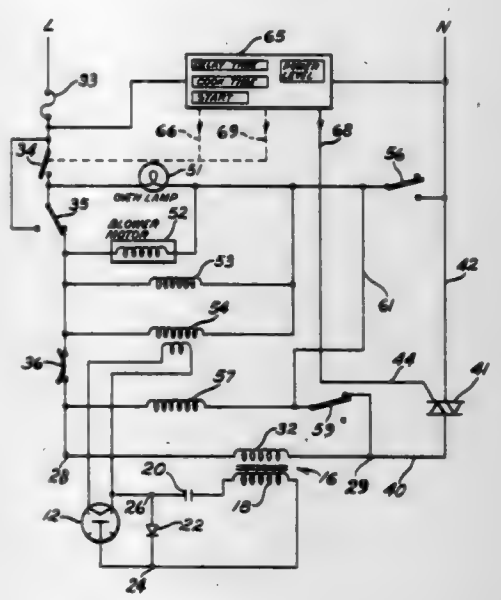
a first current path across said source including said duty cycle controlled switching element to periodically close said first current path to energize said magnetron,

a delay start relay including a first normally closed relay switch and a second normally open relay switch,

at least one electrical load adapted to be continuously energized from the power source during the cooking process,

a second current path across the source including said relay, said first relay switch and said element,

a third current path across the source including said one load and said second relay switch, and



a fourth current path across the source including said relay and said second relay switch for providing a holding current to said relay after said first relay switch opens,

whereby said relay is energized in response to initial turn-on of said magnetron by said switching element to thereby close said second relay switch and energize said one load and open said first relay switch to electrically isolate said relay coil from said switching element.

4,345,136

COPPER BIMETAL BRAZED RESISTANCE WELDING ELECTRODE

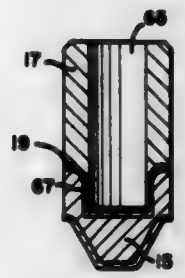
Russell A. Nippert, Delaware, Ohio, assignor to The Nippert Company, Delaware, Ohio

Division of Ser. No. 960,224, Nov. 13, 1978, Pat. No. 4,288,024, which is a continuation-in-part of Ser. No. 844,899, Oct. 25, 1977, abandoned, which is a division of Ser. No. 749,983, Dec. 13, 1976, Pat. No. 4,071,947. This application Feb. 27, 1981, Ser. No. 238,901

Int. Cl.[3] B23K *11/30*

U.S. Cl. 219—120

4 Claims



1. A bimetal resistance welding electrode, comprising:

a dispersion strengthened copper tip portion formed of a copper-aluminum alloy which is internally oxidized and cold worked and having a coating of high conductivity copper on the upper surface thereof,

a full hard hollow, extruded shank portion of high conductivity copper, and

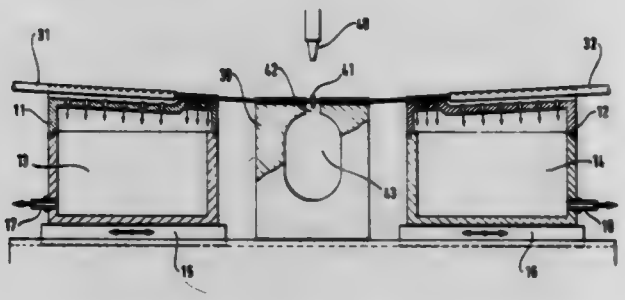
a brazed connection between said shank portion and said upper surface of said tip portion.

4,345,137

METHOD OF WELDING SEVERAL OPTICAL FIBERS END TO END IN LAYERS AND A DEVICE FOR WELDING IN ACCORDANCE WITH SAID METHOD

Georges Mignien, Mezieu, and Francis Gauthier, Eparvier, both of France, assignors to Compagnie Lyonnaise de Transmissions Optique, Clichy, France

Filed Jan. 3, 1980, Ser. No. 109,430
Claims priority, application France, Jan. 3, 1979, 79 00074
Int. Cl.³ B23K 9/00
U.S. Cl. 219—121 PK 1 Claim



1. A method of welding a plurality of optical fibers end to end in layers in a common vertical weld plane, each fiber including a bared portion and a covered portion, said method comprising the steps of:

(a) placing the covered portions of the fibers in parallel positioning grooves and the bared portions of the fibers in parallel positioning grooves for the bared portions of the fibers within supporting blocks, providing an opening in the neighborhood of the weld plane and a chamber for slowing down the gases of a microplasma with said chamber disposed below the opening and connected thereto;

(b) disposing a microplasma welding torch with a vertical axis in the common vertical weld plane and above the ends of the fibers, moving said welding torch in the weld plane;

(c) disposing a stop plate between the ends of the fibers;

(d) applying a relatively low vacuum pressure through the bottom of said parallel positioning grooves for said covered portions and said bared portions of said fibers and bringing the blocks closer to each other until the fibers press against the stop plate with said relatively low vacuum pressure allowing said fibers to slide on said supports;

(e) removing the stop plate and applying a higher relative vacuum pressure to said fibers through said parallel positioning grooves for said covered portions and for said bared portions of said fibers to securely clamp the fibers to said supports and bringing said blocks further closer together and the ends of the fibers closer until they come into contact end to end with each other;

(f) welding the ends of the fibers and terminating the vacuum pressure to said grooves to unclamp said fibers, and removing the welded fibers.

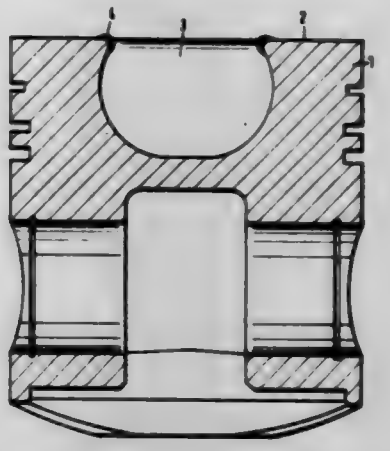
4,345,138

PROCESS OF SHAPING THE RIM OF A COMBUSTION CHAMBER RECESS OF A LIGHT-ALLOY PISTON

Wolf U. Zammert, Neckarsulm, Fed. Rep. of Germany, assignor to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 210,116
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948057
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LF 7 Claims

1. In a process of shaping the edge of a combustion chamber recess in the piston head of a finish-machined light-alloy piston by applying an oscillating charged carrier beam to the edge of said combustion zone to remelt the same, the improvement wherein, after said piston is machine finished, applying an oscillating charged carrier beam to the edge of said recess such that said oscillating charged carrier beam forms an angle of inclination with said edge of 40° to 50°, causing said charged carrier beam to act on that portion of the rim of the combustion



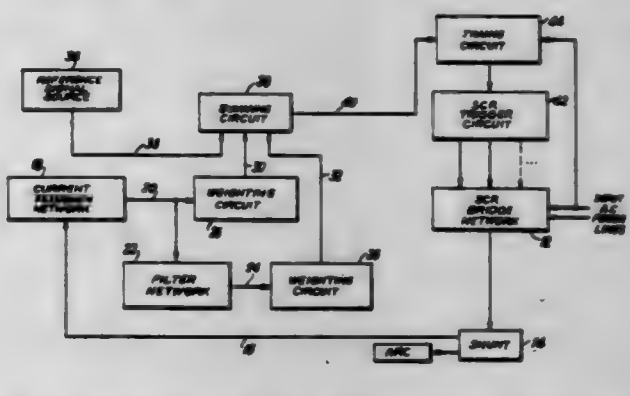
chamber recess to remelt the same, the rays of said charged carrier beam being applied to said edge portion only once.

4,345,139

CONSTANT CURRENT SCR POWER SUPPLY METHOD AND SYSTEM FOR A WELDING LOAD

Philip K. Higgins, Florence, S.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 30, 1980, Ser. No. 221,507
Int. Cl.³ B23K 9/10
U.S. Cl. 219—137 PS 8 Claims



8. A method for regulating the flow of constant current from an input AC power line to an arc by an SCR power supply interposed in series between the arc and the AC power line comprising the steps of: monitoring the arc to detect arc current perturbations; generating a first feedback signal proportional to arc current which substantially coincides in time and phase with the arc current; generating a second feedback signal proportional to arc current; passing the second feedback signal through a filter network having a relatively long time constant such that the second feedback signal, is rendered substantially nonresponsive to the arc current fundamental ripple frequency; weighing the first and second feedback signals in a predetermined ratio relative to one another; generating an error feedback control signal representing the weighted output of said first and second feedback signals and controlling the firing of said SCR power supply in timed synchronism with the input AC power line as a function of said error feedback control signal.

4,345,140

COMPOSITE WIRE FOR STAINLESS STEEL WELDING

Tomokazu Godai; Shoji Minato, both of Kamakura; Katsuhi Nishimura, Fujisawa, and Tsuneshi Ogawa, Kamakura, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Jun. 19, 1980, Ser. No. 160,930
Claims priority, application Japan, Jun. 22, 1979, 54-79547
Int. Cl.³ B23K 35/362
U.S. Cl. 219—146.23 7 Claims

1. A composite wire containing a flux for use in gas-shielded

arc welding of stainless steels, wherein said flux contains the following inorganic components with respect to the total weight of said wire:

0.1% ≦ anhydrous silicate ≦ 10%; and

0.01% ≦ a low melting metallic oxide having a melting point of no more than 888° C. ≦ 0.75%.

4,345,141

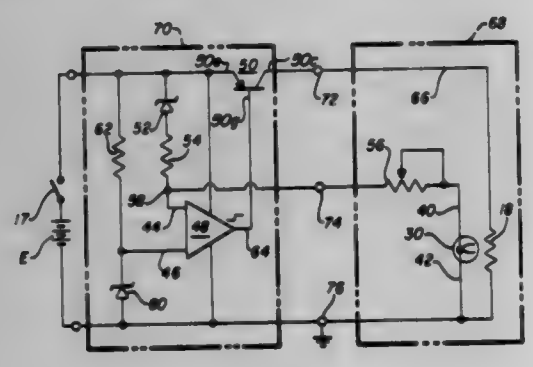
ELECTRICAL FUEL PREHEATER ASSEMBLY

William D. Little, 3548 Townsend Dr., Dallas, Tex. 75229

Filed Nov. 15, 1979, Ser. No. 94,731

Int. Cl.³ B60L *1/02*; H05B *1/02*

U.S. Cl. 219—207 **1 Claim**



1. An electrical fuel preheater assembly for use in combination with a fuel delivery line comprising, in combination:

a housing having an interior chamber defining a fuel reservoir, an inlet port and an outlet port adapted for connection in series fluid circuit relation to the fuel delivery line;

an elongated, thermally conductive electrical heating element coupled in heat transfer relation to said reservoir housing;

a thermally conductive delivery tube engaging the exterior sidewall of the elongated heating element in a multiple turn, spiral path along one end of said heating element, said delivery tube having an inlet port adapted for connection in series fluid circuit relation with said fuel delivery line and having an outlet port connected to the inlet port of said reservoir housing;

the volume of the reservoir housing chamber being substantially greater than the volume of the spiral delivery tube segment around said heater element;

a thermocouple sensor having an immersion probe received within the reservoir housing chamber for sensing the temperature of fuel in the reservoir; and,

circuit control means coupled to the thermocouple sensor and to the electrical heating element for interrupting the flow of electrical current from a power source to said heating element in response to the temperature of fuel in the sensor housing reservoir rising above a predetermined level.

4,345,142

DIRECTLY HEATABLE SEMICONDUCTOR TUBULAR BODIES

Wolfgang Dietze, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 745,227, Nov. 26, 1976, abandoned. This application Oct. 11, 1978, Ser. No. 950,452

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1975, 2554399

Int. Cl.³ F27B *5/14*; H05B *3/10*; H01C *1/14*

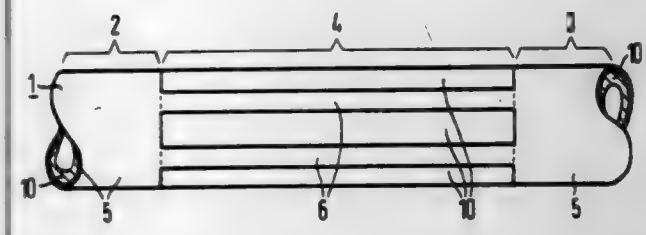
U.S. Cl. 219—390 **2 Claims**

1. A directly heatable seimconductor tubular body comprising:

a cylindrical tube comprised of a relatively pure semiconductor material selected from a group consisting of silicon and silicon carbide, said tube having at least an inner surface composed of said relatively pure semiconductor material and having a pair of outer circumferential end portions and an outer circumferential center portion extending between respective ones of said pair of end portions;

at least one layer of a dopant positioned on each one of said outer circumferential end portions; and

a plurality of circumferentially spaced apart dopant layers on said outer circumferential center portion, each one of



said spaced apart dopant layers being in contact with said dopant layer positioned on each of said outer circumferential end portions, the interrelationship between such respective dopant layers being such that an electric current applied to one outer circumferential end portion of said tube is conducted through such dopant layers to the other outer circumferential end portion of said tube for directly heating said body.

4,345,143

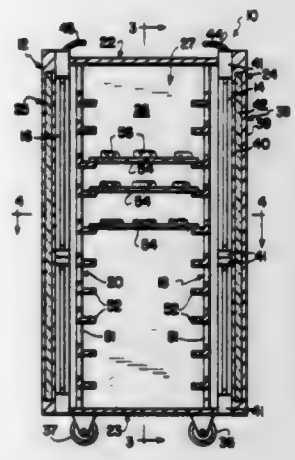
FOOD WARMING AND COOKING CABINET

Ernest M. Craig, and John M. Minor, both of Richmond, Va., assignors to Golden Skillet Corporation, Richmond, Va.

Filed Jun. 19, 1980, Ser. No. 160,994

Int. Cl.³ H05B *9/00*

U.S. Cl. 219—411 **2 Claims**



1. A food warming and cooking cabinet comprising:

a housing having interconnected side walls, a rear wall and a forward wall having an access opening therein;

a manually operable door connected to said housing and adapted to close said access opening;

said side walls and said rear wall having polished aluminum interior surfaces which surround and define an interior chamber to which access is obtainable through said access opening when said door is opened;

a pair of tubular infrared lamps disposed in said chamber adjacent said side walls;

each of said side walls having a vertically extending central concave recess formed therein;

one of said lamps being disposed in each of said recesses;

a pair of vertical support walls disposed within said chamber in spaced parallel relation to said side walls;

each of said lamps being disposed between a side wall and an adjacent support wall;

said support walls having a plurality of vertically spaced apertures therein and having inwardly directed horizontal flanges beneath said apertures;

said flanges being adapted to receive and support trays upon which food can be placed for warming or cooking;

an electrical power supply connected to said lamps; and

adjustable power regulator means connected with said power supply and said lamps for controlling the length of time said lamps are activated;

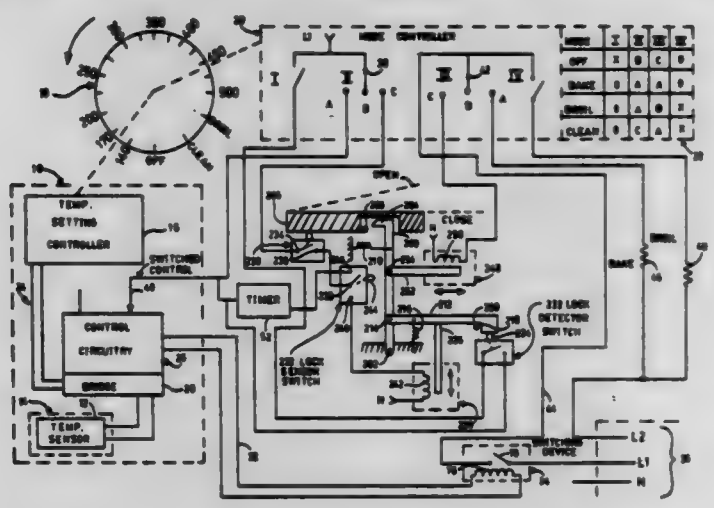
said lamps, when activated, providing infrared radiation which projects through said apertures to warm or cook food placed within said chamber upon said support trays.

4,345,144

SAFETY LATCH CONTROL ARRANGEMENT FOR SELF-CLEANING OVEN

Frank H. Bergquist, Elmhurst, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Division of Ser. No. 113,734, Jan. 21, 1980, Pat. No. 4,340,806.
This application May 4, 1981, Ser. No. 259,849
Int. Cl.³ H05B *1/02*; F24C *7/08*
U.S. Cl. 219—413 **11 Claims**



1. An interlock arrangement for a self-cleaning oven having a frame defining an oven cavity, an oven door movably mounted with respect to the frame and movable between open and closed positions, oven cavity heat generating apparatus, an oven mode and temperature selector arrangement, and a temperature control arrangement responsive to the oven mode and temperature selector arrangement for controlling operation of the heat generating apparatus, said interlock arrangement comprising:

oven door locking means carried by the oven frame and comprising an elongated locking member having a door engaging portion at one extreme end of said locking member, said locking member being movable between a door unlocked position and a door locked position;

means carried by the oven door and adapted for cooperative engagement by said locking member; and

locking control means for controlling operation of said oven door locking means,

said oven door locking means further comprising means for latching said locking member to said unlocked door position when said locking member is positioned to said unlocked door position,

said locking control means comprising first actuating means for releasing said locking member from said latched unlocked door position and second actuating means for moving said locking member from said locked door position to said unlocked door position, said first actuating means comprising means for biasing said control member to said locked door position when said locking member is released from said latched unlocked position,

said locking control means further comprising switch verification means responsive to and being directly engaged by said locking member and the oven door for providing a closed circuit path when the oven door is closed and said locking member is not in said locked door position and for providing an open circuit path when the oven door is opened or the locking member is in said door locking position, the oven mode and temperature selector arrangement being responsive to a predetermined clean mode setting to provide an electrical energizing supply to said switch verification means, said switch verification means being connected in series connection with said electrical energizing supply and said first actuating means,

said first actuating means being energized through said switch verification means to release said locking member from said latched unlocked door position when the oven mode and temperature selector arrangement is set to the clean mode, said oven door is in the closed position and said locking member is not in said door locked position,

said first actuating means being de-energized when said locking member moves to said door locked position in response to said switch verification means being in said open circuit path condition,

said oven mode and temperature selector arrangement further being responsive to a predetermined door unlock mode setting to connect an electrical energizing switched supply line to said second actuating means,

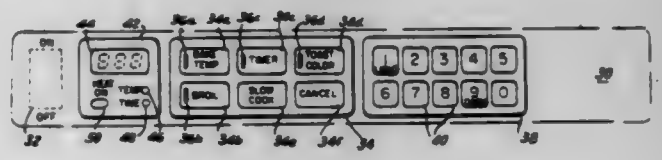
said locking control means further comprising latch verification switch means being responsive to said locking member being in said latched unlocked position for providing an open circuit path when said locking member is in said latched unlocked position, the oven mode and temperature selector arrangement further being responsive when set to the predetermined door unlock mode to provide an electrical energizing supply through said latch verification switch means to energize the temperature control arrangement, the temperature control arrangement being responsive to the oven mode and temperature selector arrangement being in the predetermined unlock door mode to provide on said electrical energizing switched supply line an energizing signal when the oven temperature is below a predetermined oven door unlock temperature and a de-energizing signal when the oven temperature is above said predetermined oven door unlock temperature, said second actuating means being responsive to the energizing signal on said electrical energizing switched supply line to move said locking member from said locked door position to said unlocked door position.

4,345,145

USER PROGRAMMABLE CONTROL SYSTEM FOR TOASTER OVEN APPLIANCE

Richard L. Norwood, Waterbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed May 19, 1980, Ser. No. 151,535
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—492 **28 Claims**



1. A countertop toaster oven appliance capable of performing the functions of TOAST, BAKE and BROIL, comprising:

(a) a compartment in which the food items to be heated are placed;

(b) heating elements for heating said compartment;

(c) sensing means for sensing the temperature within said compartment externally to the food items to be heated;

(d) a keyboard having a plurality of user actuatable keys including a plurality of numeric and function entry keys for entering numerical and functional data and for selecting one of a plurality of modes of operation;

(e) display means for displaying numerical and functional operating data;

(f) heater control means for controlling said heating elements;

(g) function selection means connected to said keyboard for establishing a set of control parameters for each selected mode of operation;

(h) heat requirement-determining means connected to said sensing means and to said function selection means for determining the heat input requirements into said compartment to satisfy the predetermined relationships for each selected mode of operation and for controlling said heater control means as a function of the actual temperature in said compartment and the temperature and mode of operation selected on said keyboard; and

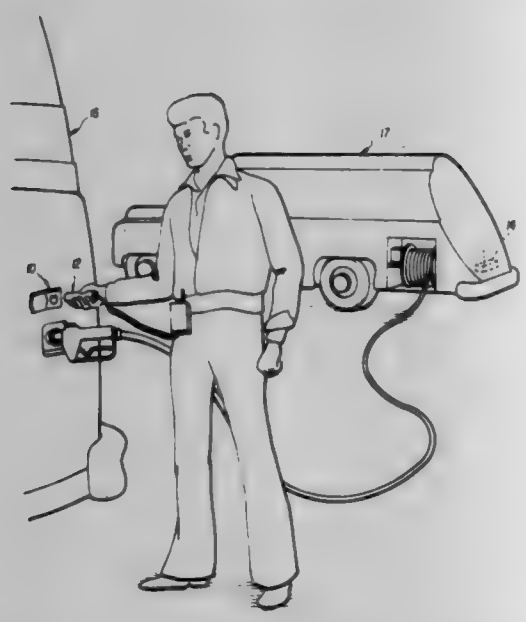
(i) an interactive data entry means connected to said function selection means and to said display means for activating said display means with a signal indicating the type of numerical data to be entered before said numerical data is entered and displaying the numerical data as it is entered.

4,345,146

APPARATUS AND METHOD FOR AN ELECTRONIC IDENTIFICATION, ACTUATION AND RECORDING SYSTEM

James R. Story, 13380 SW. 82 St., Miami, Fla. 33183, and Joseph J. Sobodowski, IV, 13020 SW. 112 Ave., Miami, Fla. 33176

Filed Mar. 25, 1980, Ser. No. 133,946
Int. Cl.³ G07F *7/08*
U.S. Cl. 235—381 **17 Claims**



1. Apparatus for monitoring dispensing of commodities to a commodity receiver comprising in combination:

passive identification means having a secret code unique to a particular commodity receiver;

means for covering the secret code;

means for securing the passive identification means to the commodity receiver;

means for deciphering the secret code unique to the particular commodity receiver;

R.F. means for transmitting the deciphered code as a R.F. signal;

means for receiving the R.F. signal including the deciphered code, and

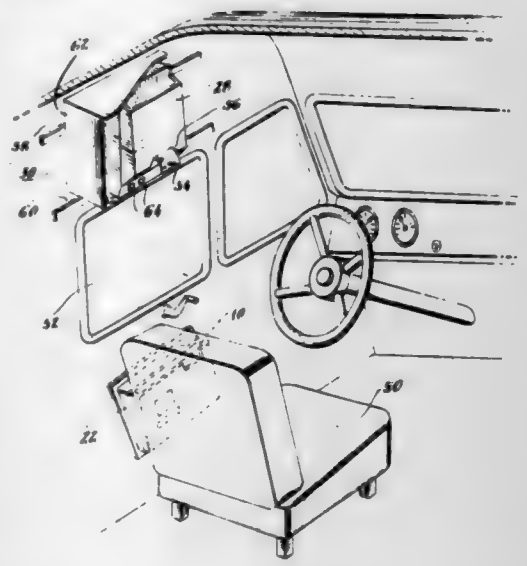
means associated with the receiving means for relating the deciphered code to the amount of commodity dispensed to the particular receiver.

4,345,147

VEHICLE MOUNTED MOBILE BUSINESS DATA HANDLING SYSTEM

Robert L. Aaron, Torrance, Calif., and Eugene F. Murphy, Ho Ho Kus, N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,783
Int. Cl.³ G06F *15/02*; G06K *7/14*
U.S. Cl. 235—385 **12 Claims**



1. A mobile business data handling system adapted to be mounted in a motor vehicle for use with a portable data entry and storage device for gathering and storing data, comprising a containing rack defining a cavity for removably accepting said portable data device, wherein

said rack is adapted to be attached inside said vehicle,

said portable data device is insertable into said rack cavity to an inserted position,

said rack has a quick-disconnect connector within said rack cavity for automatic connection of said connector with a mating connector on said portable data device when said portable data device is in said inserted position in said rack cavity,

said quick-disconnect connector in said rack cavity is arranged for connection to the vehicle power system to supply power to said portable data device and for connection to a data printer to receive and print data from said portable data device when said device is in said inserted position in said rack cavity, and

said rack cavity has guide means therein for positioning said portable data device in said rack cavity to align the connector on said portable data device with said quick-disconnect connector in said rack cavity to assure automatic mating and connection of said connectors when said portable data device is in said inserted position in said rack cavity.

4,345,148

AUTOMATIC RESPONSIVITY CONTROL FOR A CCD IMAGER

Michael Y. Pines, Los Angeles; Colin G. Whitney, Woodland Hills, and James S. Duncan, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 6, 1980, Ser. No. 194,204
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 C **14 Claims**

1. In a charge coupled device (CCD) focal plane array of photodetectors formed on a semiconductive substrate which is optically scanned and retraced over a field of view to generate image signal charge packets during the optical scanning and to generate first and second reference level charge packets during the optical retracing, a circuit for automatically compensating for deviations in optical responsivity among the photodetectors, comprising:

a CCD main channel disposed in said substrate so as to receive said image charge packets and said first and second reference level charge packets;

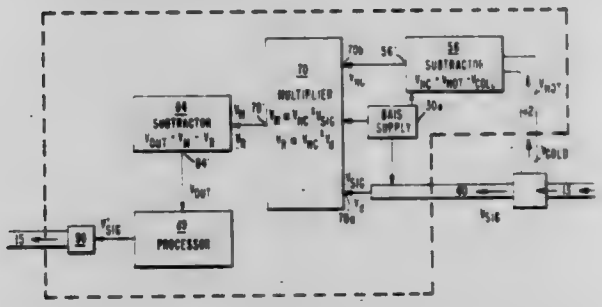
a CCD retrace channel in said substrate;

a clocked retrace electrode positioned so as to divert said reference level charge packets from said main channel into said retrace channel;

charge coupled floating sensor means in said main channel periodically reset to a first voltage V_1 for generating an image signal voltage V_{SIG} in response to each of said image signal charge packets;

charge coupled floating sensor means in said retrace channel for generating reference voltages V_{HOT} and V_{COLD} in response to said first and second reference level charge packets, respectively, during said optical retracing;

means for subtracting said reference voltages V_{HOT} and V_{COLD} from one another during said optical retracing to



establish an output voltage V_{HC} superimposed on a reference voltage V_O;

a multiplier having two inputs and an output, one of said inputs connected to receive said first substractor output voltage V_{HC}, the other of said inputs connected to said main channel charge sensor so as to generate a voltage V_M at said multiplier output which is proportional to the product $V_{SIG} \times V_{HC}$;

means for periodically holding said other multiplier output to a third voltage V_d so as to generate a voltage V_R at said multiplier output which is proportional to the product $V_d \times V_{HC}$;

means for subtracting said multiplier output voltages V_M and V_R to generate a difference voltage V_{OUT}, wherein the voltages V_O, V_1, and V_d are selected so as to minimize the contribution of said detector responsivity deviations to said output voltage V_{OUT}.

4,345,149

DISC-SHAPED CENTERING FIXTURE FOR OPTICAL ENCODERS

Anton J. Blaser, 700 E. Mason, Santa Barbara, Calif. 93103

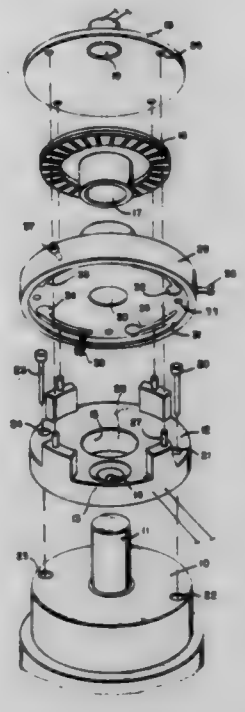
Filed Sep. 8, 1980, Ser. No. 185,145
Int. Cl.³ G01D 5/34
U.S. Cl. 250—231 SE **5 Claims**

1. An optical encoder assembly and centering fixture to be used on a motor shaft of given diameter, including, in combination:

(a) a mounting member having a circular periphery with a light source adjacent to a point on said periphery and having a central opening of larger size than said given diameter of said shaft of said motor so as to surround such shaft without touching the shaft and wherein the light source is positioned at a proper radial distance from the axis of said shaft for proper alignment with the remaining components of the assembly only when the mounting member is centered on the motor with said shaft extending through the central opening in exact concentric relationship with said circular periphery;

(b) a centering fixture comprising a disc-shaped element having a central bore of diameter corresponding to said given diameter of said shaft to receive said shaft in a friction fit, and a downwardly extending peripheral lip having an inside diameter corresponding to the outside diameter of said circular periphery of said mounting member

whereby when said shaft is received in said bore and said lip is coaxially positioned on said periphery of said mounting member, said mounting member is centered with its circular periph-



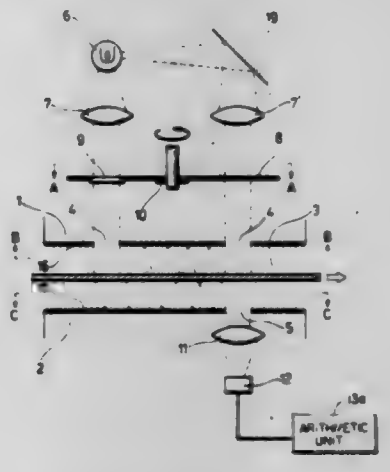
ery precisely concentric with said shaft so that it may then be secured to said motor with assurance that it will be in proper alignment with the remaining components of said encoder assembly when the same are assembled after removing the centering fixture.

4,345,150

METHOD AND APPARATUS FOR MEASURING THE MOISTURE CONTENT OF PAPER

Hisashi Tamura; Naozo Taniguchi, and Hirotoshi Ishikawa, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed May 12, 1980, Ser. No. 148,808
Claims priority, application Japan, May 21, 1979, 54-63362
Int. Cl.³ G01J 1/00
U.S. Cl. 250—339 **4 Claims**



1. A method of measuring the moisture contained or absorbed in a sheet of paper by irradiating the sheet of paper with near infrared radiation having a first wavelength which is more absorbed by the moisture and a reference wavelength which is less absorbed by the moisture, detecting said first and reference wavelengths after the radiation has interacted with the paper, and processing signals indicative of the detected radiation in a predetermined arithmetic operation, wherein the improvement comprises the steps of:

providing first and second optical systems having different

path lengths between an irradiation aperture through which the sheet of paper can be irradiated with said near infrared radiation and an incident aperture through which the radiation having interacted with the sheet of paper can be received; and

processing in a predetermined arithmetic operation, detected signals Mt and Rt which are dependent on said first wavelength and said reference wavelength, respectively, in said first optical system, and detected signals Mn and Rn which are dependent on said first wavelength and said reference wavelength, respectively, in said second optical system, for deriving a moisture content signal free from the influence of the optical properties of the sheet of paper.

4,345,151

ARRANGEMENT FOR DETERMINING A MEDIUM

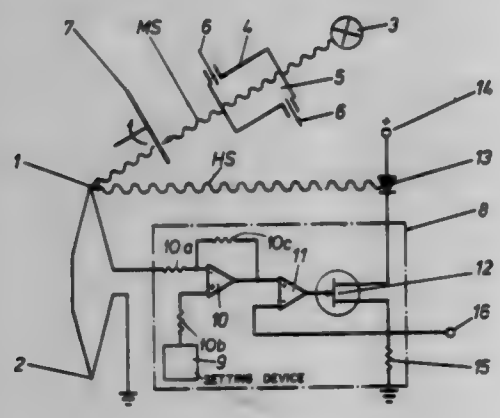
Ulrich Heim, Lübeck, Fed. Rep. of Germany, assignor to Dräger werk Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 107,279, Dec. 26, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,819

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856162

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—341 **11 Claims**



11. A method of determining a property of a medium which varies with the absorption of radiation in the medium, particularly a flowing medium comprising:

radiating a thermal sensor with a measuring radiation after the measuring radiation has passed through the medium;

exposing the thermal sensor to an auxiliary radiation from an auxiliary radiator;

periodically interrupting the measuring radiation after it has passed through the medium and before it strikes the thermal sensor;

varying the radiation from the auxiliary radiator so that the thermal sensor is always heated to a selected excess temperature with said measuring radiation interrupted and uninterrupted by varying the current passing through said auxiliary radiatior;

measuring the difference between current passing through the auxiliary radiator when the measuring radiation is interrupted and when the measuring radiation is uninterrupted; and

using the difference in current as a measure which is proportional to the property of the medium to be measured.

4,345,152

MAGNETIC LENS

Robert L. Gerlach, Minnetonka, Minn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 11, 1980, Ser. No. 176,735

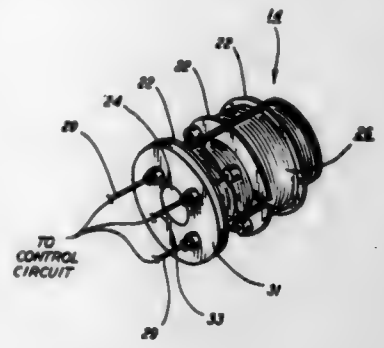
Int. Cl.³ H01J *3/14*

U.S. Cl. 250—396 ML **6 Claims**

1. A magnetic lens useful in a charged particle beam generator comprising:

a base having an aperture therethrough, said aperture being axially aligned with the beam produced by said generator;

means, for producing a controllable magnetic field in said aperture of said base and simultaneously maintaining a preselected thermal power dissipation independent of the strength of said magnetic field, said means being an electromagnetic coil concentric with said aperture and supported by said base; said coil including a pair of sub-coils the direction and magnitude of the currents of which are independently controllable; and



means for controlling said magnetic field by varying the algebraic sum of said currents in said sub-coils; and

means for maintaining said preselected thermal power dissipated by maintaining the absolute value sum of said currents constant.

4,345,153

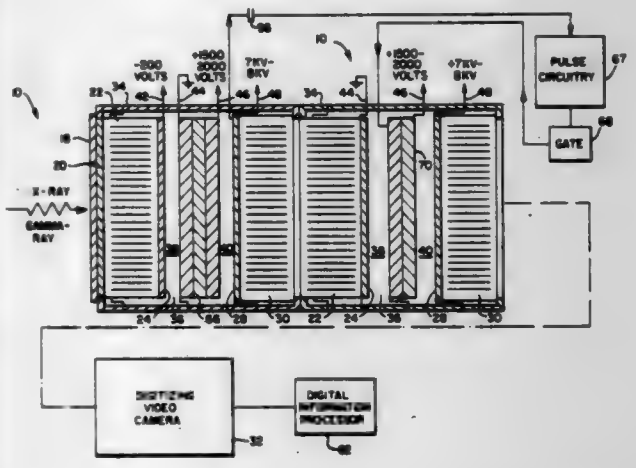
LOW INTENSITY X-RAY AND GAMMA-RAY SPECTROMETER

Lo I. Yin, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 30, 1980, Ser. No. 173,524

Int. Cl.³ G01T *1/20*

U.S. Cl. 250—369 **33 Claims**



1. Apparatus for imaging, counting, and energy resolving of single invisible radiation particles comprising:

means for converting said invisible radiation particles to visible light photons;

means for converting said visible light photons to photoelectrons;

means for light coupling each of said converting means;

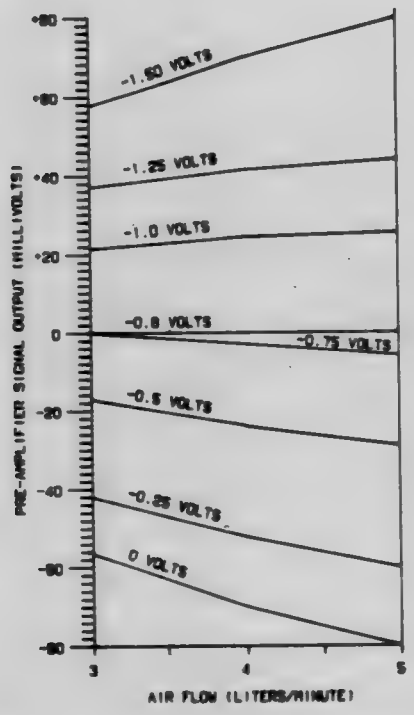
means for intensifying said photoelectrons by an average gain factor of substantially 10^4–10^7, said intensifying means being an anti-ion feedback microchannel plate multiplier operated substantially below saturation;

means for displaying said intensified photoelectrons, said displaying means quantitatively indicating spatial position, number, and energy of said single invisible radiation particles.

4,345,154
BIAS-COMPENSATED, IONIZATION SENSOR FOR GASEOUS MEDIA AND METHOD FOR ATTAINING PROPER BIAS FOR SAME

Augustus S. Bainbridge, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 3,436, Jan. 12, 1979, abandoned. This application May 18, 1981, Ser. No. 264,873
Int. Cl.³ H01J *39/28*
U.S. Cl. 250—375 19 Claims



1. For use with an ionization detector for monitoring gaseous media and detecting the presence of undesirable constituents therein, the combination comprising:

an ionization sensor cell for receiving a flow of sampled gaseous media therein and continuously sensing the ionization level thereof and for emitting electrical output voltage variations proportionate in voltage value to the levels of ionization sensed in the gaseous media, said cell being sensitive and responsive to variations in the rate of flow of the gaseous media being received therein and in consequence of such sensitivity and responsiveness thereby also emitting output voltage variations resulting from variations in the rate of flow of the gaseous media; and

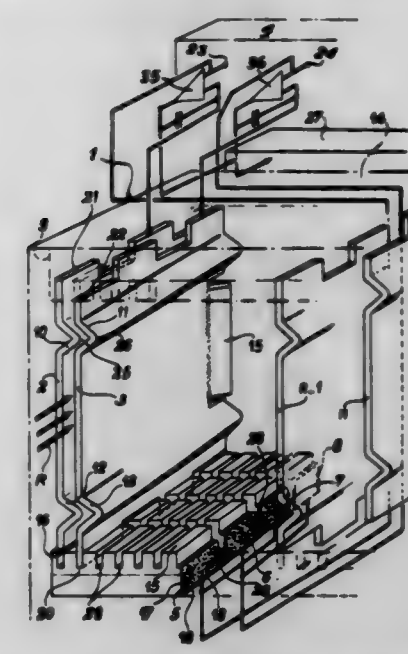
means for compensating for variations in the electrical output voltage emitted by said sensor cell as a result of variations in the rate of flow of the gaseous media being sensed by said cell, said compensating means including voltage biasing means for impressing a bias voltage upon the output voltage of said cell of sufficient extent to nullify output voltage variations emitted by said cell as a consequence of variations in the flow rate of the gaseous media being sensed by said cell.

4,345,155
RADIATION DETECTOR FOR USE IN X-RAY TOMOGRAPHY

Robert Allemand, St. Ismier, and Michel Laval, St. Martin d'Uriage, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 3, 1979, Ser. No. 81,431
Claims priority, application France, Oct. 13, 1978, 78 29267
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—385 6 Claims

1. A radiation detector comprising an ionization chamber having at least two juxtaposed electrodes, formed by plates respectively raised to a first potential and to a second potential, said plates being supported by insulating strips, wherein the

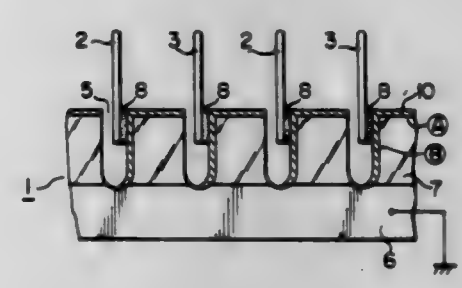


plates form in the vicinity of the insulating strips baffles which protect the strips against radiation.

4,345,156
IONIZATION CHAMBER TYPE X-RAY DETECTOR

Isao Ishikawa, Hino; Hiroshi Kanda, Tokorozawa, and Shinji Yamamoto, Hachioji, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Oct. 7, 1980, Ser. No. 194,817
Claims priority, application Japan, Oct. 8, 1979, 54-128941
Int. Cl.³ G01T *1/18;* G01N *21/00*
U.S. Cl. 250—385 7 Claims



1. An ionization chamber type X-ray detector comprising:

a pair of electrode supporting plates each having a surface in which a plurality of grooves are formed with a predetermined interval from each other, that surface portion of said electrode supporting plates between said grooves being made of non-insulative material; and

a plurality of plate-like anode and cathode electrodes secured to said grooves respectively through insulating medium.

4,345,157
PROCESS FOR USE OF AN X-RAY TOMO-SCANNER MAKING IT POSSIBLE TO PERFORM CINEDENSIGRAPHY AND CORRESPONDING ADAPTATION OF TOMO-SCANNER

Remy Klausz, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 14, 1980, Ser. No. 168,105
Claims priority, application France, Jul. 17, 1979, 79 18463
Int. Cl.³ A61B *6/00*
U.S. Cl. 378—19 11 Claims

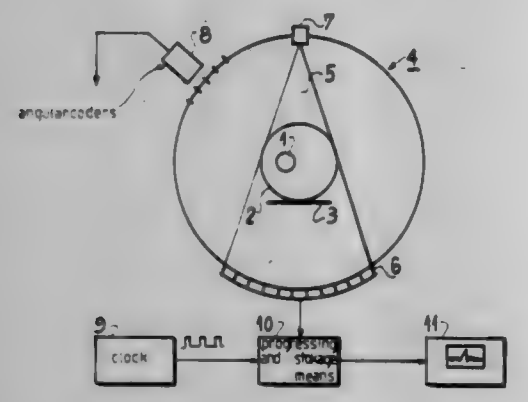
1. An X-ray tomo-scanner comprising:

a radiation absorption measuring device supplying N signals corresponding to the absorption undergone respectively

by N elementary beams while passing through a section to be examined and defining a projection of said section at the time of a first measurement, N being an integer equal to or greater than 1;

means for processing and storing the obtained sequences of N signals;

a clock means for controlling each measurement operation leading to the N signals with the sampling occurring at the rhythm of the output of the clock to indicate different



states of said section observed with said clock signals being supplied whenever the tomo-scanner is used in cinedensigraphy to the processing and storage means in place of the signals, which, when used in tomo-scanning, indicate the angular position of the measuring device; and

visual display means for displaying the amplitude of the sequences of N signals obtained as a function of time for one or more given elementary beams and/or at a constant time for the different elementary beams.

4,345,158

TOMOGRAPHIC APPARATUS FOR THE PRODUCTION OF TRANSVERSE LAYER IMAGES

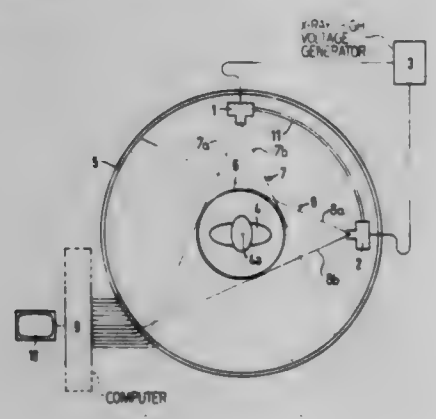
Manfred Pfeiler, and Karlheinz Pauli, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,530

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1979, 2943643

Int. Cl.³ A61B *6/00*

U.S. Cl. 378—5 **2 Claims**



1. Tomographic apparatus for the production of transverse layer images of a radiography subject, comprising a radiation measuring arrangement having two radiation sources of different radiation energy, which generate radiation beams penetrating the radiography subject, the cross-sectional extent of said radiation beams perpendicular to the layer plane being essentially equal to the layer thickness, and also having a radiation receiver which determines the radiation intensity behind the subject, a rotating device for irradiation of the radiography subject from different directions, and a computer for the determination of the attenuation coefficients of every image point in an image point-matrix disposed in the examined layer, the computer being so designed that, for every image point, it determines the attenuation coefficient for every radiation energy and determines therefrom the median ordinate value and the density, characterized in that the radiation receiver (5), as a stationary ring, is comprised of a plurality of detector elements, and that, for scanning, only the radiation sources (1, 2) are rotated about the radiography subject (4) and that the radiation sources (1, 2) are maintained at such a distance from one another that no detector element is simultaneously impinged upon by both radiation beams (7, 8).

4,345,159

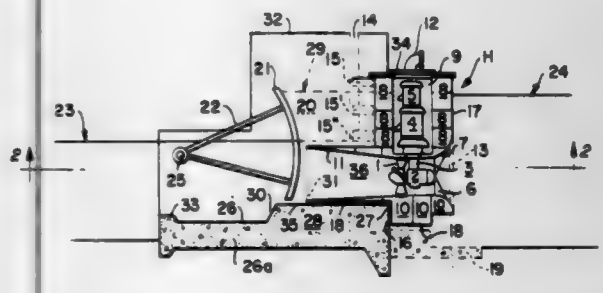
HYDROPOWERED BULKHEAD

Francisco J. Gutierrez Atencio, Estafeta Dr., Garcia 3101, Diamante Entre Rios, Argentina

Filed Jul. 15, 1980, Ser. No. 169,185

Int. Cl.³ F03B *13/08*

U.S. Cl. 290—43 **13 Claims**



1. A fluid body retaining damming installation including, fixed primary damming means and alternative complementary movable primary damming means, said fixed damming means defining a fluid passageway and said movable damming means controlling fluid flow therethrough, displaceable secondary damming means including a hydropowered bulkhead assembly having a conduit provided with a peripheral wall defining a fluid flow path through said assembly, said conduit having a first fluid intake open end and a second fluid exhaust open end, an energy generation unit within said assembly having motive means within said conduit adapted to be moved by fluid flowing through said conduit to actuate said energy generation unit, at least one said open end of said assembly conduit insertable within said fluid passageway in a juxtaposed manner to provide an energetic functional status therewithin, said hydropowered bulkhead assembly having displacement means therein operable to selectively displace said assembly and its secondary damming means between a first extreme position in said juxtaposed energetic functional status and a second extreme position with said assembly in an idle non-operative status fully removed from juxtaposed said fluid passageway, said displacement means including a plurality of selectively operable hermetic chambers and ballast means defining buoyancy of a volume at least sufficient to produce a spatial-controlled flotation or sinking status on said bulkhead assembly when gas or liquid is respectively admitted therein for achieving said displacement between said two extreme defined positions, and said hermetic chambers and ballast means optionally/alternatively operable to induce an angular rotation of said bulkhead assembly substantially about the horizontal axis of said conduit.

4,345,160

WATERWHEEL POWER GENERATOR

J. T. Smith, 225D Forrest Ave., Gainesville, Ga. 30501

Continuation of Ser. No. 949,198, Oct. 6, 1978. This application Dec. 10, 1980, Ser. No. 214,708

Int. Cl.³ F03B *7/00*

U.S. Cl. 290—52 **5 Claims**

1. Power generating apparatus comprising:

a housing enclosure;

a waterwheel carried within said housing enclosure in an upright manner having a plurality of fin elements for

turning said waterwheel responsive to a discharge of water thereagainst;

said waterwheel including a shaft;

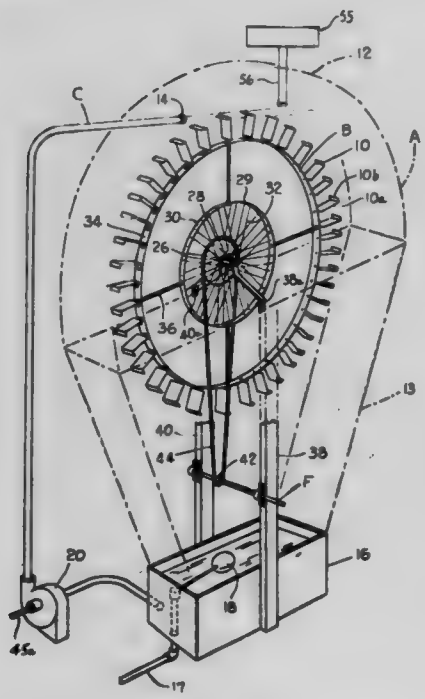
hub means carried on said shaft;

a rim member carried by said hub means carrying said fin elements;

means supporting said rim member on said hub means including adjustment means balancing and aligning said waterwheel so that said waterwheel may be maintained in rotational balance and alignment with said discharge means;

water discharge means enclosed within said housing enclosure disposed above said waterwheel;

nozzle means carried by said discharge means extended into said enclosure housing in discharge alignment with said fin elements;



said nozzle means including a generally cylindrical sidewall terminating perpendicularly in an end plate having a reduced central water discharge aperature formed therein affording abrupt water compaction at discharge facilitating discharge of a solid stream of water generally devoid of air;

a water collection tank disposed below said waterwheel integral with said housing enclosure affording collection of said water discharge from said water discharge means;

water control means for maintaining a desired level of water in said collection tank;

supply means for delivering water to said water discharge means; and

power take-off means connected to said waterwheel and adapted for connection to a power generator.

4,345,161

MULTI-WHEEL WINDMILL ELECTRO-GENERATOR

George Crompton, 710 S. Armada Rd., Venice, Fla. 33595

Filed Feb. 23, 1979, Ser. No. 14,904
Int. Cl.³ F03D *1/02*
U.S. Cl. 290—55 2 Claims

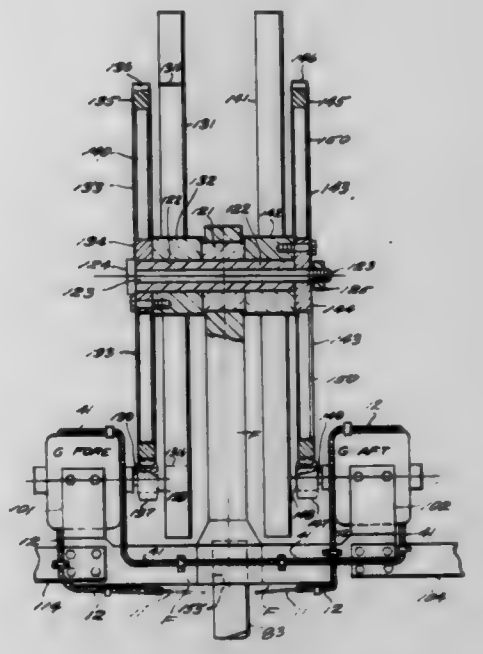
1. A wind wheel electro-generator having a plurality of wind wheels having fixed vanes,

said vanes balking the wind over the entire area swept by the vanes and widening with their radii,

said wind wheels being in fore and aft relationship,

individual electro-generators each mechanically geared to a particular wind wheel,

said electro-generators being mechanically independent of each other, and the volume outside the body of revolution defined by the peripheries of the wind wheels being unimpeded by any enclosure so that the wind stream can enter between the wheels thereby to increase the energy received,



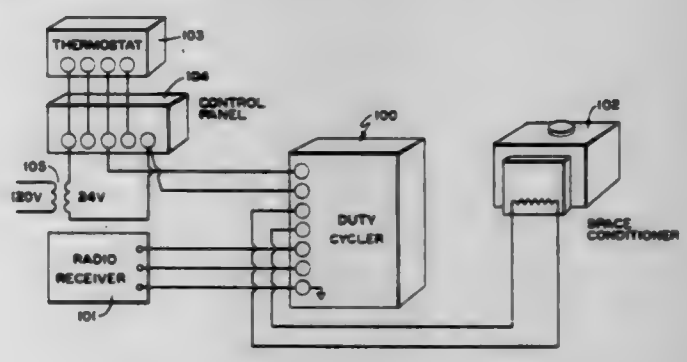
one of said wind wheels being counter rotative to another thereof.

4,345,162

METHOD AND APPARATUS FOR POWER LOAD SHEDDING

Jeffrey M. Hammer, St. Louis Park, and Thomas J. Olson, Richfield, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 30, 1980, Ser. No. 164,711
Int. Cl.³ H02J *13/00*
U.S. Cl. 307—39 46 Claims



1. A method of limiting the electrical power demand of electrical space conditioning means comprising the steps of:

sensing the ON and OFF half-cycle times of the thermostat means associated with operation of the space conditioning load means;

storing information related to said sensed ON and OFF half-cycle times;

initiating overriding control of the ON-OFF switching function of the space conditioning load means from said thermostat means at the inception of a load-shedding interval;

controlling the ON-OFF half-cycle times of the space-conditioning load during a load-shedding interval based on load-shed ON and OFF half-cycle times individually determined for that space conditioning load means derived from stored information and in a manner such that the thermostat state determines whether said space conditioning load means is ON during any part of each of said load-shed ON half-cycle times and said space conditioning means remains off during the load-shed OFF half-cycle regardless of thermostat state; and

returning full control of said ON-OFF switching means of

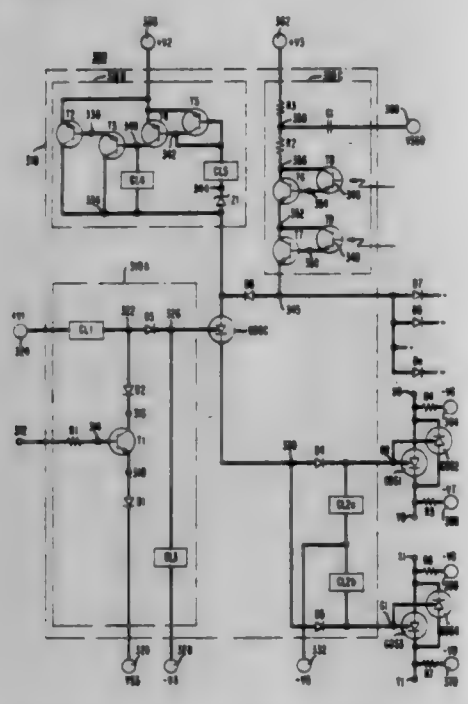
said space conditioning load means to said thermostat means after the load-shedding interval.

4,345,163

CONTROL CIRCUITRY FOR HIGH VOLTAGE SOLID-STATE SWITCHES

James A. Davis, Glen Ellyn; William F. MacPherson, Winfield Township, DuPage County; Harry E. Mussman, Glen Ellyn, all of Ill., and Peter W. Shackle, Bridgewater, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 15, 1980, Ser. No. 150,184
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—252 A 3 Claims



1. Circuitry for use with a first switching device of the type comprising a semiconductor body a bulk portion of which is of relatively high resistivity, a first region of a first conductivity type, a second region of a second conductivity type opposite that of the first conductivity type, the first and second regions being connected to output terminals of the switching device, a gate region of the second conductivity type, the gate region being coupled to a control terminal of the switching device, the first, second and gate regions being of relatively low resistivity and being mutually separated by portions of the bulk of the semiconductor body, the parameters of the device being such that, with a first voltage applied to the control terminal of the first switching device, a potential is established within a cross-sectional portion of the bulk of the semiconductor body which is substantially different from that of the potential of the first and second regions and which prevents current flow between the first and second regions, and that, with a second voltage applied to the control terminal of the first switching device and with appropriate voltages applied to the output terminals of the first switching device, a relatively low resistance current path is established between the first and second regions by dual carrier injection, a second switching device of the same type as said first switching device, a second output terminal of the second switching device being coupled to the control terminal of the first switching device, a first branch circuit being adapted to be coupled to a first potential source and being coupled to the second switching device for controlling conduction between the first and second regions thereof, comprising:

a second branch circuit coupled to the second switching device and being adapted to be coupled to a second potential source which has a lower potential than the first potential source;

the second branch circuit being adapted to supply up to a preselected maximum current level to the second switching device and then thereafter to reduce the current level to a lower level;

a third branch circuit coupled to the second switching device and being adapted to be coupled to a third potential source and further being adapted to supply a pulse of current to the second switching device;

the second circuit branch comprises a third switching device which has one output terminal coupled to the second switching device, a second output terminal adapted to be coupled to the second potential source, and which has a control terminal;

voltage sensitive circuit means coupled to the first and second output terminals and control terminal of the third switching device for sensing voltage across the output terminals of the third switching device and for biasing off said device if the potential across the output terminals thereof exceeds a preselected value; and

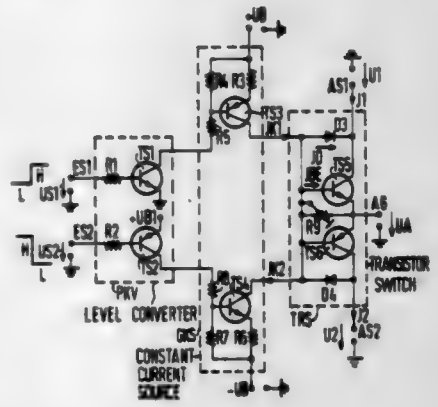
the voltage sensitive circuit means comprises a zener diode, and fourth and fifth switching devices.

4,345,164

TRANSISTOR SWITCH WITH TWO CONTROL INPUTS

Johannes Gies, Holzkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 94,823
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850653
Int. Cl.³ H03K *1/12, 3/01*
U.S. Cl. 307—255 11 Claims

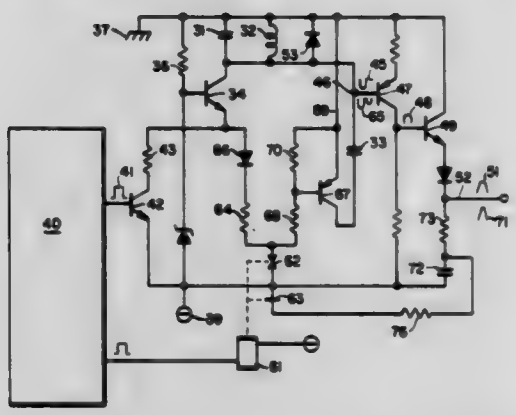


1. A transistor switch circuit, comprising: two control inputs respectively connected to two first transistors; two supply voltage sources of different polarity which are respectively supplied to a respective one of the transistors; outputs of the transistors respectively connecting to parallel connected base control inputs of two switching transistors; emitters of the switching transistors being connected to a common output; each of the collectors of the switching transistors being directly connected to a respective voltage source to be connected to the output by and through the respective switching transistor; and a first diode connected in parallel across the base-collector path of each of the two switching transistors, a polarity of the first diode being aligned to correspond to a polarity of the associated switching transistor base-collector path, whereby the switching transistors with the associated diodes provide a low resistance path from the respective voltage source to the output independent of load variations.

4,345,165
METHODS AND CIRCUITRY FOR VARYING A PULSE OUTPUT OF A RESONANT CIRCUIT

Leo L. Radke, Oklahoma City, Okla., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,404
Int. Cl.[3] H03K 5/07
U.S. Cl. 307—265 18 Claims

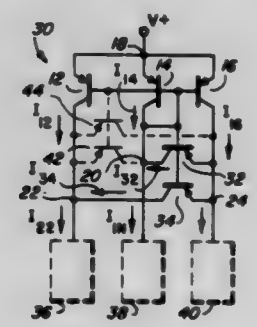


1. A pulse pair generating circuit, which comprises:
an inductive-capacitance network for generating a first output pulse of a first predetermined width;
a trigger circuit responsive to an input for applying a current pulse to energize said inductive-capacitance network to generate said first output pulse at a first point in time;
circuit means including a normally unoperated switching transistor and a capacitor connectable across the inductive-capacitance network upon operation of said transistor for controlling said inductive-capacitance network to produce a second output pulse of a second predetermined width; and
means responsive to a second input pulse for operating said switching transistor and said trigger circuit to apply an energizing pulse to said combined inductive-capacitance network and said now connected capacitor to produce an output pulse of said second predetermined width at a second point in time slightly delayed from said first point in time.

4,345,166
CURRENT SOURCE HAVING SATURATION PROTECTION

Gordon H. Allen, Mesa, and Robert A. Neidorff, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1979, Ser. No. 79,667
Int. Cl.[3] H03F 3/18; H01L 29/72
U.S. Cl. 307—296 R 9 Claims

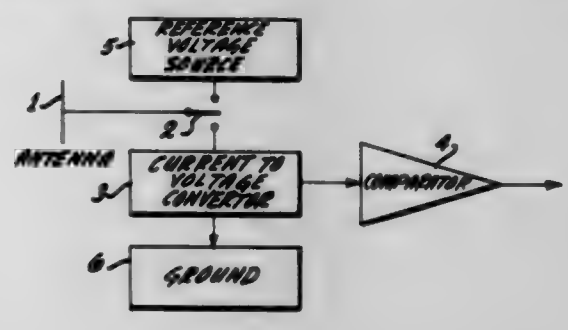


1. A current source for providing multiple output currents comprising an input transistor and at least two output transistors, the emitters of the input and output transistors being connected to a power supply terminal, the bases being commonly connected, the collector of the input transistor being connected with the base thereof to an utilization means, the collectors of the two output transistors being connected to respective load means, and additional utilization means being responsive to a first one of the output transistors becoming saturated for maintaining a balance of current between the input transistor and the second one of the output transistors, said additional utilization means being coupled to the base and collector of the first output transistor and to the respective collectors of the input and the second output transistor.

4,345,167
CAPACITANCE PROXIMITY SENSOR

Noel M. Calvin, 2683 Buena Vista, Berkeley, Calif. 94708

Continuation-in-part of Ser. No. 924,499, Jul. 14, 1978, abandoned. This application Jan. 18, 1980, Ser. No. 113,867
Int. Cl.[3] G08B 13/26
U.S. Cl. 307—308 12 Claims

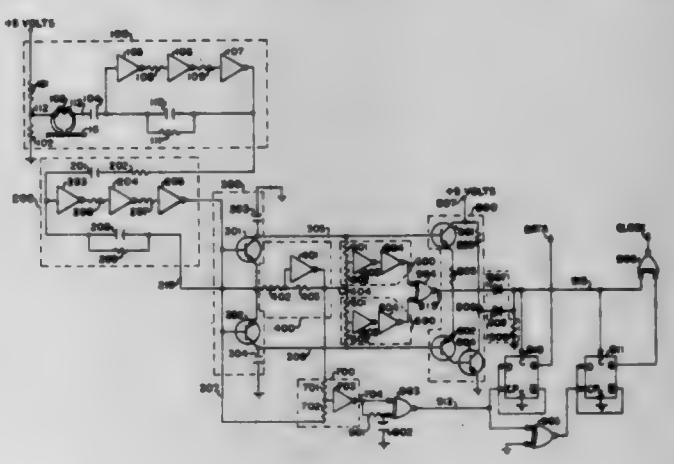


1. A method for detecting changes in the capacitance of an antenna caused by the approach of a person or object to the antenna comprising in combination the steps of:
charging said antenna to a fixed voltage relative to a reference body; discharging said antenna through a current to voltage convertor such that the output voltage of the convertor is proportional to the amount of charge stored on the antenna, performing said charging and discharging steps repetitively and in sequence; and
monitoring said output voltage to detect changes caused by the approach of a person or object to the antenna, which will increase the capacitance of the antenna, and hence increase the amount of stored charge.

4,345,168
ELECTRICAL PEAK DETECTOR

Alan J. Fisher, 5711 Tannahill Cir., Huntsville, Ala. 35802

Division of Ser. No. 13,907, Feb. 22, 1979, Pat. No. 4,254,441. This application Apr. 3, 1980, Ser. No. 136,839
Int. Cl.[3] H03K 5/153
U.S. Cl. 307—351 3 Claims



1. A peak detector comprising:
signal means for providing an alternating potential between first and second terminals;
first and second bi-polar complementary transistors connected emitter-to-emitter, and thereby providing a common emitter terminal, and connected base-to-base, and thereby providing a common base terminal;
circuit means connecting said first terminal to said common base terminal;

a first capacitor connected in circuit between the collector of said first transistor and any constant potential, and a second capacitor connected in circuit between the collector of said second transistor and any constant potential point; and

feedback means connected between said common emitter terminal and said common base terminal, including capacitance means for coupling a capacitive effect between said common emitter terminal and said common base terminal;

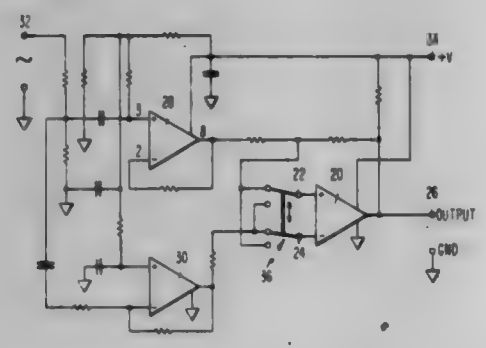
whereby, upon the application of a said alternating potential and thereby the operation of said transistors, said first and second capacitors are alternately charged to the respective peaks of a common emitter voltage through base-collector diodes of each transistor, and then each capacitor is partially discharged before the next peak of its charging potential by virtue of transistor action of quadrature phased emitter currents.

4,345,169

ZERO CROSSING DETECTOR

Mustafa Y. M. Saleh, Margate, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Oct. 27, 1980, Ser. No. 201,007
Int. Cl.³ H03K *5/153;* G01R *19/175*
U.S. Cl. 307—354 **3 Claims**



1. Apparatus for detecting zero crossings of an electrical signal, said apparatus comprising, in combination:

(a) an input terminal for receiving the electrical signal;

(b) a voltage comparator having two inputs and an output;

(c) an inverting amplifier having an input and an output, said input thereof being coupled to said input terminal and said output thereof being coupled to one input of said voltage comparator; and

(d) a non-inverting amplifier having an input and an output, said input thereof being coupled to said input terminal and said output thereof being coupled to the other input of said voltage comparator.

4,345,170

CLOCKED IGFET LOGIC CIRCUIT

George P. Sampson, III, Bernardsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 18, 1980, Ser. No. 178,901
Int. Cl.³ H03K *19/003, 19/096, 19/20, 17/16*
U.S. Cl. 307—443 **2 Claims**

1. A clocked logic circuit comprising:

means for providing a clock signal having a first and a second phase;

first and second terminals respectively connectable to receive a first and a second operating potential;

a plurality of input means for receiving respective input signals;

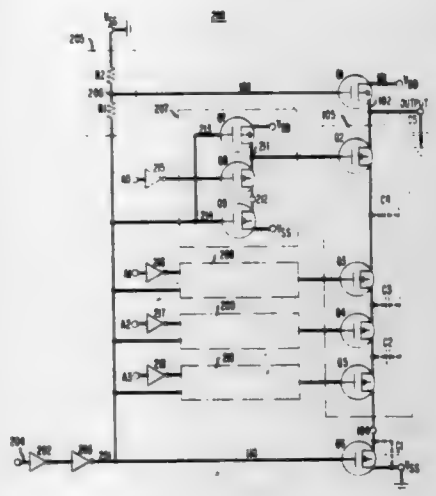
an output terminal for providing an output signal;

a first IGFET having a conduction channel coupled between the first terminal and the output terminal and a gate electrode;

means coupled to the gate electrode of the first IGFET and being responsive to the clock signal for biasing the first IGFET to the ON state during the second phase of the clock signal and for biasing the first IGFET to the OFF state or to have a relatively low channel conductance during the first phase of the clock signal;

a functional network coupled between the output terminal and a first node, the network comprising a plurality of IGFETs each having a gate electrode coupled to a respective one of the input means and a conduction channel, the conduction channels of the IGFETs of the functional network being coupled in a configuration to provide the circuit with a predetermined logical function, the configuration having two or more conduction channels coupled in series,

a second IGFET having a conduction channel coupled between the first node and the second terminal and a gate electrode;



means coupled to the gate electrode of the second IGFET and being responsive to the clock signal for biasing the second IGFET to the OFF state during the second phase of the clock signal and for biasing the second IGFET to the ON state during the first phase of the clock signal;

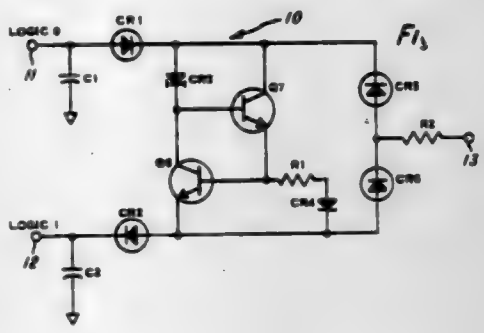
characterized in that the plurality of input means are responsive to the clock signal for providing the respective input signals to the gate electrodes of the IGFETs of the functional network during the first phase of the clock signal and for providing substantially the first operating potential to the gate electrodes of the IGFETs of the functional network during the second phase of the clock signal whereby noise at the output terminal is reduced.

4,345,171

ADAPTABLE NONLINEAR TRANSMISSION LINE TERMINATOR

William S. Harris, Jr., Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 30, 1980, Ser. No. 164,379
Int. Cl.³ H03K *5/08;* H03H *7/40*
U.S. Cl. 307—560 **10 Claims**



1. An adaptable nonlinear transmission line terminator comprising:

(a) a "0" reference terminal upon which a voltage representing a logical "0" is impressed;

(b) a "1" reference terminal upon which a voltage representing a logical "1" is impressed;

(c) an input terminal upon which an input signal is impressed;

(d) current blocking circuitry for blocking current flow between the input terminal and either of the "0" or "1" reference terminals when the input signal voltage amplitude falls within the range defined by the "0" voltage and "1" voltage, presenting high impedance to the transmission line; and

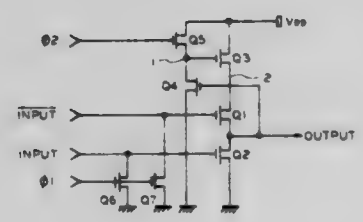
(e) impedance matching circuitry for reducing line reflection, connected to the current blocking circuitry, to match the impedance of the transmission line when the input signal voltage amplitude falls outside the range defined by the "0" voltage and the "1" voltage, thereby allowing current flow between the input terminal and either of the "0" or "1" reference terminal.

4,345,172

OUTPUT CIRCUIT

Satoru Kobayashi, and Hiroshi Watanabe, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,263
Claims priority, application Japan, Nov. 14, 1978, 53-140352
Int. Cl.³ H03K *5/08, 19/092, 19/094, 19/017*
U.S. Cl. 307—562 **16 Claims**



1. An output circuit comprising a series circuit including first and second field-effect transistors connected in series between first and second nodes and an output node derived from a junction between said first and second transistors, said first and second transistors being controlled by at least one signal, a first power source, a third field-effect transistor provided between said first node and said first power source, and a control means responsive to a level of said output node for controlling a level at the gate electrode of said third transistor so as to limit a high level of said output in absolute value.

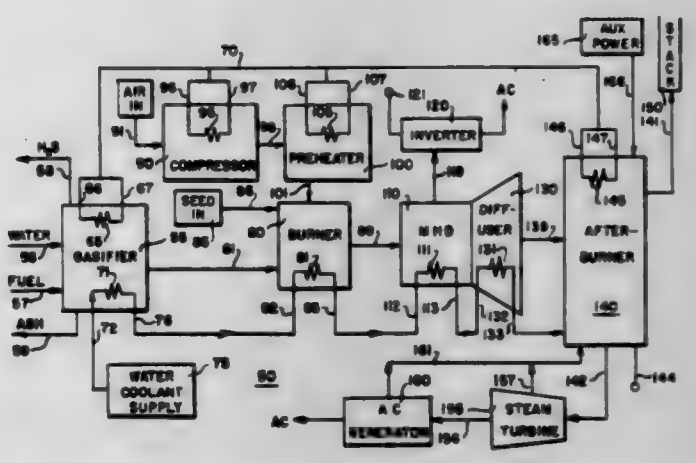
4,345,173

METHOD OF GENERATING ELECTRICITY USING AN ENDOTHERMIC COAL GASIFIER AND MHD GENERATOR

David D. Marchant, and John M. Lytle, both of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 12, 1980, Ser. No. 177,327
Int. Cl.³ H02N *4/02*
U.S. Cl. 310—11 **18 Claims**

1. A method of generating electrical power, comprising: introducing carbonaceous material and water to a gasifier, initiating and sustaining the endothermic reaction of carbon and water in the gasifier thereby providing a gasified stream free of ash containing carbon monoxide, hydrogen and nitrogen, passing the gasified stream and an ionizing seed material to a burner and there contacting the gasified stream with preheated air to burn the gasified stream thereby producing ionized combustion gases having a temperature greater than about 3600° F., accelerating the ionized combustion gases to a velocity greater than about 400 meters per econd, passing the accelerated ionized combustion gases through an MHD generator to generate DC power and thereafter through a diffuser to reduce the gas velocity, and passing the gases from the diffuser



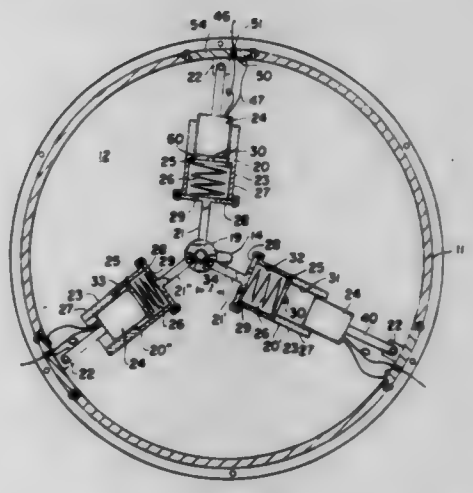
in heat exchange relationship with the gasifier to provide heat to sustain the endothermic reaction of carbon and water.

4,345,174

ELECTROMAGNETIC ENGINE

Neil H. Angus, Sebring, Fla., assignor to Angus Motor Corporation, Fort Lauderdale, Fla.

Filed Jun. 1, 1981, Ser. No. 269,332
Int. Cl.³ H02K *41/00*
U.S. Cl. 310—24 **19 Claims**



1. Electromagnetic apparatus for converting electrical energy into mechanical power comprising:

a support structure;

a crankshaft mounted on said support structure and arranged to rotate thereon;

at least one electromagnetic piston-cylinder combination comprising an electromagnetic piston pivotally attached to said support structure, a cylinder pivotally attached to a throw of said crankshaft and in sliding engagement with said piston, said piston being positioned within said cylinder;

an electrical power source for energizing said electromagnet; and

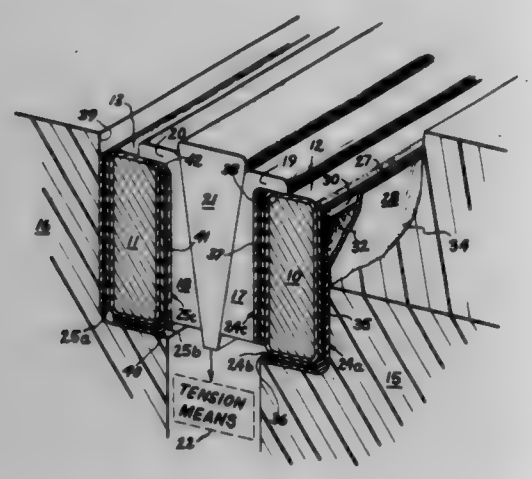
means for using substantially axial magnetic forces to impart axial motion to said cylinder which imparts rotational motion to said crankshaft.

4,345,175

MEANS FOR REDUCING SHEAR STRESSES ON WINDING CONDUCTOR INSULATION FOR AIR-GAP DYNAMOELECTRIC MACHINES

Donald W. Jones, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,316
Int. Cl.[3] H02K *15/12*
U.S. Cl. 310—45 21 Claims



1. In an air-gap dynamoelectric machine having a rotor rotatable about a longitudinal axis thereof and a stator magnetic core separated from said rotor by an air-gap, the combination comprising:

(a) a stator winding conductor having a layer of insulation thereon;

(b) stator winding conductor support means disposed in said air-gap in fixed relation to said stator magnetic core for supporting said conductor, said support means having at least one surface adjacent said conductor insulation;

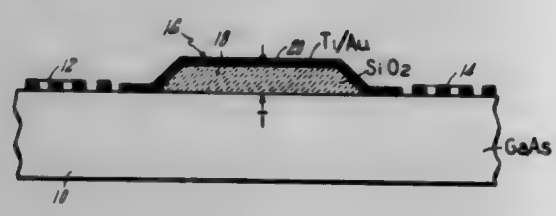
(c) an envelope disposed between said conductor insulation and said at least one surface, said envelope having a pair of interior, major, confronting surfaces slidable with respect to each other, and comprising at least one sheet of material substantially impervious to thermosetting resin.

4,345,176

TEMPERATURE COMPENSATED GALLIUM ARSENIDE SURFACE ACOUSTIC WAVE DEVICES

Thomas W. Grudkowski, Glastonbury, and Meyer Gilden, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 3, 1980, Ser. No. 203,178
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—313 A 4 Claims



1. A temperature compensated surface acoustic wave device comprising a semi-insulating gallium arsenide substrate and at least one acoustoelectric transducer disposed on a surface of said substrate,

characterized by:

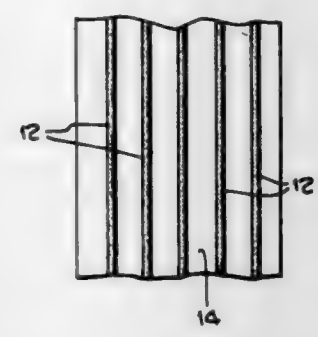
a composite mass loading and temperature compensating layer disposed on said surface, said layer including silicon dioxide and a metal having a Rayleigh wave velocity which is lower than the Rayleigh wave velocity of gallium arsenide.

4,345,177

LIGHT FIBERS MADE FROM COMPONENTS OF A TYPE II EUTECTIC SYSTEM

James D. Parsons, and Alfred S. Yue, both of Los Angeles, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 19,129, Mar. 9, 1979. This application Nov. 17, 1980, Ser. No. 207,143
Int. Cl.[3] H01J *40/02, 29/18;* G02B *5/14*
U.S. Cl. 313—95 13 Claims



1. An optical radiation conducting system comprising:

electro-magnetic conductive means for receiving and conducting optical radiation, said conductive means including a matrix material comprising a first component of a type II eutectic system and a plurality of mutually spaced optical energy conductive fibers within said matrix material, said fibers being formed from a second material component of said Type II eutectic system, said fiber material being characterized by a lesser molecular weight, but greater refractive index than said matrix material; and

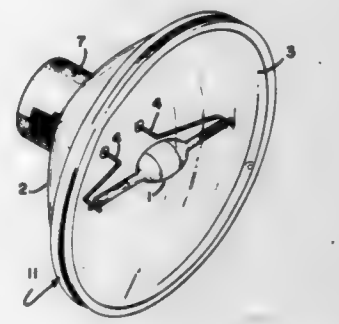
means for generating optical radiation and supplying it to a first end of said fibers whereby said optical radiation is conducted through said fibers to a second end of said fibers.

4,345,178

HIGH INTENSITY REFLECTOR LAMP

John A. Pappas, Winthrop, and Roger T. Hebert, Peabody, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 865,616, Dec. 29, 1977, abandoned. This application Apr. 6, 1981, Ser. No. 251,661
Int. Cl.[3] H01J *61/35, 61/36*
U.S. Cl. 313—113 2 Claims

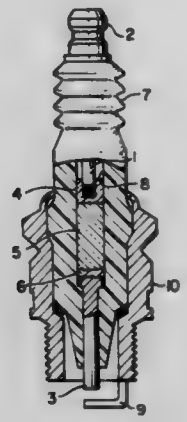


1. A reflector lamp comprising: an arc discharge tube disposed at about the focus of a parabolic reflector and supported by two lead-in support wires extending through the reflector and sealed to, and extending through and beyond, two ferrules which are glass to metal sealed to the reflector; a stabilizer support adhesively bonded to the back of the reflector, the external ends of the lead-in support wires being directly secured in the stabilizer support in order to stabilize the arc tube during vibration.

4,345,179
RESISTOR GLASS SEAL SPARK PLUG

Tadamichi Asai, and Kousuke Nakamura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 167,450
Claims priority, application Japan, Jul. 13, 1979, 54-88286
Int. Cl.[3] H01T *13/20*
U.S. Cl. 313—136 6 Claims



1. In a resistor glass seal spark plug having between a terminal screw and a center electrode an electrical conductive glass seal at the side of the lower end of the terminal screw, a resistor glass seal and an electrical conductive glass seal at the side of the center electrode, the improvement wherein the electrical conductive glass seal at least at the side of the lower end of the terminal screw comprises carbon, one or more metals and glass.

4,345,180
ENVELOPE FOR METAL HALIDE DISCHARGE LAMP WITH PROTECTIVE LAYER CONTAINING B_2O_3

Hartmut Schneider, Munich, and Josef Grabmaier, Berg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

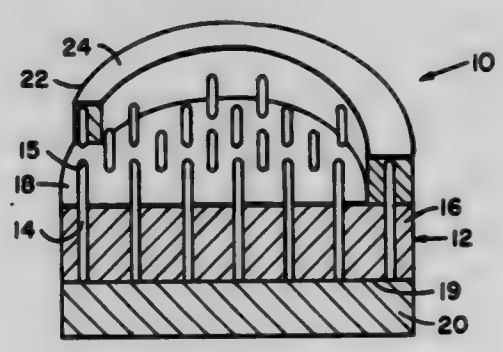
Filed Feb. 1, 1980, Ser. No. 117,550
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2906038
Int. Cl.[3] H01J *61/35*
U.S. Cl. 313—221 5 Claims

1. In a metal halide electric discharge lamp envelope composed of silica glass with a SiO_2-B_2O_3 glass layer on an inner wall thereof, the improvement comprising wherein said SiO_2-B_2O_3glass layer is covered with a protective layer comprised of a silica glass having a lower B_2O_3 content relative to the B_2O_3 content in said SiO_2-B_2O_3 glass layer.

4,345,181
EDGE EFFECT ELIMINATION AND BEAM FORMING DESIGNS FOR FIELD EMITTING ARRAYS

Joe Shelton, 700 Tatom St., SW., Huntsville, Ala. 35805

Filed Jun. 2, 1980, Ser. No. 155,890
Int. Cl.[3] H01J *1/02*
U.S. Cl. 313—309 7 Claims

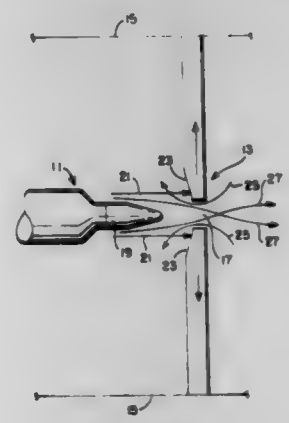


1. An electron emitter assembly for electric field electron emission comprising: a field effect electron emitter composite having a plurality of minute, elongated, parallel, conductive fibers; an insulation filler, each fiber being insulated from and held substantially equidistant from adjacent fibers by said insulation; each fiber having first ends thereof terminated in a plane for emitting electrons therefrom, said first ends extending a uniform distance beyond the surface of said insulation for providing electron field emission; and a conductive backing plate in common with the second end of each of said fibers for conveying an electrical potential thereto; and a conductive material covering selected ones of said fiber first ends for preventing electric field emission from said covered fibers when the remaining uncovered fibers are emitting electrons.

4,345,182
ELECTRODE HAVING SPIRAL-SHAPED ELECTRICALLY CONDUCTING REGIONS THEREIN USEFUL AS AN ANODE IN ELECTRON BEAM DISCHARGE DEVICES

John L. Adamski, Bothell, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 2, 1980, Ser. No. 155,520
Int. Cl.[3] H01J *1/46, 17/04, 19/38, 19/40*
U.S. Cl. 313—348 11 Claims





1. An electrode useful as an anode in an electron beam discharge device in which electrons are emitted from a cathode source, comprising:

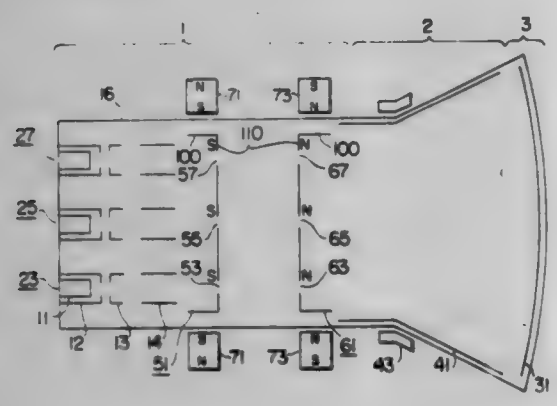
electrode means, including means located in the vicinity of the outer rim of the electrode means for grounding the electrode means to the discharge device, said electrode means having an approximately central opening therein, through which electrons from the cathode source move, for forming an electron beam downstream of said electrode means, said electrode means further having regions of electrical conductance, separated by regions of electrical non-conductance, extending radially outwardly from the central opening and arranged so that the regions of electrical conductance are angularly displaced between their beginning points, which are located relatively towards the central opening and their termination points, which are located relatively away from the central opening in the vicinity of the outer rim of the electrode, so that in operation, an electrical current is established in the regions of electrical conductance by those electrons which strike said electrode means and follow an angularly displaced path to said grounding means, resulting in the creation of a magnetic field about the central opening, which assists in focusing the electrons emitted from the cathode source through the central opening to form the electron beam.

4,345,183

COLOR PICTURE TUBE WITH MAGNETIC FOCUSING SYSTEM

Kyohei Fukuda, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1978, Ser. No. 917,179
Claims priority, application Japan, Jun. 20, 1977, 52/72058
Int. Cl.³ H01J *29/52*
U.S. Cl. 313—412 **14 Claims**



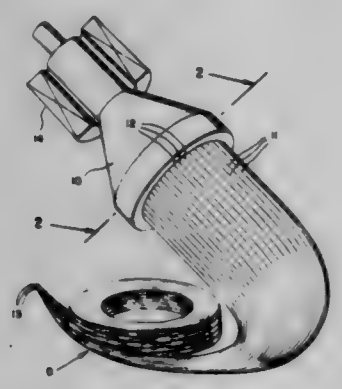
1. A color picture tube having a plurality of electron guns disposed in-line in a neck portion of said tube, said magnetic focusing means comprising a pair of magnetic members of high permeability with through holes disposed in-line in a horizontal direction of the tube for permitting electron beams emitted from the electron guns to pass therethrough, respectively, said pair of magnetic members being disposed separately in the tube axial direction in the neck portion, and magnetizing means for magnetizing one of said pair of magnetic members in one polarity and the other of said pair of magnetic members in the other polarity to produce a plurality of magnetic focusing lenses, each of said magnetic focusing lenses being present between mutually opposed through holes of said pair of magnetic members, each of said magnetic focusing lenses having a non-symmetric magnetic field distribution with respect to the lens axis coinciding with a path of the electron beam proceeding therethrough when said through holes have a shape symmetric with respect to the lens axis, said magnetic focusing means further including compensating means for modifying said non-symmetric magnetic field distribution of each of said magnetic focusing lenses to a symmetric magnetic field which is symmetric with respect to the lens axis.

4,345,184

LIGHT FIBERS HAVING LENGTHS DETERMINED BY BEAM SCANNING TIME

Paul W. Lang, Long Beach, Calif., assignor to Raymus K. Payton, Newport Beach, Calif.

Filed Nov. 10, 1980, Ser. No. 207,181
Int. Cl.³ H01J *29/10, 29/89*
U.S. Cl. 313—475 **1 Claim**



1. An electron beam-responsive light integrator including, in combination:

(a) A plurality of optical fibers having individual light entrance ends and light exit ends, the lengths of said fibers successively decreasing from one to the next adjacent fiber;

(b) individual light emitting sources comprising phosphor material secured to said entrance ends respectively, each of said sources being responsive to impingement of on electron beam thereon to emit light; and

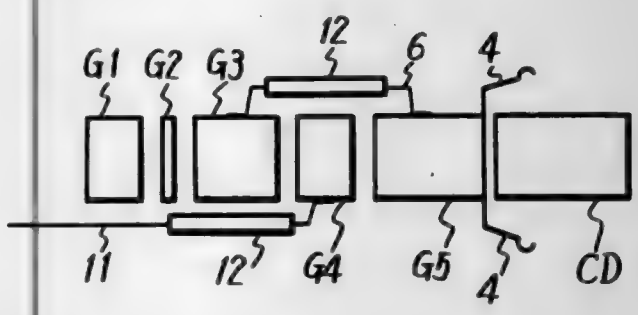
(c) a cathode ray tube including electron beam generating means for providing a beam of electrons, the entrance ends of the fibers being brought in through the screen surface of said cathode ray tube in a circular pattern, said cathode ray tube further including electron beam deflecting means functioning to cause the electron beam to scan in a circular array to thereby successively impinge on said phosphor materials to provide individual pulses of light, the time for light to travel the difference between successive fibers corresponding to the time of scan from one light emitting source to the next adjacent light emitting source, so that individual pulses of light pass from the exit end of said fibers substantially simultaneously.

4,345,185

CATHODE RAY TUBE APPARATUS

Yuzuru Kobori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 10, 1980, Ser. No. 158,117
Int. Cl.³ H01J *29/96*
U.S. Cl. 315—3 **5 Claims**



1. A cathode ray tube having an electron gun with at least two high voltage electrodes (G3 and G5), a low voltage supply lead, a low voltage electrode (G4) mounted between said high voltage electrodes, a first discharge current suppressing resistor connected between said two high voltage electrodes (G3 and G5) and a second discharge current suppressing resistor connected between said low voltage electrode and said low voltage supply lead.

4,345,186

METAL VAPOR DISCHARGE LAMP

Masato Saito; Michihiro Tsuchihashi; Yoshinori Takai; Keiji Fukuyama, and Keiji Watanabe, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1980, Ser. No. 130,238
Claims priority, application Japan, Mar. 28, 1979, 54-36552; Mar. 30, 1979, 54-37880; Mar. 30, 1979, 54-37881
Int. Cl.³ H01J *7/44, 17/34, 17/78, 29/96*
U.S. Cl. 315—49 **14 Claims**

1. A metal vapor discharge lamp comprising:

an outer bulb;

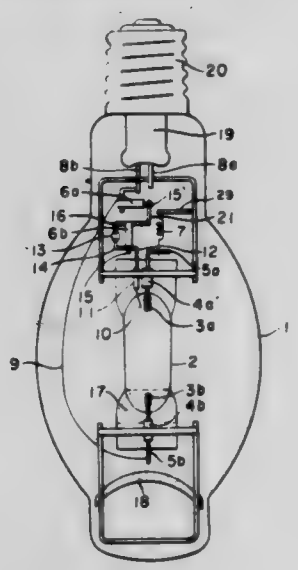
an arc tube disposed in said bulb;

first heat sensitive switch means disposed in said bulb for initiating a discharge in said arc tube, including at least one heat sensitive switch;

second heat sensitive switch means disposed in said bulb in series with said at least one heat sensitive switch, said second heat sensitive switch means having a heat sensitive switching characteristic delayed with respect to that of said first heat sensitive switch means; and

means for producing a discharge within said outer bulb and

outside of said arc tube in the event of fused bonding of said first heat sensitive switch means and subsequent opening of said second heat sensitive switch means, including



discharging parts at different potentials defining a discharge gap by a discharge caused by a surge voltage generated after opening of said second heat sensitive switch means.

4,345,187

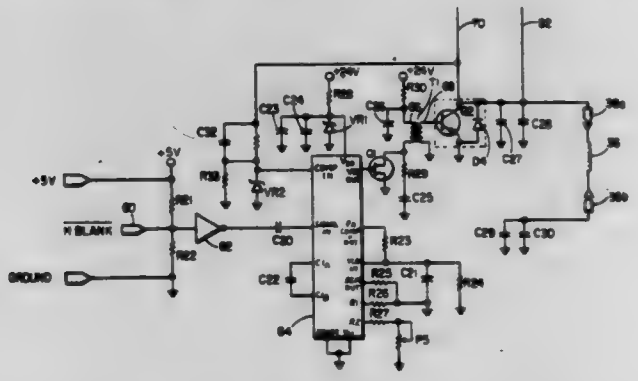
HIGH RESOLUTION, HIGH DENSITY CRT MONITOR

Clarence Casper, Jr., Windsor, Conn., assignor to Moniterm Corporation, Wayzata, Minn.

Continuation of Ser. No. 154,504, May 29, 1980, abandoned. This application May 7, 1981, Ser. No. 261,503

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—408 **24 Claims**



1. A cathode ray tube display control circuit for supplying a video control signal to a video control grid of a cathode ray tube, a blanking control signal to a blanking grid of the cathode ray tube, a vertical deflection signal to a vertical yoke, and a horizontal deflection signal to a horizontal yoke, the circuit comprising:

a first input terminal for receiving a vertical sync signal;

a second input terminal for receiving a horizontal blank signal;

a third input terminal for receiving a video signal;

vertical deflection means connected to the first input terminal for providing the vertical deflection signal and a vertical blank signal as a function of the vertical sync signal;

a phase lock loop comprising voltage controlled oscillator means having a VCO input terminal and a VCO output terminal for providing a VCO output signal at the output terminal having a frequency which is a function of a VCO input signal at the VCO input terminal, and phase comparator means having first and second phase comparator input terminals and a phase comparison output terminal, the phase comparator means providing a phase comparator output signal which is a function of a phase comparison between signals at the first and second phase comparator input terminals;

means for providing the horizontal blank signal to the first phase comparator input terminal;

means for providing a VCO input signal at the VCO input terminal which is a function of the phase comparator output signal;

first transformer means having a primary winding and a secondary winding;

first capacitance means connected in series with the primary winding;

second capacitance means connected in series with the horizontal yoke, the second capacitance means and the horizontal yoke being connected in parallel with the first capacitance means;

first semiconductor means having a control electrode and first and second main current carrying electrodes, the first and second main current carrying electrodes being connected in parallel with the first capacitance means, and wherein the horizontal yoke is connected to the first main current carrying electrode for receiving the horizontal deflection signal;

means for providing a drive signal to the control electrode of the first semiconductor means which is a function of the VCO output signal;

means for providing a horizontal retrace signal derived from a circuit including the primary winding and the first and second main current carrying electrodes to the second phase comparator input terminal;

summing means for summing the vertical blank signal with a signal derived from the secondary winding of the first transformer means to produce a summed signal;

means for providing the blanking control signal to the blanking control grid of the cathode ray tube as a function of the summed signal; and

means connected to the third input terminal for providing the video control signal as a function of the video signal supplied to the third input terminal.

4,345,188

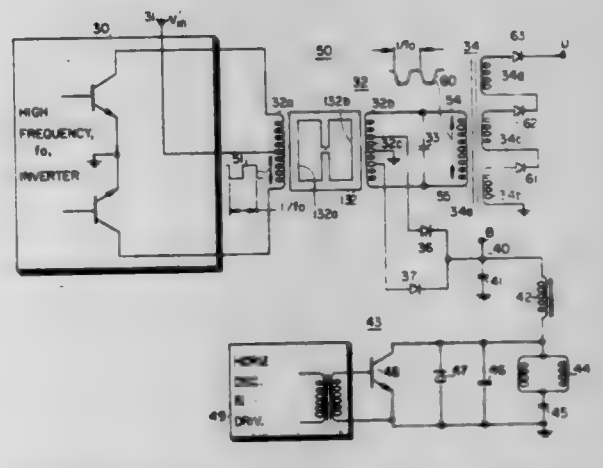
TELEVISION RECEIVER HIGH FREQUENCY REGULATED POWER SUPPLY INCLUDING A LOW VOLTAGE FERRORESONANT TRANSFORMER COUPLED TO A STEP-UP HIGH VOLTAGE TRANSFORMER

Robert J. Gries, Indianapolis, Ind.; Sandor Miko, Torreon, Mexico, and Calvin E. Conn, Carmel, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 2, 1981, Ser. No. 250,129

Int. Cl.³ H01J *29/70*

U.S. Cl. 315—411 **10 Claims**



1. A ferroresonant television display ultor voltage power supply, comprising:

a source of alternating input voltage;

a capacitance;

a saturable reactor forming a ferroresonant arrangement

with said capacitance, said saturable reactor including a magnetizable core and a reactor winding;

means coupled to said source for exciting said saturable reactor into developing an alternating polarity output voltage across said reactor winding, said capacitance generating a circulating current during each half cycle of said alternating polarity output voltage that magnetically saturates at least a portion of said magnetizable core to regulate said alternating polarity output voltage by means of ferroresonant action;

a step-up high voltage transformer including a primary winding and a high voltage secondary winding;

means for coupling said step-up transformer primary winding to the regulated alternating polarity output voltage that is developed by said ferroresonant arrangement without prior rectification of said regulated output voltage for developing a regulated high voltage across said high voltage secondary winding;

an ultor terminal; and

a high voltage rectifier arrangement coupled to said high voltage secondary winding and to said ultor terminal for developing an ultor voltage at said ultor terminal.

4,345,189

MOTOR ROTATION SPEED CONTROL CIRCUIT

Hirokazu Kukaya, and Jun Kishi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

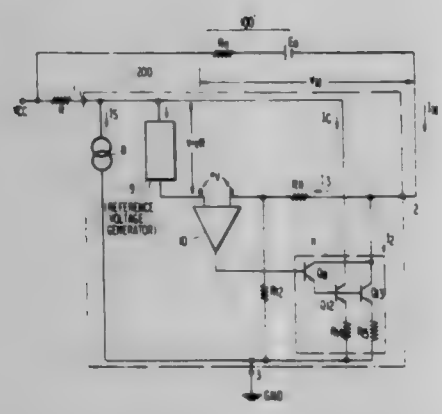
PCT No. PCT/JP79/00050, § 371 Date Oct. 29, 1979, § 102(e) Date Oct. 29, 1979, PCT Pub. No. WO79/00714, PCT Pub. Date Oct. 4, 1979

PCT Filed Feb. 28, 1979, Ser. No. 187,853

Claims priority, application Japan, Feb. 28, 1978, 53-23109

Int. Cl.³ H02P *1/00*

U.S. Cl. 318—317 **12 Claims**



1. A rotation speed control circuit for a motor comprising an input terminal, an output terminal, a constant voltage generator having one end connected to said input terminal, a first resistive element having one end connected to said output terminal, a comparison circuit comparing the voltage at the other end of said constant voltage generator with that at the other end of said first resistive element and deriving a comparison output, and an output circuit supplying first and second output currents to said input and output terminals, respectively, in response to said comparison output of said comparison circuit, said first resistive element generating a voltage drop in response to the variation of a voltage at said output terminal.

4,345,190

CHOPPER CONTROL SYSTEM

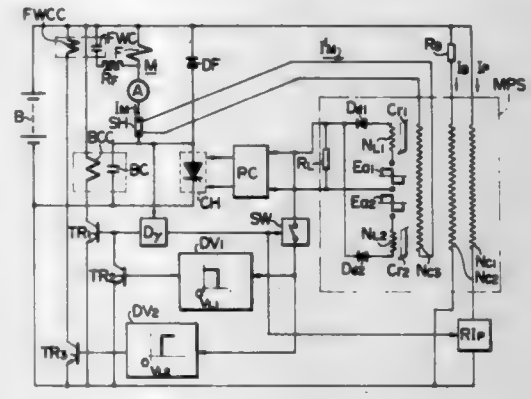
Michimasa Horiuchi, Mito; Masahiko Ibamoto, and Hideaki Rokutan, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1979, Ser. No. 85,974

Claims priority, application Japan, Oct. 21, 1978, 53-129052

Int. Cl.³ H02P *5/06*

U.S. Cl. 318—338 **6 Claims**



1. A chopper control system including a battery, a DC series motor for driving an electric vehicle, a shunt resistor, a thyristor chopper, said DC series motor, said shunt resistor and said thyristor chopper being connected in series with said battery, a magnetic phase shifter including a first control winding receiving a current instruction signal instructing the motor current of said motor and a second control winding connected across said shunt resistor for carrying out the gate control of said thyristor chopper, and a first contactor acting to short-circuit said thyristor chopper in response to the attainment of the duty factor of said thyristor chopper at a predetermined setting, said chopper control system comprising means for fixing said current instruction signal at a predetermined level while said thyristor chopper is short-circuited by said first contactor, means for releasing said first contactor in response to the detection of the fact that the value of the motor current represented by the level of the output from said magnetic phase shifter exceeds a first predetermined setting while said fixing means is in operation, and a second contactor for connecting a resistor in parallel with the field winding of said DC series motor in response to the detection of the fact that the value of the motor current represented by the level of the output from said magnetic phase shifter decreases to less than a second predetermined setting while said fixing means is in operation.

4,345,191

TWO/ONE (2/1) FAIL OPERATIONAL ELECTROHYDRAULIC SERVOACTUATOR

Imre J. Takats, Bellevue, and Charles C. Chenoweth, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 5, 1980, Ser. No. 175,687

Int. Cl.³ G05B *19/02*

U.S. Cl. 318—564 **35 Claims**

1. A redundant servoactuator system, comprising:

first and second hydraulic servoactuators connected to a positionable load;

a hydraulic control circuit for the servoactuators including a separate hydraulic channel for each channel for the first servoactuator, and a second electrohydraulic servovalve in the channel for the second servoactuator; and

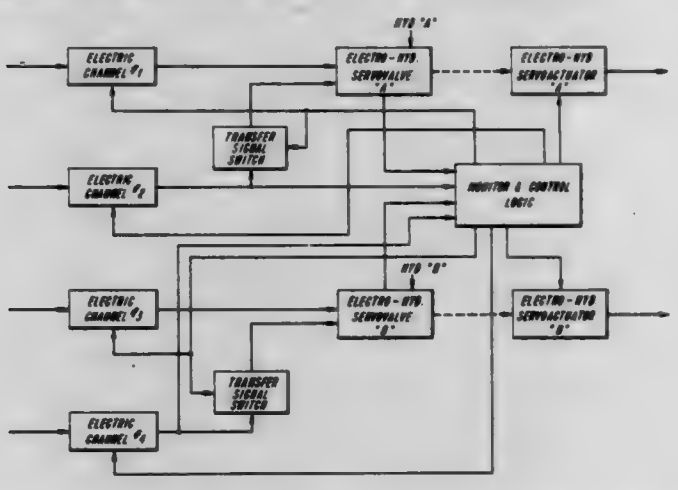
electric control means for said servovalves comprising four signal processing channels, a first one of which is connected to provide an electrical input signal for the first servovalve, and a second one of which is connected to provide an electrical input signal for the second servovalve,

a first valve position sensor connected to the first servovalve

and operable to produce a first rate indicative output corresponding to the position of the first servovalve,

a second valve position sensor connected to the second servovalve and operable to produce a second rate indicative output corresponding to the position of the second servovalve,

a first electronic model of the first servovalve having an electrical input from a third one of said channels and operable to produce a third rate indicative output reflective of the output which would be expected from the first valve position sensor in response to an electrical input equal to the electrical input of the said first model,



a second electronic model of the second servovalve having an electrical input from the fourth channel and operable to produce a fourth rate indicative output reflective of the output which would be expected from the second valve position sensor in response to an electrical input equal to the electrical input of the said second model, and

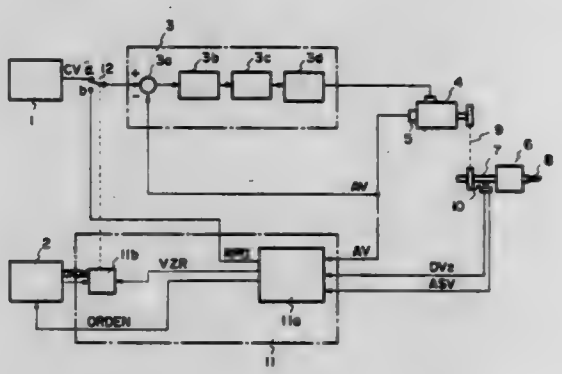
means for comparing said four rate indicative outputs with each other and for providing a failure signal if one of said rate indicative outputs differs from the others of said rate indicative outputs by a predetermined amount indicative of failure of the signal processing channel that is associated with said differing rate indicative output.

4,345,192

CONTROL SYSTEM FOR STOPPING SPINDLE AT PREDETERMINED ROTATIONAL POSITION

Yoshinori Kohzai; Yoshiki Fujioka, and Naoto Ota, all of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 190,660
Claims priority, application Japan, Oct. 9, 1979, 54-130154
Int. Cl.[3] G05B *11/18*
U.S. Cl. 318—592 9 Claims



1. A control system for stopping a spindle at a predetermined rotational position, which comprises:

a position control loop for driving the spindle, for reducing to zero a positional deviation between the present rotational position of a specified point on the spindle and the predetermined rotational position, and for stopping the spindle at the specified point on the spindle at the predetermined rotational position, comprising:

a sensor operatively connected to the spindle and to the position control loop, for producing a predetermined voltage signal level, in response to the specified point on the spindle being at the predetermined rotational position, for producing positive or negative voltage signals with respect to said predetermined voltage signal level in response to the specified point on the spindle being to the left or right of the vicinity of the predetermined rotational position, and for producing a fine position deviation voltage varying about said predetermined voltage signal level;

coarse positioning means for generating a coarse position deviation voltage in accordance with the positional deviation between the present rotational position of the specified point on the spindle and the predetermined rotational position; and

position deviation signal generating means for selectively providing one of the coarse position deviation voltage and the fine position deviation voltage as, a position deviation signal, in accordance with the specified point on the spindle being outside the vicinity of the predetermined rotational position or the specified point on the spindle being in the vicinity of the predetermined rotational position, respectively;

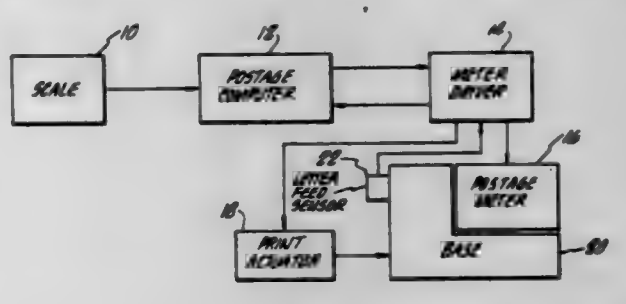
wherein the position control loop drives the spindle in accordance with the coarse position deviation voltage until the specified point on the spindle reaches the vicinity of the predetermined rotational position, and then drives the spindle such that the fine position deviation voltage is reduced to zero after the specified point on the spindle has reached the area in the vicinity of the predetermined rotational position, thereby stopping the specified point at the predetermined rotational position.

4,345,193

DRIVER FOR POSTAGE METERS

Danny R. Barger, Orange; Carl A. Eggert, Northridge, and Paul O. Lloyd, Santa Ana, all of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 27, 1980, Ser. No. 125,100
Int. Cl.[3] G05B *5/01*
U.S. Cl. 318—612 3 Claims



1. A device for driving postage amount handles of a postage meter, the postage amount handles being movable along predetermined paths for setting postage amounts, the device comprising

handle coupling means for receiving the respective handles,

a plurality of shafts supporting the handle coupling means the shafts being supported by linear bearing means for guiding the respective shafts and handle coupling means along linear paths generally parallel to the respective predetermined paths, each of said shafts including a rack formed therein,

a plurality of DC motors coupled to respective shafts through pinion drive means engaging the racks for axially displacing the shafts to thereby move the respective handle coupling means,

motor control means for controllably individually shorting each of the motors for braking the respective shaft and handle coupling means,

encoder means affixed to each respective shaft, each of the encoder means having a plurality of translucent areas therein,

optical sensor means for detecting the light-passing areas to

thereby provide outputs indicative of positions of said shafts,

control means responsive to the optical sensor means output for controlling said motor control means and for braking respective shafts and handle coupling means when the shafts reach predetermined positions, and a dollars button which travels within a guide and index means for depressing the dollars button and for riding within the guide to index the position of the device with respect to the postage meter.

4,345,194

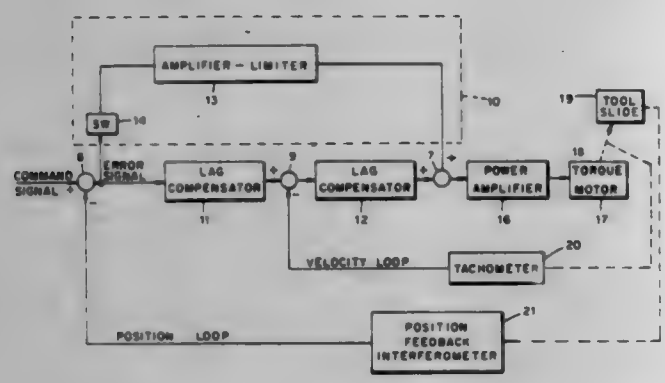
CONTROL SYSTEM TO REDUCE THE EFFECTS OF FRICTION IN DRIVE TRAINS OF CONTINUOUS-PATH-POSITIONING SYSTEMS

Walter L. Green, Concord, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 1, 1980, Ser. No. 212,045

Int. Cl.³ G05D *23/275*

U.S. Cl. 318—621 **4 Claims**



1. In a continuous-path-positioning servo system wherein a position error signal is generated and fed to a drive means by comparing a command position signal with a feedback position signal indicative of the actual position of an object positioned by said drive means in a position control loop including a position lag compensation network series connected within said position control loop and a velocity feedback control loop operatively connected within said position control loop including a velocity lag compensation network series connected with said velocity control loop and said position control loop, the improvement comprising: a feed forward circuit means connected in parallel with both said position and said velocity lag compensation networks for increasing the control loop gain at low error signal levels to prevent stick-slip movement of said object being positioned.

4,345,195

STRAPDOWN MULTIFUNCTION SERVOACTUATOR APPARATUS FOR AIRCRAFT

Carl D. Griffith, and Kenneth L. Oliver, both of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 103,243, Dec. 13, 1979. This application Aug. 8, 1980, Ser. No. 176,321

Int. Cl.³ G05B *11/01*

U.S. Cl. 318—628 **18 Claims**

1. A multifunction actuator apparatus for aircraft including a series actuator, the combination comprising:

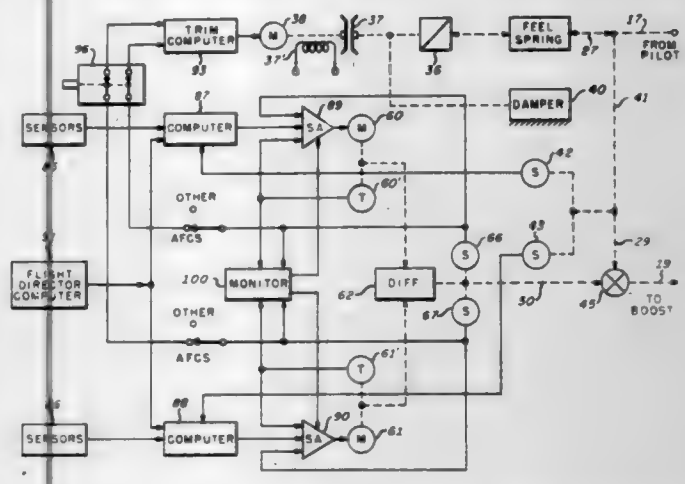
housing means adapted to be mounted directly on the aircraft structure adajcent to the primary pilot controller-to-control surface actuation members and including first and second drive shafts journalled in said housing means,

first linkage means drivably supported on said first drive shaft and coupled with said pilot controller member,

second linkage means including a drive link drivably supported on said second drive shaft and further including a differential link coupled between said control surface member, and drive link and said first linkage means,

series servomotor means including means drivably connecting said servomotor to said second drive shaft for positioning said drive link, and

first and second authority limit means secured to said housing means adjacent said differential link and drive link and



cooperable therewith, said first limiting means limiting the position of said pilot controller member between first predetermined maximum limits and said second limiting means limiting said drive link between second predetermined maximum limits.

4,345,196

SPEED CONTROL DEVICE FOR SEWING MACHINES

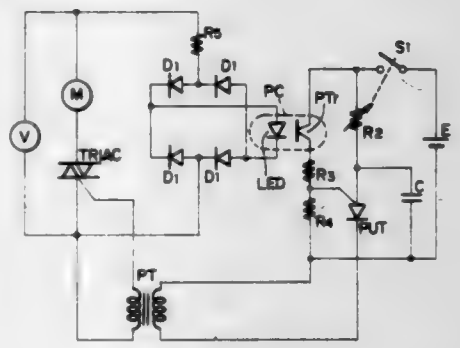
Susumu Hanyu; Yoshinobu Tonomura, and Kazuo Watanabe, all of Hachioji, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 102,324

Claims priority, application Japan, Dec. 29, 1978, 53-182651[U]

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—812 **4 Claims**

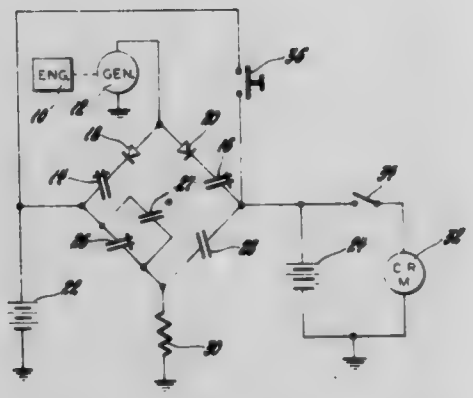


1. In an electric sewing machine, a combination comprising an A.C. drive motor; an A.C. power supply circuit; a first semiconductor control element connectable to the A.C. power supply circuit and having a control electrode for controlling the phase of the supply current; and a speed control device, comprising a trigger circuit including a separate D.C. power supply circuit, a second semiconductor control element having a control electrode for triggering the same; means for connecting the second control element to the D.C. power supply circuit; and an electrically insulating coupling circuit for coupling said speed control device to said A.C. power supply circuit, said coupling circuit including a pulse transformer connecting the trigger circuit to the control electrode of said first semiconductor control element, and a synchronizing electrooptical coupler having a light-emitting part connected to the A.C. power supply circuit and an electric part connected to the control electrode of said second semiconductor element.

4,345,197
VEHICLE BATTERY CHARGING SYSTEM

Ellis G. Wheadon, Anderson, and Robert J. Nowakowski, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 3, 1980, Ser. No. 126,532
Int. Cl.³ H02J 7/14
U.S. Cl. 320—6 6 Claims



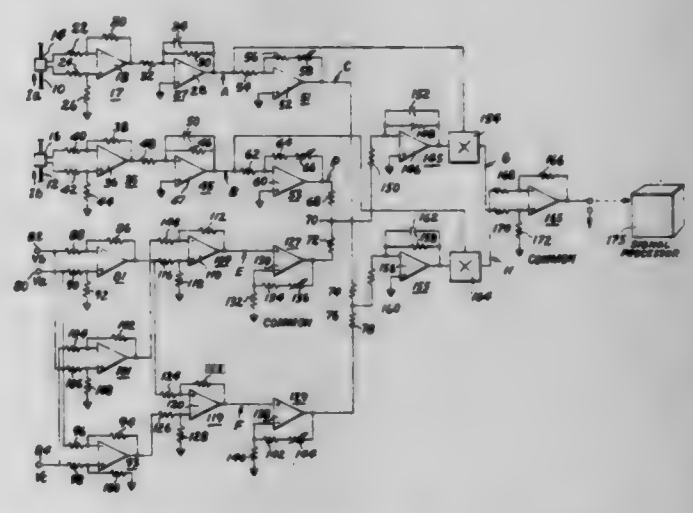
1. A vehicular battery charging system comprising:
first and second storage batteries for supplying power to vehicular electrical loads;
a source of charging current;
a bistable switching means for alternatively connecting said storage batteries for charging and discharging, said bistable switchig means having a first state wherein said first storage battery is connected to supply power to said electrical loads and said source of charging current is connected to charge said second storage battery, and a second state wherein said second storage battery is connected to supply power to said electrical loads and said source of charging current is connected to charge said first storage battery; and
means including voltage sensitive elements connected to each of said storage batteries responsive to the voltage of the storage battery that is connected to supply power to said electrical loads for changing the state of said bistable switching means when the voltage of such battery decreases below a reference valve which is independent of the instantaneous terminal voltage of either of said batteries, whereby the voltage supplied to said electrical loads is maintained within a range defined by the nominal terminal voltage of said storage batteries and said reference value.

4,345,198
GENERATOR AIR GAP ELECTRICAL TORQUE MONITOR

John F. Wolfinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 20, 1981, Ser. No. 236,085
Int. Cl.³ G01R 31/00; H02H 7/06
U.S. Cl. 322—25 9 Claims

1. In combination with a 3-phase electrical generator supplying output voltage and current to a load and having armature windings of known resistance, apparatus for continuously monitoring the air gap torque acting on the rotor of the generator, comprising:
first means providing a first load current signal indicative of load current in a first phase of said generator;
second means providing a second load current signal indicative of load current in a second phase of said generator;
first means providing a first armature voltage drop signal indicative of armature voltage drop in said first phase;
second means providing a second armature voltage drop signal indicative of armature voltage drop in said second phase;
first subtractor means providing a first interphase voltage signal representing the difference between the output voltage of said first phase and the output voltage of said second phase;
second subtractor means providing a second interphase voltage signal representing the difference between the output voltage of a third phase of said generator and the output voltage of said first phase;
third subtractor means providing a third interphase voltage difference signal representing the difference between the output voltage of said second phase and the output voltage of said third phase;
fourth subtractor means providing a first difference signal representing the difference between said first interphase voltage signal and said third interphase voltage signal;
fifth subtractor means providing a second difference signal representing the difference between said second interphase voltage signal and said first interphase voltage signal;
first summing means for summing said first difference signal and said second armature voltage drop signal to provide a first summation signal, said first difference signal and said second armature voltage drop signals being of opposite polarity;



second summing means for summing said second difference signal and said first armature voltage drop signal to provide a second summation signal, said second difference signal and said first armature voltage drop signals being of opposite polarity;
first final integrator means for integrating said first summation signal to provide a first final integration signal;
second final integrator means for integrating said second summation signal to provide a second final integration signal;
first multiplier means for multiplying said first final integration signal by said first load current signal to provide a first composite signal;
second multiplier means for multiplying said second final integration signal by said second load current signal to provide a second composite signal;
final subtractor means for subtracting said second composite signal from said first composite signal to produce an air gap torque signal representative of electrically produced torque on the generator rotor; and
means for presenting said air gap torque signal to operating personnel.

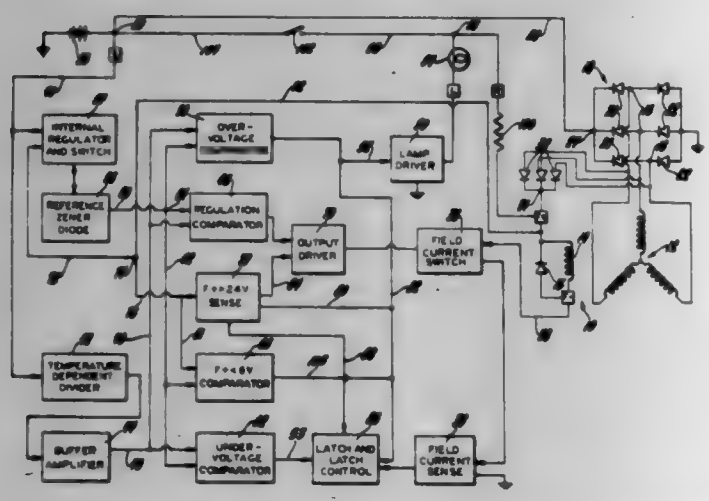
4,345,199
GENERATOR VOLTAGE REGULATOR

Richard J. Voss, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 49,320, Jun. 18, 1979, Pat. No. 4,277,738.
This application Mar. 6, 1981, Ser. No. 241,454
Int. Cl.³ H02J 7/14, 7/24
U.S. Cl. 322—28 5 Claims

1. A voltage regulator for a motor vehicle battery charging system that includes an alternating current generator having an

output winding and a field winding, a rectifier means connected to the output winding and a battery connected with the rectifier means to be charged thereby comprising, a voltage sensing circuit adapted to be connected across the battery of a battery charging system for sensing battery voltage, a Zener diode, means connecting said Zener diode with said voltage sensing circuit, reference conductor means connected to one side of said Zener diode providing a substantially constant reference voltage, voltage regulating means connected between said voltage sensing circuit and first and second conductor means, means including said Zener diode for controlling said voltage regulating means so as to maintain a substantially constant regulated voltage across said first and second conductor means the magnitude of which is a function of the break down voltage of said Zener diode, a field current control means adapted to be connected in series with the field winding



of said generator, means coupled to said reference conductor means and to said voltage sensing circuit for controlling said field current control means to thereby regulate the output voltage of the generator to a desired regulated value, and fault detecting comparator means for detecting a condition of operation wherein the voltage sensed by said voltage sensing circuit differs by more than a desired amount from a desired regulated value, said comparator means comprising voltage developing means connected across said first and second conductor means and coupled to said voltage sensing circuit for providing a control voltage that is a function of the regulated voltage applied to said first and second conductor means and the voltage sensed by said voltage sensing circuit, said comparator means including means connected to respond to a predetermined difference in said control voltage and said reference voltage.

4,345,200

LOAD OUTPUT LEVEL CONTROL CIRCUIT

James F. Bedard; Charles W. Eichelberger, both of Schenectady, and Salvatore F. Nati, Jr., Syracuse, all of N.Y., assignors to General Electric Company, New York, N.Y.

Filed Mar. 11, 1981, Ser. No. 242,782

Int. Cl.³ G05B *24/02*

U.S. Cl. 323—350 **15 Claims**

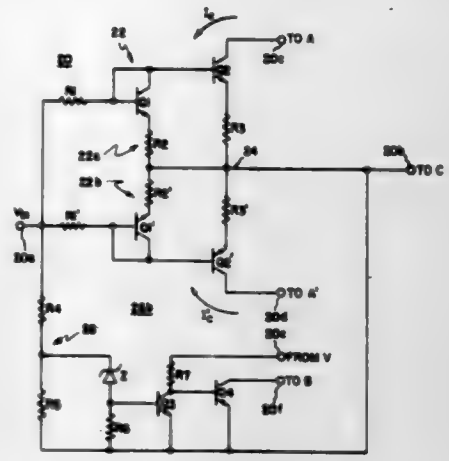
1. A circuit for controlling the output level of a load having an on/off control terminal, a common terminal and a pair of output-level-setting terminals, comprising:

a circuit common line adapted for connection to said load common terminal;

a single input terminal receiving an analog voltage with respect to said common line;

first means for providing to said on/off control terminal a signal having first and second output levels respectively responsive to said input analog voltage being respectively less than and greater than a predetermined magnitude respectively for controlling said load to the on and off conditions; and

means connected between said single input terminal and said load output-level-setting terminals for sinking essentially equal amounts of current from each of said load output-level-setting terminals to establish the output level of said



load, the magnitudes of said currents varying responsive to the magnitude of said input analog voltage.

4,345,201

FAULT LOCATION SYSTEM WITH ENHANCED NOISE IMMUNITY

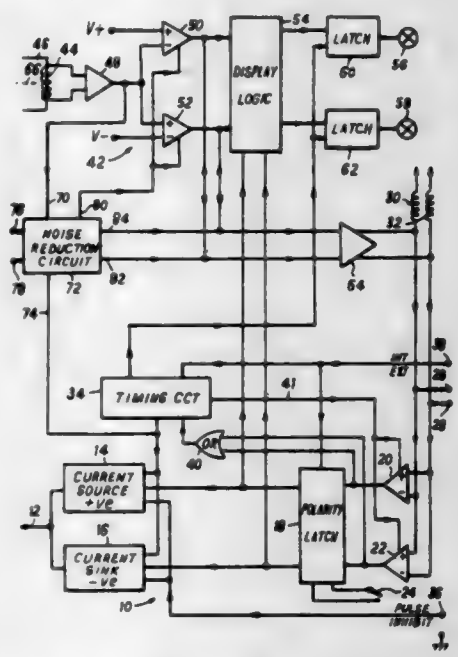
Brett A. Thompson, Poole; John A. Webb, Ferndown, and Martin B. White, Sopley, all of England, assignors to Membrain Limited, Dorset, England

Filed Jun. 20, 1980, Ser. No. 161,484

Claims priority, application United Kingdom, Dec. 20, 1979, 7943989

Int. Cl.³ G01R *31/08, 31/28*

U.S. Cl. 324—52 **9 Claims**



5. Apparatus for locating a fault in a powered electronic circuit, the apparatus comprising:

means arranged repetitively to apply to a conductor of said circuit pulses of current of predetermined sense and each having an approximately triangular waveform with a relatively steep leading edge and a relatively less steep trailing edge;

means arranged to sense magnetic field changes induced adjacent to said conductor by the leading edge of each said pulse and by noise currents in said circuit, so as to produce signals representative of said pulse-and noise-induced changes;

integrating means arranged to receive and integrate first and second pluralities of said change-representative signals to produce respective signals representative of the respective average values of said first and second pluralities of said change-representative signals, one of said first and second

pluralities of signals being produced in response both to said pulses and to said noise, and the other being produced in response only to said noise; and

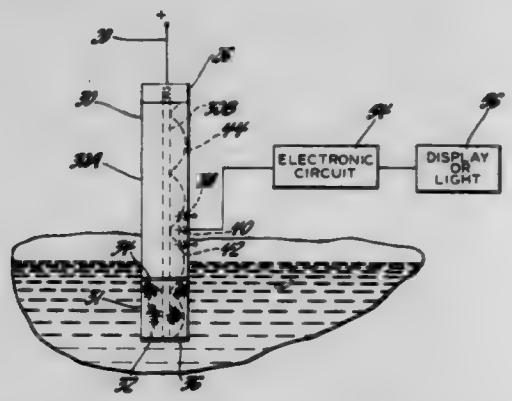
means responsive to the magnitude and polarity of the difference between the two average-representative signals to produce a signal indicative of the direction of flow of said current pulses along said conductor, whereby to permit the determination of the direction of said fault relative to the point on said conductor at which said pulses are applied.

4,345,282

METHOD OF DETECTING SOOT IN ENGINE OIL USING MICROWAVES

Louis L. Nagy, Warren, and Mark E. Myers, Jr., Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1980, Ser. No. 218,163
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—58.5 B **3 Claims**



1. A method of measuring the concentration of soot particles in engine oil substantially independently of the oil composition and non-soot contaminants comprising the steps of

coupling X band energy into a sample of the oil whereby the wavelength of the energy in the oil is modified by the permittivity of the oil, and

sensing the modified wavelength and determining therefrom a value representing the permittivity of the oil wherein the permittivity is a measure of the soot concentration and is substantially independent of non-soot contaminants and oil composition.

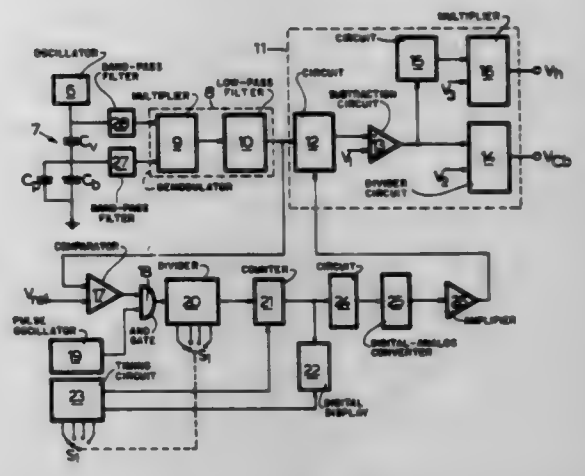
4,345,203

DEVICE FOR MEASURING THE LUBRICATION OF SURFACES ROLLING OR SLIDING RELATIVE TO EACH OTHER AND LUBRICATED WITH A LUBRICANT

Karel N. Vermeiren, Woerden; Rutgerus S. Heemskerk, Vianen, and Hendrik Dolfsma, Nieuwegein, all of Netherlands, assignors to SKF Industrial Trading & Development Company, B.V., Nieuwegein, Netherlands

Filed Jun. 25, 1980, Ser. No. 162,953
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **11 Claims**

1. Device for measuring the lubrication of surfaces rolling or sliding relative to each other and lubricated by a lubricant, provided with an oscillator generating an AC voltage signal by means of which the capacitance occurring between the lubricated surfaces is measured, characterized in that the said capacitance is first grounded and then connected by way of a condenser to the output of the oscillator, which output is connected further to a first input of a demodulating circuit, while the voltage occurring across the capacitance is delivered to a second input of the demodulating circuit, the output of the demodulating circuit being connected to a processing unit that derives a signal corresponding to the thickness of the lubricant film as well as the percentage contact time during a certain



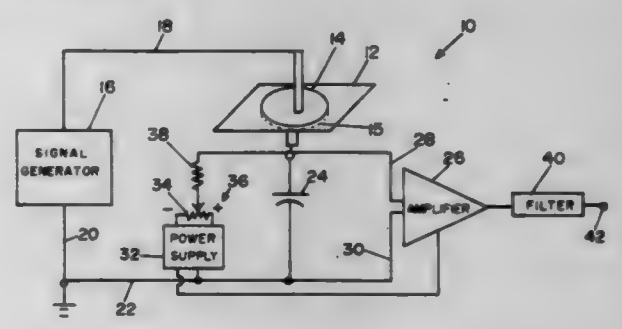
interval of measurement from the output signal of the demodulating circuit.

4,345,204

BRIDGELESS DIELECTRIC MEASUREMENT

Donald L. Shelley, Millersville, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Oct. 20, 1980, Ser. No. 198,974
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **7 Claims**



1. A method for measuring dielectric properties of a material sample at a frequency of less than 10 Hz., comprising:

selecting a series capacitor having a capacitance value at least 100 times the capacitance anticipated for the sample and at least 100 times the stray capacitance in parallel with the series capacitor; having a reactance at the testing frequency of no more than 1/100 of the anticipated leakage resistance of the sample; and having a leakage resistance of its own which is at least 100 times as great as its reactance at the testing frequency;

placing the material sample between test electrodes to form a test configuration;

connecting the series capacitor in series with the test configuration;

applying a test voltage of the testing frequency to the series circuit of the test configuration and the series capacitor; and

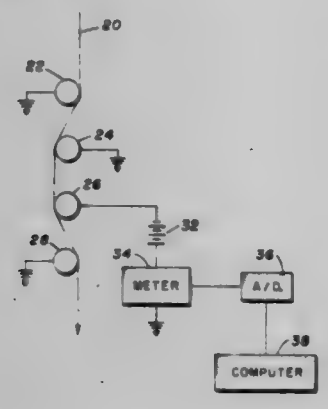
reading the voltage across the series capacitor with a high input impedance measuring means whose input impedance is at least 100 times the reactance of the series capacitor at the testing frequency.

4,345,205

FINISH MONITOR

Joseph P. Sung, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed May 5, 1980, Ser. No. 146,857
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—65 R **1 Claim**



1. Apparatus for determining the level of finish on a running yarn, comprising, in combination:

a. first and second conductive means for contacting said yarn at respective first and second points spaced along the path of said yarn;

b. means for connecting said first conductive means to a point of fixed potential;

c. means for responding to the impedance along the portion of said yarn spanning said first and second conductive means, said last-named means comprising a closed series circuit comprising said first and second conductive means, said portion, a power source, and means for responding to current flow along said yarn between said first and said second conductive means; and

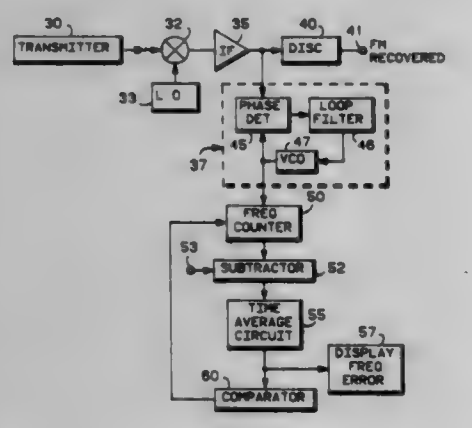
d. a third conductive means for contacting said yarn at a point downstream of said second conductive means, and means for connecting said third conductive means to said point of fixed potential.

4,345,206

FREQUENCY AND FREQUENCY ERROR COUNTING IN TEST APPARATUS

Robert J. Skalka, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jun. 10, 1980, Ser. No. 158,098
Int. Cl.³ G01R *23/14*
U.S. Cl. 324—79 R **12 Claims**



1. Test apparatus designed to be coupled to a transmitter to be tested, for receiving output signals therefrom and providing an indication of carrier frequency error or deviation, said apparatus comprising:

(a) a local oscillator and mixer for reducing the received carrier frequency by a predetermined frequency;

(b) filtering means connected to said mixer for receiving output signals therefrom and filtering the signals to obtain the reduced carrier frequency substantiall interference free;

(c) a frequency counter connected to said filtering means for receiving the filtered reduced carrier frequency and providing a count of cycles per unit of time;

(d) a subtracting circuit, including means for introducing a predetermined number of cycles per unit of time for a preselected intermediate frequency, coupled to receive the count for the reduced carrier frequency and providing an output signal indicative of the difference between the reduced carrier frequency and the intermediate frequency; and

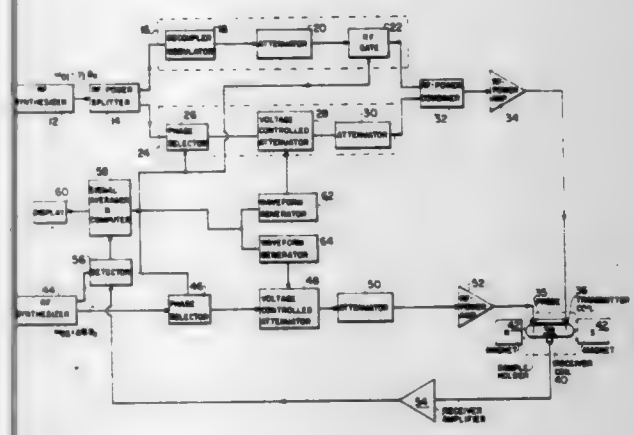
(e) indicating means coupled to receive the output signal from said subtracting circuit and provide an indication of the frequency error or deviation between the reduced carrier frequency and the intermediate frequency.

4,345,207

METHOD AND APPARATUS FOR OBTAINING ENHANCED NMR SIGNALS

Richard D. Bertrand, Dearborn Heights, Mich.; Gerard C. Chingas; A en N. Garroway, both of Oxon Hill, Md., and William B. Moniz, Clinton, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1980, Ser. No. 143,398
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—308 **17 Claims**



1. A method for NMR spectroscopic analysis of liquids having at least two nuclear spin species which comprises:

subjecting said liquid to a magnetic field;

transferring pin polarization from at least one nuclear species to at least one other nuclear species by the steps comprising:

spin-locking at least one species by rf irradiation; modulating the amplitude and/or phase of said spin locking rf irradiation; and

applying other rf irradiation that varies in amplitude and/or phase to at least one other nuclear species so that spin polarization is transferred from said spin-locked nuclear species to said other species; and

detecting directly the NMR signal from said other species.

4,345,208

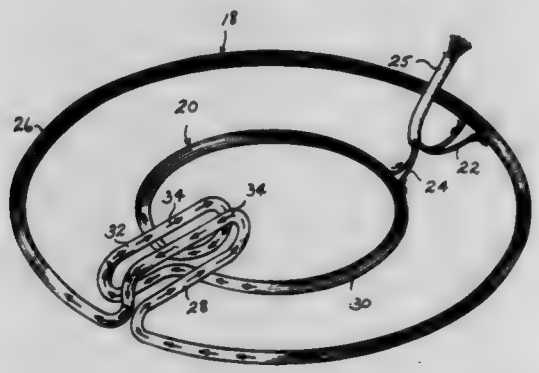
ANTI-FALSING AND ZERO NULLING SEARCH HEAD FOR A METAL DETECTOR

Paul S. Wilson, 4415 Brookton Dr., South Bend, Ind. 46614

Filed May 5, 1980, Ser. No. 146,383
Int. Cl.³ G01V *3/11*
U.S. Cl. 324—329 **5 Claims**

1. In a metal detector including a search head for sensing the presence of a metal object when the head is brought into proximity with said object, said head having mounted therein a transmitter coil adapted to receive a current and receiver coil adapted to sense the magnetic field produced about said transmitter coil by said current, said transmitter coil having first and second coil sections, said receiver coil having first and second

coil sections, the first coil section of each transmitter and receiver coil being displaced from the second coil section of each coil, said first coil section of the transmitter coil lying in substantially the same plane as and spaced apart from the first coil section of the receiver coil with the receiver coil first coil section being located within the magnetic field produced about said transmitter first coil section by said current, whereby the presence of said metal object in proximity of said transmitter coil first coil section will cause a reduction in the magnetic field induced voltage in the receiver coil first coil section, the improvement wherein said second coil sections of the transmitter and receiver coils are juxtaposed and in a spaced relationship from the plane of location of said first coil sections of the transmitter and receiver coils with each second coil section overlying the space between said first coil sections of the receiver and transmitter coils and lying in a plane generally perpendicularly oriented to the plane of location of said first coil sections of the transmitter and receiver coils, said receiver coil second coil section being located within the magnetic field produced about said transmitter coil second section by said current, whereby the voltage in said receiver coil second coil section induced therein by the magnetic field of said transmitter coil second coil section is substantially unaffected by said presence of said metal object.



4,345,209

MISSING PULSE DETECTOR

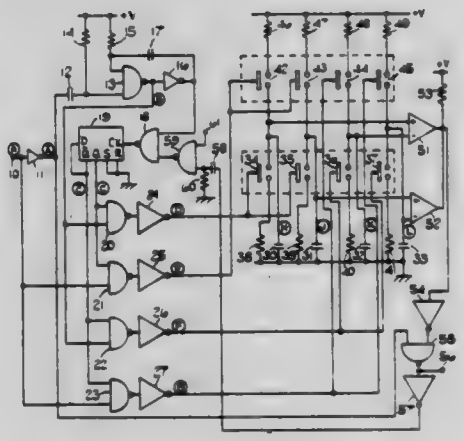
Michael J. Walker, Warley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 21, 1980, Ser. No. 152,127

Claims priority, application United Kingdom, May 25, 1979, 7918385

Int. Cl.³ H03K *5/19, 5/26*

U.S. Cl. 328—120 **5 Claims**



1. A missing pulse detector for producing an output signal whenever a pulse is missing from a regular, but variable frequency, pulse train supplied to the detector by accumulating a signal in a signal accumulating device during the interval between successively received pulses and analyzing the signal accumulated, said detector comprising a plurality of signal accumulating devices, reset means for each signal accumulating device, signal admission means for each signal accumulating device such that some of the signal accumulating devices have a higher rate of signal accumulation than the remainder, sequence control means controlled by the input pulse train and connected to control each of said reset means and each of said signal admission devices in such a manner that each signal accumulating device is reset by alternate pulses and then accumulates a signal for a time dependent on the duration of the intervals between successive pulses of the pulse train, and comparison means connected to compare the signal accumulated by one of the signal accumulating devices during one interval between successive pulses with the signal accumulated at a different rate by another one of the signal accumulating devices in a different interval between successive pulses and to produce said output signal if the signal accumulated by said one device differs from that accumulated by said other device in the sense opposite that which would result from the different rate of signal accumulation in equal intervals.

4,345,210

MICROWAVE RESONANT SYSTEM WITH DUAL RESONANT FREQUENCY AND A CYCLOTRON FITTED WITH SUCH A SYSTEM

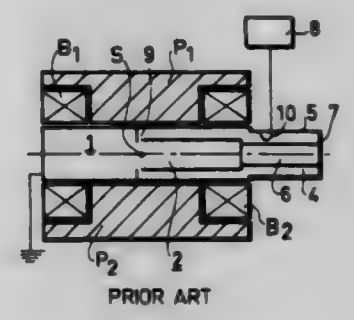
Duc T. Tran, Buc, France, assignor to C.G.R. MeV, Buc, France

Filed May 28, 1980, Ser. No. 153,853

Claims priority, application France, May 31, 1979, 79 13986

Int. Cl.³ H05H *7/00, 13/00*

U.S. Cl. 328—234 **11 Claims**



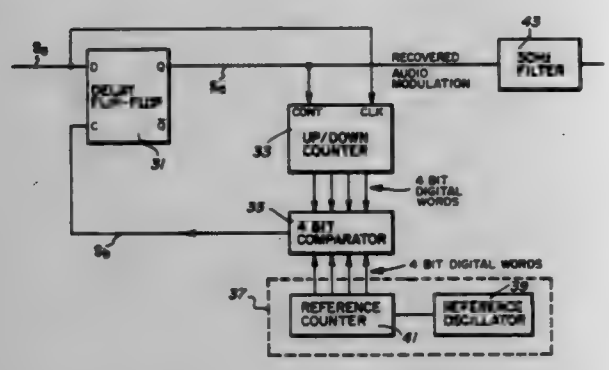
PRIOR ART

1. A resonant system for a cyclotron intended to operate at least at two frequencies f_1, f_2 and to accelerate successively charged particles of different types, this resonant system comprising an enclosure connected to ground and at least one hollow electrode or sector-shaped "Dee" inside which the beam of particles to be accelerated may travel, said electrode being disposed in the enclosure without electrical contact with said enclosure, said enclosure being placed between pole pieces of an electromagnet for supplying a magnetic field required for operation of the cyclotron; the electrode or "Dee" delimiting with the enclosure interaction spaces in which may be accelerated the charged particles issued from a source of particles disposed substantially in the center of the enclosure; means for injecting into the resonant system microwave signals for creating in the interaction spaces an accelerating microwave field; a resonant element provided with an external conductor formed from a cylindrical tube closed at one of its ends and opening at the other end into the enclosure to which it is fixed and, placed in said external conductor, an internal conductor having one end fixed to the "Dee", wherein said internal conductor has the form of a loop said loop determining with the external conductor an adjustable capacity C enables the ratio f_1/f_2 of the operating frequencies f_1, f_2 to be adjusted, the magnetic field required for operation of said cyclotron at frequencies f_1, f_2 being substantially unchanged.

4,345,211
DIGITAL PHASELOCK DEMODULATOR

Joe D. Longworth, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 15, 1980, Ser. No. 187,117
Int. Cl.³ H03K 9/06
U.S. Cl. 329—50 16 Claims



1. A digital phaselock system for demodulating a frequency modulated or phase modulated signal S_{in} comprising:

digital first means, connected for receiving S_{in} and a feedback signal S_f, for providing as output a digital signal indicative of phase between S_{in} and S_f,

second means for providing as output a predetermined number M of different digital words, said words being provided at a rate R_1, and said words being provided in a forward or reverse order as a function of phase between S_{in} and S_f,

third means for providing as output a predetermined number N of different digital words, said words being provided at a rate R_2 which is greater than R_1,

comparison fourth means for receiving the second means words and the third means words and for providing a digital output signal when a predetermined relationship between a second means word and a third means word is incurred,

fifth means receiving the fourth means output and providing S_f to said first means, and

sixth means for providing recovered modulation information to utilizing apparatus, said sixth means being connected for receiving a predetermined one of (a) the first means output or (b) the second means output.

4,345,212
EFFICIENT OPTICAL PULSE STACKER SYSTEM

Lynn G. Seppala, and Roger A. Haas, both of Pleasanton, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 10, 1980, Ser. No. 205,076
Int. Cl.³ H01S 3/098
U.S. Cl. 330—4.3 9 Claims

1. A method for production of a high power laser beam, the method comprising the steps of:

providing a laser amplifier containing an amplifier medium, with an entrance aperture at one end and a concave, substantially perfect reflector mirror at the other end of the amplifier;

providing a collimated initial beam of the frequency to be amplified and of temporal duration τ, whose optical intensity is less than the optical damage threshold for the laser amplifier optical components;

splitting the initial beam into N ($N \geqq 2$) collimated, lower intensity replication beams of the initial beams;

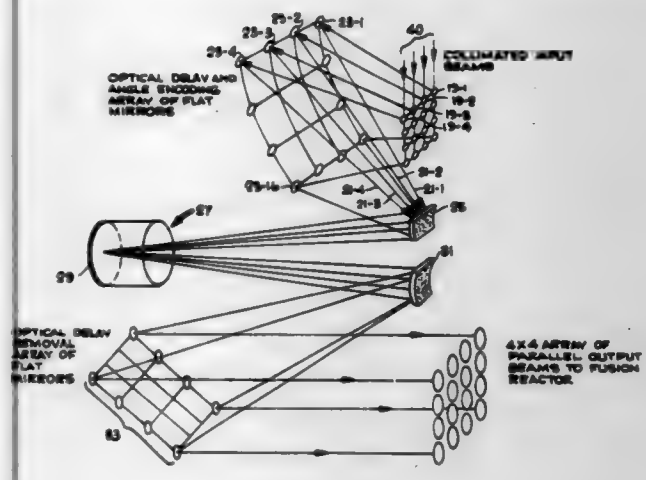
shifting the N replication beams in time and stacking the beams end-to-end so as to form a continuous composite beam of temporal duration substantially $N\tau$, with the N replication beams still being slightly separated spatially from one another;

reflecting the N component replication beams from a first convex reflector so that each replication beam is directed toward and is expanded to substantially fill the optical entrance aperture of the amplifier medium;

exciting the amplifier medium;

passing the composite beam of temporal duration $\Delta t = N\tau$ through the excited amplifier medium to increase the intensity of each replication beam;

reflecting the composite beam from the amplifier medium concave reflector mirror to contract the beam and passing the reflected composite beam through the amplifier medium a second time, in a direction substantially opposite to the direction of the first beam passage therethrough;



directing the composite beam toward a second convex reflector that physically separates the composite beam into a sequence of N single replication beams again, each of time duration substantially τ;

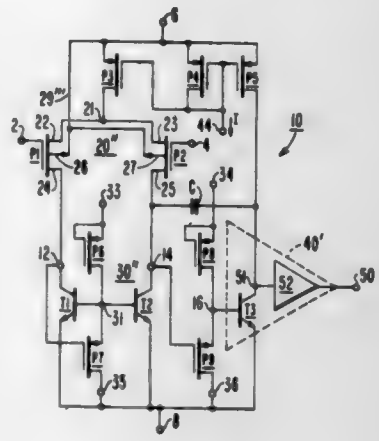
reflecting the composite beam from the second convex reflector such that each replication beam is collimated; and

redirecting and temporally shifting the replication beams so that all replication beams are substantially parallel and are substantially temporally coincident as a spatially contiguous array of replication beams.

4,345,213
DIFFERENTIAL-INPUT AMPLIFIER CIRCUITRY WITH INCREASED COMMON-MODE VOLTAGE RANGE

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1980, Ser. No. 125,645
Int. Cl.³ H03F 3/45; G06G 7/24
U.S. Cl. 330—253 33 Claims



1. An amplifying circuit operable with input signals having a common-mode component anywhere within a range approaching and including at least one of the operating potentials applied to said amplifying circuit, in combination:

first and second supply terminals for receiving operating potential therebetween;

first and second field-effect transistors of a first conductivity type, each having gate, drain, source and substrate electrodes;

means for connecting said first and second transistors in long-tailed-pair connection including first and second input terminals to which the respective gate electrodes of said first and second transistors connect for receiving input signals, a tail connection to which the respective source electrodes of said first and second transistors connect for receiving a tail current, first and second output connections to which the respective drain electrodes of said first and second transistors connect;

tail current supply means connected between said first supply terminal and said tail connection for supplying said tail current;

means for applying offsetting potentials between the respective substrate and source electrodes of both said first and second transistors, which offsetting potentials are of a polarity for maintaining the potential at the respective substrate electrodes of said first and second transistors closer to the potential at said first supply terminal than is the potential at the source electrodes of said first and second transistors, said offsetting potentials varying responsive to said common-mode component for tending to operate said first and second transistors towards depletion mode when the value of said common-mode component approaches the potential at said first supply terminal more closely than a predetermined voltage and tending to operate said first and second transistors towards enhancement mode when the value of said common-mode component departs from the potential at said first supply terminal by more than said predetermined voltage, said offsetting potentials conditioning said long-tailed pair connection for providing signals at its output connections responsive to said input signals when the common-mode component of said input signals is at a potential between the potentials at said first and second supply terminals and including at least the potential at one of said first and second supply terminals; and

differential to single-ended signal converting means including:

third and fourth transistors of a second conductivity type, having respective output electrodes connected respectively to the first and second output connections of said long-tailed-pair connection, having respective input electrodes, and having respective common electrodes connected to said second supply terminal,

potential-follower means with an input connection at the output electrode of said third transistor and with an output connection at an interconnection between the respective input electrodes of said third and fourth transistors, which potential-follower means is for exhibiting a predetermined offsetting potential between its input and output connections to operate the output electrode of said third transistor at a potential between the potential at the input electrode of said third transistor and the potential at said second supply terminal including the potential at the input electrode of said third transistor, and,

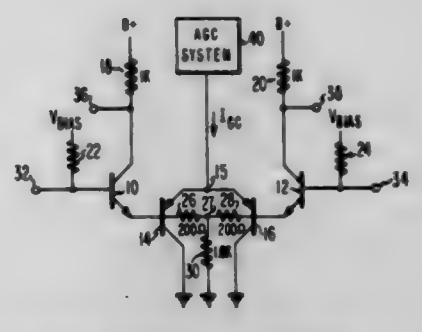
output means for operating the output electrode of said fourth transistor at a potential between the potential at the input electrode of said fourth transistor and the potential at said second supply terminal including the potential at the input electrode of said fourth transistor, and for supplying output signals related to the difference between the signals at the first and second output connections of said long-tailed-pair connection.

4,345,214

VARIABLE EMITTER DEGENERATION GAIN-CONTROLLED AMPLIFIER

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,035
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—254 **10 Claims**



1. A gain-controlled amplifier comprising:

an amplifying transistor having a base electrode coupled to receive input signals, a collector electrode at which output signals are derived, and an emitter electrode;

means, coupled to said base, emitter, and collector electrodes, for biasing said transistor;

a source of gain control current; and

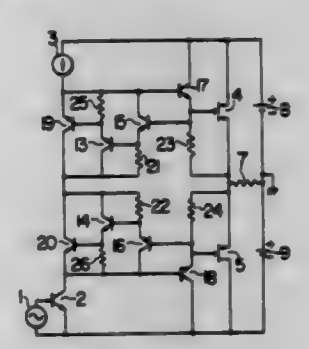
means for controlling the gain of said transistor, having a first electrode coupled to said emitter electrode of said transistor, a second electrode coupled to said source for receiving said gain control current, and a third electrode coupled to a point of reference potential, said gain control current causing a flow of current through said third electrode which is substantially equal to the flow of gain control current at said second electrode, and a flow of current through said first electrode which is substantially less than said flow of gain control current at said second electrode, said first electrode of said means providing a gain-controlling impedance at said emitter electrode of said transistor which is variable as a function of the magnitude of said gain control current.

4,345,215

AUDIO FREQUENCY POWER AMPLIFIER CIRCUIT

Nobutaka Amada, and Shigeki Inoue, both of Toyokawa, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,763
Claims priority, application Japan, Aug. 31, 1979, 54-110399
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—268 **3 Claims**



1. An audio frequency power amplifier circuit comprising a pair of output transistors of complementary push-pull type, each having an input electrode and an output electrode, a pair of drive transistors connected in emitter-follower fashion to the input electrodes of said pair of output transistors respectively, two series-connected resistors inserted between the emitters of said pair of drive transistors, a pair of voltage detection transistors of different conduction types each having a base, a collector and an emitter, means for applying the voltage between the emitters of said pair of drive transistors across the base-emitter connection of each of said pair of volt-

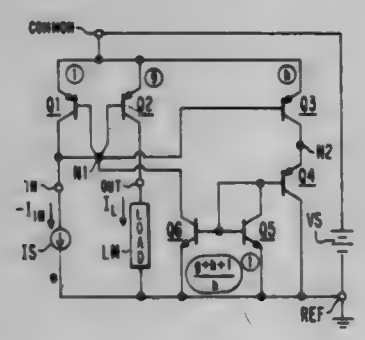
age detection transistors, a pair of emitter resistors connected respectively to the emitters of said voltage detection transistors for generating a voltage corresponding to the emitter current of said voltage detection transistors respectively, a pair of constant-voltage sources inserted between the bases of said drive transistors, means for adding the voltages of said emitter resistors to the voltages of said constant-voltage sources respectively, and means for supplying an input signal to the base of each of said drive transistors.

4,345,216

COMPENSATION OF BASE-CURRENT-RELATED ERROR IN CURRENT MIRROR AMPLIFIER CIRCUITRY

Otto H. Schade, Jr., No. Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 25, 1980, Ser. No. 162,939
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—288 **6 Claims**



1. A current mirror amplifier comprising:
an input terminal for connecting to a source of output current;
an output terminal for supplying load current to a load;
a common terminal for providing return connection for said input and load currents;
first, second, third and fourth transistors with matched current gain characteristics having respective collector electrodes, said fourth transistor having respective base and emitter electrodes, and the other of these transistors having amongst them at least one base electrode connected to said input terminal and at least one emitter electrode connected to said common terminal, the collector electrodes of said first and second transistors being respectively connected to said input terminal and to said output terminal, the collector electrode of said third transistor being connected to the emitter electrode of said fourth transistor;
means for applying an operating potential to the collector electrode of said fourth transistor; and
means responding to the flow of current through the base electrode of said fourth transistor for supplying a substantial share of the proportionally related base current requirements of said first, second, and third transistors, rather than imposing it upon said source of input current.

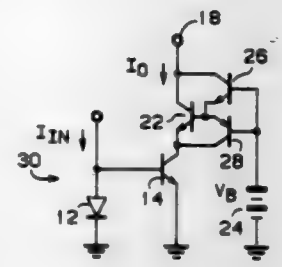
4,345,217

CASCODE CURRENT SOURCE

W. David Pace, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1980, Ser. No. 175,548
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—288 **3 Claims**

1. Cascode current source, comprising:
input circuit means receiving an input current supplied at an input for providing an output current at an output which is substantially equal in value to said input current; and
cascode circuit means coupled between said output of said input circuit means and an output of the cascode current source for buffering said input circuit means from variations in the voltage appearing at the output of the cascode circuit means including a pair of transistors connected in a Darlington configuration and a third transistor of complementary conductivity type as said pair of transistors with the base thereof connected with the base of the first transistor of said pair of transistors to a node at which is supplied a reference potential, the emitter being connected



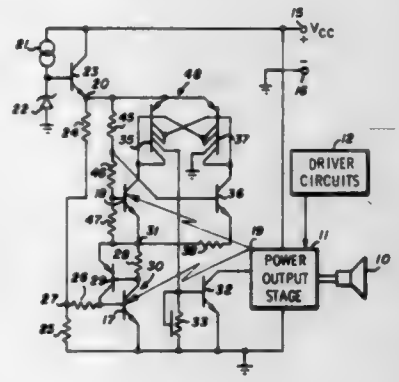
to the interconnected emitter of said first transistor and base of the second transistor and said collector being coupled with the emitter of said second transistor to said output of said input circuit means, the collectors of said first and second transistors being coupled to said output of the cascode current means.

4,345,218

TWO STAGE THERMAL SHUTDOWN

James S. Congdon, Santa Clara, and Tim D. Isbell, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 8, 1980, Ser. No. 185,055
Int. Cl.³ H03F *3/04*; H02H *5/04*
U.S. Cl. 330—298 **6 Claims**



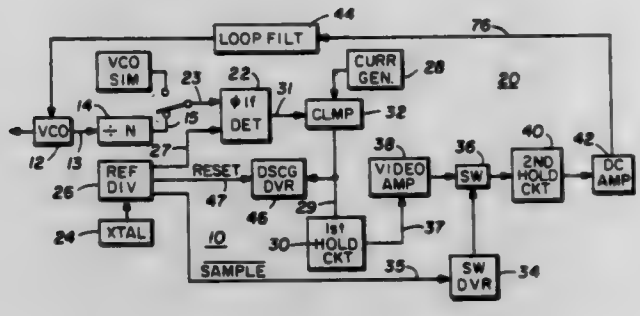
1. A circuit for protecting a semiconductor device from temperature increasing overloads, said circuit acting to shut said device off when its temperature exceeds a maximum value and then acting to turn said device on when the temperature has declined to a lower value, said circuit comprising:
means for thermally coupling at least portions of said circuit to said device;
voltage source means having a controlled and repeatable temperature coefficient of voltage;
disabling means coupled to said device and responsive to a control signal;
first latch means responsive to said voltage source means, coupled to said disabling means to supply said control signal, and operative to turn said device off when said device temperature exceeds a predetermined first maximum value; and
second latch means responsive to said first latch means and to said voltage source, said second latch means being coupled to said disabling means to turn said device off when said device temperature exceeds a predetermined second maximum temperature that is substantially lower than said first maximum temperature, whereby said circuit will permit an excursion to said first maximum temperature and will thereafter limit excursions to said second maximum temperature.

4,345,219

FREQUENCY AGILE HOLD-SAMPLE-HOLD PHASE DETECTOR

Charles R. Jackson, St. Petersburg, Fla., assignor to E-Systems, Inc., Dallas, Tex.

Filed Feb. 14, 1980, Ser. No. 121,346
Int. Cl.[3] H03L 7/08
U.S. Cl. 331—1 A 19 Claims



1. A method for developing an output voltage level error signal related to frequency and phase differences between a reference periodic signal and a variable periodic signal for changing the value of said variable periodic signal to that of said reference periodic signal, comprising the steps of:

(a) generating a control signal functionally related to frequency differences detected between the reference and variable periodic signals;

(b) generating a constant current signal;

(c) introducing said constant current signal into a first hold circuit to develop a voltage level therein;

(d) clamping said voltage level developed in said first hold circuit at a level functionally related to said detected frequency differences in response to said control signal;

(e) removing said constant current signal from said first hold circuit in response to said control signal;

(f) periodically sampling said clamped voltage level signal for developing an error signal functionally related to phase differences detected between the reference and variable periodic signals and storing said error signal in a second hold circuit; and

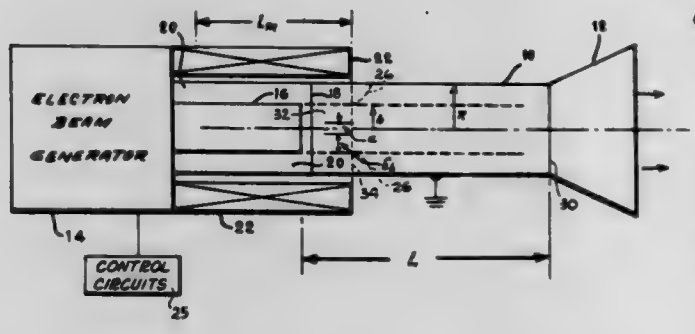
(g) developing from said stored error signal the output voltage level error signal proportional to frequency and phase differences between the reference and variable periodic signals.

4,345,220

HIGH POWER MICROWAVE GENERATOR USING RELATIVISTIC ELECTRON BEAM IN WAVEGUIDE DRIFT TUBE

Donald J. Sullivan, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 12, 1980, Ser. No. 120,809
Int. Cl.[3] H03B 9/01
U.S. Cl. 331—79 1 Claim



1. A high power microwave generator comprising

a waveguide/drift tube, the interior of said waveguide/drift tube is maintained at a vacuum, and

an anode positioned within said waveguide/drift tube,

a relativistic electron beam generator injecting a relativistic electron beam along the longitudinal axis thereof, said electron beam comprising an injected electron beam current, said anode in alignment with said electron beam generator, said anode comprises a grounded aluminum foil member traversing said waveguide/drift tube in intercepting relationship with said relativistic electron beam, said anode functioning in conjunction with said electron beam generator to form a virtual cathode, said waveguide/drift tube having geometric dimensions and said relativistic electron beam having current parameters that in combination effect the virtual cathode oscillation condition within said waveguide/drift tube to generate microwaves at a predetermined frequency, when said electron beam current exceeds the space-charge limiting current of said waveguide/drift tube, microwaves are generated,

a tuning means for tuning the frequency of said microwaves, said tuning means comprises means for changing the physical dimensions of said waveguide/drift tube, and for varying the parameters of said relativistic electron beam, and,

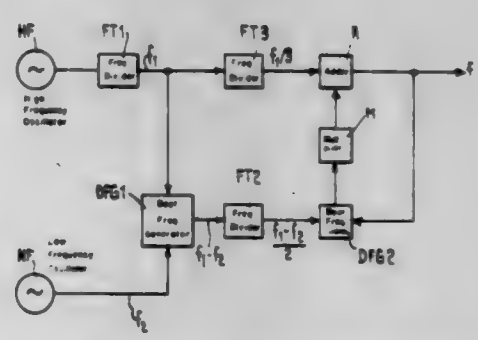
a magnetic field means generating a cusp magnetic field around said waveguide/drift tube for focusing said electron beam current at said virtual cathode.

4,345,221

TEMPERATURE COMPENSATED SIGNAL GENERATOR INCLUDING TWO CRYSTAL OSCILLATORS

Alphonse Zumsteg, Solothurm, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed May 15, 1980, Ser. No. 150,107
Claims priority, application Switzerland, May 22, 1979, 4783-79
Int. Cl.[3] H03B 5/04, 5/32
U.S. Cl. 331—176 7 Claims



1. A generator for producing a temperature compensated output signal, comprising:

a high frequency crystal oscillator having a first parabolic temperature dependency;

a low frequency crystal oscillator having a second parabolic temperature dependency different from said first dependency and characterized by a descending portion coinciding with an apex of said first dependency;

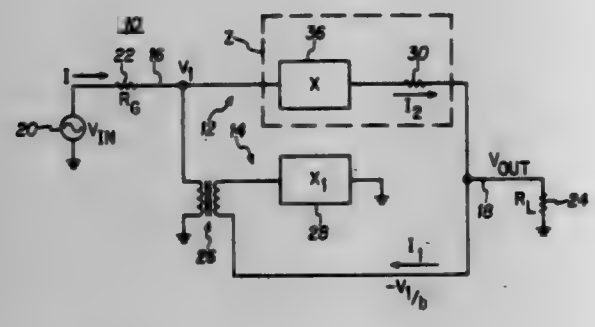
means connected to said high and low frequency oscillators for producing a first intermediate signal and a second intermediate signal substantially equal in frequency to said first intermediate signal; and

means receiving said first and second intermediate signals for producing the output signal such that the output signal is independent of temperature variations.

4,345,222
SPLIT PHASE DELAY EQUALIZER WITH STRAY REACTANCE COMPENSATION

Vernon R. Cunningham, Melissa, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 8, 1980, Ser. No. 214,368
Int. Cl.[3] H03H 7/03
U.S. Cl. 333—28 R 12 Claims

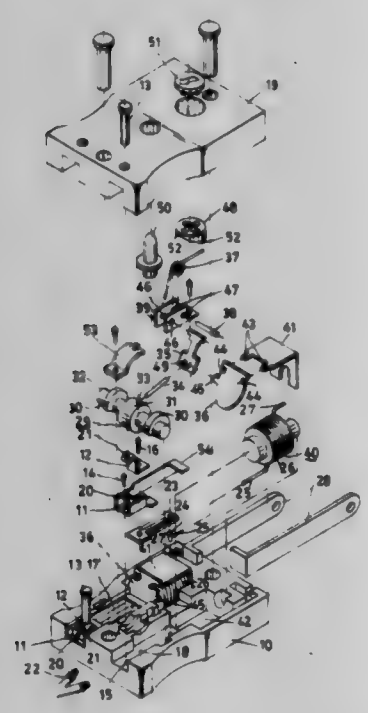


1. A split phase delay equalizer with stray reactance compensation, comprising:
a pair of circuit branches connected in parallel between an input and an output;
phase inversion means providing phase reversal between signals in said branches;
reactance means in one of said branches for providing a phase shift of the signal in that branch at a given frequency to afford an increased delay at such frequency; and
auxiliary compensating reactance means in the other of said circuit branches for compensating third order amplitude response of said equalizer around said given frequency wherein said auxiliary compensating reactance means provides a third order rise and dip opposing third order rise and dip in the amplitude response curve caused by stray reactance.

4,345,223
FUSELESS SAFETY MAGNETIC PLUG

Yu Chien-Chun, 730 Yen-ping Rd., Hsin-chu City, Taiwan

Filed Oct. 28, 1980, Ser. No. 201,529
Int. Cl.[3] H01H 77/00
U.S. Cl. 335—6 5 Claims

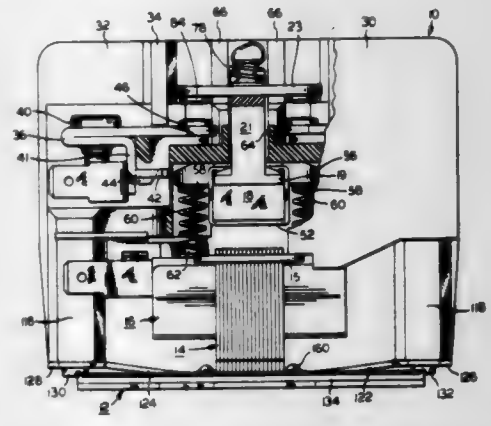


1. A fuseless safety magnetic plug comprising:
a housing structure having a base with at least two electrical channels therein, a cover, and two prongs;
a pair of wire coupling devices mounted on the base;
a magnetic device connected respectively to each of said electrical channels on the base for protecting the plug from overloading by automatically breaking the circuit to open;
a current adjusting device matching with the magnetic device for setting different current load therein;
a cam mechanism matching with said magnetic device for circuit breaking; and
a load discharging bolt matching with said cam mechanism for circuit re-connection after circuit breaking whereby said magnetic plug can effectively maintain the circuit connected thereto in safe condition, and be adaptable to different current requirements of various electrical appliances.

4,345,224
CONTACT SPRING ARRANGEMENT

Richard S. Lenzing, Farmington, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jan. 30, 1981, Ser. No. 229,908
Int. Cl.[3] H01H 50/02
U.S. Cl. 335—132 9 Claims



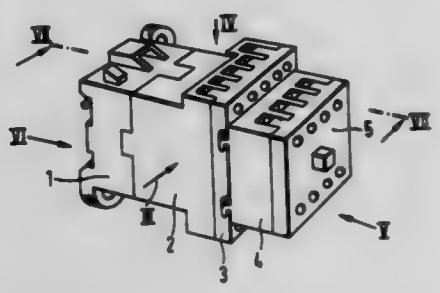
1. In an electromagnetic contactor having an armature resiliently biased in spaced relation to an energizable magnet, a moveable contact carrier adapted to move responsive to attraction of the armature by the magnet, a pin member comprising a head portion and a neck portion extending from the moveable contact carrier, a moveable contact bridge extending about the pin member, a helical spring engaged between the head portion of the pin member and the contact bridge to resiliently support the contact bridge on the carrier so that movement of the contact carrier engages the contact bridge with stationary contact means, the combination comprising:
(a) the contact carrier comprising a surface adapted to support at least one contact bridge;
(b) the pin member extending from the surface of the contact member;
(c) the contact bridge comprising interior walls defining an aperture and adapted to extend about the pin member;
(d) the helical spring comprising a top turn and additional turns having an inside diameter greater than the inside diameter of the top turn;
(e) the pin member comprising opposing sidewalls displaced from one another by a distance smaller than the inside diameter of the top turn of said spring;
(f) the pin member being contoured in a direction orthogonal to said sidewalls with;
(1) the head portion comprising first and second sloping wall sections terminating respectively in first and second flanged end portions displaced from one another to capture the top turn of said helical spring;
(2) the neck portion comprising wall portions configured to facilitate initial insertion of the helical spring into the pin member at an oblique angle so that said top turn is captured sequentially by said second and said first flange portions whereby spring insertion is achieved with minimal radial displacement of the turns of the spring.

4,345,225

SWITCH

Helmut Lemmer, Marienheide, Fed. Rep. of Germany, assignor to Starkstrom Gummersbach GmbH, Marienheide, Fed. Rep. of Germany

Filed Mar. 12, 1981, Ser. No. 242,854
Claims priority, application European Pat. Off., Mar. 13, 1980, 80/101315
Int. Cl.³ H01H 67/02
U.S. Cl. 335—132 11 Claims



1. In a switch used as a power or auxiliary switch or the like of the type including a housing having a mounting side, a contact system mounted in said housing, a magnetic system which actuates the contact system mounted in the housing and a cover which closes the housing at an end thereof facing away from its mounting side, wherein said contact system further comprises contact bars coupled to contact connecting screws and stationary contact members, as well as commonly actuable bridges with movable contact members which cooperate with said stationary contact members to act as opening and/or closing devices, wherein the contacts of said contact system are disposed in at least two different planes at different distances from the mounting plane defined by said mounting side, and wherein each bridge together with the associated movable contact members and the associate contact bars, with the stationary contact elements are each mounted in a limited switch chamber, the improvement comprising:

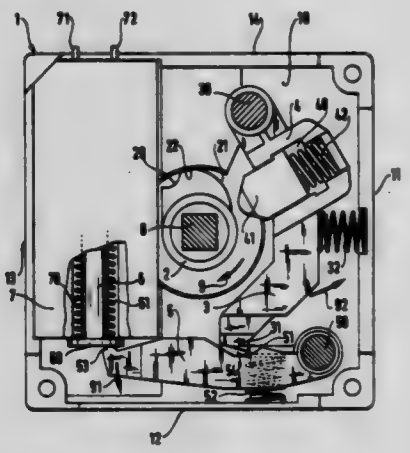
said switch chambers at each plane being laterally offset with respect to each other while having commonly aligned plane side faces which define a predetermined constant width from plane to plane, so that each contact connecting screw is freely accessible in the different distance planes of the wiring to be secured by said contact connecting screws.

4,345,226

ROTARY SWITCH WITH AN AUTOMATIC RE-SETTING MECHANISM

Jean Debaigt, Maisons Laffitte, France, assignor to CGEE Alsthom, Levallois-Perret, France

Filed Apr. 27, 1981, Ser. No. 258,162
Claims priority, application France, Apr. 25, 1980, 80 09313
Int. Cl.³ H01H 9/20
U.S. Cl. 335—166 5 Claims



1. A rotary switch for switching electrical power, said switch including a resiliently biased holding electromagnet capable of being powered by the same power supply as that which is switched by the switch, a switch-operating control shaft provided with a return spring resiliently urging said shaft in rotation towards an "OFF" position, and an automatic re-setting mechanism responsive to loss of power to the electromagnet to cause the switch to return to said "OFF" position, wherein the re-setting mechanism comprises:

a positioning cam fixed with said control shaft and including at least one positioning notch;

a first lever rotatable about a first fixed point and having a locking catch spaced from said first fixed point, said first lever further having a resiliently biased cam follower directed towards said control shaft for engaging said notch in said positioning cam in such a manner as to retain the shaft in an "ON" position against the resilient bias of said return spring; and

a second lever rotatable about a second fixed point and having a nose spaced from said second fixed point resiliently biased against a moving head of the electromagnet, said second lever further having a bearing surface for receiving the locking catch of said first lever to hold said first lever against the resilient thrust of its cam follower;

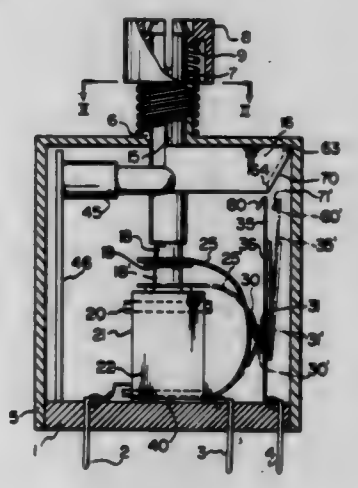
the relative positions of the electromagnet, the first and second levers, and the shaft being such that so long as power is supplied to said electromagnet, the power holds the electromagnet against its own resilient bias, said second lever holds said first lever against the resilient bias of the cam follower, and said cam follower engages in said positioning notch to hold said shaft against the bias of the return spring, but that, on failure of power to the electromagnet, the nose of the second lever is thrust by the resilient bias of the electromagnet in such a direction as to cause the bearing surface to disengage from the catch, thereby releasing the first lever to allow it to rotate away from the shaft under the thrust of the cam follower, and hence disengaging the cam follower from the positioning notch and thus allowing the return spring to return the shaft to the "OFF" position.

4,345,227

PUSH-ON PUSH-OFF SWITCH

Rodney Hayden, Stoney Creek, Canada, assignor to TRW Inc., Cleveland, Ohio

Filed May 21, 1981, Ser. No. 265,946
Claims priority, application Canada, Jun. 10, 1980, 353697
Int. Cl.³ H01H 45/02, 51/06
U.S. Cl. 335—186 8 Claims



1. An electrical switch which comprises a winding,

a magnetic core movable into said winding between an open and closed position,

a first contact carried by said core,

means mounting said first contact to said core for moving said contact towards and into electrical connection with a second contact upon movement of said core between said

open and closed position, said core being urged to said open position in the absence of magnetizing field exerted by said winding,

means connecting one end of said winding to said first contact,

plunger means for urging said core into said winding upon manual movement of said plunger means in a chosen direction,

a spring mounting for said second contact permitting resilient movement of said second contact upon connection with and pressing by said first contact when said core is moved into said closed condition,

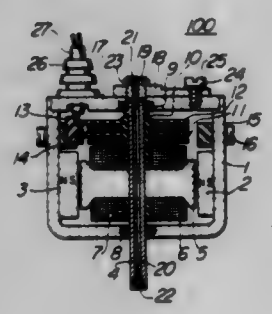
an arm carried by said plunger movable into contact with said second contact mounting means for urging said mounting means in a direction to move said second contact away from said first contact only when said core is in said closed condition and said plunger is manually actuated and moved in the chosen direction to urge said core into said winding.

4,345,228

ROTARY ACTUATOR

Takaharu Idogaki, Okazaki; Hisasi Kawai; Takeshi Matsui, both of Toyohashi; Kyo Hattori, Susono, and Kazuhiro Sakurai, Gotenba, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 23, 1981, Ser. No. 256,832
Claims priority, application Japan, Apr. 24, 1980, 55/54979
Int. Cl.³ H01F *7/14*
U.S. Cl. 335—222 **7 Claims**



1. A rotary actuator for imparting a rotational force to a driven element, comprising:

a substantially cylindrical hollow housing,

a hollow shaft rotatably mounted on said housing,

a driving means for imparting a rotational driving torque to said shaft, said shaft being adapted to be operatively connected to said driven element,

a torsion bar disposed in said shaft substantially coaxially therewith and having a first end secured to said shaft and a second end secured to said housing to thereby act against said rotational driving torque of said driving means,

first means for securing said first end of said torsion bar to said shaft, and

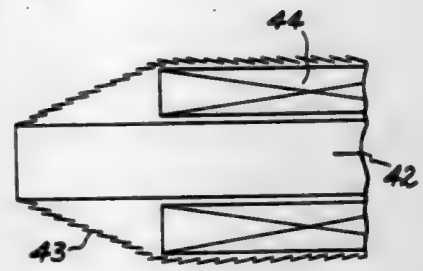
second means for securing said second end of said torsion bar to said housing, each of said first and second means including a tapered member formed with an axial central hole for securely receiving said torsion bar therein and a slit radially extending between said central hole and the tapered outer peripheral surface of said tapered member.

4,345,229

AMORPHOUS METAL BALLASTS AND REACTORS

Robert P. Alley, Manlius, and Russell E. Tompkins, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 966,855, Dec. 6, 1978, Pat. No. 4,288,773.
This application Mar. 2, 1981, Ser. No. 239,753
Int. Cl.³ H01F *27/24*
U.S. Cl. 336—83 **3 Claims**



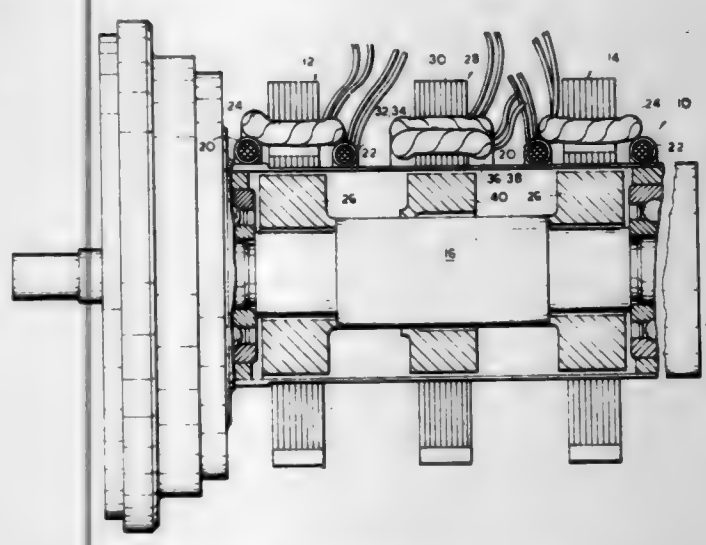
1. An amorphous metal reactor for lighting and general applications comprising an elongated generally cylindrical core made of magnetic material, a coil mounted on and magnetically coupled with said core, and a helical wrapping of overlapped amorphous metal ribbon enclosing said coil and contacting said core at both ends.

4,345,230

MULTIPLE ROTARY VARIABLE DIFFERENTIAL TRANSFORMER ON COMMON SHAFT WITH LEAKAGE FLUX COMPENSATION

Jacob Chass, Rego Park, N.Y., assignor to Pickering & Company, Inc., Plainview, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,337
Int. Cl.³ H01F *21/06*
U.S. Cl. 336—135 **6 Claims**



1. A rotary variable differential transformer (RVDT) comprising:

a first RVDT unit having a stator provided with a rotor opening therethrough, at least one primary and one secondary coil wound about portions of said stator, and a rotor extending through said rotor opening for magnetically coupling said primary and secondary coils;

a second RVDT unit having a stator provided with a rotor opening therethrough, at least one primary and one secondary coil wound about portions of said stator, and a rotor extending through said rotor opening for magnetically coupling said primary and secondary coils;

a third RVDT unit interposed between said first and second units having a stator provided with a rotor opening therethrough, a first pair of coils connected in series opposition connected to said first RVDT unit secondary, a second pair of coils connected in series opposition connected to said second RVDT unit secondary, said first and second

pairs of coils mounted to said third RVDT unit stator, and a rotor extending through said rotor opening for magnetically coupling said first and second pairs of coils; and,

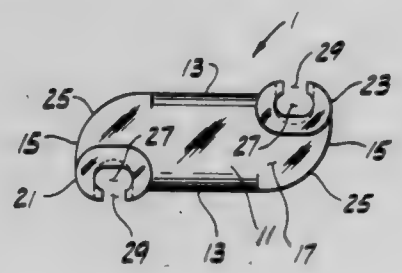
a shaft extending between said first and second RVDT units and having said first, second and third RVDT unit rotors affixed thereto.

4,345,231

SUPPORT MEMBER

Joseph S. Cline, and Cletus N. Andres, both of Highland, Ill., assignors to Basler Electric Company, Highland, Ill.

Filed Nov. 13, 1979, Ser. No. 93,697
Int. Cl.³ H01F *15/10*
U.S. Cl. 336—192 **10 Claims**



1. In combination with an electrical device having a wire end and an electrical connector on the wire end, the connector having a shank secured to the wire end and a terminal portion extending beyond the wire end, a portion of said shank as secured to the wire end having, in transverse section, maximum first and second dimensions generally at right angles to one another, the second being smaller than the first, a member of relatively rigid insulating material supporting the wire end and shank secured thereto in fixed position relative to the electrical device, said member having a recess therein extending therethrough, said recess being open at one end and receiving the wire end and being open at the other end to enable the terminal portion of the connector to extend out of the recess, said member having a slot therein extending axially of the recess from one end to the other, a portion of said slot having a width slightly greater than said second dimension but less than said first dimension, whereby said portion of the shank is entered laterally through said portion of the slot into the recess and said connector and said member turned relative one to the other generally on the axis of the shank to a position in which said first dimension extends generally widthwise of the slot thereby to prevent the shank from moving laterally out through the slot, a portion of the recess being of such cross section as to receive said portion of the shank with a relatively snug fit when the connector is turned to said position, and said member being mounted in fixed position relative to said electrical device, thereby holding the connector and the wire end against bending of the wire adjacent the shank to avoid breakage of the wire thereat.

4,345,232

NON-METALLIC CORE BAND

Angelo A. DeLaurentis, South Pymatuning, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 22,126, Mar. 20, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 216,213
Int. Cl.³ H01F *27/26*
U.S. Cl. 336—210 **1 Claim**

1. Electrical induction apparatus, comprising:

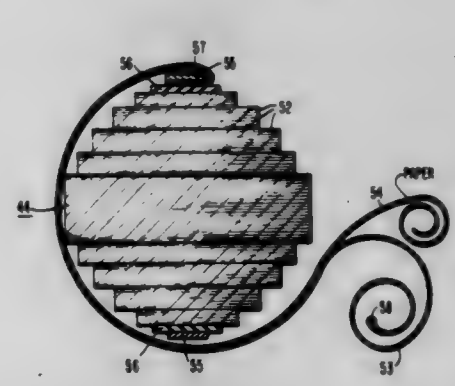
a magnetic core, said magnetic core including a plurality of superposed metallic magnetic laminations arranged to provide a magnetic circuit having leg and yoke portions;

a frame about said magnetic core including a metallic lock plate member disposed adjacent to the outer surface of an outermost lamination of at least one leg portion, which lock plate member extends between the yoke portions;

non-metallic banding means, said non-metallic banding means including a plurality of spaced bands of non-metallic material each having first and second ends, a predetermined width, and a length sufficient to completely encircle said at least one leg portion and overlap at least some portion of itself;

said lock plate member functioning as a common anchor for said plurality of spaced bands, with the first ends of said non-metallic bands being disposed between said lock plate member and said leg portion;

each of said non-metallic bands being folded back over said lock plate member to completely encircle said leg portion, with its second end overlapping the portion of itself disposed adjacent to said lock plate member;



means fastening the overlapped portions of each of said non-metallic bands together;

each of said non-metallic bands having a predetermined tension therein which causes said lock plate member and said laminations to be compressed tightly together, with said lock plate member, which retains its assembled positional relationship as a permanent and functional part of said magnetic core, firmly anchoring the first ends of said non-metallic bands;

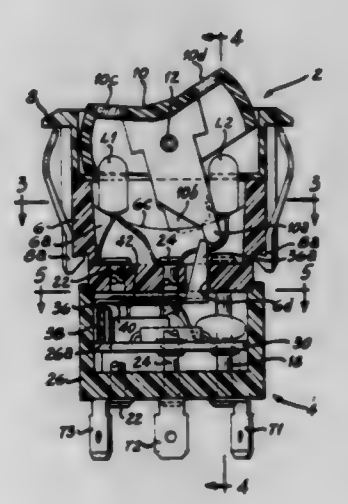
and winding means disposed over said at least one leg portion, with the overlapped, fastened portions of said non-metallic bands being between the winding means and said at least one leg portion.

4,345,233

MANUAL SWITCH WITH TIMED ELECTRO-THERMAL LATCH RELEASE

Alan A. Matthies, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 2, 1981, Ser. No. 239,872
Int. Cl.³ H01H *37/74*
U.S. Cl. 337—75 **6 Claims**



1. A manually operable electric switch having a timed, electro-thermal latch release comprising, in combination:

an insulating housing;

switch contacts mounted in said housing;

operator means mounted in said housing and manually oper-

able to actuate said contacts between open and closed circuit positions;

means biasing said contacts to a normally open circuit position;

electro-thermal latch means mounted in said housing and operable in a de-energized condition to restrain said operator means in a position effecting a closed circuit position of said contacts; and

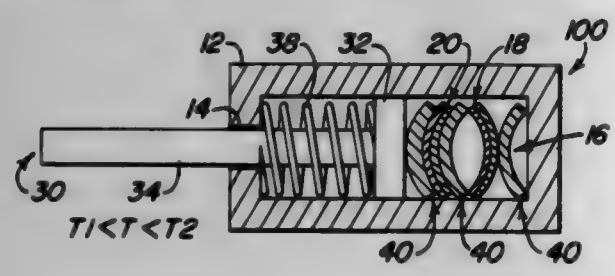
electric timing means mounted in said housing energizable upon closure of said switch contacts to initiate a timing period and operable upon completion of said timing period to energize said electro-thermal latch means to release said operator means and causing said switch contacts to be opened.

4,345,234

MULTIPLE ELEMENT THERMAL ACTUATOR

Steven A. Reich, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 15, 1980, Ser. No. 216,393
Int. Cl.³ H01H *37/52*
U.S. Cl. 337—336 **4 Claims**



1. A thermal actuator comprising:

a housing;

a stack comprising a plurality of formed members disposed within the housing, a portion of the stack comprising at least one formed member having at least a first structural state wherein the at least one formed member is concave in a first direction, the remainder of the stack comprising at least one other formed member having temperature dependent first and second structural states wherein the at least one other formed member is concave in first and second directions, respectively, adjacent formed members of the stack being in nesting engagement with each other over at least one range of ambient temperatures wherein the adjacent formed members are concave in the same direction, adjacent formed members of the stack also being in non-nesting engagement with each other over at least one other range of ambient temperatures wherein the adjacent formed members are concave in opposite directions, the at least one other formed member of the remainder of the stack comprising first and second kinds of snap-acting thermostatic bimetallic members, the first kind snapping from one to the other of its structural states at a first transition temperature, the second kind snapping from one to the other of its structural states at a second transition temperature, the at least one formed member of the portion of the stack comprising a plurality of passive members, each passive member having only a single temperature independent structural state, each bimetallic member being interposed between adjacent pairs of the passive members; and

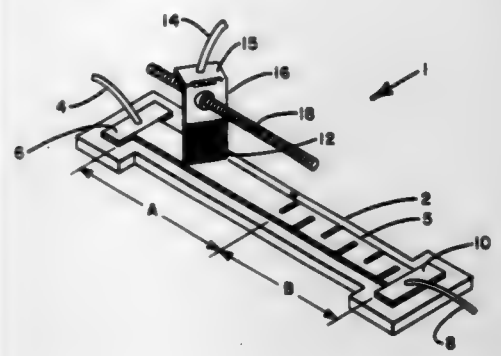
a follower movably supported by the housing, engaging one of the formed members and having a variable position depending upon the temperature dependent structural states of the stack of formed members.

4,345,235

VARIABLE RESISTANCE DEVICE HAVING A RESISTANCE ELEMENT WITH LASER CUTS

Richard E. Riley, Riverside, and Bradley D. Turner, Covina, both of Calif., assignors to Spectrol Electronics Corporation, City of Industry, Calif.

Filed Sep. 12, 1980, Ser. No. 187,251
Int. Cl.³ H01C *10/38*
U.S. Cl. 338—176 **2 Claims**



1. A variable resistance device comprising:

an electrically non-conducting substrate;

a layer of resistance material on the surface of the substrate forming a resistance path, said resistance material having at least one series of overlapping laser cuts in the edges of the resistance material generally transverse to the resistance path, said cuts being relatively small in width compared to the dimensions of the resistance path with each successive cut being in the edge opposite to the preceeding cut and with the length of each cut and the spacing between cuts selected to provide a desired non-linear resistance function along the resistance path;

a multi-fingered contact wiper which may move along and in contact with the resistance path to provide different resistance values when the wiper is in contact with different sections of the resistance path, said wiper oriented at an angle to the cuts in the resistance path so that deviations from the desired non-linear resistance function due to the wiper crossing the cuts in the resistance path, are substantially eliminated;

a first electrical contact connected to the resistance material at one end of the resistance path; and

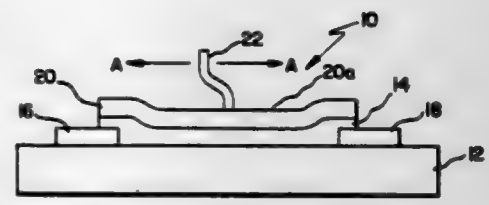
a second electrical contact connected to the resistance material at the end of the resistance path opposite to the end of the resistance path at which the first electrical contact is connected.

4,345,236

ABRASION-RESISTANT SCREEN-PRINTED POTENTIOMETER

Charles W. Eichelberger, Schenectady, and Robert J. Wojnarowski, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,344
Int. Cl.³ H01C *10/38*
U.S. Cl. 338—176 **17 Claims**



1. An abrasion-resistant potentiometer, comprising:

a substrate;

a first continuous resistive layer formed on said substrate and having a surface opposite to said substrate;

a second continuous and self-lubricating resistive layer formed substantially on the entire surface of said first resistive layer, the resistivity of said second resistive layer being substantially greater than the resistivity of said first resistive layer; and

a slide arm in pressure contact with said second resistive layer and slidably movable thereacross.

4,345,237

SUPERVISORY AND MONITORING SYSTEM FOR HELICOPTER PROPELLER BLADES

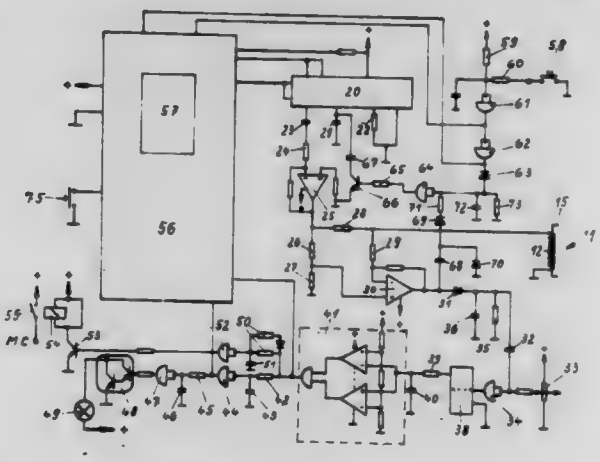
Ernst Lerche, Ritterhude; Bernward Raschke, and Siegfried Hartwig, both of Ganderkesee, all of Fed. Rep. of Germany, assignors to Verenigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,310

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936761

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—27 R **14 Claims**



1. A system for monitoring rotor blades of a propeller wherein each rotor blade is associated with a sensitive transducer responding to a defect of the blade, there being a plurality of transducers accordingly, comprising:

a resonance circuit provided for rotating with the rotor and including a plurality of capacitors;

a plurality of switches respectively operated by said transducers of the plurality and connected to the capacitors of the plurality of capacitors for individually altering the resonance frequency of the resonance circuit so that a different resonance frequency exists for responses of different ones of the transducers and the respective resonance frequency is representative of the rotor blade being defective;

a pulse transformer having a primary being stationary relative to the rotor, and a single secondary rotating with the rotor, excentrically thereto, and being intermittently coupled to the primary pursuant to rotor rotation, the resonance circuit being connected to the single secondary winding as a load thereon;

a signal generator connected for feeding a signal to the primary;

circuit means including impedance means connected to the signal generator to respond to a change in the load upon response of at least one of said switches; and

indicating means connected to said impedance means to indicate such a change as an indication of a defect in at least one of the rotor blades.

4,345,238

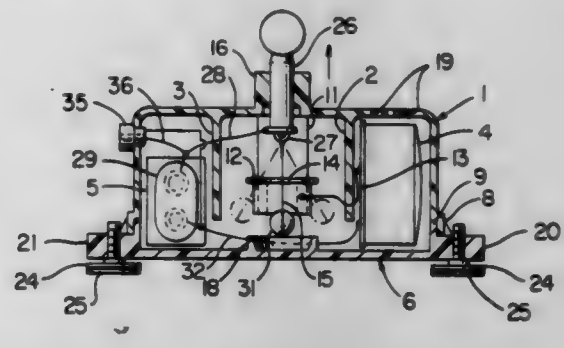
SIGNALLING DEVICE FOR USE IN AUTOMOTIVE AND LIKE VEHICLES

Richard L. Weir, 2217 Grant St., Dayton, Ohio 45406

Filed Sep. 8, 1980, Ser. No. 184,790

Int. Cl.³ B60Q *5/00*

U.S. Cl. 340—52 R **13 Claims**



1. A device for use in automotive vehicles for alerting the driver to improper and/or unsafe driving patterns, including a housing adapted to be mounted on a vehicle, a mechanism within said housing sensing driving excesses and signalling the occurrence of such excesses, at least a portion of said mechanism having means in connection therewith for the manipulation thereof to vary the sensitivity of the response of said mechanism to said excesses to suit driving conditions and individual driver requirements, and said manipulating means being exterior to said housing, facilitating its operation.

4,345,239

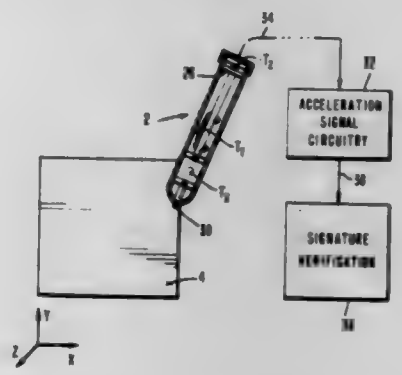
APPARATUS FOR DETERMINING PEN ACCELERATION

Brian J. Elliott, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,483

Int. Cl.³ G06K *9/22*

U.S. Cl. 340—146.3 SY **5 Claims**



1. An apparatus for measuring pen acceleration for use in a signature verification system, comprising:

a pen having capacitive transducer means mounted therein for changing capacitance responsive to acceleration of said pen,

a Blumlein bridge circuit having an input and an output and having one arm thereof comprised of the capacitance of said capacitive transducer means,

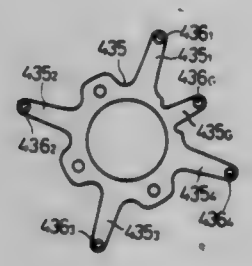
amplifier means having an input connected to the output of said Blumlein bridge circuit, and having an output for providing an amplified signal, and

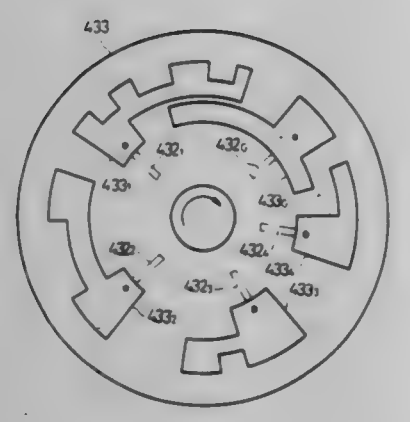
A.M. detector means for detecting the modulation on said amplified signal, which corresponds to said acceleration.

4,345,240
THROTTLE OPENING SENSOR

Hiroyuki Amano, Chiryu; Tsuyoshi Yoshida, Toyota, and Kazuhiko Shibata, Anjyo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Aisin-Waner Kabushiki Kaisha, both of Aichi, Japan

Filed Jan. 29, 1980, Ser. No. 116,411
Claims priority, application Japan, Feb. 8, 1979, 54-15119[U]
Int. Cl.[3] G08C *9/08*
U.S. Cl. 340—345 3 Claims





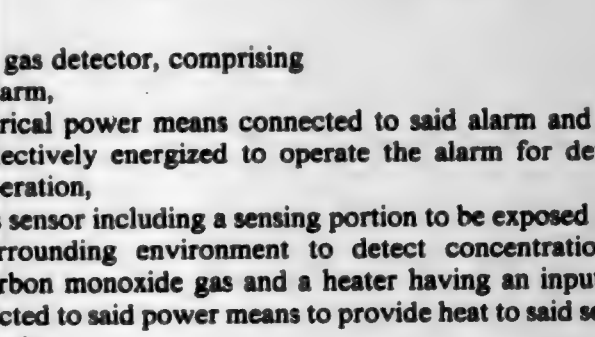
1. A throttle opening sensor comprising a printed circuit substrate having a plurality of angularly spaced apart split electrodes with each electrode having at least one radially outwardly projecting portion formed thereon and circularly disposed relative to each other, a resilient conductor having a plurality of radially extending arms equiangularly spaced apart with each arm having a contact which corresponds to only a respective split electrode, said contacts being circularly disposed for engagement with said projecting portions of said electrodes and a drive shaft for causing a limited angular movement less than 360° of one of the substrate and the resilient conductor relative to the other in mechanical association with a movement of the throttle valve as the latter is being opened or closed, the split electrodes being configured such that a code formed by a combination of contact or non-contact between the radially projecting outer portions of the individual split electrodes and the respective contacts exhibits a change in only one bit thereof for each angular movement of the drive shaft corresponding to one step of the throttle opening.

4,345,241
ANALOG-TO-DIGITAL CONVERSION METHOD AND APPARATUS

Sumio Takeuchi, Sakura; Rikichi Murooka, Kamagaya, and Jun Sakamoto, Kamakura, all of Japan, assignors to Sony/Tektronix, Tokyo, Japan

Filed Jan. 12, 1981, Ser. No. 223,979
Claims priority, application Japan, Feb. 18, 1980, 55/17805
Int. Cl.[3] H03K *13/02*
U.S. Cl. 340—347 CC 12 Claims

1. An analog-to-digital conversion apparatus, comprising:
a plurality of analog-to-digital converters arranged in parallel for converting an analog input signal into a digital signal;
clock signal generation means for driving said analog-to-digital converters at different phases to each other;
a reference signal generator for generating a reference signal to be digitized by said analog-to-digital converters; and

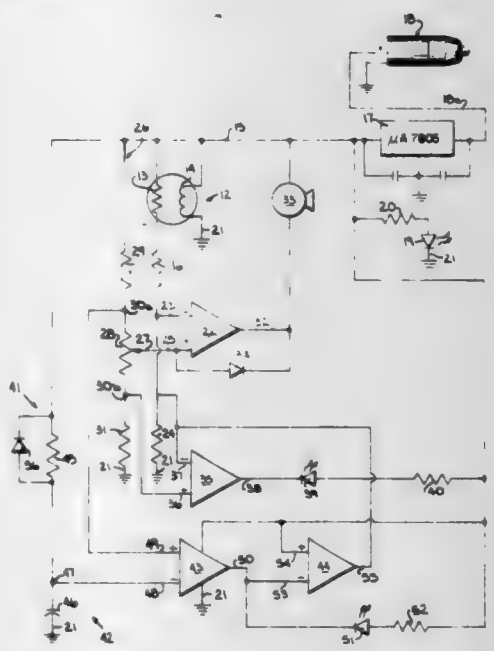


control means for controlling the phase relation of the clock signals from said clock signal generation means to be applied to each of said analog-to-digital converters in response to the outputs thereof when the reference signal is digitized.

4,345,242
GAS DETECTOR

Angelo Ienna-Balistreri, 1875 W. Sheridan Ave., Milwaukee, Wis. 53209

Filed Feb. 20, 1981, Ser. No. 236,528
Int. Cl.[3] G08B *17/10*
U.S. Cl. 340—634 6 Claims



1. A gas detector, comprising
an alarm,
electrical power means connected to said alarm and to be selectively energized to operate the alarm for detector operation,
a gas sensor including a sensing portion to be exposed to the surrounding environment to detect concentrations of carbon monoxide gas and a heater having an input connected to said power means to provide heat to said sensing portion,
an enable circuit including timing means connected to said power means to provide a timed output in response to a predetermined time delay following the initial energization of said heater,
a comparator having an output means and a separate multiple signal input means and having means to compare the input signals and establish an output at said output means selectively transferable between a first condition to indicate a gas concentration below a predetermined magnitude and a second condition to activate said electrical power means to indicate a gas concentration above said

predetermined magnitude and said input means connected to receive

a first input from said enable circuit to disable said comparator for said predetermined time delay to prevent operation of said alarm while said heater is initially energized and

a second input from said gas detector to continuously monitor the carbon monoxide concentration to provide said second condition in response to the sensing of at least said predetermined magnitude gas concentration and

a third input from said comparator output to latch said comparator to continuously activate said alarm in response to the occurrence of said second condition, and

resetting means connected to selectively de-energize said electrical power means to de-activate said alarm and condition said gas detector for continued gas monitoring.

4,345,243

APPARATUS FOR GENERATING SIGNALS FOR PRODUCING A DISPLAY OF CHARACTERS

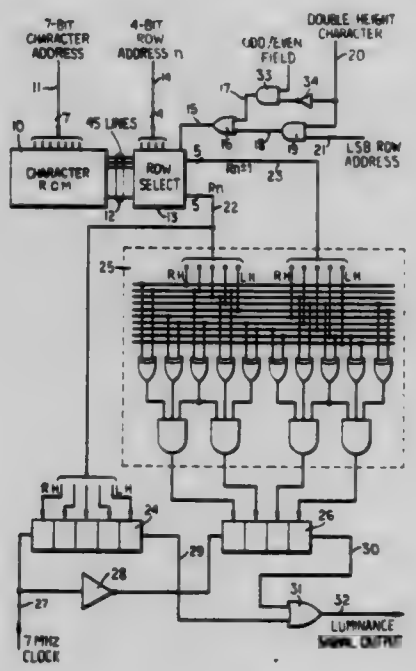
Robert Parsons, Cambs, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 2, 1980, Ser. No. 165,472

Claims priority, application United Kingdom, Jul. 24, 1979, 7925703

Int. Cl.³ G09G 1/16

U.S. Cl. 340—728 **11 Claims**



1. Apparatus for generating signals suitable for producing a display of characters on a raster scanned display means, the apparatus including a read-only memory having an address input for character codes and a data output for signals representing a character segment matrix pattern identified by a character corresponding to a character code applied to said address input; and a character rounding circuit including logic means responsive to signals representing a character segment matrix pattern derived from the read-only memory to produce signals representing additional partial character segments and means for combining the additional partial character segment signals with the character segment matrix signals derived from the read-only memory, means for operating the read-only memory to produce output signals in parallel representing the entire character segment matrix pattern of a character whose code is applied as address input thereto, and parallel gating means for selecting as the output of the read-only memory, output signals representing a selected row of the character segment matrix pattern simultaneously with output signals representing the immediately adjacent row of the character segment matrix pattern where it exists.

4,345,244

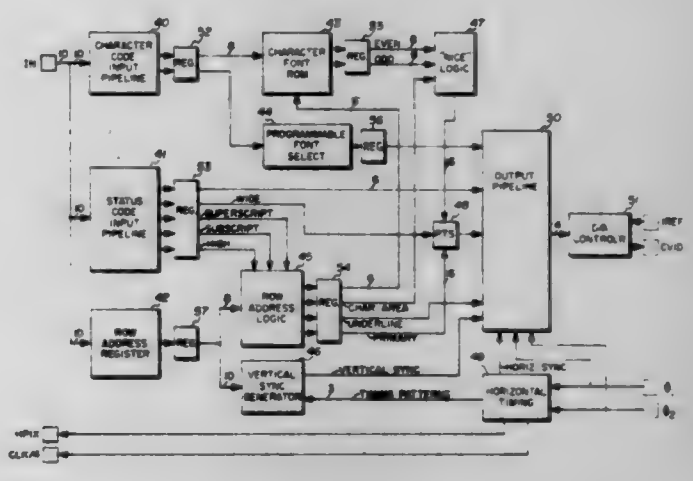
VIDEO OUTPUT CIRCUIT FOR HIGH RESOLUTION CHARACTER GENERATOR IN A DIGITAL DISPLAY UNIT

Douglas S. Greer, San Diego, Calif., and Paul Grunewald, Somerset, N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 15, 1980, Ser. No. 178,494

Int. Cl.³ G09G 1/16

U.S. Cl. 340—728 **10 Claims**



1. A system for displaying characters in a dot-matrix form, said system comprising:

a display unit having a display face and means to scan said display face in an interlaced scan mode;

storage means to store information signals representative of characters to be displayed, said storage means including a first store to hold information signals for even lines of the display and a second store to hold information signals for odd lines of the display, which even and odd lines are to be displayed in said interlaced scan mode;

logic means coupled to said display unit and to said storage means to receive information signals from both of said first store and said second store and to generate extra bit signals for display during the particular scan being displayed whenever the information signals to be displayed form a diagonal;

output buffering means including a register coupled to said logic means to receive said information signals and said extra bit signals to be transmitted to said display unit;

input buffering means including a register coupled to said storage means to receive a character code representing a character to be displayed, said character code forming an address to said storage means;

first register means coupled between said storage means and said logic means for receiving said information signals from said storage means; and

second register means between said input buffering means and said storage means to receive said character code from said input buffering means at the same time said first register means is receiving said information signals from said storage means for the first preceding character code received by said first register means.

4,345,245

METHOD AND APPARATUS FOR ARRANGING SEGMENTED CHARACTER GROUPS IN A DIGITAL TYPESETTER

Louis C. Vella, Selden, and Walter I. Hansen, Cold Spring Harbor, both of N.Y., assignors to Eltra Corporation, Morristown, N.J.

Filed Nov. 26, 1979, Ser. No. 97,276

Int. Cl.³ G06F 3/14

U.S. Cl. 340—744 **23 Claims**

1. A method of rearranging the order of random size characters from an input sequence of characters to a raster line order

of characters, for display on respective raster lines of a raster display, said characters represented by character data arranged in an input sequence, said raster lines generated in a raster line order, 1 to N, and with said input sequence of characters being different from the order of said characters in the said respective raster lines for at least a plurality of characters in said input sequence, comprising the steps of:

(a) arranging in an input sequence, character data in a first store representing the identity, size, and display location of the characters to be formed on said raster display,

(b) examining the character data in said input sequence for a change in size and display location, from one character to a successive character,



(c) identifying segments of character data for successive characters in said input sequence, having a common display location and size, said segments being in said input sequence,

(d) said step of identifying segments including the step of identifying reference raster lines, within said raster line order 1 to N, related to a parameter of at least one character within respective segments, and recording said reference raster lines,

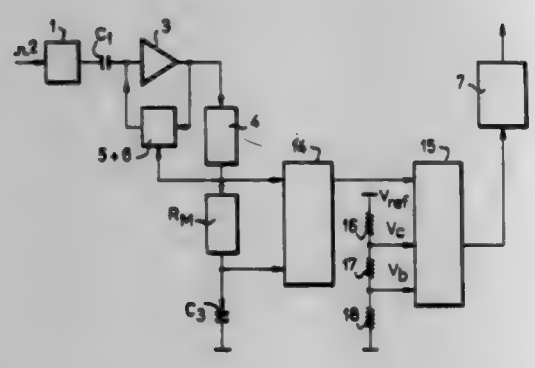
(e) rearranging the order of said segments according to the value of the reference raster lines for the respective segments and related to the said order of raster lines.

4,345,246

SYNCHRONIZATION DEVICE FOR A CHARACTER-GENERATING CIRCUIT AND A VERTICAL SCANNING CIRCUIT AND TELEVISION RECEIVER COMPRISING SUCH A DEVICE

Michel van den Driessche, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 18, 1980, Ser. No. 160,453
Claims priority, application France, Jun. 20, 1979, 79 15804
Int. Cl.³ G09G *1/16*; H04N *5/22*
U.S. Cl. 340—748 **4 Claims**



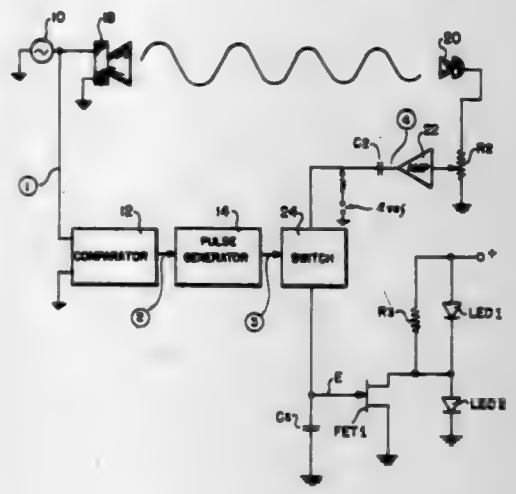
1. A synchronization device for a character-generating circuit and a vertical scanning circuit of an image tube, the scanning circuit comprising a deflector coil and a threshold detector, wherein the synchronization control signal for the generating circuit is made dependent on the current flowing through the deflector via the threshold detector a first measuring input of which receives a voltage proportional to the current through the deflector and a second reference input receives a reference voltage, the threshold detector changing state when the voltage measured reaches the reference voltage, the output signal of the threshold detector forming the synchronization signal for the generating circuit.

4,345,247

DISPLAY SYSTEM FOR STEADY STATE WAVES

William E. Thornton, and James F. Thornton, both of 701 Cowards Creek Rd., Friendswood, Tex. 77546

Filed Sep. 29, 1980, Ser. No. 191,398
Int. Cl.³ G09G *3/00*
U.S. Cl. 340—755 **9 Claims**



1. A system for visually displaying a steady state cyclic wave comprising: a source for producing a cyclic electrical signal; first transducer means coupled to said source to be driven by said electrical signal for propagating a cyclic wave along a particular path in a selected medium; a second transducer means positioned in the path of said wave and movable along the path towards and away from the first transducer means; said second transducer means serving to convert the cyclic wave into a corresponding cyclic electrical signal; sample and hold circuit means coupled to the second transducer means for producing a voltage representing the instantaneous amplitude of the wave at a sampled point in each cycle thereof; circuitry connected to said source for producing sampling pulses for said sample and hold circuit means having a predetermined fixed phase relationship with the cyclic electrical signal from said source; electrically energized display means; and drive circuit means connected to the sample and hold circuit means for producing a drive signal for the display means corresponding to the voltage produced by the circuit means.

4,345,248

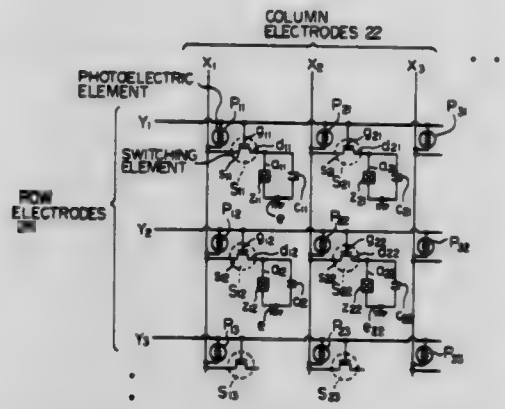
LIQUID CRYSTAL DISPLAY DEVICE WITH WRITE-IN CAPABILITY

Seigo Togashi, and Akira Tsuzuki, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,900
Claims priority, application Japan, Dec. 14, 1979, 54-162996
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—784 **15 Claims**

1. A liquid crystal display device, comprising:
means for generating a plurality of drive signals;
at least two substrates;
a layer of liquid crystal sandwiched between said substrates;
a plurality of electrodes formed upon said substrates;
a plurality of display elements controlled by said drive signals applied through said electrodes;
a plurality of switching elements provided upon a first one of said substrates;

a plurality of photoelectric elements provided upon said first one of said substrates; and



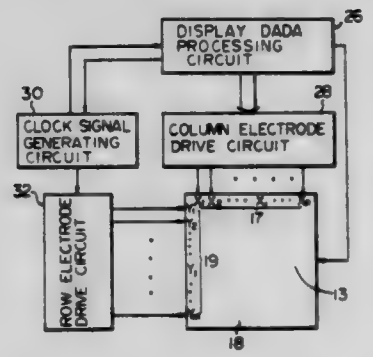
means for detecting variations in characteristics of said photoelectric elements resulting from changes in levels of light impinging thereon.

4,345,249

LIQUID CRYSTAL DISPLAY PANEL

Seigo Togashi, Tokorozawa, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,901
Claims priority, application Japan, Dec. 25, 1979, 54-167542
Int. Cl.[3] G06F *3/02*
U.S. Cl. 340—784 8 Claims



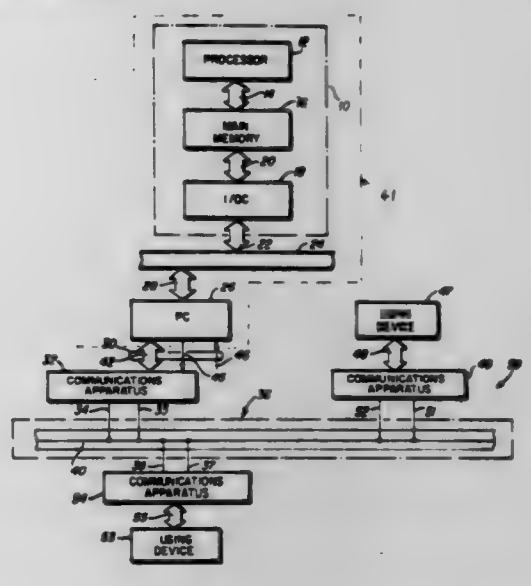
1. In a liquid crystal display panel having a layer of liquid crystal material enclosed between a pair of substrates, a set of row electrodes and a set of column electrodes formed on said substrates to mutually intersect, a plurality of display electrodes arranged in positions corresponding to intersections of said row and column electrodes, a plurality of switching elements each coupled between an intersection of said row and column electrodes and a corresponding one of said display electrodes, a source of scanning signals for selectively rendering said switching elements conductive and a source of display signal voltages, said display signal voltages being selectively applied to said display electrodes through said switching elements in response to said scanning signals, and a reference electrode which is held at a predetermined potential, the improvement whereby said display electrodes are arranged in relationship to said reference electrode such that an electric field is applied to said liquid crystal material in a direction having at least a component directed parallel to the plane of said substrates in response to a potential difference between said display signal voltage applied to one of said display electrodes and the potential of said reference electrode.

4,345,250

INFORMATION COMMUNICATION SYSTEM WITH COLLISION AVOIDANCE

Herbert K. Jacobsthal, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 22, 1980, Ser. No. 219,150
Int. Cl.[3] H04Q *9/00*
U.S. Cl. 340—825.5 20 Claims



1. An information communication system comprising:

a. a communication medium;

b. a plurality of transceivers connected to said medium, each transceiver including transmitter for transmitting an information signal onto said medium, and receiver for receiving a transmitted information signal communicated on said medium by another transceiver; and

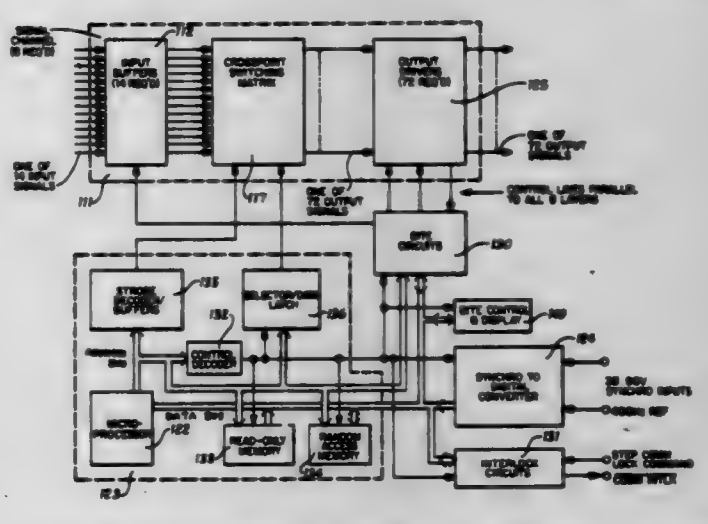
c. at least one of a plurality of collision avoidance apparatus connected to each transceiver of said transceivers for selectively applying a unique predetermined DC voltage level prior to said transmitter transmitting onto said medium to determine if another transceiver is preparing to transmit.

4,345,251

SOLID STATE COMMUTATOR SWITCH

Robert H. Begeman; Barry D. Sanderson; Donald C. Weiss, all of Indianapolis, and David L. Zeph, Westfield, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 20, 1981, Ser. No. 236,474
Int. Cl.[3] H04Q *9/00*; G06J *1/00*; G01C *17/00*
U.S. Cl. 340—825.86 8 Claims



1. A solid state switching system for connecting a plurality of input signals to a plurality of selected transducer elements comprising,

a plurality of input conductors,

a plurality of transducer elements positioned in a circular array,

a crosspoint switching matrix having a plurality of on/off solid state switching elements for connecting any of said input conductors to any of said transducer elements,

first means for selectively producing a binary number indicative of a digitized bearing position, and

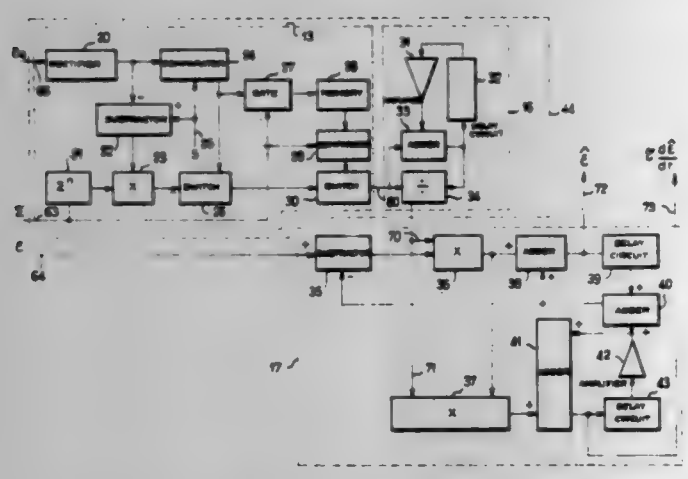
control means connected with said first means for controlling the states of said on/off solid state switching elements whereby said plurality of input conductors are electrically connected with a transducer having a bearing position corresponding to said digitized bearing position and to transducers contiguous thereto.

4,345,252

NON-LINEAR DYNAMIC FILTERING DEVICE FOR THE ANGULAR MEASURING OF NOISE IN A RADAR

Roland Carre, and Georges Doriath, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 7, 1980, Ser. No. 119,397
Claims priority, application France, Feb. 13, 1979, 79 03640
Int. Cl.³ G01S *13/44*
U.S. Cl. 343—5 NQ **10 Claims**



1. A circuit arrangement for improving the accuracy of angular measurements in an echo-type target-locating system with a first reception channel emitting a sum signal Σ, a second reception channel emitting a difference signal Δ, and circuitry connected to said reception channels for deriving therefrom an angular-deviation signal ϵ and a quadrature deviation signal ϵq respectively appearing on a first and a second output thereof, comprising:

first calculating means connected to said first reception channel and to said second output for generating a weighting function P(t) under the control of said sum signal Σ and said quadrature deviation signal ϵq, said weighting function P(t) going to zero during periods in which the sum signal Σ is low and the quadrature deviation signal ϵq is peaking;

second calculating means in cascade with said first calculating means for establishing a gain-control signal K(t) varying with said weighting function P(t); and

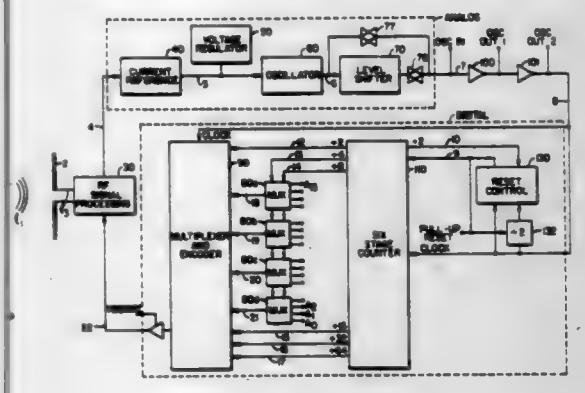
dynamic filter means connected to said second calculating means and to said first output for processing said angular-deviation signal ϵ by multiplying same with said gain-control signal K(t) and subjecting the product to recursive filtering.

4,345,253

PASSIVE SENSING AND ENCODING TRANSPONDER

D. Robert Hoover, Santa Cruz, Calif., assignor to Identronix, Inc., Santa Cruz, Calif.

Filed Jun. 20, 1980, Ser. No. 161,622
Int. Cl.³ G01S *13/80*
U.S. Cl. 343—6.8 LC **15 Claims**



1. A passive transponder comprising:

antenna means for receiving and transmitting signals;

oscillating means for generating a signal of a first frequency in response to signal received by the antenna means;

counting means connected to receive the signal from the oscillating means and to provide output signals at selected frequencies integrally divisible into the first frequency;

at least one multiplexing sequencing means having a series of input terminals, selected ones of which are altered to provide an identification code, the at least one multiplexing sequencing means being connected to receive signals from the counting means and the oscillating means;

encoding mens connected to the oscillating means, the counting means, the at least one multiplexing sequencing means, and the antenna for selecting which of the signals from the oscillating means, the counting means, and the at least one multiplexing means shall be supplied to the antenna; and

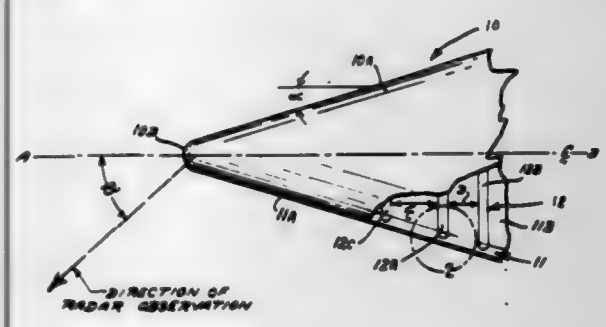
reset means coupled to the counting means for sensing the signals received by the antenna means and inhibiting the operation of the passive transponder until the signals being received by the antenna means possess sufficent energy to operate the passive transponder.

4,345,254

REENTRY VEHICLE RADAR CROSS SECTION SIGNATURE MODIFICATION

Edward N. Skomal, Redlands, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 1, 1975, Ser. No. 563,261
Int. Cl.³ H01Q *15/00*
U.S. Cl. 343—18 B **8 Claims**



1. In a reentry vehicle having a geometric axis and an integrated heatshield made of porous dielectric material, wherein the heatshield has an external ablating surface layer and an internal non-ablating surface layer, and wherein the reentry vehicle is of the type not having a metallic substructure contig-

uous to and internal of the heatshield, the improvement comprising a plurality of zones having depth, width, and length and made of electrically conductive material disposed on and partially penetrating the internal non-ablating surface layer of the heatshield, with said zones spaced non-uniformly with respect to said axis.

4,345,255

ANTENNA FEED SYSTEM

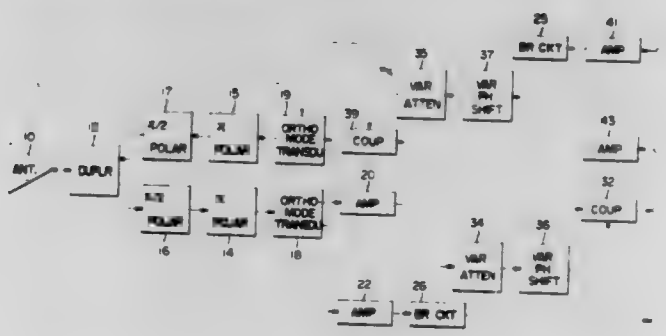
Keigo Komuro; Matsuichi Yamada, both of Tokyo; Katsuhiko Aoki, Amagasaki; Yoshihiko Yoshikawa, Amagasaki; Fumio Itoh, Amagasaki; Fumio Takeda, and Osami Ishida, both of Kamakura, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd. and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,741

Claims priority, application Japan, Dec. 25, 1978, 53-160607; Mar. 2, 1979, 54-24743

Int. Cl.³ H04B 7/00

U.S. Cl. 343—100 PE **8 Claims**



1. An antenna feed system for coupling a receiver unit to a receiving antenna for receiving a pair of elliptically polarized waves having the same frequency spectrum and rotated in opposite relationship with each other; which system comprises polarizer unit means for transforming one of said elliptically polarized waves included in a received output from said receiving antenna to a linearly polarized wave having a predetermined plane of polarization, an ortho-mode transducer connected to said polarizer unit means at its output and including a pair of first and second outputs, said ortho-mode transducer delivering a first electromagnetic wave having the same plane of polarization as said linearly polarized wave to said first output thereof and a second electromagnetic wave having a plane of polarization orthogonal to that of said linearly polarized wave to said second output thereof, a transfer circuit electrically connected to said second output of said ortho-mode transducer to impart controllably an attenuation and a phase lag to one portion of said second electromagnetic wave, and a coupler for combining said modified portion of said second electromagnetic wave from said transfer circuit with said first electromagnetic wave from said first output of said ortho-mode transducer, whereby a pair of received outputs are provided from said second output of said ortho-mode transducer and from said coupler respectively.

4,345,256

STEERABLE DIRECTIONAL ANTENNA

Lawrence L. Rainwater, Sunnyvale, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,455

Int. Cl.³ H01Q 19/08, 3/08

U.S. Cl. 343—754 **5 Claims**

1. A steerable antenna assembly comprising:

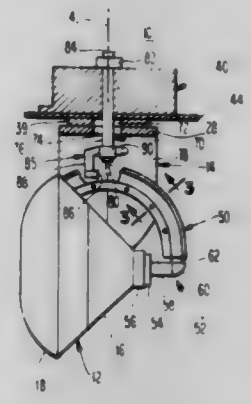
directional antenna means;

first support means attached to said directional antenna means for rotating said directional antenna means about a first axis of rotation;

second support means formed to have said first support means mounted therewith for supporting said first support means;

a coaxial feed line for transmitting RF energy, said feed line having a center conductor with a probe portion connected to one end of said center conductor, said coaxial feed line mounted to said second support means;

wave guide feed line means having a slot formed therein and electrically connected at one end to said directional antenna means, said wave guide feed line means formed to be



rotatable about said first axis of rotation, said wave guide feed line means further disposed to have said center conductor extend through said slot whereby said probe is disposed within said wave guide for every angle of rotation of said directional antenna about said first axis; and

reflecting means connected to said coaxial feed line and partially disposed within said wave guide feed line means for cooperating with said probe portion and said guide feed line means to couple efficiently RF energy between said directional antenna means and said coaxial feed line.

4,345,257

PRIMARY RADAR ANTENNA HAVING A SECONDARY RADAR (IFF) ANTENNA INTEGRATED THEREWITH

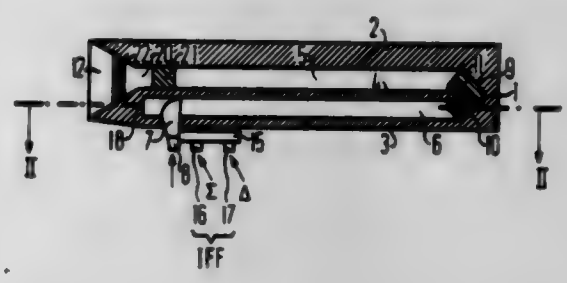
Anton Brunner, Wangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 20, 1980, Ser. No. 151,737

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 2925063

Int. Cl.³ H01Q 13/00

U.S. Cl. 343—780 **21 Claims**



1. A radar antenna comprising: a pillbox antenna including a cylindrical parabolic reflector,

an upper metal plate and a lower metal plate perpendicular to and extending from said reflector spaced apart and parallel to one another,

an intermediate plate spaced between and parallel to said upper and lower plates and forming therewith upper and lower interplate spaces, said intermediate plate spaced from said reflector,

a primary radar signal radiator coupled to said lower interplate space with its radiation center on the focal line of said reflector, and

deflection means in said interplate spaces adjacent said

reflector for deflecting radiation from said lower interplate space to said upper interplate space; and

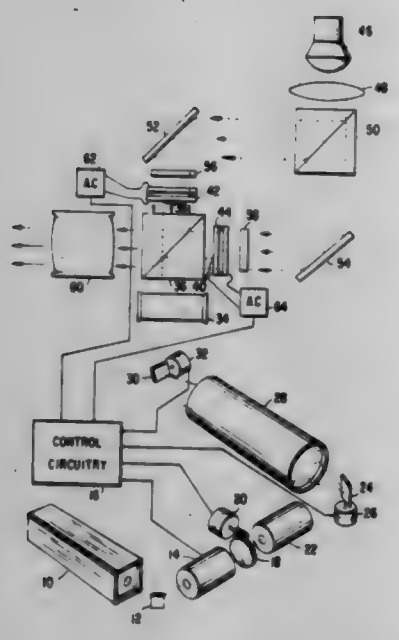
coupling means comprising a pair of identification-friend-foe (IFF) radiators arranged on opposite sides of said primary radar signal radiator and coupled to said lower interplate space for incoupling IFF signals.

4,345,258

COLOR DISPLAY SYSTEM

Robert C. Tsai, Montebello, and William J. Kidwell, North Hollywood, both of Calif., assignors to The Singer Company, Stamford, Conn.

Filed Dec. 15, 1980, Ser. No. 216,331
Int. Cl.³ G01D *9/32*
U.S. Cl. 346—17 **7 Claims**



1. A recording and projection system comprising:

a laser providing a substantially single frequency beam of coherent energy having a wavelength outside the range of wavelengths of visible light;

means for focusing said laser beam;

controllable polarization means interposed in the path of said laser beam for selectively controlling the polarization of said laser beam within a range between a first plane of polarization and a second plane of polarization so as to control the distribution of laser energy in said first and second planes of polarization;

a dichroic polarizer cube interposed in the path of said laser beam downstream from said polarization means, said cube having the property that it is substantially totally reflective to components of said laser beam that are polarized in said first plane and substantially totally transmissive to components of said laser beam that are polarized in said second plane, said cube having the further property that short wavelength visible light is reflected by said cube and long wavelength visible light is transmitted by said cube;

first and second locally erasable recording mediums positioned at the focal points of the reflected and transmitted laser beams, respectively;

deflecting means upstream from said polarizer cube for scanning said reflected and transmitted laser beams across said first and second recording mediums, respectively;

modulating means upstream from said deflecting means for modulating the intensity of said laser beam;

means for selectively erasing said first and second recording mediums;

means for providing a beam of white projection light;

a dichroic element interposed in said projection beam having dichroic properties substantially identical to the further property of said polarizer cube, said element producing from said beam of white light a beam of long wavelength visible light that is transmitted through said element and a beam of short wavelength visible light that is reflected by said element;

means for back lighting said first recording medium with said long wavelength visible light beam to form a long wavelength image;

means for back lighting said second recording medium with said short wavelength visible light beam to form a short wavelength image;

a first colored filter interposed in said long wavelength visible light beam;

a second colored filter interposed in said short wavelength visible light beam;

means for combining said long and short wavelength visible light beams to form a combined wavelength image; and

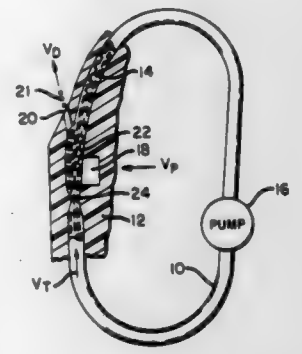
means for projecting said combined wavelength image.

4,345,259

METHOD AND APPARATUS FOR INK JET PRINTING

Peter H. Reitberger, Munich, Fed. Rep. of Germany, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 25, 1980, Ser. No. 190,773
Int. Cl.³ G01D *15/18, 9/00*
U.S. Cl. 346—75 **15 Claims**



7. Apparatus for non-impact printing in dot matrix manner on record media comprising

conduit means carrying printing ink in a closed environment system,

pump means operably associated with said system for circulating said ink under pressure along a path in continuous stream manner,

cavity means downstream of said circulating means enabling movement of ink out of said stream path,

an

outlet from said cavity means defining a nozzle through which ink is ejected and formed into droplets,

and

means comprising a deflection element adjacent the ink stream and pulsed in timed manner for generating pressure waves generally perpendicular into and through the stream path for causing ink to be moved therefrom toward and through said nozzle.

4,345,260

INK JET PRINTER WITH CARRIAGE VELOCITY COMPENSATION

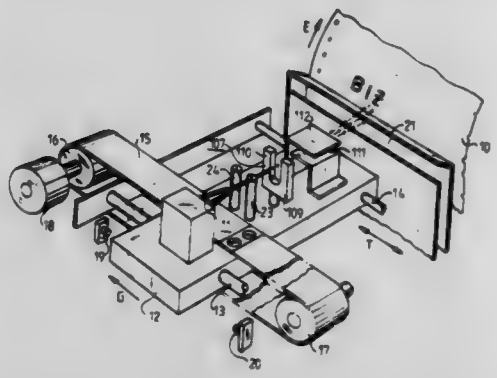
Jacques Deproux, Sevres, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Oct. 3, 1980, Ser. No. 193,820
Claims priority, application France, Mar. 13, 1980, 80 05674
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **6 Claims**

1. An ink jet printing device comprising:

means for discharging ink towards a printing medium in a series of droplets, said ink jet discharging means including at least a first ink generator having an orifice for discharging at least some of the droplets in the series, driving means for providing relative movement between the ink

discharging means and the printing medium along a first predetermined direction of movement parallel to the printing medium, said driving means being operative to provide relative movement between the ink discharging means and the printing medium along said first predetermined direction alternating with relative movement along a second predetermined direction, means for compensating for the relative movement between the ink discharging means and the printing medium by imparting at least some of the droplets in the series with a velocity component in a direction opposite the direction of relative movement between the ink discharging means and the printing medium when said relative movement is along said first predetermined direction and when said relative movement



is along said second predetermined direction, said ink jet discharging means being mounted on a carriage movable along said first and second predetermined directions, said discharging means being aligned along a plane perpendicular to said predetermined directions, and the means for compensating comprising

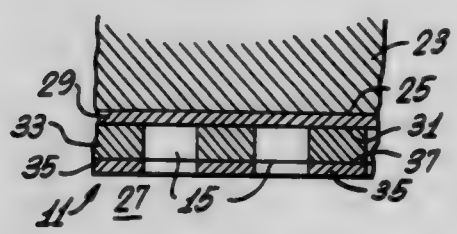
first and second deflecting electrodes mounted on said carriage and disposed proximate the orifice of said ink generator and on opposite sides of a discharge path of said series of droplets, and means for selectively and alternately energizing said electrodes with a voltage of instant magnitude, said energizing means being operable to energize the electrode of said deflecting electrodes which, when energized, deflects the ink jet in a direction opposite from the relative movement of the carriage.

4,345,261

DIELECTRIC RECORDING MEDIUM

Richard L. Wilkinson, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Feb. 21, 1979, Ser. No. 13,706
Int. Cl.³ H04N *5/76*; G01D *15/34*
U.S. Cl. 346—76 L **29 Claims**



1. An information recording medium for use with a recording apparatus wherein a write beam of radiation having a prescribed wavelength and having an intensity modulated by information to be recorded is directed at the recording medium as the medium is moved with respect thereto, whereby a succession of pits representative of the information is formed in a prescribed pattern on the medium, said recording medium comprising:

a substrate having an upper light-reflective surface;

a layer of light-absorptive dielectric material overlaying the light-reflective surface of said substrate and having a prescribed thickness approximately equal to an odd integral multiple of one-fourth the wavelength of the write beam of radiation in the dielectric material; and

a layer of metallic material overlaying the light-absorptive layer and having a lower light-reflective surface, said metallic layer being positioned to receive the intensity-modulated write beam of radiation and to transmit the beam to the dielectric layer, and being sufficiently thin to absorb only a small proportion of the radiation transmitted therethrough,

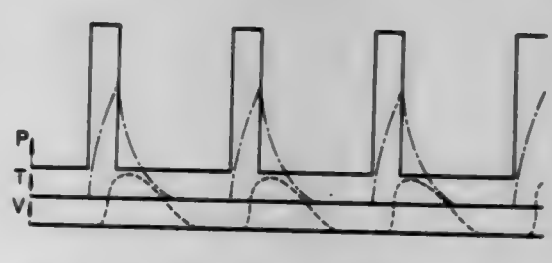
wherein a substantial proportion of the intensity-modulated write beam of radiation is transmitted through said metallic layer into said dielectric layer where, due to repeated internal reflections at the respective boundaries between the dielectric layer and the substrate and between the dielectric layer and the metallic layer, it is confined until a sufficient proportion of the beam is absorbed to vaporize selected portions of the dielectric layer, the vaporized material carrying with it the corresponding portions of the overlaying metallic layer, whereby the succession of pits is formed in the dielectric and metallic layers of the medium.

4,345,262

INK JET RECORDING METHOD

Yoshiaki Shirato, Yokohama; Yasushi Takatori, Sagamihara; Toshitami Hara, Tokyo; Yukuo Nishimura, Sagamihara, and Michiko Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,453
Claims priority, application Japan, Feb. 19, 1979, 54/18796; Mar. 6, 1979, 54/25929; Apr. 2, 1979, 54/39531
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **15 Claims**



1. An ink jet recording method which comprises:

(a) contacting or bringing closer an electro-thermal transducer with or to a recording liquid in an operating chamber having a discharge orifice;

(b) introducing into the electro-thermal transducer an input pulse signal with its pulse width being in a range of from 0.1 μsec. to 500 μsec., said input pulse signal being introduced in such a manner that its input cycle becomes at least three times as large as said pulse width;

(c) discharging said recording liquid from said discharge orifice in the form of a fine droplet in accordance with the operating force developed by the input of said pulse signal within said operating chamber; and

(d) effecting image recording on the surface of a recording medium with the liquid droplets.

4,345,263

RECORDING APPARATUS

Shigemitsu Tazaki, Matsudo, and Hiroshi Kyogoku, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

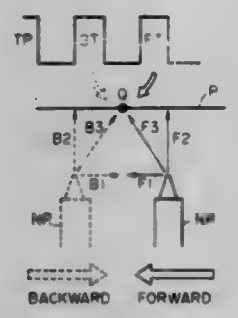
Filed Sep. 4, 1980, Ser. No. 183,948
Claims priority, application Japan, Sep. 10, 1979, 54-115994
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **2 Claims**

1. Recording apparatus comprising:

linear motor means;

ink jet means for ejecting liquid droplets, said ink jet means adapted for reciprocal movement by said linear motor means; and

means for varying the timing of ejection of liquid droplets



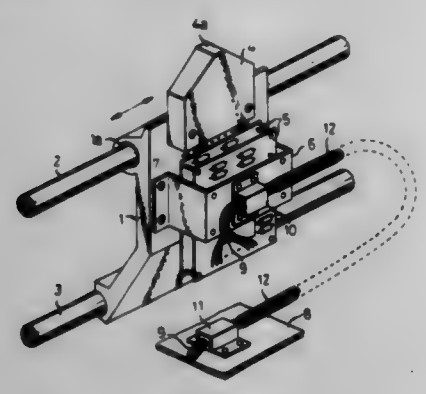
between the reciprocal movement of said ink jet means in a first direction and the reciprocal movement of said ink jet means in a second direction, wherein said means for varying the timing of ejection of liquid droplets avoids printing distortion in either direction.

4,345,264

CARRIAGE SUPPORT FOR RECORDING HEAD, DIODE MATRIX, AND DRIVERS

Kazuyuki Hara, Yokohama, Japan, assignor to Ricoh Co. Ltd., Japan

Filed Feb. 11, 1980, Ser. No. 120,546
Claims priority, application Japan, Feb. 16, 1979, 54-15984
Int. Cl.[3] G01D *15/06*
U.S. Cl. 346—154 5 Claims



1. A recording system of the type for carrying out electrostatic recording, electrostatic printing or electric perforating in a predetermined pattern on a recording medium comprising:

a carriage capable of linear reciprocatory movement;

means for driving said carriage;

a recording head supported on said carriage including at least one stylus disposed in close proximity to the recording medium;

circuit means for applying high potential to said stylus to produce an electrical discharge to an opposed common electrode;

means for supporting on said carriage at least a diode matrix, and at least one of line-direction drivers and row-direction drivers of said diode matrix comprising circuit elements; and

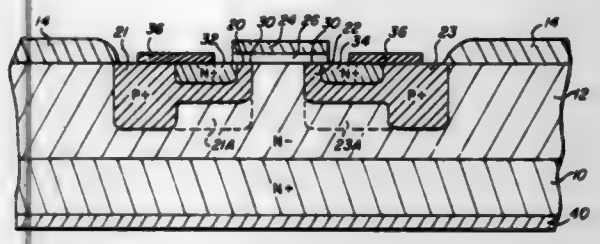
leads for electrically connecting the circuit elements supported on said carriage to other circuit elements supported on a stationary member of the recording system.

4,345,265

MOS POWER TRANSISTOR WITH IMPROVED HIGH-VOLTAGE CAPABILITY

Richard A. Blanchard, Los Altos Hills, Calif., assignor to Supertex, Inc., Sunnyvale, Calif.

Filed Apr. 14, 1980, Ser. No. 139,654
Int. Cl.[3] H01L *29/78*
U.S. Cl. 357—23 15 Claims



1. An MOS transistor having improved breakdown characteristics comprising:

a drain region of first conductivity type;

a body region of a second conductivity type in said drain region and forming a P—N junction therewith;

a source region of said first conductivity type in said body region;

a gate for inducing a surface channel region in said body between said source and drain regions; and

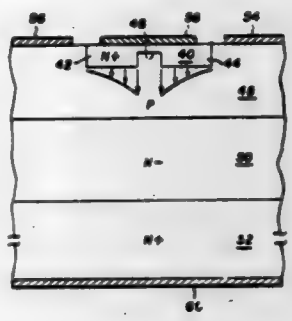
low impedance means for reducing the breakdown voltage of said P—N junction away from said channel region, said means including a second region of said second conductivity type merged with said body region and extending further into said drain region than does said body region.

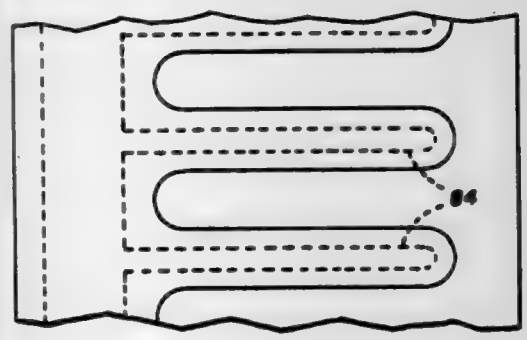
4,345,266

TRANSISTOR HAVING IMPROVED TURN-OFF TIME AND SECOND BREAKDOWN CHARACTERISTICS WITH BI-LEVEL EMITTER STRUCTURE

King Owyang, Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Continuation of Ser. No. 926,450, Jul. 20, 1978, abandoned. This application Feb. 19, 1981, Ser. No. 236,220
Int. Cl.[3] H01L *29/72*
U.S. Cl. 357—34 1 Claim





1. In a semiconductor switching transistor constituted by a semiconductor body having a major face inset into which is a comb-shaped emitter region including a longitudinal spine portion from which laterally extends a plurality of finger portions arranged for interdigitation with a base region, said emit-

ter region being arranged to define with the base region a PN junction terminating in said major face, the improvement for increasing switching speed comprising

said emitter spine portion and emitter finger portions having edge portions connected to form a continuous peripheral portion extending from said major face into said semiconductor body to a termination at said PN junction at a first depth below said major face,

said emitter spine portion and emitter finger portions further having a common interior portion bordered by said peripheral portion and extending from said major face into said semiconductor body to a termination with said PN junction at a second depth below said major face less than said first depth,

and an emitter electrode directly contacting said major face over the entirety of said interior portion and part of said peripheral portion.

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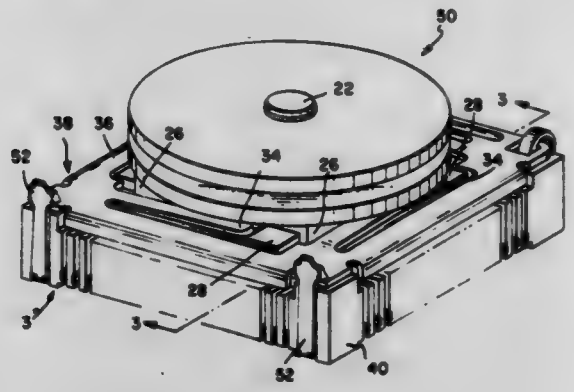
ACTIVE DEVICE SUBSTRATE CONNECTOR HAVING A HEAT SINK

Ned E. Corman, Harrisburg; Steven J. Kandybowski, Tower City; William S. Scheingold, Palmyra, and Frank C. Youngfleish, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1980, Ser. No. 136,017

Int. Cl.³ H01L *23/02, 23/42, 23/44*

U.S. Cl. 357—81 **1 Claim**



1. An active device substrate connector incorporating a heat sink, comprising:

a. a housing having a central cavity into which an active device substrate may be positioned;

b. a cover hingedly connected to one side of the housing for covering the substrate-receiving cavity and having a plurality of spring fingers spaced around a centrally positioned opening through the cover; and

c. a heat sink of thermally conductive material comprising:

i. a base plate removably positionable in between the inside of the cover when closed over the housing and a substrate which may be positioned in the cavity, said spring fingers on the cover bearing against the plate to retain it in the housing and to bias it against the substrate;

ii. a heat-exchanger consisting of a plurality of vertically stacked discs; and

iii. means for mechanically and thermally removably connecting the heat exchanger to the base plate through the cover opening.

4,345,268

PROCESSING CIRCUIT FOR COLOR TELEVISION SIGNALS

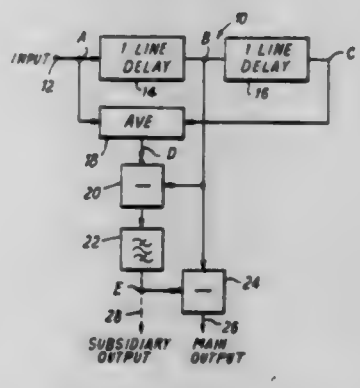
Christopher K. P. Clarke, Crawley, England, assignor to British Broadcasting Corporation, London, England

Continuation of Ser. No. 24,519, Mar. 28, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,547

Claims priority, application United Kingdom, Mar. 29, 1978, 12294/78

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—31 **7 Claims**



1. A signal processing circuit for processing an input signal in a PAL colour television system, comprising:

an input terminal adapted to receive a PAL system input signal;

means connected to the input terminal and responsive to said input signal for providing (i) a first signal being the input signal delayed by one line period and (ii) a second signal being the resultant of the average of the delayed input signal and the input signal delayed by two line periods, which average predominantly comprises luminance, subtracted from the first signal, which second signal predominantly comprises chrominance;

means for band-pass filtering the second signal to provide a filtered signal, the filter pass-band comprising essentially the PAL chrominance frequency band; and

means for combining the filtered signal with the first signal at the same relative amplitude to provide a luminance signal in which comb filtering action is confined to the chrominance frequency band.

4,345,269

IMAGE PICK-UP APPARATUS

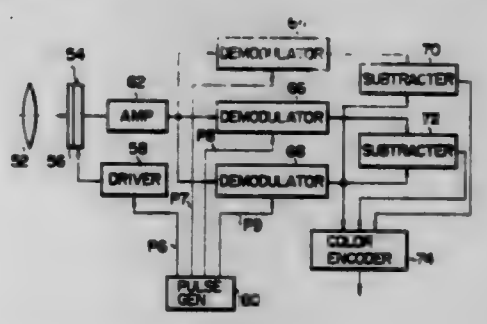
Yasuo Takemura, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 29, 1980, Ser. No. 144,918

Claims priority, application Japan, May 7, 1979, 54-55593

Int. Cl.³ H04N *9/07*

U.S. Cl. 358—43 **4 Claims**



1. An image pick-up apparatus comprising:

a solid state image pick-up device having a plurality of picture element areas;

color separation means for separating an incident light into a first color light, a second color light, and a third color light, wherein the third color light includes a first color light component corresponding to said first color light and a second color light component;

a color signal extracting circuit for extracting a color signal including first to third color signal components corresponding to said first to third color lights from those picture element areas of said solid state image pick-up device which have respectively received said first to third color lights;

first to third demodulation circuits connected to said color signal extracting circuit to respectively produce first to third output signals which respectively correspond to said first to third color signal components; and

a first operation circuit connected to said first and third demodulation circuits to produce at least a fourth color signal component corresponding to a difference between said first and third color signal components.

4,345,270

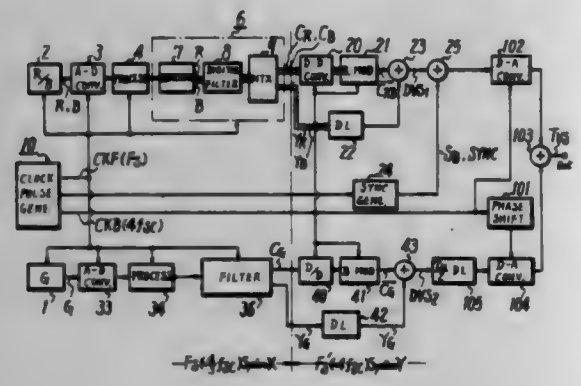
SOLID STATE DIGITAL TELEVISION CAMERA

Fumio Nagumo, Yokohama, and Takashi Asaida, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,981

Int. Cl.³ H04N 9/07

U.S. Cl. 358—44 **8 Claims**



1. A solid state digital television camera having a solid state image sensing device from which dot sequential picture signals are obtained, said camera comprising:

a. a solid state image sensing device (1, 2) for picking up a picture and producing electrical video signals, said device being driven at a first sampling rate,

b. an A-D converter (3, 33) receiving the output of said solid state image sensing device (1, 2) and converting said picked-up video signals to digital video signals at said first sampling rate,

c. a digital filter (6, 36) receiving the output of said A-D converter (3, 33) and filtering said digital video signals said filter driven at said first sampling rate,

d. a digital color modulator (21, 41) receiving the output of said filter (6, 36) and modulating a subcarrier signal in the respective carrier phases with primary color components (C_R, C_B, C_G) which are produced from said filter individually, said modulator being driven at a second sampling rate;

e. a D-A converter (102, 104) receiving the output of said digital color modulator (21, 41) and converting the outputs of said digital color modulator to analog video signals at said second sampling rate; and

f. a D-D converter (20, 40) connected between said digital filter (6, 36) and said digital color modulator (21, 41) for converting the sampling rate of said primary color component signals from said first sampling rate to said second sampling rate and said second sampling rate is higher than said first sampling rate.

4,345,271

TELEVISION CAMERA

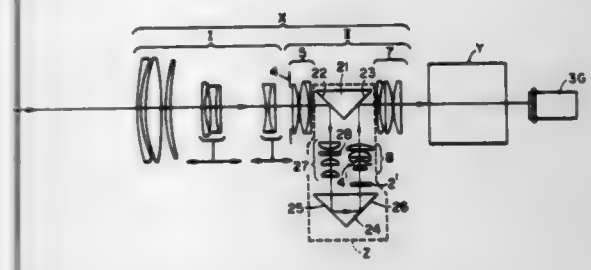
Takeshi Sekiguchi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1980, Ser. No. 199,264

Claims priority, application Japan, Oct. 24, 1979, 54-137236; Oct. 24, 1979, 54-137237

Int. Cl.³ H04N 9/10

U.S. Cl. 358—55 **12 Claims**



1. A television camera comprising an objective lens for receiving light from a scene, said objective lens having front lens means and rear lens means located at the image side of said front lens means; photosensitive converting means for sensing at least one image formed by said objective lens; and projection means including a test chart for providing the image of said test chart to said photosensitive converting means, said projection means further including a first optical path for conducting the light which has passed through said front lens means to said test chart and a second optical path for conducting the light from said test chart to said rear lens means.

4,345,272

VIDEO SIGNAL PROCESSING APPARATUS

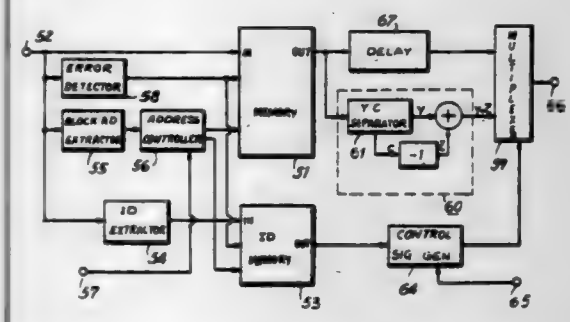
Norihisa Shirota, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,367

Claims priority, application Japan, Oct. 5, 1979, 54-129254

Int. Cl.³ H04N 9/535

U.S. Cl. 358—21 R **11 Claims**



1. Apparatus for processing a PAL color video signal including luminance and chrominance components and being composed of successive frames each having a plurality of fields constituted by successive respective lines which are interlaced in a pictorial representation of the complete frame, said apparatus comprising:

memory means having an input for receiving the video signal and a capacity suitable for the temporary storage of a field of said video signal;

means for causing the writing of the video signal received by said memory means at an address in the latter at which there was earlier written the video signal for a line of the next previous field which, in said pictorial representation of the complete frame, is positioned immediately below the line of the video signal being received;

means for detecting an error in the video signal being received and for inhibiting the writing in said memory means of the error-containing video signal;

means for reading out the video signal stored in said memory means;

means for inverting the phase of the chrominance compo-

nent of said video signal read out from the memory means; and

means for adding the phase-inverted chrominance component to the luminance component of the video signal read out of said memory means upon the detection of an error.

4,345,273

BROAD BAND SWITCHING SYSTEM

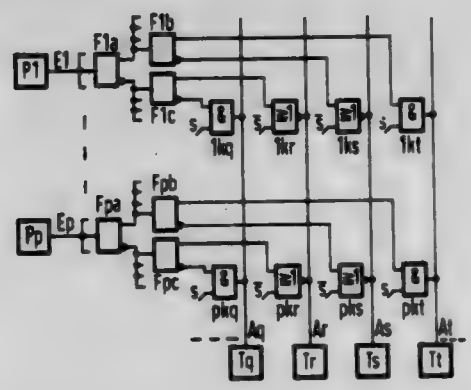
Udo Barabas; Karl-Heinz Moehrmann, and Hans-Marlin Christiansen, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 4, 1980, Ser. No. 203,980

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944784

Int. Cl.³ H04N 7/18; H04B 9/00

U.S. Cl. 358—86 **2 Claims**



1. A broad band switching system for the selective connection of broad band signal sources, particularly television program sources, to subscribers receiving broad band signals, said system comprising a broad band switching network via which the broad band signals, particularly television signals, are transmitted as pulse modulated signals, means whereby the signals of the individual signal sources (Pl . . . Pp) are multiply supplied to the respective signal source-individual input (El . . . Ep) of the broad band switching network, being respectively supplied in time-division multiplex in a plurality of time channels (Z1 . . . Z4) of a time-division multiplex system encompassing at least these time channels (Z1 . . . Z4), said plurality of time channels (Z1 . . . Z4) corresponding to the number (4) of signal sources (Pl . . . Pp) simultaneously connectible to one and the same subscriber (Tl . . . Tt), and means whereby the broad band switching network connects the subscriber-individual outputs (Aq . . . At) to the respectively desired signal source (Pl . . . Pp) in subscriber-individually determined time channels (Z1 . . . Z4) of the said plurality of time channels (Z1 . . . Z4).

4,345,274

OBJECT IDENTIFICATION SYSTEM UTILIZING CLOSED CIRCUIT TELEVISION

Joseph E. Bambara, North Babylon, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Oct. 8, 1980, Ser. No. 195,102

Int. Cl.³ H04N 7/18

U.S. Cl. 358—108 **10 Claims**

1. An object identification system for permitting visual observation, through a television camera, of an object travelling along a portion of a fixed path, said system comprising:

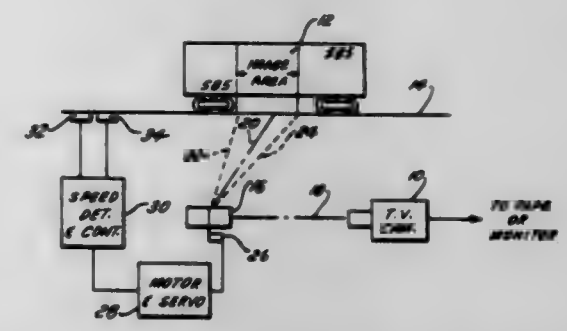
a television camera;

an effective optic axis of said television camera directed at said object path of travel through an optic axis bending element;

an optic axis bending element positioned along said optic axis;

means for determining the speed of said object;

and means responsive to said speed determining means for rotating said optic element at an angular velocity related to the speed of said object so as to bend said optic axis to



follow said object as said object moves along said path portion.

4,345,275

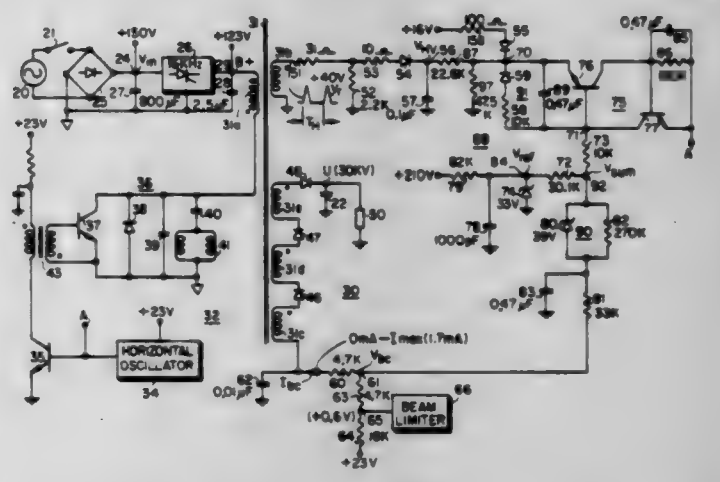
HIGH VOLTAGE PROTECTION CIRCUIT FOR A TELEVISION RECEIVER

George C. Waybright, Carmel, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 16, 1981, Ser. No. 225,811

Int. Cl.³ H04N 5/68

U.S. Cl. 358—243 **30 Claims**



1. A protection circuit for a television display requiring an ultor voltage and drawing ultor beam current from an ultor terminal, comprising:

a source of alternating voltage;

a high voltage generator responsive to said alternating voltage for developing said ultor voltage at said ultor terminal;

means responsive to said ultor voltage for developing a sense voltage representative thereof;

means responsive to said ultor beam current for developing a sense voltage representative thereof;

a comparator;

means coupled to said comparator for developing a disabling signal when energized by said comparator;

means coupled to said disabling signal developing means for applying said disabling signal to said television display such that an abnormal display is produced when said disabling signal developing means is energized;

means for applying said ultor voltage sense voltage to said comparator to activate said comparator so as to develop said disabling signal when said ultor voltage exceeds a predetermined level;

means for applying said ultor beam current sense voltage to said comparator so as to vary said predetermined level with variations in said ultor beam current sense voltage; and

a switch coupled to said comparator and responsive to an overcurrent fault condition in said television display, said switch changing states when said overcurrent fault condi-

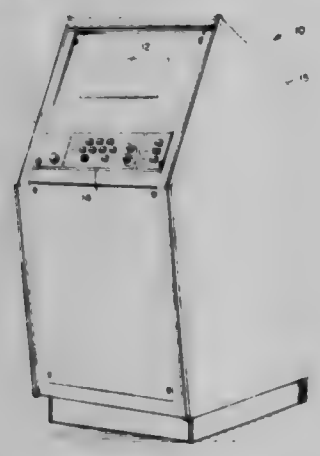
tion occurs to activate said comparator and produce an abnormal display.

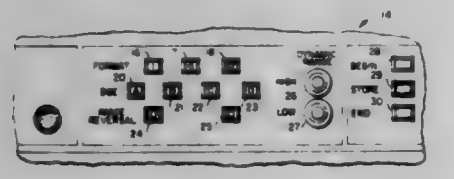
4,345,276

SYSTEM AND METHOD FOR HIGH QUALITY IMAGE REPRODUCTION

Denis G. Colomb, Boca Raton, Fla., assignor to Sonics Research Corporation, Fort Lauderdale, Fla.

Filed Aug. 29, 1980, Ser. No. 182,886
Int. Cl.³ H04N *1/20*; G03B *19/00*
U.S. Cl. 358—258 **13 Claims**





1. A method of reproducing a plurality of images on a printer in printed form in accordance with selectable, variable multiple formats, said method comprising the steps of:

(a) selecting a given one of said selectable, variable multiple formats;

(b) receiving digital data corresponding to each of said plurality of images to be reproduced except for one of said plurality of images;

(c) storing said digital data corresponding to each of said plurality of images except for one of said plurality of images;

(d) receiving digital data corresponding to said one of said plurality of images;

(e) multiplexing said digital data corresponding to said each of said plurality of images except for one of said plurality of images, with said digital data corresponding to said one of said plurality of images, in accordance with said selected given one of said selectable, variable, multiple formats to derive multiplexed digital data;

(f) providing said multiplexed digital data to said printer; and

(g) printing said plurality of images in correspondence to said multiplexed digital data provided to said printer, whereby to reproduce said plurality of images in printed form in accordance with said selected given one of said selectable variable, multiple formats.

4,345,277

LINEAR LIGHT SOURCE FIXING DEVICE USED IN A FACSIMILE TRANSMISSION APPARATUS

Masaaki Ishikawa, Hachioji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 7, 1981, Ser. No. 223,081
Claims priority, application Japan, Jan. 18, 1980, 55/4390[U]
Int. Cl.³ H04N *1/24*
U.S. Cl. 358—293 **8 Claims**

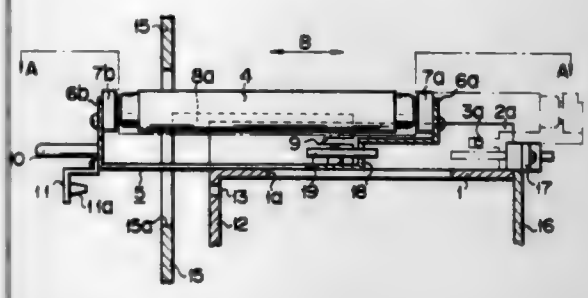
1. A linear light source fixing device of a facsimile transmission apparatus having a chassis, comprising:

a mount capable of moving between first and second positions relatively to said chassis;

at least one pair of sockets attached to said mount at a space from each other and holding a linear light source therebetween;

a first connector terminal member fixed on said chassis and connected with an electric power source;

a second connector terminal member fixed on said mount so as to be electrically connected with said first connector



terminal member when said mount is in said first position and to be electrically isolated from said first connector terminal member when said mount is in said second position; and

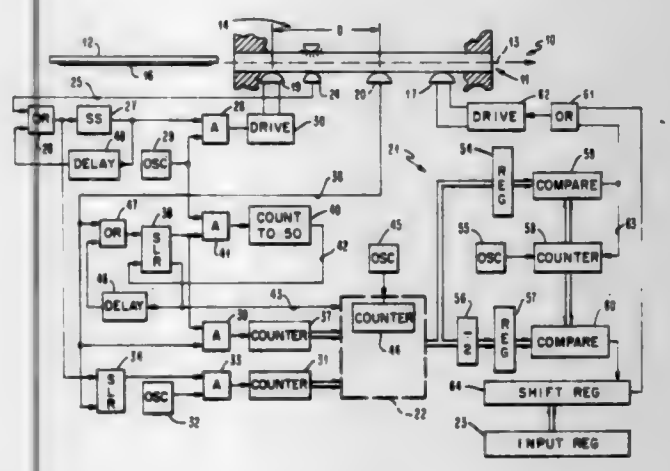
wiring means electrically connecting said second connector terminal member with said sockets.

4,345,278

ACCELERATION CORRECTION FOR SELF-CLOCKING WRITE-HEAD

Glen P. Double, Charlotte, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,318
Int. Cl.³ G11B *25/04, 15/18*
U.S. Cl. 360—2 **8 Claims**



1. In magnetic recording apparatus wherein a magnetic record form and a transducing assembly are moved relatively, one with respect to the other, along a path and wherein the apparatus includes control circuitry responsive to a time base signal and a data signal for controlling the recording of data on said record form, and including magnetic recording means, magnetic reading means aligned with said recording means along said path and spaced downstream therefrom in relation to the direction of said relative movement, and means for measuring the time interval required for a point on the record form to traverse a predetermined distance, the improvement comprising, in combination:

means for delivering a frequency reference signal to said recording means to record a representation thereof on said record form,

frequency measuring means responsive to signals derived by said reading means from said recorded representation of said frequency reference signal for measuring the frequency thereof, and

means responsive to said time interval measuring means and said frequency measuring means for producing a time base signal for said control circuitry defining predetermined

increments of displacement of the magnetic record form with respect to said transducing assembly.

4,345,279

TIME BASE CORRECTION APPARATUS

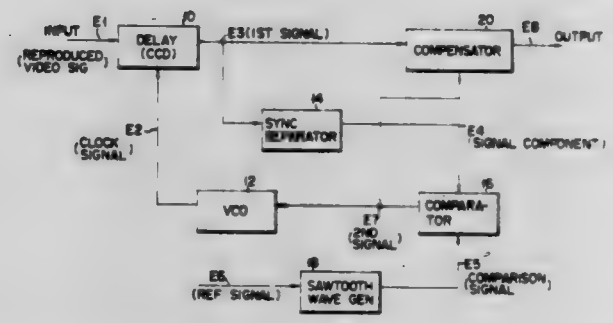
Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1980, Ser. No. 193,255

Claims priority, application Japan, Oct. 16, 1979, 54-143165[U]; Oct. 16, 1979, 54-143166[U]

Int. Cl.³ H04N 5/785

U.S. Cl. 360—36 **9 Claims**



1. A time base correction apparatus for operating on an input signal including jitter and level variation components, comprising:

delay means responsive to said input signal for providing a first signal delayed by a given time in accordance with a frequency of a clock signal, said first signal corresponding to said first signal minus the jitter but including level variation components;

comparator means connected to said delay means for comparing a specific signal component contained in said first signal with a given comparison signal to thereby produce a second signal having a level corresponding to a phase difference between said specific signal component and said given comparison signal;

generator means connected to said delay means and to said comparator means for producing said clock signal as a function of a level of said second signal; and

level variation compensation means including signal combining means connected to said delay means and to said comparator means for providing an output signal obtained by compensating level variation components of said first signal by combining said first and second signals so that said second signal cancels a DC level change of said first signal caused by time-delay operation in said delay means so that said output signal exactly corresponds to said input signal but without said jitter and level variation components.

4,345,280

ADDRESS MARK DETECTION CIRCUIT

John H. Blagaila, Boulder, and James F. Hopper, Louisville, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Sep. 4, 1980, Ser. No. 183,936

Int. Cl.³ G11B 5/09

U.S. Cl. 360—49 **10 Claims**

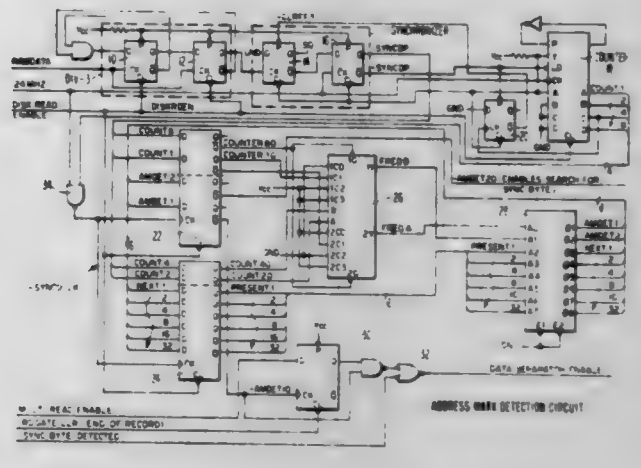
1. An address mark detection circuit for detection of an address mark recorded on a magnetic data storage means, said mark comprising a series of pulses of predetermined length and predetermined frequency comprising:

means for measuring the frequency of pulses recorded on said storage means;

means for measuring the duration of series of pulses measured to be at said predetermined frequency;

means for comparing the measured duration of said series with said predetermined length; and

means for indicating detection of an address mark in response to an indication by said means for comparing that the measured duration of said detected series of pulses of



said predetermined frequency is at least equal to said predetermined length.

4,345,281

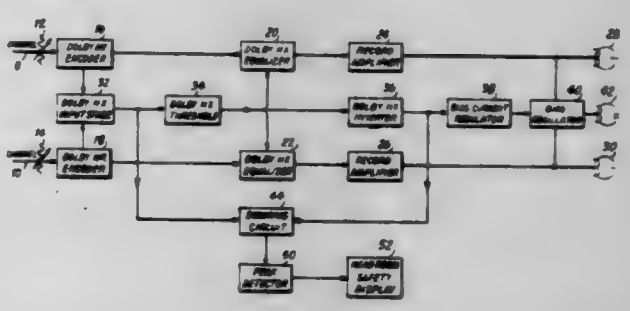
INDICATOR FOR HEADROOM EXTENSION SYSTEM FOR TAPE RECORDERS

Peter Philips, Mineola, N.Y., assignor to Harman-Kardon, Incorporated, Woodbury, N.Y.

Filed Aug. 13, 1980, Ser. No. 177,564

Int. Cl.³ G11B 5/47, 27/36

U.S. Cl. 360—66 **5 Claims**



1. An indicator for use with a tape recorder comprising:

(a) sampling means for sampling the signal to be recorded for presence of high-amplitude, high-frequency signals, said sampling means providing a first control signal directly proportional to the amount of high-amplitude, high-frequency energy present in the signal to be recorded, and a second control signal inversely proportional to the amount of high-frequency, high-amplitude energy present about a predetermined threshold in the signal to be recorded, means for summing said first and second control signals,

(b) means for selectively reducing the bias signal on the magnetic media to thereby increase the amount of recording headroom available on said media,

(c) said bias reducing means being connected to and activated by said control signal, and

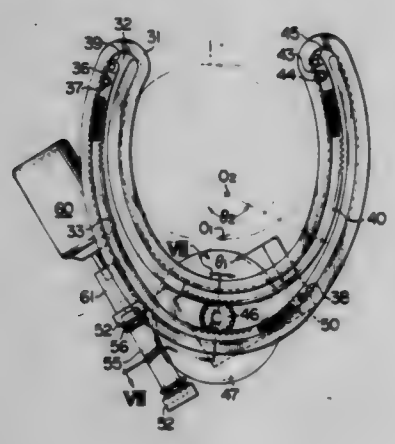
(d) display means connected to and activated when said sum of said first and second control signals is not zero to visually display the activation of said bias reducing means to thereby display the increased recording headroom provided.

4,345,282

APPARATUS FOR BRINGING WIRE-SHAPED OR TAPE-SHAPED CARRIER INTO CONTACT WITH CARRIER GUIDE MEMBER

Seii Miyakawa; Akira Kawauchi, both of Yokohama; Kazunori Iijima, Shimoinayoshi; Takao Terayama, Kashiwa; Masashi Yoshida, Nakaminato, and Hideyuki Kawase, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 166,754
Claims priority, application Japan, Jul. 6, 1979, 54-84950
Int. Cl.[3] G11B *15/66*
U.S. Cl. 360—85 8 Claims



1. An apparatus for bringing a tape-shaped carrier member received in a receiving section into contact with a drum-like carrier guide member in a predetermined position comprising:

withdrawing guide means for engaging with said tape-shaped carrier member and for bringing the tape-shaped carrier member from said receiving section to a position in which the tape-shaped member is in contact with said drum-like carrier guide member;

at least one flexible, strip-shaped power transmitting member connected to said withdrawing guide means;

guiding means including at least one guide groove extending along a longitudinally curved path, said power transmitting member being longitudinally, movably fitted in said guide groove so as to be displaceable along said path, and being flexibly deformable to conform with the curved contour of said guide groove while it is moved in said guide groove;

and

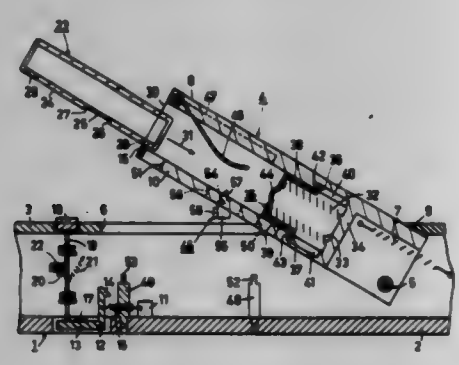
means in engagement with said strip-shaped power transmitting member for driving it along said guide groove.

4,345,283

RECORDING AND/OR REPRODUCING APPARATUS

Gerhard Maryschka, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 23, 1980, Ser. No. 173,210
Claims priority, application Austria, Aug. 7, 1979, 5399/79
Int. Cl.[3] G11B *15/66*
U.S. Cl. 360—96.6 4 Claims



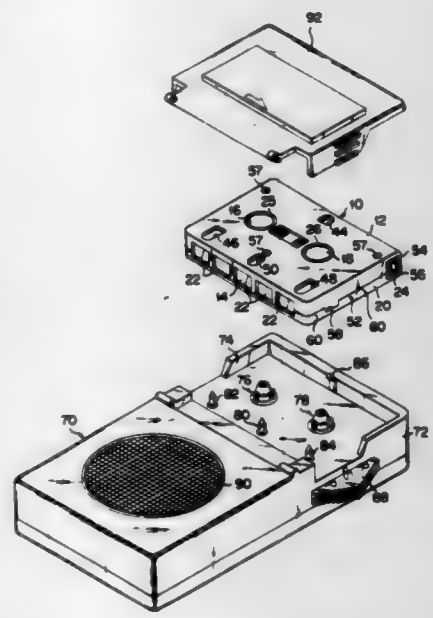
1. A recording and/or reproducing apparatus for use with a record carrier in the form of a tape which is accommodated in a cassette, which cassette is adapted to be inserted into a channel-shaped cassette holder on the apparatus, which holder is movable between a loading position and an operating position and comprises a wall formed with at least one opening for the passage of members provided for locating an inserted cassette which members are arranged on the apparatus, a latching device for the cassette, which cassette is inserted into the cassette holder in the loading position of said holder against the force of at least one spring, and at least one further spring which urges the cassette against said wall of the cassette holder in the loading position of the cassette holder, the inserted cassette being held in an operating position in which it is lifted off said wall of the cassette holder by the locating members and into which it is released by the latching device against the force of said further spring in the operating position of the cassette holder, characterized in that the latching device is constituted by at least one clamping lever which is pivotally connected to said wall of the cassette holder so as to be pivotable about an axis which extends parallel to said wall and at right angles to the direction of insertion of the cassette into the cassette holder, whch lever has a free end which projects into the path of insertion of the cassette into the cassette holder and during insertion of the cassette into the cassette holder is pivoted by the cassette from a released position to a clamping position with said free end of the lever moving substantially in the direction of insertion of said cassette, said free end of the clamping lever, when the lever is in the clamping position, forming a clamping connection with the inserted cassette under the influence of the resultant force of the said at least one spring and said at least one further spring which act on the inserted cassette, which connection when the cassette receptacle is moved to the operating position thereof, is released by lifting the cassette off the clamping lever and returning said lever to its released position, out of which position the clamping lever can be pivoted by the cassette with said free end of the lever moving substantially in the oppoite direction to the direction of insertion of the cassette when the cassette is removed from the cassette holder.

4,345,284

DEVICE FOR PREVENTING ELECTROSTATIC CHARGES ON A MAGNETIC RECORDING TAPE OF A TAPE CASSETTE

Shoichi Saito, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1980, Ser. No. 145,365
Claims priority, application Japan, May 7, 1979, 54-60452[U]
Int. Cl.[3] G11B *23/08*
U.S. Cl. 360—132 9 Claims



1. A tape cassette for mounting in a magnetic recording tape running apparatus having means for receiving a tape cassette housing, at least one element having an electroconductivity

and at least one reel shaft for engagement with magnetic recording tape in said housing for causing running of the magnetic recording tape, comprising:

a magnetic recording tape having an electroconductive nature and being accumulated with electrostatic charges, said tape having two opposite elongated faces;

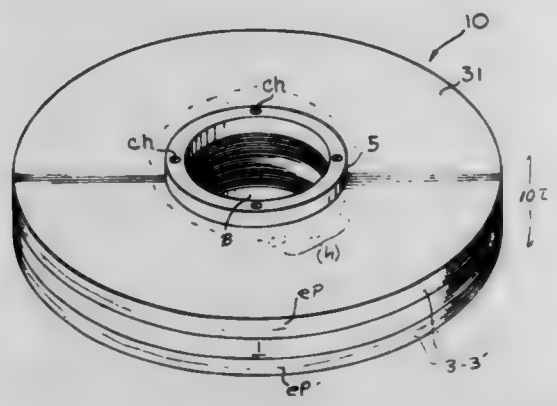
a cassette housing made of an electroconductive material and storing therein said magnetic recording tape, and said housing constantly contacting said at least one electroconductive element of the magnetic recording tape running apparatus when said housing is mounted in the receiving means of the magnetic recording tape running apparatus; and

an electroconductive member made of an electroconductive material and provided in said cassette housing in constant contact with one of said two opposite faces of the magnetic recording tape which extend in a direction of the length and width of the tape to transfer electrostatic charges from the magnetic recording tape to said cassette housing, and then to said at least one electroconductive element of the magnetic recording tape running apparatus which is in constant contact with said cassette housing.

4,345,285
FLOPPY PACK WITH VARIABLY-SPACED ISOLATION MEANS

Dean DeMoss, Camarillo, and Harvey J. Richardson, Sepulveda, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 156,197, Jun. 3, 1980. This application Jul. 25, 1980, Ser. No. 172,234
Int. Cl.³ G11B *23/02, 5/016*
U.S. Cl. 360—133 **39 Claims**



1. In an improved rotatable memory module comprising a stack of like-spaced flexible record disks stacked along a common axis to be co-rotated and adapted to be pneumatically partitioned, plus a pair of stiffener means, one at either end of the stack; and

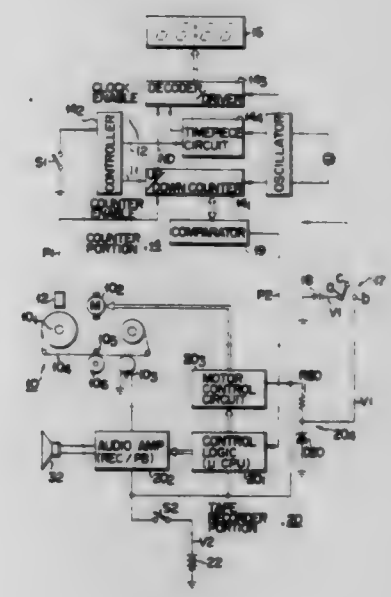
a pair of like isolation pack means, one between each respective stiffener means and the adjacent end of the record stack, each isolation pack means comprising a stack of spaced flexible isolation disks arranged along said axis in an isolation stack, the combination therewith of:

air supply means comprising conduit means adapted to conduct pressurized separation air to the gap between each adjacent pair of disks, this conduit means being arranged and adapted to also conduct a burst of partition-air to any "selected" one of the gaps between said record disks; this module further being arranged to deliver a relatively larger burst to those of said record gaps that lie at or adjacent the axial ends of said record disk stack.

4,345,286
POWER SUPPLY DEVICE FOR A MULTIFUNCTION APPARATUS HAVING A PLURALITY OF POWER SOURCES

Katsumi Kanayama; Kenzi Furuta, and Kazuyasu Motoyama, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1980, Ser. No. 136,447
Claims priority, application Japan, Apr. 10, 1979, 54/43291
Int. Cl.³ G11B *23/00*
U.S. Cl. 360—137 **5 Claims**



1. A power supply device for a multifunction tape recorder having a plurality of power sources, comprising:

an electrically operable counter portion;

an electrically operable tape recorder portion comprising a tape drive arrangement, and consuming more power than said counter portion;

a first power source removably installed in said tape recorder and being coupled to said counter portion for normally supplying power to said counter portion, said first power source comprising a first replaceably battery having a given life for operating said counter portion;

contacting means for contacting said first replaceable battery when it is installed in said tape recorder;

a second power source coupled to said tape recorder portion for supplying power to said tape recorder portion, said second power source comprising a second replaceable battery having a limited life shorter than said given life of said first replaceable battery in actual operation of said tape recorder portion; and

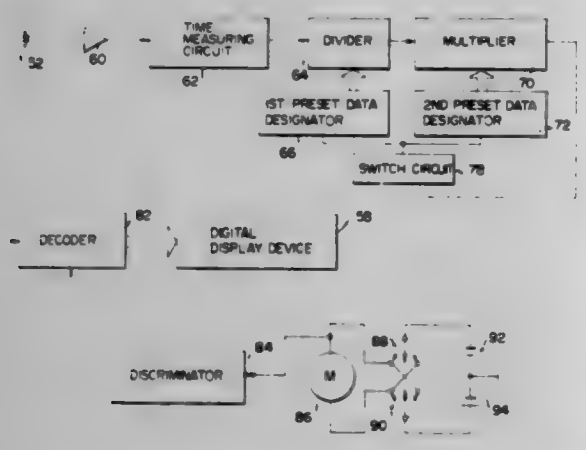
switch means operable in interlocked relation to the installation of said first replaceable battery, said switch means being coupled to said first and second replaceable batteries, to said counter portion and to said tape recorder portion, and being responsive to removal of said first replaceable battery from said tape recorder for automatically switching over power supply from said second replaceable battery to said counter portion when said first replaceable battery is removed from said tape recorder, and being responsive to installation of a first replaceable battery for automatically switching over power supply from said first replaceable battery to said counter portion.

4,345,287

WORD LINE NUMBER COUNT/DISPLAY DEVICE FOR TAPE RECORDER

Minoru Kobayashi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,316
Claims priority, application Japan, Jun. 26, 1979, 54-80334
Int. Cl.[3] G11B *5/008*
U.S. Cl. 360—137 8 Claims



1. In a tape recorder for dictation, comprising a multi-channel magnetic head including a plurality of magnetic heads; means for driving a magnetic recording tape in either one or the other direction; means coupled to one magnetic head of said multi-channel magnetic head for recording a dictation containing such information as a main communication content and a message or remark concerning said main communication content on said magnetic recording tape when said tape is being driven in said one direction; and means coupled to another magnetic head of said multi-channel magnetic head for recording, when said tape is being driven in said one direction, a first cue signal on said tape immediately before the recording of said message or remark, a second cue signal different from said first cue signal on said tape immediately before the recording of said main communication content, and a third cue signal of the same kind as said second cue signal on said tape immediately after the recording of said main communication content;

the improvement comprising a word line number count/display device comprising:

detecting means for detecting said second and third cue signals from said magnetic recording tape while it is being driven in either said one or the other direction and for producing detection signals corresponding to said detected second and third cue signals;

time measuring circuit means electrically connected to said detecting means for receiving said detection signals and for measuring the period of time elapsed from the reception of the detection signal corresponding to either one of said second and third cue signals till the reception of the detection signal corresponding to the other one of said second and third cue signals to produce a time period signal corresponding to the length of the measured time period;

dividing circuit means electrically connected to said time measuring circuit means for dividing said time period signal by a predetermined reference value corresponding to a predetermined period of time to produce a quotient signal corresponding to the quotient of the division;

multiplying circuit means electrically connected to said dividing circuit means for multiplying said quotient signal by a predetermined value obtained by dividing the number of words spoken during the afore-said predetermined period of time by an average number of words contained in one line of a typing paper used by a typist to produce a product signal corresponding to the product of the multiplication;

decoder means electrically connected to said multiplying circuit means for producing a digital signal corresponding to said product signal; and

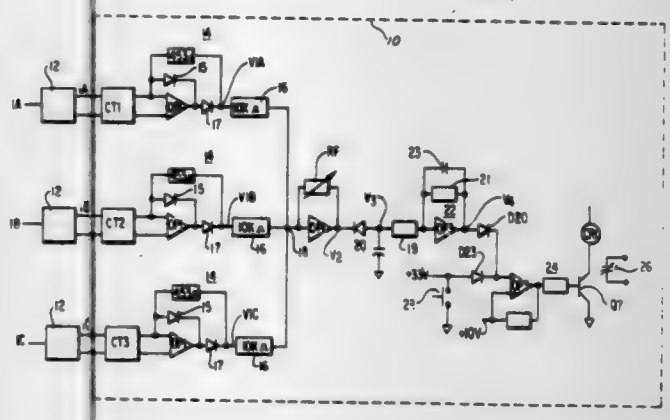
digital display means electrically connected to said decoder for displaying digital information corresponding to said digital signal.

4,345,288

SOLID STATE OVER-CURRENT PROTECTIVE APPARATUS FOR A POWER CIRCUIT

Julian C. Kampf, Grafton; Richard J. Graefe, Bayside, and Mark V. Profio, Wauwatosa, all of Wis., assignors to Square D Company, Palatine, Ill.

Filed May 4, 1981, Ser. No. 260,545
Int. Cl.[3] H02H *7/085, 7/09*
U.S. Cl. 361—31 17 Claims



1. A solid state overload protective apparatus for an electric motor comprising:

means for sensing the current flowing through each phase of said motor when energized and for generating a sensed output signal proportional in magnitude to the sensed current;

means responsive to the sensed output signal of each phase for converting said sensed signal into a second signal also proportional in magnitude to the sensed current of the motor, said converting means reflecting an active short circuit back to said current sensing means thereby reducing the current handling requirements for said current sensing means;

means for summing said second signals of each phase from the output of said converter means and for scaling said summed second signals to provide a third signal representative of a predetermined motor full load current carrying capacity of said motor, said scaling means having an adjustable control for setting the value representative of a predetermined motor full load current carrying capacity;

means for integrating said third signal output of said summing and scaling means to provide a trip signal, said integrating means having a feedback capacitor connected from the output of said integrating means to one of its inputs;

comparator means having one input tied to a predetermined trip reference voltage and another input connected to the output of said integrating means to receive said trip signal, said comparator means producing a drive output signal when said trip signal is a lesser magnitude than said trip reference signal, and said comparator producing a turn off signal indicative of an overload condition when said trip signal exceeds the magnitude of the trip reference signal; and,

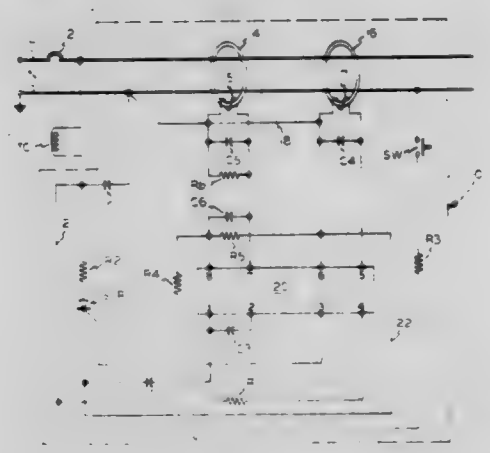
means responsive to said drive and turn off signals for continuing the supply of current to said motor when the drive signal is present and for interrupting the supply of current to said motor when the turn off signal is present, respectively.

4,345,289

GROUND FAULT CIRCUIT INTERRUPTING DEVICE WITH IMPROVED THYRISTOR TRIGGERING

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed May 4, 1981, Ser. No. 260,512
Int. Cl.³ H02H 3/33
U.S. Cl. 361—45 7 Claims



1. A module for utilization in a ground fault circuit interrupting device including a differential current transformer having a secondary winding in which is developed a fault signal proportional to any imbalance in the currents flowing in the line and neutral conductors of an AC power distribution circuit occasioned by a line-to-ground fault, separable contacts for interrupting at least the line side of the distribution circuit, and a trip solenoid for initiating separation of the contacts, said module comprising, in combination:

A. a power supply connected across the line and neutral conductors of the AC distribution circuit, said power supply including

(1) a first section having a first voltage supply bus,

(2) a second section having a second voltage supply bus,

(3) a first diode conducting half-wave rectified line current from the distribution circuit onto said first bus,

(4) a second diode conducting said half-wave rectified line current from said first bus onto said second bus,

(5) a voltage regulator connected with said first bus for establishing thereon a regulated, half-wave rectified supply voltage for a substantial portion of each conducting half-cycle of said first diode; and

(6) a filter capacitor connected with said second bus for effectively establishing thereon a DC supply voltage;

B. an integrating capacitor having a first terminal connected to said second bus and a second terminal;

C. an amplifier having an input connected to the differential transformer secondary winding for amplifying a fault signal developed therein and an output connected with said second integrating capacitor terminal such as to provide a charging current therefor of a magnitude related to the fault signal magnitude;

D. a thyristor connected in series with the trip solenoid across the line and neutral conductors of the distribution circuit and having a gate;

E. a driver powered from said second bus for drawing pulses of current therefrom for application to said gate pursuant to triggering said thyristor into conduction and thus activating the trip solenoid to initiate contact separation; and

F. a comparator including

(1) a first input connected with said second integrating capacitor terminal,

(2) a second input,

(3) means for developing a reference voltage at said second input,

(4) an output connected with said driver, and

(5) means controlled by said voltage regulator for strobing said comparator near the beginning of each half-cycle of said half-wave rectified supply voltage on said first bus as voltage regulation is achieved to compare the voltage at said second integrating capacitor terminal with said reference voltage,

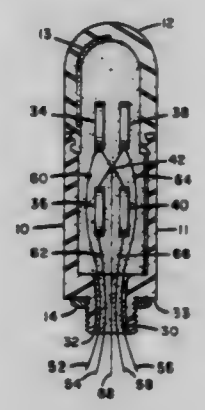
(6) when said voltage at said second integrating capacitor terminal falls into equality with said reference voltage, said comparator output conditions said driver to deliver a triggering current pulse to said thyristor gate, the resulting current drain causing a reduction in said DC supply voltage and a corresponding reduction in said second integrating capacitor terminal voltage such that an additional thyristor gate triggering pulse is delivered by said driver when said comparator is again strobed at the beginning of the next half-cycle of said half-wave rectified supply voltage.

4,345,290

ELECTRICAL TRANSIENT SUPPRESSOR

Richard H. Johnson, 3401 White Diamond, Prior Lake, Minn. 55372

Filed Sep. 22, 1980, Ser. No. 189,607
Int. Cl.³ H02H 3/20
U.S. Cl. 361—56 12 Claims



1. An electrical circuit for limiting high voltage transients in an alternating current voltage supply circuit of the type having a common neutral and an electrical ground comprising:

a. A number of first varistors connected to a common point and to each voltage leg of said voltage supply circuit, said varistors having a breakdown voltage rating of a predetermined value in excess of said voltage supply nominal value;

b. An electrical connection from said common point to said common neutral;

c. A further varistor connected from said common neutral to said electrical ground of said voltage supply circuit, said further varistor having a breakdown voltage rating of a predetermined value substantially in excess of said voltage supply nominal value; and

d. Encapsulating means for protecting said electrical circuit from the environment, said encapsulating means including:

i. a relatively thin insulative coating formed on said number of first varistors and said further varistor and said common point;

ii. a hollow enclosure member having a first opening through a wall of said enclosure, and a generally tubular, cylindrical extension projecting outwardly from said wall and in alignment with said first opening, said first opening having semicircular internal thread means formed therein, said extension also having thread means formed on the external surface thereof and a recess formed through the interior surface thereof forming a second opening in said hollow enclosure;

iii. a cap member having a cylindrical portion of a diameter dimension to fit within said first opening and having a semicircular external thread means thereon for engaging said thread means in said first opening, said cap having a recess formed in an interior surface thereof; and

iv. an insulative potting compound contained within said enclosure filling said recesses in said enclosure and cap member and surrounding said circuit.

4,345,291
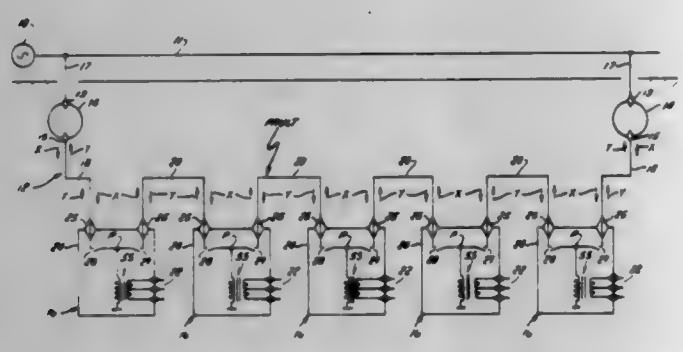
AUTOMATIC SECTIONALIZING SYSTEM

Richard E. Riebs, Hales Corners, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Apr. 21, 1980, Ser. No. 142,433

Int. Cl.³ H02H *7/26*

U.S. Cl. 361—68 **20 Claims**



1. In an underground shielded cable electric power distribution loop circuit having a pair of recloser switches connected in series in said loop circuit and electrical apparatus connected to said shielded cable between said recloser switches; a high frequency fault indicating isolating system, said system comprising a number of normally closed isolating switches connected in series in said shielded cable, means responsive to a fault current for arming those isolating switches between which a fault occurs, actuating means operatively connected to open only the isolating switches which have been armed, signal generating means responsive to a fault current in said loop circuit to apply high frequency control signals to said cable, said signal generating means responding to the absence at a predetermined time of the high frequency control signal from the faulted section of the cable to operate the actuating means to open the isolating switches which have been armed, after the recloser opens.

4,345,292

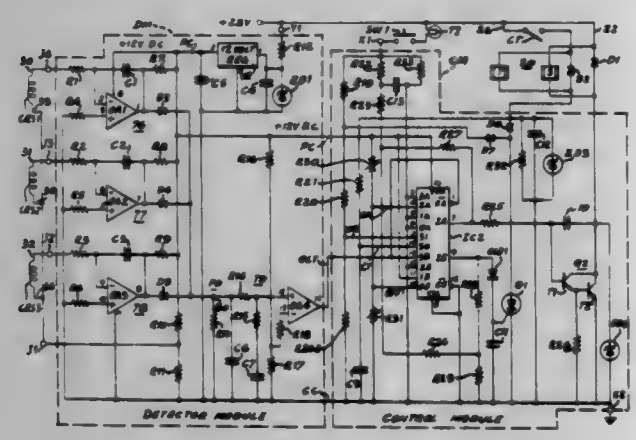
MINIMUM SIZE, INTEGRAL, A.C. OVERLOAD CURRENT SENSING, REMOTE POWER CONTROLLER

James R. Jaeschke, Waukesha, and Walter L. Rutchik, Wauwatosa, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 71,725, Aug. 31, 1979, abandoned, which is a division of Ser. No. 214,616, Dec. 9, 1980, which is a continuation of Ser. No. 923,325, Jul. 15, 1978, abandoned. This application Jun. 4, 1981, Ser. No. 270,463

Int. Cl.³ H02H *3/093*

U.S. Cl. 361—94 **7 Claims**



1. In a protective means for an electrical system supplying a load device from an electrical power supply line, the improvement comprising:

thermal simulation means for providing a control signal having a magnitude and duration proportional to the thermal condition of the electrical system for tripping a protective device when the line current reaches an overload value comprising:

means responsive to said line current for providing a charge current,

an RC time delay circuit having a capacitor charge path for said charge current including two series resistors with said control signal being taken from the junction therebetween to simulate the rising thermal condition of said electrical system, the voltage across one of said resistors providing a fast trip control signal on large overloads;

and said RC circuit having a capacitor discharge path including a third resistor in series at all times with said two resistors during discharge of said capacitor to simulate the cooling of the thermal condition of said electrical system at said control signal junction.

4,345,293

ARRESTER

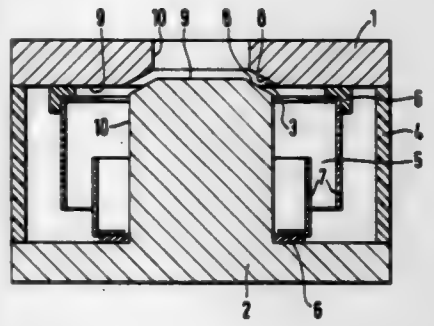
Peter Hasse, Neumarkt; Johannes Wiesinger, Puchheim, and Erich Pivit, Allmersbach, all of Fed. Rep. of Germany, assignors to Dehn + Söhne + Co. KG, Nuremberg and AEG-Telefunken Aktiengesellschaft, Frankfurt and Berlin, both of, Fed. Rep. of Germany

Filed Aug. 20, 1980, Ser. No. 179,704

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934237

Int. Cl.³ H01T *1/02*

U.S. Cl. 361—117 **7 Claims**



1. In an overvoltage arrester composed of two electrodes spaced apart to define a gas spark gap presenting an arc discharge region, a spacer member of insulating material interposed between the electrodes and forming with the electrodes the walls of a chamber communicating with the arc discharge region, and means associated with the chamber for establishing therein a labyrinth gas flow path between the arc discharge region and the spacer member, the improvement wherein one of said electrodes has the form of a solid cylinder and the other of said electrodes has the form of a disk with an essentially central bore which serves as a discharge opening leading into the open air near said arc discharge region to permit rapid escape of hot gas collecting in the chamber under excess pressure as the result of an arc discharge.

4,345,294

OVERVOLTAGE-ARRESTER DEVICE FOR TERMINAL- OR JUNCTION BLOCKS IN TELECOMMUNICATION EQUIPMENT

Horst Forberg, and Klaus-Peter Achtnig, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,382

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014796

Int. Cl.³ H02H *1/04*

U.S. Cl. 361—119 **8 Claims**

1. A modular exchangeable overvoltage arrester device for

terminal or junction blocks in telecommunication equipment, said device being adapted to accommodate a plurality of different laterally adjacent overvoltage arresters, said device comprising:

a plug-in-type housing of electrically insulating material comprising:

a housing base;

a housing top removably attachable to said housing base;

a plurality of contact blades projecting from said housing for making external electrical interconnections;

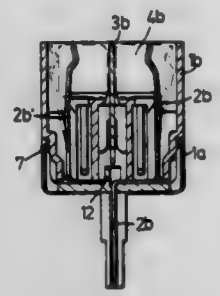
said housing top being shaped and configured to selectively receive a plurality of different switch prongs and earth bars thereby forming different versions of said housing, each such version being adapted to receive a distinct configuration of arrester elements;

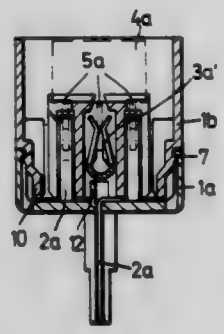
a first of said housing versions being adapted to receive standard commercial 6×8 and 8×8 arrester elements and comprising:

a plurality of spring loaded single blade first switch prongs arranged in two confronting rows adjacent the sides of said housing top; and

a first earth bar positioned between said rows of first switch prongs;

said first switch prongs and said earth bar being configured and adapted to engagingly hold said arresters therebetween in opposite pairs, one on either side of said first earth bar, thereby making appropriate electrical contact with said first switch prongs and said first earth bar;





a second of said housing versions being adapted to receive standard commercial twin arresters, each of said arresters having three pins projecting from the bottom thereof, said second housing comprising:

a plurality of second switch prongs comprised of pairs of juxtaposed spring blades arranged in two confronting rows adjacent the sides of said housing top; 2 a second earth bar positioned between said rows of said second switch prongs; and

a plurality of spring arm pairs mounted to said second earth bar;

each of said second switch prong pairs being adapted to engagingly hold one of the pins of said twin arrester, there being two of said second switch prong pairs for each said twin arrester thereby electrically contacting two of the pins of said twin arrester, each of said spring arm pairs being adapted to engagingly hold the third pin of said twin arrester, thereby making positive electrical ground contact;

each of said first and second switch prongs and each of said earth bars being connected to one of said externally projecting contact blades.

4,345,295

ARRESTER WITH SPARK GAP

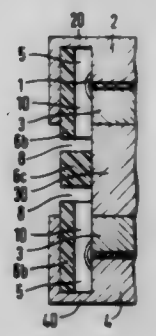
Peter Hasse, Neumarkt; Johannes Wiesinger, Puchheim, and Erich Pivit, Allmersbach, all of Fed. Rep. of Germany, assignors to Dehn & Söhne & Co. KG, Nuremberg and Aeg-Telefunken Aktiengesellschaft, Frankfurt and Berlin, both of, Fed. Rep. of Germany

Filed Aug. 20, 1980, Ser. No. 179,706

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934236

Int. Cl.³ H01T *5/00*

U.S. Cl. 361—130 **13 Claims**



1. In an arrester for limiting overvoltages in a low voltage power system and for coupling conductors which are normally resistively separated from one another for lightning protection, which arrester includes at least two electrodes spaced apart to define at least one spark gap forming an arc discharge region, and insulating means holding the electrodes in spaced-apart relation, the improvement wherein there are at least three said electrodes arranged in sequence to define at least series-arranged spark gaps, and said arrester comprises: means defining a first chamber adjacent the arc discharge region and providing a chamber wall of an insulating material which emits a quenching gas under the effect of heat and provided with at least one outlet aperture through which the gases emitted under the effect of the heat generated during arc discharge can escape; and means mounted for isolating said spark gaps from one another with respect to arc discharge.

4,345,296

DEVICE FOR CONTROLLING THE CURRENT THROUGH AN INDUCTIVE CONSUMER, ESPECIALLY A MAGNETIC VALVE IN THE FUEL METERING SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Wolfram Breitling, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,118

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1979, 2932859

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—154 **8 Claims**

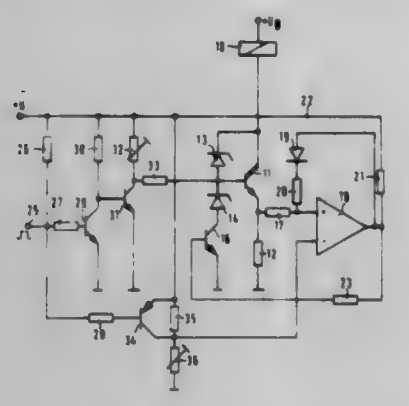
1. Apparatus for controlling the current through an inductive consumer of the type requiring a higher current during an initial attracting phase than during a subsequent maintenance phase of its operation, comprising:

first switching means and current measuring means connected in series with the inductive consumer between operational voltage lines; and

a threshold switch means, coupled with the current measuring means, for determining the transition between the initial attracting phase and the subsequent maintenance phase of the consumer operation;

the first switching means including at least one transistor, a controllable direct voltage source, and second switching means, actuated by the threshold switch means, for connecting the controllable direct voltage source parallel to a

series circuit comprising at least one base-emitter path of the at least one transistor and a measuring resistor constituting the current measuring means, during the maintenance phase of the consumer operation.

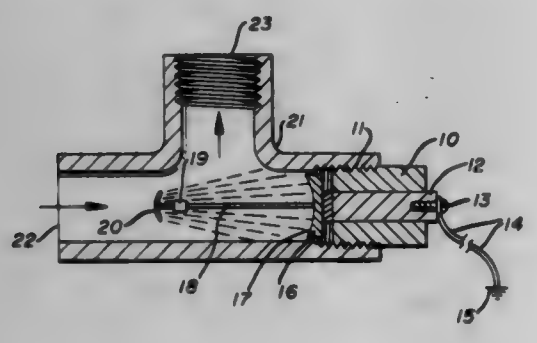


4,345,297

ELECTRONIC STATIC DISCHARGE APPARATUS

Alex J. Check, 827 Fourth St., Santa Monica, Calif. 90403

Filed Mar. 24, 1980, Ser. No. 132,887
Int. Cl.[3] H05F *3/06*
U.S. Cl. 361—215 4 Claims



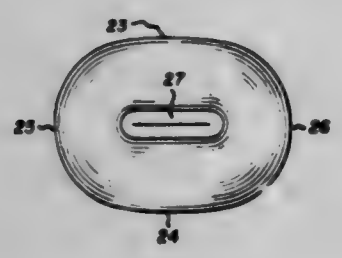
1. Static discharge apparatus for non-conductive fluids comprising a source of radioactivity, a rod mounting said source of radioactivity and a receiving antenna supporting said rod, a ground and means connecting said receiving antenna and rod to said ground, said source of radioactivity being spaced by said rod with respect to said receiving antenna, said means connecting said receiving antenna and rod to said ground comprising a plug having an exterior thread pattern and a ground wire extending from said plug to said ground.

4,345,298

MODIFIED ROUND ROLL CAPACITOR AND METHOD OF MAKING

Frederick W. Grahame, Glens Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Filed Sep. 19, 1980, Ser. No. 188,440
Int. Cl.[3] H01G *1/017*
U.S. Cl. 361—273 14 Claims



1. In an electrical capacitor comprising a pair of spaced strip electrodes and a synthetic resin strip dielectric therebetween to form a laminate which is wound in round roll form, flattened and placed in a casing and impregnated with a dielectric fluid, the improvement comprising

(a) the said strip electrodes comprising capacitor tissue paper having both sides metallized with a thin layer of metal;

(b) a central core structure in said roll;

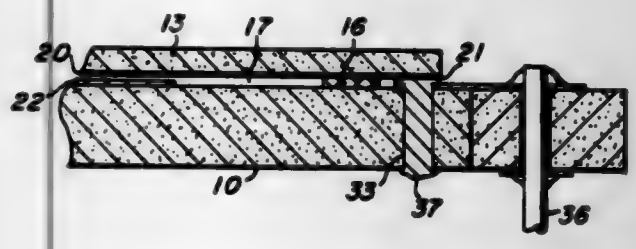
(c) said central core structure being less compressible than said roll and being a thick walled tube on which said roll was wound and flattened therewith, to provide a solid spacer in said roll essentially without any intervening space in the center of said roll.

4,345,299

CAPACITIVE PRESSURE TRANSDUCER ASSEMBLY WITH IMPROVED OUTPUT LEAD DESIGN

Roland K. Ho, McHenry, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1980, Ser. No. 202,988
Int. Cl.[3] H01G *7/00*
U.S. Cl. 361—283 19 Claims



1. A pressure transducer assembly in which pressure changes displace a diaphragm whose position determines electrical characteristics of the transducer assembly, comprising:

base substrate means having top and bottom substantially planar end surfaces, and having a peripheral portion with a lead bonding area thereon;

flexible diaphragm means, relatively thin with respect to a thicker distance between said top and bottom base substrate end surfaces, having a planar central portion and a surrounding peripheral portion;

mounting means for mounting said peripheral portion of said diaphragm means to said base substrate means top surface, said mounting means, said diaphragm planar central portion and said base substrate top surface generally forming an internal cavity wherein a reference pressure exists, said diaphragm central portion being displaceable with respect to said base substrate top surface in response to sensed pressure changes to thereby alter electrical characteristics of said transducer assembly,

said base substrate means peripheral portion and lead bonding area extending laterally with respect to and beyond the perimeter of said diaphragm means and having, in said lead bonding area, at least one lead through hole from said top to bottom base substrate surfaces for receiving an electrical lead;

said transducer assembly including at least a planar electrode metallization mounted on said diaphragm central portion and having a radial outward projection;

metallization deposited adjacent said lead through hole on of said base substrate means;

an electrical output lead positioned in said through hole and extending to at least said top and bottom base substrate surfaces; and

connection means for electrically connecting said diaphragm electrode to said lead and connecting said lead to said base substrate metallization adjacent said lead through hole,

wherein said adjacent through hole metallization is positioned on said base substrate top surface, and wherein a planar projection of said adjacent through hole metallization extends generally inwardly and overlaps, but is spaced apart from, said diaphragm electrode radial outward projection, and wherein said connecting means

comprises means for electrically connecting said adjacent base substrate through hole metallization inward projection and said diaphragm means electrode outward projection in said area of overlap.

4,345,300

RECESSED CIRCUIT MODULE

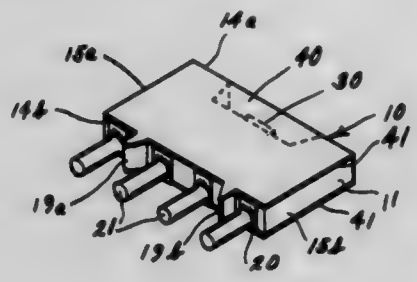
Ronald L. Stuckey, Monroe, Ind., assignor to CTS Corporation, Elkhart, Ind.

PCT No. PCT/US79/01142, § 371 Date Apr. 7, 1980, § 102(e) Date Apr. 7, 1980, PCT Pub. No. WO81/01784, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 18, 1979, Ser. No. 153,843

Int. Cl.³ H05K *1/16*

U.S. Cl. 361—386 **5 Claims**



1. A circuit module of the type having a ceramic substrate characterized by superior heat dissipative properties and wherein said substrate includes first and second spaced-apart side surfaces and includes a plurality of edge surfaces interconnecting the side surfaces, having a plurality of connector pins that are disposed substantially parallel to the side surfaces and that extend outwardly from the substrate, and sized to permit a plurality of equally sized circuit modules to be positioned side-by-side with a cumulative stack-up dimension corresponding substantially to the cumulative widths of the positioned modules, the improvement comprising: a component-receiving recess in at least one of the edge surfaces including a recess surface and which does not comprise the width of the substrate, first and second spaced-apart conductive films deposited onto the recess surface, conductive films comprising an electrical circuit deposited on at least one of the first and second side surfaces and overlapping a corner between the side surface and the recess surface to operatively connect the conductive films to said first and second spaced-apart conductive films respectively, said conductive films deposited on said side surfaces operatively connected to selected ones of the connector pins, an electrical device both mechanically and electrically connected directly to the spaced-apart conductor films deposited on the recess surface, and said electrical device proportioned to be disposed wholly between the first and second spaced-apart side surfaces and within said recess, and a plastic filler substantially filling the entirety of said recess and encapsulating the electrical device without contributing any dimensional increase to the stack-up tolerances of side-by-side contiguous circuit modules.

4,345,301

CAPACITIVE HUMIDITY TRANSDUCER

Marvin D. Nelson, St. Louis Park, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 23, 1981, Ser. No. 237,007

Int. Cl.³ H05K *1/18*; H01G *7/00*

U.S. Cl. 361—400 **4 Claims**

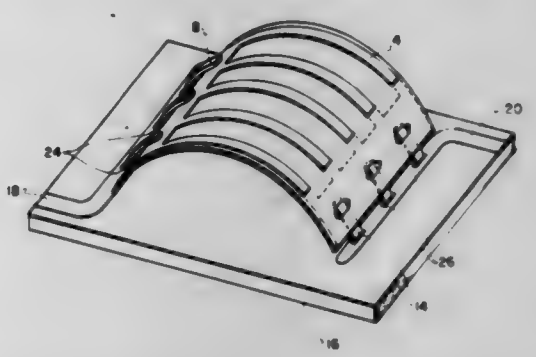
1. A capacitive humidity transducer comprising

an electrically non-conductive base member of a hygroscopic material,

a first electrically conductive coating on said base member arranged as a plurality of side-by-side extensions joined at one end to a common electrically conductive strip,

a second electrically conductive coating on said base member arranged as a plurality of side-by-side extensions joined at one end to a common electrically conductive strip and located on the opposite side of said base member from said first coating with said extensions of said first and second coatings being arranged in a facing relationship, said base member and said extensions forming a capacitor affected by atmospheric humidity as a result of the hygroscopic activity of said base member,

a first electrical connector for said first coating,



a second electrical connector for said second coating and

a printed circuit board having a first circuit thereon receiving said first connector and a second circuit thereon receiving said second connector, said first and second circuits being spaced closer together than the spacing of said first and second connectors.

4,345,302

LOW NOISE ELECTROLYTIC CAPACITORS

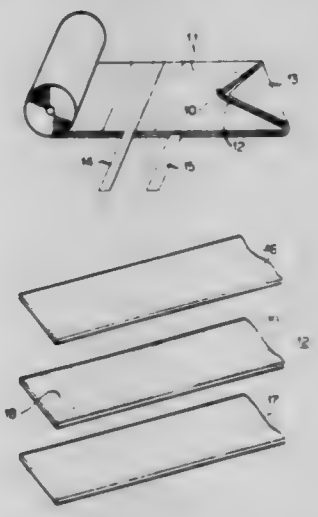
Hideo Kurose, Zushi, Japan, assignor to Momoyo Kuwada, Tokyo, Japan

Continuation of Ser. No. 1,283, Jan. 4, 1979. This application Dec. 4, 1980, Ser. No. 213,045

Claims priority, application Japan, Dec. 16, 1978, 53/156194

Int. Cl.³ H01G *9/00*; B01J *17/00*

U.S. Cl. 361—433 **6 Claims**



1. A low noise electrolytic capacitor comprising:

a pair of electrodes consisting of an anode foil and a cathode foil; and

an intermediate electroconductive layer interposed between said pair of electrodes;

said intermediate electroconductive layer composed of a first paper sheet contacted with said anode foil and impregnated with an electrolyte and a second paper sheet contacted with said cathode foil and impregnated with the electrolyte;

said second paper further containing an electroconductive fine powder distributed therein in an amount of less than 10% by weight based on the weight of said intermediate electroconductive layer; and

said fine powder being about one micron in grain size.

4,345,303
OPTICAL SYSTEMS PERMITTING CONTROLLED SHIFTING OF THE BEAM PATTERN IN HEADLAMPS, ESPECIALLY FOR VEHICLES

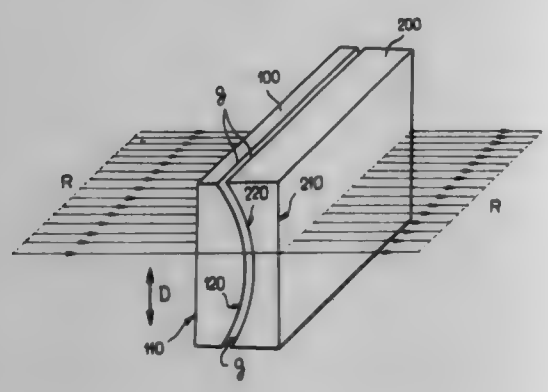
Roland Gerard, Saint-Maurice; Norbert Brun, Bobigny, and Jacques Ricard, Paris, all of France, assignors to Cibie Projecteurs, Bobigny, France

Filed Sep. 29, 1980, Ser. No. 191,499

Claims priority, application France, Oct. 2, 1979, 79 24508; Dec. 24, 1979, 79 31584

Int. Cl.³ B60Q *1/00*

U.S. Cl. 362—80 **13 Claims**



1. In a headlamp for an automobile vehicle, which headlamp is adjustable to vary the direction of the beam produced thereby, and comprises a reflector, and at least one light source fixedly mounted within said reflector, whereby light rays emitted by said light source are reflected by said reflector to form a beam of light, the improvement comprising: providing mountings for fixing said reflector rigidly on a vehicle; providing an optical beam adjusting system comprising at least one generally plate-like transparent optical deflecting element, and means supporting said optical deflecting element in a position to intercept substantially the whole of the said beam formed by said reflector, with said optical deflecting element extending generally perpendicularly to the said beam, and said supporting means permitting an adjustment of the position of said optical deflecting element with at least a component of movement in a direction transverse to the said beam; providing on said optical deflecting element surface configurations of such shapes that those light rays of the said beam which are incident on said beam adjusting system in a given direction emerge from the said beam adjusting system in substantially the same direction as one another, the said direction of emergence being changed by the said adjustment of said optical deflecting element, whereby the direction of the headlamp beam is varied without otherwise substantially affecting the characteristics of the headlamp beam; and providing an actuator mechanism connected to said optical deflecting element, for producing the said adjustment of said optical deflecting element.

4,345,304
RECHARGEABLE LAMP ASSEMBLY, MOUNTING UNIT, AND CIRCUIT THEREFOR

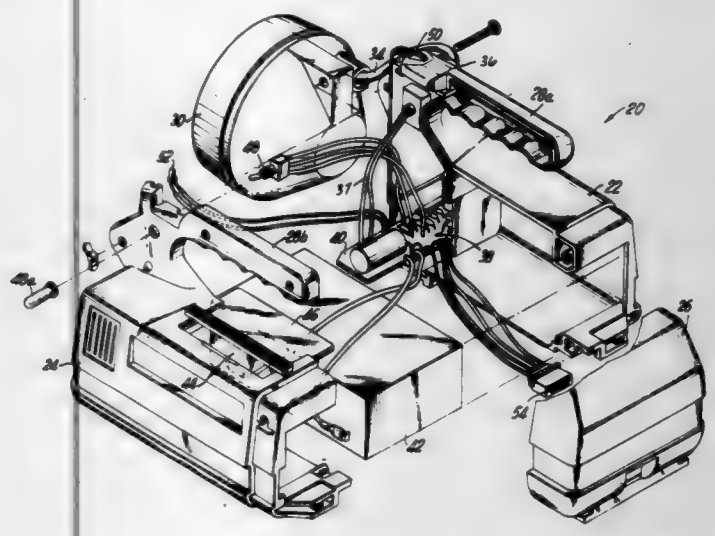
C. Bradford Penney, Norristown, Pa.; Glenn M. Zabec, Franklin Park, and Sri P. Sridharan, Hickory Hills, both of Ill., assignors to Streamlight, Inc., Norristown, Pa.

Filed Mar. 3, 1980, Ser. No. 126,967

Int. Cl.³ F21L *7/00*

U.S. Cl. 362—183 **8 Claims**

1. A rechargeable lamp assembly comprising a lamp unit having a first set of electrical contacts of particular configuration connected to circuit elements within said lamp unit and adapted for releasable connection to a mating second set of electrical contacts, and a mounting unit adapted for releasable mounting of said lamp unit thereto and including said second set of electrical contacts as a part thereof in position to releasably mate with said first set of electrical contacts when said lamp unit is mounted to said mounting unit, said mounting unit including as a part thereof a third set of electrical contacts of



said particular configuration electrically connected to said second set of electrical contacts.

4,345,305
PORTABLE ELECTRONIC SAFETY FLARE SYSTEM

Henry H. Kolm, Wayland, and Eric A. Kolm, Brookline, both of Mass., assignors to Flik, Inc., Cambridge, Mass.

Filed Aug. 11, 1980, Ser. No. 177,129

Int. Cl.³ F21L *7/00*

U.S. Cl. 362—186 **11 Claims**



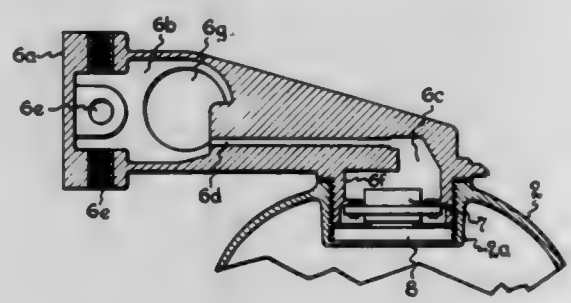
1. A portable electronic safety flare system comprising:
an elongate hollow tube at least a portion of which is transparent;
electronic strobe light circuit means in said tube;
a strobe light mounted in a transparent portion of said tube and driven by said strobe light circuit means;
a power supply disposed in said tube and interconnected with said strobe light circuit means;
a push switch interconnected with said strobe light circuit means for actuating said strobe light;
mounting means for supporting said push switch at a first end of said tube;
first cap means for closing said first end of said tube; said first cap means having a flexible portion for permitting pressure to be applied through it to actuate said push switch; and
second cap means for closing the second end of said tube.

4,345,306

LUMINAIRE MOUNTING DEVICE

Samuel T. Summey, East Flat Rock, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 10, 1980, Ser. No. 158,169
Int. Cl.[3] F21V *29/00*
U.S. Cl. 362—294 10 Claims



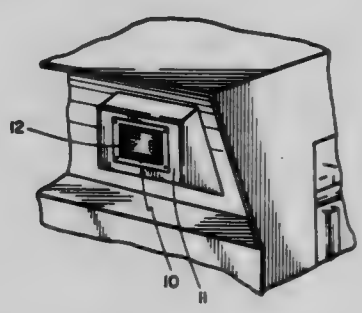
1. A lighting fixture of hazardous duty type for installation in atmospheres in which explosive gases may be evolved comprising, in combination, an elongated bracket having a mounting portion and means for securing a conduit thereto at one end and a luminaire-attaching portion at its opposite end, said bracket having a hollow interior for passage of electrical conductors therethrough from said one end to said opposite end, said hollow interior formed of enlarged chambers at said ends and an elongated narrow wireway opening at opposite ends into said enlarged chambers, a luminaire removably attached to said opposite end of said bracket, and means for electrically connecting said luminaire to the electrical conductors upon attachment of said luminaire to said bracket, whereby any explosive gases entering said bracket at said one end from a conduit secured thereto are cooled and reduced in pressure before reaching said opposite end of said bracket by passage through said narrow wireway.

4,345,307

RECTANGULAR HEADLAMP RETAINER

William R. Mayer, 112 Oak, Rochester, Ill. 62563, and Alton E. Runion, Rte. 10, Rochester, Ill.

Continuation-in-part of Ser. No. 935,490, Aug. 21, 1978. This application May 12, 1980, Ser. No. 148,698
Int. Cl.[3] F21V *7/00*
U.S. Cl. 362—306 30 Claims



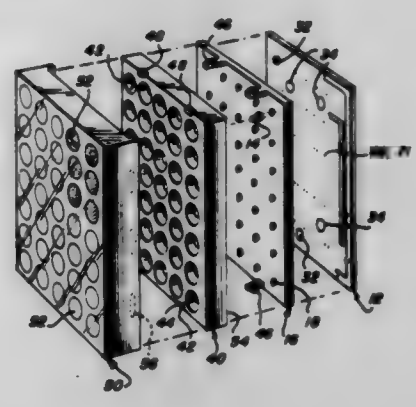
1. A shock mounting retainer assembly for a rectangular lamp, comprising: a generally rectangular supporting base adapted to be fixed to a vehicle, a generally rectangular lamp support mounted adjacent the supporting base and adapted to hold the rectangular lamp, a substantially straight horizontal vibration absorbing hinge constructed of a resilient material interconnecting the supporting base and the lamp support to provide a shock mount between the lamp and the associated vehicle, at least one of said supporting base and said lamp support being constructed of an elastomeric material, said vibration absorbing hinge being integral with at least one of said supporting base and said lamp support, said hinge being located only on one of the adjacent sides of the supporting base and said lamp support so that the lamp support is free to pivot with respect to the supporting base, and a horizontal adjustment mechanism interconnecting the supporting base and said lamp support on the sides thereof opposite the hinge so that upon adjustment of the mechanism the lamp support will pivot about the hinge with respect to the supporting base.

4,345,308

ALPHA-NUMERIC DISPLAY ARRAY AND METHOD OF MANUFACTURE

Arthur A. Mouyard, Glendale Heights; Michael V. Hamby, Chicago, and Paul A. Tomaszek, Des Plaines, all of Ill., assignors to General Instrument Corporation, Clifton, N.J.

Division of Ser. No. 936,728, Aug. 25, 1978, Pat. No. 4,254,453. This application Oct. 14, 1980, Ser. No. 196,452
Int. Cl.[3] F21V *5/00*
U.S. Cl. 362—332 5 Claims



1. A generally planar lens for a display device comprising a plurality of spherical portion means arranged in a predetermined pattern and protruding from the front viewed surface of the lens for receiving a generally collimated illumination beam of light rays, for dispersing said generally collimated illumination beam over a predetermined volume defined by a viewing angle about a central axis through said lens, for distributing said illumination beam in a substantially uniform manner over a first predetermined portion of said predetermined volume, and for providing a predetermined degree of on-axis concentration of light output along said central axis, said predetermined pattern of integrally formed spherical portion means comprising a first pattern portion defined by a circular area of predetermined diameter centered about said central axis and a second pattern portion defined by the lens surface outside of said circular area, each of said first and second pattern portions including a predetermined spacing of said spherical portion means and a predetermined ratio of the radius of curvature and the height of each of said spherical portion means determined in accordance with said predetermined viewing angle and the distribution of said illumination beam, said ratio being calculated by maximizing the percentage of said illumination beam being transmitted out said lens and by maximizing the dispersion of said transmitted light.

4,345,309

RELATING TO CACHED MULTIPROCESSOR SYSTEM WITH PIPELINE TIMING

Jega A. Arulpragasam, Stow, Mass.; Robert A. Giggi, Merrimac, N.H.; Richard F. Lary, Colorado Springs, Colo., and Daniel T. Sullivan, Bolton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 28, 1980, Ser. No. 116,083
Int. Cl.[3] G06F *9/30, 15/16*
U.S. Cl. 364—200 1 Claim

1. A multiprocessor system comprising:

A. main memory means (18) including a plurality of addressable storage locations for storing data;

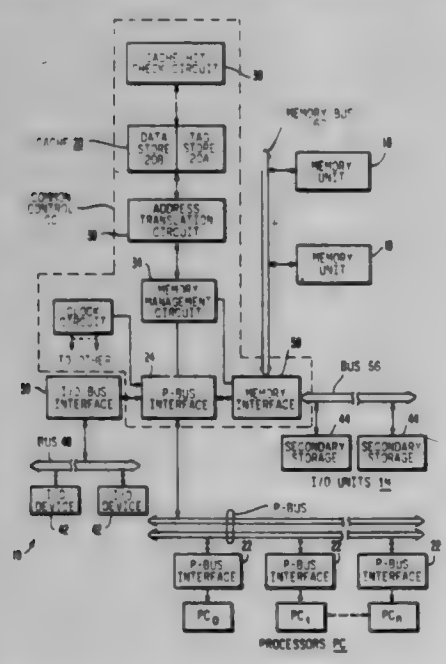
B. a plurality of processor units (22) for processing data in response to instructions and for generating signals including address, data, and writing control signals for initiating

reading and writing transactions that access addressable storage locations in said main memory means;

C. common control means shared by said processor units and said main memory means, said common control means including

i. write-through cache memory means (20) accessible by each of said processor units and including a plurality of addressable storage locations for storing copies of data stored in locations of said main memory means, said cache memory means further including means responsive to said writing control signals for forgoing the writing of associated data signals into cache memory means;

ii. processor indexed means including index locations associated with each processor unit, said processor indexed means being responsive to a writing control signal issued by a processor unit for producing an indication in said index location that another access to said cache memory means is to be performed to complete the writing transaction and for storing the address signals associated with said writing control signal so that during interim read accesses to said cache memory means, other processor units can forgo the reading of data at the address locations in said cache memory means in response to said indication, and



iii. write-back control means for writing data into said cache memory means after the data associated with said writing control signal has been written into said main memory means and for altering the indication in the corresponding index location of said processor indexed means thereby to indicate that the writing operation is completed so that the associated address location in said cache memory means can again be accessed by said other processor units;

D. processor bus means (60) interconnecting said processor units and said common control means for transferring address, control and data signals associated with the transactions among said processor units and said common control means;

E. memory bus means (60) interconnecting said common control means and said main memory means for transferring address, control and data signals associated with transactions between said common control means and said main memory means; and

F. timing means for controlling the operation of said processor bus means and said common control means, said timing means defining a predetermined, repeatable pipeline sequence of fixed time intervals during which said processor bus means and said cache memory means are available to said processor units for the transfer of data therebetween, the time interval during which said cache memory means is available having a duration sufficient to permit only one access to said cache memory means for each transaction initiated by one of said processor units.

4,345,310

AIRCRAFT FLIGHT CONTROL PROCESS AND DEVICE

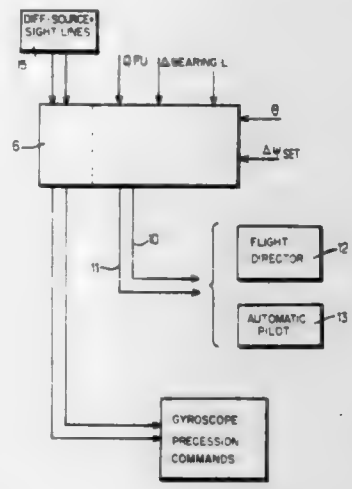
Bernard Gautier, Meudon, France, assignor to Societe Francaise d'Equipements pour la Navigation Aerienne, Villacoublay, France

Filed Jan. 2, 1980, Ser. No. 109,096

Claims priority, application France, Jan. 9, 1979, 79 00441

Int. Cl.³ G06F *15/50*; G06G *7/78*

U.S. Cl. 364—429 **7 Claims**



1. A flight control process, especially for aircraft approach and landing along a glide slope axis similar to the glide slope axis used in the ILS process and forming a predetermined slope with respect to the horizontal, said process comprising the steps of:

(a) determining from on board the aircraft said glide slope axis going through a point on the ground marked by an infrared radiation point source corresponding to the desired point of impact of the aircraft's wheels on the ground during the desired landing of the aircraft, said axis forming a predetermined slope with respect to the horizontal of approximately 3°, said axis being oriented according to a predetermined approach magnetic heading that can depend on the topography of the desired landing site;

(b) recording the aircraft position with respect to said infrared radiation source by sighting said source along a sighting line using a sighting system on board the aircraft equipped with means to determine the bearing and angular elevation of said sighting line;

(c) determining the angular deviations in azimuth and angular deviations in elevation of the sighting axis with respect to said glide slope axis;

(d) and operating the flight controls of the aircraft to bring said deviations to zero.

4,345,311

ELECTRONIC KILOWATT-HOUR METER FOR MEASURING ELECTRICAL ENERGY CONSUMPTION

John S. Fielden, Devon, England, assignor to South Eastern Electricity Board, Hove, England

Filed Jan. 7, 1980, Ser. No. 110,027

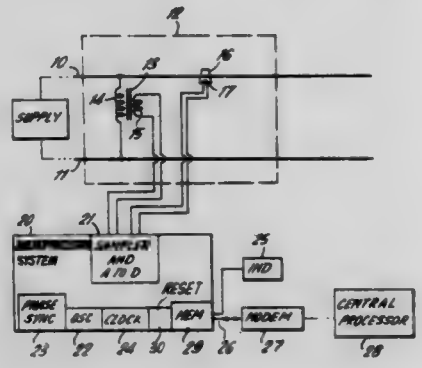
Claims priority, application United Kingdom, Jan. 11, 1979, 7901133

Int. Cl.³ G01R *21/06*; G06F *15/20*

U.S. Cl. 364—483 **7 Claims**

1. A kilowatt-hour meter for determining, from voltage and current signals, the total energy passing through an alternating electrical supply circuit, said meter comprising a clock signal generator including a timing signal frequency generator for generating timing signals at a frequency which is a multiple of the alternating supply frequency and phase locking means for synchronising the phase of the timing signals with the phase of

the alternating supply frequency, pulse sampling means controlled by the timing signals generated by said clock signal generator for sampling the magnitudes of the voltage on and current in the alternating electrical supply circuit at a prese-



lected time in each cycle, and digital data processing means for processing the sampled data to determine energy consumption during successive predetermined periods of time and to integrate the successive determinations of energy consumption.

4,345,312

METHOD AND DEVICE FOR INSPECTING THE DEFECT OF A PATTERN REPRESENTED ON AN ARTICLE

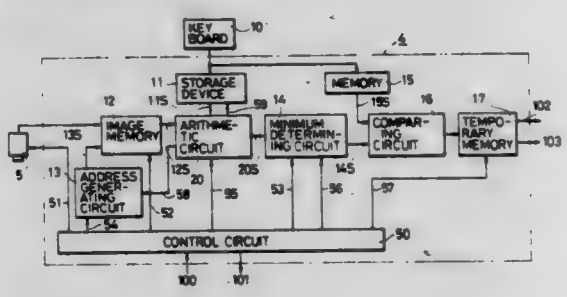
Toshikazu Yasuye; Seiji Kashioka, both of Hachiouji, and Yoshihiro Shima, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 10, 1980, Ser. No. 138,990

Claims priority, application Japan, Apr. 13, 1979, 54-48141[U]; Aug. 15, 1979, 54-103141

Int. Cl.³ G06K *9/36;* G06F *15/20*

U.S. Cl. 364—515 **15 Claims**



7. A pattern defect inspecting device for inspecting for defects in a pattern represented on an article comprising: first means for picking up and storing an image from an article having a pattern to be inspected; second means for extracting from said image a plurality of partial patterns at respective positions on the image which are offset by successively-increasing amounts from a reference position thereon; third means for comparing each of said partial patterns extracted by said second means with a standard pattern to determine a parameter indicating the the extent of lack of correspondence between the standard pattern and each of the respective partial patterns; fourth means for selecting the parameter indicating the minimum extent of lack of correspondence from among the parameters determined by said third means; and fifth means for comparing the parameter selected by said fourth means with a preset threshold value to determine the quality of said pattern to be inspected.

4,345,313

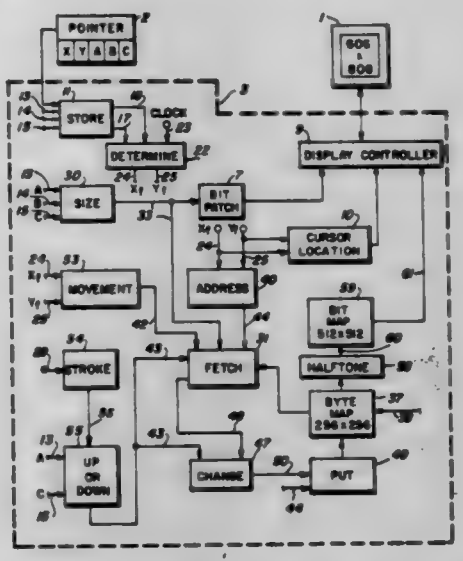
IMAGE PROCESSING METHOD AND APPARATUS HAVING A DIGITAL AIRBRUSH FOR TOUCH UP

Keith T. Knox, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1980, Ser. No. 144,507

Int. Cl.³ G06F *3/153, 15/20*

U.S. Cl. 364—515 **12 Claims**



1. Electrical image processing apparatus comprising

byte map memory means for storing raster image signals representative of continuous tone images wherein each signal has a value related to the tone level of a pixel within the continuous tone image,

display means coupled to the memory means for creating a visual image in response to the raster image signals applied to it,

cursor means coupled to the display means for applying cursor image signals thereto for creation of an airbrush tip image over a limited region of a visual image and for locating the airbrush tip image relative to the visual image in response to position signals and

airbrush means coupled to the memory and cursor means including pointer means for generating position signals for controlling the location of the airbrush tip image relative to the visual image and control means for gradually modifying in given increments the tone level of raster image signals responsible for creation of the visual image at the region of the airbrush tip image in response to manipulation of the pointer by a viewer at least including movement of the pointer.

4,345,314

DYNAMIC THRESHOLD DEVICE

Robert C. Melamud, Tokyo, Japan; James D. Nihart, Harrisburg, and James M. White, Charlotte, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,221

Int. Cl.³ H04N *1/40;* G06F *15/20*

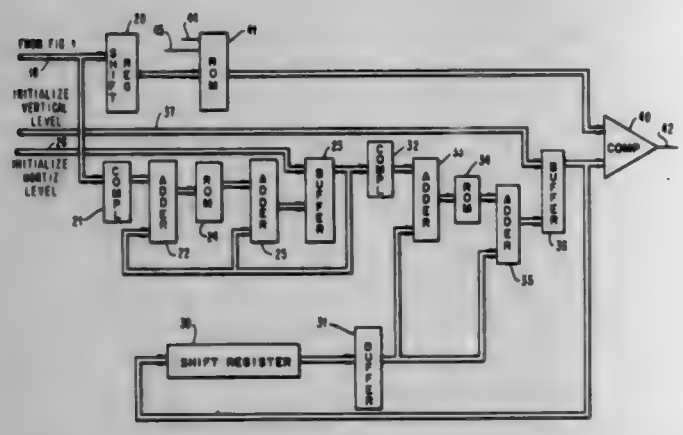
U.S. Cl. 364—515 **6 Claims**

1. A thresholder for input signals, representing the optical density of elements of a two-dimensional density varying image, wherein transducer means produces series of such input signals, each series corresponding to density variations along a first dimension of the image, and wherein the improvement comprises

information storage means for storing a first reference amount and a plurality of second reference amounts,

first means for combining an amount representing one of said input signals with said first reference amount in accordance with a function of the difference therebetween to produce an updated first reference amount and for operatively replacing in said storage means said first reference amount with said updated first reference amount,

second means for combining said updated first reference amount with a selected one of said second reference amounts to produce an updated second reference amount as a function of the difference therebetween and for operatively replacing in said storage means said selected one of



said second reference amounts with said updated second reference amount, and

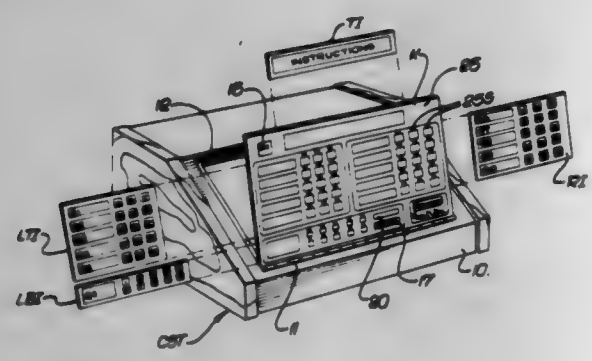
comparison means for producing a binary output as a function of the relative magnitude of one of said input signal representing amounts and an updated second reference amount.

4,345,315

CUSTOMER SATISFACTION TERMINAL

Ernest R. Cadotte, Knoxville, Tenn., and Gerald P. Hester, Santa Ana, Calif., assignors to MSI Data Corporation, Costa Mesa, Calif., by said Gerald P. Hester

Filed Jan. 19, 1979, Ser. No. 4,901
Int. Cl.³ G06F *15/02, 15/20;* G09B *7/00*
U.S. Cl. 364—900 **30 Claims**



21. A data collection terminal comprising

a housing having a plurality of keys arranged in rows and columns on one face thereof, said housing simultaneously displaying a plurality of inquiries with multiple responses for each inquiry, a response of the group of multiple responses for an individual inquiry being arranged in association with an individual key whereby the operation of a key represents the selection by the terminal user of the associated response,

the keys being arranged in an electrical matrix of rows and columns with each key arranged in electrical open circuit relationship with an individual row and column and the operation of the key momentarily bridges the row and column lines of an operated key to provide an answer signal,

the keys including a "record key" arranged at a preselected location in the rows and columns of keys to provide a "record" signal to said terminal,

microprocessor control circuit means mounted in the housing for providing key scan signals to the electrical matrix of rows and columns, row-by-row, for detecting and signalling the operation of an individual key and providing an answer signal to said microprocessor circuit means representative of the operated key, said microprocessor control circuit means including temporary storage means for temporarily storing the answer signals at preselected storage locations in accordance with the positions of the keys in said rows and columns,

permanent storage means for summing the number of times an individual response is selected with each response being assigned an individual storage location in said permanent storage means,

the operation of the "record" key provides a "record" signal to said microprocessor circuit means and said circuit means provides the necessary control signals for transferring the answer signals from the temporary storage means to said permanent storage means at the individual storage locations for summing the answer signals and thereby the number of times the individual responses have been selected by the terminal users, the plurality of keys including a plurality of keys representative of numerical data, each key being representative of a different piece of numerical data, and

wherein said housing includes digital display means for displaying alpha-numeric data and a mode select switch operable between an "operate" mode and a "parameter" mode, the mode select switch being mounted and secured in said terminal to be accessible only to an authorized individual, the "operate" mode of the select switch permitting anonymous individuals to operate the keys of the terminal to select the individual responses and thereby cause the microprocessor control circuit means to acquire the individual responses and display the selected responses as selected and to cause the recording of the selected responses in the permanent storage means only upon operation of the "record" key,

the permanent storage means having preselected parameters stored therein in the form of individual segments of numerical data for programming the terminal for performing preselected operations,

the "parameters" mode of the select switch permitting only authorized individuals to view the data comprising the answer data and programming data stored in the permanent memory by means of the digital display means,

said microprocessor control circuit means being responsive to the mode select switch being operated to the "parameter" position to permit the answer data and programming data to be displayed on the digital display

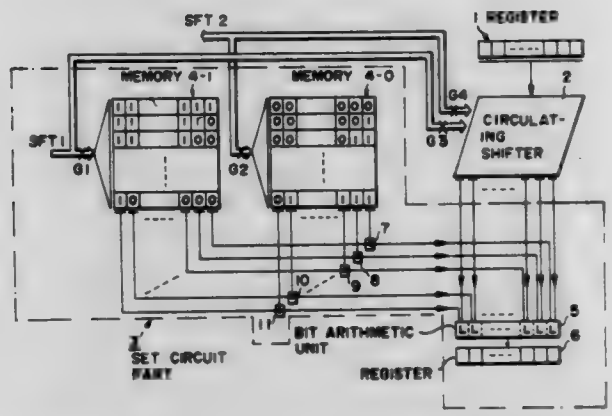
the keys including a "clear" key arranged at a preselected location in the rows and columns of keys,

said microprocessor control circuit means being further coupled to be responsive to the operation of the "record" and "clear" keys and being coupled to said digital display means for displaying the numerical data stored in the permanent storage means on the digital display means, the microprocessor control circuit means being further constructed and defined to be responsive to the operation of the "record" key to display the identification of a numerical value representative of a parameter and then responsive to the next sequential operation of the record key to display the identified numerical value so that the parameter and numerical value are displayed in the same sequence as their storage locations in the permanent storage means and to be responsive to the operation of the "clear" key to display the same numerical value and then responsive to the sequential operation of the "clear" key to display the same associate parameter identification data so that they are displayed in reverse sequence from their storage locations in the permanent storage means.

4,345,316
SHIFT ARITHMETIC DEVICE

Tatsushi Hirotani, Kawasaki, and Satoshi Nagata, Kodaira, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 27, 1979, Ser. No. 52,948
Claims priority, application Japan, Jun. 29, 1978, 53-79158
Int. Cl.[3] G06F *7/00*; G11C *19/00*
U.S. Cl. 364—900 6 Claims



4. A shift arithmetic device, having first and third input gates for applying a first shift signal and having second and fourth input gates for applying a second shift signal, comprising:

a first register for storing N-bit information to be subjected to shift arithmetic processing, where N is an integer;

circulating shifter means, operatively connected to said first register and to the third and fourth input gates, for shifting the contents of said first register in dependence upon the first and second shift signals, said circulating shifter means comprising:

a first shift gate, operatively connected to the third and fourth input gates, for executing a shift of one bit position in dependence upon the first and second shift signals;

a second shift gate, operatively connected to the third and fourth input gates and to said first shift gate, for executing a shift of two, four or six bit positions in dependence upon the first and second shift signals; and

a third shift gate, operatively connected to the third and fourth input gates and to said second shift gate, for executing a shift of eight, sixteen or twenty-four bit positions in dependence upon the first and second shift signals;

first memory means, operatively connected to the second input gate, for storing N-set patterns, for receiving the second shift signal, and for reading out one of said N-set patterns in dependence upon the second shift signal;

second memory means, operatively connected to the first input gate, for storing N-inverted set patterns, for receiving the first shift signal, and for reading out one of said N-inverted set patterns in dependence upon the first shift signal, where said N-inverted set patterns are the inverse of said N-set patterns;

a bit arithmetic unit, operatively connected to said first memory means, said second memory means and said circulating shifter means, for logically processing the output of said circulating shifter means, and said one of said N-set and said one of said N-inverted set patterns respectively read from said first and second memory means; and

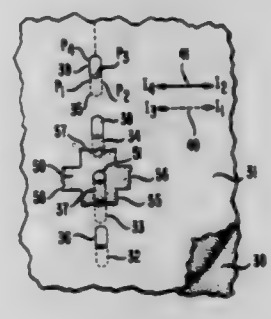
a second register, operatively connected to said bit arithmetic unit, for storing the results of said logical processing.

4,345,317
MAGNETIC DOMAIN MEMORY WITH HALL EFFECT DETECTOR

Andrew H. Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 25, 1980, Ser. No. 172,374
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—9 11 Claims

1. An arrangement comprising a layer of material in which magnetic domains can be moved, means for moving domains along a path in said layer to an output position, a detector made of a magnetic material responsive to a change in magnetic flux positioned at said output position, said detector having at least first and second terminals, means for providing an electric

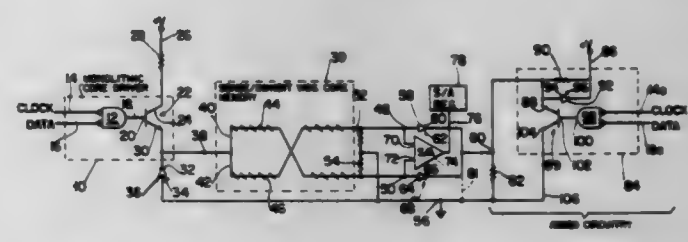


current to said first and second terminals, and means for detecting the effect of a domain on said current, said arrangement being characterized in that said magnetic material including an apeture at said output position.

4,345,318
HIGH PERFORMANCE MONOLITHIC DIGIT DRIVER

Morris O. Stein, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Aug. 29, 1980, Ser. No. 182,385
Int. Cl.[3] G11C *7/00*
U.S. Cl. 365—196 7 Claims



1. In an inhibit current driving circuit for a core memory including two half windings for inhibiting each digit of a memory word, the windings connected to inputs of a sense amplifier, and diodes connected between respective amplifier inputs and a node, the improvement comprising:

resistance means connected between the node and ground; and

switching means having its output connected across the resistance means for controllably introducing the resistance means in circuit between the node and ground, only at the end of an inhibit cycle thus decreasing the time constant of the circuit and providing fast transient inhibit signal turn off therein.

4,345,319
SELF-CORRECTING, SOLID-STATE-MASS-MEMORY ORGANIZED BY BITS AND WITH RECONFIGURATION CAPABILITY FOR A STORED PROGRAM CONTROL SYSTEM

Vincenzo Bernardini; Enzo Garetti, and Renato Manfreddi, all of Turin, Italy, assignors to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

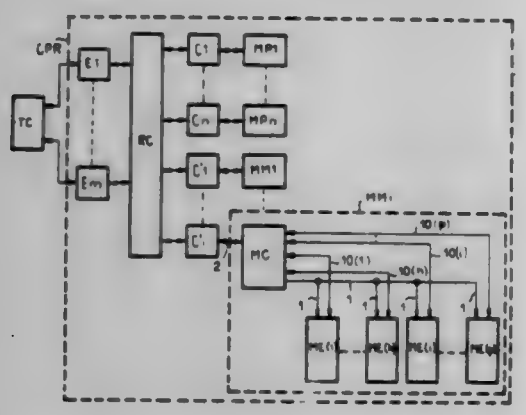
Filed Jun. 22, 1979, Ser. No. 51,246
Claims priority, application Italy, Jun. 28, 1978, 68516 A/78
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—210 5 Claims

1. In a telecommunication system wherein a processor exchanges data through a controller with a mass memory, the improvement wherein said mass memory comprises:

a plurality of solid-state memory modules including a first group of memory modules for the storage of a multiplicity of information words, a second group of memory modules for the storage of as many redundancy words respectively

associated with said information words, and at least one spare module, the number of modules of said first group equaling the number of bits in each information word, the number of modules of said second group equaling the number of bits in each redundancy word, each of said memory modules including a multiplicity of integrated charge-transfer circuits for the continuous recirculation of respective bits, each of said charge-transfer circuits consisting of several randomly accessible blocks of series-parallel-series registers responsive to shift and transfer signals; and

a command module responsive to signals from said controller for writing and reading respective bits of an informa-



tion word and of an associated redundancy word at corresponding locations of selected charge-transfer circuits of all memory modules of said first and second groups, said command module including a time base emitting said shift and transfer signals, an address generator identifying said locations, and corrective logical circuitry communicating with said memory modules through an input/output unit for verifying the accuracy of bits written and read, said input/output unit comprising switching means responsive to an instruction from said controller for loading said spare module with the contents of a defective memory module of either of said groups and substituting the spare module so loaded for the defective module in subsequent reading and writing operations.

4,345,320

INTEGRATED CIRCUIT FOR A TIME-PIECE

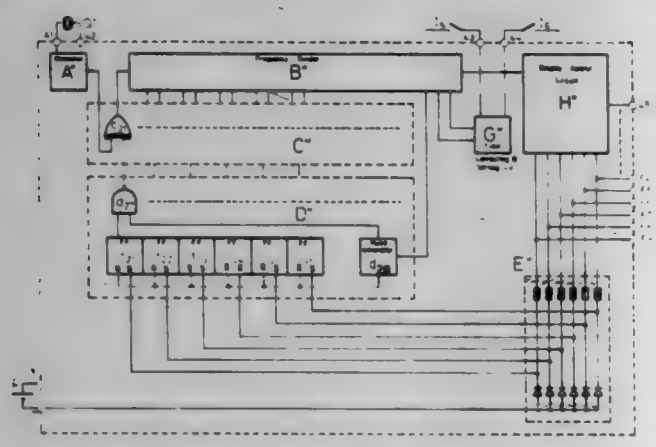
Jean-Claude Berney, Epalinges, Switzerland, assignor to Jean-Claude Berney SA, Epalinges, Switzerland

Continuation of Ser. No. 881,150, Feb. 24, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 135,742

Claims priority, application Switzerland, Feb. 28, 1977, 2461/77

Int. Cl.³ G04C *19/00, 9/00*

U.S. Cl. 368—87 **3 Claims**



1. An integrated circuit for a timepiece having means responsive to control signals for displaying time data, a power source, and manually actuated time setting elements for producing time setting signals, the integrated circuit comprising:

a first group of terminals including first terminals connecting the displaying means with the integrated circuit, and second terminals connecting the power source and the time setting elements with the integrated circuit;

means for producing a time base signal;

means responsive to said time base signal and to the time setting signals for producing the controls signals, the control signals being applied to said first terminals;

means connected to selected ones of said first terminals and to selected ones of said second terminals for storing a data signal in response to a first predetermined combination of voltages applied simultaneously to said selected first terminals and to said selected second terminals, said data signal being determined by the control signals present at said selected first terminals; and

means connected to said storing means for performing an auxiliary function of the timepiece in response to said data signal.

4,345,321

SEMICONDUCTOR LASER SOURCE OPTICAL READING HEAD

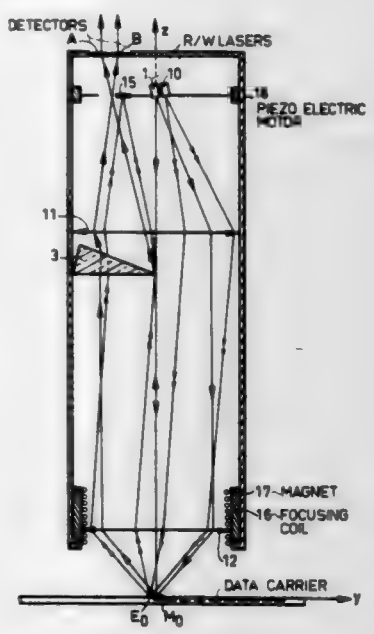
Louis Arquie; Claude Bricot, and Michel Thirouard, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 24, 1980, Ser. No. 162,635

Claims priority, application France, Jun. 26, 1979, 79 16898

Int. Cl.³ G11B *7/12*

U.S. Cl. 369—46 **8 Claims**



2. An optical reading head comprising:

a semiconductor laser source having an emissive face in the shape of a rectangular window for producing an input light beam;

an optical projecting device for receiving said light beam and for forming a spot of light which is the image of said laser source in the plane of a reflective information carrier, whereby a reflected light beam is formed;

said emissive face being oriented so that said input light beam asymmetrically illuminates the entrance pupil of the optical projection device and said reflected light beam asymmetrically illuminates the entrance pupil of the optical projection device, whereby the portions of the optical projection device which are illuminated by the input and reflected beams are adjoining and include most of the area of said entrance pupil;

a deflecting member for receiving said reflected light beam from said optical projection device and for displacing the image formed in respect to said emissive face; and

detection cells for receiving said reflected beam from said deflecting member.

4,345,322

PICKUP CARTRIDGE FOR REPRODUCING SIGNALS RECORDED ON A 45-45 STEREOPHONIC RECORD DISK

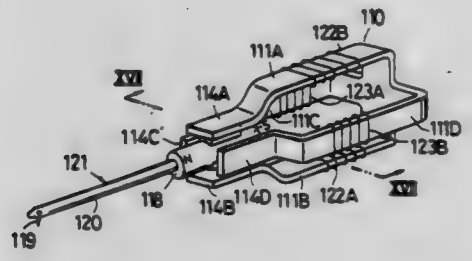
Kenshiro Aizawa, and Hisashi Okada, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Division of Ser. No. 931,728, Aug. 7, 1978, Pat. No. 4,238,646. This application Jul. 18, 1980, Ser. No. 169,987

Claims priority, application Japan, Aug. 10, 1977, 52-106790[U]; Aug. 12, 1977, 52-107865[U]; Dec. 23, 1977, 52-173676[U]; Jan. 7, 1978, 53-651[U]

Int. Cl.³ H04R *11/12*

U.S. Cl. 369—139 11 Claims



1. A pickup cartridge for reproducing signals recorded in the form of undulations of surfaces of walls of a groove formed on a 45—45 stereophonic record disk, comprising:

a cantilever carrying, at its foremost end, a stylus tip for tracing the groove of said record disk, said stylus tip being movable in accordance with the undulations of the groove walls;

a magnet provided at a base end of said cantilever;

supporting means for supporting said cantilever so as to permit said cantilever to make swinging movement about a point in accordance with a movement of said stylus tip while preventing movement of the cantilever in an axial direction thereof;

at least one first pole piece made of a magnetic material and arranged along a first plane perpendicular to a surface of said record disk in flux-linking relationship with said magnet;

at least one second pole piece made of a magnetic material and arranged along a second plane parallel to said surface of the record disk in flux-linking relationship with said magnet;

at least one first yoke made of a magnetic material and magnetically coupled to said first pole piece to form, together with said first pole piece, at least one closed magnetic path for the passage of part of the magnetic flux produced by said magnet;

at least one second yoke made of a magnetic material and magnetically coupled to said second pole piece to form, together with said second pole piece, at least one closed magnetic path for the passage of part of the magnetic flux produced by said magnet;

first coil means wound around said first yoke whereby, in response to movement of the cantilever, said magnet induces in the first pole piece, the first yoke and the first coil means an electromotive force proportional to the component of velocity of movement of said stylus tip in a direction perpendicular to the surface of said record disk;

second coil means wound around said second yoke, whereby, in response to movement of the cantilever, said magnet induces in the second pole piece, the second yoke and the second coil means an electromotive force proportional to the component of velocity of movement of said stylus tip in a direction parallel to the surface of said record disk; and

means electrically coupling said first and second coils with one another to deliver the sum of, and the difference between, electromotive forces induced in the first and second coil means.

4,345,323

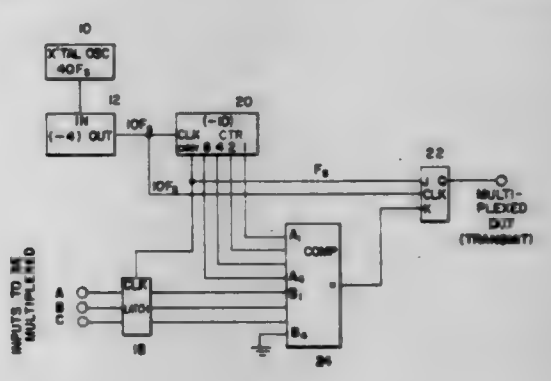
PULSE DURATION DIGITAL MULTIPLEXING SYSTEM

Paul S. Chang, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 7, 1980, Ser. No. 110,422

Int. Cl.³ H04J *15/00*

U.S. Cl. 370—9 10 Claims



1. A multiplexing transmitter for simultaneous transmission of digital input signals over a single communication channel, comprising:

registration means for clocking-in said multiple input signals at a sampling frequency; and

binary counting means having multiple outputs sequentially activated according to a specific binary count for assigning each of said clocked-in signals a respective binary coded weight, so that a unique binary coded decimal value is specified by a combination of said coded weights of said clocked-in input signals, and said means including means for generating a pulse of a duration determined by said unique combined binary coded decimal value of said clocked-in input signals, and means for corresponding each of said input signals to a respective one of said counting means outputs.

4,345,324

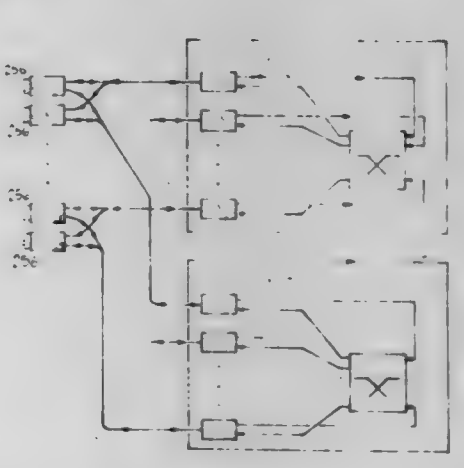
PROCESS AND SYSTEM FOR ERROR DETECTION IN A COMPUTER-CONTROLLED TELEPHONE EXCHANGE

Asbjorn Smitt, Vedbaek, Denmark, assignor to Christian Rovsing A/S, Denmark

Filed Jul. 9, 1980, Ser. No. 167,226

Int. Cl.³ H04J *3/14;* H04M *3/24*

U.S. Cl. 370—14 8 Claims



1. A method of supervising a plurality of data processing units in a redundant data processing system for controlling a telephone exchange having redundant digital switching networks, said processing units serving to set up and delete redundant communication channels through the switching networks, said method comprising the steps: of separately controlling the switching networks by the said processing units; and comparing time division multiplexed telecommunication data from associated sets of outlets from each of the redundant digital switching networks, a discrepancy in any one of said

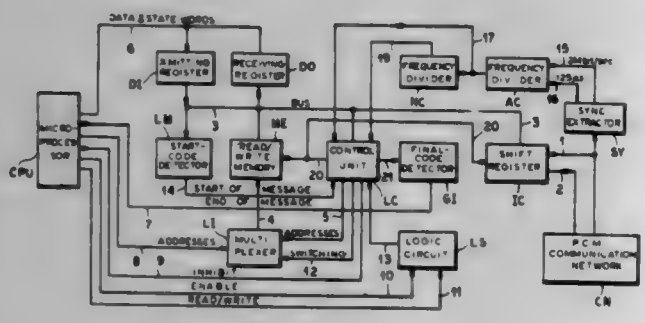
comparisons indicating an error in the set up by the controlling units of the respective communication channel through the switching networks.

4,345,325

MESSAGE-INTERCHANGE CIRCUITRY FOR MICROPROCESSORS LINKED BY SYNCHRONOUS COMMUNICATION NETWORK

Marco Gandini, and Ernesto Viale, both of Turin, Italy, assignors to Cselt-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Apr. 18, 1980, Ser. No. 141,484
Claims priority, application Italy, Apr. 19, 1979, 67819 A/79
Int. Cl.³ H04J *3/02*; H04L *5/22*
U.S. Cl. 370—29 **6 Claims**



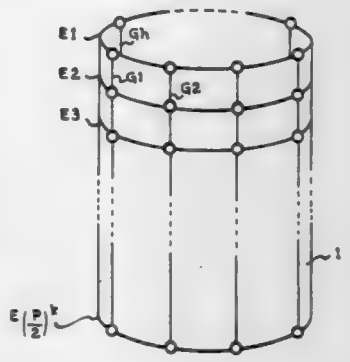
1. In a digital data-transmitting system, in combination:
a microprocessor:
synchronously operating communication means linking said microprocessor to at least one remote data-handling component;
read/write memory means having a transmitting area and a receiving area with cells for the temporary storage of outgoing message words destined for the remote data-handling component and of incoming message words destined for said microprocessor, respectively, along with information representing the state of activity of each storage area;
first circuit means coupling said microprocessor to said memory means for asynchronously loading the cells of said transmitting area with outgoing message words and for supplying said memory means with activity information relating to said transmitting area;
second circuit means coupling said memory means to said microprocessor for asynchronously supplying same with incoming message words stored in the cells of said receiving area;
input/output means connecting said transmitting and receiving areas to said communication means; and
a control unit synchronized with said communication means and responsive to activity information indicative of the presence of an outgoing message in said transmitting area for synchronously reading out the contents of the cells thereof to said communication means and further responsive to the arrival of a start code from said communication means for writing incoming message words into the cells of said receiving area along with activity information relating thereto, said control unit modifying the relevant activity information in said memory means upon completion of a message transfer between a storage area and said communication means.

4,345,326

SWITCHING NETWORK AND TELECOMMUNICATIONS CENTER COMPRISING SUCH A NETWORK

Marc P. G. Dieudonne, and Yves G. Raillard, both of Colombes, France, assignors to Le Materiel Telephonique Thomson-CSF, Colombes, France

Filed Jun. 11, 1980, Ser. No. 158,358
Claims priority, application France, Jun. 12, 1979, 79 14966
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—60 **6 Claims**



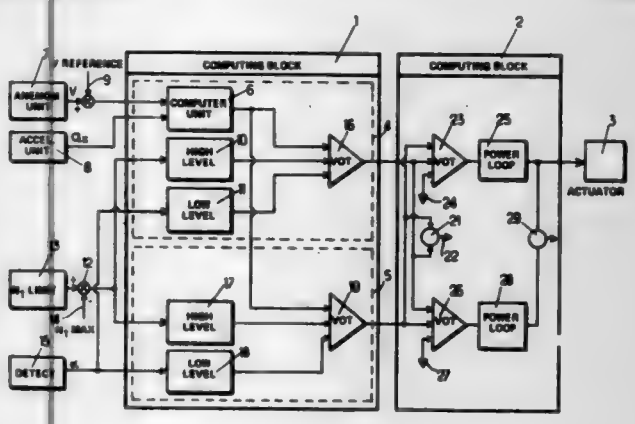
1. A switching network comprising N switching units, each switching unit being connected directly by p bilateral connections to other switching units of the network, p being an even integer greater than 2, wherein the switching units may be considered as located on h generatrices G1 to Gh, h being any integer, wherein each generatrix comprises $(p/2)^k$ switching units, numbered 1 to $(p/2)^k$, k being any integer, and wherein any switching unit of coordinates (i,j), i being the generatrix ($1 \leqq i \leqq h$) on which the switching unit is located and j being the switching unit order number on the generatrix ($1 \leqq j \leqq (p/2)^k$), is connected by p/2 connections to p/2 Ax-switching units ($1 \leqq x \leqq p/2$) on the next generatrix, the coordinates of the Ax-switching units being: ((i+1) modulo h, {x+p/2(j−1)} modulo $(p/2)^k$).

4,345,327

SELF-MONITORED PROCESS CONTROL DEVICE

Pham D. Thuy, Chatenay Malabry, France, assignor to Societe Francaise d'Equipements pour la Navigation Aerienne, Velizy-Villacoublay, France

PCT No. PCT/FR79/00056, § 371 Date Mar. 7, 1980, § 102(e) Date Feb. 20, 1980, PCT Pub. No. WO80/00198, PCT Pub. Date Feb. 7, 1980
PCT Filed Jun. 29, 1979, Ser. No. 193,268
Claims priority, application France, Jul. 7, 1978, 78 20286
Int. Cl.³ G06F *11/18*
U.S. Cl. 371—9 **3 Claims**



1. A self-monitoring control device to control at least one actuator (3) which is controlled by a command signal,
means (7,8, and 9) for generating signals corresponding to sensed parameters upon which said control signal is based,

said control system comprising at least one digital computing channel (1) which includes:

a computing unit (6) operating in conjunction with said signal generator means (7,8,9) and producing an output signal;

two pairs of limiter circuits (10,11), (17,18), one circuit (10,17) of said each pair generating a signal representative of an upper limit value and the other circuit (11,18) generating a signal representative of a lower limit value;

two voters (16,19); circuit means for connecting one input of each of said two voters to the output of said computing unit (6), circuit means for connecting the other two inputs of one of said voters (16) to the outputs of both circuits of said two pairs of limiter circuits (10,11), circuit means for connecting the other two inputs of the other voter (19) to the outputs of both of the other pair of limiter circuits (17,18), each of said voters (16,19) comprising means to select and transmit that one of the three signals received at the inputs thereof whose value is between those of the other two input signals thereat,

said self-monitoring control system further comprising another computing unit (2) which includes:

a comparator (21), circuit means for connecting the inputs thereof to the outputs of said two voters (16,19), said comparator (21) comprising means for receiving said selected and transmitted signals and for transmitting a warning signal only when said two selected signals are not identical;

two interconnected voters (23,26) circuit means for connecting the outputs of both of said voters (16,19) as one of the inputs to each of said voters (23,26), means (24,27) for generating a reference signal; circuit means for connecting another input of each of said interconnected voters (23,26) to said reference signal generating means (24,27);

two power loops (25,28), circuit means for connecting the inputs of said power loops to the outputs of said interconnected voters (23,26);

circuit means for connecting the output from one of said power loops (25) to said actuator (3);

a comparator (29), circuit means for connecting the output of said comparator (29) to the outputs of both of said power loops (25,28),

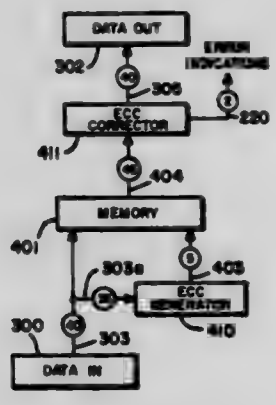
and said comparator being adapted to make a comparison between the output signals from said two power loops and to transmit a warning signal when said two power loop output signals are not identical.

4,345,328

ECC CHECK BIT GENERATION USING THROUGH CHECKING PARITY BITS

Gary D. White, Chanhassen, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,211
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—38 6 Claims



1. A memory system which provides single bit error correction/double bit error detection and through checking comprising:

an input data register capable of temporarily storing and outputting a data quantity having n data bit positions and x through checking parity bits;

a memory having a plurality of addressable locations input from said input data register wherein each of said plurality of addressable locations is capable of storing said data quantity and said x through checking parity bits and y coded check bits;

means input by said input data register and outputting to said memory for generating said y coded check bits such that the combination of said y coded check bits and said x through checking parity bits is sufficient to enable correction of a single bit error in said data quantity and to enable detection of a double bit error in said data quantity, and such that $n>2y$;

an output data register capable of temporarily storing said data quantity and said x through checking parity bits; and

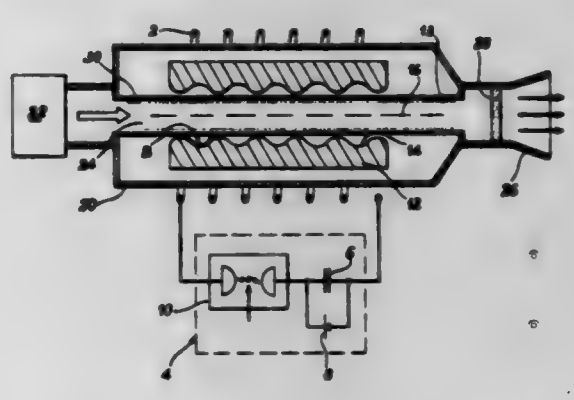
means input by said memory and outputting to said output data register for performing single bit error correction upon said data quantity received from said memory before transfer to said output data register.

4,345,329

FREE-ELECTRON LASER PROVIDED WITH A DEVICE FOR PRODUCING A PULSED MAGNETIC FIELD WITH PERIODIC SPATIAL VARIATIONS

Henri Doucet, Les Molieres, and Christian Tournes, Mareil Marly, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Filed Dec. 20, 1979, Ser. No. 105,784
Claims priority, application France, Dec. 22, 1978, 78 36123
Int. Cl.³ H01S *3/09*
U.S. Cl. 372—2 5 Claims

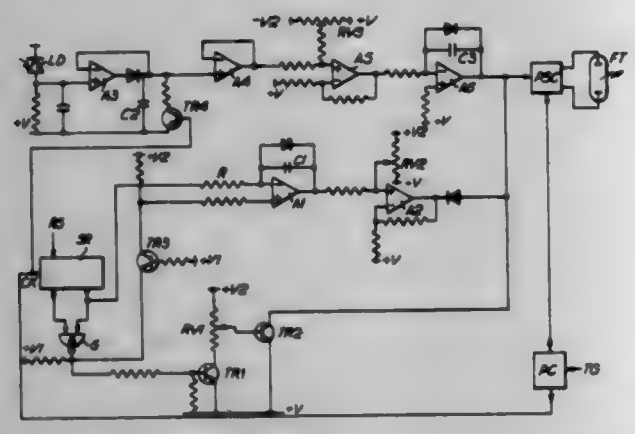


1. A free-electron laser comprising an electrically conductive winding, said winding having an axis, a current-pulse supply connected to said winding, said supply delivering current pulses having a duration, said duration defining a reciprocal duration, said winding so supplied by said current pulses constituting a pumping means, a split metallic tube placed inside said winding, said tube having a thickness and having an axis in coincidence with said axis of said winding, said tube having an inner wall, said wall being undulated periodically along the axis of the tube, said tube being formed of a conducting material having a skin-thickness at a frequency equal to said reciprocal duration of said current pulses, said skin-thickness being smaller than said thickness of the tube, a vacuum enclosure for sustaining a vacuum inside said tube, an electron source for injecting a beam of relativistic electrons into said tube in a direction parallel to the axis of said tube, said beam of electrons producing an electromagnetic radiation having a frequency and propagating in a direction parallel to the axis of the tube, said beam of electrons acting as an amplifying medium for said radiation, a vacuum-tight transparent window attached to the vacuum enclosure on the axis of said tube, said radiation emerging from said enclosure through said window and constituting the radiation delivered by said laser.

4,345,330
LASER ENERGY CONTROL CIRCUIT

James B. Howie, and John McLeod, both of Edinburgh, Scotland, assignors to Ferranti Limited, Cheadle, England

Filed Apr. 14, 1980, Ser. No. 140,007
Claims priority, application United Kingdom, Apr. 17, 1979, 7913353
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—29 8 Claims

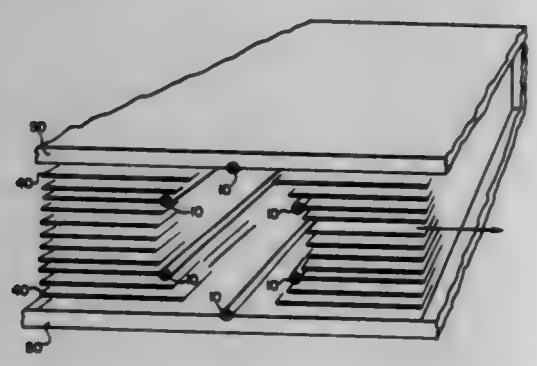


1. A laser energy control circuit for a gas-discharge-excited laser, which includes an energy source arranged to supply energy to the gas discharge at a rate determined by a control voltage, a first circuit connected to said source and arranged to deliver a first control voltage of such a value that the energy supplied is limited to a first value for a first time interval after initiation of the gas discharge, a second circuit connected to said source and arranged to deliver a second control voltage such that said energy supplied increases to a maximum value at the end of said first time interval and subsequently to change the control voltage in such a manner that said energy supplied is decreased gradually from said maximum value to a running value during a second time interval following said first time interval, a timing arrangement responsive to a series of clock pulses to determine the duration of said first time interval, and a third circuit connected to said source and responsive to light output of the laser after said second time interval to vary said control voltage in such a manner that said energy supplied is controlled to maintain said light output of the laser constant.

4,345,331
APPARATUS FOR GENERATING AN ELECTRIC FIELD

Ethan D. Hoag, East Boston, Mass., assignor to Locke Technology, Inc., Wakefield, Mass.

Filed Jan. 14, 1980, Ser. No. 111,718
Int. Cl.³ H01S *3/08*
U.S. Cl. 372—87 33 Claims



1. Apparatus for generating an electric field within a region, said apparatus comprising:

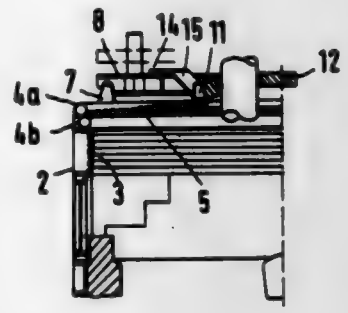
an electrode assembly including a plurality of elongated electrodes disposed with their elongated axes substantially parallel to one another, substantially equidistantly from and angularly displaced from one another around a common axis so as to define said region; and

means for applying to said electrodes a harmonically varying, multi-phase potential so that the potential at each electrode is phase dependent and the phase of the potential at each electrode is a function of the relative angular position of that electrode so as to approximate a uniform electric field within said region.

4,345,332
COVER FOR VESSEL FOR A METAL MELTING FURNACE, IN PARTICULAR AN ELECTRIC ARC FURNACE

Bodo Wronka, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann DeMag AG, Duisburg, Fed. Rep. of Germany

Filed Oct. 21, 1980, Ser. No. 199,310
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943244
Int. Cl.³ F27D *1/12*
U.S. Cl. 373—74 12 Claims



1. A metal melting furnace cover particularly suitable for an electric arc furnace comprising

(a) an outer cover frame,

(b) a cooling coil attached to said cover frame,

(c) the turns of said cooling coil being distributed generally across said cover frame,

(d) said cooling coil being formed as a self-supporting unit and having a centrally situated opening,

(e) a subframe,

(f) frame connecting means releasably connecting said subframe to said outer frame,

(g) said subframe extending generally in a plane parallel to the outer cover frame and being connectable to a hoisting device,

(h) a center disposed within the centrally situated opening of said cooling coil,

(i) said center being comprised at least partially of refractory material, and

(j) releasable, center suspending means for suspending said center from said subframe.

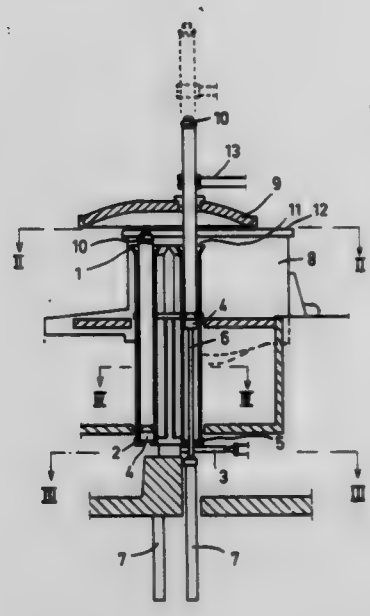
4,345,333
METHOD AND APPARATUS FOR REPLACING THE ELECTRODES OF AN ELECTRIC ARC FURNACE

Magnus G. G. Tiberg, Hällefors, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

Filed May 8, 1980, Ser. No. 148,001
Claims priority, application Sweden, May 8, 1979, 7903987
Int. Cl.³ H05B *7/00*
U.S. Cl. 373—94 8 Claims

5. Apparatus for replacing used electrodes with new electrodes of an electric arc furnace having a removable electrode roof actuatable between an inner position above the furnace and an outer position adjacent the furnace shell comprising a cartridge having a plurality of tubular members underlying the electrode roof in its outer position and adapted to receive the

new and used electrodes, aligning means for selectively situating the cartridge relative to the electrode roof to a first position



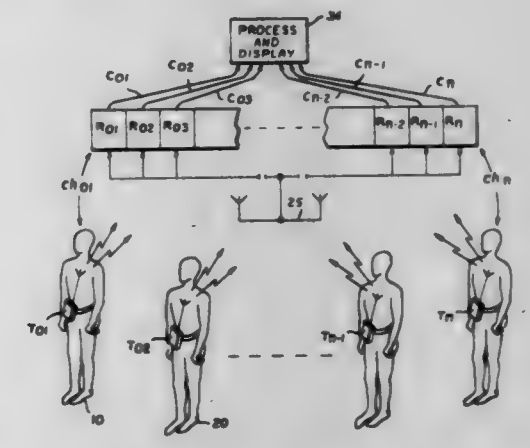
for inserting the used electrodes and to a second position for removal of the new electrodes from the cartridge.

4,345,334

REDUCED-CROSS TALK TELEMETRY SYSTEM AND METHOD OF MANUFACTURE THEREOF

John G. Nordahl, Lexington, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 5, 1977, Ser. No. 793,985
Int. Cl.³ H04B 7/015
U.S. Cl. 455—50 9 Claims



1. In a telemetry system having a plurality of transmitter-receiver channels within a predetermined band, the fundamental frequency of each transmitter channel being different and being a constant multiple of a respective basic frequency whereby spurious signals resulting from various multiples of each said basic frequency are present and may cross talk to receiver channels tuned thereto, the improvement wherein

each of the fundamental frequencies of said transmitter-receiver channels is a different one of at least some of the fundamental frequencies in a series of tentative fundamental frequencies, the successive fundamental frequencies in said series each having the same ratio to the immediately preceding fundamental frequency in said series.

265,775
SUIT
James H. Crumley, South Arlington, Va., assignor to Bowing Enterprises, Arlington, Va.
Filed Jun. 25, 1980, Ser. No. 162,920
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—29

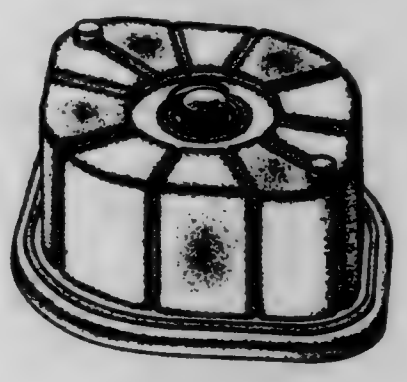




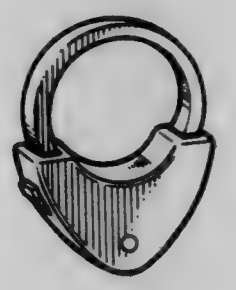
265,776
BOOT WITH ANGULARLY EXTENDING CLEATS
Michael Bell, P.O. Box 400, Warrington, Pa. 18976
Filed Apr. 7, 1980, Ser. No. 137,693
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—274



265,777
COMPUTER DISC CONTAINER
Lorene E. Elzea, Redwood City, and Robert G. Atwood, Foster City, both of Calif., assignors to Bozley, Inc., Foster City, Calif.
Filed Jun. 9, 1980, Ser. No. 157,322
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



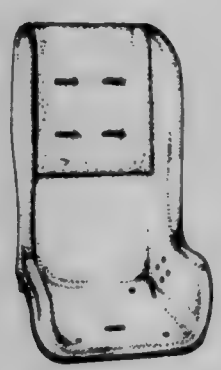
265,778
KEY HOLDER
Attilio Brentini, Le Château, Crissier, Switzerland (CH-1023)
Filed Jun. 5, 1980, Ser. No. 156,621
Claims priority, application Switzerland, Dec. 11, 1979, DM/000 051
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61



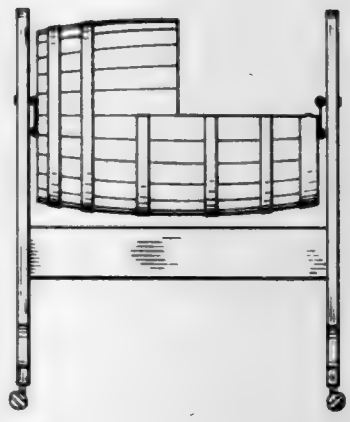
265,779
GARMENT BAG
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Mar. 9, 1981, Ser. No. 241,848
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



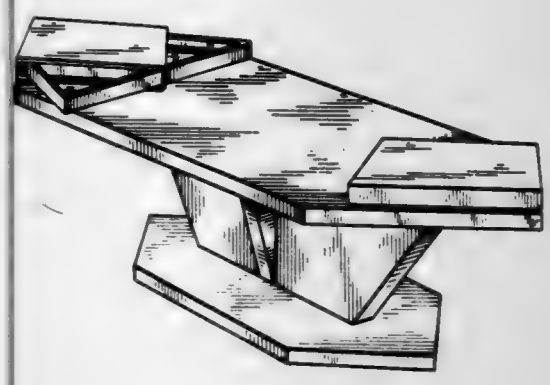
265,780
SAFETY CAR SEAT FOR A CHILD
Karl-Eric Johansson, Storgatan 55B, S-573 00 Tranas, Sweden
Filed Mar. 5, 1979, Ser. No. 17,359
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—9



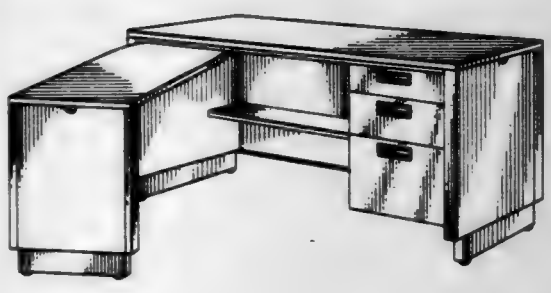
265,781
BABY CRADLE
Robert J. Dainty, Jr., 5347 E. 23rd St., Tulsa, Okla. 74114
Filed Jun. 4, 1979, Ser. No. 45,593
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—15



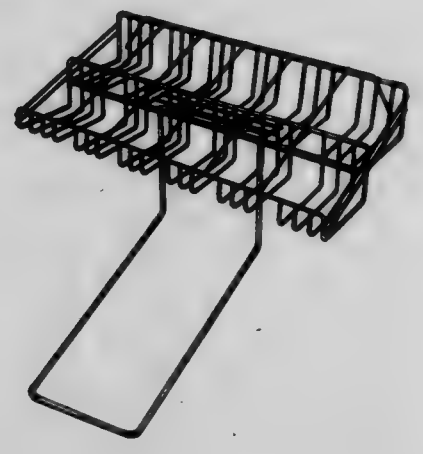
265,782
TABLE
James L. Ohle, 600 S. York Rd., Elmhurst, Ill. 60126
Filed Mar. 31, 1980, Ser. No. 135,275
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



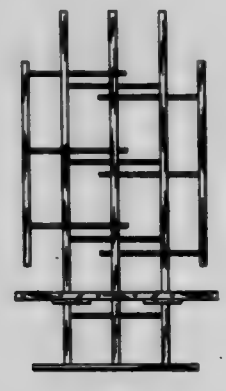
265,783
DESK
Robert M. Fusselman, Youngstown, Ohio, assignor to GF Business Equipment, Inc., Youngstown, Ohio
Filed Oct. 1, 1979, Ser. No. 81,251
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



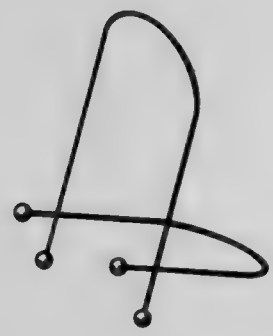
265,784
DISPLAY RACK
Ruth E. Saltzman, P.O. Box 25029, Portland, Oreg. 97225
Filed Mar. 19, 1979, Ser. No. 21,469
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—180



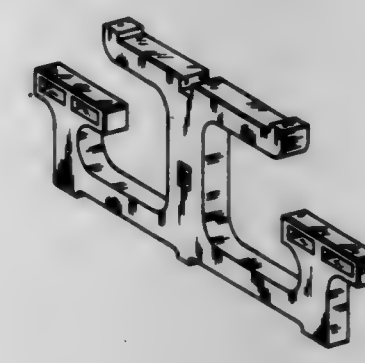
265,785
EASEL
John M. Weiskopf, 4240 37th St., #B, San Diego, Calif. 92105
Filed Mar. 10, 1980, Ser. No. 129,098
Term of patent 14 years
Int. Cl. D6—*06, 99*
U.S. Cl. D6—180



265,786
EASEL
S. Ralph Angell, 2851 Treasure Island West, Memphis, Tenn. 38115
Filed Jun. 16, 1980, Ser. No. 159,933
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—180



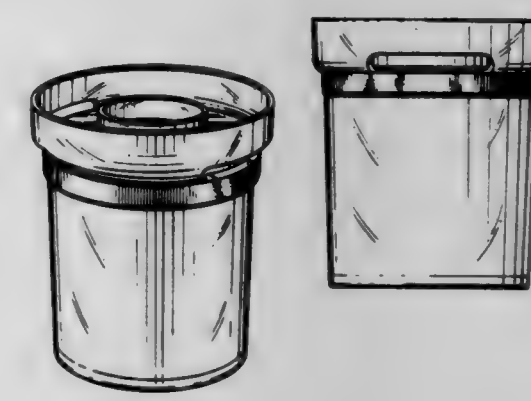
265,787
END SUPPORT FOR A COMBINED TABLE AND BENCH UNIT
DeWayne D. Berquist, Anoka, Minn., assignor to Aggressive Industries, Inc., Minneapolis, Minn.
Filed Sep. 16, 1980, Ser. No. 188,001
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



265,788
FINGER FOOD ATTACHMENT TRAY FOR A SAUCER
Moyle A. Swinn, Apt. 716 - 1170 Ramsey View Crescent, Sudbury, Ontario, Canada (P3E 2E4)
Filed May 16, 1978, Ser. No. 906,336
Claims priority, application Canada, Dec. 20, 1977, 2012771
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—39



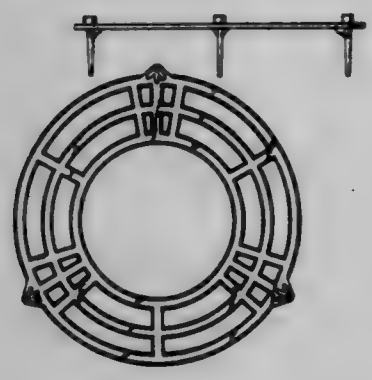
265,789
ICE BUCKET
Edgar F. Trombly, Grosse Pointe Farms, Mich., assignor to Thermo Serv, Inc., Anoka, Minn.
Filed Oct. 8, 1980, Ser. No. 195,046
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—78



265,790
RACK

Andrew V. Taylor, Sydney, Australia, assignor to Tayclox Industries Pty. Limited, Hornsby, Australia

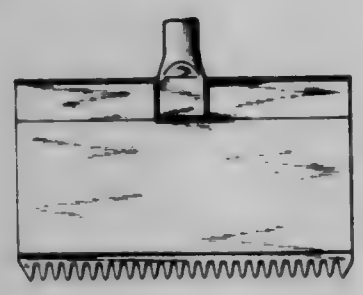
Filed May 16, 1980, Ser. No. 150,611
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—130



265,791
SHINGLE DIGGER

Gabriel J. Fieni, Douglassville, Pa. 19518

Filed Aug. 22, 1979, Ser. No. 68,629
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—88



265,792
WEDGE CLAMP FOR PANELS OR THE LIKE

Russell K. Winter, Crownsville; Nedim Savas, Wheaton; Joseph H. Snively, Bethesda, and Thomas D. Harvey, Silver Spring, all of Md., assignors to Russell William Ltd., Columbia, Md.

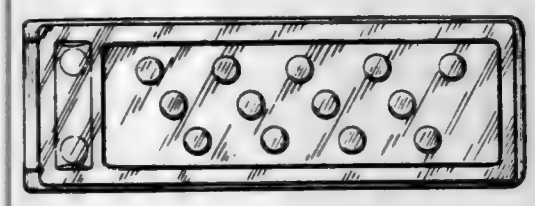
Filed Jun. 16, 1980, Ser. No. 159,860
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—394



265,793
TABLET DISPENSER

Newton C. Owen, Flemington, and Horace Carver, Frenchtown, both of N.J., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed May 9, 1980, Ser. No. 148,423
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—341



265,794
BOTTLE

Joseph Helfrich, Bouxwiller, France, assignor to Les Grands Chais deFrance, Bouxwiller, France

Filed Oct. 5, 1979, Ser. No. 82,304
Claims priority, application France, Apr. 6, 1979, 358
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370



265,795
BOTTLE

Keith S. Keith, Hollywood; Stephen G. Hauser, Tarzana, both of Calif., and Danny J. Beach, Kearney, Mo., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

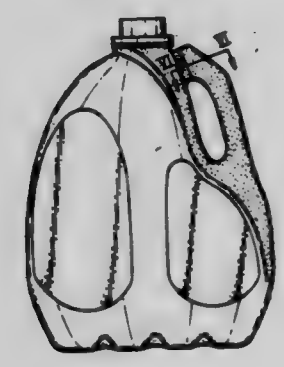
Filed Jan. 24, 1980, Ser. No. 114,875
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370



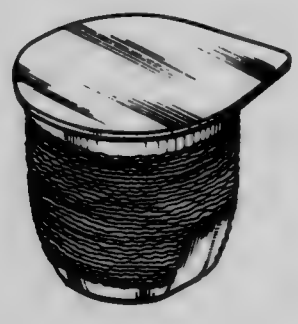
265,796
BOTTLE
Donald P. Denhoff, Marietta, Ga., assignor to Sewell Plastics, Inc., Atlanta, Ga.
Filed Jul. 10, 1980, Ser. No. 167,534
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378



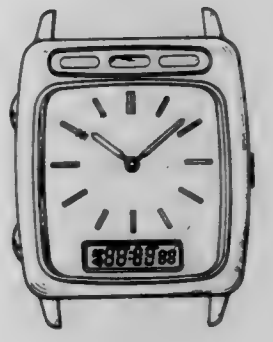
265,797
JUG
Richard L. Platte, 250 Sumac La., Ann Arbor, Mich. 48105
Filed Jul. 25, 1980, Ser. No. 172,299
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378



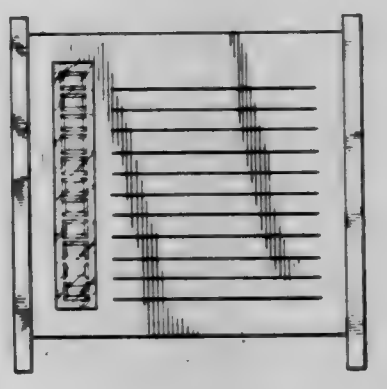
265,798
BEVERAGE CONTAINER
Giuseppe Ossola, Brescia, Italy, assignor to Idropejo S.p.A., Cogolo di Pejo, Italy
Filed Aug. 21, 1980, Ser. No. 180,231
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—429



265,799
WRISTWATCH
Takao Suzuki, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Sep. 18, 1980, Ser. No. 188,375
Claims priority, application Japan, Mar. 26, 1980, 55-11771
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



265,800
NOVELTY THERMORESPONSIVE LIQUID CRYSTAL INDICATING DEVICE
Charles Butera, and Ingela Butera, both of 2000-67 S. Escondido Blvd., Escondido, Calif. 92025
Filed May 14, 1979, Ser. No. 38,526
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



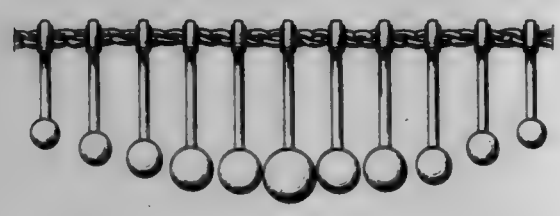
265,801
SENSOR FOR SOLAR AND WIND ENERGY MONITOR
Gaylord B. Buck, Denver, Colo., assignor to Aero Systems Research, Inc., Englewood, Colo.
Filed May 15, 1980, Ser. No. 150,193
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



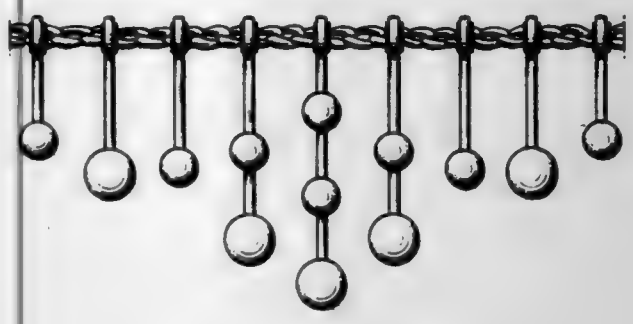
265,802
ANNUNCIATOR
Dana L. Vickery, Gardner, Mass., assignor to Simplex Time Recorder Co., Gardner, Mass.
Filed Apr. 14, 1980, Ser. No. 140,271
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—118



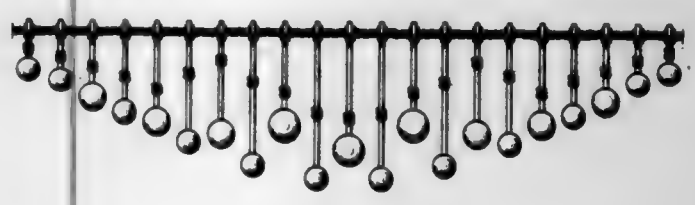
265,803
PEARL NECKLACE OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Sep. 26, 1980, Ser. No. 191,432
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—8



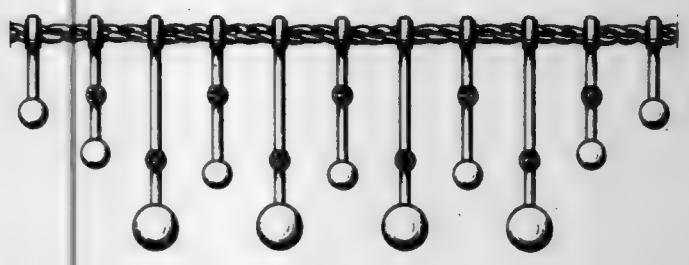
265,804
PEARL NECKLACE OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Sep. 26, 1980, Ser. No. 191,436
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—8



265,805
PEARL NECKLACE OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Sep. 26, 1980, Ser. No. 191,437
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—8



265,806
PEARL NECKLACE OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Sep. 26, 1980, Ser. No. 191,438
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—8



265,807
PEARL NECKLACE OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Sep. 26, 1980, Ser. No. 191,439
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—8



265,808
FINGER RING OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 7, 1980, Ser. No. 176,121
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—26



265,809
FINGER RING OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 7, 1980, Ser. No. 176,123
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—34





265,810
FINGER RING OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 7, 1980, Ser. No. 176,124
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—34

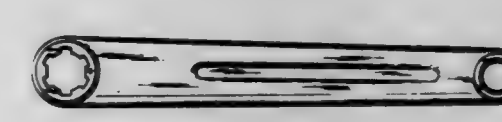


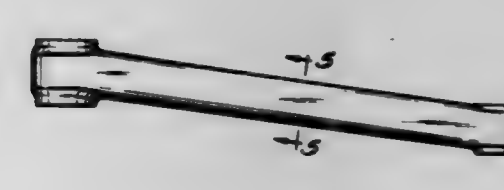


265,811
EARRING
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 7, 1980, Ser. No. 176,130
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—76

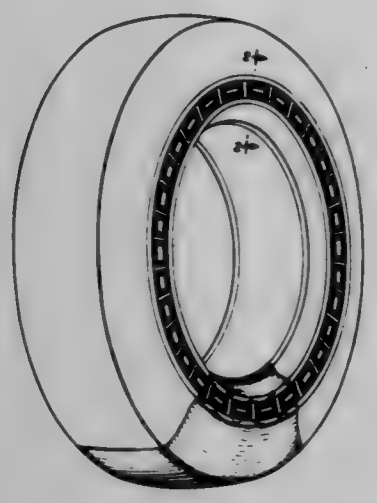


265,812
CRANK ARM FOR A BICYCLE CRANK ASSEMBLY
B. Linn Kastan, 724 Primrose La., Thousand Oaks, Calif. 91360
Filed May 27, 1980, Ser. No. 153,531
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—123

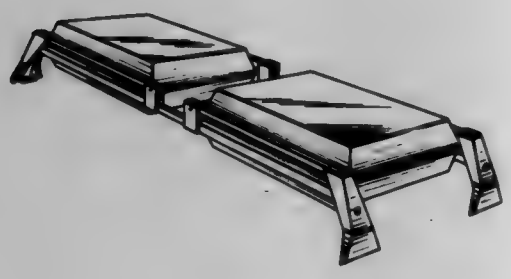




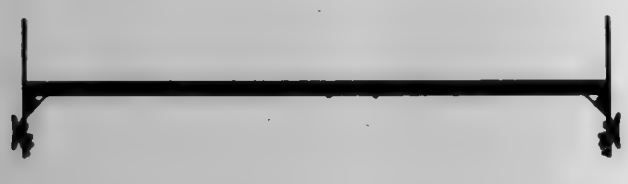
265,813
TIRE
Donald J. Sladky, Cuyahoga Falls, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Apr. 3, 1980, Ser. No. 136,857
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—152



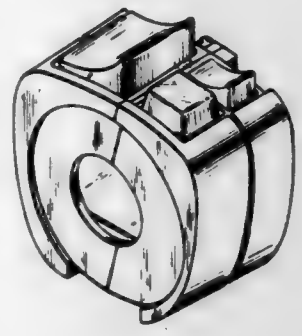
265,814
SKI AND LUGGAGE CARRIER FOR VEHICLES
Jan-Erik Brorsson, Häggatan 10, S-510 54 Brämhult, Sweden
Filed May 6, 1980, Ser. No. 147,070
Claims priority, application Sweden, Nov. 13, 1979, 792497
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



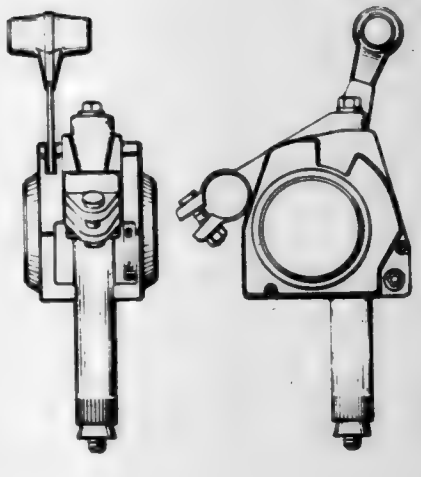
265,815
VAN ROOF RACK
John P. Francis, 13 Elm St., Brookline, Mass. 02146
Filed Jun. 16, 1980, Ser. No. 160,103
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



265,816
MOTORCYCLE HANDGRIP CONTROL
Daniel A. Matre, Milwaukee, Wis., assignor to Harley Davidson Motor Co., Inc., Milwaukee, Wis.
Filed May 30, 1980, Ser. No. 154,698
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—174



265,817
DESIGN FOR A BICYCLE GEAR SHIFTER
Daniel G. Hahn, Olney, Ill., assignor to AMF Incorporated, White Plains, N.J.
Filed Feb. 14, 1980, Ser. No. 121,558
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—179



265,818
VEHICLE WHEEL

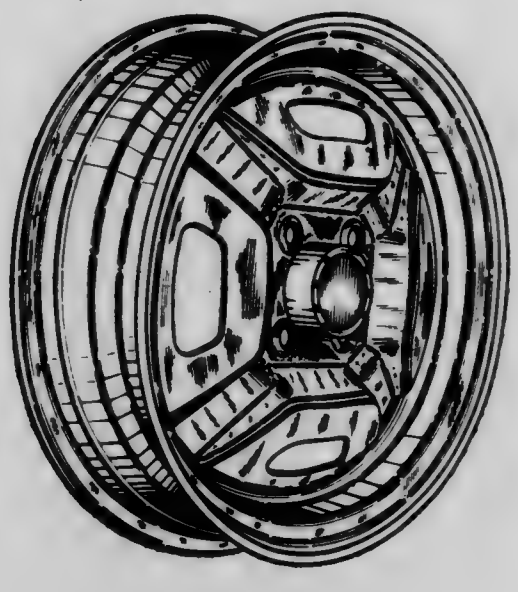
Donald J. Reid, Pleasant Ridge, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.

Filed Jan. 25, 1980, Ser. No. 115,318

Term of patent 14 years

Int. Cl. D12—*16*

U.S. Cl. D12—211



265,819
VEHICLE WHEEL

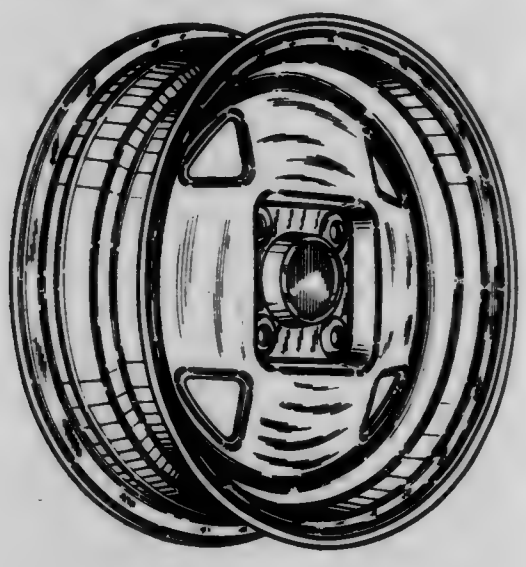
Donald J. Reid, Pleasant Ridge, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.

Filed Jan. 25, 1980, Ser. No. 115,540

Term of patent 14 years

Int. Cl. D12—*16*

U.S. Cl. D12—211



265,820
MOTOR BOAT

Keisuke Tomonaga, Akashi; Hiroshi Nishida, and Takeshi Miyazaki, both of Miki, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

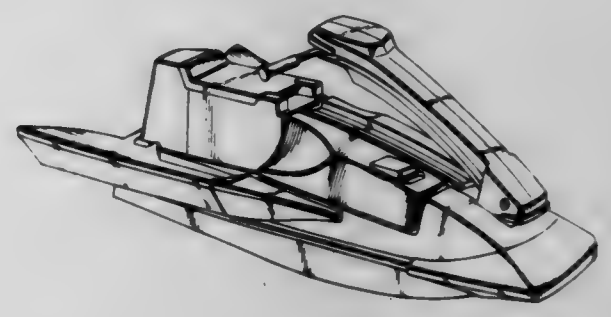
Filed Apr. 16, 1980, Ser. No. 140,683

Claims priority, application Japan, Oct. 18, 1979, 54-43792

Term of patent 14 years

Int. Cl. D12—*06*

U.S. Cl. D12—307



265,821
COMBINED CASSETTE RECORDER AND RADIO RECEIVER

Takao Okada, Kyoto; Setsuo Miyanaga, Neyagawa, and Benito Mishiro, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

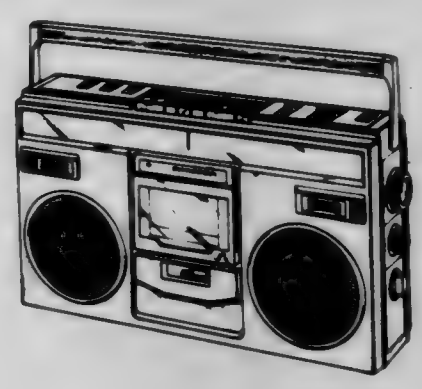
Filed Feb. 4, 1980, Ser. No. 117,925

Claims priority, application Japan, Aug. 2, 1979, 54-32436

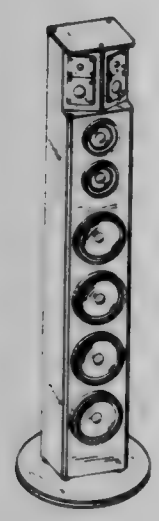
Term of patent 14 years

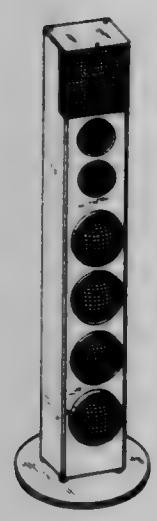
Int. Cl. D14—*01, 03*

U.S. Cl. D14—5

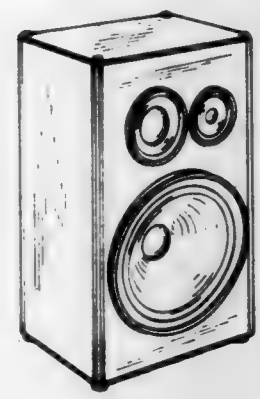


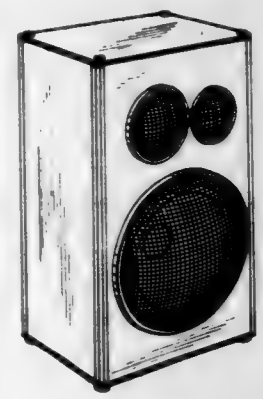
265,822
LOUDSPEAKER COLUMN
Peter Hartwein, Koenigstein, and Peter Schneider, Kronberg, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Aug. 22, 1979, Ser. No. 68,714
Term of patent 3½ years
Int. Cl. D14—*01*
U.S. Cl. D14—34



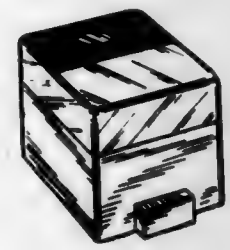


265,823
LOUDSPEAKER
Peter Hartwein, Königstein, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Aug. 22, 1979, Ser. No. 68,718
Term of patent 3½ years
Int. Cl. D14—*01*
U.S. Cl. D14—34

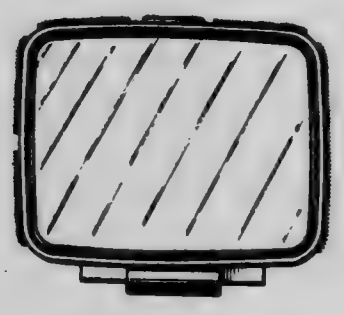


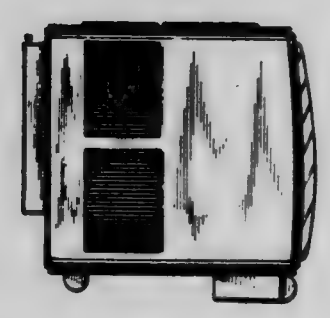


265,824
TELEPHONE KEY
Donald Foggia, Ocean, N.J., and Roman Pomponi, Norwalk, Conn., assignors to TIE/Communications, Inc., Shelton, Conn.
Filed Aug. 24, 1978, Ser. No. 936,337
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—59



265,825
COLOR TELEVISION RECEIVER
Ennio Brion, Milan, Italy, assignor to Brionvega S.p.A., Milan, Italy
Filed Jan. 4, 1980, Ser. No. 109,682
Claims priority, application Italy, Jul. 11, 1979, 35USC119
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—81

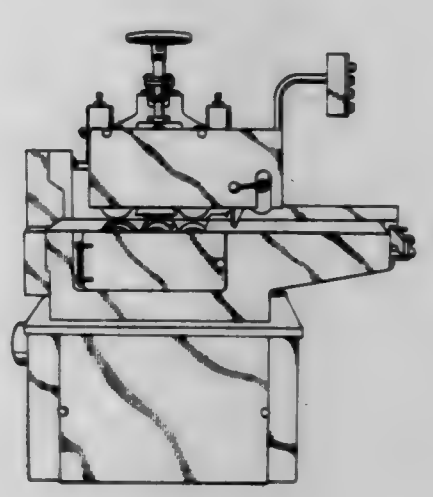




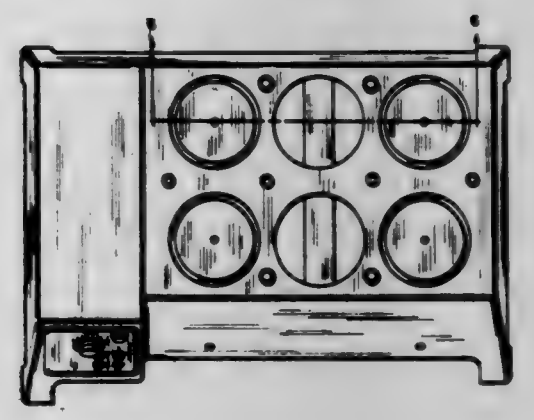
265,826
ELECTRIC CULTIVATOR
Ronald J. Holmstadt, Bloomington, Minn.; L. Ralph Sorge, New Canaan, and Robert J. Tiedemann, Stamford, both of Conn., assignors to The Toro Company, Minneapolis, Minn.
Filed May 12, 1980, Ser. No. 149,273
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—12



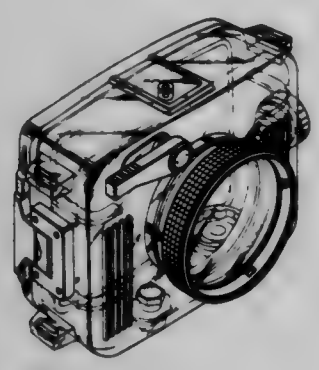
265,827
SHORT LENGTH GANG RIP SAW
Walter O. Paulson, Jr., 1433 NW. Quimby, Portland, Oreg. 97209
Filed Jun. 21, 1979, Ser. No. 50,657
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—133



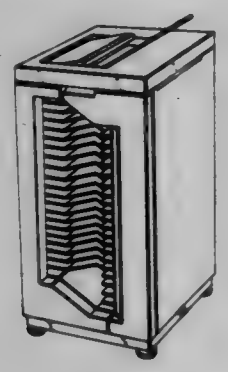
265,828
ELECTROPLATER
Harold Jaffe, Perrysburg; Roberto Blinder, and Lowell J. Jaffe, both of Toledo, all of Ohio, assignors to Jaffe Manufacturing Company, Toledo, Ohio
Filed Jul. 25, 1979, Ser. No. 60,808
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—144



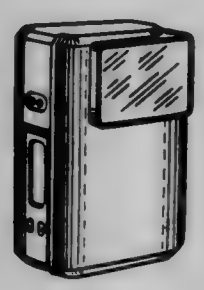
265,829
WATERPROOF HOUSING FOR CAMERA
Tsunezo Shimoda, Kamakura, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Aug. 26, 1980, Ser. No. 181,630
Claims priority, application Japan, Feb. 27, 1980, 55-007250
Term of patent 7 years
Int. Cl. D16—*01*
U.S. Cl. D16—2



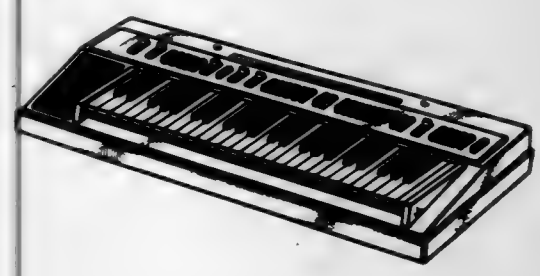
265,830
SORTER FOR ELECTROSTATIC COPIER
Kenichi Nakade, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Sep. 11, 1980, Ser. No. 186,530
Claims priority, application Japan, Mar. 11, 1980, 55-009352
Term of patent 7 years
Int. Cl. D16—*03*
U.S. Cl. D16—32



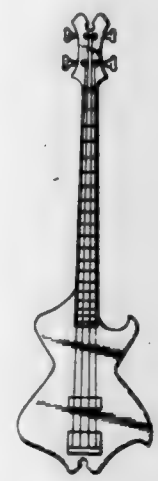
265,831
ELECTRONIC FLASH DEVICE
Herbert Schultes, Fürstenfeldbruck, and Karl-Heinz Rubner, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Jul. 31, 1980, Ser. No. 175,189
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42



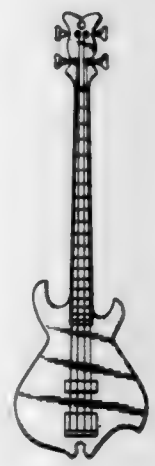
265,832
ELECTRIC ORGAN
Yasuhiro Kira; Yoshiro Watabiki; Nobushiro Aiba, and Katsumi Koyama, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Oct. 2, 1980, Ser. No. 193,521
Claims priority, application Japan, Apr. 5, 1980, 55-13.453
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—5



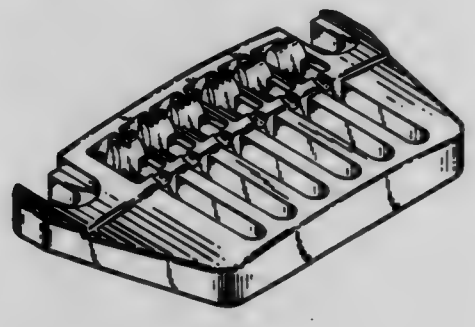
265,833
BASS GUITAR OR SIMILAR ARTICLE
Michael N. Sciuto, Apt. E, 503 Castle Dr., Baltimore, Md. 21212
Filed Apr. 29, 1980, Ser. No. 144,939
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14



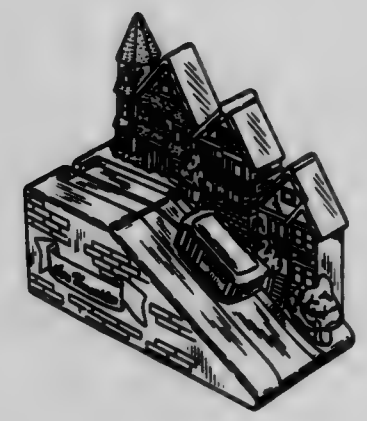
265,834
BASS GUITAR OR SIMILAR ARTICLE
Michael N. Sciuto, Apt. E, 503 Castle Dr., Baltimore, Md. 21212
Filed Apr. 29, 1980, Ser. No. 144,940
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14



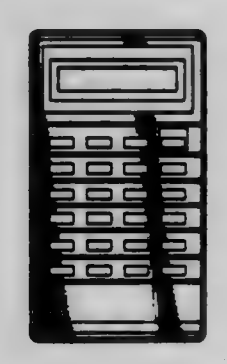
265,835
STRINGED INSTRUMENT COMBINED BRIDGE AND TAILPIECE
James H. Rickard, Harwinton, Conn., assignor to Ovation Instruments, Inc., Bloomfield, Conn.
Filed Jun. 23, 1980, Ser. No. 162,388
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—21



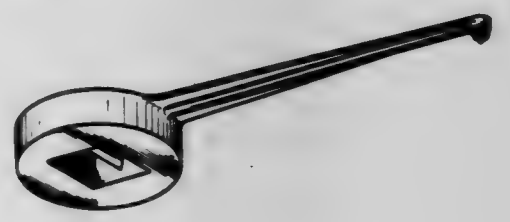
265,836
MUSIC BOX
Chong T. Ahn, 923 Fulton Ave., San Leandro, Calif. 94577
Filed Jul. 25, 1980, Ser. No. 172,713
Term of patent 14 years
Int. Cl. D17—*05*
U.S. Cl. D17—24



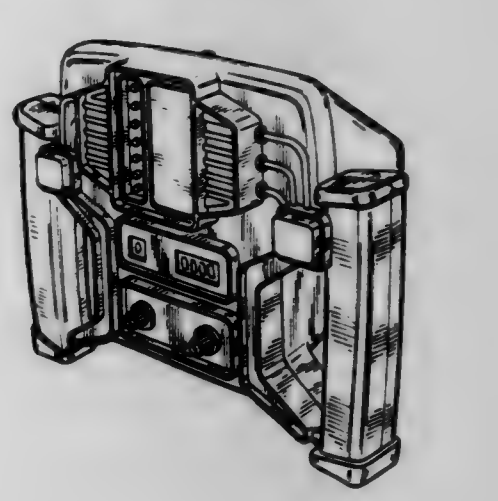
265,837
ELECTRONIC CALCULATING MACHINE
Masafumi Yamagami, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Jan. 9, 1980, Ser. No. 110,643
Claims priority, application Japan, Jul. 12, 1979, 54-29189
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



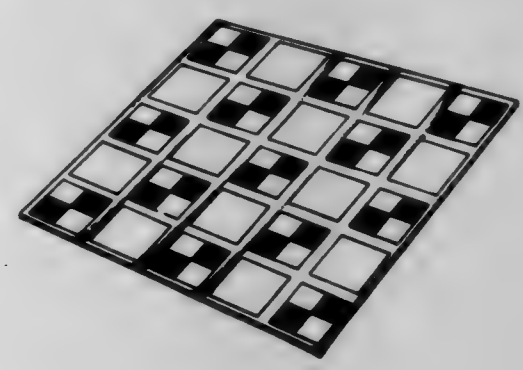
265,838
DISPOSABLE RECORDING PEN WITH INK RESERVOIR
John G. Bunning, Orange County, Calif., assignor to Esterline Angus Instrument Corporation, Indianapolis, Ind.
Filed Sep. 15, 1980, Ser. No. 187,212
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—41



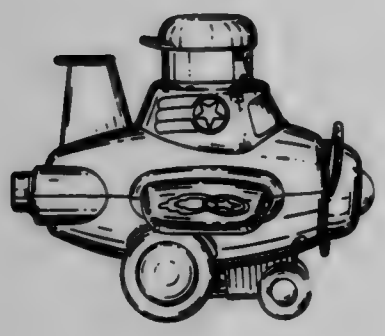
265,839
ELECTRONIC DRAG RACING TOY
Kenneth M. Kite, Cincinnati, and David W. Moine, Canton, both of Ohio, assignors to CPG Products Corp., Minneapolis, Minn.
Filed Jun. 13, 1980, Ser. No. 159,401
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



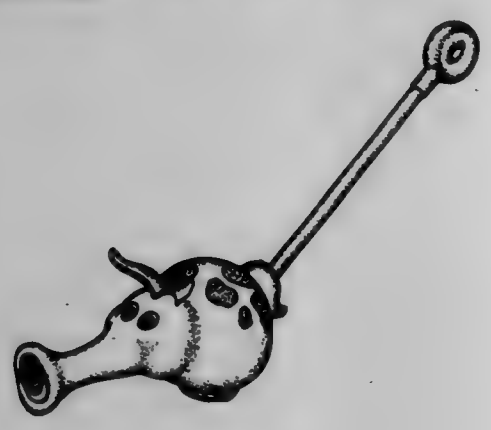
265,840
GAME BOARD
Luis Campos, 8454 Sharp Ave., Sun Valley, Calif. 91352
Filed Aug. 26, 1980, Ser. No. 181,641
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—24



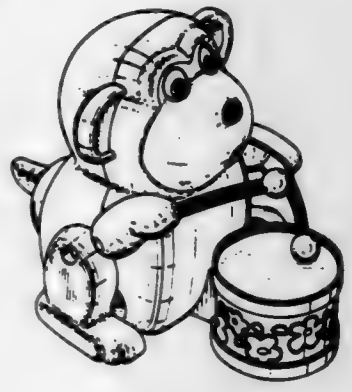
265,841
COMBINED TOY AIRPLANE AND FIGURE THEREFOR
Wai-Kuen Tung, Kowloon, Hong Kong, assignor to The Best Toys Co. Ltd., Kowloon, Hong Kong
Filed Feb. 2, 1981, Ser. No. 230,373
Claims priority, application United Kingdom, Oct. 20, 1980, 997123
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—90



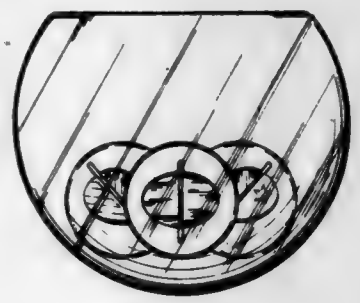
265,842
ANIMAL PUSH TOY
Michael Conners, and Thomas P. Osborne, both of Cincinnati, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.
Filed Jan. 26, 1979, Ser. No. 6,603
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



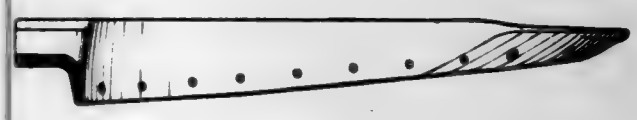
265,843
ANIMAL FIGURE TOY
Wai K. Tung, Kowloon, Hong Kong, assignor to The Best Toys Co., Ltd., Kowloon, Hong Kong
Filed Aug. 4, 1980, Ser. No. 174,846
Claims priority, application United Kingdom, Feb. 8, 1980, 993551
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—156



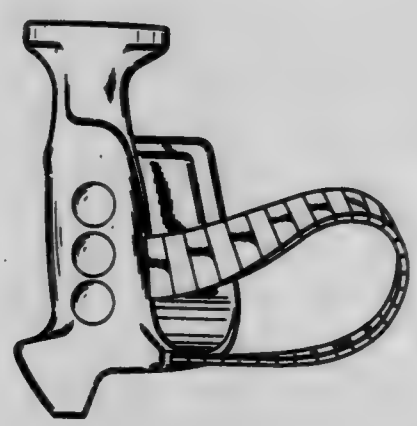
265,844
COMBINED BALL COLLECTION AND RECEPTACLE
Danny E. Simpson, Baltimore, Md., and David M. Williams, Montreal, Canada, assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Nov. 19, 1979, Ser. No. 95,828
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—204



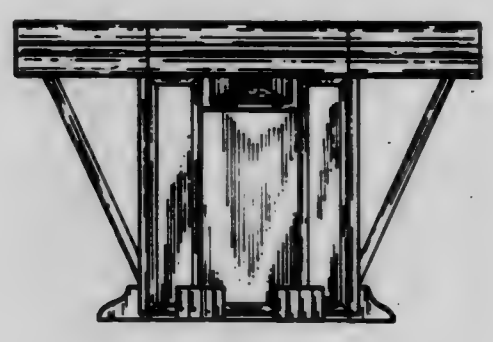
265,845
LACROSSE STICK HEAD
WilliamH. Brine, Jr., Weston, and Peter J. Brine, Wellesley, both of Mass., assignors to W. H. Brine Company, Milford, Mass.
Filed Nov. 24, 1980, Ser. No. 209,335
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—210



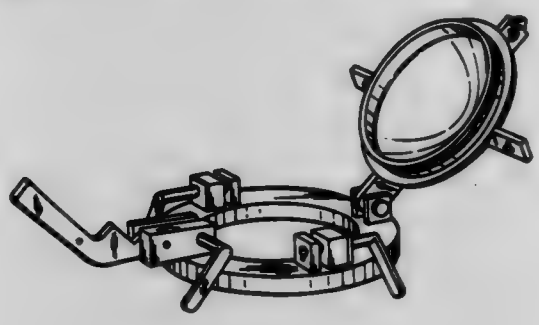
265,846
HANDLE FOR SKI POLE
Helmut Scholz, Pferrenberg, Fed. Rep. of Germany, assignor to DSI-Sportartikel GmbH, Weitnau, Fed. Rep. of Germany
Filed Apr. 16, 1980, Ser. No. 140,859
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 180W
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—230



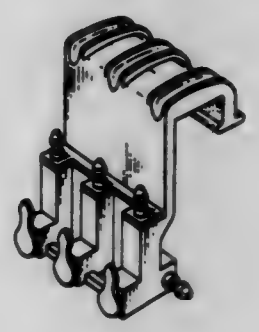
265,847
GAME TABLE
Vernon C. Nielsen, 1551 E. 1700 South, Salt Lake City, Utah 84101
Filed Feb. 11, 1980, Ser. No. 120,260
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—232



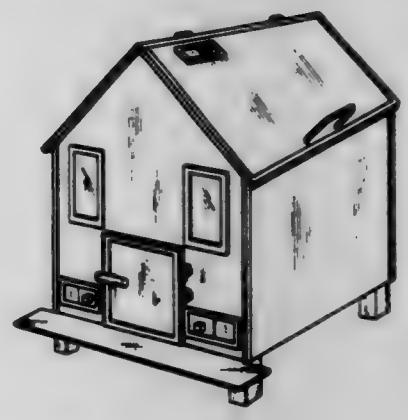
265,848
HIGH PRESSURE COVER
Tord G. I. Johansson, Karlsängen, S-760 21 VäTö, Sweden
Filed Jun. 11, 1979, Ser. No. 47,257
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, URA 1220/78
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—1



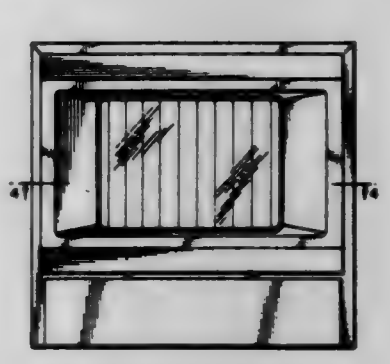
265,849
AQUARIUM GANG VALVE
Ying-Young Ng, Chai Wan, Hong Kong, assignor to Veny Plastic Co., Ltd., Hong Kong, Hong Kong
Filed Jun. 2, 1980, Ser. No. 155,067
Claims priority, application United Kingdom, Dec. 19, 1979, 79992924
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



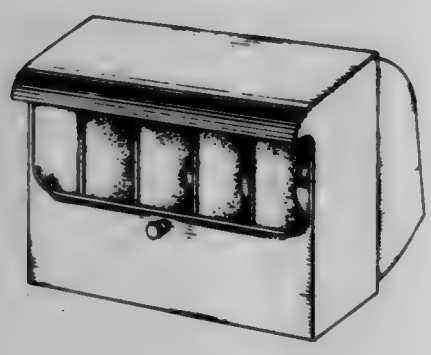
265,850
HEATING STOVE
Arnie C. Bradford, Rte. 4, Box 210, Burnsville, N.C. 28714
Filed Jul. 28, 1980, Ser. No. 173,087
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



265,851
FACIA FOR A DOMESTIC HEATING APPLIANCE
Thomas A. Babbage, Walton-on-Thames, England, assignor to Trianco Redfyre Limited, Surrey, England
Filed May 28, 1980, Ser. No. 153,945
Claims priority, application United Kingdom, Nov. 29, 1979, 992609
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—128



265,852
ROOM HUMIDIFIER
James E. Vesper, 2408 Stratton Dr., Potomac, Md. 20854
Filed Sep. 19, 1980, Ser. No. 189,384
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—147



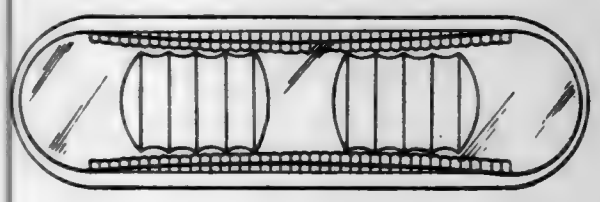
265,853
ORTHOPEDIC GARMENT
Dennis V. Meloy, Jackson, Mich., assignor to Camp International, Inc., Jackson, Mich.
Filed Jan. 24, 1980, Ser. No. 115,109
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—64



265,854
LIGHTING FIXTURE FOR PARTITION WALLS
Paul R. Maguire, 4284 Sea View La., Los Angeles, Calif. 90065
Filed Dec. 3, 1979, Ser. No. 99,660
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—78



265,855
MARKER LAMP LENS
Karel Urbanek, Weston, and Arthur F. Bleiweiss, Toronto, both of Canada, assignors to Dominion Auto Accessories Limited, Toronto, Canada
Filed Apr. 2, 1979, Ser. No. 25,775
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—122



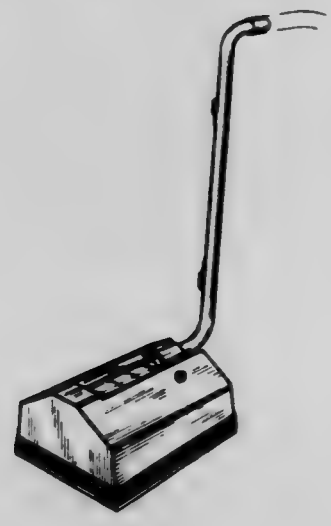
265,856
COMBINED AQUARIUM AND AVIARY
Clayton Totten, P.O. Box 66, Sedalia, N.C. 27342
Filed Jan. 21, 1980, Ser. No. 113,598
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—11



265,857
CARPET CLEANING TOOL

Jack L. Burgoon, Toledo, Ohio, and John M. Hayes, Indianapolis, Ind., assignors to The Scott & Fetzer Company, Lakewood, Ohio and Earl Grissmer Company, Inc., Indianapolis, Ind.

Filed Mar. 20, 1980, Ser. No. 132,278
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—32



265,858
LIQUID DISPENSER HANDLE FOR HOUSEHOLD SCRUBBING PAD

John W. Spirk, Jr., Cleveland Heights, Ohio, assignor to Transco Plastics Corporation, Bedford Heights, Ohio

Filed Jun. 27, 1980, Ser. No. 163,802
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—35



265,859
COMBINED POST AND MAIL BOX

William K. Gross, 4767 Bilmark Ave., Fort Myers, Fla. 33901

Filed Oct. 17, 1979, Ser. No. 85,658
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—32



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TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.P.M. Wood Products Pty. Ltd.: *See—*
Willington, John M., 4,344,237, Cl. 34-191.000.

Aaby, Trygve; and Rosenberg, Barnett. Microprobe for monitoring biophysical phenomena associated with cardiac and neural activity. 4,344,440, Cl. 128-653.000.

Aaron, Robert L.; and Murphy, Eugene F., to International Telephone and Telegraph Corporation. Vehicle mounted mobile business data handling system. 4,345,147, Cl. 235-385.000.

AB Ferrosan: *See—*
Hernestam, Sven E. H.; Martinsson, Kjell B.; Christensson, Erik G.; and Olsson, Nils-Goran E., 4,344,952, Cl. 424-267.000.

Abbin, Joseph P., Jr.; Devaney, Howard F.; and Hake, Lewis W., to United States of America, Energy. Acceleration switch. 4,345,124, Cl. 200-61.530.

Abbott Laboratories: *See—*
Larkin, Mark E.; and Balistreri, Thomas W., 4,344,472, Cl. 150-8.000.

Abex Corporation: *See—*
Farr, Aaron V.; and Saunders, Robert L., 4,344,200, Cl. 14-71.500.

Academy of Applied Science, Inc., The: *See—*
Wyckoff, Charles W., 4,345,023, Cl. 430-364.000.

Acco Industries Inc.: *See—*
Gilmore, William J., 4,344,518, Cl. 192-111.00A.

Achtnig, Klaus-Peter: *See—*
Forberg, Horst; and Achtnig, Klaus-Peter, 4,345,294, Cl. 361-119.000.

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Adolphi, Heinrich: *See—*
Schwarz, Gerd-Ulrich; Kiehs, Karl; and Adolphi, Heinrich, 4,344,961, Cl. 424-285.000.

Advance Valve Installations: *See—*
Galos, Imre, 4,344,460, Cl. 138-89.000.

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Hasse, Peter; Wiesinger, Johannes; and Pivit, Erich, 4,345,293, Cl. 361-117.000.
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Doucet, Henri; and Tournes, Christian, 4,345,329, Cl. 372-2.000.

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Ishii, Yoshiaki; Kume, Tsutomu; Ando, Naoyoshi; and Fujinami, Shosaku, 4,344,373, Cl. 110-347.000.

Agfa-Gevaert AG: *See—*
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Birgmeir, Klaus; and Stadler, Klaus, 4,344,666, Cl. 350-6.900.
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Aguilar, Abel. Dry dentifrice powders. 4,344,931, Cl. 424-52.000.

Aho, Wilho V., Jr.: *See—*
Trenschel, Donald R.; and Aho, Wilho V., Jr., 4,344,740, Cl. 416-221.000.

Air Products and Chemicals, Inc.: *See—*
Boyle, John F.; Halper, Barry J.; Link, James C.; and Mullane, John C., Jr., 4,344,290, Cl. 62-48.000.
Hyman, Floyd L.; and Ziv, Martin H., 4,345,079, Cl. 544-351.000.

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Masterson, Robert C., Jr.; Thomas, R. Gordon; and Johnson, John G., 4,344,656, Cl. 303-2.000.

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Aisin Seiki Company, Limited: *See—*
Iwasaki, Shinichiro, 4,344,331, Cl. 73-861.760.

Aisin Seiki Kabushiki Kaisha: *See—*
Amano, Hiroyuki; Yoshida, Tsuyoshi; and Shibata, Kazuhiko, 4,345,240, Cl. 340-345.000.
Kawai, Shunichi, 4,344,335, Cl. 74-674.000.

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Amano, Hiroyuki; Yoshida, Tsuyoshi; and Shibata, Kazuhiko, 4,345,240, Cl. 340-345.000.

Aizawa, Kenshiro; and Okada, Hisashi, to Nippon Gakki Seizo Kabushiki Kaisha. Pickup cartridge for reproducing signals recorded on a 45-45 stereophonic record disk. 4,345,322, Cl. 369-139.000.

Ajinomoto Company Incorporated: *See—*
Sugiyama, Katsumi; Takeda, Hideo; and Sato, Hiroko, 4,345,091, Cl. 560-163.000.

Akagi, Noriyuki; Ogawa, Yoshinari; and Sakai, Kouichi, to Teijin Limited. Polyethylene terephthalate resin compositions. 4,344,874, Cl. 524-296.000.

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Peck, Albert W., 4,344,508, Cl. 187-9.00R.

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Bladh, Per, 4,344,976, Cl. 426-472.000.

All, Frank E.; and Duncan, Gary L., to Mobil Oil Corporation. Oriented polypropylene film substrate and method of manufacture. 4,345,005, Cl. 428-461.000.

Allaway, Philip N.; Baginski, Richard M.; Liu, Don K. K.; and Teixeira, Theodore M., to Procter & Gamble Company, The. Spray-dried aluminosilicate detergents containing silicate and metaborate. 4,344,871, Cl. 252-531.000.

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Ostrowski, Arthur E.; and Polich, Joseph M., 4,344,381, Cl. 118-626.000.

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Yoshikawa, Yoshihiro; Katabami, Takao; Fujinaga, Katsumi; and Kobayashi, Yoshiaki, 4,344,327, Cl. 73-626.000.

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Bonsen, Pieter; Wong, Patrick S.; and Theeuwes, Felix, 4,344,929, Cl. 424-15.000.

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Yavnieli, Mordechai, 4,344,776, Cl. 55-129.000.

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Cherney, Jerome A.; and Pawlowski, Thomas D., 4,345,133, Cl. 219-10.55E.
Schroeder, Roger A., 4,344,584, Cl. 242-56.00A.

American Cyanamid Company: *See—*
Giglia, Robert D., 4,344,674, Cl. 350-357.000.
Mueller, Michael J.; and Montgomery, Carroll S., 4,345,094, Cl. 562-425.000.
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Tomcufcik, Andrew S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., 4,344,954, Cl. 424-270.000.

American Hoechst Corporation: *See—*
McFadden, Arthur R.; and Aultz, Daniel E., 4,345,087, Cl. 549-44.000.

Ong, Helen H.; and Profitt, James A., 4,345,081, Cl. 546-17.000.
American Home Products Corporation: *See*—
Martin, Frederick H.; and Tsuk, Andrew G., 4,344,934, Cl. 424-80.000.
American Optical Corporation: *See*—
Nordahl, John G., 4,345,334, Cl. 455-50.000.
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Ametek, Inc.: *See*—
Fulop, Gabor F.; Betz, Jacob F.; Meyers, Peter V.; and Doty, Mitchell E., 4,345,107, Cl. 136-255.000.
AMP Incorporated: *See*—
Chang, Paul S., 4,345,323, Cl. 370-9.000.
Corman, Ned E.; Kandybowski, Steven J.; Scheingold, William S.; and Youngfleish, Frank C., 4,345,267, Cl. 357-81.000.
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Racilla, John J.; and Weber, Robert N., 4,344,665, Cl. 339-99.00R.
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Kirk, Kenneth L., 4,344,645, Cl. 285-61.000.
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Anderson, Paul L.; and Brittain, Darryl A., to Sandoz, Inc. Anti-inflammatory 1-alkyl-1-phenyl-butanes. 4,344,966, Cl. 424-343.000.
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Angelo, James F., II. Apparatus for continuously carbonizing and activating carbonaceous materials. 4,344,821, Cl. 201-33.000.
Angstmann, Heinz-Dieter: *See*—
Kothe, Wilfried; and Angstmann, Heinz-Dieter, 4,344,764, Cl. 8-138.000.
Angus Motor Corporation: *See*—
Angus, Neil H., 4,345,174, Cl. 310-24.000.
Angus, Neil H., to Angus Motor Corporation. Electromagnetic engine. 4,345,174, Cl. 310-24.000.
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Chachin, Viktor N.; Kolos, Vladimir K.; Botyan, Viktor V.; Luzgin, Vladimir I.; and Antonenkov, Igor K., 4,344,313, Cl. 72-453.100.
Antoniw, Walter W.: *See*—
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Aoda, Yukio; Ninomiya, Hiroshi; Yoshida, Kooichi; and Koyanagi, Osamu, to Nippon Kayaku Kabushiki Kaisha. Pharmaceutical vehicle. 4,344,968, Cl. 424-365.000.
Aoki, Katsuhiko: *See*—
Komuro, Keigo; Yamada, Matsuichi; Aoki, Katsuhiko; Yoshikawa, Yoshihiko; Itoh, Fumio; Takeda, Fumio; and Ishida, Osami, 4,345,255, Cl. 343-100.0PE.
Aoki, Kozo: *See*—
Takahashi, Osamu; Ohki, Nobutaka; and Aoki, Kozo, 4,345,016, Cl. 430-214.000.
Apezynski, Frederick A. Wheel trim retention. 4,344,654, Cl. 301-37.00R.
Aqua-Chem, Inc.: *See*—
Chronowski, Robert A., 4,344,372, Cl. 110-245.000.
Arakawa, Hiroshi: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Yoshida, Kazunori; Suzuki, Fuzio; Itoh, Yusuke; Suzuki, Hajime; Arakawa, Hiroshi; and Kobayashi, Akira, 4,344,465, Cl. 139-435.000.
Arcamone, Federico: *See*—
Suarato, Antonino; Penco, Sergio; and Arcamone, Federico, 4,345,070, Cl. 536-17.00A.
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Archenholtz, Ake; Caisander, Yngve; and Haas, Gustav, to ASEA Aktiebolag. Means for removing the lining of a crucible furnace. 4,344,652, Cl. 299-70.000.
Architectural Art Mfg., Inc.: *See*—
Thom, Wenzel W., 4,344,719, Cl. 403-297.000.
Arendt, Hans F.; and Hoffmann, Ernst H., to Hoesch Werke Aktiengesellschaft. Procedure for washing clothes. 4,344,198, Cl. 8-158.000.
Arendt, Henry P., to Otis Engineering Corporation. Lock open mechanism for subsurface safety valve. 4,344,602, Cl. 251-58.000.
Ark-Les Corporation: *See*—
Walkup, William B., 4,344,664, Cl. 339-99.00R.
Armco Inc.: *See*—
Haselkorn, Michael H., 4,344,802, Cl. 148-27.000.
Armstrong World Industries, Inc.: *See*—
Shelley, Donald L., 4,345,204, Cl. 324-61.00R.
Arndt, Friedrich: *See*—
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Arnolds, Karlheinz E. H.: *See*—
MacPhee, John; Gasparrini, Charles R.; and Arnolds, Karlheinz E. H., 4,344,361, Cl. 101-425.000.
Arquie, Louis; Bricot, Claude; and Thirouard, Michel, to Thomson-CSF. Semiconductor laser source optical reading head. 4,345,321, Cl. 369-46.000.
Arulpragasam, Jega A.; Giggi, Robert A.; Lary, Richard F.; and Sullivan, Daniel T., to Digital Equipment Corporation. Relating to cached multiprocessor system with pipeline timing. 4,345,309, Cl. 364-200.000.
Asaba, Hirosi: *See*—
Fujita, Kenji; Korehisa, Kazuo; Asaba, Hirosi; Harada, Hideo; and Shibuya, Tsuneo, 4,344,204, Cl. 15-93.00A.
Asahi-Dow Limited: *See*—
Hoki, Tsuneo; and Matsuki, Yutaka, 4,345,041, Cl. 521-94.000.
Asahi Glass Company, Ltd.: *See*—
Yamabe, Masaaki; Kojima, Gen; and Kaya, Seitoku, 4,345,057, Cl. 526-247.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Iriguchi, Norio; Unno, Hiroshi; and Tsuda, Nobuaki, 4,344,560, Cl. 233-19.00A.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kohmoto, Shinsuke; and Haneishi, Yasuyuki, 4,344,689, Cl. 354-286.000.
Asai, Tadamichi; and Nakamura, Kousuke, to Hitachi, Ltd. Resistor glass seal spark plug. 4,345,179, Cl. 313-136.000.
Asaida, Takashi: *See*—
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Asano, Shiro; Shizuka, Kohei; Kambara, Yoshihiko; Mikami, Junji; Kato, Hiroshi; and Honda, Tadatoshi, to Mitsui Toatsu Chemicals, Inc. Process for purifying an aqueous solution of acrylamide. 4,345,101, Cl. 564-206.000.
Aschberger, Anton A.; and Walter, John, to Continental Group, Inc., The. Pilferproof closure with mechanical interlock. 4,344,545, Cl. 220-307.000.
ASEA Aktiebolag: *See*—
Archenholtz, Ake; Caisander, Yngve; and Haas, Gustav, 4,344,652, Cl. 299-70.000.
Ash, Gerald R.; and Cardwell, Richard H., to Bell Telephone Laboratories, Incorporated. Dynamic, non-hierarchical arrangement for routing traffic. 4,345,116, Cl. 179-18.0EA.
Aso, Kinichi: *See*—
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Astrove, Edgar. Medication directing aid. 4,344,430, Cl. 128-233.000.
Ateliers des Charmilles, S.A.: *See*—
Semon, Georges; and Wavre, Alain, 4,345,131, Cl. 219-69.00G.
Atlantic Richfield Company: *See*—
Gaul, James M.; and Nguyen, Tinh, 4,344,798, Cl. 106-123.0LC.
Rowley, Paul R., 4,344,384, Cl. 119-4.000.
Taylor, Kenneth R., 4,344,718, Cl. 403-287.000.
Atlas Copco Aktiebolag: *See*—
Herron, Lorne R., 4,344,599, Cl. 248-660.000.
Aubert, Jean-Paul; and Genini, Maurice, to COFLEXIP. Flexible tubular conduit. 4,344,462, Cl. 138-130.000.
Aubin, Norbert T. Method and surgically implantable apparatus for providing fluid communication with the interior of the body. 4,344,435, Cl. 128-350.00R.
Auge, Wolfgang; Thelen, Bernd; Thiem, Karl-Werner; and Neeff, Rutger, to Bayer Aktiengesellschaft. Process for working up nitric acid. 4,344,827, Cl. 203-13.000.
Aultz, Daniel E.: *See*—
McFadden, Arthur R.; and Aultz, Daniel E., 4,345,087, Cl. 549-44.000.
Austin, John J., to Champion International Corporation. Expandable carton and blank for forming same. 4,344,537, Cl. 206-611.000.
Austin, Victor L. Fluid pipe guard device. 4,344,544, Cl. 220-86.0AT.
Autoipari Kutato Intezet: *See*—
Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karasz, Gyorgy, 4,344,640, Cl. 280-432.000.
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Lerner, Bernard, 4,344,557, Cl. 229-53.000.
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Showalter, Merle R., 4,344,394, Cl. 123-306.000.
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Nunes, Anizio G. R., 4,344,389, Cl. 123-25.00B.
Azuma, Kenkoku: *See*—
Matsuoka, Hiromasa; Azuma, Kenkoku; and Nishiyama, Enju, 4,344,778, Cl. 55-180.000.
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Hall, Dale R., 4,345,040, Cl. 521-53.000.
Kramer, James H., 4,344,806, Cl. 156-154.000.
Lindeen, Gale E., 4,344,236, Cl. 34-110.000.
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Baginski, Richard M.: *See*—
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Bailey, Frank W., to Fuelsaver Company. Process and apparatus utilizing common structure for combustion, gas fixation, or waste heat recovery. 4,344,479, Cl. 165-109.00R.

Bainbridge, Augustus S., to United States of America, Army. Bias-compensated, ionization sensor for gaseous media and method for attaining proper bias for same. 4,345,154, Cl. 250-375.000.

Baker, David E., to E-A-R Corporation. Target with energy-absorbing foam mat. 4,344,621, Cl. 273-26.00A.

Baker Instruments Corp.: *See*—
Parker, Bernard; and Parsonnet, Brian, 4,344,768, Cl. 23-230.00R.

Baker International Corporation: *See*—
Longacre, Kenneth E.; and Kruschke, Marvin R., Sr., 4,344,651, Cl. 299-5.000.

Balch, Joseph C. Solar-earth thermal system. 4,344,414, Cl. 126-434.000.

Baldwin-Gegenheimer Corporation: *See*—
MacPhee, John; Gasparrini, Charles R.; and Arnolds, Karlheinz E. H., 4,344,361, Cl. 101-425.000.

Balistreri, Thomas W.: *See*—
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Balwe, Thomas: *See*—
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Bambara, Joseph E., to Servo Corporation of America. Object identification system utilizing closed circuit television. 4,345,274, Cl. 358-108.000.

Bamford, Charles R.; Mellor, James R.; and Parker, Bernard, to Pilkington Brothers Limited. Optical glass fibres and method of forming such fibres. 4,345,036, Cl. 501-37.000.

Bancroft, John; Greenhalgh, John L.; and Smith, Ronald, to J. H. Fenner & Co. Ltd. Scraper device. 4,344,525, Cl. 198-499.000.

Banks, Bruce A.; Mirtich, Michael J.; and Sovey, James S., to United States of America, National Aeronautics and Space Administration. Surface texturing of fluoropolymers. 4,344,996, Cl. 428-141.000.

Barabas, Udo; Moehrmann, Karl-Heinz; and Christiansen, Hans-Marlin, to Siemens Aktiengesellschaft. Broad band switching system. 4,345,273, Cl. 358-86.000.

Bareiss, Raoul. Apparatus for the fast, painless treatment of varicose ulcers. 4,344,421, Cl. 128-24.00R.

Barger, Danny R.; Eggert, Carl A.; and Lloyd, Paul O., to Bell & Howell Company. Driver for postage meters. 4,345,193, Cl. 318-612.000.

Barmby, Lucy L. Anti-eating face mask. 4,344,424, Cl. 128-136.000.

Barner, Roland K. Arrow rest apparatus. 4,344,409, Cl. 124-24.00R.

Barolin, Nestor E. Rocker arm and pin holder assembly for a lens surfacing machine. 4,344,259, Cl. 51-216.0LP.

Barrett, Richard B.: *See*—
Gilson, James J.; and Barrett, Richard B., 4,344,577, Cl. 239-546.000.

Bartley, Burton H.: *See*—
Petty, Randall H.; and Bartley, Burton H., 4,344,926, Cl. 423-244.000.

Bartz, Richard O.: *See*—
Child, Frances W.; and Bartz, Richard O., 4,344,403, Cl. 123-538.000.
Child, Francis W.; and Bartz, Richard O., 4,344,402, Cl. 123-538.000.
Child, Francis W.; and Bartz, Richard O., 4,344,404, Cl. 123-538.000.

Basey, Gene, to Zenith Stairways & Building Products, Inc. Variable rake stair rail assembly. 4,344,604, Cl. 256-65.000.

BASF Aktiengesellschaft: *See*—
Baumann, Hans; and Oberlinner, Andreas, 4,345,073, Cl. 544-70.000.
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Blinne, Gerd; Naarmann, Herbert; and Penzien, Klaus, 4,344,870, Cl. 252-517.000.
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Horner, Michael; and Nissen, Axel, 4,344,886, Cl. 549-408.000.
Koenig, Karl-Heinz; Schwendemann, Volker; and Feuerherd, Karl-Heinz, 4,344,891, Cl. 260-453.00A.
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Steck, Werner; Sarnecki, Wilhelm; Marosi, Laszlo; Ohlinger, Manfred; and Loeser, Werner, 4,344,791, Cl. 75-0.5AA.
Widder, Rudi; Getto, Elmar; and Hettche, Albert, 4,344,862, Cl. 252-391.000.

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Batty, Mark J.; and Groth, Thomas, to Letraset USA, Inc. Sign lettering materials. 4,344,994, Cl. 428-41.000.

Bauer, Johann: *See*—
Thyret, Helmut E.; Balwe, Thomas; Beier, Gerhard; and Bauer, Johann, 4,345,056, Cl. 526-200.000.

Bauman, Thomas G.; and Kast, Jack L., to Remington Arms Company, Inc. Firing pin block for firearm having a reciprocating breech bolt. 4,344,246, Cl. 42-69.00B.

Baumann, Hans; and Oberlinner, Andreas, to BASF Aktiengesellschaft. 7,7'-Diamino derivatives of 2,2'-spirodibenzopyranes. 4,345,073, Cl. 544-70.000.

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Bayer Aktiengesellschaft: *See*—
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Bonse, Gerhard; and Blank, Heinz U., 4,345,100, Cl. 564-124.000.
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,344,960, Cl. 424-282.000.
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,344,963, Cl. 424-304.000.
Goedecke, Ralf; Hofen, Willi; Seifert, Hermann; and Siekmann, Gerd, 4,344,897, Cl. 260-502.00R.
Haupt, Walter; Warncke, Heinz; Friebe, Heinz W.; and Reimold, Dieter, 4,344,320, Cl. 73-40.700.
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Stendel, Wilhelm, 4,345,078, Cl. 544-244.000.
Kohler, Klaus; Woditsch, Peter; Rieck, Hilmar; and Rodi, Fritz, 4,344,799, Cl. 106-300.000.
Kuhle, Engelbert; Paulus, Wilfried; Genth, Hermann; and Brandes, Wilhelm, 4,344,962, Cl. 424-300.000.
Lahrs, Jurgen; Schubert, Klaus; Gosling, Claus; Jovcic, Dorde; Gleinig, Harald; and Skerhut, Reiner, 4,344,766, Cl. 8-524.000.
Naumann, Klaus; and Rauchschwalbe, Rudolf, 4,345,090, Cl. 560-124.000.
Niemers, Ekkehard; Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl G., 4,344,939, Cl. 424-226.000.
Niemers, Ekkehard; Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl G., 4,344,955, Cl. 424-271.000.
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Czech, Franz; Mauthe, Gerhard; and Pfrotzschner, Hans, 4,345,129, Cl. 200-163.000.
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Beaird, Suzanne M. T.: *See*—
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Beals, Jeffrey R.: *See*—
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Becher, Heinz-Manfred, to Celamerck GmbH & Co. KG. Process for recovery of benzene and chlorine from waste products. 4,344,829, Cl. 204-72.000.

Becker, Jon; Miller, G. Kirby; and Burney, Charles F., to GTE Products Corporation. Apparatus for making tape transducer. 4,344,810, Cl. 156-379.700.

Beckman Instruments, Inc.: *See*—
Louderback, Allan L.; and Foley, Thomas J., 4,344,864, Cl. 252-408.000.

Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., to General Electric Company. Load output level control circuit. 4,345,200, Cl. 323-350.000.

Begeman, Robert H.; Sanderson, Barry D.; Weiss, Donald C.; and Zeph, David L., to United States of America, Navy. Solid state commutator switch. 4,345,251, Cl. 340-825.860.

Behrenz, Wolfgang: *See*—
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,344,960, Cl. 424-282.000.

Behringwerke Aktiengesellschaft: *See*—
Sedlacek, Hans-Herald; and Seiler, Friedrich R., 4,344,938, Cl. 424-177.000.

Beier, Gerhard: *See*—
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Bell & Howell Company: *See*—
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Bell Telephone Laboratories, Incorporated: *See*—
Ash, Gerald R.; and Cardwell, Richard H., 4,345,116, Cl. 179-18.0EA.
Bobeck, Andrew H., 4,345,317, Cl. 365-9.000.
Bulger, Gary A.; Heck, Lyle D.; Huttemann, Robert D.; Morabito, Joseph M.; Pitetti, Raymond C.; Unger, Burton A.; and Vallere, Donald J., 4,344,223, Cl. 29-577.00C.
Craighead, Harold G.; Howard, Richard E.; and Tennant, Donald M., 4,344,816, Cl. 156-643.000.
Davis, James A.; MacPherson, William F.; Mussman, Harry E.; and Shackle, Peter W., 4,345,163, Cl. 307-252.00A.
Sampson, George P., III, 4,345,170, Cl. 307-443.000.

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Blais, Jules M., 4,344,722, Cl. 405-270.000.

Bendix Corporation, The: *See*—
Johannesen, Donald D.; and Kazmierzak, Andrew F., 4,344,510, Cl. 188-71.900.
Schuster, Robert W.; and Mittendorf, Gerald C., 4,344,281, Cl. 60-39.28R.
Woo, Ji Y., 4,344,512, Cl. 188-79.5GE.
Benner, Harold T., Jr.: *See*—
Dieterlen, Paul E.; and Benner, Harold T., Jr., 4,344,269, Cl. 53-459.000.
Bennett, David S.; and Hoath, Grantley R., to Molins Limited. Apparatus for conveying rod-like articles. 4,344,521, Cl. 198-404.000.
Berg, Christoph: *See*—
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Bergeron, David L.; and Smith, Paul H., to International Business Machines Corporation. Bipolar compatible electrically alterable read-only memory. 4,344,222, Cl. 29-571.000.
Bergquist, Frank H., to Harper-Wyman Company. Safety latch control arrangement for self-cleaning oven. 4,345,144, Cl. 219-413.000.
Berman, Herbert M.; and Hooper, Ira. Long span structural frame. 4,344,262, Cl. 52-227.000.
Berman, Joel. Insulated shade. 4,344,474, Cl. 160-121.00R.
Bernardini, Vincenzo; Garetti, Enzo; and Manfreddi, Renato, to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A. Self-correcting, solid-state-mass-memory organized by bits and with reconfiguration capability for a stored program control system. 4,345,319, Cl. 365-210.000.
Berner, Godwin, to Ciba-Geigy Corporation. Stabilization of acid catalyzed stoving lacquers. 4,344,876, Cl. 524-91.000.
Berney, Jean-Claude, to Jean-Claude Berney SA. Integrated circuit for a time-piece. 4,345,320, Cl. 368-87.000.
Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., to E. R. Squibb & Sons, Inc. Steroid derivatives and their use in radioimmunoassays. 4,345,096, Cl. 562-465.000.
Bertrand, Richard D.; Chingas, Gerard C.; Garroway, Allen N.; and Moniz, William B., to United States of America, Navy. Method and apparatus for obtaining enhanced NMR signals. 4,345,207, Cl. 324-308.000.
Bessman, Samuel P.; and Thomas, Lyell J., Jr. Piezoelectric driven diaphragm micro-pump. 4,344,743, Cl. 417-317.000.
Bethlehem Steel Corporation: *See*—
Gerdes, John H., Jr., 4,344,819, Cl. 201-1.000.
Kihlstrom, Ernest H., 4,344,232, Cl. 33-143.00L.
Schwartz, S. Robert; Swan, William E., Jr.; Fetterman, Robert C.; and Neubaum, Victor A., deceased, 4,344,822, Cl. 201-39.000.
Smith, Marvin O., Jr., 4,344,607, Cl. 266-198.000.
Betz, Jacob F.: *See*—
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Beune, Joannes H.; and Marissen, Roelof H., to Wavin B.V. Pipe part with socket provided with longitudinally extending channels. 4,344,461, Cl. 138-109.000.
Bhatia, Chandrakant; Toman, George M.; and Bock, Thomas J., to Union Special Corp. Mechanism generating elliptical motion. 4,344,376, Cl. 112-200.000.
Biemiller, John E. Ice cube forming tray for ice making machine. 4,344,298, Cl. 62-347.000.
Biggs, Candice B.: *See*—
Wovcha, Merle G.; and Biggs, Candice B., 4,345,029, Cl. 435-55.000.
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Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., 4,345,033, Cl. 435-253.000.
Bijen, Jan M. J. M.; and Jansen, Johann J., to Stamicarbon B.V. Process and apparatus for the manufacture of fiber-reinforced hydraulically bound articles such as cementitious articles. 4,344,804, Cl. 156-42.000.
Bijen, Jan M. J. M., to Stamicarbon, B.V. Process for the manufacture of water-hardening material. 4,344,910, Cl. 264-257.000.
Bijen, Jan M. J. M., to Stamicarbon, B.V. Process for the manufacture of water-hardening material reinforced with open meshed films. 4,345,001, Cl. 428-286.000.
Binderup, Ernst T., to Leo Pharmaceutical Products, Ltd. A/S. Derivatives of penicillanic acid. 4,345,071, Cl. 542-420.000.
Birgmeir, Klaus; and Stadler, Klaus, to Agfa-Gevaert Aktiengesellschaft. Opto-mechanical device to control the direction of beams of visible light. 4,344,666, Cl. 350-6.900.
Bittler, Dieter: *See*—
Wiechert, Rudolf; Bittler, Dieter; Schleusener, Annerose; and Albring, Manfred, 4,344,941, Cl. 424-243.000.
Bittler, Knut: *See*—
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Bjurman, Susan: *See*—
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Diamond, Arthur S.; and Floersheim, Sydney N., 4,345,013, Cl. 430-106.600.
Black & Decker Inc.: *See*—
Jobling, Alan V.; and Crisp, David J., 4,344,273, Cl. 56-16.700.
Black, Robert B. Heat transfer equipment and method. 4,344,386, Cl. 122-19.000.
Bladh, Per, to Alfa-Laval AB. Process for recovering meal and oil from raw fish. 4,344,976, Cl. 426-472.000.
Blagaila, John H.; and Hopper, James F., to Storage Technology Corporation. Address mark detection circuit. 4,345,280, Cl. 360-49.000.
Blais, Jules M., to Bemalux Inc. Waterproofing barrier. 4,344,722, Cl. 405-270.000.
Blake, Anthony A.; and Blake, Neil W. Method for curing and smoking pork skins to condition them for rendering. 4,344,973, Cl. 426-264.000.
Blake, Joseph W., III. Disposable safety razor. 4,344,226, Cl. 30-31.000.
Blake, Neil W.: *See*—
Blake, Anthony A.; and Blake, Neil W., 4,344,973, Cl. 426-264.000.
Blanchard, Richard A., to Supertex, Inc. MOS Power transistor with improved high-voltage capability. 4,345,265, Cl. 357-23.000.
Blandamura, Manlio, to Finchimica S.R.L. Pharmacological use of cyproterone acetate. 4,344,942, Cl. 424-243.000.
Blank, Heinz U.: *See*—
Bonse, Gerhard; and Blank, Heinz U., 4,345,100, Cl. 564-124.000.
Blankenship, Michael G., to Corning Glass Works. Optical waveguide soot preform with reduced inner layer stress and method of making. 4,344,670, Cl. 350-96.310.
Blaser, Anton J. Disc-shaped centering fixture for optical encoders. 4,345,149, Cl. 250-231.0SE.
Blazey, Richard N.: *See*—
Stuermer, Paul A.; and Blazey, Richard N., 4,344,677, Cl. 354-5.000.
Bleiweiss, Arthur F.; Cotoara, Dimitru; and Wilkes, Robert J., to Dominion Auto Accessories Limited. Truck mirror with overlying bottom end cover. 4,344,672, Cl. 350-288.000.
Blinne, Gerd; Naarmann, Herbert; and Penzien, Klaus, to BASF Aktiengesellschaft. Preparation of electrically conductive hetero-polyphenylenes. 4,344,869, Cl. 252-517.000.
Blinne, Gerd; Naarmann, Herbert; and Penzien, Klaus, to BASF Aktiengesellschaft. Preparation of electrically conductive hetero-polyaromatics. 4,344,870, Cl. 252-517.000.
Bliss, Richard D.: *See*—
Shaffer, Steven D.; Kienitz, L. Michael; Pitts, James N., Jr.; and Bliss, Richard D., 4,344,712, Cl. 366-108.000.
Block, Hans-Dieter: *See*—
Schafer, Walter; Wagner, Kuno; and Block, Hans-Dieter, 4,344,855, Cl. 252-182.000.
Boardman, Franklin: *See*—
Evans, Anthony; Lesniak, John M.; and Boardman, Franklin, 4,344,423, Cl. 128-90.000.
Bobeck, Andrew H., to Bell Telephone Laboratories, Incorporated. Magnetic domain memory with Hall effect detector. 4,345,317, Cl. 365-9.000.
Bock, Gustav: *See*—
Ostertag, Werner; Bittler, Knut; and Bock, Gustav, 4,344,987, Cl. 427-213.000.
Bock, Thomas J.: *See*—
Bhatia, Chandrakant; Toman, George M.; and Bock, Thomas J., 4,344,376, Cl. 112-200.000.
Boehringer Ingelheim GmbH: *See*—
Cullen, Ernest; Possanza, Genus; and Stewart, Patrick B., 4,344,946, Cl. 424-250.000.
Boeing Company, The: *See*—
Adamski, John L., 4,345,182, Cl. 313-348.000.
Hammer, Robert H., 4,344,995, Cl. 428-61.000.
Takats, Imre J.; and Chenoweth, Charles C., 4,345,191, Cl. 318-564.000.
Boiten, Ebbe: *See*—
Haes, Freddy; Reynhout, Cornelis M.; Hermes, Guillaume M. P. G.; and Boiten, Ebbe, 4,344,228, Cl. 30-43.900.
Bolich, Raymond E., Jr., to Procter & Gamble Company, The. Pyridinethione salts and hair care compositions. 4,345,080, Cl. 546-6.000.
Bolssens, Frans P. J.; Franck, Guy C. J. L. G. G. M.; and Dehertefelt, Henri, to International Standard Electric Corporation. Valve and a wire cutting, skinning and wrapping tool employing the valve. 4,344,212, Cl. 29-33.00F.
Bom, Cornelis J. G.: *See*—
van der Lely, Ary; Bom, Cornelis J. G.; and Kuipers, Arie, 4,344,499, Cl. 180-197.000.
Bonaparte, Al. Aerial forest fire extinguishing device. 4,344,489, Cl. 169-70.000.
Bonazza, Benedict R.; and DeVault, Albert N., to Phillips Petroleum Company. Fuel and lubricant additives from acid treated mixtures of vegetable oil derived amides and esters. 4,344,771, Cl. 44-63.000.
Bond, Harold U., to Kockums Industries Limited. Resilient positioning apparatus. 4,344,609, Cl. 269-27.000.
Bondina Ltd.: *See*—
Thornton, Alan; and Uttley, John S., 4,344,989, Cl. 427-286.000.
Bonse, Gerhard; and Blank, Heinz U., to Bayer Aktiengesellschaft. Preparation of α-ketocarboxylic acid N-tert.-butylamides. 4,345,100, Cl. 564-124.000.
Bonsen, Pieter; Wong, Patrick S.; and Theeuwes, Felix, to ALZA Corporation. Method of delivering drug with aid of effervescent activity generated in environment of use. 4,344,929, Cl. 424-15.000.
Boose, James R.: *See*—
Falck, Glenn H.; and Boose, James R., 4,344,524, Cl. 198-494.000.
Boots Company Limited, The: *See*—
Copping, Leonard G.; Kerry, John C.; Watkins, Thomas I.; Willis, Robert J.; and Palmer, Bryan H., 4,344,893, Cl. 260-456.00A.
Borden, Inc.: *See*—
Columbus, Peter S.; and Anderson, John, 4,345,044, Cl. 523-220.000.
Borel, Denis, to SRO Kugellagerwerke J. Schmid-Roost AG. Axial/rotary guide element. 4,344,657, Cl. 308-6.00C.

Boriack, Clinton J.: *See*—
Friedli, Hans R.; and Boriack, Clinton J., 4,345,048, Cl. 525-192.000.

Boroschewski, Gerhard; Nusslein, Ludwig; and Arndt, Friedrich, to Schering AG. Carbaminic acid esters with herbicidal properties. 4,344,790, Cl. 71-111.000.

Borror, Alan L.; and Greenwald, Richard B., to Polaroid Corporation. Sulfonyl-cyano alkane silver halide solvents. 4,345,018, Cl. 430-234.000.

Bottum, Edward W. Solar collector. 4,344,415, Cl. 126-434.000.

Botyan, Viktor V.: *See*—
Chachin, Viktor N.; Kolos, Vladimir K.; Botyan, Viktor V.; Luzgin, Vladimir I.; and Antonenkov, Igor K., 4,344,313, Cl. 72-453.100.

Bouge, Gilbert: *See*—
Dupin, Thierry; Bouge, Gilbert; and Seigneurin, Laurent, 4,344,928, Cl. 423-626.000.

Bour, Edmond H. J. P.; Brouwers, Johannes A. L.; and Warnier, Jean M. M., to Stamicarbon B.V. Method for polymerizing pyrrolidone with preheating of catalyst solution. 4,345,065, Cl. 528-312.000.

Bouwhuis, Richard W.: *See*—
Echols, James M.; and Bouwhuis, Richard W., 4,344,728, Cl. 414-39.000.

Bouzianis, George J.; Hollick, John G.; McIlvin, Donald B.; and Sillars, Frederick S., to USM Corporation. Machine for stiffening sheet material. 4,344,199, Cl. 12-54.300.

Boyer, Robert C.; and Williams, George J., to Ecolaire Incorporated. Support for heat exchange tubes. 4,344,480, Cl. 165-162.000.

Boyle, John F.; Halper, Barry J.; Link, James C.; and Mullane, John C., Jr., to Air Products and Chemicals, Inc. Process and apparatus for in-line slush making for concrete cooling. 4,344,290, Cl. 62-48.000.

Brabbs, William J.: *See*—
Youngquist, Rudolph W.; and Brabbs, William J., 4,344,969, Cl. 426-18.000.

Brandes, Wilhelm: *See*—
Kuhle, Engelbert; Paulus, Wilfried; Genth, Hermann; and Brandes, Wilhelm, 4,344,962, Cl. 424-300.000.

Breault, Richard D., to United Technologies Corporation. Apparatus for reducing electrolyte loss from an electrochemical cell. 4,345,008, Cl. 429-26.000.

Breitling, Wolfram, to Robert Bosch GmbH. Device for controlling the current through an inductive consumer, especially a magnetic valve in the fuel metering system of an internal combustion engine. 4,345,296, Cl. 361-154.000.

Bresak, Ann F.: *See*—
Tolgyesi, Eva; and Bresak, Ann F., 4,344,763, Cl. 8-127.510.

Breunig, Roger D.: *See*—
Kelly, Wallace N.; and Breunig, Roger D., 4,344,738, Cl. 416-95.000.

Brewing Research Foundation, The: *See*—
Sharpe, Frederick R.; Grimmett, Christopher M.; and Laws, Derek R. J., 4,344,978, Cl. 426-600.000.

Bricot, Claude: *See*—
Arquie, Louis; Bricot, Claude; and Thirouard, Michel, 4,345,321, Cl. 369-46.000.

British Aerospace: *See*—
Holmes, Frederick H., 4,344,305, Cl. 464-169.000.

British Broadcasting Corporation: *See*—
Clarke, Christopher K. P., 4,345,268, Cl. 358-31.000.

British Petroleum Company Limited, The: *See*—
Chesters, David A., 4,344,751, Cl. 431-202.000.

Brittain, Darryl A.: *See*—
Anderson, Paul L.; and Brittain, Darryl A., 4,344,966, Cl. 424-343.000.

Broersma, Robert J., Jr.; and Spittka, Gayle A., to Dow Chemical Company, The. Method of inhibiting sickling of sickle erythrocytes using substituted-2-imidazolines. 4,344,958, Cl. 424-273.00R.

Brois, Stanley J.: *See*—
Gutierrez, Antonio; Brois, Stanley J.; Ryer, Jack; and Deen, Harold E., 4,344,853, Cl. 252-33.600.

Brooks, Kevin E.: *See*—
Wovcha, Merle G.; and Brooks, Kevin E., 4,345,034, Cl. 435-253.000.

Brooks & Perkins, Incorporated: *See*—
Naffa, Faisal A., 4,344,726, Cl. 410-79.000.

Brophy, Hugh J., Jr.: *See*—
Brophy, Hugh J., Sr.; and Brophy, Hugh J., Jr., 4,344,248, Cl. 43-15.000.

Brophy, Hugh J., Sr.; and Brophy, Hugh J., Jr. Automatic hooksetting fishing rod holder. 4,344,248, Cl. 43-15.000.

Brouwers, Johannes A. L.: *See*—
Bour, Edmond H. J. P.; Brouwers, Johannes A. L.; and Warnier, Jean M. M., 4,345,065, Cl. 528-312.000.

Brown, Gregory J., to FMC Corporation. Liquid transfer apparatus. 4,344,469, Cl. 141-90.000.

Brugmans, Johannes T.: *See*—
de Leeuw, Johannes A. N.; and Brugmans, Johannes T., 4,344,998, Cl. 428-212.000.

Brun, Norbert: *See*—
Gerard, Roland; Brun, Norbert; and Ricard, Jacques, 4,345,303, Cl. 362-80.000.

Brunelle, Daniel J., to General Electric Company. Polycarbonate transesterification with tetraborate or tetraaluminate anion containing catalyst. 4,345,062, Cl. 528-198.000.

Brunner, Anton, to Siemens Aktiengesellschaft. Primary radar antenna having a secondary radar (IFF) antenna integrated therewith. 4,345,257, Cl. 343-780.000.

Brunswick Corporation: *See*—
Puryear, John W., 4,344,586, Cl. 242-84.50A.

Bucher, Robert R.; and Riner, Felix, to Textilma AG. Thread control means in a textile machine. 4,344,307, Cl. 66-84.00R.

Budecker, Ludwig; and Schutt, Bernd, to ITT Industries, Inc. Pressure responsive distributing valve device. 4,344,451, Cl. 137-101.000.

Bulger, Gary A.; Heck, Lyle D.; Huttemann, Robert D.; Morabito, Joseph M.; Pitetti, Raymond C.; Unger, Burton A.; and Vallere, Donald J., to Western Electric Company, Inc.; and Bell Telephone Laboratories, Incorporated. Monolithic hybrid integrated circuits. 4,344,223, Cl. 29-577.00C.

Bunge, Konrad: *See*—
Thurm, Siegfried; and Bunge, Konrad, 4,344,704, Cl. 355-77.000.

Bunn, Billy A.: *See*—
Higgins, Frank; Lautenshlager, Gilbert G.; and Bunn, Billy A., 4,344,781, Cl. 55-379.000.

Burgin, Kermit. Acrylooptic tongue depressor and handle therefor. 4,344,419, Cl. 128-18.000.

Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Homogenizing system for producing high polymer latices. 4,344,859, Cl. 252-359.00D.

Burkett, Ronald J.; and Dunn, Luther L., to Linden Chemicals & Plastics, Inc. Mercury removal process and apparatus. 4,344,793, Cl. 75-81.000.

Burney, Charles F.: *See*—
Becker, Jon; Miller, G. Kirby; and Burney, Charles F., 4,344,810, Cl. 156-379.700.

Burroughs Corporation: *See*—
DeMoss, Dean; and Richardson, Harvey J., 4,345,285, Cl. 360-133.000.
Greer, Douglas S.; and Grunewald, Paul, 4,345,244, Cl. 340-728.000.
Leise, Walter F.; and Darcy, John J., 4,344,612, Cl. 271-162.000.

Butler, Roger M., to Exxon Production Research Company. Method for continuously producing viscous hydrocarbons by gravity drainage while injecting heated fluids. 4,344,485, Cl. 166-271.000.

Buttner, Horace J.; and Buttner, Thomas E. Electrical contact positioning assembly. 4,345,128, Cl. 200-153.00J.

Buttner, Thomas E.: *See*—
Buttner, Horace J.; and Buttner, Thomas E., 4,345,128, Cl. 200-153.00J.

C.G.R. MeV: *See*—
Tran, Duc T., 4,345,210, Cl. 328-234.000.

C. H. Boehringer Sohn: *See*—
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,344,964, Cl. 424-304.000.

C.P. Chemical Co., Inc.: *See*—
Hasselman, Walter, Jr., 4,345,061, Cl. 528-161.000.

C. Van der Lely N.V.: *See*—
van der Lely, Ary, 4,344,490, Cl. 172-253.000.
van der Lely, Ary; Bom, Cornelis J. G.; and Kuipers, Arie, 4,344,499, Cl. 180-197.000.

Cadotte, Ernest R.; and Hester, Gerald P., to MSI Data Corporation, by said Gerald P. Hester. Customer satisfaction terminal. 4,345,315, Cl. 364-900.000.

Cagnazzi, Ernesto, to Meka S.N.C. di P. Merati & C. Pocket accessory for oral hygiene. 4,344,535, Cl. 206-581.000.

Caisander, Yngve: *See*—
Archenholtz, Ake; Caisander, Yngve; and Hass, Gustav, 4,344,652, Cl. 299-70.000.

Calvin, Noel M. Capacitance proximity sensor. 4,345,167, Cl. 307-308.000.

Campbell Soup Company: *See*—
Salmonsen, Andrew R.; and Feehery, William J., Jr., 4,344,493, Cl. 177-52.000.

Canadian General Electric Company Limited: *See*—
Eastcott, Peter deH.; Truman, Peter T.; and Scuccato, Serge L., 4,345,123, Cl. 200-52.00R.

Canadian Patents & Development Ltd.: *See*—
Lucas, Bernard H.; and Ritcey, Gordon M., 4,344,924, Cl. 423-54.000.
Nasser, Karim W., 4,344,316, Cl. 73-19.000.

Canfield, Sheldon A.; and Sanik, Paul S., to Owens-Corning Fiberglas Corporation. Method of and apparatus for detecting the level of molten glass in a glass melting furnace. 4,345,106, Cl. 373-27.000.

Canon Kabushiki Kaisha: *See*—
Kasama, Nobuhiro; and Kitajima, Tadayuki, 4,344,700, Cl. 355-3.0SC.
Sekiguchi, Takeshi, 4,345,271, Cl. 358-55.000.
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,345,262, Cl. 346-140.00R.
Tazaki, Shigemitsu; and Kyogoku, Hiroshi, 4,345,263, Cl. 346-140.00R.

Canto, Gabriel F. Support for horizontal pipe or the like. 4,344,593, Cl. 248-73.000.

Capener, Erwin L.; and Low, James M., to Wilwardco, Inc. Method and apparatus for converting solid organic material to fuel oil and gas. 4,344,770, Cl. 44-50.000.

Cardwell, Richard H.: *See*—
Ash, Gerald R.; and Cardwell, Richard H., 4,345,116, Cl. 179-18.0EA.

Carl Dunmon & Associates, Inc.: *See*—
Sukolics, Ronald D., 4,344,267, Cl. 52-762.000.

Carl Still GmbH & Co. KG., Firma: *See—*
Stratmann, Josef; and Mrongowius, Klaus, 4,344,823, Cl. 201-41.000.

Carlson, Charles H. Controlled friction exercising device. 4,344,615, Cl. 272-67.000.

Carney, James E., to Caterpillar Tractor Co. Body positioning and driving apparatus. 4,344,811, Cl. 156-397.000.

Caroli, Celso. Tap and mixer for the delivery of water. 4,344,457, Cl. 137-597.000.

Carre, Roland; and Doriath, Georges, to Thomson-CSF. Non-linear dynamic filtering device for the angular measuring of noise in a radar. 4,345,252, Cl. 343-5.0NQ.

Carriere, Donald L., to Ford Motor Company. Differential traction drive with extreme overall torque ratios for use in a gas turbine engine driveline. 4,344,336, Cl. 74-690.000.

Casio Computer Co., Ltd.: *See—*
Sano, Shigenori, 4,344,345, Cl. 84-1.030.

Casper, Clarence, Jr., to Moniterm Corporation. High resolution, high density CRT monitor. 4,345,187, Cl. 315-408.000.

Cassella Aktiengesellschaft: *See—*
Hufnagel, Theobald; and Hetschko, Manfred, 4,345,074, Cl. 544-99.000.

Casterton, Robert H.; Phippen, Larry J.; and Wright, Darrell L., to Deere & Company. Air distribution system. 4,344,356, Cl. 98-2.110.

Caterpillar Tractor Co.: *See—*
Carney, James E., 4,344,811, Cl. 156-397.000.
Richardson, Ronald D., 4,344,323, Cl. 73-119.00A.
Sindelar, Ernest C., 4,344,287, Cl. 60-572.000.

Caumont, Jean-Francois, to Tempo Sanys. Sterilizable surgical pad. 4,344,426, Cl. 128-156.000.

Cazarra, Victor; Schwab, Andre; and Zunino, Patrick, to International Business Machines Corporation. Method for characterizing the oxygen contents of Czochralski grown silicon rods. 4,344,815, Cl. 156-601.000.

Cedar, Charles E.: *See—*
Petaja, Glen E.; and Cedar, Charles E., 4,344,478, Cl. 165-69.000.

Celamerck GmbH & Co. KG: *See—*
Becher, Heinz-Manfred, 4,344,829, Cl. 204-72.000.

Celanese Corporation: *See—*
Pilat, Howard L.; Moore, Jerry D.; and Chosnek, Jack, 4,345,093, Cl. 560-205.000.

Ceres Electronics Corporation: *See—*
Moxon, Edwin C.; and Menashi, Wilson P., 4,344,315, Cl. 374-44.000.

Cessna Aircraft Company, The: *See—*
Ridge, William A., 4,344,285, Cl. 60-452.000.

CGEE Alsthom: *See—*
Debaigt, Jean, 4,345,226, Cl. 335-166.000.

Chachin, Viktor N.; Kolos, Vladimir K.; Botyan, Viktor V.; Luzgin, Vladimir I.; and Antonenkov, Igor K. Hydropunch for use in a press. 4,344,313, Cl. 72-453.100.

Chalmers, Alexander A.: *See—*
Wollam, Carl A.; Gailey, J. Lynn; and Chalmers, Alexander A., 4,344,990, Cl. 427-286.000.

Chaloupka, Premysl G., to St. Regis Paper Company. Method and apparatus for stacking and collating articles. 4,344,727, Cl. 414-36.000.

Chamberlin, Rhodes R., to Photon Power, Inc. Process for forming tin oxide conductive pattern. 4,344,817, Cl. 156-645.000.

Champion International Corporation: *See—*
Austin, John J., 4,344,537, Cl. 206-611.000.
McLaren, Edwin C., 4,344,814, Cl. 156-581.000.

Chan, John C. H., to Houston Systems Manufacturing Co., Inc. Valve bonnet for high temperature service. 4,344,454, Cl. 137-315.000.

Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, to Hoffmann-La Roche Inc. Unsaturated eicosanoic acids. 4,345,084, Cl. 548-237.000.

Chang, Clarence D.; and Lang, William H., to Mobil Oil Corporation. Catalyst for synthesis gas conversion to oxygenates. 4,344,868, Cl. 252-455.00Z.

Chang, Paul S., to AMP Incorporated. Pulse duration digital multiplexing system. 4,345,323, Cl. 370-9.000.

Charbonnages de France: *See—*
Puff, Roger M.; and Kita, Jean-Claude, 4,344,769, Cl. 44-23.000.

Charton, Wayne F.: *See—*
Gangluff, Joseph A.; and Charton, Wayne F., 4,344,374, Cl. 111-2.000.

Chass, Jacob, to Pickering & Company, Inc. Multiple rotary variable differential transformer on common shaft with leakage flux compensation. 4,345,230, Cl. 336-135.000.

Check, Alex J. Electronic static discharge apparatus. 4,345,297, Cl. 361-215.000.

Chemie Linz Aktiengesellschaft: *See—*
Siegl, Annemarie; Knopp, Christian; and Reithmayr, Karl, 4,344,933, Cl. 424-79.000.

Chemische Werke Huls AG: *See—*
Mumcu, Salih; and Panoch, Hans J., 4,345,052, Cl. 525-411.000.
Mumcu, Salih, 4,345,064, Cl. 528-288.000.
Ruter, Jorn, 4,345,066, Cl. 528-324.000.

Chen, Albert C., to Mobil Oil Corporation. Carbonate-acrylate or alkylacrylate radiation curable coating compositions and method of curing. 4,344,982, Cl. 427-44.000.

Chen, Evan N.; Emmett, James S.; Ferraro, Frank A.; and Peleckis, Anthony J., to Warner-Lambert Company. Clean-out mechanism for twin blade shaving unit. 4,344,227, Cl. 30-41.000.

Chenoweth, Charles C.: *See—*
Takats, Imre J.; and Chenoweth, Charles C., 4,345,191, Cl. 318-564.000.

Cherney, Jerome A.; and Pawlowski, Thomas D., to American Can Company. Partially shielded microwave carton. 4,345,133, Cl. 219-10.55E.

Cherry, Sidney J.; and Wayland, Paul O., to Westinghouse Electric Corp. Vacuum interrupter with transfer-type axial magnetic field contacts. 4,345,126, Cl. 200-144.00B.

Chesters, David A., to British Petroleum Company Limited, The. Flares. 4,344,751, Cl. 431-202.000.

Chevron Research Company: *See—*
Kurkov, Victor P., 4,344,896, Cl. 260-465.100.

Chief Industries, Inc.: *See—*
Aldrich, Roger B.; and White, Gary R., 4,344,314, Cl. 72-461.000.

Chien-Chun, Yu. Fuseless safety magnetic plug. 4,345,223, Cl. 335-6.000.

Chierici, Osvaldo F., to Holland Company. Coupler carrier arrangement for railroad cars. 4,344,541, Cl. 213-61.000.

Chikamura, Takao: *See—*
Ogawa, Kazufumi; Chikamura, Takao; and Shibata, Takuo, 4,345,021, Cl. 430-321.000.

Chilcot, Arthur L., to Ferranti Limited. Gas lasers. 4,344,905, Cl. 264-111.000.

Child, Frances W.; and Bartz, Richard O. Fuel supply system. 4,344,403, Cl. 123-538.000.

Child, Francis W.; and Bartz, Richard O. Fuel supply system. 4,344,402, Cl. 123-538.000.

Child, Francis W.; and Bartz, Richard O. Fuel supply system. 4,344,404, Cl. 123-538.000.

Children's Hospital Medical Center, The: *See—*
Lew, Kenneth K., 4,345,026, Cl. 435-4.000.

Chingas, Gerard C.: *See—*
Bertrand, Richard D.; Chingas, Gerard C.; Garroway, Allen N.; and Moniz, William B., 4,345,207, Cl. 324-308.000.

Chosnek, Jack: *See—*
Pilat, Howard L.; Moore, Jerry D.; and Chosnek, Jack, 4,345,093, Cl. 560-205.000.

Chow, Wing-Sun; and Monkhouse, Donald C., to E. R. Squibb & Sons, Inc. Steroid formulation containing dipotassium EDTA. 4,344,940, Cl. 424-241.000.

Christensson, Erik G.: *See—*
Hernestam, Sven E. H.; Martinsson, Kjell B.; Christensson, Erik G.; and Olsson, Nils-Goran E., 4,344,952, Cl. 424-267.000.

Christian, Charlie R.; Gaskins, Jack C.; Hamrick, Jack; and Reed, Norman L., to West Point Foundry & Machine Co. High pressure sizing apparatus and method. 4,344,211, Cl. 28-183.000.

Christian Rovsing A/S: *See—*
Smitt, Asbjorn, 4,345,324, Cl. 370-14.000.

Christiansen, David W., to United States of America, Energy. Nuclear reactor fuel rod attachment system. 4,344,915, Cl. 376-437.000.

Christiansen, Hans-Marlin: *See—*
Barabas, Udo; Moehrmann, Karl-Heinz; and Christiansen, Hans-Marlin, 4,345,273, Cl. 358-86.000.

Chronowski, Robert A., to Aqua-Chem, Inc. Fluidized bed combustion device. 4,344,372, Cl. 110-245.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Takayama, Hiroaki; Yamada, Sachiko; and Ohmori, Masayuki, 4,344,888, Cl. 260-397.200.

Ciba-Geigy Corporation: *See—*
Berner, Godwin, 4,344,876, Cl. 524-91.000.
Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,344,957, Cl. 424-273.00B.
Nikles, Erwin; and Karrer, Friedrich, 4,344,877, Cl. 524-102.000.
Umsonst, Gerhard; Kolliker, Hans P.; and Jost, Max, 4,344,767, Cl. 524-159.000.

Cibie Projecteurs: *See—*
Gerard, Roland; Brun, Norbert; and Ricard, Jacques, 4,345,303, Cl. 362-80.000.

Circon Corporation: *See—*
Wooff, Edward A., Jr., 4,344,667, Cl. 350-80.000.

Citizen Watch Company Limited: *See—*
Togashi, Seigo; and Tsuzuki, Akira, 4,345,248, Cl. 340-784.000.
Togashi, Seigo, 4,345,249, Cl. 340-784.000.

Citron, Manning. Overload clutch. 4,344,306, Cl. 464-34.000.

Clairol Incorporated: *See—*
Janniello, Frank, 4,345,122, Cl. 200-50.00B.

Clark Door Company, Inc.: *See—*
Hermanson, Lars, 4,344,206, Cl. 16-94.00R.

Clarke, Christopher K. P., to British Broadcasting Corporation. Processing circuit for color television signals. 4,345,268, Cl. 358-31.000.

Clavel, Raymond, to Hermes Precisa International S.A. Device for positioning the beginning of a line in a typewriter. 4,344,714, Cl. 400-334.300.

Cline, Joseph S.; and Andres, Cletus N., to Basler Electric Company. Support member. 4,345,231, Cl. 336-192.000.

Clinotherm Limited: *See—*
Shelley, Stanley J.; and Emblem, Harold G., 4,344,753, Cl. 432-3.000.

Cloutier, Edward J. F.: *See—*
Minor, Robert N.; and Cloutier, Edward J. F., 4,344,406, Cl. 123-587.000.

Cloutier, Robert P., to Eastman Kodak Company. Diaphragm and shutter mechanism. 4,344,687, Cl. 354-246.000.

Coakley, John E.: *See—*
Nolan, James J.; and Coakley, John E., 4,344,491, Cl. 175-317.000.

Coca-Cola Company, The: *See—*
Merl, Milton J., 4,344,367, Cl. 108-1.000.
Cocron, Istvan: *See—*
Stemme, Otto; Lermann, Peter; and Cocron, Istvan, 4,344,686, Cl. 354-198.000.
COFLEXIP: *See—*
Aubert, Jean-Paul; and Genini, Maurice, 4,344,462, Cl. 138-130.000.
Cohen, Milton W.: *See—*
Eldridge, John D., Jr.; and Cohen, Milton W., 4,344,532, Cl. 206-370.000.
Cole, Roger A.: *See—*
Sutcliffe, Edward Y.; and Cole, Roger A., 4,344,476, Cl. 164-76.100.
Colgate-Palmolive Company: *See—*
MacRae, David M.; and Roberts, Karl H., 4,344,930, Cl. 424-28.000.
Colomb, Denis G., to Sonics Research Corporation. System and method for high quality image reproduction. 4,345,276, Cl. 358-258.000.
Columbus, Peter S.; and Anderson, John, to Borden, Inc. Acrylic wood filler. 4,345,044, Cl. 523-220.000.
Colwell, Darrel R., to Western Electric Company, Inc. Methods and apparatus for separating cleaning solvents from rosin flux and other contaminants. 4,344,825, Cl. 203-1.000.
Commissariat a l'Energie Atomique: *See—*
Allemand, Robert; and Laval, Michel, 4,345,155, Cl. 250-385.000.
Petitcolas, Hubert, 4,345,111, Cl. 174-102.00A.
Community Light & Sound, Inc.: *See—*
Howze, Bruce, 4,344,504, Cl. 181-187.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Ognier, Paul; and Guilchier, Bernard, 4,344,663, Cl. 339-75.00M.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See—*
Deproux, Jacques, 4,345,260, Cl. 346-75.000.
Compagnie Lyonnaise de Transmissions Optique: *See—*
Mignien, Georges; and Gauthier, Francis, 4,345,137, Cl. 219-121.0PK.
Congdon, James S.; and Isbell, Tim D., to National Semiconductor Corporation. Two stage thermal shutdown. 4,345,218, Cl. 330-298.000.
Conn, Calvin E.: *See—*
Gries, Robert J.; Miko, Sandor; and Conn, Calvin E., 4,345,188, Cl. 315-411.000.
Conoco Inc.: *See—*
Goldsmith, Riley G., 4,344,721, Cl. 405-224.000.
Graf, Harlan G.; Janssen, Harry R.; and Edwards, Don L., 4,344,754, Cl. 432-233.000.
Constantinescu, Spiridon. Launching tower for heavy rockets. 4,344,592, Cl. 89-1.805.
Container Corporation of America: *See—*
May, Kenneth D.; and Bell, John T., 4,344,523, Cl. 198-424.000.
Continental Conveyor & Equipment Company, Inc.: *See—*
Hooper, Homer; and Holland, R. B., 4,344,218, Cl. 29-516.000.
Continental Group, Inc., The: *See—*
Aschberger, Anton A.; and Walter, John, 4,344,545, Cl. 220-307.000.
Walter, John, 4,345,047, Cl. 525-108.000.
Contraves AG: *See—*
Heller, Rudolf; and Schindler, Walter, 4,344,595, Cl. 248-542.000.
Convey Systems Div. of Export Tool & Welding Co. Ltd.: *See—*
Potts, Roger F., 4,344,448, Cl. 134-73.000.
Cooper, James A.: *See—*
Deckas, Peter C.; Cooper, James A.; and Leebens, James V., Jr., 4,344,784, Cl. 55-473.000.
Cooper, Tom: *See—*
Loechel, Hans-Peter; and Cooper, Tom, 4,345,006, Cl. 428-473.000.
Copco Door Company: *See—*
King, Clarence H., 4,344,256, Cl. 49-501.000.
Coppens, Guillaume, to Solvay & Cie. Process for the manufacture of aldonic acids by an enzymatic method. 4,345,031, Cl. 435-137.000.
Coppens, Guillaume: *See—*
Gago, Ignace; and Coppens, Guillaume, 4,344,979, Cl. 427-4.000.
Copping, Leonard G.; Kerry, John C.; Watkins, Thomas I.; Willis, Robert J.; and Palmer, Bryan H., to Boots Company Limited, The. Pesticide compounds. 4,344,893, Cl. 260-456.00A.
Corbe, Jean A.: *See—*
Grange, Andre A.; and Corbe, Jean A., 4,344,983, Cl. 427-46.000.
Cordes, Charles P. Rim shot segment. 4,344,349, Cl. 84-411.00R.
Corman, Ned E.; Kandybowski, Steven J.; Scheingold, William S.; and Youngfleish, Frank C., to AMP Incorporated. Active device substrate connector having a heat sink. 4,345,267, Cl. 357-81.000.
Cornell Research Foundation, Inc.: *See—*
Zall, Robert R.; and Dzurec, David J., 4,344,970, Cl. 426-40.000.
Corning Glass Works: *See—*
Blankenship, Michael G., 4,344,670, Cl. 350-96.310.
Cosmos Investigations and Research Societe Francaise a Responsabilite Limitee: *See—*
Leroy, Claude, 4,344,418, Cl. 126-443.000.
Cotoara, Dimitru: *See—*
Bleiweiss, Arthur F.; Cotoara, Dimitru; and Wilkes, Robert J., 4,344,672, Cl. 350-288.000.
Cotter, Thomas P.: *See—*
Jarrett, Harold M., Jr.; and Cotter, Thomas P., 4,344,302, Cl. 62-514.00R.
Cotton Machinery Company, Inc.: *See—*
Gaudette, Andrew J.; Dana, Dave A.; and Haney, Donald, 4,344,272, Cl. 56-16.600.
Coura, Herbert R.: *See—*
Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., 4,344,453, Cl. 137-240.000.
Cournoyer, Richard L.; and Foley, James W., to Polaroid Corporation. Photographic products and processes with a pH sensitive xanthene light screening dye. 4,345,017, Cl. 430-221.000.
Cowan, Jack C.; and Thrash, Tommy, to Venture Chemicals, Inc. Method of recovering polyester fibers and cellulosic powder from polyester/cotton textile waste. 4,345,039, Cl. 521-48.000.
Craig, Ernest M.; and Minor, John M., to Golden Skillet Corporation. Food warming and cooking cabinet. 4,345,143, Cl. 219-411.000.
Craighead, Harold G.; Howard, Richard E.; and Tennant, Donald M., to Bell Telephone Laboratories, Incorporated. Selectively etched bodies. 4,344,816, Cl. 156-643.000.
Creusot-Loire: *See—*
Pere, Gerard, 4,344,834, Cl. 204-278.000.
Crisp, David J.: *See—*
Jobling, Alan V.; and Crisp, David J., 4,344,273, Cl. 56-16.700.
Criton, Eric: *See—*
Kaplan, Daniel; Landouar, Pierre; and Criton, Eric, 4,344,984, Cl. 427-74.000.
Crompton, George. Multi-wheel windmill electro-generator. 4,345,161, Cl. 290-55.000.
Cropley, Jean B., to Union Carbide Corporation. Process for the production of ethylene glycol. 4,345,104, Cl. 568-852.000.
Cross, Thomas R., to Xerox Corporation. Stapling apparatus. 4,344,554, Cl. 227-30.000.
CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Bernardini, Vincenzo; Garetti, Enzo; and Manfreddi, Renato, 4,345,319, Cl. 365-210.000.
Gandini, Marco; and Viale, Ernesto, 4,345,325, Cl. 370-29.000.
Csutak, Janos: *See—*
Novak, Lajos; Szantay, Csaba; Rohaly, Janos; Kis-Tamas, Attila; Varjas, Laszlo; and Csutak, Janos, 4,344,959, Cl. 424-279.000.
CTS Corporation: *See—*
Stuckey, Ronald L., 4,345,300, Cl. 361-386.000.
Cull, Neville L.; and Sawyer, Willard H., to Exxon Research & Engineering Co. Hydroprocessing catalysts. 4,344,867, Cl. 252-439.000.
Cullen, Ernest; Possanza, Genus; and Stewart, Patrick B., to Boehringer Ingelheim GmbH. 2,6-Diamino-benzo[1,2-d:5,4-d']bisthiazoles and salts thereof. 4,344,946, Cl. 424-250.000.
Cullen, James H., to Sperry Corporation. Character overprinting method and apparatus in non-impact printers. 4,344,713, Cl. 400-22.000.
Cummins Engine Company, Inc.: *See—*
Heydrich, Hans; Woods, Melvin E.; and Geary, William C., 4,344,390, Cl. 123-41.82A.
Cunningham, Cecil R.: *See—*
Symborski, Alex P.; and Cunningham, Cecil R., 4,344,786, Cl. 65-2.000.
Cunningham, Vernon R., to Rockwell International Corporation. Split phase delay equalizer with stray reactance compensation. 4,345,222, Cl. 333-28.00R.
Curiel, Georg; and Naguib, Moustafa M., to BBC Brown, Boveri & Company, Ltd. Two-stage supercharging apparatus. 4,344,289, Cl. 60-612.000.
Curran, Roger J., to Victor United, Inc. Gas-fired gun with gas cartridge loading and extraction assembly. 4,344,410, Cl. 124-80.000.
Czech, Franz; Mauthe, Gerhard; and Pfrotzschner, Hans, to BBC Brown, Boveri & Company, Ltd. Electrical switch. 4,345,129, Cl. 200-163.000.
Czoch, Jerzy W.; and Seagrove, Douglas J. W., to Molins Limited. Monitoring flow of rod-like articles. 4,344,520, Cl. 198-347.000.
Dahlberg, Reinhard, to Licentia Patent-Verwaltungs-G.m.b.H. Electrode system for a fuel or electrolysis cell arrangement. 4,344,832, Cl. 204-258.000.
Daihatsu Motor Co., Ltd.: *See—*
Fujihara, Youji; Shiba, Masami; Hazama, Toshio; and Kito, Shozo, 4,344,514, Cl. 192-3.580.
Daikin Kogyo Co., Ltd.: *See—*
Ueno, Fumito; and Fukuhara, Kunio, 4,344,297, Cl. 62-196.00C.
Daimler-Benz Aktiengesellschaft: *See—*
Dudeck, Ingo; and Maass, Manfred, 4,344,318, Cl. 73-35.000.
Daiwa Can Company: *See—*
Wakamatsu, Atsuyuki; and Tonooka, Keisuke, 4,344,268, Cl. 53-384.000.
Daiwa Corporation: *See—*
Isobe, Toshiyuki, 4,344,623, Cl. 273-153.00S.
Daiwa Shinku Corporation: *See—*
Takemura, Seinosuke, 4,345,118, Cl. 179-110.00A.
Dalamangas, Chris A.; and Piccirillo, Thomas P., to Technical Wire Products, Inc. Retainer for elastomeric electrical connector. 4,344,662, Cl. 339-59.00M.
Dana, Dave A.: *See—*
Gaudette, Andrew J.; Dana, Dave A.; and Haney, Donald, 4,344,272, Cl. 56-16.600.
Dancsi, Lajos: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; Keve, Tibor; and Gazdac, Maria, 4,345,082, Cl. 546-51.000.
Dannert, Horst: *See—*
Hirsch, Hans J.; and Dannert, Horst, 4,345,012, Cl. 430-48.000.

Dantzer, Elonne: *See*—
Goldfarb, Adolph E.; and Dantzer, Elonne, 4,344,249, Cl. 46-151.000.

Darcy, John J.: *See*—
Leise, Walter F.; and Darcy, John J., 4,344,612, Cl. 271-162.000.

Dart Industries, Inc.: *See*—
Jennings, Thomas C.; and Fletcher, Charles W., Jr., 4,345,045, Cl. 524-180.000.

Dataproducts Corporation: *See*—
Van Horne, Arthur C.; and Yarp, Russel E., 4,344,715, Cl. 400-616.100.

Dathe, Joachim; and Schmidhuber, Erich, to Siemens Aktiengesellschaft. Case for a semiconductor component. 4,345,108, Cl. 174-52.00H.

Davidson, James D. Energy conserving building structural elements normally called window or door frames. 4,344,265, Cl. 52-741.000.

Davis, James A.; MacPherson, William F.; Mussman, Harry E.; and Shackle, Peter W., to Bell Telephone Laboratories, Incorporated. Control circuitry for high voltage solid-state switches. 4,345,163, Cl. 307-252.00A.

Davis, Kirk E.; and Holden, Thomas F., to Lubrizol Corporation, The. Sulfurized compositions. 4,344,854, Cl. 252-45.000.

Dean, Terence F., to EMI Limited. Torque limiting device. 4,344,590, Cl. 242-201.000.

Dearborn, Howard K. Heat exchanger for space heaters. 4,344,411, Cl. 126-34.000.

Dearman, Timothy C. Pipefitter's tool. 4,344,215, Cl. 29-281.500.

Debaigt, Jean, to CGEE Alsthom. Rotary switch with an automatic re-setting mechanism. 4,345,226, Cl. 335-166.000.

De Blauwe, Francis J. A. M. C., to N.V. Raychem S.A. Thermochromic composition. 4,344,909, Cl. 264-230.000.

Debski, Andre J. Exercise vest. 4,344,620, Cl. 272-119.000.

De Busscher, Cyriel R. J.; Deleu, Walter V.; and Van Herpe, Francois, to Sperry Corporation. Cleaning apparatus of combine harvesters. 4,344,443, Cl. 130-272.000.

Deckas, Peter C.; Cooper, James A.; and Leebens, James V., Jr., to Dexon, Inc. Filter assembly for clean air rooms and work stations. 4,344,784, Cl. 55-473.000.

Deen, Harold E.: *See*—
Gutierrez, Antonio; Brois, Stanley J.; Ryer, Jack; and Deen, Harold E., 4,344,853, Cl. 252-33.600.

Deere & Company: *See*—
Casterton, Robert H.; Phippen, Larry J.; and Wright, Darrell L., 4,344,356, Cl. 98-2.110.
Reich, Steven A., 4,345,234, Cl. 337-336.000.
Schlueter, Francis E.; and Kent, Brian E., 4,344,271, Cl. 56-13.600.

De Felice, Wilfried, to Hoechst Aktiengesellschaft. Spray applicator. 4,344,573, Cl. 239-320.000.

Deforeit, Christian T. Polyphonic digital synthesizer of periodic signals. 4,344,343, Cl. 84-1.010.

Degussa AG: *See*—
Kleemann, Axel; Lussling, Theodor; Pfeifer, Wolf; and Scherberich, Paul, 4,345,072, Cl. 542-442.000.
Szulczyk, Andreas, 4,344,794, Cl. 75-173.00C.

Dehertefelt, Henri: *See*—
Boissens, Frans P. J.; Franck, Guy C. J. L. G. G. M.; and Dehertefelt, Henri, 4,344,212, Cl. 29-33.00F.

Dehn + Sohne + Co. KG: *See*—
Hasse, Peter; Wiesinger, Johannes; and Pivit, Erich, 4,345,293, Cl. 361-117.000.
Hasse, Peter; Wiesinger, Johannes; and Pivit, Erich, 4,345,295, Cl. 361-130.000.

Dehnert, Johannes; and Juenemann, Werner, to BASF Aktiengesellschaft. Disazo dyestuffs having an acylamino group and an aromatic-oxy group on different terminal moieties. 4,344,880, Cl. 260-152.000.

Del Laboratories, Inc.: *See*—
Gordon, Harry W., 4,344,932, Cl. 424-61.000.

deLarosiere, Pierre J., to International Container Systems, Inc. Case for beverage bottles. 4,344,530, Cl. 206-203.000.

DeLaurentis, Angelo A., to Westinghouse Electric Corp. Non-metallic core band. 4,345,232, Cl. 336-210.000.

de Leeuw, Johannes A. N.; and Brugmans, Johannes T., to Koninklijke Emballage Industrie Van Leer. Metallized composite structure and a method of preparing same. 4,344,998, Cl. 428-212.000.

Deleu, Walter V.: *See*—
De Busscher, Cyriel R. J.; Deleu, Walter V.; and Van Herpe, Francois, 4,344,443, Cl. 130-272.000.

de Masi, Erika. Device for the lamination of insulating boards. 4,344,812, Cl. 156-499.000.

DeMoss, Dean; and Richardson, Harvey J., to Burroughs Corporation. Floppy pack with variably-spaced isolation means. 4,345,285, Cl. 360-133.000.

Demoute, Jean-Pierre: *See*—
Martel, Jacques; Tessier, Jean; Teche, Andre; and Demoute, Jean-Pierre, 4,344,895, Cl. 260-465.00F.

Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Mathias; Kresse, Horst; and Weissflog, Wolfgang, to VEB Werk fur Fernsehelektronik Berlin im VEB Kombinat Mikroelektronik. Crystalline-liquid substituted 1,3-dioxanes and mixtures containing them. 4,344,856, Cl. 252-299.610.

Dennesen, Francis G.: *See*—
Dennesen, Joseph C.; and Dennesen, Francis G., 4,344,807, Cl. 156-155.000.

Dennesen, Joseph C.; and Dennesen, Francis G. Spiral winding of filaments. 4,344,807, Cl. 156-155.000.

Dentsply Research & Development Corp.: *See*—
Folkenroth, Richard P.; and Dunn, Thomas J., 4,344,756, Cl. 433-92.000.

Denzinger, Walter; Straub, Ferdinand; and Hartmann, Heinrich, to BASF Aktiengesellschaft. Preparation of polyvinylpyrrolidone-iodine. 4,345,049, Cl. 525-339.000.

Deppenbrock, Christoph: *See*—
Liebert, Karl-Heinz; Tischer, Werner; and Deppenbrock, Christoph, 4,344,283, Cl. 60-384.000.

Deproux, Jacques, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Ink jet printer with carriage velocity compensation. 4,345,260, Cl. 346-75.000.

Derschmidt, Hans; and Frommlet, Hubert, to Messerschmitt-Boelkow-Blohm GmbH. Hingeless and bearingless multiblade rotor for rotary wing aircraft. 4,344,739, Cl. 416-141.000.

de Rudder, Jean: *See*—
Leclerc, Jean; and de Rudder, Jean, 4,344,935, Cl. 424-89.000.

Dettling, Theodore J. Urethane prepolymer repair system. 4,345,058, Cl. 528-48.000.

Devaney, Howard F.: *See*—
Abbin, Joseph P., Jr.; Devaney, Howard F.; and Hake, Lewis W., 4,345,124, Cl. 200-61.530.

DeVault, Albert N.: *See*—
Bonazza, Benedict R.; and DeVault, Albert N., 4,344,771, Cl. 44-63.000.

Devro, Inc.: *See*—
Easton, Ian A.; Glen, James M.; and Kieran, Ann G., 4,344,967, Cl. 424-359.000.

Dexon, Inc.: *See*—
Deckas, Peter C.; Cooper, James A.; and Leebens, James V., Jr., 4,344,784, Cl. 55-473.000.

Diamond, Arthur S.; and Floersheim, Sydney N., to Black Copy Company, Inc. Dual purpose magnetic toner. 4,345,013, Cl. 430-106.600.

Diamond Shamrock Corporation: *See*—
Niksa, Andrew J., 4,344,633, Cl. 277-228.000.

Dickie, Ira A.: *See*—
Jerry, James H.; and Dickie, Ira A., 4,344,501, Cl. 180-253.000.

Diesner, Ferdinand: *See*—
Muller, Jakob; and Diesner, Ferdinand, 4,344,463, Cl. 139-383.00R.

Dieterlen, Paul E.; and Benner, Harold T., Jr., to R. A. Jones & Co. Inc. Pouch forming and filling mechanism with provision for increasing the capacity of the pouches. 4,344,269, Cl. 53-459.000.

Dietze, Wolfgang, to Siemens Aktiengesellschaft. Directly heatable semiconductor tubular bodies. 4,345,142, Cl. 219-390.000.

Dietzsch, Kurt, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Multiple flow condenser for air conditioning units of motor vehicles. 4,344,482, Cl. 165-172.000.

Dieudonne, Marc P. G.; and Raillard, Yves G., to Le Materiel Telephonique Thomson-CSF. Switching network and telecommunications center comprising such a network. 4,345,326, Cl. 370-60.000.

Digital Equipment Corporation: *See*—
Arulpragasam, Jega A.; Giggi, Robert A.; Lary, Richard F.; and Sullivan, Daniel T., 4,345,309, Cl. 364-200.000.

Dillon, Nicholas T. E. Welding and cutting handpiece. 4,344,606, Cl. 266-66.000.

Dima, Attila F.: *See*—
Silver, David A.; Dima, Attila F.; and Seman, George W., 4,345,109, Cl. 174-84.00R.

Dimetrics, Inc.: *See*—
Lesher, Howard D.; and Taff, James T., 4,344,553, Cl. 226-168.000.

Discovision Associates: *See*—
Wilkinson, Richard L., 4,345,261, Cl. 346-76.00L.

Dismuke, Keith I.: *See*—
Schmidt, Donald L.; Pruitt, Malcolm E.; and Dismuke, Keith I., 4,344,993, Cl. 428-35.000.

Ditzig, Albert F., to Molex Incorporated. Method of making hermetically sealed switch assembly. 4,344,224, Cl. 29-622.000.

Doane, William M.: *See*—
Shasha, Baruch S.; Doane, William M.; and Russell, Charles R., deceased, 4,344,857, Cl. 252-316.000.

Dolbeare, Frank A., to United States of America, Energy. Fluorometric method of quantitative cell mutagenesis. 4,345,027, Cl. 435-21.000.

Dolce, Thomas J., to General Electric Company. Flame retardant, non-dripping linear polyester compositions. 4,344,878, Cl. 524-409.000.

Dolfsma, Hendrik: *See*—
Vermeiren, Karel N.; Heemskerk, Rutgerus S.; and Dolfsma, Hendrik, 4,345,203, Cl. 324-61.00R.

Dominion Auto Accessories Limited: *See*—
Bleiweiss, Arthur F.; Cotoara, Dimitru; and Wilkes, Robert J., 4,344,672, Cl. 350-288.000.

Dorawala, Tansukhlal G.: *See*—
Reinhard, Russell R.; Dorawala, Tansukhlal G.; and Kerr, Edwin R., 4,344,865, Cl. 252-420.000.

Doriath, Georges: *See*—
Carre, Roland; and Doriath, Georges, 4,345,252, Cl. 343-5.0NQ.

Doty, Mitchell E.: *See*—
Fulop, Gabor F.; Betz, Jacob F.; Meyers, Peter V.; and Doty, Mitchell E., 4,345,107, Cl. 136-255.000.

Double, Glen P., to International Business Machines Corporation. Acceleration correction for self-clocking write-head. 4,345,278, Cl. 360-2.000.

Doucet, Henri; and Tournes, Christian, to Agence Nationale de Valorisation de la Recherche (ANVAR). Free-electron laser provided with a device for producing a pulsed magnetic field with periodic spatial variations. 4,345,329, Cl. 372-2.000.

Dow Chemical Company, The: *See—*
Broersma, Robert J., Jr.; and Spittka, Gayle A., 4,344,958, Cl. 424-273.00R.
Friedli, Hans R.; and Boriack, Clinton J., 4,345,048, Cl. 525-192.000.
Lorette, Nicholas B.; and Fosnaugh, Jerry L., 4,344,916, Cl. 422-40.000.
Schmidt, Donald L.; Pruitt, Malcolm E.; and Dismuke, Keith I., 4,344,993, Cl. 428-35.000.
Strege, Paul E.; and Renga, James M., 4,344,881, Cl. 549-229.000.

Dow Corning Corporation: *See—*
Lutz, Michael A., 4,344,800, Cl. 106-308.00Q.
Plueddemann, Edwin P., 4,344,860, Cl. 252-389.00R.

Downing, Michael W.: *See—*
Nelson, Robert L.; and Downing, Michael W., 4,345,028, Cl. 435-30.000.

Dragerwerk Aktiengesellschaft: *See—*
Heim, Ulrich, 4,345,151, Cl. 250-341.000.

Drexhage, Karl H., to Eastman Kodak Company. Color imaging devices and color filter arrays using photo-bleachable dyes. 4,345,011, Cl. 430-7.000.

Drum, Harry R. Toilet tissue holder. 4,344,583, Cl. 242-55.200.

Dry, Sidney, to Natico, Inc. Reusable tight head drum by conversion to open head drum. 4,344,546, Cl. 220-320.000.

Du Pont Canada Inc.: *See—*
Kendall, John A.; Marchildon, Ernest K.; and Stephenson, Grant R., 4,344,711, Cl. 366-83.000.

Dubey, Dennis, to Forest Country Engineering Co. Delimbing apparatus. 4,344,470, Cl. 144-2.00Z.

Dudeck, Ingo; and Maass, Manfred, to Daimler-Benz Aktiengesellschaft. Undesirable combustion characteristic detector for spark-ignited internal combustion engines. 4,344,318, Cl. 73-35.000.

Dudley, William H. Exercise apparatus. 4,344,618, Cl. 272-117.000.

Duff, John; and McFarlane, Peter, to Joy Manufacturing Company. Hammer. 4,344,353, Cl. 91-165.000.

Duffy, Edward A.: *See—*
Horne, C. James; and Duffy, Edward A., 4,344,567, Cl. 237-1.00R.

Dumas et Inchauspe: *See—*
Inchauspe, Nicolas, 4,344,889, Cl. 260-400.000.

Duncan, Gary L.: *See—*
All, Frank E.; and Duncan, Gary L., 4,345,005, Cl. 428-461.000.

Duncan, James S.: *See—*
Pines, Michael Y.; Whitney, Colin G.; and Duncan, James S., 4,345,148, Cl. 250-214.00C.

Dunkle, Steven L.: *See—*
Williams, Leo M., Jr.; and Dunkle, Steven L., 4,344,637, Cl. 280-21.00R.

Dunn, Luther L.: *See—*
Burkett, Ronald J.; and Dunn, Luther L., 4,344,793, Cl. 75-81.000.

Dunn, Thomas J.: *See—*
Folkenroth, Richard P.; and Dunn, Thomas J., 4,344,756, Cl. 433-92.000.

Dupin, Thierry; Bouge, Gilbert; and Seigneurin, Laurent, to Rhone-Poulenc Industries. Process for preparing alumina particulates, at least a fraction of which being ultrafine boehmite. 4,344,928, Cl. 423-626.000.

Du Pont de Nemours, E. I., and Company: *See—*
Resnick, Paul R., 4,345,092, Cl. 560-182.000.
Romanauskas, William A., 4,344,563, Cl. 233-26.000.
Sandberg, Harry W., 4,344,468, Cl. 141-69.000.

Dvorak, Lester I. Egg transfer apparatus. 4,344,730, Cl. 414-405.000.

Dzurec, David J.: *See—*
Zall, Robert R.; and Dzurec, David J., 4,344,970, Cl. 426-40.000.

E-A-R Corporation: *See—*
Baker, David E., 4,344,621, Cl. 273-26.00A.

E. R. Squibb & Sons, Inc.: *See—*
Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., 4,345,096, Cl. 562-465.000.
Chow, Wing-Sun; and Monkhouse, Donald C., 4,344,940, Cl. 424-241.000.

E-Systems, Inc.: *See—*
Jackson, Charles R., 4,345,219, Cl. 331-1.00A.

E. W. Buschman Company, The: *See—*
Vogt, Robert K.; and Heit, Martin A., 4,344,527, Cl. 198-781.000.

Eastcott, Peter deH.; Truman, Peter T.; and Scuccato, Serge L., to Canadian General Electric Company Limited. Self-adjusting brake engine limit switch assembly. 4,345,123, Cl. 200-52.00R.

Eastman Kodak Company: *See—*
Cloutier, Robert P., 4,344,687, Cl. 354-246.000.
Drexhage, Karl H., 4,345,011, Cl. 430-7.000.
Kim, Chang Kyu; Maggiulli, Cataldo A.; and Zielinski, Paul A., 4,345,085, Cl. 548-360.000.
Stuermer, Paul A.; and Blazey, Richard N., 4,344,677, Cl. 354-5.000.
Zeman, Robert E., 4,344,698, Cl. 355-16.000.

Easton, Ian A.; Glen, James M.; and Kieran, Ann G., to Devro, Inc. Film forming composition and uses thereof. 4,344,967, Cl. 424-359.000.

Eaton Corporation: *See—*
Jaeschke, James R.; and Rutchik, Walter L., 4,345,292, Cl. 361-94.000.
Matthies, Alan A., 4,345,233, Cl. 337-75.000.
Tenner, Richard B., 4,345,121, Cl. 200-42.00R.

Eberle, William J.: *See—*
Oxenreider, Terry; and Eberle, William J., 4,344,748, Cl. 425-143.000.

Echols, James M.; and Bouwhuis, Richard W., to Sperry Corporation. Rolling rack control means. 4,344,728, Cl. 414-39.000.

Ecolaire Incorporated: *See—*
Boyer, Robert C.; and Williams, George J., 4,344,480, Cl. 165-162.000.

Edling, Robert J., to University of Nebraska, The Board of Regents of the. Self-irrigating pot for plants. 4,344,251, Cl. 47-80.000.

Edward Weck & Company, Inc.: *See—*
Giersch, Robert V. C., 4,344,531, Cl. 206-339.000.

Edwards, Don L.: *See—*
Graf, Harlan G.; Janssen, Harry R.; and Edwards, Don L., 4,344,754, Cl. 432-233.000.

Eggert, Carl A.: *See—*
Barger, Danny R.; Eggert, Carl A.; and Lloyd, Paul O., 4,345,193, Cl. 318-612.000.

Eglinton, Robert B., to Paxall, Inc. Sheet handling apparatus. 4,344,585, Cl. 242-66.000.

Egyt Gyogyszervegyeszeti Gyar: *See—*
Novak, Lajos; Szantay, Csaba; Rohaly, Janos; Kis-Tamas, Attila; Varjas, Laszlo; and Csutak, Janos, 4,344,959, Cl. 424-279.000.

Ehrhardt, Horst, to Bjurman, Susan; and Babcock, Barbara. Combined scalp and hair care products and method. 4,344,446, Cl. 132-7.000.

Eiche, Hans, to Kunz Maschinen- u. Apparatebau GmbH. Coupling for mandrels or the like. 4,344,304, Cl. 464-85.000.

Eichelberger, Charles W.; and Wojnarowski, Robert J., to General Electric Company. Abrasion-resistant screen-printed potentiometer. 4,345,236, Cl. 338-176.000.

Eichelberger, Charles W.: *See—*
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., 4,345,200, Cl. 323-350.000.

Eimen, Shawn H., to Milsco Manufacturing Company. Vehicle seat with fore-and-aft shock isolation. 4,344,597, Cl. 248-561.000.

Eisai Co., Ltd.: *See—*
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,344,944, Cl. 424-246.000.

Ejk, Adam J.; and Krzywicki, Donald J., to Tenneco Chemicals, Inc. Calendering of polyolefins. 4,345,046, Cl. 524-223.000.

Elastogran Maschinenbau GmbH & Co.: *See—*
Kelterbaum, Manfred, 4,344,919, Cl. 422-133.000.

Eldridge, John D., Jr.; and Cohen, Milton W., to Instranetics, Inc. Surgical blade remover. 4,344,532, Cl. 206-370.000.

Elk River Resources, Inc.: *See—*
Thompson, Buster R., 4,344,820, Cl. 201-15.000.

Elleman, Daniel D.: *See—*
United States of America, National Aeronautics and Space Administration; Wang, Taylor G.; and Elleman, Daniel D., 4,344,787, Cl. 65-21.400.

Ellingson, Hartley, to Frontier, Inc. Vacuum grain moving apparatus. 4,344,723, Cl. 406-53.000.

Elliott, Brian J., to International Business Machines Corporation. Apparatus for determining pen acceleration. 4,345,239, Cl. 340-146.3SY.

Ellslager, William M.: *See—*
Zucker, Newton; and Ellslager, William M., 4,344,858, Cl. 252-358.000.

Eltra Corporation: *See—*
Vella, Louis C.; and Hansen, Walter I., 4,345,245, Cl. 340-744.000.

Emblem, Harold G.: *See—*
Shelley, Stanley J.; and Emblem, Harold G., 4,344,753, Cl. 432-3.000.

EMI Limited: *See—*
Dean, Terence F., 4,344,590, Cl. 242-201.000.

Emmett, James S.: *See—*
Chen, Evan N.; Emmett, James S.; Ferraro, Frank A.; and Peleckis, Anthony J., 4,344,227, Cl. 30-41.000.

Endo, Hiroyuki; and Ikenoue, Yutaka, to Hitachi Powdered Metals Company, Ltd. Iron-based sintered sliding product. 4,344,795, Cl. 75-230.000.

Endress u. Hauser GmbH u. Co.: *See—*
Kompa, Gunter; and Stock, Don J. R., 4,344,705, Cl. 356-5.000.

Energy Conversion Devices, Inc.: *See—*
Klose, Peter H.; and Ovshinsky, Herbert C., 4,344,701, Cl. 355-51.000.

Enso- Gutzeit Osakeyhtio : *See—*
Hakulinen, Risto R., 4,344,848, Cl. 210-617.000.

Entreprise Generale de Chauffage Industriel Pillard: *See—*
Pillard, Jean-Claude, 4,344,772, Cl. 48-76.000.

Equipment Company of America: *See—*
Albin, Michael J., 4,344,551, Cl. 225-86.000.

Ercoli, Nicolo. Oxotetrahydrothiophenes. 4,344,956, Cl. 424-272.000.

Erickson, Erick E.; and Licitis, Gunars, Sr., to Marvin Glass & Associates. Musical light toy. 4,344,346, Cl. 84-1.180.

Erickson, Wayne. Extensible socket wrench. 4,344,340, Cl. 81-177.00A.

Ernst, Edwin R.: *See—*
Robbins, Max L.; and Ernst, Edwin R., 4,344,863, Cl. 252-192.000.

Ernst Flitsch GmbH & Co.: *See—*
Gotzenberger, Rudibert, 4,344,566, Cl. 236-92.00B.

Essex Chemical Corp.: *See—*
Rizk, Sidky D.; Hsieh, Harry W. S.; and Prendergast, John J., 4,345,053, Cl. 525-440.000.

Etienne, Michel, to Automobiles Peugeot; and Societe Anonyme Automobiles Citroen. Transmission mechanism comprising a clutch and a gear box having a plurality of speed ratios. 4,344,513, Cl. 192-.02R.

Etoh, Yukihiro; Tanaka, Toshiaki; Sugasawa, Fukashi; and Iizuka, Haruhiko, to Nissan Motor Company, Limited. Internal combustion engine. 4,344,393, Cl. 123-198.00F.

Evans, Anthony; Lesniak, John M.; and Boardman, Franklin, to Johnson & Johnson. Orthopedic bandage having improved catalyst system. 4,344,423, Cl. 128-90.000.
Exxon Production Research Company: *See*—
Butler, Roger M., 4,344,485, Cl. 166-271.000.
Exxon Research and Engineering Company: *See*—
Burke, Oliver W., Jr., 4,344,859, Cl. 252-359.00D.
Cull, Neville L.; and Sawyer, Willard H., 4,344,867, Cl. 252-439.000.
Gutierrez, Antonio; Brois, Stanley J.; Ryer, Jack; and Deen, Harold E., 4,344,853, Cl. 252-33.600.
McCandlish, Larry E.; Wright, Franklin J.; and Kugler, Edwin L., 4,345,038, Cl. 518-711.000.
Robbins, Max L.; and Ernst, Edwin R., 4,344,863, Cl. 252-192.000.
F. L. Smidth & Co.: *See*—
Hjaeresen, Paul T., 4,344,596, Cl. 248-550.000.
Fahle, Ronald W.; and Reiser, Carl A., to United Technologies Corporation. Fuel cell stack compressive loading system. 4,345,009, Cl. 429-37.000.
Fahlstrom, George B., to Osmose Wood Preserving Co. of America, Inc. Method for treatment of wood using a reactive closure means to provide a time delayed release of the treating agent. 4,344,250, Cl. 47-57.500.
Fahmy, Mohamed A. H.; and Fukuto, Tetsuo R., to University of California, The Regents of the. Production of N-chlorosulfinylcarbamate esters. 4,344,883, Cl. 549-467.000.
Fahy, William J.; and Luborsky, Fred E., to General Electric Company. Electro-deposition of a nonmagnetic conductive coating for memory wire protection. 4,345,007, Cl. 428-679.000.
Falck, Glenn H.; and Boose, James R., to Koppers Company, Inc. Fines removal in horizontal coolers. 4,344,524, Cl. 198-494.000.
Fallos, George: *See*—
Orsinger, Winston A.; and Fallos, George, 4,344,729, Cl. 414-226.000.
Farmitalia Carlo Erba S.p.A.: *See*—
Suarato, Antonino; Penco, Sergio; and Arcamone, Federico, 4,345,070, Cl. 536-17.00A.
Suarato, Antonio; Penco, Sergio; and Arcamone, Federico, 4,345,068, Cl. 536-17.00A.
Farmont, Johann H. Building log with high thermal insulation characteristics. 4,344,263, Cl. 52-233.000.
Farr, Aaron V.; and Saunders, Robert L., to Abex Corporation. Bridge brake system. 4,344,200, Cl. 14-71.500.
Faulkner, Alfred H. Digital envelope generator. 4,344,347, Cl. 84-1.260.
Feal S.p.A.: *See*—
Varlonga, Giovanni, 4,344,254, Cl. 49-401.000.
Feehery, William J., Jr.: *See*—
Salmonsen, Andrew R.; and Feehery, William J., Jr., 4,344,493, Cl. 177-52.000.
Ferranti Limited: *See*—
Chilcot, Arthur L., 4,344,905, Cl. 264-111.000.
Howie, James B.; and McLeod, John, 4,345,330, Cl. 372-29.000.
Ferraro, Frank A.: *See*—
Chen, Evan N.; Emmett, James S.; Ferraro, Frank A.; and Peleckis, Anthony J., 4,344,227, Cl. 30-41.000.
Ferrini, Pier G.: *See*—
Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,344,957, Cl. 424-273.00B.
Ferris, James J. Engine apparatus. 4,344,742, Cl. 417-343.000.
Fetterman, Robert C.: *See*—
Schwartz, S. Robert; Swan, William E., Jr.; Fetterman, Robert C.; and Neubaum, Victor A., deceased, 4,344,822, Cl. 201-39.000.
Feuerherd, Karl-Heinz: *See*—
Koenig, Karl-Heinz; Schwendemann, Volker; and Feuerherd, Karl-Heinz, 4,344,891, Cl. 260-453.00A.
Fichtel & Sachs AG: *See*—
Kolb, Dieter, 4,344,516, Cl. 192-114.00R.
Fidelity Union Trust Company, Executor: *See*—
Schneider, Louis; Graham, David E., deceased; and Fidelity Union Trust Company, Executor, 4,344,788, Cl. 71-76.000.
Fielden, John S., to South Eastern Electricity Board. Electronic kilowatt-hour meter for measuring electrical energy consumption. 4,345,311, Cl. 364-483.000.
File, Joseph: *See*—
Sloyan, Jerome J., 4,344,598, Cl. 248-651.000.
Finchimica S.R.L.: *See*—
Blandamura, Manlio, 4,344,942, Cl. 424-243.000.
Finike Italiana Marposs S.p.A.: *See*—
Albertazzi, Gastone, 4,344,233, Cl. 33-178.00E.
Fink, Lothar; and Wojcichowski, Lothar, to Klockner-Werke AG. Mold apparatus with elastic clamping means. 4,344,601, Cl. 249-167.000.
Finkelston, Robert J., to SPS Technologies, Inc. Apparatus and method for tightening an assembly. 4,344,216, Cl. 29-407.000.
Firestone Tire & Rubber Company, The: *See*—
Rumpf, Robert J., 4,344,589, Cl. 242-107.40A.
Fisher, Alan J. Electrical peak detector. 4,345,168, Cl. 307-351.000.
Fisher, Charles B.; and Fisher, Sidney T. Multiple-site underground magnetic heating of hydrocarbons. 4,344,483, Cl. 166-248.000.
Fisher, Sidney T.: *See*—
Fisher, Charles B.; and Fisher, Sidney T., 4,344,483, Cl. 166-248.000.
Flamme, Walter; and Rahn, Oskar, to Peltzer & Ehlers GmbH & Co. Forming press with a cam arrangement. 4,344,312, Cl. 72-452.000.
Flanders, Thomas E., to General Electric Co. Levitated ball inclinometer. 4,344,235, Cl. 33-366.000.
Fleischer, Henry. Folding baby carriers. 4,344,649, Cl. 297-30.000.
Fletcher, Charles W., Jr.: *See*—
Jennings, Thomas C.; and Fletcher, Charles W., Jr., 4,345,045, Cl. 524-180.000.
Flexible Steel Lacing Company: *See*—
Pray, Winston C., 4,344,213, Cl. 29-243.500.
Flik, Inc.: *See*—
Kolm, Henry H.; and Kolm, Eric A., 4,345,305, Cl. 362-186.000.
Floersheim, Sydney N.: *See*—
Diamond, Arthur S.; and Floersheim, Sydney N., 4,345,013, Cl. 430-106.600.
FMC Corporation: *See*—
Brown, Gregory J., 4,344,469, Cl. 141-90.000.
Fretz, Edward R., Jr.; and Green, Joseph, 4,345,059, Cl. 528-102.000.
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,344,884, Cl. 549-273.000.
Lill, Melvin H.; and Roberts, Thomas E., Jr., 4,344,234, Cl. 33-228.000.
Pinsky, Michael L.; and Walden, John, 4,344,650, Cl. 299-4.000.
Sigal, Jacob, 4,344,716, Cl. 403-13.000.
Thompson, John S.; and Jadlocki, Joseph F., Jr., 4,344,977, Cl. 426-532.000.
Foley, James W.: *See*—
Cournoyer, Richard L.; and Foley, James W., 4,345,017, Cl. 430-221.000.
Foley, Thomas J.: *See*—
Louderback, Allan L.; and Foley, Thomas J., 4,344,864, Cl. 252-408.000.
Folkenroth, Richard P.; and Dunn, Thomas J., to Dentsply Research & Development Corp. Water recycler for dental operatories. 4,344,756, Cl. 433-92.000.
Forberg, Horst; and Achtnig, Klaus-Peter, to Krone GmbH. Overvoltage-arrester device for terminal- or junction blocks in telecommunication equipment. 4,345,294, Cl. 361-119.000.
Ford Motor Company: *See*—
Carriere, Donald L., 4,344,336, Cl. 74-690.000.
Forder, William C. F. Surgical retractor. 4,344,420, Cl. 128-20.000.
Forest Country Engineering Co.: *See*—
Dubey, Dennis, 4,344,470, Cl. 144-2.00Z.
Fortner, Suzanne M.: *See*—
Wielhouwer, Sandra L.; and Fortner, Suzanne M., 4,344,758, Cl. 433-137.000.
Fosnaugh, Jerry L.: *See*—
Lorette, Nicholas B.; and Fosnaugh, Jerry L., 4,344,916, Cl. 422-40.000.
Foster Wheeler Energy Corporation: *See*—
Stevens, William D., 4,344,388, Cl. 122-235.00R.
Zoschak, Robert J., 4,344,371, Cl. 110-229.000.
Fox, Irwin, to Fox, Irwin; Samuels, Alvin; and Samuels, David. Reactive iron oxide agents for scavenging hydrogen sulfide from hydrocarbon liquids. 4,344,842, Cl. 208-244.000.
Framatome: *See*—
Yazidjian, Jean-Claude, 4,344,387, Cl. 122-34.000.
Franck, Guy C. J. L. G. G. M.: *See*—
Bolsens, Frans P. J.; Franck, Guy C. J. L. G. G. M.; and Dehertefelt, Henri, 4,344,212, Cl. 29-33.00F.
Frazier, Albert A., to Aladdin Industries, Incorporated. Pump dispensers for containers. 4,344,548, Cl. 222-209.000.
Frechou, Jerome; and Isambert, Gilles. Automatic machine for peeling hard-boiled eggs. 4,344,359, Cl. 99-580.000.
Fretz, Edward R., Jr.; and Green, Joseph, to FMC Corporation. Fire retardant epoxy resins containing 3-hydroxyalkylphosphine oxides. 4,345,059, Cl. 528-102.000.
Frey, Fred J. Office partition interconnector assembly. 4,344,475, Cl. 160-135.000.
Friebe, Heinz W.: *See*—
Haupt, Walter; Warncke, Heinz; Friebe, Heinz W.; and Reimold, Dieter, 4,344,320, Cl. 73-40.700.
Friedli, Hans R.; and Boriack, Clinton J., to Dow Chemical Company, The. Brominated cycloaliphatic (meth) acrylate compositions. 4,345,048, Cl. 525-192.000.
Fritz, Hans-Gerhard; and Scharrenbroich, Helmut, to Voith Fischer Kunststofftechnik GmbH & Co. KG. Injection stretch-blow molding apparatus for the manufacture of biaxially oriented hollow bodies from thermoplastic material. 4,344,749, Cl. 425-174.400.
Fritz, William E.; and Soddy, Thomas C., to Youngstown Steel Door Company, The. Railway hopper car gate anti-friction seal. 4,344,365, Cl. 105-282.00A.
Frommlet, Hubert: *See*—
Derschmidt, Hans; and Frommlet, Hubert, 4,344,739, Cl. 416-141.000.
Frontier, Inc.: *See*—
Ellingson, Hartley, 4,344,723, Cl. 406-53.000.
Frudakis, Rosalie. Game encouraging self-improvement. 4,344,625, Cl. 273-242.000.
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating insects and acarids with 3-(2-chloro-3,3,4,4,4-pentafluoro-1-butenyl)-2,2-dimethyl-cyclopropanecarboxylic acid esters. 4,344,960, Cl. 424-282.000.
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Pesticidally active 2-phenyl-alk-1-enyl-cyclopropane-carboxylic acid esters. 4,344,963, Cl. 424-304.000.

Fuelsaver Company: *See—*
Bailey, Frank W., 4,344,479, Cl. 165-109.00R.

Fuji Photo Film Co., Ltd.: *See—*
Hirano, Shigeo; and Sakanoue, Kei, 4,345,024, Cl. 430-382.000.
Takahashi, Osamu; Ohki, Nobutaka; and Aoki, Kozo, 4,345,016, Cl. 430-214.000.
Tokuda, Kanji, 4,344,708, Cl. 356-404.000.
Yagihara, Morio; and Yokota, Yukio, 4,345,025, Cl. 430-385.000.

Fujihara, Youji; Shiba, Masami; Hazama, Toshio; and Kito, Shozo, to Daihatsu Motor Co., Ltd.; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Electric switch apparatus for automobile power train clutch. 4,344,514, Cl. 192-3.580.

Fujii, Takao: *See—*
Nagura, Kenji; Takeda, Shinichi; Namie, Koshi; Fujii, Takao; Yamamoto, Michio; and Yokoyama, Seiichi, 4,345,089, Cl. 560-77.000.

Fujinaga, Katsumi: *See—*
Yoshikawa, Yoshihiro; Katabami, Takao; Fujinaga, Katsumi; and Kobayashi, Yoshiaki, 4,344,327, Cl. 73-626.000.

Fujinami, Shosaku: *See—*
Ishii, Yoshiaki; Kume, Tsutomu; Ando, Naoyoshi; and Fujinami, Shosaku, 4,344,373, Cl. 110-347.000.

Fujioka, Yoshiki: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,345,192, Cl. 318-592.000.

Fujisawa, Tetsuo; and Tanioka, Takashi, to Kabushiki Kaisha Kobe Seiko Sho. Cyclone separator with influent guide blade. 4,344,538, Cl. 209-144.000.

Fujita, Kenji; Korehisa, Kazuo; Asaba, Hirosi; Harada, Hideo; and Shibuya, Tsuneo, to Sumitomo Heavy Industries, Ltd. Apparatus for cleaning door frames of coke ovens. 4,344,204, Cl. 15-93.00A.

Fujitsu Fanuc Limited: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,345,192, Cl. 318-592.000.

Fujitsu Limited: *See—*
Hirotani, Tatsushi; and Nagata, Satoshi, 4,345,316, Cl. 364-900.000.
Yoneda, Yasuhiro; Kitakohji, Toshisuke; and Kitamura, Kenro, 4,345,020, Cl. 430-270.000.

Fujiwara, Tatsuro: *See—*
Sakakibara, Hideo; Fujiwara, Tatsuro; Okegawa, Osamu; Honda, Eiichi; Watanabe, Susumu; and Matsuda, Tetsuo, 4,345,069, Cl. 536-7.100.

Fujiwara, Toshitaka; Nabeta, Teiichi; Akita, Sigeyuki; and Kitagawa, Junji, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Apparatus responsive to the amount of refrigerant flow in a refrigerant flow in a refrigerant circulating system. 4,344,293, Cl. 62-126.000.

Fukuda, Kyohei, to Hitachi, Ltd. Color picture tube with magnetic focusing system. 4,345,183, Cl. 313-412.000.

Fukuhara, Kunio: *See—*
Ueno, Fumito; and Fukuhara, Kunio, 4,344,297, Cl. 62-196.00C.

Fukuto, Tetsuo R.: *See—*
Fahmy, Mohamed A. H.; and Fukuto, Tetsuo R., 4,344,883, Cl. 549-467.000.

Fukuyama, Keiji: *See—*
Saito, Masato; Tsuchihashi, Michihiro; Takai, Yoshinori; Fukuyama, Keiji; and Watanabe, Keiji, 4,345,186, Cl. 315-49.000.

Fulop, Gabor F.; Betz, Jacob F.; Meyers, Peter V.; and Doty, Mitchell E., to Ametek, Inc. Cadmium telluride photovoltaic cells. 4,345,107, Cl. 136-255.000.

Furukawa Electric Co., Ltd., The: *See—*
Sugata, Shigeo; Tachigami, Shigeru; Kikkawa, Satoru; Umezu, Haruo; and Ohkubo, Masanori, 4,345,112, Cl. 174-107.000.

Furumaki, Naoyuki: *See—*
Miki, Isao; Kishihara, Takeshi; Kawai, Toshiyuki; and Furumaki, Naoyuki, 4,344,477, Cl. 164-98.000.

Furuta, Kenzi: *See—*
Kanayama, Katsumi; Furuta, Kenzi; and Motoyama, Kazuyasu, 4,345,286, Cl. 360-137.000.

Futere, Albert L.; and Kelly, Michael J. Limb protector for athletes. 4,344,189, Cl. 2-16.000.

Fyles, Kenneth M.; and Shorrock, Peter, to Pilkington Brothers Limited. Alkali resistant glass fibres for cement reinforcement. 4,345,037, Cl. 501-38.000.

G. D Societa per Azioni: *See—*
Seragnoli, Enzo, 4,344,445, Cl. 131-282.000.

GAF Corporation: *See—*
Schneider, Louis; Graham, David E., deceased; and Fidelity Union Trust Company, Executor, 4,344,788, Cl. 71-76.000.

Gago, Ignace; and Coppens, Guillaume, to Interox (Societe Anonyme). Process for the preparation of coated seeds. 4,344,979, Cl. 427-4.000.

Gail, Heinz: *See—*
Ganseuer, Horst; Remus, Dieter; and Gail, Heinz, 4,344,605, Cl. 266-48.000.

Gailey, J. Lynn: *See—*
Wollam, Carl A.; Gailey, J. Lynn; and Chalmers, Alexander A., 4,344,990, Cl. 427-286.000.

Gallagher, John P., Jr., to Trane Company, The. Water-in-oil emulsifier and oil-burner boiler system incorporating such emulsifier. 4,344,752, Cl. 431-354.000.

Galos, Imre, to Advance Valve Installations. Apparatus for plugging a pressure piping system. 4,344,460, Cl. 138-89.000.

Gandini, Marco; and Viale, Ernesto, to Cselt-Centro Studi e Laboratori Telecomunicazioni S.p.A. Message-interchange circuitry for microprocessors linked by synchronous communication network. 4,345,325, Cl. 370-29.000.

Gangluff, Joseph A.; and Charton, Wayne F. Heavy duty seedling planter. 4,344,374, Cl. 111-2.000.

Ganseuer, Horst; Remus, Dieter; and Gail, Heinz, to Siemag Transplan GmbH. Apparatus for cutting the end off a coiled strip. 4,344,605, Cl. 266-48.000.

Garbutt, John T., to Grain Processing Corporation. Preservation of fruits and vegetables. 4,344,971, Cl. 426-102.000.

Gardner, James J. Steam powered stove. 4,344,569, Cl. 237-12.100.

Garetti, Enzo: *See—*
Bernardini, Vincenzo; Garetti, Enzo; and Manfreddi, Renato, 4,345,319, Cl. 365-210.000.

Garrett Corporation, The: *See—*
Liu, Hsin-Tuan, 4,344,737, Cl. 415-199.100.

Garroway, Allen N.: *See—*
Bertrand, Richard D.; Chingas, Gerard C.; Garroway, Allen N.; and Moniz, William B., 4,345,207, Cl. 324-308.000.

Garvin, George R., to Sam Garvin & Company. Method for the manufacture of washers and the like. 4,344,342, Cl. 83-45.000.

Gasaver Corp.: *See—*
Minor, Robert N.; and Cloutier, Edward J. F., 4,344,406, Cl. 123-587.000.

Gaskins, Jack C.: *See—*
Christian, Charlie R.; Gaskins, Jack C.; Hamrick, Jack; and Reed, Norman L., 4,344,211, Cl. 28-183.000.

Gasparrini, Charles R.: *See—*
MacPhee, John; Gasparrini, Charles R.; and Arnolds, Karlheinz E. H., 4,344,361, Cl. 101-425.000.

Gaudette, Andrew J.; Dana, Dave A.; and Haney, Donald, to Cotton Machinery Company, Inc. Combined cotton module builder and seed cotton trash extractor. 4,344,272, Cl. 56-16.600.

Gaul, James M.; and Nguyen, Tinh, to Atlantic Richfield Company. Organic polyisocyanate-dialkyl carbonate adhesive binder compositions. 4,344,798, Cl. 106-123.0LC.

Gauthier, Francis: *See—*
Mignien, Georges; and Gauthier, Francis, 4,345,137, Cl. 219-121.0PK.

Gautier, Bernard, to Societe Francaise d'Equipements pour la Navigation Aerienne. Aircraft flight control process and device. 4,345,310, Cl. 364-429.000.

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Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; Keve, Tibor; and Gazdac, Maria, 4,345,082, Cl. 546-51.000.

Gazdag, Maria: *See—*
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Gearco Limited: *See—*
Jerry, James H.; and Dickie, Ira A., 4,344,501, Cl. 180-253.000.

Geary, William C.: *See—*
Heydrich, Hans; Woods, Melvin E.; and Geary, William C., 4,344,390, Cl. 123-41.82A.

Gebruder Buhler AG: *See—*
Seiler, Werner, 4,344,975, Cl. 426-285.000.

Geiger, Istvan; and Theuerkauf, Heinz, to Volkswagenwerk Aktiengesellschaft. Method for operation of a spark-ignited internal combustion engine and arrangement for execution of the method. 4,344,397, Cl. 123-339.000.

Gelbard, Robert B., to General Electric Company. Thermal delay demand defrost system. 4,344,294, Cl. 62-155.000.

Gellert, Jobst U. Edge gated injection molding system with hollow seals. 4,344,750, Cl. 425-548.000.

General Battery Corporation: *See—*
Oxenreider, Terry; and Eberle, William J., 4,344,748, Cl. 425-143.000.

General Dynamics, Pomona Division: *See—*
Golden, Michael D., 4,344,350, Cl. 89-33.00E.

General Electric Company: *See—*
Alley, Robert P.; and Tompkins, Russell E., 4,345,229, Cl. 336-83.000.
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., 4,345,200, Cl. 323-350.000.
Brunelle, Daniel J., 4,345,062, Cl. 528-198.000.
Dolce, Thomas J., 4,344,878, Cl. 524-409.000.
Eichelberger, Charles W.; and Wojnarowski, Robert J., 4,345,236, Cl. 338-176.000.
Fahy, William J.; and Lubonsky, Fred E., 4,345,007, Cl. 428-679.000.
Flanders, Thomas E., 4,344,235, Cl. 33-366.000.
Gelbard, Robert B., 4,344,294, Cl. 62-155.000.
Glugla, Paul G., 4,345,010, Cl. 429-197.000.
Grahame, Frederick W., 4,345,298, Cl. 361-273.000.
Harmon, Larry R., 4,345,135, Cl. 219-10.55B.
Howell, Edward K., 4,345,289, Cl. 361-45.000.
Jones, Donald W., 4,345,175, Cl. 310-45.000.
Lenzing, Richard S., 4,345,224, Cl. 335-132.000.
Loucks, George R., 4,345,050, Cl. 525-390.000.
Loucks, George R., 4,345,051, Cl. 525-390.000.
Norwood, Richard L., 4,345,145, Cl. 219-492.000.
Olson, Daniel R., 4,344,830, Cl. 204-159.160.
Owyang, King, 4,345,266, Cl. 357-34.000.
Stark, Charles J., 4,344,887, Cl. 549-531.000.
Summey, Samuel T., 4,345,306, Cl. 362-294.000.
Wolfinger, John F., 4,345,198, Cl. 322-25.000.

General Instrument Corporation: *See—*
Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., 4,345,308, Cl. 362-332.000.
General Motors Corporation: *See—*
Nagy, Louis L.; and Myers, Mark E., Jr., 4,345,202, Cl. 324-58.50B.
Voss, Richard J., 4,345,199, Cl. 322-28.000.
Wheadon, Ellis G.; and Nowakowski, Robert J., 4,345,197, Cl. 320-6.000.
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Aubert, Jean-Paul; and Genini, Maurice, 4,344,462, Cl. 138-130.000.
Genth, Hermann: *See—*
Kuhle, Engelbert; Paulus, Wilfried; Genth, Hermann; and Brandes, Wilhelm, 4,344,962, Cl. 424-300.000.
George, Delbert L.: *See—*
Healey, Daniel P., Jr.; and George, Delbert L., 4,344,808, Cl. 156-166.000.
Gerard, Roland; Brun, Norbert; and Ricard, Jacques, to Cibie Projecteurs. Optical systems permitting controlled shifting of the beam pattern in headlamps, especially for vehicles. 4,345,303, Cl. 362-80.000.
Gerdes, John H., Jr., to Bethlehem Steel Corporation. Method of determining coke level. 4,344,819, Cl. 201-1.000.
Gerlach, Robert L., to Perkin-Elmer Corporation, The. Magnetic lens. 4,345,152, Cl. 250-396.0ML.
Gerrick, Richard L. Portable golf ball washer. 4,344,203, Cl. 15-21.00A.
Getto, Elmar: *See—*
Widder, Rudi; Getto, Elmar; and Hettche, Albert, 4,344,862, Cl. 252-391.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Redemann, Richard, 4,344,581, Cl. 241-88.400.
Giersch, Robert V. C., to Edward Weck & Company, Inc. Hemostatic clip cartridge. 4,344,531, Cl. 206-339.000.
Gies, Johannes, to Siemens Aktiengesellschaft. Transistor switch with two control inputs. 4,345,164, Cl. 307-255.000.
Giggi, Robert A.: *See—*
Arulpragasam, Jega A.; Giggi, Robert A.; Lary, Richard F.; and Sullivan, Daniel T., 4,345,309, Cl. 364-200.000.
Giglia, Robert D., to American Cyanamid Company. Electrochromic display device with improved erasing characteristic. 4,344,674, Cl. 350-357.000.
Gilden, Meyer: *See—*
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Gillette Company, The: *See—*
Tolgyesi, Eva; and Bresak, Ann F., 4,344,763, Cl. 8-127.510.
Gilmore, William J., to Acco Industries Inc. Self-adjusting cable conduit mechanism. 4,344,518, Cl. 192-111.00A.
Gilson, James J.; and Barrett, Richard B. Construction of nozzle. 4,344,577, Cl. 239-546.000.
Gleinig, Harald: *See—*
Lahrs, Jurgen; Schubert, Klaus; Gosling, Claus; Jovcic, Dorde; Gleinig, Harald; and Skerhut, Reiner, 4,344,766, Cl. 8-524.000.
Glen, James M.: *See—*
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Glugla, Paul G., to General Electric Company. Electrolyte for secondary electrochemical cell. 4,345,010, Cl. 429-197.000.
Godai, Tomokazu; Minato, Shoji; Nishimura, Katushi; and Ogawa, Tsuneshi, to Kobe Steel, Ltd. Composite wire for stainless steel welding. 4,345,140, Cl. 219-146.230.
Goedecke, Ralf; Hofen, Willi; Seifert, Hermann; and Siekmann, Gerd, to Bayer Aktiengesellschaft. Process for the preparation of percarboxylic acid solutions. 4,344,897, Cl. 260-502.00R.
Gohlke, Daniel J., to W. L. Gore & Associates, Inc. Breathable laminate. 4,344,999, Cl. 428-212.000.
Gold, Charles D.: *See—*
Gold, Henry O.; and Gold, Charles D., 4,344,755, Cl. 433-76.000.
Gold, Henry O.; and Gold, Charles D. Dental handpiece guide. 4,344,755, Cl. 433-76.000.
Golden, Michael D., to General Dynamics, Pomona Division. Cross-feeder. 4,344,350, Cl. 89-33.00E.
Golden Skillet Corporation: *See—*
Craig, Ernest M.; and Minor, John M., 4,345,143, Cl. 219-411.000.
Goldfarb, Adolph E.; and Dantzer, Elonne. Play set. 4,344,249, Cl. 46-151.000.
Goldsmith, Riley G., to Conoco Inc. Multiple anchors for a tension leg platform. 4,344,721, Cl. 405-224.000.
Goodman, Alvin M.; and Tarng, Ming L., to RCA Corporation. Method of passivating a semiconductor device with a multi-layer passivant system by thermally growing a layer of oxide on an oxygen doped polycrystalline silicon layer. 4,344,985, Cl. 427-85.000.
Gordon, Harry W., to Del Laboratories, Inc. Nail cleanser. 4,344,932, Cl. 424-61.000.
Gosling, Claus: *See—*
Lahrs, Jurgen; Schubert, Klaus; Gosling, Claus; Jovcic, Dorde; Gleinig, Harald; and Skerhut, Reiner, 4,344,766, Cl. 8-524.000.
Gotberg, John P. Drawer associating constructions. 4,344,661, Cl. 312-330.00R.
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Goth, John, to Goth, John; and Goth, James, a part interest. Vehicle axle mounting arrangement. 4,344,642, Cl. 280-682.000.
Goto, Yasuo: *See—*
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Gotzenberger, Rudibert, to Ernst Flitsch GmbH & Co. Thermostatic expansion valve. 4,344,566, Cl. 236-92.00B.
Gould Inc.: *See—*
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Graf, Harlan G.; Janssen, Harry R.; and Edwards, Don L., to Conoco Inc. Water cooled vertical gas distributor. 4,344,754, Cl. 432-233.000.
Graham, David E., deceased: *See—*
Schneider, Louis; Graham, David E., deceased; and Fidelity Union Trust Company, Executor, 4,344,788, Cl. 71-76.000.
Grahame, Frederick W., to General Electric Company. Modified round roll capacitor and method of making. 4,345,298, Cl. 361-273.000.
Grain Processing Corporation: *See—*
Garbutt, John T., 4,344,971, Cl. 426-102.000.
Gram, Knud F. Sail craft. 4,344,377, Cl. 114-103.000.
Grange, Andre A.; and Corbe, Jean A., to Societe Nationale des Poudres et Explosifs. Process and apparatus for manufacturing filaments of a refractory material by high-frequency heating. 4,344,983, Cl. 427-46.000.
Grant, Duane E.; and Walker, James R., to International Business Machines Corporation. Zonal concentrator for accurate erasure of photoconductor charge. 4,344,691, Cl. 355-1.000.
Grasso, Albert P.; and Lane, John W., to United Technologies Corporation. Fuel cell power plant self-controlling coolant cleaning process. 4,344,849, Cl. 210-662.000.
Grasso, Albert P., to United Technologies Corporation. Fuel cell power plant coolant cleaning system and method. 4,344,850, Cl. 210-664.000.
Gray, Paul D., to Magnex Limited. Collapsible structure and method of building using such a structure. 4,344,266, Cl. 52-742.000.
Gray, Richard L., to Reliance Universal, Inc. Water-borne topcoat spray method. 4,344,991, Cl. 427-325.000.
Great Lakes Chemical Corporation: *See—*
Smith, Ray E.; Shukla, Jayendra G.; and Nicholson, Richard R., 4,345,002, Cl. 428-288.000.
Green, James A., II: *See—*
Young, Donald C.; and Green, James A., II, 4,345,099, Cl. 564-63.000.
Green, Joseph: *See—*
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Green, Norman F.; and Wilda, Douglas W., to Honeywell Inc. Fluid pressure sealing ring for a valve. 4,344,632, Cl. 277-152.000.
Green, Walter L., to United States of America, Energy. Control system to reduce the effects of friction in drive trains of continuous-path-positioning systems. 4,345,194, Cl. 318-621.000.
Greenhalgh, John L.: *See—*
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Greer, Douglas S.; and Grunewald, Paul, to Burroughs Corporation. Video output circuit for high resolution character generator in a digital display unit. 4,345,244, Cl. 340-728.000.
Greer Hydraulics, Incorporated: *See—*
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Gref, Hans, to Agfa-Gevaert AG. Independent drive for a roller cavity suction apparatus. 4,344,552, Cl. 226-95.000.
Grenet, Edouard P. Process for obtaining energy, soft water and by-products from aqueous substances. 4,344,847, Cl. 210-600.000.
Gries, Robert J.; Miko, Sandor; and Conn, Calvin E., to RCA Corporation. Television receiver high frequency regulated power supply including a low voltage ferroresonant transformer coupled to a step-up high voltage transformer. 4,345,188, Cl. 315-411.000.
Griffith, Carl D.; and Oliver, Kenneth L., to Sperry Corporation. Strapdown multifunction servoactuator apparatus for aircraft. 4,345,195, Cl. 318-628.000.
Grimmett, Christopher M.: *See—*
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Groszstuck, Werner, to Nustep Trenndusen Entwicklungs- und Patentverwertungsgesellschaft mbH & Co. KG. Apparatus for the separation of fluids. 4,344,780, Cl. 55-347.000.
Groszstuck, Werner, to Nustep Trenndusen Entwicklungs- und Patentverwertungsgesellschaft mbH & Co. KG. Apparatus for the separation of fluid mixtures into components of different mass. 4,344,782, Cl. 55-397.000.
Grote, Hugo; Hasselmann, Heinz; Kunze, Volkmar; Zacharias, Karl; Kuelpmann, Robert; and Mueller, Paul, to Mannesmann DeMag AG. Claw clutch. 4,344,515, Cl. 192-67.00R.
Groth, Thomas: *See—*
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Grudkowski, Thomas W.; and Gilden, Meyer, to United Technologies Corporation. Temperature compensated gallium arsenide surface acoustic wave devices. 4,345,176, Cl. 310-313.00A.
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GTE Products Corporation: *See—*
Becker, Jon; Miller, G. Kirby; and Burney, Charles F., 4,344,810, Cl. 156-379.700.
Pappas, John A.; and Hebert, Roger T., 4,345,178, Cl. 313-113.000.
Seidel, Heinz H., 4,344,725, Cl. 407-114.000.

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Gulf States Manufacturers, Inc.: *See—*
Watkins, Neil A.; and Richardson, Clayton H., Jr., 4,344,413, Cl. 126-429.000.

Gunther, John E.; Lichty, William R.; and Hoffman, William C., to Hughes Aircraft Company. Fiber optic light traps for electro-optical display devices. 4,344,668, Cl. 350-96.270.

Gupton, John E.; and Shim, Norman, to Baxter Travenol Laboratories, Inc. Bubble detector with feedback circuit for improved sensitivity. 4,344,429, Cl. 128-214.00R.

Gustafson, Hans H. Bed having two mutually displaceable frames for wall side access. 4,344,195, Cl. 5-11.000.

Gustav Georg Veith GmbH & Co., KG,: *See—*
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Gutierrez, Antonio; Brois, Stanley J.; Ryer, Jack; and Deen, Harold E., to Exxon Research & Engineering Co. Functional fluid containing metal salts of esters of hydrocarbyl succinic acid or anhydride with thio-bis-alkanols as antioxidants. 4,344,853, Cl. 252-33.600.

Gutierrez Atencio, Francisco J. Hydropowered bulkhead. 4,345,159, Cl. 290-43.000.

Haapamaki, Pertti, to Rauma-Repola Oy. Slurry measuring apparatus. 4,344,321, Cl. 73-61.400.

Haas, Gustav: *See—*
Archenholtz, Ake; Caisander, Yngve; and Haas, Gustav, 4,344,652, Cl. 299-70.000.

Haas, Roger A.: *See—*
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Haase, Thomas A.: *See—*
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Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, to Ciba-Geigy Corporation. Benz-acyl-benzimidazole derivatives and antiallergic compositions. 4,344,957, Cl. 424-273.00B.

Haes, Freddy; Reynhout, Cornelis M.; Hermes, Guillaume M. P. G.; and Boiten, Ebbe, to U.S. Philips Corporation. Shaving apparatus. 4,344,228, Cl. 30-43.900.

Haga, Takahiro: *See—*
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Hagemann, Hermann: *See—*
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Hahnke, Manfred: *See—*
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Hake, Lewis W.: *See—*
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Hakulinen, Risto R., to Enso- Gutzeit Osakeyhtio . Procedure for purifying waste water in a floating layer reactor. 4,344,848, Cl. 210-617.000.

Hall, Dale R., to B. F. Goodrich Company, The. Stabilization of post-chlorinated vinyl chloride polymers by phosphate salts. 4,345,040, Cl. 521-53.000.

Halliburton Company: *See—*
Nickles, Stephen K.; and Beaird, Suzanne M. T., 4,344,364, Cl. 105-62.00R.

Halper, Barry J.: *See—*
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Hamaker, Ralph A., to Xerox Corporation. Belt tracking system. 4,344,693, Cl. 355-3.0BE.

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Hammann, Ingeborg: *See—*
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Hammer, Jeffrey M.; and Olson, Thomas J., to Honeywell Inc. Method and apparatus for power load shedding. 4,345,162, Cl. 307-39.000.

Hammer, Robert H., to Boeing Company, The. Hybrid composite structures. 4,344,995, Cl. 428-61.000.

Hammer, Thomas: *See—*
Viehrig, Wolfgang; Osegowitsch, Viktor; and Hammer, Thomas, 4,344,690, Cl. 354-319.000.

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Hamrick, Jack: *See—*
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Hancock, Dane R.; and Rand, Burgess F. Pipe joint sealed test method. 4,344,319, Cl. 73-40.50R.

Haneishi, Yasuyuki: *See—*
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Hansen, Walter I.: *See—*
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Hanyu, Susumu; Tonomura, Yoshinobu; and Watanabe, Kazuo, to Janome Sewing Machine Co., Ltd. Speed control device for sewing machines. 4,345,196, Cl. 318-812.000.

Hara, Kazuyuki, to Ricoh Co. Ltd. Carriage support for recording head, diode matrix, and drivers. 4,345,264, Cl. 346-154.000.

Hara, Toshitami: *See—*
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,345,262, Cl. 346-140.00R.

Harada, Hideo: *See—*
Fujita, Kenji; Korehisa, Kazuo; Asaba, Hirosi; Harada, Hideo; and Shibuya, Tsuneo. 4,344,204, Cl. 15-93.00A.

Harford, Jack R., to RCA Corporation. Variable emitter degeneration gain-controlled amplifier. 4,345,214, Cl. 330-254.000.

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Harmer, George A., to Lucas Industries Limited. Friction lining wear indicators for shoe-drum brakes. 4,344,509, Cl. 188-1.110.

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Harper-Wyman Company: *See—*
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Harrell, Gordon E.: *See—*
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Harris, William S., Jr., to Texas Instruments Incorporated. Adaptable nonlinear transmission line terminator. 4,345,171, Cl. 307-560.000.

Harsco Corporation: *See—*
Perisastry, Ayyala; Vishe, Richard A.; and Hoet, Peter J., 4,344,528, Cl. 206-3.000.

Hartmann, Heinrich: *See—*
Denzinger, Walter; Straub, Ferdinand; and Hartmann, Heinrich, 4,345,049, Cl. 525-339.000.

Hartwig, Siegfried: *See—*
Lerche, Ernst; Raschke, Bernward; and Hartwig, Siegfried, 4,345,237, Cl. 340-27.00R.

Harwood, William J., to Scapa Dryers, Inc. In-line clipper seam. 4,344,209, Cl. 24-31.00R.

Hasegawa, Junzo; Kawabata, Susumu; Yoshida, Kazunori; Suzuki, Fuzio; Itoh, Yusuke; Suzuki, Hajime; Arakawa, Hiroshi; and Kobayashi, Akira, to K.K. Toyoda Jidoshokki Seisakusho; and K.K. Toyota Chuo Kenkyusho. Method and apparatus for jetting auxiliary fluid in jet loom. 4,344,465, Cl. 139-435.000.

Hasegawa, Junzo; Kawabata, Susumu; Kono, Kiichi; and Inoue, Tetsuzo, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Flexible type rapier loom. 4,344,466, Cl. 139-449.000.

Haselkorn, Michael H., to Armco Inc. Stable slurry of inactive magnesia and method therefor. 4,344,802, Cl. 148-27.000.

Hasse, Peter; Wiesinger, Johannes; and Pivit, Erich, to Dehn + Sohne + Co. KG; and AEG-Telefunken Aktiengesellschaft. Arrester. 4,345,293, Cl. 361-117.000.

Hasse, Peter; Wiesinger, Johannes; and Pivit, Erich, to Dehn & Sohne & Co. KG; and Aeg-Telefunken Aktiengesellschaft. Arrester with spark gap. 4,345,295, Cl. 361-130.000.

Hasselman, Walter, Jr., to C.P. Chemical Co., Inc. Process for the preparation of phenol-urea-formaldehyde condensation products. 4,345,061, Cl. 528-161.000.

Hasselmann, Heinz: *See—*
Grote, Hugo; Hasselmann, Heinz; Kunze, Volkmar; Zacharias, Karl; Kuelpmann, Robert; and Mueller, Paul, 4,344,515, Cl. 192-67.00R.

Hata, Kosei, to Seikenkai. Cultivation of a deodorizing lactobacillus strain, storage thereof, and composition containing living cells thereof. 4,345,032, Cl. 435-253.000.

Hattori, Kyo: *See—*
Idogaki, Takaharu; Kawai, Hisasi; Matsui, Takeshi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,345,228, Cl. 335-222.000.

Hattori, Shinichiro, to Olympus Optical Co., Ltd. Data recording device. 4,344,682, Cl. 354-62.000.

Hattori, Tadashi; and Ueno, Yoshiki, to Nippon Soken, Inc. Air-fuel ratio detecting system. 4,344,317, Cl. 73-23.000.

Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, to Nippon Soken, Inc. Power transmission device. 4,344,338, Cl. 74-752.00C.

Hauni-Werke Korber & Co. KG: *See—*
Hausler, Nikolaus; and Helms, Adolf, 4,344,382, Cl. 118-674.000.
Quarella, Guido, 4,344,526, Cl. 198-689.000.

Haupt, Walter; Warncke, Heinz; Friebe, Heinz W.; and Reimold, Dieter, to Bayer Aktiengesellschaft; and Rheinhold & Mahla GmbH. Crack indicator for monitoring the insulation of liquefied gas tanks. 4,344,320, Cl. 73-40.700.

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Hawkins, Royal R., to Sundstrand Corporation. Frequency detector. 4,344,328, Cl. 73-651.000.

Hawley, Gil R., to Phillips Petroleum Company. Polymerization with titanium impregnated silica-chromium catalysts. 4,345,055, Cl. 526-96.000.
Hayashi, Masamichi: *See*—
Murata, Tomoji; Goto, Yasuo; and Hayashi, Masamichi, 4,344,696, Cl. 355-8.000.
Hayat, Victor. Electric toothbrush. 4,344,202, Cl. 15-4.000.
Hayden, Rodney, to TRW Inc. Push-on push-off switch. 4,345,227, Cl. 335-186.000.
Hazama, Toshio: *See*—
Fujihara, Youji; Shiba, Masami; Hazama, Toshio; and Kito, Shozo, 4,344,514, Cl. 192-3.580.
Healey, Daniel P., Jr.; and George, Delbert L. Method for manufacturing synthetic resin laminate tubing having a high bursting strength. 4,344,808, Cl. 156-166.000.
Heaton, William C. Internal combustion engine. 4,344,288, Cl. 60-595.000.
Hebert, Roger T.: *See*—
Pappas, John A.; and Hebert, Roger T., 4,345,178, Cl. 313-113.000.
Heck, Lyle D.: *See*—
Bulger, Gary A.; Heck, Lyle D.; Huttemann, Robert D.; Morabito, Joseph M.; Pitetti, Raymond C.; Unger, Burton A.; and Vallere, Donald J., 4,344,223, Cl. 29-577.00C.
Heemskerk, Rutgerus S.: *See*—
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Heidelberger Druckmaschinen Aktiengesellschaft: *See*—
Jeschke, Willi; and Junghans, Rudi, 4,344,360, Cl. 101-363.000.
Jeschke, Willi; and Muller, Hans, 4,344,610, Cl. 270-6.000.
Heim, Ulrich, to Dragerwerk Aktiengesellschaft. Arrangement for determining a medium. 4,345,151, Cl. 250-341.000.
Heinemann, Otto; and Schmits, Heinz-Herbert, to Krupp Polysius AG. Cyclone separator. 4,344,783, Cl. 55-459.00B.
Heisler, Raymond A. Apparatus for sensing, orientating and delivering cans to subsequent conveyor. 4,344,522, Cl. 198-419.000.
Heismann, Richard A., to Outboard Marine Corporation. Grass catcher bag. 4,344,274, Cl. 56-202.000.
Heit, Martin A.: *See*—
Vogt, Robert K.; and Heit, Martin A., 4,344,527, Cl. 198-781.000.
Heller, Rudolf; and Schindler, Walter, to Contraves AG. Auxiliary apparatus at a stand for an optical observation device. 4,344,595, Cl. 248-542.000.
Helms, Adolf: *See*—
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Hendriksma, Roelof R.; and VanRhijn, Wilhelmus J., to Oce-van der Grinten N.V. Dispersion-heat process for producing spherical electrophotographic toner powder including hydrophobic silica. 4,345,015, Cl. 430-137.000.
Henery, Vern A., to PPG Industries, Inc. Method of delivering powder coating reactants. 4,344,986, Cl. 427-180.000.
Henry, Richard K., to Owens-Corning Fiberglas Corporation. Sensing apparatus for pelletizing process. 4,344,747, Cl. 425-140.000.
Henville, Michael I., to Unimax Switch Limited. Snap action switches. 4,345,125, Cl. 200-67.00D.
Hercofina: *See*—
Nagura, Kenji; Takeda, Shinichi; Namie, Koshi; Fujii, Takao; Yamamoto, Michio; and Yokoyama, Seiichi, 4,345,089, Cl. 560-77.000.
Hercules Incorporated: *See*—
Miyata, Nobuyoshi; and Murase, Heihachi, 4,345,004, Cl. 428-416.000.
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Koch, Klaus, 4,344,835, Cl. 208-8.00R.
Koch, Klaus, 4,344,836, Cl. 208-8.00R.
Hermanson, Lars, to Clark Door Company, Inc. Bracket and door track assembly. 4,344,206, Cl. 16-94.00R.
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Hermes Precisa International S.A.: *See*—
Clavel, Raymond, 4,344,714, Cl. 400-334.300.
Hernestam, Sven E. H.; Martinsson, Kjell B.; Christensson, Erik G.; and Olsson, Nils-Goran E., to AB Ferrosan. Method of treating diarrhoea with gamma-piperidino-butyrophenones. 4,344,952, Cl. 424-267.000.
Herring, Samuel H.: *See*—
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Herrington, Fox J., to Mobil Oil Corporation. Method and apparatus providing uniform resin distribution in a coextruded product. 4,344,907, Cl. 264-173.000.
Herrmann, Gert, to Pierburg Luftfahrtgerate Union GmbH. Self-sealing gear pump with sealing pressure divider. 4,344,745, Cl. 418-132.000.
Herron, Lorne R., to Atlas Copco Aktiebolag. Rock drill boom structure. 4,344,599, Cl. 248-660.000.
Hester, Gerald P.: *See*—
Cadotte, Ernest R.; and Hester, Gerald P., 4,345,315, Cl. 364-900.000.
Hetschko, Manfred: *See*—
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Heydrich, Hans; Woods, Melvin E.; and Geary, William C., to Cummins Engine Company, Inc. Piston-cylinder assembly of an internal combustion engine. 4,344,390, Cl. 123-41.82A.
Hicks, LaVern L.: *See*—
Hoshall, Thomas C.; Hicks, LaVern L.; and Renth, Larry, 4,344,580, Cl. 241-60.000.
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Higgins, Frank; Lautenshlager, Gilbert G.; and Bunn, Billy A., to United States Filter Corporation. Filter bag with protective cuff. 4,344,781, Cl. 55-379.000.
Higgins, Philip K., to Union Carbide Corporation. Constant current SCR power supply method and system for a welding load. 4,345,139, Cl. 219-137.0PS.
Hildreth, W. C. Automatic motorized fishing reel. 4,344,587, Cl. 242-106.000.
Hirano, Shigeo; and Sakanoue, Kei, to Fuji Photo Film Co., Ltd. Photographic development inhibitor releasing compound. 4,345,024, Cl. 430-382.000.
Hirano, Takashi, to Yamato Scale Co. Ltd. Automatic combination weighing machine with improved zero-point correction. 4,344,492, Cl. 177-25.000.
Hirose, Yasunori: *See*—
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Hirotani, Tatsushi; and Nagata, Satoshi, to Fujitsu Limited. Shift arithmetic device. 4,345,316, Cl. 364-900.000.
Hirsch, Arthur E., to J. I. Case Company. Hydraulic control circuit for decelerating a swinging backhoe. 4,344,733, Cl. 414-694.000.
Hirsch, Hans J.; and Dannert, Horst, to U.S. Philips Corporation. Electrophotographic method of generating electrostatic images on two sides of an insulating foil. 4,345,012, Cl. 430-48.000.
Hirth, Emil, to Sybron Corporation. Lift mechanism for dental chair. 4,344,594, Cl. 248-421.000.
Hitachi, Ltd.: *See*—
Amada, Nobutaka; and Inoue, Shigeki, 4,345,215, Cl. 330-268.000.
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Minakawa, Yoshimitsu; Ishibashi, Yoji; Sato, Isao; Uchiyama, Yoshihiro; and Takahashi, Kazuyoshi, 4,344,280, Cl. 60-39009.00F.
Miyakawa, Seii; Kawauchi, Akira; Iijima, Kazunori; Terayama, Takao; Yoshida, Masashi; and Kawase, Hideyuki, 4,345,282, Cl. 360-85.000.
Sawada, Hiroji; Igawa, Tatsuo; and Nagae, Hiromitsu, 4,345,120, Cl. 200-19.00R.
Suzuki, Mitsuo; Tokunaga, Takeshi; Yonekura, Seiji; Matsuoka, Shigeru; and Nakamura, Kenji, 4,344,252, Cl. 49-199.000.
Taki, Tomohiko, 4,344,741, Cl. 417-28.000.
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Hitachi Medical Corporation: *See*—
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Endo, Hiroyuki; and Ikenoue, Yutaka, 4,344,795, Cl. 75-230.000.
Hjaeresen, Paul T., to F. L. Smidth & Co. Adjustable roller support for a rotary drum. 4,344,596, Cl. 248-550.000.
Ho, Roland K., to Motorola, Inc. Capacitive pressure transducer assembly with improved output lead design. 4,345,299, Cl. 361-283.000.
Hoag, Ethan D., to Locke Technology, Inc. Apparatus for generating an electric field. 4,345,331, Cl. 372-87.000.
Hoath, Grantley R.: *See*—
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Hodogaya Chemical Co., Ltd.: *See*—
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Hoechst Aktiengesellschaft: *See*—
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Mohr, Reinhard; and Hahnke, Manfred, 4,344,879, Cl. 260-146.00R.
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Voetz, Franz J., 4,344,797, Cl. 106-84.000.
Hoefle, Milton L.; and Klutchko, Sylvester, to Warner-Lambert Company. Substituted acyl derivatives of 1,2,3,4-tetrahydroisoquinoline-3-carboxylic acids. 4,344,949, Cl. 424-258.000.
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Hoet, Peter J.: *See*—
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Hoffman, John J., to Jackel, Inc. Reinforced plastic tank. 4,344,543, Cl. 220-1.00B.

Hoffman, William C.: *See—*
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Hoki, Tsuneo; and Matsuki, Yutaka, to Asahi-Dow Limited. Foaming synthetic resin compositions stabilized with N-(higher alkyl) C_1-C_8 amides. 4,345,041, Cl. 521-94.000.
Holden, Thomas F.: *See—*
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Holdridge, David W., to Swedlow, Inc. Focusing reflector. 4,344,673, Cl. 350-292.000.
Holland Company: *See—*
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Holland, George W.: *See—*
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Hooper, Homer; and Holland, R. B., 4,344,218, Cl. 29-516.000.
Holland, Robert M. Adapter for photographic enlarger and method of attaching same. 4,344,702, Cl. 355-67.000.
Hollick, John G.: *See—*
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Hollowell, William; Tanaka, Akira; Ziv, Avraham; and Stamboulian, Nazareth, to American Safety Equipment Corp. Seat belt retractor assembly with post emergency spool release. 4,344,588, Cl. 242-107.40A.
Holmes, Frederick H., to British Aerospace. Torque shaft coupling. 4,344,305, Cl. 464-169.000.
Holoff, Manning; and Riggins, James D., to Manning Holoff Co. Tape dispenser. 4,344,813, Cl. 156-527.000.
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Nelson, Marvin D., 4,345,301, Cl. 361-400.000.
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Hooper, Homer; and Holland, R. B., to Continental Conveyor & Equipment Company, Inc. Conveyor idler roll assembly and method of producing same. 4,344,218, Cl. 29-516.000.
Hooper, Ira: *See—*
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Hoover, D. Robert, to Identronix, Inc. Passive sensing and encoding transponder. 4,345,253, Cl. 343-6.8LC.
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Horikoshi, Hiroshi: *See—*
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Horiuchi, Michimasa; Ibamoto, Masahiko; and Rokutan, Hideaki, to Hitachi, Ltd. Chopper control system. 4,345,190, Cl. 318-338.000.
Horne, C. James; and Duffy, Edward A. Hydraulic heating system. 4,344,567, Cl. 237-1.00R.
Horner, Michael; and Nissen, Axel, to BASF Aktiengesellschaft. Preparation of 2-hydroxyalkylchromans. 4,344,886, Cl. 549-408.000.
Hoshall, Thomas C.; Hicks, LaVern L.; and Renth, Larry. Fibrous material apparatus. 4,344,580, Cl. 241-60.000.
Hostetler, Eldon. Pressure responsive liquid flow regulator. 4,344,456, Cl. 137-403.000.
Houston Systems Manufacturing Co., Inc.: *See—*
Chan, John C. H., 4,344,454, Cl. 137-315.000.
Howard, Benedick J.; and Lill, Emil, to Kennametal Inc. Otterboard. 4,344,247, Cl. 43-9.000.
Howard, Kenneth J.; and Sidwell, Albert E., to Vertac Chemical Corporation. Chlorination of phenols and phenoxyacetic acids with sulfuryl chloride. 4,345,097, Cl. 562-472.000.
Howard, Richard E.: *See—*
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Howell, Edward K., to General Electric Company. Ground fault circuit interrupting device with improved thyristor triggering. 4,345,289, Cl. 361-45.000.
Howie, James B.; and McLeod, John, to Ferranti Limited. Laser energy control circuit. 4,345,330, Cl. 372-29.000.
Howze, Bruce, to Community Light & Sound, Inc. Directional loudspeaker. 4,344,504, Cl. 181-187.000.
Hozumi, Kazuhiro; and Tamaki, Shigeo, to Kuroda Precision Industries Ltd. Electromagnetic valve apparatus with a hand-operated transfer device. 4,344,603, Cl. 251-130.000.
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Rizk, Sidky D.; Hsieh, Harry W. S.; and Prendergast, John J., 4,345,053, Cl. 525-440.000.
Hubbard, Seth A.: *See—*
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Hufnagel, Theobald; and Hetschko, Manfred, to Cassella Aktiengesellschaft. Process for the manufacture of a violet organic pigment, C.I. Pigment Violet 23. 4,345,074, Cl. 544-99.000.
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Jarrett, Harold M., Jr.; and Cotter, Thomas P., 4,344,302, Cl. 62-514.00R.
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Huve, Pierre M., to Societe d'Etudes de Produits Chimiques. Use of isopropylaminopyrimidine in the chemotherapy of muscular dystrophy, myopathy and mytonia. 4,344,947, Cl. 424-251.000.
Huyck Corporation: *See—*
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Hydrocarbon Research, Inc.: *See—*
Kunesh, John G., 4,344,840, Cl. 208-59.000.
Hyman, Floyd L.; and Ziv, Martin H., to Air Products and Chemicals, Inc. Scoopable triethylene diamine. 4,345,079, Cl. 544-351.000.
Ibamoto, Masahiko: *See—*
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Ibarzabal, Joe A. Combined soap holder and press. 4,344,529, Cl. 206-77.100.
Ibuki, Yasuhiro, to Meinan Machinery Works, Inc. Reinforced veneer sheet and the method of manufacturing the reinforced veneer sheet. 4,344,471, Cl. 144-345.000.
Identronix, Inc.: *See—*
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Idogaki, Takaharu; Kawai, Hisasi; Matsui, Takeshi; Hattori, Kyo; and Sakurai, Kazuhiro, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary actuator. 4,345,228, Cl. 335-222.000.
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Iijima, Tamotsu; and Takagi, Yasuo, to Nissan Motor Company, Limited. Spark-ignition internal combustion engine. 4,344,392, Cl. 123-179.00G.
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Iizuka, Yoshitoku; and Ohkubo, Kiyokazu, to Honda Giken Kogyo Kabushiki Kaisha. Centrifugal type oil filter for an engine. 4,344,561, Cl. 233-24.000.
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Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karasz, Gyorgy, 4,344,640, Cl. 280-432.000.
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Ikeura, Kenji, to Nissan Motor Company, Limited. Idle speed control method and system for an internal combustion engine of an automotive vehicle. 4,344,398, Cl. 123-339.000.
Ikuta, Hironori: *See—*
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,344,944, Cl. 424-246.000.

Imada, Kiyoshi; Ueno, Susumu; Nishina, Yasuhide; and Nomura, Hirokazu, to Shin-Etsu Chemical Co., Ltd. Method for modifying surface properties of a shaped article of a silicone. 4,344,981, Cl. 427-40.000.
Imbert, Jean C. Full dual element prosthesis designed for the femoro-patellar joint. 4,344,192, Cl. 3-1.910.
Immel, Joseph D. Orthopedic bed. 4,344,422, Cl. 128-33.000.
Imperial Chemical Industries Limited: *See—*
Laidler, Dale A.; and Milner, David J., 4,344,894, Cl. 260-465.00D.
Inaga, Hisashi: *See—*
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Inchauspe, Nicolas, to Dumas et Inchauspe. Process for the continuous preparation of sulfonates derived from molecules having long alkyl chains and, more particularly, sulfonates derived from fatty esters. 4,344,889, Cl. 260-400.000.
Inco Ltd.: *See—*
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Industrial Air, Inc.: *See—*
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Inoue, Tetsuzo: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Kono, Kiichi; and Inoue, Tetsuzo, 4,344,466, Cl. 139-449.000.
Inoue, Tokuta; Nakanishi, Kiyoshi; Kanda, Mutsumi; Nakada, Masahiko; and Matsuura, Toshiharu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Cylinder head, spark plug, and piston configuration. 4,344,408, Cl. 123-661.000.
Institut Francais du Petrole: *See—*
Rojey, Alexandre, 4,344,292, Cl. 62-114.000.
Instranetics, Inc.: *See—*
Eldridge, John D., Jr.; and Cohen, Milton W., 4,344,532, Cl. 206-370.000.
International Business Machines Corporation: *See—*
Bergeron, David L.; and Smith, Paul H., 4,344,222, Cl. 29-571.000.
Cazarra, Victor; Schwab, Andre; and Zunino, Patrick, 4,344,815, Cl. 156-601.000.
Double, Glen P., 4,345,278, Cl. 360-2.000.
Elliott, Brian J., 4,345,239, Cl. 340-146.3SY.
Grant, Duane E.; and Walker, James R., 4,344,691, Cl. 355-1.000.
Melamud, Robert C.; Nihart, James D.; and White, James M., 4,345,314, Cl. 364-515.000.
International Container Systems, Inc.: *See—*
deLarosiere, Pierre J., 4,344,530, Cl. 206-203.000.
International Harvester Co.: *See—*
Pollard, Lorne R., 4,344,639, Cl. 280-411.00C.
Schmittbetz, Klaus; and Struchtrup, Karl D. S., 4,344,334, Cl. 74-473.00R.
International Playtex, Inc.: *See—*
Sterling, Larry D.; and Melvin, Wilbert, Jr., 4,344,197, Cl. 8-150.000.
International Standard Electric Corporation: *See—*
Bolssens, Frans P. J.; Franck, Guy C. J. L. G. G. M.; and Dehertefelt, Henri, 4,344,212, Cl. 29-33.00F.
Stoka, Roberto; and Lotzsch, Ulrich, 4,344,511, Cl. 188-73.450.
International Telephone and Telegraph Corporation: *See—*
Aaron, Robert L.; and Murphy, Eugene F., 4,345,147, Cl. 235-385.000.
Interox Chemicals Limited: *See—*
Martin, Brian, 4,344,923, Cl. 423-20.000.
Interox (Societe Anonyme): *See—*
Gago, Ignace; and Coppens, Guillaume, 4,344,979, Cl. 427-4.000.
Iriguchi, Norio; Unno, Hiroshi; and Tsuda, Nobuaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Container, apparatus and method for separating platelets. 4,344,560, Cl. 233-19.00A.
Isaka, Haruki: *See—*
Yusa, Haruhiko; Oota, Masanori; and Isaka, Haruki, 4,345,043, Cl. 523-209.000.
Isambert, Gilles: *See—*
Frechou, Jerome; and Isambert, Gilles, 4,344,359, Cl. 99-580.000.
Isbell, Tim D.: *See—*
Congdon, James S.; and Isbell, Tim D., 4,345,218, Cl. 330-298.000.
Ishibashi, Yoji: *See—*
Minakawa, Yoshimitsu; Ishibashi, Yoji; Sato, Isao; Uchiyama, Yoshihiro; and Takahashi, Kazuyoshi, 4,344,280, Cl. 60-39009.00F.
Ishida, Osami: *See—*
Komuro, Keigo; Yamada, Matsuichi; Aoki, Katsuhiko; Yoshikawa, Yoshihiko; Itoh, Fumio; Takeda, Fumio; and Ishida, Osami, 4,345,255, Cl. 343-100.0PE.
Ishida, Tokuji; Taniguchi, Nobuyuki; Itoh, Masatoshi; Matsumoto, Toshiaki; Izumi, Tatsuro; and Niwa, Masatake, to Minolta Camera Kabushiki Kaisha. Photographic devices for controlling flash photography. 4,344,680, Cl. 354-33.000.
Ishihara Sangyo Kaisha Ltd.: *See—*
Nishiyama, Ryuzo; Haga, Takahiro; Toki, Tadaaki; Koyanagi, Tohru; and Murai, Shigeo, 4,344,951, Cl. 424-263.000.
Ishii, Koji, to Ryobi Ltd. Impression cylinder cleaning device for printing machine. 4,344,362, Cl. 101-425.000.
Ishii, Yoshiaki; Kume, Tsutomu; Ando, Naoyoshi; and Fujinami, Shosaku, to Agency of Industrial Science and Technology. Method for pyrolyzing. 4,344,373, Cl. 110-347.000.
Ishikawa, Hirotoshi: *See—*
Tamura, Hisashi; Taniguchi, Naozo; and Ishikawa, Hirotoshi, 4,345,150, Cl. 250-339.000.
Ishikawa, Isao; Kanda, Hiroshi; and Yamamoto, Shinji, to Hitachi Medical Corporation. Ionization chamber type X-ray detector. 4,345,156, Cl. 250-385.000.
Ishikawa, Masaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Linear light source fixing device used in a facsimile transmission apparatus. 4,345,277, Cl. 358-293.000.
Ishikawa, Norikatsu: *See—*
Konishi, Masami; Kuramoto, Akio; Maeda, Yorishige; Ishikawa, Norikatsu; and Suzuki, Makoto, 4,344,407, Cl. 123-661.000.
Isikawa, Kingo. Device for successively stripping sheet from a stack of sheets. 4,344,613, Cl. 271-165.000.
Isobe, Toshiyuki, to Daiwa Corporation. Three-dimensional combination toy. 4,344,623, Cl. 273-153.00S.
Isserlis, Morris D. Air pollution control system. 4,344,779, Cl. 55-233.000.
Isserlis, Morris D. Air pollution control system. 4,344,920, Cl. 422-169.000.
Itoh, Fumio: *See—*
Komuro, Keigo; Yamada, Matsuichi; Aoki, Katsuhiko; Yoshikawa, Yoshihiko; Itoh, Fumio; Takeda, Fumio; and Ishida, Osami, 4,345,255, Cl. 343-100.0PE.
Itoh, Masatoshi: *See—*
Ishida, Tokuji; Taniguchi, Nobuyuki; Itoh, Masatoshi; Matsumoto, Toshiaki; Izumi, Tatsuro; and Niwa, Masatake, 4,344,680, Cl. 354-33.000.
Itoh, Yusuke: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Yoshida, Kazunori; Suzuki, Fuzio; Itoh, Yusuke; Suzuki, Hajime; Arakawa, Hiroshi; and Kobayashi, Akira, 4,344,465, Cl. 139-435.000.
ITT Industries, Inc.: *See—*
Budecker, Ludwig; and Schutt, Bernd, 4,344,451, Cl. 137-101.000.
Ivony, Jozsef: *See—*
Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karasz, Gyorgy, 4,344,640, Cl. 280-432.000.
Iwama, Atsuaki, to Kobe Steel, Ltd. Mechanism for setting slip and/or camber angles in tire testing machine. 4,344,325, Cl. 73-146.000.
Iwasaki, Shinichiro, to Aisin Seiki Company, Limited. Fluid flow meter. 4,344,331, Cl. 73-861.760.
Iwata, Tadao: *See—*
Takeda, Nobuyuki; and Iwata, Tadao, 4,345,054, Cl. 525-480.000.
IXL Manufacturing Co., Inc.: *See—*
Keathley, Bob N., 4,344,901, Cl. 264-23.000.
Izumi, Tatsuro: *See—*
Ishida, Tokuji; Taniguchi, Nobuyuki; Itoh, Masatoshi; Matsumoto, Toshiaki; Izumi, Tatsuro; and Niwa, Masatake, 4,344,680, Cl. 354-33.000.
J. H. Fenner & Co. Ltd.: *See—*
Bancroft, John; Greenhalgh, John L.; and Smith, Ronald, 4,344,525, Cl. 198-499.000.
J. I. Case Company: *See—*
Hirsch, Arthur E., 4,344,733, Cl. 414-694.000.
Shumaker, John F., 4,344,734, Cl. 414-710.000.
Jackel, Inc.: *See—*
Hoffman, John J., 4,344,543, Cl. 220-1.00B.
Jackson, Charles R., to E-Systems, Inc. Frequency agile hold-sample-hold phase detector. 4,345,219, Cl. 331-1.00A.
Jackson, Liam R., to United States of America, National Aeronautics and Space Administration. Multiwall thermal protection system. 4,344,591, Cl. 244-158.00A.
Jacobellis, Ulrico. Catheter for use in localizing the origin of idiopathic microscopic hematuria. 4,344,439, Cl. 128-636.000.
Jacobsthal, Herbert K., to Honeywell Information Systems Inc. Information communication system with collision avoidance. 4,345,250, Cl. 340-825.500.
Jadlocki, Joseph F., Jr.: *See—*
Thompson, John S.; and Jadlocki, Joseph F., Jr., 4,344,977, Cl. 426-532.000.
Jaeschke, James R.; and Rutchik, Walter L., to Eaton Corporation. Minimum size, integral, A.C. overload current sensing, remote power controller. 4,345,292, Cl. 361-94.000.
Jamison, Warren E.; and McVeigh, James J., to Projected Lubricants, Inc. Lubricated wire rope. 4,344,278, Cl. 57-221.000.
Janniello, Frank, to Clairol Incorporated. Detachable cord. 4,345,122, Cl. 200-50.00B.
Janome Sewing Machine Co., Ltd.: *See—*
Hanyu, Susumu; Tonomura, Yoshinobu; and Watanabe, Kazuo, 4,345,196, Cl. 318-812.000.
Jansen, Johann J.: *See—*
Bijen, Jan M. J. M.; and Jansen, Johann J., 4,344,804, Cl. 156-42.000.
Janssen, Harry R.: *See—*
Graf, Harlan G.; Janssen, Harry R.; and Edwards, Don L., 4,344,754, Cl. 432-233.000.
Jarrett, Harold M., Jr.; and Cotter, Thomas P., to Hughes Aircraft Company. Thermal coupling structure for cryogenic refrigeration. 4,344,302, Cl. 62-514.00R.
Jean-Claude Berney SA: *See—*
Berney, Jean-Claude, 4,345,320, Cl. 368-87.000.
Jennings, Thomas C.; and Fletcher, Charles W., Jr., to Dart Industries, Inc. Resin stabilizer systems of organotin sulfur-containing compounds and organic over-based complexes. 4,345,045, Cl. 524-180.000.

Jensen, Leif, to Rockwool International A/S. Method of producing molten stone material in a cupola furnace. 4,345,035, Cl. 501-29.000.
Jensen, Thomas H., to PPG Industries, Inc. Modular molten glass column. 4,344,785, Cl. 65-1.000.
Jerry, James H.; and Dickie, Ira A., to Gearco Limited. Geared hub. 4,344,501, Cl. 180-253.000.
Jeschke, Willi; and Junghans, Rudi, to Heidelberger Druckmaschinen Aktiengesellschaft. Ink duct for offset or letterpress printing machines. 4,344,360, Cl. 101-363.000.
Jeschke, Willi; and Muller, Hans, to Heidelberger Druckmaschinen Aktiengesellschaft. Folding apparatus for reel or web-fed rotary printing machines. 4,344,610, Cl. 270-6.000.
Jobling, Alan V.; and Crisp, David J., to Black & Decker Inc. Lawn scarifier and rake. 4,344,273, Cl. 56-16.700.
JOBS S.p.A.: *See—*
Pagani, Giacomo, 4,344,221, Cl. 29-568.000.
Johannesen, Donald D.; and Kazmierzak, Andrew F., to Bendix Corporation, The. Disc brake and improved adjuster therefor. 4,344,510, Cl. 188-71.900.
Johnson, D. Emil; Krutchen, Charles M.; and Sharps, G. Vincent, Jr., to Mobil Oil Corporation. Polymer foam extrusion system. 4,344,710, Cl. 366-76.000.
Johnson, John G.: *See—*
Masterson, Robert C., Jr.; Thomas, R. Gordon; and Johnson, John G., 4,344,656, Cl. 303-2.000.
Johnson & Johnson: *See—*
Evans, Anthony; Lesniak, John M.; and Boardman, Franklin, 4,344,423, Cl. 128-90.000.
Johnson, Keith, Jr.; and Long, Robert A., to AMP Incorporated. Pre-assembly and terminating apparatus. 4,344,225, Cl. 29-857.000.
Johnson, Marvin M.; and Nowack, Gerhard P., to Phillips Petroleum Company. Method of removing contaminant from feedstock streams. 4,344,841, Cl. 208-211.000.
Johnson, Richard H. Electrical transient suppressor. 4,345,290, Cl. 361-56.000.
Johnson, Robert M. Flexible tree saw. 4,344,229, Cl. 30-166.00R.
Jones, Donald W., to General Electric Company. Means for reducing shear stresses on winding conductor insulation for air-gap dynamoelectric machines. 4,345,175, Cl. 310-45.000.
Jones, Jessie L.; and Spector, George. Alphabet game. 4,344,627, Cl. 273-273.000.
Jost, Max: *See—*
Umsonst, Gerhard; Kolliker, Hans P.; and Jost, Max, 4,344,767, Cl. 524-159.000.
Jovcic, Dorde: *See—*
Lahrs, Jurgen; Schubert, Klaus; Gosling, Claus; Jovcic, Dorde; Gleinig, Harald; and Skerhut, Reiner, 4,344,766, Cl. 8-524.000.
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Duff, John; and McFarlane, Peter, 4,344,353, Cl. 91-165.000.
Juenemann, Werner: *See—*
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Junghans, Rudi: *See—*
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Kabushiki Kaisha Kobe Seiko Sho: *See—*
Fujisawa, Tetsuo; and Tanioka, Takashi, 4,344,538, Cl. 209-144.000.
Kabushiki Kaisha Meiki Seisakusho: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Kono, Kiichi; and Inoue, Tetsuzo, 4,344,466, Cl. 139-449.000.
K.K. Toyoda Jidoshokki Seisakusho: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Yoshida, Kazunori; Suzuki, Fuzio; Itoh, Yusuke; Suzuki, Hajime; Arakawa, Hiroshi; and Kobayashi, Akira, 4,344,465, Cl. 139-435.000.
K.K. Toyota Chuo Kenkyusho: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Yoshida, Kazunori; Suzuki, Fuzio; Itoh, Yusuke; Suzuki, Hajime; Arakawa, Hiroshi; and Kobayashi, Akira, 4,344,465, Cl. 139-435.000.
Kaffee-Veredelungs-Werk Koffeinfrei Kaffee GmbH & Co.: *See—*
Sirtl, Wolfgang, 4,344,974, Cl. 426-271.000.
Kahn, Sherwin R., to Western Electric Company, Inc. Non-destructive testing of a laminated ceramic capacitor. 4,344,326, Cl. 73-587.000.
Kaiser, Heinz: *See—*
Meddings, Basil; and Kaiser, Heinz, 4,344,574, Cl. 239-338.000.
Kalaus, Gyorgy: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; Keve, Tibor; and Gazdac, Maria, 4,345,082, Cl. 546-51.000.
Kalcor Coatings Company, Inc.: *See—*
Zucker, Newton; and Ellslager, William M., 4,344,858, Cl. 252-358.000.
Kaleskas, Edward W.: *See—*
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Kalfoglou, George, to Texaco Inc. Modified lignosulfonates as additives in oil recovery processes involving chemical recovery agents. 4,344,487, Cl. 166-274.000.
Kambara, Yoshihiko: *See—*
Asano, Shiro; Shizuka, Kohei; Kambara, Yoshihiko; Mikami, Junji; Kato, Hiroshi; and Honda, Tadatoshi, 4,345,101, Cl. 564-206.000.
Kampf, Julian C.; Graefe, Richard J.; and Profio, Mark V., to Square D Company. Solid state over-current protective apparatus for a power circuit. 4,345,288, Cl. 361-31.000.
Kanayama, Katsumi; Furuta, Kenzi; and Motoyama, Kazuyasu, to Olympus Optical Co., Ltd. Power supply device for a multifunction apparatus having a plurality of power sources. 4,345,286, Cl. 360-137.000.
Kanda, Hiroshi: *See—*
Ishikawa, Isao; Kanda, Hiroshi; and Yamamoto, Shinji, 4,345,156, Cl. 250-385.000.
Kanda, Mutsumi: *See—*
Inoue, Tokuta; Nakanishi, Kiyoshi; Kanda, Mutsumi; Nakada, Masahiko; and Matsuura, Toshiharu, 4,344,408, Cl. 123-661.000.
Kandybowski, Steven J.: *See—*
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Kaneko, Tamaki; and Okuzawa, Tugio, to Ricoh Company, Ltd. Collator. 4,344,614, Cl. 271-288.000.
Kanner, Bernard: *See—*
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Kaplan, Daniel; Landouar, Pierre; and Criton, Eric, to Thomson-CSF. Process for producing a layer containing silicon. 4,344,984, Cl. 427-74.000.
Kaplan, Leonard, to Union Carbide Corporation. Hydroxymethylation of the carbon residue of organosilicon compounds. 4,345,103, Cl. 568-840.000.
Karasz, Gyorgy: *See—*
Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karasz, Gyorgy, 4,344,640, Cl. 280-432.000.
Karl Schmidt GmbH: *See—*
Zammert, Wolf U., 4,345,138, Cl. 219-121.0LF.
Karrer, Friedrich: *See—*
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Kasada, Toshio: *See—*
Takase, Akio; Horikoshi, Hiroshi; and Kasada, Toshio, 4,345,132, Cl. 219-10.55B.
Kasama, Nobuhiro; and Kitajima, Tadayuki, to Canon Kabushiki Kaisha. Mechanism for mounting and dismounting a screen-like photosensitive medium. 4,344,700, Cl. 355-3.0SC.
Kashioka, Seiji: *See—*
Yasuye, Toshikazu; Kashioka, Seiji; and Shima, Yoshihiro, 4,345,312, Cl. 364-515.000.
Kasper, Erich, to Licentia Patent-Verwaltungs-G.m.b.H. Photo cathode made from composite semiconductor/glass material. 4,344,803, Cl. 148-33.300.
Kast, Jack L.: *See—*
Bauman, Thomas G.; and Kast, Jack L., 4,344,246, Cl. 42-69.00B.
Kasuya, Yutaka: *See—*
Takai, Haruki; Teranishi, Masayuki; Nakamizo, Nobuhiro; Kasuya, Yutaka; and Kubo, Kazuhiro, 4,344,948, Cl. 424-251.000.
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,344,945, Cl. 424-248.520.
Katabami, Takao: *See—*
Yoshikawa, Yoshihiro; Katabami, Takao; Fujinaga, Katsumi; and Kobayashi, Yoshiaki, 4,344,327, Cl. 73-626.000.
Kateman, Wilhelmus G. M. Mushroom harvesting machine. 4,344,275, Cl. 56-327.00R.
Kato, Hiroshi: *See—*
Asano, Shiro; Shizuka, Kohei; Kambara, Yoshihiko; Mikami, Junji; Kato, Hiroshi; and Honda, Tadatoshi, 4,345,101, Cl. 564-206.000.
Katona, Joseph W., to Mills Products, Inc. Automatic stapling and cutting machine. 4,344,217, Cl. 29-417.000.
Kawabata, Susumu: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Yoshida, Kazunori; Suzuki, Fuzio; Itoh, Yusuke; Suzuki, Hajime; Arakawa, Hiroshi; and Kobayashi, Akira, 4,344,465, Cl. 139-435.000.
Hasegawa, Junzo; Kawabata, Susumu; Kono, Kiichi; and Inoue, Tetsuzo, 4,344,466, Cl. 139-449.000.
Kawai, Hisasi: *See—*
Idogaki, Takaharu; Kawai, Hisasi; Matsui, Takeshi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,345,228, Cl. 335-222.000.
Kawai, Shunichi, to Aisin Seiki Kabushiki Kaisha. Power distributing device for vehicles. 4,344,335, Cl. 74-674.000.
Kawai, Toshiyuki: *See—*
Miki, Isao; Kishihara, Takeshi; Kawai, Toshiyuki; and Furumaki, Naoyuki, 4,344,477, Cl. 164-98.000.
Kawasaki Steel Corporation: *See—*
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Kawauchi, Akira: *See—*
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Kawazoe, Shozo; Matsui, Takao; and Moriuchi, Takahiko, to Nitto Electric Industrial Co., Ltd. Transparent electrically conductive film. 4,345,000, Cl. 428-212.000.
Kaya, Seitoku: *See—*
Yamabe, Masaaki; Kojima, Gen; and Kaya, Seitoku, 4,345,057, Cl. 526-247.000.

Kazmierzak, Andrew F.: *See—*
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Keathley, Bob N., to IXL Manufacturing Co., Inc. Method of making tool handle. 4,344,901, Cl. 264-23.000.
Kelly, C. Brantley, Jr. Beverage container cooler. 4,344,303, Cl. 62-530.000.
Kelly, Michael J.: *See—*
Futere, Albert L.; and Kelly, Michael J., 4,344,189, Cl. 2-16.000.
Kelly, Wallace N.; and Breunig, Roger D., to United Technologies Corporation. Rotor disk structure. 4,344,738, Cl. 416-95.000.
Kelterbaum, Manfred, to Elastogran Maschinenbau GmbH & Co. Process and apparatus for the counter-current injection-mixing of two or more fluid plastic components which react with one another. 4,344,919, Cl. 422-133.000.
Kemper, Charles R. Solar energy collector. 4,344,416, Cl. 126-438.000.
Kendall Company, The: *See—*
Pankau, Edward F., 4,344,432, Cl. 128-275.000.
Kendall, John A.; Marchildon, Ernest K.; and Stephenson, Grant R., to Du Pont Canada Inc. Self-wiping multiple screw element mixer. 4,344,711, Cl. 366-83.000.
Kennametal Inc.: *See—*
Howard, Benedick J.; and Lill, Emil, 4,344,247, Cl. 43-9.000.
Kennedy Sky-Lites, Inc.: *See—*
Weisner, Kent A.; and Walls, Lester L., Jr., 4,344,261, Cl. 52-200.000.
Kenny, Charles H. Meniscus prosthesis. 4,344,193, Cl. 3-1.911.
Kent, Brian E.: *See—*
Schlueter, Francis E.; and Kent, Brian E., 4,344,271, Cl. 56-13.600.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
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Kerr, Edwin R.: *See—*
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Kienitz, L. Michael: *See—*
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Kieran, Ann G.: *See—*
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Kihlstrom, Ernest H., to Bethlehem Steel Corporation. Method and apparatus for measuring roll gap and alignment for continuous casters. 4,344,232, Cl. 33-143.00L.
Kikkawa, Satoru: *See—*
Sugata, Shigeo; Tachigami, Shigeru; Kikkawa, Satoru; Umezu, Haruo; and Ohkubo, Masanori, 4,345,112, Cl. 174-107.000.
Kim, Chang Kyu; Maggiulli, Cataldo A.; and Zielinski, Paul A., to Eastman Kodak Company. Method for preparing 2-pyrazolin-5-ones from 1,2,4-oxadiazoles. 4,345,085, Cl. 548-360.000.
Kimberly-Clark Corporation: *See—*
Nuttall, David A.; and Hong, Sung H., 4,344,818, Cl. 162-111.000.
Kimura, Kenji, to Olympus Optical Co., Ltd. Time base correction apparatus. 4,345,279, Cl. 360-36.000.
Kinbara, Hiroji: *See—*
Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, 4,344,338, Cl. 74-752.00C.
King, Clarence H., to Copco Door Company. Door with variable hinge locations. 4,344,256, Cl. 49-501.000.
Kioritz Corporation: *See—*
Kondo, Tadashige; Ohno, Susumu; Takata, Kenichi; and Inaga, Hisashi, 4,344,395, Cl. 123-335.000.
Kircher, Morton S.: *See—*
Wright, David B.; Moore, Sanders H.; and Kircher, Morton S., 4,344,833, Cl. 204-258.000.
Kirk, Kenneth L., to Amtrol Inc. Tee-type leg bracket. 4,344,645, Cl. 285-61.000.
Kis-Tamas, Attila: *See—*
Novak, Lajos; Szantay, Csaba; Rohaly, Janos; Kis-Tamas, Attila; Varjas, Laszlo; and Csutak, Janos, 4,344,959, Cl. 424-279.000.
Kishi, Jun: *See—*
Kukaya, Hirokazu; and Kishi, Jun, 4,345,189, Cl. 318-317.000.
Kishihara, Takeshi: *See—*
Miki, Isao; Kishihara, Takeshi; Kawai, Toshiyuki; and Furumaki, Naoyuki, 4,344,477, Cl. 164-98.000.
Kita, Jean-Claude: *See—*
Puff, Roger M.; and Kita, Jean-Claude, 4,344,769, Cl. 44-23.000.
Kitagawa, Junji: *See—*
Fujiwara, Toshitaka; Nabeta, Teiichi; Akita, Sigeyuki; and Kitagawa, Junji, 4,344,293, Cl. 62-126.000.
Kitagawa, Yoshihiko; Yuyama, Masahiro; Moritani, Masahiko; and Suzuki, Mikio, to Sumitomo Chemical Company, Limited. Process for producing glass fiber-reinforced transparent cast sheet. 4,344,906, Cl. 264-128.000.
Kitajima, Tadayuki: *See—*
Kasama, Nobuhiro; and Kitajima, Tadayuki, 4,344,700, Cl. 355-3.0SC.
Kitakohji, Toshisuke: *See—*
Yoneda, Yasuhiro; Kitakohji, Toshisuke; and Kitamura, Kenro, 4,345,020, Cl. 430-270.000.
Kitamura, Kenro: *See—*
Yoneda, Yasuhiro; Kitakohji, Toshisuke; and Kitamura, Kenro, 4,345,020, Cl. 430-270.000.
Kito, Shozo: *See—*
Fujihara, Youji; Shiba, Masami; Hazama, Toshio; and Kito, Shozo, 4,344,514, Cl. 192-3.580.
Kitoh, Kyosuke: *See—*
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,344,944, Cl. 424-246.000.
Klausz, Remy, to Thomson-CSF. Process for use of an X-ray tomoscanner making it possible to perform cinedensigraphy and corresponding adaptation of tomo-scanner. 4,345,157, Cl. 378-19.000.
Kleemann, Axel; Lussling, Theodor; Pfeifer, Wolf; and Scherberich, Paul, to Degussa AG. Process for the production of 5-arylidene hydantoins (B). 4,345,072, Cl. 542-442.000.
Klein, Max, to Klein, Max. Method for separating gases liquid droplets and/or solid particles from gases or vapors. 4,344,775, Cl. 55-75.000.
Klein, Max, to Klein, Max. Filtration using expanded styrene-polymer and polyolefin micro-bits. 4,344,846, Cl. 210-503.000.
Klockner-Humboldt-Deutz AG: *See—*
Paschen, Peter; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; Kryczun, Alfred; and Pufal, Rolf, 4,344,773, Cl. 48-92.000.
Klockner-Werke AG: *See—*
Fink, Lothar; and Wojcichowski, Lothar, 4,344,601, Cl. 249-167.000.
Klose, Peter H.; and Ovshinsky, Herbert C., to Energy Conversion Devices, Inc. Microfiche recording system with traveling film head. 4,344,701, Cl. 355-51.000.
Klutchko, Sylvester: *See—*
Hoefle, Milton L.; and Klutchko, Sylvester, 4,344,949, Cl. 424-258.000.
Knapp, Donald K. Welding backup tape and its method of manufacture. 4,344,556, Cl. 228-50.000.
Knight, Pete L. Railway gang car coupler. 4,344,542, Cl. 213-188.000.
Knoll, Harold H., to Quaker Window Products Co. Window sash. 4,344,255, Cl. 49-501.000.
Knopp, Christian: *See—*
Siegl, Annemarie; Knopp, Christian; and Reithmayr, Karl, 4,344,933, Cl. 424-79.000.
Knothe, Erich; Berg, Christoph; and Melcher, Franz-Josef, to Sartorius GmbH. Measuring system having a balance with digital display having digit appearance modifying circuit. 4,344,494, Cl. 177-210.00R.
Knox, Keith T., to Xerox Corporation. Image processing method and apparatus having a digital airbrush for touch up. 4,345,313, Cl. 364-515.000.
Kobayashi, Akira: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Yoshida, Kazunori; Suzuki, Fuzio; Itoh, Yusuke; Suzuki, Hajime; Arakawa, Hiroshi; and Kobayashi, Akira, 4,344,465, Cl. 139-435.000.
Kobayashi, Minoru, to Olympus Optical Co., Ltd. Word line number count/display device for tape recorder. 4,345,287, Cl. 360-137.000.
Kobayashi, Satoru; and Watanabe, Hiroshi, to Nippon Electric Co., Ltd. Output circuit. 4,345,172, Cl. 307-562.000.
Kobayashi, Yoshiaki: *See—*
Yoshikawa, Yoshihiro; Katabami, Takao; Fujinaga, Katsumi; and Kobayashi, Yoshiaki, 4,344,327, Cl. 73-626.000.
Kobe Steel, Ltd.: *See—*
Godai, Tomokazu; Minato, Shoji; Nishimura, Katushi; and Ogawa, Tsuneshi, 4,345,140, Cl. 219-146.230.
Iwama, Atsuaki, 4,344,325, Cl. 73-146.000.
Kobori, Yuzuru, to Sony Corporation. Cathode ray tube apparatus. 4,345,185, Cl. 315-3.000.
Koch, Klaus, to Hermann Berstorff Maschinenbau GmbH. Method for monitoring and controlling hydrogenation pressure in plant for the hydrogenation of coal with hydrogen to form hydrocarbons. 4,344,835, Cl. 208-8.00R.
Koch, Klaus, to Hermann Berstorff Maschinenbau GmbH. Method for converting coal to hydrocarbons by hydrogenation. 4,344,836, Cl. 208-8.00R.
Kockums Industries Limited: *See—*
Bond, Harold U., 4,344,609, Cl. 269-27.000.
Koehler, Mark E.: *See—*
Provder, Theodore; Holsworth, Richard M.; and Koehler, Mark E., 4,344,709, Cl. 356-445.000.
Koenig, Karl-Heinz; Schwendemann, Volker; and Feuerherd, Karl-Heinz, to BASF Aktiengesellschaft. Halogenated tertiary alkyl isocyanates and their preparation. 4,344,891, Cl. 260-453.00A.
Kohler, Klaus; Woditsch, Peter; Rieck, Hilmar; and Rodi, Fritz, to Bayer Aktiengesellschaft. Readily dispersible TiO_2 pigment. 4,344,799, Cl. 106-300.000.
Kohmoto, Shinsuke; and Haneishi, Yasuyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Locking mechanism in diaphragm setting ring of SLR camera. 4,344,689, Cl. 354-286.000.
Kohmura, Isao, to Mitsubishi Paper Mills, Ltd. Diffusion transfer process. 4,345,019, Cl. 430-234.000.
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, to Fujitsu Fanuc Limited. Control system for stopping spindle at predetermined rotational position. 4,345,192, Cl. 318-592.000.

Kojima, Gen: *See*—
Yamabe, Masaaki; Kojima, Gen; and Kaya, Seitoku, 4,345,057, Cl. 526-247.000.
Kojima, Yasuhumi; Saito, Atsunori; and Yoshimi, Akiro, to Nippondenso Co., Ltd. Control method and apparatus for air conditioners. 4,344,565, Cl. 236-46.00R.
Kokusai Denshin Denwa Co., Ltd.: *See*—
Komuro, Keigo; Yamada, Matsuichi; Aoki, Katsuhiko; Yoshikawa, Yoshihiko; Itoh, Fumio; Takeda, Fumio; and Ishida, Osami, 4,345,255, Cl. 343-100.0PE.
Kolb, Dieter, to Fichtel & Sachs AG. Disengaging device. 4,344,516, Cl. 192-114.00R.
Kolliker, Hans P.: *See*—
Umsonst, Gerhard; Kolliker, Hans P.; and Jost, Max, 4,344,767, Cl. 524-159.000.
Kolm, Eric A.: *See*—
Kolm, Henry H.; and Kolm, Eric A., 4,345,305, Cl. 362-186.000.
Kolm, Henry H.; and Kolm, Eric A., to Flik, Inc. Portable electronic safety flare system. 4,345,305, Cl. 362-186.000.
Kolos, Vladimir K.: *See*—
Chachin, Viktor N.; Kolos, Vladimir K.; Botyan, Viktor V.; Luzgin, Vladimir I.; and Antonenkov, Igor K., 4,344,313, Cl. 72-453.100.
Komiyama, Tadashi; Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Kubo, Isao, to Mitsui Coke Co., Ltd. Process for the dehydration and liquefaction of water-containing coal. 4,344,837, Cl. 208-8.0LE.
Kompa, Gunter; and Stock, Don J. R., to Endress u. Hauser GmbH u. Co. Distance measuring apparatus based on the pulse travel time method. 4,344,705, Cl. 356-5.000.
Komuro, Keigo; Yamada, Matsuichi; Aoki, Katsuhiko; Yoshikawa, Yoshihiko; Itoh, Fumio; Takeda, Fumio; and Ishida, Osami, to Kokusai Denshin Denwa Co., Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Antenna feed system. 4,345,255, Cl. 343-100.0PE.
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, to FMC Corporation. Process for producing cis-3-(2,2-disubstituted-ethenyl)-2,2-dimethylcyclopropanecarboxylic acid and intermediates. 4,344,884, Cl. 549-273.000.
Kondo, Tadashige; Ohno, Susumu; Takata, Kenichi; and Inaga, Hisashi, to Kioritz Corporation. Ignition system with ignition timing retarding circuit for internal combustion engine. 4,344,395, Cl. 123-335.000.
Konig, Hans-Bodo: *See*—
Niemers, Ekkehard; Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl G., 4,344,939, Cl. 424-226.000.
Niemers, Ekkehard; Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl G., 4,344,955, Cl. 424-271.000.
Koninklijke Emballage Industrie Van Leer: *See*—
de Leeuw, Johannes A. N.; and Brugmans, Johannes T., 4,344,998, Cl. 428-212.000.
Konishi, Masami; Kuramoto, Akio; Maeda, Yorishige; Ishikawa, Norikatsu; and Suzuki, Makoto, to Toyota Jidosha Kogyo Kabushiki Kaisha. Cylinder head, ports, and piston configuration. 4,344,407, Cl. 123-661.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Nezu, Takao; and Turubuchi, Yasuo, 4,344,703, Cl. 355-76.000.
Yagi, Michio; and Sawano, Hiroshi, 4,344,679, Cl. 354-25.000.
Kono, Kiichi: *See*—
Hasegawa, Junzo; Kawabata, Susumu; Kono, Kiichi; and Inoue, Tetsuzo, 4,344,466, Cl. 139-449.000.
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, to C. H. Boehringer Sohn. 1-(Alkanoylamino-aryloxy)-2-hydroxy-3-(alkinyl-amino)-propanes and salts thereof. 4,344,964, Cl. 424-304.000.
Koppers Company, Inc.: *See*—
Falck, Glenn H.; and Boose, James R., 4,344,524, Cl. 198-494.000.
Korehisa, Kazuo: *See*—
Fujita, Kenji; Korehisa, Kazuo; Asaba, Hirosi; Harada, Hideo; and Shibuya, Tsuneo, 4,344,204, Cl. 15-93.00A.
Kothe, Wilfried; and Angstmann, Heinz-Dieter, to BASF Aktiengesellschaft. Desizing of textiles consisting of or containing cellulose. 4,344,764, Cl. 8-138.000.
Kovacs, Sandor, to Vasipari Kutato Intezet. Equipment for the measurement of minute weight forces. 4,344,495, Cl. 177-211.000.
Kowinski, John F.: *See*—
Urie, Robert G.; and Kowinski, John F., 4,344,481, Cl. 165-166.000.
Koyanagi, Osamu: *See*—
Aoda, Yukio; Ninomiya, Hiroshi; Yoshida, Kooichi; and Koyanagi, Osamu, 4,344,968, Cl. 424-365.000.
Koyanagi, Tohru: *See*—
Nishiyama, Ryuzo; Haga, Takahiro; Toki, Tadaaki; Koyanagi, Tohru; and Murai, Shigeo, 4,344,951, Cl. 424-263.000.
Kozono, Haruo; and Higashinaka, Hiroshi, to Nippon Steel Corporation. Method of rolling railroad-rails and steels of similar shape by universal rolling. 4,344,310, Cl. 72-225.000.
Kramer, James H., to B. F. Goodrich Company, The. Method of making a bearing. 4,344,806, Cl. 156-154.000.
Krass, Dennis K., to PPG Industries, Inc. Acids and esters of 5-(2-optionally substituted-4-trifluoromethyl-6-optionally substituted phenoxy)-2-nitro, -halo, or-cyano alpha substituted phenyl carboxy oximes, and method of controlling weeds with them. 4,344,789, Cl. 71-105.000.
Kress, David R., to Matrix Unlimited, Inc. Process of recovering unpolymerized photopolymer from printing plates. 4,345,022, Cl. 430-329.000.
Kress, Dieter; and Haberle, Friedrich, to MAPAL Fabrik fur Prazisionswerkzeuge Dr. Kress KG. Cutting tool assembly. 4,344,724, Cl. 407-36.000.
Kresse, Horst: *See*—
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Mathias; Kresse, Horst; and Weissflog, Wolfgang, 4,344,856, Cl. 252-299.610.
Krone GmbH: *See*—
Forberg, Horst; and Achtnig, Klaus-Peter, 4,345,294, Cl. 361-119.000.
Krupp Polysius AG: *See*—
Heinemann, Otto; and Schmits, Heinz-Herbert, 4,344,783, Cl. 55-459.00B.
Kruschke, Marvin R., Sr.: *See*—
Longacre, Kenneth E.; and Kruschke, Marvin R., Sr., 4,344,651, Cl. 299-5.000.
Krutchen, Charles M.: *See*—
Johnson, D. Emil; Krutchen, Charles M.; and Sharps, G. Vincent, Jr., 4,344,710, Cl. 366-76.000.
Kryczun, Alfred: *See*—
Paschen, Peter; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; Kryczun, Alfred; and Pufal, Rolf, 4,344,773, Cl. 48-92.000.
Krzywicki, Donald J.: *See*—
Ejk, Adam J.; and Krzywicki, Donald J., 4,345,046, Cl. 524-223.000.
Kubo, Isao: *See*—
Komiyama, Tadashi; Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Kubo, Isao, 4,344,837, Cl. 208-8.0LE.
Kubo, Kazuhiro: *See*—
Takai, Haruki; Teranishi, Masayuki; Nakamizo, Nobuhiro; Kasuya, Yutaka; and Kubo, Kazuhiro, 4,344,948, Cl. 424-251.000.
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,344,945, Cl. 424-248.520.
Kubota, Yukio. Device for determining location of the tip of catheter. 4,344,436, Cl. 128-350.00R.
Kuelpmann, Robert: *See*—
Grote, Hugo; Hasselmann, Heinz; Kunze, Volkmar; Zacharias, Karl; Kuelpmann, Robert; and Mueller, Paul, 4,344,515, Cl. 192-67.00R.
Kugler, Edwin L.: *See*—
McCandlish, Larry E.; Wright, Franklin J.; and Kugler, Edwin L., 4,345,038, Cl. 518-711.000.
Kuhle, Engelbert; Paulus, Wilfried; Genth, Hermann; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Sulphenylated acylurethanes and their use as fungicides. 4,344,962, Cl. 424-300.000.
Kuipers, Arie: *See*—
van der Lely, Ary; Bom, Cornelis J. G.; and Kuipers, Arie, 4,344,499, Cl. 180-197.000.
Kukaya, Hirokazu; and Kishi, Jun, to Nippon Electric Co., Ltd. Motor rotation speed control circuit. 4,345,189, Cl. 318-317.000.
Kulikowski, Andrzej S. Marine propulsion system. 4,344,760, Cl. 440-3.000.
Kume, Tsutomu: *See*—
Ishii, Yoshiaki; Kume, Tsutomu; Ando, Naoyoshi; and Fujinami, Shosaku, 4,344,373, Cl. 110-347.000.
Kummer, Werner: *See*—
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,344,964, Cl. 424-304.000.
Kundig, Armin. Self-contained device for spraying a heated spray material. 4,344,571, Cl. 239-130.000.
Kunesh, John G., to Hydrocarbon Research, Inc. Hydrocracking and hydrotreating shale oil in multiple catalytic reactors. 4,344,840, Cl. 208-59.000.
Kunig, Helmut, to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG. Needle plate for needle bars of needle bar drawing devices. 4,344,208, Cl. 19-129.00R.
Kunitake, Tatsuro; Ohtani, Hiroo; Watanabe, Seiichi; Takigawa, Toshiji; and Matsumoto, Yoshiro, to Sumitomo Metal Industries, Ltd. Heavy thick high-strength casting having improved weldability and impact properties. 4,344,801, Cl. 148-3.000.
Kunz Maschinen- u. Apparatebau GmbH: *See*—
Eiche, Hans, 4,344,304, Cl. 464-85.000.
Kunze, Volkmar: *See*—
Grote, Hugo; Hasselmann, Heinz; Kunze, Volkmar; Zacharias, Karl; Kuelpmann, Robert; and Mueller, Paul, 4,344,515, Cl. 192-67.00R.
Kuramoto, Akio: *See*—
Konishi, Masami; Kuramoto, Akio; Maeda, Yorishige; Ishikawa, Norikatsu; and Suzuki, Makoto, 4,344,407, Cl. 123-661.000.
Kuramoto, Shiyunji: *See*—
Sono, Kenzo; and Kuramoto, Shiyunji, 4,344,988, Cl. 427-255.500.
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission casing apparatus in motorized two-wheeled vehicle. 4,344,500, Cl. 180-230.000.
Kuratani, Osamu: *See*—
Matsumoto, Tadashi; Kuratani, Osamu; Hirose, Yasunori; and Toba, Susumu, 4,345,102, Cl. 568-678.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Yusa, Haruhiko; Oota, Masanori; and Isaka, Haruki, 4,345,043, Cl. 523-209.000.
Kurkov, Victor P., to Chevron Research Company. Preparation of 2-cyanoaldehydes by rhodium-catalyzed hydroformylation. 4,344,896, Cl. 260-465.100.
Kuroda, Akira; Nakamura, Tsutomu; and Onishi, Masatoshi, to Hodogaya Chemical Co., Ltd. Polyurethane-modified polyisocyanurate foam and method for producing the same. 4,345,042, Cl. 521-112.000.

Kuroda Precision Industries Ltd.: *See*—
Hozumi, Kazuhiro; and Tamaki, Shigeo, 4,344,603, Cl. 251-130.000.
Kurose, Hideo, to Kuwada, Momoyo. Low noise electrolytic capacitors. 4,345,302, Cl. 361-433.000.
Kuwabara, Kazuyoshi: *See*—
Okutomi, Tsutomu; Iida, Masachika; Kuwabara, Kazuyoshi; Yoshino, Hisashi; and Takayanagi, Eiichi, 4,345,130, Cl. 200-268.000.
Kuwada, Momoyo: *See*—
Kurose, Hideo, 4,345,302, Cl. 361-433.000.
Kyogoku, Hiroshi: *See*—
Tazaki, Shigemitsu; and Kyogoku, Hiroshi, 4,345,263, Cl. 346-140.00R.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Takai, Haruki; Teranishi, Masayuki; Nakamizo, Nobuhiro; Kasuya, Yutaka; and Kubo, Kazuhiro, 4,344,948, Cl. 424-251.000.
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,344,945, Cl. 424-248.520.
L & M Radiator, Inc.: *See*—
Petaja, Glen E.; and Cedar, Charles E., 4,344,478, Cl. 165-69.000.
Lahde, Frank U. Device for charging containers with an inert gas. 4,344,467, Cl. 141-66.000.
Lahrs, Jurgen; Schubert, Klaus; Gosling, Claus; Jovcic, Dorde; Gleinig, Harald; and Skerhut, Reiner, to Bayer Aktiengesellschaft. Process for the manufacture of preparations with a low dust content. 4,344,766, Cl. 8-524.000.
Laidler, Dale A.; and Milner, David J., to Imperial Chemical Industries Limited. Process for the preparation of cyclopropane carboxylic acid esters. 4,344,894, Cl. 260-465.00D.
Laitinen, Heikki: *See*—
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Landouar, Pierre: *See*—
Kaplan, Daniel; Landouar, Pierre; and Criton, Eric, 4,344,984, Cl. 427-74.000.
Lane, John W.: *See*—
Grasso, Albert P.; and Lane, John W., 4,344,849, Cl. 210-662.000.
Lang, Armin, to Zahnradfabrik Friedrichshafen, AG. Hydraulic auxiliary power steering. 4,344,284, Cl. 60-433.000.
Lang, Paul W., to Payton, Raymus K. Multiple pulse laser assemblies. 4,344,671, Cl. 350-174.000.
Lang, Paul W., to Payton, Raymus K. Light fibers having lengths determined by beam scanning time. 4,345,184, Cl. 313-475.000.
Lang, William H.: *See*—
Chang, Clarence D.; and Lang, William H., 4,344,868, Cl. 252-455.00Z.
Langenhorst, Gunter, to Top-Element Bauelemente fur Innenausbau & Raumgestaltung GmbH & Co. KG. Device for mounting a door leaf in a door opening. 4,344,258, Cl. 49-504.000.
Langer, William J., to MTS Systems Corporation. Flat belt tire tester. 4,344,324, Cl. 73-146.000.
Langlais, Jacques F.; and Valadier, Jean-Claude, to Testut-Aequitas. Integral parallelogram load receiver. 4,344,496, Cl. 177-211.000.
Lantzsch, Reinhard: *See*—
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,344,960, Cl. 424-282.000.
Large, Helen F. Fitted top contour sheet. 4,344,196, Cl. 5-496.000.
Larkin, Mark E.; and Balistreri, Thomas W., to Abbott Laboratories. Pull tab tear cap for container port. 4,344,472, Cl. 150-8.000.
Lary, Richard F.: *See*—
Arulpragasam, Jega A.; Giggi, Robert A.; Lary, Richard F.; and Sullivan, Daniel T., 4,345,309, Cl. 364-200.000.
LaSalle Machine Tool, Inc.: *See*—
Osborne, Robert L., 4,344,507, Cl. 184-6.180.
Latasiewicz, Leonard, to Motorola Inc. Membrane switch assembly with improved spacer. 4,345,119, Cl. 200-5.00A.
Latino, Richard M.; and Paquette, Edmund T., to Wright Line Inc. Cable bushing. 4,344,205, Cl. 16-2.000.
Latzer John B. Transportable compartment refrigeration panel system and method of installing. 4,344,299, Cl. 62-448.000.
Laursen, Paul D. Practice putting trainer. 4,344,624, Cl. 273-176.00F.
Lautenshlager, Gilbert G.: *See*—
Higgins, Frank; Lautenshlager, Gilbert G.; and Bunn, Billy A., 4,344,781, Cl. 55-379.000.
Laval, Michel: *See*—
Allemand, Robert; and Laval, Michel, 4,345,155, Cl. 250-385.000.
Laws, Derek R. J.: *See*—
Sharpe, Frederick R.; Grimmett, Christopher M.; and Laws, Derek R. J., 4,344,978, Cl. 426-600.000.
Le Materiel Telephonique Thomson-CSF: *See*—
Dieudonne, Marc P. G.; and Raillard, Yves G., 4,345,326, Cl. 370-60.000.
Leclerc, Jean; and de Rudder, Jean, to Synthelabo. Process for the isolation of viral glycoproteic antigens and its application to the preparation of vaccines. 4,344,935, Cl. 424-89.000.
Ledgerwood, Leroy W., III, to Hughes Tool Company. Earth boring drill bit with snap ring cutter retention. 4,344,658, Cl. 308-8.200.
Lee, Alan J. C.; and Ling, Robin S. M., to University of Exeter. Plugs for the medullary canal of a bone. 4,344,190, Cl. 3-1.900.
Leebens, James V., Jr.: *See*—
Deckas, Peter C.; Cooper, James A.; and Leebens, James V., Jr., 4,344,784, Cl. 55-473.000.
Lehn, Bertold. Snow ski having air cushion forming undersurface. 4,344,641, Cl. 280-601.000.
Leifeld, Ferdinand, to Trutzscher GmbH & Co. KG. Apparatus and method for separating debris from textile fiber tufts. 4,344,843, Cl. 209-143.000.
Leise, Walter F.; and Darcy, John J., to Burroughs Corporation. Sheet feeder support assembly. 4,344,612, Cl. 271-162.000.
Lemmer, Helmut, to Starkstrom Gummersbach GmbH. Switch. 4,345,225, Cl. 335-132.000.
Lemstra, Pieter J.: *See*—
Smith, Paul; and Lemstra, Pieter J., 4,344,908, Cl. 264-203.000.
Lenzing, Richard S., to General Electric Company. Contact spring arrangement. 4,345,224, Cl. 335-132.000.
Leo Pharmaceutical Products, Ltd. A/S: *See*—
Binderup, Ernst T., 4,345,071, Cl. 542-420.000.
Leonard, Henri, to Societe Micro-Mega S.A. Distributor for the progressive and reversible supply of an air motor, in particular for hand-held dental instruments. 4,344,746, Cl. 418-270.000.
Lerche, Ernst; Raschke, Bernward; and Hartwig, Siegfried, to Verenigte Flugtechnische Werke GmbH. Supervisory and monitoring system for helicopter propeller blades. 4,345,237, Cl. 340-27.00R.
Lermann, Peter: *See*—
Stemme, Otto; Lermann, Peter; and Cocron, Istvan, 4,344,686, Cl. 354-198.000.
Lerner, Bernard, to Automated Packaging Systems, Inc. Detachably connected container strips. 4,344,557, Cl. 229-53.000.
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Batty, Mark J.; and Groth, Thomas, 4,344,994, Cl. 428-41.000.
Levy, Joseph, to UOP Inc. Bis-amides as corrosion inhibitors. 4,344,861, Cl. 252-391.000.
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Howard, Benedick J.; and Lill, Emil, 4,344,247, Cl. 43-9.000.
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Burkett, Ronald J.; and Dunn, Luther L., 4,344,793, Cl. 75-81.000.
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Little, William D. Electrical fuel preheater assembly. 4,345,141, Cl. 219-207.000.
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Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, to Merck & Co., Inc. Intermediate for the preparation of thienamycin. 4,344,885, Cl. 549-291.000.
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Barger, Danny R.; Eggert, Carl A.; and Lloyd, Paul O., 4,345,193, Cl. 318-612.000.
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Lockett, James F. Universal sorting apparatus. 4,344,539, Cl. 209-564.000.
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McIntosh, Walter L., 4,344,699, Cl. 355-20.000.
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Johnson, Keith, Jr.; and Long, Robert A., 4,344,225, Cl. 29-857.000.
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Lorette, Nicholas B.; and Fosnaugh, Jerry L., to Dow Chemical Company, The. Method for shipping and storing ethylene oxide. 4,344,916, Cl. 422-40.000.
Lotz, Walter E. Slicing apparatus. 4,344,341, Cl. 83-29.000.
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Stoka, Roberto; and Lotzsch, Ulrich, 4,344,511, Cl. 188-73.450.
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Capener, Erwin L.; and Low, James M., 4,344,770, Cl. 44-50.000.
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Fahy, William J.; and Luborsky, Fred E., 4,345,007, Cl. 428-679.000.
Lubrizol Corporation, The: *See—*
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Lucas Industries Limited: *See—*
Harmer, George A., 4,344,509, Cl. 188-1.110.
Walker, Michael J., 4,345,209, Cl. 328-120.000.
Lussling, Theodor: *See—*
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Lutz, Michael A., to Dow Corning Corporation. Method for producing hydrophobic reinforcing silica fillers and fillers obtained thereby. 4,344,800, Cl. 106-308.00Q.
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Chachin, Viktor N.; Kolos, Vladimir K.; Botyan, Viktor V.; Luzgin, Vladimir I.; and Antonenkov, Igor K., 4,344,313, Cl. 72-453.100.
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Maass, Manfred: *See—*
Dudeck, Ingo; and Maass, Manfred, 4,344,318, Cl. 73-35.000.
Machida, Haruhiko, to Yamasa Shoyu Kabushiki Kaisha. Antiviral agent comprising 1-β-D-arabinofuranosylthymine. 4,344,937, Cl. 424-180.000.
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, to Eisai Co., Ltd. 7-α-methoxycephalosporin derivatives, and antibacterial drugs onctaining the same. 4,344,944, Cl. 424-246.000.
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Davis, James A.; MacPherson, William F.; Mussman, Harry E.; and Shackle, Peter W., 4,345,163, Cl. 307-252.00A.
MacRae, David M.; and Roberts, Karl H., to Colgate-Palmolive Company. Skin care sponge. 4,344,930, Cl. 424-28.000.
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Madland, Thorvald, to Youngstown Steel Door Company, The. Railway car door driver. 4,344,366, Cl. 105-378.000.
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Konishi, Masami; Kuramoto, Akio; Maeda, Yorishige; Ishikawa, Norikatsu; and Suzuki, Makoto, 4,344,407, Cl. 123-661.000.
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Magnex Limited: *See—*
Gray, Paul D., 4,344,266, Cl. 52-742.000.
Magnuson, Ruel D., to Gould Inc. Thermal by-pass valve with integral pressure relief. 4,344,564, Cl. 236-34.500.
Malecek, Jan. Solar energy collector. 4,344,417, Cl. 126-439.000.
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Maniscalco, James A.; and Meier, Wayne R., to United States of America, Energy. Fluidized wall for protecting fusion chamber walls. 4,344,911, Cl. 376-102.000.
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Grote, Hugo; Hasselmann, Heinz; Kunze, Volkmar; Zacharias, Karl; Kuelpmann, Robert; and Mueller, Paul, 4,344,515, Cl. 192-67.00R.
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MAPAL Fabrik fur Prazisionswerkzeuge Dr. Kress KG: *See—*
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Mapp, Calvin R. Dust pan for sliding glass door. 4,344,648, Cl. 294-55.000.
Marchant, David D.; and Lytle, John M., to United States of America, Energy. Method of generating electricity using an endothermic coal gasifier and MHD generator. 4,345,173, Cl. 310-11.000.
Marchildon, Ernest K.: *See—*
Kendall, John A.; Marchildon, Ernest K.; and Stephenson, Grant R., 4,344,711, Cl. 366-83.000.
Marissen, Roelof H.: *See—*
Beune, Joannes H.; and Marissen, Roelof H., 4,344,461, Cl. 138-109.000.
Markowitz, H. Toby, to Medtronic, Inc. Pacemaker triggering coupling circuit. 4,344,437, Cl. 128-419.0PG.
Marks, Alvin M. Charged aerosol petroleum recovery method and apparatus. 4,344,488, Cl. 166-303.000.
Marosi, Laszlo: *See—*
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Marschak, Howard J. Display device. 4,344,540, Cl. 211-106.000.
Marsico, Joseph W., Jr.: *See—*
Tomcufcik, Andrew S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., 4,344,954, Cl. 424-270.000.
Martel, Jacques; Tessier, Jean; Teche, Andre; and Demoute, Jean-Pierre, to Roussel Uclaf. Process for the preparation of (S) α-cyano-3-phenoxy-benzyl alcohol. 4,344,895, Cl. 260-465.00F.
Martin, Brian, to Interox Chemicals Limited. In-situ leaching. 4,344,923, Cl. 423-20.000.
Martin, Edson J. Portable cleat for marine use. 4,344,378, Cl. 114-218.000.
Martin, Frederick H.; and Tsuk, Andrew G., to American Home Products Corporation. Therapeutic compositions with enhanced bioavailability. 4,344,934, Cl. 424-80.000.
Martin, Ronald P.: *See—*
Sonnedecker, Ray L.; and Martin, Ronald P., 4,344,900, Cl. 261-114.0VT.
Martinez, Donald G. Area mapping apparatus. 4,344,231, Cl. 33-1.00G.
Martinsson, Kjell B.: *See—*
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Maruzen Oil Co., Ltd.: *See—*
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Marvin Glass & Associates: *See—*
Erickson, Erick E.; and Licitis, Gunars, Sr., 4,344,346, Cl. 84-1.180.
Marvin, Mark C. Underwater breathing device. 4,344,427, Cl. 128-200.250.
Marwick, Edward F. Contained nuclear explosion breeder reactor system. 4,344,913, Cl. 376-317.000.
Maryschka, Gerhard, to U.S. Philips Corporation. Recording and/or reproducing apparatus. 4,345,283, Cl. 360-96.600.
Masaki, Kenji, to Nissan Motor Company, Limited. Electrostatic fuel injector. 4,344,401, Cl. 123-536.000.
Maschinenfabrik Korfmann GmbH: *See—*
Mittelkotter, Alfred, 4,344,357, Cl. 98-50.000.
Massie, Norbert A., to Rockwell International Corporation. Modal sensor. 4,344,707, Cl. 356-354.000.
Masterson, Robert C., Jr.; Thomas, R. Gordon; and Johnson, John G., to Air Rail, Inc. Air suspension system for piggyback transportation of goods. 4,344,656, Cl. 303-2.000.
Matrix Unlimited, Inc.: *See—*
Kress, David R., 4,345,022, Cl. 430-329.000.
Matsuda, Tetsuo: *See—*
Sakakibara, Hideo; Fujiwara, Tatsuro; Okegawa, Osamu; Honda, Eiichi; Watanabe, Susumu; and Matsuda, Tetsuo, 4,345,069, Cl. 536-7.100.
Matsui, Kazuma: *See—*
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Matsui, Kiyoshi: *See—*
Tanabe, Tetsuo; Takamori, Kazumi; Matueda, Akira; Matsui, Kiyoshi; Omura, Junichi; and Miyamoto, Hitoshi, 4,344,219, Cl. 29-564.600.
Matsui, Takao: *See—*
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Matsui, Takeshi: *See—*
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Matsuki, Yutaka: *See—*
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Matsumiya, Ritsuo; and Osawa, Mitsuaki, to M. Setek Company Limited. Apparatus for applying photo resist on both surfaces of semiconductor wafer. 4,344,380, Cl. 118-66.000.

Matsumoto, Hiroshi; and Ogura, Tomoki, to Tokyo Shibaura Denki Kabushiki Kaisha. Copying machine. 4,344,697, Cl. 355-14.00C.

Matsumoto, Tadashi; Kuratani, Osamu; Hirose, Yasunori; and Toba, Susumu, to Maruzen Oil Co., Ltd. Process for producing ethylene glycol mono-t-butyl ether. 4,345,102, Cl. 568-678.000.

Matsumoto, Toshiaki: *See*—
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Matsumoto, Yoshiro: *See*—
Kunitake, Tatsuro; Ohtani, Hiroo; Watanabe, Seiichi; Takigawa, Toshiji; and Matsumoto, Yoshiro, 4,344,801, Cl. 148-3.000.

Matsumura, Toshimi; Omori, Norio; and Yamazoe, Hisamitsu, to Nippondenso Co., Ltd. Method and apparatus for controlling engine idling speed. 4,344,399, Cl. 123-339.000.

Matsuoka, Hiromasa; Azuma, Kenkoku; and Nishiyama, Enju, to Mitsubishi Denki Kabushiki Kaisha. Water producing apparatus. 4,344,778, Cl. 55-180.000.

Matsuoka, Shigeru: *See*—
Suzuki, Mitsuo; Tokunaga, Takeshi; Yonekura, Seiji; Matsuoka, Shigeru; and Nakamura, Kenji, 4,344,252, Cl. 49-199.000.

Matsushima, Noriaki; and Nemoto, Shigeru, to Sumitomo Durez Company, Ltd. Resol phenolic resin binder for hot coating of foundry sand. 4,345,003, Cl. 428-327.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Ogawa, Kazufumi; Chikamura, Takao; and Shibata, Takuo, 4,345,021, Cl. 430-321.000.
Tanabe, Tetsuo; Takamori, Kazumi; Matueda, Akira; Matsui, Kiyoshi; Omura, Junichi; and Miyamoto, Hitoshi, 4,344,219, Cl. 29-564.600.
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Matsuura, Toshiharu: *See*—
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Matsuzaki, Minoru, to Kawasaki Steel Corporation. Process for preventing growth of fishtails during slabbing. 4,344,309, Cl. 72-199.000.

Matthies, Alan A., to Eaton Corporation. Manual switch with timed electro-thermal latch release. 4,345,233, Cl. 337-75.000.

Matueda, Akira: *See*—
Tanabe, Tetsuo; Takamori, Kazumi; Matueda, Akira; Matsui, Kiyoshi; Omura, Junichi; and Miyamoto, Hitoshi, 4,344,219, Cl. 29-564.600.

Matushima, Yasuo: *See*—
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Maurer, Fritz: *See*—
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Stendel, Wilhelm, 4,345,078, Cl. 544-244.000.

Maurer, Siegfried. Processing chamber, in particular smoking chamber. 4,344,358, Cl. 99-476.000.

Mauries, Reinhard: *See*—
Rohner, Joachim; Zumfeld, Heinz; and Mauries, Reinhard, 4,344,277, Cl. 57-22.000.

Mauthe, Gerhard: *See*—
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May, Kenneth D.; and Bell, John T., to Container Corporation of America. Apparatus for accumulating and stacking articles. 4,344,523, Cl. 198-424.000.

Mayer, William R.; and Runion, Alton E. Rectangular headlamp retainer. 4,345,307, Cl. 362-306.000.

Mayr, Erwin, to Zahnraderfabrik Renk A.G. Tilt drive coupling for steel making converter. 4,344,608, Cl. 266-245.000.

McCandlish, Larry E.; Wright, Franklin J.; and Kugler, Edwin L., to Exxon Research & Engineering Co. CO Hydrogenation process using steam and molybdenum oxycarbonitride catalyst. 4,345,038, Cl. 518-711.000.

McDonnell Douglas Corporation: *See*—
Smith, Dale A., 4,344,264, Cl. 52-247.000.

McFadden, Arthur R.; and Aultz, Daniel E., to American Hoechst Corporation. Process for preparing heteroarylbenzoxepin-acetic acids, precursors and derivatives thereof. 4,345,087, Cl. 549-44.000.

McFarlane, Peter: *See*—
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McGill, Terry J.: *See*—
Smith, W. Christen; McGill, Terry J.; and Spangler, Herbert L., 4,344,370, Cl. 110-162.000.

McIlvin, Donald B.: *See*—
Bouzianis, George J.; Hollick, John G.; McIlvin, Donald B.; and Sillars, Frederick S., 4,344,199, Cl. 12-54.300.

McIntosh, Walter L., to Log Etronics, Inc. Exposure and contrast determination by prescanning in electronic photoprinting systems. 4,344,699, Cl. 355-20.000.

McLaren, Edwin C., to Champion International Corporation. Apparatus for heat sealing round containers. 4,344,814, Cl. 156-581.000.

McLeod, John: *See*—
Howie, James B.; and McLeod, John, 4,345,330, Cl. 372-29.000.

McNeilab, Inc.: *See*—
Rasmussen, Chris R., 4,345,083, Cl. 546-163.000.

McQueen, Sidney J. Trigger mechanism providing a short burst of fire capability for submachine guns. 4,344,351, Cl. 89-129.00B.

McVeigh, James J.: *See*—
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Mechanical Technology Incorporated: *See*—
Winn, Leo W., 4,344,631, Cl. 277-29.000.

Meddings, Basil; and Kaiser, Heinz, to Sherritt Gordon Mines Limited. Cross-flow nebulizer. 4,344,574, Cl. 239-338.000.

Medtronic, Inc.: *See*—
Markowitz, H. Toby, 4,344,437, Cl. 128-419.0PG.

Meier, Wayne R.: *See*—
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Meinan Machinery Works, Inc.: *See*—
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Meka S.N.C. di P. Merati & C.: *See*—
Cagnazzi, Ernesto, 4,344,535, Cl. 206-581.000.

Melamud, Robert C.; Nihart, James D.; and White, James M., to International Business Machines Corporation. Dynamic threshold device. 4,345,314, Cl. 364-515.000.

Melcher, Franz-Josef: *See*—
Knothe, Erich; Berg, Christoph; and Melcher, Franz-Josef, 4,344,494, Cl. 177-210.00R.

Melillo, David G.: *See*—
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,344,885, Cl. 549-291.000.

Mellor, James R.: *See*—
Bamford, Charles R.; Mellor, James R.; and Parker, Bernard, 4,345,036, Cl. 501-37.000.

Melton, James D. Energy efficient distillation apparatus. 4,344,828, Cl. 203-19.000.

Melvin, Wilbert, Jr.: *See*—
Sterling, Larry D.; and Melvin, Wilbert, Jr., 4,344,197, Cl. 8-150.000.

Membrain Limited: *See*—
Thompson, Brett A.; Webb, John A.; and White, Martin B., 4,345,201, Cl. 324-52.000.

Menashi, Wilson P.: *See*—
Moxon, Edwin C.; and Menashi, Wilson P., 4,344,315, Cl. 374-44.000.

Merck & Co., Inc.: *See*—
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,344,885, Cl. 549-291.000.

Merl, Milton J., to Coca-Cola Company, The. Modular product display system. 4,344,367, Cl. 108-1.000.

Merz, Johann, to Zahnradfabrik Friedrichshafen, AG. Means for mutual positioning of members. 4,344,717, Cl. 403-14.000.

Messerschmitt-Boelkow-Blohm GmbH: *See*—
Derschmidt, Hans; and Frommlet, Hubert, 4,344,739, Cl. 416-141.000.

Metabi, Tsuneyo, to Minolta Camera Kabushiki Kaisha. Interchangeable lens assembly. 4,344,688, Cl. 354-272.000.

Metzger, Karl G.: *See*—
Niemers, Ekkehard; Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl G., 4,344,939, Cl. 424-226.000.
Niemers, Ekkehard; Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl G., 4,344,955, Cl. 424-271.000.

Meyer, James A., to United States of America, Energy. Fast-acting valve and uses thereof. 4,344,449, Cl. 137-1.000.

Meyers, Peter V.: *See*—
Fulop, Gabor F.; Betz, Jacob F.; Meyers, Peter V.; and Doty, Mitchell E., 4,345,107, Cl. 136-255.000.

Michel, John M., to Woodstream Corporation. Detachable latch. 4,344,646, Cl. 292-87.000.

Mieth, Hans O. E.: *See*—
Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., 4,344,453, Cl. 137-240.000.

Mignien, Georges; and Gauthier, Francis, to Compagnie Lyonnaise de Transmissions Optique. Method of welding several optical fibers end to end in layers and a device for welding in accordance with said method. 4,345,137, Cl. 219-121.0PK.

Mikami, Junji: *See*—
Asano, Shiro; Shizuka, Kohei; Kambara, Yoshihiko; Mikami, Junji; Kato, Hiroshi; and Honda, Tadatoshi, 4,345,101, Cl. 564-206.000.

Miki, Isao; Kishihara, Takeshi; Kawai, Toshiyuki; and Furumaki, Naoyuki, to Nippon Light Metal Co., Ltd. Method of die casting a metallic cast product having a metallic hollow member embedded therein. 4,344,477, Cl. 164-98.000.

Mikina, Stanley J. Variable speed transmission. 4,344,333, Cl. 74-199.000.

Miko, Sandor: *See*—
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Milatz, Erhard; and Schmidt, Hans, to Robot Foto & Electronic GmbH & Co. K.G. Photographic cameras. 4,344,685, Cl. 354-173.000.

Milford, Alan H.; and Proulx, Oliver J., to Olin Corporation. Process for manufacturing flexible densified polymethane foam. 4,344,902, Cl. 264-51.000.

Miller, Fred R. Revolver crane barrel extender and alignment tool. 4,344,245, Cl. 42-1.00R.

Miller, G. Kirby: *See*—
Becker, Jon; Miller, G. Kirby; and Burney, Charles F., 4,344,810, Cl. 156-379.700.

Mills Products, Inc.: *See*—
Katona, Joseph W., 4,344,217, Cl. 29-417.000.

Milner, David J.: *See*—
Laidler, Dale A.; and Milner, David J., 4,344,894, Cl. 260-465.00D.

Milsco Manufacturing Company: *See*—
Eimen, Shawn H., 4,344,597, Cl. 248-561.000.

Minakawa, Yoshimitsu; Ishibashi, Yoji; Sato, Isao; Uchiyama, Yoshihiro; and Takahashi, Kazuyoshi, to Hitachi, Ltd. Combustor of gas turbine. 4,344,280, Cl. 60-39009.00F.

Minato, Shoji: *See*—
Godai, Tomokazu; Minato, Shoji; Nishimura, Katushi; and Ogawa, Tsuneshi, 4,345,140, Cl. 219-146.230.

Minnesota Mining and Manufacturing Company: *See*—
Nelson, Robert L.; and Downing, Michael W., 4,345,028, Cl. 435-30.000.

Minnick, L. John, to Minnick, L. John. Cementitious compositions and aggregate derivatives from said compositions. 4,344,796, Cl. 106-84.000.

Minolta Camera Kabushiki Kaisha: *See*—
Ishida, Tokuji; Taniguchi, Nobuyuki; Itoh, Masatoshi; Matsumoto, Toshiaki; Izumi, Tatsuro; and Niwa, Masatake, 4,344,680, Cl. 354-33.000.
Metabi, Tsuneyo, 4,344,688, Cl. 354-272.000.
Murata, Tomoji; Goto, Yasuo; and Hayashi, Masamichi, 4,344,696, Cl. 355-8.000.
Oka, Tateki; Tabuchi, Kenji; and Tanaka, Susumu, 4,345,014, Cl. 430-122.000.
Yamada, Seiji, 4,344,681, Cl. 354-38.000.

Minor, John M.: *See*—
Craig, Ernest M.; and Minor, John M., 4,345,143, Cl. 219-411.000.

Minor, Robert N.; and Cloutier, Edward J. F., to Gasaver Corp. Fuel saver. 4,344,406, Cl. 123-587.000.

Mirtich, Michael J.: *See*—
Banks, Bruce A.; Mirtich, Michael J.; and Sovey, James S., 4,344,996, Cl. 428-141.000.

Missig, James R.: *See*—
Tyree, Lewis, Jr.; Missig, James R.; and Rhoades, George D., 4,344,291, Cl. 62-62.000.

Mitchell, Thomas O., to Mobil Oil Corporation. Coal conversion catalysts. 4,344,838, Cl. 208-10.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Komuro, Keigo; Yamada, Matsuichi; Aoki, Katsuhiko; Yoshikawa, Yoshihiko; Itoh, Fumio; Takeda, Fumio; and Ishida, Osami, 4,345,255, Cl. 343-100.0PE.
Matsuoka, Hiromasa; Azuma, Kenkoku; and Nishiyama, Enju, 4,344,778, Cl. 55-180.000.
Saito, Masato; Tsuchihashi, Michihiro; Takai, Yoshinori; Fukuyama, Keiji; and Watanabe, Keiji, 4,345,186, Cl. 315-49.000.
Takase, Akio; Horikoshi, Hiroshi; and Kasada, Toshio, 4,345,132, Cl. 219-10.55B.

Mitsubishi Paper Mills, Ltd.: *See*—
Kohmura, Isao, 4,345,019, Cl. 430-234.000.

Mitsui Coke Co., Ltd.: *See*—
Komiyama, Tadashi; Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Kubo, Isao, 4,344,837, Cl. 208-8.0LE.

Mitsui Petrochemical Industries, Ltd.: *See*—
Takeda, Nobuyuki; and Iwata, Tadao, 4,345,054, Cl. 525-480.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Asano, Shiro; Shizuka, Kohei; Kambara, Yoshihiko; Mikami, Junji; Kato, Hiroshi; and Honda, Tadatoshi, 4,345,101, Cl. 564-206.000.

Mittelkotter, Alfred, to Ruhrkohle AG; and Maschinenfabrik Korfmann GmbH. Apparatus for extending ventilating conduits. 4,344,357, Cl. 98-50.000.

Mittendorf, Gerald C.: *See*—
Schuster, Robert W.; and Mittendorf, Gerald C., 4,344,281, Cl. 60-39.28R.

Miura, Noriyoshi. Cigarette holder with nicotine extractor. 4,344,444, Cl. 131-201.000.

Miyakawa, Seii; Kawauchi, Akira; Iijima, Kazunori; Terayama, Takao; Yoshida, Masashi; and Kawase, Hideyuki, to Hitachi, Ltd. Apparatus for bringing wire-shaped or tape-shaped carrier into contact with carrier guide member. 4,345,282, Cl. 360-85.000.

Miyamoto, Hitoshi: *See*—
Tanabe, Tetsuo; Takamori, Kazumi; Matueda, Akira; Matsui, Kiyoshi; Omura, Junichi; and Miyamoto, Hitoshi, 4,344,219, Cl. 29-564.600.

Miyata, Nobuyoshi; and Murase, Heihachi, to Hercules Incorporated. Process for forming a coated film of an olefinic resin. 4,345,004, Cl. 428-416.000.

Miyazaki, Kunio: *See*—
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,344,500, Cl. 180-230.000.

Mizokami, Kazunori, to Olympus Optical Co., Ltd. Diaphragm control device for camera. 4,344,678, Cl. 354-23.00D.

Mizutani, Masashi; and Nakamura, Shiro, to Yamaha Hatsudoki Kabushiki Kaisha. Ignition timing control means for internal combustion engines. 4,344,391, Cl. 123-146.50A.

Mobay Chemical Corporation: *See*—
Sanns, Frank, Jr., 4,344,892, Cl. 260-453.0AM.

Mobil Oil Corporation: *See*—
All, Frank E.; and Duncan, Gary L., 4,345,005, Cl. 428-461.000.
Chang, Clarence D.; and Lang, William H., 4,344,868, Cl. 252-455.00Z.
Chen, Albert C., 4,344,982, Cl. 427-44.000.
Herrington, Fox J., 4,344,907, Cl. 264-173.000.
Johnson, D. Emil; Krutchen, Charles M.; and Sharps, G. Vincent, Jr., 4,344,710, Cl. 366-76.000.
Mitchell, Thomas O., 4,344,838, Cl. 208-10.000.

Moehrmann, Karl-Heinz: *See*—
Barabas, Udo; Moehrmann, Karl-Heinz; and Christiansen, Hans-Marlin, 4,345,273, Cl. 358-86.000.

Mohr, Reinhard; and Hahnke, Manfred, to Hoechst Aktiengesellschaft. Quaternary and basic azamethine compounds and their use as colorants. 4,344,879, Cl. 260-146.00R.

Molex Incorporated: *See*—
Ditzig, Albert F., 4,344,224, Cl. 29-622.000.

Molins Limited: *See*—
Bennett, David S.; and Hoath, Grantley R., 4,344,521, Cl. 198-404.000.
Czoch, Jerzy W.; and Seagrove, Douglas J. W., 4,344,520, Cl. 198-347.000.

Molins Machine Company, Inc.: *See*—
Roberts, Webster C., 4,344,379, Cl. 118-44.000.

Molnar, Albert E.; and Molnar, William J. Baseball equipment cabinet. 4,344,660, Cl. 312-250.000.

Molnar, William J.: *See*—
Molnar, Albert E.; and Molnar, William J., 4,344,660, Cl. 312-250.000.

Moniterm Corporation: *See*—
Casper, Clarence, Jr., 4,345,187, Cl. 315-408.000.

Moniz, William B.: *See*—
Bertrand, Richard D.; Chingas, Gerard C.; Garroway, Allen N.; and Moniz, William B., 4,345,207, Cl. 324-308.000.

Monjoie, Michel W. J. P. R., to Hamon Sobelco, S.A. Fill sheets for gas and liquid contact apparatus. 4,344,899, Cl. 261-112.000.

Monkhouse, Donald C.: *See*—
Chow, Wing-Sun; and Monkhouse, Donald C., 4,344,940, Cl. 424-241.000.

Monsanto Company: *See*—
Sung, Joseph P., 4,345,205, Cl. 324-65.00R.

Monsheimer, Rolf; and Pfleiderer, Ernst, to Rohm GmbH. Soaking method. 4,344,762, Cl. 8-94.180.

Montgomery, Carroll S.: *See*—
Mueller, Michael J.; and Montgomery, Carroll S., 4,345,094, Cl. 562-425.000.
Mueller, Michael J.; and Montgomery, Carroll S., 4,345,095, Cl. 562-425.000.

Moore, Jerry D.: *See*—
Pilat, Howard L.; Moore, Jerry D.; and Chosnek, Jack, 4,345,093, Cl. 560-205.000.

Moore, Leo M. Integral heater follower plate. 4,344,547, Cl. 222-146.0HE.

Moore, Sanders H.: *See*—
Wright, David B.; Moore, Sanders H.; and Kircher, Morton S., 4,344,833, Cl. 204-258.000.

Morabito, Joseph M.: *See*—
Bulger, Gary A.; Heck, Lyle D.; Huttemann, Robert D.; Morabito, Joseph M.; Pitetti, Raymond C.; Unger, Burton A.; and Vallere, Donald J., 4,344,223, Cl. 29-577.00C.

Mori, Shinya: *See*—
Komiyama, Tadashi; Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Kubo, Isao, 4,344,837, Cl. 208-8.0LE.

Morita, Riyozo; and Honjyo, Yutaka, to Kabushiki Kaisha Meiki Seisakusho. Apparatus for reclaiming and recycling thermosetting scrap. 4,344,579, Cl. 241-34.000.

Morita, Shigeru, to Nippon Flute Co., Ltd. Device for feeding plate materials. 4,344,611, Cl. 271-129.000.

Moritani, Masahiko: *See*—
Kitagawa, Yoshihiko; Yuyama, Masahiro; Moritani, Masahiko; and Suzuki, Mikio, 4,344,906, Cl. 264-128.000.

Moriuchi, Takahiko: *See*—
Kawazoe, Shozo; Matsui, Takao; and Moriuchi, Takahiko, 4,345,000, Cl. 428-212.000.

Morrow, Willie L. Double twist hair roller. 4,344,447, Cl. 132-42.00R.

Motorola, Inc.: *See*—
Allen, Gordon H.; and Neidorff, Robert A., 4,345,166, Cl. 307-296.00R.
Ho, Roland K., 4,345,299, Cl. 361-283.000.
Latasiewicz, Leonard, 4,345,119, Cl. 200-5.00A.
Pace, W. David, 4,345,217, Cl. 330-288.000.
Skalka, Robert J., 4,345,206, Cl. 324-79.00R.

Motoyama, Kazuyasu: *See*—
Kanayama, Katsumi; Furuta, Kenzi; and Motoyama, Kazuyasu, 4,345,286, Cl. 360-137.000.

Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., to General Instrument Corporation. Alpha-numeric display array and method of manufacture. 4,345,308, Cl. 362-332.000.

Moxon, Edwin C.; and Menashi, Wilson P., to Ceres Electronics Corporation. Method and device for distinguishing material by thermal conductivity. 4,344,315, Cl. 374-44.000.

Moyer, Robert W.: *See*—
Remington, John L.; and Moyer, Robert W., 4,344,368, Cl. 108-51.100.

Mrongowius, Klaus: *See*—
Stratmann, Josef; and Mrongowius, Klaus, 4,344,823, Cl. 201-41.000.

MSI Data Corporation: *See*—
Cadotte, Ernest R.; and Hester, Gerald P. (said Gerald P. Hester assors. to), 4,345,315, Cl. 364-900.000.

MTS Systems Corporation: *See*—
Langer, William J., 4,344,324, Cl. 73-146.000.

Muacevic, Gojko: *See*—
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,344,964, Cl. 424-304.000.

Muchowski, Joseph M., to Syntex (U.S.A.) Inc. 6-Chloro- or 6-bromo-1,2-dihydro-3H-pyrrolo[1,2-a]-pyrrole-1-carboxylic acids and derivatives thereof. 4,344,943, Cl. 424-245.000.

Mueller, Michael J.; and Montgomery, Carroll S., to American Cyanamid Company. Process for the production of 6-hydroxy-2-naphthoic acid. 4,345,094, Cl. 562-425.000.

Mueller, Michael J.; and Montgomery, Carroll S., to American Cyanamid Company. Process for the production of 6-hydroxy-2-naphthoic acid. 4,345,095, Cl. 562-425.000.

Mueller, Paul: *See*—
Grote, Hugo; Hasselmann, Heinz; Kunze, Volkmar; Zacharias, Karl; Kuelpmann, Robert; and Mueller, Paul, 4,344,515, Cl. 192-67.00R.

Mullane, John C., Jr.: *See*—
Boyle, John F.; Halper, Barry J.; Link, James C.; and Mullane, John C., Jr., 4,344,290, Cl. 62-48.000.

Muller, Hans: *See*—
Jeschke, Willi; and Muller, Hans, 4,344,610, Cl. 270-6.000.

Muller, Jakob; and Diesner, Ferdinand, to Textilma AG. Ribbon-type fabric and method of making. 4,344,463, Cl. 139-383.00R.

Mumcu, Salih; and Panoch, Hans J., to Chemische Werke Huls AG. Method for the preparation of polyether ester amides. 4,345,052, Cl. 525-411.000.

Mumcu, Salih, to Chemische Werke Huls AG. Preparation of polyether ester amides. 4,345,064, Cl. 528-288.000.

Murai, Shigeo: *See*—
Nishiyama, Ryuzo; Haga, Takahiro; Toki, Tadaaki; Koyanagi, Tohru; and Murai, Shigeo, 4,344,951, Cl. 424-263.000.

Murase, Heihachi: *See*—
Miyata, Nobuyoshi; and Murase, Heihachi, 4,345,004, Cl. 428-416.000.

Murata, Tomoji; Goto, Yasuo; and Hayashi, Masamichi, to Minolta Camera Kabushiki Kaisha. Means for driving reciprocating members. 4,344,696, Cl. 355-8.000.

Murooka, Rikichi: *See*—
Takeuchi, Sumio; Murooka, Rikichi; and Sakamoto, Jun, 4,345,241, Cl. 340-347.0CC.

Murphy, Eugene F.: *See*—
Aaron, Robert L.; and Murphy, Eugene F., 4,345,147, Cl. 235-385.000.

Murphy, Raymond J. Crossarm including cable rewinding means for supported gymnastic equipment. 4,344,617, Cl. 272-109.000.

Murray, Donald L., to Allis-Chalmers Corporation. Auto-sampler and feed chute for an asphalt plant. 4,344,519, Cl. 193-2.00R.

Mussman, Harry E.: *See*—
Davis, James A.; MacPherson, William F.; Mussman, Harry E.; and Shackle, Peter W., 4,345,163, Cl. 307-252.00A.

Myers, Mark E., Jr.: *See*—
Nagy, Louis L.; and Myers, Mark E., Jr., 4,345,202, Cl. 324-58.50B.

Myo-Tronics Research, Inc.: *See*—
Radke, John C., 4,344,441, Cl. 128-733.000.

Naarmann, Herbert: *See*—
Blinne, Gerd; Naarmann, Herbert; and Penzien, Klaus, 4,344,869, Cl. 252-517.000.
Blinne, Gerd; Naarmann, Herbert; and Penzien, Klaus, 4,344,870, Cl. 252-517.000.

Nabeta, Teiichi: *See*—
Fujiwara, Toshitaka; Nabeta, Teiichi; Akita, Sigeyuki; and Kitagawa, Junji, 4,344,293, Cl. 62-126.000.

Naffa, Faisal A., to Brooks & Perkins, Incorporated. Cargo handling apparatus. 4,344,726, Cl. 410-79.000.

Nagae, Hiromitsu: *See*—
Sawada, Hiroji; Igawa, Tatsuo; and Nagae, Hiromitsu, 4,345,120, Cl. 200-19.00R.

Nagano Electronics Industrial Co., Ltd.: *See*—
Ogiwara, Kesami, 4,344,260, Cl. 51-283.00E.

Nagasaki, Michisuke; and Aso, Kinichi, to Yanmar Diesel Engine Co., Ltd. Reduction and reversing gear for marine propulsion systems. 4,344,337, Cl. 74-740.000.

Nagata, Satoshi: *See*—
Hirotani, Tatsushi; and Nagata, Satoshi, 4,345,316, Cl. 364-900.000.

Naguib, Moustafa M.: *See*—
Curiel, Georg; and Naguib, Moustafa M., 4,344,289, Cl. 60-612.000.

Nagumo, Fumio; and Asaida, Takashi, to Sony Corporation. Solid state digital television camera. 4,345,270, Cl. 358-44.000.

Nagura, Kenji; Takeda, Shinichi; Namie, Koshi; Fujii, Takao; Yamamoto, Michio; and Yokoyama, Seiichi, to Hercofina. Recovery of aromatic carboxylic acid or ester thereof from residue fraction of oxidation or esterification reaction mixture. 4,345,089, Cl. 560-77.000.

Nagy, Geza T.; Szepesi, Gabor; and Gazdag, Maria, to Richter Gedeon Vegyeszeti Gyar Rt. Parenteral solvent and a process for the preparation of stable solutions containing same. 4,344,950, Cl. 424-262.000.

Nagy, Louis L.; and Myers, Mark E., Jr., to General Motors Corporation. Method of detecting soot in engine oil using microwaves. 4,345,202, Cl. 324-58.50B.

Nakada, Akira; Sugiura, Toshio; Okamoto, Eisaku; and Yoshida, Kiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having musical performance training system. 4,344,344, Cl. 84-1.030.

Nakada, Masahiko: *See*—
Inoue, Tokuta; Nakanishi, Kiyoshi; Kanda, Mutsumi; Nakada, Masahiko; and Matsuura, Toshiharu, 4,344,408, Cl. 123-661.000.

Nakamizo, Nobuhiro: *See*—
Takai, Haruki; Teranishi, Masayuki; Nakamizo, Nobuhiro; Kasuya, Yutaka; and Kubo, Kazuhiro, 4,344,948, Cl. 424-251.000.

Nakamura, Akira; and Nakaya, Takao, to Nippon Gakki Seizo Kabushiki Kaisha. Diaphragm for electro-acoustic transducer. 4,344,503, Cl. 181-170.000.

Nakamura, Kenji: *See*—
Suzuki, Mitsuo; Tokunaga, Takeshi; Yonekura, Seiji; Matsuoka, Shigeru; and Nakamura, Kenji, 4,344,252, Cl. 49-199.000.

Nakamura, Kousuke: *See*—
Asai, Tadamichi; and Nakamura, Kousuke, 4,345,179, Cl. 313-136.000.

Nakamura, Shiro: *See*—
Mizutani, Masashi; and Nakamura, Shiro, 4,344,391, Cl. 123-146.50A.

Nakamura, Takeshi; and Tanaka, Akihiko, to Nippon Seiko Kabushiki Kaisha. Clutch release device. 4,344,517, Cl. 192-98.000.

Nakamura, Tsutomu: *See*—
Kuroda, Akira; Nakamura, Tsutomu; and Onishi, Masatoshi, 4,345,042, Cl. 521-112.000.

Nakanishi, Kiyoshi: *See*—
Inoue, Tokuta; Nakanishi, Kiyoshi; Kanda, Mutsumi; Nakada, Masahiko; and Matsuura, Toshiharu, 4,344,408, Cl. 123-661.000.

Nakaya, Takao: *See*—
Nakamura, Akira; and Nakaya, Takao, 4,344,503, Cl. 181-170.000.

Namie, Koshi: *See*—
Nagura, Kenji; Takeda, Shinichi; Namie, Koshi; Fujii, Takao; Yamamoto, Michio; and Yokoyama, Seiichi, 4,345,089, Cl. 560-77.000.

Nasser, Karim W., to Canadian Patents & Development Ltd. Method and apparatus for indicating the air content of concrete in situ. 4,344,316, Cl. 73-19.000.

Nati, Salvatore F., Jr.: *See*—
Bedard, James F.; Eichelberger, Charles W.; and Nati, Salvatore F., Jr., 4,345,200, Cl. 323-350.000.

Natico, Inc.: *See*—
Dry, Sidney, 4,344,546, Cl. 220-320.000.

National Semiconductor Corporation: *See*—
Congdon, James S.; and Isbell, Tim D., 4,345,218, Cl. 330-298.000.

Naumann, Klaus; and Rauchschwalbe, Rudolf, to Bayer Aktiengesellschaft. Process for preparing menthyl esters of enantiomers of chiral 3-(2,2-dichloro- and -dibromo-vinyl)-2,2-dimethylcyclopropanecarboxylic acids. 4,345,090, Cl. 560-124.000.

Naumann, Klaus: *See*—
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,344,960, Cl. 424-282.000.

NCR Corporation: *See*—
Reitberger, Peter H., 4,345,259, Cl. 346-75.000.

Neeff, Rutger: *See*—
Auge, Wolfgang; Thelen, Bernd; Thiem, Karl-Werner; and Neeff, Rutger, 4,344,827, Cl. 203-13.000.

Negi, Shigeto: *See*—
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,344,944, Cl. 424-246.000.

Neidorff, Robert A.: *See*—
Allen, Gordon H.; and Neidorff, Robert A., 4,345,166, Cl. 307-296.00R.

Nelson, Marvin D., to Honeywell Inc. Capacitive humidity transducer. 4,345,301, Cl. 361-400.000.

Nelson, Robert L.; and Downing, Michael W., to Minnesota Mining and Manufacturing Company. Bacteria growing device. 4,345,028, Cl. 435-30.000.

Nelson, Ronald E.: *See*—
Rathi, Ram N.; and Nelson, Ronald E., 4,344,497, Cl. 180-41.000.

Nelson, Walter R. Flow control device employing elastomeric element. 4,344,459, Cl. 138-45.000.

Nemoto, Shigeru: *See*—
Matsushima, Noriaki; and Nemoto, Shigeru, 4,345,003, Cl. 428-327.000.

Neubaum, Doris W., administratrix: *See*—
Schwartz, S. Robert; Swan, William E., Jr.; Fetterman, Robert C.; and Neubaum, Victor A., deceased, 4,344,822, Cl. 201-39.000.

Neubaum, Victor A., deceased: *See*—
Schwartz, S. Robert; Swan, William E., Jr.; Fetterman, Robert C.; and Neubaum, Victor A., deceased, 4,344,822, Cl. 201-39.000.

Neuper, Rienhard: *See*—
Suessenbeck, Heinrich; Siebenhofer, Gottfried; Neuper, Rienhard; and Zitz, Alfred, 4,344,354, Cl. 91-168.000.

Newton, Donald O.; and Wilharm, Fred B., to St. Regis Paper Company. Pinch bottom valve bag. 4,344,558, Cl. 229-62.500.

Nezu, Takao; and Turubuchi, Yasuo, to Konishiroku Photo Industry Co., Ltd. Copying machine with retractable stopper. 4,344,703, Cl. 355-76.000.

Nguyen, Tinh: *See*—
Gaul, James M.; and Nguyen, Tinh, 4,344,798, Cl. 106-123.0LC.

Nicholson, Richard R.: *See*—
Smith, Ray E.; Shukla, Jayendra G.; and Nicholson, Richard R., 4,345,002, Cl. 428-288.000.

Nickles, Stephen K.; and Beaird, Suzanne M. T., to Halliburton Company. Apparatus and method for conserving fuel in the operation of a train consist. 4,344,364, Cl. 105-62.00R.

Niemers, Ekkehard; Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl G., to Bayer Aktiengesellschaft. Penicillin 1,1-dioxides, compositions thereof and methods of use. 4,344,939, Cl. 424-226.000.

Niemers, Ekkehard; Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl G., to Bayer Aktiengesellschaft. Penicillin 1,1-dioxides. 4,344,955, Cl. 424-271.000.

Niemeyer, Lutz, to BBC Brown, Boveri & Company, Ltd. High-voltage, blast-actuated power switch having a collapsible contact. 4,345,127, Cl. 200-148.00R.

Nihart, James D.: *See—*
Melamud, Robert C.; Nihart, James D.; and White, James M., 4,345,314, Cl. 364-515.000.
Nihon Parkerizing Co., Ltd.: *See—*
Shimada, Shoji; Sonoda, Sakae; and Yokoyama, Kimio, 4,344,308, Cl. 72-39.000.
Nikles, Erwin; and Karrer, Friedrich, to Ciba-Geigy Corporation. Bicyclo 4-acyloxypiperidine light stabilizers. 4,344,877, Cl. 524-102.000.
Niksa, Andrew J., to Diamond Shamrock Corporation. Gasket for electrolytic cell. 4,344,633, Cl. 277-228.000.
Ninomiya, Hiroshi: *See—*
Aoda, Yukio; Ninomiya, Hiroshi; Yoshida, Kooichi; and Koyanagi, Osamu, 4,344,968, Cl. 424-365.000.
Nippert Company, The: *See—*
Nippert, Russell A., 4,345,136, Cl. 219-120.000.
Nippert, Russell A., to Nippert Company, The. Copper bimetal brazed resistance welding electrode. 4,345,136, Cl. 219-120.000.
Nippon Electric Co., Ltd.: *See—*
Kobayashi, Satoru; and Watanabe, Hiroshi, 4,345,172, Cl. 307-562.000.
Kukaya, Hirokazu; and Kishi, Jun, 4,345,189, Cl. 318-317.000.
Nippon Flute Co., Ltd.: *See—*
Morita, Shigeru, 4,344,611, Cl. 271-129.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Aizawa, Kenshiro; and Okada, Hisashi, 4,345,322, Cl. 369-139.000.
Nakada, Akira; Sugiura, Toshio; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,344,344, Cl. 84-1.030.
Nakamura, Akira; and Nakaya, Takao, 4,344,503, Cl. 181-170.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Aoda, Yukio; Ninomiya, Hiroshi; Yoshida, Kooichi; and Koyanagi, Osamu, 4,344,968, Cl. 424-365.000.
Nippon Light Metal Co., Ltd.: *See—*
Miki, Isao; Kishihara, Takeshi; Kawai, Toshiyuki; and Furumaki, Naoyuki, 4,344,477, Cl. 164-98.000.
Nippon Piston Ring Co., Ltd.: *See—*
Onozaki, Teruo, 4,344,634, Cl. 277-236.000.
Nippon Seiko Kabushiki Kaisha: *See—*
Nakamura, Takeshi; and Tanaka, Akihiko, 4,344,517, Cl. 192-98.000.
Nippon Sheet Glass Co., Ltd.: *See—*
Sono, Kenzo; and Kuramoto, Shiyunji, 4,344,988, Cl. 427-255.500.
Nippon Soken, Inc.: *See—*
Fujiwara, Toshitaka; Nabeta, Teiichi; Akita, Sigeyuki; and Kitagawa, Junji, 4,344,293, Cl. 62-126.000.
Hattori, Tadashi; and Ueno, Yoshiki, 4,344,317, Cl. 73-23.000.
Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, 4,344,338, Cl. 74-752.00C.
Idogaki, Takaharu; Kawai, Hisasi; Matsui, Takeshi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,345,228, Cl. 335-222.000.
Nippon Steel Corporation: *See—*
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Nippon Telegraph & Telephone Corporation: *See—*
Uchida, Naoya; Yoshida, Masaaki; and Yamanishi, Toru, 4,344,669, Cl. 350-96.300.
Nippondenso Co., Ltd.: *See—*
Fujiwara, Toshitaka; Nabeta, Teiichi; Akita, Sigeyuki; and Kitagawa, Junji, 4,344,293, Cl. 62-126.000.
Kojima, Yasuhumi; Saito, Atsunori; and Yoshimi, Akiro, 4,344,565, Cl. 236-46.00R.
Matsumura, Toshimi; Omori, Norio; and Yamazoe, Hisamitsu, 4,344,399, Cl. 123-339.000.
Nishimura, Katushi: *See—*
Godai, Tomokazu; Minato, Shoji; Nishimura, Katushi; and Ogawa, Tsuneshi, 4,345,140, Cl. 219-146.230.
Nishimura, Yukuo: *See—*
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,345,262, Cl. 346-140.00R.
Nishina, Yasuhide: *See—*
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Nishiyama, Enju: *See—*
Matsuoka, Hiromasa; Azuma, Kenkoku; and Nishiyama, Enju, 4,344,778, Cl. 55-180.000.
Nishiyama, Ryuzo; Haga, Takahiro; Toki, Tadaaki; Koyanagi, Tohru; and Murai, Shigeo, to Ishihara Sangyo Kaisha Ltd. N-Benzoyl N'-pyridyloxy phenyl urea. 4,344,951, Cl. 424-263.000.
Nissan Motor Co., Ltd.: *See—*
Asano, Masaharu, 4,344,400, Cl. 123-425.000.
Etoh, Yukihiro; Tanaka, Toshiaki; Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,344,393, Cl. 123-198.00F.
Iijima, Tamotsu; and Takagi, Yasuo, 4,344,392, Cl. 123-179.00G.
Ikeura, Kenji, 4,344,398, Cl. 123-339.000.
Masaki, Kenji, 4,344,401, Cl. 123-536.000.
Sawada, Hiroji; Igawa, Tatsuo; and Nagae, Hiromitsu, 4,345,120, Cl. 200-19.00R.
Nissen, Axel: *See—*
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Nissim, Joseph, to Rockwell International Corporation. Display apparatus for electronic games. 4,344,622, Cl. 273-85.00G.
Nitto Electric Industrial Co., Ltd.: *See—*
Kawazoe, Shozo; Matsui, Takao; and Moriuchi, Takahiko, 4,345,000, Cl. 428-212.000.
Niwa, Masatake: *See—*
Ishida, Tokuji; Taniguchi, Nobuyuki; Itoh, Masatoshi; Matsumoto, Toshiaki; Izumi, Tatsuro; and Niwa, Masatake, 4,344,680, Cl. 354-33.000.
Nolan, James J.; and Coakley, John E., to Slurry Mining Engineering Inc. Apparatus for actuating downhole flow control valves. 4,344,491, Cl. 175-317.000.
Nomoto, Seiichiro: *See—*
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,344,944, Cl. 424-246.000.
Nomura, Hirokazu: *See—*
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Nordahl, John G., to American Optical Corporation. Reduced-cross talk telemetry system and method of manufacture thereof. 4,345,334, Cl. 455-50.000.
Nordischer Maschinenbau Rud. Baader GmbH & Co. KG: *See—*
Kunig, Helmut, 4,344,208, Cl. 19-129.00R.
Rosenberg, Harald, 4,344,207, Cl. 17-63.000.
Norris, James X.: *See—*
Staples, Jack W.; and Norris, James X., 4,344,296, Cl. 62-175.000.
North, Bernard F., to Sun Chemical Corporation. Glyoxal/cyclic urea condensates. 4,345,063, Cl. 528-245.000.
Norton, James F.; Silagy, Richard J.; and Antoniw, Walter W., to Tuthill Corporation. Coupling assembly. 4,344,455, Cl. 137-329.400.
Norwood, Richard L., to General Electric Company. User programmable control system for toaster oven appliance. 4,345,145, Cl. 219-492.000.
Novak, Lajos; Szantay, Csaba; Rohaly, Janos; Kis-Tamas, Attila; Varjas, Laszlo; and Csutak, Janos, to Egyt Gyogyszervegyeszeti Gyar. Terpene derivatives and insecticidal compositions containing terpenes. 4,344,959, Cl. 424-279.000.
Nowack, Gerhard P.: *See—*
Johnson, Marvin M.; and Nowack, Gerhard P., 4,344,841, Cl. 208-211.000.
Nowakowski, Robert J.: *See—*
Wheadon, Ellis G.; and Nowakowski, Robert J., 4,345,197, Cl. 320-6.000.
Nunes, Anizio G. R., to Automotive Invention Researchers (Pty) Limited. Fuel/air mixing device. 4,344,389, Cl. 123-25.00B.
Nusslein, Ludwig: *See—*
Boroschewski, Gerhard; Nusslein, Ludwig; and Arndt, Friedrich, 4,344,790, Cl. 71-111.000.
Nustep Trenndusen Entwicklungs- und Patentverwertungsgesellschaft mbH & Co. KG: *See—*
Groszstuck, Werner, 4,344,780, Cl. 55-347.000.
Groszstuck, Werner, 4,344,782, Cl. 55-397.000.
Nuttall, David A.; and Hong, Sung H., to Kimberly-Clark Corporation. Air/water hybrid former. 4,344,818, Cl. 162-111.000.
N.V. Raychem S.A.: *See—*
De Blauwe, Francis J. A. M. C., 4,344,909, Cl. 264-230.000.
Nypro Inc.: *See—*
Paradis, Joseph R.; and Kaleskas, Edward W., 4,344,549, Cl. 222-465.00A.
Obase, Hiroyuki: *See—*
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,344,945, Cl. 424-248.520.
Oberhuber, Dieter. Air cushion foil for packaging purposes. 4,344,536, Cl. 206-594.000.
Oberlinner, Andreas: *See—*
Baumann, Hans; and Oberlinner, Andreas, 4,345,073, Cl. 544-70.000.
Occidental Oil Shale, Inc.: *See—*
Ridley, Richard D., 4,344,484, Cl. 166-251.000.
Occidental Research Corporation: *See—*
Schep, Raymond A., 4,345,098, Cl. 562-482.000.
Oce-van der Grinten N.V.: *See—*
Hendriksma, Roelof R.; and VanRhijn, Wilhelmus J., 4,345,015, Cl. 430-137.000.
Oda, Goro, to Tokyo Shibaura Denki Kabushiki Kaisha. Developer transportation device for electrostatic copying machine. 4,344,692, Cl. 355-3.0DD.
Oelke, Erwin S., to Smith International, Inc. Self-lapping high speed seal with wear-in lip. 4,344,629, Cl. 277-1.000.
Ogawa, Kazufumi; Chikamura, Takao; and Shibata, Takuo, to Matsushita Electric Industrial Co., Ltd. Solid-state image pickup element and process for fabricating the same. 4,345,021, Cl. 430-321.000.
Ogawa, Tsuneshi: *See—*
Godai, Tomokazu; Minato, Shoji; Nishimura, Katushi; and Ogawa, Tsuneshi, 4,345,140, Cl. 219-146.230.
Ogawa, Yoshinari: *See—*
Akagi, Noriyuki; Ogawa, Yoshinari; and Sakai, Kouichi, 4,344,874, Cl. 524-296.000.
Ogden, Ralph. Exercise treadmill. 4,344,616, Cl. 272-69.000.
Ogiwara, Kesami, to Nagano Electronics Industrial Co., Ltd.; and Shin-Etsu Chemical Co., Ltd. Method for precision shaping of wafer materials. 4,344,260, Cl. 51-283.00E.
Ognier, Paul; and Guilchier, Bernard, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Connector-locking device. 4,344,663, Cl. 339-75.00M.
Ogura, Tomoki: *See—*
Matsumoto, Hiroshi; and Ogura, Tomoki, 4,344,697, Cl. 355-14.00C.
Ohara, Tamanosuke. Hollow strings containing gelatinous oil. 4,344,279, Cl. 57-232.000.

Ohki, Nobutaka: *See*—
Takahashi, Osamu; Ohki, Nobutaka; and Aoki, Kozo, 4,345,016, Cl. 430-214.000.
Ohkubo, Kiyokazu: *See*—
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Ohkubo, Masanori: *See*—
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Ohlinger, Manfred: *See*—
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Ohmori, Masayuki: *See*—
Takayama, Hiroaki; Yamada, Sachiko; and Ohmori, Masayuki, 4,344,888, Cl. 260-397.200.
Ohnishi, Noriaki: *See*—
Komiyama, Tadashi; Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Kubo, Isao, 4,344,837, Cl. 208-8.0LE.
Ohno, Susumu: *See*—
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Ohtani, Hiroo: *See*—
Kunitake, Tatsuro; Ohtani, Hiroo; Watanabe, Seiichi; Takigawa, Toshiji; and Matsumoto, Yoshiro, 4,344,801, Cl. 148-3.000.
Oi, Shoichi: *See*—
Komiyama, Tadashi; Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Kubo, Isao, 4,344,837, Cl. 208-8.0LE.
Oka, Tateki; Tabuchi, Kenji; and Tanaka, Susumu, to Minolta Camera Kabushiki Kaisha. Magnetic brush developing method for use in electrography employing dual-component developing material. 4,345,014, Cl. 430-122.000.
Okada, Hisashi: *See*—
Aizawa, Kenshiro; and Okada, Hisashi, 4,345,322, Cl. 369-139.000.
Okamoto, Eisaku: *See*—
Nakada, Akira; Sugiura, Toshio; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,344,344, Cl. 84-1.030.
Okegawa, Osamu: *See*—
Sakakibara, Hideo; Fujiwara, Tatsuro; Okegawa, Osamu; Honda, Eiichi; Watanabe, Susumu; and Matsuda, Tetsuo, 4,345,069, Cl. 536-7.100.
Okutomi, Tsutomu; Iida, Masachika; Kuwabara, Kazuyoshi; Yoshino, Hisashi; and Takayanagi, Eiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrical contact. 4,345,130, Cl. 200-268.000.
Okuzawa, Tugio: *See*—
Kaneko, Tamaki; and Okuzawa, Tugio, 4,344,614, Cl. 271-288.000.
Olander, Donald A. Leather tooling apparatus. 4,344,230, Cl. 30-272.00R.
Olin Corporation: *See*—
Milford, Alan H.; and Proulx, Oliver J., 4,344,902, Cl. 264-51.000.
Wright, David B.; Moore, Sanders H.; and Kircher, Morton S., 4,344,833, Cl. 204-258.000.
Oliver, Kenneth L.: *See*—
Griffith, Carl D.; and Oliver, Kenneth L., 4,345,195, Cl. 318-628.000.
Olsen, Peter R., to Grinnell Lithographic Co., Inc. Fifth panel reclosable package. 4,344,533, Cl. 206-459.000.
Olson, Daniel R., to General Electric Company. UV Curable resins and sulfonate esters of benzotriazoles used in such resins. 4,344,830, Cl. 204-159.160.
Olson, Thomas J.: *See*—
Hammer, Jeffrey M.; and Olson, Thomas J., 4,345,162, Cl. 307-39.000.
Olsson, Nils-Goran E.: *See*—
Hernestam, Sven E. H.; Martinsson, Kjell B.; Christensson, Erik G.; and Olsson, Nils-Goran E., 4,344,952, Cl. 424-267.000.
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Olympus Optical Co., Ltd.: *See*—
Hattori, Shinichiro, 4,344,682, Cl. 354-62.000.
Kanayama, Katsumi; Furuta, Kenzi; and Motoyama, Kazuyasu, 4,345,286, Cl. 360-137.000.
Kimura, Kenji, 4,345,279, Cl. 360-36.000.
Kobayashi, Minoru, 4,345,287, Cl. 360-137.000.
Mizokami, Kazunori, 4,344,678, Cl. 354-23.00D.
Saito, Shoichi, 4,345,284, Cl. 360-132.000.
Tsukaya, Takashi, 4,344,684, Cl. 354-128.000.
Omori, Norio: *See*—
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Omura, Junichi: *See*—
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O'Neill, Charles E., to Inco Ltd. Reduction smelting process. 4,344,792, Cl. 75-9.000.
Ong, Helen H.; and Profitt, James A., to American Hoechst Corporation. Spiro[indoline-3,4'-piperidine]s. 4,345,081, Cl. 546-17.000.
Onishi, Masatoshi: *See*—
Kuroda, Akira; Nakamura, Tsutomu; and Onishi, Masatoshi, 4,345,042, Cl. 521-112.000.
Onozaki, Teruo, to Nippon Piston Ring Co., Ltd. Compression rings. 4,344,634, Cl. 277-236.000.
Oota, Masanori: *See*—
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Orita, Masatomo: *See*—
Tanaka, Junzo; and Orita, Masatomo, 4,345,134, Cl. 219-10.55B.
Orsinger, Winston A.; and Fallos, George, to Bell and Howell Company. Break-away device. 4,344,729, Cl. 414-226.000.
Osawa, Mitsuaki: *See*—
Matsumiya, Ritsuo; and Osawa, Mitsuaki, 4,344,380, Cl. 118-66.000.
Osborne, Robert L., to LaSalle Machine Tool, Inc. Self-lubricating machining apparatus. 4,344,507, Cl. 184-6.180.
Osegowitsch, Viktor: *See*—
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Osmose Wood Preserving Co. of America, Inc.: *See*—
Fahlstrom, George B., 4,344,250, Cl. 47-57.500.
Ostertag, Werner; Bittler, Knut; and Bock, Gustav, to BASF Aktiengesellschaft. Preparation of flaky mica pigments coated with metal oxides, and use of these pigments. 4,344,987, Cl. 427-213.000.
Ostrowski, Arthur E.; and Polich, Joseph M., to Allied Tube & Conduit Corporation. Apparatus for continuously electrostatically coating an elongated object. 4,344,381, Cl. 118-626.000.
Ota, Naoto: *See*—
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,345,192, Cl. 318-592.000.
Otis Engineering Corporation: *See*—
Arendt, Henry P., 4,344,602, Cl. 251-58.000.
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Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert. R., 4,344,453, Cl. 137-240.000.
Outboard Marine Corporation: *See*—
Heitmann, Richard A., 4,344,274, Cl. 56-202.000.
Ovshinsky, Herbert C.: *See*—
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Owens-Corning Fiberglas Corporation: *See*—
Canfield, Sheldon A.; and Sanik, Paul S., 4,345,106, Cl. 373-27.000.
Henry, Richard K., 4,344,747, Cl. 425-140.000.
Rapp, Kenneth L.; and Zolnerovich, Walter, Jr., 4,344,582, Cl. 242-45.000.
Symborski, Alex P.; and Cunningham, Cecil R., 4,344,786, Cl. 65-2.000.
Owyang, King, to General Electric Company. Transistor having improved turn-off time and second breakdown characteristics with bi-level emitter structure. 4,345,266, Cl. 357-34.000.
Oxenreider, Terry; and Eberle, William J., to General Battery Corporation. Apparatus for deforming molded battery case. 4,344,748, Cl. 425-143.000.
Oy Partek AB: *See*—
Visa, Heikki; and Laitinen, Heikki, 4,344,731, Cl. 414-471.000.
P.I.V. Antrieb Werner Reimers GmbH & Co. KG: *See*—
Steuer, Herbert K., 4,344,761, Cl. 474-245.000.
Pace, W. David, to Motorola, Inc. Cascode current source. 4,345,217, Cl. 330-288.000.
Pachkowski, Michael M.; and Ross, Howard V. Process for separating oil from a naturally occurring mixture. 4,344,839, Cl. 208-11.00R.
Pagani, Giacomo, to JOBS S.p.A. Machine tool with portable tool receiving carriage. 4,344,221, Cl. 29-568.000.
Palmer, Bryan H.: *See*—
Copping, Leonard G.; Kerry, John C.; Watkins, Thomas I.; Willis, Robert J.; and Palmer, Bryan H., 4,344,893, Cl. 260-456.00A.
Pankau, Edward F., to Kendall Company, The. Device for collecting body fluids. 4,344,432, Cl. 128-275.000.
Panoch, Hans J.: *See*—
Mumcu, Salih; and Panoch, Hans J., 4,345,052, Cl. 525-411.000.
Pappas, John A.; and Hebert, Roger T., to GTE Products Corporation. High intensity reflector lamp. 4,345,178, Cl. 313-113.000.
Paquette, Edmund T.: *See*—
Latino, Richard M.; and Paquette, Edmund T., 4,344,205, Cl. 16-2.000.
Paquette, Rolland. Artists' medium. 4,344,997, Cl. 428-161.000.
Paradis, Joseph R.; and Kaleskas, Edward W., to Nypro Inc. Close fittings for frangible objects. 4,344,549, Cl. 222-465.00A.
Parker, Bernard; and Parsonnet, Brian, to Baker Instruments Corp. Automatic pipettor. 4,344,768, Cl. 23-230.00R.
Parker, Bernard: *See*—
Bamford, Charles R.; Mellor, James R.; and Parker, Bernard, 4,345,036, Cl. 501-37.000.
Parks, Albert R., to United States of America, Navy. Organotin antifouling coating with epoxy and polyacrylate compositions. 4,344,875, Cl. 424-78.000.
Parrish, David R., to Standard Oil Company (Indiana). Method for enhanced oil recovery. 4,344,486, Cl. 166-272.000.
Parsonnet, Brian: *See*—
Parker, Bernard; and Parsonnet, Brian, 4,344,768, Cl. 23-230.00R.
Parsons, James D.; and Yue, Alfred S., to University of California, The Regents of the. Light fibers made from components of a type II eutectic system. 4,345,177, Cl. 313-95.000.
Parsons, Robert, to Texas Instruments Incorporated. Apparatus for generating signals for producing a display of characters. 4,345,243, Cl. 340-728.000.
Paschen, Peter; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; Kryczun, Alfred; and Pufal, Rolf, to Klockner-Humboldt-Deutz AG. Apparatus for the gasification of carbon and/or carbon-containing media. 4,344,773, Cl. 48-92.000.
Pascouet, Maurice Y. Method of making a cellular polymeric resin body in a self contained high-pressure mold form. 4,344,903, Cl. 264-55.000.
Paseman, Richard R. Apparatus for cleaning the interior of tubes. 4,344,570, Cl. 239-67.000.

Pauli, Karlheinz: *See—*
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Paulus, Wilfried: *See—*
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Pawlowski, Thomas D.: *See—*
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Paxall, Inc.: *See—*
Eglinton, Robert B., 4,344,585, Cl. 242-66.000.
Payton, Raymus K.: *See—*
Lang, Paul W., 4,344,671, Cl. 350-174.000.
Lang, Paul W., 4,345,184, Cl. 313-475.000.
Pearson, Raymond H. Toilet seat and lid unit with concealed air deodorizer. 4,344,194, Cl. 4-213.000.
Peck, Albert W., to Alcan Research and Development Limited. Lift mechanism for a vehicle tail-board or other load platform. 4,344,508, Cl. 187-9.00R.
Peleckis, Anthony J.: *See—*
Chen, Evan N.; Emmett, James S.; Ferraro, Frank A.; and Peleckis, Anthony J., 4,344,227, Cl. 30-41.000.
Pellegrino, Giuseppe. Two-part moulded wheel made of plastic material for children's vehicle. 4,344,655, Cl. 301-2.500.
Peltzer & Ehlers GmbH & Co.: *See—*
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Penco, Sergio: *See—*
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Suarato, Antonio; Penco, Sergio; and Arcamone, Federico, 4,345,068, Cl. 536-17.00A.
Penner, John. Adjustable wrench. 4,344,339, Cl. 81-157.000.
Penney, C. Bradford; Zabec, Glenn M.; and Sridharan, Sri P., to Streamlight, Inc. Rechargeable lamp assembly, mounting unit, and circuit therefor. 4,345,304, Cl. 362-183.000.
Penzien, Klaus: *See—*
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Blinne, Gerd; Naarmann, Herbert; and Penzien, Klaus, 4,344,870, Cl. 252-517.000.
Pere, Gerard, to Creusot-Loire. Apparatus for cooling and purification of exit gases from an electrolysis installation. 4,344,834, Cl. 204-278.000.
Perisastry, Ayyala; Vishe, Richard A.; and Hoet, Peter J., to Harsco Corporation. Projectile lock assembly. 4,344,528, Cl. 206-3.000.
Perkin-Elmer Corporation, The: *See—*
Gerlach, Robert L., 4,345,152, Cl. 250-396.0ML.
Shafer, David R., 4,344,676, Cl. 350-444.000.
Perrin, James. Log supporting rack for use in a fireplace. 4,344,412, Cl. 126-298.000.
Pesa, Frederick A.; and Haase, Thomas A., to Standard Oil Company. Carbonylation of olefinically unsaturated compounds. 4,344,866, Cl. 252-428.000.
Petaja, Glen E.; and Cedar, Charles E., to L & M Radiator, Inc. Heat exchange apparatus. 4,344,478, Cl. 165-69.000.
Petitcolas, Hubert, to Commissariat a l'Energie Atomique. Electric conducting cable insensitive to nuclear radiation. 4,345,111, Cl. 174-102.00A.
Petroff, Peter D. Flow analyzer. 4,344,329, Cl. 73-861.000.
Petty, Randall H.; and Bartley, Burton H., to Texaco Inc. Fluid catalytic cracking. 4,344,926, Cl. 423-244.000.
Peyser, Leonard F. Multi-purpose crampon. 4,344,238, Cl. 36-7.600.
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Pfeifer, Wolf: *See—*
Kleemann, Axel; Lussling, Theodor; Pfeifer, Wolf; and Scherberich, Paul, 4,345,072, Cl. 542-442.000.
Pfeiffer, Roland: *See—*
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Pfeiffer Zerstaubervertriebsgesellschaft mbH & Co. KG: *See—*
Schuster, Wilhelm; and Stahl, Jurgen, 4,344,744, Cl. 417-550.000.
Pfeiler, Manfred; and Pauli, Karlheinz, to Siemens Aktiengesellschaft. Tomographic apparatus for the production of transverse layer images. 4,345,158, Cl. 378-5.000.
Pfleiderer, Ernst: *See—*
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Pfrotzschner, Hans: *See—*
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Philips, Peter, to Harman-Kardon, Incorporated. Indicator for headroom extension system for tape recorders. 4,345,281, Cl. 360-66.000.
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Bonazza, Benedict R.; and DeVault, Albert N., 4,344,771, Cl. 44-63.000.
Hawley, Gil R., 4,345,055, Cl. 526-96.000.
Johnson, Marvin M.; and Nowack, Gerhard P., 4,344,841, Cl. 208-211.000.
Rogers, David L., 4,345,105, Cl. 585-271.000.
Schorno, Karl S., 4,344,917, Cl. 422-78.000.
Sonnedecker, Ray L.; and Martin, Ronald P., 4,344,900, Cl. 261-114.0VT.
Phippen, Larry J.: *See—*
Casterton, Robert H.; Phippen, Larry J.; and Wright, Darrell L., 4,344,356, Cl. 98-2.110.
Photon Power, Inc.: *See—*
Chamberlin, Rhodes R., 4,344,817, Cl. 156-645.000.
Piccirillo, Thomas P.: *See—*
Dalamangas, Chris A.; and Piccirillo, Thomas P., 4,344,662, Cl. 339-59.00M.
Pichat, Philippe; and Sinn, Robert, to Societe Chimique des Charbonnages. Ozone whitening of synthetic gypsum. 4,344,925, Cl. 423-170.000.
Pickering & Company, Inc.: *See—*
Chass, Jacob, 4,345,230, Cl. 336-135.000.
Pielkenrood, Jacob, to Pielkenrood-Vinitex B.V. Method and a device for making flotable particles suspended in a liquid by means of gas bubbles. 4,344,845, Cl. 210-199.000.
Pielkenrood-Vinitex B.V.: *See—*
Pielkenrood, Jacob, 4,344,845, Cl. 210-199.000.
Pierburg Luftfahrtgerate Union GmbH: *See—*
Herrmann, Gert, 4,344,745, Cl. 418-132.000.
Piesold, David D. A. Decants of tailings dams. 4,344,720, Cl. 405-41.000.
Pilat, Howard L.; Moore, Jerry D.; and Chosnek, Jack, to Celanese Corporation. Ethylene recovery from ethyl acrylate process. 4,345,093, Cl. 560-205.000.
Pilgram, Kurt H.; and Skiles, Richard D., to Shell Oil Company. Certain herbicidal N-(para-(6-chloro-3-pyridazinyloxy)phenyl)trifluoromethanesulfonamides. 4,345,076, Cl. 544-241.000.
Pilgram, Kurt H., to Shell Oil Company. Certain herbicidal N-(meta-(6-chloro-3-pyridazinyloxy)phenyl)trifluoromethanesulfonamides. 4,345,077, Cl. 544-241.000.
Pilkington Brothers Limited: *See—*
Bamford, Charles R.; Mellor, James R.; and Parker, Bernard, 4,345,036, Cl. 501-37.000.
Fyles, Kenneth M.; and Shorrock, Peter, 4,345,037, Cl. 501-38.000.
Pillard, Jean-Claude, to Entreprise Generale de Chauffage Industriel Pillard. Gas generator with fixed bed and reverse draught, to gasify solid combustible materials. 4,344,772, Cl. 48-76.000.
Pines, Michael Y.; Whitney, Colin G.; and Duncan, James S., to Hughes Aircraft Company. Automatic responsivity control for a CCD imager. 4,345,148, Cl. 250-214.00C.
Pinsky, Michael L.; and Walden, John, to FMC Corporation. Recovery of alkali values from trona deposits. 4,344,650, Cl. 299-4.000.
Pioneer Ansafone Manufacturing Corporation: *See—*
Sato, Takashi; Tsuchiya, Tomio; and Matushima, Yasuo, 4,345,114, Cl. 179-6.160.
Pirelli Cable Corporation: *See—*
Silver, David A.; Dima, Attila F.; and Seman, George W., 4,345,109, Cl. 174-84.00R.
Pitetti, Raymond C.: *See—*
Bulger, Gary A.; Heck, Lyle D.; Huttemann, Robert D.; Morabito, Joseph M.; Pitetti, Raymond C.; Unger, Burton A.; and Vallere, Donald J., 4,344,223, Cl. 29-577.00C.
Pitts, James N., Jr.: *See—*
Shaffer, Steven D.; Kienitz, L. Michael; Pitts, James N., Jr.; and Bliss, Richard D., 4,344,712, Cl. 366-108.000.
Pivit, Erich: *See—*
Hasse, Peter; Wiesinger, Johannes; and Pivit, Erich, 4,345,293, Cl. 361-117.000.
Hasse, Peter; Wiesinger, Johannes; and Pivit, Erich, 4,345,295, Cl. 361-130.000.
Plapp, Gunther, to Robert Bosch GmbH. Device for air flow rate measurement in the air intake tube of an internal combustion engine. 4,344,322, Cl. 73-118.000.
Plueddemann, Edwin P., to Dow Corning Corporation. Stabilization of silicates using salts of substituted nitrogen or sulfur containing siliconates. 4,344,860, Cl. 252-389.00R.
Polaroid Corporation: *See—*
Borror, Alan L.; and Greenwald, Richard B., 4,345,018, Cl. 430-234.000.
Cournoyer, Richard L.; and Foley, James W., 4,345,017, Cl. 430-221.000.
Polich, Joseph M.: *See—*
Ostrowski, Arthur E.; and Polich, Joseph M., 4,344,381, Cl. 118-626.000.
Pollard, Lorne R., to International Harvester Co. Dual implement hitch. 4,344,639, Cl. 280-411.00C.
Polysar Limited: *See—*
Wunder, Richard H., 4,345,067, Cl. 528-485.000.
Possanza, Genus: *See—*
Cullen, Ernest; Possanza, Genus; and Stewart, Patrick B., 4,344,946, Cl. 424-250.000.
Potts, Roger F., to Convey Systems Div. of Export Tool & Welding Co. Ltd. Machine for cleaning receptacles. 4,344,448, Cl. 134-73.000.
PPG Industries, Inc.: *See—*
Henery, Vern A., 4,344,986, Cl. 427-180.000.
Jensen, Thomas H., 4,344,785, Cl. 65-1.000.
Krass, Dennis K., 4,344,789, Cl. 71-105.000.
Pray, Winston C., to Flexible Steel Lacing Company. Rivet guiding apparatus. 4,344,213, Cl. 29-243.500.
Prendergast, John J.: *See—*
Rizk, Sidky D.; Hsieh, Harry W. S.; and Prendergast, John J., 4,345,053, Cl. 525-440.000.
Procter & Gamble Company, The: *See—*
Allaway, Philip N.; Baginski, Richard M.; Liu, Don K. K.; and Teixeira, Theodore M., 4,344,871, Cl. 252-531.000.
Bolich, Raymond E., Jr., 4,345,080, Cl. 546-6.000.
Youngquist, Rudolph W.; and Brabbs, William J., 4,344,969, Cl. 426-18.000.

Profio, Mark V.: *See—*
Kampf, Julian C.; Graefe, Richard J.; and Profio, Mark V., 4,345,288, Cl. 361-31.000.

Profitt, James A.: *See—*
Ong, Helen H.; and Profitt, James A., 4,345,081, Cl. 546-17.000.

Projected Lubricants, Inc.: *See—*
Jamison, Warren E.; and McVeigh, James J., 4,344,278, Cl. 57-221.000.

Proulx, Oliver J.: *See—*
Milford, Alan H.; and Proulx, Oliver J., 4,344,902, Cl. 264-51.000.

Provder, Theodore; Holsworth, Richard M.; and Koehler, Mark E., to SCM Corporation. Method and apparatus for photogoniometric analysis of surfaces. 4,344,709, Cl. 356-445.000.

Pruitt, Malcolm E.: *See—*
Schmidt, Donald L.; Pruitt, Malcolm E.; and Dismuke, Keith I., 4,344,993, Cl. 428-35.000.

Pufal, Rolf: *See—*
Paschen, Peter; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; Kryczun, Alfred; and Pufal, Rolf, 4,344,773, Cl. 48-92.000.

Puff, Roger M.; and Kita, Jean-Claude, to Charbonnages de France. Process and installation for treating coking coal. 4,344,769, Cl. 44-23.000.

Puryear, John W., to Brunswick Corporation. Drag spring for fishing reel. 4,344,586, Cl. 242-84.50A.

Pyke, Thomas R.: *See—*
Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., 4,345,033, Cl. 435-253.000.

Quaker Window Products Co.: *See—*
Knoll, Harold H., 4,344,255, Cl. 49-501.000.

Quarella, Guido, to Hauni-Werke Korber & Co. KG. Tobacco stream building channel for use in cigarette rod making machines or the like. 4,344,526, Cl. 198-689.000.

R. A. Jones & Co. Inc.: *See—*
Dieterlen, Paul E.; and Benner, Harold T., Jr., 4,344,269, Cl. 53-459.000.

Racilla, John J.; and Weber, Robert N., to AMP Incorporated. Connector for mass terminating individual conductors. 4,344,665, Cl. 339-99.00R.

Radke, John C., to Myo-Tronics Research, Inc. Mandibular electromyograph. 4,344,441, Cl. 128-733.000.

Radke, Leo L., to Western Electric Company, Inc. Methods and circuitry for varying a pulse output of a resonant circuit. 4,345,165, Cl. 307-265.000.

Rahn, Oskar: *See—*
Flamme, Walter; and Rahn, Oskar, 4,344,312, Cl. 72-452.000.

Raillard, Yves G.: *See—*
Dieudonne, Marc P. G.; and Raillard, Yves G., 4,345,326, Cl. 370-60.000.

Rainwater, Lawrence L., to Sperry Corporation. Steerable directional antenna. 4,345,256, Cl. 343-754.000.

Ramachandran, Sundaresan, to Union Carbide Corporation. Process for producing organo-silane coated asbestos base material. 4,344,992, Cl. 427-430.100.

Rampolla, Donald S., to United States of America, Energy. Method of increasing the deterrent to proliferation of nuclear fuels. 4,344,912, Cl. 376-180.000.

Ramsbotham, John; and van Gogh, Johan, to Shell Oil Company. Diglycidyl ethers of diphenylol alkanes, their preparation and use in curable compositions. 4,345,060, Cl. 528-103.000.

Rand, Burgess F.: *See—*
Hancock, Dane R.; and Rand, Burgess F., 4,344,319, Cl. 73-40.50R.

Rapp, Kenneth L.; and Zolnerovich, Walter, Jr., to Owens-Corning Fiberglas Corporation. Microprocessor-controlled product roving system. 4,344,582, Cl. 242-45.000.

Raschke, Bernward: *See—*
Lerche, Ernst; Raschke, Bernward; and Hartwig, Siegfried, 4,345,237, Cl. 340-27.00R.

Rasmussen, Chris R., to McNeilab, Inc. (1-Methyl-2-quinolinylidene) derivatives of guanidine. 4,345,083, Cl. 546-163.000.

Rathi, Ram N.; and Nelson, Ronald E., to Harnischfeger Corporation. Override control for axle locking apparatus of mobile crane. 4,344,497, Cl. 180-41.000.

Ratsko, Istvan; Ivony, Jozsef; Madi, Jeno; and Karasz, Gyorgy, to Autoipari Kutato Intezet; and Ikarus Karosszeria es Jarmugyar. Apparatus for the prevention of jackknifing of articulated vehicles. 4,344,640, Cl. 280-432.000.

Rauchschwalbe, Rudolf: *See—*
Naumann, Klaus; and Rauchschwalbe, Rudolf, 4,345,090, Cl. 560-124.000.

Rauma-Repola Oy: *See—*
Haapamaki, Pertti, 4,344,321, Cl. 73-61.400.

Ray, Earl B. Wheel suspension assembly for a trailer. 4,344,643, Cl. 280-724.000.

Raychem Corporation: *See—*
White, Lawrence J., 4,344,214, Cl. 29-252.000.

RCA Corporation: *See—*
Goodman, Alvin M.; and Tarng, Ming L., 4,344,985, Cl. 427-85.000.
Gries, Robert J.; Miko, Sandor; and Conn, Calvin E., 4,345,188, Cl. 315-411.000.
Harford, Jack R., 4,345,214, Cl. 330-254.000.
Salt, Walter W., Jr., 4,344,383, Cl. 118-730.000.
Schade, Otto H., Jr., 4,345,213, Cl. 330-253.000.
Schade, Otto H., Jr., 4,345,216, Cl. 330-288.000.
Waybright, George C., 4,345,275, Cl. 358-243.000.

Redemann, Richard, to Gewerkschaft Eisenhutte Westfalia. Crushing apparatus. 4,344,581, Cl. 241-88.400.

Reed, Norman L.: *See—*
Christian, Charlie R.; Gaskins, Jack C.; Hamrick, Jack; and Reed, Norman L., 4,344,211, Cl. 28-183.000.

Reich, Steven A., to Deere & Company. Multiple element thermal actuator. 4,345,234, Cl. 337-336.000.

Reimold, Dieter: *See—*
Haupt, Walter; Warncke, Heinz; Friebe, Heinz W.; and Reimold, Dieter, 4,344,320, Cl. 73-40.700.

Reinhard, Russell R.; Dorawala, Tansukhlal G.; and Kerr, Edwin R., to Texaco Inc. Steam regeneration of rhodium containing hydrocarbon dehydrocyclization catalysts. 4,344,865, Cl. 252-420.000.

Reinhardt, Friedrich; and Schmidt, Helmut, to Hoechst Aktiengesellschaft. Process for the preparation of transfer prints on optionally regenerated cellulose fibers and their mixtures with polyester fibers. 4,344,765, Cl. 8-471.000.

Reiser, Carl A.: *See—*
Fahle, Ronald W.; and Reiser, Carl A., 4,345,009, Cl. 429-37.000.

Reitberger, Peter H., to NCR Corporation. Method and apparatus for ink jet printing. 4,345,259, Cl. 346-75.000.

Reithmayr, Karl: *See—*
Siegl, Annemarie; Knopp, Christian; and Reithmayr, Karl, 4,344,933, Cl. 424-79.000.

Reliable Security Systems, Inc.: *See—*
Van Der Linden, Roy E., 4,344,647, Cl. 292-201.000.

Reliance Universal, Inc.: *See—*
Gray, Richard L., 4,344,991, Cl. 427-325.000.

Remington Arms Company, Inc.: *See—*
Bauman, Thomas G.; and Kast, Jack L., 4,344,246, Cl. 42-69.00B.

Remington, John L.; and Moyer, Robert W., to Stanley Works, The. Universal pallet. 4,344,368, Cl. 108-51.100.

Remus, Dieter: *See—*
Ganseuer, Horst; Remus, Dieter; and Gail, Heinz, 4,344,605, Cl. 266-48.000.

Renga, James M.: *See—*
Strege, Paul E.; and Renga, James M., 4,344,881, Cl. 549-229.000.

Renken, Michael J.; and Simmons, Billy P., to Trane Company, The. Average fluid flow sensor. 4,344,330, Cl. 73-861.660.

Renth, Larry: *See—*
Hoshall, Thomas C.; Hicks, LaVern L.; and Renth, Larry, 4,344,580, Cl. 241-60.000.

Resnick, Paul R., to Du Pont de Nemours, E. I., and Company. Process for alkyl perfluoro(4,7-dioxa-5-methyl-8-fluoroformylnonanoate. 4,345,092, Cl. 560-182.000.

Reszka, Leon. Animated Christmas display device. 4,344,243, Cl. 40-415.000.

Reynhout, Cornelis M.: *See—*
Haes, Freddy; Reynhout, Cornelis M.; Hermes, Guillaume M. P. G.; and Boiten, Ebbe, 4,344,228, Cl. 30-43.900.

Rheinhold & Mahla GmbH: *See—*
Haupt, Walter; Warncke, Heinz; Friebe, Heinz W.; and Reimold, Dieter, 4,344,320, Cl. 73-40.700.

Rhoades, George D.: *See—*
Tyree, Lewis, Jr.; Missig, James R.; and Rhoades, George D., 4,344,291, Cl. 62-62.000.

Rhone-Poulenc Industries: *See—*
Dupin, Thierry; Bouge, Gilbert; and Seigneurin, Laurent, 4,344,928, Cl. 423-626.000.

Ricard, Jacques: *See—*
Gerard, Roland; Brun, Norbert; and Ricard, Jacques, 4,345,303, Cl. 362-80.000.

Ricci, Andrew. Centrifuge cell collector apparatus. 4,344,562, Cl. 233-26.000.

Richardson, Clayton H., Jr.: *See—*
Watkins, Neil A.; and Richardson, Clayton H., Jr., 4,344,413, Cl. 126-429.000.

Richardson GmbH: *See—*
Wienecke, Horst, 4,344,972, Cl. 426-103.000.

Richardson, Harvey J.: *See—*
DeMoss, Dean; and Richardson, Harvey J., 4,345,285, Cl. 360-133.000.

Richardson, Ronald D., to Caterpillar Tractor Co. Dynamic timing adjustment tool. 4,344,323, Cl. 73-119.00A.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Nagy, Geza T.; Szepesi, Gabor; and Gazdag, Maria, 4,344,950, Cl. 424-262.000.
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; Keve, Tibor; and Gazdac, Maria, 4,345,082, Cl. 546-51.000.

Ricoh Co. Ltd.: *See—*
Hara, Kazuyuki, 4,345,264, Cl. 346-154.000.
Kaneko, Tamaki; and Okuzawa, Tugio, 4,344,614, Cl. 271-288.000.
Satomi, Toyokazu, 4,344,695, Cl. 355-8.000.

Ridge, William A., to Cessna Aircraft Company, The. Signal bleed-down valve. 4,344,285, Cl. 60-452.000.

Ridley, Richard D., to Occidental Oil Shale, Inc. Determining the locus of a processing zone in an in situ oil shale retort through a well in the formation adjacent the retort. 4,344,484, Cl. 166-251.000.

Riebel, Hans-Jochem: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Stendel, Wilhelm, 4,345,078, Cl. 544-244.000.

Riebs, Richard E., to RTE Corporation. Automatic sectionalizing system. 4,345,291, Cl. 361-68.000.

Rieck, Hilmar: *See—*
Kohler, Klaus; Woditsch, Peter; Rieck, Hilmar; and Rodi, Fritz, 4,344,799, Cl. 106-300.000.

Riggins, James D.: *See—*
Holoff, Manning; and Riggins, James D., 4,344,813, Cl. 156-527.000.

Riley, Richard E.; and Turner, Bradley D., to Spectrol Electronics Corporation. Variable resistance device having a resistance element with laser cuts. 4,345,235, Cl. 338-176.000.

Riner, Felix: *See—*
Bucher, Robert R.; and Riner, Felix, 4,344,307, Cl. 66-84.00R.

Ritcey, Gordon M.: *See—*
Lucas, Bernard H.; and Ritcey, Gordon M., 4,344,924, Cl. 423-54.000.

Rizk, Sidky D.; Hsieh, Harry W. S.; and Prendergast, John J., to Essex Chemical Corp. Silicon-terminated polyurethane polymer. 4,345,053, Cl. 525-440.000.

Robbins, Max L.; and Ernst, Edwin R., to Exxon Research & Engineering Co. Process for defoaming acid gas scrubbing solutions and defoaming solutions. 4,344,863, Cl. 252-192.000.

Robert Bosch GmbH: *See—*
Breitling, Wolfram, 4,345,296, Cl. 361-154.000.
Plapp, Gunther, 4,344,322, Cl. 73-118.000.
Schwerin, Gunter, 4,344,355, Cl. 91-445.000.
Seifert, Kurt, 4,344,575, Cl. 239-533.500.

Roberts, Karl H.: *See—*
MacRae, David M.; and Roberts, Karl H., 4,344,930, Cl. 424-28.000.

Roberts, Thomas E., Jr.: *See—*
Lill, Melvin H.; and Roberts, Thomas E., Jr., 4,344,234, Cl. 33-228.000.

Roberts, Webster C., to Molins Machine Company, Inc. Bonding machine and gravure applicator roll. 4,344,379, Cl. 118-44.000.

Robertson, William G., to Santa Barbara Medical Foundation Clinic. Ileostomy appliance and method for implanting the same. 4,344,434, Cl. 128-283.000.

Robot Foto & Electronic GmbH & Co. K.G.: *See—*
Milatz, Erhard; and Schmidt, Hans, 4,344,685, Cl. 354-173.000.

Rockwell International Corporation: *See—*
Cunningham, Vernon R., 4,345,222, Cl. 333-28.00R.
Longworth, Joe D., 4,345,211, Cl. 329-50.000.
Massie, Norbert A., 4,344,707, Cl. 356-354.000.
Nissim, Joseph, 4,344,622, Cl. 273-85.00G.
Sheldon, Leonard W., 4,344,653, Cl. 301-37.00T.
Yao, Shi-Kay, 4,344,675, Cl. 350-358.000.

Rockwool International A/S: *See—*
Jensen, Leif, 4,345,035, Cl. 501-29.000.

Rodi, Fritz: *See—*
Kohler, Klaus; Woditsch, Peter; Rieck, Hilmar; and Rodi, Fritz, 4,344,799, Cl. 106-300.000.

Rogers, David L., to Phillips Petroleum Company. Reducing methylacetylene charged to an ethylene production. 4,345,105, Cl. 585-271.000.

Rohaly, Janos: *See—*
Novak, Lajos; Szantay, Csaba; Rohaly, Janos; Kis-Tamas, Attila; Varjas, Laszlo; and Csutak, Janos, 4,344,959, Cl. 424-279.000.

Rohm GmbH: *See—*
Loechel, Hans-Peter; and Cooper, Tom, 4,345,006, Cl. 428-473.000.
Monsheimer, Rolf; and Pfleiderer, Ernst, 4,344,762, Cl. 8-94.180.

Rohner, Joachim; Zumfeld, Heinz; and Mauries, Reinhard, to W. Schlafhorst & Co. Method and apparatus for connecting an upper thread with a lower thread. 4,344,277, Cl. 57-22.000.

Rojey, Alexandre, to Institut Francais du Petrole. Process for heat production by means of a heat pump operated with a specific mixture of fluids as the working agent. 4,344,292, Cl. 62-114.000.

Rokutan, Hideaki: *See—*
Horiuchi, Michimasa; Ibamoto, Masahiko; and Rokutan, Hideaki, 4,345,190, Cl. 318-338.000.

Rolls-Royce Limited: *See—*
Smith, Stanley, 4,344,506, Cl. 184-6.110.
Williamson, Willie, 4,344,736, Cl. 415-14.000.

Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Centrifuge rotor having vertically offset trunnion pins. 4,344,563, Cl. 233-26.000.

Rosa, Jerry M., to United States of America, Energy. Retrievable fuel pin end member for a nuclear reactor. 4,344,914, Cl. 376-437.000.

Rosen, Perry: *See—*
Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, 4,345,084, Cl. 548-237.000.

Rosenberg, Barnett: *See—*
Aaby, Trygve; and Rosenberg, Barnett, 4,344,440, Cl. 128-653.000.

Rosenberg, Harald, to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG. Apparatus for aligning fish. 4,344,207, Cl. 17-63.000.

Ross, Howard V.: *See—*
Pachkowski, Michael M.; and Ross, Howard V., 4,344,839, Cl. 208-11.00R.

Ross, Ronald J.: *See—*
Sherman, John D.; and Ross, Ronald J., 4,344,851, Cl. 210-670.000.

Roussel Uclaf: *See—*
Martel, Jacques; Tessier, Jean; Teche. Andre; and Demoute, Jean-Pierre, 4,344,895, Cl. 260-465.00F.

Rowley, Paul R., to Atlantic Richfield Company. Sea life habitat. 4,344,384, Cl. 119-4.000.

RTE Corporation: *See—*
Riebs, Richard E., 4,345,291, Cl. 361-68.000.

Ruh, Gerhard, to Olympia Werke AG. Developing equipment for an electrophotographic copying device. 4,344,694, Cl. 355-3.0DD.

Ruhrkohle AG: *See—*
Mittelkotter, Alfred, 4,344,357, Cl. 98-50.000.

Rumpf, Robert J., to Firestone Tire & Rubber Company, The. Tandem dual spool retractor structure. 4,344,589, Cl. 242-107.40A.

Runion, Alton E.: *See—*
Mayer, William R.; and Runion, Alton E., 4,345,307, Cl. 362-306.000.

Russell, Charles R., deceased: *See—*
Shasha, Baruch S.; Doane, William M.; and Russell, Charles R., deceased, 4,344,857, Cl. 252-316.000.

Russell, Kathleen G., heir: *See—*
Shasha, Baruch S.; Doane, William M.; and Russell, Charles R., deceased, 4,344,857, Cl. 252-316.000.

Rutchik, Walter L.: *See—*
Jaeschke, James R.; and Rutchik, Walter L., 4,345,292, Cl. 361-94.000.

Ruter, Jorn, to Chemische Werke Huls AG. Transparent copolyamides and their application to transparent, impact resistant molded articles. 4,345,066, Cl. 528-324.000.

Ryan, Kenneth M.: *See—*
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,344,885, Cl. 549-291.000.

Ryan, Richard B. Adjustable drapery support assembly. 4,344,210, Cl. 24-369.000.

Ryer, Jack: *See—*
Gutierrez, Antonio; Brois, Stanley J.; Ryer, Jack; and Deen, Harold E., 4,344,853, Cl. 252-33.600.

Ryobi Ltd.: *See—*
Ishii, Koji, 4,344,362, Cl. 101-425.000.

S and S Associates: *See—*
Schiller, Karl H., 4,344,240, Cl. 40-20.00R.

Sachot, Michel E., to Societe Hure S.A. Tool exchange apparatus for boring mills and method for exchanging tools. 4,344,220, Cl. 29-568.000.

St. Regis Paper Company: *See—*
Chaloupka, Premysl G., 4,344,727, Cl. 414-36.000.
Newton, Donald O.; and Wilharm, Fred B., 4,344,558, Cl. 229-62.500.

Saito, Atsunori: *See—*
Kojima, Yasuhumi; Saito, Atsunori; and Yoshimi, Akiro, 4,344,565, Cl. 236-46.00R.

Saito, Isao: *See—*
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,344,944, Cl. 424-246.000.

Saito, Masato; Tsuchihashi, Michihiro; Takai, Yoshinori; Fukuyama, Keiji; and Watanabe, Keiji, to Mitsubishi Denki Kabushiki Kaisha. Metal vapor discharge lamp. 4,345,186, Cl. 315-49.000.

Saito, Shoichi, to Olympus Optical Co., Ltd. Device for preventing electrostatic charges on a magnetic recording tape of a tape cassette. 4,345,284, Cl. 360-132.000.

Sakai, Kouichi: *See—*
Akagi, Noriyuki; Ogawa, Yoshinari; and Sakai, Kouichi, 4,344,874, Cl. 524-296.000.

Sakakibara, Hideo; Fujiwara, Tatsuro; Okegawa, Osamu; Honda, Eiichi; Watanabe, Susumu; and Matsuda, Tetsuo, to Toyo Jozo Kabushiki Kaisha. Deformyltylosin derivatives. 4,345,069, Cl. 536-7.100.

Sakamoto, Jun: *See—*
Takeuchi, Sumio; Murooka, Rikichi; and Sakamoto, Jun, 4,345,241, Cl. 340-347.0CC.

Sakanoue, Kei: *See—*
Hirano, Shigeo; and Sakanoue, Kei, 4,345,024, Cl. 430-382.000.

Sakurai, Kazuhiro: *See—*
Idogaki, Takaharu; Kawai, Hisasi; Matsui, Takeshi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,345,228, Cl. 335-222.000.

Saleh, Mustafa Y. M., to Siemens Corporation. Zero crossing detector. 4,345,169, Cl. 307-354.000.

Sallmann, Alfred: *See—*
Habicht, Ernst; Ferrini, Pier G.; and Sallmann, Alfred, 4,344,957, Cl. 424-273.00B.

Salmonsen, Andrew R.; and Feehery, William J., Jr., to Campbell Soup Company. High-speed weighing and conveying apparatus. 4,344,493, Cl. 177-52.000.

Salt, Walter W., Jr., to RCA Corporation. Retainer ring for securing substrates in a vacuum deposition system. 4,344,383, Cl. 118-730.000.

Sam Garvin & Company: *See—*
Garvin, George R., 4,344,342, Cl. 83-45.000.

Sampson, George P., III, to Bell Telephone Laboratories, Incorporated. Clocked IGFET logic circuit. 4,345,170, Cl. 307-443.000.

Samuels, Alvin: *See—*
Fox, Irwin, 4,344,842, Cl. 208-244.000.

Samuels, David: *See—*
Fox, Irwin, 4,344,842, Cl. 208-244.000.

Sandberg, Harry W., to Du Pont de Nemours, E. I., and Company. Process and apparatus for packaging. 4,344,468, Cl. 141-69.000.

Sanderson, Barry D.: *See—*
Begeman, Robert H.; Sanderson, Barry D.; Weiss, Donald C.; and Zeph, David L., 4,345,251, Cl. 340-825.860.

Sandoz, Inc.: *See—*
Anderson, Paul L.; and Brittain, Darryl A., 4,344,966, Cl. 424-343.000.

Sanik, Paul S.: *See—*
Canfield, Sheldon A.; and Sanik, Paul S., 4,345,106, Cl. 373-27.000.

Sanns, Frank, Jr., to Mobay Chemical Corporation. Self-granulating reaction product of 4,4'-diphenylmethane diisocyanate and resorcinol. 4,344,892, Cl. 260-453.0AM.

Sano, Shigenori, to Casio Computer Co., Ltd. Automatic rhythm accompaniment system. 4,344,345, Cl. 84-1.030.

Santa Barbara Medical Foundation Clinic: *See—*
Robertson, William G., 4,344,434, Cl. 128-283.000.

Santa Barbara Research Center: *See—*
Sutcliffe, Edward Y.; and Cole, Roger A., 4,344,476, Cl. 164-76.100.

Santiago, Andres; and Santiago, Enrique, to Zeuna-Staerker KG. Catalyzer for detoxifying exhaust gases from internal combustion engines. 4,344,921, Cl. 422-179.000.

Santiago, Andres; and Santiago, Enrique, to Zeuna-Staerker KG. Catalyzer for detoxifying exhaust gases from internal combustion. 4,344,922, Cl. 422-179.000.

Santiago, Enrique: *See—*
Santiago, Andres; and Santiago, Enrique, 4,344,921, Cl. 422-179.000.
Santiago, Andres; and Santiago, Enrique, 4,344,922, Cl. 422-179.000.

Sapi, Janos: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; Keve, Tibor; and Gazdac, Maria, 4,345,082, Cl. 546-51.000.

Sarnecki, Wilhelm: *See—*
Steck, Werner; Sarnecki, Wilhelm; Marosi, Laszlo; Ohlinger, Manfred; and Loeser, Werner, 4,344,791, Cl. 75-0.5AA.

Sartorius GmbH: *See—*
Knothe, Erich; Berg, Christoph; and Melcher, Franz-Josef, 4,344,494, Cl. 177-210.00R.

Sato, Hiroko: *See—*
Sugiyama, Katsumi; Takeda, Hideo; and Sato, Hiroko, 4,345,091, Cl. 560-163.000.

Sato, Isao: *See—*
Minakawa, Yoshimitsu; Ishibashi, Yoji; Sato, Isao; Uchiyama, Yoshihiro; and Takahashi, Kazuyoshi, 4,344,280, Cl. 60-39009.00F.

Sato, Matsuo. Water feed valve with sprinkling holes. 4,344,452, Cl. 137-238.000.

Sato, Takashi; Tsuchiya, Tomio; and Matushima, Yasuo, to Pioneer Ansafone Manufacturing Corporation. Method and apparatus for recording and reproducing a message with an indication of a time occurrence. 4,345,114, Cl. 179-6.160.

Satoh, Yoji: *See—*
Takada, Shigetaka; and Satoh, Yoji, 4,344,898, Cl. 261-39.00E.

Satomi, Toyokazu, to Ricoh Company, Ltd. Method and apparatus for slitwise exposure of photosensitive member in copying machines. 4,344,695, Cl. 355-8.000.

Saunders, Robert L.: *See—*
Farr, Aaron V.; and Saunders, Robert L., 4,344,200, Cl. 14-71.500.

Sawada, Hiroji; Igawa, Tatsuo; and Nagae, Hiromitsu, to Nissan Motor Company, Limited; and Hitachi, Ltd. Distributor. 4,345,120, Cl. 200-19.00R.

Sawano, Hiroshi: *See—*
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Sawyer, Willard H.: *See—*
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Scapa Dryers, Inc.: *See—*
Harwood, William J., 4,344,209, Cl. 24-31.00R.

Schade, Otto H., Jr., to RCA Corporation. Differential-input amplifier circuitry with increased common-mode voltage range. 4,345,213, Cl. 330-253.000.

Schade, Otto H., Jr., to RCA Corporation. Compensation of base-current-related error in current mirror amplifier circuitry. 4,345,216, Cl. 330-288.000.

Schafer, Walter; Wagner, Kuno; and Block, Hans-Dieter, to Bayer Aktiengesellschaft. Process for the production of polyisocyanates which contain carbodiimide groups and which are stable in storage. 4,344,855, Cl. 252-182.000.

Scharrenbroich, Helmut: *See—*
Fritz, Hans-Gerhard; and Scharrenbroich, Helmut, 4,344,749, Cl. 425-174.400.

Scheingold, William S.: *See—*
Corman, Ned E.; Kandybowski, Steven J.; Scheingold, William S.; and Youngfleish, Frank C., 4,345,267, Cl. 357-81.000.

Schep, Raymond A., to Occidental Research Corporation. Process for producing benzene carboxylic acid salts and their acids. 4,345,098, Cl. 562-482.000.

Scherberich, Paul: *See—*
Kleemann, Axel; Lussling, Theodor; Pfeifer, Wolf; and Scherberich, Paul, 4,345,072, Cl. 542-442.000.

Schering AG: *See—*
Boroschewski, Gerhard; Nusslein, Ludwig; and Arndt, Friedrich, 4,344,790, Cl. 71-111.000.

Schering Aktiengesellschaft (A.G.): *See—*
Wiechert, Rudolf; Bittler, Dieter; Schleusener, Annerose; and Albring, Manfred, 4,344,941, Cl. 424-243.000.

Schiller, Karl H., to S and S Associates. Identification snap. 4,344,240, Cl. 40-20.00R.

Schindler, Walter: *See—*
Heller, Rudolf; and Schindler, Walter, 4,344,595, Cl. 248-542.000.

Schleusener, Annerose: *See—*
Wiechert, Rudolf; Bittler, Dieter; Schleusener, Annerose; and Albring, Manfred, 4,344,941, Cl. 424-243.000.

Schlueter, Francis E.; and Kent, Brian E., to Deere & Company. Head assembly for a cotton harvester. 4,344,271, Cl. 56-13.600.

Schmidhuber, Erich: *See—*
Dathe, Joachim; and Schmidhuber, Erich, 4,345,108, Cl. 174-52.00H.

Schmidt, Donald L.; Pruitt, Malcolm E.; and Dismuke, Keith I., to Dow Chemical Company, The. Perfluorocarbon-polymeric coatings having low critical surface tensions. 4,344,993, Cl. 428-35.000.

Schmidt, Hans: *See—*
Milatz, Erhard; and Schmidt, Hans, 4,344,685, Cl. 354-173.000.

Schmidt, Helmut: *See—*
Reinhardt, Friedrich; and Schmidt, Helmut, 4,344,765, Cl. 8-471.000.

Schmits, Heinz-Herbert: *See—*
Heinemann, Otto; and Schmits, Heinz-Herbert, 4,344,783, Cl. 55-459.00B.

Schmittbetz, Klaus; and Struchtrup, Karl D. S., to International Harvester Co. Change-speed transmission with speed-range selection means for motor vehicles, particularly for farm tractors. 4,344,334, Cl. 74-473.00R.

Schneider, Hartmut; and Grabmaier, Josef, to Siemens Aktiengesellschaft. Envelope for metal halide discharge lamp with protective layer containing B_2O_3. 4,345,180, Cl. 313-221.000.

Schneider, Louis; Graham, David E., deceased; and Fidelity Union Trust Company, Executor, to GAF Corporation. Method of plant growth regulation. 4,344,788, Cl. 71-76.000.

Schorno, Karl S., to Phillips Petroleum Company. Sample inlet for analysis instrument and method of sample analysis. 4,344,917, Cl. 422-78.000.

Schrock, Wilfried: *See—*
Niemers, Ekkehard; Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl G., 4,344,939, Cl. 424-226.000.
Niemers, Ekkehard; Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl G., 4,344,955, Cl. 424-271.000.

Schroder, Rolf: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Stendel, Wilhelm, 4,345,078, Cl. 544-244.000.

Schroeder, George F.: *See—*
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Schroeder, Roger A., to American Can Company. Apparatus for winding webs. 4,344,584, Cl. 242-56.00A.

Schubert, Klaus: *See—*
Lahrs, Jurgen; Schubert, Klaus; Gosling, Claus; Jovcic, Dorde; Gleinig, Harald; and Skerhut, Reiner, 4,344,766, Cl. 8-524.000.

Schultz, Jerome S., to United States of America, Health, Education and Welfare. Optical sensor of plasma constituents. 4,344,438, Cl. 128-634.000.

Schuricht, Henry A., to Amsted Industries Incorporated. Load bearing oscillator drive. 4,344,332, Cl. 74-54.000.

Schuster, Robert W.; and Mittendorf, Gerald C., to Bendix Corporation, The. Manually operated metering valve for a fuel control. 4,344,281, Cl. 60-39.28R.

Schuster, Wilhelm; and Stahl, Jurgen, to Pfeiffer Zerstaubervertriebsgesellschaft mbH & Co. KG. Spray pump. 4,344,744, Cl. 417-550.000.

Schutt, Bernd: *See—*
Budecker, Ludwig; and Schutt, Bernd, 4,344,451, Cl. 137-101.000.

Schwab, Andre: *See—*
Cazarra, Victor; Schwab, Andre; and Zunino, Patrick, 4,344,815, Cl. 156-601.000.

Schwartz, S. Robert; Swan, William E., Jr.; Fetterman, Robert C.; and Neubaum, Victor A., deceased (by Neubaum, Doris W., administratrix), to Bethlehem Steel Corporation. One-spot car coke quenching method. 4,344,822, Cl. 201-39.000.

Schwarz, Gerd-Ulrich; Kiehs, Karl; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Insecticidal benzylfurylmethyl esters of 3-(2,2-dichlorovinyl)-2,2-dimethyl-cyclopropane carboxylic acids. 4,344,961, Cl. 424-285.000.

Schwendemann, Volker: *See—*
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Schwerin, Gunter, to Robert Bosch GmbH. Control arrangement for a hydraulically operated implement. 4,344,355, Cl. 91-445.000.

SCM Corporation: *See—*
Provder, Theodore; Holsworth, Richard M.; and Koehler, Mark E., 4,344,709, Cl. 356-445.000.

Scuccato, Serge L.: *See—*
Eastcott, Peter deH.; Truman, Peter T.; and Scuccato, Serge L., 4,345,123, Cl. 200-52.00R.

Seagrove, Douglas J. W.: *See—*
Czoch, Jerzy W.; and Seagrove, Douglas J. W., 4,344,520, Cl. 198-347.000.

Sedlacek, Hans-Herald; and Seiler, Friedrich R., to Behringwerke Aktiengesellschaft. Agent for the treatment of allergic reactions. 4,344,938, Cl. 424-177.000.

Seidel, Heinz H., to GTE Products Corporation. Cutting insert. 4,344,725, Cl. 407-114.000.

Seifert, Hermann: *See—*
Goedecke, Ralf; Hofen, Willi; Seifert, Hermann; and Siekmann, Gerd, 4,344,897, Cl. 260-502.00R.

Seifert, Kurt, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,344,575, Cl. 239-533.500.

Seigneurin, Laurent: *See—*
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Seikenkai: *See—*
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Seiler, Friedrich R.: *See—*
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Seiler, Werner, to Gebruder Buhler AG. Process for the production of agglomerated bread crumbs. 4,344,975, Cl. 426-285.000.
Sekiguchi, Takeshi, to Canon Kabushiki Kaisha. Television camera. 4,345,271, Cl. 358-55.000.
Seman, George W.: *See—*
Silver, David A.; Dima, Attila F.; and Seman, George W., 4,345,109, Cl. 174-84.00R.
Semon, Georges; and Wavre, Alain, to Ateliers des Charmilles, S.A. Method and apparatus for electrode tool wear compensation. 4,345,131, Cl. 219-69.00G.
Seppala, Lynn G.; and Haas, Roger A., to United States of America, Energy. Efficient optical pulse stacker system. 4,345,212, Cl. 330-4.300.
Seragnoli, Enzo, to G. D Societa per Azioni. Apparatus for directly linking one or more cigarette making machines to one or more cigarette packing machines. 4,344,445, Cl. 131-282.000.
Servo Corporation of America: *See—*
Bambara, Joseph E., 4,345,274, Cl. 358-108.000.
Shackle, Peter W.: *See—*
Davis, James A.; MacPherson, William F.; Mussman, Harry E.; and Shackle, Peter W., 4,345,163, Cl. 307-252.00A.
Shafer, David R., to Perkin-Elmer Corporation, The. Single element spherical surfaced optics insensitive to wavelength and temperature. 4,344,676, Cl. 350-444.000.
Shafer, Gale E., Jr. Mold for embedding one article with another. 4,344,600, Cl. 249-88.000.
Shaffer, Steven D.; Kienitz, L. Michael; Pitts, James N., Jr.; and Bliss, Richard D., to University of California, The Regents of the. Culture processing apparatus and method. 4,344,712, Cl. 366-108.000.
Shames, Harold: *See—*
Shames, Sidney J.; and Shames, Harold, 4,344,578, Cl. 239-583.000.
Shames, Sidney J.; and Shames, Harold. Handled spray. 4,344,578, Cl. 239-583.000.
Sharpe, Frederick R.; Grimmett, Christopher M.; and Laws, Derek R. J., to Brewing Research Foundation, The. Preparation of hop extracts rich in particular constituents. 4,344,978, Cl. 426-600.000.
Sharps, G. Vincent, Jr.: *See—*
Johnson, D. Emil; Krutchen, Charles M.; and Sharps, G. Vincent, Jr., 4,344,710, Cl. 366-76.000.
Shasha, Baruch S.; Doane, William M.; and Russell, Charles R., deceased (by Russell, Kathleen G., heir), to United States of America, Agriculture. Encapsulation by entrapment. 4,344,857, Cl. 252-316.000.
Sheldon, Leonard W., to Rockwell International Corporation. Wheel trim device. 4,344,653, Cl. 301-37.00T.
Shell Oil Company: *See—*
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Pilgram, Kurt H., 4,345,077, Cl. 544-241.000.
Ramsbotham, John; and van Gogh, Johan, 4,345,060, Cl. 528-103.000.
Shelley, Donald L., to Armstrong World Industries, Inc. Bridgeless dielectric measurement. 4,345,204, Cl. 324-61.00R.
Shelley, Edwin F. Automatic telephone message interception system. 4,345,113, Cl. 179-2.00A.
Shelley, Stanley J.; and Emblem, Harold G., to Clinotherm Limited. Method for reducing the thermal inertia of a furnace or oven wall and insulated wall produced thereby. 4,344,753, Cl. 432-3.000.
Shelton, Joe. Edge effect elimination and beam forming designs for field emitting arrays. 4,345,181, Cl. 313-309.000.
Sherman, John D.; and Ross, Ronald J., to Union Carbide Corporation. Phillipsite-type zeolites for ammonia adsorption. 4,344,851, Cl. 210-670.000.
Sherman, Stanley. Oral endotracheal tube protector, and methods of constructing and utilizing same. 4,344,428, Cl. 128-207.140.
Sherritt Gordon Mines Limited: *See—*
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Shiba, Masami: *See—*
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Shibata, Kazuhiko: *See—*
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Shibata, Takuo: *See—*
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Yasuye, Toshikazu; Kashioka, Seiji; and Shima, Yoshihiro, 4,345,312, Cl. 364-515.000.
Shimada, Shoji; Sonoda, Sakae; and Yokoyama, Kimio, to Nihon Parkerizing Co., Ltd. Method for cold rolling and cleaning steel plates. 4,344,308, Cl. 72-39.000.
Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,344,659, Cl. 308-187.100.
Shimano, Keizo, to Shimano Industrial Company Limited. Sealing construction for a rotating portion at a bicycle. 4,344,659, Cl. 308-187.100.
Shin-Etsu Chemical Co., Ltd.: *See—*
Imada, Kiyoshi; Ueno, Susumu; Nishina, Yasuhide; and Nomura, Hirokazu, 4,344,981, Cl. 427-40.000.
Ogiwara, Kesami, 4,344,260, Cl. 51-283.00E.
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Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, to Canon Kabushiki Kaisha. Ink jet recording method. 4,345,262, Cl. 346-140.00R.
Shirota, Norihisa, to Sony Corporation. Video signal processing apparatus. 4,345,272, Cl. 358-21.00R.
Shizuka, Kohei: *See—*
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Shore, Ronald H. Means for separating light reflective fabrics. 4,344,473, Cl. 160-121.00R.
Shorrock, Peter: *See—*
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Showalter, Merle R., to Automotive Engine Associates. High swirl very low pollution piston engine employing optimizable vorticity. 4,344,394, Cl. 123-306.000.
Shukla, Jayendra G.: *See—*
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Shumaker, John F., to J. I. Case Company. Self-leveling bucket linkage. 4,344,734, Cl. 414-710.000.
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Siegl, Annemarie; Knopp, Christian; and Reithmayr, Karl, to Chemie Linz Aktiengesellschaft. Pharmaceutical composition with prolonged broncholytic and tocolytic activity. 4,344,933, Cl. 424-79.000.
Siekmann, Gerd: *See—*
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Siemag Transplan GmbH: *See—*
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Dietze, Wolfgang, 4,345,142, Cl. 219-390.000.
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Signode Corporation: *See—*
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Sillars, Frederick S.: *See—*
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Silver, David A.; Dima, Attila F.; and Seman, George W., to Pirelli Cable Corporation. Restraint apparatus for pipe type electric cables. 4,345,109, Cl. 174-84.00R.
Simmons, Billy P.: *See—*
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Sipos, George G. Directed flow bubble trap for arterial blood. 4,344,777, Cl. 55-178.000.
Sirtl, Wolfgang, to Kaffee-Veredelungs-Werk Koffeinfrei Kaffee GmbH & Co. Process for decaffeinizing raw coffee. 4,344,974, Cl. 426-271.000.
Skalka, Robert J., to Motorola Inc. Frequency and frequency error counting in test apparatus. 4,345,206, Cl. 324-79.00R.
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Slurry Mining Engineering Inc.: *See*—
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Smith, Allan L. Trickle flow irrigation valve. 4,344,576, Cl. 239-542.000.
Smith, Dale A., to McDonnell Douglas Corporation. Flexible corner seal structure for cryogenic container. 4,344,264, Cl. 52-247.000.
Smith, Francis C., to Smith's Ostomy Products, Inc. Ostomates appliance. 4,344,433, Cl. 128-283.000.
Smith International, Inc.: *See*—
Oelke, Erwin S., 4,344,629, Cl. 277-1.000.
Smith, J. T. Waterwheel power generator. 4,345,160, Cl. 290-52.000.
Smith, Marvin O., Jr., to Bethlehem Steel Corporation. Blast furnace support apparatus. 4,344,607, Cl. 266-198.000.
Smith, Paul; and Lemstra, Pieter J., to Stamicarbon, B.V. Process for making polymer filaments which have a high tensile strength and a high modulus. 4,344,908, Cl. 264-203.000.
Smith, Paul H.: *See*—
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Smith, Ray E.; Shukla, Jayendra G.; and Nicholson, Richard R., to Great Lakes Chemical Corporation. Novel intumescent composition and flame retardant articles treated therewith. 4,345,002, Cl. 428-288.000.
Smith, Ronald: *See*—
Bancroft, John; Greenhalgh, John L.; and Smith, Ronald, 4,344,525, Cl. 198-499.000.
Smith, Stanley, to Rolls-Royce Limited. Arrangements for drainage of lubricating oil from bearing assemblies. 4,344,506, Cl. 184-6.110.
Smith, Verity C., to Vaponics, Inc. Distillation system and process. 4,344,826, Cl. 203-2.000.
Smith, W. Christen; McGill, Terry J.; and Spangler, Herbert L., to Industrial Air, Inc. Apparatus for discharging exhaust gas at high velocity. 4,344,370, Cl. 110-162.000.
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Smith, Francis C., 4,344,433, Cl. 128-283.000.
Smitt, Asbjorn, to Christian Rovsing A/S. Process and system for error detection in a computer-controlled telephone exchange. 4,345,324, Cl. 370-14.000.
Sobodowski, Joseph J., IV: *See*—
Stoxy, James R.; and Sobodowski, Joseph J., IV, 4,345,146, Cl. 235-381.000.
Societe Anonyme Automobiles Citroen: *See*—
Etienne, Michel, 4,344,513, Cl. 192-.02R.
S.A. VAL-REX: *See*—
Tourre, Raymond, 4,344,241, Cl. 40-124.200.
Societe Chimique des Charbonnages: *See*—
Pichat, Philippe; and Sinn, Robert, 4,344,925, Cl. 423-170.000.
Societe d'Etudes de Produits Chimiques: *See*—
Huve, Pierre M., 4,344,947, Cl. 424-251.000.
Societe Francaise d'Equipements pour la Navigation Aerienne: *See*—
Gautier, Bernard, 4,345,310, Cl. 364-429.000.
Thuy, Pham D., 4,345,327, Cl. 371-9.000.
Societe Hure S.A.: *See*—
Sachot, Michel E., 4,344,220, Cl. 29-568.000.
Societe Micro-Mega S.A.: *See*—
Leonard, Henri, 4,344,746, Cl. 418-270.000.
Societe Nationale des Poudres et Explosifs: *See*—
Grange, Andre A.; and Corbe, Jean A., 4,344,983, Cl. 427-46.000.
Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See*—
Zumsteg, Alphonse, 4,345,221, Cl. 331-176.000.
Soddy, Thomas C.: *See*—
Fritz, William E.; and Soddy, Thomas C., 4,344,365, Cl. 105-282.00A.
Soleau, Bertrand S., Jr. Recirculating natural convection solar still. 4,344,824, Cl. 202-234.000.
Solvay & Cie.: *See*—
Coppens, Guillaume, 4,345,031, Cl. 435-137.000.
Somogyi, Paul S. Domestic inventory system. 4,344,644, Cl. 283-19.000.
Sonics Research Corporation: *See*—
Colomb, Denis G., 4,345,276, Cl. 358-258.000.
Sonnedecker, Ray L.; and Martin, Ronald P., to Phillips Petroleum Company. Fractionator tray valve. 4,344,900, Cl. 261-114.0VT.
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Shimada, Shoji; Sonoda, Sakae; and Yokoyama, Kimio, 4,344,308, Cl. 72-39.000.
Sony Corporation: *See*—
Kobori, Yuzuru, 4,345,185, Cl. 315-3.000.
Nagumo, Fumio; and Asaida, Takashi, 4,345,270, Cl. 358-44.000.
Shirota, Norihisa, 4,345,272, Cl. 358-21.00R.
Sony/Tektronix: *See*—
Takeuchi, Sumio; Murooka, Rikichi; and Sakamoto, Jun, 4,345,241, Cl. 340-347.0CC.
Soslau, Gerald. Platelet composition having improved storage stability and method therefor. 4,344,936, Cl. 424-101.000.
South Eastern Electricity Board: *See*—
Fielden, John S., 4,345,311, Cl. 364-483.000.
Sovey, James S.: *See*—
Banks, Bruce A.; Mirtich, Michael J.; and Sovey, James S., 4,344,996, Cl. 428-141.000.
Spangler, Herbert L.: *See*—
Smith, W. Christen; McGill, Terry J.; and Spangler, Herbert L., 4,344,370, Cl. 110-162.000.
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Jones, Jessie L.; and Spector, George, 4,344,627, Cl. 273-273.000.
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Riley, Richard E.; and Turner, Bradley D., 4,345,235, Cl. 338-176.000.
Spees, Arthur T., to Visu-Flex Corporation. Machine for manufacture of panel tile. 4,344,242, Cl. 40-373.000.
Sperry Corporation: *See*—
Cullen, James H., 4,344,713, Cl. 400-22.000.
De Busscher, Cyriel R. J.; Deleu, Walter V.; and Van Herpe, Francois, 4,344,443, Cl. 130-272.000.
Echols, James M.; and Bouwhuis, Richard W., 4,344,728, Cl. 414-39.000.
Griffith, Carl D.; and Oliver, Kenneth L., 4,345,195, Cl. 318-628.000.
Rainwater, Lawrence L., 4,345,256, Cl. 343-754.000.
Torland, Peter J.; and Todd, Robert R., 4,344,442, Cl. 130-27.00T.
White, Gary D., 4,345,328, Cl. 371-38.000.
Spittka, Gayle A.: *See*—
Broersma, Robert J., Jr.; and Spittka, Gayle A., 4,344,958, Cl. 424-273.00R.
SPS Technologies, Inc.: *See*—
Finkelston, Robert J., 4,344,216, Cl. 29-407.000.
Square D Company: *See*—
Kampf, Julian C.; Graefe, Richard J.; and Profio, Mark V., 4,345,288, Cl. 361-31.000.
Sridharan, Sri P.: *See*—
Penney, C. Bradford; Zabec, Glenn M.; and Sridharan, Sri P., 4,345,304, Cl. 362-183.000.
SRO Kugellagerwerke J. Schmid-Roost AG: *See*—
Borel, Denis, 4,344,657, Cl. 308-6.00C.
Stadler, Klaus: *See*—
Birgmeir, Klaus; and Stadler, Klaus, 4,344,666, Cl. 350-6.900.
Stahl, Jurgen: *See*—
Schuster, Wilhelm; and Stahl, Jurgen, 4,344,744, Cl. 417-550.000.
Stahle, Helmut: *See*—
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,344,964, Cl. 424-304.000.
Stamboulian, Nazareth: *See*—
Hollowell, William; Tanaka, Akira; Ziv, Avraham; and Stamboulian, Nazareth, 4,344,588, Cl. 242-107.40A.
Stamicarbon B.V.: *See*—
Bijen, Jan M. J. M.; and Jansen, Johann J., 4,344,804, Cl. 156-42.000.
Bijen, Jan M. J. M., 4,344,910, Cl. 264-257.000.
Bijen, Jan M. J. M., 4,345,001, Cl. 428-286.000.
Bour, Edmond H. J. P.; Brouwers, Johannes A. L.; and Warnier, Jean M. M., 4,345,065, Cl. 528-312.000.
Smith, Paul; and Lemstra, Pieter J., 4,344,908, Cl. 264-203.000.
Standard Oil Company: *See*—
Pesa, Frederick A.; and Haase, Thomas A., 4,344,866, Cl. 252-428.000.
Standard Oil Company (Indiana): *See*—
Parrish, David R., 4,344,486, Cl. 166-272.000.
Standard Telephones and Cables Limited: *See*—
Sweet, Anthony W., 4,345,115, Cl. 179-18.0FA.
Sweet, Anthony W., 4,345,117, Cl. 179-77.000.
Stanley Works, The: *See*—
Remington, John L.; and Moyer, Robert W., 4,344,368, Cl. 108-51.100.
Staples, Jack W.; and Norris, James X. Efficient second stage cooling system. 4,344,296, Cl. 62-175.000.
Stark, Charles J., to General Electric Company. Method for epoxidizing olefins. 4,344,887, Cl. 549-531.000.
Starkstrom Gummersbach GmbH: *See*—
Lemmer, Helmut, 4,345,225, Cl. 335-132.000.
Steck, Werner; Sarnecki, Wilhelm; Marosi, Laszlo; Ohlinger, Manfred; and Loeser, Werner, to BASF Aktiengesellschaft. Manufacture of acicular ferromagnetic iron particles. 4,344,791, Cl. 75-0.5AA.
Stein, Morris O., to Singer Company, The. High performance monolithic digit driver. 4,345,318, Cl. 365-196.000.
Stemme, Otto, to Agfa-Gevaert Aktiengesellschaft. Quality control method and apparatus for photographic pictures. 4,344,683, Cl. 354-106.000.
Stemme, Otto; Lermann, Peter; and Cocron, Istvan, to Agfa-Gevaert Aktiengesellschaft. Photographic camera with state-of-focus indication. 4,344,686, Cl. 354-198.000.
Stendel, Wilhelm: *See*—
Fuchs, Rainer; Naumann, Klaus; Lantzsch, Reinhard; Hagemann, Hermann; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,344,960, Cl. 424-282.000.
Fuchs, Rainer; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,344,963, Cl. 424-304.000.

Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Stendel, Wilhelm, 4,345,078, Cl. 544-244.000.

Stephenson, Grant R.: *See—*
Kendall, John A.; Marchildon, Ernest K.; and Stephenson, Grant R., 4,344,711, Cl. 366-83.000.

Sterling, Larry D.; and Melvin, Wilbert, Jr., to International Playtex, Inc. Method to lessen the entanglement of tubular fabrics. 4,344,197, Cl. 8-150.000.

Stetter, Jorg; Homeyer, Bernhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating pests with substituted alkanylazolyl oxime-carbamates. 4,344,953, Cl. 424-269.000.

Steuer, Herbert K., to P.I.V. Antrieb Werner Reimers GmbH & Co. KG. Side-bar chain for cone pulley transmissions. 4,344,761, Cl. 474-245.000.

Stevens, William D., to Foster Wheeler Energy Corporation. Vapor generating system utilizing integral separators and angularly arranged furnace boundary wall fluid flow tubes having rifled bores. 4,344,388, Cl. 122-235.00R.

Stewart, Carl W.: *See—*
Stewart, Owen E.; and Stewart, Carl W., 4,344,568, Cl. 237-8.00R.

Stewart, Owen E.; and Stewart, Carl W. Closed-loop heat-reclaiming system. 4,344,568, Cl. 237-8.00R.

Stewart, Patrick B.: *See—*
Cullen, Ernest; Possanza, Genus; and Stewart, Patrick B., 4,344,946, Cl. 424-250.000.

Stiles, Robert. Door edge and hinge guard. 4,344,253, Cl. 49-383.000.

Stock, Don J. R.: *See—*
Kompa, Gunter; and Stock, Don J. R., 4,344,705, Cl. 356-5.000.

Stoka, Roberto; and Lotzsch, Ulrich, to International Standard Electric Corporation. Floating caliper-spot-type disc brake. 4,344,511, Cl. 188-73.450.

Stokes, Charlie M. System for handling heavy and unwieldy vehicles. 4,344,732, Cl. 414-607.000.

Stone, Raymond. Anesthetic compositions containing benzocaine. 4,344,965, Cl. 424-310.000.

Storage Technology Corporation: *See—*
Blagaila, John H.; and Hopper, James F., 4,345,280, Cl. 360-49.000.

Story, James R.; and Sobodowski, Joseph J., IV. Apparatus and method for an electronic identification, actuation and recording system. 4,345,146, Cl. 235-381.000.

Stratmann, Josef; and Mrongowius, Klaus, to Carl Still GmbH & Co. KG., Firma. Discharging method and apparatus for dry coke cooling chambers. 4,344,823, Cl. 201-41.000.

Straub, Ferdinand: *See—*
Denzinger, Walter; Straub, Ferdinand; and Hartmann, Heinrich, 4,345,049, Cl. 525-339.000.

Strauss, Richard H. Earplugs. 4,344,425, Cl. 128-152.000.

Streamlight, Inc.: *See—*
Penney, C. Bradford; Zabec, Glenn M.; and Sridharan, Sri P., 4,345,304, Cl. 362-183.000.

Streel, Robert. Implant a geometry variable. 4,344,757, Cl. 433-173.000.

Strege, Paul E.; and Renga, James M., to Dow Chemical Company, The. Process for making alkylene carbonates. 4,344,881, Cl. 549-229.000.

Struchtrup, Karl D. S.: *See—*
Schmittbetz, Klaus; and Struchtrup, Karl D. S., 4,344,334, Cl. 74-473.00R.

Stuckey, Ronald L., to CTS Corporation. Recessed circuit module. 4,345,300, Cl. 361-386.000.

Stuermer, Paul A.; and Blazey, Richard N., to Eastman Kodak Company. Laser printer with multiple scanning beams. 4,344,677, Cl. 354-5.000.

Suarato, Antonino; Penco, Sergio; and Arcamone, Federico, to Farmitalia Carlo Erba S.p.A. Process for the preparation of 4'-deoxy-daunorubicin and 4'-deoxy-doxorubicin. 4,345,070, Cl. 536-17.00A.

Suarato, Antonio; Penco, Sergio; and Arcamone, Federico, to Farmitalia Carlo Erba S.p.A. Process for the preparation of 4'-epidaunorubicin, 3',4'-diepidaunorubicin, their doxorubicin analogs, and intermediates used in said process. 4,345,068, Cl. 536-17.00A.

Suda, Minoru: *See—*
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,344,884, Cl. 549-273.000.

Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Dietzsch, Kurt, 4,344,482, Cl. 165-172.000.

Suessenbeck, Heinrich; Siebenhofer, Gottfried; Neuper, Rienhard; and Zitz, Alfred, to Voest-Alpine Aktiengesellschaft. Valve arrangement for controlling the stroke of a telescoping prop. 4,344,354, Cl. 91-168.000.

Sugasawa, Fukashi: *See—*
Etoh, Yukihiro; Tanaka, Toshiaki; Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,344,393, Cl. 123-198.00F.

Sugata, Shigeo; Tachigami, Shigeru; Kikkawa, Satoru; Umezu, Haruo; and Ohkubo, Masanori, to Technical Research and Development Institute, Japan Defence Agency; and Furukawa Electric Co., Ltd., The. High strength cable usable undersea. 4,345,112, Cl. 174-107.000.

Sugiura, Toshio: *See—*
Nakada, Akira; Sugiura, Toshio; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,344,344, Cl. 84-1.030.

Sugiyama, Katsumi; Takeda, Hideo; and Sato, Hiroko, to Ajinomoto Company Incorporated. Method of producing N-benzyloxycarbonyl-L-aspartic acid. 4,345,091, Cl. 560-163.000.

Sukolics, Ronald D., to Carl Dunmon & Associates, Inc. Apparatus for joining wall panels. 4,344,267, Cl. 52-762.000.

Sullivan, Daniel T.: *See—*
Arulpragasam, Jega A.; Giggi, Robert A.; Lary, Richard F.; and Sullivan, Daniel T., 4,345,309, Cl. 364-200.000.

Sullivan, Donald J., to United States of America, Air Force. High power microwave generator using relativistic electron beam in waveguide drift tube. 4,345,220, Cl. 331-79.000.

Sumitomo Aluminium Smelting Co., Ltd.: *See—*
Yamada, Koichi; and Shinya, Yasuo, 4,344,904, Cl. 264-66.000.

Sumitomo Chemical Company, Limited: *See—*
Kitagawa, Yoshihiko; Yuyama, Masahiro; Moritani, Masahiko; and Suzuki, Mikio, 4,344,906, Cl. 264-128.000.

Sumitomo Durez Company, Ltd.: *See—*
Matsushima, Noriaki; and Nemoto, Shigeru, 4,345,003, Cl. 428-327.000.

Sumitomo Electric Industries, Ltd.: *See—*
Uchida, Naoya; Yoshida, Masaaki; and Yamanishi, Toru, 4,344,669, Cl. 350-96.300.

Sumitomo Heavy Industries, Ltd.: *See—*
Fujita, Kenji; Korehisa, Kazuo; Asaba, Hirosi; Harada, Hideo; and Shibuya, Tsuneo, 4,344,204, Cl. 15-93.00A.

Sumitomo Metal Industries, Ltd.: *See—*
Kunitake, Tatsuro; Ohtani, Hiroo; Watanabe, Seiichi; Takigawa, Toshiji; and Matsumoto, Yoshiro, 4,344,801, Cl. 148-3.000.

Summey, Samuel T., to General Electric Company. Luminaire mounting device. 4,345,306, Cl. 362-294.000.

Sun Chemical Corporation: *See—*
North, Bernard F., 4,345,063, Cl. 528-245.000.

Sund, Lloyd P. Grain pickup. 4,344,276, Cl. 56-364.000.

Sundstrand Corporation: *See—*
Hawkins, Royal R., 4,344,328, Cl. 73-651.000.

Sung, Joseph P., to Monsanto Company. Finish monitor. 4,345,205, Cl. 324-65.00R.

Supertex, Inc.: *See—*
Blanchard, Richard A., 4,345,265, Cl. 357-23.000.

Sutcliffe, Edward Y.; and Cole, Roger A., to Santa Barbara Research Center. Supercool method for producing single crystal mercury cadmium telluride. 4,344,476, Cl. 164-76.100.

Sutton, Bernard. Pizza carrier. 4,344,534, Cl. 206-545.000.

Suzuki, Fuzio: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Yoshida, Kazunori; Suzuki, Fuzio; Itoh, Yusuke; Suzuki, Hajime; Arakawa, Hiroshi; and Kobayashi, Akira, 4,344,465, Cl. 139-435.000.

Suzuki, Hajime: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Yoshida, Kazunori; Suzuki, Fuzio; Itoh, Yusuke; Suzuki, Hajime; Arakawa, Hiroshi; and Kobayashi, Akira, 4,344,465, Cl. 139-435.000.

Suzuki, Makoto: *See—*
Konishi, Masami; Kuramoto, Akio; Maeda, Yorishige; Ishikawa, Norikatsu; and Suzuki, Makoto, 4,344,407, Cl. 123-661.000.

Suzuki, Mikio: *See—*
Kitagawa, Yoshihiko; Yuyama, Masahiro; Moritani, Masahiko; and Suzuki, Mikio, 4,344,906, Cl. 264-128.000.

Suzuki, Mitsuo; Tokunaga, Takeshi; Yonekura, Seiji; Matsuoka, Shigeru; and Nakamura, Kenji, to Hitachi, Ltd. Garage door operation control apparatus. 4,344,252, Cl. 49-199.000.

Swan, William E., Jr.: *See—*
Schwartz, S. Robert; Swan, William E., Jr.; Fetterman, Robert C.; and Neubaum, Victor A., deceased, 4,344,822, Cl. 201-39.000.

Swanson, Harold V.; and Thompson, Duncan M., to Babson Bros. Co. Milker. 4,344,385, Cl. 119-14.080.

Swedlow, Inc.: *See—*
Holdridge, David W., 4,344,673, Cl. 350-292.000.

Sweet, Anthony W., to Standard Telephones and Cables Limited. Telephone line interface. 4,345,115, Cl. 179-18.0FA.

Sweet, Anthony W., to Standard Telephones and Cables Limited. Telephone line feed circuit. 4,345,117, Cl. 179-77.000.

Sybron Corporation: *See—*
Hirth, Emil, 4,344,594, Cl. 248-421.000.

Symborski, Alex P.; and Cunningham, Cecil R., to Owens-Corning Fiberglas Corporation. Method and apparatus for gathering strand material. 4,344,786, Cl. 65-2.000.

Syntex (U.S.A.) Inc.: *See—*
Muchowski, Joseph M., 4,344,943, Cl. 424-245.000.

Synthelabo: *See—*
Leclerc, Jean; and de Rudder, Jean, 4,344,935, Cl. 424-89.000.

Szabo, Lajos: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; Keve, Tibor; and Gazdac, Maria, 4,345,082, Cl. 546-51.000.

Szabo, William. Pivoted weight lifting apparatus. 4,344,619, Cl. 272-117.000.

Szadkowski, Stanislav, to Vesuvius International Corporation. Self-adjusting arrangement for refractory plates of slide gate mechanism. 4,344,550, Cl. 222-600.000.

Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Sapi, Janos; Dancsi, Lajos; Keve, Tibor; and Gazdac, Maria, to Richter Gedeon Vegyeszeti Gyar Rt. Process for the preparation of hydroxyamino-eburnane derivatives and octahydroindoloquinolizine intermediates. 4,345,082, Cl. 546-51.000.

Szantay, Csaba: *See—*
Novak, Lajos; Szantay, Csaba; Rohaly, Janos; Kis-Tamas, Attila; Varjas, Laszlo; and Csutak, Janos, 4,344,959, Cl. 424-279.000.

Szepesi, Gabor: *See—*
Nagy, Geza T.; Szepesi, Gabor; and Gazdag, Maria, 4,344,950, Cl. 424-262.000.

Szulczyk, Andreas, to Degussa AG. Solder alloy for the direct soldering of oxide containing silver catalyst on catalyst carrier. 4,344,794, Cl. 75-173.00C.
Tabuchi, Kenji: *See*—
Oka, Tateki; Tabuchi, Kenji; and Tanaka, Susumu, 4,345,014, Cl. 430-122.000.
Tachigami, Shigeru: *See*—
Sugata, Shigeo; Tachigami, Shigeru; Kikkawa, Satoru; Umezu, Haruo; and Ohkubo, Masanori, 4,345,112, Cl. 174-107.000.
Taff, James T.: *See*—
Lesher, Howard D.; and Taff, James T., 4,344,553, Cl. 226-168.000.
Takada, Shigetaka; and Satoh, Yoji, to Aisan Kogyo Kabushiki Kaisha. Carburetor controlling system. 4,344,898, Cl. 261-39.00E.
Takagi, Yasuo: *See*—
Iijima, Tamotsu; and Takagi, Yasuo, 4,344,392, Cl. 123-179.00G.
Takahashi, Kazuyoshi: *See*—
Minakawa, Yoshimitsu; Ishibashi, Yoji; Sato, Isao; Uchiyama, Yoshihiro; and Takahashi, Kazuyoshi, 4,344,280, Cl. 60-39009.00F.
Takahashi, Michiko: *See*—
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,345,262, Cl. 346-140.00R.
Takahashi, Osamu; Ohki, Nobutaka; and Aoki, Kozo, to Fuji Photo Film Co., Ltd. Color photographic sensitive material. 4,345,016, Cl. 430-214.000.
Takahashi, Yoshihiro, to Xertex Corporation. Determination of total carbon in liquid samples. 4,344,918, Cl. 422-80.000.
Takai, Haruki; Teranishi, Masayuki; Nakamizo, Nobuhiro; Kasuya, Yutaka; and Kubo, Kazuhiro, to Kyowa Hakko Kogyo Co., Ltd. Piperidine derivatives and pharmaceutical compositions containing same. 4,344,948, Cl. 424-251.000.
Takai, Haruki: *See*—
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,344,945, Cl. 424-248.520.
Takai, Yoshinori: *See*—
Saito, Masato; Tsuchihashi, Michihiro; Takai, Yoshinori; Fukuyama, Keiji; and Watanabe, Keiji, 4,345,186, Cl. 315-49.000.
Takamori, Kazumi: *See*—
Tanabe, Tetsuo; Takamori, Kazumi; Matueda, Akira; Matsui, Kiyoshi; Omura, Junichi; and Miyamoto, Hitoshi, 4,344,219, Cl. 29-564.600.
Takase, Akio; Horikoshi, Hiroshi; and Kasada, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Cooking apparatus. 4,345,132, Cl. 219-10.55B.
Takashima, Toshiyuki: *See*—
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,344,884, Cl. 549-273.000.
Takata, Kenichi: *See*—
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Takata, Tadanobu: *See*—
Komiyama, Tadashi; Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Kubo, Isao, 4,344,837, Cl. 208-8.0LE.
Takatori, Yasushi: *See*—
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,345,262, Cl. 346-140.00R.
Takats, Imre J.; and Chenoweth, Charles C., to Boeing Company, The. Two/one (2/1) fail operational electrohydraulic servoactuator. 4,345,191, Cl. 318-564.000.
Takayama, Hiroaki; Yamada, Sachiko; and Ohmori, Masayuki, to Chugai Seiyaku Kabushiki Kaisha. 24,25-Dihydroxycholestans and process for preparing the same. 4,344,888, Cl. 260-397.200.
Takayanagi, Eiichi: *See*—
Okutomi, Tsutomu; Iida, Masachika; Kuwabara, Kazuyoshi; Yoshino, Hisashi; and Takayanagi, Eiichi, 4,345,130, Cl. 200-268.000.
Takeda, Fumio: *See*—
Komuro, Keigo; Yamada, Matsuichi; Aoki, Katsuhiko; Yoshikawa, Yoshihiko; Itoh, Fumio; Takeda, Fumio; and Ishida, Osami, 4,345,255, Cl. 343-100.0PE.
Takeda, Hideo: *See*—
Sugiyama, Katsumi; Takeda, Hideo; and Sato, Hiroko, 4,345,091, Cl. 560-163.000.
Takeda, Nobuyuki; and Iwata, Tadao, to Mitsui Petrochemical Industries, Ltd. High-molecular-weight novolak types substituted phenolic resins and process for preparation thereof. 4,345,054, Cl. 525-480.000.
Takeda, Shinichi: *See*—
Nagura, Kenji; Takeda, Shinichi; Namie, Koshi; Fujii, Takao; Yamamoto, Michio; and Yokoyama, Seiichi, 4,345,089, Cl. 560-77.000.
Takemura, Seinosuke, to Daiwa Shinku Corporation. Quartz tuning fork electro-acoustic transducer. 4,345,118, Cl. 179-110.00A.
Takemura, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Image pick-up apparatus. 4,345,269, Cl. 358-43.000.
Takeuchi, Sumio; Murooka, Rikichi; and Sakamoto, Jun, to Sony/Tektronix. Analog-to-digital conversion method and apparatus. 4,345,241, Cl. 340-347.0CC.
Taki, Tomohiko, to Hitachi, Ltd. Automatic water supply system. 4,344,741, Cl. 417-28.000.
Takigawa, Toshiji: *See*—
Kunitake, Tatsuro; Ohtani, Hiroo; Watanabe, Seiichi; Takigawa, Toshiji; and Matsumoto, Yoshiro, 4,344,801, Cl. 148-3.000.
Tamaki, Shigeo: *See*—
Hozumi, Kazuhiro; and Tamaki, Shigeo, 4,344,603, Cl. 251-130.000.
Tamura, Hisashi; Taniguchi, Naozo; and Ishikawa, Hirotoshi, to Yokogawa Electric Works, Ltd. Method and apparatus for measuring the moisture content of paper. 4,345,150, Cl. 250-339.000.
Tanabe, Tetsuo; Takamori, Kazumi; Matueda, Akira; Matsui, Kiyoshi; Omura, Junichi; and Miyamoto, Hitoshi, to Matsushita Electric Industrial Co., Ltd. Apparatus for arranging parts. 4,344,219, Cl. 29-564.600.
Tanaka, Akihiko: *See*—
Nakamura, Takeshi; and Tanaka, Akihiko, 4,344,517, Cl. 192-98.000.
Tanaka, Akira: *See*—
Hollowell, William; Tanaka, Akira; Ziv, Avraham; and Stamboulian, Nazareth, 4,344,588, Cl. 242-107.40A.
Tanaka, Junzo; and Orita, Masatomo, to Matsushita Electric Industrial Co., Ltd. High frequency heating apparatus. 4,345,134, Cl. 219-10.55B.
Tanaka, Susumu: *See*—
Oka, Tateki; Tabuchi, Kenji; and Tanaka, Susumu, 4,345,014, Cl. 430-122.000.
Tanaka, Toshiaki: *See*—
Etoh, Yukihiro; Tanaka, Toshiaki; Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,344,393, Cl. 123-198.00F.
Taniguchi, Naozo: *See*—
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Taniguchi, Nobuyuki: *See*—
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Tanioka, Takashi: *See*—
Fujisawa, Tetsuo; and Tanioka, Takashi, 4,344,538, Cl. 209-144.000.
Tarng, Ming L.: *See*—
Goodman, Alvin M.; and Tarng, Ming L., 4,344,985, Cl. 427-85.000.
Taylor, Frank. Chillerwell cooler. 4,344,300, Cl. 62-457.000.
Taylor, Frank. Beverage cooler construction. 4,344,301, Cl. 62-457.000.
Taylor, Kenneth R., to Atlantic Richfield Company. Cold weather coupling device. 4,344,718, Cl. 403-287.000.
Tazaki, Shigemitsu; and Kyogoku, Hiroshi, to Canon Kabushiki Kaisha. Recording apparatus. 4,345,263, Cl. 346-140.00R.
Teche, Andre: *See*—
Martel, Jacques; Tessier, Jean; Teche, Andre; and Demoute, Jean-Pierre, 4,344,895, Cl. 260-465.00F.
Technical Research and Development Institute, Japan Defence Agency: *See*—
Sugata, Shigeo; Tachigami, Shigeru; Kikkawa, Satoru; Umezu, Haruo; and Ohkubo, Masanori, 4,345,112, Cl. 174-107.000.
Technical Wire Products, Inc.: *See*—
Dalamangas, Chris A.; and Piccirillo, Thomas P., 4,344,662, Cl. 339-59.00M.
Teijin Limited: *See*—
Akagi, Noriyuki; Ogawa, Yoshinari; and Sakai, Kouichi, 4,344,874, Cl. 524-296.000.
Teixeira, Theodore M.: *See*—
Allaway, Philip N.; Baginski, Richard M.; Liu, Don K. K.; and Teixeira, Theodore M., 4,344,871, Cl. 252-531.000.
Tempo Sanys: *See*—
Caumont, Jean-Francois, 4,344,426, Cl. 128-156.000.
Tennant, Donald M.: *See*—
Craighead, Harold G.; Howard, Richard E.; and Tennant, Donald M., 4,344,816, Cl. 156-643.000.
Tenneco Chemicals, Inc.: *See*—
Ejk, Adam J.; and Krzywicki, Donald J., 4,345,046, Cl. 524-223.000.
Tenner, Richard B., to Eaton Corporation. Miniature lighted pivoted actuator switch with integral lock. 4,345,121, Cl. 200-42.00R.
Terabayashi, Gosaku, to Toyota Jidosha Kogyo Kabushiki Kaisha. Passive seatbelt system. 4,344,502, Cl. 180-268.000.
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, to Kyowa Hakko Kogyo Co., Ltd. Piperidine derivatives. 4,344,945, Cl. 424-248.520.
Teranishi, Masayuki: *See*—
Takai, Haruki; Teranishi, Masayuki; Nakamizo, Nobuhiro; Kasuya, Yutaka; and Kubo, Kazuhiro, 4,344,948, Cl. 424-251.000.
Terayama, Takao: *See*—
Miyakawa, Seii; Kawauchi, Akira; Iijima, Kazunori; Terayama, Takao; Yoshida, Masashi; and Kawase, Hideyuki, 4,345,282, Cl. 360-85.000.
Tessier, Jean: *See*—
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Testut-Aequitas: *See*—
Langlais, Jacques F.; and Valadier, Jean-Claude, 4,344,496, Cl. 177-211.000.
Tex Innovation AB: *See*—
Andersson, Sture, 4,344,270, Cl. 53-511.000.
Texaco Inc.: *See*—
Kalfoglou, George, 4,344,487, Cl. 166-274.000.
Petty, Randall H.; and Bartley, Burton H., 4,344,926, Cl. 423-244.000.
Reinhard, Russell R.; Dorawala, Tansukhlal G.; and Kerr, Edwin R., 4,344,865, Cl. 252-420.000.
Texas Instruments Incorporated: *See*—
Harris, William S., Jr., 4,345,171, Cl. 307-560.000.
Parsons, Robert, 4,345,243, Cl. 340-728.000.

Textilma AG: *See—*
Bucher, Robert R.; and Riner, Felix, 4,344,307, Cl. 66-84.00R.
Muller, Jakob; and Diesner, Ferdinand, 4,344,463, Cl. 139-383.00R.
Theeuwes, Felix: *See—*
Bonsen, Pieter; Wong, Patrick S.; and Theeuwes, Felix, 4,344,929, Cl. 424-15.000.
Thelen, Bernd: *See—*
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Theuerkauf, Heinz: *See—*
Geiger, Istvan; and Theuerkauf, Heinz, 4,344,397, Cl. 123-339.000.
Thiele, Dietrich, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method and apparatus for removing waste products from solutions of fission products. 4,344,872, Cl. 252-629.000.
Thiem, Karl-Werner: *See—*
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Thirouard, Michel: *See—*
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Thom, Wenzel W., to Architectural Art Mfg., Inc. Internally expanding railing coupling. 4,344,719, Cl. 403-297.000.
Thomas, Lyell J., Jr.: *See—*
Bessman, Samuel P.; and Thomas, Lyell J., Jr., 4,344,743, Cl. 417-317.000.
Thomas, R. Gordon: *See—*
Masterson, Robert C., Jr.; Thomas, R. Gordon; and Johnson, John G., 4,344,656, Cl. 303-2.000.
Thompson, Brett A.; Webb, John A.; and White, Martin B., to Membrain Limited. Fault location system with enhanced noise immunity. 4,345,201, Cl. 324-52.000.
Thompson, Buster R., to Elk River Resources, Inc. Method of operation of high-speed coke oven battery. 4,344,820, Cl. 201-15.000.
Thompson, Charles E.; and Herring, Samuel H., to Huyck Corporation. Endless forming fabrics with bi-crimp characteristics. 4,344,464, Cl. 139-383.00A.
Thompson, Duncan M.: *See—*
Swanson, Harold V.; and Thompson, Duncan M., 4,344,385, Cl. 119-14.080.
Thompson, John S.; and Jadlocki, Joseph F., Jr.; to FMC Corporation. Smoked fish products which inhibit the growth of *Clostridium botulinum* and the formation of enterotoxin. 4,344,977, Cl. 426-532.000.
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Arquie, Louis; Bricot, Claude; and Thirouard, Michel, 4,345,321, Cl. 369-46.000.
Carre, Roland; and Doriath, Georges, 4,345,252, Cl. 343-5.0NQ.
Kaplan, Daniel; Landouar, Pierre; and Criton, Eric, 4,344,984, Cl. 427-74.000.
Klausz, Remy, 4,345,157, Cl. 378-19.000.
van den Driessche, Michel, 4,345,246, Cl. 340-748.000.
Thornton, Alan; and Uttley, John S., to Bondina Ltd. Multizonal binder impregnation. 4,344,989, Cl. 427-286.000.
Thornton, James F.: *See—*
Thornton, William E.; and Thornton, James F., 4,345,247, Cl. 340-755.000.
Thornton, William E.; and Thornton, James F. Display system for steady state waves. 4,345,247, Cl. 340-755.000.
Thrash, Tommy: *See—*
Cowan, Jack C.; and Thrash, Tommy, 4,345,039, Cl. 521-48.000.
Thurm, Siegfried; and Bunge, Konrad, to Agfa-Gevaert Aktiengesellschaft. Method of determining correction parameters for use in light-amount adjustment in a color copying operation. 4,344,704, Cl. 355-77.000.
Thuy, Pham D., to Societe Francaise d'Equipements pour la Navigation Aerienne. Self-monitored process control device. 4,345,327, Cl. 371-9.000.
Thyret, Helmut E.; Balwe, Thomas; Beier, Gerhard; and Bauer, Johann, to Wacker-Chemie GmbH. Process for suspension polymerization of vinyl chloride employing mixed protective colloids. 4,345,056, Cl. 526-200.000.
Tiberg, Magnus G. G., to Aktiebolaget SKF. Method and apparatus for replacing the electrodes of an electric arc furnace. 4,345,333, Cl. 373-94.000.
Tischer, Werner: *See—*
Liebert, Karl-Heinz; Tischer, Werner; and Deppenbrock, Christoph, 4,344,283, Cl. 60-384.000.
Toba, Susumu: *See—*
Matsumoto, Tadashi; Kuratani, Osamu; Hirose, Yasunori; and Toba, Susumu, 4,345,102, Cl. 568-678.000.
Todd, Robert R.: *See—*
Torland, Peter J.; and Todd, Robert R., 4,344,442, Cl. 130-27.00T.
Togashi, Seigo; and Tsuzuki, Akira, to Citizen Watch Company Limited. Liquid crystal display device with write-in capability. 4,345,248, Cl. 340-784.000.
Togashi, Seigo, to Citizen Watch Company Limited. Liquid crystal display panel. 4,345,249, Cl. 340-784.000.
Toki, Tadaaki: *See—*
Nishiyama, Ryuzo; Haga, Takahiro; Toki, Tadaaki; Koyanagi, Tohru; and Murai, Shigeo, 4,344,951, Cl. 424-263.000.
Tokuda, Kanji, to Fuji Photo Film Co., Ltd. Method and apparatus for exposure quantity control in automatic color printer. 4,344,708, Cl. 356-404.000.
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Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ishikawa, Masaaki, 4,345,277, Cl. 358-293.000.
Matsumoto, Hiroshi; and Ogura, Tomoki, 4,344,697, Cl. 355-14.00C.
Oda, Goro, 4,344,692, Cl. 355-3.0DD.
Okutomi, Tsutomu; Iida, Masachika; Kuwabara, Kazuyoshi; Yoshino, Hisashi; and Takayanagi, Eiichi, 4,345,130, Cl. 200-268.000.
Takemura, Yasuo, 4,345,269, Cl. 358-43.000.
Tsunoda, Sachio, 4,344,735, Cl. 415-1.000.
Tolgyesi, Eva; and Bresak, Ann F., to Gillette Company, The. Reactive silicone hair setting compositions. 4,344,763, Cl. 8-127.510.
Tolle, Gunter, to Pfaff Industriemaschinen GmbH. Sewing machine with a looper arranged above the point of stitch formation. 4,344,375, Cl. 112-131.000.
Toman, George M.: *See—*
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Tomaszek, Paul A.: *See—*
Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., 4,345,308, Cl. 362-332.000.
Tomcufcik, Andrew S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., to American Cyanamid Company. 2,3-Disubstituted-2,3,5,6,7,8-hexahydro-thiazolo[3,2-a]-[1,3]diazepin-3-ols. 4,344,954, Cl. 424-270.000.
Tompkins, Russell E.: *See—*
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Tonomura, Yoshinobu: *See—*
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Tonooka, Keisuke: *See—*
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Top-Element Bauelemente fur Innenausbau & Raumgestaltung GmbH & Co. KG: *See—*
Langenhorst, Gunter, 4,344,258, Cl. 49-504.000.
Torland, Peter J.; and Todd, Robert R., to Sperry Corporation. Anti-wrap apparatus. 4,344,442, Cl. 130-27.00T.
Tournes, Christian: *See—*
Doucet, Henri; and Tournes, Christian, 4,345,329, Cl. 372-2.000.
Tourre, Raymond, to S.A. VAL-REX. Plate for card display board. 4,344,241, Cl. 40-124.200.
Townley, J. O. Inclined static deoiler and conditioner for treating ore. 4,344,844, Cl. 209-168.000.
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Sakakibara, Hideo; Fujiwara, Tatsuro; Okegawa, Osamu; Honda, Eiichi; Watanabe, Susumu; and Matsuda, Tetsuo, 4,345,069, Cl. 536-7.100.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Idogaki, Takaharu; Kawai, Hisasi; Matsui, Takeshi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,345,228, Cl. 335-222.000.
Inoue, Tokuta; Nakanishi, Kiyoshi; Kanda, Mutsumi; Nakada, Masahiko; and Matsuura, Toshiharu, 4,344,408, Cl. 123-661.000.
Konishi, Masami; Kuramoto, Akio; Maeda, Yorishige; Ishikawa, Norikatsu; and Suzuki, Makoto, 4,344,407, Cl. 123-661.000.
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Tran, Duc T., to C.G.R. MeV. Microwave resonant system with dual resonant frequency and a cyclotron fitted with such a system. 4,345,210, Cl. 328-234.000.
Trane Company, The: *See—*
Gallagher, John P., Jr., 4,344,752, Cl. 431-354.000.
Renken, Michael J.; and Simmons, Billy P., 4,344,330, Cl. 73-861.660.
Traunecker, Werner: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muncevic, Gojko; and Traunecker, Werner, 4,344,964, Cl. 424-304.000.
Trenschel, Donald R.; and Aho, Wilho V., Jr., to United Technologies Corporation. Rotor assembly. 4,344,740, Cl. 416-221.000.
Trisolini, George S. Cleaning apparatus. 4,344,201, Cl. 15-3.000.
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Eastcott, Peter deH.; Truman, Peter T.; and Scuccato, Serge L., 4,345,123, Cl. 200-52.00R.
Trutzscher GmbH & Co. KG: *See—*
Leifeld, Ferdinand, 4,344,843, Cl. 209-143.000.
TRW Inc.: *See—*
Hayden, Rodney, 4,345,227, Cl. 335-186.000.
Tsai, Robert C.; and Kidwell, William J., to Singer Company, The. Color display system. 4,345,258, Cl. 346-17.000.
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Tsuchiya, Tomio: *See—*
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Tsuda, Nobuaki: *See—*
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Tsuk, Andrew G.: *See—*
Martin, Frederick H.; and Tsuk, Andrew G., 4,344,934, Cl. 424-80.000.
Tsukaya, Takashi, to Olympus Optical Co., Ltd. Automatic photoflash device. 4,344,684, Cl. 354-128.000.
Tsunoda, Sachio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of controlling two-stage hydraulic pump-turbines. 4,344,735, Cl. 415-1.000.

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Tuchenhagen, Otto A. P.; Mieth, Hans O. E.; and Coura, Herbert R., to Otto Tuchenhagen GmbH & Co. KG. Pipeline switch with leakage control and cleanable leakage cavity. 4,344,453, Cl. 137-240.000.
Turner, Bradley D.: *See*—
Riley, Richard E.; and Turner, Bradley D., 4,345,235, Cl. 338-176.000.
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Norton, James F.; Silagy, Richard J.; and Antoniw, Walter W., 4,344,455, Cl. 137-329.400.
Tyke, Charles R. Signage system and method of making same. 4,344,244, Cl. 40-611.000.
Tyler, Loren E. Positioning apparatus for boom structures. 4,344,572, Cl. 239-168.000.
Tyree, Lewis, Jr.; Missig, James R.; and Rhoades, George D., to Liquid Carbonic Corporation, by said James R. Missing and George D. Rhoades. Cryogenic cabinet freezer. 4,344,291, Cl. 62-62.000.
Uchida, Naoya; Yoshida, Masaaki; and Yamanishi, Toru, to Nippon Telegraph & Telephone Corporation; and Sumitomo Electric Industries, Ltd. Coated glass fibers for optical transmission. 4,344,669, Cl. 350-96.300.
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Union Carbide Corporation: *See*—
Cropley, Jean B., 4,345,104, Cl. 568-852.000.
Higgins, Philip K., 4,345,139, Cl. 219-137.0PS.
Kaplan, Leonard, 4,345,103, Cl. 568-840.000.
Ramachandran, Sundaresan, 4,344,992, Cl. 427-430.100.
Sherman, John D.; and Ross, Ronald J., 4,344,851, Cl. 210-670.000.
Vick, Steven C.; and Kanner, Bernard, 4,345,088, Cl. 556-410.000.
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Agriculture: *See*—
Shasha, Baruch S.; Doane, William M.; and Russell, Charles R., deceased, 4,344,857, Cl. 252-316.000.
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Abbin, Joseph P., Jr.; Devaney, Howard F.; and Hake, Lewis W., 4,345,124, Cl. 200-61.530.
Christiansen, David W., 4,344,915, Cl. 376-437.000.
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Banks, Bruce A.; Mirtich, Michael J.; and Sovey, James S., 4,344,996, Cl. 428-141.000.
Jackson, Liam R., 4,344,591, Cl. 244-158.00A.
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Parks, Albert R., 4,344,875, Cl. 424-78.000.
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Haes, Freddy; Reynhout, Cornelis M.; Hermes, Guillaume M. P. G.; and Boiten, Ebbe, 4,344,228, Cl. 30-43.900.
Hirsch, Hans J.; and Dannert, Horst, 4,345,012, Cl. 430-48.000.
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Anders, Larry E., 4,344,282, Cl. 60-226.00R.
Breault, Richard D., 4,345,008, Cl. 429-26.000.
Fahle, Ronald W.; and Reiser, Carl A., 4,345,009, Cl. 429-37.000.
Grasso, Albert P.; and Lane, John W., 4,344,849, Cl. 210-662.000.
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Urie, Robert G.; and Kowinski, John F., 4,344,481, Cl. 165-166.000.
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Fahmy, Mohamed A. H.; and Fukuto, Tetsuo R., 4,344,883, Cl. 549-467.000.
Parsons, James D.; and Yue, Alfred S., 4,345,177, Cl. 313-95.000.
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Lee, Alan J. C.; and Ling, Robin S. M., 4,344,190, Cl. 3-1.900.
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Edling, Robert J., 4,344,251, Cl. 47-80.000.
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White, David R., 4,344,882, Cl. 549-387.000.
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Urie, Robert G.; and Kowinski, John F., to United Technologies Corporation. Counterflow heat exchanger construction. 4,344,481, Cl. 165-166.000.
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Bouzianis, George J.; Hollick, John G.; McIlvin, Donald B.; and Sillars, Frederick S., 4,344,199, Cl. 12-54.300.
Ustin, George. Screw-on electrical connector. 4,345,110, Cl. 174-87.000.
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van den Driessche, Michel, to Thomson-CSF. Synchronization device for a character-generating circuit and a vertical scanning circuit and television receiver comprising such a device. 4,345,246, Cl. 340-748.000.
van der Lely, Ary, to C. Van der Lely N.V. Soil cultivating implement. 4,344,490, Cl. 172-253.000.
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Van Der Linden, Roy E., to Reliable Security Systems, Inc. Exterior operating arrangement for emergency exit doors with delayed opening feature. 4,344,647, Cl. 292-201.000.
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Van Horne, Arthur C.; and Yarp, Russel E., to Dataproducts Corporation. Means for attaching a tractor drive assembly to a platen. 4,344,715, Cl. 400-616.100.

Van Noord, Andrew J. Table with extensible top. 4,344,369, Cl. 108-84.000.
VanRhijn, Wilhelmus J.: *See—*
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Vaponics, Inc.: *See—*
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Varlonga, Giovanni, to Feal S.p.A. Thermally insulated aluminum door or window frame. 4,344,254, Cl. 49-401.000.
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Veith, Gustav G., to Gustav Georg Veith GmbH & Co., KG,; and Veith Transpo GmbH. Conveyor apparatus, particularly for overhead conveyance. 4,344,363, Cl. 104-162.000.
Veith Transpo GmbH: *See—*
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Cowan, Jack C.; and Thrash, Tommy, 4,345,039, Cl. 521-48.000.
Verboom, Pieter, to IHC Holland N.V. Dragging type head for a suction dredger. 4,344,239, Cl. 37-66.000.
Verenigte Flugtechnische Werke GmbH: *See—*
Lerche, Ernst; Raschke, Bernward; and Hartwig, Siegfried, 4,345,237, Cl. 340-27.00R.
Veres, Imre. Sealingly mounting arrangement for propeller shafts of watercraft. 4,344,630, Cl. 277-4.000.
Vermeiren, Karel N.; Heemskerk, Rutgerus S.; and Dolfsma, Hendrik, to SKF Industrial Trading & Development Company, B.V. Device for measuring the lubrication of surfaces rolling or sliding relative to each other and lubricated with a lubricant. 4,345,203, Cl. 324-61.00R.
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Vick, Steven C.; and Kanner, Bernard, to Union Carbide Corporation. Preparation of alkoxyaminohydridosilanes. 4,345,088, Cl. 556-410.000.
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Viehrig, Wolfgang; Osegowitsch, Viktor; and Hammer, Thomas, to Agfa-Gevaert Aktiengesellschaft. Arrangement for treating photographic bands running in parallel paths. 4,344,690, Cl. 354-319.000.
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Vogt, Robert K.; and Heit, Martin A., to E. W. Buschman Company, The. Roller conveyor with friction roll drive. 4,344,527, Cl. 198-781.000.
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Walters, William R. Icing preventor. 4,344,450, Cl. 137-62.000.
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United States of America, National Aeronautics and Space Administration; Wang, Taylor G.; and Elleman, Daniel D., 4,344,787, Cl. 65-21.400.
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Warehime, Norwood R. Turnstile goal and games usage. 4,344,628, Cl. 273-388.000.
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Weisner, Kent A.; and Walls, Lester L., Jr., to Kennedy Sky-Lites, Inc. Skylight. 4,344,261, Cl. 52-200.000.
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Wheadon, Ellis G.; and Nowakowski, Robert J., to General Motors Corporation. Vehicle battery charging system. 4,345,197, Cl. 320-6.000.
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White, David R., to Upjohn Company, The. Intermediate compounds in the preparation of spectinomycin. 4,345,086, Cl. 549-16.000.
White, Gary D., to Sperry Corporation. ECC Check bit generation using through checking parity bits. 4,345,328, Cl. 371-38.000.
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Widham, Ernest G. Signal devices for rural mailboxes. 4,344,559, Cl. 232-35.000.
Wiechert, Rudolf; Bittler, Dieter; Schleusener, Annerose; and Albring, Manfred, to Schering Aktiengesellschaft (A.G.). Antiandrogenic 17α-substituted steroids. 4,344,941, Cl. 424-243.000.
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Wielhouwer, Sandra L.; and Fortner, Suzanne M., to Wielhouwer, John D. Dental face shield. 4,344,758, Cl. 433-137.000.
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Williams, Leo M., Jr.; and Dunkle, Steven L. Hydraulic/pneumatic suspension system for snowmobiles. 4,344,637, Cl. 280-21.00R.
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Wollam, Carl A.; Gailey, J. Lynn; and Chalmers, Alexander A., to Alcan Aluminum Corporation. Process and apparatus for coating strip articles and the like. 4,344,990, Cl. 427-286.000.
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Wovcha, Merle G.; and Biggs, Candice B., to Upjohn Company, The. *Mycobacterium phlei* mutants convert sterols to androsta-1,4-diene-3,17-dione and androsta-4-ene-3,17-dione. 4,345,029, Cl. 435-55.000.
Wovcha, Merle G.; and Biggs, Candice B., to Upjohn Company, The. Microorganism mutant conversion of sterols to androsta-4-ene-3,17-dione. 4,345,030, Cl. 435-55.000.
Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., to Upjohn Company, The. *Mycobacterium fortuitum* mutant. 4,345,033, Cl. 435-253.000.
Wovcha, Merle G.; and Brooks, Kevin E., to Upjohn Company, The. *Mycobacterium fortuitum* mutant. 4,345,034, Cl. 435-253.000.
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Wronka, Bodo, to Mannesmann DeMag AG. Cover for vessel for a metal melting furnace, in particular an electric arc furnace. 4,345,332, Cl. 373-74.000.
Wunder, Richard H., to Polysar Limited. Emulsion polymer recovery. 4,345,067, Cl. 528-485.000.
Wyckoff, Charles W., to Academy of Applied Science, Inc., The. Process for increasing the effective speed of photographic films and improved film structures. 4,345,023, Cl. 430-364.000.
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Cross, Thomas R., 4,344,554, Cl. 227-30.000.
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Yagi, Michio; and Sawano, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Camera with photoelectric focus detecting device. 4,344,679, Cl. 354-25.000.
Yagihara, Morio; and Yokota, Yukio, to Fuji Photo Film Co., Ltd. Color photographic silver halide light-sensitive material. 4,345,025, Cl. 430-385.000.
Yamabe, Masaaki; Kojima, Gen; and Kaya, Seitoku, to Asahi Glass Company, Ltd. Curable fluorocopolymer. 4,345,057, Cl. 526-247.000.
Yamada, Koichi; and Shinya, Yasuo, to Sumitomo Aluminium Smelting Co., Ltd. Sintering method of zirconia. 4,344,904, Cl. 264-66.000.
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Yamada, Minoru, to Yamaha Hatsudoki Kabushiki Kaisha. Induction system of multi-cylinder engine. 4,344,396, Cl. 123-337.000.

Yamada, Sachiko: *See—*
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Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Selection and setting device for camera exposure control. 4,344,681, Cl. 354-38.000.

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Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,344,500, Cl. 180-230.000.

Yamamoto, Michio: *See—*
Nagura, Kenji; Takeda, Shinichi; Namie, Koshi; Fujii, Takao; Yamamoto, Michio; and Yokoyama, Seiichi, 4,345,089, Cl. 560-77.000.

Yamamoto, Shinji: *See—*
Ishikawa, Isao; Kanda, Hiroshi; and Yamamoto, Shinji, 4,345,156, Cl. 250-385.000.

Yamanishi, Toru: *See—*
Uchida, Naoya; Yoshida, Masaaki; and Yamanishi, Toru, 4,344,669, Cl. 350-96.300.

Yamasa Shoyu Kabushiki Kaisha: *See—*
Machida, Haruhiko, 4,344,937, Cl. 424-180.000.

Yamato Scale Co. Ltd.: *See—*
Hirano, Takashi, 4,344,492, Cl. 177-25.000.

Yamazoe, Hisamitsu: *See—*
Matsumura, Toshimi; Omori, Norio; and Yamazoe, Hisamitsu, 4,344,399, Cl. 123-339.000.

Yanmar Diesel Engine Co., Ltd.: *See—*
Nagasaki, Michisuke; and Aso, Kinichi, 4,344,337, Cl. 74-740.000.

Yao, Shi-Kay, to Rockwell International Corporation. Optical signal processing device. 4,344,675, Cl. 350-358.000.

Yarp, Russel E.: *See—*
Van Horne, Arthur C.; and Yarp, Russel E., 4,344,715, Cl. 400-616.100.

Yasuye, Toshikazu; Kashioka, Seiji; and Shima, Yoshihiro, to Hitachi, Ltd. Method and device for inspecting the defect of a pattern represented on an article. 4,345,312, Cl. 364-515.000.

Yates, Patrick; Woodcock, Sydney H.; and Beals, Jeffrey R. Semi-automatic firearm. 4,344,352, Cl. 89-198.000.

Yavnieli, Mordechai, to AMCOR Ltd. Electrostatic air filter. 4,344,776, Cl. 55-129.000.

Yazidjian, Jean-Claude, to Framatome. Device for separating water from steam at the vaporization vessel outlet of a steam generator. 4,344,387, Cl. 122-34.000.

Yin, Lo I., to United States of America, National Aeronautics and Space Administration. Low intensity X-ray and gamma-ray spectrometer. 4,345,153, Cl. 250-369.000.

Yoder, Max N., to United States of America, Navy. Superior ohmic contacts to III–V semiconductor by virtue of double donor impurity. 4,344,980, Cl. 427-38.000.

Yokogawa Electric Works, Ltd.: *See—*
Tamura, Hisashi; Taniguchi, Naozo; and Ishikawa, Hirotoshi, 4,345,150, Cl. 250-339.000.

Yokota, Yukio: *See—*
Yagihara, Morio; and Yokota, Yukio, 4,345,025, Cl. 430-385.000.

Yokoyama, Kimio: *See—*
Shimada, Shoji; Sonoda, Sakae; and Yokoyama, Kimio, 4,344,308, Cl. 72-39.000.

Yokoyama, Seiichi: *See—*
Nagura, Kenji; Takeda, Shinichi; Namie, Koshi; Fujii, Takao; Yamamoto, Michio; and Yokoyama, Seiichi, 4,345,089, Cl. 560-77.000.

Yolles, Seymour, to University of Delaware. Polymeric article for dispensing drugs. 4,344,431, Cl. 128-260.000.

Yoneda, Yasuhiro; Kitakohji, Toshisuke; and Kitamura, Kenro, to Fujitsu Limited. Positive resist polymer composition and method of forming resist pattern. 4,345,020, Cl. 430-270.000.

Yonekura, Seiji: *See—*
Suzuki, Mitsuo; Tokunaga, Takeshi; Yonekura, Seiji; Matsuoka, Shigeru; and Nakamura, Kenji, 4,344,252, Cl. 49-199.000.

Yoshida, Kazunori: *See—*
Hasegawa, Junzo; Kawabata, Susumu; Yoshida, Kazunori; Suzuki, Fuzio; Itoh, Yusuke; Suzuki, Hajime; Arakawa, Hiroshi; and Kobayashi, Akira, 4,344,465, Cl. 139-435.000.

Yoshida, Kiyoshi: *See—*
Nakada, Akira; Sugiura, Toshio; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,344,344, Cl. 84-1.030.

Yoshida, Kooichi: *See—*
Aoda, Yukio; Ninomiya, Hiroshi; Yoshida, Kooichi; and Koyanagi, Osamu, 4,344,968, Cl. 424-365.000.

Yoshida, Masaaki: *See—*
Uchida, Naoya; Yoshida, Masaaki; and Yamanishi, Toru, 4,344,669, Cl. 350-96.300.

Yoshida, Masashi: *See—*
Miyakawa, Seii; Kawauchi, Akira; Iijima, Kazunori; Terayama, Takao; Yoshida, Masashi; and Kawase, Hideyuki, 4,345,282, Cl. 360-85.000.

Yoshida, Tsuyoshi: *See—*
Amano, Hiroyuki; Yoshida, Tsuyoshi; and Shibata, Kazuhiko, 4,345,240, Cl. 340-345.000.

Yoshikawa, Yoshihiko: *See—*
Komuro, Keigo; Yamada, Matsuichi; Aoki, Katsuhiko; Yoshikawa, Yoshihiko; Itoh, Fumio; Takeda, Fumio; and Ishida, Osami, 4,345,255, Cl. 343-100.0PE.

Yoshikawa, Yoshihiro; Katabami, Takao; Fujinaga, Katsumi; and Kobayashi, Yoshiaki, to Aloka Co., Ltd. Electronic scanning ultrasonic diagnostic system. 4,344,327, Cl. 73-626.000.

Yoshimi, Akiro: *See—*
Kojima, Yasuhumi; Saito, Atsunori; and Yoshimi, Akiro, 4,344,565, Cl. 236-46.00R.

Yoshino, Hisashi: *See—*
Okutomi, Tsutomu; Iida, Masachika; Kuwabara, Kazuyoshi; Yoshino, Hisashi; and Takayanagi, Eiichi, 4,345,130, Cl. 200-268.000.

Young, Dean A. Method of preparing crystalline silica polymorph. 4,344,927, Cl. 423-339.000.

Young, Donald C.; and Green, James A., II, to Union Oil Company of California. Method of selectively removing biuret from urea and compositions for use therein. 4,345,099, Cl. 564-63.000.

Youngfleish, Frank C.: *See—*
Corman, Ned E.; Kandybowski, Steven J.; Scheingold, William S.; and Youngfleish, Frank C., 4,345,267, Cl. 357-81.000.

Youngquist, Rudolph W.; and Brabbs, William J., to Procter & Gamble Company, The. Single-dough cookies having storage stable texture. 4,344,969, Cl. 426-18.000.

Youngstown Steel Door Company, The: *See—*
Fritz, William E.; and Soddy, Thomas C., 4,344,365, Cl. 105-282.00A.
Madland, Thorvald, 4,344,366, Cl. 105-378.000.

Yue, Alfred S.: *See—*
Parsons, James D.; and Yue, Alfred S., 4,345,177, Cl. 313-95.000.

Yusa, Haruhiko; Oota, Masanori; and Isaka, Haruki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Vinyl chloride resin composition. 4,345,043, Cl. 523-209.000.

Yuyama, Masahiro: *See—*
Kitagawa, Yoshihiko; Yuyama, Masahiro; Moritani, Masahiko; and Suzuki, Mikio, 4,344,906, Cl. 264-128.000.

Zabec, Glenn M.: *See—*
Penney, C. Bradford; Zabec, Glenn M.; and Sridharan, Sri P., 4,345,304, Cl. 362-183.000.

Zacharias, Karl: *See—*
Grote, Hugo; Hasselmann, Heinz; Kunze, Volkmar; Zacharias, Karl; Kuelpmann, Robert; and Mueller, Paul, 4,344,515, Cl. 192-67.00R.

Zaharis, Edward J. Internal combustion engine. 4,344,405, Cl. 123-568.000.

Zahid, Abduz, to Greer Hydraulics, Incorporated. Accumulator device with improved bladder seal. 4,344,458, Cl. 138-30.000.

Zahnraderfabrik Renk A.G.: *See—*
Mayr, Erwin, 4,344,608, Cl. 266-245.000.

Zahnradfabrik Friedrichshafen, AG.: *See—*
Lang, Armin, 4,344,284, Cl. 60-433.000.
Liebert, Karl-Heinz; Tischer, Werner; and Deppenbrock, Christoph, 4,344,283, Cl. 60-384.000.
Merz, Johann, 4,344,717, Cl. 403-14.000.

Zall, Robert R.; and Dzurec, David J., to Cornell Research Foundation, Inc. Stabilization of milk and improved cheese yields. 4,344,970, Cl. 426-40.000.

Zammert, Wolf U., to Karl Schmidt GmbH. Process of shaping the rim of a combustion chamber recess of a light-alloy piston. 4,345,138, Cl. 219-121.0LF.

Zaschke, Horst: *See—*
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Mathias; Kresse, Horst; and Weissflog, Wolfgang, 4,344,856, Cl. 252-299.610.

Zeman, Robert E., to Eastman Kodak Company. Electrophotographic apparatus having improved grounding means. 4,344,698, Cl. 355-16.000.

Zenith Stairways & Building Products, Inc.: *See—*
Basey, Gene, 4,344,604, Cl. 256-65.000.

Zeph, David L.: *See—*
Begeman, Robert H.; Sanderson, Barry D.; Weiss, Donald C.; and Zeph, David L., 4,345,251, Cl. 340-825.860.

Zeuna-Staerker KG: *See—*
Santiago, Andres; and Santiago, Enrique, 4,344,921, Cl. 422-179.000.
Santiago, Andres; and Santiago, Enrique, 4,344,922, Cl. 422-179.000.

Zielinski, Paul A.: *See—*
Kim, Chang Kyu; Maggiulli, Cataldo A.; and Zielinski, Paul A., 4,345,085, Cl. 548-360.000.

Zitz, Alfred: *See—*
Suessenbeck, Heinrich; Siebenhofer, Gottfried; Neuper, Rienhard; and Zitz, Alfred, 4,344,354, Cl. 91-168.000.

Ziv, Avraham: *See—*
Hollowell, William; Tanaka, Akira; Ziv, Avraham; and Stamboulian, Nazareth, 4,344,588, Cl. 242-107.40A.

Ziv, Martin H.: *See—*
Hyman, Floyd L.; and Ziv, Martin H., 4,345,079, Cl. 544-351.000.

Zolnerovich, Walter, Jr.: *See—*
Rapp, Kenneth L.; and Zolnerovich, Walter, Jr., 4,344,582, Cl. 242-45.000.

Zoschak, Robert J., to Foster Wheeler Energy Corporation. Vapor generating system having integrally formed gasifiers extending to either side of the hopper portion of the generator. 4,344,371, Cl. 110-229.000.

Zucker, Newton; and Ellslager, William M., to Kalcor Coatings Company, Inc. Anti-foaming compositions. 4,344,858, Cl. 252-358.000.

Zumfeld, Heinz: *See—*
Rohner, Joachim; Zumfeld, Heinz; and Mauries, Reinhard, 4,344,277, Cl. 57-22.000.

Zumsteg, Alphonse, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Temperature compensated signal generator including two crystal oscillators. 4,345,221, Cl. 331-176.000.

Zunino, Patrick: *See—*
Cazarra, Victor; Schwab, Andre; and Zunino, Patrick, 4,344,815, Cl. 156-601.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Air Products and Chemicals, Inc.: *See*—
Sircar, Shivaji, Re. 31,014, Cl. 55-26.000.

Allen, John D. Fitment for a vessel. Re. 31,012, Cl. 285-114.000.

Belke, Jack T., to Westran Corporation. Landing gear construction. Re. 31,011, Cl. 280-763.000.

Gulf & Western Manufacturing Company: *See*—
Smith, Joseph E., Jr., Re. 31,013, Cl. 403-27.000.

Sircar, Shivaji, to Air Products and Chemicals, Inc. Separation of multicomponent gas mixtures. Re. 31,014, Cl. 55-26.000.

Smith, Joseph E., Jr., to Gulf & Western Manufacturing Company. Calibrated replacement torque rod. Re. 31,013, Cl. 403-27.000.

Westran Corporation: *See*—
Belke, Jack T., Re. 31,011, Cl. 280-763.000.

LIST OF DESIGN PATENTEES

Aero Systems Research, Inc.: *See*—
Buck, Gaylord B., 265,801, Cl. D10-96.000.

Agfa-Gevaert AG: *See*—
Schultes, Herbert; and Rubner, Karl-Heinz, 265,831, Cl. D16-42.000.

Aggressive Industries, Inc.: *See*—
Berquist, DeWayne D., 265,787, Cl. D6-196.000.

Ahn, Chong T. Music box. 265,836, 8-17-82, Cl. D17-24.000.

Aiba, Nobushiro: *See*—
Kira, Yasuhiro; Watabiki, Yoshiro; Aiba, Nobushiro; and Koyama, Katsumi, 265,832, Cl. D17-5.000.

AMF Incorporated: *See*—
Hahn, Daniel G., 265,817, Cl. D12-179.000.

Angell, S. Ralph. Easel. 265,786, 8-17-82, Cl. D6-180.000.

Atwood, Robert G.: *See*—
Elzea, Lorene E.; and Atwood, Robert G., 265,777, Cl. D3-35.000.

Babbage, Thomas A., to Frianco Redfyre Limited. Facia for a domestic heating appliance. 265,851, 8-17-82, Cl. D23-128.000.

Barr, Josef J. Pearl necklace or similar article. 265,803, 8-17-82, Cl. D11-8.000.

Barr, Josef J. Pearl necklace or similar article. 265,804, 8-17-82, Cl. D11-8.000.

Barr, Josef J. Pearl necklace or similar article. 265,805, 8-17-82, Cl. D11-8.000.

Barr, Josef J. Pearl necklace or similar article. 265,806, 8-17-82, Cl. D11-8.000.

Barr, Josef J. Pearl necklace or similar article. 265,807, 8-17-82, Cl. D11-8.000.

Barr, Josef J. Finger ring or similar article. 265,808, 8-17-82, Cl. D11-26.000.

Barr, Josef J. Finger ring or similar article. 265,809, 8-17-82, Cl. D11-34.000.

Barr, Josef J. Finger ring or similar article. 265,810, 8-17-82, Cl. D11-34.000.

Barr, Josef J. Earring. 265,811, 8-17-82, Cl. D11-76.000.

Beach, Danny J.: *See*—
Keith, Keith S.; Hauser, Stephen G.; and Beach, Danny J., 265,795, Cl. D9-370.000.

Bell, Michael. Boot with angularly extending cleats. 265,776, 8-17-82, Cl. D2-274.000.

Berquist, DeWayne D., to Aggressive Industries, Inc. End support for a combined table and bench unit. 265,787, 8-17-82, Cl. D6-196.000.

Best Toys Co., Ltd., The: *See*—
Tung, Wai K., 265,843, Cl. D21-156.000.
Tung, Wai-Kuen, 265,841, Cl. D21-90.000.

Bleiweiss, Arthur F.: *See*—
Urbanek, Karel; and Bleiweiss, Arthur F., 265,855, Cl. D26-122.000.

Blinder, Roberto: *See*—
Jaffe, Harold; Blinder, Roberto; and Jaffe, Lowell J., 265,828, Cl. D15-144.000.

Bowing Enterprises: *See*—
Crumley, James H., 265,775, Cl. D2-29.000.

Bozley, Inc.: *See*—
Elzea, Lorene E.; and Atwood, Robert G., 265,777, Cl. D3-35.000.

Bradford, Arnie C. Heating stove. 265,850, 8-17-82, Cl. D23-97.000.

Braun Aktiengesellschaft: *See*—
Hartwein, Peter; and Schneider, Peter, 265,822, Cl. D14-34.000.
Hartwein, Peter, 265,823, Cl. D14-34.000.

Brentini, Attilio. Key holder. 265,778, 8-17-82, Cl. D3-61.000.

Brine, Peter J.: *See*—
Brine, WilliamH., Jr.; and Brine, Peter J., 265,845, Cl. D21-210.000.

Brine, WilliamH., Jr.; and Brine, Peter J., to W. H. Brine Company. Lacrosse stick head. 265,845, 8-17-82, Cl. D21-210.000.

Brion, Ennio, to Brionvega S.p.A. Color television receiver. 265,825, 8-17-82, Cl. D14-81.000.

Brionvega S.p.A.: *See*—
Brion, Ennio, 265,825, Cl. D14-81.000.

Brorsson, Jan-Erik. Ski and luggage carrier for vehicles. 265,814, 8-17-82, Cl. D12-157.000.

Buck, Gaylord B., to Aero Systems Research, Inc. Sensor for solar and wind energy monitor. 265,801, 8-17-82, Cl. D10-96.000.

Bunning, John G., to Esterline Angus Instrument Corporation. Disposable recording pen with ink reservoir. 265,838, 8-17-82, Cl. D19-41.000.

Burgoon, Jack L.; and Hayes, John M., to Scott & Fetzer Company, The; and Earl Grissmer Company, Inc. Carpet cleaning tool. 265,857, 8-17-82, Cl. D32-32.000.

Butera, Charles; and Butera, Ingela. Novelty thermoresponsive liquid crystal indicating device. 265,800, 8-17-82, Cl. D10-57.000.

Butera, Ingela: *See*—
Butera, Charles; and Butera, Ingela, 265,800, Cl. D10-57.000.

Camp International, Inc.: *See*—
Meloy, Dennis V., 265,853, Cl. D24-64.000.

Campos, Luis. Game board. 265,840, 8-17-82, Cl. D21-24.000.

Carver, Horace: *See*—
Owen, Newton C.; and Carver, Horace, 265,793, Cl. D9-341.000.

Conners, Michael; and Osborne, Thomas P., to CPG Products Corp. Animal push toy. 265,842, 8-17-82, Cl. D21-150.000.

CPG Products Corp.: *See*—
Conners, Michael; and Osborne, Thomas P., 265,842, Cl. D21-150.000.
Kite, Kenneth M.; and Moine, David W., 265,839, Cl. D21-13.000.

Crumley, James H., to Bowing Enterprises. Suit. 265,775, 8-17-82, Cl. D2-29.000.

Dainty, Robert J., Jr. Baby cradle. 265,781, 8-17-82, Cl. D6-15.000.

Denhoff, Donald P., to Sewell Plastics, Inc. Bottle. 265,796, 8-17-82, Cl. D9-378.000.

Dominion Auto Accessories Limited: *See*—
Urbanek, Karel; and Bleiweiss, Arthur F., 265,855, Cl. D26-122.000.

DSI-Sportartikel GmbH: *See*—
Scholz, Helmut, 265,846, Cl. D21-230.000.

Earl Grissmer Company, Inc.: *See*—
Burgoon, Jack L.; and Hayes, John M., 265,857, Cl. D32-32.000.

Elzea, Lorene E.; and Atwood, Robert G., to Bozley, Inc. Computer disc container. 265,777, 8-17-82, Cl. D3-35.000.

Esterline Angus Instrument Corporation: *See*—
Bunning, John G., 265,838, Cl. D19-41.000.

Fieni, Gabriel J. Shingle digger. 265,791, 8-17-82, Cl. D8-88.000.

Firestone Tire & Rubber Company, The: *See*—
Sladky, Donald J., 265,813, Cl. D12-152.000.

Foggia, Donald; and Pomponi, Roman, to TIE/Communications, Inc. Telephone key. 265,824, 8-17-82, Cl. D14-59.000.

Francis, John P. Van roof rack. 265,815, 8-17-82, Cl. D12-157.000.

Fusselman, Robert M., to GF Business Equipment, Inc. Desk. 265,783, 8-17-82, Cl. D6-162.000.

GF Business Equipment, Inc.: *See*—
Fusselman, Robert M., 265,783, Cl. D6-162.000.

Gross, William K. Combined post and mail box. 265,859, 8-17-82, Cl. D99-32.000.

Hahn, Daniel G., to AMF Incorporated. Design for a bicycle gear shifter. 265,817, 8-17-82, Cl. D12-179.000.

Harley Davidson Motor Co., Inc.: *See*—
Matre, Daniel A., 265,816, Cl. D12-174.000.

Hartwein, Peter; and Schneider, Peter, to Braun Aktiengesellschaft. Loudspeaker column. 265,822, 8-17-82, Cl. D14-34.000.

Hartwein, Peter, to Braun Aktiengesellschaft. Loudspeaker. 265,823, 8-17-82, Cl. D14-34.000.
Harvey, Thomas D.: *See*—
Winter, Russell K.; Savas, Nedim; Snively, Joseph H.; and Harvey, Thomas D., 265,792, Cl. D8-394.000.
Hauser, Stephen G.: *See*—
Keith, Keith S.; Hauser, Stephen G.; and Beach, Danny J., 265,795, Cl. D9-370.000.
Hayes, John M.: *See*—
Burgoon, Jack L.; and Hayes, John M., 265,857, Cl. D32-32.000.
Helfrich, Joseph, to Les Grands Chais deFrance. Bottle. 265,794, 8-17-82, Cl. D9-370.000.
Holmstadt, Ronald J.; Sorge, L. Ralph; and Tiedemann, Robert J., to Toro Company, The. Electric cultivator. 265,826, 8-17-82, Cl. D15-12.000.
Idropejo S.p.A.: *See*—
Ossola, Giuseppe, 265,798, Cl. D9-429.000.
Jaffe, Harold; Blinder, Roberto; and Jaffe, Lowell J., to Jaffe Manufacturing Company. Electroplater. 265,828, 8-17-82, Cl. D15-144.000.
Jaffe, Lowell J.: *See*—
Jaffe, Harold; Blinder, Roberto; and Jaffe, Lowell J., 265,828, Cl. D15-144.000.
Jaffe Manufacturing Company: *See*—
Jaffe, Harold; Blinder, Roberto; and Jaffe, Lowell J., 265,828, Cl. D15-144.000.
Johansson, Karl-Eric. Safety car seat for a child. 265,780, 8-17-82, Cl. D6-9.000.
Johansson, Tord G. I. High pressure cover. 265,848, 8-17-82, Cl. D23-1.000.
Johnson & Johnson Baby Products Company: *See*—
Simpson, Danny E.; and Williams, David M., 265,844, Cl. D21-204.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Suzuki, Takao, 265,799, Cl. D10-39.000.
Kastan, B. Linn. Crank arm for a bicycle crank assembly. 265,812, 8-17-82, Cl. D12-123.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Tomonaga, Keisuke; Nishida, Hiroshi; and Miyazaki, Takeshi, 265,820, Cl. D12-307.000.
Keith, Keith S.; Hauser, Stephen G.; and Beach, Danny J., to United States Borax & Chemical Corporation. Bottle. 265,795, 8-17-82, Cl. D9-370.000.
Kelsey-Hayes Co.: *See*—
Reid, Donald J., 265,818, Cl. D12-211.000.
Reid, Donald J., 265,819, Cl. D12-211.000.
Kira, Yasuhiro; Watabiki, Yoshiro; Aiba, Nobushiro; and Koyama, Katsumi, to Nippon Gakki Seizo Kabushiki Kaisha. Electric organ. 265,832, 8-17-82, Cl. D17-5.000.
Kite, Kenneth M.; and Moine, David W., to CPG Products Corp. Electronic drag racing toy. 265,839, 8-17-82, Cl. D21-13.000.
Koyama, Katsumi: *See*—
Kira, Yasuhiro; Watabiki, Yoshiro; Aiba, Nobushiro; and Koyama, Katsumi, 265,832, Cl. D17-5.000.
Les Grands Chais deFrance: *See*—
Helfrich, Joseph, 265,794, Cl. D9-370.000.
M & M Luggage Co., Inc.: *See*—
Stark, Ted, 265,779, Cl. D3-71.000.
Maguire, Paul R. Lighting fixture for partition walls. 265,854, 8-17-82, Cl. D26-78.000.
Matre, Daniel A., to Harley Davidson Motor Co., Inc. Motorcycle handgrip control. 265,816, 8-17-82, Cl. D12-174.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Okada, Takao; Miyanaga, Setsuo; and Mishiro, Benito, 265,821, Cl. D14-5.000.
Meloy, Dennis V., to Camp International, Inc. Orthopedic garment. 265,853, 8-17-82, Cl. D24-64.000.
Mishiro, Benito: *See*—
Okada, Takao; Miyanaga, Setsuo; and Mishiro, Benito, 265,821, Cl. D14-5.000.
Miyanaga, Setsuo: *See*—
Okada, Takao; Miyanaga, Setsuo; and Mishiro, Benito, 265,821, Cl. D14-5.000.
Miyazaki, Takeshi: *See*—
Tomonaga, Keisuke; Nishida, Hiroshi; and Miyazaki, Takeshi, 265,820, Cl. D12-307.000.
Moine, David W.: *See*—
Kite, Kenneth M.; and Moine, David W., 265,839, Cl. D21-13.000.
Nakade, Kenichi, to Ricoh Company, Ltd. Sorter for electrostatic copier. 265,830, 8-17-82, Cl. D16-32.000.
Ng, Ying-Young, to Veny Plastic Co., Ltd. Aquarium gang valve. 265,849, 8-17-82, Cl. D23-19.000.
Nielsen, Vernon C. Game table. 265,847, 8-17-82, Cl. D21-232.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Kira, Yasuhiro; Watabiki, Yoshiro; Aiba, Nobushiro; and Koyama, Katsumi, 265,832, Cl. D17-5.000.
Nishida, Hiroshi: *See*—
Tomonaga, Keisuke; Nishida, Hiroshi; and Miyazaki, Takeshi, 265,820, Cl. D12-307.000.
Ohle, James L. Table. 265,782, 8-17-82, Cl. D6-146.000.
Okada, Takao; Miyanaga, Setsuo; and Mishiro, Benito, to Matsushita Electric Industrial Co., Ltd. Combined cassette recorder and radio receiver. 265,821, 8-17-82, Cl. D14-5.000.
Ortho Diagnostics, Inc.: *See*—
Owen, Newton C.; and Carver, Horace, 265,793, Cl. D9-341.000.
Osborne, Thomas P.: *See*—
Conners, Michael; and Osborne, Thomas P., 265,842, Cl. D21-150.000.
Ossola, Giuseppe, to Idropejo S.p.A. Beverage container. 265,798, 8-17-82, Cl. D9-429.000.
Ovation Instruments, Inc.: *See*—
Rickard, James H., 265,835, Cl. D17-21.000.
Owen, Newton C.; and Carver, Horace, to Ortho Diagnostics, Inc. Tablet dispenser. 265,793, 8-17-82, Cl. D9-341.000.
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Platte, Richard L. Jug. 265,797, 8-17-82, Cl. D9-378.000.
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Saltzman, Ruth E. Display rack. 265,784, 8-17-82, Cl. D6-180.000.
Savas, Nedim: *See*—
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Schneider, Peter: *See*—
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Sorge, L. Ralph: *See*—
Holmstadt, Ronald J.; Sorge, L. Ralph; and Tiedemann, Robert J., 265,826, Cl. D15-12.000.
Spirk, John W., Jr., to Transco Plastics Corporation. Liquid dispenser handle for household scrubbing pad. 265,858, 8-17-82, Cl. D32-35.000.
Stark, Ted, to M & M Luggage Co., Inc. Garment bag. 265,779, 8-17-82, Cl. D3-71.000.
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Spirk, John W., Jr., 265,858, Cl. D32-35.000.

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Babbage, Thomas A., 265,851, Cl. D23-128.000.

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ISSUED AUGUST 17, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

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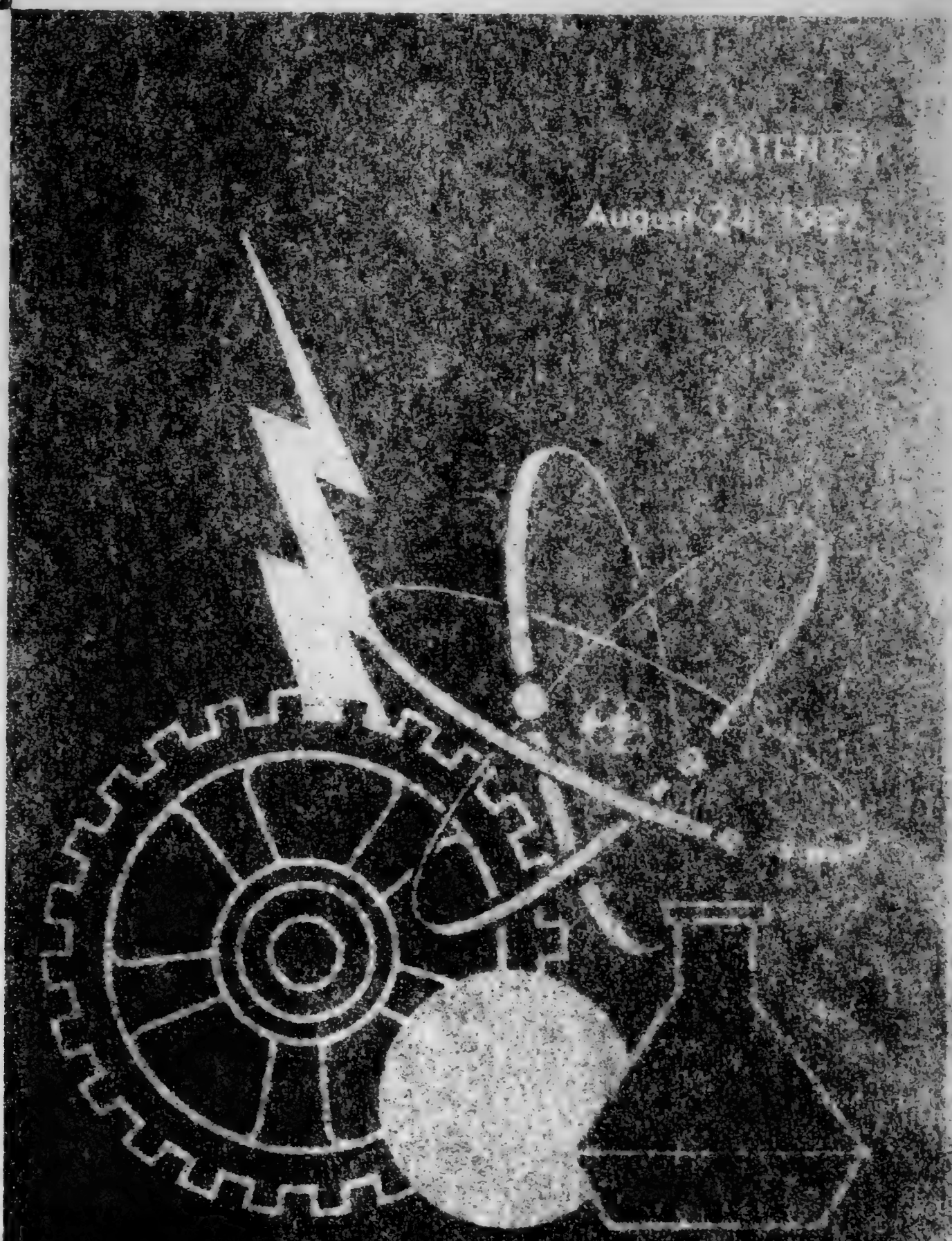
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Gerald J. Mossinghoff, *Commissioner*

Vol. 1021 Number 4

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August 24, 1982 Volume 1021 Number 4

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Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,019,320, Re. S.N. 392,438, Filed June 28, 1982, Cl. 60/226R, EXTERNAL GAS TURBINE ENGINE COOLING FOR CLEARANCE CONTROL, Ira H. Redinger, Jr., et al., Owner of Record: *United Technologies Corp., Hartford, Conn.,* Attorney or Agent: Norman Friedland, et al., Ex. Gp.: 343

4,159,083, Re. S.N. 340,202, Filed Jan. 18, 1982, Cl. 241/68, DEBRIS SEPARATING CHIPPER, Joseph A. Lapointe, Owner of Record: *Domtar, Inc., Hudson, Quebec, Canada,* Attorney or Agent: C.A. Rowley, Ex. Gp.: 322

4,198,351, Re. S.N. 392,428, Filed June 25, 1982, Cl. 260/449, FORMALDEHYDE PRODUCTION PROCESS, Anthony J. Branecky, et al., Owner of Record: *Celanese Corp., New York, N.Y.,* Attorney or Agent: Marvin Turken, et al., Ex. Gp.: 126

4,254,781, Re. S.N. 391,466, Filed June 23, 1982, Cl. 131/111, METHOD AND APPARATUS FOR DELIVERING PARTICLES OF TOBACCO TO SHREDDING MACHINES, Willi Thiele, et al., Owner of Record: *Hauni-Werke Korber & Co., K.G., Hamburg, Germany,* Attorney or Agent: Peter K. Kontler, et al., Ex. Gp.: 335

4,285,353, Re. S.N. 383,096, Filed May 28, 1982, Cl. 134/181, FILTER WITH AUTOMATIC CLEANING, Pierre Colomer, Owner of Record: *Interfiltre, S.A., Livarot, France,* Attorney or Agent: Philip Rodman, Ex. Gp.: 243

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 29,221, Reexam. No. 90/000,229, Requested: July 19, 1982, Cl. 188/378, ACCELERATION SENSITIVE MOTION SNUBBER, Elmer Chensheng Yang, Owner of Record: *Pacific Scientific Co., Anaheim, Calif.,* Attorney or Agent: Gordon H. Olson, Esq., Ex. Gp.: 310, Requester: Leonard Holtz, Esq., New York, N.Y.

3,796,048, Reexam. No. 90/000,223, Requested: June 30, 1982, Cl. 60/5, TURBOCHARGED INTERNAL COMBUSTION ENGINE WITH RESONANCE INDUCTION PIPE SYSTEM, Imre Annus, et al., Owner of Record: *Autoipari Kutato Intezet (Budapest) & Csepel Autogyar—Szigethalom, Hungary,* Attorney or Agent: Gabor J. Kelemen, Ex. Gp.: 340, Requester: Owner of Record

4,004,934, Reexam. No. 90/000,231, Requested: July 22, 1982, Cl. 501/88, SINTERED DENSE SILICON CARBIDE, Svante Prochazka, Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: G.P. Hoare, Jr., Esq., Ex. Gp.: 110, Requester: General Electric Co., Research & Development, Schenectady, N.Y.

4,118,413, Reexam. No. 90/000,233, Requested: July 26, 1982, Cl. 260/465, PREPARATION OF PHENOXYBENZYL ESTERS, Derek A. Wood, Owner of Record: *Shell Oil Co., Houston, Tex.,* Attorney or Agent: Nancy J. Gracey, Ex. Gp.: 120, Requester: Stauffer Chemical Co., Westport, Conn.

4,215,431, Reexam. No. 90/000,228, Requested: July 20, 1982, Cl. 455/43, WIRELESS TRANSMISSION SYSTEM, John Nady, Owner of Record: *Inventor,* Attorney or Agent: Craig & Antonelli, Ex. Gp.: 233, Requester: John Nady, Oakland, Calif.

4,287,537, Reexam. No. 90/000,232, Requested: July 28, 1982, Cl. 358/299, METHOD OF REPRODUCING GRAPHIC MATERIAL ON AN INTAGLIO FORM, Paul Pfau, et al., Owner of Record: *Simom S.A., A Corp. of Switzerland, Hanibuhl, Switzerland,* Attorney or Agent: Karl F. Ross, Ex. Gp.: 235, Dr.-Ing. Rudolf Hell, GmbH, West Germany

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Trademark Suits

Notices under 15 U.S.C. 1116;
Trademark Act of July 5, 1946.

Reg. No. 75,365 (ALLIGATOR BRAND AND DESIGN), Lacoste Alligator S.A.; **Reg. No. 706,041** (ALLIGATOR), **same; Reg. No. 707,572** (GROTESQUE OF ALLIGATOR IN CIRCULAR DESIGN), **same; Reg. No. 867,953** (ALLIGATOR DESIGN), **same; Reg. No. 1,084,409** (DESIGN MISCELLANEOUS), **same, filed** Nov. 5, 1980, D.C.N.J. (Newark), Doc. 80-3561, *Lacoste Alligator S.A., et al* v. *Edward A. Devlin III, et al.* Consent order for permanent injunction and stipulation of dismissal of action filed June 2, 1981. **Same, filed** May 20, 1981, D.C.N.J. (Newark), Doc. 80-1537, *Lacoste Alligator S.A., et al* v. *All-American Emblem Corp.* Order of dismissal of action filed June 29, 1981.

Reg. No. 75,365 (ALLIGATOR BRAND AND DESIGN), Lacoste Alligator S.A.; **Reg. No. 706,041** (ALLIGATOR), **same; Reg. No. 707,572** (GROTESQUE OF ALLIGATOR IN CIRCULAR DESIGN), **same; Reg. No. 867,953** (ALLIGATOR DESIGN), **same; Reg. No. 1,084,409** (DESIGN MISCELLANEOUS), **same; Reg. No. 1,101,539** (ALLIGATOR DESIGN), **same; Reg. No. 1,108,987** (DESIGN MISCELLANEOUS),

same; Reg. No. 1,108,988 (ALLIGATOR DESIGN), **same, filed** Oct. 24, 1980, D.C., S.D.N.Y., Doc. 80-Civ-6039 JMC, *Lacoste Alligator S.A., et ano* v. *Happy Appliques, Inc.* Defendants are permanently enjoined and restrained from further infringing Plaintiff's trademarks. Filed Mar. 5, 1981.

Reg. No. 297,594 ("VL" AND DESIGN), Louis Vuitton S.A., **filed** June 15, 1982, D.C., S.D.N.Y., Doc. 82-Civ-3919 CLB, *Louis Vuitton S.A.* v. *Walco Leather Co., Inc.* Action discontinued without costs to either party on June 18, 1982.

Reg. No. 322,591 (CORONET AND DESIGN), Michaels Stern & Co., Inc., **filed** Nov. 13, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7079, *Coronet Casuals, Inc.* v. *Coronet Sportswear, Inc.* Defendants are permanently enjoined from using the designation Coronet and from using any term or design similar in connection with any business. Filed June 2, 1982.

Reg. No. 398,015 (PRINTING INKS ROLLER PRODUCTS AND DESIGN), International Printing Pressman and Assistant's Union of North America; **Reg. No. 398,016** (PRINTING PRESSMAN AND ASSISTANTS AND DESIGN), **same; Reg. No. 398,017** (PRINTING PRESSMAN AND ASSISTANTS AND DESIGN), **same; Reg. No. 398,018** (PRINTING SPECIALTIES PAPER PRODUCTS AND DESIGN), **same; Reg. No. 398,019** (PRINTING SPECIALTIES PAPER PRODUCTS AND DESIGN), **same; Reg. No. 398,020** (SPECIALTIES DISTRIBUTORS PAPER PRODUCTS AND DESIGN), **same; Reg. No. 398,021** (SPECIALTIES DISTRIBUTORS PAPER PRODUCTS AND DESIGN), **same, filed** June 4, 1982, D.C., N.D. Ind. (Ft. Wayne), Doc. F82-202, *International Printing & Graphic Communications Union* v. *The Cammeron Corp., et al.*

Reg. No. 398,016. (See Reg. No. 398,015.)

Reg. No. 398,017. (See Reg. No. 398,105.)

Reg. No. 398,018. (See Reg. No. 398,015.)

Reg. No. 398,019. (See Reg. No. 398,015.)

Reg. No. 398,020. (See Reg. No. 398,015.)

Reg. No. 398,021. (See Reg. No. 398,015.)

Reg. No. 402,475 (AA AND DESIGN), Early California Industries, Inc., **filed** May 10, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-2278 IH, *Early California Industries, Inc., et al* v. *Pacific Eastern Trading Corp.*

Reg. No. 568,404 (ORKIN), Orkin Exterminating Co., Inc.; **Reg. No. 568,406** (ORKIN AND DESIGN), **same; Reg. No. 568,408** (ORKIN AND DESIGN), **same, filed** Mar. 25, 1982, D.C., S.D. W. Va. (Charleston), Doc. 82-2127, *Orkin Exterminating Co., Inc.* v. *Virgil D. Parrill, et al, doing business as Orko Termite & Pest Control.* **Same, filed** Dec. 30, 1980, D.C. N.J. (Newark), Doc. 80-4143, *Orkin Exterminating Co.* v. *Orkin Termite & Pest Control Corp.* Order dismissing action filed May 26, 1982.

Reg. No. 568,406. (See Reg. No. 568,404.)

Reg. No. 568,408. (See Reg. No. 568,404.)

Reg. No. 587,025 (AMANA), Amana Refrigeration, Inc.; **Reg. No. 605,819, same; Reg. No. 715,075, same; Reg. No. 889,068, same, filed** May 25,1982, D.C., S.D. Calif. (San Diego), Doc. 82-0662-E(I), *Amana Refrigeration, Inc.* v. *Alan C. Koonin, doing business as Cook and Cool West and doing business as La Mesa Cook and Cool.* **Same, filed** May 25, 1982, D.C., S.D. Calif. (San Diego), Doc. 82-0663-G(M), *Amana Refrigeration, Inc.* v. *Michael L. Edwards, doing business as Bea Vac-Sew Center.*

Reg. No. 605,819. (See Reg. No. 587,025.)

Reg. No. 636,452 (SARAH COVENTRY), C. H. Stuart, Inc.; **Reg. No. 777,377** (COVENTRY), **same; Reg. No. 910,513** (COVENTRY), **same; Reg. No. 910,515**(SARAH COVENTRY), **same; Reg. No. 923,157** (SARAH COVENTRY DOLL), **same; Reg. No. 950,771** (COVENTRY), **same; Reg. No. 951,916** (SARAH COVENTRY), **same; Reg. No. 998,466** (SARAH COVENTRY), **same; Reg. No. 1,018,020** (COVENTRY), **same; Reg. No. 1,021,070** (SARAH COVENTRY), **same; Reg. No. 1,026,740** (SARAH COVENTRY), **same; Reg. No. 1,028,681** (SARAH COVENTRY), **same; Reg. No. 1,030,146** (SARAH COVENTRY), **same; Reg. No. 1,032,316** (SARAH COVENTRY), **same; Reg. No. 1,036,813** (SARAH COVENTRY), **same; Reg. No. 1,040,510** (SARAH COVENTRY), **same; Reg. No. 1,043,517** (SARAH COVENTRY), **same; Reg. No. 1,067,233** (COVENTRY), **same; Reg. No. 1,068,149** (SARAH COVENTRY), **same; Reg. No. 1,104,820** (SARAH COVENTRY), **same; Reg. No. 1,118,099** (SARAH COVENTRY), **same; Reg. No. 1,120,400** (COVENTRY), **same; Reg. No. 1,122,860** (COVENTRY), **same, filed** July 7, 1980, D.C., N.D. Iowa (Cedar Rapids), Doc. C 80-1011, *C. H. Stuart, Inc.* v. *Coventry, Ltd.*

Reg. No. 672,568 (SUITIME), Suitime, Inc., **filed** Jan. 13, 1982, D.C., S.D.N.Y., Doc. 82-Civ-0219, *Suitime, Inc.* v. *That Girl in Miami, Inc.* Defendant agrees to refrain from copying, manufacturing, printing, etc. any stylized logo known as Suitime which bears a design reasonably similar to the stylized designs of plaintiff's labels. Filed June 11, 1982.

Reg. No. 706,041. (See Reg. No. 75,365.)

Reg. No. 707,572. (See Reg. No. 75,365.)

Reg. No. 711,754 (ELAVIL), Merck & Co., Inc., **filed** Nov. 21, 1980, D.C.N.J. (Newark), Doc. 80-3791, *Merck & Co., Inc.* v. *Barr Laboratories, Inc.* Consent judgment for permanent injunction filed Mar. 23, 1981.

Reg. No. 715,075. (See Reg. No. 587,025.)

Reg. No. 724,764 (PANASONIC AND DESIGN), Matsushita Electric Industrial Co.; **Reg. No. 746,848** (PANASONIC), **same; Reg. No. 774,063** (PANASONIC AND DESIGN), **same; Reg. No. 774,124** (PANASONIC AND DESIGN), **same; Reg. No. 800,220** (PANASONIC AND DESIGN), **same; Reg. No. 800,942** (PANASONIC AND DESIGN), **same; Reg. No. 808,808** (N PANASONIC AND DESIGN), **same; Reg. No. 808,840** (N PANASONIC AND DESIGN), **same; Reg. No. 808,841** (N PANASONIC AND DESIGN), **same; Reg. No. 808,849** (N PANASONIC AND DESIGN), **same; Reg. No. 808,862** (N PANASONIC AND DESIGN), **same; Reg. No. 838,277** (PANASONIC HI-TOP AND DESIGN), **same; Reg. No. 859,262** (PANASONIC), **same; Reg. No. 859,287** (PANASONIC), **same; Reg. No. 859,314** (PANASONIC), **same; Reg. No. 860,062** (PANASONIC), **same; Reg. No. 868,381** (PANASONIC), **same; Reg. No. 869,714** (PANASONIC), **same; Reg. No. 902,911** (PANASONIC), **same; Reg. No. 905,883** (PANASONIC), **same; Reg. No. 1,006,629** (PANASONIC), **same; Reg. No. 1,041,215** (PANASONIC), **same; Reg. No. 1,047,045** (PANASONIC), **same, filed** Mar. 20, 1979, D.C. Conn. (Hartford), Doc. H79-176, *Matsushita Electric Industrial Co.* v. *Wallcraft, Inc., et al.* Consent Judgment filed Sept. 9, 1980.

Reg. No. 746,848. (See Reg. No. 724,764.)

Reg. No. 758,839 (ST. CHARLES), St. Charles Mfg. Co.; **Reg. No. 1,093,131, same, filed** Feb. 24, 1981, D.C., S.D. Fla. (Ft. Lauderdale), Doc. 81-8073-Civ-JAG, *St. Charles Mfg. Co., et al* v. *Leonard Mercer, et al.* Final Order and Judgment filed Apr. 30, 1982.

Reg. No. 774,063. (See Reg. No. 724,764.)

Reg. No. 774,124. (See Reg. No. 724,764.)

Reg. No. 777,377. (See Reg. No. 636,452.)

Reg. No. 783,371 (DESIGN SUNBURST AND PYLON), Quality Inns International, Inc.; **Reg. No. 886,881** (QUALITY), **same; Reg. No. 1,183,294** (QUALITY INN), **same, filed** May 27, 1982, D.C., M.D. Fla. (Orlan-

do), Doc. 82-269-Orl-Civ-R, *Quality Inns International, Inc.* v. *Thrift Inns, Inc., et al.*

Reg. No. 800,220. (See Reg. No. 724,764.)

Reg. No. 800,942. (See Reg. No. 724,764.)

Reg. No. 808,808. (See Reg. No. 724,764.)

Reg. No. 808,840. (See Reg. No. 724,764.)

Reg. No. 808,841. (See Reg. No. 724,764.)

Reg. No. 808,849. (See Reg. No. 724,764.)

Reg. No. 808,862. (See Reg. No. 724,764.)

Reg. No. 838,277. (See Reg. No. 724,764.)

Reg. No. 855,063 (CARRERA), Carrera International Corp.; **Pat. No. 4,176,921,** Carrera International Corp.; EYEGLASSES HAVING REMOVABLE LENSES, **filed** Dec. 15, 1981, D.C., S.D. Fla. (Miami), Doc. 81-2801-CIV-SMA, *Carrera International Corp.* v. *Eye to Eye Optical, Inc., et al.*

Reg. No. 859,262. (See Reg. No. 724,764.)

Reg. No. 859,287. (See Reg. No. 724,764.)

Reg. No. 859,314 (PANASONIC), Matsushita Electric Industrial Co., Ltd.; **Reg. No. 902,911, same; Reg. No. 1,047,045, same, filed** Oct. 21, 1981, D.C., S.D.N.Y., Doc. 81-Civ-6461, *Matsushita Electric Industrial Co., Ltd.* v. *Advance Transistor Co.*

Reg. No. 859,314. (See Reg. No. 724,764.)

Reg. No. 860,062. (See Reg. No. 724,764.)

Reg. No. 867,953. (See Reg. No. 75,365.)

Reg. No. 868,381. (See Reg. No. 724,764.)

Reg. No. 869,714. (See Reg. No. 724,764.)

Reg. No. 870,475 (ROYAL COPENHAGEN DENMARK AND DESIGN), Den Kongelige Porcelainfabrik A/S; **Reg. No. 896,298, same; Reg. No. 903,866, same; Reg. No. 917,657** (MISCELLANEOUS DESIGN), **same; Reg. No. 1,117,301** (ROYAL COPENHAGEN), **same; Reg. No. 1,139,464** (ROYAL COPENHAGEN), **same; Reg. No. 1,144,568** (ROYAL COPENHAGEN), **same, filed** June 4, 1982, D.C.N.J. (Newark), Doc. 82-1785, *Royal Copenhagen Cone Co., Inc.* v. *Den Kongelige Porcelain Fabric A/S.*

Reg. No. 886,881. (See Reg. No. 783,371.)

Reg. No. 889,068. (See Reg. No. 587,025.)

Reg. No. 896,298. (See Reg. No. 870,475.)

Reg. No. 902,911. (See Reg. Nos. 724,764 and 859,314.)

Reg. No. 903,866. (See Reg. No. 870,475.)

Reg. No. 905,883. (See Reg. No. 724,764.)

Reg. No. 910,513. (See Reg. No. 636,452.)

Reg. No. 910,515. (See Reg. No. 636,452.)

Reg. No. 915,734 (URANTIA), Urantia Foundation; **Reg. No. 948,104, same; Reg. No. 1,013,544** (URANTIAN), **same; Reg. No. 1,089,942** (URANTIA), **same, filed** June 27, 1980, D.C., S.D. Tex. (Houston), Doc. H-80-1428, *Urantia Foundation* v. *First Urantia Society of Houston, et al.*

Reg. No. 916,450 (CHILDREN'S VILLAGE), Children's Village, Inc., **filed** June 17, 1982, D.C., S.D.N.Y., Doc. 82-Civ-3992 ADS, *Children's Village, Inc.* v. *Children's Village, U.S.A.*

Reg. No. 917,657. (See Reg. No. 870,475.)

Reg. No. 922,810 (BURKE), The Vecta Group, Inc., **filed** June 16, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 3779, *Steelcase, Inc.* v. *Kinetics Furniture, Inc.*

Reg. No. 923,157. (See Reg. No. 636,452.)

Reg. No. 937,009 (TAMIYA AND DESIGN), Shunsaku Tamiya, **filed** June 4, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 2802, *Model Rectifier Corp.* v. *Takachiho International, Inc., et al.*

Reg. No. 948,104. (See Reg. No. 915,734.)

Reg. No. 950,771. (See Reg. No. 636,452.)

Reg. No. 951,916. (See Reg. No. 636,452.)

Reg. No. 972,668 (RAFAEL), Cody Jaret Enterprises, Ltd.; **Reg. No. 1,139,987, same, filed** June 25, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4180 RO, *Cody Jaret Enterprises, Ltd.* v. *Feuerman Crevats, Inc.*

Reg. No. 984,005 (RALPH LAUREN AND DESIGN), Polo Fashions, Inc.; **Reg. No. 1,050,722, same; Reg. No. 1,053,873, same; Reg. No. 1,067,651** (POLO BY RALPH LAUREN), **same; Reg. No. 1,067,698** (POLO BY RALPH LAUREN), **same; Reg. No. 1,067,743** (POLO BY RALPH LAUREN), **same, filed** July 25, 1980, D.C., S.D.N.Y., Doc. 80-Civ-4278, *Polo Fashions, Inc., et ano* v. *Chalme, Inc., et al.*

Reg No. 996,511 (KOOL-N-LIGHT), Valmor Products Co.; **Reg. No. 1,025,306** (SKIN-SECRET), **same; Reg. No. 1,089,285** (VALMOR 6 IN ONE), **same, filed** Aug. 18, 1978, D.C., N.D. Ill. (Chicago), Doc. 78C3323, *Valmor Products Co.* v. *Warner-Elektra-Atlantic Co., et al.* Cause dismissed with prejudice on May 23, 1980.

Reg. No. 997,433 (POLY-SPERSE), Betz Laboratories, Inc., **filed** June 15, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-1637, *Betz Laboratories, Inc.* v. *Emco Chemical Co., Inc.*

Reg. No. 998,466. (See Reg. No. 636,452.)

Reg. No. 1,006,629. (See Reg. No. 724,764.)

Reg. No. 1,013,544. (See Reg. No. 915,734.)

Reg. No. 1,018,020. (See Reg. No. 636,452.)

Reg. No. 1,020,793 (DESIGN OF RABBIT HEAD), Playboy Enterprises, Inc., **filed** Aug. 11, 1981, D.C.N.J. (Camden), Doc. 81-2595, *Playboy Enterprises, Inc.* v. *Continental Key, Inc.* Order of Dismissal without costs and without prejudice filed June 28, 1982.

Reg. No. 1,021,070. (See Reg. No. 636,452.)

Reg. No. 1,025,306. (See Reg. No. 996,511.)

Reg. No. 1,026,740. (See Reg. No. 636,452.)

Reg. No. 1,028,681. (See Reg. No. 636,452.)

Reg. No. 1,030,146. (See Reg. No. 636,452.)

Reg. No. 1,032,316. (See Reg. No. 636,452.)

Reg. No. 1,036,813. (See Reg. No. 636,452.)

Reg. No. 1,040,510. (See Reg. No. 636,452.)

Reg. No. 1,041,215. (See Reg. No. 724,764.)

Reg. No. 1,043,517. (See Reg. No. 636,452.)

Reg. No. 1,045,985 (OP AND DESIGN), Ocean Pacific Sunwear, Inc., **filed** Aug. 7, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81-4009-LEW, *Ocean Pacific Sunwear, Inc.* v. *Andrew DeKovner, et al.*

Reg. No. 1,047,045. (See Reg. Nos. 724,764 and 859,314.)

Reg. No. 1,049,343 (DESIGN MISCELLANEOUS), Hachel International Co., Establishment; **Reg. No. 1,050,119** (WINGED DESIGN), **same; Reg. No. 1,058,847** (DESIGN MISCELLANEOUS), **same; Reg. No. 1,058,848** (DESIGN WITH FIGURES OF TWO CHILDREN), **same; Reg. No. 1,058,849** (DESIGN WITH FIGURE OF RUNNING MAN), **same; Reg. No. 1,058,850** (SUNBURST DESIGN), **same, filed** Dec. 16, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7832 CBM, *Hachel International Co.* v. *Nicos Mouyaris.* Stipulation and Order of Discontinuance filed May 25, 1982.

Reg. No. 1,050,119. (See Reg. No. 1,049,343.)

Reg. No. 1,050,722. (See Reg. No. 984,005.)

Reg. No. 1,053,873. (See Reg. No. 984,005.)

Reg. No. 1,058,847. (See Reg. No. 1,049,343.)

Reg. No. 1,058,848. (See Reg. No. 1,049,343.)

Reg. No. 1,058,849. (See Reg. No. 1,049,343.)

Reg. No. 1,058,850. (See Reg. No. 1,049,343.)

Reg. No. 1,067,233. (See Reg. No. 636,452.)

Reg. No. 1,067,651. (See Reg. No. 984,005.)

Reg. No. 1,067,698. (See Reg. No. 984,005.)

Reg. No. 1,067,743. (See Reg. No. 984,005.)

Reg. No. 1,068,149. (See Reg. No. 636,452.)

Reg. No. 1,078,330 (BUCK STOVE), Cebu Corp.; **Reg. No. 1,186,577** (BUCK STOVE AND DESIGN), **same, filed** June 1, 1982, D.C., M.D.N.C. (Greensboro), Doc. C-82-645-WS, *Buck Stove Corp.* v. *Joseph H. Brown.*

Reg. No. 1,081,795 (GIORGIO ARMANI), Giorgio Armani, S.p.A., **filed** May 20, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-2495 WMB (Bx), *Codefine, S.A. & Giorgio Armani, S.p.A.* v. *Colon.*

Reg. No. 1,084,409. (See Reg. No. 75,365.)

Reg. No. 1,086,395 (BOTTEGA VENETA), Bottega Veneta, Inc., **filed** Mar. 23, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1414 WMB, *Bottega Veneta, Inc.* v. *RHM Marketing Co., Inc., et al.* Permanent Injunction filed May 12, 1982.

Reg. No. 1,089,285. (See Reg. No. 996,511.)

Reg. No. 1,089,942. (See Reg. No. 915,734.)

Reg. No. 1,092,544 (CUTTERY), Creative Hairdressers, Inc.; **Reg. No. 1,095,509** (THE HAIR CUTTERY), **same, filed** May 28, 1982, D.C. Md. (Baltimore), Doc. B-82-1438, *Creative Hairdressers, Inc., doing business as The Hair Cuttery* v. *Dana Elmo, doing business as Clarks Lane Hair Cuttery.*

Reg. No. 1,093,131. (See Reg. No. 758,839.)

Reg. No. 1,093,346 (ANIMALS NATURALLY), Irwin Fleminger, **filed** May 20, 1982, D.C., S.D.N.Y., Doc. 82-Civ-3288 GLG, *Irwin Fleminger* v. *Fable Toy Co., Inc., et al.*

Reg. No. 1,095,509. (See Reg. No. 1,092,544.)

Reg. No. 1,096,110 (JORDACHE), Jordache Enterprises, Inc., **filed** Feb. 13, 1981, D.C., S.D.N.Y., Doc. 81-Civ-850 PNL, *Jordache Enterprises, Inc.* v. *S.R. & W. Knitwear, Inc., et al.* Defendants permanently enjoined from further infringing Plaintiff's trademark. Filed Feb. 17, 1982. **Same, filed** Apr. 15, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2375 (HFW), *Jordache Enterprises, Inc.* v. *Missprints, Ltd., et al.* **Same, filed** Dec. 22, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7952 (WCC), *Jordache Enterprises, Inc.* v. *Robetown Robes, Inc., doing business as Karla Fashions & Korvette Kottons, et al.* Action discontinued without costs to either party, on May 26, 1982. **Same, filed** June 17, 1982, D.C., S.D. Calif. (San Diego), Doc. 82-0733-G(H), *Jordache Enterprises, Inc.* v. *Squire of Calif.*

Reg. No. 1,098,333 (I.M.M.), Chicago Mercantile Exchange; **Reg. No. 1,118,427** (INTERNATIONAL MONETARY MARKET), **same, filed** June 7, 1982, D.C., N.D. Ill. (Chicago), Doc. 82C3541, *Chicago Mercantile Exchange* v. *H.K., James & Co., Inc.*

Reg. No. 1,101,539. (See Reg. No. 75,365.)

Reg. No. 1,104,820. (See Reg. No. 636,452.)

Reg. No. 1,105,850 (DESIGN MISCELLANEOUS), Binney & Smith, Inc., **filed** Mar. 22, 1982, D.C., N.D. Tex. (Dallas), Doc. CA3-82-0434R, *Binney & Smith, Inc.* v. *Alfred W. Zlogar, et al.* Defendants are enjoined and restrained from further infringing Plaintiff's trademark. Filed June 21, 1982.

Reg. No. 1,108,987. (See Reg. No. 75,365.)

Reg. No. 1,108,988. (See Reg. No. 75,365.)

Reg. No. 1,117,301. (See Reg. No. 870,475.)

Reg. No. 1,118,099. (See Reg. No. 636,452.)

Reg. No. 1,118,427. (See Reg. No. 1,098,333.)

Reg. No. 1,120,400. (See Reg. No. 636,452.)

Reg. No. 1,122,860. (See Reg. No. 636,452.)

Reg. No. 1,127,288 (THE REAL ESTATE EXPRESS), S.G.S. Real Estate Co., Inc., **filed** Nov. 10, 1981, D.C., S.D. Calif. (San Diego), Doc. 81-1137-T(H), *The Real Estate Express, Inc.* v. *Danny F. Stovall, doing business as The Realty Estate Express.* Defendant is permanently enjoined from infringing Plaintiff's trademark. Filed May 25, 1982.

Reg. No. 1,134,811 (MILITARY RENT-ALL AND DESIGN), United Rent-All, Inc., **filed** June 15, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 2981, *Military Rent-All, Inc.* v. *William J. Holt.*

Reg. No. 1,139,464. (See Reg. No. 870,475.)

Reg. No. 1,139,987. (See Reg. No. 972,668.)

Reg. No. 1,140,123 (ATHAN'S VILLAGE), Athan's Village, Inc., **filed** May 15, 1981, D.C., N.D. Ohio (Toledo), Doc. C81-325, *Athan's Village, Inc.* v. *The Greek Village Restaurant, et al.* Notice of dismissal without prejudice filed June 1, 1981.

Reg. No. 1,144,568. (See Reg. No. 870,475.)

Reg. No. 1,159,134 (SILHOUETTE), Gulf & Western Corp.; **Reg. No. 1,170,161** (SILHOUETTE ROMANCE AND DESIGN), **same, filed** Mar. 26, 1982, D.C. S.D.N.Y., Doc. 82-Civ-1910, *Gulf & Western Corp.* v. *Sharon Publications, Inc., et al.* Final Judgment and Injunction on Consent filed May 20, 1982.

Reg. No. 1,161,160 (BOMBER), American Submarine, **filed** Apr. 16, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 2316, *Americana Submarine, Inc.* v. *Andy Lavato, et al., doing business as Piasano's Pizza & Bomber Shop.* Defendants permanently restrained and enjoined from further infringing Plaintiff's trademark. Filed June 11, 1982.

Reg. No. 1,161,848 (KULL), Morris and Kuykendall, **filed** June 23, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4111 PNL, *Kull Productions, Inc.* v. *Krull Productions.*

Reg. No. 1,170,161. (See Reg. No. 1,159,134.)

Reg. No. 1,183,294. (See Reg. No. 783,371.)

Reg. No. 1,186,577. (See Reg. No. 1,078,330.)

Reg. No. 1,192,877 (KOENIG ART EMPORIUM), Art Management Services, Inc., **filed** June 2, 1982, D.C.N.J. (Newark), Doc. 82-1738, *Art Management Services, Inc.* v. *Art Emporium, Inc.*

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 2

[Docket No. 2512-96]

Trademark Applications and Examination Proceedings; Trademark Interference, Concurrent Use, Opposition and Cancellation Proceedings; Trademark Post-Registration Proceedings

Correction

In FR Doc. 82-17525, appearing as Part VI, at page 28324, in the issue of Tuesday, June 29, 1982, make the following changes:

1. On page 28324, in the second column, the fourth paragraph, the forth line, change "in" to "of";

2. On page 28324, in the third column, the sixth paragraph, the first line, change "2.83" to "2.88". In the same paragraph, line five, change "July 19," to "July 29,";

3. On page 28326, in the second column, the fifth paragraph, the first line, change "2.1120" to "2.120";

4. On page 28328, in the second column, the sixth paragraph, the first line, change "2.142" to "2.146";

5. On page 28328, in the third column, the fifth paragraph, the first line, change "2.145" to "2.165";

6. On page 28328, in the third column, the sixth paragraph, the first line, change "2.145" to "2.165";

7. On page 28329, in the second column, change the last word of the Part Heading from "COVERS" to "CASES";

8. On page 28329, in the third column, in §2.63(a), the sixth line, change "requirements" to requirement";

9. On page 28331, in the first column, §2.99(c), the first line should read "(c) ►Upon receipt of the copies required by";

10. On page 28334, in the second column, §2.120(b), line 17, change "of Rule" to "or Rule";

11. On page 28334, in the second column, §2.120(c), the first line, change "disposition" to "deposition";

12. On page 28334, §2.120(c)(2), the 25th line, change "39" to "30";

13. On page 28336, in the second column, §2.121(a)(2), the third line, remove the word "no";

14. On page 28336, in the second column, §2.121(b)(1) should as follows:

►(b) (1) The Trademark Trial and Appeal Board will schedule a testimony period for the plaintiff to present its case in chief, a testimony period for the defendant to present its case and to meet the case of the plaintiff, to present evidence in rebuttal.

15. On page 28336, in §2.121(b)(2) in the 20th line, change "representing" to "presenting";

16. On page 28336, in the second column, in §2.121, paragraph (c) should read as follows:

► (c) A testimony period which is solely rebuttal will be set for fifteen days. All other testimony periods will be set for thirty days. The periods may be extended by stipulation of the parties, approved by the Trademark Trial and Appeal Board, or, upon motion, by order of the Board.

17. On page 28338, in the second column, in §2.124 (d)(2), Line 13, change "be" to "by";

18. On page 28338, in the third column, in §2.124(e), the 8th line, change "office" to "officer";

19. On page 28338, in the third column, change the second heading for §2.125 to read as follows:

§2.125 ►Filing and Service◄ [Copies] of testimony.

20. On page 28339, in the third column, in §2.128(b), remove the third sentence;

21. On page 28339, in the third column, in §2.129(b), the first sentence, change "of time" to "or time".

22. On page 28340, in the first column, in §2.131, in line 31, change "to" to "of";

23. On page 28340, in the first column, in §2.132(a), line 8, change "more" to "move";

24. On page 28340, in the second column, in §2.132(b), the first line, change "of" to "or";

25. On page 28340, in the third column, in §2.134(b), the last line, change "be" to "by";

26. On page 28342, in the first column, in §2.165(a)(1), in the second line, change "2.612" to "2.162".

BILLING CODE 1505-01-M

PATENT NOTICES

Certificates of Correction for the Week of Aug. 24, 1982

Re. 30,597	4,275,013	4,319,383	4,329,980
Re. 30,891	4,275,256	4,319,446	4,330,273
Des. 264,161	4,278,288	4,319,950	4,330,537
Des. 264,316	4,279,717	4,320,240	4,330,579
Des. 264,802	4,281,300	4,320,348	4,330,661
3,700,328	4,282,541	4,320,501	4,330,836
3,982,207	4,282,905	4,320,507	4,330,892
3,983,028	4,283,721	4,320,998	4,330,922
4,007,848	4,285,738	4,321,270	4,331,057
4,054,539	4,288,759	4,321,999	4,331,517
4,138,577	4,290,665	4,322,176	4,331,605
4,151,068	4,292,314	4,322,225	4,331,694
4,180,336	4,292,457	4,322,574	4,331,713
4,180,856	4,292,700	4,322,676	4,331,753
4,185,166	4,292,749	4,322,905	4,331,990
4,210,451	4,292,920	4,323,067	4,332,041
4,211,972	4,293,229	4,324,298	4,332,256
4,212,857	4,293,429	4,324,645	4,332,681
4,215,054	4,296,220	4,325,145	4,333,203
4,215,536	4,296,786	4,325,220	4,333,402
4,223,108	4,297,697	4,325,464	4,333,569
4,224,576	4,299,808	4,325,723	4,333,640
4,228,221	4,300,852	4,325,882	4,333,914
4,229,620	4,301,469	4,325,958	4,333,966
4,229,718	4,303,150	4,326,201	4,334,029
4,230,609	4,303,943	4,326,213	4,334,191
4,230,726	4,305,914	4,326,247	4,334,388
4,232,123	4,306,462	4,326,261	4,334,583
4,234,897	4,306,774	4,326,961	4,334,745
4,236,003	4,307,179	4,327,010	4,334,756
4,238,313	4,308,388	4,327,366	4,334,829
4,238,486	4,309,089	4,327,378	4,334,939
4,240,897	4,309,092	4,327,441	4,335,050
4,240,918	4,310,006	4,327,492	4,335,149
4,243,708	4,311,102	4,327,814	4,335,274
4,246,482	4,311,606	4,328,085	4,335,328
4,247,318	4,311,618	4,328,132	4,335,610
4,252,966	4,311,884	4,328,592	4,335,756
4,255,505	4,311,920	4,328,614	4,335,835
4,256,809	4,312,381	4,328,865	4,336,193
4,256,840	4,313,973	4,329,151	4,336,300
4,257,371	4,314,754	4,329,275	4,336,434
4,258,871	4,315,063	4,329,510	4,336,450
4,259,484	4,316,253	4,329,530	4,336,484
4,261,567	4,316,360	4,329,554	4,337,103
4,272,864	4,317,717	4,329,575	4,337,399
4,274,882	4,319,257	4,329,623	

Disclaimers

3,796,048.—*Imre Annus, Gyula Cser, Sandor Florian, Gyorgy Horvath & Ferenc Kocsis,* Budapest, Hungary. TURBOCHARGED INTERNAL COMBUSTION ENGINE WITH RESONANCE INDUCTION PIPE SYSTEM. Patent dated Mar. 12, 1974. Disclaimer filed July 20, 1982, by the assignee, *Autoipari Kutato Intezet and Csepel Autogyar.*

Hereby enters this disclaimer to claims 1 and 4 of said patent.

4,127,588.—*Henri Ramuz,* Birsfelden, Switzerland. SULPHUR CONTAINING DERIVATIVES. Patent dated Nov. 28, 1978. Disclaimer filed May 10, 1982, by the assignee, *Hoffmann-La Roche, Inc.*

Hereby enters this disclaimer to claim 2 of said patent.

4,136,160.—*Steven R. Coh,* Baltimore, Md. SPECIFIC ASSAY FOR ACTIVE DEMYELINIZATION. Patent dated Jan. 23, 1979. Disclaimer filed June 28, 1982, by the inventor.

Hereby enters this disclaimer to claims 1 through 4 of said patent.

4,220,052.—*Jerome F. Sheldon,* Milwaukee, Wis. PIN RETENTION BY INTERFERENCE FIT DIFFERENTIAL. Patent dated Sept. 2, 1980. Disclaimer filed June 14, 1982, by the assignee, *Rexnord, Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,237,238.—*David T. De Gutseppi,* Wallingford, and *Richard A. Kolakowski,* Northford, Conn. POLYISOCYANURATE FOAMS BASED ON ESTERIFIED DMI OXIDATION RESIDUE ADDITIVE. Patent dated Dec. 2, 1980. Disclaimer filed June 28, 1982, by the assignee, *The Upjohn Co.*

Hereby enters this disclaimer to claims 1 through 7 inclusive of said patent.

4,301,968.—*Harvey L. Berger,* Poughkeepsie, and *Charles R. Brandow,* Highland, N.Y. TRANSDUCER ASSEMBLY, ULTRASONIC ATOMIZER AND FUEL BURNER. Patent dated Nov. 24, 1981. Disclaimer filed June 29, 1982, by the assignee, *Sono-Tek Corp.*

The term of this patent subsequent to May 8, 1996 has been disclaimed.

4,310,868.—*James B. Lillie,* Longmont, and *James L. Sanford,* Boulder, Co. FAST CYCLING, LOW POWER DRIVER FOR AN ELECTROMAGNETIC DEVICE. Patent dated Jan. 12, 1982. Disclaimer filed June 30, 1982, by the assignee, *International Business Machines Corp.*

Hereby enters this disclaimer to all claims of said patent.

Dedication

4,260,467.—*John L. Smith,* Mercerville, and *Bruce N. Whitlock,* Princeton, N. J. STATIC DROP MERCURY ELECTRODE. Patent dated Apr. 7, 1981. Dedication filed Apr. 22, 1982, by the assignee, *Princeton Applied Research Corp.*

Hereby dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
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New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 26, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-09-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-18-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-05-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-11-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	6-30-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-30-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	9-26-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-02-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-25-80

Expiration of patents: The patents within the range of numbers indicated below expire during June 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,186,004 to 3,192,535, inclusive

Plant Patents ..... Numbers 2,522 to 2,542 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,015

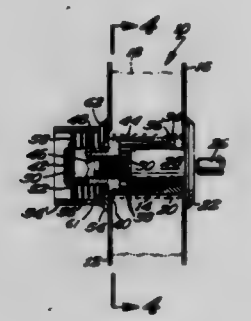
REEL ADAPTER FOR TIE MATERIAL AND METHOD OF USING SAME

Doyle A. Moore, Worthington, Minn., assignor to Bedford Industries, Inc., Worthington, Minn.

Original No. 4,117,988, dated Oct. 3, 1978, Ser. No. 678,923, Apr. 21, 1976. Application for reissue Sep. 22, 1980, Ser. No. 189,378

Int. Cl.[3] B65H *75/18, 75/22*

U.S. Cl. 242—71.9 17 Claims



1. A reel adapter for supporting a coil of tie material, said adapter comprising a *tube having about it a* tubular body member generally in the form of a cylinder, a flange member located at each end of the tubular body member, the flange members being parallel and oriented normal to the axis of the tube, fastening means for removably securing at least one of the flanges on the tube so that the coil of tie material can be placed on the adapter and the removable flange replaced and said adapter having means thereon for engaging the wound coil of tie material to the adapter to prevent rotation of the tie material on the adapter, said [tube] *tubular body member* comprising an expandable collet having a plurality of longitudinally extending circumferentially spaced segments with notches between them, the segments being free at one end and integrally connected at the other end and a collet [expanding means] *expander* operatively associated with the free ends of the segments to press the segments outward when the removable flange is moved in the direction of the other flange, *said means for engaging the wound coil of tie material to the adapter comprising said expandable collet of said tubular body member,* and the adapter includes a means *thereupon* for retaining the removable flange and collet [expanding means thereupon] *expander operably connected as a single removable assembly.*

Re. 31,016

ANTI-FRICTION SUCKER ROD GUIDE ASSEMBLY

Clarence Oster, Pecos, Tex., assignor to Conoco Inc., Ponca City, Okla.

Original No. 4,182,537, dated Jan. 8, 1980, Ser. No. 912,605, Jun. 5, 1978. Continuation-in-part of Ser. No. 784,098, Apr. 4, 1977, abandoned. Application for reissue Dec. 22, 1980, Ser. No. 218,599

Int. Cl.[3] F16C *29/00*

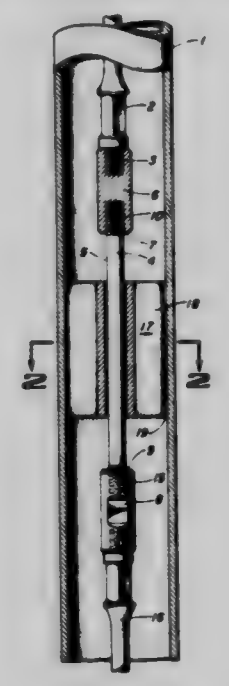
U.S. Cl. 308—4 A 8 Claims

1. An anti-friction sucker rod coupling and guide apparatus comprising in combination:

(a) an elongated polished rod member having a long axis, a standard male fitting on each end, and a polished [brass] *metal* anti-friction surface along its cylindrical length;

(b) a rod box having a shoulder perpendicular to the long axis of the rod member affixed at each end of the rod member for attaching the rod member within a sucker rod string such that the shoulders of the rod boxes form abutments encircling the rod member at each end;

(c) an elongated rod guide, fabricated of an anti-friction organic polymer having an inner bore along its long axis having a smooth surface contacting the polished [brass] *metal* anti-friction surface of the rod member, which is slideably positioned about the rod member, the rod guide having an outer diameter sufficient to functionally contact the inner diameter of a tubing string in which the rod guide is positioned, the rod guide including passageways



sufficient to permit passage of produced fluid therethrough, the rod guide having a shoulder perpendicular to the long axis of its inner bore at each of its ends adapted for abutment against the shoulders of the rod boxes affixed at each end of the rod member; the rod boxes adapted to maintain the rod guide on the rod member without deformation.

Re. 31,017

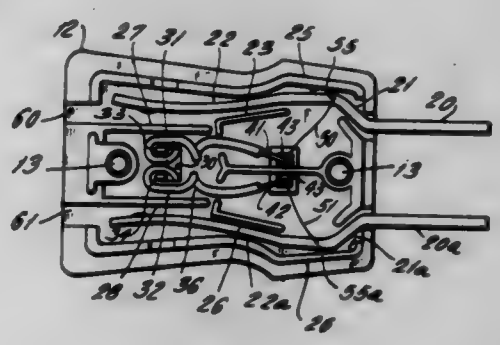
METHOD FOR FUSING MALE PLUG AT END OF POWER LINE CORD

Elliot Bernstein, Rockville Centre, N.Y., assignor to Bel Fuse Inc., Jersey City, N.J.

Original No. 4,176,902, dated Dec. 4, 1979, Ser. No. 846,036, Oct. 27, 1977. Application for reissue Mar. 31, 1980, Ser. No. 135,331

Int. Cl.[3] H01H *85/12;* H01R *13/68*

U.S. Cl. 339—147 P 3 Claims



4. [The fused plug of claim 1 wherein the wires of said line cord are stranded wires and wherein the fuse link comprises at least one selected strand of said wire] *A fused plug comprising a housing;*

a pair of prongs mounted in said housing and having substantially parallel extensions outside said housing;

an opening in said housing;
a line cord extending through said opening into said housing;
said line cord comprising a pair of wires, said wires being stranded wires and each said wire being in electrical contact with a respective one of said prongs; and
a fuse link between the end of at least one of said wires and one of said prongs adjacent said wire, said fuse link comprising at least one selected strand of said wire.

Re. 31,018

METHOD AND APPARATUS FOR SHIELDING THE EFFLUENT FROM PLASMA SPRAY GUN ASSEMBLIES

John H. Harrington, Warwick; Richard T. Smyth, and John D. Weir, both of Huntington, all of N.Y., assignors to Metco Inc., Westbury, N.Y.

Original No. 4,121,082, dated Oct. 17, 1978, Ser. No. 791,478, Apr. 27, 1977. Application for reissue Nov. 13, 1980, Ser. No. 206,589

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PL **47 Claims**

1. A plasma spray gun assembly for coating substrates comprising, in combination:

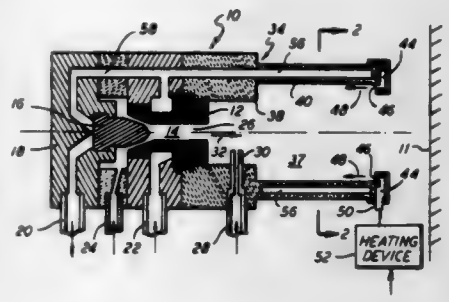
a nozzle electrode having a nozzle passage therethrough;

a rear electrode;

means for passing plasma-forming gas through the nozzle electrode;

means for passing an arc-forming current between said electrodes to form a plasma effluent;

means for introducing spray coating material into the plasma effluent;



a wall shroud for said plasma effluent extending from the exit of the nozzle electrode; and

means for forming a hot gas shroud for said plasma effluent at least within the wall shroud *directed at an angle such that the gas has a component of flow extending in a direction opposite to the direction of flow of the plasma effluent.*

PLANT PATENTS

GRANTED AUGUST 24, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,879

LILY PLANT: LILIUM 'MATCHLESS'

Edward A. McRae, 36752 SE. Bluff Rd., Boring, Oreg. 97009

Filed Oct. 27, 1980, Ser. No. 200,970
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its rapid natural propagation in field cultivation, by its vigorous growth when forced under glass, by its resistance to disease and virus, by its broad leaves, and in particular by the brilliant orange, unspotted color of its upright flowers.

4,880

LILY NAMED ESCORT

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Dec. 11, 1980, Ser. No. 215,535
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Oriental Hybrid lily plant substantially as herein shown and described, characterized by its very large, brilliantly colored flowers borne on strong, stiff, upwardly-projecting pedicels, by its short and compact pot growth habit, and by its dark green, glossy foliage.

4,881

LILY NAMED LAURA

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Dec. 11, 1980, Ser. No. 215,234
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Oriental Hybrid lily plant substantially as herein shown and described, characterized by its large, upwardly and outwardly facing flowers borne on strong stiff pedicels, by the substantially overall rosy pink coloring of the sepals and petals which are bordered by a frilly marginal band of white, and by the profuse production of flowers which have a long lasting quality whether on the plant or as cut flowers.

PATENTS

GRANTED AUG. 24, 1982

ERRATA

For CLASS	See PATENT NO.
412–005	4,345,349
279–062	4,345,445
374–020	4,345,455
374–106	4,345,470
374–188	4,345,471
524–219	4,346,024
524–141	4,346,025
524–157	4,346,026
524–377	4,346,027
524–417	4,346,028
549–302	4,346,038
549–289	4,346,039
549–505	4,346,040
549–498	4,346,041
549–557	4,346,042
373–137	4,346,252
378–110	4,346,297
005–441	4,346,298
378–024	4,346,299
206–455	4,346,300
369–044	4,346,471

PATENTS

GRANTED AUGUST 24, 1982

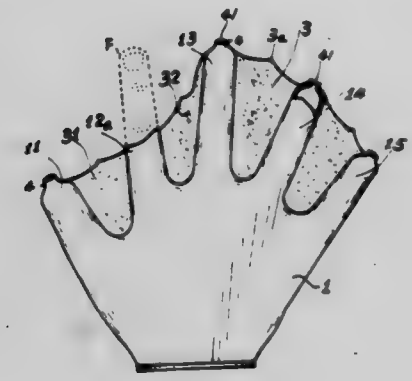
GENERAL AND MECHANICAL

4,345,335

WEBBED GLOVE FOR SWIMMING USE

Chao Shih-Li, 10-4 Fl., No. 62, Chang Chun Rd., Taipei, Taiwan

Filed Jun. 16, 1980, Ser. No. 159,820
Int. Cl.[3] A41D *19/00*; A63B *31/02*
U.S. Cl. 2—161 A **3 Claims**



1. A webbed swimming glove comprising:

a plurality of sheaths each defining a sheath cavity for accommodating a digit on a hand, each of said sheaths including an end portion terminating in an elongated sheath tip extending away from said end portion and defining an elongated aperture substantially smaller in cross-section than said sheath-cavity; and

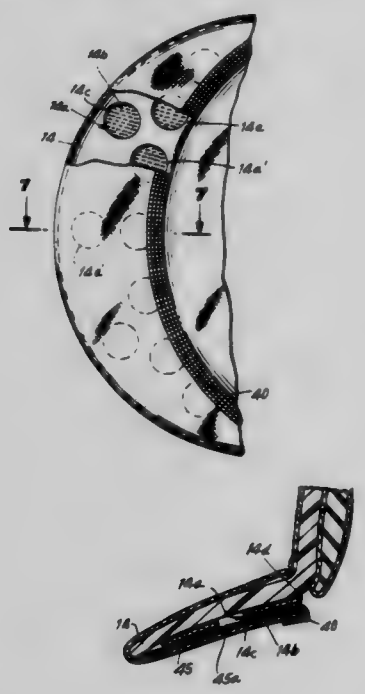
a web attached to each adjacent pair of said sheaths.

4,345,336

HEAD PROTECTING HEADWEAR

Mario A. Plastino, 659 Mastic Rd., Mastic, Long Island, N.Y. 11950

Continuation-in-part of Ser. No. 25,479, Mar. 30, 1979, abandoned. This application Jan. 25, 1980, Ser. No. 115,392
Int. Cl.[3] A42B *1/18, 3/00*
U.S. Cl. 2—187 **20 Claims**



1. Headwear for protecting the head of a wearer comprising:

a resilient shell having a crown portion, a head receiving opening defined at the bottom of the crown portion, and a peak extending downwardly and outwardly from the head receiving opening at the front of said shell;

cushioning means disposed within said shell for cushioning the head of a wearer;

a removable cover generally shaped to conform to the contour of said shell, said cover including an opening for receiving said shell, a crown portion for fitting over the crown of said shell, a peak portion for receiving the peak of said shell, and elastic means for positioning and securing said cover in place over said shell; and

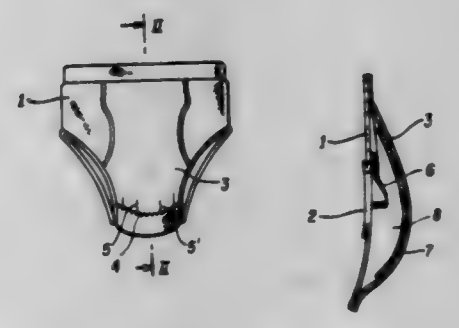
means for removably connecting the peak of said shell to the peak portion of said cover, such that said connecting means and said elastic means coact to snugly secure said cover to said shell and prevent slippage thereof.

4,345,337

MAN'S BRIEFS

Seun Y. Chung, 1102 Shinrim 8-dong, Kwanak-ku, Seoul, Rep. of Korea

Filed Aug. 19, 1980, Ser. No. 179,482
Int. Cl.[3] A41B *9/02*
U.S. Cl. 2—405 **2 Claims**



1. Briefs for the support of male genetalia, said genetalia including a penis and a seminal vesicle, said briefs having an opening formed therein for the passage of said genetalia and comprising:

a cover member attached to said briefs and located adjacent said opening formed in said briefs, said cover member and said briefs forming a space for the placement of said genetila;

a band-type ring for support of said penis attached to an upper portion of said opening formed in said briefs, said ring having a lower arcuate supporting surface disposed substantially perpendicular to said opening for supporting said penis such that said penis is separated from and prevented from contacting said seminal vesicle;

a coarse rubbing cloth attached to an interior portion of said cover member such that said rubbing cloth rubs said penis and dulls the senses of said penis; and

a plurality of wrinkles formed on a bottom portion of said cover.

4,345,338

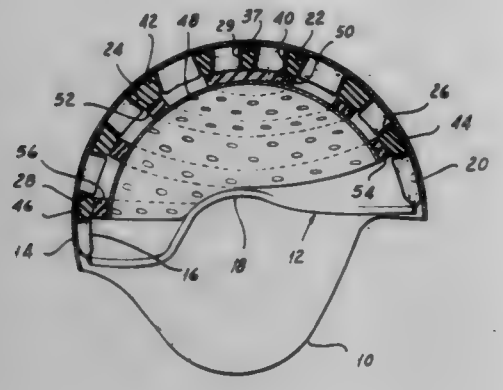
CUSTOM-FITTED HELMET AND METHOD OF MAKING SAME

Leonard P. Frieder, Jr., Dalton, and Michael R. Lavender, Vandling, both of Pa., assignors to Gentex Corporation, Carbondale, Pa.

Filed Oct. 5, 1979, Ser. No. 82,296
Int. Cl.[3] A42B *3/00, 3/02*
U.S. Cl. 2—414 **3 Claims**

1. A custom-fitted helmet assembly including in combination a sealed elastomer sack having opposed convex and concave surface portions generally conforming to the top of a wearer's head and containing a rigidified resin composite, said resin composite having been rigidified in situ by placement of said sack over the wearer's head after mechanical deformation of said sack to initiate rigidification, a rigid outer shell secured to said convex surface portion of said sack, and an inner helmet assembly adapted to fit over the wearer's head, said sack being

formed with recesses in said concave surface portion, said inner helmet assembly having resilient portions received by



said recesses and energy-absorbing portions disposed between said resilient portions and the wearer's head.

4,345,339

BIOLOGICALLY IMPLANTABLE MEMBER FOR A TENDON AND/OR LIGAMENT

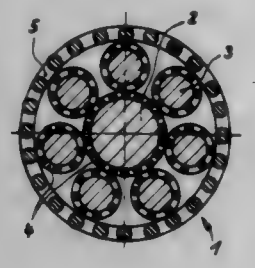
Arnold Müller, Bachs, and Gerhard Bröckel, Seuzach, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 19, 1981, Ser. No. 265,067

Claims priority, application Switzerland, Jun. 3, 1980, 4278/80

Int. Cl.³ A61F *1/24*

U.S. Cl. 3—1 **12 Claims**



1. A biologically implantable member for tendons and ligaments comprising

at least one rope having a core filament; a first tube encasing said filament therein in relatively longitudinally movable relation; at least one ring of outer filaments surrounding said first tube and said core filament, each said outer filament being of smaller diameter than said core filament; a plurality of tubes, each said tube encasing a respective outer filament therein in relatively longitudinally movable relation; and a cover encircling said ring whereby said rope has an outwardly increasing bending elasticity from said core filament.

4,345,340

STENT FOR MITRAL/TRICUSPID HEART VALVE

Jonathan J. Rosen, Fountain Valley, Calif., assignor to Vascor, Inc., Anaheim, Calif.

Filed May 7, 1981, Ser. No. 261,392

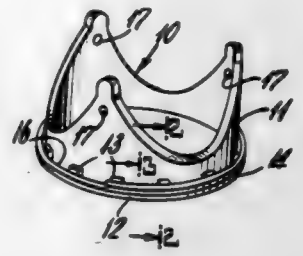
Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **16 Claims**

1. A stent for a trileaflet heart valve comprising

a body portion of a cylindrical section terminating at one end in three circumferentially-spaced commissure posts and at the other end in a flange extending radially outward from the base of said cylindrical section;

said flange including an annulus of reduced thickness defining a channel adjacent the base of said cylindrical section;



said channel being interrupted by a plurality of spaced, radially-extending, reinforcing ribs traversing said channel.

4,345,341

VACUUM SUCTION TYPE URINATING AID

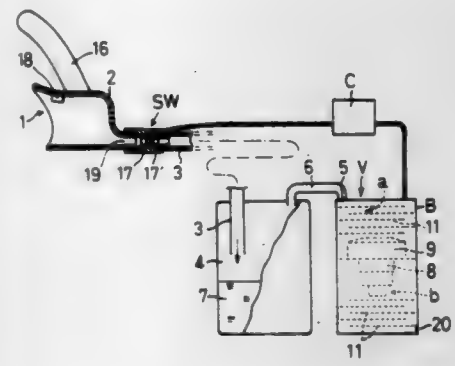
Shuichi Saito, Funabashi, Japan, assignor to Kimura Bed Mfg. Company Limited, Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,883

Claims priority, application Japan, Apr. 25, 1980, 55-57026; Apr. 25, 1980, 55-57027

Int. Cl.³ A61F *5/44*; A61M *1/00*; F01M *1/10*

U.S. Cl. 4—301 **5 Claims**



1. A vacuum suction type urinating aid comprising:

a urine receiver having a urine suction opening adapted to be applied to the urinating region of a subject to receive therefrom urine and a urine outlet;

a urine tank;

a urine transport tube connected between said urine outlet and said urine tank; and

vacuum suction device means connected to said urine tank for creating a vacuum to form an air current drawing any urine in said urine receiver through said urine transport tube into said urine tank, said vacuum suction device means comprising:

a casing having at opposite ends thereof an inlet connected to said urine tank for receiving said air current and an outlet for discharging said air current;

said casing being formed by two casing halves divided longitudinally of said opposite ends;

each said casing half having formed internally thereof a plurality of transversely extending, longitudinally spaced grooves, each said groove being defined by a pair of transversely extending, longitudinally spaced protrusions extending inwardly from the respective said casing half;

a suction motor including an impeller for creating said air current;

a partition and support plate supporting said motor, said partition and support plate fitting within respective said grooves in said casing halves with said casing halves joined together, such that an air passage extends through said casing from said inlet, through said impeller to said outlet;

a first plurality of silencing partition plates fitting within

respective said grooves of said casing halves between said inlet and said impeller;

a second plurality of silencing partition plates fitting within respective said grooves of said casing halves between said impeller and said outlet; and

said silencing plates altering the direction of said air passage and diverting the path of said air current through said casing, thereby reducing the level of noise generated from said vacuum suction device means.

4,345,342

VACUUM SUCTION TYPE URINATING AID

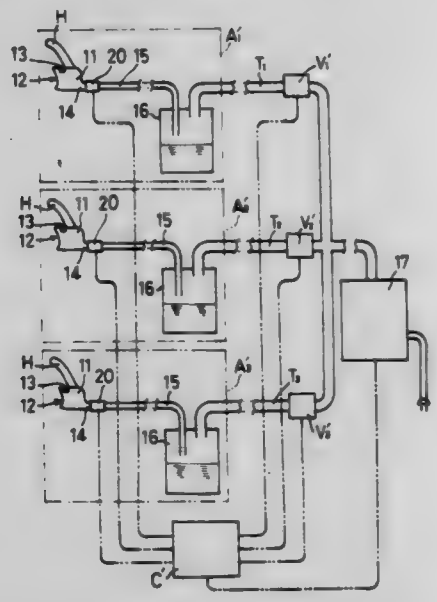
Shuiichi Saito, Funabashi, Japan, assignor to Kimura Bed Mfg. Company Limited, Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,884

Claims priority, application Japan, Mar. 14, 1980, 55-33372[U]; Mar. 14, 1980, 55-33373[U]

Int. Cl.³ A61F *5/44*; A61M *1/00*

U.S. Cl. 4—301 **2 Claims**



1. A vacuum suction type urinating aid capable of simultaneous use by plural subjects, said aid comprising:

a plurality of urine suction units capable of simultaneous use by different subjects, each said unit including a urine receiver having a urine suction opening adapted to be applied to the urinating region of a particular subject to receive therefrom urine, an air suction opening separate from said urine suction opening, and a urine outlet, a urine tank, and a urine transport tube connected between said urine outlet and said urine tank;

a plurality of vacuum suction tubes, each said vacuum suction tube having a first end connected to an upper portion of a respective said urine tank and a second end;

each said vacuum suction tube having therein a respective valve movable between a first position blocking the respective said vacuum suction tube and a second position opening said respective vacuum suction tube;

means, comprising a single vacuum suction device commonly connected to said second ends of all of said vacuum suction tubes, for, with respect to each said urine suction unit when the respective said valve is in said second position thereof, drawing air into the respective said urine receiver through said air suction hole therein and for drawing air and any urine in said respective urine receiver through the respective said urine outlet and urine transport tube into the respective said urine tank; and

each said urine suction unit including control means, connected to the respective said valve and to said single vacuum suction device, for selectively operating said single vacuum suction device and moving said respective valve from said first position thereof to said second position thereof, whereby when each said control means is not operated said respective valve is maintained in said first position thereof and, in the absence of operation of any other of said control means, said single vacuum suction device is stopped.

4,345,343

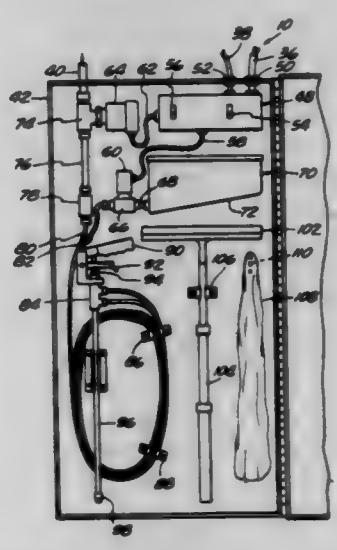
APPARATUS FOR THE CLEANING AND SANITATION OF A RESTROOM OR LAVORATORY

Matthew W. Shipman, 300 S. Westgate Ave., Los Angeles, Calif. 90049

Filed Sep. 2, 1980, Ser. No. 183,262

Int. Cl.³ A47K *4/00*

U.S. Cl. 4—662 **10 Claims**



1. An apparatus for cleaning and sanitizing a restroom facility having multiple sidewalls and a water line inside the restroom facility, the apparatus comprising,

a retrofitable housing,

means for securing said housing to at least one of said sidewalls of said restroom facility,

means for storing a cleaning solution, said storing means suspended within said housing,

first means for controlling water flow from said water line inside said restroom facility into said housing, second means for controlling cleaning solution flow from said storing means, said first and second controlling means contained within said housing,

a spray gun flexibly attached to said housing,

a mixing chamber adapted to receive said water flow and said cleaning solution flow, said mixing chamber disposed within said housing, said mixing chamber further adapted to direct said water flow and cleaning solution flow to said spray gun.

4,345,344

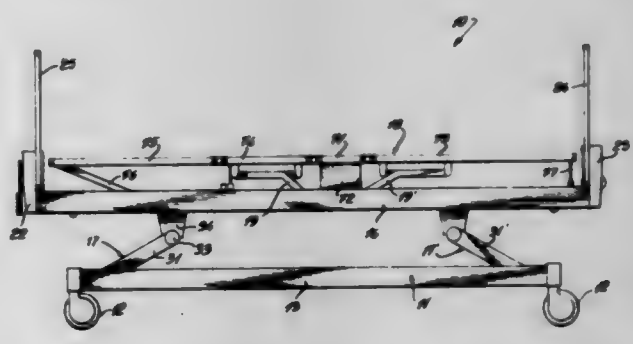
HOSPITAL BED

Andre Gadoury; Victor Pinheiro, both of Ste-Foy, and Martin Pernicka, Loretteville, all of Canada, assignors to Centre de Recherche Industrielle du Quebec, Ste-Foy, Canada

Filed Apr. 8, 1980, Ser. No. 138,554

Int. Cl.³ A61G *7/00*

U.S. Cl. 5—62 **18 Claims**



1. A hospital bed comprising a base frame, a displaceable frame supported above said base frame by adjustable leg sup-

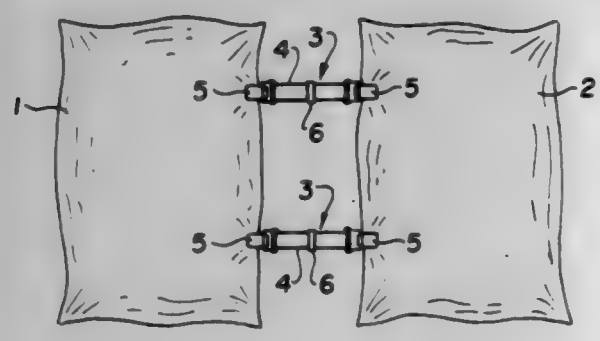
ports, said leg supports being connected in pair and spaced apart adjacent a respective end of said frames, said leg supports of each pair operating in unison and each having an upper link arm and a lower link arm, said link arms being connected at a common end to a fixed pivot rod for displacement of their axes thereabout, said pivot rod being fixed relative to said displaceable frame, first drive means connected to said adjustable leg supports for causing said displaceable frame to be displaced above said base frame, and follower means connected to a lower end of said leg supports to maintain said displaceable frame in lateral relationship with said base frame when displaced relative thereof.

4,345,345

HEAD SUPPORT

Leonard Holtz, 418 Jordan St., Oceanside, N.Y. 11572

Filed May 21, 1980, Ser. No. 151,908
Int. Cl.³ A47G 9/00
U.S. Cl. 5—437 **7 Claims**



1. A head support arrangement for supporting the head of a user when the user is seated, comprising:

a pair of individual, separable, pillows (1,2), each pillow having an edge surrounding the periphery thereof which includes at least one substantially straight elongated edge, said pillows being dimensioned to extend from the shoulders to above the head of a user; and

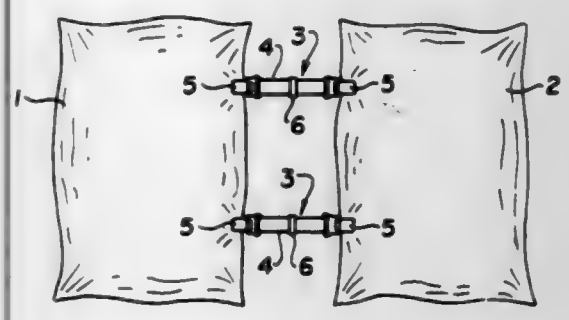
connecting means including at least one connecting member (3) having quick releasable means (5) at the respective opposite ends thereof, said quick releasable means (5) each being releasably connected to said substantially straight elongated edge of a respective pillow so as to extend between said substantially straight elongated edges and connect the individual pillows together with a spacing between the interconnected substantially straight elongated edges of the respective pillows and with said connecting member located to be behind a head of a user when the head of a user is placed on the pillows in the vicinity of the spacing between the pillows, said connecting means spanning a distance in the longitudinal direction of said substantially straight elongated edge of each of said pillows which is substantially less than the length of said substantially straight elongated edges of the pillows being connected so that the pillows have free, unconnected opposing substantially straight elongated edge portions over a central major portion of said substantially straight elongated edges where the head of the user is placed on said pillows such that the user's head does not contact a connecting means, whereby the pillows provide lateral or side support to the head of the user without utilizing any means extending around to the front of the neck or head of the user, said connecting means being substantially small relative to the pillows and quickly releasable from the pillows without damaging the pillows to permit separation of the pillows.

4,345,346

HEAD SUPPORT

Leonard Holtz, 418 Jordan St., Oceanside, N.Y. 11572

Division of Ser. No. 151,908, May 21, 1980. This application Dec. 1, 1980, Ser. No. 211,841
Int. Cl.³ A47G 9/00
U.S. Cl. 5—437 **6 Claims**



1. A method for supporting the head of a person and for preventing the head of the person from falling to the side while the person is seated, comprising:

providing a pair of individual, separable, pillows, each pillow having an edge surrounding the periphery thereof which includes at least one substantially straight elongated peripheral edge, said pillows being dimensioned to extend from the shoulders to above the head of a user;

interconnecting said pair of individual, separable, pillows along said at least one substantially straight elongated edge of each of said pillows so that said pillows are spaced from each other by means of at least one connecting member having quick releasable means at the respective opposite ends thereof, each quick releasable means of said at least one connecting member being releasably connected to a small portion of said substantially straight elongated edge of a respective pillow so as to extend between said substantially straight elongated edges and to connect the individual pillows together with said spacing between opposing substantially straight elongated edges of the respective pillows, said small portion of said substantially straight elongated edges being substantially smaller than the lengths of said substantially straight elongated edges of said pillows; and

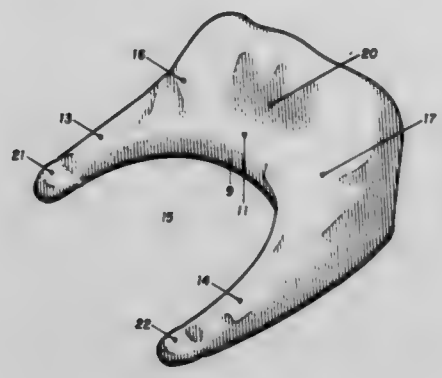
locating said interconnected, spaced pillows behind the head of the seated person with the person' head in the vicinity of the spacing between the pillows, with the pillows resting on the shoulders of the seated person and with said connecting member located behind but out of contact with the head of the user when the head of the user is placed on the pillows in the vicinity of said spacing between the pillows, the pillows being located such that the head of the user contacts the pillows in the vicinity of the central portion of said substantially straight elongated edge portions of the pillows;

said at least one connecting member being substantially thinner in the direction perpendicular to the lengthwise direction thereof than the length of said substantially straight elongated edges of said pillows being connected together so that the pillows have free, unconnected opposing substantially straight elongated edge portions over a central major portion of said substantially straight elongated edges where the head of the user is placed on said pillows such that the user's head does not contact a connecting means, whereby the pillows provide lateral or side support to the head of the user without utilizing any means extending around to the front of the neck or head of the user, and said at least one connecting member being substantially small relative to the pillows and quickly releasable from the pillows without damaging the pillows to permit quick and easy separation of the pillows from each other after use.

4,345,347
HEAD AND NECK SUPPORT CUSHIONS

Philip A. Kantor, 224 Gregory Ave., West Orange, N.J. 07052

Filed Apr. 24, 1980, Ser. No. 143,425
Int. Cl.[3] A47G 9/00
U.S. Cl. 5—441 1 Claim

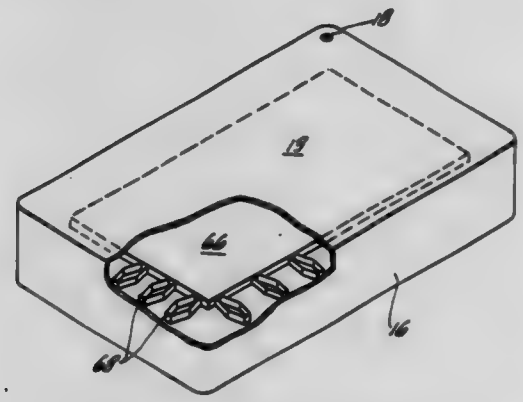


1. An inflatable head and neck support cushion in a modified "horseshoe" shape, designed to rest on the shoulders of a person relaxing or working in a semi-reclining position in any hospital bed, passenger seat or high-backed chair; such that the head and neck are received by the interior middle portion of the "horseshoe", such middle portion permanently embodying the contour of the back of the head and neck of a person, the two tips of the "horseshoe" being long enough to extend over the shoulders of the person and widely enough disposed apart from one another so that there is unrestricted circulation of air to the sides of the neck and face of the person, the "horseshoe" tips containing at their extremities tiny weights, slightly heavier than the inflated middle portion of the "horseshoe", in order to stabilize the entire cushion on the shoulders of a person.

4,345,348
WATERBED MATTRESS WITH A BAFFLE

Charles P. Hall, Muir Beach, Calif., assignor to Monterey Manufacturing, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 949,963, Oct. 10, 1978, Pat. No. 4,247,962. This application Nov. 19, 1979, Ser. No. 95,214
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.[3] A47C 27/08
U.S. Cl. 5—450 32 Claims



1. In a waterbed mattress having an enclosing structure comprising a horizontally extending top wall, a horizontally extending bottom wall, and side walls, the improvement comprising a horizontally extending baffle for reducing wave-like motion of water in the mattress disposed within the enclosing structure and vertically spaced apart from the bottom wall when the mattress is filled with water, the baffle having a horizontal extent corresponding generally to the sleeping surface of the mattress and permitting water to circulate between the top wall and the bottom wall.

4,345,349
ADHESIVE FOR PERFECT BOUND BOOKS AND METHOD OF USING SAME

Thomas P. Flanagan, Green Brook, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jul. 30, 1981, Ser. No. 288,500
Int. Cl.[3] B42C 9/02; C08L 91/06, 93/04
U.S. Cl. 412—5 7 Claims

1. A non-pressure sensitive hot melt adhesive composition comprising on a weight basis:

(1) 15–30% of at least one block polymer having the general configuration

A-B-A

wherein A is a non-elastomeric polymer block derived from the moieties of a monovinyl aromatic hydrocarbon radical and B is an elastomeric polymer block derived from the moieties of a conjugated diene monomer;

(2) 5–10% of at least one ethylene vinyl acetate copolymer containing 17 to 42% vinyl acetate, where the weight ratio of block polymer to ethylene vinyl acetate copolymer is within the range of 1.75:1 to 6:1;

(3) 25–40% of at least one rosin ester tackifier selected from the group consisting of glycerol and pentaerythritol esters of natural and modified rosins;

(4) 25–35% of at least one wax diluent which is solid at room temperature; and

(5) 0.5 to 3% of at least one stabilizer; said composition being characterized by an ability to form a film exhibiting Instron yield strengths of 100 to 250 psi. and a low temperature flexibility of less than 10° F., said composition having a melt viscosity of 3,000 to 30,000 cps. at 350° F. and being capable of setting up in less than 30 seconds and, when applied to roughened signatures using perfect binding techniques yielding a book having an adhesion page pull on coated stock of at least 10 pounds per page having a length of 7⅞ to 7¼ inches.

5. A method for binding books containing a plurality of sheets by means of the perfect binding method, the steps for producing a spine for said books comprising:

(A) securing the edges of such sheets and applying thereto a molten film of a hot melt non-pressure sensitive adhesive composition comprising on a weight basis:

(1) 15–30% of at least the block polymer having the general configuration

A-B-A

wherein A is a non-elastomeric polymer block derived from the moieties of a monovinyl aromatic hydrocarbon radical and B is an elastomeric polymer block derived from the moieties of a conjugated diene monomer;

(2) 5–10% of at least one ethylene vinyl acetate copolymer containing 17% to 42% vinyl acetate; where the weight ratio of the block polymer to the ethylene vinyl acetate copolymer is within the range of 1.75:1 to 6:1;

(3) 25–40% of at least one rosin ester tackifier selected from the group consisting of glycerol and pentaerythritol esters of natural and modified rosin,

(4) 25–35% of at least one wax diluent which is solid at room temperature; and

(5) 0.5 to 3% of at least one stabilizer; said film being characterized by an Instron yield strength of 100 to 250 psi., and a low temperature flexibility of less than 10° F., said composition having a melt viscosity of 3,000 to 30,000 cps. at 350° F. and a set up time of less than 30 seconds and, when applied to roughened signatures using perfect binding techniques yielding a book having an adhesion page pull on coated stock of at least 10 pounds per page having a length of 7⅞ to 7¼ inches;

(B) allowing said film to solidify.

4,345,350

PIPELINE CLEANING EQUIPMENT

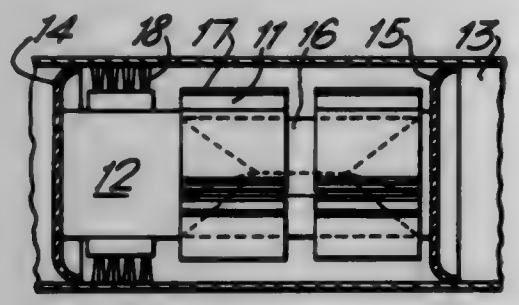
John F. Burd, Newcastle upon Tyne, England, assignor to British Gas Corporation, London, England

Filed Mar. 27, 1981, Ser. No. 248,353

Claims priority, application United Kingdom, Jan. 26, 1981, 8102288

Int. Cl.[3] B08B *9/04*

U.S. Cl. 15—104.06 R 7 Claims



1. A pig for the removal of ferromagnetic debris from the internal surface of a pipeline comprising magnetic pole generating means for generating a plurality of magnetic poles comprising blocks of hard ferromagnetic material, mounting means for said magnetic pole generating means to position said magnetic pole generating means adjacent to but spaced apart from the nominal position of the internal surface of the pipeline, spacer means contiguous with said mounting means to space magnetic poles of opposite polarity by a distance of the same order of magnitude as the spacing of said magnetic pole generating means from the nominal position of the internal surface of the pipeline.

4,345,351

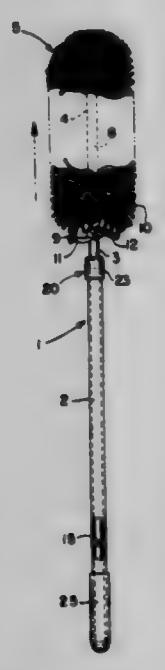
EXTENSION HANDLE FOR DUST MOPS AND THE LIKE

Theron C. Moss, Cleveland; Earl Boring, McDonald, and Jerry Hjellum, Cleveland, all of Tenn., assignors to SECO Industries, Inc., Cleveland, Tenn.

Filed Mar. 2, 1981, Ser. No. 239,501

Int. Cl.[3] B25G *1/04*

U.S. Cl. 15—144 B 11 Claims



1. An extension handle for dust mops and the like comprising an outer tubular member and an inner tubular member telescopically received in said outer tubular member, said inner and outer tubular members beiang axially movable relative to each other to vary the length of said extension handle, one of said tubular members having a protrusion thereon frictionally engaging the other tubular member to provide sufficient resistance to such relative axial movement to retain said extension handle in the desired adjusted position during use, and the other tubular member being made of relatively thin-walled plastic tubing to permit some deformation thereof according to the amount of interference between said protrusion and said other tubular member.

4,345,352

WINDOW WIPER FOR VEHICLE

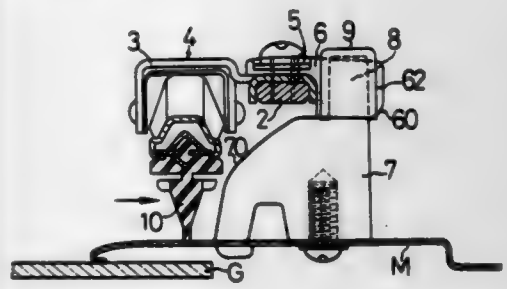
Gosaku Terabayashi, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 11, 1980, Ser. No. 186,266

Claims priority, application Japan, Sep. 15, 1979, 54-127100[U]

Int. Cl.[3] B60S *1/04*

U.S. Cl. 15—250.16 4 Claims



1. A window wiper for wiping the glass of a windshield of a vehicle comprising:

a wiper blade which is positioned along and adjacent the lower edge of said windshield glass when said wiper is stopped and at rest;

a wiper arm oscillational about a transverse axis at one end thereof;

a blade holder connected to the other end of said arm and rockably supporting the central portion of said wiper blade to that side of said arm which faces upwardly when said wiper is at rest;

a slide member fixedly mounted to said blade holder and having a portion on the other side of said arm projecting toward said windshield glass, that surface of said portion opposed to said glass being smooth and having a convexly curved edge which is lowermost when said wiper is at rest; and

a fixed guide member adjacent the lower edge of said windshield glass at a position engageable by said projecting portion when said wiper blade moves to its rest position, the surface of said guide member opposed to said projecting portion being inclined for camming engagement with said projecting portion to lift said wiper blade as the latter moves toward said rest position to minimize deformation of the wiping portion of said blade when in stopped position, and said guide member having a stop portion engageable by said slide member for stopping downward movement of said wiper blade at a predetermined position of rest

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4,345,353

FILTERING DEVICE

George L. Sommerfeld, Minneapolis, Minn., assignor to Tennant Company, Minneapolis, Minn.

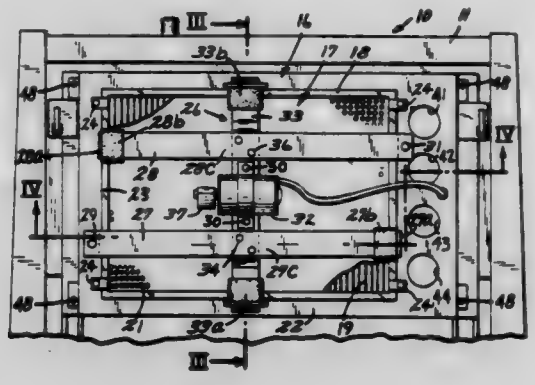
Continuation-in-part of Ser. No. 60,012, Jul. 23, 1979, Pat. No. 4,258,451. This application Nov. 24, 1980, Ser. No. 210,040

Int. Cl.[3] B01D *46/04*

U.S. Cl. 15—349 11 Claims

1. A sweeper comprising a body structure, a plurality of wheels supporting said body structure, and a sweeper housing, said body structure including a hopper, a vacuum pump and a dust filter, said hopper serving to store debris picked up by said sweeper, said vacuum pump serving to draw a partial vacuum in said sweeper housing thereby providing a moving airstream, said dust filter being disposed in said airstream to remove dust

particles from said airstream, said dust filter comprising a filter housing, a pleated planar filter medium, support means for said filter medium and a striker mechanism for removing accumulated dust from said filter medium, said striker mechanism including at least one strap, said strap having a first end secured with respect to said filter housing, said strap having a



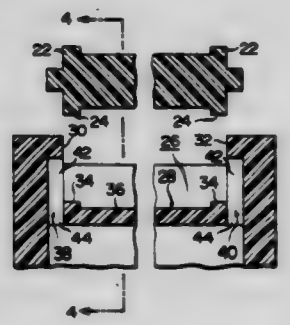
second end which is free to move with respect to said filter housing and filter medium, said second end carrying at least one hammer, said strap and hammer overlying the upper edges of the pleated filter medium, and an oscillator supported on said strap intermediate said first and second ends for imparting movement to said strap and hammer to impart shock to said filter medium thereby removing dust accumulation.

4,345,354

HINGE MECHANISM

Hiroki Ichikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,182
Claims priority, application Japan, Feb. 26, 1979, 54-23832[U]
Int. Cl.³ E05D *7/10*
U.S. Cl. 16—257 **5 Claims**



1. A hinge mechanism comprising:

an eleastically deformable first member;

a pair of pins coaxially and integrally mounted on said first member and having base ends disposed on said first member and free ends extended in opposite directions relative to each other;

said first member being elastically deformable to reduce the distance between said free ends of said oppositely extending pins;

a second member made by an injection molding and having a bottom surface and a pair of side surfaces on opposite sides of said bottom surface, said bottom and side surfaces at least partially defining a recess, and a pair of grooves each having a first end portion opening only in a respective said side surface of said recess and each rotatably receiving one of said pins, each groove further having a second end portion opening in a portion of surfaces of said second member which is located in the direction of the depth of said recess, said grooves being closed on the respective sides thereof opposite said recess; and

a pair of flanges located at said base ends of said pins, each flange having a peripheral surface having a substantially circular cross section which is coaxially arranged with said pins and slidably contacting with said bottom surface of said second member;

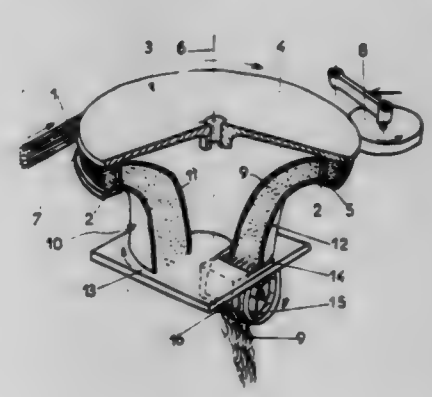
whereby said pins are received in said first portions of said grooves by applying an external force to deform said first member to reduce the distance between the free ends of said pins so as to make the distance between said free ends of said pins less than the distance between said first portions of said grooves, aligning said free ends of said pins with said grooves and then removing said external force from said first member so that said first member is rotatably connected to said second member by said pins received in said first portions of said grooves and said bottom surface which slidably contacts with said peripheral surfaces of said flanges.

4,345,355

PROCESS AND APPARATUS FOR CUTTING A TOW AND CONTINUOUSLY OPENING THE FIBERS OBTAINED

Andre Berchoux, Couzon au Mont D'Or, and Andre Coquet, Lyons, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Apr. 24, 1980, Ser. No. 143,484
Claims priority, application France, Apr. 25, 1979, 79 10974
Int. Cl.³ D01G *1/04*
U.S. Cl. 19—0.6 **16 Claims**



1. A process for cutting a tow of continuous filaments and continuously opening the fibers obtained comprising, continuously winding the tow in at least one revolution over the edges of a plurality of cutting edges arranged in a ring, pressing the tow against the cutting edges to cut the filaments of the tow into ordered arrays of fibers of fixed length defined by the distance between consecutive cutting edges, collecting the ordered arrays of fibers immediately downstream of the cutting edges, and feeding the collected fibers in an orderly arrangement to an opening means whereby the fibers of the orderly arrangement are continuously opened.

4,345,356

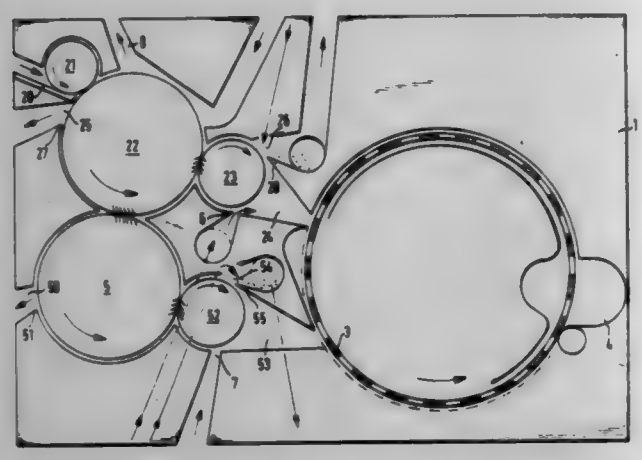
MECHANISM FOR ELIMINATING IMPURITIES FROM FIBROUS MATERIAL, IN PARTICULAR COTTON

Karl Handschuch, Gaimersheim; Burkhard Wulfhorst, Ingolstadt, and Konrad Gilhaus, Aachen, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Oct. 2, 1980, Ser. No. 193,163
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939861
Int. Cl.³ D01G *9/12, 9/08, 9/16*
U.S. Cl. 19—200 **6 Claims**

1. A mechanism for eliminating impurities from fibrous material in particular cotton, having at least two card-clothed rolls (22, 23) arranged after a feed mechanism, and a screening drum to which said fibrous material is fed by means of an airstream, a housing closely enclosing said two card-clothed rolls, said housing having separating openings including separating edges provided therein, a second (23) of said two card-clothed rolls cooperating with a first of said two card-clothed rolls as a take-off and loosener roll for said fibrous material and the centrifugal forces at the circumference of said second

card-clothed roll being greater than at said first card-clothed roll, a third card-clothed roll closely enclosed by a housing interrupted by separating openings, said third card-clothed roll



being positioned in carding relation with said first card-clothed roll, said mechanism comprising:

a take-off and loosener roll (52) positioned for removing fibers from said third card-clothed roll (5).

4,345,357

EQUIPMENT FOR DRYING AND/OR SHRINKING OF TUBULAR TEXTILE STRUCTURES

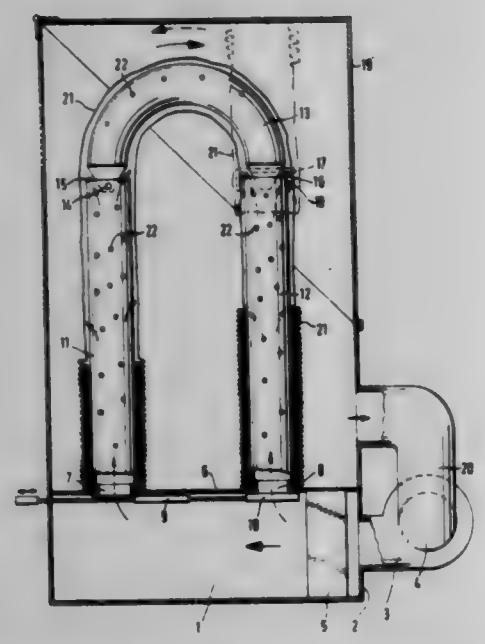
Alan Goldberg, Charlotte, N.C., assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed May 6, 1980, Ser. No. 147,155

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2918969

Int. Cl.³ D06G *7/00*

U.S. Cl. 26—18.5 **6 Claims**



1. Equipment for the drying and shrinking of textile structures formed into a tubular conformation, comprising a pressure box, means for forcing a gaseous treatment medium into said pressure box, heating means for such gaseous medium, first and second spaced vertical perforated pipes rising from said pressure box, each of said pipes having an end in communication with said box, an arcuate pipe section connecting the ends of said vertical pipes remote from said box, means to permit movement of one end of said arcuate pipe section away from an associated vertical pipe to permit sleeving of said tubular conformation on the said associated vertical pipe, and flow control means shiftable between two alternate positions respectively connecting said first pipe to said box and blocking gaseous flow to said second pipe and connecting said second pipe to said box and blocking gaseous flow in said first pipe, whereby said gaseous medium in the pipe connected to said box is caused to react against said tubular conformation and shift the same to the pipe blocked from said gaseous flow.

4,345,358

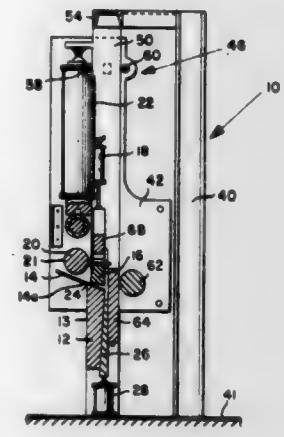
METHOD OF AND APPARATUS FOR MANUFACTURING PLOWSHARES

Dmetrios Petkidis, Protokklissi Soufli Ebrou, Greece

Filed Feb. 11, 1980, Ser. No. 120,621

Int. Cl.³ B21H *7/06*

U.S. Cl. 29—14 **2 Claims**



1. A method for forming a plowshare comprising the steps of

placing a preheated metal blank so that a first portion of its rests on the top end of a form and a second portion extends away from the top end of the form, the surface of the form having the shape of plowshare to be formed,

clamping said first portion in place so that the second portion extends at an angle which is above the horizontal,

braking the blank around an edge of the form so that said second portion of the blank forms an acute angle with said first portion by moving a roll downwardly to bend the second portion against the form, the surface of the roll also having the shape of plowshare to be formed,

moving the blank toward the roll by moving upwardly a wedge that is in contact with the form,

moving the roll upwardly to sharpen the acute angle between the first and second portions of the blank,

moving the roll downwardly to complete the making of the plowshare,

moving the wedge downwardly to allow the form to move back to its original position,

moving the roll upwardly to its original position,

and unclamping said first portion of the blank to release the plowshare from the form.

4,345,359

PROCESS FOR MANUFACTURING A PIEZOELECTRIC TRANSDUCER MADE FROM A POLYMER MATERIAL

Francois Micheron, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Aug. 18, 1980, Ser. No. 179,220

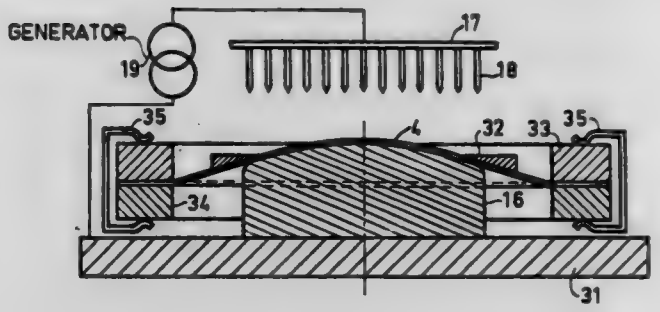
Claims priority, application France, Aug. 21, 1979, 79 21086

Int. Cl.³ H01L *41/22*

U.S. Cl. 29—25.35 **3 Claims**

1. A process for manufacturing a transducer whose active element is formed by a polymer film polarized electrically in a direction perpendicular to its faces and forming a self-supporting structure, this process consisting in stretching a flat film of polymer material in the non-polar phase over a non-developable conducting surface, in electroforming this stretched film by

means of an ionizing electric discharge produced by means of an electrode provided with points which overhang this con-



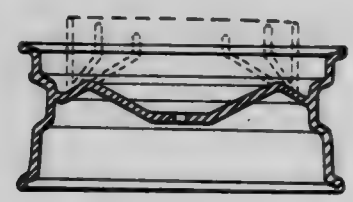
ducting surface and in providing with electrodes the faces of the electroformed zone of this film.

4,345,360

METHOD OF FORMING A METAL WHEEL

Robert A. Ridout, McHenry, Ill., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Jul. 10, 1980, Ser. No. 168,839
Int. Cl.³ B21D *53/30*
U.S. Cl. 29—159.01 **9 Claims**



1. Method of forming a metal wheel having a rim and an integral disc from a single piece of metal, comprising:

(a) forming by extrusion a piece of metal having a first portion with a cross section substantially conforming to the cross section of the rim of the wheel to be formed, the cross section of said first portion having a width dimension and a thickness dimension, said width cross sectional dimension of the first portion being substantially greater than said thickness cross sectional dimension of the first portion, the first portion having a first surface corresponding to the outer side of the wheel to be formed and a second, opposed surface corresponding to the inner side of the wheel to be formed, and an integral second portion constituting a plane section attached to the second surface of the first portion and lying generally parallel to the width cross sectional dimension of the first portion;

(b) cutting said metal piece to a length approximately equal to the circumference of the wheel to be formed from it;

(c) bending said cut piece into a circular shape with said first surface on the outside of the circle and said second surface on the inside, whereby said attached second, planar portion is formed into a cylinder concentric with the bent, circular first portion;

(d) joining the opposite ends of said bent piece; and

(e) deforming said attached, now cylindrical, second portion to form an integrally attached disc for the wheel.

4,345,361

TOOL FOR JOINING PIPES

Gerhard Baumann, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Switzerland

Filed Jul. 14, 1980, Ser. No. 168,006
Claims priority, application Switzerland, Jul. 18, 1979, 6669/79
Int. Cl.³ F16L *35/00*
U.S. Cl. 29—237 **12 Claims**

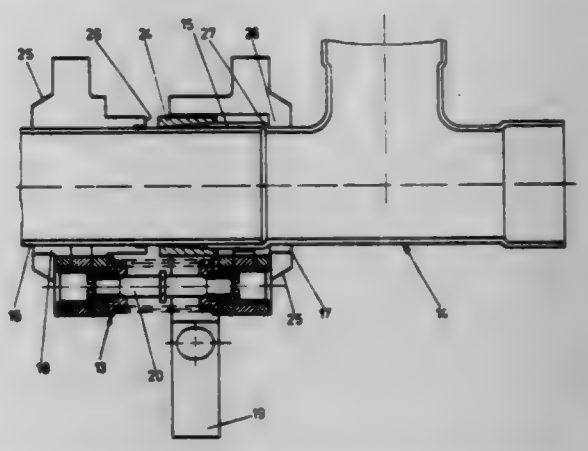
1. A system for forming a pipe joint of the type wherein end portions of pipes to be joined are telescopically assembled, one of the pipes having a radially enlarged end portion to receive the end of the other pipe, comprising

a ring having a frusto-conical interior surface;

a clamping jaw assembly including

first and second pairs of jaws with means for engaging said ring and the pipes adjacent the assembled ends, each jaw having an arcuate recess,

means for coupling the jaws of each pair together for pivotable movement about an axis parallel with the axes of the arcuate recesses, the pivot axes of said pairs being aligned,



means for biasing said first pair of jaws axially away from said second pair of jaws, and

means for urging the jaws of each pair toward each other; and

pressure clamp means for engaging said jaw assembly and for pressing said pairs of jaws toward each other for forcing said ring onto the assembled ends;

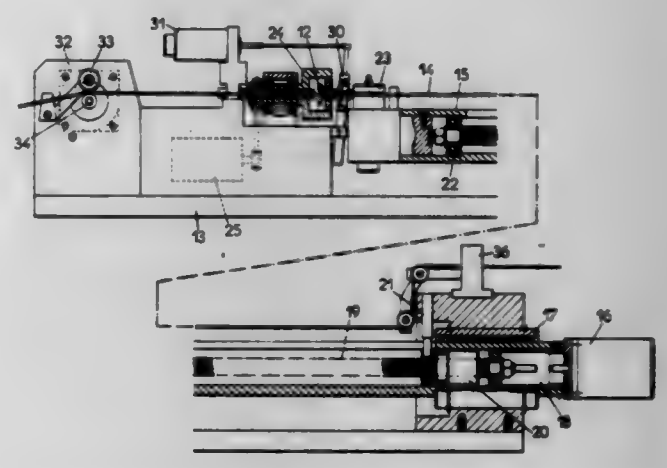
whereby said ring is forced over the outer pipe end to deform and join the assembled pipe ends by said clamping jaw assembly and said pressure clamp means.

4,345,362

PROCESS AND APPARATUS FOR STRIPPING INSULATED WIRES

Jacques de Givry, Les Loges En Josas, France, assignor to MATRA, Paris, France

Filed May 21, 1980, Ser. No. 151,760
Claims priority, application France, May 21, 1979, 79 12904
Int. Cl.³ H02G *1/12*
U.S. Cl. 29—426.5 **8 Claims**



1. A process for locally cutting the insulation sheath of an insulated wire at intervals, comprising the steps of:

(a) locating said wire along a circulation path including clamping means and cutting means in succession,

(b) moving said clamping means away from said cutting means while free from said wire and back toward said cutting means over a predetermined distance while actuated to grip said wire.

(c) closing said cutting means over said wire by an extent sufficient to cut said sheath partially and rotating said cutting means about said wire to furrow a circular groove in said sheath, while maintaining said clamping means in actuated condition,

(d) moving said clamping means away from said cutting means by an extent sufficient to break said sheath and back to its former position,

(e) opening said cutting means and de-actuating said clamping means,

(f) repeating steps (b) to (e) with optionally selected predetermined distances,

whereby a continuous length of wire is produced whose insulation sheath is cut at a plurality of locations separated by said distances.

4,345,363

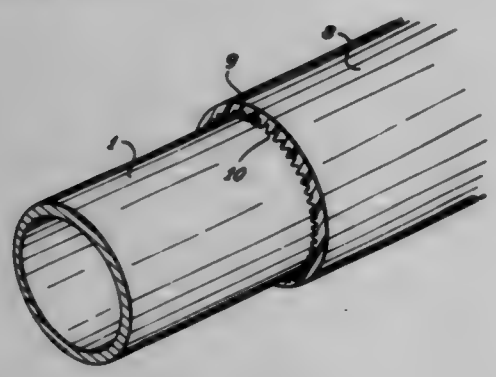
METHOD OF CONTINUOUSLY MAKING FLEXIBLE, HEAT INSULATED METAL TUBING

Ottmar Leuchs, Hannover-Bothfeld; Hans-Jürgen Klöppner, Langenhagen, and Otto Uhlmann, Burgdorf, all of Fed. Rep. of Germany, assignors to Kabel und Metallwerke Gutehoffnungshütte AG, Hanover, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,496

Int. Cl.[2] B22D *11/126;* B28B *21/54*

U.S. Cl. 29—527.4 **7 Claims**



1. Method of making a flexible, heat insulated tube for home construction purposes or the like, in a continuous process, comprising:

providing a stock of coiled, seamless drawn copper tube having a wall thickness of about 0.7 to 2 mm and an outer diameter of 8 to 35 mm;

providing a blend of 35 to 60% polyvinylchloride; 15 to 40% chalk; 15 to 30% phthalicacid ester as plasticizer; and 2 to 5% lead containing stabilizer, all percentages by weight;

soft annealing and cooling said tube both under protective gas; and

extruding the blend onto and around the cooled tube and in such a manner that the blend as extruded forms a jacket with radially inwardly directed, tapering ribs engaging the tube and defining heat insulating arch-shaped channels in between.

4,345,364

METHOD OF MAKING A DYNAMIC MEMORY ARRAY

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 7, 1980, Ser. No. 137,705

Int. Cl.[3] H01L *21/22, 21/26*

U.S. Cl. 29—571 **11 Claims**

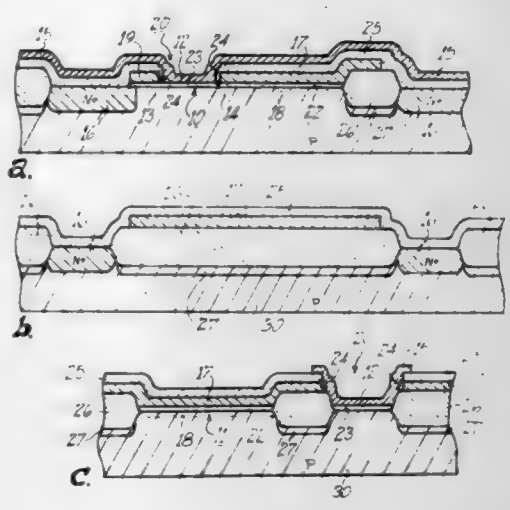
1. A method of making a dynamic semiconductor memory cell of the one-transistor type having a capacitor and a transistor comprising the steps of:

applying a layer of conductive material on a face of a body of semiconductor material overlying and separated from a first area of the face by a thin insulator,

forming a heavily doped region in said face aligned with an edge of said layer and adjacent

said first area, the heavily doped region being of conductivity-type opposite that of semiconductor material beneath it,

applying an insulator coating on said face over said layer,



opening a window in said insulator coating and in said layer over a part of said first area, and

applying a conductive strip on said face over said coating and extending into said window to form a gate of said transistor.

4,345,365

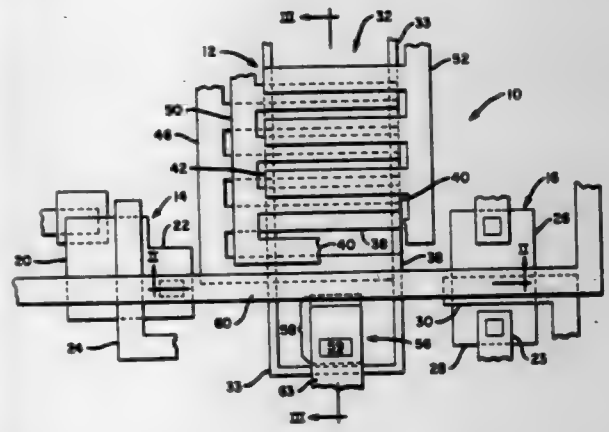
METHOD FOR FABRICATING AN INTEGRATED CIRCUIT

Donald G. Carrigan, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 6, 1980, Ser. No. 194,658

Int. Cl.[3] H01L *21/22*

U.S. Cl. 29—571 **5 Claims**



1. An improved method of fabricating charge-coupled devices of the type having a channel in a semiconductor body separated by a layer of first dielectric material from an ordered arrangement of multiple overlapping electrodes, which electrodes are formed in a sequence of depositions and patterned removals, wherein the improved process comprises the steps of:

forming said layer of first dielectric material over said channel in said substrate;

depositing a layer of first electrode material over said layer of first dielectric material;

patterning said layer of first electrode material;

removing areas of exposed first dielectric material;

forming a layer of second dielectric material over said channel;

depositing a layer of second electrode material over said layer of second dielectric material;

patterning said layer of second electrode material;

depositing a layer of third dielectric material over said substrate, said layer being significantly thicker than said layers of first or second dielectric materials;

removing material from said layer of third dielectric material in the area of said channel so that the depth of dielectric material remaining is comparable to the depth of said first and second dielectric material layers;

depositing a layer of third electrode material over said substrate, said third material having significantly greater electrical conductivity than said first or second electrode materials; and

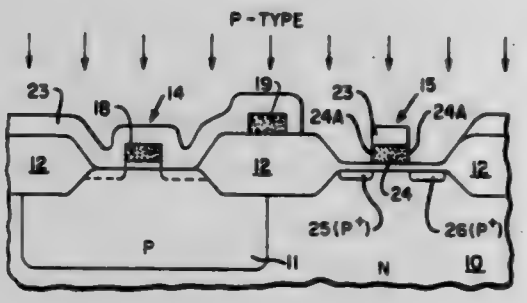
patterning said layer of third electrode material over the surface of said substrate.

4,345,366

SELF-ALIGNED ALL-N+ POLYSILICON CMOS PROCESS

Ronald W. Brower, Kettering, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 20, 1980, Ser. No. 198,428
Int. Cl.³ H01L *11/14*
U.S. Cl. 29—571 **6 Claims**



1. In a process for forming an integrated circuit from a structure comprising a body of semiconductor material having a first active region of a first conductivity type, a second active region of the second conductivity type, a relatively thin silicon dioxide layer formed over said active regions, the improvement comprising:

forming a first polysilicon gate over said first active region and a polysilicon layer over said second active region;

forming a mask containing impurities of the second conductivity type over the structure and laterally encompassing the first active region and defining a gate region in the second active region;

forming the polysilicon layer in the second active region to a second polysilicon gate defined by the mask;

implanting the first-conductivity-type impurities in source and drain regions defined in the second active region by the mask; and

diffusing the second-conductivity-type impurities from the mask into source and drain regions defined in the first active region by the first polysilicon gate and into both the first and second polysilicon gates;

the combination of implantation and diffusion forming a self-aligned source and drain in each of the first and second active regions, and both polysilicon gates doped with said second conductivity type impurities.

4,345,367

METHOD OF MANUFACTURING AN EXTENDED LIFE MULTICHANNEL MAGNETIC TRANSDUCER

James P. Chase, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

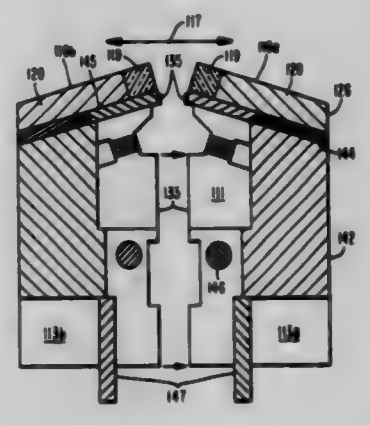
Division of Ser. No. 45,558, Jun. 4, 1979, Pat. No. 4,291,354. This application Mar. 26, 1981, Ser. No. 247,805
Int. Cl.³ G11B *5/42*
U.S. Cl. 29—603 **20 Claims**

1. A method of making a multichannel magnetic transducer assembly including the steps of forming a transducer pole tip plate of a nonmagnetic material supporting a plurality of spaced magnetic pole tips defining transducing gaps, forming a core holder of a nonmagnetic material, and said core holder having electric shielding properties, supporting a plurality of spaced magnetic core members and coil means, and mounting said transducer tip plate onto said core holder with said magnetic core members engaging associated magnetic pole tips to complete a plurality of magnetic circuits, comprising the steps of:

(a) forming a first block portion of a nonmagnetic, wear-resistant, machinable material, having two opposite planar surfaces;

(b) forming a second block portion of a nonmagnetic, conductive, machinable material, having a planar surface corresponding to one said planar surface of said first block portion;

(c) integrally joining said first and second block portion at said corresponding planar surfaces to form a composite block;



(d) machining a plurality of spaced parallel grooves in said composite block transversely to said integrally joined surfaces;

(e) integrally joining a plurality of magnetic pole tips into said grooves to obtain a half pole tip plate;

(f) assembling two corresponding half pole tip plates and integrally joining to said core holder with the first block portions of the respective half tip plates abutting at their respective planar surfaces opposite said integrally joined surfaces and with the corresponding magnetic pole tips in registration, having a nonmagnetic transducing gap material disposed therebetween and with said pole tips engaging said core members to form an integral transducer assembly; and

(g) contouring said transducer assembly at said tip plate to expose at least a portion of each pole tip defining a transducing gap to form a transducer-to-magnetic medium interface.

4,345,368

PARALLEL-TYPE HEATING CABLE AND METHOD OF MAKING SAME

David C. Goss, and Daniel R. Springs, both of San Marcos, Tex., assignors to Thermon Manufacturing Co., San Marcos, Tex.

Filed Sep. 18, 1980, Ser. No. 188,354
Int. Cl.³ H05B *3/00*
U.S. Cl. 29—611 **9 Claims**

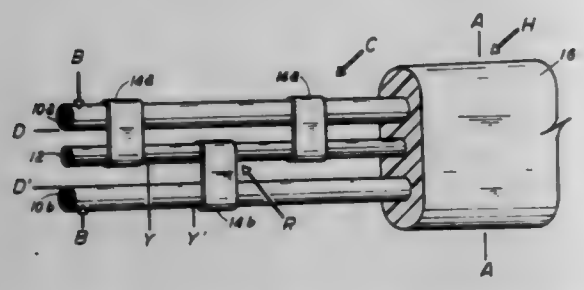
1. A continuous method of manufacturing parallel-type heating cable, comprising the steps of:

(a) continuously arranging a first and second bus wire into a spaced apart essentially parallel relationship;

(b) continuously supplying a resistive heating element between the essentially parallel to said bus wires;

(c) continuously forming a heating core from said bus wires and resistive heating element by deforming a plurality of electrically conductive splices about said first bus wire and resistive heating element and said second bus wire and resistive heating element to establish an alternating series of mechanical-electrical connections between said first

bus wire and resistive heating element and said second bus wire and resistive heating element; and



(d) continuously covering said heating element; with a protective covering.

4,345,369

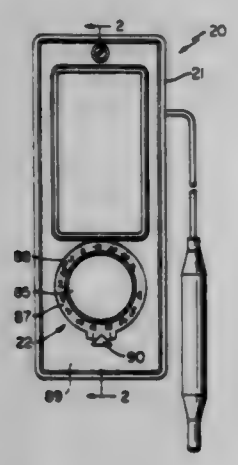
CONTROL UNIT AND ELECTRICAL SWITCH CONSTRUCTION THEREFOR—METHODS OF MAKING SUCH A CONTROL UNIT AND ELECTRICAL SWITCH CONSTRUCTION

Werner R. Bauer, Radnor, and William N. Smith, Hatboro, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 120,259, Feb. 11, 1980, Pat. No. 4,314,122, which is a division of Ser. No. 766,018, Feb. 7, 1977, Pat. No. 4,245,142, which is a continuation-in-part of Ser. No. 707,635, Jul. 22, 1976. This application Jun. 8, 1981, Ser. No. 271,527

Int. Cl.³ H01H *11/00*

U.S. Cl. 29—622 **3 Claims**



1. A method of making an electrical switch construction having a housing means carrying a pair of spaced content stops and a snap switch blade having a contact portion for being snapped between said stops when said blade is moved overcenter, and a movable actuator means carried by said housing means for moving said blade overcenter in one direction when said actuator means is moved in one direction thereof and for moving said blade overcenter in the opposite direction when said actuator means is moved in the opposite direction thereof, said method comprising the steps of forming said actuator means to be adjustable for adjusting the movement differential of said actuator means without adjusting the air gap between said contact stops, forming said actuator means to extend out of said housing means to thereby be accessible for adjustment external to said housing means, forming part of said actuator means with an actuator plunger, forming part of said actuator means with an actuator spring that is moved by movement of said actuator plunger, operatively interconnecting said actuator spring to said blade to move said blade as said actuator spring is moved, forming said actuator means with an adjustable gap defined by a pair of spaced shoulders on said actuator means that are adapted to respectively engage said actuator spring, and forming part of said actuator means from a sleeve movably carried by said housing means and being operatively associated with said plunger.

4,345,370

METHOD FOR PREPARING THE END OF A FLEXIBLE VERY HIGH FREQUENCY COAXIAL CABLE

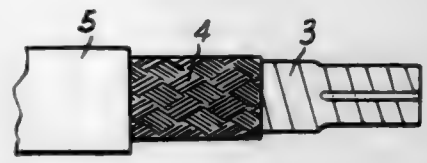
Jacques Cartier, Fontenay sous Bois, and Sebastien Givelet, Paris, both of France, assignors to Radiall, Rosny-Sous-Bois, France

Filed Jan. 30, 1980, Ser. No. 116,827

Claims priority, application France, Jan. 31, 1979, 79 02468

Int. Cl.³ H01B *13/20*

U.S. Cl. 29—828 **10 Claims**



1. In a method of preparing the end of a flexible very high frequency coaxial cable to mount a connector element thereon, the cable having a central conductor, a dielectric, a first external conductor in the form of a wound strip, second external conductor in the form of a braided conductor, and an external sheath, the method comprising, as a first step, forming at least two indentations in the wound strip adjacent the end of the cable to prevent the wound strip from unwinding during subsequent operations of mounting the connector element on the cable.

4,345,371

METHOD AND APPARATUS FOR MANUFACTURING HYBRID INTEGRATED CIRCUITS

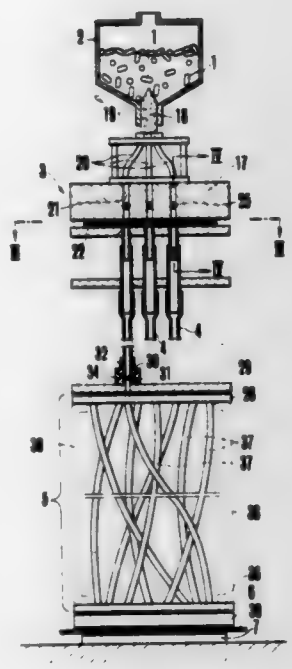
Mitsuo Ohsawa, Kanagawa; Yoshiteru Noda, Tokyo; Iwao Ichikawa, and Katsumi Yamamoto, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 135,670

Claims priority, application Japan, Mar. 14, 1979, 54-58888; Mar. 16, 1979, 54-59914

Int. Cl.³ H05K *3/30;* **B23P** *19/00*

U.S. Cl. 29—836 **10 Claims**



1. A method of manufacturing a hybrid integrated circuit on a circuit board in which circuit elements are positioned at predetermined locations on said board and electrically connected with a conductive pattern on said board, comprising the steps of:

placing a plurality of chip-type circuit elements at respective predetermined positions on an upper side of a template;

applying adhesive material at respective locations on one

side of said board corresponding to said predetermined positions;

placing said circuit board, adhesive side down, against said template so as to bring said circuit elements into contact with said adhesive material;

inverting said circuit board with said template thereagainst so that the latter is positioned above said circuit board;

removing said template from said board;

rendering said adhesive material sufficiently set to hold said circuit elements on said board; and

soldering said circuit elements to said conductive pattern to said board.

8. Apparatus for manufacturing a hybrid integrated circuit in which chip-type circuit elements are positioned at predetermined locations on a printed circuit board, comprising

hopper means for containing a plurality of said chip-type circuit elements;

capture means for capturing said circuit elements in said hopper means;

guide means for guiding the captured circuit elements to predetermined locations;

shutter means, disposed between said capture means and said guide means, for controlling the distribution of said circuit elements from said capture means to said guide means; and

selectable template means corresponding to a selected circuit design for said hybrid integrated circuit for receiving said circuit elements from said guide means for disposition onto said printed circuit board, and having element-receiving receptacles at predetermined locations thereon corresponding to said selected circuit design;

wherein said guide means includes a magazine detachably mountable between said shutter means and said template means, the magazine having a plurality of flexible channels between said shutter means and said template means said flexible channels being pre-arrangeable, before mounting said magazine in said apparatus, to guide said elements to the particular predetermined positions of the selected template means without needing to rearrange said hopper means, in accordance with the particular circuit design for said hybrid integrated circuit.

4,345,372

METHOD OF PRODUCING A MULTICONTACT SPRING

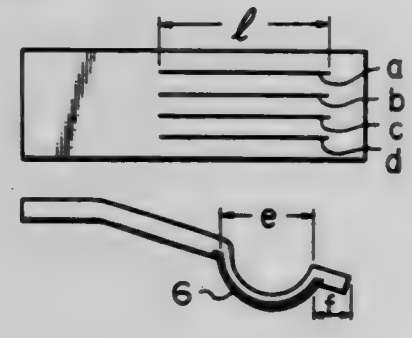
Kenji Sekigawa; Takeshi Sato, and Mikio Motizuki, all of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Oct. 26, 1979, Ser. No. 88,631

Claims priority, application Japan, Oct. 31, 1978, 53-134071

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—874 **5 Claims**



1. A method of producing a multicontact spring comprising the steps of:

blanking a metal tape to form a blank for the multicontact spring;

pressing said blank to make linear dents therein which are parallel to each other and correspond to contacting areas of said multicontact spring;

dividing said blank by repeating a press working for cutting clear through said blank a predetermined linear part which includes each one of said linear dents and does not include the end parts of said blank; and

pressing said divided parts of said blank into suitable shapes for providing contact points.

4,345,373

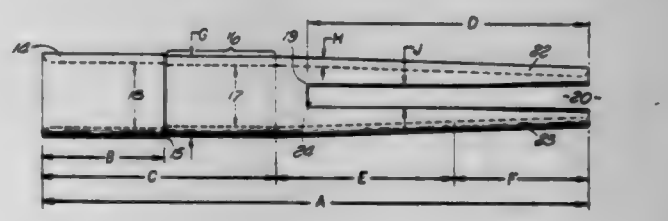
METHOD OF MANUFACTURE OF LOW-COST, HIGH QUALITY LOW INSERTION FORCE ELECTRICAL CONNECTOR SOCKET

Leonard Lacaze, Jr., San Juan Capistrano, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 951,182, Oct. 13, 1978, abandoned, which is a division of Ser. No. 850,629, Nov. 11, 1977, abandoned. This application Apr. 28, 1980, Ser. No. 144,789

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—874 **10 Claims**



1. The method of manufacture of a low insertion force electrical connector socket, comprising:

forming a length of generally tubular stock to have a generally conical inside and outside taper over a first predetermined distance (E & F) from a first end thereof;

thereafter axially slotting the side walls of said tubing from said first end to a second predetermined distance (D), said second distance not exceeding said first distance, said slotting forming a pair of tines of length equal to said second distance from said first end to a tine root region; and

partially flattening said tines while preventing plastic deformation of said tines at said root region, said partial flattening being such as to substantially modify the inside radius of said tines at least to that of said tubular stock prior to said forming operation over a third predetermined axial distance (F) from said first end, said third predetermined distance (F) being less than said second predetermined distance (D).

4,345,374

RAZOR WITH MEANS TO ADJUST BLADE GEOMETRY

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jan. 14, 1974, Ser. No. 432,842

Int. Cl.³ B26B *21/06*

U.S. Cl. 30—47 **21 Claims**

21. A razor comprising:

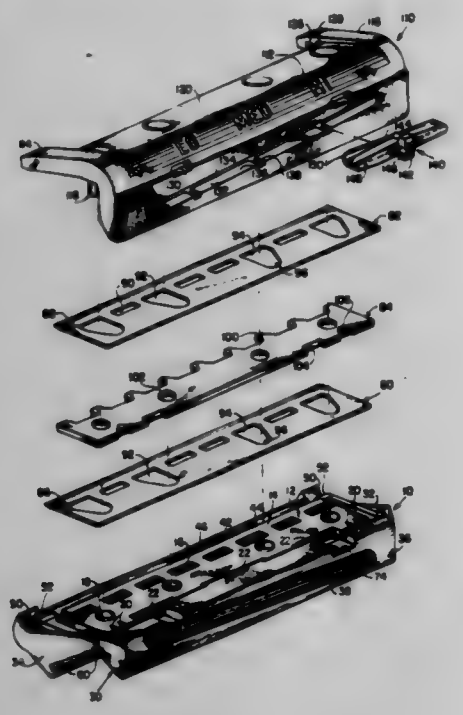
base structure having a guard surface and a blade support structure integral therewith, two blade elements permanently secured to said blade support structure with their two cutting edges being spaced apart,

the front of said blade support structure being secured to said base structure by a flexible connection and the rear of said blade support structure being spaced from and movable relative to said base structure,

said flexible connection permitting the angular orientation of said blade support structure relative to said base structure to be changed,

and an adjusting mechanism coupled between said base structure and said blade support structure for moving said

blade support structure relative to said guard surface to change the angular orientation of said blade support struc-



ture relative to said base structure to vary the shaving geometry of said razor.

4,345,375

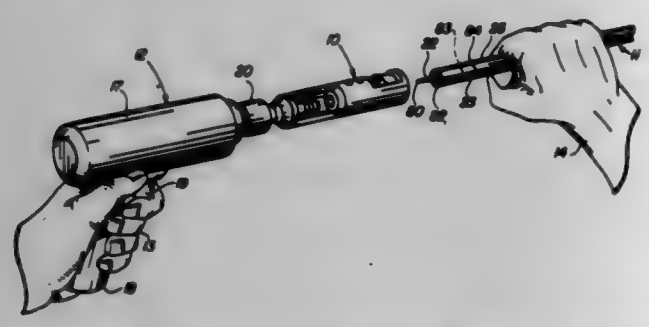
CABLE TOOL

Robert D. Hayward, 6142 N. 18th Ave., Phoenix, Ariz. 85015

Filed Jun. 2, 1980, Ser. No. 155,442

Int. Cl.³ H02G *1/12*

U.S. Cl. 30—90.1 **7 Claims**



1. A tool adapted to be rotatably driven for preparing a terminal portion of a coaxial cable for installation, which coaxial cable includes,

a center conductor having an end,

a coaxial tubular outer conductor,

a dielectric material for maintaining the center conductor substantially coaxially within the outer conductor, and

a jacket encasing the outer conductor,

said tool comprising:

a body having a longitudinal axis of rotation, a forward end and a rearward end;

means forming a bore in said body extending rearwardly from said forward end;

cylindrical coring means having a forward end and a rearward end, wall means forming a central passage for receiving the center conductor therewithin, the rearward end of said coring means being affixed to the rearward end of the body so that the central passage is substantially symmetric with the longitudinal axis, stop means engaging the end of the center conductor to limit the maximum length of the center conductor received within said central passage, and cutting means positioned at the forward end of the coring means for removing the dielectric material between the outer conductor and the center conductor a first distance measured from the end of the center conductor when said end engages the stop means;

tubular trimming means for removing the outer conductor, means for mounting the trimming means on said coring means to remove the outer conductor a second distance measured from the end of the center conductor when said end engages the stop means;

jacket stripping means mounted on the body for removing the jacket a third distance from the end of the center conductor when said end engages the stop means;

said first, second and third distances being different from one another; and

means for applying torque and a linear force to rotate the body about its axis of rotation and for applying a linear force to the body substantially along the axis of rotation.

4,345,376

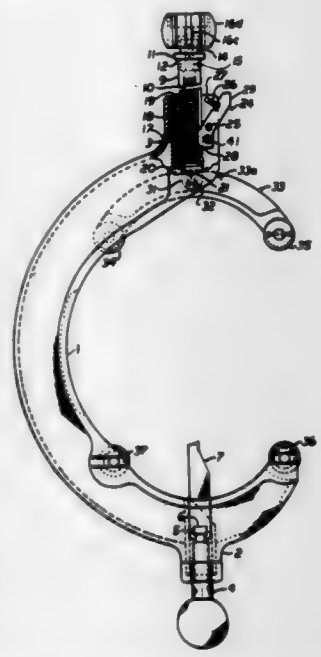
CUTTER FOR THICK WALL PLASTIC PIPE

Albert R. Benson, and James F. Willats, both of Erie, Pa., assignors to Reed Manufacturing Company, Erie, Pa.

Filed Nov. 15, 1979, Ser. No. 94,675

Int. Cl.³ B23D *21/06*

U.S. Cl. 30—96 **10 Claims**



1. A pipe cutter comprising a frame rotatable relative to a pipe being cut in a plane perpendicular to the axis of the pipe, said frame having a way for a tubular carriage of circular cross section movable toward and away from the axis of the pipe, a screw in thrust relation to said tube, a slot in the frame registering with an elongated slot in said carriage, and an element received in said slots having a threaded portion engaged with said screw for keying the carriage to the frame and for establishing a screw drive to the carriage.

4,345,377

DEHORNING TOOL

Francis W. Hewes, Jr., Toponas, Colo. 80479

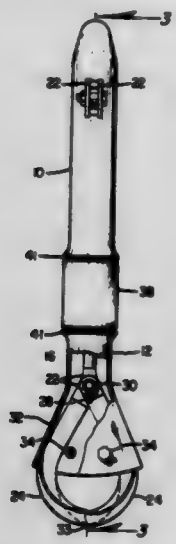
Filed Nov. 7, 1980, Ser. No. 204,918

Int. Cl.³ B26B *17/02*

U.S. Cl. 30—181 **14 Claims**

1. In a dehorning tool for severing animal horns including a hollow body, at least two cutting blades hingedly supported at one of their ends in said hollow body extending outside said body and having cutting edges on their outside free ends, means for moving the free ends of said cutting blades apart to permit placement of their cutting edges on the outside of an animal horn, and means for moving said free ends together for severing the horn with said cutting edges, the improvement which comprises actuating means including first immovable camming means located inside of said cutting blades for simultaneously extending and opening said cutting blades as their inner surfaces cam against said first immovable camming

means for placement of said cutting edges on the outside of said horn, and actuating means including second camming means



for simultaneously retracting and closing said cutting blades for severing said horn with said cutting edges.

4,345,378

SCISSORS WITH ADJUSTABLE PIVOT

Gunther Pracht, Solingen, Fed. Rep. of Germany, assignor to "Jaguar" Stahlwaren Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft, Solingen, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,477

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1980, 3023057

Int. Cl.³ B26B *13/04*

U.S. Cl. 30—266 **2 Claims**



1. Scissors useful particularly by hairdressers, comprising

(a) a movable scissors blade and a stationary scissors blade;

(b) a pivotal connection connecting said movable scissors blade and said stationary scissors blade and consisting of a threaded pin having a shank, a head and a threaded steel nut provided with a projection formed with an annular groove extending over the periphery of the said projection, the threaded pin passing with its shank through a hole of the movable scissors blade and a hole of the stationary scissors blade and being non-rotatably held by one of the scissors blades;

(c) a circular recess provided in the stationary scissors blade and defining a circular wall, said circular wall being arranged to guide the threaded steel nut via the projection thereof, and

(d) an annular body consisting of resilient material which is arranged in said annular groove and engages the projection and the circular wall of the circular recess with contact pressure.

4,345,379

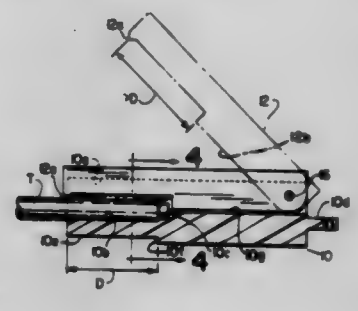
TUBE MARKING DEVICE AND GAGE

Lucius A. Pettingill, Jr., 1855 Main St., Glastonbury, Conn. 06033

Continuation-in-part of Ser. No. 171,812, Jul. 24, 1980, abandoned. This application Nov. 10, 1981, Ser. No. 320,052

Int. Cl.³ B43L *9/00*

U.S. Cl. 33—21 R **5 Claims**



1. A device for marking a tube at a predetermined distance from the tube end such that assembly of the tube with a fitting will not obscure the marking, said device comprising:

(a) a generally cylindrical elongated housing having an elongated slot open along one side of the housing, said housing defining a central bore defined axially therein and open to one end of said housing to receive the tube to be marked,

(b) said bore having an inner end intermediate the ends of said housing and said slot having a portion communicating with said bore, and another portion of said slot defined by said housing and having an inner wall which is parallel and closely spaced to th axis of said housing,

(c) a tube marking tool of approximately the same length as said elongated housing and located at least partially in said slot, said tool having marking means at one end and having its other end pivotally mounted in said housing slot adjacent the other end of said housing,

(d) said tool having a stop surface spaced from said pivotally mounted other end which stop surface abuts said inner wall of said housing slot when said tool is in its active position for marking a tube, whereby said marking means at said one end of said tool cannot penetrate the surface of the tube being marked and can only burnish the tube in the marking made thereon.

4,345,380

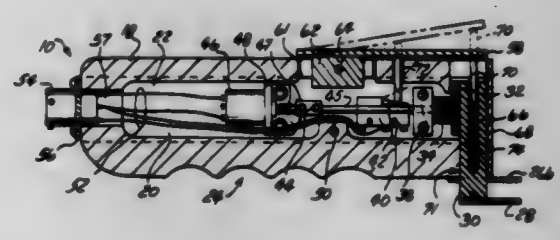
GAP GAUGE

Arthur D. Vis, Warren, Mich., assignor to Candid Logic, Inc., Hazel Park, Mich.

Filed Mar. 6, 1981, Ser. No. 241,196

Int. Cl.³ G01B *7/02*

U.S. Cl. 33—147 N **16 Claims**



1. Apparatus for measuring the gap between opposed surfaces of a pair of spaced apart parts, comprising:

first and second means insertable into said gap for respectively contacting said opposed surfaces;

means for mounting said first and second contacting means for reciprocable movement toward and away from each other;

means coupled with said mounting means for displacing said first and second contacting means in a direction away

from each other and respectively into engagement with said opposed surfaces; and,

means for sensing the relative displacement between said first and second contacting means, including means for producing an electrical signal corresponding to the magnitude of said gap, said first contacting means including a pair of finger members, and said second contacting means including one finger member, said pair of finger members being spaced apart and defining a space therebetween within which said one finger member may be received.

4,345,381

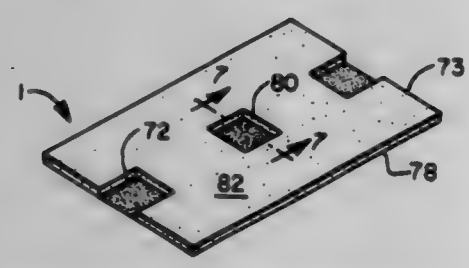
UNIVERSAL MEASURING TEMPLATE

Patricia C. Brislin, 1770 Hidden La., Lancaster, Pa. 17603

Filed Feb. 8, 1980, Ser. No. 119,722

Int. Cl.³ G01B *3/14*

U.S. Cl. 33—174 G **10 Claims**



1. A transferable universal template for marking and locating utility outlet, window and door openings in construction panels comprising:

a carrier of flexible material having front and rear sides;

a plurality of perforations in said carrier; and

a film of adhesive covering the rear side of said carrier and spanning said perforations, said film of adhesive having adhesive properties on both sides thereof whereby the adhesive portions exposed through said perforations on the front side being less than the adhesive on the rear side whereby said template is transferable from one surface to another.

4,345,382

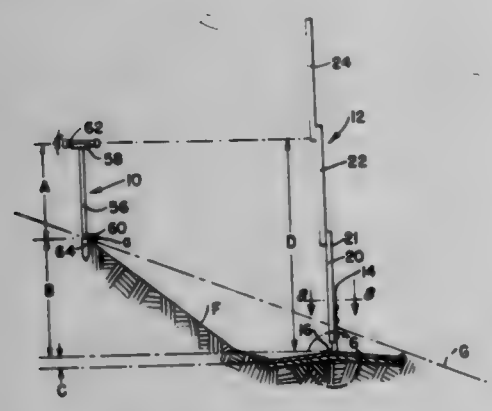
CONTRACTOR'S GRADE ROD APPARATUS AND PROCEDURE FOR SETTING AND CHECKING GRADES

Dwight D. Warren, Rte. 2, Box 155A, Scott Loop Rd., Mobile, Ala. 36609

Filed Feb. 13, 1980, Ser. No. 121,064

Int. Cl.³ G01C *15/02, 15/06*

U.S. Cl. 33—294 **5 Claims**



1. Apparatus for use in setting and checking grades in construction of roads, parking lots, buildings, or the like comprising a level support in combination with a level rod wherein said level support has a nominal length of X plus Y, for example, said level rod includes a zero mark above which are plus (+) graduations in terms of a principal dimension and a subordinate dimension and below which are minus (−) graduations in terms of said principal and subordinate dimensions down to a length of X and a leg member adjustably secured to said rod, said leg member having a foot portion extending below the lower end of said rod, said leg member being adjustable so that said foot portion may be selectively set to extend below the lower end of said rod for a minimum distance of Y or more as desired, whereby said zero mark may be selectively set at a distance equal to the nominal length of X plus Y above the lower end of said foot portion so that in use of said apparatus the zero mark of said level rod corresponds to the height of said level support;

said level rod also includes a plurality of selectively adjustable sections and means for releasably securing each of said sections to another of said sections adjacent thereto and means for releasably securing said leg member to the lowest one of said sections when said level rod is held in generally vertical position for use;

said lowest one of said sections having said graduations on a front surface with a back surface behind said front surface wherein said means for releasably securing said leg member comprise a plurality of fixed threaded studs extending from said back surface and nuts threaded on said studs, and said leg member is provided with an elongate slot through which said studs extend to facilitate sliding adjustment between said leg member and said lowest one of said sections when said nuts are loosened on said threaded studs;

said leg member comprises a relatively narrow elongate segment in contact with said back surface of said lowest one of said sections, and a relatively wide short segment at the longer end thereof extending down to said foot portion, said relatively wide short segment having a generally horizontal abutment to limit upward adjustment of said leg member with respect to said lowest one of said sections whereby said foot portion will be below the lower end of said lowest one of said section by a distance Y;

said back surface is provided with vertical graduations in inches of downwardly increasing magnitude and said leg member includes indicia means to show the amount by which said leg member and said lowest one of said sections are extended with respect to each other, and said principal and subordinate dimensions are in terms of feet and inches, respectively; and

said lowest one of said sections comprises a pair of parallel grooves on said back surface, each of said grooves extending upwardly from the lower end of said lowest one of said sections to terminate at a blind end adjacent the upper end of said lowest one of said sections.

4,345,383

DESIGNER'S TRIANGLE

Douglas F. Corsette, 6559 Firebrand, Los Angeles, Calif. 90045

Filed May 28, 1980, Ser. No. 153,858

Int. Cl.³ B43L *13/00*

U.S. Cl. 33—474 **8 Claims**

1. A designer's triangle comprising:

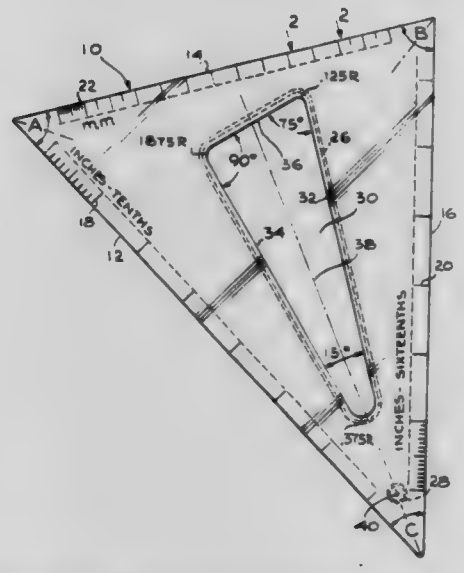
a planar sheet of clear plastic material having three external edges forming a triangle with angles of 45°, 60°, and 75°, respectively;

said planar sheet defining a triangular cutout opening with three internal edges forming a right triangle having angles of 15°, 75° and 90°, respectively;

each of said internal edges being offset by 15° from its corresponding adjacent external edge;

said triangular cutout opening being oriented relative to the external edges such that the hypotenuse of the right triangle is perpendicular to the external edge which is opposite the 45° angle and the bisector of the 15° angle of the interior triangle coincides with the bisector of the 45°

angle, said plastic sheet also defining a referencing hole at the intersection of said common bisector and the extensions of the two interior edges defining the 15° angle of the internal triangle.

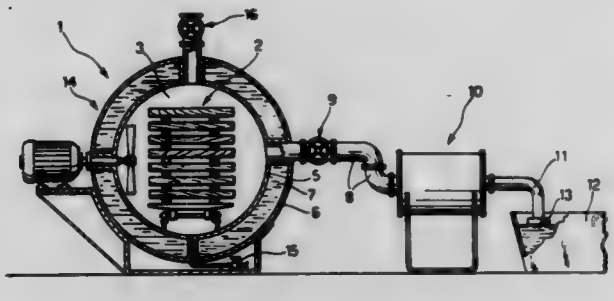


4,345,384

PROCESS FOR DRYING WOOD

Vincenzo Pagnozzi, Rocchetta di Cairo Montenotte (Savona), and Ernesto G. Pagnozzi, Via Camponuovo, Cairo Montenotte (Savona), both of Italy

Filed Feb. 19, 1981, Ser. No. 235,791
Claims priority, application Italy, Mar. 12, 1980, 67381 A/80
Int. Cl.³ F26B *5/04*
U.S. Cl. 34—16.5 **5 Claims**



1. A high temperature process for drying wood in a room adapted to be hermetically sealed and having heated pressure resistant walls with suitable valve means extending therethrough comprising;

preheating said room in sealed condition to provide steam at a first pressure in said room above atmospheric pressure and heating the wood to a first predetermined temperature greater than 100° C. thereby preventing the evaporation of water from the wood and preventing condensation of water vapor on the walls of the room, and

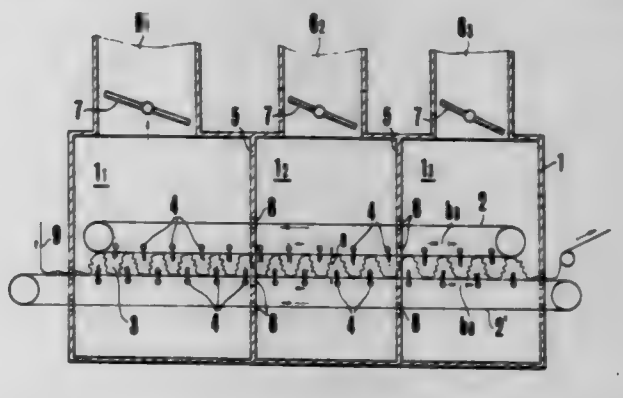
subsequently discharging a metered quantity of steam from said room through said valve means while simultaneously supplying sufficient heat to said room to maintain said first pressure and said first temperature substantially unaltered to remove water from said wood.

4,345,385

METHOD FOR CONTINUOUS DRYING OF A CLOTH AND AN APPARATUS THEREFOR

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works, Wakayama, Japan

Filed Jun. 3, 1980, Ser. No. 156,182
Claims priority, application Japan, Jun. 14, 1979, 54-74968; Sep. 26, 1979, 54-123473; Oct. 20, 1979, 54-135423
Int. Cl.³ F26B *3/04, 13/06*
U.S. Cl. 34—23 **6 Claims**



1. A method of continuously drying a cloth comprising transporting the cloth through a cloth passage defined by a pair of endless net conveyers arranged one above the other in parallel, drying the cloth using high pressure dry hot air and jetting the dry hot air from nozzles against the cloth, arranging the nozzles extending transversely of the direction of movement of the cloth through the cloth passage on opposite sides of the cloth and offset relative to one another so that the nozzles are disposed above and below the cloth passage in a zigzag manner, and driving the two conveyers so that the combination of the movement of the cloth and the jetting action of the dry hot air effects beating and vibrating of the cloth as the cloth passes through the cloth passage in a snaky state under no tension for drying of the cloth, dividing the cloth passage into at least three separate chambers arranged one after the other in the direction of movement of the cloth and drying the cloth in the first chamber at about 150° C., drying the cloth in the second chamber at about 100° C., and drying the cloth in the third chamber at about 70° C., prior to said drying process, with the cloth in a ropy state, moving the cloth generally horizontally and untwisting the cloth in the ropy state by jetting high pressure air against the cloth from below, and then expanding the cloth by jetting high pressure air against the cloth zigzag from above and below from nozzles extending transversely of the direction of movement of the cloth.

4,345,386

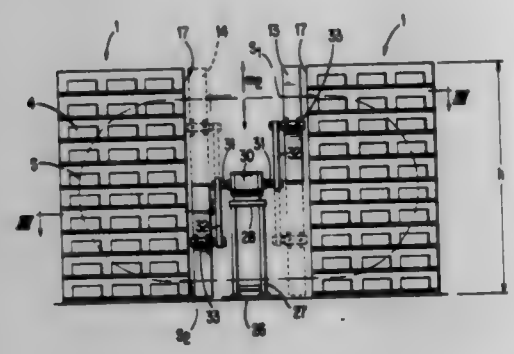
AIR AGITATION DEVICE

Carra Gianni, Suzzara, Italy, assignor to Carra Officine Meccaniche S.p.A., Codissoto de Luzzara, Italy

Filed Dec. 29, 1980, Ser. No. 220,919
Claims priority, application Italy, Dec. 31, 1979, 3582 A/79
Int. Cl.³ F26B *9/06*
U.S. Cl. 34—218 **2 Claims**

1. An air agitation device placed in a multiple section drying chamber having a central passageway between shelf sections, the device positioned in the passageway existing between two opposite sets of shelves on which articles to be dried are placed, the air agitation device comprising: at least two crankshafts, each having a crankpin, said crankshafts being identical, oriented in the same direction and rotating with respect to axes perpendicular to the longitudinal surfaces of said sets of shelves that face the passageway, and situated in proximity of the extremities of the said passageway; motor means for driving at least one of said crankshafts; journal means allowing the rotation of said crankshafts about said perpendicular axes; at least two frames articulated to corresponding crankpins of the said crankshafts, and placed on two parallel planes positioned one on each side of said journal means of the said crankshafts

and perpendicular to the said journal means; and means of ventilation, carried by the same frames, for producing a flow of



air in the direction perpendicular to the said longitudinal surfaces of the sets of shelves.

4,345,387

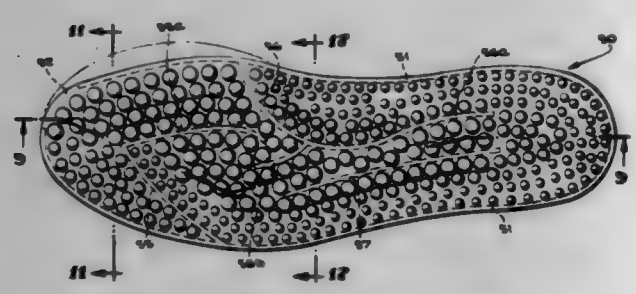
RESILIENT INNER SOLE FOR A SHOE

Alexander C. Daswick, 647 Orange Grove, South Pasadena, Calif. 91030

Filed Mar. 31, 1980, Ser. No. 135,333

Int. Cl.³ A43B *13/38, 7/06, 13/20*

U.S. Cl. 36—43 **7 Claims**



1. An inner sole for a shoe, comprising:

a generally flat sheet member made of resilient material;

said sheet member having a flat under surface with a plurality of openings therein which are upwardly enlarged to form air pockets, the material of said member extending across and thereby enclosing the upper sides of said air pockets;

whereby air flows through said openings out of or into the associated air pockets in response to impacts upon the upper surface of said member;

said sheet member also having a peripheral flange depending downwardly from the outer portion of the under surface thereof, said flange extending around most of the perimeter of said member; and

a gap in said flange so that air may flow into or out of the space between the under surface of said member and the supporting surface of a shoe within which said inner sole is placed.

4,345,388

METHOD FOR CONTROLLING THE PRODUCTION OF A DREDGING APPARATUS

Cornelis de Keizer, Dordrecht, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands

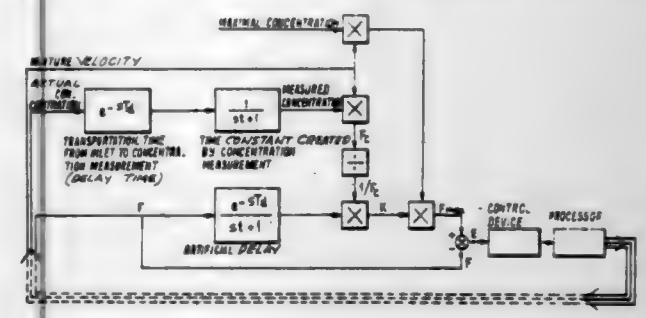
Filed Mar. 27, 1980, Ser. No. 134,477

Claims priority, application Netherlands, Mar. 27, 1979, 7902381

Int. Cl.³ E02F *3/88*

U.S. Cl. 37—195 **2 Claims**

1. A method of dredging, comprising moving a dredging instrument in contact with submarine soil with sufficient force to loosen said soil, removing said loosened soil in admixture with water from the dredging face, determining the maximum possible concentration of said mixture, determining the maximum force with which said soil resists the dredging operation corresponding to said maximum concentration, continuously determining the actual force with which said soil resists the dredging operation, continuously determining the difference



between said maximum force and said actual force, and continuously changing the dredging conditions so as to reduce said difference.

4,345,389

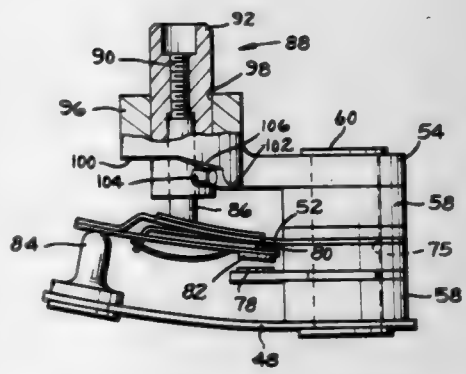
THERMOSTAT AND IRON ASSEMBLY

Charles A. Balchunas, Bethany, Conn., assignor to General Electric Company, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,533

Int. Cl.³ D06F *75/06*; H01H *37/26*

U.S. Cl. 38—77.7 **8 Claims**



1. A stacked snap-acting thermostat assembly of a lower heat deformable blade, a conductive intermediate stiff blade, a conductive upper less stiff spring blade with all blades supported, secured together and spaced apart at one end by interposed insulators, said upper blade comprising;

first and second strip type elongated elements substantially parallel to each other,

each first and second element including compression and tension portions,

means supporting one end of the first element so the other end is free to flex vertically,

insulating means transferring deformable blade movement to said first element, pivot means connecting one end of the second element to the free end of the first,

said pivot including a pivot joint between the respective compression and tension portions to place said portions under compression and tension respectively,

stops on opposite sides of the non-pivot free end of the second element and related to said pivot means so the second element free end reciprocates between said stops with a snap-action on reciprocal movement of the pivot joint between said elements,

one of said stops being a fixed contact on the stiff intermediate blade and the other a movable stop on the free end of said first element to make and break an electric circuit to control heat to a medium sensed by said thermostat,

a single structural bracket extending over all said blades and mounted on and above said supported end with an enlarged integral portion on the free end,

said portion having a bore therethrough forming an elongated bearing guide between the ends of and over said blades,

a control shaft rotatably supported in said bore and extending into contact with the tension portion of said first element to

position said upper spring blade, an arcuate cam surface with end stops formed on said integral portion and facing said upper blade,

a cam follower on said control shaft and biased by said upper blade against said cam surface,

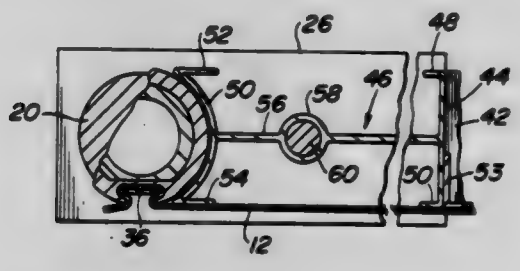
whereby the single bracket performs multiple functions of shaft bearing, cam surface and end stops, and with its shaft, an adjustment on the first element tension portion to vary the snap-action, and acts as a fixed locator of all structural parts.

4,345,390

SCREEN TENSIONING AND PRINTING FRAME

Don E. Newman, Wyncote, Pa., assignor to Stretch Devices, Inc., Philadelphia, Pa.

Filed Nov. 13, 1980, Ser. No. 206,213
Int. Cl.³ D06C *3/08*
U.S. Cl. 38—102.91 **16 Claims**



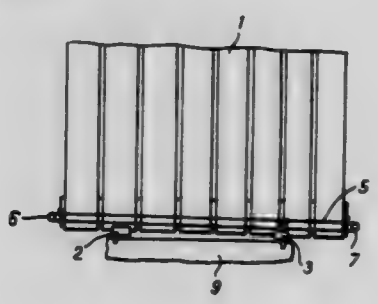
1. Apparatus comprising a screen tensioning and printing frame, said frame having a plurality of rollers coupled together by corner members which support the rollers for rotation about their longitudinal axes, each roller having a longitudinally extending channel on its periphery, a retainer means for each channel to retain an edge portion of a screen fabric in each channel, means associated with each corner member for locking each roller in a predetermined rotative position so that a desired tension may be applied to a screen fabric, a dam member associated with each roller, each dam member being inwardly of its associated roller and extending between adjacent corner members so that the dam members may form a dam for a printing medium to be applied through a screen fabric, the improvement comprising a discrete means connected to each dam member and cooperating therewith for at least partially opposing undesired inward bowing of the associated roller, said last-mentioned means including a discrete limit stop between each roller and its associated dam member, each limit stop being connected to its associated dam member by at least one web.

4,345,391

LAUNDRY FEEDING MACHINE

Henry J. Weir, "Alta Vista" Knapton Rd., Dublin, Ireland

Filed Jul. 9, 1980, Ser. No. 167,213
Claims priority, application Ireland, Jul. 9, 1979, 486/79
Int. Cl.³ D06F *67/04*
U.S. Cl. 38—143 **15 Claims**



1. An apparatus for finding and clamping the corners of the leading edge of a rectangular laundry flatwork piece so as to be able to fully extend said leading edge, said apparatus comprising:

a pair of clamp and guide means selectively operable to a clamping or to an unlocked condition, each of said clamp and guide means having a leading edge accepting configuration for accepting arbitrary portions of said leading edge with said pair of clamp and guide means disposed closer together than the length of said leading edge, said clamp and guide means captively guiding said leading edge for passage throught said guide means;

first means for effecting relative motion between portions of said leading edge of said piece and each of said clamp and guide means while in said unlocked condition to bring each of the leading edge corners of said piece toward the closest clamp and guide means; and,

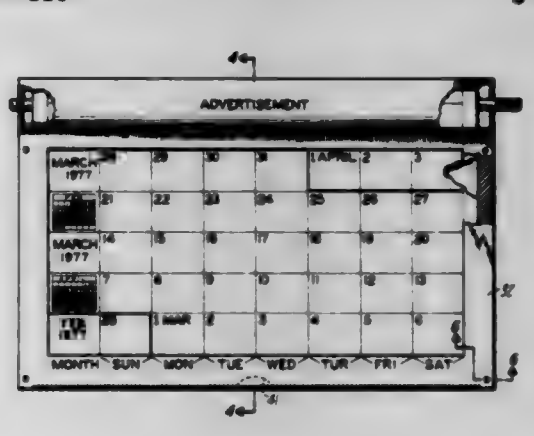
sensing means associated with each clamp and guide means to detect the passage of a leading edge corner closed to each of said clamp and guide means, said pair of clamp and guide means responding to the detection of passage of a leading edge corner past the associated sens' g means by being actuated to said clamping condition to clamp against the associated corner portion of said leading edge.

4,345,392

CALENDAR

Robert W. Cornell, 40 Belknap Rd., West Hartford, Conn. 06117

Continuation of Ser. No. 951,745, Oct. 16, 1978, abandoned.
This application Sep. 8, 1980, Ser. No. 184,749
Int. Cl.³ G09D *3/10, 3/04*; G09F *11/18*
U.S. Cl. 40—116 **3 Claims**

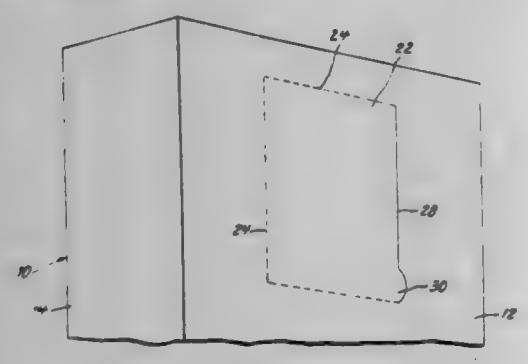


1. A flat, continuous, appointment calendar essentially consisting of a one-piece support holder having a flat bottom with a finger recess, a flat frame-like top having a top edge, bottom edge, and two side edges and overlying said flat bottom and spaced to accommodate sliding of a flexible continuous calendar sheet having calendar indicia thereon, and one-piece support also having a curved enclosure defined section connecting the top and bottom to form a chamber to hold the rolled up portion of the continuous calendar sheet, a unitary attachment means holding the top and bottom together along the side edges, an aperture defined by said frame-like top flat member to gain access to the calendar sheet so as to permit writing thereon, and the names of the days of the week and the word "month" printed or embossed on the holder along the top or bottom edge of the aperture, and a flexible, continuous calendar sheet having calendar indicia printed thereon, said indicia being divided in rows indicating the month or giving other month information and the days of the month, and in columns indicating month information and the days of the week, the columns arranged so that each day will be separately defined in each row even when the months change so that pulling the row out of view of the aperture will expose at least more than one future week, and weekly rows being detachable from the calendary sheet without affecting the succeeding weekly rows.

4,345,393
PEELABLE ON-PACKAGE COUPON AND METHOD FOR MAKING SAME

Charles E. Price, Delton; George C. Ray, III, Battle Creek; Harold R. Grieve, Battle Creek, and Robert G. Tomich, Battle Creek, all of Mich., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 836,873, Sep. 26, 1977, abandoned. This application Mar. 28, 1980, Ser. No. 134,736
Int. Cl.[3] G09F *3/00*
U.S. Cl. 40—312 6 Claims



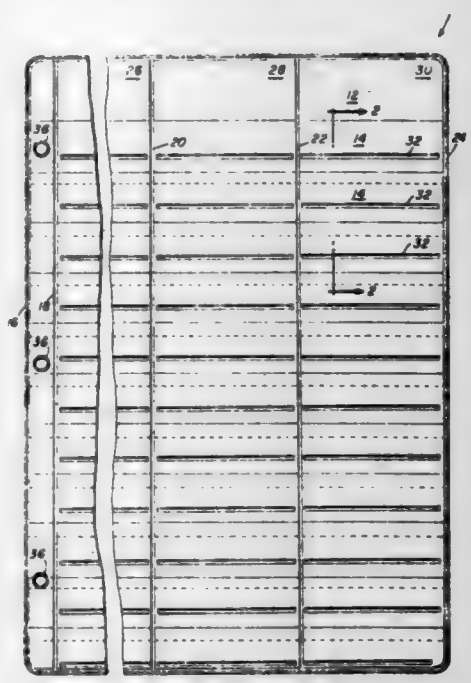
1. A carton constituting an erected carton blank formed from laminated packaging material and comprised of an inner relatively rigid ply, an outer relatively pliant ply adapted to have indicia imprinted on at least the outer surface thereof, and adhesive disposed intermediate said plies for laminating same to each other, the outer ply of said blank having a manually removable section at a predetermined interior surface area thereof enclosed by a tear outline comprised of a series of slits penetrating through said outer ply to a depth less than the thickness of said blank said slits being formed in said carton blank subsequent to the lamination of said outer ply to said inner ply and to thereby preclude any adhesive between said plies entering said slits, the opposed edges of said slits being unadhered to one another to facilitate separation of said section from said outer ply, and an adhesive release agent coated on the inner surface of said section to prevent adhesive bonding of said section with said inner ply, said removable section in the erected carton being peelable from said carton along said tear outline leaving said inner ply intact to maintain the structural integrity of said carton.

4,345,394
POCKET SHEET INSERT SHEET ASSEMBLAGE AND METHOD OF USING THE ASSEMBLAGE

David T. Sullivan, 2 Westbrook Dr., Nashua, N.H. 03060

Filed Jun. 19, 1981, Ser. No. 275,353
Int. Cl.[3] B42F *19/00*
U.S. Cl. 40—405 10 Claims

1. An assemblage comprising: at least one pocket sheet and at least one insert sheet, the pocket sheet and the insert sheet having substantially equal lengths and widths; each insert sheet comprising: a plurality of inserts on which information may be placed that are separable from each other; and each pocket

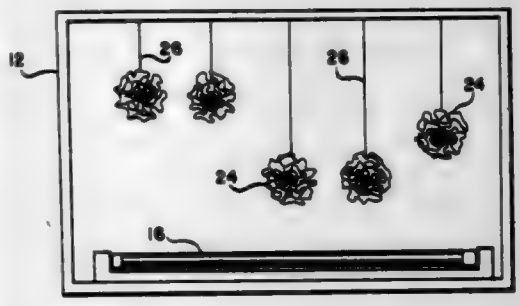


sheet comprising: a plurality of pockets of such a size as to so receive an insert as to expose information placed on the insert.

4,345,395
METHOD AND APPARATUS FOR PRODUCING DAY-NIGHT PICTURES

Gloria Grassi, 1511 E. Highland Ct., Ontario, Calif. 91764

Filed Dec. 1, 1980, Ser. No. 211,737
Int. Cl.[3] G09F *19/00, 13/06;* A63J *3/00*
U.S. Cl. 40—441 7 Claims

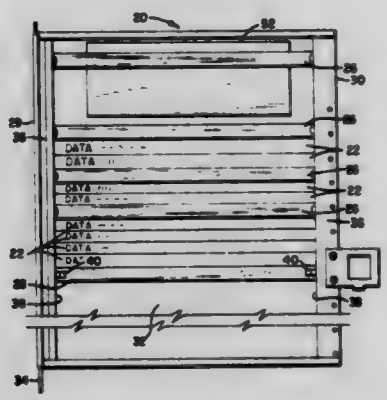


1. A day-night picture assembly comprising:
(a) a generally opaque picture having a large number of small translucent apertures therein;
(b) a generally opaque frame forming an enclosure behind said picture;
(c) a light source disposed in said enclosure; and
(d) randomly movable, multi-faceted reflector means consisting of balls of crumpled reflective foil, each ball suspended from the top of said enclosure behind said picture by a single thread-like, easily twistable suspensions means, said reflector means being movable back and forth and capable of turning and twisting;
(e) said light source being of a heat-producing type and being so positioned within said enclosure as to expose said reflector means to convection air currents generated by the heat produced by said light source, said convection air current causing said back and forth and turning and twisting movement of said reflector means.

4,345,396
VISIBLE INDEXES

Alexander P. Janssen, c/o Datastrip Corporation, 1575 Avon St. Extended, Charlottesville, Va. 22901

Filed Dec. 3, 1980, Ser. No. 212,625
Int. Cl.[3] G09F *3/04*
U.S. Cl. 40—490 5 Claims

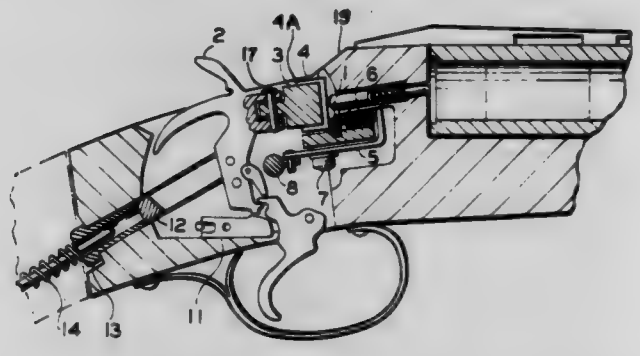


1. A visible index comprising a frame and a spring spacer for positioning an index strip or other component in a selected location along said frame or for detachably holding an item against said frame, said frame comprising a flat, sheetlike support and means at opposite edges of said support forming channels into which ends of said spacer can be fitted and said spacer comprising an elongated integral strip of elastically deformable material having integral means at the opposite ends of said strip for retaining those ends in said channels, said retaining means being resiliently biasable tab-like portions struck out of said strip, those ends of the struck out portions nearest the ends of said strip being spaced inwardly from the outer ends of said strip and being integral with said strip, and said struck out portions having segments thereof engageable with the means defining said channels, each segment being shaped at its periphery so as to avoid marring of or damage to said frame during insertion therewithin or withdrawal therefrom.

4,345,397
ALTERNATE FIRING METHOD

Mondo L. Hartman, R.R. 2 Box 281, Kalkaska, Mich. 49646

Filed Apr. 2, 1980, Ser. No. 136,684
Int. Cl.[3] F41C *19/00*
U.S. Cl. 42—42 B 5 Claims



1. A double barrel firearm having a frame, a stock, and a firing mechanism; said firing mechanism comprising a hammer having a pivoted front face, a release catch, a single trigger, and selector means for selecting the firing sequence of the barrels; said selector means comprising a selector cam pivotably mounted in said frame by a pivot pin for deflecting said hammer front face to a selected barrel, and means locating said cam selectively in first, second, and third positions; said locating means comprising a positioning lever, a compression spring with one end attached to said lever and the other end attached to said cam, and a control pin for moving said lever; said control pin being positionable in first, second, and third positions to move said cam to its first, second, and third positions; said first and third positions allowing continuous firing of either of the barrels, and the second position allowing automatic sequential firing of the barrels; and a locking means for holding said control pin in each of its positions.

4,345,398
GUN REST

Fred E. Pickett, 508 Sophia La., Shreveport, La. 71115

Filed Jun. 9, 1980, Ser. No. 158,060
Int. Cl.[3] F41C *29/00*
U.S. Cl. 42—94 8 Claims

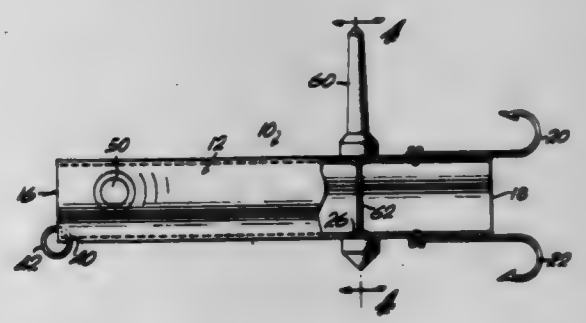


1. A gun rest for supporting a firearm comprising:
(a) a monopod characterized by a tapered base member and a plurality of tapered interior members carried by said base member in telescoping and locking relationship when said interior members are extended;
(b) pivot clamp means carried by one end of said monopod in pivotal relationship;
(c) a clamp mount plate supporting said pivot clamp means and disposed above said monopod;
(d) a monopod clamp means carried by said clamp mount plate and removably engaging said monopod when said interior members are in retracted, telescoped configuration inside said tapered base member; and
(e) a pair of barrel clamps mounted on said clamp mount plate for removably positioning said clamp mount plate and said monopod on the barrel of said firearm.

4,345,399
VIBRASONIC FISHING LURE

Chet Guzik, 8520 SW. 122nd St., Miami, Fla. 33156

Continuation-in-part of Ser. No. 91,370, Jan. 2, 1980, abandoned. This application Jul. 7, 1980, Ser. No. 166,354
Int. Cl.[3] A01K *85/01*
U.S. Cl. 43—42.06 18 Claims



1. A fishing lure comprising:
a tubular body defining an axial interior chamber;
means to create sonic effects including a strip of resilient

material secured within, and spanning under the tension, the interior chamber in a position to react vibrasonically to the movement of water axially through said interior chamber; and

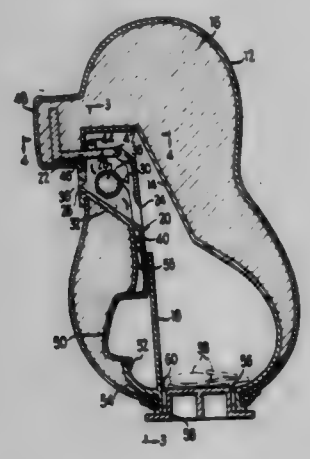
hook means connected to the tubular body.

4,345,400

PLUSH BANK

Allison W. Katzman; Edward T. Holahan; John V. Zaruba, all of Chicago, and Howard J. Morrison, Deerfield, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 3, 1980, Ser. No. 212,348
Int. Cl.[3] A63H *33/00*
U.S. Cl. 46—4 **17 Claims**



1. A toy bank comprising:

an outer, inwardly displaceable housing in the form of a plush animate figure including means for receiving tokens, such as money or the like;

a tokens receptacle disposed within said bank for storing a quantity of tokens;

passage means to direct said tokens from said outer housing to said tokens receptacle;

means, disposed within said outer housing along said passage means, for engaging said tokens temporarily to prevent said tokens from being received within said tokens receptacle;

means for moving said tokens past said engaging means to permit said tokens to be received by said tokens receptacle and an inner housing including a flexible upstanding wall defining a portion of said coin receptacle, said means for engaging said tokens comprises a pawl and ratchet mechanism comprising a pawl extending from an interior frame member, said pawl adapted to engage a ratchet mechanism on said token engaging means so that actuation of said pawl against said ratchet mechanism causes rotation of said token engaging means, said frame member includes token receiving means defining a portion of said passage means, said token receiving means on said frame member adapted to remain in alignment along said passage means during actuation of said pawl and ratchet mechanism.

4,345,401

GLIDER

Jeffrey A. Brzack, 140 Maumee Trail, Lake Orion, Mich. 48035

Continuation-in-part of Ser. No. 48,610, Jun. 13, 1979, Pat. No. 4,280,673. This application Jun. 13, 1980, Ser. No. 159,102
Int. Cl.[3] A63H *27/00*; B64C *1/00*
U.S. Cl. 46—79 **5 Claims**

1. A glider including a body formed from a multi-sided tube open at its ends with a leading edge at a forward end and a trailing edge comprising:

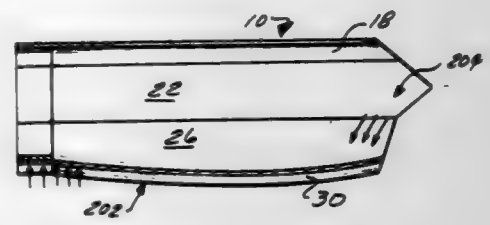
the tube comprising a plurality of walls of uniform thickness joined together to define an integral member, including;

a top wall of planar configuration;

a pair of opposed upper side walls of planar configuration integral with the top wall extending downward and outward a distance;

a pair of opposed vertical side walls of planar configuration integral with the upper side walls;

a pair of opposed lower side walls of substantially planar configuration integral with the vertical side walls extending downward and inward to a point inward of a vertical extension of the top wall and upper side wall intersection;



a substantially planar bottom wall extending between the lower side walls and integral therewith, the bottom wall including a pair of upward extending planar sections meeting at a center thereof forming a ridge; and

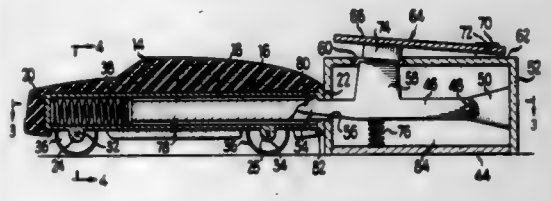
the opposed lower side walls and the planar sections of the bottom wall cambered with a convex side downward.

4,345,402

TOY VEHICLE AND LAUNCHER

Steven P. Hanson, Rancho Palos Verdes; Robert E. Smathers, Los Angeles, both of Calif., and Howard J. Morrison, Deerfield, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 4, 1980, Ser. No. 213,035
Int. Cl.[3] A63H *17/00*
U.S. Cl. 46—206 **7 Claims**



1. A toy vehicle and launcher, in combination, comprising means for launching said vehicle, said launching means including a latch and a member for actuating said latch;

a biasing means for propelling said vehicle;

a relatively rigid vehicle frame including means for receiving said latch in a pre-launching mode and a plurality of wheels mounted on said frame, said latch receiving means comprising a hollow portion with a hook member in said hollow portion, a resilient member; and

a vehicle body formed of a low density, soft, porous material secured to and enclosing said frame for defining the body of said vehicle.

4,345,403

METHOD OF PRODUCING PLANTS MYCORRHYZATED WITH SYMBIOTIC FUNGI

Giusto Giovannetti, Turin, Italy, assignor to Pegasus Pension Fund S.A., Panama City, Panama

Filed Feb. 9, 1981, Ser. No. 232,876
Claims priority, application Italy, Feb. 18, 1980, 67244 A/80
Int. Cl.[3] A01G *1/04*
U.S. Cl. 47—1.1 **9 Claims**

1. A method for producing plants mycorrhyzated (i.e. having their roots associated) with symbiotic fungi, which comprises the following steps:

(a) Cultivating a set of young plants in sterile soil;

(b) Mycorrhyzating said young plants grown under sterile conditions, by placing the roots of said plants in contact with roots previously mycorrhyzated with the desired

fungus and taken under natural conditions from other plants;

(c) Planting the resulting pilot young plants in sterile soil;

(d) Cutting secondary roots mycorrhyzated witth fungi different from the desired fungus from already adult plants to be mycorrhyzated, and sterilizing remaining roots, and

(e) Mycorrhyzating said adult plants by planting them in sterile soil among said pilot plants.

4,345,404

TREE SURGERY METHODS

Neil A. Benfer, Jr., Rte. 3, Box 313, Tappahannock, Va. 22560

Filed Sep. 3, 1980, Ser. No. 181,248

Int. Cl.³ A01N *3/04*

U.S. Cl. 47—8 **6 Claims**

1. The method of repairing a wound on a tree or shrub comprising the steps of cleaning the wound site by removing sufficient wood to provide an elliptical or oval site wherein all damaged or diseased wood is removed, applying a coating mixture of fiberglass resin and hardener to said site, whereby air and moisture are excluded from said wound site by the resultant coating.

4,345,405

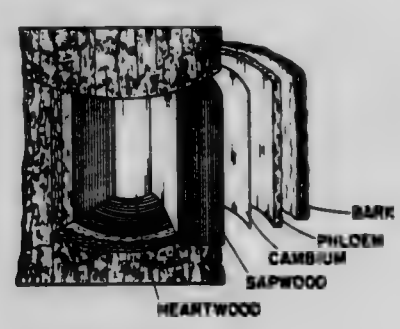
METHOD OF INDUCING LIGHTWOOD FORMATION IN LIVING CONIFERS

James W. Davis, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 27, 1981, Ser. No. 248,633

Int. Cl.³ A01M *21/00*

U.S. Cl. 47—10 **18 Claims**



1. In the method of inducing lightwood formation in a living conifer, the improvement wherein the sapwood of a selected section of a living conifer is heated internally to a temperature of from about 40° C. to about 100° C. by means of an energy source that will not kill the tree.

4,345,406

BLEACHER STRUCTURE

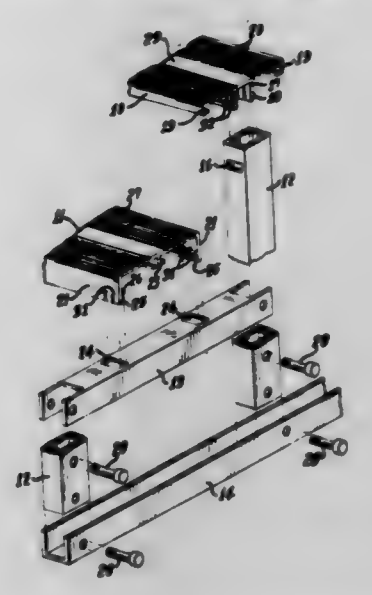
Larry L. Motley, Marianna, Fla., assignor to Jewell C. Griffin, Jr., Cottondale, Fla., a part interest

Filed Dec. 13, 1979, Ser. No. 103,392

Int. Cl.³ E04H *3/12*

U.S. Cl. 52—8 **10 Claims**

2. A bleacher structure having channel beam seat members and channel beam footrest members supported by an interconnected system of upright posts being rectangular in cross-section, cross beams, and diagonal stiffening members, said seat members having flat legs with hook projections to be inserted inside the upper open end of said posts to lie adjacent flat inner and opposed surfaces of said rectangular posts, and by spring action to lock said projections into slots in said posts so as to connect said seat members securely to said posts, the top edge of each of said posts being contacted by the lower surface of respective said seat members to support said members, and said footrest members adjacent the outside edges thereof having legs extending downwardly with hook projections to be inserted into slots in said cross beams and by spring action to lock



into said slots so as to connect said footrest members securely to said cross beams.

4,345,407

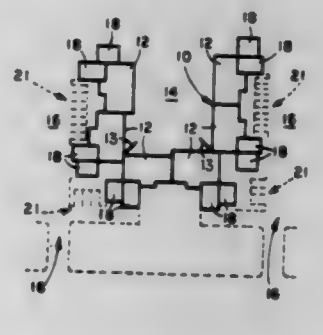
MULTI-UNIT DWELLINGS

Maurice J. Fishman, 2751 S. Ocean Dr., Apt. #PH8 S. Tower, Hollywood, Fla. 33019

Filed Jun. 2, 1980, Ser. No. 155,503

Int. Cl.³ E04H *1/04*

U.S. Cl. 52—169.3 **11 Claims**

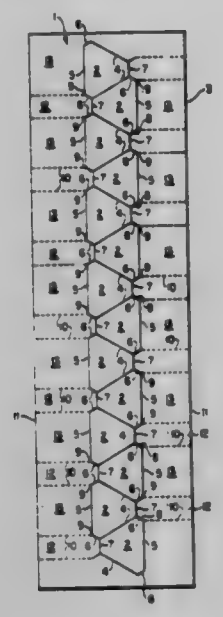


1. A multi-unit dwelling having a plurality of individual living units therein which are protected from noise and visual pollution and which are arranged to afford maximum privacy to each living unit comprising, a plurality of contiguous single floor living units arranged to form a courtyard enclosed on at least three sides therebetween, said courtyard being protected from noise and visual pollution by the plurality of living units, said plurality of living units physically separating said service side and said vehicles associated therewith from said courtyard, each of said living units having a court side exposed to said courtyard and a service side exposed to vehicle access and the associated noise and pollution associated with vehicles, each of said living units including on a single floor level a living area and a bedroom area disposed on said court side of said living unit and a bathroom, a utility room, storage areas, a garage, and a main private entrance way disposed on said service side of said living unit, each of said living units further including a garage disposed on said service side of said living unit, said living area and said bedroom area each including windows therein exposed to said protected courtyard, said bathroom, utility room, garage and storage areas forming a buffer for noise and visual pollution between said service side of said living units and said living area and bedroom area, and wherein said garage of each of said living units includes a vehicle entrance therein opening to said service side of said living units and a garage private entrance way from said garage, to said associated living unit.

4,345,408
BUILDING STRUCTURE

Paul A. Cote, 504 Cambridge Bldg., 10024 Jasper Ave., Edmonton, Alberta, Canada (T5J 1R9)

Filed Jul. 29, 1980, Ser. No. 173,287
Claims priority, application Canada, Jun. 10, 1980, 353835
Int. Cl.[3] E04H *1/02*
U.S. Cl. 52—169.3 8 Claims

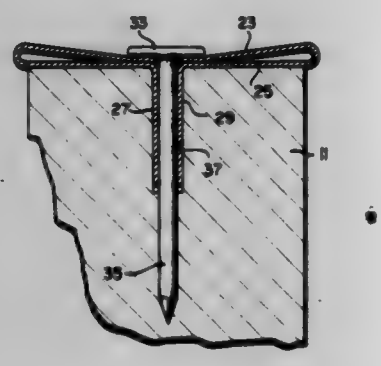


1. A row house structure habitable by humans, comprising a plurality of contiguous similar housing units defining a row of such units, at least two contiguous units being generally similarly triangular in plan, with the base of one triangular unit facing oppositely from the base of the other triangular unit and the two contiguous triangular units having a contiguous side, said row including a pair of end units, each end unit having one free side and a side contiguous with an adjacent unit, each side of any other unit in said row being contiguous with a side of an adjacent unit, and at least one access door in each housing unit.

4,345,409
BRACE MEMBER AND WALL STRUCTURE

Donald E. Schroeder, and Thomas Temperly, both of Milwaukee, Wis., assignors to Inryco, Inc., Chicago, Ill.

Continuation of Ser. No. 955,102, Oct. 26, 1978, abandoned.
This application Nov. 7, 1979, Ser. No. 92,084
Int. Cl.[3] E04C *3/12, 3/18*
U.S. Cl. 52—693 4 Claims



1. In a structure having a pair of parallel frame members and a plurality of parallel, spaced-apart support members extending between said frame members, the improvement comprising:

a brace member comprising a strip of sheet metal formed to have a generally T-shaped cross section comprising a double layered top member portion having a top layer and a bottom layer, portions of said strip adjacent the edges of said strip extending away from the bottom layer of said top member portion in a substantially perpendicular direction with respect to said top member portion to provide a pair of spaced apart flanges, said flanges being unconnected at their respective outwardly extending edges;

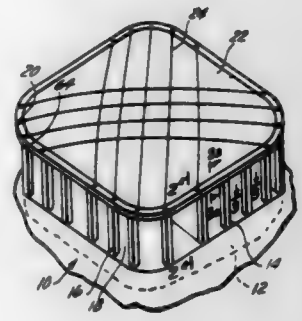
a transverse channel in each of a selected plurality of adjacent ones of said support members and said frame members, said channels being aligned in the diagonal direction across said structure to receive said brace member and sized to receive said brace flanges; and

means for fastening said brace member to said structure, said fastening means having a shank portion extending through said top brace member portion, said shank extending between said brace flanges to engage said support member at the bottom of said channel, said shank being sized to expand said brace flanges outwardly to wedge against the walls of said channels and secure said brace member to said structure members.

4,345,410
CONSTRUCTION METHOD

David Geiger, Rye, N.Y.

Filed Aug. 18, 1980, Ser. No. 178,803
Int. Cl.[3] E04B *1/34*
U.S. Cl. 52—741 17 Claims



1. A method for erecting the supporting wall of a dome structure comprising the steps of forming a peripheral foundation for the wall conforming in plan generally to the periphery of the structure, positioning hollow box columns on said foundation at predetermined points, securing the lower ends of each of said columns to said foundation at a plurality of points about each column with temporary moment connections to resist load moments during the erection procedure, securing wall panels to said columns between the columns to close the sides of the structure; securing a supporting ring to the tops of said columns, releasing said temporary moment connections at the lower ends of said columns and thereafter erecting the dome on the ring.

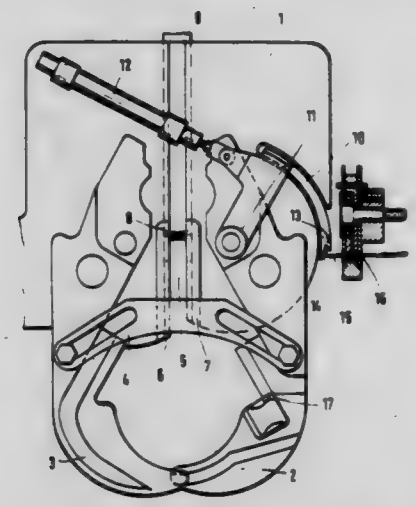
4,345,411
APPARATUS FOR TRANSFERRING SAUSAGE HANGER LOOPS INTO A CLOSING MACHINE

Herbert Niedecker, Am Ellerhang 8, D 6240 Königstein 2, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,783
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950603
Int. Cl.[3] B65B *61/14*
U.S. Cl. 53—134 3 Claims

1. In an apparatus for closing about the mouth of a filled sausage casing a closure clip having two legs, the apparatus including a plate provided with a clip guideway, means on the plate for gathering the casing, a closure die, a punch for advancing a clip through the guideway about the gathered casing and against the die to cause the clip to be closed about the casing, and means for introducing a loop of flexible material having two connected side portions so that the loop is locked to the sausage casing by the closure of the clip, whereby the sausage may be hung by the loop, the improvement wherein said loop introducing means comprises means for forming loops from a length of flexible material, and pusher means for successively engaging each loop, means operatively associated with the punch for moving said pusher so as to advance the

loop as the punch and clip advance and to bring the loop into such position intercepting the guideway that one leg of the clip



moved by the punch passes between said side portions and through the loop, whereupon the pusher means is retracted and the clip proceeds to closure.

4,345,412

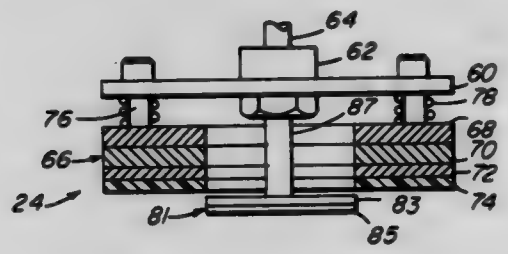
CUP LIDDING APPARATUS AND LEAKPROOF CUP

Winton E. Balzer, 963 Central Ave., Needham, Mass. 02102, and Kenneth M. Knobel, 37 Percy Rd., Lexington, Mass. 02173

Filed Jun. 13, 1980, Ser. No. 159,294

Int. Cl.³ B67B *3/04*; B65B *51/14, 7/28*

U.S. Cl. 53—297 **4 Claims**



1. In a cup lidding apparatus having a fixed housing adapted to contain a feed roll of heat sealable film, film advance means for drawing the leading end of said film from said roll into a heat sealing horizontally extended position above a cup, cup holding means mounted below the extended film and adapted to raise said cup up into contact with the lower face of said film and then lower said cup and a heat-sealing head mounted to said housing above the extended film and opposite said cup holder and adapted to reciprocate down against the upper surface of said film to heat seal the extended film against the rim of said cup, the improvement, comprising

(a) an annular heat sealing head formed with a central opening extending entirely through said head and presenting a flat lower annular face adapted to engage the upper surface of said film and seal the lower surface against the rim of said cup while isolating the center portion of said film from the heat of said head, and,

(b) said head including resilient material therein,

(c) said head including a thermally insulating member mounted in the center of said head and extending downwardly from the lower face of said head to thermally insulate the center portion of said film from said annular face.

4,345,413

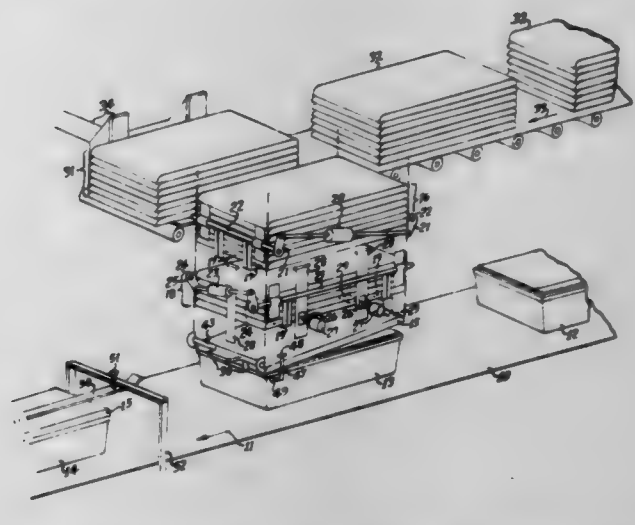
BOX LIDDING SYSTEM AND APPARATUS

Stephen C. McCranie, Woodstock, Ga., and Andrew J. Houseman, Jacksonville, Fla., assignors to Sav-A-Stop Incorporated, Jacksonville, Fla.

Filed Oct. 4, 1979, Ser. No. 81,790

Int. Cl.³ B65B *7/28*

U.S. Cl. 53—315 **16 Claims**



1. In a continuous system for placing a plurality of removable rectangular lids with depending flanges respectively on open top rectangular boxes comprising:

(a) a continuously moving generally horizontal conveyor adapted to move said open top boxes through a lidding station in a preselected orientation to receive respective said lids;

(b) a vertical chute positioned above said conveyor at said lidding station for maintaining a stack of lids in horizontal orientation corresponding to said open top boxes;

(c) at least four spaced movable fingers attached to said chute with two said fingers supporting each of opposed sides of said stack of said lids when inserted below the bottom lid in said stack, means to connect all of said fingers together for simultaneous retraction to a position providing no support for said stack;

(d) at least four spaced movable tongues attached to said chute above said fingers with two of said tongues insertable on each of opposed sides between the bottom lid and the next-to-the-bottom lid in said stack to support opposed sides of said lids resting on and above said tongues, means to connect all of said tongues together for simultaneous retraction to a position providing no support for said stack;

(e) pneumatic power means to selectively move said tongues simultaneously to their inserted position; and

(f) pneumatic power means to selectively move said fingers simultaneously into their retracted position after said tongues are in their inserted position to release said bottom lid onto an open top box in said lidding station.

4,345,414

SHAPING PROCESS

Alan Bornat, and Roy M. Clarke, both of Liverpool, England, assignors to Imperial Chemical Industries Limited, London and University of Liverpool, Liverpool, both of, England

Filed Nov. 15, 1979, Ser. No. 94,799

Claims priority, application United Kingdom, Nov. 20, 1978, 45297/78

Int. Cl.³ B29C *25/00*

U.S. Cl. 53—425 **24 Claims**

1. A process for stabilizing a product at least a portion of which comprises electrostatically spun fibres which process comprises the steps of holding the product under stress in a

desired shape and/or size while the temperature thereof is maintained between the melding temperature of the said fibres



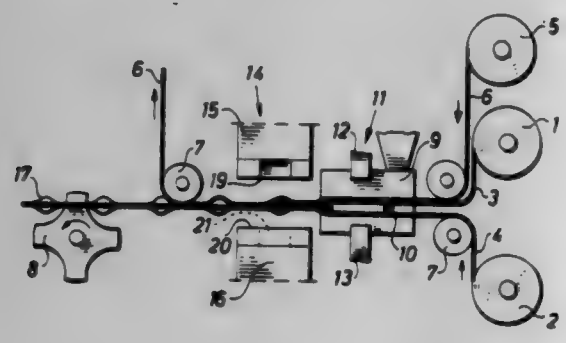
and room temperature to set the product in the desired shape and/or size and then cooling the product or allowing it to cool.

4,345,415

METHOD FOR THE MANUFACTURE OF PACKAGES FOR DRINKING STRAWS

Erik Järund, Morhult, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed May 20, 1980, Ser. No. 151,728
Claims priority, application Sweden, May 23, 1979, 7904547
Int. Cl.³ B65B *9/02*
U.S. Cl. 53—450 **4 Claims**



1. A method for the manufacture of bandlike coherent packages for drinking straws, comprising the steps of placing a plurality of drinking straws transversely between two material webs constituted of thermoplastic films, heat sealing the two material webs to one another around each drinking straw to form closed protective envelopes, heat-sealing a material strip to a side of one of the films remote from the drinking straws, thereby creating transverse sealing regions situated between the drinking straws, removing portions of the sealing regions from the material webs located between the drinking straws together with the material strip so that the protective envelopes are joined together only along limited portions of their peripheral edges.

4,345,416

VACUUM GRASS COLLECTING APPARATUS

George R. Cameron, 3616 Rexford La., Sarasota, Fla. 33583

Filed Oct. 6, 1980, Ser. No. 193,968
Int. Cl.³ A01D *35/26, 35/22*
U.S. Cl. 56—13.3 **4 Claims**

1. A vacuum grass collecting apparatus for a tractor-type lawnmower having a rear discharge opening in its cutting deck and a rear power-take-off, comprising:

(a) a refuse container having an intake opening;

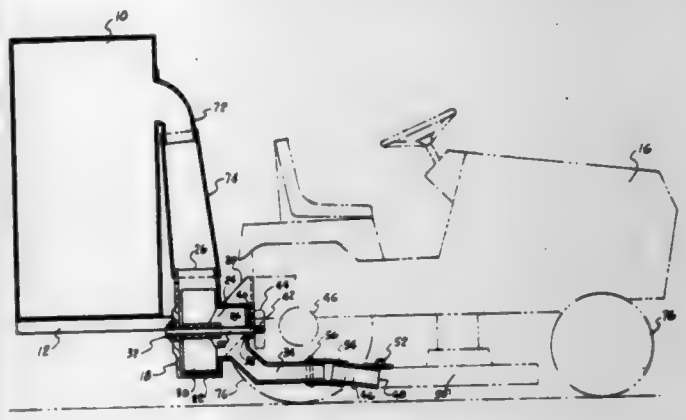
(b) means for mounting said refuse container on the rear of the tractor-type lawnmower;

(c) a blower consisting essentially of a housing having an intake opening and a discharge opening, a rotatable drive shaft having a plurality of impeller blades mounted thereon and a support bearing for said rotatable drive shaft;

(d) means for mounting said blower on the rear of the tractor-type lawnmower;

(e) a duct interconnecting said intake opening in said refuse container and said discharge opening in said housing of said blower;

(f) an articulated duct, positioned under the rear axle of the tractor-type lawnmower, interconnecting said intake opening in said housing of said blower and the rear discharge opening in the cutting deck of the tractor-type lawnmower, said articulated duct comprising a first duct element which engages said intake opening in said housing of said blower, a second duct element which engages the rear discharge opening in the cutting deck of the tractor-type lawnmower, a hinge assembly which bridges the bottom surfaces of said first duct element and said second duct element, a pair of rearwardly extending plates fixedly attached to the sides of the rear opening of said second



duct element to slideably engage the outside surfaces of the sides of said first duct element adjacent to its front opening, and a flexible rubber strip which bridges the top surfaces of said first duct element and said second duct element; and

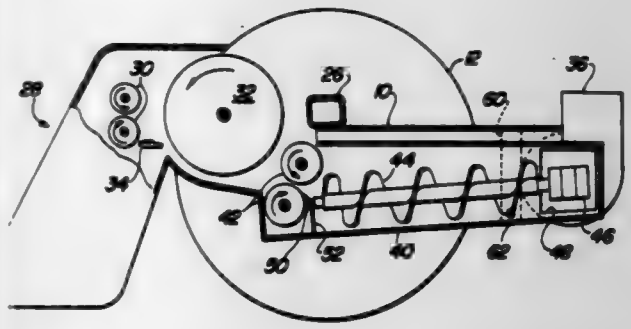
(g) means for operatively connecting said rotatable drive shaft of said blower and the rear power-take-off of the tractor-type lawnmower; said refuse container, said means for mounting said refuse container, said blower, said means for mounting said blower, said ducts, and said means for operatively connecting said rotatable drive shaft and the rear power-take-off, all being positioned between the two imaginary parallel vertical planes which contain the outer extremities of the tractor-type lawnmower, exclusive of its cutting deck.

4,345,417

FORAGE HARVESTER WITH KERNEL PROCESSING MEANS

Harold E. deBuhr; Walter W. Booker, both of Ottumwa, and Steven L. Schmid, Agency, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Feb. 17, 1981, Ser. No. 235,314
Int. Cl.³ A01D *45/02*
U.S. Cl. 56—14.3 **1 Claim**



1. A forage harvester having a fore-and-aft mobile frame, crop-gathering means carried at a fore part of the frame for gathering corn crops from the field, including stalks, leaves, ears and husks, crop discharge means at an aft part of the frame, a rotary cutterhead carried by a fore part of the frame

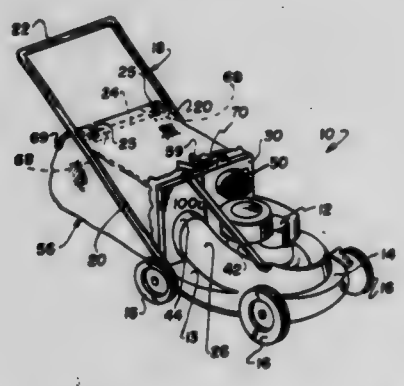
just aft of the gathering means for rotation on an axis transverse to the fore-and-aft centerline of the frame for receiving crops from the gathering means and for chopping the crops into fragments, and a drive source carried by the frame, characterized in that a pair of cooperative compressor rolls is carried by the frame aft of the cutterhead for receiving chopped crops from the cutterhead and for further reducing the crops, said rolls being rotatable on parallel axes parallel to the cutterhead axis, one roll being an upper roll located immediately behind a rear part of the cutterhead, the other roll being a lower roll offset below and forwardly of the upper roll and just under the bottom rear part of the cutterhead so that the cutterhead discharges directly and immediately into the bite of the rolls, fore-and-aft conveyor means having a fore part projecting below the upper roll and in close proximity to the lower roll to receive crops from the rolls and to convey them rearwardly, a substructure is removably carried by the frame and includes a bottom underlying the rolls and conveyor means and the rolls and conveyor means are carried by the substructure so that the substructure, rolls and conveyor means are removable from and installable in the frame as a unit, and drive means is connected between the power source, the cutterhead, the rolls and the conveyor means.

4,345,418

DISPOSABLE BAG MOUNTING AND SHUTDOWN MECHANISM FOR ROTARY LAWN MOWER

Ramiro Arizpe, 9938 Donegal, Dallas, Tex. 75218

Filed Feb. 20, 1981, Ser. No. 236,537
Int. Cl.³ A01D *35/22, 75/20*
U.S. Cl. 56—202 **11 Claims**



1. In a rotary power lawn mower and the like: a housing, motor means mounted on said housing and drivably connected to a rotary mower blade means, said housing including a discharge chute for conveying grass cuttings and debris entrained in a moving air stream generated by said blade means away from said housing, a mounting plate disposed on said mower and including a portion forming a substantially flat surface adapted to form a closure over the mouth of a disposable plastic grass collection bag, a first opening in said plate in flow receiving communication with said discharge chute for discharging grass cuttings directly into said collection bag from said chute, a second opening in said plate for venting air substantially free of debris from said collection bag, a collection bag holder including a perimeter frame member and a flexible tubular bag holding skirt secured at one end to said frame member, said frame member being adapted to be releasably mounted on said plate with the mouth of said collection bag folded over the edge of said frame member for clamping said collection bag between said plate and said frame member;

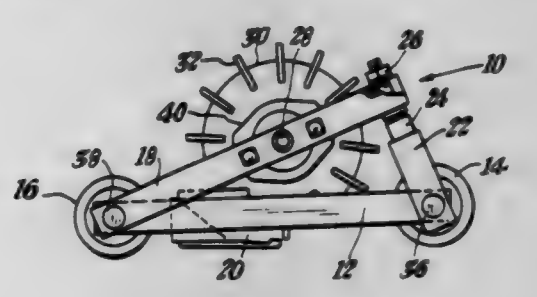
means on said skirt for supporting said collection bag and said skirt at the end opposite said plate whereby said bag holder extends generally horizontally from said plate rearward of said housing, and a movable locking member mounted on said plate and adapted to be moved between locking and release positions with respect to said bag holder for releasably securing said frame member and a collection bag held thereby to said plate for receiving grass cuttings from said first opening.

4,345,419

SELF ADJUSTING, FLOATING, REEL BLADE MOWER

Noel Chandler, 3912 Santiago St., Sebring, Fla. 33870

Filed Mar. 31, 1981, Ser. No. 249,610
Int. Cl.³ A01D *55/20*
U.S. Cl. 56—249 **3 Claims**



1. A reel blade lawn mower that requires no adjustment between the reel blades and the bed knife to establish a variable, predetermined contact pressure for optimum cutting between the reel blade tips and the bed knife cutting surface, comprising:

a frame;

first and second movable support means connected to said frame;

a reel having a plurality of cutting blades affixed thereto disposed about a central reel shaft;

a bed knife attached to said frame;

a means connected to the central shaft of said reel and said frame for supporting said reel pivotally against said bed knife, said reel and said reel central shaft support means being configured in weight, size and location to provide a predetermined blade tip contact pressure on said bed knife when freely vertically supported on said bed knife, said pivot located relative to said frame, said bed knife and said reel central shaft to produce an increased contact pressure above said predetermined contact pressure as a function of increased force on said reel blades resisting the motion of said reel blades.

4,345,420

MOWING IMPLEMENT

Pieter A. Oosterling, and Hendricus C. van Staveren, both of Nieuw-Vennep, Netherlands, assignors to Multinorm, B.V., Nieuw-Vennep, Netherlands

Continuation of Ser. No. 832,740, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 769,775, Feb. 17, 1977, abandoned, which is a continuation of Ser. No. 706,952, Jul. 20, 1976, abandoned, which is a continuation of Ser. No. 536,740, Dec. 27, 1974, abandoned. This application Nov. 5, 1979, Ser. No. 91,167
Int. Cl.³ A01D *55/22, 35/264*
U.S. Cl. 56—295 **2 Claims**



1. A mowing implement comprising, in combination:

an elongate housing of generally rectangular cross section adapted to extend in a direction of movement of the mowing implement, said housing being of predetermined narrow width and of predetermined small thickness whereby to pass over the ground with its top wall angled slightly downwardly but still spaced closely thereabove;

a train of gears disposed in serially meshing relation within said housing, each gear being of a diameter less than said

predetermined narrow width of the housing and of a thickness less than said small thickness of the housing;

a shaft connected to that gear at said one end of the housing and a plurality of further shafts connected to other gears of said train of gears, each shaft projecting upwardly through the top wall of said housing;

a holder connected to each shaft and including a first disc having a flat portion and a dished central portion, said flat portion closely overlying the top wall of said housing and projecting beyond the front edge of the housing whereby to present a very small gap between such portion and top wall of the housing at the front edge thereof so as to preclude the entry of potentially damaging foreign objects between said holder and said housing, each holder including a second disc connected to the dished central portion of said first disc, each second disc being flat throughout and being connected in registry with its first disc so that the peripheries of the two discs are in vertically spaced relation; and

a cutter pivotally connected to each holder between said first and second disc adjacent the periphery thereof and projecting therefrom to sweep a circular path which is larger than the circular path swept by its holder, the circular paths swept by cutter members of adjacent holders overlapping well forward of said front edge of the housing but such cutter members being rotationally staggered with respect to each other so as to prevent interference therebetween.

4,345,421

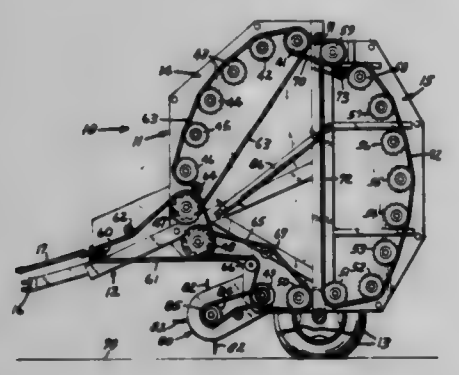
BALING MACHINE WITH A NON-CIRCULAR CHAMBER

Terry R. Schwalenberg, Medford; Frank C. Krumholz, Owatonna; Glenn G. Kanengieter, Blooming Prairie, and Larry L. Henkensiefken, Waseca, all of Minn., assignors to Owatonna Manufacturing Company, Inc., Owatonna, Minn.

Filed Dec. 8, 1980, Ser. No. 214,195

Int. Cl.³ A01D *39/00*; B30B *5/04*

U.S. Cl. 56—341 **11 Claims**



1. A baling machine for forming rolled bales, comprising:

(a) a frame;

(b) means for supporting said frame for movement;

(c) a body mounted on said frame, said body including a fixed front portion and a movable rear portion;

(d) a plurality of generally transverse, parallel rollers rotatably mounted on said body, said rollers being arranged to define a vertically elongated baling chamber in cross-section having an arched upper end and a rounded lower end with an inlet;

(e) means mounted in said inlet of said baling chamber for picking up agricultural material and feeding said material into said chamber;

(f) means for effecting rotation of said roller such that the agricultural material in said chamber is rolled and kneaded into a generally cylindrical bale; and

(g) means for relatively moving the rear portion of said body relative to the front portion for removal of the bale.

4,345,422

HAY-GATHERING MACHINE FOR PULLING WINDROWS, TURNING AND SCATTERING HAY

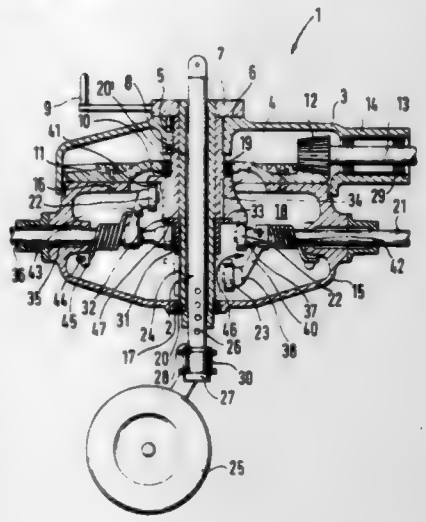
Jean-Pierre Amstutz, Birr, Switzerland, assignor to Bucher Guyer A.G. Maschinenfabrik, Niederweningen, Switzerland

Filed Apr. 28, 1980, Ser. No. 144,259

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917744; Switzerland, Jun. 8, 1979, 5352/79

Int. Cl.³ A01D *79/00*

U.S. Cl. 56—370 **24 Claims**



1. In a hay-gathering machine for pulling windrows of hay and for turning and scattering the hay, comprising at least one rake-wheel rotating about a substantially vertical swivel axle, wherein rake tines are fastened on a plurality of the tine-carriers which are outwardly directed from said swivel axle, said tine-carriers being supported near the hub of the rake-wheel for rotation about their longitudinal axes and each being provided with a crank-like control lever which cooperatively engages a first control channel to control the rotational movement of the tine-carriers between a lowered and a raised position of the rake tines, the improvement comprising

a second control channel is provided equidistantly about said swivel axle and means to adjust the relative position of said first and second control channels so that in a first position each said control lever contacts said first control channel and in a second position each said control lever is lifted from said first control channel and contacts said second control channel, said second control channel maintaining said tine-carriers in a substantially fixed position.

4,345,423

YARN RESERVE DISC FOR A SPINDLE ASSEMBLY OF A TWO-FOR-ONE TWISTER TEXTILE YARN PROCESSING MACHINE

Wolfgang Leupers, Krefeld, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,447

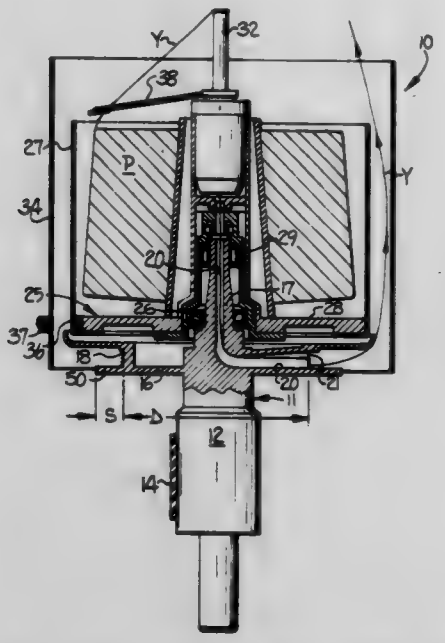
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1979, 2931369

Int. Cl.³ D01H *7/86*

U.S. Cl. 57—58.84 **2 Claims**

1. In a spindle assembly of a two-for-one twister textile yarn processing machine having a rotatably driven rotor mechanism including a driven whorl, a yarn reserve disc positioned above said whorl and having an outer, circumferential yarn storage surface of predetermined diameter, a hollow axle extending axially from and above said reserve disc, and a generally L-shaped yarn passageway extending axially through said hollow axle and partially through said yarn reserve disc and then radially through said yarn reserve disc and having an exit aperture in said yarn storage surface; the improvement to said yarn reserve disc of means for preventing coils of yarn collected around said yarn storage surface, particularly upon

breakage of the yarn during processing by said spindle assembly, from slipping down off said yarn storage surface onto said whorl which would interfere with proper rotation of said rotor



mechanism, said means comprising an annular rim extending radially outwardly from a lower portion of said yarn storage surface of said yarn reserve disc and having a radial length comprising the relationship:

$$S/D \geqq \sqrt{Do/D}\ ;$$

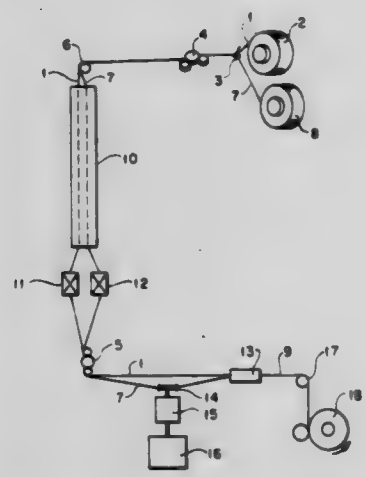
where S=the radial length of said annular rim, D=the nominal diameter of said yarn storage surface of said reserve disc, and Do=an auxiliary dimension of 1 mm.

4,345,424

TEXTURED NOVELTY YARN AND PROCESS

Michael A. Davis, and Bron W. Spivey, both of Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed Jun. 23, 1980, Ser. No. 161,848
Int. Cl.³ D02B *3/34*
U.S. Cl. 57—209 **6 Claims**



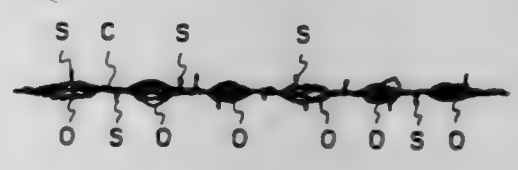
1. A two-phase effect yarn, comprising a first group of lively textured synthetic polymeric continuous filaments and a second group of textured synthetic polymeric filaments, the two groups of filaments being of substantially equal length and combined along their lengths to form a cohesive yarn, and further, slidably attached to each other along portions of their combined lengths, the first group of filaments having alternatingly low and high amplitude characteristics relative to the second group, but substantially no formed slubs along the combined yarn length in a first phase; slubs being capable of being formed in a second phase by exerting sufficient frictional forces along the length of the combined yarn in one direction to cause the two groups of filaments to slide relative to each other until sufficient interfilamentary frictional forces cause a binding action among the filaments.

4,345,425

PROCESS FOR MAKING BULKY TEXTURED MULTIFILAMENT YARN

Takao Negishi, and Kazuo Tomiita, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 13,198, Feb. 16, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,370
Int. Cl.³ D02G *3/34, 1/20;* D02J *1/08*
U.S. Cl. 57—289 **9 Claims**



1. A process for manufacturing a bulky textured multifilament yarn composed of a plurality of individual filaments having false-twisted crimps, having interlaced yarn sections and non-interlaced yarn sections formed alternately along the longitudinal axis of the yarn, and having a plurality of filament portions protruding from the yarn axis, said process comprising at least two steps:

slackening a multifilament yarn treated by a false twisting operation to such an extent that crimps of individual filaments are formed; the crimps of each of said filaments being irregularly distributed along its length as compared to the crimp distribution of other filaments of said yarn;

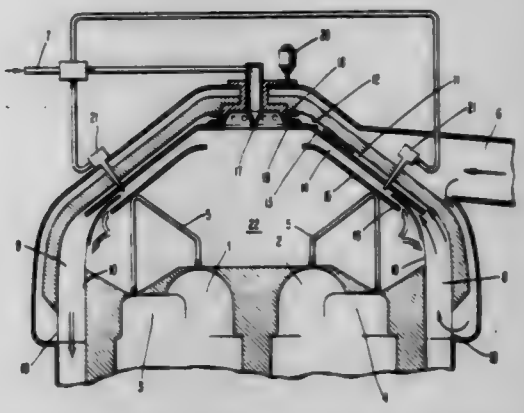
then interlacing said individual filaments of said slackened multifilament yarn by a fluid jet stream while taking up said multifilament yarn, whereby crimps of said individual filaments created by said flase twisting operations are maintained in said yarn during said slackening and interlacing treatment of said yarn.

4,345,426

DEVICE FOR BURNING FUEL WITH AIR

Rolf A. Egnell, Bygatan 17, S-240 13 Genarp, and Carl-Göran Sjöstedt, Tibastgränd 20, S-230 40 Bara, both of Sweden

Filed Mar. 27, 1980, Ser. No. 134,478
Int. Cl.³ F23R *3/04;* F02G *1/04*
U.S. Cl. 60—39.23 **9 Claims**



1. A device for burning fuel with air and in which the combustion gases are at least partially recirculated, said device comprising:

primary walls defining a preheater having adjacent passages for exhaust gases and air supplied for the combustion, said preheater for heating the air and cooling the exhaust gases; secondary walls defining a passage for a first part of the air flow leaving the preheater and for directing said first air flow to a single fuel nozzle; further walls forming

a number of paths for guiding a part of combustion gas flow from a location near said heat exchanger to a location near said nozzle to cause a recirculation of said part of the combustion gases;

still further walls defining ejector nozzles for guiding a second part of the preheated air leaving the preheater into each of said paths to provide the driving force for the recirculation of said part of the combustion gases; and

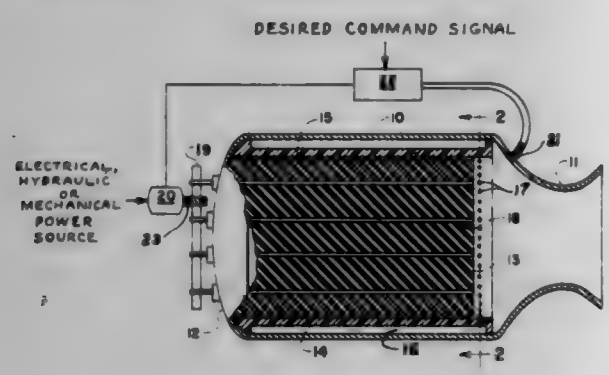
means for indirectly controlling the amount of combustion gases recirculated in said paths, said control means including governing means positioned in said passage for regulating said first air flow.

4,345,427

ROCKET MOTOR OR GAS GENERATOR HAVING CONTROLLED THRUST OR MASS FLOW OUTPUT

Roger H. Whitesides, Jr., Somerville, Ala., assignor to Thiokol Corporation, Newtown, Pa.

Filed Oct. 26, 1979, Ser. No. 88,706
Int. Cl.³ F02K *9/26*
U.S. Cl. 60—234 **2 Claims**



1. A rocket motor or gas generator comprising in combination, a casing including a combustion chamber, a solid propellant grain mounted in said casing, a separator between said grain and the casing, a head closing one end of said casing, at least one opening at the opposite end of said casing, filaments embedded in said propellant, means adapted to retract the filaments during burning of the propellant at various rates to vary its overall burning rate, the separator including walls defining at least one channel in its surface adjacent the casing and port means allowing communication between said channel and said combustion chamber, with each channel arranged longitudinally with respect to the propellant grain, with each channel extended beyond the propellant grain, with the port means comprising at least one passage for each channel and the passage radially oriented with respect to the longitudinal central axis of the motor or gas generator, wherein said propellant grain is cylindrical in form and said separator is annular in form and fits around the cylindrical walls of said propellant grain, and wherein said channels in said separator are uniformly spaced in all four quadrants of said separator to insure a substantially uniform pressure distribution over the burning end of said propellant grain and the cylindrical walls thereof.

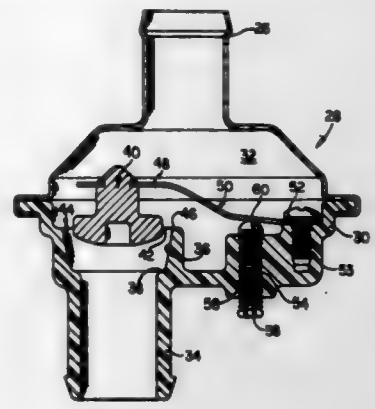
4,345,428

FLOW CONTROL VALVE FOR VEHICLE EMISSIONS CONTROL SYSTEM

John E. Cook, Chatham, Canada, assignor to Canadian Fram, Chatham, Canada

Filed Nov. 20, 1980, Ser. No. 208,614
Int. Cl.³ F01N *3/22*; F16K *13/06, 17/40*
U.S. Cl. 60—274 **12 Claims**

1. A method of controlling exhaust emissions in a motor vehicle having an exhaust system including a catalytic converter and a source of air pressure, comprising the steps of communicating the source of air pressure to the catalytic converter, venting at least a portion of the output generated by the source of air pressure when the vehicle is new, and progressively reducing the quantity of air vented as the vehicle is used



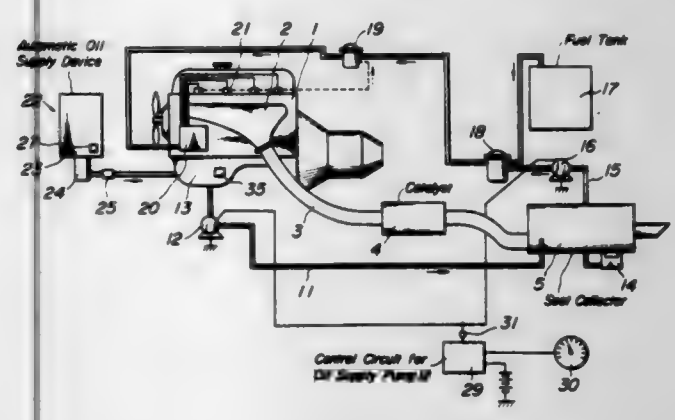
to thereby progressively increase the quantity of air communicated to the catalytic converter.

4,345,429

SOOT TREATMENT DEVICE FOR A DIESEL ENGINE

Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Apr. 18, 1980, Ser. No. 141,696
Claims priority, application Japan, Apr. 24, 1979, 54-49656
Int. Cl.³ F02M *25/06*
U.S. Cl. 60—279 **7 Claims**



1. A soot treatment device for a diesel engine which includes an exhaust system, comprising:

a soot collector arranged in said exhaust gas system for collecting soot in exhaust gases; and

means for suspending collected soot in an oil and thereafter mixing said oil into fuel for the engine so as to be again burned together with the fuel in the engine.

4,345,430

AUTOMOTIVE CATALYTIC CONVERTER EXHAUST SYSTEM

John M. Pallo, Englewood; Stephen J. Previte, Littleton, and William Schafer, Lakewood, all of Colo., assignors to Manville Service Corporation, Denver, Colo.

Filed Nov. 15, 1979, Ser. No. 94,413
Int. Cl.³ F01N *7/14*
U.S. Cl. 60—282 **9 Claims**

1. In a vehicular internal combustion engine exhaust system, wherein gases at elevated temperature are exhausted from said engine through an exhaust manifold following combustion and conveyed by said exhaust system from said manifold to the atmosphere, said exhaust system containing a catalytic converter having therein a three-way catalyst through which said gases pass for reduction of their content of unburned hydrocarbons, nitrogen oxides and carbon monoxide, the improvement which comprises:

(a) conduit means joining said exhaust manifold and said converter and through which said gases are conveyed

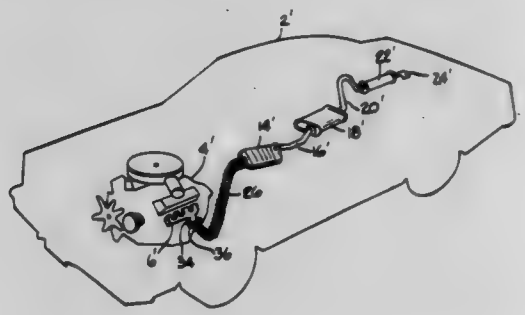
from said exhaust manifold to said converter, said conduit means retaining sufficient heat in said gases such that said gases upon reaching the inlet of said converter are at a temperature above the minimum operating temperature of said three-way catalyst;

(b) said conduit means comprising:

(1) an inner corrugated pipe having an imperforate surface in contact with said exhaust gases;

(2) an outer corrugated pipe;

(3) said inner and outer corrugated pipe each being flexible in all directions;



(4) said inner and outer pipes comprising spirally wound strips of stainless steel;

(5) said outer pipe spaced a predetermined distance from said inner pipe; and

(6) a flexible refractory fiber thermal insulation in said space between said outer and inner pipes so that there is not contact between said outer and inner pipes; and

(c) attachment means associated with said outer and inner pipes for attaching said conduit means to said exhaust manifold and said catalytic converter.

4,345,431

EXHAUST GAS CLEANING SYSTEM FOR DIESEL ENGINES

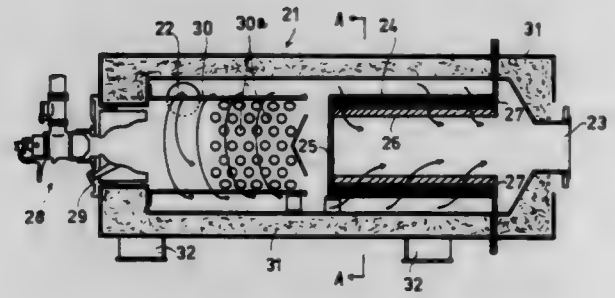
Yoshinobu Suzuki, Narashinoshi; Kiyoshi Chiba, Machidashi; Tomoya Tukuhiro, Kanagawa; Yoshiyuki Iwasawa, Tokyo; Yasuo Kajioka, Tokyo, and Tomio Komine, Tokyo, all of Japan, assignors to Shimizu Construction Co. Ltd., Tokyo, Japan

PCT No. PCT/JP79/00194, § 371 Date Mar. 25, 1980, § 102(e) Date Mar. 25, 1980, PCT Pub. No. WO80/00362, PCT Pub. Date Mar. 6, 1980

PCT Filed Jul. 26, 1979, Ser. No. 194,244

Int. Cl.³ F01N *3/28, 3/38*

U.S. Cl. 60—286 **2 Claims**



1. An exhaust gas cleaning system for diesel engines employing a hollow housing, said housing being provided with axially disposed inlet and outlet exhaust gas passages at respective ends of said housing; a catalytic bed; a heat resistant filter; said catalytic bed being disposed concentrically within said filter to form a combined assembly; said assembly being positioned at a downstream side within said housing to define a passage in a space between an outer surface of said assembly and an interior wall surface of said housing; wherein; said filter and catalytic bed being laminated to one another and being cylindrically shaped as a hollow assembly; a partition plate; said plate being disposed at the outlet of said assembly to form a closure for separating said inlet and outlet gas passages; a regenerating burner; said burner being affixed to said housing in air tight relation to and in proximity of said inlet passage; said assembly being subjected to hot air from said burner for burning and removing trapped particles from said filter; and said burner being ignited intermittently in response to pressure differential across said assembly due to clogging thereof, as exhaust gas passes through said filter.

4,345,432

EXHAUST GAS PURIFYING SYSTEM FOR INTERNAL COMBUSTION ENGINE

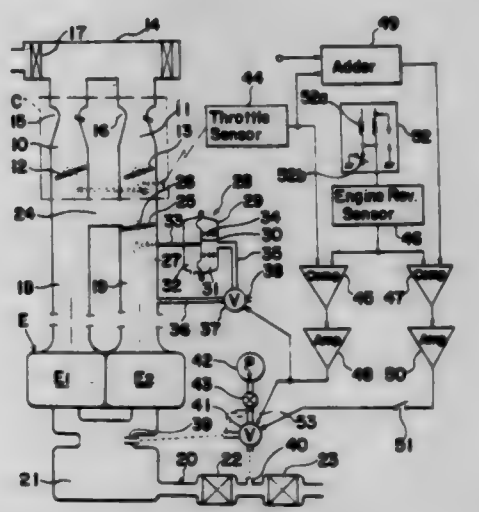
Koso Iida; Hideo Shiraishi, and Haruki Higashi, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jul. 16, 1980, Ser. No. 169,488

Claims priority, application Japan, Jul. 16, 1979, 54-98690[U]

Int. Cl.³ F01N *3/22;* F02D *17/02*

U.S. Cl. 60—290 **10 Claims**



1. An exhaust gas purifying system for an automobile engine of a type including a source of combustible air-fuel mixture, a fuel intake system extending between the combustible mixture source and at least first and second engine cylinders, said intake system including a main passage communicated with the combustible mixture source and at least first and second intake passage means communicated at one end with the main passage and at the other end to the respective first and second engine cylinders; and an exhaust passage means communicated at one end with the first and second engine cylinders and at the other end with the atmosphere for the discharge of exhaust gases emitted from the engine as a result of the combustion of the combustible mixture, said exhaust gas purifying system comprising, in combination:

a shutter valve supported inside the first intake passage means for movement between a closed position, in which the supply of the combustible mixture from the combustible mixture source to the first engine cylinder is interrupted, and an opened position in which the combustible mixture from the combustible mixture source is supplied to all of the engine cylinders;

valve operating means for positioning the shutter valve selectively in the closed and opened positions;

a first catalyst unit disposed in the exhaust passage means;

a first air supply means communicated at one end with a source of secondary air and at the other end with a first portion of the exhaust passage means upstream of the first catalyst unit with respect to the direction of flow of the exhaust gases towards the atmosphere;

means for controlling the supply of the secondary air from the secondary air source to the first portion of the exhaust passage means; and

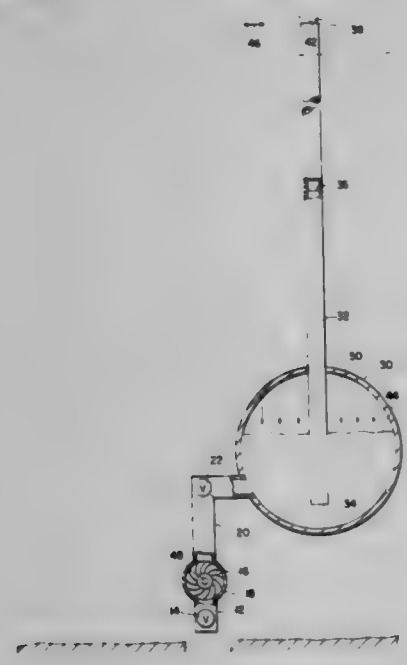
means for causing said valve operating means to position the shutter valve in the closed position by the detection of a decelerated condition of the engine and also for causing the controlling means to operate so as to increase the supply of the secondary air to the first portion of the exhaust passage means by the detection of an engine operating condition in which the load is smaller than a predetermined load which is larger than said decelerated condition.

4,345,433

TRAPPED AIR METHOD OF GENERATING ROTARY POWER IN A DEEPSEA ENVIRONMENT

Tad Stanwick, 4715 Upton St., NW., Washington, D.C. 20016

Continuation-in-part of Ser. No. 907,062, May 17, 1978, Pat. No. 4,215,544. This application Dec. 31, 1979, Ser. No. 108,725
The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.
Int. Cl.³ F03B *13/10*
U.S. Cl. 60—327 **3 Claims**



1. Trapped air method of generating deepsea rotary power comprising:

A. supporting a rotatable turbine and sphere containing trapped air in communicant relationship;

B. submerging said turbine and sphere containing trapped air to a deepsea working depth;

C. admitting water at the working depth through said turbine and into said sphere containing trapped air, so as to drive said turbine and compress the trapped air; and

D. bleeding admitted water with an assist from the trapped air from a lower portion of said sphere to a surface location via a flexible conduit extending from the bottom of said sphere to a point adjacent the surface location.

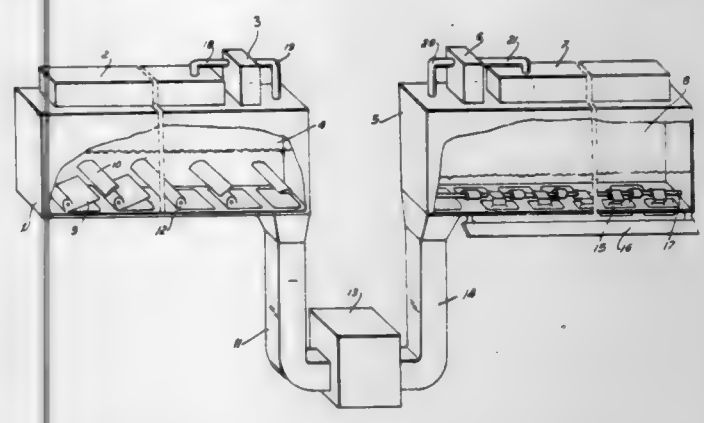
4,345,434

SEA AND OCEAN WAVE ENERGY CONVERTER

Ivan P. Nedyalkov, Sofia, Bulgaria, assignor to Institute Za Yadreni Izsledvaniya I Yadrena Energetika, Sofia, Bulgaria

Filed Nov. 5, 1979, Ser. No. 91,247
Claims priority, application Bulgaria, Nov. 3, 1978, 41298
Int. Cl.³ F03B *13/10, 13/12*
U.S. Cl. 60—398 **5 Claims**

1. In a device for converting the energy of sea and ocean waves having a submerged turbogenerator connected by means of pipelines to floating input and output elements on which there are mounted ballast systems and stabilizers, the improvement wherein the input and output elements are designed as a high-pressure vessel and a low-pressure vessel, respectively, with respective gas cushions and comprising a high-pressure compressor unit and a low-pressure compressor unit mounted on the high-pressure vessel and the low-pressure vessel, respectively, and connected to high-pressure and low-pressure gas tanks, respectively, and to respective gas cushions in respective closed circuits, each of said compressor units being operable to transfer gas in both directions between a respective gas tank and gas cushion, input valves in the high-pressure vessel for controlling the flow of water into the high-



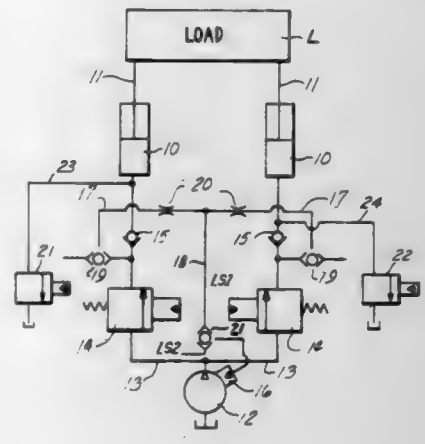
pressure vessel, and the low-pressure vessel is provided with an output guiding device and with output valves for controlling the flow of water out of the low-pressure vessel, wherein the said pipelines and flexible hoses, and comprising means for connecting the device at two different points to the sea bottom by means of at least two flexible cords of which at least one may be altered in length.

4,345,435

POWER TRANSMISSION

Robert H. Breeden, Metamora, Mich., assignor to Sperry Corporation, Troy, Mich.

Filed May 5, 1980, Ser. No. 146,591
Int. Cl.³ F04B *49/08*; F15B *11/22, 13/06*
U.S. Cl. 60—420 **4 Claims**



1. A hydraulic system comprising

a single load,

a pair of actuators operable to act in parallel to move said single load, each actuator including an expansible chamber which when expanded moves said load in one direction,

each expansible chamber of said actuator having a fluid inlet,

a variable displacement pump including means responsive to a pressure for varying the displacement of the pump,

a meter-in valve associated with the expansible chamber of each actuator for supplying fluid from the pump to its respective actuator chamber,

a meter-out valve associated with the expansible chamber of each actuator for controlling the flow of fluid out of its respective actuator chamber,

a load drop check valve between each said meter-in valve and its associated actuator chamber,

and means for sensing the pressures solely between each said meter-in valve and its associated load drop check valve and applying an average of said pressures to said respon-

sive means of said pump for varying the displacement of the pump.

4,345,436

CONTROL FOR LOAD SHARING PUMPS

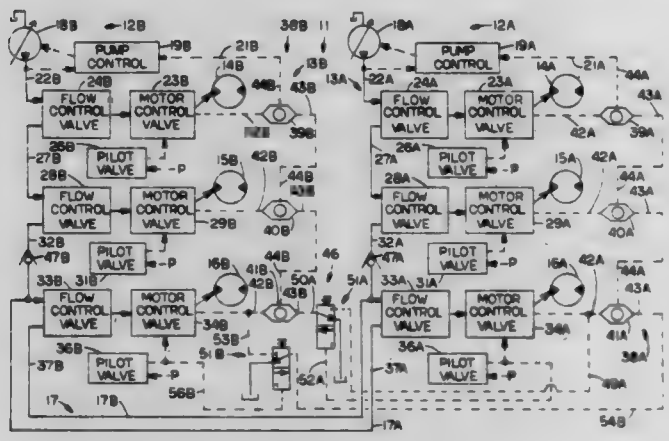
Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00379, § 371 Date Apr. 7, 1980, § 102(e) Date Apr. 7, 1980, PCT Pub. No. WO81/02914, PCT Pub. Date Oct. 15, 1981

PCT Filed Apr. 7, 1980, Ser. No. 245,238

Int. Cl.³ F15B *11/16, 13/06, 13/09*

U.S. Cl. 60—421 **12 Claims**



1. In a fluid system (**11**) having first (**14A, 15A, 16A**) and second (**14B, 15B, 16B**) pluralities of fluid operated devices, first (**12A**) and second (**12B**) fluid source means for supplying working fluid to said first (**14A, 15A, 16A**) and second (**14B, 15B, 16B**) pluralities of fluid operated devices respectively, first (**19A**) and second (**19B**) control means for varying the outputs of said first (**12A**) and second (**12B**) fluid source means, respectively, in response to control pressures, and crossover means (**17**) for transmitting fluid from said first source means (**12A**) to at least one device (**16B**) of said second plurality of devices (**14B, 15B, 16B**), the improvement comprising:

first pressure comparing means (**38A**) for establishing a two way control pressure flow path between said first control means (**12A**) and the one of a first predetermined group (**14A, 15A, 16A, 16B**) of said devices that is most highly pressurized at a particular time, said first predetermined group (**14A, 15A, 16A, 16B**) including said first plurality of devices (**14A, 15A, 16A**) and at least said one (**16B**) of said second plurality of devices (**14B, 15B, 16B**).

4,345,437

STIRLING ENGINE CONTROL SYSTEM

John J. Dineen, Durham, N.H., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,076

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—521 **10 Claims**

1. A Stirling engine power unit, comprising:

a vessel adapted to hold a working gas under high pressure in a working space;

an external heater for heating the working gas in a hot space of said vessel, and a cooler for cooling the working gas in a cool space of said vessel;

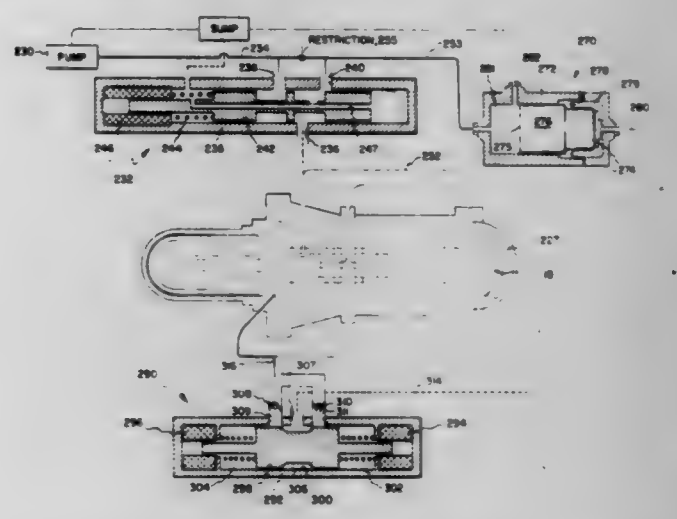
a displacer movable in said vessel to shuttle the working gas between said hot space and said cool space to produce a periodic pressure wave in the working gas;

a first flexible wall having one face sealing the working gas in said working space and flexing in response to said pressure wave;

a first hydraulic chamber adapted to contain a hydraulic fluid and sealed on one side by the other face of said first flexible wall, so that flexing of said first flexible wall causes displacement of hydraulic fluid in said hydraulic chamber;

a power piston having one end in said first hydraulic chamber and movable in response to displacement of the hydraulic fluid in said hydraulic chamber;

a second hydraulic chamber adapted to contain a hydraulic fluid, bounded on one side by the other end of said power piston, and bounded on the other side by one face of a second flexible wall;



a bounce space adapted to be filled with said working gas, said bounce space bounded on one side by the other face of said second flexible wall and on the other side by an interior surface of said vessel;

a control plenum in said vessel adapted to be filled with said working gas; and

means for modulating the power of the engine.

4,345,438

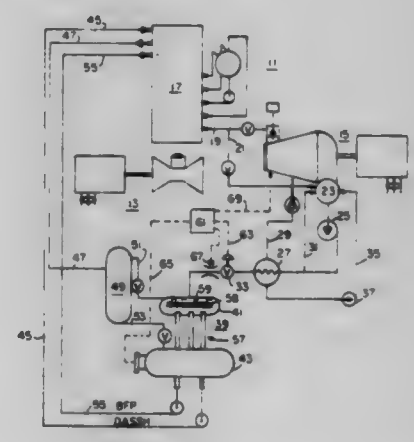
DEAERATOR LEVEL CONTROL

Donald E. Labbe, Woburn, and Joseph E. Dutremble, Ipswich, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Sep. 2, 1980, Ser. No. 182,957

Int. Cl.³ F01K *19/00*

U.S. Cl. 60—657 **5 Claims**



1. In a steam turbine power plant including a steam turbine and condenser providing condensate to a steam deaerator, the condensate flow being regulated by a flow control valve upstream from the deaerator, a deaerator water level control positioning the flow control valve comprising:

means providing a water level error signal proportional to the difference between the actual deaerator water level and the water level setpoint;

summing means providing a flow demand signal based upon the water level error signal and a turbine load signal; and,

means providing a valve position signal based upon the difference between the flow demand signal and a condensate flow signal.

4,345,439

SNOWMAKING METHOD AND APPARATUS

Robert W. Gundlach, Victor, N.Y., assignor to Vencraft Corp., West Henrietta, N.Y.

Filed Feb. 20, 1980, Ser. No. 122,837

Int. Cl.³ F25C *5/12*

U.S. Cl. 62—71 **7 Claims**



2. A method of providing snow on a ski slope which comprises:

(a) providing a water distribution system along at least one side of said slope;

(b) providing a surface upon which water is deposited at an ambient atmospheric temperature below the freezing point of water along said ski slope from said distrubtion system;

(c) intermittently depositing water from said distribution system onto said surface at a rate such that the water placed on the surface freezes before additional water is deposited on said surface thereby forming a layer of ice on said surface, and;

(d) comminuting said ice and distributing the comminuted ice onto said slope.

4,345,440

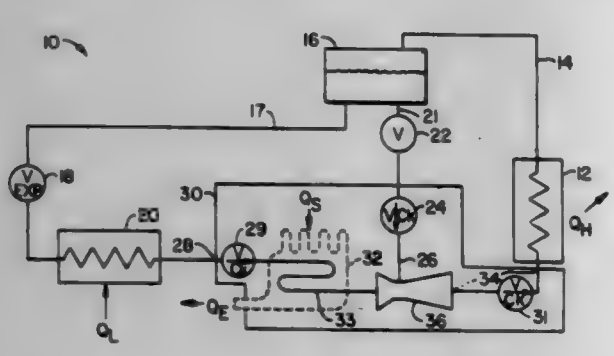
REFRIGERATION APPARATUS AND METHOD

Reed R. Allen, deceased, late of Sunnyvale, Calif., and by Mary G. Allen, heir, 825 S. Wolfe Rd., Sunnyvale, Calif. 94086

Filed Feb. 2, 1981, Ser. No. 230,248

Int. Cl.³ F25B *1/00*

U.S. Cl. 62—116 **11 Claims**



10. A method for refrigeration comprising:

condensing in a condenser means compressed vaporized refrigeration fluid to a liquid phase to expel heat to a heat sink;

accumulating said condensed liquid phase fluid in a sealed reservoir at substantial equilibrium with said fluid in vapor phase;

adiabatically depressurizing a first portion of said liquid phase fluid from said reservoir;

evaporating in a heat exchanging means said first portion as adiabatically depressurized liquid phase to a vapor phase fluid to draw heat from an environment to be cooled;

introducing said first portion as vapor phase fluid at an inlet of a converging section of a venturi having a converging section, a constrictive throat and a diverging section;

introducing a second portion of liquid phase fluid from said reservoir into said venturi downstream of said throat;

applying sufficient heat to said first portion of said fluid introduced into said venturi to cause said first portion and said second portion upon mixture to be propelled as a compressed vapor phase fluid through said venturi; and

returning said compressed vapor phase fluid from said venturi to said condensing means for condensing;

said method being devoid of external mechanical input to propel said refrigeration fluid in any physical phase.

4,345,441

DEFROSTER FOR THE EVAPORATOR OF A REFRIGERATOR

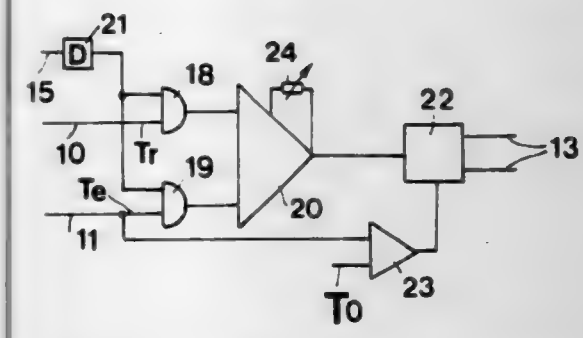
Borge M. Hansen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jan. 5, 1981, Ser. No. 222,668

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1980, 3001019

Int. Cl.³ F25D *21/02, 21/06*

U.S. Cl. 62—140 **1 Claim**



1. A refrigerator assembly comprising, thermostat and compressor means, an evaporator, a frost sensor spaced a predetermined distance from said evaporator corresponding to a permissible frost layer thickness, a second sensor abutting said evaporator for measuring evaporator temperature, evaporator defroster means, first comparator means monitoring said sensors to turn on said defroster means when said evaporator temperature equals the temperature of said frost sensor, second comparator means overriding said first comparator means monitoring said second sensor and a reference ice melting point temperature to maintain said defrosting means in an off condition while said evaporator temperature exceeds said melting point temperature, and means enabling said first comparator means each time said thermostat means initiates actuation of said compressor means.

4,345,442

CONTROL SYSTEM FOR RESONANT FREE-PISTON VARIABLE STROKE COMPRESSOR FOR LOAD-FOLLOWING ELECTRIC HEAT PUMPS AND THE LIKE

Richard A. Dorman, Troy, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

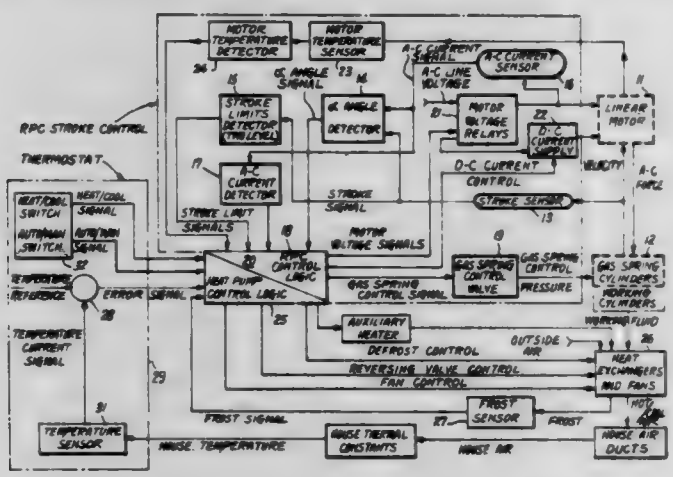
Filed Jun. 17, 1980, Ser. No. 160,306

Int. Cl.³ F25B *13/00;* F04B *49/06*

U.S. Cl. 62—160 **8 Claims**

1. A resonant piston compressor control system for use in controlling automatically the operation of a resonant piston

compressor of the mechanically resonant free-piston type driven by an electrodynamic linear motor wherein the spring-mass resonant piston system of the compressor is forced into vibration by the linear motor and is arranged to have a selectively variable mechanical resonant frequency generally centered on the power line frequency of the alternating current power source supplying the linear reciprocating motor, the resonant frequency of the spring-mass resonant piston system being varied by varying the stiffness of enclosed volumes of gas comprising resilient gas spring means that communicate with a reservoir of gas at higher pressure than the gas spring means, means selectively interconnecting the resilient gas spring means with a gas spring pressure control manifold and a gas spring pressure control valve means that can be selectively opened and closed to regulate the pressure of the gas in



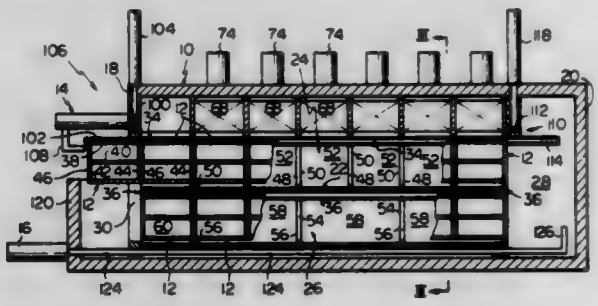
the gas spring pressure control manifold and the stiffness of the resilient gas spring means; said control system comprising control circuit means including alternating current sensing means for deriving a sensed alternating current signal representative of the phase and magnitude of the alternating current supplied to the linear reciprocating motor, resonant piston displacment/velocity sensing means for deriving a stroke signal representative of the resonant piston velocity, α angle detector means responsive to the output from said alternating current sensing means and said resonant piston displacement-/velocity sensing means for comprising the phase of the alternating current supplied to the linear reciprocating motor and the resonant piston velocity and deriving an output α angle control signal for controlling the voltage value of the alternating current supply voltage to the linear reciprocating motor for controlling the output capacity of the compressor.

4,345,443

APPARATUS FOR LOWERING THE TEMPERATURE OF ARTICLES

Shunroku Yamashita, Takatsuki, Japan, assignor to Kibun Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1981, Ser. No. 233,283
Claims priority, application Japan, Feb. 16, 1980, 55-18160
Int. Cl.³ F25D *25/04*
U.S. Cl. 62—380 **6 Claims**



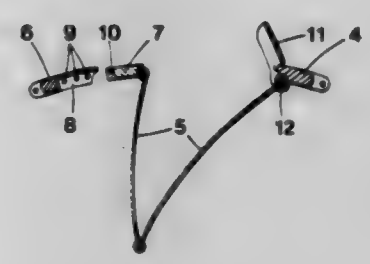
1. An apparatus for lowering the temperature of articles in order to cool, supercool or freeze the articles, comprising: a low temperature box, said box having separate walls therein and dividing said box into a plurality of small chambers, said walls each having at least one opening therein for passage therethrough of the articles to be cooled, said separate walls being spaced from each other along an article conveying path at predetermined intervals with the openings therein aligned; means for lowering the temperature in each of said small chambers to a desired temperature; and article conveying means for conveying articles along said article conveying path through said openings, said article conveying means including a plurality of successive containers for receiving the articles and each having a forward end wall and a rear end wall substantially the same size as said openings, said intervals between said separate walls being substantially a whole number of times the space between said forward and rear end walls of said containers, and advancing means for intermittently advancing the containers through said box with the containers arranged in at least one row, and for stopping the containers with said end walls of the containers generally close to and substantially filling the openings of said separate walls, whereby leakage of cooled gas between the chambers is substantially prevented and the temperature in each of said small chambers can be accurately controlled to a desired value.

4,345,444

METALLIC BRACELET

Jacques-Hubert Gay, Geneva, Switzerland, assignor to Gay Freres S.A., Geneva, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,137
Claims priority, application Switzerland, Oct. 1, 1979, 8825/79
Int. Cl.³ A44C *5/08, 5/24*
U.S. Cl. 63—4 **9 Claims**



1. A bracelet and extension apparatus comprising
(a) a link portion having articulated links of generally rectangular form and generally equal length arranged in adjoining rows of side links and middle links,
(b) an end piece having the external appearance of said side links and of at least one said middle link,
(c) said end piece being situated at one of the extremities of said link portion,
(d) a slide slideably moveable within the middle part of the end piece, and
(e) slide piece securing means for securing the slide piece in a chosen one of several possible positions in said end piece in order to adjust the bracelet to the wrist, adjacent ones of said positions being spaced from each other by less than the length of one of said links,
(f) the slide piece being adaptable for attachment to a clasp.

4,345,445

FLEXIBLE DRILL CHUCK DRIVE

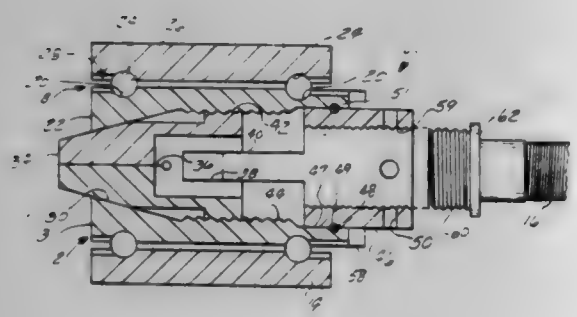
Daniel E. Warthen, 1019 Premont St., Pontiac, Mich. 48053

Filed Jan. 14, 1980, Ser. No. 111,861
Int. Cl.³ F16C *1/02*
U.S. Cl. 279—62 **1 Claim**

1. A flexible shaft drive for drill chucks comprising
a support sleeve encircling the chuck for rotatably supporting the chuck during use;
a bearing means interposed the chuck and the sleeve for rotatably and axially supporting the chuck, the bearing means comprising a first pair of axially spaced arcuate

means comprising a first pair of axially spaced arcuate grooves formed around the chuck perimeter, a second pair of axially spaced arcuate grooves formed inside the sleeve aligned with the first pair of arcuate grooves, a filling notch formed in the support sleeve and the chuck communicating with the grooves to provide a path for insertion of a plurality of balls to support the sleeve in a spaced relationship from the chuck allowing the chuck to freely rotate while the user's hand grasps the sleeve, said balls contacting said sleeves and said chuck perimeter said balls and grooves allowing the sleeve to impose a radial and a thrust load on the chuck while the chuck is rotating;

said chuck further comprising a collet means for releasably grasping tools within the chuck including a tapered bore formed in the chuck, a plurality of tapered jaws having a tapered outer diameter complimentary to the tapered bore, said jaws joined at a large end of the tapered outer diameter, a plurality of axially extending radial slits between jaws, said jaws biased radially outward against the tapered bore so that axial movement of the jaws within the tapered bore causes radial movement of the jaws so that a tool may be radially grasped or released, a driving notch formed at said large end, a drive tang supported in a bushing bore engaging said driving notch, a threaded diameter formed along an outside diameter of the jaws, a



threaded bore formed in the chuck threadingly engaging said threaded diameter so that rotation of said jaws relative to the chuck causes said jaws to displace inward or outward; with said driving notch and said tang providing a positive drive for said collet while allowing axial movement of said collet relative to said tang;

said support sleeve overlaying a substantial portion of said collet means with one of said first pair of axially spaced arcuate grooves positioned adjacent the tool to provide axial and radial tool support as close as possible to the tool;

a bushing bore formed in the chuck;

a driven bushing concentrically supported in the bushing bore, a first retaining groove formed in said driven bushing, a retaining ring slidingly filling said first and second retaining grooves preventing axial movement of said driven bushing relative to said bushing bore and allowing relative rotation between said driven bushing and said bushing bore, and a plurality of radial apertures formed at another end of said driven bushing to rotatingly accommodate an end of a chuck key, said chuck key including a driving gear, a driven gear formed at a rearward end of said chuck meshing with said driven gear; and

wherein rotation of said chuck key in one direction causes said jaws to move radially inward and rotation of said chuck key in a counter direction causes said jaws to move radially outward.

4,345,446

CIRCULAR KNITTING MACHINE FOR PRODUCING HIGH PILE FABRIC HAVING COMBED-IN FIBRES

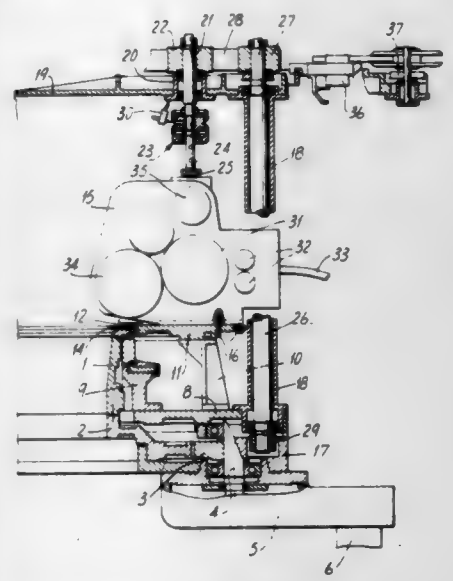
Erwin Schäberle, Gäufelden, Fed. Rep. of Germany, assignor to Sulzer Morat GmbH, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 103,091

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853717

Int. Cl.[3] **D04B** *9/14, 35/10;* **F16D** *7/02*

U.S. Cl. 66—9 B **8 Claims**



1. Circular knitting machine for producing pile fabric having combed-in fibres, comprising a drive motor and at least a carding device which has a drive member being in operative connection with the drive motor for supplying rotary movements to the rotatable parts of the carding device, characterized in that between the drive motor (**6**) and the drive member (**25**) there is provided an overload clutch (**23**) having a driven part (**42**) and a device (**30,63**) for automatically stopping the drive motor (**6**) when the overload condition is reached, that between the drive member (**25**) and the overload clutch (**23**) there is provided a coupling (**24**), and that the coupling (**24**) and said driven part (**42**) are the connecting elements of a rapid make or break connection for rapidly connecting or disconnecting said overload clutch and said drive member.

4,345,447

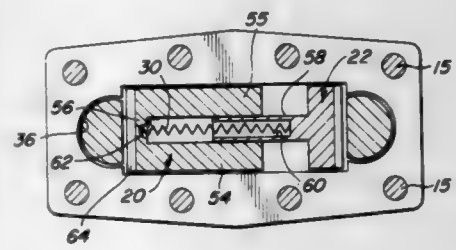
DOUBLE LOCK

Poon C. Keung, 28 Chi Kiang St. G/F., and Yiu Fu, 28A Chi Kiang St. G/F., both of Tokwawan, Kowloon, Hong Kong

Filed Nov. 3, 1980, Ser. No. 203,403

Int. Cl.[3] **E05B** *67/22*

U.S. Cl. 70—38 A **7 Claims**



1. A padlock comprising in combination a

plurality of flat plates secured together to provide a laminated body,

a shackle having first and second parallel legs having respective notches therein,

said laminated body having first and second openings respectively receiving said first and second legs,

a key-operated lock barrel mounted in one end of said laminated body for rotation therein,

first and second locking slides mounted on coplanar relationship in said laminated body for reciprocal movement into and out of said notches,

said first, locking slide being U-shaped and having two spaced apart parallel legs,

said second locking slide being T-shaped and having a leg and crossed top portion,

said leg portion of said second locking slide being slidably disposed between said parallel legs of said first locking slide and guided thereby,

a spring compressed between said first and second slides for urging said slides into said notches,

said spring extending into a hole in the distal end of said leg of said second locking slide,

first and second cam follower surfaces respectively provided on said slides and extending toward said lock barrel, and

cam means drivingly connected to said lock barrel and operatively engaging said cam follower surfaces for retracting said slides from said notches in response to the rotation of said lock barrel in said laminated body.

4,345,448

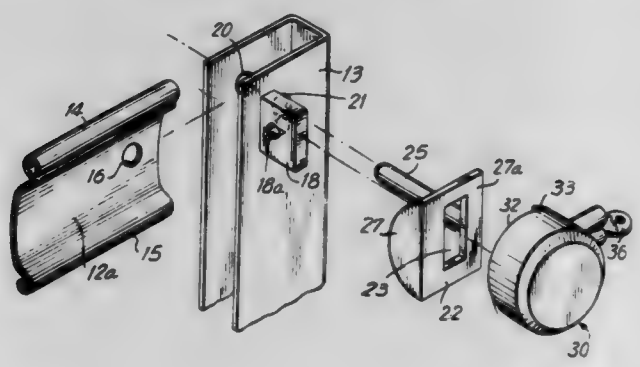
CLOSURE ASSEMBLY WITH PROTECTIVE LOCK

Martin D. Solomon, 243 Beach 122nd St., Belle Harbor, Queens, N.Y. 11694

Continuation of Ser. No. 829,593, Sep. 1, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,651

Int. Cl.³ E05B *65/08*

U.S. Cl. 70—95 **8 Claims**



1. A gate locking system for securely closing an opening comprising

a pair of opposed channeled guide tracks, one of said tracks having a fixed ear extending therefrom with an aperture through said ear and having a hole therethrough adjacent said ear;

a gate movable within said tracks between open and closed positions; said gate including at least one recessed portion with an aperture therethrough;

a bracket having a flat plate with a slot therein for receiving said ear, a pin extending perpendicularly from one surface of said plate adjacent said slot, and a barrier member extending from said plate in a plane substantially perpendicular to said plate and from said one surface thereof; said bracket being placed on said one track so that said ear extends through said slot to expose said ear aperture, said pin extends through said gate aperture and said track hole to lock said gate, and said barrier member extends across a portion of the mouth of said one track and engages said gate recessed portion to lock said gate and block access to said pin when said gate is in said closed position; and

a lock within which said ear is received with a portion of said lock extending through said ear aperture to secure said bracket to said track;

whereby the engagement of said pin with said gate aperture and said track hole constitutes a primary locking mechanism, and the engagement of said barrier with said recessed portion of said gate provides a back-up locking mechanism as well as blocking access to said pin.

4,345,449

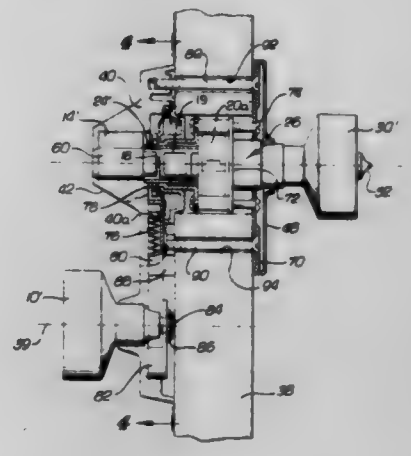
HIGH SECURITY CYLINDRICAL BORED LOCK

Richard O. Mullich, Burbank, Calif., assignor to TRE Corporation, Beverly Hills, Calif.

Filed Dec. 17, 1979, Ser. No. 104,299

Int. Cl.³ E05B *55/00*

U.S. Cl. 70—153 **9 Claims**



1. An offset knob security assembly for use with a cylindrical bored lock of the type having a lock cylinder which cooperates with a cylinder spindle to retract a latch bolt and an outer spindle surrounding the cylinder spindle, said outer spindle cooperating with an inner knob to also retract said latch bolt, wherein said lock cylinder, cylinder spindle, outer spindle and inner knob are located on a first axis, said security assembly comprising:

an outer knob located on a second axis which is offset from said first axis;

a first cam connected to the outer spindle;

a second cam connected to the outer knob; and

a pair of parallel pushrods coupling the second cam to the first cam, whereby rotation of said outer knob will rotate said second cam and impart rotation to first cam and outer spindle through one of said pushrods, wherein the offset arrangement between the outer knob and the lock cylinder and cylinder spindles isolates the lock cylinder and spindles from outside manipulation despite removal of the outer knob.

4,345,450

REVERSE EXTRUSION PRESS

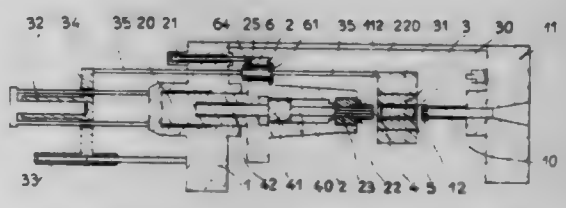
Michel Doudet, Epone, France, assignor to Secim, Courbevoie, France

Filed Nov. 2, 1977, Ser. No. 847,942

Claims priority, application France, Nov. 10, 1976, 76 33870

Int. Cl.³ B21C *23/00, 23/21, 27/00*

U.S. Cl. 72—273.5 **4 Claims**



1. An indirect extrusion press for tubes comprising: a fixed support and a fixed crosspiece; a tubular ram mounted on said fixed crosspiece and supporting a die centered on an extrusion axis; a movable crosspiece movable along said extrusion axis between said fixed support and said fixed crosspiece; a container, provided with a bore for a billet, engagable on said ram and movable between said movable crosspiece and said fixed crosspiece; a needle for piercing the billet and extrusion of the tubes, mounted on the movable crosspiece in the extrusion axis; a closing bottom of the container mounted on the movable crosspiece and comprising, with respect to the container, a

cylindrical extension capable of being enclosed in the bore for ramming of the billet and having a length greater than the elongation of the billet during piercing; a main jack for the displacement of the movable crosspiece and of the container toward the ram; at least two auxiliary jacks attached to the support and connected, respectively to the movable crosspiece and to the container by the operating rods parallel to the extrusion axis; and at least one means of connecting the container with the movable crosspiece in an adjustable position, defined by a jack comprised of two displaceable elements, one with respect to the other parallel to the extrusion axis along a length greater than the elongation of the billet during piercing, control means and locking means for one of these elements with respect to the other and means for connecting one of these elements to the movable crosspiece and the other element to the container, at least one of said connecting means being detachable.

4,345,451

WIRE DRAWING METHOD AND APPARATUS

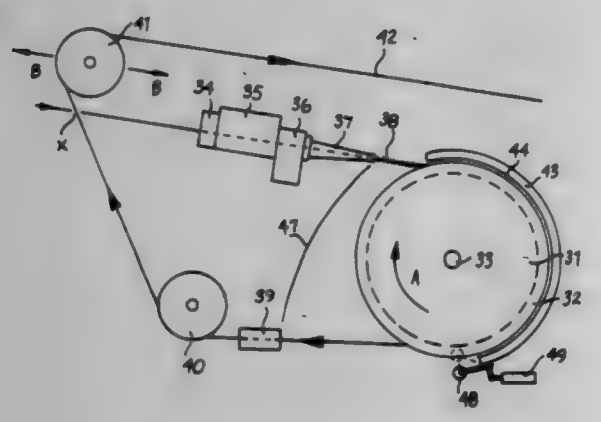
John W. Pamplin, Auckland; Brian R. Astbury, and Richard Shillito, both of Crook, all of England, assignors to Marshall Richards Barcro Limited, Crook, England

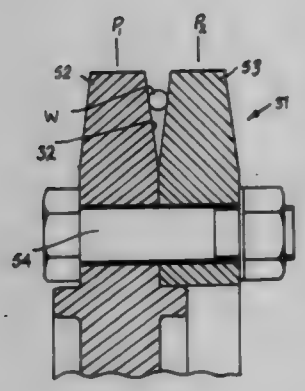
Filed Dec. 10, 1979, Ser. No. 101,561

Claims priority, application United Kingdom, Dec. 12, 1978, 48053/78; Jan. 30, 1979, 7903285; May 8, 1979, 7915881

Int. Cl.³ B21C *9/00, 3/14, 1/04, 1/14*

U.S. Cl. 72—286 **26 Claims**





1. In a method of drawing ferrous wire employing a plurality of drawing stages for continuously drawing the ferrous wire to successively smaller sizes, with each stage comprising a wire drawing die for reducing the size of the wire, a soap box upstream of the die having a dry wire lubricant for lubricating the ferrous wire for drawing the wire to a smaller size and a rotatable drawing wheel downstream of the die operable to draw the wire through the die, the improvement wherein said method comprises, at each of a plurality of successive drawing stages, drawing the ferrous wire through the respective die with the respective drawing wheel by wedging the wire within a peripheral circular wedging groove of the drawing wheel for less than one turn therearound, the circular wedging groove being coaxial with the axis of rotation of the drawing wheel, and continuously conducting a water based, liquid coolant into contact with the ferrous wire along the wire path from the die to the drawing wheel and while the wire is within the wedging groove of the drawing wheel, and drying the wire between each upstream drawing wheel and downstream soap box of said plurality of successive drawing stages.

13. In a wire drawing apparatus having a plurality of drawing stages for continuously drawing wire to successively smaller sizes respectively, with each drawing stage comprising a wire drawing die for reducing the size of the wire, a soap box upstream of the die having a dry wire lubricant for lubricating the wire for drawing the wire to a smaller size and a rotatable drawing wheel downstream of the die operable to draw the wire through the die, the improvement wherein in each of a plurality of successive drawing stages of the drawing apparatus, the drawing wheel comprises a peripheral circular wedging groove, coaxial with the axis of rotation of the drawing wheel, for wedging the wire within less than one turn around the wheel for drawing the wire with the drawing wheel through the respective die, and wire cooling means for continuously conducting a water based coolant into contact with the wire along the wire path from the die to the drawing wheel and while the wire is within the wedging groove of the drawing wheel, and wherein the apparatus comprises an air wipe for drying the wire between each upstream drawing wheel and downstream soap box of said plurality of successive drawing stages.

4,345,452

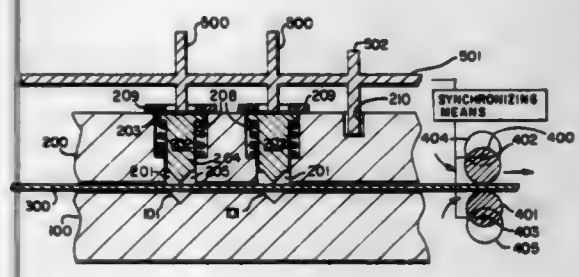
CAM SHAFT OPERATED PUNCH PRESS FOR EXPANDING LEAD ALLOY BATTERY GRID MATERIAL

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Aug. 15, 1979, Ser. No. 66,797

Int. Cl.³ B21D *28/20*

U.S. Cl. 72—452 **5 Claims**



1. A punching apparatus comprising:

a. support means for supporting a material to be punched thereon;

b. biased punch means above said support means, said biased punch means comprised of:

(i) a top plate above said support means said top plate having a plurality of horizontally aligned openings therethrough,

(ii) punch means slidably mounted within each said opening and said top plate, and

(iii) biasing means engaging said punch means for forcing said punch members upwards within said openings;

c. cam means engaging said punch means for operating said punch means, said cam means comprised of:

(i) a rotary punch cam drive shaft above said aligned openings, and

(ii) a plurality of cam members eccentrically mounted on said punch cam drive shaft, one cam member above each opening, and engaging said punch members within said openings;

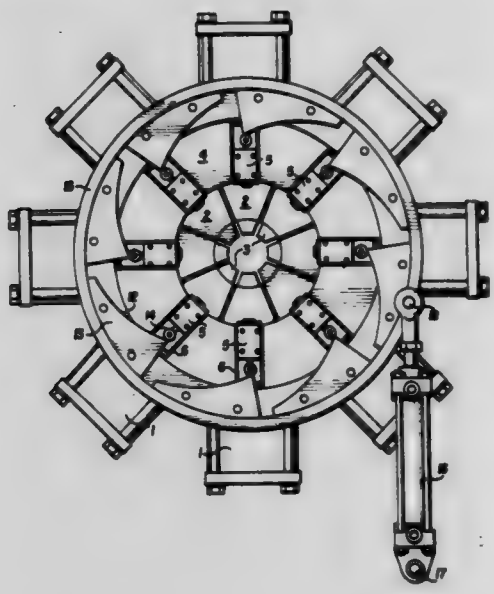
d. moving means adjacent said support means and said material to be punched for moving material to be punched across said support means synchronously with the motion of said cam means.

4,345,453

HYDRAULIC PRESS

Jorma Lillbacka, SF-62300 Härmä, Finland

Filed Oct. 5, 1979, Ser. No. 82,389
Claims priority, application Finland, Apr. 17, 1979, 791227
Int. Cl.³ B21J *9/12*
U.S. Cl. 72—453.18 **10 Claims**



1. An improved press, comprising:

at least one hydraulic cylinder for moving at least one jaw of the press;

a control valve for said at least one cylinder, said valve having a movable spool for controlling flow of hydraulic fluid to said at least one cylinder;

at least one control cam having a cam surface, said cam being adapted for movement transverse to the axis of movement of the piston of said at least one cylinder;

at least one cam follower connected between said movable spool and said cam surface, whereby movement of said cam adjusts the position of said control valve; and

means for moving said control cam to actuate said control valve.

4,345,454

COMPENSATING WELL INSTRUMENT

Robert L. Brown, Buena Park, Calif., assignor to AMF Incorporated, White Plains, N.Y.

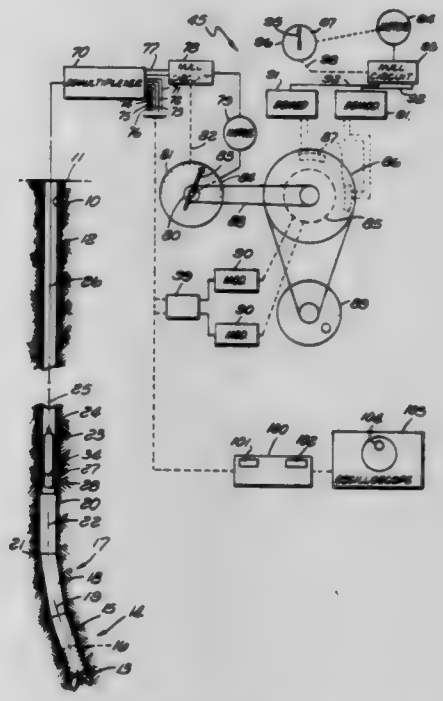
Filed Nov. 19, 1980, Ser. No. 208,236
Int. Cl.³ E21B *47/024*
U.S. Cl. 73—1 E **23 Claims**

20. The method comprising:

lowering into a well a probe having sensing means responsive to changes in inclination of an axis of the probe or the direction of that inclination;

rotating said probe about said axis;

taking different readings from said probe in different rotary positions thereof; and



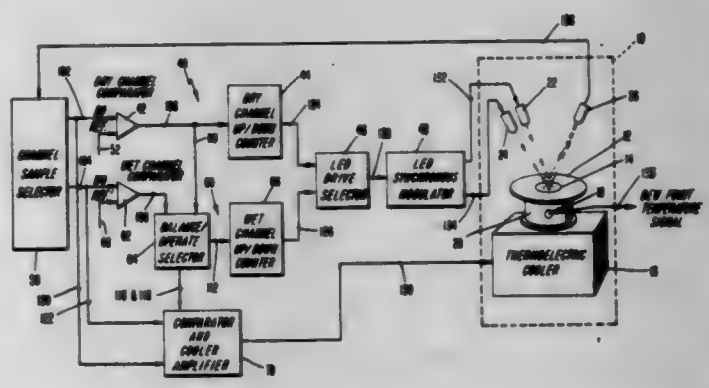
determining the accuracy of said sensing means by noting variations in said readings.

4,345,455

DEW POINT HYGROMETER WITH CONTINUOUS BALANCING SYSTEM

Stanley B. Hayes, Jr., Norfolk, Mass., assignor to EG&G, Inc., Wellesley, Mass.

Filed Mar. 28, 1980, Ser. No. 135,127
Int. Cl.³ G01N *25/68*
U.S. Cl. 374—20 **8 Claims**



1. A dew point hygrometer for determining the dew point of a gas sample comprising:

a. only one light sensor;

b. first and second light sources;

c. first and second reflective surfaces positioned to reflect light from said first and second light sources, respectively, to said light sensor;

d. means for cooling said second reflective surface; and

e. circuit means responsive to said light sensor for controlling the operation of said cooling means and for selectively driving said first and second light sources.

8. A method of determining the dew point of a gas sample exposed to first and second mirrors, comprising the steps of:

maintaining said first mirror and said second mirror in close physical and thermal proximity;

positioning first and second light sources to reflect light off said first and second mirrors, respectively, into a single light sensor;

selectively supplying first and second signals to said first and second light sources, respectively, to illuminate said first and second light sources;

producing respective third and fourth signals from said light sensor responsive to illumination of said light sensor by said first and second light sources;

adjusting said first and second signals to said first and second light sources, while maintaining the temperature of said mirrors above the dew point temperature of said gas sample, to establish a selected relationship between said third and fourth signals from said light sensor;

thereafter, reducing the temperature of said second mirror below the temperature of said first mirror while correspondingly adjusting both said first and second signals to maintain said third signal at the value established during said step of adjusting, and continuing to reduce the temperature of said second mirror until a predetermined difference is detected betweeen said third and fourth signals, thereby indicating that a predetermined amount of dew has formed on said second mirror; and

measuring the temperature of the second mirror.

4,345,456

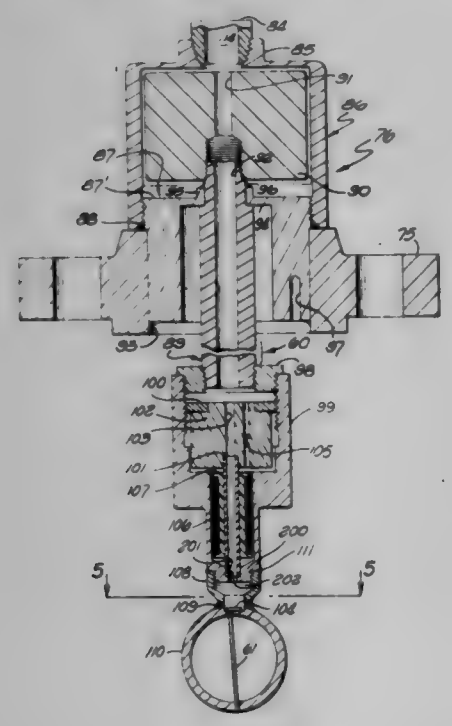
DENSITOMETER

Joseph J. Ponzi, Alhambra, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 186,892

Int. Cl.³ G01N *9/00*

U.S. Cl. 73—32 A **8 Claims**



1. In a vibration densitometer, the combination comprising: a probe having a body; a magnetostrictive member mounted in said body in a position with its ends fixed to said body; means mounted in said body to vary magnetic flux through said member in a manner to cause it to expand and to contract alternately along a drive axis, said expansion and contraction causing said body to vibrate; a hollow cylinder having an external cylindrical surface with a symmetrical axis; connection means mounting said cylinder on said body in a position such that said symmetrical axis is normal to said drive axis, vibration of said body causing vibration of said hollow cylinder, said connection means having a hollow interior providing free and open communication from an exposed portion of the said external cylindrical surface of said cylinder through said body; a piezoelectric crystal bonded to said exposed portion; and a rectangular vane having two parallel edge portions fixed to said cylinder at positions 180 degrees therearound with respect to each other, said cylinder having at least one slot therethrough through which one of said two edge portions projects to a position in engagement with said crystal, said vane lying approximately in a plane through said symmetrical axis at a predetermined angle ϕ relative to said drive axis, said connection means being sealed to said body and sealed to said cylinder around said exposed portion thereof to prevent fluid from entering said body through the said hollow interior of said connection means.

4,345,457

METHOD FOR DETECTING THE DEPTH OF CRACKS IN ROLLS USED FOR TRANSFERRING HOT STEEL INGOT BLOOM AND ROLLS USED THEREFOR

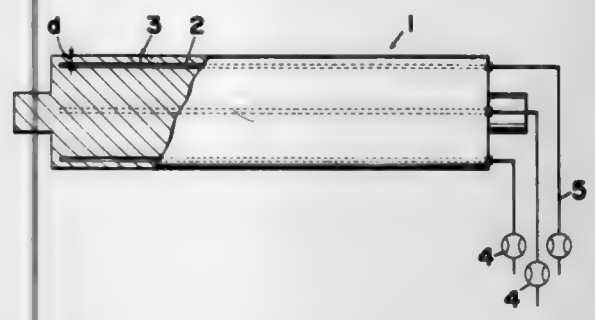
Takanori Kuroki, Munakata, and Hironori Kuroki, Kitakyushu, both of Japan, assignors to Kuroki Kogyosho Co., Ltd., Fukuoka, Japan

Filed Apr. 25, 1980, Ser. No. 143,705

Claims priority, application Japan, Dec. 27, 1979, 54-171782; Dec. 28, 1979, 54-171630

Int. Cl.³ G01M *3/26*

U.S. Cl. 73—37.5 **18 Claims**



1. Method for detecting the depth of cracks in rolls used for transferring hot steel ingot blooms comprising:

(i) supplying a fluid of desired pressure into a plurality of elongated holes formed in said roll, said plurality of elongated holes being disposed below the round outer surface of said roll and extending in a direction parallel to the axis of said roll, and

(ii) detecting the change of the amount of flow of said fluid which is caused by the communication of cracks on said surface with said elongated holes.

4,345,458

WATER TANK ASSEMBLY FOR A PRESSURE RESISTANCE MEASURING APPARATUS FOR TESTING CONTAINERS

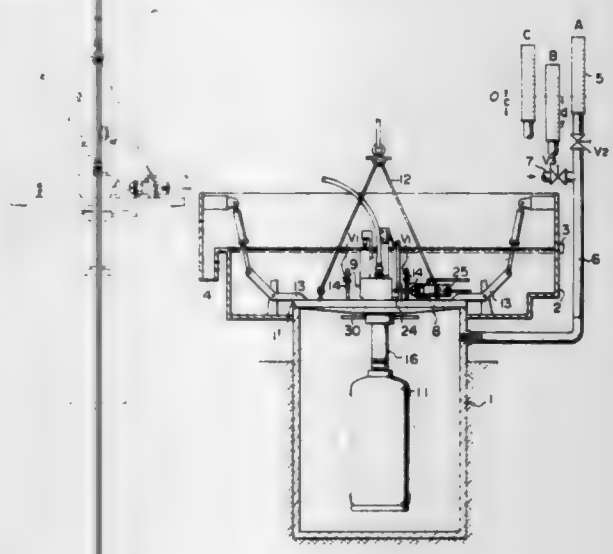
Jiro Kosaka, Zama, Japan, assignor to Meiko Industry Corporation, Limited, Nihonbashi, Japan

Filed Oct. 29, 1980, Ser. No. 201,988

Claims priority, application Japan, Jul. 19, 1980, 55-102256[U]

Int. Cl.³ G01B *13/24*

U.S. Cl. 73—37.5 **2 Claims**



1. A water tank assembly for a pressure resistance measuring apparatus for testing containers comprising:

a vertical water tank;

an auxiliary water tank connected with said vertical water tank at an upper end portion of said vertical tank wherein said vertical tank has a smaller diameter than that of said auxiliary water tank;

a cover attached to said vertical water tank;

a nozzle assembly connected to said cover wherein a container to be tested is fixed to the lower end of the nozzle assembly, an opening end portion of said vertical water tank protruding into said auxiliary water tank, and wherein said vertical water tank and said auxiliary water tank store water and the water level of said auxiliary water tank is above said upper end portion of said vertical water tank.

4,345,459

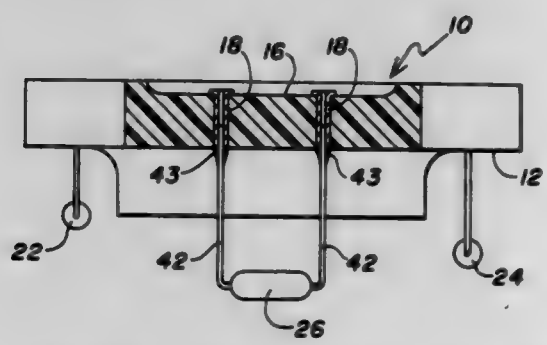
SENSING DEVICE

Ralph A. Perry, and James M. Booe, both of Indianapolis, Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Oct. 17, 1980, Ser. No. 198,058

Int. Cl.³ G01N *25/18*

U.S. Cl. 73—61.1 R **5 Claims**



1. In a device for sensing a substance on the surface of a liquid of the type including a floatation means and a sensing element mounted on said floatation means for extending into said liquid, wherein the improvement comprises a plastic encasement enclosing all portions of said element to be exposed to said liquid for preventing interference with the operation of said element by substances in said liquid other than first said substance.

4,345,460

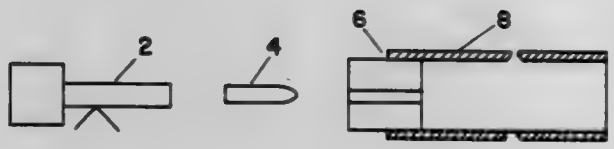
MULTI-CALIBER PROJECTILE SOFT RECOVERY SYSTEM

Herbert D. Curchack, Rockville, Md., and A. David Hahn, Haven Beach, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 11, 1980, Ser. No. 158,556

Int. Cl.³ G01L *5/14*

U.S. Cl. 73—167 **6 Claims**



1. A projectile soft recovery system comprising an object placed in the path of said projectile whereby said projectile becomes embedded in said object, and means to decelerate said object with the projectile embedded therein, wherein said object comprises means for accommodating projectiles of varying sizes.

4,345,461

APPARATUS FOR TAKING BEDROCK SAMPLES FROM BOTTOM OF DEEP-WATER BASINS

Georgy M. Lezgintsev, Leninsky Prospekt, 39, kv. 257; Evgeny I. Garbuz, ulitsa Pavla Andreeva, 28, Korpus 7, kv. 431; Evgeny A. Kontar, ulitsa Kropotkinskaya, 9, kv. 2, all of Moscow; Rudolf G. Glukhikh, ulitsa Pavilostas, 7, kv. 7, Latviiskaya SSR, Liepaya; Ivar O. Murdmaa, ulitsa Vavilova, 31, Korpus 1, kv. 96, Moscow; Vadim G. Soluyanov, ulitsa Artema, 59/65, kv. 133, Kiev; Alexandr S. Belyavsky, Altufievskoe Shosse, 24"b", kv. 135, and Alexei N. Kuznetsov, Rublevskoe Shosse, 101, kv. 39, Korpus 2, both of Moscow, all of U.S.S.R.

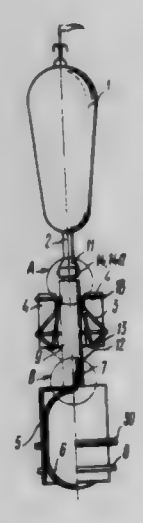
PCT No. PCT/SU79/00126, § 371 Date Aug. 26, 1980, § 102(e) Date Jul. 10, 1980, PCT Pub. No. WO80/01413, PCT Pub. Date Jul. 10, 1980

PCT Filed Nov. 30, 1979, Ser. No. 199,722

Claims priority, application U.S.S.R., Dec. 26, 1978, 2696400; May 10, 1979, 2766603; May 29, 1979, 2770102; Jul. 23, 1979, 2799894; Sep. 24, 1979, 2811901

Int. Cl.³ G01D *21/00*

U.S. Cl. 73—170 A **14 Claims**



1. An apparatus for taking bedrock samples from the bottom of deep-water basins, having a float with a rod and a supporting frame, containers with ballast weights, a device for dropping ballast weights, and a working member, wherein the improvement comprises the working member having a split casing with an open bottom and accommodating a shell; an initiating device destroying said shell at the moment the working member comes in contact with the bottom of a water basis; and a device for catching and holding a sample.

4,345,462

VESSEL LOCATION SYSTEM

Hugo A. Zanutti, Clemson 271-B University Gardens, Rio Piedras, P.R. 00927

Division of Ser. No. 870,610, Jan. 19, 1978, Pat. No. 4,232,391. This application Jan. 31, 1980, Ser. No. 117,375

Int. Cl.³ G01C *17/00*

U.S. Cl. 73—178 R **10 Claims**

1. Sea compass apparatus comprising;

longitude indicator means,

latitude indicator means,

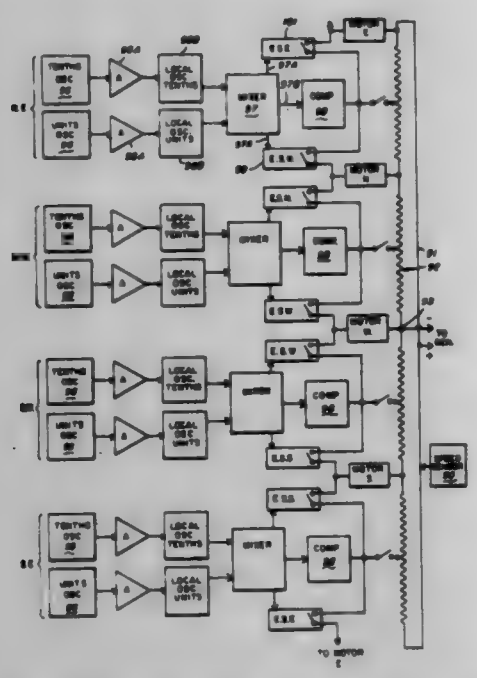
means for driving each indicator means in one direction or the other,

and control means for controlling said driving means including means responsive to vessel speed and vessel direction,

said means responsive to vessel direction including means for registering the direction of travel of the vessel and enabling said drive means to drive the indicator means in a direction of longitude and latitude corresponding to the direction of travel,

said means for registering the direction of travel of the vessel including means for registering the direction of travel of

the vessel in a decimal notation demarcating a position within one of the four quadrants, and means responsive to said decimal notation for driving one of said north and



south motor means and one of said east and west motor means at a speed that is a function of the position in the active quadrant.

4,345,463

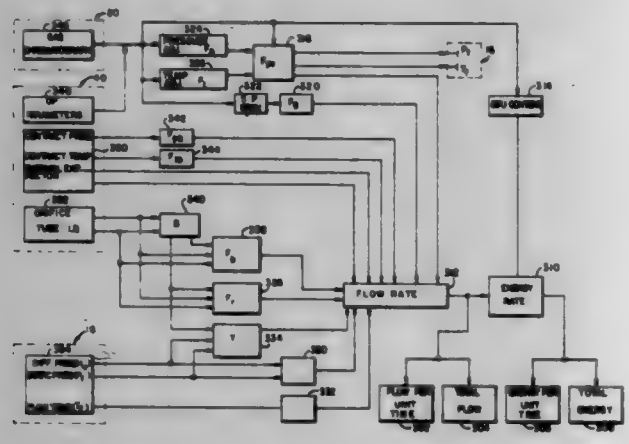
ON-LINE GAS MEASUREMENT AND ANALYSIS SYSTEM

Wayne Wilson, Houston, Tex.; George Rosko, Toms River, and James R. Patmore, Neptune, both of N.J., assignors to Electronic Associates, Inc., West Long Branch, N.J.

Filed Apr. 22, 1980, Ser. No. 142,670

Int. Cl.[3] G01N *31/06*; G01K *17/06*

U.S. Cl. 73—190 CV **14 Claims**



1. A system for measuring on line the total energy and total fluid flow of a gas mixture within a pipeline having widely varying component compositions and widely varying flow rates copmrising:

gas chromatograph means for producing time varying signals related to the component compositions of the gas mixture within the pipeline,

programmable gain means coupled to said gas chromatograph means having a plurality of gain ranges, said programmable gain means having comparative means for selecting a gain range for optimum resolution and for producing a related gain range signal,

means for converting to digital form the output of said programmable gain means,

transducer means for measuring the pressure and temperature of said gas mixture within the pipeline, and

control means coupled to said transducer means, said converting means and said gain range means for producing energy and flow rate signals of the gas mixture in the pipeline based on the on-line pressure, temperature, and component gas composition within a range related to the gain range signals.

4,345,464

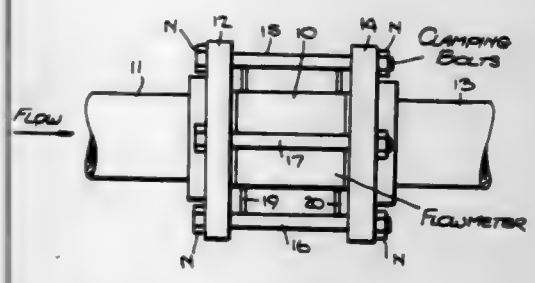
CENTERING DEVICE FOR FLOWMETERS INTERPOSED IN FLOW LINE

Peter J. Herzl, Morrisville; Harold W. Metzger, Willow Grove, and Richard L. Crumley, Southampton, all of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed Oct. 31, 1980, Ser. No. 202,733

Int. Cl.[3] G01F *15/18*

U.S. Cl. 73—201 **9 Claims**



1. A caming device for a flowmeter or other instrument having a cylindrical body having a flow conduit therein adapted to center this body with respect to flanged upstream and downstream pipes of a flow line in which the meter is interposed, the pipe flanges being bridged by clamping bolts which pass through holes in a bolt circle in the flanges and act when tightened to encage and compress the meter, the holes having clearances therein allowing limited bolt play, said camming device comprising a plate having a central aperture whose diameter matches the outer diameter of the meter body whereby the plate is rotatable thereon, said plate having means to facilitate rotation thereof, said plate having a symmetrical array of camming edges that tangentially engage the bolts such that when the device is rotated on the meter body it acts to force the bolts to their extreme hole positions, as a result of which the body is caused to assume a position concentric with the bolt circle and centered with respect to the pipes.

4,345,465

PROBE FOR MEASURING FLOW RATE AND/OR TEMPERATURE OF A FLOWING MEDIUM

Heiko Gruner, Gerlingen, and Heinz Friedrich, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 147,713

Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919433

Int. Cl.[3] G01F *1/68*

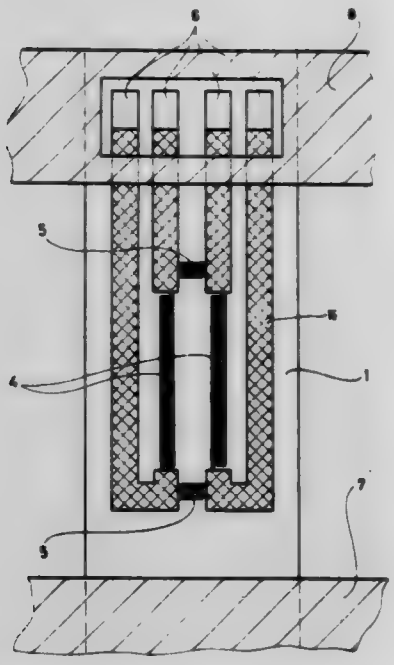
U.S. Cl. 73—204 **6 Claims**

1. A probe for measuring the rate of flow and/or temperature of a flowing medium, suitable for measurement of air and/or fuel intake flow of internal combustion engines, said probe having at least one temperature dependent resistor provided on a carrier disposed in a flow channel or duct of a fluid medium and having the improvement which consists in that:

said carrier is a thin heat-resistant synthetic resin sheet and carries in a pattern load down on one of its faces an electrical resistor layer comprising a tantalum layer lying directly on said resin sheet overlaid by a nickel layer in portions of said pattern for producing temperature dependence of resistance, said pattern being extended so as to provide conducting paths, for connecting resistors, said paths comprising extensions of the said tantalum layer directly lying on said resin sheet completely overlaid in said extended pattern with said nickel layer;

said carrier and said layers thereon are covered by a second heat-resistant thin synthetic resin sheet (2), except for

connection contact locations of said connecting paths serving at least one resistor provided by said resistor layer, which locations are left free by said second sheet, said second sheet being sealed and bonded to said carrier substantially everwhere where said carrier is not covered by the resistors (4,5) formed by said resistor layer and by said conducting paths (16), and



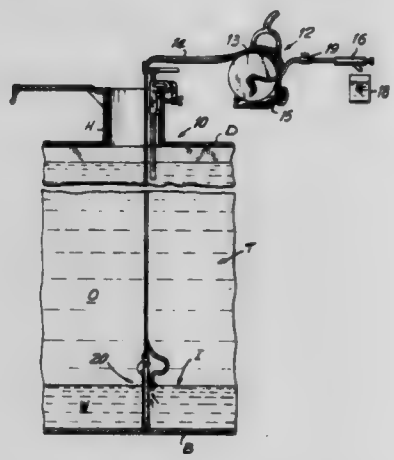
the carrier and its layers and covering sheet are held in two spaced locations in a mechanical self-supporting holder (7,8,14,15) which leaves free cavities (9) for lead connections to said contact location in such a manner that said flowing medium (11) has unimpeded heat conducting access to the regions occupied by said at least one resistor.

4,345,466

APPARATUS FOR OBTAINING SAMPLES AT VARIOUS LEVELS FROM WITHIN A MULTI-LIQUID CONTAINER PRIMARILY FOR DETERMINING THE LEVEL OF THE LIQUID INTERFACE AND RELATED METHOD

N. Lewis Lesser, 536 Ridgewood Ave., Glen Ridge, N.J. 07028

Filed Dec. 20, 1979, Ser. No. 105,564
Int. Cl.³ G01F *23/04*
U.S. Cl. 73—298 **19 Claims**



1. An apparatus for determining the level of the liquid interface from within a multi-liquid container having a passageway leading therein, said apparatus being adapted for use with a sampling bob connected by a flexible tube to an elevated location with respect to such container, said apparatus comprising:

(a) a frame,

(b) clamp means for removably attaching the frame to the container,

(c) positioning means slidably mounted for vertical movement relative to the frame,

(d) means for temporarily fixing the sampling bob tube at any point along a substantial portion of its length to the positioning means, and

(e) means on the frame for retaining the positioning means at various vertically spaced locations,

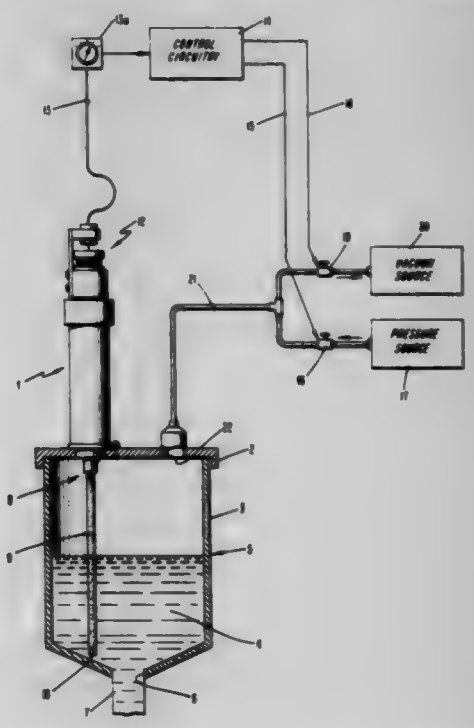
whereby, when the positioning means is shifted to various vertically spaced locations, the sampling bob is similarly shifted to various vertically spaced locations through substantially the entire height of the container.

4,345,467

HIGH TEMPERATURE PRESSURE TRANSDUCER SYSTEM

Charles E. Carlson, Succasunna, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 15, 1980, Ser. No. 187,121
Int. Cl.³ G01F *23/18;* B22D *17/32*
U.S. Cl. 73—309 **6 Claims**



1. A pressure transducer for measuring the combined gas and hydrostatic pressure at a selected level in a liquid pool in a closed vessel, comprising:

sensor rod means extending into the pool through a top wall portion of the vessel and having a submerged sensing surface which senses the total combined pressure acting on said sensing surface resulting from hydrostatic pressure of said liquid pool and gas pressure exerted on the pool;

housing means sealingly supporting said sensor rod means, said housing means including resilient means for restraining radial movement of said sensor rod means but permitting axial movement responsive to changes in sensed pressure;

spring means associated with said housing means and acting upon said sensor rod means, biasing it against axial displacement;

sensing means in cooperation with said sensor rod means for sensing and signaling axial displacement of said sensor rod means; and

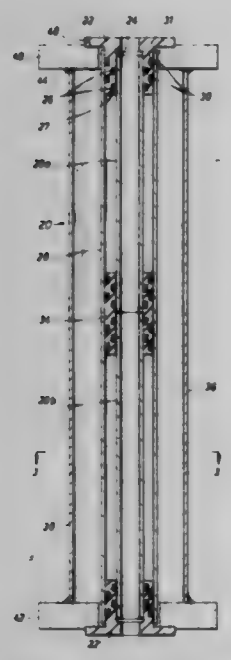
sealing means having an end surroundingly attached to said sensor rod means and the other end connected to said housing means to isolate the interior of said vessel from ambient atmosphere, said sealing means being insensitive to gas pressure acting upon it directly from either side.

4,345,468

LIQUID SIGHT MONITOR

William A. Jackson, Houston, Tex., assignor to Jogler, Inc., Houston, Tex.

Filed Oct. 7, 1980, Ser. No. 189,862
Int. Cl.³ G01F *23/02*
U.S. Cl. 73—326 **10 Claims**



1. A liquid sight monitor for monitoring liquid presence of a liquid system connected thereto, comprising

an internal tube adaptable for connection to the liquid system and insufficiently transparent to reveal the presence of liquid in the tube,

an external tube surrounding said internal tube and sufficiently transparent to reveal the presence of liquid in said internal tube, and

plural means for spacing apart the external surface of said internal tube from the internal surface of said external tube including

first seal means in at least one first grooved surface of said plural spacing apart means for sealing against the internal surface of said external tube, and

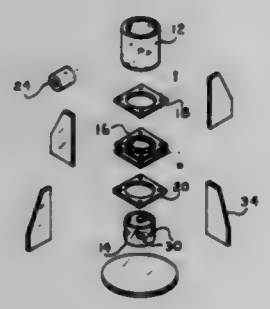
second seal means in at least one grooved surface of said plural spacing apart means for sealing against the external surface of said internal tube.

4,345,469

AIR TUNNEL DEVICE FOR THERMOHYGROMETER

James A. Devine, Norton, and José A. Miletti, Townsend, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1980, Ser. No. 193,772
Int. Cl.³ G01N *25/62*
U.S. Cl. 73—338.6 **1 Claim**



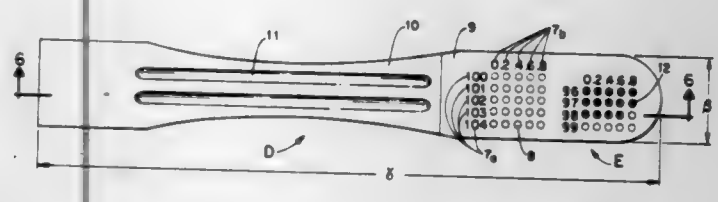
1. In combination with a thermohygrometer instrument for temperature and humidity measurement of the type which includes a temperature/humidity air probe for detecting the temperature and humidity of the ambient air through the change of electrical resistance of the probe, an air tunnel device comprising a housing defining a central air passageway therein, a probe support member for receiving the temperature/humidity air probe of the thermohygrometer instrument and for mounting said probe so the probe is exposed to the air in said air passageway, said housing comprises upper and lower cylinders, a base affixed to the lower cylinder and upright reinforcement members spaced circumferentially about the housing and secured to the base of the cylinders wherein an upper intake opening and at least one lower exhaust opening and having a fan device located therein and disposed in said air passageway below the probe support member for drawing air in through said upper opening so as to create uniform velocity air flow past said probe.

4,345,470

ALL PLASTIC DISPOSABLE THERMOMETER

Craig R. Hof, Hopatcong; Roy A. Ulin, Jr., Wyckoff, both of N.J., and Robert B. Polak, Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 946,935, Sep. 28, 1978, Pat. No. 4,232,552, which is a continuation-in-part of Ser. No. 895,422, Apr. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 844,334, Oct. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 796,492, May 12, 1977, abandoned. This application Feb. 1, 1980, Ser. No. 113,142
Int. Cl.³ G01K *11/16*
U.S. Cl. 374—106 **26 Claims**



1. A disposable thermometer device comprising:

(a) suitable non-metallic polymeric heat-conducting easily embossable flexible base layer means having one or more spaced cavities defined therein of about 0.030 to about 0.040 inch diameter and with a depth of from about 0.005 to about 0.025 inch, said cavities being non-elastic, to determine a like number of predetermined temperatures in a predetermined temperature range, with a like number of different thermally responsive compositions of matter associated with one of the predetermined temperatures, said compositions being inert to said base layer means; and

(b) suitable non-metallic sealant layer means in sealing engagement with the base layer means, overlying each of said cavities, the compositions of part (a) being inert to said sealant layer means;

to form a rigid non-vented substantially vapor-impermeable enclosure for each cavity between the base layer walls and floor of said cavity and the sealant layer means, wherein at least one of the base layer means and the sealant layer means is transparent and has a tensile strength sufficient for conventional web-line operation.

4,345,471

TEMPERATURE MEASUREMENT APPARATUS

Fumihiro Endo; Toshio Ishikawa; Jun Ozawa; Yuzuru Kamata, and Shigeo Shiono, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,282
Claims priority, application Japan, May 21, 1979, 54-61453
Int. Cl.³ G01K *5/62*
U.S. Cl. 374—188 **8 Claims**

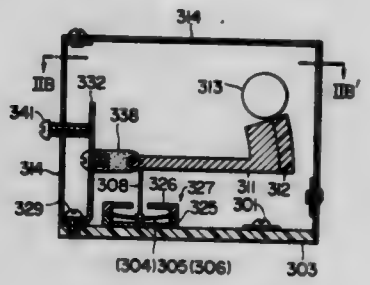
1. Temperature measurement apparatus for use in measuring the temperature of a member located within a closed vessel, comprising:

light emitting means to be disposed outside said closed vessel

for projecting light along an optical path extending through the interior of said closed vessel,

light receiving means to be disposed outside said closed vessel for receiving light from said light emitting means along said optical path, and

temperature detecting means to be disposed on said member which is to have its temperature measured for selectively varying the light on said optical path which reaches said light receiving means including means for selectively intercepting the light in said optical path in steps in response to changes in the temperature of said member from one predetermined temperature level to another, thereby



changing in a stepwise manner the quantity of the light to be received by said light receiving means,

said temperature detecting means including a plurality of temperature sensing means disposed on said member for responding to respective temperature levels of this member in a stepwise manner, and a respective light intercepting means disposed on a respective one of said plural temperature sensing means for changing its position relative to said optical path in response to changes in the temperature level of said member, thereby changing in a stepwise manner the quantity of the light to be received by said light receiving means.

4,345,472

METHOD AND APPARATUS FOR DIGITALLY ANALYZING DYNAMIC UNBALANCE OF A ROTATING BODY

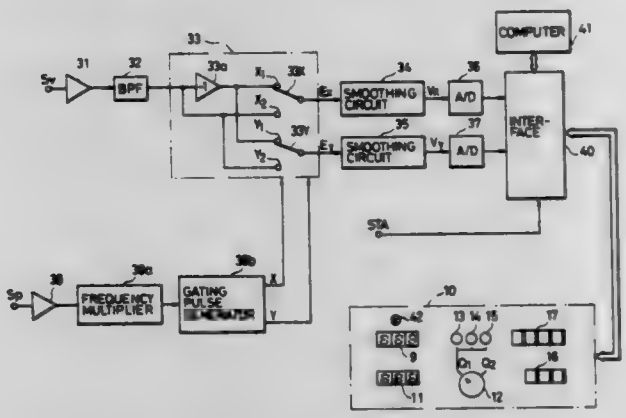
Yoshihumi Hara, Hirakata; Saburo Kubota, Kadoma; Akira Ihara, Kyoto; Masaru Kishimoto, Nara, and Masaki Suzuki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Jun. 12, 1980, Ser. No. 158,821

Claims priority, application Japan, Jun. 13, 1979, 54-74818

Int. Cl.³ G01M *1/22*

U.S. Cl. 73—462 **5 Claims**



1. An apparatus for analyzing the unbalance of a rotating body comprising: means rotatably supporting the body to permit vibration thereof under the action of an unbalanced mass in the body, a vibration responsive device operatively associated with the body for generating a periodic signal timed in accordance with the vibration of said body, means for dividing said periodic signal into two vector components having a predetermined phase difference therebetween, means for converting said vector components into corresponding d.c. signals, means for converting said d.c. signals into corresponding digital values, and means for digitally processing said digital values to detect the magnitude and angular location of said unbalanced mass, said means for digitally processing including a computer programmed to calculate the following equations:

$$U_W = k\sqrt{(Vx - a)^2 + (Vy - b)^2}$$

$$\phi_W = \delta^\circ + \tan^{-1}\frac{Vy - b}{Vx - a}$$

where, U_W and ϕ_W are the magitude and the angular location of said unbalanced mass, respectively, and k, a, b, and δ are constants.

4,345,473

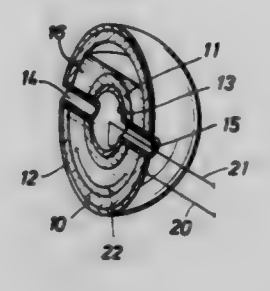
VERTICAL COMPONENT ACCELEROMETER

Albert J. Berni, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 26, 1980, Ser. No. 210,483

Int. Cl.³ G01P *15/09*

U.S. Cl. 73—516 LM **10 Claims**



1. An accelerometer for measuring the vertical component of acceleration comprising:

a first and second hollow piezoelectric element, said second element being disposed within said first element;

mounting means for securing said first and second elements in position and isolating the volume between said first and second elements;

contact means for securing first and second leads to the outer surface of said first element and the inner surface of said second element;

a conductive liquid, said liquid partially filling the volume between said first and second elements; and,

means for coupling a third lead to said conductive liquid.

4,345,474

ELECTROSTATIC ACCELEROMETER

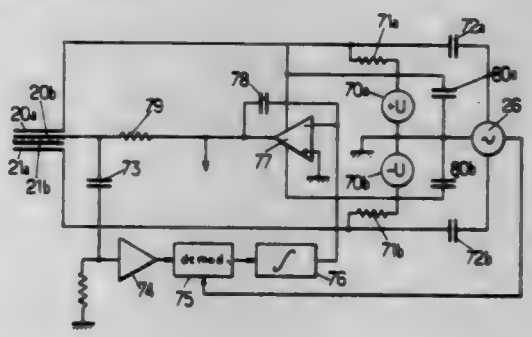
Alain Deval, Plaisir, France, assignor to Societe d'Applications Generales d'Electricite et de Mecanique SAGEM, Paris, France

Filed Apr. 9, 1980, Ser. No. 138,731

Claims priority, application France, Apr. 11, 1979, 79 09213

Int. Cl.³ G01P *15/13*

U.S. Cl. 73—517 B **3 Claims**



1. An electrostatic pendulous accelerometer for measuring

acceleration along a sensing axis, comprising: a stator defining an internal cavity; a pendulum consisting of an electrically insulating disc connected to the stator by hinge means allowing the pendulum to oscillate under the action of accelerations along said sensing axis; a pair of first electrodes formed on the opposite surfaces of said cavity perpendicular to said sensing axis; a pair of second electrodes disposed on the opposite sides of said disc, each confronting one of said first electrodes and in capacitive relation therewith; a detection circuit for detecting unbalance between the capacities of two measurement capacitors each comprising one of the first electrodes and the confronting second electrode, said detection circuit comprising two legs, each leg having a reference capacitor connected to constitute a capacitor bridge with one of said measurement capacitors and a charge amplifier connected to charge said reference and measurement capactors with a constant current; a servo-control circuit which comprises integrating amplifier means connected to receive an electric signal representative of the unbalance of the capacities of said two measurement capacitors and supplying two channels constructed and connected to cause delivery of square voltage pulses to each of the capacitive bridges by the associated charge amplifier depending on the direction of acceleration for rebalance of the pendulum, and a pulse counter connected to count the difference between the number of square pulses applied to the capacitive bridges; and a sequencer alternately supplying pulses for simultaneous energization of both charge amplifiers and pulses for selectively opening one of two gates each transmitting the outputs signals of one of said comparators to a corresponding one of said charge amplifiers, as charge controlled signals.

4,345,475

METHOD AND APPARATUS FOR RECEIVING ULTRASONIC ENERGY BY OPTICAL MEANS

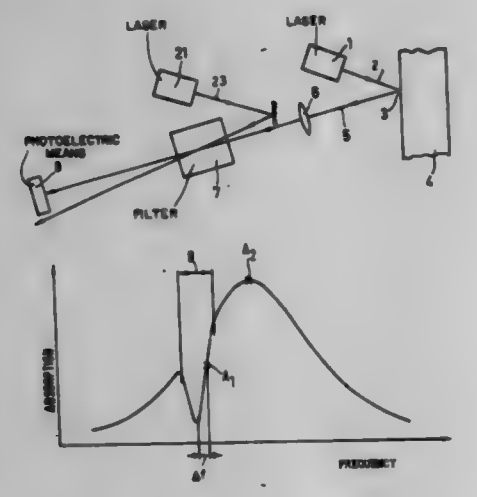
Wolf Bickel, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Krautkramer-Branson, Inc., Stratford, Conn.

Filed Nov. 10, 1980, Ser. No. 205,304

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1980, 3002620

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—657 **8 Claims**



1. The method of optical reception of ultrasonic energy in testing of workpieces by ultrasonic energy wherein a surface portion of such workpiece is illuminated by the light from a frequency stabilized single-mode laser, the laser light reflected at said surface portion is frequency modulated by the Doppler effect responsive to ultrasonic energy deforming said workpiece portion and is passed through a gas filled light filter, the frequency of said single-mode laser being selected to cause an amplitude modulation of said reflected light along the slope of the absorption curve of said filter, and the amplitude modulated light passed through said filter is transmitted to a photoelectric means to produce an electrical signal which is responsive to the intensity of the ultrasonic energy at said workpiece surface portion, the improvement comprising:

illuminating said workpiece portion (3) with a first laser light beam (2);

irradiating the gas in the light filter (7) with a second laser light beam (23) of such intensity that the filter (7) substantially loses its absorption ability for the frequency or frequencies of said second laser light beam (23) to cause in the original absorption region (22) of said filter (7) at least one part region (B) characterized by a steeper slope of the absorption curve.

4,345,476

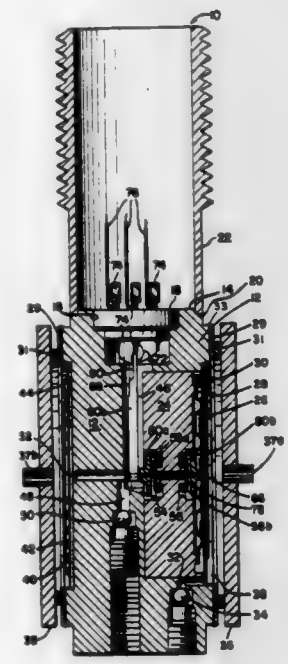
DIFFERENTIAL PRESSURE TRANSDUCER WITH HIGH COMPLIANCE, CONSTANT STRESS CANTILEVER BEAM

Gurnam Singh, Riverside, Calif., assignor to Bourns Instruments, Inc., Riverside, Calif.

Continuation of Ser. No. 172,101, Jul. 25, 1980, abandoned. This application Jul. 20, 1981, Ser. No. 285,238

Int. Cl.³ G01L *9/00*

U.S. Cl. 73—720 **6 Claims**



1. A differential pressure transducer, of the type employing a cantilever beam having piezoelectric strain gauges mounted thereon or diffused therein, a pressure-sensitive diaphragm, and a strut element connecting said diaphragm and said beam in a manner which produces a stress in said beam at said strain gauges in response to a pressure applied to said diaphragm, wherein the improvement comprises:

said diaphragm having a shape factor of at least about 6; and

said beam having a compliance at least about 2.6 times the compliance of said diaphragm.

4,345,477

SEMICONDUCTION STRESS SENSING APPARATUS

Russell L. Johnson, New Brighton, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 3, 1980, Ser. No. 212,657

Int. Cl.³ G01B *7/18*

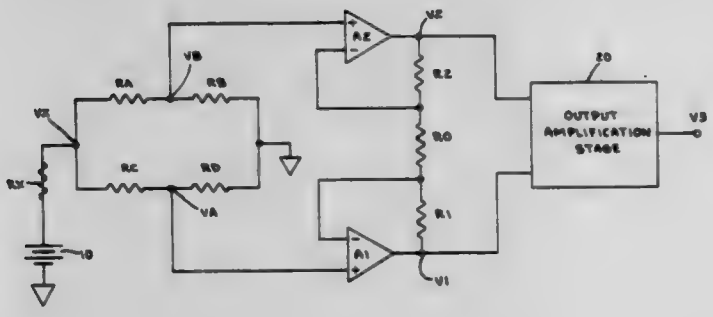
U.S. Cl. 73—766 **59 Claims**

1. A stress transducing system supported in and on a semiconductor material stress sensing structure having structural portions including substantially a diaphragm and a constraint for constraining said diaphragm at peripheral portions thereof, with said structure having a major surface bounding semiconductor material, said semiconductor material being of a first conductivity type except in selected locations thereof, said major surface being common to both said diaphragm and said constraint, said stress transducing system comprising:

a first semiconductor piezoresistive domain in said semiconductor material at a said selected location extending at least in part into said diaphragm, and with said domain

being adjacent to said major surface, said first semiconductor piezoresistive domain having first and second terminating regions, said first semiconductor piezoresistive domain having therein a first distribution of dopant atoms with depth into said semiconductor material away from said major surface which leads to said first semiconductor piezoresistive domain being of a second conductivity type and having a temperature coefficient of resistance of a first magnitude which is effective in a first magnitude direction, said first semiconductor piezoresistive domain being a component part of a stress sensing circuit which is capable of providing a stress sensing circuit first output signal at a stress sensing circuit first output region of a magnitude varying in correspondence to changes in magnitude of stress applied to said diaphragm, said stress sensing circuit first output signal varying with such stress, as aforesaid, in a manner characteristic of said first semiconductor piezoresistive domain and remaining portions of said structure to thereby establish a stress sensing characteristic which characteristic also depends upon temperatures occurring in said structure;

a first semiconductor resistive domain in said semiconductor material at a said selected location and adjacent to said major surface, said first semiconductor resistive domain having first and second terminating regions, said first semiconductor resistive domain having substantially said first distribution of dopant atoms therein leading to said



first semiconductor resistive domain being of said second conductivity type and having a temperature coefficient of resistance of substantially said first magnitude which is effective in said first magnitude direction, said first resistive domain being substantially free of effects in electrical behavior in response to stresses applied to said diaphragm, said first semiconductor resistive domain being a component part of a signal processing circuit having a signal processing circuit first input region which is electrically connected to said stress sensing circuit first output region and having a signal processing circuit output region, said signal processing circuit being capable of providing a stress transducer system output signal at said signal processing circuit output region which is a version of said stress sensing circuit first output signal but as compensated to be substantially free of effects of said temperature dependence in said stress sensing circuit characteristic; and

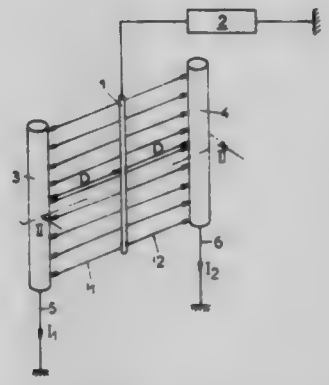
a first primarily resistive domain adjacent to said major surface and supported by said structure, said first primarily resistive domain having first and second terminating regions, said first primarily resistive domain having a temperature coefficient of resistance of a magnitude substantially less than said first magnitude, said first primarily resistive domain being substantially free of effects in electrical behavior in response to stresses applied to said diaphragm and being a component part of said signal processing circuit.

4,345,478

GAS FLOW MEASURING DEVICE

Jean Barat, Verrieres les Buisson, France, assignor to Metraflu, France

Filed Jul. 18, 1980, Ser. No. 169,956
Claims priority, application France, Jul. 18, 1979, 79 18653
Int. Cl.[3] G01F *1/64*
U.S. Cl. 73—861.09 6 Claims



1. A device for the measurement of a component of the speed vector of an ionizable gas flow utilizing high electrical voltage potential, said device comprising:

a linear section of conducting wire;

means for applying said high electrical potential to said section of conducting wire to produce ions through the corona effect around the periphery of said section of wire;

a pair of linear conductors for collecting the ions produced by said corona effect to generate ion currents, said pair of conductors arranged parallel to said section of wire and equally spaced on opposite sides of said wire; and

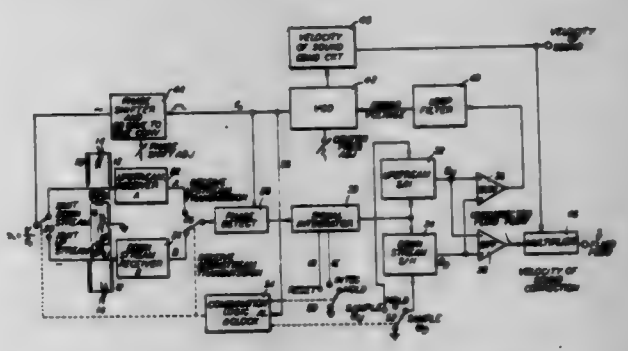
means responsive to the difference in said ion currents generated at each of said pair of conductors as a result of collecting the ions emitted by said section of conducting wire to generate a signal corresponding to the speed vector of the ionizable gas flow.

4,345,479

FLOWMETER SYSTEM WITH SYNCHRONOUS CLOCK FOR GENERATION OF TIMING SIGNALS

Robert S. Loveland, West Covina, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 13, 1981, Ser. No. 224,783
Int. Cl.[3] G01F *1/66*
U.S. Cl. 73—861.28 8 Claims



1. A flowmeter system comprising, in combination:

transducer means for transmitting acoustic compression waves upstream and downstream in a fluid flowing in a path;

circuit means for measuring the phase difference between the transducer means in the fluid flow path of the acoustic compression waves transmitted upstream and circuit means for measuring the phase difference between said transducer means in the fluid flow path of the acoustic compression waves transmitted downstream;

circuit means for producing a difference signal dependent on

the difference between the two phase differences, the magnitude and sign of which being directly related to the instantaneous fluid flow rate and its direction;

circuit means for automatically adjusting the frequency of the acoustic compression waves to a frequency where a fixed wavelength distance, in the fluid flow medium, occurs across the path of the transducer means; and

signal generating means for producing timing signals for operating said circuit means which relate in frequency to the frequency of said acoustic compression waves.

4,345,480

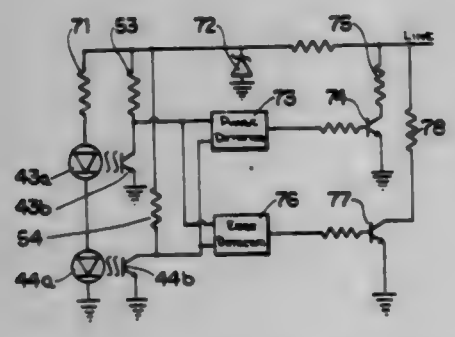
ROTARY FLOW METER

Edward R. Basham, 4125 Driskell, Fort Worth, Tex. 76107, and Helmut R. M. Cmelik, 9008 Ridglea Country Club Dr., #301, Fort Worth, Tex. 76126

Continuation of Ser. No. 879,254, Feb. 21, 1978, abandoned. This application May 7, 1980, Ser. No. 147,634

Int. Cl.[3] G01F *1/115*

U.S. Cl. 73—861.77 **6 Claims**



1. An improved axial vane type flow meter for measuring the direction and rate of fluid flow within a borehole, comprising:

an impeller means having a plurality of helical vanes mounted adjacent a sensing means for rotating in response to fluid flow;

said impeller means including a cage freely suspended within said borehole with said vanes being axially positionable within said cage for rotation in closer proximity with one end of said cage than the other for engaging laminar fluid flow therefrom and balancing bidirectional sensitivity;

said sensing means including two light paths and a light interrupter means for digitally sensing rotation and signalling both direction and rate of fluid flow of a duration imparting less than one revolution to said impellers;

said sensing means being longitudinally disposed from said impeller in axial alignment therewith and sealably contained relative thereto and the fluid passing therearound; and

a magnetic coupling connecting said impeller means to said sensing means through a first magnet coupled through a bulkhead to a second magnet to cause longitudinal separation between said impeller means and said sensing means and thereby provide virtually resistance free signal generation subject only to sensing means bearing resistance.

4,345,481

DIGITAL TORQUE METER SYSTEM

Kenneth Schroyer, Slidell, La., assignor to Instruments, Computers and Controls Corp., Slidell, La.

Filed Jun. 3, 1980, Ser. No. 156,055

Int. Cl.[3] G01L *3/12*

U.S. Cl. 73—862.34 **13 Claims**

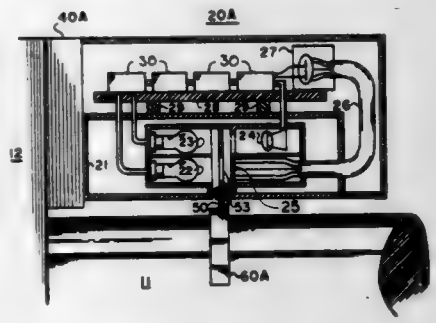
12. A torque meter system for a load transmitting rotating shaft, comprising:

first interrupter means for mounting on the shaft for rotation therewith;

first electro-optical sensor means, having a primary light source and a spaced primary light detector between which said first interrupter means passes and temporarily blocks the light going from said light source to said light detector, for detecting when said first interrupter passes it;

second interrupter means for mounting on the shaft at a longitudinally spaced position on the shaft for rotation therewith; and

second electro-optical means, having a primary light source and a spaced, primary light detector between which said second interrupter means passes and temporarily blocks the light going from said light source to said light detector, for detecting when said second interrupter means passes it; and



electrical circuit means connected to said first and said second electro-optical detector means for comparing the relative times said first electro-optical means and said second electro-optical means detect the passage of said first and second interrupter means, respectively;

said primary light detector including a series of optical glass fibers arranged in a vertical, radial array to form a thin, straight line, light pick-up.

4,345,482

FIBER OPTICAL DEVICES FOR MEASURING PHYSICAL PHENOMENON

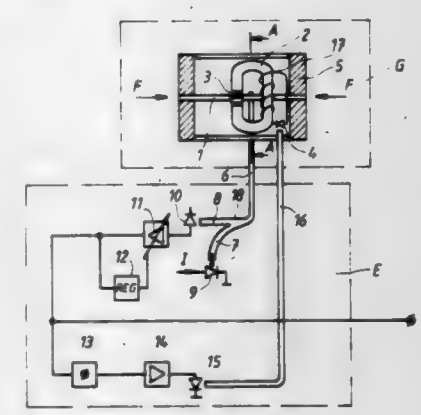
Morgan Adolfsson, and Torgny Brogardh, both of Vasteras, Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed Nov. 14, 1979, Ser. No. 94,097

Claims priority, application Sweden, Nov. 16, 1978, 7811821

Int. Cl.[3] G01L *1/10*

U.S. Cl. 73—862.59 **20 Claims**



1. Fiber optical device for measuring physical phenomenon, comprising:

a transducer unit including an object mounted therein and adapted to oscillatate at a resonant frequency thereof and having a property of oscillation altered in response to a change in physical characteristic of said object induced by stimulus of the physical phenomena being measured, and including at least one light conducting fiber having a fiber optical position/movement detector element mounted in operative association with said object to detect said altered oscillation property;

processing means for generating an output signal representative of the phenemena being measured in response to an output of said fiber optical detector element; and

excitation means for generating energy causing said object to oscillate, and including optical transmission means for

transmitting oscillating energy to said transducer unit, said means for transmitting including at least one light conducting fiber for optically transmitting said oscillating energy.

4,345,483

METERING APPARATUS

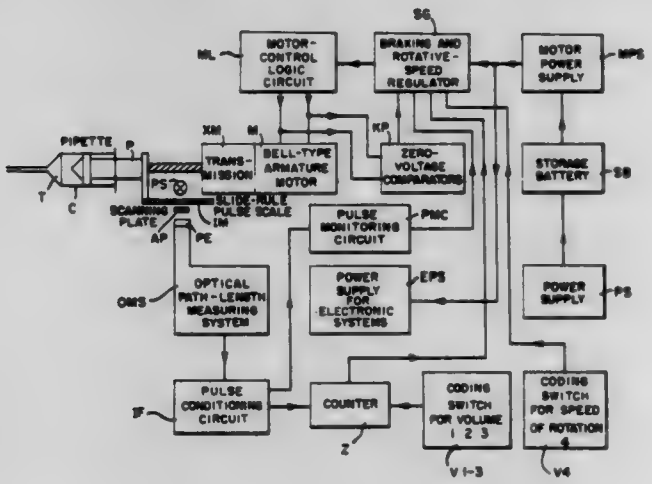
Benno Paletta; Reinhard Möller, both of Graz, Austria, and Joachim Kasielke, Brühl, Fed. Rep. of Germany, assignors to Clinicon International GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 183,794

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2937066

Int. Cl.³ B01L *3/02*

U.S. Cl. 73—864.16 **22 Claims**



1. In a metering apparatus for liquids, having a motor-driven piston/cylinder system, optical position-determining means including a transparent pulse scale with nontransparent marks and affixed to the piston, an optical/digital measuring circuit which converts the stroke of the piston into a corresponding number of digital pulses, means including a counter for counting the digital pulses for controlling the stroke of the piston on the basis of a preset metering volume, the improvement wherein: the optical position-determining means further comprises a second pulse scale adjacent to the first pulse scale and fixed relative to the cylinder to form a scanning plate, and a light transmitter and a light receiver for the scanning of the marks, and the marks on the pulse scales form a regular line grid; the motor comprises a direct-current motor; and the means for controlling the stroke of the piston comprises means for controlling the speed of rotation of the motor on the basis of the contents of the counter such that when the preselected metering volume is approached the lowest speed level is selected, and braking means for applying a reverse voltage to the motor when the counter position corresponding to the preselected metering volume is reached to permit the motor to be brought to a dead stop.

4,345,484

SAMPLING DEVICE

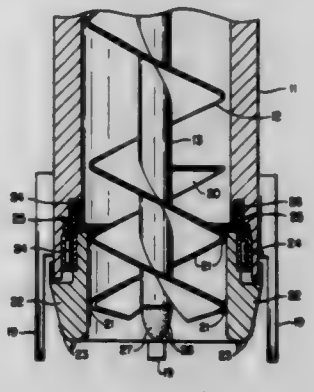
Gregory Gould, 30 Clairmont Ave., Thornwood, N.Y. 10594, and Hendrik Colijn, 423 Franklin Heights Dr., Monroeville, Pa. 15146

Filed Oct. 14, 1980, Ser. No. 196,711

Int. Cl.³ G01N *1/08*

U.S. Cl. 73—864.43 **10 Claims**

1. A sampling device comprising a tubular means, auger means rotatable within said tubular means, cutting means attached to said auger means, said cutting means comprising



circular cutting means having a circumference approximately equal to the circumference to said tubular means.

4,345,485

TEMPORARY LOCKING DEVICE FOR INERTIA WHEEL

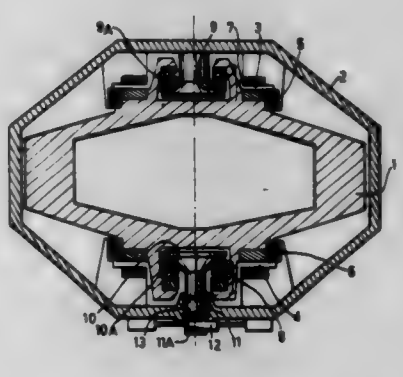
Jean-Luc Livet, Palaiseau, and Maurice Bretaudeau, Fontenay le Fleury, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, France

Filed Mar. 26, 1980, Ser. No. 133,997

Claims priority, application France, Mar. 30, 1979, 79 08013

Int. Cl.³ G01C *19/24*

U.S. Cl. 74—5.1 **11 Claims**



1. Temporary locking device for a rotor of an inertia wheel, sustained with respect to a stator, by magnetic means and associated with two emergency bearings comprising:

a conical bearing surface for each said emergency bearings;

a complementary conical bearing surface for each of said conical bearing surfaces, one of the two conical bearing surfaces being able to come into mechanical contact with said complementary bearing surface, and one of said complementary bearing surfaces being rendered axially movable;

so that said rotor can be immobilised for three degrees of freedom, two radially and one axially, after placing said bearing surfaces in mechanical contact, said rotor remaining free to rotate.

4,345,486

POWER TRANSMISSION HAVING A CONTINUOUSLY VARIABLE GEAR RATIO

Henry T. Olesen, 48-50 Sondergaardsvej, DK-3500 V rlose, Denmark

Filed Mar. 20, 1979, Ser. No. 22,299

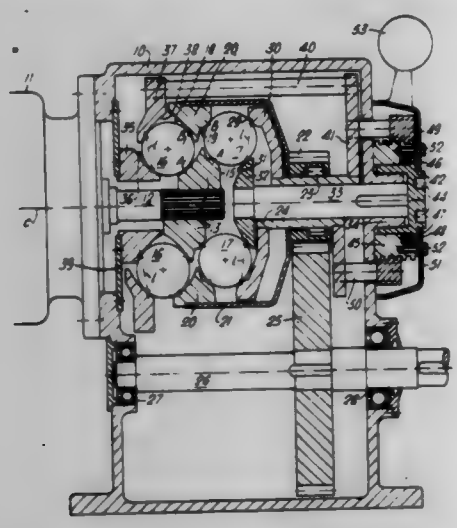
Claims priority, application United Kingdom, Mar. 22, 1978, 11424/78

Int. Cl.³ F16H *15/26*

U.S. Cl. 74—198 **9 Claims**

1. A power transmission for transmitting power from a driving shaft to a driven shaft along a main axis of the transmission and having a continuously variable gear ratio, in which torque is transmitted by friction forces at points of tangency

between balls and runways and wherein the balls and runways are divided into two axially spaced groups, the balls in each group rolling on four runways, two of which runways are rotationally immovable with respect to each other and two of which runways are coupled to the driving and the driven shaft, respectively, each group of runways including at least one radially inner runway and at least one radially outer runway, at least two of the runways in each group being axially displace-



able, the two groups of balls being coupled in parallel, a respective radially inner runway of each group being connected to a respective radially inner runway of the other group to resist relative axial movement of said radially inner runways, and a respective radially outer runway of each group being connected to a respective, radially outer runway of the other group to resist relative axial movement of said radially outer runways, the cross-sectional shapes of the runways being determined by the equations

$$\frac{dy}{dx} = tg\ u;\ \frac{dy}{dz} = -\ tg\ v;\ \frac{dy_1}{dx} = tg\ u_1;\ \frac{dy_1}{dz} = tg\ v_1 \text{ and}$$

$$f = \frac{\sin u \cdot (y - \cos v)}{\sin v \cdot (y + \cos u)} = \frac{\sin u_1 \cdot (y_1 - \cos v_1)}{\sin v_1 \cdot (y_1 + \cos u_1)}$$

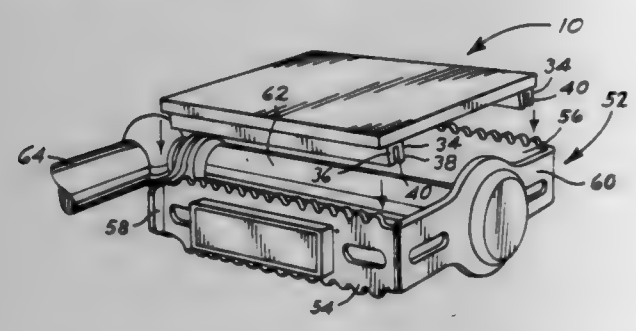
where x and z are the relative axial displacements of the balls and the radially outer and inner runways, respectively, f is the gear ratio of the transmission, y and y_1 are the corresponding variable radial distances of the ball centers from the main axis of the transmission, and u, u_1, v and v_1 are the angles between the ball radii to the points of tangency of the balls and runways.

4,345,487

PROTECTIVE PAD FOR MOUNTING ON A BICYCLE PEDAL

Michael Straker, 771 SW. 15th St., Corvallis, Oreg. 97330

Filed Feb. 19, 1980, Ser. No. 122,450
Int. Cl.³ G05G *1/16*
U.S. Cl. 74—563 **3 Claims**



1. For use on a bicycle pedal having spaced-apart side members, a protective pad for mounting on the pedal comprising:

a pad member having a substantially flat surface for contact by a rider's foot, said pad member being provided with recess means;

coupling means including a gripping means detachably connected to and extending from said pad member, said gripping means being formed of resilient material and provided with projection means for detachable insertion into said recess means, said gripping means also including a slot dimensioned for receiving one of the side members for frictionally engaging opposed surfaces of the side member to thereby mount said pad member on the pedal; and

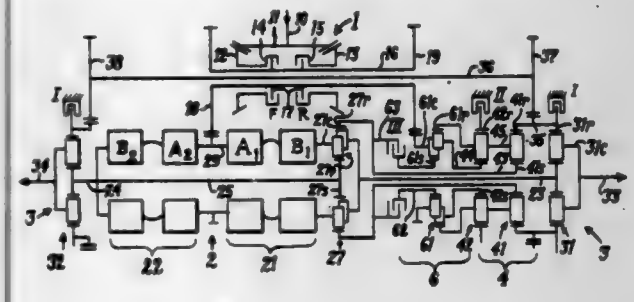
said recess means and said projection means each being configured so that said projection means is frictionally held in said recess means when inserted thereinto and is detachable therefrom by manual force.

4,345,488

HYDROMECHANICAL STEERING TRANSMISSION

Bradley O. Reed, Pittsfield, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,033
Int. Cl.³ F16H *47/04, 37/06, 1/44*
U.S. Cl. 74—682 **15 Claims**



1. A multi-range synchronous shifting hydromechanical transmission comprising:

an input drive train;

right and left output multi-element differential gear units each having an output shaft attached to a first said element;

a hydrostatic component including an input member responsive to said input drive train, right and left output members, hydrostatic means responsive to said input member for propelling said right and left output members hydrostatically at independently controlled variable speeds for propulsion and steering, a third output member and means for propelling said third output member hydrostatically at a speed which is the average of the speed of said right and left output members, whereby the outputs of said right, left and third output members can be used for propulsion and a speed difference between said right and left output members can be used for steering;

mechanical means for connecting said right and left output members of said hydrostatic component to a second element of said right and left output multi-element differential gear units respectively;

a mechanical gear train interconnecting said input drive train, said third output member of said hydrostatic component and a third element of said right and left multi-element differential output gear units, said gear train including reduction and differential gearing components and means for selectively actuating said components of said gear train in at least two different combinations of said reduction and differential gearing components for generating and transmitting two different hydromechanical drive speeds to the third elements of said output differential gear units, to cause said transmission to operate in two different hydromechanical ranges, or in a third combination by immobilizing said third elements to lock out said gear train to cause said transmission to operate in a third range, each of said two hydromechanical ranges having a distinct propulsion torque ratio between said right and left output members and said output shafts, said torque ratios

both being different from the torque ratio between said right and left output members and said output shafts when said gear train is locked out.

4,345,489

HYDRAULIC CONTROL SYSTEM FOR SERVOS IN AUTOMATIC TRANSMISSIONS

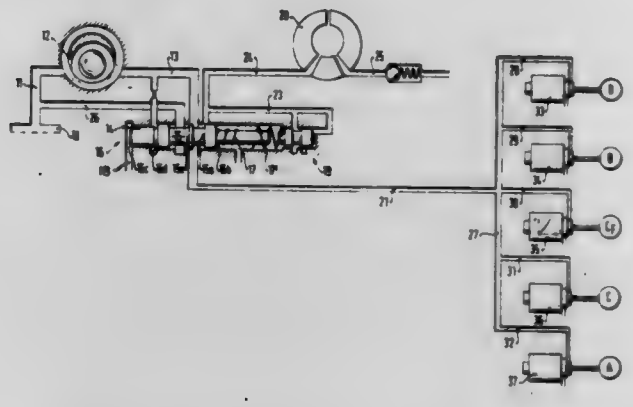
Alfred Müller, Leonberg; Manfred Schwab, Gerlingen; Meinrad Feder, Schwieberdingen; Achim Schreiber, Schwieberdingen, and Joseph Sauer, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,993

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2901051

Int. Cl.³ F16H *3/74*

U.S. Cl. 74—752 A 5 Claims



1. A hydraulic control system for a plurality of switching elements of an automatic transmission including a main conduit, a main pressure valve to regulate the pressure in the main conduit and a torque converter valve, comprising a plurality of electromagnetically actuated pressure regulating valves connected in parallel to said main pressure conduit, each pressure regulating valve having a corresponding variable fluid opening, the variation of said opening being proportional to applied electrical current, and each switching element being connected to the main pressure conduit through one of said pressure regulating valves.

4,345,490

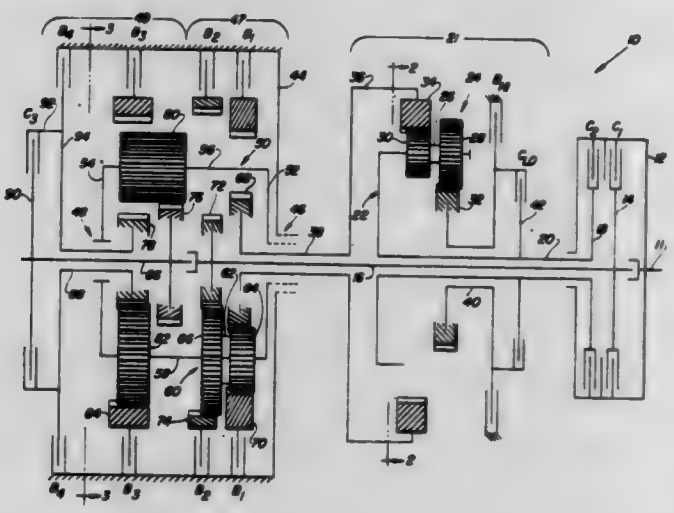
MULTI-SPEED POWERSHIFT TRANSMISSION

Lyle R. Madson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 26, 1980, Ser. No. 134,274

Int. Cl.³ F16H *57/10*

U.S. Cl. 74—761 13 Claims



1. A multi-speed powershift transmission for connection to a driven power shaft, said transmission comprising:

(a) a first planetary section comprising a rotatable carrier, planet gear means rotatably mounted on said rotatable carrier, a rotatable sun gear meshing with said planet gear means, a rotatable ring gear meshing with said planet gear means, a rotatable hollow member, connecting means joining one of said sun gear, ring gear and carrier to said hollow member, a brake for selectively preventing rotation of a second of said sun gear, ring gear and carrier, and a clutch for selectively locking the second of said sun gear, ring gear and carrier to the third thereof;

(b) a first drive clutch for selectively connecting the third of said sun gear, ring gear and carrier to said driven power shaft;

(c) a second planetary section comprising first and second relatively rotatable sun gears, first and second relatively rotatable ring gears, a rotatable carrier, planet gear means rotatably mounted on said rotatable carrier and meshing with said sun and ring gears, first and second brakes for selectively preventing rotation of said first and second ring gears, respectively, and the first of said sun gears being connected to said output member of said first planetary section;

(d) a second drive clutch for selectively connecting the second of said sun gears to said driven power shaft; and

(e) a third planetary section comprising an extension of said rotatable carrier of said second planetary section, first and second relatively rotatable sun gears, a rotatable output member connected to said first sun gear, a brake for selectively preventing rotation of said second sun gear, a clutch for selectively locking said second sun gear to said first sun gear, planet gear means rotatably mounted on said rotatable carrier and meshing with said first and second sun gears, a relatively rotatable ring gear meshing with said planet gear means, and a brake for selectively preventing rotation of said ring gear.

4,345,491

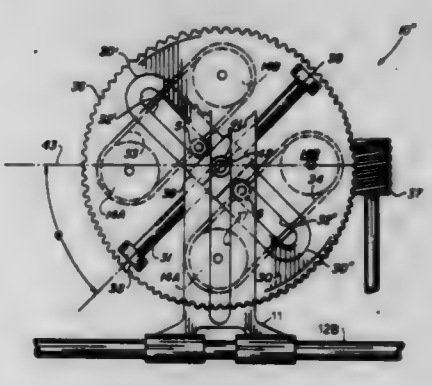
TRANSMISSION UTILIZING VELOCITY CONTROL MECHANISM

Gilbert H. Hannon, 1232 Elizabeth St., Green Bay, Wis. 54308

Filed Jun. 19, 1980, Ser. No. 161,001

Int. Cl.³ F16H *19/06, 35/08*

U.S. Cl. 74—831 3 Claims



1. A transmission employing a velocity control device comprising:

a support,

a slotted tool actuating platform mounted for reciprocal movement on said support,

drive means mounted adjacent said platform and connected thereto for causing reciprocal movement of said platform,

said drive means comprises a pair of sprocket means each having an endless means mounted thereon for movement thereby upon rotation of the associated sprocket means,

a pair of following means one mounted on each of said endless means for movement therewith,

a support rod,

a slide bracket laterally positioned across said rod for slidable movement along said rod,

a pair of spacedly positioned axially aligned slots formed in said bracket to extend longitudinally thereof,

each of said slots loosely engaging a different one of said following means for causing said bracket to be reciprocally moved along said support rod over a portion of the travel of said endless means and to be relatively stationary during a second portion of the travel of said endless means when said following means moves along said slots, and

a roller mounted on said bracket for riding in the slot of said platform for moving said platform in a simulating manner.

4,345,492

METHOD OF MAKING METAL FORMING PUNCHES

Emerson D. Spengler, and Charles W. Schaeffer, both of Lebanon, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Sep. 18, 1980, Ser. No. 188,414
Int. Cl.³ B21K *5/00*
U.S. Cl. 76—101 R **3 Claims**



1. A method of making a punch for forming metal comprises sequentially the following steps:

(a) providing a cylindrical bar of steel,

(b) cutting a piece from said cylindrical bar,

(c) applying a coating of phosphate and lubricant to said piece,

(d) extruding said piece into a punch for forming metal having a polygonal cross section at one end, a cylindrical cross section at the other end and an intermediate transition portion therebetween, the length of the cylindrical cross section being about the same as the length of the polygonal cross section,

(e) annealing said punch

(f) facing said one end of said punch, and

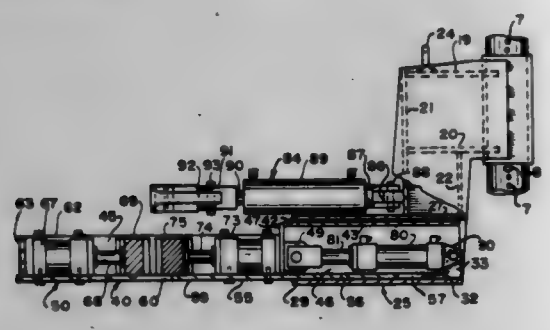
(g) heat treating said punch.

4,345,493

DRILL ROD HOLDING AND BREAK-OUT DEVICE

Charles L. Rassieur, Creve Coeur, Mo., assignor to Central Mine Equipment Company, St. Louis, Mo.

Filed Oct. 22, 1980, Ser. No. 199,428
Int. Cl.³ B25B *13/50*
U.S. Cl. 81—57.34 **8 Claims**



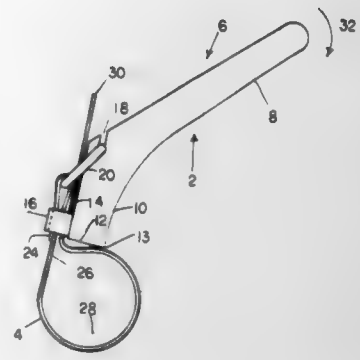
1. In a vehicle mounted rod holding and break-out device the improvement comprising a clamp support, a pair of oppositely disposed clamp jaws mounted on said support, means mounted on said support for moving at least one of said clamp jaws toward and away from the other, a housing for mounting and supporting one end of said clamp support for sliding in and out with respect to said housing, means mounted in said housing and connected to said support for moving said support in in and out directions, and means mounted on said vehicle for pivotally supporting said housing for swinging said housing and support toward and away from said vehicle.

4,345,494

OIL FILTER WRENCH

Norman O. Aamodt, R.D. #5, Coatesville, Pa. 19320

Filed Oct. 28, 1980, Ser. No. 201,421
Int. Cl.³ B25B *13/52*
U.S. Cl. 81—64 **2 Claims**



1. A strap wrench comprising:

(a) a handle portion having a body member and a handle member connected together,

(b) said body member having an axis extending of an obtuse angle to the axis of the handle member and having a flat end perpendicular to the axis of the body and an outer square corner opposite the end of the body member connected to the handle member,

(c) between said two ends and adjacent said flat end there being a strap mounting surface and over that surface there being a retainer loop structure, and

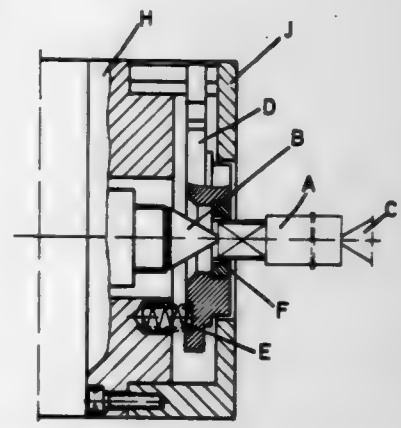
(d) a strap with one end of said strap being fastened to said body member, said strap passing through said retainer loop structure, then said strap forming a loop and passing back through said retainer loop structure under said strap portion already positioned in said retainer loop structure.

4,345,495

LATHE DOG

Erwin Junker, Talstrasse 78, D 7611 Nordrach-Baden, Fed. Rep. of Germany

Filed Jul. 15, 1980, Ser. No. 169,197
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942351
Int. Cl.³ B23B *33/00*
U.S. Cl. 82—41 **6 Claims**



1. In a lathe structure of the type including a pair of tapered center points for clamping therebetween a workpiece, a rotatable chuck base body, and a lathe dog for clamping the workpiece and for transferring thereto rotation of said chuck base body, the improvement wherein said lathe dog comprises:

a pendulum disc mounted on said chuck base body for rotation therewith;

means for mounting said pendulum disc on said chuck base body to prevent relative rotation therebetween in either of opposite directions of rotation of said chuck base body about the axis of rotation thereof, and to allow relative

axial movement and relative tilting movement of said pendulum disc with respect to said chuck base body;

a carrier disc connected to said pendulum disc for movement therewith, said carrier disc having therethrough an opening with internal axially inclined surfaces for contacting an end of the workpiece;

one of said center points extending into said opening; and

means operable between said chuck base body and said pendulum disc for urging said pendulum disc and said carrier disc toward the workpiece in the direction of a straight line extending between the contact points of said center points with the workpiece, and thereby for urging said inclined surfaces of said carrier disc into clamping contact with the workpiece.

4,345,496

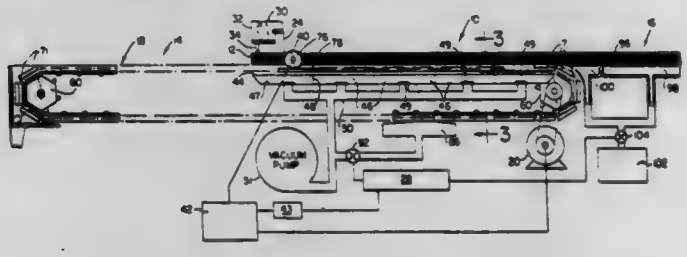
APPARATUS FOR WORKING ON SUCCESSIVE SEGMENTS OF SHEET MATERIAL

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Division of Ser. No. 8,045, Jan. 31, 1979, abandoned. This application Nov. 18, 1980, Ser. No. 207,871

Int. Cl.³ D06H 7/24

U.S. Cl. 83—100 **14 Claims**



1. Apparatus for working on sheet material comprising a vacuum table having material shifting means for moving sheet material relative to said table, said material shifting means including an endless belt conveyor having a bristle mat including an upper run having upwardly extending bristles defining a movable material supporting surface and a lower run having downwardly extending bristles defining a lower surface of said belt conveyor, said apparatus having a working mode wherein said conveyor is at rest relative to said table and a material moving mode wherein said conveyor relative to said table, said material supporting surface having air passageways, therethrough, means in communication with said passageways in at least a portion of said material supporting surface for applying vacuum to said portion of said material supporting surface, means defining a vacuum chamber below said lower run and having an opening therein adjacent said lower surface for applying vacuum to said lower surface, and means for applying vacuum to said vacuum chamber and reducing vacuum applied to said portion of said material supporting surface during said material moving mode.

4,345,497

FILM SLITTER

Wendall C. Cobleigh; Donald L. Barmore, and Robert C. Geschwender, all of Lincoln, Nebr., assignors to Professional Marketing Associates, Lincoln, Nebr.

Filed Sep. 18, 1980, Ser. No. 188,532

Int. Cl.³ B26D 7/06

U.S. Cl. 83—105 **4 Claims**

1. A film slitter, comprising,

a support means having upper and lower ends, inner and outer ends and opposite sides,

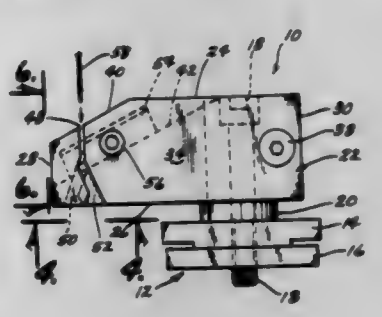
said support means having a central, disposed and elongated first slot formed therein extending downwardly thereinto from the upper end thereof and terminating above the lower end thereof, said first slot being positioned substantially equidistant from said opposite sides,

said support means having a second slot formed therein extending downwardly thereinto from the upper end thereof and extending from said first slot to one of said sides,

said support means having a third slot formed therein extending downwardly thereinto from the upper end thereof and extending from first slot to the other of said sides,

the upper ends of said second and third slots being parallel and aligned,

said second slot having a lower end portion which is angularly disposed with respect to the upper end portion of said second slot,



said third slot having a lower end portion which is angularly disposed with respect to the upper end portion of said third slot,

said lower end portion of said second slot extending towards one of said inner or outer ends of said support means,

said lower end portion of said third slot extending towards the other of said inner or outer ends of said support means,

said support means receiving a vertically disposed blade means in said first slot with the upper end of the blade means will be positioned below the upper end of said support means.

4,345,498

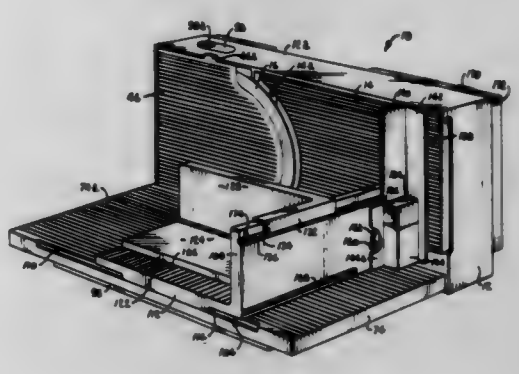
FOOD SLICING MACHINE

Gary R. Best, Jackson County, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.

Filed Jun. 18, 1980, Ser. No. 160,660

Int. Cl.³ B26D 7/06

U.S. Cl. 83—707 **30 Claims**



1. A food slicing machine comprising:

a housing having a generally vertical guide surface;

a slicing blade mounted on the housing, the blade being rotatable to slice food directed against the blade;

an electric motor coupled to the slicing blade for rotating the blade with respect to the housing;

a platform coupled with the housing for pivotal movement between a folded storage position and a generally horizontal operating position;

a food tray mounted on the platform for sliding longitudinal movement along the platform, the food tray having a table portion for carrying food toward the slicing blade, and a food pusher mounted on the food tray for moving food against the slicing blade; the table portion being disposed between the platform and the guide surface, and at least a portion of the food pusher disposed between the platform

and the housing when the platform is in the storage position; and

a releasable lock on the housing for locking the platform in the storage position.

4,345,499

METHOD FOR THE PRODUCTION OF SAWBLADES, ESPECIALLY JIGSAW OR SABRESAW BLADES

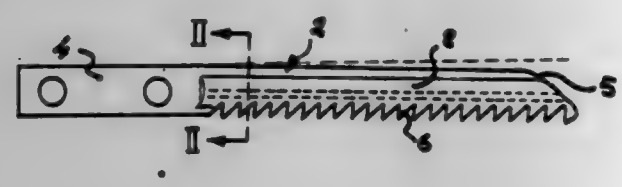
Frank L. Ross, 35 Rygards Alle, DK-2900 Hellerup, Denmark

Filed May 6, 1980, Ser. No. 147,184

Claims priority, application Denmark, May 10, 1979, 19461/79

Int. Cl.³ B27B *33/12*; B23D *63/00*

U.S. Cl. 83—835 **4 Claims**



1. A sawblade, especially a jigsaw blade, characterized by comprising a blade body incorporating a cold swaged relief groove on each side surface thereof and by a cold swaged preformed slot in said blade body, and further characterized by having a toothed insert fastened into said preformed swaged slot.

4,345,500

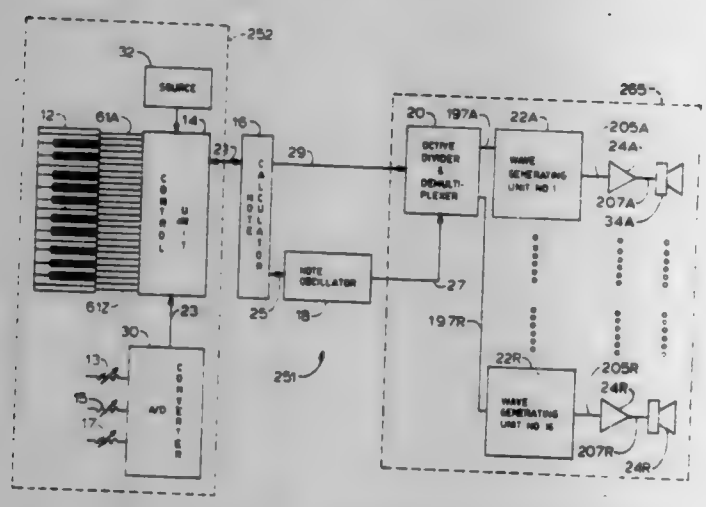
HIGH RESOLUTION MUSICAL NOTE OSCILLATOR AND INSTRUMENT THAT INCLUDES THE NOTE OSCILLATOR

Sydney A. Alonso, Strafford, and Cameron W. Jones, Wilder, both of Vt., assignors to New England Digital Corp., White River Junction, Vt.

Filed Apr. 28, 1980, Ser. No. 144,525

Int. Cl.³ G10H *5/06*

U.S. Cl. 84—1.01 **22 Claims**



1. A digital electronic musical instrument comprising, in combination:

means for selecting at least one desired note having a fundamental frequency, which means for selecting provides a binary output signal;

digital calculator means connected to receive the binary output signal and operable to produce, in binary form, values of a fractional increment number;

digital oscillator means comprising clock means for generating clock pulses at a predetermined periodic repetition rate, adder means having a first adder input and a second adder input respectively to receive a first binary input signal formed of binary bits having whole number significance and the fractional increment number, said adder means having a modulus, an adder sum output and a carry-out output, said adder means being operable to add the first binary input signal and, as a second binary input signal, the fractional increment number, said adder means being operable to provide a carry-out pulse on the carry-out output thereof whenever said modulus is exceeded, the fractional increment number being formed of binary bits, selected ones of which are aligned within the adder means to have a lower order of significance than the bits forming the first binary input signal, accumulator means having an accumulator input and an accumulator output, which accumulator means is connected to receive the clock pulses from the clock means and to receive the adder sum at the accumulator input and being operable to store the adder sum and to provide the stored adder sum at the accumulator output, said accumulator output being connected to provide said first binary input signal to said first adder input, so that an oscillator output is provided in the form of carry-out pulses having a rate proportional to said fractional increment number received by said second adder input; and

means for producing said desired note in response to at least some of the carry-out pulses.

4,345,501

AUTOMATIC PERFORMANCE TEMPO CONTROL DEVICE

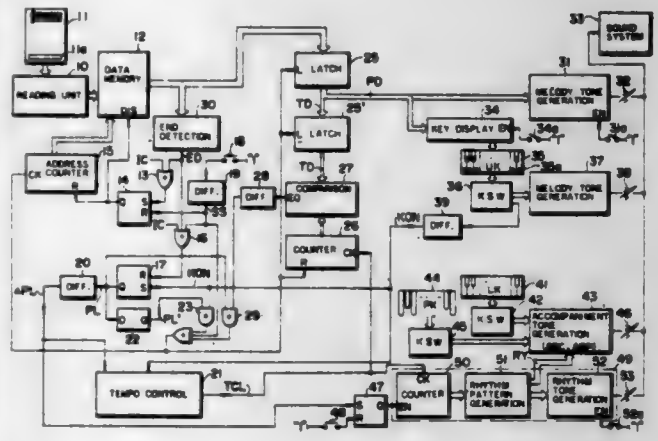
Akira Nakada, Hamamatsu; Eisaku Okamoto, Hamakita, and Kiyoshi Yoshida, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 11, 1981, Ser. No. 272,644

Claims priority, application Japan, Jun. 18, 1980, 55-82507

Int. Cl.³ G10H *1/40*

U.S. Cl. 84—1.03 **8 Claims**



1. An automatic performance tempo control device comprising:

manual performance signal generating means for generating a manual performance signal comprising a plurality of manual timing pulses in accordance with manual performance;

tempo clock signal generating means for generating a tempo clock signal;

tempo control means which receives said manual timing signal and said tempo clock signal, including judgment means for judging whether or not a pluse out of said manual timing pulses has been generated in a predetermined range around the timing determined by said tempo clock signal; and

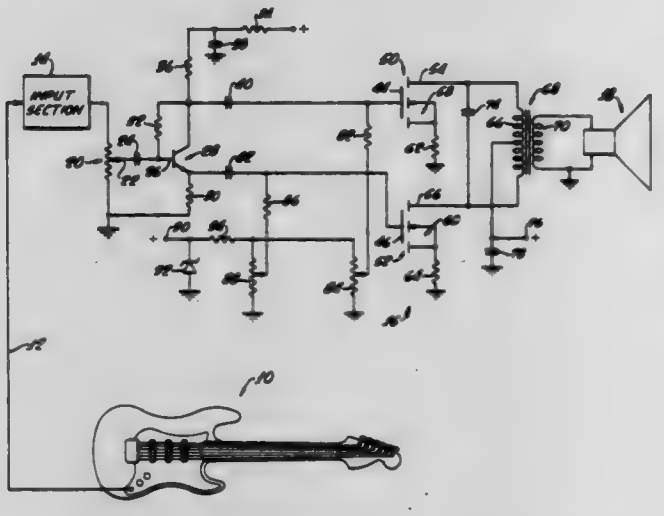
tempo control signal generating means for generating a tempo control signal in accordance with the result of the judgement of said judgement means, said tempo clock signal generating means further receiving said tempo control signal and modifying the frequency of said tempo clock signal in accordance with said tempo control signal.

4,345,502

MUSICAL INSTRUMENT PERFORMANCE AMPLIFIER

Edward R. Jahns, Fullerton, Calif., assignor to CBS Inc., New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,409
Int. Cl.[3] G10H *1/02*; H03F *3/26*
U.S. Cl. 84—1.21 4 Claims



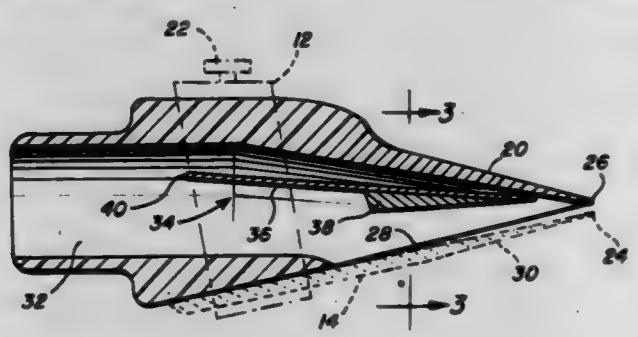
1. A music creating system comprising
an electrical musical instrument such as an electric guitar or the like for generating electrical music signals,
a speaker having an impedance, and
amplifier means connected between said instrument and speaker for amplifying said electrical music signals and cooperating with said speaker for sustaining sounds generated by said electrical musical instrument and for providing harmonics of such sounds at higher power, said amplifier means comprising
an input section for receiving electrical music signals generated by the instrument, and
output means adapted to be connected to said speaker for providing an impedance considerably greater than the impedance of said speaker, said output means comprising
a pair of power field effect transistors having output drain electrodes presenting an output impedance in the order of about twenty-five hundred ohms, and
output transformer means connected to said drain electrodes in push pull for providing said transistors with a drain to drain load of not more than about one hundred ohms, whereby said output means provides a high impedance constant current source to said speaker connected thereto.

4,345,503

INTERCHANGEABLE TONE CHAMBER

Clinton A. Runyon, 174 Emerite Dr., Lafayette, La. 70506

Filed Jun. 17, 1981, Ser. No. 274,661
Int. Cl.[3] G10D *9/02*
U.S. Cl. 84—383 R 8 Claims



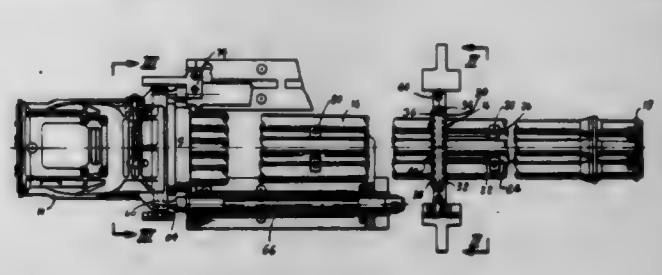
1. In a mouthpiece for a woodwind musical instrument wherein the mouthpiece comprises a hollow mouthpiece frame and a primary reed, the frame defining an interior tone chamber having an end for attachment to a length of tubular instrument body and having a chink opening between said primary reed and said mouthpiece for blowing of air therethrough to produce a musical tone, the improvement comprising a tone-altering member mounted within said tone chamber, said member comprising a secondary reed for vibrating sympathetically with said primary reed and a wedge mounted to said secondary reed, said secondary reed and said wedge modifying the tone produced.

4,345,504

GUN MOUNT

Robert G. Kirkpatrick, Shelburne, and Ronald R. Snyder, Georgia, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Apr. 8, 1980, Ser. No. 138,473
Int. Cl.[3] F41D *11/24*
U.S. Cl. 89—37 GM 5 Claims



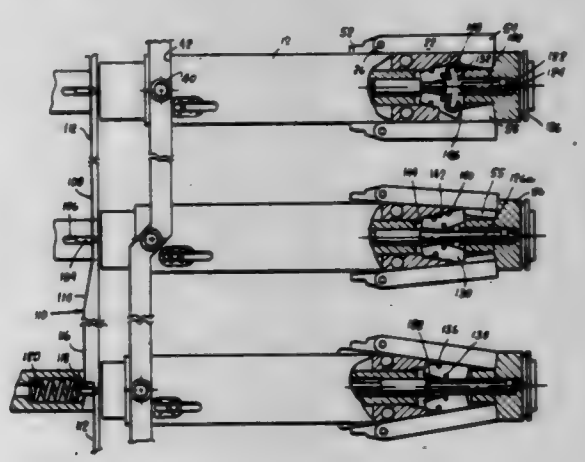
1. A gun comprising:
a housing;
a rotor having a plurality of gun barrels journaled for rotation about a longitudinal axis with respect to said housing;
clamp means secured to said plurality of gun barrels;
ring mass means having a longitudinal bore therein;
first antifriction bearing means journaling said clamp means for rotation with respect to said ring mass means about said longitudinal axis;
first stationary support means;
second antifriction bearing means journaling said ring mass means to said first stationary support means for displacement along said longitudinal axis of said first antifriction bearing means and said ring mass means with respect to said first stationary support means.

4,345,505

FIRING PIN LOCKING SYSTEM

Raymond A. Patenaude, Burlington; Steven R. Duke, Williston, and John K. Coolidge, Colchester, all of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Jun. 11, 1980, Ser. No. 158,197
Int. Cl.[3] F41D *11/06*
U.S. Cl. 89—154 5 Claims



1. A gun having a longitudinal axis and comprising:
a receiver;
a chamber;

a gun bolt movable along a path in said receiver parallel to said axis to and between the aft disposition whereat said chamber is open and a forward disposition whereat said chamber is closed by said gun bolt;

said gun bolt having a bolt face and carrying a firing pin, and a control means;

said firing pin being movable along a path in said gun bolt to and between an aft disposition whereat the forward end of said pin is aft of said bolt face and a forward disposition whereat said forward end is forward of said bolt face;

said control means being movable along a path to and between an aft disposition and a forward disposition relative to said gun bolt;

gun bolt locking means carried by said receiver and movable by said control means to and between a first disposition whereat said gun bolt is locked to said receiver to fixedly close said chamber and a second disposition whereat said gun bolt is free of said bolt locking means;

firing pin locking means carried by said gun bolt and movable to and between a first disposition whereat it interferes with movement of said firing pin and a second disposition whereat said firing pin is free to said pin locking means, said pin locking means being normally biased to its first disposition;

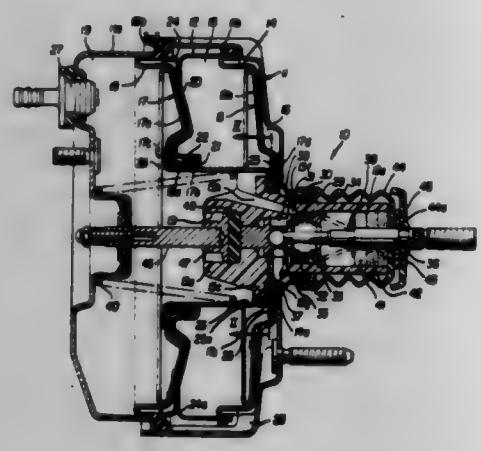
said bolt locking means, if and only if, it is substantially in its first disposition whereat said gun bolt is locked thereby positively causing said pin locking means to move to its second disposition whereat said pin is free thereof.

4,345,506

VACUUM TYPE BOOSTER

Atsushi Ohomi, Anjo, Japan, assignor to Aisin Seiki Company, Ltd., Kariya, Japan

Filed May 7, 1980, Ser. No. 147,590
Claims priority, application Japan, May 17, 1979, 54-61104
Int. Cl.³ F15B *9/10*; F01B *19/00*; F16J *3/02*
U.S. Cl. 91—376 R **3 Claims**



1. A vacuum type brake booster comprising:

a negative pressure source;

a housing;

a partition wall positioned within said housing;

front and rear chambers defined within said housing by said partition wall;

a first power piston and first diaphragm means positioned in said rear chamber, said rear chamber further comprising a first constant pressure chamber and a first variable pressure chamber defined by said first power piston and said first diaphragm means;

a second power piston and second diaphragm means positioned in said front chamber, said front chamber further comprising a second constant pressure chamber and a second variable pressure chamber defined by said second power piston and said second diaphragm means, said first and second power pistons being integrally connected with each other, said first and second constant pressure chambers communicating with each other and communicating with said negative pressure source and said first and second variable pressure chambers communicating with each other;

said first power piston including a hollow axial portion slidably and sealingly extending through a rear wall portion of said housing;

a valve mechanism disposed in said hollow axis portion of said first power piston for selectively connecting said first and second variable pressure chambers with said constant pressure chambers and atmospheric pressure; said first power piston including a plastic core portion including said hollow axial portion and a metallic disc portion, said metallic disc portion including a plurality of pawls formed therein extending forwardly from the inner peripheral portion of said disc portion and being bent inwardly at end portions thereof; said core portion including a flange portion at the outer periphery thereof; said flange portion of said core portion and an inner peripheral portion of said first diaphragm means being enclosed between said inner peripheral portion of said disc portion and said end portion of said pawls to thereby secure said core portion and said disc portion; said second power piston including a sleeve portion sealingly and slidably extending through said partition wall of said housing, said sleeve portion having a sufficient inner diameter for receiving said core portion of said first power piston; and

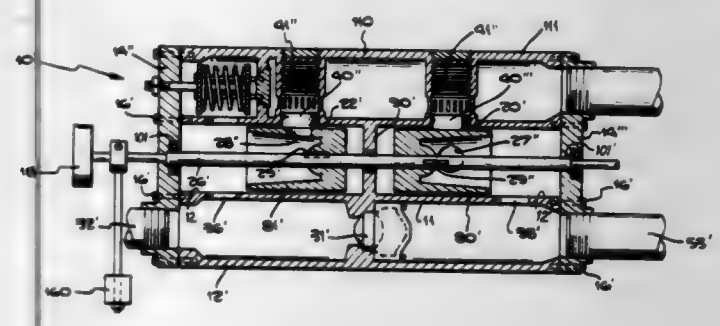
said sleeve portion including an inwardly bent portion at the rear end portion thereof between said flange portion and said inner peripheral portion of said disc portion interconnecting said first and second power pistons.

4,345,507

ELEVATOR FLUID FLOW CONTROL VALVE

Elmer J. Simpson, Margate, and Glen A. Rued, Pompano, both of Fla., assignors to Elevator Equipment Co., Los Angeles, Calif.

Filed Mar. 6, 1980, Ser. No. 127,767
Int. Cl.³ F15B *13/044*
U.S. Cl. 91—449 **6 Claims**



1. A hydraulic control valve system comprising: a body including a first chamber compartment with an inlet port and an outlet port and a second chamber compartment with an inlet port and an outlet port; first and second gate means rotatably mounted in said body for opening and closing respective outlet ports; drive means in operative engagement with the gate means adapted to rotate said gate means between open and closed positions, said drive means including external actuating means; wiper seal means in said first chamber compartment acting between said first gate means and the respective outlet port for providing a seal for the respective outlet port; wiper seal means in said second chamber compartment acting between the second gate means and the respective outlet port for providing a seal for the other outlet port; a hydraulic actuated jack, a supply of hydraulic fluid under pressure, a fluid conduit connected at one end to said fluid supply and at the other end adapted to be connected with said inlet ports and said jack, there being an intermediate one-way valve in said conduit having an open position allowing flow of fluid from said supply to said other end, said fluid conduit including by-pass means connected between a point upstream of said one-way valve and the inlet for said first chamber and between

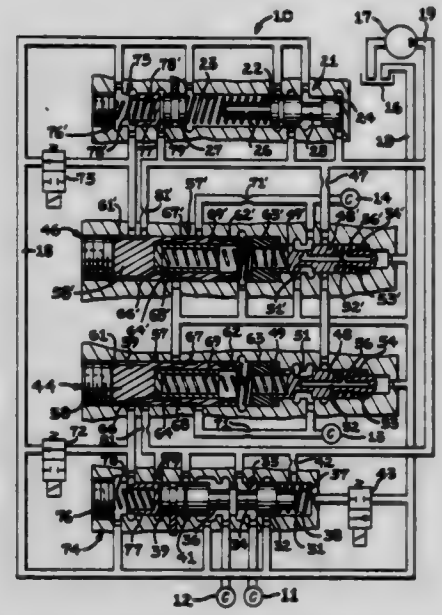
a point downstream of said one-way valve and the inlet of said second chamber.

4,345,508

CONTROL SYSTEM FOR SEQUENTIALLY ACTUATING FLUID ACTUATORS

Alan R. Coutant, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00684, § 371 Date Jun. 2, 1980, § 102(e) Date Jun. 2, 1980, PCT Pub. No. WO81/03526, PCT Pub. Date Dec. 10, 1981
PCT Filed Jun. 2, 1980, Ser. No. 230,969
Int. Cl.³ F15B *11/20*
U.S. Cl. 91—516 8 Claims



1. In a control system (10) adapted for sequentially actuating first (11), second (12) and third (13) fluid actuators and having a tank (16), a pump (17) and a drain line (18) connected to the tank (16), a supply line (19) connected to the pump (17), and a selector valve (31) connected to the supply line (19) and to the first (11) and second (12) fluid actuators and being movable between a first position at which the supply line (19) is communicated with the first fluid actuator (11) and a second position at which the supply line (19) is communicated with the second fluid actuator (12), the improvement comprising:

a fluid actuated valve (44) connected to the supply line (19), the drain line (18), and the third fluid actuator (13) and having a valve element (48) movable between a first position at which the third fluid actuator (13) is communicated with the drain line (18) and a second position at which the supply line (19) is communicated with the third fluid actuator (13), a spring (56) biasing the valve element (48) to the first position, and a fluid chamber (61) at one end of the valve element (48), said valve element (48) being moved to the second position in response to fluid pressure in the fluid chamber (61) exceeding a preselected value and to the first position in response to the fluid pressure in the fluid chamber (61) dropping below the preselected value;

means (74) for dumping the fluid in the fluid chamber (61) of the fluid actuated valve (44) to the drain line (18) for dropping the fluid pressure in the fluid chamber (61) below the preselected value responsive to moving the selector valve (31) between the first and second positions; and

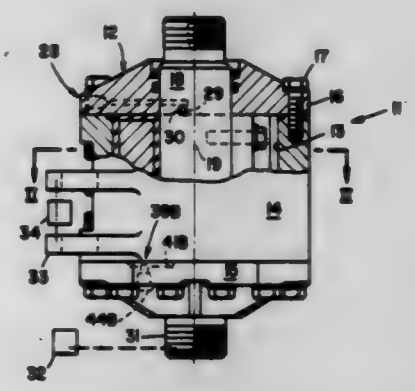
an orifice (81) connecting the supply line (19) to the fluid chamber (61) and being of a size sufficient for delaying the filling of the fluid chamber (61) with fluid until the selected one of the first and second fluid actuators (11,12) is filled with fluid.

4,345,509

CONTAMINANT TRAP FOR FLUID OPERATED ROTARY ACTUATOR

John W. Bridwell, Morton, and James R. Doyle, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00782, § 371 Date Jun. 23, 1980, § 102(e) Date Jun. 23, 1980, PCT Pub. No. WO82/00045, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 23, 1980, Ser. No. 245,233
Int. Cl.³ F15B *21/04;* F01C *9/00*
U.S. Cl. 92—78 10 Claims



1. In a rotary actuator (11) having housing means (12) for defining a vane chamber (13), an actuator shaft (18) extending within the vane chamber (13) and being rotatable relative to the housing means (12), a vane (24) extending radially from the actuator shaft (18) within the vane chamber (13), and port means (28) for transmitting pressurized fluid to and from the vane chamber (13) through flow passages (29, 30) which open into said vane chamber (13) to pivot the vane (24) and turn the actuator shaft (18) relative to the housing means (12), the improvement comprising:

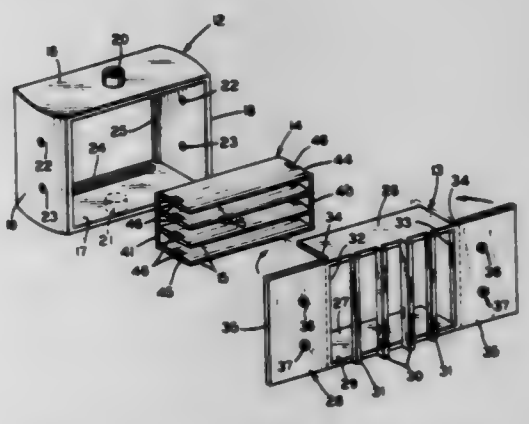
trapping means (39) for retaining particulate contaminants of the fluid within the vane chamber (13) at a location (38A) which is away from the path of movement of the vane (24) and away from said flow passages (29, 30), wherein said trapping means (39) includes at least a pair of spaced apart sump cavities (41A, 41B) formed within said housing means (12) and opening into said vane chamber (13), a first (41A) of said sump cavities (41A, 41B) being adjacent one end of the path of travel of said vane (24) and the other (41B) of said sump cavities being adjacent the other end of the path of travel of said vane (24).

4,345,510

LOUVER ASSEMBLY

Robert A. Sterett, Jackson, Mich., assignor to LOF Plastics Inc., Detroit, Mich.

Filed Aug. 4, 1980, Ser. No. 175,035
Int. Cl.³ F24F *13/16*
U.S. Cl. 98—40 VM 6 Claims



1. A louver assembly comprising a tubular housing having a generally rectangular interior passageway open at both ends

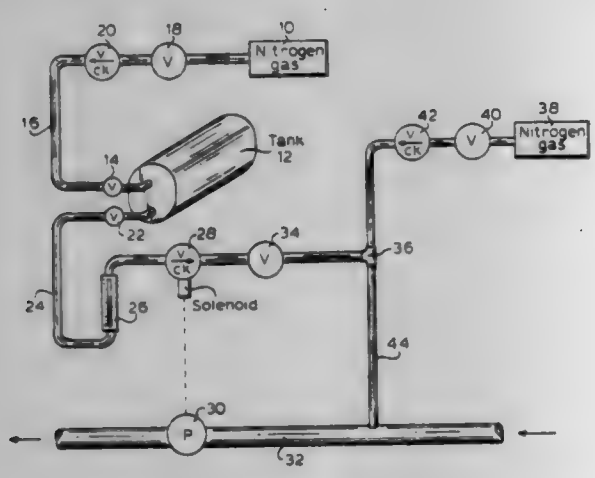
and defined by top, bottom and end walls, a deflector body mounted within said tubular housing, said deflector body including a U-shaped central section with top and bottom legs extending normally from an elongated planar portion, and a wing at each end of said planar portion initially coplanar therewith and joined thereto by a living hinge and folded inwardly about said hinge against the ends of said legs forming a box-like member providing an open passageway through said housing, each said wing including a protuberance on its outer surface adapted to snap fit into a corresponding aperture in the adjacent end wall of said tubular housing upon insertion of said deflector body therein with said wings folded, and a vane cartridge mounted within said deflector body, said vane cartridge including a plurality of spaced-apart parallel vanes extending across said deflector body, each said vane being mounted at its ends to said wings of said deflector body by pivot pins received within cooperating pivot seats on the folded wings for pivotal movement about its longitudinal axis, and tie bars integrally formed with said vanes at a pair of diagonally opposite corners thereof interconnecting said vanes for movement in unison about their individual longitudinal axes within said deflector body to selectively direct air emerging from said louver or close off said passageway.

4,345,511

SULFUR DIOXIDE ADDITION FOR MUST

James W. Lunt, Fresno, Calif., assignor to Paul Masson, Inc., Saratoga, Calif.

Division of Ser. No. 184,145, Sep. 4, 1980, Pat. No. 4,302,476.
This application Apr. 10, 1981, Ser. No. 252,908
Int. Cl.³ C12C *7/14*
U.S. Cl. 99—276 **8 Claims**



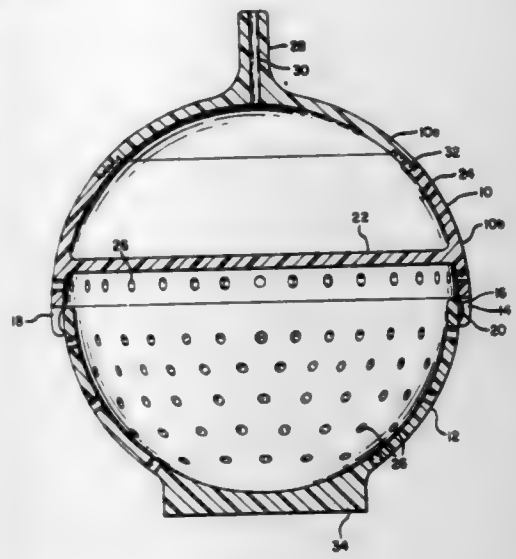
1. A system for relatively quickly applying and evenly distributing substantially accurate amount of sulfur dioxide continuously to must being pumped through a conduit during a wine making procedure, comprising: a first conduit containing must that is being pumped therethrough, a cylinder containing sulfur dioxide, means for maintaining the sulfur dioxide in the cylinder under constant and uniform pressure, a conduit means extending from the cylinder to the must line for delivering sulfur dioxide thereto, a flow meter in the conduit means for accurately monitoring the amount of sulfur dioxide deliver to the must conduit, a valve for closing the conduit means when no must is flowing in the must conduit and opening the conduit means when must is flowing in the must conduit, control means for controlling the rate of flow of sulfur dioxide delivered to the must conduit, a first source of supply of an inert gas under pressure, and a second conduit for delivering the inert gas to the sulfur dioxide conduit means for entry with the sulfur dioxide into the must conduit so that upon closing of the sulfur dioxide conduit means by the valve, the inert gass will be adapted to prevent juice from the must from migrating back into the conduit means.

4,345,512

CONTAINER FOR MAKING A TEA BEVERAGE

Richard C. Moore, 2423 N. Humboldt, Portland, Oreg. 97217

Filed Oct. 24, 1980, Ser. No. 200,157
Int. Cl.³ A47J *31/18*
U.S. Cl. 99—323 **3 Claims**



1. A container for mixing a tea beverage in a supporting vessel comprising

(a) a hollow body portion formed of upper and lower sections,

(b) said body portion being constructed of microwave transparent material,

(c) connecting means releasably connecting said upper and lower sections together,

(d) said lower body section having an outer surface of convex shape and being arranged to receive tea leaves,

(e) perforations in said lower body section of a size which confine tea leaves but which admit water for steeping the tea leaves and to discharge flavored water,

(f) said upper body section having a compartment defined by imperforate wall means comprising a bottom wall portion and upper enclosing top and side wall portions,

(g) said compartment providing buoyant support of the container whereby in making a tea beverage said container floats on the water to be flavored with at least a portion of said lower section below the surface for steeping the leaves and flavoring the water circulating through said container,

(h) and venting means in an upper portion of said upper section leading from said compartment to atmosphere to relieve expanding gases in said compartment.

4,345,513

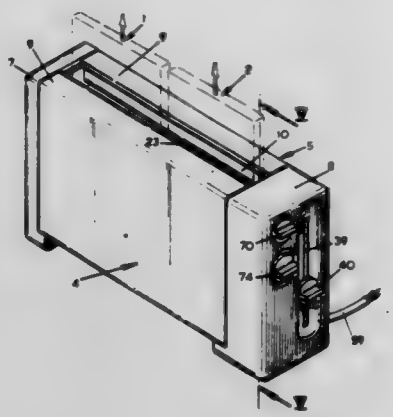
ELECTRIC TOASTER

David Holt, Cambridge, England, assignor to Pifco Limited, Failsworth, England

Filed Feb. 17, 1981, Ser. No. 235,272
Claims priority, application United Kingdom, Feb. 23, 1980, 8006210
Int. Cl.³ A47J *37/08*
U.S. Cl. 99—327 **13 Claims**

1. A toaster for toasting a slice of bread, comprising: a casing in which is located a reciprocable carriage movable towards and away from an aperture defined by said casing, through which aperture a slice of bread when mounted on said carriage can pass, a pair of enclosed electric bar heating elements disposed within said casing respectively adjacent opposed side edges of the casing which define said aperture, and a motor arrangement for driving said carriage from a first position located remote from said aperture towards said aperture into a second position at a predetermined speed, whereby a slice of bread mounted on said carriage can be made to pass between said elements to toast both sides of the slice progessively as the

slice passes out of said casing through said aperture, the degree of toasting being determined by the speed of movement of said carriage, the motor arrangement comprising a vertically oriented screw threaded rod, a motor for rotatably driving said screw threaded rod, a frame mounted on the rod and forming



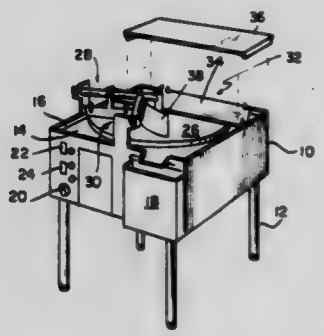
a part of the carriage, and brush means carried on the frame with bristles which contact the screw threaded surface of the rod, operation of said motor to rotate said rod causing said bristles to follow the screw thread of the rod to move the frame and thereby the carriage along the rod from the first position of the carriage into the second position.

4,345,514

CONTINUOUS HAMBURGER GRILL

Fred W. Morley, Indianapolis, Ind., assignor to David W. Morley, Indianapolis, Ind.

Filed Oct. 6, 1980, Ser. No. 194,382
Int. Cl.³ B30B *37/06*
U.S. Cl. 99—349 **12 Claims**



1. A continuous grill for hamburgers or the like, having means for forming unshaped balls or scoops or like quantums of ground meat into patties, comprising

a continuous moving, heated grill plate adapted to receive the meat quantums at a loading station and having a surface to which the meat will stick when pressed thereagainst,

a sloping pressure plate in a fixed position above said grill plate, beneath which the quantums pass as they are conveyed from the loading zone by the grill plate,

and a non-stick liner covering the meat-engaging surface of the pressure plate along which the meat will slide as it is carried thereunder by sticking engagement with the grill plate,

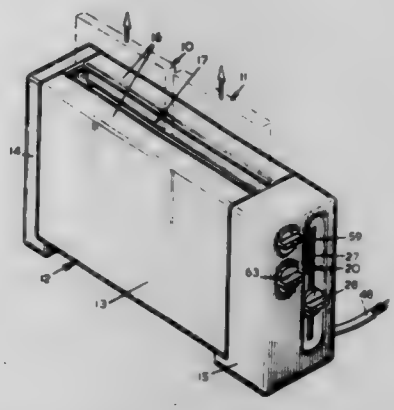
said pressure plate being sloped and positioned relative to the grill so as to press the meat quantums into sticking engagement with the grill plate and to compress them between itself and the grill plate into patties of substantially uniform thickness.

4,345,515

SLIDABLE BRUSH AND SCREW LINEAR DRIVE ARRANGEMENT

David Holt, Cambridge, England, assignor to Pifco Limited, Failsworth, England

Filed Feb. 17, 1981, Ser. No. 235,271
Claims priority, application United Kingdom, Feb. 23, 1980, 8006210; Mar. 6, 1980, 8007606
Int. Cl.³ A47J *37/08*
U.S. Cl. 99—393 **9 Claims**



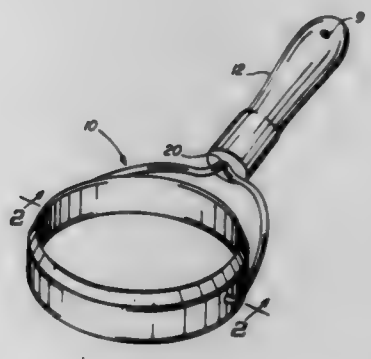
1. A linear drive arrangement comprising a screw threaded rod, a prime mover adapted to rotatably drive said screw threaded rod, a carriage mounted on the screw threaded rod, and a plurality of bristles which are carried by the carriage and which contact the screw threaded surface of the rod, operation of the prime mover to rotate the rod causing the bristles to follow the screw thread of the rod to drive the carriage along the rod, said bristles forming brush means and being sufficiently resilient so that the carriage can be slid over the rod by the application of force thereto, the bristles flexing to ride over the screw threaded surface of the rod.

4,345,516

COOKING AND CUTTING IMPLEMENT

Lawrence L. Sinclair, 123 Old Carriage Rd., Ponce Inlet, Fla. 32019

Filed Feb. 6, 1981, Ser. No. 232,140
Int. Cl.³ A47J *43/18*
U.S. Cl. 99—426 **9 Claims**



1. A kitchen implement comprising in combination:

a hollow cylindrical ring member open at each end and having a cutting edge on one end and a flat edge on the other end and a pair of openings located in the exterior side of said ring member;

a handle;

handle arm members connected to said handle and to the exterior of said ring member, said handle arm members engaging said pair of openings in said ring member, thereby allowing said arm members and handle to move relative to said ring and said arm members positioned to rest on one edge of said ring when said handle is not being held, whereby said ring member can cut a circular shape on one side with said cutting edge and can be placed on a

griddle on the flat edge for cooking an egg, or the like, therein.

4,345,517

JUICE EXTRACTOR

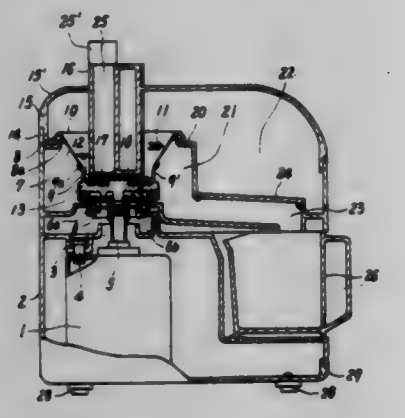
Yuzuru Arao, Takatsuki; Katsufumi Nishio, Toyonaka; Masashi Mikami, Osaka, and Toyoaki Murasawa, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 849,480, Nov. 7, 1977, abandoned. This application May 18, 1979, Ser. No. 40,735

Claims priority, application Japan, Nov. 16, 1976, 51-138159; Nov. 16, 1976, 51-154383; Nov. 16, 1976, 51-154384; Nov. 17, 1976, 51-138920

Int. Cl.[3] **A23N** *1/02*; **B04B** *5/00*

U.S. Cl. 99—511 **14 Claims**



1. In a juice extractor including:

a rotatable centrifugal basket having a base, an axis of rotation and a filter portion in the shape of an inverted frustum of a cone, said filter portion having an open end of a selected diameter and a lower end of smaller diameter, said base having an inner face having cutting teeth thereon,

a food feeding duct extending vertically above said inner face with a selected gap between the bottom end of said feeding duct and said inner face of said base of said basket,

a motor for rotating said basket at high speed,

the improvement comprising:

said lower end of said filter portion of said basket being connected to said base of said basket and said base constituting a cylindrical-shaped pot part defined by a substantially vertical imperforate peripheral wall, said peripheral wall having a vertical height such that the top edge of said peripheral wall is located above and higher than the level of the bottom end of said food feeding duct by from 2–18 mm.

4,345,518

CAN CRUSHER

Jon B. Cash, and Paul K. Ludwig, both of San Bruno, Calif., assignors to Krushko, San Bruno, Calif.

Continuation-in-part of Ser. No. 124,151, Feb. 25, 1980, abandoned. This application Mar. 5, 1981, Ser. No. 240,717

Int. Cl.[3] **B30B** *9/32*

U.S. Cl. 100—98 R **6 Claims**

1. An improved can crusher comprising:

a piston;

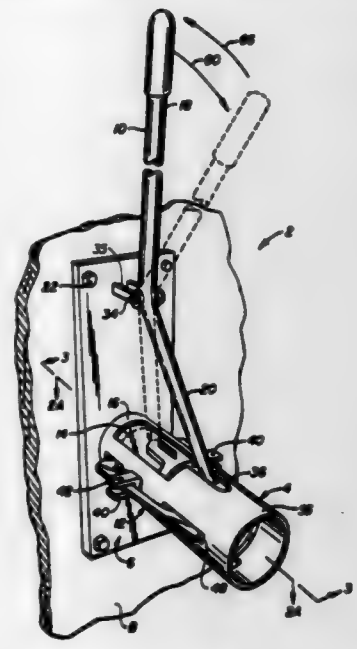
a base;

tube means attached to and extending transversely from the base and within which said piston can move along a path from an upper position remote from the base to a lower position proximate the base, the tube means including means for receiving and positioning a can to be crushed so that one end thereof is proximate the base;

means for urging said piston along said path from the upper towards the lower position into engagement with the can to thereby crush the can by removing the other end of the can towards said one end thereof, said urging means including a handle having a handlegrip portion, a piston-engaging portion and a pivot point between said handlegrip and piston-engaging portions;

arm means connected with the tube means and movable into engagement with a side of the can, said arm means having a can piercing portion for denting and piercing the side;

means, activated by the motion of the piston from the upper to the lower position, for moving the arm means to dent



and pierce the can side before the piston moves the other can end toward the one can end to thereby facilitate the crushing of the can by the piston;

wherein the arm means moving means includes means connected with the piston for forcing said engaging means of said arm away from said path to thereby pivot said arm in a first direction and move said piercing means to pierce and dent the side of said can.

4,345,519

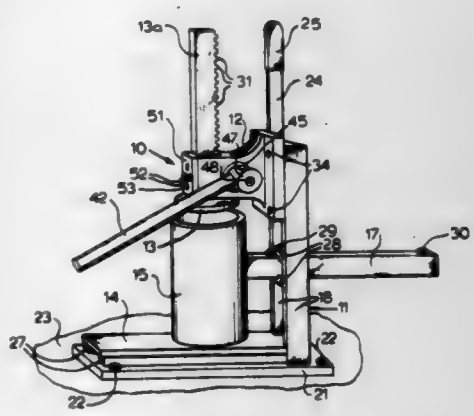
VERTICAL CAN CRUSHER

Mario C. Sabino, R.R. #1, Hennepin, Ill. 61327

Filed Feb. 27, 1981, Ser. No. 239,041

Int. Cl.[3] **B30B** *15/30, 9/32*

U.S. Cl. 100—215 **12 Claims**



1. In a vertical can crusher of the type having a vertical standard carrying a cantilever head supporting a vertically movable crushing ram, and means for vertically actuating the ram reciprocatably relative to an upwardly facing worktable substantially spaced below said head and fixed relative to the standard, the improvement comprising:

a vertical tubular can receptacle having its lower end separably supported on said worktable and having its upper end open to receive a can therein and adapted to receive said ram for crushing the can against said worktable;

and horizontal means attached to said receptacle and guided

by said standard for controlling said receptacle for movement relative to said standard and said head between:

a first position operatively aligned under said ram so that a can placed in said receptacle is adapted to be crushed into a flattened disk by operating said actuating means to drive the ram downwardly into the receptacle, followed by raising of the ram from said receptacle, and

a second position adapted for discharging the crushed can from the receptacle clear of said worktable.

4,345,520

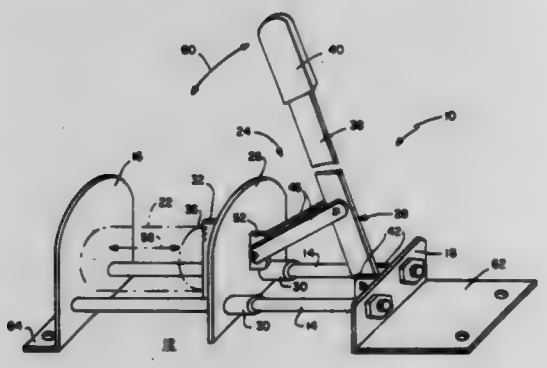
PORTABLE CAN CRUSHING APPARATUS

Norman Goldsmith, Saratoga, Calif., and Joseph W. Perrucci, 1135 Olive Branch La., San Jose, Calif. 95120, assignors to Joseph W. Perrucci, San Jose, Calif.

Filed Jan. 29, 1981, Ser. No. 229,649

Int. Cl.³ B30B *9/32, 1/04*

U.S. Cl. 100—293 **8 Claims**



1. A portable can crushing apparatus comprising:

(a) means including a pair of spaced-apart parallel rods and a front end plate normal to and connected with said rods at forwardmost ends of the latter for supporting a can to be crushed on and extending between said rods with one end of the can resting against said front end plate;

(b) a back end plate connected with and supporting rearwardmost ends of said rods;

(c) can crushing means including a crush plate mounted for slidable movement along said rods in confronting relationship with said front end plate and handle means located between said crush plate and back end plate for moving said crush plate towards and away from said front end plate, whereby to crush said can; and

(d) a holding plate connected to and extending rearwardly of said back end plate in a plane parallel with and below said rods so as to serve as a footrest for maintaining the end plates and rods in place as a can is crushed on a horizontal support surface.

4,345,521

INHIBITING MEANS FOR POSTAGE REGISTER PARCEL IDENTIFICATION SYSTEM

John H. Soderberg, Monroe, N.Y., and Leonard M. Penque, Huntington, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 14, 1981, Ser. No. 224,976

Int. Cl.³ B41J *1/22*

U.S. Cl. 101—93 **15 Claims**

1. A value printing apparatus comprising:

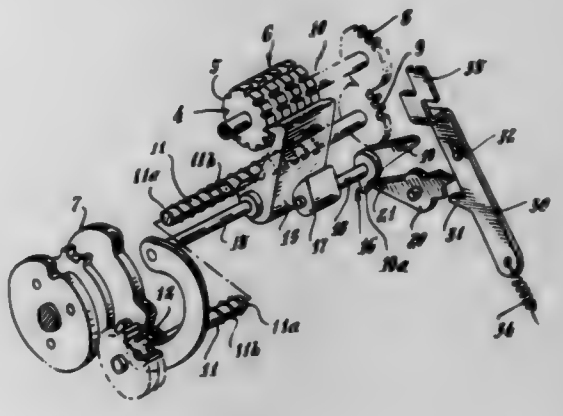
a printing head;

at least one print wheel having raised characters to be printed and recessed spaces between the print characters, said print wheel being mounted within said printing head and protruding at least partially from the surface of the head;

means for automatically incrementally advancing said print wheel one unit during the printing cycle;

inhibiting means for selectively preventing the incremental advancement of said print wheel said one unit during the printing cycle, said inhibiting means comprising:

an edged member adjacent to and engageable with said print wheel having a first edge adapted to fit the recessed spaces between the print character of the print wheel;



activation means adjacent said edged member for retaining it in contact with said print wheel, such that said first edge is locked into a recessed space between two print characters on said print wheel.

4,345,522

AERIAL TRANSPORT SYSTEM

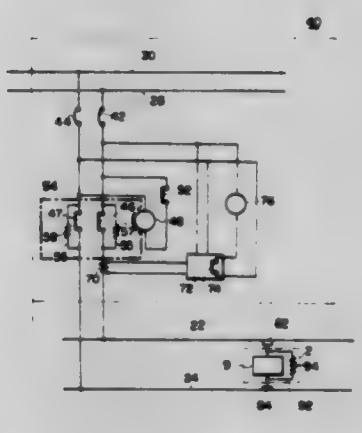
Keiichi Miyamoto; Naohiko Inoue, both of Yokohama, and Yasuhisa Takeuchi, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 8, 1980, Ser. No. 110,333

Claims priority, application Japan, Feb. 11, 1979, 54-14598; Feb. 20, 1979, 54-17834

Int. Cl.³ B61B *3/02*; B60L *15/22*

U.S. Cl. 104—89 **39 Claims**



16. In an aerial transport system having an aerial track having therealong a pair of power supply cables, a pair of electric current-carrying cables in parallel relationship with respect to one another and with respect to the track and being separated at longitudinal regular intervals so as to define respectively independent electric power supply zones, self-propelled vehicles, each having an electric current collecting means to collect electric power from the current-carrying cables and to supply the power to an electric driving means mounted on the vehicle so as to drive wheels engaging the track for propelling the vehicle along the track, said transport system including an electric power supply control means for controlling driving of the vehicle, said electric power control means comprising:

a first circuit for each power supply zone interposed between the power supply cables and the current-carrying cables for comprising a power supply circuit therewith;

a second circuit provided in said vehicle, which second circuit completes the power supply circuit while the vehicle travels in the power supply zone;

a means for detecting an intensity of electric current which flows through said power supply circuit in said power

supply zone so as to detect the existence of a vehicle in said zone; and

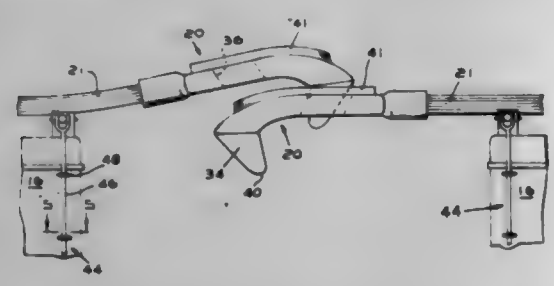
a third circuit associated with said first circuit and a corresponding detecting means in an adjacent forward power supply zone, said third circuit serving to block the electric current flow in said power supply circuit when said detecting means in said adjacent forward zone detects the electric current exceeding a predetermined level.

4,345,523

RAILWAY CAR STABILIZER

David H. Robertson, 35 Mill Brook Dr., East Longmeadow, Mass. 01028

Filed Jun. 9, 1980, Ser. No. 157,667
Int. Cl.³ B61D *49/00*; B61G *3/00, 5/02*
U.S. Cl. 105—1 A **6 Claims**



1. Apparatus for stabilizing a string of coupled railway cars during movement of the cars over railway tracks, said apparatus comprising:

(a) a plurality of flexible cables overlying an upper surface of said cars, each cable traversing substantially the entire length of a respective one of said cars and overhanging at least one end of said one car, said cable being secured to the upper surface of said cars by a gripping means which fixedly holds a section of the cable in a stationary position;

(b) each cable having two end portions which extend from opposite sides of the gripping means with at least one of the end portions having a coupling member attached thereto, adjacent ones of said coupling members being engaged to connect adjacent cars, whereby rolling motion of one of said adjacent connected cars about the car's longitudinal axis causes one of the end portions of the cable secured to said car to twist about said axis, while the gripping means for said cable prevents the cabble's other end portion from twisting, whereby said twisted cable portion absorbs torsional forces imparted to it by said car and said twisted cable portion and said gripping means inhibit the transmission of said torsional forces to another of the adjacent connected cars.

4,345,524

LOAD CARRYING VEHICLE AND TRACK THEREFOR

Weston R. Loomer, Walton, Ky., assignor to Litton Systems, Inc., Florence, Ky.

Filed Feb. 26, 1980, Ser. No. 124,773
Int. Cl.³ B62D *21/00*; B60P *1/00*; B61F *1/00*
U.S. Cl. 105—404 **7 Claims**

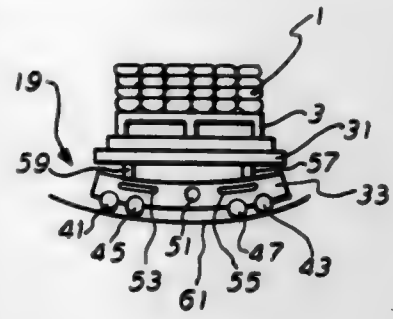
1. A load carrying vehicle adapted to ride on a track which deflects longitudinally under load comprising:

a frame;

a load carrying platform having first and second longitudinally spaced ends and first and second transversely spaced sides coupled to said frame;

first and second side plates, one located adjacent to each of said first and second sides of said platform and oriented generally perpendicularly thereto, coupled to said frame; and

at least four wheels coupled to said frame adjacent to each of said side plates, the first and second of said four wheels being exterior wheels and being positioned adjacent to the first and second ends of said platform and the third and fourth of said wheels being interior wheels, said interior wheels being located longitudinally inward of said first and second wheels, respectively,



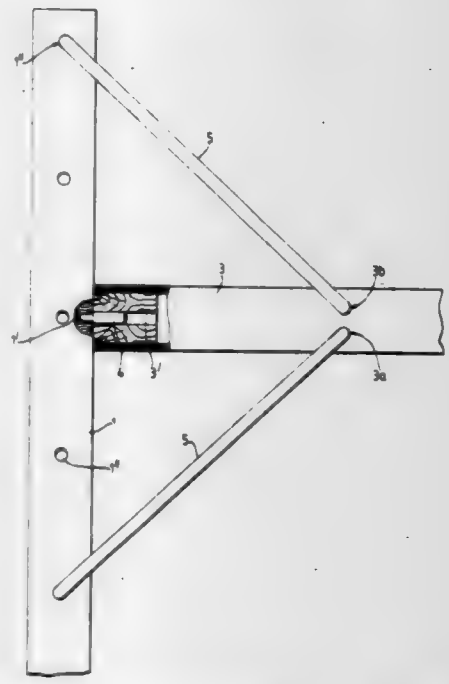
wherein said first and second vehicle side plates are structured to longitudinally bend under load, whereby a load on said vehicle is supported by said third and fourth wheels as well as by said first and second wheels.

4,345,525

FURNITURE STRUCTURE

Christian de poorter, Via Canonica, 91, 20154 Milano, Italy

Filed May 29, 1979, Ser. No. 43,037
Claims priority, application Japan, May 26, 1978, 21959B/78
Int. Cl.³ A47B *9/14, 47/00*
U.S. Cl. 108—107 **4 Claims**



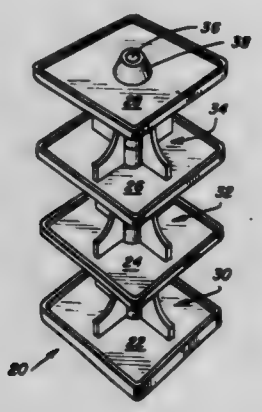
1. A furniture structure comprising at least two vertical framing pieces, at least one horizontal framing piece, each said vertical framing piece defining two opposed sides with spaced holes in each side and a third side perpendicular to said two sides, at least one hole in said third side perpendicular to said spaced holes, said horizontal framing piece defining two opposed sides with spaced holes in each side and at least two holes in said horizontal framing piece each aligned with one hole in said third side of a vertical framing piece when assembled, a pin fitting within said hole of said third side of said vertical framing piece and the aligned hole of said horizontal framing piece and rigid rods positioned at about 45° with respect to the vertical and horizontal framing pieces and fitting within holes in the sides of said vertical and horizontal framing pieces.

4,345,526

SHELVING DISPLAY AND SUPPORT

Kenneth F. Streit, Mt. Prospect, Ill., assignor to Techplastics, Inc., West Chicago, Ill.

Filed Dec. 7, 1979, Ser. No. 101,095
Int. Cl.[3] A47B 47/00
U.S. Cl. 108—111 11 Claims



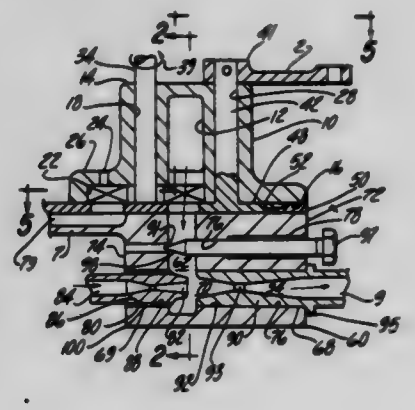
1. A stand for packaged goods, beverages and the like, comprising: a pole; a base having a passage adapted to receive said pole therein and to support said pole in vertical orientation; at least one shelf, said shelf having a passage adapted to receive said pole therein for positioning said shelf in a horizontal disposition; and support means between said base and said shelf for holding said shelf in spaced relationship with respect to said base, said support means including first and second wing pairs, each wing of each pair including a top edge adapted to bear against said shelf, a bottom edge adapted to bear against said base, and a side edge common to the wings of each pair and disposed perpendicularly to the top and bottom edges of each wing, each wing pair further including first and second spaced hooks formed integrally with its wings at the side edge thereof, the hooks of the first wing pair being internested with the hooks of the second wing pair and said internested hooks collectively defining a passage for receiving said pole therein, whereby when said pole is received in the passages in said base, shelf and hooks, said wings bear against said base and said shelf to support said shelf in spaced relationship with respect to said base.

4,345,527

SOLID FUEL PARTICLE AND AIR FUEL CONTROL DEVICE

William C. Marchand, 11339 Roxbury, Detroit, Mich. 48224

Filed Jul. 14, 1980, Ser. No. 168,072
Int. Cl.[3] F23K 3/02
U.S. Cl. 110—104 R 21 Claims



1. A solid fuel particle metering device for mixing solid fuel particles with air from a high pressure air source to form a uniform combustible mixture for burning in a combustion system, said device comprising:

a first housing having an inlet end, an opposite end and portions defining a fuel inlet passage, said fuel inlet passage extending from said inlet end through said opposite end, said fuel inlet passage further adapted to receive said solid fuel particles therein;

a second housing mounted adjacent to said first housing, said second housing having an inlet end neighboring the opposite end of the first housing; an opposite end distal said opposite end of the first housing; one side extending from said inlet end to said opposite end; an opposite side opposite to said one side and a body portion defining a blind cavity extending from said inlet end toward said opposite end, said housing body portion further having a first aperture extending from said one side through said opposite side and intersecting said blind cavity for flow communication between said blind cavity and said first aperture;

means for metering and transferring said solid fuel particles from said fuel inlet passage in said first housing to said blind cavity of said second housing, said metering and transferring means being mounted in said first housing;

means for injecting air from said air source into said blind cavity, said injecting means being mounted in said first aperture so as to mix air with the solid fuel particles in said blind cavity of the second housing to form said uniform combustible mixture; and

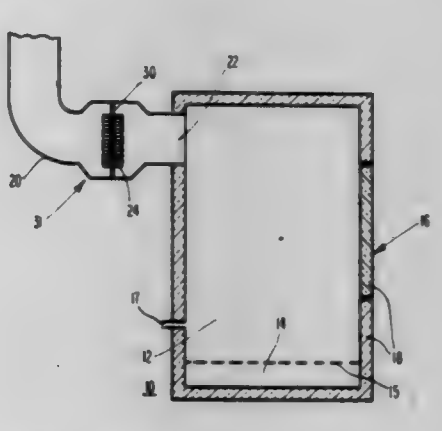
means for ejecting said uniform combustible mixture from said blind cavity, said ejecting means being mounted in said first aperture in said second housing so as to eject said uniform mixture from said solid fuel particle metering device; said first housing further comprising a first passage adjacent but spaced away from said fuel inlet passage; a counterbore in said opposite end of the first housing and coaxially located with said first passage; a second air inlet passage means interposed said fuel inlet passage and said means for injecting air such so that the air entering said blind cavity through said injecting means causes air to flow through said second air inlet passage means from the outside of the solid fuel particle metering device into said second air inlet passage means to said blind cavity.

4,345,528

WOOD BURNING STOVE

Roger A. Allaire, Big Flats, and Robert V. VanDewoestine, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 28, 1980, Ser. No. 173,156
Int. Cl.[3] F23J 15/00
U.S. Cl. 110—203 6 Claims



1. A wood burning stove comprising:

a combustion chamber with an access door;

a flue in communication with said combustion chamber for removing exhaust therefrom;

a catalytic converter means for removing oxidizable species from said exhaust, said catalytic converter means having a honeycomb structure having a plurality of catalytically active passageways extending therethrough and being rotatably mounted in and transversely across said flue whereby impedance to said exhaust caused by said converter means may be selectively maximized when the longitudinal axes of said passageways are parallel to the

longitudinal axis of the flue and minimized when the longitudinal axes of said passageways are perpendicular to the longitudinal axis of said flue; and

means for moving said converter means between positions of said converter means substantially extending transversely across said flue and of said converter means insubstantially extending across said flue, said means for moving said converter means comprising axial means extending transverse of said flue and on which said converter means is mounted for rotation between positions of said converter means substantially extending transversely across said flue with said passageways parallel to the longitudinal axis of the flue and of said converter means insubstantially extending transversely across said flue with said passageways perpendicular to the longitudinal axis of said flue.

4,345,529

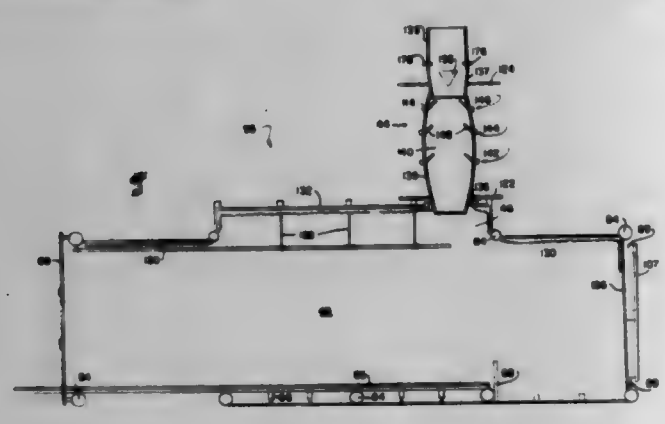
POLLUTION REDUCTION SMOKELESS AUTO INCINERATOR

Roy Weber, P.O. Box 336, and Bruce C. Huddleston, 865 N. Kalaheo Ave., both of Kailua, Oahu, Hi. 96734

Division of Ser. No. 906,814, May 17, 1978, Pat. No. 4,181,081, which is a continuation of Ser. No. 726,529, Sep. 27, 1976, abandoned. This application Aug. 13, 1979, Ser. No. 65,800

Int. Cl.³ F23B *5/00*; F23C *9/00*; F23G *7/06*

U.S. Cl. 110—213 **17 Claims**



1. Pollution control apparatus comprising

a conduit having an inlet for receiving pollutants and an outlet for expelling relatively pollution free exhaust,

body means positioned on the conduit forming a recirculation vortex combustion zone in the conduit immediately downstream of the body means, an annular space between said body means and said conduit providing communication between said combustion zone and said inlet, an air injection means in the conduit downstream of the body means for introducing air into the combustion zone, and

heating means connected to the conduit upstream of the combustion zone for introducing heat into the conduit to heat pollutants, said pollutants being directed past said body means into said combustion zone and being burned in said combustion zone.

4,345,530

INSTALLATION FOR BURNING-OUT SCRAP METAL

Peter-Michel Gutschmidt, Tegernsee, Fed. Rep. of Germany, assignor to Orgatechna Treuhand AG, Ennetbuergen, Switzerland

Filed Feb. 6, 1980, Ser. No. 119,175

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904479

Int. Cl.³ F23G *7/00*

U.S. Cl. 110—215 **8 Claims**

1. An installation for burning-out scrap metal goods for the purpose of reclaiming scrap metal, comprising:

(a) at least one furnace wagon, which is capable of being loaded with the scrap metal goods to be burned-out;

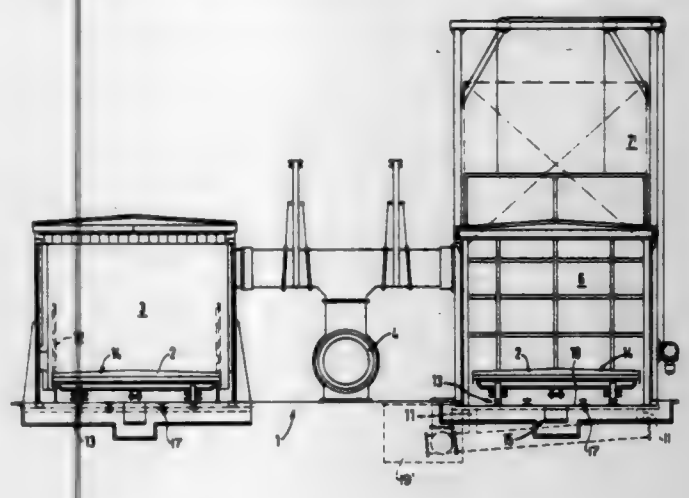
(b) at least one burning-out chamber into which said furnace wagon is movable for burning-out the scrap metal goods to produce scrap steel;

(c) means for heating said burning-out chamber to a temperature of at least about 600° C.;

(d) at least one afterburning chamber communicating with said burning-out chamber for afterburning flue gases produced in the burning-out chamber at a temperature from about 1100° to 1200° C.;

(e) a waste gas purifying plant communicating with said afterburning chamber for eliminating the flue gas impurities and for the scrubbing of the flue gases originating from the afterburning chamber;

(f) at least one cooling chamber arranged adjacent to and in selective communication with said burning-out chamber for cooling the burned-out material, said cooling chamber



being connected at the charging end of each burning-out chamber;

(g) each of said burning-out chambers including a door which is arranged at the charging end and which seals so as to be impervious to smoke;

(h) each of said heating means in each of said burning-out chambers comprising a plurality of selectively operable burners positioned along the length of said burning-out chamber;

(i) a plurality of rails for driving said furnace wagons into the burning-out and cooling chambers; and

(j) said furnace wagon having a floor, said floor having a slope leading from the center to both longitudinal sides, along which sides gullies are provided for catching melting metal.

4,345,531

APPARATUS AND METHOD FOR CULTIVATING LAND

Narciss A. Redl, 730 Spadina, Apt. 1403, Saskatoon, Saskatchewan, Canada (S7K 4H7)

Filed Apr. 15, 1980, Ser. No. 140,674

Int. Cl.³ A01C *7/00*

U.S. Cl. 111—1 **1 Claim**

1. A land cultivating machine comprising a mobile chassis having a frame and means on the frame for removing a predetermined amount of soil, cultivating said soil and replacing said soil in the ground as the machine moves forwardly, said machine comprising;

(a) means for picking up straw ahead of the machine and for cutting the straw for subsequent use;

(b) means for making a cut of predetermined depth and width in the soil to remove crusted or dried soil and to move that soil onto each side of the path to be treated;

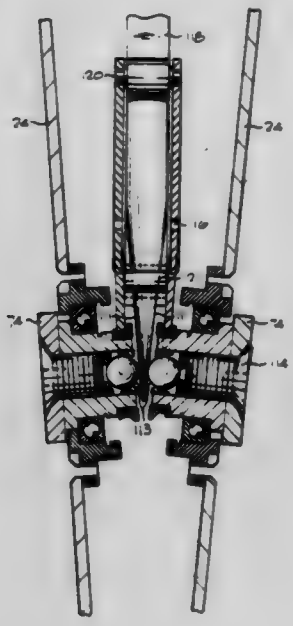
(c) a disc-supporting suspension arm supported by said frame in a trailing arrangement and in alignment with the path of travel of the machine;

(d) resilient means for biasing said suspension arm towards the ground surface;

(e) first and second discs respectively mounted on said suspension arm by first and second axles on either side of a

disc spreading guide disposed therebetween, said spreading guide having downwardly tapering surfaces on the lower end thereof and said axles having bearing means for cooperating with said tapering surfaces such that said discs are maintained by said guide in spaced relation with the lower ends thereof inclined toward one another when said discs are disposed in an operating position, and said lower ends of said discs are spread apart if said discs move upwardly in response to ground obstructions;

(f) a stripping bar engaging the inner surfaces of said discs during rotation thereof;



(g) shoe means for guiding soil cut from the ground by said discs into the confines of the machine;

(h) a rotative tilling device mounted rearwardly of said discs in the path of soil being directed into the machine for breaking up the soil and subsequently directing the soil into a mixing chamber rearwardly positioned relative to said tilling device;

(i) means in said mixing chamber for crushing rocks therein, mixing additives with the soil and directing said soil in packing density into the trench cut by said discs; and

(j) means for applying seed onto the top of the trench and applying straw onto the top of the seed.

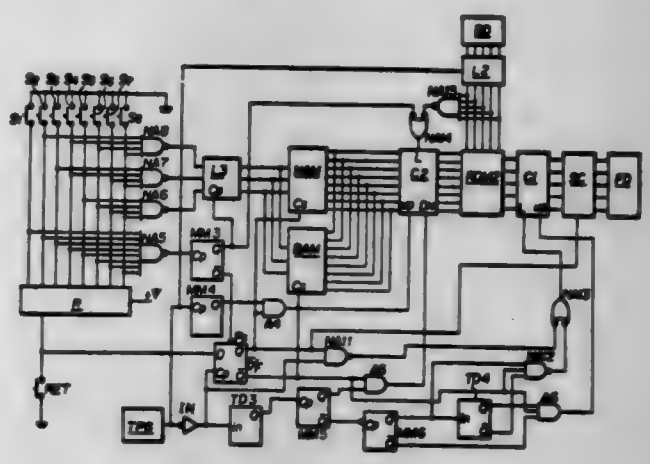
4,345,532

ELECTRONIC SEWING MACHINE WITH BACK STITCHING SYSTEM

Yasukata Eguchi, Kunitachi, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 486, Jan. 2, 1979, Pat. No. 4,236,468, which is a continuation of Ser. No. 863,143, Dec. 21, 1977, abandoned. This application Mar. 24, 1980, Ser. No. 133,132
Claims priority, application Japan, Dec. 27, 1976, 51/156462
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **1 Claim**

1. In a sewing machine, an arrangement for forming patterns made up of stitches, comprising, in combination, a static memory having a plurality of outputs and a plurality of address signal inputs and comprised of a plurality of storage units connected to said inputs and outputs and addressable by address signals applied to the address signal inputs of the memory; stitch-forming means provided with a plurality of stitch control signal inputs connected to the outputs of the memory and operative for producing any of a plurality of different stitches in dependence upon the signals produced at the outputs of the memory; addressing means including an addressing counter operative when activated for applying the address signals to the address inputs of the static memory to read out stitch control signals from the memory; synchronizing means operative for activating the addressing means in synchronism with the operation of the stitch forming means; and back stitching means manually operated to change the address signals in accordance with the required back stitches, said back stitching means including a manually operated switch, an address memory operative, when the manually operated switch is operated, to cause the addressing counter to count down the storage



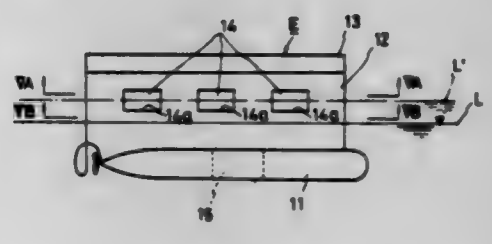
units of the static memory by the address signals, and signal inverting means connected between the static memory and the stitch-forming means to invert the stitch control signals read out from the static memory.

4,345,533

SEMI-SUBMERGED SHIP

Yoshikuni Kunitake, Nagareyama, Japan, assignor to Mitsui Engineering and Shipbuilding Co. Ltd., Tokyo, Japan

Filed Dec. 3, 1979, Ser. No. 99,934
Claims priority, application Japan, Feb. 20, 1979, 54-19560
Int. Cl.³ B63B *1/10, 1/32*
U.S. Cl. 114—61 **17 Claims**



1. A semi-submerged ship comprising at least two lower hulls always positioned below the surface of water and arranged substantially in parallel to each other with respect to the direction of advance, struts mounted substantially vertically on the upper portion of each of the at least two of lower hulls along substantially the entire length thereof and an upper hull supported by said struts and always positioned above the surface of water, wherein each strut is continuous in the lengthwise direction of the lower hull and at least one opening is formed on each strut wherein the height of said opening is less than the height of said strut and a water-tight seal is formed between the opening and the interior of the strut, and wherein the draft line is positioned on the openings of the struts while the ship is stopped.

4,345,534

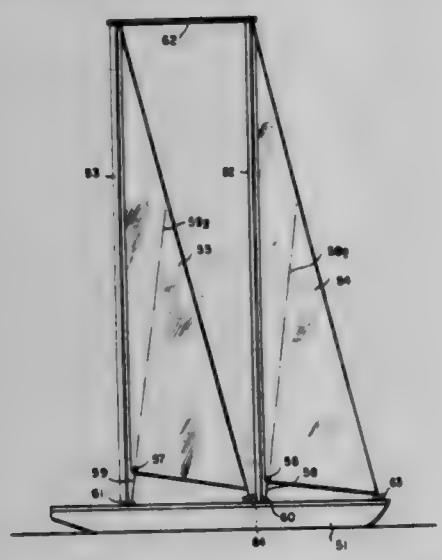
SAIL RIGGING SYSTEM

Richard E. Carter, Nahant, Mass., assignor to Carter Offshore Design, Inc., Nahant, Mass.

Filed Oct. 15, 1979, Ser. No. 84,546
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—106 **9 Claims**

1. A sail system, comprising a vessel having a plurality of masts and jibs, means for attaching each jib to each mast and supporting at least an upper part of said jib, means associated with each mast for attaching the tack of a jib to the vessel as a point directly forward of the mast, and fairlead means associ-

ated with each mast for attaching the clew of a jib to the vessel at a point such that, when the upper part is supported by the mast and the tack is attached to the vessel, at least one of said jibs, when closehauled, has a camber of about 12% to 25%, as measured horizontally at the clew of that jib and the



centerline of the vessel is from about 10% to 16%, and wherein the lead position line defined by the fairlead means and the clew intersects the luff of the jib at a point between about 65 and 80% of the length of the luff, measured from the tack, and wherein at least one of said jibs is attached to roller furling means for reducing the exposed area of that jib.

4,345,535

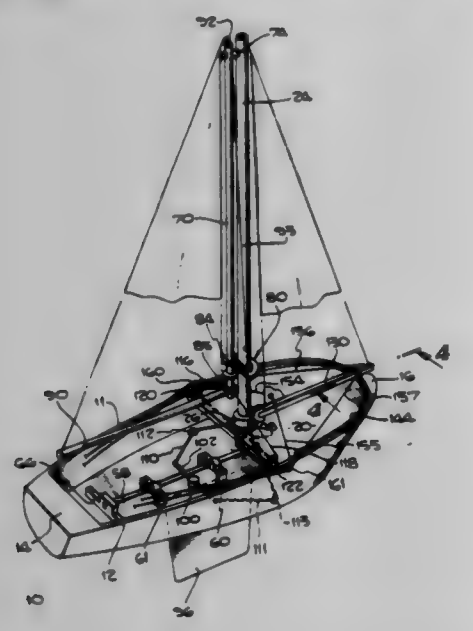
SAILBOAT TRIMMING AND STABILIZING SYSTEM

Abraham D. Ross, 534 Mary Ann Dr., Redondo Beach, Calif. 90278

Continuation-in-part of Ser. No. 12,755, Feb. 16, 1979, abandoned. This application Dec. 15, 1980, Ser. No. 216,376

Int. Cl.³ B63B *39/00, 43/02*

U.S. Cl. 114—122 **12 Claims**



1. In a sailboat having a hull and a mainsail means for maintaining leveling or trimming of the hull comprising in combination, a mast mounted to be capable of tilting to port or starboard under the influence of the wind, means operatively connected to the mast to apply a force resisting the tilting of the mast, said means including a torsion bar mounted along the center line of the hull and connected to the mast whereby tilting of the mast applies torsion to one end of the bar about the axis of the torsion bar providing a righting moment and restoring force, the torsion bar having an end part connected to the boat whereby the torsion in the bar exerts a righting moment on the hull.

4,345,536

VESSEL RAISING HEAVY STRUCTURES

F. Browne Gregg, P.O. Box 1046, Leesburg, Fla. 32748

Filed Oct. 30, 1979, Ser. No. 89,663

Int. Cl.³ B63B *39/02*

U.S. Cl. 114—124 **13 Claims**



4. A marine vessel for lifting and elevating heavy objects relative to the surface of a body of water comprising a buoyant hull having first and second ends, a main deck, said hull having a plurality of compartments for receiving ballast, means for selectively introducing ballast into and removing ballast from said compartments to selectively raise and lower said first end of said hull relative to the surface of the body of water so as to lower a portion of said main deck to a point adjacent to the surface of the body of water, track means mounted so as to extend longitudinally of said hull, said track means having a first end dispose generally adjacent said main deck so as to be be disposed generally adjacent to the surface of the body of water when said first end of said hull is lowered thereby lowering said portion of said main deck with respect to the surface of the body of water and a second end disposed in a remote vertically spaced relationship to and above said main deck and vertically spaced above the surface of the body of water, support means mounting said track means on an incline with said first end of said track means being located generally adjacent said first end of said hull and said second end of said track means being remotely spaced longitudinally from said first end toward said second end of said hull, carriage means movably mounted on said track means, said carriage means having engaging means for cooperatively supporting the heavy objects, and means for moving said carriage means along said track means to raise or lower said carriage means with respect to said main deck and the surface of the body of water.

4,345,537

APPARATUS FOR RESTRAINING AND BERTHING A FLOATING BODY

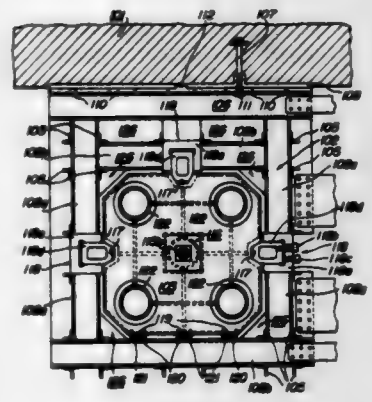
Shigeo Ueda, and Yuji Fukuda, both of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 970,096, Dec. 15, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,397

Claims priority, application Japan, Dec. 26, 1977, 52-156952; Jan. 14, 1978, 53-3099

Int. Cl.³ B63B *59/02*

U.S. Cl. 114—219 **3 Claims**



1. An apparatus for restraining a floating body at a quay wall comprising; a bumper, a hydraulic piston and cylinder assembly having a movable member coupled to said bumper to

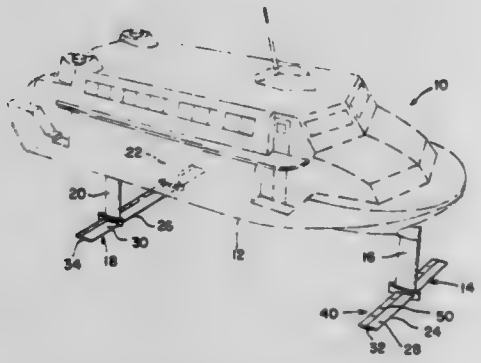
adjust the distance between said bumper and said quay wall and, distance pieces selectively interposed between said movable member and said quay wall for permanently maintaining said distance constant and independent of hydraulic pressure in said hydraulic piston and cylinder assembly, wherein at least two walls of said quay wall are connected to a cylindrical frame structure as guide means extending away from the quay wall for said movable member, said cylindrical frame structure having a cylindrical space within which is axially slidably arranged a core structure constructed as said movable member which is connected by said hydraulic piston and cylinder assembly to said quay wall, each of at least the upper and both side surfaces of said core structure is formed with an axially extending groove which engages a respective load support means connected to the frame structure and extending along the grooves of the core structure, sidewalls of said grooves and an end of said respective load support means are inclined at the same angle and a clearance is provided between a bottom of said grooves and the end of said respective load support means and, said cylindrical frame structure comprising a plurality of beams extending vertically and horizontally to form a rectangular cylinder within which is loosely fitted said core structure of a box-shaped structure.

4,345,538

FLAP FLEXURE RETAINER/SEAL FOR HYDROFOIL VESSELS AND THE LIKE

Gary J. Warner, Issaquah, and Winfried M. Feifel, Redmond, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 31, 1980, Ser. No. 174,268
Int. Cl.³ B63B *1/24, 1/26*
U.S. Cl. 114—274 **20 Claims**



1. In a fluid foil having a plurality of trailing control flaps, or the like, hingedly engaged to the foil for rotation with respect thereto,

at least one of said flaps being a driving flap and at least one of said flaps being a driven flap,

a key extending from said driving flap into a keyway in said driven flap so that said flaps rotate together with respect to said foil,

an elastic liner being fitted into said keyway and being fitted on said key to protect surfaces of the key and keyway,

the improvement comprising:

retainer means between said driving and driven flaps in association with said key and keyway to secure said liner in said association with said key and keyway.

4,345,539

WARNING SYSTEM WITH PNEUMATIC FUNCTION GENERATOR

Henry L. Williams, Oklahoma City, Okla., assignor to Geosource Inc., Houston, Tex.

Filed Apr. 21, 1980, Ser. No. 141,770
Int. Cl.³ B66B *3/02*
U.S. Cl. 116—68 **12 Claims**

1. A pneumatic warning system for a boom-type load lifting device comprising:

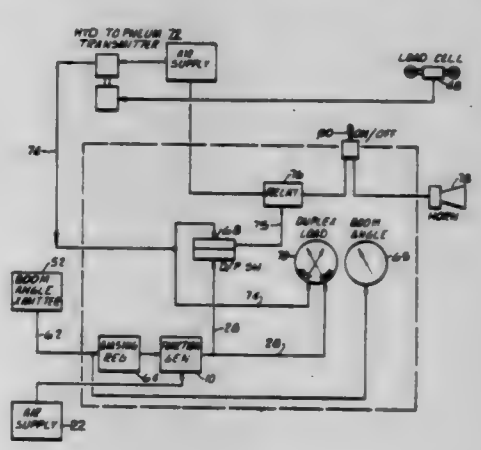
a pneumatic function generator including:

an air cylinder with means for receiving and storing an input pneumatic signal;

means for mechanically representing a predetermined curve, functionally dependent on said input pneumatic signal, mechanically connected to said air cylinder; and

means for translating the function of said curve to an output pneumatic signal for any value of said input pneumatic signal, mechanically connected to and operatively associated with said means for representing said curve;

means for transmitting a boom angle pneumatic signal, pneumatically connected to said pneumatic function generator;



means for determining the weight of a load on said lifting device;

means for delivering a pneumatic load signal to said pneumatic function generator,

comparator signal means for comparing said output signal of said pneumatic function generator with said pneumatic load signal, whereby said comparator means delivers a pneumatic output warning signal when said load signal exceeds said pneumatic function generator output signal; and

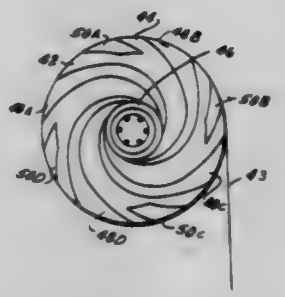
warning signal means connected to said comparator signal means for sounding a warning when said load signal exceeds said pneumatic function generator output signal.

4,345,540

TAPE CASSETTE

Irving Karmin, 32-22 92 St., Queens, N.Y. 11369

Continuation of Ser. No. 689, Jan. 3, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,521
Int. Cl.³ G09F *9/00*; G11B *23/42*
U.S. Cl. 116—278 **6 Claims**



1. An improved tape cartridge, comprising:

a generally rectangular housing, viewing means, rotatable hub means mounted within said housing and recordable tape wound on said hub means to form a tape reel face consisting of a plurality of contiguous tape edges;

marking means applied to said plurality of contiguous tape edges before a first unwinding of said recordable tape, said marking means forming;

a first pattern, marked on said tape edges, each pattern of said marking means spaced substantially 90° apart on subsequent rewinding forms;

a second pattern, said first and second pattern causing alternating portions of said marking means and said tape to appear whereby rotational movement of said marking means indicated movement of said tape as seen by viewing means.

4,345,541

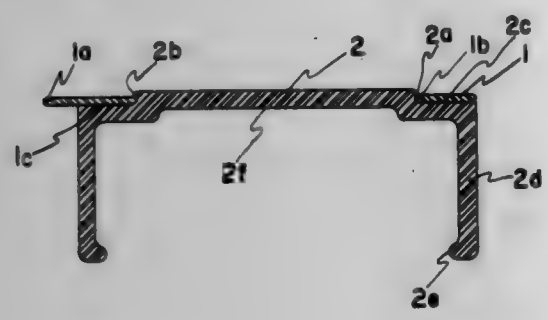
MONO-RINGED ROTATORY MEDICATION REMINDER

Antony-Euclid C. Villa-Real, Las Vegas, Nev., assignor to Medi-Timer Corporation, Las Vegas, Nev.

Filed Feb. 12, 1980, Ser. No. 120,871

Int. Cl.³ B65D *5/72*; G09F *9/00*

U.S. Cl. 116—308 **4 Claims**



1. A medication dosage time-intake reminder device for a container cap comprising:

a stationary central member having an annular ridge and groove in the top surface thereof and a downwardly depending annular wall, said top surface having time interval indicia thereon;

an outer annular ring member having an annular ridge portion for engagement with said ridge and groove portion in said top surface of said stationary central member whereby said annular ring member may be rotated relative to said top surface;

medication dosage indicating means on the surface of said outer annular ring member whereby upon rotation of said outer annular ring member with respect to said stationary central member, the medication dosage indicating means may be aligned with the time interval indicia to indicate the time of the next dose administration; and;

an annular protuberance on said depending annular wall whereby said protuberance may engage a portion of a container cap and the device can be rigidly retained on said container cap.

4,345,542

APPARATUS FOR PARAFFINING YARN

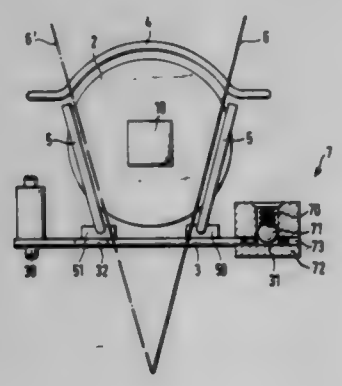
Friedrich Hauner, Ingolstadt, Fed. Rep. of Germany, assignor to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,495

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 7927734[U]

Int. Cl.³ B05C *1/06*

U.S. Cl. 118—78 **4 Claims**



1. An apparatus for paraffining yarn with paraffin wax supplied by a rotationally mounted paraffin body as said thread travels along a path, a thread guide rail positioned before and after said paraffin body in the direction of travel of said thread, said paraffin body being displaceable in the direction perpendicular to a plane extending through said guide rails, and a stop against which said paraffin body bears limiting the displacement of said paraffin body, comprising:

said guide rails (3, 4) supporting the thread on their side opposite the paraffin body;

means (30) for pivotally supporting at least one of said guide rails (3) for pivotal movement transversely relative to the path of travel of said yarn from a first position in which the yarn travelling along said path occupies a position further away from said body in front of said paraffin body to a second position thereby entraining said yarn to occupy a position outside the axial movement path of said paraffin body when being withdrawn from its working position;

means for supporting said stop on said one of said guide rails (3);

releasable lock means (7) for holding said one of said guide rails (3) in said first position wherein said stop bears against said paraffin body and for releasing said one of said guide rails (3) allowing said one of said guide rails to be pivoted to said second position wherein said stop (5) releases said paraffin body and said yarn being moved out of the path of said paraffin body thereby allowing said paraffin body to be removed without interferring with the travel of said thread.

4,345,543

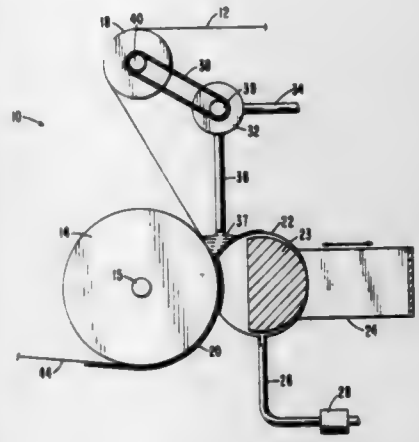
APPARATUS FOR FORMING A COATING ON A SUBSTRATE

David J. Pipkin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 53,143, Jun. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 882,281, Feb. 23, 1978, abandoned. This application Nov. 17, 1980, Ser. No. 207,571

Int. Cl.³ C05C *3/12, 3/18*

U.S. Cl. 118—106 **18 Claims**



1. Apparatus for coating a moving web with a coating liquid, the apparatus comprising:

backing support means adapted to engage one surface of the moving web so as to guide the web in a fixed-position path of travel;

at least one length of stationary smoothing film mounted so as to facilitate the positioning of a portion thereof adjacent the opposite surface of the web;

means to meter a coating liquid through at least one orifice which is positioned adjacent the confluence of the smoothing film and web;

pliant pressure generating means positioned to bear against said film in a manner to position said film adjacent the web and to provide both a static force and a high-hydrodynamic-pressure coating zone between the web and said film, compliance of said pressure generating means to said

backing support providing a coating zone whose length, in the direction of web movement, applies said hydrodynamic pressure to the liquid for at least a critical time interval which is sufficient to insure uniform coating thickness to the length of the web;

means to adjust the relative position of said pressure generating means and said support means, in order to control the length of compliance of said pressure generating means to said backing support, to thereby control said critical time interval; and

means to adjust the force with which said pressure generating means bears against said film, to thereby control the magnitude of said static force and high-hydrodynamic-pressure;

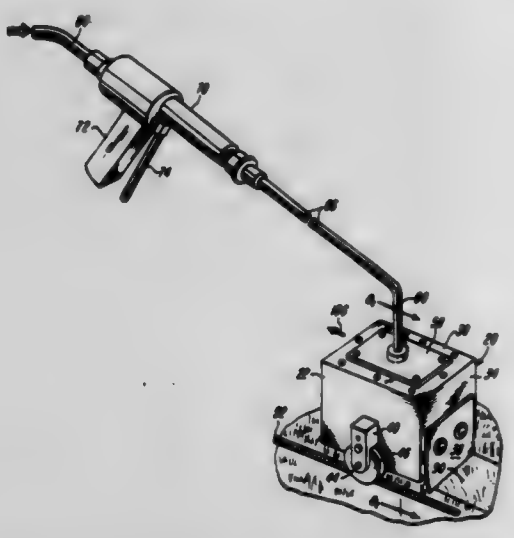
whereby a moving web may be carried through said coating zone with said film bearing thereagainst for at least said critical time interval which is controllable as a function of the relative position of said pressure generating means and said backing support means.

4,345,544

APPARATUS FOR FORMING LINES ON AN ATHLETIC PLAYING FIELD OR COURT

Jack J. Besecker, 247 N. High St., Bradford, Ohio 45308

Filed Feb. 25, 1981, Ser. No. 238,080
Int. Cl.³ B05C *5/00, 17/00*
U.S. Cl. 118—108 **4 Claims**



1. Apparatus for applying a line to the surface of an athlete field or the like in which a rope is stretched taut across a portion of the surface at the location of the desired line, and in which liquid lining material is pumped from a source thereof through an elongate flexible hose, comprising:

valve structure joined to the elongate flexible hose,

an elongate rigid tube having an end thereof attached to the valve structure,

a housing positioned adjacent the surface and joined to the opposite end of the elongate rigid tube, the housing having a pair of opposed side walls and a pair of opposed end walls, one of the end walls being a forward end wall and the other end wall being a trailing end wall, the housing having an opening in the bottom portion thereof, a pair of guide and support wheels, there being a guide and support wheel attached to each of the side walls of the housing for rotation with respect thereto, each of the guide and support wheels being adapted to engage the rope and to support the housing as the housing is supported by both of the guide and support wheels and as the rope is engaged by one of the guide and support wheels and guides movement thereof and thus guides movement of the housing along the rope,

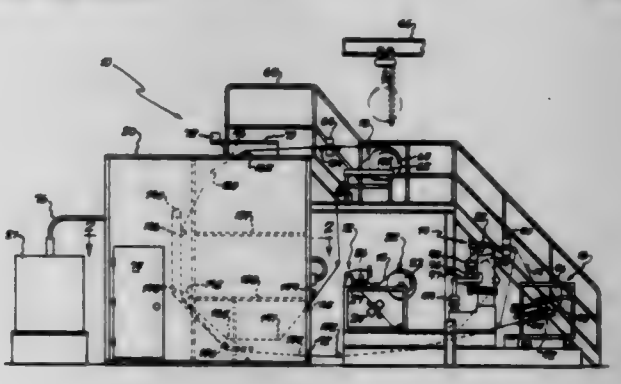
the flexible hose conducting liquid lining material to the valve structure, the valve structure controlling flow of the liquid lining material to the elongate rigid tube, the liquid lining material flowing through the elongate rigid tube to the housing, the liquid lining material flowing within the housing between the side walls and between the end walls, the liquid lining material flowing downwardly from the housing through the opening in the bottom portion of the housing, the liquid lining material flowing upon the surface and forming a line upon the surface as one of the guide and support wheels is moved along the rope and as the movement of the housing is guided by the guide and support wheel, the elongate rigid tube serving as a handle for movement of the housing.

4,345,545

APPARATUS FOR ELECTRON CURING OF RESIN COATED WEBS

Alton K. Miller, Niagara Falls, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,722
Int. Cl.³ B05B *5/02*
U.S. Cl. 118—621 **8 Claims**



1. In apparatus for curing a wet coating on a running length web, said web being coated on one side only, by irradiating said web selectively from either the coated or uncoated side, means for transporting said web along a selected path without contacting the coated side of the web; an irradiating chamber enclosing a portion of said path, said chamber having an entrance and an exit; a source of high energy electron radiation for directing an electron beam into said chamber substantially perpendicularly to the plane of the path of said web and onto the uncoated side; an additional means located along said selected path upstream of the entrance of said chamber for deflecting said web along a second path around and past said chamber on the side of said chamber opposite said source of high energy electron radiation and back to said selected path downstream of the exit of said chamber; a second additional means downstream of the exit of said chamber for deflecting said web from said second path into the exit of said chamber along said selected path but in the opposite direction; whereby when the web is transported only by the means for transporting said web along a selected path, the web is directly irradiated on the uncoated side, but when it is transported by said means to transport and said additional means it is directly irradiated on the coated side, but in neither case is the coated side contacted by the transport means prior to the irradiation.

4,345,546

APPARATUS FOR COATING ITEMS

Hermann P. Weber, 5506 Beckford Ave., Tarzana, Calif. 91356

Filed Jun. 15, 1981, Ser. No. 273,461
Int. Cl.³ B05C *3/02, 3/10*
U.S. Cl. 118—675 **9 Claims**

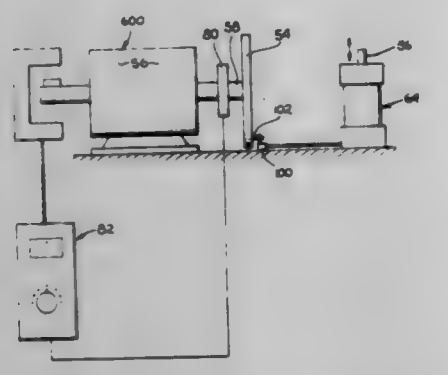
1. Apparatus for dip-coating items, said items having a top edge, a central portion, and a bottom edge, said apparatus comprising:

a rack for supporting a plurality of items to be coated;

a flexible cord having a first end coupled to said rack and a second end coupled to a rotatable drive means, whereby said rack is suspended above the surface of a volume of coating solution and is coupled to said rotatable drive means;

said drive means providing rotational movement to said second end of said flexible cord;

whereby rotation of said drive means causes vertical reciprocal movement of said rack and items to be coated, such that said items are immersed into said coating solution and



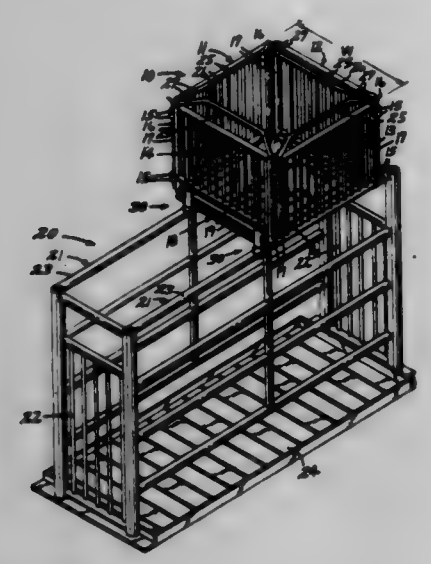
drawn out of said coating solution with a relatively low velocity as said top edge and said bottom edge exit from said coating solution, and with a higher velocity as the central portion of said items exit from said coating solution.

4,345,547

CRATE CRIB ATTACHMENT

Michael D. Lynch, Burbank, S. Dak., assignor to Delmar J. Lynch and John P. Lynch, both of Burbank, S. Dak.

Filed Feb. 23, 1981, Ser. No. 237,571
Int. Cl.³ A01K *1/02*
U.S. Cl. 119—20 **11 Claims**



1. In combination:

(a) a farrowing crate, said crate including a plurality of upwardly extending wall members defining an interior space therebetween;

(b) a crate crib attachment for newborn animals, said attachment being proportionally smaller than said farrowing crate and having a floor and a plurality of upwardly extending side walls defining a containing space therebetween, said plurality of side walls including a pair of opposing side walls having lowermost portions defined by a pair of spaced apart rod members each extending across the width of said respective side wall; and

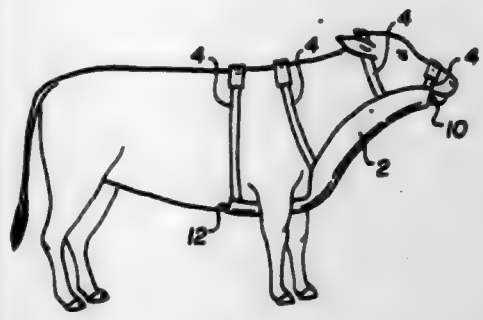
(c) means for mounting said crib attachment to a topmost portion of said farrowing crate to keep the newborn animals contained in said crib attachment in close proximity to a mother animal located in said farrowing crate, said mounting means including a plurality of mounting brackets each having means for securing a respective portion of said rod member pair to said mounting bracket, including means for attaching said mounting bracket to a segment of said farrowing crate topmost portion.

4,345,548

THROAT PROTECTOR

Clifton T. Krebs, Box 297, Vernon, British Columbia, Canada (V1T 6M2), and Leonard B. Krebs, General Delivery, Fort Steele, British Columbia, Canada

Filed Jan. 5, 1981, Ser. No. 222,578
Int. Cl.³ A01K *29/00*; B68C *5/00*
U.S. Cl. 119—108 **5 Claims**



1. A neck protector for an animal to be roped the protector comprising:

a flexible member comprising a first portion, relatively narrow, to extend substantially horizontally between the animal's fore legs and a second portion extending from the first portion and adapted to extend vertically and around the neck of the animal sufficiently to protect the animal's windpipe and to the mouth of the animal, under the jaws; said second portion being substantially wider than said first portion and having an inside smooth surface;

a first strap at a first end of the flexible member to extend around the animal's body;

a second strap at a second end of the flexible member to extend around the animal's nose; and

at least one further strap to extend around the animal's neck the straps serving to locate the protector in position on the animal.

4,345,549

STEAM-GENERATOR WITH IMPROVED FACILITIES FOR REPLACEMENT OF PARTS

Riccardo Colmano, Legnano, Italy, assignor to Ansaldo Societa per Azioni, Genoa and C.N.E.N. Comitato Nazionale per l'Energia Nucleare, Rome, both of, Italy

Filed Dec. 17, 1979, Ser. No. 104,240
Int. Cl.³ F22B *1/02*
U.S. Cl. 122—34 **11 Claims**

1. A vertical steam-generator having natural circulation in a vertical cylindrical vessel having a removable top cover and containing:

a bundle of U-shaped tubes being fastened to a tubeplate and housed in a shell;

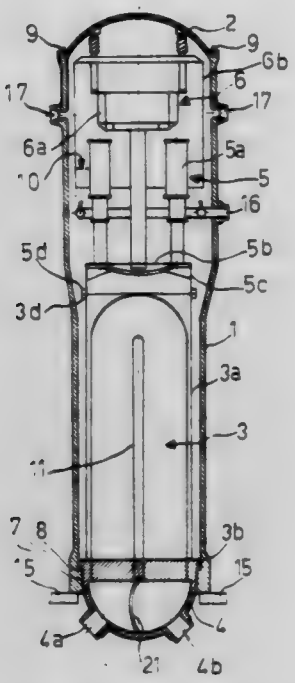
said U-shaped tubes having a primary heat-carrier fluid medium flowing therethrough and being immersed in a secondary fluid medium;

a steam-separator detachably mounted above said bundle of tubes;

a drying unit detachably mounted above said steam-separator and fastened to said vessel by means of springs which are kept under compression by the cover of the vessel;

said cylindrical vessel having at its lower end an inwardly extending annular ledge on which said tubeplate is detachably mounted with water-tight means;

said tubeplate with bundle of tubes and shell being coaxially aligned with said vessel by pin means;



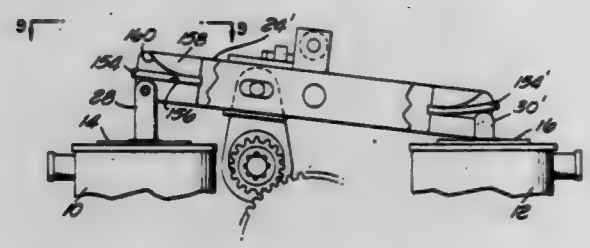
whereby said drying unit, steam-separator and tube-plate with bundle of tubes and shell may be separately removed from said cylindrical vessel by vertical lifting.

4,345,550

DEFLECTING ROCKER ARM FOR AN INTERNAL COMBUSTION ENGINE

Donald G. Finley, 1658 Morse Dr., San Pedro, Calif. 90732

Continuation-in-part of Ser. No. 901,171, Apr. 28, 1978, Pat. No. 4,215,660. This application May 9, 1980, Ser. No. 148,315
Int. Cl.³ F02B *75/04, 75/26*
U.S. Cl. 123—78 E **4 Claims**



1. In an internal combustion engine having a pair of cylinders, first and second pistons in each cylinder and oppositely acting in predetermined phase relationship so that the facing surfaces of the pistons are moved together and apart to define a stroke length and to at least partially define a combustion chamber, said pistons including piston rods extending outwardly therefrom, means for providing fuel to said combustion chamber, a transfer port in each cylinder, opened and closed by one of said pistons and providing air to said combustion chamber, an exhaust port in each cylinder for removing combustion products from said combustion chamber, a pivotally mounted first rocker arm having opposite ends arranged for reciprocal movement of said first pistons, means arranged for reciprocal movement with said second pistons, and a crankshaft rotatably driven by pivotal movement of said rocker arm, the improvement comprising:

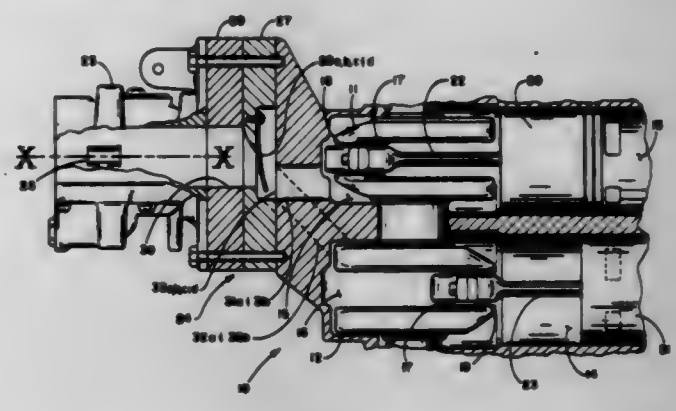
a spring member carried on each end of said rocker arm, said spring member having a substantially planar surface bearing against the outer end of the respective piston rod so as to be interposed between said rocker arm and each piston whereby to permit said pistons to move apart by deflecting the respective spring, during combustion, in advance of said crankshaft.

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AIR AND FUEL INDUCTION SYSTEM FOR A TWO CYCLE ENGINE

James L. Bloemers, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Oct. 19, 1981, Ser. No. 312,559
Int. Cl.³ F02B *33/28, 75/20*
U.S. Cl. 123—59 B **11 Claims**



1. In a two cycle engine having at least two adjacent horizontal cylinders positioned aligned one above the other each having a separate closed crankcase, an air and fuel induction system comprising:

(a) a single horizontally positioned carburetor having a single metering system for supplying an air and fuel mixture to both cylinders

(b) an induction passageway for each cylinder connecting between the carburetor and each crankcase, each induction passageway having an opening at about the same elevation and each opening having about the same cross sectional area, and

(c) a reed valve positioned adjacent the carburetor throat and at the entrance to each of the induction passageways, said reed valve including at least one flat reed positioned directly across and closing the entrance to each of the induction passageways.

4,345,552

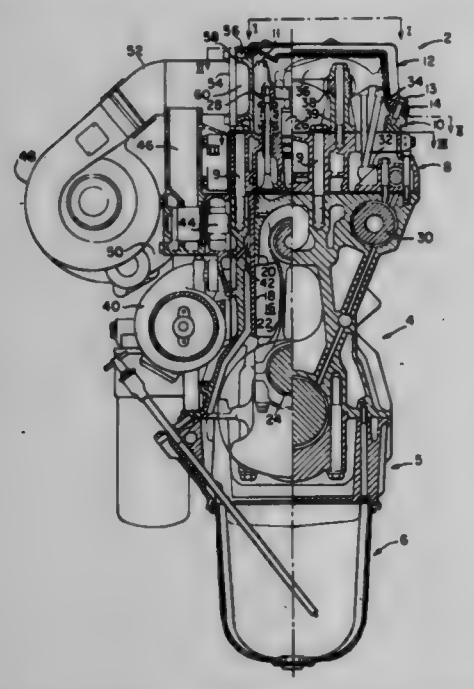
ROCKER HOUSING AND ROCKER COVER

Edward W. Kasting, Seymour; Richard E. Glasson, and Bryan W. Swank, both of Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 18, 1979, Ser. No. 104,791
Int. Cl.³ F01M *9/10*
U.S. Cl. 123—90.38 **15 Claims**

1. A rocker housing for use in an internal combustion engine having a plurality of cylinders, a cylinder head with a plurality of intake and exhaust passages formed therein to permit the flow of gases respectively to and from the cylinders, a plurality of intake and exhaust valve assemblies mounted on the cylinder head to open and close respective intake and exhaust passages formed in the cylinder head, and a rocker arm mechanism in operative engagement with the intake and exhaust valve assemblies to control the flow of gases respectively into and out of the cylinders, said rocker housing comprising a casing including an upright front wall, an upright back wall and a pair of side walls, said front wall having a greater height than said back wall and said side walls joining said front and back walls at right angles to form an open rectangular box for surrounding the rocker arm mechanism, an opening formed in said casing to receive air from an external source, and an air collection and distribution means also formed in said casing in fluid communication with said opening to collect air received at said opening and distribute air so collected simultaneously to all of the intake passages formed in the cylinder head, said air collection and distribution means includes both a plenum in fluid communication with said opening and a plurality of passageways extending from said plenum to register respectively with the plurality of intake passages formed in the cylinder head, said

front wall including a generally planar, vertically oriented outer surface containing a recess extending along substantially the entire horizontal width of said front wall, said plenum being formed by the exterior surface of said recess, and securing means for securing said casing to the cylinder head, said securing means including a pair of bosses formed on opposed sides of each said passageway, each said boss containing a vertically oriented hole for receiving a bolt for attaching said casing to the cylinder head.

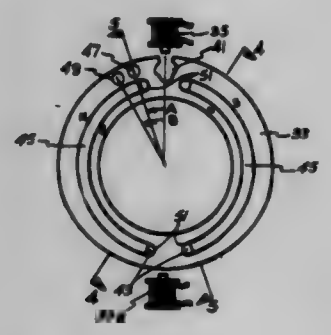


4,345,553

MULTIPLE STEP ADVANCE WITH MAGNETIC TRIGGER ROTOR

Robert T. Magrane, Reno, Nev., and Nando A. Fontana, West Springfield, Mass., assignors to Eltra Corporation, Toledo, Ohio

Filed Mar. 25, 1980, Ser. No. 133,771
Int. Cl.[3] F02P *3/06*
U.S. Cl. 123—149 C 11 Claims



1. An ignition system for use with a small internal combustion engine having at least one cylinder including a piston therein, comprising:

ignition means responsive to trigger signals for producing ignition pulses in said cylinder of said engine;

trigger means for producing said trigger signals in timed relation to the movement of said piston in said cylinder;

said trigger means including a trigger coil and a magnetic trigger rotor rotated past said trigger coil in synchronism with the movement of said piston for generating a trigger signal in said coil;

said trigger rotor being formed of a magnetically conductive material, having arcuate slots formed therein, and having first and second magnetic means disposed in said slots;

said first and second magnetic means being magnetized so that the first magnetic means has a first polarity magnetic pole disposed towards the periphery of said rotor and so that said second magnetic means has a second polarity magnetic pole disposed towards the periphery of said rotor;

said trigger rotor having a radial slot formed therein between said arcuate slots so that the rotor has a magnetic field which changes polarity across said radial slot to generate a trigger signal of maximum magnitude when said radial slot of said rotor is rotated past said trigger coil for producing a trigger signal effective at relatively low speeds of said engine;

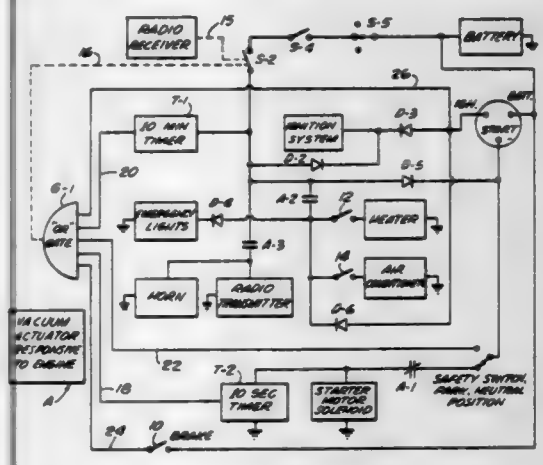
said trigger rotor further including at least one cylindrical hole formed therein adjacent said radial slot and circumferentially spaced from said radial slot and spaced from the radial periphery of said rotor, said cylindrical hole being formed with its axis parallel to the axis of rotation of said rotor, for distorting said magnetic field and for providing a change in the amount of flux passing through said trigger coil when said cylindrical hole of said rotor is rotated past said trigger coil, to generate a trigger signal which is effective only when said engine has accelerated to a predetermined speed, to provide an advanced ignition pulse.

4,345,554

VEHICLE ENGINE REMOTE STARTER CONTROL AND PROTECTIVE SYSTEM

Donald M. Hildreth, 4011 Garden Ave., Los Angeles, Calif. 90039, and Edward P. Tyler, 10644 Tuxford St., Sun Valley, Calif. 91352

Filed Nov. 19, 1979, Ser. No. 95,260
Int. Cl.[3] F02N *17/00*
U.S. Cl. 123—179 BG 7 Claims



1. A remotely controlled starting and control system for an internal combustion engine of an unattended vehicle, in which switching means are operative upon receipt of a remotely transmitted command signal to connect and disconnect an associated starter motor and ignition system to an energy source, the improvement comprising:

a solenoid actuated switch for controlling the operation of the starter motor;

normally closed contacts in an energizing circuit of said solenoid;

means responsive to engine operation for continuously generating an output signal indicative of the engine operating RPM;

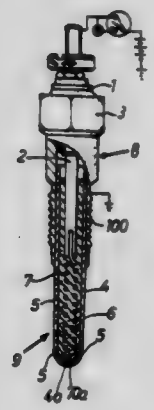
means controlled by said output signal for actuating the normally closed contacts to an open position, when the RPM is less than a preset level for a predetermined first time interval; and

means operable in response to the operation of said actuating means to open said normally closed contacts, for preventing reclosure of said contacts until the expiration of a predetermined second time interval.

4,345,555
SELF-HEATING IGNITION PLUG

Yujiro Oshima; Yoshiyasu Fujitani; Hideaki Muraki; Shiroh Kondoh, and Kouji Yokota, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Mar. 14, 1980, Ser. No. 130,589
Claims priority, application Japan, Mar. 20, 1979, 54-32870
Int. Cl.³ F02P *19/00, 23/02*
U.S. Cl. 123—272 38 Claims



1. A self-heating type ignition plug comprising a base portion having a fixing portion formed on an outer wall thereof and a terminal insulatedly provided therein and connected to an electrical source,

an ignition means integrally connected to the said base portion, having an ignition surface formed on a wall surface thereof and composed of a catalyst comprising a transition metal, and

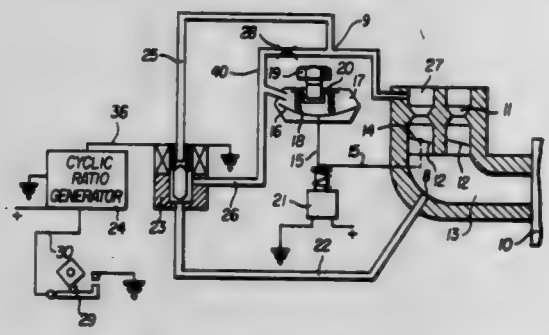
a heating means comprising a resistive exothermic element connected to the terminal of said base portion, the resistive exothermic element being provided adjacent to the ignition surface within the ignition means,

whereby fuel may be ignited and burned as a whole by said ignition surface of the catalyst which is maintained at preset temperature due to an oxidation reaction of said catalyst and the fuel in contact therewith, after the heating means is deenergized.

4,345,556
PROCESS FOR THE REDUCTION OF NOXIOUS GASES FROM CARBURETOR-EQUIPPED INTERNAL COMBUSTION ENGINE DURING DECELERATION PERIODS AND APPARATUS FOR APPLYING SAID PROCESS

Jean P. Crouillere, Taverny, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed May 30, 1980, Ser. No. 154,764
Claims priority, application France, Jun. 19, 1979, 79 15677
Int. Cl.³ F02D *1/04;* F02B *75/10;* F02D *11/08;* F02M *1/14*
U.S. Cl. 123—327 4 Claims



1. A process for the reduction of emissions of noxious gases from a carburetor-supplied internal combustion engine having at least one butterfly gas valve, an intake manifold, a membrane chamber, a membrane dividing said membrane chamber into first and second compartments, a three-way solenoid valve, a modulated cyclic ratio generator, a first hose, a second hose, a third hose, a fourth hose, and restriction means disposed in said fourth hose, wherein said process comprises:

communicating said first hose with said three-way solenoid valve and with said intake manifold at a first point downstream from said carburetor;

communicating said second hose with said three-way solenoid valve and with said intake manifold at a second point upstream from said carburetor;

communicating said third hose with said three-way solenoid valve and with said first compartment of said membrane chamber;

communicating said fourth hose with said second hose at a third point upstream from said carburetor and downstream from said membrane chamber such that first and second parallel fluid flow paths are effected from said solenoid valve to said second point wherein said second hose forms said first flow path and said third hose and said fourth hose form said second flow path;

generating a control signal with said modulated cyclic ratio generator in proportion to the speed of said engine;

sending said control signal to said three way solenoid valve;

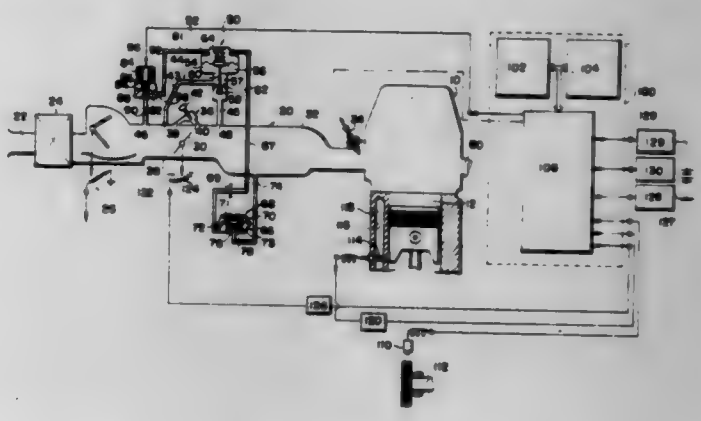
actuating said solenoid valve proportional to said engine speed with said control signal;

partially opening said at least one butterfly valve via actuation of said three-way solenoid valve during deceleration of said engine such that said partial opening is proportional to both said speed of said engine and proportional to the level of vacuum in said intake manifold of said engine so as to reduce the emission of noxious gases during said deceleration of said engine.

4,345,557
IDLE SPEED CONTROL METHOD AND SYSTEM FOR AN INTERNAL COMBUSTION ENGINE OF AN AUTOMOBILE VEHICLE

Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed May 28, 1980, Ser. No. 154,051
Claims priority, application Japan, May 29, 1979, 54-65663
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—339 63 Claims



1. An intake air flow rate control system for a vehicle internal combustion engine in which either feedback control or open loop control is selectively carried out, in said feedback control, a feedback control ratio being determined based on an actual engine speed and a reference engine speed so that a difference between said actual engine speed and reference engine speed is reduced to zero and in said open loop control, an open loop control ratio being determined corresponding to an engine or engine coolant temperature,

the system comprising in combination:

means for sensing said engine or engine coolant temperature;

means for sensing engine speed,

means for sensing engine load,

a first means for determining said reference engine speed corresponding to said sensed engine or engine coolant temperature;

a second means for determining said open loop control ratio

based on said sensed engine or engine coolant temperature and said sensed engine load;

a third means for sensing engine driving conditions and for selecting in response thereto one of said feedback control and said open loop control;

a fourth means responsive to said third means selecting said feedback control for determining said feedback control ratio based on said sensed engine speed and said reference engine speed;

a fifth means responsive to said third means selecting said open loop control for correcting said open loop control ratio in response to acceleration or deceleration of the vehicle;

a sixth means for limiting maximum and minimum values of said feedback and open loop control ratios for improving the response characteristics of the control system; and

a seventh means for operating said first to sixth means in a predetermined order.

4,345,558

KNOCK DETECTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

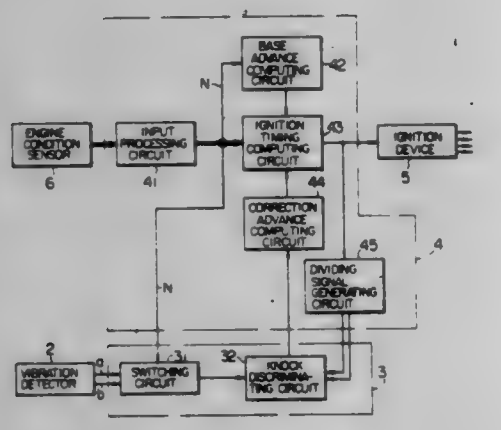
Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Ootsuka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 31, 1980, Ser. No. 135,929

Claims priority, application Japan, Apr. 28, 1979, 54/53143; Jun. 15, 1979, 54/76009

Int. Cl.³ F02D 5/04

U.S. Cl. 123—425 **6 Claims**



1. A knock detecting apparatus for an internal combustion engine in which a combustible mixture is ignited by an ignition spark and ignition control means for controlling a timing of said ignition spark, said detecting apparatus comprising:

first means responsive to knocks of said engine at around a predetermined first frequency and effective to produce a first knock output signal indicative of said engine knocks;

second means responsive to knocks of said engine at around a predetermined second frequency and effective to produce a second knock output signal indicative of said engine knocks, said second frequency being lower than said first frequency;

means responsive to an operating condition of said engine and effective to produce a condition output signal indicative of said operating condition; and

means responsive to said condition output signal and effective to selectively apply one of said first and second output signals to said ignition control means to thereby control said timing of ignition spark, said first and second output signals being selected in response to said condition output signals being selected in response to said condition output signal indicating that said operating condition is higher and lower than a predetermined reference value, respectively.

4,345,559

APPARATUS FOR DAMPING BOUNCE OSCILLATIONS IN AN INTERNAL COMBUSTION ENGINE

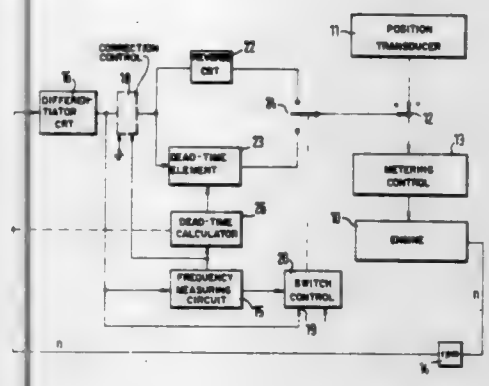
Thomas Küttner, Stuttgart, and Wolf Wessel, Oberriexingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 15, 1980, Ser. No. 122,100

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1979, 2906782

Int. Cl.³ F02B 47/00

U.S. Cl. 123—435 **26 Claims**



1. An apparatus for damping low-frequency bounce oscillations in an internal combustion engine having first signal generating means for generating at least one operational signal and a fuel metering means for supplying fuel to the engine in accordance with said at least one operational signal, which comprises:

rpm signal generating means for generating an rpm signal proportional to the engine rpm;

signal differentiation means, connected to receive said rpm signal, for generating an rpm differential signal proportional to the rate of change of said rpm signal with respect to time;

countercontrol signal generating means, connected to receive said rpm differential signal, for supplying a damping signal to said fuel metering means upon the occurrence of predetermined characteristics of said rpm differential signal indicating bounce-induced oscillations in the engine speed, wherein said fuel metering means enriches or leans said fuel in said response to said damping signal.

4,345,560

ELECTRONICALLY CONTROLLED CARBURETOR

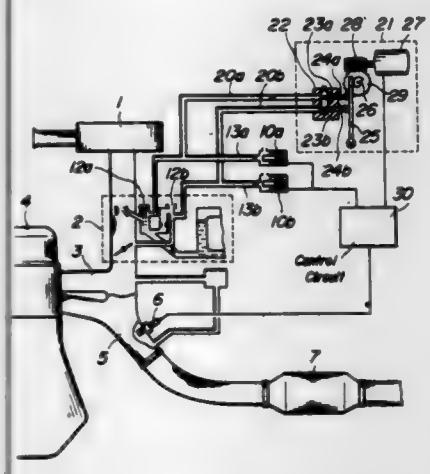
Koyo Nakamura, and Hatsuo Nagaishi, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Jan. 14, 1980, Ser. No. 112,118

Claims priority, application Japan, Jan. 16, 1979, 54-3762

Int. Cl.³ F02M 7/12

U.S. Cl. 123—440 **18 Claims**



1. An electronically controlled carburetor, which comprises an oxygen sensor provided in an exhaust passage of an internal

combustion engine for detecting indirectly an air to fuel ratio of a mixture gas, an air to fuel ratio correction means for correcting the air to fuel ratio of the mixture gas to be supplied to said internal combustion engine and a first control circuit for forming a first control signal to be applied to said air to fuel ratio correction means for removing a deviation of said air to fuel ratio detected indirectly by said oxygen sensor from a first target value, based on a result of comparison between said air to fuel ratio and said first target value, further comprising:

a second control circuit for forming a second control signal which corresponds to a deviation of said first control signal from a second target value, based on a result of comparison of said first control signal and said second target value and

an air to fuel ratio range correction means for correcting a controllable range of said air to fuel ratio of said mixture, based on said control signal;

a speed of response of said air to fuel ratio range correction means being settled far lower than that of said air to fuel ratio correction means;

said air to fuel ratio correction means comprising a plurality of main air bleeders and a plurality of auxiliary air bleeders which are controlled by said first control signal and said air to fuel ratio range correction means comprising a plurality of controlling air bleeders which are controlled by said second control signal;

said plurality of controlling air bleeders being formed of a plurality of needle valves which are controlled commonly by a pressure means under the control of said second control signal.

4,345,561

AIR-FUEL RATIO CONTROL METHOD AND ITS APPARATUS

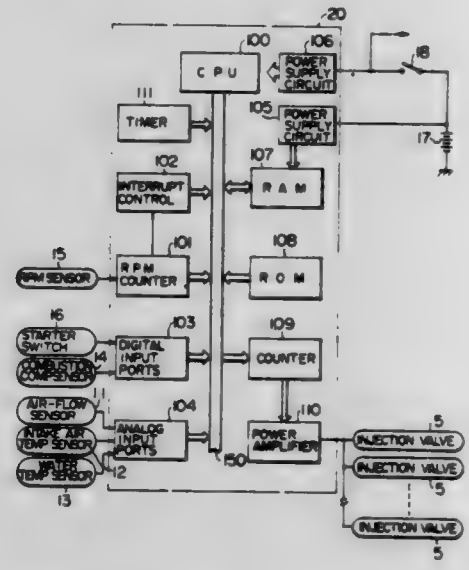
Toshio Kondo, Anjo; Yasuo Sagisaka, Kariya; Masahiko Tajima, Takahama, and Akio Kobayashi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 2, 1980, Ser. No. 136,706

Claims priority, application Japan, Apr. 5, 1979, 54/41360

Int. Cl.³ F02B *3/00*; F02G *3/00*; F02D *5/00*; G05B *15/00*

U.S. Cl. 123—440 **6 Claims**



1. An apparatus for controlling an air-fuel ratio of a combustion engine comprising:

intake sensor means for sensing an intake condition of said combustion engine;

rotation sensor means for sensing a rotation speed of said combustion engine;

combustion components sensor means for sensing combustion components representative of an air-fuel ratio of mixture supplied to said combustion engine;

integrator means for integrating an output of said combustion components sensor means;

read/write memory means for storing a plurality of correction values in corresponding storage locations addressed by outputs of said intake sensor means and said rotation sensor means;

comparator means for comparing an output of said integrator means with predetermined upper and lower limit values;

means for correcting one of said correction values in increasing and decreasing directions when an output of said comparator means indicates that said output of said integrator means is inside said upper and lower limit values, said one of said correction values being read out from one of said storage locations addressed by said outputs of said intake sensor means and said rotation sensor means and an output of said correcting means being written in said one of said storage locations as said one of correction values;

means for replacing all of said correction values by a predetermined reference value when said output of said comparator means indicates that said output of said integrator means is outside said upper and lower limit values, said predetermined reference value being written in said storage location as said correction values; and

control means for controlling an air-fuel ratio of said combustion engine in accordance with said one of said correction values.

4,345,562

METHOD AND APPARATUS FOR REGULATING THE FUEL-AIR RATIO IN INTERNAL COMBUSTION ENGINES

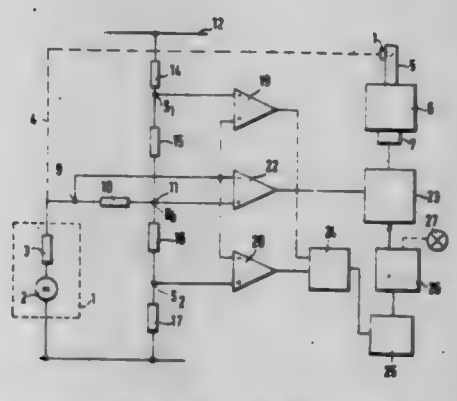
Ulrich Drews, Vahingen-Pulverdingen; Peter Werner, Wiernsheim, and Werner Möhrle, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,435

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919220

Int. Cl.³ F02B *3/00, 33/00*

U.S. Cl. 123—440 **9 Claims**



1. In a method of regulating the fuel-air ratio of the operational mixture intended for combustion in an internal combustion engine utilizing a λ sensor, which is connected with a regulating apparatus for influencing the fuel-air ratio, and further having an apparatus for monitoring the operational readiness of the λ sensor, wherein in order to ascertain the internal sensor resistance influencing the operational readiness of the sensor a reference voltage, with the interposition of a resistor, is supplied to an output of the λ sensor to oppose the λ sensor voltage and the resultant voltage at the λ sensor output is examined as to a minimum jump indicating the operational readiness of the λ sensor by means of two comparison devices having different threshold voltages whose output signals are logically linked and the signal resulting therefrom is evaluated as a standard for the operational readiness by an evaluation circuit which generates a first signal, indicating the operational readiness of the λ sensor, and a second signal indicating the operational unreadiness of the λ sensor, the improvement which comprises the steps of:

comparing the resultant voltage with the reference voltage and generating a comparison signal indicating the dispo-

sition of the resultant voltage relative to the reference voltage; and

transforming the comparison signal into a correction signal for varying the fuel-air ratio, utilizing the regulating apparatus, which is connected to receive the comparison signal.

4,345,563

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

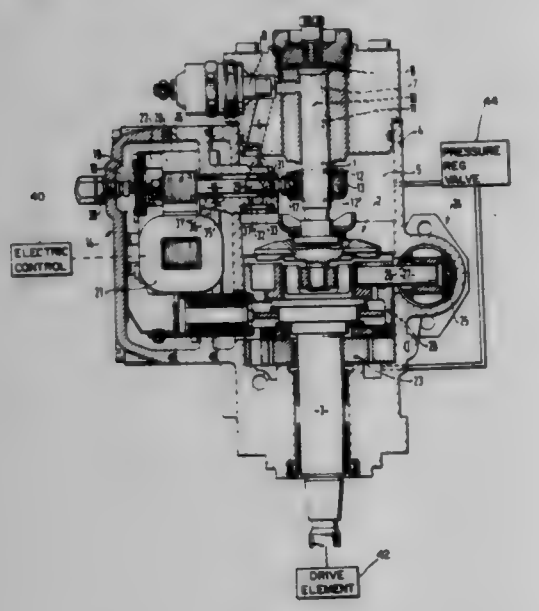
Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,117

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929176

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—458 **6 Claims**



1. In a fuel injection pump assembly for internal combustion engines, comprising: a fuel injection pump; a fuel supply pump; means for driving both pumps in synchronism; a housing defining a suction chamber into which fuel is delivered by the fuel supply pump; a pressure control valve connected to the suction chamber for controlling the pressure of the fuel in the suction chamber as a function of engine rpm; a fuel quantity adjustment member; and an rpm governor connected to the fuel quantity adjustment member for adjustment of the fuel quantity adjustment member, the improvement in the rpm governor, comprising:

a pressure relief chamber;

a fuel connecting line connecting the pressure relief chamber to the suction chamber;

a rotatably mounted shaft; and

guide means surrounding said rotatably mounted shaft; wherein:

(i) the rotatably mounted shaft includes an eccentric end portion which directly engages the fuel quantity adjustment member and controls the adjustment thereof;

(ii) the rotatably mounted shaft defines first means and the guide means defines second means; and

(iii) both said first means and said second means cooperate to form a valve controlling the extent of opening of the fuel connecting line as a function of the rotation of said rotatably mounted shaft.

4,345,564

FUEL INJECTION VALVE DRIVE SYSTEM

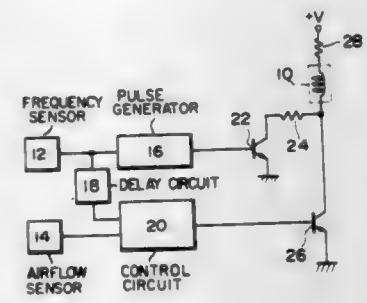
Yoshihisa Kawamura, Fujisawa; Kesao Matsuto, and Masaaki Saito, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 28, 1979, Ser. No. 107,832

Claims priority, application Japan, Aug. 1, 1979, 54-1188

Int. Cl.³ F02D *5/02*; H01F *7/18*

U.S. Cl. 123—490 **9 Claims**



1. A fuel injection valve drive system for use in an internal combustion engine provided with at least one fuel injection valve operated by a solenoid coil having positive and negative terminals, the positive terminal of said solenoid coil being coupled to a power source, said drive system comprising:

(a) a reference pulse generator for generating a train of reference pulses in synchronism with the rotation of said engine;

(b) a first drive signal generator responsive to each reference pulse from said reference pulse generator for generating a first drive signal having a constant pulse width;

(c) a second drive signal generator for generating a second drive signal having a pulse width dependent upon at least one engine operating parameter, the second drive signal occurring a predetermined time period after the beginning of the first drive signal from said first drive signal generator;

(d) first switching means connected in series with said solenoid coil, said first switching means responsive to the first drive signal from said first drive signal generator for permitting a first current to flow through said solenoid coil for a time period corresponding to the pulse width of the first drive signal, the first current being insufficient to open said fuel injection valve; and

(e) second switching means connected in parallel with said first switching means, said second switching means responsive to the second drive signal from said second drive signal generator for permitting a second current to flow through said solenoid coil a predetermined time period after the first current and for a time period corresponding to the pulse width of the second drive signal, the second current being sufficient to open said fuel injection valve.

4,345,565

FUEL PUMPING APPARATUS

Harry S. Bottoms, Henley in Arden, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 1, 1980, Ser. No. 145,831

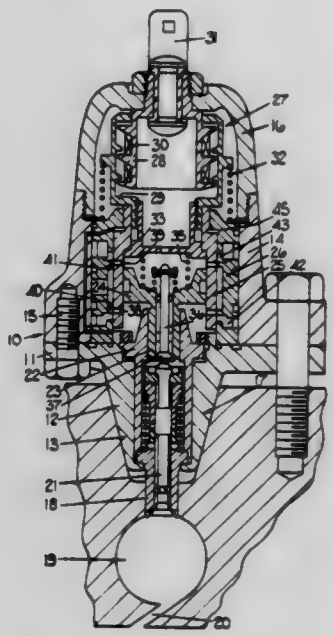
Claims priority, application United Kingdom, Dec. 7, 1979, 7942372

Int. Cl.³ F04B *49/06*; F02M *39/00*

U.S. Cl. 123—497 **6 Claims**

1. A fuel pumping apparatus for supplying fuel under pressure to a fuel injection nozzle of an internal combustion engine comprising a plunger reciprocable within a bore, a piston connected to the plunger and of larger diameter than the plunger, valve means operable to apply a fluid under pressure to one surface of the piston to effect movement of the piston and the plunger thereby to cause fuel contained within the bore to be delivered to the injection nozzle, and electrically controlled actuating means for the valve means characterised in that the piston is constructed as a double acting piston and the

valve means is movable from an intermediate position in which the supply of fluid under pressure to the opposite ends of the cylinder containing the piston is prevented, towards one or other operating positions in which fluid under pressure is supplied to one end of the cylinder and allowed to escape from the other end of the cylinder and vice versa, the apparatus



further comprising resilient means acting between the piston and an output member of the actuating means, the arrangement being such that the extent of the return movement of the piston and plunger following delivery of fuel, is determined by the force generated by the actuating means and which is at least in part, opposed by the force exerted by the resilient means.

4,345,566

FUEL PUMPING APPARATUS

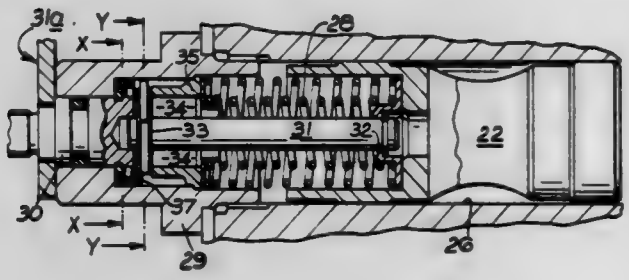
Michael T. Hammock, Holmer Green, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 5, 1980, Ser. No. 213,594

Claims priority, application United Kingdom, Jan. 22, 1980, 8002111

Int. Cl.³ F02D 1/06

U.S. Cl. 123—502 **5 Claims**



1. A fuel pumping apparatus for supplying fuel to a compression ignition internal combustion engine, and comprising an injection pump operable in use in timed relationship with an associated engine, a pump for supplying fluid at a pressure which varies with the speed at which the apparatus is driven, a cylinder, a fluid pressure operable piston in the cylinder, said piston being responsive to the pressure of said fluid to vary the timing of delivery of fuel by the apparatus such that with increasing speed the timing of delivery of fuel is advanced, an end closure for the cylinder, resilient means biasing the piston in a direction away from said end closure, said piston being moved against the action of said resilient means to advance the timing of delivery of fuel by the injection pump, a shaft mounted in said end closure for angular movement about the axis of said cylinder, a lever mounted on said shaft and operable in use when it is required to start the associated engine, to move the shaft from an inoperative position to an operative position, said shaft having a hollow end portion presented to the piston and defining a pair of axially extending slots, an actuating rod having one end located within said hollow end portion and mounting an abutment which acts as a stop to determine the extent of movement of the piston under the action of the resilient means, a pin mounted in said actuating rod for engagement by the walls of said slots, an annular member surrounding the hollow end portion of the shaft, said member defining a pair of cam profiles for engagement by the opposite end portions of the pin, each cam profile defining three settings for the pin, the first of which is a normal running position, the second of which is the cold start position in which the piston is allowed to move to a position in which the timing is retarded as compared with the normal running position, and a third setting in which the piston is allowed to move to a position in which the timing is advanced as compared with the normal running positions, said pin being moved from said first position to the second position when the shaft is moved from the inoperative to the operative position, the pin being moved at least in part by further resilient means from said second position to said third position when the piston is subjected to fluid pressure.

4,345,567

FUEL SUPPLY SYSTEM

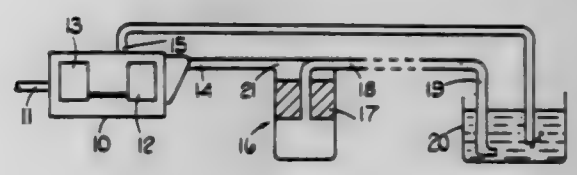
Chandrasegaram Balachandran, London, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 17, 1980, Ser. No. 141,157

Claims priority, application United Kingdom, May 12, 1979, 7916558

Int. Cl.³ F02B 77/00, 33/00

U.S. Cl. 123—510 **4 Claims**

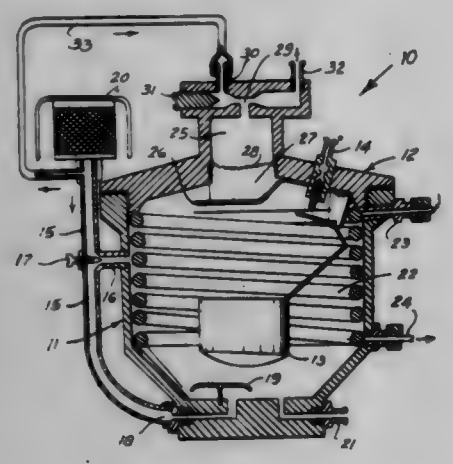


1. A fuel supply system for a diesel engine comprising a fuel pumping apparatus which includes a high pressure pump which in use supplies fuel at high pressure to the injection nozzles of the engine, and a low pressure feed pump which draws fuel through a fuel inlet of the apparatus and supplies fuel to the high pressure pump, the apparatus also having a drain outlet through which fuel and air collecting within a cavity of the apparatus can escape, the system further including a filter and inlet means connecting the filter to the fuel inlet and through which fuel is drawn by said feed pump from a supply tank to said pumping apparatus via the filter, a reservoir attached to the filter and fluidly interposed between said supply tank and said pumping apparatus, fluid passage means connecting said reservoir to said fuel pumping apparatus for conducting fuel from said pumping apparatus to said reservoir for maintaining the reservoir full of fuel during operation of the engine, outlet passage means fluidly connecting said reservoir to said supply tank, said outlet passage being located in said reservoir to define a predetermined level of fluid in said reservoir, and restricted passage means fluidly connecting said reservoir and said inlet means to by-pass the filter and fluidly connect the pumping apparatus and said reservoir so that fuel will be supplied to said pumping apparatus at a restricted rate from said reservoir via said restricted passage means if fuel in said supply tank is exhausted.

4,345,568
MULTI-FUEL VAPOR CHARGER CARBURETION SYSTEM AND DEVICE THEREFOR

Adolfo P. Alegre, 119 Bignay St., Quezon City; Armando E. Guidote, Antipolo, Rizal, and Alfonso G. Puyat, No. 7 Caimito St., Forbes Park, Makati, Metro Manila, all of Philippines

Filed Mar. 24, 1980, Ser. No. 132,786
Claims priority, application Philippines, Sep. 7, 1979, 23009
Int. Cl.³ F02M *13/04*
U.S. Cl. 123—522 5 Claims



1. A fuel vapor charge producing device comprising a pure liquid fuel or mixture container which can be of any desired shape and material with a cover and a float secured inside said device to control the inflow of pure liquid fuel or mixture into the container, a fuel or mixture inlet-valve made on said container for the entry of fuel or mixture, an air inlet adapted to allow the entry of air into said container above the liquid or mixture level and another air inlet below the fuel or mixture level such that the incoming air comes in contact with the liquid fuel or mixture to aid and agitate in emulsifying and vaporizing said fuel or mixture evenly within the range of the operating temperature, and a vapor outlet means connected to the intake manifold and/or to the air inlet of the carburetor of a conventional internal combustion engine, such that when the engine runs, the device is subjected to a vacuum pressure to force atmospheric air to be sucked into said device through the air inlets and to provide the proper or ideal air/fuel or or mixture ratio, said vapor outlet means including a venturi tube mounted on said cover and having one end connected to an air pipe and the other end connected by conduit means to the intake manifold and/or air inlet of the carburetor of an engine, a vapor outlet passage extending from said container through said cover into said venturi tube whereby a flow of vapor is induced by the venturi effect of the the venturi tube.

4,345,569
INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINES

Tadashi Hattori; Siniti Mukainakano, and Hitoshi Yoshida, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 27, 1979, Ser. No. 107,638
Claims priority, application Japan, Dec. 27, 1978, 53/162709
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 10 Claims

1. An intake system for an internal combustion engine comprising:

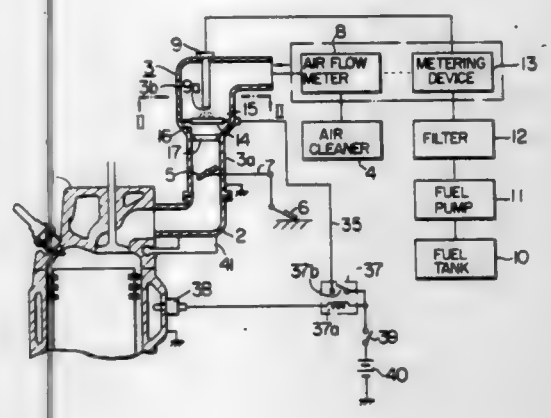
an intake pipe structure,

fuel supply means for supplying fuel into said intake pipe structure to form an air-fuel mixture,

an intake manifold connected between said intake pipe structure and cylinders of said engine for distributing the air-fuel mixture into said cylinders,

a throttle valve disposed in said intake pipe structure between said fuel supply means and said intake manifold for controlling an amount of the air-fuel mixture to be charged into said cylinders,

substantially imperforate baffle means disposed in said intake pipe structure between said fuel supply means and said throttle valve in opposition to said fuel supply means with a predetermined distance from the latter for impingement of fuel therefrom on said baffle means, and having an outer edge spaced from an inner wall surface of said intake pipe structure to define an opening therebetween, whereby



impinged fuel flows toward said edge and is atomized by flow of air thereby,

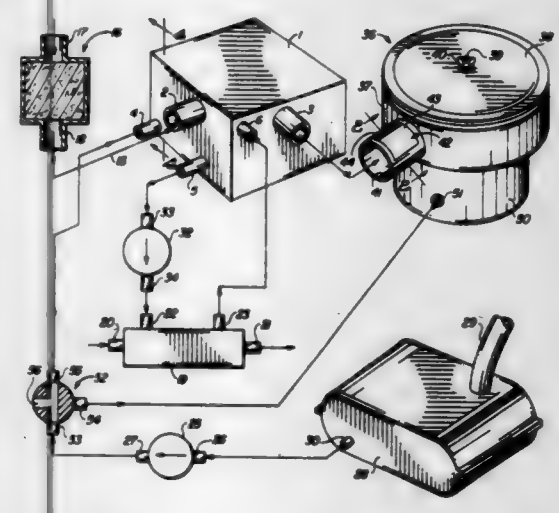
said baffle means including heater means adapted to be heated when electric current is applied thereto, and

power supply means for supplying electric current to said baffle means.

4,345,570
FUEL HEATING APPARATUS FOR VEHICLES

Paul W. McNeece, P.O. Box 728, Ruston, La. 71270

Filed Sep. 25, 1980, Ser. No. 190,739
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 11 Claims



1. A fuel heating apparatus for a vehicle having a carburetor comprising:

(a) a vaporizer box for mixing fuel and air and having an air inlet and a fuel-air mixture outlet, and a cool fuel inlet, a cool fuel discharge and a hot fuel inlet, and further including float means for maintaining a desired level of said fuel inside said vaporizer box;

(b) heat exchange means in cooperation with said vaporizer box for receiving fuel from said vaporizer box through said cool fuel discharge, heating said fuel to vaporize at least a portion of said fuel, and discharging said fuel to said vaporizer box through said hot fuel inlet; and

(c) a mixing chamber in cooperation with said vaporizer box and having a fuel-air inlet for receiving a mixture of said at least a portion of said fuel which is vaporized, and said air from said fuel-air outlet of said vaporizer box and further mixing said at least a portion of said fuel which is vaporized and said air and introducing said at least a portion of

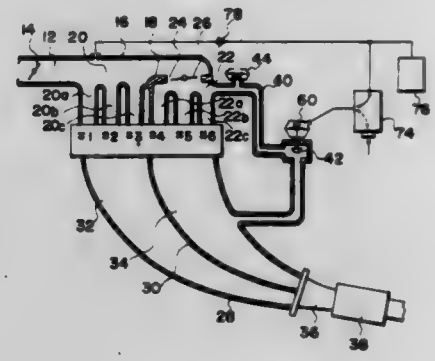
said fuel which is vaporized and said air as a vaporized fuel-air mixture into said carburetor of said vehicle.

4,345,571

INTERNAL COMBUSTION ENGINE

Haruhiko Iizuka, Yokosuka, and Fukashi Sugasawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 28, 1980, Ser. No. 135,072
Claims priority, application Japan, Mar. 30, 1979, 54-37781
Int. Cl.³ F02M *25/06*; F02D *17/02*
U.S. Cl. 123—568 **7 Claims**



1. An internal combustion engine comprising:
(a) a plurality of cylinders split into first and second groups;
(b) an air intake passage provided therein with a throttle valve and divided downstream of said throttle valve into first and second branches for supplying air to said first and second groups of cylinders, respectively, said second intake passage branch provided near its inlet with a stop valve normally open to allow the flow of air into said second group of cylinders;
(c) an exhaust passage through which exhaust gases are discharged from said cylinders to the atmosphere;
(d) an EGR passage having its one end opening into said exhaust passage and the other end opening into said second intake passage branch, said EGR passage having therein an EGR valve adapted to normally close so as to interrupt exhaust gas recirculation into said second intake passage branch and to open so as to allow exhaust gas recirculation thereinto when the engine load is below a predetermined value;
(e) split engine control means responsive to engine load conditions for cutting off the supply of fuel to said second group of cylinders and closing said stop valve to cut off the flow of air to said second group of cylinders, thereby rendering said second group of cylinders inactive when the engine load is below the predetermined engine load value; and
(f) attenuation means for attenuating pressure waves resulting from exhaust pulsations and propagated through said EGR passage toward said second intake passage branch sufficient to substantially prevent exhaust gases recirculated in said second intake passage branch from escaping through said stop valve into said first intake passage branch when said second group of cylinders is inactive.

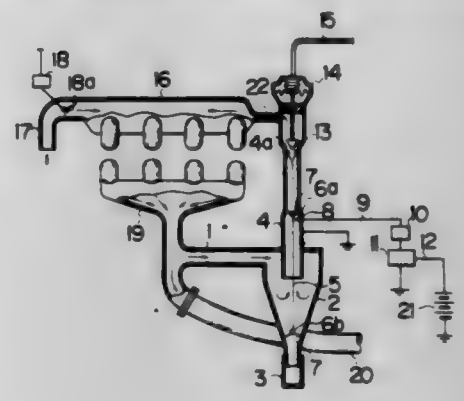
4,345,572

ENGINE EXHAUST GAS REFLUX APPARATUS

Nagatoshi Suzuki, 5-7-7, Kugahara, Ohta-ku, Tokyo, Japan (146); Sadaakira Araki, 2081, Izumi, Komae-shi, Tokyo, Japan (201), and Soichi Kawazoe, 452-72, Kazigaya-cho, Totsuka-ku, Yokohama-shi, Kanagawa-ken, Japan (247)

Filed Dec. 18, 1980, Ser. No. 217,749
Claims priority, application Japan, Aug. 7, 1980, 55-112065[U]
Int. Cl.³ F02M *25/06*; F01N *3/02, 3/12*
U.S. Cl. 123—568 **6 Claims**

1. An engine exhaust gas reflux apparatus provided with an exhaust manifold, a dust collector linked to said exhaust manifold and a control valve and substantially comprising an electrostatic filter type discharge pipe connected to said dust collector and an intake manifold available for drawing exhaust gas from said electrostatic filter type discharge pipe thereby to preferably reduce NO_x contained in exhaust gas.

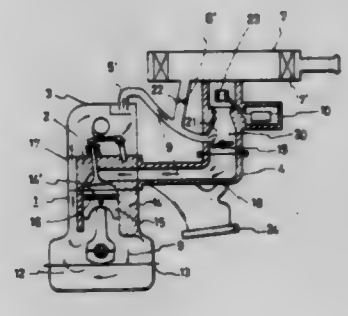


4,345,573

BLOW-GAS TREATING AND CONTROLLING SYSTEM

Haruyuki Obata, Susonoshi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 17, 1980, Ser. No. 141,170
Claims priority, application Japan, May 16, 1979, 54-59083
Int. Cl.³ F02M *23/14*
U.S. Cl. 123—572 **3 Claims**



1. A blow-by gas treating and controlling system having a blow-by gas treating pipe connected between the cylinder head cover of an engine and the barrel of a variable venturi carburetor attached to said engine, said variable venturi carburetor including a throttle valve mounted downstream of said barrel, characterized in that said blow-by gas treating pipe is connected between said cylinder head of said engine and the vacuum region of said barrel above the throttle valve of said variable venturi carburetor, said blow-by gas treating pipe is unrestricted between said cylinder head and said barrel, and a bleed pipe connected at one end to said blow-by gas treating pipe intermediate its ends and at its other end to an air cleaner attached to the suction side of said carburetor upstream of said throttle valve.

4,345,574

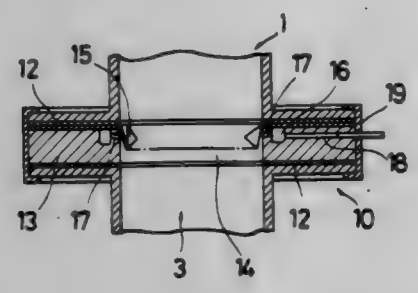
SECONDARY AIR FEEDER FOR AN INTERNAL COMBUSTION ENGINE

Tadakatsu Iwami, 374, Shikisai, Himeji-shi, Hyogo-ken, Japan

Filed Jan. 3, 1980, Ser. No. 109,402
Claims priority, application Japan, Mar. 27, 1979, 54/41633[U]
Int. Cl.³ F02M *23/12, 29/02*
U.S. Cl. 123—587 **4 Claims**

1. A secondary air feeder for an internal combustion engine, comprising a vortex chamber provided between a carburetor and a suction pipe and an air supply regulator communicating with said vortex chamber for serving as a secondary air intake,

said vortex chamber including a plurality of fins provided on the upper brim of a hollow cylindrical portion formed therein, an annular air chamber formed around said fins concentrically with a passage of said vortex chamber and a plurality of air vents communicating with the back side of said fins from said



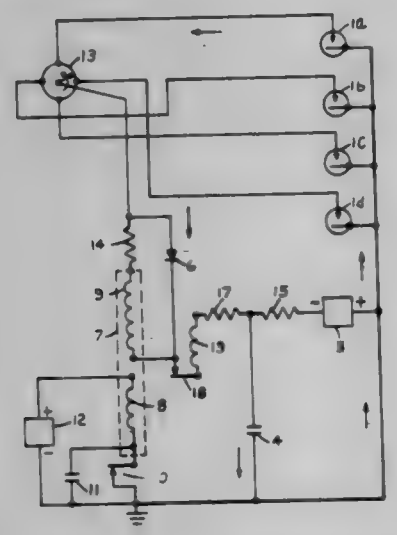
annular air chamber, each of the free ends of said fins being bent slightly, inwardly of the inner diameter of said passage, said air vents being tilted relative to said passage, and said annular air chamber being provided with an inlet pipe communicating with said air supply regulator.

4,345,575

IGNITION SYSTEM WITH POWER BOOSTING ARRANGEMENT

Adam A. Jorgensen, 1911 NW. 36 St., Oakland Park, Fla. 33309

Filed May 20, 1981, Ser. No. 265,669
Int. Cl.³ F02P *3/06, 15/00*
U.S. Cl. 123—598 **8 Claims**



1. An ignition system with power boosting arrangement for an internal combustion engine, said engine having at least one cylinder with a combustion chamber with at least one spark plug having at least one spark gap, in which an initial spark is struck from a high voltage, low current source and then maintained as an arc from a coordinated high current, low voltage source at a high energy level for an extended duration, the improvement comprising:

a high voltage ignition coil having primary and a secondary high voltage winding disposed on a magnetic core, said windings having a turns ratio such as to create in said secondary winding an electrical pulse of short duration and a potential sufficient to strike a spark in said spark gap at the time of interruption of energizing current in said primary winding,

a power source for high direct current of a voltage lower than that required to initiate a spark in said spark gap, but sufficiently high to sustain an arc across said spark gap at a predetermined high current value and for a predetermined duration once an initial spark has been struck, said power source consisting of a storage capacitor in parallel connection with a direct current power supply through a first current limiting resistor, said storage capacitor connected to said spark plug through a second limiting resistor and a first rectifier, said direct current power supply having such current and voltage rating as required to recharge said storage capacitor after each discharge before next discharge,

high voltage ignition coil primary winding energizing current means and means for abruptly interrupting said energizing current at the instant an initial spark is to be struck,

circuit means for connecting said high voltage secondary winding to said spark plug in parallel connection with said high current source through a second rectifier, said first and second rectifiers providing separation between said high voltage secondary winding and said high current power source,

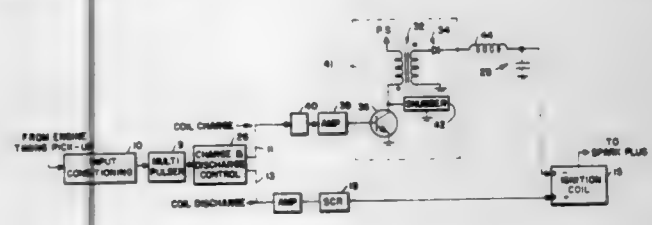
circuit means providing a common ground return path for said high voltage ignition coil, said high current power source and said spark plugs.

4,345,576

MULTI-SPARK CD IGNITION

Gordon P. Moseley, and Kurt W. Christner, both of Carson City, Nev., assignors to Super Shops, Inc., Newport Beach, Calif.

Filed Sep. 24, 1979, Ser. No. 77,928
Int. Cl.³ F02P *3/06*
U.S. Cl. 123—604 **22 Claims**



1. A multi-spark ignition for an internal combustion engine; said engine comprising a combustion chamber having a spark plug therein, an ignition coil for producing electrical energy to cause said spark plug to spark, means to supply said energy to said plug, means for producing timing pulses from said engine, each said timing pulse having a time duration proportional to the speed of said engine; said ignition comprising means to produce multiple pulses corresponding to multi-sparks at said plug, and means to cause said pulse producing means to output said pulses for a period of time which is the shorter of said time duration of each said timing pulse or a predetermined period of time about equal to the maximum time required for complete combustion in said chamber during slow engine speed operation as in cranking or idle.

4,345,577

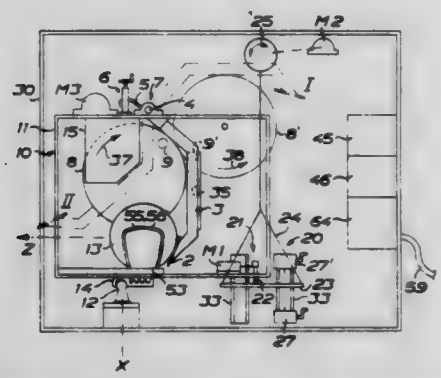
SPRING TYPE APPARATUS FOR PROJECTING BALLS

Uno K. T. Andersson, Ullstorp P.B. 3287, Vinslöv, Sweden (S-280-13)

PCT No. PCT/SE79/00040, § 371 Date Oct. 27, 1979, § 102(e) Date Sep. 28, 1979, PCT Pub. No. WO79/00665, PCT Pub. Date Sep. 6, 1979
PCT Filed Feb. 26, 1979, Ser. No. 169,115
Claims priority, application Sweden, Feb. 27, 1978, 7802182
Int. Cl.³ F41B *7/00*
U.S. Cl. 124—16 **10 Claims**

1. Apparatus for projecting balls, including a frame an impact device (10) supported in said frame (11) and provided with means to convey to a ball to a location on the frame for projection, the frame (11) being supported in a frame-work (30) for movement around a vertical axis (X) and a horizontal axis (Y), a first drive means (M1) is provided to rotate the frame (11) around said vertical axis (X) in two different horizontal directions in horizontal plane, a second drive means (M2) rotates said frame (11) around said horizontal axis (Y) in two different vertical directions, an underlying support (23) aids in rotation of the frame about the horizontal and vertical axes, the first and the second drive means (M1, M2) rotate the frame over an adjustable angular arc, there being provided limit means (27, 27' and 28, 28') are for limiting the movement of the

frame (11) around the vertical axis (X) and the horizontal axis (Y) to mark the end positions for the impact device (10), said limit means being coupled to a respective drive means (M1, M2) and upon actuation is adopted to cause the frame to reverse its direction of movement and said limit means are displaceably supported for variation of the angular arcs in horizontal and vertical direction over which the frame is moveable.



4,345,578

BALL PROJECTING DEVICE CAPABLE OF PROVIDING SPIN

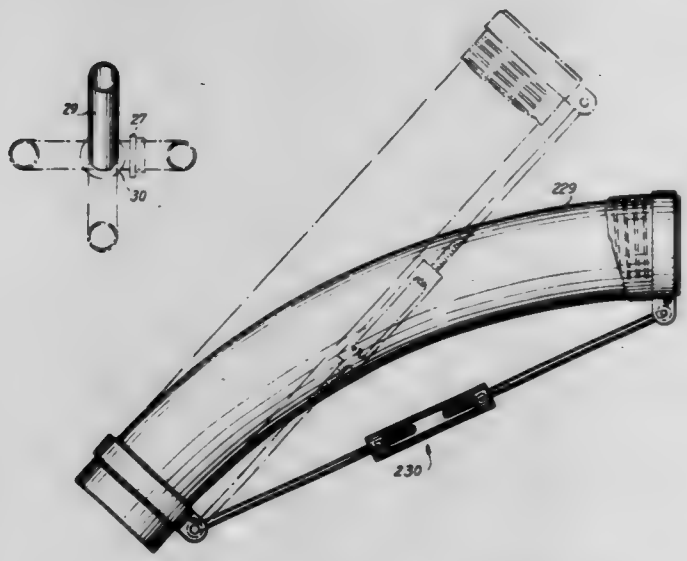
Richard A. Speer, Ware Neck, Va., assignor to Apollo Systems, Inc., Cedar Falls, Iowa

Continuation-in-part of Ser. No. 929,675, Jul. 31, 1978, Pat. No. 4,250,862, which is a continuation-in-part of Ser. No. 894,162, Apr. 5, 1978, Pat. No. 4,212,284, which is a continuation-in-part of Ser. No. 764,197, Jan. 31, 1977, Pat. No. 4,094,294. This application May 25, 1979, Ser. No. 42,499

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ F41F *1/04*

U.S. Cl. 124—56 **14 Claims**



1. A device for projecting a ball, the device comprising a ball-directing tube having an internal circumference for confining and directing a ball to be projected, at least the outermost portion of the tube extending out to the muzzle being curved along the longitudinal extent thereof, said tube defining a midline along said longitudinal extent which is curved along a substantial portion of the tube's length, said midline having a radius of curvature no larger than 125 times the internal radius of the tube; gas pressure supply means in fluid flow connection with the tube to provide gas under pressure thereto; a first end to the tube being in fluid pressure connection to the pressure supply means; means for feeding a ball into the tube at the breech end thereof for movement along the tube in a direction from the first end of the tube toward the muzzle end of the tube and means for transiently developing gas pressure within the tube between the first end and the ball within the tube; the ball feeding means being capable of feeding a ball slightly smaller than the internal diameter of the curved portion of the tube; whereby a ball projected from the tube has a rotational velocity imparted thereto.

4,345,579

CUTTING WHEEL

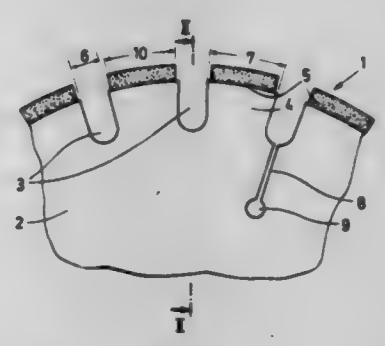
Rolf Eichenlaub, Quellenweg 26, D-5900 Siegen-Volnsberg, and Boris Z. Novakovic, Am Homberg 28, D-5931 Netphen-Frohnhausen, both of Fed. Rep. of Germany

Filed Sep. 3, 1980, Ser. No. 183,746

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 8017100[U]

Int. Cl.³ B28D *1/04*

U.S. Cl. 125—15 **5 Claims**



1. In a cutting disk comprising a steel support disk having radially extending slots spaced about its periphery, the slots defining between them bases, and cutting segments of abrasive material mounted on said bases; the improvement in which the disk is a dry cutting disk, and thermal expansion equalizing slots spaced equidistantly about the disk circumference and extending radially inwardly further than the first-mentioned slots and being narrower than said first-mentioned slots, the last-mentioned slots being arranged as radially inward extensions of the first-mentioned slots.

4,345,580

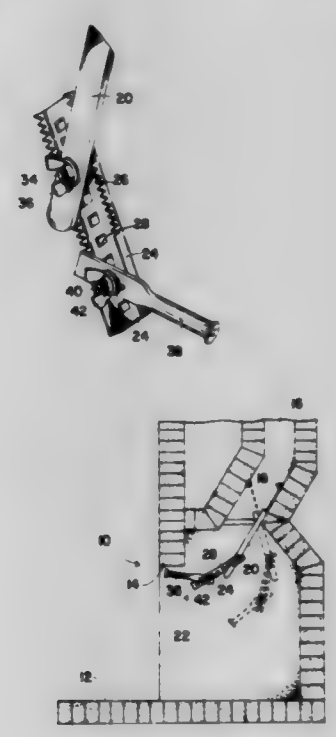
FIREPLACE DAMPER ATTACHMENT

Gerald W. Speicher, P.O. Box XX, Santa Rosa, Calif. 95403

Filed Nov. 10, 1980, Ser. No. 205,671

Int. Cl.³ F23L *3/00*

U.S. Cl. 126—288 **2 Claims**



1. An attachment for a fireplace flue damper having a handle of flat bar stock metal with a first hole therethrough, said handle being disposed to swing through the fore and aft plane

of a face thereof to adjust said damper; said attachment comprising:

a rectangular elongated channel defined by opposite side walls and a web joining said side walls adapted to be disposed across a face of said damper handle at a selected angle along said plane, with the edges of said side walls in engagement therewith;

a plurality of square adjustment holes along the web of said channel;

a carriage bolt nested in and extending through a selected one of said adjustment holes and said first hole so that the end of said channel is disposed at a desired height in the fireplace opening when the damper is in open position;

a force-applying wing nut threaded onto said carriage bolt said side wall edges being serrated to grip said flat bar handle at any location thereof when force is applied thereto and

a hand grip secured to the other end of said channel.

4,345,581

BOTTOM CONSTRUCTION OF PONDS PARTICULARLY SOLAR PONDS

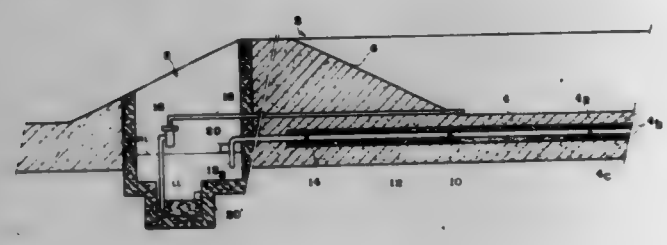
Sraya Shacher, Ramat Gan, Israel, assignor to Solmat Systems Ltd., Jerusalem, Israel

Continuation of Ser. No. 62,477, Jul. 31, 1979, abandoned. This application Dec. 19, 1980, Ser. No. 218,596

Claims priority, application Israel, Nov. 1, 1978, 55479

Int. Cl.³ F24J *3/02*; E02D *27/00*

U.S. Cl. 126—415 **10 Claims**



1. A pond containing a body of liquid, characterized in that, in order to minimize seepage of the liquid through the pond bottom, the pond comprises a multi-layer bottom construction over the natural earth and underlying the complete pond, which bottom construction includes an upper layer of a permeable material having a low degree of permeability to the liquid in the pond, an intermediate layer of a permeable material having a high degree of permeability to the liquid in the pond, and a bottom layer of a permeable material having a low degree of permeability to the liquid in the pond; and pumping means for returning the liquid which permeates through the upper layer into the intermediate layer, back to the pond above the upper layer.

4,345,582

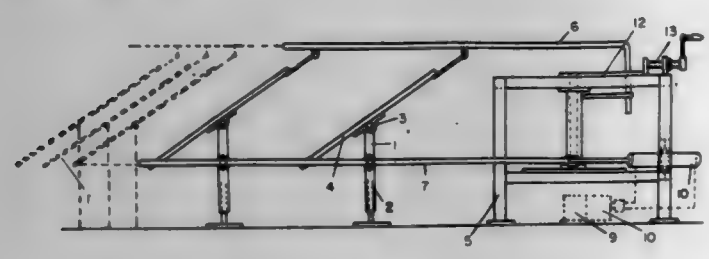
SYSTEM FOR THE UTILIZATION OF SOLAR ENERGY

Naaman B. Aharon, Drori St. 14A, Rishon Litzion, Israel

Filed Nov. 19, 1979, Ser. No. 95,646

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—424 **14 Claims**



1. A system for the utilization of solar energy comprising a plurality of units operating together, each of said units comprising a solar collector mounted on a stand carrying said solar collector, horizontal rotation means connected to each unit for rotating a respective solar collector around the horizontal axis and vertical rotation means for rotating each stand and its respective solar collector around the vertical axis, horizontal and vertical actuation means for actuation of the horizontal and vertical rotation means, tracking means for tracking the control of said actuation means, said actuation means including a central control post connected to said horizontal and vertical rotation means to simultaneously control said units, and a separate stand for housing at least a portion of said horizontal and vertical actuating means.

4,345,583

WATER HEATER USING SOLAR AND NON-SOLAR ENERGY

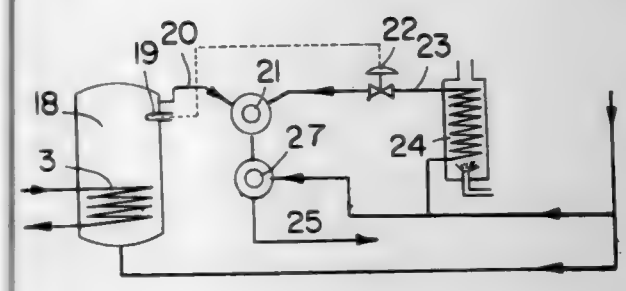
Claude Morin, Saint Lattier, France, assignor to Pechiney Ugine Kuhlmann, Paris, France

Filed Aug. 21, 1979, Ser. No. 68,453

Claims priority, application France, Aug. 21, 1978, 78 24848

Int. Cl.³ F24J *3/02*; G05D *23/00*

U.S. Cl. 126—427 **10 Claims**



1. Apparatus for the preparation of hot water comprising:

(a) a solar heating system including a reservoir for water, said reservoir having a cold water inlet and a solar heated water outlet, and a solar heating means for heating water in said reservoir;

(b) an auxiliary non-solar heating system independent of said solar heating system and having an instantaneous heating means operable to instantaneously heat water whenever water flows through said non-solar heating system, said instantaneous heating means having a cold water inlet and a hot water outlet;

(c) thermostatic mixing means, said solar heating system outlet and said non-solar heating system hot water outlet separately coupled to said thermostatic mixing means for independent reception, by said thermostatic mixing means, of solar heated water from said reservoir outlet and hot water from said hot water outlet, said thermostatic mixing means being normally closed to said hot water outlet and adapted to sense the temperature of the water received from said reservoir outlet to open flow of water from said hot water outlet if the sensed temperature is below a selected value; and

(d) means for withdrawing water from said thermostatic mixing means.

4,345,584

SOLAR ENERGY SYSTEM

George R. Royer, 2137 Ragan Woods Dr., Toledo, Ohio 43614

Filed Jan. 4, 1980, Ser. No. 109,558

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—427 **3 Claims**

1. A solar heating apparatus comprising:

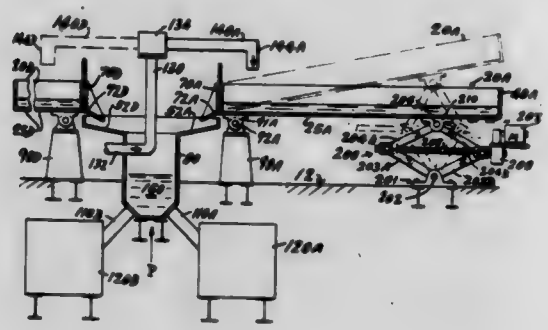
(a) a longitudinally disposed solar heating collecting surface, disposed towards the sun, with an upper surface above and on undersurfaces thereunder;

(b) retaining means on the upper surface of said collecting surface to retain water on the upper surface of said collecting surface for the purpose of solar heating of said retained water;

(c) elevating means appended to one portion of the collect-

ing surface, for elevation of that portion of the solar heating surface for facilitating drainage of solar heated water;

(d) pivot means integrally appended to that portion of collecting surface which is longitudinally opposite to the end having the elevating means; whereby the collecting surface when elevated by said elevating means elevates the collecting surface in a tilted position about said pivot



means, and downwardly towards said end where the pivot means is located;

(e) exit means in said retaining means on said surface to allow drainage of the water off the collecting surface;

(f) collecting means adjacent said exit means to collect solar heated water;

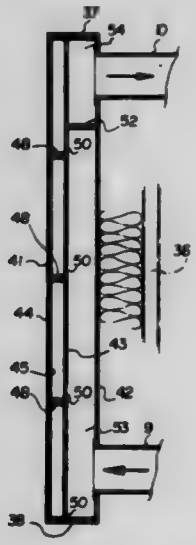
(g) superheating means to superheat said solar heated water.

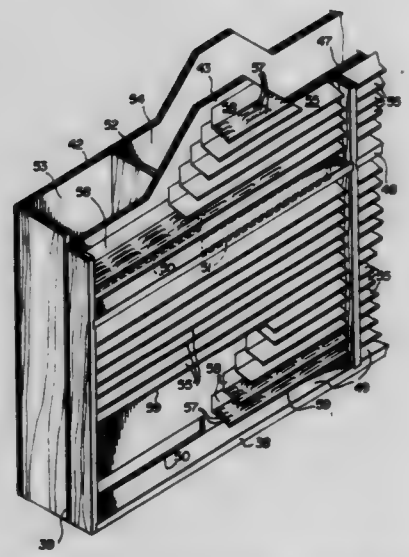
4,345,585

SOLAR HEATING APPARATUS

Victor C. Ellis, La Ronge, Canada, assignor to Sun-Woods Engineering Ltd., Saskatchewan, Canada

Filed Jul. 9, 1980, Ser. No. 167,217
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—429 2 Claims





1. A solar heat collector for use in a solar heating apparatus of the type which utilizes air as a heat transfer medium comprising:

(a) a rectangular casing, including:

(i) a front wall,

(ii) a rear wall,

(iii) a pair of opposing side walls,

(iv) a top wall, and

(v) a bottom wall,

the front wall being adapted to transmit solar heat to the interior of the casing;

(b) an intermediate wall extending between the side walls;

(c) first partitions interconnecting said front wall and said intermediate wall, said first partitions extending vertically between the top and bottom walls of the casing, and horizontally between the opposing side walls of the casing to define a plurality of rectangular heating chambers in the area between said front and intermediate walls;

(d) second partitions extending between said intermediate wall and said rear wall dividing the area between said intermediate and rear walls into an air inlet manifold and an air discharge manifold;

(e) cold air inlet duct means in the bottom of said rear wall for introducing air into said air inlet manifold;

(f) air inlet openings in said intermediate wall connecting each heating chamber to said air inlet manifold;

(g) air outlet openings in said intermediate wall connecting each heating chamber to said air discharge manifold;

(h) a plurality of heat exchange fins in said heating chambers for receiving solar heat and transferring such heat to air passing from the air inlet opening to the air outlet opening in each heating chamber; and

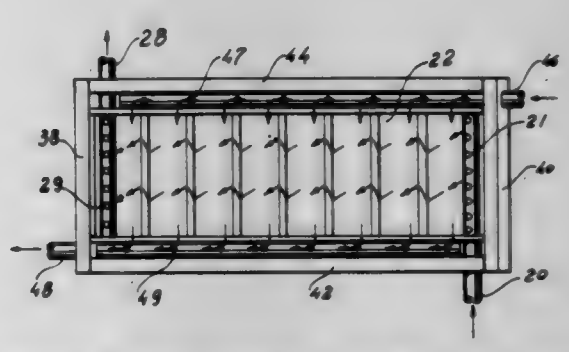
(i) hot air outlet duct means in the top of said rear wall for discharging hot air from said air discharge manifold.

4,345,586

CASCADE SOLAR HEATER

Julio A. Monjes, 2858 Via Cordoba, San Roman, Calif. 94583

Filed Feb. 5, 1980, Ser. No. 118,738
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—449 5 Claims



1. A cascade solar fluid heater which can be mounted on a roof or other structure for direct solar energy heating of a fluid by means of incident radiant energy, comprising:

a plurality of collection channels connected in series to form a continuous cascade or staircase arrangement, the channels being of a highly absorbing material which absorbs a fraction of the incident radiant energy and increases in temperature;

first inlet means for introducing a first fluid at the top of the cascade arrangement to produce a continuous flow of fluid down the cascade, the fluid flow being sufficient for causing the fluid to collect in the collection channels for a sufficient time to be heated by the material forming the channels;

first removal means to remove fluid which has flowed to the bottom of the cascade and been heated in the collection channels;

a backing plate to which the continuous cascade of collection channels is mounted, the backing plate and channels forming a series of enclosed flow spaces underneath the channels running perpendicular to the cascade flow;

second inlet means for introducing a second fluid into the enclosed flow spaces underneath the channels to produce an independent cross-flow of the second fluid underneath the channels to be heated by the material forming the channels; and

second removal means to remove fluid which has flowed through the enclosed flow spaces beneath the channels and been heated.

4,345,587

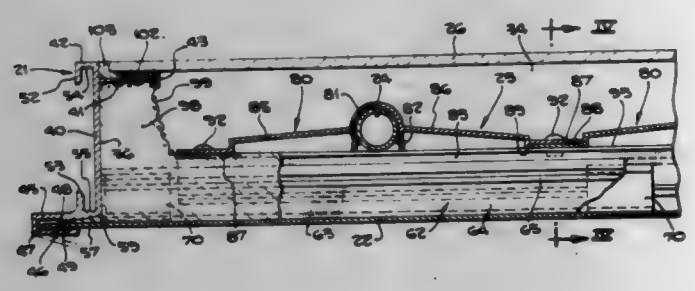
SOLAR ENERGY COLLECTOR MEANS AND METHOD OF ASSEMBLING THE SAME

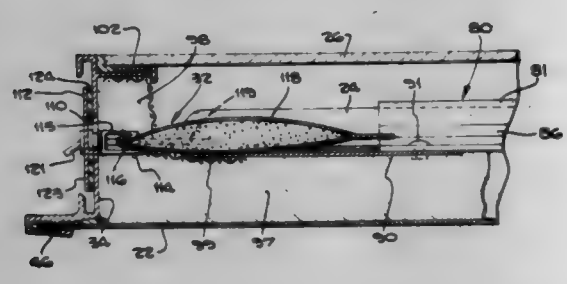
Elmer R. Carvalho, Claremont, Calif., assignor to D G Shelter Products Company, City of Industry, Calif.

Filed Nov. 16, 1979, Ser. No. 95,623

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—450 **15 Claims**





1. In a solar collector, the improvement comprising:

an extruded aluminum rectangular frame having a peripheral inwardly directed flange adjacent the top edge of the frame, and having a bottom outwardly directed peripheral flange provided with a return portion therebeneath defining an inwardly opening peripheral recess;

a plate of light transmitting material having peripheral margins supported by said inwardly directed flange with the top surface of the place lying in substantially the same plane as the top edge of said frame;

a backwall of aluminum sheet material having peripheral margins received within said inwardly opening peripheral recess of said bottom flange;

an adhesive structural bonding material between peripheral edges of said plate and the top of said frame and inwardly directed flange for bonding and structurally securing said plate to the frame;

an adhesive structural bonding material between the peripheral upper surface of said backwall margins and the bottom surface of said bottom flange and structurally joining said frame and said backwall margins;

said return portion on said bottom flange below said said backwall margins being adapted for crimping engagement with said backwall margins;

said structural peripheral bonding of said plate and said backwall to said rectangular frame providing a rigid box-like collector stress-skin structure.

2. In a solar collector, the improvement comprising:

an extruded aluminum rectangular frame having a peripheral inwardly directed flange adjacent the top edge of the frame;

a plate of light transmitting material having peripheral margins supported by said flange with the top surface of the plate lying in substantially the same plane as the top edge of said frame; and

an adhesive sealant material between the peripheral edges of said plate and the top of said frame for bonding and securing the plate to the frame;

a back wall of aluminum sheet material;

said rectangular frame having a bottom outwardly directed peripheral flange provided with a return portion therebeneath defining a peripheral recess opening inwardly and receiving peripheral margins of said back wall;

means on said bottom flange for crimping engagement with said back wall margins;

an adhesive sealant bonding said back wall margins to said bottom flange and sealing the bottom joint lines made by said frame and back wall;

said bonding of said plate and said back wall to said rectangular frame providing a rigid collector structure;

a solar absorber and coil assembly between said plate and said back wall;

and means to position and retain said coil assembly within said frame;

said means for positioning and retaining said coil assembly in said frame including

a plurality of generally U-shaped cross rib means secured to said frame and bonded to said back wall;

a plurality of generally U-shaped cross members on said coil assembly;

said cross members having clip engagement means depending therefrom;

and a plurality of spaced clip members positioned within said U-shaped cross rib means whereby said coil assembly is adapted to be snapped into assembled relation with said frame and back wall.

9. In a solar collector having a receptacle, a solar absorber means therewithin, and a light transmitting plate thereon; the provision of:

an opening in said receptacle;

a removable desiccant means received within said opening and provided with means for sealing said opening;

said desiccant means including a breather tube having one end in desiccant material in said desiccant means and having its other end external of said receptacle for air communication between the interior of said receptacle through the desiccant material and the ambient air;

said desiccant means including

a porous bag of desiccant;

and means for releasably gripping said bag.

11. In a collector means comprising a rectangular frame provided with a backwall and spaced light transmitting plate, both wall and plate being structurally bonded and sealed to said frame, a solar energy absorber means located between said backwall and light transmitting plate within said frame, a blanket of insulating material between said absorber means and said backwall including, the combination of:

attachment means on said rectangular frame comprising external juxtaposed spaced ribs providing parallel recesses at least at ends of said rectangular frame;

and bracket means comprising a bracket element having a depending edge portion at one end receivable in one of said juxtaposed recesses and having a pivotal mounting at its other end

said bracket element having a seating surface,

a bracket angle clip seated on said seating surface with one leg of said angle clip extending into the other of said recesses,

and a securement member extending through the other leg of said clip and said bracket element for releasably retaining said bracket means in assembly with said frame.

13. In a method of assembling a solar collector for thermal isolation of a frame and back wall providing a receptacle in contact with ambient temperature and a solar absorber and coil assembly within the receptacle and adapted to receive and be heated by solar energy transmitted thereto through a light transmitting plate, the steps of:

positioning and securing nonmetallic, insulating clip members in said receptacle;
providing clip engagement means on said coil assembly;
interposing a blanket of insulating material between said coil assembly and the interior of said receptacle including said insulating clip members;
placing said coil assembly over said blanket of insulating material;
and pressing said coil assembly toward said receptacle to cause engagement of said clip engagement means and clip members with said insulating blanket therebetween.

4,345,588

METHOD OF DELIVERING A THERAPEUTIC AGENT TO A TARGET CAPILLARY BED

Kenneth J. Widder, Carboro, N.C., and Andrew E. Senyei, Long Beach, Calif., assignors to Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 32,399, Apr. 23, 1979, and Ser. No. 859,842, Dec. 12, 1977, said Ser. No. 32,399, is a continuation-in-part of Ser. No. 820,812, Aug. 1, 1977, abandoned. This application Jun. 27, 1980, Ser. No. 163,716

Int. Cl.³ A61K *9/50, 9/38*

U.S. Cl. 128—1.3 **12 Claims**

1. The method of delivering a therapeutic agent to a target site associated with a capillary bed of the body, comprising the steps of:

(a) incorporating the therapeutic agent in microspheres formed from a biodegradable matrix material with magnetic particles embedded therein, said magnetic particles having an average size of not over 300 Angstroms, said microspheres having an average size of less than 1.5 microns and passing into said capillary bed with the blood flowing therethrough;

(b) introducing said therapeutic agent-containing microspheres into an artery upstream of said capillary bed;

(c) applying a magnetic field to the area of the body of said capillary bed and artery, said magnetic field being of a strength capable of immobilizing said microspheres at the blood flow rate of said capillary bed while permitting said microspheres to pass through said artery at the blood flow rate therein;

(d) immobilizing at least part of said microspheres in capillaries of said target bed by said magnetic field application while blood continues to perfuse therethrough; and

(e) removing said magnetic field before said therapeutic agent is released, said microspheres being retained in said capillary bed after said removal of said magnetic field for release of said therapeutic agent in effective therapeutic relation to said target site.

4,345,589

ENDOSCOPIC INSTRUMENTATION APPARATUS

Siegfried Hiltebrandt, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,755

Claims priority, application Fed. Rep. of Germany, May 15, 1979, 7913986[U]

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—4 **1 Claim**



1. Endoscopic instrumentation apparatus for performing laparoscopy and culdoscopy, comprising:

(a) a puncture cannula presenting a connection for a gas supply having a distal oblique face and a proximal cylindrical casing in which a coupling element constituted by a hollow shaft is installed for displacement against a spring toward the proximal end,

(b) a hollow mandrel presenting a connection for a gas supply and a related optical system, each of which is respectively and separately connectible to said coupling element of said puncture cannula and when so connected each extending distally beyond said oblique face of said puncture cannula,

(c) a hollow contractible cylindrical intermediate element comprising contractible parts reducible in length against a spring therein and also connectible to said coupling element of said puncture cannula, said interemediate element being combined with and traversable by an optical system longer than the first when connected therewith and of a length to project distally at least beyond said oblique face of said puncture cannula,

(d) the contractible length of the intermediate element resulting in the distal end of the longer optical system therein projecting further beyond the oblique face of the cannula by the length of the contraction so the distal end of the second-named optics may be brought that much closer to the object,

(e) wherein said intermediate element comprises a first hollow cylinder closed off at its distal end by a coupling element complementally engaging in said coupling element of said puncture cannula, a second hollow cylinder closed off at its proximal end and being displaceable in said first hollow cylinder toward the distal end against a spring by means of handles, and wherein a proximal delimitation of said second displaceable, hollow cylinder is provided with a coupling element similar to that of said hollow shaft of said puncture cannula.

4,345,590

SUPPORT BANDAGE

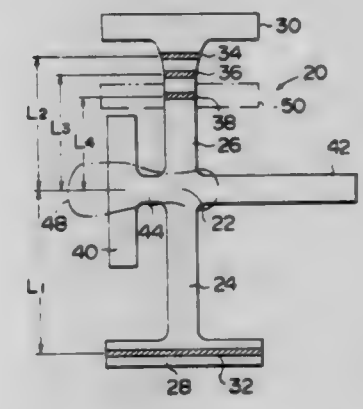
Kikuo Nakajima, Kosai, Japan, assignor to Kuniaki Yamazaki, Chiba, Japan

PCT No. PCT/JP80/00026, § 371 Date Oct. 26, 1980, § 102(e) Date Oct. 23, 1980, PCT Pub. No. WO80/01758, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 26, 1980, Ser. No. 201,406

Int. Cl.³ A61F *13/06*

U.S. Cl. 128—166 **10 Claims**



1. A support bandage formed of a continuous and thin sheet material with one surface thereof being applied thereto with an adhesive, comprising:

(a) a foot sole attachable portion;

(b) a first extended portion to be closely attached to the inner side of the body, which is radially extended from said foot sole attachable portion and the forward end of which is larger in width than the base portion;

(c) a second extended portion to be closely attached to the outer side of the body, which is radially extended from said foot sole attachable portion and the forward end of which is larger in width than the base portion; and

(d) a third extended portion to be closely attached to the rear side of the leg, which is radially extended from said foot sole attachable portion which is interposed between said first and second extended portions; whereby said extended

portions are adhered to the ankle and therearound, overlapped one another to cover the ankle and thereabout and prevent the rotation of the ankle to an extreme extent.

4,345,591

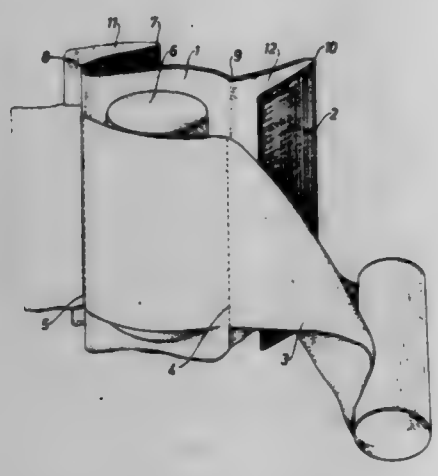
MOUND DRESSING

Erland Hedgren, Täby, Sweden, assignor to Salve S.A., Switzerland

Continuation of Ser. No. 940,087, Sep. 6, 1978, abandoned. This application Feb. 27, 1981, Ser. No. 239,141

Int. Cl.³ A61F *13/00*

U.S. Cl. 128—169 **2 Claims**



1. A wound dressing comprising an elongated rolled bandage having longitudinal edges and an elongated sheet compress laid lengthwise one overlying the other, said compress having a width larger than the width of the bandage and being stitched to the bandage forming two spaced seams extending transversely across the width of the bandage, the length of bandage between said two spaced seams being greater than the length of the compress between said two spaced seams to define a normally open pocket between the bandage and the compress which is open along the respective longitudinal edges for the removable insertion of an additional bandage means therebetween, said compress having a pair of flaps respectively extending freely beyond said two spaced seams to enable the compress to have one of two predetermined conditions, the first predetermined condition being one in which said flaps are folded over the region between the two spaced seams and the second predetermined condition being one in which said flaps are spread along a substantial portion of the length of the bandage, said compress being adapted to be applied against a wound on the body of a living subject and said bandage, adapted to be applied to the body, acting to pull the portion of said compress between said seams taut thereby applying pressure to said wound.

4,345,592

PRESSURE DEMAND REGULATOR WITH AUTOMATIC SHUT-OFF

Eugene A. Giorgini, Cheektowaga, N.Y., and John L. Sullivan, Fort Erie, Canada, assignors to A-T-O Inc., Willoughby, Ohio

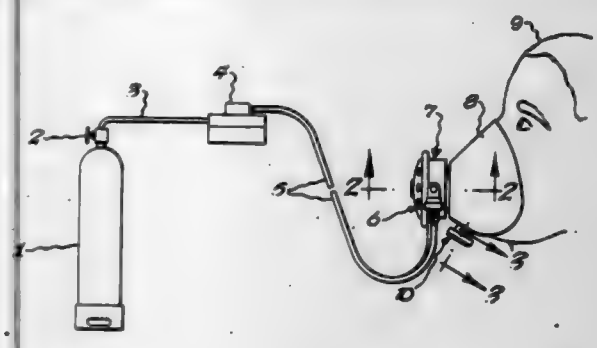
Filed Sep. 10, 1980, Ser. No. 185,894

Int. Cl.³ A62B *7/04*

U.S. Cl. 128—204.26 **7 Claims**

1. In a pressure-demand breathing apparatus including a face mask providing a mask chamber when fitted against the face of a user, and means including an air supply line for connecting said mask to a pressurized air supply, a pressure demand regulator positioned in said air supply line between said face mask and said air supply,

said pressure-demand regulator including means responsive to pressure within said mask chamber for admitting said pressurized air to said mask chamber at flow rates required for normal breathing or abnormally deep breathing when said mask is worn and for maintaining a predetermined positive pressure in the mask chamber above ambient pressure when said mask is fitted against the face of a user, said regulator also admitting said pressurized air to said mask at a predetermined high air flow rate substantially greater than that required either for normal breathing or for abnormally deep breathing when said mask is removed the improvement comprising shut off means for interrupting air flow from said air supply to said mask chamber and time delay means for preventing said shut-off means from interrupting said air flow for a predetermined period of time, wherein said shut-off means is responsive to said air flow and time delay means to interrupt the supply of air to said mask automatically upon



sustained high flow through said regulator at a rate exceeding that required even for abnormally deep breathing which occurs for a time exceeding said predetermined period of time, whereby, said shut off means differentiates between temporary, user-induced high flow rates only momentarily exceeding that required even for abnormally deep breathing and sustained high flow rates exceeding said preselected values, such as occur when said mask is removed from the face of a user and open to ambient atmosphere, said shut-off means operating to interrupt the air supply only in the event of such sustained high flow rates.

4,345,593

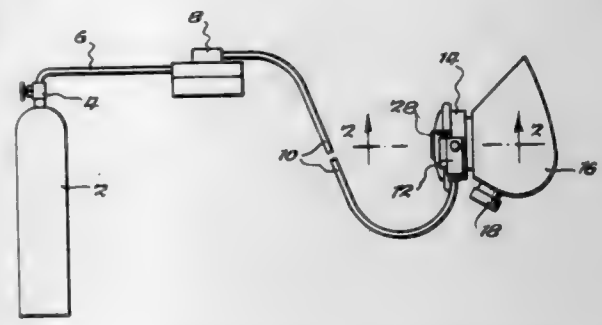
PRESSURE-DEMAND BREATHING APPARATUS WITH AUTOMATIC AIR SHUT-OFF

John L. Sullivan, Fort Erie, Canada, assignor to A-T-O Inc., Willoughby, Ohio

Continuation of Ser. No. 926,004, Jul. 19, 1978, abandoned. This application Feb. 6, 1981, Ser. No. 231,994

Int. Cl.³ A62B *7/04*

U.S. Cl. 128—204.26 **7 Claims**



1. In a pressure-demand breathing apparatus including a face mask providing a mask chamber when fitted against the face of a wearer and means including an air supply line for connecting said mask to a pressurized air supply, a pressure demand regulator positioned in said air supply line between said face mask and said air supply,

said pressure-demand regulator including means responsive to pressure within said mask chamber for admitting said pressurized air to said mask chamber at flow rates required for normal breathing or abnormally deep breathing when said mask is worn and for maintaining a predetermined positive pressure in the mask chamber above the ambient pressure when said mask is worn, said regulator also admitting said pressurized air to said mask at a predetermined high air flow rate substantially greater than that required either for normal breathing or for abnormally

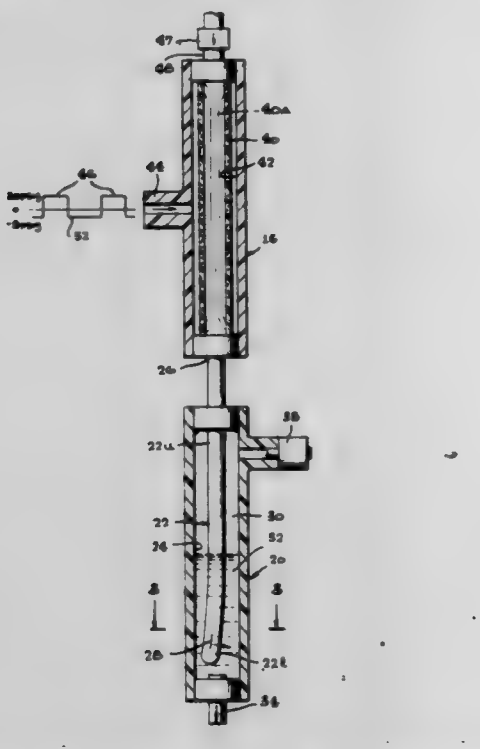
deep breathing when said mask is removed, the improvement comprising shut-off means positioned between said pressure-demand regulator and said air supply, said shut-off means being responsive to said predetermined high air flow rate through said pressure demand regulator which exceeds that required even for abnormally deep breathing for automatically interrupting the supply of air to said mask under unrestricted flow conditions such as occurs when the mask is removed from the face of a wearer and is open to the ambient atmosphere, whereby said shut-off means is inoperative during normal breathing and during abnormally deep breathing when the mask is worn but only becomes operative when the flow therethrough exceeds the flow which occurs during abnormally deep breathing so that sufficient air is supplied to the wearer at all times when said mask is worn but the air supply is shut off when said mask is removed, to thereby prevent unwanted depletion of said air supply.

4,345,594

CLOSELY CONTROLLABLE INTRAVENOUS INJECTION SYSTEM

Jose Bisera, Camarillo, and Max H. Weil, Beverly Hills, both of Calif., assignors to Institute of Critical Care Medicine, Los Angeles, Calif.

Filed Sep. 12, 1980, Ser. No. 186,681
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214 F **4 Claims**



1. Apparatus for transferring a fluid from a container to a patient-connected catheter, in a controlled and primarily steady flow, comprising:

a peristaltic pump having an inlet connectable to said container and a pump outlet; and

a pressure moderator having an inlet coupled to said pump outlet and having a moderator outlet connectable to said patient-connected catheter;

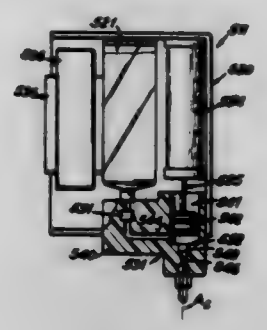
said moderator including walls forming a closed chamber connected to said outlet, and containing a quantity of said fluid and a gas, said chamber having a lower end connectable to said catheter, so that the fluid flowing to the patient passes first through said chamber and forms a fluid column of variable height therein, and including a flexible tube having an open end coupled to said pump outlet and a closed end said tube including a portion lying with said chamber and having at least one slit therein to permit the release of fluid into said chamber at each pulse of said peristaltic pump.

4,345,595

PIEZOELECTRIC FLUID INJECTOR

Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of Atlanta, Ga. 30327

Division of Ser. No. 1,091, Jan. 8, 1979, Pat. No. 4,273,122, Continuation-in-part of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, and Ser. No. 964,953, Nov. 30, 1978, Pat. No. 4,235,235. This application Mar. 27, 1981, Ser. No. 248,566
Int. Cl.³ A61M *5/20*
U.S. Cl. 128—214 F **1 Claim**



1. Apparatus for injecting fluid into a patient at an average prescribed rate over a prolonged period of time comprising:

carriage means defining a fluid chamber therein carrying fluid to be dispensed and an outlet from said fluid chamber connected to the patient;

a piston slidably mounted in said fluid chamber for forcing fluid from said outlet as said piston is moved toward said outlet;

an electrical power supply;

electrically operated driving means for moving said piston toward said outlet when said electrically operated driving means is connected to said power supply, said electrically operated driving means constructed and arranged to move said piston only a prescribed distance toward said outlet each time said electrical power supply is connected to said electrically operated driving means regardless of the length of time said electrical power supply is connected to said electrically operated driving means, said piston forcing a volume of the fluid from said outlet much less than the total volume of fluid to be injected over the prolonged period of time each time said piston is moved said prescribed distance; and

control means for selectively connecting said electrical power supply to and disconnecting said electrical power supply from said electrically operated driving means at a rate such that fluid is injected into the patient at the desired average rate over the prolonged period of time so that, if said control means fails so as to continuously connect said electrical power supply to said electrically operated driving means, said piston will be moved only said incremental prescribed distance toward said outlet to prevent overdosing the patient,

said driving means including a driving member exhibiting a piezoelectric effect and linkage means connecting said driving member to said piston so that the change in volume experienced by said driving member when said control means connects said power supply to said driving member moves said piston toward said outlet.

4,345,596

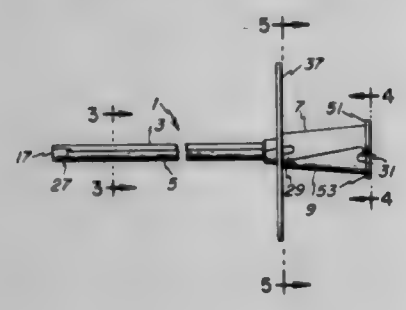
ARTERIAL CATHERIZATION DEVICE

Ruperto S. Young, Amsterdam, N.Y., assignor to Janis Marie Young, Amsterdam and Roberta H. Wessendorf, Guilderland, both of, N.Y.

Filed Dec. 23, 1981, Ser. No. 333,704
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214 R **21 Claims**

1. A surgical instrument for insertion into a blood-vessel lumen, said surgical instrument comprising a separable assembly of longitudinal sections in mating relationship, said longitu-

dinal sections having first cooperating releasable interdigitation locking means for maintaining said longitudinal sections in their assembled relationship and releasable upon relative



movement of said longitudinal sections, said longitudinal sections having second means cooperating to force apart and separate said longitudinal sections by further relative movement of said longitudinal sections.

4,345,597

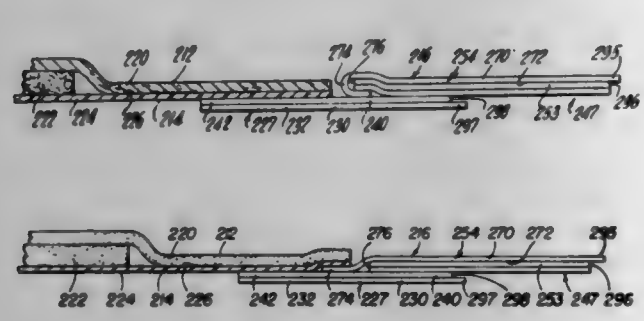
DIAPER WITH RESEALABLE TAPE CLOSURE

Ludwig Tritsch, Wilmette, Ill., assignor to Johnson & Johnson Baby Product Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 782,650, Feb. 27, 1976, abandoned, which is a division of Ser. No. 661,920, Feb. 27, 1976, Pat. No. 4,049,001. This application Dec. 12, 1979, Ser. No. 102,703

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—287 **3 Claims**



1. A disposable diaper having a facing sheet defining a diaper inside surface for direction toward an infant, a moisture-impervious backing sheet substantially coextensive with said facing sheet and defining a diaper outside surface, an absorbent panel positioned between said facing sheet and said backing sheet, and an adhesive tab fastener means which comprises:

a first securing tape ribbon having a fixed end and a free working end,

an adhesive coating on at least one face of said fixed end of said first securing tape ribbon by means of which said fixed end of said first securing tape ribbon is attached to said diaper outside surface at a marginal location thereof, and a pressure-sensitive adhesive coating on said one face of said free working end of said first securing tape ribbon;

a second securing tape ribbon having a fixed end and a grippable free working end, said fixed end of said second securing tape ribbon being coextensive with and adhesively but releasably attached to said adhesive-coated face of said free working end of said first securing tape ribbon and the free working end of said second securing tape ribbon extending beyond the free working end of said first securing tape ribbon, and a pressure-sensitive adhesive coating on said second securing ribbon on the face thereof opposite to the face attached to said free working end of said first securing tape ribbon;

release means for engagement with said pressure-sensitive adhesive coating on said second securing tape ribbon, comprising a cover strip releasably attached to said adhesive coating on said second securing tape ribbon which is removable therefrom to make said pressure-sensitive adhesive coating on said second securing tape ribbon available for use in securing said diaper about an infant, said cover strip having a length greater than said adhesive coating on said second securing tape ribbon and including a projecting portion which extends beyond the innermost edge of said adhesive coating on said second securing tape ribbon and is attached to the adhesive coating on said free working end of said first securing tape ribbon; said free working end of said first securing tape ribbon being separable from said fixed end of said second securing tape ribbon to enable said diaper to be removed from said infant and to make said pressure-sensitive adhesive coating on said free working end of said first securing tape ribbon available for use in refastening said diaper about said infant.

4,345,598

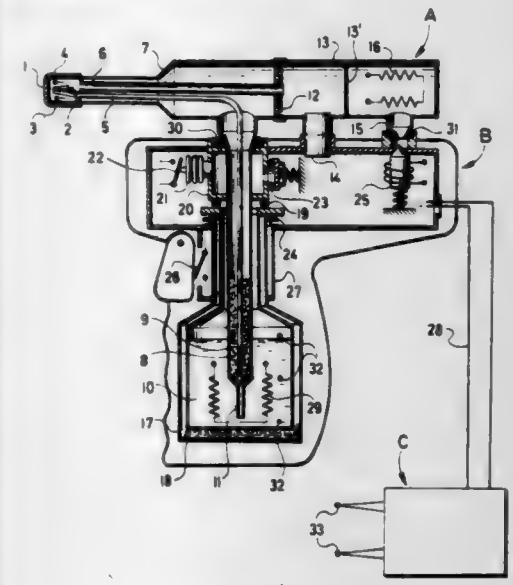
CRYOGENIC APPARATUS FOR SURGERY

Ladislav Zobac, Brno; Zdenek Malek, Prague; Frantisek Soukup, Roztoky U Praha; Antonin Ryska, Prague; Jan Jelinek, Prague, and Jiri Busta, Prague, all of Czechoslovakia, assignors to Vyzkumny ustav Silnoproude Elektrotechniky, Prague, Czechoslovakia

Filed Mar. 27, 1980, Ser. No. 134,415

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **3 Claims**

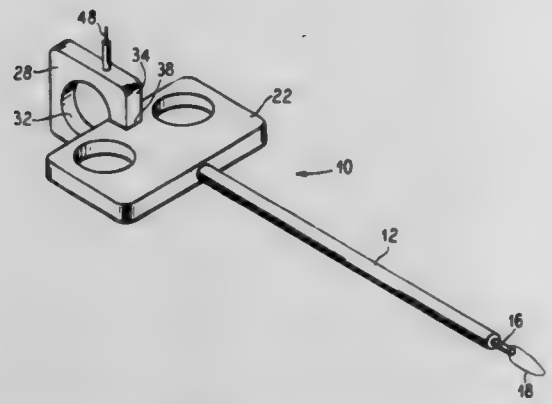


1. Cryogenic apparatus for surgery comprising a hand-held mobile surgical instrument, the surgical instrument comprising an elongated hollow holder, a hollow applicator on a first end of the holder, a porous heat exchanger and an electrical heating unit disposed within the applicator, a heating device for gases escaping from the applicator disposed near the second end of the holder, a mounting member for the holder, said mounting member generally of T-shape and having a head portion in the form of an elongated generally horizontal hollow part upon which the holder is mounted and a handle portion disposed generally vertically, means for exchangeably mechanically and electrically connecting the head of the mounting member to the holder, a storage vessel for liquefied gas disposed within the handle portion of the mounting member remote from the holder, conduit means leading from storage vessel in the handle portion of the mounting means to the applicator in the holder, and a pressurizing switch with a pressure indicator and an electro-magnetic regulating valve disposed within the mounting member, the holder having an extension remote from the applicator thereon, the electro-magnetic regulating valve being seated air tightly on said head portion of the mounting member, said porous heat exchanger being composed of a pile of metal grids situated in planes perpendicular to the axis of the applicator.

4,345,599
TONSIL SNARE

Stuart G. McCarrell, 2204 N. Cleveland St., Chicago, Ill. 60614

Filed Mar. 20, 1980, Ser. No. 132,127
Int. Cl.[3] A61B *17/00, 17/36, 1/72*
U.S. Cl. 128—320 13 Claims



1. A snare instrument comprising: an elongate tube including a forward end and a rear end; finger means mounted at said rear end of said tube, said

finger means comprising a first plate having a rear edge, first and second hole means defining respective first and second holes through said plate on opposite sides of said tube for receiving first and second fingers of the user, and notch means defining a notch in said rear edge;

an elongate rod mounted in said tube for axial and rotary movement, said rod including a forward end adapted for attachment of a snare wire loop, and a rear end; and

thumb means mounted on said rear end of said rod, said thumb means comprising a second plate having a forward edge, said second plate having a hole therein for receiving the thumb of a user,

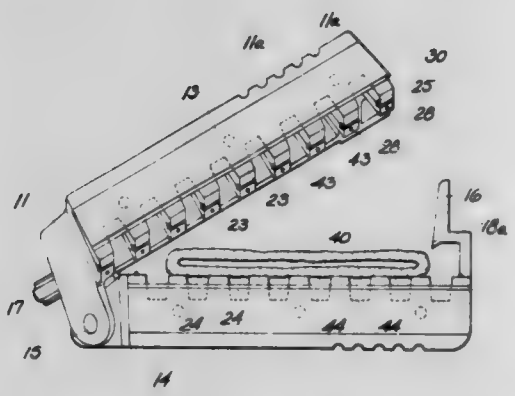
said rod having a predetermined length such that when said forward edge of said second plate engages said rear edge of said first plate said forward end of said rod is located within said tube,

wherein relative rotation of said plates permits receipt of a portion of said second plate in said notch and permits forward movement of said first end of said rod out of said forward end of said elongate tube for attachment or detachment of the snare wire loop, and rearward movement of said rod in response to the parting of the thumb and fingers of the user causes said forward end of said tube to receive the snare wire loop and collapse the same.

4,345,600
PURSE-STRINGER

Robert G. Rothfuss, Bellevue, Ky., assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Aug. 4, 1980, Ser. No. 174,813
Int. Cl.[3] A61B *17/04*
U.S. Cl. 128—334 R 12 Claims

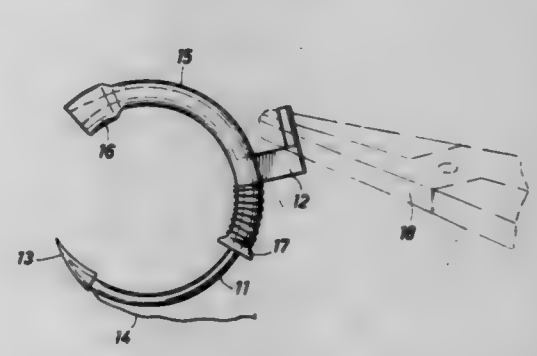


1. An instrument to facilitate the emplacement of a purse-string suture in a tubular structure, comprising a barrette-like structure having upper and lower jaws hinged together at one end, said jaws having longitudinally spaced clamping teeth with each of the teeth on said upper jaw being directly opposed to a corresponding tooth on said lower jaw whereby when a tubular structure is clamped between said jaws, the portions thereof between the pairs of opposing clamping teeth bulge out into the spaces between the teeth, a needle track extending longitudinally in each of said jaws disposed respectively above and below the clamping line of said teeth, whereby a needle and suture, in passing through the track of one of said jaws passes the suture through the portions of said tubular structure bulging into the spaces between the teeth on said one of said jaws, and in passing back through the track on the other of said jaws passes the suture through the portions of said tubular structure bulging into the spaces between the teeth on said other jaw, the tracks in the respective jaws communicating with each other, so that, when said jaws are unlatched and opened, said tubular structure, with the purse-string suture in place, may be removed from the instrument.

4,345,601
CONTINUOUS SUTURING DEVICE

Mamoru Fukuda, 1260 Hardy, Bridge City, Tex. 77611

Filed Apr. 7, 1980, Ser. No. 138,232
Int. Cl.[3] A61B *17/06, 17/04*
U.S. Cl. 128—339 15 Claims



1. A suturing apparatus for continuous suturing of incised or ruptured tissue comprising:

(a) a curved, elongate, axially hollow sleeve having first and second ends and defining an elongate slot;

(b) a curved suturing needle with a point, said suturing needle having a common arc and radii of curvature with said hollow sleeve and being movable relative to said sleeve between a retracted position where said needle is substantially positioned within said hollow sleeve and an extended position where said needle extends from within said first end of said sleeve into said second end of said sleeve;

(c) a needle appendage extending from adjacent the unpointed end of said needle and through said elongate slot and defining a needle manipulating lever means located externally of said elongate sleeve;

(d) a thread bearing cap for said point of said suturing needle adapted to connect to a suture thread; and

(e) means for selectively separating said cap from said suturing needle point.

4,345,602
MEDICAL VASCULAR GUIDE WIRE AND SELF-GUILDING TYPE CATHETER

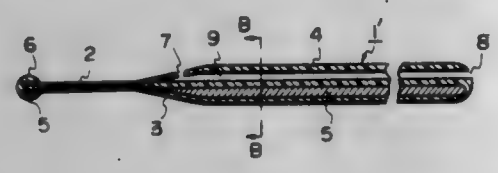
Hidenaga Yoshimura, Tokyo; Kunio Yamada, Nishio; Hironori Yamada, Okazaki; Ryusaku Yamada, Osaka, and Hiroaki Kudo, Nara, all of Japan, assignors to Toray Monofilament Company Limited, Aichi and Osaka City Government, Osaka, both of, Japan

Filed Jan. 29, 1980, Ser. No. 116,600

Claims priority, application Japan, Feb. 8, 1979, 54-12814; Oct. 26, 1979, 54-137558; Oct. 26, 1979, 54-137559; Oct. 26, 1979, 54-137560; Oct. 26, 1979, 54-137561

Int. Cl.[3] A61M *25/00*

U.S. Cl. 128—349 R 16 Claims



1. A medical vascular guide insertable into a blood vessel for travel along the interior thereof; comprising

(a) an elongated tubular outer member having

(i) a manipulating part of first cross-sectional area;

(ii) a flexible part, of reduced cross-sectional area relative to said manipulating part;

(iii) a tapering part, connecting said manipulating part and said flexible part;

(b) an elongated metal member occupying the interior of said manipulating part of said tubular member;

(c) a tip member at an end of said flexible part remote from said tapering part, of integral unitary construction with said tubular member, of enlarged cross-sectional area relative to said flexible part;

(d) a second metal member occupying the interior of said tip portion;

(e) wherein said manipulating, tapering and flexible parts and said tip member are integrally formed of a single synthetic resin monofilament.

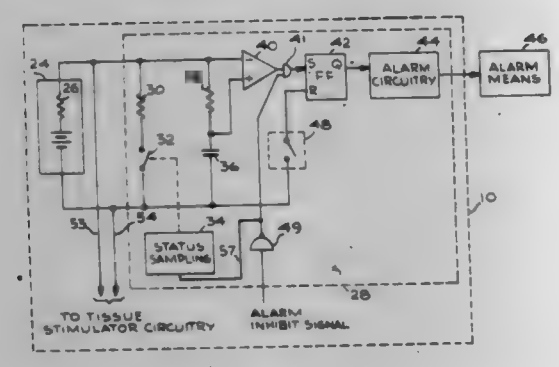
4,345,603
IMPLANTABLE BATTERY MONITORING MEANS AND METHOD

Joseph H. Schulman, Los Angeles, Calif., assignor to Pacesetter Systems, Inc., Sylmar, Calif.

Filed Feb. 19, 1980, Ser. No. 122,352

Int. Cl.[3] A61N *1/36*

U.S. Cl. 128—419 PT 29 Claims



1. In combination:

an implantable device having a battery contained therein;

a load means for drawing current from said battery;

first means for providing a first voltage related to the output voltage of said battery;

second means for periodically applying said load means to said battery, thereby generating a second voltage related to said loaded battery output voltage;

comparison means responsive to said first and second voltages for generating an output signal having a predetermined characteristic when said first and second voltages have a predetermined relationship with respect to each other, said output signal being related to the internal impedance of said battery; and

third means responsive to said output signal for indicating that said predetermined characteristic is present.

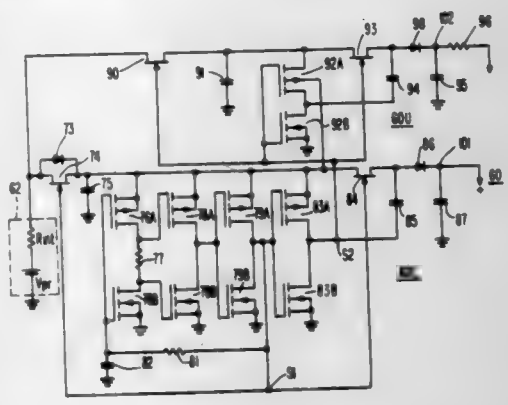
4,345,604
LONG LIFE CARDIAC PACER WITH SWITCHING POWER

Alexis C. M. Renirie, Dieren, Netherlands, assignor to Vitafin N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 956,605, Nov. 1, 1978, abandoned, which is a continuation of Ser. No. 802,736, Jun. 2, 1977, abandoned, which is a division of Ser. No. 651,549, Jan. 22, 1976, Pat. No. 4,031,899. This application Jul. 21, 1980, Ser. No. 170,686

Int. Cl.[3] A61N *1/30*

U.S. Cl. 128—419 PS 4 Claims



1. A self powered circuit for providing an output which is variable as a function of its available power, comprising a DC power source having characteristics subject to variation as a function of the power which it has delivered, and programmable conversion means connected to said source for converting the DC output of said source to a higher DC level, said conversion means providing a conversion which is a predetermined function of the power available from said source.

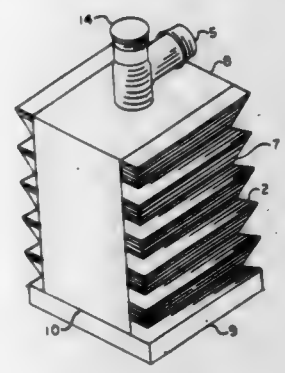
4,345,605
LUNG EXERCISER

Gordon A. Gereg, 557-A Blue Church Rd., Coopersburg, Pa. 18036

Filed Oct. 20, 1980, Ser. No. 199,084

Int. Cl.[3] A61B *5/08;* A63B *23/00;* F16J *3/00*

U.S. Cl. 128—728 6 Claims



1. A device to provide volume exercise for a patients lungs said device comprising a lightweight bellows made up of a plurality of vertically spaced pairs of square layers of plastic film, each pair of layers being joined at their peripheral edge, each layer having an opening at the center thereof, the peripheral edge of one of said openings on each layer of said pairs of

layers being sealed to the peripheral edge of an opening on an adjacent layer of an adjacent pair of said layers, said openings in each layer defining an interconnecting passage between each pair of layers, a solid bottom layer sealed to the peripheral edge of the lowermost layer of said pair of layers, a top layer sealed to the peripheral edge of the uppermost layer of said pair of layers, said uppermost layer having an outlet opening therein, whereby a closed volume is formed with a passage out the upper most layer and being readily collapsible with very little resistance to collapse due to the lightweight and high flexibility said bellows an outlet fitting connected to said outlet opening adapted to be connected to tubing and thereby allow a patient to exercise by drawing air from the bellows into the lungs, the maximum volume capacity of said closed volume being greater than the amount, and means to reduce the volume of said bellows by partially collapsing the bellows or limiting its extension including a support system for the bellows, said support system comprising a foldable hanger in the shape of an inverted U having its bridge section connected to the outlet fitting and its legs extending downwardly on opposite sides of said bellows, the distance the bellows could extend being directly related to the volume in the bellows, a movable platform slidably mounted to each leg of said hanger adjacent the lowermost layer of said bellows wherein the extension of said bellows is limited in an adjustable fashion by a movable platform into which the legs of the U shaped hanger could slide, the position of the platform up or down the hanger being calibrated to bellows volume for prescribed lung volume exercise, said platform being an open top shallow box with opposing slots in which the legs of the hanger slide, wherein said box could act as a storage container for the collapsed bellows and folded hanger when not in use, the bellows further being provided with a skeleton made up of flat sheets of semi-rigid material, each sheet having a hole at the center for air flow and being inserted into each pair of layers of the bellows, whereby the bellows, when evacuated, will reduce in volume by the bottom moving up rather than having the sides cave in, said size of said sheets being also a free extension limit by limiting the amount the bottom could drop since the sides must move in a certain amount to have the bottom and top move apart.

4,345,606

SPLIT SLEEVE INTRODUCERS FOR PACEMAKER ELECTRODES AND THE LIKE

Philip O. Littleford, 251 Salvador Sq., Winter Park, Fla. 32789

Division of Ser. No. 9,137, Feb. 5, 1979, Pat. No. 4,243,050, which is a continuation-in-part of Ser. No. 860,246, Dec. 13, 1977, Pat. No. 4,166,469. This application Mar. 24, 1980, Ser. No. 133,325

The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.

Int. Cl.³ A61N *1/18*

U.S. Cl. 128—784 **10 Claims**



1. Apparatus for introducing an object into the human body, said apparatus comprising:

a tubular introducer with a tapered end adapted to extend into said body;

a hollow sleeve surrounding the introducer and formed of a tube having a first portion with an inner dimension greater than the outer dimension of said introducer and a second portion at one end of said sleeve which extends parallel with said introducer, said second portion dimensioned for close engagement with said introducer adjacent the tapered end thereof, with a gradual taper along said sleeve between said first and second portions; and

said sleeve having a longitudinally weakened line along said first portion from the other end of said sleeve, said weakened line extending through said taper and terminating short of said one end.

4,345,607

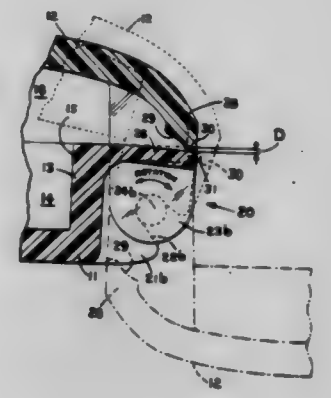
SPRING LATCH AND HINGE ASSEMBLY FOR CLOSURE MEMBERS

Joseph P. Contreras, Mendham, and George J. Sass, Bloomingdale, both of N.J., assignors to Corona Plastics, Inc., Denville, N.J.

Filed Nov. 28, 1980, Ser. No. 211,216

Int. Cl.³ A45D *33/00*

U.S. Cl. 132—83 R **12 Claims**



1. A spring latch and hinge assembly for a closure member pivotally connectible to a base member includes,

a. spaced hinge means including hinge elements connected respectively to the closure member and the base member to permit movement of the closure member to a full open position,

b. resilient means disposed between the spaced hinge means,

c. latch means disposed between the spaced hinge means to coact with the resilient means,

d. said resilient means has a rounded peripheral edge,

e. said latch means has a concave section inwardly of the end thereof disposed to engage the rounded end of the resilient means on movement of the closure member from full open to closed position and vice versa, and

f. an incremental section disposed for operative association between the resilient means and the latch means, and adjacent their peripheral edges so that a force must be exerted on the closure member during closing movement to compress the resilient means whereby said resilient means will exert a counterforce to prevent said closure member moving from the closed to the open position.

4,345,608

HAIR LIFT COMB

Joseph N. Cavaioli; Joseph R. Cavaioli, and James N. Cavaioli, all of Superior Comb Co., 301 Sixth St., Leominster, Mass. 01453

Filed Apr. 24, 1981, Ser. No. 257,178

Int. Cl.³ A45D *24/00*

U.S. Cl. 132—160 **4 Claims**

1. A comb for penetrating and lifting the hair comprising a handle, a series of generally parallel teeth thereon, each tooth

including a tapered raised portion thereon along the tooth, said raised portions extending away from the general plane of the



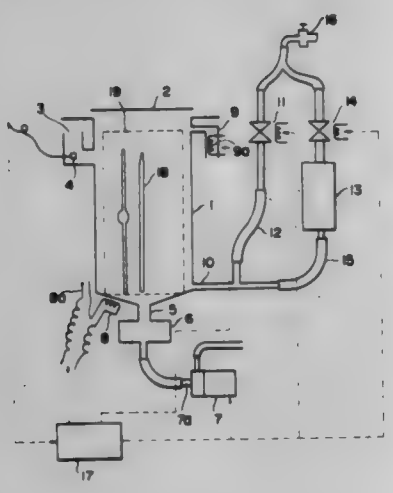
several teeth alternately in opposite directions, and each tooth having a plain straight tip at the terminal free end thereof.

4,345,609

RINSING AND DRYING APPARATUS

Hideyuki Nishizawa, 1-5-1, Nakazato-cho, Kita-ku, Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,831
Claims priority, application Japan, Aug. 28, 1979, 54-110012
Int. Cl.[3] B08B *9/00*
U.S. Cl. 134—57 R 5 Claims



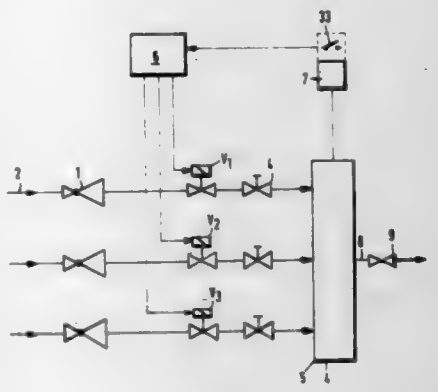
1. A drying apparatus comprising a vessel whose upper end is open; a cover detachable to the opening, which cover has no function of sealing the opening; a ventilating tube whose upper end is in communication with an upper portion of the vessel, said tube being provided with an electric heater in its inside and being in communication, at its lower end, with the atmosphere; a retarding tank being in communication with the lower end of the vessel; and a pump for draining the inside of the vessel by means of the retarding tank.

4,345,610

PROCESS AND DEVICE FOR THE MIXING OF GASES

Martin Herter, deceased, late of Pulheim-Geyen, Fed. Rep. of Germany; by Johanna Herter, heiress, Romerfeldstr. 9, 5024 Pulheim-Geyen, Fed. Rep. of Germany; by Ingrid Radtke, heir, Schlehenweg 4, 4047 Dormagen 1 (Delhoven), Fed. Rep. of Germany; by Manfred Herter, heir, Im Bachgarten 56, 5024 Pulheim, Fed. Rep. of Germany, and Werner Oppel, Saarstr. 46, 5083 Rodenkirchen, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,460
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915983
Int. Cl.[3] G05D *11/13*
U.S. Cl. 137—7 5 Claims



1. In a process for mixing gases for use in the treatment of workpieces by plasma discharges wherein gases from a plurality of reservoirs are fed individually to a mixing chamber by individual supply lines having magnetic valves which are normally closed and are opened for predetermined individual times in response to a pressure in said mixing chamber below a predetermined value whereby the amount of each individual gas fed to said mixing chamber being proportional to its predetermined individual time;

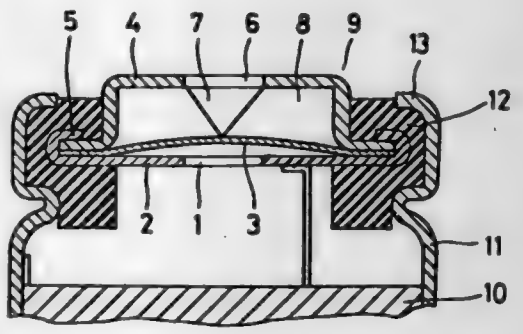
the step of controlling the opening and closing of said magnetic valves so that all magnetic valves reach the halftime of their respective total opening times at the same moment regardless of the total opening time of each magnetic valve.

4,345,611

SAFETY VALVE MEANS FOR BATTERY

Hironosuke Ikeda, Hirakata; Hisao Oishi, Kobe, and Seiki Yoshida, Kakogawa, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jun. 4, 1980, Ser. No. 156,512
Claims priority, application Japan, Jun. 7, 1979, 54-77862; Jul. 4, 1979, 54-92657
Int. Cl.[3] F16K *13/04*
U.S. Cl. 137—68 R 7 Claims



1. A safety valve means for sealing an end of a battery casing comprising:

a lid plate having therein a valve hole,

a thin plate overlying said lid plate for covering said valve hole,

a terminal plate of reverse disk shape supported by said lid plate and having a gas vent and a cutter means projecting toward said thin plate in the area of said valve hole, the peripheries of said lid plate, thin plate and terminal plate overlying each other to form a multi-layer peripheral portion, said terminal plate forming a valve chamber together with said thin plate,

means for holding the periphery of said thin plate between the peripheries of said lid plate and said terminal plate by turning over an outer edge of said lid plate or said terminal plate, and

a separate annular resilient member having a small center opening disposed between said thin plate and said terminal plate, and located with its principal portion within said reverse disk shaped portion of said terminal plate and interior to said multi-layer peripheral portion, said resilient member being pressed by said terminal plate so as to press said thin plate toward said lid plate such that the portion of said thin plate which is located interior to said peripheral portion is supported against bowing in the region between said lid plate, annular resilient member and said terminal plate.

4,345,612

ANESTHETIC GAS CONTROL APPARATUS

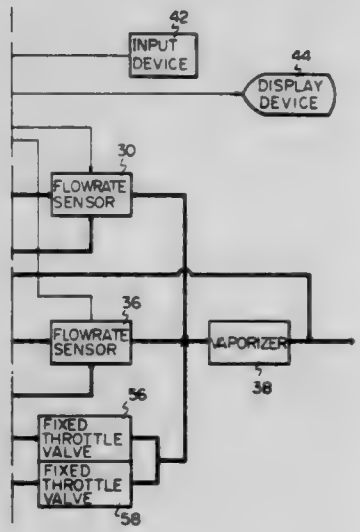
Tuyoshi Koni; Yoshihisa Urushida, and Akira Tsuzuki, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

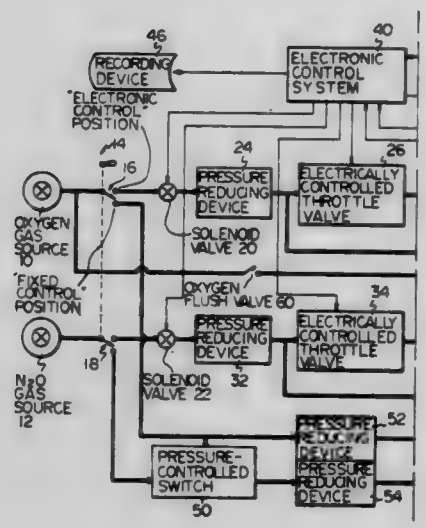
Filed Jun. 9, 1980, Ser. No. 157,581

Claims priority, application Japan, Jun. 12, 1979, 54-73835

Int. Cl.³ G05D *11/13*

U.S. Cl. 137—101.19 **8 Claims**





1. An apparatus for supplying a predetermined rate of flow of an anasthetic gas comprising a mixture of a first gas and a second gas, said first and second gases being provided from a first gas source and a second gas source, said apparatus comprising:

a first electrically controlled throttle valve coupled to receive said first gas from said first gas source, for producing a controlled flow thereof;

a second electrically controlled throttle valve coupled to receive said second gas from said second gas source, for producing a controlled flow thereof;

first flowrate sensing means for measuring the rate of flow of said first gas when output from said first electrically controlled throttle valve and for producing electrical signals of digital form indicative of the magnitude of said rate of flow;

second flowrate sensing means for measuring the rate of flow of said second gas when output from said second electrically controlled throttle valve and for producing electrical signals of digital form indicative of the magnitude of said rate of flow of the second gas;

data input means for generation of digital data to specify a predetermined total rate of flow of said anasthetic gas and to specify a predetermined mixture ratio of said first and second gases;

an electronic control system coupled to receive said digital electrical signals from said first flowrate sensing means and from said second flowrate sensing means and to receive said digital data from said data input means, and comprising memory circuit means for storing said digital data from said data input means and digital data processing circuit means for comparing said predetermined total rate of flow of said anasthetic gas and said predetermined mixture ratio of said first and second gases as represented by said stored digital data with an actual total rate of flow of said anasthetic gas and an actual mixture ratio of said first and second gases as represented by said digital electrical signals from said first and second flowrate sensing means and for producing control signals on the basis of said comparison, said control signals being applied to said first and second electrically controlled throttle valves for thereby bringing said actual total rate of flow of anasthetic gas and actual mixture ratio of said first and second gases into coincidence with said predetermined total rate of flow of said anasthetic gas and said predetermined mixture ratio of said first and second gases respectively;

electro-optical display means for displaying said predetermined total rate of flow of said anasthetic gas and said predetermined mixture ratio of said first and second gases stored in said memory circuit means; and

means for mixing said first and second gases after measurement of the rates of flow thereof by said first and second flowrate sensing means, for thereby providing said anasthetic gas further comprising first and second fixed throttle valves having the outputs thereof coupled to said means for combining the first and second gases; and manually a actuated gas switching means for selectively supplying either (1) said first gas from said first gas source to said first electrically controlled throttle valve and said second gas from said second gas source to said second electrically controlled throttle valve, or (2) said first gas from said first gas source to said first fixed throttle valve and said second gas from said second gas source to said second fixed throttle valve, and further comprising pressure controlled gas switch means located downstream of said second fixed throttle valve and responsive to pressure from said first gas source to allow flow of said second gas past said gas switch means only when the pressure of said first gas source is above a predetermined minimum pressure.

4,345,613

PRESSURE-OPERATED PORTABLE SIPHON APPARATUS FOR REMOVING CONCENTRATIONS OF LIQUID FROM A GAS PIPELINE

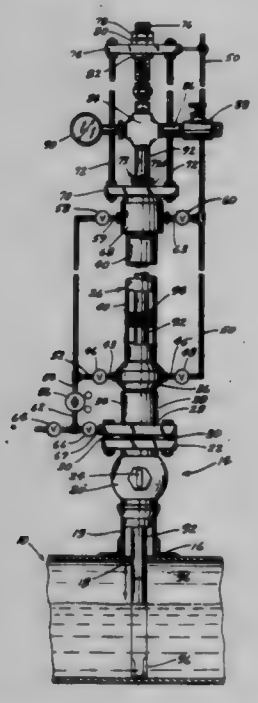
Walter C. Mills, San Angelo, Tex., and James W. Patterson, Hobbs, N. Mex., assignors to InterNorth, Inc., Omaha, Nebr.

Continuation-in-part of Ser. No. 40,712, May 21, 1979, Pat. No. 4,282,894, which is a continuation-in-part of Ser. No. 832,673, Sep. 12, 1977, Pat. No. 4,155,372. This application May 18, 1981, Ser. No. 264,592

The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.

Int. Cl.[3] F16K *51/00*; F17D *3/10*; F04F *10/00*

U.S. Cl. 137—317 3 Claims



1. In combination with a natural gas carrier pipeline having concentrations of liquid therein, comprising,

a first valve means mounted on the pipeline at the upper portion thereof and being in communication with the interior thereof,

a hollow support means being removably secured to said first valve means and extending upwardly therefrom; a hollow siphon pipe vertically movably mounted in said hollow support means and completely enclosed therein, said siphon pipe being movable from an upper position, wherein the lower end thereof is disposed above said first valve means, to a lower position wherein said siphon pipe extends through said first valve means with the lower end of said siphon pipe being positioned in said pipeline,

a piston means on said siphon pipe in said hollow support means,

a source of operating pressure in communication with the interior of said hollow support means above said piston means and with the interior of said hollow support means below said piston means,

first control valve means for selectively supplying said operating pressure to said hollow support means above said piston means whereby said siphon pipe and said piston means will be moved downwardly in said hollow support means towards the said lower position,

second control valve means for selectively supplying said operating pressure to said hollow support means below said piston means whereby said siphon pipe and said piston means will be moved upwardly in said hollow support means towards the said upper position above said first valve means,

and a second valve means mounted on said support means and being operatively fluidly connected to the interior of said siphon pipe above said first valve means for permitting the selective removal of the liquid in said pipeline by the gas pressure within the pipeline, upwardly through said siphon pipe when said siphon pipe is in its said lower position,

said source of operating pressure comprising a source of pressure selected from the group consisting of nitrogen, CO_2 and compressed air.

4,345,614

HYDRAULIC STEERING AND OPERATING DEVICE

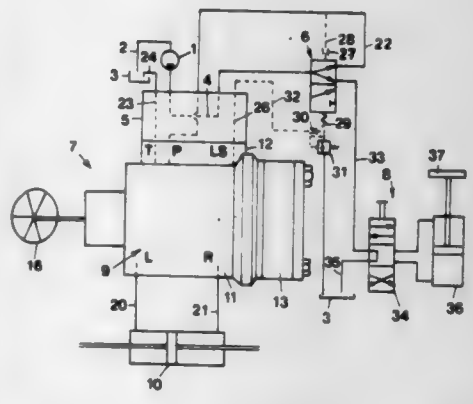
Niels G. Karlberg, and Poul H. H. Pedersen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Aug. 18, 1980, Ser. No. 178,880

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934221

Int. Cl.[3] F16K *49/00*

U.S. Cl. 137—340 3 Claims

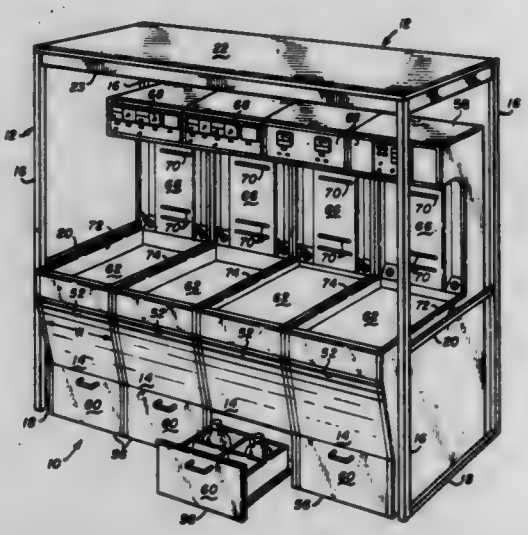


1. A hydraulic steering system comprising, pump and tank means, steering apparatus having a housing with supply and exhaust ports on one side thereof and a pair of servomotor operating ports, said steering apparatus having valve means with throttle supply passages for selectively directing fluid from said supply port thereof to either of said servomotor operating ports and from the other of said servomotor operating ports to said exhaust port, a heat exchange block attached to said one side of said steering apparatus housing and having a pair of supply conduit means and exhaust conduit means extending between one of said conduit means and connecting said pump and tank means respectively to said housing supply and exhaust ports, priority valve means in said conduit means having steering and auxiliary mode positions, branch conduit means extending from said priority valve means and forming auxiliary circuit means, connecting said priority valve means to upstream and downstream sides of said throttle supply passages to effect selection of said steering mode position or said auxiliary mode position, the fluid flow for said steering mode position being from said pump means through the other of said supply conduit means through said priority valve means through said one of said supply conduit means to said steering apparatus supply port, the fluid flow for said auxiliary mode being from said pump means through the other of said supply conduit means, and through said priority valve means to said auxiliary circuit means, said pairs of supply conduit means crossing in said heat exchange block to allow pressurized fluid passing through said other of said supply conduits through said priority valve means in said auxiliary mode to act in a heat exchange relationship with said one of said supply conduit means and said steering apparatus valve means.

4,345,615
MULTIPHASE MODULAR CHEMICAL PROCESSING STATION

Angelo S. Di Cicco, Sunnyvale, and Walter N. Quave, South San Francisco, both of Calif., assignors to Kay Plastic Products, Inc., Tempe, Ariz.

Filed Mar. 13, 1980, Ser. No. 130,149
Int. Cl.[3] B08B *15/02*
U.S. Cl. 137—343 16 Claims



1. A multiphase modular chemical processing station comprising:

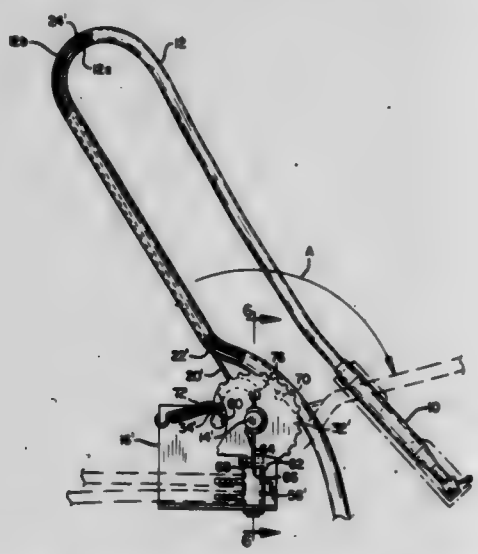
a fixed plumbing-electrical structure divided into a plurality of discrete module attachment positions including electrical connections and multiple fluid input and exhaust connections for each said position; and

a plurality of chemical processing modules, each module being adapted for rapid attachment to or detachment from one of said module attachment positions, each module being self contained for completely performing a desired chemical process independently from each other module.

4,345,616
RETRACTOR FOR HOSE-CONNECTED HAND PIECES

Paul V. Terry, P.O. Box 454, Tualatin, Oreg. 97062

Continuation-in-part of Ser. No. 130,707, Mar. 17, 1980, abandoned. This application Feb. 17, 1981, Ser. No. 234,828
Int. Cl.[3] A61C *19/00*
U.S. Cl. 137—355.17 6 Claims



1. Retractable apparatus for hand pieces arranged for use with a fluid supply hose of the type having at least one supply passageway and an unused passageway,

(a) base member,

(b) an arm having opposite ends,

(c) and support means on said base member rotatably supporting said arm at one end thereof on said base member,

(d) the end of said arm opposite from its support on said base member comprising a tip end arranged to penetrate a hose and extend into the unused passageway of the hose,

(e) said arm extending interiorly along a portion of the unused passageway such as to provide an elongated support for the hose between its ends.

5. Retractable apparatus for hose connected hand pieces comprising

(a) a base member,

(b) an arm having opposite ends,

(c) a spindle on said base member rotatably supporting said arm for movement between non-use and use positions,

(d) means arranged to connect a hose intermediate its ends to said arm,

(e) a spiral spring on said spindle having one end connected to said arm,

(f) a collar on said spindle secured to the other end of said spring wherein said spring is tensioned upon movement of said arm from its non-use position to its use position whereby to automatically retract the arm upon release thereof,

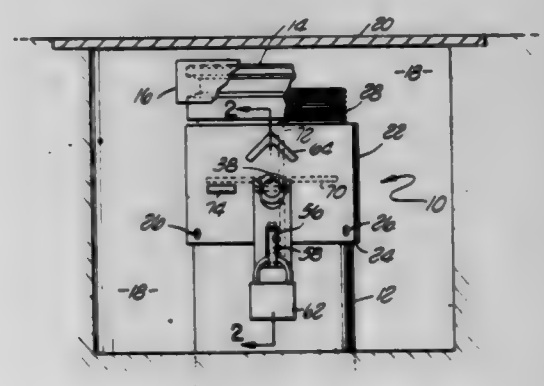
(g) friction means on said collar engageable with said spindle,

(h) and adjustment means operative on said friction means arranged to set said friction means on said spindle in a manner to provide a fixed anchor for said other end of said spring in the tensioned operation of said arm but allowing manual rotative repositioning of said collar on said spindle to change the retracting force of said spring.

4,345,617
LOCK APPARATUS FOR STORAGE TANKS

Sergio M. Bravo, 1823 N. Hill Dr., South Pasadena, Calif. 91030

Filed Mar. 11, 1980, Ser. No. 129,509
Int. Cl.[3] B65D *39/16, 55/12, 55/14;* F16K *35/00*
U.S. Cl. 137—385 12 Claims



1. A lock apparatus for attachment to a pipe communicating with a storage tank for a flowable substance for preventing insertion of a foreign object into the storage tank through the pipe, comprising:

a cylindrical housing having a top part, a bottom part for attachment to the pipe, and a transverse orifice through the side of the cylindrical housing;

a plate pivotal in the interior of the cylindrical housing between a closed position and an open position;

an axle fixed to the plate and extending through the transverse orifice, the axle being pivotal in the transverse orifice to pivot the plate;

a latch member pivotally attached to the axle externally of the cylindrical housing, the latch member having a latch orifice therethrough;

a lock flange fixed to the external surface of the cylindrical housing between the radial orifice and the bottom part, the latch member being selectively positioned over the lock flange with the lock flange extending through the latch orifice when the plate is in the closed position to thereby couple the latch member to the lock flange; and

a tamper prevention flange fixed to extend radially from the external surface of the cylindrical housing in linear alignment with the transverse orifice and the lock flange.

4,345,618

ARRANGEMENT FOR THE REGULATION OF THE HEIGHT OF A LIQUID LEVEL

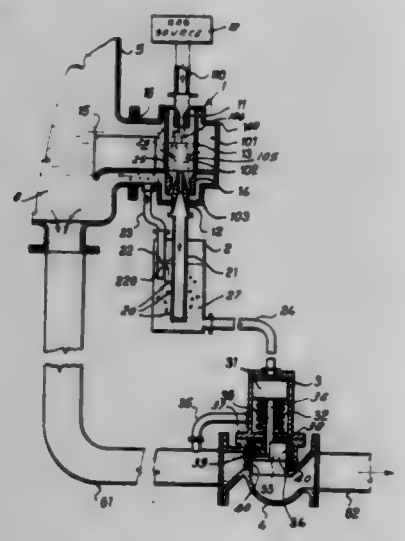
Josef Altman, Domazlice, and Zdenek Roth, Pilsen, both of Czechoslovakia, assignors to Skoda, oborovy podnik, Pilsen, Czechoslovakia

Filed Jan. 9, 1981, Ser. No. 223,902

Claims priority, application Czechoslovakia, Feb. 2, 1980, 1294-80

Int. Cl.³ F16K *21/16*; G05D *9/02*

U.S. Cl. 137—393 **5 Claims**



1. An arrangement for the regulation of the level of a liquid in a system having a collecting tank for the liquid, a first conduit connected to the tank for discharging liquid from the tank, and a controllable liquid discharge valve interposed in the first conduit, said arrangement comprising a first, influx chamber communicating with the interior of the tank, a first, downwardly directed transmitter nozzle disposed in the upper portion of the influx chamber, a source of gaseous medium under constant pressure connected to the first nozzle, a second, upwardly open pick-up nozzle disposed in alignment with the first nozzle and vertically spaced therefrom so that liquid in the influx chamber can flow into the space between the two nozzles to form a two-phase mixture which is received by the second nozzle, means restricting the rate of flow of liquid from the tank into the space in the influx chamber between the first and second nozzles, a second chamber, a two-phase, gas-liquid separatur in the second chamber, a second conduit connected between the outlet end of the second nozzle and the second chamber to conduct to the second chamber the two-phase mixture formed by interaction of gas from the first nozzle with the liquid in the influx chamber between the nozzles, means for separating the gas from the two-phase mixture in the second chamber, and means responsive to the pressure of the liquid which is separated from the gas in the second chamber to control the liquid discharge valve so as to maintain the level of the liquid in the tank substantially constant.

4,345,619

BACKFLOW PREVENTER

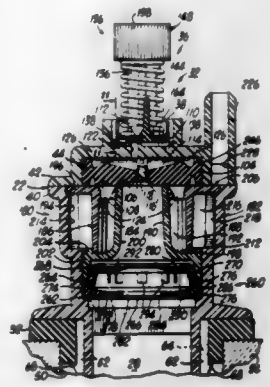
Dwight N. Johnson, El Toro, Calif., assignor to JH Industries, Inc., San Marcos, Calif.

Division of Ser. No. 47,945, Jun. 12, 1979, which is a division of Ser. No. 809,382, Jun. 23, 1977, Pat. No. 4,180,096. This application Jun. 19, 1980, Ser. No. 161,070

Int. Cl.³ F16K *15/14*

U.S. Cl. 137—512.15 **10 Claims**

1. A backflow preventer comprising an upstream disc member having an annular array of upstream flow passages surrounding an impervious center region, a unitary elastomeric body including an outer ring and upstream and downstream flexible radially inwardly extending check valve portions each having a central opening; said upstream check valve portion overlying said upstream flow passages; a cup member between said check valve portions and having its convex side facing downstream; a rim on said cup member abutting the inner wall of said ring; an annular array of downstream flow passages in said cup member surrounding an impervious central region; said downstream check valve portion overlying said down-



stream flow passages; and said cup member including projections adjacent said downstream flow passages extending upstream into the path of movement of said upstream check valve portion.

4,345,620

SAFETY VALVE ASSEMBLY

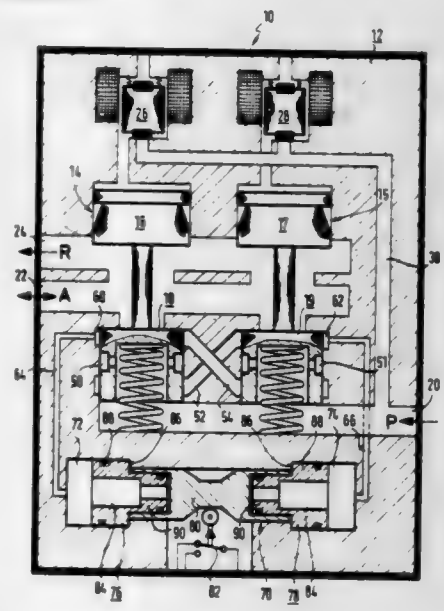
Erich Ruchser, Kernen; Helmut Ott, Stuttgart, and Günter Baldauf, Rommelshausen, all of Fed. Rep. of Germany, assignors to Technomatic AG, Aesch, Switzerland

Filed Jul. 17, 1980, Ser. No. 169,933

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930571

Int. Cl.³ F15B *13/043, 20/00*

U.S. Cl. 137—596.16 **9 Claims**



1. A safety valve assembly for pressurized medium-operated devices, particularly clutch and brake devices of presses, comprising a housing having a supply inlet, a consumer outlet and a return outlet, said housing also having two separate chambers and two passages which crosswise connect said chambers with one another; two valves operating in parallel with one another and each having a working piston and a valve member, said valve members of said valves being guided in said chambers of said housing and operative for establishing and interrupting the communication between said inlet and outlets via said cross-passages so as to allow passage of a pressurized medium or to prevent the same; means for controlling the operation of said valves; pressure-sensing means having two opposite sides each communicating with a respective one of said cross-passages and displaceable in the event of malfunction from its inoperative position to its operative position; and actuating means arranged to turn off a consumer in response to the displace-

ment of said pressure-sensing means from its inoperative position to its operative position, said pressure-sensing means including a pressure balance having two sides each communicating with a respective one of said cross-passages so that when the pressure in said cross-passages and thereby at both sides of said pressure balance are identical said pressure balance remains immovable and is retained in its inoperative position, and when in the event of malfunction of pressure in one of said cross-passages and thereby at one of said sides of said pressure balance is greater than the pressure in the other of said cross-passages and thereby at the other of said sides of said pressure balance, said pressure balance is displaced from its inoperative position to its operative position, said pressure balance including a sliding member having an axis and movable in an axial direction between said inoperative and operative positions, and two stepped pistons located at axially opposite sides of said sliding member and each communicating with a respective one of said cross-passages, said stepped pistons being arranged so as to retain said sliding member in said inoperative position and to displace the same to said operative position in dependence upon the relation between the pressures of the pressurized medium in said cross-passages.

4,345,621

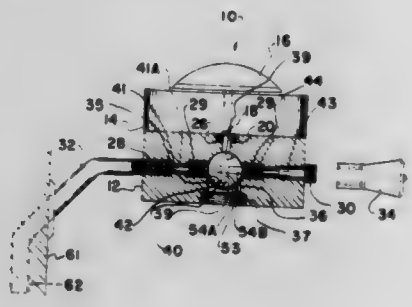
TIMED SHOWER HEAD VALVE

William H. Dunckhorst, P.O. Box 32, South Lake Tahoe, Calif. 95705

Continuation-in-part of Ser. No. 64,532, Aug. 5, 1979, Pat. No. 4,282,899, which is a continuation-in-part of Ser. No. 843,825, Oct. 20, 1977, abandoned. This application Feb. 2, 1981, Ser. No. 230,209

Int. Cl.³ B05B *1/30;* F16K *31/48*

U.S. Cl. 137—624.12 **4 Claims**



1. A valve assembly adaptable for mounting on a conduit leading to a bath shower head so as to conserve the amount of water employed for a complete shower in one cycle of operation of said assembly, by control of the time period of flow of water through said shower head, so as to provide timed period of water flow during one cycle of operation, in which

the assembly comprises

a valve housing

a clock timer device mounted to said valve housing and fitted with a rotatable shaft, said clock timer incorporating spring clock work mechanism to cause said shaft to rotate, at a uniform velocity in a second direction for a circular angular sector generally equal to the circular angular sector that said shaft has been initially rotated manually in a first direction, with a first end of said shaft attachable externally to a knob,

a circular valve member rotatably mounted in an interior chamber in said valve housing and attached to said shaft,

an interior chamber of a shape to fit about the circular perimeter of said valve housing,

an internal inlet port and an internal outlet port in said valve housing each joining said interior chamber by an individual passageway to an external inlet port and an external outlet port respectively,

a groove recessed in the circular perimeter of the valve member, with the axis of the groove lying substantially in a plane that intersects the axes of both internal inlet and outlet ports, said plane being substantially perpendicular to the axis of the rotatable shaft of the clock timer, and with each of two opposed ends of the groove separated from each other along the periphery of the valve member by a non-recessed section of the valve member periphery, where said non-recessed section extends along an angular sector, in said common plane, so as to completely block an internal inlet port or internal outlet port when said non-recessed section is aligned with said internal port,

a through passageway in said valve member joined at each opposed end to a section of the groove,

said groove and said non-recessed section located so that in the initial and final position of the valve member, recessed section completely blocks one internal port, in

a second position of the valve member, the recessed groove extends completely to both internal ports so as to permit water flow through said groove, and through said through passageway,

said initial and final position being a position that the valve member is rotated to, in a second direction by the timer shaft after the timer shaft has been rotated manually in the first direction, opposed to said second direction, from the said initial and final position to the said second position.

4,345,622

CONTROL AND CUT-OFF DEVICE FOR FLOWING MEDIA

Thom L. Henningsson, Sollentuna, Sweden, assignor to Ingenjorsfirma T. Henningsson AB, Sweden

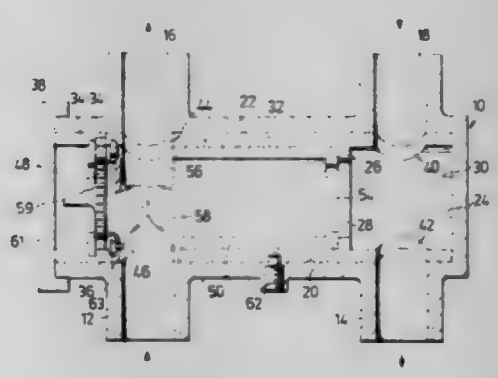
PCT No. PCT/SE79/00238, § 371 Date Jul. 24, 1980, § 102(e) Date Jul. 22, 1980, PCT Pub. No. WO80/01100, PCT Pub. Date May 29, 1980

PCT Filed Nov. 16, 1979, Ser. No. 199,507

Claims priority, application Sweden, Nov. 24, 1978, 7812130

Int. Cl.³ F17D *3/01;* F16K *5/10*

U.S. Cl. 137—637.1 **6 Claims**



1. A control and cut-off device for flowing media in plants where one or more consumer devices are to be supplied with a medium are connected to a source of such medium, said control and cut-off device including a valve housing having two connection openings for connection to said source of medium and two connection openings for connection to said consumer devices and control and cut-off members rotatable within the valve housing to control and cut-off the flow of medium from the source of medium to the consumer devices and again back to the source, the valve housing being provided with a cylindrical boring with which the connection openings communicate, a first tubular valve slide being rotatably mounted in the boring and having a cylindrical boring in which a second tubular valve slide is rotatably fitted, said slides being locked against axial displacement when in use and provided with openings arranged to effect control or cut-off, respectively, of the medium when rotating the slides, and wherein the first valve slide is provided with a peripheral annular locking ring arranged to lock the second valve slide against axial movement in relation to the first valve slide such that when said locking ring locks said second valve slide against axial movement said first and second valve slides are locked to rotate together within said valve housing, when said locking ring is released from locking the second valve slide, said first and second valve

slides are permitted to rotate relative to each other for selecting a control or cut-off mode of the flow of medium to at least one said consumer device, and when said locking ring again locks said second valve slide, said valve slides are rotationally locked together and said control and cut-off device is able to vary and block the flow of medium to the consumer device.

4,345,623

MULTIPORT DISK VALVE, ESPECIALLY FOR DUST-REMOVER DUCT SYSTEMS

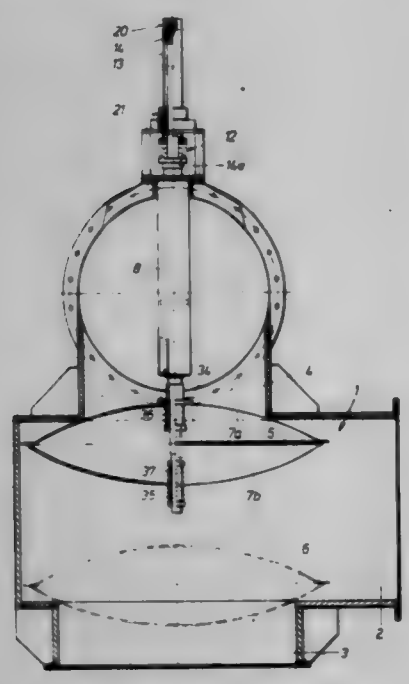
Walther Krull, Lübeck; Dieter Köhn, Neustadt, and Wolf-Dieter Schiller, Lübeck, all of Fed. Rep. of Germany, assignors to Beth GmbH, Lübeck, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,152

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916311

Int. Cl.³ F16K *31/122*; F17D *3/00*

U.S. Cl. 137—637.2 **7 Claims**



1. A valve comprising:

a valve housing formed with a pair of spaced-apart opposite ports along a common axis and at least one further port, each of said opposite ports being provided with a respective valve seat;

a valve plate in said housing between said opposite ports having a pair of oppositely convex shells each engageable with a respective one of said seats and concave toward one another; and

a pair of telescopingly engaged relatively shiftable rods extending along the axis of said opposite ports and each connected to a respective one of said shells for allowing said shells to be drawn together into mutually abutting relationship at their edges to form a closed double convex body engageable with either of said ports and allowing said shells to be urged by common movement of said rod to engage said seats selectively and, upon relative movement of said rods, to be urged individually into engagement with the respective seats.

4,345,624

BLOW-OUT GUARD FOR HIGH-PRESSURE HOSES

Thomas F. Rider, Manitowoc, Wis., assignor to Gould Inc., Rolling Meadows, Ill.

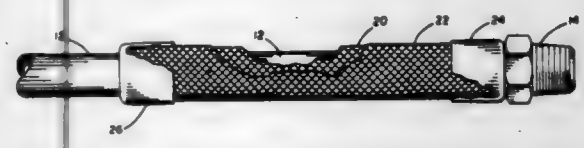
Continuation of Ser. No. 121,904, Feb. 15, 1980, abandoned. This application Nov. 2, 1981, Ser. No. 317,080

Int. Cl.³ F16l *11/00*

U.S. Cl. 138—110 **9 Claims**

1. A blow-out guard assembly for use with a high-pressure conduit carrying fluids of the type having at least one coupling end, said assembly comprising:

at least a one layer sheath loosely circumferentially surrounding said high-pressure conduit and extending axially from said coupling end at least a finite length along said conduit, said sheath being a non-load bearing member during normal fluid flow loading of said conduit and having a plurality of interstices therethrough, said interstitial spacing being 20% at maximum; and



a ferrule covering and fixedly attaching one end of said sheath to said coupling end and leaving most of the sheath uncovered such that escaping effluents from said high-pressure conduit during blow out would pass through said interstices of said sheath causing the effluents to disperse and become harmless.

4,345,625

PIPE JOINTS OF REINFORCED RESIN AND PROCESS FOR THEIR MOLDING

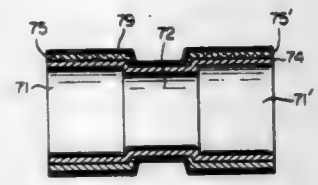
Masakatsu Mayumi, Osaka; Kenji Mitooka, and Sigeharu Fujiwara, both of Okayama, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

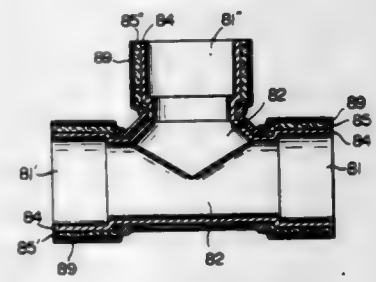
Division of Ser. No. 938,100, Aug. 30, 1978, Pat. No. 4,243,457. This application Aug. 13, 1980, Ser. No. 178,013

Claims priority, application Japan, Sep. 2, 1977, 52-106058; Sep. 19, 1977, 52-126434[U]; Dec. 1, 1977, 52-144796

Int. Cl.³ F16L *9/14*

U.S. Cl. 138—141 **1 Claim**





1. A pipe joint having socket portions and one or more non-socket portions, said socket portions having a wall consisting of an inner surface layer composed of a cured reinforced resin molding material, an outer surface layer composed of a cured reinforced resin molding material, and an interlayer between said inner and outer layers composed of a cured resin mortar, said non-socket portions having a wall consisting of a cured reinforced resin molding material.

4,345,626

CIRCUMFERENTIAL STIRRUP PANEL

Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

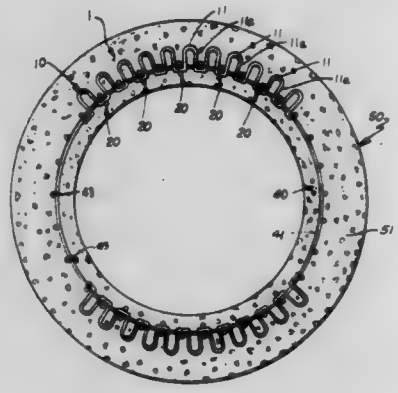
Continuation of Ser. No. 36,171, May 4, 1979, abandoned. This application May 20, 1981, Ser. No. 265,443

Int. Cl.³ B21F *27/22*

U.S. Cl. 140—107 **8 Claims**

1. A method for adding stirrup reinforcement to a concrete pipe reinforcing cage comprising the steps of: providing a mat comprised of a plurality of generally sinusoidal shaped stirrup members, each stirrup member including a plurality of nodes

and antenodes, said stirrup members being oriented generally parallel to one another with said antenodes lying in a base plane and with said nodes projecting from said base plane, and said mat further including a plurality of tie wires joined to said stirrup members, said tie wires being oriented generally parallel to one another and generally perpendicular to said stirrup



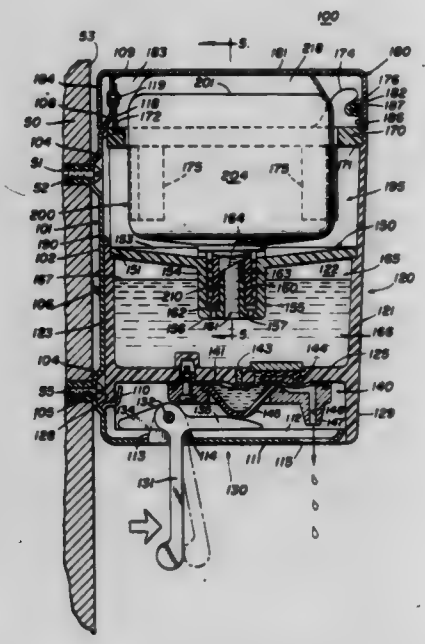
members; shaping said mat so that said stirrup members conform generally in curvature to the curvature of a cage to be reinforced at the area to be reinforced; and joining said mat to a pipe reinforcing cage with each of said sinusoidal stirrup members oriented to extend circumferentially with respect to said cage and with said tie wires oriented to extend longitudinally with respect to said cage.

4,345,627

SOAP DISPENSING SYSTEM

Antonio M. Cassia, Milan, Italy, assignor to Steiner Corporation, Salt Lake City, Utah

Filed May 16, 1980, Ser. No. 150,556
Claims priority, application Italy, Jan. 21, 1980, 19346 A/80
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—18 **33 Claims**



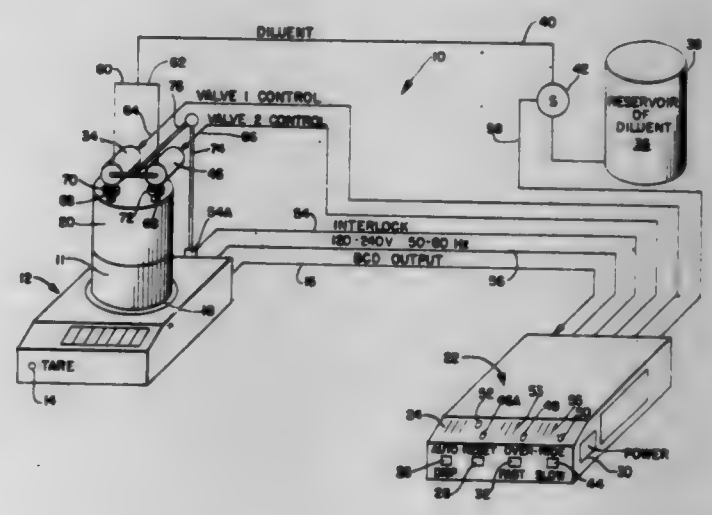
1. A system for dispensing liquid soap comprising a closed wall structure defining a container, partition means separating said container into a separate lower liquid soap reservoir and a separate upper refill compartment, dispensing means carried by said container for dispensing liquid soap from said reservoir, said partition means having a refill aperture therethrough providing the exclusive communication for soap flow between said reservoir and said refill compartment and dimensioned to permit the free flow of liquid soap therethrough, and a refill cartridge containing liquid soap and having an outlet, said refill cartridge being removably enclosed within said refill compartment in a refill configuration with said outlet disposed for cooperation with said refill aperture to permit the free flow of liquid soap from said refill cartridge to said reservoir thereby to refill said reservoir as liquid soap is dispensed therefrom.

4,345,628

GRAVIMETRIC DILUTER

Jeptha E. Campbell, Cincinnati, and James E. Gilchrist, Terrace Park, both of Ohio, assignors to Spiral Systems Inc., Cincinnati, Ohio

Filed Feb. 9, 1981, Ser. No. 232,525
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—83 **8 Claims**



1. An apparatus for diluting a sample within a container to a dilution factor f by weight of diluent comprising:

(a) means for repeatedly measuring the weight W of the sample plus any diluent within the container;

(b) means for choosing a dilution factor f by weight of a diluent to be used for diluting the sample;

(c) means for calculating TW wherein $TW = W/f$ and W is the weight of the sample within the container prior to the addition of diluent;

(d) means for calculating $TW - W$;

(e) fluid conducting means disposed between a reservoir of diluent and the container for permitting the diluent to flow from the reservoir to the container for the purpose of diluting the sample within the container to the selected dilution factor f; and

(f) valve means in fluid communication with the fluid conducting means and coupled to the means for calculating $TW - W$ for interrupting the flow of diluent between the reservoir and the container when $TW - W = 0$ and permitting diluent to flow between the reservoir and the container when $TW > W$.

4,345,629

AUTOMATIC BAG HANGER

Wilfred L. Inglett, Jr., Augusta, Ga., assignor to Inglett & Company, Inc., Augusta, Ga.

Filed Jan. 26, 1981, Ser. No. 228,592
Int. Cl.³ B65B *3/16*
U.S. Cl. 141—114 **10 Claims**

1. A machine for hanging an empty opened bag on the filling spout of a bagging machine, comprising

a frame;

a magazine supported by said frame and adapted to hold a stack of collapsed bags;

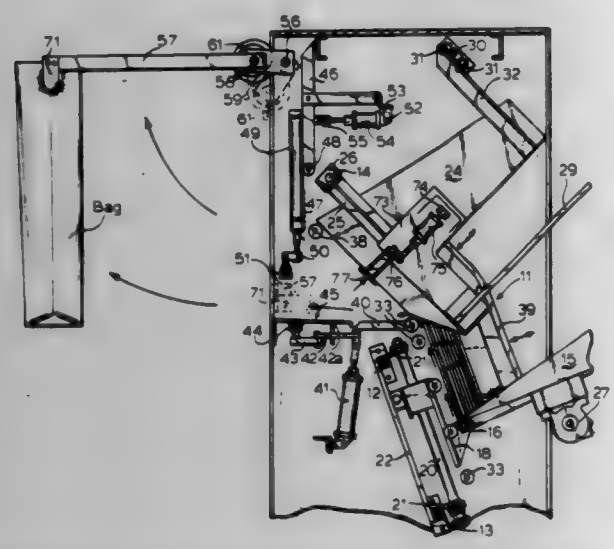
a bag support roll shaft extending across the central area of the magazine, which shaft will define upper and lower portions for the bags stacked in the magazine and draped over such shaft, the lower portions being positioned at an angle between approximately 10° and 30° from the vertical and the upper portions being positioned at an angle between approximately 10° and 25° greater than the angle for the lower portions;

lower vacuum means to grip the top end of the bottom bag

in the magazine and pull the upper portion of the bag downwardly from the magazine to a generally horizontal position;

upper vacuum means cooperating with the lower vacuum means to grip and open the said top end of the said bottom bag;

a pair of spaced transfer arms pivotally mounted at the upper end thereof to said frame above said magazine, the lower



ends of said arms being movable between the side edges of said horizontal opened bag and said spout;

means at the lower ends of said arms to clamp the side edges of the said opened bag to the transfer arms; and

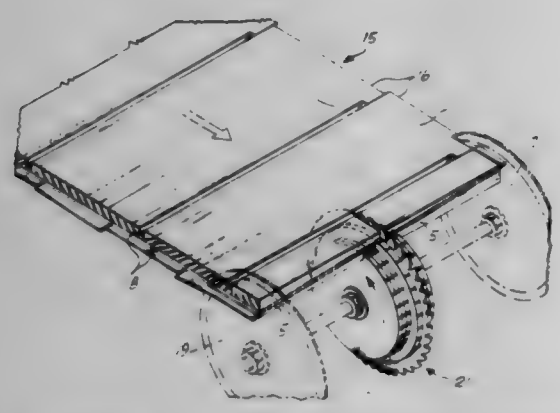
means for pivoting said transfer arms to pull the bag clamped to the transfer arms completely from the stack in the magazine and transfer such bag to a vertical position on the spout.

4,345,630

METHOD OF MAKING RABBETED SHINGLE BUTT JOINT SIDEWALL PANEL

Joe L. Bockwinkel, Winlock, and Willis G. Pehl, Chehalis, both of Wash., assignors to Shakertown Corporation, Winlock, Wash.

Filed Apr. 24, 1980, Ser. No. 143,301
Int. Cl.³ E04C *2/10, 2/40*
U.S. Cl. 144—346 **4 Claims**



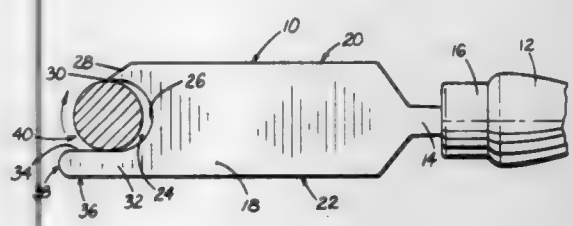
1. In a process for making weathertight laminated wood shingle panels including laying up an elongated backing sheet and a face layer of random width high quality wood face shingles having their lengths extending transversely of the backing sheet and generally lengthwise of their grain arranged in a row transversely of their lengths and lengthwise of the backing sheet with their longitudinal edges in edge-abutting relationship, the width of the backing sheet being substantially as great as the lengths of the shingles, and bonding the backing sheet and face layer together, the improvement comprising rabbeting, prior to assembling the face shingles in edge-abutting relationship, the face side only of a longitudinal edge of each random width face shingle generally parallel to the grain of the wood of such face shingle, and assembling the face shingles onto the backing sheet with the underside of each face shingle ungrooved.

4,345,631

WOOD TURNING TOOL

Anton J. Lemler, Rte. 6, Box 144, Sedalia, Mo. 65301

Filed Oct. 24, 1980, Ser. No. 200,463
Int. Cl.³ B25D *3/00*
U.S. Cl. 145—24 **1 Claim**



1. In a chisel for turning a workpiece spindle in a lathe, a chisel blade comprising:

an elongated flat bar having a semi-circular, template notch in one end thereof for clearing the workpiece and gauging the size and configuration of contours to be cut into the workpiece by the chisel,

said end having a beveled portion merging with said notch at one terminus of the latter presenting a sharp, leading cutting edge extending transversely of the bar and integral therewith; and

an elongated, imperforate tongue at said end, integral with the bar and extending outwardly beyond the opposite terminus of said notch in diametrically opposed relationship to said edge for guiding the chisel during turning of the workpiece into an operating position for cutting said contours,

said bar having a pair of opposed, flat parallel sides, said wall being perpendicular throughout to said sides and having a pair of opposed, flat parallel edges perpendicular to said sides, one of said parallel edges merging with said beveled portion, the other of said parallel edges having a stretch in opposed parallel relationship to said surface, the bar being solid throughout, presenting an uninterrupted, transversely flat, concave wall defining said notch, said tongue having a flat, workpiece-engaging surface parallel with the longitudinal axis of the bar, the tongue terminating in a convex tip transversely perpendicular to said sides,

said cutting edge extending uninterruptedly and linearly across the bar in perpendicular relationship to said sides and being in a predetermined fixed position with respect to said tongue.

4,345,632

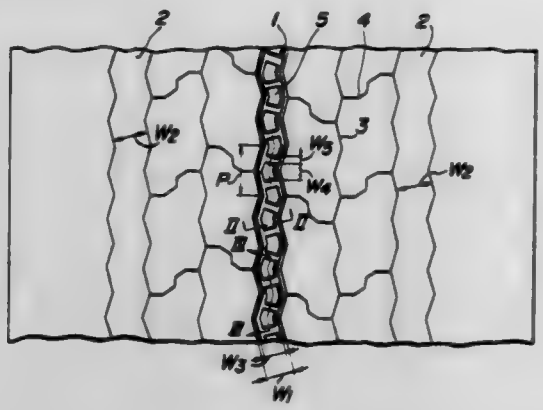
TREAD WITH SPACED PROJECTIONS IN STONE EJECTING GROOVE

Hiroyoshi Takigawa, Kodaira, and Nobuhiro Miyamura, Higashimurayama, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1980, Ser. No. 207,506
Claims priority, application Japan, Nov. 29, 1979, 54-153646
Int. Cl.³ B60C *11/04*
U.S. Cl. 152—209 R **11 Claims**

1. In a heavy duty pneumatic tire having a tread provided on its outer surface with a plurality of circumferential grooves, the improvement wherein at least one groove of said circumferential grooves is opened on said tread surface at an open groove width corresponding to 2–8% of a transverse width of said tread, has a groove bottom width substantially equal to said open groove width in such a medium narrowed shape that the groove width is gradually decreased from the edge of said open groove to a certain narrowed point in the depthwise direction of the groove and then gradually increased from said narrowed point to the groove bottom under no load, and is

provided on its groove bottom with multiple protrusions separated apart from the opposed groove walls of said groove and



at an interval between the adjoining protrusions in the circumferential direction of said groove.

4,345,633

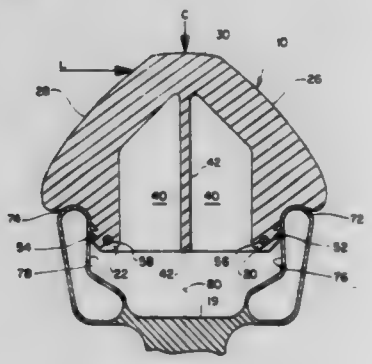
WEBBED NON-PNEUMATIC TIRE

Oscar P. Gilmore, 5909 Jurupa Ave., Riverside, Calif. 92504

Continuation-in-part of Ser. No. 911,204, May 31, 1978, and a continuation-in-part of Ser. No. 919,726, Jun. 27, 1978, abandoned. This application Feb. 2, 1979, Ser. No. 8,867

Int. Cl.³ B60C *7/12*

U.S. Cl. 152—328 **7 Claims**



1. A non-pneumatic tire of the type to be mounted on a rim formed with an axially extending central rim and axially spaced apart annular mounting flanges comprising:

a resilient circumferential tread wall having a radially outwardly facing tread surface;

a pair of axially spaced apart resilient elastic side walls projecting radially inwardly from said tread wall and cooperating therewith to form a circumferential cavity, said sidewalls terminating at their radial inner edges in shoulders for seating on the radial edges of said mounting flanges;

a pair of axially spaced apart elastic retaining flanges projecting radially inwardly from said respective sidewalls for being stretched over said rim mounting flanges and for receipt against the axially inner sides thereof, said retaining flanges terminating in radial inner edges spaced radially from axially extending surfaces of said rim;

a plurality of radially projecting resilient webs spaced apart substantially equidistant about the circumference of said cavity, extending axially between said retaining flanges and said side walls and attached thereto throughout substantially the radial width of said retaining flanges and said side walls to yieldingly urge said retaining flanges axially outwardly into engagement with said respective mounting flanges; and,

a single annular elastic stabilizing band disposed in said cavity, centrally between said sidewalls and of a circumference sufficient to be held under tension when said tire retaining flanges are mounted on said rim mounting flanges whereby said tire may be mounted on said rim with said retaining flanges retained between said mounting flanges and pushed thereagainst by said webs and when weight is applied to said rim while said tire rolls on a support surface said sidewalls will carry said weight and when said webs pass sequentially between said rim and support surface they will cooperate with said sidewalls to provide irregular support.

4,345,634

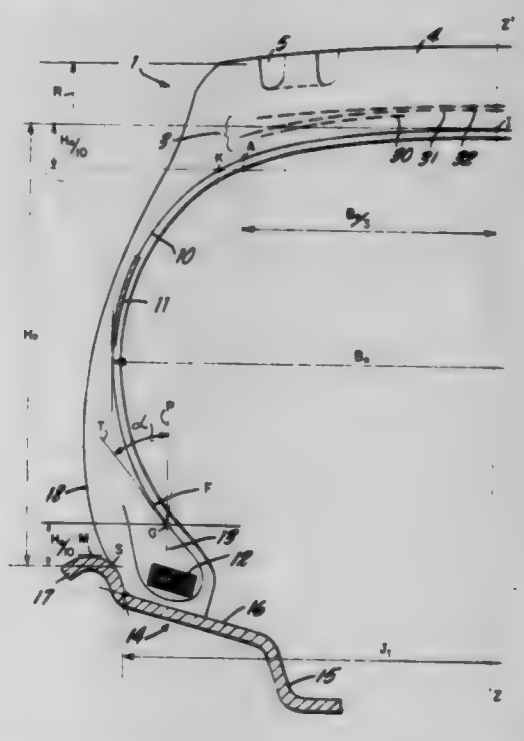
TIRE FOR MEDIUM AND HEAVY CARRIER VEHICLES

Daniel G. Giron, Greer, S.C., assignor to Michelin Recherche et Technique S.A., Basel, Switzerland

Filed Jun. 4, 1980, Ser. No. 156,338

Int. Cl.³ B60C *9/08, 3/00*

U.S. Cl. 152—353 R **13 Claims**



1. A tire for medium and heavy carrier vehicles having a tread, a radial carcass reinforcement anchored to at least one bead ring in each bead and a tread reinforcement formed of at least two plies of wires or cables parallel in each ply and crossed from one ply to the next, forming acute angles with the longitudinal direction of the tire, the radial carcass reinforcement having, when the tire is mounted on a rim and inflated to its operating pressure but not under load, as seen in meridian cross section, a neutral fiber whose point of intersection with the trace of the equatorial plane of the tire is at a radial distance from the point of contact of the tire with the flange of the rim at most equal to 0.65 times the maximum axial width of the neutral fiber, the width of the rim being at least equal to 0.88 times the maximum axial width of the neutral fiber, characterized

by the fact that the tire being mounted on the rim and inflated to its operating pressure but not under load, the length of the segment of the neutral fiber of the radial carcass reinforcement between, on the one hand, a radially inner extreme point located at a radial distance outward of the point of contact of the tire with the flange of the rim equal to 0.1 times said radial distance between said point of contact and said point of intersection and, on the other hand, a radially outer extreme point located axially outward of said point of intersection and at a radial distance inward of said point of intersection equal to 0.1 times said radial distance between said point of contact and said point of intersection, is less than 1.20 times the distance between the two extreme points of said segment of the neutral fiber of the radial carcass reinforcement, said point of contact being located radially and axially inward of the point of maximum radial height of the flange of the rim,

by the fact that the beads of the tire being mounted on the

rim in their operating position and the tire being not inflated and not under load, the neutral fiber of the radial carcass reinforcement passes through a point located, on the one hand, radially inward of the point of intersection of the neutral fiber of the radial carcass reinforcement with the trace of the equatorial plane at a distance at most equal to 0.075 times the maximum axial width of the neutral fiber of the radial carcass reinforcement when the tire is mounted and inflated but not under load and, on the other hand, axially outward of the trace of the equatorial plane at a distance equal to one-third of the maximum axial width of the neutral fiber of the radial carcass reinforcement of the tire when mounted and inflated, said neutral fiber of the radial carcass reinforcement being symmetrical with respect to the trace of the equatorial plane, and

by the fact that the radial carcass reinforcement has, at least along said segment of its neutral fiber, a relative elongation of less than 2.5% under a force equal to 10% of its ultimate tensile strength,

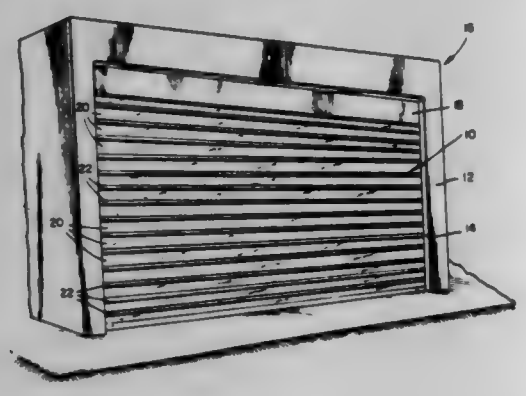
whereby the belting action of the tread reinforcement under the effect of inflation to operating pressure is reduced to a relatively narrow zone centered on the equatorial plane so as to avoid the generation of harmful stresses at the tread reinforcement edges.

4,345,635

ROLLING PROTECTIVE GATE FOR STORE FRONTS OR THE LIKE

Martin D. Solomon, 26 Margaret Ave., Lawrence, N.Y. 11559

Filed Aug. 29, 1980, Ser. No. 182,577
Int. Cl.³ E06B *9/08*
U.S. Cl. 160—133 **10 Claims**



1. A rolling gate adapted to provide a transparent displaceable security closure for a building access opening defining a store front, said gate comprising:

a plurality of elongated transparent slats disposed horizontally in vertically-spaced relationship, each slat having a narrow, rectangular body portion and being sized to extend across the entire width of said access opening,

a plurality of elongated metal rods interconnecting said slats in their spaced relationship, with each rod being sized to extend across the entire width of said access opening,

each of said elongated metal rods being elliptical in cross section and having convex front and rear walls, each rod having a height appreciably less than the height of the body portion of each slat, and a width appreciably greater than the thickness of the body portion of each slat,

and coupling means formed integrally on each of said slats and rods for pivotally connecting each transparent slat along its entire upper and lower edges between a pair of adjacent rods to form the assembled gate,

said coupling means comprising an enlarged bead formed integrally along the full length of each longitudinal edge of the narrow body portion of each transparent slat, and a pair of elongated sockets of circular cross-section formed integrally in the upper and lower portions of each metal rod and extending the full length of said rod, each of said sockets being sized to receive the enlarged bead of an adjacent slat for turning movement therein,

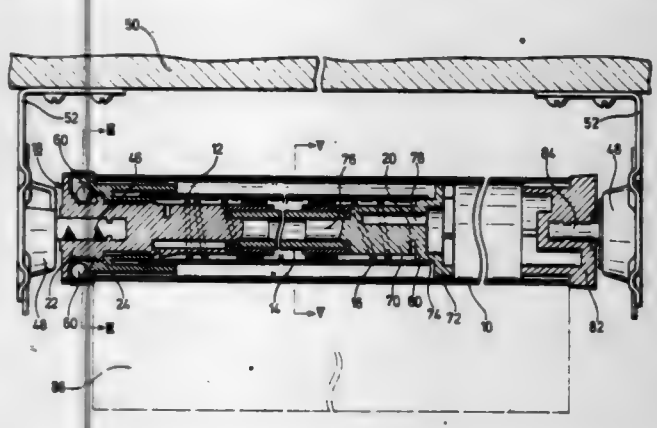
whereby said interconnected and articulated slats and rods provide a rolling security gate for said store front, which, in lowered position, has a completely solid body without interruptions or gaps, which provides visibility of said store front and passage of light therethrough.

4,345,636

ROLLER SCREEN UNIT

Shigeki Fukuchi, Tokyo, Japan, assignor to Metako Kigyo Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1979, Ser. No. 60,387
Claims priority, application Japan, Jul. 31, 1978, 53-93248
Int. Cl.³ E06B *9/208*
U.S. Cl. 160—297 **5 Claims**



1. A roller screen unit comprising an outer roller sleeve on which a screen member may be wound, an intermediate sleeve received loosely in said outer roller sleeve, a core member loaded with an elongated spiral spring and received in the intermediate sleeve, a clutch mechanism connected to one end of the elongated spiral spring in association with the outer roller sleeve, and a pillow member for the intermediate sleeve and connected with the opposite end of the elongated spiral spring, said clutch mechanism including a stator member comprising a cylindrical body having one end adapted to be suspended by a bracket and provided with a cover disk with an abutting drum section in which one or more cavities are formed said drum section having an annular rim spaced from said cover disk, and being further provided on its periphery spaced from said annular rim with an elastically projected stopper means, and at the opposite end with an extended shaft adapted to be inserted into one end of the core member and with a channel having a pocket for receiving and engaging with the one end of the elongated spiral spring, a rotator member rotatably mounted on the stator member comprising a sleeve body with a flanged end in which one or more chambers with contiguous recesses are formed, and balls received within said recess to form ball clutch means.

4,345,637

METHOD FOR FORMING HIGH FRACTION SOLID COMPOSITIONS BY DIE CASTING

Merton C. Flemings, Cambridge, Mass.; Rodney G. Riek, Maryland Heights, and Kenneth P. Young, Ballwin, both of Mo., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 853,795, Nov. 21, 1977, abandoned. This application Nov. 15, 1979, Ser. No. 94,636
Int. Cl.³ B22D *17/00*
U.S. Cl. 164—113 **10 Claims**

1. The method of casting a metal composition which is at least partially liquid and when partially liquid contains between about 1 weight percent and about 85 weight percent degenerate dendrites homogeneously dispersed within a liquid phase of said metal composition which comprises injecting under pressure said metal composition into a die formed of a

material having a thermal diffusivity of at least about 0.5 cm^2/sec, solidifying said material in said die, ejecting the solidified material from said die and maintaining said die at an original mean die temperature prior to said injecting step of not more than 400° F. by spraying the cavity surface of the die directly with a liquid coolant, the temperature of the liquid being sufficiently low so as to reduce the mean die temperature back to a mean die temperature of not more than its original mean die temperature and to not more than about 400° F. and to minimize penetration of heat from said metal composition into the wall of the die so that the heat extracted from said composition during casting is removed from the mold during the subsequent spraying step and repeating said injecting, solidifying, ejecting and spraying steps, the time between said injecting step and said ejecting step being less than about 1 minute and the time between said ejection step and said spraying step being less than about 30 seconds thereby to minimize penetration of heat from said metal composition into the wall of the die so that the heat extracted from said composition during casting is removed from the mold during the subsequent spraying step.

4,345,638

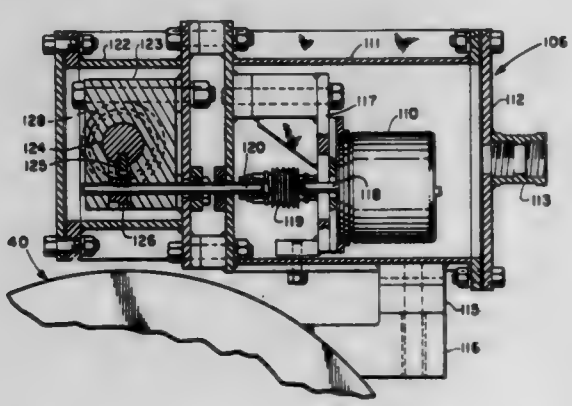
FOUNDRY MOLDING METHOD

Rudolf Hermes, Parma, Ohio, assignor to The Osborn Manufacturing Corporation, Cleveland, Ohio

Division of Ser. No. 64,008, Aug. 6, 1979, Pat. No. 4,248,290. This application Nov. 17, 1980, Ser. No. 207,792

Int. Cl.³ B22C *9/20*

U.S. Cl. 164—456 **18 Claims**



1. A method of metal founding, comprising forming a mold cake with a casting forming surface in at least one vertically oriented face thereof, and transferring such cake toward a pouring station, including bringing a pusher at zero speed into engagement with such cake, wherein the method further comprising measuring a dimensional parameter of such cake, and using such parameter to control movement of such pusher.

4,345,639

HEAT STORAGE UNITS

Richard J. Lane, Moddershall, Near Stone, England, assignor to Ti Creda Manufacturing Limited, Stoke on Trent, England

Filed Jul. 5, 1979, Ser. No. 55,000

Int. Cl.³ F28D *17/00*; F24H *7/04*

U.S. Cl. 165—10 **13 Claims**

1. A heat storage unit comprising:

a housing;

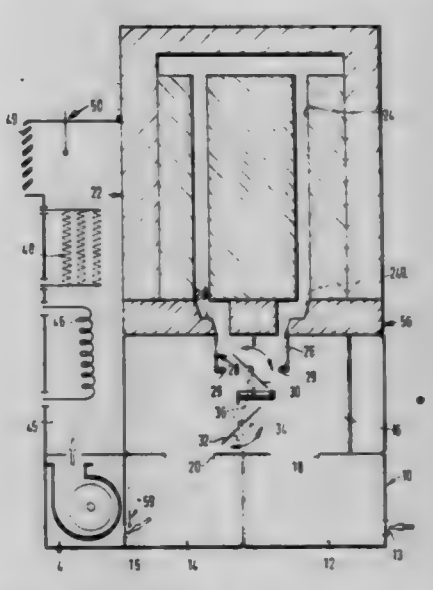
an air inlet and an air outlet extending into the housing;

means within the housing defining a flow path extending between the inlet and the outlet;

heat storage elements mounted in the housing, said heat storage elements defining passage means extending between the heat storage elements, said passage means communicating with an opening in an ancillary chamber in the housing;

impeller means on the housing and which is operative to cause air flow into the air inlet and from the air outlet;

a valve member mounted adjacent to the opening in the ancillary chamber; drive means connected to said valve member and which is operative to move the valve member between a first position in which said valve member divides the ancillary chamber into an inlet section in communication with an upstream flow section of the heat storage elements and an outlet section in communication with a downstream flow section of the heat storage elements, and a second position in which the valve member



extends across the opening of the ancillary chamber to close the opening;

whereby when the valve member is in its first position the impeller means is operative to cause air to flow from the inlet to the outlet through said heat storage elements, and when the valve member is in its second position said impeller means is operative to cause air to flow from the inlet to the outlet with no significant flow of air through said heat storage elements.

4,345,640

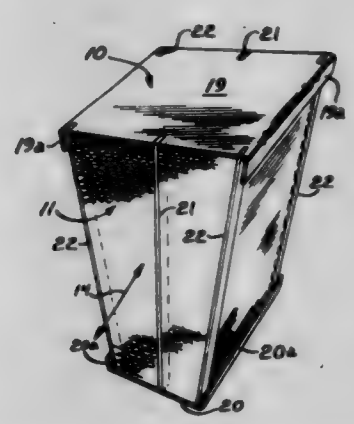
REGENERATIVE HEAT EXCHANGER BASKET

Edward J. Cullinan, 411 Opatrny Dr., Fox River Grove, Ill. 60021

Filed May 11, 1981, Ser. No. 262,470

Int. Cl.³ F28D *19/04*

U.S. Cl. 165—10 **1 Claim**



1. In a basket for use in a regenerative heat exchanger of the type wherein a fluid to or from which heat is to be transferred is passed through the basket from one end thereof to another end thereof and wherein there is a space of a predetermined size in the heat exchanger which is available to receive the basket, said basket comprising an outer frame open at said ends, a stack of a plurality of heat exchange plates within said frame, each of said plates having end edges generally corresponding to said ends of the basket, said plates abutting adjacent plates of the stack and defining fluid passages therebetween which passages extending from end to end of the plates, said frame including a plurality of bars across said ends of the basket to

prevent said plates from shifting endwise in the basket, each of said bars having a first face of a given width in juxtaposition to the plate edges and a second face of a given width which is generally normal to said end edges, the improvement comprising:

each of said plates having a recess at each location where the plate abuts a bar, each recess having a width as measured parallel to the edge of the plate which substantially corresponds to said given width of said first face, and having a length as measured normal to said end edge of the plate which substantially corresponds to said given width of said second face,

said bars being positioned in said recesses,

whereby said plates extend substantially to said ends of the basket and thus, for a basket of a given size, there is nearly a maximum amount of plate surface available for heat exchange purposes.

4,345,641

MOTOR VEHICLE, ESPECIALLY A TRUCK, WITH A COOLING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

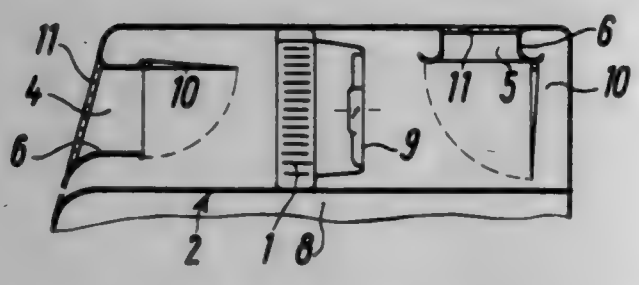
Kurt Hauser, Stuttgart, Fed. Rep. of Germany, assignor to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 195,857

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941014

Int. Cl.³ F28F *9/00*

U.S. Cl. 165—41 **14 Claims**



1. A motor vehicle with a cooling device for an internal combustion engine, said cooling device comprising at least one heat exchanger, said heat exchanger being mounted in an elevated position on top of or behind a cab of the vehicle, the improvement comprising a liquid-collecting container means which is provided about said heat exchanger, said liquid-collecting container means being resistant to pressure and breakage, being closed except for one or more air intake openings and air exhaust openings, and being provided at said air intake and exhaust openings with means for ensuring that said container means serves as a liquid-collecting chamber for coolant that escapes from the heat exchanger in any position of the vehicle.

4,345,642

ARTICULATED HEAT PIPES

Donald M. Ernst, Leola, and Richard L. Copenhaver, Rothsville, both of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Dec. 24, 1980, Ser. No. 220,074

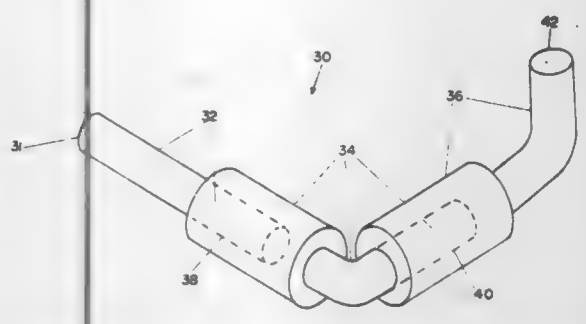
Int. Cl.³ F28D *15/00*; F28F *5/00*

U.S. Cl. 165—86 **6 Claims**

1. A heat pipe assembly comprising:

at least two heat pipes with tubular casings with a first heat pipe having its casing constructed with an angle and a cavity in one end shaped as a cylinder;

a second heat pipe having its casing constructed with an angle and with a first end shaped to match and inserted into the cavity in the first heat pipe, the first end of the second heat pipe differing in dimension from the cavity of the first heat pipe into which it is inserted sufficient to provide a gap between the outer surface of the second heat pipe and the inner surface of the first heat pipe, the thickness of the gap being within the range of 0.001 inch to 0.015 inch; and



a heat conducting fluid inserted into the gap and conducting heat between the surfaces forming the gap.

4,345,643

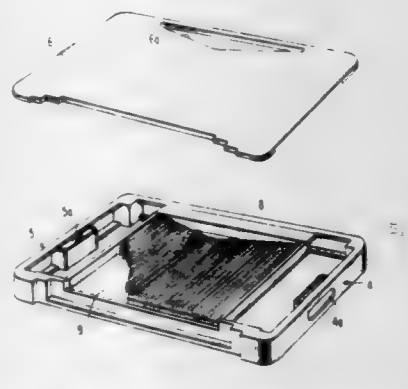
HEAT EXCHANGER BASE FOR A PORTABLE LASER SYSTEM

Stanley R. Dawson, Corona, and Cecil L. Hayes, Placentia, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 24, 1980, Ser. No. 210,068

Int. Cl.³ F28F *3/06*

U.S. Cl. 165—122 **7 Claims**



1. A heat exchanger base for electrical apparatus comprising,

a frame having contiguous front, back and end walls;

a plate secured to the upper edge of said frame forming a top wall for supporting electrical apparatus;

a bottom plate secured to the lower edge of said frame;

radiator means including a shelf mounted within said frame between and extending substantially parallel to the top and bottom plates and a plurality of like heat-radiating fins supported on said shelf and extending between said front and backwalls, the bottom surface of said top plate engaging the top edges of said fins; and

air inlet and outlet means provided in said base communicating with respective opposite front and back portions of said radiator means for causing heat generated by the apparatus to be conducted through the top wall and dissipated through said radiator means.

4,345,644

OIL COOLER

Detlef B. Dankowski, 921 Westbrook, Garland, Tex. 75043

Filed Nov. 3, 1980, Ser. No. 203,135

Int. Cl.³ F28F *1/42, 9/22*

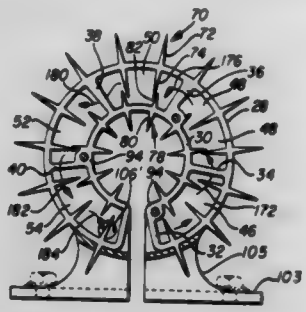
U.S. Cl. 165—154 **14 Claims**

1. A fluid cooler comprising:

a body defining a plurality of circumferentially spaced interconnected passageways, each passageway having a forward and rearward end with alternate ends of said passageways being in fluid communication to provide a continuous circuitous passageway for fluid from a first passageway through intermediate passageways to an exhaust passageway, said first passageway being completely sepa-

rated from said exhaust passageway by a heat exchange fluid gap;

means for injecting fluid into the first passageway; and



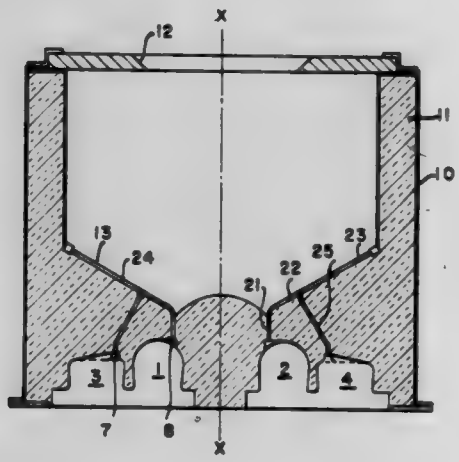
a discharge aperture permitting fluid discharge from the exhaust passageway.

4,345,645

HOT GAS ENGINE HEATER HEAD

Jan C. Bratt, Malmö, Sweden, assignor to Kommanditbolaget United Stirling AB & CO, Malmo, Sweden

Filed Oct. 20, 1980, Ser. No. 199,007
Int. Cl.³ F24J 3/00
U.S. Cl. 165—176 **3 Claims**



1. A multiple cylinder hot gas engine heater head in which a plurality of tubes connect the cylinders with the corresponding regenerator housings and in which each tube has a first curved part of a shape which corresponds substantially to the shape of an involute curve on a cone and in which the inner ends of the tubes start on a base circle and the first curved parts are juxtaposed so that constant gaps between the curved parts are obtained, characterized in that each tube has a second curved part following a different involute curve on the same cone starting in continuation of the said first curved part wherein the second curved parts are juxtaposed leaving a constant gap between the second curved parts.

4,345,646

APPARATUS FOR CHEMICAL CUTTING

Jamie B. Terrell, Fort Worth, Tex., assignor to Gearhart Industries, Inc., Fort Worth, Tex.

Continuation of Ser. No. 877,085, Feb. 13, 1978, abandoned.
This application Sep. 24, 1979, Ser. No. 78,472
Int. Cl.³ E21B 29/02
U.S. Cl. 166—55 **12 Claims**

1. A downhole chemical fluid jet cutting tool adapted to be suspended from an electrical wireline comprising in combination:

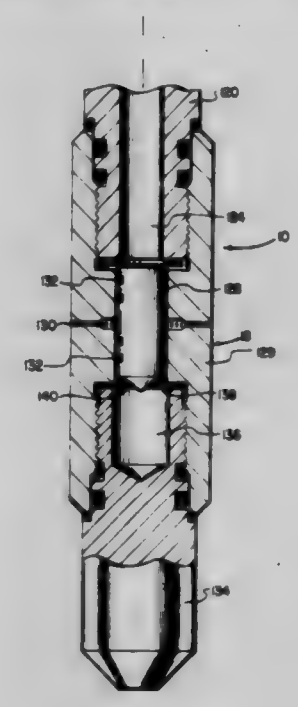
(a) an elongated generally cylindrical tool body;

(b) a generally cylindrical slip body means forming part of said tool body and comprising a pipe gripping slips array connected into a fluid pressure responsive co-axially disposed expandable piston-cylinder means;

(c) said piston-cylinder means being biased toward a retracted position by elastic return means;

(d) each slip of said slips including a head at a first end being retained by said slip body and being biased toward a retracted position from a deployed position by positive retraction means;

(e) said piston-cylinder means including a slip expansion mandrel means disposed within said slip array to deploy said slips into gripping engagement as said piston-cylinder



is actuated against said elastic return means in response to application of fluid pressure;

(f) a chemical fluid cutting means forming part of said tool body including a fluid chamber adapted to contain a fluid chemical defined within said tool body between two diaphragm means provided to rupture from application of a designated differential fluid pressure; and

(g) a fluid jet discharge means formed in said tool body and adapted to direct fluid chemical from said tool body in selected direction and at high velocity.

4,345,647

APPARATUS TO INCREASE OIL WELL FLOW

William C. Carmichael, 3806 N. Stratford Rd., NE., Atlanta, Ga. 30342

Filed Jul. 18, 1980, Ser. No. 169,943
Int. Cl.³ E21B 23/06, 33/127, 43/18, 47/04
U.S. Cl. 166—66 **1 Claim**

1. An oil well construction for extracting oil bearing liquid from an oil bearing formation in the ground including:

a tubular well casing extending into the ground past the oil bearing formation, said well casing including an upper end extending above the ground and a lower end located below the oil bearing formation, said well casing defining a plurality of openings therethrough communicating with the oil bearing formation so that the oil bearing liquid flows in said casing through said openings, said well casing defining a sump therein between said openings and the lower end of said well casing to collect the oil bearing liquid therein;

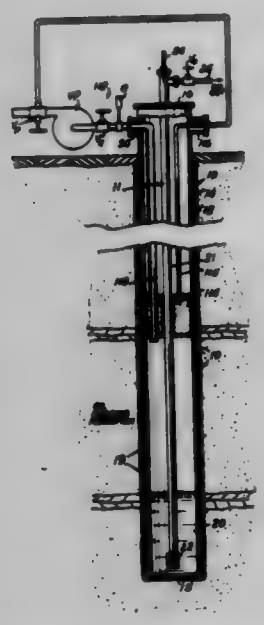
lift means for removing the oil bearing liquid from said sump, said lift means including an oil lift pipe extending into said well casing from the upper end thereof, said lift pipe defining an intake thereto located in said sump;

upper liquid level sensing means positioned in said sump in said well casing at a position just below the lowermost of said openings through said well casing and operatively connected to said lift means to cause said lift means to remove the oil bearing liquid from said sump when the

level of the oil bearing liquid in said sump rises to the level of said upper liquid level sensing means;

lower liquid level sensing means positioned in said sump in said well casing below said upper liquid level sensing means and at a position just above said intake to said lift pipe and operatively connected to said lift means to cause said lift means to stop the removal of the oil bearing liquid from said sump when the level of the oil bearing liquid in said sump is lowered to the level of said lower liquid level sensing means;

inflatable sealing means positioned in said well casing around said oil lift pipe above said openings through said well casing and;



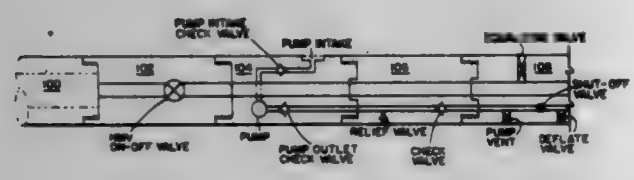
vacuum producing means including a vacuum pump having a pump inlet and a pump outlet, said pump inlet communicating with the inside of said casing between said sealing means and the oil bearing liquid in said sump to impose a vacuum therein so that said vacuum is imposed on the oil bearing formation through said openings in said well casing to assist in the extraction of the oil bearing liquid from the oil bearing formation and said pump outlet communicating with said inflatable sealing means to inflate said sealing means and seal said well casing around said oil lift pipe above said openings through said well casing.

4,345,648

INFLATABLE PACKER SYSTEM

Felix Kuus, Huntington Beach, Calif., assignor to BJ-Hughes, Inc., Long Beach, Calif.

Filed Feb. 11, 1980, Ser. No. 120,418
Int. Cl.³ E21B *33/127*
U.S. Cl. 166—106 **63 Claims**



1. An inflatable packer system with a central unrestricted bore adapted to be lowered on a tubular member into a well annulus having a wall for isolating at least one zone in the well during test comprising;

at least one inflatable element in said system adapted to be located adjacent said at least one zone;

pump means in said system operable upon rotation of said tubular member to provide inflation fluid;

inflation fluid passage means separate from said central unrestricted bore between said pump means and said at least one inflatable element;

valve means in said system for controlling flow of inflation fluid to said at least one inflatable element;

said valve means including an outer sleeve housing means;

shifting sleeve means in said valve means adapted to be shifted downward longitudinally with respect to said sleeve housing means upon initial flow of inflation fluid from said pump means to provide an inflation fluid passageway between said pump means and said at least one inflatable element;

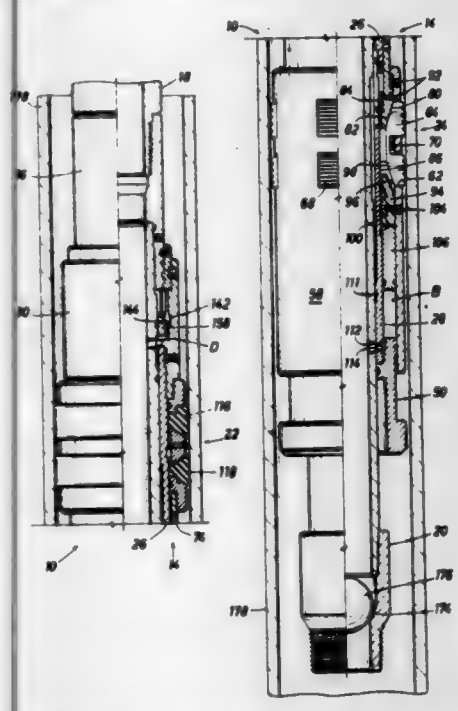
said pump means operable to pump inflation fluid into said at least one inflatable element to sealingly engage said at least one inflatable element against the well annulus wall to isolate said at least one zone.

4,345,649

WELL PACKER

John L. Baugh, and James W. Montgomery, both of Houston, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Sep. 5, 1980, Ser. No. 184,674
Int. Cl.³ E21B *33/128, 33/129*
U.S. Cl. 166—120 **7 Claims**



6. A well packer for releasable setting within a well conduit comprising:

a. a central mandrel extending within an outer assembly;

b. holding means for releasably connecting said mandrel to said outer assembly against relative axial movement therebetween, said holding means being releasable by rotation of said mandrel relative to said outer assembly;

c. sleeve means, as part of said outer assembly;

d. seal means mounted on said sleeve means and movable generally radially between a retracted configuration and an extended configuration in which said seal means may sealingly engage said conduit;

e. first lock means engageable with said sleeve means for locking said seal means in said extended configuration;

f. anchoring means, as part of said outer assembly, movable generally between a retracted position and an extended position for grippingly engaging said conduit; and

g. second lock means engageable with said sleeve means for locking said anchoring means in said extended position.

4,345,650

PROCESS AND APPARATUS FOR ELECTROHYDRAULIC RECOVERY OF CRUDE OIL

Richard H. Wesley, P.O. Box 218429, Houston, Tex. 77218

Filed Apr. 11, 1980, Ser. No. 139,438
Int. Cl.³ E21B *43/25*
U.S. Cl. 166—249 **21 Claims**

1. A process for stimulating recovery of crude oil from oil

bearing earth formations wherein such oil is incapable of migrating through the formation in commercially producing quantity, said process comprising:

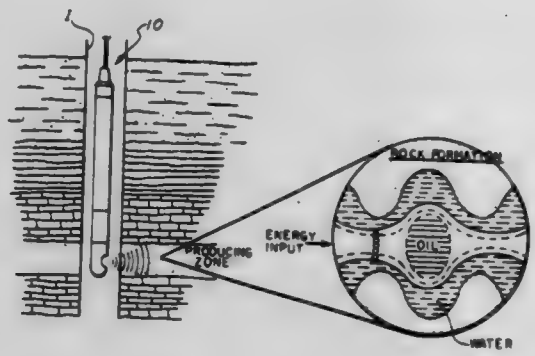
locating a pair of electrodes within a well bore, said electrodes being in spaced relation and defining a spark gap therebetween;

developing first and second electrical charges substantially at the level of the oil bearing earth formation;

releasing said first electrical charge into said spark gap to render said spark gap conductive;

releasing said second electrical charge into said conductive spark gap to generate said explosive spark;

said explosive spark introducing intense shock waves into said oil bearing formation at the level of said formation, said electrical spark generated shock waves being of sufficient magnitude to modify the oil retention quality of said formation sufficiently to release a substantial quantity of oil from the adhesion thereof to the formation;



introducing hydraulic waves into said oil bearing formation at the level of said formation, said hydraulic waves being generated by said electrical spark simultaneously with said shock waves and traveling through said formation at a rate of speed that is slower as compared to the speed of said shock waves; said hydraulic waves inducing released oil to migrate forcibly away from the point of energy introduction of said shock waves and hydraulic waves; and

producing the migrating oil from adjacent collection wells positioned in spaced, surrounding relation with said point of energy introduction into said formation.

4,345,651

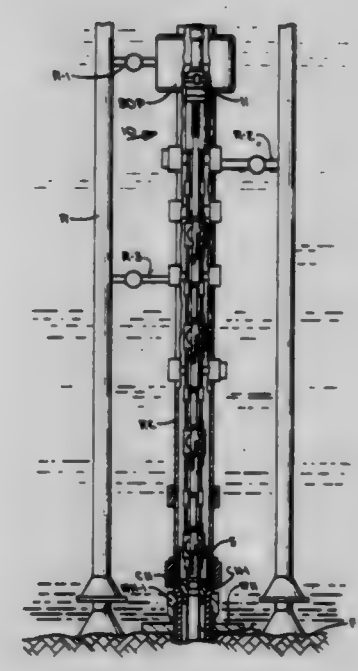
APPARATUS AND METHOD FOR THE MECHANICAL SEQUENTIAL RELEASE OF CEMENTING PLUGS

Neil H. Akkerman, Kingwood, and Gonzalo Vazquez, Houston, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Mar. 21, 1980, Ser. No. 133,363
Int. Cl.³ E21B *33/16*
U.S. Cl. 166—291 **8 Claims**

4. An apparatus for holding and selectively mechanically releasing a plug device used in cementing a subterranean well, said apparatus being securable on a longitudinally and rotationally manipulatable conduit communicating with said well, said apparatus comprising: an elongated cylindrical housing; control head means positioned within said housing and shiftable in response to manipulation of said conduit from closed position whereby said plug device is prevented from passing through said control head means to open position whereby said plug device is permitted to pass through said control head means; means for transferring at least one of longitudinal and rotational manipulation of said conduit to said control head means to selectively shift said control head means between closed and open positions; and plural control head means positioned within said housing and sequentially shiftable from closed position to open position, one after another.

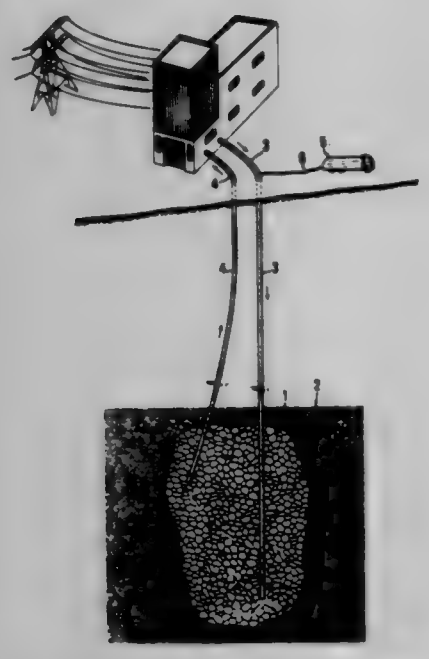
7. In a method of cementing a subterranean well wherein plug devices are dropped within a first conduit in the well, the steps of: (1) extending to said first conduit an apparatus for holding and selectively mechanically releasing a plug device used in cementing said well, said apparatus being securable on a longitudinally and rotationally manipulatable second conduit communicating with said well, said apparatus comprising: an elongated cylindrical housing; control head means positioned within said housing and shiftable in response to manipulation of said second conduit from closed position whereby said plug device is prevented from passing through said control head means to open position whereby said plug device is permitted to pass through said control head means; means for transferring at least one of longitudinal and rotational manipulation of said second conduit to said control head means to selectively shift said control head means between closed and open positions; a valve element disposed in said control head means with a central flow way therethrough and a bridge exteriorly on said valve element, said valve element, when in closed position, positioning said bridge within the interior of said cylindrical housing to prevent passage of said plug device therethrough, said valve element, when manipulated to open position, moving said flow way to substantial alignment with said flow passageway to permit fluid transmission through said cylindrical housing and to permit passage of said plug device therethrough; said control head means comprising at least one auxiliary flow passageway ported therethrough and off-set from said central flow way, whereby when said valve element is in closed position, fluid transmitted through said auxiliary flow passageway may enter into said valve element and within said elongated cylindrical housing therebelow, and, when said valve element is in open position, said bridge traverses said auxiliary flow passageway and prevents fluid transmission from said auxiliary flow passageway through said valve element and within said cylindrical housing therebelow; (2) manipulating said second conduit to activate said means for transferring at least one of longitudinal and rotational manipulation to shift said control head means from closed position to open position; and (3) pumping fluid through said second conduit and said apparatus to permit said plug device to be moved through said control head means, out of said apparatus and into said first conduit.



4,345,652
PROCESS FOR IMPROVING THE PERMEABILITY OF GROUND FORMATIONS, ADAPTED TO THE PRODUCTION OF HIGH TEMPERATURE GEOTHERMIC ENERGY

Claude Roque, Chatou, France, assignor to Institut Francais du Petrole, Ruell-Malmaison, France

Filed Dec. 24, 1980, Ser. No. 219,606
Claims priority, application France, Dec. 28, 1979, 79 32020
Int. Cl.[3] E21B *43/27, 43/28*
U.S. Cl. 166—307 9 Claims



1. A process for increasing the permeability of ground formations, adapted to the production of geothermal energy at high temperature, comprising the following successive steps:

(a) injecting a sodium or potassium hydroxide solution during a limited period to effect leaching treatment of the formation;

(b) injecting a saline solution; and

(c) circulating of a heat conveying fluid through the formation. tion.

4,345,653
PACKER DEFLATE SUBASSEMBLY FOR AN INFLATABLE PACKER SYSTEM

Randy S. Baker, Long Beach, and Gerald C. Eckmann, La Puente, both of Calif., assignors to BJ-Hughes Inc., Long Beach, Calif.

Filed Feb. 15, 1980, Ser. No. 121,960
Int. Cl.[3] E21B *33/127*
U.S. Cl. 166—317 7 Claims

1. An emergency deflation mechanism intended for use in an inflatable packer system adapted for use in a well annulus comprising:

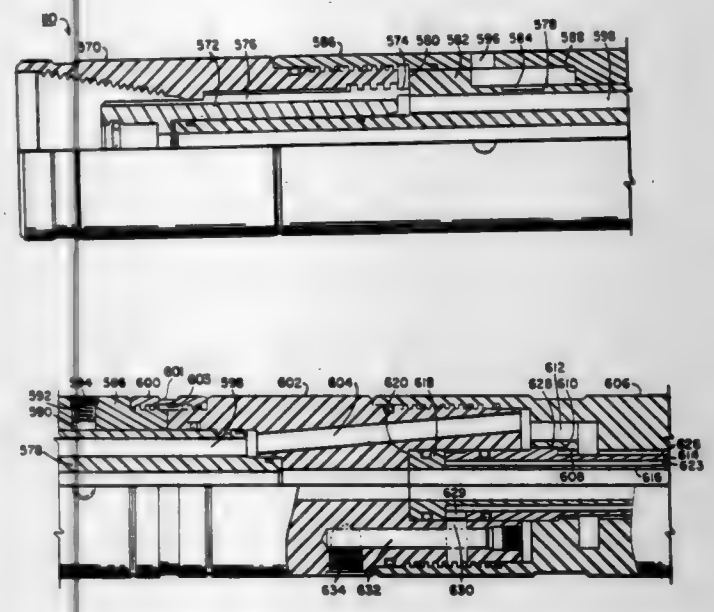
a longitudinally extending fixed cylindrical member adapted to be fixed against axial movement when in position in a well annulus;

a slidably movable cylindrical member, said slidably movable cylindrical member being adapted for relative movement axially with respect to said fixed cylindrical member;

inflation fluid passage means;

a circumferentially grooved tension sleeve joining said fixed cylindrical member and said slidably movable cylindrical member and adapted to be ruptured when a predetermined tension is applied to said slidably movable cylindrical member;

so that said slidably movable cylindrical member moves axially with respect to said fixed cylindrical member to

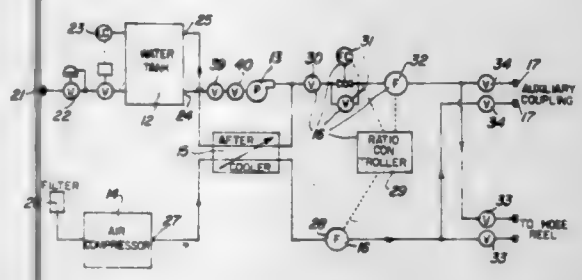


vent inflation fluid from said inflation fluid passage means to the well annulus.

4,345,654
PNEUMATIC ATOMIZING FIRE FIGHTING SUPPLY TRUCK

Stephen C. Carr, 1245 E. 1300 South, Salt Lake City, Utah 84105

Filed Oct. 6, 1980, Ser. No. 194,054
Int. Cl.[3] A62C *27/18, 27/28*
U.S. Cl. 169—24 7 Claims



1. A fire fighting supply system utilizing pneumatic atomization for extinguishing fires, comprising in combination:

a vehicle having emergency warning devices and storage areas for fire fighting equipment;

a water tank and pump assembly for supplying and pumping water to an aftercooler, and a hose and nozzle assembly;

an air compressor for supplying a pressurized flow of air to the hose and nozzle assembly;

said water operated aftercooler disposed to cool warm compressed air from said air compressor;

manual and automatic ratio flow regulating devices;

said hose and nozzle assembly comprising a live hose reel, a hose, and a nozzle apparatus with a plurality of pneumatic atomizing nozzles.

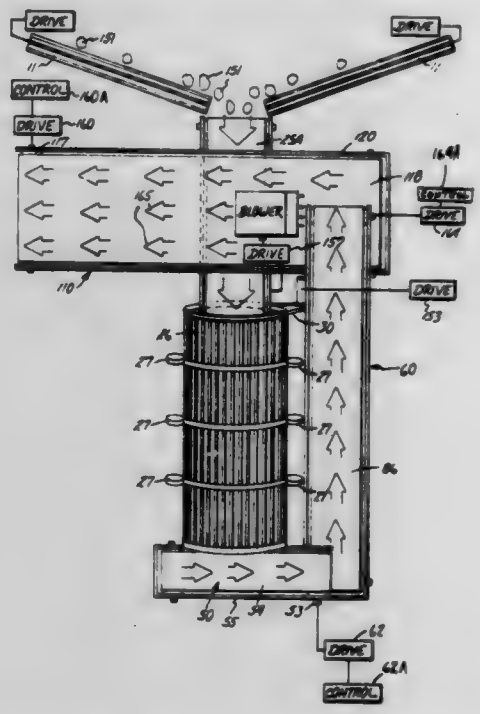
4,345,655
ROCK PICKER WITH STORAGE CONVEYORS

Harley D. Fahrenholz, P.O. Box 278, Clarissa, Minn. 56440

Filed Sep. 24, 1980, Ser. No. 190,373
Int. Cl.[3] A01B *43/00*
U.S. Cl. 171—63 6 Claims

1. In a rock picker having a longitudinally extending frame, means for lifting rocks or the like from the ground, conveyor means having a longitudinal axis and in position to receive rocks from the means for lifting, the improvement comprising said conveyor means including means to manually control the operation thereof to permit intermittent operation, said con-

veyor means being normally stopped and being operable to move rocks dropped on the conveyor means to different locations along the longitudinal axis thereof such that rocks are stored on the conveyor means at selected locations by selectively operating the conveyor means, said conveyor means including a conveyor frame, upwardly extending side walls on



said conveyor frame, said conveyor frame having one side wall facing the operator at the forward end of the rock picker, and an opening in said side wall member adjacent the discharge end of the conveyor means, means covering the opening effective for preventing rocks from falling through the opening, but permitting the operator to view rocks supported on said conveyor means at the location of the opening.

4,345,656

STRIKING CAP LINING

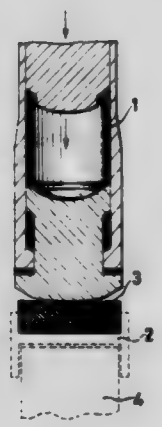
Josef Berzen, Oberhausen, and Herbert Mrozik, Bottrop, both of Fed. Rep. of Germany, assignors to Ruhrchemie AG, Oberhausen, Fed. Rep. of Germany

Division of Ser. No. 918,188, Jun. 19, 1978. This application Dec. 18, 1979, Ser. No. 104,992

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728164

Int. Cl.³ B25D *17/11*; F16F *15/04*

U.S. Cl. 173—131 **5 Claims**



1. A pile-driver comprising a cylinder and a piston, said piston being in registry with a cap disposed over an article to be driven, said cap having a lining in striking relationship with said piston, said lining comprising polyethylene having a viscosimetrically determined molecular weight of 1,000,000 to 10,000,000 and 5 to 40 volume percent of a metal powder.

4,345,657

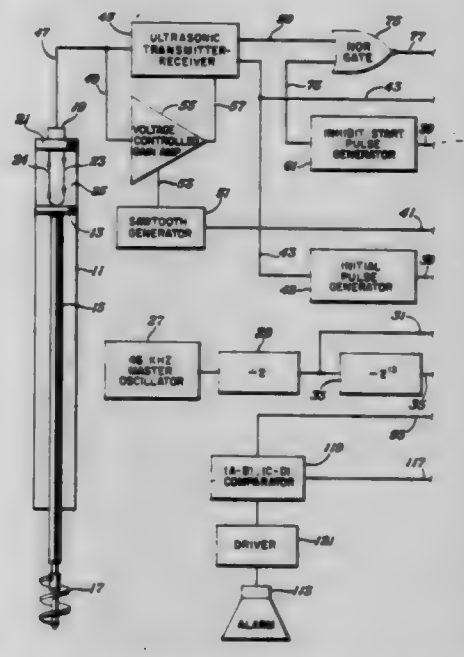
ELECTRONIC DEPTH INDICATOR FOR HYDRAULIC DRILLING MACHINES

Mig A. Howard, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Oct. 4, 1979, Ser. No. 81,726

Int. Cl.³ E21B *47/04*

U.S. Cl. 175—40 **6 Claims**



1. A depth determining apparatus for an earth boring machine of the type having a cylinder, a piston carried in the cylinder and longitudinally movable in response to hydraulic fluid pressure, a rotatably driven kelly carried by the piston and adapted to carry a cutting tool, the apparatus comprising:

transducer means mounted at the top of the cylinder for transmitting a sound wave through the hydraulic fluid to the top of the piston and detecting the return of the wave at the top of the cylinder;

counter means for determining the elapsed time for the wave to travel to the piston and back to the transducer means; and

display means for converting the elapsed time into a signal corresponding to the depth of the cutting tool and displaying the signal to the operator.

4,345,658

VEHICLE ABLE TO MOVE BY ADHESION ON A RANDOM SURFACE

Francois Danel, Vendome; Henri Nicollet, Montreuil; Paul Marchal, Gif-sur-Yvette; Marc Robin, Rambouillet, and Jean Vertut, Issy-les-Moulineaux, all of France, assignors to Commissariat A l'Energie Atomique, Paris, France

Filed Sep. 20, 1979, Ser. No. 77,380

Claims priority, application France, Sep. 29, 1978, 78 27905

Int. Cl.³ B62D *57/02*

U.S. Cl. 180—8 C **14 Claims**

1. A vehicle able to move by adhesion on a random surface comprising:

a central body defining a pivoting axis which remains substantially perpendicular to a surface and which has two groups of central supports which adhere to said surface and which are arranged symmetrically with respect to the pivoting axis; first and second carriages, each provided with two groups of adhesive end supports;

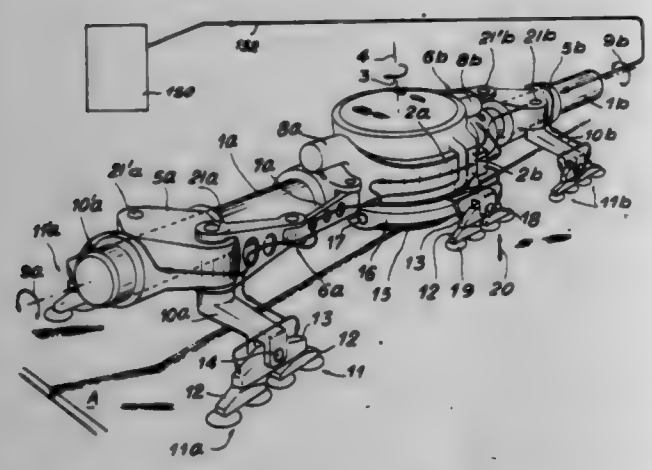
first and second members for guidance in rectilinear translation and without rotation of the first and second carriages in accordance with two directions which remain substantially orthogonal to the pivoting axis, the two groups of end supports associated with a respective carriage being arranged symmetrically relative to a plane containing the rectilinear translation axis and said pivoting axis and connected to the carriage by arms;

displacement means for independently actuating the first and second carriages along the guidance members;

displacement means for pivoting about said pivoting axis the first and second guidance members, the groups of central supports being mounted for rotation relative to said body; means for rotating the groups of central supports about the pivoting axis;

means for bringing about conformity of the position of the pairs of groups of end supports with said surface; in combination with

means for controlling the adhesion state on the surface or the non-adhesion of said supports, and means for controlling the displacement means in such a way that the relative pivoting of one of the guidance means about the pivoting axis or the translation of one of said carriages is only possible if the supports associated with the carriage are



not adhering to the surface and if simultaneously the groups of central supports and those of the other carriage adhere on said surface and in such a way that the displacement in translation of the two carriages relative to the guidance members is only possible if the groups of central supports are disengaged with respect to said surface and the groups of supports associated with the carriages are adhering to the surface.

13. A controllable suction member comprising: a flared skirt made from an elastic material and having a closed bottom and a free edge constituting a deformable lip, a supporting member arranged within said skirt and fixed to said bottom, said member projecting towards the free edge to define a supporting surface made from a material with a high friction coefficient, and means for producing a vacuum within the skirt, said supporting surface being convex and allowing bending of the lip, at a variable angle to accommodate a non-horizontal surface.

4,345,659

AUTOMATIC STEERING MECHANISM FOR SOD PROCESSING MACHINE AND SHOE THEREFOR

William T. Arnold, Sutton West, Canada, assignor to Browwer Turf Equipment Limited, Keswick, Canada

Filed Jul. 10, 1980, Ser. No. 168,820

Int. Cl.³ B62D *1/26*

U.S. Cl. 180—131 **5 Claims**

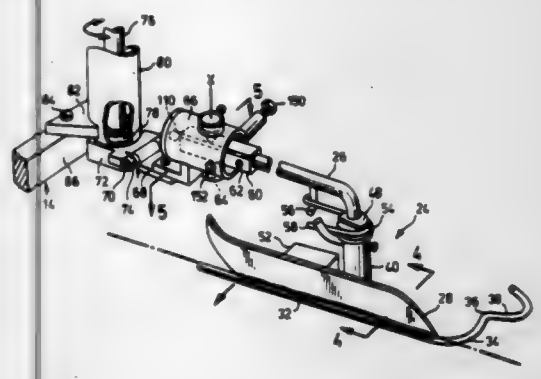
1. In a harvesting apparatus having steering wheels for steering said apparatus, a steering mechanism for steering said wheels, hydraulic power means for driving said steering mechanism, and a hydraulic steering circuit connected to said hydraulic power means for operating said hydraulic power means, an automatic steering mechanism for guiding said apparatus along a path of travel parallel to a cut edge of sod in the ground, said automatic steering mechanism comprising:

(a) an elongated shoe adapted to slide along the ground against said cut edge and to follow said edge, said shoe having a front ramp means which slopes upwardly and forwardly so that said shoe will rise over obstacles in said path of travel, said shoe further having a trailing end,

(b) said shoe comprising an elongated edge rod of substantially circular cross-section adapted to slide along and protrude into said cut edge, a front rod joined to said edge rod and extending outwardly and forwardly in a horizontal plane from said edge rod, away from said cut edge, to a location spaced outwardly of said edge rod, at least one further rod spaced laterally from said edge rod and adapted to slide over the ground and to act as a support runner, said front ramp means extending forwardly from said location and being spaced outwardly from said edge portion, so that said ramp means will not slide along said cut edge,

(c) a support arm for said shoe, said support arm having a forward end and a rear end, said rear end being mounted on said apparatus,

(d) joint means mounted on said shoe at a location between said front ramp means and said trailing end so that said shoe extends substantially both forwardly and rearwardly of said joint means, said joint means connecting said shoe to said forward end of said support arm for pitching and yawing movement of said shoe relative to said support arm,



(e) spring means coupled to said rear end of said support arm and biasing said support arm against said cut edge,

(f) sensing and actuating means connected to said arm for sensing side to side movement of said arm as said shoe follows said cut edge and for producing an actuating signal in response to said side to side movement,

(g) valve means in said hydraulic steering circuit for controlling flow to said hydraulic power means,

(h) said valve means being connected to said sensing and actuating means and being responsive to said actuating signal for operating said power means to steer said steering wheels for said apparatus to follow the path of said shoe,

(i) and feedback means connected to said wheels and coupled to one of said sensing and actuating means and said valve means and responsive to the steering of said wheels in the direction caused by said steering signal to change the condition of said one or said sensing and actuating means and said valve means in a direction to reduce the effect of said actuating signal on said valve means.

4,345,660

VEHICLE EMERGENCY STEERING SYSTEM

Wayne R. Miller, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

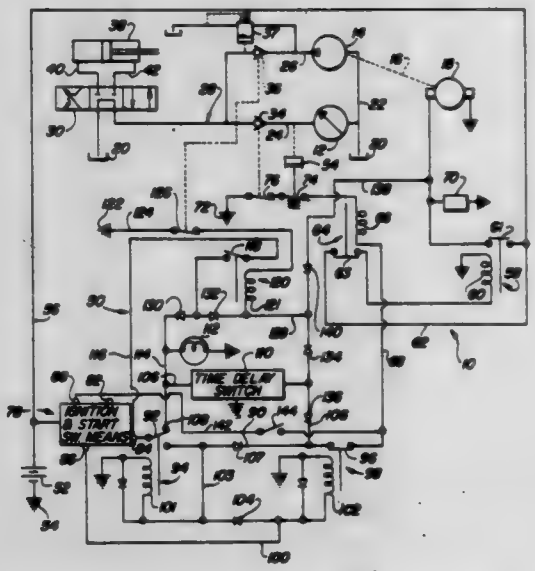
Filed Dec. 26, 1979, Ser. No. 106,831

Int. Cl.³ B62D *5/006*

U.S. Cl. 180—133 **3 Claims**

1. In a vehicle hydraulic power steering system including main and backup pumps, an electrically responsive drive for the backup pump and electric control circuitry for automatically effecting energization of the drive upon a failure of the main pump to output fluid adequate for normal steering operation and a test circuit between an "on" contact of a vehicle ignition and start switch means and the control circuitry to energize the electrically responsive drive when the switch means is placed in an "on" position before starting the vehicle, and said test circuit including a time delay switch which interrupts current flow through the test circuit a predetermined period after being energized, the improvement comprising: an electrically responsive backup pump failure indicating device;

a first lead connecting said device to said "on" contact; a normally open switch connected to said first lead; means for closing said normally open switch; a second lead connecting said closing means to said time delay switch; a normally closed backup pump failure sensing switch serially connected with said closing means and said time delay switch whereby said closing means is actuated to close said normally open switch



when said "on" contact is engaged, said backup pump is not operating and said time delay switch has not timed out; said normally open switch being serially connected with said closing means and said backup pump failure sensing switch whereby a failure of the backup pump to operate satisfactorily when the electrically responsive drive is being tested will be indicated by the continued energization of the failure indicating device, after the time delay switch has timed out.

4,345,661

ANTI-ROLL SYSTEM FOR VEHICLES

Masao Nishikawa, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

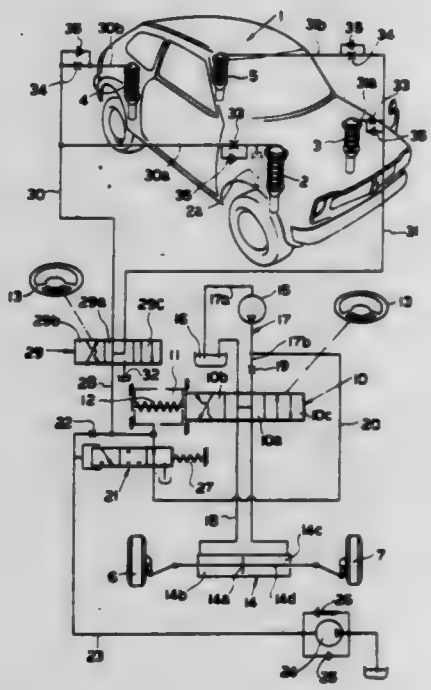
PCT No. PCT/JP79/00098, § 371 Date Feb. 8, 1980, § 102(e) Date Feb. 5, 1980, PCT Pub. No. WO80/00017, PCT Pub. Date Jan. 10, 1980

PCT Filed Apr. 17, 1979, Ser. No. 190,865

Claims priority, application Japan, Jun. 8, 1978, 53/69097

Int. Cl.³ B60G *21/006*

U.S. Cl. 180—141 **8 Claims**



1. An anti-roll system for a vehicle equipped with a power steering system including a hydraulic pressure reaction chamber for producing a steering reactive force, and means for modulating said steering reactive force by the speed at which the vehicle is moving, said system comprising:

damper means having at least a cylinder and a piston, said damper means being disposed between the vehicle body and each of the vehicle wheels;

said damper means being in fluid communication with said hydraulic pressure reaction chamber in said power steering system;

means for selectively connecting said hydraulic pressure reaction chamber with those of said damper means disposed on either side of said vehicle in response to rotation of a steering wheel of said vehicle in a selected steering direction, said means being connected between said hydraulic pressure reaction chamber and said damper means; and

the hydraulic pressure in said reaction chamber being introduced, while said vehicle is being turned, into said damper means disposed on the radial outermost side of a circle along which said vehicle is being turned, depending on said selected steering direction, so as to control the roll of the vehicle body.

4,345,662

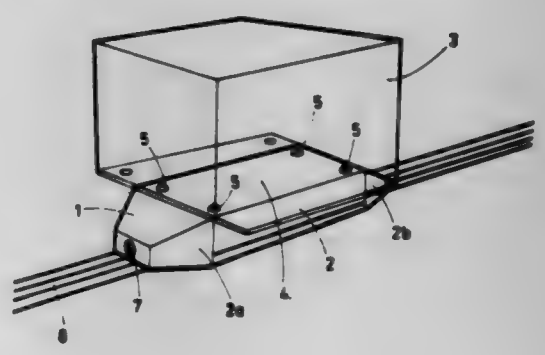
INSTALLATION WITH AUTOMATIC VEHICLES

Michel Deplante, Paris, France, assignor to MATRA, Paris, France

Filed Dec. 7, 1979, Ser. No. 101,336

Int. Cl.³ B60T *7/16*; B62D *1/28*

U.S. Cl. 180—168 **7 Claims**



1. An installation for transporting loads automatically along a predetermined path extending through corridors or the like, which path includes stops, junctions, crossings, inlets, and outlets for vehicles traveling along said path, said installation comprising an optical track laid along the ground to define said path, said optical track consisting of an extended, optically detectable central track section which is bounded along its two opposing edges respectively by a pair of optically detectable lateral track sections, said central and lateral track sections having optical characteristics which are different from one another respectively; and at least one vehicle adapted to be guided along said track, said vehicle comprising a substantially rectangular frame having load support means thereon, said vehicle further comprising four steerable ground-engaging wheels located at the four corners of said frame respectively, said four wheels being interconnected to one another by linkages arranged to cause the positions of said four steerable wheels to change in unison, said vehicle also comprising a motor for driving a single ground-engaging driving wheel which is centrally located along the main axis of said frame, and control means carried by said vehicle for controlling the positioning of said four steerable wheels and the operation of said driving wheel, said control means comprising ultrasonic emitter-receiver means located adjacent an end of said vehicle and oriented forwardly of said vehicle for detecting the presence of obstacles forward of and along the path of movement of said vehicle, and said control means further including at least two light emitter-light receiver assemblies carried by said vehicle and oriented downwardly of said vehicle toward said optical track, said two emitter-receiver assemblies being later-

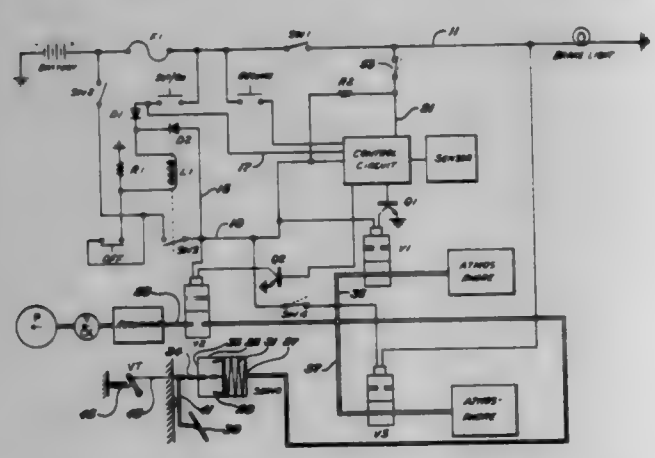
ally spaced from one another and being positioned respectively to overlap one of the elongated boundary edges between said central track section and one of said lateral track sections respectively, the emitter in each said assembly being operative to emit light toward its associated elongated boundary edge in said track and the receiver in each said assembly being operative to receive optical signals from the portions of said track which are illuminated by said emitters, the receiver in each of said assemblies being operative to produce an output signal which is a function of the lateral position of said assembly relative to the boundary edge between said central track section and the associated one of said lateral track sections as said vehicle travels along said track, and circuit means responsive to the sum and difference of the two signals provided by the two receivers in said assemblies for simultaneously determining that said difference is substantially null and that said sum is substantially the double of an average value, said circuit means being operative to control the positioning of said four steerable wheels and being operative to control said motor of said vehicle when the difference between said two signals is not null in average.

4,345,663

SPEED GOVERNOR WITH DUAL SAFETY SYSTEM

Neal G. Shields, Fort Worth, Tex., assignor to Specific Cruise Systems, Inc., Fort Worth, Tex.

Filed Jul. 18, 1980, Ser. No. 170,112
Int. Cl.³ B60K *31/00*
U.S. Cl. 180—177 **10 Claims**



1. In a motor vehicle speed governor of the type having servo means for moving the throttle, accelerator means for causing the servo means to advance the throttle, decelerator means for causing the servo means to release the throttle, control means for controlling the accelerator means and decelerator means in response to vehicle speed, and power means for energizing the control means, the improvement comprising:

brake switch means, connected into a brake line extending between a brake fuse and a brake light, for signalling the control means to actuate the decelerator means when a brake pedal is depressed;

safety means for causing the servo means to release the throttle independent of the positions of the accelerator means and decelerator means, the safety means being connected into a safety line that extends from the power means to a point in the brake line between the brake switch means and the brake light; and

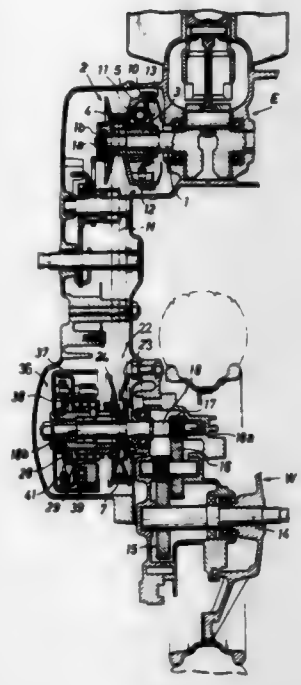
safety switch means connected in the safety line for opening the safety line when the brake pedal is depressed to cause the safety means to release the throttle.

4,345,664

POWER TRANSMISSION FOR TWO-WHEELED VEHICLE

Nobuo Anno, Urawa; Haruki Okui, Wako; Kuniyuki Yamamoto, Kodaira, and Kunio Miyazaki, Oimachi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1980, Ser. No. 151,622
Claims priority, application Japan, May 23, 1979, 54-63642
Int. Cl.³ B60K *41/14*; F16H *55/56*; F16D *43/14*
U.S. Cl. 180—230 **14 Claims**



1. A power transmission for a two-wheeled motorcycle, comprising:

(a) an engine (E);

(b) a drive shaft (1) driven by said engine (E);

(c) a variable-diameter drive pulley mechanism (2) connected to said drive shaft (1);

(d) a variable-diameter driven pulley mechanism (22);

(e) a V-belt (7) extending around said drive and driven pulley mechanisms (2, 22) for operative connection therebetween;

(f) clutch means (36) operatively connected with said driven pulley mechanism (22);

(g) a driven shaft (18) coaxially supporting said driven pulley mechanism (22) and said clutch means (36);

(h) a wheel (W) driven by said driven shaft (18), said wheel (W) being disposed on the same side of the power transmission mechanism as said engine (E);

(i) said drive pulley mechanism (2) including an axially movable member (5) and an axially fixed member (4), disposed on the side closest to said engine and on the opposite side with respect to said V-belt, respectively, said members (23, 24) supporting said V-belt therebetween;

(j) said driven pulley mechanism (22) including an axially movable member (24) and an axially fixed member (23), disposed on the side closest to said clutch means and on the opposite side with respect to said V-belt, respectively, said members (23, 24) supporting said V-belt therebetween; and

(k) said clutch means comprising a centrifugal clutch including an outer member (37) connected to said driven shaft, and a drive plate (38) integrally connected to said driven pulley mechanism, said drive plate (38) including an element for frictionally engaging said outer member (37) upon actuation of said element under centrifugal forces.

4,345,665

SAFETY BELT SYSTEM FOR MOTOR VEHICLES

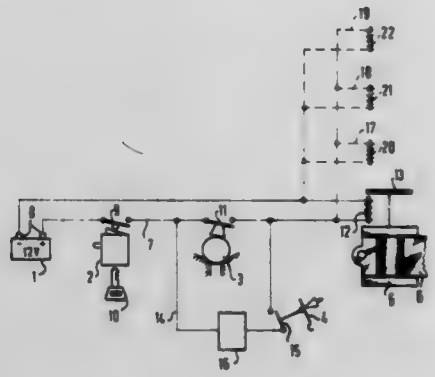
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,109

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1979, 2934749

Int. Cl.³ B60R *21/00*

U.S. Cl. 180—270 5 Claims



1. Safety belt system for motor vehicles having vehicle batteries and steering wheel locks with a safety-current circuit which does not have a seat switch in the circuit, for activating the safety belt system during the time when motion of the vehicle can occur, which comprises a safety belt with one end of the belt extending into an automatic roll-up device, locking means in the automatic roll-up device for locking the safety belt, activating means which when energized by an electric current will cause said locking means to lock the safety belt, an electric safety current circuit connected to the vehicle battery for passage of electric current to energize said activating means, a first switch in the circuit operated in conjunction with the steering wheel lock, said first switch closed by unlocking the steering wheel lock to provide for current flow in the circuit and permit movement of the vehicle, a second switch in the circuit which normally is in the open position, said first switch and said second switch connected in series in said circuit, and a sensor device which effects closing of said second switch when a predetermined deceleration of the vehicle is exceeded whereby electric current flows through the circuit from the battery to energize the activating means and cause the locking means to lock the safety belt.

4,345,666

SOUND-DAMPING ASSEMBLY FOR A STRUCTURE OF A PIECE OF FURNITURE

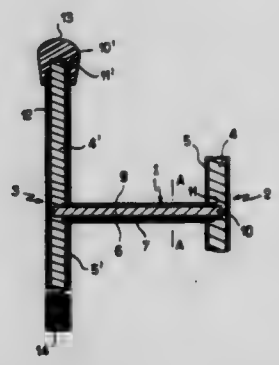
Marcel Mathou, 12630 Gages, France

Filed Oct. 23, 1980, Ser. No. 200,055

Claims priority, application France, Nov. 7, 1979, 79 27502

Int. Cl.³ F16F *15/00*

U.S. Cl. 181—207 12 Claims



1. A sound-damping structure assembly for use as a structural component of a piece of furniture, which comprises a first elongated structural member and a second sheathing member having substantially the same length as said first member and surrounding same, wherein said second member is made out of a rigid or semi-rigid material, said first and second members having, in cross-section, relative outer and inner contours, respectively, whereby in assembled relationship a damping air cushion is formed on the major portion of the interface between said outer contour of said first member and said inner contour of said second member.

4,345,667

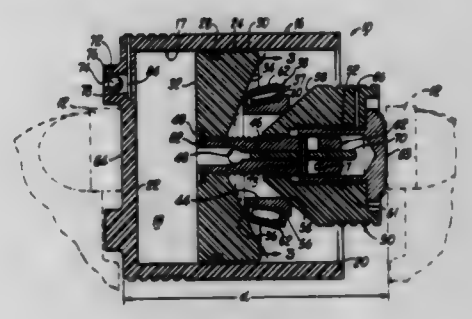
METHOD AND APPARATUS FOR INJECTING VISCOUS MATERIALS

William E. Shultz, 239 N. Main St., Lombard, Ill. 60148

Filed Jan. 24, 1980, Ser. No. 115,062

Int. Cl.³ F01M *11/00*; F16N *3/10*

U.S. Cl. 184—1 D 4 Claims



1. An assembly for greasing an article comprising:

a housing defining an internal chamber including a first open end;

a piston slideably insertable into said chamber;

a lubricant receiving aperture in said piston adapted to direct grease from below said piston upwardly into said article when said piston is compressed against said grease;

a stem centrally extending from said piston;

a compression application member adapted to be mounted on said stem; and

an extension member adapted to engage said compression application member for increasing a longitudinal dimension of said compression application member.

4,345,668

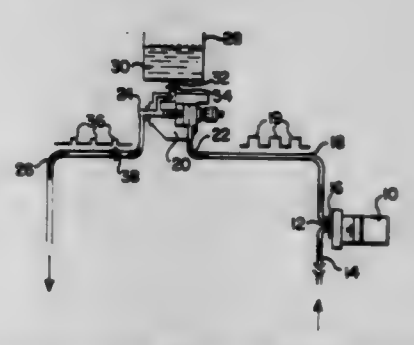
VERY LOW FLOW RATE LUBRICANT METERING APPARATUS AND METHOD FOR A TOOL AND WORKPIECE

Frank L. Gaunt, 6922 - 113th Court St. East, Puyallup, Wash. 98371

Filed Jul. 7, 1980, Ser. No. 166,404

Int. Cl.³ F16N *13/16*

U.S. Cl. 184—29 20 Claims



14. A precision, very low flow rate lubricant metering apparatus for lubricating a tool and workpiece during machining operations, comprising means for substantially continuously, during operation, delivering lubricant to an output, for delivery to a tool and workpiece during machining operations, at a very low flow rate of less than about 10 cubic centimeters per minute, wherein the lubricant is of the type which permits said machining operations to take place at said very low flow rate without substantially reducing the cutting action between the tool and workpiece, and without substantially reducing the life of the tool; thereby eliminating the need for special cooling

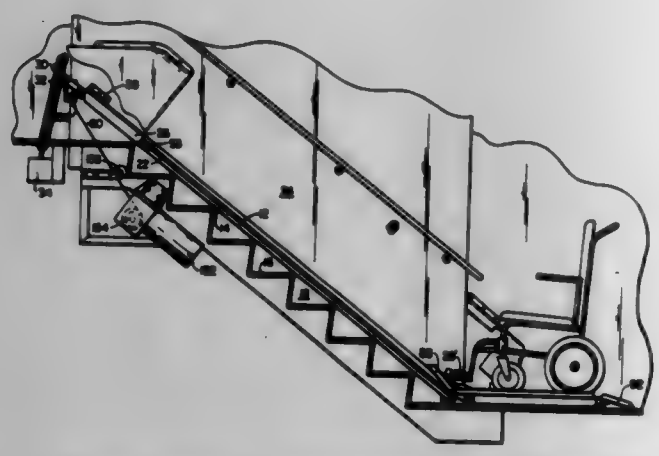
techniques such as the use of liquid fluorocarbon coolants and the use of high lubricant flow rates for cooling purposes.

4,345,669

WHEELCHAIR LIFT

Kenneth L. Noall, Ogden, Utah, assignor to Abex Corporation, New York, N.Y.

Filed Sep. 5, 1980, Ser. No. 184,509
Int. Cl.[3] B66B *9/06*
U.S. Cl. 187—10 14 Claims



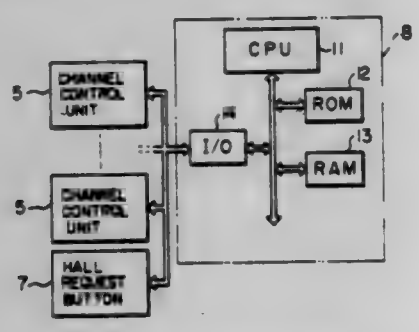
1. A lift for moving a wheelchair over a stairway from a lower floor to an upper floor including a ramp, a carriage mounted adjacent the ramp, a wheelchair supporting platform attached to the carriage, means for moving the carriage and platform along the ramp, characterized by means for pivoting the ramp between a first position in which the ramp rests horizontally on top of the stairway and a second position in which the ramp is stored substantially vertically beside the stairway and intrusion of the ramp into the stairway is minimized.

4,345,670

ELEVATOR CONTROL SYSTEM

Takashi Kaneko, and Tatsuo Iwasaka, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1981, Ser. No. 222,767
Claims priority, application Japan, Jan. 7, 1980, 55-125
Int. Cl.[3] B66B *5/02*
U.S. Cl. 187—29 R 12 Claims



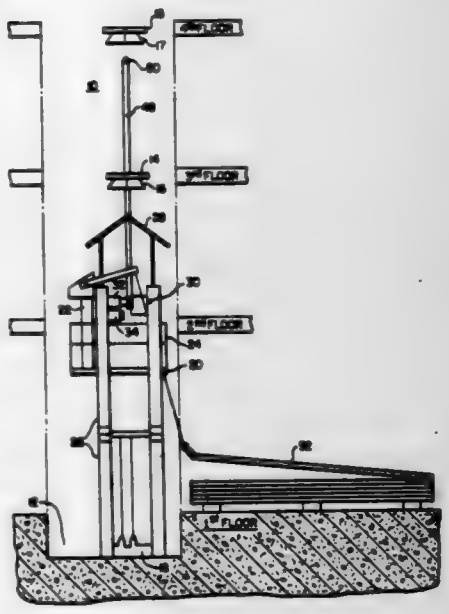
1. An elevator control system comprising;
at least one elevator for serving to a plurality of floors,
a control unit for controlling said elevator in accordance with a first group of programs and a second group of programs to impart a plurality of functions to said elevator,
a fault detection means for detecting a fault occurred in the control operation by said control unit,
a first fault processing means for stopping the control by said control means when the fault detected by said first detection means is due to the operation related to a program of said first group, and
a second fault processing means for removing the control by a program causing the fault when said program causing the fault is in said second group.

4,345,671

APPARATUS AND METHOD FOR INSTALLING ELEVATOR GUIDE RAILS

Larry P. Tosato, Millburn, N.J.; Henry A. Wehrli, Monroeville, Pa., and Robert C. Stewart, deceased, late of Morris, N.J. (by Dorothy M. Stewart, executrix), assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1980, Ser. No. 129,531
Int. Cl.[3] B66B *7/02*
U.S. Cl. 187—95 12 Claims



1. A system for installing elevator guide rails in a hoistway constructed of guide rail sections, comprising:
a plurality of wall brackets located in vertical alignment along said hoistway;
a plurality of guide funnels detachably mounted to said wall brackets;
means for pushing said guide rail sections up said hoistway through said guide funnels;
guide means detachably mounted to the first guide rail section pushed up said hoistway for smoothly guiding said guide rail section through said plurality of guide funnels;
means for retaining said guide rail sections in said hoistway; and
means for aligning a guide rail section colinearly with said guide rail sections retained in said hoistway such that said aligned guide rail section may be connected to said guide rail sections retained in said hoistway to provide said vertically straight guide rail.

4,345,672

ALARM DEVICE FOR A BRAKE CLEARANCE LIMIT IN AN AIR-OVER-HYDRAULIC BRAKE SYSTEM

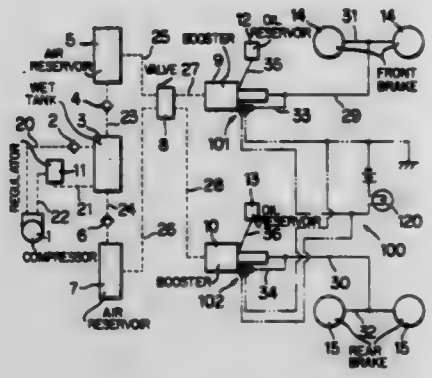
Kei Nakasu, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 11, 1979, Ser. No. 74,713
Claims priority, application Japan, Dec. 29, 1978, 53-165192
Int. Cl.[3] F16D *66/00*
U.S. Cl. 188—1.11 13 Claims

1. In an air-over-hydraulic brake system, wherein an air pressure piston actuated by pressurized air drives a hydraulic piston to produce hydraulic pressure in a hydraulic brake system, an alarm device for giving a warning when a permissible limit of a brake clearance has been reached comprising:
hydraulic pressure sensing means for detecting a hydraulic pressure P in said hydraulic brake system;
shift amount sensing means for detecting a shift amount l of said air pressure piston, at a brake operation time just when said permissible limit of the brake clearance has been reached, from a position where the brake clearance has just been lost; and

warning means for warning a driver of a vehicle when a formula

$$l > \alpha \cdot P$$



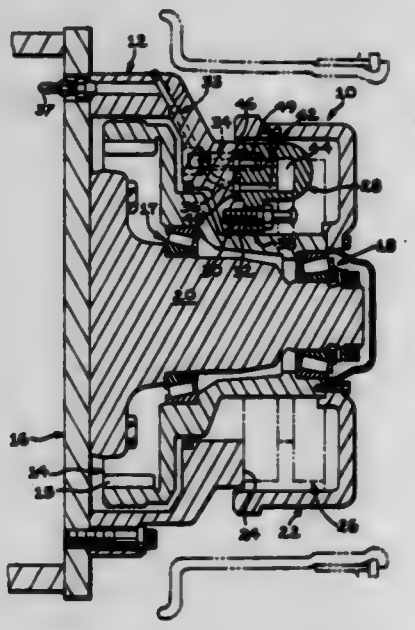
has become to be satisfied, wherein α is an expansion constant of said hydraulic brake system which is a quotient of the increased shift amount of said hydraulic pressure piston after the disappearance of the brake clearance divided by the increased amount of the hydraulic pressure.

4,345,673

WHEEL BRAKE ARRANGEMENT

William I. Callaghan, and Charles P. Ehinger, both of Mentor, Ohio, assignors to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/00269, § 371 Date Mar. 13, 1980, § 102(e) Date Mar. 13, 1980, PCT Pub. No. WO81/02550, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 13, 1980, Ser. No. 201,092
Int. Cl.³ B60T *1/06*; F16D *51/00*
U.S. Cl. 188—18 R 9 Claims



1. In a wheel brake arrangement (10) having a frame (16), a wheel gear housing (12) adjacent the frame (16), an annular rotating brake drum member (22) adjacent one end (24) of the wheel gear housing (12), the annular rotating drum member (22) being mountable to a surrounding wheel hub, a radially expandable brake shoe friction member (26) intermediate the wheel gear housing (12) and the rotating brake drum member (22) and means (28) for fluid pressure motivating of the friction brake shoe member (26) to expand radially into frictional engagement with the rotating brake drum member (22), the improvement comprising:

means (30) for mounting said motivating means (28) in abutting relation directly to said one end of said wheel gear housing (12) without the interposition of a backing plate between said motivating means (28) and said wheel gear housing (12);

said wheel gear housing (12) defining a passage (33);

means for rigidly connecting the wheel gear housing (12) to the frame (16); and

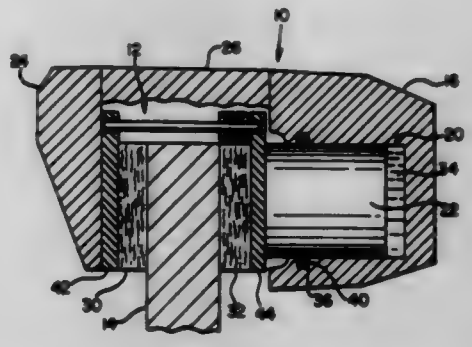
means (38) for connecting said passage (33) with said motivating means (28).

4,345,674

DISC BRAKE PAD RETRACTOR

Dusan M. Vacval, Buffalo Grove, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 191,557
Int. Cl.³ F16D *65/38*
U.S. Cl. 188—71.8 6 Claims



1. A disc brake system for braking a rotatable disc brake rotor comprising:

a selectively actuable caliper assembly disposed about said rotor;

a pair of lining carriers carried by said caliper assembly respectively on opposite sides of said rotor, each lining carrier having a brake pad in confronting relation to said rotor and having an axial aperture, said apertures being axially aligned; and

a disc brake wear compensator and retractor assembly including a retractor rod carried in said apertures of said lining carriers, a cup shaped retractor housing slidably displaced on said retractor rod one of said lining carriers abutting said retractor housing and adapted to displace said retractor housing on said rod, a wear compensating resistance member disposed within said retractor housing and slidably mounted on said rod with an interference fit therebetween, said resistance member being slidably displaced by said retractor housing along said retractor rod when the displacement of said retractor housing on said retractor rod exceeds a predetermined distance, and spring means being disposed within said retractor housing between said retractor housing and said resistance member and being disposed to bias said retractor housing away from said resistance member said predetermined distance and said lining carrier and brake pad away from said rotor.

4,345,675

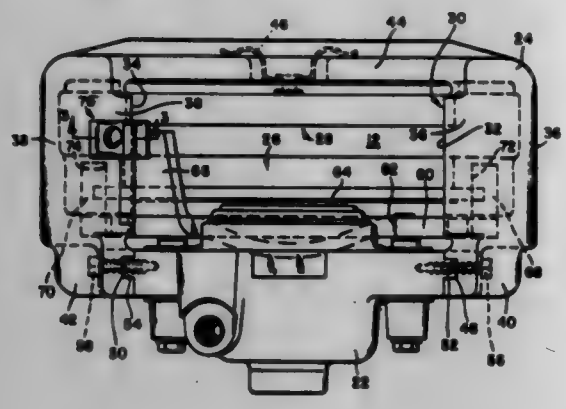
DISC BRAKE ASSEMBLY WITH LIGHTWEIGHT AND SPACE SAVING CHARACTERISTICS

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 6, 1980, Ser. No. 127,708
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.43 1 Claim

1. A disc brake assembly with space saving characteristics comprising a torque plate (14) fixedly disposed relative to a rotor (12) to be braked, a caliper assembly (20, 22, 64) movably carried by the torque plate (14), a pair of friction elements (26, 28) cooperating with the caliper assembly (20) to frictionally engage the rotor (12) during braking, the caliper assembly (20, 22, 64) including a central opening (30) forming abutment surfaces (32, 34) the torque plate (14) including a first portion (60) parallel with the rotor (12) and extending into the central opening (30) to engage the abutment surfaces (32, 34) and a second portion (66) perpendicular to the rotor (14) and dis-

posed substantially within the central opening (30), characterized by said torque plate first portion (60) defining a cut out (62) opening radially outwardly to receive a portion of said caliper assembly (22, 64) and also separating said first portion (60) into a pair of radially extending sections (61, 63) disposed within the central opening (30), said torque plate second portion (66) extending axially from only one of said radially extending sections to engage one of the abutment surfaces (32, 34) thereby preventing rotation of the caliper assembly in one direction, said torque plate second portion (66) comprising the only part of the torque plate extending perpendicularly within the central opening, said caliper assembly (20, 22, 64) including axially extending flanges (36, 38) overlaying said rotor (12),



each of said flanges defining an arcuate width (A) which is larger than an arcuate width (B) defined by the entire portion of said torque plate second portion extending perpendicularly within the central opening (30), and said flanges (36, 38) having a radial dimension which is substantially equal to a radial dimension for said torque plate second portion (66), whereby the forces transmitted from one of said flanges (38) to said torque plate second portion (66), will be spread over a larger volume of material for said one flange (38) than said torque plate second portion (66), while at the same time maintaining the radial dimension for said one flange (38) substantially equal to the radial dimension for said torque plate second portion (66) to accommodate space limitations for the disc brake assembly.

4,345,676

FRICTION CLUTCH DRIVEN PLATES

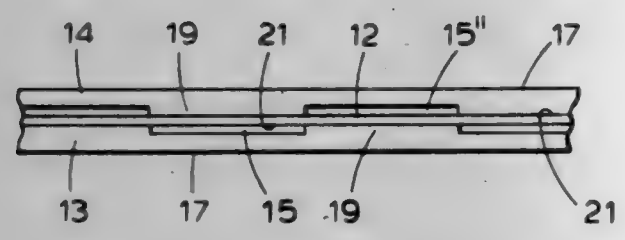
Roger P. Jarvis, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Mar. 28, 1980, Ser. No. 135,093

Claims priority, application United Kingdom, Apr. 4, 1979, 7911750

Int. Cl.³ F16D *13/64*

U.S. Cl. 192—107 C **8 Claims**



1. A friction clutch driven plate comprising:

an annular friction facing having a friction surface and a back face;

a rigid annular support plate having an opposed annular surface in contact with said back face; and

circumferentially spaced recesses are provided in the opposed adjacent surfaces of the facing and the support plate to relieve the back face of the facing so as to allow the friction surface portions of the facing to yield under axial load on engagement of the driven plate against a drive member.

4,345,677

CHUTE-HOSE COUPLER UNIT FOR AN AUTOMATIC ASSEMBLING MACHINE

Katsumi Shinjo, Osaka, Japan, assignor to Yugen Kaisha Shinjoseisakusho, Osaka, Japan

Filed Sep. 5, 1980, Ser. No. 184,601

Claims priority, application Japan, Sep. 28, 1979, 54-135667[U]

Int. Cl.³ B65G *11/00*

U.S. Cl. 193—2 A **1 Claim**



1. A chute-hose coupler unit used for an automatic assembling machine, the unit comprising:

a first coupler adapted to be detachably connected to an end of a first chute-hose;

a second coupler adapted to be detachably connected to an end of a second chute-hose;

said first coupler including a first leaf spring which has its free flexible end at a point adjacent to the open end of said first coupler;

said second coupler including a second leaf spring which has its free flexible end at a point adjacent to the open end of said second coupler;

said each leaf spring including a stop pin in its free flexible end portion, said stop pin having a tendency of being inserted into said chute-hoses under the urge of said leaf springs so as to block the component parts therein against dropping out of the open ends of said couplers when said couplers are disconnected from each other;

said first coupler including a first cam means adapted to slide under said second leaf spring; and

said second coupler including a second cams means adapted to slide under said first leaf spring.

4,345,678

ROLLER CONVEYORS

David M. Garnett, Thorpe Arch Trading Estate, Wetherby, Yorkshire, England (LS23 7BL)

Filed Dec. 26, 1979, Ser. No. 107,200

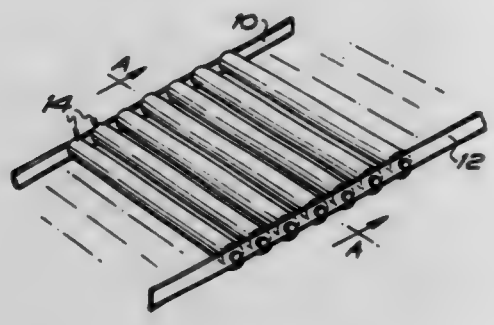
Claims priority, application United Kingdom, Sep. 7, 1979, 7931143

Int. Cl.³ B65G *39/09*

U.S. Cl. 193—35 R **13 Claims**

1. A roller for a roller conveyor, said roller comprising a sleeve body receiving roller bearings in the ends thereof, at least one of the bearings comprising an inner race and an outer race of which one is in operative connection with the sleeve

body, whilst the other is mounted on spindle means, and the race which is in operative connection with the spindle means is in use stationery and receives the spindle means with clear-



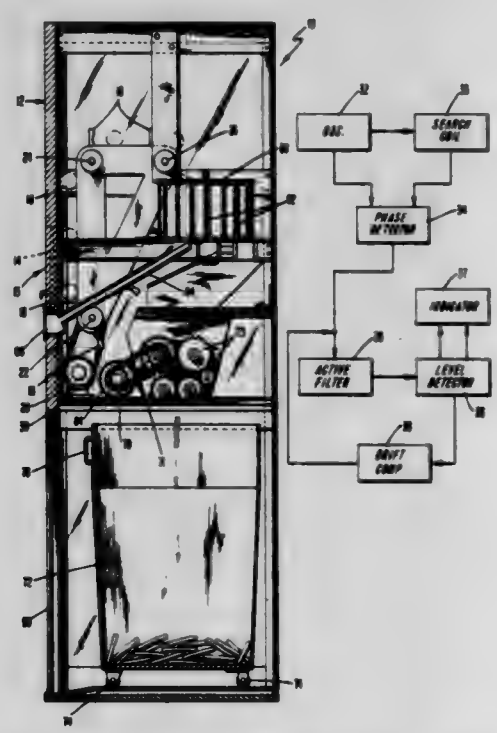
ance, the bearing including a flexible seal positioned between said race and said spindle sealing the said race to the spindle but allowing at least limited relative axial movement of the spindle means and said race.

4,345,679

CONTAINER COLLECTION APPARATUS WITH ELECTROMAGNETIC SENSOR AND METHOD

Bruce H. DeWoolfson, 2200 Columbia Pike, #1113, Arlington, Va. 22204

Filed May 9, 1980, Ser. No. 148,371
Int. Cl.³ G07F *07/06*
U.S. Cl. 194—4 C **14 Claims**



1. Apparatus for collecting and storing empty aluminum containers and issuing payment for containers collected, comprising:

preselection means for exposing a crushed or non-crushed container offered by a customer to an electromagnetic field for identifying whether said container is substantially aluminum without establishing direct electrical contact with said container, said preselection means including a container access area configured to accomodate both crushed and non-crushed containers for exposure to said field;

means for accepting only a container identified by said preselection means as being substantially aluminum, independent of the configuration of said container;

coin-dispensing means responsive to said preselection means for dispensing coins in return for containers having a substantially aluminum composition;

means cooperating with said accepting means for crushing said containers; and

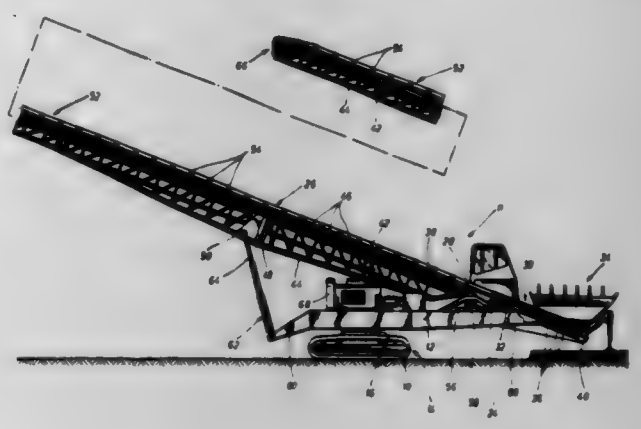
means for storing crushed containers received from said crushing means.

4,345,680

MATERIAL TRANSFER APPARATUS

Franklin J. Kay, 2103 Place Rebecca D-3, Houston, Tex. 77068

Continuation of Ser. No. 912,198, Jun. 5, 1978, abandoned. This application Aug. 22, 1980, Ser. No. 180,433
Int. Cl.³ B65G *41/00*
U.S. Cl. 198—304 **22 Claims**



1. An apparatus for transferring material, e.g. overburden, comprising:

lower support means;

a frame rotatably mounted to said support means about a vertical axis;

means defining a hopper supported by said frame and having at least a portion thereof in horizontal spaced relation to said support means and outwardly from said vertical axis;

a conveyor mounted to said frame and extending to a discharge end, said conveyor communicating with said hopper for receiving material therefrom and conveying the material to the conveyor discharge end, at least a portion of said conveyor being mounted for pivoting about a horizontal axis on said frame that is spaced apart from said vertical axis and is located between said vertical axis and the end of said conveyor which communicates with said hopper; and

means for pivoting said conveyor portion about said horizontal axis to adjust the elevation of the conveyor discharge end;

whereby, in operation, the horizontally displaced hopper portion facilitates the maintenance of the apparatus center of gravity within the area defined by said support means.

4,345,681

ELEVATOR

Victor Vinson, 6 Barnwell, Peterborough, England (PE85PH)

Filed Sep. 17, 1980, Ser. No. 188,038
Int. Cl.³ B65G *15/14, 19/00*
U.S. Cl. 198—626 **20 Claims**

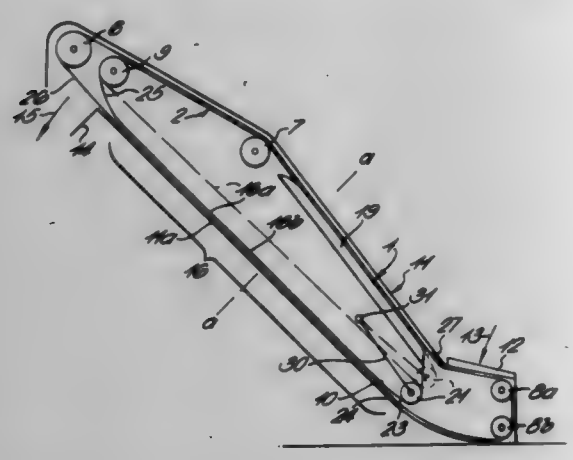
1. An elevator comprising:

a pair of continuous entrainments mounted one within the other and at least a section of one entrainment lying adjacent a corresponding section of the other, at least the outer entrainment being perforate to enable material being transported to pass therethrough;

drive means for driving said entrainments simultaneously; and,

a support for the entrainments including means which extend alongside said corresponding sections of the entrainments and which define an inlet and an outlet, said means retaining the material which is transported by said sections from the inlet to the outlet when said sections are elevated and when said entrainments are driven, said support enabling floating movement of a lower end portion of said inner entrainment relative to said outer entrainment and thereby enabling relative movement be-

tween said sections of the inner and outer entrainments whereby the spacing between said sections varies to ac-



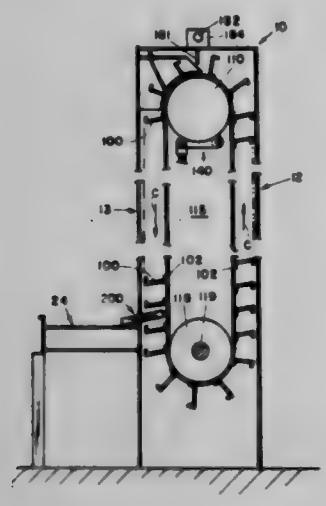
commodate the material transported from the inlet to the outlet.

4,345,682

EGG TRANSPORTING SYSTEM

Charles A. White, Woodstock; Jerome J. Kennedy, Marietta, and Harold S. Wayne, Douglasville, all of Ga., assignors to U.S. Industries, Inc., New York, N.Y.

Division of Ser. No. 114,341, Jan. 22, 1980, Pat. No. 4,293,066.
This application Apr. 16, 1981, Ser. No. 254,783
Int. Cl.³ B65G *17/30*
U.S. Cl. 198—635 **5 Claims**



1. In an egg transferring elevator including endless loop conveying means extending generally vertically and including egg carrying cradles having spaced fingers with a first surface for carrying eggs in an upward direction on one side of said elevator and a second surface for carrying eggs in a downward direction whereby eggs are shifted from said first surface of a cradle to said second surface of an adjacent cradle as the cradles travel over an upper end of said elevator, said endless loop conveying means mounted in a frame, means for slowing the transfer of egg from one cradle to another at the upper end of said elevator comprising:

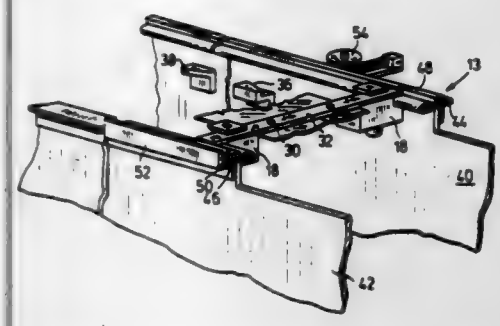
a plurality of downwardly projecting resilient fingers spaced from one another and mounted to said frame at said upper end in the area where the transfer of eggs from one cradle to another occurs and extending into the space between fingers of said cradles to releasably engage eggs as they fall from one cradle to another thereby slowing and cushioning such transfer of eggs.

4,345,683

CONVEYOR FOR LABELLING APPARATUS

George B. Pfeffer, Minnetonka, Minn., assignor to Datafile Limited, Willowdale, Canada

Filed Apr. 28, 1980, Ser. No. 140,816
Int. Cl.³ B65G *47/86*
U.S. Cl. 198—653 **15 Claims**



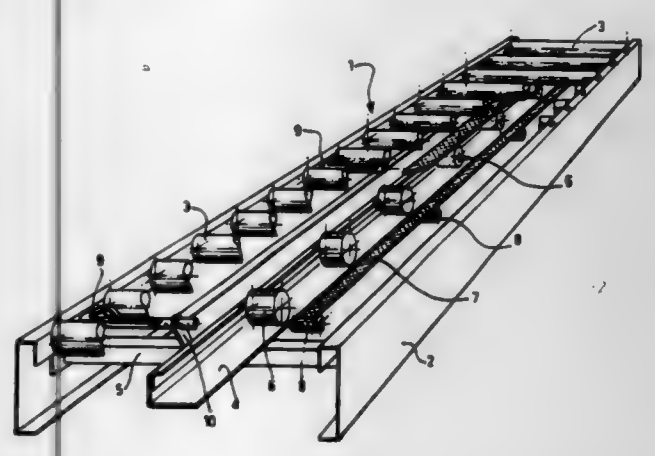
1. In apparatus for labelling sheet material, a conveyor comrising a plurality of pairs of clamps secured to a looped endless carrier, the clamps of each pair of clamps being spaced apart transversely of said carrier and secured along respective sides of said carrier, each clamp of said pair having means for biasing said clamp to a closed position and means for holding said clamp in its open position, means to each carrier side for opening said pairs of clamps in their held-open position and means to each carrier side for releasing said pairs of clamps from their held-open position to close said clamps under pressure of said biasing means to grip sheet material which has been placed on said conveyor and hold it while being labelled, said holding means including a catch where said means for opening said clamps and said means for closing said clamps exert forces on each pair of said clamps which are laterally directed relative to said carrier toward one another or away from one another in opening and closing said clamps to balance thereby forces on said carrier and maintaining carrier alignment during opening and closing of each pair of clamps.

4,345,684

ACCUMULATOR CONVEYOR

Guy Rolland, Viry Chatillon, France, assignor to Societe Mecanique Generale et Decolletage Tournage, Evry Cedex, France

Filed Jul. 28, 1980, Ser. No. 173,126
Claims priority, application France, Jul. 30, 1979, 79 19607
Int. Cl.³ B65G *13/06*
U.S. Cl. 198—781 **3 Claims**



1. An accumulator conveyor for intermittent loads comprising a frame, a transport surface defined by carrier rollers for bearing and displacing the loads; at least one drive belt in continuous displacement under said carrier rollers and adapted to be brought into friction drive relation with respect thereto; pressure rotors having eccentric axes of rotation supporting said drive belt and adapted to urge said drive belt against said carrier rollers; load sensing means disposed at spaced locations along the transport surface between adjacent carrier rollers;

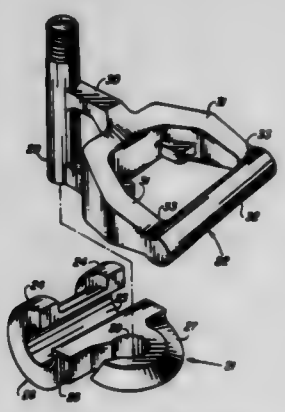
the improvement comprising each of said pressure rotors having a housing with an outer wall of generally cylindrical configuration rotatably mounted about an eccentric axis; at least one pressure roller rotatably mounted inside each of said rotor housings; the outer wall of each of said rotor housings having two angularly spaced apertures through which the outer surface of its associated pressure roller protrudes, said apertures both being located on one side of a diametrical plane containing the axis of rotation of its associated pressure rotor.

4,345,685

CHAIN DRIVEN CONVEYOR BELTS

Edward J. Horkey, 835 W. 22nd St., Suite C, Tempe, Ariz. 85282

Filed Jul. 25, 1980, Ser. No. 172,142
Int. Cl.³ B65G *17/06, 17/38*
U.S. Cl. 198—852 **12 Claims**



1. A link for a drag chain comprising:
a supporting surface,
support arms extending rearwardly from said supporting surface,
a connecting bar formed integral with the free ends of said support arms, and
an attachment pin extending laterally from said supporting surface substantially perpendicular to said connecting bar, and
means comprising a part of said pin for use in attaching the link to the surface of a flat belt conveyor.

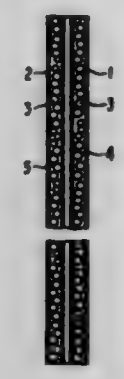
4,345,686

MATERIAL FOR FIXING ANCHOR BOLT OR LIKE AND METHOD OF MANUFACTURING SAME

Takeshi Sato, 7-10, Kikusui-cho, 5-chome, Hyogo-ku, Kobe, Hyogo-ken 652; Hiroji Tada, 1183-1, Mega-Asahi-cho, Shikama-ku, Himeji-shi, Hyogo-ken 672, and Yoshiichi Yano, 1-10-504, Tsurukabuto 4-chome, Nada-ku, Kobe, Hyogo-ken 657, all of Japan

PCT No. PCT/JP79/00147, § 371 Date Apr. 16, 1980, § 102(e) Date Jul. 5, 1979, PCT Pub. No. WO80/02707, PCT Pub. Date Dec. 11, 1980
PCT Filed Jun. 8, 1979, Ser. No. 192,951
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—219 **6 Claims**

1. A material for fixing an anchor bolt or the like, comprising a plurality of pairs of first and second members having crushable tube envelopes formed of a frangible material, respectively, and being arranged along a cylindrical surface to form a tubular structure having a central cavity, the envelope of said first member being filled with artificial solid ball-like aggregates and paste-like base material of cold-setting resin requiring hardener, the envelope of said second member being filled with artificial solid ball-like aggregates and paste-like hardener for said resin, said first and second members being adhered mutually with adhesive, and the outer diameters of said members



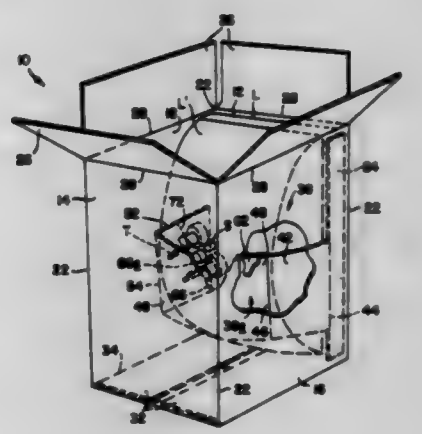
being selected to adapt the outer diameter of said tubular structure for a predetermined planting hole.

4,345,687

COLLAPSIBLE HEADLAMP CARTON AND BLANK FOR FORMING SAME

Thomas L. Davidson, Uncasville, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Jan. 15, 1981, Ser. No. 225,327
Int. Cl.³ B65D *85/42*
U.S. Cl. 206—418 **13 Claims**



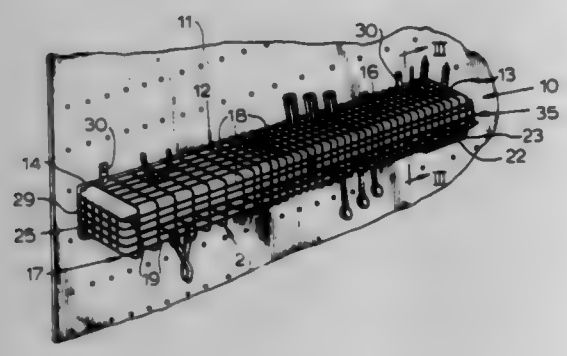
1. In a collapsible carton constructed from a single blank and adapted to contain and retain an automobile headlamp of the type including a series of at least four panels hinged together to form a rectangular tube, a glue flap hinged to the free side edge of the panel at one end of the series for adherence to the free side edge of the panel at the other end of the series to maintain the integrity of the tube; cover flaps hinged to the opposite free edges of the wall panels for closing off the open ends of the tube; the improvement comprising a lamp-retaining strap inside the carton, said strap including a pair of similar panels hinged at corresponding edges thereof to opposite carton wall panels, a bridging panel hinged at its opposite edges to free edges of said pair of panels so as to extend between said opposite carton wall panels, a strap reinforcing panel hinged to a free edge of said bridging panel perpendicular to its hinged connections to said pair of panels, said reinforcing panel having substantially the same dimensions as the bridging panel so that it can be folded along its said hinge line flush against said bridging panel, and means for adhering the reinforcing panel to the bridging panel to form a two-ply strap segment extending between said pair of panels so that when a headlamp is inserted into the carton and engaged under said strap, said strap has little tendency to tear.

4,345,688

TOOL HOLDER DEVICE

Albert De Boer, 18851 Wildwood Ave., Lansing, Ill. 60438

Filed Jul. 18, 1980, Ser. No. 169,938
Int. Cl.³ A47F 5/01
U.S. Cl. 211—60 T 8 Claims



1. A tool holder device for storing hand tools in an organized, accessible and compact manner comprising:

an elongated body means having longitudinal top and bottom faces thereon with each of said faces being formed of a grating having tool receiving openings therein whereby said top face grating is adapted to support certain hand tools in an upright pendent orientation and whereby said bottom face grating is adapted to stabilize depending portions of said hand tools extending through said bottom face openings;

a mounting means for securing said elongated body to a mounting surface;

a longitudinal support plate secured to said body and underlying a portion of said bottom face being adapted to support on end certain tool members which are not supportable by said top face grating in a pendent orientation wherein both top and bottom face gratings serve to stabilize portions of said tool members extending through said top and bottom face openings; and

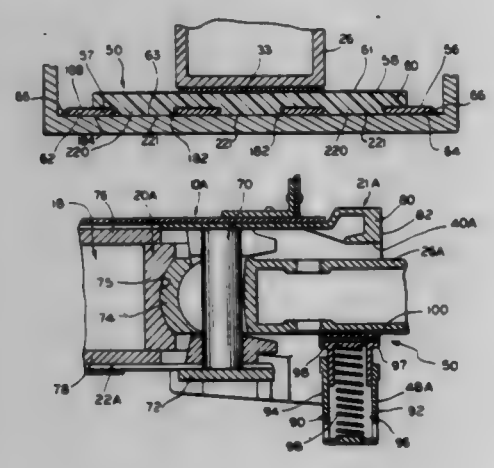
a tool hanger means pivotally carried on said body means and having a plurality of tool supporting hooks adapted to extend outwardly of said body means when said tool hanger is placed in a tool supporting position and said plurality of tool supporting hooks are adapted to fold generally flat against said body means when said tool hanger means is pivoted to a non-tool supporting position.

4,345,689

COMPOSITE SPIN WELDED COUPLER CARRIER ASSEMBLY

Osvaldo F. Chierici, Geneva, Ill., assignor to Holland Company, Aurora, Ill.

Filed Apr. 11, 1980, Ser. No. 139,439
Int. Cl.³ B61G 9/22, 7/10
U.S. Cl. 213—61 5 Claims



1. In a railroad car wheeled for riding on track rails and having a body including a center sill projecting from one end of the car and equipped with a coupler striker casting and a coupler mounted on the center sill for swinging movement sidewise of the car, said coupler including a shank extending through the casting, with the casting including a striker portion having a striking face disposed in a vertical plane and disposed transversely of the car center line of draft and a window opening disposed transversely of and aligned with the car center line of draft through which the coupler shank extends, said casting, adjacent said face, mounting below the coupler shank and across the lower side of the window, a coupler carrier on which the coupler shank rests, with the coupler carrier including a bearing member formed from an ultra high molecular weight polyethylene of dry self lubricating characteristics that is characterized by being resistant to adherence thereto of foreign matter, said polyethylene having a molecular weight in the range of from about 3,000,000 to about 9,000,000, said bearing member defining a flat horizontally disposed load support surface on which the coupler shank rides for supporting the coupler on the coupler carrier, and means for mounting said bearing member on a horizontal support member of said striker casting,

the improvement wherein:

the bearing member is of planar configuration and is coextensive in marginal configuration to said load support surface,

a metal mounting plate comprising a planar body on which said bearing member is disposed in overlying, parallel relation thereto and against one side of said plate body,

said mounting plate body defining upper and lower side surfaces that are substantially planar, and said upper side surface being at said one side of said plate body,

and means for securing said metal plate on said casting horizontal support member, with said lower surface of said plate body flush against said striker casting horizontal support member,

said plate body being formed to define a plurality of spaced apart apertures of circular outline each having a side wall surfacing that is of other than right configuration whereby said apertures each form marginal edgings on either side of said plate of which one of said marginal edgings is of less diameter than the aperture other marginal edging,

with said apertures being oriented such that said one of said marginal edgings thereof are at said one side of said plate,

said bearing member defining stud portions integral therewith that are respectively coextensive with said apertures, respectively, and that have their respective side walls conformed to, and in direct physical bearing relation with, the respective aperture side wall surfacings,

said stud portions each defining an end surface that is substantially coplanar with said plate body lower surface for flush fitting of said stud portion ends with the striker casting horizontal support member,

whereby said bearing member may be made fast to said mounting plate body free of bonding materials or mechanical fasteners.

4,345,690

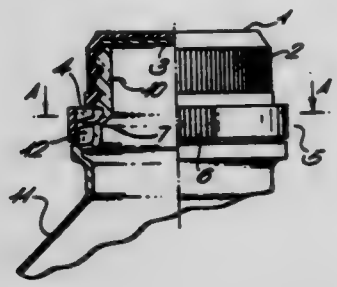
SAFETY CLOSURE

Eric T. Hopley, Norwich, England, assignor to U.G. Closures & Plastics Limited, Middlesex, England

Filed Sep. 15, 1978, Ser. No. 942,805
Claims priority, application United Kingdom, Sep. 19, 1977, 38896/77
Int. Cl.³ B65D 55/02, 85/56; A61J 1/00
U.S. Cl. 215—216 5 Claims

1. A container and a closure cap therefor, wherein the neck of the container is screw-threaded and is provided with at least one lug beneath the screw thread, the closure cap comprising a top, a screw-threaded depending skirt and an annular band attached to the skirt by four spaced bridges, the annular band being provided with one or more fins adapted to engage the lug(s) on the container neck, the annular band being deformable by radial pressure at positions spaced from the fin(s) to

increase the diameter of the band in the region of the fin(s) such that the fin(s) do not engage the lug(s) on the container neck,



the bridges attaching the annular band to the skirt being so situated that they are substantially undeformed when the annular band is deformed.

4,345,691

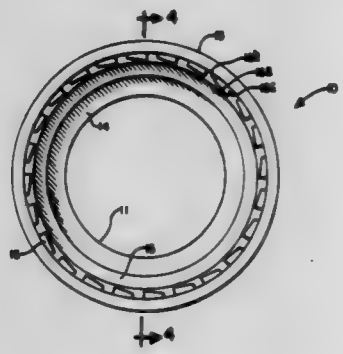
CHILD RESISTANT BOTTLE CLOSURE

James E. Burke, Huntington, Conn., assignor to Ethyl Products Company, Richmond, Va.

Continuation of Ser. No. 34,584, Apr. 30, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,398

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—216 **4 Claims**



1. A child-resistant closure assembly for connecting a pump or other dispensing device to a container comprising a cap and a fluid container, said cap having a circular outer ridge means, said cap and said container having a series of ratchet teeth thereon for mutual engagement to prevent said cap from being removed from said container when said cap is threaded onto said container, said ratchet teeth being spaced apart on said cap, said teeth on said cap having front and rear edges formed perpendicular to the tangent of said outer ridge and a beveled inner edge, said teeth on said container having generally rectangular, beveled outer surfaces and a rear edge perpendicular to the tangent of said outer ridge, the lower end of said teeth on said container merging into said container, said cap and said container having threads thereon for mutual engagement, said cap having a hole in the top thereof for receiving and connecting a pump or dispensing device to said container.

4,345,692

CLOSURE CAP FOR A CONTAINER

Albert Obrist, Kaiseraugst, and Hans Breuer, Balsthal, both of Switzerland, assignors to Albert Obrist AG, Reinach, Switzerland

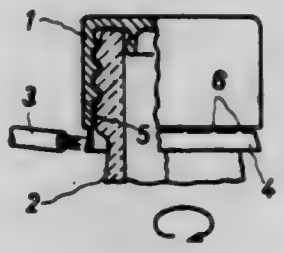
Filed Feb. 12, 1981, Ser. No. 233,884

Claims priority, application Switzerland, Feb. 14, 1980, 1203/80

Int. Cl.³ B65D *41/34*

U.S. Cl. 215—252 **6 Claims**

1. In a closure cap for a container comprising a cap portion, a guarantee strip, and a plurality of peripherally spaced rupturable web portions connecting the lower edge of said cap portion to said guarantee strip, said cap portion, guarantee strip and said web portions being integrally produced by an injection moulding process from a thermoplastics material, said guarantee strip being adapted to surround the neck of a container and to be form-locked thereabout by hot-deformation, the improvement in that the wall of the guarantee strip has an enlarged portion of relatively increased cross section and



amount of material in the region between each two successive rupturable connecting web portions, said enlarged portions being separated by wall portions of relatively lesser cross section in the region of each said connecting web.

4,345,693

AIR AND MOISTURE BARRIER FOR ELECTRICAL OUTLET BOXES

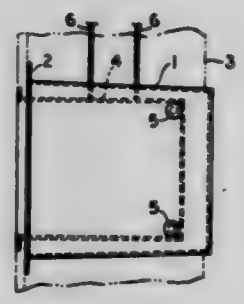
G. Russell Balkwill, 2429 Howard Ave., Windsor, Ontario, Canada (N8X 3Y5); Jules P. Robinet, 2865 Virginia Park, Windsor, Ontario, Canada (N9E 2B8), and John F. Tamasovics, 2530 Todd La., Windsor, Ontario, Canada

Continuation of Ser. No. 36,436, May 7, 1979, abandoned, which is a continuation of Ser. No. 908,223, May 22, 1978, Pat. No. 4,158,420. This application Aug. 4, 1980, Ser. No. 176,571

The portion of the term of this patent subsequent to Jun. 19, 1996, has been disclaimed.

Int. Cl.³ H02G *3/08*

U.S. Cl. 220—3.3 **3 Claims**

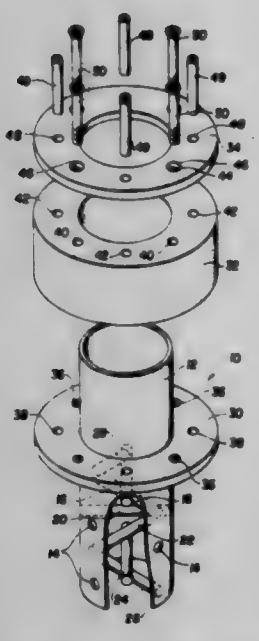


1. In combination, a rigid electrical outlet box having an open face, a cover of flexible plastic material of the same shape but slightly larger than the electrical outlet box extending around and enclosing all sides and the back of said outlet box opposite the open face so that the open face remains uncovered, to form an air and vapor barrier around the sides and back of said box, said cover having a flexible, thinwall flange around the perimeter near the open face of said box and extending outwardly therefrom and slanting away from said cover, whereby the peripheral edge of the flange can tightly contact the back surface of a wall or the like around the open face of the outlet box and on the same side of the wall or the like as the outlet box, and the cover provides a barrier to prevent water from entering the outlet box through the sides and back thereof.

4,345,694
ANTI-SIPHONING DEVICE

George S. Chambers, High Point, N.C., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Filed Dec. 10, 1980, Ser. No. 215,132
Int. Cl.[3] B65D *25/02, 39/12, 51/16;* B67C *3/00*
U.S. Cl. 220—86 AT 14 Claims



1. A device for preventing siphoning of a liquid from a container having a fill pipe comprising:

a fill tube having an outside diameter smaller than the inside diameter of said fill pipe;

a plurality of restriction means extending from the interior of said fill tube at different radial angles across the fill tube;

a first annular plate secured to the exterior of said fill tube having an outside diameter substantially equal to the inside diameter of said fill tube;

a second annular plate slidably received on the exterior of said fill tube having an outside diameter substantially equal to the inside diameter of said fill tube:

an elastomeric annulus positioned on the exterior of said fill tube between said first and second annular plates and having an outside diameter substantially equal to the inside diameter of said fill tube; and

means interconnecting said first and second annular plate for drawing said second annular plate toward said first plate to cause said elastomeric annulus to radially expand and engage the interior of said fill pipe thereby securing said device to said fill pipe.

12. A device for preventing siphoning of liquid from a container having a fill pipe comprising:

a fill tube having an outside diameter smaller than the inside diameter of said fill pipe;

means mounted to said fill tube to secure said fill tube to said fill pipe; and

a plurality of means, each secured at both ends thereof to said fill tube and axially and radially spaced, for restricting the interior of said fill tube without substantially obstructing liquid flow therethrough, each of said restriction means lie in a distinct plane orthogonal to the axis of said fill tube and crossing the center of said fill tube.

4,345,695
LID FOR A DRINKING CUP

James V. Galloway, deceased, late of Winnetka, Ill. (by Dean K. Galloway), and Scott F. Galloway, 2037 Pratt Ct., Evanston, Ill. 60093

Filed May 1, 1980, Ser. No. 145,700
Int. Cl.[3] A47G *19/22;* B65D *41/26, 51/16*
U.S. Cl. 220—254 1 Claim

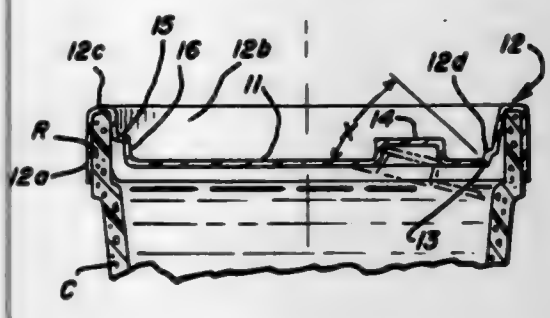
1. A lid for removable mounting on the rim of a drinking cup, the lid comprising:

(a) a substantially planar center section adapted to conform substantially to an area defined by the interior of the rim of the cup;

(b) a peripheral section delimiting said center section and adapted to fit snugly over said rim of the cup, the peripheral section consisting of an annular inner wall segment rising substantially vertically from the edge of the center section, an annular outer wall segment depending a substantial distance from the exterior of said rim of the cup to form a seal with the lower lip of a person drinking from the cup, and a bight segment connecting the upper edges of the inner and outer wall segments;

(c) a stiffening rib formed along a portion of the peripheral section adjacent the confluence of the bottom edge of said inner wall segment of said peripheral section with said substantially planar center section;

(d) an elongated U-shaped slit in said center section describing a resilient drinking portion in the center section, the bight portion connecting the two legs of said U-shaped slit being juxtaposed said stiffening rib and beveled at an angle



not to exceed about 45° relative to the exposed surface of said center section;

(e) elevated breathing means formed in said center section diametrically opposite said elongated U-shaped slit, said breathing means preventing the occurrence of a vacuum-like condition within the cup during drinking from the cup; and

(f) a protuberance formed in said center section substantially equidistant from the ends of said U-shaped slit and spaced away from the bottom of said U-shaped slit, the protuberance projecting upward a substantial distance from said center section but not exceeding the height of said inner wall segment of the peripheral section, the protuberance having a hollow interior adapted to communicate with the interior of the cup when the lid is mounted on the rim of the cup and sized relative to the drinking portion so that the latter is substantially open upon a predetermined depressing force being applied to the protuberance by the upper lip of a person drinking from the cup.

4,345,696
CONTAINER OPENING APPARATUS

Henry L. Guimarin, Irving, Tex., assignor to Guimarin Container Co., Incorporated, Dallas, Tex.

Filed Nov. 20, 1980, Ser. No. 208,589
Int. Cl.[3] B65D *17/42*
U.S. Cl. 220—277 11 Claims

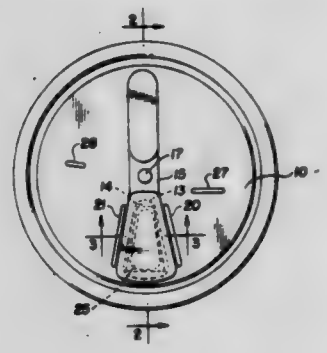
1. In a container end including a substantially flat disc-like body member having an outer major surface and an inner major surface and adapted to mate with a container body to form a sealed enclosure, the improvement comprising:

(a) a partially severable tab defined by a weakening score line in said substantially flat member, said tab including at least one inclined boss projecting outwardly from said outer major surface; and

(b) opening means comprising an elongated member disposed substantially diametrically across said end secured to said container adjacent said end and moveable in a plane substantially parallel with said outer major surface,

said opening means covering said tab and said inclined boss;

whereby movement of said opening means in said plane substantially parallel with said outer major surface causes



said opening means to engage said inclined boss and depress said tab inwardly into said container by at least partially severing said tab from said end along said weakening score line.

4,345,697

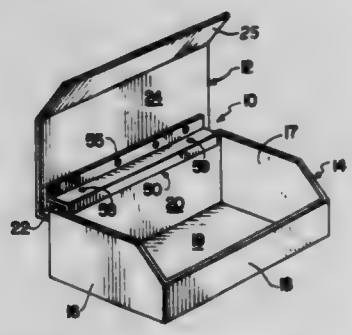
SEPARABLE HINGE ASSEMBLY FOR A COVER

Billy E. Wilson, and Coy R. Hutson, both of Parsons, Kans., assignors to Power-Flame, Inc., Parsons, Kans.

Filed Aug. 29, 1980, Ser. No. 182,654

Int. Cl.³ B65D *43/24*

U.S. Cl. 220—335 **25 Claims**



1. A hinge assembly for first and second panels, the combination comprising:

a first portion located on said first panel;

a lip extending from said first portion and having a distal edge;

a second portion located on said second panel;

a hinge member;

means for rigidly coupling said hinge member to said first panel,

said hinge member comprising

a leg, and

an intermediate portion extending from said first panel and having said leg extending therefrom substantially perpendicular to said lip,

said leg having a distal edge forming a slot with said distal edge of said lip, which slot receives said second portion therein,

said second portion being in contact with said lip when said first and second portions are substantially perpendicular,

said second portion being in contact with said leg when said first and second portions are substantially parallel.

4,345,698

AIRCRAFT SELF-SEALING FUEL TANK

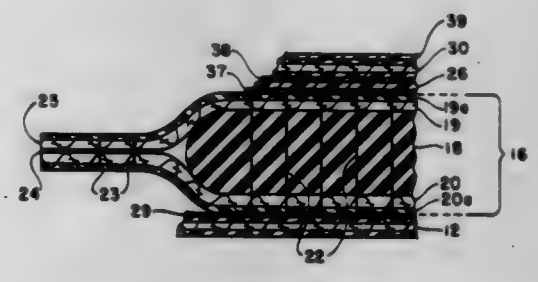
Herbert F. Villemain, Cuyahoga Falls, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 25, 1980, Ser. No. 133,767

Int. Cl.³ B65D *25/14*

U.S. Cl. 220—452 **1 Claim**

1. A self-sealing fuel tank, comprising: an innerliner member; a plurality of sealant panels secured to the exterior surface of the innerliner member and to each other to form the configuration of said fuel tank; each of said sealant panels including: a first layer of fabric having one rubberized side and one unrubberized side, a second layer of fabric having one rubberized side and one unrubberized side, a layer of sealant compound between said first layer and the second layer with the unrubberized side of the fabric layers being positioned adjacent the sealant compound; said fabric layers extending beyond the sealant compound to form connecting flanges, said first layer of fabric, second layer of fabric and layer of sealant compound



being joined by a plurality of rows of parallel stitching along their surface faces that are surrounded by said connecting flanges and a plurality of circumferential rows of stitching in the flanges adjacent the edge of the sealant compound; adhesive means, joining the flanges of each panel to the respective adjacent panels of the formed tank, for forming hinge-like flexible joints between the panels of said tank; a fuel barrier layer on the outer surface of the sealant panels and an outer member covering the external surface of the fuel barrier layer on all of said panels and joints.

4,345,699

LUBRICANT TANK

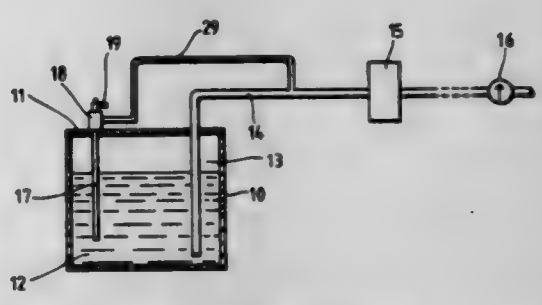
Clive N. Bunyan, Harrow, England, assignor to Rolls-Royce Limited, London, England

Filed Nov. 6, 1980, Ser. No. 204,700

Claims priority, application United Kingdom, Dec. 7, 1979, 7942305

Int. Cl.³ B67D *5/32*

U.S. Cl. 222—40 **6 Claims**

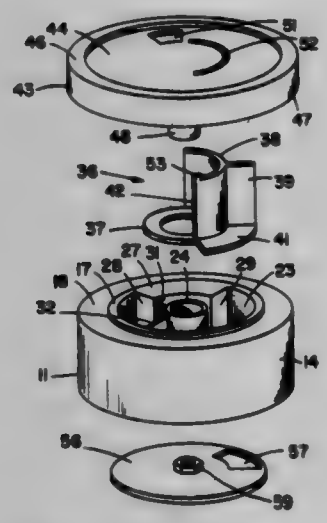


1. A tank suitable for holding a lubricant and comprising a removable dipstick, means for the reception and support of said dipstick, first duct means for the withdrawal of lubricant from said tank, second duct means interconnecting said first duct means with said dipstick support means, and pump means associated with said first duct means, said pump means being adapted to pump lubricant from said tank through said first duct means, said dipstick and dipstick support means being adapted and arranged such that said second duct means is obturated only when said dipstick is correctly positioned in said dipstick support means, said second duct means being so adapted and arranged that when not so obturated by said dipstick, air is drawn therefrom into said first duct means by the action of said pump means to reduct the pressure of said lubricant within said first duct means, means being provided to detect and indicate said pressure reduction.

4,345,700
VARIABLE QUANTITY DISPENSING DEVICE FOR GRANULAR MATERIAL

David W. Souza, Fremont, Calif., assignor to SJ Marketing Incorporated, Palo Alto, Calif.

Filed Apr. 28, 1980, Ser. No. 144,226
Int. Cl.³ G01F *11/46*
U.S. Cl. 222—438 13 Claims



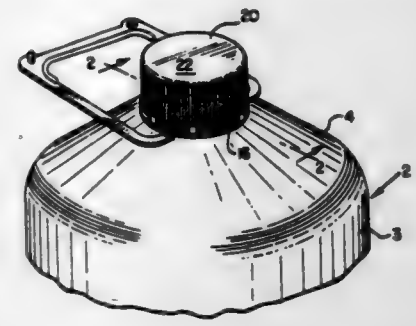
1. A device for dispensing material from a container having an externally threaded neck forming an opening, comprising: a cap member having an annular internally threaded outer wall to be threadably secured to said neck, a cup-like coffer extending into said outer wall and opening outwardly therefrom, said coffer including an annular inner sidewall concentrically within and spaced from said outer wall, and an annular portion completely joining adjacent ends of said inner and outer walls; a protruding member extending into said coffer from the sidewall thereof; a lid member rotatably secured to said cap member, and having a circular disc top wall disposed to close the open end of said coffer and a depending integral annular wall surrounding said annular portion of said cap member; a discharge port in said lid member top wall; a disc bottom cover connected to said lid member for rotation therewith beneath and to close the bottom of said coffer; an inlet port in said bottom cover angularly spaced from said lid discharge port; an adjustable member rotatably secured within said coffer and including a radially extending wall angularly spaced from said protruding member; said protruding member, radially extending wall, sidewall, lid member, and bottom cover defining a chamber having a volume variable according to the angular position of said adjustable member relative to said cap member; said lid member being rotatable to selectively move said inlet opening into registration with said chamber in one position and to move said lid discharge port into registration with said chamber in another position angularly spaced from said one position; said cap member annular portion having sealing means for contacting the outer edge of the container neck; said lid member top wall being closely adjacent to and parallel to said cap member annular portion; and manually operable means extending through said lid member top wall for rotating said adjustment member relative to said lid member and said cap member.

4,345,701
CONTAINER CLOSURE DEVICE

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Division of Ser. No. 81,593, Oct. 3, 1979, Pat. No. 4,299,330.
This application Jan. 21, 1981, Ser. No. 226,987
Int. Cl.³ B65D *5/72, 25/40, 35/38*
U.S. Cl. 222—569 10 Claims

2. A connection for a plastic neck member with a neck portion having a cylindrical wall and an inwardly turned curl with a smooth annular inner, upper and lower surface and an annular outer face with radially outwardly extending projection means, said plastic member being heat-softenable and having a slot at one end extending inwardly therefrom flanked by inner and outer flange portions and terminating in an inner

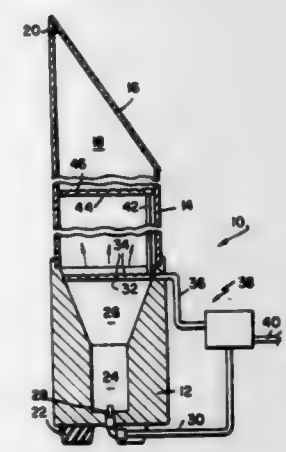


groove complemental to said surface and in engagement therewith, said outer flange being deformed into pockets opposing respective projection means attendant to heating of said neck member to a predetermined temperature.

4,345,702
FIBER DISSEMINATOR

Neil M. Wolfe, Cecil City, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 25, 1980, Ser. No. 181,141
Int. Cl.³ B65D *88/72*
U.S. Cl. 222—630 9 Claims



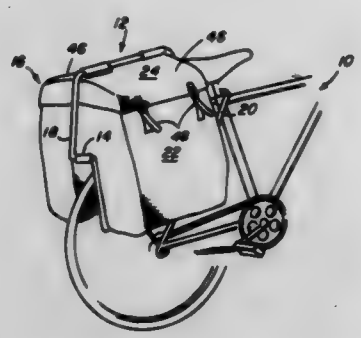
1. A fiber disseminator which comprises:
a vertically-disposed vessel having lower, intermediate and upper chambers, said upper chamber being of larger cross-section than said lower chamber;
a top wall formed of a transparent material dispersed over said upper chamber of said vessel;
first conduit means for intermittently introducing a suspension media into a lower portion of said lower chamber, and for upwardly dispersing said fibers from a stored position in said lower chamber to a dispersed position in said intermediate and upper chambers;
second conduit means for continuously introducing said suspension media into said intermediate and upper chambers for separating and transporting said fibers through said upper chamber; and
orifice means for ejection of separated fibers and venting of said suspension media from said upper chamber of said fiber disseminator, said orifice means including an opening positioned in a top end of said upper chamber;
said disseminator permitting dispersion of a known deposition of fiber of a controlled and selected size.

4,345,703

CARRYING BAG, PARTICULARLY FOR BICYCLES

Richard A. Allen, Bowles Ter., Lincoln, Mass. 01773

Filed Feb. 17, 1981, Ser. No. 234,773
Int. Cl.³ B62J 9/00
U.S. Cl. 224—32 A 11 Claims



1. A carrier configured to be mounted on a bicycle, said carrier comprising:

(a) a foldable frame having an upper member and a pair of side members;

(b) a bag fitted to said frame, said bag having an upper compartment and a pair of side compartments; and

(c) means for holding said frame and said bag to the bicycle, said frame operative to hold said upper compartment over a wheel of the bicycle and each of said side compartments at each side of the wheel when said carrying bag is mounted to said bicycle;

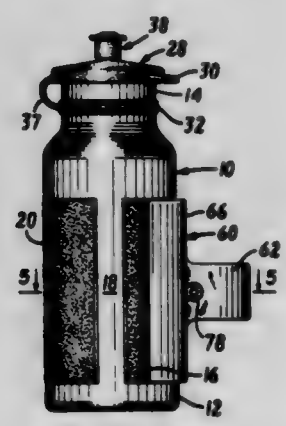
(d) said frame including a pair of pivotable members, each said pivotable member having an upper support and a lower outrigger, said upper supports operative to hold said bag upright to maintain said upper compartment in an expanded position above the wheel, said outriggers operative to keep said side compartments away from the spokes of the wheel.

4,345,704

BOTTLE MOUNT AND BOTTLE FOR BICYCLES

Matthew S. Boughton, Stamford, Conn., assignor to Cannondale Corporation, Stamford, Conn.

Filed Sep. 2, 1981, Ser. No. 298,641
Int. Cl.³ B62J 11/00
U.S. Cl. 224—39 9 Claims



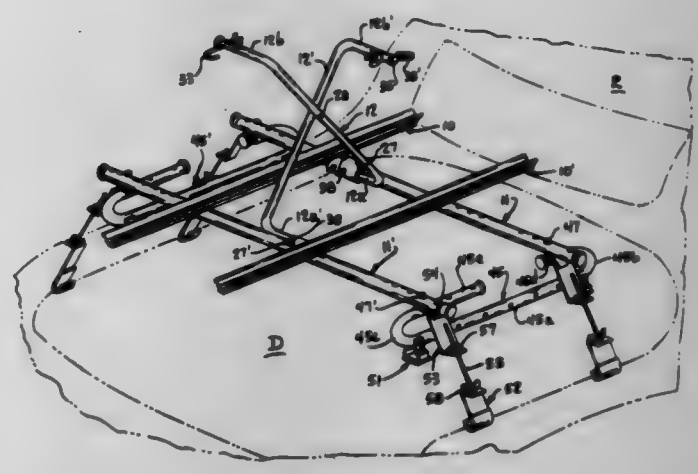
1. A bottle mount and bottle combination for bicycles wherein the mount comprises means defining a concave surface that is a segment of a surface of revolution generated by a substantially straight line and is of not more than about 180 degrees in circumferential extent, one element of a hook and loop cloth fastener affixed to the concave surface, and means for fastening the mount to a bicycle with the concave surface facing generally upwardly, and wherein the bottle comprises a receptacle, a portion of the receptacle having an outer surface that is complementary throughout its circumferential extent to the concave surface of the mount and the other element of the hook and loop cloth fastener being affixed to said complementary portion of the receptacle, and a removable closure for the receptacle.

4,345,705

AUTOMOBILE ATTACHED CARRIER

Joseph V. Graber, 3739 County Trunk M, Middleton, Wis. 53562

Filed Mar. 6, 1981, Ser. No. 241,099
Int. Cl.³ B60P 3/06
U.S. Cl. 224—42.03 B 14 Claims



1. An automobile attached carrier for supporting at least two bicycles comprising,

(a) first and second channels each adapted to receive the front and rear wheels of a bicycle,

(b) first and second cross frame members extending crosswise of the channels and secured thereto to support the channels in laterally spaced relation,

(c) means for mounting the first and second cross frame members on the roof or deck lid of an automobile,

(d) first and second elongated bicycle support members,

(e) first and second bracket means mounting one end portion of the first and second elongated bicycle support members respectively on the first and second cross frame members for swinging movement in generally upright planes intermediate the channels from a lower folded position adjacent the level of the channels to a raised support position in which the elongated bicycle support members extend upwardly at an acute angle to the horizontal and cross each other at a location intermediate their ends,

(f) means detachably interconnecting the first and bicycle support members intermediate their ends at the crossing location,

(g) and first and second arm means on the other end portion of the respective first and second bicycle support members extending laterally thereof and each including clamp means for detachably engaging a portion of the frame of a bicycle resting in a respective one of the channels.

4,345,706

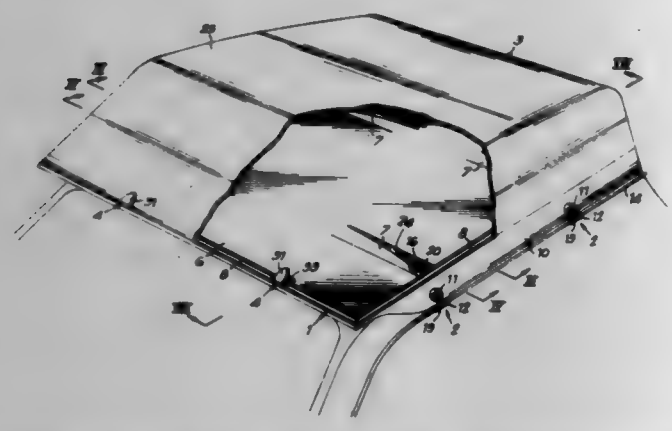
LUGGAGE-CARRIER OR AUXILIARY LUGGAGE COMPARTMENT FOR MOTOR CARS

Claude Benit, Transvaalstraat 17, 2600 Berchem, Belgium

Filed Mar. 24, 1980, Ser. No. 132,860
Claims priority, application Belgium, Mar. 28, 1979, 2/57691
Int. Cl.³ B60R 9/04
U.S. Cl. 224—327 7 Claims

1. Luggage carrier for a roof of a motor car having a gutter channel, said carrier including a substantially planar base and a plurality of releasable fixing devices, said base having a plurality of transverse channels with open tops and with bottom parts fitting the shape of said roof, said fixing devices being in said channels, said base further having longitudinal rims each of which is provided with a strip-shaped support, the lower

edge of which is shaped to fit in said gutter channel, said support having, in alignment with the said transverse channels,



passages for said fixing devices which are adapted to fix said base to said gutter channel.

4,345,707

METHOD OF AUTOMATICALLY FRAMING A REVERSAL FILM PROVIDED WITH EDGE NOTCHES

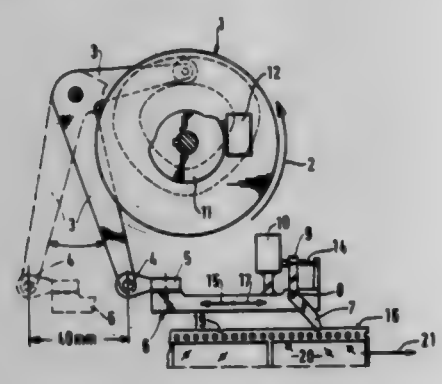
Otfried Urban, and Peter Mundt, both of Garmisch-Partenkirchen, Fed. Rep. of Germany, assignors to Geimuplast Peter Mundt GmbH & Co., KG, Farchant, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,550

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853158

Int. Cl.³ B65H *17/40*

U.S. Cl. 226—68 **6 Claims**



1. An apparatus for automatically framing an edge notched reversal film, the edge notches bearing predetermined relationships to image bearing portions of the film to be framed, said apparatus comprising:

means for feeding film including a feed gripper (7) engageable with an edge notch for feeding film, and drive means for moving said feed gripper through an operating cycle, the feed gripper during a first portion of the operating cycle engaging an edge notch and feeding the film, and the feed gripper during a second portion of the operating cycle disengaging from an edge notch and moving into a position for engaging a succeeding edge notch located within a predetermined range of variable spacings from the previously engaged edge notch; and

first (12) and second (10) switch means for controlling said drive means, said first switch means (12) being actuatable by said drive means during the second portion of the operating cycle and being open during at least a part of said first portion of the operating cycle, said second switch means (10) being independent from said first switch means and being actuatable by engagement of said feed gripper with an edge notch, said drive means moving said feed gripper when at least one of said switch means is actuated.

4,345,708

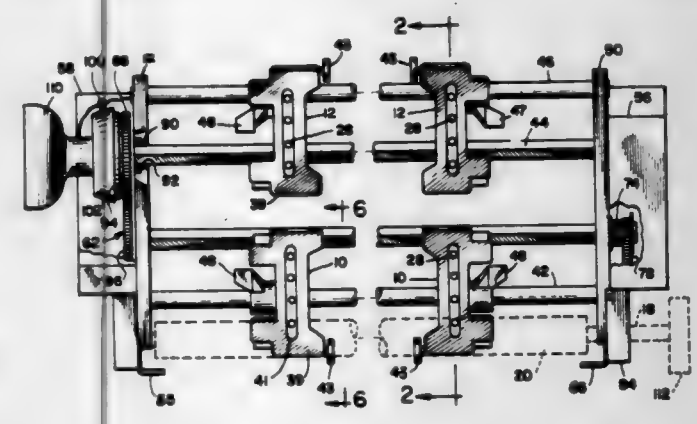
DOCUMENT FEED MECHANISM

Leo J. Hubbard, Somerset, Mass., assignor to P.H.D. of Puerto Rico, Inc., Fajardo, P.R.

Filed May 27, 1980, Ser. No. 153,394

Int. Cl.³ B65H *17/38*

U.S. Cl. 226—74 **10 Claims**



1. A web feed mechanism which comprises first and second feeding means which are disposed in driving relationship with the web when it is driven and which are spaced from each other to define a length of said web therebetween, driving means coupling said first and second feeding means in driving relationship with each other, said driving means comprising driven means connected in driving relationship with said second feeding means, means coupling said first feeding means to said driven means for driving said first feeding means when said second feeding means is driven, and a clutch in said means coupling said first feeding means to said driven means for decoupling said first feeding means from driving relationship with said driven means so that said second feeding means can move said web with respect to said first feeding means until the tension in said length of said web is adjusted, said clutch having a pair of plates one of which is rotatable with said driven means and the other of which is rotatable with said first feeding means, and manually operable means connected to said other of said plates for separating said plates and holding said first feeding means stationary to prevent movement thereof with respect to said web until said tension in said length of said web is adjusted.

4,345,709

PAPER SPLICING DEVICE, ESPECIALLY FOR CIGARETTE OR FILTER ROD-MAKING MACHINES

Ronald S. C. Barton, Welling, England, assignor to Molins, Ltd., London, England

Filed May 23, 1980, Ser. No. 152,845

Claims priority, application United Kingdom, May 29, 1979, 7918676

Int. Cl.³ B65H *23/08, 17/32*

U.S. Cl. 226—195 **14 Claims**

8. A web splicing device for splicing the leading end of a first web provided by a first web supply to the trailing end of a second web which is being drawn through said web splicing device by a web receiving apparatus, said web splicing device comprising:

a reservoir through which said second web is drawn by said web receiving apparatus;

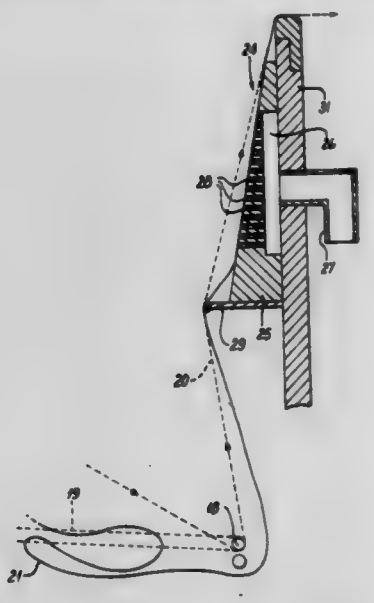
a suction brake acting on said second web after it leaves said reservoir so as to tension said second web by a predetermined amount;

drive means for supplying said second web to said reservoir at a rate greater than the rate at which said second web is withdrawn therefrom in preparation for splicing, thereby to accumulate said second web in said reservoir;

splicing means upstream of said reservoir for splicing the leading end of said first web to the trailing end of said second web; and

an auxiliary suction brake, positioned upstream of said first-

mentioned suction brake and responsive to said drive means accumulating said second web in said reservoir, for



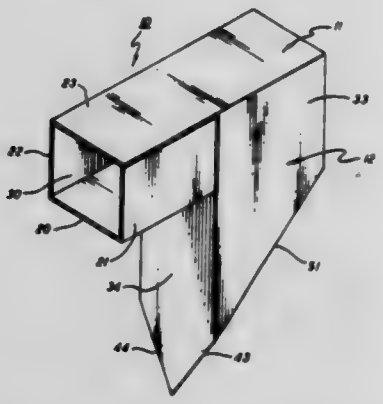
engaging said second web to maintain said predetermined amount of tension on said second web as it leaves said reservoir.

4,345,710

TEMPORARY MATERIAL RECEPTACLE

Donald R. Gillespie, R.D. #2, Stump Rd., Skaneateles, N.Y. 13152, and John M. French, Jr., 314 Garden City Dr., Mattydale, N.Y. 13211

Filed Mar. 20, 1981, Ser. No. 245,941
Int. Cl.³ B65D *5/52, 91/00*
U.S. Cl. 229—16 R **8 Claims**



1. A self-locking receptacle for printed material and the like that is formed by folding a single board of foldable material that includes

a rectangular bottom panel,

a pair of complimentary rectangular side panels, each side panel being of substantially the same length as the bottom panel and having its lower side edge foldably attached to one of the side edges of the bottom panel,

a rectangular top panel being of substantially the same length as the side bottom panels having a first one of its two side edges foldably attached to the upper side edge of one of the side panels whereby the four cojoined panels can be folded into a rectangular housing,

an elongated support panel foldably attached to the second side edge of the top panel and having at least one longitudinal side edge that is normal to said second side edge of the top panel, the width of said support panel being less than the length of the top panel,

a rectangular shaped bladed front panel foldably attached to said one side edge of the support panel, the top edge of the front panel being parallel with the second side edge of the top panel and being spaced therefrom a distance that is substantially equal to the width of the side panels, the width of the front panel being substantially equal to the width of the bottom panel, and the bottom portion thereof terminating in a point,

a locking panel foldably attached to a second side edge of the bladed panel, the top edge of the locking panel being coplanar with the top edge of the blade panel,

a locking tab foldably attached to the top edge of the locking panel, and

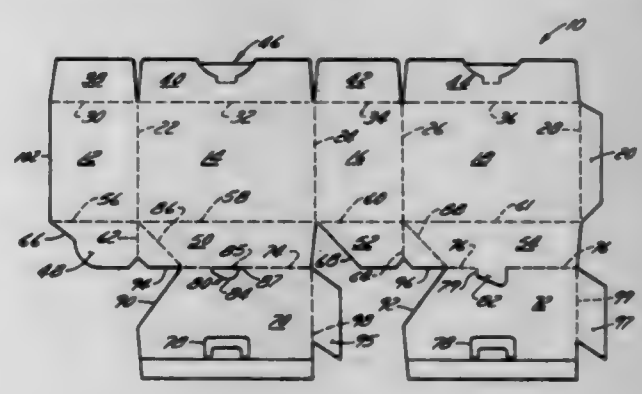
said bottom panel having a slotted hole formed therein for receiving the locking tab therein.

4,345,711

PARTITIONED CARTON

David Fischer, 12 Cavotti Crescent, Downsview, Ontario, Canada (M3H 4V1)

Filed Mar. 23, 1981, Ser. No. 246,676
Int. Cl.³ B65D *5/46, 5/48*
U.S. Cl. 229—41 R **11 Claims**



1. A carton blank comprising a first end wall and a first side wall, a second end wall and a second side wall foldably interconnected by a plurality of substantially parallel fold lines and adapted to form a knock-down sleeve, bottom flaps connected one to each of said end and side walls by fold lines substantially perpendicular to said set of fold lines, means permitting interconnection adjacent pairs of said bottom flaps to form a self erecting bottom when said knocked down sleeve is squared, a partition panel foldably connected to each of said bottom flaps connected to said first and second side walls via fold lines substantially perpendicular to said set of fold lines, said partition panels each terminating in a free end, said bottom flaps and said partitions being cut away to permit erection of said bottom as said sleeve is squared, means defining an aperture in one of said partition panels adjacent its fold lines connection to said side bottom flap to which it is foldably connected, a projection extending from said side bottom flap from which the other of said partition panel is foldably connected, an abutment edge on said projection, said projection being formed from said other partition panel, said projection and aperture being relatively positioned and shaped to cooperate so that said projection enters said aperture as a knock down sleeve formed from said blank is squared from a knocked-down position to an erected position and said abutment edge engages a wall of said aperature to prevent said sleeve from returning to knocked down condition.

4,345,712

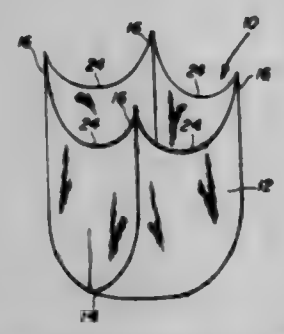
PLASTIC BAG

Heung S. Gim, 5389 W. 229th St., Fairview Park, Ohio 44126

Filed Sep. 24, 1980, Ser. No. 190,230
Int. Cl.³ B65D *33/24*
U.S. Cl. 229—62 **3 Claims**

1. A bag formed from a tubular strip of material comprising a body portion having a four-sided configuration with an opening at one end thereof, said body portion being formed by adjacent layers of the tubular strip of material, the respective longitudinal edges of said adjacent layers being in register the material between said adjacent layers being tucked inwardly to

form two inward folds with one of said adjacent layers on opposite sides thereof, and a bottom portion integrally formed to said body portion at the other end thereof, said opening being defined by a generally arc-like cut in each surface defining the four sides of said body portion, said arc-like cut being



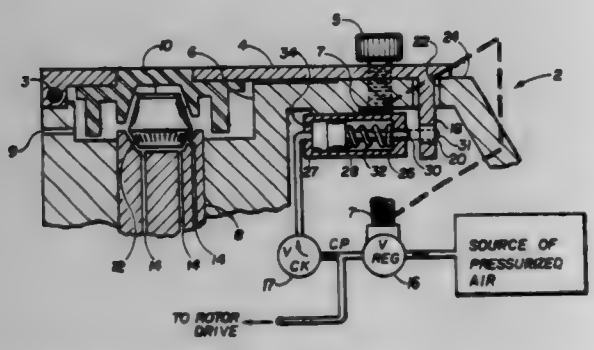
continuous on each surface defining said four sides of said bag forming fastening ends at the junction of those of said surfaces that are adjacent, the length of said fastening ends being sufficient to permit diagonally opposite fastening ends to be brought together and tied forming a carrying handle for same.

4,345,713

SAFETY LOCK FOR AIR DRIVEN CENTRIFUGE

William S. Gutierrez, San Francisco; Lee Gropper, Los Altos, and Hugh O. Brown, Campbell, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 13, 1981, Ser. No. 254,020
Int. Cl.³ B04B 7/06
U.S. Cl. 233—1 B 6 Claims



1. In an air driven centrifuge having an access door to a rotor chamber housing a rotor seat and a rotor having a plurality of turbine flutes formed in the underside thereof, said rotor seat having driving air jet means connected to a source of pressurized air for impinging pressurized air streams against said turbine flutes for supporting and spinning said rotor on an air cushion above said rotor seat within said chamber, the improvement comprising:

means for preventing the opening of said access door when pressurized air is supplied to said air jet means; and

means for delaying, for a predetermined time, the opening of said access door after said supply of pressurized air to said air jet means is discontinued.

4,345,714

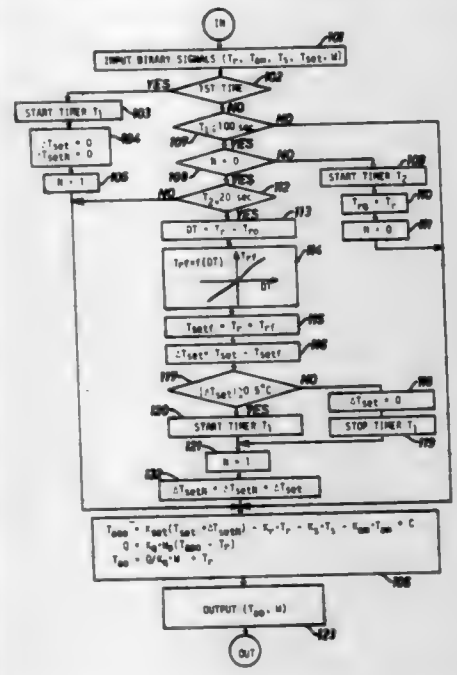
CONTROL METHOD AND APPARATUS FOR AIR CONDITIONERS

Yasuhumi Kojima, Gifu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 28, 1980, Ser. No. 173,894
Claims priority, application Japan, Aug. 1, 1979, 54-98528
Int. Cl.³ G05D 23/00
U.S. Cl. 236—46 R 8 Claims

1. A method of controlling an air conditioner which supplies an air flow into a compartment or other region, the air conditioner comprising air flow quantity control means and air flow temperature control means, the method comprising the steps of detecting the quantity of heat necessary for adjusting the actual temperature of air in said compartment or other region to a desired value and to maintain it at said desired value, and controlling said air flow temperature control means in such manner that the air flow temperature is such as to enable the air flow at a desired air flow quantity to supply said necessary heat quantity, said necessary heat quantity and said air flow temperature being determined employing electric signals in the form of a first electric signal indicative of the actual air temperature in said compartment or other region and a second electric signal indicative of a desired air temperature in said compartment or other region, wherein the improvement comprises the steps of:

detecting a first deviation between values of the preceding and following first electric signals at a predetermined time



interval after lapse of a predetermined period of time from starting the air conditioner;

detecting an expected value of the actual air temperature in relation to said first deviation, said expected value of the actual air temperature being obtained as a stable value under the control of said air flow temperature control means;

detecting a second deviation between said desired value and said expected value of the actual air temperature;

detecting a third deviation related to said second deviation when said second deviation is larger than a predetermined value; and

compensating said necessary heat quantity in accordance with said third deviation.

4,345,715

SAFETY DEVICE FOR A HEAT EXCHANGE EQUIPMENT FILLED WITH PRESSURIZED LIQUID

Raymond J. E. Van Craenenbroeck, Bergmolenstraat 64, B 2740 Melsele, Belgium

Filed Aug. 13, 1980, Ser. No. 177,578
Claims priority, application Belgium, Aug. 24, 1979, 2/58027
Int. Cl.³ F24D 3/10
U.S. Cl. 237—66 12 Claims

1. A safety device for heat exchange equipment fillable with pressurized liquid, which safety device comprises:

a. a vessel with sidewalls having an overflow for discharging liquid from said vessel when the liquid rises above the level of said overflow,

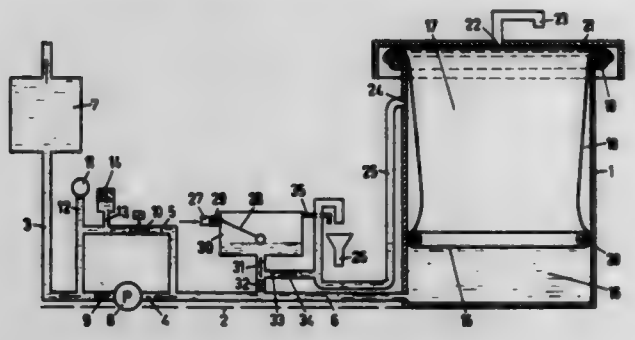
b. a diaphragm mounted in said vessel movable by the liquid inside said vessel between a position below the overflow and a position above said overflow to separate said vessel into a lower and an upper space, said upper space being open to the atmosphere,

c. a pipe for connecting the lower space of the vessel to the equipment to be protected, which pipe is divided in one

location into two paths which paths subsequently join before reaching the equipment,

d. a pump with its pressure side directed toward the equipment in one path,

e. a one-way valve through which liquid flows to the equipment, in the same path and thus in series with said pump,



f. an electro-magnetic valve in the other path,

g. a contact manometer connected to said other path between the equipment and the electro-magnetic valve, and

h. means for controlling said pump and said electro-magnetic valve based on the pressure measured by the manometer.

4,345,716

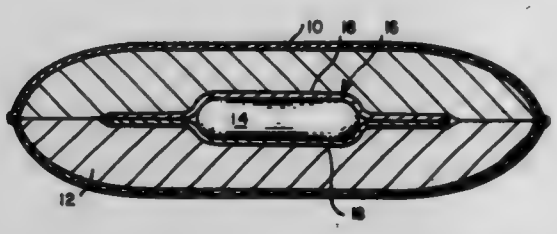
SACHET

John C. Armstrong, Milton, and Joseph H. O'Neil, Brewster, both of Mass., assignors to The Pharmasol Corporation, Randolph, Mass.

Filed Jul. 21, 1980, Ser. No. 170,954

Int. Cl.³ A61L *9/04*

U.S. Cl. 239—56 **12 Claims**



1. A sachet comprising a pillow-shaped case defining an enclosure, said case being comprised of two substantially coextensive sheets of porous, flexible, fabricated material joined at their edges, an absorbent stuffing constrained within the casing comprised of two substantially coextensive layers of relatively loosely associated fibers, said layers of absorbent stuffing being coextensive and in intimate surface contact with the sheets comprising the case and holding the latter distended, a covering defining a cavity within the case located between the stuffing layers, the said covering comprising coextensive plies of fibrous materials and a frangible capsule containing a volatile material positioned in the cavity between the plies of the covering, said covering and capsule positioned therein being centered with respect to the sides and edges of the case, and wherein the plies of the covering extend laterally beyond the capsule in the plane defined by the meeting surfaces of the stuffing layers a distance less than coextensive with the stuffing plies.

4,345,717

LOW PRESSURE FUEL INJECTION SYSTEM

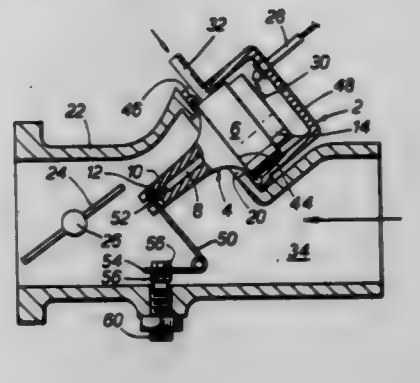
Michael W. Clark, Witham, and Barrie J. Martin, Shenfield, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Continuation of Ser. No. 1,859, Jan. 8, 1979, abandoned. This application Apr. 4, 1980, Ser. No. 137,419

Claims priority, application United Kingdom, Jan. 17, 1978, 1905/78

Int. Cl.³ B05B *1/08, 3/14, 17/06*

U.S. Cl. 239—102 **5 Claims**



1. A low-pressure fuel-injection system for the injection fuel at a pressure less than 39 p.s.i. into the intake air of a combustion engine, which system comprises an injector having a body; a fuel passage in the body; an outlet orifice arranged at a downstream end of said fuel passage for discharging the fuel into such intake air; a single valve obturator element, said single obturator element being positioned at the downstream end of said outlet orifice for closing said orifice; a spring positioned downstream of said outlet orifice for urging the single valve obturator element to close the outlet orifice on its downstream side, said spring being sufficiently strong to hold said obturator in an orifice-closing position against the force exerted upon it by such low-pressure fuel in said orifice; and vibrator means for vibrating the injector to overcome the spring force and thereby move the single valve obturator element away from the outlet orifice to enable fuel to be discharged through the outlet orifice.

4,345,718

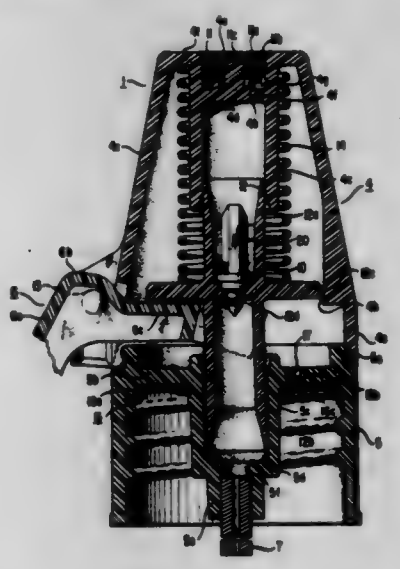
MANUALLY ACTUATED TRIGGER SPRAYER

William Horvath, 10 Crestwood Dr., Watchung, N.J. 07060

Continuation-in-part of Ser. No. 32,334, Apr. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 875,685, Feb. 6, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 106,398

Int. Cl.³ B05B *9/043*

U.S. Cl. 239—333 **27 Claims**



1. A manually operated spray dispenser constructed in com-

bination with the closure of a container of fluid product having an upwardly extending mouth, said dispenser comprising in combination:

an accumulator housing forming in fixed relation to said closure an outer tubular wall constructed to extend upwardly from the mouth of said container, said accumulator housing enclosing in integral coaxial relation an upper stationary tubular accumulator, and the mouth of said container enclosing in integral coaxial relation a lower stationary tubular member vertically spaced apart from said upper tubular accumulator;

means for communicating between said lower stationary tubular member and the fluid in said container;

a spray dispensing nozzle mounted in said accumulator housing in a spray button chamber in communication with said upper stationary tubular accumulator member;

a hollow tubular piston having its upper and lower ends respectively disposed to move in vertically reciprocating relation in said upper stationary tubular accumulator and said lower stationary tubular member;

an annular lateral enlargement connected to said hollow tubular piston intermediate between the upper and lower ends thereof, said annular lateral enlargement having an upper face and an underside;

means comprising a check valve located in said hollow tubular piston intermediate between the upper and lower ends of said piston and responsive to a pressure differential between said ends to admit said fluid product from the lower end into the upper end of said hollow tubular piston;

a helical coil-spring surrounding said upper stationary tubular accumulator and compressed between a fixed upper wall of said accumulator housing and the upper face of said annular lateral enlargement;

a pivot mounted in horizontal relation to the outer tubular wall of said accumulator housing;

trigger means mounted to rotate in a vertical plane about said pivot, said trigger means including a downwardly extended trigger arm, and horizontally extended lever means disposed to contact the underside of said annular enlargement and to move said hollow tubular piston vertically against the compression of said coil spring; and

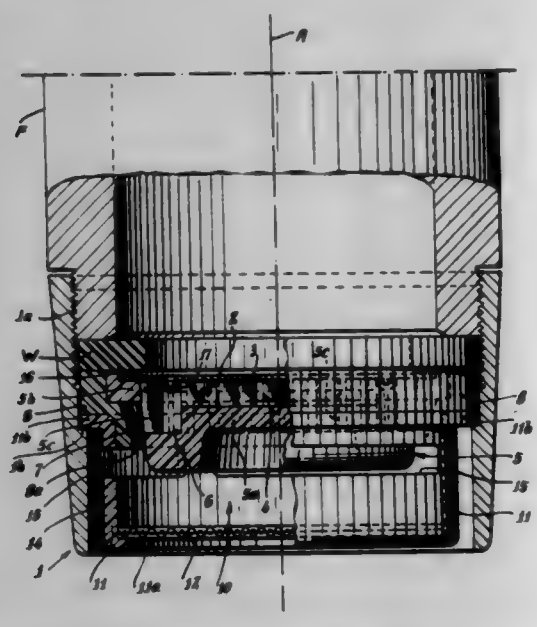
means for maintaining said container at substantially ambient pressure.

4,345,719

WATER AERATOR

Robert E. Bock, Woodbury, Conn., assignor to WPM, Inc., Waterbury, Conn.

Filed Mar. 31, 1980, Ser. No. 135,352
Int. Cl.³ E03C *1/084*
U.S. Cl. 239—428.5 **17 Claims**



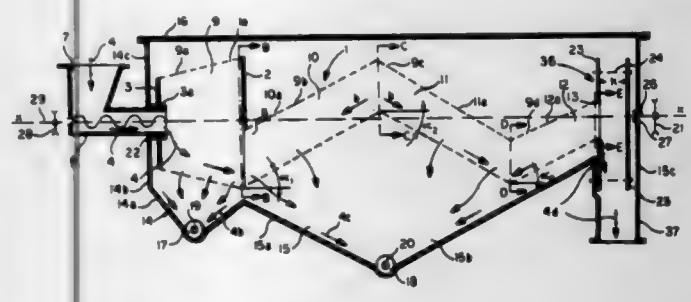
1. In a water aerator for delivering an aerated bubbly stream, the combination of a cylindrical barrel adapted to be removably secured at its upper portion to a source of water under pressure, a basket mounted in the barrel and surrounding a mixing chamber, screen means supported by the basket below said chamber and through which said stream is adapted to be discharged, said barrel and basket having opposing parts forming a passage for flow of atmospheric air into the mixing chamber due to a reduced pressure therein, a diffuser overlying the mixing chamber and forming a diffuser chamber positioned to receive water from said source, the diffuser chamber being open at the top and having peripheral openings for diffusing a flow of water outwardly from the diffuser chamber to the mixing chamber, the diffuser also having a seat recessed below the top of the diffuser, a flow restrictor disc supported on said seat and having a control opening for admitting water from said source to the diffuser chamber, and means on the diffuser for releasably retaining said restrictor disc against removal from the diffuser, said control opening, diffuser chamber, peripheral openings and mixing chamber forming a path through which water is adapted to flow from said source to said screen means for discharge from the aerator.

4,345,720

APPARATUS FOR THE TREATMENT OF SOLID, GRANULAR AND/OR LUMPY MATERIALS

Istvan Takacs; Endre Vereczkey; Gyula Bosits, and György Kerey, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Nov. 28, 1979, Ser. No. 97,971
Claims priority, application Hungary, Mar. 21, 1979, RI 700
Int. Cl.³ B02C *23/10*
U.S. Cl. 241—74 **7 Claims**



1. An apparatus for screening solid materials comprising:

a horizontally elongated housing having a pair of end walls and a bottom formed with means for removing screened material from said housing;

an elongated rotary sieve body journaled on said end walls for rotation about a generally horizontal axis, said body being formed with

a sieve drum at one end of said body, said sieve drum having a frustopyramidal configuration and being disposed symmetrically with respect to said axis while being rotatable therearound and having a pair of axially spaced plates, and drum diverging toward the other end of said body and having a periphery formed by planar and perforated sieve surfaces, said drum having central opening in one of said plates disposed proximal to one of said end walls and an opening in an other of said plates which is eccentric to said axis,

a generally zigzag-shaped tube communicating with said opening in said other of said plates and formed with at least three angularly adjoining tube sections, each having a polygonal cross section formed by planar sieve walls, and

a discharge drum communicating with said tube remote from said frustopyramidal drum and having an open periphery;

means for introducing material to be screened into said frustopyramidal drum through said central opening in said one of said plates whereby some of said material passes through said body with a combined spiraling and back and

forth movement and is discharged from the periphery of said discharge drum; and

means at an end of said housing in the region of said discharge drum for collecting material discharged therefrom.

4,345,721

APPARATUS FOR THE VARIABLE SPEED CONTROL OF CAMS IN TEXTILE MACHINES

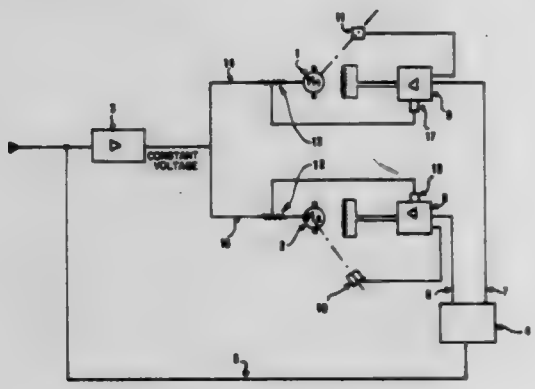
Yves Derail, Roanne, France, assignor to ASA S.A., France

Filed Mar. 10, 1980, Ser. No. 128,918

Claims priority, application France, Mar. 16, 1979, 79 07221

Int. Cl.³ B65H *54/38*

U.S. Cl. 242—18.1 **10 Claims**



1. In an apparatus for the control of speed variation of textile machine cams where a textile machine has two symmetric sides and each side has cams which provide for a back and forth movement to guide the winding of the threads upon spools, the cams of each side being controlled by a motor which is mechanically linked to the cams, the improvement comprising:

a common induction source connected to the motors on each side of the textile machine, said common induction source being adapted to establish the two motors' average speed and to exchange the two motors' braking energy, the variations around the average speed of the two motors being modulated in phase opposition by a flux variation in each motor thereby producing a staggering of the thread wound upon the spools from one layer to the other end and thereby avoiding bunching on the formed winding.

4,345,722

DOUBLE-DRUM WINDER

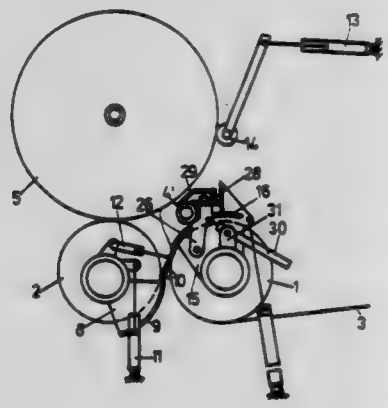
Friedrich Kuhn, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,423

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930474; Mar. 7, 1980, 3008785

Int. Cl.³ B65H *17/12, 19/26*

U.S. Cl. 242—56 R **18 Claims**



1. A double-drum winder for winding a web in a roll on a winding core, comprising:

first and second support drums having parallel axes, each of said support drums being rotatable about its respective axis; said support drums being disposed side-by-side and defining a first gap between them; said support drums adapted to support a roll that comprises a winding core and a web wrapped around the winding core, said support drums being adapted to support the roll in such a manner that when the roll is placed on said support drums with a portion of the web extending through said first gap and said drums rotate, the portion of said web extending through said first gap is wound onto the roll;

means for rotating at least one of said support drums in a direction such that the web moves through said first gap and then through a second gap defined between the first of said drums and the roll and is then wound onto the roll;

means for raising the roll off said first support drum after the roll has been placed on said first support drum and after the web has been wound on the roll, said raising means displacing the roll generally away from said first support drum and generally toward the second of said drums, whereby raising the roll enlarges said second gap;

a holding ledge movable into said first gap for engaging the web on the side thereof facing toward said second drum for pressing the web against said first drum;

severing means movable into said second gap for engaging the web on the side thereof facing toward said first drum and for engaging said holding ledge and for severing the web between said severing means and said holding ledge.

4,345,723

RETRACTOR PROVIDED WITH A TAKE-UP FORCE REDUCING MECHANISM

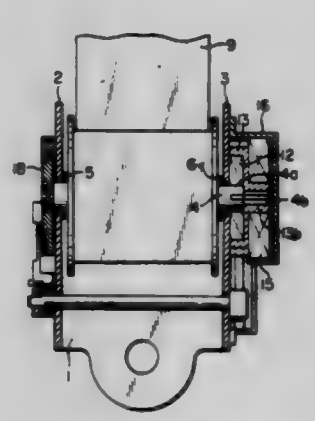
Masaru Morinaga, Yamato, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 188,034

Claims priority, application Japan, Oct. 9, 1979, 54-138359[U]

Int. Cl.³ A62B *35/00*; B65H *75/48*

U.S. Cl. 242—107 **4 Claims**



1. A seat belt retractor provided with a take-up force reducing mechanism which has two spiral springs, at least one of which acts for webbing take-up and in which the webbing take-up force can be reduced by controlling at least one of the two springs, the retractor including:

a take-up shaft;

a cam rotatably fixed to the take-up shaft and having a cam track with a small-diameter circular cam portion, a large-diameter circular cam portion, and a spiral cam portion interconnecting the circular cam portions;

a cam follower adapted to follow the cam portions of the cam track;

cam follower guide means at the junctions of the respective cam track portions for (a) guiding the cam follower during webbing pay-out from one of the small-diameter and large-diameter cam portions to the spiral cam portion, then into the other of the small-diameter and large-diameter cam portions, (b) then retaining the cam follower in said other circular cam portion during continued webbing pay-out, (c) guiding the cam follower during webbing

rewind from said other circular cam portion into the spiral cam portion, then from the spiral cam portion into said one circular cam portion, and (d) then retaining the cam follower in said one cam portion during continued webbing rewind; and

spring force controlling means for reducing the take-up force when the cam follower is retained in said other circular cam portion.

4,345,724

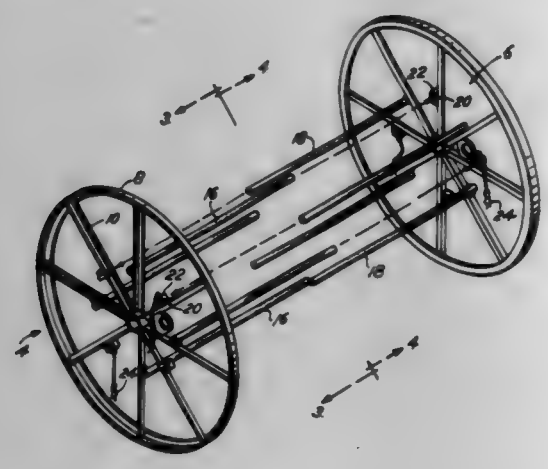
LIGHTWEIGHT REEL

Willard G. Lindell, Maple Park, Ill., assignor to The Anaconda Company, Denver, Colo.

Filed Jun. 23, 1980, Ser. No. 162,002

Int. Cl.³ B65H *75/22*

U.S. Cl. 242—115 **3 Claims**



1. A lightweight, readily assembled and disassembled reel for transporting and dispensing material such as electrical conductor, said reel having an assembled condition and a disassembled condition, said reel, in the assembled condition comprising:

(i) a pair of first and second flange portions;

(ii) a plurality of spaced apart elongated support members of substantially equal length, some of said support members being permanently attached at one end to said first flange portion, other of said support members being permanently attached at one end to the second flange portion, said elongated support members being in an upright position relative to said flange portions;

(iii) means for quickly and detachably connecting the other ends of each of said elongated support members to the other of said flange portions;

(iv) said elongated support members when connected to said other flange portions and said pair of flange portions defining support means for the material being stored; and said reel, in said disassembled condition, comprising:

(i) said elongated support members being completely disconnected and free at the other ends from the flange portions;

(ii) said flange portions being positionable adjacent each other in a stacked configuration, with said elongated support members positioned to extend from the flange portions in the same direction through adjacent stacked flange portions and the other ends of said elongated members being in a laterally spaced relationship to each other.

4,345,725

BRAKING MECHANISM OF A TAPE RECORDER

Toshikazu Kato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,443

Claims priority, application Japan, Jun. 18, 1979, 54-83250[U]

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—204 **5 Claims**

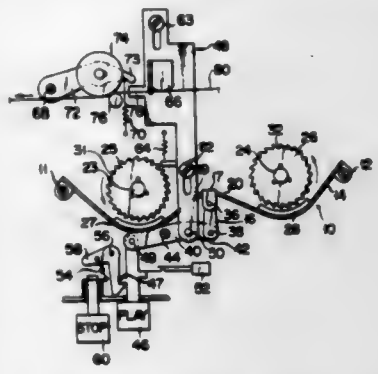
1. In a tape recorder, an improved braking mechanism for applying respective braking forces to a pair of reel shafts of the tape recorder, comprising:

an elongated brake band made of flexible material and having two opposite end portions;

means for rotatably mounting said end portions spaced from each other;

a connecting means coupled to a middle portion of said brake band and being rotatably connected to a movable member which operates interlockingly with an operation mode button of the tape recorder; and

a pair of brake discs mounted respectively on the reel shafts of the tape recorder, each brake disc having on the periphery thereof a brake member, said brake members each including a plurality of protruding portions which are inclined at a predetermined angle to the radial direction of the respective brake disc, the plurality of protruding portions of each respective brake member being inclined in the same direction relative to said radial direction, and the protruding portions of one of said brake members being inclined unidirectionally in the opposite direction to the unidirectional inclination of the protruding portions of the other of said brake members;



said brake band having respective portions which are adapted to be pushed against respective brake members to engage said respective brake members when the operation mode button is operated such that said brake members cut into a corresponding portion of the brake band when a corresponding brake disc rotates in one direction and slip over the corresponding portion of the brake band when the corresponding brake disc rotates in the other direction, when said brake band is engaged with said brake members.

4,345,726

FISHING REEL WITH SPOOL SHAFT BEARINGS

Hideo Noda, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Feb. 4, 1980, Ser. No. 117,988

Claims priority, application Japan, Feb. 15, 1979, 54-18628[U]

The portion of the term of this patent subsequent to Sep. 16, 1997, has been disclaimed.

Int. Cl.³ A01K *89/00*

U.S. Cl. 242—212 **3 Claims**

1. A fishing reel comprising,

a pair of first and second side frames, said side frames being opposite to each other at a given interval,

a first bearing supported to said first side frame,

a cylindrical bearing case fixed to said second side frame,

a second bearing supported to said bearing case,

a spool shaft rotatably supported by said first and second bearings, said spool shaft having engaging faces,

a spool mounted to said spool shaft rotatably together therewith,

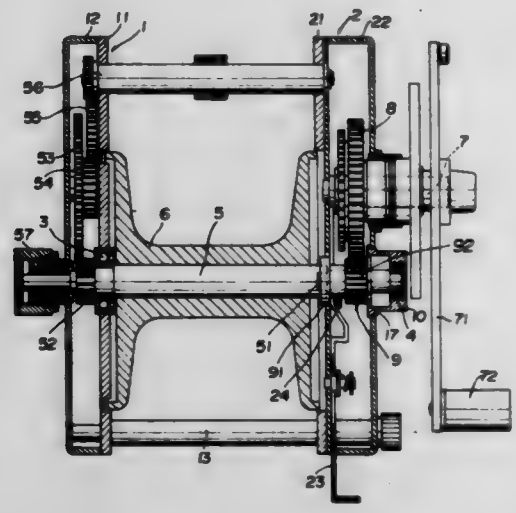
a handle shaft supported to said second side frame,

a driving gear fixed to said handle shaft,

a pinion in mesh with said driving gear, said pinion having a first and a second end portion and being supported axially movably on said spool shaft, said first end portion at the spool side being provided with an engaging portion in mesh with said engaging faces of said spool shaft, said

second end portion at the second bearing side always extending into said bearing case,

a third bearing fixed to the second end portion of said pinion, said third bearing having a round outer periphery adjacent to the inner periphery of said bearing case, said round



outer periphery being slightly smaller in diameter than the inner periphery of said bearing case, so that when said spool shaft deflects said third bearing contacts at said outer periphery with the inner periphery of said bearing case to thereby prevent further deflections of said spool shaft.

4,345,727

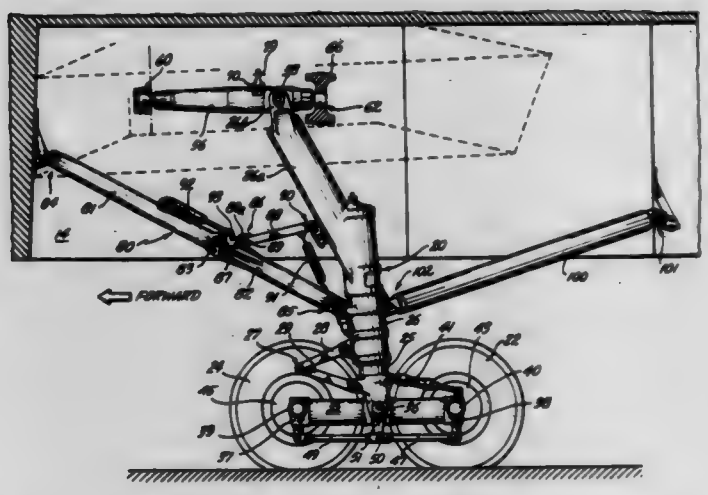
BODY-BRACED MAIN AIRPLANE LANDING GEAR

Robert B. Brown, Kent, and John A. Stepien, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 26, 1979, Ser. No. 107,137

Int. Cl.³ B64C *25/12*

U.S. Cl. 244—102 R **6 Claims**



1. A main landing gear assembly for an airplane having a fuselage boy and a wing, comprising:

a shock strut having a first end and a second end and wheel means journalled to said second end of said shock strut, said first end of said shock strut being pivotably and universally attached to said wing of said airplane for universal pivotal movement of said shock strut and said wheel means between a downwardly depending, extended position for taxiing and landing of said airplane and a retracted position;

a foldable drag strut having first and second ends, said first end of said drag strut being pivotably and universally attached to said shock strut at a first position on said shock strut intermediate said first and second ends of said shock strut, said second end of said drag strut being pivotably and universally attached to a first fixed point of said fuselage body, said first fixed point of said fuselage body being inward and forward of said first end of said shock strut, and releasable locking means for maintaining said drag strut in a nonfolded, aligned configuration with said shock strut in said extended position; and,

a rigid radius brace having first and second ends, said first end of said radius brace being pivotably and universally connected to said shock strut at a second position on said shock strut intermediate said first and second ends of said shock strut, said second end of said radius brace being pivotably and universally connected to a second fixed point of said fuselage body, said second fixed point of said fuselage body being inward and rearward of said first end of said shock strut such that said rigid radius brace constrains said shock strut to extend and retract along a predetermined skewed travel path in an inward, upward and forward movement during retraction and a corresponding outward, downward and rearward movement during extension, and whereby said rigid radius brace and said foldable drag strut operate to bear a major portion of drag loads imposed on the extended landing gear assembly.

4,345,728

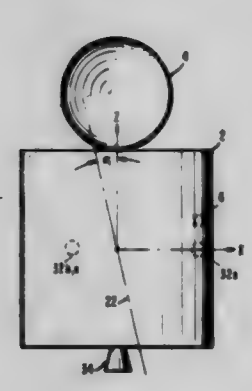
METHOD FOR CONTROLLING THE ATTITUDE OF A SPINNING SPACECRAFT IN THE PRESENCE OF SOLAR PRESSURE

Murray J. Neufeld, Studio City, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 880,929, Feb. 24, 1978, abandoned, which is a continuation of Ser. No. 660,089, Feb. 23, 1976, abandoned, which is a division of Ser. No. 551,206, Feb. 19, 1975, Pat. No. 3,996,804. This application Sep. 4, 1979, Ser. No. 71,646

Int. Cl.³ B64G *1/24*

U.S. Cl. 244—168 **3 Claims**



1. Method for compensating for the affects of solar pressure upon a spinning body comprising the ordered steps of:

determining the axial location of the center of solar pressure relative to the center of gravity of the spinning body; and

shifting the center of gravity of the spinning body in the axial direction of said center of solar pressure, to thereby reduce the affects of attitude changing torques inducted by solar radiation.

4,345,729

THRUST UNITS

Arthur J. Barter, Farnborough, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Aug. 6, 1980, Ser. No. 175,610

Claims priority, application United Kingdom, Aug. 16, 1979, 7928563

Int. Cl.³ B64G *1/26;* F02G *3/00*

U.S. Cl. 244—169 **9 Claims**

1. A thrust unit for a space vehicle whose attitude is monitored by a space vehicle attitude control system, said thrust unit comprising

a container;

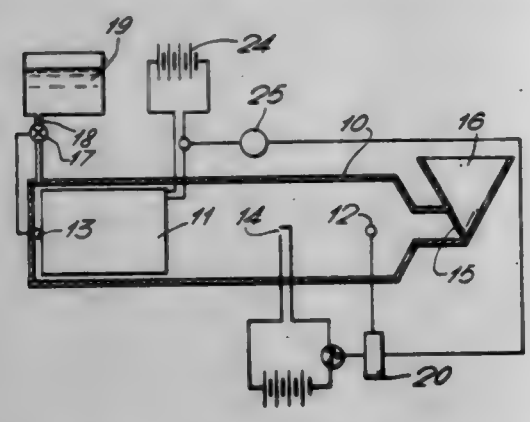
an electrolyzer unit within the container;

means for supplying electrolyte to the electrolyzer unit;

control means responsive to said space vehicle attitude control system for initiating operation of the electrolyzer unit to produce combustible gases from the electrolyte when a change in attitude of the space vehicle is desired;

means for sensing when the pressure within the container reaches a predetermined level;

ignition means for igniting the combustible gases within said container at the predetermined pressure level; and



means for allowing combustion gases to escape from the container to effect a change in attitude of the space vehicle;

said control means being further responsive to said space vehicle attitude control system for terminating operation of said electrolyzer unit when the desired change in attitude of the space vehicle has been completed.

4,345,730

METHOD FOR THE PRODUCTION OF A LINK-BELT AND A LINK-BELT PRODUCED THEREBY

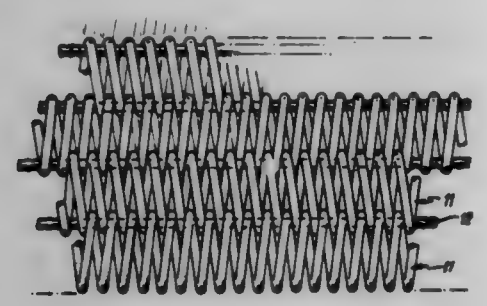
Gerrit W. E. Leuvelink, Haaksbergen, Netherlands, assignor to T. T. Haaksbergen B.V., Haaksbergen, Netherlands

Filed May 14, 1980, Ser. No. 149,692

Claims priority, application Fed. Rep. of Germany, May 26, 1979, 2921491

Int. Cl.[3] B21F *27/00*; B32B *5/00*

U.S. Cl. 245—6 7 Claims



1. A link-belt comprising a multiplicity of helical coils joined in side-by-side disposition by respective hinge wires engaged with the interdigitated turns thereof, the material of at least one of the coils and hinge wires being of a synthetic thermoplastic material and being deformed from an initial constant transverse cross-section in the regions in which the said coils and hinge wires lie in close disposition thereby to stabilise the said link-belt.

4,345,731

SEALING MEANS FOR GUTTER HANGER FASTENING MEANS

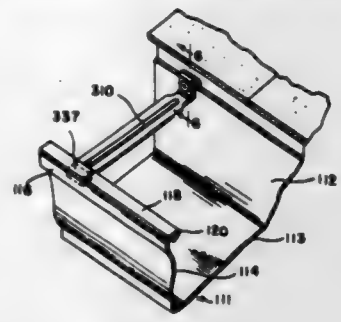
Lacy A. Rowe, 1851 Skycoe Dr., Salem, Va. 24153

Division of Ser. No. 128,727, Mar. 10, 1980, Pat. No. 4,294,423. This application May 15, 1981, Ser. No. 264,203

Int. Cl.[3] E04D *13/06*

U.S. Cl. 248—48.2 1 Claim

1. Gutter wall fastener nail hole sealing means for use with a rain gutter having a rear wall portion adapted to be secured to a facia board or wall of a building, fastening means for securing the gutter to the building wall, including bracket hanger means provided between the front and rear gutter walls and a headed nail or like headed and sharpened fastening means adapted to be driven through a hole in the rear wall of the gutter and into the facia board; said bracket hanger means including an inverted U-shaped hook or bend portion adapted to fit over the perforated top of the rear gutter wall, said bend portion having openings aligned with the hole in the rear wall of the gutter, through which said headed nail or like fastening means is adapted to be driven to secure the bracket and gutter to the facia board of a building; said sealing means comprising a



compressible strip of elastomeric material adapted to be secured within the U-shaped bend of the hanger bracket extending over the aligned nail hole apertures in the U-shaped bend and in the gutter rear wall, and to be draped over the top of the gutter rear wall, said flexible strip when in place serving as nail hole sealing means when compressed by the headed nail or like fastener when it is driven through the aligned openings in the U-shaped bend and the opening in the top wall portion of the gutter, thereby compressing the strip about the nail hole and preventing leakage of water to the facia board of the building to which the gutter is applied.

4,345,732

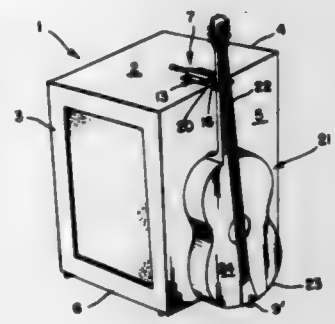
SUPPORTING BRACKET FOR MUSICAL INSTRUMENTS

Manuel Gallegos, 5094 Milwaukee St., Denver, Colo. 80216

Filed Aug. 14, 1980, Ser. No. 178,004

Int. Cl.[3] G10G *5/00*

U.S. Cl. 248—441 B 8 Claims



1. A supporting bracket arrangement for mounting a guitar and other stringed musical instruments having an enlarged body case portion and a relatively narrow projecting finger board portion in an upright position relative to a side wall of a generally rectangular amplifier comprising elongated rods having laterally bent outer ends, said rods being encased in plastic jackets, and generally flat rectangular metal clamping plates associated with said rods and being formed with generally U-shaped channels extending lengthwise thereof of a diameter to snugly and frictionally accommodate said rods therein, said plates having means for flat and opposing attachment thereof to the upper and lower walls of said amplifier, said rods and plates being arranged in at least two opposing units, and said rods being frictionally slidable outwardly in said channels whereby the base portion of said guitar may be supported by a lowermost rod with the finger board portion thereof being hookingly engaged by said uppermost rod and

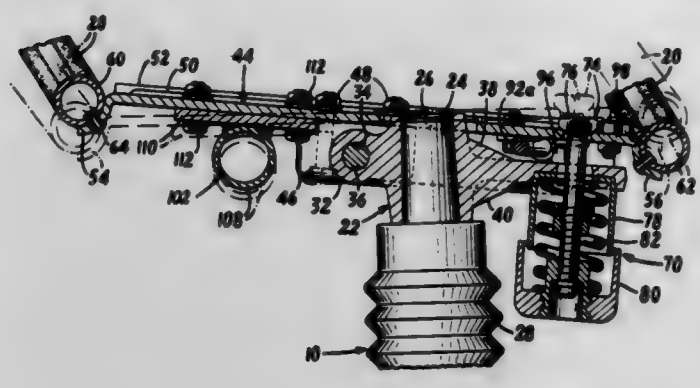
slidable inwardly in said channels whereby said guitar is securely and erectly supported on said amplifier.

4,345,733

MOUNTING DEVICE FOR A CHAIR SEAT

Emilio Ambasz, New York, N.Y., and Giancarlo Piretti, Bologna, Italy, assignors to Center for Design Research and Development N.V., Curacao, Netherlands Antilles

Filed Apr. 28, 1980, Ser. No. 144,261
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—561 **4 Claims**



1. A mounting device for a chair seat comprising a generally plate-like support bracket adapted to be mounted generally horizontally on a chair base, a transverse horizontal axle on the support bracket, a seat-mounting member attached to the axle to pivot about the axis of the axle and being adapted to be fastened to the underside of the chair seat, the support bracket and mounting member having mutually engageable surfaces spaced apart from the axle for limiting rearward tilting of the member on the bracket, a spring assembly for restraining the member from tilting forward about the axle, and including a connecting pin connected to and extending down from the mounting member at a location spaced apart rearwardly of the axle, a spring retainer at the lower end of the pin, a hole in the seat-mounting member and support bracket through which the pin passes, a downwardly facing spring seat portion on the bracket, and a compression spring engaged between the spring retainer and the spring seat portion of the bracket, and a blocking member selectively engageable between the bracket and member when the member is tilted forward to keep the member tilted forward, the blocking member being a rod having an offset portion and being pivotably mounted on one of the member and the bracket for movement between an inactive position in which the offset lies generally in a horizontal plane with the pivot axis of the rod and a blocking position in which the offset is vertically displaced from the pivot axis of the rod and in engagement with an abutment on the other of the bracket and member which keeps it in the blocking position.

4,345,734

ADJUSTABLE BASE MOUNT FOR A WALKING-BEAM GAS COMPRESSOR

John Studinger, 1330 Leyden, Suite 134, Denver, Colo. 80220

Filed Aug. 18, 1980, Ser. No. 179,101
Int. Cl.³ F16M *11/00*
U.S. Cl. 248—669 **2 Claims**

1. An adjustable base support for oil well piston pump subjected to high pressures and requiring periodic adjustment of height of the pump cylinder comprising:

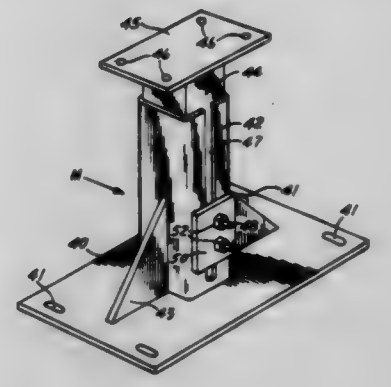
(a) a base plate for securing to a pumping platform,

(b) an outer rectangular tube secured to and upstanding on said base plate, including bracing means for said tube on said base plate, and including a narrow slot in one side extending from adjacent said base plate to the distal edge of the tube forming an open slot,

(c) an inner rectangular tube telescoped in said outer tube with a close fit and having an end extending a short distance beyond the end of said outer tube,

(d) a pump support base secured to the extending end of said inner tube,

(e) locking means for securing said inner and outer tubes in a predetermined telescoped position including a pair of bolts extending through bolt openings in said inner tube and through said slot and having the bolt heads internally



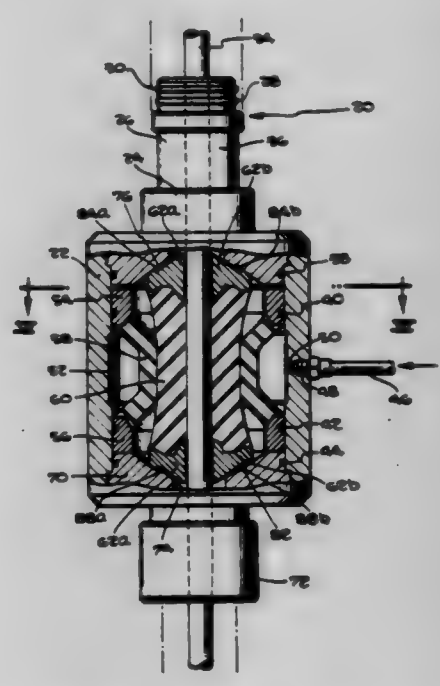
of said inner tube, a pressure plate of substantially the width of the inner tube positioned between the bolt heads and the inner tube wall with the bolt heads welded thereto, and an outer pressure plate of substantially the width of the outer tube mounted on said bolts on the exterior of said out tube, and a nut threadly attached to each said bolt.

4,345,735

BLOWOUT PREVENTER

John Regan, Palos Verdes Peninsula, Calif., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 160,787, Jun. 18, 1980, abandoned.
This application Jul. 31, 1981, Ser. No. 288,711
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 B **7 Claims**



6. In a blowout preventer apparatus of the type having a resilient and radially compressible annular packing mounted within a housing chamber having axially aligned upper and lower cylindrical bores communicating with the inner bore of said annular packing, said packing resiliently and axially expanding towards said upper and lower bores upon said radial compression, the improvement comprising:

(a) radial sectored end portions of said packing communicating with said upper and lower bores;

(b) a plurality of means, circumferentially arranged upon said sectored ends of said packing and individually movable radially inward into said upper and lower bores, for

controlling said axial expansion, said controlling means comprising

(i) rigid arcuate wedge members circumferentially disposed on said sectored end portions of said packing, and

(ii) a pair of generally conical bores in said housing converging into said upper and lower cylindrical bores, said conical bores forming bearing surfaces for said controlling means and guiding said controlling means into conical convergence in said upper and lower bores in response to said radial compression; and

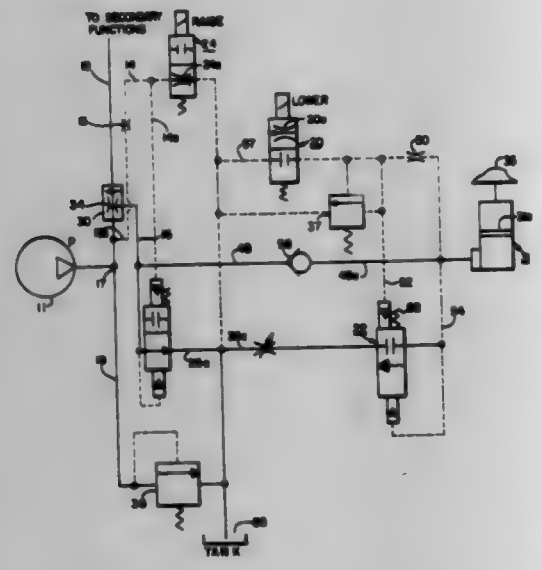
(c) shoulder means for limiting said sector-wise inward radial movement of said controlling means to a common radial position independent of the uniformity of said radial compression, said shoulder means being disposed on said controlling means and on said housing for mutually abutting contact at said common radial position, said shoulder means comprising a pair of annular shoulders in said conical bores and an arcuate shoulder on each of said wedge members, whereby said axial expansion of said packing material causes said wedge members to progressively and conically converge into said upper and lower bores until said annular and arcuate shoulders mutually abut and said packing seals said inner bore from said upper and lower bores when said inner bore is empty, or until said packing sealingly engages an oil tool in said inner bore.

4,345,736

SOLENOID OPERATED VALVE AND DASHPOT ASSEMBLY

Kenneth W. Zeuner, New Hope, and Alonzo B. Jarman, Wrightstown, both of Pa., assignors to Control Concepts, Inc., Newtown, Pa.

Filed Jan. 21, 1981, Ser. No. 226,689
Int. Cl.³ F16K *31/02*; F15B *13/043*
U.S. Cl. 251—30 **7 Claims**



1. A valve system having a raise and a lower two-stage valve assembly comprising

said raise two-stage valve assembly including a raise first solenoid operated pilot stage, a raise second stage divided into inlet and outlet sections, a raise second stage orifice between the sections within which a raise second stage poppet reciprocates,

said lower two-stage valve assembly including a lower first solenoid operated pilot stage, a lower second stage divided into inlet and outlet sections, a lower second stage orifice between the sections within which a lower and second stage poppet reciprocates,

said raise and lower second stage poppets each having an outer contour to provide a predetermined flow area between the respective orifice and outer contour, said first raise and lower pilot being respectively coupled to said raise and lower second stages by fluid communication for normally maintaining the respective stages opened and closed,

a first dashpot assembly coupled to said lower second stage poppet for first damping only the rate of opening of said lower second stage poppet thereby damping lowering of said load means, and

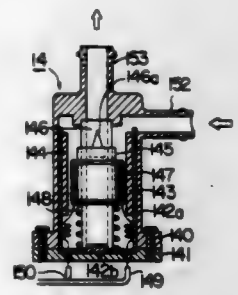
a second dashpot assembly coupled to said raise second stage poppet for damping only the rate of closing of said raise second stage poppet thereby damping raising of said load means, the second dashpot assembly includes a movable element mounted within a housing, said movable element having a chamber and a first opening for restricting flow of fluid into said movable chamber and a second opening for permitting rapid flow of fluid out of said movable chamber, closing means disposed within said movable chamber and coupled to said raise second stage poppet, said closing means having an enlarged section (1) for closing said second opening and pulling said movable element when said raise second stage poppet moves in a direction away from said element whereby fluid flows into said movable chamber only through the restricted first opening and (2) for opening said second opening when said raise second stage poppet moves in a direction towards said movable element thereby permitting rapid flow of fluid out of said chamber.

4,345,737

LINEAR SOLENOID VALVE ACTUATION DEVICE

Hisasi Kawai, Toyohashi; Kazuhiro Sakurai, Susono, and Muneaki Matsumoto, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 22, 1980, Ser. No. 123,818
Claims priority, application Japan, Mar. 6, 1979, 54-26344; Apr. 27, 1979, 54-52941
Int. Cl.³ F16K *31/08*; F02M *7/24*
U.S. Cl. 251—129 **6 Claims**



1. A linear solenoid valve actuation device comprising:

a housing having inlet port and outlet port;

a tubular shaft positioned within said housing and having a slit through which said inlet port and said outlet port are communicated;

a spool mounted slidable on said tubular shaft to open and close said slit;

a biasing spring positioned around said tubular shaft to bias said spool;

a permanent magnet positioned around said tubular shaft to provide a magnetic field in a transverse direction to said tubular shaft;

a solenoid winding wound on said spool for moving when energized said spool against the biasing force of said biasing spring;

a pulse generator for generating a train of pulses;

a step signal generator connected to said pulse generator for generating a step signal increasing and decreasing stepwisely in response to said pulses; and

an amplifier circuit connected to said step signal generator for energizing said solenoid winding by an electric current proportional to said step signal, said amplifier circuit including means for generating a constant magnitude

signal which is proportional to frictional hysteresis of said spool on said tubular shaft;

means for either increasing or decreasing said step signal in proportion to said constant magnitude signal upon either increase or decrease of said step signal; and

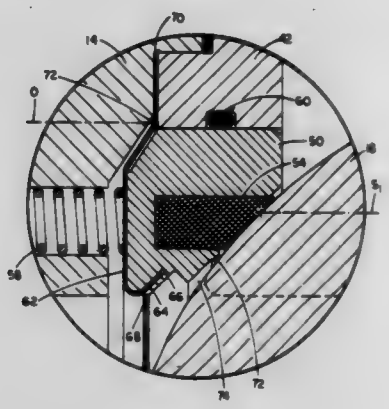
means for supplying said electric current in proportion to said increased or decreased step signal.

4,345,738

FIRE SAFE SEAL

Roger L. Ripert, Concord, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Aug. 25, 1980, Ser. No. 180,980
Int. Cl.³ F16K *5/00*
U.S. Cl. 251—315 **6 Claims**



1. In a valve having a valve body, a closure member mounted in said body for movement between open and closed positions, an internal cylindrical surface in said body adjacent to said closure member, a metallic seat ring slidable in said internal surface, an annular recess in the leading face of said seat ring, a resilient seal ring in and protruding from said recess to seal off fluid flow when urged against said closure member and biasing means urging said seat ring against said closure member; a fire safe seal comprising:

a thin, flexible, annular metallic diaphragm sealed at its outer periphery to said body and at its inner edge to said seat ring;

said diaphragm being interposed between said seat ring and said biasing means; and

a narrow metallic annular sealing ridge integral with and around the leading face of said seat ring within the area circumscribed by said annular recess.

said sealing ridge protruding from said leading face so as to engage against said closure member in absence of said sealing ring while a clearance remains between said closure member and the remainder of said leading face.

4,345,739

FLANGED SEALING RING

Charles Wheatley, Tulsa, Okla., assignor to Barton Valve Company, Shawnee, Okla.

Filed Aug. 7, 1980, Ser. No. 175,937
Int. Cl.³ F16K *3/00*
U.S. Cl. 251—358 **1 Claim**



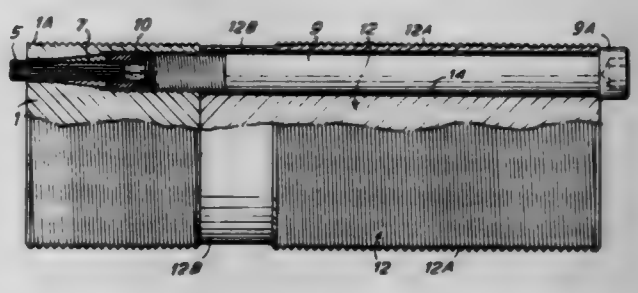
1. In combination with a valve having an annular retaining groove of substantially T-shaped cross-sectional configuration with one open side and a bottom, an annular sealing ring disposed in said groove and comprising a unitary rigid annular core, a resilient covering disposed around the core, an outwardly extending flange provided in the outer periphery of the resilient covering, said rigid core having a width greater than the width of the open side of the groove, said flange extending outwardly through the open side of the groove, said resilient covering having a bulbous surface oppositely disposed with respect to the outwardly extending flange to provide a relatively small area of engagement with the bottom of the groove in an uncompressed condition of the sealing ring and relatively large area of engagement in the compressed condition of the sealing ring, said groove having a surface cooperating with the bulbous surface of said resilient covering whereby a relatively large clearance space for compression is provided between the bulbous surface of the groove surface, and wherein the cross-sectional configuration of the resilient covering is substantially T-shaped and wherein the cross-sectional configuration of the annular core is substantially T-shaped generally corresponding to the cross-sectional configuration of the resilient covering.

4,345,740

TENSIONING SYSTEM FOR CABLES IN PRESTRESSED CONCRETE

Romualdo Macchi, Via S. Paolo 31, Pisa, Italy

Filed Sep. 19, 1980, Ser. No. 188,721
Claims priority, application Italy, Sep. 28, 1979, 9550 A/79
Int. Cl.³ E04C *5/08*
U.S. Cl. 254—29 A **4 Claims**



1. In a system for tensioning strand cables in prestressed concrete of the type having an anchoring head, means defining a plurality of holes in the anchoring head into which an end of each strand or wire extends, anchoring means within each of said hole for anchoring each said end to the anchoring head, a screw-threaded external surface on the anchoring head, a ring threadably engaged with the external surface of the anchoring head for engagement with a support to hold the anchoring head in a position in which the cables are tensioned, the improvement comprising:

an intermediate member;

means defining a plurality of holes extending through the intermediate member, wherein the means defining holes in the intermediate member define as many holes as the means defining holes in the anchoring head, with the holes in the intermediate member being in register with the holes in the anchoring head;

the exterior surface of the intermediate member having an axially extending non-threaded portion between a portion having the screw-threaded exterior surface thereof and the anchoring head for allowing the ring to be disengaged from the thread on the intermediate member and then engaged on the thread of the anchoring head;

rods extending through each said hole defining means in the intermediate member, and screw-threadably engaged with a respective one of the hole defining means in the anchoring head to lock the intermediate member to the anchoring head;

a screw-threaded exterior surface on the intermediate member for engagement with the ring to hold the intermediate member, during tensioning of the cable, in fixed positions;

a thread on the intermediate member for releasable engagement with a jack for tensioning the cable,

whereby the jack and the intermediate member can be removed from the anchoring head when tensioning is complete.

4,345,741

DRIVING PULLEY MECHANISM

Johannes A. Rinio, 5, Promenade Venezia, Grand Siecle, Versailles, France (7800), and Rodolphe F. Tanson, Moutfort, Luxembourg

Division of Ser. No. 675,876, Apr. 12, 1976, Pat. No. 4,193,311. This application May 14, 1979, Ser. No. 38,773

Claims priority, application Fed. Rep. of Germany, May 17, 1975, 2522033

Int. Cl.³ B66D *1/26*

U.S. Cl. 254—287 **6 Claims**



1. A driving pulley mechanism comprising a driving pulley, especially for multiple purpose hoists with a traversing cable, said driving pulley comprising two pulley parts inclined toward each other, each of said pulley parts having a peripheral edge containing one cable groove part, and wherein the pulley parts are pressed toward each other at the apex of their peripheral edges to form a groove which carries the cable, said parts being pressed by a plurality of elastic pressing devices which are arranged in spaced relationship over the surface of the pulley parts in proximity to the peripheral edge of said pulley parts, and wherein the pulley parts are spread apart during rotation by a spreading device at least at one point opposite the apex carrying the cable, and wherein said pressing devices which press both pulley parts towards each other are coupled for rotation with the driving pulley and rest on both pulley parts.

4,345,742

REGENERATIVE HYDRAULIC INTERLOCK SYSTEM

John B. Morfitt, Langley, Canada, assignor to Lantec Industries Ltd., Langley, Canada

Filed Jun. 20, 1980, Ser. No. 161,601

Int. Cl.³ B66D *1/26*

U.S. Cl. 254—291 **6 Claims**

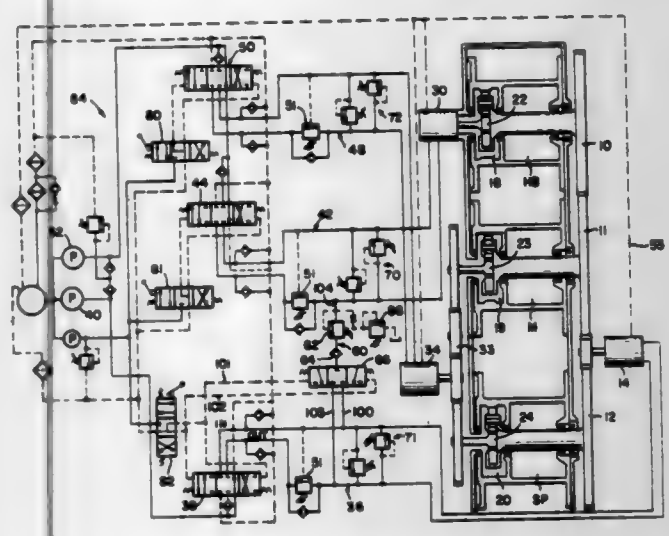
1. A regenerative hydraulically controlled interlock system for logging yarders capable of handling a load using open loop hydraulic circuits, comprising:

at least main and haulback drums and gear means continuously, commonly coupling said drums for mechanically driving said drums simultaneously;

primary drive means for powering said main and haulback drums simultaneously generally in opposite directions, said primary drive means including a motor in a primary open loop hydraulic power circuit;

hydraulic interlock drive means including an interlock motor coupled to said haulback drum for selectively varying the speed and/or direction of said haulback drum relative to the main drum;

a secondary open loop hydraulic power circuit coupled to said hydraulic interlock drive means, said hydraulic interlock drive means regeneratively producing pressurized hydraulic fluid to said secondary open-loop hydraulic



power circuit when said interlock motor is driven by said load; and

selective diversion means for selectively hydraulically coupling said secondary open loop hydraulic power circuit to said primary open loop hydraulic power circuit for supplementing said primary open loop hydraulic power circuit.

4,345,743

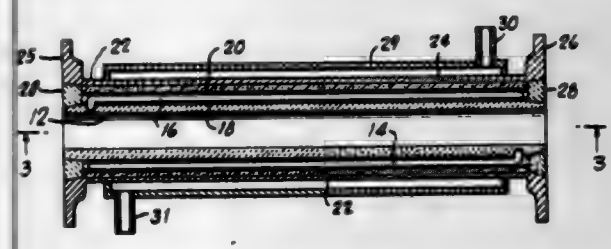
MEANS AND METHOD FOR CONTAINING FLOWING OR STANDING MOLTEN METAL

Olivo G. Sivilotti; John Sulzer, both of Kingston, and Alan F. Treganza, Sydenham, all of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Oct. 10, 1980, Ser. No. 196,100

Int. Cl.³ C21C *5/46*; C22B *9/00*

U.S. Cl. 266—44 **10 Claims**



1. A method of containing molten metal, comprising:

a. disposing the molten metal, at a predetermined temperature value, in a predetermined space while

b. maintaining refractory lining material beneath, above and alongside the metal, in defining relation to said space, to surround the molten metal, and while

c. supplying heat to substantially all exterior surfaces of said lining material, and

d. controlling said supply of heat to maintain the temperature of said exterior surfaces at least at about said predetermined value; the aforesaid method being one in which:

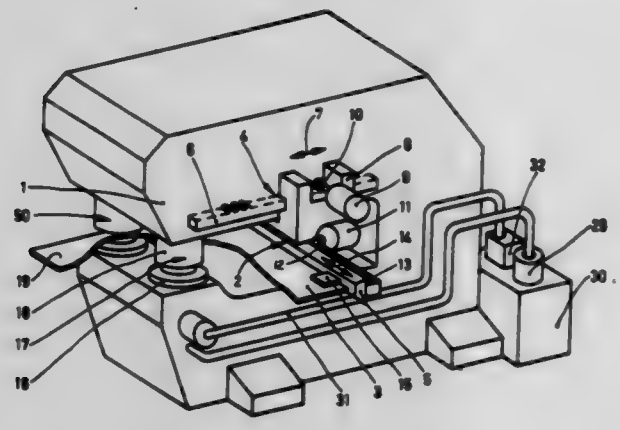
e. at a later time molten metal is drained from said space, to empty the space, and in which

f. during said later drainage of metal from the space, said supply of heat to the exterior surfaces of the lining material is maintained to keep said exterior surfaces at said predetermined temperature value until said metal has substantially all been drained away, whereby metal thereafter remaining and solidifying on the refractory lining material is at most a paper-thin layer.

4,345,744
WORKING MACHINE WITH FLAME CUTTER AND COOLING UNIT

Berthold Leibinger, Gerlingen, and Hans Klingel, Möglingen, both of Fed. Rep. of Germany, assignors to Trumpf GmbH & Co., Ditzingen, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,375
Claims priority, application Fed. Rep. of Germany, May 11, 1980, 3041621; Aug. 30, 1980, 3032729
Int. Cl.³ B23K 7/00, 7/10
U.S. Cl. 266—49 43 Claims

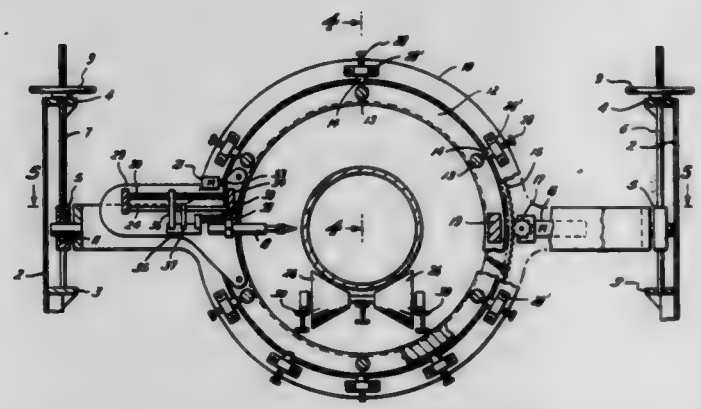


1. A machine for working flat workpieces comprising:
a frame;
a flame cutter connected to said frame for directing a cutting jet to one side of a workpiece which penetrates the workpiece;
a mechanism connected to the frame for moving the workpiece past the cutting jet; and
cooling equipment connected to the frame having an opening space facing said flame cutter for receiving the jet which has penetrated a workpiece, and having means for circulating a coolant in the opening space to receive the jet which has penetrated the workpiece.

4,345,745
PIPE CUTTER FOR END CUTS OF TUBULAR MATERIAL

Richard J. Steele, 2202 Harwell, Houston, Tex. 77026

Filed Aug. 13, 1981, Ser. No. 292,407
Int. Cl.³ B23K 7/04
U.S. Cl. 266—56 6 Claims

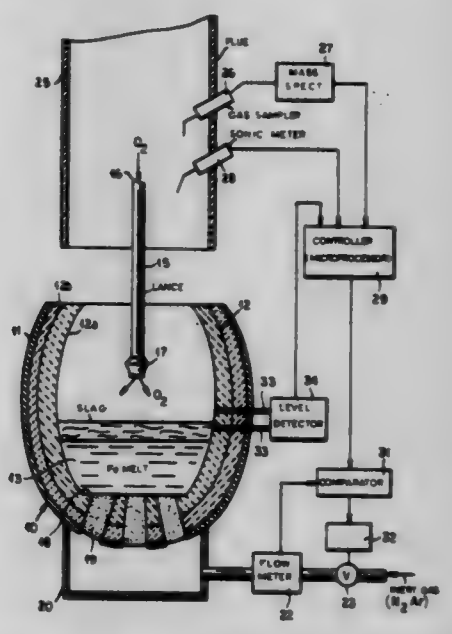


1. In a pipe cutting device, a pair of annular torch supporting members, a cutting torch mounted on said members, a vertically adjustable annular member adapted to concentrically receive said torch supporting members, means for rotating said torch supporting members in a selected path of rotation.

4,345,746
APPARATUS FOR REFINING FERROUS MELT WITH SLAG CONDITIONING

Francois Schleimer, Dudelange; Romain Henrion, Esch; Ferdinand Goedert, Dudelange; Lucien Lorang, Differdange, and Jean Baumert, Esch, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Continuation of Ser. No. 204,537, Nov. 6, 1980. This application May 4, 1981, Ser. No. 261,509
Claims priority, application Luxembourg, Nov. 7, 1979, 81859
Int. Cl.³ C21C 5/30
U.S. Cl. 266—90 5 Claims

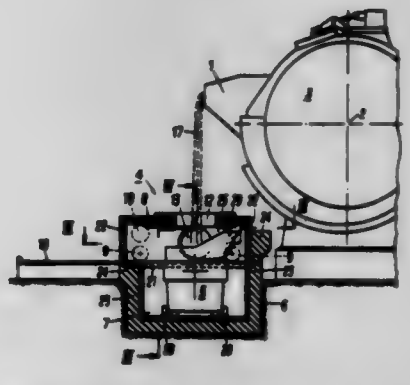


1. The combination with a steel-refining vessel containing a slag overlying a melt of a metal to be refined, a lance for blowing oxygen onto the surface of the melt, and means for bubbling an inert gas through said melt from the bottom thereof, of:
a control system including hydrostatic means for measuring the level of said slag, sound-responsive means for measuring the consistency of said slag, and gas-analysis means responsive to gas above said slag, each of said means generating a signal, and control means responsive to at least one of said signals for regulating the rate of flow of inert gas to said melt.

4,345,747
FILLING STAND FOR POURING MOLTEN METAL FROM A TILTABLE METALLURGICAL VESSEL INTO A METALLURGICAL LADLE

Friedrich Laimer, Perg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jul. 16, 1980, Ser. No. 169,417
Claims priority, application Austria, Aug. 9, 1979, 5430/79
Int. Cl.³ C21B 7/14
U.S. Cl. 266—240 12 Claims



1. In a filling stand arrangement to be used for pouring molten metal from a tiltable metallurgical vessel into a metallurgical ladle, for example for pouring molten pig iron from a

pig iron mixer into a transporting ladle, and of the type including a tiltable metallurgical vessel including an outlet for pouring out a molten metel jet, a metallurgical ladle, a casing surrounding said metallurgical ladle and comprised of a casing lower portion and a casing upper portion, at least one exhaust conduit being connected to said casing, and a pour-in opening for receiving the molten metal jet provided in said casing upper portion below said outlet of said tiltable metallurgical vessel, the improvement which is characterized in that at least a part of the casing that includes said pour-in opening is displaceable in the tilting plane of said tiltable metallurgical vessel by a distance related to a change in the position of said molten metal jet streaming out of said outlet of said tiltable metallurgical vessel.

4,345,748

FLUID DAMPED UNIT, PARTICULARLY FOR USE AS SHOCK ABSORBER OR TELESCOPIC STRUT

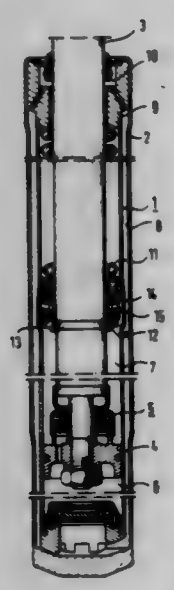
Felix Wössner, Schweinfurt; Günther Handke, Euerbach, and Manfred Koller, Bergrheinfeld, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,515

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853914

Int. Cl.³ B60G *13/06, 15/12*

U.S. Cl. 267—8 R **32 Claims**



1. A fluid damped unit particularly suitable as a shock absorber comprising a cylinder, a piston rod positioned within said cylinder and arranged for extending and retracting movement from one end of said cylinder, means located at said one end of said cylinder for guiding said piston rod and sealing said cylinder, a piston fixed to said piston rod near the end of said piston rod within said cylinder, said piston dividing the interior of said cylinder into a first annular work chamber adjacent said guiding and sealing means and a second work chamber adjacent the end of said cylinder which is opposite said guiding and sealing means, a fluid charge in said cylinder, wherein said piston rod can be reciprocated between a fully retracted position and a fully extended position relative to said cylinder, and damper means arranged in said first annular work chamber for damping the movement of said piston rod, said damper means arranged to create a damping force applied against said piston rod during a portion of its movement intermediate said fully retracted and fully extended positions and including throttling fluid passage means located within said first work chambers and dividing said first work chamber into two annular chamber sections, said damper means also comprising a compression spring which surrounds said piston rod, said compression spring having one end facing toward said guiding and sealing means which bears against one of said guiding and sealing means and said cylinder, damping ring means including a damping ring carrier arranged at the other end of said compression spring to divide said first annular work chamber into said two annular chamber sections, a damping ring arranged in said damping ring carrier to frictionally contact the inner circumferential surface of said cylinder and being axially movable relative to said damping ring carrier between a pair of end positions, one of said end positions being closer to said piston and the other end position being more remote from said piston, said damping ring reducing the flow cross section of said throttling fluid passage means when located in the one of said end positions and increasing the flow cross section of said throttling fluid passage means when located in the other said end position, and said damping ring carrier is fixed to said compression spring, and stop means mounted for movement together with said piston rod.

4,345,749

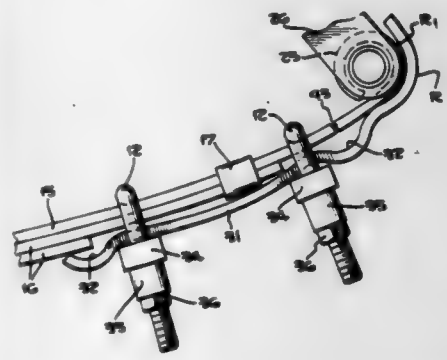
MULTIPURPOSE SPLINT MEANS FOR SPRING LEAF ASSEMBLIES

Donald J. Hellwig, Exeter, Calif., assignor to Hellwig Products Company, Inc., Visalia, Calif.

Filed Jul. 28, 1980, Ser. No. 172,984

Int. Cl.³ F16F *1/26*

U.S. Cl. 267—51 **1 Claim**



1. A multipurpose splint means for at least temporary repair of a broken leaf element of a spring leaf assembly, comprising:

an elongated flexible generally arcuate member of spring steel having correspondingly curved opposite elongate surfaces;

said arcuate member including an intermediate portion of selected length,

an end portion providing a transverse recess means,

a corresponding transverse recess means at the opposite end of the intermediate portion,

said recess means being curved in the same direction and adapted to provide positioning means for securement members in one application of the arcuate member to a leaf spring assembly,

an opposite end portion integral with said recess means at the opposite end of the intermediate portion and curving through a radius of about 90° and adapted to cradle an end eye of a main spring leaf in another application of the arcuate member to a leaf spring assembly,

said recess means, intermediate portion, and said opposite end portion providing on one elongate surface spaced convex faces,

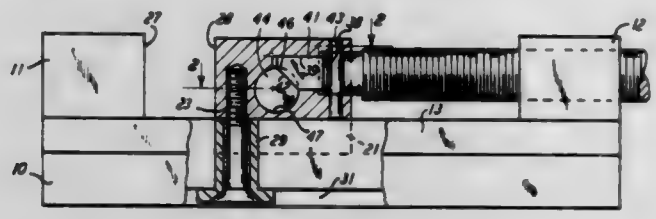
the convex face of the intermediate portion including a central face portion lying exteriorly beyond a plane tangent to the convex faces of the contiguous recess means,

said convex faces of the recess means and intermediate portion forming spaced concave indentations adapted to position securement members in said another application of the arcuate member to a leaf spring assembly.

4,345,750
VISE

Hans F. Glaser, 6533 Greenridge Dr., Racine, Wis. 53406

Filed Feb. 2, 1981, Ser. No. 230,525
Int. Cl.³ B23Q 3/02
U.S. Cl. 269—136 1 Claim

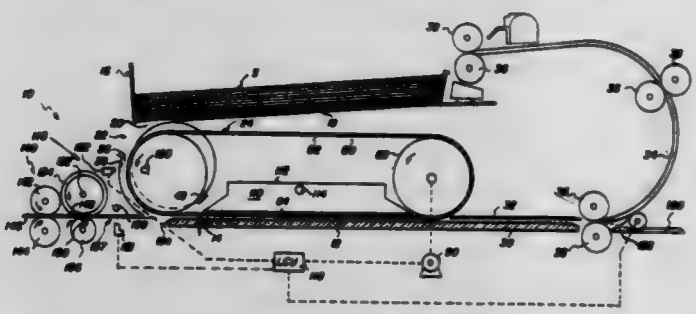


1. A vise comprising a base of an upright U-shape with two spaced apart abutments and an interconnecting portion extending between and offset with respect to the center line between said abutments, a block slidable on said interconnecting portion and along said center line and having a clamp surface facing one of said abutments for clamping a work piece with said one abutment a cylindrical pin in said block and extending in said transverse direction and having a flat angled surface thereon faced away from said interconnecting portion, a wedge on said block and in contact with said screw and said pin and having a surface mated with said flat angled surface, said mated surfaces being disposed at an elevation lower than the center line of contact of said screw and said wedge for urging said block downwardly onto said interconnecting portion, a screw threadedly mounted in the other of said abutments and in abutment with said wedge in said block for forcing said block toward said one abutment in the clamping action, said block and said interconnecting portion having a three-sided mated rail relationship therebetween for the sliding of said block on said interconnecting portion and the avoidance of movement of said block transverse to said center line, said interconnecting portion having a slot extending therein parallel to and on the plane of said center line, a connector attached to said block and extending through said slot and in sliding relation with said interconnecting portion for guiding said block on said interconnecting portion, said connector being offset on said block to the side thereof intermediate said one abutment and said mated surfaces, the projected area of said block on the plane in the direction transverse to said center line being less than the corresponding projected area of each of said abutments and thereby said block having clearance with the planes extending parallel to said center line and between the respective edges of said abutments for clamping of said vise across said abutments while having clearance for the sliding movement of said block.

4,345,751
SHEET FEEDING APPARATUS

Ronald C. Holzhauser, Holley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,339
Int. Cl.³ B65H 5/22
U.S. Cl. 271—3.1 13 Claims



1. Sheet feeding apparatus for feeding sheets seriatim from a stack of sheets in a tray or the like, the apparatus comprising:

an oscillating vacuum tube located adjacent the tray, the tube having a plurality of ports extending through the outer surface of the tube and having means for applying a vacuum to the ports so that a sheet in the tray can be tacked to the tube surface by vacuum and partially removed from the tray upon oscillation of the tube, the tube comprising a plurality of spaced tube sections and means interconnecting the sections for effecting conjoint oscillating movement of the sections about an axis;

at least one endless vacuum belt having a plurality of openings therethrough, a portion of the belt being disposed between two adjacent sections of the vacuum tube;

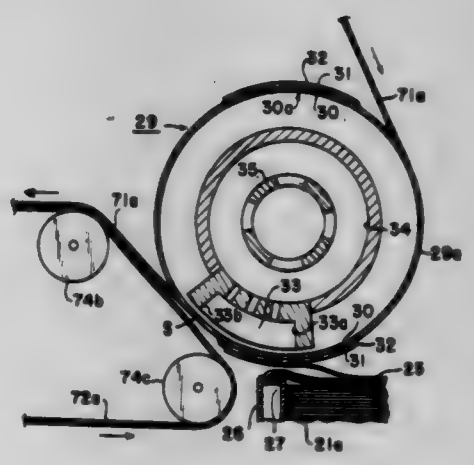
means for applying a vacuum through openings in the belt; and

means supporting the belt for movement along an endless path, the supporting means locating the belt relative to two adjacent sections of the tube so that the path traveled by the belt extends between the tube sections and is recessed beneath the tube surface at the portion of the tube sections nearest the tray and the belt path then projects from the tube sections and above the tube surface, whereby a sheet removed from the tray by the tube is transferred to the belt upon oscillation of the tube.

4,345,752
SHEET TRANSPORT APPARATUS

Kunihiko Nakamura, and Hiromi Miyaji, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 138,676, Apr. 9, 1980, abandoned. This application Jan. 29, 1981, Ser. No. 230,887
Claims priority, application Japan, Apr. 20, 1979, 54-48713; Oct. 25, 1979, 54-137966
Int. Cl.³ B65H 5/08
U.S. Cl. 271—12 8 Claims



1. A sheet transport apparatus comprising:

means for maintaining a stack of sheets with the topmost sheet of said stack at a predetermined position;

suction drum means supported adjacent said topmost sheet of said stack with a clearance therebetween at the leading edge portion of said topmost sheet for picking up said topmost sheet in the transport direction, said drum means comprising a rotatable cylindrical member with an elongated apertured zone in its curved surface, the peripheral length of said apertured zone being less than the length of said sheets; a stationary suction chamber positioned within said cylindrical member and extending along the inner surface of said cylindrical member, said stationary suction chamber having an opening which opens adjacent to the inner surface of said cylindrical member for picking up said topmost sheet of said stack when the leading end of said apertured zone of said cylindrical member passes by said opening of said suction chamber; and means for rotating said cylindrical member in a manner that the periphery of said cylindrical member facing to the leading edge portion of said topmost sheet moves in the transport direction, said rotating means rotating said cylindrical member

in a cyclic operation of acceleration-deceleration and in such a relation that said leading end of said apertured zone of said cylindrical member is substantially aligned with the leading edge of said topmost sheet of said stack when said cylindrical member reaches the minimum speed in its cyclic operation; and

means for conveying said picked-up topmost sheet away from said suction drum means, said conveying means comprising a pair of constant speed belt conveyor devices defining first and second conveying paths and an entrance area therebetween in such a manner that the conveying belts gradually approach each other in the transport direction initially making frictional contact with the leading edge of a sheet picked up and fed by said suction drum means while the traveling speed of said belt conveyor devices exceeds the peripheral speed of said cylindrical member and while the trailing portion of the sheet is still under suction by the suction drum means whereby said sheet is flattened and then becomes contiguous with said belts, and thereafter said conveying belts grasping the leading edge of said picked-up sheet, said second conveying path and said first conveying path thereafter being the same while the conveying belts travel contiguously in the transport direction;

the maximum peripheral speed of said cylindrical member being selected nearly equal to the travelling speed of said conveying belts; and

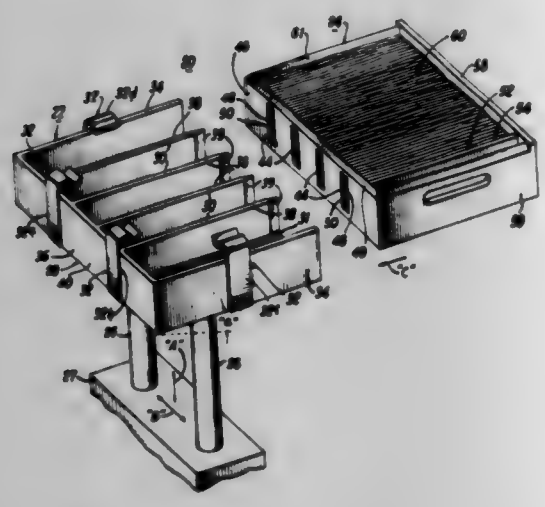
said sheet being grasped at the leading edge between said conveying belts and released from said suction drum when the peripheral speed of said cylindrical member reaches the maximum speed.

4,345,753

PROCESS AND APPARATUS FOR ALIGNING PAPER DOCUMENTS

Robert Marshall, El Paso, Tex., assignor to A. C. Nielsen Company, Northbrook, Ill.

Filed May 16, 1980, Ser. No. 150,567
Int. Cl.[3] B65H *3/62*
U.S. Cl. 271—146 11 Claims



1. A paper jogger comprising:

a vibratory mechanism;

a vibratory support connected to said vibratory mechanism;

a paper tray for holding a plurality of paper documents to be jogged, said tray being releaseably securable to said vibratory support; and

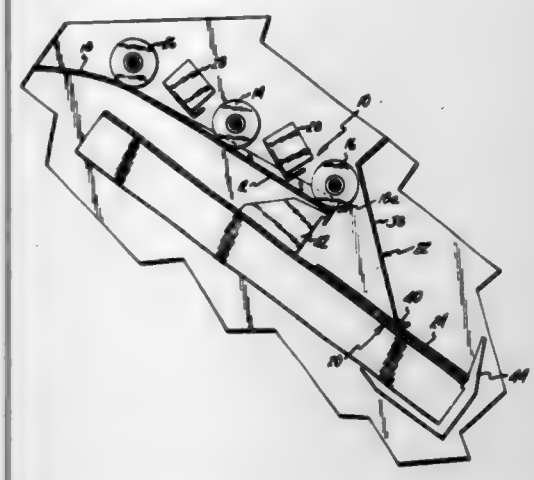
dividing means removably receivable within said tray for dividing said paper documents into discrete portions, said dividing means including a plurality of splines extending outwardly of said vibratory support, said tray including a plurality of elongated slots formed therein through which said splines are received in said tray.

4,345,754

PHOTOGRAPHIC STACKING DEVICE

Armer J. Willenbring, Bloomington, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Oct. 27, 1980, Ser. No. 200,933
Int. Cl.[3] B65H *31/00*
U.S. Cl. 271—209 3 Claims



1. A photographic print stacking device for stacking individual photographic prints, each print having an image-bearing surface and a non-image-bearing surface, on a print tray as they are discharged in a machine direction from a discharge end of a print conveying apparatus, the device comprising:

a print slide positioned proximate the discharge end and generally above a print tray for receiving and discharging individual photographic prints with the non-image-bearing surface adjacent the print slide as the prints are driven in the machine direction, the print slide having a substantially flat central portion and a pair of downwardly and inwardly sloping side portions, sloping toward the central portion of such that the print slide has a concavely bowed surface in a transverse direction for engaging the prints and having a print slide discharge end;

drive roller means for drivably engaging a central portion of the image-bearing surface of each photographic print for discharging each print off the print slide, the drive roller means being positioned above the substantially flat central portion of the print slide proximate the print slide discharge end to cause the prints to generally conform to the concave bow of the print slide in a transverse direction by deflecting side portions of each print upwardly with the side portions of the print slide as each print is discharged from the discharge end of the print conveying apparatus; and

a central deflector downwardly deflecting each print toward the print tray onto a print stack after each print is discharged from the print slide, the central deflector having an upper end portion attached proximate the print conveying apparatus and positioned proximate the print slide discharge end to deflect each print upon discharge from the print slide.

4,345,755

EXERCISING DEVICE

James A. Eidson, 4430 E. Sheila St., Los Angeles, Calif. 90023

Filed Sep. 29, 1980, Ser. No. 191,705
Int. Cl.[3] A63B *69/00, 69/24*
U.S. Cl. 272—78 9 Claims

1. An exercising device comprising:

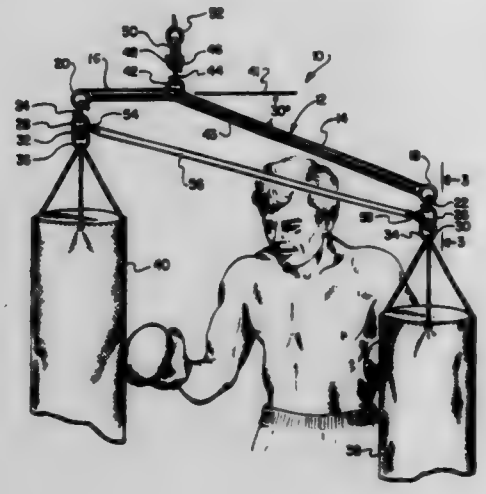
a first punching bag and a second punching bag;

an elongated member having a first end and a second end, said first end being spaced from said second end, said elongated member having an upper surface and a lower surface;

a first hanger assembly connected to said first end on said lower surface, said first hanger assembly being connected

to said first punching bag, said first hanger assembly including first swivel means for permitting three hundred and sixty degree rotation of said first punching bag relative to said elongated member;

a second hanger assembly connected to said second end on said lower surface, said second hanger assembly being connected to said second punching bag, said second hanger assembly including second swivel means for permitting three hundred and sixty degree rotation of said



second punching bag relative to said elongated member; and

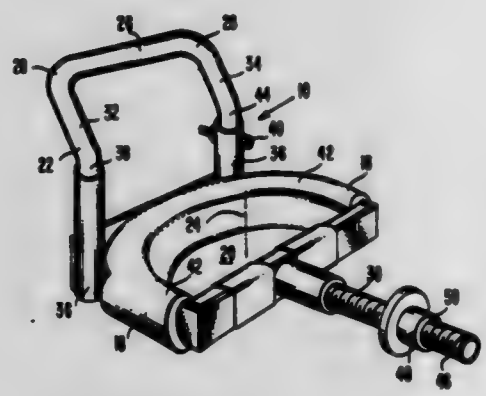
a third hanger assembly connected to said elongated member on said upper surface, said third hanger assembly being located intermediate said first and second ends, said third hanger assembly being connected to a supportive member, said third hanger assembly including third swivel means for permitting swiveling of said elongated member relative to said supporting member.

4,345,756

ADJUSTABLE DUMBBELL APPARATUS

Jesse Hoagland, 333 Bellevue Ave., Trenton, N.J. 08618

Filed Dec. 1, 1980, Ser. No. 211,879
Int. Cl.[3] A63B *21/06*
U.S. Cl. 272—117 8 Claims



1. An adjustable dumbbell apparatus, particularly adapted to maintain the arms of the exerciser in a straight orientation when used with weighted members, which comprises:

(a) a circumferential member defining a hole therein through which the arm of the exerciser extends, said hole defining a hole axis therethrough extending through the center of said hole perpendicular to a plane defined by said circumferential member;

(b) a strut means being fixedly secured with respect to the inner side of said circumferential member and extending upwardly therefrom approximately parallel to said hole axis to extend along the forearm and wrist area of an exerciser;

(c) a grip means detachably secured with respect to said strut means and including a horizontal portion thereof extending approximately perpendicular with respect to said strut means to provide a location for grasping by the hand of the exerciser; and

(d) a weight support member being fixedly secured with respect to said cicumferential member at a location opposite from said strut means and extending therefrom approximately perpendicular with respect to said hole axis and with respect to said strut means and said grip means, said weight support means adapted to receive variously weighted members secured thereon to control the intensity of the exercise.

4,345,757

ANCHORED MASSAGE AND EXERCISING BAR

Raymond J. Lo Voi, 828 Liberty La., Rockaway Point (Queens), N.Y. 11697

Filed Dec. 4, 1979, Ser. No. 100,009
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—127 2 Claims



1. A massage and exercising system comprised of:

at least one central shaft;

a handle rotatably mounted on one end of each shaft;

a ball joint having a ball member connected to the other end of each shaft for anchoring said shaft for pivotal movement about said other end;

a plurality of massage rollers mounted on each shaft between the handle and the ball joint so as to be individually rotatable thereon;

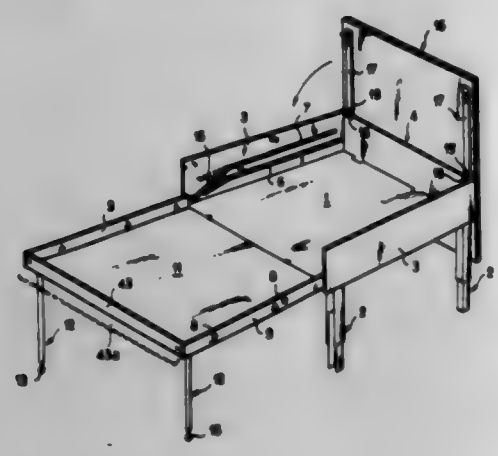
a stationary plate which is fastened to a relatively immovable object, said stationary plate having at least one opening therein for each shaft to be anchored, each opening consisting of a rounded portion for accepting the ball member and a straight channel portion extending horizontally from the rounded portion, said straight portion having a width smaller than the diameter of the ball member for the captured movement of the ball member to the distal end of the channel; and

a movable plate which is slideably mounted with regard to the stationary plate so as to be operable between an advanced and a retracted position, said movable plate having at least one opening consisting of a second rounded portion for accepting the ball member and a second horizontal channel portion extending from the second rounded portion and turning vertically at its distal end to form an "L" shape, said second rounded portion and said second horizontal channel being aligned with the opening(s) of the stationary plate when the movable plate is in its retracted position so that the ball member can be inserted through both rounded portions and slid horizontally along the channel portions to their distal ends thereby positioning said ball member to be captured when the movable plate is moved to its advanced position.

4,345,758
CONVERTIBLE TABLE, ESPECIALLY FOR GAMES

Bertrand Kempf, 46, rue des Martyrs, 75009 Paris, France

Filed Feb. 20, 1980, Ser. No. 123,189
Claims priority, application France, Mar. 1, 1979, 79 05352
Int. Cl.[3] A63B *61/00*
U.S. Cl. 273—30 11 Claims

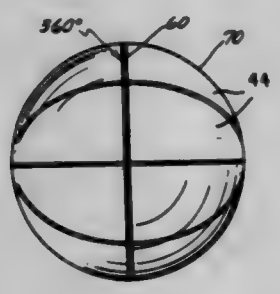


1. A convertible table primarily intended for games, comprising a stationary horizontal bottom panel mounted on four rigid legs and provided with two side panels and one end panel fixed to said bottom panel and extending upwardly, and a movable panel slidably mounted over said stationary panel for displacement in a direction parallel to said stationary panel by means of rollers adapted to cooperate with at least one pair of roller tracks secured to said side panels, the movable panel being capable of displacement from an inward storage position in which the movable panel overlies the stationary panel to an outwardly extended position in the line of extension of the stationary bottom panel and provided with at least one leg fitted with a small wheel for supporting said movable panel in said outwardly extended position, said roller tracks being placed with respect to said stationary bottom panel at a level such that the two panels are located in the storage position at a vertical distance from each other which permits storage of objects on said stationary bottom panel and said movable panel, said table further comprising a cover resting on said side panels for providing protection above said movable panel when said movable panel is in said storage position, said cover comprising two table-top panels joined to each other by means of a transverse hinge adjacent to that side of the table from which the movable panel is outwardly extensible, removable spacer members being provided for extending said at least one leg of the movable panel and receiving the unfolded table-top panel when said movable panel is in the outwardly extended position.

4,345,759
BASKETBALL

Dean L. Nims, 680-59th St., Des Moines, Iowa 50312

Filed Nov. 2, 1979, Ser. No. 90,680
Int. Cl.[3] A63B *41/00*
U.S. Cl. 273—65 R 7 Claims



4. A conventional basketball including a plurality of panels therearound and having indicia means extending transversely across the panels and substantially around the ball at the center and giving the appearance of a continuous 360° line when the ball is rotated uniformly, for sighting and aligning with the basket and providing feedback data on how the ball was shot relative to being shot with the hand launching it squarely which imparts rotation about an axis of rotation through the ball that is stationary relative to the ball, said indicia means allowing the ball to be oriented in the shooter's hand with the indicia means on the ball in a vertical plane and on the line of intended flight to the basket.

4,345,760
EDUCATIONAL MARBLE GAME

John J. Kovach, 189 Landover, Gahanna, Ohio 43230

Filed May 27, 1980, Ser. No. 153,174
Int. Cl.[3] A63F *7/00*
U.S. Cl. 273—118 R 6 Claims



1. A game apparatus for teaching and learning geography, comprising:

a. a plurality of spherical playing pieces; and

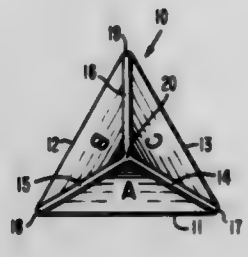
b. a game board playing surface, composed of a portable sheet of carpet material sufficiently hard and textured that the playing pieces will readily roll and stop thereon, the game board having indicia on the surface thereof, including a combination of assorted straight and curved lines joined together to form contours representing, defining, and depicting the shaped borders of enclosed areas of different contours of unnamed divisions or unnamed subdivisions of geographical significance, the spherical playing pieces being constructed to roll upon the playing surface of the game board by the projection of game players and to come to rest upon the surface of the game board within the shaped borders of the enclosed areas of the unnamed divisions or unnamed subdivisions and to strike other spherical playing pieces, and to propel them across the playing surface causing them to come to rest within or without the shaped borders of the enclosed areas of the unnamed divisions or unnamed subdivisions, and the game board being devoid of recesses capable of capturing the spherical playing pieces;

according to the rules and procedures of the game played upon the surface with the spherical playing pieces which allows the players to capture the spherical playing pieces according to skill in detecting the shape and naming the divisions or subdivisions in addition to skill in projecting the spherical playing pieces.

4,345,761
TETRAHEDRAL GAMING DIE WITH RECESSED PYRAMIDAL FACES

David B. China, Shohola, Pa., assignor to Bermas Plastics Co., Inc., Long Island City, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,239
Int. Cl.[3] A63F 9/04
U.S. Cl. 273—146 8 Claims

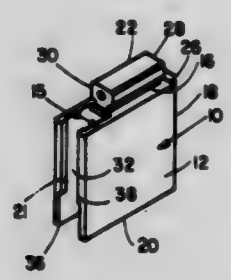


1. A novel gaming die which is in the form of an equilateral tetrahedron, characterized in that each of the four sides has the same form of a recessed triangular pyramid having three congruent facets, and the twelve congruent facets bear various markings for scoring purposes.

4,345,762
ASSEMBLY TOY

Yaacov Lebelson, 24 Hahalutzim St., Tel Aviv, Israel

Filed Nov. 18, 1980, Ser. No. 207,872
Claims priority, application Israel, Dec. 3, 1979, 58844
Int. Cl.[3] A63F 9/12
U.S. Cl. 273—157 R 14 Claims



1. An assembly toy comprising at least first and second elements, said first element having a male attachment protrusion disposed along an edge thereof and said second element having defined along an edge thereof a female socket, the protrusion and the socket being configured to permit selectable press fit and slidable engagement therebetween;

said at least first and second elements each being formed of a pair of parallel disposed flat surfaces arranged in generally co-extensive spaced relationship and defining first, second, third and fourth edges;

said pair of surfaces being joined along at least part of said first and second edges and being separated from each other along said third and fourth edges thereby to permit flexibility between said pair of surfaces at said third and fourth edges;

said male attachment protrusion being disposed along said first edges and defining a generally elongate protrusion including an end portion having generally parallel planar side protrusion surfaces extending parallel to said pair of surfaces and a narrowed neck portion joining said end portion to said first edge;

said female socket being defined by said pair of surfaces at said third edges, said female socket also comprising flange means extending inwardly from said pair of surfaces for selectable retaining of said male attachment protrusion, at least one of said protrusion and flange means including bevelled surfaces being so directed as to enable ready press fit engagement and disengagement of said protrusion and socket during generally coplanar motion therebetween.

4,345,763
GOLF CLUB

Arthur P. Swanson, 1454 Estate La., Glenview, Ill. 60025

Filed Dec. 8, 1981, Ser. No. 328,633
Int. Cl.[3] A63B 53/00
U.S. Cl. 273—164 11 Claims

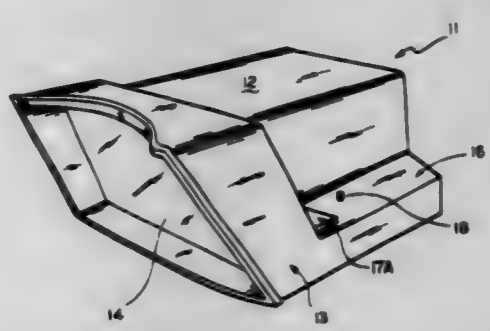


1. A lofted golfing iron having a visible top sighting edge on the blade thereof to facilitate alignment of the club for the intended flight path of the ball and having an enhanced size striking face which comprises a blade having heel and toe ends of substantially the same height, a thick bottom sole with a front edge, an upright back face, a top edge parallel with said front edge and an inclined front striking face between said bottom and top edges extending from the heel to the toe ends, a hosel extending upwardly and forwardly from the heel end of the blade, a flattened land connecting the bottom of the hosel with the bottom portion of the heel end of the blade and said top edge of the blade being thinner than the remaining portion of the blade and defining the aforesaid sighting line.

4,345,764
HAND-HELD ELECTRONIC GAME

Gordon A. Barlow; John R. Krutsch, both of Glenview, and Richard A. Karlin, Chicago, all of Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Jan. 30, 1980, Ser. No. 116,835
Int. Cl.[3] A63F 9/00
U.S. Cl. 273—313 22 Claims



1. A hand-held programmed electronic game for playing by individuals holding said electronic game,

said game comprising first electronically controlled lights for depicting invaders and bombs,

second electronically controlled lights for depicting defenders and death rays,

third electronically controlled lights visually interposed between said electronically controlled lights depicting said defenders and said electronically controlled lights depicting invaders for depicting barriers impenetrable by said bombs and death rays,

said first and second electronically controlled lights affixed in first and second planes respectively, and

means for causing individuals to see said first, second and third electronically controlled lights in a single plane.

4,345,765

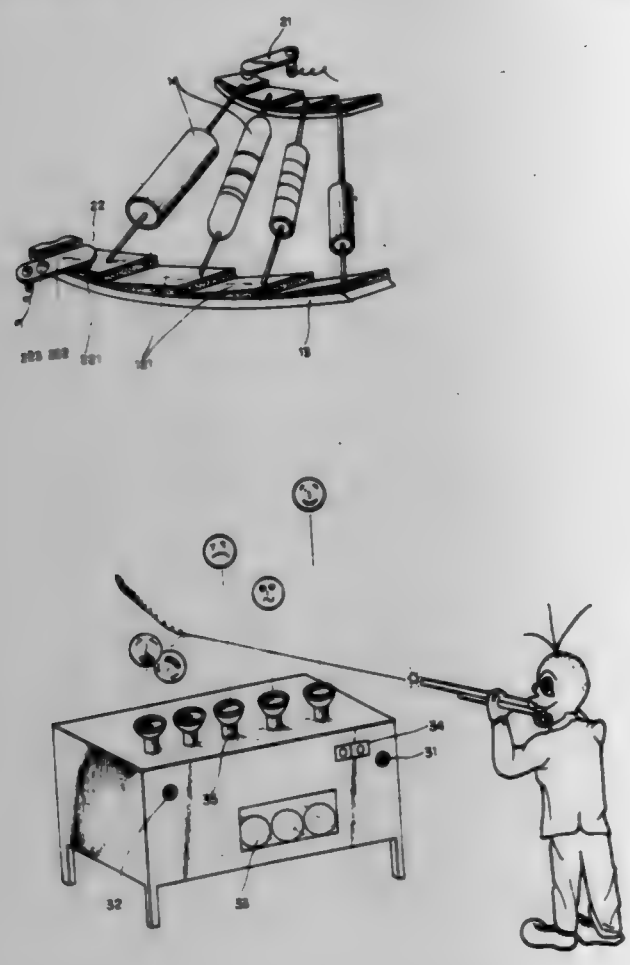
MOVING TARGET MEANS OF SHOOTING GALLERY

Austin Wang, No. 3, 5th Alley, 5th La., 1st Sec. Chung-Ching S. Rd., Taipei, Taiwan

Filed Jul. 9, 1980, Ser. No. 166,900

Int. Cl.³ F41J *9/02*

U.S. Cl. 273—359 **8 Claims**



1. A moving target mechanism for shooting galleries comprising:

a plurality of air pump means for producing a plurality of individual vertical air-jets;

a lightball supported on each air jet; and

means for continuously varying the current passing through each air pump means to continuously change the flow rate of each air jet whereby the height of support of each lightball is varied continuously.

4,345,766

APPARATUS FOR SEALING AN OIL WELL PUMP POLISHED ROD

Sandor Turanyi, P.O. Box 845, Stafford, Tex. 77477

Filed May 7, 1981, Ser. No. 261,539

Int. Cl.³ E21B *33/08;* F16J *15/56*

U.S. Cl. 277—30 **5 Claims**

1. An apparatus for effecting a seal with a reciprocating polished rod member of substantially constant diameter to block leakage of fluid therebetween, including:

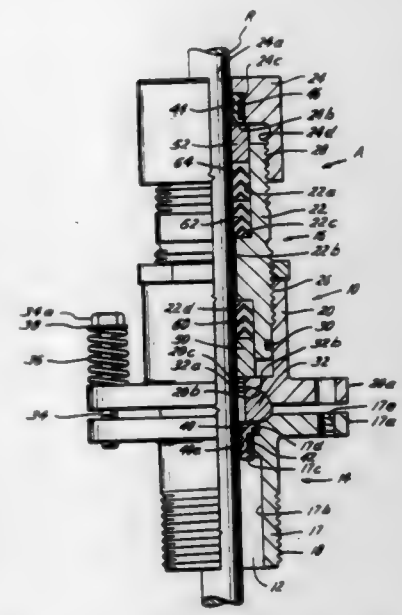
a substantially tubular housing having a longitudinal bore extending therethrough in which said substantially constant diameter reciprocating polished rod member is positioned for sealing therewith, said tubular housing having means for operably securing with a wellhead of the a hydrocarbon producing well having the polished rod member extending therefrom;

said tubular housing having a first tubular housing portion and a second tubular housing portion, said second tubular housing portion connected with said first tubular housing portion by means for enabling limited relative angular movement therebetween, said first housing portion securable with the wellhead;

a first polished rod scraper disposed in said bore and movably mounted with said first housing portion, said first rod scraper having an inner surface disposed closely adjacent said polished rod for blocking passage of undesired solid matter therebetween;

a second polished rod scraper disposed in said bore and movably mounted with said second housing portion, said second rod scraper having an inner surface disposed closely adjacent said polished rod for blocking passage of undesired solid matter therebetween;

a first polished rod guide bushing mounted with said second housing portion and disposed in said bore adjacent said first housing portion, said first guide bushing having an



inner surface arranged for contacting said polished rod for establishing the relative radial relationship therebetween;

a second polished rod guide bushing mounted with said second housing portion and disposed in said bore adjacent said second polished rod scraper, said second guide bushing having an inner surface arranged for contracting said polished rod for establishing the relative radial relationship therebetween, said first and second guide bushings spaced apart a sufficient distance for maintaining said second housing portion longitudinally aligned with said polished rod; and

means mounted with said second housing portion and disposed in said bore between said first and said second guide bushings for effecting a sliding seal between said second housing portion and the polished rod to block leakage of wellhead fluid therebetween.

4,345,767

FLUID SEAL ELEMENT FOR COMPRESSED AIR FILTER

Brian P. Neal, Kingswood, England, assignor to Bendix Westinghouse Ltd., Bristol, England

Filed Jun. 30, 1980, Ser. No. 164,111

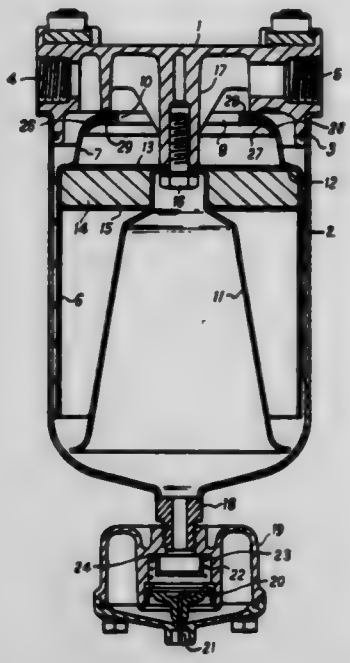
Claims priority, application United Kingdom, Aug. 2, 1979, 7926885

Int. Cl.³ F16T *1/14;* B01D *27/10;* F16J *15/00*

U.S. Cl. 277—12 **1 Claim**

1. A fluid pressure unit comprising a housing having an input port and an outlet port, an internal member for carrying a filter element, said internal member having a generally bell-shaped section with an axial aperture, an annular seal element for said aperture comprising a generally "U"-shaped section to provide two lips, one disposed outside the bell-shape and one inside the bell section, one lip longer than the other, the bell-shape having at least one further aperture covered by the longer said lip and means mounting said internal member whereby connec-

tion between the inside and outside via said aperture is closed by a seal effected by the shorter said lip, the longer said lip



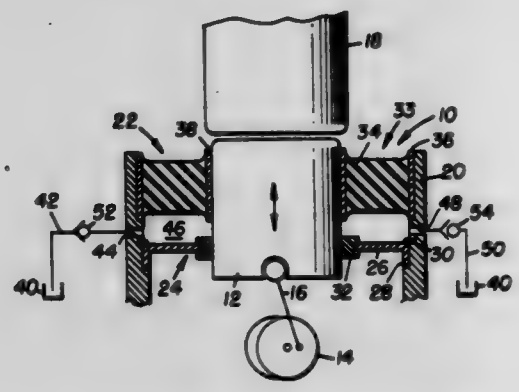
being deflectable to provide a bypass via the further aperture in the event of a pressure build-up on one side thereof.

4,345,768

SELF PUMPING SEAL FOR A RECIPROCATING MEMBER

Michael A. Roussin, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00918, § 371 Date Oct. 29, 1979, § 102(e) Date Oct. 29, 1979, PCT Pub. No. WO81/01182, PCT Pub. Date Apr. 30, 1981
PCT Filed Oct. 29, 1979, Ser. No. 108,907
Int. Cl.³ F01B *19/02;* F04B *45/04;* F16J *15/56*
U.S. Cl. 277—22 12 Claims



1. In a seal arrangement for a device having a housing (20), and a reciprocating member (12) mounted in said housing (20), the improvement comprising:

first seal means (24) for sealingly associating the reciprocating member (12) with said housing (20);

second seal means (33) for sealingly associating the reciprocating member (12) with said housing (20) and forming a substantially fluid tight variable volume cavity (46) with said first seal means (24);

a source of cooling fluid (40);

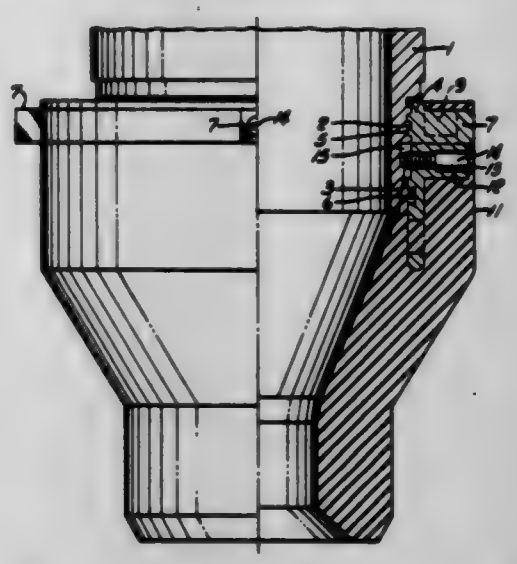
means (42,52,44), for communicating said source of cooling fluid (40) to said variable volume cavity (46).

4,345,769

DRILLING HEAD ASSEMBLY SEAL

Paul R. Johnston, Washington, Pa., assignor to Washington Rotating Control Heads, Inc., Washington, Pa.

Filed Mar. 16, 1981, Ser. No. 244,026
Int. Cl.³ F16J *15/56*
U.S. Cl. 277—31 4 Claims



1. In a drilling head assembly for rotary well drilling, a vertically extending tubular member provided with an external screw thread adjacent to but spaced above its lower end, the outer surface of said member below said screw thread tapering downwardly to said lower end to form a sealing surface, a metal ring encircling said screw thread and sealing surface and provided with an internal screw thread engaging said first-mentioned thread for connecting the ring to said tubular member, the portion of said ring beside said sealing surface being spaced therefrom and extending downwardly below it and provided with an annular recess encircling and facing said surface, and a resilient sealing member encircling said ring and secured thereto with the portion of the ring beside said sealing surface and below it embedded in the sealing member, the sealing member filling said annular recess and converging downwardly below said ring to a neck portion of reduced diameter for fitting around a drill string, and the inner surface of the sealing member converging from above said annular recess downwardly to said neck portion, the sealing member being compressed between said tapered sealing surface and the encircling portion of said ring to form a seal between said tubular member and ring.

4,345,770

COFFERED SEAL

Reinhold Seeh, Weinheim an der Bergstrasse, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

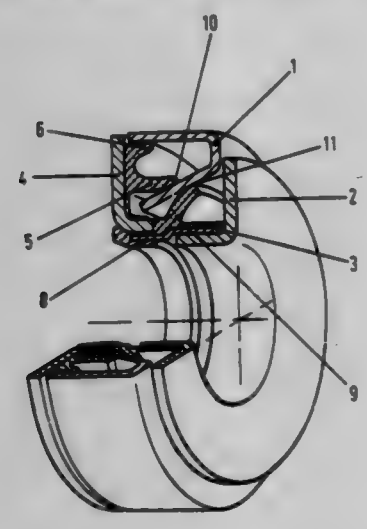
Filed Apr. 13, 1981, Ser. No. 253,389
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1980, 3031870
Int. Cl.³ F16J *15/24, 15/32*
U.S. Cl. 277—48 6 Claims

1. A coffered seal comprising:

an outer ring of sheet metal having a substantially U-shaped cross section open toward one axial direction and comprising an outer side and an inner side that extends at an angle of approximately 20° to 50° relative to the axis of the ring;

inner ring means comprising a multi-part structure defining a U-shaped cross section extending axially beyond the outer ring in both axial directions to enclose the outer ring; and

first and second elastomeric sealing rings comprising first and second sealing lips, respectively, within the U-shaped



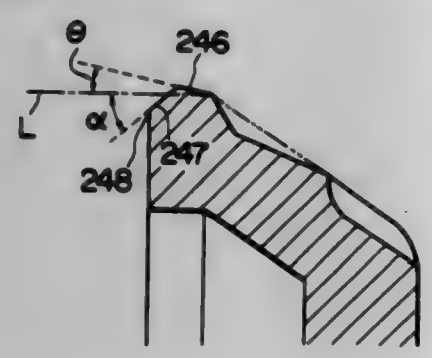
cross section of the inner ring and bearing against opposite surfaces of the inwardly extending side of the outer ring.

4,345,771

SEALING CUP FOR HYDRAULIC PISTON-CYLINDER DEVICE

Junzo Hasegawa, Obu; Masatoshi Yamada, Nagoya; Kaoru Nakamura, Anjo, and Eiichi Yasuda, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya; Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, all of, Japan

Continuation of Ser. No. 924,836, Jul. 14, 1978, abandoned. This application Dec. 5, 1980, Ser. No. 213,454
Claims priority, application Japan, Jul. 15, 1977, 52-85385
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—205 8 Claims



1. A sealing cup for sealing space between cooperating piston and cylinder walls of a hydraulic piston-cylinder device, said sealing cup comprising:

an annular body of resilient material including an annular base having an axis adapted to be substantially coincident with the axis of said cylinder when installed;

an annular inner sealing lip extending in a first axial direction from said annular base and having an edge remote from said annular base and an inner sealing surface adapted to be engaged with a wall to be sealed; and

an annular outer sealing lip extending in said first axial direction from said annular base so as to encircle said inner sealing lip in spaced relationship therewith and having an edge remote from said annular base and an outer sealing surface adapted to be engaged with a wall surface to be sealed;

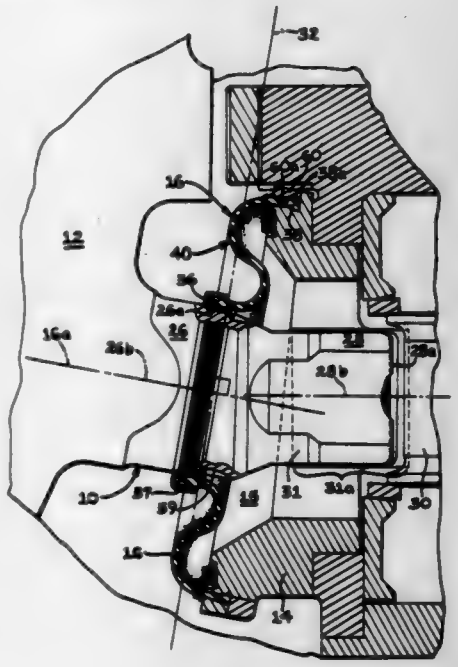
at least one of said inner and outer sealing surfaces adapted to be slidably movable with respect to one of said piston and cylinder walls to be sealed, said slidably movable sealing surface consisting of first, second and third annular surfaces having substantially straight line axial profiles, said first annular surface extending from said annular base in said first axial direction and extending at an acute angle to said axis radially outwardly when said corresponding wall is said cylinder wall and radially inwardly when said corresponding wall is said piston wall, said second annular surface connected to and extending from said first annular surface in said first axial direction and extending at an angle to said axis less than said acute angle radially inwardly when said corresponding wall is said cylinder wall and radially outwardly when said corresponding wall is said piston wall, and said third annular surface connected to and extending from said second annular surface in said first axial direction at an angle to said axis greater than said acute angle and extending radially outwardly when said corresponding wall is said cylinder wall and radially inwardly when said corresponding wall is said piston wall, said second and third annular surfaces intersecting at an obtuse angle and defining an annulr groove in said slidably movable sealing surface, the edge of said slidably movable sealing surface and the intersection of said first and second annular surfaces being adapted to exert greater sealing pressure than the vertex of said annular groove when said slidably movable sealing surface is mounted for sealing engagement with said corresponding wall for retaining lubricating oil in said annular groove during axial movement of said slidably movable sealing surface.

4,345,772

CONSTANT STRAIN BOOT SEAL

Albert L. Woody; Lawrence E. Fox, both of Peoria, and Harold L. Reinsma, Dunlap, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00118, § 371 Date Jan. 26, 1981, § 102(e) Date Jan. 26, 1981
PCT Filed Jan. 26, 1981, Ser. No. 273,892
Int. Cl.³ F16J *15/52*
U.S. Cl. 277—212 FB 8 Claims



1. A seal apparatus (16) for sealing between a first (12) and a second (14) relatively displaceable member, said seal apparatus (16) comprising:

an annular, rigid inner terminating portion (36), an annular, rigid outer terminating portion (38), an annular flexible portion (40) having an inner margin (46), an outer margin (48), a longitudinal axis (16*a*), and a plurality of concentrically arranged, interconnected convolutions (42,44), the thickness of said convolutions (42,44) perpendicular to a convoluted centersurface (16*b*) therethrough decreases from said inner margin (46) to said outer margin (48) in proportion to a radial separation distance (H) between the centersurface (16*b*) at said inner margin (46) and the centersurface (16*b*) along said convolutions (42,44), said inner (36) and outer (38) terminating portions being respectively joined to said inner

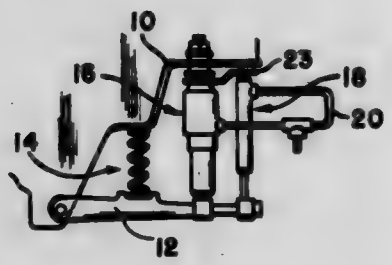
(46) and outer (48) margins and being respectively fixedly attachable to the first (12) and the second (14) members so as to move therewith.

4,345,773

LOAD LEVELING AIR PUMP WITH PRESSURE CLUTCH

Arthur K. Brown, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 5, 1979, Ser. No. 91,233
Int. Cl.[3] B62D *37/00*
U.S. Cl. 280—6 R 11 Claims



1. An automatic load leveling mechanism for a vehicle having an unsprung mass, a sprung mass supported from the unsprung mass, and a fluid-receiving device for controlling the relative position of said masses, said masses having a variable average separation depending upon the amount of fluid within said fluid-receiving device and upon the weight of the sprung mass, said load leveling mechanism comprising:

a fluid pump for pumping fluid into said fluid-receiving device and powered by the relative movement of said masses in response to motion of said vehicle, said pump comprising a housing connected to one of said masses, a pump piston slidably mounted in said housing and connected to the other of said masses, the feedback means slidably mounted in said housing, said feedback means, said pump piston and said housing cooperating to define a compression chamber therebetween, said pump piston moving relative to said one mass to transfer fluid from said compression chamber to said fluid-receiving device, said feedback means being movable toward said pump piston in response to increasing fluid pressure in the fluid-receiving device; and

fluid control means for permitting fluid to escape from the fluid-receiving device upon at least a predetermined separation of said masses;

said feedback means comprises a pair of relatively movable feedback pistons slidably and sealingly mounted in said housing, one of said feedback pistons comprising an expandible portion for frictional engagement with said housing, said feedback pistons including relatively engageable portions, said engageable portions being engageable with each other to expand said expandible portion into frictional engagement with said housing to limit movement of said feedback means within said housing as said pump piston moves to compress fluid in said compression chamber.

4,345,774

ROLLER SKATE APPARATUS

John C. Poe, Long Beach, and Tony Radecki, Altadena, both of Calif., assignors to R. C. Sports, Inc., Olathe, Kans.

Filed Sep. 11, 1980, Ser. No. 186,166
Int. Cl.[3] A63C *17/14*
U.S. Cl. 280—11.2 3 Claims

1. In roller skate apparatus of the general type wherein each skate for use in a right and left pair thereof has

elongate skate plate means,

means adapted for securing said skate plate means to a foot of a user with said skate plate means disposed beneath the foot of the user and longitudinally extending generally horizontally and in the general direction of intended travel of the skate,

a pair of truck means each including axle means carried thereby,

means for mounting said pair of truck means at respectively forward and rearward locations on said skate plate means with the respective axes of said axle means of said pair of truck means disposed beneath said skate plate means, extending generally horizontally and laterally with respect to said skate plate means, and spaced from each other longitudinally of said skate plate means, and

a pair of ground engaging wheel means respectively mounted for rotation upon said axle means of said pair of truck means,



an improved construction for said apparatus including:

there is provided toe stop means,

said structure further includes as an integrally formed part thereof means presenting a pair of laterally offset holes in said skate plate means adjacent the forward end thereof, and

there is provided releasable fastening means for securing said toe stop means to said skate plate means in association with either of said holes,

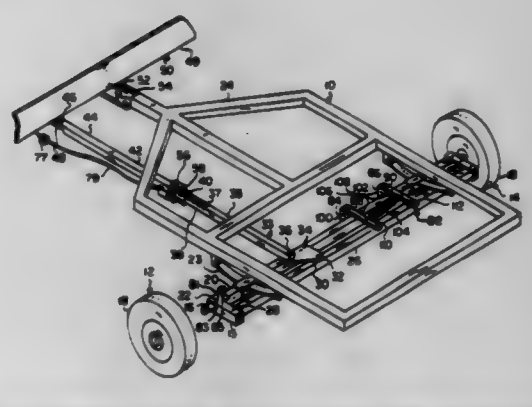
whereby the same toe stop means and fastening means may be employed for skates intended for use on either the right foot or the left foot of a user merely by mounting said toe stop means in association with the appropriately corresponding one of said holes.

4,345,775

AUTOMATIC STEERING SYSTEM FOR A TOWED VEHICLE

Donald V. Merrifield, 6614 Robinhood La., Huntsville, Ala. 35806

Filed Jun. 23, 1980, Ser. No. 162,194
Int. Cl.[3] B62D *13/06*
U.S. Cl. 280—443 5 Claims



1. An automatic steering system for steering a two-wheeled towed vehicle when backed, comprising:

a frame and a pair of wheel assemblies positioned on opposite sides of said frame, and said frame being pivotally connectible at a central region of one end, a front end, of said frame to a central point of the rear of a towing vehicle; and

a steering axle assembly extending laterally across said frame and supporting said wheel assemblies, and comprising:

a fixed axle member fixedly attached across said frame,

a hinged member pivotally supported about a vertical axis at each end of said fixed axle, and each hinged member supporting, about a generally horizontal axis, a said wheel assembly,

a steering axle member spaced from and lying generally parallel to said fixed axle member and pivotally attached at each end, about a generally vertical axis, to a said hinged member,

spring bias means for generally biasing said steering axle in a fixed longitudinal position with respect to said fixed axle member, whereby said wheel assemblies are biased to effect straight direction steering of said towed vehicle,

operating lever means pivotally connecting said fixed and steering axle members about generally vertical axes, and whereby rotation of said lever arm effects steering of said wheel assemblies,

steering control means comprising an extensible steering arm extending in a front-to-back direction with respect to said frame and positioned to the side of a general front-to-back axis of said frame and pivotally connected in one end region of said lever means and pivotally interconnectible at an opposite end region of a said towing vehicle, and

control means for selectably locking said steering arm in a selected length position,

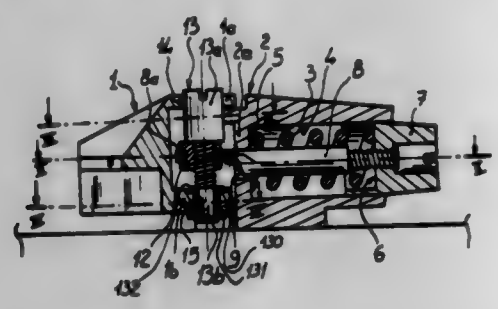
whereby, with said steering arm freely extensible, said lever arm is not operated as said towed vehicle is towed in a forward direction; and, upon the locking of said steering arm in a selected length position, said steering arm operates said lever arm and effects steering coordinate with the direction of movement of a towing vehicle, enabling precise backing of the towed vehicle along a track determined by the steering of the towing vehicle.

4,345,776

SAFETY BINDING FOR SKI

Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon & Fils, Annecy, France

Filed Jun. 5, 1980, Ser. No. 156,622
Claims priority, application France, Jun. 6, 1979, 79 14484
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—629 25 Claims



1. A safety binding for binding a ski boot onto a ski, said binding comprising:

(a) a jaw adapted to engage and hold one end of said boot on said ski;

(b) a support means adapted to be secured to said ski;

(c) elastic means adapted to bias said jaw towards said support means; and

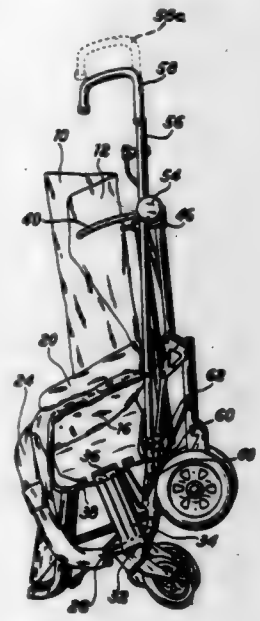
wherein said binding comprises two lines of support converging above said ski positioned on opposite sides of the longitudinal plane of symmetry of said binding whereby, during release, said jaw is pivotable alternately along each of said lines of support, and wherein said jaw or an intermediate element associated therewith is biased to pivot relative to said support means at an upper point and at two lower points, said three points forming said two lines of support.

4,345,777

BABYS' PUSHCHAIRS, OF TYPE COLLAPSING WIDTHAWAYS AND EASY TO CARRY BY HAND LIKE AN UMBRELLA, PLUS RELATIVE IMPROVED PUSHCHAIR

Giuseppe Perego, Via De Gasperi, 20043 Arcore (Milano), Italy

Filed Feb. 21, 1980, Ser. No. 123,444
Claims priority, application Italy, Oct. 10, 1979, 26390 A/79
Int. Cl.³ B62B *7/08*
U.S. Cl. 280—647 15 Claims



1. In a folding perambulator having a pair of side frames each with a side arm, a folding linkage interconnecting the side frames which is foldable to allow the pair of side frames to approach each other in a widthwise collapsed state of the perambulator and unfoldable to allow separation of the side frames in an uncollapsed state of the perambulator, and a foldable seat and seat back connected between the side frames, the improvement comprising:

a rigid cross arm extending between the side arms with the perambulator in its uncollapsed state having one end pivotally connected to one side arm; and

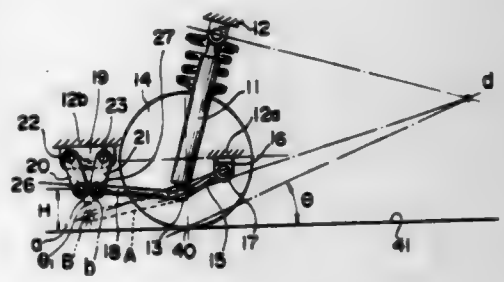
a lever member pivotally connected at one end thereof to an opposite end of said cross arm; said lever member pivotally connected at an opposite end thereof to the side frame carrying the other side arm at a location vertically spaced from the other side arm, so that said rigid cross arm can move from a substantially horizontal position with the perambulator uncollapsed into a substantially oblique position with the perambulator collapsed.

4,345,778

SUSPENSION FOR VEHICLES

Masaaki Minagawa, Kokubunji, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1979, Ser. No. 87,965
Claims priority, application Japan, Oct. 27, 1978, 53-132389
Int. Cl.³ B60G *3/00*
U.S. Cl. 280—701 10 Claims



1. In a suspension for vehicles including: a shock absorber having an upper end thereof supported on a first portion of a

vehicle chassis and a lower end thereof connected to a road wheel; an arm supporting said road wheel, said arm being connected at an end thereof to the lower end of said shock absorber and at the other end thereof to a second portion of said vehicle chassis; and a rod supporting said road wheel, said rod being connected at an end thereof to the lower end of said shock absorber and at the other end thereof to a third portion of said vehicle chassis and extending in the longitudinal direction of said vehicle, the improvement comprising:

a pair of links pivotally connected at first ends thereof to longitudinally spaced positions on either one end of said rod and at second ends thereof to longitudinally spaced positions on an element to which said one end of said rod is connected; and

said links having respective longitudinal axes which extend substantially vertically and are inclined relative to each other at a predetermined angle such that said axes of said links intersect at an imaginary supporting point of said rod which is shifted vertically with respect to an actual supporting point of said rod to raise the position of a point around which said shock absorber is angularly movable up and down.

4,345,779

DRIVE MECHANISM FOR A VEHICLE TRAILER LIFTING GEAR

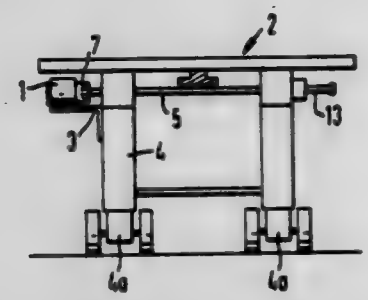
Philip V. Busby, 13 Brunel Ave., Neyland, near Milford Haven, Dyfed, England

Filed Jun. 17, 1980, Ser. No. 160,301

Claims priority, application United Kingdom, Jun. 20, 1979, 7921471

Int. Cl.³ B60S *9/08*

U.S. Cl. 280—766 **11 Claims**



1. For a vehicle trailer lifting gear having two telescopic support legs at the end of the vehicle trailer couplable to a vehicle, operable via a rotatable shaft having first and second ends and gearing to vary the height of the trailer end to permit coupling to or uncoupling from a vehicle, a lifting gear drive mechanism comprising:

an air driven rotary drive unit fixedly attachable to said vehicle trailer and connectible to a source of air under pressure, said drive unit comprising a reversible socket gun drivable by air under pressure and having a drive socket, and

connecting means for drivingly connecting said drive unit to said first end of said rotatable shaft so that with the mechanism in operative association with said vehicle trailer said drive unit can be connected to said source of air under pressure to rotate said shaft one way or the other to extend or retract said support legs, said connecting means including a nut fixedly connectible to said first end of said rotatable shaft for cooperation with said socket.

4,345,780

AUTOMATIC SEATBELT SYSTEM

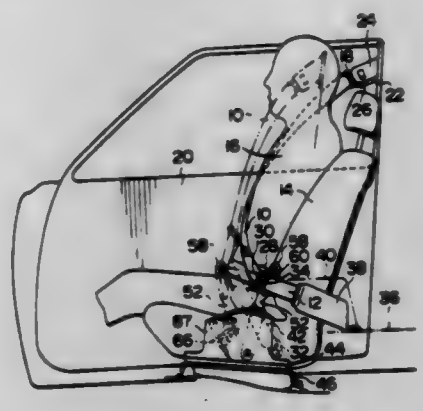
Shigeru Moriya; Hisashi Ogawa, and Mitsuaki Katsono, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 8, 1980, Ser. No. 148,037

Claims priority, application Japan, Jul. 4, 1979, 54-93014[U]

Int. Cl.³ B60R *21/02*

U.S. Cl. 280—802 **11 Claims**



1. An automatic seatbelt system wherein an occupant restraining webbing is suspendedly extended at least from a vehicle door to the substantially central portion of a vehicle through a position forwardly of an occupant's seat, and said webbing approaches or recedes from the seat in accordance with the opening or closing the door, comprising:

(a) a guide lever provided at one side of said seat and formed at the forward end thereof with a loop, through which the intermediate portion of the webbing passes, said guide lever being moved by the manual operation forwardly in the vehicle to enlarge a space formed between the seat and the webbing;

(b) a locking device for retaining said guide lever in a condition of being turned forwardly in the vehicle, to thereby prevent said guide lever from returning rearwardly in the vehicle; said locking device comprising a striker provided on said guide lever, a lock lever formed with a projection engageable with said striker in a locked condition, and a release lever formed with a projection engageable with said lock lever to retain said locked condition; and

(c) release means for releasing the operation of said locking device before the vehicle enters the normal running condition, whereby the occupant is brought into a seatelt fastened condition by the returning movement of said guide lever.

4,345,781

WEBBING SLIDER LOCK MECHANISM

Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 9, 1980, Ser. No. 148,277

Claims priority, application Japan, May 16, 1979, 54-66186[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **9 Claims**

1. A webbing slider lock mechanism for a passenger restraint system in a vehicle, said mechanism comprising:

a guide rail in the vehicle, said rail having a sliding groove and a driving groove; said rail having a restraining and a releasing end;

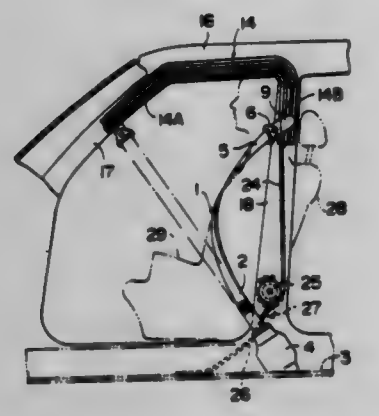
a slider movable within and along said sliding groove and connected to an end of an occupant restraining webbing;

a release arm having a connecting bar, said arm being projectable into said driving groove at the restraining end of said guid rail;

a locking lever below said release arm at said restraining end of said guide rail, said lever being projectable into said

sliding groove to lock said slider, said lever being engagable by said connecting bar of said release arm;

means for biasing said release arm and said locking lever to project respectively and simultaneously into said driving groove and into said sliding groove; and



a driving member movable within and along said driving groove of said guide rail, said driving member having a longitudinal fastening hole, said slider being received in said hole and being of shorter length than said hole to define a space in the direction of travel of said slider, and said driving member including means for pushing said release arm out of said driving groove.

4,345,782

PASSIVE SEATBELT SYSTEM FOR MOTOR VEHICLES

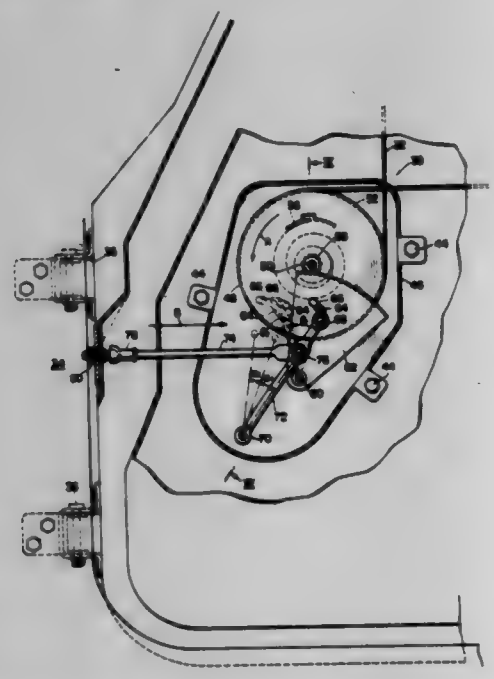
Noritada Yoshitsugu; Masanao Motonami, and Mitsuaki Katsuno, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, both of Aichi, Japan

Filed Jan. 4, 1979, Ser. No. 879

Claims priority, application Japan, Apr. 3, 1978, 53-43571[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—803 **6 Claims**



1. A passive seatbelt system for a vehicle which automatically removes the seatbelt from the passenger or fastens said seatbelt to the passenger when the vehicle doors are opened or closed, comprising:

a take-up pulley which is supported on the vehicle door;

an elongated member wound on said take-up pulley and coupled to said seatbelt for causing movement of the passenger-restraining seatbelt; and

a stroke-amplifying means installed between the take-up pulley and the vehicle body for amplifying the opening and closing strokes of the door and transmitting said opening and closing strokes to said take-up pulley, said stroke-amplifying means comprising:

a pinion which is connected with the take-up pulley,

a sector gear which is supported on the door and which engages with the pinion, and

a speed reducing means for reducing the amount of opening and closing stroke of the door only during the final stage of opening of said door whereby the rotational speed of the take-up pulley during the final stage of opening the door decreases, said speed reducing means comprising a slot formed in the sector gear, said slot having a portion being oriented along a direction of the opening and closing stroke of said door when said door is opened beyond a specified angle;

wherein a force receiving pin which engages with said slot is installed on the end of an arm pivotally supported on the door such that said arm pivots when the door is opened or closed.

4,345,783

PIPE COUPLING DEVICE

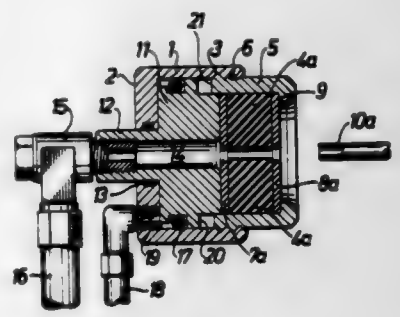
Gunnar M. Bergstrand, Stangholmsbacken 56, 12740 Skärholmen, Sweden

PCT No. PCT/SE78/00049, § 371 Date Jun. 9, 1980, § 102(e) Date May 27, 1980, PCT Pub. No. WO80/00740, PCT Pub. Date Apr. 17, 1980

PCT Filed Oct. 9, 1978, Ser. No. 199,508

Int. Cl.³ F16L *25/00*

U.S. Cl. 285—12 **3 Claims**



1. A pipe coupling device for connecting a conduit to a pipe section, said device comprising: a hollow casing, a resilient sleeve in said casing with a radially inner surface for sealingly engaging said pipe section, and a tubular element axially moveably arranged in said hollow casing for axially compressing and radially expanding said sleeve said casing including abutment means thereon for retaining said tubular element and resilient sleeve therewithin and for providing abutment means for said resilient sleeve during said compression thereof, said tubular element being adapted to be permanently connected to said conduit for the supply of pressurized fluid axially through the interior of the tubular element into said pipe section, said hollow casing comprising a readily detachable unit including a separate casing portion and said sleeve and being easily replaceable by a similar unit having a sleeve with a different radially inner surface adapted to a different pipe section dimension, and said tubular element being a piston with a radially widened portion forming a piston surface to be exposed to an actuation fluid for axially displacing said tubular element during coupling operation.

4,345,784

CONNECTOR ASSEMBLY FOR FLEXIBLE PRODUCTION TUBING

John B. Walling, P.O. Box 16266, Fort Worth, Tex. 76133

Filed May 16, 1980, Ser. No. 150,615

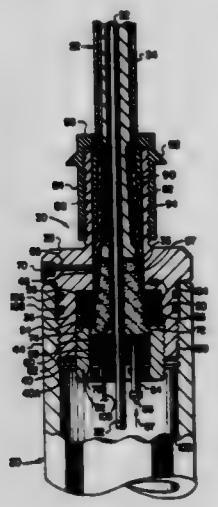
Int. Cl.³ F16L *39/02*

U.S. Cl. 285—39 **12 Claims**

1. A connector assembly for attaching a length of flexible well tubing to a submersible pump of the type including a

housing having a connector box, the flexible well tubing including a tubular outer sidewall covering, a tubular production conduit received within the outer sidewall covering, and a tubular sheath of flexible strands interposed between the outer sidewall covering and the production conduit, said connector assembly comprising, in combination:

a tubular connector housing having an end portion for engaging the pump housing connector box, an axially extending bore for receiving an end portion of the flexible



well tubing, and a counterbore extending axially through said connector housing defining a sealing chamber;

a binding element lodged within the sealing chamber, the binding element having a surface around which the flexible strands can be wound and having an opening through which the production conduit can be extended; and,

an axially movable, annular plug assembly lodged within the sealing chamber for applying a compressive force against the binding element, said plug assembly having an opening through which the production conduit can be extended.

4,345,785

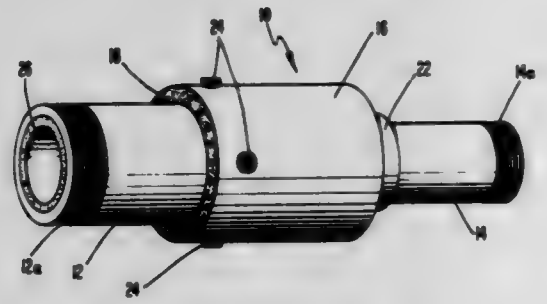
DIELECTRIC PIPE COUPLING FOR USE IN HIGH TEMPERATURE, CORROSIVE ENVIRONMENTS

Randol W. Bradford, Waggaman, La., assignor to Freeport Minerals Company, New York, N.Y.

Continuation of Ser. No. 8,112, Jan. 31, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,293

Int. Cl.³ F16L *59/14*

U.S. Cl. 285—50 **4 Claims**



1. A pipe coupling for electrically isolating two adjacent pipes of dissimilar metals included in a string of pipe to be suspended from its upper end in the hostile environment of a well, said string being subject to high differential fluid pressures and elevated temperatures, said coupling being assembled prior to inclusion in said string in situ, comprising:

an assembly of elements including two generally aligned tubular elements of dissimilar metals respectively electrolytically compatible with a respective one of said two adjacent pipes of said string;

each of the respective outer ends of said tubular elements being threaded for connection with a respective one of said two adjacent pipes;

one of said tubular elements being of uniform outside diameter along its length, terminating at its inner end in a transverse surface normal to its axis and comprising the less expensive of said two dissimilar metals;

the inner end of the other of said tubular elements comprising more expensive of said two dissimilar metals and being provided with and outwardly projecting annular flange having an external axial force-transmitting surface and an inner end surface in axial alignment with and parallel to said first-mentioned transverse surface;

an exterior tubular retainer housing overlapping the inner ends of both of said tubular elements comprising a metal electrolytically compatible with said one of the tubular elements;

the interior surface of the housing having a uniform diameter along its length for a sliding fit over the exterior inner end of said one tubular element and terminating at one end in an inwardly directed flange provided with an axial force-transmitting surface axially spaced from said first-mentioned force-transmitting surface;

the inner annular margin of the flange on the housing being of less diameter than the outer diameter of the other of said tubular elements and defining therewith an annular space;

an annular washer of electrically non-conductive synthetic plastic material resistant to deformation and elevated temperature disposed in contact with and under axial compression between said transverse flat surface and said inner end surface of said tubular elements;

a sleeve of electrically non-conductive synthetic plastic material resistant to deformation and elevated temperature disposed between the housing and the other of the tubular elements, a portion of said sleeve filling said annular space and a medial portion of the sleeve having axially spaced radially directed surfaces disposed in axial force-transmitting abutment between said previously-mentioned force-transmitting surfaces; and another portion of said sleeve extending from said medial portion to said annular washer;

temporary fastening means associated with being provided to prevent axial displacement of the housing relative to said one tubular element during assembly when exteriorly applied axial force to compress said washer has been removed prior to final welding, and;

a permanent weldment joining the housing to said one tubular element to retain said washer in sealing engagement in opposition to "pull out" forces exerted on the coupling when connected in a suspended string of pipes.

4,345,786

TORCH TUBING CLAMPING APPARATUS

Allen C. Egert, Denton, Tex., assignor to Victor Equipment Co., Denton, Tex.

Filed Apr. 11, 1979, Ser. No. 29,370

Int. Cl.³ F16L *39/02*

U.S. Cl. 285—131 **2 Claims**



1. In tubing clamping apparatus in which a plurality of hoses

carrying respective fluids are to be connected in fluid-tight relationship with a torch having a body that has two respective fuel and oxygen passageways penetrating therethrough, the improvement comprising:

two respective said hose barbs sealingly connected with said body in fluid communication with said respective passageways; said hose barbs being sealingly connected at one end with said torch and having respectively outwardly extending free ends having respective enlarged inverted frusto-conical sections; each said inverted frusto-conical section having a maximum diameter greater than said hose barbs for grippingly receiving the respective hose and having its smaller end extending away from said torch to facilitate insertion of said hose thereover;

two respective said hoses connected respectively with respective said hose barbs by being inserted thereover;

thermoplastic clamping means disposed about said hoses and encompassing said hoses between said clamping means and said hose barbs to hold respective hoses sealingly and frictionally in place; said thermoplastic clamping means comprising a thermoplastic clamp having two apertures penetrating longitudinally therethrough and having a split skirt with radially interiorly protruding shoulders for clamping said hoses; said hoses penetrating longitudinally through respective said apertures in said clamping means; said split skirt being moved radially interiorly to clamp said hoses with its said shoulders against respective said hose barbs; said shoulders comprising respective interiorly protruding segments of a ring in each aperture; said skirt being slit in two places about each hose and longitudinally along each aperture; said skirt being adapted to close said slit sufficiently to clamp said hose with said shoulders; a groove 61 being disposed adjacent the base of said split skirt to facilitate closure for clamping; and

retainer means for retaining said clamping means in clamping relationships with said hoses and said hose barbs; said retainer means comprising a handle that screws onto mating threads onto said body of said torch and compressingly engages said clamping means, forcing said clamping means into clamping engagement with said hoses on respective said hose barbs.

4,345,787

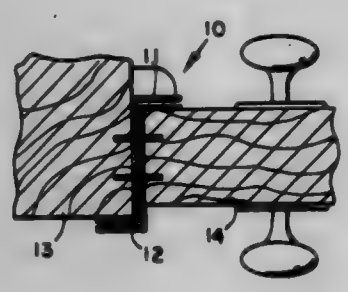
LOCK GUARD

Zdzislaw T. Dabrowski, 3301 Davison Ave., Erie, Pa. 16504

Filed Jun. 9, 1980, Ser. No. 157,899

Int. Cl.³ E05C *21/00*

U.S. Cl. 292—346 1 Claim



1. A lock guard for use with locks of the type having a strike plate attached to a door jamb and a latchbolt plate attached to a door, the lock guard comprising,

a first guard plate,

the first guard plate comprising an intermediate web (15) having a first edge (27), a second edge (28), a front surface (35), and a rear surface (15),

a first flange (16) attached to the intermediate web (15) at the first edge (27) thereof,

the said first flange (16) being disposed at a right angle to said intermediate web (15) and extending outwardly from the front and adapted to rest on a door jamb surface thereof,

a second flange (17) attached at a second edge (28) of the intermediate web (15) and adapted to overlie a doorstop,

said second flange (17) being disposed at a right angle to said intermediate flange (15) and extending rearwardly from the rear surface thereof,

an aperture (20) in said intermediate web (15) being disposed at approximately the midpoint thereof,

an aperture in said intermediate web (15),

the aperture having a first side and a second side, said aperture being adapted to receive the latchbolt of the doorlock,

a first tab (18) attached to the intermediate web (15) adjacent a first side of said aperture (20) and a second tab (19) attached to the intermediate web (15) adjacent a second side of said aperture (20),

said first tab and said second tab extending from said web in planes generally parallel to said first flange at said first side and said second side of said aperture (20), respectively,

a second guard plate,

said guard plate being identical in configuration to said first guard plate and comprising an intermediate web (15) having a first end (27), a second end (28), a front surface (35), and a rear surface (26),

a first flange (16) attached to the intermediate web (15) at the first end (27) thereof,

said first flange (16) being disposed at a right angle to said intermediate web (15) and extending outwardly from the front surface thereof,

a second flange (17) attached at a second end (28) of the intermediate web (15),

said second flange (17) being disposed at a right angle to said intermediate flange (15) and extending rearwardly from the rear surface thereof,

an aperture (20) in said intermediate web (15) being disposed at approximately the midpoint thereof,

the aperture having a first side and a second side,

said aperture adapted to permit the latch bolt of the doorlock to pass therethrough a first tab (18) attached to the intermediate web (15) adjacent a first side of said aperture (20) and a second tab (19) attached to the intermediate web (15) adjacent a second side of said aperture (20),

said first tab and said second tab being generally co-extensive with said first side and said second side of said aperture (20),

said first tab and said second tab extend generally perpendicular to said intermediate web (15).

4,345,788

PAPER ROLL LIFTING DEVICE

Philip T. Newton, 7430 Elliott St., Vancouver, British Columbia, Canada (V5S 2N6)

Filed Dec. 18, 1980, Ser. No. 217,748

Claims priority, application United Kingdom, Dec. 19, 1979, 7943777

Int. Cl.³ A47F *13/08*

U.S. Cl. 294—1 R 10 Claims

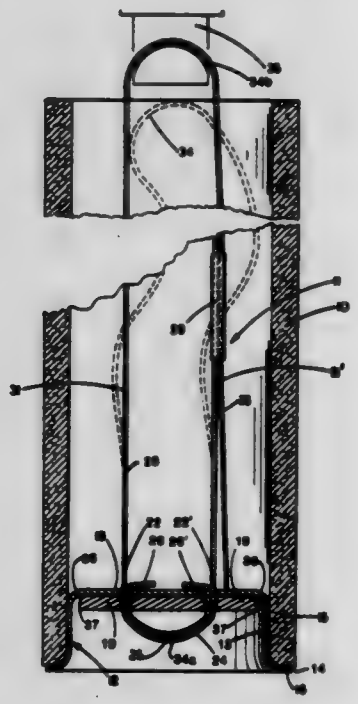
1. A lifting device for facilitating handling of relatively heavy rolls of sheet material wound about a cylindrical hollow-cored support and similar hollow-cored cylindrical objects comprising, in combination:

(a) a cup-shaped member having a relatively flat central base portion, an upstanding cylindrical wall, and an outwardly extending radial flange at the free end of said wall; said wall having an outer diameter at least equal to the inside diameter of the hollow-cored support such that said cup-shaped member is frictionally engaged with the hollow-core support upon force-fit insertion of said cup-shaped member into one end of the hollow-cored support with said radial flange in face-to-face engagement with the radial end wall of the hollow-cored support; said central base portion of said cup-shaped member having a pair of spaced openings extending axially therethrough;

(b) a relatively thick metallic washer positioned within said

cup-shaped member in face-to-face engagement with said flat central base portion; said washer having a pair of spaced openings extending axially therethrough and positioned for registration with the pair of openings formed in said central base portion of said cup-shaped member;

(c) a generally U-shaped saddle-like clip having an arcuate base portion and a pair of upstanding generally parallel legs; said clip being dimensioned so as to permit said legs to be projected upwardly through respective ones of the registered pairs of openings in said washer and said central base portion of said cup-shaped member with the portions of said legs extending beyond said flat central base portion being folded inwardly into face-to-face engagement with said flat central base portion for securing said washer and said flat central base portion together in face-to-face relation; and,



(d) a closed-loop lifting strap formed of resilient springy material characterized by its self-supporting characteristics; said strap having a pair of opposed arcuate loop ends and a pair of generally parallel loop sides and being dimensioned so that said pair of parallel loop sides respectively extend through the pairs of registered openings in said washer and said flat central base portion of said cup-shaped member so as to permit one of said opposed arcuate loop ends of said strap to engage said arcuate base portion of said saddle-like clip in face-to-face relation and the opposed one of said arcuate loop ends of said strap to protect outwardly beyond the opposite end of the hollow-cored support so as to permit selective engagement thereof with cargo hooks and the like.

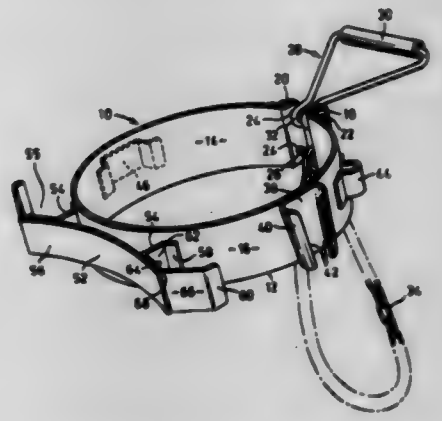
4,345,789

CARRYING DEVICE FOR CYLINDRICAL TANKS

Lawrence C. Garnett, Unionville, Canada, assignor to Enpoco Limited, Canada

Filed Oct. 30, 1980, Ser. No. 202,198
Int. Cl.[3] B65D *63/18*
U.S. Cl. 294—31.2 6 Claims

1. A detachable carrying device for use with a tank having a torch connected thereto by a flexible hose, said carrying device comprising a band formed to extend around at least a portion of said tank and having an inner surface engageable therewith, connecting means acting between spaced locations on said band and operable to cause relative movement therebetween to move said inner surface into engagement with said tank, a carrying handle connected to said band at one side of said band and a cleat attached to said band at the opposite side of said band and spaced from said spaced locations to provide a storage facility for said hose independent of the operation of said connecting means, said cleat having a pair of support



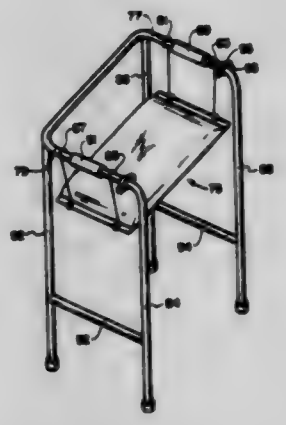
surfaces spaced outwardly from said band to provide a stable position for said tank when supported on said support surfaces.

4,345,790

WALKER WITH DETACHABLE SEAT

Martha D. Coe, 63 E. River Rd., Rumson, N.J. 07760

Filed Jul. 3, 1980, Ser. No. 165,701
Int. Cl.[3] A61H *3/04*; A47D *13/04*
U.S. Cl. 297—6 7 Claims



1. A walker described having left and right side frames connected by one or more front horizontal members, said side frames each comprising front and rear upright members connected at their upper ends by a top horizontal member, handgrips mounted near the center of each of said top horizontal members, a rectangular seat detachably suspended inside of said walker from said left and right top horizontal members, said seat being suspended at a convenient seating height by means of four S-shaped hooks which engage four holes located near the corners of said seat, in the metal frame there the two hooks attached to the forward or front side of said seat being hooked over said upper horizontal members in front of said handgrips and the other two hooks located to the rear of said handgrips, and a retaining means to prevent said two other hooks from sliding down said two rear upright members.

4,345,791

CHILD RESTRAINT SYSTEM FOR A MOTOR VEHICLE

Thomas J. Bryans, Canton; Richard H. Miller, Wayne, and Arthur W. Single, II, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

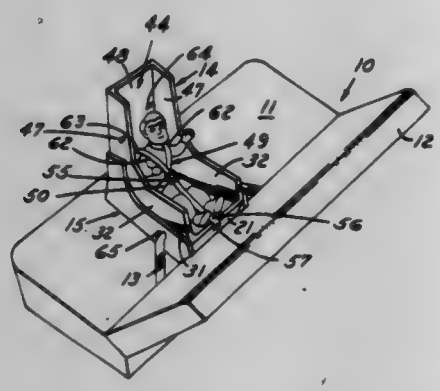
Filed Nov. 3, 1980, Ser. No. 203,007
Int. Cl.[3] A47C *1/08*; B60R *21/10*
U.S. Cl. 297—250 14 Claims

1. A child restraint system comprising:

a bolster adapted to be supported on a seat cushion of a vehicle seat and a child seat adapted to be supported on the bolster or directly on the seat cushion independently of the bolster,

both the bolster with the child seat supported thereon or the independently supported child seat being held on the seat cushion by a seat belt,

the child seat having a harness system integrated therewith to restrain a child independently of the seat belt,



interengageable means for coupling the child seat to the bolster in an infant carrier mode when the child seat is supported thereon,

and releasable latch means for latching the child seat to the bolster in the infant carrier mode.

4,345,792

SEAT RECLINING MECHANISM

Philip C. Shephard, Coventry, England, assignor to I.H.W. Engineering Limited, Warwick, England

Division of Ser. No. 940,965, May 8, 1978, Pat. No. 4,211,451, which is a continuation-in-part of Ser. No. 781,103, Mar. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 653,659, Jan. 30, 1976, abandoned. This application Jun. 1, 1979, Ser. No. 44,451

Claims priority, application United Kingdom, Feb. 7, 1978, 05235/75

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.³ A47C 1/025

U.S. Cl. 297—362 7 Claims



1. Seat reclining apparatus comprising:

a. first and second internally toothed coaxial ring gears, respectively fixedly connected to bench and back portions of said seat rotatable circularly with respect to one another about a common axis to rotate said seat back with respect to said seat bench, one of said ring gears having more teeth than the other;

b. a drive gear rotatable circularly coaxially with and spaced interiorly of said ring gears; said common axis of said drive and ring gears being stationary;

c. means for rotating said drive gear;

d. at least one planetary idler gear engaging said drive gear and both of said ring gears at a common angular position, each said planetary idler gear rotating about an axis which is parallel to the common axis of said drive and ring gears, each said planetary idler gear axis rotating circularly about said common axis as each said planetary idler gear is rotatably driven by said drive gear and concurrently engages said two ring gears thereby rotating said ring gears coaxially with respect to one another;

e. positioning means, interposed between said drive and ring gears, rotatable with said at least one planetary idler gear around said drive gear about said common axis for maintaining said at least one planetary idler gear in driving contact with said drive gear and said ring gears thereby enabling said ring gears to rotate coaxially with respect to one another; and

f. at least one carrier member movable relative to said shaft and extending between said at least one planetary gear and said positioning means, each said carrier member having a plurality of surfaces facing and adapted for contacting a portion of the periphery of a respective one of said at least one planetary gear and said positioning means to maintain said at least one planetary gear and said positioning means in spaced relationship as they rotate.

4,345,793

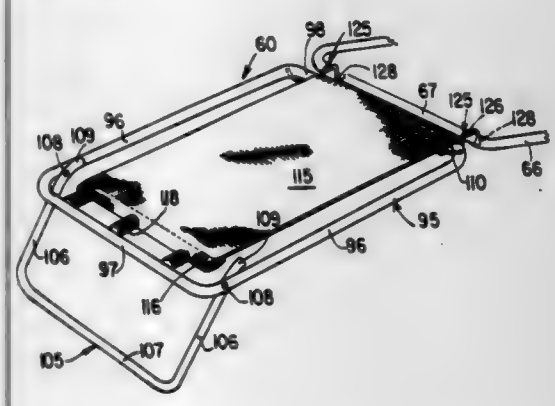
FURNITURE FOR CONVERTING A CHAIR OR SETTEE INTO A LOUNGE

Henry J. Duda, 3357 N. Newland, Chicago, Ill. 60634

Filed May 12, 1980, Ser. No. 149,030

Int. Cl.³ A47C 7/52, 9/00

U.S. Cl. 297—438 6 Claims



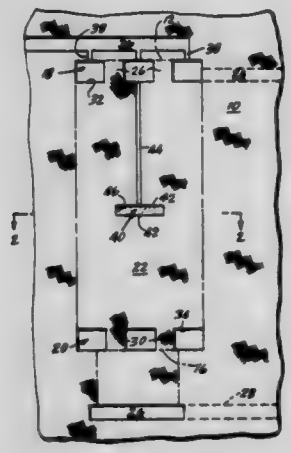
1. Furniture for converting a chair or settee into a lounge, said furniture comprising a generally rectangular frame, a leg assembly pivotally mounted to one end of said rectangular frame movable between a storage position wherein said leg assembly is adjacent said rectangular frame and substantially parallel thereto and a support position wherein said leg assembly extends away from and is supportive of said rectangular frame, a rod positioned parallel and adjacent to the other end of said frame and resiliently mounted thereto, spaced apart hooks each having one end thereof mounted on said rod and the other end thereof extending outwardly and away from the other end of said rectangular frame for removable connection to the associated chair or settee, said hooks each having an arcuate portion thereof passing underneath the associated rectangular frame and over and around said rod and in use pass over the associated chair or settee frame member and extend downwardly therebeyond and fabric connected to said one end of said rectangular frame passing over and around the other end of said frame for connection to said rod, whereby to maintain tension on said rod to maintain said rod in place when said furniture is connected to a chair or settee.

4,345,794

PLACEMENT OF EXPLOSIVE FOR FORMING IN SITU OIL SHALE RETORT

Harry E. McCarthy; Gordon B. French, both of Golden, Colo., and Melvin A. Cook, Salt Lake City, Utah, assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Nov. 10, 1980, Ser. No. 205,872
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 41 Claims



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed in a subterranean formation containing oil shale, the in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, the method comprising the steps of:

excavating an upper void and a lower void vertically spaced apart from each other in the subterranean formation, at least a portion of the upper void being substantially directly above the lower void, thereby leaving an intervening zone of unfragmented formation between the voids, the intervening zone having an upper horizontal free face adjacent the upper void and a lower horizontal free face adjacent the lower void;

preparing at least one generally cylindrical explosive chamber in the intervening zone between the excavated voids, the axis of such an explosive chamber being substantially perpendicular to the free faces, the length of the axis of such explosive chamber being less than the radius of such explosive chamber;

placing a load of explosive in such explosive chamber;

detonating the load of explosive in such explosive chamber for explosively expanding formation in the intervening zone toward both voids at the same time to produce a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort;

introducing an oxygen-supplying gas to the fragmented mass for sustaining a retorting zone in the fragmented mass and for advancing the retorting zone through the fragmented mass; and

recovering liquid and gaseous products of retorting from a lower portion of the in situ oil shale retort.

4,345,795

WIRE WHEEL WITH DISC BRAKE CLEARANCE

James J. Schardt, Dayton, Ohio, assignor to Dayton Wheel Products Company, Dayton, Ohio

Continuation of Ser. No. 947,033, Sep. 29, 1978, abandoned. This application Jul. 25, 1980, Ser. No. 172,311
Int. Cl.³ B60B *1/04*
U.S. Cl. 301—6 E 2 Claims

1. In a wire wheel particularly for fitting to a vehicle having a brake disc and a brake caliper extending around a portion of the edge of the disc,

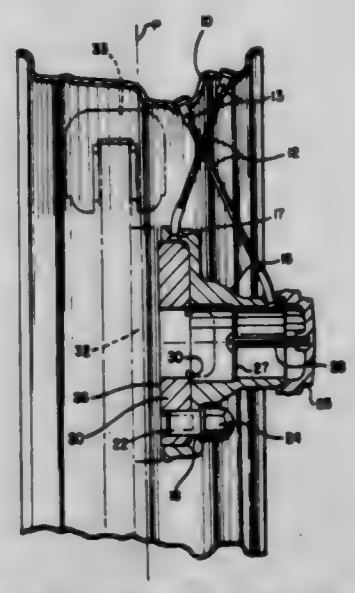
a circular rim having holes therethrough for receiving spoke nipples,

a hubshell having an inner mounting end with a cup-shaped interior and being less in radius than the spacing of the caliper from the wheel center and also having a smaller outer end,

said inner mounting end having radially extending holes adapted to receive spokes

a plurality of spokes extending between said rim and said hubshell supporting said rim concentric with said hubshell and with said hubshell located on the outer side of a plane which bisects the rim circumferentially,

said spokes having enlarged inner ends fitted into said holes in said hubshell and having outer ends terminating inwardly of said holes through said rim,



nipples extending through said holes in said rim and threaded to said outer ends of said spokes;

the improvement comprising

a removable supporting ring rigidly fitted into said cup-shaped inner mounting end of said hubshell covering the inner ends of said spokes and having a mounting face adjacent said plane and on the same side of said plane as said spokes, said ring being removable from said hubshell,

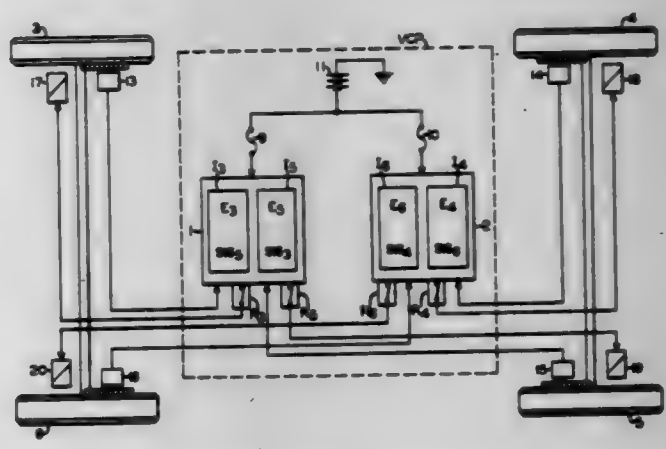
whereby said rim surrounds said brake disc and said caliper is clear of the rotating spokes and hubshell.

4,345,796

ANTI-SKID BRAKE CONTROL SYSTEM FOR CONTROLLING THE TWO PAIRS OF DIAGONALLY OPPOSED WHEELS OF A MOTOR VEHICLE

Erich Reinecke, Burgdorf, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,330
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933336
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—92 8 Claims



1. An anti-skid brake control system for a motor vehicle having at least two pairs of diagonally opposed wheels comprising,

(a) sensing means for producing output signals in accordance with the rotational behavior of each wheel of both pairs of diagonally opposed wheels,

(b) evaluating means for each wheel of both pairs of diagonally opposed wheels for producing control signals in accordance with the output signals,

(c) regulating means for each wheel of both pairs of diagonally opposed wheels for controlling the braking effort in accordance with the control signals, and

(d) switching means for each wheel of both pairs of diagonally opposed wheels for monitoring the evaluating means and for deactivating the regulating means of either of the two pairs of diagonally opposed wheels when a circuit malfunction occurs in their respective evaluating means.

4,345,797

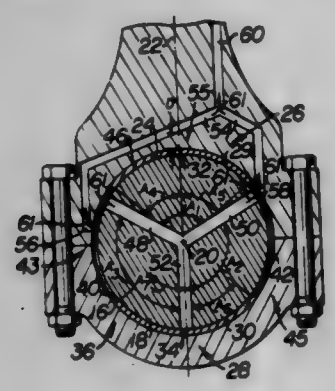
LUBRICATION SYSTEM FOR AN ENGINE

Benny Ballheimer, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 965,532, Nov. 20, 1978, abandoned. This application Feb. 1, 1980, Ser. No. 117,715

Int. Cl.³ F16C *3/14, 9/04*

U.S. Cl. 308—122 2 Claims



1. In a lubrication system (36) for an engine (10) having a crankshaft journal (18) having a central axis (20) and a normal axis (22), a connecting rod (14) connected to said journal (18) and a bearing (16) having first and second substantially opposed loading areas (26,28) and being positioned between the journal (18) and connecting rod (14), said first and second loading areas (26,28) being positioned at locations sufficient for receiving principal loads in response to movement of said connecting rod (14), said normal axis (22) intersecting said first and second loading areas (26,28) and said central axis (20), said lubrication system (36) having a first passage (38) in the journal (18) and second and third passages (40,42) disposed between the bearing (16) and said journal (18), said first passage (38) being positionable in fluid communication with said second and third passages (40,42) in response to rotation of said journal (18), the improvement comprising:

said first passage (38) having first, second and third passage portions (48,50,52) positioned at preselected angles (A_1.,A_2,A_3) one from the other and being in continuous fluid communication through said passage portions (48,50,52) with at least one of said second and third passages (40,42) in response to rotation of the crankshaft journal (18), said preselected angles (A_1,A_2,A_3) each being about 120°; and said second and third passages (40,42) each being spaced at preselected angles (A_4,A_7,A_5,A_6) relative to said central axis (20) from said points of intersection (32,34) of said normal axis (22) and said first and second loading areas (26,28), said preselected angles (A_4,A_5,A_6,A_7) each having a magnitude greater than 45° and less than about 60°.

4,345,798

REDUCTION IN WEAR OF CONTACTING SURFACES

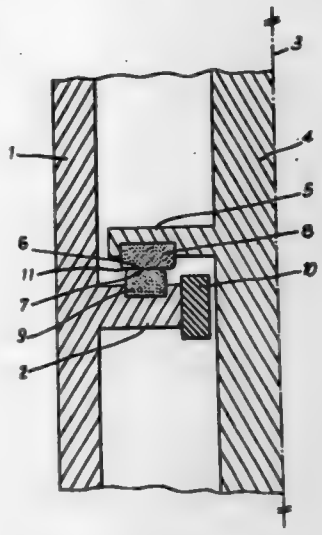
Abel C. Cortes, Le Perray en Yvelines, France, assignor to Compagnie Francaise des Petroles, Paris, France

Continuation of Ser. No. 66,104, Aug. 13, 1979, abandoned. This application Apr. 28, 1981, Ser. No. 258,258

Claims priority, application France, Aug. 11, 1978, 78 23809

Int. Cl.³ F16C *17/04, 33/24*

U.S. Cl. 308—160 10 Claims



1. A drilling turbine, comprising; a pair of surfaces adapted to be in sliding contact with one another, each said surface comprising a lapped diamonded surface, one of said surfaces being provided on a ring fixed to a rotor of said drilling turbine, the other said surface being fixed to a ring of a stator of said drilling turbine, said diamonded surface of one of said rings engaging said diamonded surface of the other of said rings.

4,345,799

BEARING ASSEMBLY

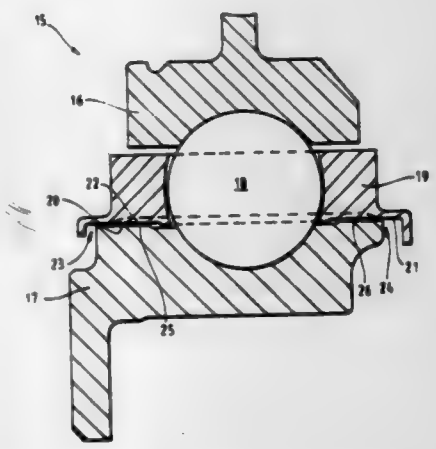
Brian Crofts, Littleover, England, assignor to Rolls-Royce Limited, London, England

Filed Feb. 11, 1981, Ser. No. 233,372

Claims priority, application United Kingdom, Apr. 8, 1980, 8011470

Int. Cl.³ F16C *33/66*

U.S. Cl. 308—187 6 Claims



1. A rolling element bearing comprising a radially inner bearing race, a radially outer bearing race and a plurality of rolling elements arranged within a bearing cage situated between the two races, the radially innermost cylindrical surface of the cage including at least one oil reservoir consisting of an annular recess, the radially outermost cylindrical surface of the innermost race including at least one radially extending lip arranged adjacent to at least one reservoir, and which lip during rotation of the bearing contacts the oil within the reservoir whereby the cage speed is adapted to be controlled by the inner race.

4,345,800

DOUBLE-ROW RADIALLY SELF-ALIGNING ROLLER BEARING

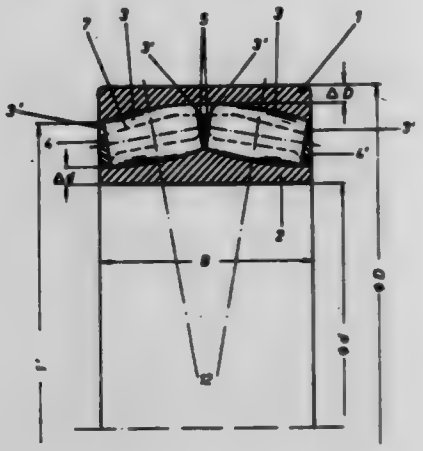
Heinrich Hofmann; Günther Markfelder, both of Schweinfurt, and Hans-Eberhard Bender, Biebertal, all of Fed. Rep. of Germany, assignors to Fag Kugelfischer Georg Schäfer & Co., Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 119,551

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906210

Int. Cl.³ F16C *19/28, 33/48*

U.S. Cl. 308—217 23 Claims



1. A double-row, radially self-aligning, roller bearing, comprising:

a radially inner race ring; a radially outer race ring which is radially outward of the radially inner race ring, wherein the race rings define races of the roller bearing;

two annular roller cages, one for each axial side of the roller bearing, and each roller cage being for retaining a respective annular array of rollers at an orientation wherein the rollers generally extend axially of the roller bearing and for guiding the rollers in their rotation;

each cage comprising an annular series of roller pockets, each pocket for retaining a roller therein; the pockets being defined, at the circumferential sides thereof, between a respective pair of circumferentially spaced apart pocket walls of the cage; each cage also being comprised of a pair of annular rings located at axially opposite sides of the pockets, and the pocket walls being attached at the ends thereof to the cage rings; the cage rings of each cage having respective inner and outer diameters selected such that in an axial view of the roller bearing, the projection of one cage ring onto the other cage ring does not intersect the other cage ring;

each cage being a molded unit having a generally axially extending form parting line, which parting line is arranged to generally meet the outer diameter of the axially more outward cage ring of each cage and to generally meet the inner diameter of the axially more inward cage ring of each cage; each roller having a respective central plane, and the angle between the form parting line and the roller central plane being greater than 90°;

two annular arrays of bearing rollers, with each annular array having rollers oriented therein with respective axes that generally extend axially of the bearing; each roller having a roller surface; the pocket walls of the pockets having, at least toward the axial ends of the roller surfaces, guide surface sections which are adapted, along the axial direction of the rollers but not in the circumferential direction of the rollers, to the profile of the respective roller surface, and the guide surface sections having narrow clearance with respect to the roller surfaces.

20. A double-row, radially self-aligning, roller bearing, comprising:

a radially inner race ring; a radially outer race ring which is radially outward of the radially inner race ring, wherein the race rings define races of the roller bearing and the race rings are developed without additional guide elements for the rollers;

two annular roller cages, one for each axial side of the roller bearing, and each roller cage being for retaining a respective annular array of rollers at an orientation wherein the rollers generally extend axially of the roller bearing and for guiding the rollers in their rotation;

each cage comprising an annular series of roller pockets, each pocket for retaining a roller therein; the pockets being defined, at the circumferential sides thereof, between a respective pair of circumferentially spaced apart pocket walls of the cage; each cage also being comprised of a pair of annular rings located at axially opposite sides of the pockets, and the pocket walls being attached at the ends thereof to the cage rings; the cage rings of each cage having respective inner and outer diameters selected such that in an axial view of the roller bearing, the projection of one cage ring onto the other cage ring does not intersect the other cage ring;

to annular arrays of bearing rollers, with each annular array having rollers oriented therein with respective axes that generally extend axially of the bearing; each roller having a roller surface; the pocket walls of the pockets having, at least toward the axial ends of the roller surfaces, guide surface sections which are adapted, along the axial direction of the rollers but not in the circumferential direction of the rollers, to the profile of the respective roller surface, and the guide surface sections having narrow clearance with respect to the roller surfaces;

the bearing has dimensions in accordance with the following approximation:

$$\left(\frac{B}{d/2+\Delta d}\right)^2 \approx 3\left(\frac{D/2-\Delta D}{d/2+\Delta d}\right)^2 - 2\left(\frac{D/2-\Delta D}{d/2+\Delta d}\right) - 1$$

wherein B is the axial width of the bearing, D is the outside diameter of the outer race ring of the bearing, d is inner diameter of the inner race ring of the bearing, ΔD is the minimum wall thickness at the outer race ring and Δd is the minimum wall thickness at the inner race ring.

4,345,801

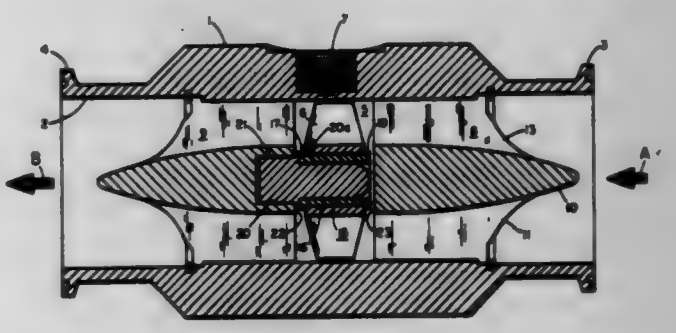
TURBINE METER ROTOR BEARING

Jeptha F. Randolph, Tulsa, and Donald L. Stout, Sand Springs, both of Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 19, 1980, Ser. No. 122,091

Int. Cl.³ F16C *33/20;* G01F *1/10*

U.S. Cl. 308—238 3 Claims



1. In a turbine meter having a bored housing and two aligned spider supports within the housing bore, a bearing for a rotor mounted between the two spider supports, including,

a rotor housing with an axial bore and adapted to be mounted between the spider support structures,

a bushing predominantly of polytetrafluoroethylene mounted axially in the rotor bore and terminating in flanges which capture the bushing within the rotor bore,

and a shaft of stainless steel mounted in the downstream of the two spider supports and having a shoulder facing upstream as the shaft extends axially of the bore of the turbine meter body and through the rotor bushing to a predetermined clearance from the face of the upstream spider support,

whereby the shaft shoulder forms the normal bearing surface for the downstream flange of the bushing and the upstream spider support face forms a bearing surface for the upstream bushing flange when flow is reversed through the meter.

4,345,802

DISPENSER

Egon Sorensen, Cheyenne, Wyo., assignor to AMF, Inc., White Plains, N.Y.

Filed Sep. 17, 1980, Ser. No. 188,155
Int. Cl.[3] A47B 57/00
U.S. Cl. 312—42 5 Claims



1. An overhead article dispenser comprising an elongated vertically positioned cabinet, an article dispensing base in said cabinet, a series of telescopically related boxes in said cabinet, said boxes being open at their top and front sides, means on the top and bottom of immediately adjacent boxes to keep them from separating when expanded with respect to each other, a reversible hoist mechanism on said cabinet to alternately expand and collapse said boxes with respect to each other sequentially one at a time, said boxes when fully expanded being raised off said base whereby articles to be dispensed can be positioned on said base as well as in said boxes, and said boxes when collapsed sequentially bottoming on said base and each other.

4,345,803

WORK STATION DESK

Peter J. Heck, 2801 Maple St., Michigan City, Ind. 46360

Filed Jun. 10, 1980, Ser. No. 158,283
Int. Cl.[3] A47B 21/00, 13/08
U.S. Cl. 312—194 20 Claims

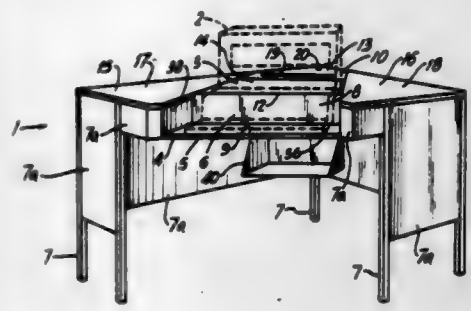
1. Work station desk in the form of a work station angular desk for an office machine comprising

a center section having a substantially rectangular center work surface portion provided along one side thereof constituted as a front side with a substantially straight front access edge of sufficient width relative to the width of an office machine operator to provide an unobstructed work station area thereat and to accommodate an office machine therein,

a pair of opposed diverging side sections angularly disposed to each other and to the center section, each side section having a corresponding substantially triangular side work surface portion adjacent to the center work surface portion,

a selectively shaped and sized office machine accommodating depression recess defined in the center work surface portion and extending forwardly peripherally to the front access edge to provide a lower level open recess area thereat relative to the level of the remainder of the center work surface portion,

compositely complemental cooperating selectively shaped and sized structurally supporting depression recess modifying filler means for removable insertion in the recess and



cooperating therwith to modify the extent and configuration of the open recess area thereat in conformity with the corresponding extent and configuration of an office machine being accommodated in the work station area, and

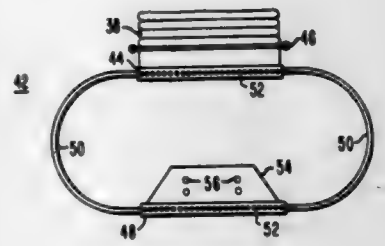
mounting means supporting the center section and side sections in the form of a free standing angular desk correspondingly having a sufficient width at the center work surface portion to provide such unobstructed work station area for an office machine operator situated at the front access edge and vicinally between the adjacent confines of the side work surfaces of the opposed diverging side sections angularly disposed to the center section and to accommodate an office machine in the work station area at such recess.

4,345,804

FLEXIBLE BUSHING CONNECTOR

Thomas J. Lanoue, Muncie, Ind., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1980, Ser. No. 164,872
Int. Cl.[3] H01R 11/01, 35/00
U.S. Cl. 339—9 E 5 Claims



1. A connector for providing a flexible electrical connection between a winding lead of a winding and a through electrical conductor of a bushing, comprising:

a first conductive member adapted for connection to the through electrical conductor;

a second conductive member;

a plurality of flexible conductors connecting said first conductive member to said second conductive member for mechanically absorbing the motion of said through electrical conductor and for electrically providing a plurality of current paths, said flexible conductors being symmetrically arranged such that a uniform electric field is produced when said flexible conductors are carrying current;

a connecting member carried by said second conductive

member and adapted for connection to said winding lead, said connecting member being located within a plurality of flexible conductors; and

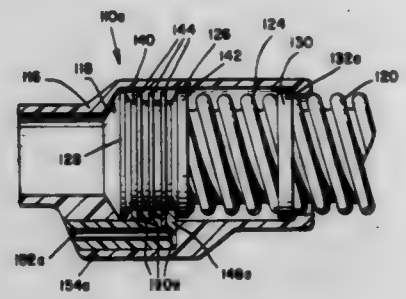
said flexible conductors constituting the only current-carrying conductors connecting said first and second conductive members.

4,345,805

SELF-SEALING VACUUM HOSE SWIVEL FITTING

Richard O. Finley, Redondo Beach, and David A. Stanwood, West Covina, both of Calif., assignors to Plastiflex Company International, Fountain Valley, Calif.

Filed Sep. 17, 1979, Ser. No. 76,285
Int. Cl.³ H01R *3/04*; F16L *33/00*
U.S. Cl. 339—16 R **9 Claims**



1. In a vacuum hose formed with an undulated wall, and a fitting securing said hose at least at one of its end portions to one of a wand or tank of a vacuum cleaner, the improvement in swivelably and pneumatically sealing said hose end portion to said fitting comprising:

a sealing surface on the interior of said fitting and swivelably and sealingly engaged under a spring bias with means terminating said hose end portion;

a generally annular flexible lip on said hose terminating means whose sealing engagement with said sealing surface is enhanced by vacuum created in said hose; and

means defining a groove in one of said fitting and said hose end portion and an annular member on the other of said fitting and said hose end portion and rotatably extending within said groove means to form a swivelable coupling therebetween, said swivelable coupling being spaced from said sealing surface and said hose terminating means and cooperating with said sealing surface to resiliently compress a portion of said undulated wall adjacent to said hose terminating means and thereby to form said spring bias and to urge said annular flexible lip into a maintained, positive, pneumatically sealing and swivelable contact with said sealing surface.

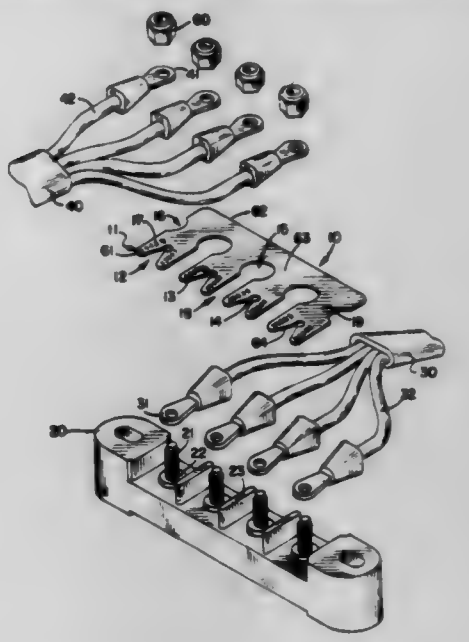
4,345,806

WIRE HARNESS RETAINER CLIP

John R. McHenney, Fort Wayne, Ind., assignor to International Harvester Co., Chicago, Ill.

Filed Aug. 15, 1980, Ser. No. 178,316
Int. Cl.³ H01R *31/08*
U.S. Cl. 339—19 **10 Claims**

1. A retainer clip means for securing electrical wire terminal lugs to a plurality of spaced and aligned electrical terminal contact posts of a junction block having a raised block isolating each contact post from the contact post adjacent thereto, the retainer clip means made from a substantially flat and relatively thin strip of an electrical non-conductive flexible material having a generally rectangular configuration, and having at least one terminal post snap-on tab means, said terminal post snap-on tab means being formed by a substantially V-shaped groove having side edges converging laterally, inwardly from a first side edge toward a second, substantially straight side edge of the flat strip, said terminal post snap-on tab means being further formed with a generally circular hole through a portion of the strip intermediate said first and second side edges, said hole intersecting said V-shaped groove at the bottom thereof and generally conforming in shape and cross-sectional area to the outer contour and cross-sectional area of a terminal contact post, the edges of the strip defining said V-shaped groove and said hole partially defining a pair of elongated, laterally extending terminal post snap-on tabs and the intersection of the V-shaped groove and the hole forming a restricted passageway means of a width smaller than the diameter of said hole in a non-flexed state of the tab means along the V-shaped groove for confining a terminal contact post in the hole, the terminal contact post being engageable with the tab



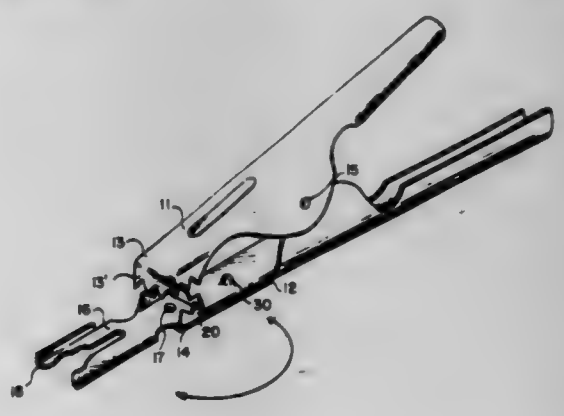
means along said converging side edges of the V-shaped groove leading toward the restricted passageway means thereby flexing the strip portions on opposite sides of the V-shaped groove defining said restricted passageway means and thereby permitting passage of a terminal contact post into the confines of the hole; and flexible shank means operatively interconnecting said terminal post snap-on tab means to a marginal portion of said strip contiguous to said second, substantially straight side edge laterally spaced from said first side edge.

4,345,807

BATTERY CABLE CONNECTOR

Joseph Shekel, New York, and Joseph DeStefano, Carle Place, both of N.Y., assignors to Auto-Line Manufacturing Corp., Copaigue, N.Y.

Continuation-in-part of Ser. No. 125,218, Feb. 27, 1980, abandoned. This application May 27, 1980, Ser. No. 153,156
Int. Cl.³ H01R *11/24, 27/00*
U.S. Cl. 339—31 B **14 Claims**



1. A battery cable connector for alternative attachment to a top terminal of a top terminal battery and a side terminal of a side terminal battery, comprising:

first and second gripping members;

first and second jaws on end portions of said first and second gripping members respectively;

a first hinge coacting with said first and second gripping members and effective to permit manual relative rotation of said first and second jaws between a closed state and an open state;

a support member;

a second hinge pivotally joining a first end of said support member to said first gripping member;

a side battery terminal clamp at a second end of said support member;

said support member being rotatable on said second hinge between a retracted position and at least one extended position;

said side battery terminal clamp extending beyond said first jaw in said extended position and available for connection to a side battery terminal;

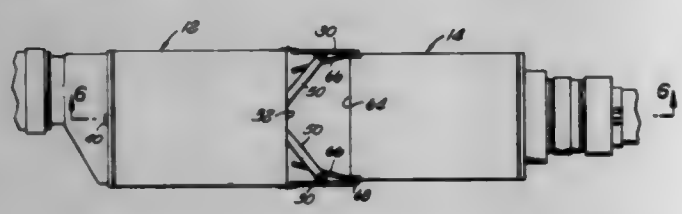
said side battery terminal clamp being retracted toward said first gripping member in said retracted position thereof, said retracted position permitting engagement of said first and second jaws with a top battery terminal.

4,345,808

ELECTRICAL CONNECTOR

Francis H. Ingham, Scottsdale, Ariz., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,525
Int. Cl.³ H01R *13/44, 13/60*
U.S. Cl. 339—40 **12 Claims**



1. An electrical connector comprising:

first and second mating connector members each comprising a shell having a forward mating end and a rear;

first closure means on said first connector member shell closing said forward mating end thereof when said connector members are unmated;

second closure means on said second connector member shell closing said forward mating end thereof when said connector members are unmated;

means for selectively shifting said first closure means to an open position; and

said first closure means, when in said open position, automatically opening said second closure means during mating of said first and second connector members.

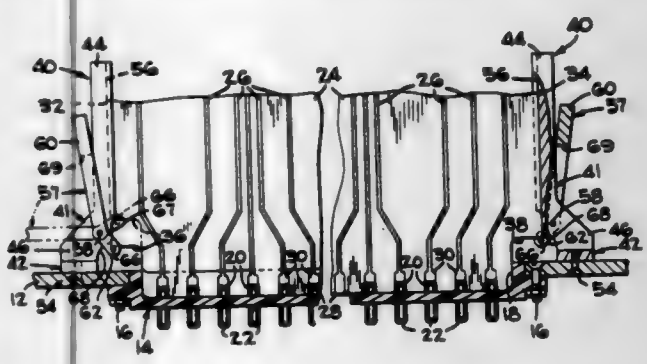
4,345,809

CIRCUIT BOARD EJECTOR AND GUIDE

Mary L. Sugden, 58 Michael Way, Santa Clara, Calif. 95051

Filed Jun. 9, 1980, Ser. No. 157,885
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—45 M **4 Claims**

1. A circuit board ejector for facilitating removal of a circuit board from a circuit board connector, said circuit board having an end edge, a plurality of conductive strip terminals adjacent the end edge, shoulder portions adjacent the end edge defining first and second abutment surfaces parallel to and spaced from said end edge, and first and second side edges extending from respective abutment surfaces and substantially perpendicular thereto, said connector forming a slot and having a plurality of contacts within said slot for frictionally engaging said strip terminals, said ejector comprising an elongate body and a base rigid with said body, means for affording attachment of said base adjacent on end of said connector, said body defining a channel groove for alignment with said connector slot, said channel groove having a width sufficient to slidably receive said first side edge therein so as to guide said circuit board therein, said channel groove having a depth less than said abutment surface, said body having an offset portion adjacent said base so as to form a clear space between said base and the inner end of said channel groove, a lever having a bifurcated portion defining two furcations that are spaced apart so as to flank said offset portion, said furcations having extremities, means including a pivot extending through said furcations remote from said extremities for mounting said lever to said body for pivoting movement about a pivot axis in said offset portion, a pin mounted on said furcations at said extremities



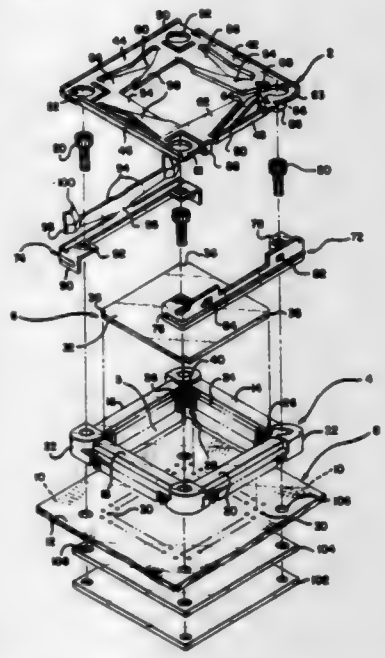
and spanning the space there between to define an engaging portion remote from said pivot axis and disposed in said clear space in alignment with said channel groove for engagement with said first abutment surface, said lever having a handle portion opposite said engaging portion and accessible from the side of said elongate body opposite said channel groove so that application of force on said handle portion in a direction substantially parallel to said channel groove and toward said base causes said engaging portion to contact said abutment surface within said clear space and move said circuit board along said channel away from said connector slot.

4,345,810

INTEGRATED CIRCUIT CONNECTOR

Johannes C. W. Bakermans, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 16, 1980, Ser. No. 197,402
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—75 MP **9 Claims**



1. A clamping lid for an electrical connector of the type comprising a rectangular housing having a rectangular well extending into one major surface thereof, said well being dimensioned to receive an IC package of the type comprising a rectangular substrate, an integrated circuit chip mounted on said substrate, and terminal pads on one surface of said substrate, said terminal pads being arranged in rows extending

alongside margins of said one surface, said housing having contact terminals therein for contacting said terminal pads, said lid being intended for assembly to said housing in covering relationship to said IC package and having hold-down spring means engageable with said IC package for clamping said IC package against said contact terminals, said clamping lid comprising:

a flat stamped and formed resilient sheet metal member dimensioned to be mounted on said housing in covering relationship to said IC package, said member having four side rails extending between the four corners of said sheet metal member,

at least two of said side rails, which are opposite, each having a pair of cantilever hold-down springs integral therewith, said cantilever springs extending from two adjacent corners of said member towards each other and having overlapping free ends, said springs extending in opposite oblique directions, with respect to the plane of said member, from one side of said member whereby,

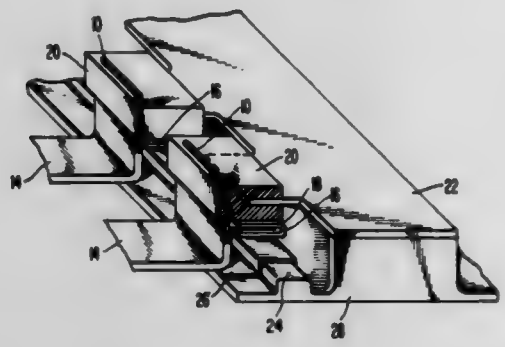
upon placement of said IC package in said well and subsequent placement of said lid on said housing with said one side of said housing opposed to said IC package, said cantilever springs bear against said IC package and are flexed towards the plane of said lid thereby imposing clamping forces on said IC package.

4,345,811

FLAT RIBBON CABLE SHIELD

Lubomir J. Volka, Holbrook, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 27, 1980, Ser. No. 134,522
Int. Cl.³ H01R *4/66, 23/12, 23/38*
U.S. Cl. 339—143 R **15 Claims**



1. A shielding system for electronic equipment comprising:

an equipment enclosure means;

circuit mounting means mounted within said equipment enclosure means;

connector joining means included on said circuit mounting means;

a cable connector means attached to said connector joining means;

a cable means connected to said cable connector means;

a continuous electrically conductive shielding material covering said cable means;

a protective coating over said continuous electrically conductive shielding material;

a section of said electrically conductive shielding material folded back upon said protective coating;

an electrically conductive clip crimped upon said folded back section of said electrically conductive shielding material;

means attaching said electrically conductive clip to said cable connector means; and

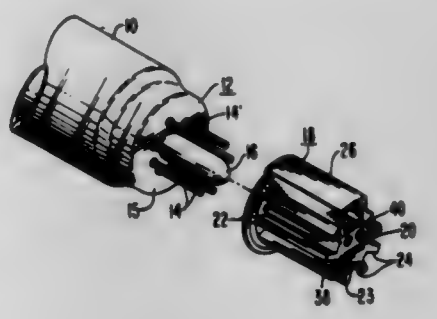
an electrically conductive protruding means on said equipment enclosure means adjacent to said connector joining means, wherein the electrically conductive protruding means contacts said electrically conductive clip upon the joining of said connector means to said connector joining means, thereby providing a cable means shielding system which is operator separable from said equipment enclosure means.

4,345,812

ELECTRON TUBE BASE WITH FLOW CHANNELS THEREIN

Myron H. Wardell, Jr., Lititz, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 28, 1980, Ser. No. 153,908
Int. Cl.³ H01R *33/74*
U.S. Cl. 339—144 R **5 Claims**



1. A base member adapted to be disposed over an array of lead-in conductors and an exhaust tubulation of an electron tube, said base member comprising:

a. a tubular housing having an open proximal end for receiving said exhaust tubulation therein and a closed distal end,

b. a flange extending outwardly from said housing at said proximal end,

c. an array of apertures through said flange for receiving said array of conductors therethrough,

d. a recess in said flange communicating with said open end and encompassing at least one of said apertures,

e. an adhesive injection aperture through the wall of said housing at its distal end, and

f. an open longitudinal channel in the internal surface of said tubular housing communicating with said injection aperture and extending from near said distal end of said housing to said recess, wherein said housing has an internal diameter which is only slightly larger than the external diameter of said exhaust tubulation, whereby said tubulation is received in said housing in a relatively close manufacturing tolerance fit with the resulting radial clearance being so small as to impede excessive flow of adhesive material along said tubulation from the distal end of said housing to said recess and whereby as a result thereof said channel provides a preferential flow path along the length of said housing and into said recess for adhesive material injected into said adhesive injection aperture.

4,345,813

KEYABLE CONNECTOR-HEADER ASSEMBLIES FOR MULTIPLE CONDUCTOR CABLES

David A. Hatch, Sherborn, Mass., assignor to Pintek, Inc., Newton Upper Falls, Mass.

Filed Mar. 24, 1980, Ser. No. 133,426
Int. Cl.³ H01R *23/64*
U.S. Cl. 339—184 M **16 Claims**

1. An electrical connection system comprising:

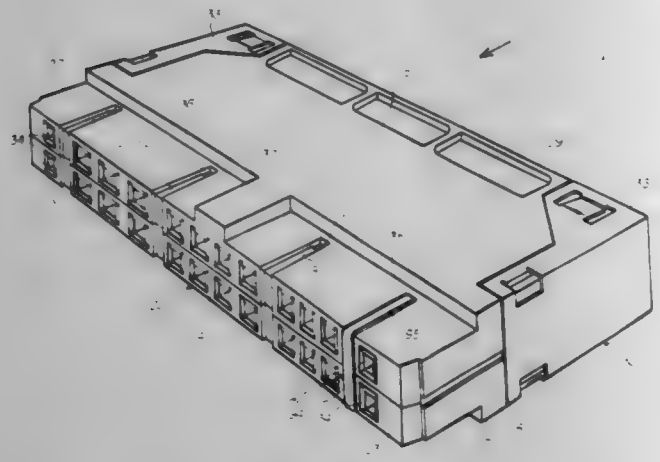
a plug-in connector housing adapted to receive a plurality of electrical signal wires;

a plurality of connector contacts retained by said housing and each shaped and arranged for connection to one of the signal wires;

a header body shaped and arranged to receive said connector housing;

a plurality of header contacts retained by said body and each positioned so as to engage one of said connector contacts upon reception of said connector housing by said header body;

connector keying means selectively disposed at any of a plurality of predetermined positions on said housing; and header keying means selectively disposed at any of a plurality of given positions on said header body and each corresponding to one of said predetermined positions on said



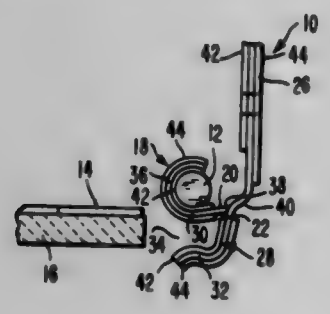
connector housing, and wherein when disposed at any corresponding pair of said predetermined and given positions said connector keying means and said header keying means are shaped and arranged to engage and prevent engagement between said connector contacts and said header contacts.

4,345,814

SOLDER-BEARING LEAD HAVING SOLDER FLOW-CONTROL STOP MEANS

Ernst A. Gutbier, North Andover, and Paul J. Ouellette, Amesbury, both of Mass., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Feb. 4, 1981, Ser. No. 231,569
Int. Cl.³ H01R *9/06*
U.S. Cl. 339—275 R **10 Claims**



1. A solder-bearing lead, which comprises:

an elongated stem having a solderable portion on at least one surface of the stem;

first and second resilient clamping fingers extending in opposed spaced relationship from the elongated stem to define a gap for the reception of a substrate therebetween, the first resilient clamping finger defining an electrical contact finger having opposite sides, a first surface for engaging a contact pad on the substrate, and a second opposite surface, the second surface forming a continuation of the one surface of the stem and also having a solderable portion;

a solder preform attached to the solderable portion of the second surface of the electrical contact finger; and

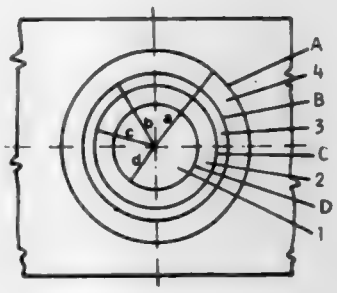
a solder flow-control stop on the second surface of the electrical contact finger closely adjacent the solder preform for precluding flow of molten solder from the solder preform along the second surface of the contact finger to the stem during a soldering operation, and for directing flow of the molten solder essentially directly over at least one of the opposite sides of the contact finger by gravity to the contact pad engaged by the first surface of the contact finger.

4,345,815

PERFECT GEODESIC LENS FOR WAVEGUIDES AND OPTICAL PROCESSOR OF UNIDIMENSIONAL SIGNALS EMPLOYING SAID LENS

Giancarlo Righini, Florence; Stefano Sottini, Vaglia, and Vera Russo, Florence, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Italy

Filed Aug. 3, 1979, Ser. No. 63,594
Claims priority, application Italy, Aug. 7, 1978, 9555 A/78
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.18 **6 Claims**



1. Geodesic lens for optical waveguides characterized in that it is formed by four concentric zones (4,3,2,1), of which the two external ones (4,3), having an external radius a and b, are portions of a plane surface, the central zone (1), having a radius d, represents the actual lens, and the remaining zone (2), having an external radius c, is a connecting portion without discontinuities with the contiguous portions (1,3), having the external radius respectively equal to d and b, said connecting zone (2) being described by its meridian curve $l(\rho)$, which can be arbitrarily chosen, provided that $l'(\rho)$ be continuous for $d \leqq \rho \leqq c$ and match with continuity the $l'(\rho)$ of the surface under the parallel of radius d for $\rho = d$ and the $l'(\rho)$ of the plane for $\rho = c$, said central zone (1) being described by its meridian curve $l(\rho)$, obtained by integrating the following formula:

$$l'(\rho) = -\frac{d}{\pi} \square_{\arccos(\rho/d)} \frac{F'(\psi)\cos\psi}{\sqrt{d^2\cos^2\psi - \rho^2}}\, d\psi$$

where $F'(\psi)$ is the derivative of the function $F(\psi)$ expressing the longitude travelled by a ray in the surface under the parallel d, said parameters a, b, d having been selected according to the optical characteristics of the lens to be obtained, taking into account the formulae: focal length $f = ab/(a+b)$, aperture $= 2d$, linear magnification $X = b/a$ (or $X = a/b$, according to the position of the image (9) with respect to the source (10)).

4,345,816

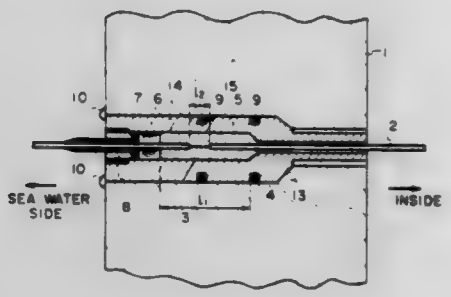
OPTICAL FIBER INTRODUCING EQUIPMENT FOR OPTICAL SUBMERGED REPEATER

Taiichiro Nakai, Fujisawa; Masanori Sato, Machida; Kahei Furusawa, Kamifukuoka; Hitoshi Yamamoto, Kawasaki; Yoshihiko Yamazaki, Kashiwa, and Yoshihiro Ejiri, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 33,232, Apr. 25, 1979, abandoned. This application May 13, 1981, Ser. No. 263,120
Claims priority, application Japan, May 9, 1978, 53-54042
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **9 Claims**

4. In combination, a small-diametered elongated metal cylinder for introducing an optical fiber into the housing of a submarine repeater, the metal cylinder having an axial bore for receiving an optical fiber and an outer diameter dimensioned to fit in a watertight manner into an elongated opening in a hous-

ing for the submarine repeater open to the exterior of the housing, a coated optical fiber extending axially through said axial bore and out thereof at both ends of the metal cylinder, the axial bore having a portion thereof with an enlarged diameter several times larger than the outer diameter of the coated optical fiber and open at an end of the metal cylinder disposed in said elongated opening toward the exterior of the housing of the submarine repeater, the optical fiber having an uncoated portion disposed in said axial bore portion with an enlarged diameter and of less length than an axial length of said axial bore portion, an adhesive having a substantially fixed volume when hardened disposed in said portion of the axial bore filling



the space between the optical fiber and the bore portion of enlarged diameter and covering the uncoated portion of the fiber, the adhesive terminating axially spaced from said end of the cylinder, a chemically stable liquid having excellent wetting ability and low in compressibility in said portion of the axial bore in contact with an end of the adhesive toward said end of the metal cylinder and filling a length of said portion of the axial bore, a packing holding the liquid in said bore portion, a packing gland holding said packing in position and disposed to preclude water entering the bore portion when the metal cylinder is disposed in a submarine repeater which is submerged, and the optical fiber extending through the packing and packing gland.

4,345,817

WIDE ANGLE DISPLAY DEVICE

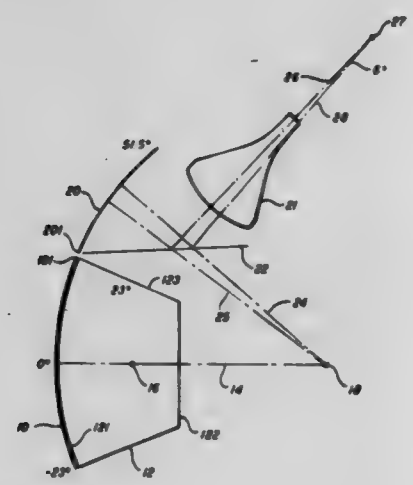
Eric C. E. Gwynn, Hove, England, assignor to The Singer Company, Binghamton, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,903

Claims priority, application United Kingdom, Jan. 29, 1980, 8003002

Int. Cl.³ G02B *27/14*

U.S. Cl. 350—174 **10 Claims**



1. A visual display arrangement for a simulator to develop improved realism in a projected scene as viewed by an observer, comprising:

first and second wide angle display devices in each of which the screen of a CRT is reflected into a concave mirror by a beam splitter through which the observer sees the image of the CRT screen in the mirror,

the concave mirrors of the first and second display devices being positioned contiguously to form a composite visual display scene, and

the CRT axis of at least one display device being so tilted that the CRT screen images as observed in the adjacent concave mirrors are substantially continuous.

4,345,818

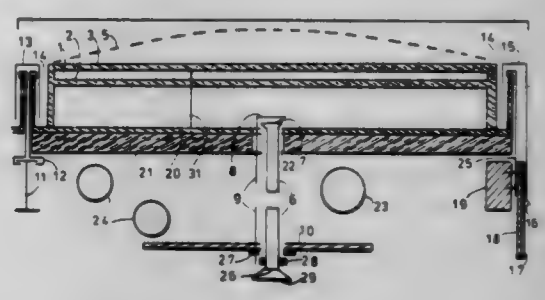
SOLAR DIODES

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Continuation-in-part of Ser. No. 104,305, Dec. 13, 1979, abandoned. This application Jun. 17, 1980, Ser. No. 160,371

Int. Cl.³ G02B *17/00, 27/00*

U.S. Cl. 350—259 **35 Claims**



1. A system for using solar radiation within a building while preventing undesirable energy exchange comprising: fixed relatively short focal length radiation concentrating means of thin cross section of the Fresnel type for concentrating said solar radiation, said concentrating means being of large area and forming part of the weatherproof roof or wall surface of said building or being enclosed beneath a transparent weatherproof roof or wall surface of said building; and small area light guide means for transmitting said concentrated radiation through building structure and/or insulation means of said building; and thereby directing and dispersing said radiation to useful locations within said building, the short focal length of said radiation concentrating means permitting installation of said system in wall or roof region of said building without occupying excessive internal volume of said building.

4,345,819

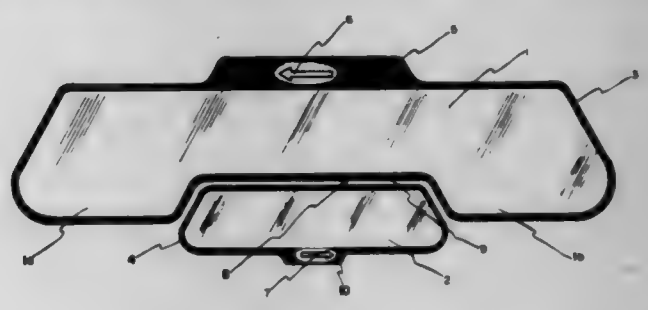
MULTI-ANGULAR PANORAMIC AUTOMOTIVE REAR VIEW MIRROR

Antony-Euclid C. Villa-Real, 2512 Capistrano Ave., Las Vegas, Nev. 89121

Filed Jan. 29, 1980, Ser. No. 116,499

Int. Cl.³ B60R *1/08*; G02B *5/08*

U.S. Cl. 350—304 **23 Claims**



1. A rearview mirror system for a vehicle adapted to be mounted on the vehicle and including at least a pair of adjustably interconnected framed mirrors which can be moved simultaneously or independently relative to each other, including an upper or main mirror adjustably connected to at least one lower or dependent mirror to collectively vary the reflective angles thereof, and wherein the lower section of the main mirror has a structural indentation or cut-out portion to accommodate part of the lower dependent mirror, the combination of said mirrors altogether provide adjustable rearward and

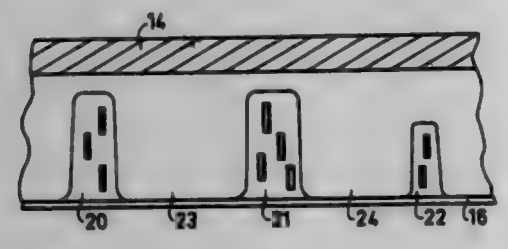
lateral field of vision without substantial obstruction to the forward field of vision.

4,345,820

VISUAL DISPLAY APPARATUS FOR ELECTRICAL SIGNALS RECORDED ON A MAGNETIC MEDIUM

Jacques Chabrolle, Bagnolet, France, assignor to "L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques", Bagnolet, France

Filed May 12, 1980, Ser. No. 148,835
Claims priority, application France, May 10, 1979, 79 11854
Int. Cl.³ G02F *1/01*
U.S. Cl. 350—362 **7 Claims**



1. An easily erasable visual memory apparatus for visual display of signals recorded on a magnetic medium comprising:

a rigid block of non-magnetic transparent material;

a dimple formed in said rigid block and containing a liquid suspension;

a supple membrane closing said dimple;

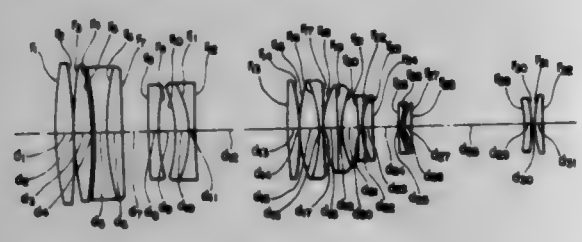
said liquid suspension comprising magnetic particles susceptible to being displaced by the fields of each magnetic signal of said magnetic medium, said magnetic medium being placed against said supple member to form said visual display and wherein said supple member is adapted to erase said display when a finger is passed over said membrane.

4,345,821

ZOOM LENS

Satoru Tachihara, Wako, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,492
Claims priority, application Japan, Oct. 12, 1979, 54-131526
Int. Cl.³ G02B *15/16*
U.S. Cl. 350—427 **2 Claims**



1. A zoom lens system comprising, in order from the object side, a first lens group having a positive refractive power, a second lens group having a negative refractive power, a third lens group having a positive refractive power and a fourth lens group having a negative refractive power, wherein the second lens group is movable along the optical axis to thereby vary the focal length of the zoom lens system and the third lens group is movable along the optical axis to thereby maintain the image position constant, and the fourth lens group is composed, in order from the object side, of a negative lens, a positive lens, at least one negative lens, and at least one positive lens, the zoom lens system satisfying:

	F = 186.0 ~ 390.0		F_{NO} = 4.50		
	R	D			
1	216.203	11.00	N_1	1.48749 ν_1	70.1
2	−368.288	0.10			
3	210.000	11.55	N_2	1.48749 ν_2	70.1
4	−300.000	1.05			
5	−289.670	8.22	N_3	1.77250 ν_3	49.6
6	159.718	9.50	N_4	1.48749 ν_4	70.1
7	∞	Variable			
8	2539.340	6.50	N_5	1.61800 ν_5	63.4
9	140.152	9.24			
10	−102.000	9.76	N_6	1.80518 ν_6	25.4
11	−62.234	2.89	N_7	1.61800 ν_7	63.4
12	636.576	Variable			
13	400.000	7.09	N_8	1.61800 ν_8	63.4
14	−117.000	0.10			
15	89.240	11.82	N_9	1.64328 ν_9	47.9
16	−89.240	2.99	N_{10}	1.74077 ν_{10}	27.8
17	−2221.231	0.10			
18	54.000	8.25	N_{11}	1.61800 ν_{11}	63.4
19	921.767	2.68	N_{12}	1.68893 ν_{12}	31.1
20	48.800	Variable			
21	−155.000	2.49	N_{13}	1.81600 ν_{13}	46.6
22	89.373	0.10			
23	39.688	6.06	N_{14}	1.61293 ν_{14}	37.0
24	199.610	16.27			
25	189.738	2.22	N_{15}	1.83481 ν_{15}	42.7
26	29.702	1.26			
27	34.227	4.27	N_{16}	1.67270 ν_{16}	32.1
28	328.301	71.17			
29	−46.966	3.40	N_{17}	1.83481 ν_{17}	42.7
30	−85.000	2.38			
31	75.123	4.50	N_{18}	1.61293 ν_{18}	37.0
32	317.405				

Variable Distances			
f	186.0	270.0	390.0
d_7	1.85	34.37	67.16
d_{12}	76.02	37.98	1.94
d_{20}	8.39	13.91	17.17

$|f_2| = 98.83 = 0.53\ f_W$
$f_0/f_{123} = 2.19$
$N_L = 1.81600$
$R_L = -155.0 = 1.42\ f_4$

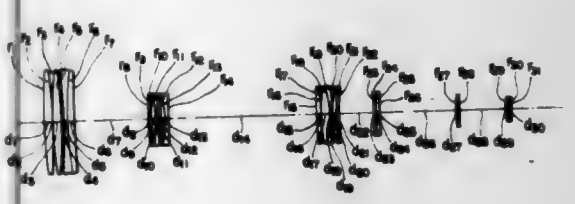
wherein f is the focal length, R is the radius of curvature, D is the thickness on the optical axis and the spacing between lenses, N is the refractive index at the d-line, and ν is the Abbe number of the corresponding lens.

4,345,822

TELEPHOTO ZOOM LENS

Satoru Tachihara, Wako, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,494
Claims priority, application Japan, Oct. 12, 1979, 54-131527
Int. Cl.³ G02B *15/16*
U.S. Cl. 350—427 **2 Claims**



1. A compact super telephoto zoom lens comprising, in order from the object side, a first lens group having a positive refractive power, a second lens group having a negative refractive power, a third lens group having a positive refractive power and a fourth lens group having a negative refractive power, said second lens group being movable along the optical axis to thereby vary the focal length and said third lens group being movable along the optical axis to thereby maintain the image position constant, said fourth lens group being composed, in order, of a negative lens, a positive lens, at least one positive lens and at least one negative lens, said zoom lens satisfying:

	f = 254.0~980.0		F_{NO} = 10.0			
	R	D				
1	500.000	7.09	N_1	1.49700	ν_1	81.3
2	−646.382	0.22				
3	322.505	5.09	N_2	1.49700	ν_2	81.3
4	−696.315	1.75				
5	−680.500	4.28	N_3	1.74400	ν_3	44.7
6	360.000	5.81	N_4	1.56873	ν_4	63.2
7	1966.422	Variable				
8	605.547	2.65	N_5	1.49700	ν_5	81.3
9	174.750	3.55				
10	−189.000	2.80	N_6	1.61800	ν_6	63.4
11	∞	2.39				
12	−237.849	3.68	N_7	1.74077	ν7	27.8
13	−99.34	3.00	N_8	1.51821	ν_8	65.0
14	957.523	Variable				
15	816.500	4.91	N_9	1.49700	ν_9	81.3
16	−172.273	0.10				
17	270.359	7.09	N_{10}	1.61800	ν_{10}	63.4
18	−105.738	3.36	N_{11}	1.64769	ν_{11}	33.8
19	−755.188	0.10				
20	144.780	3.68	N_{12}	1.69680	ν_{12}	55.5
21	445.920	2.64	N_{13}	1.74077	ν_{13}	27.8
22	200.000	Variable				
23	−288.350	2.01	N_{14}	1.77250	ν_{14}	49.6
24	143.660	0.10				
25	101.000	4.10	N_{15}	1.59270	ν_{15}	35.3
26	868.000	70.28				
27	814.439	3.57	N_{16}	1.80518	ν_{16}	25.4
28	∞	43.07				
29	79.199	2.01	N_{17}	1.74077	ν_{17}	27.8
30	122.016	2.17	N_{18}	1.83481	ν_{18}	42.7
31	58.575					

Variable Distances

f	254.0	640.0	980.0
d_7	1.83	134.31	232.82
d_{14}	215.34	65.08	0.79
d_{22}	21.06	38.85	4.62

$|f_2|$ = 148.41 = 0.58 f_W
f_0/f_{123} = 2.59
N_L = 1.77250
R_L = −288.350 = 1.91 f_4

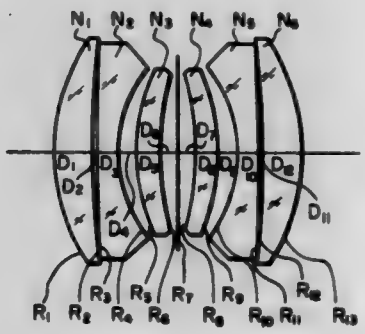
where f is the focal length, R is the radius of curvature, D is the thickness on the optical axis or the spacings between lenses, N is the refractive index at the d-line, and ν is the Abbe number of the respective lens.

4,345,823

REPRODUCTION LENS HAVING A SIX GROUP SIX ELEMENT COMPOSITION A LARGE VIGNETTING FACTOR AND A COMPACT SIZE

Hiroichi Shinohara, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Mar. 12, 1980, Ser. No. 129,739
Claims priority, application Japan, May 30, 1979, 54-66147
Int. Cl.³ G02B 9/62
U.S. Cl. 350—464 1 Claim



1. A reproduction lens assembly comprising: two groups of three elements for providing a large aperture efficiency and a compact size formed by arranging a lens system symmetrically with respect to a stop, wherein said two groups of three elements include a first pair of convex Meniscus lenses having a concave surface thereof directed toward said stop, said stop being positioned between the lenses of the first pair of Meniscus lenses, a second pair of concave Meniscus lenses having a concave surface thereof directed toward the stop and a third pair of convex meniscus lenses having a concave surface thereof directed toward the stop with a small air gap being formed between the third pair and second pair of Meniscus lenses, wherein r_1 denotes a surface of a stop, r_2, r_3 . . . r_7 denote a radius of curvature of each of said lenses, respectively, d_1 denotes the distance between the stop and each of said lenses of the first pair of lenses, d_2, d_3 . . . d_6 denote the distance between each surface of said lenses, respectively, n_1, n_2, n_3 denote a refractive index of each of said lenses, respectively, f_1, f_2 . . . f_7 denote a focal length up to each surface, respectively, and f denotes a composite focal length, and wherein the following conditions are met:

$$0.00981\,f < d_1 < 0.01962\,f \tag{1}$$

$$1.32 < \frac{f}{f_3} < 1.40, \tag{2}$$

$$-3.1 < \frac{f}{f_5} < -2.7 \tag{3}$$

$$0.01717\,f > d_3 \tag{4}$$

$$-0.1325\,f < r_4 < -0.1227\,f \tag{5}$$

$$0 < n_3 - n_2 < 0.07 \tag{6}$$

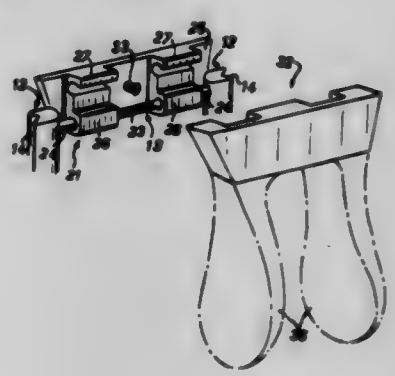
$$0.108\,f > d_1 + d_2 + d_3 + d_4 + d_5 + d_6. \tag{7}$$

4,345,824

EYEGLASS FRAMES OPENABLE AT THE BRIDGE

Jean-Michel Daubignard, Villiers-sur-Marne, France, assignor to Essilor International "Cie Generale d'Optique", Creteil, France

Filed Jun. 24, 1980, Ser. No. 162,636
Claims priority, application France, Jun. 27, 1979, 79 16524
Int. Cl.³ G02C 1/00, 1/08, 5/12
U.S. Cl. 351—98 7 Claims

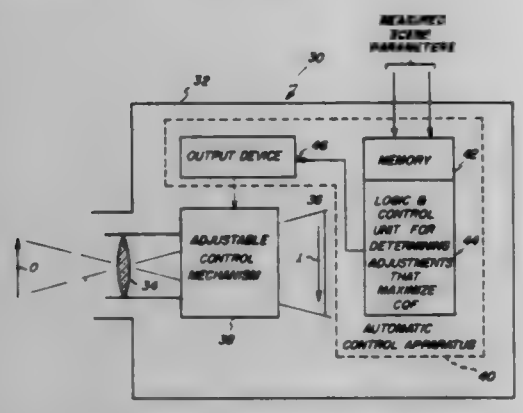


1. In an eyeglass frame a frame front comprising two rims adapted to receive lenses, a pair of substantially parallel pins interconnecting said rims, each of said rims having an inner open end facing each other and defining a slot between said pins, a first of said pins forming a pivot pin permanently pivotally mounting a latching member and releasable latching means operatively arranged between said latching member and a second of said pins.

4,345,825
APPARATUS FOR AUTOMATIC CONTROL OF A PHOTOGRAPHIC CAMERA

Lawrence J. Matteson, Rochester; Roger J. Greenwald, Churchville, and Carl N. Schauffele, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,260
Int. Cl.[3] G03B 7/091
U.S. Cl. 354—23 D 11 Claims



1. In a photographic camera having a mechanism for adjusting one or more of the following camera functions: aperture size, shutter speed, flash output, and lens extension, an automatic camera control apparatus responsive to measured scene parameters including at least subject brightness and subject distance, for adjusting the mechanism, said control apparatus comprising:

logic means including a memory unit, said memory unit containing signals representing a mapping function defining the adjustment of said mechanism for particular combinations of values of scene parameters said adjustment being determined by maximizing an objective figure of merit relating measurable photographic parameters to subjectively perceived picture quality;

means for measuring the values of such scene parameters for a particular scene to be photographed;

means controlled by said measuring means for supplying said logic means with signals representing the measured values;

said logic means being responsive to said signals representing the measured values for producing signals representing corresponding values for the adjustment of the mechanism determined by said mapping function; and

control means responsive to the signals produced by said logic means for adjusting the mechanism to the produced values.

4,345,826
SHUTTER SPEED SETTING AND DISPLAY APPARATUS

Akira Takahashi, and Masanori Hashimoto, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Japan

Continuation of Ser. No. 928,682, Jul. 27, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,404
Claims priority, application Japan, Jul. 27, 1977, 52-90169; Sep. 20, 1977, 52-113030; Sep. 20, 1977, 52-113031
Int. Cl.[3] G03B 9/62, 17/18
U.S. Cl. 354—23 D 6 Claims

1. A shutter speed setting and display apparatus for use in a camera, comprising:

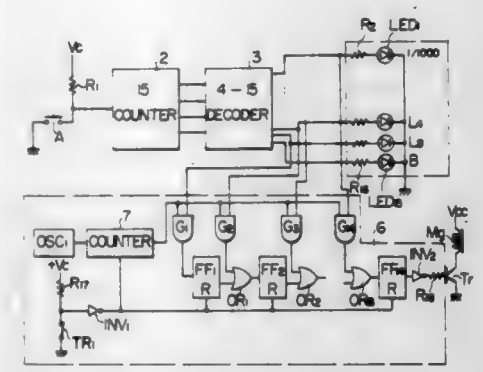
(a) an electrical pulse generator for generating pulses at a rate slow enough to manually select any number of said pulses within an operating range of numbers of said pulses;

(b) an up-down counter for counting said pulses to a selected count value within said range, said up-down counter having an up-count input terminal and a down-count input terminal;

(c) a first AND gate having one input connected to said pulse generator and an output connected to said up-count input terminal of said counter;

(d) a second AND gate having one input connected to said pulse generator and an output connected to said down-count input terminal of said counter;

(e) first and second manually controlled push-button switches connected to another input of said first and second AND gates respectively for allowing pulses from said pulse generator to be transmitted to said counter as long as one of said manually controlled push button switches is depressed to establish a count value in said counter;



(f) decoding means connected to said counter to transform the selected count value of said pulses to a speed-controlling signal;

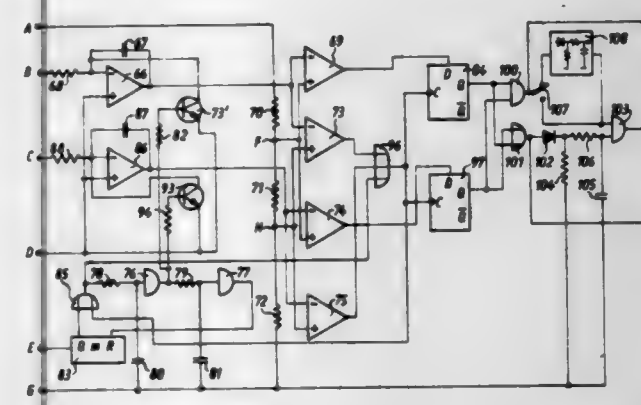
(g) shutter speed operating means connected to said decoding means to be controlled by said speed-controlling signal; and

(h) visible display means connected to said decoding means to be controlled thereby to indicate visually and in sequence the speed value corresponding to said selected count value.

4,345,827
DISTANCE-MEASURING SYSTEM WITH IN-RANGE SIGNALLING FOR USE WITH CAMERAS, ALARMS, AND THE LIKE

Otto Stemme, Munich; Peter Lermann, Naring, and Istvan Cocron, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,600
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939139
Int. Cl.[3] G03B 7/08
U.S. Cl. 354—25 16 Claims



1. In a control system for use in cameras and the like which utilizes a clocked radiation transmitter for periodically emitting pulses of radiation with a fixed frequency, amplitude and pulse duration, like first and second radiation receivers receiving the pulses and generating first and second received signals corresponding thereto, and a signal processing network including two channels for processing the first and second received signals so as to reduce background radiation and noise, an improvement for converting the first and second received signals to digital signals and indicating when an object is lo-

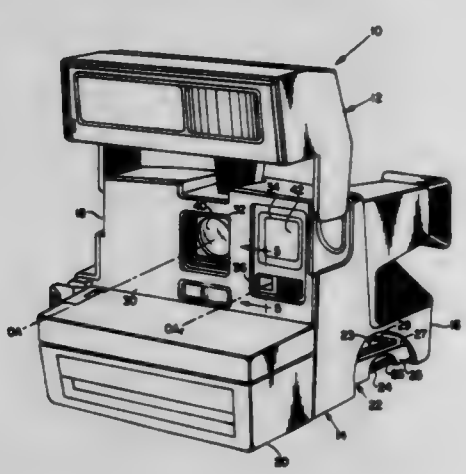
cated within a range of focus comprising: integrating means connected to the signal processing network and responding to the first and second received signals so as to produce first and second analog signals which are a time integrated transformation of the received signals; threshold means connected to said integrating means and having threshold values which are large as compared to pulse amplitude and a noise component, the threshold means operating in a manner that digital input signals are produced which are characteristic of said analog signals and being logically high when the analog signals exceed the threshold values and being logically low otherwise; storage means cooperating with said threshold means by storing said digital input signals and releasing the same in response to a pulse at the end of each measuring cycle of said transmitter; control means including logical AND or OR gating members having inputs connected to said storage means so as to produce an in-range signal only upon the occurrence of a logically high digital input signal, two RC timing circuits, an additional AND gate having an input selectively connectable to the output of said AND gating member either directly or via one of said RC timing circuits, and another input connected via the other RC timing circuit to the output of said OR gating member; and a first output terminal connected to the output of said OR gating member, a second output terminal connected to the output of said AND gating member, and a third output terminal connected to the output of said additional AND gate.

4,345,828

LIGHT DETECTING APPARATUS FOR PHOTOGRAPHIC CAMERA

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 24, 1980, Ser. No. 219,930
Int. Cl.³ G03B *7/08, 9/38, 9/40*
U.S. Cl. 354—27 **5 Claims**



1. Photographic scene light detecting apparatus for use with a camera of the type which includes means for facilitating the positioning of film in an exposure plane, a light path for transmitting scene light to the exposure plane, and an electronic control system for receiving an input signal and controlling the firing of an electronic flash at a predetermined time after the initiation of an exposure interval, said apparatus comprising:

light detecting means, including at least one photodetector having a photosensitive surface of predetermined size with a central axis therethrough, for providing an electrical output signal for use as the input signal to the camera electronic control system, said output signal having a characteristic which varies in accordance with the amount of radiant power incident to said photosensitive surface;

optical means, including a converging lens stationed forwardly of said photodetector and having its optical axis offset with respect to said photodetector central axis and an oblique conical shaped tunnel positioned forwardly of said converging lens, converging toward said lens, and having an axis therethrough offset below said photodetector central axis, said converging lens structured and arranged to direct radiant energy from a scene toward said photodetector photosensitive surface whereby said photodetector operates to provide said output signal and said tunnel structured and arranged to limit the useful angular field of said converging lens;

blade apparatus; and

means for mounting said blade apparatus for displacement between a first arrangement in which said blade apparatus is simultaneously in light blocking relation to both the camera light path and said photodetector thereby precluding scene light from being transmitted along the camera light path and from impinging on said photodetector photosensitive surface and a second arrangement in which said blade apparatus is simultaneously in light unblocking relation to both the camera light path and at least a portion of said photodetector photosensitive surface, said blade apparatus being structured to define a primary varying aperture aligned with the camera light path which aperture changes from an initial value to a final value during displacement of said blade apparatus from its first to second arrangement and further structured to selectively uncover different portions of said photodetector photosensitive surface during displacement of said blade apparatus from its first to second arrangement,

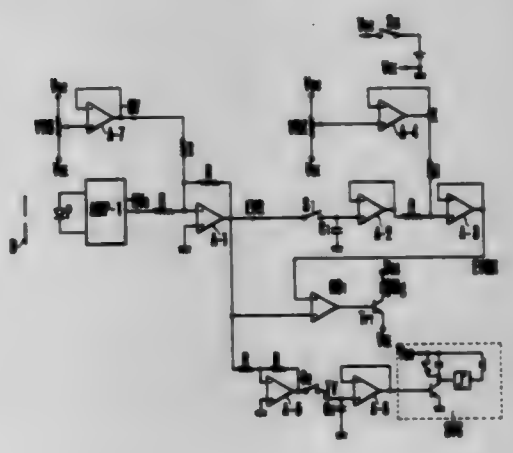
said optical means, said photodetector, and said blade apparatus being structured to in combination operate so that, during displacement of said blade apparatus from its first to its second arrangement, said light detecting apparatus views the scene through different angular fields for different positions of said blade apparatus to facilitate exposure control by preferentially receiving radiant energy from different regions of a scene corresponding to times before and after the time at which the electronic flash is fired, one of said angular fields, corresponding to the time prior to the firing of the electronic flash, being aimed below the horizontal to preferentially expose subject matter in the lower regions of the scene and another of said angular fields, corresponding to the time after the firing of the electronic flash, being aimed equally above and below the horizontal to equally expose subject matter in the upper and lower regions of a scene.

4,345,829

PROGRAM-CONTROLLED CAMERA

Kenichi Shinbori, Kawasaki; Shinji Sakai; Nobuhiko Shinoda, both of Tokyo; Tadashi Ito, Yokohama, and Hiroyasu Murakami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,400
Claims priority, application Japan, Mar. 24, 1979, 54-34921
Int. Cl.³ G03B *7/087*
U.S. Cl. 354—37 **4 Claims**



1. A camera comprising:

(a) a light measuring circuit for producing an output corresponding to a value Bvo representing the brightness value measured at the fully open aperture value of an interchangeable lens;

(b) information setting means for entering data corresponding to a value Sv representing the speed of film to be used;

(c) a program constant signal forming circuit for producing a signal representative of a selected program constant K, said signal forming circuit being arranged so that the value of the program constant K can be selected irrespective of the aperture value; and

(d) a control circuit for controlling the aperture and shutter time in accordance with the output of said light measuring circuit, the data from said information setting means and the value of the signal from the program constant signal forming circuit based on the Apex equation: Bvo+SV-=Avs+Tv and the formula: Tv=αAvs+K in which α= is a constant and Avs in the stop-numbered diaphragm value.

4,345,830

MOTOR DRIVEN TYPE CAMERA

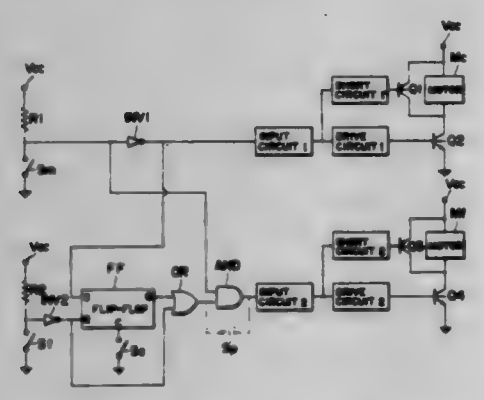
Kazuhisa Aratame, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Japan

Filed Feb. 24, 1981, Ser. No. 237,686

Claims priority, application Japan, Mar. 4, 1980, 55-26190

Int. Cl.³ G03B *1/12*

U.S. Cl. 354—173 **6 Claims**



1. In a motor driven camera which includes a motor for charging a shutter of the camera, a motor for winding film in the camera, and control circuit means for driving the shutter charging motor and the film winding motor in response to external signals input to the control circuit means, the improvement comprising:

a selecting switch connected to the control circuit means and selectively movable between a first position in which the camera operates in a normal photographic mode such that the shutter is charged by the charging motor and the film is advanced to a successive frame thereof by the winding motor following each photographic exposure operation, and a second position for enabling multiple exposure photography in which the shutter charging motor is operable normally to charge the shutter but the film winding motor is disabled to prevent advancement of the film following a photographic exposure operation while said switch is in its second position so that multiple exposure of a single film frame is enabled; and

automatic restoration circuit means connected to said control circuit means for automatically returning said selecting switch from its second to its first position following a photographic exposure operation during which said switch has been in its second position to disable the film winding motor and thereby enable multiple exposure photography, whereby inadvertent further multiple exposure of a film frame immediately following a desired multiple exposure thereof and due to a user's forgetting to return said switch from its second to its first position is positively prevented by said automatic restoration circuit.

4,345,831

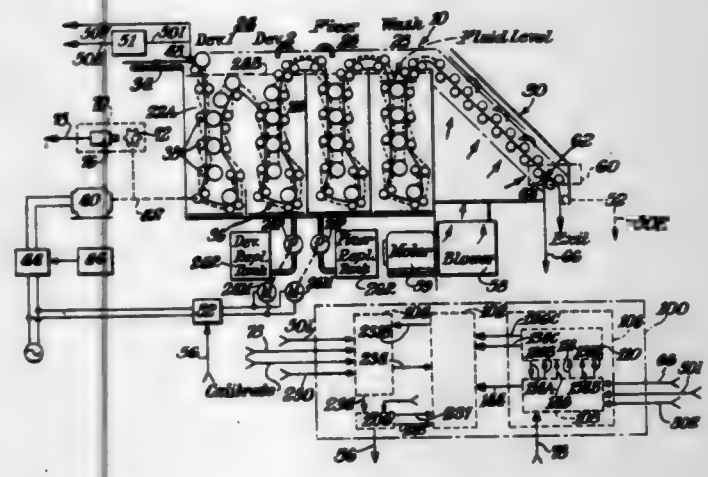
AUTOMATIC REFERENCE BACKGROUND MONITORING NETWORK FOR A FILM PROCESSOR

Robert W. Kachelries, West Goshen, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 3, 1980, Ser. No. 136,806

Int. Cl.³ G03D *13/00*

U.S. Cl. 354—298 **14 Claims**



1. In a film processor including a scanner arrangement having a light source and a photodetector responsive to the intensity of the light source for generating a reference background level signal representative of the intensity of the output of the scanner arrangement when no film is interposed between the photodetector and the source, the reference background level being useful as a standard against which the transmissivity of processed film is determined, wherein the improvement comprises:

a reference background level monitoring network for tracking the reference background level signal output from the photodetector and for compensating for a fluctuation in the source by generating an adjusted reference background level functionally related to the weighted average of the instantaneous reference background level signal and a previous reference background level signal.

4,345,832

AUTOMATIC FILM DEVELOPER HAVING A FILM GUIDE MEANS

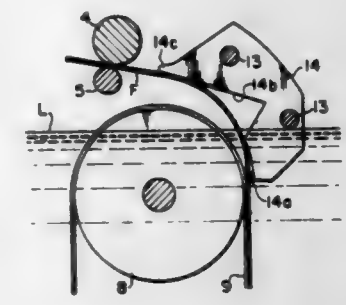
Norimasa Nomura, Kyoto, and Yasuhito Yoshimi, Mukou, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Mar. 24, 1980, Ser. No. 132,782

Claims priority, application Japan, Apr. 11, 1979, 54-48085[U]

Int. Cl.³ G03D *3/12*

U.S. Cl. 354—320 **2 Claims**



1. An automatic film developer having a film guide means, comprising:

a liquid tank in which a developing liquid is contained;

a belt, movably mounted in the tank, which conveys a film fed in the tank in the developing liquid while the film is developed; and

a film guide means having a contact surface in its one side,

part of which is immersed in the liquid, and which includes a plurality of recesses over the majority of the portion of the length of said surface which is out of the liquid, whereby film which is transferred along said contact surface may be separated from said contact surface in the recess portions.

4,345,833

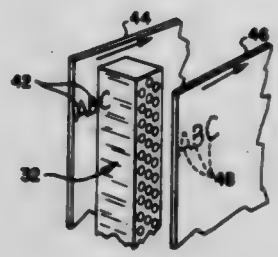
LENS ARRAY

Walter P. Siegmund, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 23, 1981, Ser. No. 237,327

Int. Cl.³ G03B *27/00*; C03C *25/00*

U.S. Cl. 355—1 **6 Claims**



1. A lens array comprising:

an arrangement of juxtapositioned cylindrical sections of glass each having a radial gradation of refractive index ranging from a maximum at its axis to an outermost minimum and a length defining object and image planes according to imaging rules of self-focussing lenses;

a matrix of supporting glass surrounding each of said sections, said matrix having a refractive index approximating said minimum of said graded index sections and further having light-absorbing properties for absorption of light straying from said sections.

5. A method of making a lens array comprising the steps of:

providing a perform of rod and cladding ion exchangeable glasses;

heating and drawing the preform to the extent of rendering said rod of glass of a diametral size corresponding to that desired of lenses of said array;

cutting the draw into multiple lengths;

assembling said lengths in an orderly array;

heating the array to a temperature sufficient to render said cladding glass homogeneous as a matrix about said rod glasses and, at the same time, effect interdiffusion of ions from one of said glasses into the other to the extent of rendering said rod glasses radially graded in refractive index; and

at one stage of said method, cutting said rod glasses to desirable image forming lengths and optically polishing opposite faces thereof.

4,345,834

TRANSFER TYPE ELECTROSTATIC COPYING APPARATUS

Hiroshi Kimura, Neyagawa; Masahiko Hisajima, Osaka, and Yutaka Shigemura, Takarazuka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Oct. 17, 1979, Ser. No. 85,518

Claims priority, application Japan, Nov. 2, 1978, 53-135331; Dec. 31, 1978, 53-182460[U]; Dec. 31, 1978, 53-182461[U]; Dec. 31, 1978, 53-182462[U]; Jul. 3, 1979, 54-84540; Jul. 3, 1979, 54-92103[U]

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **11 Claims**

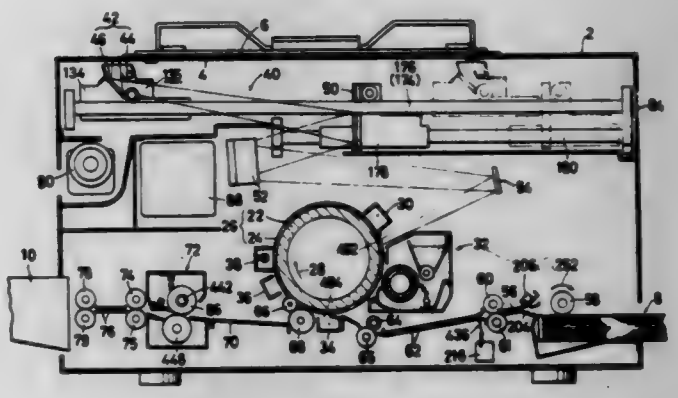
1. In a transfer type electrostatic copying apparatus of the type comprising a cylindrical drum and a photosensitive layer provided on a peripheral surface of said drum, means for rotating said drum, a support for an original document to be copied, an optical system for illuminating the original document and for exposing a light image thereof onto said photosensitive layer, and one of said support and said optical system including a movable portion movable in a first direction from a home first position to a second position and movable in a second direction opposite to said first direction from said second position to said home first position, the improvement comprising:

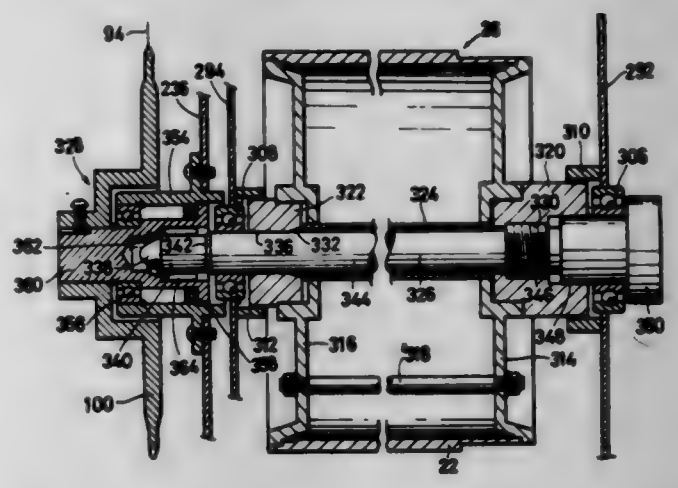
an endless member entrained around first and second wheels to have first and second parallel linear runs, one of said wheels being rotated such that said endless member moves in an endless path around said wheels and along said linear runs;

said endless member having fixed thereto a first engaging member movable with said endless member in said endless path;

a second engaging member fixed to said movable portion;

connecting means for permanently connecting said first engaging member to said second engaging member in a manner to prevent relative movement therebetween in directions parallel to said linear runs and to allow relative movement therebetween in directions transverse to said





linear runs by a distance at least equal to the spacing between said linear runs, and for thereby causing said endless member and said engaging members to move said movable portion in said first direction when said first engaging member is in said first linear run and to move said movable portion is said second direction when said first engaging member is in said second linear run;

said first engaging member being located at a position at the outer periphery of said first wheel and furthest spaced from said second wheel when said movable portion is at said home first position thereof;

cleaning means, positioned adjacent said photosensitive layer, for cleaning the outer surface of said photosensitive layer when said movable portion moves in said first direction from said home first position;

means for initiating and completing said exposing of said light image onto said photosensitive layer when said movable portion moves in said second direction back to said home first position;

means for synchronizing the speed of said movable portion

in said second direction to be equal to the speed of said outer surface of said photosensitive layer;

a pair of bearings having a common axis and mounted on side walls on opposite sides of said photosensitive drum in the direction of the axis thereof, the inner diameter of one said bearing being larger than that of the other said bearing;

a rotary shaft having a tip portion formed into an approximate conical shape, said shaft extending through said drum and being supported by said bearings; and

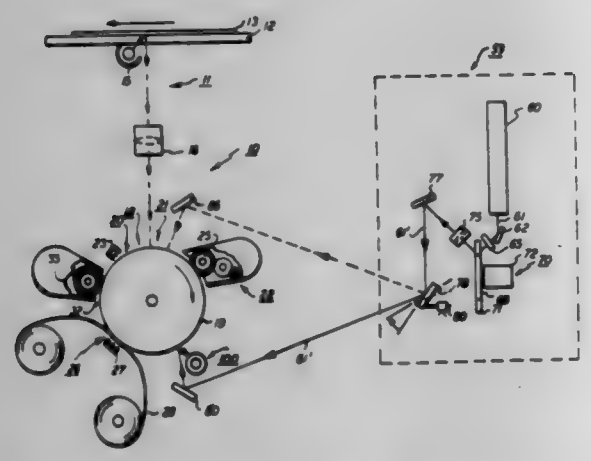
coupling means for transmitting driving force to said rotary shaft and positioned on the side of said photosensitive drum opposite the side thereof into which said shaft is inserted, said drum having extending outwardly from opposite sides thereof bosses fitting into open upper ends of holder members rigidly fixed to said side walls.

4,345,835

MULTIPLE FUNCTION REPRODUCTION APPARATUS

Charles J. Kramer, Pittsford; David B. Kay, Rochester, and Christopher Snelling, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 14, 1980, Ser. No. 111,520
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 R **16 Claims**



1. In a copying apparatus having a photoreceptor, means to charge said photoreceptor in preparation for imaging, exposure means for exposing said charged photoreceptor to produce latent electrostatic images, developing means for developing the images, and transfer means for transferring said developed images to copy substrate material, the improvement comprising:

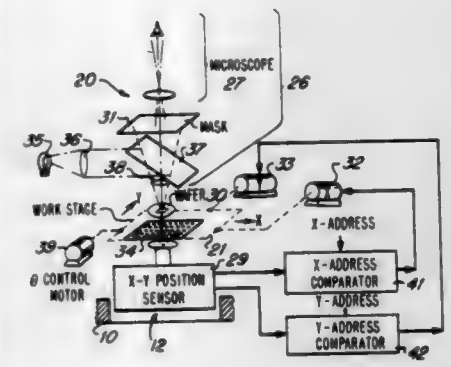
combined image write/read means for scanning said photoreceptor, said image write/read means being operable in a first write mode to expose said photoreceptor in accordance with image signals input thereto to produce said latent electrostatic images on said photoreceptor and in a second read mode to expose images previously developed on said photoreceptor to produce image signals representative of said previously developed images, said developing means in said first write mode applying developing material to said photoreceptor to render said latent electrostatic images visible after said latent electrostatic images are produced by said image write/read means and in said second read mode applying developing material to said photoreceptor to render latent electrostatic images on said photoreceptor visible before said latent electrostatic images are exposed by said image write/read means.

4,345,836

TWO-STAGE WAFER PREALIGNMENT SYSTEM FOR AN OPTICAL ALIGNMENT AND EXPOSURE MACHINE

Edward H. Phillips, Mountain View, Calif., assignor to Optimetrix Corporation, Mountain View, Calif.

Filed Oct. 22, 1979, Ser. No. 87,220
Int. Cl.[3] G03B *27/42*
U.S. Cl. 355—53 **22 Claims**



1. In a method for prealignment of a wafer, having an alignment flat formed at the periphery thereof, in an optical alignment and exposure machine, the steps of:

receiving the wafer at a prealignment station;

turning the wafer about an axis generally perpendicular to a plane of one of its major faces to bring the alignment flat of the wafer into alignment with a first reference operatively associated with the prealignment station to derive a first stage of prealignment of the wafer;

transferring the first-stage prealigned wafer directly to a rotatable alignment and exposure chuck while maintaining the first stage of prealignment of the wafer; and

aligning the alignment flat of the wafer with a second reference operatively associated with said chuck to derive a second stage of more precise prealignment of the wafer.

17. Alignment apparatus for sequentially aligning workpieces with respect to a masking element prior to exposing a photosensitive film on each aligned workpiece in accordance with the masking element, said alignment apparatus comprising:

first prealignment means for receiving a workpiece and prealigning the workpiece with respect to a first reference;

chuck means for rotating a prealigned workpiece to facilitate optical alignment of the prealigned workpiece with respect to the masking element;

transfer means for transferring the prealigned workpiece from the first prealignment means onto the chuck means; and

second prealignment means coupled to the chuck means for rotation therewith and for further prealigning the transferred prealigned workpiece with respect to a second reference while the transferred prealigned workpiece is on the chuck means and while the chuck means is at the angular position of optical alignment of a preceding workpiece.

4,345,837

ENHANCED FLUORESCENT EMISSION

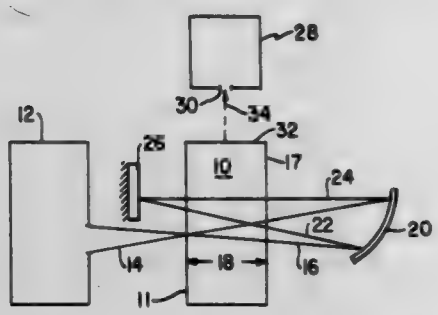
Eli A. Kallet, New York, N.Y., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.

Filed Jun. 27, 1980, Ser. No. 163,846
Int. Cl.[3] G01N *21/64*
U.S. Cl. 356—317 **4 Claims**

1. In a method of providing an increased path length of light through a sample wherein a light source transmits an exciting beam of light through said sample in a forward direction, the improvement comprising the steps of:

reflecting said exciting beam from a first reflector in a backward direction along a known path through said sample, thereby forming a first reflected beam; and

imaging said first reflected beam upon the surface of a second reflector to cause a second reflected beam to be reflected in said forward direction along said known path through said sample to said first reflector and to be reflected directly back to said light source.

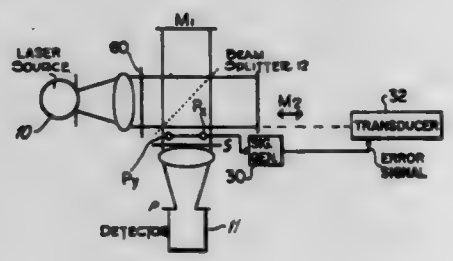


4,345,838

APPARATUS FOR SPECTROMETER ALIGNMENT

Henry L. Buijs, 2052 Dickson, Sillery, Quebec; Garry L. Vail, 35 Route Penney, Neuschatel, Quebec, both of Canada (G2A 3C5), and Jean-Noel Berube, 1425 des Metairies, Ancienne Lorette, Quebec, Canada (G2E 4J7)

Filed Jul. 30, 1980, Ser. No. 173,702
Claims priority, application Canada, Aug. 31, 1979, 334846
Int. Cl.[3] G01B *9/02*
U.S. Cl. 356—346 2 Claims



1. In a spectrometer having a laser reference source providing a generally square-shaped beam, a beamsplitter-compensator, a fixed mirror and a moving mirror, a system for detecting variations in alignment between the mirrors including three detectors located adjacent the output field and arranged at the vertices of a triangle, and wherein stray reflections at the beamsplitter-compensator create laterally displaced ghost images of the reference source, the improvement comprising means orienting the beamsplitter-compensator with respect to the reference beam so that the ghost images are displaced along a diagonal of the square-shaped beam and a mask in the input laser beam restricting the laser beam to an L-shaped area which when it impinges on the output field includes the vertices of the triangle.

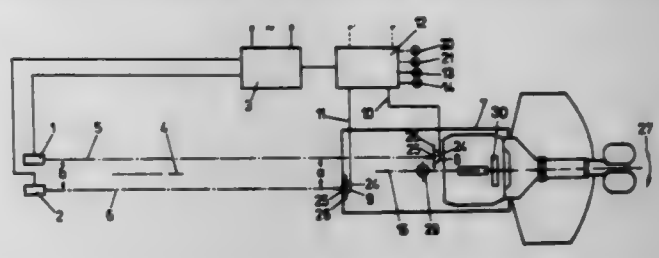
4,345,839

DEVICE FOR CONTROLLING THE POSITION OF A DRIFT ADVANCING MACHINE

Bernhard Droescher, and Alfred Zitz, both of Zeltweg, Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Jan. 23, 1980, Ser. No. 114,600
Claims priority, application Austria, Mar. 14, 1979, 1920/79
Int. Cl.[3] G01B *11/00*
U.S. Cl. 356—400 8 Claims

1. In apparatus for controlling the position of a drift advancing machine along a desired drift axis, said machine having a longitudinal axis: two light beam sources or laser beam sources spaced longitudinally from the machine along the desired drift axis, said sources emitting beams which are parallel to each other and to the desired drift axis and which are in different vertical planes extending longitudinally of the drift; and two beam receivers arranged on the machine and longitudinally spaced-apart relative to the longitudinal axis of the machine, said receivers being in transversely spaced-apart positions relative to the longitudinal axis of the machine, and the transverse distance between said receivers corresponding to the transverse distance between the two beams.

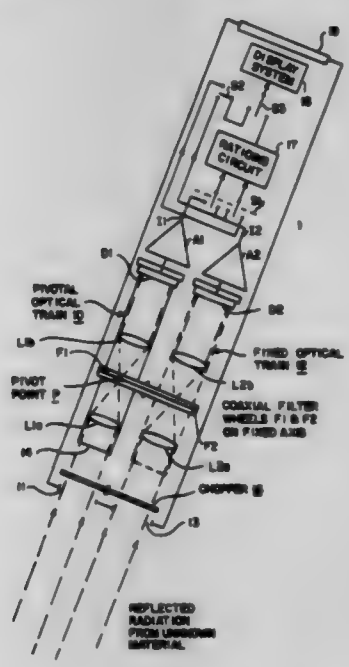


4,345,840

METHOD AND APPARATUS FOR INSTANTANEOUS BAND RATIOING IN A REFLECTANCE RADIOMETER

Alexander F. H. Goetz, Altadena, and Richard A. Machida, La Verne, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 8, 1980, Ser. No. 138,306
Int. Cl.[3] G01J *3/50;* G01N *21/25*
U.S. Cl. 356—407 9 Claims



1. A method for providing instantaneous identification of particular reflecting materials by ratioing reflectance measurements at selected pairs of wavelength bands, each band of a pair being chosen for a particular spectral characteristic of a material of interest selected from a group consisting of spectral peaks and band wings on either side of spectral peaks for each band reflected from a particular material, comprising the steps of selecting a plurality of different paired bands, one pair at a time, for instantaneous band ratioing, simultaneously detecting the intensity of radiation reflected by materials under investigation into said plurality of predetermined bands centered on spectral characteristics of the different materials, determining the ratio of radiation intensity in at least one band to the radiation intensity in other bands, and displaying the band ratio thus determined to provide a ratio display indicative of the particular material, whereby a reflecting body can be checked for the presence of a plurality of different materials identified by at least one particular band ratio value for each material.

4. Apparatus for identifying an unknown material in a target area that reflects radiation within predetermined selected bands comprising

two optical trains directed independently at the same target area, each train having a detector for measuring the intensity of radiation reflected from the same target area, and

each train having a suitable filter for passing a different one of a set of selected bands of reflecting radiation, each one being selected to be centered on different spectral characteristics of the material,

means for producing the ratio of reflected radiation intensity detected through the detector of one optical train to the reflected radiation intensity detected through the detector of the other optical train for each set of selected bands, and

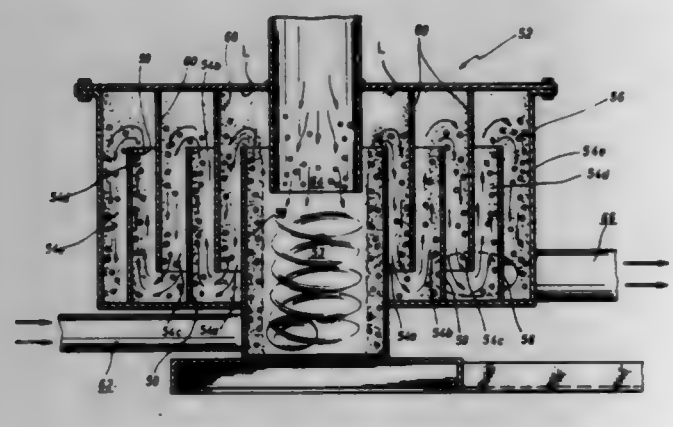
means for displaying the value of said ratios, whereby said particular material is identified by a particular ratio value.

4,345,841

MULTI-STAGE CENTRIFUGAL MIXER

Roger W. Day, Houston, Tex., assignor to Geosource Inc., Houston, Tex.

Filed Jun. 20, 1980, Ser. No. 161,396
Int. Cl.³ B28C *5/06*
U.S. Cl. 366—2 **24 Claims**



23. A method for mixing flowable materials with solid materials for use in hydrocarbon drilling operations comprising the steps of:

tangentially feeding a flowable material into an annular housing having a plurality of mixing chambers for mixing so as to create a centrifugal motion in said flowable material resulting in forming a vortex in said flowable material;

axially feeding solid materials into said vortex within said annular housing for obtaining a high density mixture;

mixing said solid materials with said flowable materials by centrifugal motion, propagating said solid materials in a radially outward direction;

combining said mixture of said flowable and said solid materials by alternately spilling said mixture over and passing said mixture under a series of partition walls while maintaining the rotational velocity of said mixture in the same direction of rotation throughout said annular housing; and

tangentially discharging said mixture from said annular housing.

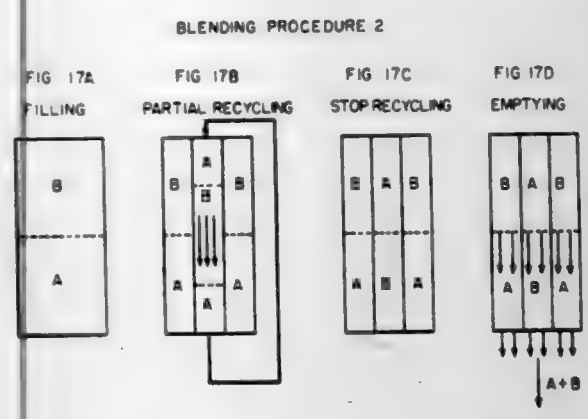
4,345,842

UNIVERSAL BLENDING METHOD FOR BLENDING THE MATERIAL CONTENTS OF A SILO

Ivan A. S. Z. Peschl, Kennedylaan 8, 6029 RE Sterksel, Netherlands

Filed Nov. 30, 1979, Ser. No. 99,038
Int. Cl.³ B01F *15/02*
U.S. Cl. 366—137 **11 Claims**

1. A universal blending method for blending at least two types of materials initially provided in at least two horizontal layers of respective materials in a single silo having a predetermined interior cross-sectional area with respect to the longitudinal axis of said silo, said method comprising the steps of: initially discharging a partial vertical column of said materials into a collection area substantially in the downward direction of said longitudinal axis without substantially disturbing a vertically adjacent partial column of said materials, said initial discharging partial vertical column of material including an initial lower section of a first material type and an initial upper section of a second material type prior to the initial discharge thereof into said collection area, said initial discharging step causing at least a part of the material of said partial vertical column initial lower section to be discharged into said collection area while said partial vertical column initial upper section of material is vertically displaced into the area vacated by said discharged partial vertical column initial lower section; recycling said discharged material from said partial vertical column



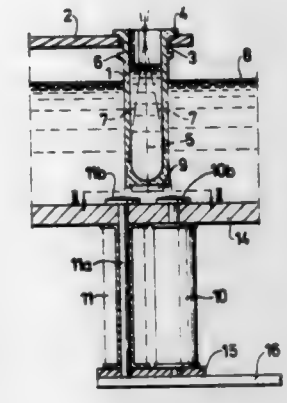
initial lower section from said collection area into the area vacated by said vertically displaced partial vertical column initial upper section, whereby a checkered pattern of the initial types of materials in said silo is provided between said two vertically adjacent columns of material when viewed as a vertical cross-section through the vertically adjacent columns of material; and simultaneously discharging said checkered pattern of vertically adjacent columns of materials into said collection area to provide a selected blended material.

4,345,843

AGITATOR

Erling G. Berglund, Jäfälla, and Hans J. Krook, Sollentuna, both of Sweden, assignors to Clinicon AB, Bromma, Sweden

Filed Feb. 23, 1981, Ser. No. 237,078
Claims priority, application Sweden, Mar. 11, 1980, 8001912
Int. Cl.³ B01F *13/08*
U.S. Cl. 366—219 **11 Claims**



1. An apparatus for shaking a test tube, comprising an holder with a circular hole therein in which a test tube can be hung by means of a flange, which flange projects outwardly from the upper edge of the test tube and which rests against the holder in a manner such that the test tube is restricted swingable outwardly, in all directions, from a substantially vertical rest position; a member of magnetic material attached to the lower end of the test tube; at least three stationarily arranged electromagnets each having a first pole and a second pole, said first poles of the electromagnets being arranged with their pole faces located in a common, substantially horizontal plane at a distance beneath the lower end of the test tube and on a circle substantially concentrical about the centre axis of the test tube in said rest position; and means for energizing the electromagnets in a given sequence so that the test tube, as a result of the

magnetic co-action between said magnetic member on the test tube and the said first poles of the electromagnets, is caused to effect substantially a nutational rotation around said rest position, with the point of the nutational rotation located substantially in the centre of the circular hole.

4,345,844

CALORIMETER

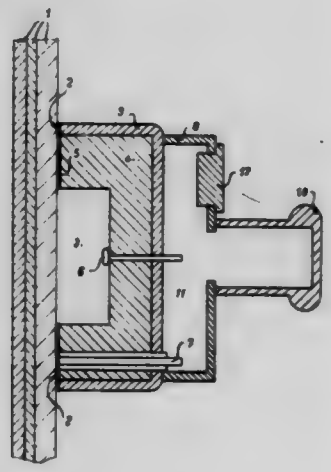
Marcel Birukoff, 10, route de la Gare, 1806 Saint-Legier, Vaud, Switzerland

Filed May 1, 1980, Ser. No. 145,816

Claims priority, application Switzerland, May 9, 1979, 4334/79

Int. Cl.³ G01K *17/00*

U.S. Cl. 374—31 **1 Claim**



1. A calorimeter comprising a heat-insulated enclosure having a recess that opens on one side of said enclosure and is adapted to be disposed against a surface whose heat flow is to be measured, a housing outside said enclosure and mounted on the other side of said enclosure for receiving temperature indicating means, and a temperature sensor that is disposed in part in said recess and extends through a side wall of said heat-insulated enclosure and terminates in said housing for said temperature indicating means, and an elastic gasket to seal the heat-insulated enclosure against the surface whose heat flow is to be measured, about the margins of said recess.

4,345,845

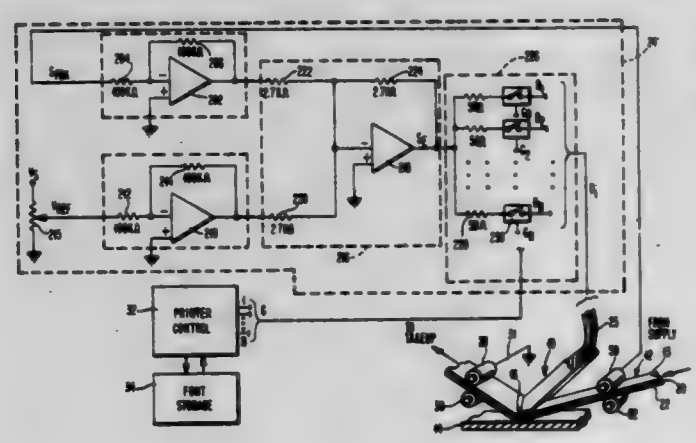
DRIVE CIRCUIT FOR THERMAL PRINTER

Alan E. Bohnhoff, Lexington, Ky.; Bruce M. Cassidy, Fairfax, Va., and Stanley Dyer, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 19, 1981, Ser. No. 275,183

Int. Cl.³ B41J *3/02*

U.S. Cl. 400—120 **11 Claims**



1. For use in a printer of the kind that utilizes a thermal printing ribbon having a moderately conducting outer layer and a highly-conducting inner layer, said printer including a printhead with a set of electrodes that wipe over said moderately-conducting outer layer at a print zone to apply respective printing signals, timed in accordance with gating signals from a print controller, for causing localized heating within said ribbon and resultant mark formation at a receiving medium, printing signal circuitry comprising:

collection contact means for establishing electrical contact with said moderately conducting layer of said ribbon at a collection zone spaced from said print zone;

monitoring contact means for establishing electrical contact with said moderately conducting layer of said ribbon at a detection zone spaced from said print zone and said collection zone;

printhead energization means including,

a high impedance circuit, connected electrically to said monitoring contact means, for producing a buffered feedback signal representative of the electric potential assumed by said monitoring contact means;

signal channels coupled to respective of said electrodes,

signal processing means; responsive to said buffered feedback signal, for producing a set of printing signals, said signal processing means including means for adjusting a reference voltage level in accordance with said buffered feedback signal to produce an energization signal;

and switching means for selectively connecting said energization signal to said signal channels in accordance with said gating signals to act as respective printing signals at said electrodes; and

means defining a low impedance signal return path between said collector contact means and said printhead energization means whereby a return path for said printing signals is established.

4,345,846

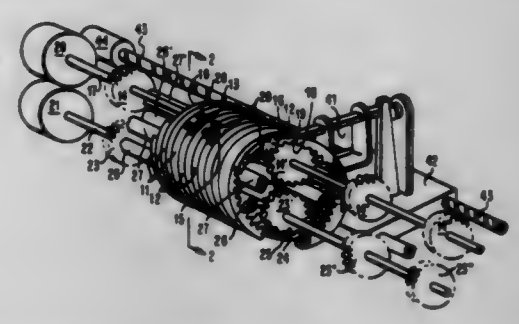
IMPACT PRINTER WITH DUAL HELIX CHARACTER PRINT ELEMENTS

Raymond D. Mathews, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1980, Ser. No. 193,879

Int. Cl.³ B41J *1/32*

U.S. Cl. 400—157 **8 Claims**



1. In an impact printer having a print member comprising type characters to be printed and a print hammer operable to impact selected ones of said type characters against a printing medium,

the improvement wherein said print member comprises

a first helical element having a first font of type characters arranged around its periphery, said first helical element being rotatably mounted so as to be linearly movable along an axis adjacent to said print medium,

a second helical element having a second font of type characters arranged around its periphery in the same direction as said first font, said second helical element being rotatably mounted along said axis in a position interspaced with said first helical element,

means for rotating and linearly moving said first helical element independently of said second helical element, and

means for rotating and linearly moving said second helical element independently of said first helical element,

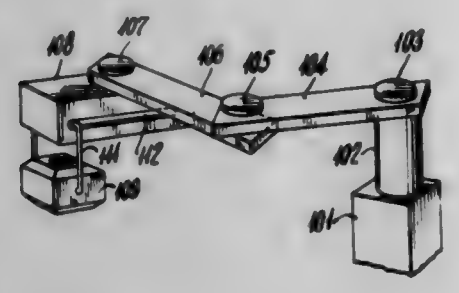
so that said helical elements are rotatable and linearly movable along said axis independent of each other.

4,345,847

AUTOMATIC BRAKE SEQUENCING FOR OVERHEAD SUPPORT ARM ASSEMBLIES

Charles M. Schiff, Aurora; Eric K. Maxon, Englewood, and Ronald E. West, Littleton, all of Colo., assignors to Technicare Corporation, Solon, Ohio

Filed Dec. 19, 1979, Ser. No. 105,360
Int. Cl.[3] F16C *11/00*
U.S. Cl. 403—103 6 Claims



1. In a system having an overhead arm assembly including at least three segments pivotably connected in sequence to one another and to a fixed member at three respective joints, apparatus for controlling locking and unlocking of said joints comprising:

(a) first brake means at a first joint between first and second ones of said segments;

(b) second brake means at a second one of said joints;

(c) operator actuated first control means for selectively releasing said first brake means to permit said second segment to pivot relative to said first segment;

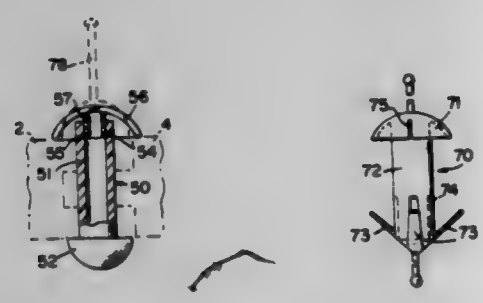
(d) second control means, for detecting the angular orientation of said first and second segments relative to one another, and for responsively controlling said second brake means for unlocking said second brake means when said first and second segments achieve at least a predetermined angular divergence from a condition of alignment.

4,345,848

SPECTACLE HINGE PIN

Stephen Cheselka, 87 Columbia St., Apt. 21-F, New York, N.Y. 10002

Filed Nov. 27, 1979, Ser. No. 97,842
Int. Cl.[3] F16C *11/00;* F16D *1/12*
U.S. Cl. 403—157 8 Claims



1. A hinge pin device for spectacle hinges having a hinge pin or hinge screw opening (9), comprising:

an elongated shank (7) adapted to be received in the hinge opening (9) of the hinge, at least a portion of said shank being serrated (8) over a substantial portion of the length thereof and said serrations extending at least to the vicinity of one end of said shank, said shank having a length such that at least a portion of the serrated portion thereof extends out of the hinge opening (9);

a head member (5) on the end of said shank opposite said one end, said shank extending from said head member in a given direction, said head member (5) being impassible through said hinge opening (9);

a cap member (6) adjustably receivable over said one end of said shank and selectively engageable with at least one of said serrations which extends out of the hinge opening (9), said cap member having an opening smaller than the maximum diameter of the serrated portion (8) of said shank (7) for snappingly engaging said outwardly extending serrated portion of said shank to lock said cap onto said shank, said cap member being impassible through said hinge opening;

a first elongated handling member (78) coupled to said shank and extending from said head member in the longitudinal direction of said shank and in the direction opposite to the direction said shank extends from said head member, said first handling member having a cross section in a direction perpendicular to its longitudinal axis, which is substantially smaller than that of said shank, and being selectively breakable off from said shank; and

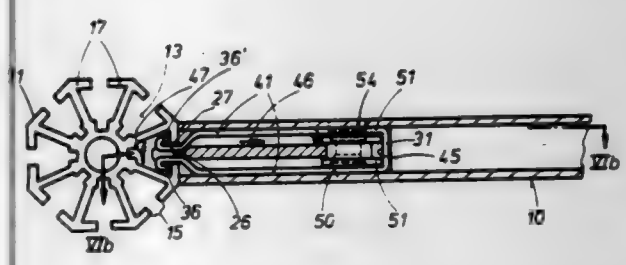
a second elongated handling member (78) coupled to said cap member and extending substantially in the longitudinal direction of said shank when said cap member is attached to said shank, said second handling member having a cross-section in a direction perpendicular to its longitudinal axis, which is substantially smaller than that of said shank, and being selectively off from said cap member.

4,345,849

FRAMEWORK OF RELEASABLY-CONNECTABLE BARS

Bruno Stenemann, Beckum, Fed. Rep. of Germany, assignor to Octanorm-Vertriebs GmbH für Bauelemente, Filderstadt, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,388
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941008
Int. Cl.[3] F16B *7/04, 12/20*
U.S. Cl. 403—252 14 Claims



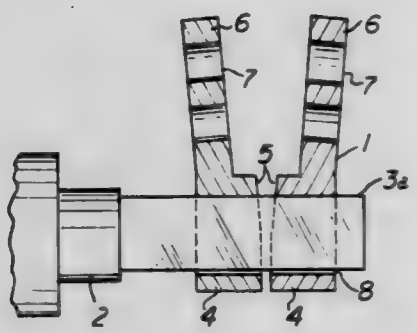
1. In a frame assembly of the type comprising separate, interconnected bars, of which at least some have undercut longitudinal slots which lockingly receive the coupling ends of coupling members that project from ends of other bars, said other bars each having a bearing member carrying a transversely oriented eccentric member which is rotatably operable from one external face of said other bar, and a holding member which can be displaced longitudinally and laterally in response to rotation of the eccentric member, the holding member having a hook-shaped coupling end which, in the coupled position, engages in one of said undercut longitudinal slots, the improvement wherein said bearing member has a longitudinal central wall, said holding member including a tongs-shaped leaf-spring comprising a pair of arms joined at one end by a web, the free ends of the arms forming holding means, an inner end portion of said central wall of said bearing member including a recess for housing said eccentric member, an outer end of said bearing member having a wedge portion which extends as far as said longitudinal slot when the bars are coupled, an inside surface of said leaf-spring web defining an engagement surface for said eccentric member to displace said holding member, said two arms of said leaf-spring having oppositely directed hooked ends and convergent sloping portions disposed adjacent said wedge portion which are spread apart by said wedge portion when the holding member is displaced inwardly by said eccentric member.

4,345,850

CLAMP-ON QUICK DISCONNECT ROTARY VALVE LINKAGE ARRANGEMENT

Hans D. Baumann, P.O. Box 471, Rye, N.H. 03870

Filed Jun. 22, 1981, Ser. No. 275,978
Int. Cl.[3] B25G *3/20*; F16B *2/14*
U.S. Cl. 403—373 4 Claims



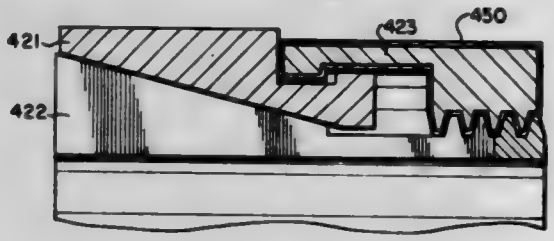
1. A rotary valve linkage arrangement consisting of a pair of levers having a central bore with at least two parallel flat surfaces engaging therewith a valve shaft having a similar but slightly smaller cross sectional profile than that of said lever bore, said levers further having each an extended arm portion encompassing therein one or more bores placed at some radial distance from the shaft axis and capable of engaging suitable fastening means, each of said levers having additional hub portions extending in width beyond the thickness of said extended arm portions and terminating in contact surfaces facing each other, said arms being urged towards each other by suitable fastening means to cause a tilting action of both levers around the contact surfaces of the extending hub portions facing each other and thereby causing tight engagement between the parallel surfaces of said shaft and lever bores.

4,345,851

MOUNTING DEVICE

Dimitri G. Soussloff, Wyomissing, Pa., assignor to Harrington Hoists, Manheim, Pa.

PCT No. PCT/US79/00480, § 371 Date Mar. 10, 1980, § 102(e) Date Feb. 15, 1980, PCT Pub. No. WO80/00179, PCT Pub. Date Feb. 7, 1980
Continuation-in-part of Ser. No. 923,056, Jul. 10, 1978. This PCT application Jul. 10, 1979, Ser. No. 179,286
The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.
Int. Cl.[3] F16B *2/14*
U.S. Cl. 403—369 7 Claims



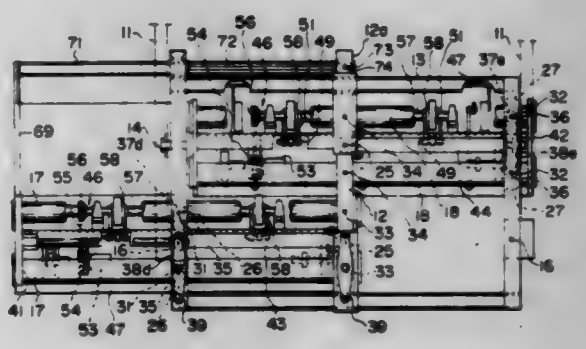
1. A mounting device for mounting a machine element having a cylindrical bore coaxially on a shaft having a cylindrical surface, said device comprising a segmented inner sleeve encircling the shaft, said inner sleeve comprising an integral member having a straight cylindrical interior bore corresponding in diameter to the external cylindrical surface of said shaft and having a tapered external surface, the segments of said inner sleeve providing a plurality of terminated axial slots extending longitudinally of said sleeve each extending from one end of the sleeve and terminating short of the other end, and a single axial through-slot extending from end to end of the sleeve to permit contraction and expansion of said interior bore, said device also comprising a segmented outer sleeve encircling said inner sleeve, said outer sleeve having a tapered internal surface corresponding in angle of taper to the tapered external surface of said inner sleeve and having a straight cylindrical outer surface corresponding in diameter to the cylindrical bore of said machine element, said segmented outer sleeve comprising a plurality of separate separable segments, one end of said inner sleeve having external threads, the corresponding end of said outer sleeve having circumferential interlock means providing opposed forward and rearward radial surfaces substantially perpendicular to the central axis of the shaft, a clamping nut threadedly engaged with the threaded end of said inner sleeve, said nut having cooperating circumferential interlock means defining opposing forward and rearward drive surfaces confronting the corresponding surfaces of the interlock means of said outer sleeve, whereby upon rotation of said nut in one direction, the forward surfaces of the respective interlock means engage and effect relative axial displacement of said sleeves in one direction, and upon rotation of said nut in the opposite direction, the rearward surfaces of the respective interlock means engage and effect relative axial displacement of said sleeves in the opposite direction, said displacements causing said tapered surfaces to expand and contract the interior bore and to contract and expand the exterior surface of said outer sleeve, and anti-friction means reducing the friction opposing rotation of said nut.

4,345,852

LEVELING DEVICE FOR ASPHALT FINISHER

Fumio Goto, Gunma; Kenji Yoshino, Takasaki; Hiroshi Kono, Urawa, and Mitsuaki Naito, Koganei, all of Japan, assignors to Niigata Engineering Co., Ltd. and Nippon Hodo Co., Ltd., both of Tokyo, Japan

Filed Mar. 6, 1980, Ser. No. 127,628
Claims priority, application Japan, May 14, 1979, 54/63837[U]
Int. Cl.[3] E01C *19/38*
U.S. Cl. 404—114 7 Claims



7. A leveling device for an asphalt finisher or the like comprising:

(a) a front screed and rear screed positioned respectively at front and rear portions of said device on opposite lateral positions thereof,

(b) means for mounting said front and rear screeds on a vehicle body wherein both of said screeds are movable laterally and tiltable sidewards, said mounting means comprising, for each of said screeds,

a main frame;

a pair of supporting arms adapted at one end to be pivotally coupled to said vehicular body;

means for pivotably supporting said main frame on said supporting arms;

crown adjustment screws;

an auxiliary frame coupled to said main frame; said auxiliary frame being positioned at a central portion of said main frame and being movable vertically relative to said main frame by means of said crown adjustment screws, said screeds being supported by said main frame and said auxiliary frame;

a first set of bearing means and a second set of bearing means

adapted to support said screeds thereon, said first set of bearing means being disposed in said auxiliary frame, said second set of bearing means being disposed in said main frame;

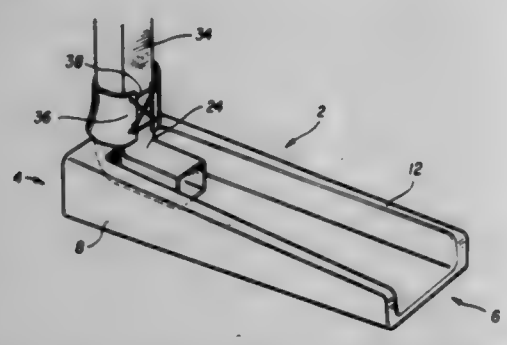
first and second set of screed height adjusting screws, said first set of screed height adjusting screws being connected to said first set of bearing means to control vertical positions thereof relative to said auxiliary frame, and said second set of screed height adjusting screws being connected to said second set of bearing means to control vertical positions thereof relative to said main frame.

4,345,853

LIGHT WEIGHT RUN-OFF TROUGH

Stanley P. Fisher, 10110 Walker Lake Dr., Great Falls, Va. 22066

Filed Aug. 5, 1980, Ser. No. 175,538
Int. Cl.³ E04D *13/08*; E02B *9/04*
U.S. Cl. 405—119 **10 Claims**



1. A run-off trough for a down spout, comprising:

a hollow body having at least a rear end including a substantially vertical surface, a front end and a top surface;

a first depression in said top surface and forming a trough; and

means on said substantially vertical surface for attaching said trough to a vertical portion of said down spout,

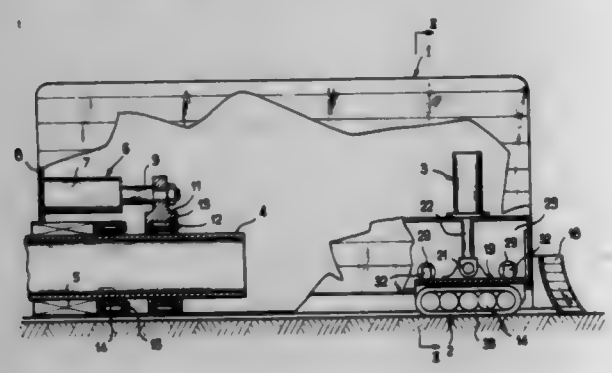
wherein said means for attaching comprise a portion of said substantially vertical surface, said portion including arm means, and at least said arm means of said portion being separable from the remainder of said substantially vertical surface.

4,345,854

APPARATUS FOR LAYING UNDERWATER PIPELINES

Alfred Valantin, Clermont, France, assignor to Techniques Industrielles et Minieres, Paris, France, a part interest

Filed Jun. 26, 1979, Ser. No. 52,238
Claims priority, application France, Jun. 29, 1978, 78 19467
Int. Cl.³ F16L *1/04*
U.S. Cl. 405—159 **19 Claims**



1. A device for utilizing an auxiliary vessel in order to lay pipelines which are submerged at the bottom of the sea and connected to at least one point of the coast,

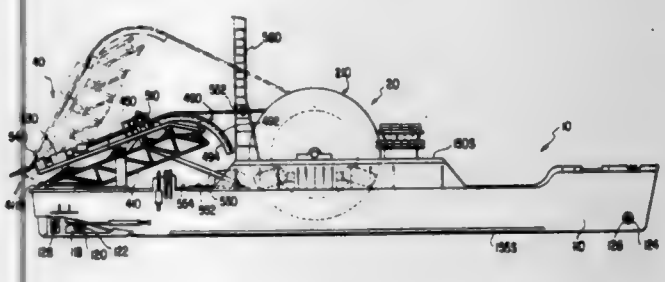
comprising an underwater vehicle provided with means for traveling along the sea bed, means for providing a flexible connection with the vessel, means for fabricating the pipe within the vehicle at least to a partial extent, and means for withdrawing the pipe from the vehicle progressively as it is being fabricated and for placing said pipe on the sea bed, wherein the means for fabricating the pipeline are such that the internal space of the vehicle is in communication with the internal space of the entire pipeline which has already been laid, said means for withdrawing the pipeline from the vehicle comprising two rings of elastic and high-strength material each provided with a selectively inflatable cavity in order to ensure leak-tight cooperation of said ring with said pipeline, at least one of said rings being mounted on an annular piston which is capable of sliding longitudinally with respect to the vehicle, and jack means acting between said piston and the vehicle to withdraw the pipe from the vehicle.

4,345,855

SELF PROPELLED DYNAMICALLY POSITIONED REEL PIPE LAYING SHIP

Stanley T. Uyeda, Orange; E. John Radu, Fountain Valley; William J. Talbot, Jr., Corona Del Mar, and Norman Feldman, Huntington Beach, all of Calif., assignors to Santa Fe International Corporation, Orange, Calif.

Division of Ser. No. 35,216, May 2, 1979, Pat. No. 4,269,540, which is a continuation-in-part of Ser. No. 903,181, May 5, 1978, abandoned. This application May 18, 1981, Ser. No. 264,958
Int. Cl.³ F16L *1/00*; B63B *35/04*
U.S. Cl. 405—168 **26 Claims**



1. A reel pipelaying vessel, comprising a reel mounted thereon and pipe conditioning means located downstream of the reel in the direction of unspooling, said pipe conditioning means, including:

radius control means for imparting a substantially uniform curvature to the pipe after it is unspooled from the reel;

straightening means for imparting a reverse bending force to the pipe opposite the curvature imparted by said radius control means, said straightening means having a plurality of reaction means for exerting relatively opposed reaction forces on the pipe; and

means for cooperatively adjusting the radius control means and straightening means relative to the nominal pipe path to adjust the pipe support surfaces of the radius control means and straightening means relative to the pipe path, to thereby maintain the pipe path at the exit end of the straightening means substantially the same for different pipe diameters whereby pipe exiting the straightening means is optimally subject to substantially no net bending stresses and substantially no net residual bending strains.

4,345,856

COMPOSITION AND PROCESS FOR STABILIZING EMBANKMENTS

Philip C. Tuck, 192 Spring St., West Bridgewater, Mass. 02379

Filed Nov. 28, 1979, Ser. No. 97,690
Int. Cl.³ E02B *3/04*; E02D *17/20*
U.S. Cl. 405—258 **20 Claims**

4. A method for grading and stabilizing an embankment comprising applying to the surface of said embankment in depths of about 2-4 feet, as measured perpendicular to the embankment, in the absence of any artificial supporting means a mixture consisting essentially of rip rap and loam wherein said rip rap consists essentially of a mixed aggregate of pro-

cessed stone ranging in size from about 6–18 inches in diameter in which at least about 25% of said rip rap is less than 10 inches in diameter and at least about 25% is greater than 10 inches in diameter, and the porportion by volume of loam to rip rap is from about 1–10 to 1–2.

19. A method for constructing and stabilizing an embankment comprising the following steps:

(a) constructing a first pair of rip rap embankments on either side of a space to be filled stabilized;



(b) filling said first pair of rip rap embankments with loam and the cavity therebetween with gravel or fill;

(c) constructing a second layer of rip rap embankments on top of said first pair of embankments followed again by filling said embankments with loam and the cavity therebetween with gravel or fill; and,

(d) constructing successive layers in a similar manner until said embankment attains the desired height.

4,345,857

CONSTRUCTION PLATE FOR A DITCH CONSTRUCTION DEVICE

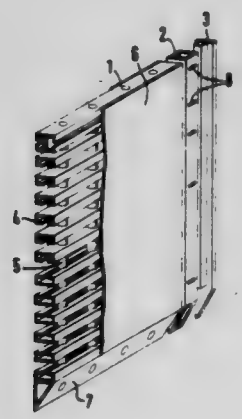
Josef Krings, Hans-Böckler-Str. 23, D-5138 Heinsberg-Oberbruch, Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 210,720

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948458

Int. Cl.³ E21D *5/12*

U.S. Cl. 405—282 **12 Claims**



1. In a construction plate for a ditch construction device of the type comprising profiled steel elements which are rigidly coupled together, cover plates covering said steel elements and profiled steel elements in the form of hollow profiles mounted adjacent the small sides of the construction plate and provided with guide heads for coupling adjacent supports or construction plates, the improvement comprising:

at least one vertically-disposed hollow profile having a wall facing the inner side of said construction plate and having a plurality of vertically spaced-apart and aligned horizontally-disposed slot openings formed therein;

a profiled guide bar having a rear side rib with a plurality of vertically spaced-apart and aligned horizontally-extending joint plates disposed for insertion through said openings of said hollow profile, said joint plates each having vertically-extending and aligned throughput openings formed therein vertically aligned with the throughput openings of the other plates; and

a locking rod insertable through said throughput openings, said locking rod having wedge elements for engaging said joint plate and/or hollow profile.

4,345,858

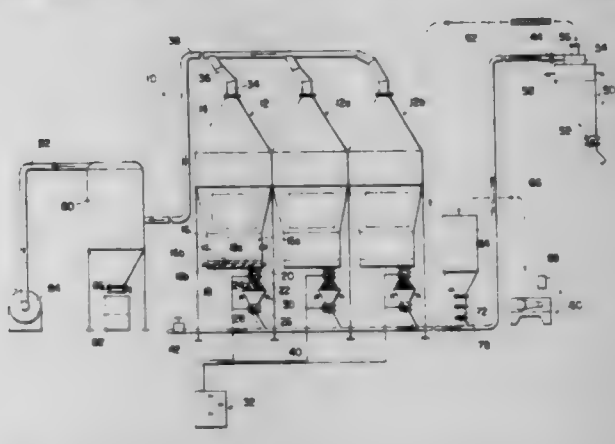
PARTICULATE MATERIAL DISPENSING AND WEIGHING SYSTEM AND METHOD

Robert C. Barlow, Bridgeville, Del., assignor to O. A. Newton & Son Company, Bridgeville, Del.

Filed Aug. 25, 1980, Ser. No. 180,923

Int. Cl.³ B65G *53/66*

U.S. Cl. 406—34 **9 Claims**



1. Apparatus for dispensing pre-selected quantities of multiple particulate material ingredients comprising:

(a) plural storage hopper means, one for each of a plurality of ingredients,

(b) plural ingredient weigh scales, one for each of said ingredients,

(c) means for discharging the ingredient from each storage hopper means to a respective weigh scale,

(d) a pneumatic ingredients delivery conduit,

(e) means for delivering ingredient from each said weigh scale to said delivery conduit, and

(f) means for receiving and for weighing the total quantity of material delivered by said delivery conduit,

(g) whereby the total quantity of material delivered is compared with the sum of the weights indicated by said ingredient weigh scales.

4,345,859

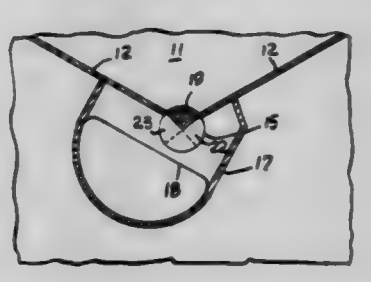
HOPPER DISCHARGE VALVE

Harry G. Robertson, Chicago, Ill., assignor to Edaco, Inc., Evergreen Park, Ill.

Filed Jun. 2, 1980, Ser. No. 155,615

Int. Cl.³ B65G *53/46*

U.S. Cl. 406—128 **8 Claims**



1. A hopper discharge structure having a discharging valve for evacuating granular-like lading from hopper cars and the like comprising:

(a) a hopper structure providing end walls and inclined side

walls, the confronting lower edges of which are spaced apart to provide a discharge opening therebetween,

(b) a cylindrical valve shaft rotatably supported between said end walls along a line parallel to said discharge opening formed between said inclined side walls,

(c) said valve shaft having its axis of rotation located equally between and along a line beneath said confronting lower edges of said inclined side walls with said valve shaft having a diameter such that a portion of its periphery sits within and closes said discharge opening,

(d) said valve shaft providing a plurality of channels formed in selective portions thereof, with one channel in one portion extending throughout the length of said valve shaft, and with partial channels formed in adjacent portions and of a length less than said one channel and on diametrically opposite sides thereof,

(e) means for rotating said shaft within said discharge opening so as to position said channels into selective lading discharging positions,

(f) a trough underlying said valve shaft and enclosing said discharge opening for reciving the lading flowing therethrough, and

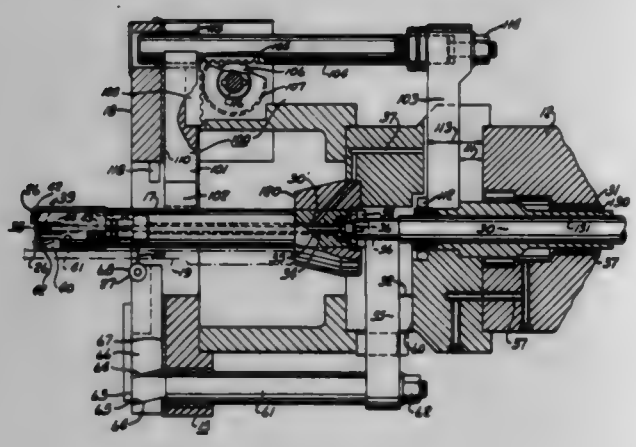
(g) a discharge port mounted on said trough externally of said side walls through which the lading is exhausted under pneumatic or vacuum means.

4,345,860

BORING MACHINE AND METHOD OF RIGIDIZING A BORING BAR

Alex Shashaty, 41562 Lodge Rd., Leetonia, Ohio 44431

Filed Jul. 14, 1980, Ser. No. 168,599
Int. Cl.³ B23B *35/00, 51/08*
U.S. Cl. 408—1 R **10 Claims**



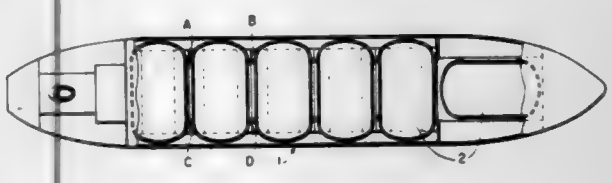
1. A boring machine for boring pipe ends or other elongated workpieces comprising, a support frame, a boring bar secured at one end thereof to said frame and having boring tool means on its other or free end for inside boring of an elongated workpiece, drive means on said frame to provide relative boring rotation between a workpiece to be bored and said boring bar, and radially retractable clamp means carried by said frame for radially clamping said boring bar intermediate its ends to rigidly support said bar during initial boring operations on an elongated workpiece and adapted for outward radial retraction to coaxially pass a workpiece end being internally bored over said bar past said clamp means after completion of said initial boring operations, said drive means including a spindle journaled for rotation on its axis in said frame, a motor in rotary driving engagement with said spindle, said boring bar axially aligned with said spindle and said one end thereof secured to one end of said spindle, said radially retractable clamp means being rotatably carried by said one end of said spindle.

4,345,861

UNIVERSAL TANK AND SHIP SUPPORT ARRANGEMENT

Harald Aarseth, Marsveien 2, N-1500 Moss, Norway

Filed Nov. 21, 1979, Ser. No. 96,365
Claims priority, application Norway, Nov. 24, 1978, 783969
Int. Cl.³ B61D *5/06;* B63B *25/16;* B65D *88/74, 90/06*
U.S. Cl. 410—68 **4 Claims**



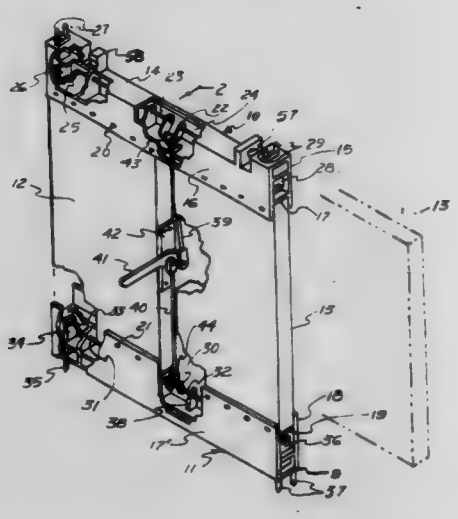
1. A system for supporting a large, generally cylindrical horizontal tank on a carrier and for accommodating movements of the tank due to thermal contraction and expansion and carrier movements comprising four supports arranged fore and aft of the tank and on each side of the longitudinal axis thereof, said four supports having tank portions rigidly secured to the tank and carrier portions mounted to the carrier by means rigidly securing the carrier portion of one said support to said carrier and slidably connecting the carrier portions of the other three said supports to the carrier for horizontal movement of the tank and said three supports relative to the carrier, and spherical ball and socket joint means interposed between said tank and carrier portions of said supports for accommodating relative movement between said tank and carrier portions of said supports.

2. A system for supporting a large, generally cylindrical tank in the hull of a ship positioned with its longitudinal axis parallel with the horizontal, and for accommodating movements of the tank due to thermal expansion and contraction and to movements of the ship, said system comprising means extending around the periphery of the tank for reinforcing the same, means in vertical alignment with said reinforcing means for supporting the tank, said supporting means comprising four support elements, two of which are positioned in laterally spaced relation toward one end of the tank and two of which are positioned in laterally spaced relation toward the other end of the tank, each support element comprising a tank portion and a hull portion, means for rigidly securing each said tank portion to the tank, means for rigidly securing the hull portion of a first said support element to the hull, means for slidably connecting the hull portion of a second said support element to the hull, transversely spaced from the first mentioned support element for movement of the second support element only in transverse directions relative to the axis of the tank, means for slidably connecting the hull portion of a third support element to the hull longitudinally spaced from said second mentioned support element for movement of the third support element only in directions parallel to the longitudinal axis of the tank and means for slidably connecting the hull portion of a fourth said support element transversely spaced from said third mentioned support element for movement of the fourth element in both transverse and parallel directions, the tank portions of each support element being connected with its respective hull portion by spherical joint means for rotational movement therebetween, and thermal insulation being provided between the parts of said spherical joint.

4,345,862
MODULAR FREIGHT BRACING BULKHEAD ASSEMBLY

Bennett O. Blout, Berwyn, and James C. Ruffolo, Country Club Hills, both of Ill., assignors to Evans Products Company, Portland, Oreg.

Filed Nov. 17, 1980, Ser. No. 207,406
Int. Cl.³ B60P 7/014
U.S. Cl. 410—134 2 Claims



1. A freight bracing bulkhead adapted to be suspended from a trolley cooperating with overhead tracks in a cargo area comprising an upper frame and a lower frame, said upper frame having spaced apart vertical members connected by a horizontal member which define a downwardly facing channel in said upper frame, said lower frame having spaced apart vertical members connected by a horizontal member which define an upwardly facing channel in said lower frame, two panel members extending between said upper and lower frames, the upper ends of said panel members being received in the downwardly facing channel of said upper frame and the lower ends of said panel members being received in the upwardly facing channel of said lower frame, means removably connecting said panel members to said upper and lower frames, each of said panels having a horizontal dimension that is greater than one-third the length of said upper and lower frames but less than one-half the length thereof, locking means located at the ends of said upper and lower frames and movable between an extended, locked position to a retracted, released position, and linkage means communicating said locking means with actuation means for moving said locking means between said locked position and said released position, said linkage means and said actuation means being located exteriorly of said panel means.

4,345,863
NUT CONTROL DEVICE

Haruo Mochida, Yokohama, and Tetsuo Kobayashi, Ikeda, both of Japan, assignors to Nissan Motor Company, Limited and Nippon Cable System, Inc., both of, Japan

Filed May 16, 1980, Ser. No. 150,623
Claims priority, application Japan, Jul. 13, 1979, 54-89130
Int. Cl.³ F16B 37/12
U.S. Cl. 411—252 2 Claims

1. A control device for preventing a nut from loosening, comprising:

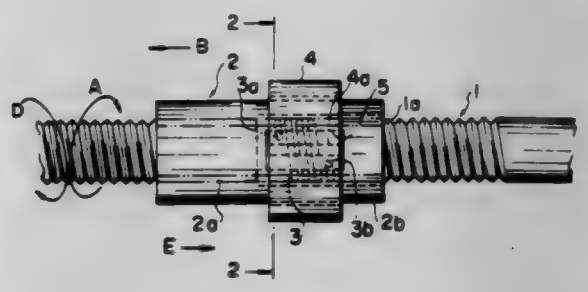
a first member having an external thread portion;

a second member having an internal thread portion screwed with the external thread portion and an opening;

a locking coil which is wound around the external thread portion of the first member and has at its both ends bent portions to be selectively engaged with the opposite sides of the opening of the second member; and

a third member which is loosely rotatably fitted in the opening of the second member and has a projection which is engaged or disengaged with the bent portions of the locking coil,

wherein the opening of the second member is a rectangular aperture formed in its longitudinal direction, and the bent portions of the locking coils and the projection of the third

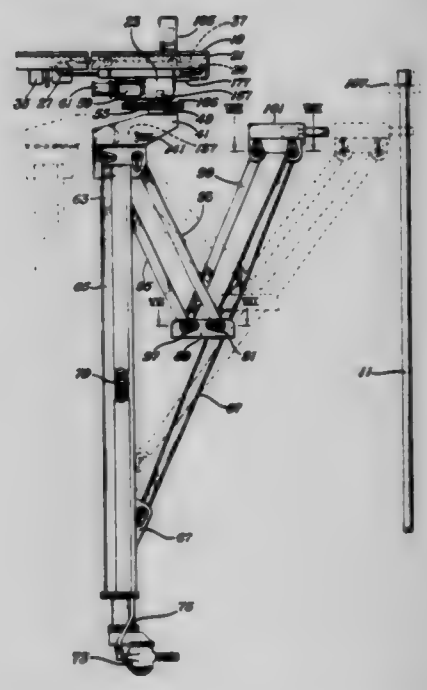


member are placed within the rectangular aperture thereof in such a manner that a certain clearance can be set between the side walls of the rectangular aperture of the second member and the bent portions of the locking coil, the projection of the third member being between the bent portions of the locking coil.

4,345,864
PIPE MANIPULATOR

Roger Smith, Jr., and Faustyn C. Langowski, both of Georgetown, Tex., assignors to BJ-Hughes Inc., Round Rock, Tex.

Filed Mar. 17, 1980, Ser. No. 130,762
Int. Cl.³ E21B 19/15
U.S. Cl. 414—22 4 Claims



1. Apparatus for moving stands of pipe in a derrick, said apparatus comprising:

a powered turret for rotation about a generally vertical axis;

mounting means for positioning said turret at a selected location relative to the derrick;

a generally vertical leg supported and rotated by the turret;

a powered dolly mounted for movement and selected positioning along the vertical leg;

a power arm having one end rotatably mounted to the dolly;

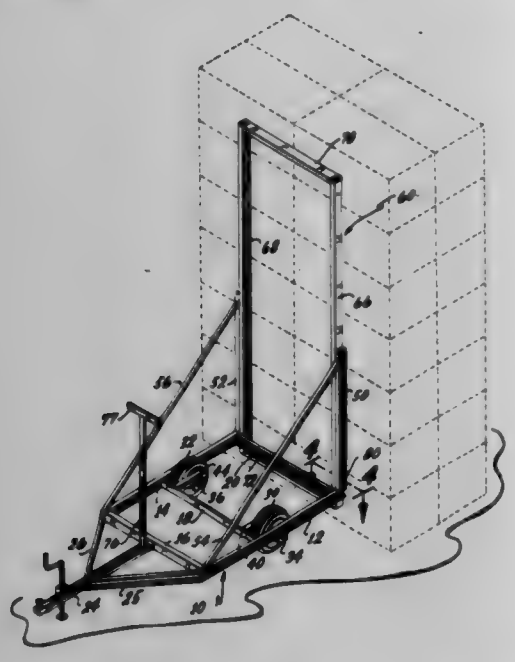
a pipe gripping head mounted to the opposite end of the power arm; and

a scissor arm having one end rotatably connected to the power arm and the other end rotatably connected to a selected one of the leg and the turret.

4,345,865
STACK STARTER

Joseph E. Jager, 44022 N. 75th St. East, Lancaster, Calif. 93534

Continuation of Ser. No. 34,470, Apr. 30, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 206,718
Int. Cl.[3] B60P *1/04*
U.S. Cl. 414—35 1 Claim



1. An implement for starting and stabilizing stacked bales of hay on the surface of the ground, stacked by tilting from a transport vehicle comprising:

a wheel-supported frame said frame having a pair of horizontally extending parallel side members, a transverse end member connected to and extending between the inner sides of the parallel side members and spaced inwardly from the respective ends of the side members and a pair of vertically upstanding members extending upwardly from the upper end surfaces of the parallel side members;

a rectangular frame having parallel side elements pivotally mounted intermediate its ends to and between the upper free ends of said upstanding members for pivotal movement from a horizontal position to a vertical position, said rectangular frame when in said vertical position having its said side elements positioned between the said ends of the said side members of the wheel supported frame and against said transverse end member, said rectangular frame, when in said vertical position, defining a planar vertical surface free of lateral projections; said rectangular frame when in vertical position extending substantially to the ground;

means for selectively locking said rectangular frame in said vertical position to said vertically extending members adjacent the ends of the side members whereby said rectangular frame is in a fixed position and serves to engage and stabilize the vertical side of a stack of bales opposite a transport vehicle from which said bales are tilted to thereby stabilize said stack against tilting or collapsing away from said vehicle, the implement including the frame being movable away from stack leaving it standing, said wheel—supported frame is provided with an upright member, located at the other end of said frame from said upstanding members, for engaging and supporting said rectangular frame in a horizontal position for transporting said implement.

4,345,866
LOADER-UNLOADER SYSTEM FOR WORK PIECES

Larry D. Greene, Centralia, Ill., assignor to Acco Industries Inc., Bridgeport, Conn.

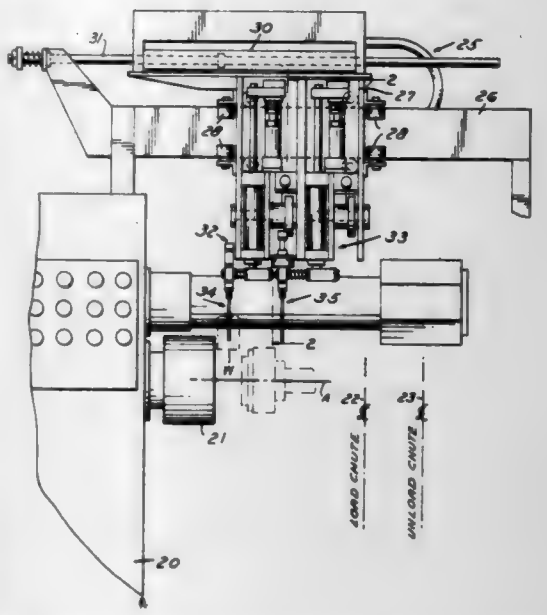
Filed Feb. 22, 1980, Ser. No. 123,496
Int. Cl.[3] B23B *13/00*
U.S. Cl. 414—224 14 Claims

6. A load-unload head for loading and unloading a workpiece into a machine tool wherein each workpiece is held in position for rotation about a longitudinal axis comprising

a body,

a set of fingers,

means for mounting said fingers on said head for linear movement radially toward and away from one another for gripping and releasing a workpiece,



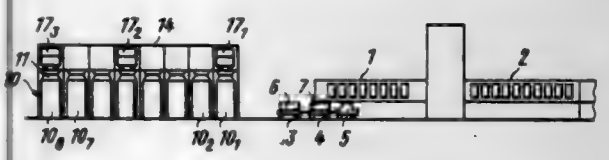
and means for moving said fingers toward and away from one another in said linear path,

means associated with said head for rotating said head about an axis at a right angle to the axis of the workpiece being loaded said means for rotating being such that a workpiece in the machine tool can be gripped, removed from the machine tool, rotated and re-inserted in the machine tool to permit machining of an opposite surface thereof.

4,345,867
COKE DRY QUENCHING PLANT

Alexandr N. Minasov, ulitsa Ivanova, 12/16, kv. 59; Alexandr N. Suslov, ulitsa Karla Marxa, 38 E, kv. 42, both of Kharkov; Alexandr A. Azimov, ulitsa Oktyabrskoi revoljutsii, 25, kv. 11, and Gennady N. Marapulets, ulitsa Lyzenko, 40, both of Slavyansk, all of U.S.S.R.

Filed Mar. 10, 1980, Ser. No. 128,503
Int. Cl.[3] C10B *39/02*
U.S. Cl. 414—287 7 Claims



1. A coke dry quenching plant comprising:

vertical quenching chambers, said chambers each being arranged in a row and each including an associated coke-charging means corresponding thereto and installed in an upper part thereof;

hoisting shafts, one of said hoisting shafts for each said vertical quenching chambers, and each said hoisting shaft being mounted opposite an associated one of a corresponding vertical quenching chamber;

a body for carrying coke;

lifts operatively movable relative to and interacting with said hoisting shafts, each said lift including a carriage for transporting said body from one of said hoisting shafts to and from the coke-charging means of its said corresponding vertical quenching chamber;

a trestle justaposed to an exit end of said hoisting shafts, rails on said trestle and positioned on a level thereof where said lift exits from said exit of said hoisting shafts, said body

being movable on said trestle and guided by said rails for movement along said vertical quenching chambers;

a railway line laid on a side of said vertical quenching chambers on a level of the location of said rails of said trestle perpendicularly to said rails and interacting with said undercarriage of said lift carriage; and

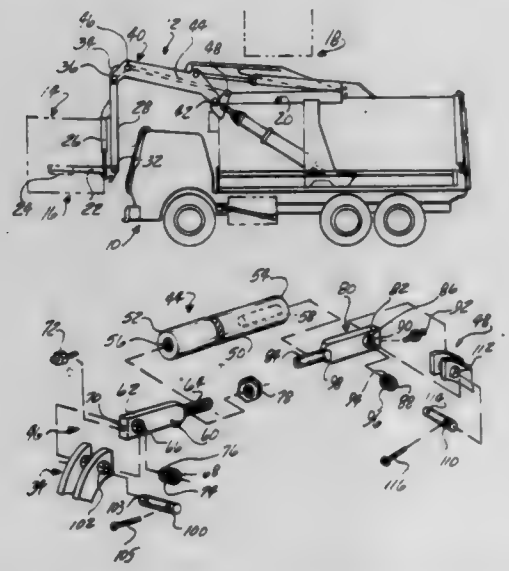
means for transferring said body in a horizontal plane along said trestle and perpendicularly thereto.

4,345,868

WASTE RECEPTACLE DUMPING MECHANISM

Charles P. Rizzo, 33552 Chatsworth, Sterling Heights, Mich. 48077; Stephen Barraco, 55327 Broughton, Mt. Clemens, Mich. 48044, and James Quinn, 40900 Production Dr., Mt. Clemens, Mich. 48045

Filed Jul. 21, 1980, Ser. No. 169,515
Int. Cl.³ B65F *3/00*
U.S. Cl. 414—408 **1 Claim**



1. An improved waste receptacle dumping mechanism including a vehicle mounted cylinder actuated mechanism for engaging and translating a waste receptacle from a first position in front of said vehicle to a second position over a waste receiving opening at a rear portion of said vehicle; a fork associated with said mechanism for releasably engaging the receptacle, cylinder means for pivoting the fork and dumping the contents of the receptacle into the waste receiving opening, the fork supported by a pair of spaced vertical arms each having a lower end and an upper end, each of the lower ends pivotally engaging the fork, a pivot support spaced downward from each of the upper ends of the vertical arms pivotally engaging a forward end of a pair of spaced swinging arms, each swinging arm including a rear end pivotally supported by the vehicle; a pair of adjustable stabilizer rods including a front end pivot attached to the upper ends of the vertical arms and a back end pivot pivotally attached to the vehicle, the stabilizer rods and their pivots configured to stabilize the waste receptacle in a horizontal position as the swinging arms translate the receptacle from the first position to the second position, the adjustable stabilizer rods comprising:

a central rod including a rod front end and a rod back end;

a threaded bore formed longitudinally in the rod front end;

a central bore formed longitudinally in the rod back end;

a front end bearing support including an enlarged end and a threaded end, the enlarged end including a first bearing bore formed therein, a first roller bearing snugly pressed into the bearing first bore;

lock means threadingly engaging the threaded end of the front end bearing support, the threaded end threadingly engaging the threaded bore in the rod front end;

a rear end bearing support including an enlarged end and a cylindrical end, the large end including a second bearing bore formed therein, a second roller bearing snugly pressed into the second bearing bore, the cylindrical end slidingly engaging the central bore in the rod back end, a shoulder formed at an inner end of the cylindrical end, the shoulder secured to the central rod;

a first pin snugly engaging an upper end aperture formed in the vertical arm upper end and slidingly engaging the first roller bearing rollers to define the front end pivot; and

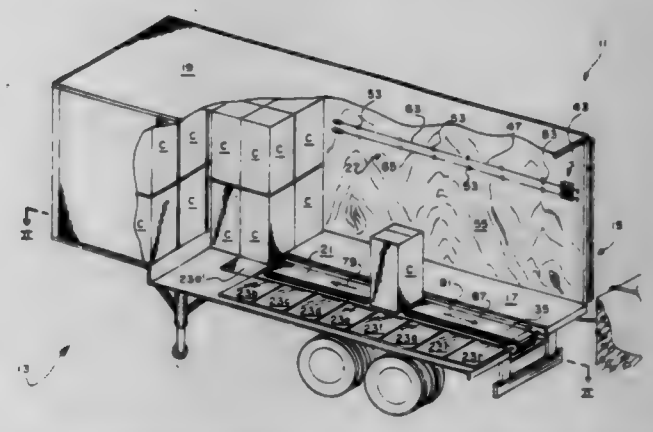
a second pin snugly engaging a pair of aligned apertures formed in the vehicle and slidingly engaging the second roller bearing rollers to define the back end pivot.

4,345,869

CONVEYOR SYSTEM FOR LOADING AND UNLOADING TRUCKS AND TRAILERS

John L. King, 1740 Kansas, Memphis, Tenn. 38109

Filed Nov. 3, 1980, Ser. No. 203,644
Int. Cl.³ B60P *1/38*
U.S. Cl. 414—520 **4 Claims**



1. The combination with a cargo transport truck of the type having a cargo body of self-contained powered conveyor means for assisting in the loading and unloading operation wherein the improvement comprises: variable traverse means for: (1) selectively and progressively abating and augmenting respectively the effective length of the conveyor means commensurate with the loading and unloading operation, and (2) enabling the entire cargo floor area of the cargo body to be utilized in restingly supporting cargo although any likelihood of having cargo directly supported upon the conveyor means during transport of the truck may be avoided for enabling the conveyor means to be effectively operated when the cargo body may be fully loaded as well as when it may be empty and the various stages therebetween; and manually operable control means for selectively enabling said conveyor means to be operated in forward and reverse directions and to cease operation, said control means including a first control means including a first control member being readily accessible along and extending substantially the entire length of the cargo body and a second control member being readily accessible along and extending substantially the entire length of the cargo body and substantially coextensive with said first control member, a manual action on said first control member causing said conveyor means to travel in a forward direction, a manual action on said second control member causing said conveyor means to travel in a reverse direction.

4,345,870

QUICK ATTACH LOADER

Carl M. Anderson, and Vernon L. Losey, both of Claremore, Okla., assignors to Hesston Corporation, Hesston, Kans.

Filed Jun. 16, 1980, Ser. No. 159,767
Int. Cl.³ E02F *3/70*
U.S. Cl. 414—686 **10 Claims**

1. In combination with a tractor having a front mounting means and a pair of intermediate mounting means, one on each side respectively of the tractor, a materials handling implement including:

a frame structure having a pair of laterally spaced, interconnected side units,

each unit including an elongated, fore and aft bar having a

front leg secured thereto and depending therefrom and a rear upright secured thereto, each upright being provided with an upstanding post and a rear leg depending from the bar;

a boom assembly having a pair of laterally spaced, interconnected lifting beams,

each beam including a fore and aft rear arm and a forwardly extending front arm;

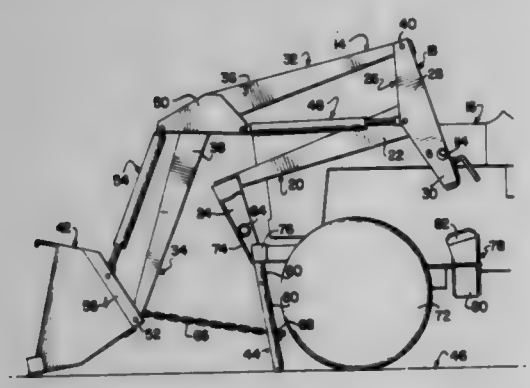
pivot means connecting the rear ends of the rear arms with the upper ends of the corresponding posts for up and down swinging movement of said assembly relative to said structure;

a materials handling tool mounted on the forward ends of said front arms;

a stand mounted on the lower ends of said front legs and cooperable with said tool in rendering the implement free standing and self supporting; and

power means interconnecting each upright with a corresponding beam for raising and lowering said structure and said rear arms while the implement is supported by said tool and said stand,

the lower end of each front leg having means releasably attaching the same to said front mounting means, and the lower end of each rear leg having means releasably attaching the same to the corresponding intermediate mounting means after said structure and the rear legs are lowered,



said front mounting means comprising a crosspiece, said front legs having a cross member interconnecting the same and resting on the crosspiece.

6. The method of mounting a materials handling implement on a tractor,

said implement having a frame structure provided with a stand depending from its forward end, a boom assembly mounted on said structure for up and down swinging movement, a materials handling tool carried by said assembly, and power means between said structure and said assembly for swinging the latter,

said implement being ground supported by the bucket and the stand when the implement is detached from the tractor,

said method including the steps of:

driving the tractor forwardly to position its front end adjacent the stand;

actuating the power means to swing said structure downwardly while the implement is supported by the tool and the stand until said structure engages the tractor at a number of locations on the latter; and

attaching the structure to the tractor at each of said locations,

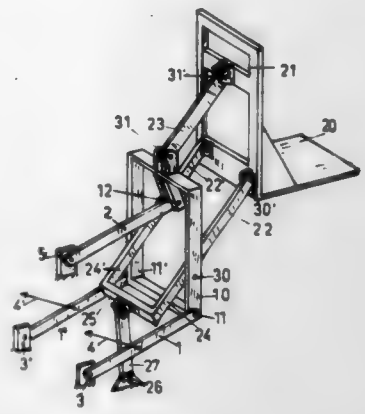
said structure having a front cross member and a pair of spaced rear legs, said tractor having a front crosspiece and a pair of spaced pockets, said method including the downward swinging of said structure until the rear legs enter the pockets and the cross member descends toward and comes to rest on the top of the crosspiece at substantially the same time.

4,345,871

HIGH-LIFT ATTACHMENT FOR AN AGRICULTURAL TRACTOR PROVIDED WITH A THREE-POINT LINKAGE

Eitan Kalif, 20b Yehoshua St., Afula, Israel

Filed Apr. 2, 1980, Ser. No. 136,469
Int. Cl.[3] B66F *9/06*
U.S. Cl. 414—703 5 Claims



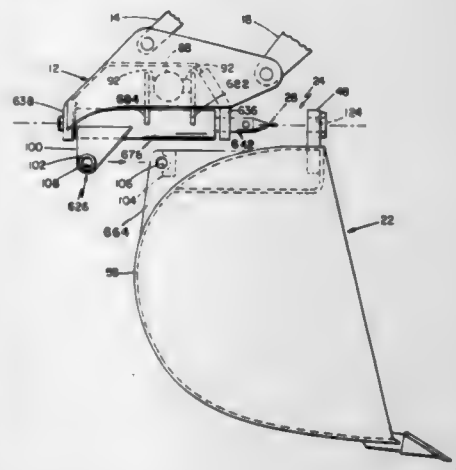
1. A high-lift attachment for a tractor provided with a three-point linkage, comprising a lifting implement in the form of a platform or a fork provided with an upstanding backing frame or wall on the side facing the tractor; an upstanding intermediate frame positioned between said backing frame and said three-point linkage, in substantially parallel alignment with said backing frame and pivotally connected thereto by at least three upper and lower parallel links, wherein the distance between the pivot points on each of said links is equal, said intermediate frame being pivotally connected to the upper arm and to both lower arms of said three-point pivot, wherein said upper arm and said two lower arms are of identical length as measured between their respective pivot points, and wherein the pivot points of said upper arm are positioned rearwardly in respect of the pivot points of said lower arms, both on the tractor and on said intermediate frame; at least one of said links connecting said intermediate frame to said backing frame being provided with an elongated portion extending beyond said intermediate frame in the direction of said tractor linkage; means being provided for urging said elongated portion in a downwards direction.

4,345,872

CONNECTORS

Carroll H. Arnold, Westminster, Mass., assignor to Wain-Roy, Inc., Hubbardston, Mass.

Filed Jul. 10, 1978, Ser. No. 923,379
Int. Cl.[3] E02F *3/70*
U.S. Cl. 414—705 8 Claims



1. In apparatus for releasably securing a materials handler to a boom while permitting rotation of said materials handler relative to said boom about relatively perpendicular first and

second axes, said second axis being on the side of said boom opposite said first axis and said apparatus including a hitch adapted for pivotal connection to said boom for rotation about said first axis and for connection to said materials handler for providing said rotation about said second axis, that improvement comprising:

a first connector system including a first hitch connector adjacent said first axis and a first materials handler connector, said first hitch connector having (i) a projecting axially-fixed pin attached to said hitch and extending generally along said second axis and having a circular in cross-section tapered nose at one end thereof and (ii) a cylindrical sleeve surrounding said pin, and said first materials handler connector including a member projecting upwardly beyond the top of said material handler and defining an aperture for receiving said projecting nose of first hitch connector pin when said hitch and said handler are moved relatively together;

a second connector system spaced from first connector system and including (i) a recess defined by said materials handler and a pair of axially aligned apertures extending through opposite walls of said recess with the axes of said apertures generally parallel to said axis and (ii) a projection defined by said hitch and arranged to fit within said recess when said tapered nose is fitted within said aperture of said first connector system;

an arm attached to said sleeve, defining said projection of said connector system and extending downwardly into said recess in a direction generally perpendicular to said second axis; and,

means for rotating said sleeve and said arm about said second axis,

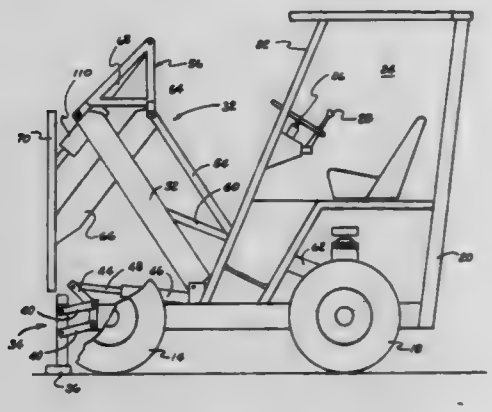
whereby said rotation of said arm causes said materials handler to rotate about said second axis.

4,345,873

MATERIAL HANDLING VEHICLE

Roger S. Wymore, 4612 F. Ave., NE., Cedar Rapids, Iowa 52402

Filed Jun. 2, 1980, Ser. No. 155,210
Int. Cl.³ B66F *9/06*
U.S. Cl. 414—714 7 Claims



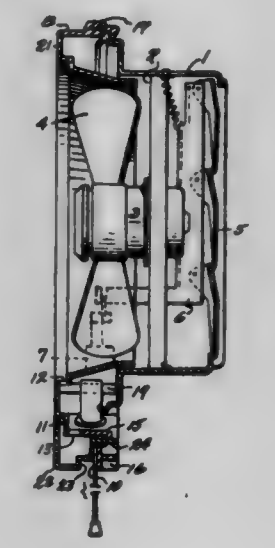
1. A material handling vehicle for moving a load a short distance, said vehicle comprising a main vehicle frame, front and rear ground-engaging wheels supported by said frame on a fixed wheel base, means for powering said vehicle, a first lifting assembly pivotally supported by said frame, said first lifting assembly including a four-bar linkage arrangement, a linkage frame pivotally connected to the outer end of said first lifting assembly, a second lifting assembly pivotally supported by said linkage frame, said second lifting assembly including a four-bar linkage arrangement, attachment means at the outer end of said second lifting assembly to provide for lifting and carrying a load at one end of the vehicle, first control means for controlling movement of said first lifting assembly, second control means for controlling movement of said second lifting assembly, said first and second lifting assemblies providing for the positioning of a load with its center of gravity between the front and rear wheels, and outrigger means moveable to and from a ground-engaging position to assist in supporting a load during the lifting of the load and positioning of the load to a carrying position.

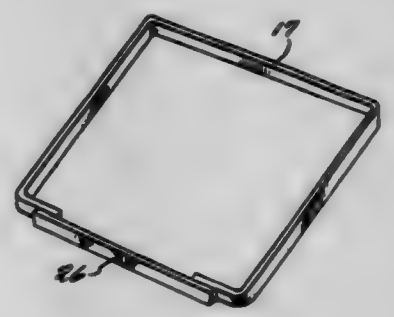
4,345,874

EXHAUST FAN WITH PROTECTIVE BAND

Kenichi Ozeki, Ichinomiya, and Takashi Fushimi, Mino, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 26, 1980, Ser. No. 124,901
Claims priority, application Japan, Jul. 24, 1979, 54-94070
Int. Cl.³ F01D *29/70*
U.S. Cl. 415—9 16 Claims





1. An exhaust fan comprising:

rotatable blades;

drive means for rotating said rotatable blades;

a case for mounting and surrounding at least said rotatable blades;

band means detachable disposed and surrounding said case so as to protrude therefrom for removing a coating film therewith, said film covering said case and said band means for protecting said case from dirt.

4,345,875

TURBO-MACHINES OPERATING AT THE MAXIMUM POSSIBLE EFFICIENCY

Jean F. Charpentier, 3 Rue du Pont de Madame Mille, 18190 Chateauneuf-sur-Cher, France

Filed Dec. 1, 1980, Ser. No. 211,838
Int. Cl.³ F01D *13/02*
U.S. Cl. 415—69 1 Claim

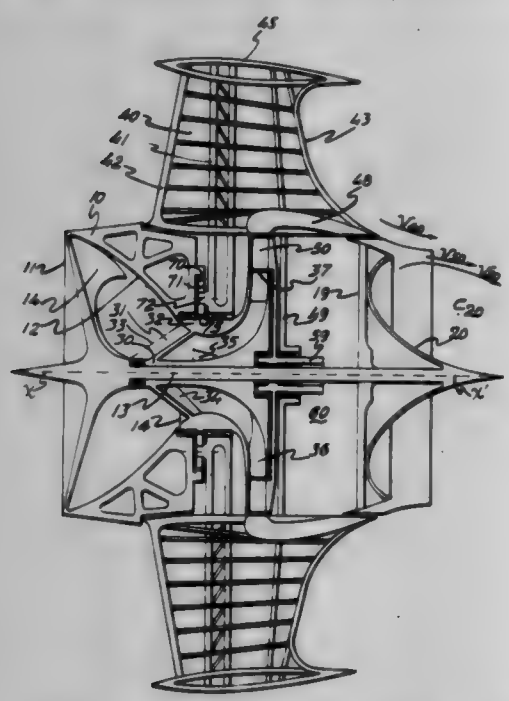
1. A compound converter of fluid energy comprising:

a. A fixed body structured for supporting several rotating units and including a fixed longitudinal central shaft surrounded by a co-axial central convergent channel having a circular frontal inlet diameter slightly smaller than the fixed body maximum diameter of the fixed body for receiving the upstream activating mass-flow of fluid and having,

b. An external axial turbine mounted free to rotate on the

fixed body and having blades that are radially extended from the outer contour of said fixed body, and receive rotational motion by the activating external mass-flow of velocity V_o passing through the actuator annulus area of said blades when rotating and with the effective energy generated by said external axial turbine being convertable to mechanical form and transmitted to:

c. An accelerator mounted free to rotate on said fixed body central shaft (a), a mechanical transmission operatively connecting the external axial turbine (b) to the accelerator, the accelerator having an inlet plane facing the outlet plane of the central converging channel (a) with its longitudinal guiding profile changing from axial to radial direction for accelerating axially and tangentially the activating mass-flow of initial velocity V_o entering the frontal inlet of the central converging channel (a) and subjecting it to the final centrifugal force of an accelerator deflector which ejects said mass-flow in the optimum direction required by



the receptive unity while transmitting to it the ultimate acceleration; and

d. A radial turbine having a cylindrical inlet and having a center support hub shaft, said radial turbine being mounted co-axially with the accelerator and free to rotate on the said central fixed shaft (a), with its cylindrical inlet facing a corresponding outlet of the accelerator (c) in order to receive through the central mass-flow ejected by same the "total effective energy retained by the turbomachine from the activating mass-flow passing through the central and annulus actuators' areas," and to convert energy to mechanical form on its own central support hub shaft prolonged beyond its bearing for connection to an output means; and

with the radial turbines' outlet facing the inlet of a rotating collector integral with the external axial turbine, structured for ensuring an efficient final phase of the mass-flow ejection.

4,345,876

ROTOR STRUCTURE FOR A ROTARY WING AIRCRAFT

Alois Schwarz, Putzbrunn; Karl-Heinz Mautz, Ottobrun, and Michael Stephan, Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

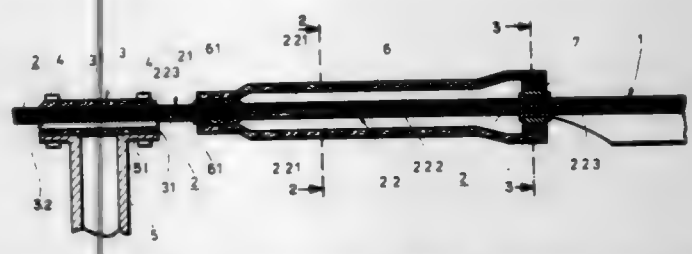
Filed Jan. 21, 1980, Ser. No. 114,236

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903524

Int. Cl.³ B64C *27/38*

U.S. Cl. 416—134 A **8 Claims**

1. A hingeless rotor structure for rotary wing aircraft, comprising rotor head means, an even number of wing blade means forming at least one pair of wing blades, a single length of spar means operatively interconnecting the blade means of a pair, securing means rigidly securing said single length of spar means to said rotor head means, said single length of spar means comprising two members located on opposite sides of the rotor head, each spar member being located between the rotor head and the respective wing blade means, each spar member having a flexible section (2.1) having a given torsion yieldability and a torque soft zone (2.2) extending between the respective wing blade means (1) of a pair of wings and the flexible section (2.1), beam means (6) stiff against bending arranged to bridge the respective torque soft zone, bearing means (7) operatively securing said beam means at the radially outer end thereof to the respective wing blade means for permitting blade angle movements of the respective wing blade and substantially rigid means (6.1) rigidly securing the radially inner end of said beam means (6) to said spar means at a point spaced from said rotor head means so as to leave said flexible section (2.1) of the spar member between said rotor head means and said securing means (6.1), said flexible section (2.1) of the spar member being sufficiently yielding relative to bending loads to permit the blade flapping movements as well as the blade lead-lag movements and wherein said torque soft zone (2.2) of said spar means comprises a plurality of mutually separated strands (2.2.1) bridged by said beam means (6), said torque soft zone (2.2) having, due to said mutually separated strands (2.2.1), a torsion yieldability higher than said given torsion yieldability.



4,345,877

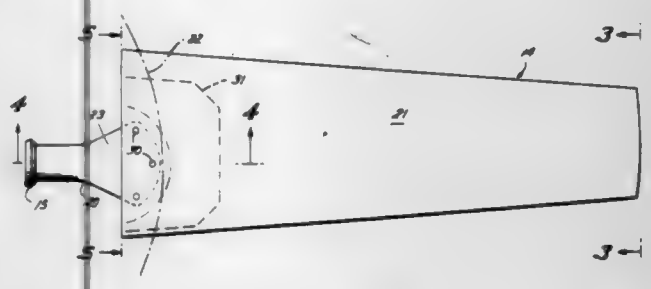
AXIAL FLOW FANS AND BLADES THEREFOR

Robert C. Monroe, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Apr. 4, 1980, Ser. No. 136,511

Int. Cl.³ F04B *29/34*

U.S. Cl. 416—239 **11 Claims**



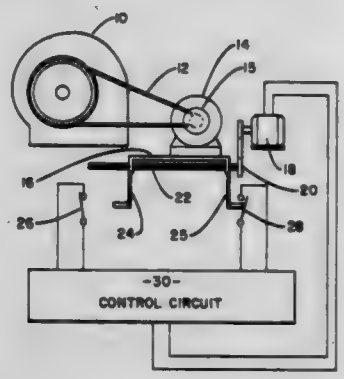
1. An axial flow fan, comprising a rotatable hub, a seal disc on one side of the hub extending outwardly from the periphery of the hub, a plurality of blades each extending radially from the hub, each blade comprising a metallic portion having a neck which is attached to the hub, and a reinforced plastic portion which has an exterior air foil cross section, and which is made of one hollow piece which decreases in width in a direction from its inner to its outer end, the outer end of the metallic portion fitting a relatively short distance into and being of substantially less width than the inner open end of the plastic portion, and fasteners securing the interfitting ends of the blade portions to one another, the outer periphery of the seal disc extending outwardly to approximately the inner ends of the plastic portion of the blades.

4,345,878

APPARATUS FOR CHANGING BELTS

Charles K. Griffin, Auburn, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,434
Int. Cl.[3] F04B 49/00, 35/04
U.S. Cl. 417—15 3 Claims



1. Motor position control apparatus with a manual limit switch bypass for use in changing belts comprising:

(1) demand sensing means;

(2) driven means;

(3) variable sheave driving means for driving said driven means;

(4) belt means for drivably connecting said driving and driven means;

(5) means for positioning said driving means in response to said demand sensing means;

(6) switch actuator means carried by said driving means; and

(7) control circuit means including:

(a) first limit switch means for preventing further movement of said driving means towards said driven means past a limiting position wherein said first limit switch means are opened by said switch actuator means;

(b) second limit switch means for preventing further movement of said driving means away from said driven means past a limiting position wherein said second limit switch means are opened by said switch actuator means;

(c) manually actuated bypass means for bypassing said first limit switch means; and

(d) manually actuated means for causing said driven means to move past the limiting position in which said first limit switch means are opened when said manually actuated bypass means are actuated whereby said belt means can be removed and replaced without the use of tools.

4,345,879

HYDRAULIC SWITCH FOR A PUMP

Charles W. Steiner, Brooklyn Park, Minn., assignor to Simer Pump Company, Minneapolis, Minn.

Filed Dec. 6, 1979, Ser. No. 100,896
Int. Cl.[3] F04B 49/04
U.S. Cl. 417—40 26 Claims

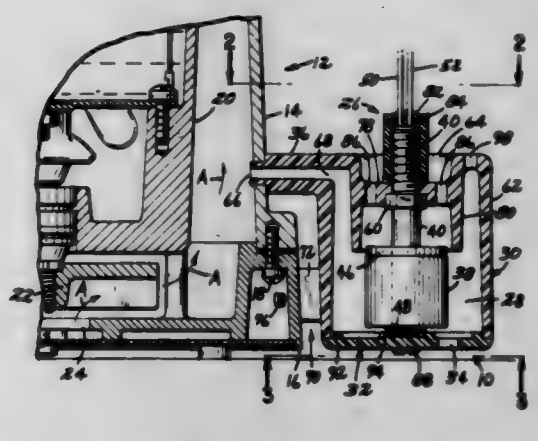
1. A hydraulic switch for controlling the operation of a pump, comprising:

means for buoyantly sensing a predetermined liquid level;

means for controlling the pump while said sensing means senses liquid at or above said liquid level;

reservoir means for holding liquid to be sensed by said sensing means;

means for communicating liquid from the discharge conduit of said pump to said reservoir means; and



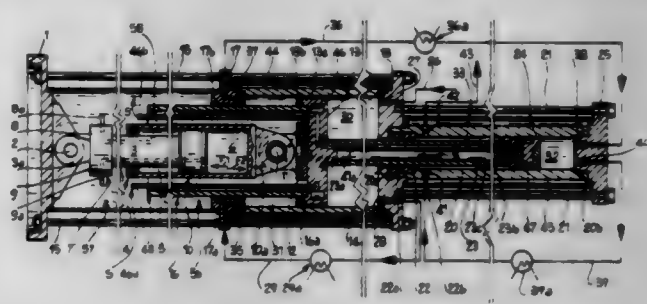
means for draining from said reservoir means said liquid flowing into said reservoir means.

4,345,880

MULTI-STAGE, RECIPROCATING, POSITIVE DISPLACEMENT COMPRESSOR

Franco Zanarini, Castel Maggiore, Italy, assignor to Safe S.r.l., Bologna, Italy

Filed Jun. 11, 1980, Ser. No. 158,523
Claims priority, application Italy, Aug. 28, 1979, 4915/79[U]
Int. Cl.[3] F04B 3/00, 25/00, 35/00
U.S. Cl. 417—264 10 Claims



1. A multi-stage reciprocating, positive displacement compressor having first and second ends and comprising:

a support structure forming the first end of said compressor;

a hydraulic jack having an axially-extending rod with a first end secured to said support structure and a second end extending towards said second end of said compressor, said rod forming a piston, and a cylinder encompassing the piston, the piston dividing the interior of the cylinder into first and second expansion chambers;

means for feeding fluid under pressure into said first and said second expansion chambers to thereby reciprocate said cylinder with respect to said rod;

a pumping piston coaxial with said cylinder and secured to an end of said cylinder closest to the second end of the compressor;

chamber defining means for defining a cylindrical chamber secured to said support structure, said cylindrical chamber being coaxial with and encompassing said pumping piston, said chamber defining means having a first end extending towards said first end of said compressor and a second end extending towards said second end of said compressor;

means for defining a first sliding hermetic seal between an interior surface of said cylindrical chamber and a peripheral surface of said pumping piston;

a cylindrical tubular liner coaxial with and inwardly spaced from said chamber defining means, a first end of said liner extending towards the first end of said compressor and a second end of said liner being secured to said pumping piston;

a guide ring secured to and extending inwardly from said first end of said cylindrical chamber defining means;

means for defining a second sliding hermetic seal between an interior surface of said guide ring and an exterior surface of said tubular liner;

a disk secured to and closing the second end of said cylindrical chamber defining means so as to form a first compressor stage between said disk and said pumping piston, a second compressor stage being formed between said means defining said first sliding hermetic seal and said means defining said second sliding hermetic seal; and

pipe means for connecting said first stage with fluid to be compressed, for connecting said first and said second stages, and for removing compressed fluid from said compressor.

4,345,881

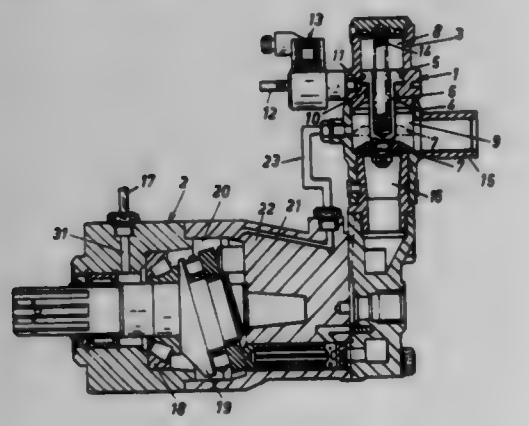
CLOSE-OFF VALVE FOR SUCTION PIPES IN HYDRAULIC PUMPS

Ralf K. E. Petersson, deceased, late of Hudiksvall, Sweden, and by Stephan Vejdemo, executor, Huddinge, Sweden, assignors to Sundins Fabriker AB, Hudiksvall, Sweden

Filed Jan. 31, 1980, Ser. No. 117,346

Int. Cl.³ F04B *1/18, 39/10*

U.S. Cl. 417—270 **3 Claims**



1. An improved close-off valve for suction pipes between a reservoir and a hydraulic pump, said pump being of the kind comprising a hydraulic piston system, a main passageway adapted to selectively communicate with said reservoir, a tilting disc for operating said hydraulic piston system for generating a flow of a hydraulic fluid from the reservoir through the said main passageway to said pump, a thrust bearing supporting said tilting disc, and a bypass passageway provided in the pump housing and passing across said tilting disc and said thrust bearing to allow passage through of a small amount of oil, said small amount of oil being sufficient to lubricate and cool the pump, said close-off valve comprising a valve housing, a spring-loaded piston movably mounted in said valve housing and operatively connected to a rod, a valve disc supported by said rod, a solenoid valve controlling the movement of said valve disc, said valve disc arranged to be moved into abutment against a valve seat for the purpose of shutting off the connection of said reservoir to said main passageway of the pump, the improvement comprising a cavity in said valve housing between said reservoir and said valve seat, said cavity being in continuous communication with the reservoir and with said bypass passageway regardless of the position of said valve disc for allowing oil to flow from the reservoir around said thrust bearing and said tilting disc and further through said bypass passageway to lubricate said thrust bearing of the pump and said tilting disc to cool the pump even when said valve disc is in the closed position.

4,345,882

HERMETIC MOTOR COMPRESSOR

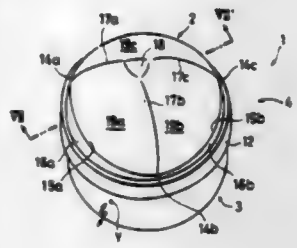
Fumitoshi Saito, Yawata; Sotomitsu Maeda, Kadoma, and Toshio Uetsuji, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited and Matsushita Reiki Company, Limited, both of Osaka, Japan

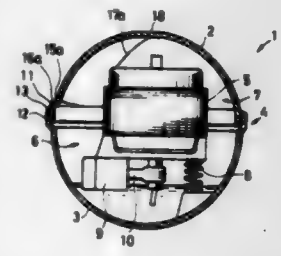
Filed Jul. 11, 1980, Ser. No. 168,178

Claims priority, application Japan, Jul. 13, 1979, 54-89549; Jul. 13, 1979, 54-97065[U]; Mar. 10, 1980, 55-31450[U]; Mar. 10, 1980, 55-31451[U]

Int. Cl.³ F04B *21/00, 35/04*

U.S. Cl. 417—312 **15 Claims**





1. A hermetic motor compressor comprising:

(a) a motor-compressor unit; and

(b) a casing for containing said motor-compressor unit, said casing having a dome-like upper casing and a dome-like lower casing, each of said upper and lower casings having an engagement portion for engaging with each other, and an apex portion at the top of the dome thereof, at least one of said upper and lower casings having:

at least three corner portions in the vicinity of said engagement portion thereof;

at least three crest lines respectively extending from said corner portions toward said apex portion;

said casing having at least three crescent-shaped planes, each plane being placed between a pair of said corner portions, each of said crescent-shaped planes having a convexly curved side placed along a section of said engagement portion, and a concavely curved side; and

at least three curved surfaces connecting two of said crest lines and said concavely curved side of respective crescent-shaped planes.

4,345,883

HIGH PRESSURE PUMPING APPARATUS FOR SEMI-FLUID MATERIAL

Robert E. Westerlund, 10904 N. Westview 41W, Mequon, Wis. 53092, and Wayne L. Read, 4913 Hillside Rd., West Bend, Wis. 53095

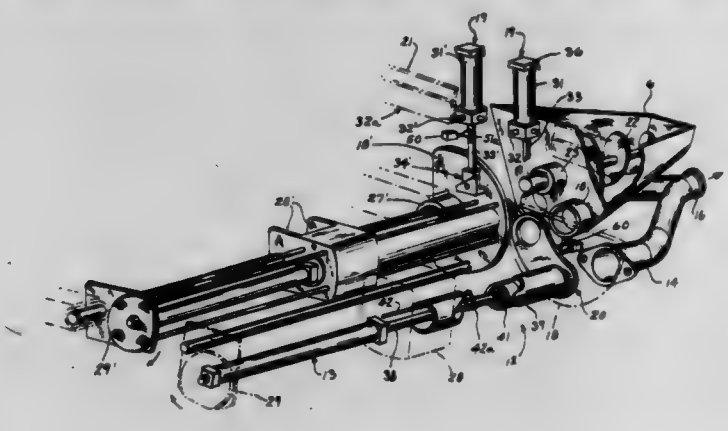
Filed Jun. 11, 1979, Ser. No. 47,301

Int. Cl.³ F04B *7/04, 49/00*

U.S. Cl. 417—317 **6 Claims**

1. A pumping apparatus for establishing a constant and uniform pressurized discharge flow of semi-fluid material through a flow system adapted to be connected to such apparatus, comprising a supply means containing a supply of semi-fluid material and having discharge means for delivery of the semi-fluid material therefrom, a plurality of receiving means located in predetermined spaced relation to said discharge means for receiving said semi-fluid material and transferring said material to a remote location, a plurality of pump assemblies movably mounted with respect to said discharge means

and said receiving means to a charging position and a discharge position for selective charging and discharging with material, control means coupled to actuate said pump assemblies and operable to charge the pump assemblies substantially more rapidly then to discharge the pump assembly, said control means including positioning means alternately positioning the pump assemblies in said two positions and including a period of a simultaneous discharge positions during each positioning of the pump assemblies for simultaneously establishing pressurized flow from said pumps to said receiving means and thereby establishing a continuous and uninterrupted movement of the semi-fluid material through said receiving means, said control means including first position control means for actuating the first pump assembly and second position control means for actuating the second pump assembly, each of said pump assemblies including signal means for establishing unique signals including a first signal with the pump assembly fully charged, a second signal shortly before the pump assembly is fully discharged and a third signal when the pump assembly is fully discharged, a fourth signal in response to positioning of the pump assembly in the charging position and a fifth signal in



response to positioning of the pump assembly in the discharging position, and circuit means connecting said signal means into said first and second control means to cyclically actuate said pump assemblies including a pumping cycle in which the first pump assembly is charging and the second pump assembly is discharging, said charging being at a substantially faster rate than said discharging and in sequencing including a condition in which said first pump assembly is fully charged and in said discharge position prior to said second pump assembly and actuating said corresponding signal means to establish said second signal and said second pump assembly actuates said second signal means to establish said second signal means to actuate the fi st pump assembly to discharge simultaneously with the second pump assembly and said second pump assembly actuating the second signal means to establish said third signal and actuating the positioning means to place the second pump assembly in the charging position for charging of said second pump assembly and initiating a second cycle with the first and second pump assemblies reversed in the identical sequence to the first cycle, said first and second control means continuously establishing said first and second cycles to maintain a constant discharge.

4,345,884

PUMP DRIVE

Michael A. Longiny, Fountain Valley; Dimitar Kalchev, Montebello, and Thomas K. Zinn, Chino, all of Calif., assignors to Peerless Pump Division, Indian Head Inc., Montebello, Calif.

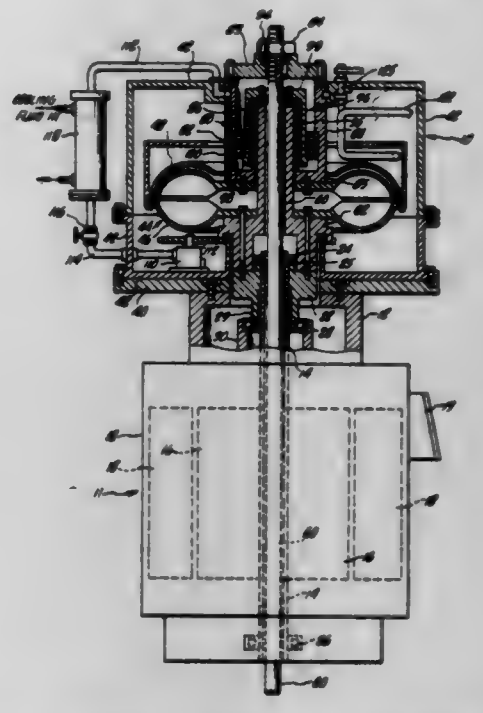
Filed Jan. 28, 1980, Ser. No. 115,941
Int. Cl.³ F04B 49/00
U.S. Cl. 417—359 **17 Claims**

2. A mechanism for driving a pump comprising:

(a) a hollow shaft motor;

(b) a rotatable output shaft having first and second ends and capable of being mechanically coupled to the pump at its second end, a portion of the output shaft between the first and second ends being within the hollow shaft of the motor;

(c) a variable speed transmission unit adjacent the motor and mechanically coupled to the hollow shaft and the output shaft for transmitting power from the motor to the output shaft for rotation of the output shaft at a rate proportional to the rate of rotation of the hollow shaft; and



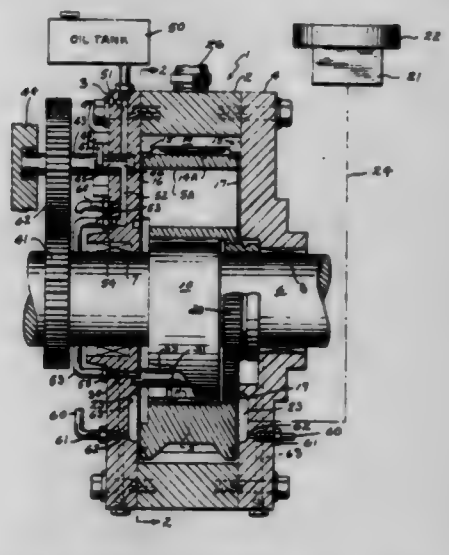
(d) means for adjusting the position of the output shaft relative to the motor, the adjusting means being located on the opposite side of the variable speed transmission unit than the motor, wherein the output shaft is not directly in contact with any bearings.

4,345,885

LUBRICATION SYSTEM FOR ROTARY-TROCHOIDAL ENGINES

Eugene D. Turner, West Bend, Wis., assignor to Briggs & Stratton Corporation, Milwaukee, Wis.

Filed Mar. 3, 1980, Ser. No. 126,323
Int. Cl.³ F01C 21/04
U.S. Cl. 418—90 **9 Claims**



1. In a rotary-trochoidal engine having (a) a housing formed by a rotor housing defining a trochoidal chamber and a pair of opposed end housings joined thereto, (b) a crankshaft journaled in the end housings and having an eccentric positioned in the trochoidal chamber, and (c) a rotor supported on a rotor bearing carried on a surface of the eccentric,

a lubrication system for supplying lubricating oil for the rotor bearing comprising, in combination:

(1) a first oil passage extending through a first of said end housings,

(2) a second oil passage in the eccentric, one end of said second passage disposed in communication with the surface of the eccentric on which the rotor bearing is carried and the opposite end of said second passage disposed to register with said first passage as the eccentric rotates within the housing,

(3) means for supplying lubricating oil to said first passage, and

(4) a collecting member disposed within said opposite end of said second passage and disposed to ride against the inner surface of said first end housing to thereby collect oil emerging from said first passage and transfer said oil to said second passage and hence to said rotor bearing.

4,345,886

ROTARY COMPRESSOR WITH VANES IN THE HOUSING AND SUCTION THROUGH THE ROTOR

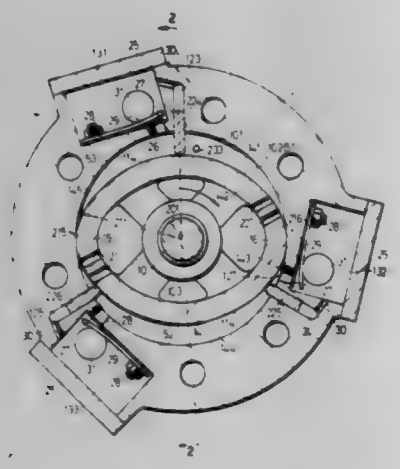
Shozo Nakayama; Mitsuhiro Hattori, and Hiromitsu Ono, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation of Ser. No. 8,918, Feb. 5, 1979, abandoned. This application Mar. 26, 1981, Ser. No. 247,953

Claims priority, application Japan, Mar. 10, 1978, 53-27973; Mar. 14, 1978, 53-32261; Mar. 14, 1978, 53-32262; Mar. 14, 1978, 53-32419; Mar. 15, 1978, 53-33212; Mar. 15, 1978, 53-33213; Apr. 1, 1978, 53-38391; Apr. 1, 1978, 53-42720; Apr. 3, 1978, 53-39023; Apr. 3, 1978, 53-43429; Apr. 4, 1978, 53-39367; Apr. 4, 1978, 53-39368

Int. Cl.³ F04C *18/00, 27/00, 29/02*

U.S. Cl. 418—100 **15 Claims**



1. A vane type rotary compressor comprising:

a cylindrical housing having front and rear side plates for closing longitudinal ends of said housing;

a rotor rotatably disposed in said cylindrical housing for constituting a cylinder chamber between said cylindrical housing and said rotor, said rotor having at least one longer-diameter portion with the same curvature as that of an inner surface of said cylindrical housing which constitutes, in cooperation with the inner peripheral surface of said cylindrical housing, a sealing portion between said cylindrical housing and said rotor, said rotor extending between said side plates and making gas tight sliding contact with said side plates when it is rotated;

a suction chamber defined in said rotor for sucking a fluid to be compressed from the outside of said housing, said suction chamber extending in the inside of said rotor from the one side plate to the other side plate of said housing such that an inner surface of said rotor is directly in contact with said side plates for providing a gas tight seal and lubrication therebetween by the fluid sucked into the suction chamber;

a plurality of vanes disposed in said housing and with their inner ends engaging the outer peripheral surface of said rotor with sliding contact, so as to divide said cylinder chamber into at least two working chambers, the number of said vanes being one more than the number of said longer-diameter portions of said rotor;

at least one suction port formed through the wall of said rotor for communicating between said suction chamber and one of said working chambers, said suction port being located such that, when the volume of one of said working chambers has been expanded to the maximum for compression of the sucked fluid as a result of the rotation of said rotor by power applied from outside, said suction port is positioned immediately beyond that vane that defines the leading edge of the respective working chamber and said suction port is immediately behind the respective longer-diameter portion of the rotor; and

delivery ports located in said housing to deliver fluid compressed in said working chambers to the outside of said housing, the number of said delivery ports being as many as that of the working chambers.

4,345,887

DEVICE FOR THE POURING OF PLASTER

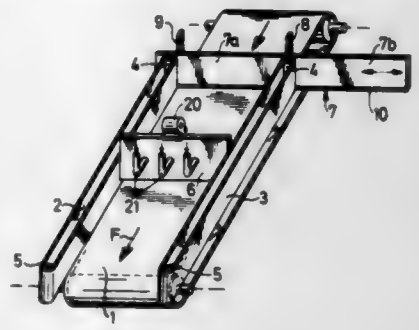
Jacques Lanneau, Breuil-le-Vert, and Adrien Delcoigne, Chantilly, both of France, assignors to Isover Saint-Gobain, Neuilly, France

Filed Aug. 21, 1980, Ser. No. 180,036

Claims priority, application France, Aug. 21, 1979, 79 21038

Int. Cl.³ B28B *21/56, 21/94;* B29C *13/00;* B29D *7/02*

U.S. Cl. 425—115 **18 Claims**



1. Apparatus for casting a plaster composition onto a moving base including

a bottomless reservoir disposed above said moving base,

said apparatus having a slit between said base and a front wall of said reservoir.

a movable rear wall of said reservoir being disposed with a surface thereof substantially vertical to said base and said rear wall being formed of but a single member having a larger surface at least twice that of an end of said reservoir, and

said member being mounted such that said surface can be traversed across the width of said reservoir.

4,345,888

APPARATUS FOR PRODUCING PREFABRICATED MODULAR BUILDING PANELS

James C. Brunemann, R.R. 5, P.O. Box 31, Brookville, Ind. 47012

Filed Oct. 27, 1980, Ser. No. 201,219

Int. Cl.³ B28B *7/22, 21/96*

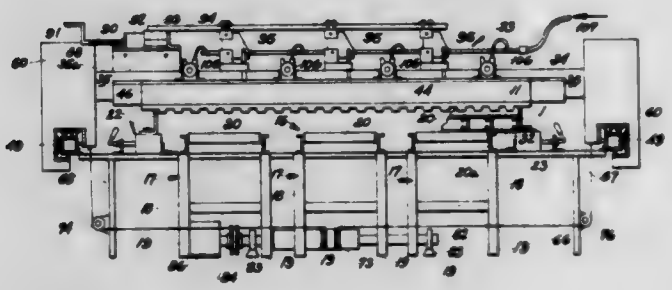
U.S. Cl. 425—117 **31 Claims**

1. Apparatus for applying an exterior layer of cementitous material to a partially assembled prefabricated modular building panel of the type having a rigid framework composed of a plurality of rigidly interconnected stud members and a support base secured to the framework having an outer surface configured to retain the cementitous material, said apparatus comprising:

a generally-horizontal planar bed for supporting the partially assembled panel in a horizontal position with the outer surface of the support base facing upwardly;

screed means overlying said bed for spreading cementitous

material over the outer surface of the panel support base, said screed means comprising an elongated screed extending transversely across said bed and movable horizontally along the longitudinal axis of the bed, and texturing means secured to said screed and vertically positioned to contact the exterior layer of cementitous material applied to the outer surface of the support layer, said texturing means comprising an elongated texturing blade attached to the lower end of said screed, said texturing blade configured



to produce a desired surface texture in the cementitous layer as the screed traverses the bed;

an angled plate extending upwardly and forwardly from the front cementitous material contacting surface of said texturing blade for causing the cementitous material to roll downwardly as said screed traverses the bed; and

means for traversing said screed over said bed to spread the layer of cementitous material over the outer surface of the panel support base.

4,345,889

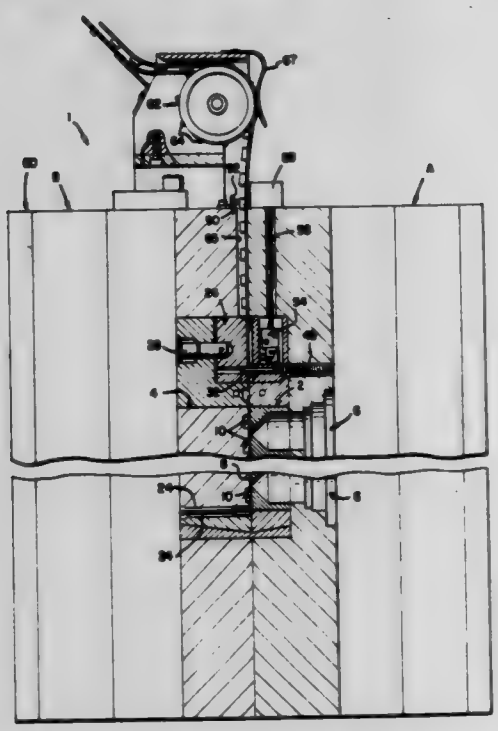
MOLDING PLASTIC BODIES ON CONTINUOUS STRIP

Ronald D. Sizemore, Germanton; John J. Tucci, Winston-Salem, and Albert D. Willette, Pfafftown, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 81,607, Oct. 3, 1979, Pat. No. 4,309,370. This application May 26, 1981, Ser. No. 267,099

Int. Cl.³ B29F *1/00*

U.S. Cl. 425—122 **7 Claims**



1. Apparatus for molding a series of products along a continuous strip, comprising:

a first mold half and a second mold half constructed for closed together cooperation during a molding cycle,

a pair of molding dies mounted respectively on said first mold half, and in closed together cooperation during a molding cycle to mold a composite product consisting of a series of molded bodies interconnected one to the other and provided with at least one molded strip segment,

first means for closing together said dies and for separating said dies to provide a space therebetween,

second means on one said dies for ejecting said composite product outwardly of one said die,

drive means for withdrawing all but a remainder portion of said composite product from said space between said dies,

third means for aligning said remainder portion in desired position between said dies prior to closing together said dies in a repeated molding operation,

fourth means responsive to misalignment of said remainder portion between said dies for disabling said first means and preventing closure together of said dies for a repeated molding cycle,

said drive means constructed for providing slack in said composite product during closure together of said dies during a repeated molding cycle, and

during a repeated molding cycle, said dies constructed for molding an additional composite product joined integrally to said remainder portion.

4,345,890

INJECTION MOLDING MACHINE HAVING MOLD LOCKING UNIT EQUIPPED WITH TOGGLE DRIVE AND HYDRAULIC LOCKING MECHANISM

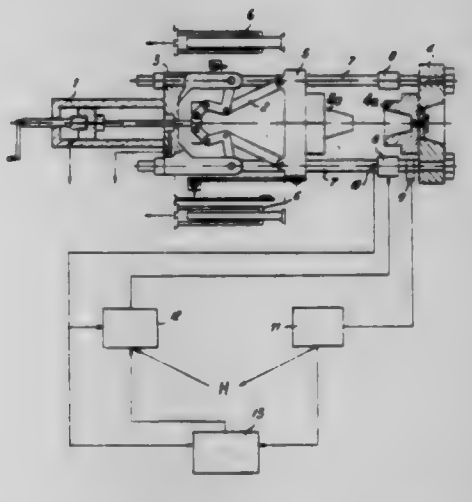
Peter Hemmi, Männedorf, and Richard Schrepfer, Näfels, both of Switzerland, assignors to Netstal-Maschinen AG, Switzerland

Filed Jun. 6, 1980, Ser. No. 157,277

Claims priority, application Switzerland, Jun. 11, 1979, 5467/79

Int. Cl.³ B29F *1/06*

U.S. Cl. 425—143 **7 Claims**



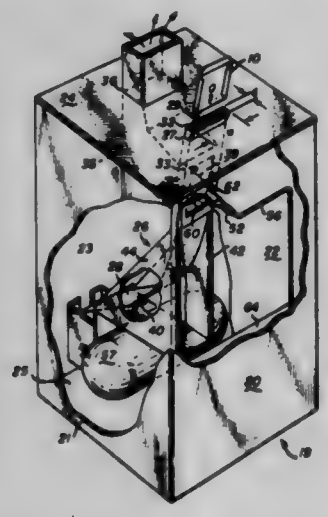
1. An injection mold for conducting molding operations, with locking device comprising a fixed backing plate, a fixed mold part plate, at least one thermally expandible and contractible tie rod connected between said fixed backing plate and said fixed mold part plate, a movable mold part plate, drive and locking means connected between said fixed backing plate and said movable mold part plate for moving said movable mold part plate toward said fixed mold part plate and locking said movable mold part plate in a molding position with respect to said fixed mold part plate, and thermal force control means associated with said tie rod for continuously sensing and for regulating the temperature thereof during molding operations to selectively change the length thereof between said fixed backing plate and said fixed mold part plate and thus the force between said fixed and movable mold part plate.

4,345,891

APPARATUS AND METHOD FOR FUZZ REMOVAL FROM EDGES OF SHEET MATERIAL

Lawrence G. Martinelli, San Jose, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed May 28, 1980, Ser. No. 153,866
Int. Cl.³ B29C *17/08, 17/12*
U.S. Cl. 425—289 11 Claims



1. Apparatus for removing fuzz from the edges of sheets of material which is decomposible by heat, the apparatus comprising:

an elongated inclined chute having an opening about one end for receiving a sheet of material from which fuzz is to be removed, having an aperture intermediate its terminal ends and penetrating laterally through the chute; and

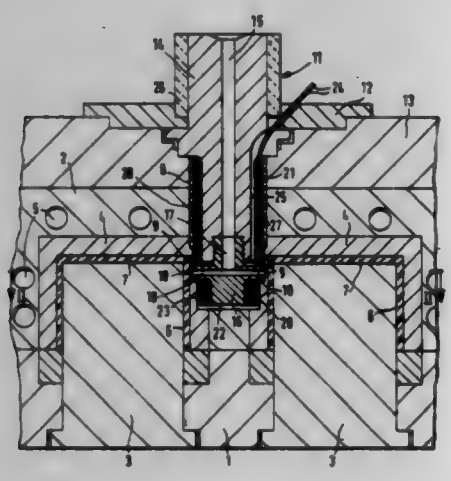
a heated gas flow means positioned adjacent to said aperture for creating a heated gaseous flow through said aperture, whereby the fuzz from the edges of the moving sheet which pass within the confines of the aperture are decomposed.

4,345,892

INJECTION MOULDING DIE WITH HEAVY-DUTY SPRUE BUSH

Wolfgang Schulte, Schalksmühle-Heedfeld, and Giacinto Castiglia, Lüdenscheid, both of Fed. Rep. of Germany, assignors to Firma Jetform Heisskanalnormalien und Zubehor GmbH, Fed. Rep. of Germany

Filed Nov. 25, 1980, Ser. No. 210,226
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1980, 3002264
Int. Cl.³ B29F *1/08*
U.S. Cl. 425—548 8 Claims



1. In an injection moulding die for moulding thermoplastic material, the die having a heavy-duty sprue bush of higher temperature than the die for a spruing through tunnel gating to at least one mould chamber, the heavy-duty sprue bush being: oriented generally perpendicularly to the jointing plane of the die; fixedly located within a receiving chamber in the die; and heated by a first electric heater portion coiled around it, the improvements comprising:

(a) an orifice head attached to a front end of the sprue bush and received in the receiving chamber, the orifice head having a generally cylindrical outer wall;

(b) means in the orifice head defining sprue runners, the axis of each runner extending generally parallel to, but displaced from the jointing plane of the die;

(c) a second electric heating coil portion wrapped around the generally cylindrical outer wall of the orifice head, the first and second heating coil portions serving to heat the sprue bush and the orifice head so as to maintain the moulding material in a plastic, free-flowing state throughout the length of the sprue bush and the sprue runners, the dimensions of the cylindrical outer wall and the second electric heating coil portion being such as to leave an insulating air gap between them and the receiving chamber to minimize heat transfer to the die; and,

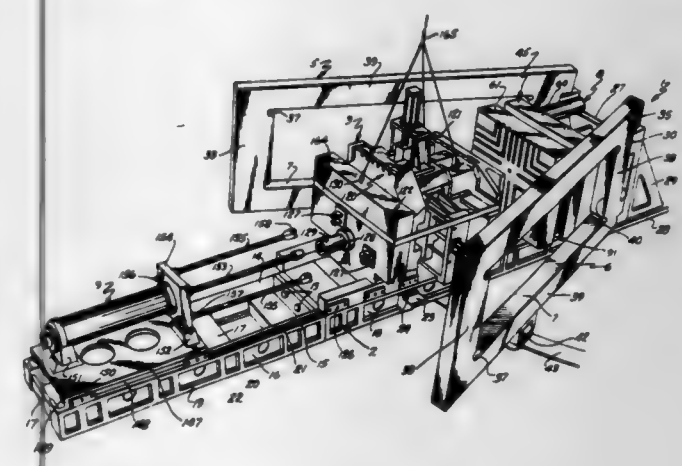
(d) means defining an injection opening through a side wall of each of the moulding chambers tightly abuting said sprue runners, the axis of each injection opening extending generally parallel to the jointing plane of the die, but displaced therefrom.

4,345,893

MOLDING MACHINE

Edgar D. Prince, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Oct. 20, 1980, Ser. No. 199,066
Int. Cl.³ B29F *1/00;* B29C *1/00*
U.S. Cl. 425—595 29 Claims



1. A molding machine, comprising:

first and second die supports adapted to mount mating die halves thereon;

a base movably supporting said die supports thereon for convergence and divergence along said base;

means for translating said die supports between an open position and a closed position;

first and second rigid clamping frames having first ends thereof pivotally mounted on opposite sides of said base, and including means defining closed borders sized to receive said die supports therein; said frames having second ends disposed opposite said first ends;

means for laterally pivoting said clamping frames between an open position for removing the die from said base, and a closed position wherein the closed borders of said clamping frames are received over and surround said die supports;

means for retaining the second ends of said clamping frames in the closed position during molding; and

means extendable between one of the first and second ends of said clamping frames and an adjacent one of said die supports for positively blocking said die supports in the closed position within said clamping frames, whereby

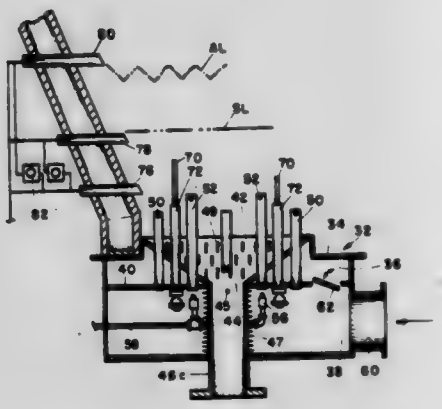
separation forces developed during die injection are resisted by said clamping frames.

4,345,894

LIGHT FUEL START-UP FLUIDIZED BED COMBUSTOR

Willard P. Smith, and Bruce R. Hutchinson, both of Spring Lake, Mich., assignors to Stone-Platt Fluidfire Limited, Brierly Hill, England

Filed Oct. 20, 1980, Ser. No. 198,918
Int. Cl.³ F27B *15/14*
U.S. Cl. 431—170 5 Claims



2. A fluidized bed combustor comprising:

a combustion chamber;

a distributor plate assembly at the bottom of said combustion chamber;

said assembly including a housing forming a first air plenum and a second air plenum; a surface in the top of said housing, having air flow openings in said surface from said first plenum to said combustion chamber; air flow riser tubes in addition to said air flow openings, said riser tubes projecting up from said second plenum to a position elevated above said surface, having air inlets adjacent the bottom of said riser tubes and air outlets adjacent the top thereof; said riser tubes comprising a first set of riser tubes and a second set of riser tubes; fuel nozzles arranged for injection of light liquid fuel into the risers of said second set for elevation and discharge of the fuel with air flow to said combustion chamber;

forced air supply means to said housing for air flow thereto under pressure; and air flow control means for regulating the relative flow at said first and second plenums to thereby regulate air flow through said air flow openings in said surface relative to air flow through said riser tubes.

4,345,895

PHOTOFLASH DEVICE HAVING DIE-STAMPED CIRCUIT BOARD ASSEMBLY WITH FLEXURE MEANS TO PREVENT SWITCH CUTTING

Randall H. LeFever, and Boyd G. Brower, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 19, 1980, Ser. No. 131,610
Int. Cl.³ F21K *5/02*
U.S. Cl. 431—359 24 Claims

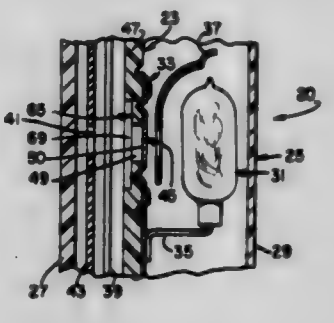
1. A circuit board assembly for use within a photoflash device, said circuit board assembly comprising:

a dielectric substrate;

a switching element positioned on said dielectric substrate and having a portion thereof pressed within said dielectric substrate;

an electrically conductive member pressed within said dielectric substrate and having at least a part thereof located atop said pressed portion of said switching element and in electrical contact therewith; and

flexure means located within said substrate or forming a part thereof for permitting said substrate to flex during pressing of said portion of said switching element and said conductive member within said substrate sufficiently to



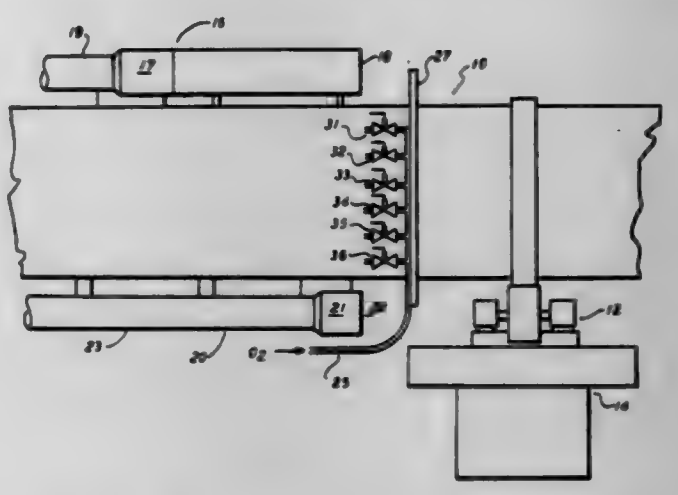
prevent severing of said switching element during said pressing.

4,345,896

METHODS AND APPARATUS FOR CALCINING CARBONACEOUS MATERIAL

Randolph Abernathy, Jr., South Orange, and Douglas M. Rowe, Somerset, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Filed Apr. 29, 1981, Ser. No. 258,826
Int. Cl.³ F27D *7/02*; F27B *9/04, 7/00*
U.S. Cl. 432—19 11 Claims



1. Apparatus for calcining carbonaceous material comprising a rotary kiln; fan means mounted on said kiln for introducing air through an inlet thereof and into the interior of said kiln; valve means disposed about a portion of the circumference of said kiln such that upon kiln revolution, said fan inlet and valve means are aligned for a predetermined segment of kiln revolution; a source of oxygen gas connected to said valve means; means for sensing alignment of said fan inlet and said valve means; and means for opening said valve means in response to said sensing means sensing said alignment to supply oxygen gas into said fan inlet whereby air introduced into said kiln is enriched in oxygen.

4,345,897

RECIRCULATING SYSTEM FOR GAS-FIRED FURNACE

C. Robert Stanton, 1316 Edwardsville Rd., Granite City, Ill. 62040

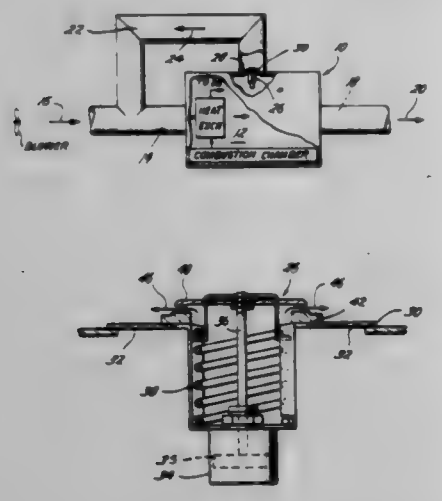
Filed Apr. 21, 1980, Ser. No. 142,079
Int. Cl.³ F24H *1/00*; F24B *7/00*; F16K *15/00*
U.S. Cl. 432—72 12 Claims

1. Combustion gas recirculating system for a gas-fired furnace of the type which includes a plenum with a cold air inlet duct and a warm air exhaust duct, a combustion chamber where gas is burned to form hot combustion gases, a heat exchanger in the plenum for receiving the hot combustion gases and including a surface configuration past which air can flow and be heated, an outlet in the heat exchanger for the hot

combustion gases, and a blower for moving air through the plenum and past the heat exchanger, the invention comprising:

(a) a recirculation duct connecting the combustion gas outlet with the cold air inlet duct;

(b) a thermostatically controlled valve for regulating the flow of hot combustion gases from the combustion gas



outlet to the cold air inlet duct by opening when the hot combustion gases reach a predetermined temperature and closing when the hot combustion gases are below said predetermined temperature; and

(c) bypass means for allowing a pedetermined minimum amount of hot combustion gases to flow to the cold air inlet duct when the thermostatic valve is closed.

4,345,898

FACE BOW

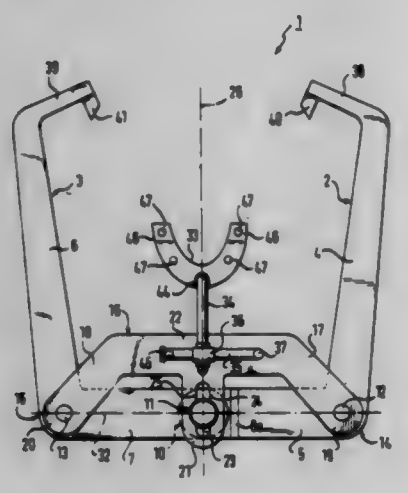
Heinz Mack, Südl. Auffahrtsallee, 8000 München 19, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,232

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3032913

Int. Cl.³ A61C *19/04*

U.S. Cl. 433—73 **7 Claims**



1. A face bow consisting essentially of two L-shaped side arms which are connected by pivot bearings to a base plate at two oppositely located peripheral pivot points for scissors-like movement, and which can be locked in the overlapping region of the ends of the transverse portions of the L-shaped side arms, wherein

(a) the pivot bearings (12,13) are disposed in the respective L-bends (14,15) of the L-shaped side arms (2,3), and

(b) in the middle between the pivot bearings (12,13) on which the base plate is mounted and spaced inwardly thereof, the base plate (16) is provided with a slot (23) in a portion of the plate which extends rearwardly of the remainder thereof whose longitudinal edges (24,25) extend parallel to the longitudinal axis (26) of the face bow (1) and through which projects the locking means (11), passing rotatably but non-slidably through the free ends (8,9) of the transverse portions (5,7) in the overlapping region.

4,345,899

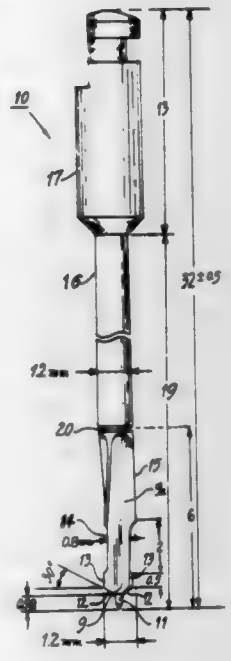
DENTAL TWIST DRILL

David G. Vlock, 2 E. 65th St., New York, N.Y. 10021

Continuation-in-part of Ser. No. 56,760, Jul. 12, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,777

Int. Cl.³ A61C *3/02*

U.S. Cl. 433—165 **8 Claims**



1. A longitudinal dental twist drill comprising a plurality of cutting blades extending at an angle to the principal axis of the drill; a plurality of bearing surfaces supporting said cutting blades; said bearing surfaces extending helically along the drill; the outer bearing surfaces extending parallel to the main axis of the drill and defining, when rotated, a cylindrical surface; a plurality of flutes separating said bearing surfaces; an additional bearing section extending along the main axis of the drill; and a recess between said additional bearing section and said first mentioned bearing surface, serving as a pocket for the reception of debris transferred from the cutting members by the flutes along the axis of said drill; whereby a parallel-sided cylindrical deep hole is formed in a tooth when drilled with said dental twist drill.

4,345,900

DENTURE MEANS AND METHOD

Harry S. Katz, 785 Pleasant Valley Way, West Orange, N.J. 07052, and Sidney Schneider, 576 Sussex Ave., Morristown, N.J. 07960

Continuation of Ser. No. 398,936, Sep. 20, 1973, abandoned, and a continuation-in-part of Ser. No. 241,706, Apr. 6, 1972, abandoned. This application Apr. 30, 1975, Ser. No. 573,324

Int. Cl.² A61C *13/22*

U.S. Cl. 433—171 **76 Claims**

73. A method of forming an artificial denture for the mouth of a dental patient employing a tray having a gum-receiving portion with a U-shaped continuous slot formed therein, and a preformed unitary structure comprising an abbreviated basic tray, the bottom portion of which is removed forming a slot in said basic tray, thereby exposing the bottoms of the false teeth, the method comprising:

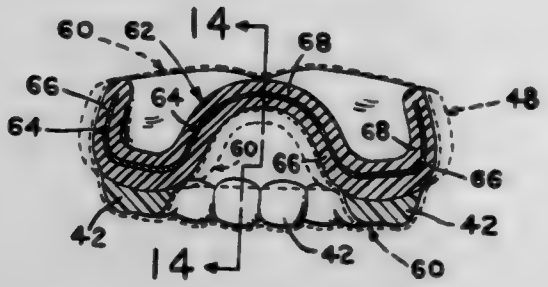
placing a deformable sheet as a spacer over said tray, a applying pressure to said tray having said spacer therein to conform said tray to the gums of a patient with the spacer between the surfaces of said tray and of said gums,

removing said tray from said gums,

applying a suitable amount of dental acrylic resin to said tray,

placing said tray in contact with said gums with said dental acrylic resin adjacent said gum surfaces,

simultaneously forcing said tray against said gums while allowing said dental acrylic resin to harden,



removing said tray from said gums, and

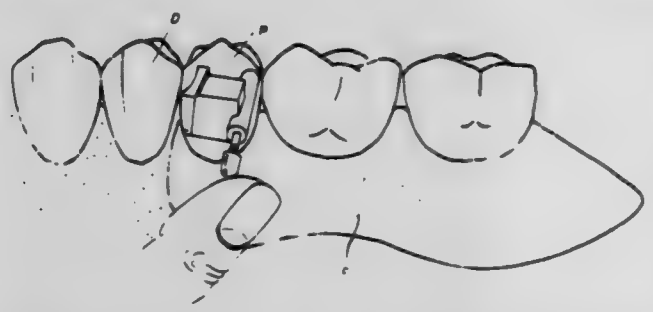
separating said tray from said hardened acrylic resin whereby said preformed unitary structure and said hardened acrylic resin form a unitary denture.

4,345,901

DENTAL PROSTHESIS CONNECTING APPARATUS

Mario Romagnoli, Milan, Italy, assignor to Metaux Precieux S.A., Neuchatel, Switzerland

Filed Apr. 30, 1980, Ser. No. 145,338
Claims priority, application Italy, May 9, 1979, 22485 A/79
Int. Cl.[3] A61C *13/22*
U.S. Cl. 433—172 7 Claims



1. Connecting apparatus for removable dental prosthesis, of the type having a male part, a female part, and a device for joining said male part and said female part, wherein the improvement comprises:

said male part being of substantially frustoconical shape;

said female part being of substantially frustoconical shape; and

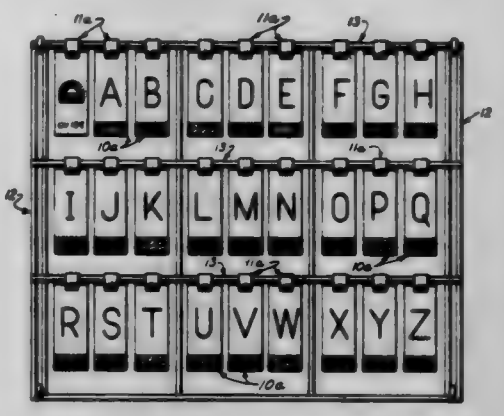
said device for joining comprising means for securing said female member to said male member and preventing relative movement therebetween, said means for securing comprising a cylindrical sliding member incorporated in said female part and movable transversely with respect to a longitudinal axis of said female part, said male member having a substantially semi-cylindrical, laterally outwardly open, transverse groove, the surface of which is generated about a substantially straight line, for receiving said sliding member whereby said male part and said female part are interlocked and said sliding member and said transverse groove are coaxial when said sliding member is in place.

4,345,902

SIMPLIFIED PHONICS IN THE SEQUENTIAL STEPS TO READING

Jean V. Hengel, One Vernon La., Malvern, Pa. 19355

Continuation-in-part of Ser. No. 153,261, May 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 753,263, Dec. 22, 1976, abandoned. This application Aug. 31, 1981, Ser. No. 297,635
Int. Cl.[3] G09B *1/12*
U.S. Cl. 434—170 5 Claims



1. A color coded device employing three different colors for teaching phonics which comprises a display of letters of the English alphabet wherein said display is on cards grouped as follows:

Group I—B, D, F, J, L, M, N, Q, R, V, X, and Z are coded with one color;

Group II—C, G, H, K, P, S, T, and W have more than one pronunciation and are color coded with a second color;

Group III—A, E, I, O, and U are vowels and are color coded with a third color and

Group IV—Y, a consonant, which can act as a vowel, is color coded with two (2) colors because it has attributes of both Group II and Group III.

4,345,903

FIN PROPULSION BOAT

Otto Laser, Zum Homberger Born 6, D-3546 Vöhl-Asel, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 109,236, Jan. 3, 1980, abandoned, which is a continuation of Ser. No. 873,206, Jan. 30, 1978, abandoned. This application May 27, 1980, Ser. No. 152,995
Int. Cl.[3] B63H *25/06*
U.S. Cl. 440—14 11 Claims



1. In a boat incorporating a tread system with pedals for applying foot power to a cross bar rigidly fastened to a pivot which extends through the boat bottom and carries, at its lower end, a substantially horizontal swing arm to the free end of which a vertical fin is mounted for limited lateral movement with respect to the swing arm, and further incorporating a front steering mechanism including a pivotable forward fin near the bow of the boat, the improvement comprising an aft stabilizing fin rigidly attached to the boat bottom near the stern

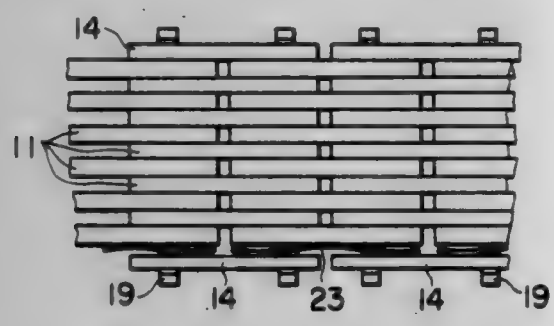
thereof, said vertical fin being arranged between said forward and aft fins.

4,345,904

CHAIN DRIVE ASSEMBLY

Akio Numazawa, Nagoya; Yutaka Taga, and Masayoshi Funato, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 44,186, May 31, 1979, abandoned. This application Jun. 15, 1981, Ser. No. 273,319
Claims priority, application Japan, Apr. 9, 1979, 54-41980
Int. Cl.³ F16G *13/04*
U.S. Cl. 474—215 **16 Claims**



1. In a silent chain for cooperative engagement with sprockets on a sprocket wheel, said chain including a plurality of plates the top and side edges of which are substantially identical in shape and dimension, said plates being arranged in transversely adjacent groups and said groups being longitudinally rotatably coupled by transverse pins forming said chain, the improvement comprising:

a curved leaf spring having top and side edges substantially conforming in shape to the top and side edges of said plates, said leaf spring having a pair of longitudinally adjacent holes and being secured by a longitudinally adjacent pair of said pins received in said holes for compression between transversely adjacent plates, said leaf spring being curved to provide a longitudinally central bow portion between said pins and being disposed coincident with at least one of said transversely adjacent plates so that said bow portion is in biasing contact with a corresponding longitudinally central portion of said coincident transversely adjacent plate, said leaf spring biasing said plates together in a direction axial of said pins, the length of said leaf spring on a pitch circle of said sprocket wheel being smaller than that of said plates and the diameter of said holes being greater than said pins to preclude contact by said leaf springs with said sprockets when said groups of plates engage said sprockets.

4,345,905

MAKING OF CONTAINERS WITH TRI-LAMINATED END WALLS

Lenard E. Moen, 7914 Michigan Ave., Whittier, Calif. 90602

Continuation of Ser. No. 846,900, Oct. 31, 1977, abandoned. This application Sep. 29, 1980, Ser. No. 191,529
Int. Cl.³ B31B *1/46*
U.S. Cl. 493—171 **5 Claims**

1. A machine for forming a container from a preformed paperboard body blank having a rectangular bottom panel, side wall panels along and substantially co-extensive with the two sides of said bottom panel, first end wall panels along and substantially co-extensive with the two ends of said bottom panels, and two pairs of additional end wall panels extending endwise of said side panels from the ends of the latter panels and each having a length approximating the width of said bottom panel, said machine comprising:

a forming die defining a forming cavity of substantially the same rectangular cross-section as said body blank bottom panel,

a substantially rectangular forming mandrel movable longitudinally through a forming stroke into and a return stroke from said cavity through said one end of the cavity,

said forming die being adapted to receive said body blank in an initial forming position, wherein said bottom panel of the blank overlies said one end of said cavity, whereby movement of said mandrel through said forming stroke forces said body blank into said cavity bottom panel first,

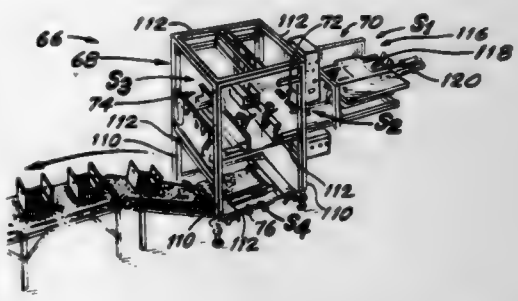
said forming die including folding shoe means about said one end of said forming cavity whose positions relative to said cavity remain fixed during said forming stroke of said forming mandrel,

said folding shoe means comprising die shoes defining the two parallel sides of said forming cavity which parallel the sides of said body blank bottom panel,

actuator means for extending and retacting said die shoes toward and away from said cavity,

said forming die including parallel die plates defining the two re aining sides of said cavity,

said folding shoe means being disposed to engage said end wall panels of said body blank in said initial forming position of the bank in such manner that during movement of said blank into said cavity by said mandrel, said folding shoe means effect upward folding of said additional end wall panels relative to said side wall panels in a sequence of one pair after the other pair of said additional end panels, followed by simultaneous continued folding of said additional end wall panels relative to said side wall panels and concurrent upward folding of said side wall panels to upright positions relative to said bottom panel, whereby said additional end wall panels swing inwardly and downwardly to upright side by side overlapping positions along the ends of said bottom panel, and final upward folding said first end wall panels to upright positions relative to said bottom panel, whereby said additional end wall panels swing inwardly and downwardly to upright side by side overlapping positions along the ends of said bottom panel, and final upward folding said first end wall panels to upright positions relative to said bottom panel to form a container configuration wherein said end wall panels were disposed in upright side by side contacting relation along the ends of said bottom panel extending the full width of said bottom panel to form full width three ply laminar end walls of said container configuration,



means for operating said actuator means to extend said die shoes in timed relation to movement of said forming mandrel for pressing said body blank side wall panels against the opposing side faces of said mandrel,

said mandrel side faces converging upwardly in such a way that pressing of said body blank side walls against said mandrel faces by extension of said die shoes folds said side wall panels slightly past normal relative to said bottom panel to press said additional end wall panels edgewise firmly against said bottom panel,

actuator means for extending and retracting said die plates toward and away from one another in timed relation to movement of said forming mandrel,

actuator means for expanding and contracting said mandrel normal to said die plates, and

means for operating said die plate and mandrel actuator means to extend said die plates and expand said mandrel in

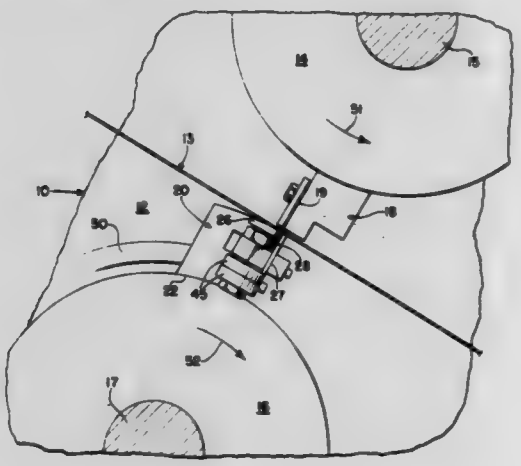
timed relation to the mandrel movement for pressing the folded bottom blank end wall panels between said mandrel and die plates.

4,345,906

CAM OPERATED GRIPPERS FOR PRINTED WEBS

Clyde G. Gregoire, Bensenville, Ill., assignor to Baldwin-Gregg, Inc., Lyons, Ill.

Filed Oct. 31, 1980, Ser. No. 202,599
Int. Cl.[3] B65H *45/16*
U.S. Cl. 493—432 4 Claims



1. An actuator for effecting the opening and closing of a movable gripper jaw for paper web folding machines for the printing industry which has a frame support of spaced apart walls, and operational folding roller journally carried for rotation in the spaced apart walls for engaging and folding the paper web, a working box carried transversely on the outer surface of the operational folding roller, the working box havinga stationary jaw on a top side and a cooperating movable gripper jaw on a front side and movable toward and away from the stationary jaw, said actuator comprising said working box having a block with an elongated horizontal groove therein disposed axially of said folding roller and open to the front side adjacent the movable gripper jaw, an elongated actuator memoer slidable endwise in said groove, said actuator member having a plurality of inclined cam slots at spaced apart intervals therealong, bolt members threadedly affixed in a vertical position from the top side of said block through the horizontal groove and into a lower side of said block and having one each extending through each of said inclined cam slots, roller members journalled on said bolt members at the position of said inclined cam slots, said roller members having a diameter just slightly smaller then the width of the inclined cam slots, said movable gripper jaw abutting the side of said actuator member at the open side of said block groove, a bridge member spaced outwardly of said movable jaw, means spaced from end portions of said movable jaw for joining the bridge member to said actuator member and permitting said movable gripper jaw to have limited separate movement between said actuator member and said bridge member, guide bolts having shank portions slidably passing through openings provided in said movable jaw and having ends threadedly engaging said block, said guide bolts having enlarged heads confining said movable jaw in proximity to said working box and its stationary jaw, cam means on said spaced apart walls for moving said actuator member along said block groove, rollers journally mounted on the ends of said actuator member and adapted to engage the cam means on said spaced apart walls, and said cam means in certain rotated positions of said operational folding roller moving said actuator member to one end of said elongated horizontal groove and causing said movable jaw to abut said stationary jaw, and said cam means in certain other rotated positions of said operational folding roller causing said actuator member to be shifted to the other end of the groove and to cause the roller members to slide to an opposite end of the inclined cam slots and effect an outward shifting of the movable jaw away from the stationary jaw.

4. A web gripper for use in a web folder comprising a frame structure, a folding roller journaled for rotation in said frame structure for engaging and folding a paper web, a working box carried transversely on the outer surface of said roller, the working box having a stationary jaw and an elongated endwise movable actuator axiallyslidable on said folding roller, cam means on said frame structure for effecting the sliding of said actuator, a movable jaw supported for movement on said endwise moving actuator, means guiding said moving jaw relative to said stationary jaw for movement towards and away from said stationary jaw, said means including a plurality of inclined cam slots within said endwise movable actuator at spaced apart intervals therealong, rollers affixed to the working box and disposed in each of the inclined cam slots to effect a positive movement of said moving jaw toward and away from said stationary jaw upon endwise movement of said actuator.

4,345,907

PROCESS OF APPLYING DYESTUFFS AND/OR CHEMICALS OR FINISHING MATERIALS TO TEXTILES, FIBROUS PRODUCTS, SHEET MATERIALS, PAPERS OR FLEECES

Günther Wegele, Iffeldorf; Gerhard Brink, Münchberg; Goetz Rotta, Weinheim; Manfred Roeth, Ludwigshafen, and Siegfried Wittmann, Mannheim, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Theodor Rotta GmbH & Co. KG, Mannheim, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 973,576
Int. Cl.[3] D06P *5/20*
U.S. Cl. 8—444 11 Claims

1. A process of applying dyestuffs and/or chemicals or finishing materials to textiles, fibrous products, sheet materials, paper or fleeces, characterized in that said dyestuffs and/or chemicals or finishing materials are applied indirectly in an electrostatic field between a high-voltage grid electrode and a grounded electrode, and are applied substantially perpendicular to said electrostatic field.

4,345,908

STRETCHABLE WOVEN CELLULOSIC FABRIC AND PROCESS FOR MAKING SAME

Sigo Mohr, Jr., Hewlett, N.Y., and Jerry L. Carter, Gloverville, S.C., assignors to Joshua L. Baily & Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 98,246, Nov. 28, 1979, abandoned. This application Nov. 21, 1980, Ser. No. 208,980
Int. Cl.[3] D06M *1/06;* D06L *3/02*
U.S. Cl. 8—111 9 Claims

1. In a woven, predominantly cellulosic fabric, the improvement wherein the fabric has at least about 11 percent stretchability in the filling direction with less than about 6 percent growth over repeated washing and drying cycles and having wrinkle-resistance and shrinkage control within commercial tolerances, said improvement being obtained by the method comprising:

(a) subjecting a woven, predominantly cellulosic fabric precursor to warp-wise tension while maintaining the fabric in a relaxed state in the filling direction;

(b) mercerizing the fabric by contacting it with aqueous alkali, while maintaining the condition of step (a);

(c) subjecting the fabric treated in step (b) to a tensile force in the filling direction sufficient to impart to the fabric, while said force is being applied and while maintaining the warp-wise tension of step (a), a width of within about −1 and +3% of the initial greige width;

(d) washing the fabric treated in step (c) to substantially remove the aqueous alkali therefrom while maintaining the conditions of step (a);

(e) contacting the fabric obtained in step (d) with anhydrous liquid ammonia under the conditions or step (a) whereby the width of the emerging fabric is substantially less than the inital greige width; and

(f) subjecting the fabric obtained in step (e) to compressive shrinkage.

4,345,909

PROCESS FOR DYEING OR TREATING TEXTILE FIBRE MATERIALS

Christian Guth, Basel; Hanspeter Gysin, Aesch, and Jörg Binz, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 8, 1981, Ser. No. 261,994
Claims priority, application Switzerland, May 19, 1980, 3883/80
Int. Cl.[3] D06P *1/62*
U.S. Cl. 8—477 16 Claims

1. A process for treating textile fibers with foam, comprising the step of applying to the textile fibers a foamed aqueous composition which contains dye, a fluorescent whitening agent or a fabric finishing agent, and additionally contains water and

(A) a fatty acid/alkanolamine reaction product or an alkylene oxide adduct of this reaction product and

at least two of the following components

(B) a fatty alcohol which is optionally mono-, di- or triethoxylated and which contains 8 to 22 carbon atoms in the fatty alcohol radical,

(C) an adduct of 5 to 15 moles of ethylene oxide and 1 mole of a fatty alcohol or a fatty acid, each containing 8 to 22 carbon atoms, or 1 mole of an alkylphenol containing a total of 1 to 12 carbon atoms in the alkyl moiety,

and

(D) an acid ester, or a salt thereof, of a polyadduct of 2 to 15 moles of ethylene oxide and 1 mole of a fatty alcohol containing 8 to 22 carbon atoms.

4,345,910

DYEING OF NCD POLYESTER FIBERS

Michele Vescia, Limburgerhof, and Sigismund Heimann, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 10, 1981, Ser. No. 233,300
Int. Cl.[3] D06P *1/651*
U.S. Cl. 8—610 4 Claims

1. A process for dyeing polyester fibers which do not require a carrier with disperse dyes by the exhaustion method at 20°–100° C. and pH 4–6, with liquor ratios of from 5:1 to 100:1, and dyeing times of from 30 to 180 minutes, wherein the dyeing is carried out in the absence of carriers and in the presence of from 0.5 to 20%, based on fiber weight, of a leveling agent consisting of an adduct of a C_5–C_{14}-alkylphenol or C_5–C_{14}-alkylnaphthol with from 4 to 25 moles of ethylene oxide.

4,345,911

DIAGNOSTIC AGENT FOR THE DETECTION OF BILIRUBIN IN BODY FLUIDS AND REAGENT SUITABLE THEREFOR

Helmut Kohl, Wetter, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,763
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936745
Int. Cl.[3] G01N *33/72*
U.S. Cl. 23—230 B 8 Claims

5. A method for detecting bilirubin in a body fluid, which method comprises contacting said body fluid with a diazonium salt of pyrazole and observing for a color change indicative of the presence of bilirubin.

4,345,912

URANIUM PROSPECTING BASED ON SELENIUM AND MOLYBDENUM

Gerald L. Bartz, Amarillo, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 12, 1980, Ser. No. 186,780
Int. Cl.[3] G01N *33/24*
U.S. Cl. 23—230 EP 3 Claims

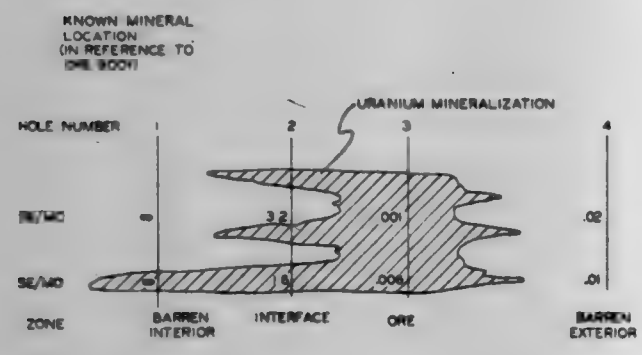
1. Uranium prospecting process useful for non-oxidized uranium deposits comprising

a. drilling one or more first holes through a formation,

b. obtaining at least one first sample of the formation material from said first hole or holes from a known depth in the formation,

c. determining the ratio of extrinsic selenium to extrinsic molybdenum of said sample, relating the location from which said sample had been taken as exterior or interior by categorizing said samples into interior and exterior samples based on the value of said ratio as compared to the ratio value from known location tests, the terms "extrinsic selenium" and "extrinsic molybdenum" referring to the

content of selenium or molybdenum in the surface matter of the sample particles; and



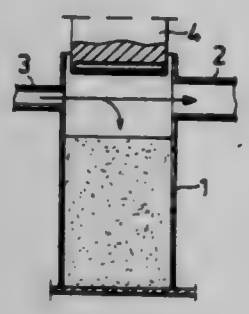
d. determining from said information obtained in step c. the location and/or shape of a uranium ore body.

4,345,913

METHOD AND APPARATUS FOR DETERMINING THE LIGNIN CONTENT IN PULP

Ann-Sofi Jönsson, Genarp, Sweden, assignor to Eur-Control Kille AB, Sweden

Filed Jan. 14, 1981, Ser. No. 225,134
Claims priority, application Sweden, Jan. 18, 1980, 8000434
Int. Cl.³ G01N *25/20*
U.S. Cl. 23—230 R **9 Claims**



1. A method for determining the lignin content in a pulp sample comprising:

(a) compressing the pulp sample to dewater same while simultaneously blowing gas of substantially no reactive capacity with regard to the lignin through the pulp sample, whereby a dewatered product of a definite low moisture content is obtained,

(b) blowing chlorine gas through the dewatered product resulting from (a), and

(c) measuring the maximum temperature rise resulting from (b).

9. Apparatus for carrying out the method in accordance with claim 1, and comprising a gastight measuring cell in which there is arranged a piston displaceable in the cell with the aid of a compressed air cylinder (4), characterized in that the piston (4) is provided with a channel (1) opening out in the measuring cell (1), through which channel air and chlorine gas are introducible into the measuring cell via valve means and that the measuring cell comprises in addition to a metal ring at the lower part of the measuring cell to sense the temperature of the pulp sample therein, a strainer plate formed in a movable plate with a cavity underneath, through which water and gas excess can be led off, at one end position said plate forming with its strainer plate the bottom of the measuring cell, and its other end position enabling blowing out of the pulp sample via a hole.

4,345,914

METHOD OF HEATING FINE-GRAINED SOLIDS

Roland Rammler, Königstein, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 33,644, Apr. 25, 1979, abandoned, which is a continuation of Ser. No. 823,777, Aug. 11, 1977, abandoned. This application Sep. 16, 1980, Ser. No. 187,856
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637427
Int. Cl.³ C10L *5/08*
U.S. Cl. 44—10 C **10 Claims**

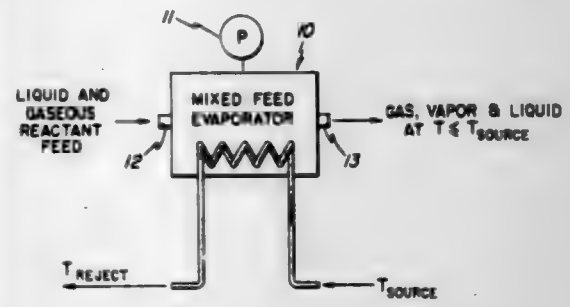
1. A process for heating a fine-grained coal or coke in direct contact with hot combustion gases which comprises feeding said coal or coke and oxygen containing hot gas to a vertical conveyor zone, heating and simultaneously partially combusting said coal or coke and effecting a considerable temperature rise of the coal or coke by the hot combustion gases and pneumatically transporting said coal or coke in said conveyor zone to a collecting zone, the coal or coke being thus heated to a temperature of 400°–800° C., causing said coal or coke to flow from said collecting zone to a final heating stage comprising a fluidized bed zone where the coal or coke is partially combusted in contact with oxygen-containing hot fluidization gases and being thus heated to a temperature of 500°–900° C., the coal or coke being thus heated in only two heating stages, and using the so-heated coal or coke in a mixture to produce briquettes or pellets.

4,345,915

MIXED FEED EVAPORATOR

Himanshu B. Vakil, Schenectady, and Philip G. Kosky, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1977, Ser. No. 847,777
Int. Cl.³ C10J *3/16*
U.S. Cl. 48—197 R **9 Claims**



1. In the process in which (a) a preselected liquid is vaporized, (b) a gaseous reactant feed stream is heated, (c) the vapor so produced and the heated gaseous reactant feed are introduced into a reaction chamber for the conduct of a chemical reaction and (d) a reaction product stream is discharged from said reaction chamber, the improvement comprising the steps of:

mixing the preselected liquid and the gaseous reactant feed stream in a given molar ratio, the gas phase being substantially insoluble in said liquid,

intimately contacting the liquid and gaseous phases,

heating the resulting mixture by heat exchange with a fluid separate from said mixture, said fluid entering the heat exchange relationship at a temperature below the boiling point of said liquid at the total pressure of said mixture whereby vapor is generated from said liquid and

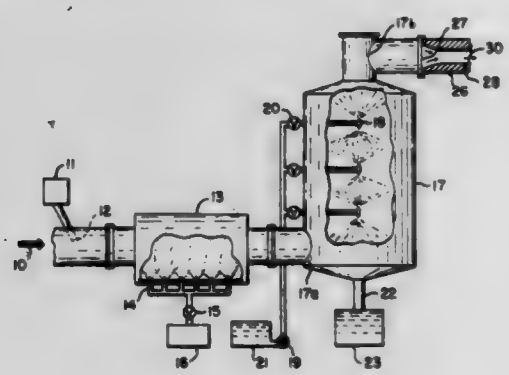
introducing the resulting mixed flow comprising heated gaseous reactant feed and vapor into said reaction chamber for conduct of said chemical reaction.

4,345,916

MEANS AND METHOD FOR REMOVING AIRBORNE PARTICULATES FROM AN AEROSOL STREAM

Clyde N. Richards, 4667 Ocean Blvd., #306, San Diego, Calif. 92019, and Marx Brook, 1216 North Dr., Socorro, N. Mex. 87801

Filed May 19, 1980, Ser. No. 151,352
Int. Cl.[3] B03C *3/01*; B01D *37/00, 47/00, 51/04*
U.S. Cl. 55—5 18 Claims



1. A method for removing airborne particulates from an aerosol stream, comprising the steps of

(a) saturating said aerosol stream with water vapor;

(b) supersaturating said saturated aerosol stream for a time sufficient to permit condensation of said water vapor upon, and growth of said particulates; and

(c) scrubbing said supersaturated aerosol stream, while maintaining said stream at supersaturation, whereby to remove said particulates therefrom.

13. An apparatus for removing airborne particulates from an aerosol stream, comprising:

(a) means for saturating said aerosol stream with water vapor;

(b) means for supersaturating said saturated aerosol stream for a time sufficient to permit condensation of said water vapor upon, and growth of said particulates; and

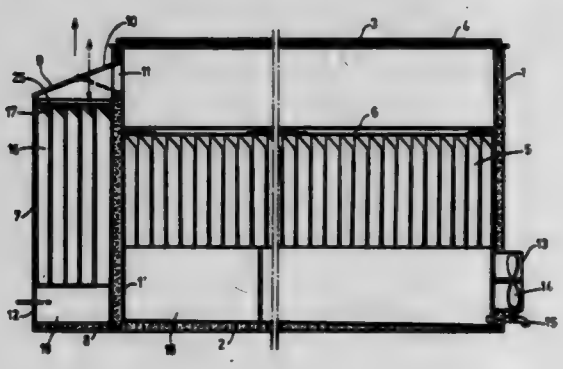
(c) means for scrubbing said supersaturated aerosol stream, while maintaining said stream at supersaturation, whereby to remove said particulates therefrom.

4,345,917

METHOD AND APPARATUS FOR RECOVERY OF WATER FROM THE ATMOSPHERE

Peter Hussmann, Munich, Fed. Rep. of Germany, assignor to Mittex Aktiengesellschaft, Liechtenstein, Liechtenstein

Continuation of Ser. No. 18,698, Mar. 8, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 276,244
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810269
Int. Cl.[3] B01D *53/04*
U.S. Cl. 55—33 36 Claims



1. A method of recovering water from air utilizing a main and an auxiliary heat reservoir comprising the steps of:

(a) during a desorption phase of operation:

(1) passing relatively dry, warm air through said auxiliary heat reservoir for preheating said air,

(2) subsequently passing said relatively dry, warm air through an adsorbent material for adsorption of moisture from said adsorbent material into said relatively dry, warm air

(3) then, passing said relatively warm air having moisture from said adsorbent material through said main heat reservoir, and

(4) condensing said moisture removed from said adsorbent material in said main heat reservoir, said main heat reservoir taking up heat of condensation in condensing said moisture,

(b) during a cold blowing phase of operation subsequent to said desorption phase:

(1) passing relatively cool air through said main heat reservoir for picking up at least a portion of said heat of condensation,

(2) passing said relatively cool air containing said heat of condensation through said adsorbent material and through said auxiliary heat reservoir for depositing said heat of condensation in said auxiliary heat reservoir,

(c) during an adsorption phase of operation:

(1) passing relatively humid, cool air through said main heat reservoir, and

(2) subsequently passing said air from said main heat reservoir through said adsorbent material for adsorption of moisture from said air into said adsorbent material, and

(d) repeating said steps (a), (b) and (c) whereby moisture is adsorbed from humid, cool air by said adsorbent material during said adsorption phase of operation, moisture is picked up from said adsorbent material and condensed in said main heat reservoir during said desorption phase of operation, and heat of condensation is transmitted from said main heat reservoir to said auxiliary heat reservoir during said cold blowing phase of operation.

4. A water recovery apparatus comprising:

(a) a main heat reservoir,

(b) a region of adsorbent material adjacent to said main heat reservoir for adsorption of moisture from relatively humid, cool air and for desorption of moisture therefrom into relatively dry, warm air,

(c) an auxiliary heat reservoir spacedly positioned from the region of adsorbent material and away from said main heat reservoir,

(d) means for generating a first air flow path during a desorption phase of operation through said auxiliary heat reservoir, then through said adsorbent material and subsequently through said main heat reservoir for passing relatively dry, warm air through said region of adsorbent material so that said relatively dry, warm air takes up moisture from said adsorbent material and condenses same in said main heat reservoir, said main heat reservoir taking up heat of condensation in condensing said moisture,

(e) means for generating a second air flow path during a cold blowing phase of operation through said main heat reservoir, then through said region of adsorbent material and then through said auxiliary heat reservoir for passing relatively cool air through said main heat reservoir for picking up at least a portion of said heat of condensation and transferring same to said auxiliary heat reservoir,

(f) means for generating a third air flow path during an adsorption phase of operation through said main heat reservoir, then through said region of adsorbent material for cooling said main heat reservoir and for passing relatively humid, cool air through said region of adsorbent material so that said adsorbent material picks up moisture from said relatively humid, cool air

whereby moisture is adsorbed from said humid, cool air by said adsorbent material during said adsorption phase, moisture is picked up from said adsorbent material and condensed in said main heat reservoir during said desorption phase of operation and heat of condensation is trans-

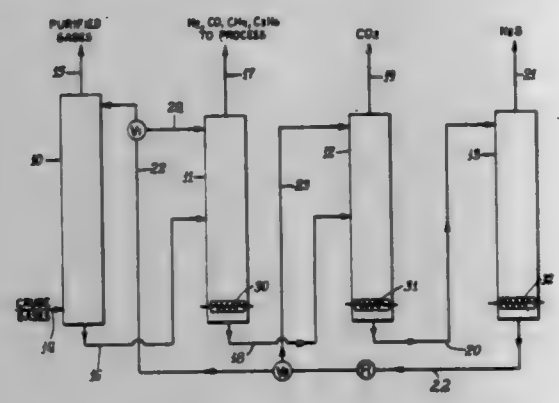
mitted from said main heat reservoir to said auxiliary heat reservoir during said cold blowing phase of operation.

4,345,918

PROCESS FOR PURIFICATION OF GAS STREAMS

Herman P. Meissner, Winchester, Mass., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Jan. 31, 1979, Ser. No. 7,988
Int. Cl.³ B01D *53/14*
U.S. Cl. 55—38 **16 Claims**



1. A process for separation of carbon dioxide and sulfur containing compounds from a gas stream comprising:

passing a gas stream containing undesired gases including carbon dioxide and sulfur containing compounds countercurrent to a liquid physical absorbent, dissolving the undesired gases in said physical absorbent in a physical solvent absorber, removing the purified gases from the upper portion of said physical solvent absorber and removing said liquid physical absorbent containing dissolved gases from the bottom of said physical solvent absorber;

feeding the liquid physical solvent absorbent containing dissolved gases into the central region of a fractionating column, introducing liquid physical absorbent substantially free from dissolved gases in the upper region of said fractionating column and maintaining said fractionating column under conditions of temperature and pressure whereby at least one of said undesired gases passes from the upper region of said fractionating column and is removed from the process, said liquid physical solvent absorbent containing remaining dissolved gases passes from the lower region of said fractionating column, the introduction of feed to said fractionating column being at a location of said column at approximately the position wherein the column contents composition under operating conditions is the same as the feed composition, the pressure in said physical solvent absorber and said fractionating column being substantially the same.

4,345,919

DEGASSER FOR BIOLOGICAL FLUIDS

William R. Wilkinson, Mission City; Russell G. Sharp, Sugar Land; Charles C. Reed, Houston; Denton A. Cooley, Houston, and Terry N. Crane, Houston, all of Tex., assignors to Texas Medical Products, Inc., Houston, Tex.

Filed Jan. 19, 1981, Ser. No. 225,837
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—41 **15 Claims**

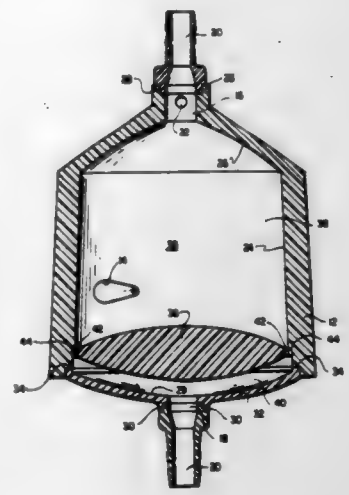
15. A method for separating gas bubbles from blood, the method comprising the steps of:

introducing blood into a first chamber in a container so as to minimize hemolysis of said blood and such that said blood has a vortical flow;

separating gas bubbles from the blood by utilizing centrifugal forces which are caused by said vortical flow and by utilizing gravitational forces;

removing the separated gas bubbles from the first chamber through an aperture extending from the first chamber to the exterior of said container;

directing the blood downward along interior walls of the first chamber and outward along the upper curved surface of a double convex baffle so as to collect said blood adjacent said interior walls and adjacent an outer perimeter of said baffle;



transferring the blood from which the gas bubbles have been separated through apertures adjacent the perimeter of the double convex baffle into a second chamber through utilization of gravity;

collecting the blood in said second chamber; and

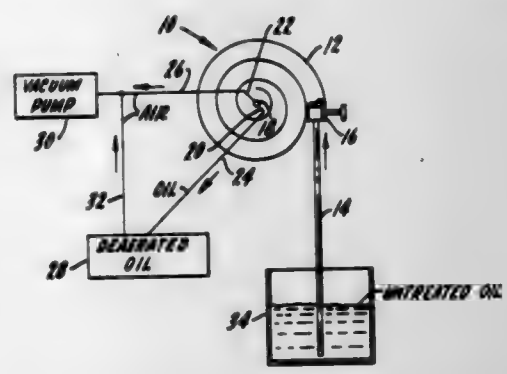
removing said collected blood from the second chamber through an aperture extending from the second chamber to the exterior of the container.

4,345,920

VACUUM DEAERATOR

Louis Ross, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 686,763, May 17, 1976, abandoned, which is a continuation of Ser. No. 535,533, Dec. 23, 1974, abandoned. This application Sep. 29, 1978, Ser. No. 947,211
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—46 **8 Claims**



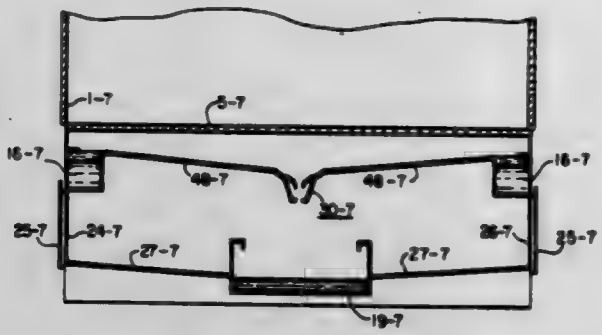
1. A vacuum deaerator comprising fluid passage means having a fluid inlet, a liquid outlet and a gas outlet separate from said liquid outlet, means communicating with said fluid inlet for establishing fluid flow into said passage means at a sub-atmospheric pressure, closed storage means communicating with said liquid outlet, and vacuum inducing means communicating with said storage means and said gas outlet for drawing gas therefrom at a pressure lower than said sub-atmospheric pressure.

4,345,921

SPRAY CHAMBER INCLUDING A WET SEPARATOR

Lennart Gustavsson, and Osten Maatta, both of S-Vaxjo, Sweden, assignors to AB Svenska Flaktfabriken, Nacka, Sweden

Filed Apr. 24, 1981, Ser. No. 257,158
Claims priority, application Sweden, Jul. 4, 1980, 8004943
Int. Cl.[3] B01D *47/10;* B05C *15/00*
U.S. Cl. 55—223 22 Claims



1. A wet separator comprising at least one exhaust venturi with an inlet for a flow of gaseous medium, a venturi throat and outlet means, said venturi throat being formed by opposed venturi sides converging toward the central axis of the at least one exhaust venturi in the direction of the gas flow from said inlet to said outlet, and means to cause liquid to flow into said at least one exhaust venturi along said sides, first guide plates extending inwardly from said opposed venturi sides adjacent said inlet and converging toward one another in said direction of flow and terminating in a noise-muffling zone defined between the plates and the venturi sides in advance of said venturi throat, said plates directing both said gas and said liquid flows into said zone to blend said flows in the noise-muffling zone.

19. In a spray chamber having a grate-like floor, said grate-like floor having openings therethrough for the passage of particle-laden air downwardly therethrough, and an outlet for particle-laden air below said floor, said outlet comprising water reservoirs disposed below said floor along the periphery of the spray chamber and an exhaust venturi disposed centrally of said chamber below the floor between the water reservoirs and arranged to afford flow of said air in one direction therethrough, means to continuously supply water to said reservoirs to fill the reservoirs to overflowing and cause the water to flow into said exhaust venturi so as to provide a body of water underlying the openings in said grate-like floor, said exhaust venturi being formed by opposed venturi sides extending downwardly from said reservoir means and converging toward the central axis of the exhaust venturi in the direction of the air flow to define therebetween a venturi throat spaced below the reservoir means, the water from said reservoir means flowing along said venturi sides into said throat, and guide plates extending inwardly from said opposite venturi sides adjacent said reservoir means and converging toward one another in the direction of air flow with a greater angle of convergence than said venturi sides and terminating in a noise-muffling zone along said venturi axis above said throat, and means to cause water from said reservoir means to flow over said guide plates, along said plates and into said noise-muffling zone to cause the air and water flows to blend and mix together in said zone.

4,345,922

AIR CLEANER WITH ANTI-REENTRAINMENT

Eugene E. Grassel, Oak Ridge, Tenn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Dec. 22, 1980, Ser. No. 218,615
Int. Cl.[3] B01D *46/04*
U.S. Cl. 55—302 3 Claims

1. An air cleaner comprising, in combination:

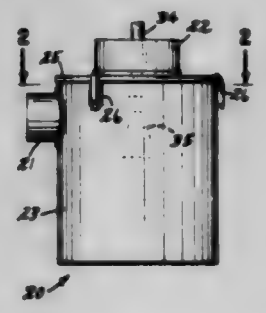
a casing having a top wall, a bottom wall, an inlet for air to be cleaned and an axial outlet for cleaned air;

a filter mounted in said casing and positioned so as to separate said inlet from said outlet, said filter having a first, outer surface, a second, inner surface, and a substantially hollow interior defined by said inner surface, said interior being in fluid communication with said outlet, with entering air passing from said inlet to said outlet depositing particulate matter on said first surface of said filter with cleaned air passing through said filter interior to said outlet;

renewal means positioned in fluid communication with said filter interior for directing a flow of reverse-cleaning air against said second surface of said filter;

means for preventing redeposit, on said filter outer surface, of particulate matter dislodged by said renewal means, said means including a shroud positioned between and spaced apart from said filter and said casing and arranged so as to define a closed space therebetween, with said casing, said filter, and said shroud each being a substantially hollow cylinder;

inlet valve means in said shroud operative between a normal first, open condition, in which inflow of air from said inlet to said first surface of said filter is enabled, and a second,



closed condition, in which reverse airflow of the air from said filter to said inlet is prevented;

and outlet valve means located between said shroud and said filter and generally opposite said inlet valve means, said outlet valve means comprising a plurality of spaced-apart apertures in said casing bottom wall and a plurality of resilient, pressure-responsive shutters aligned with said apertures for opening and closing said apertures, said outlet valve means being operative between a normal first, closed condition, in which inflow of air from said inlet to said filter first surface is prevented, and a second, open condition, in which a reverse-cleaning, scavenging flow of air from said renewal means is enabled to pass through said filter, said reverse flow of air causing the pressure within said space to be greater than the pressure at said inlet and dislodging particulate matter from said filter, with said shutters moving said outlet valve means into said second, open condition as a result of the rise of the pressure within said closed space,

whereby said inlet and said outlet valve means are operative simultaneously in said first conditions and alternately, simultaneously, in said second conditions.

4,345,923

AIR PURIFIER WITH HERMETIC SEALING

Donald W. Schoen, St. Paul, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Apr. 3, 1981, Ser. No. 250,893
Int. Cl.[3] B01D *46/44, 50/00*
U.S. Cl. 55—314 12 Claims

8. An air purifier comprising, in combination:

a housing having an air inlet, an air outlet, a barrier between said inlet and said outlet, first upper bypass openings on opposite sides of said barrier, and second lower bypass openings on opposite sides of said barrier;

a bypass plenum mounted on said housing and including means for enabling a first flow path for air flow between said upper bypass openings, and means for disabling said first air flow path;

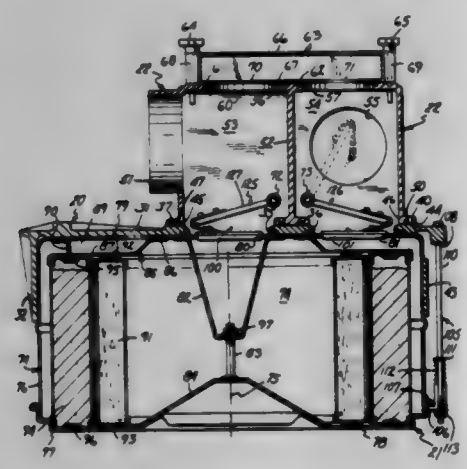
a filter canister positioned generally below said housing, said filter canister including a filter and having portions containing an inlet aperture and an outlet aperture, each aperture located adjacent one of said second lower bypass openings, said apertures and said openings allowing fluid communication between said filter canister and said housing for air flow through said filter and closure means at said apertures for preventing air flow through said filter canister,

and means for removing each of said closure means from said apertures to allow air flow through said filter.

12. An air purifier comprising, in combination:

(a) a housing having an air inlet, an air outlet, a barrier between said inlet and said outlet, said barrier having a portion with an opening therein, and a pair of bypass openings positioned on opposite sides of said barrier;

(b) a filter canister positioned adjacent said housing, said



canister including a filter, portions of said canister being adjacent said pair of bypass openings and containing an inlet aperture and an outlet aperture for allowing air flow between said housing and said filter canister, and closure means secured to each of said apertures for normally preventing air flow through said filter canister, said closure means comprising sheet metal members peripherally sealing said apertures and pull tabs secured to said sheet metal members for destroying said peripheral sealing and removing said members from said apertures;

(c) means for securing said filter canister to said housing, said canister apertures being aligned with a respective housing bypass opening;

(d) means mounted to said housing for activating said pull tabs; and

(e) valve means mounted on said closure means for simultaneously closing said barrier opening when said sheet metal members are removed from said apertures.

4,345,924

FILTER APPARATUS HAVING IMPROVED FILTER BAG SUPPORT STRUCTURE

Adolf Margraf, Am Schleplingsbach 46, D-3060 Stadthagen, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,336

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006823

Int. Cl.³ B01D *46/02*

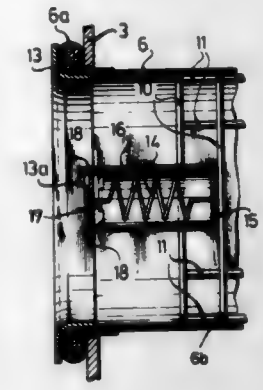
U.S. Cl. 55—379 **9 Claims**

1. In a gas-dust removing filter apparatus including a casing provided with a perforated partition which divides the casing into a dust-removing chamber and an accessible clean gas chamber, filter bags inserted into the dust-removing chamber of said casing via one of the perforations of said partition, and arranged to be cleaned by counterflow scavenging,

each of said filter bags having a rigid internal spacing element, and being provided at one end thereof with an open mouth disposed at the clean gas side of said partition and a neck portion disposed in the dust removing chamber, and at the other end thereof supported opposite to said partition, and a seal including a clamping frame to resiliently grip the rim of the open mouth of each of said filter bags between itself and the partition,

the improvement comprising;

said spacing element terminating in front of said partition, and



spring means connected at one end thereof to the clamping frame and at the other end thereof engaging the confronting end of said spacing element,

said spring means, when under stress, bearing against said neck portion and being supported together with respective parts of each of said filter bags on said partition at the side thereof of the dust-removing chamber.

4,345,925

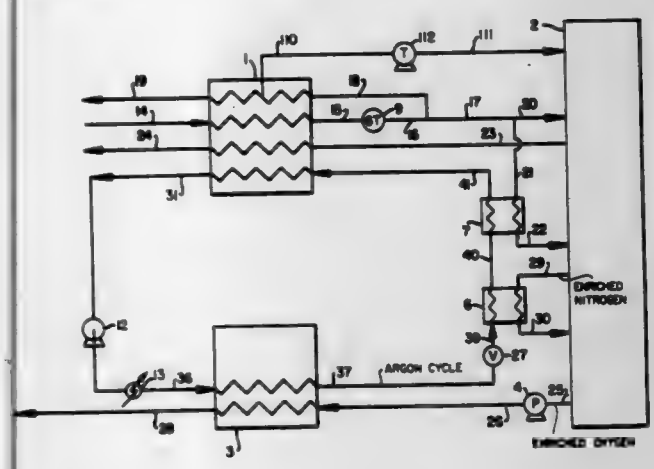
PROCESS FOR THE PRODUCTION OF HIGH PRESSURE OXYGEN GAS

Harry Cheung, Kenmore, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 26, 1980, Ser. No. 210,733

Int. Cl.³ F25J *3/04*

U.S. Cl. 62—13 **7 Claims**



1. A process for the production of oxygen gas at greater than atmospheric pressure comprising the steps of:

(a) introducing cleaned, cooled air into a distillation column;

(b) separating said air into oxygen-rich and nitrogen-rich fractions in said column;

(c) removing from said column at least a portion of said oxygen-rich fraction as liquid;

(d) pumping said liquid oxygen-rich portion to the desired pressure of at least about 600 psia;

(e) vaporizing said liquid oxygen-rich portion to oxygen gas at said desired pressure by indirect heat exchange with an argon containing fluid, recirculating in an essentially closed loop, said fluid comprising from 50 to 100 mole percent argon and from 0 to 50 mole percent oxygen;

(f) recovering said oxygen gas at said desired pressure;

(g) removing from said column at least a portion of a nitrogen-rich fraction as gas;

(h) condensing said gaseous nitrogen-rich portion by indirect heat exchange with said recirculating argon containing fluid; and

(i) returning said condensed nitrogen-rich portion back to said column, wherein said condensed nitrogen-rich portion is returned to said column in an amount sufficient to make up the nitrogen liquid reflux associated with said removed liquid oxygen-rich portion.

4,345,926

EXPANSION ENGINE

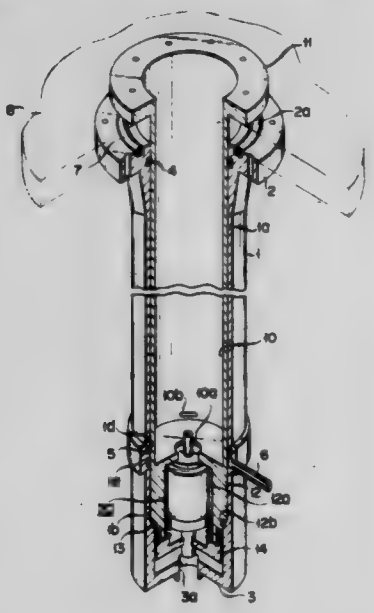
Shunichi Nakaya, Kawasaki, and Katsumasa Araoka, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 18, 1980, Ser. No. 188,495

Claims priority, application Japan, Sep. 18, 1979, 54/119743

Int. Cl.³ F25J *1/00*

U.S. Cl. 62—38 **11 Claims**



1. An expansion engine to be disposed so as to extend into a vacuum tank comprising:

an outer cylinder inserted in said vacuum tank and having its proximal end opening into the atmosphere;

an inner cylinder removably inserted from its distal side into said outer cylinder through said opening;

a piston capable of reciprocating inside said inner cylinder;

an intake valve mechanism disposed on the distal side of said inner cylinder and capable of moving together with said inner cylinder; and

seal means to seal the interface between said cylinders airtightly.

4,345,927

APPARATUS AND PROCESS FOR USE PREPARING A CONTINUOUS STRAND MAT

Charles E. Picone, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 31, 1980, Ser. No. 221,740

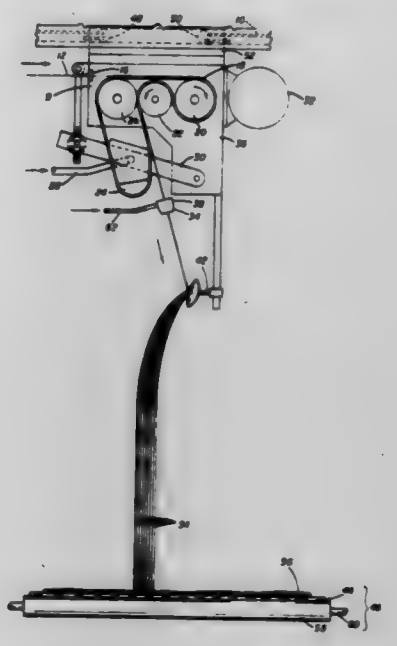
Int. Cl.³ C03B *37/02*

U.S. Cl. 65—4.4 **14 Claims**

9. Process for separating a bundle of strands into more than one group of strands to fall onto a moving conveyor to form a continuous strand mat comprising:

a. pulling the bundle of strands through a feeder for deposition onto the moving conveyor,

b. accelerating the bundle of strands from the feeder through an accelerating means to increase the strand speed over that speed given the strands by the puller means, and



c. deflecting the bundle of strands on a convex surface onto a moving conveyor to produce the mat.

4,345,928

FABRICATION METHOD OF SINGLE-MODE OPTICAL FIBER PREFORMS

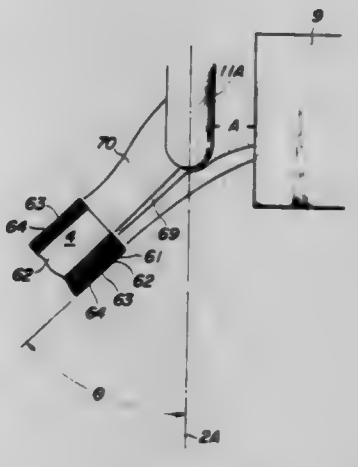
Masao Kawachi; Satoru Tomaru; Takao Edahiro, and Shoichi Suto, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Sep. 19, 1980, Ser. No. 188,914

Claims priority, application Japan, Oct. 9, 1979, 54-129530; Jul. 11, 1980, 55-93841

Int. Cl.³ C03B *19/06*

U.S. Cl. 65—18.2 **7 Claims**



1. A method of fabricating a single-mode optical fiber preform from a seed rod having a longitudinal axis, comprising the steps of:

translating said seed rod along its longitudinal axis, said seed rod being rotated simultaneously with said translation;

producing a flame stream and a stream of fine glass particles located within said flame stream eccentric to the center area thereof, said flame and glass particle streams being directed against one end of said seed rod by a core torch inclined at an acute angle with respect to the longitudinal axis of said seed rod;

attaching and depositing said fine glass particles on said one end of said seed rod to form a porous glass core body, said porous glass core body being grown in the direction of said longitudinal axis of said seed rod by the action of said core torch;

exhausting non-reacted raw material for said porous glass

core body through at least one exhaust port disposed in the vicinity of said core body;

producing glass particles for cladding said core body, said glass cladding particles being produced by a cladding torch;

attaching and depositing a porous glass cladding body on the periphery of said porous glass core body, said porous glass cladding body being grown in the direction of said longitudinal axis of said seed rod by the action of said cladding torch thereby forming a cladding layer;

heating the resulting porous glass body until it is vitrified into a transparent glass body; and

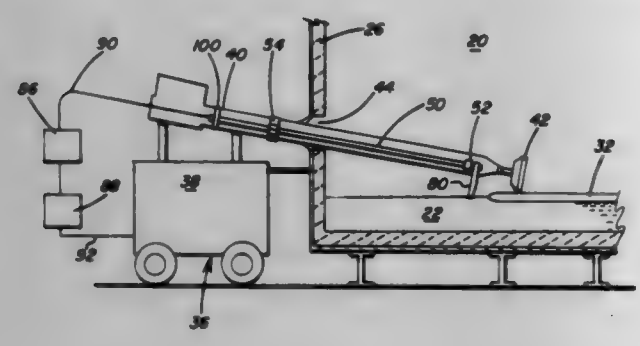
sealing said transparent glass body within a silica tube.

4,345,929

METHOD OF AND APPARATUS FOR VERTICALLY POSITIONING DEVICES IN GLASS FORMING CHAMBER

Edward M. Kapura, Carlisle, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 11, 1981, Ser. No. 262,263
Int. Cl.³ C03B *18/06*
U.S. Cl. 65—99.5 **19 Claims**



1. A method of vertically positioning a conditioning device in a glass forming chamber a preselected vertical distance relative to the surface of a pool of molten metal contained within the chamber upon which a ribbon of glass is supported, comprising the steps of:

suspending said conditioning device within said chamber;

mounting a contact member within said chamber in an initial position spaced from and above the surface of said pool of molten metal, said initial position a known vertical distance from said conditioning device equal to said preselected vertical distance;

moving said contact member from said initial position toward the surface of said pool of molten metal; while

moving said conditioning device to maintain said known vertical distance equal to said preselected vertical distance; and

generating a signal when said contact member engages the surface of said pool of molten metal to indicate that said conditioning device is positioned said preselected vertical distance relative to said pool of molten metal.

11. Apparatus for positioning a conditioning device in a preselected vertical position relative to a pool of molten metal which is contained in a forming chamber and upon which ribbon of glass is supported, comprising:

means for mounting said conditioning device within said chamber;

a contact chamber;

means for suspending said contact member in an initial position within said chamber over the pool of molten metal, said initial position a known vertical distance from said conditioning device which equals said preselected vertical distance;

means for generating a signal when said contact member engages said pool of molten metal;

means for moving said contact member from said initial position toward the surface of said pool of molten metal; and

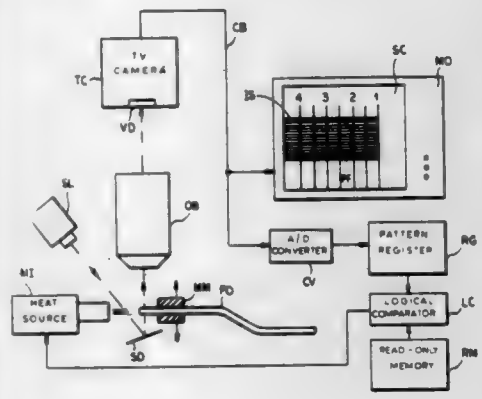
means for moving said conditioning device during movement of said contact member to maintain said known vertical distance equal to said preselected vertical distance.

4,345,930

PROCESS AND APPARATUS FOR SPHERICALLY CURVING AN END OF AN OPTICAL FIBER

Carlo P. Basola, and Guido Chiaretti, both of Milan, Italy, assignors to Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Dec. 5, 1980, Ser. No. 213,623
Claims priority, application Italy, Dec. 7, 1979, 69356 A/79
Int. Cl.³ B29D *11/00*; C03B *37/14*
U.S. Cl. 65—102 **7 Claims**



1. A process for providing an end face of an optical fiber with a convex curvature optimizing the transfer of luminous energy thereto from an adjoining light source, comprising the steps of:

heating a flat end of a stationary fiber by an axially aligned that source to an elevated temperature near the melting point of the fiber material;

projecting an enlarged image of the profile of the fiber end upon a receiving surface during the heating step;

monitoring changes in the shape of said image at said elevated temperature; and

terminating the heating of said fiber end upon said image reaching a shape satisfying a predetermined criterion.

5. An apparatus for providing an end face of an optical fiber with a convex curvature optimizing the transfer of luminous energy thereto from an adjoining light source, comprising:

stationary mounting means centered on an axis for holding an extremity of an optical fiber initially having a flat end face;

a heat source coaxial with said mounting means for confronting the end face of a fiber extremity held thereby and raising the temperature of said end face to a level near the melting point thereof;

magnifying means forming a light beam transversely intersecting said axis at said end face for projecting an enlarged image of the profile of said extremity upon a receiving surface; and

a recording of a predetermined criterion for the shape of said fiber end disposed for instantaneous comparison with the projected profile image for enabling a deactivation of said heat source upon detection of substantial agreement between said image and said criterion.

4,345,931

GELATED FERTILIZERS, PROCESS FOR THEIR MANUFACTURE AND THEIR USE IN PLANT FERTILIZATION

Klaus Meyer, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 25, 1979, Ser. No. 87,944

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 2846831

Int. Cl.³ C05C *9/00*

U.S. Cl. 71—28 10 Claims

1. A water-soluble fertilizer paste consisting essentially of 58 to 88% by weight of a water-soluble plant nutrient selected from the group consisting of urea, N-, P-, K- and N,P,K-fertilizer salts, 4 to 12% by weight of a water soluble gelling agent selected from the group consisting of a polyglycol ether having at least 9 ethylene oxide units or a polyglycol ether derivative having at least 8 ethylene oxide units in the molecule or mixtures thereof and 8 to 25% by weight of water.

4,345,932

HERBICIDES

Peter S. Gates, Cambridge; John Gillon, Great Shelford, and David T. Saggers, Saffron Walden, all of England, assignors to Fisons Limited, London, England

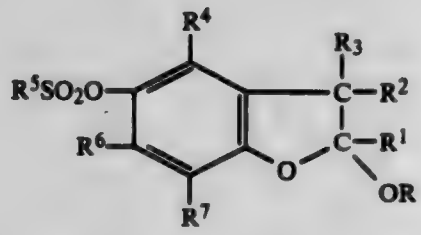
Continuation of Ser. No. 648,161, Jan. 12, 1976, Pat. No. 4,072,495, which is a continuation-in-part of Ser. No. 275,256, Jul. 26, 1972, abandoned, which is a division of Ser. No. 826,274, May 20, 1969, Pat. No. 3,689,507. This application Jun. 8, 1977, Ser. No. 804,752

Claims priority, application United Kingdom, May 24, 1968, 24858/68; Feb. 8, 1969, 6951/69; Apr. 8, 1969, 7985/69

Int. Cl.³ A01N *43/08*

U.S. Cl. 71—88 44 Claims

1. A herbicidal or plant growth retardant composition comprising a herbicidal or plant growth retardant amount of a mixture of (A) a benzofuranyl compound of the formula



wherein R is a member selected from the group consisting of alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 4 carbon atoms, monochloro alkenyl of 2 to 4 carbon atoms, alkynyl of 2 to 6 carbon atoms, monochloro alkynyl of 2 to 6 carbon atoms, alkoxyalkyl of 2 to 8 carbon atoms; R^1 is hydrogen or alkyl of 1 to 4 carbon atoms; R^2 and R^3 are the same or different and are hydrogen or alkyl of 1 to 4 carbon atoms; R^5 is alkyl of 1 to 4 carbon atoms or monochloro alkyl of 1 to 4 carbon atoms; and R^4, R^6 and R^7 are the same or different and are hydrogen, halogen or alkyl of 1 to 4 carbon atoms, and (B) a further herbicide, or plant growth retardant in admixture with at least one member of the group consisting of an inert carrier and a wetting agent.

4,345,933

SUCROSE ESTER OF 2-METHOXY-3,6-DICHLOROBENZOIC ACID

George F. Luteri, Mt. Prospect, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 115,637, Jan. 28, 1980, Pat. No. 4,291,158. This application Mar. 25, 1981, Ser. No. 247,471

Int. Cl.³ A01N *43/08, 43/16*

U.S. Cl. 71—88 4 Claims

1. A method of increasing the recoverable sugar contained in sugar cane which comprises contacting the sugar plant with an effective amount of sucrose tri(2-methoxy-3,6-dichloro-benzoate).

4,345,934

METHOD OF PRODUCING HYBRID CEREAL GRAIN SEEDS BY APPLICATION OF 1-ARYL-1,4-DIHYDRO-4-OXO(THIO)-PYRIDAZINES

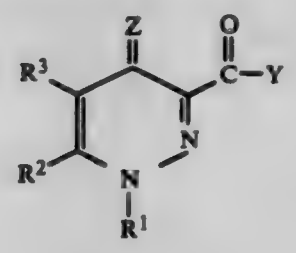
Ted T. Fujimoto, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 776,394, Mar. 10, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,029

Int. Cl.³ A01N *43/58*

U.S. Cl. 71—92 23 Claims

1. A method of inducing male sterility in a cereal grain or forage plant which comprises treating the plant prior to meiosis with an amount effective to produce male sterility in the plant of a compound of the formula



wherein

R^1 is an unsubstituted phenyl group or a phenyl group substituted with up to three substituents selected from the group consisting of halogen atoms, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, (C_1–C_4) alkylthio, (C_1–C_4) alkylsulfinyl, (C_1–C_4) alkylsulfonyl or trifluoromethyl,

R^2 is a (C_1–C_4) alkyl group, or phenyl,

R^3 is a hydrogen atom, a (C_1–C_4) alkyl group, or a halogen atom, a benzyl group or a phenethyl group,

Z is oxygen or sulfur, and

Y is the group $Z'R^4$ or NR^5R^6

wherein Z′ is oxygen or sulfur,

R^4 is hydrogen, (C_1–C_4) alkyl, (C_1–C_4) alkoxyalkyl, cyclohexylmethyl, bromopropyl, phenyl or benzyl,

R^5 and R^6 are independently selected from the group consisting of hydrogen or (C_1–C_4) alkyl or (C_1–C_4) alkyl substituted with carboxyl or (C_1–C_4) alkoxycarbonyl, or when

R^5 is hydrogen, R^6 is hydroxyl,

or an agronomically acceptable salt, (C_1–C_{12}) alkyl ester or mono or di(C_1–C_4) alkyl amide thereof.

4,345,935

2,4-IMIDAZOLIDINEDIONES, COMPOSITIONS AND HERBICIDAL METHOD

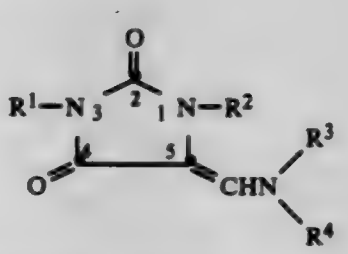
Thomas D. Thibault, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 5, 1981, Ser. No. 308,621

Int. Cl.³ A01N *43/50;* C07D *233/96*

U.S. Cl. 71—92 31 Claims

1. A compound of the formula:



wherein: R^1 and R^2 independently are lower alkyl, phenyl, or phenyl substituted with one or two groups selected from halo, lower alkyl, halo lower alkyl, lower alkoxy or nitro, and R^3 and R^4 independently are methyl or ethyl.

25. A herbicidal composition comprising from about 0.1 to

about 95.0 percent by weight of a compound of claim 1 admixed with a suitable agricultural carrier.

4,345,936

IMIDAZOLES, COMPOSITIONS AND HERBICIDAL METHOD

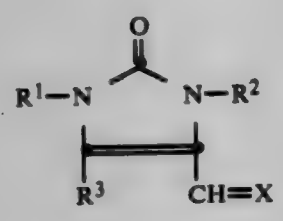
Thomas D. Thibault, Indianapolis, and Roger L. St. Clair, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 5, 1981, Ser. No. 308,728

Int. Cl.³ A01N *43/50*; C07D *233/68, 233/78, 233/86*

U.S. Cl. 71—92 **33 Claims**

1. A compound of the formula



wherein:

R^1 and R^2 independently are lower alkyl, cycloalkyl, phenyl, or phenyl substituted with one or two groups selected from halo, lower alkyl, lower alkoxy, halo lower alkyl, or nitro;

R^3 is chloro, lower alkoxy, lower alkylthio or NR^4R^5, in which R^4 is methyl or ethyl and R^5 is methyl, ethyl or propenyl; and

X is O or N-lower alkyl.

24. A herbicidal composition comprising from about 0.1 to about 95.0 percent by weight of a compound of claim 1 admixed with an agronomically acceptable carrier.

4,345,937

HERBICIDAL N-(HALOACETYL)-N-(N'-METHYLENEPYRROLIDONYL)-2-ALKOXYANILINES

Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

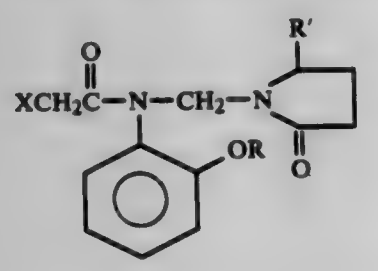
Division of Ser. No. 892,146, Mar. 31, 1978, Pat. No. 4,178,167, which is a continuation-in-part of Ser. No. 807,066, Jun. 16, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,306

The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.

Int. Cl.³ A01N *43/36*; C07D *207/263*

U.S. Cl. 71—95 **8 Claims**

1. Herbicidal N-haloacetyl-N-(N'-methylenepyrrolidonyl)-2-alkoxyaniline compounds having the formula:



where R is alkyl of 1–6 carbon atoms, R' is hydrogen or lower alkyl of 1–3 carbon atoms, and X is chloro, bromo or iodo.

4,345,938

HERBICIDAL 2-HALOACETANILIDES

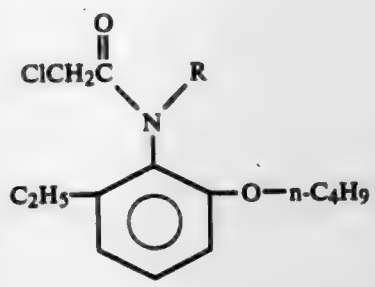
Gerhard H. Alt, University City, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 25, 1980, Ser. No. 133,764

Int. Cl.³ A01N *37/22*; C07C *103/32*

U.S. Cl. 71—118 **12 Claims**

1. Compounds having the formula



wherein R is a C_{1-4} alkyl radical.

4,345,939

METHOD FOR PROVIDING OXYGEN ENHANCED AIR FOR USE IN METALLURGICAL PROCESSES

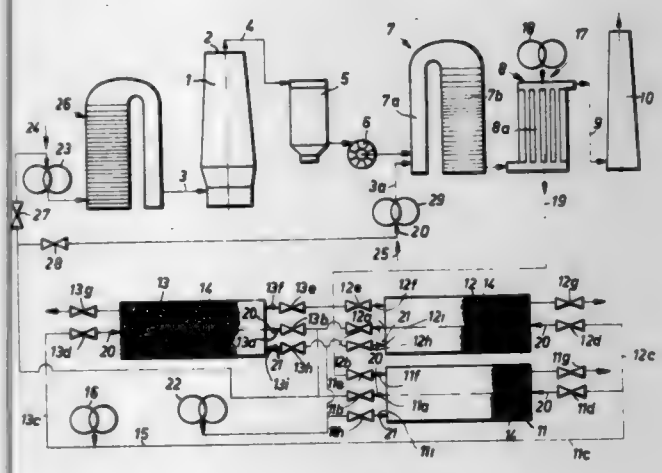
Günter Ratschat, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann DeMag A.G., Duisburg, Fed. Rep. of Germany

Filed Oct. 31, 1979, Ser. No. 89,977

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911763

Int. Cl.³ C21B *5/00*

U.S. Cl. 75—41 **9 Claims**



1. A method for regulating the percentages of individual gaseous constituents being provided to a metallurgical reaction process, comprising the steps of

(a) obtaining a supply of ambient air;

(b) passing said ambient air in a first direction through a zeolite molecular sieve material having a crystal lattice structure;

(c) entrapping inert gaseous constituents in said crystal lattice structure of said molecular sieve material, thereby enhancing the relative oxygen content of said air while simultaneously decreasing the absolute and relative amounts of said inert gaseous constituents of said ambient air;

(d) providing said now oxygen-enhanced air to a metallurgical reaction process for use therewith; and

(e) regenerating said molecular sieve material by first heating said molecular sieve material by passing a source of heated gas through said molecular sieve material in a second direction, said gas being heated by the recovered heat of said metallurgical reaction process, and by then cooling said molecular sieve material.

4,345,940

DESULFURIZING PROCESS

Peter J. Koros, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Incorporated, Pittsburgh, Pa.

Filed Apr. 13, 1981, Ser. No. 253,472
Int. Cl.[3] C21C *7/02*
U.S. Cl. 75—58 10 Claims

1. In a process for desulfurizing a bath of molten iron contained in a vessel which comprises the step of

injecting particulate lime and a carbon-containing particulate compound containing at least carbon and hydrogen in proportions ranging from $CH_{>0}$ to CH_2

the improvement wherein:

said carbon-containing particulate compound is of a type which has a volatile matter concentration of 5 to 20%, by weight.

4,345,941

NON-PICK-UP AND HEAT RESISTANT ALLOY

Hisashi Hiraishi; Toshiaki Morichika, and Shinichi Murakami, all of Hirakata, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Dec. 11, 1979, Ser. No. 102,367
Claims priority, application Japan, Dec. 14, 1978, 53-155288
Int. Cl.[3] C22C *30/00*
U.S. Cl. 75—122 4 Claims

1. A non-pick-up and heat resistant alloy consisting essentially of, by weight:

0.1–0.5% C,
1.0–1.8% Si,
$0 < Mn \leqq 2.0\%$,
26–30% Cr,
34–40% Ni,
$3 \leqq Co \leqq 9\%$,
0.5–3.0% Mo,
0.5–5.0% Nb,
0.5–10% W, and
balance Fe;

wherein the total amount of Ni and Co is 37–43%.

4,345,942

ABRASION RESISTANT SINTERED ALLOY FOR INTERNAL COMBUSTION ENGINES

Kentaro Takahashi; Yoshikatsu Nakamura, both of Omiya, and Masajiro Takeshita, Yono, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,256
Claims priority, application Japan, Apr. 26, 1979, 54/50932
Int. Cl.[3] B22F *3/12*
U.S. Cl. 75—237 4 Claims

1. An abrasion resistant sintered alloy for use in internal combustion engines which comprises 0.5 to 4.0% by weight of carbon, 1.5 to 16.0% by weight of Nb, 0.1 to 4.0% by weight of Mo, 0.1 to 10.0% by weight of Ni and 0.1 to 5.0% by weight P which permits liquid-phase sintering at temperatures not higher than 1,250° C., and the balance Fe and have 0.2 to 10% by volume of sintering pores at least 40% of which consist of pores having a pore size of not larger than 150 μm.

4,345,943

ABRASION RESISTANT SINTERED ALLOY FOR INTERNAL COMBUSTION ENGINES

Kentaro Takahashi; Yoshikatsu Nakamura, both of Omiya, and Masajiro Takeshita, Yono, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,231
Claims priority, application Japan, Apr. 26, 1979, 54-50850
The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.
Int. Cl.[3] B22F *3/12*
U.S. Cl. 75—238 8 Claims

1. An abrasion resistant sintered alloy for use in internal combustion engines which comprises 0.5 to 4.0% by weight of C, 5.0 to 30.0% by weight of Cr, less than 10.0% by weight of at least one of Ni, Mo, Co and Cu, 0.1 to 5.0% by weight of at least one of P, B and Si which permits a low temperature liquid-phase sintering at temperatures not higher than 1,250° C. and the balance iron, and have hardness after sintering of Hv 500 to 1,200, 7 to 45% by area ratio of cementite or eutectic crystal of cementite and P and 0.2 to 10% by volume of sintering pores at least 40% of which consist of pores having a pore size of not larger than 150 μm.

4,345,944

CEMENT ADDITIVE

Yoshiteru Kazama; Isao Kokubo; Akitoshi Tsuji, and Yukio Tanino, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1981, Ser. No. 244,405
Claims priority, application Japan, Mar. 31, 1980, 55-41384
Int. Cl.[3] C04B *7/35*
U.S. Cl. 106—90 8 Claims

1. A cement additive comprising solid granules, the individual granules comprising water-reducing agent deposited on or adhered to a solid carrier which carrier is compatible with hydraulic cement, said water-reducing agent being composed principally of naphthalene-sulfonic acid/formaldehyde high molecular weight condensate, or salt thereof, and being effective for preparing a hydraulic cement composition, said cement additive having been formed by molding into granules a mixture consisting essentially of from 12 to 87 parts by weight of said condensate and from 88 to 13 parts by weight of CaO, together with water necessary for granulation.

4,345,945

METHOD FOR DISPERSING COMMINUTED SOLIDS

Glenn N. Robinson, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Dec. 9, 1980, Ser. No. 214,606
Int. Cl.[3] C09C *1/36, 1/02*
U.S. Cl. 106—300 16 Claims

13. An aqueous slurry of a comminuted pigment consisting essentially of a pigment, water and the salt of 2-amino-2-methyl-1-propanol reacted with phosphoric acid in a 1–3:1, respectively, mole ratio.

4,345,946

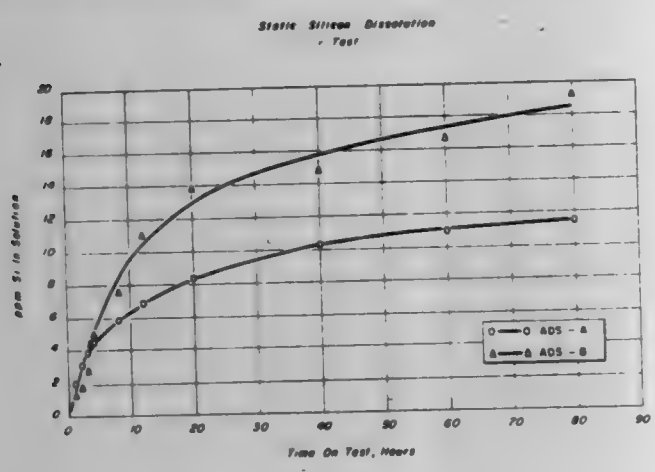
PROCESS FOR USE OF A ZEOLITE MOLECULAR SIEVE ADSORBENT IN AN AQUEOUS SYSTEM

Hosheng Tu, Shorewood, and Juana E. Rojo, La Grange, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 75,576, Sep. 14, 1979, abandoned. This application Aug. 1, 1980, Ser. No. 174,474
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.[3] C13K *3/00;* C13D *3/12;* C13K *11/00, 3/00*
U.S. Cl. 127—46.3 6 Claims

1. In a process for the separation of a component from a feed mixture comprising an aqueous solution of a mixture of components by contacting said solution with a zeolite, the silicon constituent of said zeolite tending to dissolve in said solution resulting in the undesirable disintegration of said zeolite, the improvement which comprises impregnating said zeolite, prior to said contacting with said aqueous solution, with aluminum

cations, thereby effecting a chemical reaction between said zeolite and said aluminum cations which substantially reduces



the extent of dissolution of said silicon constituent and the extent of said disintegration of said zeolite.

4,345,947

CLARIFICATION OF GLUCOSE SYRUPS

John T. Rundell, Keston; Paul R. Pottage, Bromley, and Ronald J. Harradine, Caterham, all of England, assignors to Tate & Lyle Limited, England

Filed Apr. 28, 1981, Ser. No. 258,440
Int. Cl.³ C13K *1/00, 1/06*
U.S. Cl. 127—48 **15 Claims**

1. A process for the clarification of a hydrolysed starch syrup, which process comprises the steps of forming in the syrup at a pH of 3.5 to 6.5 a primary floc formed between aluminum ions, hydroxide ions, and phosphate ions; aerating said syrup containing said primary floc; distributing an anionic organic polymeric flocculant through said syrup after aeration to initiate formation of a secondary floc; allowing said secondary floc to grow, and to segregate by flotation, giving flocculated solids and clarified syrup; and separating said flocculated solids from said clarified syrup.

4,345,948

METHOD FOR DEWATERING STARCH SLURRIES CONTAINING SWOLLEN STARCH GRANULES

William F. Breuninger, Greenwood, Ind., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jul. 13, 1981, Ser. No. 282,353
Int. Cl.³ C13L *1/08*
U.S. Cl. 127—70 **5 Claims**

1. In a process for the washing of starch conversion products containing swollen starch granules in a continuous centrifugal device, the improvement which comprises adding to the starch slurry 0.1 to 1%, based on weight of starch solids, of a cationic polymer which is a water-soluble acid salt of an aminoalkyl ester of a carboxylic acid polymer thereby increasing the production rate and yield while reducing suspended solids in the effluent.

4,345,949

CLEANING REACTORS CONTAMINATED WITH CARBOXYL CONTAINING POLYMERS

Hung S. Park, Avon Lake, Ohio; William D. Ryan, Jr., Paducah, Ky., and Harold L. Paine, Wellington, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 30, 1981, Ser. No. 229,705
Int. Cl.³ B08B *3/08, 3/10, 9/08*
U.S. Cl. 134—22.16 **7 Claims**

1. A process for cleaning a polymerization vessel contaminated with carboxyl containing polymers adhering to the inner surfaces thereof comprising adding to said vessel a trivalent metal salt, a surface active agent and water, heating the resulting solution and stirring to effectively remove said deposit of carboxyl containing polymer.

4,345,950

METHOD FOR MAKING A COMPOSITE GRAINED CAST ARTICLE

Kevin S. O'Hara, Peabody, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 21, 1980, Ser. No. 142,527
Int. Cl.³ C22F *1/10*
U.S. Cl. 148—2 **3 Claims**

1. A method for making a composite grained unitary cast article from a unitary casting of a high temperature superalloy based on at least one element selected from the group consisting of Ni and Co, comprising the steps of:

providing the unitary cast article in the single grained condition from an alloy which has good creep rupture and thermal fatigue high temperature properties in the single grained condition and is capable of developing good high cycle fatigue resistance properties in a lower temperature range of up to about 1300° F. in a multi-grained condition;

subjecting a first portion of the single grained article intended to operate in the lower temperature range to mechanical work to provide permanent plastic deformation in the surface of the first portion sufficient to enable recrystallization of the first portion when the first portion is heated at a recrystallization temperature, said recrystallization temperature being from at least the gamma prime solution temperature range of the alloy up to but not including that temperature which affects detrimentally the alloy of the article when the superalloy is based on Ni, and being from at least about 1600° F. up to but not including that temperature which affects detrimentally the alloy of the article when the superalloy is based on Co; and then

heating at least the first portion of the article at the recrystallization temperature for a time sufficient to recrystallize the first portion of the article to a multi-grained condition thus to provide the recrystallized first portion with high cycle fatigue resistance greater than that of the remaining single grained portion.

4,345,951

PROCESS FOR THE MANUFACTURE OF HOLLOW BODIES MADE OF ALUMINUM ALLOY AND PRODUCTS THUS OBTAINED

Jean Coupry, Voiron, and Marc Anagnostidis, Chamalieres, both of France, assignors to Societe Metallurgique de Gerzat, Paris, France

Filed May 30, 1980, Ser. No. 155,116
Claims priority, application France, Jun. 1, 1979, 79 15054
Int. Cl.³ C22F *1/04*
U.S. Cl. 148—2 **7 Claims**



1. A process for obtaining from an alloy in the non-recrystallized state a hollow body which is resistant to an internal pressure comprising tensile stress and bursting stress which are higher than or equal to 660 MPa and a lengthwise breaking elongation greater than or equal to 9% when tensile stress = 660 MPa, comprising at least the following steps:

(a) casting a billet of an alloy essentially consisting by weight:

Zn		7.6 to 9.5%
Cu		1.0 to 1.8%
Mg		2.4 to 3.5%
Cr		0.07 to 0.17%
Mn		0.15 to 0.25%
Zr		0.08 to 0.14%
Fe	≦	0.20%
Si	≦	0.15%
Ti	≦	0.10%
Others each	≦	0.05%
Others total	≦	0.15%
Remainder		Al

(b) homogenizing said billet;
(c) hot extruding said billet to provide a hollow body; and
(d) heat treating the extruded hollow body by solution treatment, quenching and artificial ageing (T_6 state).

4,345,952

METHOD FOR THE MANUFACTURE OF TUBES FROM STEEL HAVING HIGH DUCTILITY AT LOW TEMPERATURE

Alain L. A. Royer, Vandoeuvre les Nancy; Eugene Herzog, Nantes, and Robert M. L. Rouyer, Fumel, all of France, assignors to Pont-A-Mousson S.A., Nancy, France

Continuation of Ser. No. 47,964, Jun. 12, 1979, abandoned. This application Dec. 2, 1980, Ser. No. 212,166
Claims priority, application France, Jun. 12, 1978, 78 17864
Int. Cl.³ C21D *9/08*
U.S. Cl. 148—3 **13 Claims**

1. A method for manufacturing a tube from low carbon alloyed steel adapted to be welded, comprising the steps of: selecting a steel having at the most, as a percentage by weight, in addition to iron, 0.08% carbon, at the most 0.30% silicon, between 1.20 and 2.20% manganese and at least one metal-generating special carbide such as molybdenum, centrifugally casting a steel having contents of molybdenum from 0.42% to 0.50% and aluminum from 0.02% to 0.08% by weight in a centrifugal casting mould to form a tube, and subjecting the centrifugally cast tube after being extracted from the mould to at least controlled cooling, hardening and annealing to produce a mean KCV coefficient of resilience according to ASTM-E-23-64 at minus 40° C. of 148 to 220 joules.

4. A centrifugally cast and weldable tube of weldable steel comprising: a centrifugally cast low carbon alloyed steel tube, said tube thus cast subjected to at least controlled cooling, hardening and annealing and said low carbon alloyed steel comprising by weight, in addition to iron, at the most 0.08% carbon and at the most 0.30% silicon, manganese between 1.20 and 2.20%, at least one metal-generating special carbide and having a homogeneous ferritic structure having fine grains with stable carbides dispersed in a homogeneous manner in the ferrite, comprising molybdenum from 0.42% to 0.50%, aluminum from 0.02% to 0.08% and, vanadium 0.10% and/or traces of niobium the tube having a mean KCV coefficient of resilience according to ASTM-E-23-64 at minus 40° C. of 148 to 220 joules.

4,345,953

ALUMINUM-BASED DIE CASTING ALLOYS

Nobuo Kaneko, Minami Magome, and Masaru Yamamoto, Tokyo, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1980, Ser. No. 182,312
Int. Cl.³ C22C *21/06*
U.S. Cl. 148—32 **9 Claims**



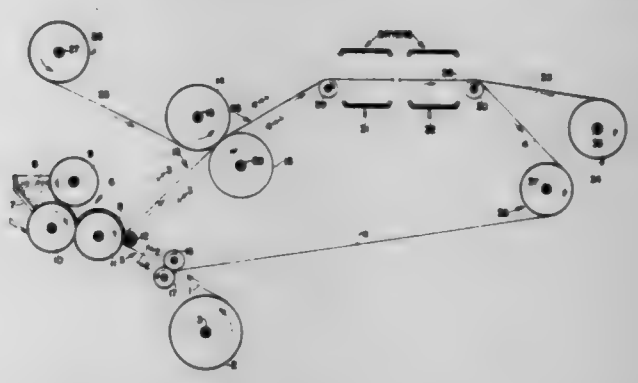
1. A die cast product having high strength and free from hot cracks made from an aluminum-based die casting alloy consisting essentially of 4–8% by weight of Zn, 6–11% by weight of Mg and the balance aluminum.

4,345,954

METHOD OF MAKING LAMINATES

Paul Panchu, Jamaica Plain, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 23, 1979, Ser. No. 23,310
Int. Cl.³ H01M *6/12*
U.S. Cl. 156—87 **20 Claims**



1. The method of making a triplex laminate of cellophane, electrode particles and conductive plastic, comprising the steps of laminating under pressure a sheet of conductive plastic, a sheet of cellophane, and an intermediate layer of an aqueous dispersion of electrode particles and a binder in which said aqueous dispersion comes into contact with the conductive plastic sheet at least as soon as it comes in contact with the cellophane sheet, and drying said laminate to remove moisture from said dispersion by diffusion through said cellophane sheet.

4,345,955

PROCESS FOR MANUFACTURING MULTILAYER CERAMIC CHIP CARRIER MODULES

Frank C. Bakermans, Shiremanstown, and Lee R. Conrad, Lewisberry, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

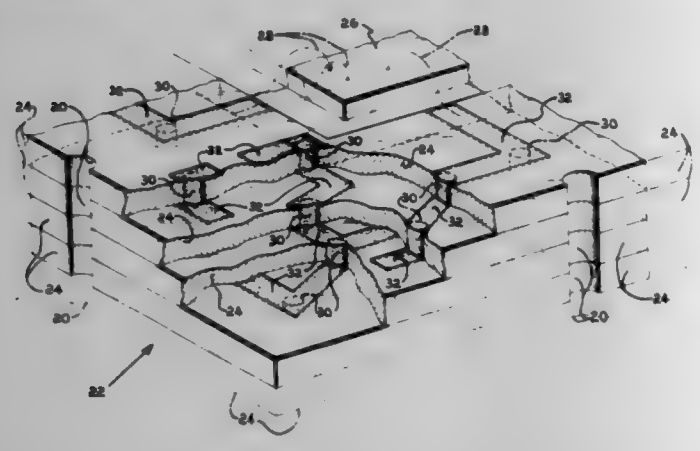
Continuation-in-part of Ser. No. 201,469, Oct. 28, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 307,657
Int. Cl.³ B32B *31/06*; C04B *39/12, 35/10*
U.S. Cl. 156—89 **10 Claims**

1. A process for producing a multilayer ceramic module for use with integrated circuits comprising:
(a) mixing together a nonconductive particulate material suitable for preparing a ceramic body with a binder at a temperature above the melting point of the binder and injecting said mixture into a mold containing predesigned ridges, heating and pressuring said mixture in the mold and then causing

said binder to be hardened by cooling to form a ceramic "green body" layer,

(b) applying a conductive paste to the formed ceramic layer,

(c) pressing together two or more of said layers to form a module,



(d) exposing said green body in a vapor of a solvent for said binder and thereafter a bath of a liquid solvent for said binder maintained at a temperature above the melting point of said binder, and

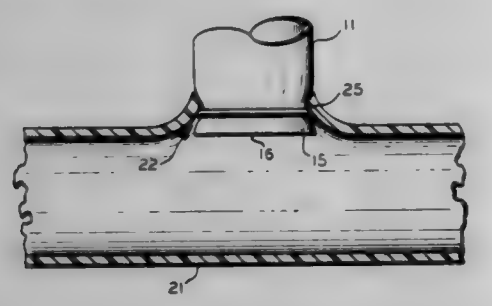
(e) sintering said module.

4,345,956

METHOD FOR MAKING A PIPE CONNECTION OR FITTING

Russell C. Cox, Taylors, S.C., and Arthur H. McElroy, Tulsa, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 16, 1980, Ser. No. 140,901
Int. Cl.³ B29C *17/08;* B29D *3/00; 9/00*
U.S. Cl. 156—198 **5 Claims**



1. A method for connecting a first end of a first pipe to a container in such a manner that the transverse surface of the first end of said first pipe is substantially flush with the inside surface of the portion of the wall of said container to which the first end of said first pipe is connected, wherein at least the first end portion of said first pipe which is connected to said container and at least the portion of the wall of said container to which the first end portion of said first pipe is connected comprises a synthetic thermoplastic polymeric material which has a plastic memory, said method comprising the steps of:

cold-swaging the first end portion of said first pipe to form an inwardly tapered first end portion of said first pipe;

forming a hole in said wall of said container which is smaller than but similar to the outside configuration of the untapered portion of said first pipe;

cold expanding the portion of the wall of said container which is adjacent said hole in such a manner that the wall of said container adjacent said hole extends outwardly from the remaining portion of said container to form an expanded hole in said wall of said container which is larger than but similar to the outside configuration of the largest portion of the inwardly tapered first end portion of said first pipe which must be inserted into the expanded hole in said wall of said container;

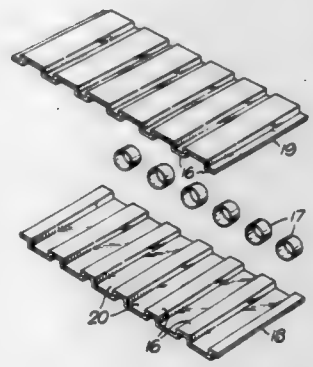
inserting the inwardly tapered first end portion of said first pipe into the expanded hole in said wall of said container in such a manner that the transverse surface of the inwardly tapered first end portion of said first pipe is substantially flush with the inside surface of the portion of the wall of said container which is substantially adjacent said hole, the plastic memory of at least the first end portion of said first pipe which is connected to said container causing the inwardly tapered first end portion of said first pipe to expand and the plastic memory of at least the portion of said wall of said container to which the first end portion of said first pipe is connected causing the expanded hole in the wall of said container to contract, thus forming a connection between said first pipe and said container wherein the transverse surface of the first end portion of said first pipe which extends through the hole in said wall of said container is substantially flush with the inside surface of the portion of the wall of said container which is substantially adjacent said hole and wherein the plastic memory of said synthetic thermoplastic polymeric material causes the formation of said connection without the necessity of applying other forces to said synthetic thermoplastic polymeric material.

4,345,957

POLYMERIC ARTICLES

Pushpkumar D. Changani, Swindon; Donald G. Peacock, Kempsford, and David Roberts, Broome Manor Swindon, all of England, assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 28, 1980, Ser. No. 172,899
Int. Cl.³ H02G *15/18, 1/14;* B29C *27/24;* H05B *3/10*
U.S. Cl. 156—218 **11 Claims**



1. A process for the production of a hollow heat-recoverable article provided with a functional insert, the steps comprising:

deforming a substantially non-cross-linked polymeric material at a temperature below the crystalline melting point or softening point of the material to render the material heat-recoverable primarily in one direction;

disposing a functional insert in contact with an exposed portion of said material;

fusing together parts of the deformed material to at least one other non-cross-linked polymeric component said fusing being done along lnes substantially perpendicular to the direction of polymeric material heat-recoverability to produce at least one hollow radially inwardly heat-recoverable article with the functional insert located therein; and,

cross-linking the fused portions of the polymeric material.

4,345,958

METHOD OF MAKING AN APPLIQUE ARTICLE

Minoru Kuroda, Amagasaki, Japan, assignor to Nishigawa Shoji Co. Ltd., Tokyo, Japan and Dimension Weld International Corp., Stamford, Conn.

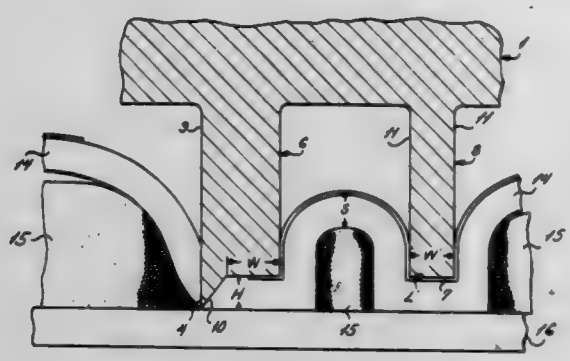
Continuation of Ser. No. 764,917, Feb. 2, 1977, Pat. No. 4,209,354, which is a continuation of Ser. No. 646,960, Jan. 7, 1976, Pat. No. 4,160,684, which is a continuation-in-part of Ser. No. 393,791, Sep. 4, 1973, abandoned, which is a continuation of Ser. No. 113,088, Feb. 5, 1971, abandoned, which is a continuation-in-part of Ser. No. 662,962, Aug. 24, 1967, abandoned, and a continuation-in-part of Ser. No. 112,403, Feb. 3, 1971, abandoned, which is a continuation of Ser. No. 792,719, Jan. 21, 1969, abandoned, which is a continuation-in-part of Ser. No. 662,962, Aug. 24, 1967, abandoned. This application Jun. 19, 1979, Ser. No. 50,114

Claims priority, application Japan, Dec. 19, 1966, 41-83085; Dec. 19, 1966, 41-115532; Dec. 19, 1966, 41-115533; Dec. 19, 1966, 41-115535

The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.

Int. Cl.[3] B32B *31/00*

U.S. Cl. 156—221 8 Claims



1. A method of applying an applique to a support, comprising the steps of providing a cover layer of synthetic plastic sheet material having a design surface with an outer contour line and at least a narrow outer bonding zone along said outer contour line, and at least one inner bonding zone spaced from the outer zone; further providing an intermediate layer of a resiliently compressible latently adhesive thermoplastic material; sandwiching said intermediate layer between said cover layer and a support material; and pressing against said cover layer die means having inner and outer pressure faces, said outer pressure face corresponding to said outer bonding zone and a raised cutting edge fixed along said outer pressure face and corresponding to said contour line, while activating said latently adhesive thermoplastic material of said intermediate layer and thereby bonding said cover layer by said intermediate layer in said outer bonding zone to said support material and while severing only said cover layer and intermediate layer along said outer contour line, the presence of said intermediate layer resulting in formation of a cushion between said support material and said cover layer in the area surrounded by said outer bonding zone upon bonding of said cover layer to said support material.

4,345,959

PROCESS FOR PRODUCING THERMOSETTING RESIN FILM

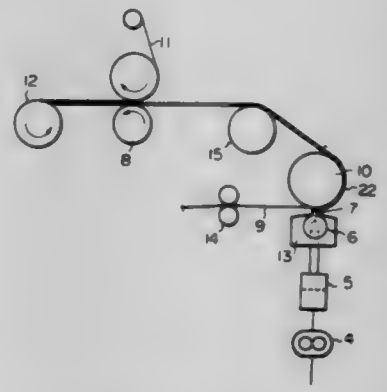
Hajime Asai; Hisashi Tada, and Takeo Gomi, all of Ootake, Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,537

Int. Cl.[3] B29D *7/02*

U.S. Cl. 156—244.11 14 Claims

1. An improvement in a process for producing a thermosetting resin film, wherein a molten heat curable thermosetting resin composition which is fluid at less than 100° C. and has a curing agent incorporated therein is extruded through a linear slit of a flat die, maintained at a constant temperature, onto a release sheet continuously moving at a constant rate in close proximity to the exit end of the linear slit, said improvement comprising (i) using as a non-solvent thermosetting resin in the molten thermosetting resin composition a resin which is fluid at a temperature of less than 100° C. and which is solid at room temperature, the molten thermosetting resin composition being a non-solvent type thermosetting resin composition which is prepared in the absence of a solvent by mixing in a mixer the ingredients of the composition which consists essentially of thermosetting resin, a monomeric precursor for the resin and



curing agent with or without unreacted cross-linking agent and filler, the curing agent being dissolved in the monomeric precursor, (ii) using as the flat die a flat sheeting die having a substantially circular manifold into which the thermosetting resin composition is fed and (iii) extruding the molten thermosetting resin composition maintained at a temperature of lower than 100° C. onto the release sheet supported by a back-up roll and confronting the exit of the linear slit of said flat sheeting die; said back-up roll being fitted with self-aligning bearing means.

4,345,960

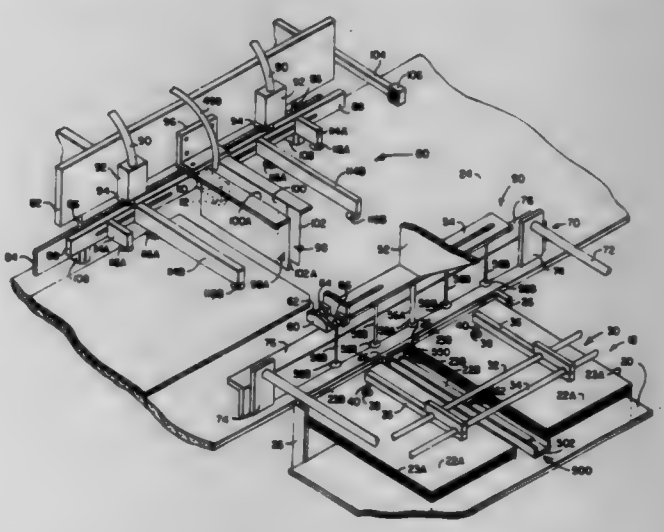
SYSTEM FOR AND METHOD OF LAMINATING

John D. Mims, Hopkington; Leland F. Mills, Dunbarton, and Ronald I. Fowler, Pittsfield, all of N.H., assignors to Crathern Engineering Co., Inc., Contoocook, N.H.

Filed May 29, 1981, Ser. No. 268,197

Int. Cl.[3] B32B *31/00*

U.S. Cl. 156—264 24 Claims



1. Apparatus for laminating sheet members respectively to select portions of a sheet of material, at least one of said sheet members being made of a relatively flexible and thin material of a predetermined length, and at least one other of said sheet members being made of a relatively stiff and thicker material, said apparatus comprising, in combination:

supporting means at a first location for supporting said members, each at a respective first position, said supporting

means including flexible member support means for supporting said flexible member;

lifting means at said first location for lifting at least a portion of each sheet member from said first position to a respective second position, said lifting means including means for moving said flexible member support means between the respective first and second positions of said flexible member;

feed means for feeding flexible material onto said flexible member support means at said first position;

cutting means for severing said flexible material so that said flexible material supported on said flexible member support means is of said predetermined length so as to form said flexible member;

transport means for transferring said sheet members disposed in said second position to a second location; and

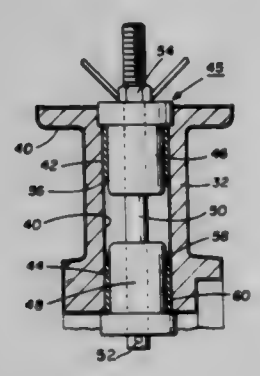
means at said second location for registering and securing each of said sheet members to the respective select portion of said sheet of material.

4,345,961

CORROSION RESISTANT VALVE CONSTRUCTION

Thomas F. Rothwell, and Gerald B. Smith, both of Bradford, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 151,222, May 19, 1980, Pat. No. 4,303,094.
This application Mar. 27, 1981, Ser. No. 248,665
Int. Cl.³ B32B *1/10*; F16K *1/22*
U.S. Cl. 156—294 **4 Claims**



1. In a pipe line valve for corrosive service including a metal body defining a flow passage between an inlet and an outlet, a closure member in said passage, a rotatable operator shaft extending from a driving connection with said closure member to a location external of said body, means defining at least one bore through a wall of said body for accommodating said operator shaft, and a corrosion resistant coating bonded to said valve body on at least the wall surface of said shaft bore, the method of placing a sleeve bearing for said operator shaft in said bore comprising the steps of selecting a sleeve bearing of outside diameter less than the uncoated diameter of said bore but greater than the inside diameter of the bonded coating thereon, and while the coating is at an elevated temperature in a semi-fluid unhardened state gradually pressing the sleeve axially inward of the bore to inwardly displace a quantity of coating composition encountered against the inward face of the sleeve.

4,345,962

CONTROL IN APPLICATION OF PULP INSULATION TO ELECTRICAL CONDUCTORS

William E. Cowley, Ottawa; Michael A. Shannon, Glen Burnie, and Victor L. LeNir, Montreal, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 25, 1981, Ser. No. 277,327
Int. Cl.³ H01B *3/48*
U.S. Cl. 156—356 **7 Claims**

1. Apparatus for pulp insulating a plurality of conductors comprising:

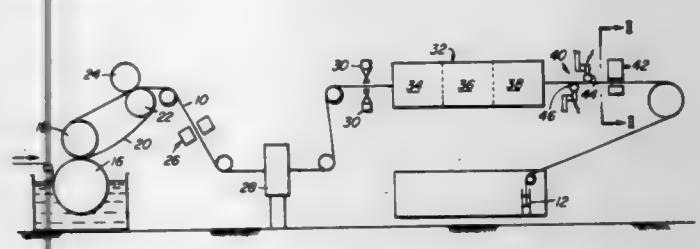
a pulp bath for simultaneous passage of the conductors along side-by-side paths;

weight measuring means to measure the weight of wet pulp applied to the conductors;

means to adjust the amount of pulp fibre entering the bath per unit time;

control means, actuable by signals received from the weight measuring means and corresponding to the actual weight of pulp per unit length, to operate the pulp fibre amount adjusting means to change the amount of the pulp fibre in the bath and thus to bring the weight within preset limits;

an oven for drying the pulp, said oven being composed of at least two zones, an upstream zone and a downstream zone, said zones each having an adjustable drying temperature setting;



a moisture measuring means and a diameter measuring means downstream of the oven to measure moisture retention and average final diameter of the pulp on the conductors;

the diameter measuring means being associated with the adjustable temperature setting of the upstream zone of the oven to influence that setting to control the rate of flash evaporation in the upstream zone and thus the degree of expansion of the pulp during flash evaporation; and

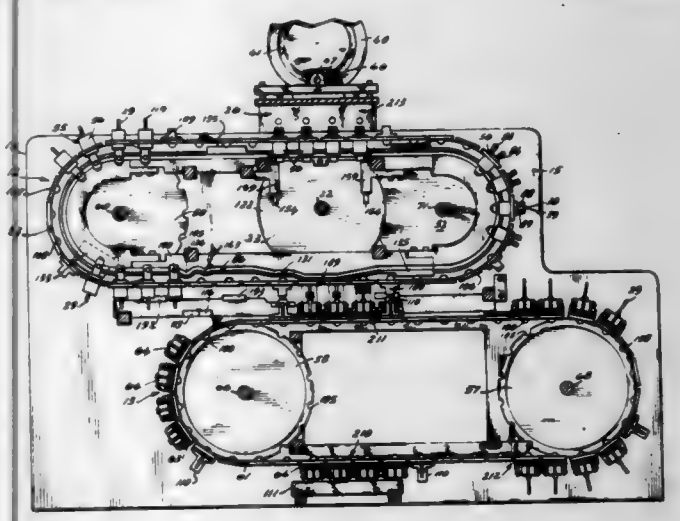
the moisture measuring means being associated with the adjustable temperature setting of the downstream zone of the oven to control the rate of drying in the downstream zone to provide a desired moisture retention in the pulp upon the insulated conductors emerging from the oven.

4,345,963

ASSEMBLY MACHINE FOR I.V. COMPONENTS

Robert J. Braber, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jun. 1, 1981, Ser. No. 269,229
Int. Cl.³ B29B *3/00*
U.S. Cl. 156—423 **11 Claims**



1. An apparatus for assembling component parts to lengths of flexible tubing comprising:

a first and a second conveyor member, each said conveyor member defined by a continuous guide path;

means to continuously move each said conveyor;

a frame member supporting said conveyors for rotation over a horizontal axis to provide upper and lower loading and unloading surfaces with said first conveyor supported

above said second conveyor with portions of said conveyors placed in an overlapping manner;

a plurality of oppositely positioned tubing clamp members carried by said first conveyor;

a plurality of commodity carrier members carried by said second conveyor;

means operatively associated with said tubing clamp members to supply predetermined lengths of tubing in said tubing clamp members in a rectilinear manner and in a first plane when said clamp members are positioned at said upper loading surface of said first conveyor;

means operatively associated with said commodity members to position a commodity thereon;

means constructed and arranged in conjunction with said tubing clamp members and said frame member to position the ends of said lengths of tubing in a plane other than said first plane; and

means operatively associated with said tubing clamp members, said commodity carrier members, said conveyor members and said frame member to place at least one end of said tubing when in said other plane in said commodity when said tubing clamp members are in the lower unloading position of said first conveyor and said commodity carrier members are in the upper loading position of said second conveyor.

4,345,964

APPARATUS FOR THE APPLICATION OF A PLIABLE WEB OF MATERIAL ONTO CORRUGATED SHEET

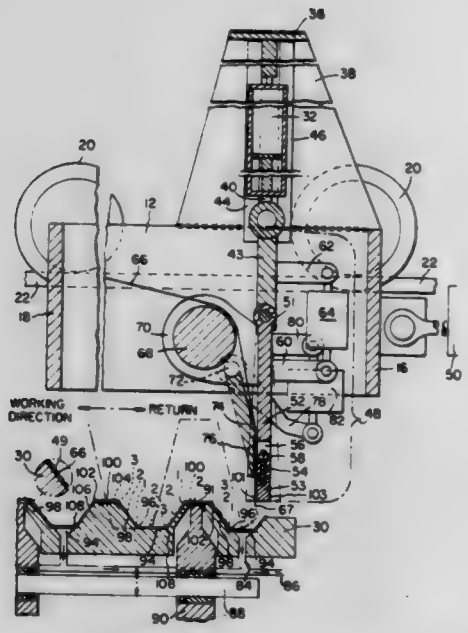
Stig S. W. Scholander, Karlbergsvägen 68 B, S-113 35 Stockholm, Sweden

Filed Oct. 24, 1980, Ser. No. 200,540

Claims priority, application Sweden, Oct. 29, 1979, 7908943

Int. Cl.³ E04C *2/26*

U.S. Cl. 156—468 **6 Claims**



5. Apparatus for the application of a pliable web of material such as a thin non-woven web of glass or mineral fibers bonded together at the points of crossing by a glue, on to corrugated sheet, including a rectangular frame open at the top and bottom and having parallel vertical walls, means for supporting the frame above the sheet material to be coated, and means for moving the frame perpendicularly to the extension of the corrugations of the sheet, comprising:

(a) a supporting bar slidably mounted in vertical guidways between two opposite walls of the frame, said supporting bar being carried vertically displaceable via fluidum-operated cylinder-piston assemblies from a beam extending across said frame and rigidly connected to said opposite frame walls; an applicator plate pivotally connected by means of hinges to said supporting bar and suspended therefrom, the bottom edge of said applicator plate being adapted in the course of depositing the web of material to press the free end portion of the web of material firmly to a sheet sprayed with glue, and by coordinated propulsion of the frame by means of said driving means and lifting and lowering of said supporting bar by means of said cylinder-piston assemblies, to follow the corrugations of the sheet for pressing the web of material firmly thereto;

(b) a fluidum-operated cylinder-piston assembly mounted to the supporting bar and applicator plate between brackets for adjusting the angle of inclination of the applicator plate in swinging movements coordinated with the forward movement of the frame and the lifting and lowering movements of the applicator plate;

(c) a guide roller for guiding the web of material into the working area of the applicator plate, said guide roller being rotatably mounted between brackets mounted at the extreme ends of the applicator plate perpendicularly to the surface of said plate on the opposite side of said brackets; and

(d) a material holder pivotally mounted on pivots between the applicator plate and guide roller and obliquely below the latter, said material holder having the shape of an oblong plate extending across the entire width of the web of material, the lower edge of said material holder presenting a beveled knurled surface; a pair of levers rigidly connected to the pivots of the material holder and extending outside the ends of the material holder through the space between said ends and said opposite walls of the frame, a pair of brackets mounted on the opposite flat side of the applicator plate perpendicularly thereto above and in the same plane as said levers, and a pair of fluidum-operated cylinder-piston assemblies pivotally mounted between respective ends of the levers and brackets for swinging the material holder in relation to the applicator plate.

4,345,965

METHOD AND APPARATUS FOR MAKING TWO COMPONENT MOULDINGS

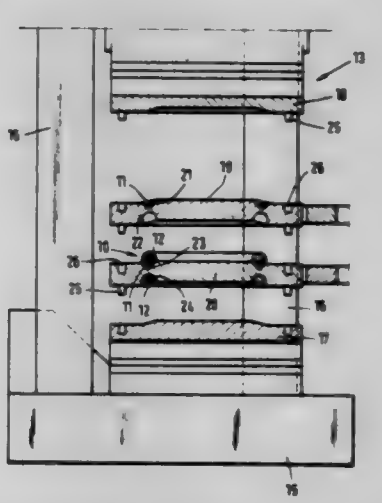
Bernhard Lindenmayer, Hessheim, and Lothar Fink, Achim, both of Fed. Rep. of Germany, assignors to Kloeckner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Aug. 3, 1979, Ser. No. 63,886

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834211

Int. Cl.³ B29C *3/02*; B29G *3/00*

U.S. Cl. 156—500 **15 Claims**



1. An injection moulding apparatus for manufacturing a composite article of rubber or the like comprising first and second components thermally joined together by vulcanizing or the like, comprising:

(a) a mould press having two substantially parallel, mutually displaceable end plates movable toward each other to close the press and vice versa,

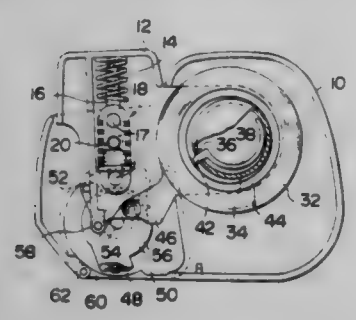
(b) means defining a cavity in a first one of said end plates corresponding to the shape of the first component,
(c) means defining a cavity in a second one of said end plates corresponding to the shape of the second component,
(d) a planar mould plate having a first cavity defined in one surface thereof corresponding to the shape of the first component and a second cavity defined in another, opposite surface thereof corresponding to the shape of the second component,
(e) a planar separator plate,
(f) means for aligning the mould plate and the separator plate between the end plates in a stacked, mutually cooperable, juxtaposed manner to structurally define, upon the closure of the press, three separate mould chambers corresponding respectively to the shape of the first component, the shape of the composite article, and the shape of the second component, and
(g) means for interchanging the relative positions of the mould plate and the separator plate to simultaneously produce separate first and second components and a composite article formed of two previously moulded first and second components during a single closure operation of the mould press.

4,345,966

AUTOMATIC TAPE APPLICATOR

Shigeru Iiyama, No. 13-5, Kamisoshigaya 5-chome, Setagaya-ku, Tokyo; Sinzi Otsu, No. 13-14, Kamiaoki-nishi 2-chome, Kawaguchi-shi, Saitama-ken, and Akio Ooyachi, No. 2292 Hachijo, Yashio-shi, Saitama-ken, all of Japan

Filed Mar. 3, 1981, Ser. No. 240,092
Claims priority, application Japan, Mar. 19, 1980, 55-36817[U]
Int. Cl.³ B32B *31/00*; B44C *7/00*
U.S. Cl. 156—523 **3 Claims**



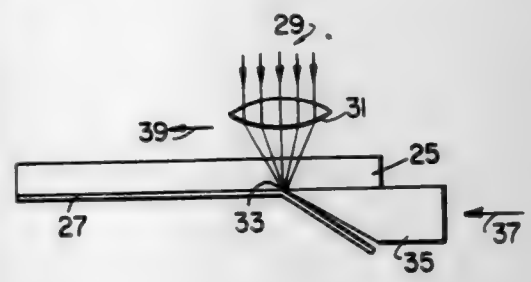
1. An automatic tape applicator for sticking an adhesive tape onto a surface of an object including a casing and a pusher, which is characterized in that:
said pusher is so mounted to the casing that it is reciprocated between uppermost and lowermost positions when it is pushed against the force of a spring urging the pusher toward the uppermost position, and when the pushing force is released from the pusher,
said casing rotatably supports a disk provided with a cutting blade,
said pusher is provided with a rack meshing with teeth of the disk, a tape supporter for holding a rolled adhesive tape, a tape deflection roller for deflecting the tape end downwardly, and a tape support roller for preventing the twist or sagging of the tape end fed to the underside of the deflection roller from the rolled tape,
when the pusher is pushed downwardly, the tape end positioned at the underside of the deflection roller is also downwardly moved and projected from a window formed in the bottom of the casing and is stuck to the surface of the object, and the disk is rotated so as to set the cutter blade on the disk in a cutting preparatory position, and when the pushing force is released from the pusher after the sticking of the tape to the object, the disk is rotated reversely by the rack and the tape is cut at the underside of the deflection roller.

4,345,967

METHOD OF PRODUCING THIN SINGLE-CRYSTAL SHEETS

Melvin S. Cook, 43 Westerly Rd., Saddle River, N.J. 07458

Filed Mar. 4, 1980, Ser. No. 127,114
Int. Cl.³ C30B *33/00*
U.S. Cl. 156—613 **19 Claims**



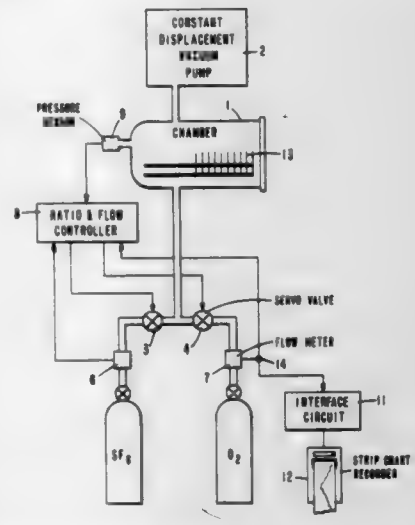
1. A method of producing thin crystals comprising the steps of epitaxially growing an attached layer of crystal on a substrate, said layer of crystal being transparent to radiation of at least one particular wavelength to which said substrate is absorptive in a region of said substrate adjacent the interface of said substrate with said layer of crystal, directing radiation of said at least one particular wavelength into at least part of said absorptive region through said layer of crystal such that material of said at least part but not all of said absorptive region liquifies at the interface of said layer of crystal and substrate, and separating said layer of crystal from said substrate at the liquified material.

4,345,968

END POINT DETECTION USING GAS FLOW

Mary Ellen B. Coe, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 27, 1981, Ser. No. 296,754
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—627 **12 Claims**



1. A plasma etching system comprising:
a plasma etching chamber;
means for sensing the molar content within said chamber;
a source of first etchant gas;
means for coupling said first gas into said chamber;
first means, for regulating the flow rate of said first gas through said means for coupling said first gas;
means for extracting gases from said chamber,
second means, for regulating the flow rate of gases through said means for extracting;
control means, responsive to said means for sensing the molar content, for actuating said first and second means for regulating, so that one means for regulating maintains a substantially constant flow rate while the other means for regulating responds to said means for sensing the molar content; and

means for sensing changes, in the means for regulating which responds to said means for sensing the molar content, to detect the end point of etching.

10. A method for determining the end point of plasma etching, comprising:

coupling a plasma etching chamber to a source of vacuum and a source of etchant gas;

regulating either the inlet gas flow rate or the gas flow rate to said source of vacuum, while holding the other substantially constant, to maintain a fixed molar content within said chamber; and

sensing the time related change of said regulated gas flow during the progression of etching to detect transitions between substantially steady levels.

4,345,969

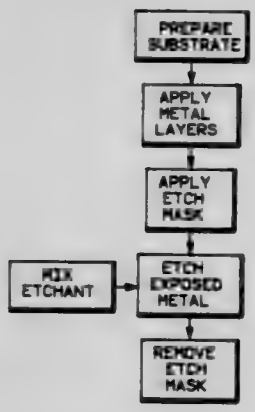
METAL ETCH SOLUTION AND METHOD

Kristi L. James, Phoenix, and A. L. Shields, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 23, 1981, Ser. No. 246,783

Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—659.1 **9 Claims**



5. A method for the patterned etching of sequential layers of titanium nickel and copper on a substrate which comprises the steps of: providing an etch mask overlying said sequential layers; immersing said substrate in an etchant solution comprising about 1.8 to 2.0 moles/liter hydrofluoric acid, about 2.5 to 4.0 moles/liter acetic acid, about 8.7 to 9.0 moles/liter nitric acid and balance water; and etching portions of said layers exposed through said mask in said solution until said exposed portions are removed.

4,345,970

PROCESS AND APPARATUS FOR CONTROLLING THE DEPOSITION OF A LIQUID ON TO A MOVING SURFACE

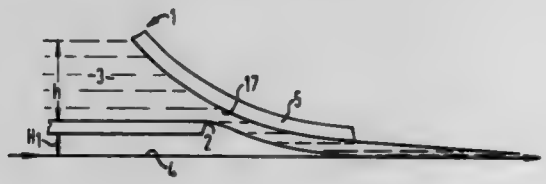
Bronislaw Radvan, Flackwell Heath; Vaughan W. Punton, Beaconsfield, and Paul B. Trendall, High Wycombe, all of England, assignors to The Wiggins Teape Group Limited, Hampshire, England

Filed Feb. 22, 1980, Ser. No. 123,763

Claims priority, application United Kingdom, Feb. 28, 1979, 7907124

Int. Cl.³ D21F *11/04*

U.S. Cl. 162—123 **11 Claims**



1. A process for controlling the deposition of a liquid from a reservoir outlet on to a moving surface, a lower surface of the reservoir outlet being located above and spaced apart from the moving surface, which process includes discharging a jet of the liquid from the outlet on to the underside of a downwardly extending guide member which underside is convex to the jet and is disposed between the outlet and the moving surface, allowing the liquid jet to flow unconstrained down the convex surface of the member on the underside of the member such that a lower surface of the jet is exposed to ambient pressure until the direction of flow of the jet approaches the direction of travel of the moving surfce, depositing liquid on to the moving surface, and maintaining an end of the guide member remote from the reservoir outlet in a predetermined fixed spaced relationship from the moving surface.

11. A process for preparing multilayer paper, which process includes discharging a jet of paper making stock from a headbox slice on to a convexly curved underside of a downwardly extending guide member which is disposed between the slice and a moving wire carrying a paper web disposed below and spaced apart from a lower surface of said slice, allowing the jet of stock to flow unconstrained down the member on the underside such that a lower surface of the jet is exposed to ambient pressure until the direction of flow of the jet approaches the direction of travel of the moving wire, and depositing the liquid on to the paper web to thereby form the multi-layer paper.

4,345,971

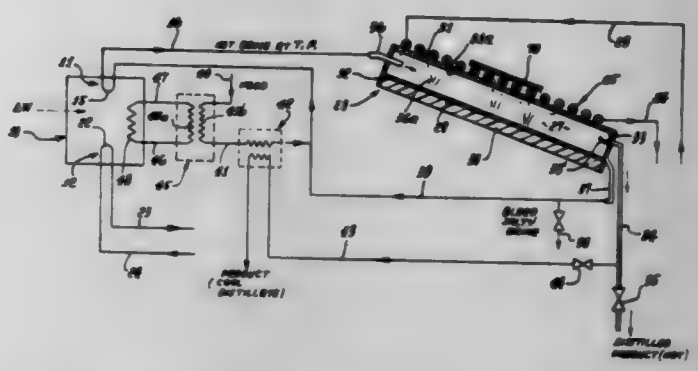
DISTILLATION EMPLOYING HEAT PUMP

W. Keith R. Watson, El Camino Real (Box 1547), Rancho Santa Fe, Calif. 92067

Filed Mar. 13, 1980, Ser. No. 130,143

Int. Cl.³ C02F *1/04*

U.S. Cl. 202—177 **13 Claims**



1. In a heat transfer apparatus, the combination comprising

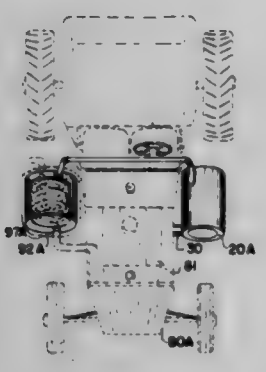
(a) a heat pump having first and second fluid passing portions, the pump operable to transfer heat to distillable fluid in said first portion from coolant in said second portion and from a heat input source,

(b) distillation means having first and second zones at lower and upper sides respectively of a heat transferring barrier plate which is inclined from horizontal, the first zone having an upper section connected with the heat pump first portion to receive heated fluid therefrom for vaporization at said first zone and condensation at the under side of said plate, there being a return line connected between a lower section of said first zone and said heat pump first portion to return concentrate to said heat pump first portion for re-heating, the second zone extending in latent heat receiving proximity to said first zone and via said barrier plate, the second zone connected with the heat pump second portion to circulate heated coolant thereto after transfer of latent heat to said coolant in said second zone, and to return said coolant to said second zone after transfer of heat from the coolant in the heat pump second portion, said heat pump and said distillation means being separate units.

4,345,972
ALCOHOL RECOVERY PROCESS

Tilda M. Hannebaum, and Harold W. Hannebaum, both of P.O. Box H, Shoshone, Id. 83352

Filed Jul. 1, 1980, Ser. No. 164,854
Int. Cl.³ B01D *3/02*
U.S. Cl. 203—18 1 Claim



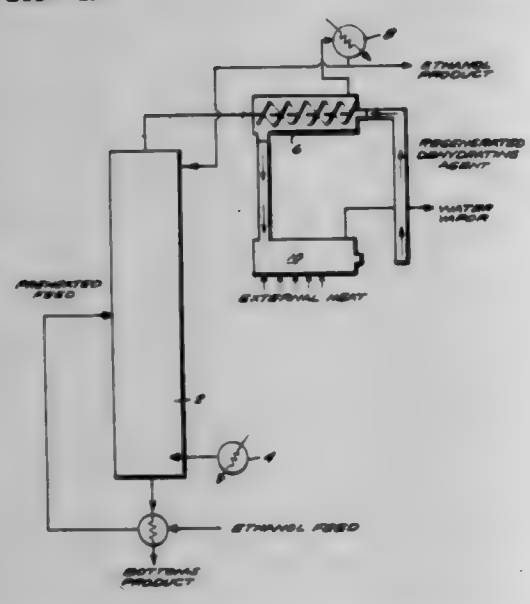
1. A process for producing alcohol, comprising, providing an apparatus, mounted on a vehicle powered by an internal combustion engine, for distillation of alcohol, comprising a vessel for containing mash, means for heating the mash in said vessel to form an alcohol-containing vapor, a condenser coupled to said vessel for condensing said vapor, said condenser being in the form of a hollow double metal walled shaped body formed of an interior metal wall and an exterior metal wall spaced from said interior interior wall and concentric therewith so as to enclose an interior chamber, with both said walls joined together along opposed ends of said walls, and with said condenser shaped to that ambient air may freely flow about the exterior surfaces of both metal walls so as to cool vapors in the chamber to cause said vapors to condense, together with inlet and outlet means connected to said chamber,

in which an exhaust system of said engine serves as the means for heating the vessel containing the mash, and in which the condenser chamber inlet means is connected to an outlet of the mash-containing vessel and in which the condenser chamber outlet means is coupled to the fuel supply of said engine, and recovering an alcoholic distillate from said apparatus.

4,345,973
VAPOR PHASE DEHYDRATION OF AQUEOUS ALCOHOL MIXTURES

Michael R. Ladisch, and George T. Tsao, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West LaFayette, Ind.

Filed Aug. 25, 1980, Ser. No. 181,244
Int. Cl.³ B01D *3/34, 53/04;* B01J *20/24;* C07C *29/80*
U.S. Cl. 203—19 10 Claims

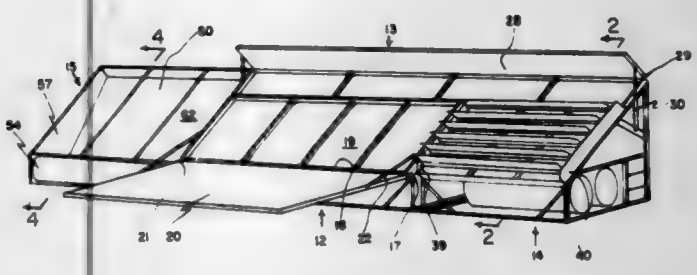


1. A process for the dehydration of aqueous alcohol mixtures and separation of water therefrom which comprises contacting said mixtures while in the vapor state with a dehydration agent selected from the group consisting of cellulose, carboxymethylcellulose, cornmeal, cracked corn, corn cobs, wheat straw, bagasse, starch, hemicellulose, wood chips, other grains, other agricultural residues and mixtures thereof and recovering the alcohol with less than 5% water.

4,345,974
SOLAR PROCESS

Walton W. McCarthy, Box 1091, Bozeman, Mont. 59715

Filed Sep. 15, 1980, Ser. No. 187,348
Int. Cl.³ B01D *3/02*
U.S. Cl. 203—19 2 Claims



1. A solar process for producing alcohol including providing an apparatus of a size sufficiently small to be conveniently carried on a flat bed truck, said apparatus including a fermentation section and a distillation section; said fermentation section including a shallow pan with a large top opening inclined at an angle to the horizontal, a transparent member disposed over said top opening of said fermentation pan, cover means for said fermentation pan; means for introducing fermentable material into said fermentation pan, means for removing liquid from said fermentation pan, solar heating means for said liquid, means for transferring said heated liquid to said distillation section; said distillation section including a shallow pan with a large top opening inclined at an angle to the horizontal, said distillation pan including a bottom section with a plurality of spaced rib members, said rib members being disposed in a substantially horizontal, parallel orientation, a transparent member disposed over said top opening of said distillation pan, means for selectively reducing the solar exposure of said distillation pan, liquid collecting means disposed adjacent the lower edge of said distillation pan; and means for controlling the temperatures within said fermentation pan and said distillation pan; said process also including the steps of preparing a pulverized fermentable material, vigorously mixing water with said pulverized fermentable material to form a uniform aqueous mixture including said fermentable material, adjusting the pH of said mixture to between about 4 and 5, selectively exposing said aqueous fermentable mixture to solar radiation in said fermentation section to heat said mixture to an elevated temperature between about 80° and 100° F., maintaining said aqueous fermentable mixture at said elevated temperature for a time sufficient to ferment substantially all of said fermentable material, separating liquid from said fermented mixture, exposing said fermented liquid to solar radiation in said distillation section to heat said liquid to a temperature approaching the boiling point of said alcohol between about 170° and 190° F., passing said heated liquid continuously in small quantities over said inclined rib members while subjecting said liquid to solar radiation through said transparent member of said distillation pan, vaporizing the alcohol component of said liquid, controlling the exposure of said fermented liquid to solar radiation during said vaporizing step, condensing said vaporized alcohol component on the under side of said transparent member disposed closely above said inclined rib members, and collecting said condensed alcohol component.

4,345,975

PROCESS FOR PREVENTING BLOCKAGE IN DISTILLATION COLUMN OF TREATMENT APPARATUS FOR AMMONIACAL WASTE LIQUID

Hideshi Abe, Kurashiki, and Koji Tonooka, Okayama, both of Japan, assignors to Mitsui Kensetsu Kabushiki Kaisha, Tokyo, Japan

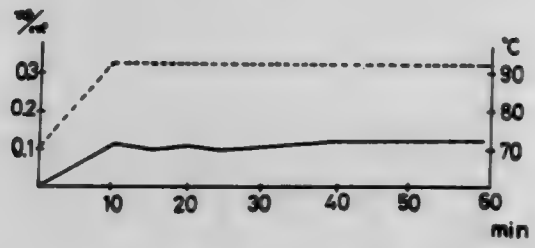
Division of Ser. No. 31,036, Apr. 18, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,625

Claims priority, application Japan, Sep. 12, 1978, 53-111313; Jan. 30, 1979, 54-8791

Int. Cl.³ B01D *3/34*

U.S. Cl. 203—37

3 Claims



1. In a method for treatment of an ammoniacal waste liquid comprising the steps of effecting a decomposition reaction of fixed ammonia by adding a calcium series alkali so as to obtain a reaction product comprising free ammonia and a calcium salt, separating the calcium salt so as to obtain a separated liquid, and steam-stripping the free ammonia from the separated liquid in a distillation column, the improvement comprising the step of aging the separated liquid in an aging tank for at least 5 minutes at an elevated temperature equal to the temperature at the top of the distillation column immediately prior to the steam-stripping, thus preventing blocking in the distillation column.

4,345,976

PROCESS FOR SEPARATING MIXTURES OF SUBSTANCES OF LOW VOLATILITY

Siegfried Peter, Lange Zeile 138, D-8520 Erlangen, Fed. Rep. of Germany; Gerd Brunner, Roth, and Rolf Riha, Friedelsheim, both of Fed. Rep. of Germany, assignors to Siegfried Peter, Uttenreuth-Weihr, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 739,325, Nov. 5, 1976, abandoned, which is a continuation of Ser. No. 632,087, Nov. 14, 1975, abandoned, which is a continuation of Ser. No. 496,871, Aug. 12, 1974, abandoned. This application Feb. 7, 1979, Ser. No. 10,143

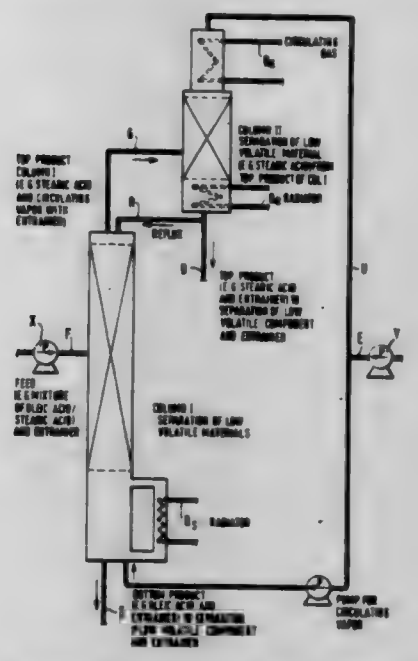
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1973, 2340566

Int. Cl.³ B01D *3/36;* C11C *1/10*

U.S. Cl. 203—49

16 Claims

1. A process for substantially separating the components of mixtures of substances at least one of which is of low volatility, while the other is of low or no volatility by using a compressed gas under supercritical conditions, and an entrainer adapted to increase the concentration of said mixtures of substances in the gaseous phase as well as the separation factor between the components to be separated, comprising in combination, feeding such mixture and said entrainer into a first distillation zone, passing said compressed gas upward through said distillation zone, effecting the separation and downward travel of the first component mixed with entrainer, to the bottom of said first distillation zone; passing from the top of said first distillation zone, the compressed gas, entrainer and second component to a point at most as high as the center of a second distillation zone, passing said compressed gas, entrainer and second component upward past a condensing zone at the top of said second distillation zone condensing part of said entrainer so it will travel downward in countercurrent to the compressed gas whereby to substantially free the same from the second component, and to pass to the bottom of said second distillation zone; recycling the compressed gas from the top of the second distillation zone to the bottom of the first distillation zone, recycling part of the bottom product of said second distillation zone to the top of said first distillation zone, whereby to effect substantial separation of said components in the absence of any substantial pressure decrease and the consequent need for recompression.



4,345,977

METHOD AND APPARATUS FOR DEPOSITING METAL IN A LARGE DIAMETER CYLINDRICAL BORE WHICH PASSES THROUGH A LARGE PART

Jacques Blanc, Lyons; Andre Coulon, Bessoncourt, and Gilbert Pellus, Evecquemont, all of France, assignors to Alsthom-Atlantique, Paris and TSM. Traitements de Surface et Mecanique, Vigny, both of, France

Continuation-in-part of Ser. No. 153,290, May 27, 1980, Pat. No. 4,279,706. This application Apr. 2, 1981, Ser. No. 250,378

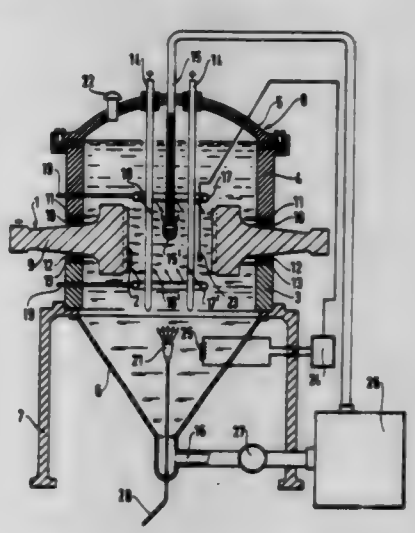
Claims priority, application France, Mar. 27, 1980, 80 06834

The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.

Int. Cl.³ C25D *7/04, 17/02, 21/10*

U.S. Cl. 204—26

10 Claims



1. A method of depositing a metal in a large-diameter cylindrical bore which passes through a large part, said method comprising the steps of:

placing the large part centered between an upper tank and a lower tank, said tanks having a common vertical axis of symmetry so that the axis of symmetry of the bore coincides with the axis of the tanks and so that the tanks and the part define a chamber with the bore inside the chamber and the peripheral portions of the part extending outside the chamber,

filling said chamber with electrolyte to the extent of immersing at least the bore of the part within said electrolyte,

causing the electrolyte to flow between a supply tube which discharges electrolyte into said chamber and a removal tube situated at the bottom of the lower tank,

entraining the electrolyte inside the chamber in a circular descending motion through the bore of the part, and

simultaneously applying a flow of direct current between said large part which serves as a cathode and anode means disposed adjacent the bore and coaxially of the tanks.

4,345,978

METHOD AND APPARATUS FOR PREPARING AROMATIC HYDRAZO OR DIAMINODIPHENYL COMPOUNDS

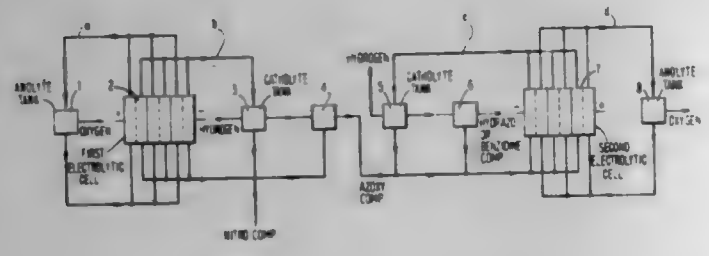
Hans de Groot, Nuenen; Eeuwoud van den Heuvel, Helmond; Embrecht Barendrecht, Veldhoven, and Leonard J. J. Janssen, Nuenen, all of Netherlands, assignors to Borma B.V., Netherlands

Filed Jun. 4, 1980, Ser. No. 156,339

Claims priority, application Netherlands, Jun. 5, 1979, 7904418

Int. Cl.³ C25B *3/04*

U.S. Cl. 204—74 **11 Claims**



1. A method of preparing hydrazo compounds by the electrochemical reduction of aromatic nitro compounds, wherein the reaction is carried out continuously and in two steps, comprising a first step in which the aromatic nitro compounds are reduced to form the corresponding azoxy compounds in a first electrochemical cell, and as the azoxy compounds are produced additional aromatic nitro compound is continuously added to the first electrochemical cell to maintain the concentration of aromatic nitro compound therein substantially constant, and the azoxy compound is continuously removed from the first electrochemical cell to maintain the concentration of azoxy compound therein substantially constant; and subsequently a second step in which the azoxy compounds which have been removed from the first cell are reduced further in a second electrochemical cell to form the corresponding hydrazo compounds.

4,345,979

METHOD AND APPARATUS FOR RECOVERING GEOPRESSURED METHANE GAS FROM OCEAN DEPTHS

Neil L. Carpenter, 175 Nimitz Rd., Kerrville, Tex. 78208

Division of Ser. No. 807,739, Jun. 17, 1977, Pat. No. 4,199,025, which is a continuation-in-part of Ser. No. 624,391, Oct. 21, 1975, Pat. No. 4,037,655, which is a continuation of Ser. No. 462,326, Apr. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 228,846, Feb. 24, 1972, abandoned. This application Apr. 21, 1980, Ser. No. 142,101

Int. Cl.³ C25B *1/00, 9/04*

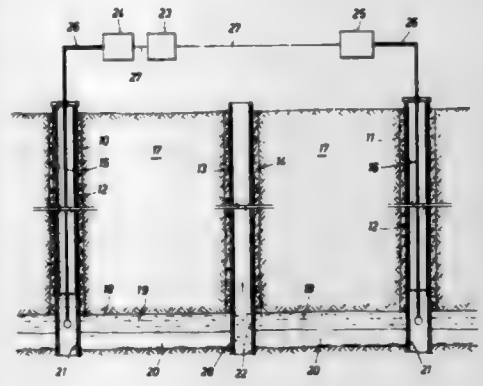
U.S. Cl. 204—101 **9 Claims**

1. A method of recovering geopressured methane dissolved in ocean salt water at a predetermined depth, comprising the steps of

disposing at least two spaced-apart electrodes into electrical contact with the ocean salt water carrying the dissolved methane gas at the predetermined depth, said ocean salt water acting as an electrolyte in contact with said electrodes,

insulating said electrodes from substantially all overlying ocean salt water above a selected depth leaving a selected length of each electrode exposed in electrical contact with the ocean salt water carrying the dissolved methane gas to establish an electrical circuit composed of said electrodes and said salt water electrolyte at said depth containing said geopressured methane,

establishing an AC electrical current flow in said electrodes and said salt water electrolyte at said geopressured methane depth for establishing an AC electrical field surrounding said electrodes for establishing a current density in the ocean salt water carrying the dissolved methane gas in an area surrounding said electrodes exceeding the minimum current density required to cause AC disassociation of saltwater, electrochemically releasing as a free gas said dissolved methane gas and other free gases from said ocean salt water in said area surrounding said electrodes as a function of said current density in said area exceeding said minimum current density and causing AC disassociation of the salt water for allowing said free methane gas to rise to the surface of the ocean, and



recovering said free methane gas at the ocean surface.

4,345,980

ELECTROWINNING OF ZINC

Richard T. Chow; Clifford J. Krauss, and Douwe Ybema, all of Trail, Canada, assignors to Cominco Ltd., Canada

Filed Jun. 12, 1980, Ser. No. 158,711

Claims priority, application Canada, Feb. 19, 1980, 345935

Int. Cl.³ C25C *1/16*

U.S. Cl. 204—119 **4 Claims**

1. In the continuous operation of a process for the electrowinning of zinc comprising leaching zinc-bearing material with spent electrolyte containing sulfuric acid to provide an acid zinc sulphate containing solution; purifying the resulting leach solution to remove undesirable impurities therefrom; incorporating the purified leach solution in the electrolyte in a multiplicity of electrically interconnected cells each containing a plurality of anodes and of cathodes for the deposition of zinc from the electrolyte; recirculating electrolyte overflowing from the cells; returning a portion of the electrolyte circulating through the cells as spent electrolyte to said leaching; periodically removing at least some of the anodes in some of the cells; cleaning or replacing the removed anodes as necessary; returning the fresh or cleaned anodes into the cells from which anodes were removed whereby all of the anodes are periodically removed and replaced during the electrowinning process; the improvement which comprises: returning as spent electrolyte to the leaching process the electrolyte overflowing from only those cells containing at least some replaced or freshly cleaned anodes.

4,345,981

ANODICALLY POLARIZED SURFACE FOR BIOFOULING AND SCALE CONTROL

John E. Bennett, and Joseph E. Elliott, both of Painesville, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 963,611, Nov. 24, 1978, Pat. No. 4,256,556. This application Feb. 23, 1981, Ser. No. 237,470
Int. Cl.³ C25B *1/02*
U.S. Cl. 204—129 8 Claims

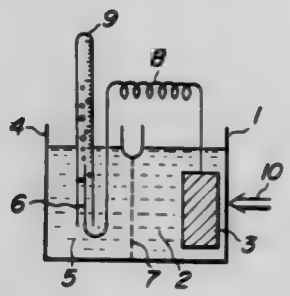
1. A method of maintaining an electrocatalytic electroconductive surface free of at least one of biological and hardness deposits in an aqueous environment containing chloride ions, said electrocatalytic, electroconductive surface being for generating an effective amount of oxygen to maintain said surface free of biological and hardness deposits with substantially no evolution of chlorine gas when made anodic, comprising: making said electrocatalytic surface anodic to a second electroconductive surface whereby water in contact with the electrocatalytic surface is electrolyzed to produce sufficient oxygen and hydrogen ions at said anodic electrocatalytic surface to prevent formation of biological or hardness deposits without the evolution of chlorine, and periodically making the second electroconductive surface anodic to the electrocatalytic surface to effect a removal of at least hardness deposits on the second electroconductive surface.

4,345,982

PROCESS FOR THE PRODUCTION OF HYDROGEN UTILIZING A PHOTOGALVANIC EFFECT OF A POLYACID ION

Tsuneo Ikawa, Kamakura, and Toshihiro Yamase, Yokohama, both of Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan

Filed Feb. 25, 1981, Ser. No. 237,905
Claims priority, application Japan, Mar. 5, 1980, 55-26722
Int. Cl.³ C25B *1/10*
U.S. Cl. 204—129 10 Claims



1. A process for the production of hydrogen comprising immersing an anode into an aqueous solution of an alkylammonium salt of polytungstic acid or polyvanadic acid as an anode electrolyte, immersing a cathode into an aqueous solution of an acid as a cathode electrolyte, isolating both said electrolytes from each other, electrically connecting both the electrodes to each other and irradiating a light onto said anode electrolyte, whereby hydrogen is evolved at said cathode.

4,345,983

METHOD FOR DISPOSAL OF CHEMICAL WASTE

Jeffrey K. S. Wan, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed May 21, 1981, Ser. No. 265,798
Int. Cl.³ B01J *19/12*
U.S. Cl. 204—158 R 8 Claims

1. A process for disposal of chlorinated hydrocarbons comprising:

effecting intimate contact between a para- or ferromagnetic material surface and a solid or liquid phase chlorinated hydrocarbon;

subjecting said intimately contacted surface to microwave radiations in the range 1.5–3 GHz so as to generate a high intensity oscillating electrical field at said surface and so as to produce, in the presence of a free oxygen containing gas, chloride ions and oxidation products of organic moieties of said chlorinated hydrocarbons.

4,345,984

NOVEL PROSTAGLANDIN ANALOGUES AND PROCESS FOR MAKING SAME

Edward D. Mihelich, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 2, 1981, Ser. No. 239,765
Int. Cl.³ C07C *301/16*
U.S. Cl. 204—162 R 8 Claims

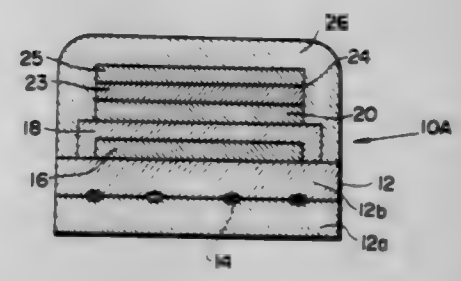
1. A process for converting olefins to the corresponding alpha-epoxy alcohols comprising reacting an olefin with singlet oxygen in the 1 Δg state and converting the reaction product to an alpha-epoxy alcohol by in situ rearrangement in the presence of a catalytic amount of a heterogeneous or homogeneous catalyst containing a transition metal of group IVB, VB or VIB of the Periodic Table, excluding chromium.

4,345,985

METHOD OF PRODUCING SOLID ELECTROLYTE OXYGEN-SENSING ELEMENT OF LAMINATED STRUCTURE

Masayuki Tohda, Yokosuka; Hiroshi Takao, Kamakura, and Shinji Kimura, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 23, 1980, Ser. No. 219,841
Claims priority, application Japan, Dec. 26, 1979, 54-168084
Int. Cl.³ B05D *5/12*
U.S. Cl. 204—192 EC 18 Claims



1. A method of producing an oxygen sensing element of the concentration cell type, the method comprising the steps of:

preparing a lamination of a shield layer made of a ceramic material, a reference electrode layer laid on a major surface of said shield layer, an oxygen ion conductive solid electrolyte layer formed on said surface of said shield layer such that said reference electrode layer is tightly sandwiched between said shield layer and said solid electrolyte layer and a first measurement electrode layer which has a microscopically porous and gas-permeable structure and is formed on and in close contact with the outer surface of said solid electrolyte layer by applying a wet composition containing fine particles of a metal onto said surface of said solid electrolyte layer, drying the applied composition to evaporate the liquid component of the applied composition and firing the uncompleted lamination to sinter the metal particles contained in the applied composition;

and

forming a second measurement electrode layer having a microscopically porous and gas-permeable structure on the outer surface of said first measurement electrode layer by physical vapor deposition of a metal on said surface of said first measurement electrode layer, wherein said forming of said second measurement electrode layer comprises a first sub-step of performing said physical vapor deposition for a limited time such that the thickness of a metal

film on said lamination during said first sub-step does not exceed 0.5 microns, a second sub-step of subjecting said lamination with said metal film deposited thereon from said first sub-step to a heat treatment performed in air at a temperature in the range from 900° to 1100° C. and a third sub-step of resuming said physical vapor deposition wherein said metal film subjected to said heat treatment becomes an innermost part of said second measurement electrode layer.

2. A method according to claim 1, wherein said second measurement electrode layer is formed so as to have a thickness not greater than 1.0 micron.

6. A method according to claim 2, wherein said second measurement electrode layer is formed by a vacuum evaporation process.

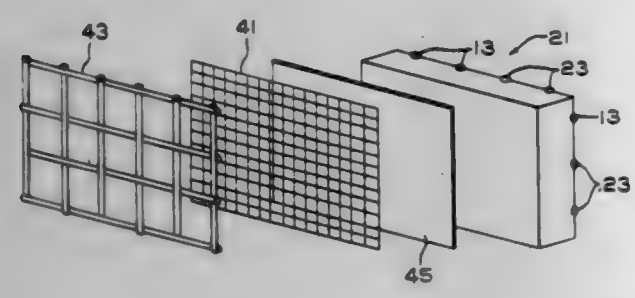
8. A method according to claim 6, wherein the step of forming said second measurement electrode layer further comprises renewing the outer surface of said first measurement electrode layer by sputter-etching in advance of said first sub-step.

4,345,986

CATHODE ELEMENT FOR SOLID POLYMER ELECTROLYTE

Malcolm Korach, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 2, 1980, Ser. No. 155,277
Int. Cl.³ C25B *9/00, 9/04*
U.S. Cl. 204—266 **4 Claims**



1. In an electrolytic cell having an electrolyte impermeable permionic membrane with an anodic portion and a cathodic portion, anodic means removably in contact with the anodic portion, and cathodic means removably in contact with and compressively bearing upon the cathodic portion, the improvement wherein the cathodic means removably bearing upon the permionic membrane comprises a microporous, ductile member, consisting essentially of metallic materials, having a thickness of from about 0.01 millimeter to 1.0 millimeter, chosen from the group consisting of perforated foils and perforated sheets, and conforming to the permionic membrane.

4,345,987

COATED ELECTRODE AND A METHOD OF ITS PRODUCTION

Akira Fukasawa, and Minoru Ueda, both of Ibaragi, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,688
Claims priority, application Japan, Apr. 16, 1980, 55-50773
Int. Cl.³ C25B *11/16;* C25C *7/02;* H01M *4/02*
U.S. Cl. 204—290 R **5 Claims**

1. A coated electrode in which lead dioxide is coated on the surface of an alloy which consists of lead and silver.

4,345,988

METHOD FOR SEALING THE DRIVE-SIDE PORTION OF A PREPARATION AND HYDROGENATION CHAMBER FOR HYDROGENATING COAL WITH HYDROGEN TO FORM HYDROCARBONS

Klaus Koch, Laatzen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover Kleefeld, Fed. Rep. of Germany

Division of Ser. No. 151,762, May 21, 1980, Pat. No. 4,287,157. This application Jan. 14, 1981, Ser. No. 225,012
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943538
Int. Cl.³ C10G *1/00;* G10B *47/00;* C10B *47/20, 57/12*
U.S. Cl. 208—8 R **8 Claims**

1. A method of seaing off a drive means for a preparation chamber and a hydrogenation chamber of an apparatus for hydrogenating coal with hydrogen to form hydrocarbons, said chambers being defined by a cylinder containing a rotatable element to convey particles of coal at a first pressure from the preparation chamber into and through the hydrogenation chamber, said method comprising the steps of

(a) continuously feeding a sealing substance in paste form and under pressure from a storage container into a sealing region adjacent to the drive side of said preparation chamber;

(b) maintaining the pressure in said sealing region at a higher pressure than said first pressure prevailing in the adjacent preparation chamber; and

(c) forcing said sealing substance from said sealing region into said preparation chamber due to the force of the pressure differential therebetween, thereby sealing said drive means from said preparation chamber by prohibiting said particles of coal to pass from said preparation chamber into said sealing region.

4,345,989

CATALYTIC HYDROGEN-DONOR LIQUEFACTION PROCESS

Lonnie W. Vernon, Baytown; Lavanga R. Veluswamy; Charles A. Euker, Jr., both of Houston, all of Tex., and Charles A. Mims, Summit, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 27, 1980, Ser. No. 181,602
Int. Cl.³ C10G *1/06;* B01J *37/00*
U.S. Cl. 208—10 **21 Claims**

1. A catalytic hydrogen-donor liquefaction process for converting a solid carbonaceous feed material into lower molecular weight liquid hydrocarbons which comprises contacting said feed material with a hydrogen-donor solvent containing above about 0.6 weight percent donatable hydrogen and a hydrogen-containing gas in a liquefaction zone under liquefaction conditions in the presence of an added carbon-alkali metal catalyst comprising a carbon-alkali metal reaction product prepared by partially gasifying an intimate mixture of carbonaceous solids and an alkali metal constituent with steam in a reaction zone external to said liquefaction zone.

4,345,990

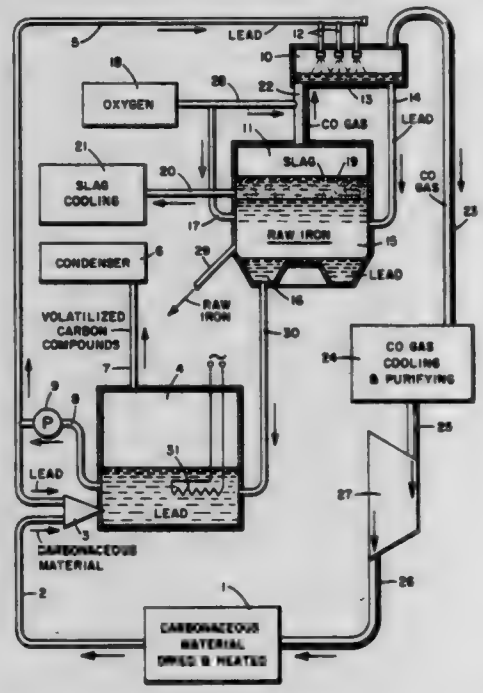
METHOD FOR RECOVERING OIL AND/OR GAS FROM CARBONACEOUS MATERIALS

Per A. H. H. Fahlström, Akersberga, and Karl G. Görling, Lidingö, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE80/00105, § 371 Date Dec. 12, 1980, § 102(e) Date Nov. 5, 1980, PCT Pub. No. W080/02149, PCT Pub. Date Oct. 16, 1980
PCT Filed Apr. 11, 1980, Ser. No. 212,725
Claims priority, application Sweden, Apr. 12, 1979, 7903283
Int. Cl.³ C10G *1/02;* C10B *49/14, 53/06*
U.S. Cl. 208—11 R **12 Claims**

1. A method of recovering volatile constituents from carbonaceous materials by pyrolysis and gasification, whereby the

material is introduced into a first reactor vessel containing a first melt in which volatile constituents are driven off by thermal treatment, and subsequently recovered, and wherein part of the first melt containing the non-volatile constituents of said carbonaceous material is transferred to a second reactor vessel containing a second melt at a temperature greater than the temperature in the first reactor, the first and the second melts being mutually different melts whose solubility in one another is limited and which can be physically separated, and whereby said first and said second melts are brought together to transfer



to and to absorb into said second melt said non-volatile constituents, and wherein one of the members of the group consisting of oxygen, air, and oxides is also introduced into the second melt for gasifying residual quantities of carbonaceous material present in said non-volatile constituents by oxidation; and metal melt from the second reactor vessel is returned to the first reactor vessel in a quantity to substantially maintain the temperature therein and to replace the quantity of the first melt transferred from said first reactor vessel to the second reactor vessel.

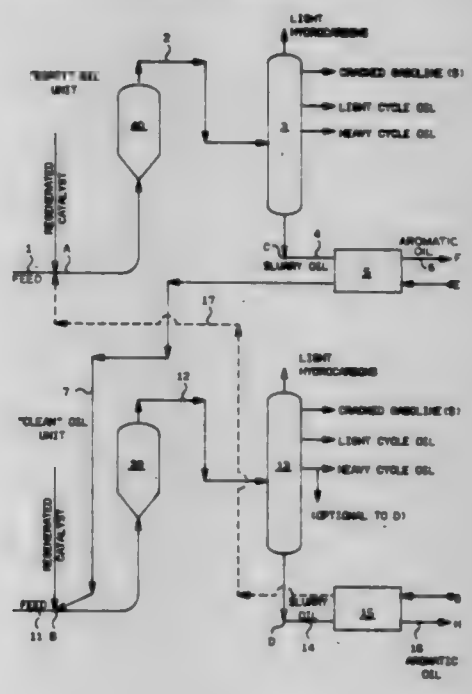
4,345,991

CATALYTIC CRACKING PROCESS

Albert F. Stegelman, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 10, 1980, Ser. No. 214,840
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—78 **6 Claims**

1. In a catalytic cracking process comprising
(a) a first cracking-regeneration loop wherein
(aa) a first feedstock is contacted under cracking conditions with a cracking catalyst in a first cracking zone,
(bb) the cracked first feedstock is withdrawn from said first cracking zone and introduced into a first fractionator,
(cc) a first bottoms slurry is withdrawn from said first fractionator, said first bottoms slurry containing first cracking catalyst fines,
(b) a second cracking-regeneration loop wherein
(aa) a second feedstock is contacted under cracking conditions with a cracking catalyst in a second cracking zone,
(bb) the cracked second feedstock is withdrawn from said second cracking zone and introduced into a second fractionator,
(cc) a second bottoms slurry is withdrawn from said second fractionator, said second bottoms slurry containing a second cracking catalyst fines,
with the proviso that one of said first and second cracking catalyst fines have a relatively high coke content whereas the other one has a relatively low coke content,
the improvement
wherein said first bottoms slurry is passed through a first filter to yield a first oil essentially free of first cracking catalyst fines,
wherein said second bottoms slurry is passed through a second filter to yield a second oil essentially free of second cracking catalyst fines,
wherein said first filter is backflushed by passing at least a portion of said second oil through said first filter to yield a first backflush slurry consisting essentially of said second oil and said first cracking catalyst fines,



wherein said first backflush slurry is passed through said second filter and said second bottoms slurry is also passed through said second filter,
wherein a second backflush fluid being a desirable hydrocarbon feed for said second cracking-regeneration loop is passed through said second filter to yield a second backflush slurry consisting essentially of said second backflush fluid and first and second cracking catalyst fines, and
wherein said second backflush slurry is introduced into said second loop for cracking in said second cracking zone.

4,345,992

CATALYTIC CRACKING PROCESS

Stone P. Washer, and Joe Van Pool, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 27, 1980, Ser. No. 200,646
Int. Cl.³ C10G *47/00, 47/24;* B01J *37/12, 37/18*
U.S. Cl. 208—120 **9 Claims**

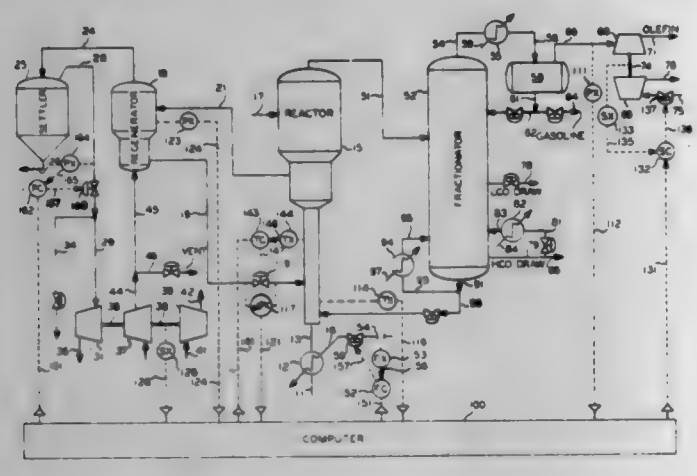
1. In a process for the catalytic cracking of hydrocarbons wherein said hydrocarbons are contacted with particulate cracking catalyst under cracking conditions in a cracking zone, portions of said cracking catalyst are continually transferred to a regeneration zone where carbonaceous materials thereon are consumed by combustion, the thus regenerated catalyst is continually transferred to a reduction zone wherein said catalyst is exposed to a reducing gas under conditions so that the adverse effects of contaminating metals thereon are at least reduced, and the thus reduced catalyst is continually transferred to the cracking zone, the improvement comprising using a gaseous seal upstream of the reducing zone to assure that the major portion of the unconsumed reducing gas passes into the cracking zone.

4,345,993

CONTROL OF A FLUID CATALYTIC CRACKING UNIT

William S. Stewart, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 30, 1980, Ser. No. 221,680
Int. Cl.³ C10G *11/18*; G05D *7/00, 23/00*; F27B *15/00*
U.S. Cl. 208—164 18 Claims



10. A method for controlling a fluid catalytic cracking unit, wherein a feed provided to a reactor is contacted with a regenerated cracking catalyst provided to the reactor from a catalyst regenerator to produce a product stream which is provided from said reactor to a fractionator, wherein cracking catalyst contaminated by carbon is provided from said reactor to said catalyst regenerator and contacted with a free oxygen-containing gas provided to said catalyst regenerator from an air blower to produce said regenerated catalyst with the resulting hot gases being removed from said catalyst regenerator as a flue gas, and wherein an overhead stream is withdrawn from said fractionator and partially condensed with the uncondensed portion of said overhead stream being provided to the suction inlet of a compressor, said method comprising the steps of:

establishing a first signal representative of the actual suction pressure for said compressor;

establishing a second signal representative of the desired suction pressure for said compressor;

comparing said first signal and said second signal and establishing a third signal responsive to the difference between said first signal and said second signal, wherein said third signal is scaled so as to be representative of the speed of said compressor required to maintain the actual suction pressure represented by said first signal substantially equal to the desired suction pressure represented by said second signal;

controlling the speed of said compressor in response to said third signal;

establishing a fourth signal representative of the differential pressure between said catalyst regenerator and said reactor;

establishing a fifth signal representative of the desired differential pressure between said catalyst regenerator and said reactor;

comparing said fourth signal and said fifth signal and establishing a sixth signal responsive to the difference between said fourth signal and said fifth signal, wherein said sixth signal is scaled so as to be representative of the pressure of the flue gas flowing from said catalyst regenerator required to maintain the actual differential pressure between said catalyst regenerator and said reactor represented by said fourth signal substantially equal to the desired differential pressure between said catalyst regenerator and said reactor represented by said fifth signal; and

manipulating the pressure of said flue gas in response to said sixth signal, wherein the suction pressure for said compressor rises when a compressor speed limit is reached to effectively shift loading from said compressor to said air blower by raising the pressure in said catalyst regenerator to maintain a desired pressure differential between said catalyst regenerator and said reactor as the suction pressure for said compressor rises.

4,345,994

METHOD FOR MONITORING THE EFFICIENCY OF RAW MATERIAL BENEFICIATION APPARATUS

Joseph W. Leonard, III, 322 Kenmore St., and Joseph W. Leonard, IV, 1243 Corvette St., both of Morgantown, W. Va. 26505

Filed Dec. 5, 1980, Ser. No. 213,677
Int. Cl.³ B03B *13/06*
U.S. Cl. 209—1 7 Claims

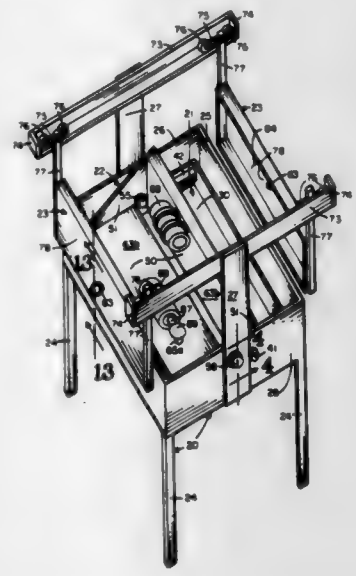
1. In a float-sink separation process for specific gravity sorting of raw material in particulate form, such as coal, by introducing particles of said raw material for separation into a liquid bath wherein the particles are separated within said liquid bath in accordance with the specific gravity of the particles, wherein particles with relative higher specific gravity sink within said bath and particles with relative lower specific gravity float within said bath, a method for determining the efficiency of said separation, said method comprising sequentially introducing individually to said bath with said raw material particulates to be separated prepared particles of determined size and specific gravity, said prepared particles being of a plurality of specific gravities and each prepared particle being of a known size and individually detecting and recording the separation location of each individual prepared particle introduced to said bath.

4,345,995

MAGNETIC SEPARATOR

James H. Ahrendt, E. 12114 Cataldo, #67, Spokane, Wash. 99206

Filed Feb. 20, 1981, Ser. No. 236,588
Int. Cl.³ B03C *1/06*
U.S. Cl. 209—219 5 Claims



1. A machine for separating paramagnetic particles from a particulate mass containing substantially more diamagnetic particles, comprising in combination:

a frame providing a peripherally defined pan support at a spaced distance above a horizontal frame supporting surface;

a processing pan pivotably supported in the pan support in a normally horizontal position but releasably pivotable for dumping;

a spindle plate support having two substantially perpendicularly related spindle plates pivotably mounted on the frame above the pan support in such position that each spindle plate is pivotable to a position substantially parallel to and at a spaced distance above opposite halves of the processing pan, each of said spindle plates having;

a plurality of spacedly arrayed elongate rotatable mag-

netic cylinders extending substantially perpendicularly from its processing pan facing surface, and

means of rotating said cylinder; and

means of removing separated paramagnetic particulate matter from the magnetic cylinders.

4,345,996

CONIC REACTION CHAMBER FOR WATER DECONTAMINATION

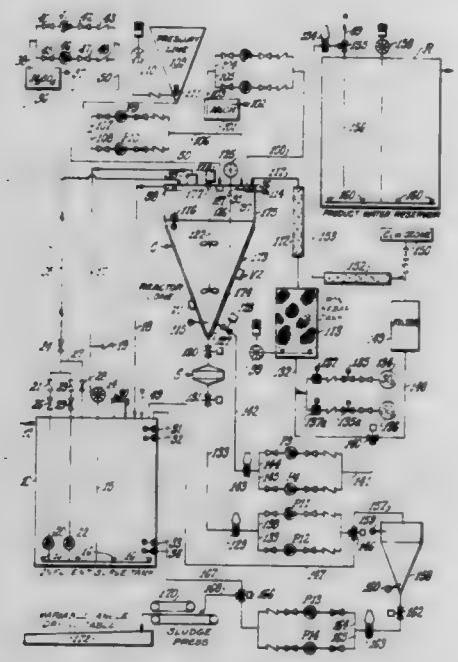
William E. Lindman, Fountain Valley, and John A. Alexander, Cayucos, both of Calif., assignors to Precipitator Corporation, Santa Fe Springs, Calif.

Continuation-in-part of Ser. No. 189,339, Sep. 22, 1980, which is a division of Ser. No. 840,414, Oct. 7, 1977, Pat. No. 4,224,148, which is a division of Ser. No. 597,217, Jul. 18, 1975, abandoned.

This application Sep. 22, 1980, Ser. No. 189,600

Int. Cl.³ B01D *21/01, 21/24*

U.S. Cl. 210—96.1 **10 Claims**



1. A mixing and reaction chamber particularly adapted for effecting selective stepwise treatment of a flowable, contaminated body of liquid therein, said chamber having multiple inlet means with conduit coupling means for flow coupling respectively to acidic and alkaline reagent supply sources and for introduction of said body of liquid into the chamber,

said chamber having an upper generally cylindrical segment and a lower conic body formed of upwardly outspread, inwardly smooth walls and terminating in a lower generally apical area, said chamber having selective flow control and dual outlet means for separately withdrawing from the contained body of liquid a solid particle component and a supernatent liquid component separated therefrom,

said conic body having means for mixing the body of liquid and additionally having means for selective introduction of gaseous reagents including air into the body of liquid for reaction therewith,

the smooth walls of said conic body including an acid and alkali resistant polymeric-resin liner and an outer support frame including at least one longitudinal anchorage strut disposed inwardly overlying said liner and having power driven vibration means carried by said support frame and fastened to said strut through said liner for accentuating formation and accumulation of solid particles in said apical area in response to introduction of said acidic or alkaline reagents.

4,345,997

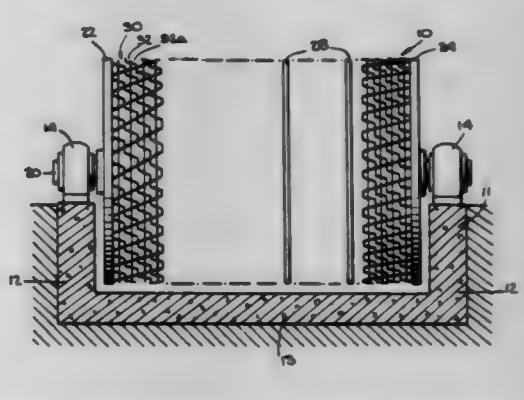
MEDIA

William K. McConnell, Jr., Fort Worth, and Charles M. Campbell, Burleson, both of Tex., assignors to Crane Co., New York, N.Y.

Filed Mar. 9, 1981, Ser. No. 241,794

Int. Cl.³ C02F *3/04*

U.S. Cl. 210—150 **8 Claims**



1. A contactor media for removing waste from water comprising:

at least two mated discs, each disc having parallel raised ribs separated by parallel inverted ribs in an alternating pattern;

each rib having a top surface with a series of uniformly spaced apart recesses therein; and,

each inverted rib having a series of uniformly spaced apart recesses therein on the side of said disc opposite the top surface,

whereby two mated discs have the recesses of the inverted ribs of one disc interfitting with the recesses of the ribs of the other disc, and whereby the two mated discs form crossing chordal channels which provide for the flow of waste water therein and the growth of microorganisms on the surfaces thereof and enhance the transfer of oxygen.

4,345,998

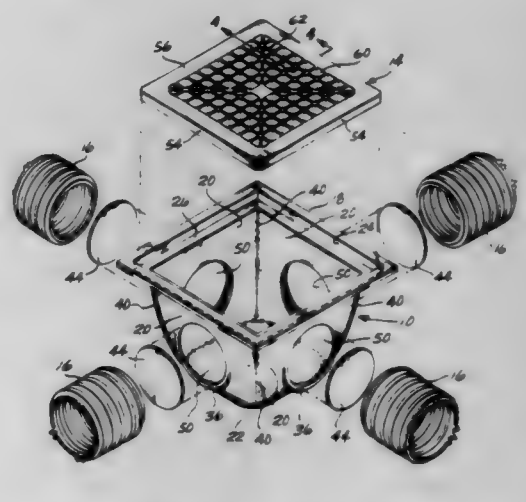
PLASTIC CATCH BASIN

Kelly R. Graffis, 20209 Broadway, Snohomish, Wash. 98290, and Bruce G. Sievert, 18519 - 43rd Pl., Lynnwood, Wash. 99036

Continuation of Ser. No. 55,179, Jul. 5, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,268

Int. Cl.³ E01F *5/00*; E03F *5/06*

U.S. Cl. 210—164 **9 Claims**



1. A thin-wall, monolithic, structural plastic catch basin comprising four side walls meeting at four corners, a bottom, and a top rim formed to include an upwardly opening grate receiving recess;

said top rim extending all the way around said catch basin and comprising a shelf portion which is a horizontal continuation of the side walls of the catch basin and a vertical wall portion

which is an upward continuation of said horizontal shelf portion;

a thin-wall, horizontal plate, constituting an outward continuation of the vertical wall portion of the top rim, including a ground material contacting lower surface;

each said side wall comprising a main panel portion which slopes inwardly as it extends downwardly;

said corners changing gradually in shape, from a small radius, substantially square configuration at the rim to a flatter, substantially wider configuration at the bottom;

each side wall including a generally upright central portion and a crescent shape transition wall interconnected between the lower part of said central portion and the adjoining part of the main panel portion of the side wall;

with said top rim serving as both a receptacle for a grate and as a structural girth beam which strengthens the top of the catch basin;

with the changing shape of the corners of the catch basin at the bottom providing a substantially dome shape attended by dome strength at the bottom of the catch basin; and

with the corners of the catch basin and the transition walls reinforcing the catch basin vertically against buckling under weight placed on the top of the catch basin.

8. A thin-wall, monolithic, structural plastic catch basin comprising four side walls meeting at four corners, a bottom, and a top rim formed to include an upwardly opening grate receiving recess;

each said side wall comprising a main panel portion which slopes inwardly as it extends downwardly;

said corners changing gradually in shape, from a small radius, substantially square configuration at the rim to a large radius rounded configuration at the bottom;

at least one said side wall including a generally upright central portion and a crescent shape transition wall interconnected between the lower part of said central portion and the adjoining part of the main panel portion of the side wall;

with said top rim serving as both a receptacle for a grate and as a structural girth beam which strengthens the top of the catch basin;

with the rounded nature of the corners of the catch basin at the bottom providing a dome shape attended by dome strength at the bottom of the catch basin;

with the corners of the catch basin reinforcing the catch basin vertically against buckling under weight placed on the top of the catch basin;

wherein said side wall central portion includes a drain pipe receiving opening which is bordered all the way around by thin plastic wall material sized to fit within grooved portions of corrugated plastic drain pipe; and

corrugated plastic drain pipe connected to said catch basin, comprising a first rib on the inside of said side wall central portion, a second rib on the outside of said side wall central portion, and a groove between said ribs in which the part of said side wall central portion which immediately borders the drain pipe receiving opening is received, said ribs being larger in diameter than said drain pipe receiving opening.

4,345,999

APPARATUS FOR PREVENTING THE ENTRY OF AIR INTO AN ARTIFICIAL ORGAN

Jan-Erik Sigdell, and Gerd Krick, both of Bad Homburg, Fed. Rep. of Germany, assignors to Dr. Eduard Fresenius, Chemisch-pharmazeutische Industrie K.G., Apparatebau K.G., Bad Homburg, Fed. Rep. of Germany

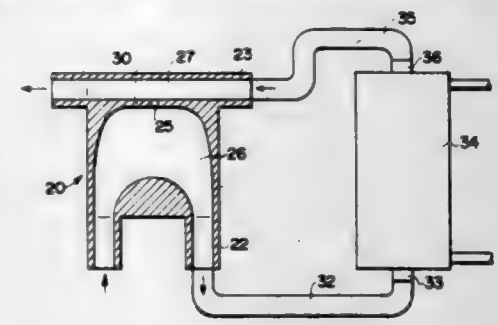
Continuation-in-part of Ser. No. 29,203, Apr. 12, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,378

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818390

Int. Cl.³ B01D *19/00, 31/00*

U.S. Cl. 210—188 **11 Claims**

1. A separator for removing gas from a liquid flow before the liquid flow passes into and through an artificial organ and for returning removed gas back into the liquid flow after the liquid flow has passed from an inlet to an outlet of the artificial organ, comprising inflow channel means (20) for coupling to an inlet of the artificial organ; outflow channel means (27) for coupling to an outlet of the artificial organ, said outflow channel means (27) being positioned over and adjacent to the inflow channel means (20) in its operative position; common wall means (30) joining the inflow channel means (20) and the outflow channel means (27), said common wall means comprising flow resistance means (25) having a low flow impedance for gases and high flow impedance for liquids, said flow resistance means (25) being connectable in parallel to the artificial



organ, whereby gases may pass directly from inflowing liquid back into liquid flowing out of the aritificial organ, thereby passing the artificial organ, said inflow channel means (20) being connectable in series with each other through the artificial organ for generating a pressure drop in said outflow channel means (27) relative to said inflow channel means (20) by liquid flowing out of the artificial organ and through the outflow channel means (27), said pressure drop supporting the withdrawal of gas through said flow resistance means (25) to prevent the entry of gas into an artificial organ.

4,346,000

REACTOR FOR ANAEROBIC PREFERMENTATION OF AQUEOUS WASTE WATERS

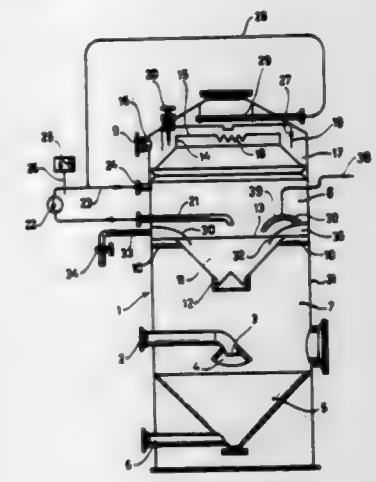
Barend L. van Drooge, Amsterdam, Netherlands, assignor to Stork Amsterdam B.V., Amsterdam, Netherlands

Filed Oct. 27, 1980, Ser. No. 201,078

Claims priority, application Netherlands, Oct. 26, 1979, 7907897

Int. Cl.³ C02F *3/28*

U.S. Cl. 210—195.1 **7 Claims**



1. Reactor for anaerobic prefermentation of aqueous waste waters to be purified by anaerobic fermentation of organic material, said reactor comprising a waste water inlet (2), a liquid outlet (9) for the discharge of prefermented waste water and a sludge outlet (6), the reactor at least comprising one first (7) and one second reactor (8) space being in open connection with each other, the waste water inlet (2) and the sludge outlet (6) debouching into the first reactor space, means (25) for controlling and adjusting the pH in the second reactor (8) space, a centrally suspended annular precipitation cone provided between the first and second reactor space and being connected with the liquid outlet (9) and/or with the second

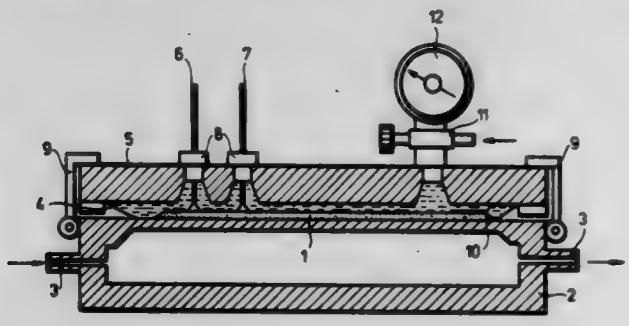
reactor space, through an overflow and a gathering chamber for gathering proteins floating upon the liquids in the first reactor space, said gathering chamber being bounded by a covering sheet extending from the reactor wall into the precipitation cone at a point below the cone's upper edge, while a curved gas escaping tube debouches on the one hand into the gathering space below said covering sheet, and on the other hand, by means of an end to above the upper edge of the cone, said reactor further comprising a floating solids drain line which debouches into the gathering chamber.

4,346,001

LINEAR OVERPRESSURED THIN-LAYER CHROMATOGRAPHIC APPARATUS

Erno Tyihak, Budapest; Emil Mincsovics, Szentendre; Sandor Dios, Budakalasz; Gyula Horvath; Huba Kalasz, both of Budapest; Janos Nagy, Szentendre; Ferenc Körmendi, Budapest; Laszlo Kozma, Budapest; Janos Borsos, Budapest, and Janos Kiss, Budapest, all of Hungary, assignors to Labor Müszeripari Müvek, Esztergom, Hungary

Filed Jun. 12, 1981, Ser. No. 273,209
Int. Cl.³ B01D *19/08*
U.S. Cl. 210—198.3 **1 Claim**



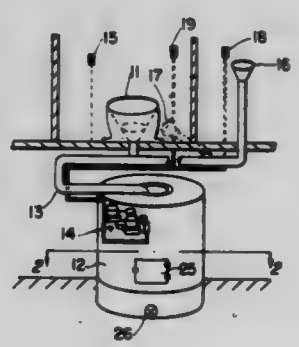
1. Linear overpressured layer chromatographic apparatus comprising a base plate to support a sorbent layer, a cover plate fastenable to the base plate and fitted with a membrane for resiliently clamping down the sorbent layer, means for controlling the introduction of a pressurising between the cover plate and the membrane; and the cover plate is provided with at least one inlet for the mobile phase and at least one sample inlet sealedly passed through the membrane plate.

4,346,002

WATERLESS VACUUM TOILET

Manfred W. A. Petzinger, Rte. 7, Box 87, Elizabethtown, Ky. 42701

Continuation of Ser. No. 72,381, Sep. 4, 1979, abandoned. This application Apr. 3, 1981, Ser. No. 251,023
Int. Cl.³ A47K *11/02*; C05F *9/04*
U.S. Cl. 210—202 **4 Claims**



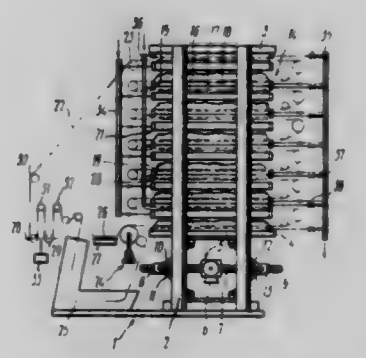
1. An apparatus for aerobic biological transformation of human waste material comprising:
(a) an aerobic composting compartment for holding said waste during aerobic biological transformation, said compartment having upper inlet and upper outlet means;
(b) a waterless toilet adapted to receive deposited human waste;
(c) a cup-shaped paper receptacle, associated with said waterless toilet, having a cup portion and a cone portion, said cup portion being fabricated from a limited water absorbing material and said cone portion being fabricated from a water absorbing material, means for inserting said cup-shaped receptacle into said waterless toilet prior to depositing said human waste, said cup portion containing said human waste;
(d) a first conduit, coupling said waterless toilet to said composting compartment inlet means, for transporting said cup-shaped paper receptacle containing said human waste from said toilet to said composting compartment, said cone portion wiping said first conduit interior clean as it traverses through said conduit;
(e) vacuum generating means, associated with said first conduit means, for creating a vacuum within said first conduit means thereby transporting said cup-shaped paper receptacle from said toilet to said composting compartment;
(f) funnel means communicating with said first conduit for injecting decomposable garbage, cut grass, weeds, leaves and the like into said composting compartment thereby facilitating the decomposition of said human waste; and
(g) an exhaust conduit, connected to said composting compartment outlet means, for exhausting air and water vapor from said composting compartment; and
(h) a water vapor separator, associated with said exhaust conduit, for preventing condensed water vapor running back down the interior of said exhaust conduit into said composting compartment.

4,346,003

MASH-SEPARATING FILTER-PRESS

Nikolai F. Polyakov, ulitsa Yabluneva, 24; Leonid M. Ryabchenjuk, ulitsa Entuziastov, 11/1a, kv. 41; Nina A. Emelyanova, ulitsa Sechenova, 3, kv. 56; Georgy T. Sulim, prospekt Mira, 8, kv. 24; Vladimir A. Kobzar, ulitsa Krasnozvezdnaya, 5, kv. 37; Stanislav R. Peresunko, ulitsa Smirnova-Lastochkina, 3/5, kv. 47; Anatoly I. Sokolenko, pereulok Guchny, 2a, kv. 1, and Oleg V. Ivanenko, ulitsa Sechenova, 3, kv. 56, all of Kiev, U.S.S.R.

Filed Nov. 3, 1980, Ser. No. 203,346
Int. Cl.³ B01D *25/12*
U.S. Cl. 210—225 **8 Claims**



1. A mash-separating filter-press comprising:
(a) a framework;
(b) vertical guides mounted on said framework;
(c) a stationary thrust plate horizontally fixed on the upper ends of said vertical guides;
(d) a movable pressure platen horizontally mounted on said vertical guides for movement therealong;
(e) a reciprocating drive mounted on said framework and connected with said movable pressure platen;
(g) a plurality of filter plates horizontally mounted above each other between said thrust plate and said pressure platen for vertical movement along said vertical guides, each said filter plate having:
vertical side boards located on the periphery thereof

having upper and lower butt ends spaced from each other;

a first sieve fixed on the upper butt ends of said side boards;

a second sieve fixed on the lower butt ends of said side boards;

a horizontal partition fixed to said side boards between said sieves and dividing the inner space of the filter plate into an upper cavity and a lower cavity;

(h) a plurality of frames mounted on said vertical guides for vertical movement therealong, each of said frames being situated between vertically adjacent filter plates and defining around the periphery a cavity;

(i) an endless filter band passed in zigzags between said frames and filter plates so that said filter band runs round each said filter plate from above and from below;

(j) a stepping drive mounted on said framework and connected with said endless filter band;

(k) a mash supply collector communicated with the cavities of said frames;

(l) at least one wort withdrawal collector communicated with the upper and the lower cavity of each said filter plate;

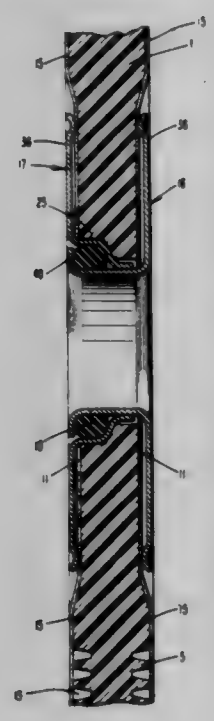
(m) a means for supplying and discharging sparge water, communicated with the upper and the lower cavity of each said filter plate through ducts formed in said boards of each filter plate.

4,346,004

SECURING MEANS FOR THE LEAKPROOF MOUNTING OF A SEMI-PERMEABLE MEMBRANE TO A SUPPORT PLATE

Jacques Foucras, Bron, and Georges Rodet, Communay, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 11, 1980, Ser. No. 215,325
Claims priority, application France, Dec. 13, 1979, 79 31187
Int. Cl.[3] B01D *31/00*
U.S. Cl. 210—232 17 Claims



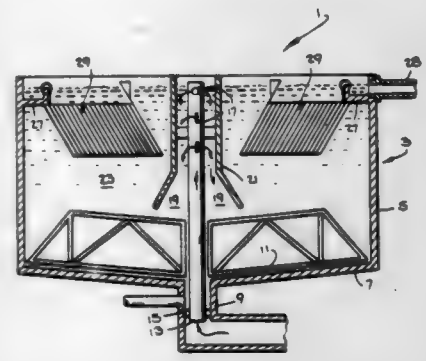
1. A device for the leaktight securing of semi-permeable membranes to opposite faces and around at least one fluid passage orifice of a membrane support plate of a separatory apparatus, the said device comprising two stamped metal rings which have flanges with means for pressing the edges of said membranes sealingly against the support plate, said rings have generally cylindrical portions which extend into said orifice from opposite ends thereof, one of said rings being a male ring and the other of said rings being a female ring, said cylindrical portions being fixed together in a leaktight manner by a gasket arranged between the rings.

4,346,005

TUBE SETTLER MODULE

Donald R. Zimmerman, Secane, Pa., assignor to Crane Co., New York, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,581
Int. Cl.[3] B01D *21/00*
U.S. Cl. 210—232 3 Claims



1. A settler system for use in a circular clarifier having a fluid therein with a center feed inlet and a peripheral launder with an outlet, said system comprising:

(a) a plurality of pie-shaped modules each having a plurality of settler media with passage therethrough for effecting separation of particles from influent feedwater;

(b) float means attached to the top portion of one end of each module adapted to suspend the module in a fluid, said float means forming a barrier around the center feed inlet to prevent fluid from passing from the inlet to the outlet unless it passes through the settler media; and,

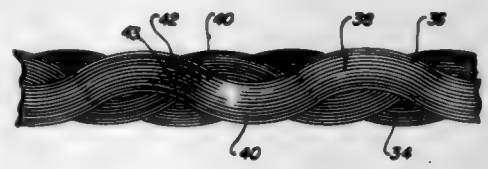
(c) hangar means attached to the other end of each module adapted to secure said module to the launder.

4,346,006

DIFFUSION MEMBRANE UNITS WITH ADHERED SEMIPERMEABLE CAPILLARIES

Clinton V. Kopp, Barrington, and Dilip Shah, Gurnee, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 24, 1980, Ser. No. 133,083
Int. Cl.[3] B01D *31/00*
U.S. Cl. 210—321.4 8 Claims



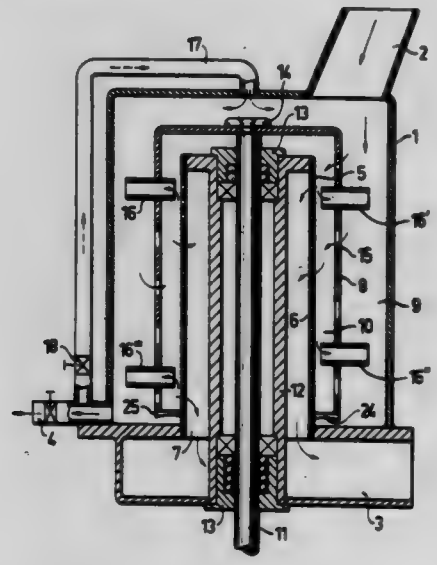
1. A diffusion membrane device comprising a joined plurality of semipermeable capillary membrane tubes comprising, a plurality of planar, single-layered arrays of substantially parallel capillary membrane tubes, said parallel tubes of each of said plurality of single-layered arrays lying in facing contact with at least one adjacent, single-layered, planar array, said plurality of planar arrays defining out of phase sinuous paths, portions of each single-layered array being out of contact with adjoining single-layered arrays, and other portions of each single-layered array being in facing, overlying relation with adjacent single-layered arrays, with the respective capillary membrane tubes of each said single-layered array crossing at an acute angle the tubes of the adjacent single-layered arrays, the crossing tubes of the respective single-layered arrays being adhered to each other, whereby said diffusion membrane device defines a single, unitary structure.

4,346,007

METHOD AT SCREENING APPARATUS FOR CLEANING THE APERTURES IN A SCREEN PLATE AND DEVICE FOR CARRYING OUT THE METHOD

Bo Norman, Johanneshov, and Karl-Johan Grundström, Solna, both of Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden

Continuation of Ser. No. 17,720, Mar. 5, 1979, abandoned. This application Sep. 2, 1980, Ser. No. 183,065
Claims priority, application Sweden, Mar. 8, 1978, 7802653
Int. Cl.[3] B01D *33/10, 35/16, 45/18*
U.S. Cl. 210—360.1 14 Claims



1. Screening apparatus comprising a cylindrical screen plate having apertures through which a fluid flows in a radial direction so that material dispersed in the fluid collects on the cylindrical surface of the screen plate; and means for producing suction to clean the aperture by removing screened material therefrom, said means including, at least one pumping means mounted in a carrier provided with apertures and rotatable with respect to the screen plate and having the shape of a channel-like nozzle extended radially to the screen plate and having an open inlet end closely facing said surface of the screen plate, and means for moving said carrier and pumping means along a circular path substantially concentric with said cylindrical surface of the screen plate at a velocity which creates suction at said nozzle inlet end sufficient to remove screened material from said cylindrical surface of the screen plate and to conduct the material into and through the pumping means, said apertures in the carrier having a radial extension considerably smaller than said channel-like nozzle to allow recirculation of the main part of the removed material to the screen plate.

4,346,008

ROTARY DRUM FILTER

Milton D. Leighton, Florham Park, and Douglas G. Ryan, Rockaway, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 15, 1980, Ser. No. 216,447
Int. Cl.[3] B01D *33/08*
U.S. Cl. 210—395 14 Claims

1. In a rotary filter means of the type comprising:

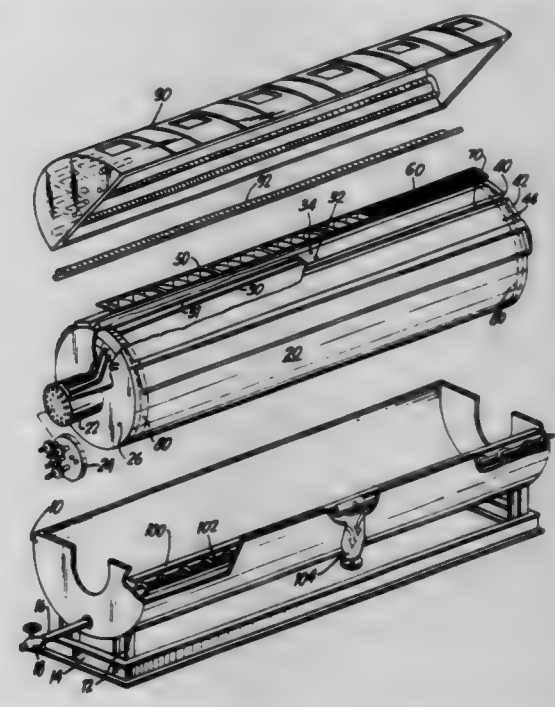
(a) a filter vat adapted to contain a filterable liquid-solid slurry;

(b) a rotatable filter drum at least partially disposed in said filter vat and adapted to accept a filter cloth, said drum having circumferential openings therein in substantial alignment with fluid conduits disposed in said drum;

(c) means to rotate said drum in said filter vat;

(d) fluid conduits disposed in said drum in substantial alignment with the circumferential openings in said drum, said conduits communicating with a valve means and with a liquid collection means; and

(e) a valve means communicating with said fluid conduits for regulation of the fluid flow through said conduits and through the circumferentially disposed openings in said filter drum; the improvement which comprises a vented liquid collection means having chambers therein communicating with said fluid conduits said chambers adapted to collect liquid from said fluid conduits during one phase of the rotation of said filter drum and adapted to permit the removal of the liquid during another phase of the rotation of said filter drum.

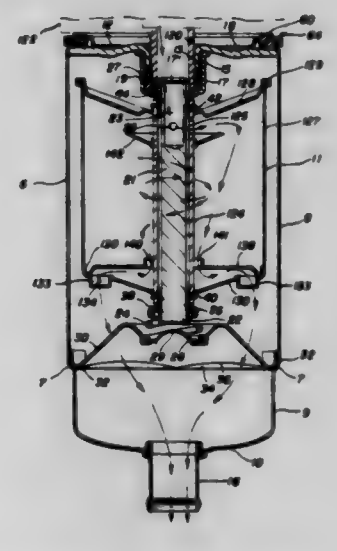


4,346,009

CENTRIFUGAL SPIN-ON FILTER OR SEPARATOR

Willis R. Alexander, Hagerstown, Md., and Robert J. Shaltis, Hastings, Mich., assignors to Hastings Manufacturing Co., Hastings, Mich. and Mack Trucks, Allentown, Pa.

Continuation-in-part of Ser. No. 82,548, Oct. 9, 1979, Pat. No. 4,284,504. This application Jul. 15, 1981, Ser. No. 283,475
The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.
Int. Cl.[3] B04B *9/00*
U.S. Cl. 210—512.1 14 Claims



1. An oil separator cartridge comprising a cylindrical spin-on housing having opposite inlet and outlet ends connected by an intermediate wall, said inlet end including a threaded aperture being threadably mountable on an oil output tube having a smooth cylindrical outer end surface, a centrifugal separator rotor unit mounted for rotation and axial reciprocation within said housing for receiving oil from said oil output tube, biasing means urging said centrifugal separator rotor unit toward said inlet with a force of sufficient strength to normally overcome

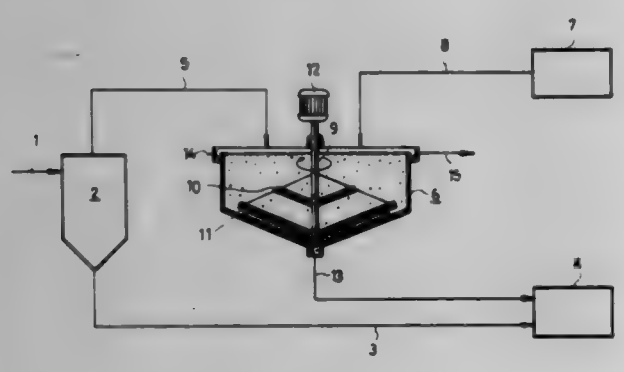
the axial force exerted on said centrifugal separator rotor unit by oil under normal pressure in said oil output tube but permitting said centrifugal separator rotor unit to axially move away from said inlet in response to pressure surges above said normal pressure in said oil output tube so as to cushion the effect of such pressure surges on said cartridge, and sealing means mounted within said cartridge for maintaining sealing engagement with said oil output tube for precluding bypass or leakage flow of oil from said oil output tube directly into said housing for all axial positions of said centrifugal separator rotor unit.

4,346,010

PROCESS FOR RECOVERING FINE COAL PARTICLES FROM SLURRY OF FINELY DIVIDED COAL

Etsuo Ogino; Nobuo Yoshii, and Kazuo Harada, all of Osaka, Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Filed Apr. 7, 1981, Ser. No. 251,700
Claims priority, application Japan, Apr. 14, 1980, 55-49654
Int. Cl.³ C02F *1/54*
U.S. Cl. 210—714 **6 Claims**



1. A process for recovering fine coal particles from a slurry of finely-divided coal, comprising the steps of:

mixing coarsely divided coal and a binder together to cause the binder to adhere to the surfaces of the coarsely divided coal pieces;

thereafter mixing the slurry of the finely-divided coal with the coal pieces having the binder adhered thereto to cause fine coal particles to adhere to the binder over the surfaces of the coal pieces serving as nuclei so as to thereby form agglomerates; and

subsequently separating the agglomerates from the remaining slurry portion to recover the fine coal particles along with the coarsely divided coal and the binder.

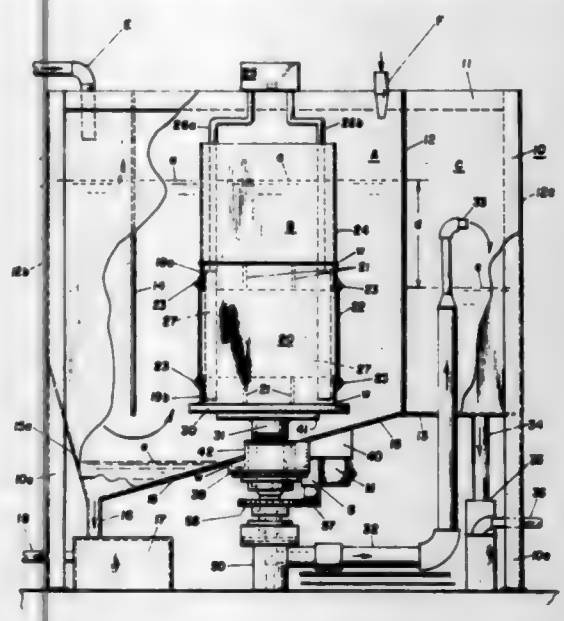
4,346,011

LADEN FLUID CLASSIFYING PROCESS AND APPARATUS

Raymond G. Brownstein, P.O. Box 143, Wexford, Pa. 15090

Filed Sep. 8, 1980, Ser. No. 184,662
Int. Cl.³ B01D *37/00, 35/20*
U.S. Cl. 210—748 **6 Claims**

1. An improved method for clarifying a liquid lading effluent by removing contaminating particles therefrom which comprises, continuously introducing liquid effluent into an outer chamber, employing an upstanding screen mesh to provide a central inner influent chamber for receiving clarified liquid therein, maintaining the screen mesh wetted along both sides thereof, maintaining the liquid effluent at about the viscosity of water at room temperature; applying ultrasonic energy within surrounding liquid closely adjacent to and along substantially the full extent of the screen mesh in such a parallel manner as to prevent the forming of a liquid meniscus and the effective forming of air bubbles within the screen mesh, to retain and agglomerate larger contaminant particles within the outer chamber in a spaced relation with respect to the screen mesh, and to continuously prevent clogging of the interstices of the screen mesh by smaller particles; all while moving clarified influent liquid solely under a slight pressure head and capillary action through the screen mesh into the inner chamber; and during the operation, removing agglomerated aggregate from the outer chamber and clarified influent liquid from the inner



chamber in such a manner as to maintain the screen in a wetted condition along both sides thereof and to enable a continuous clarification of effluent liquid being introduced into the outer chamber.

4,346,012

POWDERY FIRE-EXTINGUISHING AGENT, AND PROCESS FOR ITS PREPARATION

Toshihiko Umaba, Takaishi, and Tadashi Ito, Osaka, both of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo and Miyata Industry Company Limited, Kanagawa, both of, Japan

Filed May 14, 1980, Ser. No. 149,634
Claims priority, application Japan, May 15, 1979, 54-58693
Int. Cl.³ A62D *1/06;* B05D *7/24*
U.S. Cl. 252—7 **4 Claims**

1. A powdery fire-extinguishing agent containing a first powder as main ingredient and a second powder as adjuvant, at least one of said first and second powders being prepared by dipping said powders in a solution or dispersion of an organofluorine compound to adsorb thereon said organofluorine compound and then drying the dipped powders, said organofluorine compound having a fluoroalkyl group containing 3 to 20 carbon atoms, having a major transition temperature of 20° C. or higher, having a fluorine content of 5% by weight or more, being insoluble in water and insoluble or sparingly soluble in a combustible liquid, having oil repellency, being selected from the group consisting of: (i) a homopolymer or copolymer of a vinyl monomer having a fluoroalkyl group containing 3 to 20 carbon atoms; (ii) a mono- or polyester formed between a monohydric or polyhydric alcohol containing 3 to 30 carbon atoms and having a fluoroalkyl group containing 3 to 20 carbon atoms and a mono- or polycarboxylic acid containing 4 to 20 carbon atoms and being optionally fluorinated; (iii) a mono- or polyester formed between a mono- or polycarboxylic acid containing 3 to 20 carbon atoms and having a fluoroalkyl group containing 3 to 20 carbon atoms and a monohydric or polyhydric alcohol containing 2 to 20 carbon atoms and being optionally fluorinated; (iv) a mono- or polyurethane formed between a monohydric or polyhydric alcohol containing 3 to 30 carbon atoms and having a fluoroalkyl group containing 3 to 20 carbon atoms and an organic mono- or polyisocyanate; and (v) a homopolymer or copolymer of an epoxide monomer having a fluoroalkyl group containing 3 to 20 carbon atoms, and being adhered in an amount, based on the treated powdery fire-extinguished agent, of 0.01 to 10% weight to the treated fire-extinguishing agent.

2. The powdery fire-extinguishing agent of claim 1 wherein said powder as main ingredient is selected from the group

consisting of sodium hydrogencarbonate, potassium hydrogencarbonate, ammonium sulfate, ammonium dihydrogen phosphate, potassium chloride, sodium chloride, barites, diammonium hydrogen phosphate, and mixtures thereof with aluminum sulfate and/or aluminum chlorohydrate.

4,346,013

THIXOTROPIC LIQUID AND PROCESS FOR ITS PRODUCTION

Daniel Cadolle, Gland, Switzerland, assignor to BP Chemicals Limited, London, England

Filed Aug. 20, 1980, Ser. No. 179,769

Claims priority, application United Kingdom, Aug. 21, 1979, 7929130; Nov. 24, 1979, 7940673

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 A **10 Claims**

1. A process for producing a non-hydraulic thixotropic aqueous liquid which comprises mixing together an aqueous solution of a hydrated cellulose ether and at least 0.05% and not more than 0.4% by weight based on the weight of the total solution of a water soluble ferric salt with an amount of a water-soluble alkali sufficient to give an alkali solution and to make said liquid thixotropic in the absence of a hydraulic substance.

4,346,014

ROLLING OIL COMPOSITIONS AND METHOD OF INHIBITING CARBON SMUT ON BATCH ANNEALED STEEL

Joseph A. Piucci, Royersford, and Kurt Goltz, Exton, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 20, 1981, Ser. No. 255,605

Int. Cl.³ C10M *1/38*

U.S. Cl. 252—47.5 **8 Claims**

1. In a process for producing steel sheet or strip substantially free of carbon smut deposits from cold rolled steel sheet or strip the improvement comprising cold rolling the steel sheet or strip in contact with a rolling oil containing about 0.5 to 5% by weight of one or more organic nitro-compounds selected from the group consisting of 2,4-dinitro benzoic acid, 2,5-dinitro benzoic acid, 3,4-dinitro benzoic acid, 3,5-dinitro benzoic acid, picric acid, 1,3-dinitro benzene, 2,4,6-trinitro toluene, 3,5-dinitro salicylic acid, 2-amino-6- nitrobenzothiazole, poly glycol ester of 3,5-dinitro benzoic acid, dimethyl octyne diol ester of 3,5-dinitro benzoic acid, 2,4,7-trinitro-9-fluorenone and 1,5-difluoro-2,4-dinitro benzene and thereafter without further treatment batch annealing the steel strip.

4,346,015

METHOD OF IMPROVING ANTIWEAR PROPERTIES OF HIGH TEMPERATURE HYDROCARBON COMPOSITIONS

George S. Somekh, New Rochelle, N.Y., and Robert A. Cupper, Ridgefield, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 13,535, Feb. 21, 1979, abandoned. This application Aug. 14, 1980, Ser. No. 177,909

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—50 **4 Claims**

1. The method for improving the anti-wear properties of high temperature hydrocarbon composition which comprises adding to said compositions about 0.001 to about 5% by weight of the total composition of at least one arene having 2 or more aromatic rings, selected from the group consisting of acridine, quinoxaline, phthalazine and mixtures thereof.

4,346,016

6-STYRYLQUINOXALINES, AND THEIR USE AS FLUORESCENT BRIGHTENERS

Kurt Burdeska, Basel, and Guglielmo Kabas, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

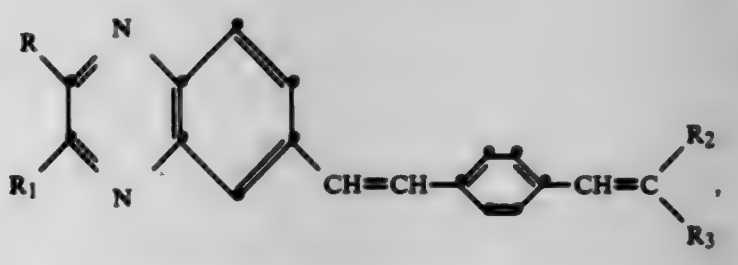
Filed Apr. 16, 1981, Ser. No. 254,822

Claims priority, application Switzerland, Apr. 23, 1980, 3130/80

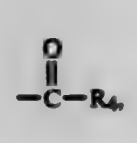
Int. Cl.³ C07D *403/00*

U.S. Cl. 252—301.22 **10 Claims**

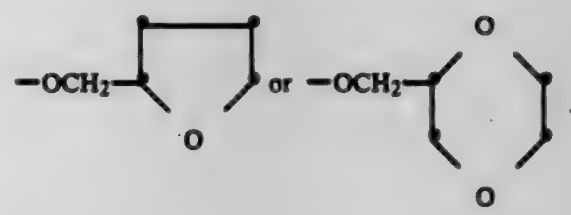
1. A 6-styrylquinoxaline of the formula



in which R and R_1 independently of one another are hydrogen, alkyl, aryl or aryloxy which is unsubstituted or substituted by non-chromophoric substituents, alkoxy, alkoxyalkoxy or phenylthio, R_2 is hydrogen or alkyl and R_3 is cyano or a group of the formula



in which R_4 is alkoxy, alkoxyalkoxy, acyloxyalkoxy,



4,346,017

METHOD FOR CONTROLLING BOILER WATER FOAMING

Thomas E. Cornelius, III, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Mar. 19, 1980, Ser. No. 131,583

Int. Cl.³ B01D *19/04*

U.S. Cl. 252—321 **3 Claims**

1. A method for controlling boiler water foaming which comprises maintaining in said boiler water from 0.1 to 1000 ppm of a boiler water antifoam composition which consists essentially of a vegetable or mineral wax having a saponification number of less than 100; and at least one member selected from the group consisting of chelates, phosphates and phosphonates.

4,346,018

MULTI-PURPOSE BLOOD DILUENT AND LYSING AGENT FOR DIFFERENTIAL DETERMINATION OF LYMPHOID-MYELOID POPULATION OF LEUKOCYTES

James H. Carter, Ft. Lauderdale; Stephen L. Ledis, Hialeah, and Harold R. Crews, Miami, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jun. 16, 1980, Ser. No. 159,782

Int. Cl.³ G01N *33/48*

U.S. Cl. 252—408 **17 Claims**

1. A multipurpose isotonic diluent comprising a mixture of an aqueous solution of:

1. Procaine hydrochloride,
2. N-(2-acetamido)iminodiacetic acid (ADA),
3. Chlorhexidene diacetate,
4. Dimethylolurea,
5. Sodium sulfate and sodium chloride, said diluent being adjusted
   to a pH of 7.0±0.1 with sodium hydroxide or hydrochloric acid solution, as necessary, and
   to an osmolality of 320±5 milliosmoles per kilogram with sodium chloride.

17. In a method of determining leukocytes and hemoglobin in blood wherein a lysing agent containing an aqueous solution of a quaternary ammonium salt having surface active properties, and an alkali metal cyanide, are used to stromatolyze erythrocytes and platelet cells and to convert hemoglobin to a chromagen, the improvement wherein said lysing agent is a mixture of 40 to 70 g/l of dodecyltrimethylammonium chloride (50% solution) and 4 to 7 g/l of tetradecyltrimethylammonium bromide or hexadecyltrimethylammonium bromide, and said alkali metal cyanide is 250 to 500 mg/l of potassium cyanide.

4,346,019

STABILIZATION AND REGENERATION OF ACTIVATED CARBON SUPPORTED PALLADIUM CHLORIDE CATALYSTS IN THE OXIDATION OF VINYL HALIDES

Augustine I. Dalton, Jr., Allentown, and Shivaji Sircar, Wescosville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 22, 1981, Ser. No. 276,240
Int. Cl.³ B01J *27/32*; B01D *53/34*
U.S. Cl. 252—416 **9 Claims**

1. The method for regenerating spent palladium halide catalyst impregnated on or admixed with an adsorbent carbon, which catalyst became deactivated in the oxidation of olefinically unsaturated organic compounds, comprising the step of exposing the spent catalyst to an oxygen-containing inert gas at a temperature in the range of −25° C. to 70° C. for a period of about 16 to 60 days.

2. The method as defined in claim 1 wherein said catalyst is palladium chloride supported on activated carbon.

3. The method as defined in claims 1 or 2 wherein said unsaturated organic compound is an olefinic halide.

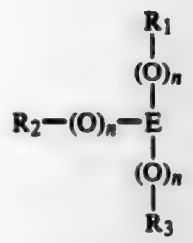
4,346,020

NOVEL CATALYST SYSTEM AND PROCESS FOR PRODUCING ETHANOL USING SAID NOVEL CATALYST SYSTEM

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 42,563, May 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 939,258, Sep. 5, 1978, abandoned. This application Dec. 29, 1980, Ser. No. 220,427
Int. Cl.³ B01J *31/28, 31/04, 31/02*
U.S. Cl. 252—429 R **21 Claims**

1. A novel catalyst system comprising (1) a cobalt entity selected from the group consisting of a cobalt carbonyl, a hydrido cobalt carbonyl and a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, (2) a tertiary organo Group VA compound of the Periodic Table of the formula:



wherein E is a member selected from the group consisting of trivalent phosphorus, trivalent arsenic and trivalent antimony; and R_1, R_2, and R_3 are either alike or different members selected from the group consisting of saturated or unsaturated, straight or branched chain alkyl radicals having from one to 24 carbon atoms, aryl radicals having from six to 20 carbon atoms; alkenyl radicals having from two to 30 carbon atoms; cycloalkyl radicals having from three to 40 carbon atoms; aralkyl and alkaryl radicals having from six to 40 carbon atoms; and n is an integer of 0 or 1 with the provision that when n is 1, E must be phosphorus, (3) an iodine compound and (4) a ruthenium compound.

4,346,021

METHOD FOR PRODUCING ALUMINOSILICATES, THEIR USE AS CATALYSTS AND SUPPORTS AND METHOD FOR PRODUCING CATALYSTS THEREFROM

William J. Ball, Capel; Keith W. Palmer, Weybridge, and David G. Stewart, Epsom, all of England, assignors to The British Petroleum Company Limited, London, England

Continuation-in-part of Ser. No. 968,401, Dec. 11, 1978, Pat. No. 4,242,233. This application Dec. 5, 1980, Ser. No. 213,227
Claims priority, application United Kingdom, Dec. 25, 1977, 53645/77
The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.
Int. Cl.³ B01J *29/06*; C01B *33/28*
U.S. Cl. 252—431 N **18 Claims**

1. A method for preparing a crystalline aluminosilicate having a high silica to alumina molar ratio and an X-ray diffraction pattern substantially the same as that of ZSM-5 zeolite, which method comprises mixing a source of silica, a source of alumina, a source of alkali metal, water and at least one monoalkanolamine selected from the group consisting of monoethanolamine and monopropanolamine, the ratio of said source of silica to said source of alumina being at least 20:1 based on the equivalent moles of silica and alumina in said respective sources, maintaining said mixture at a temperature above about 120° C. and recovering the crystalline aluminosilicate formed.

4,346,022

METHOD AND APPARATUS FOR PREPARING LEAD-ACID BATTERY PASTES

Edward O. Wolcott, and Frank W. Wentzel, Jr., both of Gainesville, Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Apr. 13, 1979, Ser. No. 30,039
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—509 **9 Claims**

1. A process for preparing paste mixtures for coating plate grids for use in making lead-acid batteries, the steps comprising feeding a measured quantity of lead powder and a measured quantity of water to a mixer, driving said mixer with a motor wherein the power input to said motor is dependent on the viscosity of material being mixed in said mixer, blending said lead powder and water with said mixer, feeding a measured quantity of dilute sulfuric acid to said mixer, while heating the materials in the mixture to a temperature of between about 140° F. and 160° F., monitoring the power input to said motor for determining the viscosity of paste material in said mixer, mixing said blended lead powder and water with said mixer until the power input to said motor stabilizes, and adding water

to said materials in said mixer until the power input to said mixer stabilizes at a predetermined value, thereby forming the paste mixture.

4,346,023

PROCESS FOR THE PREPARATION OF NOVEL UNSATURATED MACROCYCLIC KETONES

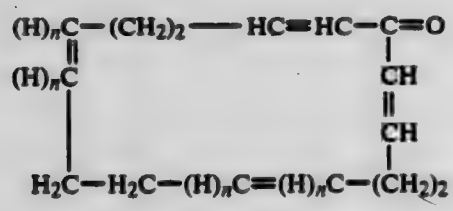
George H. Büchi, and Hans Wüest, both of Cambridge, Mass., assignors to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 76,960, Sep. 19, 1979, Pat. No. 4,302,607, which is a continuation-in-part of Ser. No. 11,685, Feb. 12, 1979, abandoned. This application Mar. 17, 1981, Ser. No. 244,629

Int. Cl.³ A61K *7/46;* C07C *49/547*

U.S. Cl. 252—522 R 9 Claims

1. An unsaturated macrocyclic ketone of formula



processing two single or two double bonds in the positions indicated by the dotted lines and wherein index n stands for integer 1 or 2.

8. A perfume composition which comprises having added thereto a perfuming effective amount of a compound of formula (I) or of formula (V), as set forth in claim 1 or 4, respectively.

4,346,024

HEAT-STABLE POLYPHASE POLYAMIDE/POLYESTERAMIDE COMPOSITIONS

Jean Coquard, Grezieu La Varenne, and Jean Goletto, Ecully, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 5, 1980, Ser. No. 213,473

Claims priority, application France, Dec. 10, 1979, 79 30649; Mar. 5, 1980, 80 05271

Int. Cl.³ C08L *67/08, 77/02, 77/12*

U.S. Cl. 524—219 12 Claims

1. A heat-stable polyphase polyamido composition of matter having enhanced mechanical properties, comprising (i) from 55 to 99% by weight of a nylon polyamide resin matrix, said polyamide resin having a number-average molecular weight of at least 5,000, and (ii) from 1 to 45% by weight of a particulate disperse phase, which remains differentiated from the polyamide resin matrix both in the solid state and molten state, said particulates having a particle size ranging from 0.01 to 10μ, and said disperse phase comprising a polyesteramide having a content in amide groups of less than 40% of the amide groups comprising said polyamide matrix resin and a glass transition temperature of less than 5° C.

4,346,025

STABILIZED VINYL CHLORIDE POLYMER COMPRISING A PHENYLETHYLIDENE ARYL PHOSPHITE

William E. Leistner, New York, N.Y.; Motonobu Minagawa, Koshigaya, Japan; Yutaka Nakahara, Iwatsuki, Japan, and Kazumi Kitsukawa, Misato, Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

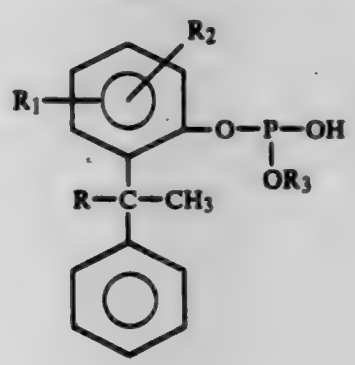
Filed Feb. 7, 1980, Ser. No. 119,547

Claims priority, application Japan, Feb. 7, 1979, 54-13501

Int. Cl.³ C08K *5/52;* C09K *15/32*

U.S. Cl. 524—141 12 Claims

1. A stabilizer composition capable of enhancing the resistance to deterioration in color, clarity, and compatibility of a vinyl chloride polymer composition when heated at 175° C., comprising (A) at least one 6 to 30 carbon atoms phenol salt or 6 to 24 carbon atoms carboxylic acid salt of a polyvalent metal selected from the group consisting of magnesium, calcium, zinc, strontium, barium, cadmium, lead, stannous tin, and dialkyltin, and (B) per part of salt (A) from 0.1 to 10 parts of at least one hydrogen phosphite ester of an ortho-phenylethylidene-substituted phenol having the formula:



(I)

wherein:

R is hydrogen or methyl;

R_1 and R_2 are each selected from the group consisting of alkyl groups having from one to twenty carbon atoms; aryl groups having from six to eighteen carbon atoms; alkaryl and aralkyl groups having from seven to twenty-four carbon atoms; alkylene oxyalkyl groups having from three to forty carbon atoms and from one to twelve oxyether groups; and alkylene oxyaryl groups having from seven to forty-two carbon atoms and from one to twelve oxyether groups;

R_3 is selected from the group consisting of hydrogen; alkyl groups having from one to twenty carbon atoms; cycloalkyl having from five to twenty carbon atoms; aryl groups having from six to eighteen carbon atoms; alkaryl and aralkyl groups having from seven to twenty-four carbon atoms; alkylene oxyalkyl groups having from three to forty carbon atoms and from one to twelve oxyether groups; and alkylene oxyaryl groups having from seven to forty-two carbon atoms and from one to twelve oxyether groups.

12. A vinyl chloride polymer composition having enhanced resistance to deterioration in color, clarity, and compatibility when heated at 175° C., comprising a vinyl chloride polymer and per 100 parts by weight thereof 0.01 to 10 parts by weight of a stabilizer composition according to claim 1.

4,346,026

NON-AGING EPOXY COMPATIBLE SIZE

Robert W. Wong, Granville, and Richard M. Haines, Warsaw, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 30, 1981, Ser. No. 259,132

Int. Cl.³ C08K *5/54*

U.S. Cl. 524—157 5 Claims

1. An aqueous-based size for glass fibers comprising polyvinylacetate and 3-chloropropyl trimethoxysilane.

4,346,027

AIR-DRYING COMPOSITIONS FOR TREATING FIBROUS SUBSTRATES

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 19, 1980, Ser. No. 188,642

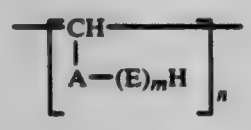
Int. Cl.³ C08K *5/15*

U.S. Cl. 524—377 10 Claims

1. A composition comprising a hydrophilic polymer comprising a plurality of unsaturated linkages that are activated towards oxidative polymerization and a polyol having at least two —OR groups where each R group is —H or —CH_3 provided that at least one such R group is hydrogen, and a carbon to oxygen atom ratio of less than 3:1.

2. A composition according to claim 1 in which the hydro-

philic polymer has a backbone comprising at least one segment with the formula



where A is a moiety terminating in the residue of an active hydrogen-containing group selected from the group consisting of alcoholic hydroxyl, thiol, amide, carboxylic acid and secondary amine with an active hydrogen removed, E is a moiety containing a radical having an activated olefinic unsaturation, either α, β or β γ to the activating group, n is the number of adjacent segments having this formula, and n and m are integers and are each at least 1, provided that where one is less than 4 the other is at least 4.

4,346,028

ASBESTIFORM CRYSTALLINE CALCIUM SODIUM OR LITHIUM PHOSPHATE, PREPARATION AND COMPOSITIONS

Edward J. Griffith, Manchester, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 153,664, May 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 103,787, Dec. 14, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,221

Int. Cl.³ C01B *25/30*

U.S. Cl. 524—417 15 Claims



1. Asbestiform, crystalline calcium M phosphate wherein M is sodium or lithium.

9. A process for preparing asbestiform crystalline calcium M phosphate wherein M is sodium or lithium which comprises:

(a) bringing together under reaction conditions a source of oxygen, calcium, phosphorus and M wherein the mole ratios are about 15 mole percent to about 30 mole percent M_2O, about 48 mole percent to about 60 mole percent P_2O_5, and about 20 mole percent to about 37 mole percent CaO to form a melt of a phosphate salt mixture;

(b) maintaining the phosphate salt mixture at a temperature below about the melting point of the calcium M phosphate for a sufficient time to form blocks of calcium M phosphate; and

(c) fiberizing the blocks into said asbestiform crystalline calcium M phosphate.

15. A composite which comprises from about 1 to about 99 percent by weight asbestiform crystalline calcium M phosphate wherein M is sodium or lithium, having an aspect ratio of at least 10:1 and from about 1 to about 99 percent by weight organic polymeric materials.

4,346,029

ANTIPLASMIN AND ANTISERUM

Desire J. Collen, Winksele, Belgium, assignor to Leuven Research & Development V.Z.W., Louvain, Belgium

Division of Ser. No. 775,462, Mar. 8, 1977, Pat. No. 4,198,335. This application Jan. 22, 1979, Ser. No. 5,590

Claims priority, application Netherlands, Mar. 18, 1976, 7602846

Int. Cl.³ A61K *39/395;* C07G *7/00*

U.S. Cl. 260—112 B 3 Claims

1. A method of preparing an antiserum against antiplasmin, comprising the steps of:

(a) generating an antiserum against plasmin-antiplasmin complex, said generated antiserum containing a plurality of antibodies including antibodies against antiplasmin;

(b) selectively purifying said generated antiserum by removing antibodies other than antibodies against antiplasmin by incubating said antiserum with antiplasmin-free human blood plasma and purified plasminogen and removing the precipitate thus formed.

4,346,030

IMIDAZODIAZEPINE DERIVATIVES

Max Gerecke; Willy Haefely, both of Reinach; Walter Hunkeler, Magden; Emilio Kyburz, Reinach, all of Switzerland; Hanns Möhler, Inzlingen, Fed. Rep. of Germany; Lorenzo Pieri, Riehen, and Petar Polc, Binningen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

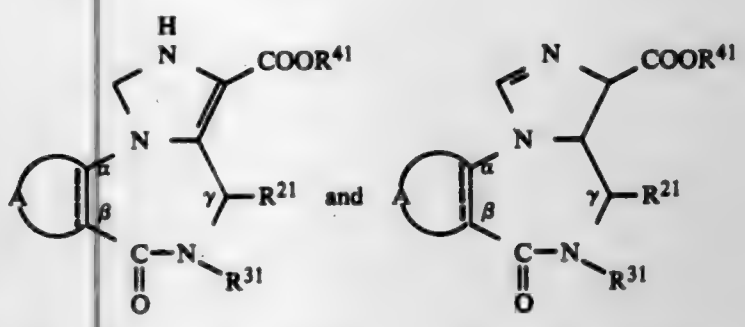
Division of Ser. No. 193,775, Oct. 3, 1980, Pat. No. 4,316,839. This application Nov. 16, 1981, Ser. No. 321,491

Claims priority, application Switzerland, Oct. 4, 1979, 8971/79; Oct. 4, 1979, 8972/79; Nov. 30, 1979, 10664/79; Nov. 30, 1979, 10665/79; Jul. 25, 1980, 5716/80

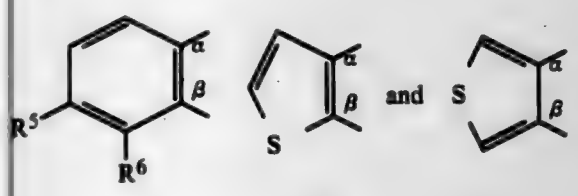
Int. Cl.³ C07D *487/04, 487/14, 513/14*

U.S. Cl. 260—239.3 T 1 Claim

1. The compounds of the formulas



wherein A together with the two carbon atoms denoted as α and β is selected from the group consisting of



(a) (b) (c)

the dotted line represents the double bond present in groups (a) and (b), R^{41} is selected from the group consisting of methyl, ethyl and isopropyl and either R^{21} is hydrogen and R^{31} is lower alkyl or R^{21} and R^{31} together are trimethylene or propenylene and the carbon atom denoted as γ has the S- or R,S-configuration.

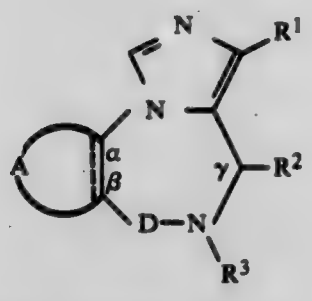
4,346,031

PROCESS FOR PREPARING IMIDAZODIAZEPINES

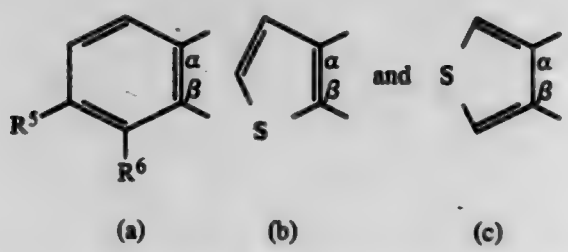
Max Gerecke; Willy Haefely, both of Reinach; Walter Hunkeler, Magden; Emilio Kyburz, Reinach, all of Switzerland; Hanns Möhler, Inzlingen, Fed. Rep. of Germany; Lorenzo Pieri, Riehen, and Petar Polc, Binningen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 193,775, Oct. 3, 1980, Pat. No. 4,316,839.
This application Nov. 16, 1981, Ser. No. 321,492
Claims priority, application Switzerland, Oct. 4, 1979, 8971/79; Oct. 4, 1979, 8972/79; Nov. 30, 1979, 10664/79; Nov. 30, 1979, 10665/79; Jul. 25, 1980, 5716/80
Int. Cl.³ C07D *487/04, 513/14*
U.S. Cl. 260—239.3 T 1 Claim

1. A process for the manufacture of compounds of the formula



wherein A together with the two carbon atoms denoted as α and β is selected from the group consisting of

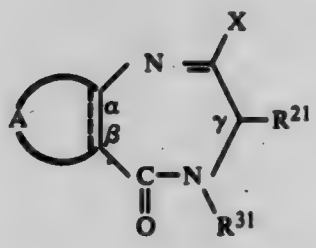


(a) (b) (c)

the dotted line represents the double bond present in groups (a) and (b), D is C═O or C═S, R^1 is selected from the group consisting of cyano, lower alkanoyl and a group of the formula —$COOR^4$, R^4 is selected from the group consisting of methyl, ethyl, isopropyl and 2-hydroxyethyl, R^5 is selected from the group consisting of hydrogen, trifluoromethyl and halogen and R^6 is selected from the group consisting of hydrogen, trifluoromethyl, halogen and lower alkyl and either R^2 is hydrogen and R^3 is hydrogen or lower alkyl or R^2 and R^3 together are trimethylene or propenylene and the carbon atom denoted as γ has the S- or R,S-configuration,

which comprises

reacting a compound of the formula



wherein A and the dotted line are as above, X represents a leaving group, and either R^{21} is hydrogen and R^{31} is lower alkyl, or R^{21} and R^{31} together are trimethylene or propenylene and the carbon atom denoted as has the S- or R,S-configuration,

in the presence of a base with an isocyanoacetic ester of the formula

$CN—CH_2—COOR^{41}$

wherein R^{41} is methyl, ethyl or isopropyl.

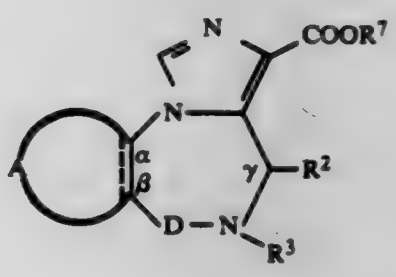
4,346,032

IMIDAZODIAZEPINE DERIVATIVES

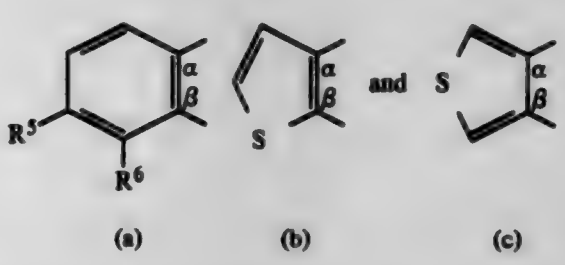
Max Gerecke; Willy Haefely, both of Reinach; Walter Hunkeler, Magden; Emilio Kyburz, Reinach, all of Switzerland; Hanns Möhler, Inzlingen, Fed. Rep. of Germany; Lorenzo Pieri, Riehen, and Petar Polc, Binningen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 193,775, Oct. 3, 1980, Pat. No. 4,316,839.
This application Nov. 16, 1981, Ser. No. 321,519
Claims priority, application Switzerland, Oct. 4, 1979, 8971/79; Oct. 4, 1979, 8972/79; Nov. 30, 1979, 10664/79; Nov. 30, 1979, 10665/79; Jul. 25, 1980, 5716/80
Int. Cl.³ C07D *487/04, 487/14, 513/14*
U.S. Cl. 260—239.3 T 1 Claim

1. A compound of the formula



wherein A together with the two carbon atoms denoted as α and β is selected from the group consisting of



(a) (b) (c)

the dotted line represents the double bond present in groups (a) and (b), D is >C═O or >C═S, R^5 is selected from the group consisting of hydrogen, trifluoromethyl and halogen and R^6 is selected from the group consisting of hydrogen, trifluoromethyl, halogen and lower alkyl and either R^2 is hydrogen and R^3 is hydrogen or lower alkyl or R^2 and R^3 together are trimethylene or propenylene, the carbon atom denoted as γ has the S- or R,S-configuration and R^7 is lower alkyl with the proviso that R^7 is not methyl, ethyl or isopropyl.

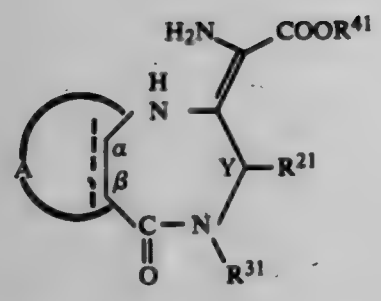
4,346,033

THIENODIAZEPINONE AND BENZODIAZEPINONE INTERMEDIATES

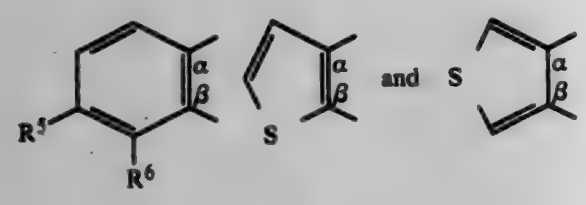
Max Gerecke; Willy Haefely, both of Reinach; Walter Hunkeler, Magden; Emilio Kyburz, Reinach, all of Switzerland; Hanns Möhler, Inzlingen, Fed. Rep. of Germany; Lorenzo Pieri, Riehen, and Petar Polc, Binningen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 193,775, Oct. 3, 1980, Pat. No. 4,316,839.
This application Nov. 16, 1981, Ser. No. 321,821
Claims priority, application Switzerland, Oct. 4, 1979, 8971/79; Oct. 4, 1979, 8972/79; Nov. 30, 1979, 10664/79; Nov. 30, 1979, 10665/79; Jul. 25, 1980, 5716/80
Int. Cl.³ C07D *487/04, 487/14, 513/14*
U.S. Cl. 260—239.3 B 1 Claim

1. A compound of the formula



wherein A together with the two carbon atoms denoted as α and β is selected from the group consisting of



(a) (b) (c)

the dotted line represents the double bond present in groups (a) and (b), R^{41} is selected from the group consisting of methyl, ethyl and isopropyl and either R^{21} is hydrogen and R^{31} is lower alkyl or R^{21} and R^{31} together are trimethylene or propenylene and the carbon atom denoted as γ has the S- or R,S-configuration.

4,346,034

PROCESS FOR PREPARING IMIDAZODIAZEPINES

Max Gerecke; Willy Haefely, both of Reinach; Walter Hunkeler, Magden; Emilio Kyburz, Reinach; Hanns Möhler, Inzlingen; Lorenzo Pieri, Riehen, and Petar Polc, Binningen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

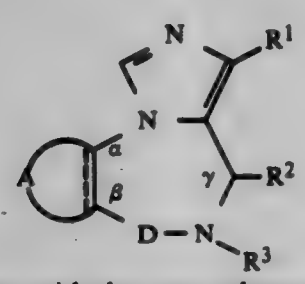
Division of Ser. No. 193,775, Oct. 3, 1980, Pat. No. 4,316,839. This application Nov. 16, 1981, Ser. No. 321,941

Claims priority, application Switzerland, Oct. 4, 1979, 8971/79; Oct. 4, 1979, 8972/79; Nov. 30, 1979, 10664/79; Nov. 30, 1979, 10665/79; Jul. 25, 1980, 5716/80

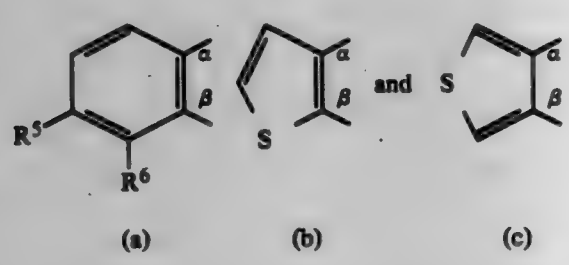
Int. Cl.³ C07D *487/04, 487/14, 513/14*

U.S. Cl. 260—239.3 T **1 Claim**

1. A process for the manufacture

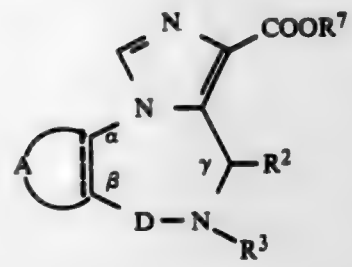


wherein A together with the two carbon atoms denoted as α and β is selected from the group consisting of



(a) (b) (c)

the dotted line represents the double bond present in groups (a) and (b), D is C═O or C═S, R^1 is selected from the group consisting of cyano, lower alkanoyl and a group of the formula —$COOR^4$, R^4 is selected from the group consisting of methyl, ethyl, isopropyl and 2-hydroxyethyl, R^5 is selected from the group consisting of hydrogen, trifluoromethyl and halogen and R^6 is selected from the group consisting of hydrogen, trifluoromethyl, halogen and lower alkyl and either R^2 is hydrogen and R^3 is hydrogen or lower alkyl or R^2 and R^3 together are trimethylene or propylene and the carbon atom denoted as γ has the S— or R,S— configuration, which comprises trans-esterifying a compound of the formula



wherein A, the dotted line, D, R^2 and R^3 are as above, and R^7 is lower alkyl.

4,346,035

PROCESS FOR PREPARING IMIDAZODIAZEPINES

Max Gerecke; Willy Haefely, both of Reinach; Walter Hunkeler, Magden; Emilio Kyburz, Reinach, all of Switzerland; Hanns Möhler, Inzlingen, Fed. Rep. of Germany; Lorenzo Pieri, Riehen, and Petar Polc, Binningen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

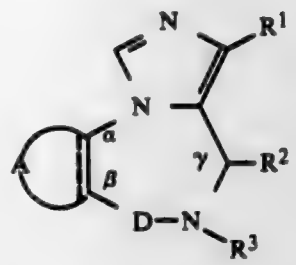
Division of Ser. No. 193,775, Oct. 3, 1980, Pat. No. 4,316,839. This application Nov. 16, 1981, Ser. No. 322,031

Claims priority, application Switzerland, Oct. 4, 1979, 8971/79; Oct. 4, 1979, 8972/79; Nov. 30, 1979, 10664/79; Nov. 30, 1979, 10665/79; Jul. 25, 1980, 5716/80

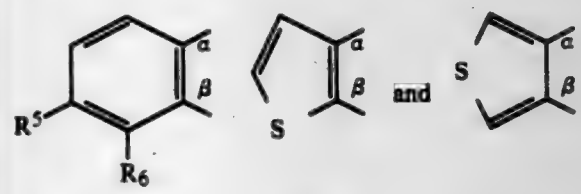
Int. Cl.³ C07D *487/04, 487/14, 513/14*

U.S. Cl. 260—239.3 T **1 Claim**

1. A process for the manufacture

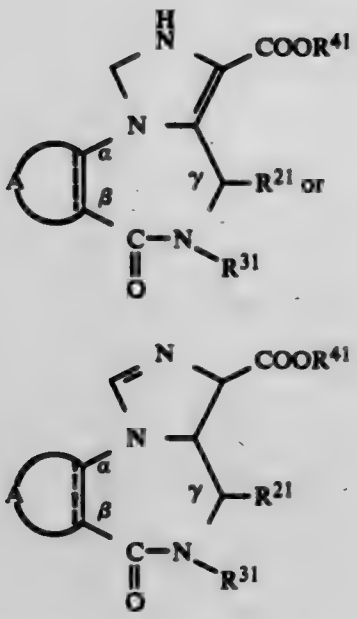


wherein A together with the two carbon atoms denoted as α and β is selected from the group consisting of



(a) (b) (c)

the dotted line represents the double bond present in groups (a) and (b), D is >C═O or >C═S, R^1 is selected from the group consisting of cyano, lower alkanoyl and a group of the formula —$COOR^4$, R^4 is selected from the group consisting of methyl, ethyl, isopropyl and 2-hydroxyethyl, R^5 is selected from the group consisting of hydrogen, trifluoromethyl and halogen and R^6 is selected from the group consisting of hydrogen, trifluoromethyl, halogen and lower alkyl and either R^2 is hydrogen and R^3 is hydrogen or lower alkyl or R^2 and R^3 together are trimethylene or propylene and the carbon atom denoted as γ has the S— or R,S-configuration,



wherein A and the dotted line are as above, R^{21} is hydrogen, R^{31} is lower alkyl and R^{41} is methyl, ethyl or isopropyl.

4,346,036

PROCESS FOR PREPARING IMIDAZODIAZEPINE DERIVATIVES

Max Gerecke; Willy Haefely, both of Reinach; Walter Hunkeler, Magden; Emilio Kyburz, Reinach, all of Switzerland; Hanns Möhler, Inzlingen, Fed. Rep. of Germany; Lorenzo Pieri, Riehen, and Petar Polc, Binningen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

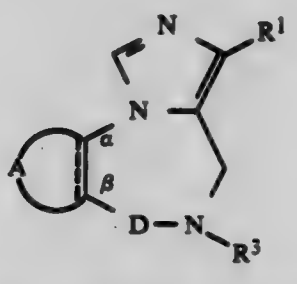
Division of Ser. No. 193,775, Oct. 3, 1980, Pat. No. 4,316,839. This application Nov. 16, 1981, Ser. No. 322,113

Claims priority, application Switzerland, Oct. 4, 1979, 8971/79; Oct. 4, 1979, 8972/79; Nov. 30, 1979, 10664/79; Nov. 30, 1979, 10665/79; Jul. 25, 1980, 5716/80

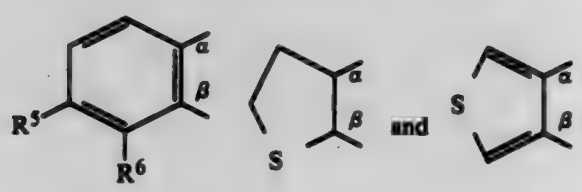
Int. Cl.³ C07D *487/04, 487/14, 513/14*

U.S. Cl. 260—239.3 T **1 Claim**

1. A process for the manufacture of a compound of the formula



wherein A together with the two carbon atoms denoted as α and β is selected from the group consisting of

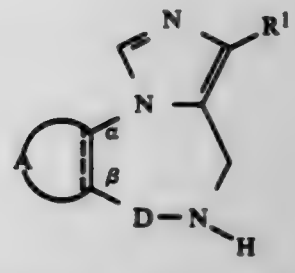


(a) (b) (c)

the dotted line represents the double bond present in groups (a) and (b), D is C=O or C=S, R^1 is selected from the group consisting of cyano, lower alkanoyl and a group of the formula $-COOR^4$, R^4 is selected from the group consisting of methyl, ethyl, isopropyl and 2-hydroxyethyl, R^5 is selected from the group consisting of hydrogen, trifluoromethyl, halogen and lower alkyl and R^3 is lower alkyl

which comprises

alkylating a compound of the formula



wherein A, the dotted line, D and R^1 are as above, at the secondary amino group.

4,346,037

BASE CATALYZED ACYLATION WITH ENOL ESTERS

Howard J. Burke, and Edward J. Hessler, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 10, 1981, Ser. No. 282,314

Int. Cl.³ C07J *71/00*

U.S. Cl. 260—239.55 R **16 Claims**

1. In a process comprising acylating an alcohol wherein the improvement comprises reacting the alcohol with an enol ester using a strong base as catalyst.

3. A process for the preparation of a compound having the formula

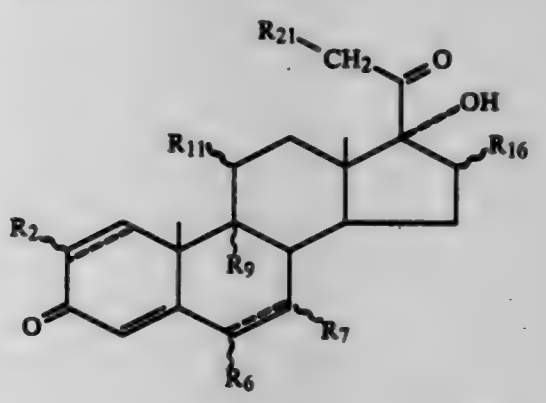
ROAc I

in which R is alkyl, alkenyl, aryl, aralkyl, cycloalkyl, alkyl substituted cycloalkyl, cycloalkenyl, heterocyclic ring or steroidal ring system, and Ac is an acyl group of from 2 to 6 carbons, inclusive, which comprises reacting an enol ester with an alcohol having the formula

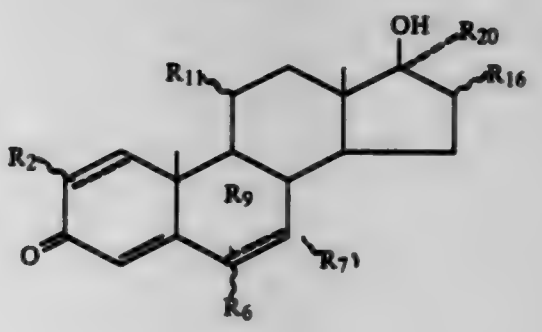
ROH II

wherein R is as defined above, in the presence of a strong base as catalyst.

4. A process according to claim 3 wherein the alcohol includes a steroidal ring system such that the alcohol is selected from the formulae

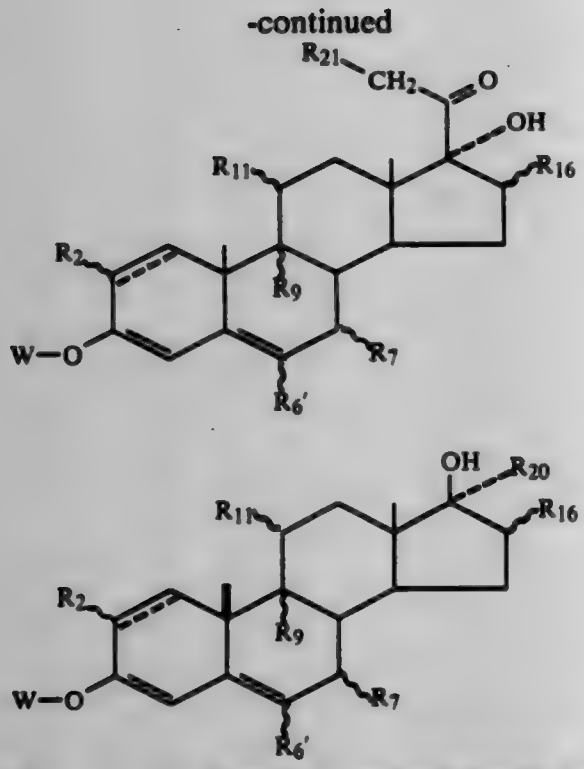


A



B

-continued



wherein ~ is α or β; ═ is an optional double bond; R_2 is hydrogen or halo wherein halo is fluoro, chloro, or bromo; R_6 is hydrogen, halo; wherein halo is fluoro, chloro, or bromo, methyl or methylene with the proviso that if there is a double bond between the 6 and 7 position R_6 is limited to hydrogen, methyl, or halo; W is alkyl of from one to 5 carbons, inclusive, and R_6' is hydrogen, methyl or halo; wherein halo is fluoro, chloro or bromo; R_7 is hydrogen or methyl; R_9 is hydrogen or fluoro; R_{11} is hydrogen, OX or keto or R_9 and R_{11} taken together are a β-epoxide or a double bond; R_{16} is hydrogen or methylene, methyl or OX; R_{20} is hydrogen, methyl, allenyl or —C═C—Z wherein Z is hydrogen or alkyl of from one to 5 carbon atoms, inclusive; R_{21} is H, halo or OX; wherein X is hydrogen, trimethylsilyl, or —CO—Y, wherein Y is lower alkyl or phenyl.

6. A process according to claim 4 wherein the alcohol is 17α-hydroxy-6-α-methyl-9β,11β-oxido-pregna-1,4-diene-3,20-dione.

4,346,036

OXABICYCLO[3.1.0]HEXAN-2-ONES

Petrus A. Kramer, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

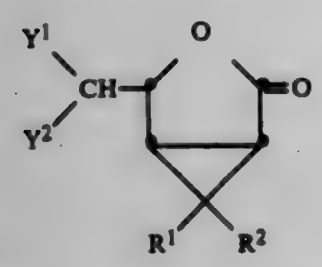
Filed Sep. 28, 1981, Ser. No. 306,106

Claims priority, application United Kingdom, Oct. 22, 1980, 8034067

Int. Cl.³ C07D *307/93*

U.S. Cl. 549—302 4 Claims

1. A compound of the formula



(I)

wherein each of Y^1 and Y^2 independently represents a fluorine, chlorine or bromine atom and each of R^1 and R^2 independently represents a hydrogen atom or an alkyl group having up to 10 carbon atoms, or R^1 and R^2 together represent an alkylene group having from 2 to 5 carbon atoms.

4,346,039

SYNTHESIS OF OCHRATOXINS

George A. Kraus, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Mar. 19, 1981, Ser. No. 245,382

Int. Cl.³ C07D *311/76*

U.S. Cl. 549—289 10 Claims

1. A method of synthesis of an Ochratoxin precursor compound, comprising:

reacting the dimethyl ester of 2-hydroxy-4-methylbenzene-1,3 dioic acid with a deprotonating agent of the formula: R_1R_2NM, with R_1 and R_2 being straight or branched chain alkyl group of C_2 or greater chain length, and M being a metal selected from the group of lithium, sodium, potassium and magnesium, followed by addition of acetadehyde to provide methyl-1,4-dihydro-8-hydroxy-3-methyl-1-H-2-benzopyran-1-one-7-carboxylate.

4,346,040

PROCESS FOR CONVERTING AN ALDEHYDE INTO AN ALKENE, IN PARTICULAR FURFURAL INTO FURFURYLIDENES

Michel Delmas, Entraygues; Antoine Gaset, Toulouse, and Yves Le Bigot, Saint Martin de Londres, all of France, assignors to Agrifurane S.A., Bon Encontre, France

Filed Jul. 21, 1981, Ser. No. 285,488

Claims priority, application France, Jul. 28, 1980, 80 16767

Int. Cl.³ C07D *307/28*

U.S. Cl. 549—505 11 Claims

1. In a process for converting an aldehyde into a corresponding alkene, wherein the aldehyde is placed in the presence of a phosphonium salt and a base in the solution of an aprotic organic solvent, for obtaining an alkene substituted or not in alpha or beta of the carbon of the ethylenic double bond obtained from the phosphonium salt by a cyclic or an aliphatic chain and not substituted from the same carbon by a heteroatom or a heteroatomic functional group, the improvement comprising using as said base a compound selected from the group consisting of (i) mineral bases which in aqueous medium produce a basic strength less than or equal to the basic strength of the hydroxide ion and (ii) organic bases of the nitrogen compound family, and adjusting the hydration rate of the organic reaction medium so as to provide approximately 0.5 to 5 moles of water per mole of aldehyde in the reaction medium.

4,346,041

COMPOSITION AND PROCESS

Paul A. Aristoff, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

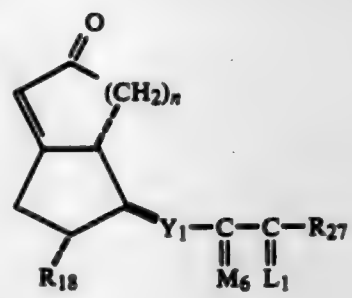
Continuation-in-part of Ser. No. 125,608, Feb. 28, 1980, Pat. No. 4,338,457. This application Dec. 22, 1980, Ser. No. 219,198

Int. Cl.³ C07C *49/633*

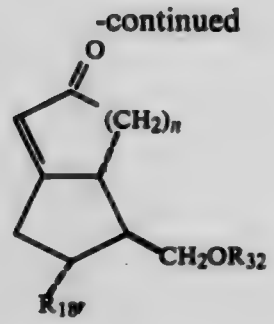
U.S. Cl. 549—498 1 Claim

1. The carbacyclin intermediate of formula IV or V:

IV



-continued



V

wherein n is one or 2;

wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and α-R_4:β-R_3, and wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein M_6 is α-OR_{10}:β-R_5 or α-R_5:β-OR_{10}, wherein R_5 is hydrogen or methyl and R_{10} is an acid hydrolyzable protective group;

wherein R_{27} is

(1) $-C_mH_{2m}-CH_3$, wherein m is an integer from one to 5, inclusive,

(2) phenoxy optionally substituted by one, two or three chloro, fluoro, trifluoromethyl, (C_1-C_3)alkyl, or (C_1-C_3)alkoxy, with the proviso that not more than two substituents are other than alkyl, with the proviso that R_{27} is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different,

(3) phenyl, benzyl, phenylethyl, or phenylpropyl optionally substituted on the aromatic ring by one, two or three chloro, fluoro, trifluoromethyl, (C_1-C_3)alkyl, or (C_1-C_3)alkoxy, with the proviso that not more than two substituents are other than alkyl,

(4) cis—CH=CH—CH_2—CH_3,

(5) $-(CH_2)_2-CH(OR_{10})-CH_3$, wherein R_{10} is as defined above, or

(6) $-(CH_2)_3-CH=C(CH_3)_2$;

wherein $-C(L_1)-R_{27}$ taken together is

(1) (C_4-C_7)cycloalkyl optionally substituted by one to 3 (C_1-C_5)alkyl;

(2) 2-(2-furyl)ethyl,

(3) 2-(3-thienyl)ethoxy, or

(4) 3-thienyloxymethyl;

wherein R_{18} is hydrogen, hydroxy, hydroxymethyl, $-OR_{10}$ or $-CH_2OR_{10}$, wherein R_{10} is an acid-hydrolyzable protective group;

wherein R_{32} is hydrogen or R_{31}, wherein R_{31} is a hydroxyl hydrogen protective group; and

wherein Y_1 is trans—CH=CH—, cis—CH=CH—, $-CH_2CH_2-$, or —C≡C—.

4,346,042

PREPARATION OF EPIHALOHYDRIN ENANTIOMERS

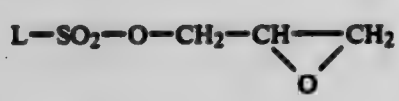
John J. Baldwin, Lansdale, and David E. McClure, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 940,681, Sep. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 919,590, Jun. 27, 1978, abandoned. This application May 5, 1980, Ser. No. 146,927

Int. Cl.³ C07D *303/34*

U.S. Cl. 549—557 2 Claims

1. An (R) or (S) isomer of a compound of the formula



wherein L is CF_3.

4,346,043

ANTIMICROBIAL GLYCOLIC ACID DERIVATIVES

August V. Bailey, New Orleans; Gordon J. Boudreaux, Metairie, and Gene Sumrell, New Orleans, all of La., assignors to The United States of America as represented by the United States Department of Agriculture, Washington, D.C.

Filed Feb. 19, 1981, Ser. No. 235,812

Int. Cl.³ C09F *5/00*

U.S. Cl. 260—404 5 Claims

1. A glycolic acid derivative having antimicrobial activity and the general structure:

$$(RCOOCH_2CH_2)_2NCOCH_2OOCR$$

where R is selected from the group consisting of an alkyl and alkenyl of 4 to 17 carbon atoms and may be branched or unbranched.

4,346,044

WATER-SOLUBLE AIR-DRYING ALKYD RESINS, PROCESS FOR THEIR PREPARATION AND THEIR USE AS BASES FOR NON-YELLOWING LACQUERS

Rolf Dhein; Jochen Schoeps, and Rolf Küchenmeister, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,558

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930734

Int. Cl.³ C09D *3/64*

U.S. Cl. 260—404.8 12 Claims

1. Water-soluble, air-drying, amine-neutralised alkyd resins having fatty acid contents of 20–60% obtained from reactants comprising dicarboxylic acids or their ester-forming derivatives, polyhydric alcohols, fatty acids, and semi-ester-forming dicarboxylic acid anhydrides, characterised in that 10–80% by weight of the fatty acids are fatty acids with conjugated double bonds and the semi-ester-forming dicarboxylic acid anhydride is hexahydrophthalic acid anhydride.

4,346,045

PROCESS FOR RESOLVING DL-S-BENZOYL-β-MERCAPTOISOBUTYRIC ACID, AND PRODUCTS OBTAINED

Nicolaas A. De Heij, Venlo, Netherlands, assignor to Oce-Andeno B.V., Venlo, Netherlands

Filed Mar. 3, 1981, Ser. No. 239,899

Claims priority, application Netherlands, Mar. 6, 1980, 8001341

Int. Cl.³ C07C *153/07*

U.S. Cl. 260—455 R 4 Claims

1. A process for resolving DL-S-benzoyl-β-mercaptoisobutyric acid which comprises treating said acid in solution with D-(+)-N-benzyl-α-phenethylamine (NBPA), thus forming a salt of NBPA with D-(−)-S-benzoyl-β-mercaptoisobutyric acid, and isolating said salt.

4,346,046

PROCESS FOR PRODUCING AMINOARYL-β-SULFATOETHYLSULFONE

Nobuzi Nishimura, Toyonaka; Utazi Sawa; Takemi Tokieda, both of Nara; Shun-ichi Hayakawa, and Yasuo Tezuka, both of Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 16, 1980, Ser. No. 169,497

Claims priority, application Japan, Jul. 19, 1979, 54-92201; Aug. 9, 1979, 54-102075; Aug. 14, 1979, 54-103656

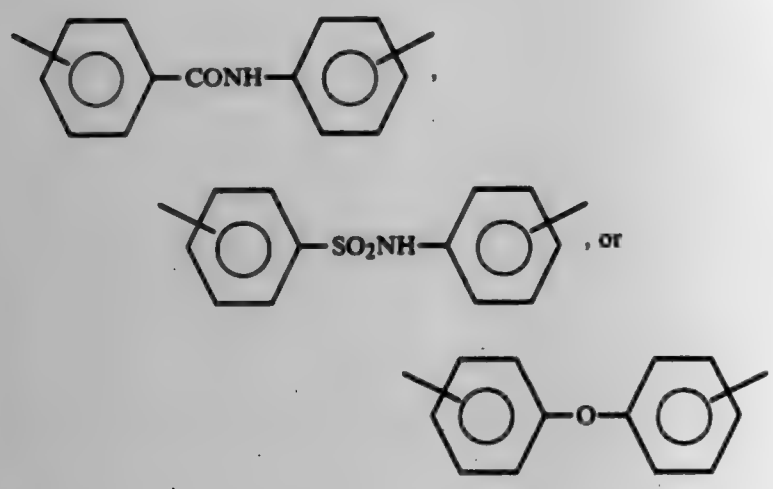
Int. Cl.³ C07C *141/16*

U.S. Cl. 260—458 C 6 Claims

1. A process for producing a sulfuric acid semiester of the formula (I):

$$NH_2—A—(SO_2CH_2CH_2OSO_3H)_n \quad (I)$$

wherein A is phenylene, naphthylene,



which may be substituted with one or two methyl, methoxy, hydroxy, chloro, carboxylic or sulfonic acid groups and n is an integer of 1 or 2, which comprises subjecting a mixture of an acid and a compound of the formula (II-1) or (II-2):

$$NH_2—A-(SO_2CH_2CH_2OH)_n \quad \text{(II-2):}$$

$$B—NH—A-(SO_2CH_2CH_2OH) \quad \text{(II-2)}$$

wherein A and n are as defined above and B is a group capable of being hydrolyzed by an acid, to reaction, while removing a volatile matter from the reaction system, in a reaction zone capable of removing the volatile matter by azeotropy with an organic solvent, evaporation or vaporization, whereby esterification of said compound of the formula (II-1) or hydrolysis and esterification of said compound of the formula (II-2) is effected, the acid in the reaction system being sulfuric acid and the amount of the acid being 1 to 2 moles per mole of β-hydroxyethylsulfonyl group in the compound of the formula (II-1) or (II-2).

4,346,047

PRODUCTION OF PHOSGENE

Herbert Riegel, Maplewood, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Oct. 2, 1978, Ser. No. 947,604
Int. Cl.[3] C07C *51/58*
U.S. Cl. 260—544 K 17 Claims

1. A process for producing phosgene, comprising:

(a) contacting a molten salt mixture containing the higher and lower valent chlorides of a multivalent metal with hydrogen chloride and oxygen to enrich the salt in the higher valent metal chloride;

(b) contacting the molten salt from step (a) with carbon monoxide to strip gaseous chlorine from the salt and produce phosgene by reaction with carbon monoxide, said contacting being effected to recover essentially all of the chlorine values added in step (a) as phosgene and chlorine; said contacting being effected under a vacuum, with the carbon monoxide being employed in about stoichiometric proportions to chlorine values added to the molten salt in step (a);

(c) passing molten salt from step (b) to step (a); and

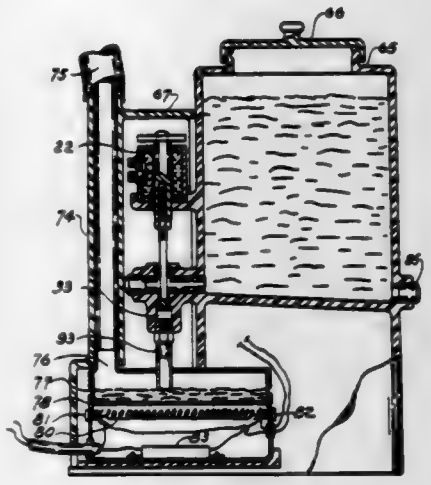
(d) recovering a gaseous effluent from step (b) containing carbon monoxide, stripped chlorine and phosgene, said carbon monoxide and chlorine being present in the effluent in about stoichiometric proportions for phosgene production.

4,346,048

HUMIDIFYING SYSTEM FOR MOBILE VEHICLES

James T. Gates, 1611 Kirkley Rd., Columbus, Ohio 43221

Filed Apr. 29, 1981, Ser. No. 258,642
Int. Cl.[3] B60H *3/02*
U.S. Cl. 261—130 4 Claims



1. Apparatus for controlling the humidity of the passenger compartment of a vehicle, said compartment including a conventional cigar lighter outlet comprising, in combination:

a container for holding water, said container including an upper opening for filling purposes and two lower openings for discharge purposes,

when in operative condition:

(a) the upper opening being closed by a lid which seals the container in fluid tight condition,

(b) the first of said lower openings being a drain opening having means therein to prevent both water from discharging and air from entering, and

(c) the second of said lower openings leading into a passage, said passage including a valve seat, a valve member for sealing against said seat in fluid tight arrangement, said valve member being mounted on a common stem with a reciprocal plunger, said plunger being a part of an actuator,

said actuator being controlled by a humidity sensing device and powered by electrical current from a plug inserted into said cigar lighter outlet, said humidity sensing device being connected in series with said actuator and with an electric heater whereby the opening of said passage by said actuator also switches the heater to the on position,

a spigot leading from the passage downstream of the valve seat to a terminus within a heater pan, the heater being disposed to heat the water in the pan when the valve member is in the open position,

the passage, spigot, and valve member being configured to allow water to flow by gravity from the container to the pan and air to flow from said pan area to the container to relieve the vacuum formed by the discharge of water from the fluid tight container when said valve member is in open position,

the spigot extending into the area of the pan below the upper level thereof whereby the water will rise above the level of the spigot terminus before the pan overflows to thereby stop the discharge of water from the container since no air can enter the spigot to relieve the vacuum within the container,

a vapor duct leading from the pan to the interior of the passenger compartment whereby water vapor generated by said heater will exit the pan and flow to the compartment until the humidity sensing device deactivates the electrical system when a predetermined humidity level has been reached in the compartment.

4,346,049

SINTERED ALPHA SILICON CARBIDE CERAMIC BODY HAVING EQUIAXED MICROSTRUCTURE

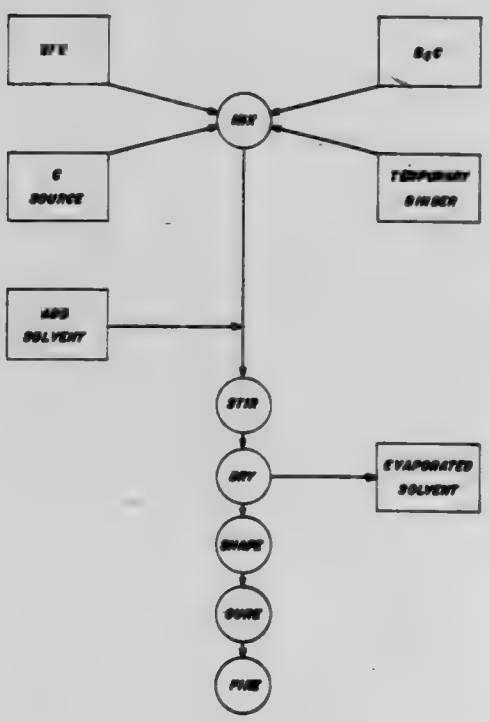
John A. Coppola, Lewiston; Laurence N. Hailey, Niagara Falls, and Carl H. McMurtry, Youngstown, all of N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Division of Ser. No. 901,406, May 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 584,226, Jun. 5, 1975. This application Jul. 31, 1978, Ser. No. 930,435

The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.

Int. Cl.[3] F27B *9/04*

U.S. Cl. 264—65 36 Claims



1. A process for producing a sintered alpha silicon carbide ceramic body having equiaxed microstructure, comprising the steps of:

(a) mixing together a mixture comprising the components:

(i) from about 91 to about 99.85 parts by weight silicon carbide powder comprising at least 95% by weight alpha, non-cubic crystalline silicon carbide and having a surface area of from about 1 to about 100 m^2/g;

(ii) from about 0.67 to about 20 parts by weight of a carbonizable organic material having a carbon content of at least 33% by weight;

(iii) from about 0.15 to about 5 parts by weight of a boron source containing from about 0.15 to about 3.0 parts by weight boron;

(iv) up to about 15 parts by weight of temporary binder; and

(v) from about 25 to about 100% by weight of the silicon carbide powder, carbonizable organic material, boron source and temporary binder of a solvent in which the carbonizable organic material is soluble; said mixing being done in such a way as to disperse the carbonizable organic material about the silicon carbide powder and coat the silicon carbide powder therewith;

(b) drying the mixture in such a way as to evaporate the solvent from the mixture;

(c) shaping the dried mixture in such a way as to produce a shaped body having a density of at least about 1.60 g/cc; and

(d) firing the shaped body under such conditions of time, temperature and atmosphere as to obtain a density of at least about 2.40 g/cc and an equiaxed microstructure, said temperature being between about 1900° C. and about 2250° C.

4,346,050

POLYMER CONCRETE HAVING LOW BINDER LEVELS

Peter F. Trent, Westmount, and Raymond Charlebois, Laval Sur-le-Lac, both of Canada, assignors to Plastibeton Canada Inc., Montreal, Canada

Continuation-in-part of Ser. No. 119,259, Feb. 7, 1980, abandoned, which is a continuation of Ser. No. 44,141, May 31, 1979, abandoned, which is a continuation of Ser. No. 918,196, Jun. 22, 1978, abandoned. This application Dec. 17, 1980, Ser. No. 217,498

Int. Cl.[3] B28B *1/08*

U.S. Cl. 264—71 28 Claims

1. A process for preparation of a polymer bonded concrete of less than 10% by weight organic binder which comprises

(1) mixing an aggregate containing sand, stone or gravel or mixtures thereof with, as binder components,

(a) at least one material selected from the group of α, β-ethylenically unsaturated monomer and an unsaturated polyester dissolved in at least one of said α, β-ethylenically unsaturated monomer, the solution of monomer and polyester being of low viscosity and containing monomer in excess of that required for crosslinking purposes, and wherein said α,β-ethylenically unsaturated monomer is selected from the group of styrene, styrene derivatives, C_{1-18} alkyl esters of acrylic acid, C_{1-8} alkyl esters of methacrylic acid, divinyl benzene, and mixtures thereof; and

(b) a free radical polymerication initiator, to form a mixture of aggregate with binder components;

(2) casting the mixture;

(3) subjecting the mixture to intense vibration, wherein the vibration is sufficiently intense to cause segregation of aggregate from binder and to cause a layer of excess liquid binder to form on the upper surface of the cast mixture, and

(4) allowing the monomers to polymerize and set to produce the polymer bonded concrete.

4,346,051

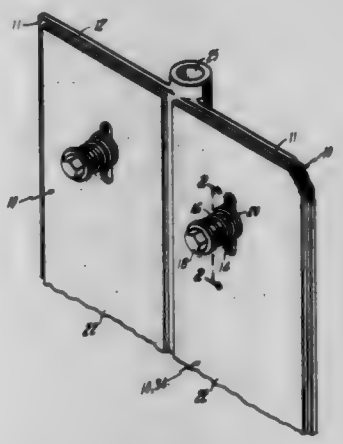
METHOD OF PRESS FORMING A ZEOLITE ARTICLE

David J. McFarlin, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 16,263, Feb. 28, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,161

Int. Cl.[3] B29J *5/00*

U.S. Cl. 264—102 2 Claims



1. The method of forming a zeolite article useful for cryoadsorption which comprises

(a) pressing dry zeolite powder of a pore size between $2\text{-}25\times10^{-10}$ m without a binder at a pressure of at least 10 MPa (1.5 ksi), to form a preform;

(b) sealing the preform within a flexible container;

(c) evacuating the container; and

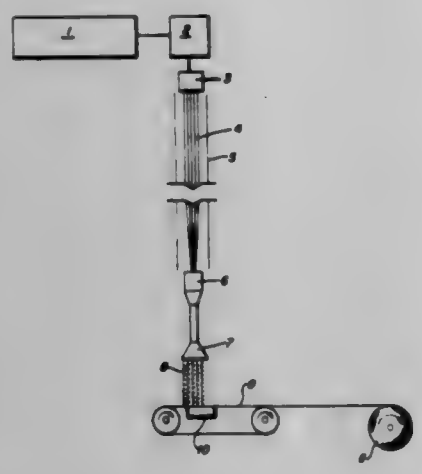
(d) isostatically pressing the preform in the container at a pressure of 200–500 MPa (29–80 ksi), to compact the article.

4,346,052

PROCESS FOR HOMOGENEOUS CURLY SYNTHETIC POLYMER FIBERS

Jack R. Knox, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 909,161, May 24, 1978, Pat. No. 4,241,002, which is a division of Ser. No. 712,845, Aug. 9, 1976, abandoned.
This application Jul. 31, 1980, Ser. No. 174,200
Int. Cl.[3] B28B *3/20*
U.S. Cl. 264—176 F 2 Claims



1. A method of increasing the crystallization temperature range of a stereospecific polymer consisting essentially of extruding at a temperature between about 200° C. and about 325° C. a mixture of said stereosymmetric polymer and an organic compound, said organic compound having at least one bromine labile in the temperature range about 200° C. to about 325° C.

4,346,053

PROCESS FOR MELT-SPINNING HOLLOW FIBERS

Ronald E. Pfeiffer, Pensacola, Fla., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 13,353, Feb. 21, 1979, Pat. No. 4,278,415.
This application Mar. 2, 1981, Ser. No. 239,257
Int. Cl.[3] D01D *5/24*
U.S. Cl. 264—561 4 Claims



1. A process for preparing a hollow fiber which comprises extruding a fusion melt of an acrylonitrile polymer and water through a spinnerette assembly which comprises in combination:

a. a spinnerette plate containing a plurality of orifices with a counterbore for each orifice and,

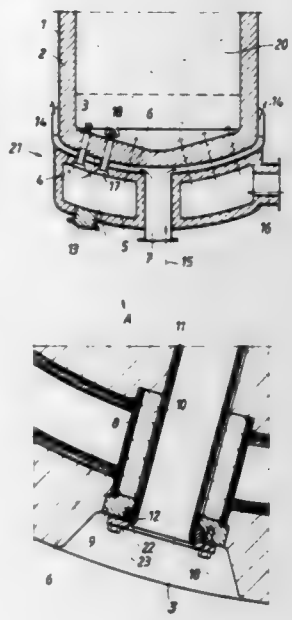
b. removable pins positioned within each orifice counterbore combination, each pin being of solid construction and having an upper portion positioned within said counterbore and a lower portion positioned within said orifice, said upper portion occupying a fixed position within said counterbore and enabling spinning composition to flow through the counterbore to the orifice at operative back pressure and said lower portion being spaced from the orifice wall to provide a hollow extrudate directly into a steam-pressurized solidification zone maintained under conditions of pressure and temperature which prevent sheath-core structure formation in the resulting extrudate.

4,346,054

FLUIDIZABLE BED APPARATUS

Lars Löfgren, and Artur Östlund, both of Linköping, Sweden, assignors to Stal-Laval Apparat AB, Linköping, Sweden

Filed Mar. 13, 1981, Ser. No. 243,449
Claims priority, application Sweden, Mar. 21, 1980, 8002199
Int. Cl.[3] B01J *8/44;* F26B *17/10;* F23C *11/02*
U.S. Cl. 422—49 13 Claims



1. A fluidizable bed apparatus comprising:

a container containing a bed of fluidizable particulate material which becomes hot in use, the container having a bottom wall and side walls;

a unitary structure arranged at least partly beneath said bottom wall and including surface means spaced beneath the bottom wall to define therewith at least one passage for the flow therethrough of a cooling medium to cool said bottom wall;

inlet means for supplying a cooling medium to each said passage;

outlet means for withdrawing cooling medium supplied to each said passage;

at least one tubular fixing means secured between said bottom wall and the unitary structure, each said tubular fixing means having a uniform diameter along its length; and

at least one nozzle secured to the unitary structure for introducing a fluidizing medium into said container to create a fluidized bed of said particulate material, each said nozzle passing through a respective tubular fixing means and through a respective through-opening provided by opening means in said bottom wall.

4,346,055

AUTOMATIC IGNITION SYSTEM FOR A FLAME IONIZATION DETECTOR

Andrew J. Murphy, West Grove, Pa.; Robert P. Rhodes, Newark, Del., and Terry A. Woodruff, Kennett Square, Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 964,753, Nov. 29, 1978, abandoned.
This application Jun. 13, 1980, Ser. No. 159,034
Int. Cl.[3] G01N *21/72, 27/62*
U.S. Cl. 422—54 5 Claims

1. A flame ionization detector, comprising

means for forming a jet from gases to be analyzed and a flammable gas, when said gases are applied thereto,

mixing means for introducing air to the periphery of the jet when air is applied thereto,

a collector tube having one end mounted so as to receive gases from the jet,

an exit tube for exhausting gases from said collector tube,

said exit tube having one end inserted into the other end of said collector tube,

electrical insulating means inserted between said exit tube and said collector tube,

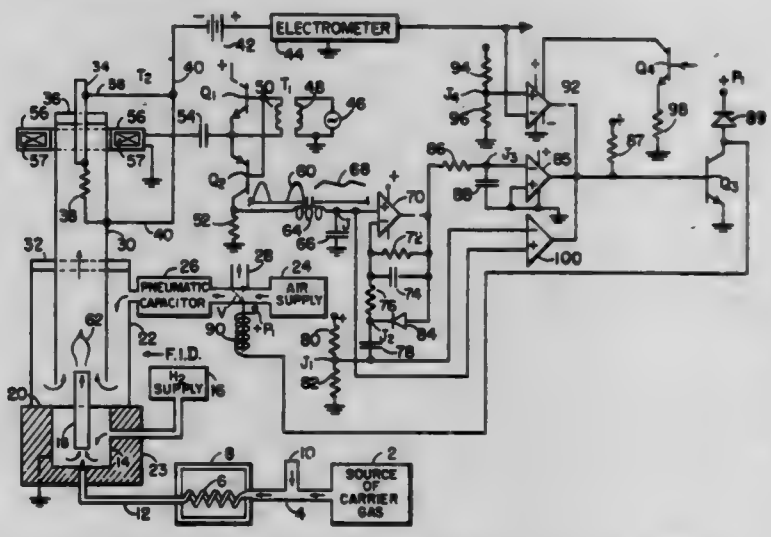
a filament igniter mounted within said collector tube and having its ends respectively connected to said collector tube and said exit tube,

an electrical conductor connected between said exit tube and said collector tube so that it, the exit tube and the filament form a closed electrical loop,

a magnetic core linking said loop,

a winding linking said core,

a transformer having primary and secondary windings, said secondary winding being coupled to said winding for linking said core for causing alternating electrical current to flow through said winding when said primary winding is energized,



a current sensing resistor connected in said circuit with said transformer so that alternating current flows through it when said transformer is energized,

a source of direct current potential and an electrometer connected between said collector tube and said means for forming the jet so as to collect ions produced when the jet is ignited and produce a current proportional to the rate at which ions are collected,

means responsive to the voltage across said resistor for causing said mixing means to reduce the flow of air when said voltage changes by a given amount at a rate exceeding a predetermined value, and

means responsive to the voltage across said resistor for causing said mixing means to restore the flow of air to its former value when said voltage reverts to the value it had when the air was shut off.

4,346,056

AUTOMATIC ANALYZING APPARATUS

Masahiko Sakurada, Machida, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,446

Claims priority, application Japan, Aug. 15, 1979, 54/111525[U]; Aug. 17, 1979, 54/112413[U]

Int. Cl.³ G01N *35/04*

U.S. Cl. 422—64 **9 Claims**

1. An automatic analyzing apparatus comprising:

means for containing a plurality of samples to be analyzed in a plurality of containers;

means for delivering each of the samples into respective reaction vessels;

a plurality of reagent vessels containing plural kinds of reagents for effecting a plurality of analysis items;

a reagent vessel holder comprising a turntable for holding said plurality of reagent vessels along a circumference thereof;

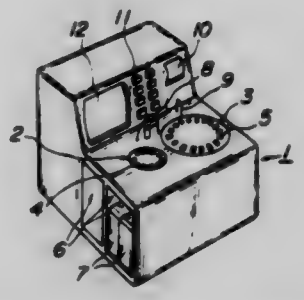
a delivery device for delivering into the reaction vessels a reagent contained in a reagent vessel which is indexed at a delivery position;

means for rotating said reagent vessel holder in such a manner that the reagent vessels arranged in the reagent vessel holder are passed through said delivery position;

first indicia means provided in said reagent vessel holder for denoting an original point of the reagent vessel holder with respect to said delivery position;

second indicia means provided in said reagent vessel holder for discriminating the kind of the reagents;

means for detecting said first and second indicia means formed in said reagent vessel holder to generate an original point signal and a command signal for discriminating the kind of the reagent, respectively;



means for storing a plurality of analysis conditions for all analysis items to be effected by the apparatus, said analysis conditions including an amount of sample to be delivered into the reaction vessel, an amount of reagent to be delivered into the reaction vessel and photometric wavelength;

means for selecting in response to said command signal one of said plurality of the analysis conditions stored in said storing means, the selected analysis condition being related to an analysis item using the relevant reagent denoted by said command signal; and

means for controlling said rotating means under the control of said original point signal and for controlling said delivering means in response to the analysis condition read out from said storing means.

4,346,057

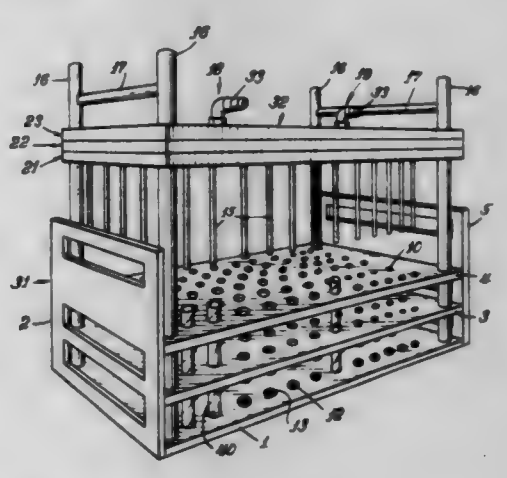
TEST TUBE EVAPORATOR

Everett N. Bowser, 715 N. Main St., Glen Ellyn, Ill. 60137

Filed Jun. 22, 1981, Ser. No. 275,862

Int. Cl.³ B10L *3/00*

U.S. Cl. 422—101 **2 Claims**



1. A test tube evaporator comprising;

a rack having a substantially rectangularly shaped base and upstanding side walls;

supports extending parallel to the base between the side walls below a midline of the said walls;

means provided by the base for receiving the closed end of a test tube;

means provided by the supports, in vertical alignment with the receiving means provided by the base, retaining the

test tubes in a perpendicular position relative to the receiving means;

a chamber removably carried between the upstanding side walls in spaced parallel relation above the supports and the base;

an evaporating needle depending from the underside of and having communication with the chamber concentrically of the means provided by the base for receiving the closed end of a test tube;

means to support the chamber at variations in height above the closed end of a test tube;

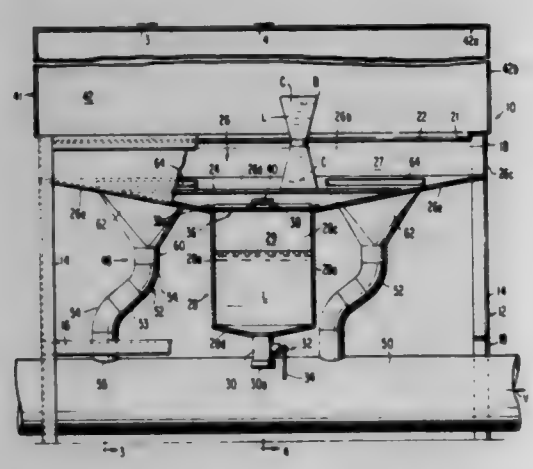
and means to support the chamber in an inverted position, separated from the rack, so that the evaporating needles depending from the chamber are in an upstanding direction, the means to support the chamber at variations in height above the closed end of a test tube being the same as the means to support the chamber in an inverted position.

4,346,058

DUAL LID TYPE COAL WASHABILITY TABLE WITH BUILT-IN AIR VENTILATION SYSTEM

Lee S. Rigsby, Ashland, Ky., assignor to Ashland Coal, Inc., Huntington, W. Va.

Filed Apr. 16, 1981, Ser. No. 254,702
Int. Cl.³ B01L *9/00*
U.S. Cl. 422—104 **6 Claims**



1. An improved coal washability table comprising:

opposed, vertical front and rear walls joined at their ends by vertical end walls and defining an elongated rectangular open frame, opening vertically upwardly,

a rectangular sump tank being open at its top and being mounted below the top of said open frame, adjacent to the front wall of said open frame, and being spaced from the end walls and the rear walls of said open frame,

a recessed sink mounted within said open frame, overlying said sump tank and opening thereto and including inclined table sink drain walls extending from the rear and opposite ends of said open frame to respective rear and opposite side edges of said sump tank and being joined to the front, rear and end walls of said open frame,

a first lid pivotably mounted to the table frame along one edge thereof and overlying the open top of said table frame to completely seal off the frame opening providing access to the recessed sink and sump tank,

a removable second lid overlying the open top of said sump tank to selectively close off the recessed sink volume from the sump tank interior,

at least one air register opening provided within the table sink inclined drain walls to the rear of the sump tank,

a horizontal main air ventilation tube underlying said sink and extending longitudinally through said rectangular open frame, and

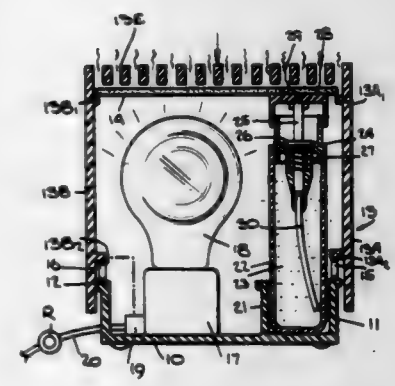
a ventilation tube assembly coupled at one end to said underlying main air ventilation tube and being connected at its opposite end to said at least one air register opening such that when said underlying main air ventilation tube is subjected to low vacuum pressure, toxic and/or noxious vapors created during the performance of separation tests on coal submergable within an organic liquid provided to the sump tank are readily removed from the area of the recessed sink and the sump tank.

4,346,059

AROMA-GENERATING LAMP STRUCTURE

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Mar. 3, 1981, Ser. No. 240,165
Int. Cl.³ A61L *9/04*
U.S. Cl. 422—125 **11 Claims**



1. An aroma-generating structure comprising:

A. a substantially enclosed housing having a vent at the top thereof;

B. a pad of porous material having wicking properties completely covering said vent, said pad being impregnated with an aroma-producing liquid; and

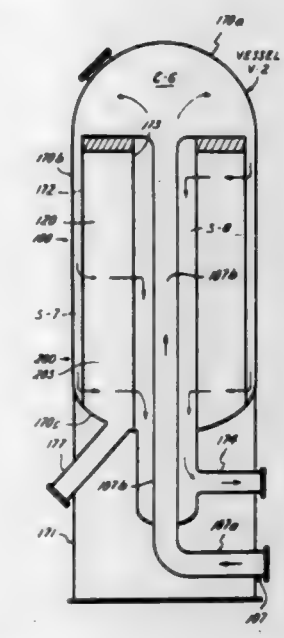
C. an electrical heating means confined within the housing, said means acting to heat and expand the confined air to create a positive air pressure in the housing producing a pressure differential between the heated air and the atmosphere above said vent, thereby driving the heated air through the pad-covered vent to rapidly volatilize the liquid and exude an aromatic vapor into the atmosphere.

4,346,060

RADIAL AMMONIA CONVERTERS

Raymond S. Eagle, and Vishnu A. Patel, both of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Division of Ser. No. 925,137, Jul. 17, 1978, Pat. No. 4,230,669.
This application Mar. 27, 1980, Ser. No. 134,616
Int. Cl.³ C01C *1/02*
U.S. Cl. 422—148 **6 Claims**



1. An ammonia converter, comprising:

a vessel which includes a lower head, a main shell and an upper head;

an internal annular catalyst bed formed by an outer cylindrical wall mounted on said lower head spaced from said main shell to form an annular space between said catalyst bed and said shell and an inner cylindrical retainer wall;

catalyst removal means extending from said lower head;

gas inlet means which includes a vertical pipe section along the axis of said vessel and spaced from said annular catalyst bed and means for directing gas to said annular space between said catalyst bed and said shell; and

outlet means which extend below said lower head concentric with said outlet means for removing the effluent from said catalyst bed.

2. An ammonia converter, comprising:

a vessel which includes a bottom head, a main shell and an upper head;

an internal annular catalyst bed mounted to said main shell, said bed being spaced from and parallel to said main shell;

an interchanger mounted in said vessel which includes a vertically positioned tube bundle;

gas transfer means for passing gas in one direction axially through said vessel and includes the tube side of said tube bundle and a transfer conduit flexibly joined to said interchanger which extends through and is spaced from said annular catalyst bed;

cover means extending from said gas transfer means which covers said annular catalyst bed;

synthesis gas transfer means including inlet means in said top head for introducing synthesis gas at the top of said vessel and diverting said gas by said cover means into the space between said main shell and said outer cylindrical wall of said catalyst bed; and

catalyst bed transfer means including outlet means in said bottom head for removing said catalyst bed effluent and contacting the outside of said tube bundle before passing through said outlet means.

5. An ammonia converter, comprising:

a vessel which includes a bottom head, a main cylindrical shell and a top head;

an internal annular catalyst bed formed by an outer cylindrical wall mounted on an internal head supported by gussets mounted on said bottom head to form an annular space between said catalyst bed and said shell and an inner cylindrical retainer wall;

an interchanger mounted within the annulus of said catalyst bed and spaced from said bed which includes a vertically positioned tube bundle;

gas transfer means which includes inlet means in said top head for passing gas downwardly through the tubes of said tube bundle and between said internal head and said bottom head to said annular space between said catalyst bed and said shell; and

effluent transfer means for passing the major portion of the catalyst bed effluent on the shell side of said tube bundle and then upwardly out of said vessel.

4,346,061

PURIFICATION OF AMMONIUM TUNGSTATE SOLUTIONS

John B. Goddard, Grand Island, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1981, Ser. No. 249,504

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—56 **9 Claims**

1. In the evaporative crystallization of ammonium tungstate solution containing dissolved silicon and phosphorus impurities to obtain ammonium paratungstate, the improvement which comprises adding a soluble aluminum salt or aluminum hydroxide to the ammonium tungstate solution in amounts such that the addition provides about 0.3 to 4 parts by weight of aluminum to 1 part by weight of dissolved silicon expressed as SiO_2 and digesting the resultant solution at a temperature of at least about 45° C. for a period of at least about one half hour immediately prior to crystallization of ammonium paratungstate and then removing precipitated silicon and phosphorus impurities and recovering the crystallized ammonium paratungstate whereby the yield of ammonium paratungstate is increased while at the same time the aluminum content is maintained at a level no greater than about 20 ppm aluminum.

9. Method for recovering tungsten from tungsten ores and concentrates containing molybdenum, silicon and phosphorus impurities, which comprises: digesting the tungsten ore or concentrate with an alkaline solution, treating the digested solution with an acid to precipitate molybdenum and silicon impurities, subjecting the acidified solution to solvent extraction followed by stripping with aqueous ammonium to form an ammonium tungstate solution, adding a soluble aluminum salt or aluminum hydroxide to the ammonium tungstate solution in amounts such that the addition provides about 0.3 to 2 parts by weight of aluminum to 1 part by weight of dissolved silicon as SiO_2, digesting the resultant solution at a temperature of between about 45° C. and 61° C. for a period of between about 0.5 and 3 hours and then recovering crystallized ammonium paratungstate while at the same time removing precipitated silicon and phosphorus, the ammonium paratungstate containing no more than about 20 ppm aluminum.

4,346,062

CHLORINATION LEACHING WITH SULFUR EXTRACTION FOR RECOVERY OF ZINC VALUES

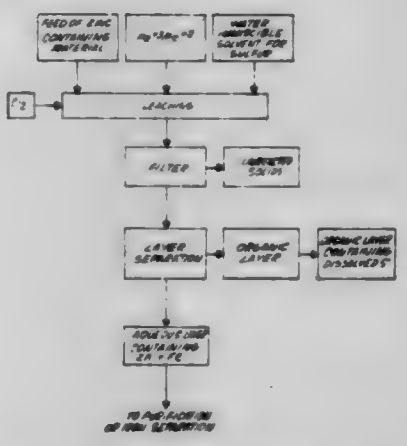
Robert W. Au, Mission Viejo, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 224,996, Jan. 14, 1981, abandoned, which is a division of Ser. No. 32,662, Apr. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 905,127, May 12, 1978, abandoned. This application Feb. 13, 1981, Ser. No. 234,128

The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.

Int. Cl.³ C25C *1/16*; C22B *19/22*; C01G *9/04*; C01B *17/06*

U.S. Cl. 423—109 **5 Claims**



1. A process for recovering zinc values from zinc sulfide-containing material, comprising the steps of:

(a) partially chlorinating zinc sulfide-containing material in an aqueous medium including recycle solution from step (i) and an aqueous chlorination leaching solution containing elemental chlorine and ferric chloride, in the presence of a water immiscible solvent for sulfur at a temperature below the melting point of sulfur and at about atmospheric pressure, to form an aqueous layer containing zinc chloride, iron, chlorine and partially chlorinated solid residue and a water-immiscible solvent layer containing sulfur;

(b) separating the aqueous layer and water-immiscible solvent layer from the solid residue,

(c) separating the aqueous layer containing zinc chloride, iron and chlorine from the immiscible solvent layer containing sulfur;

(d) treating the separated aqueous layer with elemental chlorine and an alkali to precipitate ferric hydroxide;

(e) separating precipitated ferric hydroxide from the aqueous layer;
(f) recovering zinc values from the aqueous layer;
(g) dissolving the precipitated ferric hydroxide in an acidic medium to form a secondary leaching solution;
(h) leaching additional zinc values from the solid residue with the secondary leaching solution in the presence of chlorine to form a recycle solution containing zinc chloride and iron chloride; and
(i) returning the recycle solution to step (a).

4,346,063

DESULFURIZATION OF HOT GAS WITH CERIUM OXIDE

Robert P. Cahn, Millburn, and John M. Longo, New Providence, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 16, 1981, Ser. No. 243,720
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—230 **19 Claims**

1. A process for removing H_2S from a gas stream comprising H_2S and oxygen wherein said oxygen is present in said gas in an amount at least equal to that stoichiometrically required to convert the H_2S to cerium oxysulfate, said process comprising contacting said gas stream with cerium oxide at a temperature of at least about 350° C. to produce a gas of reduced H_2S content.

4,346,064

DECONTAMINATION OF COMBUSTION GASES IN FLUIDIZED BED INCINERATORS

Albert M. Leon, Mamaroneck, N.Y., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Dec. 12, 1980, Ser. No. 215,579
Int. Cl.³ B01J *8/00*; C01B *17/00*
U.S. Cl. 423—244 **7 Claims**

1. A process for effectively removing sulfur and sulfur oxide atmospheric pollutants from a gaseous stream produced by the incineration of one or more combustible feed materials containing either molecular or combined sulfur or both comprising, passing said stream upwardly through a high temperature contact zone defined by a fluidized bed of countercurrent, descending sorbent particulate material capable of combining at the high temperature with said pollutants to provide a solid adduct, the opposed points of entry of said sorbent particulate and combustible feed materials respectively being such that said sorbent and combustion products of said combustible feed materials traverse at least about 90% of the vertical extent of said contact zone and wherein concentration gradients are maintained vertically.

4,346,065

PROCESS FOR THE MANUFACTURE OF FINELY DISPERSED SPARINGLY SOLUBLE SALTS OF OXYACIDS OF PHOSPHORUS

Alexander Maurer; Renate Adrian, both of Hürth, and Gero Heymer, Erftstadt-Liblar, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 2, 1981, Ser. No. 222,079
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951126
Int. Cl.³ C01B *15/16, 25/26*; C04B *11/22*
U.S. Cl. 423—305 **7 Claims**

1. In a process for the manufacture of a finely dispersed, sparingly soluble divalent metal salt of an oxyacid of phosphorus, having a maximum particle size of 20 μm, by reacting a compound of a divalent metal with the oxyacid of phosphorus or an alkali metal or ammonium salt thereof, the improvement which comprises reacting an at least 5% by weight aqueous solution or suspension of a compound of a divalent metal selected from the group consisting of Mg, Ca, Sr, Ba, Mn, Zn, Cu, Cd, Pb, Sn, Co and Ni, while maintaining a pH range of between 3 and 9 and while stirring, with an at least 2 mol% solution of at least one trivalent metal selected from the group consisting of Al, Fe
and Cr in the oxyacid of phosphorus or with an at least 2 mol% solution of at least one trivalent metal selected from the group consisting of Al, Fe and Cr in the oxyacid of phosphorus and an aqueous solution of an alkali metal or ammonium salt of the oxyacid of phosphorus, the compound of the divalent metal and that of the trivalent metal being used in the reaction mixture in a molar ratio of from 9:1 to 50:1, with the resultant formation of the finely dispersed divalent metal salt of the oxyacid of phosphorus, at least 90% of the particles of which salt have a size between 0.05 and 7 μm, and separating and drying the precipitated salt.

4,346,066

PURIFICATION OF WET-PROCESS PHOSPHORIC ACID

Reinhard Gradl, Hürth; Klaus Schrödter, Cologne; Klaus-Peter Ehlers, Erftstadt, and Wolfgang Scheibitz, Frankfurt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,365
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2926943
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—321 S **9 Claims**

1. In the process for purifying an aqueous solution of phosphoric acid which comprises the steps of extracting countercurrently with respect to each other an organic solvent and an aqueous phosphoric acid solution with the resulting formation of an organic and an aqueous phase, in a plurality of extraction zones each consisting of a mixing zone and a separating zone, said organic solvent being immiscible or partially miscible with water, separating an organic phosphoric acid extract obtained from a remaining aqueous raffinate, and recovering purified phosphoric acid from the organic phosphoric acid extract, the improvement which comprises using the aqueous phase as the continuous phase and dispersing therein the organic phase by filling the mixing zones with the aqueous phase prior to starting the extraction, feeding continuously to said extraction zones the organic solvent and the phosphoric acid solution in a volume ratio of at least 2:5 to 1, and providing and maintaining within the mixing zones of said extraction zones the organic and the aqueous phase at a volume ratio of at most 1 to 1.

4,346,067

METHOD OF ION EXCHANGE ZEOLITES

William A. Wachter, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 29, 1981, Ser. No. 278,163
Int. Cl.³ C01B *33/20, 33/28*
U.S. Cl. 423—326 **11 Claims**

1. A method of cation exchanging an alkali metal cation-containing crystalline metallosilicate zeolite which comprises the steps of:
(a) contacting said zeolite with an ion exchange medium comprising an ammonium ion, urea, and water;
(b) heating the resulting mixture to a temperature and for a time sufficient to evaporate said water and to solidify the remaining mixture, and
(c) recovering an ammonium exchanged crystalline metallosilicate zeolite having a decreased content of alkali metal cation.

4,346,068

PROCESS FOR PREPARING HIGH-PURITY α-TYPE SILICON NITRIDE

Kiyoshi Kasai; Yoshitaka Kubota, and Takaaki Tsukidate, all of Shin Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin Nanyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,671
Claims priority, application Japan, Jan. 11, 1980, 55-1404
Int. Cl.³ C01B *21/068*
U.S. Cl. 423—344 2 Claims

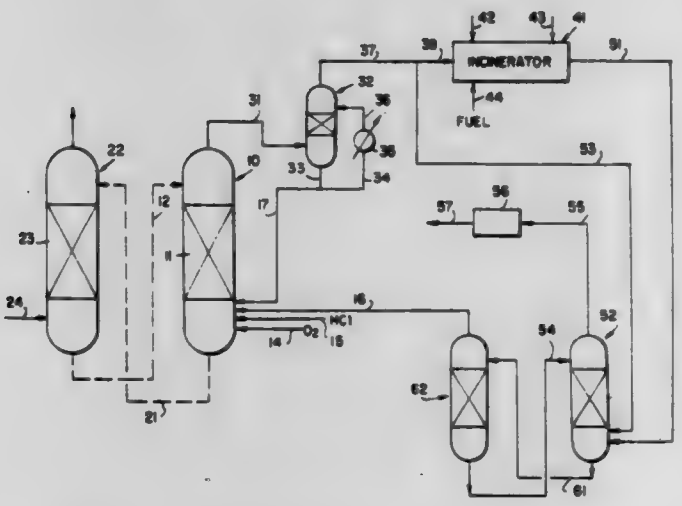
1. A process for preparing silicon nitride which comprises heating a nitrogen-containing silane compound at a temperature in the range of about 1,300° C. to about 1,600° C. in an ammonia gas atmosphere in a heating furnace made of a metal selected from the group consisting of molybdenum, zirconium, tantalum and alloys thereof to obtain a high-purity α-type silicon nitride, said nitrogen-containing silane compound obtained by reacting silicon tetrachloride with ammonia in the gaseous phase in an inert atmosphere at a temperature of from −30° C. to 70° C.

4,346,069

RECOVERY OF CHLORINE VALUES IN INTEGRATED PROCESS FOR OXYCHLORINATION AND COMBUSTION OF CHLORINATED HYDROCARBONS

Herbert Riegel, Maplewood, and Chiung-Yuan Huang, Glen Ridge, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jan. 26, 1981, Ser. No. 228,462
Int. Cl.³ C01B *7/01*; C07C *21/00*
U.S. Cl. 423—488 3 Claims



1. A process for integrating an oxychlorination reaction with combustion of chlorinated hydrocarbons, comprising:

recovering a gas containing hydrogen chloride and water vapor from an oxychlorination reaction;

combusting a chlorinated organic compound to produce a combustion gas including chlorine values from the chlorinated organic compound essentially as hydrogen chloride;

simultaneously treating effluent from the combusting and said gas from the oxychlorination reaction to recover anhydrous hydrogen chloride therefrom; and

employing recovered anhydrous hydrogen chloride in the oxychlorination reaction.

4,346,070

TEST FOR TERATOGENIC POTENTIAL EMPLOYING HYDRA

E. Marshall Johnson, Philadelphia, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Filed Apr. 11, 1980, Ser. No. 139,269
Int. Cl.³ A61K *49/00*; C12Q *1/00*
U.S. Cl. 424—9 7 Claims

1. A method of determining the mammalian teratogenic potential of a compound (agent) of unknown mammalian teratogenic effect, comprising the steps of:

(a) providing a plurality of artificial embryos of Hydra, said artificial embryos comprising Hydra cell pellets;

(b) chronically exposing said embryos to varying preselected concentrations of said compounds;

(c) observing said chronically exposed embryos over time to estimate a minimum teratogenic concentration of said compound required to interfere with the development of said embryo after a length of time;

(d) comparing said minimum teratogenic concentration to a minimum adult reference concentration of said compound which is toxic to normal adult Hydra;

whereby the mammalian teratogenic potential of said compound is indicated by the degree of difference between said teratogenic and adult reference concentrations.

4,346,071

REHYDRATED SILICA GEL DENTIFRICE ABRASIVE

Anthony L. Dent, Bala Cynwyd; M. Robert Derolf, Pottstown, both of Pa., and Elliot P. Hertzenberg, Wilmington, Del., assignors to PQ Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 90,167, Nov. 1, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,083
Int. Cl.³ A61K *7/16*
U.S. Cl. 424—49 4 Claims

1. In the known multi-component dentifrice characterized in that silica gel is the abrasive cleansing agent the improvement consisting of a rehydrated silica gel abrasive cleansing agent which has a radioactive dentin abrasion (RDA) value of at least 30 units/g of anhydrous SiO_2 in a test wherein calcium pyrophosphate has an RDA value of 10 units per gram, said rehydrated silica constituting 5 to 80% of the weight of the dentifrice, having an average particle size of 5 to 18 μm, containing 25 to 45% by weight of water and being prepared by drying a silica hydrogel to a water content of 5 to 15% by weight and rehydrating said gel to 25 to 45% by weight of water.

4,346,072

DENTIFRICES

Eric Baines, Flixton, and John F. Carr, Knutsford, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 50,935, Jun. 21, 1979, abandoned, which is a continuation of Ser. No. 871,677, Jan. 23, 1978, abandoned, which is a continuation of Ser. No. 766,658, Feb. 8, 1977, abandoned, which is a continuation of Ser. No. 640,663, Dec. 15, 1975, abandoned. This application Sep. 12, 1980, Ser. No. 186,804
Claims priority, application United Kingdom, Dec. 13, 1974, 53932/74; May 29, 1975, 23454/75; May 29, 1975, 23455/75
The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.
Int. Cl.³ A61K *7/16*
U.S. Cl. 424—49 5 Claims

1. An aqueous toothpaste comprising milled alpha-alumina trihydrate abrasive particles produced by milling Bayer process alkaline alpha-alumina trihydrate in the presence of a surface-modifying agent, wherein said surface-modifying agent is a carboxylic acid which contains a polar and a non-polar group.

4,346,073

HEPATITIS B IMMUNE GLOBULIN USED TO INACTIVATE HEPATITIS B VIRUS IN INJECTABLE BIOLOGICAL PRODUCTS

David L. Aronson; Edward Tabor, and Robert J. Gerety, all of Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 11, 1980, Ser. No. 139,236
Int. Cl.[3] A61K *39/42*
U.S. Cl. 424—86 5 Claims

1. A method of preventing the transmission of hepatitis B by injectable biological products made from pooled plasma comprising treatment of the biological products with an effective amount of hepatitis B immune globulin in vitro prior to administration to laboratory animals and humans.

4,346,074

PASTEURELLOSIS VACCINES

Neil J. L. Gilmour, Falkirk; William B. Martin, Longniddry; James M. Sharp, Haddington, all of Scotland; Dennis A. Thompson, Hayes, England, and Peter W. Wells, Haddington, Scotland, assignors to National Research Development Corp., London, England

PCT No. PCT/GB79/00141, § 371 Date Apr. 23, 1980, § 102(e) Date Apr. 23, 1980, PCT Pub. No. WO80/00412, PCT Pub. Date Mar. 20, 1980
PCT Filed Aug. 16, 1979, Ser. No. 194,122
Claims priority, application United Kingdom, Aug. 24, 1978, 34525/78
Int. Cl.[3] A61K *39/00, 39/102*
U.S. Cl. 424—92 22 Claims

1. A pasteurellosis vaccine comprising antigenic material derived from the A1 and A2 serotypes of *Pasteurella haemolytica,* wherein the A1 serotype antigenic material comprises capsular extract and the A2 serotype antigenic material comprises heat-killed whole organisms.

13. A process for the production of a pasteurellosis vaccine comprising: cultivating organisms of the A1 and A2 serotype of *P. haemolytica;* preparing antigenic material of the A2 serotype by heat-killing whole organisms of the A2 serotype; preparing antigenic material of the A1 serotype by forming a capsular extract from organisms of the A1 serotype; and admixing said antigenic materials of the A1 and A2 serotypes.

4,346,075

ANTIBIOTIC DC-11 AND PROCESS FOR PRODUCTION THEREOF

Fusao Tomita; Tatsuya Tamaoki; Nobuo Nakamura, all of Machida; Shuji Okubo, Matsudo; Kunikatsu Shirahata, Machida; Masaji Kasai, Fujisawa, and Tetsuo Oka, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 31,912, Apr. 20, 1979, abandoned. This application Apr. 8, 1981, Ser. No. 252,062
Claims priority, application Japan, Jun. 14, 1980, 55-80482; Aug. 20, 1980, 55-114373; Sep. 18, 1980, 55-128605
Int. Cl.[3] A61K *35/00*
U.S. Cl. 424—120 4 Claims

1. A composition of matter, DC-11, characterized by:
Melting point: 225°-228° C. (decomposition)
Elementary analysis: H=6.9%, C=59.0%, N=2.0%
Infrared absorption spectrum measured in KBr tablet substantially as shown in FIG. 1;
Ultraviolet absorption spectrum in methanol substantially as shown in FIG. 2;
Proton magnetic resonance spectrum in $CDCl_3$ substantially as shown in FIG. 3;
Carbon magnetic resonance spectrum in $CDCl_3$ substantially as shown in FIG. 4; and
Specific optical rotation: $[\alpha]_D^{20} = -86.3$ (C=1.0, acetone).

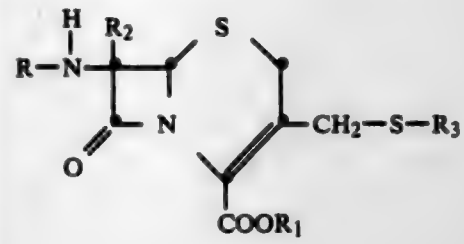
4,346,076

BIS-TETRAZOYLMETHYL SUBSTITUTED CEPHALOSPORIN ANTIBIOTICS

Allen S. Katner, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 17, 1980, Ser. No. 187,859
Int. Cl.[3] A61K *31/545;* C07D *501/56*
U.S. Cl. 424—246 32 Claims

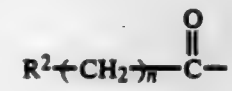
1. A compound of the formula



wherein R is an acyl group of the formula



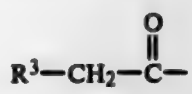
wherein R^1 is C_1-C_4 alkyl or C_1-C_4 alkyl substituted by halogen or cyano; or R is an aroyl or aralkanoyl group of the formula



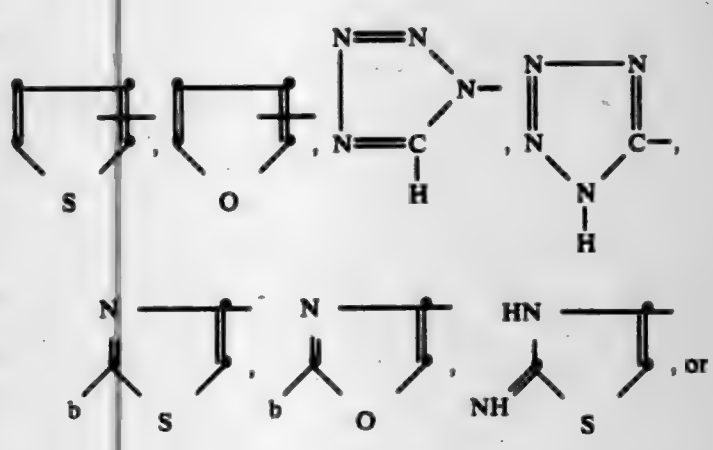
wherein R^2 is phenyl or a mono-substituted phenyl group substituted by halogen, cyano, amino, hydroxy, C_1-C_4 alkyl, C_1-C_4 alkoxy, carboxy, carboxamido, hydroxymethyl, aminomethyl, carboxymethyl, or C_1-C_4 alkoxycarbonylmethyl;
or R^2 is a di- or tri-substituted phenyl group of the formula



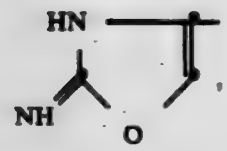
wherein a, a', and a'' independently are hydrogen, halogen, hydroxy, C_1-C_4 alkoxy, provided that only one of a, a' and a'' may be hydrogen, and n is 0 or 1;
or R is a heteroarylalkanoyl group of the formula



wherein R^3 is a group of the formula

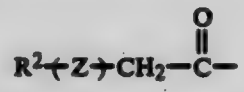


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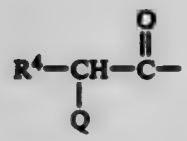
wherein each b is hydrogen, amino, protected-amino, C_1–C_3 alkyl or phenyl;

or R is an aryloxyacetyl or arylthioacetyl group of the formula

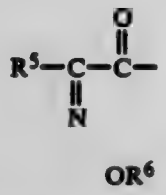


wherein R^2 has the same meanings as defined above and Z is O or S;

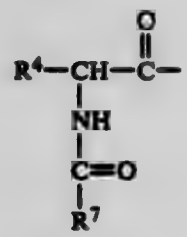
or R is a substituted aralkanoyl or heteroarylalkanoyl group of the formula



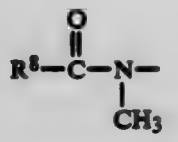
wherein R^4 is R^2 as defined above, and in addition is 1,4-cyclohexadienyl, thienyl or furyl, and Q is hydroxy, formyloxy, carboxy, sulfo, or amino; or R is an oximino-substituted aralkanoyl or heteroarylalkanoyl group of the formula



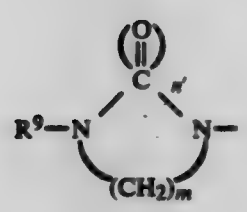
wherein R^5 is R^2 and R^3 as each is defined above, and R^6 is hydrogen, or C_1–C_4 alkyl, or R is a group of the formula



wherein R^4 has the same meanings defined above and R^7 is phenyl substituted by from 1 to 3 hydroxy groups, or pyridyl substituted by from 1 to 3 hydroxy groups, or a group of the formula



wherein R^8 is C_1–C_4 alkylamino, phenyl, halophenyl, furyl, styryl, nitrostyryl or halostyryl; or R^7 is a group of the formula

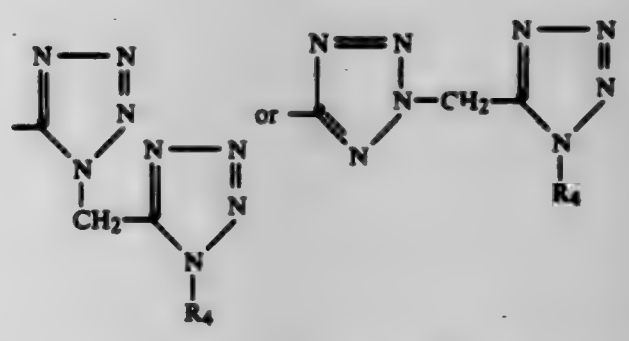


wherein n′ is 1 or 2 and m is 2 or 3, with the limitation that when n′ is 2, m is 2, and R^9 is hydrogen, C_1–C_3 alkyl, C_2–C_4 alkanoyl, or C_1–C_3 alkylsulfonyl;

R_1 is hydrogen or a carboxy protecting group;

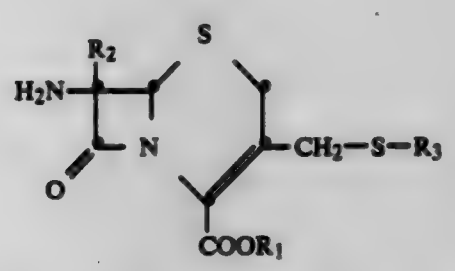
R_2 is hydrogen or methoxy;

R_3 is a bis-tetrazolylmethyl group of the formula

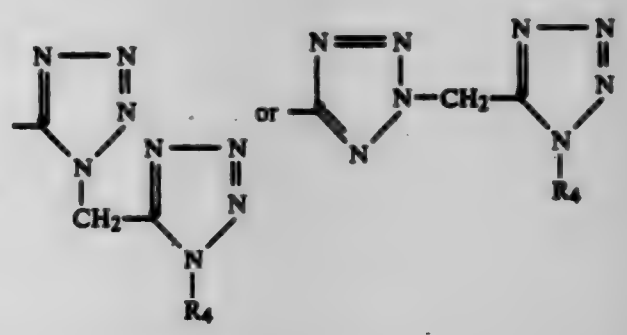


wherein R_4 is hydrogen, or C_1–C_3 alkyl; and when R_1 is hydrogen the pharmaceutically acceptable, non-toxic salts thereof.

22. The compound of the formula



wherein R_1 is hydrogen or a carboxy-protecting group; R_2 is hydrogen or methoxy; and R_3 is a bis-tetrazolylmethyl group of the formula



wherein R_4 is hydrogen or C_1–C_3 alkyl.

26. An antibiotic pharmaceutical formulation comprising an effective amount of an antibiotic compound of claim 1, wherein R_1 is hydrogen or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

4,346,077

METHOD FOR REDUCING INCIDENCE OF PERIPARTURIENT DISORDERS IN COWS

Darwin G. Braund, Fayetteville; Thomas J. Fronk, Newfield, both of N.Y.; Richard L. Goings, Nashua; John W. Peters, Manson, both of Iowa, and Robert L. Steele, Syracuse, N.Y., assignors to Agway, Inc., Syracuse, N.Y.

Continuation-in-part of Ser. No. 132,483, Mar. 21, 1980, abandoned. This application Apr. 13, 1981, Ser. No. 253,374

Int. Cl.[3] A61K *33/06, 33/10*

U.S. Cl. 424—156 8 Claims

1. A nutritional method for reducing the occurrence of milk fever and retained placenta in periparturient cows consisting essentially of administering to each cow a single, forced, oral dosage of nutritional supplement including between about 18 and 36 grams of readily absorbable calcium within a period of 0 to 8 hours after parturition.

4,346,078

NOVEL ANTICOAGULANT AGMATINE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Sandor Bajusz; Erzsebet Szell nee Hasenöhrl; Eva Barabas; Daniel Bagdy, and Zsuzsanna Mohai nee Nagy, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Mar. 6, 1981, Ser. No. 241,356

Claims priority, application Hungary, Oct. 7, 1980, GO 1449

Int. Cl.[3] A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 8 Claims

1. An agmatine compound or a pharmaceutically effective salt thereof of the formula I:

X—Pro—Agm-(HB)$_n$

wherein

X is an α-amino acid moiety of D-configuration, having a phenyl, phenyl-lower-alkyl, or phenyl-lower alkyl wherein the lower alkyl is interrupted by an oxygen atom,

Pro is an L-proline residue,

Agm is an agmatine group,

B is chloride and

n is 0, 1 or 2.

4,346,079

SOLID ANTIPERSPIRANT COMPOSITION AND PROCESS FOR ITS PREPARATION

Ernst-Ludwig Roehl, Naarden, Netherlands, assignor to Naarden International N.V., Naarden-Bussum, Netherlands

Filed Nov. 3, 1980, Ser. No. 203,374

Claims priority, application Netherlands, Nov. 7, 1979, 7908149

Int. Cl.[3] A61K *7/34, 7/36, 7/38*

U.S. Cl. 424—65 10 Claims

1. In a solid transparent gelled antiperspirant composition comprising

(a) 5–80% by weight of a lower monohydric alcohol,

(b) 5–75% by weight of a dihydric alcohol, a polyhydric alcohol, a polyglycol or a polyglycol ether having at least one hydroxyl radical, or a mixture of two or more thereof,

(c) 0.5–10% by weight of dibenzaldehydemonosorbitol acetal,

(d) 0–15% by weight of a monoalkylolamide or dialkylolamide of a higher fatty acid,

(e) 0–10% by weight of a propylene-/ethylene glycol polycondensate having an average molecular weight of at least 500 and composed of at least 60% propyleneoxygroups,

(f) 2–20% by weight of a metal antiperspirant compound, and

(g) 0–1% by weight of a higher fatty acid, wherein the improvement comprising incorporating 0.1 to 25% by weight of an oleaginous compound to lessen stickiness of said composition, said oleaginous compound selected from the group consisting of an ester of a monohydric alcohol with a monobasic carboxylic acid, an ester of a monohydric alcohol with a polybasic carboxylic acid, an ester of a polyhydric alcohol with a monobasic carboxylic acid, an ester of a polyhydric alcohol with a polybasic carboxylic acid, a siloxane having a viscosity of 0.01 to 25 centistokes, a hydrocarbon having a boiling point of a maximum of 350° C. at one atmosphere pressure, saturated fatty alcohols being liquid at room temperature, unsaturated fatty alcohols being liquid at room temperature, and a mixture of two or more compounds of said group.

4,346,080

CYCLOHEXYL PHENETHYLETHER USED FOR COMBATTING TOBACCO BEETLES

Jacob Kiwala, Brooklyn, N.Y.; Richard J. Tokarzewski, Keyport, N.J.; Frederick L. Schmitt, Holmdel, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

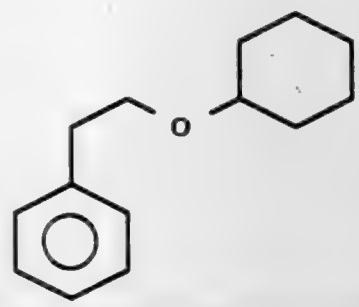
Division of Ser. No. 192,238, Sep. 30, 1980, Pat. No. 4,306,096. This application May 28, 1981, Ser. No. 267,905

The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.

Int. Cl.[3] A01N *25/00*

U.S. Cl. 424—84 2 Claims

1. A method of attracting and destroying *Lasioderma Sericorne* (F.) comprising applying to an area contaminated with said *Lasioderma Serricorne* (F.) said cyclohexyl phenethylether having the structure:



said attractant being applied to said area in an amount sufficient to attract said *Lasioderma Serricorne* (F.).

4,346,081

COMPOSITIONS FOR INGESTION BY RUMINANTS TO REMOVE PROTOZOA, PROCESS FOR THEIR PREPARATION AND USE OF THESE COMPOSITIONS FOR THE FEEDING OF RUMINANTS

Ignace Gago, Braine-l'Alleud, and Guillaume Coppens, Brussels, both of Belgium, assignors to Interox (Societe Anonyme), Brussels, Belgium

Filed Jan. 9, 1981, Ser. No. 223,775

Claims priority, application France, Jan 11, 1980, 80 00774

Int. Cl.[3] A61K *33/40*

U.S. Cl. 424—130 10 Claims

1. Composition for ingestion by ruminants and having a protozoa removing effect comprising an effective protozoa removing amount of a peroxide of a metal of group 2 of the Periodic Table in a ruminant feed.

4,346,082

METHOD OF EMPLOYING THERAPEUTIC COMPOSITION COMPRISING AMMONIUM OR SUBSTITUTED AMMONIUM COMPOUNDS FOR TREATMENT OF ALCOHOLISM

Emanuel Revici, New York, N.Y., assignor to The Vinoxen Company, New York, N.Y.

Continuation of Ser. No. 109,699, Jan. 4, 1980, abandoned, which is a continuation of Ser. No. 2,591, Jan. 11, 1979, abandoned, which is a continuation of Ser. No. 839,567, Oct. 5, 1977, abandoned. This application Feb. 27, 1981, Ser. No. 239,091

Int. Cl.³ A61K *33/04, 33/02, 31/19*

U.S. Cl. 424—162 14 Claims

1. A method for treating alcoholism or for eliminating, reducing or preventing alcohol intoxication or the manifestation of alcohol intoxication in a host, which comprises administering thereto a therapeutic composition comprising a non-toxic compound containing a cation selected from the group consisting of ammonium and substituted ammonium, and wherein the anion portion of the compound contains sulfur, said compound having a pH greater than about 5.0 when in aqueous solution at a concentration of 5 grams per 100 grams of solution, in an amount sufficient to eliminate, reduce or prevent alcohol intoxication or the manifestations of alcohol intoxication.

4,346,083

BIOLOGICALLY ACTIVE AMIDES

Samuel Wilkinson, Beckenham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 927,271, Jul. 24, 1978, Pat. No. 4,244,944. This application Sep. 25, 1980, Ser. No. 191,150

Claims priority, application United Kingdom, Nov. 24, 1977, 48980/77

Int. Cl.³ A61K *37/00;* C07C *103/52*

U.S. Cl. 424—177 7 Claims

1. Tyr.D-Met. Gly. Phe($4NO_2$). $ProNH_2$.

4,346,084

PROCESS AND COMPOSITION FOR TREATING DISORDERS BY ADMINISTERING LITHIUM AND CHOLINE

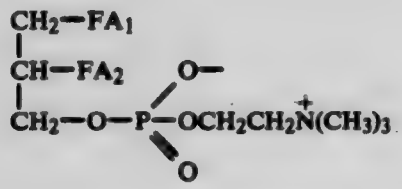
John H. Growdon, Brookline, and Richard J. Wurtman, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 126,124, Feb. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 88,227, Oct. 25, 1979, abandoned, which is a continuation of Ser. No. 847,967, Nov. 2, 1977, abandoned. This application Jan. 30, 1981, Ser. No. 229,802

Int. Cl.³ A61K *31/265, 31/685*

U.S. Cl. 424—199 10 Claims

1. A composition of matter comprising (a) a physiologically acceptable source of lithium in an amount to treat manic-depressive illness which, when administered to a human causes side effects associated with inadequate release of brain acetylcholine and (b) an amount of a compound effective to raise the bloodstream choline level of a patient to between about 10 and 50 nanomoles/ml and to release adequate amounts of brain acetylcholine selected from the group consisting of choline, a salt of choline, lysolecithin, an acyglycerophosphocholine, having the formula:



wherein FA_1 and FA_2 can be the same or different and are fatty acid residues having from 6–26 carbon atoms, glycerophosphatidyl choline and mixtures thereof.

4,346,085

PROCESS AND COMPOSITION FOR TREATING DISORDERS BY ADMINISTERING AMPHETAMINE AND CHOLINE

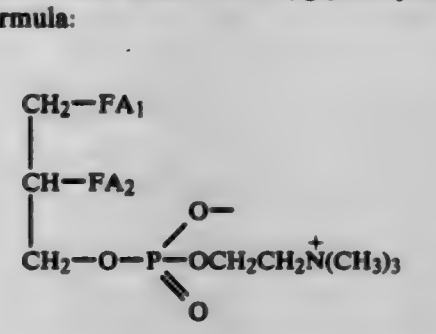
John H. Growdon, Brookline, and Richard J. Wurtman, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 126,124, Feb. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 88,227, Nov. 25, 1979, abandoned, which is a continuation of Ser. No. 847,967, Nov. 2, 1977, abandoned. This application Jan. 30, 1981, Ser. No. 229,812

Int. Cl.³ A61K *31/131, 31/445, 31/685*

U.S. Cl. 424—199 12 Claims

1. A composition of matter comprising (a) a drug which, when administered to a human causes side effects associated with inadequate release of brain acetylcholine, said drug being selected from the group consisting of amphetamine and methylphenidate and (b) an amount of a compound effective to raise the bloodstream choline level of a patient to between about 10 and 50 nanomoles/ml and to release adequate amounts of brain acetylcholine selected from the group consisting of choline, a salt of choline, lysolecithin, an acyglycerophosphocholine having the formula:



wherein FA_1 and FA_2 can be the same or different and are fatty acid residues having from 6–26 carbon atoms, glycerophosphatidyl choline and mixtures thereof.

4,346,086

CORTICOSTEROID-CONTAINING CREAM

Henning Sattler, Hamburg, and Georg A. Ulex, Moorrege, both of Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 9, 1981, Ser. No. 271,884

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—243 22 Claims

1. A corticosteroid-containing cream comprising

(a) 0.05–0.5 parts fluocortolone

(b) 2.5–20 parts fatty acid sorbitan esters and/or mixtures of fatty acid mono- and diglycerides

(c) 1–5 parts fatty acid monoglycerides

(d) 1–10 parts beeswax

(e) 5–25 parts liquid paraffin

(f) 25–75 parts petroleum jelly and water ad 100 parts,

all parts being by weight.

4,346,087

ANTIBACTERIAL SURFACE ACTIVE AGENT CONTAINING AZAALKENELACTAM

Hiroyoshi Hamanaka, Yachio, and Mamoru Shinano, Negishi, both of Japan, assignors to Toho Chemical Industry Co., Ltd., Japan

PCT No. PCT/JP80/00055, § 371 Date Dec. 1, 1980, § 102(e) Date Dec. 1, 1980, PCT Pub. No. WO80/02155, PCT Pub. Date Oct. 16, 1980

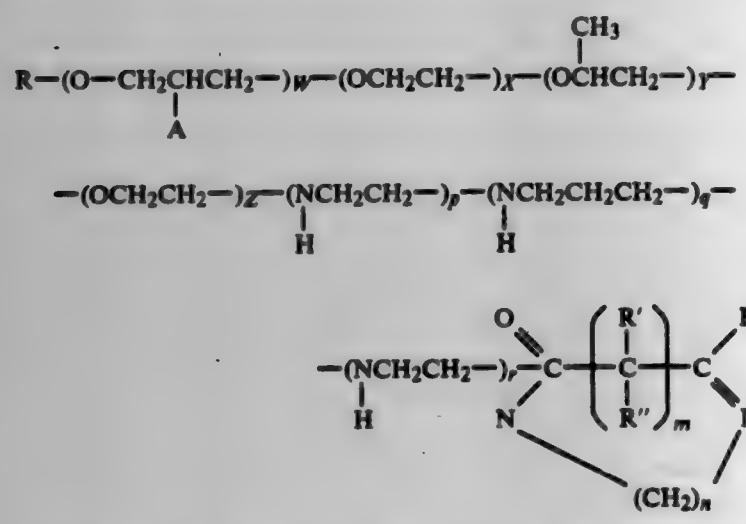
PCT Filed Mar. 28, 1980, Ser. No. 224,520

Claims priority, application Japan, Mar. 30, 1979, 54/38254

Int. Cl.[3] A61K *31/55;* C07D *243/08*

U.S. Cl. 424—244 21 Claims

1. A cyclic amide compound of the formula



wherein R is an alkyl group, alkenyl group, monoalkylphenyl group, monoalkylbenzyl group, hydroxyalkyl group, alkylcarbonyl group, alkenylcarbonyl or hydroxysubstituted alkyl- or alkenyl-carbonyl group having 8 to 22 carbon atoms in total, R′, R″ and R‴ are hydrogen atoms or methyl groups, A is hydrogen atom or methyl group, $0 \leqq W \leqq 1$, $0 \leqq X+Z \leqq 3$, $0 \leqq Y \leqq 3$, $0 \leqq p+q+r \leqq 3$, m=1 or 2, and n=2 or 3; said compound may assume a structure in which, if necessary, the nitrogen atoms, except forthe amide grouping, may combine with a carboxylate radical by covalent bond or to add to a carboxylate.

21. An antibacterial surface active composition comprising water and an antibacterially effective amount of a cyclic amide compound in accordance with claim 1.

4,346,088

THIAZOLINE DERIVATIVES

Hans-Jochen Lang, Hofheim am Taunus; Bernhard Seuring, Frankfurt am Main, and Ernold Granzer, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

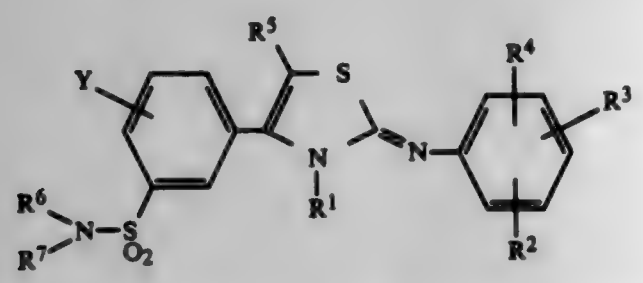
Filed Jul. 1, 1980, Ser. No. 165,218

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926771

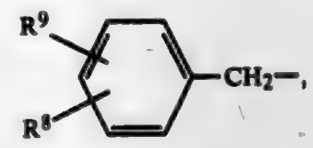
Int. Cl.[3] A61K *31/425;* C07D *277/38, 417/12*

U.S. Cl. 424—248.51 13 Claims

1. Thiazoline derivative of the formula



in which R^1 denotes alkyl of 1 to 8 carbon atoms, cycloalkyl of 3 to 8 carbon atoms or alkenyl of 3 to 4 carbon atoms; R^2, R^3 and R^4 are identical or different and denote hydrogen, halogen, alkyl or alkoxy of 1 to 4 carbon atoms, dimethyl- or diethylamino or trifluoromethyl, or any two of R^2, R^3 and R^4 together denote methylenedioxy or ethylenedioxy; R^5 denotes hydrogen or alkyl of 1 to 3 carbon atoms; R^6 denotes hydrogen or alkyl of 1 to 6 carbon atoms; R^7 denotes hydrogen, alkyl of 1 to 12 carbon atoms, cycloalkyl of 3 to 12 carbon atoms, allyl, phenethyl or a benzyl of the formula



in which R^8 and R^9 are identical or different and denote hydrogen, methyl, chlorine or methoxy, or R^6 and R^7 together represent an alkylene chain which can be branched and has a total of up to 8 carbon atoms and in which one methylene group can be replaced by —O— or



and Y denotes hydrogen, halogen or alkyl of 1 to 3 carbon atoms; an alkali or alkaline earth mtal salt thereof, or an acid addition salt thereof with a pharmacologically acceptable acid.

13. Process for the treatment of a lipid metabolism disorder which comprises administering to a patient suffering therefrom a hypolipidaemically effective amount of a compound as defined in claim 1.

4,346,089

1-AZA-4-OXA-BICYCLO [4,4,0]DECANE DERIVATIVES

Michael S. Hadley, Sawbridgeworth; Francis D. King, Newport, and Roger T. Martin, Harlow, all of England, assignors to Beecham Group Limited, England

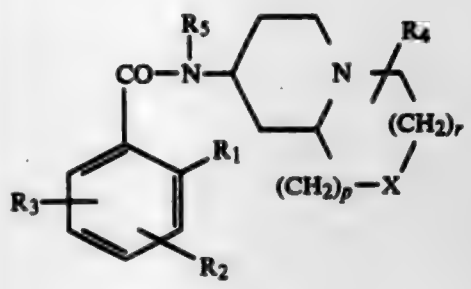
Filed Jan. 28, 1981, Ser. No. 229,191

Claims priority, application United Kingdom, Jan. 30, 1980, 8003154; Sep. 6, 1980, 8028864

Int. Cl.[3] A61K *31/535;* C07D *265/36*

U.S. Cl. 424—248.52 9 Claims

1. A compound of the formula (I):



(I)

and pharmaceutically acceptable salts and N-oxides thereof, wherein:

R_1 is a C_{1-6} alkoxy group;

R_2 and R_3 are the same or different and are hydrogen, halogen, CF_3, C_{1-7}acyl, C_{1-7} acylamino, C_{1-6} alkyl-$S(O)_n$ wherein n is 0, 1 or 2, nitro, C_{1-6} alkoxy, hydroxy, or amino, aminocarbonyl or aminosulphonyl optionally substituted by one or two C_{1-6} alkyl groups;

or R_1 and R_2 taken together are methylenedioxy or ethylenedioxy in which case R_3 is any one of the groups given for R_1 and R_2 above;

R_4 is hydrogen, C_{1-4} alkyl, phenyl or phenyl C_{1-4} alkyl;

R_5 is hydrogen or C_{1-4} alkyl;

X is oxygen atom;

p is 1; and

r is 1.

8. A pharmaceutical composition comprising a compound according to claim 1 in an amount effective for the treatment of

disorders related to impaired gastro-intestinal motility, together with a pharmaceutically acceptable carrier.

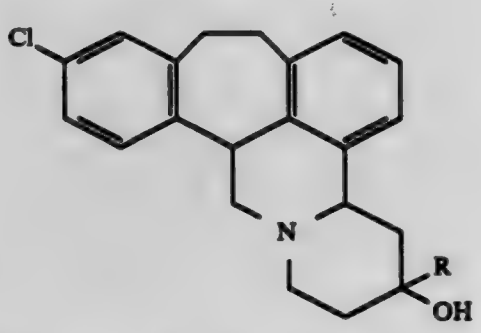
4,346,090

13-CHLORO-BENZOCYCLOHEPTAPYRIDOISOQUINOLINES AND USE AS NEUROLEPTICS

Leslie G. Humber, Dollard des Ormeaux; Francois T. Bruderlein, Guertin Montreal, and Andre A. Asselin, St. Laurent, all of Canada, assignors to Ayerst, McKenna & Harrison Ltd., Montreal, Canada

Filed Jul. 21, 1977, Ser. No. 817,660
Int. Cl.[3] A61K *31/435;* C07D *221/18*
U.S. Cl. 424—258 8 Claims

1. A compound of formula 1



(I)

in which R is lower alkyl selected from the group consisting of straight chain alkyl having up to six carbon atoms and branched chain alkyl having up to four carbon atoms or R is cycloalkyl having 3–6 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

7. A method of producing neuroleptic effects in a mammal which comprises administering to said mammal an effective neuroleptic amount of a compound of claim 1, or a pharmaceutically acceptable salt thereof.

4,346,091

INSECTICIDAL COMBINATIONS

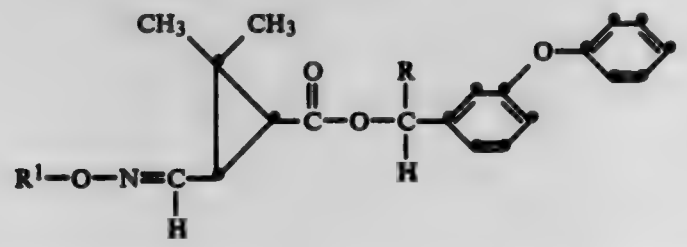
James R. Sanborn, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 153,285, May 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 93,348, Nov. 13, 1979, abandoned. This application Oct. 16, 1981, Ser. No. 311,846
Int. Cl.[3] A01N *37/08, 37/34, 43/42*
U.S. Cl. 424—258 2 Claims

1. An insecticidal composition containing as active ingredient a combination of

(a) 3,4-dihydro-2-(2-propynyl)isocarbostyril, and

(b) a pyrethroid of the formula



(I)

wherein R is hydrogen or cyano (—CN), and R^1 is cycloalkylmethyl of from four to eight carbon atoms, or branched-chain alkyl of from three to ten carbon atoms, with the proviso that pyrethroid is in the (1R,cis) isomeric configuration, in the proportion of from about 0.002 to about 0.05 part by weight of (a) per part by weight of (b).

4,346,092

INSECTICIDAL COMBINATIONS

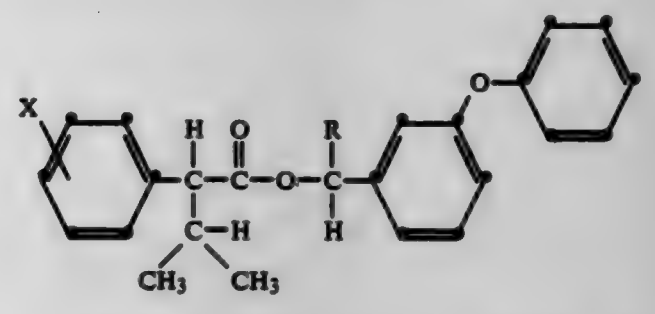
James R. Sanborn, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 153,285, May 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 93,348, Nov. 13, 1979, abandoned. This application Oct. 16, 1981, Ser. No. 311,849
Int. Cl.[3] A01N *37/10, 37/34, 43/42*
U.S. Cl. 424—258 2 Claims

1. An insecticidal composition containing as active ingredient a combination of

(a) 3,4-dihydro-2-(2-pyropynyl)isocarbostyril, and

(b) a pyrethroid of the formula



wherein R is hydrogen or cyano (—CN), and X is chlorine, bromine, fluorine, difluoromethoxy, or alkoxy of from one to four carbon atoms, in the proportion of from about 0.002 to about 0.05 part by weight of (a) per part by weight of (b).

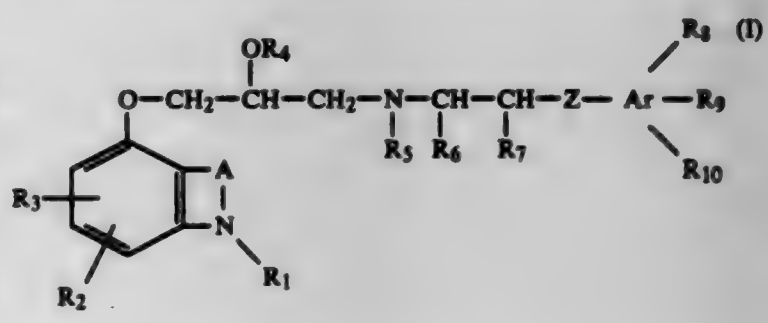
4,346,093

HETEROCYCLIC OXYPROPANOLAMINE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS

Walter-Gunar Friebe, Darmstadt; Helmut Michel, Mannheim; Carl H. Ross, Viernheim; Fritz Wiedemann, Weinheim-Lützelsachsen; Wolfgang Bartsch, Viernheim, and Karl Dietmann, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,190
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905877
Int. Cl.[3] A61K *31/41;* C07D *249/18*
U.S. Cl. 424—269 18 Claims

1. Heterocylic oxypropanol compounds of the formula



(I)

wherein

R_1, R_2, R_6 and R_7 are individually selected from hydrogen or lower alkyl with 1 to 6 carbon atoms;

R_3, R_4, R_5 and R_{10} are each hydrogen

Z is a valency bond or oxygen;

Ar is phenyl;

R_8, R_9 are identical or different, hydrogen, alkyl with up to 6 carbon atoms, alkenyl with up to 6 carbon atoms, allyloxy, alkylthio with up to 6 carbon atoms, alkanoylamino in which the alkanoyl component contains up to 8 carbon atoms, alkanoylamino in which the alkanoyl component contains up to 8 carbon atoms, alkanoyl

with up to 8 carbon atoms, aminocarbonyl or benzyloxy; and

A is -N=N-.

13. Method of treating a subject for circulatory and cardiac diseases which comprises administering to an afflicted subject, a pharmacologically effective amount of a heterocyclic oxypropanol compound as claimed in claim 1.

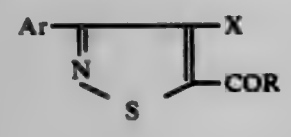
4,346,094

3-ARYL-5-ISOTHIAZOLECARBOXYLIC ACIDS AND RELATED COMPOUNDS USED TO LOWER URIC ACID LEVELS

James R. Beck; Robert P. Gajewski, both of Indianapolis, and Ronald E. Hackler, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 22, 1980, Ser. No. 189,435
Int. Cl.³ C07D *275/02*; A61K *31/425, 31/44*
U.S. Cl. 424—270 18 Claims

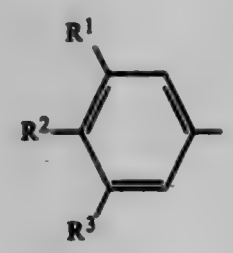
1. A method for lowering the blood urate (uric acid) level in mammals which comprises the parenteral administration to a mammal having an elevated blood urate level and in need of treatment of a drug of the formula



I

wherein

Ar is pyridyl, thienyl, phenyl or



wherein at least one of R^1, R^2 and R^3 is H and the other two are individually H, CF_3, Cl, Br, F, alk or O-alk, only one of R^1, R^2 and R^3 can be I, or R^1 and R^2 or R^2 and R^3 when taken together are methylenedioxy;

X is NH_2, H, hal, OH or NH-alk;

R is OH or OM; wherein hal is Cl, F, I, or Br; alk is (C_1–C_3) alk; and M is a non-toxic cation in a quantity sufficient to lower said elevated blood urate level.

4,346,095

THERAPEUTIC TREATMENT FOR VIRAL HEPATITIS INFECTION

James B. Mercer, 13109 W. 95th St., Lenexa, Kans. 66215

Continuation-in-part of Ser. No. 876,618, Feb. 10, 1978, Pat. No. 4,177,281. This application Aug. 6, 1979, Ser. No. 64,072
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R 4 Claims

1. A method for treating a human host having a viral hepatitis infection comprising:

(a) repeatedly orally administering anti-hepatitis viral infection effective amounts of a pharmaceutical composition which contains, as an active ingredient, 1-(B-hydroxethyl)-2-methyl-5-nitromidazole to a human host in need of said treatment.

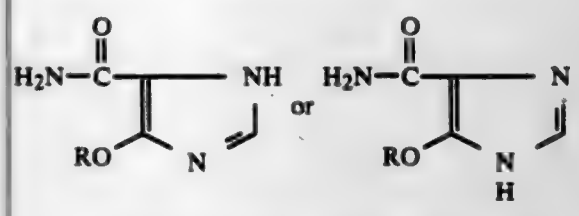
4,346,096

ANTITUMOR AND IMMUNOSUPPRESSIVE 4-CARBAMOYL IMIDAZOLIUM-5-OLATE DERIVATIVES AND PHARMACEUTICAL COMPOSITION THEREOF

Tetsutaro Sanjiki, Ibaraki; Akinori Seta, Toyonaka, and Takao Kiyohara, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 7, 1980, Ser. No. 176,241
Claims priority, application Japan, Sep. 20, 1979, 54-121783
Int. Cl.³ C07D *233/64, 233/28, 233/66*; A61K *31/415*
U.S. Cl. 424—273 R 10 Claims

1. A compound of the formula



wherein R is a benzenesulfonyl group which may be substituted with a lower alkyl group, a lower alkoxy group, a nitro group or a halogen atom.

8. An immunosuppressant composition which comprises an amount of a compound of claim 1 as an active ingredient and a pharmaceutically acceptable carrier or diluent.

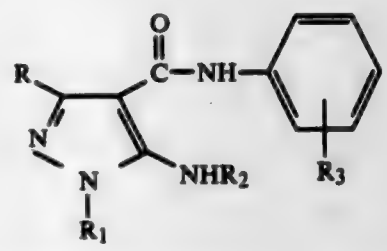
4,346,097

METHOD FOR TREATING CONVULSIONS WITH PYRAZOLE-4-CARBOXAMIDE DERIVATIVES

Dietrich Schweiss, and Ivan C. Nordin, both of Holland, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 30, 1980, Ser. No. 192,407
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 P 4 Claims

1. A method for treating convulsions in a warm blooded animal which comprises administering to said warm blooded animal an anticonvulsive effective amount of at least one compound having the structural formula:



wherein R and R_1 may be the same or different and are alkyl of from 1 to 6 carbon atoms, phenyl, or benzyl; R_2 is hydrogen or alkyl of from 1 to 6 carbon atoms, R_3 is halo, alkyl of from 1 to 6 carbon atoms, amino, alkoxy of from 1 to 6 carbon atoms, nitro, trifluoromethyl, hydroxy, $CONR_4R_5$ wherein R_4 and R_5 may be the same or different and are hydrogen or alkyl of from 1 to 6 carbon atoms, or COOA wherein A is hydrogen, alkyl of from 1 to 6 carbon atoms, or a cation of a pharmaceutically acceptable metal or an amine; and the pharmaceutically acceptable salts thereof.

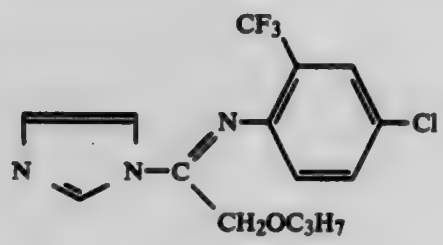
4,346,098

FUNGICIDAL COMPOSITIONS AND METHODS

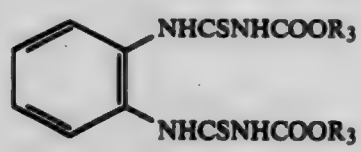
Yasushi Yasuda, Yokohama; Masami Mizuno, Yamanishi; Hiroaki Nishikawa, Ohiso, and Akira Murakami, Hiratsuka, all of Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

Filed Dec. 5, 1980, Ser. No. 213,452
Claims priority, application Japan, Dec. 7, 1979, 54/158108
Int. Cl.[3] A01N *43/50, 43/56*
U.S. Cl. 424—273 R 4 Claims

1. A fungicidal composition for agricultural and horticultural use consisting essentially of an inert carrier and a fungicidally effective amount of a mixture of compounds (I) and (II) in a weight ratio of compound (I) and compound (II) of 80:20 to 5:95, said compounds having the following structural formulas:



(I)



(II)

wherein R_3 is an alkyl component having 1 or 2 carbon atoms.

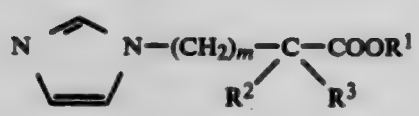
4,346,099

CARBOXY-IMIDAZOLE DERIVATIVES, COMPOSITIONS AND USE

Tadao Tanouchi, Takatsuki; Masanori Kawamura; Takanori Okada, both of Ibaraki, and Masaki Hayashi, Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka and Kissei Pharmaceutical Co., Ltd., Nagano, both of, Japan

Filed Sep. 22, 1981, Ser. No. 304,531
Int. Cl.[3] A61K *31/415*
U.S. Cl. 424—273 R 12 Claims

1. An imidazole of the general formula:



(I)

wherein m represents an integer of 4 to 9, R^1 represents a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms, and one of R^2 and R^3 represents a hydrogen atom, and the other represents a halogen atom or a phenyl group, or R^2 and R^3 together represent $-(CH_2)_n-$, in which n represents an integer of 4 to 6, or represent $=CH_2$, or pharmaceutically acceptable non-toxic salts thereof.

11. A thromboxane A_2 inhibiting composition which comprises, as an active ingredient, an effective amount of at least one compound of the general formula (I) depicted in claim 1, wherein various symbols are as defined in claim 1, or a pharmaceutically acceptable non-toxic salt thereof, together with a pharmaceutical carrier or coating.

4,346,100

PHENOXY ACETIC ACID DERIVATIVE, ITS PREPARATION AND THERAPEUTIC USE

Andre Esanu, Paris, France, assignor to Societe d'Etudes de Produits Chimiques, Paris, France

Filed Apr. 17, 1978, Ser. No. 897,287
Claims priority, application United Kingdom, Apr. 22, 1977, 16789/77
Int. Cl.[3] A61K *31/38*
U.S. Cl. 424—275 1 Claim

1. A therapeutic composition comprising a choloretically effective amount of a compound selected from the group consisting of [2-isopropyl-4-(2-thenoyl)-5-methyl]-phenoxy acetic acid and alkali metal salts thereof, together with a pharmaceutically acceptable carrier therefor.

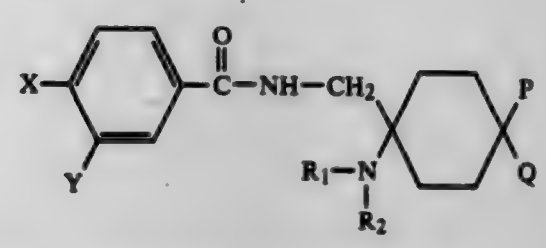
4,346,101

BENZAMIDE DERIVATIVE ANALGESICS

Daniel Lednicer, Columbus, Ohio, assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 8, 1980, Ser. No. 213,963
Int. Cl.[3] A61K *31/335, 31/165;* C07D *319/04;* C07C *103/22*
U.S. Cl. 424—278 23 Claims

1. A compound of the formula



wherein each of R_1 and R_2 is C_1 to C_3-alkyl,
P, taken separately, is benzyl or methyl,
Q, taken separately, when P is benzyl or methyl, is hydrogen or hydroxy, but P is not methyl when Q is hydrogen;
P and Q, taken together, complete an alkylene dioxy group selected from the group consisting of ethylenedioxy, 1,3-propylenedioxy and 1,3-propylenedioxy having one or two methyl groups on carbon two of the propylene chain;
X is selected from the group consisting of a halogen having an atomic number of from 9 to 35, trifluoromethyl, C_1 to C_3-alkyloxy or nitro; and Y is a halogen having an atomic number of from 9 to 35 or hydrogen, and Y is hydrogen when X is trifluoromethyl or nitro, and X can also be methoxy when Y is bromine, and the hydrates and pharmacologically acceptable salts thereof.

10. A composition useful in pharmaceutical dosage unit form for alleviating pain in warm-blooded mammals which comprises a pain-alleviating effective non-toxic amount of a compound of formula I in claim 1 in combination with a pharmaceutically acceptable carrier.

13. A method for alleviating pain which comprises administering to a warm-blooded animal a pain-allevating effective amount of a compound of formula I in claim 1 in a pharmaceutical dosage unit form.

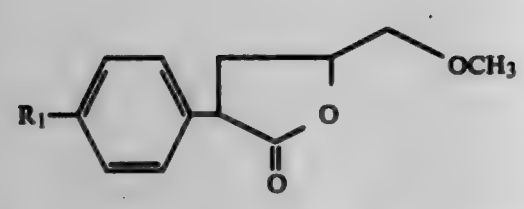
4,346,102

3H-DIHYDROFURANONE-2 DERIVATIVES AND PHARMACEUTICAL USE THEREOF

Michel Langlois, Buc; Alain P. Lacour, La Varenne; Bernard P. Bucher, Marnes la Coquette, and Gisele C. Mocquet, Paris, all of France, assignors to Delalande S.A., Courbevoie, France

Filed Apr. 28, 1980, Ser. No. 144,075
Claims priority, application France, May 7, 1979, 79 11453
Int. Cl.[3] C07D *307/32, 405/12;* A61K *31/365, 31/44*
U.S. Cl. 424—279 9 Claims

1. A compound having the formula



wherein R_1 is selected from the group consisting of 4-chlorobutoxy, 4-cyanobutoxy, benzyloxy, meta-nitrobenzyloxy, meta-chlorobenzyloxy, meta-cyanobenzyloxy, 3-pyridinylmethoxy, 3-cyano-5-nitrobenzyloxy and 3-chloro-4-fluorobenzyloxy, as a mixture of four diastereoisomers thereof, a mixture of two cis diastereoisomers thereof or a mixture of two trans diastereoisomers thereof, with the exception that a mixture of two trans diastereoisomers is excluded when R_1 is 4-chlorobutoxy or benzyloxy and that a mixture of two cis diastereoisomers and a mixture of two trans diastereoisomers are excluded when R_1 is 4-cyanobutoxy or 3-pyridinylmethoxy.

4,346,103

TREATMENT FOR ARTHRITIS AND SUBSTANCES FOR USE IN SUCH TREATMENT

Charles A. Friedmann, Quattroventi, Montefili, Creve in Chianti, Florence, Italy

Continuation of Ser. No. 112,824, Jan. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 773,406, Mar. 1, 1977, abandoned. This application May 18, 1981, Ser. No. 264,817

Claims priority, application South Africa, Mar. 16, 1976, 76/1627

Int. Cl.[3] **A61K** *31/12, 31/19, 31/235*

U.S. Cl. 424—308 **4 Claims**

1. A method of treating the symptoms of multiple sclerosis comprising administering to a person suffering therefrom an effective amount of 1,8 dialkyloxy-3-carboxy-anthraquinone or a pharmaceutically acceptable ester thereof, in which the alkyl radical is derived from an aliphatic acid having from 1 to 6 carbon atoms.

4,346,104

NOVEL SUBSTITUTED PHENYLACETIC ACID AMIDE COMPOUNDS

Alfred Sallmann, Bottmingen, and Gerhard Baschang, Bettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

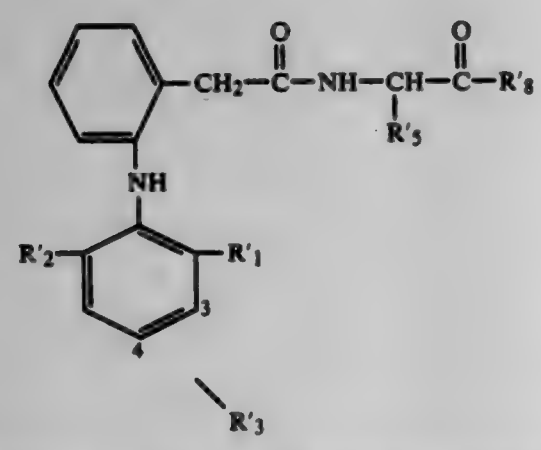
Division of Ser. No. 33,295, Apr. 25, 1979, Pat. No. 4,250,192, which is a continuation of Ser. No. 905,087, May 11, 1978, abandoned, and Ser. No. 906,292, May 15, 1978, abandoned. This application Dec. 17, 1980, Ser. No. 217,365

Claims priority, application Luxembourg, May 11, 1977, 77316

Int. Cl.[3] **C07C** *101/447;* **A61K** *31/24, 31/195;* **C07C** *103/29*

U.S. Cl. 424—309 **12 Claims**

1. A compound of the formula



(III)

in which R_1' is lower alkyl having not more than 4 carbon atoms or halogen having an atomic number of not more than 35, R_2' is hydrogen, lower alkyl having not more than 4 carbon atoms or halogen having an atomic number of more than 35 and R_3' is hydrogen, with the proviso that R_3' can also be lower alkyl having not more than 4 carbon atoms, in the 3-position, if R_1' is one of the said halogen atoms and R_2' is hydrogen, or with the proviso that R_3' can also be halogen having an atomic number of not more than 35, in the 4-position, if R_1' is one of the said halogen atoms and R_2' is hydrogen, and R_5' is lower alkyl having not more than 4 carbon atoms, which is substituted by mercapto, lower alkylthio having not more than 4 carbon atoms, or S'-substituted dithio, the second sulfur atom in the S'-substituted dithio group containing, as a substituent, the radical of a compound of the formula III which is bonded via the grouping R_5' and in which R_1', R_2' R_3', R_5' and R_8' are as defined, and R_8' is hydroxyl, lower alkoxy having not more than 4 carbon atoms or substituted or unsubstituted amino, substituted amino being a radical of the formula —NH—CH($R_5^{a'}$)—C(=O)-$R_8^{a'}$ in which $R_5^{a'}$ and $R_8^{a'}$ have the meanings defined for R_5' and R_8' respectively, and a radical of the formula —NH—CH(R_5')—C(=O)-R_8' consisting of one, two or three aminoacid radicals, or a therapeutically acceptable salt thereof.

9. A pharmaceutical preparation containing an antiinflammatory effective amount of a compound as claimed in claim 1 together with conventional pharmaceutical excipients.

4,346,105

NOVEL SUBSTITUTED PHENYLACETIC ACID AMIDE COMPOUNDS

Alfred Sallmann, Bottmingen, and Gerhard Baschang, Bettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

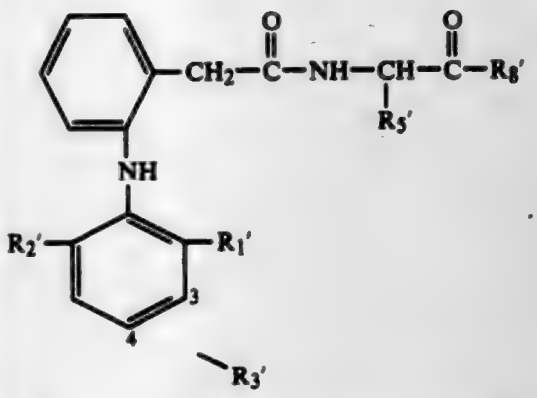
Division of Ser. No. 33,295, Apr. 25, 1979, Pat. No. 4,250,192, which is a continuation of Ser. No. 905,087, May 11, 1978, abandoned, and Ser. No. 906,292, May 15, 1978, abandoned. This application Dec. 17, 1980, Ser. No. 217,366

Claims priority, application Luxembourg, May 11, 1977, 77316

Int. Cl.[3] **C07C** *101/447;* **A61K** *31/24, 31/195;* **C07C** *103/29*

U.S. Cl. 424—309 **12 Claims**

1. A compound of the formula



in which R_1 is lower alkyl having not more than 4 carbon atoms or halogen having an atomic number of not more than 35, R_2' is hydrogen, lower alkyl having not more than 4 carbon atoms or halogen having an atomic number of not more than 35 and R_3 is hydrogen, with the proviso that R_3' can also be lower alkyl having not more than 4 carbon atoms, in the 3-position, if R_1' is one of the said halogen atoms and R_2' is hydrogen, or with the proviso that R_3' can also be halogen having an atomic number of not more than 35, in the 4-position, if R_1' is one of said halogen atoms and R_2' is hydrogen, and R_5' is lower alkyl having not more than 4 carbon atoms substituted by hydroxyl or lower alkoxy, and R_8' is hydroxyl, lower alkoxy having not more than 4 carbon atoms or substituted or unsubstituted amino, substituted amino being a radical of the formula —NH—CH($R_5^{a'}$)—C(=O)—$R_8^{a'}$, in which $R_5^{a'}$, and $R_8^{a'}$ have the meanings for R_5' and R_8' respectively, and a radical of the

formula —NH—CH(R_5')—C(=O)—R_8' consisting of one, two or three aminoacid radicals, or a therapeutically acceptable salt thereof.

4. A pharmaceutical preparation containing an antiinflammatory effective amount of a compound as claimed in claim 1 together with conventional pharmaceutical excipients.

4,346,106

METHOD FOR INHIBITING ONSET OF MIGRAINE HEADACHES WITH NADOLOL COMPOSITIONS

Abraham Sudilovsky, Lawrenceville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 263,656, May 14, 1981, abandoned. This application Jun. 25, 1981, Ser. No. 277,378

Int. Cl.[3] A61K *31/22, 31/135*

U.S. Cl. 424—311 6 Claims

1. A method for inhibiting onset of migraine headaches in a mammalian species which comprises systemically administering to a mammalian host susceptible to migraine headaches and in need of such treatment nadolol or an ester thereof or a pharmaceutically acceptable acid-addition salt of said nadolol or ester thereof in a dosage of from about 60 to about 240 mg in a single dose per day.

4,346,107

PHARMACEUTICAL COMPOSITION COMPRISING ACYL-CARNITINE FOR THE TREATMENT OF IMPAIRED CEREBRAL METABOLISM

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy, and Menotti Calvani, Rome, Italy, assignors to Claudio Cavazza, Rome, Italy

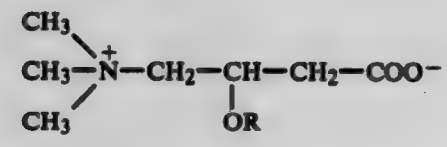
Filed Feb. 5, 1980, Ser. No. 119,075

Claims priority, application Italy, Feb. 12, 1979, 47976 A/79; Nov. 9, 1979, 50795 A/79

Int. Cl.[3] A61K *31/205*

U.S. Cl. 424—316 3 Claims

1. A therapeutic method for the treatment of a patient affected by impaired cerebral metabolism, senile and presenile psychomotor involution, depressive states, senile and presenile dementia, decreased cerebral blood flow, sequelae of cerebral stroke, cerebral ischaemias, and primary impaired cerebral metabolism, comprising administering via the oral or parenteral route to said patient a therapeutically effective amount of an acyl-carnitine of the formula:



(I)

wherein R is an acyl radical selected from the group consisting of acetyl, propionyl, butyryl, hydroxybutyryl and acetoacetyl.

4,346,108

METHOD FOR PREVENTING ADHESION FORMATION

Adam Singer, Englishtown, N.J., assignor to The Upjohn Manufacturing Company M, P.R.

Filed Jun. 22, 1981, Ser. No. 275,871

Int. Cl.[3] A61K *31/19*

U.S. Cl. 424—317 2 Claims

1. A process for preventing or reducing adhesion formation comprising the systemic administration to a human or animal of an effective adhesion preventing or reducing amount of p-isobutylhydraptropic acid or an alkyl ester of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof, or a pharmacologically acceptable salt thereof; said human or animal having an adhesion inducing trauma to its tissue.

4,346,109

METHOD OF TREATING KERATOTIC SKIN DISEASE

Isao Yamatsu, Kawaguchi; Yuichi Inai, Tokyo; Shinya Abe, Kawagoe; Takeshi Suzuki, Abiko; Yoshikazu Suzuki, Ichinomiya; Osamu Tagaya, Gifu, and Nozomu Koyanagi, Niiza, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

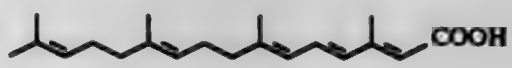
Filed Mar. 30, 1981, Ser. No. 249,290

Claims priority, application Japan, Jul. 31, 1980, 55-104420

Int. Cl.[3] A61K *31/20*

U.S. Cl. 424—318 6 Claims

1. A method for the treatment of skin disease with keratinization, which comprises administering to a subject requiring such treatment a therapeutically effective amount of 3,7,11,15-tetramethyl-2,4,6,10,14-hexadecapentaenoic acid of the formula:



or a pharmaceutically acceptable salt thereof.

4,346,110

METHOD FOR TREATING DEPRESSION

Michael G. Palfreyman, Fegersheim, and Ian A. McDonald, Truchtersheim, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Filed Jun. 1, 1981, Ser. No. 268,554

Int. Cl.[3] A61K *31/24, 31/195*

U.S. Cl. 424—319 3 Claims

1. A method for treating depression which comprises administering to a depressed patient an antidepressant effective amount of 2-amino-3-(3'-hydroxyphenyl)-3-butenoic acid or 2-amino-3-(3',4'-dihydroxyphenyl)-3-butenoic acid, or a C_1–C_8 alkyl ester, or a pharmaceutically acceptable salt thereof.

4,346,111

ALKANOLAMINE DERIVATIVES

Leslie H. Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

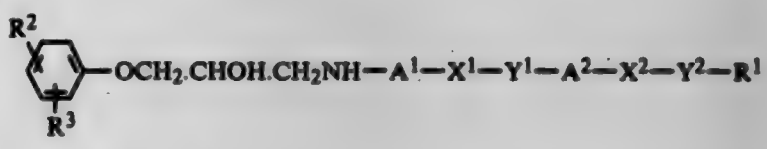
Division of Ser. No. 98,933, Nov. 30, 1979, Pat. No. 4,318,921, which is a division of Ser. No. 839,568, Oct. 5, 1977, Pat. No. 4,211,878. This application Dec. 12, 1980, Ser. No. 215,874

Claims priority, application United Kingdom, Oct. 7, 1976, 41714/76

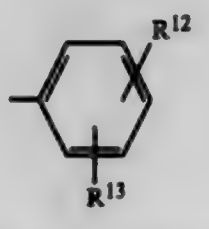
Int. Cl.[3] A61K *31/165;* C07C *121/50, 103/19*

U.S. Cl. 424—324 10 Claims

1. An alkanolamine derivative selected from the group consisting of a compound of the formula:



wherein A^1 is alkylene of from 2 to 6 carbon atoms; wherein A^2 is a direct link or alkylene of up to 6 carbon atoms; wherein R^1 is hydrogen, or alkyl halogenoalkyl, alkenyl or cycloalkyl each of up to 10 carbon atoms, or aryl of the formula:



wherein R^2, R^3, R^{12} and R^{13}, which may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro, carbamoyl, cyano or alkyl, alkenyl, alkoxy, alkylthio, alkenyloxy, alkanoyl or acylamino each of up to 6 carbon atoms, or wherein R^2 and R^3 together and/or R^{12} and R^{13} together, form

trimethylene, tetramethylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl or naphthyl; wherein X^1 is amidic of the formula —NHCO— and X^2 is amidic of the formula —CONH—; wherein Y^1 is a direct link and wherein Y^2 is a direct link, or alkylene or alkyleneoxy each of up to 6 carbon atoms, and the non-toxic pharmaceutically-acceptable acid-addition salts thereof.

4,346,112

COMPOSITION AND METHOD FOR TREATING PATIENTS HAVING PARKINSON'S DISEASE

James G. Henkel, Manchester, and Gerald Gianutsos, Tolland, both of Conn., assignors to University Patents Inc., Norwalk, Conn.

Filed Jun. 29, 1981, Ser. No. 278,687
Int. Cl.³ A61K *31/13*
U.S. Cl. 424—325 **2 Claims**

1. The process of treating an animal afflicted with Parkinson's Disease which comprises administering to the animal between about 2 and about 7 mg/kg 3-ethyl-1-aminoadamantane in an amount effective to control the undesirable side effects of Parkinson's Disease and a pharmaceutically acceptable carrier.

4,346,113

PROCESS FOR THE CONTINUOUS FERMENTATION OF AQUEOUS SLURRIES FOR THE PRODUCTION OF ALCOHOL AND YEAST BIOMASS

Uwe Faust, Fischbach; Paul Präve, Neuenhain; Beate Dorsemagen, Frankfurt, and Norbert Hofer, Eppstein, all of Fed. Rep. of Germany, assignors to UHDE GmbH, Dortmund, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,345
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938339
Int. Cl.³ C12P *7/06*; C12G *3/02*
U.S. Cl. 426—12 **4 Claims**

1. In a continuous process for the production of alcohol and yeast biomass by reaction in a uniform fermenting mixture of a sugar-bearing, aqueous slurry, starter yeast, yeast nutrients and an oxygen-bearing gas, the process comprising the steps of continuously withdrawing from the fermenting mixture a yeast- and alcohol-bearing wort which forms therein and separating from the withdrawn wort an alcohol-bearing medium, while continuously feeding to the mixture fresh aqueous slurry, the starter yeast, the yeast nutrients and the oxygen-bearing gas, the improvement wherein the yeast is a flocculating, bottom yeast, the portion of the wort which remains after separation of the alcohol-bearing medium therefrom, is recycled to the fermenting mixture, the oxygen-bearing gas is dispersed homogeneously throughout the fermenting mixture, and is introduced to maintain a mean-free oxygen concentration not greater than 1 ppm in the aqueous phase, and the process is controlled to maintain the measurable free sugar concentration in the fermenting mixture at a level which does not exceed 0.1 percent by weight, and to maintain the active yeast concentration in the fermenting mixture between 100 and 110 percent of the specific degree of fermentation.

4,346,114

SOY SAUCE FROM TEAR GRASS AND PROCESS FOR PRODUCTION THEREOF

Yoshihide Hagiwara, Takarazuka, Japan, assignor to Japan Natural Food Co. Ltd., Osaka, Japan

Continuation of Ser. No. 109,638, Jan. 4, 1980, abandoned. This application Feb. 25, 1981, Ser. No. 237,871
Claims priority, application Japan, Jan. 12, 1979, 54/1227
Int. Cl.³ A23L *1/238*
U.S. Cl. 426—18 **8 Claims**

1. A process for producing a tear grass soy sauce, which comprises inoculating a koji mold for soy sauce in a koji substrate comprising a denatured proteinous material and a denatured carbohydrate material, at least 10% by weight based on the weight of said carbohydrate material being tear grass, cultivating the koji mold to form a koji for soy sauce, said cultivation being started at a pH of about 4.0 to about 8.0 and a temperature of from room temperature to about 40° C. adding water and sodium chloride to the koji to prepare moromi, fermenting the moromi, said fermentation being started at a pH of about 3 to about 7 and a temperature of from room temperature to about 40° C. and separating the liquid layer from the fermentation product.

4,346,115

FERMENTATION OF ACID-CONTAINING DOUGHS

Philippe Clement, Roubaix, and Jean-Paul Rossi, Marcq En Baroeul, both of France, assignors to Lesaffre et Cie, Paris, France

Filed Dec. 23, 1977, Ser. No. 863,950
Claims priority, application United Kingdom, Dec. 24, 1976, 54174/76
Int. Cl.³ A21D *2/14*; C12C *11/16*; C12N *1/18*
U.S. Cl. 426—25 **7 Claims**

7. An active dry baker's yeast composition containing an emulsifying agent and having more than 92% of dry matter for use in fermenting sour dough on dough containing an acid mold inhibitor or salt thereof, and wherein said dry yeast composition

(a) yields more than 38 ml in test A'_5 in one hour,

wherein, in said test A'_5 160 mg of dry matter of said dry yeast, which has been rehydrated in distilled water, at 38° C. with 40% of the volume of hydration used therefor, for 15 minutes, and thereafter adding thereto 0.15 ml of a mixture of 15 g of acetic acid and 80 g of lactic acid together with an amount of water containing 405 mg of NaCl, required to make up 15 ml, the yeast so rehydrated and mixed with said water additions is then added to 20 g of flour incubated at 30° C., kneading the resulting dough for 40 seconds to obtain dough, maintaining said dough at 30° C. in a vessel for 13 minutes after the beginning of said kneading, thereafter hermetically sealing said vessel and measuring the total amount of gas produced, in ml, at 30° C. and 760 mm of Hg, after the expiration of 60 minutes; and

(b) yields more than 820 ml in test B'_3 in 3 hours,

wherein, in said test B'_3 1.6 g of yeast dry material is rehydrated at 38° C. with 50 ml of distilled water for 15 minutes, and at the end of said 15 minutes there is added thereto 2 ml of a mixture of 15 g of acetic acid and 80 g of lactic acid, with the remaining complement of water, i.e., 98 ml of water containing 5 g of salt, required to make up 150 ml total, the resulting yeast/water/salt/acid mixture being then added to 250 g of flour, and the resulting mixture is then kneaded for 6 minutes, so that the temperature of the resulting dough at the end of said kneading is 27° C., placing the dough in the chamber of a Chopin zymotachygraph, and exactly 6 minutes after said kneading, said chamber is placed under pressure and maintained at 27° C., and recording the total release of gas, in ml, on a graph after the expiration of 3 hours.

4,346,116

NON-CARIOGENIC HYDROGENATED STARCH HYDROLYSATE, PROCESS FOR THE PREPARATION AND APPLICATIONS OF THIS HYDROLYSATE

Francoise Verwaerde; Jean-Bernard Leleu, and Michel Huchette, all of Lestrem, France, assignors to Roquette Freres, France

Continuation-in-part of Ser. No. 38,711, May 14, 1979, Pat. No. 4,279,931. This application May 21, 1980, Ser. No. 151,816
Claims priority, application France, Dec. 11, 1978, 78 34830; Ireland, Dec. 4, 1979, 2322/79
The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.
Int. Cl.[3] A23L *1/09;* C13K *7/00*
U.S. Cl. 426—48 14 Claims

1. Non-cariogenic hydrogenated starch hydrolysate comprising:

less than 3% by weight of polyols of DP higher than 20,

35 to 60% by weight of maltitol,

0.1 to 19% by weight of sorbitol

the balance up to 100 consisting essentially of polyols of DP 3 to 20.

4,346,117

METHOD FOR INHIBITING THE GROWTH OF *CLOSTRIDIUM BOTULINUM* AND THE FORMATION OF ENTEROTOXIN IN CORNED BEEF AND POULTRY AND PRODUCTS THEREOF

John S. Thompson, Wayne, Pa., and Joseph F. Jadlocki, Jr., Mount Holly, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 207,566, Nov. 17, 1980, which is a continuation-in-part of Ser. No. 184,689, Sep. 8, 1980, Pat. No. 4,277,507, which is a continuation-in-part of Ser. No. 140,328, Apr. 14, 1980, Pat. No. 4,282,260. This application Jul. 6, 1981, Ser. No. 280,192
The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.
Int. Cl.[3] A23B *4/02;* A23L *1/31, 1/315*
U.S. Cl. 426—264 17 Claims

1. A food product, that is resistant to the outgrowth of *Clostridium botulinum* and the formation of enterotoxins during storage of said food product, selected from the group consisting of corned beef and smoked poultry, said food product containing an alkali metal nitrite salt, in an amount less than about 120 ppm, and a compound selected from the group consisting of hypophosphorous acid and its nontoxic water-soluble salts in an amount effective to inhibit production of enterotoxin from *Clostridium botulinum* during storage of said food product.

10. A method of inhibiting the production of enterotoxin from *Clostridium botulinum* and, upon cooking, inhibiting formation of nitrosamines from nitrite salt in corned beef and smoked poultry which comprises the step of adding thereto an alkali metal nitrite salt, in an amount less than about 120 ppm, and a compound selected from the group consisting of hypophosphorous acid and its nontoxic water-soluble salts in an amount effective to inhibit production of enterotoxin from *Clostridium botulinum* during storage of the meat.

4,346,118

ANTIMICROBIAL AGENTS ADDED TO ANIMAL FEEDS

Mir N. Islam, Newark, Del., assignor to University of Delaware, Newark, Del.

Filed May 2, 1980, Ser. No. 146,322
Int. Cl.[3] A23L *3/34*
U.S. Cl. 426—335 1 Claim

1. A process of protecting poultry or animal feed by diminishing the growth of aflatoxin producing mold during the storage of the feed which comprises incorporating in said feed a dialkyl ester of fumaric acid in an amount of at least 0.2% by weight of the feed and wherein the alkyl groups of the dialkyl ester are methyl, ethyl or propyl groups.

4,346,119

PROCESS FOR THE PREPARATION OF INSTANT COOKING ALIMENTARY PASTE

Ennio Braibanti, Milan, Italy, assignor to Dott. Ing. M., G. Braibanti & C. S.p.A., Italy

Filed Dec. 5, 1980, Ser. No. 213,699
Claims priority, application Italy, Mar. 10, 1980, 20483 A/80
Int. Cl.[3] A23L *1/16*
U.S. Cl. 426—451 7 Claims

1. A method of preparing instant-cooking alimentary paste, comprising the following steps:

(a) introducing a mixture of cereal flour and water into an extrusion zone to form a paste, and steam-treating said paste coming from the extrusion zone and having a moisture content of about 25–35%, using steam at a temperature of at least about 95° but no greater than 100° C., at atmospheric pressure, and for a time sufficient to effect only partial gelatinization of said extruded paste;

(b) wetting the partially gelatinized paste to increase the moisture content to approximately 40% to 55%,

(c) allowing the so-wetted paste to stand for a time sufficient to permit the moisture to become substantially evenly distributed in said paste;

(d) steam-treating said paste treated from stage (c), with steam at a temperature of at least about 95° but no greater than 100° C., at atmospheric pressure to effect further gelatinization and cooking thereof.

4,346,120

FROZEN DESSERT PRODUCT

Robert G. Morley, Stone Mountain, and W. Ronald Ashton, Duluth, both of Ga., assignors to Landwide Foods, Inc., Dover, Mass.

Filed Nov. 26, 1980, Ser. No. 210,846
Int. Cl.[3] A23G *9/02*
U.S. Cl. 426—565 19 Claims

1. A frozen dessert product

A. characterized at least in part by being extrudable and coneable at near 0° F. for serving by extrusion at home freezer temperatures,

B. consisting essentially, by weight in the absence of significant weight by flavorings, of

(1) edible triglycerides in a range from 5% to 15%,

(2) protein in a range from 3% to 5%,

(3) water in a range of 46% to 60%,

(4) saccharides in a range from 20% to 40%, and including plural saccharides selected from the group consisting of sorbitol, fructose, dextrose, corn syrup, mannitol and sucrose,

(5) stabilizers in a range from 0.25% to 1.3% and including at least a first stabilizer selected from the group consisting of guar gum, locust bean gum, tara gum, propylene glycol alginate, sodium carboxymethyl cellulose, and other cellulose ethers; a second stabilizer selected from the group consisting of microcrystalline cellulose and cellulose fibers; and a third stabilizer selected from the group consisting of gelatin, xanthan gum, carrageenan, pectin and sodium alginate, and

(6) emulsifiers in a range from 0.2% to 0.8% and including at least a first emulsifier selected from the group consisting of mono- and diglycerides and distilled monoglycerides, and a second emulsifier selected from the group consisting of polysorbate 65, polysorbate 80, and ethoxylated monoglycerides, and

C. having a specific gravity in the range of between 0.36 and 0.54.

4,346,121

PROCESS FOR PREPARING CRUMB PRODUCTS

Sandor Turos, Gamla Särövägen 113, S-436 00 Askim, Sweden

PCT No. PCT/SE80/00081, § 371 Date Nov. 3, 1980, § 102(e) Date Nov. 3, 1980, PCT Pub. No. WO80/01869, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 17, 1980, Ser. No. 227,882

Claims priority, application Sweden, Mar. 16, 1979, 7902399

Int. Cl.³ A23G *1/00*

U.S. Cl. 426—580 12 Claims

1. A process for manufacturing crumb products, which comprises preparing a first raw material flow F1 containing component f1 and one or more flows f2–f4 wherein

f1 contains liquid milk or milk products selected from the group consisting of completely or partly defatted fresh milk, defatted or whole condensed milk, whey, completely or partly desalted whey, butter milk, casein or caseinate, whey protein concentrate and combinations thereof, having a dry solids content of 20–27% by weight, suitably at a temperature of about 50° C.;

f2 contains sugar raw materials in the form of tetroses, pentoses, hexoses selected from the group consisting of glucose, fructose, and galactose, sugar alcohols exemplified by sorbitol, disaccharides selected from the group consisting of lactose, maltose, and dextromaltose, partially hydrolyzed starch, syrup products, xylitol or different combinations thereof, suitably in an aqueous solution;

f3 contains dry protein raw materials selected from the group consisting of vegetable protein, dry milk solids, whey powder, butter milk powder, which suitably are admixed with water and treated in in a colloid mill, having the same dry solids contents as stated for f1;

f4 contains one or more amino acids, which may be in combination with one or more reducing sugars, suitably in an aqueous solution;

and a second flow F2 consisting of flow f5 and may contain flow f6, of which

f5 contains fatty components selected from the group consisting of cream, suitably with a fat content of 12–35% by weight, butter, butter oil, other vegetable and/or animal fat products or fat-containing products and mixtures thereof;

f6 consists of an emulsifier for the fat phase, which promotes the formation of emulsions of the type oil-in-water, exemplified by glyceryl monostearate;

and wherein the flow F1 having a dry solids content of 20–70% by weight and a pH in the range 4–8 is heat-treated at a temperature of 100°–130° C. during a period of time of about 7–2 minutes for performing a Maillard reaction, and subsequently is cooled to a temperature of about 80°–95° C.; whereupon the flows F1 at the said temperature and F2 at a temperature of about 65°–75° C. are metered into an emulsifying vessel to the formation of an emulsion of F2 in F1, which emulsion after an adjustment of the water content, if required, is submitted to a homogenizing treatment in a homogenizer, whereupon the crumb emulsion formed is used directly.

4,346,122

LOW-VISCOSITY, HIGH-NSI, HEAT-GELLING SOY ISOLATES

Frank T. Orthoefer, Decatur, Ill., and Lynn V. Ogden, Pleasanton, Calif., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Dec. 29, 1980, Ser. No. 220,590

Int. Cl.³ A23J *1/14, 3/02*

U.S. Cl. 426—656 20 Claims

1. A dry vegetable protein isolate useful for preparing imitation cheese products, said isolate characterized as: (a) having an NSI of at least 90, (b) substantially free from vegetable protein hydrolyzates, (c) forming an insoluble gel when dissolved in water at a 15% by weight protein isolate concentration and heated to 85° C. for 30 minutes, and (d) yielding an aqueous isolate solution viscosity of less than 100,000 cps when reconstituted with water at 22° C. and a 15% by weight (d.s.b.) isolate concentration.

4,346,123

METHOD OF DEPOSITING HARD WEAR-RESISTANT COATINGS ON SUBSTRATES

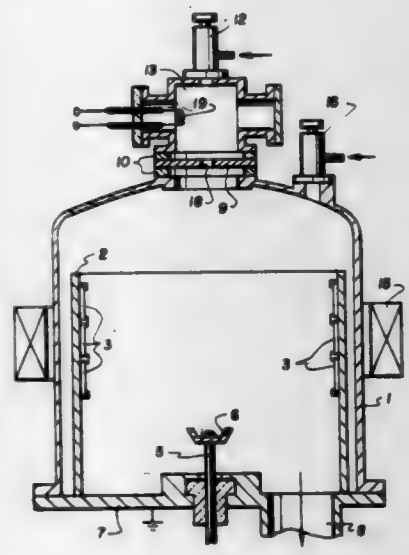
Helmut Kaufmann, Triesen, Liechtenstein, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Aug. 1, 1980, Ser. No. 174,610

Claims priority, application Switzerland, Aug. 2, 1979, 7092/79

Int. Cl.³ C23C *11/14*

U.S. Cl. 427—38 4 Claims



1. A method of depositing a hard wear-resistant coating onto a substrate comprising:

evaporating a metal in a nitrogen containing residual gas atmosphere to form the coating on the substrate; and simultaneously forming an electric gas discharge in the atmosphere to activate the residual gas; wherein

the atmosphere simultaneously contains nitrogen, oxygen and carbon with the atomic number proportion of oxygen to carbon being between about 0.5 to 1.5; and wherein the metal is selected from the group which consists of titanium, zirconium and hafnium.

4,346,124

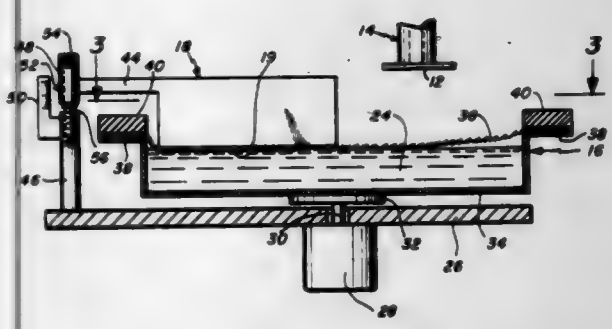
METHOD OF APPLYING AN ADHESIVE TO A CIRCUIT CHIP

Laurier A. Wood, Amherst, and Donald N. Humphries, Bedford, both of N.H., assignors to Laurier Associates, Inc., Hudson, N.H.

Filed May 4, 1981, Ser. No. 259,854

Int. Cl.³ H01L *21/58*

U.S. Cl. 427—82 2 Claims



1. A method of applying a liquid glue to the surface of a circuit chip in which a bath tray is employed having a mesh screen disposed in the bath tray above the liquid glue level, said method comprising the steps of; providing a leveling paddle extending into the tray, causing relative rotation between the leveling paddle and the bath tray with the paddle

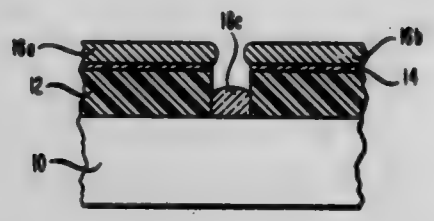
sweeping across the screen to dip the screen into the liquid glue material, at the same time smoothing the glue over the screen, thereafter, pressing the circuit chip onto the mesh screen to receive the application of glue onto the circuit chip.

4,346,125

REMOVING HARDENED ORGANIC MATERIALS DURING FABRICATION OF INTEGRATED CIRCUITS USING ANHYDROUS HYDRAZINE SOLVENT

Eliezer Kinsbron, Highland Park, and Frederick Vratny, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 8, 1980, Ser. No. 214,171
Int. Cl.³ H01L *21/70*
U.S. Cl. 427—96 **12 Claims**



1. A method of fabricating an IC device, comprising the steps of

forming in a multi-layered device structure a hardened pattern of organic material to cover all but selected surface portions of said device structure,

processing said selected surface portions utilizing said hardened pattern as a mask therefor,

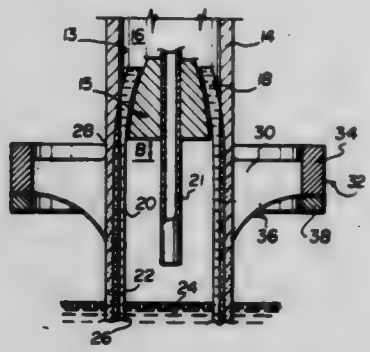
and, subsequent to said processing step, removing said hardened pattern by applying to said device structure a formulation that comprises anhydrous hydrazine.

4,346,126

METHOD OF CASTING A REVERSE OSMOSIS OR ULTRAFILTRATION POLYMERIC MEMBRANE

Oleh Kutowy, North Gower; William L. Thayer, and Srinivasa Sourirajan, both of Ottawa, all of Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Continuation-in-part of Ser. No. 179,103, Aug. 18, 1980, abandoned. This application May 11, 1981, Ser. No. 262,686
Claims priority, application Canada, Sep. 13, 1979, 336704
Int. Cl.³ B05D *5/00, 7/22*
U.S. Cl. 427—209 **5 Claims**



1. In a method of casting a reverse osmosis or ultrafiltration, polymeric membrane on a wall of a porous support having a first side which will be subjected to a relatively high liquid pressure when in use, and a second side which will be subjected to a relatively low liquid pressure when in use, wherein the porous support is coated on the first side with a cellulose ester, solvent carrier, casting solution to at least partially impregnate the porous support from the first side, the solvent carrier is partially evaporated from the cellulose ester, solvent carrier coating to leave a cellulose ester residue impregnation in the porous support, then the cellulose ester residue adjacent the first and second sides is gelled with a gelation liquid comprising a monohydric alcohol, and then the gelation liquid is removed, the improvement comprising gelling the cellulose ester residue adjacent the first side with a gelation liquid which is separate from the gelation liquid used to gel the cellulose ester residue adjacent the second side, the monohydric alcohol mole fractions of the separate gelation liquids and the temperatures of the separate gelation liquids during gelation being chosen so that relatively larger pores are gelled in the cellulose ester residue adjacent the second side compared to those in the cellulose ester residue adjacent the first side by the different gelation conditions.

4,346,127

PROCESS FOR PREPARING ABSORBING MOP MATERIAL OF NON-WOVEN FIBRES AND POLYMERIC BINDER

Antonio Ruvolo, Olgiate Olona, and Vincenzo Massa, Milan, both of Italy, assignors to Montedison S.p.A., Italy

Continuation of Ser. No. 912,834, Jun. 5, 1978, abandoned. This application Dec. 21, 1979, Ser. No. 106,049
Claims priority, application Italy, Jun. 6, 1977, 24388 A/77
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—244 **9 Claims**

1. A process for preparing an absorbing mop material having a weight ranging from 100 to 750 g/m^2 comprising a substratum of non-woven fibers and a flexible, porous polymeric binder, said process comprising:

preparing a non-woven web of unbonded textile fibers consisting of essentially a cellulosic material, said web having a weight of from about 50 to about 300 g/m^2;

preparing a polymeric aqueous dispersion containing

(a) from about 15 to about 60 parts, by weight, per 100 parts by weight of the dispersion, of a thermo-coagulable polymer of the type generally used as a binder for textile fibers, and

(b) from about 0.2 to about 8 parts, by weight, per 100 parts by weight of the dispersion, of a coagulating agent suitable for the thermo-coagulation of the polymeric binder at a temperature between 40° and 90° C;

adding to the aqueous dispersion an expanding agent consisting of a liquid having a boiling point of 30° C. to 80° C. that exerts no dissolving or swelling action on the polymeric binder, in an amount from about 20% to about 120%, by weight, with respect to the weight of the polymeric binder;

impregnating said web with the polymeric aqueous dispersion to which the expanding agent has been added;

subjecting the impregnated web to a heat treatment at 40° C. to 90° C. in order to bring about the coagulation of the polymeric aqueous dispersion and the evaporation of the expanding agent;

washing the web with water; and

drying said web and partially crosslinking the polymeric binder of said web by subjecting the web to a further heat treatment, at a temperature equal to or higher than 100° C.

4,346,128

TANK PROCESS FOR PLATING ALUMINUM SUBSTRATES INCLUDING POROUS ALUMINUM CASTINGS

David M. Loch, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 135,679, Mar. 31, 1980, abandoned. This application May 19, 1981, Ser. No. 265,099
Int. Cl.³ C23C *3/02*
U.S. Cl. 427—328 **18 Claims**

1. The process of plating an aluminum substrate comprising the steps of:

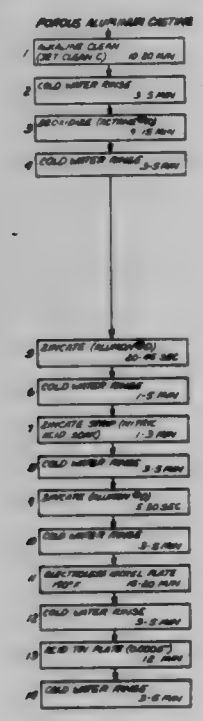
(a) cleaning the substrate;

(b) immersing the substrate in a room temperature, low pH, dilute acid bath containing an acidic fluoride-containing

salt so as to remove surface contaminants from the substrate while subjecting the substrate to only minimal etching;

(c) immersing the substrate in a first dilute zincate bath having a zinc concentration on the order of 1.1 oz./gal. to apply a first protective coating of zinc thereon;

(d) soaking the substrate in an acid bath for from 1-3 minutes to remove the first protective coating of zinc from the substrate and to apply a uniform oxide coating thereon for reducing subsequent zinc deposition rates;



(e) immersing the substrate in a second dilute zincate bath having a zinc concentration on the order of 1.1 oz./gal. to apply a second protective coating of zinc thereon;

(f) applying a non-porous barrier layer to the second protective coating of zinc by immersion of the zinc coated substrate in a heated bath containing a metal plating solution; and,

(g) applying a conductive metal outer plate to the non-porous barrier layer by immersing the substrate in a metal plating bath.

4,346,129

METHOD AND APPARATUS FOR THICKNESS CONTROL OF A COATING

Charles E. Decker, Canton, and John L. Hostetler, North Canton, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Mar. 2, 1981, Ser. No. 239,697
Int. Cl.³ B05C *3/12*; B05D *3/04*
U.S. Cl. 427—348 **13 Claims**

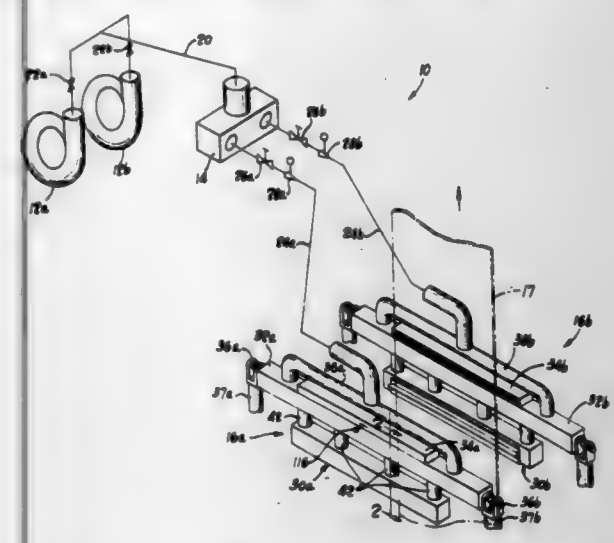
3. In a method of controlling the thickness of a coating applied to a moving strip, the steps comprising:

directing a flow of fluid under pressure to the surface of a moving strip through an air knife extending across a width of the strip at a first location to modify the coating thickness;

applying a diffused flow of fluid to the same surface of the moving strip across the width of the strip at a second location subsequent to the first location in the direction of strip travel, to chill the coating;

supplying said two flows of fluid from a common fluid source; and

controlling a proportion of the flow of the fluid from the common source that is applied as a diffused flow at the second location to establish a desired pressure and flow of



fluid from the air knife for a given pressure and flow of fluid from the common source.

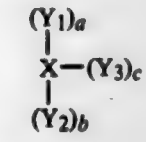
4,346,130

APPLICATION OF DURABLE, ANTISTATIC, SOIL RELEASE AGENT

Alfred Tropea, Gibbstown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 229,105, Jan. 28, 1981, abandoned. This application Aug. 20, 1981, Ser. No. 294,788
Int. Cl.³ B05D *3/02*; B32B *27/00*; D04H *1/58*; C08G *12/30*
U.S. Cl. 427—393.1 **19 Claims**

1. Process for applying durable, antistatic soil release agent to a substrate, said agent being of the formula



wherein

X is an aminoplast resin moiety having amino nitrogen atoms and 4 to 6 methylene groups, each of which methylene groups is attached to an amino nitrogen atom and to the extent that any such methylene groups are not attached to Y_1, Y_2, or Y_3 they are attached to a $-OCH_3$ group;

Y_1 is $O(C_2H_4O)_{5\text{-}20}R_1$ wherein R_1 is $C_{1\text{-}5}$ alkyl;

Y_2 is $O(C_2H_4O)_{5\text{-}88}R_2$ wherein R_2 is $C_{6\text{-}20}$ alkyl;

Y_3 is



wherein R_3 is $C_{4\text{-}20}$ alkyl, $C_{4\text{-}20}$ alkenyl or benzyl, R_4 is $C_{1\text{-}4}$ alkyl, $A^{\ominus}$ is an organic or inorganic anion, each of m and n is at least 1 and the sum of m and n is 12 to 100;

each of a and b is 0 to 2 and the sum of a and b is 0 to 2;

c is 1 to 2;

the sum of a, b and c is 1 to 4;

said agent having a calculated hydrophile-lipophile balance (HLB) of 14.5 to 18.0, a 20 weight % aqueous solution viscosity, as measured at 20° C. on a Brookfield viscometer, of 0.250 to 16.000 pascal seconds, an electrical resistivity (Keithley Log R) on polyester fabric, at 20±2% relative humidity and 23°±1° C. of no greater than 13.00 initially and no greater than 14.25 after ten washes, and a soil release rating on polyester fabric of at least 3 initially, said process comprising the steps:

(a) diluting the agent with water to achieve the desired concentration and viscosity,

(b) adding sufficient salt of a mono-, di- or trivalent metal or of an ammonium cation to achieve a cloud point (measured as described herein), of the diluted agent of step (a), of less than 100° C. but greater than 25° C., or adding sufficient polyacidic compound having a second dissociation constant of greater than 1×10^{-8} to achieve a pH of the diluted agent of step (a) of 3.0 to 6.0, or adding both said salt and said polyacidic compound to achieve said cloud point and pH,

(c) adding from about 0.07 to 0.8% wt % on weight of fabric of an anionic surfactant selected from the class consisting of alkyl sulfates containing from 12 to 22 carbon atoms, alkyl sulfonates containing from 12 to 24 carbon atoms and alkaryl sulfonates containing 3 to 16 alkyl carbon atoms and phenylene or naphthylene as the aromatic moiety,

(d) further diluting the agent to the desired application concentration,

(e) applying the diluted agent of step (c) to the substrate to be treated so as to achieve the desired level of agent on the substrate,

(f) drying and curing the agent on the substrate, and

(g) recovering substrate which has been durably treated with the agent of the aforesaid formula.

4,346,131

POLYMERIZED SOLUTIONS FOR DEPOSITING OPTICAL OXIDE COATINGS

Bulent E. Yoldas, Churchill Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 65,706, Aug. 10, 1979, abandoned, which is a continuation of Ser. No. 931,346, Aug. 8, 1978, abandoned. This application Sep. 23, 1980, Ser. No. 189,868

Int. Cl.³ B32B *1/00, 17/06*

U.S. Cl. 428—35 **12 Claims**

1. A substrate having an oxide coating thereon which has a predetermined index of refraction between about 1.4 and about 2.4 made by

(A) preparing a clear solution which comprises:

(1) alkoxide having the general formula $M(OR)_n$ where M is selected from the group consisting of 0 to 100% Ti, 0 to 25% Si, 0 to 100% Ta, and up to 15% of a metal ion which forms an alkoxide, R is alkyl from C_1 to C_6, and n is the valence of M;

(2) about 1.7 to about 4 moles of water per mole of alkoxide;

(3) sufficient alcohol to give a solids content of about 0.1 to about 15% and

(4) a sufficient amount of a suitable acid to prevent cloudiness;

(B) applying said clear solution to said substrate; and

(C) heating said substrate to about 300° to about 600° C.

4,346,132

CELLULAR AIR BAG INSULATION AND INSULATOR

Chen-Yen Cheng, and Wu-Cheh Cheng, both of 9605 La Playa St., NE., Albuquerque, N. Mex. 87111

Continuation-in-part of Ser. No. 21,020, Mar. 16, 1979, Pat. No. 4,262,045. This application Apr. 14, 1981, Ser. No. 254,070

Int. Cl.³ B32B *3/20*; E04B *1/80*

U.S. Cl. 428—76 **2 Claims**

1. An inflatable and deflatable cellular bag insulator that comprises

(a) an inflatable and deflatable outer enclosure that is made of a flexible and non-porous film material, is expansible mainly along a first direction and has a front surface and a rear surface upon inflation, the front surface being adapted to face the area to be insulated while in use,

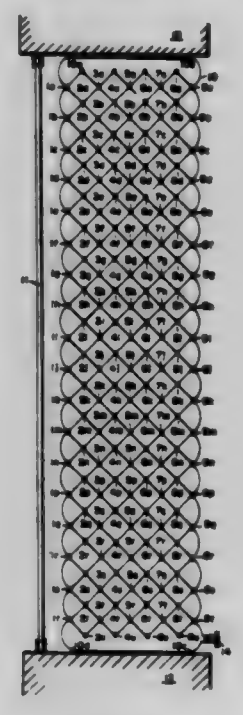
(b) a valving means for inflating and deflating the enclosure,

(c) an inner core that comprises at least one sheet of stacked and mutually bonded flexible film material, each sheet being joined to each neighboring sheet by a set of parallel linear joints laid in the direction substantially parallel to the front surface and substantially perpendicular to the first direction said joints extending substantially the entire length of the sheets forming expansible spaces, and the two sets of linear joints on both sides of an inner sheet being in staggered positions to each other,

(d) linear joints joining the inner core to the outer enclosure,

(e) at least one passage for transferring gas from the valving means to the expansible spaces of the inner core,

that, upon inflating with a gas, the linear joints and the film material in the inner core and the outer enclosure are pulled



away from each other to form an array of layers of parallel compartments extending from a first end to a second end and filled with the inflating gas, reducing heat transfer through the inflated unit by reducing convective flow of gas within the enclosure and requiring heat to pass through the multilayers of the gas filled compartment, wherein the improvement that comprises closing a portion of the parallel compartments at the first end and closing a portion of the parallel compartments at the second end to thereby reduce convective movement of gas contained therein.

4,346,133

STRUCTURAL LAMINATE AND METHOD FOR MAKING SAME

Donald E. Hipchen, Seminole; Michael J. Skowronski, and Joseph R. Hagan, both of Clearwater, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation-in-part of Ser. No. 79,771, Sep. 28, 1979, Pat. No. 4,284,683, which is a continuation of Ser. No. 866,110, Mar. 13, 1978, abandoned, which is a continuation of Ser. No. 745,169, Nov. 26, 1976, abandoned, which is a division of Ser. No. 650,243, Jan. 19, 1976, Pat. No. 4,028,158. This application May 22, 1981, Ser. No. 266,562

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.³ B32B *5/20, 5/26, 5/28*

U.S. Cl. 428—109 **21 Claims**

1. A structural laminate comprising:

A. at least one planar facing sheet;

B. a rigid foam attached to one surface of the facing sheet, the rigid foam formed from a foam-forming mixture; and

C. glass fibers wherein:

I. the glass fibers are distributed substantially evenly throughout the rigid foam,

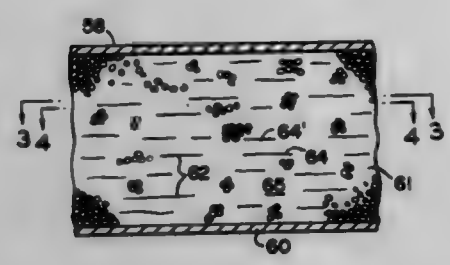
II. the glass fibers are greater than one foot in length,

III. the glass fibers are arranged in layers,

IV. each layer of glass fibers is substantially parallel to the facing sheet, and

V. the rigid foam completely fills the interstices between the glass fibers, the glass fibers being held in fixed rela-

tionship with respect to each other solely by the rigid foam.



6. The structural laminate of claim 1 wherein the glass fibers in each layer are at an angle to the glass fibers in each next adjacent layer.

4,346,134

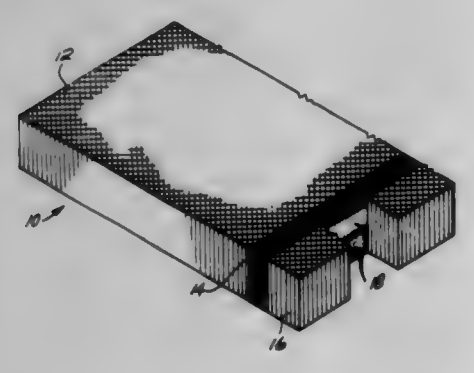
HONEYCOMB CORE ASSEMBLY INCLUDING A SACRIFICIAL CORE PORTION

R. John Hilton, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 164,437, Jun. 30, 1980. This application Sep. 29, 1980, Ser. No. 191,737

Int. Cl.³ B32B *3/12*

U.S. Cl. 428—116 **2 Claims**



1. A honeycomb core assembly useful in a process for simultaneously machining a plurality of surface portions of said honeycomb core assembly, said honeycomb core assembly comprising:

a honeycomb core blank having a low density portion and a higher density portion;

a sacrificial honeycomb core portion having a density less than said higher density portion of said honeycomb core blank;

temporary fastening means disposed between facing surface portions of said higher density portion of said honeycomb core blank and said sacrificial honeycomb core portion; and

said plurality of surface portions comprising a surface portion of said higher density portion and a surface portion of said sacrificial honeycomb core portion.

4,346,135

FIBROUS REINFORCING MEANS FOR CEMENTITIOUSLY AND BITUMINOUSLY BOUND COMPOSITE STRUCTURES AND COATINGS

Adolf Arnheiter, St. Gallen, and Rudolf Enzler, Lichtensteig, both of Switzerland, assignors to Arnheiter AG, Forta-Seilwerke, St. Gallen, Switzerland

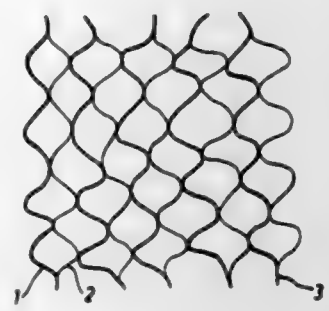
Filed Apr. 14, 1980, Ser. No. 139,727

Claims priority, application Switzerland, May 3, 1979, 4153/79

Int. Cl.³ B32B *5/04*

U.S. Cl. 428—212 **6 Claims**

1. A fibrous reinforcing means for structures and coatings of the type selectively bound together by cement and by bitumen comprising at least two different fiber forms, one of said fiber forms being a closed fiber net including spring elastic fiber means, said closed fiber net having a condensed form prior to being added to a material with which it is mixed and said spring elastic fiber means being means urging said closed fiber net to an open form, said closed fiber net including a first group of fibers and a second group of fibers, said second group of fibers



defining said spring elastic fiber means, the fibers of said first group having a length different from the length of the fibers of said second group, and said fiber forms each comprising fibers of various lengths for distribution in the mixing material in a percentage equivalent in the intended distribution percentage of mixing material aggregates of different grain sizes.

4,346,136

BONDABLE MAGNET WIRE COMPRISING POLYAMIDE-IMIDE COATING CONTAINING RESIDUAL SOLVENT

John H. Lupinski, Scotia, N.Y., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jul. 14, 1980, Ser. No. 168,481

Int. Cl.³ B05D *5/10*; B32B *15/02, 15/08*; H01B *3/30*

U.S. Cl. 428—213 **9 Claims**

1. A bondable, non-tacky, enamel coated, insulated, electrical conductor comprising an electrical conductor, a base insulation coating on said conductor of cured, solid, thermosetting, resin enamel, and an overcoat of polyamide-imide enamel on said base coating, characterized in that said polyamide-imide enamel includes residual solvent in an amount such that said polyamide-imide enamel is self-bondable upon heating to a temperature above the ambient temperatures at which said conductor is stored and worked.

4,346,137

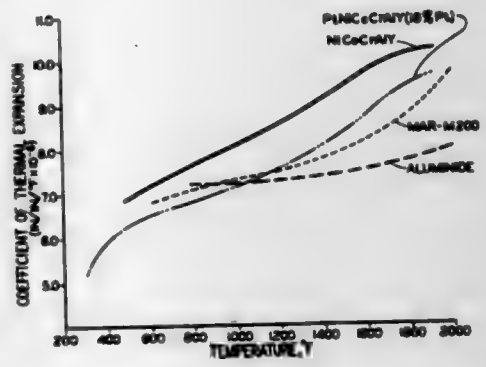
HIGH TEMPERATURE FATIGUE OXIDATION RESISTANT COATING ON SUPERALLOY SUBSTRATE

Ralph J. Hecht, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1979, Ser. No. 105,358

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—215 **6 Claims**



1. A coated article consisting of a superalloy substrate having a protective coating on at least part of the substrate, said coating consisting essentially of 8–30% Cr, 5–20% Al, 10–60% Ni, 8–30% Co, from 0.05–1.0% of a material selected from the

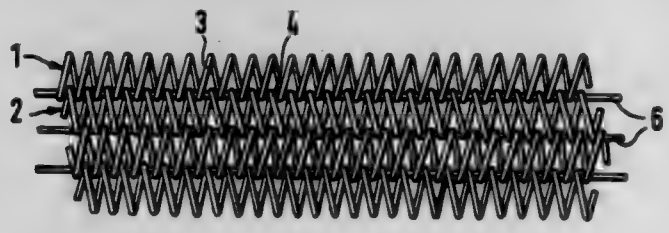
group consisting of Y, Sc, and La, and mixtures thereof, balance Pt, Rh and mixtures thereof in an amount of at least 13%.

4,346,138

SIEVE BELT OF THERMOSETTABLE SYNTHETIC RESIN HELICES FOR PAPERMAKING MACHINE

Johannes Lefferts, Enschede, Netherlands, assignor to SITEG Siebtechnik GmbH, Ahaus-Alstatte, Fed. Rep. of Germany

Filed Jan. 11, 1980, Ser. No. 111,497
Claims priority, application Netherlands, Apr. 23, 1979, 7903176; Fed. Rep. of Germany, Sep. 21, 1979, 2938221
Int. Cl.³ D04H *3/02*
U.S. Cl. 428—222 5 Claims



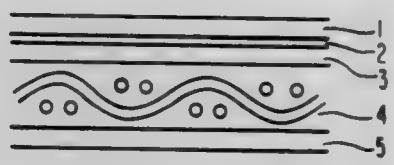
1. A sieve belt of the type used in a paper making machine and comprising a plurality of interleaved helices of windings of thermosettable synthetic resin, the helices being longitudinally unbiased and the windings being free of torsion, and a plurality of pintle-filaments extending through respective channels formed by the interleaved windings of adjacent helices, the individual windings of the helices protruding into the material of the pintle-filaments so that the helices and pintle-filaments are interlocked to hold together the helices and prevent lateral shifting thereof.

4,346,139

HIGHLY WEATHER-PROOF HIGH STRENGTH TRI-AXIAL WOVEN MEMBRANE MATERIALS

Yoshitaka Osawa; Akira Nishimura, and Shinichi Toyooka, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 31, 1980, Ser. No. 221,750
Claims priority, application Japan, Mar. 7, 1980, 55/29514
Int. Cl.³ B32B *7/00, 27/00*
U.S. Cl. 428—252 13 Claims



1. A highly weather-proof high strength membrane material which comprises

a polyvinyl fluoride resin film coated with an adhesive layer on one side thereof,

a urethane resin applied by spraying on the adhesive layer,

a triaxially woven fabric of polyaramide fibers as reinforcing fibers adhered on one surface thereof onto the sprayed urethane layer, and

a urethane resin applied by spraying on another surface of the fabric.

4,346,140

COMPOSITE STRUCTURE OF AN AROMATIC POLYAMIDE FABRIC COATED WITH A FLUOROSILICONE RUBBER

Richard H. Carlson, Clinton, Conn., and Gerald L. Gatcomb, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 30, 1981, Ser. No. 249,225
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—252 7 Claims



1. A composite sheet structure comprising a layer about 2–30 mils thick of a fluorosilicone rubber firmly adhered to both sides of an aromatic polyamide fabric and having a dielectric constant of about 4–8 and a dissipation factor of about 0.015–0.030 where the dielectric constant and dissipation factor are determined at one megahertz frequency according to ASTMD-1531.

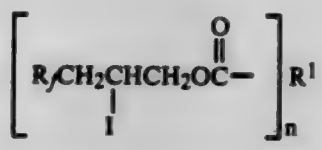
4,346,141

IODINE-SUBSTITUTED POLYFLUOROALKYL ESTERS AND THEIR USE

William R. Remington, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 149,576, May 14, 1980, abandoned. This application Mar. 30, 1981, Ser. No. 249,224
Int. Cl.³ D04H *1/58*
U.S. Cl. 428—289 22 Claims

1. A compound having the formula:



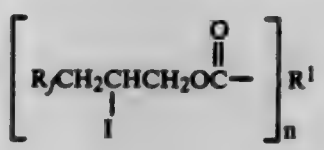
wherein

R_f is a fluorinated aliphatic containing at least 3 carbons;

R^1 is the hydrocarbon residue of either citric, succinic, chlorendic, trimellitic or pyromellitic acid; and

n is a number from 1 to 4.

7. A process for imparting oil- or water-repellency, or dry soil resistance to a substrate which comprises applying to the substrate at least one compound having the formula:



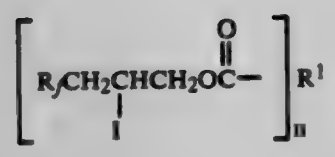
wherein

R_f is a fluorinated aliphatic containing at least 3 carbons;

R^1 is the hydrocarbon residue of either citric, phthalic (o, m or p isomer), benzoic, succinic, chlorendic, trimellitic or pyromellitic acid; and

n is a number from 1 to 4.

15. A substrate exhibiting oil- or water-repellency or dry soil resistance and having deposited thereon a compound having the formula:



wherein

R_f is a fluorinated aliphatic containing at least 3 carbons;

R^1 is the hydrocarbon residue of either citric, phthalic (o, m or p isomer), benzoic, succinic, chlorendic, trimellitic or pyromellitic acid; and

n is a number from 1 to 4.

4,346,142

HYDROPHILIC MONOMER TREATED MICROPOROUS FILMS AND PROCESS

Nelson R. Lazear, New Martinsville, W. Va., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 71,644, Sep. 4, 1979, abandoned. This application Nov. 14, 1980, Ser. No. 206,975

Int. Cl.³ B05D *3/06*

U.S. Cl. 428—315.7 **15 Claims**

1. A process for preparing an open celled hydrophilic polyolefinic microporous film having an electrical resistance of less than about 30 milliohms per square inch and a water flow rate therethrough of greater than about 0.01 cc/min/cm^2 at a pressure differential of about one atmosphere from a normally hydrophobic polyolefinic microporous film selected from the group consisting of polyethylene and polypropylene microporous films, comprising the steps of:

(a) coating the surface of the micropores of a normally hydrophobic polyethylene or polypropylene open celled microporous film characterized by having a reduced bulk density as compared to the bulk density of a precursor film from which it is prepared, an average pore size of from about 200 to about 10,000 Angstroms, and a surface area of at least about 10 square meters per gram, with at least one hydrophilic organic hydrocarbon monomer having from about 2 to about 18 carbon atoms characterized by the presence of at least one double bond and at least one polar functional group; and

(b) chemically fixing to the surface of the micropores of the microporous film an amount of said hydrophilic organic hydrocarbon monomer sufficient to preserve the open celled nature of said micropores and sufficient to obtain an add-on of from about 0.1 to about 10%, by weight, based on the weight of the uncoated microporous film, by irradiating the coated microporous film of (a) with an amount of ionizing radiation of from about 1 to 10 megarads for polyethylene microporous films and from about 3 to 10 megarads for polypropylene films.

8. A hydrophilic open celled microporous film having an electrical resistance of less than about 30 milliohms per square inch and a water flow rate therethrough of greater than about 0.01 cc/min/cm^2 at a pressure differential of about one atmosphere comprising:

(a) an open celled normally hydrophobic microporous film prepared from a polymer selected from the group consisting of polyethylene and polypropylene characterized by having a reduced bulk density as compared to the bulk density of a precursor film from which it is prepared, an average pore size of from about 200 to about 10,000 Angstroms and a surface area of at least 10 square meters per gram; and

(b) a coating on the surface of the micropores of the microporous film of at least one hydrophilic organic hydrocarbon monomer having from about 2 to about 18 carbon atoms characterized by the presence of at least one double bond and at least one polar function group in an amount sufficient to preserve the open celled nature of the microporous film and to obtain an add-on of from about 0.1 to about 10%, by weight, based on the weight of the uncoated microporous film, said hydrophilic organic hydrocarbon monomer coating being chemically fixed to the surface of the micropores of the microporous film by exposure to an amount of ionizing radiation of from about 1 to 10 megarads for polyethylene microporous films and from about 3 to 10 megarads for polypropylene microporous films.

4,346,143

METHOD OF APPLYING ZINC-RICH PRIMER AND PRODUCT

Charles L. Young, Jr., Westerville, Ohio, and Ralph C. Gray, Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 7, 1977, Ser. No. 849,292

Int. Cl.³ B32B *15/04, 15/08*

U.S. Cl. 428—332 **20 Claims**

1. An improved method of providing corrosion resistance to a ferrous metal substrate which involves the application of a zinc-rich coating to the surface of the substrate, the improvement comprising:

(A) treating the surface of the ferrous metal substrate by contacting the ferrous metal substrate for at least one and up to 60 seconds with 1 to less than 20 percent by weight of aqueous nitric acid followed by

(B) directly applying to said previously treated surface a zinc-rich coating which contains at least 30 percent by volume pulverulent zinc in a resinous binder.

16. A ferrous metal article coated by the method of claim 1.

4,346,144

POWDER COATING COMPOSITION FOR AUTOMOTIVE TOPCOAT

James M. Craven, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 21, 1980, Ser. No. 170,868

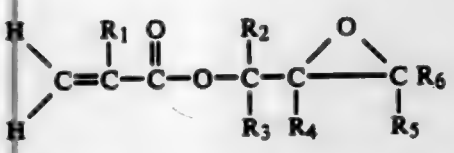
Int. Cl.³ C08L *63/08, 61/28, 63/10*

U.S. Cl. 428—335 **17 Claims**

1. A thermosetting powder coating composition of finely divided particles having a particle size of about 1 to 100 microns, wherein the particles are an intimately mixed blend consisting essentially of:

A. an acrylic copolymer consisting essentially of polymerized monomers of:

(1) about 8 to 35 percent by weight, based on the weight of the copolymer, of a monoethylenically unsaturated monomer having the formula

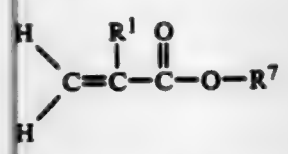


where R_1 and R_4 are the same or different and are each selected from the group consisting of hydrogen and the methyl radical, and R_2, R_3, R_5, and R_6, are hydrogen and

(2) about 65 to 92 percent by weight, based on the weight of the copolymer, of at least one monoethylenically unsaturated monomer which is free of epoxy groups selected from the group consisting of

(a) styrene;

(b) esters of acrylic or methacrylic acid having the formula



where R^1 is selected from the group consisting of

hydrogen and the methyl radical, and R^7 is selected from the group consisting of C_1–C_{20} aliphatic hydrocarbon radicals and C_1–C_{20} aromatic hydrocarbon radicals.

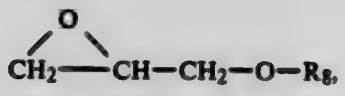
wherein the copolymer has a number average molecular weight of about 1,500 to 10,000, a weight average molecular weight of about 3,000 to 18,000, and a glass transition temperature of about 30° C. to 100° C;

B. a carboxy-terminated crosslinking agent consisting of an aliphatic dicarboxylic acid having the formula

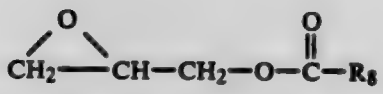
$$HOOC—(CH_2)_n—COOH$$

where n is an integer from 8–18; said crosslinking agent being present in an amount sufficient to provide 0.9–1.5 carboxylic acid groups for each epoxy group orginially in the copolymer;

C. a supplementary crosslinking having at least one functional group which is capable of reacting with either hydroxyl groups or carboxylic acid groups, and which will not react until the the carboxylic-terminated crosslinking agent has reacted with the acrylic copolymer said supplementary crosslinking being present in an amount sufficient to provide 0.1–0.7 functional group for each epoxy group originally in the acrylic copolymer and is selected from the group consisting of an alkylated melamine formaldehyde resin, an alkylated glycoluril resin, an aliphatic glycidyl ether having the formula

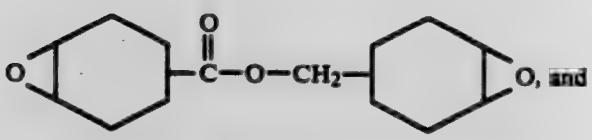


an aliphatic glycidyl ester having the formula

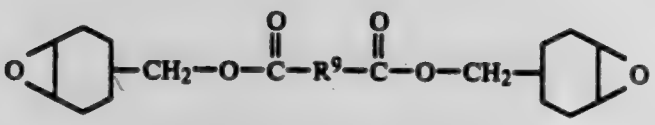


where R^8 is selected from the group consisting of the C_1–C_{20} aliphatic hydrocarbon radicals,

a cycloaliphatic epoxide having the formula



a cycloaliphatic epoxide having the formula



where R^9 is selected from the group consisting of bivalent C_6–C_{10} aromatic hydrocarbon radicals and bivalent C_2–C_{20} aliphatic hydrocarbon radicals; and

D. at least one agent capable of preventing the degradation of the coating by ultraviolet light

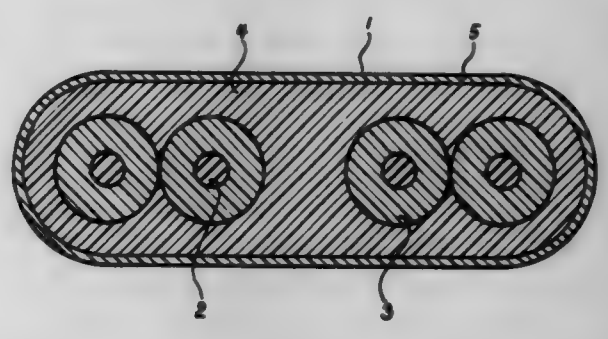
wherein the agent has a weight average molecular weight of greater than 300 and a particle size of less than 40 microns.

4,346,145

COATING COMPOSITION AND COATED ARTICLES

Jae H. Choi, Warren Township, Marion County, Ind.; John J. Mottine, Jr., Red Bank Township, Monmouth County, N.J.; Walter J. Sparzak, Sr., Catonsville, and William C. Vesperman, Bel Air, both of Md., assignors to Western Electric Co., Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 5, 1981, Ser. No. 222,440
Int. Cl.³ D02G 3/00
U.S. Cl. 428—389 11 Claims



1. A strand material having a char-forming flame retardant covering thereover, said covering comprising a polyvinyl chloride resin, a plasticizer consisting essentially of 45–60 parts by weight per 100 parts of resin of a flame retardant phosphate plasticizer, said plasticizer comprising 30–60% by weight of tributoxyethyl phosphate, or 85–100% by weight 2-ethylhexyl diphenyl phosphate, 4–8 parts by weight of a cycloaliphatic epoxy resin, and 2–4 parts by weight of a metallic stabilizer.

4,346,146

POROUS FLAME RETARDANT ACRYLIC SYNTHETIC FIBERS AND A METHOD FOR PRODUCING THESE FIBERS

Yoshikazu Kondo; Toshihiro Yamamoto, and Takaji Yamamoto, all of Hofu, Japan, assignors to Kanebo, Ltd., Tokyo and Kanebo Synthetic Fibers, Ltd., Osaka, both of, Japan

Filed Jun. 6, 1980, Ser. No. 156,994
Claims priority, application Japan, Jun. 18, 1979, 54-77048; Jun. 18, 1979, 54-77049
Int. Cl.³ D02G 3/00
U.S. Cl. 428—398 10 Claims



1. A porous, flame-retardant, acrylic, synthetic fiber, in which the polymeric component of said fiber consists of a mixture of

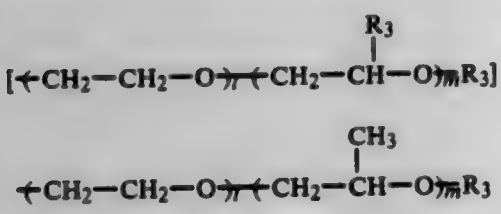
(A) from 2 to 50% by weight of cellulose acetate, and

(B) from 50 to 98% by weight of a polymer material selected from the group consisting of

1. modacrylic copolymer consisting of from (i) 20 to 60% by weight of at least one of vinyl chloride and vinylidene chloride, (ii) less than 5% by weight of a copolymerizable monomer different from vinyl chloride, vinylidene chloride and acrylonitrile, and (iii) the balance is acrylonitrile, and
2. mixture of said modacrylic copolymer and an acrylic copolymer consisting of (i) from 5 to 30% by weight of monomer having the formula



wherein R_1 is H or CH_3, X is selected from the group consisting of H, NH_4, alkali metal and



wherein R_3 is H or CH_3, and l and m are integers of from 0 to 50 and $0<l+m\leqq 50$, (ii) at least 70% by weight of acrylonitrile and (iii) the balance is said copolymerizable monomer, with the proviso that the amount of said acrylic copolymer is not greater than 33% by weight, based on the total weight of said polymeric component of said fiber, said fiber having a surface area A of voids of not greater than 15 m^2/g, a porosity V of from 0.05 to 0.75 cm^3/g and the ratio of porosity V/surface area A being 1/30 or more, said fiber having mainly macrovoids formed by phase separation of said cellulose acetate and said modacrylic copolymer.

4,346,147

METHOD OF MANUFACTURING NITRIDED SILICON PARTS

Pernette Barlier, Paris, and Jean-Paul Torre, Mennecy, both of France, assignors to Association pour la Recherche et Developpement des Methodes et Processus Industriels (ARMINES), Paris, France

Filed Jan. 4, 1980, Ser. No. 109,713
Claims priority, application France, Jan. 5, 1979, 79 00268
Int. Cl.³ F27B *9/04*
U.S. Cl. 428—446 **6 Claims**

1. A material which is oxidation resistant when hot, said material being formed by a solid solution of aluminum and oxygen in silicon nitride, of the β'-SiAlON type and being formed by nitriding sintering of silicon powder in an atmosphere rich in nitrogen, the improvement comprising adding about 1 to 10% by weight of aluminum to the silicon powder before sintering thereof and subjecting the silicon nitride sintered with aluminum to preliminary oxidation while hot under conditions such that the aluminum and oxygen supplied by ambient atmosphere react on the silica formed at the surface to form a surface layer of acicular mullite.

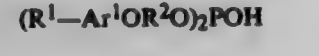
4,346,148

PHOSPHORUS-CONTAINING COMPOSITIONS, LUBRICANTS CONTAINING THEM AND METAL WORKPIECES COATED WITH SAME

Richard W. Jahnke, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 36,113, May 4, 1979, abandoned. This application Sep. 21, 1979, Ser. No. 77,879
Int. Cl.³ B32B *15/08, 27/00*
U.S. Cl. 428—461 **27 Claims**

1. A metal working lubricant comprising a major amount of lubricating oil and a minor amount, effective to improve the rust inhibiting and extreme pressure properties thereof, of a phosphorus-containing composition comprising at least one compound having the formula



wherein:

Each R^1 is independently an aliphatic hydrocarbon-based radical having from about 4 to about 100 carbon atoms;
each R^2 is independently an ethylene, trimethylene, lower alkyl-substituted ethylene or lower alkyl-substituted trimethylene radical; and
each Ar^1 is independently an aromatic radical.

24. A metal workpiece having on its surface a film of a lubricant according to claim 1, 5, 6, 7, 11, 12 or 16.

4,346,149

WATER BASED ALUMINUM PAINT

James E. Sullivan, Fort Myers, Fla., assignor to Gulfko Incorporated, Fort Myers, Fla.

Filed May 19, 1980, Ser. No. 151,345
Int. Cl.³ C08K *3/08*
U.S. Cl. 428—516 **9 Claims**

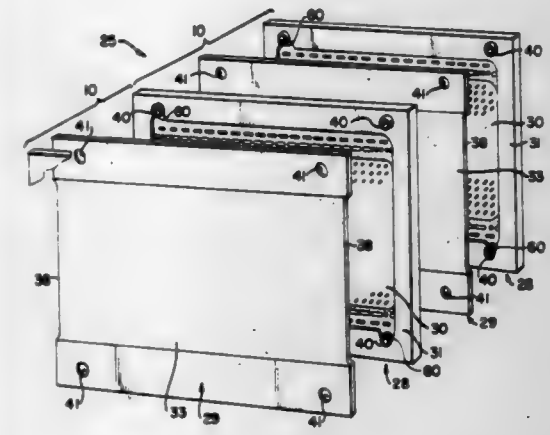
1. A process for coating a plastic film with a water based aluminum paint which comprises preparing a paint by adding sequentially while stirring to water containing a small amount of a dispersant, aluminum paste or powder, finely divided mica, an acrylic polymer and an antifoamer in suitable amounts to form a paint, and coating the surface of a plastic film with said paint, said coating having high reflectivity toward heat and light, and being water resistant and crack resistant.

4,346,150

ELECTROCHEMICAL CONSTRUCTION

Richard J. Bellows; Patrick G. Grimes, both of Westfield; Kenneth R. Newby, Berkeley Heights; Harry Einstein, Springfield, and Hsue C. Tsien, Chatham Township, Morris County, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 1, 1981, Ser. No. 268,675
Int. Cl.³ H01M *4/00, 8/00*
U.S. Cl. 429—18 **12 Claims**



1. An electrochemical construction comprising a stack of cells each comprised of an integral separator and spacer disposed between adjacent electrodes each comprised of a plastic sheet having a coextruded electrically conductive mid-portion and electrically non-conductive side portions.

4,346,151

MULTICELL SEALED RECHARGEABLE BATTERY

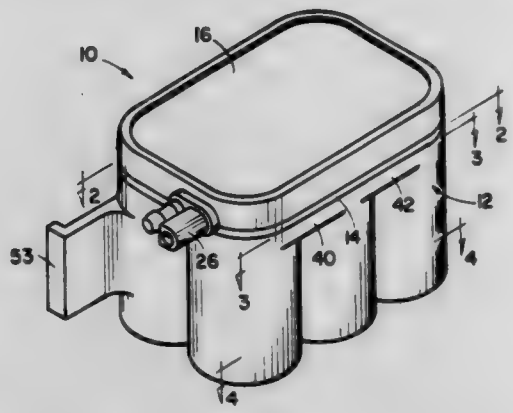
Toshio Uba, Denver; Larry K. W. Ching, Littleton, and Michael R. Harrison, Evergreen, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Dec. 29, 1980, Ser. No. 221,227
Int. Cl.³ H01M *10/12*
U.S. Cl. 429—54 **12 Claims**

1. A multicell sealed rechargeable battery and housing therefor capable of withstanding variable internal pressures, comprising:
an open mouth substantially rigid monobloc container including a plurality of cup-shaped cell holders of internal substantially cylindrical shape each interconnected to at

least one adjacent cell holder at mutual circumferential tangent zone(s), to define common substantially non-deformable intercell partitions at such zones;

non-self-contained electrochemical cells having plates and



separator spirally wound together in substantially cylindrical shape closely fitting in said cell holders and electrically interconnected to form a battery; and

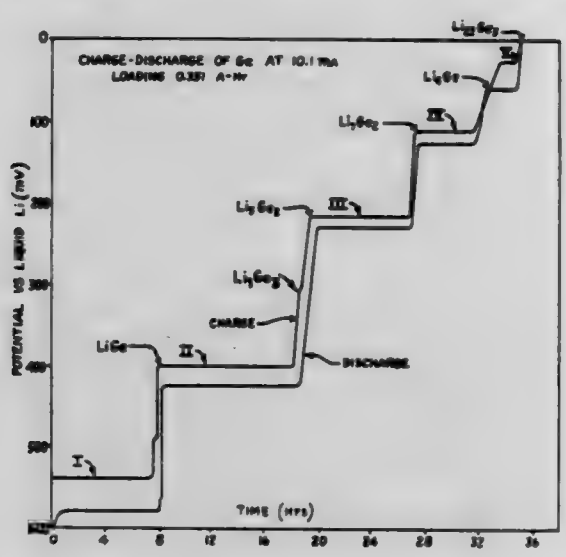
a closure member attached to the monobloc container at its mouth.

4,346,152

LITHIUM-GERMANIUM ELECTRODES FOR BATTERIES

Anthony F. Sammells, Naperville, and Michael R. St. John, Chicago, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Jul. 18, 1980, Ser. No. 169,962
Int. Cl.³ H01M *4/40*
U.S. Cl. 429—112 **17 Claims**



1. A negative lithium electrode for molten salt electrical storage batteries comprising:

an electrochemically active material selected from the group consisting of lithium-germanium alloys, lithium-germanium-silicon alloys, lithium-germanium-aluminum alloys and mixtures thereof, and

a current collector support in electronic communication therewith.

4,346,153

ELECTRODE FOR A LEAD-ACID STORAGE CELL

Michel Rigal, Lille, and Jean Saerens, Haubourdin, both of France, assignors to Compagnie Europeenne d'Accumulateurs, Paris, France

Filed Jan. 6, 1981, Ser. No. 222,761
Claims priority, application France, Jan. 18, 1980, 80 01065
Int. Cl.³ H01M *4/68, 4/70*
U.S. Cl. 429—234 **13 Claims**

1. An electrode for a lead-acid storage cell, said electrode containing an active material, an active material support made of lead or a lead alloy, and at least one electric conductor which includes an elongated core made of a substance chosen from the group consisting of copper, aluminum, silver, zinc,



and alloys of each of these metals, said core being coated with a protective layer made of a substance chosen from the group consisting of titanium, tungsten, tantalum, niobium, zirconium and alloys thereof.

4,346,154

ANTISTAIN AGENT OR ANTISTAIN AGENT PRECURSOR IN PHOTOGRAPHIC SILVER HALIDE ELEMENT

Donald F. McLaen, and Arthur H. Herz, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,330
Int. Cl.³ G03C *1/06, 1/48*
U.S. Cl. 430—14 **15 Claims**

1. In a photographic silver halide element comprising a support having thereon

(a) a photographic silver halide gelatino emulsion layer,

(b) an undercoat layer between the emulsion layer and the support,

the improvement comprising

in the undercoat layer a stain retarding concentration of a phosphine antistain agent or phosphine antistain agent precursor.

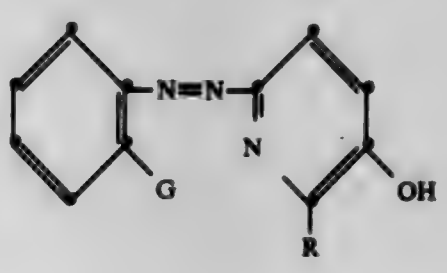
4,346,155

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE 6-ARYLAZO-3-PYRIDINOL MAGENTA DYE-RELEASING COMPOUNDS AND PERCURSORS THEREOF

Derek D. Chapman, and James A. Reczek, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 237,170, Feb. 23, 1981, which is a division of Ser. No. 174,406, Aug. 1, 1980, Pat. No. 4,287,292. This application Aug. 24, 1981, Ser. No. 295,455
Int. Cl.³ G03C *1/40, 7/00, 1/10, 5/54*
U.S. Cl. 430—17 **3 Claims**

1. A photographic element comprising a support having thereon a layer comprising a photographic mordant having bound thereto a coordination complex of a polyvalent metal ion and a compound having the formula:



wherein:

R represents hydroxy or amino; and

G represents carboxy; a hydrolyzable ester group having the formula $COOR^2$, wherein R^2 is an alkyl or substituted alkyl group having 1 to about 8 carbon atoms or an aryl or substituted aryl group having 6 to about 10 carbon atoms; or a sulfamoyl group having the formula SO_2NHR^3 wherein R^3 represents hydrogen, alkyl or substituted alkyl having 1 to about 8 carbon atoms, aryl or substituted aryl

having 6 to about 10 carbon atoms, or an acyl group having 1 to about 8 carbon atoms.

4,346,156

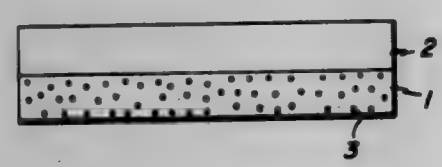
ELECTROPHOTOGRAPHIC-MAGNETIC DUPLEX IMAGING STRUCTURE AND METHOD

Eugene C. Faucz, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 672,809, Apr. 1, 1976, abandoned. This application Sep. 27, 1976, Ser. No. 726,853

Int. Cl.³ G03G *19/00*

U.S. Cl. 130—39 **9 Claims**



1. A thermomagnetic recording method comprising

charging electrostatically the surface of a photoconductive layer of a recording member including the photoconductive layer and a magnetizable layer,

said photoconductive layer being transmissive of electromagnetic radiation of at least some wavelength within the visible spectrum extending from about 2900 to about 38,000 angstroms and being photoelectrically responsive to actinic radiation of some wavelength within the visible spectrum,

said magnetizable layer being absorbtive of the radiation transmitted through the photoconductive layer,

exposing the charged surface of the recording member to a pattern of actinic radiation to create a corresponding pattern with electrostatic charge on the surface,

developing the electrostatic charge pattern by depositing a toner material on the photoconductive surface that either reflects or absorbs radiation transmitted by the photoconductive layer,

recording the magnetizable layer with a uniform pattern of magnetic transitions, and

exposing, from the photoconductive layer side, the recording member to radiation transmitted by the photoconductive layer to heat the magnetizable layer above its Curie point temperature in regions complementary to the toner material to record a latent magnetic image in the magnetizable layer corresponding to the pattern of the toner material.

4,346,157

COMPLEX TYPE ELECTROPHOTOGRAPHIC PLATE

Atsushi Kakuta, Hitachiota; Shigeo Suzuki, Hitachi; Yasuki Mori, Hitachi, and Hirosada Morishita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

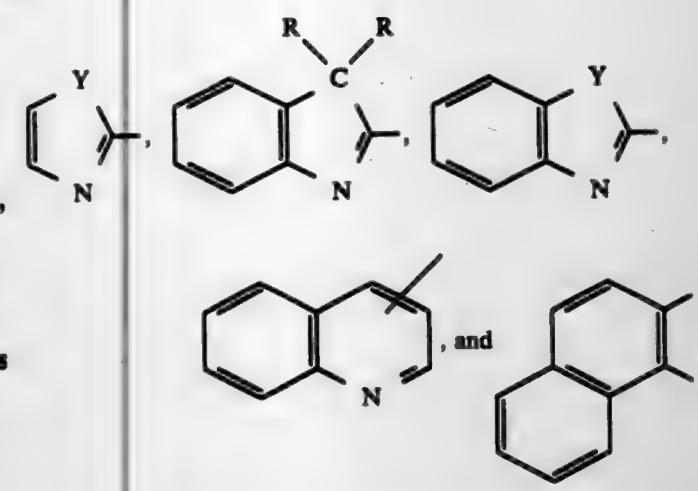
Continuation-in-part of Ser. No. 70,822, Aug. 29, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,829

Claims priority, application Japan, Sep. 4, 1978, 53/107466; Nov. 8, 1978, 53/136697

Int. Cl.³ G03G *5/09*

U.S. Cl. 430—58 **18 Claims**

1. A complex type electrophotographic plate comprising a conductive support; a first layer, adhered to the support, of a charge generating material, said first layer having a thickness of 0.1 to 5 μm; and a second layer, superposed on the first layer, of a homogeneous mixture of a charge transport material, and an insulating, resinous binder therefor, said second layer having a thickness of 5 to 100 μm and being substantially transparent to light of a wavelength of 4200 to 8000 Å; wherein said charge transport material is at least one member selected from the class consisting of nonionic compounds represented by the general formula: X—(CH=CH)$_n$—Ar where X is a heterocyclic group selected from the group consisting of



and Y is O or S; R is a lower alkyl group; the hetero ring may be substituted; n is an integer of 0, 1 or 2; and Ar is an aryl or substituted aryl group.

4,346,158

IMAGING SYSTEM WITH A DIAMINE CHARGE TRANSPORT MATERIAL IN A POLYCARBONATE RESIN

Damodar M. Pai; Milan Stolka, and John F. Yanus, all of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

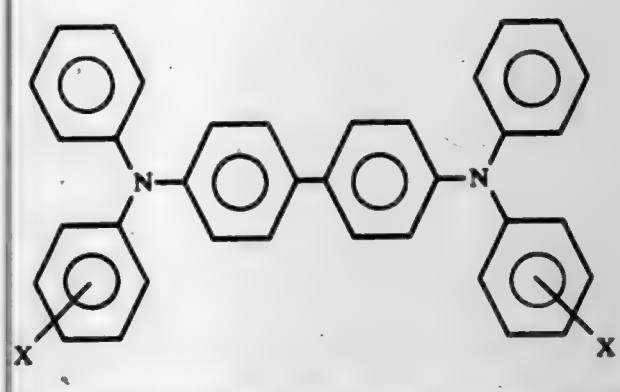
Continuation-in-part of Ser. No. 965,969, Dec. 4, 1978, Pat. No. 4,265,990, which is a continuation-in-part of Ser. No. 793,819, May 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 716,403, Aug. 23, 1976, abandoned. This application May 4, 1981, Ser. No. 260,496

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.³ G03G *5/00, 5/04*

U.S. Cl. 430—59 **6 Claims**

1. An imaging member comprising a charge generation layer comprising a layer of photoconductive material, a contiguous charge transport layer, and an electrically conductive layer, said charge transport layer comprising a polycarbonate resin material having a molecular weight of from about 20,000 to about 120,000 having dispersed therein from about 25 to about 75 percent by weight of one or more compounds having the general formula:



wherein X is selected from the group consisting of an alkyl group, having from 1 to about 4 carbon atoms and chlorine, said photoconductive layer exhibiting the capacity of photogeneration of holes and injection of said holes and said charge transport layer being capable of supporting the injection of photogenerated holes from said photoconductive layer and transporting said holes through said charge transport layer to said electrically conductive layer.

4,346,159
PHOTOSENSITIVE ELEMENT FOR ELECTROPHOTOGRAPHY

Shigeru Sadamatsu; Lyon S. Pu, and Yoshihisa Ishikawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1978, Ser. No. 877,783
Claims priority, application Japan, Feb. 14, 1977, 52-14152
Int. Cl.[3] G03G 5/14
U.S. Cl. 430—67 12 Claims

1. A photosensitive element for electrophotography having improved charging performance and comprising an electrically conductive backing member, a photoconductive layer having an electric resistance of greater than about 10^{13} Ωcm and a thickness of about 10 to about 50μ on the backing member, and a transparent electrically insulating surface layer on the photoconductive layer, wherein the transparent electrically insulating surface layer contains a an electron donating compound in an amount of 0.01 to 30% by weight or a layer of an electron donating compound about 0.01 to about 15μ thick interposed between the photoconductive layer and the transparent electrically insulating surface layer, whereby a charge-retentive layer is formed in the boundary between the photoconductive layer and the transparent electrically insulating layer to prevent a charge held in the boundary between the photoconductive layer and the transparent electrically insulating layer from discharging, wherein a positive-type photoconductor is used as the photoconductive layer, further wherein said transparent electrically insulating layer is a layer of a member selected from the group consisting of a polysiloxane, a polyurethane, a polyester, a polyethyleneoxide, a polyethylene terephthalate, a polyethylene, a polyoxyethylene, a polycarbonate, a polystyrene, a polyphenylether, a polyphenylene, a polypeptide, an acrylonitrile/butadiene/styrene resin, an acrylonitrile/styrene resin, an apoxy resin, a polyvinyl alcohol, a polyacetal, a polyamide, a urea resin, a melamine resin, an acrylic resin or a copolymer thereof and wherein said electron donating compound is selected from the group consisting of Nigrothin, Methylene Blue, Indigo Blue, Congo Red, Victoria Pure Blue, Violet 6B, Fuchsin, Basic Cyanine LG, Auramine, Naphthalene Green, Acid Rhodamine G, Fluorescin, Rose Bengal, Eosin A, Eosin Y, Pholoxine Pinakryptol Green, Celestine Blue, Quinoline Blue, cyanine dyes, Oil Red B, Chrome Blue, Blue Black RG, a condensed polycyclic compound, an amine compound, a quaternary amine compound, an aniline derivative, a nitrogen-containing heterocyclic compound, a sulfur-containing heterocyclic compound, an oxygen-containing heterocyclic compound, a nitrogen- and oxygen-atom containing heterocyclic compound, a nitrogen- and sulfur-atom containing heterocyclic compound, an oxygen- and sulfur-atom containing heterocyclic compound or a sulfur-, nitrogen- and oxygen-atom containing heterocyclic compound.

4,346,160
TWO-SHEET DIFFUSION TRANSFER ELEMENTS

John F. Bishop, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 174,421, Aug. 1, 1980, Pat. No. 4,298,682.
This application Mar. 16, 1981, Ser. No. 243,678
Int. Cl.[3] G03C 1/76
U.S. Cl. 430—215 20 Claims

1. In a photographic assemblage comprising:

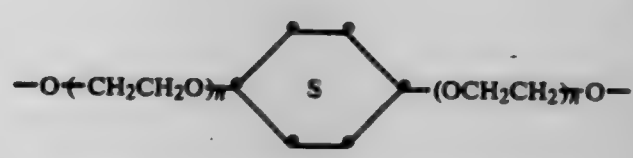
(A) a photographic element comprising a support having thereon at least one exposed photosensitive silver halide emulsion layer having associated therewith a dye image-providing material, and superposed thereon in face-to-face contact therewith:

(B) a dye image-receiving element comprising a support having thereon a dye image-receiving layer, said receiving element being adapted to be separated from said photographic element after processing thereof;

the improvement wherein either said photographic element or said receiving element has thereon an overcoat layer, said overcoat layer being located at the interface of said photographic element and said receiving element superposed thereon, said overcoat layer comprising either silica in a hydrophilic colloid at a ratio of 2:1 to 7:1, or an ionic polyester in a hydrophilic colloid at a ratio of 1:5 to 10:1, said polyester comprising recurring units of:

(I) a diol component which comprises:

(a) at least 50 mole percent of units derived from diols having the structures:



(i)

wherein n is an integer of from 1 to 4; and

(ii) O—(RO)—$_m$, wherein m is an integer of from 2 to 4, and R is an alkylene group of 2 to about 4 carbon atoms; and

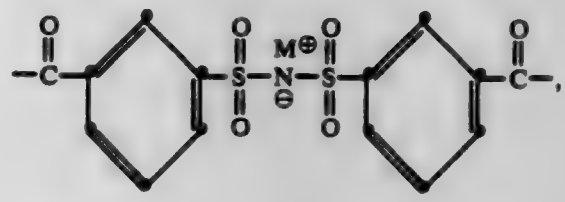
(b) 0 to 50 mole percent of units derived from one or more diols having the structure:

—O—R^1—O—

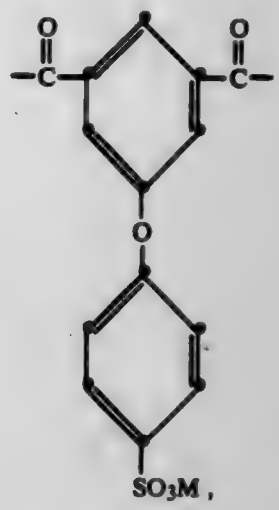
wherein R^1 is an alkylene group of up to about 16 carbon atoms, a cycloalkylene group of 6 to about 20 carbon atoms, a cycloalkylenebisalkylene group of 8 to about 20 carbon atoms, an arylenebisalkylene group of 8 to about 20 carbon atoms, or an arylene group of 6 to about 12 carbon atoms; and

(II) an acid component which comprises:

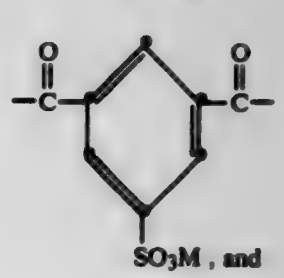
(a) 8 to 30 mole percent of units derived from one or more ionic dicarboxylic acids, said units having the structures:



,

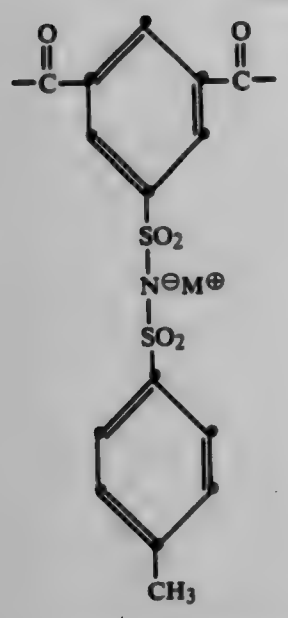


,



, and

-continued



wherein M is ammonium or a monovalent metal; and

(b) 70 to 92 mole percent of recurring units derived from other diacids.

4,346,161

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE 6-(2-THIENYLAZO)-3-PYRIDINOL CYAN DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

James J. Krutak; Robert J. Maleski, and William H. Moore, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1981, Ser. No. 258,845
Int. Cl.³ G03C *7/00, 1/40, 1/10, 5/54*
U.S. Cl. 430—223 41 Claims

22. In a photographic assemblage comprising:

(a) a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material: and

(b) a dye image-receiving layer: the improvement wherein said dye image-providing material is a nondiffusible compound having at least one diffusible 6-(2-thienylazo)-3-pyridinol dye moiety or precursor thereof, said compound containing:

(a) in the 3-position of the thienylazo moiety a carboxy group, a salt thereof or a hydrolyzable precursor thereof; and

(b) a ballasted carrier moiety which is capable of releasing said diffusible azo dye under alkaline conditions.

4,346,162

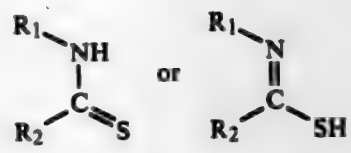
NEGATIVE TONABLE PHOTOSENSITIVE REPRODUCTION ELEMENTS

Werner Abele, Neu-Isenburg, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 17, 1981, Ser. No. 274,559
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 3023247
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—270 4 Claims

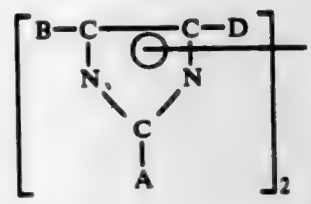
1. Photosensitive nonsilver reproduction element for the preparation of negative tonable images comprising a support bearing a layer of a photosensitive composition which comprises at least (1) one thermoplastic binder, (2) a photosensitive system consisting essentially of

(a) 10 to 50% by weight, based on the total weight of solids in the photosensitive composition, of at least one thio compound of the formula:



wherein R_1 can be H, alkyl of 1 to 4 carbon atoms and aryl of 6 to 10 carbon atoms, and R_2 can be H and alkyl of 1 to 6 carbon atoms, and R_1 and R_2 when taken together can be members of a 5 to 7 membered ring which may contain oxygen, sulfur and nitrogen as additional heteroatoms, and

(b) at least one hexarylbisimidazole compound of the formula:



wherein A, B and D are either identical or different and are optionally substituted aryl groups derived from carbocyclic or heterocyclic compounds; and optionally (3) a plasticizer.

4,346,163

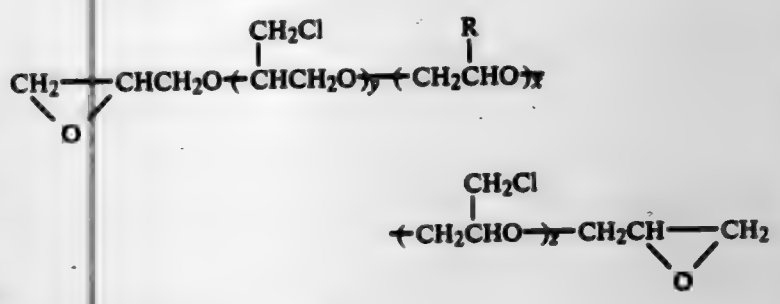
RESIST FOR USE IN FORMING A POSITIVE PATTERN WITH A RADIATION AND PROCESS FOR FORMING A POSITIVE PATTERN WITH RADIATION

Kenichi Takeyama, Osaka; Takayoshi Morimoto, Ashiya, and Kunio Hibino, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 960,770, Nov. 15, 1978, abandoned.
This application Sep. 22, 1980, Ser. No. 188,773
Claims priority, application Japan, Nov. 17, 1977, 52-138574
Int. Cl.³ B05D *3/06*
U.S. Cl. 430—280 2 Claims

1. A process for forming a positive pattern with a radiation comprising the steps of:

(1) applying on a substrate a resist comprising a copolymer composed of 100 moles of methyl methacrylate and 1 to 15 moles of methacrylic acid and a cross-linking agent having the following general formula:



wherein R is H or CH_3, x is an integer of 1 to 9, and y and z are zero, or an integer of 1, 2 or 3,

(2) cross-linking the copolymer with the cross-linking agent by heating,

(3) irradiating the desired area with a radiation and then

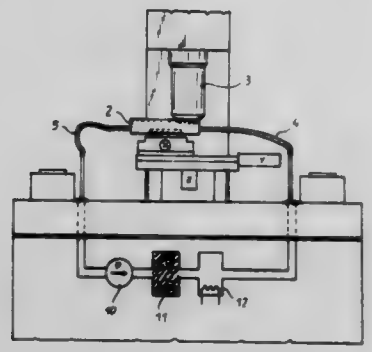
(4) developing the latent image formed in the resist with the radiation with an organic solvent.

4,346,164

PHOTOLITHOGRAPHIC METHOD FOR THE MANUFACTURE OF INTEGRATED CIRCUITS

Werner Tabarelli, Schlossstr. 5, Vaduz, Liechtenstein (FL-9490), and Ernst W. Löbach, Tonagass 374, Eschen, Liechtenstein (FL-9492)

Filed Oct. 6, 1980, Ser. No. 194,422
Int. Cl.³ G03C 5/00
U.S. Cl. 430—311 5 Claims



1. A photolithographic method of printing a pattern onto a semiconductor substrate, particularly for the manufacture of an integrated circuit, comprising the steps of:

coating said substrate with a photosensitive layer;

juxtaposing a projection lens with said layer across a space separating said lens from said layer;

imaging a pattern of a mask through said lens onto said photosensitive layer to expose said layer; and

filling said space between said layer and a juxtaposed boundary face of said lens with a transparent liquid during the exposure of said layer, the refractive index of said liquid being selected so as to be close to the refractive index of said layer, said liquid being capable of wetting said layer and subsequently incapable of attacking same.

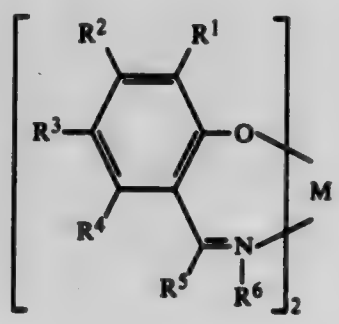
4,346,165

PROCESS FOR IMPROVING LIGHT FASTNESS OF COLOR IMAGES

Satoru Sawada; Shigeru Oono; Nobuo Seto; Yoshiaki Suzuki; Kotaro Nakamura, and Nobuo Furutachi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

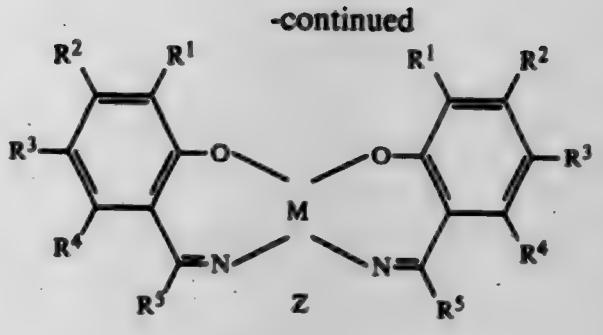
Filed Jan. 19, 1981, Ser. No. 223,665
Claims priority, application Japan, Jan. 9, 1980, 55-1635
Int. Cl.³ G03C 7/00
U.S. Cl. 430—372 54 Claims

1. A process for improving the light fastness of a magenta color image comprising incorporating at least one member of the complexes represented by the following formulae (I), (II), (III) and (IV), and at least one member of the discoloration prevention aids represented by the following formulae (V), (VII) and (VIII) in a layer in which said magenta color image can be formed by reaction of a 3-anilino-5-pyrazolone type magenta coupler and an oxidation product of an aromatic primary amine developing agent; wherein formulae (I), (II), (III), and (IV) are

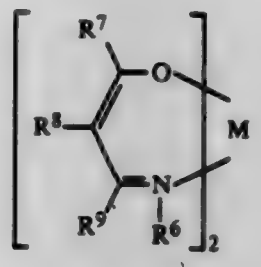


(I)

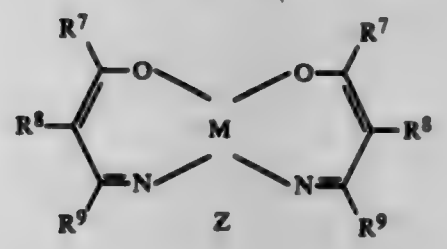
-continued



(II)



(III)



(IV)

wherein

M is Cu, Co, Ni, Pd or Pt;

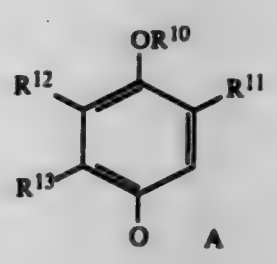
R^1, R^2, R^3, and R^4 are each hydrogen, a halogen atom, a cyano group, an alkyl group linked to the carbon atom of the benzene nucleus either directly or through a divalent linking group, an aryl group, a cycloalkyl group, or a heterocyclic group, or R^1 and R^2, R^2 and R^3, or R^3 and R^4 represent a group of non-metallic atoms combining with each other to form a 6-membered ring;

R^5, R^8, and R^9 can each represent hydrogen, an alkyl group, or an aryl group, or R^8 or R^9 together represent a group of non-metallic atoms combining to form a 5- to 8-membered ring;

R^6 is hydrogen, an alkyl group, an aryl group, or a hydroxy group;

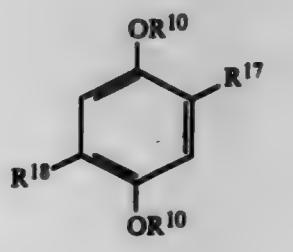
R^7 can represent an alkyl group or an aryl group, or R^7 and R^8 together represent a group of non-metallic atoms combining to form a 5- to 8-membered ring; and

Z is a group of non-metallic atoms forming a 5- or 6-membered ring; and wherein formula (V), (VII) and (VIII) are



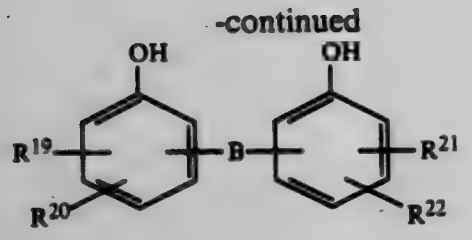
(V)

A



(VII)

-continued

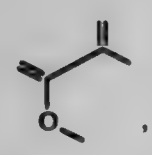


(VIII)

wherein

R^{10} is hydrogen, an alkyl group, an acyl group a sulfonyl group, a carbamoyl group, a sulfamoyl group, an alkoxycarbonyl group, or a trialkylsilyl group;

A is a group of non-metallic atoms completing a 5- or 6-membered ring in combination with the group



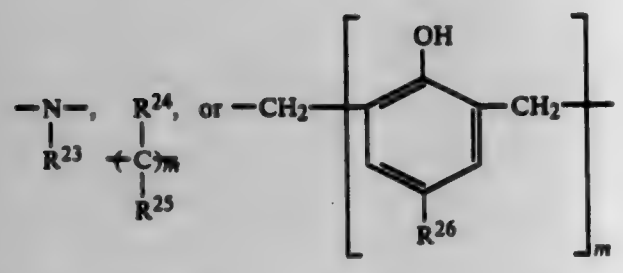
and may contain a bisspiro bond;

R^{11}, R^{12}, and R^{13} are each hydrogen, an alkyl group, an alkoxy group, an aryl group, an aryloxy group, an aralkyl group, an aralkoxy group, an alkenyl group, an alkenoxy group, an acylamino group, a halogen atom, an alkylthio group, an arylthio group, a diacylamino group, an alkoxycarbonyl group, an acyloxy group, an acyl group or a sulfonamido group;

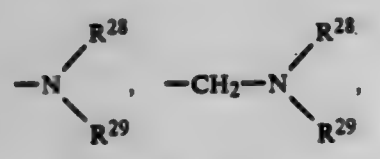
R^{17} is hydrogen, a straight chain or branched chain alkyl group containing from 1 to 22 carbon atoms, or an alkenyl group containing from 3 to 22 carbon atoms;

R^{18} is a straight chain or branched chain alkyl group containing from 1 to 22 carbon atoms or an alkenyl group containing from 3 to 22 carbon atoms;

B is —S—, —S—S—, —O—, $—CH_2—S—CH_2—$, SO_2—, —SO—, $—CH_2—O—CH_2—$,



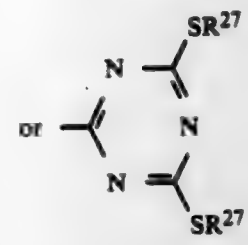
R^{19}, R^{20}, R^{21}, and R^{22} are each hydrogen, an alkyl group, an aryl group, an aralkyl group, an alkylthio group, a halogen atom, an alkoxy group, an arylthio group, an aralkoxy group, an aryloxy group, $—COOR^{27}$, $—NHCOR^{27}$, $—NHSO_2R^{27}$, $—O—COR^{27}$,



or $—CH_2)_nD$, all containing from 1 to 22 carbon atoms;

R^{23} is hydrogen, an alkyl group or an aryl group; R^{24} and R^{25} are each hydrogen, or an aryl group, or they combine together to form a substituted 5- or 6-membered ring; R^{26} is hydrogen or a methyl group; R^{27} is an alkyl group or an aryl group; R^{28} and R^{29} are each hydrogen, an alkyl group, an aryl group, a heterocyclic group or an aralkyl group, or they combine together to form a substituted 5- or 6-membered heterocyclic ring;

D is an ester group or



and

m and n are each an integer of from 1 to 3.

4,346,166

METHOD OF MAKING FAMILIES OF STEADY-STATE HEAT TRANSFER COEFFICIENT CURVES VISIBLE BY PHOTOCHEMICAL MEANS

Bernhard Montag, Forchheim, and Heinrich Optiz, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,235

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008265

Int. Cl.³ G03C *5/30*

U.S. Cl. 430—435 **3 Claims**

1. In a method for making families of steady-state heat transfer coefficient curves visible by photochemical means, wherein, a moist silver halide-containing photogelatin layer is applied to a surface and subjected to a gas stream, whereby an invisible residual moisture profile is obtained in said photogelatin layer, the improvement comprising converting said residual moisture profile into a silver sulfide line photogram by immersing said photogelatin layer, in daylight, in a developer solution mixture comprising alcohol and an organic sulfur compound soluble in alcohol and capable of reacting with the silver halide to form a silver sulfide, and thereafter fixing the line photogram.

4,346,167

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND PROCESS FOR PRODUCING SILVER HALIDE PHOTOGRAPHIC EMULSION

Eiji Imatomi; Tsuyoshi Ogawa, and Tsutomu Hamaoka, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

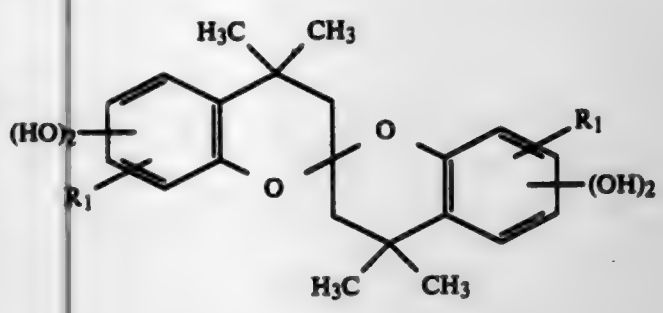
Filed Jul. 29, 1981, Ser. No. 287,850

Claims priority, application Japan, Jul. 29, 1980, 55-104207

Int. Cl.³ G03C *1/02, 1/28, 1/34*

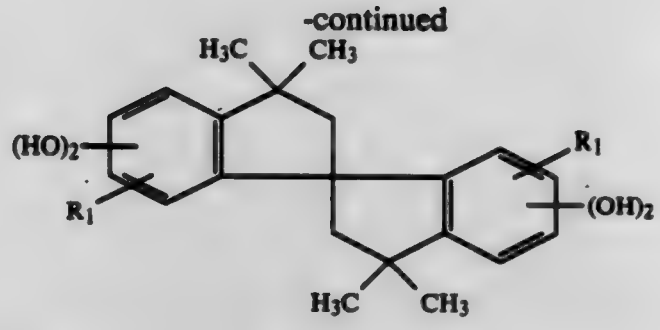
U.S. Cl. 430—569 **19 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon at least one light-sensitive silver halide emulsion layer, said silver halide emulsion layer containing a rhodium salt in an amount sufficient to increase a contrast thereof, and said silver halide emulsion layer or a layer adjacent thereto containing a compound represented by formula (I) or (II)



(I)

-continued



(II)

wherein R_1 represents hydrogen or a substituted or unsubstituted alkyl group.

4,346,168

PROCESS FOR THE PREPARATION OF PENICILLIN DERIVATIVES

Martin Cole, and Robert A. Edmondson, both of Dorking, England, assignors to Beecham Group Limited, England

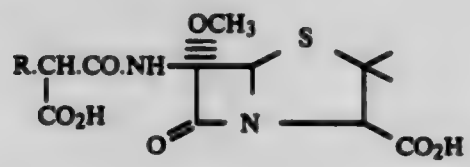
Filed May 13, 1980, Ser. No. 149,343

Claims priority, application United Kingdom, May 15, 1979, 7916921

Int. Cl.³ C12P *37/00*

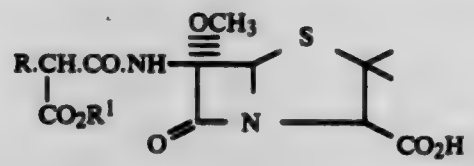
U.S. Cl. 435—43 6 Claims

1. A process for the preparation of a 6α-methoxy penicillin of formula (I):



(I)

wherein R represents phenyl or 2- or 3-thienyl, which process comprises subjecting a compound of formula (IV):



(IV)

where R^1 is an ester-forming radical, to the action of the enzyme α-chymotrypsin or an esterase-producing strain of Streptomyces sp.

4,346,169

METHOD FOR PRODUCTION OF L-ARGININE BY FERMENTATION

Kunihiko Akashi, Saga; Yayoi Nakamura, Ayase; Takayasu Tsuchida, Kawasaki; Hiroe Yoshii, and Shigeho Ikeda, both of Yokohama, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 187,146

Int. Cl.³ C12P *13/10*

U.S. Cl. 435—114 5 Claims

1. A method for the production of L-arginine by fermentation which comprises:

(1) culturing aerobically in a culture medium a mutant capable of producing L-arginine of the genus Brevibacterium or Corynebacterium, and

(2) recovering the L-arginine accumulated in the culture medium; said mutant being resistant to Keto-malonic acid, fluoro-malonic acid, monofluoro-acetic acid or aspartate-antagonist,

wherein said mutant belongs to the species *Brevibacterium flavum* or *Corynebacterium acetoacidophilum* selected from the class consisting of

Brevibacterium flavum	NRRL B-12235
Brevibacterium flavum	NRRL B-12236
Brevibacterium flavum	NRRL B-12237
Brevibacterium flavum	NRRL B-12240
Brevibacterium flavum	NRRL B-12242
Brevibacterium flavum	NRRL B-12243
Brevibacterium flavum	NRRL B-12244
Brevibacterium flavum	NRRL B-12241
Brevibacterium flavum	NRRL B-12247
Corynebacterium acetoacidophilum	NRRL B-12238
Corynebacterium acetoacidophilum	NRRL B-12239
Corynebacterium acetoacidophilum	NRRL B-12245
Corynebacterium acetoacidophilum	NRRL B-12246

4,346,170

METHOD FOR PRODUCING L-LYSINE BY FERMENTATION

Kounosuke Sano, Tokyo, and Takayasu Tsuchida, Kawasaki, both of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Jul. 23, 1980, Ser. No. 171,317

Claims priority, application Japan, Jul. 23, 1979, 54-93533

Int. Cl.³ C12P *13/08;* C12N *15/00, 1/20, 1/00*

U.S. Cl. 435—115 17 Claims

1. An L-lysine producing organism which is obtained by incorporation into a host strain of the genus Escherichia of a hybrid vector having inserted therein a DNA fragment with genetic information controlling L-lysine production, which fragment is derived from a donor strain of the genus Escherichia which is resistant to an L-lysine analogue.

4,346,171

FERMENTATION PROCESS FOR PRODUCING COMPOUND HAVING ANTHELMINTIC AND ACARICIDAL ACTIVITIES

Yo Takiguchi; Hiroshi Mishima, both of Tokyo; Shinjiro Yamamoto, Shiga, and Michiya Terao, Tokyo, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

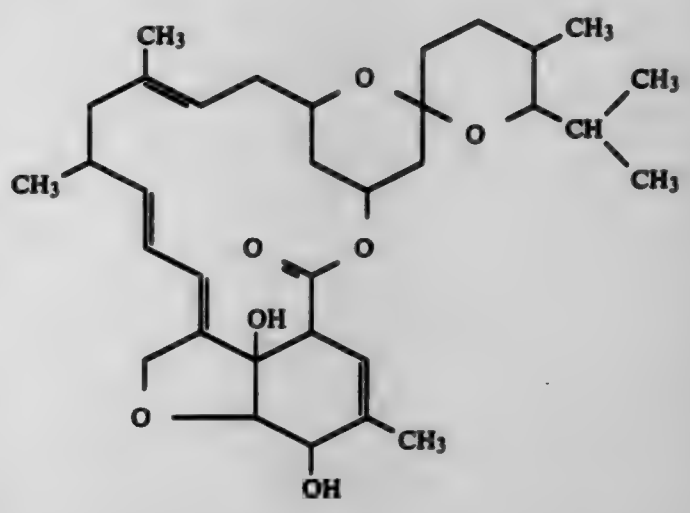
Filed Aug. 18, 1980, Ser. No. 179,479

Claims priority, application Japan, Aug. 23, 1979, 54-107550

Int. Cl.³ C12P *17/18*

U.S. Cl. 435—119 11 Claims

1. A process for preparing Compound B-41D having the formula



which comprises cultivating Streptomyces strain B-41-146 or a compound B-41D-producing mutant thereof in a culture medium therefor containing skimmed milk to form the Compound B-41D and isolating the Compound B-41D.

4,346,172

ELECTROCHEMICAL PROCESS AND APPARATUS TO CONTROL THE CHEMICAL STATE OF A MATERIAL

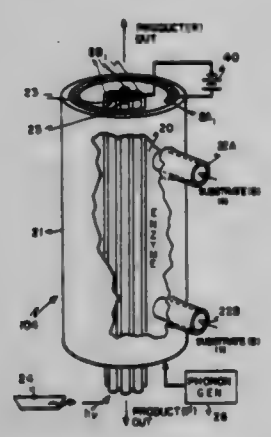
Mitchell R. Swartz, Malden, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 911,625, Jun. 1, 1978, Pat. No. 4,243,751, which is a division of Ser. No. 636,290, Nov. 28, 1975, Pat. No. 4,139,348. This application Apr. 18, 1980, Ser. No. 141,636

The portion of the term of this patent subsequent to Jun. 6, 1998, has been disclaimed.

Int. Cl.³ G01N *27/26, 27/28, 33/16;* A61B *10/00*

U.S. Cl. 435—168 34 Claims



1. In a process wherein a chemical change is wrought upon a material as a consequence of it having been subjected to a reaction or reactions, which chemical change is an unwanted chemical deterioration resulting from a reversible reaction which can be counteracted by introducing appropriate charge carriers, electrons or holes, into the electronic states of said material, the further steps of adding small amounts of a dye or quinone electroactive mediator to the material to facilitate the charge carrier transfer to said electronic states, the resulting material being a matrix material and the electroactive mediator, introducing photons to the resulting material, the electroactive mediator being one which permits, in the presence of said photons, charge carrier transfer to the resulting material at an applied electric potential difference that is below the electrolysis potential of the resulting material, and applying an electric potential below the electrolysis potential across the resulting material to inject appropriate charge carriers into the resulting material and into the electronic states thereof to counteract the unwanted chemical deterioration and cause the material to revert to a desired state.

4,346,173

PROCESS FOR THE PRODUCTION OF ACYL-COENZYME A OXIDASE

Shigeru Ikuta; Shigeyuki Imamura; Hidehiko Ishikawa; Kazuo Matsuura; Masaki Takada, and Hideo Misaki, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Oct. 27, 1980, Ser. No. 201,123

Claims priority, application Japan, Oct. 26, 1979, 54-139166

Int. Cl.³ C12N *9/02*

U.S. Cl. 435—189 7 Claims

1. A process for the production of acyl-Coenzyme A oxidase, which comprises culturing an acyl-Coenzyme A-oxidase-producing microorganism belonging to genus Macrophomina, genus Cladosporium, genus Aspergillus, genus Monascus, genus Saccharomyces or genus Arthrobacter in a nutrient medium, and isolating the thus-formed acyl-CoA oxidase therefrom.

4,346,174

PROCESS FOR ISOLATING SUPEROXIDE DISMUTASE FROM RED BLOOD CELLS

Takamasa Yasuda, Tokyo, Japan, assignor to Fujizoki Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1981, Ser. No. 275,392

Claims priority, application Japan, Jun. 23, 1980, 55-83920

Int. Cl.³ C12N *9/02*

U.S. Cl. 435—189 19 Claims

1. A process for isolating superoxide dismutase from red blood cells comprising:

(a) heating hemolyzed red blood cells in the presence of at least one monovalent inorganic neutral salt and at least one transition metal salt to form a first supernatant solution and a first precipitate;

(b) removing said first precipitate;

(c) heating said first supernatant solution in the presence of at least one transition metal salt in an amount sufficient to form a clear supernatant solution and a second precipitate; and

(d) removing said second precipitate.

4,346,175

PROCESS FOR THE MICROBIOLOGICAL MODIFICATION OF HARDWOOD BY THE ACTION OF MICROORGANISMS

Sven-Olof Enfors, Mellanvägen 4, Stanstorp, S-243 00 Höör; Nils Molin, Clementstorget 12, S-222 Lund, and Eugen Montelin, Majorsgatan 41, S-290 Ahus, all of Sweden, assignors to Sven-Olof Enfors, Hoor; Nils Molin, Lund and Eugen Montelin, Ahus, all of, Sweden

Filed Oct. 3, 1978, Ser. No. 948,275

Claims priority, application Sweden, Oct. 4, 1977, 7711089

Int. Cl.³ C12P *1/02*

U.S. Cl. 435—317 14 Claims

1. A process for the controlled microbiological modification of hardwood to produce a wood product of high porosity by the action of microorganisms, wherein an aerobic microorganism selected from the group consisting of *Armillaria mellea, Xylaria polymorpha, Bacillus polymyxa,* and an enzymatically active preparation thereof, specially selected for the hardwood in question, is implanted in a sufficient amount in or on the surface of the wood for attack thereof, and wherein the temperature moisture content in the wood, O_2 content and CO_2 content are adjusted in relation to the selected microorganism or enzymatically active preparation thereof, selective modification of the hardwood being thereby realized, and wherein the process is discontinued in a suitable manner.

4,346,176

GLASS FOR OPTICAL FIBER

Terutoshi Kanamori, and Toyotaka Manabe, both of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Jan. 14, 1981, Ser. No. 225,094

Claims priority, application Japan, Feb. 13, 1980, 55/15417

Int. Cl.³ C03C *3/12, 13/00*

U.S. Cl. 501—37 13 Claims

1. Fluoride glass for an optical fiber having good transmittance with a low transmission loss in the infrared region consisting essentially of 10 to 64 mol % of at least one fluoride selected from a first group consisting of CaF_2, SrF_2 and BaF_2; 0.5 to 50 mol% of at least one fluoride selected from a second group consisting of YF_3 and the fluorides of the lanthanide elements; and 30 to 65 mol % of AlF_3.

4,346,177

PULVERULENT COMPOSITIONS AND REFRACTORY ARTICLE OBTAINED WITH SAID COMPOSITION

Gerard Cochet, Plaisir, and Gilbert Provost, Les Breviaires, both of France, assignors to Societe Anonyme dite: Carbonisation Entreprise et Ceramique, Montrouge, France

Filed Nov. 18, 1980, Ser. No. 208,023
Claims priority, application France, Nov. 19, 1979, 79 28418
Int. Cl.³ C04B *35/02*
U.S. Cl. 501—123 5 Claims

1. A pulverulent composition for admixture with a refractory aggregate and water, and for molding without hydraulic bonding, so as to provide pressed refractory articles, including bricks for the construction of thermal enclosures, comprising as a first portion, 70–96% by weight of silica, either vitreous or amorphous, of which the particles have a diameter lower than 1 μm; as a second portion, 4–30% by weight of a compound capable of supplying 1–20% by weight of alkaline earth oxide; and as a third portion, 0.5–3% by weight of a fluidizing or dispersing agent.

4,346,178

STRUCTURED KAOLIN AGGLOMERATES AND METHODS OF MAKING THE SAME

Peter Economou, Millington, N.J., assignor to Yara Engineering Corporation, Elizabeth, N.J.

Filed Jul. 27, 1981, Ser. No. 287,026
Int. Cl.³ C09C *3/08*
U.S. Cl. 501—148 15 Claims

1. An opacifying pigment for paper coating and paper filler applications comprising structured agglomerates of clay platelets stabilized with urea-formaldehyde polymeric submicron size particles.

4,346,179

PRODUCTION OF ALCOHOLS FROM SYNTHESIS GASES

Andre Sugier; Edouard Freund, and Jean-Francois Le Page, all of Rueil Malmaison, France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 4, 1980, Ser. No. 137,098
Claims priority, application France, Apr. 5, 1979, 79 08881
Int. Cl.³ C07C *27/06, 31/02, 31/04*
U.S. Cl. 518—707 20 Claims

1. A process for manufacturing a mixture of methanol and saturated, mainly linear primary homolog alcohols, said mixture being suitable for direct use as a component of automotive gasoline, said process comprising the steps of:

(1) passing a synthesis gas comprising carbon dioxide, carbon monoxide and hydrogen through a first catalytic zone, at a temperature of 230°–350° C., under conditions favoring the synthesis of a mixture of methanol and saturated, mainly linear primary homolog alcohols;

(2) cooling the resultant effluent, separating the resultant liquid phase from the unconverted gas phase, and removing water from the liquid phase to produce a first liquid phase containing methanol and a mixture of saturated, mainly linear primary homolog alcohols comprising mainly ethanol and propanol;

(3) passing at least a portion of the separated gas phase from step (2) through a second catalytic zone, at a temperature of 240°–300° C., under conditions favoring the synthesis of only methanol;

(4) cooling the effluent from the second catalytic zone, separating the resultant liquid phase from the unconverted gas phase, and removing water from the liquid phase to produce a second liquid phase containing at least about 97% by weight of methanol; and

(5) combining said first liquid phase with said second liquid phase to produce a product mixture containing 74–90% by weight of methanol and 10–26% by weight of saturated, mainly linear primary homolog alcohols; said product mixture being suitable for direct use as a component of automotive gasoline.

4,346,180

PROCESS FOR THE PRODUCTION OF ORGANIC ALKALI METAL SILICATE COMPOUNDS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 251,132, Apr. 6, 1981, Pat. No. 4,321,184, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,073,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Dec. 10, 1981, Ser. No. 329,405
Int. Cl.³ C08J *9/00*
U.S. Cl. 521—100 9 Claims

1. The process for the production of foamed polyurethane silicate resinous product by the following steps:

(a) mixing and reacting 5 to 100 parts by weight of an oxidated silicon compound selected from the group consisting of hydrated silica, sodium silicate, potassium silicate, natural oxidated silicon compounds containing free silicic acid acid radicals and mixtures thereof, 50 to 100 parts by weight of an alkali metal compound selected from the group consisting of alkali metal hydroxide, alkali metal carbonates and mixtures thereof in an aqueous solution and an organic compound which is attached to a substituent which will split off during the reaction is a substituted hydrocarbon which contains a substituent selected from the group consisting of halogen, acid sulfate, nitrate, acid phosphate, bicarbonate, formate, acetate, propionate, laurate, oleate, stearate, oxalate, acid malonate, acid tartrate, acid citrate and mixtures thereof in an amount wherein the substituted radicals are about equal to the alkali metal radicals thereby producing an organic alkali metal silicate; then

(b) adding and mixing 50 to 100 parts by weight of an organic polyisocyanate and up to 50% by weight of a chemically inert blowing agent, boiling within the range of from −25° C. to 80° C. and allowing the mixture to react thereby.

(c) producing a foamed polyurethane silicate resinous product.

4,346,181

METHOD OF REDUCING FORMALDEHYDE EMISSIONS FROM FORMALDEHYDE CONDENSATION POLYMERS

George G. Allan, Seattle, Wash., assignor to Board of Regents, University of Washington, Seattle, Wash.

Continuation of Ser. No. 137,990, Apr. 4, 1980, abandoned. This application Sep. 8, 1981, Ser. No. 300,037
Int. Cl.³ C08J *9/30*
U.S. Cl. 521—136 2 Claims

1. A method of reducing formaldehyde emissions from a foamable aqueous solution of a urea-formaldehyde condensation polymer, consisting essentially of:

providing an aqueous urea-formaldehyde polymer having a molar ratio of formaldehyde to urea ranging from 1:1 to 1:2.5, and

incorporating in the urea-formaldehyde polymer a minor amount of an acrylamide polymer selected from the group consisting of acrylamide and methacrylamide or a combination of the two which react with free formaldehyde present in the urea-formaldehyde polymer or formaldehyde generated as a result of hydrolysis of the polymer during use to reduce liberation of free formaldehyde from the polymer.

4,346,182

POLYIMIDES

John Gagliani, and Raymond Lee, both of San Diego, Calif., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 254,137, Apr. 14, 1981. This application Apr. 14, 1981, Ser. No. 254,138

Int. Cl.[3] C08J *9/00*; C08G *18/16*

U.S. Cl. 521—189 10 Claims

1. A foamable terpolyimide precursor comprising an essentially stoichiometric mixture of an alkyl ester of 3,3',4,4'-benzophenonetetracarboxylic acid or a mixture of such esters and at least three diamines, one of said diamines being heterocyclic, a second of said diamines being aromatic, a third of said diamines being aliphatic, and said precursor containing from 0.05 to 0.5 mole of aliphatic diamine and from 0.05 to 0.9 mole of heterocyclic diamine per mole of benzophenonetetracarboxylic acid ester(s).

4,346,183

METHACRYLATE POLYMER MIX CONTAINING ALKALINE EARTH METAL RESINATE

Thomas J. Hyde, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 136,912, Apr. 3, 1980, abandoned. This application Jul. 29, 1981, Ser. No. 288,006

Claims priority, application Japan, Apr. 3, 1981, 56-49487

Int. Cl.[3] C08L *93/00*

U.S. Cl. 523—200 5 Claims

1. An improved methacrylate polymer concrete slurry consisting essentially of

(a) particulate inorganic filler containing silica

(b) a methacrylate polymerization initiator

(c) a plasticizer for methacrylate polymer

(d) methacrylate polymer

(e) methacrylate monomer

(f) paraffinic oil, and

(g) a methacrylate polymerization promotor,

in which the improvement comprises the presence in the slurry of 0.03 to 0.60% by weight of slurry of an alkaline earth metal resinate.

4,346,184

COATING COMPOSITIONS FOR INHIBITING CORROSION OF METAL SURFACES

Cyril F. Drake, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 912,129, Jun. 2, 1978, Pat. No. 4,210,575. This application Nov. 13, 1980, Ser. No. 206,426

Claims priority, application United Kingdom, Nov. 15, 1979, 7939544

Int. Cl.[3] C08L *63/00, 67/00, 35/00*

U.S. Cl. 523—451 25 Claims

1. A water soluble glass composition consisting essentially of 54.6 to 63.3 mol % zinc oxide, 35.8 to 45.3 mol % phosphorus pentoxide, the remainder comprising at least 0.1 mol % aluminum oxide.

10. A paint composition adapted to inhibit corrosion of a metal surface to which it is applied, the composition including a water soluble glass composition dispersed in a paint binder in which said glass composition comprises 54.6 to 63.3 mol % zinc oxide, 35.8 to 45.3 mol % phosphorus pentoxide, the remainder comprising at least 0.1 mol % aluminum oxide.

18. A process of inhibiting the corrosion of a metal surface comprising

coating said surface with a paint composition containing a water soluble glass composition dispersed in a paint binder in which said glass composition comprises from 35.8 to 45.3 mol % phosphorus pentoxide and from 54.6 to 63.3 mol % zinc oxide as its major constituents which together provide the glass forming oxide and glass modifying oxide respectively of said glass, said glass also comprising a minor proportion of aluminum oxide.

4,346,185

PROCESS FOR THE PRODUCTION OF ALKALI METAL UNSATURATED POLYESTER SILICATE RESINOUS PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 122,015, Feb. 19, 1980, which is a continuation-in-part of Ser. No. 10,061, Feb. 7, 1979, Pat. No. 4,200,697, which is a continuation-in-part of Ser. No. 794,915, May 9, 1977, Pat. No. 4,125,498, which is a continuation-in-part of Ser. No. 653,727, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 562,201, Apr. 14, 1975, abandoned. This application Jul. 6, 1981, Ser. No. 280,782

Int. Cl.[3] C08L *67/00*

U.S. Cl. 524—5 16 Claims

1. The process for the production of alkali metal unsaturated polyester silicate resin by the following steps:

(a) mixing 10 to 30 parts by weight of a polyhydroxyl organic compound and 10 to 30 parts by weight of an unsaturated polycarboxylic compound selected from the group consisting of polycarboxylic acid, polycarboxylic acid anhydride and mixtures thereof,

(b) adding slowly 1 to 10 parts by weight of alkali metal silicate to the mixture while agitating and heating the mixture at a temperature between the melting temperature of the unsaturated polycarboxylic acid compound and the boiling temperature of the polyhydroxyl organic compounds while agitating for 20 to 90 minutes, thereby

(c) producing an alkali metal unsaturated polyester silicate resinous product,

(d) adding a vinyl monomer, selected from the group consisting of vinyl acetate, styrene, methacrylic acid, methyl methacrylate, vinyl toluene, acrylic acid, acrylonitrile, divinyl benzene and mixtures thereof, in the amount of 20 to 50 percent by weight, percentage based on the weight of the alkali metal unsaturated polyester resinous product, thereby,

(e) producing an alkali metal unsaturated polyester silicate resin.

14. The process of claim 1 wherein an additional step is taken after step (e) of claim 1 wherein up to two parts by weight of a water-binding agent selected from the group consisting of hydraulic cement, synthetic anhydride, gypsum and burnt lime, 1 part by weight of the alkali metal unsaturated polyester silicate resin of step (e) of claim 1, up to 25% by weight of water, percentage based on the weight of the water-binding agent, and a catalytic amount of a peroxide initiator and an activator are added, thoroughly mixed and reacted.

4,346,186

PROCESS FOR FIXING PHOTO-INDUCED COLORED DERIVATIVES OF SPIROPYRANS AND COMPOSITIONS THEREFOR

Thomas B. Garrett, Warwick Township, Lancaster County; John E. Herweh; Alan B. Magnusson, both of East Hempfield Township, Lancaster County, and Normal L. Miller, Manheim Township, Lancaster County, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 189,031, Sep. 22, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,455

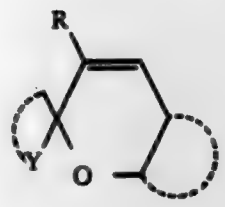
Int. Cl.[3] C08K *5/00*

U.S. Cl. 524—82 22 Claims

1. A process for fixing spiropyrans in their colored form, said process comprising the steps of:

preparing a solvent solution comprising

(a) a spiropyran having the formula



wherein Y represents NR, O or S and each R independently represents H, alkyl or alkenyl, and

(b) an iodonium salt, said solvent solution comprising from about 0.1 to about 10 moles of iodonium salt for every one mole of spiropyran, and

irradiating said solvent solution with a sufficient dose of ultraviolet radiation to fix said spiropyran in its colored form.

4,346,187

FLAME RETARDANT POLYPROPYLENE COMPOSITIONS CONTAINING TRITYL SYNERGISTS

George M. Nichols, Evantson, Ill., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Continuation-in-part of Ser. No. 853,617, Nov. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 788,187, Apr. 18, 1977, abandoned, Ser. No. 801,174, May 27, 1977, abandoned, and Ser. No. 788,185, Apr. 18, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,700

Int. Cl.³ C08K *5/13, 5/09, 5/06, 5/05, 5/47, 5/34, 5/18, 5/36*

U.S. Cl. 524—83 19 Claims

1. In a flame retardant polypropylene composition comprising polypropylene and an organic bromine flame retardant compound, the improvement wherein a trityl synergist is included therein, said trityl synergist having a structure selected from the group consisting of

Trityl-X and Trityl—A—R_1

wherein X is selected from the group consisting of —F, —Cl, —Br, —NCS and —N_3; and

wherein A is selected from the group consisting of —O—, —S— and —NH—; and

wherein —R_1 is —H or a carbon-containing radical attached through a carbon atom to —A—.

4,346,188

POLYOLEFIN COMPOSITIONS STABILIZED AGAINST UV-RADIATIONS BY PYRROLIDINE DERIVATIVES

Silvestro Costanzi, San Giuliano Milanese; Francesco Tessarolo, Monza; Adriano Ballabio, Giussano, and Maurizio Brunelli, Milan, all of Italy, assignors to ANIC, S.p.A., Palermo, Italy

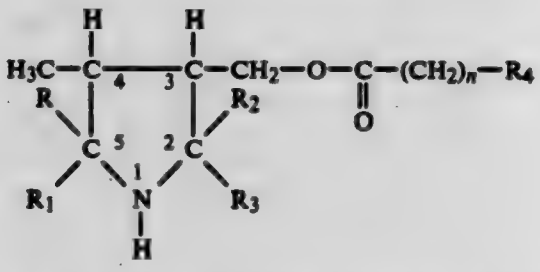
Filed Dec. 5, 1980, Ser. No. 213,655

Claims priority, application Italy, Feb. 19, 1980, 20002 A/80

Int. Cl.³ C08K *5/00;* C07D *207/08*

U.S. Cl. 524—104 7 Claims

1. An ester compound of the formula:



wherein R, R_1, R_2 and R_3 are methyl radicals, R_4 is hydrogen or a carboxyester radical which is the same as the esterified group which contains the pyrrolidine ring, and n is 4 or 17, R_4 being hydrogen where n is 17 and being a carboxyester which is the same as the esterified group which contains the pyrrolidine ring where n is 4.

4,346,189

AGENT FOR FORMING CLEANER CUTTING PRESSURE SENSITIVE ADHESIVES

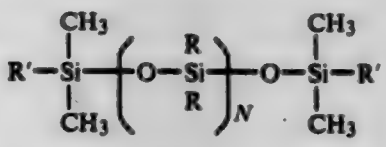
Jacques J. Laurent, Soignies, Belgium, assignor to Morgan Adhesives Company, Stow, Ohio

Filed Jul. 14, 1980, Ser. No. 168,507

Int. Cl.³ C08L *9/00*

U.S. Cl. 524—267 10 Claims

1. A pressure sensitive adhesive composition comprising the solids deposited from a mixture of synthetic rubber, and tackifiers and also including a silicone additive in the amounts of from about 6 to 10 percent of the resultant composition and where the silicone is a polysiloxane that has the formula of;



and where R is either a methyl, a phenyl, a vinyl or a silicon bounded hydrogen group and R′ is selected from the group consisting of either a methyl, or a hydroxyl group, and N is from 16 to 150, and the viscosity of said polysiloxane is from about 20 to about 350 centistokes.

4,346,190

THICKENED ACRYLIC POLYMER LATICES

Eugene S. Barabas, Watchung; Andrew Klein, Somerville, and Dru W. Alwani, Wayne, all of N.J., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 773,503, Feb. 18, 1977, Pat. No. 4,110,291. This application Aug. 28, 1978, Ser. No. 937,312

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.³ C08L *33/02*

U.S. Cl. 524—522 4 Claims

1. An acrylic polymer latex containing an effective thickening amount of a different acrylic copolymer latex prepared by inducing, at a temperature of about 5° C. to about 80° C., a redox-initiated polymerization in an aqueous dispersion of initially, as monomers, (1) about 50 to about 65 wt% of methacrylic acid or ethacrylic acid, and (2) about 35 to about 50 wt% of methylacrylate.

4,346,191

PROCESS FOR THE PRODUCTION OF AMINE POLYSULFIDE SILICATE REACTION PRODUCTS AND THEIR REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 104,577, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 19,178, Mar. 9, 1979, Pat. No. 4,197,229, which is a continuation-in-part of Ser. No. 921,728, Jul. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 881,247, Feb. 27, 1978, abandoned. This application Mar. 3, 1981, Ser. No. 240,001

Int. Cl.³ C08K *5/49*

U.S. Cl. 524—710 27 Claims

1. The process for the production of alkali metal amine polysulfide silicate reaction product by mixing and heating the following components:

A. sulfur containing compound selected from the group consisting of sulfur, alkali metal sulfides, alkali metal polysulfides, alkaline earth metal polysulfides and mixtures thereof, in an amount of 1 to 4 parts by weight,

B. alkali metal hydroxide in an amount of 2 parts by weight,

C. organic polyamine, in the amount of 0.05 to 4 parts by weight,

D. oxidated silicon compound, in the amount of 1 to 2 parts by weight, at a temperature just above the melting point of sulfur until the reaction is substantially complete.

8. The process of claim 1 wherein additional steps are taken wherein the alkali metal amine polysulfide silicate reaction

product is added to water containing 1% to 5% of an emulsifying or dispersing agent to produce an aqueous solution containing 10% to 70% by weight of the reaction product; then a substituted organic compound having at least two carbon atoms, each of which is attached to a substituent which will split off during the reaction, is added to said aqueous solution in the amount wherein the mols of the substituted radicals of the substituted organic compound in the mixture are about equal to the mols of the alkali metal radicals in the mixture, which is then agitated until the reaction is substantially complete, thereby producing an aqueous dispersion of poly(organic amine polysulfide silicate) resinous product.

10. The process of claim 8 wherein the emulsifying or dispersing agent is selected from the group consisting of lignin sulfonate, alkyl aryl sulfonates, aryl alkyl sulfonates, sorbitan monolaurates, alkyl aryl sulfates, aryl alkyl sulfates, methyl cellulose, sulfonated petroleum fractions, polymerized alkyl aryl sulfonates, polymerized aryl alkyl sulfonates, soybean lecithin and mixtures thereof.

4,346,192

PROCESS FOR THE PRODUCTION OF ORGANIC ALKALI METAL SILICATE COMPOUNDS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 251,132, Apr. 6, 1981, Pat. No. 4,321,184, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,073,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Dec. 7, 1981, Ser. No. 328,198

Int. Cl.³ C08K *3/34, 3/36*

U.S. Cl. 524—788 **9 Claims**

1. The process for the production polyurethane silicate resinous product by the following steps:

(a) mixing and reacting 5 to 100 parts by weight of an oxidated silicon compound selected from the group consisting of hydrated silica, sodium silicate, potassium silicate, natural oxidated silicon compounds containing free silicic acid radicals and mixtures thereof, 50 to 100 parts by weight of an alkali metal compound selected from the group consisting of alkali metal hydroxide, alkali metal carbonates and mixtures thereof in an aqueous solution and an organic compound which is attached to a substituent which will split off during the reaction is a substituted hydrocarbon which contains a substituent selected from the group consisting of halogen, acid sulfate, nitrate, acid phosphate, bicarbonate, formate, acetate, propionate, laurate, oleate, stearate, oxalate, acid malonate, acid tartrate, acid citrate and mixtures thereof in an amount wherein the substituted radicals are about equal to the alkali metal radicals thereby producing an organic alkali metal silicate; then

(b) adding and mixing 50 to 100 parts by weight of an organic polyisocyanate and allowing the mixture to react thereby,

(c) producing a polyurethane silicate resinous product.

4,346,193

CONTINUOUS PROCESS FOR MAKING STAR-BLOCK COPOLYMERS

David R. Warfel, Exton, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 4, 1981, Ser. No. 260,150

Int. Cl.³ C08F *297/04*

U.S. Cl. 525—52 **4 Claims**

1. A continuous anionic solution polymerization process for producing star-block copolymers in a continuous tubular reactor having internal zones defined by a sequence of four static mixers, each of which is maintained at a temperature of from 65° to 85° C. and each has a means for introducing new matter at the inlet of the mixer, and the tubular reactor having a pressure control valve mounted after the last mixer to maintain the reactor in a liquid full mode at all times, said process consisting essentially of the steps of

(a) continuously feeding to a first static mixer a solution of vinyl aromatic compound in an inert solvent and a solution of hydrocarbyllithium initiator in an inert solvent at a rate such that the time of flow of the solutions through the first mixer is between 6 and 15 minutes;

(b) continuously feeding to a second static mixer a conjugated diene monomer, at sufficient pressure to ensure the diene is in the liquid state, at a rate such that the time of flow through the second mixer is between 25 and 55 minutes;

(c) continuously feeding to a third static mixer a multifunctional coupling agent at a rate such that the time of flow through the third mixer is between 25 and 55 minutes;

(d) continuously feeding to a fourth static mixer a terminating agent;

(e) continuously removing the reaction product from the tubular reactor through the pressure control valve; and

(f) separating the resulting star-block copolymer from the inert solvent.

4,346,194

TOUGHENED POLYAMIDE BLENDS

Miguel J. Roura, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 114,240, Jan. 22, 1980, abandoned. This application Oct. 20, 1980, Ser. No. 198,356

Int. Cl.³ C08L *77/00*

U.S. Cl. 525—66 **3 Claims**

1. A polyamide blend comprising:

(a) 60–90% by weight polyamide which is a mixture of 20–80% by weight 66 nylon and complementally 80–20% by weight 6 nylon, and complementally

(b) 3–40% by weight of a polymeric toughening agent that is an adduct of a polymer of ethylene, at least one C_3–C_6 α-olefin and at least one nonconjugated diene, with an unsaturated compound containing carboxyl or carboxyl derivatives.

4,346,195

POLYETHYLENE TEREPHTHALATE BLENDS

Edwin D. Hornbaker, and Jesse D. Jones, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 162,138, Jun. 23, 1980. This application Sep. 14, 1981, Ser. No. 301,935

Int. Cl.³ C08L *67/02*

U.S. Cl. 525—176 **17 Claims**

1. A thermoplastic composition which comprises in intimate admixture:

(a) a polyethylene terephthalate, and

(b) a rubber-modified graft copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride;

said composition having a heat deflection temperature of at least about 80° C. at 264 psi as measured by the ASTM procedure D 648-72.

4,346,196

HEAT SEAL COMPOSITION COMPRISING A BLEND OF METAL NEUTRALIZED POLYMERS

George L. Hoh, and Donald A. Vassallo, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 10, 1980, Ser. No. 185,728

Int. Cl.³ C08L *23/26, 31/04, 33/02, 33/06*

U.S. Cl. 525—196 **5 Claims**

1. A substantially homogeneous blend of polymeric materials comprising:

(a) 20 to 80 percent, by weight, of a terpolymer having, as monomeric components,
(i) 65 to 95 percent, by weight, ethylene,
(ii) 4 to 30 percent, by weight, vinyl alkanoate or an ester selected from the group consisting of alkyl acrylate, and alkyl methacrylate wherein the alkanoic acid moiety of the alkanoate and the alkyl group have one to four carbon atoms, and
(iii) 0.5 to 20 percent, by weight, ethylenically unsaturated monocarboxylic acid selected from the group consisting of acrylic acid and methacrylic acid; and
(b) 20 to 80 percent, by weight, of an ionomer having, as monomeric components,
(i) 75 to 99 percent, by weight, ethylene,
(ii) 1 to 25 percent, by weight, ethylenically unsaturated monocarboxylic acid selected from the group consisting of acrylic acid and methacrylic acid

wherein the sum of the weight percentages of comonomers (ii) and (iii) in the terpolymer is at least eight percentage points higher than the weight percentage of comonomer (ii) in the ionomer and wherein 5 to 40 percent of the carboxylic acid in the blend is neutralized by zinc ions.

4,346,197

METHOD OF POLYMERIZING BLENDS OF BIS (ALLYL CARBONATE) MONOMERS WITH POLYMERS AND POLYMER BLENDS PREPARED THEREBY

John C. Crano, and Ronald L. Haynes, both of Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,063
Int. Cl.³ C08L *47/00*
U.S. Cl. 525—277 **20 Claims**

1. A method of forming a polymerizate of a bis(allyl carbonate) comprising:
forming a monomeric composition comprising the bis(allyl carbonate) monomer, a polymer having a viscosity average molecular weight above 100,000 of an olefinically unsaturated monomer, and an initiator,
forming a fabricable pseudoplastic resin having a shear stress of 10^3 to 10^7 dynes per square centimeter at shear rates of 10^1 to 10^4 per second;
working the fabricable resin; and
thereafter curing the fabricable resin to form a polymerizate.

4,346,198

CLEAR IMPACT RESISTANT THERMOPLASTIC STAR-BLOCK COPOLYMERS

Kenneth Doak, Murrysville; Le-Khac Bi, West Chester, and Ralph Milkovich, Paoli, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 167,883, Jul. 14, 1980, abandoned, which is a continuation of Ser. No. 35,047, May 1, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,279
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.³ C08F *297/04*
U.S. Cl. 525—314 **6 Claims**

1. Star-block copolymers, of from 60 to 90% by weight of a monovinyl aromatic compound and 40 to 10% by weight of a conjugated diene of 4 to 8 carbon atoms, which have an average structure of the general formula (A—B/A′)$_m$X where A is a non-elastomeric polymer segment based on the monovinyl aromatic compound, B/A′ is an elastomer polymer segment based on a random copolymer of the monovinyl aromatic compound (A′) and the conjugated diene (B) wherein the weight ratio of A′ to B must be less than 1.0, m is an integer between 8 and 12, and X is the radical of a polyfunctional coupling agent by means of which the linear polymer blocks (A—B/A′) are chemically bonded to form the star-block copolymers, wherein said segment A contains 80 to 95% by weight of the total monovinyl aromatic compound, and segment B/A′ contains no significant blocks of either monovinyl aromatic compound or conjugated diene.

4,346,199

PROCESS FOR A POLYMERIC POLYBLEND COMPOSITION COMPRISING A MATRIX PHASE TERPOLYMER OF ALKENYL AROMATIC ALKENYL NITRILE AND MYRCENE MONOMERS AND A DIENE RUBBER PHASE GRAFTED WITH SAID MONOMERS

Fred M. Peng, Longmeadow, Mass., and Edward F. Tokas, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 30, 1981, Ser. No. 307,257
Int. Cl.³ C08F *279/02*
U.S. Cl. 525—316 **23 Claims**

1. A process for preparing polymeric polyblends comprising the steps:
A. charging an aqueous latex having diene rubber particles dispersed therein to a reaction zone,
B. mixing a monomer formulation of alkenyl aromatic, alkenyl nitrile and myrcene with said latex, said myrcene being present in about 1 to 30% by weight of said monomer formulation,
C. polymerizing said monomers in the presence of said latex such that said rubber particles become grafted with at least a portion of said monomers while said monomers form a matrix polymer phase of said monomers, and
D. separating said matrix polymer having said grafted rubber particles dispersed therein from said latex forming said polymeric polyblend.

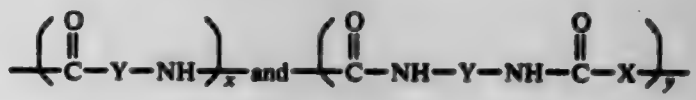
4,346,200

THERMOPLASTIC POLYAMIDE COMPOSITIONS

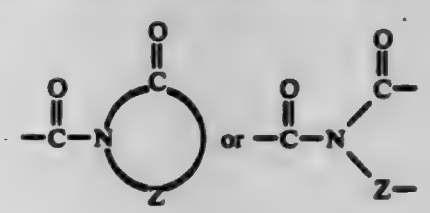
James C. Woodbrey, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1980, Ser. No. 220,939
Int. Cl.³ C08L *77/00*
U.S. Cl. 525—421 **12 Claims**

1. A composition comprising:
(a) at least one polyamide resin of number average molecular weight of at least 5000; and
(b) at least one block polymer having
(i) from about 30 to about 70 weight percent polyamide segments selected from



wherein x is an integer equal to five or more and y is an integer equal to three or more;
(ii) from about 70 to about 30 weight percent of segments having a molecular weight of at least 300 selected from the group consisting of segments of poly(ethylene oxide), poly(propylene oxide), polycaprolactone, polytetrahydrofuran, polybutadiene, polyisoprene, polyisobutylene, poly(C_1–C_8 alkylene acrylate), poly(C_1–C_4 dialkylene siloxane), poly(ethylene-co-propylene), poly(ethylene-co-carbon monoxide) and combinations thereof; said (ii) segments being connected to an (i) polyamide segment through groups selected from amide, ester, urea, carbamate and imide; and
(iii) greater than 0.05 milliequivalents of



groups per gram of (b); wherein Y and Z are alkylene having from about 3 to about 14 carbon atoms and X is arylene or alkylene having from about 3 to about 14 carbon atoms;

provided that the composition contains from about 10 to about 90 weight percent of Component (a) and from about 90 to about 10 weight percent of Component (b).

4,346,201

POLYMER BLEND OF AN ACRYLIC POLYMER AND A BLOCK POLYMER OF ACRYLIC SEGMENTS AND POLYMERCAPTAN SEGMENT

John A. Simms, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 16,001, Feb. 28, 1979, abandoned, which is a continuation-in-part of Ser. No. 823,324, Aug. 10, 1977, abandoned. This application Jan. 28, 1981, Ser. No. 229,160

Int. Cl.³ C08L *75/06, 75/08*

U.S. Cl. 525—440 20 Claims

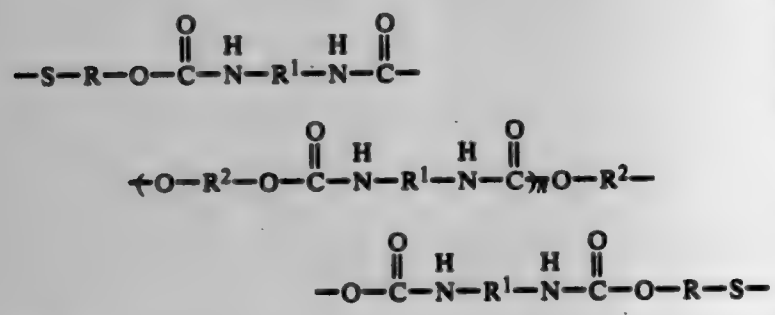
1. A composition comprising a polymer blend

(1) up to 40% by weight, based on the weight of the polymer blend, of a polymer of repeating units of {A} of a hard acrylic segment, wherein the polymer has a number average molecular weight of about 2,000–6,000, contains about 1–5% by weight of hydroxyl groups and has a glass transition temperature of 25° C. and above; and

(2) at least 60% by weight, based on the weight of the polymer blend, of block consisting essentially of the repeating units of {A}{B}{A} wherein

[A] comprises 15–85% by weight, based on the weight of the block polymer, of a hard acrylic segment containing at least one hydroxyl group and having a glass transition temperature of 25° C. and above; and

[B] comprises 85–15% by weight, based on the weight of the block polymer, of a segment that has the formula



where

R is an alkylene group having 2–6 carbon atoms;

R^1 is an aliphatic, a cycloaliphatic or an aromatic group;

R^2 is a polyester segment or a polyalkylene ether segment; and

n is from 0–10;

wherein the block polymer has a number average molecular weight of about 5,000–20,000 and a weight average molecular weight of about 20,000–100,000, contains about 0.1–5.0% by weight of hydroxyl groups and is free of isocyanate groups;

wherein the polymer blend is prepared by a process which comprises the steps of

(1) contacting an organic diisocyanate with a polyester or a poly(alkylene ether) glycol at about 40°–125° C. for about 0.5–6 hours to form an isocyanate terminated intermediate;

(2) contacting the isocyanate terminated intermediate with a mercapto alkanol of the formula H—S—R—OH where R has 2–6 carbon atoms to form an —SH terminated intermediate that is free of isocyanate groups;

(3) polymerizing the —SH terminated intermediate with acrylic monomers wherein at least one of the acrylic monomers contains a hydroxyl group in the presence of a free radical polymerization catalyst at about 50°–200° C. for about 1–6 hours to form the polymer blend.

4,346,202

SHORTSTOPPING FREE RADICAL POLYMERIZATION OF OLEFINIC MONOMERS

Louis Cohen, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 24, 1981, Ser. No. 257,284

Int. Cl.³ C08F *2/42, 2/20*

U.S. Cl. 526—83 11 Claims

1. A method of stopping the homopolymerization of vinyl chloride and the copolymerization of vinyl chloride with one or more copolymerizable olefinic monomers having a terminal $CH_2{=}C<$ grouping in the presence of a free-radical yielding catalyst(s) comprising, adding to the polymerization mixture containing said monomer(s) and said catalyst(s) a shortstopping agent selected from the group consisting of 4,4′-thiodiphenol, the NH_4, Na, K and hi salts of 4,4′-thiodiphenol, acid and salt forms of mixtures of the 4,4′-, 2,2′-, and 2,4′-thiodiphenol isomers, and the monoethanolamine salt of 4,4′-thiodiphenol, said shortstopping agent being employed in an amount greater than ½ the amount of the catalyst(s) charged to the reactor, maintaining the pH of the reaction medium above 7.0, and activating said shortstopping agent by lowering the pH to about 2.0 to about 5.0.

4,346,203

EMULSIFIER FOR THE PREPARATION OF POLYMERS

Adolf Schmidt, Cologne; Helmut Meier; Günther Schedrat, both of Leverkusen, and August Bockmann, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,567

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931674; Apr. 2, 1980, 3012822

Int. Cl.³ C08F *2/26*

U.S. Cl. 526—225 9 Claims

1. An emulsifier for the preparation of a polymeric emulsion which comprises at least 50 percent by weight of an alkali metal salt of a polysulphonic acid of an alkane of 8 to 20 carbon atoms and an alkali metal salt of a monosulphonic acid of an alkane of 8 to 20 carbon atoms.

4,346,204

COPOLYMERS CONTAINING HYDROXYL GROUPS, METHOD OF PRODUCTION AND THEIR APPLICATION IN SIZING OF PAPER

Felix Schülde, Wulfen; Karl Peterlein, and Klaus Diedrich, both of Gladbeck, all of Fed. Rep. of Germany, assignors to C Hemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

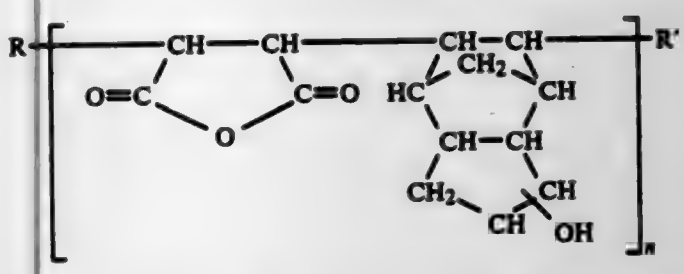
Filed Feb. 14, 1980, Ser. No. 121,507

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905764

Int. Cl.³ C08L *3/02;* C08F *22/06*

U.S. Cl. 526—271 9 Claims

1. A copolymer of maleic anhydride and dicyclopentadiene, having hydroxy groups, of the formula:



wherein R and R′ may be the same or different radicals selected from the group consisting of hydrogen, C_1–C_{14} alkyl-isobutyronitrile, unsubstituted phenyl or phenyl substituted by halogen or C_1–C_8 alkyl, C_1–C_{14} alkoxy-sub-

stituted benzoyl, C_1–C_{14} acyloxy-substituted benzoyl and halogen-substituted benzoyl, and n=3–10.

4,346,205

ENERGY ABSORBING ELASTOMERS AND COMPOSITES

Maurice A. F. Hiles, Welwyn, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 38,307, May 11, 1979, abandoned, which is a continuation of Ser. No. 904,920, May 3, 1978, abandoned, which is a division of Ser. No. 736,936, Oct. 29, 1976, Pat. No. 4,101,704, which is a continuation-in-part of Ser. No. 681,528, Apr. 29, 1976, abandoned. This application May 19, 1980, Ser. No. 150,951

Claims priority, application United Kingdom, Jul. 23, 1976, 30881/76

Int. Cl.³ C08G *18/48, 18/18*

U.S. Cl. 528—53 24 Claims



1. An elastomer comprising a flexible polyurethane of essentially linear structure containing unsatisfied hydroxyl groups, and having a compression set less than 15%, an elongation at break of at least 500%, and a recovery which is delayed after compression by at least 0.7 sec, said elastomer comprising the reaction product of substantially linear polyols based on polyalkylene glycol and having an average molecular weight in the range of 600 to 1200, and an aromatic diisocyanate.

13. A method of making a flexible polyurethane elastomer of essentially linear structure containing unsatisfied hydroxyl groups and having a compression set less than 15%, an elongation at break of at least 500%, and a recovery which is delayed after compression by at least 0.7 sec, which method comprises reacting substantially linear polyols based on polyalkylene glycol and having an average molecular weight in the range 600 to 1200 with an aromatic diisocyanate which is in less than stoichiometric amount.

4,346,206

IMIDE PREPOLYMER FROM REACTION OF EPOXY COMPOUND WITH BIS-IMIDE/DIAMINE REACTION MIXTURE

Akio Takahashi, Hitachioota; Yutaka Itoh, Hitachi; Takeshi Shimazaki, Hitachi; Motoyo Wajima, Hitachi; Hirosada Morishita, Hitachi; Yutaka Mizuno, Shimodate; Shunya Yokozawa, Oyama, and Kenji Tsukanishi, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 176,740

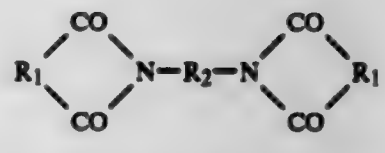
Claims priority, application Japan, Aug. 17, 1979, 54-105241

Int. Cl.³ C08G *59/40, 73/10*

U.S. Cl. 528—88 3 Claims

1. A process for preparing an imide prepolymer, which comprises the steps of:

(1) heating, at 70° to 170° C. for 5 to 120 minutes, at least one bis-imide (A) represented by the formula (a):



(a)

wherein R_1 stands for a divalent organic radical having a carbon-carbon double bond, and R_2 stands for a divalent organic radical having at least 2 carbon atoms, and at least one diamine (B) represented by the formula (b):

$$H_2N—R_3—NH_2 \quad (b)$$

wherein R_3 stands for a divalent organic radical having at least 2 carbon atoms, in an organic solvent having a boiling point of 70° to 170° C. as measured under a pressure of 760 mmHg, said at least one bis-imide (A) and said at least one diamine (B) being employed at a molar ratio of the component (A) to the component (B) of from 1:0.1 to 1:1, to obtain a reaction mixture containing an intermediate reaction product which is insoluble or slightly soluble in a low boiling point organic solvent, said solvent having a boiling point no higher than about that of methyl ethyl ketone; and (2) further heating, at 50° to 140° C. for 5 to 120 minutes, the reaction mixture together with at least one 1,2-epoxy compound (C) having at least two 1,2-epoxy groups, said at least one 1,2-epoxy compound (C) being employed in a weight proportion, relative to the total of said at least one bis-imide (A), said at least one diamine (B) and said at least one 1,2-epoxy compound (C), of from 10 to 80%, to obtain a reaction mixture containing an imide prepolymer having an increased solubility relative to that of said intermediate reaction product in said low boiling point organic solvent.

4,346,207

FLOWABLE, CURABLE EPOXY RESIN MIXTURE

Jürg Maurer, Riehen, and Heinz Rembold, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 31, 1981, Ser. No. 288,856

Claims priority, application Switzerland, Aug. 11, 1980, 6059/80

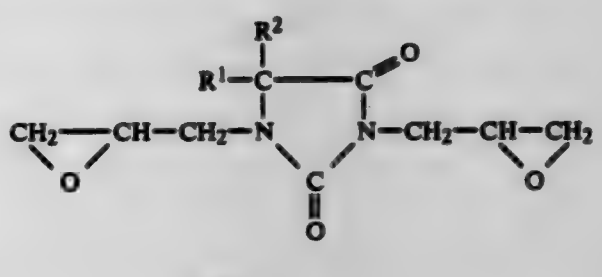
Int. Cl.³ C08G *59/26, 59/42*

U.S. Cl. 528—103 5 Claims

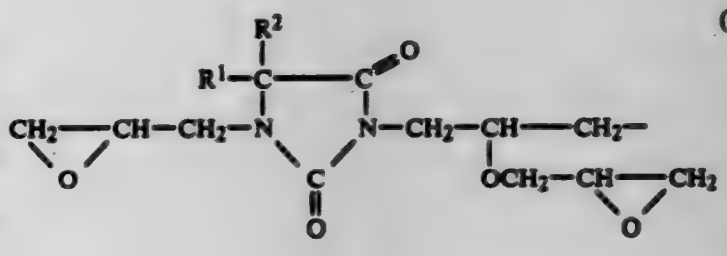
1. A flowable, curable mixture based on bisphenol epoxy resins containing on average more than one epoxy group in the molecule, a hardener for epoxy resins and, if desired, other ingredients, said mixture comprising

(a) an anhydride hardener, and

(b) a mixture of 90 to 50% by weight of at least one bisphenol epoxy resin and 10 to 50% by weight of at least one hydantoin epoxy resin of the formula I or II

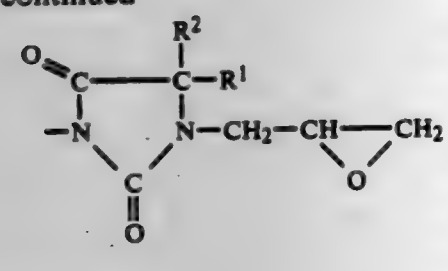


(I)



(II)

-continued



wherein R^1 and R^2 are methyl or ethyl.

4,346,208

ANISOTROPIC MELTS WHICH CAN BE SHAPED, BASED ON AROMATIC POLYESTERS, AND ARTICLES FORMED FROM THESE MELTS

Bernard Fayolle, Ecully, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Sep. 11, 1980, Ser. No. 186,289

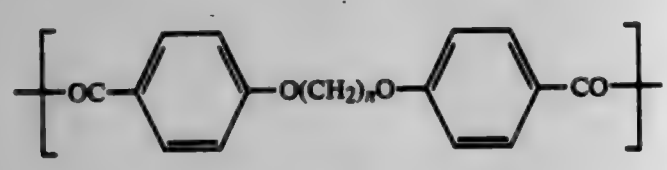
Claims priority, application France, Sep. 21, 1979, 79 24135

Int. Cl.³ C08G *63/18, 63/40*

U.S. Cl. 528—176 **9 Claims**

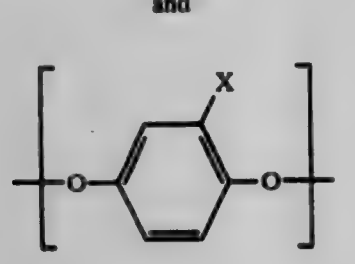
1. Anisotropic melts which can be shaped, based on aromatic polyesters, characterised in that they are prepared by fusion of a homopolyester possessing the following characteristics:

they consist essentially of repeat units of the formulae:



(I)

and



(II)

in which:

n=4 and X represents a methyl group or a chlorine atom, or

n=6 and X represents a hydrogen atom, a methyl group or a chlorine atom; and

they have flow points between 200° C. and 340° C.

4,346,209

SOLVENT RESISTANT HALOGENATED AROMATIC POLYESTER FIBERS AND PROCESS THEREFOR

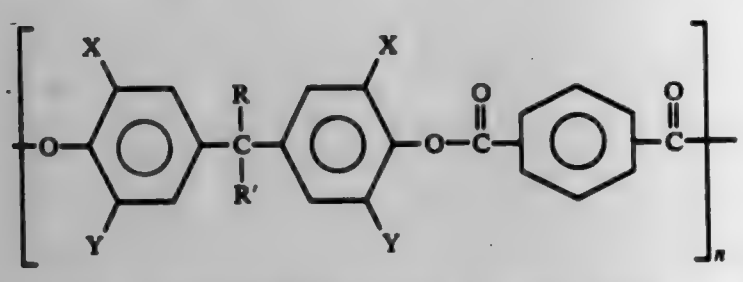
Alex S. Forschirm, Parsippany, and Arnold J. Rosenthal, Whippany, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,204

Int. Cl.³ C08G *63/18;* D06M *13/08*

U.S. Cl. 528—191 **10 Claims**

1. Solvent resistant halogenated aromatic polyester fibers said polyester having recurring units of the structural



wherein X, which may be the same or different, may be chlorine or bromine, Y, which may be the same or different, may be hydrogen, chlorine, or bromine, R and R′ may be the same or different and represent lower alkyl groups, hydrogen, or together constitute a cyclic hydrocarbon group, and n equals at least 10, and wherein said halogenated aromatic polyester contains at least some isophthaloyl halide/bisphenol isomer of said polyester, said fibers being first heat treated at substantially constant length at a temperature of from about 270° to about 295° C. for a period of from about 5 to about 60 minutes to produce modified halogenated aromatic polyester fibers, and then further treating said modified halogenated aromatic polyester fibers with perchloroethylene which is at a temperature of from about 80° C. up to its boiling point for a period of at least about 15 minutes to produce halogenated aromatic polyester fibers having improved solvent resistance.

4,346,210

PROCESS FOR THE PREPARATION OF POLYCARBONATES CATALYZED BY CYCLIC AZA COMPOUNDS

Wolfgang Alewelt; Dieter Margotte; Claus Wulff, and Hugo Vernaleken, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 931,695, Aug. 7, 1978, abandoned. This application Oct. 26, 1979, Ser. No. 88,694

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1977, 2735775

Int. Cl.³ C08L *69/00*

U.S. Cl. 528—199 **5 Claims**

1. In the process for the production of an aromatic polycarbonate by a phase boundary process the improvement comprising the introduction of a cyclic aza compound selected from the group consisting of N-ethyl pyrrolidine, N-ethylpiperidine, N-ethylmorpholine, N-isopropylpiperidine and N-isopropylmorpholine as a catalyst.

4,346,211

COPOLYCARBONATES PREPARED WITH 2,2′-BIS(P-HYDROXYPHENYL) 1,1,1,3,3,3-HEXAFLUOROPROPANE

Sivaram Krishnan, Moers, Fed. Rep. of Germany, and Arthur L. Baron, New Martinsville, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

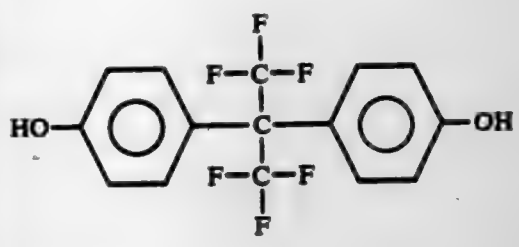
Continuation-in-part of Ser. No. 86,891, Oct. 22, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,650

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—202 **13 Claims**

1. In a polycarbonate resin based on the reaction product of a fluorine-free aromatic diol and a carbonic acid derivative the improvement comprising:

a fluorinated difunctinal phenolic compound represented by the structural formula:



co-reacted in said reaction product.

4,346,212

PHENANTHRENE/HCHO DERIVED POLYAMIDE-IMIDE

Joseph G. Robinson, Winchcombe; David I. Barnes, Cheltenham, and Angela M. Carswell, Longhope, all of England, assignors to Coal Industry (Patents) Limited, England

Filed Jul. 31, 1980, Ser. No. 174,152

Claims priority, application United Kingdom, Sep. 21, 1979, 7932778

Int. Cl.³ C08G *2/16, 73/10*

U.S. Cl. 528—229 11 Claims

1. A method of producing a phenanthrene-derived poly-(amide-imide) resin comprising the steps of

(1) reacting a phenanthrene with formaldehyde or a formaldehyde donor in the presence of an acid catalyst to give a phenanthrene-formaldehyde reaction product having substantially only methylene bridges;

(2) oxidising the reaction product to oxidise the methylene bridges to keto groups and to break the 9, 10 bond in the phenanthrene moieties to produce a polycarboxylated reaction product; and

(3) reacting the polycarboxylated reaction product with an aromatic diamine to produce a poly-(amide-imide) resin.

4,346,213

PROCESS FOR THE PREPARATION OF POLYBUTYLENE TEREPHTHALATE

Henry K. Hall, Jr., and Anne B. Padias, both of Tuscon, Ariz., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 181,275

Int. Cl.³ C08G *63/34*

U.S. Cl. 528—272 13 Claims

1. In the process for preparing polybutylene terephthalate in which terephthalic acid and 1,4-butanediol are reacted in a first stage at elevated temperature in the presence of polyesterification catalyst until the clearing point of the reaction is reached, and the reaction products of the aforesaid first stage are further reacted in a second stage at a temperature which is higher than that of the first stage and at substantially less than superatmospheric pressure to distill 1,4-butanediol, in the presence of polycondensation catalyst to provide polybutylene terephthalate, the improvement is provided which comprises commencing the second stage reaction after a major part of the terephthalic acid has been consumed in the first stage but before the clearing point of the first stage reaction has been reached.

4,346,214

PROCESS FOR THE PRODUCTION OF POLYESTER AMIDE SILICATE RESINOUS PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 124,093, Feb. 25, 1980, which is a continuation-in-part of Ser. No. 10,061, Feb. 7, 1979, Pat. No. 4,200,697, which is a continuation-in-part of Ser. No. 794,915, May 9, 1977, Pat. No. 4,125,498, which is a continuation-in-part of Ser. No. 653,727, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 562,201, Apr. 14, 1975, abandoned. This application Aug. 31, 1981, Ser. No. 297,715

Int. Cl.³ C08G *63/04, 63/30*

U.S. Cl. 528—275 10 Claims

1. The process for the production of polyester amide silicate resinous product by the following steps:

(a) mixing 1 to 10 parts by weight of an oxidated silicon compound, 1 to 30 parts by weight of a polyhydroxy organic compound, 10 to 30 parts by weight of a polycarboxylic acid and/or polycarboxylic acid anhydride compound, 1 to 30 parts by weight of an organic polyamine compound and up to 10% by weight of an alkali catalyst, percentage based on the weight of the reactants.

(b) heating the said mixture at a temperature between the melting and the boiling temperatures of the polycarboxylic acid or polycarboxylic acid anhydride or polyamine compound while agitating for 20 to 90 minutes, thereby

(c) producing a polyester amide silicate resinous product.

4,346,215

FILM OF AROMATIC POLYAMIDE AND PROCESS THEREFOR

William D. Garlington, and Isadore Swerlick, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 130,851, Mar. 17, 1980, abandoned. This application Jul. 17, 1981, Ser. No. 284,235

Int. Cl.³ C08G *69/32, 69/46*

U.S. Cl. 528—348 5 Claims

1. A film of wholly aromatic polyamide, at least 85% of the repeating units of which are metaphenylene isophthalamide units, said polyamide having an inherent viscosity of at least 1.2 deciliters/g in concentrated sulfuric acid at 30° C. at a concentration of 0.5 gram of polymer per 100 cc of solution and being soluble to the extent of 1 g of polyamide in a solvent consisting of 9 g of N,N-dimethylacetamide and 1 g of $CaCl_2.2H_2O$ at 25° C., said film being transparent, undrawn, and noncrystalline and having a pneumatic impact strength of at least 2 kg-cm/mil.

4,346,216

OSMIUM CARBOHYDRATE COMPLEXES

Conrad C. Hinckley, Carbondale, Ill., assignor to Research Corporation, New York, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,163

Int. Cl.³ C07H *23/00*

U.S. Cl. 536—121 6 Claims

1. A complex comprising a polydisperse mixture of osmium-carbohydrate polymers prepared by reacting an osmium compound with a carbohydrate selected from the group consisting of aldoses, ketoses, heptuloses, octuloses, nonuloses, uronic acids, aldonic acids, alditols, disaccharides and polysaccharides.

2. The complex of claim 1 wherein said carbohydrate is glucose.

4,346,217

DI-QUATERNARY AMMONIUM SALTS OF α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

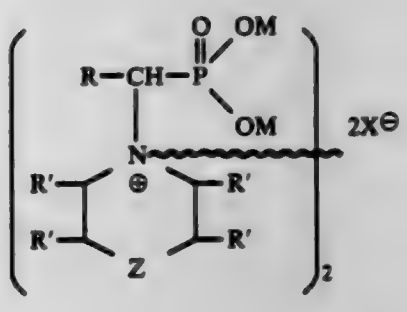
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,259, Aug. 9, 1978, Pat. No. 4,264,768. This application Oct. 14, 1980, Ser. No. 196,984

Int. Cl.³ C07D *279/12*

U.S. Cl. 542—412 11 Claims

1. A compound of the formula



where R is alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl, or hydroxyphenyl, R′ is hydrogen or alkyl, Z is S, SO or SO_2, M is hydrogen or a salt moiety, ~~~ is a bridging group selected from alkenylene and alkinylene, and X is a halide.

4,346,218

CYCLIZATION PROCESS TO FORM CEPHEM RING

Teruji Tsuji, Takatsuki; Yoshio Hamashima, Kyoto; Mitsuru Yoshioka, Toyonaka; Masayuki Narisada, Ibaraki; Hiroshi Tanida; Taichiro Komeno, both of Osaka, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 66,462, Aug. 13, 1979, abandoned, which is a continuation of Ser. No. 856,807, Dec. 1, 1977, abandoned, which is a division of Ser. No. 658,665, Feb. 17, 1976, Pat. No. 4,079,181. This application Feb. 27, 1980, Ser. No. 125,233

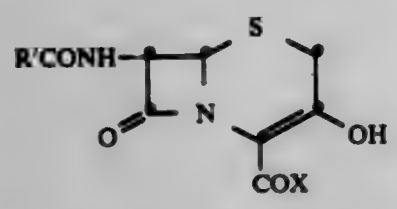
Claims priority, application Japan, Feb. 17, 1975, 50/19612; Feb. 21, 1975, 50/22229; Mar. 7, 1975, 50/28452; Mar. 30, 1975, 50/33808

The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.

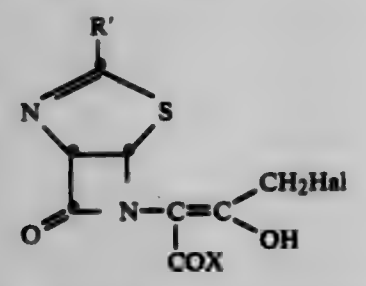
Int. Cl.[3] C07D *501/20*

U.S. Cl. 544—16 4 Claims

1. A method for the production of a compound of the formula



which comprises treating a compound of the formula



with an acid, base, solvent, or solvent together with a catalizer selected from the group of a neutral or basic silica gel, alumina, diatomaceous earth, or florisil, wherein

R′ is a member selected from the group consisting of (1) hydrogen, (2) C_1 to C_4 alkyl, (3) phenyl, (4) α-chlorobenzyl, (5) ArCQQ, (6) Ar—G—CQQ wherein Q represents hydrogen or methyl, G represents oxygen or sulfur and Ar represents (a) phenyl, (b) dihydrophenyl, (c) monocyclic heterocyclic aromatic containing from 1 to 4 hetero atoms selected from the group of nitrogen, oxygen and sulfur or (d) one of said groups (a) to (c) substituted by an inert group selected from the group of alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, chlorine, bromine, iodine, fluorine, trifluoromethyl hydroxy, cyano, aminomethyl, amino and nitro,

Hal is chlorine, bromine, or iodine, and

X is OH or a carboxy protecting group.

4,346,219

PROCESS FOR PREPARING DESACETOXYCEPHALOSPORANIC ACID

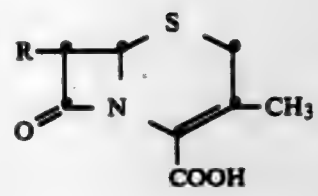
William C. Vladuchick, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 29, 1981, Ser. No. 278,780

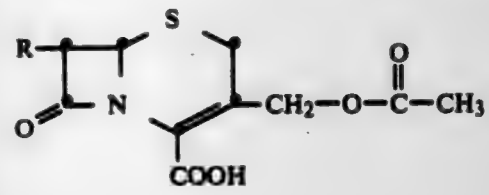
Int. Cl.[3] C07D *501/04*

U.S. Cl. 544—28 10 Claims

1. A process for preparing a desacetoxycephalosporanic acid of the formula



which comprises mixing at a temperature between about 20° C. and about 100° C. a cephalosporanic acid of the formula



with a tri(C_1–C_6 alkyl)silane in the presence of an organic acid having a pKa of less than 1.5 and a Lewis acid; wherein R is amino or disubstituted amino.

4,346,220

1,2,4-TRIAZIN-5-ONES

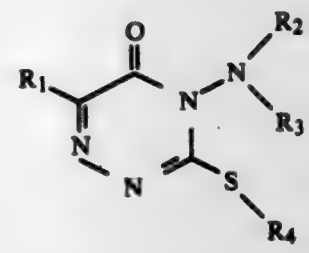
Maged M. Fawzi, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 597,836, Nov. 28, 1966, Pat. No. 3,905,801. This application Nov. 22, 1974, Ser. No. 526,261

Int. Cl.[3] C07D *253/06;* A01N *43/64*

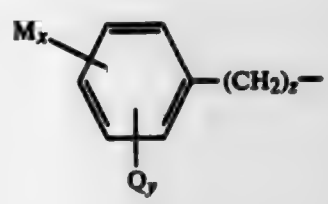
U.S. Cl. 544—182 6 Claims

1. Substituted 1,2,4-triazine-5-one having the formula



wherein

R_1 is hydrogen, alkyl of 1 through 8 carbon atoms, naphthyl, benzyl, phenyl, or



wherein

M and Q are each separately halogen, nitro, cyano, alkyl of 1 through 3 carbon atoms, or alkoxy of 1 through 3 carbon atoms,

x and y are each integers from 0 to 2 provided that the sum of x and y is either 1 or 2, and

z is 0 or 1;

R_2 and R_3 are each separately hydrogen, alkyl of 1 through 4 carbon atoms, phenyl, or

R_2, R_3 and the nitrogen atom to which they are bonded taken together form morpholino, piperidino, or pyrrolidino; and

R_4 is hydrogen, alkyl of 1 through 4 carbons, benzyl, allyl, carboalkoxy of 2 through 4 carbon atoms, or carboalkoxy alkyl of 3 through 4 carbon atoms,

provided that when R_4 is hydrogen or methyl and R_2 and R_3 are each hydrogen, then R_1 is other than methyl or phenyl.

4,346,221

PREPARATION OF 4-AMINO-6-(PYRIDINYL)-3(2H)-PYRIDAZINONES FROM 6-(PYRIDINYL)-3(2H)-PYRIDAZINONES

George Y. Lesher, Schodack; William B. Dickinson, Albany, and Baldev Singh, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 144,563, Apr. 28, 1980, Pat. No. 4,305,943. This application Mar. 2, 1981, Ser. No. 239,566
Int. Cl.³ C07D *401/04*; A61K *31/50*
U.S. Cl. 544—238 3 Claims

1. The process which comprises reacting 2-R-6-PY-3(2H)-pyridazinone with hydrazine to produce 4-amino-2-R-6-PY-3(2H)-pyridazinone, where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, and, R is hydrogen, lower-alkyl or lower-hydroxyalkyl.

4,346,222

1,3,5,5-TETRANITROHEXAHYDROPYRIMIDINE (DNNC)

Donald A. Levins, San Jose; Clifford D. Bedford, Mountain View, and Clifford L. Coon, Fremont, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Dec. 4, 1980, Ser. No. 212,816
Int. Cl.³ C07D *239/04*
U.S. Cl. 544—322 1 Claim

1. 1,3,5,5-Tetranitrohexahydropyrimidine.

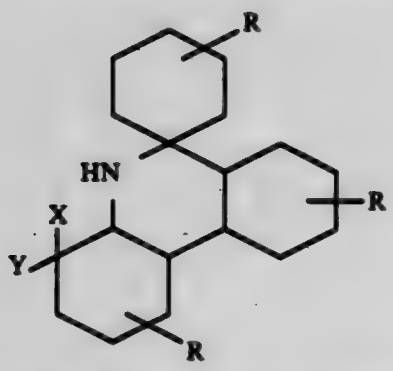
4,346,223

PREPARATION OF PERHYDROPHENANTHRIDINES

Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed May 18, 1981, Ser. No. 264,900
Int. Cl.³ C07D *221/20, 221/12*
U.S. Cl. 546—18 12 Claims

1. A perhydrophenanthridine of the formula



where R is hydrogen or a hydrocarbon and X and Y are hydrogen or a hydrocarbon group substituted with a functional group selected from the group consisting of carbonyl, carboxyl or nitrilo groups.

4,346,224

4A-ARYL-DECAHYDROISOQUINOLINES

Henry Rapoport, Berkeley, Calif.; Dwight D. Weller, Champaigne, Ill., and Richard D. Gless, Oakland, Calif., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 939,706, Sep. 5, 1978, Pat. No. 4,289,882, which is a continuation-in-part of Ser. No. 900,275, Apr. 26, 1978, Pat. No. 4,189,583. This application Jan. 14, 1981, Ser. No. 224,958
Int. Cl.³ C07D *211/22, 211/60*
U.S. Cl. 546—221 3 Claims

1. The compound ethyl 4-(3'-methoxyphenyl)-2-piperidone-5-carboxylate.

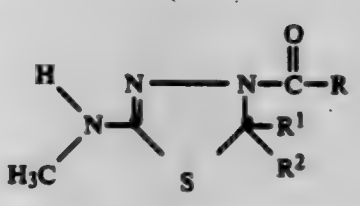
4,346,225

HERBICIDAL 2-METHYLAMINO THIADIAZOLINES

Eddie V. P. Tao, and Gilbert S. Staten, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 15, 1981, Ser. No. 273,697
Int. Cl.³ C07D *285/12*
U.S. Cl. 548—138 10 Claims

1. A compound of the formula



wherein R is phenyl, 3-trifluoromethylphenyl, 2-trifluoromethylphenyl, fluorophenyl, chlorophenyl, nitrophenyl, or C_3-C_4 alkyl; R^1 and R^2 are independently hydrogen, methyl or ethyl, provided that one of R^1 and R^2 is not methyl when the other is ethyl, and provided that no more than one of R^1 and R^2 is hydrogen.

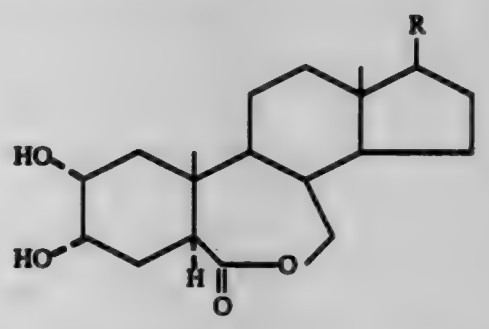
4,346,226

PLANT GROWTH PROMOTING BRASSINOSTEROIDS

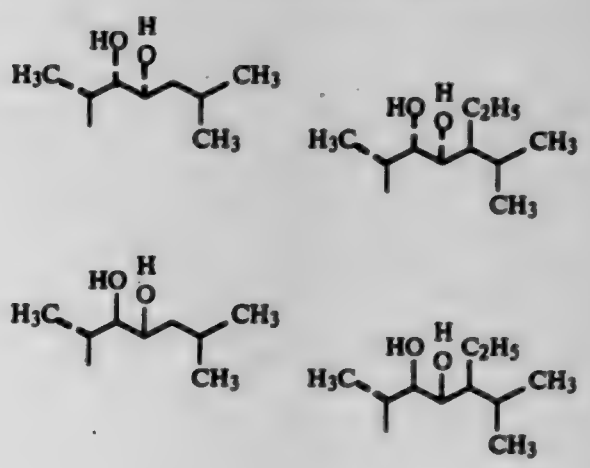
Malcolm J. Thompson, Baltimore; Nagabhushanam Mandava, Silver Spring, both of Md.; Joseph F. Worley, deceased, late of Rockville, Md. (by Anita S. Worley, a personal representative); Samson R. Dutky, Silver Spring, Md.; William E. Robbins, Silver Spring, Md., and Judith L. Flippen-Anderson, Annandale, Va., assignors to The United States of America as represented by the Secretary of the Department of Agriculture, Washington, D.C.

Filed Aug. 28, 1980, Ser. No. 182,210
Int. Cl.³ C07D *313/06*
U.S. Cl. 549—268 6 Claims

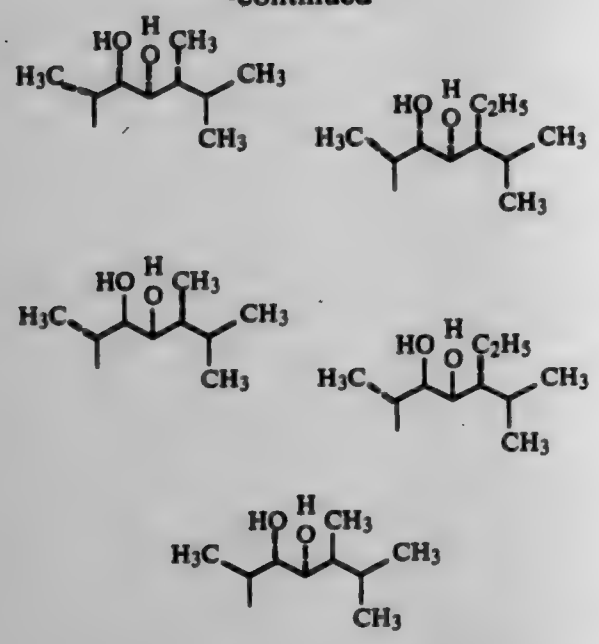
1. Polyhydroxylated steroidal lactone having from 27 to 29 carbon atoms and the formula



wherein R is selected from the group consisting of



-continued



said compounds being highly effective in promoting plant growth and increasing crop yield.

4,346,227

ML-236B DERIVATIVES AND THEIR PREPARATION

Akira Terahara, and Minoru Tanaka, both of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

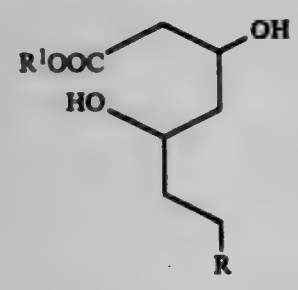
Filed Jun. 5, 1981, Ser. No. 270,846

Claims priority, application Japan, Jun. 6, 1980, 55-76127; Aug. 22, 1980, 55-115483; Sep. 8, 1980, 55-124385; Sep. 19, 1980, 55-130311

Int. Cl.³ C07C *69/013*

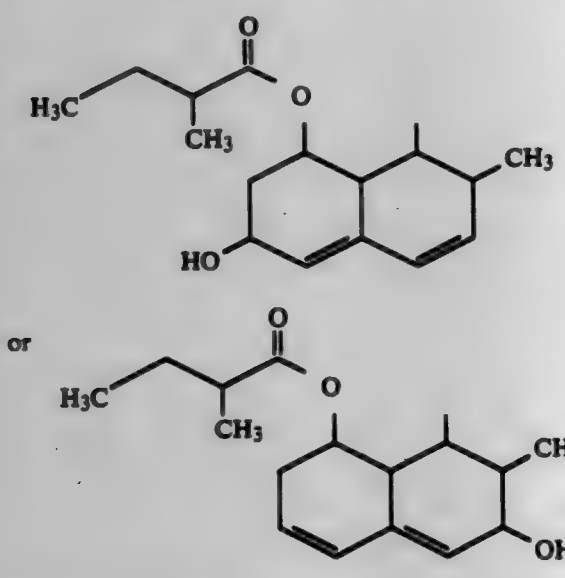
U.S. Cl. 560—119 **25 Claims**

1. Compounds of formula (I):



(I)

wherein R^1 represents a hydrogen atom or a C_1–C_5 alkyl group, and R represents a group of the formula



and pharmaceutically acceptable salts of the acid when R^1 represents a hydrogen atom.

4,346,228

NOVEL 11-OXOPROSTAGLANDIN DERIVATIVES

Werner Skuballa; Bernd Raduechel; Helmut Vorbrueggen; Walter Elger; Olaf Loge, and Eckehard Schillinger, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Bergkamen, Fed. Rep. of Germany

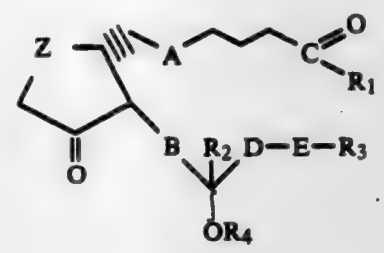
Filed Apr. 15, 1976, Ser. No. 677,420

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1975, 2517773

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—53 **18 Claims**

1. An 11-oxoprostaglandin acid of the formula



I

wherein

R_1 is $-OR_5$, $-NHSO_2CH_3$ or $-O-CH_2-U-V$, R_5 being a hydrogen atom, alkyl of 1–10 carbon atoms, monocyclic or bicyclic hydrocarbon aryl of 6–10 ring carbon atoms or a corresponding aryl substituted by 1–3 halogen atoms, phenyl, 1–3 alkyl groups each of 1–4 carbon atoms, chloromethyl, fluoromethyl, trifluoromethyl, carboxyl or hydroxy, or a 5- or 6-member heterocycle group attached by a ring carbon atom thereof and having at least one nitrogen, oxygen or sulfur atom as a ring member, U being a direct bond, carbonyl or carbonyloxy, and V being a phenyl ring substituted by one or more of phenyl, alkoxy or 1–2 carbon atoms, and halogen;

R_2 is a hydrogen atom or alkyl of 1–5 carbon atoms;

R_3 is alkyl of 1–5 carbon atoms, hydrocarbon alkylaryl of up to 10 carbon atoms wherein aryl is as defined hereinabove, cycloalkyl, aryl as defined hereinabove or benzodioxol-2-yl;

$-OR_4$ is a free or etherified hydroxy group;

A is $-CH_2-CH_2-$, cis-$CH=CH-$, or trans-$CH=CH-$;

B is $-CH_2-CH_2-$ or trans-$CH=CH-$;

D and E collectively are a direct bond, or D is straight-chain or branched alkylene of 1–5 carbon atoms and E is an oxygen or sulfur atom; and

Z is $>CH\sim\sim OR_4$-group, wherein OR_4 can be in the α- or β-position and is as defined above; with the proviso that when D is alkylene and E is an oxygen atom, R_3 is alkylaryl of up to 10 carbon atoms, cycloalkyl, aryl or benzodioxolyl-2-yl;

and, when R_1 is hydroxy, physiologically acceptable salts thereof with bases.

4,346,229

REACTION PRODUCTS OF DMT PROCESS RESIDUE AND DIPROPYLENE GLYCOL

Leighton K. Derr, Aurora, Ill.; Lyle B. Hawkins, Wilmington, and Marlene J. Jones, New Castle, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed May 1, 1980, Ser. No. 145,515

Int. Cl.³ C07C *69/773, 69/76*

U.S. Cl. 560—91 **2 Claims**

1. The reaction product produced by reacting DMT process residue with a quantity of dipropylene glycol or a mixture thereof with up to 50% by weight of one or more different glycols, in moles, in excess of the number of equivalents of available acid and methyl ester present in said residue, as determined by the acid number and the methoxyl content of said residue.

4,346,230

PROCESS FOR THE PREPARATION OF DIMETHYL TEREPHTHALATE

Gerhart Hoffmann; Rudolph Cordes, both of Niederkassel-Ranzel, and Wolfgang Merkel, Niederkassel, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 955,538, Oct. 30, 1978, abandoned, which is a continuation of Ser. No. 790,825, Apr. 25, 1977, abandoned, which is a continuation of Ser. No. 614,971, Sep. 19, 1975, abandoned, which is a continuation of Ser. No. 316,025, Dec. 18, 1972, abandoned. This application Sep. 18, 1980, Ser. No. 188,457

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1971, 2163031

Int. Cl.³ C07C *67/08*

U.S. Cl. 560—99 9 Claims

1. In a process for the preparation of dimethyl terephthalate by the air oxidation of a mixture of p-xylene and methyl p-toluate in a liquid reaction medium at a temperature of from about 80° to 250° C., by esterification of the resulting acid products with methanol, and by recycling of the methyl p-toluate to the oxidation stage, wherein a catalyst consisting of a mixture of cobalt and manganese compounds is employed during the oxidation stage and during the esterification stage, the improvement which comprises utilizing manganese during the oxidation stage in a concentration that is less than the concentration during the esterification stage, the manganese being in a concentration ranging between 0.0005% and 0.001% by weight during the oxidation stage and in a higher concentration resulting from the addition of about 0.001 to about 1% by weight of manganese during the esterification stage and utilizing cobalt in a concentration ranging from 0.005% to 1% by weight during the oxidation stage and the esterification stage, thereby increasing the yield of dimethyl terephthalate when compared with the use of higher manganese concentrations during the oxidation stage.

4,346,231

POLYMERIZABLE ETHYL-ENICALLY UNSATURATED AMIDE COMPOUNDS

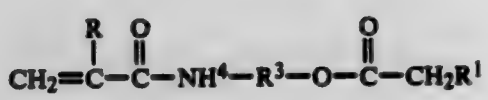
Ignazio S. Ponticello; Kenneth R. Hollister, and Richard C. Tuites, all of 1669 Lake Ave., Rochester, N.Y. 14650

Division of Ser. No. 85,138, Oct. 15, 1979, Pat. No. 4,247,673, which is a division of Ser. No. 971,463, Dec. 20, 1978, Pat. No. 4,215,195. This application Jun. 9, 1980, Ser. No. 157,600

Int. Cl.³ C07C *103/133*

U.S. Cl. 560—178 5 Claims

1. A compound of formula (II):



wherein R is hydrogen or methyl; R^1 is cyano or



wherein R^2 is alkyl of 1 to 6 carbon atoms; R^3 is alkylene of 1 to 12 carbon atoms, arylene of 6 to 12 carbon atoms, arylenebisalkylene of 8 to 32 carbon atoms, alkylenebisarylene of 13 to 34 carbon atoms, arylenealkylene of 7 to 24 carbon atoms or cycloalkylene of 4 to 12 carbon atoms; and R^4 is hydrogen or alkyl of 1 to 6 carbon atoms.

4,346,232

PROCESS FOR PRODUCING AROMATIC POLYCARBOXYLIC ACID

Makoto Komatsu; Toru Tanaka, and Hideaki Fujita, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,183

Claims priority, application Japan, Aug. 13, 1979, 54-103062

Int. Cl.³ C07C *51/255*

U.S. Cl. 562—416 12 Claims

1. A process for producing an aromatic polycarboxylic acid having at least three carboxyl groups, which comprises oxidizing a polyalkyl-substituted aromatic aldehyde or a polyalkyl-substituted aromatic carboxylic acid with molecular oxygen in water as a solvent in the presence of metal ions of manganese or cerium and a bromide ion-liberating compound as a catalyst, while keeping an oxygen concentration of effluent gas from reactor at least at 3%.

4,346,233

PROCESS FOR THE PREPARATION OF UREAS

Hans G. Zengel, Kleinallstadt; Manfred F. Bergfeld, and Rainer Zielke, both of Erlenbach, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

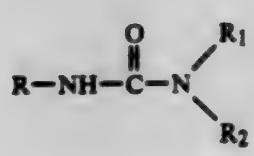
Filed Mar. 31, 1981, Ser. No. 249,536

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015374

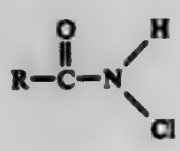
Int. Cl.³ C07C *127/15*

U.S. Cl. 562—439 3 Claims

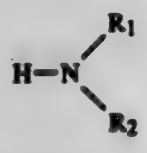
1. A process for preparing ureas wherein no isocyanate starting materials are required, said ureas being of the formula



wherein R is a saturated aliphatic hydrocarbon radical having from 10 to 30 carbon atoms; R_1 is an aliphatic or hydroxyl- or carboxyl- substituted aliphatic radical having from 1 to 20 carbon atoms, or an araliphatic radical having from 1 to 20 carbon atoms in the aliphatic portion of the radical and having from 6 to 12 carbon atoms in the aromatic portion of the radical; and R_2 is hydrogen or a group represented by R_1; which comprises treating a N-chloramide of a higher fatty acid of the formula



in isopropanol and/or tertiary butanol, with an aliphatic or araliphatic primary or secondary amine of the formula



in the presence of an alkali hydroxide or alkaline-earth hydroxide within a temperature range of from 20° to 100° C.

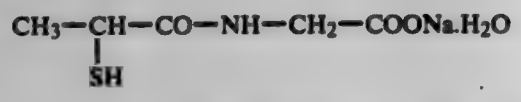
4,346,234

PROCESS FOR THE PREPARATION OF THE SODIUM SALT OF MERCAPTOPROPIONYLGLYCINE

Pietro Gargani, Via Ripamonti, 166-Milano, Italy

Continuation-in-part of Ser. No. 45,827, Jun. 5, 1979, abandoned. This application Apr. 29, 1980, Ser. No. 145,007
Claims priority, application Italy, Jun. 16, 1978, 24637 A/78
Int. Cl.[3] C07C *149/243*
U.S. Cl. 562—556 2 Claims

1. A process for preparing sodium 2-mercaptopropionyl-glycinate monohydrate of formula:



wherein 2-mercaptopropionylglycine is reacted with sodium 2-ethylhexanoate in an anhydrous mean, at ambient temperature and the formed salt is precipitated by cooling and addition of water.

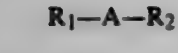
4,346,235

FLUORINE-CONTAINING COMPOUNDS

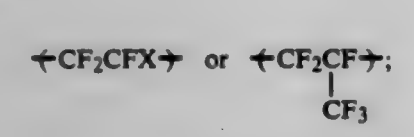
Noboru Sonoda, Osaka; Shinji Murai, Kawanishi, and Kazuhisa Takii, Nagaokakyo, all of Japan, assignors to Okamura Oil Mill Limited and Daikin Kogyo Co., Ltd., both of, Japan

Filed Jun. 10, 1980, Ser. No. 158,301
Claims priority, application Japan, Jun. 15, 1979, 54-75826; Jun. 15, 1979, 54-75827
Int. Cl.[3] C07C *55/02, 53/21*
U.S. Cl. 562—596 3 Claims

1. A fluorine-containing compound of the formula



wherein A is



R_1 and R_2 are each hydrogen or $HOOC—CH_2)_5$, while R_1 and R_2 may not be hydrogen at the same time; X is hydrogen or halogen.

3. A fluorine-containing compound as defined in claim 1 in which R_1 and R_2 are both $HOOC-(-CH_2)_5$.

4,346,236

METHOD OF OXIDIZING TERTIARY-ALKYL PHOSPHINES

Fui-Tseng H. Lee, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Feb. 9, 1981, Ser. No. 232,770
Int. Cl.[3] C07F *9/53*
U.S. Cl. 568—15 10 Claims

1. A process for the oxidation of a water soluble tris-alkyl phosphine to the corresponding tris-alkyl phosphine oxide which comprises heating said phosphine in the presence of water and catalytic amounts of an acid at a temperature above about 100° C.

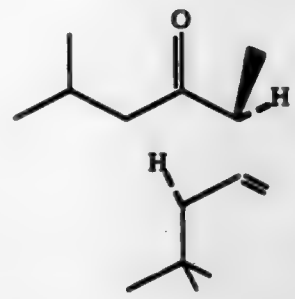
4,346,237

BRANCHED KETONES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

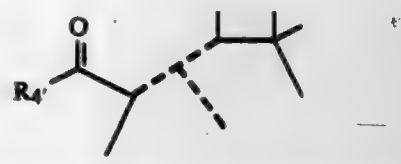
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 184,132, Sep. 4, 1980, Pat. No. 4,321,255. This application May 8, 1981, Ser. No. 261,701
Int. Cl.[3] C07C *45/46, 49/203*
U.S. Cl. 568—398 7 Claims

1. The compound having the structure:



2. A product containing a major proportion of a mixture defined according to the structure:



wherein in each of the molecules of the mixture, one of the dashed lines is a carbon-carbon double bond and each of the other of the dashed lines is a carbon-carbon single bond, and wherein R_4' represents C_1–C_3 lower alkyl, produced according to the process of:

(i) dimerizing 2-methyl-2-butene in the presence of an acid catalyst to produce a diisoamylene composition;
(ii) admixing the resulting dimerized isoamylene with an acylating agent selected from the group consisting of an acyl anhydride and an acyl halide in the presence of a Lewis acid catalyst or a protonic acid catalyst at a temperature of from −80° C. up to +80° C.; and
(iii) distilling the resulting product from the reaction mass.

4,346,238

PROCESS FOR THE PREPARATION OF CRYSTALLINE SODIUM PARAFORMYLPHENOLATE

Alain Schouteeten, Ezanville, and Yani Christidis, Paris, both of France, assignors to Societe Francaise Hoechst, France

Filed May 7, 1980, Ser. No. 147,678
Claims priority, application France, May 14, 1979, 79 12173
Int. Cl.[3] C07C *45/54, 47/565*
U.S. Cl. 568—432 9 Claims

1. Process for manufacturing crystalline sodium paraformyl-phenolate comprising:

(a) condensing glyoxylic acid with an excess of phenol in water in the presence of sodium hydroxide at a temperature comprised between 30° C. and 100° C.;
(b) neutralising the solution thus obtained and then freeing it from the unconverted phenol by steam distillation or by extraction with a water-immiscible organic solvent, and then subjecting it hot under a pressure of oxygen, to a catalytic decarboxylating oxidising degradation in the presence of sodium hydroxide;
(c) allowing the aqueous solution so-obtained, after removal of the catalyst by filtration, and then concentration hot under vacuum to 60% plus or minus 10% of its initial volume, to crystallise; and
(d) draining the precipitated crystals, washing them and then drying them to constant weight under vacuum of 1 mm of mercury at about 20° C. to obtain sodium paraformyl-phenolate crystallised with two molecules of water.

4,346,239

PROCESS FOR THE PREPARATION OF 2-METHYLENE ALDEHYDES

Hanswilhelm Bach, Duisburg; Eike Brundin, Dinslaken, and Wilhelm Gick, Duisburg-Baeri, all of Fed. Rep. of Germany, assignors to Ruhrchemie AG, Oberhausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 106,211, Dec. 21, 1979. This application Dec. 29, 1980, Ser. No. 220,382

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025350

The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.

Int. Cl.³ C07C *47/22*

U.S. Cl. 568—461 15 Claims

1. A process for the preparation of a 2-methylene aldehyde which comprises contacting formaldehyde and an aldehyde of the formula R—CH_2—CHO, wherein R represents a substituted or unsubstituted organic radical having 2 to 12 carbon atoms in the presence of a secondary amine and an organic carboxylic acid having up to 5 carbon atoms, said secondary amine and said organic carboxylic acid being present in a catalytic amount.

4,346,240

HYDROGENATION OF ESTERS USING ALKALI DOPED HETEROGENEOUS GROUP VIII TRANSITION METAL CATALYSTS

Roger A. Grey, Denville, and Guido P. Pez, Boonton, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 132,917, Mar. 24, 1980, abandoned. This application Sep. 29, 1981, Ser. No. 307,031

Int. Cl.³ C07C *31/38*

U.S. Cl. 568—842 32 Claims

1. A process for hydrogenating a monoester to the alcohols corresponding to the acid and alcohol portions of the monoester which comprises reacting hydrogen with the monoester in the liquid phase in the presence of solid catalyst composition at a temperature not exceeding about 150° C., said solid catalyst composition consisting essentially of about 0.1 to about 15 weight percent of at least one group VIII transition metal, about 1 to about 50 weight percent of at least one alkali metal cation, about 2 to about 50 weight percent of an anion radical selected from the group consisting of arene radical anions, ketyls, aliphatic alkoxide anions and mixtures thereof, and the balance of a support comprising high surface area carbon.

4,346,241

PROCESS FOR RECOVERING ETHANOL FROM DILUTE AQUEOUS SOLUTIONS EMPLOYING LIQUID EXTRACTION MEDIA

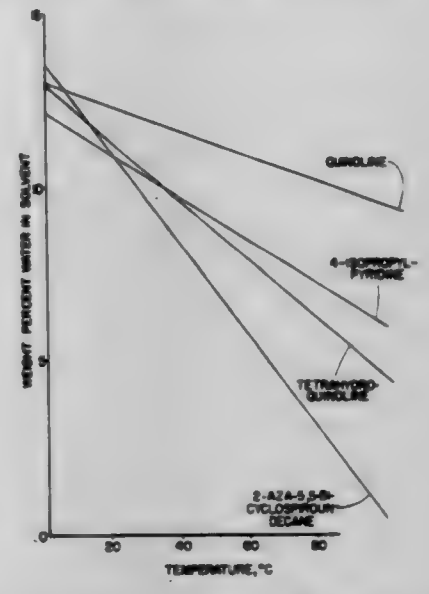
Julian Feldman, Cincinnati, Ohio, assignor to National Distillers & Chemical Corp., New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 305,884

Int. Cl.³ C07C *29/86*

U.S. Cl. 568—916 15 Claims

1. A process for recovering ethanol present in dilute aqueous solution which comprises contacting said dilute aqueous ethanol solution with at least one inert extractant which is liquid at ambient temperature and pressure, said extractant being selected from the group consisting of unsubstituted and substituted cyclic secondary amines and unsubstituted and substituted aromatic cyclic amines having a distribution coefficient of at least about 0.70.



4,346,242

METHOD FOR PREPARING SUBSTITUTED META-PHENYLALKOXYNITROBENZENES

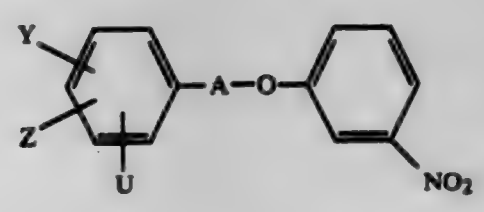
David M. Spatz, San Francisco, Calif., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 5, 1980, Ser. No. 156,881

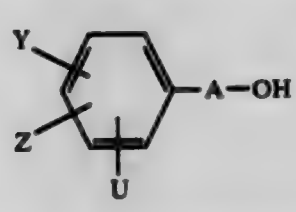
Int. Cl.³ C07L *41/01*

U.S. Cl. 568—586 9 Claims

1. A method for the preparation of compounds of formula:



wherein Y is hydrogen, halogen, C_1–C_4 alkyl, C_3–C_5 alkenyl, C_3–C_5 alkynyl, C_1–C_4 alkoxy, CH_3S, CF_3, CN, NH_2, OCF_2H, OCF_3 or OCF_2Cl; Z is hyrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, or CF_3; U is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen; A is C_2–C_4 alkylene, straight chain or branched; comprising reacting a compound of formula:



wherein Y, Z, U and A are as defined above with an equimolar amount of m-dinitrobenzene in the presence of an equimolar amount of an alkali metal hydroxide or an alkali metal alkoxide and in the presence of a polar solvent of hexamethylphosphoramide, dimethylformamide, dimethyl sulfoxide, acetonitrile or mixtures thereof in the temperature range of from 20° C. to 80° C.

4,346,243

METHYL SUBSTITUTED NORBORNANE CARBOXALDEHYDE DIMETHYL ACETALS

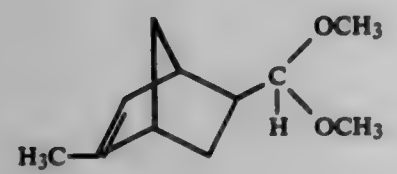
Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Rumson; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 247,323, Mar. 25, 1981, Pat. No. 4,326,998, which is a continuation-in-part of Ser. No. 152,187, May 22, 1980, Pat. No. 4,284,824. This application Jul. 16, 1981, Ser. No. 284,108

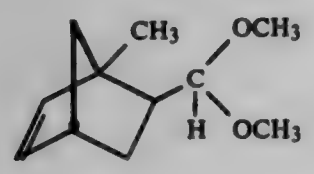
Int. Cl.[3] C07C *43/162*

U.S. Cl. 568—591 1 Claim

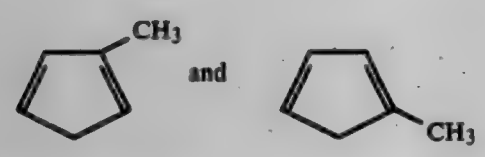
1. A product containing a mixture of methyl substituted norbornane carboxaldehyde dimethyl acetals having the structures:



and



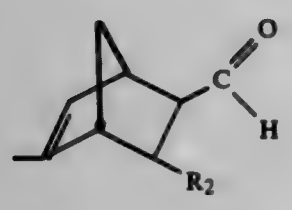
produced according to the process which consists of the steps of (i) admixing a mixture of methyl cyclopentadienes having the structures:



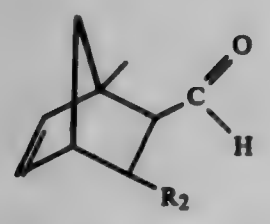
with acrolein in the presence of a catalyst having the formula:

$$R_m'AlX_n$$

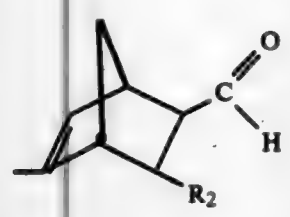
wherein R′ is C_1-C_3 alkyl and X is chloro or bromo with $m+n=3$ and m being 1 or 2 and n being 1 or 2; the reaction taking place at a temperature of between 0° C. and 50° C.; the reaction taking place in the presence of an inert solvent wherein a mixture of compounds having the structures:



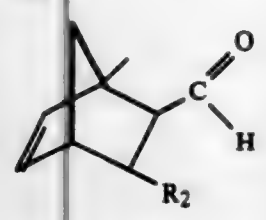
and



is formed; (ii) reacting the mixture of compounds having the two structures:



and



with methyl alcohol in the presence of an alkali metal alkoxide; and (iii) distilling the resulting reaction product from the reaction mass; wherein R_2 is hydrogen.

4,346,244

PREPARATION OF CHLOROALKOXYBENZENES

Gerard Soula, Meyzieu, and Louis Linguenheld, Ruelisheim, both of France, assignors to Rhone-Poulenc Industries, Paris, France

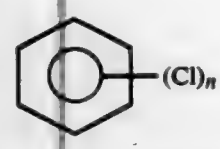
Filed Mar. 11, 1981, Ser. No. 242,540

Claims priority, application France, Mar. 12, 1980, 80 05489

Int. Cl.[3] C07C *41/16*

U.S. Cl. 568—656 20 Claims

1. A process for the preparation of a chloroalkoxybenzene, comprising reacting a polychlorobenzene having the structural formula (I):



(I)

wherein n ranges from 2 to 6, with at least one alkali metal hydroxide and alcohol having the formula ROH (II), wherein R contains from 1 to about 12 carbon atoms, in the presence of an effective amount of at least one tertiary amine sequestering agent having the formula (III):

$$N\text{-}[CHR_1\text{—}CHR_2O\text{—}(CHR_3\text{—}CHR_4\text{—}O)_nR_5]_3 \quad \text{(III)}$$

wherein n is a number greater than or equal to 0 and less than or equal to about 10, R_1, R_2, R_3, R_4, which may be identical or different, each represents a hydrogen atom or an alkyl radical having from 1 to 4 carbon atoms and R_5 represents an alkyl or cycloalkyl radical having from 1 to 12 carbon atoms, a phenyl radical or a radical of the formula $-C_mH_{2m}\text{-}\phi$, or $C_mH_{2m+1}\text{-}\phi$-, with m ranging from 1 to about 12 and ϕ being phenyl.

4,346,245

SUBSTITUTED TRICYCLODECANE DERIVATIVES

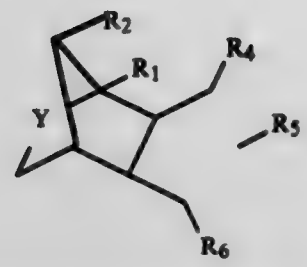
Mark A. Sprecker, Sea Bright, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 220,628, Dec. 29, 1980, which is a division of Ser. No. 144,898, Apr. 29, 1980, Pat. No. 4,275,251. This application Sep. 25, 1981, Ser. No. 305,531

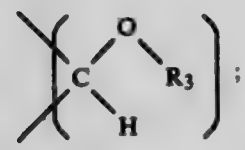
Int. Cl.[3] C07C *43/162*

U.S. Cl. 568—665 2 Claims

1. A product comprising a major proportion of at least one compound defined according to the structure:



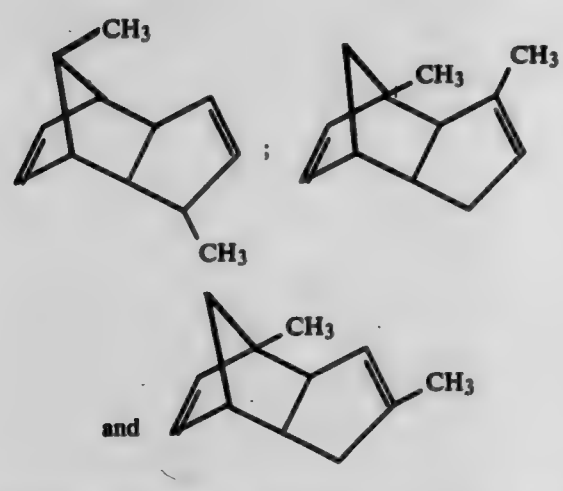
wherein Y is the moiety having the structure:



wherein one of the dashed lines represents a carbon-carbon single bond and the other of the dashed lines represents a carbon-carbon double bond; wherein R_1 and R_2 represent hydrogen or methyl with the proviso that one of R_1 or R_2 is hydrogen and the other of R_1 and R_2 is methyl; wherein R_4, R_5 and R_6 represent hydrogen or methyl with the proviso that one of R_4, R_5 and R_6 is hydrogen; and wherein R_3 is isopropyl; produced by the process comprising the step of reacting in the presence of a protonic acid catalyst or a Lewis acid catalyst at least one methyl cyclopentadiene isomer having a structure selected from the group consisting of:



or at least one precursor thereof having a structure selected from the group consisting of:



with isopropyl alcohol in the presence of a Lewis acid catalyst selected from the group consisting of borontrifluoride, borontrifluoride etherate, zinc chloride and stannic chloride or a protonic acid catalyst selected from the group consisting of sulfuric acid, para toluene sulfonic acid and phosphoric acid at a temperature in the range of from 25° C. up to 125° C.

4,346,246

PROCESS FOR ADJUSTING THE HALOGEN CONTENT OF HALOGENATED ALIPHATIC ETHERS

Ross C. Terrell, Clark, and Kirsten Hansen, Berkeley Heights, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Continuation of Ser. No. 19,953, Mar. 12, 1979, abandoned. This application May 13, 1980, Ser. No. 149,360

Int. Cl.³ C07C *41/01, 41/24*

U.S. Cl. 568—684 **9 Claims**

1. A process for replacing a halogen substituent with hydrogen in a halogenated aliphatic ether of the methyl-ethyl or ethyl-ethyl type, comprising reacting a primary or secondary alkanol and an inorganic base selected from the group consisting of alkali and alkaline earth metal hydroxides and alkoxides, in the presence of a catalyst selected from the group consisting of copper, silver, cobalt, tin, manganese, nickel, iron, molybdenum, chromium, antimony, vanadium, the salts thereof, an amine, and mixtures thereof, with a halogenated aliphatic ether of the formula:

(a) $CX_3OCY_2CZ_3$

where

CX_3 is CF_3, CH_3, CH_2F, CF_2Cl, CF_2Br, or CHF_2;

and

CZ_3CY_2 is CF_3CCl_2, CF_3CClBr, CF_3CBr_2, $CFCl_2CF_2$, $CFCl_2CFCl$, $CFCl_2CFBr$, $CFBrClCF_2$, $CFClBrCFCl$, $CFBrClCFBr$, CCl_3CF_2, $CFBr_2CF_2$, $CFBr_2CFCl$, $CFBr_2CFBr$, CCl_2BrCF_2, $CClBr_2CF_2$ or CBr_3CF_2, or

(b) $CX_3CY_2OCY_2CX_3$

where at least one of the CX_3CY_2 groups is selected from the following:

CF_3CCl_2, CF_3CClBr, CF_3CBr_2, $CFCl_2CF_2$, $CFCl_2CFCl$, $CFCl_2CFBr$, $CFBrClCF_2$, $CFBrClCFCl$, $CFBrClCFBr$, CCl_3CF_2, $CFBr_2CF_2$, $CFBr_2CFCl$, $CFBr_2CFBr$, CCl_2BrCF_2, $CClBr_2CF_2$ or CBr_3CF_2;

and the other CX_3CY_2 group may be the same or may be selected from the following:

CF_3CH_2, CF_3CHF, CF_3CHCl, CF_3CHBr, CF_3CF_2, CF_3CFCl, CF_3CFBr, CH_3CH_2, $CHFCH_2$, CHF_2CF_2, $CFClCF_2$, $CF_2ClCFCl$, $CF_2ClCFBr$, CF_2BrCF_2, $CF_2BrCFCl$, $CF_2BrCFBr$, $CHFBrCF_2$, $CHCl_2CF_2$, $CHClBrCF_2$, or $CHBr_2CF_2$.

4,346,247

METHOD AND CATALYST FOR MAKING BISPHENOL

Gary R. Faler, and George R. Loucks, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 103,095, Dec. 13, 1979, Pat. No. 4,294,995. This application Jul. 24, 1981, Ser. No. 286,492

The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.

Int. Cl.³ C07C *37/00*; C08F *112/08*

U.S. Cl. 568—728 **2 Claims**

1. In a method for making bisphenol, based on the reaction between a ketone and a phenol in the presence of an effective amount of a sulfonated polystyrene cation-exchange resin in acid form modified by the neutralization of 5–25% of a cation-exchange capacity with a promoter in the form of an organo mercapto amine whereby the promoter is incorporated onto the cation-exchange resin backbone by an acid-amine salt ionic bond which is susceptible to excessive loss from the cation-exchange resin due to leaching as the result of the degradation of the acid-amine salt ionic bond during the use of the ion-exchange resin in phenol-ketone condensation reaction, the improvement which comprises utilizing as the cation-exchange resin, a sulfonated polystyrene having 5–25% of its cation-exchange capacity occupied by C_2–C_{14} organo mercapto amine covalently bonded to the cation-exchange backbone by nitrogen-sulfur linkages.

4,346,248

PREPARATION OF 2,4,5-TRICHLOROPHENOL AND 2,4,5-TRICHLOROPHENOXYACETIC ACID FREE OF 2,3,7,8-TETRACHLORO-DIBENZO-P-DIOXIN CONTAMINATION

Dennis L. Deavenport, Memphis, Tenn.; Kenneth J. Howard, North Little Rock, and Albert E. Sidwell, Jacksonville, both of Ark., assignors to Vertac Chemical Corporation, Memphis, Tenn.

Continuation of Ser. No. 122,838, Feb. 20, 1980, abandoned. This application May 22, 1981, Ser. No. 266,479

Int. Cl.[3] C07C *39/32*

U.S. Cl. 568—776 3 Claims

1. A process for the production of 2,4,5-trichlorophenol analytically free of 2,3,7,8-tetrachloro-dibenzo-p-dioxin consisting essentially of nitrating 1,2,4-trichlorobenzene with an acid selected from the group consisting of:

(a) fuming nitric acid at a temperature of from 30° C. to 55° C.,

(b) mixed concentrated sulfuric acid/concentrated nitric acid at a temperature of from 60° C. to 100° C. and

(c) concentrated sulfuric acid at a temperature of from 50° C. to 100° C., followed by concentrated nitric acid at the same temperatures,

reducing the resulting 1,2,4-trichloro-5-nitrobenzene by a process selected from the group consisting of catalytic hydrogenation and in situ hydrogenation by the action of an acid on a metal with formation of nascent hydrogen, acidifying the resulting 2,4,5-trichloroaniline with a strong mineral acid, diazotizing the resulting strong mineral acid salt of 2,4,5-trichloroaniline, in the presence of an alkali metal nitrite suspended in a cold aqueous strong mineral acid solution at a temperature below 10° C., hydrolytically decomposing the resulting 2,4,5-trichlorobenzenediazonium acid salt, in the presence of water or steam at a temperature of from reflux temperature to 375° C. and recovering 2,4,5-trichlorophenol analytically free of 2,3,7,8-tetrachloro-dibenzo-p-dioxin in an analytical test sensitive to 100 parts per billion.

4,346,249

PREPARATION OF PARA-ISOPROPENYLPHENOL

Herman O. Krabbenhoft, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,653

Int. Cl.[3] C07C *37/00, 39/06*

U.S. Cl. 568—782 3 Claims

1. The process for making p-isopropenylphenol which comprises passing p-isopropylphenol, in combination with phenol and water, over a calcium-nickel-phosphate catalyst bed at a temperature of 275°–500° C., wherein the calcium-nickel-phosphate catalyst is calcined at a temperature of from 600°–800° C. prior to its use as the catalyst in the reaction, there being employed for each mol of the p-isopropylphenol, from 0.5 to 5 mols of phenol and 0.5 to 4 mols of water.

4,346,250

TELOMERIZATION OF TETRAFLUOROETHYLENE

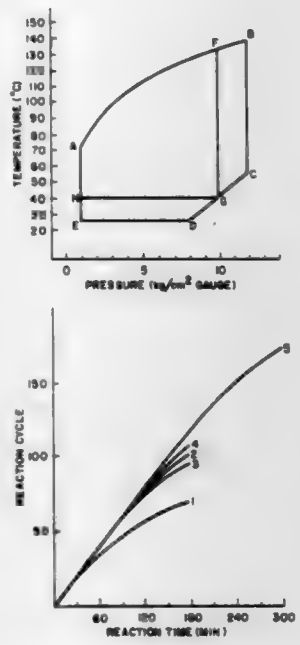
Takaomi Satokawa; Tuneo Fujii; Akira Ohmori, and Yorio Fujita, all of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 31,843, Apr. 20, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,453

Claims priority, application Japan, Apr. 21, 1978

Int. Cl.[3] C07C *31/38*

U.S. Cl. 568—842 7 Claims



1. A process for preparing by telomerization a fluoroalkanol which is predominantly of the formula

$$H(CF_2CF_2)_nCH_2OH$$

wherein n is an integer of not more than 4, said process comprising mixing substantially the total amount of methanol and polymerization initiator required for the telomerization together and then mixing tetrafluoroethylene with the resulting mixture at a rate whereby the temperature of the resulting reaction mixture is maintained at from 25° to 150° C., the partial pressures of tetrafluoroethylene and methanol are between 30 to 1 and 1 to 5 and the total pressure on the reaction is between 1 and 12 kg per cm^2 gauge until telomerization is completed.

4,346,251

4-SUBSTITUTED-2-INDANOLS

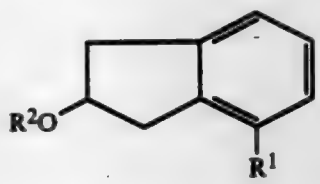
John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 42,372, May 24, 1979, Pat. No. 4,263,319, which is a continuation-in-part of Ser. No. 927,198, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 870,973, Jan. 20, 1978, abandoned. This application Oct. 31, 1980, Ser. No. 202,813

Int. Cl.[3] C07C *35/32*

U.S. Cl. 568—808 2 Claims

1. A compound of the formula

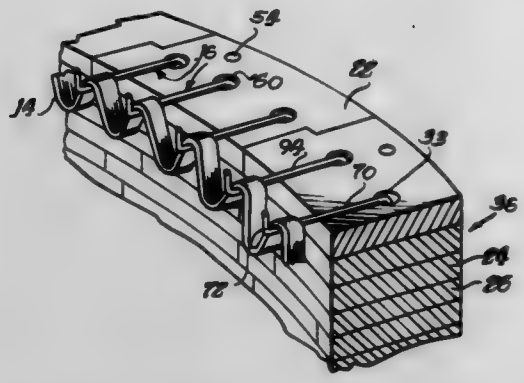


in which R^1 is phenyl which may be substituted with halogen or lower alkyl, and R^2 is hydrogen.

4,346,252
SOFT WALL HANGER FOR FURNACE

Robert R. Walton, and Finis E. Edwards, both of Shelbyville, Ind., assignors to Wellman Thermal Systems Corporation, Shelbyville, Ind.

Filed Sep. 29, 1980, Ser. No. 191,952
Int. Cl.[3] F27D *1/00*
U.S. Cl. 373—130 26 Claims

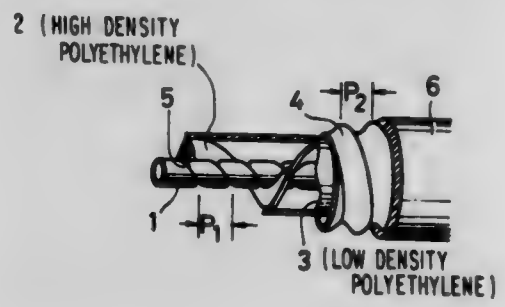


1. In an electrical resistance heating furnace, the combination comprising;
an outer wall for the furnace, a vertically extending lining on the interior side of said outer wall to limit heat transfer to the outer wall,
a plurality of softwall batts of ceramic fiber stacked vertically and defining a substantial portion of said lining,
a plurality of layers of insulating material more rigid than said soft wall batts of substantially the same size and shape as said soft wall batts, stacked on the top of a plurality of soft wall batts at predetermined vertical locations in said lining, and
hanger means releasably connected to and supported by said layers of more rigid insulating material and having portions extending inwardly from an inner face of the lining to support electrical resistance heating elements thereon.

4,346,253
COAXIAL CABLE

Yasunori Saito; Kunihiro Nakagaki; Kunihiko Yoneyama, all of Yokohama, and Katsumi Ohmoto, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 6, 1980, Ser. No. 204,723
Claims priority, application Japan, Nov. 29, 1979, 54-166049[U]; Dec. 7, 1979, 54-170400[U]
Int. Cl.[3] H01B *11/18*
U.S. Cl. 174—29 3 Claims



1. A coaxial cable, comprising: inner and outer conductors, each of said inner and outer conductors being formed as a corrugated tube, and means for insulating and coaxially supporting said inner and outer conductors comprising a thermoplastic resin insulating member including a spiral rib and an insulating tube surrounding said rib, said spiral rib and said insulating tube being coupled together as an integral insulating member, said rib being in direct contact with said inner conductor and being closely fitted in bottoms of the corrugated portions thereof, said coaxial cable further comprising means for improving the bendability of the cable including spirally corrugated said inner and outer conductors with pitches P_1 and P_2, respectively, the ratio of said pitch P_1 to said pitch P_2 being in a range from 0.9 to 1.2, and said spiral rib being formed with a pitch P_3 wherein

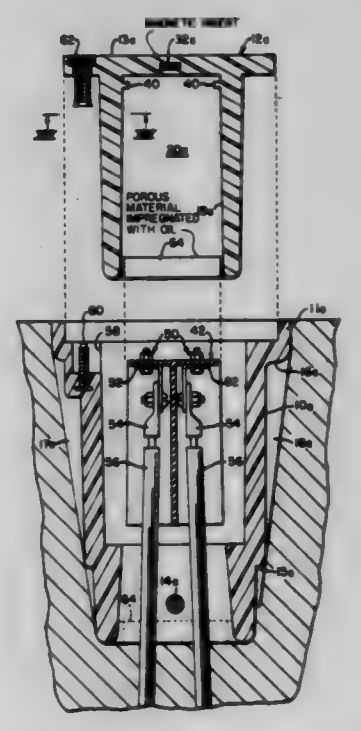
$$P_1 \approx P_2 \approx P_3/N,$$

where N is an integer.

4,346,254
TEST STATION APPARATUS FOR FLUSH MOUNTING

Frank W. Borin, 2552 Almaden Ct., Bel Air, Calif. 90024, and Jeffrey G. Thomas, 17800 Rayen, Northridge, Calif. 91423

Continuation-in-part of Ser. No. 19,989, Mar. 12, 1979, abandoned. This application May 2, 1980, Ser. No. 145,941
Int. Cl.[3] H02G *9/10*
U.S. Cl. 174—37 19 Claims



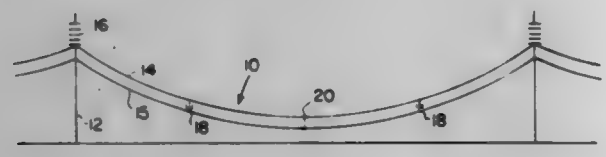
1. A cathodic test station apparatus for coupling conductor wires extending from a pipe, a casing, an anode, the soil or the like to a device to measure, supply or respond to an electrical current or potential comprising stiff conductor leads having a high resistance to bending, a generally hollow housing having a flanged upper end for extending essentially flush with the ground surface for access from aboveground after subterranean implantation of the side wall thereof such that the lower end extends into the ground and protectively surrounds end portions of said conductor leads within the housing, an enclosure member defining an airtight pocket within side wall means projecting from a solid end wall and having a flange extending outwardly therefrom for recessed support by the flanged upper end of said housing, said enclosure member having a one-piece construction to loosely fit within said housing and unsupported by the side wall thereof, a terminal block member including a terminal carrier plate, and fasteners to hold said conductor leads on said terminal carrier plate, said terminal block member being supported essentially only by said stiff conductor leads to remain in said hollow housing for access to the conductor leads from aboveground without withdrawing the terminal block member from said housing, said terminal block member having a configuration to hold the conductor leads within the airtight pocket of said enclosure member such that the airtight pocket of the enclosure member when supported by said housing prevents ingress of water into the enclosure member by entrapped air therein.

4,346,255

OVERHEAD ELECTRICAL CONDUCTOR SYSTEM INCLUDING SUBSPAN OSCILLATION AND AEOLIAN VIBRATION ABSORBER FOR SINGLE AND BUNDLE CONDUCTORS

Olaf Nigol, Etobicoke, Canada, assignor to Slater Steel Industries Limited, Hamilton, Canada

Filed May 7, 1980, Ser. No. 147,096
Claims priority, application Canada, Jan. 24, 1980, 344328
Int. Cl.³ H02G *7/14, 7/12*
U.S. Cl. 174—42 **9 Claims**



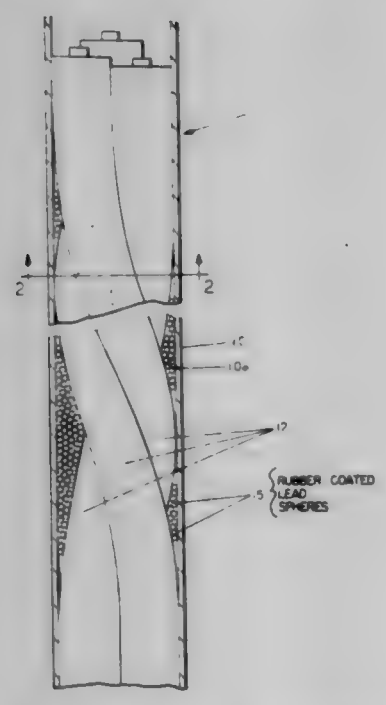
1. An overhead electrical conductor system comprising:
tower means for suspending conductor means;
conductor means suspended between intermittently spaced tower means;
absorbing means for absorbing travelling waves in said conductor means, said absorbing means comprising first and second members movable with respect to each other, said absorbing means having a dissipative mechanical impedance of value R in the range of $0.5\sqrt{TM}$ to $3.0\sqrt{TM}$, where T is the tension in the conductor means and M is the mass of the conductor means per unit length;
platform means spaced from said conductor means; and
attachment means provided on opposing ends of said first and second members connecting said absorbing means between said conductor means and said platform means, wherein said dissipative mechanical impedance R of the absorbing means is effective to dissipate energy of travelling waves generated on said conductor means.

4,346,256

CONDUIT IN SUPPLYING ELECTRICAL POWER AND PRESSURIZED FLUID TO A POINT IN A SUBTERRANEAN WELL

Martin G. Hubbard, Corona del Mar, and John W. Erickson, Huntington Beach, both of Calif., assignors to Kobe, Inc., Commerce, Calif.

Filed Apr. 1, 1980, Ser. No. 136,190
Int. Cl.³ E21B *17/00*
U.S. Cl. 174—47 **2 Claims**



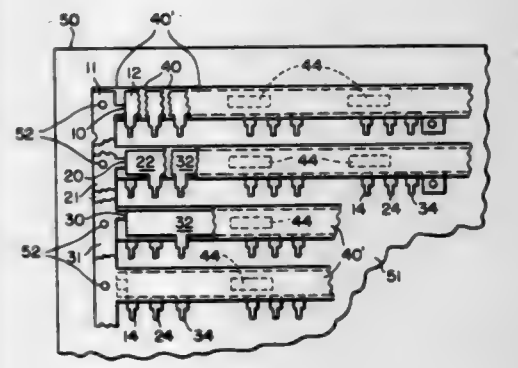
1. A conduit for concurrently transmitting electric power and pressured fluid to a utilization point within a subterranean well, comprising: a continuous cylindrical housing of sufficient length to extend from a well surface to a downhole utilization point; at least one insulated, electrically conductive wire passing through said housing; a plurality of spheres having a compressible surface packed into the space between said insulated, electric conductive wire and the interior bore of said cylindrical housing, whereby said insulated, electrically conductive wire is gravitationally stabilized within said housing and the spaces between said spheres provide a fluid passage therethrough for pressured fluid.

4,346,257

LAMINATED BUS BAR WITH DIELECTRIC CERAMIC INSERTS

Lee C. Moss; Phillip J. Knox, and Raymond W. Snyder, all of Rochester, N.Y., assignors to Eldre Components, Inc., Rochester, N.Y.

Filed Mar. 18, 1980, Ser. No. 131,523
Int. Cl.³ H01B *5/00*
U.S. Cl. 174—72 B **7 Claims**

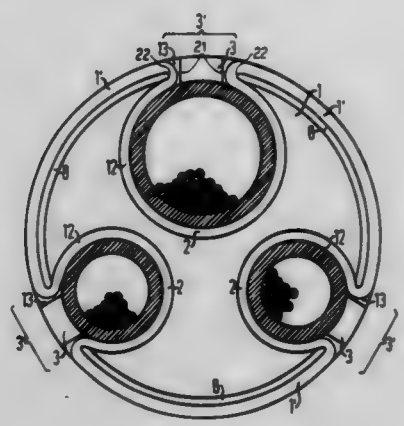


1. A laminated bus bar comprising
a pair of flat, metal, strip conductors, each having a plurality of circuit-connecting projections extending from at least one edge thereof,
a first layer of dielectric insulation laminated between and electrically insulating said conductors one from the other,
additional layers of dielectric insulation laminated over and enclosing the outside surfaces of said conductors except in the areas of said circuit-connecting projections,
a ceramic insert incorporated in said first layer of insulation and operative significantly to increase the capacitance of said conductors,
at least three of said conductor strips being laminated together within said additional layers of insulation, and with one of said first layers of insulation being laminated between each pair of adjacent conductors,
each of said first layers of insulation having therein a plurality of longitudinally spaced openings and each of said openings having one of said inserts secured therein with opposite sides of said insert engaged with the confronting surfaces of the two conductors which flank the respective first layer of insulation, and
means connecting at least certain of the projections on one of a first pair of said conductors with certain of the projections on the other of said first pair of conductors thereby further to increase the capacitance as between said first pair of conductors and a third conductor in said bar.

4,346,258
CABLE SLEEVE SEALED AT EACH END BY END MEMBERS

Dieter Kunze, Neuried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,550
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1979, 2947139
Int. Cl.³ H02G *15/08*
U.S. Cl. 174—93 9 Claims

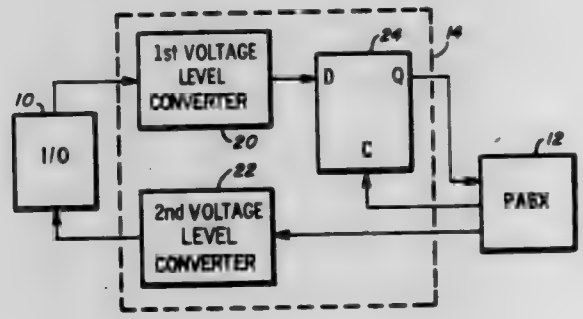


1. In a cable sleeve having a tubular member closed at each end by an end member having a substantially cylindrical flange received on a separate support member and means for forming a seal between a portion of the tubular member and the flange, each of said end portions having at least one cable inlet, each of said cable inlets being formed by a protuberance of a heat shrinkable material having an axially extending separating line which is common with the cylindrical flange to enable introduction of a cable into the inlet, the improvement comprising each of the common separating lines being an axial extending opening having non-joinable edge portions spaced apart a sufficient distance to enable easy insertion of the cable, and each of the openings receiving a separate, metal filling member having a coating of heat meltable sealing adhesive, said non-joinable edges of each opening being sealingly engaged with the filling member after the heat shrinking operation.

4,346,259
LOW SPEED TERMINAL INTERFACE FOR ALL-DIGITAL PABX

Jay Doty, Santa Ana, Calif., assignor to Anderson Jacobsen, Inc., San Jose, Calif.

Filed Jun. 23, 1980, Ser. No. 162,115
Int. Cl.³ H04J *3/02;* H04B *1/16;* H04L *5/22*
U.S. Cl. 178—3 2 Claims



1. A data interface for the interfacing of a first I/O terminal for the conversion of alphanumeric characters to binary encoded signals with a PABX for switching and multiplexing the signals for the subsequent application to a second I/O terminal interfaced with the PABX for the conversion of the signals to alphanumeric characters, said data interface comprising:

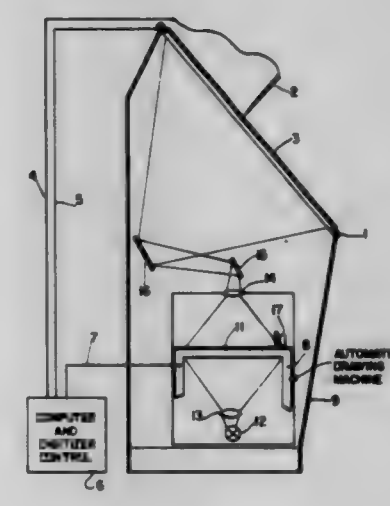
a transmission channel including, a first voltage level converter for application of binary encoded signals from said first I/O terminal, means for sampling the applied signals having a first input responsive to said first voltage converter, a second input responsive to a clock signal developed by said PABX, and an output for applying the sampled signals to said PABX; and

a reception channel including a second voltage level converter for application of received binary encoded signals from said PABX to said second I/O terminal.

4,346,260
METHOD AND APPARATUS TO CONTROL A DRAWING MACHINE ATTACHED TO A COMPUTER BY MEANS OF A DIGITIZING DEVICE

Rainer Kaufmann, Hamburg, Fed. Rep. of Germany, assignor to Aristo Graphic Systeme GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 161,476
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925613
Int. Cl.³ G06F *3/08;* G06K *15/20*
U.S. Cl. 178—18 10 Claims



1. In a method for controlling a drawing machine having a horizontal table surface and a carriage means to move a drawing head that is controlled by a computer which receives inputs from a digitizing device which further comprises a sensor plate and sensor, the improvement which comprises the steps of optically projecting an image of the horizontal drawing table surface through the back side of a translucent sensor plate which is spaced thereabove, and thereby reproducing an image of said drawing table surface conformably upon the front side of said plate as a drawing field, to thereby define a screen upon which a digitizing sensor is operable to be employed, and in turn supply inputs to said computer to control said drawing head.

4,346,261
SPEAKER PHONES

Alfred M. Hestad, and Levi L. Rose, both of Chicago, Ill., assignors to United Networks, Inc., Chicago, Ill.

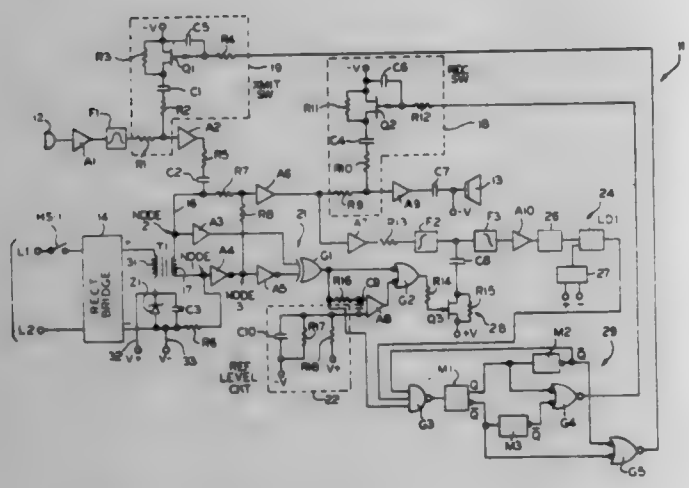
Filed Mar. 17, 1980, Ser. No. 130,847
Int. Cl.³ H04M *9/08*
U.S. Cl. 179—1 HF 15 Claims

13. A system for determining speech direction in duplex circuits wherein signals occur in first and second directions,

said system including component means wherein said signals in said first direction are in phase at two separate nodes in said component, while signals in said second direction are out of phase at said two separate nodes, and

gate means having inputs connected to said first and second

nodes for providing high outputs responsive to the out-of-phase signals at the inputs to said gate means and low



outputs responsive to the in-phase signals at the inputs of said gate means.

4,346,262

SPEECH ANALYSIS SYSTEM

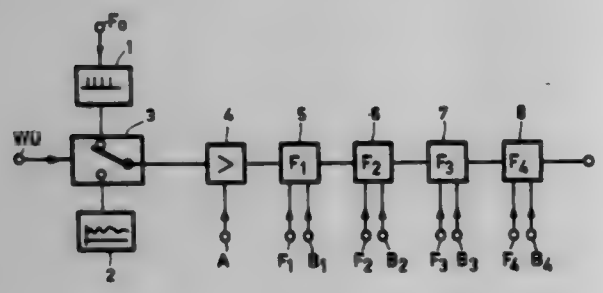
Leonardus F. Willems, and Leonardus L. M. Vogten, both of Eindhoven, Netherlands, assignors to N.V. Philips' Gloeilampenfabrieken and Technische Hogeschool Eindhoven, both of Eindhoven, Netherlands

Filed Mar. 31, 1980, Ser. No. 135,963

Claims priority, application Netherlands, Apr. 4, 1979, 7902631

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SA 1 Claim



1. In a speech analysis system, the method of determining the formant parameters for a recursive digital all-pole filter whereby a function derived from the filter approaches, as closely as possible, a function derived from the speech, the method comprising the steps:

sampling, at a predetermined rate, segments, of a specified duration,, of the speech signal;

determining the auto-correlation coefficients r_k from the signal samples s_j, wherein:

$$r_k = \sum_{n=1}^{j} s_n \cdot s_{n+k}$$

determining the filter coefficients a_j from the autocorrelation coefficients r_k, wherein:

$$r_k = -\sum_{j=1} a_j \cdot r_{|j-k|}$$

determining the coefficient combinations p_i and q_i of the n second-order sections of the digital all-pole filter, wherein the transfer function thereof is split into n second-order transfer functions:

$$\frac{1}{1+\sum_{j=1} a_j \cdot z^{-j}} = \frac{1}{\prod_{i=1}^{n} (1 + p_i \cdot z^{-1} + q_i \cdot z^{-2})}$$

where $z^{-1}=\exp(-sT)$, s being the complex frequency $s=+jw$ and T the sampling period;

transforming the coefficient combinations p_i and q_i into the coefficients c_i and r_i in accordance with the equations:

$$c_i = \frac{p_i}{\sqrt{|q_i|}}, \quad r_i = \text{sign}(q_i) * \sqrt{|q_i|}$$

limiting the values of the coefficients c_i and r_i to values located in an area limited by the values $c=-2$, $c=2$, $r=1$ and $r=0$;

arranging the coefficient combinations c_i and r_i in order of increasing values of c_i; and

determining the formant parameters F_i and B_i using the equations:

$$r_i = e^{-\pi B_i T},$$

$$C_i = -2 \cos 2\pi F_i T$$

controlling said fiter utilizing said formant parameters to generate said filter-derived speech function.

4,346,263

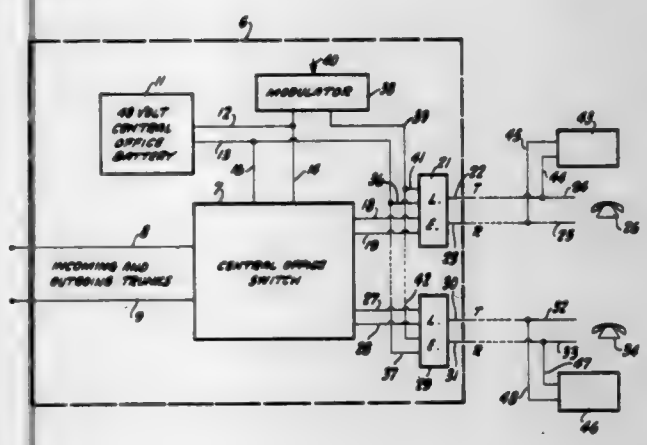
SIGNALLING ARRANGEMENT FOR TELEPHONE EQUIPMENT

C. Edward Elkins, Pleasant Hill, Calif., assignor to Badger Meter, Inc., Richmond, Calif.

Filed Jan. 14, 1980, Ser. No. 111,549

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 A 16 Claims



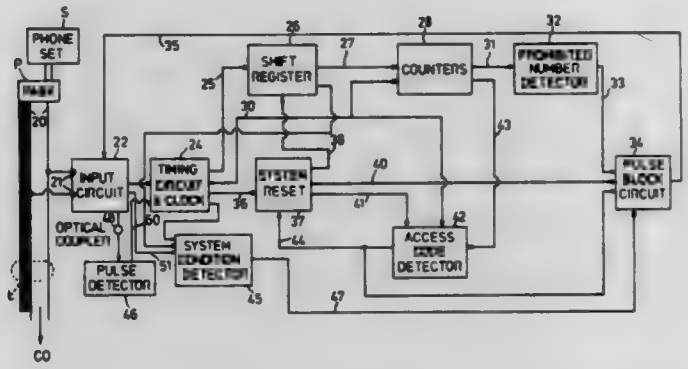
1. A signalling arrangement for use with a telephone system having a plurality of subscriber telephones individually connected by voice frequency lines to a central office exchange and connected by battery lines at the central office exchange to a common electrical battery, comprising:

a plurality of individual response devices each located adjacent a related one of said subscriber telephones, means for connecting each of said responsive devices in circuit with the respective one of said related subscriber telephones, means for amplitude modulating said battery lines at a non audible frequency recognizable by said responsive devices, and means for connecting said modulating device through said battery lines at the central office exchange to said voice frequency lines for recognition by said responsive devices.

4,346,264
TELEPHONE CALL RESTRICTION APPARATUS

Martin M. Sharvit, Thornhill, Canada, assignor to Cindon Research Inc., Rexdale, Canada

Filed Apr. 2, 1980, Ser. No. 136,734
Int. Cl.³ H04M 1/66
U.S. Cl. 179—18 DA 18 Claims



9. A telephone call restrictor having means for authorized persons to overcome the restriction by dialing an access code on a normal telephone set connected with the system, comprising

connection means for connecting the restrictor to a telephone line;

counter means connected with said connection means for receiving dial pulse signals and for counting the pulses for digits dialed;

programmable means connected to said counter means and having prohibited number detection means connected to said counter means for recognizing a predetermined digit or combination of digits representing a prohibited number and providing at recognition an inhibit signal;

switch means responsive to the receipt of an inhibit signal for connecting a resistance across said telephone line, said resistance having a resistance value low enough to prevent dial pulses being received at a central office;

pulse detector means connected to said connection means for detecting dial pulses when said resistance is connected across said telephone line, and being connected to said counter means to provide detected dial pulse signals thereto;

a code detector connected to said counter means for recognizing a predetermined combination of digits representing an access code and providing at recognition a reset signal, and

a reset circuit responsive to said reset signal for resetting said switch means to remove said resistance and to permit dialed pulses to be received at said central office.

4,346,265
ANNUNCIATOR

Kenneth G. Buss, Dallas, and Norman L. Culp, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

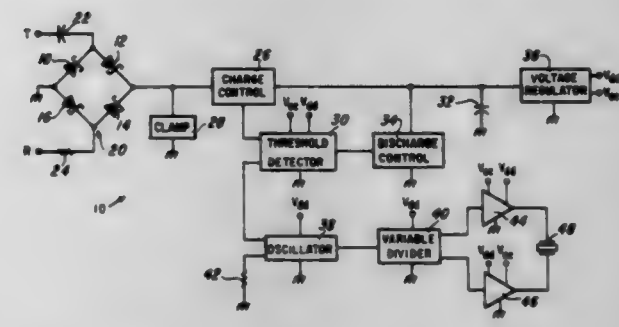
Filed Dec. 17, 1979, Ser. No. 104,332
Int. Cl.³ H04M 1/00
U.S. Cl. 179—84 T 15 Claims

1. A circuit for storing the energy of an applied signal in a charge storage device, the circuit comprising:

charge control means for resistively coupling the applied signal to the charge storage device in the absence of a charge signal, and for directly coupling the applied signal to the charge storage device in response to the charge signal;

discharge control means for resistively shunting the charge storage device in response to a discharge signal; and

threshold detecting means for providing the discharge signal when the voltage on the charge storage device is less than a first threshold, and for providing the charge signal when the

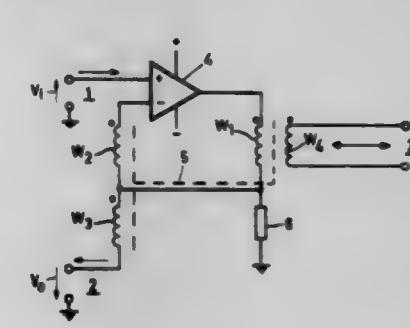


voltage on the charge storage device is at least equal to the first threshold.

4,346,266
HYBRID CIRCUIT

Klaus-Dieter K. Brockmann, and Teunis A. van Harreveld, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,305
Claims priority, application Netherlands, May 11, 1979, 7903709
Int. Cl.³ H04B 1/58
U.S. Cl. 179—170 NC 2 Claims



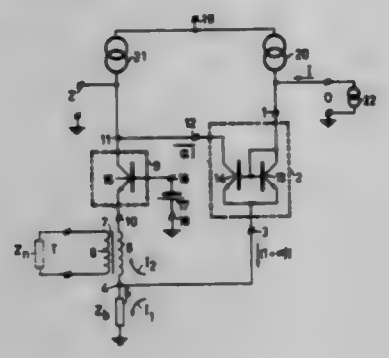
1. A hybrid circuit for coupling a two-wire port having a two-wire transmission path to a transmit port and to a receive port for the connection of the transmit path and the receive path of a four-wire transmission path to said two-wire port comprising:

a transformer having a plurality of windings, a differential amplifier, and an impedance, said receive port being connected to a first input of said differential amplifier whose output is connected at one end of a first winding of said transformer the other end of said first winding being connected to said impedance, a second input of said differential amplifier which forms a differential input in conjunction with the first input being connected to one end of a second winding of said transformer the other end of said second winding being connected to the junction of said first winding and said impedance and to one end of a third winding of said transformer, the other end of said third winding being connected to said transmit port, said two-wire port being connected to a fourth winding of said transformer, wherein the winding senses of said transformer windings are such that the voltage produced across said impedance subtracts from that induced in said third winding as a result of an input signal applied to said receive port.

4,346,267
HYBRID CIRCUIT

Eise C. Dijkmans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 142,939
Claims priority, application Netherlands, May 15, 1979, 7903797
Int. Cl.[3] H04B *1/58*
U.S. Cl. 179—170 NC 5 Claims



1. A hybrid circuit for coupling a two-way transmission path to a one-way transmit path and to a one-way receive path comprising:

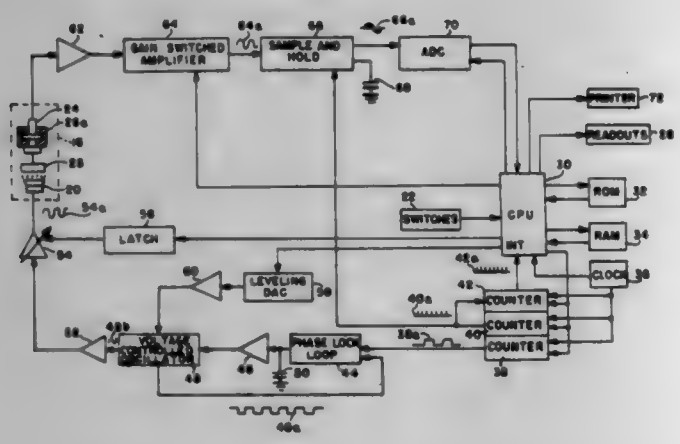
a coupling circuit,

a balancing impedance with is coupled to the two-way transmission by means of said coupling circuit, a current amplifier whose input is connected to the receive path, said hybrid circuit further comprising an impedance converter which has a high impedance output coupled to said one-way transmit path and a low-impedance input connected to one end of said coupling circuit of said balancing impedance and said two-way transmission path, the other end of said coupling circuit being connected to a terminal of common potential, said output of said current amplifier is connected to the high-ohmic output of said converter and said current amplifier comprises a common terminal connected to the junction point of said two-way transmission path and said balancing impedance.

4,346,268
AUTOMATIC AUDIOLOGICAL ANALYZER

Leonardus J. Geerling, Rte. 2, Box 947, Hillsboro, Oreg. 97123

Filed Jan. 30, 1981, Ser. No. 229,887
Int. Cl.[3] H04R *29/00*
U.S. Cl. 179—175.1 A 24 Claims



1. An acoustical analyzer system for testing acoustical devices comprising:

means for generating operating signals having a predetermined frequency;

means for receiving said operating signals and generating voltage signals;

means for receiving said voltage signals and generating feedback signals to said means for generating said voltage signals, said means for receiving said voltage signals generating test signals having the same frequency as the frequency of said operating signals and said feedback signals when they are in coincidence;

means for receiving said test signals and generating test tone signals having a predetermined frequency and amplitude for driving a device under test, which generates output signals;

means receiving said output signals and sampling said output signals to generate sampled signals at amplitude levels of said output signals;

means for storing the amplitude levels;

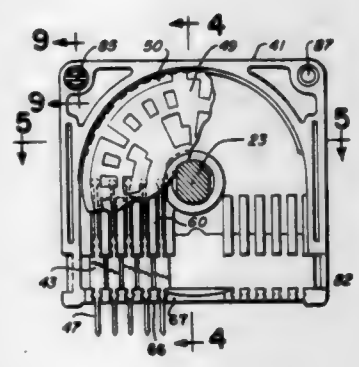
means for converting said amplitude levels to digital signals and storing said digital signals; and

means for processing said digital signals to generate utilization signals.

4,346,269
ROTARY SWITCH AND METHOD OF MOUNTING CONTACTS

Roy H. Slavin, and W. Donald Scharbert, both of Aurora, Ill., assignors to Standard Grigsby, Inc., Aurora, Ill.

Continuation of Ser. No. 781,511, Mar. 25, 1977, abandoned.
This application Mar. 11, 1981, Ser. No. 242,597
Int. Cl.[3] H01H *9/00, 19/54*
U.S. Cl. 200—11 DA 20 Claims



1. A switch assembly comprising:

a first electrically insulative cover plate having a hole therethrough;

first means for retaining a plurality of contacts in spaced relation on said first cover plate said first retaining means including a plurality of first projections extending perpendicularly from an edge portion of said first cover plate and spaced from one another;

a second electrically insulative cover plate adapted to fit in parallel relation with said first cover plate;

second means for retaining a plurality of contacts in spaced relation on said second cover plate, said second retaining means including a plurality of second projections extending perpendicularly from an edge portion of said second cover plate and spaced from one another, said second projections being offset from said first projections so as to interfit therewith;

a plurality of longitudinally extending first electrical contacts retained by said first retaining means, each of said first contacts lying between respective first projections and engaged by the second projection interfitting therebetween;

a plurality of longitudinally extending second electrical contacts retained by said first retaining means, each of said second contacts lying between respective second projections and engaged by the first projection interfitting therebetween;

a rotor shaft rotatably and supportedly extending through said hole;

a rotor disc mounted on the rotor shaft for rotation therewith, said disc having first and second electrically conductive patterns formed on opposite sides thereof, respectively; and

means for fastening the first and second cover plates together in parallel relations with the rotor disc disposed between

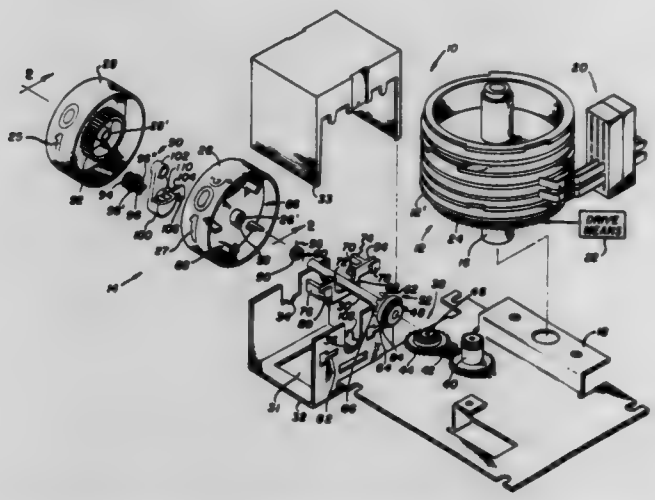
said first and second contacts so that said first contacts operatively engage said first pattern and said second contacts operatively engage said second pattern.

4,346,270

TIMING MECHANISM WITH A DIGITAL CLOCK

Garry A. Stout, Bargersville, and Donald L. Ray, Oaklandon, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Aug. 4, 1980, Ser. No. 174,756
Int. Cl.[3] H01H *43/00*
U.S. Cl. 200—33 R 13 Claims



1. In combination, a timing mechanism wherein a cam means is rotated to open and close electrical switches operably associated therewith, a digital clock means indicating cycle times of said cam means comprising:

(a) a shaft rotatably mounted in a frame,

(b) a first coupling means coupling said cam means to said shaft for rotation with said cam means,

(c) a first display wheel carried on said shaft to be independently rotatable from said shaft,

(d) actuator means including a rotating member coupled to said shaft and at least one peg extending from said rotating member,

(e) a torsion spring coupled to said actuator means and said display wheel,

(f) stop means carried on said wheel, and

(g) a slider slideably carried in said frame and engaging said one peg and said stop means to selectively stop rotation of said display wheel in response to said actuator means.

4,346,271

MANUALLY ACTUATED TIMER FOR APPLIANCES

Donald S. Cushing, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 6, 1980, Ser. No. 194,645
Int. Cl.[3] H01H *43/12*
U.S. Cl. 200—38 R 12 Claims

1. An electromechanical timer for use in washing appliances comprising:

a frame;

a control cam rotatably mounted to said frame and having an idle position;

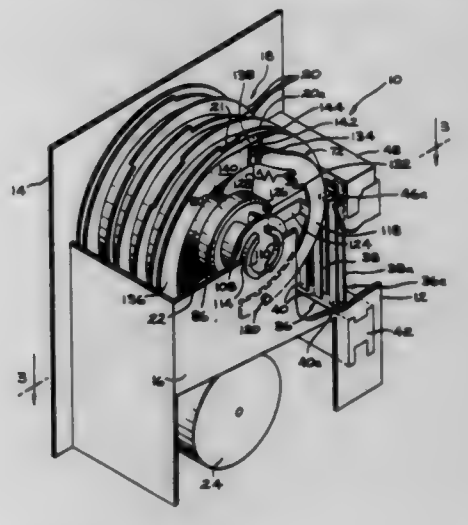
an electrically energizable motor for rotating said control cam;

control switch means for controlling energization of said motor, said switch means being operative when de-actuated to prevent energization of said motor and when actuated to enable energization of said motor; said control cam being operative in its idle position to de-actuate said switch means and in moving from its idle position to actuate said switch means;

an engaging member mounted to said frame for movement between a cocked position and a rest position and bias means urging said engaging member toward its rest position;

said engaging member being effective to move said control cam from its idle position as said engaging member moves from its cocked position to its rest position;

a manually operable actuator mounted to said frame for movement between an actuating position and a neutral position; said actuator being operative to engage and move said engaging member to its cocked position as said actuator moves from its neutral position to its actuating position and to



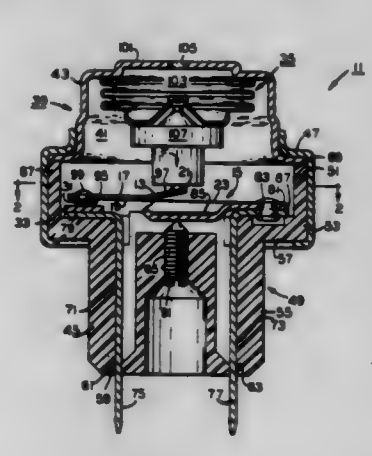
release said engaging member for movement to its rest position as said actuator moves from its actuating position to its neutral position; whereby the sequential movement of said actuator from its neutral position to its actuating position and back to its neutral position causes said control cam to move from its idle position to thereby enable energization of said motor.

4,346,272

CONTROL DEVICE AND METHOD OF OPERATING

Donald H. Stoll, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Apr. 18, 1980, Ser. No. 141,689
Int. Cl.[3] H01H *35/34, 1/26*
U.S. Cl. 200—83 C 35 Claims



2. A control device for an electrical circuit comprising:

a housing having a chamber therein;

resilient switch means pivotally mounted within said chamber and adapted for movement between circuit making and breaking positions, said switch means including means for stiffening it with said stiffening means having a force receiving portion disposed at least adjacent said switch means;

fulcrum means disposed in said chamber for pivoting engagement with said switch means; and

means in said chamber and operable generally for applying a control force onto said force receiving portion of said stiffening means, said switch means in its circuit making position being initially resiliently yieldable in response to the control force applied onto said stiffening means into the pivotal engagement with said fulcrum means and at least a part of said switch means being thereafter pivotally movable generally about said fulcrum means toward the circuit breaking

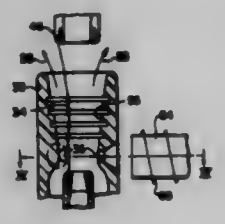
position in response to the control force applied onto said stiffening means.

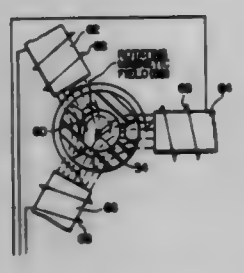
4,346,273

CIRCUIT-INTERRUPTER HAVING A HIGH-FREQUENCY TRANSVERSE MAGNETIC FIELD TO ASSIST IN ARC INTERRUPTION

Thomas N. Meyer, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 10, 1979, Ser. No. 102,045
Int. Cl.[3] H01H *33/18, 33/88*
U.S. Cl. 200—147 R 7 Claims





1. A puffer-type compressed-gas alternating current circuit interrupter including means defining a relatively stationary hollow venting contact structure, a relatively movable contact structure comprising a movable tubular venting arcing contact having a throat portion therethrough, a movable operating cylinder carrying said movable tubular venting arcing contact and slidable over a relatively fixed piston structure to compress gas in the confined space therebetween, means for establishing a flow of compressed gas through the throat portion of said movable tubular venting arcing contact for increased arc turbulence when the contacts are opened, means defining a hollow insulating nozzle movable with said movable tubular venting arcing contact, at least one field-coil embedded in said insulating hollow nozzle structure for generating a magnetic field transversely to the established arc, and separate power means for establishing a high-frequency current flow through said field coil during the arc-interruption period of short transitory duration, whereby the established arc is moved laterally by the Lorentz force (J×B) for increased arc turbulence action.

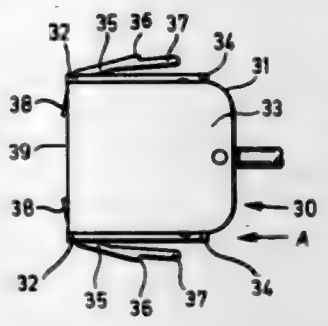
4,346,274

FASTENING DEVICE FOR A SWITCH

Erich Mutschler, and Adam Weber, both of Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,223
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933703
Int. Cl.[3] H01H *9/00*
U.S. Cl. 200—296 5 Claims

1. A fastening device for a switch in a receptacle with at least two guide grooves, of which each has a bottom and two opposite lateral walls and comprises at least two guide webs which for mounting the switch on the receptacle are pushed into the guide grooves, wherein in longitudinal direction of the groove on each guide groove the one side wall is staggered backwards relative to the other side wall in such a way that the projecting portion of the longer side walls and the guide webs may be



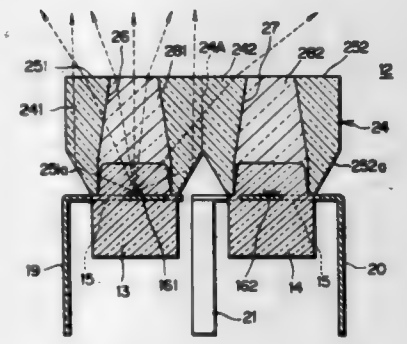
brought into contact by a vertical movement with respect to the direction of insertion.

4,346,275

ILLUMINATED PUSHBUTTON SWITCH

Norio Iwakiri, and Yasuhiro Kiyono, both of Nagaokakyo, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 11, 1980, Ser. No. 176,759
Claims priority, application Japan, Aug. 21, 1979, 54-115409
Int. Cl.[3] H01H *9/16*
U.S. Cl. 200—314 5 Claims



1. An illuminated pushbutton switch including an elongated housing, a switching component accomodated within said housing, an actuating component coaxially housed in said housing for actuating said switching component in response to an external force, and an illuminating component for lightning an upper portion of said actuating component,

said illuminating component comprising a lead frame,

a plurality of light emitting devices arranged on said lead frame, and

an optically transparent member including a plurality of transparent blocks corresponding to and embedding said light emitting devices,

each of said blocks including a lens portion having an upper flat polygonal surface and a nearly reverse conical side wall portion in which the light emitted from the corresponding one of said light emitting devices is reflected to radiate uniform light beams from the upper flat polygonal surface,

the upper flat polygonal surface of said blocks constituting a continuous flat surface.

4,346,276

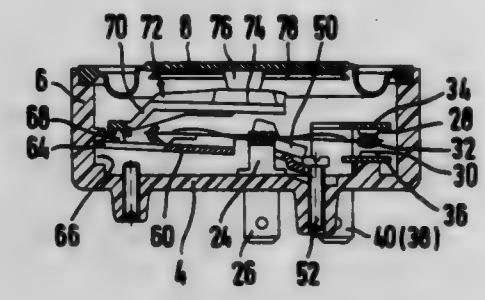
MULTIPLE PRESSURE SWITCH

Helmut Baader, Birkenweg 6, D-8470 Nabburg, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 214,948
Int. Cl.[3] H01H *13/00*
U.S. Cl. 200—329 5 Claims

1. A multiple pressure switch comprising an actuating member and a first and a second snap spring, said snap springs each having at least one electrical contact, said contacts each cooperating with a fixed electrical contact, said snap springs under

spring prestress each assume a starting position, and have a first and second point of application, respectively, for said actuating member, the actuating member being additionally supported on a third point of application, said three points of application lying on the corners of a conceived triangle and with a gradual increase of an external force acting within the triangle on the actuating member, the actuating member causes first the first



and then the second snap switch to snap over into an end position, wherein relative to a base plane E normal to the direction of application of said external force, said first point of application in its starting position lies higher and in its end position lies deeper than said second point of application in its original position, and the second point of application in its starting position lies higher and in its end position lies lower than the third point of application.

4,346,277

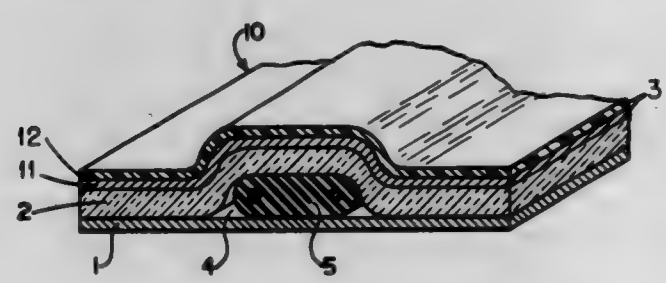
PACKAGED ELECTRICAL HEATING ELEMENT

Rudolph G. Wojtecki, Mantua, and Joseph P. Kaan, Stow, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 89,651, Oct. 29, 1979, Pat. No. 4,314,144. This application Apr. 22, 1981, Ser. No. 256,442

Int. Cl.³ H05B *3/34*

U.S. Cl. 219—528 **9 Claims**



1. An elongate flexible heating package having sufficient flexibility to conform to an item to be heated to which the package is secured and adapted to improve the heating efficiency of an elongate, electrically insulated, electrical heating element contained within the package, said package comprising;

a first layer comprising a wall made from a flexible heat conductive material that extends longitudinally along the length of the package and is adapted to establish a heat contacting relationship to the item to be heated to which the package is secured,

a second layer secured along the length of the package to the side of said first layer that faces away from the item to be heated to which the package is secured, said second layer comprising a wall made from a flexible heat insulative material,

a third layer secured along the length of the package to the side of said second layer that faces away from said first layer, said third layer comprising a wall made from a flexible heat resistant material that is adapted to protect said second layer, said third layer comprising a metal foil having a mylar film disposed along the length of the package on the side of said third layer that faces away from said second layer, said first, second and third layers being of substantially the same width, and an elongated cavity extending along the length of the package between a portion of said first layer wall and the composite wall comprising a portion of said second and said third layer walls, said cavity containing said electrical heating element and having an open-ended cross-sectional configuration that permits the heating element to be axially inserted into and removed from the cavity for replacement and repair without having to remove the package from the item to be heated to which the package is secured.

4,346,278

METHODS AND APPARATUS FOR ELECTRICAL DISCHARGE MACHINING

Sushantha K. Bhattacharyya, and Mohamed F. El-Menshawy, both of Birmingham, England, assignors to National Research Development Corporation, London, England

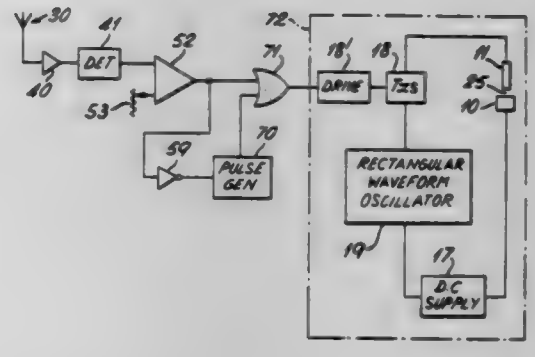
PCT No. PCT/GB78/00051, § 371 Date Aug. 13, 1979, § 102(e) Date Aug. 6, 1979, PCT Pub. No. W079/00379, PCT Pub. Date Jun. 28, 1979

PCT Filed Dec. 8, 1978, Ser. No. 154,411

Claims priority, application United Kingdom, Dec. 13, 1977, 51713/77

Int. Cl.³ B23P *1/02*

U.S. Cl. 219—69 M **15 Claims**



11. A method of E.D.M. machining comprising:

repeatedly carrying out first and second operations, the first operation being the application of a substantially continuous voltage between an electrode and a workpiece to provide sparking in a gap between the electrode and the workpiece, and the second operation being the removal of the said substantially continuous voltage for an interval; and

deriving a monitoring signal representative of the degree of sparking in the gap, the second operation commencing when the monitoring signal indicates that sparking in the gap is below a predetermined level.

4,346,279

NARROW GAP WELDING TORCH WITH REPLACEMENT TIP

Gerald G. Lessmann, Pittsburgh, Pa.; Ronald P. Simpson, Old Saybrook, Conn., and Ronald D. O'Brokta, Allegheny Township, Armstrong County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

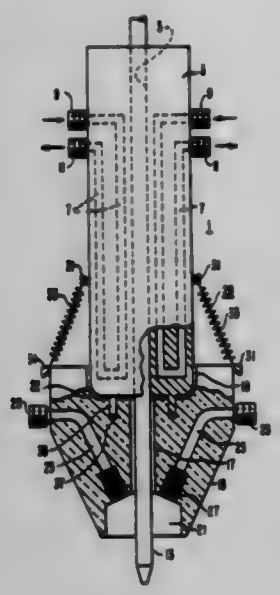
Filed Apr. 24, 1980, Ser. No. 143,207

Int. Cl.³ B23K *9/16*

U.S. Cl. 219—75 **2 Claims**

1. A narrow groove welding torch comprising an electrode holder having a rectangular cross-section with cooling ducts disposed within the electrode holder and a replaceable tip disposed on one end of the electrode holder, the tip having a generally rectangular cross-section, a centrally disposed opening extending through the tip with rectangular shaped counterbores on each end of the opening, blanketing gas ducts are disposed in the tip and extend from leading and trailing sides of the tip into one of the counterbores, the ducts having diffusers disposed therein adjacent one of the counterbores to supply a gentle flow of shielding gas to one of the counterbores, the

other counterbore receiving the electrode holder and having insulating packing disposed therein between the electrode holder and the tip, and the tip being detachably attached to the



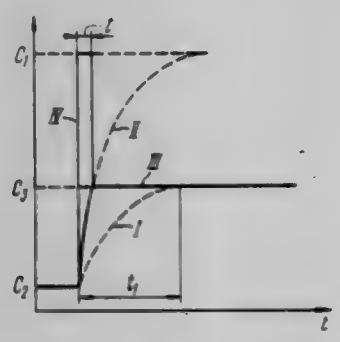
electrode holder and being held to the electrode holder by springs which fit over hooks disposed on both the electrode holder and the replaceable tip.

4,346,280

METHOD AND APPARATUS FOR BUILDING UP SURFACE LAYER WITH ALTERNATING COMPOSITION

Sergei V. Gulakov, ulitsa M.Mazaya, 41, kv.2; Boris I. Nosovsky, ulitsa Kuprina, 23a, kv.30; Leonid K. Leschinsky, prospekt Lenina, 75b, kv.60; Ksenofont K. Stepnov, ulitsa Dalne vostochnaya, 50, kv.4, and Anatoly E. Rudnev, bulvar Bogdana Khmelnitskogo, 18, kv.35, all of Zhdanov Donetskoi oblasti, U.S.S.R.

Filed Jul. 1, 1980, Ser. No. 164,949
Int. Cl.³ B23K *9/04*
U.S. Cl. 219—76.1 **2 Claims**



1. A method of building up a variable-composition metal layer on a metal blank, comprising the steps of:

supplying at least two alloying materials to a metal zone melted by an arc and restricted by a solidification boundary;

varying the ratio of said alloying materials with respect to the required amount of certain portions of the built-up layer within 0.01 to 20% for a decrease in the alloying degree and within 0.01 to 100% for an increase in the alloying degree; and

maintaining said ratio for a period of time determined from the following relationship:

$$t = \frac{V}{v \cdot A} \cdot \ln \frac{C_1 - C_2}{C_1 - C_3},$$

where

V is the volume of the metal melted by the arc and restricted by the solidification boundary,

v is the building-up rate,

A is the cross-sectional area of the built-up layer,

C_1 is the amount of alloying elements varied with respect to the necessary amount,

C_2 is the initial amount of alloying elements relative to which variations are made, and

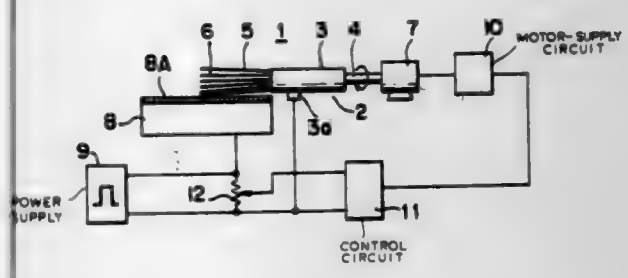
C_3 is the required amount of alloying elements in the built-up layer and subsequent changes in the amount of alloying elements to reach the required level.

4,346,281

METHOD OF AND APPARATUS FOR DISCHARGE-SURFACING ELECTRICALLY CONDUCTIVE WORKPIECES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jan. 17, 1980, Ser. No. 112,817
Int. Cl.³ B23P *17/00*
U.S. Cl. 219—76.13 **28 Claims**



1. In a method of discharge-treating a surface of an electrically conductive workpiece by bringing said surface and an electrode together to form a localized contact therebetween, iteratively effecting a spark discharge across a gap between said electrode and said surface to form a weld at the contact area upon said surface, breaking said contact to permit said weld to cool thereby leaving a metallurgically modified area upon said surface and sweeping said electrode over said surface to successively form such metallurgically modified areas over said surfaces, the improvement which comprises: forming said electrode of a plurality of electrically conductive elongate pieces fixedly mounted to a rotary shank so as to individually project axially therefrom and extending so as to collectively form a converging body of revolution axially opening away from said shank and with said pieces lying along generatrices of the body of revolution; rotating said shank to permit said elongate pieces to be revolved and to uniformly expand the body of revolution outwardly toward the ends of said pieces remote from said shank while revolving; urging the outer lateral surfaces of said revolving pieces along a length thereof tangentially against said workpiece surface and so that the expanded body of revolution is tangential to said surface while an electric current is applied between said pieces and said workpiece to bring about spark discharge between said revolving individual surfaces of pieces and said workpiece surface thereby creating said metallurgically modified area where said pieces and said workpiece are brought together.

4,346,282

METHOD OF EXTRUSION-FUSION WELDING OF LEAD PARTS THROUGH AN APERTURE IN A BATTERY CASE

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 790,881, Apr. 26, 1977, Pat. No. 4,166,210. This application Oct. 5, 1978, Ser. No. 948,979
Int. Cl.³ B23K *11/18*
U.S. Cl. 219—78.16 **11 Claims**

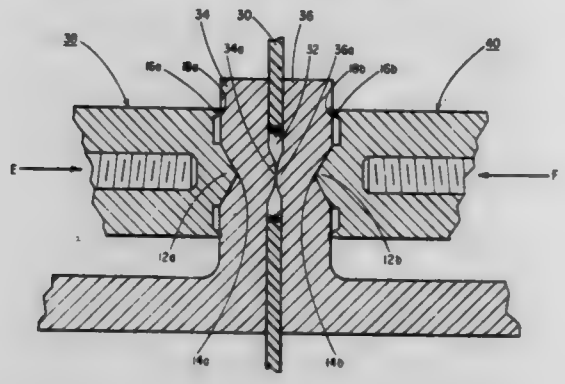
1. A method of welding lead parts through an aperture in the partition of a battery case utilizing an electrode comprising at least an extruding portion for extruding portions of said parts to touch within said aperture, and a forging portion for forging

portions of said parts during the welding of said parts, comprising the steps of:

a. positioning said parts on opposite sides of said aperture to at least entirely overlap said aperture;

b. extruding at least a portion of said parts into said aperture at least until said forging portion contacts a surface of said part and said extruded portions touch within said aperture;

c. limiting the degree of contact between said parts within said aperture responsive to the degree of contact between said forging portion and said lead part;



d. passing current through said parts to melt said portions of said parts at least within said aperture;

e. compressing at least said melted portions within said aperture; and

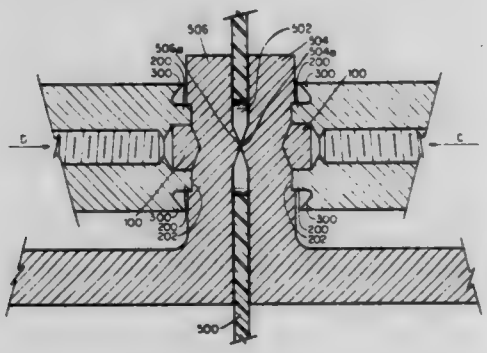
f. forging unmelted portions of said parts surrounding said aperture at least during a portion of said compression step, whereby said lead parts are welded through said partition of said battery case.

4,346,283

METHOD OF EXTRUDING, FUSING AND FORGING LEAD CONNECTIONS IN BATTERY CASES

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Division of Ser. No. 790,881, Apr. 26, 1977, Pat. No. 4,166,210.
This application Apr. 11, 1979, Ser. No. 29,255
The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.
Int. Cl.³ B23K *11/18*
U.S. Cl. 219—78.16 **7 Claims**



1. A method of welding lead parts through an aperture in the wall of a battery case to form a connection therethrough, said aperture having a substantially flat surface region disposed around the perimeter thereof, utilizing an electrode comprising at least an upsetting portion for upsetting portions of said parts to touch within said aperture, and a bevelled forging portion for forging portions of said lead parts in an area generally adjacent said flat surface region during the welding of said parts, comprising the steps of:

(a) positioning said parts on opposing sides of said aperture to at least entirely overlap said aperture;

(b) upsetting at least a portion of said parts into said aperture at least until said forging portion contacts a surface of said parts and said parts touch within said aperture;

(c) passing current through said parts to melt said portions of said parts at least within said aperture;

(d) compressing at least said melted portions within said aperture; and

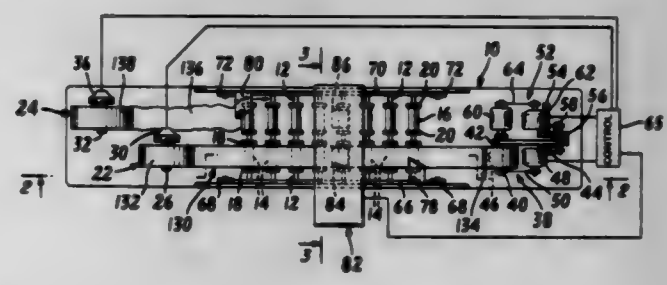
(e) forging, with said bevelled forging portion, portions of said parts generally surrounding said aperture and opposite said flat surface region at least during a portion of said compression step, whereby said lead parts are welded through said wall of said battery case.

4,346,284

DUAL PATH WEB TRANSPORT AND PROCESSING APPARATUS WITH RADIANT ENERGY DIRECTING MEANS

Everett C. Grollimund, Midlothian, and Peter Martin, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,450
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LK **13 Claims**



1. Web transport and treatment apparatus comprising:

(a) a web support structure defining at least two independent web transport paths;

(b) means for emitting radiant energy;

(c) means for selectively directing such radiant energy along at least two separate routes, a first one of said routes extending into a first treatment zone aligned with a first one of said transport paths, a second one of said routes extending into a second treatment zone aligned with a second one of said transport paths;

(d) at least two payout stands;

(e) at least two takeup stands, a respective one of said payout stands and a respective one of said takeup stands being associated with each of said paths so that a web can be fed along either one of said paths by the payout and takeup stands associated therewith; and

(f) control means for actuating said payout and takeup stands to feed a series of webs along alternate ones of said paths so that each web is fed along one of said paths while the payout and takeup stands associated with another one of said paths are idle, said control means also being operative to coordinate the operation of said directing means to direct said radiant energy into the treatment zone aligned with each of said paths while a web is being fed along such path, whereby each web in the series may be loaded onto an idle payout stand and threaded along the path associated with such stand while another web in the series is being fed along another path and treated by said radiant energy.

4,346,285

HEATING DEVICE EMPLOYING THERMISTOR WITH POSITIVE COEFFICIENT CHARACTERISTIC

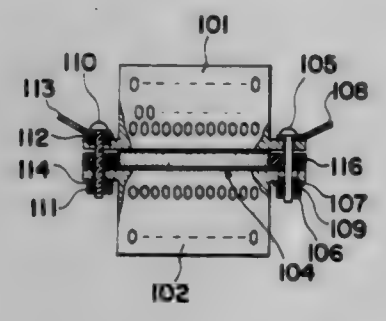
Toshikazu Nakamura, Yokaichi, and Hirofumi Yoshida, Shiga, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

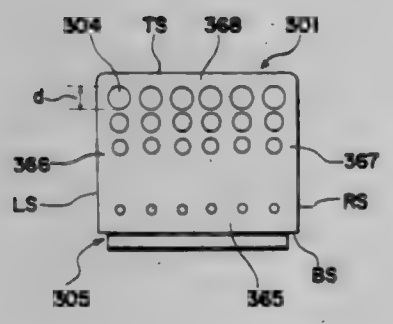
Filed Apr. 23, 1980, Ser. No. 143,040

Claims priority, application Japan, Apr. 28, 1979, 54-53138; Apr. 28, 1979, 54-53139; May 4, 1979, 54-55121; May 11, 1979, 54-58340

Int. Cl.[3] H05B *3/00;* H01C *7/02*

U.S. Cl. 219—381 22 Claims





1. A heating device for heating fluid comprising, in combination:

a heat dissipating means having a plurality of through-holes defined therein, said through-holes extending in a first direction and permitting air to be heated to flow along said first direction only;

a heating unit including a thermistor element having a positive temperature coefficient characteristic, said thermistor element being adapted to generate heat when electric power is applied thereto, said heat dissipating means being mounted on said heating unit in thermal conductive relation therewith such that heat generated by said heating unit is transmitted to the heat dissipating means to heat fluid flowing through the through-holes, said thermistor element including a pair of electrodes between which heating current flows, the location of said electrodes being such that said current flows in a second direction substantially perpendicular to said first direction; and

means for connecting said heat dissipating means and the heating unit together.

4,346,286

TEMPERATURE CONTROLLED ELECTRICAL POWER SUPPLY APPARATUS

Frederick J. Romp, Keysborough, Australia, assignor to Canargo International Pty. Ltd., Victoria, Australia

Filed Feb. 20, 1981, Ser. No. 236,457

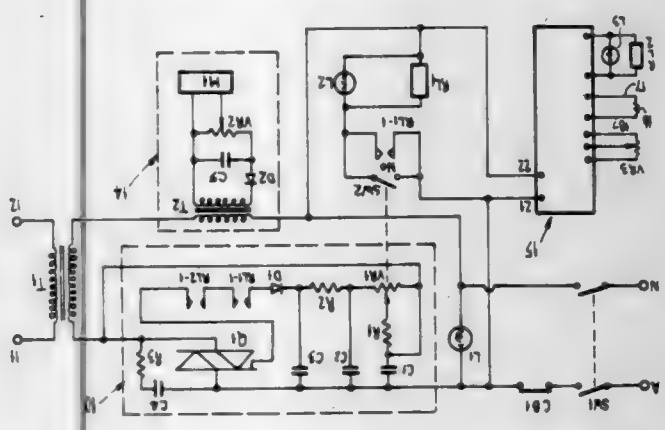
Int. Cl.[3] H05B *1/02*

U.S. Cl. 219—501 6 Claims

1. Temperature controlled electrical power supply apparatus for heating carpet-joining tape of the kind having a conducting foil adapted to be heated by electric current to melt adhesive thereon, said apparatus comprising:

first control circuitry for receiving AC power supply voltage and including a set of electrical contacts to provide an adjustable high current output, a first adjustable resistor for enabling adjustment of said high current output, a switch parallelly connected with the first normally open contacts of a first relay and mechanically connected with said switch such that closure thereof activates said first relay, said first relay including second normally open contacts which are closed to enable said high current output; and

second control circuitry including a thermistor adapted to be connected in thermal contact with said foil, switching circuitry connected to said thermistor to interrupt said



high current output when the temperature of said foil reaches a preset temperature to maintain the temperature of said foil at a substantially constant temperature, said second control circuitry further including an SCR with a gate circuit connected to said thermistor, a second relay controlled by said SCR for controlling said set of electrical contacts to interrupt said high current output and connected in series with said second normally open contacts.

4,346,287

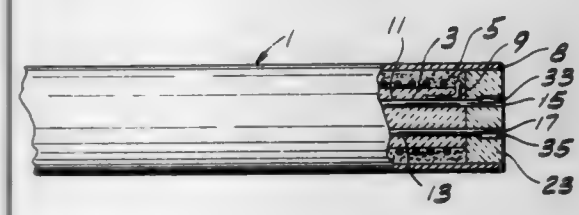
ELECTRIC HEATER AND ASSEMBLY

George B. Desloge, St. Louis, Mo., assignor to Watlow Electric Manufacturing Company, St. Louis, Mo.

Filed May 16, 1980, Ser. No. 148,593

Int. Cl.[3] H05B *3/08*

U.S. Cl. 219—541 33 Claims



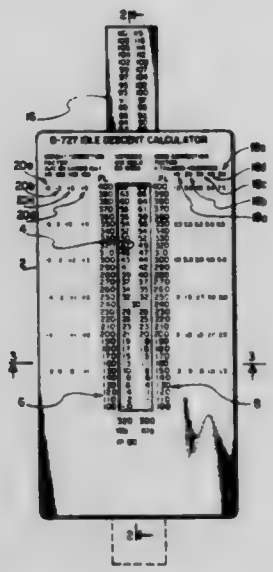
1. An electrical heater comprising a heating element, a sheath surrounding said heating element and spaced therefrom, said sheath having an end spaced longitudinally from an end of the heating element, electrically insulating means between the heating element and the sheath, an internal lead pin electrically connected to the heating element and extending toward said end of the sheath, an electrically insulating end plug within said sheath at said end thereof having an opening in its inner face into which the outer end of said pin is received, and a hole in its outer face having its centerline offset from the centerline of said pin but laterally bounded in part by a lateral surface of said pin, and an external lead having an inner terminal, the hole in the end plug receiving the inner terminal of the external lead, said lateral surface of the pin being generally complementary in shape to an adjacent portion of the lateral surface of the inner terminal, the sheath holding the end plug in a laterally compressed state, whereby the end plug holds said inner terminal and said internal lead in engagement with each other to form a lapped connection therebetween interiorly of the insulating end plug.

4,346,288

FUEL SAVING AIRCRAFT DESCENT CALCULATOR

Edward T. Foster, 1653 Berwick Pl., Westlake Village, Calif. 91361

Filed Oct. 31, 1980, Ser. No. 202,601
Int. Cl.[3] G06G *1/02;* G06C *3/00*
U.S. Cl. 235—70 A 14 Claims



1. A manually operable calculator for calculating a beginning of descent position to optimize aircraft fuel consumption during descent from an actual altitude and distance to a target altitude and distance, comprising:

a first member having a distance scale displayed thereon,

a second member having a first altitude scale displayed thereon, said first altitude scale being proportional in terms of indicated air speed below a predetermined altitude,

said first and second members being mutually alignable and said distance and first altitude scales being proportioned so that, when a target distance on the distance scale is aligned with a target altitude on the first altitude scale, the actual altitude on the first altitude scale is aligned with a desired fuel efficient distance on the distance scale for commencing the descent, for a given aircraft weight and speed and a given wind condition,

an aircraft weight and wind correction scale means, said correction scale means providing a correction factor to adjust the indicated distance for commencing a descent based upon the aircraft weight and prevailing wind conditions, and

means mutually securing said first and second members for relative aligned movement.

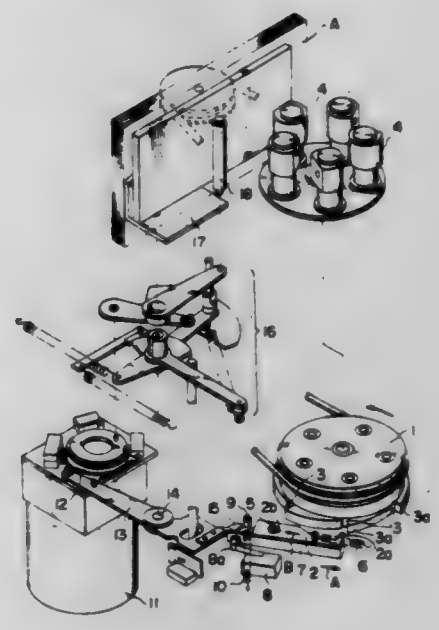
4,346,289

DEVICE FOR STOPPING SUCTION HEADS OF PAPER SHEET COUNTING APPARATUS AT DETERMINED ANGULAR POSITIONS

Tuyoshi Miyagawa, and Hitoshi Manabe, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,630
Claims priority, application Japan, Jun. 5, 1980, 55/78242[U]
Int. Cl.[3] G06M *9/02;* B65H *3/12*
U.S. Cl. 235—98 R 2 Claims

1. A device for stopping the suction heads of a paper sheet counting apparatus at predetermined angular positions to be ready for immediately sucking the first sheet of the next cycle counting operation, comprising a rotary cylinder carrying a group of suction heads and having a peripheral face provided with engaging recesses each corresponding to each one of said suction heads to determine the angular positions of said suction heads when one cycle paper sheet counting operation is terminated and the rotary disk is stopped, a stopper having a pawl to be engaged with one of said recesses to stop and fix said rotary cylinder during the standstill time when said suction heads are to be stopped at predetermined angular position, said stopper having an elongated hole extending in the longitudinal direction thereof to receive a shaft about which said stopper is to be swinged, said stopper being movable relative to said shaft in the longitudinal direction within the extent defined by the



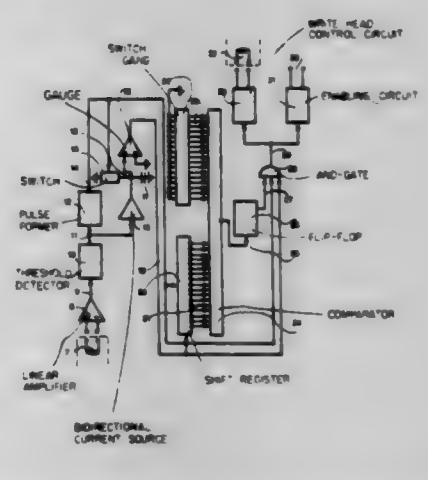
length of said elongated hole, and a resilient member for damping the sliding movement of said stopper relative to said shaft when said pawl is engaged with one of said engaging recesses.

4,346,290

DEVICE FOR THE RECOGNITION AND PROGRESSIVE CANCELLATION OF INFORMATION RECORDED ON A MAGNETIC SUPPORT

Mario Rossi, corso Vittorio Emanuele 74, Turin, Italy

Continuation of Ser. No. 878,577, Feb. 16, 1978. This application Jul. 26, 1979, Ser. No. 60,766
Claims priority, application Italy, Mar. 4, 1977, 67474 A/77
Int. Cl.[3] G06K *7/08, 19/08*
U.S. Cl. 235—436 5 Claims



1. An improved apparatus of the type employed to generate an enablement signal used to enable operation of a dispensing machine or the like under the control of data magnetically recorded in a single data track on the magnetic strip of a credit card, the data on the magnetic strip including key data identifying the card as a valid one and number-of-permitted-uses data identifying the number of times the credit card is to be permitted to enable operation of a dispensing machine, the improved apparatus comprising, in combination, a guide structure defining a path for manual transport of a credit card along said path; a read-write head unit including magnetic data reading means and magnetic data-writing means located along said path so that the magnetic strip of a manually inserted card pass along the read-write head unit during the manual transport of the card in said path, the magnetic data reading means being operative during the manual transport of the card for converting magnetically recorded data present on the strip into read out electrical signals, signal-evaluating means connected to receive

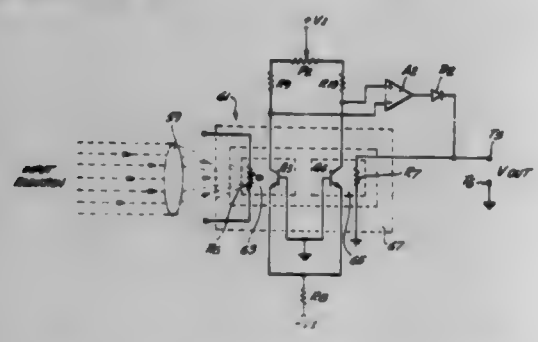
the read out electrical signals from the magnetic data reading means and operative for recognizing the key data despite the unpredetermined speed of the manual transport of the card relative to the head unit and furthermore ascertaining, despite the unpredetermined transport speed, whether the number-of-permitted-uses data indicate exhaustion of the number of permitted uses of the card, and including enablement-signal-generating means operative, in response to recognition of the key data accompanied by ascertainment that the number of permitted uses is not yet exhausted, for generating an enablement signal for enabling an automatic dispensing machine; and updating means operative during manually performed transport of the card past the head unit for causing the magnetic writing means to write upon the magnetic strip in a manner updating the number-of-permitted-uses data to cause the number-of-permitted-uses data to represent a decreased number of permitted uses, and wherein the signal-evaluating means comprises means defining a signal transmission path for the electrical signals produced by the magnetic data reading means, the signal transmission path including amplifier means with automatic amplification control operative for stabilizing the signal level of signals transmitted in the signal transmission path against the influence of variations in the manual transport speed of the credit card past the read-write head unit, and wherein the apparatus further comprises a credit card having a magnetic strip on which are recorded key data identifying the card as a valid one and number-of-permitted-uses data identifying the number of times the credit card is to be honored, and on which are furthermore recorded a series of bits spatially located in the card such that the series of bits reaches the read-write head unit prior to the key data and prior to the number-of-permitted-uses data, whereby the amplifier means with automatic amplification control can begin to adapt itself to the speed of manual transport of the credit card by responding to the electrical signals derived by the magnetic reading means from said series of bits.

4,346,291

THERMALLY ISOLATED MONOLITHIC SEMICONDUCTOR DIE

Roy W. Chapel, Jr., Edmonds, and I. Macit Gurol, Seattle, both of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.

Division of Ser. No. 842,972, Oct. 17, 1977. This application Sep. 2, 1980, Ser. No. 182,966
Int. Cl.³ G06G *7/20*
U.S. Cl. 250—211 R **21 Claims**



1. An RMS converter for converting the RMS value of an input signal into an output signal having a DC value equal to the RMS value of the input signal, said RMS converter comprising:

a semiconductor die including a frame defining an aperture and first and second islands located in said aperture, each of said islands including a semiconductor component formed therein and a resistor formed thereon so as to be in thermal communication with the semiconductor component formed therein, said semiconductor die further including a plurality of support leads equal in number to the number of terminals defined by said semiconductor components and said resistors, said support leads extending outwardly from said islands to said frame so as to provide the sole support for said islands, each of said support leads including a layer of a structurally strong metal of high electrical conductivity and low thermal conductivity, said layer of structurally strong metal being substantially thicker than any other layer of said support leads;

input circuit means for applying said RMS signal to the resistor on one of said islands via the support leads connected to said resistor;

bridge means connected to said semiconductor components formed in said islands via said support leads connected to said semiconductor components such that said bridge means and said semiconductor components form a bridge circuit having a pair of opposed power terminals and a pair of opposed output terminals;

comparison means connected to said pair of opposed output terminals of said bridge circuit for comparing the signals at said terminals and producing an output related to the difference therebetween;

feedback means connecting the output of said comparison means to the resistor on said other island via said support leads connected to said resistor; and,

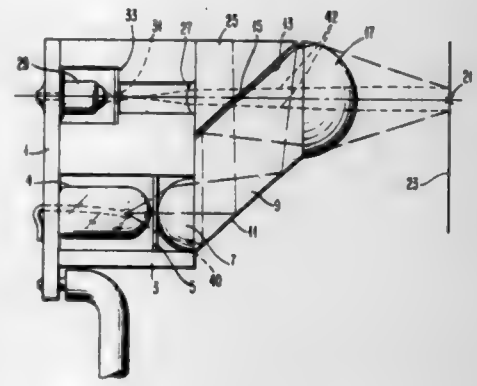
output means connected to detect the voltage drop across said resistor on said other island, said voltage drop having a DC value equal to the RMS value of the signal applied to said resistor on said one of said islands.

4,346,292

COAXIAL OPTICAL SCANNER

Wilson M. Routt, Jr., Lexington, and Donald L. West, Winchester, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,936
Int. Cl.³ H01J *3/14*
U.S. Cl. 250—216 **13 Claims**



1. An optical scanner having a light source, a first optical system for directing light from said source to a predetermined region, a photosensor, and a second optical system for collecting light reflected from markings on a surface at said region and directing said reflections on to said photosensor wherein the improvement comprises:

said first optical system comprising a collecting lens, a first reflective planar surface, and a second reflective planar surface parallel to said first planar surface, and an outer condenser lens, the center area on the axis of said condenser lens being part of said second optical system, said first optical system being adapted and arranged to collect light emitted by said light source, direct said light in a beam formed by said collecting lens, reflect said beam from said first surface to said second surface, reflect at least a part of said beam from said second surface to said condenser lens, and focus said beam by said condenser lens near said predetermined region, and

said second optical system comprising an objective lens and an area within said second planar surface adapted to transmit light from said center area of said condenser lens to said photosensor.

4,346,293

OPTICAL ELECTRONIC DISTANCE SENSOR WITH A PARALLEL BEAM OF LIGHT AND ADJUSTABLE DETECTOR-EMITTER SEPARATION

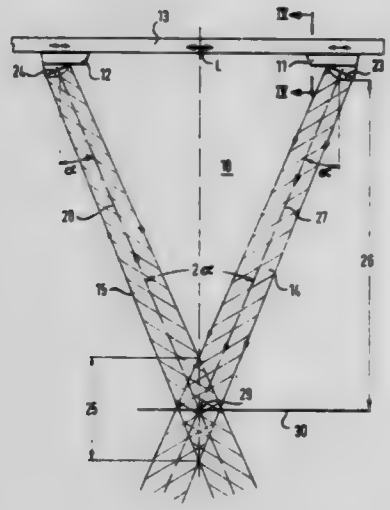
Günter Fetzer, Gundelfingen, Fed. Rep. of Germany, assignor to Erwin Sick GmbH - Optik-Elektronik, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 138,033

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1979, 7916322[U]

Int. Cl.³ G01V *9/04*

U.S. Cl. 250—222 R 7 Claims



1. V-light barrier apparatus for sensing the presence and absence of an object on a surface, comprising a straight mounting rail extending in a first direction, a light transmitter mounted on said rail and constructed to transmit a parallel beam of light along a transmitted beam path at a fixed and invariable angle relative to said rail, a light receiver mounted on said rail and constructed to receive a parallel beam of light along a received beam path at a fixed and invariable angle relative to said rail, with the transmitted beam path and the received beam path intersecting over an intersection region at a distance from said rail, means enabling movement of said light transmitter and said light receiver along said rail to adjust their relative separation, and thereby said distance, to bring said intersection region into coincidence with one of said surface and said object without varying the size or shape of said intersection region, and means for securing said light transmitter and said light receiver to said mounting rail.

4,346,294

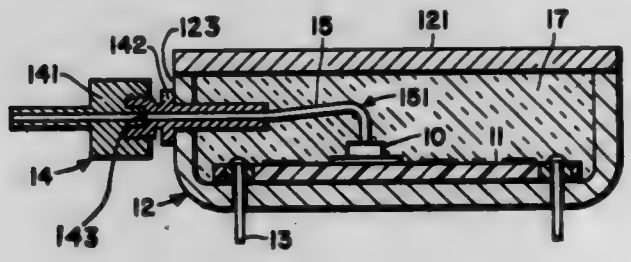
LOW PROFILE OPTICAL COUPLING TO PLANAR-MOUNTED OPTOELECTRONIC DEVICE

Neil P. Albaugh, and Robert M. Stitt, both of Tucson, Ariz., assignors to Burr-Brown Research Corp., Tucson, Ariz.

Continuation of Ser. No. 55,032, Jul. 5, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,841

Int. Cl.³ G02B *5/14*

U.S. Cl. 250—227 4 Claims



1. A low profile fiber optic module comprising:

a housing; and

at least one optoelectronic device disposed within said housing; and

light fiber means having a first portion passing through and supported only by a side portion of said housing and having a second substantially orthogonal freestanding portion for coupling extramodular light to said device through substantially a 90° angle, said second portion being supported only by and being biased against said device.

4,346,295

RADIATION IMAGE READ OUT DEVICE

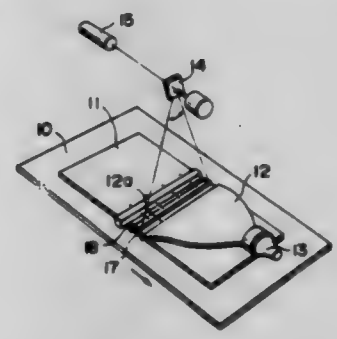
Kazuyoshi Tanaka; Hisatoyo Kato, and Seiji Matsumoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 19, 1979, Ser. No. 105,240

Claims priority, application Japan, Dec. 26, 1978, 53-163572; Jul. 11, 1979, 54-87806; Jul. 11, 1979, 54-87807; Jul. 11, 1979, 54-87808

Int. Cl.³ G03C *5/16;* G01T *1/11;* G02B *5/14*

U.S. Cl. 250—327.2 9 Claims



1. A radiation image information read out device for reading out radiation image information recorded on a stimulable phosphor plate by scanning the stimulable phosphor plate with a stimulating ray comprising in combination a photodetector for detecting the light emitted by the stimulable phosphor plate upon stimulation of the stimulable phosphor, and a light guide member provided between the photodetector and the stimulable phosphor plate for transmitting the light emitted by the stimulable phosphor plate to the photodetector, said light guide member being made of a light transmitting sheet material one end of which is located adjacent to a scan line on the stimulable phosphor plate and the other of which is located adjacent to the light receiving face of the photodetector and shaped to be adapted to be adjacent to the light receiving face wherein said end to be located adjacent to the scan line is shaped into a linear form and the other to be located adjacent to the light receiving face of the photodetector is shaped into an annular form to be adapted for the light receiving face of the photodetector and wherein the ratio of a length from said one end to the other of the light guide member to a width of the end to be located adjacent to the scan line is within the range of 0.4 to 1.5.

4,346,296

NON-DISPERSIVE INFRARED GAS ANALYZER

Robert E. Passaro, Walnut Creek, and Kevin Williams, Pinole, both of Calif., assignors to Andros Analyzers Incorporated, Oakland, Calif.

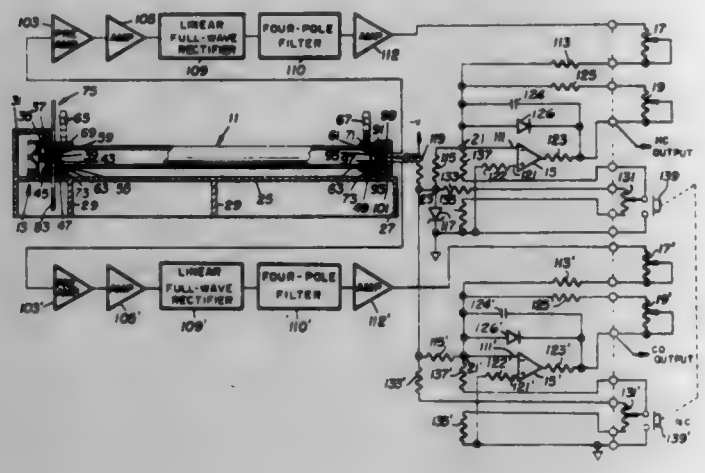
Filed Aug. 15, 1980, Ser. No. 178,302

Int. Cl.³ G01N *21/26*

U.S. Cl. 250—343 11 Claims

1. A non-dispersive infrared gas analyzer, comprising, a sample cell for containing the gas mixture to be analyzed, means for directing infrared energy through said sample cell, means for periodically interrupting the infrared energy at a predetermined frequency, detector means responsive to the infrared energy at at least one preselected wavelength to produce an AC signal having an amplitude proportional to the infrared energy passing through said sample cell and having a frequency corresponding to the predetermined frequency, said preselected wavelength corresponding to the characteristic absorption wavelength of a preselected gas, and signal processing means for processing the AC signal output of said detector

means to produce a DC signal having an amplitude proportional to the concentration of the preselected gas in the mixture being analyzed, said signal processing means including an output amplifier and first variable control means manually



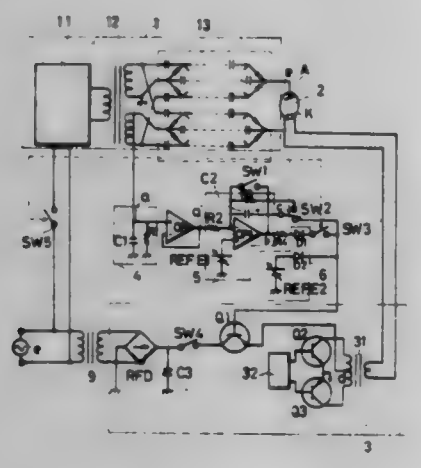
adjustable to adjust the gain of said output amplifier to bring the output of said output amplifier to zero with a non-absorbing gas in said sample cell, and second variable control means connected in a feedback loop to said output amplifier for span calibration.

4,346,297

X-RAY PHOTOGRAPHIC APPARATUS

Masakazu Suzuki, Kyoto; Shuhei Furuichi, Shiga, and Toshiaki Ikeda, Yahata, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Jun. 26, 1981, Ser. No. 277,889
Claims priority, application Japan, Jun. 27, 1980, 55-88061
Int. Cl.³ H05G *1/34, 1/58*
U.S. Cl. 378—110 **3 Claims**



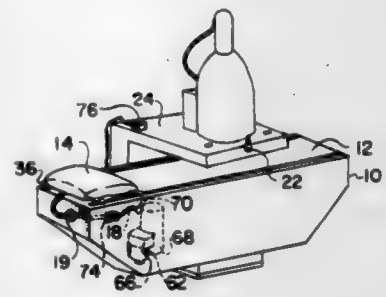
1. An X-ray photographic apparatus designed to irradiate X-rays of desired density from an X-ray tube by controlling an X-ray tube current at a desired value set by a reference voltage (Ref. E1) by deriving the X-ray tube current in the form of a detection voltage (Va), integrating the voltage difference between said detection voltage (Va) and said reference voltage (Ref. E1) for setting the desired value of said X-ray tube current, using the integrated voltage as a control signal, and feeding back and controlling a filament heating current, said X-ray photographic apparatus being characterized in that the apparatus has a tube current automatic control circuit (3) for preventing overshooting of the tube current generated at the start of X-ray irradiation by presetting the initial integration value of an integration circuit (5) to a preheating level setting voltage (Ref. E2) lower than said reference voltage (Ref. E1), said integration circuit being designed to integrate the difference between said detection voltage (Va) and said reference voltage (Ref. E1).

4,346,298

AUTOMATIC AIR PILLOW FOR DIAGNOSTIC X-RAY MACHINE

Jagannath K. Dixit, 1128 Sioux Dr., Crown Point, Ind. 46307

Filed Mar. 2, 1981, Ser. No. 239,674
Int. Cl.³ A61B *6/04*
U.S. Cl. 5—441 **6 Claims**



1. An inflatable pillow assembly for use in connection with an examination table of the tip type having a table surface and having motor means for rotating said table between horizontal and vertical positions and switch means for actuating said motor;

an inflatable pillow,

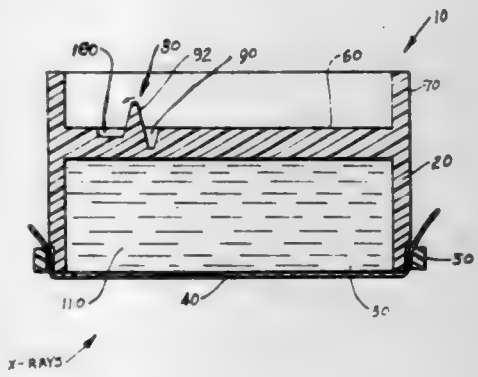
a source of compressed air; a three-way valve connecting said pillow to said source; said valve including a vent outlet; said valve being actuated by said switch means whereby said pillow is inflated when said table is brought to said horizontal position and is deflated when said table is brought to said vertical position; and support means for detachably securing said pillow to said table.

4,346,299

CELL FOR CONTAINING FLUID TO BE ANALYZED BY X-RAY SPECTROSCOPY

Arthur J. Mitteldorf, Scotch Plains; Joseph Marcovecchio, Berkeley Heights, and Rodolfo A. Boquiron, New Monmouth, all of N.J., assignors to Spex Industries Inc., Metuchen, N.J.

Filed May 18, 1981, Ser. No. 264,566
Int. Cl.³ G01N *21/00*
U.S. Cl. 378—204 **4 Claims**



1. A fluid cell for x-ray analysis comprising

a cylinder having a first closed end defined by a wall and a second open end,

a thin sheet of synthetic resinous material fitted over said open end and adapted to pass radiation through it into a quantity of fluid disposed in said cylinder, with said cylinder disposed so that said second end is facing down and said first end is up,

wall-rupturing means formed in said closed end for rupturing said closed end to accommodate fluid flow from within said cylinder when said fluid heats and expands due to said radiation,

said means being formed near to but inwardly of the periphery of said wall and comprising a vertical post which rises from a portion of said wall which defines said first closed

end of said cylinder, at least a part of said portion of said wall being thinner than said wall and rupturable by means of pressure applied to said post to cause said post to tend to pivot, and

an upstanding rim rising from said wall and defining the periphery of said closed end and being of sufficient height to contain fluid which may be present on said closed end after said means has been operated to rupture said wall.

4,346,300

FILM SHEET CASSETTE

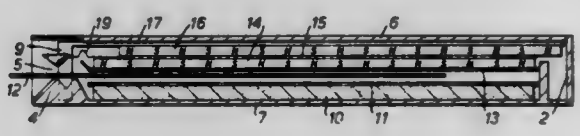
George F. A. M. Turner, Ingatestone, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Mar. 28, 1980, Ser. No. 135,024

Claims priority, application United Kingdom, Apr. 20, 1979, 7913880

Int. Cl.³ G03D *13/08, 13/10*

U.S. Cl. 206—455 **12 Claims**



1. A fixed plate cassette comprising a frame with fixed front and back plates, a pressure plate positioned between said front and back plates, a parallel top plate supported in said frame, means connected to said frame for moving said top plate, a first array of permanent magnetic poles of alternating polarity and a second array of permanent magnets, in which the pressure plate is held in operative position when the cassette is in the closed state by the force of magnetic repulsion exerted between said first array of permanent magnetic poles of alternating polarity which is integral with or is attached to said pressure plate and said second coacting array of permanent magnets attached to said parallel top plate, the pressure plate being retractable from the operative position by activating said moving means causing said parallel top plate to slide to a position in which the magnetic poles in said first array of magnetic poles attract the dissimilar poles of said second array, thereby moving said pressure plate towards said parallel top plate, so opening the cassette.

4,346,301

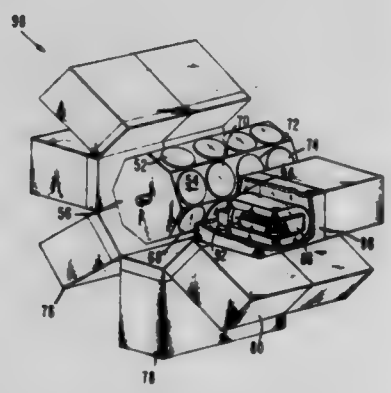
ION IMPLANTATION SYSTEM

William P. Robinson, Newbury Park, and Robert L. Seliger, Agoura, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 61,578, Jul. 30, 1979, Pat. No. 4,258,266. This application Mar. 19, 1981, Ser. No. 245,285

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—492.2 **10 Claims**



1. An ion implantation system comprising:

a plurality of high current separated ion sources, each of said high current ion sources comprising:

a plasma chamber having an anode and a cathode, a feed supply to said plasma chamber for supplying feed material to be ionized in said plasma chamber, walls defining a narrow rectangular exit slot from said plasma chamber, through which slot ions are extracted along a path to form a high aspect ratio ribbon ion beam of substantially rectangular crosssection and having a height and a thickness;

magnetic field means for producing in said plasma chamber a magnetic field across said path in the direction of the height of the beam;

first and second separator electrodes positioned on opposite sides of said path laterally of said path in the thickness dimension of the beam for applying an electric field across said path, said separator electrodes being positioned with respect to said magnetic field means so that said electric field is transverse with respect to said magnetic field to separate unwanted ion species laterally from the ion beam; and

a target drum rotating on an axis for circumferentially carrying therearound a plurality of target wafers, said plurality of separated ion sources being positioned radially around said target drum, each of said plurality of separated ion sources being positioned to impinge upon the target as the target is moved to provide a multiple implantation on the target.

4,346,302

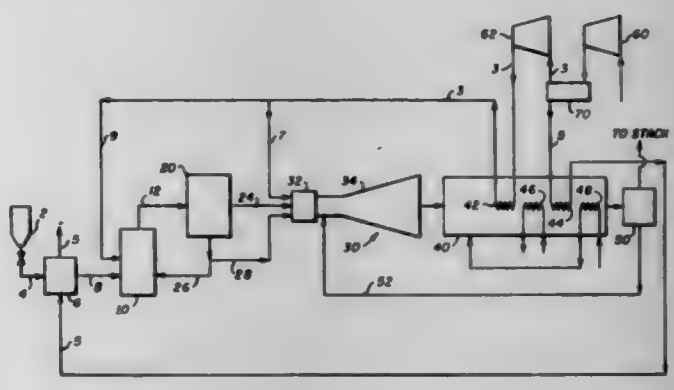
OXYGEN BLOWN COAL GASIFIER SUPPLYING MHD-STEAM POWER PLANT

Carl R. Bozzuto, Enfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 28, 1980, Ser. No. 144,124

Int. Cl.³ H02N *4/02*

U.S. Cl. 290—1 R **12 Claims**



1. An apparatus for generating power from the combustion of coal comprising:

a. an oxygen-blown magnetohydrodynamic generator having a burner for producing a high temperature working gas and a generation channel for directly generating electric power from the high temperature working gas, the generation channel connected to the burner so as to receive the high temperature working gas;

b. an oxygen-blown gasifier for producing a combustible medium BTU gas to be combusted in the burner of said magnetohydrodynamic generator;

c. means for supplying coal to said gasifier;

d. means for supplying preheated compressed oxygen to said gasifier and to the burner of said magnetohydrodynamic generator;

e. a gas cleaner disposed downstream with respect to gas flow of said coal gasifier for removing sulfur compounds, nitrogen compounds, and particulate matter including fly ash and unburned carbon from the combustible medium BTU gas produced in said gasifier;

f. a first gas pass connected between said coal gasifier and said gas cleaner thereby providing a gas path for conveying the combustible medium BTU gas from said gasifier to said gas cleaner;

g. a first transport means interconnected between said gas cleaner and said gasifier for conveying a portion of the particulate matter removed from the combustible medium BTU gas in said gas cleaner back to said gasifier for gasification of the unburned carbon contained therein;

h. a second gas pass connected between said gas cleaner and the burner of said magnetohydrodynamic generator for conveying the clean combustible medium BTU gas to the burner of said magnetohydrodynamic generator for combustion therein;

i. means operatively associated with said magnetohydrodynamic generator for injecting a seed material into the high temperature working gas produced in the burner of said magnetohydrodynamic generator as the high temperature working gas enters the generation channel of the magnetohydrodynamic generator, said seed material being readily ionized upon injection into the high temperature working gas so as to enhance the conductivity of the working gas passing through the generation channel of said magnetohydrodynamic generator;

j. a vapor generator connected to the generation channel of said magnetohydrodynamic generator so as to receive the seeded high temperature working gas passing out of the generation channel, said vapor generator having heat transfer surface whereby heat is transferred from the high temperature working gas to a liquid to generate a vapor as a source of power; and

k. a flue connected to said vapor generator for venting the working gas passing through said vapor generator to the atmosphere.

4,346,303

CONTROL SYSTEM FOR AN ELECTRICALLY DRIVEN VEHICLE WITH THREE GENERATORS AND FLYWHEEL ENERGY CONSERVATION

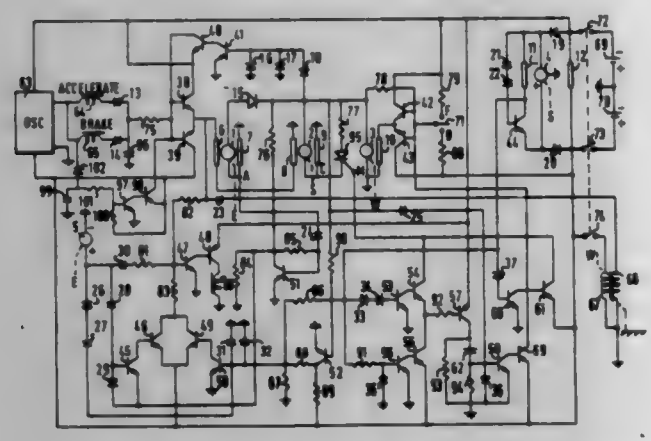
Dragan Bukatarevic, 22 Cheniston Gardens, London W.8., England

Filed Mar. 16, 1981, Ser. No. 244,277

Claims priority, application Yugoslavia, Mar. 18, 1980, 733/80

Int. Cl.³ B60L *11/04, 11/16*

U.S. Cl. 290—45 **10 Claims**



1. A control system for an electrically driven vehicle, comprising a prime mover for driving first generator means (1), electric traction motor means (3) for converting electrical energy generated by the first generator means (1) into mechanical energy propelling the vehicle, second generator means (3) operative during deceleration of the vehicle to convert kinetic energy of the vehicle into electrical energy, second motor means (2) for converting electrical energy generated by the second generator means during said deceleration into mechanical energy stored in mechanical energy accumulator means, and third generator means (2) operative during subsequent acceleration of the vehicle to convert mechanical energy stored in the mechanical energy accumulator means into electrical energy for driving the electric traction motor means (3).

4,346,304

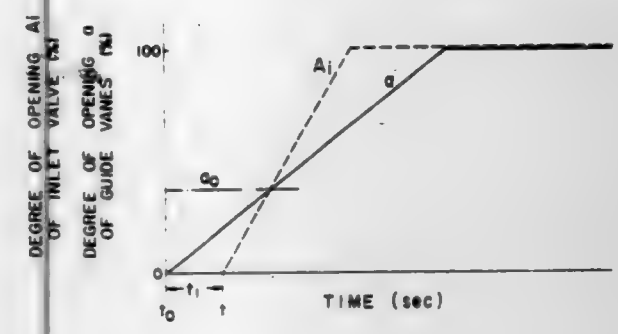
METHOD OF CONTROLLING OPERATION OF FRANCIS TYPE PUMP TURBINES

Sachio Tsunoda, and Kaneo Sugishita, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 25, 1980, Ser. No. 210,238

Int. Cl.³ F01D *15/10*

U.S. Cl. 290—52 **5 Claims**



1. In a Francis type pump turbine comprising a runner chamber, a runner disposed in said runner chamber and directly coupled to a synchronous dynamoelectric machine for operating the same as a synchronous condenser or a synchronous generator, a spiral casing disposed to surround said runner chamber, guide vanes disposed between said runner chamber and said spiral casing, an inlet valve positioned at an inlet of said spiral casing, and a draft tube connected to said runner chamber, a method of controlling an operation of said Francis type pump turbine comprising the steps of

completely or substantially completely closing said inlet valve and said guide vanes;

admitting compressed gas into said runner chamber to press down water level therein to a predetermined level in said draft tube so as to cause said runner to rotate in said gas thereby operating said synchronous machine as a synchronous condenser;

releasing said gas from said runner chamber; and

then initiating opening of said inlet valve and said guide vanes so as to switch the operation of said dynamoelectric machine from synchronous condenser operation to synchronous generator operation.

4,346,305

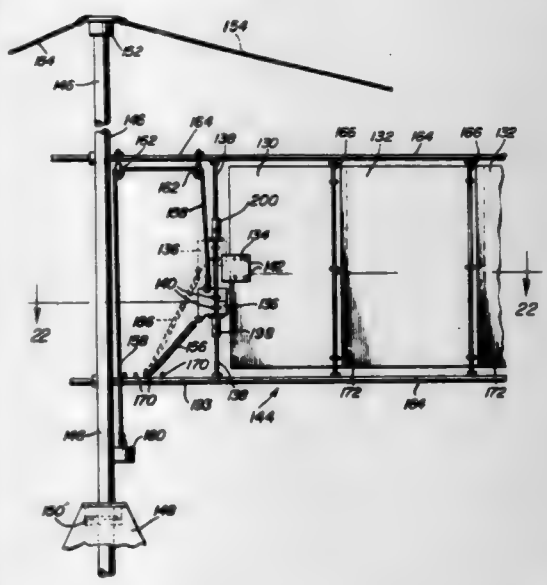
GOVERNOR FOR FLUID CURRENT MOTOR

Forest B. White, Bison, S. Dak. 57620

Continuation-in-part of Ser. No. 746,012, Nov. 30, 1976, abandoned. This application Mar. 27, 1979, Ser. No. 24,324

Int. Cl.³ F03D *3/00, 7/04*

U.S. Cl. 290—55 **13 Claims**



1. A fluid current motor, comprising, in combination; vane

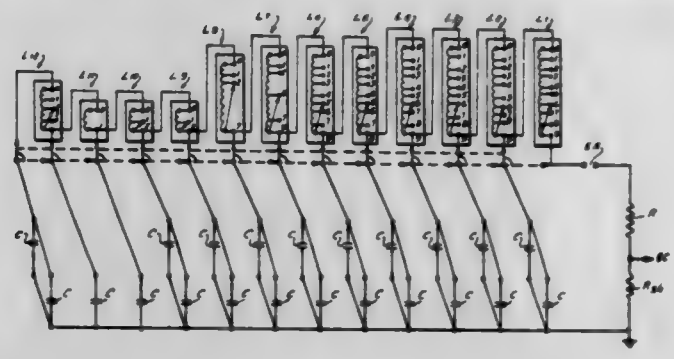
means supported for rotation about a central axis, support means mounting the vane means for said rotation in the fluid current in order to translate the fluid current into useful mechanical or electrical energy, said vane means comprising at least one pair of parallel spaced frame members and at least one flapper pivotally mounted between the frame members, said vane means further including stop means provided between said frame members for limiting pivotal movement of said flapper when the flapper is moving with the fluid current, while permitting the flapper to swing parallel to a direction of flow of the fluid current when the flapper is moing against the direction of flow of the fluid current, a governor system to limit the rotation of said vane means in the fluid current, said governor system including a control stop pivotally mounted on control support means extending between said frame members and being capable of pivotal movement on said control support by direct contact with said fluid current so as to respond to the speed of said fluid current, said control stop being engageable with said flapper whenever the fluid current speed is below a predetermined limit and disengageable from said flapper when the speed of said fluid current exceeds the predetermined limit whereby the rotational movement of said vane is severely limited, said governor system further including an adjustable tension means for maintaining said control stop engageable with said flapper whenever the current speed is below a predetermined limit, said adjustable tension means being secured to said control stop and extending to one of said frame members, said tension means being mounted for movement along said one frame member to adjust the response of said control stop to said fluid current speed, said tension means being a spring tension means in which the response of said control stop can be controlled by the tension of said spring, the tension of said spring being responsive to the distance between said control support means and the point wherein said spring is mounted to said one frame member.

4,346,306

METHOD AND APPARATUS FOR GENERATING HIGH CURRENT IMPULSES

Petre Arabadji, Bucharest, Romania, assignor to Institutul de Cercetari Pentru Industria Electrotehnica, Bucharest, Romania

Filed Sep. 4, 1979, Ser. No. 72,467
Claims priority, application Romania, Sep. 1, 1978, 95085
Int. Cl.³ H03K *3/00*
U.S. Cl. 307—108 **6 Claims**



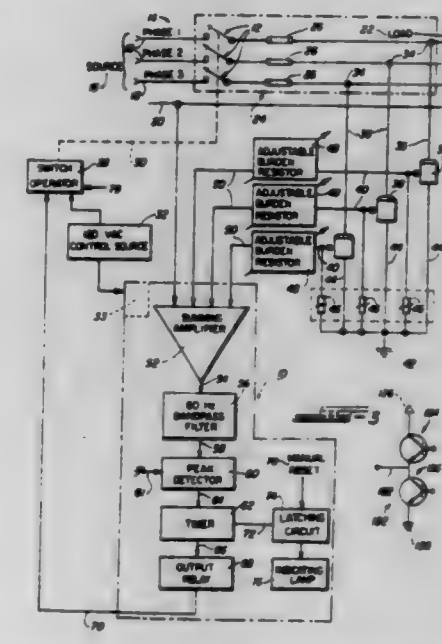
1. A method of generating high current impulses comprising the steps of charging a plurality of parallel connected pairs of capacitors both for generating long-duration rectangular current impulses, and high amplitude short-duration impulses, determining the stage capacity as a common value of the solutions established for variants having as a parameter the number of stages, the latter being between the possible lower and upper limits which insure the impulse shape within a tolerance range, varying the number of circuit stages to obtain various impulse shapes when the load characteristics differ widely, using the coil internal resistances as an effective circuit synthesis element, and eliminating the coils and using the internal impedance and internal inductance of the circuit during the generation of high amplitude short-duration current impulses thereby optimizing the energy efficiency and achieving compatibility in long-duration and short-duration rectangular impulse generator.

4,346,307

VOLTAGE-UNBALANCE DETECTOR FOR POLYPHASE ELECTRICAL SYSTEMS

John A. Zulaski, Mount Prospect, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Nov. 3, 1978, Ser. No. 957,267
Int. Cl.³ H01H *83/14*
U.S. Cl. 307—130 **9 Claims**



1. An improved detector for use with high-voltage, polyphase switch-gear, the switch-gear being of the type which includes an interrupter-switch-power-fuse combination in each phase thereof and a switch operator for opening the switches, the switch-gear being connectable between a source and loads of a high-voltage, polyphase, alternating current, electrical system, wherein the improved detector comprises:

sensing means for providing a first time-varying output signal indicative of the magnitude and phase orientation of the phase-to-ground voltage on each phase of the system;

means for vectorially summing the first output signals and for providing a second time-varying output signal, the peak value of which varies according to variations in the phase orientation and magnitude of the phase-to-ground voltage on each phase of the system so that the peak value of the second output signal is zero if the vector sum of the phase-to-ground voltage is zero, and so that the peak value of the second output signal is non-zero if the vector sum of the phase-to-ground voltages is not zero;

means for comparing the peak value of the second output signal to a reference signal and for providing an error signal if the peak value of the second output signal is non-zero by more than a predetermined value, the error signal indicating that the phase-to-ground voltage variations exceed predetermined limits, the comparing means

(a) providing the error signal upon the passage of a first time period which begins when the peak value of the second output signal is non-zero by more than the predetermined value, and

(b) eliminating the error signal upon the passage of a second time period which begins when the peak value of the second output signal either is zero or is non-zero by less than the predetermined value,

the first time period being substantially less than the second time period;

timer means responsive to the error signal for providing a third output signal a predetermined time after initiation of the error signal only if such error signal persists for such predetermined time; and

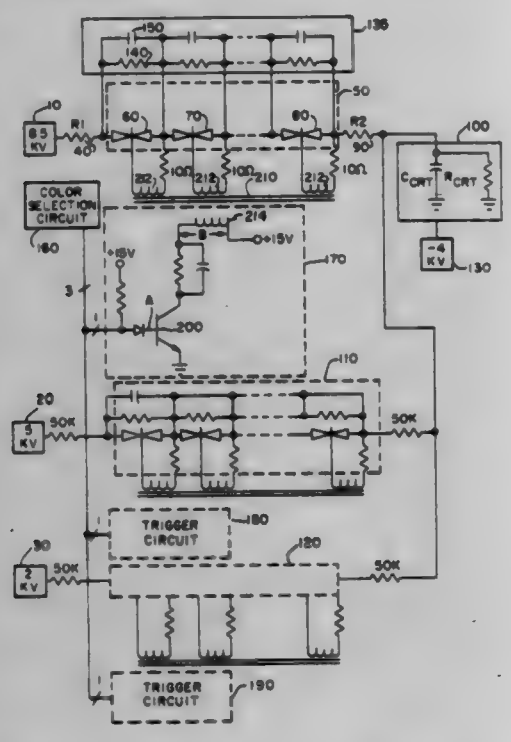
means responsive to the third output signal for initiating the switch operator to operate the switches.

4,346,308

DC SWITCHING CIRCUIT WITH CURRENT THROUGH RESISTIVE LOAD BELOW HOLDING CURRENT OF TRIAC STRINGS TO CHARGE CAPACITIVE LOAD TO PREDETERMINED POTENTIALS

Eugene K. Severson, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 11, 1978, Ser. No. 968,244
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—252 B **1 Claim**



1. A bidirectionally conductive switching circuit for selectively coupling dc voltages to a load, the switching circuit comprising:

a load having a capacitance that can be charged and discharged, and having a resistance high enough to limit the current due to the resistance to a value less than either of the first and second holding currents for the first and second serial strings of triacs recited below:

a first dc voltage supply;

a first serial string of triacs, each triac thereof having first and second conduction terminals and a gate terminal, the conduction terminals coupled serially between the first dc voltage supply and the load, the first serial string having a first holding current beneath whose value the string will no longer conduct in the absence of a signal applied to the gate terminals;

a first trigger means having a plurality of outputs each individually coupled to an associated gate terminal in the first serial string of triacs, for synchronously applying to the gate terminals a periodic signal switching the triacs conductive to charge the capacitance in the load toward the voltage of the first dc voltage supply until the charging current falls below the value of the first holding current and for thereafter maintaining the voltage at that level;

a second dc voltage supply of voltage different in value than the voltage of the first dc voltage supply;

a second serial string of triacs, each triac thereof having first and second conduction terminals and a gate terminal, the conduction terminals coupled serially between the second dc voltage supply and the load, the second serial string having a second holding current beneath whose value the string will no longer conduct in the absence of a signal applied to the gate terminals; and

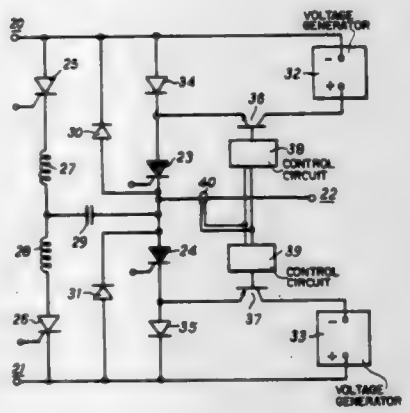
a second trigger means having a plurality of outputs each individually coupled to an associated gate terminal in the second serial string of triacs, for synchronously applying to the gate terminals a periodic signal switching the triacs conductive to discharge the capacitance in the load toward the voltage of the second dc voltage supply until the discharging current falls below the value of the second holding current and for thereafter maintaining the voltage at that level.

4,346,309

CONTROLLABLE RECTIFIER CIRCUIT

John M. Garrett, and Kenneth G. King, both of Chippenham, England, assignors to Westinghouse Brake and Signal Co., Ltd., Chippenham, England

Filed Jan. 18, 1980, Ser. No. 113,190
Claims priority, application United Kingdom, Jan. 23, 1979, 7902378; May 15, 1979, 7916812
Int. Cl.³ H03K *17/72*
U.S. Cl. 307—252 M **8 Claims**



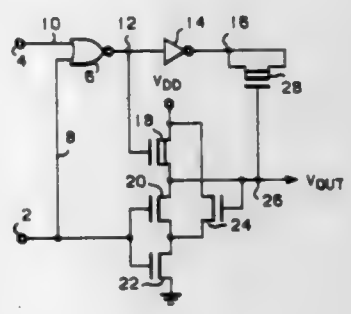
1. A controllable rectifier circuit comprising a controllable rectifier device capable of blocking forward current flow in a load current path through the device; current source means, operative in response to a trigger signal, for passing a blocking recovery assisting current in a forward sense through the device; and current sensing means for sensing the level of load current through the device and producing the said trigger signal for the current source in response to the load current falling below a threshold value equal to or less than the forward holding current of the device, the blocking recovery assisting current produced by the current source means being equal to or less than the forward holding current so as to deplete the current carrier density in the region of the forward blocking junction of the device and thereby reduce the turn-off time thereof.

4,346,310

VOLTAGE BOOSTER CIRCUIT

Ernest A. Carter, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1980, Ser. No. 148,096
Int. Cl.³ H03K *6/02, 5/02*
U.S. Cl. 307—264 **7 Claims**



1. A circuit for generating, at an output node, a voltage which is higher than the circuit's supply voltage, comprising:

a first field-effect-transistor having a source electrode coupled to ground, a drain electrode coupled to said output

node and a gate electrode coupled to a disabling signal for turning said first field-effect-transistor off;

a second field-effect-transistor of a depletion type having a source electrode coupled to said output node, a drain electrode coupled to said supply voltage and a gate electrode coupled to an enabling signal for turning said second field-effect-transistor on when said first field-effect-transistor turns off to produce a first voltage at said output node; and

voltage boost means coupled to said output node and responsive to the termination of said enabling signal for increasing the voltage at said output node, said voltage boost means comprising:

inverter means having an input coupled to said enabling signal and having an output; and

a third field-effect-transistor having source and drain electrodes coupled to the output of said inverter means and having a gate electrode coupled to said output node.

4,346,311

PULSE GENERATOR CIRCUIT

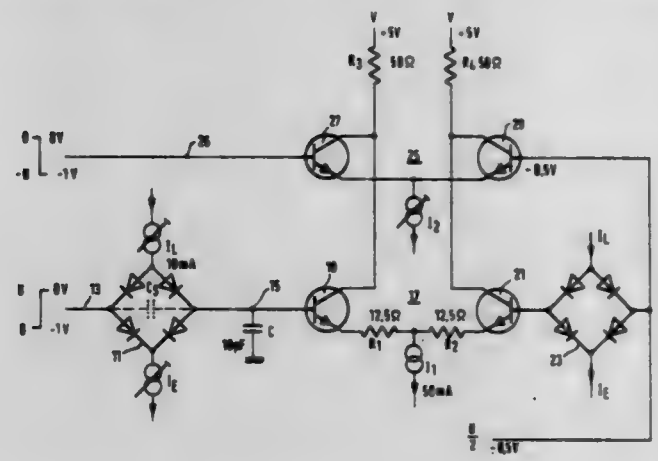
Peter Aue, Böblingen, and Werner Hüttemann, Herrenberg-Kuppingen, both of Fed. Rep. of Germany, assignors to Hewlett-Packard GmbH, Böblingen, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,871

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932655

Int. Cl.³ H03K *5/12, 6/00*

U.S. Cl. 307—268 **4 Claims**



1. A pulse generator circuit for generating pulses having predetermined slopes, comprising

a capacitor that can be charged and discharged through predetermined current sources;

a switching device for connecting and disconnecting the current sources and a step function signal source for controlling the switching device, the capacitance of the capacitor being in the range of the stray capacitance of the switching devices; and

means for superimposing a fraction of the output signal of the step function signal source in opposite phase upon the output signal of the capacitor so as to compensate the voltage surge in the output signal of the capacitor resulting from the voltage divider formed by the stray capacitance of the switching device and the capacitor.

4,346,312

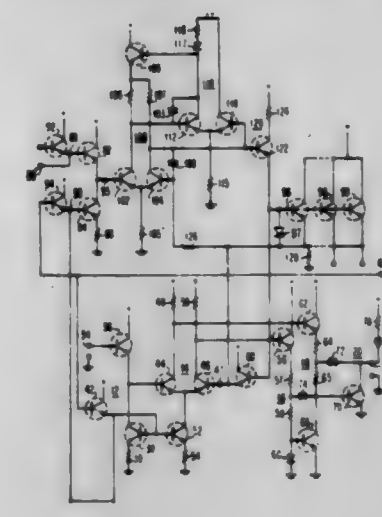
INTEGRATED SEMICONDUCTOR CURRENT DRIVER CIRCUITRY

Warren A. Christopherson, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 921,142, Jun. 30, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,756

Int. Cl.³ H03K *5/01, 19/003*

U.S. Cl. 307—270 **8 Claims**



1. Integrated semiconductor current driver circuitry comprising

an output transistor having a collector electrode connected to an output terminal, having another electrode connected to a point of fixed reference potential, and having a further electrode,

a current switching circuit having one input terminal connected to a source of bistatic signal voltage, having another input terminal connected to a source of regulated reference potential, and having a pair of complementary output terminals,

a pair of emitter follower circuits having input terminals connected individually to said complementary output terminals of said current switching circuit and having complementary output terminals, and

one diode connected between said output terminal of one of said emitter follower circuits and said collector electrode of said output transistor,

another diode connected directly between said output terminal of the other of said emitter follower circuits and said further electrode of said output transistor,

a further diode connected to said other of said emitter follower circuits and to said point of fixed reference potential, and

an electric connection between said further electrode of said output transistor and said output terminal of said one emitter follower circuit.

4,346,313

MONOLITHIC INTEGRATED THRESHOLD SWITCH

Lothar Blossfeld, Freiburg-Hochdorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 20, 1976, Ser. No. 688,519

Int. Cl.³ H03K *5/153;* G01R *19/165, 19/175*

U.S. Cl. 307—350 **7 Claims**

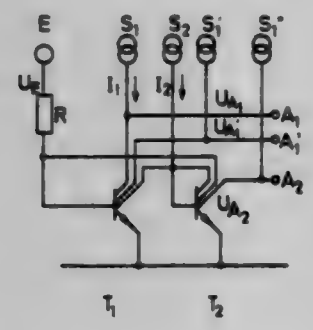
1. A monolithic integrated threshold switch which switches on at an upper voltage valve of a hysteretic input voltage/output voltage characteristic and switches off at a lower voltage comprising:

a first transistor having at least first and second collectors;

a second transistor having a first collector coupled to the base of said first transistor and said second transistor having a second collector coupled to the base of said second transistor and to said second collector of said first transis-

tor, the emitters of said first and second transistors being coupled together;

means for applying an input current to the base of said first transistor and said first collector of said second transistor for turning on said first transistor which in turn cuts off said second transistor;



first means for applying a first current to said first collector of said first transistor; and

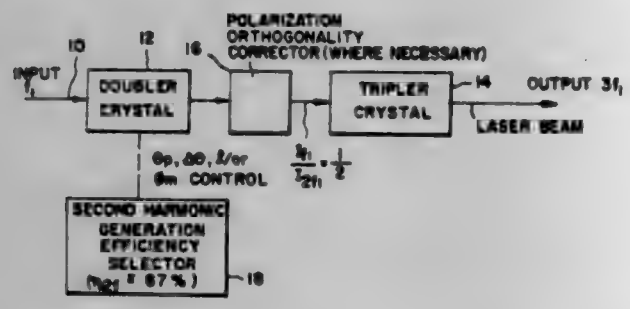
second means for applying a second current to the base of said second transistor and said second collector of said second transistor, said second transistor turning off when said input current exceeds said second current.

4,346,314

HIGH POWER EFFICIENT FREQUENCY CONVERSION OF COHERENT RADIATION WITH NONLINEAR OPTICAL ELEMENTS

Robert S. Craxton, Rochester, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Filed May 1, 1980, Ser. No. 145,409
Int. Cl.³ H03F *7/04*
U.S. Cl. 307—427 **34 Claims**



1. The method of converting the frequency of coherent radiation from a source with the aid of at least one non-linear optical element through which said radiation passes, which method comprises the steps of first converting said radiation from said source at a predetermined conversion efficiency which provides coherent radiation of at least two different frequencies each of which having energy at a predetermined ratio to the other, corresponding to the ratio of said different frequencies, and then converting said radiation to a third frequency by combining said radiation of said different frequencies to produce output radiation of said third frequencies with optimal overall efficiency of conversion.

4,346,315

SWITCHED DELAY LINE FOR STEERABLE NULL ANTENNA SYSTEM

Eugene L. Roberts, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

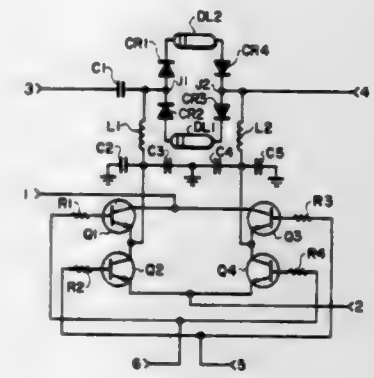
Filed Aug. 25, 1980, Ser. No. 180,554
Int. Cl.³ H03K *5/14, 17/66*
U.S. Cl. 307—603 **4 Claims**

1. A delay unit for providing an incrementally variable delay for radio frequency signals, comprising:

a plurality of delay line sections connected in tandem for said radio frequency signals and also for direct current bias;

wherein each delay line section comprises first and second delay line segments in parallel between first and second junction points, each of said delay line segments having diode means in series with it between said junction points polarized in opposite directions, the first delay line segment being relatively short and the second delay line segment being of a length to provide a given differential delay assigned to that section, switch control means comprising four switch devices connected in a bridge configuration, first and second terminals for bias current connected to diagonally opposite points of the bridge configuration, with the other diagonal having its end points connected via first and second inductors respectively to said first and second junction points, third and fourth terminals coupled respectively to said first and second junction points with at least one blocking capacitor, fifth and sixth terminals for control signals, each of said four switch devices having a control terminal, the fifth terminal being connected to the control terminals of diagonally opposite ones of said switch devices and the sixth terminal being connected to the control terminals of the other two switch devices;

each said section being operative to provide minimum delay responsive to an "on" control signal at the fifth terminal to turn on the switch devices coupled thereto and to an "off"

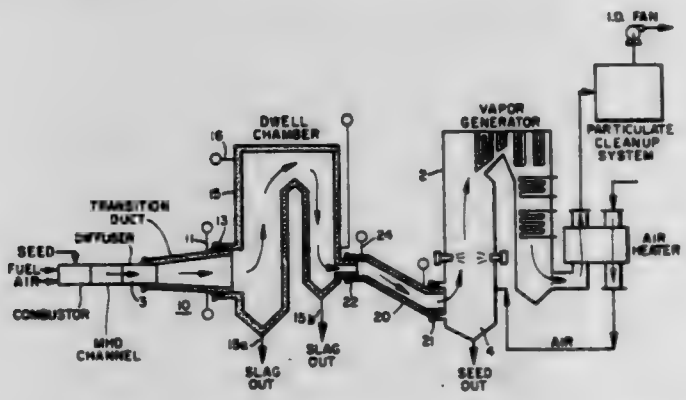


signal at the sixth terminal to turn off the switch devices connected thereto so that bias current between the first and second terminals flows through the switch devices turned on and the first delay line segment to forward bias the diode means in series therewith, which causes the diode means in series with the second delay line segment to be reverse biased, so that radio frequency signals may flow between the third and fourth terminals through the first delay line segment; and being operative to provide maximum delay responsive to an "on" control signal at the sixth terminal and an "off" control signal at the fifth terminal so that the switch devices are in the states to cause the bias current between the first and second terminal to flow through the second delay line segment to forward bias the diode means in series therewith and to reverse bias the diode means in series with the first delay line segment, so that the radio frequency signals flow through the second delay line means; the delay unit having each delay line section except the last connected with said first and fourth terminals connected respectively to said second and third terminals of the next section, with a direct-current constant current source connected to the second terminal of the first section and the first terminal of the last section, and with said third terminal of the first section and said fourth terminal of the last section connected to place the delay unit in a radio frequency signal path for flow of radio frequency signals in either direction.

4,346,316
APPARATUS FOR RETROFITTING AN EXISTING STEAM GENERATOR WITH AN MHD TOPPING UNIT

Stanley R. Wysk, Suffield, and Mark Palkes, Glastonbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 19, 1980, Ser. No. 150,834
Int. Cl.[3] G21D 7/02
U.S. Cl. 310—11 7 Claims



1. A connecting system between an MHD channel and a pre-existing steam generator, including,

an MHD channel operated to produce electrical energy while discharging an output of gas containing vaporized seed and slag at a high velocity and high temperature,

a pre-existing steam generator adapted to receive the gas output and condensed seed of the MHD channel,

a transition conduit lined with water-cooled refractory connected directly to the MHD channel to receive the output gas and vaporized seed and slag,

a chamber lined with water-cooled refractory connected to the output of the transition conduit to receive the channel output gas and vaporized seed and slag and sized to provide a dwell time of substantially two seconds for the gas and vaporized seed and slag in the chamber,

means for removing condensed slag from the lower portion of the chamber in separation from subsequently condensed seed,

and a connecting conduit connected to the output of the chamber and the input of the lower portion of the steam generator which conduit delivers the delayed output gas of the MHD channel to the lower portion of the steam generator,

whereby the channel gas is delayed long enough in the reducing conditions within the chamber to attenuate NO_x and the hot gas of the channel has been reduced to a temperature range compatible with the design of the heat-absorbing waterwalls of the steam generator.

4,346,317
GASIFIED COAL-FIRED SYSTEM

John H. Fernandes, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 18, 1980, Ser. No. 179,326
Int. Cl.[3] H02N 4/02
U.S. Cl. 310—11 3 Claims

1. A system for generating electrical power from the combustion of coal and air, comprising,

an MHD channel having a combustor to which fuel and air are supplied for combustion,

a coal-gasifier connected to the combustor as the source of fuel,

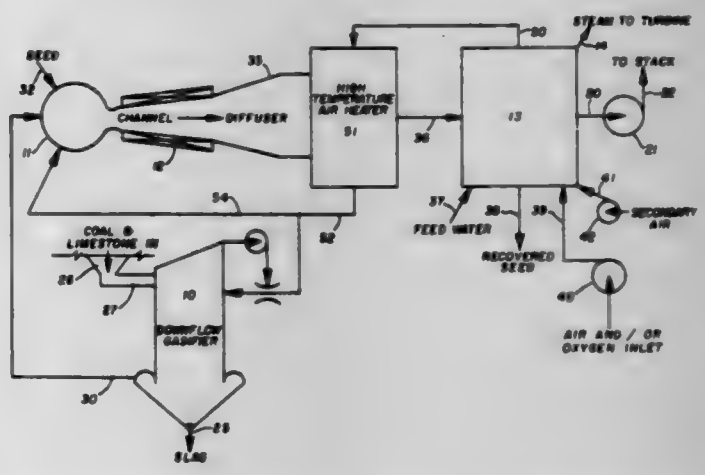
a source of coal and lime/limestone connected to the gasifier within which the coal is converted to gaseous fuel for the combustor and from which slag is produced containing sulfur from the coal and particulate matter,

a vapor generator connected to the output of the channel to receive its products of combustion and transfer their heat to water in converting the water to steam,

a steam turbine and electric generator connected to the steam output of the vapor generator to convert the steam energy into electrical energy,

a source of combustion air connected to the vapor generator to transfer heat from the products of combustion to the combustion air,

a heat exchanger connected between the channel and vapor generator and combustion air outlet of the vapor generator to transfer heat from the products of combustion from the channel to the combustion air heated by the vapor generator,

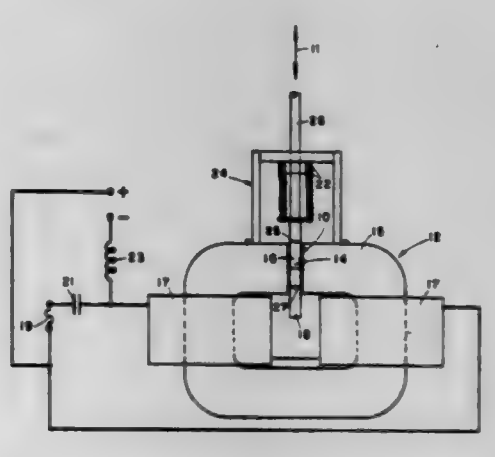


and a connection between the heat exchanger and the combustor to supply the heated combustion air to the combustor in support of the combustion of the fuel supplied by the gasifier.

4,346,318
LINEAR MOTION DEVICES

Shmuel Shtrikman, Rehovot, Israel, assignor to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Feb. 21, 1979, Ser. No. 13,680
Claims priority, application Israel, Feb. 22, 1978, 54107
Int. Cl.[3] H02K 33/12
U.S. Cl. 310—12 6 Claims



1. Apparatus for producing linear motion comprising:

a coil defining an electromagnetic field across a gap; and

a permanent magnet comprising first and second sections, magnetized in respective opposite directions disposed within the magnetic field in said gap for driving engagement with the electric field, the permanent magnet being configured such that its axes of magnetization lie along its smallest dimension;

an iron core about which said coil is wound, said core being formed of a plurality of layers laminated together, the laminations being stacked along axes perpendicular to the flow of magnetic flux in said core; and

a coil spring coupling said permanent magnet to a fixed support, said coil spring extending along a spring axis which is perpendicular to said magnetization axes and

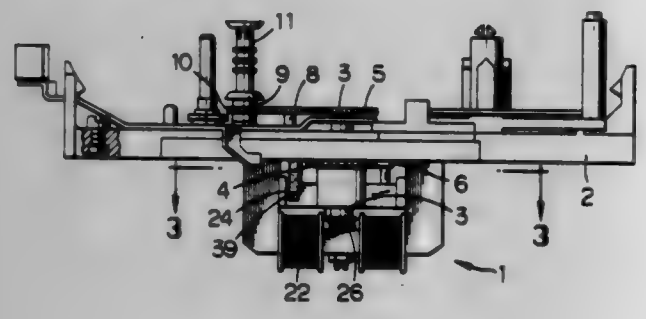
parallel to an axis along which the permanent magnet is driven in motion.

4,346,319

ROTARY ELECTROMAGNETIC ACTUATOR

Nobuyuki Naganuma, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 3, 1981, Ser. No. 250,837
Claims priority, application Japan, Apr. 15, 1980, 55-50182
Int. Cl.³ H02K *33/00*
U.S. Cl. 310—36 **5 Claims**



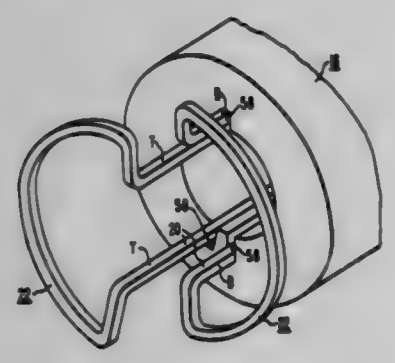
1. In a rotary electromagnetic actuator comprising a stator having at least two stator poles, each of which has a pole surface; a rotor having at least two rotor poles, each of which has a pole surface, rotatably arranged so as to enable each of the pole surfaces of the stator to face to the corresponding pole surface of the rotor respectively; an electromagnetic coil wound on the stator for energizing the stator pole to rotate the rotor in one direction; means cooperating with the rotor for rotating the rotor in opposite direction when the electromagnetic coil is not energized; and first positioning means and second positioning means for determining a rotating range of the rotor; the improvement wherein said each pole surface of said stator poles is in a form of plural steps in an ascending arrangement in said one direction for providing plural stator pole edges, and said each pole surface of said rotor poles is in a form of plural steps as many as said steps of said stator pole in a descending arrangement in said one direction for providing rotor pole edges, and the pitch of the rotor pole edges is different from the pitch of the stator pole edges.

4,346,320

DYNAMOELECTRIC MACHINE HAVING IMPROVED INTERLEAVED STATOR END TURNS

Kent R. Davey, College Station, Tex., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 10, 1980, Ser. No. 139,081
Int. Cl.³ H02K *1/16*
U.S. Cl. 310—179 **5 Claims**



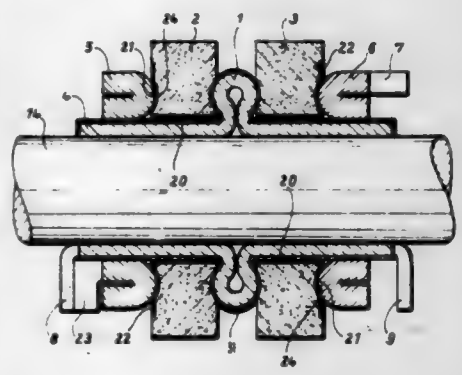
1. A dynamoelectric machine comprising:
a generally tubular-shaped stator core having a plurality of slots in the periphery of said stator core;
a multiphase winding constituting a first plurality of coil sides receivable in a first plurality of said stator core slots, each of said first plurality of stator slots having a top one and a bottom one of said first plurality of coil sides disposed therein, each of the top coil sides of said first plurality of coils sides being electrically connected to a preselected bottom coil side of said first plurality of coil sides, each of the bottom coil sides of said first plurality of coil sides being electrically connected to a preselected top coil side of said first plurality of coil sides,
a second plurality of coil sides receivable in a second plurality of said stator slots, each of said second plurality of stator slots having a top one and a bottom one of said second plurality of coil sides disposed therein, each of a preselected number of the top coil sides of said second plurality of coil sides being electrically connected to a preselected top coil side of said second plurality of coil sides, each of a preselected number of the bottom coil sides of said second plurality of coil sides being electrically connected to a preselected bottom coil side of said second plurality of coil sides; and
a plurality of generally C-shaped connector ring segments disposed on both axial ends of the stator core and each joining two coil sides, said connector ring segments being axially interspersed according to phase.

4,346,321

SLIP RING RETAINER MECHANISM

Manfred Frister, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 6,921, Jan. 26, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,865
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808347
Int. Cl.³ H02K *13/02*
U.S. Cl. 310—232 **14 Claims**



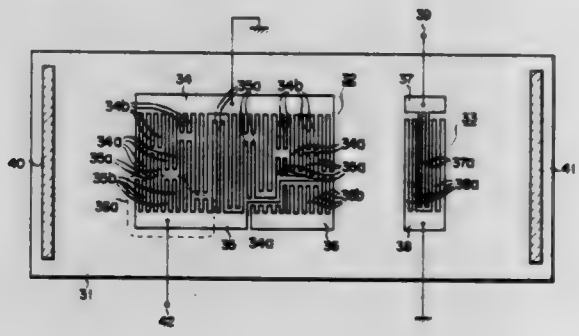
1. In a dynamo electric machine, having a shaft (14), a slip ring retainer device for mounting at least two slip rings (2, 3) on the shaft comprising a material selected from the group consisting of graphite and a graphite metal mixture, positioned axially adjacent each other on the shaft (14) of the machine
wherein the inside diameter of each of said slip rings (2, 3) is sufficiently large so that the respective slip ring is mounted on the shaft without the application of substantial radial force comprising
means for applying axially directed compressive forces against the axial end faces of the slip rings mounted on said shaft at respective opposite axial faces of the adjacent slip rings for exerting substantially only axially directed retaining forces on said slip rings pressing the slip rings towards each other, said compressive force applying means including
metallic pressure rings (5, 6) coaxially surrounding said shaft, positioned at respective opposite axial end faces of said slip rings, and applying axially directed retaining forces against the axial faces of the slip rings, said pressure rings being provided with terminal connecting means,
and insulating separating means separating said slip rings from each other.

4,346,322

ELASTIC SURFACE WAVE DEVICE

Kouji Sato, Yokohama; Sadao Takahashi, Tokyo, and Toshikazu Kodama, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 18, 1980, Ser. No. 131,538
Claims priority, application Japan, Mar. 22, 1979, 54/32245
Int. Cl.³ H03H *9/00*
U.S. Cl. 310—313 B 6 Claims



1. An elastic surface wave device comprising, in combination:

a piezoelectric substrate;

at least one electromechanical transducer provided on one surface of the substrate;

said transducer comprising first and second comb electrodes each having respective finger electrodes arranged with the finger electrodes of the first comb electrode interdigitating with the finger electrodes of the second comb electrode in a predetermined overlap length weighting fashion for forming therein an overlap region and non-overlap region; and

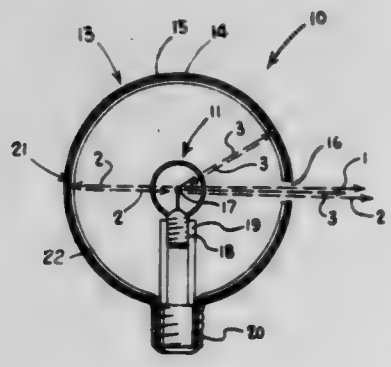
a dummy electrode insulated from said first and second comb electrodes and formed on said one surface of said substrate adjacent thereto in said non-overlap region, said dummy electrode comprising non-interdigitating fingers and being substantially at ground potential.

4,346,323

INFRARED RADIATION LAMP

Tomas Hirschfeld, Livermore, Calif., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Sep. 17, 1979, Ser. No. 75,934
Int. Cl.³ H01K *1/32*
U.S. Cl. 313—111 13 Claims



1. An improved radiation generating lamp operating in the near infrared to infrared range, comprising:

spherical reflective means, said reflective means defining a window; and

an incandescent source of radiation centered within said reflective means for generating radiation in the visible range and in the near infrared to infrared range;

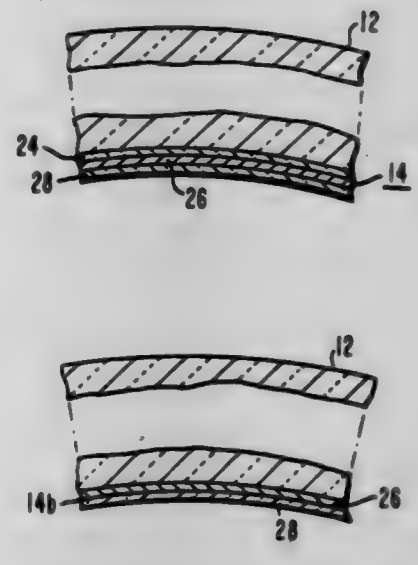
said reflective means receiving said radiation emanating from said source and reflecting back to said source at least a portion of said radiation in the visible range and in the infrared and near infrared range, said source absorbing at least a portion of said reflected radiation in the visible range and re-directing at least a portion of said reflected radiation in the near infrared range to infrared range through said window, such as to enhance the emission characteristics of said lamp in the near infrared to infrared range.

4,346,324

HEAT MIRROR FOR INCANDESCENT LAMP

Bulent E. Yoldas, Churchill, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 84,217, Oct. 12, 1979, Pat. No. 4,293,593, which is a continuation-in-part of Ser. No. 65,706, Aug. 10, 1979, abandoned, which is a continuation of Ser. No. 931,346, Aug. 8, 1978, abandoned. This application May 14, 1981, Ser. No. 263,432
Int. Cl.³ H01K *1/32*
U.S. Cl. 313—112 6 Claims



5. An electric incandescent lamp comprising a sealed regularly conformed hollow thin-walled light-transmitting vitreous envelope, a heat mirror carried on the interior surface of said envelope, said heat mirror operative to substantially transmit visible radiations and to substantially reflect infrared radiations, incandescent filament means of coiled configuration operatively positioned within said envelope so that infrared radiations emitted therefrom during lamp operation will be reflected by said heat mirror to impinge upon said filament means thereby to enhance the conversion of electric energy to visible energy, and said heat mirror consisting essentially of:

a. a thin continuous silver layer of predetermined thickness carried directly on the interior surface of said envelope, said silver layer being substantially transmissive for visible radiations and substantially reflective for infrared radiations; and

b. a thin continuous layer substantially comprising titania carried over and adhered to the interior surface of said silver layer, and said layer substantially comprising titania having a predetermined thickness within the range of from about 100 to about 400 Angstroms.

4,346,325

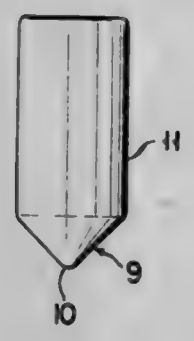
ELECTRON GUN

Mamoru Nakasuji, Yokohama, and Hirotsugu Wada, Machida, both of Japan, assignors to VLSI Technology Research Association, Japan

Filed Mar. 27, 1980, Ser. No. 134,677
Claims priority, application Japan, Mar. 31, 1979, 54-38546
Int. Cl.³ H01J *1/16, 19/10*
U.S. Cl. 313—336 3 Claims

1. An electron gun for a shaped-beam-type electron beam

delineating system, comprising: a cathode including a single



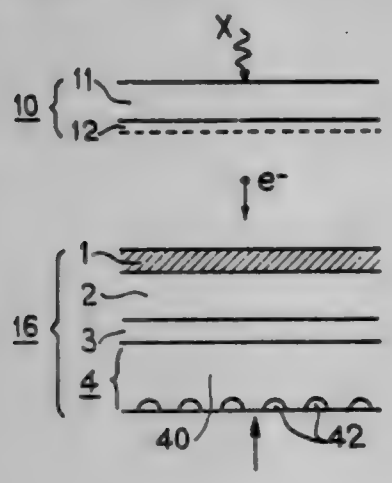
crystal of lanthanum hexaboride having a convex end portion with a tip radius ranging between 260 and 1,000 microns.

4,346,326

RADIOLOGICAL IMAGE INTENSIFIER TUBE AND RADIOLOGICAL CHAIN INCORPORATING SUCH A TUBE

Bertrand Driard; Jean Ricodeau, and Henri Rougeot, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 26, 1979, Ser. No. 106,487
Claims priority, application France, Dec. 29, 1978, 78 36957
Int. Cl.³ H01J *31/00*
U.S. Cl. 313—388 **3 Claims**



1. A radiological image intensifier tube with a video output combining in a vacuum envelope on either side of a target which is in four parts, on the one hand means transforming the incident X-ray image into a beam of photoelectrons directed towards the target and producing thereon an impact under the action of which an electrical image of the incident image is formed in the target, and on the other hand means for reading the electrical signals constituting the thus formed image, wherein on the side exposed to the photoelectrons this target has three successive layers consisting of a metal barrier covering a layer of luminescent material, the latter being in contact with a semi-transparent layer covering the actual target in which is formed the said electrical image.

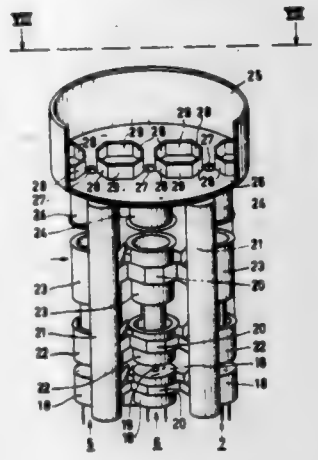
4,346,327

DISPLAY TUBE FOR DISPLAYING COLOR PICTURES

Piet G. J. Barten, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,580
Claims priority, application Netherlands, Feb. 27, 1978, 7802129
Int. Cl.³ H01J *29/51, 29/76*
U.S. Cl. 313—413 **6 Claims**

1. A display tube for displaying color pictures, said display tube comprising a display window, a cone attached to said display window, a neck attached to said cone, a display screen provided on the inside of said display window and consisting of a large number of regions luminescing in three different colors, means disposed in said neck for generating three electron beams, the axes of said electron beams being situated substantially in one plane, a color selection electrode positioned before said display screen for assigning each electron beam to luminescent regions of one color, and a system of deflection coils, disposed around the transition of the neck to the cone of the display tube, for generating a first and a second orthogonal deflection field, the first deflection field having a field distribution which is strongly pin-cushion-shaped on the display screen side, and the second deflection field having a



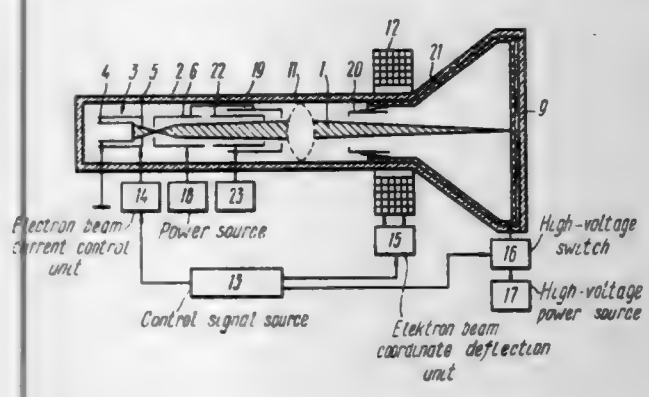
field distribution which is strongly barrel-shaped on the display screen side, wherein said display tube further comprises correction elements placed near each electron beam for deforming the field distribution of the first deflection field, on the neck side near each electron beam, in a barrel-like manner and for deforming the field distribution of the second deflection field, on the neck side near each electron beam, in a pin-cushion-like manner whereby the effects of deflection defocusing on the display screen are considerably reduced in the vertical direction as well as the horizontal direction.

4,346,328

ELECTRON BEAM DEVICE WITH VARIABLE BEAM ENERGY

Sergei A. Rybalko, ulitsa Sovetskaya, 8a, kv. 94, Fryazino Moskovskoi oblasti, U.S.S.R.

Division of Ser. No. 888,563, Mar. 20, 1978, Pat. No. 4,211,953. This application Nov. 27, 1979, Ser. No. 98,380
Int. Cl.³ H01J *29/46, 29/58*
U.S. Cl. 313—449 **3 Claims**



1. An electron beam device with variable electron beam energy comprising:

a sealed casing;

an electron source in said casing for shaping an electron beam;

a luminescent screen in said casing;

focusing means arranged in said casing for maintaining the optimal diameter of said beam in the plane of said screen with changes in the energy of the electrons of said beam;

an accelerating electrode for said focusing means having an input aperture for also shaping said beam; said electrode

being positioned across the path of said beam, after said electron source;

a first auxiliary electrode for said focusing means arranged across the path of said beam and located after said input aperture of said accelerating electrode and electrically coupled therewith;

a second electrode for said focusing means and axially symmetrical with said first electrode and arranged across the path of said beam after said first electrode and electrically coupled to said screen by means of a current-carrying coating on the internal surfaces of said casing;

a gap in said focusing means forming a variable focal power lens ensuring adequate compensation for the influence of changes in the energy of electrons of said beam on the diameter of said beam in the plane of said screen;

said gap being located between said first auxiliary electrode and said second electrode of said focusing means;

a third auxiliary electrode for said focusing means positioned across the path of said beam after accelerating electrode but before said gap;

there being a spacing between the end faces of said third electrode and said first electrode facing said screen;

said spacing being equal to or less than the maximum diameter of said first electrode multiplied by 1.5; and

the ratio between the minimum diameter of said first electrode and the minimum diameter of said third electrode ranging between 1.5 and 6.

4,346,329

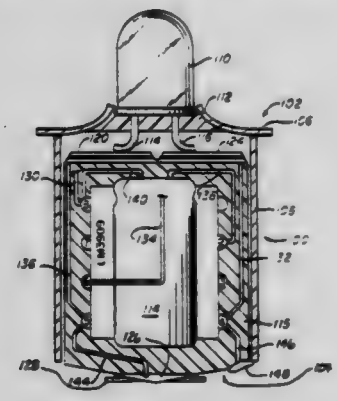
AIMING POST LIGHT

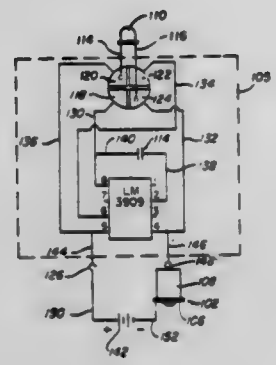
Robert C. H. Schmidt, 16001 Tonkawood Ct., Minnetonka, Minn. 55343

Division of Ser. No. 69,954, Aug. 27, 1979, Pat. No. 4,290,095. This application Sep. 26, 1980, Ser. No. 191,182

Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96;* H01K *1/62*

U.S. Cl. 315—51 **4 Claims**





1. A multi-option LED module light bulb comprising an electrically conductive cup and a rotatable insert positioned therein, an LED positioned on said cup with leads extending therein and into contact with the top of said insert,

said top of said insert being divided into a plurality of conductive segments whereby said leads contact selected segments,

said insert having an integrated circuit and capacitor embedded therein,

said circuit being connected to a center contact on the bottom of said base,

said circuit and said capacitor being connected to said segments whereby said LED is energized by those segments contacting said LED leads, and

means for rotating said insert to select segments for contact with said leads.

4,346,330

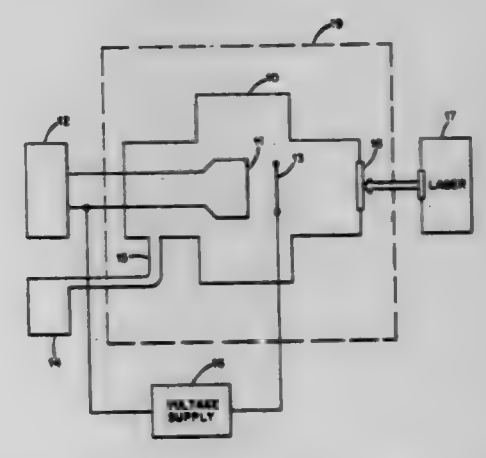
LASER GENERATED HIGH ELECTRON DENSITY SOURCE

Chunghsin Lee, Reading, and Peter E. Oettinger, Acton, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Apr. 14, 1980, Ser. No. 140,390

Int. Cl.³ H01J *45/00*

U.S. Cl. 315—150 **16 Claims**



1. Apparatus for thermionically generating high current pulses of electrons comprising:

a metallic target having a surface coated with adsorbed cesium atoms; and

laser means for directing a pulse of laser energy onto said target to heat a portion of the surface of said target, said pulse having a duration short compared with the residence time of said cesium atoms on said portion of the surface and having a power level sufficient to heat said portion of the surface to an electron emitting temperature below the melting point of said metallic target to cause thermionic emission of a high current pulse of electrons.

4,346,331

FEEDBACK CONTROL SYSTEM FOR APPLYING AC POWER TO BALLASTED LAMPS

Henri H. Hoge, Baltimore, Md., assignor to Enertron, Inc., Baltimore, Md.

Filed May 27, 1980, Ser. No. 153,528

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—158 **7 Claims**

1. A lighting feedback control system for applying an AC power signal from an AC power source to at least one lamp, comprising:

phase switching means connected in series with said lamp and said AC power source for switching power across said lamp, said phase switching means comprising a control terminal for switching said phase switching means to a low impedance state upon application of a phase control signal thereto;

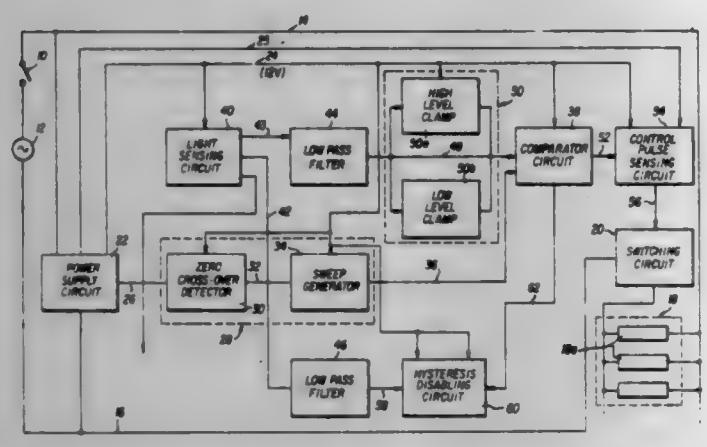
line switching means for enabling the application of AC power to said lamp through said phase switching means;

light sensing means for generating a light control signal indicative of an amount of light present in a predetermined location;

phase angle conduction control means having an input coupled to said light control signal for generating and apply-

ing said phase control signal to said control terminal of said phase switching means, said phase angle control means controlling the phase angle conduction time of said phase switching means based on the amount of light measured by said light sensing means to maintain a constant level of lighting, said phase angle control means comprising,

filter means for increasing the phase angle conduction time of said phase switching means from a predetermined minimum value to a steady state phase angle conduction time based on said light control signal after power enabling by said line switching means;



wherein said phase angle conduction control means comprises output disabling means coupled to said light sensing means for disabling the switching of said phase switching means when said light control signal has a first level indicative of a first predetermined amount of light, comprising

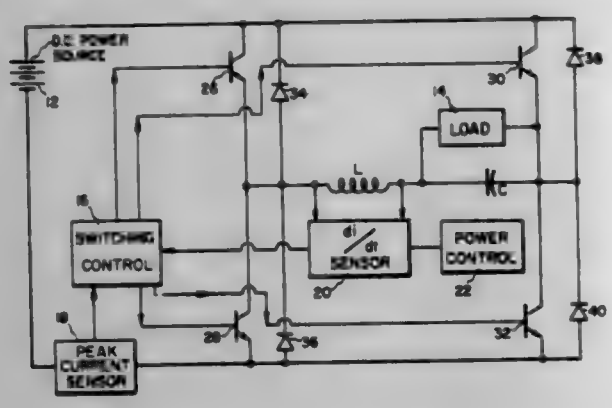
hysteresis circuit means for maintaining disabled the switching of said phase switching means after said light control signal has said first level until said light control signal has a second level indicative of a second predetermined amount of light.

4,346,332

FREQUENCY SHIFT INVERTER FOR VARIABLE POWER CONTROL

John P. Walden, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 14, 1980, Ser. No. 177,942
Int. Cl.[3] H05B *41/29, 41/392*
U.S. Cl. 315—307 39 Claims



1. A circuit for starting and varying the output of a gas discharge lamp comprising:

a variable frequency power source having an output;

a resonant matching network connected to the power source output, the matching network operative to transfer power from the source to the output of the network when the network output is loaded by a gas discharge lamp; and

control circuit means connected to said power source for controlling the frequency of the power source, including:

(i) a first sensing circuit operative to sense a signal representing a time derivative of a current flow in the matching network and produce an indication signal at an output of said circuit, the indication signal being zero whenever the time derivative is below a set threshold value of said first sensing circuit, and wherein the indication signal operates to control the frequency of said power source; and

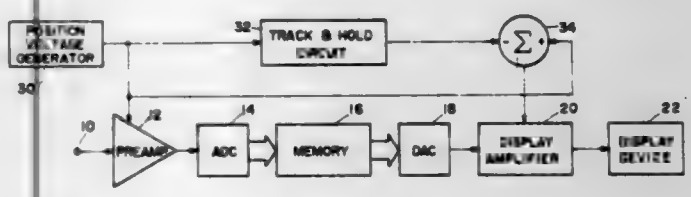
(ii) a variable threshold adjustment means coupled to said first sensing circuit for adjusting the setting of said threshold value and thereby varying said output of the lamp.

4,346,333

POSITION CONTROL CIRCUIT FOR A DIGITAL OSCILLOSCOPE

Thomas P. Dagostino, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 29, 1979, Ser. No. 76,532
Int. Cl.[3] G01R *13/20;* G06F *3/147;* H01J *29/70*
U.S. Cl. 315—367 5 Claims



1. A position control circuit for a digital oscilloscope having a vertical deflection system including an input preamplifier operable in an acquisition mode and a display amplifier operable in a display mode, comprising:

means for generating a variably adjustable position voltage in both said acquisition and display modes, said position voltage being coupled to said preamplifier;

means for tracking said position voltage in said acquisition mode to develop a reference voltage which is equal in amplitude to said position voltage, and for holding said reference voltage at a fixed value in said display mode; and

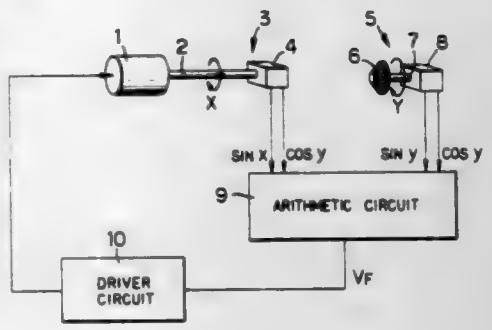
summation means for subtracting said reference voltage from said position voltage to thereby provide an algebraic summation voltage, said summation voltage being coupled to said display amplifier.

4,346,334

DC SERVOMOTOR SYSTEM

Toyokazu Inoue, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 20, 1981, Ser. No. 284,803
Claims priority, application Japan, Jul. 23, 1980, 55-100823; Jul. 24, 1980, 55-101709
Int. Cl.[3] G05B *1/06*
U.S. Cl. 318—45 6 Claims



1. A DC servomotor system comprising:

(a) a direct current motor;

(b) first signal generating means for producing, in response to rotary movement of said direct current motor, a first sine-wave signal A·SIN x and a first cosine-wave signal B·COS x, where x is an angle of rotation of said direct current motor, and A and B are constants;

(c) second signal generating means for producing a second

sine-wave signal C·SIN y and a second cosine-wave signal D·COS y, where y is a variable and C and D are constants;

(d) arithmetic means for processing said first sine- and cosine-wave signals A·SIN x and B·COS x and said second sine- and cosine-wave signals C·SIN y and D·COS y to produce a sine-wave signal E·SIN (y−x), where E is a constant; and

(e) means for amplifying said sine-wave signal E·SIN (y−x) and providing a thus amplified sine-wave signal E·SIN (y−x) to said direct current motor,

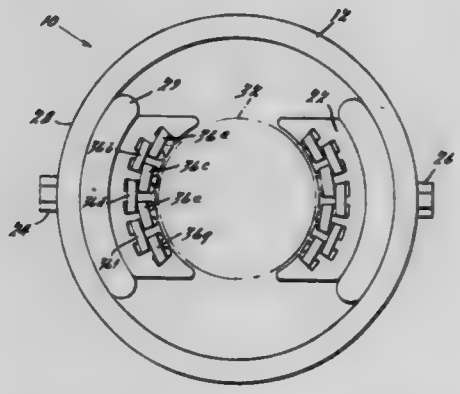
whereby said direct current motor is rotated in accordance with the signals produced from said second signal generating means.

4,346,335

SPEED CONTROL OF A D.C. ELECTRIC MOTOR

Stirling A. McInnis, 661 Kenyon St., Troy, Mich. 48084

Filed Apr. 7, 1981, Ser. No. 251,865
Int. Cl.³ H02P 7/10
U.S. Cl. 318—351 30 Claims



1. A stator assembly for a D.C. electric motor, comprising:

a yoke member;

at least one pair of opposing field pole members, each having a shank portion mounted to said yoke member, a face portion defined by a plurality of field pole leg members extending radially inwardly to form a bore for receiving an armature, and a core portion interposed radially between said shank portion and said face portion for providing a magnetic path between said shank portion and said face portion;

a field coil wound around said shank portion of each of said field pole members; and

a plurality of separately excitable field control coils wound individually around said field pole leg members of each of said field pole members.

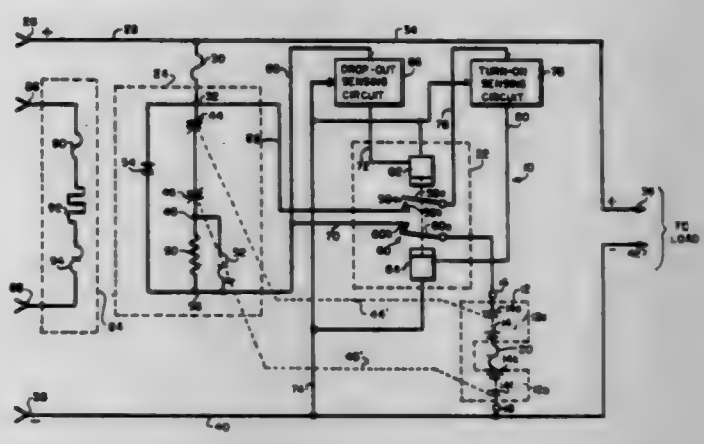
4,346,336

BATTERY CONTROL SYSTEM

James J. Crawford, Ringwood, N.J., assignor to Frezzolini Electronics, Inc., Hawthorne, N.J.

Filed Nov. 17, 1980, Ser. No. 207,647
Int. Cl.³ H02J 7/10
U.S. Cl. 320—9 8 Claims

1. A recharge control system for a rechargeable power source comprising first and second input terminals each adapted for connection to a source of charging power, first circuit means for feeding power from said first input terminal to a first terminal of the rechargeable power source, second circuit means for feeding power from said second input terminal to a second terminal of the rechargeable power source, switch means for sending at least one condition of said rechargeable power source and for interrupting said first circuit means for feeding power in response thereto, third circuit means for feeding power from said rechargeable power source to said first input terminal, said third means including means for bypassing at least a portion of said switch means for interrupting said first circuit means for feeding power; said switch means including a pressure switch connected with said rechargeable power source and having contacts in series with said first circuit means, said switch means being responsive to said pressure exceeding a predetermined value to open said contacts; said means for bypassing including a power diode bypassing said switch contacts for power fed from said rechargeable power source to at least one of said input terminals; and a thermostat having contacts in series with said first circuit means for feeding power, said thermostat being operative to



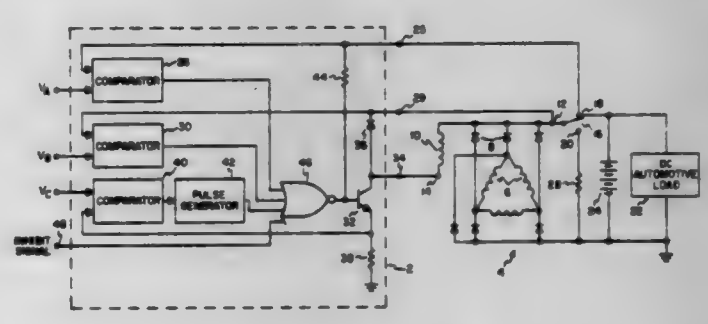
close said contacts above a predetermined temperature and to open said contacts below said predetermined temperature, and a resistor in parallel with said thermostat contacts, whereby said resistor is placed in series with said first circuit means for feeding power below said predetermined temperature, and said means for bypassing is effective for bypassing said thermostat contacts and said resistor for feeding power from said rechargeable power source to said first input terminal.

4,346,337

VOLTAGE REGULATOR CIRCUIT WITH MULTIPLE CONTROL FUNCTIONS

Donald L. Watrous, Liverpool, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 9, 1979, Ser. No. 83,179
Int. Cl.³ H02P 9/30
U.S. Cl. 322—25 5 Claims



1. A voltage regulator circuit for providing regulation of an electric alternator, said alternator having an output terminal for supplying energy to a load circuit and having a field winding terminal, said regulator circuit comprising:

a control device coupled to said field winding terminal for controlling the field current of said alternator;

first means responsive to the voltage across said load circuit for causing application of a first control signal to said current control device for regulating said alternator voltage at said output terminal to within a predetermined voltage level;

second means responsive to said field current for causing application of a second control signal to said current control device for limiting the field current to a predetermined current level giving rise to an alternating voltage at said output terminal of a level that is less than said predetermined voltage level whereby said first means is enabled in one operation of said regulator circuit as a function of load voltage and said second means is enabled in a further

operation of said regulator circuit as a function of field current;

said second means including sensing means for generating a first sensing signal that is proportional to said field current, and comparison means for comparing a field current reference signal with said sensing signal so as to supply said second control signal when said sensing signal exceeds said reference signal; and

an OR network coupling the output of each of said first and second means to said current control device such that said first and second control signals can reach said current control device,

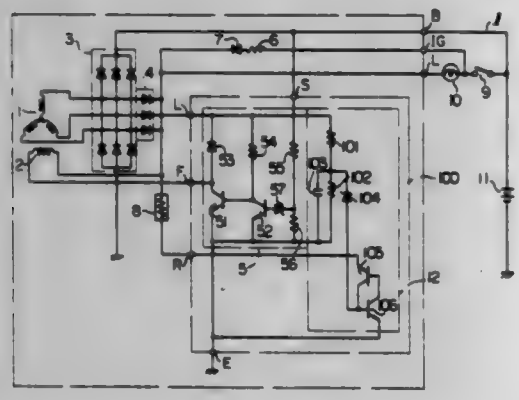
said comparison means including a pulse generating network whose output is employed to supply said second control signal to the input of said current control device, and a comparator network the output of which is coupled to said pulse generating network, said comparator network providing an enabling output for triggering said pulse generating network upon said sensing signal exceeding said reference signal and supplying said second control signal as a pulsed signal.

4,346,338

BATTERY CHARGING CONTROL SYSTEM FOR VEHICLES

Takeshi Nakamoto, Ohbu; Katsutaro Iwaki, Chiryu; Katsuya Muto, Kariya; Katsumi Itoh, Ohbu, and Yoshio Akita, Ichinomiya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 26, 1980, Ser. No. 191,816
Claims priority, application Japan, Sep. 28, 1979, 54/126220
Int. Cl.³ H02J 7/14
U.S. Cl. 322—28 **4 Claims**



1. A charging control system for vehicles comprising:

an AC generator having a field coil and an armature coil installed in a vehicle;

a main rectifier for rectifying an output of said AC generator;

an auxiliary rectifier for rectifying an output of said AC generator;

a battery connected to an output terminal of said main rectifier through a charging line and to an output terminal of said auxiliary rectifier through both a key switch and a parallel circuit including indicator means and an initial excitation resistor;

a voltage regulator for energizing said field coil of said generator so as to control the generation of power by said generator;

an energization resistor connected to the output terminal of said auxiliary rectifier; and

an energization control circuit disposed such that an energization path is established between the output terminal of said auxiliary rectifier and a ground through said energization resistor only when the generated voltage of said generator is within a predetermined range, said energization control circuit including:

a voltage detecting circuit for receiving a voltage generated at the output terminal of said auxiliary rectifier and for detecting that said input voltage has reached a first predetermined value;

delay means for delaying the voltage to said voltage detecting circuit; and

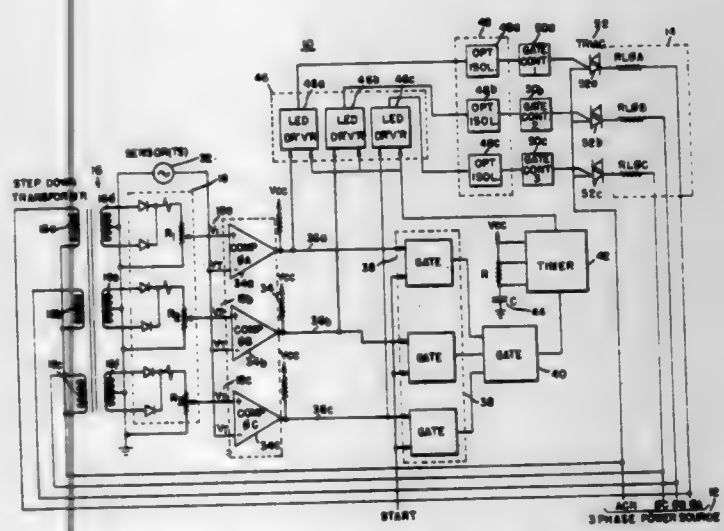
a hold circuit responsive to a detection signal from said voltage detecting circuit for performing a self-holding operation and for establishing an energization path through said energization resistor.

4,346,339

APPARATUS FOR AUTOMATIC REGULATION OF AC POWER

Walter S. Lewandowski, Collegeville, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,936
Int. Cl.³ G05F 1/455
U.S. Cl. 323—245 **2 Claims**



1. A closed loop phase control system for controlling an amount of power delivered to a load on a multi-phase power line comprising:

a multi-phase power source means connected to said load by a plurality of power lines for providing an AC current flow through said load, each of said power lines associated with a different phase line voltage;

reference voltage means connected to said plurality of power lines for sensing and rectifying each of said different phase AC line voltages whereby a cyclic rectified reference voltage is generated from each of said different phase AC line voltages;

parameter sensing means for sensing the value of a predetermined parameter of said load that is sensitive to said current flow and developing a sensor voltage signal indicative of said value;

comparator means connected to said reference voltage means for comparing each of the reference voltages associated with one of said power lines with said sensor voltage signal and developing a trigger signal when one of said reference signals is greater than or substantially equal to said sensor voltage signal;

first circuitry means for generating a switching pulse of a predetermined pulse width in response to each of said trigger signals from said comparator means and for transmitting said pulse along one of a plurality of gating lines corresponding to one of said plurality of power lines, said first circuitry means further comprising: a single switching pulse generating circuit coupled to said comparator means; and selection circuit means coupled to said comparator means and to said single switching pulse generating circuit for automatically selecting one of said plurality of gating lines corresponding to one of said plurality of power lines associated with said trigger signal along which selected gating line said switching pulse is transmitted; and

a plurality of triac means connected to said load correspond-

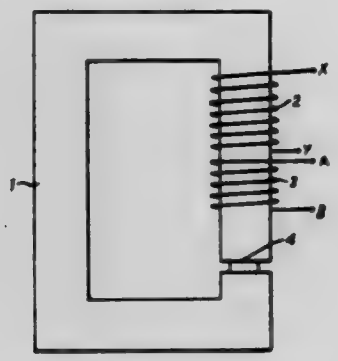
ing to said plurality of power lines and connected to said plurality of gating lines such that one triac means is connected at only one gating line, each of said triac means for conducting said AC current flow through said load in response to said switching pulse until said AC current flow associated with a corresponding voltage line passes through zero.

4,346,340

METHOD AND MEANS FOR CONTROLLING THE FLUX DENSITY IN THE CORE OF AN INDUCTOR

Francis C. Hackett-Jones, "Seymour", Wouldham, Kent, England

Filed Apr. 30, 1980, Ser. No. 145,264
Int. Cl.[3] G05F 5/00
U.S. Cl. 323—249 8 Claims



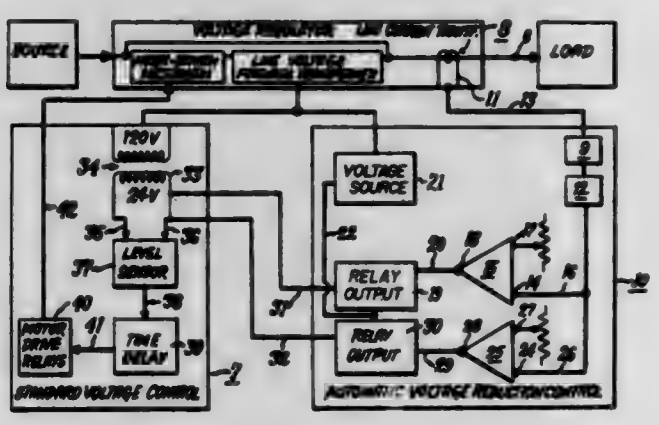
1. A method of controlling the flux density within the core of an inductor which has applied to a winding thereof a first A.C. component of current and a second component of current which is D.C. or A.C. of a lower frequency than the first, comprising the steps of detecting the said second component of current and applying to a control winding of the inductor a control current in order to produce in the said core a magnetic flux tending to balance the magnetic flux generated by said second component of current, whereby saturation of the core of said inductor occurs at a greater amplitude of said first A.C. component of current than would be the case in the absence of said control current.

4,346,341

METHOD AND APPARATUS FOR AUTOMATIC VOLTAGE REDUCTION CONTROL

Richard D. Blackburn, and Donald A. Duclos, both of Pittsfield, Mass., assignors to General Electric Company

Filed Mar. 2, 1981, Ser. No. 239,696
Int. Cl.[3] G05F 1/14
U.S. Cl. 323—257 2 Claims



1. A voltage reduction control circuit for utilization in conjunction with a conventional voltage regulator normally operating to regulate the line voltage in a power distribution circuit, wherein said voltage regulator includes a potential transformer having a primary connected with the distribution circuit and a secondary in which is developed a voltage signal indicative of the line voltage, and a motor-driven mechanism operating to effect incremental reductions in the line voltage in response to increases in said control voltage and incremental increases in the line voltage in response to decreases in said control voltage, said voltage reduction control circuit including, in combination:

a current transformer linked with the distribution circuit for developing a first signal indicative of the load current flowing therein;

means for monitoring said first signal with respect to a reference signal indicative of a predetermined peak load current level, said monitoring means generating an output signal when said first signal exceeds said reference signal;

a voltage source; and

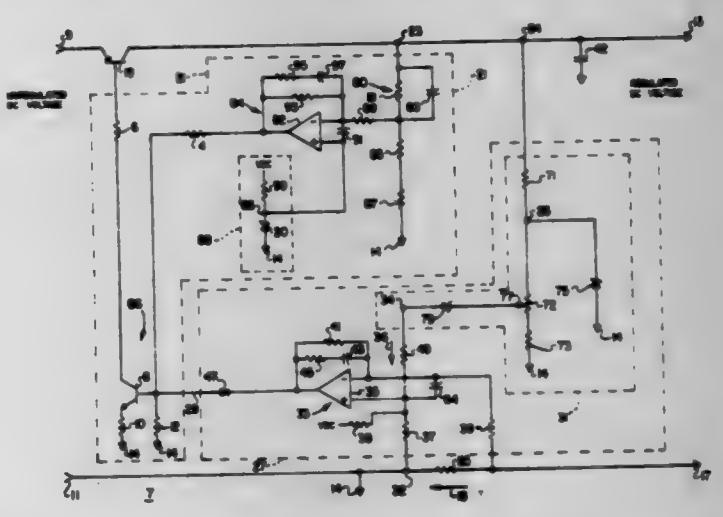
switching means connected in circuit between said voltage source and the potential transformer secondary of the voltage regulator, said switching means operating in response to said output signal to connect said voltage source in circuit with the potential transformer secondary and thus effect a step voltage increase in said voltage signal, whereby the motor-driven mechanism responds as though to a high line voltage condition by effecting a reduction in the line voltage to thereby decrease the load current to a level below said predetermined peak load current level.

4,346,342

CURRENT LIMITING VOLTAGE REGULATOR

James A. Carollo, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 9, 1981, Ser. No. 271,768
Int. Cl.[3] G05F 1/44
U.S. Cl. 323—276 7 Claims



1. A current limiting voltage regulator for a DC power supply that provides an output DC voltage comprising:

a current sensor means for sensing the current provided by the DC power supply to obtain a sensed current signal;

a threshold generator means for generating a dynamic current threshold reference signal;

a detector means for detecting when the sensed current signals exceed the dynamic current threshold reference signal and if detected to provide a voltage override signal according to a preselected function;

voltage control means for controlling the output DC voltage and in response to the voltage override signal adjusts the output DC voltage to limit the current flow from the DC power supply; and

the first threshold generator means includes; a first threshold generator means for generating a first preselected threshold that is a first stage of the dynamic current threshold reference signal and when exceeded by the sensed current signal will cause the detector means to provide the voltage override signal of a first magnitude that will cause the voltage control circuit to reduce the DC output voltage to a first preselected output voltage, and a second threshold generator means for generating a second preselected

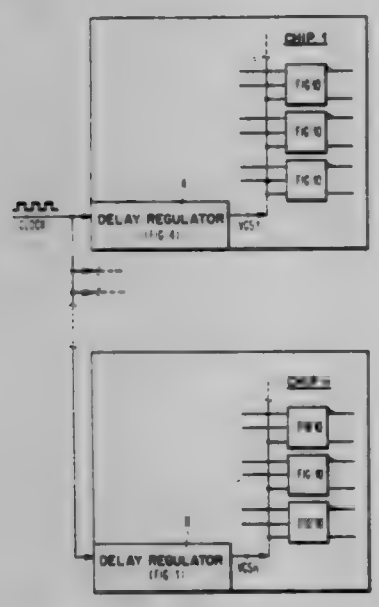
threshold that is a second stage of the dynamic threshold reference signal and when exceeded by the sensed current signal at the first preselected output voltage will cause the detector means to provide the voltage override signal of a second magnitude that will cause the voltage control circuit to reduce the DC output voltage to a second preselected output voltage, and a third threshold generator means for generating a third preselected threshold that is a third stage of the dynamic threshold reference signal and when exceeded by the sensed current signal at the second preselected voltage will cause the detector means to provide the voltage override signal of a third magnitude that will cause the voltage control circuit to reduce the DC output voltage to a third preselected voltage.

4,346,343

POWER CONTROL MEANS FOR ELIMINATING CIRCUIT TO CIRCUIT DELAY DIFFERENCES AND PROVIDING A DESIRED CIRCUIT DELAY

Erich Berndlmaier; Jack A. Dorler, both of Wappingers Falls; Joseph M. Mosley, Hopewell Junction, and Stephen D. Weitzel, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1980, Ser. No. 150,762
Int. Cl.³ G05F *1/46*
U.S. Cl. 323—282 **27 Claims**



1. In an electronic system including one or more interconnected integrated circuit chips, each of said one or more integrated circuit chips having a plurality of interconnected logic circuits thereon, each of said logic circuits having a gate delay versus power curve, said system being characterized by the inclusion of power control means for regulating the power to each of said one or more chips whereby the power provided to said logic circuits on said one or more integrated circuit chips may vary chip to chip but said gate delay of said logic circuits on each of said one or more integrated circuit chips will be essentially equal one to another.

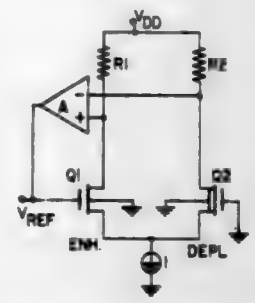
4,346,344

STABLE FIELD EFFECT TRANSISTOR VOLTAGE REFERENCE

Robert A. Blauschild, Los Altos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Feb. 8, 1979, Ser. No. 10,195
Int. Cl.³ G05F *3/08*
U.S. Cl. 323—313 **5 Claims**

1. A stable voltage reference comprising an enhancement field effect transistor, a depletion field effect transistor, a separate means connected in series with the drain-source terminals of each of said field effect transistors for limiting the flow of current therethrough, a differential amplifier provided with a first input connected between the enhancement field effect transistor and the current limiting means connected thereto and provided with a second input connected between the depletion field effect transistor and the current limiting means connected thereto, means connecting the gate of one of said field effect transistors to a reference potential, and means connecting the output of said differential amplifier to the gate



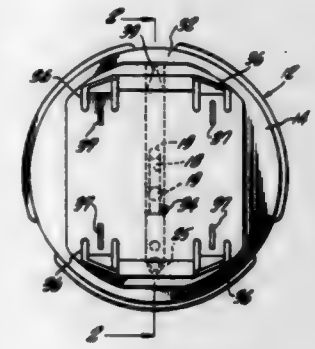
of the other of said field effect transistors, said depletion field effect transistor being provided with a depletion implant sufficient to generate a difference in gate-source voltages between said field effect transistors under identical drain-source current conditions, and the geometric ratios of the width of the channels and the length of the gates of said field effect transistors being sufficient to substantially eliminate temperature drift.

4,346,345

THEFT RESISTING DEVICE

Ronald C. Welz, Cerritos, Calif., assignor to Southern California Edison Company, Rosemead, Calif.

Filed Apr. 25, 1980, Ser. No. 143,741
Int. Cl.³ G01R *11/24*; H01R *13/00*
U.S. Cl. 324—110 **13 Claims**

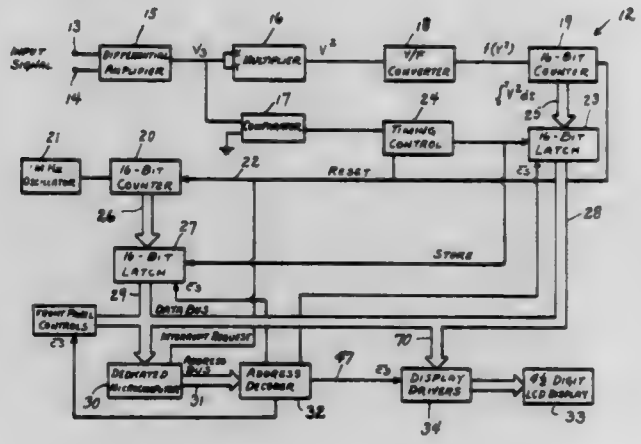


1. A device for metering electricity comprising:
(a) a socket having a plurality of electric terminals;
(b) an electric meter having a plurality of projecting blades, the meter being located within the socket with each blade in a respective terminal, the meter comprising a housing that includes a side wall, the side wall having an opening therethrough;
(c) a slide mounted within the housing, the slide having a first retracted position and a second protruding position, the slide being maintained in the first retracted position completely within the housing, wherein the slide moves to the second protruding position when the meter is removed from the socket, a portion of the slide in the protruding position extending through the opening in the side wall of the housing and preventing relocation of the meter in the socket; and
(d) locking means within the housing preventing the slide from moving from the protruding position to the retracted position.

4,346,346
INSTRUMENT FOR MEASURING TRUE-RMS A.C. VOLTAGE AND A.C. VOLTAGE FLUCTUATIONS

Jeffrey L. Silberberg, Rockville, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Feb. 5, 1980, Ser. No. 118,969
Int. Cl.[3] G01R *15/10, 19/02*
U.S. Cl. 324—132 16 Claims



1. A line voltage monitor comprising a pair of input terminals, analog input circuit means connected to said input terminals and including multiplier means for squaring an input signal voltage V(t) applied to said terminals, voltage-to-frequency converter means producing logic pulses at a rate proportional to the square of said signal voltage, $V^2(t)$, first counter means for integrating the pulses to derive a pulse accumulation representing the integral of said squared signal voltage, over n cycles

$$\int_0^{nT} V^2(t)\,dt,$$

where n is an integer equal to or greater than 1, second counter means for determining the cycle period T of the input signal, computer means to divide said pulse accumulation by n times said cycle period to derive the RMS value

$$\left[\frac{1}{nT}\int_0^{nT} V^2(t)dt\right]^{\frac{1}{2}}$$

of said input signal voltage, V(t) and means to display said derived RMS value; whereby by making n equal to 1, said derived RMS value is based on each individual cycle of said input signal voltage.

4,346,347
DIODE FAULTS DETECTING APPARATUS

Shohichi Kamata; Yoshinori Kimura, both of Yokohama, and Katsumi Hirai, Inagi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 26, 1979, Ser. No. 97,494
Claims priority, application Japan, Dec. 15, 1978, 53-154640; Dec. 15, 1978, 53-154648
Int. Cl.[3] G01R *31/22*
U.S. Cl. 324—158 D 2 Claims

1. Apparatus for fault testing at least two diodes without using a reference diode, comprising:

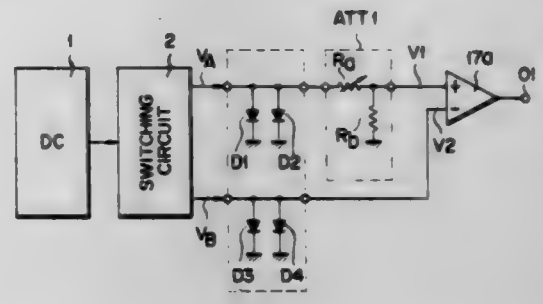
a direct current power supply;

at least first and second diodes to be fault detected, formed on the same substrate;

means for independently biasing said first and second diodes with power from said direct current power supply;

an attenuator, connected to a first polarity terminal of said first diode, to produce an attenuator output voltage having a level lower than a voltage level on said first polarity terminal of said first diode; and

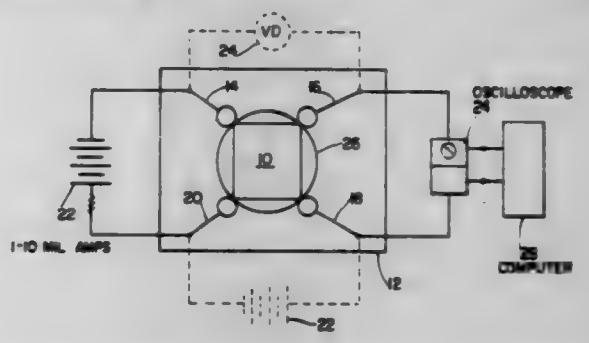
a comparator having a first input coupled to the output of said attenuator and a second input coupled to a first polarity terminal of said second diode, to produce a logic level comparison output signal indicating whether or not the attenuator output voltage is higher than that of the first polarity terminal of the second diode, thereby indicating whether one of said diodes is faulty.



4,346,348
LASER TECHNIQUE FOR ACCURATELY DETERMINING THE COMPENSATION DENSITY IN N-TYPE NARROW GAP SEMICONDUCTOR

Filbert J. Bartoli, Upper Marlboro, and Jerry R. Meyer, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1980, Ser. No. 125,427
Int. Cl.[3] G01R *31/26, 27/02*
U.S. Cl. 324—158 R 5 Claims



1. A nondestructive optical technique for determining the compensation density of narrow-gap semiconductors which comprises the steps of:

fabricating a sample of n-type, narrow-gap semiconductive material on an electrically nonconductive substrate to include electrical contacts at the corners of the semiconductor material;

cooling said semiconductor sample;

directing uniformly over the surface area of said semiconductor sample a laser pulse of such a wavelength that the photon energy is less than the band gap of the sample but greater than ½ of the band gap with a power density such that carries are generated uniformly throughout the volume of the sample;

applying a steady D.C. voltage to adjacent contacts on said sample;

measuring and recording the conductivity voltage for a given combination of electrical contacts of said sample;

repeating the above conductivity voltage measurements for each combination of electrical contacts and voltage source polarity and obtaining an average conductivity voltage curve for all data obtained;

directing a magnetic field perpendicularly to the surface area of said sample;

directing uniformly over the surface area of said semiconductor sample a laser pulse of such a wavelength that the

photon energy is less than the band gap of the sample but greater than ½ the band gap with a power density such that carriers are generated uniformly throughout the volume of said sample;

measuring and recording the Hall-voltages after peak of the laser pulse for each pair of electrical contacts with the magnetic field in each direction perpendicular to the surface area and for each polarity of said source;

obtaining an average Hall-voltage curve from all recorded Hall-voltage curves;

from the average Hall-voltage curve and average conductivity voltage curve obtained, preparing a mobility vs carrier density curve; and

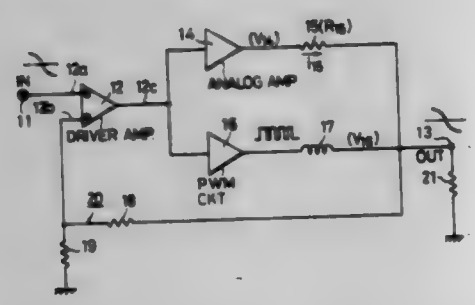
comparing the obtained mobility vs carrier density curve with a family of previously calculated curves representing different compensation densities, thereby determining the compensation density by obtaining a match, and hence designating the quality of the material of the sample.

4,346,349

MULTI-CHANNEL AUDIO POWER AMPLIFIER

Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 7, 1980, Ser. No. 147,502
Claims priority, application Japan, May 10, 1979, 54-57464
Int. Cl.³ H03F *3/38, 3/68*
U.S. Cl. 330—10 **7 Claims**



1. A power amplifier for amplifying audio frequency signals that may have frequency components within a first range of frequencies, comprising:

a driver amplifier for amplifying an input signal, the driver amplifier being operable over the entire first range of frequencies,

a high frequency analog power amplifying circuit having an input coupled to the driver amplifier for power-amplifying with a substantially flat gain components of an output signal from the driver amplifier that are within a second range of frequencies within the first range;

a low frequency pulse modulation and demodulation circuit having an input coupled to the driver amplifier for power-amplifying components of an output signal from the driver that are within a third range of frequencies within the first range, the first range including at least one frequency that is lower than any frequency in the second range, the pulse modulation and demodulation circuit comprising a pulse width modulator operating at a predetermined carrier frequency and an inductor coil acting as a low pass filter having a cut-off frequency lower than that of the carrier;

an output terminal for delivering an output signal of the power amplifier including signals from both the high frequency analog amplifier and the low frequency pulse circuit;

a resistor having an impedance higher than that of the low pass filter of the pulse modulation and demodulating circuit for frequencies in the third range coupling an output of the high frequency analog power amplifying circuit to the output terminal; and

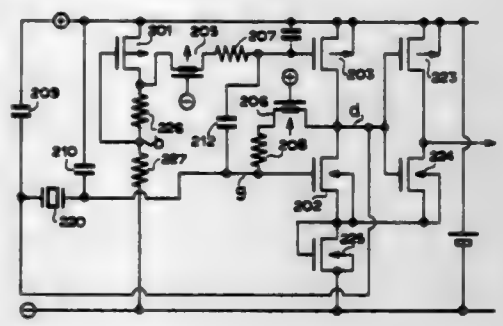
a negative feedback circuit providing a negative feedback from the output terminal to the driver amplifier.

4,346,350

FET QUARTZ OSCILLATORS

Shigeru Morokawa, and Ryoji Iwakura, both of Saitama, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1980, Ser. No. 116,615
Claims priority, application Japan, Feb. 16, 1979, 54-16981
Int. Cl.³ H03B *5/36*
U.S. Cl. 331—116 FE **8 Claims**



1. An oscillator circuit comprising

(a) a reference voltage supply source;

(b) a first high resistance element connected to the output of said reference voltage supply source;

(c) a first transistor having a first drain electrode and a control gate electrode, said control gate electrode being connected through said first high resistance element to said reference voltage supply source;

(d) a second transistor having a second control gate electrode and a second drain electrode, said second drain electrode connected to said drain electrode of said first transistor and having a conduction type different from that of said first transistor;

(e) a second high resistance element connected between said second control gate electrode and the drain electrode of said second transistor;

(f) a first condenser coupling the control gate electrodes of said first and second transistors such that said first and second transistors form an inversion amplifier circuit;

(g) a quartz resonator circuit connected between the second control gate electrode of said inversion amplifier circuit and the first drain electrode thereof; and

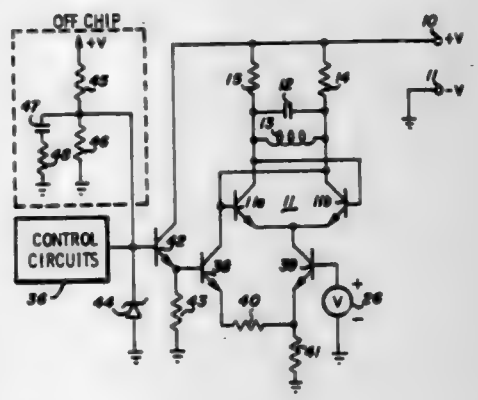
(h) an electric supply source connected between a third electrode of said first and second transistors.

4,346,351

HIGH FREQUENCY VOLTAGE-CONTROLLED OSCILLATOR

Milton E. Wilcox, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 28, 1980, Ser. No. 125,606
Int. Cl.³ H03B *5/12*
U.S. Cl. 331—117 R **8 Claims**



1. A voltage controlled oscillator circuit comprising:

differential oscillator means including a pair of differentially connected transistors, a pair of load resistors coupled between one terminal of a source of supply voltage and

the collectors of said pair of transistors, direct cross connections between the base-collector circuits of said pair of transistors and a tuned antiresonant circuit coupled between said collectors;

a current source transistor having its base returned to a constant potential, its emitter returned by means of a resistor to the other terminal of said source of supply voltage and a collector coupled to said oscillator means; and

a shunting transistor having its emitter-collector circuit coupled between one of said differential oscillator collectors and said emitter of said current source transistor, an emitter follower driver coupled to the base of said shunting transistor, and control signal means coupled to the input of said emitter follower driver whereby the curent in said oscillator means is varied, thereby varying its frequency.

4,346,352

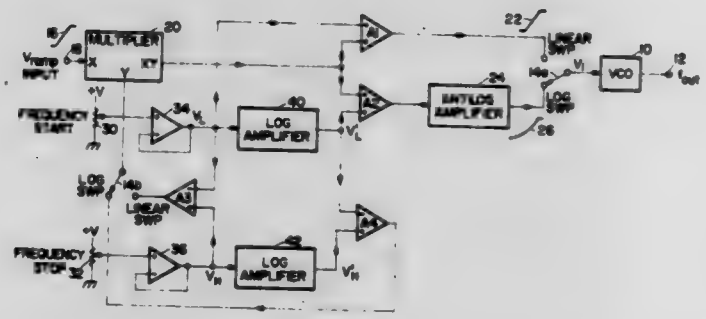
LINEAR AND LOGARITHMIC SWEEP CONTROL CIRCUITS FOR A VOLTAGE-CONTROLLED OSCILLATOR

Robert E. Baetke, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 30, 1980, Ser. No. 192,279

Int. Cl.³ H03C *23/00*

U.S. Cl. 331—178 **8 Claims**



1. A sweep control circuit for a voltage-controlled oscillator, comprising:

a linear circuit path and a non-linear circuit path driven by a common ramp voltage to provide respectively a linear sweep signal and a non-linear sweep signal which are selectively connectable to said voltage-controlled oscillator;

means for generating independent first start and stop voltages;

means for converting said first start and stop voltages to second start and stop voltages which are related to said first voltages in accordance with a non-linear function determined by said non-linear circuit path; and

means for combining said first start and stop voltages with said ramp voltage to form said linear sweep signal, and for combining said second start and stop voltages with said ramp voltage to form said non-linear sweep signal.

4,346,353

MODULATOR AND DEMODULATOR CIRCUITS FOR MODIFIED DELAY MODULATION METHOD

Werner Scholz, Gehrden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,127

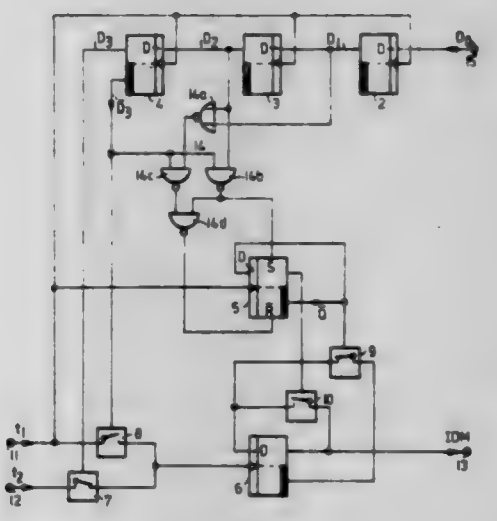
Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922082

Int. Cl.³ H03K *7/10, 9/10*

U.S. Cl. 332—9 R **12 Claims**

1. In a method for converting a binary sequence composed of a succession of bits, each having a value of "1" or "0", occurring in successive bit intervals, into a transmitted signal containing a representation of each bit, by representing a bit of one value as a change in the level of the transmitted signal at a time corresponding to the middle of the associated bit interval, and representing a bit of the other value as a change in the level of the transmitted signal at a time corresponding to the end of the associated bit interval if a further bit of the other value follows, the improvement comprising in part suppressing signal level changes associated with the bits of the other value for causing the time period between level changes in said transmitted signal to be no longer than the period of two bit intervals and for preventing the occurrence of more than two consecutive level changes at intervals equal to each bit interval and associated with the bits of the other value.

6. Demodulator for recovering a binary sequence composed of a succession of bits, each having a value of "1" or "0", occurring in successive bit intervals, from a transmitted signal containing a representation of each bit in that a bit of one value is represented as a change in the level of the transmitted signal at a time corresponding to the middle of the associated bit interval, a bit of the other value is represented as a change in the level of the transmitted signal at a time corresponding to the end of the associated bit interval if a further bit of the other value follows, transmitted signal level changes associated with bits of the other value are in part suppressed to cause the time

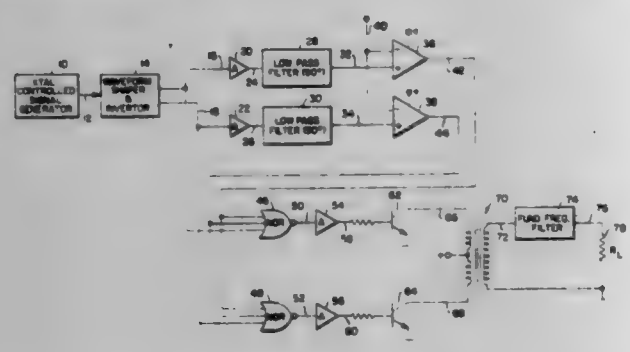


period between level changes in said transmitted signal to be no longer than the period of two bit intervals, and the occurrence of more than two consecutive level changes at intervals equal to each bit interval and associated with the bits of the other value is prevented, said demodulator comprising: pulse forming means connected for forming a pulse in response to each level change of the transmitted signal; pulse regenerating means connected to receive the pulses formed by said pulse forming means for generating a train of pulses having a repetition rate equal to twice the repetition rate of the binary sequence; switching voltage generator means connected to receive the pulses produced by said regenerating means for generating two periodic switching voltages differing from one another in phase by 180° and each having a repetition rate equal to that of the binary sequence; gating means connected to receive the pulses formed by said pulse forming means and the switching voltages for utilizing the switching voltages as gating signals and for producing signals representative of the time relation between the pulses formed by said pulse forming means and each of the switching voltages; and an identification circuit connected to receive signals produced by said gating means for producing a signal identifying the switching voltage associated in phase with at least three consecutive transmitted signal level changes at intervals equal to each bit interval.

4,346,354
AMPLITUDE MODULATOR USING VARIABLE WIDTH RECTANGULAR PULSE GENERATOR

George D. Hanna, Dallas, Tex., assignor to Continental Electronics, Inc., Dallas, Tex.

Filed Sep. 29, 1980, Ser. No. 191,898
Int. Cl.[3] H03C *1/02, 1/50*
U.S. Cl. 332—43 B 11 Claims



11. A method for impressing an information signal on a carrier signal, comprising the steps of;

producing pulses when the carrier signal amplitude is greater than the information signal amplitude;

causing said pulses to be produced at times corresponding to zero and π radians on the time continuum of the carrier signal;

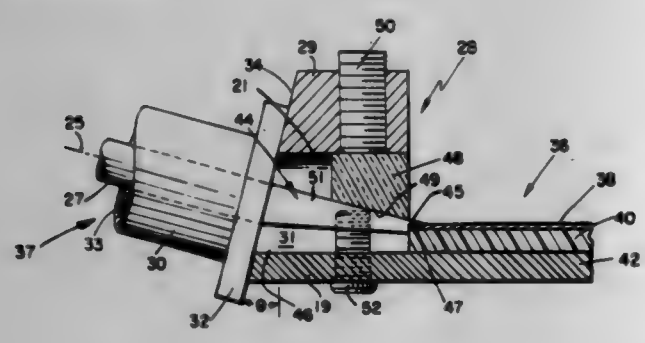
inverting every other consecutive pulse of said produced signal, and producing a resultant signal therefrom;

extracting the fundamental frequency from the resultant signal, whereby when the information signal is varied from zero to the maximum of the carrier signal, the fundamental frequency wave peaks correspond to the information signal.

4,346,355
RADIO FREQUENCY ENERGY LAUNCHER

Toshikazu Tsukii, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 17, 1980, Ser. No. 207,559
Int. Cl.[3] H01P *5/08*
U.S. Cl. 333—33 8 Claims



1. A radio frequency energy launcher for transferring such energy between a coaxial transmission line having inner and outer spaced, coaxial conductors and a microstrip transmission line having a dielectric substrate, a strip conductor disposed on a surface of the substrate and a ground plane separated from the strip conductor by the dielectric substrate comprising:

a conductive housing having a wall structure providing a passageway forming an outer conductor and a spaced inner conductor extending within said passageway to electrically interconnect said inner conductor of said coaxial transmission line and said strip conductor of said microstrip transmission line;

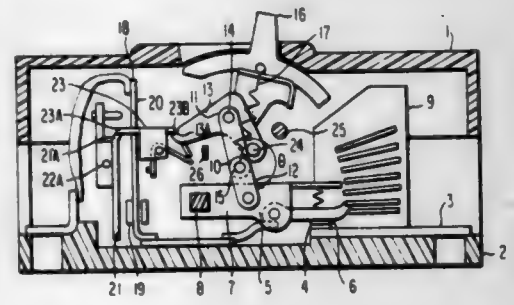
means for exerting a mounting force between the inner conductor of the coaxial transmission line and the strip conductor of the microstrip transmission line such force having a component normal to the surface of the dielectric substrate; and

wherein the launcher inner conductor is disposed at an oblique angle relative to the surface of said dielectric substrate.

4,346,356
CIRCUIT BREAKER WITH INCREASED CONTACT SEPARATION

Kohei Fujiwara, and Setsuo Hosogai, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1981, Ser. No. 233,234
Claims priority, application Japan, Feb. 19, 1980, 55-19866[U]
Int. Cl.[3] H01H *75/00, 77/00, 83/00*
U.S. Cl. 335—6 5 Claims



1. In a circuit breaker including a stationary contact (4) a movable contact assembly (5) having a movable contact arm (7) and a movable contact (6) provided thereon and separable from said stationary contact; a switch handle (16) for manually opening or closing said contacts; a toggle mechanism (10) having a first link (11), a second link (12) having one end thereof pivotally connected to one end of said first link, the other end of said second link being connected to said movable contact arm, and a spring (17) connected between said handle and the pivotal connection of said links; a trip mechanism (23) operable in response to an abnormal current flow; an L-shaped bell crank (13) having a center portion thereof connected to the other end of said first link, engaged at its one end with said trip mechanism when said contacts are closed, and rotatable around a shaft (24) at its other end by the spring induced pivoting of said toggle mechanism links to separate said contacts when the crank is disengaged from said trip mechanism; the improvements characterized by:

(a) a fixed stop member (26) disposed in a path of movement of said toggle mechanism for direct abutment thereby to limit the degree of pivoting between said first and second links, and thereby the separation distance between the contacts, during manual contact separation, and

(b) said shaft, against which the movable contact arm strikes during automatic contact separation, being disposed sufficiently far from said contact arm in its manually opened position to enable a greater separation distance between the contacts during automatic operation by said trip mechanism than during manual operation by said switch handle.

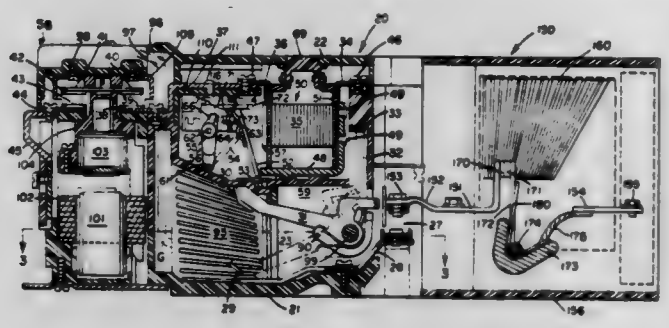
4,346,357
CURRENT-LIMITING CIRCUIT BREAKER ADAPTER

Frank W. Kussy, Randallstown; Gustave E. Heberlein, Jr., Sykesville, both of Md., and Bernard DiMarco, Bellefontaine, Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 17, 1979, Ser. No. 104,621
Int. Cl.[3] H01H *77/10*
U.S. Cl. 335—16 6 Claims

1. A current-limiting circuit breaker assembly comprising, in combination: a first circuit breaker having a first pair of contacts, a first arc interruption chamber associated with said first pair of contacts, a contact operating mechanism having a manual operating mechanism connected to said first pair of contacts and automatic trip means connected to said first pair

of contacts to open said first pair of contacts in response to a fault current, said first pair of contacts being disposed to have oppositely directed current paths of substantial length to produce a magnetic blow open force on said first pair of contacts to cause them to open independently of said contact operation mechanism, and a second circuit breaker comprising a second pair of contacts connected in series with said first pair of contacts, a second arc interruption chamber associated with



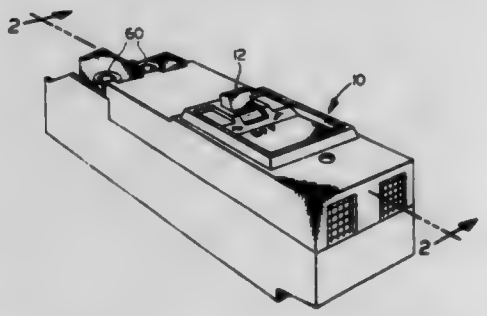
said second pair of contacts and biasing means connected to said second pair of contacts to normally close said second pair of contacts; said second pair of contacts being disposed to have oppositely directed current paths of substantial length to produce a magnetic blow open force to open said second pair of contacts against the force of said biasing means when the current through said second pair of contacts exceeds a given value; said circuit breaker assembly being contained in a common housing.

4,346,358

CONTACT POP RESPONSIVE LATCH RELEASE FOR CIRCUIT BREAKERS

Eldon B. Heft, West Hartford, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jan. 16, 1981, Ser. No. 225,496
Int. Cl.³ H01H *75/00, 75/12, 77/00*
U.S. Cl. 335—16 **6 Claims**



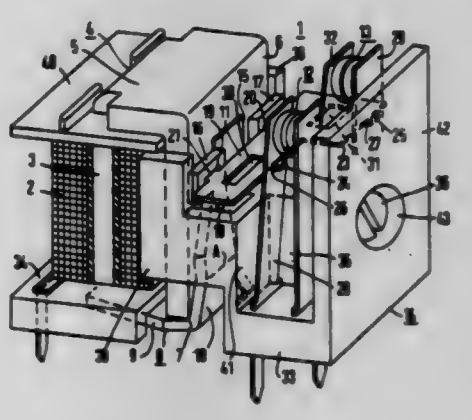
1. An improved circuit breaker of the type comprising, in combination:
at least one elongated, electrically conductive arm;
a movable contact affixed to one end of said arm;
a stationary contact;
an operating mechanism including
a one-piece, pivotally mounted trigger,
a pin pivotally mounting said arm intermediate its end, and
a spring exerting a moment in said arm about said pin
a trip mechanism including
a latch normally sustaining said trigger in a reset position to enable said operating mechanism to articulate said arm between an open position with said contacts in spaced relation and a closed position with said contacts in engaged relation, said spring moment exerting contact pressure on said engaging contacts, and
trip elements responsive to current of overcurrent proportions flowing through said engaging contacts for actuating said latch to release said trigger, whereupon said operating mechanism articulates said arm from its closed to its open position as said spring discharges;
the improvement which comprises:
a rigid extension provided at the other end of said arm, with said arm in its closed position, said extension disposing its termination in actuating relation with said latch, whereby pivotal movement of said arm about said pin in opposition to said spring moment, as motivated by the flow of high level fault currents through said contacts causes said extension to actuate said latch and release said trigger before said trip elements can react to the fault current.

4,346,359

RELAY

Paul Pirner, Altdorf, and Alois Muehling, Pleinfeld, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,718
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3002079
Int. Cl.³ H01H *45/02*
U.S. Cl. 335—202 **21 Claims**



1. A relay, comprising in combination:
an excitation coil having a core and at least one flange;
a U-shaped one-piece yoke comprising a covered yoke leg, a free yoke leg, and a bridge connecting said yoke legs with each other, said covered yoke leg serving as said core of said excitation coil;
a contact carrier unit;
a supporting bridge associated with said contact carrier unit and extending essentially perpendicularly to the axis of said excitation coil;
at least one switching contact having contact fingers, said contact fingers being positioned approximately parallel to the axis of said excitation coil and fastened with one end at said supporting bridge;
an angularly formed armature for operating said switching contact, said armature having an interacting armature leg for interacting with said core of said excitation coil, and a free armature leg not interacting with said core of said excitation coil, said interacting armature leg extending towards said core of said excitation coil, and said free armature leg extending essentially parallel to said free leg of said yoke and thereby covering a portion thereof, whereby said free armature leg is provided with a central recess, the end portion of said free armature leg thereby forming two armature operating fins;
a fastening piece associated with said supporting bridge, said fastening piece having an end face;
means for connecting said end face of said fastening piece to said free yoke leg at the location of said central recess provided between said fins in said free armature leg, thereby attaching said contact carrier unit to said yoke;
at least one supporting side arm provided on said contact carrier, said side arm extending from said contact carrier beyond said free yoke leg and supporting the inner face end of said flange of said excitation coil, whereby said flange supports with its outer face end said bridge connecting said two yoke legs;
a knife-edge bearing for supporting said armature, said knife-

edge bearing being formed by one edge of a face end of said free yoke leg; and

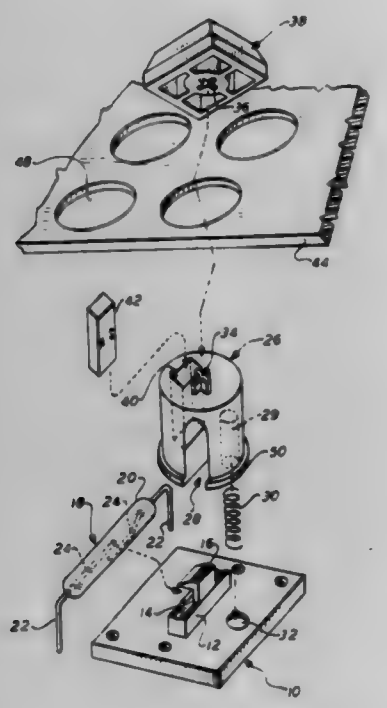
holding means for attaching said armature to said free leg of said yoke.

4,346,360

LOW PROFILE REED KEYSWITCH

Mark J. Del Tufo, Belleville, N.J., assignor to Litton Business Systems, Inc., Morris Plains, N.J.

Filed May 1, 1980, Ser. No. 145,512
Int. Cl.[3] H01H *36/00*
U.S. Cl. 335—205 7 Claims



1. A low-profile reed keyswitch comprising:

a base;

a magnetically actuated reed switch having a longitudinal body and at least a pair of leads entering said body;

fixture means fastened to said base for supporting and retaining said reed switch independent of the leads with the longitudinal body of said reed switch substantially parallel to said base and with the leads of said reed switch passing freely through said base, said fixture means having a resilient clip thereon, the body of said reed switch being retained by said fixture means and said clip;

plunger means spaced apart from said reed switch and having a vertical slot therein, said plunger means being moveable in a straight line to a first position near said base and to a second position away from said base;

a spring for biasing said plunger means toward said second position away from said base; and

permanent magnet means carried in said vertical slot of said plunger for movement with said plunger means, said permanent magnet means being moved to a position to actuate said reed switch when said plunger is moved to said first position near said base.

4,346,361

COOLING DUCT ARRANGEMENT FOR TRANSFORMER WINDINGS

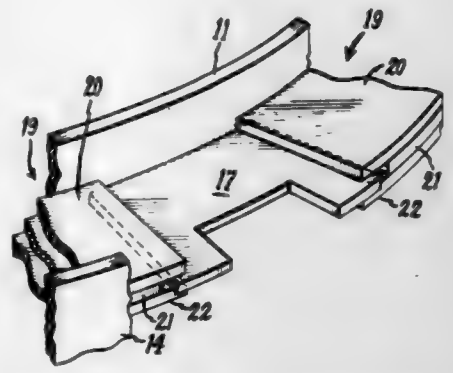
George E. Sauer, Stockbridge, Mass., assignor to General Electric Company, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,050
Int. Cl.[3] H01F *27/10*
U.S. Cl. 336—60 1 Claim

1. A cooling duct arrangement for a transformer disk winding comprising, in combination:

a pair of inner and outer electrically insulating cylinders situated in a transformer tank containing dielectric oil for cooling and insulating a transformer disk winding arranged about a magnetic core and located between said inner and outer cylinders;

a plurality of inner and outer oil blocks alternatingly, radially disposed between disk winding sections, the outer edges of said outer oil blocks contacting the surface of said outer cylinder and the inner edges thereof terminating short of said inner cylinder, and the inner edges of said inner oil blocks contacting the surface of said inner cylinder, the outer edge of each said inner oil block having a slot, whereby said inner and outer oil blocks cooperate in promoting labywrinth flow of dielectric oil through the disk winding sections;



and

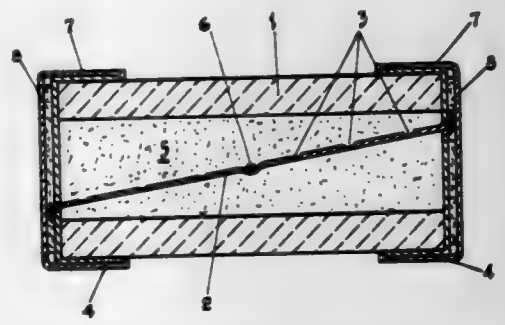
a pair of spacers associated with each said inner oil block, each said spacer pair contacting the surface of said inner cylinder and providing opposed, radially extending grooves for slidably receiving the lateral edges of its associated inner oil block, thereby accommodating positional adjustment of said inner oil blocks accasioned by shrinkage of said inner cylinder during a transformer drying process and thus avoid distrubance of the contacting relationship between said inner oil blocks and said inner cylinder.

4,346,362

ELECTRIC FUSES WITH REGIONS OF REDUCED CROSS-SECTIONAL AREA

John Feenan, and Ronald V. Wafer, both of Liverpool, England, assignors to The English Electric Company Limited, London, England

Filed Sep. 29, 1980, Ser. No. 192,014
Claims priority, application United Kingdom, Oct. 10, 1979, 7935213
Int. Cl.[3] H01H *85/02*
U.S. Cl. 337—248 5 Claims



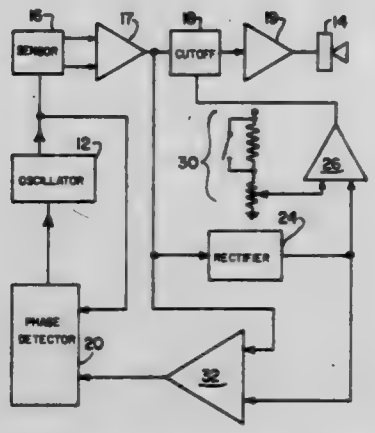
1. An electric fuse incorporating a tubular body of insulating material, metal end caps on the respective ends of the tubular body and an elongate fuse element having regions of reduced cross-sectional area and extending through the tubular body in electrical series between the metal end caps, wherein the fuse also incorporates within each end cap a respective gasket of an absorbent material impregnated with an arc-inhibiting substance.

4,346,363

ELECTRONIC CIRCUIT FOR SENSING DEVIATIONS IN PHYSICAL FORCES THEREON

Jack Wilhelmson, 244 Colony Ct., Bloomingdale, Ill. 60108

Filed Dec. 22, 1978, Ser. No. 972,297
Int. Cl.³ G08B 3/00
U.S. Cl. 340—27 R 5 Claims



1. An electronic sensor circuit for sensing deviations in direction and magnitude of physical forces thereon comprising:

input means for generating electrical input signals of selected predetermined frequencies;

frequency selecting means electrically coupled to said input means for sensing a deviation in physical forces and selecting in response thereto a predetermined frequency corresponding to the direction of the deviation; and

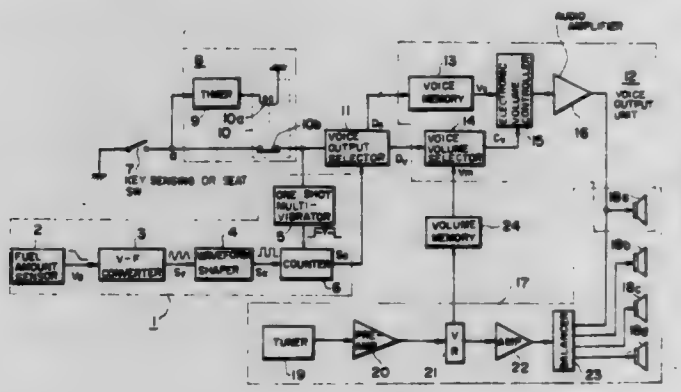
amplitude control means electrically coupled to said frequency selecting means for receiving said selected frequencies and providing an amplitude controlled output of said selected frequencies corresponding to the magnitude of the deviation of the physical forces.

4,346,364

VOICE WARNING SYSTEM FOR AN AUTOMOTIVE VEHICLE WITH READY-TO-DRIVE SENSOR

Kazumasa Takagi, Yokohama, and Masakazu Tsunoda, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 28, 1980, Ser. No. 182,239
Claims priority, application Japan, Aug. 31, 1979, 54-110251
Int. Cl.³ B60Q 5/00; G08B 21/00
U.S. Cl. 340—52 D 14 Claims



1. A voice warning system for an automotive vehicle, which comprises:

(a) fuel amount sensing means for detecting the amount of remaining fuel;

(b) ready-to-drive sensing means for detecting that the driver is ready to drive;

(c) a voice output selector for selectively outputting a voice output designation signal in accordance with a signal from said fuel amount sensing means whenever the signal from said ready-to-drive sensing menas is input thereto;

(d) a voice memory for storing necessary voice outputs and for outputting a series of voice signals V_s in accordance with the voice output designation signal D_s from said voice output selector,

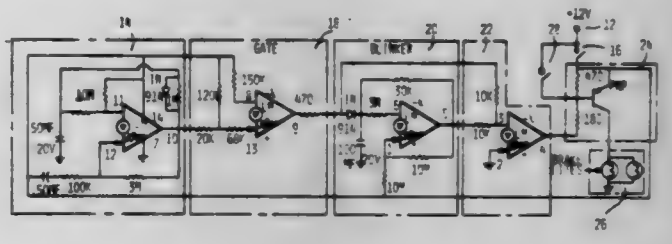
whereby the amount of remaining fuel is informed to the driver in voice form whenever the driver is ready to drive.

4,346,365

STOPPED VEHICLE WARNING DEVICE

Charles E. Ingram, 2906 Orchard Ct., Highland, Mich. 48031

Filed Sep. 17, 1979, Ser. No. 75,894
Int. Cl.³ B60Q 1/44
U.S. Cl. 340—72 10 Claims



1. A stopped vehicle indicating device for use with a brake light on a vehicle which is lighted when the vehicle brakes are applied comprising:

timing means, responsive to the application of said vehicle brakes, for providing a time delayed output signal, said output signal being generated after a predetermined time delay after said vehicle brakes are applied and remaining present as long as said vehicle brakes are applied; and

flasher means, responsive to the presence of said output signal of said timing means, for flashing said brake light on and off, as long as said output signal is present;

said flasher means and said timing means being reset when said brakes are released.

4,346,366

SYSTEM FOR GENERATING AND MODIFYING DESIGNS FOR AUTOMATIC KNITTING MACHINERY AND THE LIKE

Toshihiro Kajiura, Osaka; Chiaki Masaki, Settsu, and Masahiro Mori, Osaka, all of Japan, assignors to Kanebo Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 916,469, Jun. 19, 1978, abandoned, which is a continuation of Ser. No. 565,119, Apr. 4, 1975, abandoned. This application Feb. 21, 1980, Ser. No. 123,461
Claims priority, application Japan, Apr. 9, 1974, 49-39446
Int. Cl.³ G06F 15/46
U.S. Cl. 340—146.3 R 7 Claims

1. A pattern generating and modifying system for producing signals representative of patterns to be knitted, comprising:

(a) input means adapted to be operated by a designer-operator,

(b) a programmable digital processing and controlling unit connected to said input means, said unit including

(i) means for producing signals representative of predetermined design motifs of said patterns,

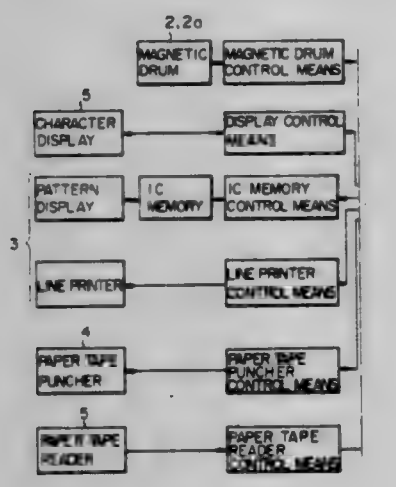
(ii) means for modifying said signals thereby to alter the dimensions, position, color and selected other characteristics of said motifs or patterns, and

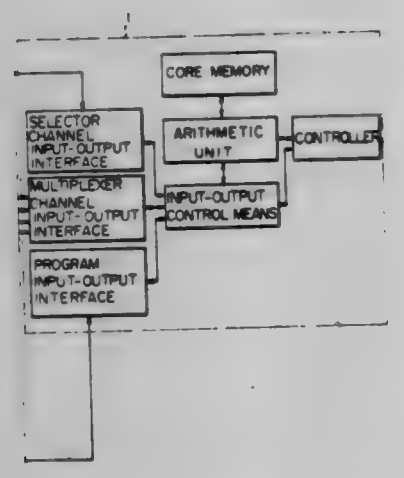
(iii) means for applying said signals or modified signals to output terminals,

(c) memory means associated with said processing unit which include a main canvas data storage area and sub-canvas data storage area,

(d) monitor means coupled to one of said output terminals for visually displaying the contents of said main and sub-canvas areas including said motifs or patterns which have been generated in response to said signals or modified signals,

said processing and controlling unit also including means to transfer data signals between said main and sub-canvas storage areas, means to control said monitor means, means





to control the application of said signals or modified signals to predetermined ones of said output terminals, and means to cooperate in controlling said input means.

4,346,367

CIRCUIT FOR CONVERTING BINARY DIGITAL SIGNALS INTO PSEUDOTERNARY A.C. PULSES

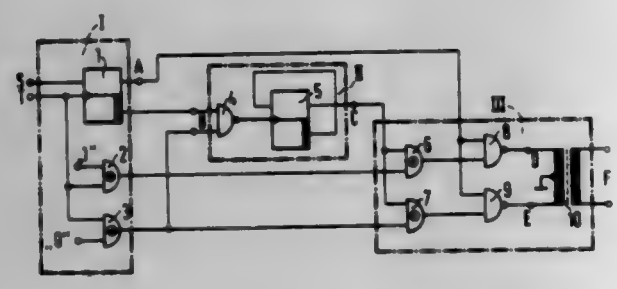
Walter Leinweber, Nuremberg, Fed. Rep. of Germany, assignor to TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 92,945

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850129

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **4 Claims**



1. A circuit arrangement for converting a binary pulse train into a pseudoternary A.C. pulse train comprising in combination, first and second clocked flip-flips, each having a clock signal input, a first-state input, a first-state output, and a second-state output, first, second, third and fourth EXCLUSIVE-OR-gates each having an output and first and second inputs, first, second and third NAND-gates each having an output and first and second inputs, the first-state input of the first flip-flop being connected to receive the binary pulse train, the first inputs of the first and second EXCLUSIVE-OR-gates being connected to receive the same clock pulse train as the clock signal input of the first flip-flip, means constantly applying a "1" signal to the second input of the first EXCLUSIVE-OR-gate and constantly applying a "0" signal to the second input of the second EXCLUSIVE-OR-gate, the first NAND-gate having its first input connected to the second-state output of the first flip-flop and its second input to the output of the second EXCLUSIVE-OR-gate, the output of the first NAND-gate being connected to the clock signal input of the second flip-flop, the second-state output of the second flip-flop being connected to the first-state input of the same, the first-state output of the second flip-flop being connected to the first inputs of the third and fourth EXCLUSIVE-OR-gates, the second inputs of the third and fourth EXCLUSIVE-OR-gates being respectively connected to the output of the first EXCLUSIVE-OR-gate and of the second EXCLUSIVE-OR-gate, the first inputs of the second and third NAND-gates being connected to the first-state output of the first flip-flop, the second inputs of the second and third NAND-gates being respectively connected to the output of the third EXCLUSIVE-OR-gate and of the fourth EXCLUSIVE-OR-gate, and furthermore including a transformer having a primary winding connected between the outputs of the second and third NAND-gates.

4,346,368

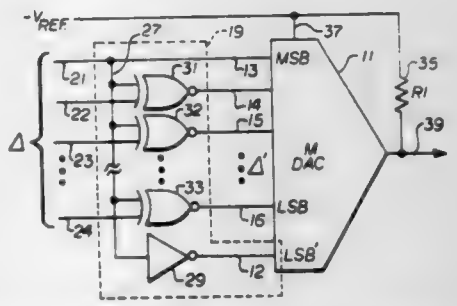
DIGITAL-TO-ANALOG CONVERTER CAPABLE OF PROCESSING A SIGN MAGNITUDE OR ONES COMPLEMENT BINARY CODED INPUT

Walter J. Johnson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 23, 1979, Ser. No. 96,901

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA **8 Claims**



1. A digital-to-analog converter for processing an original binary code input in which a single analog reference numeral, such as zero, is represented by two different numbers in the original binary code input, the apparatus comprising:

digital-to-analog converter means, including a conventional digital-to-analog converter having a plurality of input lines, adapted to respectively receive the bits of a given binary input, from most significant bit to least significant bit thereof, the conventional converter being modified to include at least one additional input line so that the input lines of said converter means include the input lines of said conventional converter plus the additional input line, the output of said conventional converter being the output of said converter means, the conventional converter being further modified to include means connecting the additional input line in said conventional converter redundantly with equal weighting to the input line thereof adapted to receive the least significant bit; and

circuit means, having a plurality of inputs at least equal to the number of bits in the original code input and a plurality of outputs no greater than the number of input lines of said converter means, said circuit means being responsive to the original code input to produce a modified code input which has one more bit than the original code input and which, when applied to said converter means, results

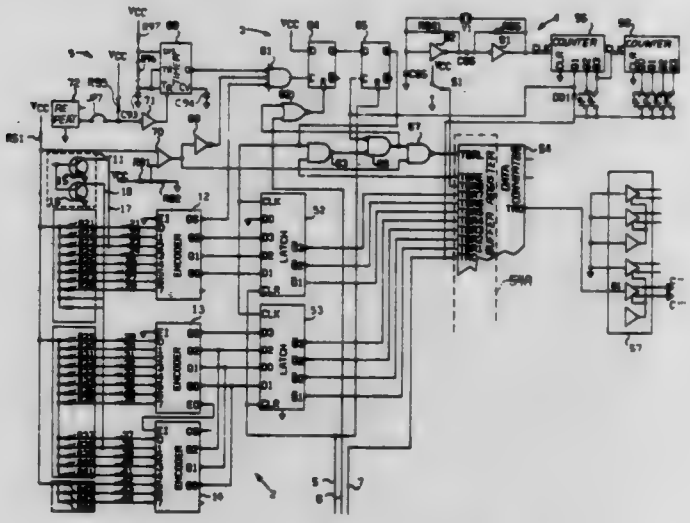
in an analog output which corresponds to the original code input, in which output said single analog reference numeral is produced in response to the two different numbers in the original binary code input.

4,346,369

KEYBOARD ENCODER-DECODER

Edward K. Macy, Dewey, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 1, 1979, Ser. No. 80,594
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 S **13 Claims**



1. Apparatus for encoding comprising:
a keyboard comprising a plurality of keyboard switches;
parallel word generating means for generating a parallel format binary data word representative of only one actuated keyboard switch;
serial word generating means for receiving said parallel format binary data word and generating in response thereto a serial format binary data word; and
means for detecting that at least one and only one keyboard switch is actuated, said means for detecting having operably associated therewith
means for permitting receipt of said parallel format binary data word by said serial word generating means only when at least one and only one keyboard switch is actuated, and
means for permitting generation of said serial format binary data word to begin only when at least one and only one keyboard switch is actuated.

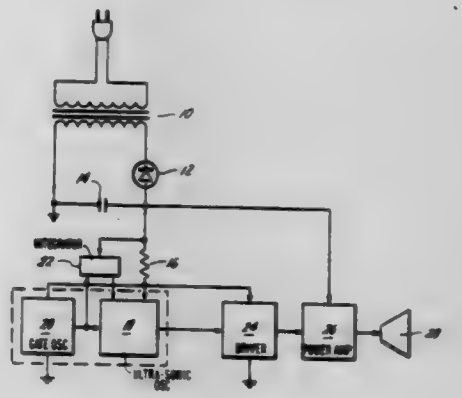
4,346,370

ULTRA-SONIC PEST CONTROL APPARATUS

Harry D. Carter, 5108 FM 1960 West, Houston, Tex. 77069, and Ted Ojevich, 5935 Moonmist, Houston, Tex. 77081

Filed Jun. 25, 1980, Ser. No. 162,763
Int. Cl.³ G08B *3/10*; A01M *29/00*
U.S. Cl. 340—384 E **6 Claims**

1. Ultra-sonic pest control apparatus, comprising:
(a) tone generating means for generating an output frequency as a function of applied voltage;
(b) a transducer electrically connected to the output of the tone generating means for delivering ultra-sonic sound;
(c) generating means for generating a periodically repeating sawtooth waveform; and
(d) gating means connected to the tone generating means and generating means for emitting a frequency sweep responsive to each sawtooth pattern of said sawtooth waveforms and uniformly chopping a portion of each frequency sweep and passing said chopped frequency



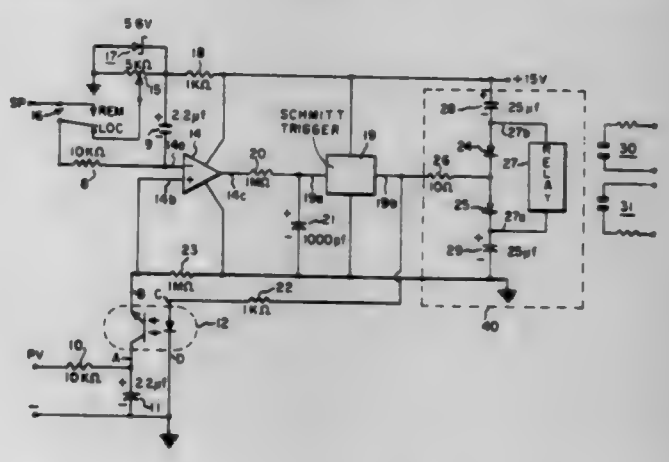
sweeps at predetermined, uniform, timed intervals to said transducer.

4,346,371

ALARM CIRCUIT

Edward S. Ida, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 22, 1980, Ser. No. 189,627
Int. Cl.³ G08B *29/00*
U.S. Cl. 340—507 **3 Claims**

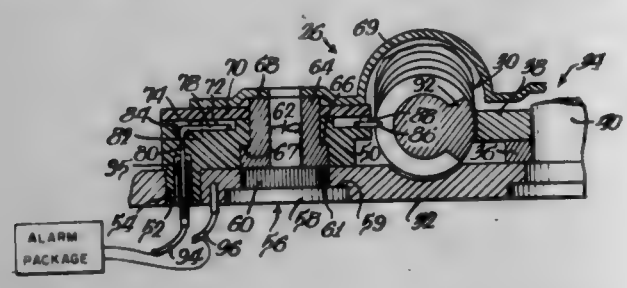


1. A fail-safe circuit for monitoring a signal that includes a load circuit having input terminals and a pulsating signal source for actuation thereof, said pulsating signal source comprising: an opto-isolator having emitter, collector and active photodiode terminals, the monitored signal being fed to said collector terminal, said collector terminal and said emitter terminal being operatively connected; a comparator having an inverting terminal, a noninverting terminal and an output terminal; a set point voltage source connected to the inverting terminal of the comparator; the noninverting terminal being connected to said emitter terminal of said opto-isolator; an oscillating Schmitt trigger circuit having input and output terminals; a signal delay circuit connecting the output terminal of the comparator with input terminal of the Schmitt trigger circuit, the output terminal of the Schmitt trigger circuit joining the input terminals of the load circuit to the active photodiode terminal of the opto-isolator whereby a failure mode will cause said Schmitt trigger to cease oscillating as a pulsating signal source, deactivating said load circuit.

4,346,372
WINDOW OPERATOR WITH SWITCH TO OPERATE A BURGLAR ALARM

Christopher T. Sandberg, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.

Filed Sep. 22, 1980, Ser. No. 189,055
Int. Cl.[3] G08B *13/08*
U.S. Cl. 340—545 14 Claims



1. A window operator having means for generating an electric signal in response to operation of the window operator comprising:

a casing mountable on a window frame;

operator linkage means rotatably mounted within the casing and extending from said casing and connectable to a window sash;

rotatable means within said casing responsive to rotation of a handle and connected to said operator linkage means for causing rotation of the last mentioned means;

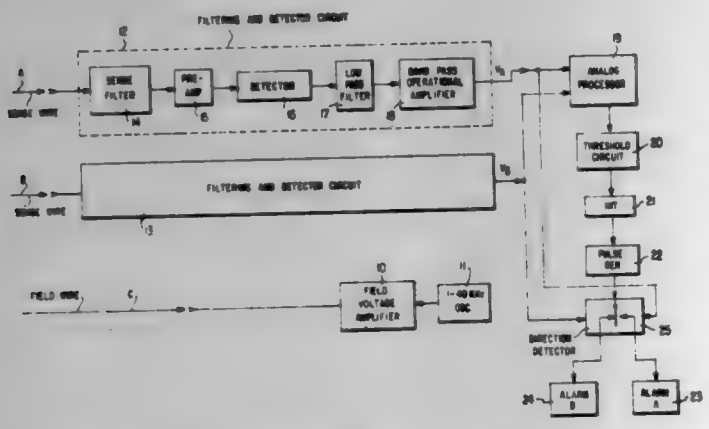
a circuit closing element positioned within said casing adjacent said rotatable means; and

said rotatable means having an irregular surface which intermittently engages said element for activation thereof.

4,346,373
INTRUSION WARNING SYSTEM UTILIZING A DIFFERENTIAL ELECTRIC FIELD

Gregory V. Hassman, 3126 Avis Way, Pinole, Calif. 94564

Filed Apr. 8, 1980, Ser. No. 138,404
Int. Cl.[3] G08B *13/26*
U.S. Cl. 340—561 9 Claims



1. An intrusion warning system for protecting at least a portion of the perimeter of a given area comprising in combination:

means for producing a quasi-stationary electric field including a field wire insulated from ground and extending along the portion of the perimeter to be protected substantially parallel to ground, and an oscillator circuit having its output connected to said field wire and producing an output signal whose wavelength is very long compared to the length of said field wire;

first and second field sensing wires insulated from ground and extending along said portion of the perimeter substantially parallel to and vertically displaced from said field wire, said field sensing wires being disposed on opposite sides of said field wire and equidistantly spaced from said field wire and from ground;

first and second detector means, connected to said first and second sensing wires respectively, for detecting changes in the electric field sensed by said sense wires and for producing respective first and second electrical analog output signals corresponding to said changes;

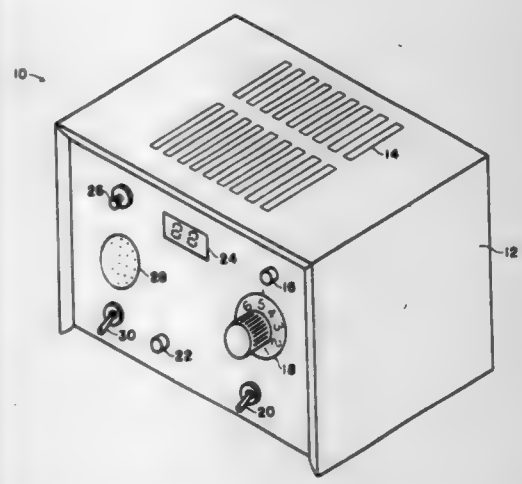
signal processing means for combining and multiplying said first and second electrical analog output signals and for producing an output signal whenever neither of said first and second electrical analog output signals is equal to zero and the difference between said first and second analog output signals is greater than a given value; and

alarm circuit means responsive to an output signal from said signal processing means for producing an alarm.

4,346,374
CLASSROOM NOISE ALARM

James W. Groff, P.O. Box 38, Morgan Hill, Calif. 95037

Filed Jan. 5, 1981, Ser. No. 222,304
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—573 4 Claims



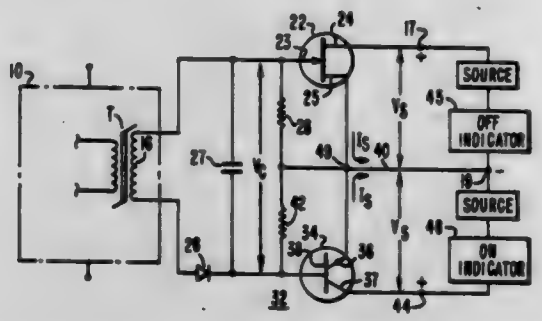
1. A classroom noise alarm for aiding the teacher in maintaining discipline comprising in combination: a power supply circuit for energizing said classroom noise alarm; a switch for actuating said power supply circuit of said classroom noise alarm; audible alarm means; a microphone for detecting noise occuring within a school classroom; an audio amplifier coupled with said microphone for amplifying the output thereof; adjustable resistance means coupled to the output of said audio amplifier for controlling the amplitude of an amplified noise signal; a sound-actuated switch coupled to the output of said adjustable resistance means and comprising an operatively associated audio input transformer, rectifieto the trigger of said second monostable multivibrator, the output thereof being connected to a second input terminal of said logic gate, thereby preventing said logic control signal of said sound-actuated switch from being conducted through said logic gate except during a predetermined time delay of said second monostable multivibrator occuring subsequent to a prior, predetermined time delay of said first monostable multivibrator for initiating actuation of said audible alarm means only after repeated classroom noise occuring within a specified timed interval; a second timing means, the trigger thereof being connected to the output of said logic gate of said first timing and control logic means and the output being connected to said audible alarm means for controlling actuation and duration of said audible alarm means; and counting and readout means operatively associated with said second timing means for counting and displaying the exact number of times said audible alarm means are actuated by classroom noise.

4,346,375

SOLID STATE STATUS INDICATION CIRCUIT FOR POWER CONTROLLERS

William W. Billings, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 27, 1980, Ser. No. 181,568
Int. Cl.³ G08B 21/00
U.S. Cl. 340—644 2 Claims



1. Solid state indication circuitry to indicate either the ON or OFF status of a power circuit comprising:

means associated with the power circuit for producing a first voltage only upon the power circuit being ON;

means for applying second and third voltages, independent of said first voltage, respectively across first and second pairs of status indicating output terminals of which one terminal of each of said first and second pairs is connected to a common terminal;

voltage divider means for establishing fourth and fifth voltages, developed from said first voltage, between said common terminal and first and second control terminals respectively of first and second respective semiconductive devices;

said first semiconductive device being a depletion mode field effect transistor having first and second terminals connected to said first pair of output terminals and conduction therebetween indicating an OFF state of the power circuit occurs upon said fourth voltage being at a low level; and

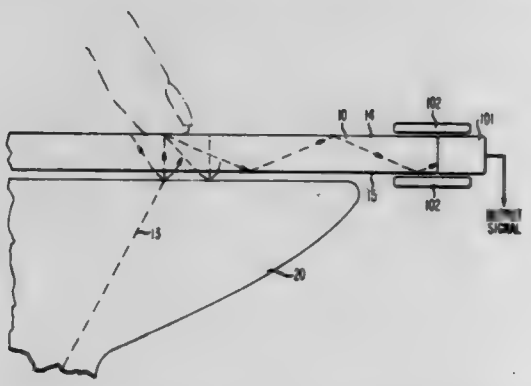
said second semiconductive device having first and second terminals connected to said second pair of output terminals and conduction therebetween indicating an ON state of the power circuit occurs upon said fifth voltage being at a high level.

4,346,376

TOUCH POSITION SENSITIVE SURFACE

James B. Mallos, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1980, Ser. No. 140,716
Int. Cl.³ G08B 5/36
U.S. Cl. 340—712 22 Claims



1. A touch sensitive device for use in conjunction with a signal source, said device comprising

spaced apart surfaces arranged such that signals are introduced between said surfaces so as to become entrapped within said device by total internal reflection between said surfaces as a result of a touch of one of said surfaces, and

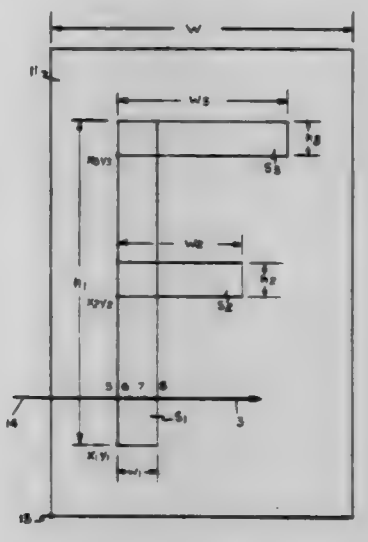
signal utilization means communicating with a region between said surfaces so as to provide a distinctive output when said signals are so introduced between said surfaces.

4,346,377

METHOD AND APPARATUS FOR ENCODING AND GENERATING CHARACTERS IN A DISPLAY

James A. Green, Wichita, Kans., assignor to Eltra Corporation, Morristown, N.J.

Filed May 30, 1980, Ser. No. 155,021
Int. Cl.³ G06F 3/14
U.S. Cl. 340—731 14 Claims



1. A method of displaying reduced and expanded size characters in a photocomposition device comprising the steps of:

(a) encoding each of a set of normalized characters in a series of overlapping strokes, each stroke being a geometric shape and each stroke being encoded by start point coordinates and a first and second dimension of said stroke,

(b) encoding a set of instructions describing the display placement and size of said characters,

(c) determining the display locations coextensive with each stroke and storing said locations,

(d) accessing said stored locations for display of said strokes and said characters.

4,346,378

DOUBLE TRACE ELECTRO OPTIC DISPLAY

Ian A. Shanks, Malvern, England, assignor to National Research Development Corporation, London, England

Filed Apr. 23, 1980, Ser. No. 143,148
Claims priority, application United Kingdom, May 3, 1979, 7915425
Int. Cl.³ G09G 3/36
U.S. Cl. 340—754 13 Claims

1. Apparatus for simultaneously displaying two waveform traces comprising:

(i) an electro optic display having a layer of display material between two dielectric substrates, a first series of m strip electrodes on one substrate and a second series of n strip electrodes on the other substrate arranged to define an m×n plurality of elements across which an electric signal may be applied to change the layer from one state to another thereby causing an observable display effect;

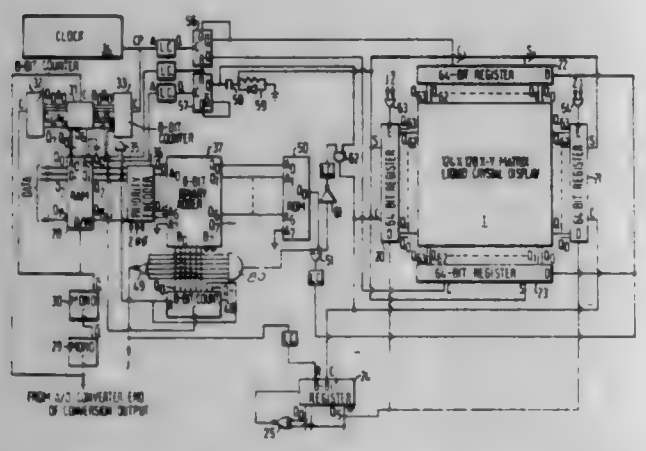
(ii) means for generating m different coded reference waveforms from different L-bit, N'-ary numbers whereby each waveform has a different shape over a period t, L and N' being integers greater than 1;

(iii) means for supplying a secondary voltage signal different from all the coded reference waveforms;

(iv) means for applying a different one of said coded reference waveforms to some of the first set of electrodes whilst applying said secondary voltage signal to the re-

mainder of the first set of electrodes so that all electrodes in the first set receive one of said coded waveforms and said secondary voltage signal in turn;

(v) means for selectively producing ones of the coded waveforms for application to the second set of electrodes simultaneously with coded waveform voltages applied to the first set of electrodes, the choice of such selectivity produced coded waveforms being related for each successive



n electrode to successive sample values of the two traces, and to the order of coded waveforms on the first set of electrodes;

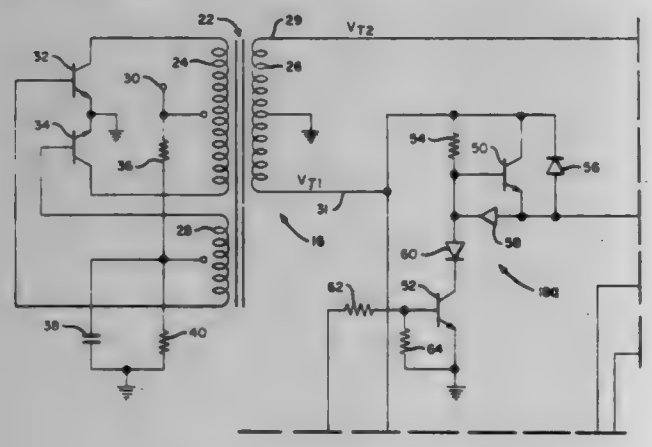
(vi) the arrangement being such that the two waveform traces appear collectively at intersections where the same waveform occurs periodically and simultaneously on both m, n electrodes to produce a below display threshold voltage level and the voltage at other intersections is above threshold level.

4,346,379

AC DRIVE SYSTEM FOR PLASMA DISPLAY PANELS

William G. Skaggs, and John L. Curry, both of Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 12, 1980, Ser. No. 177,329
Int. Cl.³ G09G 3/28
U.S. Cl. 340—778 **37 Claims**



1. A control system for driving a plasma display panel having a plurality of first electrodes extending in a first direction and a plurality of second electrodes extending in a second direction wherein said first electrodes are maintained in a spaced-apart relationship from said second electrodes to form a gas discharge cell at each point where one of said first electrodes crosses over one of said second electrodes, said control system comprising:

oscillator means for producing a first voltage signal, having an alternating sequence of positive and negative components respectively reaching a first predetermined positive voltage and a first predetermined negative voltage, and a second voltage signal, having an alternating sequence of positive and negative components respectively reaching a second predetermined positive voltage and a second predetermined negative voltage, wherein the positive components of said first voltage signal substantially coincide with the negative components of said second voltage signal and the negative components of said first voltage signal substantially coincide with the positive components of said second voltage signal;

first driver means for selectively applying the positive and negative components of said first voltage signal to said first electrodes; and

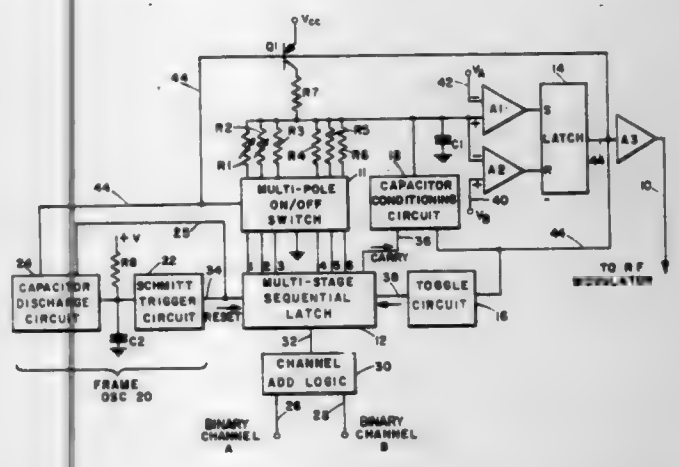
second driver means for selectively applying the positive and negative components of said second voltage signal to said second electrodes.

4,346,380

SIMULTANEOUS COMMUNICATION OF ANALOG AND BINARY INFORMATION IN A SINGLE FRAME OF A PULSE COUNT MODULATED DIGITAL SIGNAL

Dennis M. Monticelli, Fremont; William M. Howard, Campbell, and Robert S. Sleeth, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 968,174, Dec. 11, 1978, abandoned.
This application Apr. 15, 1980, Ser. No. 140,589
Int. Cl.³ H04J 3/00
U.S. Cl. 340—825.63 **3 Claims**



1. A communications system for communicating both analog information and binary information in a single frame of a pulse train, comprising:

a first number "m" of analog information input channels for providing analog input information, wherein "m" is a positive integer greater than or equal to "one";

means for sequentially multiplexing and modulating the first given number "m" of analog information input channels to produce a first sequence of "m" analog information pulses in each frame of the pulse train, wherein each analog information pulse respectively has a width that is proportional to the amplitude of the analog information in the respective analog information input channel;

a second given number "n" of binary information input channels for providing binary input information, wherein "n" is a positive integer greater than "one";

means for modulating the second given number "n" of binary information input channels to produce a second sequence of binary information pulses in a particular unary code wherein 2^n possible states are represented by a number of sequential pulses that are representative of the binary information in the "n" binary information input channels:

means for multiplexing said second sequence of binary information pulses in each frame of the pulse train sequentially to said first sequence of analog information pulses; and

means for producing a sync signal that persists for the interval between the second sequence of binary information pulses and the subsequent first sequence of analog information pulses in the next frame.

4,346,381

BROAD BAND COUPLING ARRANGEMENT

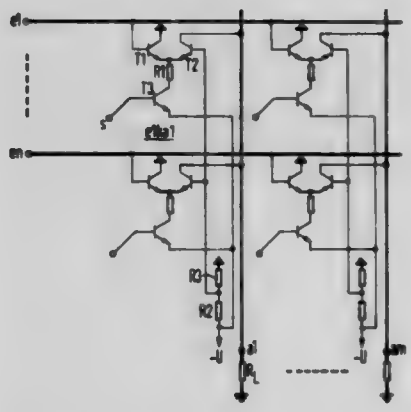
Helmut Bauch, Starnberg, and Hans Rehm, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,659

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932587

Int. Cl.³ H04Q *9/00*; H03K *19/20*

U.S. Cl. 340—825.93 6 Claims



1. A broad band coupling arrangement comprising a matrix of cross point circuits in ECL technology, said coupling point circuits being formed of cross point switches (e1ka) constructed only with transistors (T1, T2, T3) which are conductive only in the through-connected condition of the respective cross point switch, said matrix having an input line (e) and an output line (a), the cross point switches being respectively formed by a differential amplifier circuit with two emitter-coupled transistors (T1, T2) having a common emitter current branch, having base electrodes and having collector electrodes, and a switching transistor (T3) having main electrodes coupled with the common emitter current branch which switching transistor is conductive only upon selection of the appertaining cross point switch, one of the emitter-coupled transistors (T1) of each cross point switch having its base electrode connected to the input line (e) of the matrix, and the output line (a) of the matrix being connected to the collector electrode of one of the emitter-coupled transistors (T2), said matrix having rows and columns of the differential amplifier circuits, the base electrodes of one of the emitter-coupled transistors (T1) of a row of differential amplifier circuits being connected in common with the input line (e), and being multiply connected with one another, the collectors of one of the emitter coupled transistors (T2) of a column of differential amplifier circuits being connected in common with the output line (a), characterized in that the collectors of the ones of the emitter coupled transistors (T2) which are connected in common to the output line (a) of the matrix are respectively multiply connected with one another via a signal path free of inverse feedback.

4,346,382

DOPPLER RADAR FOR DETECTION AND LOCALIZATION OF HELICOPTERS

Henri J. Bosc, Paris, and Pierre J. Goyard, Fontenay-le-Fleury, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 10, 1980, Ser. No. 168,183

Claims priority, application France, Aug. 23, 1979, 79 21210

Int. Cl.³ G01S *13/52, 13/28, 13/44*

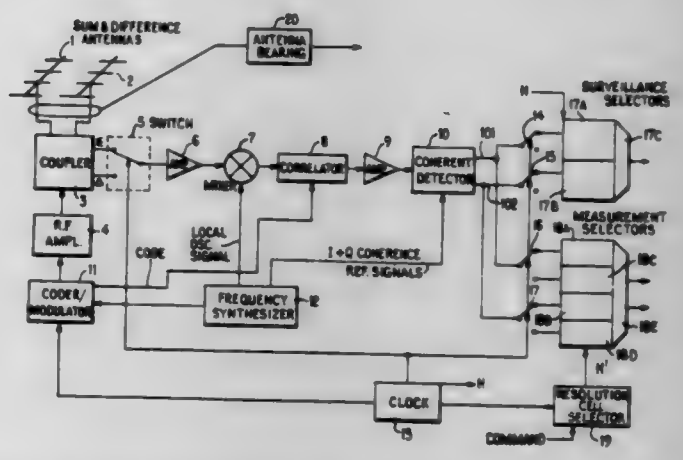
U.S. Cl. 343—5 SA 13 Claims

1. A radar system for discrete identification and localization of helicopters comprising:

a radar transmitter and antenna system for illuminating a target with electromagnetic energy;

a receiver responsive to echo signals from said target resulting from said illumination; and

evaluation means responsive to output signals of said receiver for rejecting echo signals not characteristic of helicopter echoes, said evaluation means including circuits for applying the criteria of percentage amplitude modulation, the criterion of spectral width or both of said criteria, said evaluation means acting to reject echo signals



having spectral width below a predetermined value, echo signals having a percentage of amplitude modulation below a predetermined value or to reject said echo signals failing to exceed either of said predetermined values.

4,346,383

CHECKING THE LOCATION OF MOVING PARTS IN A MACHINE

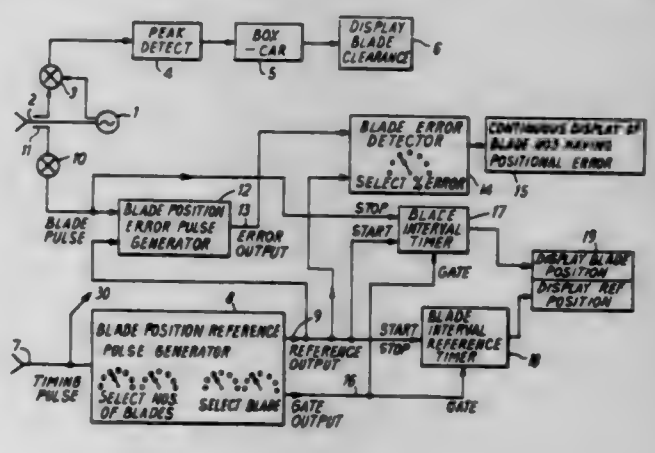
Sydney C. Woolcock, Wells, and Edwin G. Brown, Bath, both of England, assignors to EMI Limited, Hayes, England

Filed Aug. 1, 1980, Ser. No. 174,581

Claims priority, application United Kingdom, Aug. 4, 1979, 7927250

Int. Cl.³ G01S *13/08*; G01R *27/04*

U.S. Cl. 343—12 R 11 Claims



1. In a turbine engine comprising a set of turbine blades extending radially of an axis of rotation and a casing surrounding the set, the improvement of means for monitoring the clearance between the blades and the casing comprising:

means for producing electromagnetic waves of millimetric wavelength λ having a reference phase,

a waveguide fixed relative to the casing and having an aperture facing the said set of turbine blades, and spaced therefrom by λ/4 or less, the area of the aperture being small in relation to the radially facing cross-sectional area of any one of the said blades, the waveguide and aperture being dimensioned to allow the said waves to propagate from the producing means through the aperture,

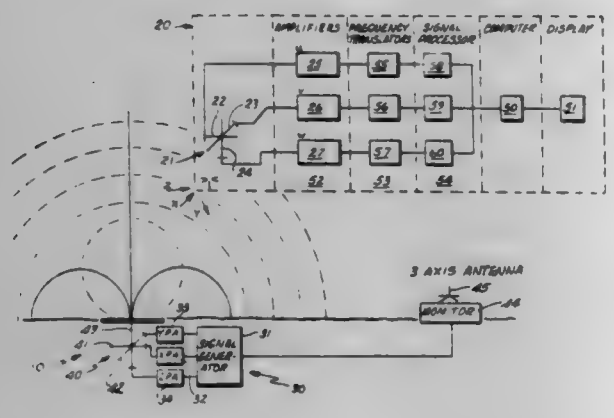
a phase detector coupled to the producing means and the waveguide to produce a signal, dependent on the phase difference between the said reference phase and the phase of the reflected waves,

and further means for producing a further signal representing the amplitude of the reflected waves, thereby to indicate the presence of a blade in proximity to the waveguide.

4,346,384
REMOTE OBJECT POSITION AND ORIENTATION LOCATOR

Frederick H. Raab, Burlington, Vt., assignor to The Austin Company, Cleveland, Ohio

Filed Jun. 30, 1980, Ser. No. 164,783
Int. Cl.³ G01S *3/02*
U.S. Cl. 343—112 R 16 Claims



1. Apparatus for determining the position and orientation of a remote object relative to a reference coordinate frame comprising:

a plurality of radiating means having orthogonal components centered about the origin of said reference coordinate frame;

transmitter means for applying to said plurality of radiating means electrical signals which generate a plurality of electromagnetic fields, said plurality of electromagnetic fields being distinguishable from one another;

a plurality of receiving means disposed on said remote object, said receiving means having orthogonal components for detecting and measuring the received components of said electromagnetic fields;

one of said plurality of radiating means and said plurality of receiving means consisting of only two orthogonal components;

said radiating means and said receiving means being adapted for operation at a separation distance sufficient to insure that the far-field components of said electromagnetic fields are substantially greater in magnitude from the nearfield components of said electromagnetic fields; and

analyzing means associated with said receiving means for non-iteratively converting the received components of said electromagnetic fields into remote object position and orientation relative to said reference coordinate frame with at least one ambiguous combination of orientation and position, said analyzing means operating open loop with respect to said radiating means.

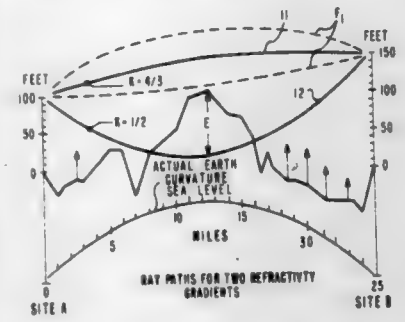
4,346,385
MICROWAVE ANTENNA HEIGHT PREDICTION

James A. Schiavone, Bridgewater, and Arvids Vigants, Red Bank, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 18, 1980, Ser. No. 188,320
Int. Cl.³ H01Q *19/00, 9/34*
U.S. Cl. 343—703 6 Claims

1. A microwave transmission facility comprising at least two antennas at opposite ends of a transmission path, wherein the heights of said antennas above ground are chosen by a path profile procedure wherein an effective earth radius is utilized having a ratio to the actual earth radius of K, wherein K is determined from N′, the vertical gradient of refractivity of the atmosphere in the vicinity of said path, characterized in that said transmission facility is designed to provide a probability of outage due to obstruction fading of less than a given amount, wherein

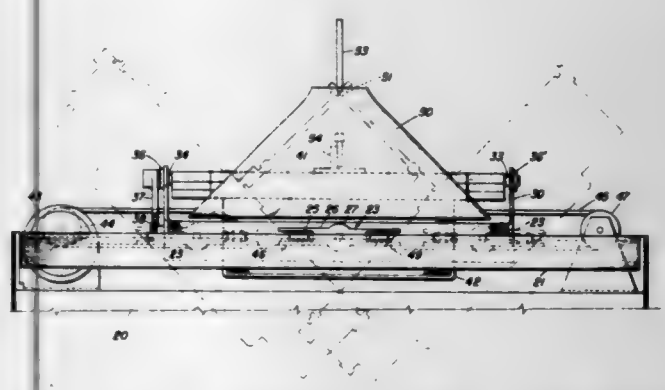
the value of N′ is chosen to produce said probability of outage according to the weighted sum of probability density functions comprising a first density function characteristic of the mixed atmosphere of the daytime regime, and a second density function characteristic of the stratified atmosphere of the nighttime regime, wherein the standard deviation of said second function is the larger of those characteristic of a coastal region and an interior region, with the extent of the coastal region being determined by factors comprising the distance that air penetrates inland in a period of one day from an ocean, gulf, or one of the Great Lakes, and wherein the standard deviations characteristic of said interior region and said coastal regions are determined by factors comprising: (1) temperature inversion occurrence frequency; (2) air homogeneity; (3) water body proximity; (4) wind direction occurrence frequency; (5) air moisture capacity; and (6) surface moisture availability.



4,346,386
ROTATING AND TRANSLATING RADAR ANTENNA DRIVE SYSTEM

William H. Francis, Coconut Creek, and Eckard F. Natter, Coral Springs, both of Fla., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 19, 1981, Ser. No. 275,189
Int. Cl.³ H01Q *13/10*
U.S. Cl. 343—765 12 Claims



1. A rotating and translating mount for a radar antenna comprising,

a base;

a carriage adapted to move translationally along said base;

a radar atenna;

means for securing said antenna to said carriage for rotary motion of said antenna about an axis orthogonal to the direction of translational motion of said carriage; and

a double slider mechanism for converting translational motion of said carriage to rotary motion of said antenna, said mechanism including a rod rigidly attached to said antenna and extending in the direction of the beam produced by said antenna; and

means attached to said base and slidingly engaging said rod to constrain said rod to pass through a point fixed relative to said base during motion of said carriage.

4,346,387

METHOD AND APPARATUS FOR CONTROLLING THE ELECTRIC CHARGE ON DROPLETS AND INK-JET RECORDER INCORPORATING THE SAME

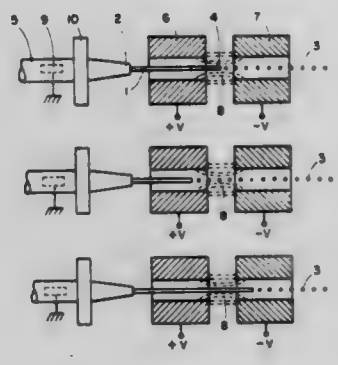
Carl H. Hertz, Skolbänksvägen 8, S-223 67 Lund, Sweden

Filed Dec. 2, 1980, Ser. No. 212,115

Claims priority, application Sweden, Dec. 7, 1979, 7910088; Feb. 5, 1980, 8000880

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—1.1 **57 Claims**



1. A method of providing a stream of liquid droplets which carry thereon electric charges of predetermined magnitude and polarity, comprising the steps of

(a) providing an electrically conductive liquid jet which breaks up at a drop formation point to form liquid droplets;

(b) providing an electric field, through which said droplets are directed, having an electric potential gradient; and

(c) controlling the location of said drop formation point within said electric field along said gradient thereby to control the electric charge on said droplets.

4,346,388

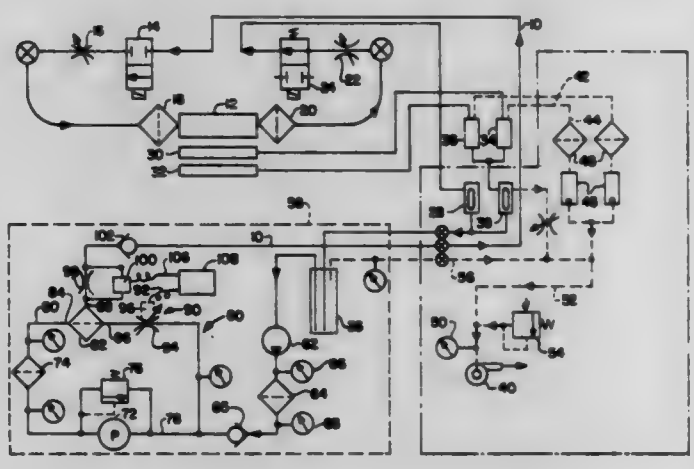
INK JET FLUID SUPPLY SYSTEM

Robert A. Wiley, Richardson, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 13, 1980, Ser. No. 159,016

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **12 Claims**



1. A system for supplying fluid to the fluid supply line of an ink jet system, comprising

a fluid reservoir,

pump means having a pump inlet, connected to receive fluid from said fluid reservoir, and a pump outlet,

a filter means, including a mainstream influent inlet, a mainstream effluent outlet, and a filtrate effluent outlet, for filtering a portion of the fluid passing between said mainstream influent inlet and said mainstream effluent outlet and providing the fluid so filtered to said filtrate effluent outlet, said mainstream influent inlet being connected to said pump outlet,

variable restriction means, connecting said mainstream fluid outlet to said pump inlet, for controllably restricting flow therebetween in response to a restriction control signal,

flow measuring means for connecting said filtrate effluent outlet of said filter means to said fluid supply line of said ink jet printer and for providing a flow signal in response to fluid flow therethrough, and

means, responsive to said flow signal and to a reference level signal, for comparing said flow signal and said reference level signal and providing said restriction control signal to said variable restriction means, whereby flow is restricted sufficiently through said variable restriction means to provide substantially uniform fluid flow to said fluid supply line.

4,346,389

MULTIPLE CHARGE ELECTRODE DEVICE FOR LIQUID JET PRINTER

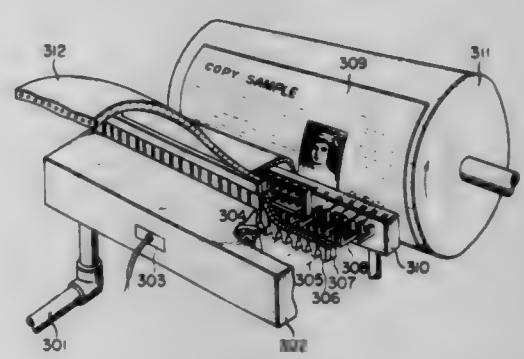
Haruhiko Nagayama, Machida, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 192,090

Claims priority, application Japan, Oct. 11, 1979, 54/129918; Oct. 11, 1979, 54/129919; Nov. 9, 1979, 54/145096

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **2 Claims**



1. A multi-layer laminated multiple charge electrode device for a liquid jet printer, comprising:

a first insulating substrate plate having a plurality of downwardly opening U-shaped apertures adjacent a lower edge thereof;

a conductive first shield plate having one major surface secured to said first insulating substrate plate, said first shield plate having an insulating layer thereon and a corresponding plurality of downwardly opening U-shaped apertures adjacent said lower edge, the apertures of said first shield plate being smaller than the apertures of said first insulating substrate;

a conductive charge electrode layer on the surface of said first insulating substrate plate remote from said first shield plate, said charge electrode layer extending over the inner surfaces of said apertures of said first insulating substrate plate;

a second insulating substrate plate having one major surface secured to the other major surface of said first shield plate, said second insulating substrate plate having a corresponding plurality of downwardly opening U-shaped apertures adjacent said lower edge, the apertures of said first shield plate being smaller than the apertures of said second insulating substrate plate;

a conductive second shield plate having one major surface secured to the other major surface of said second insulating substrate plate, said second shield plate having an insulating layer thereon and a corresponding plurality of downwardly opening U-shaped apertures adjacent said lower edge, the apertures of said second shield plate being smaller than the apertures of said second insulating substrate plate; and

a conductive charge sensor layer on a major surface of said second insulating plate, said charge sensor layer extending

over the inner surfaces of said apertures of said second insulating substrate plate,

whereby the aligned U-shaped apertures of said plates comprise a corresponding plurality of channels for charging, and sensing the charge upon streams of liquid droplets traversing said channels.

4,346,390

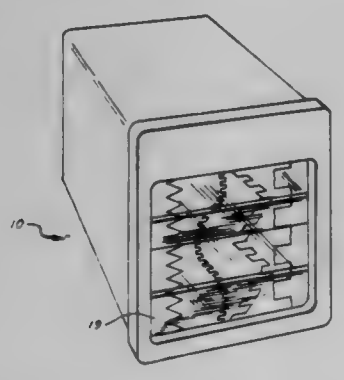
SOLID STATE RECORDER

Charles A. Allen, Richardson, and David T. Houston, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 4, 1980, Ser. No. 156,455

Int. Cl.³ G01D *15/10*

U.S. Cl. 346—76 PH **20 Claims**



1. A chart recorder for thermal recording on heat sensitive paper that is advanced at a selectable rate by a motive means having means for receiving a plurality of electrical signals representing various parameters to be recorded, and annotated, as individual traces, comprising:

(a) a fixed printhead having at least one horizontal line of a plurality of individually energizable thermal elements in thermal contact with the heat sensitive paper;

(b) drive means connected to the printhead for energizing selected thermal elements and for activating the motive means; and

(c) digitizing means for receiving and simultaneously digitizing the plurality of electrical signals; and

(d) digital computer means including central processor means, timing means, read-only memory means having instructions means therein for controlling the operation of the computer means, and read and write memory means for storing digital data including the plurality of digitized signals to be recorded, the computer means adapted to receive the plurality of digitized signals and connected to the drive means for causing the drive means to energize selected thermal elements in conformance with the digitized signals and for causing the activation of the motive means to advance the heat sensitive paper.

4,346,391

RECORDER

Yuji Sato, and Shoji Koizumi, both of Kobe, Japan, assignors to Furuno Electric Co., Ltd., Hyogo, Japan

Filed Oct. 6, 1980, Ser. No. 193,973

Claims priority, application Japan, Oct. 11, 1979, 54-141113[U]

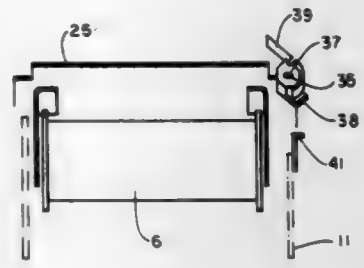
Int. Cl.³ G01D *15/34*; B65H *17/02, 27/00*

U.S. Cl. 346—136 **9 Claims**

1. In a recorder having recording paper mounted to advance lengthwise from a body with curved surface to a roller, and having at least one recording stylus mounted to move transversely across the width of the recording paper, with a lead piece placed in the path of the recording stylus extending over the edge of the recording paper for smoothly leading the recording stylus into the recording paper; the improvement wherein:

(i) said lead piece is rotatably supported on said recorder,

(ii) means are provided for continuously biasing the lead piece in a direction to withdraw the lead piece from the path of the recording paper, and



(iii) an obstruction piece is positioned to push said biasing means so as to hold said lead piece to lie over said recording paper.

4,346,392

PLOTTING HEAD FOR USE IN DRAWING MACHINE

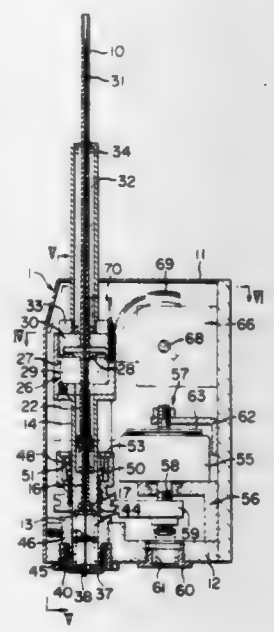
Taketo Isobe, and Terumi Matsushita, both of Chigasaki, Japan, assignors to Mutoh Industry Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,328

Claims priority, application Japan, Apr. 12, 1979, 54-44551; Oct. 26, 1979, 54-139016; Oct. 26, 1979, 54-139017; Feb. 6, 1980, 55-13233; Feb. 6, 1980, 55-13234; Feb. 6, 1980, 55-13235; Feb. 6, 1980, 55-13687[U]; Feb. 6, 1980, 55-13688[U]

Int. Cl.³ G01D *15/24*

U.S. Cl. 346—139 C **20 Claims**



1. A plotting head for supporting a lead for selective engagement with a drafting sheet in a drawing machine, comprising:

a housing supported on said drawing machine;

a lead holder supported on said housing for movement relative thereto toward and away from the drafting sheet in a vertical direction;

a collet supported on said lead holder for vertical movement relative thereto between a first upper position and a second lower position, said collet having a central vertical opening for receiving the lead;

first means for effecting movement of said collet between said first and said second positions;

second means for actuating said collet as said collet moves to said first position, said collet being in gripping engagement with the lead in said first position and being free of gripping engagement with the lead in said second position;

bias means for continuously and yieldably urging said lead holder downwardly;

selectively actuable third means cooperable with said lead holder for effecting upward movement of said lead holder against the urging of said bias means, said third means

including an actuator supported for reciprocal vertical movement and clutch means cooperable with said lead holder and said actuator for transmitting only upward movement of said actuator to said lead holder;

lead gripping means supported on said housing adjacent the lower end thereof for frictionally engaging said lead to yieldably resist vertical movement of said lead;

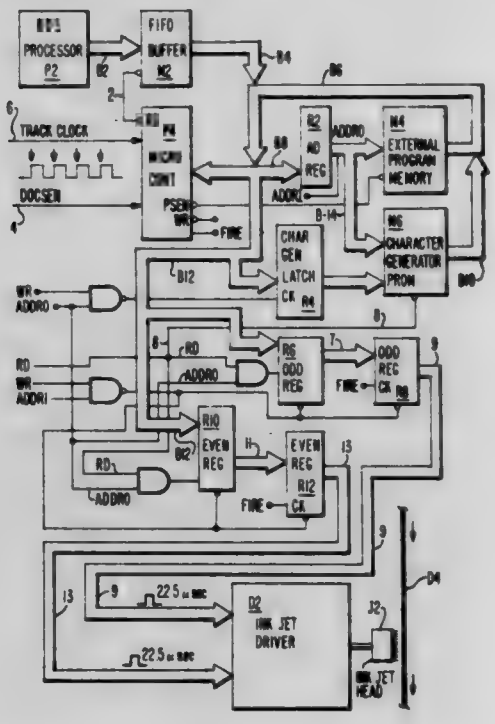
whereby when said collet is in said first position and said third means is deactuated, said collet grips the lead and said bias means urges said lead holder and said collet downwardly, thereby urging the lead into engagement with the drafting sheet.

4,346,393

MATRIX PRINTER EMPLOYING A SPECIAL CHARACTER FONT

Harry L. Wallace, Livonia, and John M. Chambors, Canton, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 2, 1980, Ser. No. 145,779
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **1 Claim**



1. Apparatus for generating printed characters according to a novel character font where the characters are formed by dots printed in print positions on the face of a moving document by printing means forming part of the head of a matrix printer, comprising:

a drop-on-demand ink jet printer head supporting printing means including a plurality of distinct ink jet elements for projecting drops of ink to print dots on selected surfaces;

said printing means comprising a plurality of said ink jet elements spaced apart in an odd and an even column;

said ink jet printer head supporting said odd and even columns of ink jet elements in a manner such that the odd and even columns are parallel to each other;

said columns being oriented in a direction to be substantially perpendicular to horizontal rows, along which ink dots are placed;

the ink jets in the columns being offset from each other vertically so that each jet produces dots along a separate horizontal line;

register means coupled to said printer head to provide command pluses to drive said ink jet elements, causing each driven ink jet element to project a drop of ink and provide a dot on the selected surface;

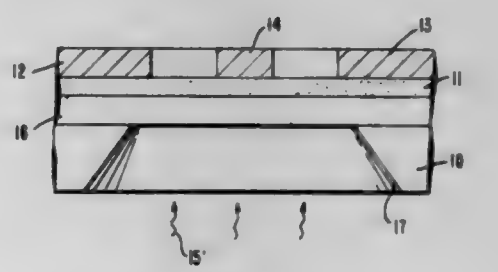
said register means applying said command pulses to energize said ink jet elements in a sequence to assure that dots in successive adjacent print positions are placed on the surface by different ones of said ink jet elements and to assure that each ink jet element can be fired only on the occurrence of an alternate command pulse, whereby successive dots generated by any two ink jet elements will appear on different horizontal lines and successive dots generated by any one ink jet element will appear along a horizontal line with a blank space between dots.

4,346,394

GALLIUM ARSENIDE BURRUS FET STRUCTURE FOR OPTICAL DETECTION

Luis Figueroa, Woodland Hills, and Huan-Wun Yen, Westlake Village, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 24, 1980, Ser. No. 133,183
Int. Cl.³ H01L *27/14, 29/80, 31/10*
U.S. Cl. 357—30 **8 Claims**



1. An integrated optical photodetector comprising:

(a) a substrate of semi-insulating III-V semiconductor material and

(b) at least one detector supported on said substrate, said detector including:

(i) an active region of III-V semiconductor material, and

(ii) a pair of electrodes contacting said active region, characterized by

(c) an undoped buffer layer of mixed III-V semiconductor material provided between said substrate and said active region, said buffer layer having an indirect bandgap, said bandgap being larger than that of said active region; and

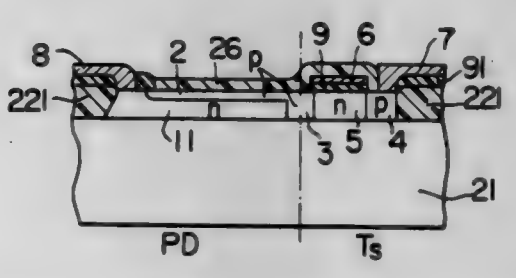
(d) at least one opening in said substrate which exposes a portion of said buffer layer, said at least one opening operably associated with said at least one detector for introducing incident optical radiation thereon.

4,346,395

LIGHT DETECTING PHOTODIODE-MIS TRANSISTOR DEVICE

Hirobumi Ouchi, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1980, Ser. No. 134,282
Claims priority, application Japan, Mar. 28, 1979, 54-35555
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **9 Claims**



1. A light detector device comprising a plurality of photodiode and MIS transistor couples arranged adjacent to each other on one surface of an insulating substrate,

each photodiode and MIS transistor couple having a photodiode which includes a first semiconductor region of one conductivity type on and adjoining the insulating substrate surface, a second semiconductor region of an oppo-

site conductivity type in said first region, said second and first regions forming therebetween a photosensitive pn junction substantially parallel to the insulating substrate surface, and an electrode in ohmic contact with said first region, and a MIS transistor which includes third and fourth semiconductor regions of said opposite conductivity type as source and drain regions on the insulating substrate surface, said third region being contiguous with said second region of said photodiode, a fifth semiconductor region of said one conductivity type between said third and fourth regions as a channel region on the insulating substrate surface, an insulating film on said fifth region, a gate electrode formed on said insulating film, and an electrode for light signal read out formed in ohmic contact with said fourth region, said third, fourth and fifth regions extending to and reaching the insulating substrate surface whereby a stray capacitance due to the capacitance of a pn junction formed between said third and fifth regions and the capacitance of a pn junction formed between said fourth and fifth regions is reduced, and

the adjacent photodiode and MIS transistor couples being electrically and optically isolated from each other by a solid insulating material layer filled therebetween on the insulating substrate surface, whereby signal separation between the adjacent photodiode and MIS transistor couples is improved to prevent a blooming phenomenon.

4,346,396

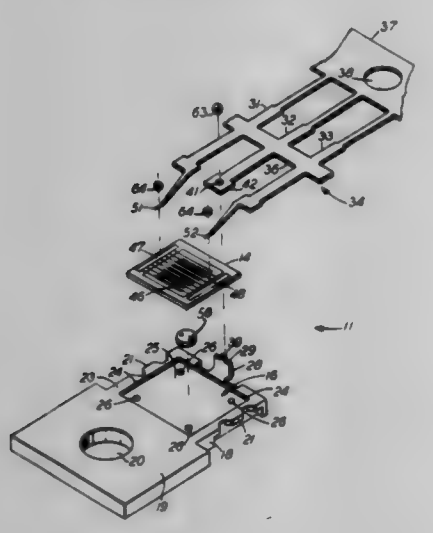
ELECTRONIC DEVICE ASSEMBLY AND METHODS OF MAKING SAME

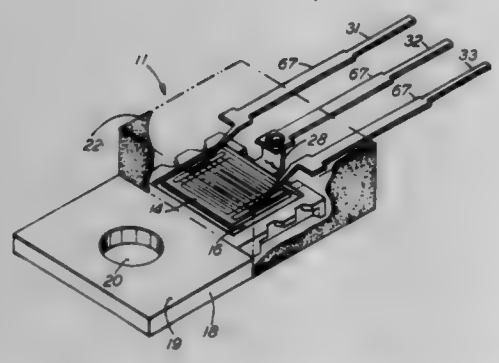
Arthur E. Carroll, II, Raytown, Mo.; Basil C. Lewis, Jr., Reading, Pa., and Howard T. Yeazel, Leawood, Kans., assignors to Western Electric Co., Inc. and Bell Telephone Laboratories, Inc., both of New York, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,543

Int. Cl.³ H01L *23/48, 29/44, 29/52*

U.S. Cl. 357—70 **3 Claims**





1. An electronic device assembly which comprises:

a substrate of a heat and electricity conducting material having a first thickness, the substrate having a recessed seat bounded by retaining ledges, said seat having a depth of a first predetermined dimension between an inner surface of the substrate and a substantially flat bottom surface of the seat, the seat further having a rectangular shape in a plane parallel to the inner surface of the substrate and four pedestals of the same material as that of the substrate extending from the bottom surface, said pedestals spaced apart from each other toward the four corners of the seat and having a height above said bottom surface of the seat which is less than said depth of said seat from said inner surface of the substrate;

an electronic device mounted in said seat and having a mounting surface spaced from said bottom surface by the height of said pedestals, a space between said bottom surface of said seat and said mounting surface being substantially occupied by reflowed solder, which bonds said device to said substrate, the lateral extent of said device being less than that of the rectangular shape of the seat, such that a moat-like opening is formed about the periphery of the device, said moat-like opening being bounded outwardly by the ledges of said seat, said solder also occupying at least part of said opening and being retained by said ledges, said device having a thickness which locates an active, upper surface of said device above the surface of the substrate by a second, predetermined dimension;

a lead support formed integrally with the substrate and of the same material as the substrate to extend above the inner surface of the substrate, said lead support having a height-defining platform at a third dimension above the inner surface of the substrate at a height greater than said active surface of said device, and a pin extending from the platform; and

leads extending from said assembly, a first of such leads being located on the platform by the pin extending through an aperture in such first leads and being solder bonded to the platform and extending from said platform outwardly from the assembly, the height of said first lead above the device defining a location of two further leads, each of such further leads having inner ends tapered in the vertical and horizontal direction, such ends sloping from said height of the pedestal toward said active surface of the device and laterally contacting said device in a downwardly urging contact force, said further leads having been solder bonded to said active surface in a bonding operation simultaneously bonding said first lead to said platform and reflowing said solder between said substrate and said device while said device was being held between opposite urging forces between the pedestals and the ends of said second leads.

4,346,397

APPARATUS FOR REPRODUCING A VIDEO SIGNAL OF ONE SYSTEM WITH CONVERSION TO A VIDEO SIGNAL OF ANOTHER SYSTEM

Yoshihiko Ota, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 23, 1979, Ser. No. 5,688

Claims priority, application Japan, Jan. 23, 1978, 53-5225; Jan. 23, 1978, 53-5226; Jan. 23, 1978, 53-5227; Jan. 23, 1978, 53-5228

Int. Cl.³ H04N *5/78*

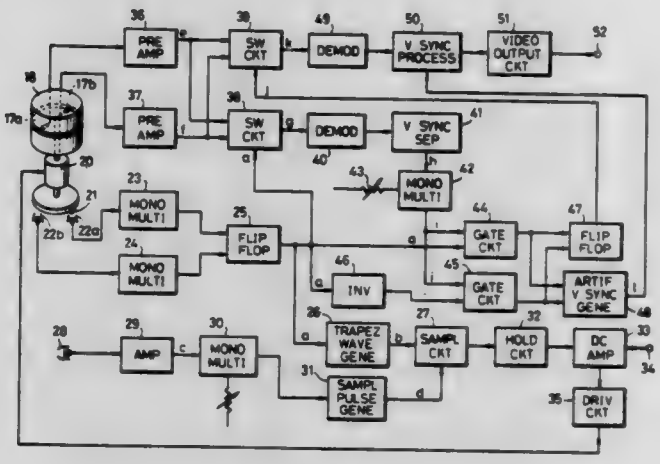
U.S. Cl. 358—4 **12 Claims**

1. An apparatus for reproducing a video signal of a certain system having a field frequency F1 and a number N1 of horizontal scanning lines within one field period which has been recorded on a magnetic tape travelling at a speed S1 along a plurality of mutually parallel tracks formed obliquely relative to the longitudinal direction of the tape, with conversion of the video signal to a video signal of another system having a field frequency F2 and a number N2 of horizontal scanning lines, said reproducing apparatus comprising:

means for causing said tape to travel at a speed S2 which is represented by the equation

$S2 = F2/F1\ S1$; and

reproducing means for causing rotary heads to trace each track on said travelling magnetic tape thereby utilizing a signal over a tracing range of a length l2 substantially as a reproduced signal corresponding to a unit field amount, said length l2 being represented by the equation



$l2 = (N2/N1)l1$,

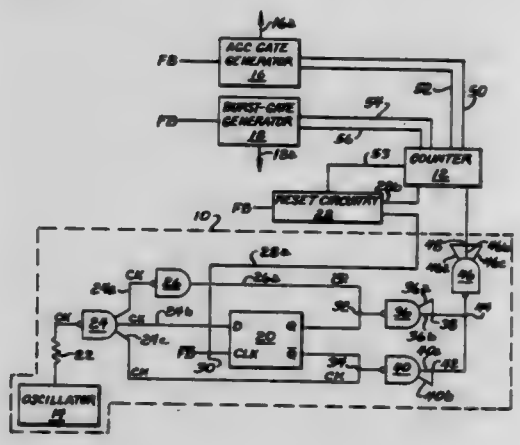
wherein l1 is the length of the recording track corresponding to a unit field amount of the recorded signal on the magnetic tape.

4,346,398

AUTOMATIC CLOCK PHASE SELECTOR

Stephen Lai, Mount Prospect, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 27, 1980, Ser. No. 200,673
Int. Cl.³ H04N 9/46
U.S. Cl. 358—20 **6 Claims**



1. In a television receiver which develops a flyback pulse and which has an AGC gate generator, a burst-gate generator, and a counter for enabling the AGC gate generator and the burst-gate generator for given time intervals during each horizontal video line in response to input pulses applied to the counter, an automatic clock phase selector for applying input pulses of selected phases to the counter to enable the generators during selected time intervals comprising:

means for generating a train of true clock pulses having positive portions and negative portions, and for generating a train of complementary clock pulses having positive portions and negative portions; and

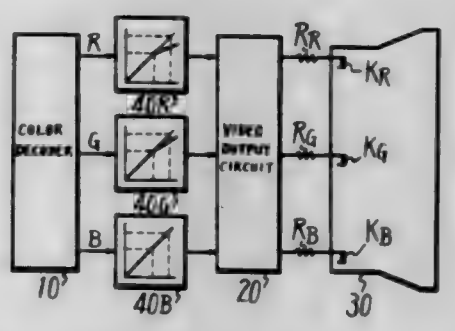
selector means receiving said clock pulses and the flyback pulse and being responsive to time coincidence between a selected edge of the flyback pulse and the positive portion of a true clock pulse for coupling a selected one of the trains of clock pulses to the counter, and being responsive to time coincidence between said edge of the flyback pulse and the negative portion of the true clock pulse for coupling the other train of clock pulses to the counter so that the intervals during which the AGC gate generator and the burst-gate generator are enabled track with the occurrence of said edge of the flyback pulse.

4,346,399

COLOR TEMPERATURE CONTROL CIRCUIT

Touru Akutagawa, Irima; Takashi Okada, and Yutaka Tanaka, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,438
Claims priority, application Japan, Feb. 8, 1980, 55-15364
Int. Cl.³ H04N 9/535
U.S. Cl. 358—29 **4 Claims**



1. A color temperature control circuit for a color television receiver, comprising:

(A) a color decoder circuit supplied with a composite video signal and for generating red, green and blue primary color signals at its outputs;

(B) a video output circuit for amplifying said three primary color signals;

(C) a tri-color cathode ray tube having three control electrodes adapted to receive said three primary color signals from said video output circuit; and

(D) a circuit arrangement connected between said color decoder circuit and said video output circuit, said circuit arrangement having the same transfer function for all three primary color signals when the input signals are below a predetermined level and having a transfer function for the blue primary color signal larger than that for the red primary color signal when input signal levels of said blue and red primary color signals are larger than said predetermined level.

4,346,400

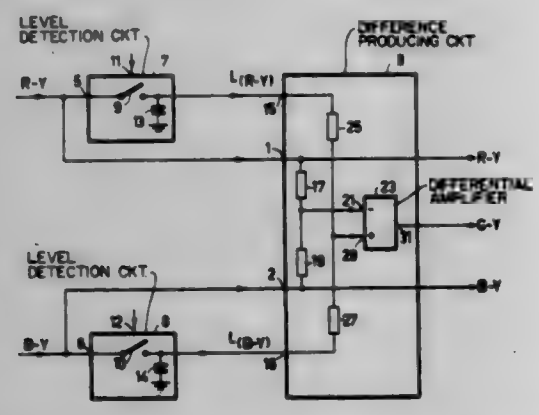
MATRIX CIRCUITS

Paulus J. M. Hovens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,235
Claims priority, application Netherlands, Nov. 9, 1979, 7908215
Int. Cl.³ H04N 9/52
U.S. Cl. 358—30 **4 Claims**

1. A matrix circuit for obtaining a third color difference signal from first and second color difference signals to be applied to inputs thereof comprising: a difference producing circuit a first and a second level detection circuit for obtaining a first and a second level correcting signal to be applied to said difference producing circuit, said first and the second color difference signals also being applied to said difference producing circuit, and said difference producing circuit further comprising a circuit for compensating a mutual influencing of levels of said color difference signals, and wherein an input of

the first and an input of the second level detection circuits are connected to the relevant inputs of the matrix circuit for applying uncompensated color difference signals to the inputs of the level detection circuits.

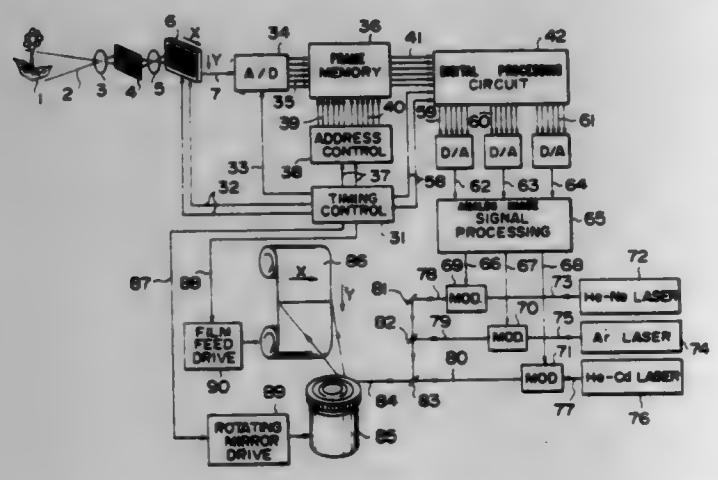


4,346,401

REPRODUCING A COLOR IMAGE ON A PHOTOSENSITIVE MATERIAL IN RESPONSE TO AN ELEMENT-SEQUENTIAL COLOR SIGNAL

Yuji Ohara, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 30, 1980, Ser. No. 145,242
Claims priority, application Japan, May 1, 1979, 54-53630
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **12 Claims**



1. A method of reproducing a color image on a subtractive color photosensitive material by use of an electric signal obtained by two-dimensionally scanning an original color image in which the electric signal carries regularly and alternately contained signal components for different color components in every section of the electric signal corresponding to every picture element of the original color image, said method comprising the steps of:

analog-to-digital converting the electric signal to obtain a digital signal;

dividing said digital signal into a plurality of digital signals, one for each color component, each of said plurality of digital signals having signal sections, having color components of a given level therein, separated by at least one intervening signal section having no color component therein;

processing each of said plurality of digital signals by filling in each said at least one intervening signal section having no color component therein in accordance with at least the level of the color component in an adjacent signal section to derive at least one filled in section for each signal section, each said signal section and said at least one filled in section comprising a filled in divided signal;

digital-to-analog converting the filled in divided signals to derive respective analog signals;

modulating respective laser beams with said respective analog signals to produce respective modulation output signals;

combining said respective modulation output signals into a single output signal; and

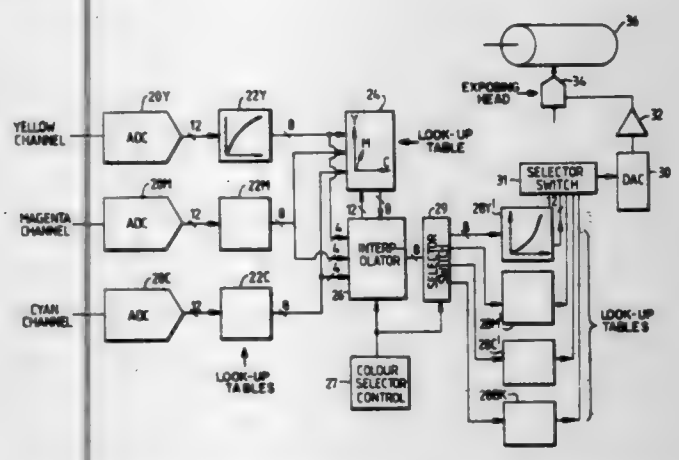
recording a color image on a subtractive color photosensitive material by two-dimensionally scanning in accordance with said single output signal.

4,346,402

IMAGE-REPRODUCTION APPARATUS

Peter C. Pugsley, Pinner, England, assignor to Crosfield Electronics Limited, London, England

Filed May 28, 1980, Ser. No. 154,168
Claims priority, application United Kingdom, May 30, 1979, 7918806
Int. Cl.³ G03F *3/08*
U.S. Cl. 358—80 **9 Claims**



3. Apparatus for the production of colour-separated and colour-corrected images from a coloured original, including an electro-optical scanner for producing uncorrected colour separation signals corresponding to successively scanned elements of the original, comprising:

a plurality of analogue-to-digital converters for individually converting the signals into digital form;

a plurality of separate first signal-varying means, each including a digitally stored first look-up table, connected to individually receive the uncorrected colour separation signals, said first signal-varying means providing signals which have been modified substantially independently of one another;

colour-correcting signal-varying means connected to receive the modified uncorrected colour separation signals, the colour-correcting signal-varying means including a digitally stored look-up table for providing colour-corrected colour separation signals, each of which is a function of two or more of the modified uncorrected colour separation signals; and

means for deriving from the colour-corrected signals, output signals for application to one or more output devices by means of which each colour-corrected colour-separation image is recorded on a recording medium.

4,346,403

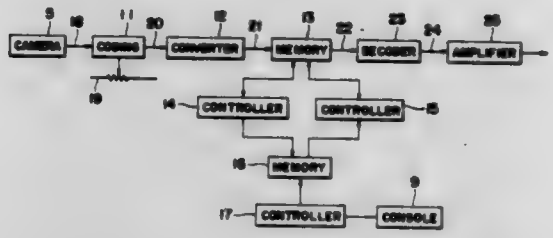
PROCESS AND DEVICE FOR PRODUCING ANIMATED CARTOONS

Shigeru Tamura, Tokyo, Japan, assignor to Kabushiki Kaisha n a c, Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,680
Claims priority, application Japan, Sep. 21, 1979, 54-120708
Int. Cl.³ H04N *5/24*
U.S. Cl. 358—93 **2 Claims**

1. An animated cartoon production process comprising the steps of: photographing a plurality of drawings one by one using a TV camera; causing the photographed drawings to be stored one by one in an image storage device; reproducing and

displaying desired drawings successively by an image display device to check the motion of the figures in the animation;



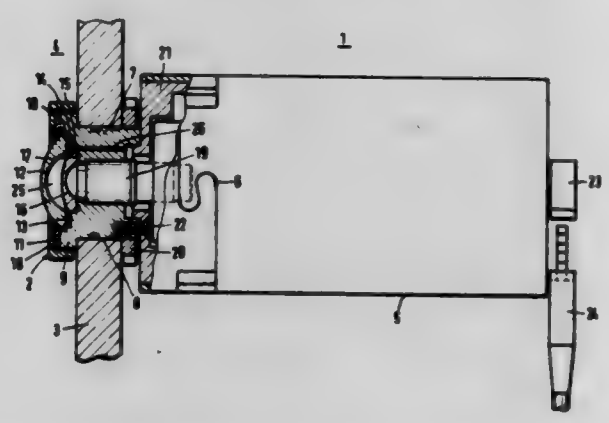
producing in-between drawings between key shots, adjusting the key shots or removing any of them; and thereafter copying and painting the cells and filming the completed cells.

4,346,404

MONITORING CAMERA

Rudolf Gantenbrink, Am Tiergarten 58, 3000 Hannover 73, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,288
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947864
Int. Cl.³ H04H *7/18*
U.S. Cl. 358—99 **14 Claims**



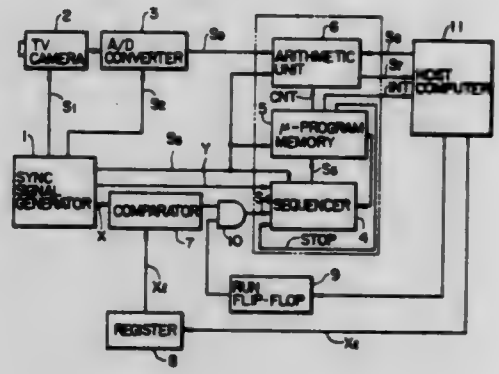
1. A monitoring camera for a submersible pressure vessel, particularly a bathyscaphe, which includes an interior and a wall surrounding the interior and having an inner side, the camera comprising a rear portion outside said pressure vessel and a front portion installed in an opening of said wall; and at least one lens located at the interior of said pressure vessel and sealingly covering said front portion, said lens projecting only slightly into said interior from said wall.

4,346,405

VISUAL INFORMATION PROCESSING APPARATUS

Haruo Yoda, Hinodemachi, and Jun Motoike, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 10, 1980, Ser. No. 195,859
Claims priority, application Japan, Oct. 12, 1979, 54-130801
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—105 **6 Claims**



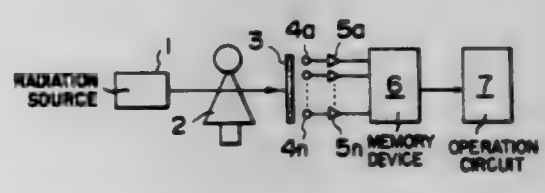
1. A visual information processing apparatus comprising: first means for successively producing digitized two-dimensional image data in a raster-scanning manner; second means for generating a coordinate (X, Y) of a scanning point of said two-dimensional image; third means which is provided with a plurality of microprograms and which executes a microprogram corresponding to a value of said coordinate Y, thereby to process the image data which is produced by said first means; and fourth means for starting said third means when a value of said coordinate X is in agreement with a particular value X_f; wherein said image data is processed for every particular image region.

4,346,406

GRADATION PROCESSING METHOD FOR A RADIATION IMAGE RECORDING SYSTEM

Hisatoyo Kato, and Masamitsu Ishida, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 11, 1980, Ser. No. 168,799
Claims priority, application Japan, Jul. 11, 1979, 54-87805
Int. Cl.³ H04N *5/30*
U.S. Cl. 358—110 **7 Claims**



1. In a radiation image recording system including a radiation image information read out system having an amplification gain for scanning a stimulable phosphor plate with a light beam of stimulating rays to cause the stimulable phosphor plate carrying radiation image information to emit light according to the radiation image information stored therein in the form of radiation energy and detecting the emitted light to read out the radiation image information,

a method of gradation processing comprising photoelectrically detecting the light emitted from the stimulable phosphor plate, determining the maximum value Smax, the minimum value Smin and the average value $\bar{S}$ among the image signal obtained by detecting the emitted light, setting the read out level of the radiation image information read out system so that the minimum signal level Smin is made a standard input signal when the difference of log Smax—log Smin is less than a predetermined value and a signal level other than the minimum signal level Smin is made a standard input signal when said difference is not less than said predetermined value and that said standard input signal is read out as a predetermined level of a standard output signal, controlling the amplification gain of the image information read out system to $\Delta s/(\log Smax - \log Smin)$ where Δs is a reproduced signal region in said former case, and fixing the amplification gain at a constant value in said latter case.

4,346,407

APPARATUS FOR SYNCHRONIZATION OF A SOURCE OF COMPUTER CONTROLLED VIDEO TO ANOTHER VIDEO SOURCE

Ralph H. Baer, Manchester, and Leonard D. Cope, Merrimack, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

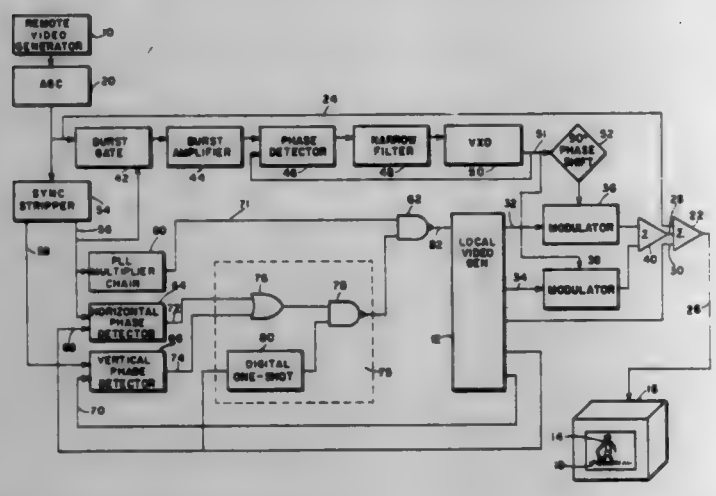
Filed Jun. 16, 1980, Ser. No. 159,548
Int. Cl.³ H04N *5/04*
U.S. Cl. 358—149 **23 Claims**

1. Apparatus for synchronizing a source of computer controlled video to a second video source, comprising:

a source of computer controlled video providing video and

synchronization signals in which said synchronization signals are related to its system clock;

a second video source providing video and synchronization signals; and



first means responsive to the synchronization signals of said second video source for generating clock signals for said source of computer controlled video.

4,346,408

METHOD FOR THE TELEVISION SCANNING OF FILMS

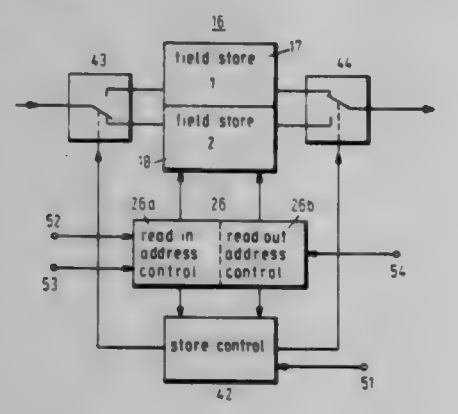
Volker Massmann, Mühltal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,284

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012257; Mar. 29, 1980, 3012327

Int. Cl.³ H04N *3/36*

U.S. Cl. 358—214 **4 Claims**



1. A method for the scanning of films and to derive television signals therefrom with line interlace,

wherein the film is scanned line by line without line interlacing, the signals each belonging to a scanned line are read into a frame store (16) having two field stores (17,18) at an address characterizing the position of the particular line within a film frame,

and the content of the frame store is read-out according to a television standard,

comprising,

for studio asynchronous film speeds below 50 frames per second,

the steps of

reading-in one film frame into one (17) of the two field stores (17,18) of the frame store (16), and simultaneously completely, and repetitively reading-out the other field store (18) until the reading-in of one of the film frames into said one (17) of the field stores (17,18) is completed;

reading-in the next film frame into the other store (18) so that the respective reading-out of one field store (e.g. 17) only begins after the complete reading-in into a field store (then 17) and the complete reading-out, at least once, of the other field store (18).

4,346,409

METHOD OF AND APPARATUS FOR PROCESSING A RADIOGRAPHIC IMAGE

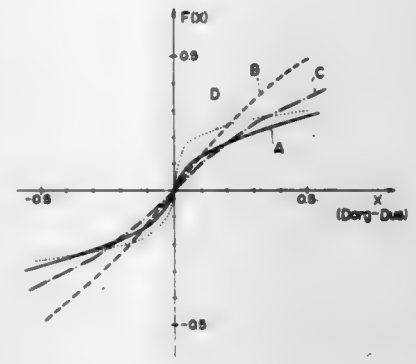
Masamitsu Ishida; Hisatoyo Kato, and Seiji Matsumoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1980, Ser. No. 220,771

Claims priority, application Japan, Dec. 25, 1979, 54/168936

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—280 **10 Claims**



1. A method of processing a radiographic image in a radiographic image copying system in which an original radiograph is scanned and the radiographic image information recorded on the original radiograph is read out and converted into an electric signal and then an image is reproduced on a recording material by use of the electric signal, said method comprising a step of conducting an operation represented by a formula

$$D' = Dorg + F(X)$$

is conducted at every scanning point, where Dorg in the original image density read out from the original radiograph, X is Dorg-Dus, Dus being an unsharp mask density corresponding to a super-low spatial frequency, and F(X) is a monotone increasing function which satisfies the condition of $F'(X_1) \geqq F'(X_2) \geqq 0$ for arbitrary values X_1, X_2 of X ($|X_1| < |X_2|$) and in which there exists at least one certain value X_0 of X which satisfies the condition of $F'(X_1) > F'(X_2)$ when $|X_1| < |X_0| < |X_2|$, whereby the frequency component above said super-low patial frequency is emphasized.

4,346,410

FACSIMILE RECEIVER

Tetsuo Maeno, Ueda, Japan, assignor to Matsushita Graphic Communications Systems, Inc., Tokyo, Japan

Filed Apr. 10, 1980, Ser. No. 138,898

Claims priority, application Japan, Apr. 17, 1979, 54-47630; May 8, 1979, 54-55981

Int. Cl.³ H04N *1/32*

U.S. Cl. 358—281 **2 Claims**

1. A facsimile receiver for demodulating a received image signal through synchronous detection comprising:

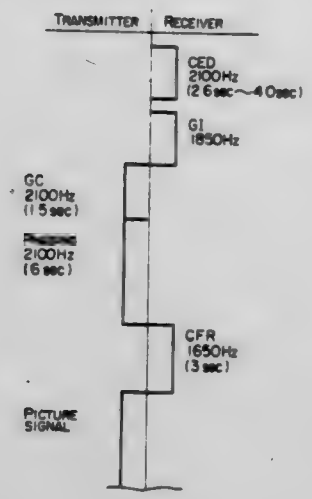
demodulation means for synchronously detecting an image signal received from a transmitting facsimile station;

carrier reproducing means for reproducing a carrier signal from a received image signal and providing said reproduced carrier signal to said demodulation means, said carrier reproducing means including a phase locked loop circuit having an input for receiving a carrier signal contained in said image signal;

means for transmitting a communication control signal to said transmitting facsimile station prior to the reception of an image signal from said facsimile station;

means for selectively applying said communications control signal to the input of said phase locked loop circuit to cause said phase locked loop circuit to operate in response to said communications control signal; and,

a control circuit for providing a control signal which activates said means for selectively applying to cause said



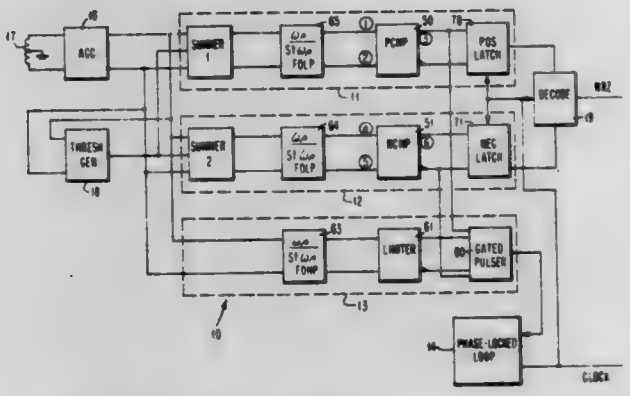
communications control signal to be applied to the input of said phase locked loop.

4,346,411

AMPLITUDE SENSITIVE THREE-LEVEL DETECTOR FOR DERIVATIVE READ BACK CHANNEL OF MAGNETIC STORAGE DEVICE

Otto R. Buhler, Boulder; Homer J. Gardner, Longmont, both of Colo., and Peter T. Marino, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1981, Ser. No. 234,519
Int. Cl.³ G11B *5/09, 5/02*
U.S. Cl. 360—46 **7 Claims**



1. A system for reading information stored on a flexible magnetic media comprising:

(a) a magnetic transducer for providing a differential signal representing binary data stored on said flexible media;

(b) first and second peak threshold comparators for respectively detecting positive and negative peaks of said differential signal;

(c) an automatic gain control circuit connected between said transducer and said comparators and including a feedback loop providing a relatively long time constant for said gain control circuit compared to bit times of said binary data;

(d) a voltage threshold generator connected to said AGC circuit for providing a reference threshold voltage to said comparators which is a precise percentage of the voltage peaks of said differential signal and which has a relatively short time constant relative to said bit times; and

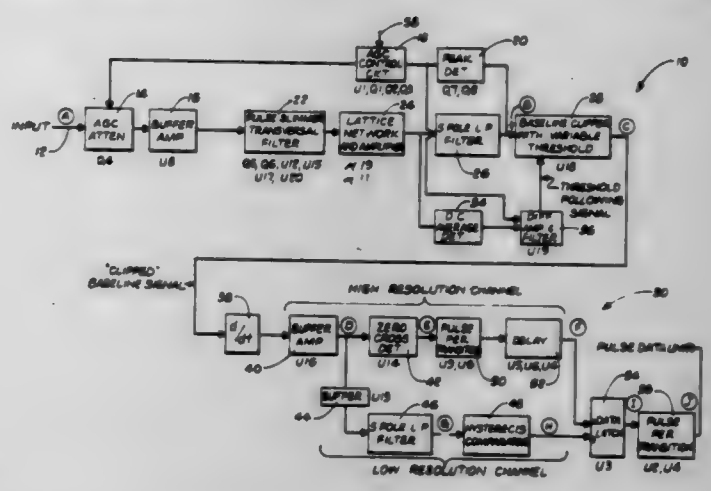
(e) clock means responsive to said input signal peaks to sample said peak detectors to establish the amplitude relationship of said input signal to said reference voltage signal.

4,346,412

READ SIGNAL PROCESSING CIRCUIT

Bobby E. Conley, Yukon, Okla., assignor to Magnetic Peripherals, Inc., Minneapolis, Minn.

Filed Apr. 21, 1981, Ser. No. 256,158
Int. Cl.³ G11B *5/09, 5/02*
U.S. Cl. 360—46 **7 Claims**



1. A read signal processing circuit for a magnetic storage disk, the circuit receiving an amplified analog read signal from the disk's read-write head and outputting a binary reconstruction of the original encoded write signal, the circuit comprising:

a pulse slimmer transversal filter for receiving the analog read signal and slimming the signal;

a base line clipper with variable threshold connected to the transversal filter for receiving the slimmed signal and inserting an electronic base line in the signal and clipping the slimmed signal between the base line and a threshold level; and

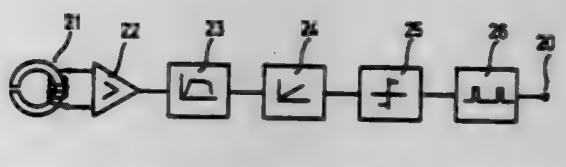
means for converting the clipped base line signal to a pulse transition data signal.

4,346,413

MAGNETIC HEAD POSITIONING SERVO ARRANGEMENT FOR A SYSTEM FOR RECORDING/REPRODUCING INFORMATION ON A MAGNETIC RECORDING MEDIUM, PARTICULARLY ON A FLEXIBLE MAGNETIC RECORDING MEDIUM

Joachim Hack, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,219
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928311
Int. Cl.³ G11B *5/00, 21/10*
U.S. Cl. 360—77 **12 Claims**



1. A magnetic head positioning servo arrangement for a system for recording/reproducing information on a magnetic recording medium, particularly on a flexible magnetic recording medium, the position of the head being adjustable, relative to the magnetic tracks of the recording medium, by means of an actuator, and at least one reference signal being recorded within or beneath each magnetic track, which signal, when sensed, provides information about the momentary position of the head, this information being compared, in a comparator circuit, with information about the correct position of the head above the track center, and, if there is a difference, a control signal is generated for the actuator which moves the magnetic head back to its correct position,

wherein the reference signal consists of at least one pair of pulse sequences, said pulse sequences

being recorded asymetrically with respect to the center of said track,

consisting of a pulse pattern on said track having a signal free marker zone which is produced by partially erasing the pulse pattern and at least part of which extends diagonally across said track, and,

when sensed, producing increasing and decreasing signal pulses,

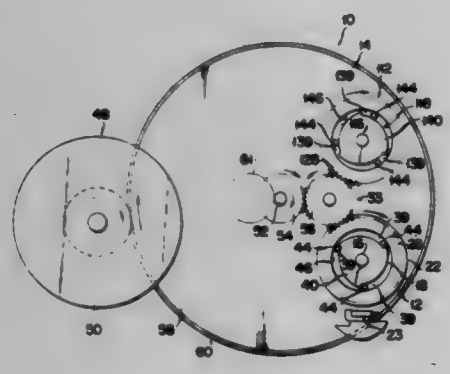
the individual pulses of the sensed signal being detected and compared by means of a comparator circuit, and a control signal for the actuator being generated in the event of a difference in signals.

4,346,414

TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 90,900, Nov. 5, 1979, Pat. No. 4,309,727.
This application May 1, 1980, Ser. No. 145,733
Claims priority, application Japan, Nov. 16, 1978, 53-141616; Nov. 16, 1978, 53-141618; Nov. 16, 1978, 53-157809[U]
Int. Cl.³ G11B *15/32, 15/44, 15/26*
U.S. Cl. 360—90 **3 Claims**



1. A tape recorder embodying a reel mechanism fitted with a pair of one-way clutches and comprising:

a reversible motor;

a center capstan shaft having a flywheel fixed thereto;

a capstan gear fitted to said center capstan shaft;

a pair of spaced reel shafts disposed in a common vertical plane and having reel gears mounted thereon;

an intermediate gear interposed between and engaging said reel gears and said capstan gear with the center of said intermediate gear and the center of said capstan shaft lying in a common vertical plane normal to the vertical plane of said reel shafts; and

a pulley coupled to said motor and engaging said flywheel for transmitting the rotation moment of the motor to one of said reel shafts by one of said pair of one-way clutches.

4,346,415

CASSETTE TAPE RECORDER

Hideo Tomabechi, Hachioji; Hazime Osada, Fuchu, and Akira Osanai, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1980, Ser. No. 156,579
Claims priority, application Japan, Jun. 13, 1979, 54-74488
Int. Cl.³ G11B *15/29, 5/54*
U.S. Cl. 360—105 **4 Claims**

1. A cassette tape recorder for use with a tape cassette loaded therein, said tape cassette containing magnetic recording tape, which comprises:

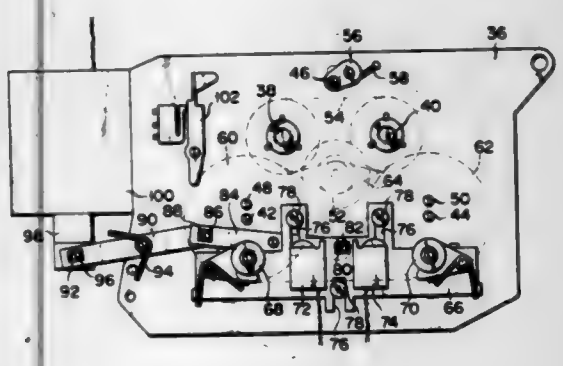
a pair of capstans;

a motor capable of being rotated selectively in one or the other direction at the same constant speed and with the same characteristics;

a power transmission mechanism coupled to said pair of capstans and also to said motor for transmitting the rotation of said motor to at least one of said pair of capstans to cause rotation of at least one of said pair of capstans in either one or the other direction, thereby causing a magnetic recording tape accommodated in a loaded tape cassette to be driven in one or the other direction;

a first magnetic head assembly including at least recording and playback magnetic heads, and having tape guide means for defining a position of the tape in a direction perpendicular to the tape transporting direction, and movable between a first position in which the recording and the playback magnetic heads and the tape guide means contact with a magnetic recording tape in a loaded tape cassette and the magnetic head assembly capable of recording tape driven in said one direction or reproducing magnetic signals from said at least one track and a second position in which the first magnetic head assembly is spaced apart from said magnetic recording tape;

a second magnetic head assembly including at least recording and playback magnet heads, and having tape guide means for defining a position of the tape in a direction perpendicular to the tape transporting direction, and movable between a first position in which the recording and the playback magnetic heads and the tape guide means of said second



magnetic head assembly contact with magnetic recording tape in a loaded tape cassette and the magnetic head assembly capable of recording magnetic signals in the other track or tracks than said at least one track of said magnetic recording tape driven in said other direction or reproducing magnetic signals from said other track or tracks and a second position in which the second magnetic head assembly is spaced from said magnetic recording tape;

a moving mechanism for moving said first and second magnetic head assemblies simultaneously and in the same direction; and

a magnetic head assembly operation switching circuit means for electrically selecting and rendering operative said first magnetic head assembly when said magnetic recording tape is driven in one direction and electrically selecting and rendering operative said second magnetic head assembly when said magnetic recording tape is driven in said other direction;

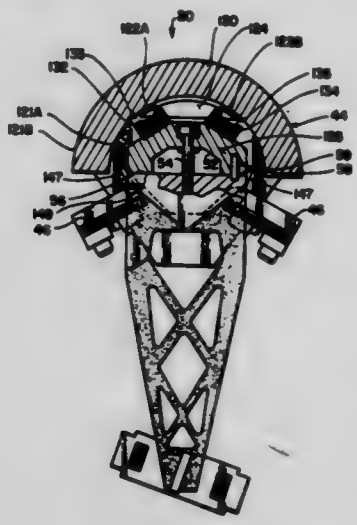
said second magnetic head assembly being arranged such that it is on the upstream side of the first magnetic head assembly when the magnetic tape is driven in said one direction and it is on the downstream side of the first magnetic head assembly when the magnetic tape is driven in said other direction.

4,346,416

ROTARY ACTUATOR ASSEMBLY FOR DISK DRIVE HEAD POSITIONER

Charles M. Riggle, Acton, Mass.; John D. Read, Monument, Colo.; William B. Noe, Concord; Richard Winfrey, Boxborough, both of Mass.; Christopher A. Pollard, Monument, and Frank W. Bernett, Colorado Springs, both of Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 29, 1980, Ser. No. 126,129
Int. Cl.[3] G11B *21/02, 5/55*
U.S. Cl. 360—106 11 Claims



1. An assembly for moving a read/write recording head over the surface of a magnetic disk recording medium, the recording medium being supported by spindle means for rotating the medium about a spindle axis that is perpendicular to the plane of rotation of the recording medium, the spindle means being supported by a base, the assembly comprising:

an actuator arm having a pivotal end at one extremity and a head supporting end at the other extremity for supporting the head;

an actuator motor comprising a stator and a rotor, the rotor being rotatable about a rotor axis that is parallel to said spindle axis, the rotor being connected to the pivotal end of the actuator arm for pivotally moving the actuator arm through a predefined limited angular range about the rotor axis;

the rotor including a pair of permanent magnets, and the stator being mounted on said base and having opposed shaft receptors for supporting the rotor, said stator including at least one electro-magnet having at least one coil for energization to produce an electromagnetic force between the stator and the rotor, to produce movement of the rotor about said rotor axis; the rotor including

an elongated member having a substantially U-shaped cross-sectional area in the plane normal to the rotor axis;

a pair of aligned stub shaft members located on said rotor axis, one disposed at each end of and connected to the elongated U-shaped member, for use as a shaft for rotation and support of the U-shaped member within the shaft receptors of said stator;

the end surfaces of the open side of the U-shaped member providing mounting surfaces located intermediate said stub shaft members for securing the arm thereagainst;

the actuator arm having a mounting surface at one end thereof adapted to be secured to the U-shaped member of the rotor;

the permanent magnets of the rotor being of elongated configuration, disposed parallel to the rotor axis and being fixed to the outside of the U-shaped member;

the stator including a stator core that is arcuately shaped thereby to embrace the area of travel of said permanent magnets and a stator coil wound about the stator core;

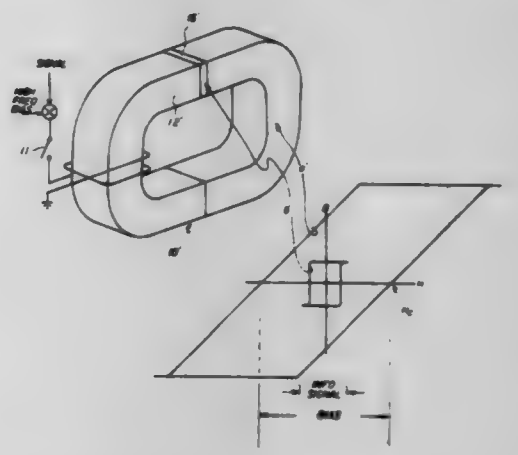
said permanent magnets being formed to produce a substantially constant magnetic flux density between said permanent magnets and said stator core over the rotational range of the rotor.

4,346,417

SELECTIVELY ACTUABLE MAGNETIC HEAD

Neil J. Griffith, San Diego, Calif., assignor to Spin Physics, Inc., San Diego, Calif.

Filed Mar. 24, 1980, Ser. No. 133,076
Int. Cl.[3] G11B *5/251, 5/28*
U.S. Cl. 360—115 4 Claims



1. Multichannel record head apparatus, comprising:

(a) a plurality of discrete gapped magnetic cores, the gaps of which are disposed along a gap line, said cores respectively being of low coercivity and having magnetic saturation levels greater than that which corresponds to a given amount of applied field;

(b) magnetic gapping material extending completely from one side to the other of said gaps, said gapping material being of low coercivity and being magnetically saturable at said given amount of applied field; and

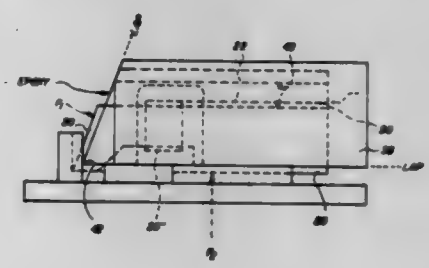
(c) means cooperative with said cores for selectively applying fields thereto of at least said given amount, thereby to saturate magnetically said gaps so that said gaps will support respective recording fringe fields, the field of any given gap being incapable of inductively causing the gap of any other core from exhibiting a fringe field when that other core does not have a selectively applied field applied thereto of said given amount.

4,346,418

HIGH DENSITY MULTITRACK MAGNETIC HEAD

Dennis F. Cullum, Leucadia, and Jelmer Dorreboom, Olivenhain, both of Calif., assignors to Spin Physics, Inc., San Diego, Calif.

Filed Sep. 5, 1980, Ser. No. 184,553
Int. Cl.[3] G11B *5/10, 5/42, 5/28;* H01F *7/06*
U.S. Cl. 360—129 13 Claims



1. The method of assembling part of a multitrack magnetic head having about 30 or more tracks per widthwise inch, said method comprising the steps of

(a) setting a plurality of core pieces in aligned slots of a slotted jig, the core pieces being narrower than a first dimension Y,

(b) setting magnetic shield members between respective pairs of said core pieces, thereby to form an interleaved assembly of shield members and core pieces, said shield members being wider than said dimension Y and being disposed to reside against the shoulders of respective jig slots, whereby the parts of said shield members which do not abut against said shoulders extend away from said interleaved assembly of core pieces and shield members,

(c) embracing said interleaved assembly of core pieces and shield members within a slotted bracket assembly so that the extended parts of said shield members reside in respective slots of said bracket assembly,

(d) bonding said bracket assembly, said shield members, and said core pieces together while said core pieces reside in said jig slots, and

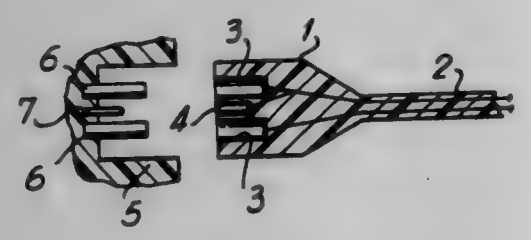
(e) after said bonding, removing said core pieces from the slots of said jig, whereby those parts of said core pieces which had resided in said jig slots may be lapped away or otherwise removed from said bonded parts.

4,346,419

DETACHABLE PLUG

Frank Janniello, Stamford, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,062
Int. Cl.³ H02H *11/00*
U.S. Cl. 361—2 **2 Claims**



1. An electrical connection system for preventing arcing between the contacts comprising:

a socket having two high current male contacts and a low current male contact;

a plug having therein two high current female contacts and a low current female contact for receiving said male contacts;

said socket being part of an electrically powered device requiring high CURRENT:

said high current contacts in said socket being electrically connected to said device and a solid-state switch which is turned off and on by a control gate in electrical connection with said low current contact;

wherein the high current contacts in the socket and the plug are of such dimensions that they join before the low current contacts are joined when the plug is inserted into the socket in said device to be operated and the low current contacts are of such dimensions that their contact is broken before the contact of the high current contacts when the plug is removed thus preventing arcing.

4,346,420

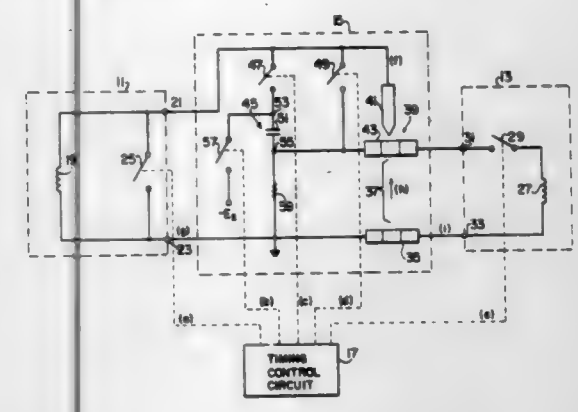
MAGNETOPLASMADYNAMIC SWITCH

Peter J. Turchi, Alexandria, Va., assignor to The United States of America as represented by the Secretry of the Navy, Washington, D.C.

Filed May 28, 1980, Ser. No. 153,987
Int. Cl.³ H02H *3/00*
U.S. Cl. 361—4 **12 Claims**

1. A magnetoplasmadynamic switch for transforming and delivering energy to an inductive load at very high electromagnetic power rates from a storage circuit, the storage circuit including a circuit interrupter in parallel with a storage inductor and carrying a current supplied to the storage inductor from a primary energy source, the switch comprising:

an electrode adapted to be coupled between one terminal of the circuit interrupter and one terminal of the load; and



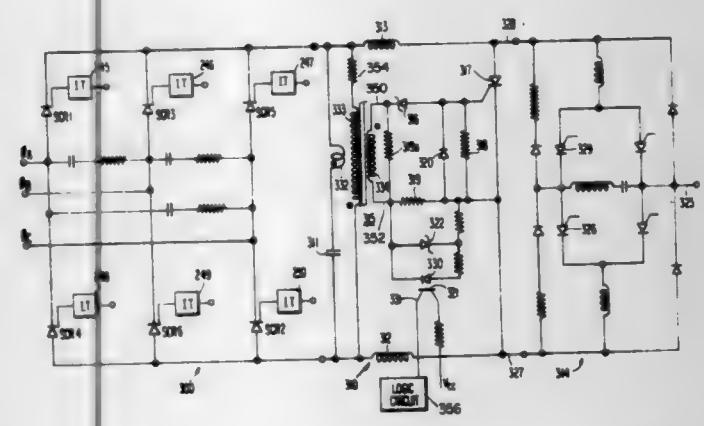
means adapted to be coupled between the other terminal of the circuit-interrupter and the other terminal of the load and spaced from the electrode for jetting plasma to the electrode to provide a low impedance conduction path when the storage circuit is interrupted.

4,346,421

FAULT DETECTOR

George P. Gurr, Dunwoody, Ga., assignor to Sangamo Weston, Inc., Atlanta, Ga.

Filed Jul. 2, 1979, Ser. No. 54,023
Int. Cl.³ H02H *3/08, 7/122*
U.S. Cl. 361—57 **18 Claims**



1. A fault detector for an inverter having a plurality of conduction controlled devices supplied by a source of direct current on a DC bus, which comprises:

a capacitor;

detector means connected to said capacitor in series across said DC bus for sensing current discharged by said capacitor and for supplying an output signal as a function of said current;

means for short circuiting said DC bus in response to said output signal,

wherein said detector means comprises a saturable core transformer means having a primary winding and a secondary winding, said secondary winding having a first end and a second end, said primary winding connected to said capacitor in series across said DC bus, and said secondary winding supplying said output signal; and

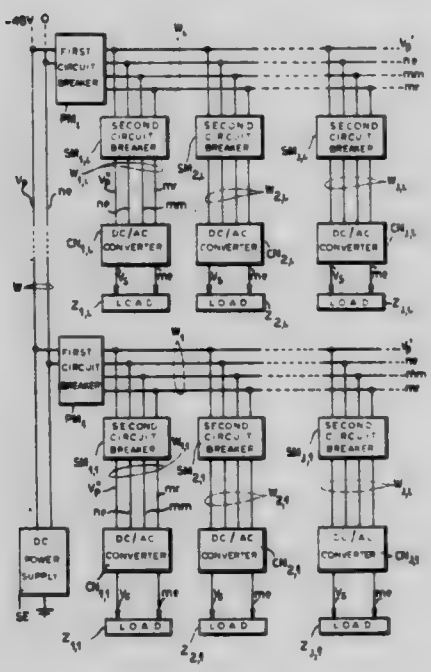
wherein said detector means further comprises Zener diode means connected to said first end of said secondary winding for providing said output signal to said means for short circuiting when said output signal exceeds the Zener voltage of said Zener diode means.

4,346,422

POWER-DISTRIBUTION NETWORK FOR TELECOMMUNICATION SYSTEM

Luciano Inzoli, Lodi, Italy, assignor to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

Filed Feb. 24, 1981, Ser. No. 237,673
Claims priority, application Italy, Feb. 25, 1980, 20137 A/80
Int. Cl.³ H02H 7/26
U.S. Cl. 361—62 7 Claims



1. A power-distribution network for energizing a multiplicity of loads, comprising:

a supply of direct current connected to a trunk line;

a plurality of primary branch lines connected in parallel to said trunk line via respective first circuit breakers responsive to short circuits in the associated primary branch lines;

a plurality of sets of secondary branch lines each feeding at least one load, the branch lines of each set being connected in parallel to one of said primary branch lines via respective second circuit breakers responsive to short circuits in the associated secondary branch lines;

each of said circuit breakers being provided with interrupter contacts in series with a conductor of the associated branch line and with energy-storing means for maintaining at least a predetermined minimum level of energization for any load served thereby over a predetermined recovery period following the occurrence of a short circuit in any parallel branch line to enable substantial restoration of a normal supply voltage in the associated branch line, said energy-storing means including a capacitor connected in each circuit breaker between a high-voltage conductor containing said interrupter contacts and a neutral conductor forming part of the associated branch line; and

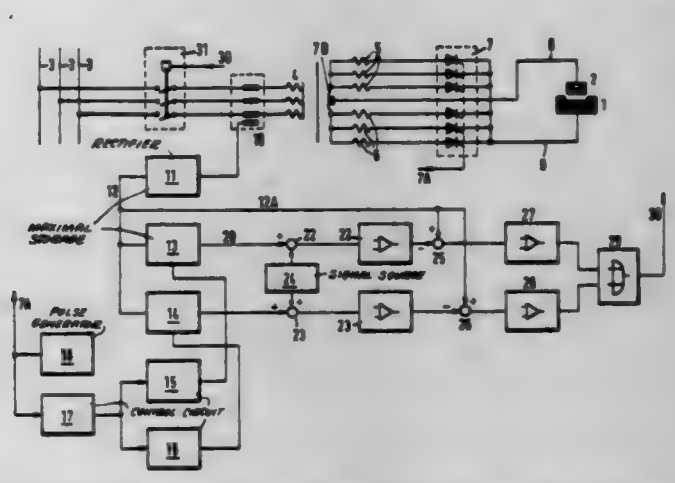
chopper-type converters inserted between said secondary branch lines and said loads, each of said second circuit breakers including inductance elements in said high-voltage and neutral conductors thereof forming with the energy-storing capacitor thereof a filter blocking the chopping frequency of any converter connected to the respective secondary branch line.

4,346,423

SHORT CIRCUIT DISCONNECTING CIRCUIT

Hans Matthes, Wermelskirchen, and Klaus Reifenrath, Solingen, both of Fed. Rep. of Germany, assignors to AEG-Elotherm, G.m.b.H., Remscheid-Hasten, Fed. Rep. of Germany

Filed Aug. 18, 1981, Ser. No. 293,962
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032757
Int. Cl.³ B23K 9/10
U.S. Cl. 361—87 6 Claims



1. A circuit for disconnecting the current from the operating gap of an electrolytic processing device in the event of a short circuit comprising:

means for producing a signal indicating the current in said gap;

means connected to said producing means for storing the maximum value of said signal within successive time periods;

means connected to said storing means for comparing the stored value in the preceding period with said signal indicating gap current and producing a switching signal when the comparison indicates a short circuit has occurred; and

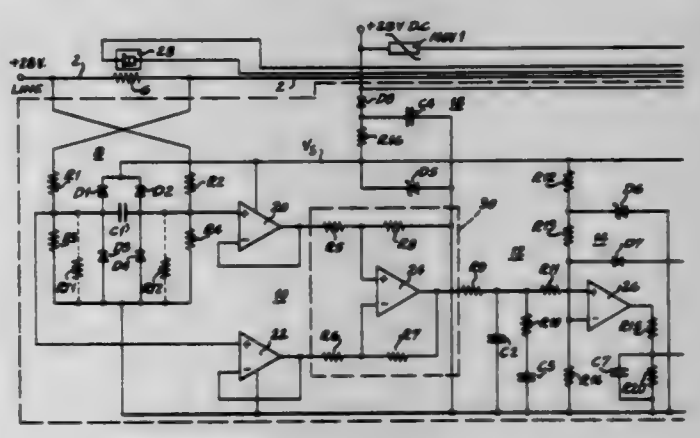
switch means connected to said comparing means for disconnecting the current from said gap when said switching signal is produced.

4,346,424

ELECTRONIC REMOTE CONTROL D.C. POWER CONTROLLER AND CIRCUIT BREAKER

James E. Hansen, Oak Creek, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 22, 1980, Ser. No. 123,593
Int. Cl.³ H02H 3/093, 3/087
U.S. Cl. 361—94 9 Claims



1. In an electrical system having an overload relay in a D.C. power line connecting a D.C. power source to a load device and said relay including D.C. power contacts in said power line and electromagnetic coil means for closing and opening said contacts, electronic means for controlling said relay comprising:

an electronic control circuit supplied from said D.C. source with unidirectional power with respect to ground of said D.C. power source responsive to an external manual control signal for operating said coil means to close said D.C. power contacts and being responsive to an overcurrent trip signal for operating said coil means to trip said D.C. power contacts open;

and an electronic detector circuit responsive to an overcurrent on said D.C. power line for providing said trip signal to said electronic control circuit comprising:

a resistor connected in said D.C. power line for providing an input signal proportional to the current in said line;

an amplifier having a floating input portion and an output portion referenced to said ground;

an input bridge circuit responsive to said input signal when unbalanced thereby for applying a compatible reduced signal to said amplifier, and comprising means for suppressing positive and negative transients and means operative with said floating input portion of said amplifier for effecting common mode rejection in said input signal and means in said output portion providing an amplified output signal in response to said amplifier input signal;

a time delay network referenced to said ground for modifying said amplified output signal;

a threshold comparator including means applying a reference voltage thereto with respect to said ground against which the modified signal from said time delay network is compared to provide an output signal with respect to said ground when said input signal is above a predetermined value indicative of an overload condition in said D.C. power line;

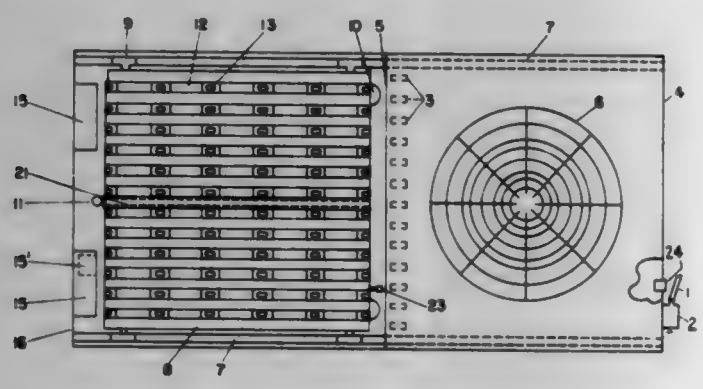
and logic circuit means referenced to said ground responsive to said comparator output signal for providing said trip signal to said electronic control circuit thereby to trip said D.C. power contacts open.

4,346,425

MASS MAGNETIC TAPE DEGAUSSING SYSTEM

Billy C. Gray, 765 Baca Rd., Las Cruces, N. Mex. 88001

Filed Nov. 17, 1980, Ser. No. 207,517
Int. Cl.³ H01F *13/00*
U.S. Cl. 361—151 **9 Claims**



1. A mass degaussing apparatus, comprising,

means for simultaneously positioning a plurality of magnetic tapes in an upright position in an array, and

means for degaussing the plurality of magnetic tapes in said array.

4,346,426

MAGNETIC TAPE DE-GAUSSER AND METHOD OF ERASING MAGNETIC RECORDING TAPE

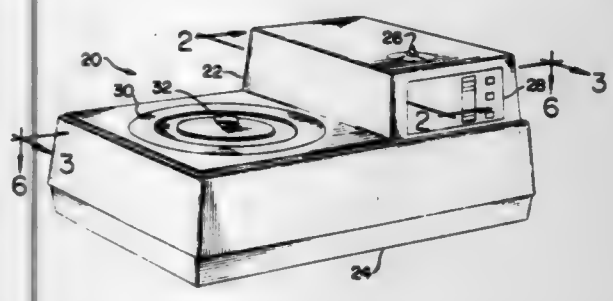
John S. Baumann, Fullerton; Roger W. Knipp, Fountain Valley, and Joseph J. Kacin, Huntington Beach, all of Calif., assignors to Fluxcom, Inc., Anaheim, Calif.

Filed Jan. 7, 1981, Ser. No. 223,142
Int. Cl.³ H01F *13/00*
U.S. Cl. 361—151 **23 Claims**

1. A magnetic tape de-gausser for erasing information encoded on a magnetic tape encased in a magnetic tape container, said de-gausser comprising:

a base having a first electromagnet mounted therein for generating magnetic flux for erasing said magnetic tape;

a tray slidably mounted on said base for conveying said magnetic tape container towards and away from said lower electromagnet;



a second electromagnet for generating magnetic flux for erasng said magnetic tape; and

means for adjustably mounting said second electromagnet on said base so that said tray slides between said first and second electromagnets and so that the distance between said first and second electromagnets adjusts to tightly accommodate said tray and said magnetic tape container.

4,346,427

CONTROL DEVICE RESPONSIVE TO INFRARED RADIATION

Kitson Blissett, Freeport, N.Y., and Robert A. Dunbar, Swampscott, Mass., assignors to Robert Rothenhaus, Bayside, N.Y., a part interest

Continuation of Ser. No. 53,249, Jun. 29, 1979, abandoned. This application Oct. 31, 1980, Ser. No. 202,592
Int. Cl.³ C08B *13/18*
U.S. Cl. 361—173 **58 Claims**



1. A device responsive to heat emanating from a human body for controlling an auxiliary current line, comprising

detection means including an infrared detector for producing detection signals in response to infrared radiation in the frequency spectrum emitted by the human body;

circuit means adapted to receive said detection signals for amplifying them and producing reset signals for those detection signals resulting from movement of a body emanating infrared radiation in said spectrum;

timing means adapted to receive said reset signals for producing a control signal after failing to receive a reset signal for a time period preselected to be longer than the time period expected between movements of a human body within the field of view of said detector; and

control means adapted to receive said control signal for controlling said current line in response thereto.

4,346,428

COUPLING ASSEMBLY WITH BONDING JUMPER

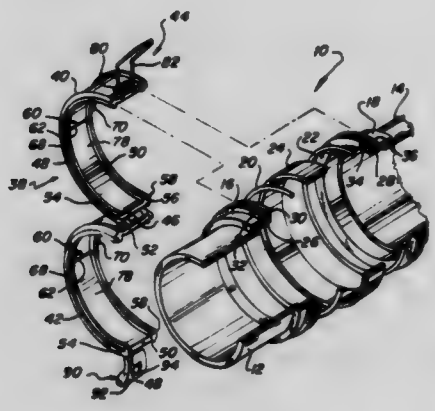
Edwin J. Gale, Aurora, Colo., assignor to Stanley Aviation Corp., Denver, Colo.

Filed Jun. 5, 1980, Ser. No. 156,665
Int. Cl.³ H01R *3/04*
U.S. Cl. 361—215 **6 Claims**

1. A coupling assembly for interconnecting first and second fluid carrying conduit members, comprising:

coupler means removably circumferentially engaging the conduit members to minimize displacement of the conduit members away from each other; and

at least one electrical conductive resilient jumper attached to said coupler means having an elongate body portion with a longitudinal axis, a first arm and a second arm each connected substantially at right angles to opposite ends of said elongated body portion, said first arm extending in a



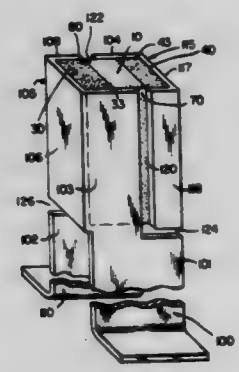
direction opposite said second arm so that, upon engagement of said first arm with the first conduit member, a torque is produced around said axis of said body portion tending to force said second arm against the second conduit member while said second arm produces a torque around said axis of said body portion in the opposite direction so that a strong electrical contact between said electrical jumper and each of the conduit members is provided.

4,346,429

MULTILAYER CERAMIC CAPACITOR WITH FOIL TERMINAL

Henrique V. DeMatos, Greenville, S.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 9, 1980, Ser. No. 167,191
Int. Cl.³ H01G *1/14*
U.S. Cl. 361—310 **1 Claim**



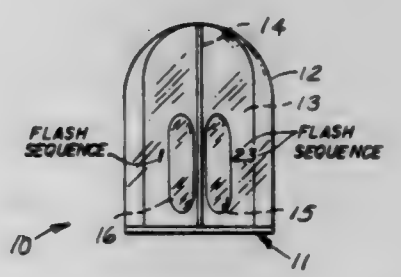
1. A ceramic capacitor device comprising a ceramic chip containing embedded electrodes having a pair of opposed rectangular shaped end surfaces at which surfaces ends of alternate embedded electrodes are exposed and a pair of opposed rectangular shaped side surfaces parallel to said embedded electrodes and substantially larger in area than said opposed end surfaces, each opposed end surface being metallized to provide an electrical contact with exposed ends of embedded electrodes, and portions of each opposed side surface which are contiguous to an end surface being metallized to provide a pair of spaced apart metallized portions on each opposed side surface separated by unmetallized ceramic, a pair of metal foil terminal leads each having a strip portion of substantially the same width as the distance between the opposed end surfaces of the cermanic chip said strip portions being opposite and parallel to each other and parallel to the side surfaces of said ceramic chip, each said strip portion having (i) a first extension overlying one metallized portion of the side surface closest to said strip portion and also overlying most of the unmetallized ceramic of the same side surface and (ii) a second extension of substantially L-shaped cross section overlying the metallized end surface adjacent the aforesaid metallized side surface portion and the metallized portion of the other side surface contiguous to said metallized end surface, the said metallized portions being metallurgically bonded to said overlying metal foil extensions.

4,346,430

CODED STROBE LIGHT DEVICE FOR AIRCRAFT

Bruce B. Holland, 7628 La Sobrina Dr., Dallas, Tex. 75248

Filed Feb. 28, 1980, Ser. No. 125,351
Int. Cl.³ B64D *47/02*
U.S. Cl. 362—62 **15 Claims**



1. A light device for use on aircraft comprising:

a first strobe element for flashing a signal in a first regulated sequence;

a second strobe element for flashing a signal in a second regulated sequence;

separator means for permitting emission of the signals of said first and second strobe elements over first and second predetermined arc about the aircraft, the first and second predetermined arcs overlapping in at least one arcuate region; and

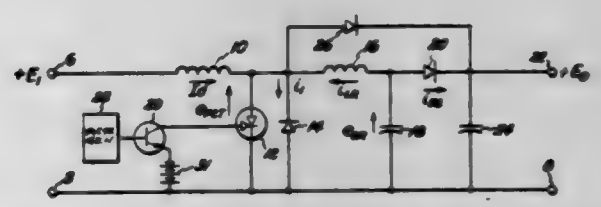
the combined signal of said first and second strobe elements in said at least one arcuate region being distinct from signals in either the first or second regulated sequences to indicate the direction of motion of the aircraft without relation to the distance from which the aircraft is viewed.

4,346,431

FIELD CONTROLLED THYRISTOR SWITCHING POWER SUPPLY

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 12, 1981, Ser. No. 224,599
Int. Cl.³ H02M *3/315*
U.S. Cl. 363—27 **4 Claims**



1. A switching power supply providing power to an external load comprising:

a field controlled thyristor (FCT);

a first inductor;

commutating means comprising a second inductor and a first capacitor for commutating off said FCT, said first and second inductor being in series with one another with one end of said FCT connected to the junction of said first and second inductor so that current builds up in said first inductor when said FCT is on;

a first diode in parallel with said FCT being reversed biased when said FCT is on;

a second diode to provide energy to said load when the voltage across said FCT jumps due to said first diode blocking current, said second diode having one end connected between said first and second inductances and the other end connected to said load;

filter capacitor means connected across said load;

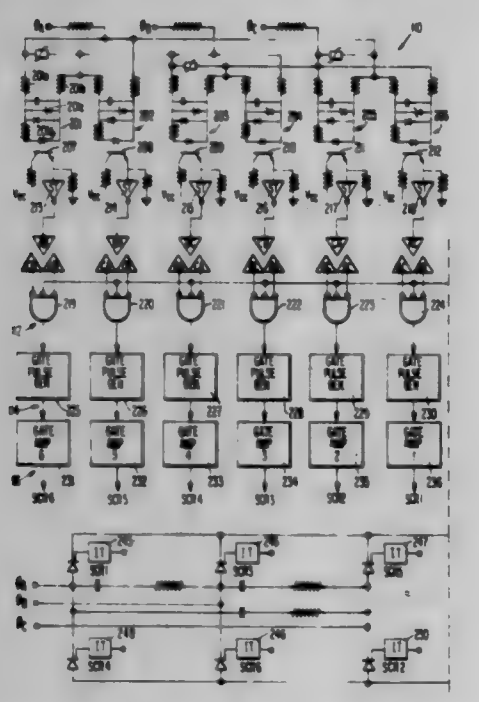
a third diode connected to permit current to flow from said first inductor to said load when said FCT is off; and

pulse generator means connected to the gate of said FCT for holding said FCT off when said FCT has been commutated off and for subsequently turning said FCT on.

4,346,432
RECTIFIER CONTROLLER RESPONSIVE TO SENSED A.C. VOLTAGE SIGNALS

George P. Gurr, Dunwoody, Ga., assignor to Sangamo Weston, Inc., Atlanta, Ga.

Filed Jul. 2, 1979, Ser. No. 54,025
Int. Cl.[3] H02M 7/155
U.S. Cl. 363—129 22 Claims



1. A controller for a rectifier of first, second and third phase alternating current voltage signals for supplying a controlled direct current voltage to a load, said rectifier including three pairs of solid state gate controlled rectifying devices connected in a bridge configuration to a common output bus, each of said pair of devices connected to receive one of said first, second or third phase voltage signals to rectify both the positive half and negative half of the respective applied voltage signal, which comprises:

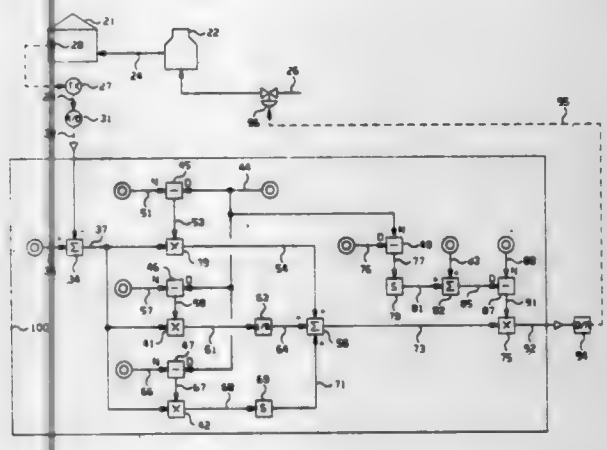
means for detecting comprising voltage detection means for receiving said first, second and third voltage signals and for providing six outputs when respective ones of said voltage signals are greater than ones of the others of said voltage signals; and

means for providing gate control signals comprising logic means responsive to said six outputs for providing a first set of three gate control signals for indicating which of said voltage signals are most positive at any point in time, and for providing a second set of three gate control signals for indicating which of said voltage signals are most negative at any point in time, said first set of three gate control signals connected to be applied to the gates of one of said devices in each pair, said second set of three gate control signals connected to be applied to the gates of the other of said devices in each pair.

4,346,433
PROCESS CONTROL

Robert W. Rutledge, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 11, 1980, Ser. No. 129,295
Int. Cl.[3] G06G 7/66; G05B 11/42, 13/04
U.S. Cl. 364—162 1 Claim



1. A method for maintaining the value of a controlled process variable substantially equal to a desired value for said controlled process variable, wherein said controlled process variable is responsive to changes in a manipulated process variable, and wherein said process can be represented by a general second order equation of the form

$$G_P(S) = \frac{K_1}{(\tau_1 S + 1)(\tau_2 S + 1)}$$

where

G_P=process transfer function;

K_1=process gain;

τ_1 and τ_2=process time constants; and

S=Laplace operator;

said method comprising the steps of:

establishing a first signal which is representative of the actual value of said controlled process variable;

establishing a second signal representative of the desired value of said controlled process variable;

establishing a third signal representative of the difference (E) between said first signal and said second signal in response to said first signal and said second signal;

supplying said third signal to a process controller having a transfer function given by

$$G_C(S) = \left[\frac{\tau_1 + \tau_2}{2K_1\lambda} + \frac{1}{2K_1\lambda S} + \frac{\tau_1\tau_2 S}{2K_1\lambda}\right]\left[\frac{1}{(\lambda/2)(S) + 1}\right]$$

where

G_C=process controller transfer function;

$\lambda = C(\tau_1+\tau_2)/2$;

C has a value in the range of about 0.75 to about 1.25; and

τ_1, τ_2, K_1 and S are as previously defined;

said process controller providing a manipulated variable control signal equal to

$$\left[\left(\frac{\tau_1 + \tau_2}{2K_1\lambda}\right)(E) + \left(\frac{E}{2K_1\lambda}\right)\left(\frac{1}{S}\right) + \left(\frac{\tau_1\tau_2 E}{2K_1\lambda}\right)(S)\right]\left[\frac{1}{(\lambda/2(S) + 1}\right]$$

and

manipulating said manipulated variable in response to said

manipulated variable control signal to thereby maintain said controlled process variable substantially equal to the desired value for said control process variable, wherein said method additionally comprises the steps of:

(a) calculating a plurality of values for λ;

(b) substituting a calculated value for λ into the transfer function of said process controller;

(c) noting the response of said controlled process variable to a change in the desired value of said controlled process variable;

(d) repeating steps (b) and (c) until all of the calculated values of λ have been tested; and

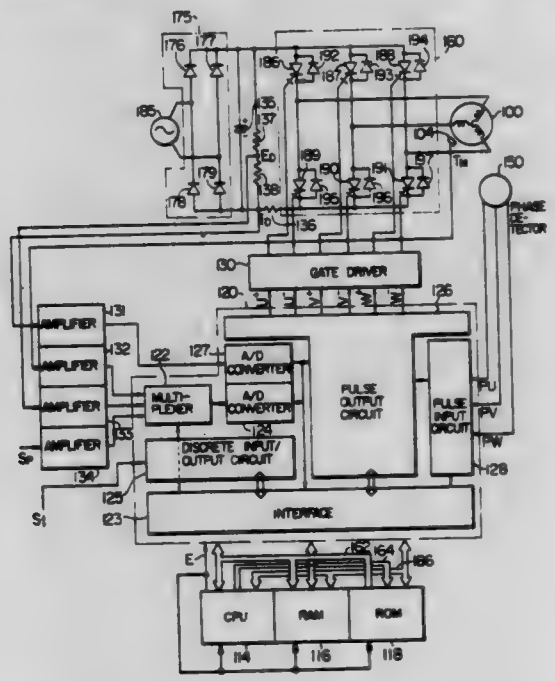
(e) selecting the value of λ for which the response of said controlled process variable to a change in the desired value of said controlled process variable most closely approximates a critically damped response to thereby tune said process controller.

4,346,434

APPARATUS FOR CONTROLLING AN ELECTRIC MOTOR

Shigeki Morinaga, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,483
Claims priority, application Japan, Mar. 20, 1979, 54-32571
Int. Cl.³ G06F *15/46;* H02P *5/06*
U.S. Cl. 364—183 **60 Claims**



11. A digital apparatus for controlling an electric motor comprising:

a reference register group including a plurality of reference registers for storing reference data relating to the desired operation of said electric motor;

counter means for selectively producing an increasing or decreasing count value;

comparing means having a first input connected to said reference register group and a second input connected to said counter means for comparing the reference data stored in a selected reference register to the count value of said counter means;

sequencer control means for selectively enabling said reference registers while controlling the increasing and decreasing of said counter means in accordance with a predetermined sequence;

comparison output means for storing the outputs of said comparing means which indicate the comparison result associated with said selected reference registers; and

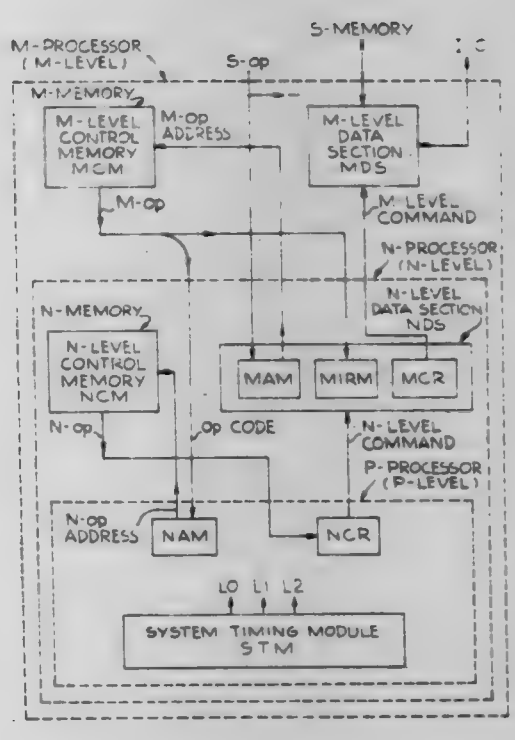
means for controlling said electric motor on the basis of the data stored in said comparison output means.

4,346,435

PIPELINED INTERPRETIVE DIGITAL DATA PROCESSOR COMPRISED OF A MULTI-LEVEL HIERARCHY OF PROCESSORS

John B. Wise, Banstead, England, assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 23, 1979, Ser. No. 23,342
The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.
Int. Cl.³ G06F *9/00, 7/00*
U.S. Cl. 364—200 **8 Claims**



1. In an interpretive-type electronic digital data processing system for performing data processing operations, the combination comprising:

a multi-level hierarchy of processors for performing data processing operations, said hierarchy of processors being designatable in descending hierarchical order as S, M, N and P processors and being constructed and arranged such that said M-processor serves as a control section for said S-processor, said N-processor serves as a control section for said M-processor and said P-processor serves as a control section for said N-processor;

said S-processor including an S memory for storing S instructions corresponding to one or more high level languages;

said M-processor including an M memory for storing M instructions;

said N-processor including an N memory for storing N instructions;

means for applying S instructions to said N-processor;

said N-processor including means responsive to an applied S instruction for fetching a selected one or more M instructions from said M memory and for applying the fetched one or more M instructions to said P-processor;

said P-processor including means responsive to a fetched M instruction for fetching a selected one or more N instructions from said N memory and in response thereto producing an N-level command which is applied to said N-processor;

said N-processor being responsive to an applied N-level command for processing a fetched M instruction to produce an M-level command which is applied to said M-processor;

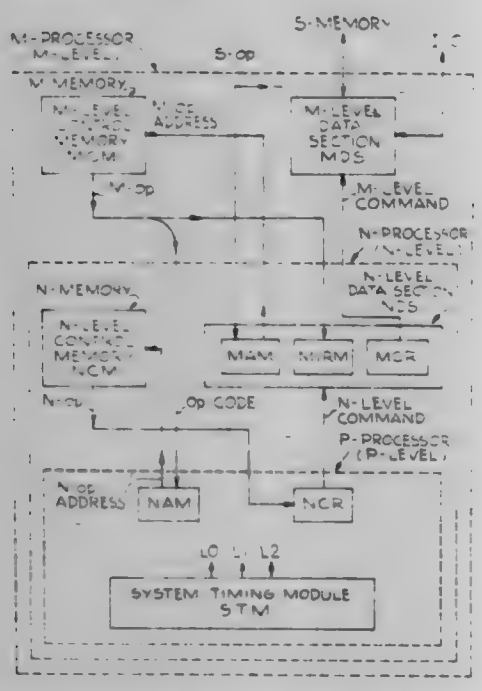
said M-processor being responsive to said M-level command for processing applied data in accordance therewith.

4,346,436

INTERPRETIVE DIGITAL DATA PROCESSOR COMPRISED OF A MULTI-LEVEL HIERARCHY OF PROCESSORS AND HAVING PROGRAM PROTECTION MEANS

John B. Wise, Banstead, England, assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 23,342, Mar. 23, 1979. This application May 3, 1979, Ser. No. 35,588
Int. Cl.[3] G06F *9/38, 9/30, 9/32*
U.S. Cl. 364—200 12 Claims



1. In an interpretive-type electronic digital data processing system for performing data processing operations, the combination comprising:

a multi-level hierarchy of processors for performing data processing operations, said hierarchy of processors being designatable in descending hierarchical order as S, M, N and P processors and being constructed and arranged such that said M-processor serves as a control section of said S-processor, said N-processor serves as a control section for said M-processor and said P-processor serves as a control section for said N-processor;

said S-processor including an S memory for storing S instructions corresponding to one or more high level languages;

said M-processor including an M memory for storing M instructions;

said N-processor including an N memory for storing N instructions;

means for applying S instructions to said N-processor;

said N-processor including means responsive to an applied S instruction for fetching a selected one or more M instructions from said M memory and for applying the fetched one or more M instructions to said P-processor;

said P-processor including means responsive to a fetched M instruction for fetching a selected one or more N instructions from said N memory and in response thereto producing an N-level command which is applied to said N-processor;

said N-processor being responsive to an applied N-level command for processing a fetched M instruction to produce an M-level command which is applied to said M-processor;

said M-processor being responsive to said M-level command for processing applied data in accordance therewith;

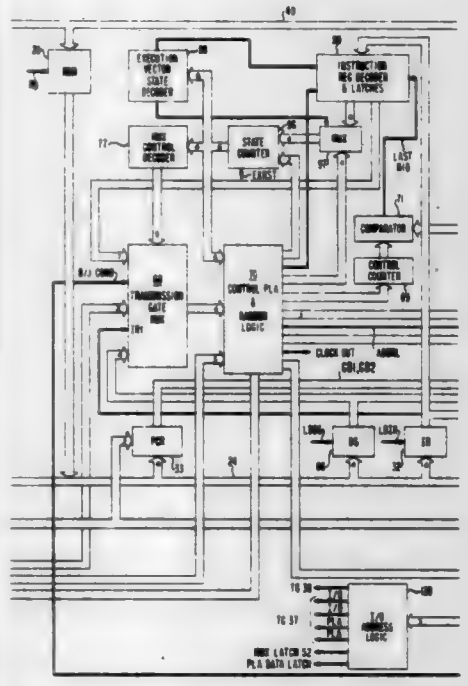
said M-processor also comprising S memory access protection means including a selectively addressable memory containing S memory access rights data which are selectively referenced for each access to said S memory so as to prevent improper access to data stored therein.

4,346,437

MICROCOMPUTER USING A DOUBLE OPCODE INSTRUCTION

Donald E. Blahut, Holmdel, and Richard L. Ukeiley, Marlboro, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 31, 1979, Ser. No. 71,712
Int. Cl.[3] G06F *9/22*
U.S. Cl. 364—200 4 Claims



1. A microcomputer including

a memory for storing single and double opcode instructions, each instruction having plural words, each word having n bits;

an instruction register having n stages;

a data bus coupling the memory to the instruction register;

an arithmetic logic unit interconnected with the data bus and arranged for executing at least a part of defined processing sequences on data supplied over the data bus, the processing sequences being defined by the single and double opcode instructions;

controller means for producing a plurality of control signals including a clock signal, the controller means causing the microcomputer to process the single and double opcode instructions by first fetching the single opcode word of the single opcode instruction from the memory through the data bus to fill the instruction register;

latching means having plural states;

logic means, included within the controller means and interconnected with the instruction register and with the latching means, being responsive to the single opcode word of the single opcode instruction stored in the instruction register and to the clock signal produced by the controller means for producing a signal which latches the latching means into a first state indicating that there is sufficient information in the instruction register for prescribing the processing sequence defined by the single opcode instruction;

the controller means including means responsive to the first state of the latching means and to the opcode word of the single opcode instruction currently stored in the instruction register for causing the microcomputer to execute the specific processing sequence defined by the single opcode instruction;

the controller means including means responsive to the microcomputer completing the execution of the processing sequence defined by the single opcode instruction for causing the microcomputer to continue processing the single and double opcode instructions by fetching a first opcode word of the double opcode instruction from the memory through the data bus to fill the instruction register;

the logic means being responsive to the first opcode word of the double opcode instruction now stored in the instruction register and to the clock signal produced by the controller means for producing a signal which latches the latching means into a second state indicating that there is insufficient information stored in the instruction register for prescribing the processing sequence defined by the double opcode instruction;

the controller means including means responsive to the second state of the latching means for causing the microcomputer to fetch a second opcode word of the double opcode instruction from the memory through the data bus to replace the first opcode word in the instruction register before the microcomputer executes the processing sequence defined by the double opcode instruction; and

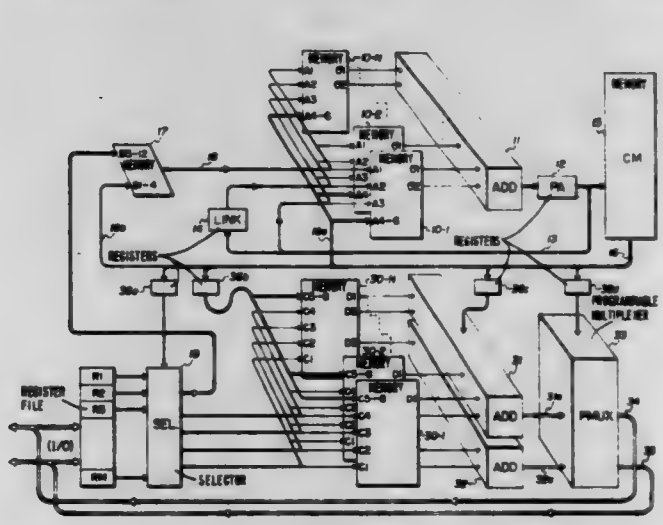
the controller means including means responsive to the second state of the latching means and to the second opcode word of the double opcode instruction currently stored in the instruction register for causing the microcomputer to execute the specific processing sequence defined by the double opcode instruction.

4,346,438

DIGITAL COMPUTER HAVING PROGRAMMABLE STRUCTURE

Hanan Potash, La Jolla; Burton L. Levin, San Diego, and Stephen J. C. Chan, San Diego, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 24, 1979, Ser. No. 87,666
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 **30 Claims**



1. A digital computer having a control section for sequentially generating addresses to a control memory from digital data of any kind, said control section being comprised of:

a plurality of programmable memory means, each of said memory means having first address inputs, second address inputs coupled to receive a portion of the presently active control word from said control memory, and a pair of outputs;

a plurality of register means for storing said digital data, each of said register means having its ith bit coupled to the first address inputs on the ith one of said memory means, where i = 1, 2 . . . N, N being the total number of programmable memory means;

each of said memory means including means responsive to the control word portion on its second address inputs for generating signals on its pair of outputs representing programmable arithmetic transformations of the bits on its first address inputs; and

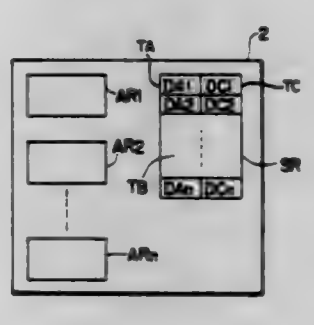
means for combining said signals on said pair of outputs from all of said memory means into said control memory address.

4,346,439

DIRECT MEMORY ACCESS OF A MAIN MEMORY BY AN INPUT/OUTPUT DEVICE USING A TABLE IN MAIN MEMORY

Takakazu Huno, Tachikawa; Takeyuki Endo; Kunihiro Odaka, both of Hinode, and Yasutaka Shibuya, Tachikawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Filed Jan. 7, 1980, Ser. No. 109,878
Claims priority, application Japan, Jan. 17, 1979, 54-2969
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **15 Claims**



1. A data transfer method for use in a data processing system including a processor, a main memory and at least one input-/output device capable of operating in the direct memory access mode to effect direct data transfer from separate storage areas of continuous addresses in said main memory to said input/output device, comprising the steps of:

storing the starting address and the number of continuous addresses of each of said separate storage areas of said main memory from which data is to be transferred in the form of a table having a number of data groups equal to the number of separate storage areas, including transferring to said input/output device the starting address of said table in the main memory and the number of data groups therein, feeding the starting address of said table to said main memory from said input/output device to effect direct data transfer therefrom in accordance with the direct memory access mode, incrementing said starting address of said table at said input/output device in accordance with the number of data groups therein, forwarding the incremented addresses from said input/output device to said main memory for direct memory access mode transfer therefrom, and storing the data transferred from said table in said input/output device;

feeding in succession the starting address of each separate storage area to said main memory from said input/output device to effect direct data transfer therefrom in accordance with the direct memory access mode;

incrementing each starting address at said input/output device in accordance with the stored number of continuous addresses associated with said starting address; and

forwarding said incremented addresses to said main memory for direct memory access mode transfer of data prior to forwarding the next starting address to said main memory.

4,346,440

ADVANCED DATA LINK CONTROLLER

Shikun Kyu, Yokohama, Japan, and Edward C. Hepworth, Chattanooga, Tenn., assignors to Motorola, Inc., Schaumburg, Ill.

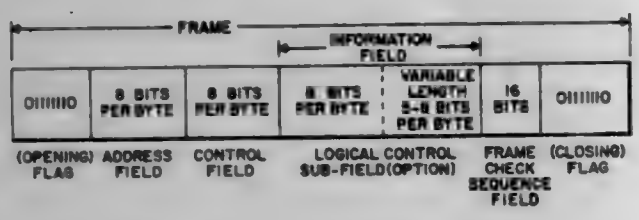
Division of Ser. No. 921,012, Jun. 30, 1978, Pat. No. 4,225,919. This application Mar. 21, 1980, Ser. No. 132,439
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **1 Claim**

1. A data link controller for controlling data communications between a bidirectional data bus and a communications link and for transmitting and receiving data alternatively NRZ or NRZI coded in serial form, said data link controller comprising:

a transmitter;

a receiver;

control means which control the operation of the data link controller when the data link controller is operatively connected to a loop configuration having a plurality of stations, each of which comprises one transmitter and one receiver, wherein the output of a transmitter of a first



station is connected to the input of a receiver of a second station; and

means for counting the number of stations in the loop configuration by measuring the amount of delay in data transmission wherein at least a two bit delay is used for NRZI encoding.

4,346,441

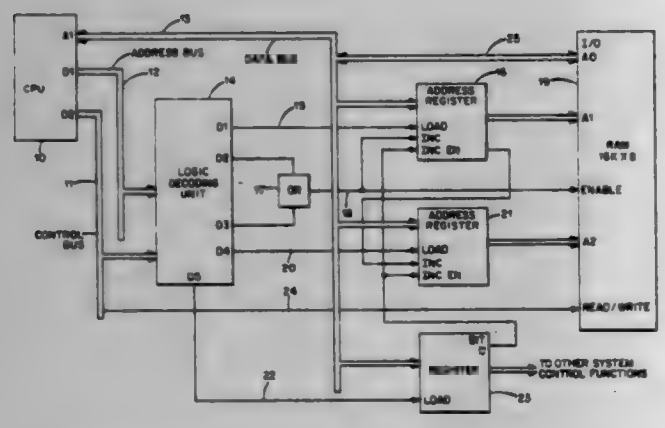
RANDOM ACCESS MEMORY SYSTEM FOR EXTENDING THE MEMORY ADDRESSING CAPACITY OF A CPU

Odas P. Plank; Richard A. Slater, both of Nashua, N.H., and Steven G. Taibbi, Beverly, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 29, 1980, Ser. No. 144,813

Int. Cl.³ G06F *13/06*

U.S. Cl. 364—200 **5 Claims**



1. A random access memory system for extending the memory addressing capacity of a CPU in a data processing system including a control bus, an address bus and a data bus each in electrical communication with said CPU, said memory system comprising:

(a) logic decoding means coupled to said control bus and to said address bus, said logic decoding means being operative in response to control words and a minimum number of memory addresses applied to said CPU to said control bus and said address bus, respectively, to generate command signals for controlling either a data read or a data write operation specified by said control words;

(b) address register means coupled to said logic decoding means and to said data bus, said address register means being conditioned by said command signals to provide memory addresses during both a data read and a data write operation for selectively addressing a single or a series of memory locations

and said address register means including:

first register means coupled to said data bus and to said logic decoding means, said first register means for storing a memory address applied to said data bus by said CPU in response to predetermined ones of said command signals generated by said logic decoding means, said memory address specifying any one of said plurality of memory locations; and,

second register means coupled to said data bus, to said logic decoding means and to said first register means, said second register means storing a control bit signal applied to said data bus by said CPU in response to another one of said command signals, said control bit signal having first and second states for defining whether a single or series of locations are being accessed,

said first register means being operative to selectively increment said memory address in accordance with said first and second states of said control signal for providing said memory addresses for addressing said single or series of memory locations; and

(c) a random access memory coupled to said control bus, said logic decoding means, said address register means and said data bus, said random access memory including a plurality of memory locations and said memory being operative in response to said command signals to store in or supply information from said single or said series of memory locations within said plurality of memory locations specified by said memory addresses received from said first address register means during said data write operation or during said data read operation.

4,346,442

SECURITIES BROKERAGE-CASH MANAGEMENT SYSTEM

Thomas E. Musmanno, Brooklyn, N.Y., assignor to Merrill Lynch, Pierce, Fenner & Smith Incorporated, New York, N.Y.

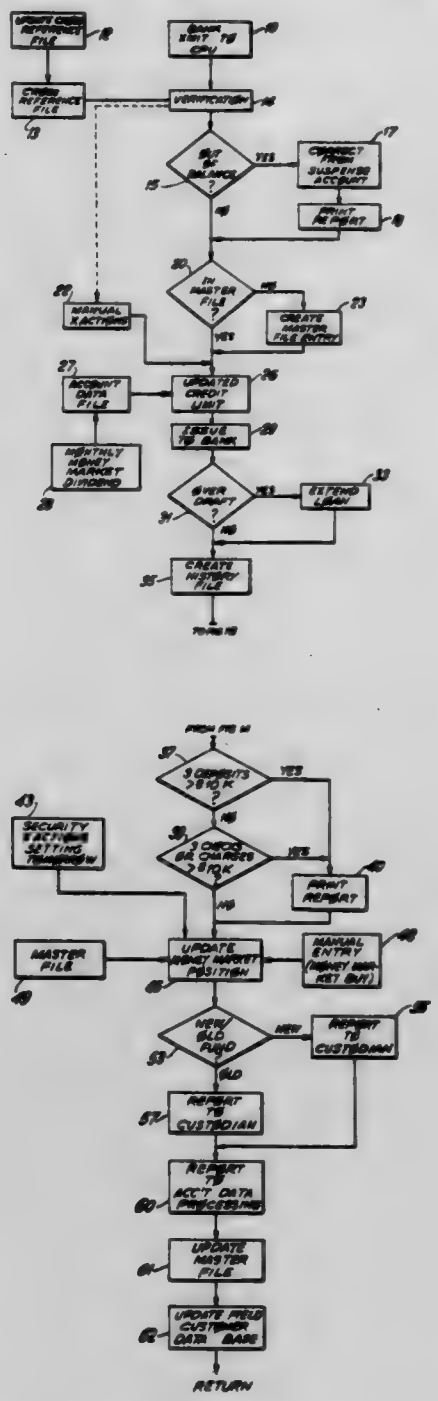
Filed Jul. 29, 1980, Ser. No. 173,331

Int. Cl.³ G06F *15/21*

U.S. Cl. 364—408 **6 Claims**

1. In combination in a system for processing and supervising a plurality of composite subscriber accounts each comprising a margin brokerage account, a charge card and checks administered by a first institution, and participation in at least one short term investment, administered by a second institution, said system including brokerage account data file means for storing current information characterizing each subscriber margin brokerage account of the second institution, manual entry means for entering short term investment orders in the second institution, data receiving and verifying means for receiving and verifying charge card and check transactions from said first institution and short term investment orders from said manual entry means, means responsive to said brokerage account data file means and said data receiving and verifying means for generating an updated credit limit for each account, short term investment updating means responsive to said brokerage account data file means and said data receiving and verifying means for selectively generating short term investment transactions as required to generate and invest proceeds for subscribers' accounts, wherein said system includes plural such short term investments, said system further comprising means responsive to said short term updating means for allo-

cating said short term investment transactions among said plural short term investments, communicating means to communicate said updated credit limit for each account to said first institution.



4,346,443

REGULATION AND CONTROL SYSTEM FOR THE FUEL FEEDING UNIT OF AN INTERNAL-COMBUSTION ENGINE

Giancarlo De Angelis, Milan; Alberto Catastini, Corsico; Aldo Bassi; Edoardo Rogora, both of Milan; Dario Radaelli, Legnano; Luciano Bertoloni, Milan, and Francesco Perrone, Novara, all of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

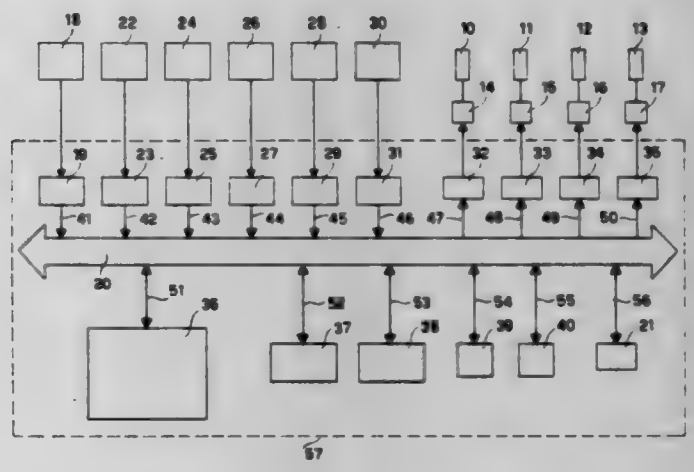
Filed Sep. 8, 1980, Ser. No. 184,630

Claims priority, application Italy, Sep. 10, 1979, 25586 A/79

Int. Cl.³ G06F *15/50*

U.S. Cl. 364—431.04 **2 Claims**

1. A regulation and control system for the unit of fuel feed to an internal combustion engine, said engine being equipped with air intake ducts and actuators for feeding the engine with fuel, said regulation and control system comprising a first detector of a first engine operational parameter, capable of delivering a discrete number of values taken by such a parameter, each of said value being formed by a preselected number of bits, a second detector of a second engine operational parameter capable of delivering a discrete number of values taken by said parameter each of said values consisting of a preselected number of bits, each couple of values of said first and said second parameters defining an engine operational condition, a third detector of an operational temperature of the engine, capable of delivering a discrete number of values taken by such temperature, each of said values consisting of a preselected number of bits, a first pulse generator operatively connected to the mainshaft and capable of delivering at every engine revolution a pulsed signal composed by a number of pulses equal to the number of fuel-dispensing operations which must take place during each engine revolution, a second pulse generator operatively connected to a shaft rotated at half the RPM of the mainshaft and capable of emitting a properly phased pulse at every engine cycle, a central microprocessor unit (CPU), a reading and writing storage unit (RAM), a reading only storage unit (ROM) containing the calculation programs of the microprocessor unit, the carburation plan of the engine as a function of the two engine operational parameters aforesaid, the carburation correction plan as a function of an engine working temperature, the cells of the storage unit (ROM) relative to the carburation plan containing, each, an information for metering the fuel consisting of a preselected number of bits, the value of which is a function of the quantity of fuel to be fed to the engine at every dispensing step, in the operation condition defined by a couple of values of the two engine operational parameters aforesaid, all the other engine operational parameters being assumed constant, the number of the storage cells being equal to the number of the possible combinations of the values taken by a preselected number of most significant bits of the first engine operational parameter and of



the values taken by a preselected number of most significant bits of the second engine operational parameter, the cells of the storage unit aforesaid (ROM) relative to the plan of carburation correction containing, each, an information the value of which is the correction coefficient of the fuel metering as a function of the values taken by said working temperature of the engine, said central microprocessor unit being programmed:

for generating an address of the reading only storage (ROM) composed by the combination of the aforementioned preselected number of the first most significant bits of the numerical value taken by said first engine operational parameter and by the aforesaid preselected number of the first most significant bits of the numerical value taken by the second engine operational parameter;

for identifying by means of such address that cell of the reading only storage in which a first metering information is contained;

for identifying in said reading only storage, in addition to said first metering information three additional metering information pieces, each of which corresponds to the content of the storage cells located in a preselected environmental domain of said address, each of the three cells being identified by algebraically summing certain preselected constants to said address;

for obtaining from the aforesaid four metering information pieces a metering information calculated by an operative

interpolation process, the operative elementary module of which uses a preselected number of the least significant bits of each of said first and said second engine operational parameters;

for identifying in said reading only storage the cell containing the correction coefficient corresponding to the engine working temperature, and for utilizing said correction coefficient to modify said calculated correction information according to a preselected procedure;

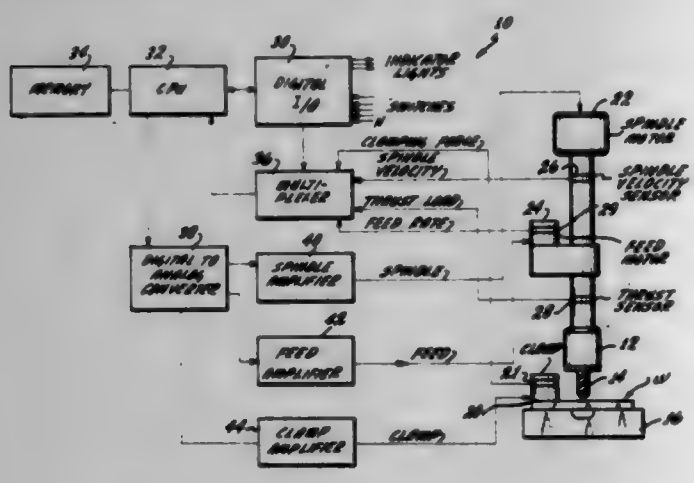
for calculating from the thermally corrected metering information the utilized metering information expressed in terms of the control magnitude required by the fuel feeding actuators for the engine, the value of said control magnitude being obtained by calculations based on algorythms depending on the operational features of said actuators, and

for calculating the instant of command of said fuel feed actuators, utilizing the pulsed signals coming from said first and said second pulse generators, the pulses coming from the first generator being utilized for distinguishing the starting sequential order for the same actuators within a cycle of the engine and for determining the instant of start of each actuator, the pulses coming from the second generator being utilized for defining the beginning of each engine cycle.

4,346,444
CONSTANT THRUST ADAPTIVE CONTROL MACHINE TOOL

Samuel Schneider, San Diego, and John D. Beyer, Poway, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Mar. 20, 1980, Ser. No. 132,252
Int. Cl.[3] G06F *15/46;* G05B *19/18*
U.S. Cl. 364—475 37 Claims



1. In a metal working machine for moving a cutting tool through a metal workpiece, the combination of:

a spindle including means for carrying a cutting tool therein;

feed drive means for advancing said spindle;

rotation drive means for rotating said spindle;

means for clamping the workpiece in a position to permit the cutting tool to move therethrough;

means for sensing the thrust of the cutting tool against the workpiece and providing an output;

means for sensing the rotational velocity of said spindle and providing an output;

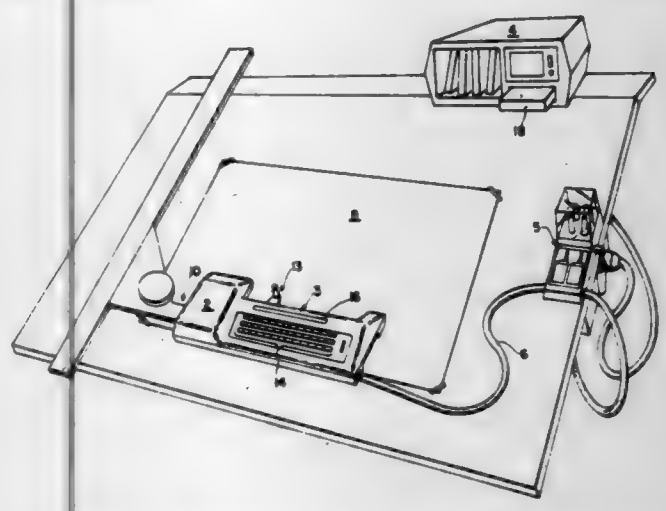
input means responsive to only the input of the hardness of the workpiece material and the diameter of the cutting tool for determining the optimum thrust load of the cutting tool against the workpiece;

control means coupled to the input means, the rotational velocity sensing means, and the thrust sensing means, and providing an output to the feed drive means and the rotational drive means to rotate and advance the cutting tool carried by said spindle into contact with the workpiece at the predetermined optimum thrust load and providing an output to the clamping means to maintain the clamping force in excess of said predetermined thrust load.

4,346,445
PORTABLE ALPHANUMERIC AND SYMBOL DRAFTING DEVICE

Jean P. Leuenberger, Bethlehem, Pa.; David J. Logan, Glastonbury, and Clifford A. Scorso, Jr., Bolton, both of Conn., assignors to KOH-I-NOOR Rapidograph, Bloomsbury, N.J.

Filed Mar. 6, 1980, Ser. No. 127,663
Int. Cl.[3] G05B *19/19;* G06F *3/13*
U.S. Cl. 364—520 19 Claims



1. A portable alphanumeric and symbol drafting device comprising a keyboard unit in functional interconnection to an electronics package unit, wherein;

(a) Said keyboard unit further comprises a portable housing with a first longitudinal edge, a lower surface adapted to be placed on a drafting surface, and an upper surface which comprises a keyboard means for inputting at least one character or symbol; wherein further a carriage means for supporting a technical drafting pen is operably mounted for longitudinal (x) and transverse (y) movement proximate said first edge of said housing; means to move said pen carriage in said x and y directions in response to a drawing control signal which comprises a planar member having an extending guideway parallel to said longitudinal housing edge, and an x-axis servo motor and encoder assembly mounted thereon which is operable to respond to one aspect of said control signal, and selectively move said drafting pen carriage, superposed upon said planar member, in the x-direction, parallel to said longitudinal edge; wherein further said y-axis control comprises a y-axis dc servo motor and encoder assembly which is mounted to a base reference of said housing and is operable to respond to a second aspect of said control signal and move said entire planar member assembly in the y-direction, perpendicular to said longitudinal edge; means for raising and lowering said pen carriage means, in a z direction, in further response to said control signal; wherein further,

(b) Said electronics package unit further comprises storing memory means for holding addressable, numerical instructions for a vocabulary of characters, means for receiving a character input from said keyboard means and communicating said input to address means for recalling numerical instructions for each of said characters from said vocabulary, means for converting said recalled numerical instructions into a drawing control signal, said converting means communicating with scale means operable to selectively change the scale of a character representation to be executed by said pen, in response to said drawing control signal and means for conveying said drawing control signal through said functional interconnection and to said keyboard unit for controlling said carriage means in said x, y and z directions.

4,346,446

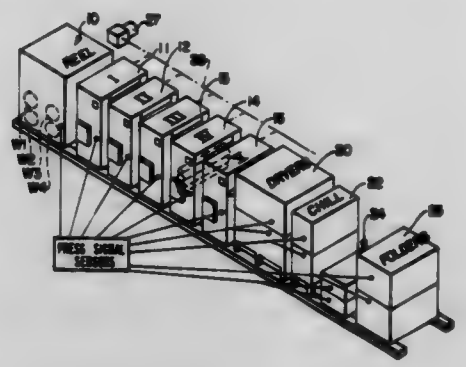
MANAGEMENT AND ANALYSIS SYSTEM FOR WEB MACHINES AND THE LIKE

Robert S. Erbstein; Gary R. Richard, both of New London County, Conn.; Roland T. Palmatier, Washington County, R.I., and Robert W. McGill, Hilversum, Netherlands, assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 25, 1980, Ser. No. 133,770

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—551 **30 Claims**



1. A management system for a web processing machine such as a printing press having a web material supply, a plurality of devices for acting repetitively on material drawn from the supply, delivery mechanism receiving the processed material, a drive for said machine, and a plurality of detectors on said machine operable to indicate various occurrences during use of the machine such as correct presence and passage of material, engagement of the drive, on-off impression of the devices, and/or malfunctions or jams in the delivery mechanism;

a control console including a data output device and a data entry device,

a memory storing information to be used during processing of a job on the machine,

an electronic processor,

decoding means receiving inputs from said detectors and providing machine event outputs to said processor,

said processor operating to interrogate said machine event outputs and to provide update operating information on said data output device as the machine is operated.

4,346,447

DIVISIONAL READING DEVICE FOR SINE SIGNALS

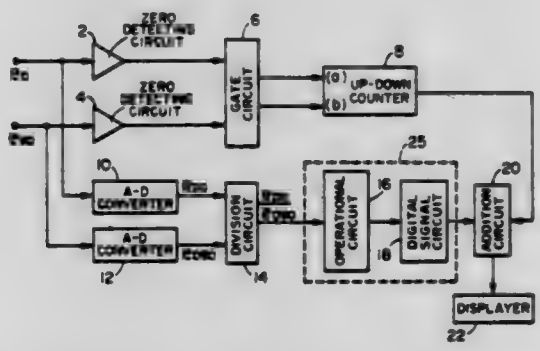
Akio Takahama, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,534

Claims priority, application Japan, Dec. 28, 1979, 54-172199; Dec. 28, 1979, 54-172200; Feb. 25, 1980, 55-21586

Int. Cl.³ G06J *1/00*; G06G *7/22*; G01D *5/34*

U.S. Cl. 364—560 **9 Claims**



1. An apparatus for increasing the measurement resolution and accuracy of a position measuring device of the type that employs a detector that provides first and second voltages which vary as sine signals in accordance with the displacement of an object from a predetermined position, the sine signals being 90° out of phase with each other, and that determines the displacement of the object from the predetermined position by counting the number of zero crossings of one of said sine signals, each zero crossing corresponding to a unit of displacement, comprising:

converting means for forming the ratio of said sine signals and for converting the ratio to an output signal representative of a portion of a unit of displacement; and

means for combining a signal corresponding to the number of zero crossings obtained by said counting with said signal representative of a portion of a unit of displacement to provide a measurement of displacement that includes the number of units of displacement and a portion of a unit of displacement.

4,346,448

GENERATION OF ELECTRIC SIGNALS HAVING APPROXIMATELY SINUSOIDAL WAVEFORMS

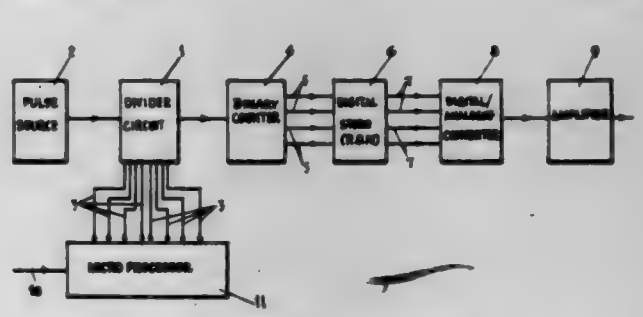
Howard F. Insam, Harrow, and Stephen R. Laurenson, Stanmore, both of England, assignors to The General Electric Company, Limited, London, England

Filed Nov. 23, 1979, Ser. No. 96,841

Claims priority, application United Kingdom, Nov. 23, 1978, 45818/78

Int. Cl.³ G06F *15/353*; G06J *1/00*

U.S. Cl. 364—607 **12 Claims**



1. In a method of generating an electric signal having an approximately sinusoidal waveform, said method being of the kind comprising the steps of

(A) frequency dividing a first train of pulses by a factor to derive a second train of pulses having a lower pulse repetition frequency,

(B) utilizing the second train of pulses to address in turn locations of a digital store which stores in digital form a plurality of quantized amplitudes of a sine wave, and

(C) deriving from the signals supplied by the digital store an output signal having an approximately sinusoidal waveform, the improvement comprising:

(D) making a plurality of progressive alterations to the factor by which the frequency of the first train of pulses is divided to form the second train of pulses so as to change the fundamental frequency of the output signal.

4,346,449

DATA STORAGE AND RETRIEVAL SYSTEM

Stanford R. Ovshinsky, Bloomfield Hills; Peter H. Klose, and Wayne P. Messing, both of Troy, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 724,084, Sep. 16, 1976, Pat. No. 4,205,387. This application Nov. 5, 1979, Ser. No. 91,454

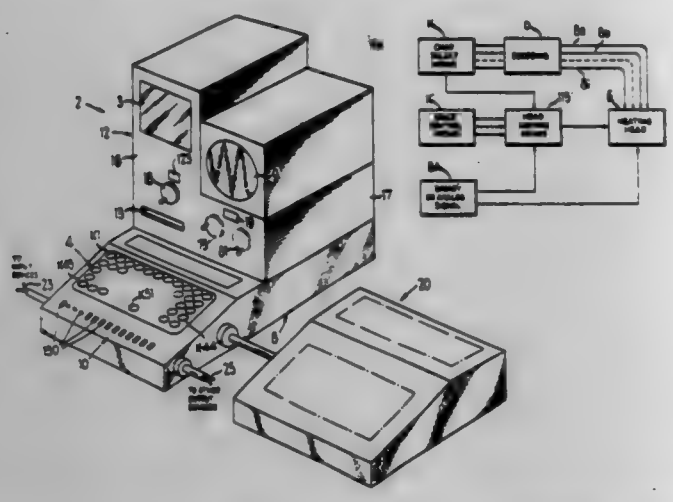
The portion of the term of this patent subsequent to May 27, 1997, has been disclaimed.

Int. Cl.³ G06F *3/12, 15/40*; H05B *1/00*; G01D *15/10*

U.S. Cl. 364—900 **32 Claims**

1. A recording system for producing microform records, said system comprising: recording means positioned to image selected micro-sized points of an imageable recording material, said recording means including exposed micro-sized dot image-forming points and having electrical signal input terminals adapted to receive electrical image-producing signals for rendering selected ones of said points effective to image said recording material at the points of said recording material

confronting the same to provide a desired image pattern on the recording material, the size of each of said micro-sized image-forming points being no greater than about 20 micron and



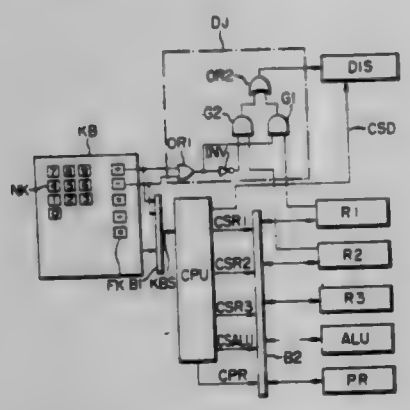
being spaced apart along center points to provide a dot image resolution of at least about 50 dots per millimeter, and operating means for selectively feeding said electrical image-producing signals to said recording means.

4,346,450

ELECTRONIC CALCULATOR HAVING ITEM COUNT DISPLAY

Shigeru Matsuyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1980, Ser. No. 123,210
Claims priority, application Japan, Mar. 3, 1979, 54-24052
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—710 **6 Claims**



1. An electronic apparatus for providing plural information, comprising:

calculation instruction means for generating calculation instructions;

first memory means connected to said calculation instruction means for memorizing a number corresponding to the number of operations of said calculation instruction means;

data input means for entering data;

processor means connected to said calculation instruction means and to said data input means for operating on said entered data in accordance with said calculation instructions to produce a calculation result;

second memory means connected to said processor means for memorizing said calculation result; and

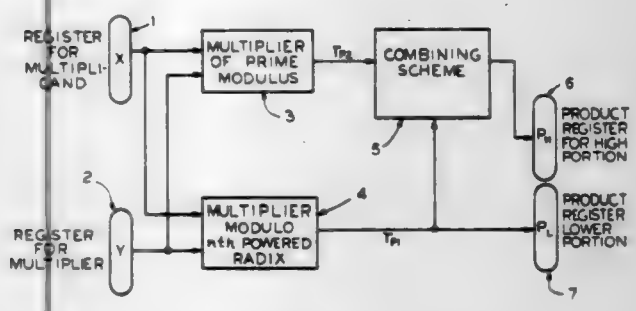
output means connected to said first memory means, to said second memory means and to said calculation instruction means for outputting the content of said first memory means in one drive mode of said calculation instruction means and the content of said second memory means in another drive mode of said calculation instruction means.

4,346,451

DUAL MODULI EXPONENT TRANSFORM TYPE HIGH SPEED MULTIPLICATION SYSTEM

Aisuke Katayama, 2-47, Kawamotomutsumicho, Akita-shi, Akita, Japan

Filed May 23, 1980, Ser. No. 152,681
Claims priority, application Japan, Jun. 1, 1979, 54-67495
Int. Cl.³ G06F *7/52*
U.S. Cl. 364—746 **8 Claims**



1. An asynchronous multiplier comprising:

first means for calculating a first residue which is congruent with a result of a multiplication of a first and a second positive integer with respect to a first modulus which is equal to a prime number, both said first and said second positive integers being represented by an even number of digits;

second means for calculating a first, a second, and a third product by multiplying (a) a lower half of the digits of said first positive integer by a lower half of the digits of said second positive integer, (b) the lower half of the digits of said first positive integer by the digits of a higher half of the second positive integer digits and (c) a higher half of the digits of said first positive integer by the lower half of the digits of said second positive integer, respectively;

first combining means for combining said first through said third products into a second residue which is congruent with the result of the multiplication with respect to a second modulus which is equal to said prime number less one; and

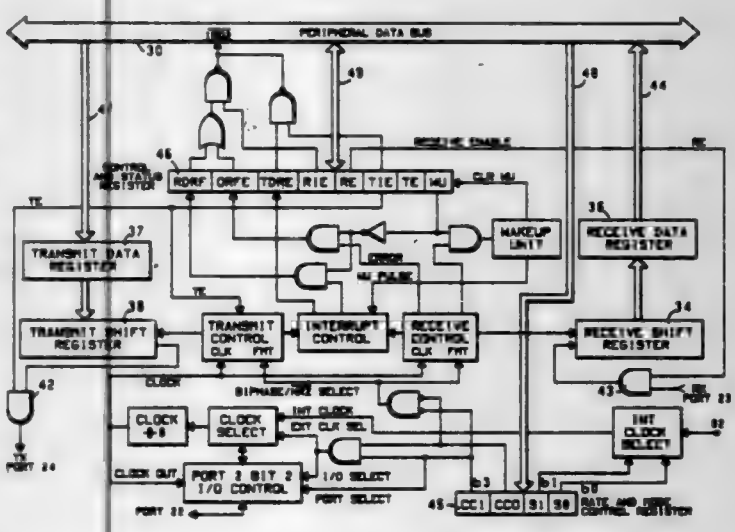
second combining means for combining said first and said second residues into said result of said multiplication.

4,346,452

NRZ/BIPHASE MICROCOMPUTER SERIAL COMMUNICATION LOGIC

Stanley E. Groves, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1978, Ser. No. 939,743
Int. Cl.³ G06F *5/00*; H04L *27/18*
U.S. Cl. 364—900 **4 Claims**



1. In a microcomputer including a processor, serial I/O communication logic and bus means for coupling said proces-

sor to said serial I/O communication logic, said serial I/O communication logic comprising:

control register means coupled to said processor, for storing transmit mode and receive mode signals provided by said processor,

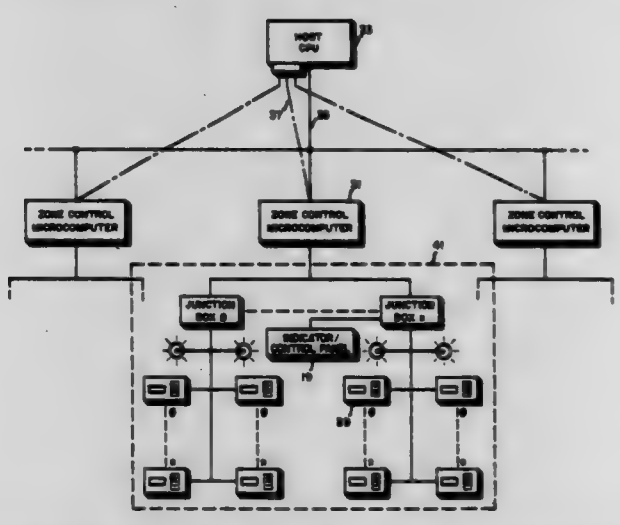
transmitter means coupled to said processor, for receiving and storing data provided periodically by said processor, and for serially transmitting said stored data via a serial output line in either NRZ or biphase format as selected by said transmit mode signal stored in said control register means, and receiver means coupled to said processor, for serially receiving data via a serial input line in either NRZ or biphase format as selected by said receive mode signal stored in said control register means, storing said received data, and periodically providing said stored data to said processor.

4,346,453

ITEM DISPLAY ORDER PICKING SYSTEM

Raoul E. Drapeau, Vienna, and William M. Stone, Reston, both of Va., assignors to Scope Incorporated, Reston, Va.

Filed Nov. 26, 1979, Ser. No. 97,169
Int. Cl.[3] G06F *3/04*
U.S. Cl. 364—900 3 Claims



1. An item handling system for aiding manual handling of said items by a human operator within a predetermined zone in accordance with output data including order number, quantity and location from a data input device comprising:

a memory means;

control means coupled to the output of said data input device including order number, quantity and location and to said memory means for formatting the data to be stored in said memory means and providing a preselected data output to a line driver means through an interface adapter means;

at least one bay having a plurality of storage areas containing items to be picked;

a display module adjacent each of said storage areas in said predetermined zone and coupled to the output of said control means through said interface adapter means to said line driver means;

a changeable numerical display activated by said control means on each of said display modules for indicating the quantity of items to be picked;

manually operated switch means on said display module for decrementing or incrementing the number indicated on said numerical display; and

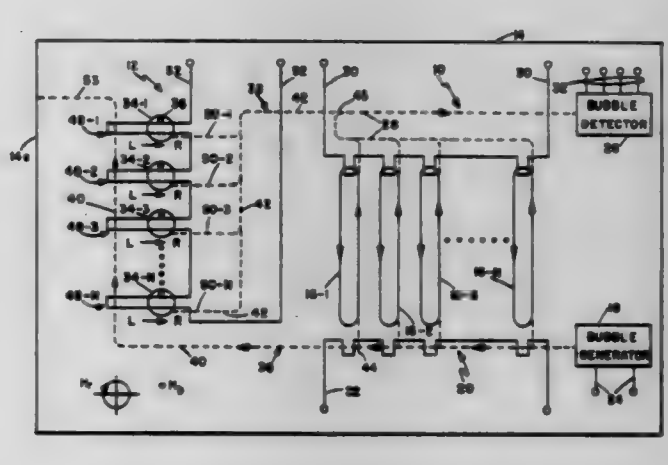
means for interconnecting said switch to said control means through said interface adapter means for transferring information relative to decrementing and incrementing to said control means.

4,346,454

BUBBLE MEMORY WITH ON CHIP ERROR MAP STORAGE ON PERMALLOY DISK ELEMENTS

Peter K. George, Morgan Hill, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 22, 1980, Ser. No. 180,312
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—15 1 Claim



1. A magnetic bubble memory chip comprising:

a plurality of data loops, some of which may be defective, for storing magnetic bubbles representative of data therein, the data loops including a plurality of permalloy propagation elements having a predetermined period;

a serial-parallel input path for propagating bubbles to the data loops;

a parallel-serial output path for propagating bubbles from the data loops;

a plurality of permalloy disk elements arranged in spaceda-part linear fashion, each of the disk elements having a diameter substantially equal to the predetermined period, there being an equal number of the data loops and the disk elements, each of the disk elements being adapted for having a single bubble circulated thereabout in the presence of an in-plane rotating magnetic field;

an error map propagation path for propagating bubbles representative of an error map indicating which of the data loops are defective, including a first leg and a second leg, the legs extending past the disk elements on opposite sides thereof, the first leg having one end positioned for receiving bubbles from the serial portion of the serial-parallel input path, and the second leg having one end positioned for feeding bubbles onto the serial portion of the parallel-serial output path;

a plurality of load gates each for transferring a single bubble from the first leg to one of the disk elements, there being an equal number of the load gates and the disk elements; and

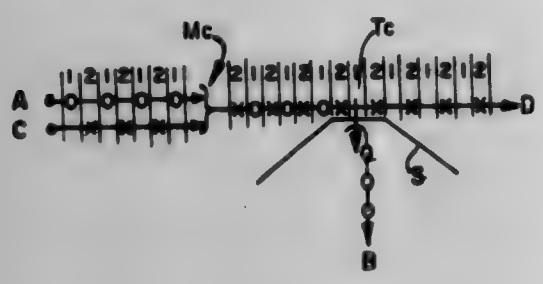
a plurality of read gates each for replicating a single bubble from one of the disk elements onto the second leg, therebeing an equal number of the read gates and the disk elements; and

a control conductor extending adjacent the disk elements, the gates, and the legs of the error map propagation path so that simultaneous parallel storing of bubbles on the disk elements and thereafter simultaneous parallel access to bubbles stored on the disk elements is obtained upon consecutively applying predetermined load and read signals to the control conductor.

4,346,455
CROSSOVER JUNCTION FOR MAGNETIC BUBBLE DOMAIN CIRCUITS

Thomas T. Chen, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 886,972, Mar. 15, 1978, abandoned.
This application Aug. 27, 1979, Ser. No. 70,237
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—16 10 Claims



1. A crossover junction for permitting streams of magnetic bubble domains in intersecting propagation paths to cross over the respective paths without interference with each other, comprising:

at least two input propagation paths capable of propagating input bubble domains,

merge means for joining all of the input propagation paths into a common propagation path and propagating all of the input domains from each of said input propagation paths such that the input bubble domains are interleaved on said common propagation path,

at least one output propagation path separate from and adjacent to said common propagation path, and

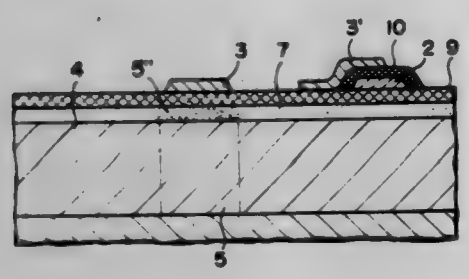
active transfer switch means selectively joining said common propagation path and said output propagation path

wherein separate output bubble domains representative of the input bubble domains from a selected input propagation path can be taken from the common propagation path and supplied to said output propagation path in response to the operation of said transfer switch means whereby input bubble domain streams on said input propagation paths can effectively cross each other without interference.

4,346,456
MAGNETIC BUBBLE DEVICE

Ryoichi Kinoshita, and Shobu Orihara, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 22, 1979, Ser. No. 68,626
Claims priority, application Japan, Aug. 30, 1978, 53-105983
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—36 6 Claims

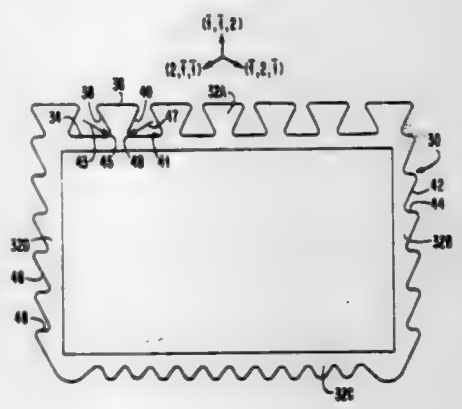


3. A magnetic bubble device comprising a magnetic thin film serving as a medium for propagation of a magnetic bubble and having first, second and third regions which are formed by first, second and third ion implantation processes, respectively, wherein said first and third ion implantation processes are the same, wherein said second ion implantation process is different from said first ion implantation process, and wherein said first and third regions are bubble propagation paths and said second region formed to prevent strip out of a bubble is a strip-like region between said bubble propagation paths.

4,346,457
DOVETAIL PROPAGATION STRUCTURE FOR CONTIGUOUS DISK BUBBLE DEVICES

Hung L. Hu, Sunnyvale, and Kochan Ju, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,185
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—36 8 Claims



1. A propagation track for use in contiguous disk bubble devices comprising

a first track portion facing in the direction of and being substantially perpendicular to the $(\bar{1},\bar{1},2)$ axis,

a second track portion facing in the direction of and being substantially perpendicular to one of the axes taken from the group consisting of $(2,1,\bar{1})$ and $(\bar{1},2,\bar{1})$, said second portion connected to said first portion,

a third track portion facing in the direction of and being substantially perpendicular to the $(\bar{1},\bar{1},2)$ axis and connected to said second portion, and

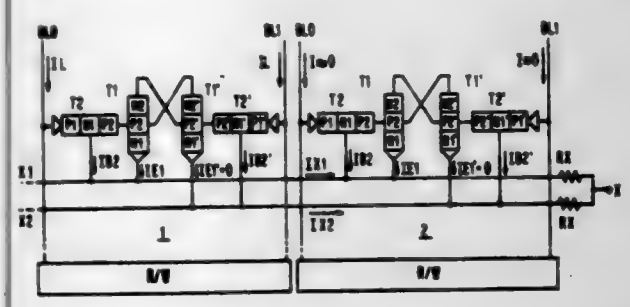
a fourth track portion connected to said third portion and facing in the direction of and being substantially perpendicular to the axis taken from the group consisting of $(2,\bar{1},\bar{1})$ and $(\bar{1},2,\bar{1})$ that is different from the axis selected for said second portion,

a fifth track portion facing in the direction of and being substantially perpendicular to the $(\bar{1},\bar{1},2)$ axis, and connected to said fourth portion.

4,346,458
I²L MONOLITHICALLY INTEGRATED STORAGE ARRANGEMENT

Horst H. Berger, Sindelfingen, and Siegfried K. Wiedmann, Stuttgart, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1980, Ser. No. 177,348
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944141
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—174 14 Claims



1. A monolithically integrated storage arrangement with

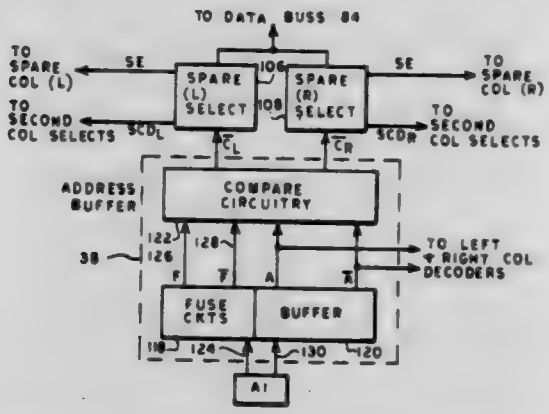
storage cells arranged in a matrix, which comprise two I^2L structures each made up of an injector (P1, P1') and an associated inverting transitor (T1, T1') and connected in the form of a flip-flop by a cross-coupling between the collector (N2 and N2', respectively) of one transistor and the base (P2' and P2, respectively) of the other inverting transistor, the operating current and the read/write currents of the storage cells of a matrix column being applied via a bit line pair (BL0, BL1) connected to the injectors (P1, P1') of said storage cells, and the selection of the storage cells of a matrix line being effected via a common address line (X) coupled to the emitters (N1, N1') of the inverting transistors (T1, T1') of said storage cells, characterized in that the emitters (N1) of the inverting transistors (T1) of one I^2L *structure of the storage cells of each matrix line are connected to a first partial address line (X1) and the emitters (N1') of the inverting transistors (T1') of the other* I^2L structure are connected to a second partial word line (X2), and that each of the two partial address lines (X1, X2) subsequent to each group of storage cells (l to m) is connected to the common address line (X) via a resistor (RX).

4,346,459

REDUNDANCY SCHEME FOR AN MOS MEMORY

Rahul Sud, Colorado Springs; Kim C. Hardee, Manitou Springs, and John O. Heightley, Monument, all of Colo., assignors to INMOS Corporation, Colorado Springs, Colo.

Filed Jun. 30, 1980, Ser. No. 164,282
Int. Cl.³ G11C *8/00, 29/00, 11/40*
U.S. Cl. 365—200 22 Claims



1. In an MOS memory chip having an array of memory cells adapted to be tested by a probe test operation which identifies defective memory cells and generates a signal for use in replacing defective memory cells, a redundancy scheme for substituting spare memory cells for cells found to be defective by the probe test, comprising:

a plurality of spare memory cells;

on-chip address control means electrically responsive to the signal generated during probe test for permanently storing and for rendering continuously available a fully asynchronous electrical indication of the addresses of defective memory cells, for comparing incoming memory address information received after testing with the address of defective memory cells, and for generating a control signal indicative of the receipt of memory address information corresponding to the address of a defective memory cell; and

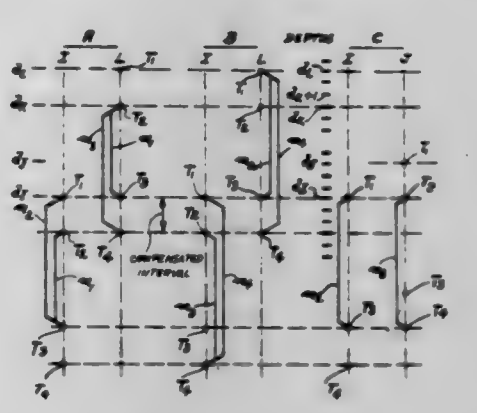
selection means responsive to the control signal for electrically accessing a spare memory cell and for prohibiting access to the defective memory cell.

4,346,460

METHOD AND APPARATUS FOR DERIVING COMPENSATED MEASUREMENTS IN A BOREHOLE

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 922,114, Jul. 5, 1978. This application May 21, 1980, Ser. No. 152,075
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—27 37 Claims



1. Apparatus for producing measurements of a physical characteristic of subsurface media near a borehole penetrating the earth to provide for a borehole compensated measurement, comprising:

an elongated support member;

transducers of a first type supported by said member and separated along said member by a preselected separation along a line generally parallel to the elongation of said member;

transducers of a second type supported by said member and separated along said member by said preselected separation along said line, said second type transducers located along said line on one side of said first type transducers and said transducers of said first and second types having respective common operating characteristics; and

means for producing measurements of said physical characteristic of subsurface media using combinations of said first and second type transducers at selected borehole positions for obtaining repetitive measurements of said physical characteristic for a selected interval of borehole depth.

4,346,461

SEISMIC EXPLORATION USING VIBRATORY SOURCES, SIGN-BIT RECORDING, AND PROCESSING THAT MAXIMIZES THE OBTAINED SUBSURFACE INPORMATION

Francis Muir, Laguna Niguel, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 1, 1980, Ser. No. 117,689
Int. Cl.³ G01V *1/20, 1/36*
U.S. Cl. 367—39 16 Claims

1. A method of seismic surveying using vibratory sources that recovers all the essential information of full-waveform recording even though said method uses only sign-bit recording of both the source signals and the detected signals, which comprises:

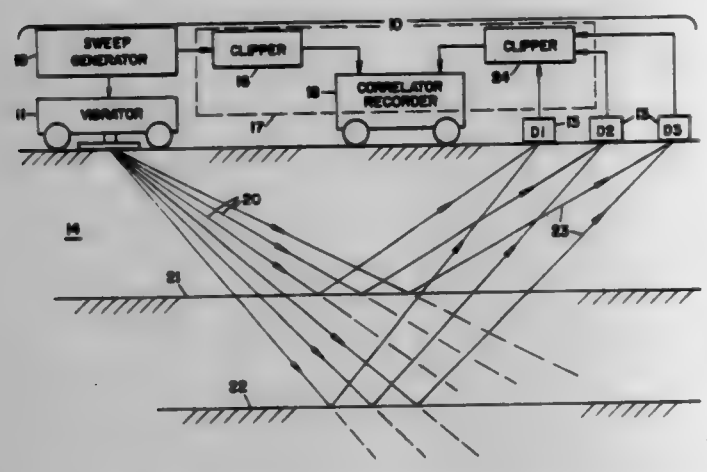
A. injecting seismic vibrations into the earth by driving at least one substantially linearly-responding vibratory source with a substantially Gaussian, zero mean, stationary code;

B. recording a sign-bit representation of said substantially Gaussian, zero mean, stationary code;

C. recording a sign-bit representation of the seismic vibrations that have propagated through the earth from said at least one vibratory source to at least one receiver; and

D. cross-correlating said sign-bit representation of said sub-

stantially Gaussian, zero mean, stationary code with said sign-bit representation of the received said seismic vibrations; the result of said cross-correlating being the desired seismic survey record.

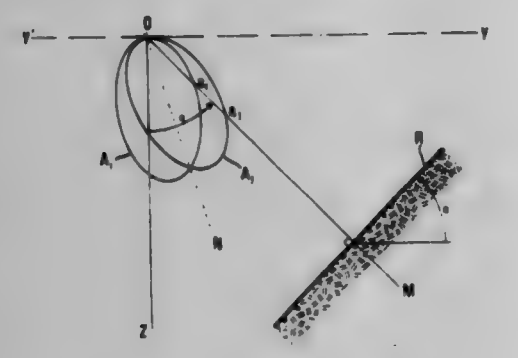


4,346,462

SEISMIC PROSPECTING METHOD PROVIDING FOR THE DETERMINATION OF THE FLANK DIP OF SUBTERRANEAN LAYERS AND DEVICE FOR CARRYING OUT THE SAME

Benoit T. du Boullay, Sevres, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jan. 26, 1978, Ser. No. 872,361
Claims priority, application France, Jan. 28, 1977, 77 02690
Int. Cl.³ G01V *1/30*
U.S. Cl. 367—61 **21 Claims**



1. A seismic prospecting method for determining the flank dip of subterranean layers in a medium reflecting acoustic waves, with respect to the plane of a seismic profile by using a transmitting device capable of transmitting acoustic waves through the medium on survey according to a plurality of different directivity diagrams comprising:

sequentially actuating the transmitting device a plurality of times while changing the directivity diagram for each of said plurality of times;

sequentially receiving the waves reflected by reflecting layers of said medium in a plurality of reception points arranged along a line substantially parallel to the profile plane;

recording the echoes, on said reflecting layers, of the acoustic waves transmitted according to each of the directivity diagrams;

and

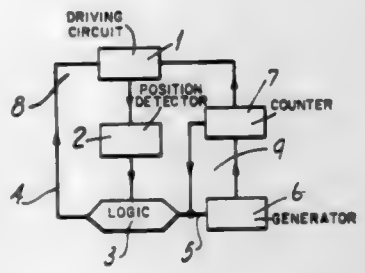
processing the recorded signals, said processing comprising combining the transmitted acoustic intensities according to a predetermined relationship for each transmission direction in each of the directivity diagrams of the transmission device to form a first combination, combining the respective values of at least one parameter representing the intensity of the reflected acoustic waves recorded on the recordings corresponding to the different directivity diagrams according to the same predetermined relationship to form a second predetermined combination, and comparing the results of the two combinations to determine the flank dip.

4,346,463

MOVEMENT DETECTOR FOR A STEPPING MOTOR

Mai Tu Xuan, Chavannes; Marcel Jufer, Morges, both of Switzerland, and Andre Pittet, Bangalore, India, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Jun. 23, 1980, Ser. No. 162,227
Claims priority, application France, Jun. 21, 1979, 79 16816
Int. Cl.³ G06F *1/04;* H02P *1/40*
U.S. Cl. 368—157 **4 Claims**



1. A feed arrangement for a single phase timepiece stepping motor arranged to control the functioning of the motor by means of a first type of bipolar pulses of relatively small width or by a second type of bipolar pulses of greater width, a series of pulses of the second type being applied to the motor whenever said motor has failed to step in response to pulses of the first type wherein there is provided a step detector including first means arranged to sample a first signal Ud developed by the current through the motor winding and second means arranged and adapted to generate a second signal

$$Uc = \int_O^T Ud\,dt$$

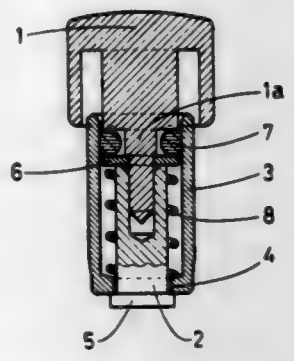
the level of which indicates whether or not the motor has stepped in response to a pulse of the first type.

4,346,464

CONTROL MEMBER FOR A WATER-TIGHT WATCH

Karl Wenger, Chambesy, Switzerland, assignor to Boninchi S.A., Geneva, Switzerland

Filed Jul. 2, 1980, Ser. No. 165,265
Claims priority, application Switzerland, Jul. 4, 1979, 6226/79
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—289 **7 Claims**



1. A control assembly for a water-tight watch of small dimensions having a case, comprising:

a tube adapted to be fixed water-tight to the case of a watch and to extend outwardly from said case,

a control member having a head portion and a stem portion

freely received in said tube for movement of said control member relative to said tube,

means defining an annular recess in said stem portion opening toward the inside of said tube and having a bottom wall and parallel axially spaced radial side walls lying in planes perpendicular to said tube, and

a resilient annular packing in said recess, said packing being compressed in an axial direction between said parallel radial side walls of said recess, engaging an inner surface of said tube and having a free side spaced with a radial clearance from said bottom wall of said recess.

4,346,465

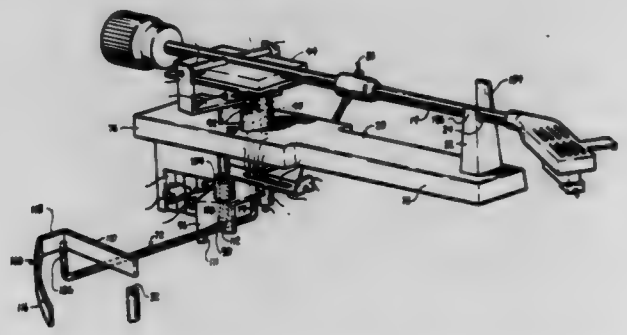
AUTOMATIC RECORD PLAYER

James T. Dennis, P.O. Box 15100, Oklahoma City, Okla. 73155, and George Kolomayets, Chicago, Ill., assignors to James T. Dennis, Oklahoma City, Okla.

Division of Ser. No. 9,254, Feb. 5, 1979, Pat. No. 4,291,886, which is a continuation of Ser. No. 813,225, Jul. 5, 1977, abandoned. This application Dec. 1, 1980, Ser. No. 211,837

Int. Cl.³ G11B *17/06, 19/06*

U.S. Cl. 369—230 **13 Claims**



3. In an automatic record player, the combination of, a tone arm, means for mounting the tone arm for rotation about a fixed point, a main cycling gear, means for rotating said gear one revolution during an automatic cycle, cam means on said main cycling gear, a tone arm lift rod having a horizontal portion one end of which is in engagement with said cam means and the other end of which is connected to a right-angle end portion, bearing means for mounting said right-angle end portion for rotation about a vertical axis, said right-angle end portion being positioned so that movement thereof along said vertical axis raises and lowers said tone arm, means defining a shoulder positioned above and extending generally transversely of said horizontal portion of said lift rod and spaced from said right-angle end portion, means for biasing said lift rod upwardly into engagement with said shoulder, said shoulder being inclined with respect to the horizontal so that said biasing means tend to rotate said horizontal portion about said bearing means and move said right-angle end portion along said vertical axis, said biasing means also acting to bias said one end of said horizontal portion into engagement with said cam means, said cam means controlling rotation of said horizontal portion about said bearing means and vertical movement of said right-angle end portion during an automatic cycle.

4,346,466

COMPENSATOR FOR HORIZONTAL ANGULAR ERROR OF A RECORD-PLAYER ARM

Peter K. Kanchev, Sofia, Bulgaria, assignor to Bulgarsko Radio, Sofia, Bulgaria

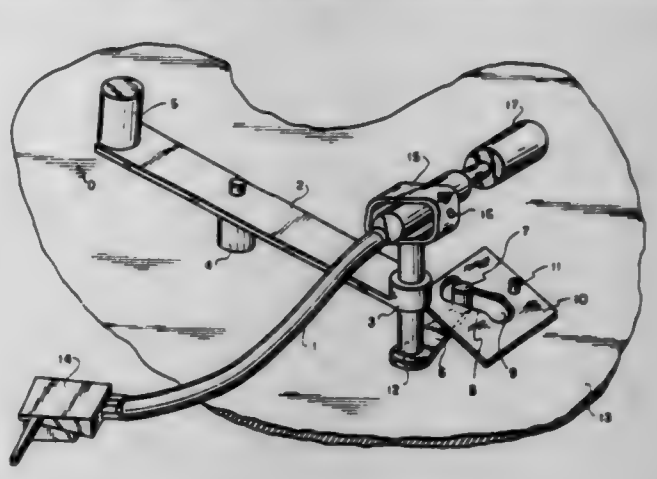
Filed Jun. 2, 1980, Ser. No. 155,134

Claims priority, application Bulgaria, May 31, 1979, 43792

Int. Cl.³ G11B *3/38*

U.S. Cl. 369—250 **1 Claim**

1. A compensator for the horizontal angular error of a conventional playing arm of a disc record player having a base frame, comprising a bearing lever freely rotating about an intermediate point thereof in a horizontal plane upon a vertical axis, a vertical shaft rotatably mounted on the bearing lever at one end thereof, the playing arm being mounted for oscillation in a vertical plane on the upper end of said shaft and for rotation therewith in a horizontal plane, a counter-load statically balancing the whole system including the vertical shaft and the playing arm, said counter-load being mounted on the other end of the bearing lever, a compensating lever fixedly connected to the lower end of the shaft which supports the playing arm, said compensating lever extending radially from said shaft in a direction with respect to the length of the bearing lever which



is opposite to the direction at which the center of the record lies with respect to the length of the bearing lever, a roller which freely rotates about a vertical axis mounted on the outer end of the compensating lever, and a horizontally disposed cam plate having a shaped slot therewithin, such slot accurately guidingly receiving the roller, and means adjustably affixing the cam plate to the base frame of the record player, said last named means including a screw by which the cam plate is affixed to the base frame and about which the cam plate is angularly adjustable.

4,346,467

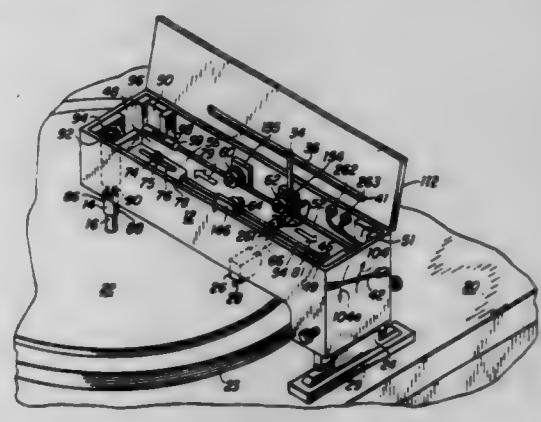
LINEAR TRACKING TONE ARM

Louis C. Souther, 429 York St., Canton, Mass. 02021

Filed Dec. 29, 1980, Ser. No. 220,422

Int. Cl.³ G11B *3/36*

U.S. Cl. 369—249 **24 Claims**



1. A linear-tracking tone arm mechanism for a record turntable, said mechanism comprising:

a housing having means for engaging the spindle of a turntable and means for mounting to the turntable which supports said housing above the turntable;

an elongate generally horizontal track assembly mounted to said housing and extending longitudinally in the direction generally between said means for engaging and said means for mounting and having a forward track and a parallel rearward track horizontally spaced from and slightly higher than said forward track;

a carriage including first and second rear bearings having a first surface for engaging the top of said rear track and a second surface for engaging the side of said rear track opposite said forward track and a forward bearing having

a first surface for engaging the top of said forward track and a second surface for engaging the side of said forward track opposite said rear track; said second surface of said rear bearings being spaced from said second surface of said forward bearing a greater distance than said forward track is spaced from said rearward track to enable said second surface of said forward bearing to remain clear of said forward tracks;

a tone arm; and

means for mounting said tone arm to said carriage.

4,346,468

HIGH DENSITY INFORMATION DISC

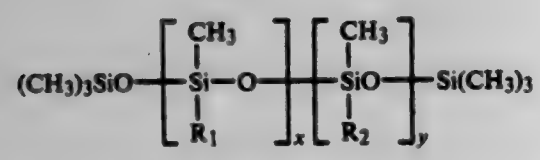
Joseph R. Preston, Radnor; Louis J. Hillenbrand, and David A. Berry, both of Columbus, all of Ohio, assignors to RCA Corporation, New York, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,784

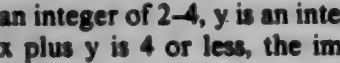
Int. Cl.³ B32B *3/02*; G11B *5/74*

U.S. Cl. 369—276 **4 Claims**

1. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record coated with a methyl alkyl siloxane lubricant having the formula:



wherein R_1 and R_2 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x plus y is 4 or less, the improvement which comprises said lubricant containing a tetrakis(dialkylamino)silane of the formula:



wherein R is an alkyl group of 1–5 carbon atoms.

4,346,469

HIGH DENSITY INFORMATION DISC

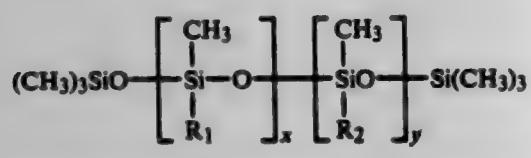
Louis J. Hillenbrand, Columbus; Joseph R. Preston, Radnor, and David A. Berry, Columbus, all of Ohio, assignors to RCA Corporation, New York, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,785

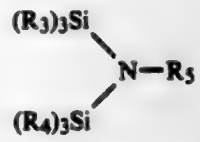
Int. Cl.³ B32B *3/02*; G11B *5/74*

U.S. Cl. 369—276 **4 Claims**

1. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record coated with a methyl alkyl siloxane lubricant having the formula



wherein R_1 and R_2 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x plus y is 4 or less, the improvement which comprises adding to said lubricant a hexaalkyldisilazane additive of the formula



wherein R_3 and R_4 independently are alkyl groups of 1–5 carbon atoms and R_5 is selected from the group consisting of hydrogen or alkyl of 1–5 carbon atoms.

4,346,470

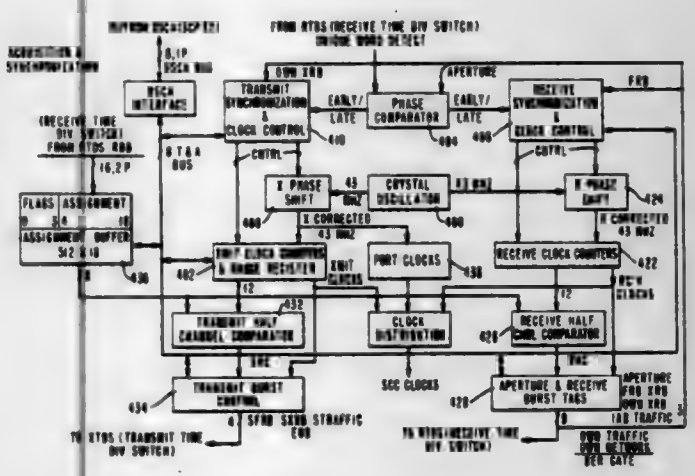
INITIAL ACQUISITION OF SYNCHRONIZATION FOR A STATION IN A TDMA SATELLITE COMMUNICATION NETWORK

Joseph A. Alvarez, III, Damascus, and John Shabe, Darnestown, both of Md., assignors to IBM Corporation, Armonk, N.Y.

Filed Mar. 21, 1980, Ser. No. 132,708

Int. Cl.³ H04J *3/16*; H04L *7/10*

U.S. Cl. 370—104 **6 Claims**



2. A method for acquiring transmit synchronization at a secondary station with the periodic frame reference bursts from a reference station in a TDMA network, comprising the steps of:

bursting an initial acquisition burst from said secondary station during a relatively wide interval in the traffic portion of a TDMA frame and measuring a propagation delay factor;

adding said propagation delay factor to the receive frame timing synchronized with the reception of said frame reference bursts at said secondary station to obtain a finely adjusted transmit frame timing;

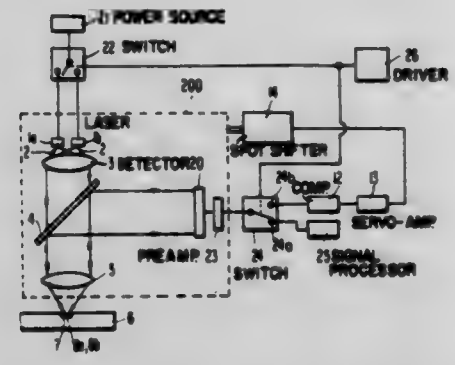
bursting a transmit reference burst from said secondary station during a relatively narrow interval in the control portion of periodic, non-consecutive ones of said TDMA frames and measuring a propagation delay correction factor;

adjusting the phase of said transmit frame timing with said correction factor to maintain synchronization of said secondary station with said reference station.

4,346,471
OPTICAL APPARATUS FOR TRACKING A RECORD CARRIER

Kazuo Hirasawa, and Takahiro Kubo, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1980, Ser. No. 156,227
Claims priority, application Japan, Jun. 4, 1979, 54-70888
Int. Cl.³ G11B 7/00; H04N 5/76
U.S. Cl. 369—44 7 Claims



1. An optical apparatus for tracking a record carrier comprising:

a first radiation source for generating a first radiation beam applied onto an information track of a record carrier to read out information;

a second radiation source for generating a second radiation beam applied onto the information track at a predetermined distance from said first radiation beam;

a first selector for selecting one of said first and second radiation beams to be applied to said record carrier;

a radiation-sensitive detector for detecting a radiation beam reflected by said record carrier;

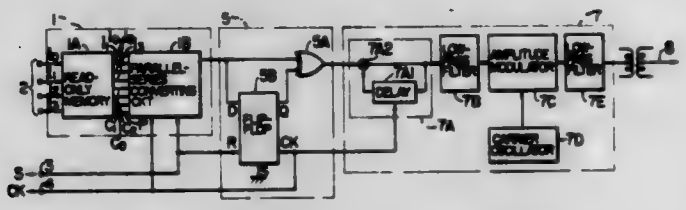
a second selector coupled with said radiation-sensitive detector and operating in synchronysm with said first selector to periodically select the reflected radiation caused by said second radiation beam; and

shifting means coupled with said second selector for adjusting the position of an optical system comprising said first and second radiation sources in response to an amplitude difference between the output of said second selector and a reference signal level in order to follow said information track.

4,346,472
METHOD AND APPARATUS FOR ELIMINATING DOUBLE BIT ERROSION IN A DIFFERENTIAL PHASE SHIFT KEYING SYSTEM

Seiei Ohkoshi; Isao Ishikawa; Teiji Okamoto, all of Yokohama, and Nobuo Tsukamoto, Tachikawa, all of Japan, assignors to Hitachi, Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Aug. 7, 1980, Ser. No. 176,205
Claims priority, application Japan, Aug. 10, 1979, 54-101280
Int. Cl.³ G06F 11/10
U.S. Cl. 371—37 7 Claims



1. An information coding method usable in a digital data transmission system for transmitting digital data in frames containing n bits with each frame including error correcting code bits and information bits modulated by differential phase shift keying, comprising the steps of:

forming for each frame of digital data an individual code for transmission in such a manner that a first transmitted bit of said code for transmission is made equal to a first bit of said error correcting code and an i-th transmitted bit ($2 \leqq i \leqq n$) of said code for transmission is formed by a modulo 2 sum of the i-th and (i−1)th bits of said error correcting code;

modulating said code for transmission by differential phase shift keying;

transmitting said modulated code;

demodulating said transmitted code by differential phase shift keying;

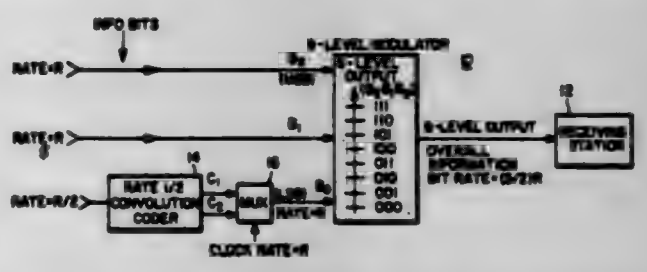
forming a demodulated error correcting code from said demodulated transmitted code in such a manner that the first bit of said demodulated error correcting code is made equal to the first bit of said demodulated transmitted code and an i-th bit of said demodulated error correcting code is formed by a modulo 2 sum of an i-th bit of said demodulated transmitted code and an (i−1)th bit of said demodulated error correcting code; and

performing an error correcting operation on said demodulated error correcting code to regenerate said information code, said error correcting operation being peculiar to said error correcting code having said code length of n bits.

4,346,473
ERROR CORRECTION CODING METHOD AND APPARATUS FOR MULTILEVEL SIGNALING

Robert C. Davis, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 26, 1980, Ser. No. 125,084
Int. Cl.³ G06F 11/10
U.S. Cl. 371—43 44 Claims



20. A system for encoding an information bit stream having a most significant bit and at least one lower significant bit for transmission over a transmission channel to a receiving station, comprising:

means for converting at least one of said lower significant bits in the bit stream into a pair of code branch bits T_1 and T_2 without encoding the most significant bit;

means for using each code branch bit pair to select one of a group of baseband voltages for transmission to the receiving station,

wherein a plurality of the transmitted baseband voltages produce a code path, and wherein the minimum distance between any two code paths is:

$$d_{code} = 6\sqrt{\frac{E_b}{5}} .$$

4,346,474
EVEN-ODD PARITY CHECKING FOR SYNCHRONOUS DATA TRANSMISSION

Daniel T. W. Sze, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,581
Int. Cl.³ G06F 11/10
U.S. Cl. 371—49 7 Claims

1. A synchronous transmission system for transmitting, receiving, and checking data bit groups arranged in succeeding

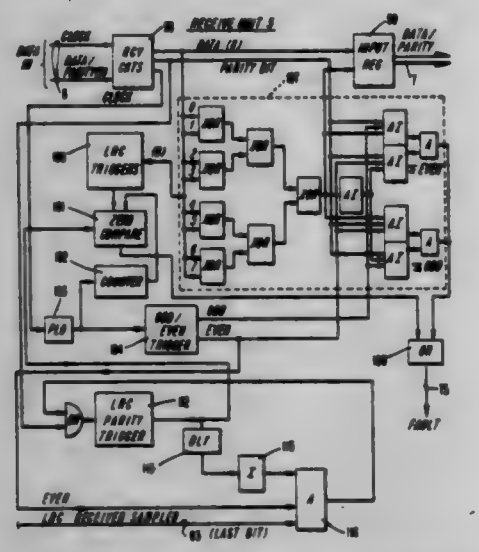
frames, each frame typically consisting of a multiplicity of data bit groups, comprising:

a transmission line;

a plurality of stations selectively interconnected for data communications via said transmission line;

a controller at each of said stations, each of said controllers controlling data storage, data transfer, data transmit, data receive, and data checking operations at its respective station, and each of said controllers including a random access memory/register block serving as a buffer storage for control information and data, a data bus buffer serving as a buffer storage for data transferred to and from an external source, control logic for controlling storage accessing and read/write operations of its respective station, and a data bus in said controller interconnecting said memory/register block, said data bus buffer and said control logic;

a controller microprocessor incorporated in each of said controllers for monitoring and analyzing information transmitted and received at its respective station and for developing and recognizing control signals, each of said controller microprocessors including an internal bus for transmittal of information and commands internally within said microprocessor, an arithmetic logic unit having an associated accumulator and a plurality of registers including an instruction register for storing instructions, a decode and control block for developing operations sig-



nals from instructions in said instruction register, a transmit block for processing byte, count and control functions during transmission of data and for providing even and odd parity signals and a gate LRC signal, a receive block for processing byte count and control functions during receipt of data, said receive block also providing a longitudinal redundancy check (LRC) sample signal;

a data transmit unit incorporated in each of said controllers, each of said data transmit units being interconnected with the related microprocessor of its respective controller for transmitting data responsive to control signals from the said related microprocessor, each of said data transmit units including a data/parity register for temporarily storing said data bit groups, an even-odd parity circuit for generating even and odd vertical redundancy parity check (VRC) bits for the data bit groups stored in said data/-parity register under control of said even and odd parity signals from the said related microprocessor, a longitudinal redundancy check (LRC) circuit for generating longitudinal redundancy check bits for all bit positions of individual frames of data bit groups under control of said gate LRC signal from the said related microprocessor, and each of said data transmit units further including drive circits to supply output signals to said transmission line representative of said data bit groups, even-odd parity check bits and LRC bits during transmission of data; and

a data receive unit incorporated in each of said controllers, each of said data receive units being interconnected with the related microprocessor of its respective controller for receiving and checking data from any of said transmit units on a selective basis responsive to control signals from the said related microprocessor, each of said data receive units including receive circuits for receiving signals from said transmission line representative of said data bit groups, said even-odd parity check bits and said LRC bits, a parity check circuit for analyzing data bit groups and even-odd check bits for correct even or odd parity during receipt of data under control of signals from the related microprocessor, an LRC checking circuit for analyzing the LRC characteristics of data in successive frames and comparing the LRC bits developed during receipt of data with the transmitted LRC bits to determine correctness of the LRC of the data bit groups under control of said LRC sample signal from the said related microprocessor, fault indicating circuitry for signaling incorrect even-odd parity and incorrect LRC of received data and each of said data receive units further including an input register for temporarily storing data bit groups as they are received for transfer to other portions of the respective station.

4,346,475

DATA TRANSMISSION SYSTEM OPERATING ON THE SPREAD SPECTRUM PRINCIPLE

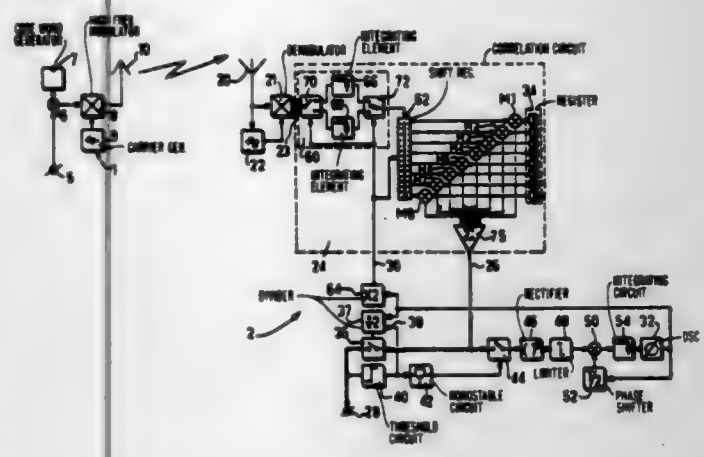
Roger P. J. Alexis, Neuilly-sur-Seine, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,285

Claims priority, application France, Jul. 13, 1979, 79 18259

Int. Cl.³ H04B *1/12, 15/00;* H04K *1/04*

U.S. Cl. 375—1 **3 Claims**

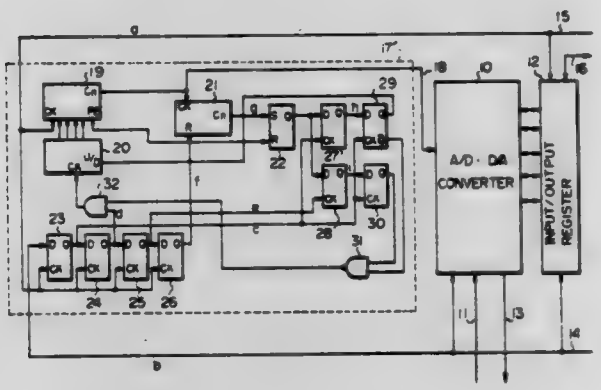


1. A data transmission system operating on the spread system principle, the system consisting, on the one hand, of a transmitting portion having a terminal for receiving data to be transmitted at two levels, an ajdusting device for generating a spreading code word corresponding with the first level, this code word being selected from among the code words D, and an inverted version of said code word corresponding with the second level, and a transmission circuit for transmitting the output signals of the adjusting device through a transmission channel and, on the other hand, of a receiving portion comprising a receiving circuit for receiving the signals from the transmission channel and for reproducing, after transmission, the output signals of said adjusting device, a correlation circuit for correlating the reproduced signals and said code word, the correlation circuit having an input for shift signals, an oscillator circuit coupled to the output of said correlation circuit for forming said shift signals, and an output terminal for supplying the transmitted data for further processing, characterized in that there is provided, between the output of the correlation circuit and the output terminal of the receiving portion, a gate circuit which is controlled from the signals produced by the oscillator circuit in order to be rendered conductive for each shift which is equal to an even number of times the duration of a binary element forming the spreading code word.

4,346,476
A/D, D/A CONVERTER FOR PCM TRANSMISSION SYSTEM

Masao Yamasawa, Sagamihara; Michinobu Ohhata, Kawasaki, and Toshi Ikezawa, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 23, 1980, Ser. No. 152,556
Claims priority, application Japan, May 30, 1979, 54-66121
Int. Cl.[3] H04L 7/04
U.S. Cl. 375—8 9 Claims



1. A codec for a PCM transmission system for converting analog signals to serial digital signals for transmission by the PCM system and for converting serial digital signals received by the PCM system to analog signals, said codec being responsive to frame pulses of a predetermined frequency defining the rate of sampling of the analog signal, the conversion of digital words corresponding to analog samples to serial digital signals and the reverse conversion of serial digital signals as received to digital words for conversion to analog signals, and to read/-write clocks of a predetermined frequency defining the timing of the conversion of parallel digital signals of said digital words to serial digital signals for transmission and the reverse conversion thereof, comprising:

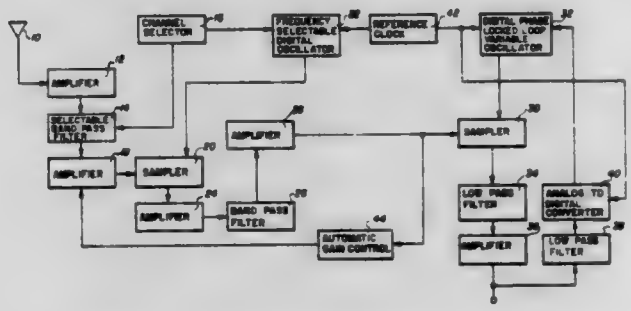
a digital phase locked loop circuit for generating internal operation clocks by dividing the frequency of said read/-write clocks by a value which is determined in accordance with the frequency ratio between said frame pulses and said read/write clocks, and

an a/d and d/a conversion means responsive to said frame pulses and said internal operation clocks, for coding an analog signal to a PCM digital signal for transmission and for decoding a received PCM digital signal to an analog signal.

4,346,477
PHASE LOCKED SAMPLING RADIO RECEIVER

Robert S. Gordy, Largo, Fla., assignor to E-Systems, Inc., Dallas, Tex.

Filed Aug. 1, 1977, Ser. No. 820,866
Int. Cl.[3] H04B 1/16; H03J 7/02
U.S. Cl. 455—257 25 Claims



1. A radio receiver in which a first signal is frequency translated to produce a second signal, comprising:

(a) means for generating a first clock signal,

(b) means responsive to a control signal for generating a second clock signal by adding clock pulses to said first clock signal,

(c) means responsive to said control signal for generating said second clock signal by deleting clock pulses from said first clock signal,

(d) means for generating a sampling clock signal by dividing the rate of said second clock signal,

(e) means for sampling said first signal at the rate of said sampling clock signal to frequency translate said first signal thereby generating the second signal which includes a carrier component,

(f) means for extracting said carrier component from said second signal,

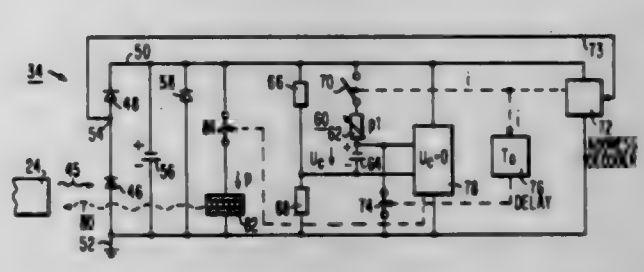
(g) means for generating said control signal responsive to a phase difference between said carrier component and a third signal having a predetermined frequency, and

(h) means for phase locking said carrier component to said third signal by varying the rate of said sampling clock signal in response to said control signal.

4,346,478
FIBER OPTICAL SENSOR SYSTEM, PREFERABLY FOR MEASURING PHYSICAL PARAMETERS

Georg H. Sichling, Corvallis, Oreg., assignor to Siemens Corporation, Iselin, N.J.

Filed Dec. 1, 1980, Ser. No. 211,681
Int. Cl.[3] H04B 9/00
U.S. Cl. 455—612 32 Claims



1. A fiber optical sensor system for transmission of information from one location to another, comprising in combination:

(a) a fiber optical transmission line having a first end and at least one second end for transmitting light therebetween,

(b) a first light source for emitting a first light beam into said first end of said transmission line;

(c) at least one first receiver element sensitive to the light of said first light source for receiving light of said first light source from said second end of said transmission line and for generating a first electric output signal in accordance with the light received;

(d) electrical energy storage means connected to said first receiver element for receiving said first electric output signal and for storing energy in accordance therewith;

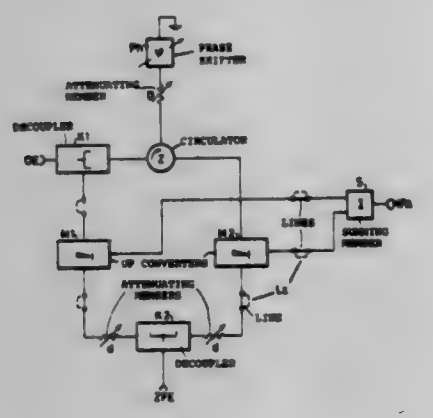
(e) a second light source for emitting a second light beam into said second end of said transmission line, said second light source being energized from said electrical energy storage means and being controlled in dependence upon information to be transmitted; and

(f) a second receiver element sensitive to the light of said second light source for receiving light of said second light source from said transmission line and for generating a second electric output signal in accordance with the light received and thereby in accordance with the transmitted information.

4,346,479
COMPENSATION FOR TRANSMISSION ELEMENT NONLINEARITIES IN A RADIO RELAY TRANSMISSION SYSTEM

Herbert Weber, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,172
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923046
Int. Cl.[3] H04B *1/66, 15/00*
U.S. Cl. 455—22 5 Claims

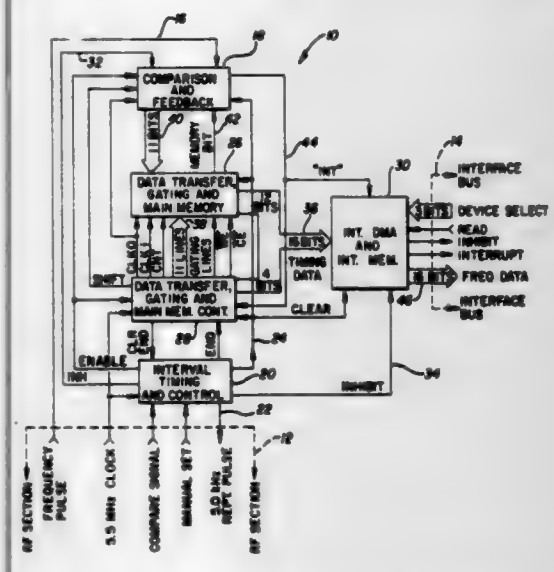


1. In a method for compensating, by means of a distortion converter stage, for a distorted signal component introduced into a high frequency output signal modulated by a useful signal, which component is introduced into the output signal by a transmission member in a radio relay transmission system, the distortion converter stage being provided with first and second mixing diodes, which method includes supplying the converter stage with an intermediate frequency signal modulated by the useful signal and with a local oscillator signal, mixing the modulated intermediate frequency signal and the local oscillator signal by means of the first mixing diode in a manner to produce a first high frequency signal having the same frequency as the output signal, modulated by the useful signal and having a selected power level, mixing the modulated intermediate frequency signal and the local oscillator signal by means of the second mixing diode in a manner to produce a second high frequency signal having the same frequency as the output signal, modulated by the useful signal, having a power level lower than the selected power level, and shifted in phase relative to the first high frequency signal, and combining the first and second high frequency signals in a manner to produce the high frequency output signal such that the output signal has a distorted component whose amplitude coincides with the amplitude of the distorted signal component introduced by the transmission member but whose phase is in phase opposition with the latter, the improvement wherein said steps of mixing are carried out by means of at least two converters each including a respective one of said mixing diodes, said method further comprises supplying the converter containing said second diode with the local oscillator signal via a level and phase controller, and said step of combining is performed in a summing member.

4,346,480
FREQUENCY IDENTIFICATION CIRCUIT

Billy R. Poston, St. Petersburg; Ramon P. Chambers, Clearwater, and Robert S. Gordy, Largo, all of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Continuation of Ser. No. 910,943, Apr. 13, 1978, abandoned.
This application May 5, 1980, Ser. No. 153,551
Int. Cl.[3] H04B *1/16;* H03K *5/22;* G01R *23/16*
U.S. Cl. 455—154 24 Claims



1. A frequency identification circuit for identifying the presence of a frequency in a band of frequencies, comprising:

means for storing at address locations individual frequency information data for the band of frequencies and for generating a memory bit identifying the address location of each of the individual frequencies,

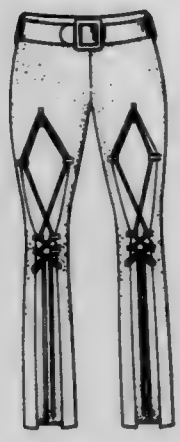
means for comparing a memory bit for an identified individual frequency with a frequency information bit representing the presence of a frequency in the band of frequencies and for generating an indication signal when a comparison occurs thereby indicating the presence of a frequency at the memory bit address in the means for storing, and

encoding means connected to said means for storing and responsive to the indication signal to receive from the means for storing the frequency information data at the address location identified by the memory bit compared with the frequency information bit for encoding into a digital representation of the identified frequency.

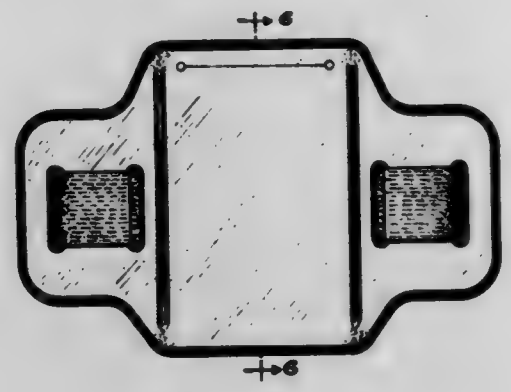
DESIGNS

AUGUST 24, 1982

265,860
SLACKS
Aziza Smith, 2129 E. 12th, Denver, Colo. 80206
Filed May 30, 1980, Ser. No. 154,801
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28



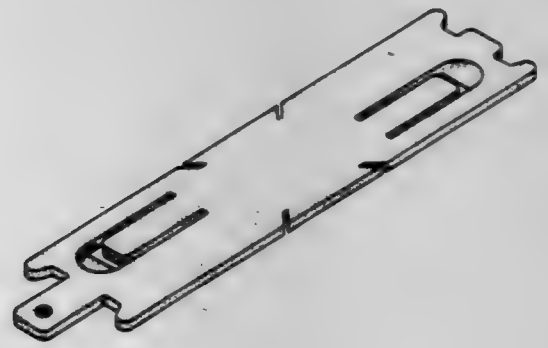
265,861
ARMBAND IDENTIFICATION PASSHOLDER WITH A TRANSPARENT FRONT FACE
Stanley Walasek, 1116 Colonial Way, Bridgewater, N.J. 08807
Filed Mar. 31, 1980, Ser. No. 135,630
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—402



265,862
POLE-MOUNTED SUN SHADE
John W. Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed May 16, 1980, Ser. No. 150,347
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D3—5



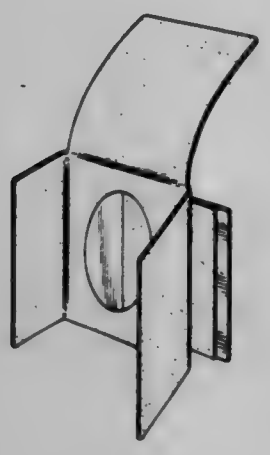
265,863
SEWING THREAD ORGANIZER
Ellen D. McCarn, Birmingham, Ala., assignor to McCarn Enterprises, Inc., Birmingham, Ala.
Filed Jul. 14, 1980, Ser. No. 168,706
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—23



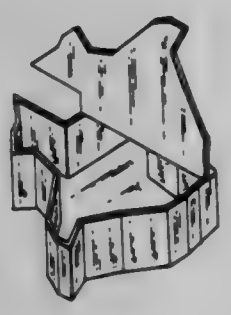
265,864
TOTE BAG WITH ATTACHED POUCH
Donald R. Kracke, 704 Silver Spur Rd., Rolling Hills Estates, Calif. 90274
Filed Aug. 11, 1980, Ser. No. 177,171
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—43



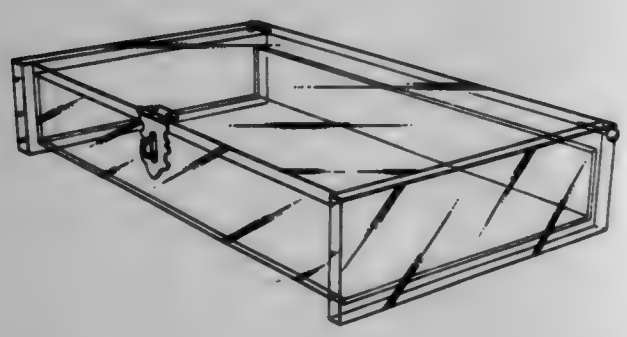
265,865
FOLDABLE PACKET FOR STORING AND DISPLAYING A JEWELRY ARTICLE
James R. Stephens, New York, N.Y., and Margaret Grieve, Towaco, N.J., assignors to General Mills Products Corp., Minneapolis, Minn.
Filed Dec. 27, 1979, Ser. No. 107,687
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—56



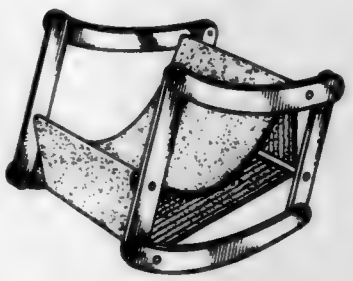
265,866
JEWELRY BOX
Gary M. Levin, 940 E. 19 St., Brooklyn, N.Y. 11230
Filed Aug. 6, 1979, Ser. No. 63,953
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—66



265,867
TRANSPARENT LOCK BOX
Craig S. Margulis, Los Angeles, Calif., assignor to Acrylic Creations, Inc., Van Nuys, Calif.
Filed Mar. 14, 1980, Ser. No. 130,287
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—78



265,868
CONVERTIBLE ROCKING CHAIR
Johannes P. Holschneider, 144 Folger St., Clemson, S.C. 29631
Filed Aug. 28, 1978, Ser. No. 937,206
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—3



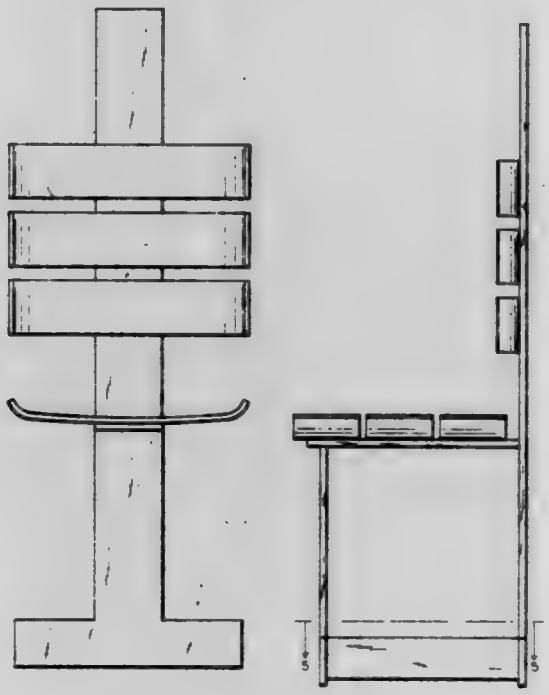
265,869
SOFA
Ernst Lüthy, Klingnau, Switzerland, assignor to C & D Consulting & Design AG, Engelberg, Switzerland
Filed Jul. 9, 1980, Ser. No. 167,094
Claims priority, application Hague, Jan. 11, 1980, 69793
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



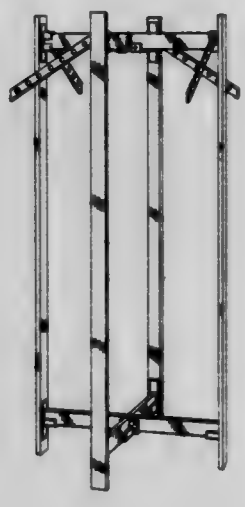
265,870
CHAIR
Daniel D. Wistehuff, Hickory, N.C., assignor to Pinnacle Furniture Company, Inc., Claremont, N.C.
Filed Apr. 18, 1980, Ser. No. 141,400
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



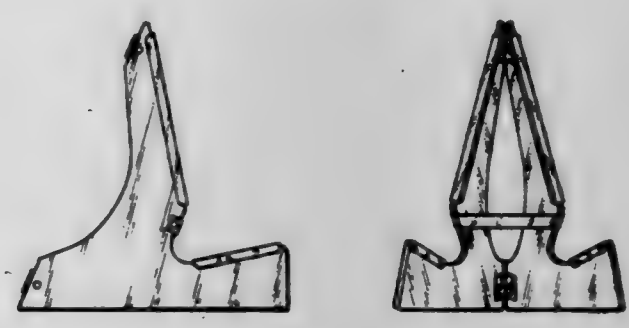
265,871
CHAIR
Steven D. Gageby, 2025 N. Bradley St., St. Paul, Minn. 55117
Filed Jul. 19, 1979, Ser. No. 58,937
The portion of the term of this patent subsequent to May 4, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76



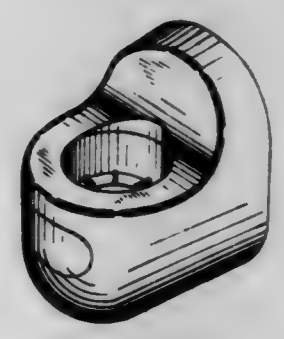
265,872
APPAREL DISPLAY RACK
John A. Rekow, 6130 SW. Taylors Ferry Rd., Portland, Oreg. 97219
Filed Jan. 4, 1980, Ser. No. 109,646
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—85



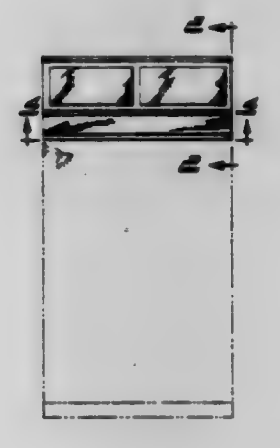
265,873
GUITAR STAND
Larry C. Smith, 22916 Juniper Ave., Torrance, Calif. 90505
Filed Apr. 14, 1980, Ser. No. 140,220
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



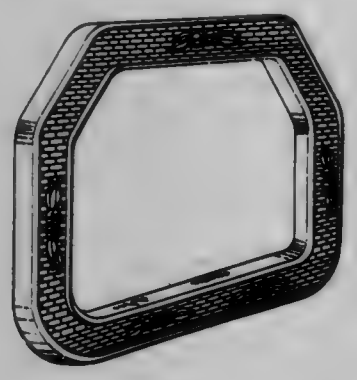
265,874
SUPPORT FOR A HAND-HELD SHOWERHEAD
Odo Klose, Wuppertal, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany
Filed Aug. 27, 1979, Ser. No. 70,100
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, MR 6936
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—86



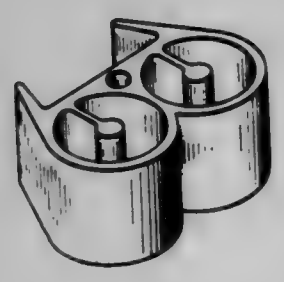
265,875
SHOWER OR TUB STORAGE CABINET
Gregory Wolf, West Reading; Scott Sandman, Fleetwood, and Clark Pearson, Birdsboro, all of Pa., assignors to The Tappan Company, Mansfield, Ohio
Filed Oct. 5, 1979, Ser. No. 82,121
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—86



265,876
TOWEL RACK
Reg Littlefield, Toronto, Canada, assignor to Aqualine Products Limited, Mississauga, Canada
Filed Jul. 17, 1981, Ser. No. 284,173
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—101



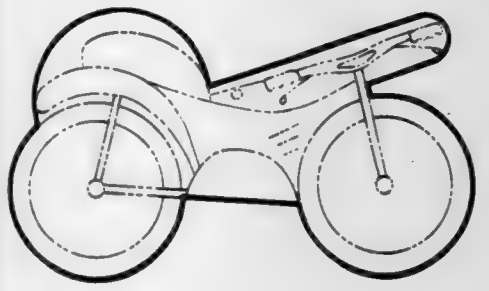
265,877
DRUMSTICK HOLDER
Bruce N. Hardy, Elkhart, Ind., assignor to Silver Street, Incorporated, Elkhart, Ind.
Filed Jun. 23, 1980, Ser. No. 162,017
Term of patent 14 years
Int. Cl. D6—*04;* D8—*08*
U.S. Cl. D6—125



265,878
TABLE
Daniel D. Wistehuff, Hickory, N.C., assignor to Pinnacle Furniture Company, Inc., Claremont, N.C.
Filed Apr. 18, 1980, Ser. No. 141,683
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

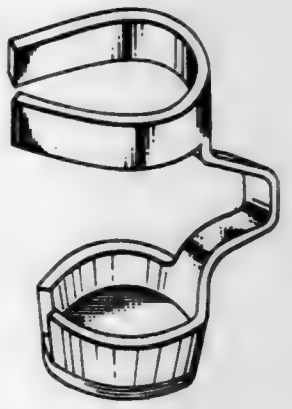


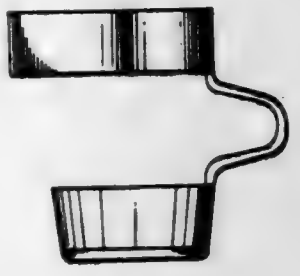
265,879
CAKE BAKING FRAME
Helen Bisso, Fairview Heights, Ill., assignor to Paul Bisso, Fairview Heights, Ill.
Filed May 5, 1980, Ser. No. 146,233
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—43



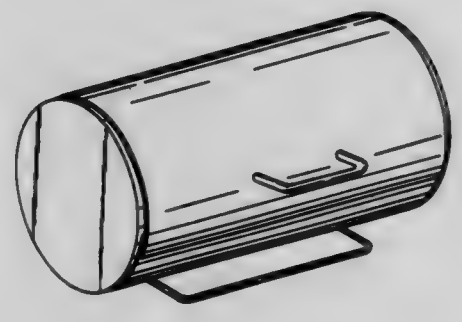


265,880
BEVERAGE CAN HOLDER
Thomas M. Craig, 8200 Lenore St., Houston, Tex. 77017
Filed Aug. 20, 1980, Ser. No. 180,061
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—70

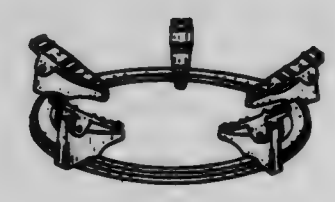




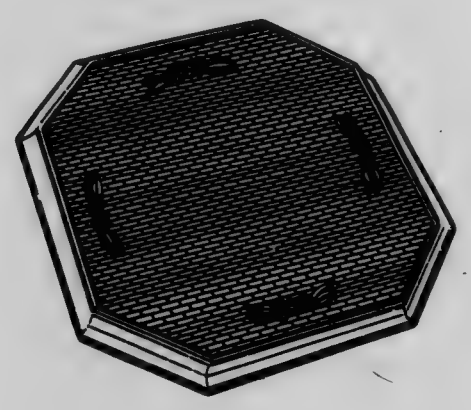
265,881
BARBECUE
Ronald Bell, and Jorn Sorensen, both of Richmond, Canada, assignors to Force 10 Marine Ltd., Richmond, Canada
Filed Jul. 14, 1980, Ser. No. 168,919
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110



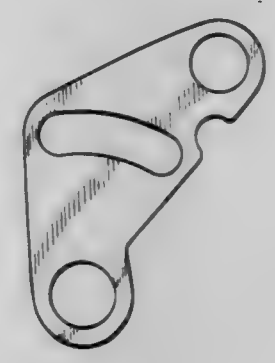
265,882
SUPPORTING FRAME FOR GAS STOVE
Wen-I Shih, No. 266, Tz'u Wen Road, Taoyuan, Taiwan
Filed May 22, 1980, Ser. No. 152,415
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—130



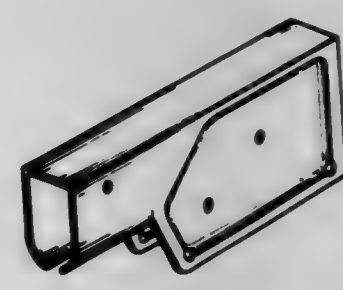
265,883
WALL PLATE
Reg Littlefield, Toronto, Canada, assignor to Aqualine Products Limited, Mississaug, Canada
Filed Jul. 17, 1981, Ser. No. 284,246
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—351



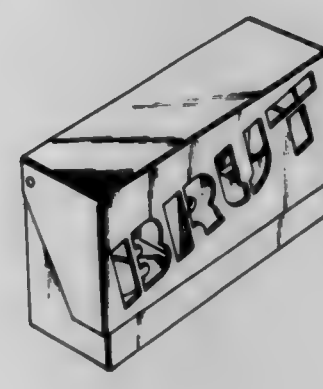
265,884
VIBRATION DAMPENING BRACKET FOR A TAKE-UP CRADLE OF A YARN TEXTURING MACHINE
James B. Mabry, Elon College, N.C., assignor to Mabry Industries, Inc., Elon College, N.C.
Filed Apr. 19, 1979, Ser. No. 31,607
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



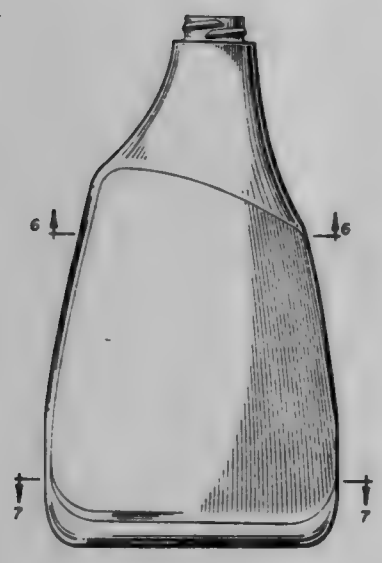
265,885
CURTAIN TRACK END PULLEY
Ivan A. Smith, Cheltenham, Australia, assignor to Village Nominees Pty. Ltd., Australia
Filed Jul. 22, 1980, Ser. No. 171,155
Claims priority, application Australia, Mar. 13, 1980, 80,452
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—358



265,886
BOX
Louise Caputo, New York, N.Y., assignor to Faberge, Incorporated, New York, N.Y.
Filed Nov. 21, 1979, Ser. No. 96,372
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—332



265,887
BOTTLE
Richard L. Weckman, Perrysburg, Ohio, assignor to The Clorox Company, Oakland, Calif.
Filed May 27, 1980, Ser. No. 153,833
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—375



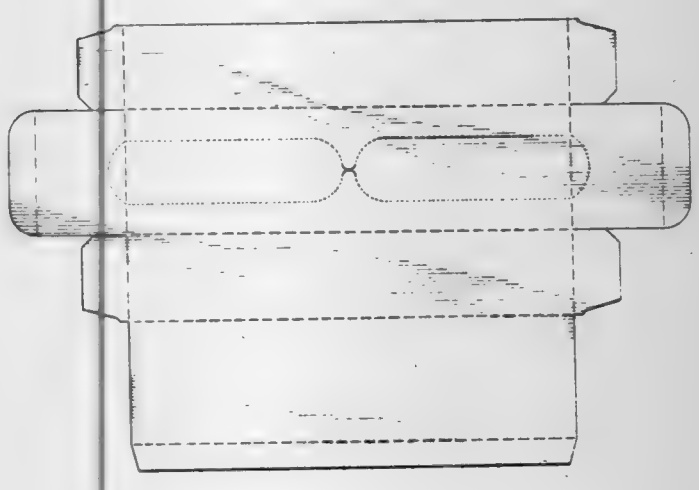
265,888
OIL CONTAINER OR THE LIKE
Charles N. Epperson, Rte. 1, Box 101, Okmulgee, Okla. 74447
Filed Jun. 9, 1980, Ser. No. 181,600
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—375



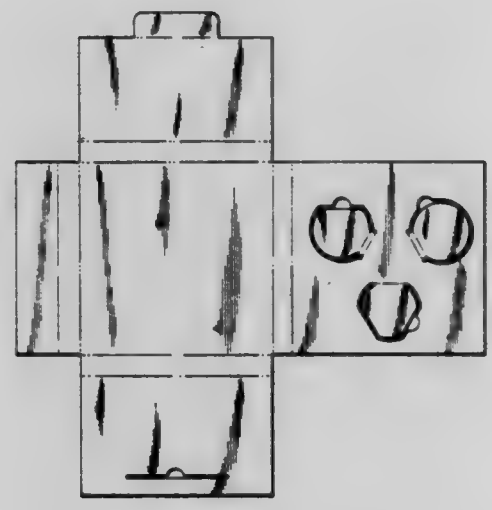
265,889
BRASSIERE DISPLAY PACKAGE
James L. Lawrence, Winston-Salem, N.C., and Joel Heller, Greenlawn, N.Y., assignors to Consolidated Foods Corporation, Winston-Salem, N.C.
Filed Jan. 28, 1980, Ser. No. 115,913
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—418



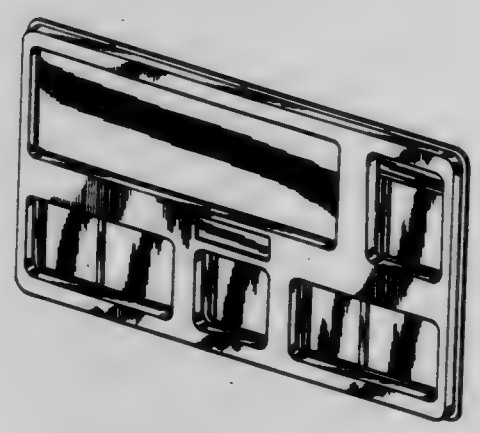
265,890
CARTON BLANK
Floyd F. Fallen, and Calvin L. Wilson, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Nov. 16, 1979, Ser. No. 95,527
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



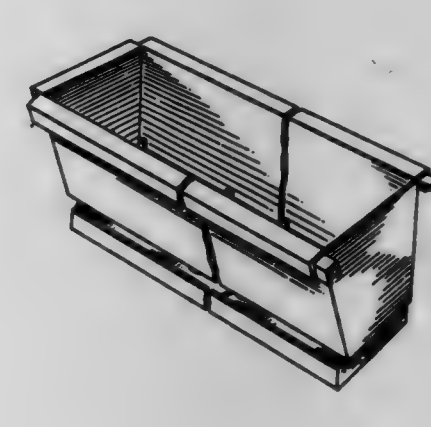
265,891
CARTON BLANK
Michael F. Sammons, 2608 Inwood Rd., Suite 130, Dallas, Tex. 75235
Filed Aug. 4, 1980, Ser. No. 174,832
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



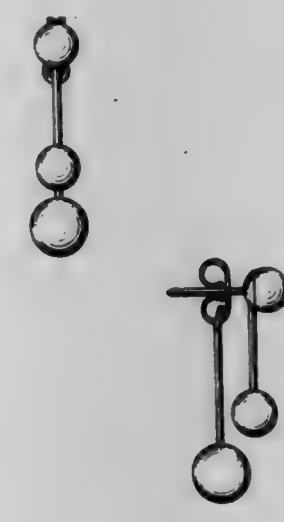
265,892
SPORTS SCOREBOARD
James L. Gebhardt, Roswell, and Ferris L. Hutchins, Jr., Doraville, both of Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed Aug. 6, 1979, Ser. No. 63,798
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—46.1



265,893
COMBINED MODULAR FLOWER BOX AND TRAY THEREFOR
Donald H. Whiting, 1330 Mississauga Valley Blvd., Unit 26, Mississauga, Ontario, Canada (L5A 3T1)
Filed Apr. 1, 1981, Ser. No. 249,927
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—156



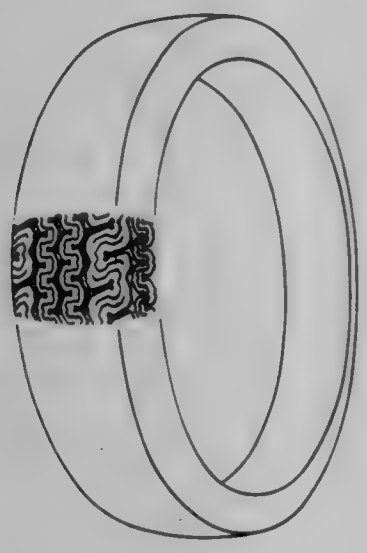
265,894
PEARL EARRING
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Sep. 26, 1980, Ser. No. 191,441
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—43



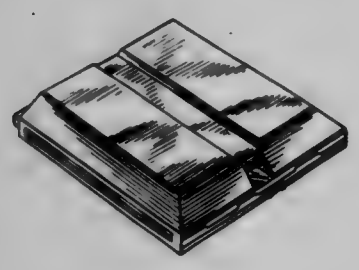
265,895
EARRING
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 7, 1980, Ser. No. 176,122
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—76



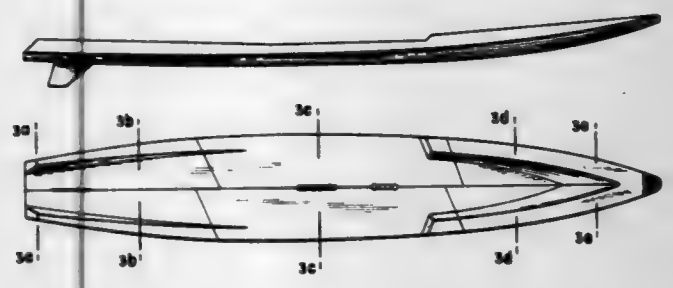
265,896
PNEUMATIC TIRE TREAD AND BUTTRESS
John A. Hutz, Mt. Clemens, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Aug. 18, 1980, Ser. No. 179,361
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



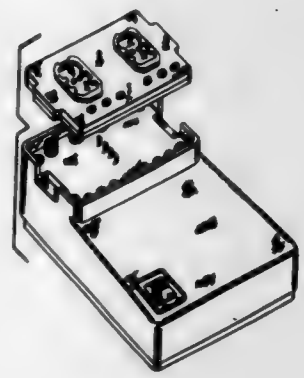
265,897
CAR TOP SKI CARRIER
Gary A. Gerber, 15 White Birch Ridge, Weston, Conn. 06883
Filed Aug. 13, 1979, Ser. No. 65,834
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



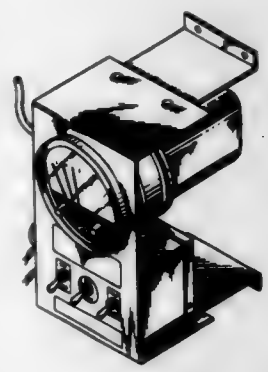
265,898
BOARD FOR WATER SPORTS
Andrej Cerkovnik, Spodnji Rudnik 4/17, and Stane Zvanut, Vrhovci c. XVII/22, both of 61000 Ljubljana, Yugoslavia
Filed Apr. 2, 1980, Ser. No. 136,738
Claims priority, application Yugoslavia, Oct. 3, 1979, M-267/79
Term of patent 14 years
Int. Cl. D12—*06*; D21—*02*
U.S. Cl. D12—303



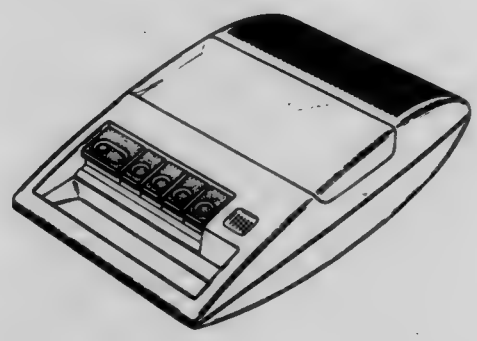
265,899
BATTERY CHARGER SYSTEM
Lawrence E. House, II, Baltimore, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Oct. 17, 1979, Ser. No. 86,361
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—5



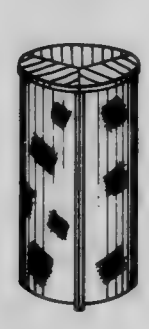
265,900
STATIC PRESSURE CONTROL ASSEMBLY FOR ENVIRONMENTALLY CONTROLLED BUILDINGS AND THE LIKE
William H. Johnson, Harrisonburg, Va., assignor to Shenandoah Manufacturing Co., Inc., Harrisonburg, Va.
Filed May 27, 1980, Ser. No. 153,729
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12



265,901
PORTABLE CASSETTE TAPE RECORDER
Kunishige Miki, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 10, 1980, Ser. No. 158,046
Claims priority, application Japan, Dec. 26, 1979, 54-56153
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



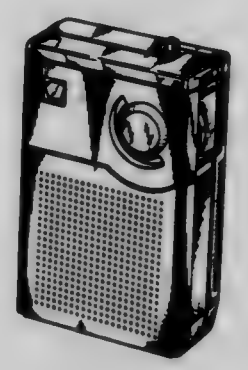
265,902
SPEAKER CABINET
Steven J. Eberbach, 950 Fountain St., Ann Arbor, Mich. 48103
Filed Mar. 7, 1980, Ser. No. 128,467
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33



265,903
TELEPHONE
Erwin R. Wendorff, 1 Walnut Hollow La., Lincroft, N.J. 07738
Filed Apr. 16, 1980, Ser. No. 141,132
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



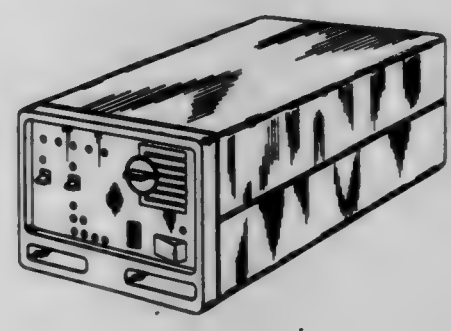
265,904
RADIO RECEIVER
Dieudonne G. Aoija, Hong Kong, Hong Kong, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 1, 1980, Ser. No. 164,995
Claims priority, application United Kingdom, Jan. 3, 1980, 993033
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



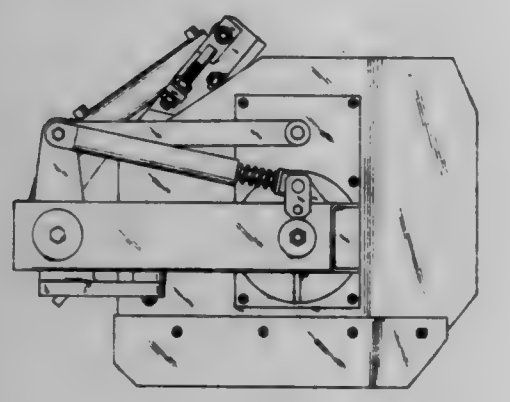
265,905
MICROWAVE ANTENNA
Richard D. Bogner, 4 Hunters La., Roslyn, N.Y. 11576, and Leonard H. King, 67 Southgate Rd., Valley Stream, N.Y. 11581
Filed Mar. 12, 1980, Ser. No. 129,759
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86



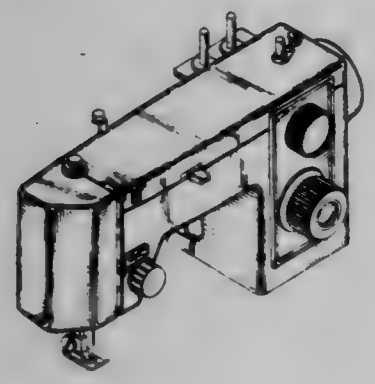
265,906
MODEM
Robert E. Steinbugler, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Jun. 4, 1979, Ser. No. 45,701
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—107



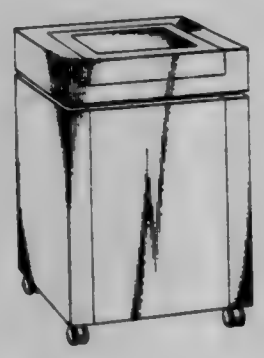
265,907
SNOW PLOW SNOW RETAINING GATE
Gustaf Karisson, Linkoping, Sweden, assignor to GK Haninge Maskiner AB, Linkoping, Sweden
Filed May 29, 1980, Ser. No. 154,438
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D15—12



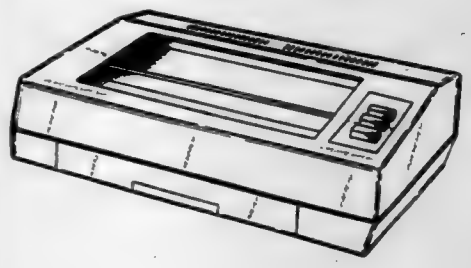
265,908
SEWING MACHINE BRACKET ARM
Eric A. Schneider, Linden, N.J., assignor to The Singer Company, Stamford, Conn.
Filed Apr. 28, 1980, Ser. No. 144,005
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—76



265,909
PAPER SHREDDER OR THE LIKE
Takefumi Hatanaka, Matsudo, Japan, assignor to Lifewell Corporation, Tokyo, Japan
Filed May 19, 1980, Ser. No. 151,493
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D15—127



265,910
PAPER SHREDDER OR THE LIKE
Takefumi Hatanaka, Matsudo, Japan, assignor to Lifewell Corporation, Tokyo, Japan
Filed Jul. 22, 1980, Ser. No. 170,441
Claims priority, application Japan, Apr. 18, 1980, 55-15053
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D15—127



265,911
PAPER SHREDDER OR THE LIKE
Takefumi Hatanaka, Matsudo, Japan, assignor to Lifewell Corporation, Tokyo, Japan
Filed Jul. 22, 1980, Ser. No. 170,442
Claims priority, application Japan, Apr. 18, 1980, 55-015054
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D15—127



265,912

MACHINE TOOL ENCLOSURE

Juergen Frenkel, Berlin, German Democratic Rep., assignor to Veb Werkzeugmaschinenkombinat "7 Oktober", Berlin, German Democratic Rep.

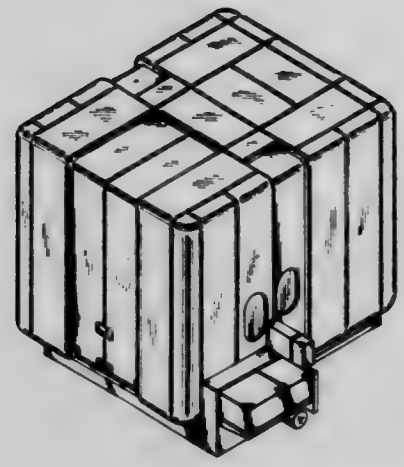
Filed May 14, 1979, Ser. No. 38,722

Claims priority, application German Democratic Rep., Nov. 13, 1978, 13214/M1373

Term of patent 14 years

Int. Cl. D15—*99*

U.S. Cl. D15—138



265,913

DESK TOP ELECTRONIC CALCULATOR

Eiichi Yoshioka, Tokyo, and Hideo Fushimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,838

Claims priority, application Japan, Jun. 14, 1979, 54-24607

Term of patent 14 years

Int. Cl. D18—*01*

U.S. Cl. D18—7



265,914

PRINTING MACHINE

Etsuo Hiraishi, Hiroshima, and Masakazu Sakamoto, Fukuyama, both of Japan, assignors to Ryobi Limited, Hiroshima, Japan

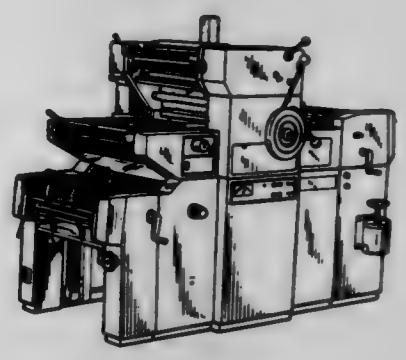
Filed Nov. 19, 1980, Ser. No. 208,413

Claims priority, application Japan, May 23, 1980, 55-20688

Term of patent 14 years

Int. Cl. D18—*02*

U.S. Cl. D18—13



265,915

WATERCOLOR PALETTE

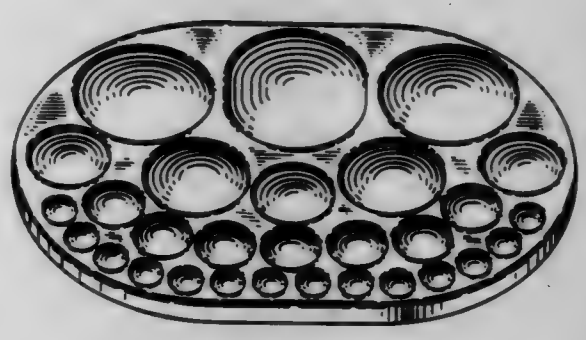
Mary Tivey, 18700 NW. Idaho, Portland, Oreg. 97229

Filed Jul. 17, 1980, Ser. No. 169,894

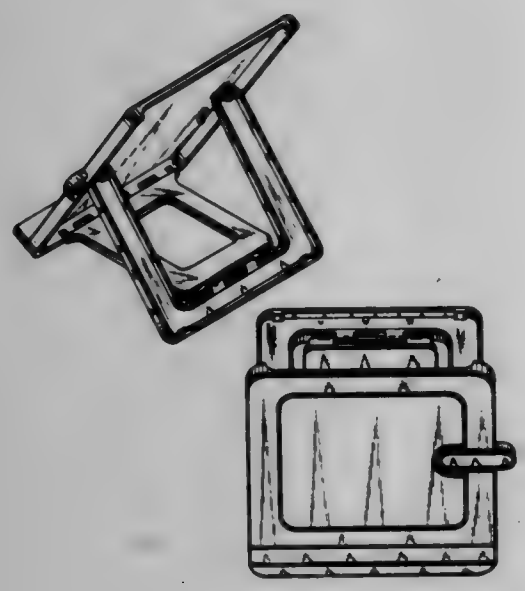
Term of patent 14 years

Int. Cl. D19—*06*

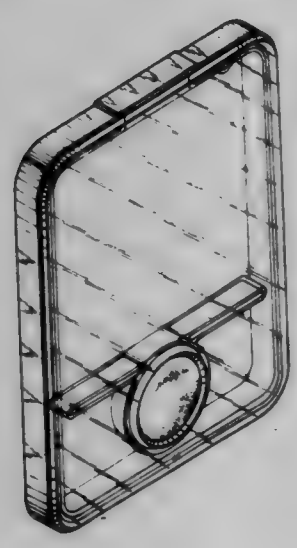
U.S. Cl. D19—35



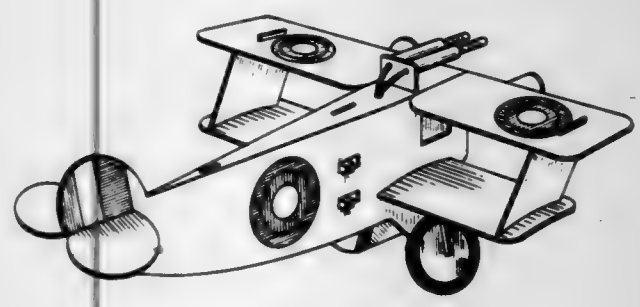
265,916
FOLDABLE STENOGRAPHIC NOTEBOOK HOLDER
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.
Filed May 9, 1980, Ser. No. 148,524
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—91



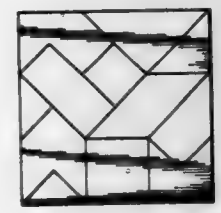
265,917
HOUSING FOR AMUSEMENT WATER TOY
Masahiko Hamaguchi, and Yasuhiro Sato, both of Tokyo, Japan, assignors to Tomy Kogyo Company, Inc., Tokyo, Japan
Filed Sep. 25, 1980, Ser. No. 190,559
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

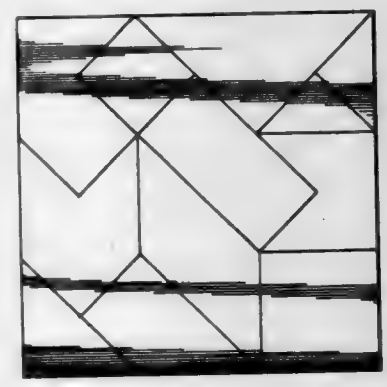


265,918
TOY AIRPLANE
Robert R. Schoch, 517 Otteray Dr., High Point, N.C. 27260
Filed Jun. 26, 1978, Ser. No. 919,392
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—89

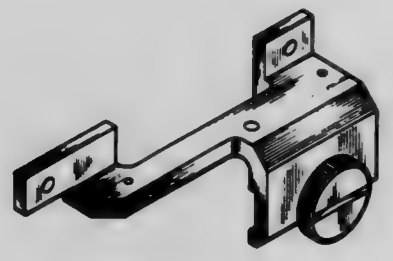


265,919
SQUARE PUZZLE
Klaus W. Spiecker, Notre-Dame des Bois, Comte Frontenac, Quebec, Canada
Filed Dec. 23, 1977, Ser. No. 864,154
Claims priority, application Canada, Jun. 28, 1977, 2806772
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—104

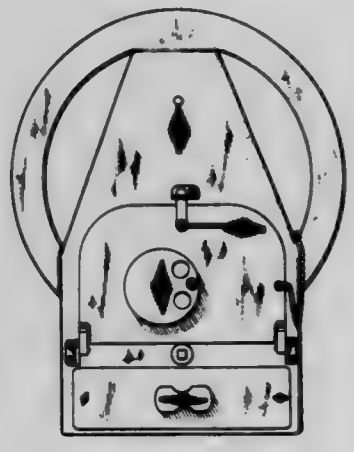




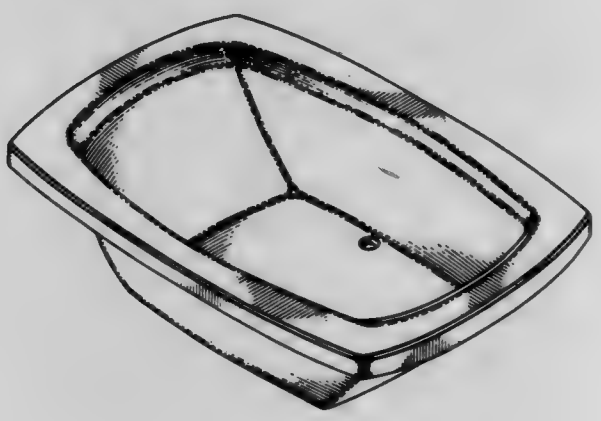
265,920
BASE FOR A RIFLE TELESCOPE MOUNT
Daniel L. Bechtel, P.O. Box 11281, Fort Worth, Tex. 76109
Filed Aug. 18, 1980, Ser. No. 178,730
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



265,921
WOOD BURNING STOVE
Peter Kilham, Box 98, Pole 27, Mill Rd., Foster, R.I. 02825
Filed Sep. 15, 1980, Ser. No. 187,218
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



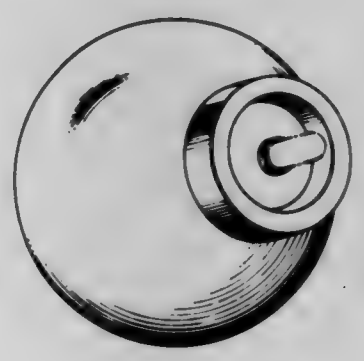
265,922
BATHTUB
Stephen J. Jasperson, Valencia, Calif., assignor to Gruber Systems, Inc., Valencia, Calif.
Filed Sep. 12, 1980, Ser. No. 186,688
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



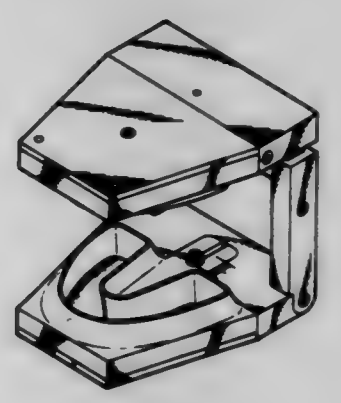
265,923
BATHTUB
Richard J. Cuttriss, Fillmore, Calif., assignor to Gruber Systems, Inc., Valencia, Calif.
Filed Mar. 31, 1981, Ser. No. 249,375
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



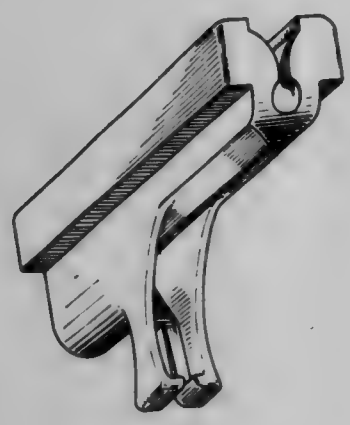
265,924
AIR IONIZER
Stephen J. S. Gehlke, Berkeley, Calif., assignor to Ion Systems, Inc., Berkeley, Calif.
Filed Mar. 6, 1980, Ser. No. 127,897
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



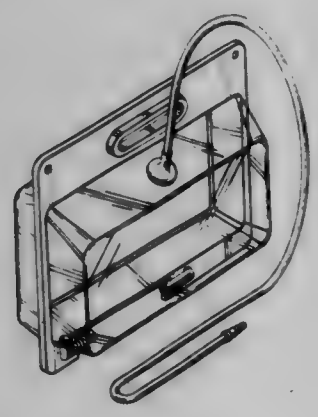
265,925
OCCLUDATOR
Fumio Yogosawa, Tokyo, Japan, assignor to Sankin Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Nov. 8, 1979, Ser. No. 92,261
Claims priority, application Japan, May 11, 1979, 54-19045; May 11, 1979, 54-57839
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—16



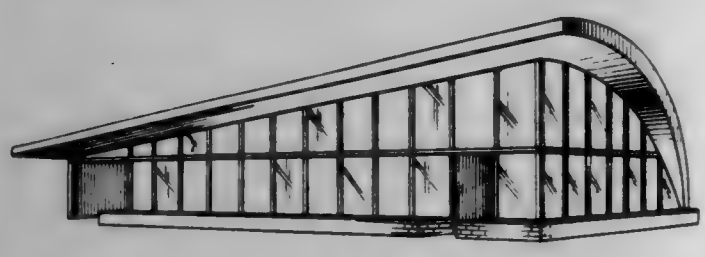
265,926
GRIPPABLE TUBING CLAMP OR THE LIKE
Herbert F. D'Alo, Crystal Lake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Dec. 21, 1979, Ser. No. 106,113
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—27



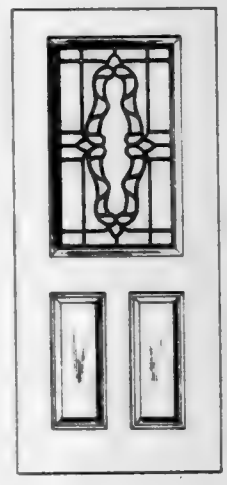
265,927
URINE COLLECTION DEVICE OR THE LIKE
Charles A. Lahay, Fayette, Ala., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 19, 1980, Ser. No. 131,600
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—59



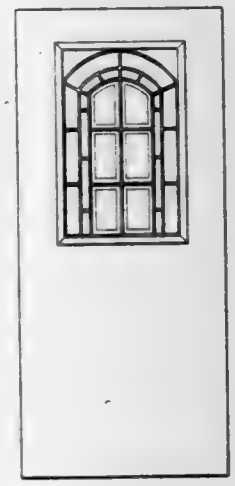
265,928
BUILDING STRUCTURE
Walter F. Feuchs, 16 Lake St., White Plains, N.Y. 10603
Filed May 19, 1980, Ser. No. 150,996
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—18



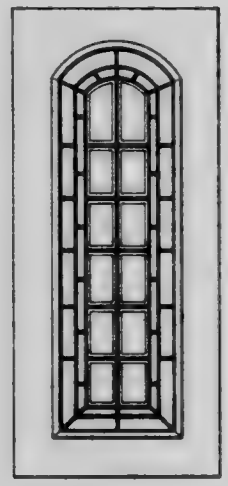
265,929
DOOR
Linda S. Simpson, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.
Filed Mar. 18, 1980, Ser. No. 131,333
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48



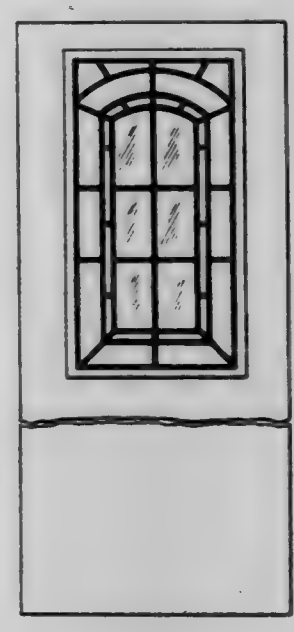
265,930
DOOR
Linda S. Simpson, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.
Filed Mar. 18, 1980, Ser. No. 131,304
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48



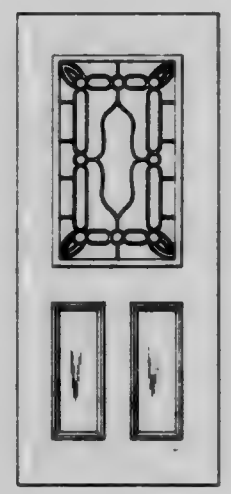
265,931
DOOR
Linda S. Simpson, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.
Filed Mar. 18, 1980, Ser. No. 131,332
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48



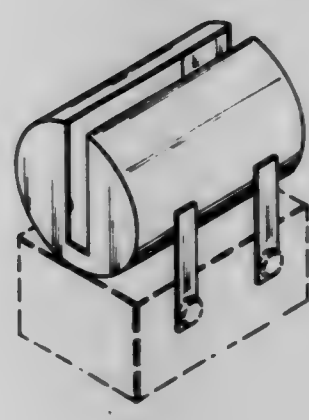
265,933
DOOR
Linda S. Simpson, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.
Filed Aug. 22, 1980, Ser. No. 163,856
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48



265,932
DOOR
Linda S. Simpson, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.
Filed Mar. 18, 1980, Ser. No. 131,335
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48



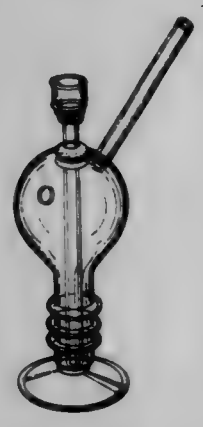
265,934
QUARTZ HALIDE LAMP REFLECTOR-HEAT CONCENTRATOR
Russell R. Ellersick, 7925 Twin Oaks Dr., Citrus Heights, Calif. 95610
Filed Aug. 17, 1978, Ser. No. 934,637
Term of patent 14 years
Int. Cl. D26—*05*; D23—*03*
U.S. Cl. D26—118



265,935
PIPE
Robert B. Sher, 609 Lochmor, Danville, Calif. 94526
Filed Mar. 31, 1981, Ser. No. 249,624
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03

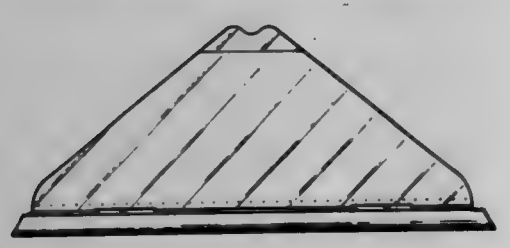


265,936
PIPE
Robert B. Sher, 609 Lochmor, Danville, Calif. 94526
Filed Mar. 31, 1981, Ser. No. 249,626
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03

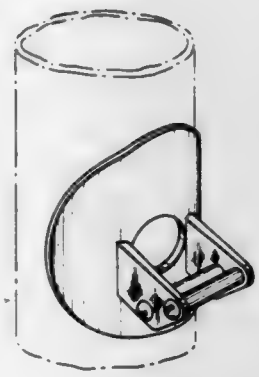


265,937
ANTFARM
Joseph W. Berteloot, 310 Ladera, San Jose, Calif. 95134
Filed May 30, 1980, Ser. No. 154,823
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

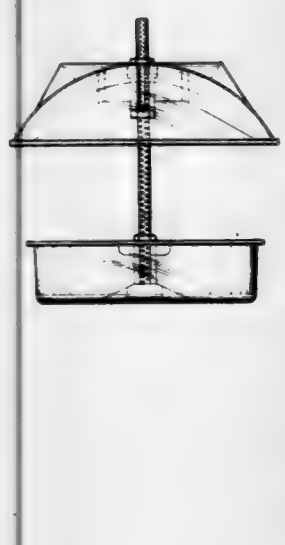




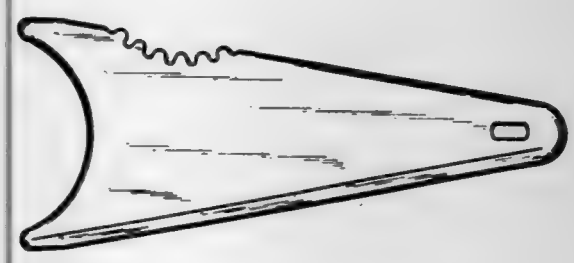
265,938
BIRD FEEDER PERCH
Peter Kilham, P.O. Box 98, Mill Rd., Foster, R.I. 02825
Filed Jun. 2, 1980, Ser. No. 156,312
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



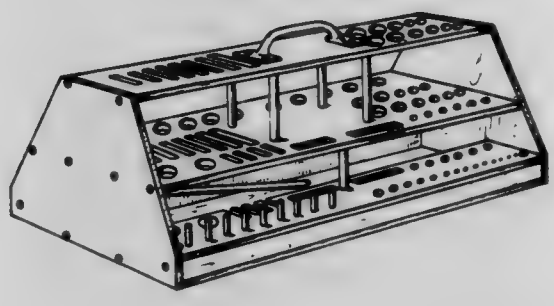
265,939
WINDOW BIRD FEEDER
Peter Kilham, P.O. Box 98, Mill Rd., Foster, R.I. 02825
Filed Jun. 2, 1980, Ser. No. 156,311
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—14



265,940
PAINT ROLLER CLEANER
Sven O. Olsson, 7951 Chicago Ave. South, Minneapolis, Minn. 55420
Filed Mar. 14, 1980, Ser. No. 130,545
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—46



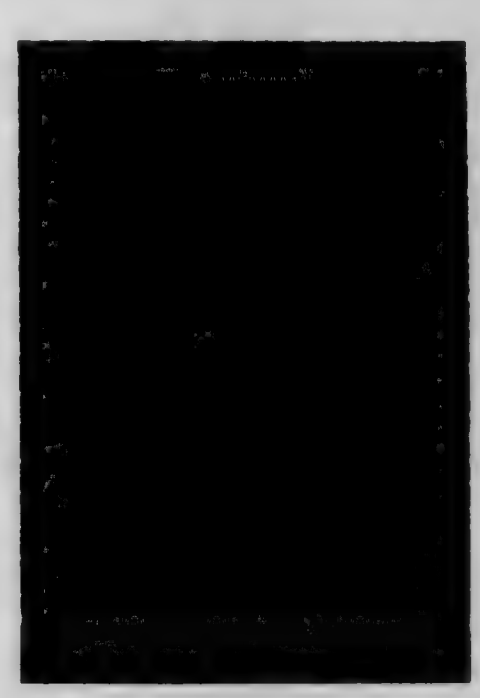
265,941
TOOL CADDY
Monte C. Allison, 1109 Grace Ave., Burlington, N.C. 27215, and Kenneth M. Graves, 295 Cheek La., Graham, N.C. 27253
Filed Jan. 28, 1980, Ser. No. 115,789
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D34—44



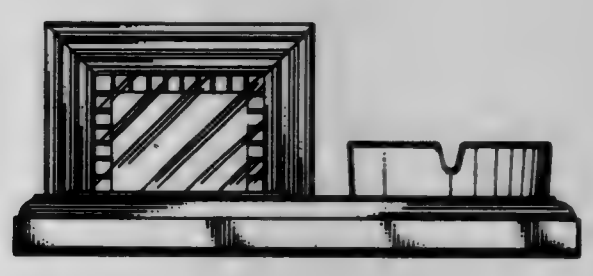
265,942
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,669
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, URA 1193
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



265,943
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed Sep. 9, 1980, Ser. No. 185,616
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, URA 365
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



265,944
COMBINED TOY BANK AND ASH TRAY
Robert F. Word, 115 E. 83rd St. South, Wichita, Kans. 67233
Filed May 27, 1980, Ser. No. 153,530
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—36



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PATENTS WERE ISSUED ON THE 24TH DAY OF AUGUST, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Sorensen, Egon, 4,345,802, Cl. 312-42.000.
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Rizzo, Charles P.; Barraco, Stephen; and Quinn, James, 4,345,868, Cl. 414-408.000.

Barten, Piet G. J., to U.S. Philips Corporation. Display tube for displaying color pictures. 4,346,327, Cl. 313-413.000.

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Barton, Ronald S. C., to Molins, Ltd. Paper splicing device, especially for cigarette or filter rod-making machines. 4,345,709, Cl. 226-195.000.

Barton Valve Company: *See*—
Wheatley, Charles, 4,345,739, Cl. 251-358.000.

Bartsch, Wolfgang: *See*—
Friebe, Walter-Gunar; Michel, Helmut; Ross, Carl H.; Wiedemann, Fritz; Bartsch, Wolfgang; and Dietmann, Karl, 4,346,093, Cl. 424-269.000.

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Hack, Joachim, 4,346,413, Cl. 360-77.000.
Vescia, Michele; and Heimann, Sigismund, 4,345,910, Cl. 8-610.000.

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Bauer, Werner R.; and Smith, William N., to Robertshaw Controls Company. Control unit and electrical switch construction therefor—methods of making such a control unit and electrical switch construction. 4,345,369, Cl. 29-622.000.

Baugh, John L.; and Montgomery, James W., to Hughes Tool Company. Well packer. 4,345,649, Cl. 166-120.000.

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Baumann, Hans D. Clamp-on quick disconnect rotary valve linkage arrangement. 4,345,850, Cl. 403-373.000.

Baumann, John S.; Knipp, Roger W.; and Kacin, Joseph J., to Fluxcom, Inc. Magnetic tape de-gausser and method of erasing magnetic recording tape. 4,346,426, Cl. 361-151.000.

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Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,345,746, Cl. 266-90.000.

Baxter Travenol Laboratories, Inc.: *See*—
Kopp, Clinton V.; and Shah, Dilip, 4,346,006, Cl. 210-321.400.

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Alewelt, Wolfgang; Margotte, Dieter; Wulff, Claus; and Vernaleken, Hugo, 4,346,210, Cl. 528-199.000.
Dhein, Rolf; Schoeps, Jochen; and Kuchenmeister, Rolf, 4,346,044, Cl. 260-404.800.
Schmidt, Adolf; Meier, Helmut; Schedrat, Gunther; and Bockmann, August, 4,346,203, Cl. 526-225.000.

Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., to Eli Lilly and Company. 3-Aryl-5-isothiazolecarboxylic acids and related compounds used to lower uric acid levels. 4,346,094, Cl. 424-270.000.

Beckman Instruments, Inc.: *See*—
Gutierrez, William S.; Gropper, Lee; and Brown, Hugh O., 4,345,713, Cl. 233-1.00B.

Bedford, Clifford D.: *See*—
Levins, Donald A.; Bedford, Clifford D.; and Coon, Clifford L., 4,346,222, Cl. 544-322.000.

Beecham Group Limited: *See*—
Cole, Martin; and Edmondson, Robert A., 4,346,168, Cl. 435-43.000.
Hadley, Michael S.; King, Francis D.; and Martin, Roger T., 4,346,089, Cl. 424-248.520.

Behringwerke Aktiengesellschaft: *See*—
Kohl, Helmut, 4,345,911, Cl. 23-230.00B.

Beiersdorf Aktiengesellschaft: *See*—
Sattler, Henning; and Ulex, Georg A., 4,346,086, Cl. 424-243.000.

Bell Telephone Laboratories, Incorporated: *See*—
Blahut, Donald E.; and Ukeiley, Richard L., 4,346,437, Cl. 364-200.000.
Carroll, Arthur E., II; Lewis, Basil C., Jr.; and Yeazel, Howard T., 4,346,396, Cl. 357-70.000.
Choi, Jae H.; Mottine, John J., Jr.; Sparzak, Walter J., Sr.; and Vesperman, William C., 4,346,145, Cl. 428-389.000.
Kinsbron, Eliezer; and Vratny, Frederick, 4,346,125, Cl. 427-96.000.
Mallos, James B., 4,346,376, Cl. 340-712.000.
Schiavone, James A.; and Vigants, Arvids, 4,346,385, Cl. 343-703.000.

Bellows, Richard J.; Grimes, Patrick G.; Newby, Kenneth R.; Einstein, Harry; and Tsien, Hsue C., to Exxon Research & Engineering Co. Electrochemical construction. 4,346,150, Cl. 429-18.000.

Belyavsky, Alexandr S.: *See*—
Lezgintsev, Georgy M.; Garbuz, Evgeny I.; Kontar, Evgeny A.; Glukhikh, Rudolf G.; Murdmaa, Ivar O.; Soluyanov, Vadim G.; Belyavsky, Alexandr S.; and Kuznetsov, Alexei N., 4,345,461, Cl. 73-170.00A.

Bender, Hans-Eberhard: *See*—
Hofmann, Heinrich; Markfelder, Gunther; and Bender, Hans-Eberhard, 4,345,800, Cl. 308-217.000.

Bendix Corporation, The: *See*—
Brown, Arthur K., 4,345,773, Cl. 280-6.00R.
Francis, William H.; and Natter, Eckard F., 4,346,386, Cl. 343-765.000.
Ritsema, Irving R., 4,345,675, Cl. 188-73.430.

Bendix Westinghouse Ltd.: *See*—
Neal, Brian P., 4,345,767, Cl. 277-12.000.

Benfer, Neil A., Jr. Tree surgery methods. 4,345,404, Cl. 47-8.000.

Benit, Claude. Luggage-carrier or auxiliary luggage compartment for motor cars. 4,345,706, Cl. 224-327.000.

Bennett, John E.; and Elliott, Joseph E., to Diamond Shamrock Corporation. Anodically polarized surface for biofouling and scale control. 4,345,981, Cl. 204-129.000.

Benson, Albert R.; and Willats, James F., to Reed Manufacturing Company. Cutter for thick wall plastic pipe. 4,345,376, Cl. 30-96.000.

Berchoux, Andre; and Coquet, Andre, to Rhone-Poulenc-Textile. Process and apparatus for cutting a tow and continuously opening the fibers obtained. 4,345,355, Cl. 19-0.600.

Berger, Horst H.; and Wiedmann, Siegfried K., to International Business Machines Corporation. I^2L Monolithically integrated storage arrangement. 4,346,458, Cl. 365-174.000.

Bergfeld, Manfred F.: *See*—
Zengel, Hans G.; Bergfeld, Manfred F.; and Zielke, Rainer, 4,346,233, Cl. 562-439.000.

Berglund, Erling G.; and Krook, Hans J., to Clinicon AB. Agitator. 4,345,843, Cl. 366-219.000.

Bergstrand, Gunnar M. Pipe coupling device. 4,345,783, Cl. 285-12.000.

Bermas Plastics Co., Inc.: *See*—
China, David B., 4,345,761, Cl. 273-146.000.

Berndlmaier, Erich; Dorler, Jack A.; Mosley, Joseph M.; and Weitzel, Stephen D., to International Business Machines Corporation. Power control means for eliminating circuit to circuit delay differences and providing a desired circuit delay. 4,346,343, Cl. 323-282.000.

Bernett, Frank W.: *See*—
Riggle, Charles M.; Read, John D.; Noe, William B.; Winfrey, Richard; Pollard, Christopher A.; and Bernett, Frank W., 4,346,416, Cl. 360-106.000.

Berni, Albert J., to Shell Oil Company. Vertical component accelerometer. 4,345,473, Cl. 73-516.0LM.

Berry, David A.: *See*—
Hillenbrand, Louis J.; Preston, Joseph R.; and Berry, David A., 4,346,469, Cl. 369-276.000.
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Bertoloni, Luciano: *See*—
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Buijs, Henry L.; Vail, Garry L.; and Berube, Jean-Noel, 4,345,838, Cl. 356-346.000.
Berzen, Josef; and Mrozik, Herbert, to Ruhrchemie AG. Striking cap lining. 4,345,656, Cl. 173-131.000.
Besecker, Jack J. Apparatus for forming lines on an athletic playing field or court. 4,345,544, Cl. 118-108.000.
Best, Gary R., to Rival Manufacturing Company. Food slicing machine. 4,345,498, Cl. 83-707.000.
Beth GmbH: *See—*
Krull, Walther; Kohn, Dieter; and Schiller, Wolf-Dieter, 4,345,623, Cl. 137-637.200.
Bethlehem Steel Corporation: *See—*
Spengler, Emerson D.; and Schaeffer, Charles W., 4,345,492, Cl. 76-101.00R.
Beyer, John D.: *See—*
Schneider, Samuel; and Beyer, John D., 4,346,444, Cl. 364-475.000.
Bhattacharyya, Sushantha K.; and El-Menshawy, Mohamed F., to National Research Development Corporation. Methods and apparatus for electrical discharge machining. 4,346,278, Cl. 219-69.00M.
Bi, Le-Khac: *See—*
Doak, Kenneth; Bi, Le-Khac; and Milkovich, Ralph, 4,346,198, Cl. 525-314.000.
Bickel, Wolf, to Krautkramer-Branson, Inc. Method and apparatus for receiving ultrasonic energy by optical means. 4,345,475, Cl. 73-657.000.
Billings, William W., to Westinghouse Electric Corp. Solid state status indication circuit for power controllers. 4,346,375, Cl. 340-644.000.
Binz, Jorg: *See—*
Guth, Christian; Gysin, Hanspeter; and Binz, Jorg, 4,345,909, Cl. 8-477.000.
Birukoff, Marcel. Calorimeter. 4,345,844, Cl. 374-31.000.
Bisera, Jose; and Weil, Max H., to Institute of Critical Care Medicine. Closely controllable intravenous injection system. 4,345,594, Cl. 128-214.00F.
Bishop, John F., to Eastman Kodak Company. Two-sheet diffusion transfer elements. 4,346,160, Cl. 430-215.000.
BJ-Hughes Inc.: *See—*
Baker, Randy S.; and Eckmann, Gerald C., 4,345,653, Cl. 166-317.000.
Kuus, Felix, 4,345,648, Cl. 166-106.000.
Smith, Roger, Jr.; and Langowski, Faustyn C., 4,345,864, Cl. 414-22.000.
Blackburn, Richard D.; and Duclos, Donald A., to General Electric Company. Method and apparatus for automatic voltage reduction control. 4,346,341, Cl. 323-257.000.
Blahut, Donald E.; and Ukeiley, Richard L., to Bell Telephone Laboratories, Incorporated. Microcomputer using a double opcode instruction. 4,346,437, Cl. 364-200.000.
Blanc, Jacques; Coulon, Andre; and Pellus, Gilbert, to Alsthom-Atlantique; and TSM. Traitements de Surface et Mecanique. Method and apparatus for depositing metal in a large diameter cylindrical bore which passes through a large part. 4,345,977, Cl. 204-26.000.
Blauschild, Robert A., to Signetics Corporation. Stable field effect transistor voltage reference. 4,346,344, Cl. 323-313.000.
Blissett, Kitson; and Dunbar, Robert A., to Rothenhaus, Robert, a part interest. Control device responsive to infrared radiation. 4,346,427, Cl. 361-173.000.
Bloemers, James L., to Brunswick Corporation. Air and fuel induction system for a two cycle engine. 4,345,551, Cl. 123-59.00B.
Blossfeld, Lothar, to ITT Industries, Inc. Monolithic integrated threshold switch. 4,346,313, Cl. 307-350.000.
Blount, David H. Process for the production of organic alkali metal silicate compounds. 4,346,180, Cl. 521-100.000.
Blount, David H. Process for the production of alkali metal unsaturated polyester silicate resinous products. 4,346,185, Cl. 524-5.000.
Blount, David H. Process for the production of amine polysulfide silicate reaction products and their reaction products. 4,346,191, Cl. 524-710.000.
Blount, David H. Process for the production of organic alkali metal silicate compounds. 4,346,192, Cl. 524-788.000.
Blount, David H. Process for the production of polyester amide silicate resinous products. 4,346,214, Cl. 528-275.000.
Blout, Bennett O.; and Ruffolo, James C., to Evans Products Company. Modular freight bracing bulkhead assembly. 4,345,862, Cl. 410-134.000.
Blum, Alvin S. Solar diodes. 4,345,818, Cl. 350-259.000.
Board of Regents, University of Washington: *See—*
Allan, George G., 4,346,181, Cl. 521-136.000.
Bock, Robert E., to WPM, Inc. Water aerator. 4,345,719, Cl. 239-428.500.
Bockmann, August: *See—*
Schmidt, Adolf; Meier, Helmut; Schedrat, Gunther; and Bockmann, August, 4,346,203, Cl. 526-225.000.
Bockwinkel, Joe L.; and Pehl, Willis G., to Shakertown Corporation. Method of making rabbeted shingle butt joint sidewall panel. 4,345,630, Cl. 144-346.000.
Boden, Richard M., to International Flavors & Fragrances Inc. Branched ketones, organoleptic uses thereof and process for preparing same. 4,346,237, Cl. 568-398.000.
Boehringer Mannheim GmbH: *See—*
Friebe, Walter-Gunar; Michel, Helmut; Ross, Carl H.; Wiedemann, Fritz; Bartsch, Wolfgang; and Dietmann, Karl, 4,346,093, Cl. 424-269.000.
Boeing Company, The: *See—*
Brown, Robert B.; and Stepien, John A., 4,345,727, Cl. 244-102.00R.
Hilton, R. John, 4,346,134, Cl. 428-116.000.
Johnson, Walter J., 4,346,368, Cl. 340-347.0DA.
Loch, David M., 4,346,128, Cl. 427-328.000.
Warner, Gary J.; and Feifel, Winfried M., 4,345,538, Cl. 114-274.000.
Bohnhoff, Alan E.; Cassidy, Bruce M.; and Dyer, Stanley, to International Business Machines Corporation. Drive circuit for thermal printer. 4,345,845, Cl. 400-120.000.
Boliden Aktiebolag: *See—*
Fahlstrom, Per A. H. H.; and Gorling, Karl G., 4,345,990, Cl. 208-11.00R.
Boninchi S.A.: *See—*
Wenger, Karl, 4,346,464, Cl. 368-289.000.
Booe, James M.: *See—*
Perry, Ralph A.; and Booe, James M., 4,345,459, Cl. 73-61.10R.
Booker, Walter W.: *See—*
deBuhr, Harold E.; Booker, Walter W.; and Schmid, Steven L., 4,345,417, Cl. 56-14.300.
Boquiron, Rodolfo A.: *See—*
Mitteldorf, Arthur J.; Marcovecchio, Joseph; and Boquiron, Rodolfo A., 4,346,299, Cl. 378-204.000.
Borg-Warner Chemicals, Inc.: *See—*
Nichols, George M., 4,346,187, Cl. 524-83.000.
Borg-Warner Corporation: *See—*
Ross, Louis, 4,345,920, Cl. 55-46.000.
Borin, Frank W.; and Thomas, Jeffrey G. Test station apparatus for flush mounting. 4,346,254, Cl. 174-37.000.
Boring, Earl: *See—*
Moss, Theron C.; Boring, Earl; and Hjellum, Jerry, 4,345,351, Cl. 15-144.00B.
Borma B.V.: *See—*
de Groot, Hans; van den Heuvel, Eeuwoud; Barendrecht, Embrecht; and Janssen, Leonard J. J., 4,345,978, Cl. 204-74.000.
Bornat, Alan; and Clarke, Roy M., to Imperial Chemical Industries Limited; and University of Liverpool. Shaping process. 4,345,414, Cl. 53-425.000.
Borsos, Janos: *See—*
Tyihak, Erno; Mincsovics, Emil; Dios, Sandor; Horvath, Gyula; Kalasz, Huba; Nagy, Janos; Kormendi, Ferenc; Kozma, Laszlo; Borsos, Janos; and Kiss, Janos, 4,346,001, Cl. 210-198.300.
Bosc, Henri J.; and Goyard, Pierre J., to International Standard Electric Corporation. Doppler radar for detection and localization of helicopters. 4,346,382, Cl. 343-5.0SA.
Bosits, Gyula: *See—*
Takacs, Istvan; Vereczkey, Endre; Bosits, Gyula; and Kerey, Gyorgy, 4,345,720, Cl. 241-74.000.
Bottoms, Harry S., to Lucas Industries Limited. Fuel pumping apparatus. 4,345,565, Cl. 123-497.000.
Boudreaux, Gordon J.: *See—*
Bailey, August V.; Boudreaux, Gordon J.; and Sumrell, Gene, 4,346,043, Cl. 260-404.000.
Boughton, Matthew S., to Cannondale Corporation. Bottle mount and bottle for bicycles. 4,345,704, Cl. 224-39.000.
Bourns Instruments, Inc.: *See—*
Singh, Gurnam, 4,345,476, Cl. 73-720.000.
Bowser, Everett N. Test tube evaporator. 4,346,057, Cl. 422-101.000.
Bozik, John E.: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,346,020, Cl. 252-429.00R.
Bozzuto, Carl R., to Combustion Engineering, Inc. Oxygen blown coal gasifier supplying MHD-steam power plant. 4,346,302, Cl. 290-1.00R.
BP Chemicals Limited: *See—*
Cadolle, Daniel, 4,346,013, Cl. 252-8.50A.
Braber, Robert J., to Abbott Laboratories. Assembly machine for I.V. components. 4,345,963, Cl. 156-423.000.
Bradford, Randol W., to Freeport Minerals Company. Dielectric pipe coupling for use in high temperature, corrosive environments. 4,345,785, Cl. 285-50.000.
Braibanti, Ennio, to Dott. Ingg. M., G. Braibanti & C. S.p.A. Process for the preparation of instant cooking alimentary paste. 4,346,119, Cl. 426-451.000.
Bratt, Jan C., to Kommanditbolaget United Stirling AB & CO. Hot gas engine heater head. 4,345,645, Cl. 165-176.000.
Braund, Darwin G.; Fronk, Thomas J.; Goings, Richard L.; Peters, John W.; and Steele, Robert L., to Agway, Inc. Method for reducing incidence of periparturient disorders in cows. 4,346,077, Cl. 424-156.000.
Bravo, Sergio M. Lock apparatus for storage tanks. 4,345,617, Cl. 137-385.000.
Breeden, Robert H., to Sperry Corporation. Power transmission. 4,345,435, Cl. 60-420.000.
Bretaudeau, Maurice: *See—*
Livet, Jean-Luc; and Bretaudeau, Maurice, 4,345,485, Cl. 74-5.100.
Breuer, Hans: *See—*
Obrist, Albert; and Breuer, Hans, 4,345,692, Cl. 215-252.000.
Breuninger, William F., to National Starch and Chemical Corporation. Method for dewatering starch slurries containing swollen starch granules. 4,345,948, Cl. 127-70.000.
Bridgestone Tire Co., Ltd.: *See—*
Takigawa, Hiroyoshi; and Miyamura, Nobuhiro, 4,345,632, Cl. 152-209.00R.
Ueda, Shigeo; and Fukuda, Yuji, 4,345,537, Cl. 114-219.000.

Bridwell, John W.; and Doyle, James R., to Caterpillar Tractor Co. Contaminant trap for fluid operated rotary actuator. 4,345,509, Cl. 92-78.000.

Briggs & Stratton Corporation: *See—*
Turner, Eugene D., 4,345,885, Cl. 418-90.000.

Brink, Gerhard: *See—*
Wegele, Gunther; Brink, Gerhard; Rotta, Goetz; Roeth, Manfred; and Wittmann, Siegfried, 4,345,907, Cl. 8-444.000.

Brislin, Patricia C. Universal measuring template. 4,345,381, Cl. 33-174.00G.

British Gas Corporation: *See—*
Burd, John F., 4,345,350, Cl. 15-104.06R.

British Petroleum Company Limited, The: *See—*
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,346,021, Cl. 252-431.00N.

Brockel, Gerhard: *See—*
Muller, Arnold; and Brockel, Gerhard, 4,345,339, Cl. 3-1.000.

Brockmann, Klaus-Dieter K.; and van Harreveld, Teunis A., to U.S. Philips Corporation. Hybrid circuit. 4,346,266, Cl. 179-170.0NC.

Brogardh, Torgny: *See—*
Adolfsson, Morgan; and Brogardh, Torgny, 4,345,482, Cl. 73-862.590.

Brook, Marx: *See—*
Richards, Clyde N.; and Brook, Marx, 4,345,916, Cl. 55-5.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Inoue, Toyokazu, 4,346,334, Cl. 318-45.000.
Naganuma, Nobuyuki, 4,346,319, Cl. 310-36.000.

Brower, Boyd G.: *See—*
LeFever, Randall H.; and Brower, Boyd G., 4,345,895, Cl. 431-359.000.

Brower, Ronald W., to NCR Corporation. Self-aligned all-n^+ polysilicon CMOS process. 4,345,366, Cl. 29-571.000.

Brown, Arthur K., to Bendix Corporation, The. Load leveling air pump with pressure clutch. 4,345,773, Cl. 280-6.00R.

Brown, Edwin G.: *See—*
Woolcock, Sydney C.; and Brown, Edwin G., 4,346,383, Cl. 343-12.00R.

Brown, Hugh O.: *See—*
Gutierrez, William S.; Gropper, Lee; and Brown, Hugh O., 4,345,713, Cl. 233-1.00B.

Brown, Robert B.; and Stepien, John A., to Boeing Company, The. Body-braced main airplane landing gear. 4,345,727, Cl. 244-102.00R.

Brown, Robert L., to AMF Incorporated. Compensating well instrument. 4,345,454, Cl. 73-1.00E.

Brownstein, Raymond G. Laden fluid classifying process and apparatus. 4,346,011, Cl. 210-748.000.

Browwer Turf Equipment Limited: *See—*
Arnold, William T., 4,345,659, Cl. 180-131.000.

Bruderlein, Francois T.: *See—*
Humber, Leslie G.; Bruderlein, Francois T.; and Asselin, Andre A., 4,346,090, Cl. 424-258.000.

Brundin, Eike: *See—*
Bach, Hanswilhelm; Brundin, Eike; and Gick, Wilhelm, 4,346,239, Cl. 568-461.000.

Brunelli, Maurizio: *See—*
Costanzi, Silvestro; Tessarolo, Francesco; Ballabio, Adriano; and Brunelli, Maurizio, 4,346,188, Cl. 524-104.000.

Brunemann, James C. Apparatus for producing prefabricated modular building panels. 4,345,888, Cl. 425-117.000.

Brunner, Gerd: *See—*
Peter, Siegfried; Brunner, Gerd; and Riha, Rolf, 4,345,976, Cl. 203-49.000.

Brunswick Corporation: *See—*
Bloemers, James L., 4,345,551, Cl. 123-59.00B.

Bryans, Thomas J.; Miller, Richard H.; and Single, Arthur W., II, to Ford Motor Company. Child restraint system for a motor vehicle. 4,345,791, Cl. 297-250.000.

Brzack, Jeffrey A. Glider. 4,345,401, Cl. 46-79.000.

Bucher, Bernard P.: *See—*
Langlois, Michel; Lacour, Alain P.; Bucher, Bernard P.; and Mocquet, Gisele C., 4,346,102, Cl. 424-279.000.

Bucher Guyer A.G. Maschinenfabrik: *See—*
Amstutz, Jean-Pierre, 4,345,422, Cl. 56-370.000.

Buchi, George H.; and Wuest, Hans, to Firmenich SA. Process for the preparation of novel unsaturated macrocyclic ketones. 4,346,023, Cl. 252-522.00R.

Buhler, Otto R.; Gardner, Homer J.; and Marino, Peter T., to International Business Machines Corporation. Amplitude sensitive three-level detector for derivative read back channel of magnetic storage device. 4,346,411, Cl. 360-46.000.

Buijs, Henry L.; Vail, Garry L.; and Berube, Jean-Noel. Apparatus for spectrometer alignment. 4,345,838, Cl. 356-346.000.

Bukatarevic, Dragan. Control system for an electrically driven vehicle with three generators and flywheel energy conservation. 4,346,303, Cl. 290-45.000.

Bulgarsko Radio: *See—*
Kanchev, Peter K., 4,346,466, Cl. 369-250.000.

Bunyan, Clive N., to Rolls-Royce Limited. Lubricant tank. 4,345,699, Cl. 222-40.000.

Burd, John F., to British Gas Corporation. Pipeline cleaning equipment. 4,345,350, Cl. 15-104.06R.

Burdeska, Kurt; and Kabas, Guglielmo, to Ciba-Geigy Corporation. 6-Styrylquinoxalines, and their use as fluorescent brighteners. 4,346,016, Cl. 252-301.220.

Burke, Howard J.; and Hessler, Edward J., to Upjohn Company, The. Base catalyzed acylation with enol esters. 4,346,037, Cl. 260-239.55R.

Burke, James E., to Ethyl Products Company. Child resistant bottle closure. 4,345,691, Cl. 215-216.000.

Burr-Brown Research Corp.: *See—*
Albaugh, Neil P.; and Stitt, Robert M., 4,346,294, Cl. 250-227.000.

Burroughs Corporation: *See—*
Potash, Hanan; Levin, Burton L.; and Chan, Stephen J. C., 4,346,438, Cl. 364-200.000.
Volka, Lubomir J., 4,345,811, Cl. 339-143.00R.
Wallace, Harry L.; and Chambors, John M., 4,346,393, Cl. 346-140.00R.
Wise, John B., 4,346,435, Cl. 364-200.000.
Wise, John B., 4,346,436, Cl. 364-200.000.

Burroughs Wellcome Co.: *See—*
Wilkinson, Samuel, 4,346,083, Cl. 424-177.000.

Busby, Philip V. Drive mechanism for a vehicle trailer lifting gear. 4,345,779, Cl. 280-766.000.

Buss, Kenneth G.; and Culp, Norman L., to Texas Instruments Incorporated. Annunciator. 4,346,265, Cl. 179-84.00T.

Busta, Jiri: *See—*
Zobac, Ladislav; Malek, Zdenek; Soukup, Frantisek; Ryska, Antonin; Jelinek, Jan; and Busta, Jiri, 4,345,598, Cl. 128-303.100.

C Hemische Werke Huls Aktiengesellschaft: *See—*
Schulde, Felix; Peterlein, Karl; and Diedrich, Klaus, 4,346,204, Cl. 526-271.000.

C.N.E.N. Comitato Nazionale per l'Energia Nucleare: *See—*
Colmano, Riccardo, 4,345,549, Cl. 122-34.000.

Cadolle, Daniel, to BP Chemicals Limited. Thixotropic liquid and process for its production. 4,346,013, Cl. 252-8.50A.

Cahn, Robert P.; and Longo, John M., to Exxon Research & Engineering Co. Desulfurization of hot gas with cerium oxide. 4,346,063, Cl. 423-230.000.

Calgon Corporation: *See—*
Cornelius, Thomas E., III, 4,346,017, Cl. 252-321.000.

California Institute of Technology: *See—*
Goetz, Alexander F. H.; and Machida, Richard A., 4,345,840, Cl. 356-407.000.

Callaghan, William I.; and Ehinger, Charles P., to Towmotor Corporation. Wheel brake arrangement. 4,345,673, Cl. 188-18.00R.

Calvani, Menotti: *See—*
Cavazza, Claudio; and Calvani, Menotti, 4,346,107, Cl. 424-316.000.

Cameron, George R. Vacuum grass collecting apparatus. 4,345,416, Cl. 56-13.300.

Campbell, Charles M.: *See—*
McConnell, William K., Jr.; and Campbell, Charles M., 4,345,997, Cl. 210-150.000.

Campbell, Jeptha E.; and Gilchrist, James E., to Spiral Systems Inc. Gravimetric diluter. 4,345,628, Cl. 141-83.000.

Canadian Fram: *See—*
Cook, John E., 4,345,428, Cl. 60-274.000.

Canadian Patents & Development Ltd.: *See—*
Kutowy, Oleh; Thayer, William L.; and Sourirajan, Srinivasa, 4,346,126, Cl. 427-209.000.

Canargo International Pty. Ltd.: *See—*
Romp, Frederick J., 4,346,286, Cl. 219-501.000.

Candid Logic, Inc.: *See—*
Vis, Arthur D., 4,345,380, Cl. 33-147.00N.

Cannondale Corporation: *See—*
Boughton, Matthew S., 4,345,704, Cl. 224-39.000.

Canon Kabushiki Kaisha: *See—*
Matsuyama, Shigeru, 4,346,450, Cl. 364-710.000.
Shinbori, Kenichi; Sakai, Shinji; Shinoda, Nobuhiko; Ito, Tadashi; and Murakami, Hiroyasu, 4,345,829, Cl. 354-[illegible]000.

Carborundum Company, The: *See—*
Miller, Alton K., 4,345,545, Cl. 118-621.000.

Carl Freudenberg, Firma: *See—*
Seeh, Reinhold, 4,345,770, Cl. 277-48.000.

Carlson, Charles E., to Allied Corporation. High temperature pressure transducer system. 4,345,467, Cl. 73-309.000.

Carlson, Richard H.; and Gatcomb, Gerald L., to Du Pont de Nemours, E. I., and Company. Composite structure of an aromatic polyamide fabric coated with a fluorosilicone rubber. 4,346,140, Cl. 428-252.000.

Carmichael, William C. Apparatus to increase oil well flow. 4,345,647, Cl. 166-66.000.

Carollo, James A., to Rockwell International Corporation. Current limiting voltage regulator. 4,346,342, Cl. 323-276.000.

Carpenter, Neil L. Method and apparatus for recovering geopressured methane gas from ocean depths. 4,345,979, Cl. 204-101.000.

Carr, John F.: *See—*
Baines, Eric; and Carr, John F., 4,346,072, Cl. 424-49.000.

Carr, Stephen C. Pneumatic atomizing fire fighting supply truck. 4,345,654, Cl. 169-24.000.

Carra Officine Meccaniche S.p.A.: *See—*
Gianni, Carra, 4,345,386, Cl. 34-218.000.

Carrier Corporation: *See—*
Griffin, Charles K., 4,345,878, Cl. 417-15.000.

Carrigan, Donald G., to NCR Corporation. Method for fabricating an integrated circuit. 4,345,365, Cl. 29-571.000.

Carroll, Arthur E., II; Lewis, Basil C., Jr.; and Yeazel, Howard T., to Western Electric Co., Inc.; and Bell Telephone Laboratories, Inc. Electronic device assembly and methods of making same. 4,346,396, Cl. 357-70.000.

Carswell, Angela M.: *See—*
Robinson, Joseph G.; Barnes, David I.; and Carswell, Angela M., 4,346,212, Cl. 528-229.000.

Carter, Ernest A., to Motorola, Inc. Voltage booster circuit. 4,346,310, Cl. 307-264.000.

Carter, Harry D.; and Ojevich, Ted. Ultra-sonic pest control apparatus. 4,346,370, Cl. 340-384.00E.
Carter, James H.; Ledis, Stephen L.; and Crews, Harold R., to Coulter Electronics, Inc. Multi-purpose blood diluent and lysing agent for differential determination of lymphoid-myeloid population of leukocytes. 4,346,018, Cl. 252-408.000.
Carter, Jerry L.: *See*—
Mohr, Sigo, Jr.; and Carter, Jerry L., 4,345,908, Cl. 8-111.000.
Carter Offshore Design, Inc.: *See*—
Carter, Richard E., 4,345,534, Cl. 114-106.000.
Carter, Richard E., to Carter Offshore Design, Inc. Sail rigging system. 4,345,534, Cl. 114-106.000.
Cartier, Jacques; and Givelet, Sebastien, to Radiall. Method for preparing the end of a flexible very high frequency coaxial cable. 4,345,370, Cl. 29-828.000.
Carvalho, Elmer R., to D G Shelter Products Company. Solar energy collector means and method of assembling the same. 4,345,587, Cl. 126-450.000.
Cash, Jon B.; and Ludwig, Paul K., to Krushko. Can crusher. 4,345,518, Cl. 100-98.00R.
Cassia, Antonio M., to Steiner Corporation. Soap dispensing system. 4,345,627, Cl. 141-18.000.
Cassidy, Bruce M.: *See*—
Bohnhoff, Alan E.; Cassidy, Bruce M.; and Dyer, Stanley, 4,345,845, Cl. 400-120.000.
Castiglia, Giacinto: *See*—
Schulte, Wolfgang; and Castiglia, Giacinto, 4,345,892, Cl. 425-548.000.
Catastini, Alberto: *See*—
De Angelis, Giancarlo; Catastini, Alberto; Bassi, Aldo; Rogora, Edoardo; Radaelli, Dario; Bertoloni, Luciano; and Perrone, Francesco, 4,346,443, Cl. 364-431.040.
Caterpillar Tractor Co.: *See*—
Ballheimer, Benny, 4,345,797, Cl. 308-122.000.
Bridwell, John W.; and Doyle, James R., 4,345,509, Cl. 92-78.000.
Coutant, Alan R., 4,345,508, Cl. 91-516.000.
Johnson, Howard L., 4,345,436, Cl. 60-421.000.
Roussin, Michael A., 4,345,768, Cl. 277-22.000.
Woody, Albert L.; Fox, Lawrence E.; and Reinsma, Harold L., 4,345,772, Cl. 277-212.0FB.
Cavaioli, James N.: *See*—
Cavaioli, Joseph N.; Cavaioli, Joseph R.; and Cavaioli, James N., 4,345,608, Cl. 132-160.000.
Cavaioli, Joseph N.; Cavaioli, Joseph R.; and Cavaioli, James N. Hair lift comb. 4,345,608, Cl. 132-160.000.
Cavaioli, Joseph R.: *See*—
Cavaioli, Joseph N.; Cavaioli, Joseph R.; and Cavaioli, James N., 4,345,608, Cl. 132-160.000.
Cavazza, Claudio; and Calvani, Menotti, to Cavazza, Claudio. Pharmaceutical composition comprising acyl-carnitine for the treatment of impaired cerebral metabolism. 4,346,107, Cl. 424-316.000.
CBS Inc.: *See*—
Jahns, Edward R., 4,345,502, Cl. 84-1.210.
Celanese Corporation: *See*—
Forschirm, Alex S.; and Rosenthal, Arnold J., 4,346,209, Cl. 528-191.000.
Hall, Henry K., Jr.; and Padias, Anne B., 4,346,213, Cl. 528-272.000.
Lazear, Nelson R., 4,346,142, Cl. 428-315.700.
Celotex Corporation, The: *See*—
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,346,133, Cl. 428-109.000.
Center for Design Research and Development N.V.: *See*—
Ambasz, Emilio; and Piretti, Giancarlo, 4,345,733, Cl. 248-561.000.
Central Mine Equipment Company: *See*—
Rassieur, Charles L., 4,345,493, Cl. 81-57.340.
Centre de Recherche Industrielle du Quebec: *See*—
Gadoury, Andre; Pinheiro, Victor; and Pernicka, Martin, 4,345,344, Cl. 5-62.000.
Chabrolle, Jacques, to "L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques". Visual display apparatus for electrical signals recorded on a magnetic medium. 4,345,820, Cl. 350-362.000.
Chambers, George S., to J. P. Stevens & Co., Inc. Anti-siphoning device. 4,345,694, Cl. 220-86.0AT.
Chambers, Ramon P.: *See*—
Poston, Billy R.; Chambers, Ramon P.; and Gordy, Robert S., 4,346,480, Cl. 455-154.000.
Chambors, John M.: *See*—
Wallace, Harry L.; and Chambors, John M., 4,346,393, Cl. 346-140.00R.
Chan, Stephen J. C.: *See*—
Potash, Hanan; Levin, Burton L.; and Chan, Stephen J. C., 4,346,438, Cl. 364-200.000.
Chandler, Noel. Self adjusting, floating, reel blade mower. 4,345,419, Cl. 56-249.000.
Changani, Pushpkumar D.; Peacock, Donald G.; and Roberts, David, to Raychem Corporation. Polymeric articles. 4,345,957, Cl. 156-218.000.
Chapel, Roy W., Jr.; and Gurol, I. Macit, to John Fluke Mfg. Co., Inc. Thermally isolated monolithic semiconductor die. 4,346,291, Cl. 250-211.00R.
Chapman, Derek D.; and Reczek, James A., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible 6-arylazo-3-pyridinol magenta dye-releasing compounds and percursors thereof. 4,346,155, Cl. 430-17.000.
Charlebois, Raymond: *See*—
Trent, Peter F.; and Charlebois, Raymond, 4,346,050, Cl. 264-71.000.
Charpentier, Jean F. Turbo-machines operating at the maximum possible efficiency. 4,345,875, Cl. 415-69.000.
Chase, James P., to Ampex Corporation. Method of manufacturing an extended life multichannel magnetic transducer. 4,345,367, Cl. 29-603.000.
Chemische Fabrik Theodor Rotta GmbH & Co. KG: *See*—
Wegele, Gunther; Brink, Gerhard; Rotta, Goetz; Roeth, Manfred; and Wittmann, Siegfried, 4,345,907, Cl. 8-444.000.
Chen, Thomas T., to Rockwell International Corporation. Crossover junction for magnetic bubble domain circuits. 4,346,455, Cl. 365-16.000.
Cheng, Chen-Yen; and Cheng, Wu-Cheh. Cellular air bag insulation and insulator. 4,346,132, Cl. 428-76.000.
Cheng, Wu-Cheh: *See*—
Cheng, Chen-Yen; and Cheng, Wu-Cheh, 4,346,132, Cl. 428-76.000.
Cheselka, Stephen. Spectacle hinge pin. 4,345,848, Cl. 403-157.000.
Cheung, Harry, to Union Carbide Corporation. Process for the production of high pressure oxygen gas. 4,345,925, Cl. 62-13.000.
Chevron Research Company: *See*—
Muir, Francis, 4,346,461, Cl. 367-39.000.
Chiaretti, Guido: *See*—
Basola, Carlo P.; and Chiaretti, Guido, 4,345,930, Cl. 65-102.000.
Chiba, Kiyoshi: *See*—
Suzuki, Yoshinobu; Chiba, Kiyoshi; Tukuhiro, Tomoya; Iwasawa, Yoshiyuki; Kajioka, Yasuo; and Komine, Tomio, 4,345,431, Cl. 60-286.000.
Chierici, Osvaldo F., to Holland Company. Composite spin welded coupler carrier assembly. 4,345,689, Cl. 213-61.000.
China, David B., to Bermas Plastics Co., Inc. Tetrahedral gaming die with recessed pyramidal faces. 4,345,761, Cl. 273-146.000.
Ching, Larry K. W.: *See*—
Uba, Toshio; Ching, Larry K. W.; and Harrison, Michael R., 4,346,151, Cl. 429-54.000.
Choi, Jae H.; Mottine, John J., Jr.; Sparzak, Walter J., Sr.; and Vesperman, William C., to Western Electric Co., Inc.; and Bell Telephone Laboratories, Incorporated. Coating composition and coated articles. 4,346,145, Cl. 428-389.000.
Chow, Richard T.; Krauss, Clifford J.; and Ybema, Douwe, to Cominco Ltd. Electrowinning of zinc. 4,345,980, Cl. 204-119.000.
Christidis, Yani: *See*—
Schouteeten, Alain; and Christidis, Yani, 4,346,238, Cl. 568-432.000.
Christner, Kurt W.: *See*—
Moseley, Gordon P.; and Christner, Kurt W., 4,345,576, Cl. 123-604.000.
Christopherson, Warren A., to International Business Machines Corporation. Integrated semiconductor current driver circuitry. 4,346,312, Cl. 307-270.000.
Chung, Seun Y. Man's briefs. 4,345,337, Cl. 2-405.000.
Ciba-Geigy AG: *See*—
Turner, George F. A. M., 4,346,300, Cl. 206-455.000.
Ciba-Geigy Corporation: *See*—
Burdeska, Kurt; and Kabas, Guglielmo, 4,346,016, Cl. 252-301.220.
Guth, Christian; Gysin, Hanspeter; and Binz, Jorg, 4,345,909, Cl. 8-477.000.
Maurer, Jurg; and Rembold, Heinz, 4,346,207, Cl. 528-103.000.
Sallmann, Alfred; and Baschang, Gerhard, 4,346,104, Cl. 424-309.000.
Sallmann, Alfred; and Baschang, Gerhard, 4,346,105, Cl. 424-309.000.
Cindon Research Inc.: *See*—
Sharvit, Martin M., 4,346,264, Cl. 179-18.0DA.
Citizen Watch Company Limited: *See*—
Koni, Tuyoshi; Urushida, Yoshihisa; and Tsuzuki, Akira, 4,345,612, Cl. 137-101.190.
Morokawa, Shigeru; and Iwakura, Ryoji, 4,346,350, Cl. 331-116.0FE.
Clairol Incorporated: *See*—
Janniello, Frank, 4,346,419, Cl. 361-2.000.
Clark, Michael W.; and Martin, Barrie J., to Plessey Handel und Investments AG. Low pressure fuel injection system. 4,345,717, Cl. 239-102.000.
Clarke, Roy M.: *See*—
Bornat, Alan; and Clarke, Roy M., 4,345,414, Cl. 53-425.000.
Clement, Philippe; and Rossi, Jean-Paul, to Lesaffre et Cie. Fermentation of acid-containing doughs. 4,346,115, Cl. 426-25.000.
Clinicon AB: *See*—
Berglund, Erling G.; and Krook, Hans J., 4,345,843, Cl. 366-219.000.
Clinicon International GmbH: *See*—
Paletta, Benno; Moller, Reinhard; and Kasielke, Joachim, 4,345,483, Cl. 73-864.160.
Cmelik, Helmut R. M.: *See*—
Basham, Edward R.; and Cmelik, Helmut R. M., 4,345,480, Cl. 73-861.770.
Coal Industry (Patents) Limited: *See*—
Robinson, Joseph G.; Barnes, David I.; and Carswell, Angela M., 4,346,212, Cl. 528-229.000.
Cobleigh, Wendall C.; Barmore, Donald L.; and Geschwender, Robert C., to Professional Marketing Associates. Film slitter. 4,345,497, Cl. 83-105.000.
Cochet, Gerard; and Provost, Gilbert, to Societe Anonyme dite: Carbonisation Entreprise et Ceramique. Pulverulent compositions and

refractory article obtained with said composition. 4,346,177, Cl. 501-123.000.

Cocron, Istvan: *See*—
Stemme, Otto; Lermann, Peter; and Cocron, Istvan, 4,345,827, Cl. 354-25.000.

Coe, Martha D. Walker with detachable seat. 4,345,790, Cl. 297-6.000.

Coe, Mary Ellen B., to NCR Corporation. End point detection using gas flow. 4,345,968, Cl. 156-627.000.

Cohen, Louis, to B. F. Goodrich Company, The. Shortstopping free radical polymerization of olefinic monomers. 4,346,202, Cl. 526-83.000.

Cole, Martin; and Edmondson, Robert A., to Beecham Group Limited. Process for the preparation of penicillin derivatives. 4,346,168, Cl. 435-43.000.

Colgate-Palmolive Company: *See*—
Baines, Eric; and Carr, John F., 4,346,072, Cl. 424-49.000.

Colijn, Hendrik: *See*—
Gould, Gregory; and Colijn, Hendrik, 4,345,484, Cl. 73-864.430.

Collen, Desire J., to Leuven Research & Development V.Z.W. Anti-plasmin and antiserum. 4,346,029, Cl. 260-112.00B.

Colmano, Riccardo, to Ansaldo Societa per Azioni; and C.N.E.N. Comitato Nazionale per l'Energia Nucleare. Steam-generator with improved facilities for replacement of parts. 4,345,549, Cl. 122-34.000.

Combustion Engineering, Inc.: *See*—
Bozzuto, Carl R., 4,346,302, Cl. 290-1.00R.
Fernandes, John H., 4,346,317, Cl. 310-11.000.
Randolph, Jeptha F.; and Stout, Donald L., 4,345,801, Cl. 308-238.000.
Wysk, Stanley R.; and Palkes, Mark, 4,346,316, Cl. 310-11.000.

Cominco Ltd.: *See*—
Chow, Richard T.; Krauss, Clifford J.; and Ybema, Douwe, 4,345,980, Cl. 204-119.000.

Commissariat A l'Energie Atomique: *See*—
Danel, Francois; Nicollet, Henri; Marchal, Paul; Robin, Marc; and Vertut, Jean, 4,345,658, Cl. 180-8.00C.

Compagnie Europeenne d'Accumulateurs: *See*—
Rigal, Michel; and Saerens, Jean, 4,346,153, Cl. 429-234.000.

Compagnie Francaise des Petroles: *See*—
Cortes, Abel C., 4,345,798, Cl. 308-160.000.

Conley, Bobby E., to Magnetic Peripherals, Inc. Read signal processing circuit. 4,346,412, Cl. 360-46.000.

Conrad, Lee R.: *See*—
Bakermans, Frank C.; and Conrad, Lee R., 4,345,955, Cl. 156-89.000.

Consiglio Nazionale Delle Ricerche: *See*—
Righini, Giancarlo; Sottini, Stefano; and Russo, Vera, 4,345,815, Cl. 350-96.180.

Continental Electronics, Inc.: *See*—
Hanna, George D., 4,346,354, Cl. 332-43.00B.

Continental Group, Inc., The: *See*—
Walter, John, 4,345,701, Cl. 222-569.000.

Contreras, Joseph P.; and Sass, George J., to Corona Plastics, Inc. Spring latch and hinge assembly for closure members. 4,345,607, Cl. 132-83.00R.

Control Concepts, Inc.: *See*—
Zeuner, Kenneth W.; and Jarman, Alonzo B., 4,345,736, Cl. 251-30.000.

Cook, John E., to Canadian Fram. Flow control valve for vehicle emissions control system. 4,345,428, Cl. 60-274.000.

Cook, Melvin A.: *See*—
McCarthy, Harry E.; French, Gordon B.; and Cook, Melvin A., 4,345,794, Cl. 299-2.000.

Cook, Melvin S. Method of producing thin single-crystal sheets. 4,345,967, Cl. 156-613.000.

Cooley, Denton A.: *See*—
Wilkinson, William R.; Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; and Crane, Terry N., 4,345,919, Cl. 55-41.000.

Coolidge, John K.: *See*—
Patenaude, Raymond A.; Duke, Steven R.; and Coolidge, John K., 4,345,505, Cl. 89-154.000.

Coon, Clifford L.: *See*—
Levins, Donald A.; Bedford, Clifford D.; and Coon, Clifford L., 4,346,222, Cl. 544-322.000.

Cope, Leonard D.: *See*—
Baer, Ralph H.; and Cope, Leonard D., 4,346,407, Cl. 358-149.000.

Copenhaver, Richard L.: *See*—
Ernst, Donald M.; and Copenhaver, Richard L., 4,345,642, Cl. 165-86.000.

Coppens, Guillaume: *See*—
Gago, Ignace; and Coppens, Guillaume, 4,346,081, Cl. 424-130.000.

Coppola, John A.; Hailey, Laurence N.; and McMurtry, Carl H., to Kennecott Corporation. Sintered alpha silicon carbide ceramic body having equiaxed microstructure. 4,346,049, Cl. 264-65.000.

Coquard, Jean; and Goletto, Jean, to Rhone-Poulenc Industries. Heat-stable polyphase polyamide/polyesteramide compositions. 4,346,024, Cl. 524-219.000.

Coquet, Andre: *See*—
Berchoux, Andre; and Coquet, Andre, 4,345,355, Cl. 19-0.600.

Cordes, Rudolph: *See*—
Hoffmann, Gerhart; Cordes, Rudolph; and Merkel, Wolfgang, 4,346,230, Cl. 560-99.000.

Cornelius, Thomas E., III, to Calgon Corporation. Method for controlling boiler water foaming. 4,346,017, Cl. 252-321.000.

Cornell, Robert W. Calendar. 4,345,392, Cl. 40-116.000.

Corning Glass Works: *See*—
Allaire, Roger A.; and VanDewoestine, Robert V., 4,345,528, Cl. 110-203.000.

Corona Plastics, Inc.: *See*—
Contreras, Joseph P.; and Sass, George J., 4,345,607, Cl. 132-83.00R.

Corsette, Douglas F. Designer's triangle. 4,345,383, Cl. 33-474.000.

Cortes, Abel C., to Compagnie Francaise des Petroles. Reduction in wear of contacting surfaces. 4,345,798, Cl. 308-160.000.

Costanzi, Silvestro; Tessarolo, Francesco; Ballabio, Adriano; and Brunelli, Maurizio, to ANIC, S.p.A. Polyolefin compositions stabilized against UV-radiations by pyrrolidine derivatives. 4,346,188, Cl. 524-104.000.

Cote, Paul A. Building structure. 4,345,408, Cl. 52-169.300.

Coulon, Andre: *See*—
Blanc, Jacques; Coulon, Andre; and Pellus, Gilbert, 4,345,977, Cl. 204-26.000.

Coulter Electronics, Inc.: *See*—
Carter, James H.; Ledis, Stephen L.; and Crews, Harold R., 4,346,018, Cl. 252-408.000.

Coupry, Jean; and Anagnostidis, Marc, to Societe Metallurgique de Gerzat. Process for the manufacture of hollow bodies made of aluminum alloy and products thus obtained. 4,345,951, Cl. 148-2.000.

Coutant, Alan R., to Caterpillar Tractor Co. Control system for sequentially actuating fluid actuators. 4,345,508, Cl. 91-516.000.

Cowley, William E.; Shannon, Michael A.; and LeNir, Victor L., to Northern Telecom Limited. Control in application of pulp insulation to electrical conductors. 4,345,962, Cl. 156-356.000.

Cox, Russell C.; and McElroy, Arthur H., to Phillips Petroleum Company. Method for making a pipe connection or fitting. 4,345,956, Cl. 156-198.000.

Crane Co.: *See*—
McConnell, William K., Jr.; and Campbell, Charles M., 4,345,997, Cl. 210-150.000.
Zimmerman, Donald R., 4,346,005, Cl. 210-232.000.

Crane, Terry N.: *See*—
Wilkinson, William R.; Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; and Crane, Terry N., 4,345,919, Cl. 55-41.000.

Crano, John C.; and Haynes, Ronald L., to PPG Industries, Inc. Method of polymerizing blends of bis (allyl carbonate) monomers with polymers and polymer blends prepared thereby. 4,346,197, Cl. 525-277.000.

Crathern Engineering Co., Inc.: *See*—
Mims, John D.; Mills, Leland F.; and Fowler, Ronald I., 4,345,960, Cl. 156-264.000.

Craven, James M., to Du Pont de Nemours, E. I., and Company. Powder coating composition for automotive topcoat. 4,346,144, Cl. 428-335.000.

Crawford, James J., to Frezzolini Electronics, Inc. Battery control system. 4,346,336, Cl. 320-9.000.

Craxton, Robert S., to University of Rochester, The. High power efficient frequency conversion of coherent radiation with nonlinear optical elements. 4,346,314, Cl. 307-427.000.

Crews, Harold R.: *See*—
Carter, James H.; Ledis, Stephen L.; and Crews, Harold R., 4,346,018, Cl. 252-408.000.

Crofts, Brian, to Rolls-Royce Limited. Bearing assembly. 4,345,799, Cl. 308-187.000.

Crosfield Electronics Limited: *See*—
Pugsley, Peter C., 4,346,402, Cl. 358-80.000.

Crouillere, Jean P., to Regie Nationale des Usines Renault. Process for the reduction of noxious gases from carburetor-equipped internal combustion engine during deceleration periods and apparatus for applying said process. 4,345,556, Cl. 123-327.000.

Crumley, Richard L.: *See*—
Herzl, Peter J.; Metzger, Harold W.; and Crumley, Richard L., 4,345,464, Cl. 73-201.000.

Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See*—
Basola, Carlo P.; and Chiaretti, Guido, 4,345,930, Cl. 65-102.000.

Cullinan, Edward J. Regenerative heat exchanger basket. 4,345,640, Cl. 165-10.000.

Cullum, Dennis F.; and Dorreboom, Jelmer, to Spin Physics, Inc. High density multitrack magnetic head. 4,346,418, Cl. 360-129.000.

Culp, Norman L.: *See*—
Buss, Kenneth G.; and Culp, Norman L., 4,346,265, Cl. 179-84.00T.

Cummins Engine Company, Inc.: *See*—
Kasting, Edward W.; Glasson, Richard E.; and Swank, Bryan W., 4,345,552, Cl. 123-90.380.

Cupper, Robert A.: *See*—
Somekh, George S.; and Cupper, Robert A., 4,346,015, Cl. 252-50.000.

Curchack, Herbert D.; and Hahn, A. David, to United States of America, Army. Multi-caliber projectile soft recovery system. 4,345,460, Cl. 73-167.000.

Curry, John L.: *See*—
Skaggs, William G.; and Curry, John L., 4,346,379, Cl. 340-778.000.

Cushing, Donald S., to General Electric Company. Manually actuated timer for appliances. 4,346,271, Cl. 200-38.00R.

D G Shelter Products Company: *See*—
Carvalho, Elmer R., 4,345,587, Cl. 126-450.000.

Dabrowski, Zdzislaw T. Lock guard. 4,345,787, Cl. 292-346.000.

Dagostino, Thomas P., to Tektronix, Inc. Position control circuit for a digital oscilloscope. 4,346,333, Cl. 315-367.000.

Daikin Kogyo Co., Ltd.: *See—*
Satokawa, Takaomi; Fujii, Tuneo; Ohmori, Akira; and Fujita, Yorio, 4,346,250, Cl. 568-842.000.
Sonoda, Noboru; Murai, Shinji; and Takii, Kazuhisa, 4,346,235, Cl. 562-596.000.

Dainippon Ink & Chemicals, Inc.: *See—*
Umaba, Toshihiko; and Ito, Tadashi, 4,346,012, Cl. 252-7.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Nomura, Norimasa; and Yoshimi, Yasuhito, 4,345,832, Cl. 354-320.000.

Dalton, Augustine I., Jr.; and Sircar, Shivaji, to Air Products and Chemicals, Inc. Stabilization and regeneration of activated carbon supported palladium chloride catalysts in the oxidation of vinyl halides. 4,346,019, Cl. 252-416.000.

Danel, Francois; Nicollet, Henri; Marchal, Paul; Robin, Marc; and Vertut, Jean, to Commissariat A l'Energie Atomique. Vehicle able to move by adhesion on a random surface. 4,345,658, Cl. 180-8.00C.

Danfoss A/S: *See—*
Hansen, Borge M., 4,345,441, Cl. 62-140.000.
Karlberg, Niels G.; and Pedersen, Poul H. H., 4,345,614, Cl. 137-340.000.

Dankowski, Detlef B. Oil cooler. 4,345,644, Cl. 165-154.000.

Daswick, Alexander C. Resilient inner sole for a shoe. 4,345,387, Cl. 36-43.000.

Datafile Limited: *See—*
Pfeffer, George B., 4,345,683, Cl. 198-653.000.

Daubignard, Jean-Michel, to Essilor International "Cie Generale d'Optique". Eyeglass frames openable at the bridge. 4,345,824, Cl. 351-98.000.

Davey, Kent R., to Westinghouse Electric Corp. Dynamoelectric machine having improved interleaved stator end turns. 4,346,320, Cl. 310-179.000.

Davidson, Thomas L., to Robertson Paper Box Co., Inc. Collapsible headlamp carton and blank for forming same. 4,345,687, Cl. 206-418.000.

Davis, James W., to Hercules Incorporated. Method of inducing lightwood formation in living conifers. 4,345,405, Cl. 47-10.000.

Davis, Michael A.; and Spivey, Bron W., to Akzona Incorporated. Textured novelty yarn and process. 4,345,424, Cl. 57-209.000.

Davis, Robert C., to Harris Corporation. Error correction coding method and apparatus for multilevel signaling. 4,346,473, Cl. 371-43.000.

Dawson, Stanley R.; and Hayes, Cecil L., to United States of America, Army. Heat exchanger base for a portable laser system. 4,345,643, Cl. 165-122.000.

Day, Roger W., to Geosource Inc. Multi-stage centrifugal mixer. 4,345,841, Cl. 366-2.000.

Dayton Wheel Products Company: *See—*
Schardt, James J., 4,345,795, Cl. 301-6.00E.

De Angelis, Giancarlo; Catastini, Alberto; Bassi, Aldo; Rogora, Edoardo; Radaelli, Dario; Bertoloni, Luciano; and Perrone, Francesco, to Alfa Romeo S.p.A. Regulation and control system for the fuel feeding unit of an internal-combustion engine. 4,346,443, Cl. 364-431.040.

Deavenport, Dennis L.; Howard, Kenneth J.; and Sidwell, Albert E., to Vertac Chemical Corporation. Preparation of 2,4,5-trichlorophenol and 2,4,5-trichlorophenoxyacetic acid free of 2,3,7,8-tetrachlorodibenzo-p-dioxin contamination. 4,346,248, Cl. 568-776.000.

De Boer, Albert. Tool holder device. 4,345,688, Cl. 211-60.00T.

deBuhr, Harold E.; Booker, Walter W.; and Schmid, Steven L., to Deere & Company. Forage harvester with kernel processing means. 4,345,417, Cl. 56-14.300.

Decker, Charles E.; and Hostetler, John L., to Republic Steel Corporation. Method and apparatus for thickness control of a coating. 4,346,129, Cl. 427-348.000.

Deere & Company: *See—*
deBuhr, Harold E.; Booker, Walter W.; and Schmid, Steven L., 4,345,417, Cl. 56-14.300.
Madson, Lyle R., 4,345,490, Cl. 74-761.000.
Miller, Wayne R., 4,345,660, Cl 180-133.000.

de Givry, Jacques, to MATRA. Process and apparatus for stripping insulated wires. 4,345,362, Cl. 29-426.500.

de Groot, Hans; van den Heuvel, Eeuwoud; Barendrecht, Embrecht; and Janssen, Leonard J. J., to Borma B.V. Method and apparatus for preparing aromatic hydrazo or diaminodiphenyl compounds. 4,345,978, Cl. 204-74.000.

De Heij, Nicolaas A., to Oce-Andeno B.V. Process for resolving DL-S-benzoyl-β-mercaptoisobutyric acid, and products obtained. 4,346,045, Cl. 260-455.00R.

de Keizer, Cornelis, to IHC Holland N.V. Method for controlling the production of a dredging apparatus. 4,345,388, Cl. 37-195.000.

Delalande S.A.: *See—*
Langlois, Michel; Lacour, Alain P.; Bucher, Bernard P.; and Mocquet, Gisele C., 4,346,102, Cl. 424-279.000.

Delcoigne, Adrien: *See—*
Lanneau, Jacques; and Delcoigne, Adrien, 4,345,887, Cl. 425-115.000.

Delmas, Michel; Gaset, Antoine; and Le Bigot, Yves, to Agrifurane S.A. Process for converting an aldehyde into an alkene, in particular furfural into furfurylidenes. 4,346,040, Cl. 549-505.000.

Del Tufo, Mark J., to Litton Business Systems, Inc. Low profile reed keyswitch. 4,346,360, Cl. 335-205.000.

DeMatos, Henrique V., to Union Carbide Corporation. Multilayer ceramic capacitor with foil terminal. 4,346,429, Cl. 361-310.000.

Dennis, James T.; and Kolomayets, George, to Dennis, James T. Automatic record player. 4,346,465, Cl. 369-230.000.

Dent, Anthony L.; Derolf, M. Robert; and Hertzenberg, Elliot P., to PQ Corporation. Rehydrated silica gel dentifrice abrasive. 4,346,071, Cl. 424-49.000.

Deplante, Michel, to MATRA. Installation with automatic vehicles. 4,345,662, Cl. 180-168.000.

de poorter, Christian. Furniture structure. 4,345,525, Cl. 108-107.000.

Derail, Yves, to ASA S.A. Apparatus for the variable speed control of cams in textile machines. 4,345,721, Cl. 242-18.100.

Derolf, M. Robert: *See—*
Dent, Anthony L.; Derolf, M. Robert; and Hertzenberg, Elliot P., 4,346,071, Cl. 424-49.000.

Derr, Leighton K.; Hawkins, Lyle B.; and Jones, Marlene J., to Hercules Incorporated. Reaction products of DMT process residue and dipropylene glycol. 4,346,229, Cl. 560-91.000.

Desloge, George B., to Watlow Electric Manufacturing Company. Electric heater and assembly. 4,346,287, Cl. 219-541.000.

DeStefano, Joseph: *See—*
Shekel, Joseph; and DeStefano, Joseph, 4,345,807, Cl. 339-31.00B.

Deval, Alain, to Societe d'Applications Generales d'Electricite et de Mecanique SAGEM. Electrostatic accelerometer. 4,345,474, Cl. 73-517.00B.

Devine, James A.; and Miletti, Jose A., to United States of America, Army. Air tunnel device for thermohygrometer. 4,345,469, Cl. 73-338.600.

DeWoolfson, Bruce H. Container collection apparatus with electromagnetic sensor and method. 4,345,679, Cl. 194-4.00C.

Dhein, Rolf; Schoeps, Jochen; and Kuchenmeister, Rolf, to Bayer Aktiengesellschaft. Water-soluble air-drying alkyd resins, process for their preparation and their use as bases for non-yellowing lacquers. 4,346,044, Cl. 260-404.800.

Diamond Shamrock Corporation: *See—*
Bennett, John E.; and Elliott, Joseph E., 4,345,981, Cl. 204-129.000.

Di Cicco, Angelo S.; and Quave, Walter N., to Kay Plastic Products, Inc. Multiphase modular chemical processing station. 4,345,615, Cl. 137-343.000.

Dickinson, William B.: *See—*
Lesher, George Y.; Dickinson, William B.; and Singh, Baldev, 4,346,221, Cl. 544-238.000.

Diedrich, Klaus: *See—*
Schulde, Felix; Peterlein, Karl; and Diedrich, Klaus, 4,346,204, Cl. 526-271.000.

Dietmann, Karl: *See—*
Friebe, Walter-Gunar; Michel, Helmut; Ross, Carl H.; Wiedemann, Fritz; Bartsch, Wolfgang; and Dietmann, Karl, 4,346,093, Cl. 424-269.000.

Digital Equipment Corporation: *See—*
Riggle, Charles M.; Read, John D.; Noe, William B.; Winfrey, Richard; Pollard, Christopher A.; and Bernett, Frank W., 4,346,416, Cl. 360-106.000.

Dijkmans, Eise C., to U.S. Philips Corporation. Hybrid circuit. 4,346,267, Cl. 179-170.0NC.

DiMarco, Bernard: *See—*
Kussy, Frank W.; Heberlein, Gustave E., Jr.; and DiMarco, Bernard, 4,346,357, Cl. 335-16.000.

Dimension Weld International Corp.: *See—*
Kuroda, Minoru, 4,345,958, Cl. 156-221.000.

Dineen, John J., to Mechanical Technology Incorporated. Stirling engine control system. 4,345,437, Cl. 60-521.000.

Dios, Sandor: *See—*
Tyihak, Erno; Mincsovics, Emil; Dios, Sandor; Horvath, Gyula; Kalasz, Huba; Nagy, Janos; Kormendi, Ferenc; Kozma, Laszlo; Borsos, Janos; and Kiss, Janos, 4,346,001, Cl. 210-198.300.

Dixit, Jagannath K. Automatic air pillow for diagnostic X-ray machine. 4,346,298, Cl. 5-441.000.

Doak, Kenneth; Bi, Le-Khac; and Milkovich, Ralph, to Atlantic Richfield Company. Clear impact resistant thermoplastic star-block copolymers. 4,346,198, Cl. 525-314.000.

Dr. Eduard Fresenius, Chemisch-pharmazeutische Industrie K.G., Apparatebau K.G.: *See—*
Sigdell, Jan-Erik; and Krick, Gerd, 4,345,999, Cl. 210-188.000.

Donaldson Company, Inc.: *See—*
Grassel, Eugene E., 4,345,922, Cl. 55-302.000.
Schoen, Donald W., 4,345,923, Cl. 55-314.000.

Dorler, Jack A.: *See—*
Berndlmaier, Erich; Dorler, Jack A.; Mosley, Joseph M.; and Weitzel, Stephen D., 4,346,343, Cl. 323-282.000.

Dorman, Richard A., to Mechanical Technology Incorporated. Control system for resonant free-piston variable stroke compressor for load-following electric heat pumps and the like. 4,345,442, Cl. 62-160.000.

Dorr-Oliver Incorporated: *See—*
Leon, Albert M., 4,346,064, Cl. 423-244.000.

Dorreboom, Jelmer: *See—*
Cullum, Dennis F.; and Dorreboom, Jelmer, 4,346,418, Cl. 360-129.000.

Dorsemagen, Beate: *See—*
Faust, Uwe; Prave, Paul; Dorsemagen, Beate; and Hofer, Norbert, 4,346,113, Cl. 426-12.000.

Dott. Ingg. M., G. Braibanti & C. S.p.A.: *See—*
Braibanti, Ennio, 4,346,119, Cl. 426-451.000.

Doty, Jay, to Anderson Jacobsen, Inc. Low speed terminal interface for all-digital PABX. 4,346,259, Cl. 178-3.000.

Doudet, Michel, to Secim. Reverse extrusion press. 4,345,450, Cl. 72-273.500.

Doyle, James R.: *See—*
Bridwell, John W.; and Doyle, James R., 4,345,509, Cl. 92-78.000.

Drake, Cyril F., to International Standard Electric Corporation. Coating compositions for inhibiting corrosion of metal surfaces. 4,346,184, Cl. 523-451.000.

Drapeau, Raoul E.; and Stone, William M., to Scope Incorporated. Item display order picking system. 4,346,453, Cl. 364-900.000.

Dresser Industries, Inc.: *See—*
Rothwell, Thomas F.; and Smith, Gerald B., 4,345,961, Cl. 156-294.000.

Drews, Ulrich; Werner, Peter; and Mohrle, Werner, to Robert Bosch GmbH. Method and apparatus for regulating the fuel-air ratio in internal combustion engines. 4,345,562, Cl. 123-440.000.

Driard, Bertrand; Ricodeau, Jean; and Rougeot, Henri, to Thomson-CSF. Radiological image intensifier tube and radiological chain incorporating such a tube. 4,346,326, Cl. 313-388.000.

Droescher, Bernhard; and Zitz, Alfred, to Voest-Alpine Aktiengesellschaft. Device for controlling the position of a drift advancing machine. 4,345,839, Cl. 356-400.000.

du Boullay, Benoit T., to Institut Francais du Petrole. Seismic prospecting method providing for the determination of the flank dip of subterranean layers and device for carrying out the same. 4,346,462, Cl. 367-61.000.

Duclos, Donald A.: *See—*
Blackburn, Richard D.; and Duclos, Donald A., 4,346,341, Cl. 323-257.000.

Duda, Henry J. Furniture for converting a chair or settee into a lounge. 4,345,793, Cl. 297-438.000.

Duke, Steven R.: *See—*
Patenaude, Raymond A.; Duke, Steven R.; and Coolidge, John K., 4,345,505, Cl. 89-154.000.

Dunbar, Robert A.: *See—*
Blissett, Kitson; and Dunbar, Robert A., 4,346,427, Cl. 361-173.000.

Dunckhorst, William H. Timed shower head valve. 4,345,621, Cl. 137-624.120.

Du Pont de Nemours, E. I., and Company: *See—*
Abele, Werner, 4,346,162, Cl. 430-270.000.
Bakermans, Frank C.; and Conrad, Lee R., 4,345,955, Cl. 156-89.000.
Carlson, Richard H.; and Gatcomb, Gerald L., 4,346,140, Cl. 428-252.000.
Craven, James M., 4,346,144, Cl. 428-335.000.
Fawzi, Maged M., 4,346,220, Cl. 544-182.000.
Garlington, William D.; and Swerlick, Isadore, 4,346,215, Cl. 528-348.000.
Hoh, George L.; and Vassallo, Donald A., 4,346,196, Cl. 525-196.000.
Hyde, Thomas J., 4,346,183, Cl. 523-200.000.
Ida, Edward S., 4,346,371, Cl. 340-507.000.
Kachelries, Robert W., 4,345,831, Cl. 354-298.000.
Remington, William R., 4,346,141, Cl. 428-289.000.
Roura, Miguel J., 4,346,194, Cl. 525-66.000.
Simms, John A., 4,346,201, Cl. 525-440.000.
Tropea, Alfred, 4,346,130, Cl. 427-393.100.

Dutky, Samson R.: *See—*
Thompson, Malcolm J.; Mandava, Nagabhushanam; Worley, Joseph F., deceased; Meudt, Werner J.; Dutky, Samson R.; Robbins, William E.; and Flippen-Anderson, Judith L., 4,346,226, Cl. 549-268.000.

Dutremble, Joseph E.: *See—*
Labbe, Donald E.; and Dutremble, Joseph E., 4,345,438, Cl. 60-657.000.

Dyer, Stanley: *See—*
Bohnhoff, Alan E.; Cassidy, Bruce M.; and Dyer, Stanley, 4,345,845, Cl. 400-120.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Hoffmann, Gerhart; Cordes, Rudolph; and Merkel, Wolfgang, 4,346,230, Cl. 560-99.000.

E. R. Squibb & Sons, Inc.: *See—*
Sudilovsky, Abraham, 4,346,106, Cl. 424-311.000.

E-Systems, Inc.: *See—*
Gordy, Robert S., 4,346,477, Cl. 455-257.000.
Poston, Billy R.; Chambers, Ramon P.; and Gordy, Robert S., 4,346,480, Cl. 455-154.000.

Eagle, Raymond S.; and Patel, Vishnu A., to Pullman Incorporated. Radial ammonia converters. 4,346,060, Cl. 422-148.000.

Eastman Kodak Company: *See—*
Bishop, John F., 4,346,160, Cl. 430-215.000.
Chapman, Derek D.; and Reczek, James A., 4,346,155, Cl. 430-17.000.
Holzhauser, Ronald C., 4,345,751, Cl. 271-3.100.
Krutak, James J.; Maleski, Robert J.; and Moore, William H., 4,346,161, Cl. 430-223.000.
Matteson, Lawrence J.; Greenwald, Roger J.; and Schauffele, Carl N., 4,345,825, Cl. 354-23.00D.
McLaen, Donald F.; and Herz, Arthur H., 4,346,154, Cl. 430-14.000.

Eaton Corporation: *See—*
Hansen, James E., 4,346,424, Cl. 361-94.000.
Wojtecki, Rudolph G.; and Kaan, Joseph P., 4,346,277, Cl. 219-528.000.

Eberle, William J., to General Battery Corporation. Cam shaft operated punch press for expanding lead alloy battery grid material. 4,345,452, Cl. 72-452.000.

Eberle, William J., to General Battery Corporation. Method of extrusion-fusion welding of lead parts through an aperture in a battery case. 4,346,282, Cl. 219-78.160.

Eberle, William J., to General Battery Corporation. Method of extruding, fusing and forging lead connections in battery cases. 4,346,283, Cl. 219-78.160.

Eckmann, Gerald C.: *See—*
Baker, Randy S.; and Eckmann, Gerald C., 4,345,653, Cl. 166-317.000.

Economou, Peter, to Yara Engineering Corporation. Structured kaolin agglomerates and methods of making the same. 4,346,178, Cl. 501-148.000.

Edahiro, Takao: *See—*
Kawachi, Masao; Tomaru, Satoru; Edahiro, Takao; and Suto, Shoichi, 4,345,928, Cl. 65-18.200.

Edmondson, Robert A.: *See—*
Cole, Martin; and Edmondson, Robert A., 4,346,168, Cl. 435-43.000.

Edsco, Inc.: *See—*
Robertson, Harry G., 4,345,859, Cl. 406-128.000.

Edwards, Finis E.: *See—*
Walton, Robert R.; and Edwards, Finis E., 4,346,252, Cl. 373-130.000.

EG&G, Inc.: *See—*
Hayes, Stanley B., Jr., 4,345,455, Cl. 374-20.000.

Egert, Allen C., to Victor Equipment Co. Torch tubing clamping apparatus. 4,345,786, Cl. 285-131.000.

Egnell, Rolf A.; and Sjostedt, Carl-Goran. Device for burning fuel with air. 4,345,426, Cl. 60-39.230.

Eguchi, Yasukata, to Janome Sewing Machine Co. Ltd. Electronic sewing machine with back stitching system. 4,345,532, Cl. 112-158.00E.

Eheim, Franz, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,345,563, Cl. 123-458.000.

Ehinger, Charles P.: *See—*
Callaghan, William I.; and Ehinger, Charles P., 4,345,673, Cl. 188-18.00R.

Ehlers, Klaus-Peter: *See—*
Gradl, Reinhard; Schrodter, Klaus; Ehlers, Klaus-Peter; and Scheibitz, Wolfgang, 4,346,066, Cl. 423-321.00S.

Eichenlaub, Rolf; and Novakovic, Boris Z. Cutting wheel. 4,345,579, Cl. 125-15.000.

Eidson, James A. Exercising device. 4,345,755, Cl. 272-78.000.

Einstein, Harry: *See—*
Bellows, Richard J.; Grimes, Patrick G.; Newby, Kenneth R.; Einstein, Harry; and Tsien, Hsue C., 4,346,150, Cl. 429-18.000.

Eisai Co., Ltd.: *See—*
Yamatsu, Isao; Inai, Yuichi; Abe, Shinya; Suzuki, Takeshi; Suzuki, Yoshikazu; Tagaya, Osamu; and Koyanagi, Nozomu, 4,346,109, Cl. 424-318.000.

Ejiri, Yoshihiro: *See—*
Nakai, Taiichiro; Sato, Masanori; Furusawa, Kahei; Yamamoto, Hitoshi; Yamazaki, Yoshihiko; and Ejiri, Yoshihiro, 4,345,816, Cl. 350-96.200.

Eldre Components, Inc.: *See—*
Moss, Lee C.; Knox, Phillip J.; and Snyder, Raymond W., 4,346,257, Cl. 174-72.00B.

Electronic Associates, Inc.: *See—*
Wilson, Wayne; Rosko, George; and Patmore, James R., 4,345,463, Cl. 73-190.0CV.

Elevator Equipment Co.: *See—*
Simpson, Elmer J.; and Rued, Glen A., 4,345,507, Cl. 91-449.000.

Elger, Walter: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Schillinger, Eckehard, 4,346,228, Cl. 560-53.000.

Eli Lilly and Company: *See—*
Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., 4,346,094, Cl. 424-270.000.
Katner, Allen S., 4,346,076, Cl. 424-246.000.
Tao, Eddie V. P.; and Staten, Gilbert S., 4,346,225, Cl. 548-138.000.
Thibault, Thomas D., 4,345,935, Cl. 71-92.000.
Thibault, Thomas D.; and St. Clair, Roger L., 4,345,936, Cl. 71-92.000.
Vladuchick, William C., 4,346,219, Cl. 544-28.000.

Elkins, C. Edward, to Badger Meter, Inc. Signalling arrangement for telephone equipment. 4,346,263, Cl. 179-2.00A.

Elliott, Joseph E.: *See—*
Bennett, John E.; and Elliott, Joseph E., 4,345,981, Cl. 204-129.000.

Ellis, Victor C., to Sun-Woods Engineering Ltd. Solar heating apparatus. 4,345,585, Cl. 126-429.000.

El-Menshawy, Mohamed F.: *See—*
Bhattacharyya, Sushantha K.; and El-Menshawy, Mohamed F., 4,346,278, Cl. 219-69.00M.

Eltra Corporation: *See—*
Green, James A., 4,346,377, Cl. 340-731.000.
Magrane, Robert T.; and Fontana, Nando A., 4,345,553, Cl. 123-149.00C.

Emelyanova, Nina A.: *See—*
Polyakov, Nikolai F.; Ryabchenjuk, Leonid M.; Emelyanova, Nina A.; Sulim, Georgy T.; Kobzar, Vladimir A.; Peresunko, Stanislav R.; Sokolenko, Anatoly I.; and Ivanenko, Oleg V., 4,346,003, Cl. 210-225.000.

Emhart Industries, Inc.: *See—*
Perry, Ralph A.; and Booe, James M., 4,345,459, Cl. 73-61.10R.
Stout, Garry A.; and Ray, Donald L., 4,346,270, Cl. 200-33.00R.

EMI Limited: *See—*
Woolcock, Sydney C.; and Brown, Edwin G., 4,346,383, Cl. 343-12.00R.

Endo, Fumihiro; Ishikawa, Toshio; Ozawa, Jun; Kamata, Yuzuru; and Shiono, Shigeo, to Hitachi, Ltd. Temperature measurement apparatus. 4,345,471, Cl. 374-188.000.

Endo, Takeyuki: *See—*
Huno, Takakazu; Endo, Takeyuki; Odaka, Kunihiro; and Shibuya, Yasutaka, 4,346,439, Cl. 364-200.000.

Energy Conversion Devices, Inc.: *See—*
Ovshinsky, Stanford R.; Klose, Peter H.; and Messing, Wayne P., 4,346,449, Cl. 364-900.000.

Enertron, Inc.: *See—*
Hoge, Henri H., 4,346,331, Cl. 315-158.000.

Enfors, Sven-Olof; Molin, Nils; and Montelin, Eugen, to Enfors, Sven-Olof; Molin, Nils; and Montelin, Eugen. Process for the microbiological modification of hardwood by the action of microorganisms. 4,346,175, Cl. 435-317.000.

Engel, John F., to FMC Corporation. 4-Substituted-2-indanols. 4,346,251, Cl. 568-808.000.

English Electric Company Limited, The: *See—*
Feenan, John; and Wafer, Ronald V., 4,346,362, Cl. 337-248.000.

Enpoco Limited: *See—*
Garnett, Lawrence C., 4,345,789, Cl. 294-31.200.

Enzler, Rudolf: *See—*
Arnheiter, Adolf; and Enzler, Rudolf, 4,346,135, Cl. 428-212.000.

Erbstein, Robert S.; Richard, Gary R.; Palmatier, Roland T.; and McGill, Robert W., to Harris Corporation. Management and analysis system for web machines and the like. 4,346,446, Cl. 364-551.000.

Erickson, John W.: *See—*
Hubbard, Martin G.; and Erickson, John W., 4,346,256, Cl. 174-47.000.

Ernst, Donald M.; and Copenhaver, Richard L., to Thermacore, Inc. Articulated heat pipes. 4,345,642, Cl. 165-86.000.

Erwin Sick GmbH - Optik-Elektronik: *See—*
Fetzer, Gunter, 4,346,293, Cl. 250-222.00R.

Esanu, Andre, to Societe d'Etudes de Produits Chimiques. Phenoxy acetic acid derivative, its preparation and therapeutic use. 4,346,100, Cl. 424-275.000.

Essilor International "Cie Generale d'Optique": *See—*
Daubignard, Jean-Michel, 4,345,824, Cl. 351-98.000.

Etablissements Francois Salomon & Fils: *See—*
Salomon, Georges P. J., 4,345,776, Cl. 280-629.000.

Ethyl Corporation: *See—*
Hornbaker, Edwin D.; and Jones, Jesse D., 4,346,195, Cl. 525-176.000.

Ethyl Products Company: *See—*
Burke, James E., 4,345,691, Cl. 215-216.000.

Euker, Charles A., Jr.: *See—*
Vernon, Lonnie W.; Veluswamy, Lavanga R.; Euker, Charles A., Jr.; and Mims, Charles A., 4,345,989, Cl. 208-10.000.

Eur-Control Kalle AB: *See—*
Jonsson, Ann-Sofi, 4,345,913, Cl. 23-230.00R.

Evans Products Company: *See—*
Blout, Bennett O.; and Ruffolo, James C., 4,345,862, Cl. 410-134.000.

Exxon Research & Engineering Co.: *See—*
Bellows, Richard J.; Grimes, Patrick G.; Newby, Kenneth R.; Einstein, Harry; and Tsien, Hsue C., 4,346,150, Cl. 429-18.000.
Cahn, Robert P.; and Longo, John M., 4,346,063, Cl. 423-230.000.
Leighton, Milton D.; and Ryan, Douglas G., 4,346,008, Cl. 210-395.000.
Vernon, Lonnie W.; Veluswamy, Lavanga R.; Euker, Charles A., Jr.; and Mims, Charles A., 4,345,989, Cl. 208-10.000.
Wachter, William A., 4,346,067, Cl. 423-326.000.

Fag Kugelfischer Georg Schafer & Co.: *See—*
Hofmann, Heinrich; Markfelder, Gunther; and Bender, Hans-Eberhard, 4,345,800, Cl. 308-217.000.

Fahlstrom, Per A. H. H.; and Gorling, Karl G., to Boliden Aktiebolag. Method for recovering oil and/or gas from carbonaceous materials. 4,345,990, Cl. 208-11.00R.

Fahrenholz, Harley D. Rock picker with storage conveyors. 4,345,655, Cl. 171-63.000.

Faler, Gary R.; and Loucks, George R., to General Electric Company. Method and catalyst for making bisphenol. 4,346,247, Cl. 568-728.000.

Farrand Optical Co., Inc.: *See—*
Kallet, Eli A., 4,345,837, Cl. 356-317.000.

Faucz, Eugene C., to Xerox Corporation. Electrophotographic-magnetic duplex imaging structure and method. 4,346,156, Cl. 130-39.000.

Faust, Uwe; Prave, Paul; Dorsemagen, Beate; and Hofer, Norbert, to UHDE GmbH. Process for the continuous fermentation of aqueous slurries for the production of alcohol and yeast biomass. 4,346,113, Cl. 426-12.000.

Fawzi, Maged M., to Du Pont de Nemours, E. I., and Company. 1,2,4-Triazin-5-ones. 4,346,220, Cl. 544-182.000.

Fayolle, Bernard, to Rhone-Poulenc Industries. Anisotropic melts which can be shaped, based on aromatic polyesters, and articles formed from these melts. 4,346,208, Cl. 528-176.000.

Feder, Meinrad: *See—*
Muller, Alfred; Schwab, Manfred; Feder, Meinrad; Schreiber, Achim; and Sauer, Joseph, 4,345,489, Cl. 74-752.00A.

Feenan, John; and Wafer, Ronald V., to English Electric Company Limited, The. Electric fuses with regions of reduced cross-sectional area. 4,346,362, Cl. 337-248.000.

Feifel, Winfried M.: *See—*
Warner, Gary J.; and Feifel, Winfried M., 4,345,538, Cl. 114-274.000.

Feldman, Julian, to National Distillers & Chemical Corp. Process for recovering ethanol from dilute aqueous solutions employing liquid extraction media. 4,346,241, Cl. 568-916.000.

Feldman, Norman: *See—*
Uyeda, Stanley T.; Radu, E. John; Talbot, William J., Jr.; and Feldman, Norman, 4,345,855, Cl. 405-168.000.

Fernandes, John H., to Combustion Engineering, Inc. Gasified coal-fired system. 4,346,317, Cl. 310-11.000.

Fetzer, Gunter, to Erwin Sick GmbH - Optik-Elektronik. Optical electronic distance sensor with a parallel beam of light and adjustable detector-emitter separation. 4,346,293, Cl. 250-222.00R.

Fichtel & Sachs AG: *See—*
Wossner, Felix; Handke, Gunther; and Koller, Manfred, 4,345,748, Cl. 267-8.00R.

Figueroa, Luis; and Yen, Huan-Wun, to Hughes Aircraft Company. Gallium arsenide burrus FET structure for optical detection. 4,346,394, Cl. 357-30.000.

Fink, Lothar: *See—*
Lindenmayer, Bernhard; and Fink, Lothar, 4,345,965, Cl. 156-500.000.

Finley, Donald G. Deflecting rocker arm for an internal combustion engine. 4,345,550, Cl. 123-78.00E.

Finley, Richard O.; and Stanwood, David A., to Plastiflex Company International. Self-sealing vacuum hose swivel fitting. 4,345,805, Cl. 339-16.00R.

Firmenich SA: *See—*
Buchi, George H.; and Wuest, Hans, 4,346,023, Cl. 252-522.00R.

Fischer, David. Partitioned carton. 4,345,711, Cl. 229-41.00R.

Fischer & Porter Company: *See—*
Herzl, Peter J.; Metzger, Harold W.; and Crumley, Richard L., 4,345,464, Cl. 73-201.000.

Fisher, Stanley P. Light weight run-off trough. 4,345,853, Cl. 405-119.000.

Fishman, Maurice J. Multi-unit dwellings. 4,345,407, Cl. 52-169.300.

Fisons Limited: *See—*
Gates, Peter S.; Gillon, John; and Saggers, David T., 4,345,932, Cl. 71-88.000.

Flanagan, Thomas P., to National Starch and Chemical Corporation. Adhesive for perfect bound books and method of using same. 4,345,349, Cl. 412-5.000.

Flemings, Merton C.; Riek, Rodney G.; and Young, Kenneth P., to Massachusetts Institute of Technology. Method for forming high fraction solid compositions by die casting. 4,345,637, Cl. 164-113.000.

Flippen-Anderson, Judith L.: *See—*
Thompson, Malcolm J.; Mandava, Nagabhushanam; Worley, Joseph F., deceased; Meudt, Werner J.; Dutky, Samson R.; Robbins, William E.; and Flippen-Anderson, Judith L., 4,346,226, Cl. 549-268.000.

Fluxcom, Inc.: *See—*
Baumann, John S.; Knipp, Roger W.; and Kacin, Joseph J., 4,346,426, Cl. 361-151.000.

FMC Corporation: *See—*
Engel, John F., 4,346,251, Cl. 568-808.000.
Lee, Fui-Tseng H., 4,346,236, Cl. 568-15.000.
Thompson, John S.; and Jadlocki, Joseph F., Jr., 4,346,117, Cl. 426-264.000.

Fohl, Artur, to REPA Feinstanzwerk GmbH. Safety belt system for motor vehicles. 4,345,665, Cl. 180-270.000.

Fontana, Nando A.: *See—*
Magrane, Robert T.; and Fontana, Nando A., 4,345,553, Cl. 123-149.00C.

Ford Motor Company: *See—*
Bryant, Thomas J.; Miller, Richard H.; and Single, Arthur W., II, 4,345,791, Cl. 297-250.000.

Forschirm, Alex S.; and Rosenthal, Arnold J., to Celanese Corporation. Solvent resistant halogenated aromatic polyester fibers and process therefor. 4,346,209, Cl. 528-191.000.

Foster, Edward T. Fuel saving aircraft descent calculator. 4,346,288, Cl. 235-70.00A.

Foucras, Jacques; and Rodet, Georges, to Rhone-Poulenc Industries. Securing means for the leakproof mounting of a semi-permeable membrane to a support plate. 4,346,004, Cl. 210-232.000.

Fowler, Ronald I.: *See—*
Mims, John D.; Mills, Leland F.; and Fowler, Ronald I., 4,345,960, Cl. 156-264.000.

Fox, Lawrence E.: *See—*
Woody, Albert L.; Fox, Lawrence E.; and Reinsma, Harold L., 4,345,772, Cl. 277-212.0FB.

Francis, William H.; and Natter, Eckard F., to Bendix Corporation, The. Rotating and translating radar antenna drive system. 4,346,386, Cl. 343-765.000.

Freeport Minerals Company: *See—*
Bradford, Randol W., 4,345,785, Cl. 285-50.000.

French, Gordon B.: *See—*
McCarthy, Harry E.; French, Gordon B.; and Cook, Melvin A., 4,345,794, Cl. 299-2.000.

French, John M., Jr.: *See—*
Gillespie, Donald R.; and French, John M., Jr., 4,345,710, Cl. 229-16.00R.

Freund, Edouard: *See—*
Sugier, Andre; Freund, Edouard; and Le Page, Jean-Francois, 4,346,179, Cl. 518-707.000.

Frezzolini Electronics, Inc.: *See—*
Crawford James J., 4,346,336, Cl. 320-9.000.

Friebe, Walter-Gunar; Michel, Helmut; Ross, Carl H.; Wiedemann, Fritz; Bartsch, Wolfgang; and Dietmann, Karl, to Boehringer Mann-

heim GmbH. Heterocyclic oxypropanolamine compounds and pharmaceutical compositions. 4,346,093, Cl. 424-269.000.
Frieder, Leonard P., Jr.; and Lavender, Michael R., to Gentex Corporation. Custom-fitted helmet and method of making same. 4,345,338, Cl. 2-414.000.
Friedmann, Charles A. Treatment for arthritis and substances for use in such treatment. 4,346,103, Cl. 424-308.000.
Friedrich, Heinz: *See*—
Gruner, Heiko; and Friedrich, Heinz, 4,345,465, Cl. 73-204.000.
Frister, Manfred, to Robert Bosch GmbH. Slip ring retainer mechanism. 4,346,321, Cl. 310-232.000.
Fronk, Thomas J.: *See*—
Braund, Darwin G.; Fronk, Thomas J.; Goings, Richard L.; Peters, John W.; and Steele, Robert L., 4,346,077, Cl. 424-156.000.
Fu, Yiu: *See*—
Keung, Poon C.; and Fu, Yiu, 4,345,447, Cl. 70-38.00A.
Fuji Photo Film Co., Ltd.: *See*—
Imatomi, Eiji; Ogawa, Tsuyoshi; and Hamaoka, Tsutomu, 4,346,167, Cl. 430-569.000.
Ishida, Masamitsu; Kato, Hisatoyo; and Matsumoto, Seiji, 4,346,409, Cl. 358-280.000.
Kato, Hisatoyo; and Ishida, Masamitsu, 4,346,406, Cl. 358-110.000.
Ohara, Yuji, 4,346,401, Cl. 358-75.000.
Sawada, Satoru; Oono, Shigeru; Seto, Nobuo; Suzuki, Yoshiaki; Nakamura, Kotaro; and Furutachi, Nobuo, 4,346,165, Cl. 430-372.000.
Tanaka, Kazuyoshi; Kato, Hisatoyo; and Matsumoto, Seiji, 4,346,295, Cl. 250-327.200.
Fuji Xerox Co., Ltd.: *See*—
Sadamatsu, Shigeru; Pu, Lyon S.; and Ishikawa, Yoshihisa, 4,346,159, Cl. 430-67.000.
Fujii, Tuneo: *See*—
Satokawa, Takaomi; Fujii, Tuneo; Ohmori, Akira; and Fujita, Yorio, 4,346,250, Cl. 568-842.000.
Fujimoto, Ted T., to Rohm and Haas Company. Method of producing hybrid cereal grain seeds by application of 1-aryl-1,4-dihydro-4-oxo(-thio)-pyridazines. 4,345,934, Cl. 71-92.000.
Fujita, Hideaki: *See*—
Komatsu, Makoto; Tanaka, Toru; and Fujita, Hideaki, 4,346,232, Cl. 562-416.000.
Fujita, Yorio: *See*—
Satokawa, Takaomi; Fujii, Tuneo; Ohmori, Akira; and Fujita, Yorio, 4,346,250, Cl. 568-842.000.
Fujitani, Yoshiyasu: *See*—
Oshima, Yujiro; Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, 4,345,555, Cl. 123-272.000.
Fujitsu Limited: *See*—
Kinoshita, Ryoichi; and Orihara, Shobu, 4,346,456, Cl. 365-36.000.
Yamasawa, Masao; Ohhata, Michinobu; and Ikezawa, Toshi, 4,346,476, Cl. 375-8.000.
Fujiwara, Kohei; and Hosogai, Setsuo, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker with increased contact separation. 4,346,356, Cl. 335-6.000.
Fujiwara, Sigeharu: *See*—
Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, 4,345,625, Cl. 138-141.000.
Fujizoki Pharmaceutical Co., Ltd.: *See*—
Yasuda, Takamasa, 4,346,174, Cl. 435-189.000.
Fukasawa, Akira; and Ueda, Minoru, to Agency of Industrial Science & Technology. Coated electrode and a method of its production. 4,345,987, Cl. 204-290.00R.
Fukuchi, Shigeki, to Metako Kigyo Co., Ltd. Roller screen unit. 4,345,636, Cl. 160-297.000.
Fukuda, Mamoru. Continuous suturing device. 4,345,601, Cl. 128-339.000.
Fukuda, Yuji: *See*—
Ueda, Shigeo; and Fukuda, Yuji, 4,345,537, Cl. 114-219.000.
Funato, Masayoshi: *See*—
Numazawa, Akio; Taga, Yutaka; and Funato, Masayoshi, 4,345,904, Cl. 474-215.000.
Furuichi, Shuhei: *See*—
Suzuki, Masakazu; Furuichi, Shuhei; and Ikeda, Toshiaki, 4,346,297, Cl. 378-110.000.
Furuno Electric Co., Ltd.: *See*—
Sato, Yuji; and Koizumi, Shoji, 4,346,391, Cl. 346-136.000.
Furusawa, Kahei: *See*—
Nakai, Taiichiro; Sato, Masanori; Furusawa, Kahei; Yamamoto, Hitoshi; Yamazaki, Yoshihiko; and Ejiri, Yoshihiro, 4,345,816, Cl. 350-96.200.
Furutachi, Nobuo: *See*—
Sawada, Satoru; Oono, Shigeru; Seto, Nobuo; Suzuki, Yoshiaki; Nakamura, Kotaro; and Furutachi, Nobuo, 4,346,165, Cl. 430-372.000.
Fushimi, Takashi: *See*—
Ozeki, Kenichi; and Fushimi, Takashi, 4,345,874, Cl. 415-9.000.
Gadoury, Andre; Pinheiro, Victor; and Pernicka, Martin, to Centre de Recherche Industrielle du Quebec. Hospital bed. 4,345,344, Cl. 5-62.000.
GAF Corporation: *See*—
Barabas, Eugene S.; Klein, Andrew; and Alwani, Dru W., 4,346,190, Cl. 524-522.000.
Schneider, Louis; and Graham, David E., 4,345,937, Cl. 71-95.000.
Gagliani, John; and Lee, Raymond, to International Harvester Company. Polyimides. 4,346,182, Cl. 521-189.000.
Gago, Ignace; and Coppens, Guillaume, to Interox (Societe Anonyme). Compositions for ingestion by ruminants to remove protozoa, process for their preparation and use of these compositions for the feeding of ruminants. 4,346,081, Cl. 424-130.000.
Gajewski, Robert P.: *See*—
Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., 4,346,094, Cl. 424-270.000.
Gale, Edwin J., to Stanley Aviation Corp. Coupling assembly with bonding jumper. 4,346,428, Cl. 361-215.000.
Gallegos, Manuel. Supporting bracket for musical instruments. 4,345,732, Cl. 248-441.00B.
Galloway, Dean K.: *See*—
Galloway, James V., deceased; and Galloway, Scott, 4,345,695, Cl. 220-254.000.
Galloway, James V., deceased (by Galloway, Dean K.); and Galloway, Scott. Lid for a drinking cup. 4,345,695, Cl. 220-254.000.
Galloway, Scott: *See*—
Galloway, James V., deceased; and Galloway, Scott, 4,345,695, Cl. 220-254.000.
Gantenbrink, Rudolf. Monitoring camera. 4,346,404, Cl. 358-99.000.
Garbuz, Evgeny I.: *See*—
Lezgintsev, Georgy M.; Garbuz, Evgeny I.; Kontar, Evgeny A.; Glukhikh, Rudolf G.; Murdmaa, Ivar O.; Soluyanov, Vadim G.; Belyavsky, Alexandr S.; and Kuznetsov, Alexei N., 4,345,461, Cl. 73-170.00A.
Gardner, Homer J.: *See*—
Buhler, Otto R.; Gardner, Homer J.; and Marino, Peter T., 4,346,411, Cl. 360-46.000.
Gargani, Pietro. Process for the preparation of the sodium salt of mercaptopropionylglycine. 4,346,234, Cl. 562-556.000.
Garlington, William D.; and Swerlick, Isadore, to Du Pont de Nemours, E. I., and Company. Film of aromatic polyamide and process therefor. 4,346,215, Cl. 528-348.000.
Garnett, David M. Roller conveyors. 4,345,678, Cl. 193-35.00R.
Garnett, Lawrence C., to Enpoco Limited. Carrying device for cylindrical tanks. 4,345,789, Cl. 294-31.200.
Garrett, John M.; and King, Kenneth G., to Westinghouse Brake and Signal Co., Ltd. Controllable rectifier circuit. 4,346,309, Cl. 307-252.00M.
Garrett, Thomas B.; Herweh, John E.; Magnusson, Alan B.; and Miller, Normal L., to Armstrong World Industries, Inc. Process for fixing photo-induced colored derivatives of spiropyrans and compositions therefor. 4,346,186, Cl. 524-82.000.
Gaset, Antoine: *See*—
Delmas, Michel; Gaset, Antoine; and Le Bigot, Yves, 4,346,040, Cl. 549-505.000.
Gatcomb, Gerald L.: *See*—
Carlson, Richard H.; and Gatcomb, Gerald L., 4,346,140, Cl. 428-252.000.
Gates, James T. Humidifying system for mobile vehicles. 4,346,048, Cl. 261-130.000.
Gates, Peter S.; Gillon, John; and Saggers, David T., to Fisons Limited. Herbicides. 4,345,932, Cl. 71-88.000.
Gates Rubber Company, The: *See*—
Uba, Toshio; Ching, Larry K. W.; and Harrison, Michael R., 4,346,151, Cl. 429-54.000.
Gaunt, Frank L. Very low flow rate lubricant metering apparatus and method for a tool and workpiece. 4,345,668, Cl. 184-29.000.
Gay Freres S.A.: *See*—
Gay, Jacques-Hubert, 4,345,444, Cl. 63-4.000.
Gay, Jacques-Hubert, to Gay Freres S.A. Metallic bracelet. 4,345,444, Cl. 63-4.000.
Gearhart Industries, Inc.: *See*—
Terrell, Jamie B., 4,345,646, Cl. 166-55.000.
Geerling, Leonardus J. Automatic audiological analyzer. 4,346,268, Cl. 179-175.10A.
Geiger, David. Construction method. 4,345,410, Cl. 52-741.000.
Geimuplast Peter Mundt GmbH & Co., KG: *See*—
Urban, Otfried; and Mundt, Peter, 4,345,707, Cl. 226-68.000.
General Battery Corporation: *See*—
Eberle, William J., 4,345,452, Cl. 72-452.000.
Eberle, William J., 4,346,282, Cl. 219-78.160.
Eberle, William J., 4,346,283, Cl. 219-78.160.
General Electric Company: *See*—
Balchunas, Charles A., 4,345,389, Cl. 38-77.700.
Blackburn, Richard D.; and Duclos, Donald A., 4,346,341, Cl. 323-257.000.
Cushing, Donald S., 4,346,271, Cl. 200-38.00R.
Faler, Gary R.; and Loucks, George R., 4,346,247, Cl. 568-728.000.
Heft, Eldon B., 4,346,358, Cl. 335-16.000.
Kirkpatrick, Robert G.; and Snyder, Ronald R., 4,345,504, Cl. 89-37.0GM.
Krabbenhoft, Herman O., 4,346,249, Cl. 568-782.000.
Labbe, Donald E.; and Dutremble, Joseph E., 4,345,438, Cl. 60-657.000.
Lupinski, John H., 4,346,136, Cl. 428-213.000.
O'Hara, Kevin S., 4,345,950, Cl. 148-2.000.
Patenaude, Raymond A.; Duke, Steven R.; and Coolidge, John K., 4,345,505, Cl. 89-154.000.
Reed, Bradley O., 4,345,488, Cl. 74-682.000.
Sauer, George E., 4,346,361, Cl. 336-60.000.
Steigerwald, Robert L., 4,346,431, Cl. 363-27.000.
Stoll, Donald H., 4,346,272, Cl. 200-83.00C.
Vakil, Himanshu B.; and Kosky, Philip G., 4,345,915, Cl. 48-197.00R.
Walden, John P., 4,346,332, Cl. 315-307.000.
Watrous, Donald L., 4,346,337, Cl. 322-25.000.

Wolcott, Edward O.; and Wentzel, Frank W., Jr., 4,346,022, Cl. 252-509.000.

General Electric Company, Limited, The: *See—*
Insam, Howard F.; and Laurenson, Stephen R., 4,346,448, Cl. 364-607.000.

General Foods Corporation: *See—*
Price, Charles E.; Ray, George C., III; Grieve, Harold R.; and Tomich, Robert G., 4,345,393, Cl. 40-312.000.

Gentex Corporation: *See—*
Frieder, Leonard P., Jr.; and Lavender, Michael R., 4,345,338, Cl. 2-414.000.

Georg Fischer Aktiengesellschaft: *See—*
Baumann, Gerhard, 4,345,361, Cl. 29-237.000.

George, Peter K., to National Semiconductor Corporation. Bubble memory with on chip error map storage on permalloy disk elements. 4,346,454, Cl. 365-15.000.

Geosource Inc.: *See—*
Day, Roger W., 4,345,841, Cl. 366-2.000.
Williams, Henry L., 4,345,539, Cl. 116-68.000.

Gerber Garment Technology, Inc.: *See—*
Pearl, David R., 4,345,496, Cl. 83-100.000.

Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, to Hoffmann-La Roche Inc. Imidazodiazepine derivatives. 4,346,030, Cl. 260-239.30T.

Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, to Hoffmann-La Roche Inc. Process for preparing imidazodiazepines. 4,346,031, Cl. 260-239.30T.

Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, to Hoffmann-La Roche Inc. Imidazodiazepine derivatives. 4,346,032, Cl. 260-239.30T.

Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, to Hoffmann-La Roche Inc. Thienodiazepinone and benzodiazepinone intermediates. 4,346,033, Cl. 260-239.30B.

Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, to Hoffmann-La Roche Inc. Process for preparing imidazodiazepines. 4,346,034, Cl. 260-239.30T.

Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, to Hoffmann-La Roche Inc. Process for preparing imidazodiazepines. 4,346,035, Cl. 260-239.30T.

Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, to Hoffmann-La Roche Inc. Process for preparing imidazodiazepine derivatives. 4,346,036, Cl. 260-239.30T.

Gereg, Gordon A. Lung exerciser. 4,345,605, Cl. 128-728.000.

Gerety, Robert J.: *See—*
Aronson, David L.; Tabor, Edward; and Gerety, Robert J., 4,346,073, Cl. 424-86.000.

Geschwender, Robert C.: *See—*
Cobleigh, Wendall C.; Barmore, Donald L.; and Geschwender, Robert C., 4,345,497, Cl. 83-105.000.

Gianni, Carra, to Carra Officine Meccaniche S.p.A. Air agitation device. 4,345,386, Cl. 34-218.000.

Gianutsos, Gerald: *See—*
Henkel, James G.; and Gianutsos, Gerald, 4,346,112, Cl. 424-325.000.

Gick, Wilhelm: *See—*
Bach, Hanswilhelm; Brundin, Eike; and Gick, Wilhelm, 4,346,239, Cl. 568-461.000.

Gilchrist, James E.: *See—*
Campbell, Jeptha E.; and Gilchrist, James E., 4,345,628, Cl. 141-83.000.

Gilhaus, Konrad: *See—*
Handschuch, Karl; Wulfhorst, Burkhard; and Gilhaus, Konrad, 4,345,356, Cl. 19-200.000.

Gillespie, Donald R.; and French, John M., Jr. Temporary material receptacle. 4,345,710, Cl. 229-16.00R.

Gillette Company, The: *See—*
Jacobson, Chester F., 4,345,374, Cl. 30-47.000.

Gillon, John: *See—*
Gates, Peter S.; Gillon, John; and Saggers, David T., 4,345,932, Cl. 71-88.000.

Gilmore, Oscar P. Webbed non-pneumatic tire. 4,345,633, Cl. 152-328.000.

Gilmour, Neil J. L.; Martin, William B.; Sharp, James M.; Thompson, Dennis A.; and Wells, Peter W., to National Research Development Corp. Pasteurellosis vaccines. 4,346,074, Cl. 424-92.000.

Gim, Heung S. Plastic bag. 4,345,712, Cl. 229-62.000.

Giorgini, Eugene A.; and Sullivan, John L., to A-T-O Inc. Pressure demand regulator with automatic shut-off. 4,345,592, Cl. 128-204.260.

Giovannetti, Giusto, to Pegasus Pension Fund S.A. Method of producing plants mycorrhyzated with symbiotic fungi. 4,345,403, Cl. 47-1.100.

Giron, Daniel G., to Michelin Recherche et Technique S.A. Tire for medium and heavy carrier vehicles. 4,345,634, Cl. 152-353.00R.

Givelet, Sebastien: *See—*
Cartier, Jacques; and Givelet, Sebastien, 4,345,370, Cl. 29-828.000.

Glaser, Hans F. Vise. 4,345,750, Cl. 269-136.000.

Glasson, Richard E.: *See—*
Kasting, Edward W.; Glasson, Richard E.; and Swank, Bryan W., 4,345,552, Cl. 123-90.380.

Gless, Richard D.: *See—*
Rapoport, Henry; Weller, Dwight D.; and Gless, Richard D., 4,346,224, Cl. 546-221.000.

Glukhikh, Rudolf G.: *See—*
Lezgintsev, Georgy M.; Garbuz, Evgeny I.; Kontar, Evgeny A.; Glukhikh, Rudolf G.; Murdmaa, Ivar O.; Soluyanov, Vadim G.; Belyavsky, Alexandr S.; and Kuznetsov, Alexei N., 4,345,461, Cl. 73-170.00A.

Goddard, John B., to Union Carbide Corporation. Purification of ammonium tungstate solutions. 4,346,061, Cl. 423-56.000.

Goedert, Ferdinand: *See—*
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,345,746, Cl. 266-90.000.

Goetz, Alexander F. H.; and Machida, Richard A., to California Institute of Technology. Method and apparatus for instantaneous band ratioing in a reflectance radiometer. 4,345,840, Cl. 356-407.000.

Goings, Richard L.: *See—*
Braund, Darwin G.; Fronk, Thomas J.; Goings, Richard L.; Peters, John W.; and Steele, Robert L., 4,346,077, Cl. 424-156.000.

Goldberg, Alan, to H. Krantz GmbH & Co. Equipment for drying and/or shrinking of tubular textile structures. 4,345,357, Cl. 26-18.500.

Goldsmith, Norman; and Perrucci, Joseph W., to Perrucci, Joseph W. Portable can crushing apparatus. 4,345,520, Cl. 100-293.000.

Goletto, Jean: *See—*
Coquard, Jean; and Goletto, Jean, 4,346,024, Cl. 524-219.000.

Goltz, Kurt: *See—*
Piucci, Joseph A.; and Goltz, Kurt, 4,346,014, Cl. 252-47.500.

Gomi, Takeo: *See—*
Asai, Hajime; Tada, Hisashi; and Gomi, Takeo, 4,345,959, Cl. 156-244.110.

Gordon Barlow Design: *See—*
Barlow, Gordon A.; Krutsch, John R.; and Karlin, Richard A., 4,345,764, Cl. 273-313.000.

Gordy, Robert S., to E-Systems, Inc. Phase locked sampling radio receiver. 4,346,477, Cl. 455-257.000.

Gordy, Robert S.: *See—*
Poston, Billy R.; Chambers, Ramon P.; and Gordy, Robert S., 4,346,480, Cl. 455-154.000.

Gorling, Karl G.: *See—*
Fahlstrom, Per A. H. H.; and Gorling, Karl G., 4,345,990, Cl. 208-11.00R.

Goss, David C.; and Springs, Daniel R., to Thermon Manufacturing Co. Parallel-type heating cable and method of making same. 4,345,368, Cl. 29-611.000.

Goto, Fumio; Yoshino, Kenji; Kono, Hiroshi; and Naito, Mitsuaki, to Niigata Engineering Co., Ltd.; and Nippon Hodo Co., Ltd. Leveling device for asphalt finisher. 4,345,852, Cl. 404-114.000.

Gould, Gregory; and Colijn, Hendrik. Sampling device. 4,345,484, Cl. 73-864.430.

Gould Inc.: *See—*
Kussy, Frank W.; Heberlein, Gustave E., Jr.; and DiMarco, Bernard, 4,346,357, Cl. 335-16.000.
Rider, Thomas F., 4,345,624, Cl. 138-110.000.

Goyard, Pierre J.: *See—*
Bosc, Henri J.; and Goyard, Pierre J., 4,346,382, Cl. 343-5.0SA.

Graber, Joseph V. Automobile attached carrier. 4,345,705, Cl. 224-42.03B.

Gradl, Reinhard; Schrodter, Klaus; Ehlers, Klaus-Peter; and Scheibitz, Wolfgang, to Hoechst Aktiengesellschaft. Purification of wet-process phosphoric acid. 4,346,066, Cl. 423-321.00S.

Graffis, Kelly R.; and Sievert, Bruce G. Plastic catch basin. 4,345,998, Cl. 210-164.000.

Graham, David E.: *See—*
Schneider, Louis; and Graham, David E., 4,345,937, Cl. 71-95.000.

Granda, Edward J.: *See—*
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,346,243, Cl. 568-591.000.

Granzer, Ernold: *See—*
Lang, Hans-Jochen; Seuring, Bernhard; and Granzer, Ernold, 4,346,088, Cl. 424-248.510.

Grassel, Eugene E., to Donaldson Company, Inc. Air cleaner with anti-reentrainment. 4,345,922, Cl. 55-302.000.

Grassi, Gloria. Method and apparatus for producing day-night pictures. 4,345,395, Cl. 40-441.000.

Gray, Billy C. Mass magnetic tape degaussing system. 4,346,425, Cl. 361-151.000.

Gray, Ralph C.: *See—*
Young, Charles L., Jr.; and Gray, Ralph C., 4,346,143, Cl. 428-332.000.

Green, James A., to Eltra Corporation. Method and apparatus for encoding and generating characters in a display. 4,346,377, Cl. 340-731.000.

Greene, Larry D., to Acco Industries Inc. Loader-unloader system for work pieces. 4,345,866, Cl. 414-224.000.

Greenwald, Roger J.: *See—*
Matteson, Lawrence J.; Greenwald, Roger J.; and Schauffele, Carl N., 4,345,825, Cl. 354-23.00D.

Gregg, F. Browne. Vessel raising heavy structures. 4,345,536, Cl. 114-124.000.

Gregoire, Clyde G., to Baldwin-Gregg, Inc. Cam operated grippers for printed webs. 4,345,906, Cl. 493-432.000.

Grey, Roger A.; and Pez, Guido P., to Allied Corporation. Hydrogenation of esters using alkali doped heterogeneous group VIII transition metal catalysts. 4,346,240, Cl. 568-842.000.

Grieve, Harold R.: *See—*
Price, Charles E.; Ray, George C., III; Grieve, Harold R.; and Tomich, Robert G., 4,345,393, Cl. 40-312.000.
Griffin, Charles K., to Carrier Corporation. Apparatus for changing belts. 4,345,878, Cl. 417-15.000.
Griffin, Jewell C., Jr.: *See—*
Motley, Larry L., 4,345,406, Cl. 52-8.000.
Griffith, Edward J., to Monsanto Company. Asbestiform crystalline calcium sodium or lithium phosphate, preparation and compositions. 4,346,028, Cl. 524-417.000.
Griffith, Neil J., to Spin Physics, Inc. Selectively actuable magnetic head. 4,346,417, Cl. 360-115.000.
Grimes, Patrick G.: *See—*
Bellows, Richard J.; Grimes, Patrick G.; Newby, Kenneth R.; Einstein, Harry; and Tsien, Hsue C., 4,346,150, Cl. 429-18.000.
Groff, James W. Classroom noise alarm. 4,346,374, Cl. 340-573.000.
Grollimund, Everett C.; and Martin, Peter, to Philip Morris Incorporated. Dual path web transport and processing apparatus with radiant energy directing means. 4,346,284, Cl. 219-121.0LK.
Gropper, Lee: *See—*
Gutierrez, William S.; Gropper, Lee; and Brown, Hugh O., 4,345,713, Cl. 233-1.00B.
Grove Valve and Regulator Company: *See—*
Ripert, Roger L., 4,345,738, Cl. 251-315.000.
Groves, Stanley E., to Motorola, Inc. NRZ/Biphase microcomputer serial communication logic. 4,346,452, Cl. 364-900.000.
Growdon, John H.; and Wurtman, Richard J., to Massachusetts Institute of Technology. Process and composition for treating disorders by administering lithium and choline. 4,346,084, Cl. 424-199.000.
Growdon, John H.; and Wurtman, Richard J., to Massachusetts Institute of Technology. Process and composition for treating disorders by administering amphetamine and choline. 4,346,085, Cl. 424-199.000.
Grundstrom, Karl-Johan: *See—*
Norman, Bo; and Grundstrom, Karl-Johan, 4,346,007, Cl. 210-360.100.
Gruner, Heiko; and Friedrich, Heinz, to Robert Bosch GmbH. Probe for measuring flow rate and/or temperature of a flowing medium. 4,345,465, Cl. 73-204.000.
GTE Products Corporation: *See—*
LeFever, Randall H.; and Brower, Boyd G., 4,345,895, Cl. 431-359.000.
Guidote, Armando E.: *See—*
Alegre, Adolfo P.; Guidote, Armando E.; and Puyat, Alfonso G., 4,345,568, Cl. 123-522.000.
Guimarin Container Co., Incorporated: *See—*
Guimarin, Henry L., 4,345,696, Cl. 220-277.000.
Guimarin, Henry L., to Guimarin Container Co., Incorporated. Container opening apparatus. 4,345,696, Cl. 220-277.000.
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Ksenofont K.; and Rudnev, Anatoly E. Method and apparatus for building up surface layer with alternating composition. 4,346,280, Cl. 219-76.100.
Gulf Research & Development Company: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,346,020, Cl. 252-429.00R.
Gulfko Incorporated: *See—*
Sullivan, James E., 4,346,149, Cl. 428-516.000.
Gundlach, Robert W., to Vencraft Corp. Snowmaking method and apparatus. 4,345,439, Cl. 62-71.000.
Gurol, I. Macit: *See—*
Chapel, Roy W., Jr.; and Gurol, I. Macit, 4,346,291, Cl. 250-211.00R.
Gurr, George P., to Sangamo Weston, Inc. Fault detector. 4,346,421, Cl. 361-57.000.
Gurr, George P., to Sangamo Weston, Inc. Rectifier controller responsive to sensed A.C. voltage signals. 4,346,432, Cl. 363-129.000.
Gustavsson, Lennart; and Maatta, Osten, to AB Svenska Flaktfabriken. Spray chamber including a wet separator. 4,345,921, Cl. 55-223.000.
Gutbier, Ernst A.; and Ouellette, Paul J., to Western Electric Company, Inc. Solder-bearing lead having solder flow-control stop means. 4,345,814, Cl. 339-275.00R.
Guth, Christian; Gysin, Hanspeter; and Binz, Jorg, to Ciba-Geigy Corporation. Process for dyeing or treating textile fibre materials. 4,345,909, Cl. 8-477.000.
Gutierrez, William S.; Gropper, Lee; and Brown, Hugh O., to Beckman Instruments, Inc. Safety lock for air driven centrifuge. 4,345,713, Cl. 233-1.00B.
Gutschmidt, Peter-Michel, to Orgatechna Treuhand AG. Installation for burning-out scrap metal. 4,345,530, Cl. 110-215.000.
Guzik, Chet. Vibrasonic fishing lure. 4,345,399, Cl. 43-42.060.
Gwynn, Eric C. E., to Singer Company, The. Wide angle display device. 4,345,817, Cl. 350-174.000.
Gysin, Hanspeter: *See—*
Guth, Christian; Gysin, Hanspeter; and Binz, Jorg, 4,345,909, Cl. 8-477.000.
H. Krantz GmbH & Co.: *See—*
Goldberg, Alan, 4,345,357, Cl. 26-18.500.
Hack, Joachim, to BASF Aktiengesellschaft. Magnetic head positioning servo arrangement for a system for recording/reproducing information on a magnetic recording medium, particularly on a flexible magnetic recording medium. 4,346,413, Cl. 360-77.000.
Hackett-Jones, Francis C. Method and means for controlling the flux density in the core of an inductor. 4,346,340, Cl. 323-249.000.
Hackler, Ronald E.: *See—*
Beck, James R.; Gajewski, Robert P.; and Hackler, Ronald E., 4,346,094, Cl. 424-270.000.
Hadley, Michael S.; King, Francis D.; and Martin, Roger T., to Beecham Group Limited. 1-Aza-4-oxa-bicyclo [4,4,0]decane derivatives. 4,346,089, Cl. 424-248.520.
Haefely, Willy: *See—*
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,030, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,031, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,032, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,033, Cl. 260-239.30B.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,034, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,035, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,036, Cl. 260-239.30T.
Hagan, Joseph R.: *See—*
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,346,133, Cl. 428-109.000.
Hagiwara, Yoshihide, to Japan Natural Food Co. Ltd. Soy sauce from tear grass and process for production thereof. 4,346,114, Cl. 426-18.000.
Hahn, A. David: *See—*
Curchack, Herbert D.; and Hahn, A. David, 4,345,460, Cl. 73-167.000.
Hailey, Laurence N.: *See—*
Coppola, John A.; Hailey, Laurence N.; and McMurtry, Carl H., 4,346,049, Cl. 264-65.000.
Haines, Richard M.: *See—*
Wong, Robert W.; and Haines, Richard M., 4,346,026, Cl. 524-157.000.
Hall, Charles P., to Monterey Manufacturing, Inc. Waterbed mattress with a baffle. 4,345,348, Cl. 5-450.000.
Hall, Henry K., Jr.; and Padias, Anne B., to Celanese Corporation. Process for the preparation of polybutylene terephthalate. 4,346,213, Cl. 528-272.000.
Hall, John B.: *See—*
Sprecker, Mark A.; and Hall, John B., 4,346,245, Cl. 568-665.000.
Hamanaka, Hiroyoshi; and Shinano, Mamoru, to Toho Chemical Industry Co., Ltd. Antibacterial surface active agent containing azaalkenelactam. 4,346,087, Cl. 424-244.000.
Hamaoka, Tsutomu: *See—*
Imatomi, Eiji; Ogawa, Tsuyoshi; and Hamaoka, Tsutomu, 4,346,167, Cl. 430-569.000.
Hamashima, Yoshio: *See—*
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,346,218, Cl. 544-16.000.
Hammock, Michael T., to Lucas Industries Limited. Fuel pumping apparatus. 4,345,566, Cl. 123-502.000.
Handke, Gunther: *See—*
Wossner, Felix; Handke, Gunther; and Koller, Manfred, 4,345,748, Cl. 267-8.00R.
Handschuch, Karl; Wulfhorst, Burkhard; and Gilhaus, Konrad, to Schubert & Salzer. Mechanism for eliminating impurities from fibrous material, in particular cotton. 4,345,356, Cl. 19-200.000.
Hanna, George D., to Continental Electronics, Inc. Amplitude modulator using variable width rectangular pulse generator. 4,346,354, Cl. 332-43.00B.
Hannebaum, Harold W.: *See—*
Hannebaum, Tilda M.; and Hannebaum, Harold W., 4,345,972, Cl. 203-18.000.
Hannebaum, Tilda M.; and Hannebaum, Harold W. Alcohol recovery process. 4,345,972, Cl. 203-18.000.
Hannon, Gilbert H. Transmission utilizing velocity control mechanism. 4,345,491, Cl. 74-831.000.
Hansen, Borge M., to Danfoss A/S. Defroster for the evaporator of a refrigerator. 4,345,441, Cl. 62-140.000.
Hansen, James E., to Eaton Corporation. Electronic remote control D.C. power controller and circuit breaker. 4,346,424, Cl. 361-94.000.
Hansen, Kirsten: *See—*
Terrell, Ross C.; and Hansen, Kirsten, 4,346,246, Cl. 568-684.000.
Hanson, Steven P.; Smathers, Robert E.; and Morrison, Howard J., to Marvin Glass & Associates. Toy vehicle and launcher. 4,345,402, Cl. 46-206.000.
Hara, Yoshihumi; Kubota, Saburo; Ihara, Akira; Kishimoto, Masaru; and Suzuki, Masaki, to Matsushita Electric Industrial Company, Limited. Method and apparatus for digitally analyzing dynamic unbalance of a rotating body. 4,345,472, Cl. 73-462.000.
Harada, Kazuo: *See—*
Ogino, Etsuo; Yoshii, Nobuo; and Harada, Kazuo, 4,346,010, Cl. 210-714.000.

Hardee, Kim C.: *See—*
Sud, Rahul; Hardee, Kim C.; and Heightley, John O., 4,346,459, Cl. 365-200.000.

Harradine, Ronald J.: *See—*
Rundell, John T.; Pottage, Paul R.; and Harradine, Ronald J., 4,345,947, Cl. 127-48.000.

Harrington Hoists: *See—*
Soussloff, Dimitri G., 4,345,851, Cl. 403-369.000.

Harris Corporation: *See—*
Davis, Robert C., 4,346,473, Cl. 371-43.000.
Erbstein, Robert S.; Richard, Gary R.; Palmatier, Roland T.; and McGill, Robert W., 4,346,446, Cl. 364-551.000.

Harrison, Michael R.: *See—*
Uba, Toshio; Ching, Larry K. W.; and Harrison, Michael R., 4,346,151, Cl. 429-54.000.

Hartman, Mondo L. Alternate firing method. 4,345,397, Cl. 42-42.00B.

Hasegawa, Junzo; Yamada, Masatoshi; Nakamura, Kaoru; and Yasuda, Eiichi, to Aisin Seiki Kabushiki Kaisha; Kabushiki Kaisha Toyota Chuo Kenkyusho; and Toyota Jidosha Kogyo Kabushiki Kaisha. Sealing cup for hydraulic piston-cylinder device. 4,345,771, Cl. 277-205.000.

Hashimoto, Masanori: *See—*
Takahashi, Akira; and Hashimoto, Masanori, 4,345,826, Cl. 354-23.00D.

Hassman, Gregory V. Intrusion warning system utilizing a differential electric field. 4,346,373, Cl. 340-561.000.

Hastings Manufacturing Co.: *See—*
Alexander, Willis R.; and Shaltis, Robert J., 4,346,009, Cl. 210-512.100.

Hatch, David A., to Pintek, Inc. Keyable connector-header assemblies for multiple conductor cables. 4,345,813, Cl. 339-184.00M.

Hattori, Mitsuhiro: *See—*
Nakayama, Shozo; Hattori, Mitsuhiro; and Ono, Hiromitsu, 4,345,886, Cl. 418-100.000.

Hattori, Tadashi; Mukainakano, Siniti; and Yoshida, Hitoshi, to Nippon Soken, Inc. Intake system for internal combustion engines. 4,345,569, Cl. 123-549.000.

Hattori, Tadashi: *See—*
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,345,558, Cl. 123-425.000.

Hauner, Friedrich, to Schubert & Salzer. Apparatus for paraffining yarn. 4,345,542, Cl. 118-78.000.

Hauser, Kurt, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Motor vehicle, especially a truck, with a cooling device for an internal combustion engine. 4,345,641, Cl. 165-41.000.

Hawkins, Lyle B.: *See—*
Derr, Leighton K.; Hawkins, Lyle B.; and Jones, Marlene J., 4,346,229, Cl. 560-91.000.

Hayakawa, Shun-ichi: *See—*
Nishimura, Nobuzi; Sawa, Utazi; Tokieda, Takemi; Hayakawa, Shun-ichi; and Tezuka, Yasuo, 4,346,046, Cl. 260-458.00C.

Hayashi, Masaki: *See—*
Tanouchi, Tadao; Kawamura, Masanori; Okada, Takanori; and Hayashi, Masaki, 4,346,099, Cl. 424-273.00R.

Hayes, Cecil L.: *See—*
Dawson, Stanley R.; and Hayes, Cecil L., 4,345,643, Cl. 165-122.000.

Hayes, Stanley B., Jr., to EG&G, Inc. Dew point hygrometer with continuous balancing system. 4,345,455, Cl. 374-20.000.

Haynes, Ronald L.: *See—*
Crano, John C.; and Haynes, Ronald L., 4,346,197, Cl. 525-277.000.

Hayward, Robert D. Cable tool. 4,345,375, Cl. 30-90.100.

Heberlein, Gustave E., Jr.: *See—*
Kussy, Frank W.; Heberlein, Gustave E., Jr.; and DiMarco, Bernard, 4,346,357, Cl. 335-16.000.

Hecht, Ralph J., to United Technologies Corporation. High temperature fatigue oxidation resistant coating on superalloy substrate. 4,346,137, Cl. 428-215.000.

Heck, Peter J. Work station desk. 4,345,803, Cl. 312-194.000.

Hedgren, Erland, to Salve S.A. Mound dressing. 4,345,591, Cl. 128-169.000.

Heft, Eldon B., to General Electric Company. Contact pop responsive latch release for circuit breakers. 4,346,358, Cl. 335-16.000.

Heightley, John O.: *See—*
Sud, Rahul; Hardee, Kim C.; and Heightley, John O., 4,346,459, Cl. 365-200.000.

Heimann, Sigismund: *See—*
Vescia, Michele; and Heimann, Sigismund, 4,345,910, Cl. 8-610.000.

Hellwig, Donald J., to Hellwig Products Company, Inc. Multipurpose splint means for spring leaf assemblies. 4,345,749, Cl. 267-51.000.

Hellwig Products Company, Inc.: *See—*
Hellwig, Donald J., 4,345,749, Cl. 267-51.000.

Hemmi, Peter; and Schrepfer, Richard, to Netstal-Maschinen AG. Injection molding machine having mold locking unit equipped with toggle drive and hydraulic locking mechanism. 4,345,890, Cl. 425-143.000.

Hengel, Jean V. Simplified phonics in the sequential steps to reading. 4,345,902, Cl. 434-170.000.

Henkel, James G.; and Gianutsos, Gerald, to University Patents Inc. Composition and method for treating patients having Parkinson's Disease. 4,346,112, Cl. 424-325.000.

Henkensiefken, Larry L.: *See—*
Schwalenberg, Terry R.; Krumholz, Frank C.; Kanengieter, Glenn G.; and Henkensiefken, Larry L., 4,345,421, Cl. 56-341.000.

Henningsson, Thom L., to Ingenjorsfirma T. Henningsson AB. Control and cut-off device for flowing media. 4,345,622, Cl. 137-637.100.

Henrion, Romain: *See—*
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,345,746, Cl. 266-90.000.

Hepworth, Edward C.: *See—*
Kyu, Shikun; and Hepworth, Edward C., 4,346,440, Cl. 364-200.000.

Hercules Incorporated: *See—*
Davis, James W., 4,345,405, Cl. 47-10.000.
Derr, Leighton K.; Hawkins, Lyle B.; and Jones, Marlene J., 4,346,229, Cl. 560-91.000.

Hermann Berstorff Maschinenbau GmbH: *See—*
Koch, Klaus, 4,345,988, Cl. 208-8.00R.

Hermes, Rudolf, to Osborn Manufacturing Corporation, The. Foundry molding method. 4,345,638, Cl. 164-456.000.

Herter, Johanna, heiress: *See—*
Herter, Martin, deceased; Herter, Johanna, heiress; Radtke, Ingrid, heir; Herter, Manfred, heir; and Oppel, Werner, 4,345,610, Cl. 137-7.000.

Herter, Manfred, heir: *See—*
Herter, Martin, deceased; Herter, Johanna, heiress; Radtke, Ingrid, heir; Herter, Manfred, heir; and Oppel, Werner, 4,345,610, Cl. 137-7.000.

Herter, Martin, deceased; by Herter, Johanna, heiress; by Radtke, Ingrid, heir; by Herter, Manfred, heir; and Oppel, Werner. Process and device for the mixing of gases. 4,345,610, Cl. 137-7.000.

Hertz, Carl H. Method and apparatus for controlling the electric charge on droplets and ink-jet recorder incorporating the same. 4,346,387, Cl. 346-1.100.

Hertzenberg, Elliot P.: *See—*
Dent, Anthony L.; Derolf, M. Robert; and Hertzenberg, Elliot P., 4,346,071, Cl. 424-49.000.

Herweh, John E.: *See—*
Garrett, Thomas B.; Herweh, John E.; Magnusson, Alan B.; and Miller, Normal L., 4,346,186, Cl. 524-82.000.

Herz, Arthur H.: *See—*
McLaen, Donald F.; and Herz, Arthur H., 4,346,154, Cl. 430-14.000.

Herzl, Peter J.; Metzger, Harold W.; and Crumley, Richard L., to Fischer & Porter Company. Centering device for flowmeters interposed in flow line. 4,345,464, Cl. 73-201.000.

Herzog, Eugene: *See—*
Royer, Alain L. A.; Herzog, Eugene; and Rouyer, Robert M. L., 4,345,952, Cl. 148-3.000.

Hessler, Edward J.: *See—*
Burke, Howard J.; and Hesaler, Edward J., 4,346,037, Cl. 260-239.55R.

Hesston Corporation: *See—*
Anderson, Carl M.; and Losey, Vernon L., 4,345,870, Cl. 414-686.000.

Hestad, Alfred M.; and Rose, Levi L., to United Networks, Inc. Speaker phones. 4,346,261, Cl. 179-1.0HF.

Hewes, Francis W., Jr. Dehorning tool. 4,345,377, Cl. 30-181.000.

Hewlett-Packard Company: *See—*
Murphy, Andrew J.; Rhodes, Robert P.; and Woodruff, Terry A., 4,346,055, Cl. 422-54.000.
Severson, Eugene K., 4,346,308, Cl. 307-252.00B.

Hewlett-Packard GmbH: *See—*
Aue, Peter; and Huttemann, Werner, 4,346,311, Cl. 307-268.000.

Heymer, Gero: *See—*
Maurer, Alexander; Adrian, Renate; and Heymer, Gero, 4,346,065, Cl. 423-305.000.

Hibino, Kunio: *See—*
Takeyama, Kenichi; Morimoto, Takayoshi; and Hibino, Kunio, 4,346,163, Cl. 430-280.000.

Higashi, Haruki: *See—*
Iida, Koso; Shiraishi, Hideo; and Higashi, Haruki, 4,345,432, Cl. 60-290.000.

Hildreth, Donald M.; and Tyler, Edward P. Vehicle engine remote starter control and protective system. 4,345,554, Cl. 123-179.0BG.

Hiles, Maurice A. F., to National Research Development Corporation. Energy absorbing elastomers and composites. 4,346,205, Cl. 528-53.000.

Hillenbrand, Louis J.; Preston, Joseph R.; and Berry, David A., to RCA Corporation. High density information disc. 4,346,469, Cl. 369-276.000.

Hillenbrand, Louis J.: *See—*
Preston, Joseph R.; Hillenbrand, Louis J.; and Berry, David A., 4,346,468, Cl. 369-276.000.

Hiltebrandt, Siegfried, to Richard Wolf GmbH. Endoscopic instrumentation apparatus. 4,345,589, Cl. 128-4.000.

Hilton, R. John, to Boeing Company, The. Honeycomb core assembly including a sacrificial core portion. 4,346,134, Cl. 428-116.000.

Hinckley, Conrad C., to Research Corporation. Osmium carbohydrate complexes. 4,346,216, Cl. 536-121.000.

Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., to Celotex Corporation, The. Structural laminate and method for making same. 4,346,133, Cl. 428-109.000.

Hirai, Katsumi: *See—*
Kamata, Shohichi; Kimura, Yoshinori; and Hirai, Katsumi, 4,346,347, Cl. 324-158.00D.

Hiraishi, Hisashi; Morichika, Toshiaki; and Murakami, Shinichi, to Kubota Ltd. Non-pick-up and heat resistant alloy. 4,345,941, Cl. 75-122.000.

Hirasawa, Kazuo; and Kubo, Takahiro, to Mitsubishi Denki Kabushiki Kaisha. Optical apparatus for tracking a record carrier. 4,346,471, Cl. 369-44.000.

Hirschfeld, Tomas, to Technicon Instruments Corporation. Infrared radiation lamp. 4,346,323, Cl. 313-111.000.

Hisajima, Masahiko: *See—*
Kimura, Hiroshi; Hisajima, Masahiko; and Shigemura, Yutaka, 4,345,834, Cl. 355-3.00R.

Hitachi Chemical Company, Ltd.: *See—*
Takahashi, Akio; Itoh, Yutaka; Shimazaki, Takeshi; Wajima, Motoyo; Morishita, Hirosada; Mizuno, Yutaka; Yokozawa, Shunya; and Tsukanishi, Kenji, 4,346,206, Cl. 528-88.000.

Hitachi Denshi Kabushiki Kaisha: *See—*
Huno, Takakazu; Endo, Takeyuki; Odaka, Kunihiro; and Shibuya, Yasutaka, 4,346,439, Cl. 364-200.000.

Hitachi, Ltd.: *See—*
Endo, Fumihiro; Ishikawa, Toshio; Ozawa, Jun; Kamata, Yuzuru; and Shiono, Shigeo, 4,345,471, Cl. 374-188.000.
Huno, Takakazu; Endo, Takeyuki; Odaka, Kunihiro; and Shibuya, Yasutaka, 4,346,439, Cl. 364-200.000.
Kakuta, Atsushi; Suzuki, Shigeo; Mori, Yasuki; and Morishita, Hirosada, 4,346,157, Cl. 430-58.000.
Kaneko, Takashi; and Iwasaka, Tatsuo, 4,345,670, Cl. 187-29.00R.
Morinaga, Shigeki, 4,346,434, Cl. 364-183.000.
Ohkoshi, Seiei; Ishikawa, Isao; Okamoto, Teiji; and Tsukamoto, Nobuo, 4,346,472, Cl. 371-37.000.
Ouchi, Hirobumi, 4,346,395, Cl. 357-30.000.
Yoda, Haruo; and Motoike, Jun, 4,346,405, Cl. 358-105.000.

Hitachi Shipbuilding & Engineering Co., Ltd.: *See—*
Ogino, Etsuo; Yoshii, Nobuo; and Harada, Kazuo, 4,346,010, Cl. 210-714.000.

Hjellum, Jerry: *See—*
Moss, Theron C.; Boring, Earl; and Hjellum, Jerry, 4,345,351, Cl. 15-144.00B.

Hoagland, Jesse. Adjustable dumbbell apparatus. 4,345,756, Cl. 272-117.000.

Hoechst Aktiengesellschaft: *See—*
Gradl, Reinhard; Schrodter, Klaus; Ehlers, Klaus-Peter; and Scheibitz, Wolfgang, 4,346,066, Cl. 423-321.00S.
Lang, Hans-Jochen; Seuring, Bernhard; and Granzer, Ernold, 4,346,088, Cl. 424-248.510.
Maurer, Alexander; Adrian, Renate; and Heymer, Gero, 4,346,065, Cl. 423-305.000.
Meyer, Klaus, 4,345,931, Cl. 71-28.000.

Hof, Craig R.; Ulin, Roy A., Jr.; and Polak, Robert B., to Akzona Incorporated. All plastic disposable thermometer. 4,345,470, Cl. 374-106.000.

Hofer, Norbert: *See—*
Faust, Uwe; Prave, Paul; Dorsemagen, Beate; and Hofer, Norbert, 4,346,113, Cl. 426-12.000.

Hoffmann, Gerhart; Cordes, Rudolph; and Merkel, Wolfgang, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of dimethyl terephthalate. 4,346,230, Cl. 560-99.000.

Hoffmann-La Roche Inc.: *See—*
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,030, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,031, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,032, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,033, Cl. 260-239.30B.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,034, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,035, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,036, Cl. 260-239.30T.

Hofmann, Heinrich; Markfelder, Gunther; and Bender, Hans-Eberhard, to Fag Kugelfischer Georg Schafer & Co. Double-row radially self-aligning roller bearing. 4,345,800, Cl. 308-217.000.

Hoge, Henri H., to Enertron, Inc. Feedback control system for applying AC power to ballasted lamps. 4,346,331, Cl. 315-158.000.

Hoh, George L.; and Vassallo, Donald A., to Du Pont de Nemours, E. I., and Company. Heat seal composition comprising a blend of metal neutralized polymers. 4,346,196, Cl. 525-196.000.

Holahan, Edward T.: *See—*
Katzman, Allison W.; Holahan, Edward T.; Zaruba, John V.; and Morrison, Howard J., 4,345,400, Cl. 46-4.000.

Holland, Bruce B. Coded strobe light device for aircraft. 4,346,430, Cl. 362-62.000.

Holland Company: *See—*
Chierici, Osvaldo F., 4,345,689, Cl. 213-61.000.

Hollister, Kenneth R.: *See—*
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,346,231, Cl. 560-178.000.

Holt, David, to Pifco Limited. Electric toaster. 4,345,513, Cl. 99-327.000.

Holt, David, to Pifco Limited. Slidable brush and screw linear drive arrangement. 4,345,515, Cl. 99-393.000.

Holtz, Leonard. Head support. 4,345,345, Cl. 5-437.000.

Holtz, Leonard. Head support. 4,345,346, Cl. 5-437.000.

Holzhauser, Ronald C., to Eastman Kodak Company. Sheet feeding apparatus. 4,345,751, Cl. 271-3.100.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Anno, Nobuo; Okui, Haruki; Yamamoto, Kuniyuki; and Miyazaki, Kunio, 4,345,664, Cl. 180-230.000.
Minagawa, Masaaki, 4,345,778, Cl. 280-701.000.
Nishikawa, Masao, 4,345,661, Cl. 180-141.000.

Honeywell Inc.: *See—*
Johnson, Russell L., 4,345,477, Cl. 73-766.000.

Honeywell Information Systems Inc.: *See—*
Plank, Odas P.; Slater, Richard A.; and Taibbi, Steven G., 4,346,441, Cl. 364-200.000.

Hopley, Eric T., to U.G. Closures & Plastics Limited. Safety closure. 4,345,690, Cl. 215-216.000.

Horkey, Edward J. Chain driven conveyor belts. 4,345,685, Cl. 198-852.000.

Hornbaker, Edwin D.; and Jones, Jesse D., to Ethyl Corporation. Polyethylene terephthalate blends. 4,346,195, Cl. 525-176.000.

Horvath, Gyula: *See—*
Tyihak, Erno; Mincsovics, Emil; Dios, Sandor; Horvath, Gyula; Kalasz, Huba; Nagy, Janos; Kormendi, Ferenc; Kozma, Laszlo; Borsos, Janos; and Kiss, Janos, 4,346,001, Cl. 210-198.300.

Horvath, William. Manually actuated trigger sprayer. 4,345,718, Cl. 239-333.000.

Hosogai, Setsuo: *See—*
Fujiwara, Kohei; and Hosogai, Setsuo, 4,346,356, Cl. 335-6.000.

Hostetler, John L.: *See—*
Decker, Charles E.; and Hostetler, John L., 4,346,129, Cl. 427-348.000.

Houseman, Andrew J.: *See—*
McCranie, Stephen C.; and Houseman, Andrew J., 4,345,413, Cl. 53-315.000.

Houston, David T.: *See—*
Allen, Charles A.; and Houston, David T., 4,346,390, Cl. 346-76.0PH.

Hovens, Paulus J. M., to U.S. Philips Corporation. Matrix circuits. 4,346,400, Cl. 358-30.000.

Howard, Kenneth J.: *See—*
Deavenport, Dennis L.; Howard, Kenneth J.; and Sidwell, Albert E., 4,346,248, Cl. 568-776.000.

Howard, Mig A., to Hughes Tool Company. Electronic depth indicator for hydraulic drilling machines. 4,345,657, Cl. 175-40.000.

Howard, William M.: *See—*
Monticelli, Dennis M.; Howard, William M.; and Sleeth, Robert S., 4,346,380, Cl. 340-825.630.

Hu, Hung L.; and Ju, Kochan, to International Business Machines Corporation. Dovetail propagation structure for contiguous disk bubble devices. 4,346,457, Cl. 365-36.000.

Huang, Chiung-Yuan: *See—*
Riegel, Herbert; and Huang, Chiung-Yuan, 4,346,069, Cl. 423-488.000.

Hubbard, Leo J., to P.H.D. of Puerto Rico, Inc. Document feed mechanism. 4,345,708, Cl. 226-74.000.

Hubbard, Martin G.; and Erickson, John W., to Kobe, Inc. Conduit in supplying electrical power and pressurized fluid to a point in a subterranean well. 4,346,256, Cl. 174-47.000.

Huchette, Michel: *See—*
Verwaerde, Francoise; Leleu, Jean-Bernard; and Huchette, Michel, 4,346,116, Cl. 426-48.000.

Huddleston, Bruce C.: *See—*
Weber, Roy; and Huddleston, Bruce C., 4,345,529, Cl. 110-213.000.

Hudson Products Corporation: *See—*
Monroe, Robert C., 4,345,877, Cl. 416-239.000.

Hughes Aircraft Company: *See—*
Figueroa, Luis; and Yen, Huan-Wun, 4,346,394, Cl. 357-30.000.
Neufeld, Murray J., 4,345,728, Cl. 244-168.000.
Robinson, William P.; and Seliger, Robert L., 4,346,301, Cl. 250-492.200.

Hughes Tool Company: *See—*
Baugh, John L.; and Montgomery, James W., 4,345,649, Cl. 166-120.000.
Howard, Mig A., 4,345,657, Cl. 175-40.000.
Regan, John, 4,345,735, Cl. 251-1.00B.

Humber, Leslie G.; Bruderlein, Francois T.; and Asselin, Andre A., to Ayerst, McKenna & Harrison Ltd. 13-Chloro-benzocycloheptapyridoisoquinolines and use as neuroleptics. 4,346,090, Cl. 424-258.000.

Humphries, Donald N.: *See—*
Wood, Laurier A.; and Humphries, Donald N., 4,346,124, Cl. 427-82.000.

Hunkeler, Walter: *See—*
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,030, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,031, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,032, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,033, Cl. 260-239.30B.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,034, Cl. 260-239.30T.

Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,035, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,036, Cl. 260-239.30T.

Huno, Takakazu; Endo, Takeyuki; Odaka, Kunihiro; and Shibuya, Yasutaka, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Direct memory access of a main memory by an input/output device using a table in main memory. 4,346,439, Cl. 364-200.000.

Hussmann, Peter, to Mittex Aktiengesellschaft. Method and apparatus for recovery of water from the atmosphere. 4,345,917, Cl. 55-33.000.

Hutchinson, Bruce R.: *See*—
Smith, Willard P.; and Hutchinson, Bruce R., 4,345,894, Cl. 431-170.000.

Hutson, Coy R.: *See*—
Wilson, Billy E.; and Hutson, Coy R., 4,345,697, Cl. 220-335.000.

Huttemann, Werner: *See*—
Aue, Peter; and Huttemann, Werner, 4,346,311, Cl. 307-268.000.

Hyde, Thomas J., to Du Pont de Nemours, E. I., and Company. Methacrylate polymer mix containing alkaline earth metal resinate. 4,346,183, Cl. 523-200.000.

I.H.W. Engineering Limited: *See*—
Shephard, Philip C., 4,345,792, Cl. 297-362.000.

Ichikawa, Hiroki, to Olympus Optical Co., Ltd. Hinge mechanism. 4,345,354, Cl. 16-257.000.

Ichikawa, Iwao: *See*—
Ohsawa, Mitsuo; Noda, Yoshiteru; Ichikawa, Iwao; and Yamamoto, Katsumi, 4,345,371, Cl. 29-836.000.

Ida, Edward S., to Du Pont de Nemours, E. I., and Company. Alarm circuit. 4,346,371, Cl. 340-507.000.

Ihara, Akira: *See*—
Hara, Yoshihumi; Kubota, Saburo; Ihara, Akira; Kishimoto, Masaru; and Suzuki, Masaki, 4,345,472, Cl. 73-462.000.

IHC Holland N.V.: *See*—
de Keizer, Cornelis, 4,345,388, Cl. 37-195.000.

Iida, Koso; Shiraishi, Hideo; and Higashi, Haruki, to Toyo Kogyo Co., Ltd. Exhaust gas purifying system for internal combustion engine. 4,345,432, Cl. 60-290.000.

Iiyama, Shigeru; Otsu, Sinzi; and Ooyachi, Akio. Automatic tape applicator. 4,345,966, Cl. 156-523.000.

Iizuka, Haruhiko; and Sugasawa, Fukashi, to Nissan Motor Company, Limited. Internal combustion engine. 4,345,571, Cl. 123-568.000.

Ikawa, Tsuneo; and Yamase, Toshihiro, to Tokyo Institute of Technology. Process for the production of hydrogen utilizing a photogalvanic effect of a polyacid ion. 4,345,982, Cl. 204-129.000.

Ikeda, Hironosuke; Oishi, Hisao; and Yoshida, Seiki, to Sanyo Electric Co., Ltd. Safety valve means for battery. 4,345,611, Cl. 137-68.00R.

Ikeda, Shigeho: *See*—
Akashi, Kunihiko; Nakamura, Yayoi; Tsuchida, Takayasu; Yoshii, Hiroe; and Ikeda, Shigeho, 4,346,169, Cl. 435-114.000.

Ikeda, Toshiaki: *See*—
Suzuki, Masakazu; Furuichi, Shuhei; and Ikeda, Toshiaki, 4,346,297, Cl. 378-110.000.

Ikeura, Kenji, to Nissan Motor Company, Limited. Idle speed control method and system for an internal combustion engine of an automobile vehicle. 4,345,557, Cl. 123-339.000.

Ikezawa, Toshi: *See*—
Yamasawa, Masao; Ohhata, Michinobu; and Ikezawa, Toshi, 4,346,476, Cl. 375-8.000.

Ikuta, Shigeru; Imamura, Shigeyuki; Ishikawa, Hidehiko; Matsuura, Kazuo; Takada, Masaki; and Misaki, Hideo, to Toyo Jozo Kabushiki Kaisha. Process for the production of acyl-Coenzyme A oxidase. 4,346,173, Cl. 435-189.000.

Imamura, Shigeyuki: *See*—
Ikuta, Shigeru; Imamura, Shigeyuki; Ishikawa, Hidehiko; Matsuura, Kazuo; Takada, Masaki; and Misaki, Hideo, 4,346,173, Cl. 435-189.000.

Imatomi, Eiji; Ogawa, Tsuyoshi; and Hamaoka, Tsutomu, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material and process for producing silver halide photographic emulsion. 4,346,167, Cl. 430-569.000.

Imperial Chemical Industries Limited: *See*—
Bornat, Alan; and Clarke, Roy M., 4,345,414, Cl. 53-425.000.
Smith, Leslie H., 4,346,111, Cl. 424-324.000.

Inai, Yuichi: *See*—
Yamatsu, Isao; Inai, Yuichi; Abe, Shinya; Suzuki, Takeshi; Suzuki, Yoshikazu; Tagaya, Osamu; and Koyanagi, Nozomu, 4,346,109, Cl. 424-318.000.

Ingenjorsfirma T. Henningsson AB: *See*—
Henningsson, Thom L., 4,345,622, Cl. 137-637.100.

Ingham, Francis H., to International Telephone and Telegraph Corporation. Electrical connector. 4,345,808, Cl. 339-40.000.

Inglett & Company, Inc.: *See*—
Inglett, Wilfred L., Jr., 4,345,629, Cl. 141-114.000.

Inglett, Wilfred L., Jr., to Inglett & Company, Inc. Automatic bag hanger. 4,345,629, Cl. 141-114.000.

Ingram, Charles E. Stopped vehicle warning device. 4,346,365, Cl. 340-72.000.

INMOS Corporation: *See*—
Sud, Rahul; Hardee, Kim C.; and Heightley, John O., 4,346,459, Cl. 365-200.000.

Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,346,281, Cl. 219-76.130.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for discharge-surfacing electrically conductive workpieces. 4,346,281, Cl. 219-76.130.

Inoue, Naohiko: *See*—
Miyamoto, Keiichi; Inoue, Naohiko; and Takeuchi, Yasuhisa, 4,345,522, Cl. 104-89.000.

Inoue, Toyokazu, to Brother Kogyo Kabushiki Kaisha. DC Servomotor system. 4,346,334, Cl. 318-45.000.

Inryco, Inc.: *See*—
Schroeder, Donald E.; and Temperly, Thomas, 4,345,409, Cl. 52-693.000.

Insam, Howard F.; and Laurenson, Stephen R., to General Electric Company, Limited, The. Generation of electric signals having approximately sinusoidal waveforms. 4,346,448, Cl. 364-607.000.

Institut Francais du Petrole: *See*—
du Boullay, Benoit T., 4,346,462, Cl. 367-61.000.
Roque, Claude, 4,345,652, Cl. 166-307.000.
Sugier, Andre; Freund, Edouard; and Le Page, Jean-Francois, 4,346,179, Cl. 518-707.000.

Institute of Critical Care Medicine: *See*—
Bisera, Jose; and Weil, Max H., 4,345,594, Cl. 128-214.00F.

Institute of Gas Technology: *See*—
Meissner, Herman P., 4,345,918, Cl. 55-38.000.
Sammells, Anthony F.; and St. John, Michael R., 4,346,152, Cl. 429-112.000.

Institute Za Yadreni Izsledvaniya I Yadrena Energetika: *See*—
Nedyalkov, Ivan P., 4,345,434, Cl. 60-398.000.

Institutul de Cercetari Pentru Industria Electrotehnica: *See*—
Arabadji, Petre, 4,346,306, Cl. 307-108.000.

Instruments, Computers and Controls Corp.: *See*—
Schroyer, Kenneth, 4,345,481, Cl. 73-862.340.

International Business Machines Corporation: *See*—
Alvarez, Joseph A., III; and Shabe, John, 4,346,470, Cl. 370-104.000.
Berger, Horst H.; and Wiedmann, Siegfried K., 4,346,458, Cl. 365-174.000.
Berndlmaier, Erich; Dorler, Jack A.; Mosley, Joseph M.; and Wetzel, Stephen D., 4,346,343, Cl. 323-282.000.
Bohnhoff, Alan E.; Cassidy, Bruce M.; and Dyer, Stanley, 4,345,845, Cl. 400-120.000.
Buhler, Otto R.; Gardner, Homer J.; and Marino, Peter T., 4,346,411, Cl. 360-46.000.
Christopherson, Warren A., 4,346,312, Cl. 307-270.000.
Hu, Hung L.; and Ju, Kochan, 4,346,457, Cl. 365-36.000.
Mathews, Raymond D., 4,345,846, Cl. 400-157.000.
Pipkin, David J., 4,345,543, Cl. 118-106.000.
Routt, Wilson M., Jr.; and West, Donald L., 4,346,292, Cl. 250-216.000.
Sze, Daniel T. W., 4,346,474, Cl. 371-49.000.

International Flavors & Fragrances Inc.: *See*—
Boden, Richard M., 4,346,237, Cl. 568-398.000.
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,346,080, Cl. 424-84.000.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,346,243, Cl. 568-591.000.
Sprecker, Mark A.; and Hall, John B., 4,346,245, Cl. 568-665.000.

International Harvester Company: *See*—
Gagliani, John; and Lee, Raymond, 4,346,182, Cl. 521-189.000.
McHenney, John R., 4,345,806, Cl. 339-19.000.
Vacval, Dusan M., 4,345,674, Cl. 188-71.800.

International Minerals & Chemical Corp.: *See*—
Robinson, Glenn N., 4,345,945, Cl. 106-300.000.

International Standard Electric Corporation: *See*—
Bosc, Henri J.; and Goyard, Pierre J., 4,346,382, Cl. 343-5.0SA.
Drake, Cyril F., 4,346,184, Cl. 523-451.000.

International Telephone and Telegraph Corporation: *See*—
Ingham, Francis H., 4,345,808, Cl. 339-40.000.
Lacaze, Leonard, Jr., 4,345,373, Cl. 29-874.000.
Ponzi, Joseph J., 4,345,456, Cl. 73-32.00A.

InterNorth, Inc.: *See*—
Mills, Walter C.; and Patterson, James W., 4,345,613, Cl. 137-317.000.

Interox (Societe Anonyme): *See*—
Gago, Ignace; and Coppens, Guillaume, 4,346,081, Cl. 424-130.000.

Inzoli, Luciano, to Italtel Societa Italiana Telecomunicazioni S.p.A. Power-distribution network for telecommunication system. 4,346,422, Cl. 361-62.000.

Iowa State University Research Foundation, Inc.: *See*—
Kraus, George A., 4,346,039, Cl. 549-289.000.

Ishida, Masamitsu; Kato, Hisatoyo; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Method of and apparatus for processing a radiographic image. 4,346,409, Cl. 358-280.000.

Ishida, Masamitsu: *See*—
Kato, Hisatoyo; and Ishida, Masamitsu, 4,346,406, Cl. 358-110.000.

Ishidoshiro, Hiroshi: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,345,385, Cl. 34-23.000.

Ishikawa, Hidehiko: *See*—
Ikuta, Shigeru; Imamura, Shigeyuki; Ishikawa, Hidehiko; Matsuura, Kazuo; Takada, Masaki; and Misaki, Hideo, 4,346,173, Cl. 435-189.000.

Ishikawa, Isao: *See*—
Ohkoshi, Seiei; Ishikawa, Isao; Okamoto, Teiji; and Tsukamoto, Nobuo, 4,346,472, Cl. 371-37.000.

Ishikawa, Toshio: *See*—
Endo, Fumihiro; Ishikawa, Toshio; Ozawa, Jun; Kamata, Yuzuru; and Shiono, Shigeo, 4,345,471, Cl. 374-188.000.
Ishikawa, Yoshihisa: *See*—
Sadamatsu, Shigeru; Pu, Lyon S.; and Ishikawa, Yoshihisa, 4,346,159, Cl. 430-67.000.
Islam, Mir N., to University of Delaware. Antimicrobial agents added to animal feeds. 4,346,118, Cl. 426-335.000.
Isobe, Taketo; and Matsushita, Terumi, to Mutoh Industry Ltd. Plotting head for use in drawing machine. 4,346,392, Cl. 346-139.00C.
Isover Saint-Gobain: *See*—
Lanneau, Jacques; and Delcoigne, Adrien, 4,345,887, Cl. 425-115.000.
Italtel Societa Italiana Telecomunicazioni S.p.A.: *See*—
Inzoli, Luciano, 4,346,422, Cl. 361-62.000.
Ito, Tadashi: *See*—
Shinbori, Kenichi; Sakai, Shinji; Shinoda, Nobuhiko; Ito, Tadashi; and Murakami, Hiroyasu, 4,345,829, Cl. 354-37.000.
Umaba, Toshihiko; and Ito, Tadashi, 4,346,012, Cl. 252-7.000.
Itoh, Katsumi: *See*—
Nakamoto, Takeshi; Iwaki, Katsutaro; Muto, Katsuya; Itoh, Katsumi; and Akita, Yoshio, 4,346,338, Cl. 322-28.000.
Itoh, Yutaka: *See*—
Takahashi, Akio; Itoh, Yutaka; Shimazaki, Takeshi; Wajima, Motoyo; Morishita, Hirosada; Mizuno, Yutaka; Yokozawa, Shunya; and Tsukanishi, Kenji, 4,346,206, Cl. 528-88.000.
ITT Industries, Inc.: *See*—
Blossfeld, Lothar, 4,346,313, Cl. 307-350.000.
Mutschler, Erich; and Weber, Adam, 4,346,274, Cl. 200-296.000.
Ivanenko, Oleg V.: *See*—
Polyakov, Nikolai F.; Ryabchenjuk, Leonid M.; Emelyanova, Nina A.; Sulim, Georgy T.; Kobzar, Vladimir A.; Peresunko, Stanislav R.; Sokolenko, Anatoly I.; and Ivanenko, Oleg V., 4,346,003, Cl. 210-225.000.
Iwaki, Katsutaro: *See*—
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Iwami, Tadakatsu. Secondary air feeder for an internal combustion engine. 4,345,574, Cl. 123-587.000.
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Iwasawa, Yoshiyuki: *See*—
Suzuki, Yoshinobu; Chiba, Kiyoshi; Tukuhiro, Tomoya; Iwasawa, Yoshiyuki; Kajioka, Yasuo; and Komine, Tomio, 4,345,431, Cl. 60-286.000.
J. M. Voith GmbH: *See*—
Kuhn, Friedrich, 4,345,722, Cl. 242-56.00R.
J. P. Stevens & Co., Inc.: *See*—
Chambers, George S., 4,345,694, Cl. 220-86.0AT.
Jackson, William A., to Jogler, Inc. Liquid sight monitor. 4,345,468, Cl. 73-326.000.
Jacobson, Chester F., to Gillette Company, The. Razor with means to adjust blade geometry. 4,345,374, Cl. 30-47.000.
Jadlocki, Joseph F., Jr.: *See*—
Thompson, John S.; and Jadlocki, Joseph F., Jr., 4,346,117, Cl. 426-264.000.
Jager, Joseph E. Stack starter. 4,345,865, Cl. 414-35.000.
"Jaguar" Stahlwaren Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft: *See*—
Pracht, Gunther, 4,345,378, Cl. 30-266.000.
Jahnke, Richard W., to Lubrizol Corporation, The. Phosphorus-containing compositions, lubricants containing them and metal workpieces coated with same. 4,346,148, Cl. 428-461.000.
Jahns, Edward R., to CBS Inc. Musical instrument performance amplifier. 4,345,502, Cl. 84-1.210.
James, Kristi L.; and Shields, A. L., to Motorola, Inc. Metal etch solution and method. 4,345,969, Cl. 156-659.100.
Janniello, Frank, to Clairol Incorporated. Detachable plug. 4,346,419, Cl. 361-2.000.
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Eguchi, Yasukata, 4,345,532, Cl. 112-158.00E.
Janssen, Alexander P. Visible indexes. 4,345,396, Cl. 40-490.000.
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Japan Natural Food Co. Ltd.: *See*—
Hagiwara, Yoshihide, 4,346,114, Cl. 426-18.000.
Jarman, Alonzo B.: *See*—
Zeuner, Kenneth W.; and Jarman, Alonzo B., 4,345,736, Cl. 251-30.000.
Jarund, Erik, to Tetra Pak International AB. Method for the manufacture of packages for drinking straws. 4,345,415, Cl. 53-450.000.
Jarvis, Roger P., to Automotive Products Limited. Friction clutch driven plates. 4,345,676, Cl. 192-107.00C.
Jelinek, Jan: *See*—
Zobac, Ladislav; Malek, Zdenek; Soukup, Frantisek; Ryska, Antonin; Jelinek, Jan; and Busta, Jiri, 4,345,598, Cl. 128-303.100.
Jetform Heisskanalnormalien und Zubehor GmbH, Firma: *See*—
Schulte, Wolfgang; and Castiglia, Giacinto, 4,345,892, Cl. 425-548.000.
JH Industries, Inc.: *See*—
Johnson, Dwight N., 4,345,619, Cl. 137-512.150.
Jogler, Inc.: *See*—
Jackson, William A., 4,345,468, Cl. 73-326.000.
John Fluke Mfg. Co., Inc.: *See*—
Chapel, Roy W., Jr.; and Gurol, I. Macit, 4,346,291, Cl. 250-211.00R.
Johnson, Bruce K., to Polaroid Corporation. Light detecting apparatus for photographic camera. 4,345,828, Cl. 354-27.000.
Johnson, Dwight N., to JH Industries, Inc. Backflow preventer. 4,345,619, Cl. 137-512.150.
Johnson, E. Marshall, to Thomas Jefferson University. Test for teratogenic potential employing hydra. 4,346,070, Cl. 424-9.000.
Johnson, Howard L., to Caterpillar Tractor Co. Control for load sharing pumps. 4,345,436, Cl. 60-421.000.
Johnson & Johnson Baby Product Company: *See*—
Tritsch, Ludwig, 4,345,597, Cl. 128-287.000.
Johnson, Russell L., to Honeywell Inc. Semiconduction stress sensing apparatus. 4,345,477, Cl. 73-766.000.
Johnson, Walter J., to Boeing Company, The. Digital-to-analog converter capable of processing a sign magnitude or ones complement binary coded input. 4,346,368, Cl. 340-347.0DA.
Johnston, Paul R., to Washington Rotating Control Heads, Inc. Drilling head assembly seal. 4,345,769, Cl. 277-31.000.
Jones, Cameron W.: *See*—
Alonso, Sydney A.; and Jones, Cameron W., 4,345,500, Cl. 84-1.010.
Jones, Jesse D.: *See*—
Hornbaker, Edwin D.; and Jones, Jesse D., 4,346,195, Cl. 525-176.000.
Jones & Laughlin Steel Incorporated: *See*—
Koros, Peter J., 4,345,940, Cl. 75-58.000.
Jones, Marlene J.: *See*—
Derr, Leighton K.; Hawkins, Lyle B.; and Jones, Marlene J., 4,346,229, Cl. 560-91.000.
Jonsson, Ann-Sofi, to Eur-Control Kalle AB. Method and apparatus for determining the lignin content in pulp. 4,345,913, Cl. 23-230.00R.
Jorgensen, Adam A. Ignition system with power boosting arrangement. 4,345,575, Cl. 123-598.000.
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Mohr, Sigo, Jr.; and Carter, Jerry L., 4,345,908, Cl. 8-111.000.
Ju, Kochan: *See*—
Hu, Hung L.; and Ju, Kochan, 4,346,457, Cl. 365-36.000.
Jufer, Marcel: *See*—
Tu Xuan, Mai; Jufer, Marcel; and Pittet, Andre, 4,346,463, Cl. 368-157.000.
Junker, Erwin. Lathe dog. 4,345,495, Cl. 82-41.000.
Kaan, Joseph P.: *See*—
Wojtecki, Rudolph G.; and Kaan, Joseph P., 4,346,277, Cl. 219-528.000.
Kabas, Guglielmo: *See*—
Burdeska, Kurt; and Kabas, Guglielmo, 4,346,016, Cl. 252-301.220.
Kabel und Metallwerke Gutehoffnungshutte AG: *See*—
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Kabushiki Kaisha Morita Seisakusho: *See*—
Suzuki, Masakazu; Furuichi, Shuhei; and Ikeda, Toshiaki, 4,346,297, Cl. 378-110.000.
Kabushiki Kaisha n a c: *See*—
Tamura, Shigeru, 4,346,403, Cl. 358-93.000.
Kabushiki Kaisha Ricoh: *See*—
Shinohara, Hiroichi, 4,345,823, Cl. 350-464.000.
Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Yoshitsugu, Noritada; Motonami, Masanao; and Katsuno, Mitsuaki, 4,345,782, Cl. 280-803.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Nakayama, Shozo; Hattori, Mitsuhiro; and Ono, Hiromitsu, 4,345,886, Cl. 418-100.000.
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Hasegawa, Junzo; Yamada, Masatoshi; Nakamura, Kaoru; and Yasuda, Eiichi, 4,345,771, Cl. 277-205.000.
Oshima, Yujiro; Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, 4,345,555, Cl. 123-272.000.
Kachelries, Robert W., to Du Pont de Nemours, E. I., and Company. Automatic reference background monitoring network for a film processor. 4,345,831, Cl. 354-298.000.
Kacin, Joseph J.: *See*—
Baumann, John S.; Knipp, Roger W.; and Kacin, Joseph J., 4,346,426, Cl. 361-151.000.
Kaiser Aluminum & Chemical Corporation: *See*—
Ridout, Robert A., 4,345,360, Cl. 29-159.010.
Kajioka, Yasuo: *See*—
Suzuki, Yoshinobu; Chiba, Kiyoshi; Tukuhiro, Tomoya; Iwasawa, Yoshiyuki; Kajioka, Yasuo; and Komine, Tomio, 4,345,431, Cl. 60-286.000.
Kajiura, Toshihiro; Masaki, Chiaki; and Mori, Masahiro, to Kanebo Limited. System for generating and modifying designs for automatic knitting machinery and the like. 4,346,366, Cl. 340-146.30R.
Kakuta, Atsushi; Suzuki, Shigeo; Mori, Yasuki; and Morishita, Hirosada, to Hitachi, Ltd. Complex type electrophotographic plate. 4,346,157, Cl. 430-58.000.
Kalasz, Huba: *See*—
Tyihak, Erno; Mincsovics, Emil; Dios, Sandor; Horvath, Gyula; Kalasz, Huba; Nagy, Janos; Kormendi, Ferenc; Kozma, Laszlo; Borsos, Janos; and Kiss, Janos, 4,346,001, Cl. 210-198.300.

Kalchev, Dimitar: *See*—
Longiny, Michael A.; Kalchev, Dimitar; and Zinn, Thomas K., 4,345,884, Cl. 417-359.000.
Kalif, Eitan. High-lift attachment for an agricultural tractor provided with a three-point linkage. 4,345,871, Cl. 414-703.000.
Kallet, Eli A., to Farrand Optical Co., Inc. Enhanced fluorescent emission. 4,345,837, Cl. 356-317.000.
Kamata, Shohichi; Kimura, Yoshinori; and Hirai, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Diode faults detecting apparatus. 4,346,347, Cl. 324-158.00D.
Kamata, Yuzuru: *See*—
Endo, Fumihiro; Ishikawa, Toshio; Ozawa, Jun; Kamata, Yuzuru; and Shiono, Shigeo, 4,345,471, Cl. 374-188.000.
Kanamori, Terutoshi; and Manabe, Toyotaka, to Nippon Telegraph & Telephone Public Corp. Glass for optical fiber. 4,346,176, Cl. 501-37.000.
Kanchev, Peter K., to Bulgarsko Radio. Compensator for horizontal angular error of a record-player arm. 4,346,466, Cl. 369-250.000.
Kanebo Limited: *See*—
Kajiura, Toshihiro; Masaki, Chiaki; and Mori, Masahiro, 4,346,366, Cl. 340-146.30R.
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,346,146, Cl. 428-398.000.
Kanebo Synthetic Fibers, Ltd.: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,346,146, Cl. 428-398.000.
Kaneko, Nobuo; and Yamamoto, Masaru, to Mitsui Mining & Smelting Co., Ltd. Aluminum-based die casting alloys. 4,345,953, Cl. 148-32.000.
Kaneko, Takashi; and Iwasaka, Tatsuo, to Hitachi, Ltd. Elevator control system. 4,345,670, Cl. 187-29.00R.
Kanengieter, Glenn G.: *See*—
Schwalenberg, Terry R.; Krumholz, Frank C.; Kanengieter, Glenn G.; and Henkensiefken, Larry L., 4,345,421, Cl. 56-341.000.
Kantor, Philip A. Head and neck support cushions. 4,345,347, Cl. 5-441.000.
Kao Soap Co., Ltd.: *See*—
Kazama, Yoshiteru; Kokubo, Isao; Tsuji, Akitoshi; and Tanino, Yukio, 4,345,944, Cl. 106-90.000.
Kapura, Edward M., to PPG Industries, Inc. Method of and apparatus for vertically positioning devices in glass forming chamber. 4,345,929, Cl. 65-99.500.
Karlberg, Niels G.; and Pedersen, Poul H. H., to Danfoss A/S. Hydraulic steering and operating device. 4,345,614, Cl. 137-340.000.
Karlin, Richard A.: *See*—
Barlow, Gordon A.; Krutsch, John R.; and Karlin, Richard A., 4,345,764, Cl. 273-313.000.
Karmin, Irving. Tape cassette. 4,345,540, Cl. 116-278.000.
Kasai, Kiyoshi; Kubota, Yoshitaka; and Tsukidate, Takaaki, to Toyo Soda Manufacturing Co., Ltd. Process for preparing high-purity α-type silicon nitride. 4,346,068, Cl. 423-344.000.
Kasai, Masaji: *See*—
Tomita, Fusao; Tamaoki, Tatsuya; Nakamura, Nobuo; Okubo, Shuji; Shirahata, Kunikatsu; Kasai, Masaji; and Oka, Tetsuo, 4,346,075, Cl. 424-120.000.
Kasielke, Joachim: *See*—
Paletta, Benno; Moller, Reinhard; and Kasielke, Joachim, 4,345,483, Cl. 73-864.160.
Kasting, Edward W.; Glasson, Richard E.; and Swank, Bryan W., to Cummins Engine Company, Inc. Rocker housing and rocker cover. 4,345,552, Cl. 123-90.380.
Katayama, Aisuke. Dual moduli exponent transform type high speed multiplication system. 4,346,451, Cl. 364-746.000.
Katner, Allen S., to Eli Lilly and Company. Bis-tetrazoylmethyl substituted cephalosporin antibiotics. 4,346,076, Cl. 424-246.000.
Kato, Hisatoyo; and Ishida, Masamitsu, to Fuji Photo Film Co., Ltd. Gradation processing method for a radiation image recording system. 4,346,406, Cl. 358-110.000.
Kato, Hisatoyo: *See*—
Ishida, Masamitsu; Kato, Hisatoyo; and Matsumoto, Seiji, 4,346,409, Cl. 358-280.000.
Tanaka, Kazuyoshi; Kato, Hisatoyo; and Matsumoto, Seiji, 4,346,295, Cl. 250-327.200.
Kato, Toshikazu, to Olympus Optical Co., Ltd. Braking mechanism of a tape recorder. 4,345,725, Cl. 242-204.000.
Katsono, Mitsuaki: *See*—
Moriya, Shigeru; Ogawa, Hisashi; and Katsono, Mitsuaki. 4,345,780, Cl. 280-802.000.
Katsuno, Mitsuaki: *See*—
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Katz, Harry S.; and Schneider, Sidney. Denture means and method. 4,345,900, Cl. 433-171.000.
Katzman, Allison W.; Holahan, Edward T.; Zaruba, John V.; and Morrison, Howard J., to Marvin Glass & Associates. Plush bank. 4,345,400, Cl. 46-4.000.
Kaufmann, Helmut, to Balzers Aktiengesellschaft. Method of depositing hard wear-resistant coatings on substrates. 4,346,123, Cl. 427-38.000.
Kaufmann, Rainer, to Aristo Graphic Systeme GmbH & Co. Method and apparatus to control a drawing machine attached to a computer by means of a digitizing device. 4,346,260, Cl. 178-18.000.
Kawachi, Masao; Tomaru, Satoru; Edahiro, Takao; and Suto, Shoichi, to Nippon Telegraph & Telephone Public Corporation. Fabrication method of single-mode optical fiber preforms. 4,345,928, Cl. 65-18.200.
Kawai, Hisasi; Sakurai, Kazuhiro; and Matsumoto, Muneaki, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Linear solenoid valve actuation device. 4,345,737, Cl. 251-129.000.
Kawamura, Masanori: *See*—
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Kawamura, Yoshihisa; Matsuto, Kesao; and Saito, Masaaki, to Nissan Motor Company, Limited. Fuel injection valve drive system. 4,345,564, Cl. 123-490.000.
Kawazoe, Soichi: *See*—
Suzuki, Nagatoshi; Araki, Sadaakira; and Kawazoe, Soichi, 4,345,572, Cl. 123-568.000.
Kay, David B.: *See*—
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Kay, Franklin J. Material transfer apparatus. 4,345,680, Cl. 198-304.000.
Kay Plastic Products, Inc.: *See*—
Di Cicco, Angelo S.; and Quave, Walter N., 4,345,615, Cl. 137-343.000.
Kazama, Yoshiteru; Kokubo, Isao; Tsuji, Akitoshi; and Tanino, Yukio, to Kao Soap Co., Ltd. Cement additive. 4,345,944, Cl. 106-90.000.
Kempf, Bertrand. Convertible table, especially for games. 4,345,758, Cl. 273-30.000.
Kennecott Corporation: *See*—
Coppola, John A.; Hailey, Laurence N.; and McMurtry, Carl H., 4,346,049, Cl. 264-65.000.
Kennedy, Jerome J.: *See*—
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Kerey, Gyorgy: *See*—
Takacs, Istvan; Vereczkey, Endre; Bosits, Gyula; and Kerey, Gyorgy, 4,345,720, Cl. 241-74.000.
Keung, Poon C.; and Fu, Yiu. Double lock. 4,345,447, Cl. 70-38.00A.
Kibun Co., Ltd.: *See*—
Yamashita, Shunroku, 4,345,443, Cl. 62-380.000.
Kimura Bed Mfg. Company Limited: *See*—
Saito, Shuichi, 4,345,341, Cl. 4-301.000.
Saito, Shuiichi, 4,345,342, Cl. 4-301.000.
Kimura, Hiroshi; Hisajima, Masahiko; and Shigemura, Yutaka, to Mita Industrial Company Limited. Transfer type electrostatic copying apparatus. 4,345,834, Cl. 355-3.00R.
Kimura, Shinji: *See*—
Tohda, Masayuki; Takao, Hiroshi; and Kimura, Shinji, 4,345,985, Cl. 204-192.0EC.
Kimura, Yoshinori: *See*—
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King, Francis D.: *See*—
Hadley, Michael S.; King, Francis D.; and Martin, Roger T., 4,346,089, Cl. 424-248.520.
King, John L. Conveyor system for loading and unloading trucks and trailers. 4,345,869, Cl. 414-520.000.
King, Kenneth G.: *See*—
Garrett, John M.; and King, Kenneth G., 4,346,309, Cl. 307-252.00M.
Kinoshita, Ryoichi; and Orihara, Shobu, to Fujitsu Limited. Magnetic bubble device. 4,346,456, Cl. 365-36.000.
Kinsbron, Eliezer; and Vratny, Frederick, to Bell Telephone Laboratories, Incorporated. Removing hardened organic materials during fabrication of integrated circuits using anhydrous hydrazine solvent. 4,346,125, Cl. 427-96.000.
Kirkpatrick, Robert G.; and Snyder, Ronald R., to General Electric Company. Gun mount. 4,345,504, Cl. 89-37.0GM.
Kishimoto, Masaru: *See*—
Hara, Yoshihumi; Kubota, Saburo; Ihara, Akira; Kishimoto, Masaru; and Suzuki, Masaki, 4,345,472, Cl. 73-462.000.
Kiss, Janos: *See*—
Tyihak, Erno; Mincsovics, Emil; Dios, Sandor; Horvath, Gyula; Kalasz, Huba; Nagy, Janos; Kormendi, Ferenc; Kozma, Laszlo; Borsos, Janos; and Kiss, Janos, 4,346,001, Cl. 210-198.300.
Kissei Pharmaceutical Co., Ltd.: *See*—
Tanouchi, Tadao; Kawamura, Masanori; Okada, Takanori; and Hayashi, Masaki, 4,346,099, Cl. 424-273.00R.
Kitsukawa, Kazumi: *See*—
Leistner, William E.; Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,346,025, Cl. 524-141.000.
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Cyclohexyl phenethylether used for combatting tobacco beetles. 4,346,080, Cl. 424-84.000.
Kiyohara, Takao: *See*—
Sanjiki, Tetsutaro; Seta, Akinori; and Kiyohara, Takao, 4,346,096, Cl. 424-273.00R.
Kiyono, Yasuhiro: *See*—
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Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., to International Flavors & Fragrances Inc. Methyl substituted norbornane carboxaldehyde dimethyl acetals. 4,346,243, Cl. 568-591.000.
Klingel, Hans: *See*—
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Kloppner, Hans-Jurgen: *See—*
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Klose, Peter H.: *See—*
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Knipp, Roger W.: *See—*
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Knobel, Kenneth M.: *See—*
Balzer, Winton E.; and Knobel, Kenneth M., 4,345,412, Cl. 53-297.000.

Knox, Jack R., to Standard Oil Company (Indiana). Process for homogeneous curly synthetic polymer fibers. 4,346,052, Cl. 264-176.00F.

Knox, Phillip J.: *See—*
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Kobayashi, Akio: *See—*
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Kobayashi, Tetsuo: *See—*
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Kobe, Inc.: *See—*
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Kobylinski, Thaddeus P.: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,346,020, Cl. 252-429.00R.

Kobzar, Vladimir A.: *See—*
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Koch, Klaus, to Hermann Berstorff Maschinenbau GmbH. Method for sealing the drive-side portion of a preparation and hydrogenation chamber for hydrogenating coal with hydrogen to form hydrocarbons. 4,345,988, Cl. 208-8.00R.

Kodama, Toshikazu: *See—*
Sato, Kouji; Takahashi, Sadao; and Kodama, Toshikazu, 4,346,322, Cl. 310-313.00B.

KOH-I-NOOR Rapidograph: *See—*
Leuenberger, Jean P.; Logan, David J.; and Scorso, Clifford A., Jr., 4,346,445, Cl. 364-520.000.

Kohl, Helmut, to Behringwerke Aktiengesellschaft. Diagnostic agent for the detection of bilirubin in body fluids and reagent suitable therefor. 4,345,911, Cl. 23-230.00B.

Kohn, Dieter: *See—*
Krull, Walther; Kohn, Dieter; and Schiller, Wolf-Dieter, 4,345,623, Cl. 137-637.200.

Koizumi, Shoji: *See—*
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Kojima, Yasuhumi, to Nippondenso Co., Ltd. Control method and apparatus for air conditioners. 4,345,714, Cl. 236-46.00R.

Kokubo, Isao: *See—*
Kazama, Yoshiteru; Kokubo, Isao; Tsuji, Akitoshi; and Tanino, Yukio, 4,345,944, Cl. 106-90.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
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Koller, Manfred: *See—*
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Kolomayets, George: *See—*
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Komatsu, Makoto; Tanaka, Toru; and Fujita, Hideaki, to Mitsubishi Gas Chemical Company, Inc. Process for producing aromatic polycarboxylic acid. 4,346,232, Cl. 562-416.000.

Komeno, Taichiro: *See—*
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,346,218, Cl. 544-16.000.

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Kommanditbolaget United Stirling AB & CO: *See—*
Bratt, Jan C., 4,345,645, Cl. 165-176.000.

Kondo, Toshio; Sagisaka, Yasuo; Tajima, Masahiko; and Kobayashi, Akio, to Nippondenso Co., Ltd. Air-fuel ratio control method and its apparatus. 4,345,561, Cl. 123-440.000.

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Oshima, Yujiro; Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, 4,345,555, Cl. 123-272.000.

Koni, Tuyoshi; Urushida, Yoshihisa; and Tsuzuki, Akira, to Citizen Watch Company Limited. Anesthetic gas control apparatus. 4,345,612, Cl. 137-101.190.

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Aratame, Kazuhisa, 4,345,830, Cl. 354-173.000.

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Goto, Fumio; Yoshino, Kenji; Kono, Hiroshi; and Naito, Mitsuaki, 4,345,852, Cl. 404-114.000.

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Lezgintsev, Georgy M.; Garbuz, Evgeny I.; Kontar, Evgeny A.; Glukhikh, Rudolf G.; Murdmaa, Ivar O.; Soluyanov, Vadim G.; Belyavsky, Alexandr S.; and Kuznetsov, Alexei N., 4,345,461, Cl. 73-170.00A.

Kopp, Clinton V.; and Shah, Dilip, to Baxter Travenol Laboratories, Inc. Diffusion membrane units with adhered semipermeable capillaries. 4,346,006, Cl. 210-321.400.

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Koros, Peter J., to Jones & Laughlin Steel Incorporated. Desulfurizing process. 4,345,940, Cl. 75-58.000.

Kosaka, Jiro, to Meiko Industry Corporation, Limited. Water tank assembly for a pressure resistance measuring apparatus for testing containers. 4,345,458, Cl. 73-37.500.

Kosky, Philip G.: *See—*
Vakil, Himanshu B.; and Kosky, Philip G., 4,345,915, Cl. 48-197.00R.

Kovach, John J. Educational marble game. 4,345,760, Cl. 273-118.00R.

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Yamatsu, Isao; Inai, Yuichi; Abe, Shinya; Suzuki, Takeshi; Suzuki, Yoshikazu; Tagaya, Osamu; and Koyanagi, Nozomu, 4,346,109, Cl. 424-318.000.

Kozma, Laszlo: *See—*
Tyihak, Erno; Mincsovics, Emil; Dios, Sandor; Horvath, Gyula; Kalasz, Huba; Nagy, Janos; Kormendi, Ferenc; Kozma, Laszlo; Borsos, Janos; and Kiss, Janos, 4,346,001, Cl. 210-198.300.

Krabbenhoft, Herman O., to General Electric Company. Preparation of para-isopropenylphenol. 4,346,249, Cl. 568-782.000.

Kramer, Charles J.; Kay, David B.; and Snelling, Christopher, to Xerox Corporation. Multiple function reproduction apparatus. 4,345,835, Cl. 355-3.00R.

Kramer, Petrus A., to Shell Oil Company. Oxabicyclo[3.1.0]hexan-2-ones. 4,346,038, Cl. 549-302.000.

Kraus, George A., to Iowa State University Research Foundation, Inc. Synthesis of ochratoxins. 4,346,039, Cl. 549-289.000.

Krauss, Clifford J.: *See—*
Chow, Richard T.; Krauss, Clifford J.; and Ybema, Douwe, 4,345,980, Cl. 204-119.000.

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Bickel, Wolf, 4,345,475, Cl. 73-657.000.

Krebs, Clifton T.; and Krebs, Leonard B. Throat protector. 4,345,548, Cl. 119-108.000.

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Krebs, Clifton T.; and Krebs, Leonard B., 4,345,548, Cl. 119-108.000.

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Sigdell, Jan-Erik; and Krick, Gerd, 4,345,999, Cl. 210-188.000.

Krings, Josef. Construction plate for a ditch construction device. 4,345,857, Cl. 405-282.000.

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Krook, Hans J.: *See—*
Berglund, Erling G.; and Krook, Hans J., 4,345,843, Cl. 366-219.000.

Krull, Walther; Kohn, Dieter; and Schiller, Wolf-Dieter, to Beth GmbH. Multiport disk valve, especially for dust-remover duct systems. 4,345,623, Cl. 137-637.200.

Krumholz, Frank C.: *See—*
Schwalenberg, Terry R.; Krumholz, Frank C.; Kanengieter, Glenn G.; and Henkensiefken, Larry L., 4,345,421, Cl. 56-341.000.

Krushko: *See—*
Cash, Jon B.; and Ludwig, Paul K., 4,345,518, Cl. 100-98.00R.

Krutak, James J.; Maleski, Robert J.; and Moore, William H., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible 6-(2-thienylazo)-3-pyridinol cyan dye-releasing compounds and precursors thereof. 4,346,161, Cl. 430-223.000.

Krutsch, John R.: *See—*
Barlow, Gordon A.; Krutsch, John R.; and Karlin, Richard A., 4,345,764, Cl. 273-313.000.

Kubo, Takahiro: *See—*
Hirasawa, Kazuo; and Kubo, Takahiro, 4,346,471, Cl. 369-44.000.

Kubota Ltd.: *See—*
Hiraishi, Hisashi; Morichika, Toshiaki; and Murakami, Shinichi, 4,345,941, Cl. 75-122.000.

Kubota, Saburo: *See—*
Hara, Yoshihumi; Kubota, Saburo; Ihara, Akira; Kishimoto, Masaru; and Suzuki, Masaki, 4,345,472, Cl. 73-462.000.

Kubota, Yoshitaka: *See—*
Kasai, Kiyoshi; Kubota, Yoshitaka; and Tsukidate, Takaaki, 4,346,068, Cl. 423-344.000.

Kuchenmeister, Rolf: *See—*
Dhein, Rolf; Schoeps, Jochen; and Kuchenmeister, Rolf, 4,346,044, Cl. 260-404.800.

Kudo, Hiroaki: *See*—
Yoshimura, Hidenaga; Yamada, Kunio; Yamada, Hironori; Yamada, Ryusaku; and Kudo, Hiroaki, 4,345,602, Cl. 128-349.00R.

Kuhn, Friedrich, to J. M. Voith GmbH. Double-drum winder. 4,345,722, Cl. 242-56.00R.

Kuniaki Yamazaki: *See*—
Nakajima, Kikuo, 4,345,590, Cl. 128-166.000.

Kunitake, Yoshikuni, to Mitsui Engineering and Shipbuilding Co. Ltd. Semi-submerged ship. 4,345,533, Cl. 114-61.000.

Kunze, Dieter, to Siemens Aktiengesellschaft. Cable sleeve sealed at each end by end members. 4,346,258, Cl. 174-93.000.

Kuroda, Minoru, to Nishigawa Shoji Co. Ltd.; and Dimension Weld International Corp. Method of making an applique article. 4,345,958, Cl. 156-221.000.

Kuroki, Hironori: *See*—
Kuroki, Takanori; and Kuroki, Hironori, 4,345,457, Cl. 73-37.500.

Kuroki Kogyosho Co,, Ltd.: *See*—
Kuroki, Takanori; and Kuroki, Hironori, 4,345,457, Cl. 73-37.500.

Kuroki, Takanori; and Kuroki, Hironori, to Kuroki Kogyosho Co., Ltd. Method for detecting the depth of cracks in rolls used for transferring hot steel ingot bloom and rolls used therefor. 4,345,457, Cl. 73-37.500.

Kussy, Frank W.; Heberlein, Gustave E., Jr.; and DiMarco, Bernard, to Gould Inc. Current-limiting circuit breaker adapter. 4,346,357, Cl. 335-16.000.

Kutowy, Oleh; Thayer, William L.; and Sourirajan, Srinivasa, to Canadian Patents & Development Ltd. Method of casting a reverse osmosis or ultrafiltration polymeric membrane. 4,346,126, Cl. 427-209.000.

Kuttner, Thomas; and Wessel, Wolf, to Robert Bosch GmbH. Apparatus for damping bounce oscillations in an internal combustion engine. 4,345,559, Cl. 123-435.000.

Kuus, Felix, to BJ-Hughes, Inc. Inflatable packer system. 4,345,648, Cl. 166-106.000.

Kuznetsov, Alexei N.: *See*—
Lezgintsev, Georgy M.; Garbuz, Evgeny I.; Kontar, Evgeny A.; Glukhikh, Rudolf G.; Murdmaa, Ivar O.; Soluyanov, Vadim G.; Belyavsky, Alexandr S.; and Kuznetsov, Alexei N., 4,345,461, Cl. 73-170.00A.

Kyburz, Emilio: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,030, Cl. 260-239.30T.
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Kyowa Hakko Kogyo Co., Ltd.: *See*—
Tomita, Fusao; Tamaoki, Tatsuya; Nakamura, Nobuo; Okubo, Shuji; Shirahata, Kunikatsu; Kasai, Masaji; and Oka, Tetsuo, 4,346,075, Cl. 424-120.000.

Kyu, Shikun; and Hepworth, Edward C., to Motorola, Inc. Advanced data link controller. 4,346,440, Cl. 364-200.000.

"L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques": *See*—
Chabrolle, Jacques, 4,345,820, Cl. 350-362.000.

Labbe, Donald E.; and Dutremble, Joseph E., to General Electric Company. Deaerator level control. 4,345,438, Cl. 60-657.000.

Labor Muszeripari Muvek: *See*—
Tyihak, Erno; Mincsovics, Emil; Dios, Sandor; Horvath, Gyula; Kalasz, Huba; Nagy, Janos; Kormendi, Ferenc; Kozma, Laszlo; Borsos, Janos; and Kiss, Janos, 4,346,001, Cl. 210-198.300.

Lacaze, Leonard, Jr., to International Telephone and Telegraph Corporation. Method of manufacture of low-cost, high quality low insertion force electrical connector socket. 4,345,373, Cl. 29-874.000.

Lacour, Alain P.: *See*—
Langlois, Michel; Lacour, Alain P.; Bucher, Bernard P.; and Mocquet, Gisele C., 4,346,102, Cl. 424-279.000.

Ladisch, Michael R.; and Tsao, George T., to Purdue Research Foundation. Vapor phase dehydration of aqueous alcohol mixtures. 4,345,973, Cl. 203-19.000.

Lai, Stephen, to Zenith Radio Corporation. Automatic clock phase selector. 4,346,398, Cl. 358-20.000.

Laimer, Friedrich, to Voest-Alpine Aktiengesellschaft. Filling stand for pouring molten metal from a tiltable metallurgical vessel into a metallurgical ladle. 4,345,747, Cl. 266-240.000.

Landwide Foods, Inc.: *See*—
Morley, Robert G.; and Ashton, W. Ronald, 4,346,120, Cl. 426-565.000.

Lane, Richard J., to Ti Creda Manufacturing Limited. Heat storage units. 4,345,639, Cl. 165-10.000.

Lang, Hans-Jochen; Seuring, Bernhard; and Granzer, Ernold, to Hoechst Aktiengesellschaft. Thiazoline derivatives. 4,346,088, Cl. 424-248.510.

Langlois, Michel; Lacour, Alain P.; Bucher, Bernard P.; and Mocquet, Gisele C., to Delalande S.A. 3H-Dihydrofuranone-2 derivatives and pharmaceutical use thereof. 4,346,102, Cl. 424-279.000.

Langowski, Faustyn C.: *See*—
Smith, Roger, Jr.; and Langowski, Faustyn C., 4,345,864, Cl. 414-22.000.

Lanneau, Jacques; and Delcoigne, Adrien, to Isover Saint-Gobain. Device for the pouring of plaster. 4,345,887, Cl. 425-115.000.

Lanoue, Thomas J., to Westinghouse Electric Corp. Flexible bushing connector. 4,345,804, Cl. 339-9.00E.

Lantec Industries Ltd.: *See*—
Morfitt, John B., 4,345,742, Cl. 254-291.000.

Laser, Otto. Fin propulsion boat. 4,345,903, Cl. 440-14.000.

Laurel Bank Machine Co., Ltd.: *See*—
Miyagawa, Tuyoshi; and Manabe, Hitoshi, 4,346,289, Cl. 235-98.00R.

Laurenson, Stephen R.: *See*—
Insam, Howard F.; and Laurenson, Stephen R., 4,346,448, Cl. 364-607.000.

Laurent, Jacques J., to Morgan Adhesives Company. Agent for forming cleaner cutting pressure sensitive adhesives. 4,346,189, Cl. 524-267.000.

Laurier Associates, Inc.: *See*—
Wood, Laurier A.; and Humphries, Donald N., 4,346,124, Cl. 427-82.000.

Lavender, Michael R.: *See*—
Frieder, Leonard P., Jr.; and Lavender, Michael R., 4,345,338, Cl. 2-414.000.

Lazear, Nelson R., to Celanese Corporation. Hydrophilic monomer treated microporous films and process. 4,346,142, Cl. 428-315.700.

Lebelson, Yaacov. Assembly toy. 4,345,762, Cl. 273-157.00R.

Le Bigot, Yves: *See*—
Delmas, Michel; Gaset, Antoine; and Le Bigot, Yves, 4,346,040, Cl. 549-505.000.

Ledis, Stephen L.: *See*—
Carter, James H.; Ledis, Stephen L.; and Crews, Harold R., 4,346,018, Cl. 252-408.000.

Lednicer, Daniel, to Upjohn Company, The. Benzamide derivative analgesics. 4,346,101, Cl. 424-278.000.

Lee, Chunghsin; and Oettinger, Peter E., to Thermo Electron Corporation. Laser generated high electron density source. 4,346,330, Cl. 315-150.000.

Lee, Fui-Tseng H., to FMC Corporation. Method of oxidizing tertiary-alkyl phosphines. 4,346,236, Cl. 568-15.000.

Lee, Raymond: *See*—
Gagliani, John; and Lee, Raymond, 4,346,182, Cl. 521-189.000.

LeFever, Randall H.; and Brower, Boyd G., to GTE Products Corporation. Photoflash device having die-stamped circuit board assembly with flexure means to prevent switch cutting. 4,345,895, Cl. 431-359.000.

Lefferts, Johannes, to SITEG Siebtechnik GmbH. Sieve belt of thermosettable synthetic resin helices for papermaking machine. 4,346,138, Cl. 428-222.000.

Leibinger, Berthold; and Klingel, Hans, to Trumpf GmbH & Co. Working machine with flame cutter and cooling unit. 4,345,744, Cl. 266-49.000.

Leighton, Milton D.; and Ryan, Douglas G., to Exxon Research & Engineering Co. Rotary drum filter. 4,346,008, Cl. 210-395.000.

Leinweber, Walter, to TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH. Circuit for converting binary digital signals into pseudoternary A.C. pulses. 4,346,367, Cl. 340-347.0DD.

Leistner, William E.; Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, to Adeka Argus Chemical Co., Ltd. Stabilized vinyl chloride polymer comprising a phenylethylidene aryl phosphite. 4,346,025, Cl. 524-141.000.

Leleu, Jean-Bernard: *See*—
Verwaerde, Francoise; Leleu, Jean-Bernard; and Huchette, Michel, 4,346,116, Cl. 426-48.000.

Lemler, Anton J. Wood turning tool. 4,345,631, Cl. 145-24.000.

LeNir, Victor L.: *See*—
Cowley, William E.; Shannon, Michael A.; and LeNir, Victor L., 4,345,962, Cl. 156-356.000.

Leon, Albert M., to Dorr-Oliver Incorporated. Decontamination of combustion gases in fluidized bed incinerators. 4,346,064, Cl. 423-244.000.

Leonard, Joseph W., III; and Leonard, Joseph W., IV. Method for monitoring the efficiency of raw material beneficiation apparatus. 4,345,994, Cl. 209-1.000.

Leonard, Joseph W., IV: *See*—
Leonard, Joseph W., III; and Leonard, Joseph W., IV, 4,345,994, Cl. 209-1.000.

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Sugier, Andre; Freund, Edouard; and Le Page, Jean-Francois, 4,346,179, Cl. 518-707.000.

Lermann, Peter: *See*—
Steiame, Otto; Lermann, Peter; and Cocron, Istvan, 4,345,827, Cl. 354-25.000.

Lesaffre et Cie: *See*—
Clement, Philippe; and Rossi, Jean-Paul, 4,346,115, Cl. 426-25.000.

Leschinsky, Leonid K.: *See*—
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Ksenofont K.; and Rudnev, Anatoly E., 4,346,280, Cl. 219-76.100.

Lesher, George Y.; Dickinson, William B.; and Singh, Baldev, to Sterling Drug Inc. Preparation of 4-amino-6-(pyridinyl)-3(2H)-pyridazinones from 6-(pyridinyl)-3(2H)-pyridazinones. 4,346,221, Cl. 544-238.000.

Lesser, N. Lewis. Apparatus for obtaining samples at various levels from within a multi-liquid container primarily for determining the level of the liquid interface and related method. 4,345,466, Cl. 73-298.000.

Lessmann, Gerald G.; Simpson, Ronald P.; and O'Brokta, Ronald D., to Westinghouse Electric Corp. Narrow gap welding torch with replacement tip. 4,346,279, Cl. 219-75.000.

Leuchs, Ottmar; Kloppner, Hans-Jurgen; and Uhlmann, Otto, to Kabel und Metallwerke Gutehoffnungshutte AG. Method of continuously making flexible, heat insulated metal tubing. 4,345,363, Cl. 29-527.400.

Leuenberger, Jean P.; Logan, David J.; and Scorso, Clifford A., Jr., to KOH-I-NOOR Rapidograph. Portable alphanumeric and symbol drafting device. 4,346,445, Cl. 364-520.000.

Leupers, Wolfgang, to Palitex Project Company GmbH. Yarn reserve disc for a spindle assembly of a two-for-one twister textile yarn processing machine. 4,345,423, Cl. 57-58.840.

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Collen, Desire J., 4,346,029, Cl. 260-112.00B.

Levin, Burton L.: *See*—
Potash, Hanan; Levin, Burton L.; and Chan, Stephen J. C., 4,346,438, Cl. 364-200.000.

Levins, Donald A.; Bedford, Clifford D.; and Coon, Clifford L., to SRI International. 1,3,5,5-Tetranitrohexahydropyrimidine (DNNC). 4,346,222, Cl. 544-322.000.

Lewandowski, Walter S., to Sperry Corporation. Apparatus for automatic regulation of AC power. 4,346,339, Cl. 323-245.000.

Lewis, Basil C., Jr.: *See*—
Carroll, Arthur E., II; Lewis, Basil C., Jr.; and Yeazel, Howard T., 4,346,396, Cl. 357-70.000.

Lezgintsev, Georgy M.; Garbuz, Evgeny I.; Kontar, Evgeny A.; Glukhikh, Rudolf G.; Murdmaa, Ivar O.; Soluyanov, Vadim G.; Belyavsky, Alexandr S.; and Kuznetsov, Alexei N. Apparatus for taking bedrock samples from bottom of deep-water basins. 4,345,461, Cl. 73-170.00A.

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Scholz, Werner, 4,346,353, Cl. 332-9.00R.
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Lindell, Willard G., to Anaconda Company, The. Lightweight reel. 4,345,724, Cl. 242-115.000.

Lindenmayer, Bernhard; and Fink, Lothar, to Kloeckner-Werke AG. Method and apparatus for making two component mouldings. 4,345,965, Cl. 156-500.000.

Lindman, William E.; and Alexander, John A., to Precipitator Corporation. Conic reaction chamber for water decontamination. 4,345,996, Cl. 210-96.100.

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Soula, Gerard; and Linguenheld, Louis, 4,346,244, Cl. 568-656.000.

Littleford, Philip O. Split sleeve introducers for pacemaker electrodes and the like. 4,345,606, Cl. 128-784.000.

Litton Business Systems, Inc.: *See*—
Del Tufo, Mark J., 4,346,360, Cl. 335-205.000.

Litton Systems, Inc.: *See*—
Loomer, Weston R., 4,345,524, Cl. 105-404.000.

Livet, Jean-Luc; and Bretaudeau, Maurice, to Societe Nationale Industrielle et Aerospatiale. Temporary locking device for inertia wheel. 4,345,485, Cl. 74-5.100.

Lobach, Ernst W.: *See*—
Tabarelli, Werner; and Lobach, Ernst W., 4,346,164, Cl. 430-311.000.

Loch, David M., to Boeing Company, The. Tank process for plating aluminum substrates including porous aluminum castings. 4,346,128, Cl. 427-328.000.

LOF Plastics Inc.: *See*—
Sterett, Robert A., 4,345,510, Cl. 98-40.0VM.

Lofgren, Lars; and Ostlund, Artur, to Stal-Laval Apparat AB. Fluidizable bed apparatus. 4,346,054, Cl. 422-49.000.

Logan, David J.: *See*—
Leuenberger, Jean P.; Logan, David J.; and Scorso, Clifford A., Jr., 4,346,445, Cl. 364-520.000.

Loge, Olaf: *See*—
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Schillinger, Eckehard, 4,346,228, Cl. 560-53.000.

Longiny, Michael A.; Kalchev, Dimitar; and Zinn, Thomas K., to Peerless Pump Division, Indian Head Inc. Pump drive. 4,345,884, Cl. 417-359.000.

Longo, John M.: *See*—
Cahn, Robert P.; and Longo, John M., 4,346,063, Cl. 423-230.000.

Loomer, Weston R., to Litton Systems, Inc. Load carrying vehicle and track therefor. 4,345,524, Cl. 105-404.000.

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Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, 4,345,746, Cl. 266-90.000.

Losey, Vernon L.: *See*—
Anderson, Carl M.; and Losey, Vernon L., 4,345,870, Cl. 414-686.000.

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Faler, Gary R.; and Loucks, George R., 4,346,247, Cl. 568-728.000.

Loveland, Robert S., to Perkin-Elmer Corporation, The. Flowmeter system with synchronous clock for generation of timing signals. 4,345,479, Cl. 73-861.280.

Lo Voi, Raymond J. Anchored massage and exercising bar. 4,345,757, Cl. 272-127.000.

Lubrizol Corporation, The: *See*—
Jahnke, Richard W., 4,346,148, Cl. 428-461.000.

Lucas Industries Limited: *See*—
Balachandran, Chandrasegaram, 4,345,567, Cl. 123-510.000.
Bottoms, Harry S., 4,345,565, Cl. 123-497.000.
Hammock, Michael T., 4,345,566, Cl. 123-502.000.

Ludwig, Paul K.: *See*—
Cash, Jon B.; and Ludwig, Paul K., 4,345,518, Cl. 100-98.00R.

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Riegel, Herbert, 4,346,047, Cl. 260-544.00K.
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Lunt, James W., to Paul Masson, Inc. Sulfur dioxide addition for must. 4,345,511, Cl. 99-276.000.

Lupinski, John H., to General Electric Company. Bondable magnet wire comprising polyamide-imide coating containing residual solvent. 4,346,136, Cl. 428-213.000.

Luteri, George F., to Velsicol Chemical Corporation. Sucrose ester of 2-methoxy-3,6-dichlorobenzoic acid. 4,345,933, Cl. 71-88.000.

Lynch, Delmar J.: *See*—
Lynch, Michael D., 4,345,547, Cl. 119-20.000.

Lynch, John P.: *See*—
Lynch, Michael D., 4,345,547, Cl. 119-20.000.

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Maatta, Osten: *See*—
Gustavsson, Lennart; and Maatta, Osten, 4,345,921, Cl. 55-223.000.

Macchi, Romualdo. Tensioning system for cables in prestressed concrete. 4,345,740, Cl. 254-29.00A.

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Goetz, Alexander F. H.; and Machida, Richard A., 4,345,840, Cl. 356-407.000.

Mack, Heinz. Face bow. 4,345,898, Cl. 433-73.000.

Mack Trucks: *See*—
Alexander, Willis R.; and Shaltis, Robert J., 4,346,009, Cl. 210-512.100.

Macy, Edward K., to Phillips Petroleum Company. Keyboard encoder-decoder. 4,346,369, Cl. 340-365.00S.

Madson, Lyle R., to Deere & Company. Multi-speed powershift transmission. 4,345,490, Cl. 74-761.000.

Maeda, Sotomitsu: *See*—
Saito, Fumitoshi; Maeda, Sotomitsu; and Uetsuji, Toshio, 4,345,882, Cl. 417-312.000.

Maeno, Tetsuo, to Matsushita Graphic Communications Systems, Inc. Facsimile receiver. 4,346,410, Cl. 358-281.000.

Magnetic Peripherals, Inc.: *See*—
Conley, Bobby E., 4,346,412, Cl. 360-46.000.

Magnusson, Alan B.: *See*—
Garrett, Thomas B.; Herweh, John E.; Magnusson, Alan B.; and Miller, Normal L., 4,346,186, Cl. 524-82.000.

Magrane, Robert T.; and Fontana, Nando A., to Eltra Corporation. Multiple step advance with magnetic trigger rotor. 4,345,553, Cl. 123-149.00C.

Malek, Zdenek: *See*—
Zobac, Ladislav; Malek, Zdenek; Soukup, Frantisek; Ryska, Antonin; Jelinek, Jan; and Busta, Jiri, 4,345,598, Cl. 128-303.100.

Maleski, Robert J.: *See*—
Krutak, James J.; Maleski, Robert J.; and Moore, William H., 4,346,161, Cl. 430-223.000.

Mallos, James B., to Bell Telephone Laboratories, Incorporated. Touch position sensitive surface. 4,346,376, Cl. 340-712.000.

Manabe, Hitoshi: *See*—
Miyagawa, Tuyoshi; and Manabe, Hitoshi, 4,346,289, Cl. 235-98.00R.

Manabe, Toyotaka: *See*—
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Mandava, Nagabhushanam: *See*—
Thompson, Malcolm J.; Mandava, Nagabhushanam; Worley, Joseph F., deceased; Meudt, Werner J.; Dutky, Samson R.; Robbins, William E.; and Flippen-Anderson, Judith L., 4,346,226, Cl. 549-268.000.

Mannesmann DeMag A.G.: *See*—
Ratschat, Gunter, 4,345,939, Cl. 75-41.000.

Manville Service Corporation: *See*—
Pallo, John M.; Previte, Stephen J.; and Schafer, William, 4,345,430, Cl. 60-282.000.

Marapulets, Gennady N.: *See*—
Minasov, Alexandr N.; Suslov, Alexandr N.; Azimov, Alexandr A.; and Marapulets, Gennady N., 4,345,867, Cl. 414-287.000.

Marchal, Paul: *See*—
Danel, Francois; Nicollet, Henri; Marchal, Paul; Robin, Marc; and Vertut, Jean, 4,345,658, Cl. 180-8.00C.

Marchand, William C. Solid fuel particle and air fuel control device. 4,345,527, Cl. 110-104.00R.

Marcovecchio, Joseph: *See*—
Mitteldorf, Arthur J.; Marcovecchio, Joseph; and Boquiron, Rodolfo A., 4,346,299, Cl. 378-204.000.

Margotte, Dieter: *See*—
Alewelt, Wolfgang; Margotte, Dieter; Wulff, Claus; and Vernaleken, Hugo, 4,346,210, Cl. 528-199.000.

Margraf, Adolf. Filter apparatus having improved filter bag support structure. 4,345,924, Cl. 55-379.000.
Marino, Peter T.: *See*—
Buhler, Otto R.; Gardner, Homer J.; and Marino, Peter T., 4,346,411, Cl. 360-46.000.
Markfelder, Gunther: *See*—
Hofmann, Heinrich; Markfelder, Gunther; and Bender, Hans-Eberhard, 4,345,800, Cl. 308-217.000.
Marshall Richards Barcro Limited: *See*—
Pamplin, John W.; Astbury, Brian R.; and Shillito, Richard, 4,345,451, Cl. 72-286.000.
Marshall, Robert, to A. C. Nielsen Company. Process and apparatus for aligning paper documents. 4,345,753, Cl. 271-146.000.
Martin, Barrie J.: *See*—
Clark, Michael W.; and Martin, Barrie J., 4,345,717, Cl. 239-102.000.
Martin, John K., III: *See*—
Whitney, Douglass G.; and Martin, John K., III, 4,345,595, Cl. 128-214.00F.
Martin, Peter: *See*—
Grollimund, Everett C.; and Martin, Peter, 4,346,284, Cl. 219-121.0LK.
Martin, Roger T.: *See*—
Hadley, Michael S.; King, Francis D.; and Martin, Roger T., 4,346,089, Cl. 424-248.520.
Martin, William B.: *See*—
Gilmour, Neil J. L.; Martin, William B.; Sharp, James M.; Thompson, Dennis A.; and Wells, Peter W., 4,346,074, Cl. 424-92.000.
Martinelli, Lawrence G., to Verbatim Corporation. Apparatus and method for fuzz removal from edges of sheet material. 4,345,891, Cl. 425-289.000.
Marvin Glass & Associates: *See*—
Hanson, Steven P.; Smathers, Robert E.; and Morrison, Howard J., 4,345,402, Cl. 46-206.000.
Katzman, Allison W.; Holahan, Edward T.; Zaruba, John V.; and Morrison, Howard J., 4,345,400, Cl. 46-4.000.
Masaki, Chiaki: *See*—
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Massachusetts Institute of Technology: *See*—
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Growdon, John H.; and Wurtman, Richard J., 4,346,084, Cl. 424-199.000.
Growdon, John H.; and Wurtman, Richard J., 4,346,085, Cl. 424-199.000.
Swartz, Mitchell R., 4,346,172, Cl. 435-168.000.
Massmann, Volker, to Robert Bosch GmbH. Method for the television scanning of films. 4,346,408, Cl. 358-214.000.
Mathews, Raymond D., to International Business Machines Corporation. Impact printer with dual helix character print elements. 4,345,846, Cl. 400-157.000.
Mathou, Marcel. Sound-damping assembly for a structure of a piece of furniture. 4,345,666, Cl. 181-207.000.
MATRA: *See*—
de Givry, Jacques, 4,345,362, Cl. 29-426.500.
Deplante, Michel, 4,345,662, Cl. 180-168.000.
Matsumoto, Muneaki: *See*—
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Tanaka, Kazuyoshi; Kato, Hisatoyo; and Matsumoto, Seiji, 4,346,295, Cl. 250-327.200.
Matsushita Electric Industrial Co., Ltd.: *See*—
Arao, Yuzuru; Nishio, Katsufumi; Mikami, Masashi; and Murasawa, Toyoaki, 4,345,517, Cl. 99-511.000.
Hara, Yoshihumi; Kubota, Saburo; Ihara, Akira; Kishimoto, Masaru; and Suzuki, Masaki, 4,345,472, Cl. 73-462.000.
Saito, Fumitoshi; Maeda, Sotomitsu; and Uetsuji, Toshio, 4,345,882, Cl. 417-312.000.
Takeyama, Kenichi; Morimoto, Takayoshi; and Hibino, Kunio, 4,346,163, Cl. 430-280.000.
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Matsushita Reiki Company, Limited: *See*—
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Matsushita, Terumi: *See*—
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Matsuto, Kesao: *See*—
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Matsuura, Kazuo: *See*—
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Matsuyama, Shigeru, to Canon Kabushiki Kaisha. Electronic calculator having item count display. 4,346,450, Cl. 364-710.000.
Matteson, Lawrence J.; Greenwald, Roger J.; and Schauffele, Carl N., to Eastman Kodak Company. Apparatus for automatic control of a photographic camera. 4,345,825, Cl. 354-23.00D.
Matthes, Hans; and Reifenrath, Klaus, to AEG-Elotherm, G.m.b.H. Short circuit disconnecting circuit. 4,346,423, Cl. 361-87.000.
Maurer, Alexander; Adrian, Renate; and Heymer, Gero, to Hoechst Aktiengesellschaft. Process for the manufacture of finely dispersed sparingly soluble salts of oxyacids of phosphorus. 4,346,065, Cl. 423-305.000.
Maurer, Jurg; and Rembold, Heinz, to Ciba-Geigy Corporation. Flowable, curable epoxy resin mixture. 4,346,207, Cl. 528-103.000.
Mautz, Karl-Heinz: *See*—
Schwarz, Alois; Mautz, Karl-Heinz; and Stephan, Michael, 4,345,876, Cl. 416-134.00A.
Maxon, Eric K.: *See*—
Schiff, Charles M.; Maxon, Eric K.; and West, Ronald E., 4,345,847, Cl. 403-103.000.
Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Pipe joints of reinforced resin and process for their molding. 4,345,625, Cl. 138-141.000.
McCarrell, Stuart G. Tonsil snare. 4,345,599, Cl. 128-320.000.
McCarthy, Harry E.; French, Gordon B.; and Cook, Melvin A., to Occidental Oil Shale, Inc. Placement of explosive for forming in situ oil shale retort. 4,345,794, Cl. 299-2.000.
McCarthy, Walton W. Solar process. 4,345,974, Cl. 203-19.000.
McClure, David E.: *See*—
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McConnell, William K., Jr.; and Campbell, Charles M., to Crane Co. Media. 4,345,997, Cl. 210-150.000.
McCranie, Stephen C.; and Houseman, Andrew J., to Sav-A-Stop Incorporated. Box lidding system and apparatus. 4,345,413, Cl. 53-315.000.
McDonald, Ian A.: *See*—
Palfreyman, Michael G.; and McDonald, Ian A., 4,346,110, Cl. 424-319.000.
McElroy, Arthur H.: *See*—
Cox, Russell C.; and McElroy, Arthur H., 4,345,956, Cl. 156-198.000.
McElroy, David J., to Texas Instruments Incorporated. Method of making a dynamic memory array. 4,345,364, Cl. 29-571.000.
McFarlin, David J., to United Technologies Corporation. Method of press forming a zeolite article. 4,346,051, Cl. 264-102.000.
McGill, Robert W.: *See*—
Erbstein, Robert S.; Richard, Gary R.; Palmatier, Roland T.; and McGill, Robert W., 4,346,446, Cl. 364-551.000.
McHenney, John R., to International Harvester Co. Wire harness retainer clip. 4,345,806, Cl. 339-19.000.
McInnis, Stirling A. Speed control of a D.C. electric motor. 4,346,335, Cl. 318-351.000.
McLaen, Donald F.; and Herz, Arthur H., to Eastman Kodak Company. Antistain agent or antistain agent precursor in photographic silver halide element. 4,346,154, Cl. 430-14.000.
McMurtry, Carl H.: *See*—
Coppola, John A.; Hailey, Laurence N.; and McMurtry, Carl H., 4,346,049, Cl. 264-65.000.
McNeece, Paul W. Fuel heating apparatus for vehicles. 4,345,570, Cl. 123-557.000.
Mead Corporation, The: *See*—
Wiley, Robert A., 4,346,388, Cl. 346-75.000.
Mechanical Technology Incorporated: *See*—
Dineen, John J., 4,345,437, Cl. 60-521.000.
Dorman, Richard A., 4,345,442, Cl. 62-160.000.
Medi-Timer Corporation: *See*—
Villa-Real, Antony-Euclid C., 4,345,541, Cl. 116-308.000.
Meier, Helmut: *See*—
Schmidt, Adolf; Meier, Helmut; Schedrat, Gunther; and Bockmann, August, 4,346,203, Cl. 526-225.000.
Meiko Industry Corporation, Limited: *See*—
Kosaka, Jiro, 4,345,458, Cl. 73-37.500.
Meissner, Herman P., to Institute of Gas Technology. Process for purification of gas streams. 4,345,918, Cl. 55-38.000.
Mercer, James B. Therapeutic treatment for viral hepatitis infection. 4,346,095, Cl. 424-273.00R.
Merck & Co., Inc.: *See*—
Baldwin, John J.; and McClure, David E., 4,346,042, Cl. 549-557.000.
Merkel, Wolfgang: *See*—
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Merrell Toraude et Compagnie: *See*—
Palfreyman, Michael G.; and McDonald, Ian A., 4,346,110, Cl. 424-319.000.
Merrifield, Donald V. Automatic steering system for a towed vehicle. 4,345,775, Cl. 280-443.000.
Merrill Lynch, Pierce, Fenner & Smith Incorporated: *See*—
Musmanno, Thomas E., 4,346,442, Cl. 364-408.000.
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Messing, Wayne P.: *See*—
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Metako Kigyo Co., Ltd.: *See*—
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Metallgesellschaft Aktiengesellschaft: *See*—
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Metaux Precieux S.A.: *See—*
Romagnoli, Mario, 4,345,901, Cl. 433-172.000.
Metraflu: *See—*
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Meyer, Jerry R.: *See—*
Bartoli, Filbert J.; and Meyer, Jerry R., 4,346,348, Cl. 324-158.00R.
Meyer, Klaus, to Hoechst Aktiengesellschaft. Gelated fertilizers, process for their manufacture and their use in plant fertilization. 4,345,931, Cl. 71-28.000.
Meyer, Thomas N., to Westinghouse Electric Corp. Circuit-interrupter having a high-frequency transverse magnetic field to assist in arc interruption. 4,346,273, Cl. 200-147.00R.
Michel, Helmut: *See—*
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Michelin Recherche et Technique S.A.: *See—*
Giron, Daniel G., 4,345,634, Cl. 152-353.00R.
Micheron, Francois, to Thomson-CSF. Process for manufacturing a piezoelectric transducer made from a polymer material. 4,345,359, Cl. 29-25.350.
Mihelich, Edward D., to Procter & Gamble Company, The. Novel prostaglandin analogues and process for making same. 4,345,984, Cl. 204-162.00R.
Mikami, Masashi: *See—*
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Miletti, Jose A.: *See—*
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Miller, Alton K., to Carborundum Company, The. Apparatus for electron curing of resin coated webs. 4,345,545, Cl. 118-621.000.
Miller, Normal L.: *See—*
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Miller, Richard H.: *See—*
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Miller, Wayne R., to Deere & Company. Vehicle emergency steering system. 4,345,660, Cl. 180-133.000.
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Mims, John D.; Mills, Leland F.; and Fowler, Ronald I., 4,345,960, Cl. 156-264.000.
Mills, Walter C.; and Patterson, James W., to InterNorth, Inc. Pressure-operated portable siphon apparatus for removing concentrations of liquid from a gas pipeline. 4,345,613, Cl. 137-317.000.
Mims, Charles A.: *See—*
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Mims, John D.; Mills, Leland F.; and Fowler, Ronald I., to Crathern Engineering Co., Inc. System for and method of laminating. 4,345,960, Cl. 156-264.000.
Minagawa, Masaaki, to Honda Giken Kogyo Kabushiki Kaisha. Suspension for vehicles. 4,345,778, Cl. 280-701.000.
Minagawa, Motonobu: *See—*
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Minasov, Alexandr N.; Suslov, Alexandr N.; Azimov, Alexandr A.; and Marapuleta, Gennady N. Coke dry quenching plant. 4,345,867, Cl. 414-287.000.
Mincsovics, Emil: *See—*
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Misaki, Hideo: *See—*
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Mita Industrial Company Limited: *See—*
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Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsubishi Gas Chemical Company, Inc.: *See—*
Komatsu, Makoto; Tanaka, Toru; and Fujita, Hideaki, 4,346,232, Cl. 562-416.000.
Mitsubishi Rayon Company, Limited: *See—*
Asai, Hajime; Tada, Hisashi; and Gomi, Takeo, 4,345,959, Cl. 156-244.110.
Mitsui Engineering and Shipbuilding Co. Ltd.: *See—*
Kunitake, Yoshikuni, 4,345,533, Cl. 114-61.000.
Mitsui Kensetsu Kabushiki Kaisha: *See—*
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Mitsui Mining & Smelting Co., Ltd.: *See—*
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Mitteldorf, Arthur J.; Marcovecchio, Joseph; and Boquiron, Rodolfo A., to Spex Industries Inc. Cell for containing fluid to be analyzed by x-ray spectroscopy. 4,346,299, Cl. 378-204.000.
Mittex Aktiengesellschaft: *See—*
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Miyagawa, Tuyoshi; and Manabe, Hitoshi, to Laurel Bank Machine Co., Ltd. Device for stopping suction heads of paper sheet counting apparatus at determined angular positions. 4,346,289, Cl. 235-98.00R.
Miyaji, Hiromi: *See—*
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Miyamoto, Keiichi; Inoue, Naohiko; and Takeuchi, Yasuhisa, to Nissan Motor Company, Limited. Aerial transport system. 4,345,522, Cl. 104-89.000.
Miyamura, Nobuhiro: *See—*
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Mohr, Sigo, Jr.; and Carter, Jerry L., to Joshua L. Baily & Co., Inc. Stretchable woven cellulosic fabric and process for making same. 4,345,908, Cl. 8-111.000.
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Monjes, Julio A. Cascade solar heater. 4,345,586, Cl. 126-449.000.
Monroe, Robert C., to Hudson Products Corporation. Axial flow fans and blades therefor. 4,345,877, Cl. 416-239.000.
Monsanto Company: *See—*
Alt, Gerhard H., 4,345,938, Cl. 71-118.000.
Griffith, Edward J., 4,346,028, Cl. 524-417.000.
Peng, Fred M.; and Tokas, Edward F., 4,346,199, Cl. 525-316.000.
Van Eenam, Donald N., 4,346,027, Cl. 524-377.000.
Woodbrey, James C., 4,346,200, Cl. 525-421.000.

Montag, Bernhard; and Optiz, Heinrich, to Siemens Aktiengesellschaft. Method of making families of steady-state heat transfer coefficient curves visible by photochemical means. 4,346,166, Cl. 430-435.000.

Montedison S.p.A.: *See—*
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Montelin, Eugen: *See—*
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Monterey Manufacturing, Inc.: *See—*
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Montgomery, James W.: *See—*
Baugh, John L.; and Montgomery, James W., 4,345,649, Cl. 166-120.000.

Monticelli, Dennis M.; Howard, William M.; and Sleeth, Robert S., to National Semiconductor Corporation. Simultaneous communication of analog and binary information in a single frame of a pulse count modulated digital signal. 4,346,380, Cl. 340-825.630.

Moore, Richard C. Container for making a tea beverage. 4,345,512, Cl. 99-323.000.

Moore, William H.: *See—*
Krutak, James J.; Maleski, Robert J.; and Moore, William H., 4,346,161, Cl. 430-223.000.

Morfitt, John B., to Lantec Industries Ltd. Regenerative hydraulic interlock system. 4,345,742, Cl. 254-291.000.

Morgan Adhesives Company: *See—*
Laurent, Jacques J., 4,346,189, Cl. 524-267.000.

Mori, Masahiro: *See—*
Kajiura, Toshihiro; Masaki, Chiaki; and Mori, Masahiro, 4,346,366, Cl. 340-146.30R.

Mori, Yasuki: *See—*
Kakuta, Atsushi; Suzuki, Shigeo; Mori, Yasuki; and Morishita, Hirosada, 4,346,157, Cl. 430-58.000.

Morichika, Toshiaki: *See—*
Hiraishi, Hisashi; Morichika, Toshiaki; and Murakami, Shinichi, 4,345,941, Cl. 75-122.000.

Morimoto, Takayoshi: *See—*
Takeyama, Kenichi; Morimoto, Takayoshi; and Hibino, Kunio, 4,346,163, Cl. 430-280.000.

Morin, Claude, to Pechiney Ugine Kuhlmann. Water heater using solar and non-solar energy. 4,345,583, Cl. 126-427.000.

Morinaga, Masaru, to NSK-Warner K.K. Retractor provided with a take-up force reducing mechanism. 4,345,723, Cl. 242-107.000.

Morinaga, Shigeki, to Hitachi, Ltd. Apparatus for controlling an electric motor. 4,346,434, Cl. 364-183.000.

Morishita, Hirosada: *See—*
Kakuta, Atsushi; Suzuki, Shigeo; Mori, Yasuki; and Morishita, Hirosada, 4,346,157, Cl. 430-58.000.
Takahashi, Akio; Itoh, Yutaka; Shimazaki, Takeshi; Wajima, Motoyo; Morishita, Hirosada; Mizuno, Yutaka; Yokozawa, Shunya; and Tsukanishi, Kenji, 4,346,206, Cl. 528-88.000.

Moriya, Shigeru; Ogawa, Hisashi; and Katsono, Mitsuaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic seatbelt system. 4,345,780, Cl. 280-802.000.

Morley, David W.: *See—*
Morley, Fred W., 4,345,514, Cl. 99-349.000.

Morley, Fred W., to Morley, David W. Continuous hamburger grill. 4,345,514, Cl. 99-349.000.

Morley, Robert G.; and Ashton, W. Ronald, to Landwide Foods, Inc. Frozen dessert product. 4,346,120, Cl. 426-565.000.

Morokawa, Shigeru; and Iwakura, Ryoji, to Citizen Watch Co., Ltd. FET Quartz oscillators. 4,346,350, Cl. 331-116.0FE.

Morrison, Howard J.: *See—*
Hanson, Steven P.; Smathers, Robert E.; and Morrison, Howard J., 4,345,402, Cl. 46-206.000.
Katzman, Allison W.; Holahan, Edward T.; Zaruba, John V.; and Morrison, Howard J., 4,345,400, Cl. 46-4.000.

Moseley, Gordon P.; and Christner, Kurt W., to Super Shops, Inc. Multi-spark CD ignition. 4,345,576, Cl. 123-604.000.

Mosley, Joseph M.: *See—*
Berndlmaier, Erich; Dorler, Jack A.; Mosley, Joseph M.; and Weitzel, Stephen D., 4,346,343, Cl. 323-282.000.

Moss, Lee C.; Knox, Phillip J.; and Snyder, Raymond W., to Eldre Components, Inc. Laminated bus bar with dielectric ceramic inserts. 4,346,257, Cl. 174-72.00B.

Moss, Theron C.; Boring, Earl; and Hjellum, Jerry, to SECO Industries, Inc. Extension handle for dust mops and the like. 4,345,351, Cl. 15-144.00B.

Motizuki, Mikio: *See—*
Sekigawa, Kenji; Sato, Takeshi; and Motizuki, Mikio, 4,345,372, Cl. 29-874.000.

Motley, Larry L., to Griffin, Jewell C., Jr., a part interest. Bleacher structure. 4,345,406, Cl. 52-8.000.

Motoike, Jun: *See—*
Yoda, Haruo; and Motoike, Jun, 4,346,405, Cl. 358-105.000.

Motonami, Masanao: *See—*
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,345,781, Cl. 280-802.000.
Yoshitsugu, Noritada; Motonami, Masanao; and Katsuno, Mitsuaki, 4,345,782, Cl. 280-803.000.

Motorola, Inc.: *See—*
Carter, Ernest A., 4,346,310, Cl. 307-264.000.
Groves, Stanley E., 4,346,452, Cl. 364-900.000.
James, Kristi L.; and Shields, A. L., 4,345,969, Cl. 156-659.100.
Kyu, Shikun; and Hepworth, Edward C., 4,346,440, Cl. 364-200.000.

Mottine, John J., Jr.: *See—*
Choi, Jae H.; Mottine, John J., Jr.; Sparzak, Walter J., Sr.; and Vesperman, William C., 4,346,145, Cl. 428-389.000.

Mrozik, Herbert: *See—*
Berzen, Josef; and Mrozik, Herbert, 4,345,656, Cl. 173-131.000.

Muehling, Alois: *See—*
Pirner, Paul; and Muehling, Alois, 4,346,359, Cl. 335-202.000.

Muir, Francis, to Chevron Research Company. Seismic exploration using vibratory sources, sign-bit recording, and processing that maximizes the obtained subsurface information. 4,346,461, Cl. 367-39.000.

Mukainakano, Siniti: *See—*
Hattori, Tadashi; Mukainakano, Siniti; and Yoshida, Hitoshi, 4,345,569, Cl. 123-549.000.

Muller, Alfred; Schwab, Manfred; Feder, Meinrad; Schreiber, Achim; and Sauer, Joseph, to Robert Bosch GmbH. Hydraulic control system for servos in automatic transmissions. 4,345,489, Cl. 74-752.00A.

Muller, Arnold, and Brockel, Gerhard, to Sulzer Brothers Limited. Biologically implantable member for a tendon and/or ligament. 4,345,339, Cl. 3-1.000.

Mullich, Richard O., to TRE Corporation. High security cylindrical bored lock. 4,345,449, Cl. 70-153.000.

Multinorm, B.V.: *See—*
Oosterling, Pieter A.; and van Staveren, Hendricus C., 4,345,420, Cl. 56-295.000.

Mundt, Peter: *See—*
Urban, Otfried; and Mundt, Peter, 4,345,707, Cl. 226-68.000.

Murai, Shinji: *See—*
Sonoda, Noboru; Murai, Shinji; and Takii, Kazuhisa, 4,346,235, Cl. 562-596.000.

Murakami, Akira: *See—*
Yasuda, Yasushi; Mizuno, Masami; Nishikawa, Hiroaki; and Murakami, Akira, 4,346,098, Cl. 424-273.00R.

Murakami, Hiroyasu: *See—*
Shinbori, Kenichi; Sakai, Shinji; Shinoda, Nobuhiko; Ito, Tadashi; and Murakami, Hiroyasu, 4,345,829, Cl. 354-37.000.

Murakami, Shinichi: *See—*
Hiraishi, Hisashi; Morichika, Toshiaki; and Murakami, Shinichi, 4,345,941, Cl. 75-122.000.

Muraki, Hideaki: *See—*
Oshima, Yujiro; Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, 4,345,555, Cl. 123-272.000.

Murasawa, Toyoaki: *See—*
Arao, Yuzuru; Nishio, Katsufumi; Mikami, Masashi; and Murasawa, Toyoaki, 4,345,517, Cl. 99-511.000.

Murata Manufacturing Co., Ltd.: *See—*
Nakamura, Toshikazu; and Yoshida, Hirofumi, 4,346,285, Cl. 219-381.000.

Murdmaa, Ivar O.: *See—*
Lezgintsev, Georgy M.; Garbuz, Evgeny I.; Kontar, Evgeny A.; Glukhikh, Rudolf G.; Murdmaa, Ivar O.; Soluyanov, Vadim G.; Belyavsky, Alexandr S.; and Kuznetsov, Alexei N., 4,345,461, Cl. 73-170.00A.

Murphy, Andrew J.; Rhodes, Robert P.; and Woodruff, Terry A., to Hewlett-Packard Company. Automatic ignition system for a flame ionization detector. 4,346,055, Cl. 422-54.000.

Musmanno, Thomas E., to Merrill Lynch, Pierce, Fenner & Smith Incorporated. Securities brokerage-cash management system. 4,346,442, Cl. 364-408.000.

Muto, Katsuya: *See—*
Nakamoto, Takeshi; Iwaki, Katsutaro; Muto, Katsuya; Itoh, Katsumi; and Akita, Yoshio, 4,346,338, Cl. 322-28.000.

Mutoh Industry Ltd.: *See—*
Isobe, Taketo; and Matsushita, Terumi, 4,346,392, Cl. 346-139.00C.

Mutschler, Erich; and Weber, Adam, to ITT Industries, Inc. Fastening device for a switch. 4,346,274, Cl. 200-296.000.

Naarden International N.V.: *See—*
Roehl, Ernst-Ludwig, 4,346,079, Cl. 424-65.000.

Nagaishi, Hatsuo: *See—*
Nakamura, Koyo; and Nagaishi, Hatsuo, 4,345,560, Cl. 123-440.000.

Naganuma, Nobuyuki, to Brother Kogyo Kabushiki Kaisha. Rotary electromagnetic actuator. 4,346,319, Cl. 310-36.000.

Nagata, Wataru: *See—*
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,346,218, Cl. 544-16.000.

Nagayama, Haruhiko, to Ricoh Co., Ltd. Multiple charge electrode device for liquid jet printer. 4,346,389, Cl. 346-75.000.

Nagy, Janos: *See—*
Tyihak, Erno; Mincsovics, Emil; Dios, Sandor; Horvath, Gyula; Kalasz, Huba; Nagy, Janos; Kormendi, Ferenc; Kozma, Laszlo; Borsos, Janos; and Kiss, Janos, 4,346,001, Cl. 210-198.300.

Naito, Mitsuaki: *See—*
Goto, Fumio; Yoshino, Kenji; Kono, Hiroshi; and Naito, Mitsuaki, 4,345,852, Cl. 404-114.000.

Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic performance tempo control device. 4,345,501, Cl. 84-1.030.

Nakagaki, Kunihiro: *See—*
Saito, Yasunori; Nakagaki, Kunihiro; Yoneyama, Kunihiko; and Ohmoto, Katsumi, 4,346,253, Cl. 174-29.000.

Nakahara, Yutaka: *See—*
Leistner, William E.; Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,346,025, Cl. 524-141.000.

Nakai, Taiichiro; Sato, Masanori; Furusawa, Kahei; Yamamoto, Hitoshi; Yamazaki, Yoshihiko; and Ejiri, Yoshihiro, to Kokusai Denshin

Denwa Kabushiki Kaisha. Optical fiber introducing equipment for optical submerged repeater. 4,345,816, Cl. 350-96.200.

Nakajima, Kikuo, to Kuniaki Yamazaki. Support bandage. 4,345,590, Cl. 128-166.000.

Nakamoto, Takeshi; Iwaki, Katsutaro; Muto, Katsuya; Itoh, Katsumi; and Akita, Yoshio, to Nippondenso Co., Ltd. Battery charging control system for vehicles. 4,346,338, Cl. 322-28.000.

Nakamura, Kaoru: *See*—
Hasegawa, Junzo; Yamada, Masatoshi; Nakamura, Kaoru; and Yasuda, Eiichi, 4,345,771, Cl. 277-205.000.

Nakamura, Kotaro: *See*—
Sawada, Satoru; Oono, Shigeru; Seto, Nobuo; Suzuki, Yoshiaki; Nakamura, Kotaro; and Furutachi, Nobuo, 4,346,165, Cl. 430-372.000.

Nakamura, Koyo; and Nagaishi, Hatsuo, to Nissan Motor Co., Ltd. Electronically controlled carburetor. 4,345,560, Cl. 123-440.000.

Nakamura, Kunihiko; and Miyaji, Hiromi, to Tokyo Shibaura Denki Kabushiki Kaisha. Sheet transport apparatus. 4,345,752, Cl. 271-12.000.

Nakamura, Nobuo: *See*—
Tomita, Fusao; Tamaoki, Tatsuya; Nakamura, Nobuo; Okubo, Shuji; Shirahata, Kunikatsu; Kasai, Masaji; and Oka, Tetsuo, 4,346,075, Cl. 424-120.000.

Nakamura, Toshikazu; and Yoshida, Hirofumi, to Murata Manufacturing Co., Ltd. Heating device employing thermistor with positive coefficient characteristic. 4,346,285, Cl. 219-381.000.

Nakamura, Yayoi: *See*—
Akashi, Kunihiko; Nakamura, Yayoi; Tsuchida, Takayasu; Yoshii, Hiroe; and Ikeda, Shigeho, 4,346,169, Cl. 435-114.000.

Nakamura, Yoshikatsu: *See*—
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,345,942, Cl. 75-237.000.
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,345,943, Cl. 75-238.000.

Nakasu, Kei, to Toyota Jidosha Kogyo Kabushiki Kaisha. Alarm device for a brake clearance limit in an air-over-hydraulic brake system. 4,345,672, Cl. 188-1.110.

Nakasuji, Mamoru; and Wada, Hirotsugu, to VLSI Technology Research Association. Electron gun. 4,346,325, Cl. 313-336.000.

Nakaya, Shunichi; and Araoka, Katsumasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Expansion engine. 4,345,926, Cl. 62-38.000.

Nakayama, Shozo; Hattori, Mitsuhiro; and Ono, Hiromitsu, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Rotary compressor with vanes in the housing and suction through the rotor. 4,345,886, Cl. 418-100.000.

Narisada, Masayuki: *See*—
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,346,218, Cl. 544-16.000.

National Distillers & Chemical Corp.: *See*—
Feldman, Julian, 4,346,241, Cl. 568-916.000.

National Research Development Corporation: *See*—
Bhattacharyya, Sushantha K.; and El-Menshawy, Mohamed F., 4,346,278, Cl. 219-69.00M.
Gilmour, Neil J. L.; Martin, William B.; Sharp, James M.; Thompson, Dennis A.; and Wells, Peter W., 4,346,074, Cl. 424-92.000.
Hiles, Maurice A. F., 4,346,205, Cl. 528-53.000.
Shanks, Ian A., 4,346,378, Cl. 340-754.000.

National Semiconductor Corporation: *See*—
George, Peter K., 4,346,454, Cl. 365-15.000.
Monticelli, Dennis M.; Howard, William M.; and Sleeth, Robert S., 4,346,380, Cl. 340-825.630.
Wilcox, Milton E., 4,346,351, Cl. 331-117.00R.

National Starch and Chemical Corporation: *See*—
Breuninger, William F., 4,345,948, Cl. 127-70.000.
Flanagan, Thomas P., 4,345,349, Cl. 412-5.000.

Natter, Eckard F.: *See*—
Francis, William H.; and Natter, Eckard F., 4,346,386, Cl. 343-765.000.

NCR Corporation: *See*—
Brower, Ronald W., 4,345,366, Cl. 29-571.000.
Carrigan, Donald G., 4,345,365, Cl. 29-571.000.
Coe, Mary Ellen B., 4,345,968, Cl. 156-627.000.
Skaggs, William G.; and Curry, John L., 4,346,379, Cl. 340-778.000.

Neal, Brian P., to Bendix Westinghouse Ltd. Fluid seal element for compressed air filter. 4,345,767, Cl. 277-12.000.

Nedyalkov, Ivan P., to Institute Za Yadreni Izsledvaniya I Yadrena Energetika. Sea and ocean wave energy converter. 4,345,434, Cl. 60-398.000.

Negishi, Takao; and Tomiita, Kazuo, to Toray Industries, Inc. Process for making bulky textured multifilament yarn. 4,345,425, Cl. 57-289.000.

Netstal-Maschinen AG: *See*—
Hemmi, Peter; and Schrepfer, Richard, 4,345,890, Cl. 425-143.000.

Neufeld, Murray J., to Hughes Aircraft Company. Method for controlling the attitude of a spinning spacecraft in the presence of solar pressure. 4,345,728, Cl. 244-168.000.

New England Digital Corp.: *See*—
Alonso, Sydney A.; and Jones, Cameron W., 4,345,500, Cl. 84-1.010.

Newby, Kenneth R.: *See*—
Bellows, Richard J.; Grimes, Patrick G.; Newby, Kenneth R.; Einstein, Harry; and Tsien, Hsue C., 4,346,150, Cl. 429-18.000.

Newman, Don E., to Stretch Devices, Inc. Screen tensioning and printing frame. 4,345,390, Cl. 38-102.910.

Newton, Philip T. Paper roll lifting device. 4,345,788, Cl. 294-1.00R.

Nichols, George M., to Borg-Warner Chemicals, Inc. Flame retardant polypropylene compositions containing trityl synergists. 4,346,187, Cl. 524-83.000.

Nicollet, Henri: *See*—
Danel, Francois; Nicollet, Henri; Marchal, Paul; Robin, Marc; and Vertut, Jean, 4,345,658, Cl. 180-8.00C.

Niedecker, Herbert. Apparatus for transferring sausage hanger loops into a closing machine. 4,345,411, Cl. 53-134.000.

Nigol, Olaf, to Slater Steel Industries Limited. Overhead electrical conductor system including subspan oscillation and aeolian vibration absorber for single and bundle conductors. 4,346,255, Cl. 174-42.000.

Niigata Engineering Co., Ltd.: *See*—
Goto, Fumio; Yoshino, Kenji; Kono, Hiroshi; and Naito, Mitsuaki, 4,345,852, Cl. 404-114.000.

Nims, Dean L. Basketball. 4,345,759, Cl. 273-65.00R.

Nippon Cable System, Inc.: *See*—
Mochida, Haruo; and Kobayashi, Tetsuo, 4,345,863, Cl. 411-252.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,345,501, Cl. 84-1.030.
Yokoyama, Kenji, 4,346,349, Cl. 330-10.000.

Nippon Hodo Co., Ltd.: *See*—
Goto, Fumio; Yoshino, Kenji; Kono, Hiroshi; and Naito, Mitsuaki, 4,345,852, Cl. 404-114.000.

Nippon Kogaku K.K.: *See*—
Takahama, Akio, 4,346,447, Cl. 364-560.000.

Nippon Piston Ring Co., Ltd.: *See*—
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,345,942, Cl. 75-237.000.
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,345,943, Cl. 75-238.000.

Nippon Soda Company Limited: *See*—
Yasuda, Yasushi; Mizuno, Masami; Nishikawa, Hiroaki; and Murakami, Akira, 4,346,098, Cl. 424-273.00R.

Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Mukainakano, Siniti; and Yoshida, Hitoshi, 4,345,569, Cl. 123-549.000.
Kawai, Hisasi; Sakurai, Kazuhiro; and Matsumoto, Muneaki, 4,345,737, Cl. 251-129.000.
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,345,558, Cl. 123-425.000.

Nippon Telegraph & Telephone Public Corp.: *See*—
Kanamori, Terutoshi; and Manabe, Toyotaka, 4,346,176, Cl. 501-37.000.
Kawachi, Masao; Tomaru, Satoru; Edahiro, Takao; and Suto, Shoichi, 4,345,928, Cl. 65-18.200.
Ohkoshi, Seiei; Ishikawa, Isao; Okamoto, Teiji; and Tsukamoto, Nobuo, 4,346,472, Cl. 371-37.000.

Nippondenso Co., Ltd.: *See*—
Kojima, Yasuhumi, 4,345,714, Cl. 236-46.00R.
Kondo, Toshio; Sagisaka, Yasuo; Tajima, Masahiko; and Kobayashi, Akio, 4,345,561, Cl. 123-440.000.
Nakamoto, Takeshi; Iwaki, Katsutaro; Muto, Katsuya; Itoh, Katsumi; and Akita, Yoshio, 4,346,338, Cl. 322-28.000.

Nishigawa Shoji Co. Ltd.: *See*—
Kuroda, Minoru, 4,345,958, Cl. 156-221.000.

Nishikawa, Hiroaki: *See*—
Yasuda, Yasushi; Mizuno, Masami; Nishikawa, Hiroaki; and Murakami, Akira, 4,346,098, Cl. 424-273.00R.

Nishikawa, Masao, to Honda Giken Kogyo Kabushiki Kaisha. Anti-roll system for vehicles. 4,345,661, Cl. 180-141.000.

Nishimura, Akira: *See*—
Osawa, Yoshitaka; Nishimura, Akira; and Toyooka, Shinichi, 4,346,139, Cl. 428-252.000.

Nishimura, Nobuzi; Sawa, Utazi; Tokieda, Takemi; Hayakawa, Shunichi; and Tezuka, Yasuo, to Sumitomo Chemical Company, Limited. Process for producing aminoaryl-β-sulfatoethylsulfone. 4,346,046, Cl. 260-458.00C.

Nishio, Katsufumi: *See*—
Arao, Yuzuru; Nishio, Katsufumi; Mikami, Masashi; and Murasawa, Toyoaki, 4,345,517, Cl. 99-511.000.

Nishizawa, Hideyuki. Rinsing and drying apparatus. 4,345,609, Cl. 134-57.00R.

Nissan Motor Company, Limited: *See*—
Iizuka, Haruhiko; and Sugasawa, Fukashi, 4,345,571, Cl. 123-568.000.
Ikeura, Kenji, 4,345,557, Cl. 123-339.000.
Kawamura, Yoshihisa; Matsuto, Kesao; and Saito, Masaaki, 4,345,564, Cl. 123-490.000.
Miyamoto, Keiichi; Inoue, Naohiko; and Takeuchi, Yasuhisa, 4,345,522, Cl. 104-89.000.
Mochida, Haruo; and Kobayashi, Tetsuo, 4,345,863, Cl. 411-252.000.
Nakamura, Koyo; and Nagaishi, Hatsuo, 4,345,560, Cl. 123-440.000.
Takagi, Kazumasa; and Tsunoda, Masakazu, 4,346,364, Cl. 340-52.00D.
Tohda, Masayuki; Takao, Hiroshi; and Kimura, Shinji, 4,345,985, Cl. 204-192.0EC.
Yasuhara, Seishi, 4,345,429, Cl. 60-279.000.

Noall, Kenneth L., to Abex Corporation. Wheelchair lift. 4,345,669, Cl. 187-10.000.

Noda, Hideo, to Shimano Industrial Company Limited. Fishing reel with spool shaft bearings. 4,345,726, Cl. 242-212.000.

Noda, Yoshiteru: *See*—
Ohsawa, Mitsuo; Noda, Yoshiteru; Ichikawa, Iwao; and Yamamoto, Katsumi, 4,345,371, Cl. 29-836.000.

Noe, William B.: *See*—
Riggle, Charles M.; Read, John D.; Noe, William B.; Winfrey, Richard; Pollard, Christopher A.; and Bernett, Frank W., 4,346,416, Cl. 360-106.000.

Nomura, Norimasa; and Yoshimi, Yasuhito, to Dainippon Screen Seizo Kabushiki Kaisha. Automatic film developer having a film guide means. 4,345,832, Cl. 354-320.000.

Nordin, Ivan C.: *See*—
Schweiss, Dietrich; and Nordin, Ivan C., 4,346,097, Cl. 424-273.00P.

Norman, Bo; and Grundstrom, Karl-Johan, to Svenska Traforskningsinstitutet. Method at screening apparatus for cleaning the apertures in a screen plate and device for carrying out the method. 4,346,007, Cl. 210-360.100.

Northern Telecom Limited: *See*—
Cowley, William E.; Shannon, Michael A.; and LeNir, Victor L., 4,345,962, Cl. 156-356.000.

Northwestern University: *See*—
Widder, Kenneth J.; and Senyei, Andrew E., 4,345,588, Cl. 128-1.300.

Nosovsky, Boris I.: *See*—
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Ksenofont K.; and Rudnev, Anatoly E., 4,346,280, Cl. 219-76.100.

Novakovic, Boris Z.: *See*—
Eichenlaub, Rolf; and Novakovic, Boris Z., 4,345,579, Cl. 125-15.000.

NSK-Warner K.K.: *See*—
Morinaga, Masaru, 4,345,723, Cl. 242-107.000.

Numazawa, Akio; Taga, Yutaka; and Funato, Masayoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Chain drive assembly. 4,345,904, Cl. 474-215.000.

N.V. Philips' Gloeilampenfabrieken: *See*—
Willems, Leonardus F.; and Vogten, Leonardus L. M., 4,346,262, Cl. 179-1.0SA.

O. A. Newton & Son Company: *See*—
Barlow, Robert C., 4,345,858, Cl. 406-34.000.

Obata, Haruyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Blow-gas treating and controlling system. 4,345,573, Cl. 123-572.000.

Obrist, Albert; and Breuer, Hans, to Albert Obrist AG. Closure cap for a container. 4,345,692, Cl. 215-252.000.

O'Brokta, Ronald D.: *See*—
Lessmann, Gerald G.; Simpson, Ronald P.; and O'Brokta, Ronald D., 4,346,279, Cl. 219-75.000.

Occidental Oil Shale, Inc.: *See*—
McCarthy, Harry E.; French, Gordon B.; and Cook, Melvin A., 4,345,794, Cl. 299-2.000.

Occidental Research Corporation: *See*—
Au, Robert W., 4,346,062, Cl. 423-109.000.

Oce-Andeno B.V.: *See*—
De Heij, Nicolaas A., 4,346,045, Cl. 260-455.00R.

Octanorm-Vertriebs GmbH fur Bauelemente: *See*—
Stenemann, Bruno, 4,345,849, Cl. 403-252.000.

Odaka, Kunihiro: *See*—
Huno, Takakazu; Endo, Takeyuki; Odaka, Kunihiro; and Shibuya, Yasutaka, 4,346,439, Cl. 364-200.000.

Oettinger, Peter E.: *See*—
Lee, Chunghsin; and Oettinger, Peter E., 4,346,330, Cl. 315-150.000.

Ogawa, Hisashi: *See*—
Moriya, Shigeru; Ogawa, Hisashi; and Katsono, Mitsuaki, 4,345,780, Cl. 280-802.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,345,781, Cl. 280-802.000.

Ogawa, Tsuyoshi: *See*—
Imatomi, Eiji; Ogawa, Tsuyoshi; and Hamaoka, Tsutomu, 4,346,167, Cl. 430-569.000.

Ogden, Lynn V.: *See*—
Orthoefer, Frank T.; and Ogden, Lynn V., 4,346,122, Cl. 426-656.000.

Ogino, Etsuo; Yoshii, Nobuo; and Harada, Kazuo, to Hitachi Shipbuilding & Engineering Co., Ltd. Process for recovering fine coal particles from slurry of finely divided coal. 4,346,010, Cl. 210-714.000.

O'Hara, Kevin S., to General Electric Company. Method for making a composite grained cast article. 4,345,950, Cl. 148-2.000.

Ohara, Yuji, to Fuji Photo Film Co., Ltd. Reproducing a color image on a photosensitive material in response to an element-sequential color signal. 4,346,401, Cl. 358-75.000.

Ohhata, Michinobu: *See*—
Yamasawa, Masao; Ohhata, Michinobu; and Ikezawa, Toshi, 4,346,476, Cl. 375-8.000.

Ohkoshi, Seiei; Ishikawa, Isao; Okamoto, Teiji; and Tsukamoto, Nobuo, to Hitachi, Ltd.; and Nippon Telegraph & Telephone Public Corporation. Method and apparatus for eliminating double bit errosion in a differential phase shift keying system. 4,346,472, Cl. 371-37.000.

Ohmori, Akira: *See*—
Satokawa, Takaomi; Fujii, Tuneo; Ohmori, Akira; and Fujita, Yorio, 4,346,250, Cl. 568-842.000.

Ohmoto, Katsumi: *See*—
Saito, Yasunori; Nakagaki, Kunihiro; Yoneyama, Kunihiko; and Ohmoto, Katsumi, 4,346,253, Cl. 174-29.000.

Ohomi, Atsushi, to Aisin Seiki Company, Ltd. Vacuum type booster. 4,345,506, Cl. 91-376.00R.

Ohsawa, Mitsuo; Noda, Yoshiteru; Ichikawa, Iwao; and Yamamoto, Katsumi, to Sony Corporation. Method and apparatus for manufacturing hybrid integrated circuits. 4,345,371, Cl. 29-836.000.

Oishi, Hisao: *See*—
Ikeda, Hironosuke; Oishi, Hisao; and Yoshida, Seiki, 4,345,611, Cl. 137-68.00R.

Ojevich, Ted: *See*—
Carter, Harry D.; and Ojevich, Ted, 4,346,370, Cl. 340-384.00E.

Oka, Tetsuo: *See*—
Tomita, Fusao; Tamaoki, Tatsuya; Nakamura, Nobuo; Okubo, Shuji; Shirahata, Kunikatsu; Kasai, Masaji; and Oka, Tetsuo, 4,346,075, Cl. 424-120.000.

Okada, Takanori: *See*—
Tanouchi, Tadao; Kawamura, Masanori; Okada, Takanori; and Hayashi, Masaki, 4,346,099, Cl. 424-273.00R.

Okada, Takashi: *See*—
Akutagawa, Touru; Okada, Takashi; and Tanaka, Yutaka, 4,346,399, Cl. 358-29.000.

Okamoto, Eisaku: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,345,501, Cl. 84-1.030.

Okamoto, Teiji: *See*—
Ohkoshi, Seiei; Ishikawa, Isao; Okamoto, Teiji; and Tsukamoto, Nobuo, 4,346,472, Cl. 371-37.000.

Okamura Oil Mill Limited: *See*—
Sonoda, Noboru; Murai, Shinji; and Takii, Kazuhisa, 4,346,235, Cl. 562-596.000.

Okubo, Shuji: *See*—
Tomita, Fusao; Tamaoki, Tatsuya; Nakamura, Nobuo; Okubo, Shuji; Shirahata, Kunikatsu; Kasai, Masaji; and Oka, Tetsuo, 4,346,075, Cl. 424-120.000.

Okui, Haruki: *See*—
Anno, Nobuo; Okui, Haruki; Yamamoto, Kuniyuki; and Miyazaki, Kunio, 4,345,664, Cl. 180-230.000.

Olesen, Henry T. Power transmission having a continuously variable gear ratio. 4,345,486, Cl. 74-198.000.

Olympus Optical Co., Ltd.: *See*—
Ichikawa, Hiroki, 4,345,354, Cl. 16-257.000.
Kato, Toshikazu, 4,345,725, Cl. 242-204.000.
Osanai, Akira, 4,346,414, Cl. 360-90.000.
Sakurada, Masahiko, 4,346,056, Cl. 422-64.000.
Tomabechi, Hideo; Osada, Hazime; and Osanai, Akira, 4,346,415, Cl. 360-105.000.

Omron Tateisi Electronics Co.: *See*—
Iwakiri, Norio; and Kiyono, Yasuhiro, 4,346,275, Cl. 200-314.000.

O'Neil, Joseph H.: *See*—
Armstrong, John C.; and O'Neil, Joseph H., 4,345,716, Cl. 239-56.000.

Ono, Hiromitsu: *See*—
Nakayama, Shozo; Hattori, Mitsuhiro; and Ono, Hiromitsu, 4,345,886, Cl. 418-100.000.

Ono Pharmaceutical Co., Ltd.: *See*—
Tanouchi, Tadao; Kawamura, Masanori; Okada, Takanori; and Hayashi, Masaki, 4,346,099, Cl. 424-273.00R.

Oono, Shigeru: *See*—
Sawada, Satoru; Oono, Shigeru; Seto, Nobuo; Suzuki, Yoshiaki; Nakamura, Kotaro; and Furutachi, Nobuo, 4,346,165, Cl. 430-372.000.

Oosterling, Pieter A.; and van Staveren, Hendricus C., to Multinorm, B.V. Mowing implement. 4,345,420, Cl. 56-295.000.

Ootsuka, Yoshinori: *See*—
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,345,558, Cl. 123-425.000.

Ooyachi, Akio: *See*—
Iiyama, Shigeru; Otsu, Sinzi; and Ooyachi, Akio, 4,345,966, Cl. 156-523.000.

Oppel, Werner: *See*—
Herter, Martin, deceased; Herter, Johanna, heiress; Radtke, Ingrid, heir; Herter, Manfred, heir; and Oppel, Werner, 4,345,610, Cl. 137-7.000.

Optimetrix Corporation: *See*—
Phillips, Edward H., 4,345,836, Cl. 355-53.000.

Optiz, Heinrich: *See*—
Montag, Bernhard; and Optiz, Heinrich, 4,346,166, Cl. 430-435.000.

Orgatechna Treuhand AG: *See*—
Gutschmidt, Peter-Michel, 4,345,530, Cl. 110-215.000.

Orihara, Shobu: *See*—
Kinoshita, Ryoichi; and Orihara, Shobu, 4,346,456, Cl. 365-36.000.

Orthoefer, Frank T.; and Ogden, Lynn V., to A. E. Staley Manufacturing Company. Low-viscosity, high-NSI, heat-gelling soy isolates. 4,346,122, Cl. 426-656.000.

Osada, Hazime: *See*—
Tomabechi, Hideo; Osada, Hazime; and Osanai, Akira, 4,346,415, Cl. 360-105.000.

Osaka City Government: *See*—
Yoshimura, Hidenaga; Yamada, Kunio; Yamada, Hironori; Yamada, Ryusaku; and Kudo, Hiroaki, 4,345,602, Cl. 128-349.00R.

Osanai, Akira, to Olympus Optical Co., Ltd. Tape recorder. 4,346,414, Cl. 360-90.000.

Osanai, Akira: *See*—
Tomabechi, Hideo; Osada, Hazime; and Osanai, Akira, 4,346,415, Cl. 360-105.000.

Osawa, Yoshitaka; Nishimura, Akira; and Toyooka, Shinichi, to Sumitomo Electric Industries, Ltd. Highly weather-proof high

strength tri-axial woven membrane materials. 4,346,139, Cl. 428-252.000.

Osborn Manufacturing Corporation, The: *See—*
Hermes, Rudolf, 4,345,638, Cl. 164-456.000.

Oshima, Yujiro; Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Self-heating ignition plug. 4,345,555, Cl. 123-272.000.

Ostlund, Artur: *See—*
Lofgren, Lars; and Ostlund, Artur, 4,346,054, Cl. 422-49.000.

Ota, Yoshihiko, to Victor Company of Japan, Ltd. Apparatus for reproducing a video signal of one system with conversion to a video signal of another system. 4,346,397, Cl. 358-4.000.

Otsu, Sinzi: *See—*
Iiyama, Shigeru; Otsu, Sinzi; and Ooyachi, Akio, 4,345,966, Cl. 156-523.000.

Ott, Helmut: *See—*
Ruchser, Erich; Ott, Helmut; and Baldauf, Gunter, 4,345,620, Cl. 137-596.160.

Ouchi, Hirobumi, to Hitachi, Ltd. Light detecting photodiode-MIS transistor device. 4,346,395, Cl. 357-30.000.

Oude Alink, Bernardus A., to Petrolite Corporation. Preparation of perhydrophenanthridines. 4,346,223, Cl. 546-18.000.

Ouellette, Paul J.: *See—*
Gutbier, Ernst A.; and Ouellette, Paul J., 4,345,814, Cl. 339-275.00R.

Ovshinsky, Stanford R.; Klose, Peter H.; and Messing, Wayne P., to Energy Conversion Devices, Inc. Data storage and retrieval system. 4,346,449, Cl. 364-900.000.

Owatonna Manufacturing Company, Inc.: *See—*
Schwalenberg, Terry R.; Krumholz, Frank C.; Kanengieter, Glenn G.; and Henkensiefken, Larry L., 4,345,421, Cl. 56-341.000.

Owens-Corning Fiberglas Corporation: *See—*
Wong, Robert W.; and Haines, Richard M., 4,346,026, Cl. 524-157.000.

Ozawa, Jun: *See—*
Endo, Fumihiro; Ishikawa, Toshio; Ozawa, Jun; Kamata, Yuzuru; and Shiono, Shigeo, 4,345,471, Cl. 374-188.000.

Ozeki, Kenichi; and Fushimi, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Exhaust fan with protective band. 4,345,874, Cl. 415-9.000.

P.H.D. of Puerto Rico, Inc.: *See—*
Hubbard, Leo J., 4,345,708, Cl. 226-74.000.

Pacesetter Systems, Inc.: *See—*
Schulman, Joseph H., 4,345,603, Cl. 128-419.0PT.

Padias, Anne B.: *See—*
Hall, Henry K., Jr.; and Padias, Anne B., 4,346,213, Cl. 528-272.000.

Pagnozzi, Ernesto G.: *See—*
Pagnozzi, Vincenzo; and Pagnozzi, Ernesto G., 4,345,384, Cl. 34-16.500.

Pagnozzi, Vincenzo; and Pagnozzi, Ernesto G. Process for drying wood. 4,345,384, Cl. 34-16.500.

Pai, Damodar M.; Stolka, Milan; and Yanus, John F., to Xerox Corporation. Imaging system with a diamine charge transport material in a polycarbonate resin. 4,346,158, Cl. 430-59.000.

Paine, Harold L.: *See—*
Park, Hung S.; Ryan, William D., Jr.; and Paine, Harold L., 4,345,949, Cl. 134-22.160.

Pako Corporation: *See—*
Willenbring, Armer J., 4,345,754, Cl. 271-209.000.

Paletta, Benno; Moller, Reinhard; and Kasielke, Joachim, to Clinicon International GmbH. Metering apparatus. 4,345,483, Cl. 73-864.160.

Palfreyman, Michael G.; and McDonald, Ian A., to Merrell Toraude et Compagnie. Method for treating depression. 4,346,110, Cl. 424-319.000.

Palitex Project Company GmbH: *See—*
Leupers, Wolfgang, 4,345,423, Cl. 57-58.840.

Palkes, Mark: *See—*
Wysk, Stanley R.; and Palkes, Mark, 4,346,316, Cl. 310-11.000.

Pallo, John M.; Previte, Stephen J.; and Schafer, William, to Manville Service Corporation. Automotive catalytic converter exhaust system. 4,345,430, Cl. 60-282.000.

Palmatier, Roland T.: *See—*
Erbstein, Robert S.; Richard, Gary R.; Palmatier, Roland T.; and McGill, Robert W., 4,346,446, Cl. 364-551.000.

Palmer, Keith W.: *See—*
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,346,021, Cl. 252-431.00N.

Pamplin, John W.; Astbury, Brian R.; and Shillito, Richard, to Marshall Richards Barcro Limited. Wire drawing method and apparatus. 4,345,451, Cl. 72-286.000.

Panchu, Paul, to Polaroid Corporation. Method of making laminates. 4,345,954, Cl. 156-87.000.

Park, Hung S.; Ryan, William D., Jr.; and Paine, Harold L., to B. F. Goodrich Company, The. Cleaning reactors contaminated with carboxyl containing polymers. 4,345,949, Cl. 134-22.160.

Passaro, Robert E.; and Williams, Kevin, to Andros Analyzers Incorporated. Non-dispersive infrared gas analyzer. 4,346,296, Cl. 250-343.000.

Patel, Vishnu A.: *See—*
Eagle, Raymond S.; and Patel, Vishnu A., 4,346,060, Cl. 422-148.000.

Patenaude, Raymond A.; Duke, Steven R.; and Coolidge, John K., to General Electric Company. Firing pin locking system. 4,345,505, Cl. 89-154.000.

Patmore, James R.: *See—*
Wilson, Wayne; Rosko, George; and Patmore, James R., 4,345,463, Cl. 73-190.0CV.

Patterson, James W.: *See—*
Mills, Walter C.; and Patterson, James W., 4,345,613, Cl. 137-317.000.

Paul Masson, Inc.: *See—*
Lunt, James W., 4,345,511, Cl. 99-276.000.

Peacock, Donald G.: *See—*
Changani, Pushpkumar D.; Peacock, Donald G.; and Roberts, David, 4,345,957, Cl. 156-218.000.

Pearl, David R., to Gerber Garment Technology, Inc. Apparatus for working on successive segments of sheet material. 4,345,496, Cl. 83-100.000.

Pechiney Ugine Kuhlmann: *See—*
Morin, Claude, 4,345,583, Cl. 126-427.000.

Pedersen, Poul H. H.: *See—*
Karlberg, Niels G.; and Pedersen, Poul H. H., 4,345,614, Cl. 137-340.000.

Peerless Pump Division, Indian Head Inc.: *See—*
Longiny, Michael A.; Kalchev, Dimitar; and Zinn, Thomas K., 4,345,884, Cl. 417-359.000.

Pegasus Pension Fund S.A.: *See—*
Giovannetti, Giusto, 4,345,403, Cl. 47-1.100.

Pehl, Willis G.: *See—*
Bockwinkel, Joe L.; and Pehl, Willis G., 4,345,630, Cl. 144-346.000.

Pellus, Gilbert: *See—*
Blanc, Jacques; Coulon, Andre; and Pellus, Gilbert, 4,345,977, Cl. 204-26.000.

Peng, Fred M.; and Tokas, Edward F., to Monsanto Company. Process for a polymeric polyblend composition comprising a matrix phase terpolymer of alkenyl aromatic alkenyl nitrile and myrcene monomers and a diene rubber phase grafted with said monomers. 4,346,199, Cl. 525-316.000.

Pennwalt Corporation: *See—*
Piucci, Joseph A.; and Goltz, Kurt, 4,346,014, Cl. 252-47.500.

Penque, Leonard M.: *See—*
Soderberg, John H.; and Penque, Leonard M., 4,345,521, Cl. 101-93.000.

Perego, Giuseppe. Babys' pushchairs, of type collapsing widthaways and easy to carry by hand like an umbrella, plus relative improved pushchair. 4,345,777, Cl. 280-647.000.

Peresunko, Stanislav R.: *See—*
Polyakov, Nikolai F.; Ryabchenjuk, Leonid M.; Emelyanova, Nina A.; Sulim, Georgy T.; Kobzar, Vladimir A.; Peresunko, Stanislav R.; Sokolenko, Anatoly I.; and Ivanenko, Oleg V., 4,346,003, Cl. 210-225.000.

Perkin-Elmer Corporation, The: *See—*
Loveland, Robert S., 4,345,479, Cl. 73-861.280.

Pernicka, Martin: *See—*
Gadoury, Andre; Pinheiro, Victor; and Pernicka, Martin, 4,345,344, Cl. 5-62.000.

Perrone, Francesco: *See—*
De Angelis, Giancarlo; Catastini, Alberto; Bassi, Aldo; Rogora, Edoardo; Radaelli, Dario; Bertoloni, Luciano; and Perrone, Francesco, 4,346,443, Cl. 364-431.040.

Perrucci, Joseph W.: *See—*
Goldsmith, Norman; and Perrucci, Joseph W., 4,345,520, Cl. 100-293.000.

Perry, Ralph A.; and Booe, James M., to Emhart Industries, Inc. Sensing device. 4,345,459, Cl. 73-61.10R.

Peschl, Ivan A. S. Z. Universal blending method for blending the material contents of a silo. 4,345,842, Cl. 366-137.000.

Peter, Siegfried; Brunner, Gerd; and Riha, Rolf, to Peter, Siegfried. Process for separating mixtures of substances of low volatility. 4,345,976, Cl. 203-49.000.

Peterlein, Karl: *See—*
Schulde, Felix; Peterlein, Karl; and Diedrich, Klaus, 4,346,204, Cl. 526-271.000.

Peters, John W.: *See—*
Braund, Darwin G.; Fronk, Thomas J.; Goings, Richard L.; Peters, John W.; and Steele, Robert L., 4,346,077, Cl. 424-156.000.

Petersson, Ralf K. E., deceased; and by Vejdemo, Stephan, executor, to Sundins Fabriker AB. Close-off valve for suction pipes in hydraulic pumps. 4,345,881, Cl. 417-270.000.

Petkidis, Dmetrios. Method of and apparatus for manufacturing plowshares. 4,345,358, Cl. 29-14.000.

Petrolite Corporation: *See—*
Oude Alink, Bernardus A., 4,346,223, Cl. 546-18.000.
Quinlan, Patrick M., 4,346,217, Cl. 542-412.000.

Pettingill, Lucius A., Jr. Tube marking device and gage. 4,345,379, Cl. 33-21.00R.

Petzinger, Manfred W. A. Waterless vacuum toilet. 4,346,002, Cl. 210-202.000.

Pez, Guido P.: *See—*
Grey, Roger A.; and Pez, Guido P., 4,346,240, Cl. 568-842.000.

Pfeffer, George B., to Datafile Limited. Conveyor for labelling apparatus. 4,345,683, Cl. 198-653.000.

Pfeiffer, Ronald E., to American Cyanamid Company. Process for melt-spinning hollow fibers. 4,346,053, Cl. 264-561.000.

Pharmasol Corporation, The: *See—*
Armstrong, John C.; and O'Neil, Joseph H., 4,345,716, Cl. 239-56.000.

Philip Morris Incorporated: *See—*
Grollimund, Everett C.; and Martin, Peter, 4,346,284, Cl. 219-121.0LK.

Phillips, Edward H., to Optimetrix Corporation. Two-stage wafer prealignment system for an optical alignment and exposure machine. 4,345,836, Cl. 355-53.000.

Phillips Petroleum Company: *See*—
Bartz, Gerald L., 4,345,912, Cl. 23-230.0EP.
Cox, Russell C.; and McElroy, Arthur H., 4,345,956, Cl. 156-198.000.
Macy, Edward K., 4,346,369, Cl. 340-365.00S.
Rutledge, Robert W., 4,346,433, Cl. 364-162.000.
Stegelman, Albert F., 4,345,991, Cl. 208-78.000.
Stewart, William S., 4,345,993, Cl. 208-164.000.
Washer, Stone P.; and Van Pool, Joe, 4,345,992, Cl. 208-120.000.

Pickett, Fred E. Gun rest. 4,345,398, Cl. 42-94.000.

Picone, Charles E., to PPG Industries, Inc. Apparatus and process for use preparing a continuous strand mat. 4,345,927, Cl. 65-4.400.

Pieri, Lorenzo: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,030, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,031, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,032, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,033, Cl. 260-239.30B.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,034, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,035, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,036, Cl. 260-239.30T.

Pifco Limited: *See*—
Holt, David, 4,345,513, Cl. 99-327.000.
Holt, David, 4,345,515, Cl. 99-393.000.

Pinheiro, Victor: *See*—
Gadoury, Andre; Pinheiro, Victor; and Pernicka, Martin, 4,345,344, Cl. 5-62.000.

Pintek, Inc.: *See*—
Hatch, David A., 4,345,813, Cl. 339-184.00M.

Pipkin, David J., to International Business Machines Corporation. Apparatus for forming a coating on a substrate. 4,345,543, Cl. 118-106.000.

Piretti, Giancarlo: *See*—
Ambasz, Emilio; and Piretti, Giancarlo, 4,345,733, Cl. 248-561.000.

Pirner, Paul; and Muehling, Alois, to Siemens Aktiengesellschaft. Relay. 4,346,359, Cl. 335-202.000.

Pitney Bowes Inc.: *See*—
Soderberg, John H.; and Penque, Leonard M., 4,345,521, Cl. 101-93.000.

Pittet, Andre: *See*—
Tu Xuan, Mai; Jufer, Marcel; and Pittet, Andre, 4,346,463, Cl. 368-157.000.

Piucci, Joseph A.; and Goltz, Kurt, to Pennwalt Corporation. Rolling oil compositions and method of inhibiting carbon smut on batch annealed steel. 4,346,014, Cl. 252-47.500.

Plank, Odas P.; Slater, Richard A.; and Taibbi, Steven G., to Honeywell Information Systems Inc. Random access memory system for extending the memory addressing capacity of a CPU. 4,346,441, Cl. 364-200.000.

Plastibeton Canada Inc.: *See*—
Trent, Peter F.; and Charlebois, Raymond, 4,346,050, Cl. 264-71.000.

Plastiflex Company International: *See*—
Finley, Richard O.; and Stanwood, David A., 4,345,805, Cl. 339-16.00R.

Plastino, Mario A. Head protecting headwear. 4,345,336, Cl. 2-187.000.

Plessey Handel und Investments AG: *See*—
Clark, Michael W.; and Martin, Barrie J., 4,345,717, Cl. 239-102.000.

Poe, John C.; and Radecki, Tony, to R. C. Sports, Inc. Roller skate apparatus. 4,345,774, Cl. 280-11.200.

Polak, Robert B.: *See*—
Hof, Craig R.; Ulin, Roy A., Jr.; and Polak, Robert B., 4,345,470, Cl. 374-106.000.

Polaroid Corporation: *See*—
Johnson, Bruce K., 4,345,828, Cl. 354-27.000.
Panchu, Paul, 4,345,954, Cl. 156-87.000.

Polc, Petar: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,030, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,031, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,032, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,033, Cl. 260-239.30B.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,034, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,035, Cl. 260-239.30T.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,346,036, Cl. 260-239.30T.

Pollard, Christopher A.: *See*—
Riggle, Charles M.; Read, John D.; Noe, William B.; Winfrey, Richard; Pollard, Christopher A.; and Bernett, Frank W., 4,346,416, Cl. 360-106.000.

Polyakov, Nikolai F.; Ryabchenjuk, Leonid M.; Emelyanova, Nina A.; Sulim, Georgy T.; Kobzar, Vladimir A.; Peresunko, Stanislav R.; Sokolenko, Anatoly I.; and Ivanenko, Oleg V. Mash-separating filter-press. 4,346,003, Cl. 210-225.000.

Pont-A-Mousson S.A.: *See*—
Royer, Alain L. A.; Herzog, Eugene; and Rouyer, Robert M. L., 4,345,952, Cl. 148-3.000.

Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C. Polymerizable ethylenically unsaturated amide compounds. 4,346,231, Cl. 560-178.000.

Ponzi, Joseph J., to International Telephone and Telegraph Corporation. Densitometer. 4,345,456, Cl. 73-32.00A.

Poston, Billy R.; Chambers, Ramon P.; and Gordy, Robert S., to E-Systems, Inc. Frequency identification circuit. 4,346,480, Cl. 455-154.000.

Potash, Hanan; Levin, Burton L.; and Chan, Stephen J. C., to Burroughs Corporation. Digital computer having programmable structure. 4,346,438, Cl. 364-200.000.

Pottage, Paul R.: *See*—
Rundell, John T.; Pottage, Paul R.; and Harradine, Ronald J., 4,345,947, Cl. 127-48.000.

Power-Flame, Inc.: *See*—
Wilson, Billy E.; and Hutson, Coy R., 4,345,697, Cl. 220-335.000.

PPG Industries, Inc.: *See*—
Crano, John C.; and Haynes, Ronald L., 4,346,197, Cl. 525-277.000.
Kapura, Edward M., 4,345,929, Cl. 65-99.500.
Korach, Malcolm, 4,345,986, Cl. 204-266.000.
Picone, Charles E., 4,345,927, Cl. 65-4.400.
Young, Charles L., Jr.; and Gray, Ralph C., 4,346,143, Cl. 428-332.000.

PQ Corporation: *See*—
Dent, Anthony L.; Derolf, M. Robert; and Hertzenberg, Elliot P., 4,346,071, Cl. 424-49.000.

Pracht, Gunther, to "Jaguar" Stahlwaren Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft. Scissors with adjustable pivot. 4,345,378, Cl. 30-266.000.

Prave, Paul: *See*—
Faust, Uwe; Prave, Paul; Dorsemagen, Beate; and Hofer, Norbert, 4,346,113, Cl. 426-12.000.

Precipitator Corporation: *See*—
Lindman, William E.; and Alexander, John A., 4,345,996, Cl. 210-96.100.

Preston, Joseph R.; Hillenbrand, Louis J.; and Berry, David A., to RCA Corporation. High density information disc. 4,346,468, Cl. 369-276.000.

Preston, Joseph R.: *See*—
Hillenbrand, Louis J.; Preston, Joseph R.; and Berry, David A., 4,346,469, Cl. 369-276.000.

Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Novel catalyst system and process for producing ethanol using said novel catalyst system. 4,346,020, Cl. 252-429.00R.

Previte, Stephen J.: *See*—
Pallo, John M.; Previte, Stephen J.; and Schafer, William, 4,345,430, Cl. 60-282.000.

Price, Charles E.; Ray, George C., III; Grieve, Harold R.; and Tomich, Robert G., to General Foods Corporation. Peelable on-package coupon and method for making same. 4,345,393, Cl. 40-312.000.

Prince Corporation: *See*—
Prince, Edgar D., 4,345,893, Cl. 425-595.000.

Prince, Edgar D., to Prince Corporation. Molding machine. 4,345,893, Cl. 425-595.000.

Procter & Gamble Company, The: *See*—
Mihelich, Edward D., 4,345,984, Cl. 204-162.00R.

Professional Marketing Associates: *See*—
Cobleigh, Wendall C.; Barmore, Donald L.; and Geschwender, Robert C., 4,345,497, Cl. 83-105.000.

Provost, Gilbert: *See*—
Cochet, Gerard; and Provost, Gilbert, 4,346,177, Cl. 501-123.000.

Pu, Lyon S.: *See*—
Sadamatsu, Shigeru; Pu, Lyon S.; and Ishikawa, Yoshihisa, 4,346,159, Cl. 430-67.000.

Pugsley, Peter C., to Crosfield Electronics Limited. Image-reproduction apparatus. 4,346,402, Cl. 358-80.000.

Pullman Incorporated: *See*—
Eagle, Raymond S.; and Patel, Vishnu A., 4,346,060, Cl. 422-148.000.

Punton, Vaughan W.: *See*—
Radvan, Bronislaw; Punton, Vaughan W.; and Trendall, Paul B., 4,345,970, Cl. 162-123.000.

Purdue Research Foundation: *See*—
Ladisch, Michael R.; and Tsao, George T., 4,345,973, Cl. 203-19.000.

Puyat, Alfonso G.: *See—*
Alegre, Adolfo P.; Guidote, Armando E.; and Puyat, Alfonso G., 4,345,568, Cl. 123-522.000.

Quave, Walter N.: *See—*
Di Cicco, Angelo S.; and Quave, Walter N., 4,345,615, Cl. 137-343.000.

Queen's University at Kingston: *See—*
Wan, Jeffrey K. S., 4,345,983, Cl. 204-158.00R.

Quinlan, Patrick M., to Petrolite Corporation. Di-quaternary ammonium salts of α-1,4-thiazine alkanephosphonic acids. 4,346,217, Cl. 542-412.000.

Quinn, James: *See—*
Rizzo, Charles P.; Barraco, Stephen; and Quinn, James, 4,345,868, Cl. 414-408.000.

R. C. Sports, Inc.: *See—*
Poe, John C.; and Radecki, Tony, 4,345,774, Cl. 280-11.200.

Raab, Frederick H., to Austin Company, The. Remote object position and orientation locator. 4,346,384, Cl. 343-112.00R.

Radaelli, Dario: *See—*
De Angelis, Giancarlo; Catastini, Alberto; Bassi, Aldo; Rogora, Edoardo; Radaelli, Dario; Bertoloni, Luciano; and Perrone, Francesco, 4,346,443, Cl. 364-431.040.

Radecki, Tony: *See—*
Poe, John C.; and Radecki, Tony, 4,345,774, Cl. 280-11.200.

Radiall: *See—*
Cartier, Jacques; and Givelet, Sebastien, 4,345,370, Cl. 29-828.000.

Radtke, Ingrid, heir: *See—*
Herter, Martin, deceased; Herter, Johanna, heiress; Radtke, Ingrid, heir; Herter, Manfred, heir; and Oppel, Werner, 4,345,610, Cl. 137-7.000.

Radu, E. John: *See—*
Uyeda, Stanley T.; Radu, E. John; Talbot, William J., Jr.; and Feldman, Norman, 4,345,855, Cl. 405-168.000.

Raduechel, Bernd: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Schillinger, Eckehard, 4,346,228, Cl. 560-53.000.

Radvan, Bronislaw; Punton, Vaughan W.; and Trendall, Paul B., to Wiggins Teape Group Limited, The. Process and apparatus for controlling the deposition of a liquid on to a moving surface. 4,345,970, Cl. 162-123.000.

Rammler, Roland, to Metallgesellschaft Aktiengesellschaft. Method of heating fine-grained solids. 4,345,914, Cl. 44-10.00C.

Randolph, Jeptha F.; and Stout, Donald L., to Combustion Engineering, Inc. Turbine meter rotor bearing. 4,345,801, Cl. 308-238.000.

Rapoport, Henry; Weller, Dwight D.; and Gless, Richard D., to United States of America, Health and Human Services. 4a-Aryl-decahydroisoquinolines. 4,346,224, Cl. 546-221.000.

Rassieur, Charles L., to Central Mine Equipment Company. Drill rod holding and break-out device. 4,345,493, Cl. 81-57.340.

Ratschat, Gunter, to Mannesmann DeMag A.G. Method for providing oxygen enhanced air for use in metallurgical processes. 4,345,939, Cl. 75-41.000.

Ray, Donald L.: *See—*
Stout, Garry A.; and Ray, Donald L., 4,346,270, Cl. 200-33.00R.

Ray, George C., III: *See—*
Price, Charles E.; Ray, George C., III; Grieve, Harold R.; and Tomich, Robert G., 4,345,393, Cl. 40-312.000.

Raychem Corporation: *See—*
Changani, Pushpkumar D.; Peacock, Donald G.; and Roberts, David, 4,345,957, Cl. 156-218.000.

Raytheon Company: *See—*
Tsukii, Toshikazu, 4,346,355, Cl. 333-33.000.

RCA Corporation: *See—*
Hillenbrand, Louis J.; Preston, Joseph R.; and Berry, David A., 4,346,469, Cl. 369-276.000.
Preston, Joseph R.; Hillenbrand, Louis J.; and Berry, David A., 4,346,468, Cl. 369-276.000.
Wardell, Myron H., Jr., 4,345,812, Cl. 339-144.00R.

Read, John D.: *See—*
Riggle, Charles M.; Read, John D.; Noe, William B.; Winfrey, Richard; Pollard, Christopher A.; and Bernett, Frank W., 4,346,416, Cl. 360-106.000.

Read, Wayne L.: *See—*
Westerlund, Robert E.; and Read, Wayne L., 4,345,883, Cl. 417-317.000.

Reczek, James A.: *See—*
Chapman, Derek D.; and Reczek, James A., 4,346,155, Cl. 430-17.000.

Redl, Narciss A. Apparatus and method for cultivating land. 4,345,531, Cl. 111-1.000.

Reed, Bradley O., to General Electric Company. Hydromechanical steering transmission. 4,345,488, Cl. 74-682.000.

Reed, Charles C.: *See—*
Wilkinson, William R.; Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; and Crane, Terry N., 4,345,919, Cl. 55-41.000.

Reed Manufacturing Company: *See—*
Benson, Albert R.; and Willats, James F., 4,345,376, Cl. 30-96.000.

Regan, John, to Hughes Tool Company. Blowout preventer. 4,345,735, Cl. 251-1.00B.

Regie Nationale des Usines Renault: *See—*
Crouillere, Jean P., 4,345,556, Cl. 123-327.000.

Rehm, Hans: *See—*
Bauch, Helmut; and Rehm, Hans, 4,346,381, Cl. 340-825.930.

Reifenrath, Klaus: *See—*
Matthes, Hans; and Reifenrath, Klaus, 4,346,423, Cl. 361-87.000.

Reinecke, Erich, to WABCO Fahrzeugbremsen GmbH. Anti-skid brake control system for controlling the two pairs of diagonally opposed wheels of a motor vehicle. 4,345,796, Cl. 303-92.000.

Reinsma, Harold L.: *See—*
Woody, Albert L.; Fox, Lawrence E.; and Reinsma, Harold L., 4,345,772, Cl. 277-212.0FB.

Rembold, Heinz: *See—*
Maurer, Jurg; and Rembold, Heinz, 4,346,207, Cl. 528-103.000.

Remington, William R., to Du Pont de Nemours, E. I., and Company. Iodine-substituted polyfluoroalkyl esters and their use. 4,346,141, Cl. 428-289.000.

Renirie, Alexis C. M., to Vitafin N.V. Long life cardiac pacer with switching power. 4,345,604, Cl. 128-419.0PS.

REPA Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,345,665, Cl. 180-270.000.

Republic Steel Corporation: *See—*
Decker, Charles E.; and Hostetler, John L., 4,346,129, Cl. 427-348.000.

Research Corporation: *See—*
Hinckley, Conrad C., 4,346,216, Cl. 536-121.000.

Revici, Emanuel, to Vinoxen Company, The. Method of employing therapeutic composition comprising ammonium or substituted ammonium compounds for treatment of alcoholism. 4,346,082, Cl. 424-162.000.

Rhodes, Robert P.: *See—*
Murphy, Andrew J.; Rhodes, Robert P.; and Woodruff, Terry A., 4,346,055, Cl. 422-54.000.

Rhone-Poulenc Industries: *See—*
Coquard, Jean; and Goletto, Jean, 4,346,024, Cl. 524-219.000.
Fayolle, Bernard, 4,346,208, Cl. 528-176.000.
Foucras, Jacques; and Rodet, Georges, 4,346,004, Cl. 210-232.000.
Soula, Gerard; and Linguenheld, Louis, 4,346,244, Cl. 568-656.000.

Rhone-Poulenc-Textile: *See—*
Berchoux, Andre; and Coquet, Andre, 4,345,355, Cl. 19-0.600.

Richard, Gary R.: *See—*
Erbstein, Robert S.; Richard, Gary R.; Palmatier, Roland T.; and McGill, Robert W., 4,346,446, Cl. 364-551.000.

Richard Wolf GmbH: *See—*
Hiltebrandt, Siegfried, 4,345,589, Cl. 128-4.000.

Richards, Clyde N.; and Brook, Marx. Means and method for removing airborne particulates from an aerosol stream. 4,345,916, Cl. 55-5.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Bajusz, Sandor; Szell nee Hasenohrl, Erzsebet; Barabas, Eva; Bagdy, Daniel; and Mohai nee Nagy, Zsuzsanna, 4,346,078, Cl. 424-177.000.
Takacs, Istvan; Vereczkey, Endre; Bosits, Gyula; and Kerey, Gyorgy, 4,345,720, Cl. 241-74.000.

Ricodeau, Jean: *See—*
Driard, Bertrand; Ricodeau, Jean; and Rougeot, Henri, 4,346,326, Cl. 313-388.000.

Ricoh Co., Ltd.: *See—*
Nagayama, Haruhiko, 4,346,389, Cl. 346-75.000.
Takahashi, Akira; and Hashimoto, Masanori, 4,345,826, Cl. 354-23.00D.

Rider, Thomas F., to Gould Inc. Blow-out guard for high-pressure hoses. 4,345,624, Cl. 138-110.000.

Ridout, Robert A., to Kaiser Aluminum & Chemical Corporation. Method of forming a metal wheel. 4,345,360, Cl. 29-159.010.

Riegel, Herbert, to Lummus Company, The. Production of phosgene. 4,346,047, Cl. 260-544.00K.

Riegel, Herbert; and Huang, Chiung-Yuan, to Lummus Company, The. Recovery of chlorine values in integrated process for oxychlorination and combustion of chlorinated hydrocarbons. 4,346,069, Cl. 423-488.000.

Riek, Rodney G.: *See—*
Flemings, Merton C.; Riek, Rodney G.; and Young, Kenneth P., 4,345,637, Cl. 164-113.000.

Rigal, Michel; and Saerens, Jean, to Compagnie Europeenne d'Accumulateurs. Electrode for a lead-acid storage cell. 4,346,153, Cl. 429-234.000.

Riggle, Charles M.; Read, John D.; Noe, William B.; Winfrey, Richard; Pollard, Christopher A.; and Bernett, Frank W., to Digital Equipment Corporation. Rotary actuator assembly for disk drive head positioner. 4,346,416, Cl. 360-106.000.

Righini, Giancarlo; Sottini, Stefano; and Russo, Vera, to Consiglio Nazionale Delle Ricerche. Perfect geodesic lens for waveguides and optical processor of unidimensional signals employing said lens. 4,345,815, Cl. 350-96.180.

Rigsby, Lee S., to Ashland Coal, Inc. Dual lid type coal washability table with built-in air ventilation system. 4,346,058, Cl. 422-104.000.

Riha, Rolf: *See—*
Peter, Siegfried; Brunner, Gerd; and Riha, Rolf, 4,345,976, Cl. 203-49.000.

Rinio, Johannes A.; and Tanson, Rodolphe F. Driving pulley mechanism. 4,345,741, Cl. 254-287.000.

Ripert, Roger L., to Grove Valve and Regulator Company. Fire safe seal. 4,345,738, Cl. 251-315.000.

Ritsema, Irving R., to Bendix Corporation, The. Disc brake assembly with lightweight and space saving characteristics. 4,345,675, Cl. 188-73.430.

Rival Manufacturing Company: *See—*
Best, Gary R., 4,345,498, Cl. 83-707.000.

Rizzo, Charles P.; Barraco, Stephen; and Quinn, James. Waste receptacle dumping mechanism. 4,345,868, Cl. 414-408.000.

Robbins, William E.: *See—*
Thompson, Malcolm J.; Mandava, Nagabhushanam; Worley, Joseph F., deceased; Meudt, Werner J.; Dutky, Samson R.; Robbins, William E.; and Flippen-Anderson, Judith L., 4,346,226, Cl. 549-268.000.

Robert Bosch GmbH: *See—*
Drews, Ulrich; Werner, Peter; and Mohrle, Werner, 4,345,562, Cl. 123-440.000.
Eheim, Franz, 4,345,563, Cl. 123-458.000.
Frister, Manfred, 4,346,321, Cl. 310-232.000.
Gruner, Heiko; and Friedrich, Heinz, 4,345,465, Cl. 73-204.000.
Kuttner, Thomas; and Wessel, Wolf, 4,345,559, Cl. 123-435.000.
Massmann, Volker, 4,346,408, Cl. 358-214.000.
Muller, Alfred; Schwab, Manfred; Feder, Meinrad; Schreiber, Achim; and Sauer, Joseph, 4,345,489, Cl. 74-752.00A.

Roberts, David: *See—*
Changani, Pushpkumar D.; Peacock, Donald G.; and Roberts, David, 4,345,957, Cl. 156-218.000.

Roberts, Eugene L., to United States of America, Army. Switched delay line for steerable null antenna system. 4,346,315, Cl. 307-603.000.

Robertshaw Controls Company: *See—*
Bauer, Werner R.; and Smith, William N., 4,345,369, Cl. 29-622.000.

Robertson, David H. Railway car stabilizer. 4,345,523, Cl. 105-1.00A.

Robertson, Harry G., to Edsco, Inc. Hopper discharge valve. 4,345,859, Cl. 406-128.000.

Robertson Paper Box Co., Inc.: *See—*
Davidson, Thomas L., 4,345,687, Cl. 206-418.000.

Robin, Marc: *See—*
Danel, Francois; Nicollet, Henri; Marchal, Paul; Robin, Marc; and Vertut, Jean, 4,345,658, Cl. 180-8.00C.

Robinet, Jules P.: *See—*
Balkwill, G. Russell; Robinet, Jules P.; and Tamasovics, John F., 4,345,693, Cl. 220-3.300.

Robinson, Glenn N., to International Minerals & Chemical Corp. Method for dispersing comminuted solids. 4,345,945, Cl. 106-300.000.

Robinson, Joseph G.; Barnes, David I.; and Carswell, Angela M., to Coal Industry (Patents) Limited. Phenanthrene/HCHO derived polyamide-imide. 4,346,212, Cl. 528-229.000.

Robinson, William P.; and Seliger, Robert L., to Hughes Aircraft Company. Ion implantation system. 4,346,301, Cl. 250-492.200.

Rockwell International Corporation: *See—*
Carollo, James A., 4,346,342, Cl. 323-276.000.
Chen, Thomas T., 4,346,455, Cl. 365-16.000.

Rodet, Georges: *See—*
Foucras, Jacques; and Rodet, Georges, 4,346,004, Cl. 210-232.000.

Roehl, Ernst-Ludwig, to Naarden International N.V. Solid antiperspirant composition and process for its preparation. 4,346,079, Cl. 424-65.000.

Roeth, Manfred: *See—*
Wegele, Gunther; Brink, Gerhard; Rotta, Goetz; Roeth, Manfred; and Wittmann, Siegfried, 4,345,907, Cl. 8-444.000.

Rogora, Edoardo: *See—*
De Angelis, Giancarlo; Catastini, Alberto; Bassi, Aldo; Rogora, Edoardo; Radaelli, Dario; Bertoloni, Luciano; and Perrone, Francesco, 4,346,443, Cl. 364-431.040.

Rohm and Haas Company: *See—*
Fujimoto, Ted T., 4,345,934, Cl. 71-92.000.

Rohr Industries, Inc.: *See—*
Schneider, Samuel; and Beyer, John D., 4,346,444, Cl. 364-475.000.

Rojo, Juana E.: *See—*
Tu, Hosheng; and Rojo, Juana E., 4,345,946, Cl. 127-46.300.

Rolland, Guy, to Societe Mecanique Generale et Decolletage Tournage. Accumulator conveyor. 4,345,684, Cl. 198-781.000.

Rolls-Royce Limited: *See—*
Bunyan, Clive N., 4,345,699, Cl. 222-40.000.
Crofts, Brian, 4,345,799, Cl. 308-187.000.

Romagnoli, Mario, to Metaux Precieux S.A. Dental prosthesis connecting apparatus. 4,345,901, Cl. 433-172.000.

Romp, Frederick J., to Canargo International Pty. Ltd. Temperature controlled electrical power supply apparatus. 4,346,286, Cl. 219-501.000.

Roque, Claude, to Institut Francais du Petrole. Process for improving the permeability of ground formations, adapted to the production of high temperature geothermic energy. 4,345,652, Cl. 166-307.000.

Roquette Freres: *See—*
Verwaerde, Francoise; Leleu, Jean-Bernard; and Huchette, Michel, 4,346,116, Cl. 426-48.000.

Rose, Levi L.: *See—*
Hestad, Alfred M.; and Rose, Levi L., 4,346,261, Cl. 179-1.0HF.

Rosen, Jonathan J., to Vascor, Inc. Stent for mitral/tricuspid heart valve. 4,345,340, Cl. 3-1.500.

Rosenthal, Arnold J.: *See—*
Forschirm, Alex S.; and Rosenthal, Arnold J., 4,346,209, Cl. 528-191.000.

Rosko, George: *See—*
Wilson, Wayne; Rosko, George; and Patmore, James R., 4,345,463, Cl. 73-190.0CV.

Ross, Abraham D. Sailboat trimming and stabilizing system. 4,345,535, Cl. 114-122.000.

Ross, Carl H.: *See—*
Friebe, Walter-Gunar; Michel, Helmut; Ross, Carl H.; Wiedemann, Fritz; Bartsch, Wolfgang; and Dietmann, Karl, 4,346,093, Cl. 424-269.000.

Ross, Frank L. Method for the production of sawblades, especially jigsaw or sabresaw blades. 4,345,499, Cl. 83-835.000.

Ross, Louis, to Borg-Warner Corporation. Vacuum deaerator. 4,345,920, Cl. 55-46.000.

Rossi, Jean-Paul: *See—*
Clement, Philippe; and Rossi, Jean-Paul, 4,346,115, Cl. 426-25.000.

Rossi, Mario. Device for the recognition and progressive cancellation of information recorded on a magnetic support. 4,346,290, Cl. 235-436.000.

Roth, Zdenek: *See—*
Altman, Josef; and Roth, Zdenek, 4,345,618, Cl. 137-393.000.

Rothenhaus, Robert: *See—*
Blissett, Kitson; and Dunbar, Robert A., 4,346,427, Cl. 361-173.000.

Rothfuss, Robert G., to Senco Products, Inc. Purse-stringer. 4,345,600, Cl. 128-334.00R.

Rothwell, Thomas F.; and Smith, Gerald B., to Dresser Industries, Inc. Corrosion resistant valve construction. 4,345,961, Cl. 156-294.000.

Rotta, Goetz: *See—*
Wegele, Gunther; Brink, Gerhard; Rotta, Goetz; Roeth, Manfred; and Wittmann, Siegfried, 4,345,907, Cl. 8-444.000.

Rougeot, Henri: *See—*
Driard, Bertrand; Ricodeau, Jean; and Rougeot, Henri, 4,346,326, Cl. 313-388.000.

Roura, Miguel J., to Du Pont de Nemours, E. I., and Company. Toughened polyamide blends. 4,346,194, Cl. 525-66.000.

Roussin, Michael A., to Caterpillar Tractor Co. Self pumping seal for a reciprocating member. 4,345,768, Cl. 277-22.000.

Routt, Wilson M., Jr.; and West, Donald L., to International Business Machines Corporation. Coaxial optical scanner. 4,346,292, Cl. 250-216.000.

Rouyer, Robert M. L.: *See—*
Royer, Alain L. A.; Herzog, Eugene; and Rouyer, Robert M. L., 4,345,952, Cl. 148-3.000.

Rowe, Douglas M.: *See—*
Abernathy, Randolph, Jr.; and Rowe, Douglas M., 4,345,896, Cl. 432-19.000.

Rowe, Lacy A. Sealing means for gutter hanger fastening means. 4,345,731, Cl. 248-48.200.

Royer, Alain L. A.; Herzog, Eugene; and Rouyer, Robert M. L., to Pont-A-Mousson S.A. Method for the manufacture of tubes from steel having high ductility at low temperature. 4,345,952, Cl. 148-3.000.

Royer, George P. Solar energy system. 4,345,584, Cl. 126-427.000.

Ruchser, Erich; Ott, Helmut; and Baldauf, Gunter, to Technomatic AG. Safety valve assembly. 4,345,620, Cl. 137-596.160.

Rudnev, Anatoly E.: *See—*
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Ksenofont K.; and Rudnev, Anatoly E., 4,346,280, Cl. 219-76.100.

Rued, Glen A.: *See—*
Simpson, Elmer J.; and Rued, Glen A., 4,345,507, Cl. 91-449.000.

Ruffolo, James C.: *See—*
Blout, Bennett O.; and Ruffolo, James C., 4,345,862, Cl. 410-134.000.

Ruhrchemie AG: *See—*
Bach, Hanswilhelm; Brundin, Eike; and Gick, Wilhelm, 4,346,239, Cl. 568-461.000.
Berzen, Josef; and Mrozik, Herbert, 4,345,656, Cl. 173-131.000.

Rundell, John T.; Pottage, Paul R.; and Harradine, Ronald J., to Tate & Lyle Limited. Clarification of glucose syrups. 4,345,947, Cl. 127-48.000.

Runyon, Clinton A. Interchangeable tone chamber. 4,345,503, Cl. 84-383.00R.

Russo, Vera: *See—*
Righini, Giancarlo; Sottini, Stefano; and Russo, Vera, 4,345,815, Cl. 350-96.180.

Rutledge, Robert W., to Phillips Petroleum Company. Process control. 4,346,433, Cl. 364-162.000.

Ruvolo, Antonio; and Massa, Vincenzo, to Montedison S.p.A. Process for preparing absorbing mop material of non-woven fibres and polymeric binder. 4,346,127, Cl. 427-244.000.

Ryabchenjuk, Leonid M.: *See—*
Polyakov, Nikolai F.; Ryabchenjuk, Leonid M.; Emelyanova, Nina A.; Sulim, Georgy T.; Kobzar, Vladimir A.; Peresunko, Stanislav R.; Sokolenko, Anatoly I.; and Ivanenko, Oleg V., 4,346,003, Cl. 210-225.000.

Ryan, Douglas G.: *See—*
Leighton, Milton D.; and Ryan, Douglas G., 4,346,008, Cl. 210-395.000.

Ryan, William D., Jr.: *See—*
Park, Hung S.; Ryan, William D., Jr.; and Paine, Harold L., 4,345,949, Cl. 134-22.160.

Rybalko, Sergei A. Electron beam device with variable beam energy. 4,346,328, Cl. 313-449.000.

Ryska, Antonin: *See—*
Zobac, Ladislav; Malek, Zdenek; Soukup, Frantisek; Ryska, Antonin; Jelinek, Jan; and Busta, Jiri, 4,345,598, Cl. 128-303.100.

S & C Electric Company: *See—*
Zulaski, John A., 4,346,307, Cl. 307-130.000.

Sabino, Mario C. Vertical can crusher. 4,345,519, Cl. 100-215.000.

Sadamatsu, Shigeru; Pu, Lyon S.; and Ishikawa, Yoshihisa, to Fuji Xerox Co., Ltd. Photosensitive element for electrophotography. 4,346,159, Cl. 430-67.000.

Saerens, Jean: *See—*
Rigal, Michel; and Saerens, Jean, 4,346,153, Cl. 429-234.000.

Safe S.r.l.: *See—*
Zanarini, Franco, 4,345,880, Cl. 417-264.000.

Saggers, David T.: *See*—
Gates, Peter S.; Gillon, John; and Saggers, David T., 4,345,932, Cl. 71-88.000.
Sagisaka, Yasuo: *See*—
Kondo, Toshio; Sagisaka, Yasuo; Tajima, Masahiko; and Kobayashi, Akio, 4,345,561, Cl. 123-440.000.
St. Clair, Roger L.: *See*—
Thibault, Thomas D.; and St. Clair, Roger L., 4,345,936, Cl. 71-92.000.
St. John, Michael R.: *See*—
Sammells, Anthony F.; and St. John, Michael R., 4,346,152, Cl. 429-112.000.
Saito, Fumitoshi; Maeda, Sotomitsu; and Uetsuji, Toshio, to Matsushita Electric Industrial Company, Limited; and Matsushita Reiki Company, Limited. Hermetic motor compressor. 4,345,882, Cl. 417-312.000.
Saito, Masaaki: *See*—
Kawamura, Yoshihisa; Matsuto, Kesao; and Saito, Masaaki, 4,345,564, Cl. 123-490.000.
Saito, Shuichi, to Kimura Bed Mfg. Company Limited. Vacuum suction type urinating aid. 4,345,341, Cl. 4-301.000.
Saito, Shuiichi, to Kimura Bed Mfg. Company Limited. Vacuum suction type urinating aid. 4,345,342, Cl. 4-301.000.
Saito, Yasunori; Nakagaki, Kunihiro; Yoneyama, Kunihiko; and Ohmoto, Katsumi, to Sumitomo Electric Industries, Ltd. Coaxial cable. 4,346,253, Cl. 174-29.000.
Sakai, Shinji: *See*—
Shinbori, Kenichi; Sakai, Shinji; Shinoda, Nobuhiko; Ito, Tadashi; and Murakami, Hiroyasu, 4,345,829, Cl. 354-37.000.
Sakurada, Masahiko, to Olympus Optical Company Limited. Automatic analyzing apparatus. 4,346,056, Cl. 422-64.000.
Sakurai, Kazuhiro: *See*—
Kawai, Hisasi; Sakurai, Kazuhiro; and Matsumoto, Muneaki, 4,345,737, Cl. 251-129.000.
Sallmann, Alfred; and Baschang, Gerhard, to Ciba-Geigy Corporation. Novel substituted phenylacetic acid amide compounds. 4,346,104, Cl. 424-309.000.
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Salomon, Georges P. J., to Etablissements Francois Salomon & Fils. Safety binding for ski. 4,345,776, Cl. 280-629.000.
Salve S.A.: *See*—
Hedgren, Erland, 4,345,591, Cl. 128-169.000.
Sammells, Anthony F.; and St. John, Michael R., to Institute of Gas Technology. Lithium-germanium electrodes for batteries. 4,346,152, Cl. 429-112.000.
Sanborn, James R., to Shell Oil Company. Insecticidal combinations. 4,346,091, Cl. 424-258.000.
Sanborn, James R., to Shell Oil Company. Insecticidal combinations. 4,346,092, Cl. 424-258.000.
Sandberg, Christopher T., to Truth Incorporated. Window operator with switch to operate a burglar alarm. 4,346,372, Cl. 340-545.000.
Sanders Associates, Inc.: *See*—
Baer, Ralph H.; and Cope, Leonard D., 4,346,407, Cl. 358-149.000.
Sanders, James M.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,346,243, Cl. 568-591.000.
Sando Iron Works: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,345,385, Cl. 34-23.000.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works. Method for continuous drying of a cloth and an apparatus therefor. 4,345,385, Cl. 34-23.000.
Sangamo Weston, Inc.: *See*—
Gurr, George P., 4,346,421, Cl. 361-57.000.
Gurr, George P., 4,346,432, Cl. 363-129.000.
Sanjiki, Tetsutaro; Seta, Akinori; and Kiyohara, Takao, to Sumitomo Chemical Company, Limited. Antitumor and immunosuppressive 4-carbamoyl imidazolium-5-olate derivatives and pharmaceutical composition thereof. 4,346,096, Cl. 424-273.00R.
Sankyo Company, Limited: *See*—
Takiguchi, Yo; Mishima, Hiroshi; Yamamoto, Shinjiro; and Terao, Michiya, 4,346,171, Cl. 435-119.000.
Terahara, Akira; and Tanaka, Minoru, 4,346,227, Cl. 560-119.000.
Sano, Kounosuke; and Tsuchida, Takayasu, to Ajinomoto Company, Incorporated. Method for producing L-lysine by fermentation. 4,346,170, Cl. 435-115.000.
Santa Fe International Corporation: *See*—
Uyeda, Stanley T.; Radu, E. John; Talbot, William J., Jr.; and Feldman, Norman, 4,345,855, Cl. 405-168.000.
Sanyo Electric Co., Ltd.: *See*—
Ikeda, Hironosuke; Oishi, Hisao; and Yoshida, Seiki, 4,345,611, Cl. 137-68.00R.
Sasa, George J.: *See*—
Contreras, Joseph P.; and Sasa, George J., 4,345,607, Cl. 132-83.00R.
Sato, Kouji; Takahashi, Sadao; and Kodama, Toshikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Elastic surface wave device. 4,346,322, Cl. 310-313.00B.
Sato, Masanori: *See*—
Nakai, Taiichiro; Sato, Masanori; Furusawa, Kahei; Yamamoto, Hitoshi; Yamazaki, Yoshihiko; and Ejiri, Yoshihiro, 4,345,816, Cl. 350-96.200.
Sato, Takeshi; Tada, Hiroji; and Yano, Yoshiichi. Material for fixing anchor bolt or like and method of manufacturing same. 4,345,686, Cl. 206-219.000.
Sato, Takeshi: *See*—
Sekigawa, Kenji; Sato, Takeshi; and Motizuki, Mikio, 4,345,372, Cl. 29-874.000.
Sato, Yuji; and Koizumi, Shoji, to Furuno Electric Co., Ltd. Recorder. 4,346,391, Cl. 346-136.000.
Satokawa, Takaomi; Fujii, Tuneo; Ohmori, Akira; and Fujita, Yorio, to Daikin Kogyo Co., Ltd. Telomerization of tetrafluoroethylene. 4,346,250, Cl. 568-842.000.
Sattler, Henning; and Ulex, Georg A., to Beiersdorf Aktiengesellschaft. Corticosteroid-containing cream. 4,346,086, Cl. 424-243.000.
Sauer, George E., to General Electric Company. Cooling duct arrangement for transformer windings. 4,346,361, Cl. 336-60.000.
Sauer, Joseph: *See*—
Muller, Alfred; Schwab, Manfred; Feder, Meinrad; Schreiber, Achim; and Sauer, Joseph, 4,345,489, Cl. 74-752.00A.
Sav-A-Stop Incorporated: *See*—
McCranie, Stephen C.; and Houseman, Andrew J., 4,345,413, Cl. 53-315.000.
Sawa, Utazi: *See*—
Nishimura, Nobuzi; Sawa, Utazi; Tokieda, Takemi; Hayakawa, Shun-ichi; and Tezuka, Yasuo, 4,346,046, Cl. 260-458.00C.
Sawada, Satoru; Oono, Shigeru; Seto, Nobuo; Suzuki, Yoshiaki; Nakamura, Kotaro; and Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Process for improving light fastness of color images. 4,346,165, Cl. 430-372.000.
Schaberle, Erwin, to Sulzer Morat GmbH. Circular knitting machine for producing high pile fabric having combed-in fibres. 4,345,446, Cl. 66-9.00B.
Schaeffer, Charles W.: *See*—
Spengler, Emerson D.; and Schaeffer, Charles W., 4,345,492, Cl. 76-101.00R.
Schafer, William: *See*—
Pallo, John M.; Previte, Stephen J.; and Schafer, William, 4,345,430, Cl. 60-282.000.
Scharbert, W. Donald: *See*—
Slavin, Roy H.; and Scharbert, W. Donald, 4,346,269, Cl. 200-11.0DA.
Schardt, James J., to Dayton Wheel Products Company. Wire wheel with disc brake clearance. 4,345,795, Cl. 301-6.00E.
Schauffele, Carl N.: *See*—
Matteson, Lawrence J.; Greenwald, Roger J.; and Schauffele, Carl N., 4,345,825, Cl. 354-23.00D.
Schedrat, Gunther: *See*—
Schmidt, Adolf; Meier, Helmut; Schedrat, Gunther; and Bockmann, August, 4,346,203, Cl. 526-225.000.
Scheibitz, Wolfgang: *See*—
Gradl, Reinhard; Schrodter, Klaus; Ehlers, Klaus-Peter; and Scheibitz, Wolfgang, 4,346,066, Cl. 423-321.00S.
Schering Aktiengesellschaft: *See*—
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Schillinger, Eckehard, 4,346,228, Cl. 560-53.000.
Schiavone, James A.; and Viganta, Arvids, to Bell Telephone Laboratories, Incorporated. Microwave antenna height prediction. 4,346,385, Cl. 343-703.000.
Schiff, Charles M.; Maxon, Eric K.; and West, Ronald E., to Technicare Corporation. Automatic brake sequencing for overhead support arm assemblies. 4,345,847, Cl. 403-103.000.
Schiller, Wolf-Dieter: *See*—
Krull, Walther; Kohn, Dieter; and Schiller, Wolf-Dieter, 4,345,623, Cl. 137-637.200.
Schillinger, Eckehard: *See*—
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Schillinger, Eckehard, 4,346,228, Cl. 560-53.000.
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; Lorang, Lucien; and Baumert, Jean, to Arbed S.A. Apparatus for refining ferrous melt with slag conditioning. 4,345,746, Cl. 266-90.000.
Schlumberger Technology Corporation: *See*—
Schuster, Nick A., 4,346,460, Cl. 367-27.000.
Schmid, Steven L.: *See*—
deBuhr, Harold E.; Booker, Walter W.; and Schmid, Steven L., 4,345,417, Cl. 56-14.300.
Schmidt, Adolf; Meier, Helmut; Schedrat, Gunther; and Bockmann, August, to Bayer Aktiengesellschaft. Emulsifier for the preparation of polymers. 4,346,203, Cl. 526-225.000.
Schmidt, Robert C. H. Aiming post light. 4,346,329, Cl. 315-51.000.
Schmitt, Frederick L.: *See*—
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,346,080, Cl. 424-84.000.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,346,243, Cl. 568-591.000.
Schneider, Louis; and Graham, David E., to GAF Corporation. Herbicidal N-(haloacetyl)-N-(N'-methylenepyrrolidonyl)-2-alkoxyanilines. 4,345,937, Cl. 71-95.000.
Schneider, Samuel; and Beyer, John D., to Rohr Industries, Inc. Constant thrust adaptive control machine tool. 4,346,444, Cl. 364-475.000.
Schneider, Sidney: *See*—
Katz, Harry S.; and Schneider, Sidney, 4,345,900, Cl. 433-171.000.
Schoen, Donald W., to Donaldson Company, Inc. Air purifier with hermetic sealing. 4,345,923, Cl. 55-314.000.

Schoepe, Jochen: *See—*
Dhein, Rolf; Schoepe, Jochen; and Kuchenmeister, Rolf, 4,346,044, Cl. 260-404.800.

Scholander, Stig S. W. Apparatus for the application of a pliable web of material onto corrugated sheet. 4,345,964, Cl. 156-468.000.

Scholz, Werner, to Licentia Patent-Verwaltungs-G.m.b.H. Modulator and demodulator circuits for modified delay modulation method. 4,346,353, Cl. 332-9.00R.

Schouteeten, Alain; and Christidis, Yani, to Societe Francaise Hoechst. Process for the preparation of crystalline sodium paraformylphenolate. 4,346,238, Cl. 568-432.000.

Schreiber, Achim: *See—*
Muller, Alfred; Schwab, Manfred; Feder, Meinrad; Schreiber, Achim; and Sauer, Joseph, 4,345,489, Cl. 74-752.00A.

Schrepfer, Richard: *See—*
Hemmi, Peter; and Schrepfer, Richard, 4,345,890, Cl. 425-143.000.

Schrodter, Klaus: *See—*
Gradl, Reinhard; Schrodter, Klaus; Ehlers, Klaus-Peter; and Scheibitz, Wolfgang, 4,346,066, Cl. 423-321.00S.

Schroeder, Donald E.; and Temperly, Thomas, to Inryco, Inc. Brace member and wall structure. 4,345,409, Cl. 52-693.000.

Schroyer, Kenneth, to Instruments, Computers and Controls Corp. Digital torque meter system. 4,345,481, Cl. 73-862.340.

Schubert & Salzer: *See—*
Handschuch, Karl; Wulfhorst, Burkhard; and Gilhaus, Konrad, 4,345,356, Cl. 19-200.000.
Hauner, Friedrich, 4,345,542, Cl. 118-78.000.

Schulde, Felix; Peterlein, Karl; and Diedrich, Klaus, to C Hemische Werke Huls Aktiengesellschaft. Copolymers containing hydroxyl groups, method of production and their application in sizing of paper. 4,346,204, Cl. 526-271.000.

Schulman, Joseph H., to Pacesetter Systems, Inc. Implantable battery monitoring means and method. 4,345,603, Cl. 128-419.0PT.

Schulte, Wolfgang; and Castiglia, Giacinto, to Jetform Heisskanalnormalien und Zubehor GmbH, Firma. Injection moulding die with heavy-duty sprue bush. 4,345,892, Cl. 425-548.000.

Schuster, Nick A., to Schlumberger Technology Corporation. Method and apparatus for deriving compensated measurements in a borehole. 4,346,460, Cl. 367-27.000.

Schwab, Manfred: *See—*
Muller, Alfred; Schwab, Manfred; Feder, Meinrad; Schreiber, Achim; and Sauer, Joseph, 4,345,489, Cl. 74-752.00A.

Schwalenberg, Terry R.; Krumholz, Frank C.; Kanengieter, Glenn G.; and Henkensiefken, Larry L., to Owatonna Manufacturing Company, Inc. Baling machine with a non-circular chamber. 4,345,421, Cl. 56-341.000.

Schwarz, Alois; Mautz, Karl-Heinz; and Stephan, Michael, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Rotor structure for a rotary wing aircraft. 4,345,876, Cl. 416-134.00A.

Schweiss, Dietrich; and Nordin, Ivan C., to Warner-Lambert Company. Method for treating convulsions with pyrazole-4-carboxamide derivatives. 4,346,097, Cl. 424-273.00P.

Scope Incorporated: *See—*
Drapeau, Raoul E.; and Stone, William M., 4,346,453, Cl. 364-900.000.

Scorso, Clifford A., Jr.: *See—*
Leuenberger, Jean P.; Logan, David J.; and Scorso, Clifford A., Jr., 4,346,445, Cl. 364-520.000.

Secim: *See—*
Doudet, Michel, 4,345,450, Cl. 72-273.500.

SECO Industries, Inc.: *See—*
Moss, Theron C.; Boring, Earl; and Hjellum, Jerry, 4,345,351, Cl. 15-144.00B.

Seeh, Reinhold, to Carl Freudenberg, Firma. Coffered seal. 4,345,770, Cl. 277-48.000.

Sekigawa, Kenji; Sato, Takeshi; and Motizuki, Mikio, to Shinko Electric Industries Co., Ltd. Method of producing a multicontact spring. 4,345,372, Cl. 29-874.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, 4,345,625, Cl. 138-141.000.

Seliger, Robert L.: *See—*
Robinson, William P.; and Seliger, Robert L., 4,346,301, Cl. 250-492.200.

Senco Products, Inc.: *See—*
Rothfuss, Robert G., 4,345,600, Cl. 128-334.00R.

Senyei, Andrew E.: *See—*
Widder, Kenneth J.; and Senyei, Andrew E., 4,345,588, Cl. 128-1.300.

Seta, Akinori: *See—*
Sanjiki, Tetsutaro; Seta, Akinori; and Kiyohara, Takao, 4,346,096, Cl. 424-273.00R.

Seto, Nobuo: *See—*
Sawada, Satoru; Oono, Shigeru; Seto, Nobuo; Suzuki, Yoshiaki; Nakamura, Kotaro; and Furutachi, Nobuo, 4,346,165, Cl. 430-372.000.

Seuring, Bernhard: *See—*
Lang, Hans-Jochen; Seuring, Bernhard; and Granzer, Ernold, 4,346,088, Cl. 424-248.510.

Severson, Eugene K., to Hewlett-Packard Company. DC Switching circuit with current through resistive load below holding current of triac strings to charge capacitive load to predetermined potentials. 4,346,308, Cl. 307-252.00B.

Shabe, John: *See—*
Alvarez, Joseph A., III; and Shabe, John, 4,346,470, Cl. 370-104.000.

Shacher, Sraya, to Solmat Systems Ltd. Bottom construction of ponds particularly solar ponds. 4,345,581, Cl. 126-415.000.

Shah, Dilip: *See—*
Kopp, Clinton V.; and Shah, Dilip, 4,346,006, Cl. 210-321.400.

Shakertown Corporation: *See—*
Bockwinkel, Joe L.; and Pehl, Willis G., 4,345,630, Cl. 144-346.000.

Shaltis, Robert J.: *See—*
Alexander, Willis R.; and Shaltis, Robert J., 4,346,009, Cl. 210-512.100.

Shanks, Ian A., to National Research Development Corporation. Double trace electro optic display. 4,346,378, Cl. 340-754.000.

Shannon, Michael A.: *See—*
Cowley, William E.; Shannon, Michael A.; and LeNir, Victor L., 4,345,962, Cl. 156-356.000.

Sharp, James M.: *See—*
Gilmour, Neil J. L.; Martin, William B.; Sharp, James M.; Thompson, Dennis A.; and Wells, Peter W., 4,346,074, Cl. 424-92.000.

Sharp, Russell G.: *See—*
Wilkinson, William R.; Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; and Crane, Terry N., 4,345,919, Cl. 55-41.000.

Sharvit, Martin M., to Cindon Research Inc. Telephone call restriction apparatus. 4,346,264, Cl. 179-18.0DA.

Shashaty, Alex. Boring machine and method of rigidizing a boring bar. 4,345,860, Cl. 408-1.00R.

Shekel, Joseph; and DeStefano, Joseph, to Auto-Line Manufacturing Corp. Battery cable connector. 4,345,807, Cl. 339-31.00B.

Shell Oil Company: *See—*
Berni, Albert J., 4,345,473, Cl. 73-516.0LM.
Kramer, Petrus A., 4,346,038, Cl. 549-302.000.
Sanborn, James R., 4,346,091, Cl. 424-258.000.
Sanborn, James R., 4,346,092, Cl. 424-258.000.

Shephard, Philip C., to I.H.W. Engineering Limited. Seat reclining mechanism. 4,345,792, Cl. 297-362.000.

Shibuya, Yasutaka: *See—*
Huno, Takakazu; Endo, Takeyuki; Odaka, Kunihiro; and Shibuya, Yasutaka, 4,346,439, Cl. 364-200.000.

Shields, A. L.: *See—*
James, Kristi L.; and Shields, A. L., 4,345,969, Cl. 156-659.100.

Shields, Neal G., to Specific Cruise Systems, Inc. Speed governor with dual safety system. 4,345,663, Cl. 180-177.000.

Shigemura, Yutaka: *See—*
Kimura, Hiroshi; Hisajima, Masahiko; and Shigemura, Yutaka, 4,345,834, Cl. 355-3.00R.

Shih-Li, Chao. Webbed glove for swimming use. 4,345,335, Cl. 2-161.00A.

Shillito, Richard: *See—*
Pamplin, John W.; Astbury, Brian R.; and Shillito, Richard, 4,345,451, Cl. 72-286.000.

Shimano Industrial Company Limited: *See—*
Noda, Hideo, 4,345,726, Cl. 242-212.000.

Shimazaki, Takeshi: *See—*
Takahashi, Akio; Itoh, Yutaka; Shimazaki, Takeshi; Wajima, Motoyo; Morishita, Hirosada; Mizuno, Yutaka; Yokozawa, Shunya; and Tsukanishi, Kenji, 4,346,206, Cl. 528-88.000.

Shimizu Construction Co. Ltd.: *See—*
Suzuki, Yoshinobu; Chiba, Kiyoshi; Tukuhiro, Tomoya; Iwasawa, Yoshiyuki; Kajioka, Yasuo; and Komine, Tomio, 4,345,431, Cl. 60-286.000.

Shinano, Mamoru: *See—*
Hamanaka, Hiroyoshi; and Shinano, Mamoru, 4,346,087, Cl. 424-244.000.

Shinbori, Kenichi; Sakai, Shinji; Shinoda, Nobuhiko; Ito, Tadashi; and Murakami, Hiroyasu, to Canon Kabushiki Kaisha. Program-controlled camera. 4,345,829, Cl. 354-37.000.

Shinjo, Katsumi, to Yugen Kaisha Shinjoseisakusho. Chute-hose coupler unit for an automatic assembling machine. 4,345,677, Cl. 193-2.00A.

Shinko Electric Industries Co., Ltd.: *See—*
Sekigawa, Kenji; Sato, Takeshi; and Motizuki, Mikio, 4,345,372, Cl. 29-874.000.

Shinoda, Nobuhiko: *See—*
Shinbori, Kenichi; Sakai, Shinji; Shinoda, Nobuhiko; Ito, Tadashi; and Murakami, Hiroyasu, 4,345,829, Cl. 354-37.000.

Shinohara, Hiroichi, to Kabushiki Kaisha Ricoh. Reproduction lens having a six group six element composition a large vignetting factor and a compact size. 4,345,823, Cl. 350-464.000.

Shiono, Shigeo: *See—*
Endo, Fumihiro; Ishikawa, Toshio; Ozawa, Jun; Kamata, Yuzuru; and Shiono, Shigeo, 4,345,471, Cl. 374-188.000.

Shionogi & Co., Ltd.: *See—*
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,346,218, Cl. 544-16.000.

Shipman, Matthew W. Apparatus for the cleaning and sanitation of a restroom or lavoratory. 4,345,343, Cl. 4-662.000.

Shirahata, Kunikatsu: *See—*
Tomita, Fusao; Tamaoki, Tatsuya; Nakamura, Nobuo; Okubo, Shuji; Shirahata, Kunikatsu; Kasai, Masaji; and Oka, Tetsuo, 4,346,075, Cl. 424-120.000.

Shiraishi, Hideo: *See—*
Iida, Koso; Shiraishi, Hideo; and Higashi, Haruki, 4,345,432, Cl. 60-290.000.

Shtrikman, Shmuel, to Yeda Research and Development Co. Ltd. Linear motion devices. 4,346,318, Cl. 310-12.000.

Shultz, William E. Method and apparatus for injecting viscous materials. 4,345,667, Cl. 184-1.00D.

Sichling, Georg H., to Siemens Corporation. Fiber optical sensor system, preferably for measuring physical parameters. 4,346,478, Cl. 455-612.000.

Sidwell, Albert E.: *See—*
Deavenport, Dennis L.; Howard, Kenneth J.; and Sidwell, Albert E., 4,346,248, Cl. 568-776.000.

Siegmund, Walter P., to American Optical Corporation. Lens array. 4,345,833, Cl. 355-1.000.

Siemens Aktiengesellschaft: *See—*
Bauch, Helmut; and Rehm, Hans, 4,346,381, Cl. 340-825.930.
Kunze, Dieter, 4,346,258, Cl. 174-93.000.
Montag, Bernhard; and Optiz, Heinrich, 4,346,166, Cl. 430-435.000.
Pirner, Paul; and Muehling, Alois, 4,346,359, Cl. 335-202.000.

Siemens Corporation: *See—*
Sichling, Georg H., 4,346,478, Cl. 455-612.000.

Sievert, Bruce G.: *See—*
Graffis, Kelly R.; and Sievert, Bruce G., 4,345,998, Cl. 210-164.000.

Sigdell, Jan-Erik; and Krick, Gerd, to Dr. Eduard Fresenius, Chemisch-pharmazeutische Industrie K.G., Apparatebau K.G. Apparatus for preventing the entry of air into an artificial organ. 4,345,999, Cl. 210-188.000.

Signetics Corporation: *See—*
Blauschild, Robert A., 4,346,344, Cl. 323-313.000.

Silberberg, Jeffrey L., to United States of America, Health, Education and Welfare. Instrument for measuring true-RMS A.C. voltage and A.C. voltage fluctuations. 4,346,346, Cl. 324-132.000.

Simer Pump Company: *See—*
Steiner, Charles W., 4,345,879, Cl. 417-40.000.

Simms, John A., to Du Pont de Nemours, E. I., and Company. Polymer blend of an acrylic polymer and a block polymer of acrylic segments and polymercaptan segment. 4,346,201, Cl. 525-440.000.

Simpson, Elmer J.; and Rued, Glen A., to Elevator Equipment Co. Elevator fluid flow control valve. 4,345,507, Cl. 91-449.000.

Simpson, Ronald P.: *See—*
Lessmann, Gerald G.; Simpson, Ronald P.; and O'Brokta, Ronald D., 4,346,279, Cl. 219-75.000.

Sinclair, Lawrence L. Cooking and cutting implement. 4,345,516, Cl. 99-426.000.

Singer, Adam, to Upjohn Manufacturing Company M, The. Method for preventing adhesion formation. 4,346,108, Cl. 424-317.000.

Singer Company, The: *See—*
Gwynn, Eric C. E., 4,345,817, Cl. 350-174.000.

Singh, Baldev: *See—*
Lesher, George Y.; Dickinson, William B.; and Singh, Baldev, 4,346,221, Cl. 544-238.000.

Singh, Gurnam, to Bourns Instruments, Inc. Differential pressure transducer with high compliance, constant stress cantilever beam. 4,345,476, Cl. 73-720.000.

Single, Arthur W., II: *See—*
Bryans, Thomas J.; Miller, Richard H.; and Single, Arthur W., II, 4,345,791, Cl. 297-250.000.

Sircar, Shivaji: *See—*
Dalton, Augustine I., Jr.; and Sircar, Shivaji, 4,346,019, Cl. 252-416.000.

SITEG Siebtechnik GmbH: *See—*
Lefferts, Johannes, 4,346,138, Cl. 428-222.000.

Sivilotti, Olivo G.; Sulzer, John; and Treganza, Alan F., to Alcan Research and Development Limited. Means and method for containing flowing or standing molten metal. 4,345,743, Cl. 266-44.000.

Sizemore, Ronald D.; Tucci, John J.; and Willette, Albert D., to AMP Incorporated. Molding plastic bodies on continuous strip. 4,345,889, Cl. 425-122.000.

SJ Marketing Incorporated: *See—*
Souza, David W., 4,345,700, Cl. 222-438.000.

Sjostedt, Carl-Goran: *See—*
Egnell, Rolf A.; and Sjostedt, Carl-Goran, 4,345,426, Cl. 60-39.230.

Skaggs, William G.; and Curry, John L., to NCR Corporation. AC Drive system for plasma display panels. 4,346,379, Cl. 340-778.000.

Skoda, oborovy podnik: *See—*
Altman, Josef; and Roth, Zdenek, 4,345,618, Cl. 137-393.000.

Skowronski, Michael J.: *See—*
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,346,133, Cl. 428-109.000.

Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Schillinger, Eckehard, to Schering Aktiengesellschaft. Novel 11-oxoprostaglandin derivatives. 4,346,228, Cl. 560-53.000.

Slater, Richard A.: *See—*
Plank, Odas P.; Slater, Richard A.; and Taibbi, Steven G., 4,346,441, Cl. 364-200.000.

Slater Steel Industries Limited: *See—*
Nigol, Olaf, 4,346,255, Cl. 174-42.000.

Slavin, Roy H.; and Scharbert, W. Donald, to Standard Grigsby, Inc. Rotary switch and method of mounting contacts. 4,346,269, Cl. 200-11.0DA.

Sleeth, Robert S.: *See—*
Monticelli, Dennis M.; Howard, William M.; and Sleeth, Robert S., 4,346,380, Cl. 340-825.630.

Smathers, Robert E.: *See—*
Hanson, Steven P.; Smathers, Robert E.; and Morrison, Howard J., 4,345,402, Cl. 46-206.000.

Smith, Gerald B.: *See—*
Rothwell, Thomas F.; and Smith, Gerald B., 4,345,961, Cl. 156-294.000.

Smith, Leslie H., to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,346,111, Cl. 424-324.000.

Smith, Roger, Jr.; and Langowski, Faustyn C., to BJ-Hughes Inc. Pipe manipulator. 4,345,864, Cl. 414-22.000.

Smith, Willard P.; and Hutchinson, Bruce R., to Stone-Platt Fluidfire Limited. Light fuel start-up fluidized bed combustor. 4,345,894, Cl. 431-170.000.

Smith, William N.: *See—*
Bauer, Werner R.; and Smith, William N., 4,345,369, Cl. 29-622.000.

Snelling, Christopher: *See—*
Kramer, Charles J.; Kay, David B.; and Snelling, Christopher, 4,345,835, Cl. 355-3.00R.

Snyder, Raymond W.: *See—*
Mosa, Lee C.; Knox, Phillip J.; and Snyder, Raymond W., 4,346,257, Cl. 174-72.00B.

Snyder, Ronald R.: *See—*
Kirkpatrick, Robert G.; and Snyder, Ronald R., 4,345,504, Cl. 89-37.0GM.

Societe Anonyme dite: Carbonisation Entreprise et Ceramique: *See—*
Cochet, Gerard; and Provost, Gilbert, 4,346,177, Cl. 501-123.000.

Societe d'Applications Generales d'Electricite et de Mecanique SAGEM: *See—*
Deval, Alain, 4,345,474, Cl. 73-517.00B.

Societe d'Etudes de Produits Chimiques: *See—*
Esanu, Andre, 4,346,100, Cl. 424-275.000.

Societe Francaise Hoechst: *See—*
Schouteeten, Alain; and Christidis, Yani, 4,346,238, Cl. 568-432.000.

Societe Mecanique Generale et Decolletage Tournage: *See—*
Rolland, Guy, 4,345,684, Cl. 198-781.000.

Societe Metallurgique de Gerzat: *See—*
Coupry, Jean; and Anagnostidis, Marc, 4,345,951, Cl. 148-2.000.

Societe Nationale Industrielle et Aerospatiale: *See—*
Livet, Jean-Luc; and Bretaudeau, Maurice, 4,345,485, Cl. 74-5.100.

Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
Tu Xuan, Mai; Jufer, Marcel; and Pittet, Andre, 4,346,463, Cl. 368-157.000.

Soderberg, John H.; and Penque, Leonard M., to Pitney Bowes Inc. Inhibiting means for postage register parcel identification system. 4,345,521, Cl. 101-93.000.

Sokolenko, Anatoly I.: *See—*
Polyakov, Nikolai F.; Ryabchenjuk, Leonid M.; Emelyanova, Nina A.; Sulim, Georgy T.; Kobzar, Vladimir A.; Peresunko, Stanislav R.; Sokolenko, Anatoly I.; and Ivanenko, Oleg V., 4,346,003, Cl. 210-225.000.

Solmat Systems Ltd.: *See—*
Shacher, Sraya, 4,345,581, Cl. 126-415.000.

Solomon, Martin D. Closure assembly with protective lock. 4,345,448, Cl. 70-95.000.

Solomon, Martin D. Rolling protective gate for store fronts or the like. 4,345,635, Cl. 160-133.000.

Soluyanov, Vadim G.: *See—*
Lezgintsev, Georgy M.; Garbuz, Evgeny I.; Kontar, Evgeny A.; Glukhikh, Rudolf G.; Murdmaa, Ivar O.; Soluyanov, Vadim G.; Belyavsky, Alexandr S.; and Kuznetsov, Alexei N., 4,345,461, Cl. 73-170.00A.

Somekh, George S.; and Cupper, Robert A., to Union Carbide Corporation. Method of improving antiwear properties of high temperature hydrocarbon compositions. 4,346,015, Cl. 252-50.000.

Sommerfeld, George L., to Tennant Company. Filtering device. 4,345,353, Cl. 15-349.000.

Sonoda, Noboru; Murai, Shinji; and Takii, Kazuhisa, to Okamura Oil Mill Limited; and Daikin Kogyo Co., Ltd. Fluorine-containing compounds. 4,346,235, Cl. 562-596.000.

Sony Corporation: *See—*
Akutagawa, Touru; Okada, Takashi; and Tanaka, Yutaka, 4,346,399, Cl. 358-29.000.
Ohsawa, Mitsuo; Noda, Yoshiteru; Ichikawa, Iwao; and Yamamoto, Katsumi, 4,345,371, Cl. 29-836.000.

Sorensen, Egon, to AMF, Inc. Dispenser. 4,345,802, Cl. 312-42.000.

Sottini, Stefano: *See—*
Righini, Giancarlo; Sottini, Stefano; and Russo, Vera, 4,345,815, Cl. 350-96.180.

Soukup, Frantisek: *See—*
Zobac, Ladislav; Malek, Zdenek; Soukup, Frantisek; Ryska, Antonin; Jelinek, Jan; and Busta, Jiri, 4,345,598, Cl. 128-303.100.

Soula, Gerard; and Linguenheld, Louis, to Rhone-Poulenc Industries. Preparation of chloroalkoxybenzenes. 4,346,244, Cl. 568-656.000.

Sourirajan, Srinivasa: *See—*
Kutowy, Oleh; Thayer, William L.; and Sourirajan, Srinivasa, 4,346,126, Cl. 427-209.000.

Soussloff, Dimitri G., to Harrington Hoists. Mounting device. 4,345,851, Cl. 403-369.000.

Souther, Louis C. Linear tracking tone arm. 4,346,467, Cl. 369-249.000.

Southern California Edison Company: *See—*
Welz, Ronald C., 4,346,345, Cl. 324-110.000.

Souza, David W., to SJ Marketing Incorporated. Variable quantity dispensing device for granular material. 4,345,700, Cl. 222-438.000.

Sparzak, Walter J., Sr.: *See—*
Choi, Jae H.; Mottine, John J., Jr.; Sparzak, Walter J., Sr.; and Vesperman, William C., 4,346,145, Cl. 428-389.000.

Spatz, David M., to American Cyanamid Company. Method for preparing substituted meta-phenylalkoxynitrobenzenes. 4,346,242, Cl. 568-586.000.

Specific Cruise Systems, Inc.: *See—*
Shields, Neal G., 4,345,663, Cl. 180-177.000.

Spector, Donald. Aroma-generating lamp structure. 4,346,059, Cl. 422-125.000.
Speer, Richard A., to Apollo Systems, Inc. Ball projecting device capable of providing spin. 4,345,578, Cl. 124-56.000.
Speicher, Gerald W. Fireplace damper attachment. 4,345,580, Cl. 126-288.000.
Spengler, Emerson D.; and Schaeffer, Charles W., to Bethlehem Steel Corporation. Method of making metal forming punches. 4,345,492, Cl. 76-101.00R.
Sperry Corporation: *See—*
Breeden, Robert H., 4,345,435, Cl. 60-420.000.
Lewandowski, Walter S., 4,346,339, Cl. 323-245.000.
Spex Industries Inc.: *See—*
Mitteldorf, Arthur J.; Marcovecchio, Joseph; and Boquiron, Rodolfo A., 4,346,299, Cl. 378-204.000.
Spin Physics, Inc.: *See—*
Cullum, Dennis F.; and Dorreboom, Jelmer, 4,346,418, Cl. 360-129.000.
Griffith, Neil J., 4,346,417, Cl. 360-115.000.
Spiral Systems Inc.: *See—*
Campbell, Jeptha E.; and Gilchrist, James E., 4,345,628, Cl. 141-83.000.
Spivey, Bron W.: *See—*
Davis, Michael A.; and Spivey, Bron W., 4,345,424, Cl. 57-209.000.
Sprecker, Mark A.; and Hall, John B., to International Flavors & Fragrances Inc. Substituted tricyclodecane derivatives. 4,346,245, Cl. 568-665.000.
Sprecker, Mark A.: *See—*
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,346,080, Cl. 424-84.000.
Springs, Daniel R.: *See—*
Goss, David C.; and Springs, Daniel R., 4,345,368, Cl. 29-611.000.
SRI International: *See—*
Levins, Donald A.; Bedford, Clifford D.; and Coon, Clifford L., 4,346,222, Cl. 544-322.000.
Stal-Laval Apparat AB: *See—*
Lofgren, Lars; and Ostlund, Artur, 4,346,054, Cl. 422-49.000.
Standard Grigsby, Inc.: *See—*
Slavin, Roy H.; and Scharbert, W. Donald, 4,346,269, Cl. 200-11.0DA.
Standard Oil Company (Indiana): *See—*
Knox, Jack R., 4,346,052, Cl. 264-176.00F.
Stanley Aviation Corp.: *See—*
Gale, Edwin J., 4,346,428, Cl. 361-215.000.
Stanton, C. Robert. Recirculating system for gas-fired furnace. 4,345,897, Cl. 432-72.000.
Stanwick, Tad. Trapped air method of generating rotary power in a deepsea environment. 4,345,433, Cl. 60-327.000.
Stanwood, David A.: *See—*
Finley, Richard O.; and Stanwood, David A., 4,345,805, Cl. 339-16.00R.
Staten, Gilbert S.: *See—*
Tao, Eddie V. P.; and Staten, Gilbert S., 4,346,225, Cl. 548-138.000.
Steele, Richard J. Pipe cutter for end cuts of tubular material. 4,345,745, Cl. 266-56.000.
Steele, Robert L.: *See—*
Braund, Darwin G.; Fronk, Thomas J.; Goings, Richard L.; Peters, John W.; and Steele, Robert L., 4,346,077, Cl. 424-156.000.
Stegelman, Albert F., to Phillips Petroleum Company. Catalytic cracking process. 4,345,991, Cl. 208-78.000.
Steigerwald, Robert L., to General Electric Company. Field controlled thyristor switching power supply. 4,346,431, Cl. 363-27.000.
Steiner, Charles W., to Simer Pump Company. Hydraulic switch for a pump. 4,345,879, Cl. 417-40.000.
Steiner Corporation: *See—*
Cassia, Antonio M., 4,345,627, Cl. 141-18.000.
Stemme, Otto; Lermann, Peter; and Cocron, Istvan, to AGFA-Gevaert Aktiengesellschaft. Distance-measuring system with in-range signalling for use with cameras, alarms, and the like. 4,345,827, Cl. 354-25.000.
Stenemann, Bruno, to Octanorm-Vertriebs GmbH fur Bauelemente. Framework of releasably-connectable bars. 4,345,849, Cl. 403-252.000.
Stephan, Michael: *See—*
Schwarz, Alois; Mautz, Karl-Heinz; and Stephan, Michael, 4,345,876, Cl. 416-134.00A.
Stepien, John A.: *See—*
Brown, Robert B.; and Stepien, John A., 4,345,727, Cl. 244-102.00R.
Stepnov, Ksenofont K.: *See—*
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Ksenofont K.; and Rudnev, Anatoly E., 4,346,280, Cl. 219-76.100.
Sterett, Robert A., to LOF Plastics Inc. Louver assembly. 4,345,510, Cl. 98-40.0VM.
Sterling Drug Inc.: *See—*
Lesher, George Y.; Dickinson, William B.; and Singh, Baldev, 4,346,221, Cl. 544-238.000.
Stewart, David G.: *See—*
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,346,021, Cl. 252-431.00N.
Stewart, Dorothy M., executrix: *See—*
Tosato, Larry P.; Wehrli, Henry A.; and Stewart, Robert C., deceased, 4,345,671, Cl. 187-95.000.
Stewart, Robert C., deceased: *See—*
Tosato, Larry P.; Wehrli, Henry A.; and Stewart, Robert C., deceased, 4,345,671, Cl. 187-95.000.
Stewart, William S., to Phillips Petroleum Company. Control of a fluid catalytic cracking unit. 4,345,993, Cl. 208-164.000.
Stitt, Robert M.: *See—*
Albaugh, Neil P.; and Stitt, Robert M., 4,346,294, Cl. 250-227.000.
Stolka, Milan: *See—*
Pai, Damodar M.; Stolka, Milan; and Yanus, John F., 4,346,158, Cl. 430-59.000.
Stoll, Donald H., to General Electric Company. Control device and method of operating. 4,346,272, Cl. 200-83.00C.
Stone-Platt Fluidfire Limited: *See—*
Smith, Willard P.; and Hutchinson, Bruce R., 4,345,894, Cl. 431-170.000.
Stone, William M.: *See—*
Drapeau, Raoul E.; and Stone, William M., 4,346,453, Cl. 364-900.000.
Stork Amsterdam B.V.: *See—*
van Drooge, Barend L., 4,346,000, Cl. 210-195.100.
Stout, Donald L.: *See—*
Randolph, Jeptha F.; and Stout, Donald L., 4,345,801, Cl. 308-238.000.
Stout, Garry A.; and Ray, Donald L., to Emhart Industries, Inc. Timing mechanism with a digital clock. 4,346,270, Cl. 200-33.00R.
Straker, Michael. Protective pad for mounting on a bicycle pedal. 4,345,487, Cl. 74-563.000.
Streit, Kenneth F., to Techplastics, Inc. Shelving display and support. 4,345,526, Cl. 108-111.000.
Stretch Devices, Inc.: *See—*
Newman, Don E., 4,345,390, Cl. 38-102.910.
Studinger, John. Adjustable base mount for a walking-beam gas compressor. 4,345,734, Cl. 248-669.000.
Sud, Rahul; Hardee, Kim C.; and Heightley, John O., to INMOS Corporation. Redundancy scheme for an MOS memory. 4,346,459, Cl. 365-200.000.
Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Hauser, Kurt, 4,345,641, Cl. 165-41.000.
Sudilovsky, Abraham, to E. R. Squibb & Sons, Inc. Method for inhibiting onset of migraine headaches with nadolol compositions. 4,346,106, Cl. 424-311.000.
Sugasawa, Fukashi: *See—*
Iizuka, Haruhiko; and Sugasawa, Fukashi, 4,345,571, Cl. 123-568.000.
Sugden, Mary L. Circuit board ejector and guide. 4,345,809, Cl. 339-45.00M.
Sugier, Andre; Freund, Edouard; and Le Page, Jean-Francois, to Institut Francais du Petrole. Production of alcohols from synthesis gases. 4,346,179, Cl. 518-707.000.
Sugishita, Kaneo: *See—*
Tsunoda, Sachio; and Sugishita, Kaneo, 4,346,304, Cl. 290-52.000.
Sulim, Georgy T.: *See—*
Polyakov, Nikolai F.; Ryabchenjuk, Leonid M.; Emelyanova, Nina A.; Sulim, Georgy T.; Kobzar, Vladimir A.; Peresunko, Stanislav R.; Sokolenko, Anatoly I.; and Ivanenko, Oleg V., 4,346,003, Cl. 210-225.000.
Sullivan, David T. Pocket sheet insert sheet assemblage and method of using the assemblage. 4,345,394, Cl. 40-405.000.
Sullivan, James E., to Gulfko Incorporated. Water based aluminum paint. 4,346,149, Cl. 428-516.000.
Sullivan, John L., to A-T-O Inc. Pressure-demand breathing apparatus with automatic air shut-off. 4,345,593, Cl. 128-204.260.
Sullivan, John L.: *See—*
Giorgini, Eugene A.; and Sullivan, John L., 4,345,592, Cl. 128-204.260.
Sulzer Brothers Limited: *See—*
Muller, Arnold; and Brockel, Gerhard, 4,345,339, Cl. 3-1.000.
Sulzer, John: *See—*
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Sumitomo Chemical Company, Limited: *See—*
Nishimura, Nobuzi; Sawa, Utazi; Tokieda, Takemi; Hayakawa, Shun-ichi; and Tezuka, Yasuo, 4,346,046, Cl. 260-458.00C.
Sanjiki, Tetsutaro; Seta, Akinori; and Kiyohara, Takao, 4,346,096, Cl. 424-273.00R.
Sumitomo Electric Industries, Ltd.: *See—*
Osawa, Yoshitaka; Nishimura, Akira; and Toyooka, Shinichi, 4,346,139, Cl. 428-252.000.
Saito, Yasunori; Nakagaki, Kunihiro; Yoneyama, Kunihiko; and Ohmoto, Katsumi, 4,346,253, Cl. 174-29.000.
Sumrell, Gene: *See—*
Bailey, August V.; Boudreaux, Gordon J.; and Sumrell, Gene, 4,346,043, Cl. 260-404.000.
Sun-Woods Engineering Ltd.: *See—*
Ellis, Victor C., 4,345,585, Cl. 126-429.000.
Sundins Fabriker AB: *See—*
Petersson, Ralf K. E., deceased; and Vejdemo, Stephan, executor, 4,345,881, Cl. 417-270.000.
Super Shops, Inc.: *See—*
Moseley, Gordon P.; and Christner, Kurt W., 4,345,576, Cl. 123-604.000.
Suslov, Alexandr N.: *See—*
Minasov, Alexandr N.; Suslov, Alexandr N.; Azimov, Alexandr A.; and Marapulets, Gennady N., 4,345,867, Cl. 414-287.000.

Suto, Shoichi: *See*—
Kawachi, Masao; Tomaru, Satoru; Edahiro, Takao; and Suto, Shoichi, 4,345,928, Cl. 65-18.200.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Webbing slider lock mechanism. 4,345,781, Cl. 280-802.000.
Suzuki, Masakazu; Furuichi, Shuhei; and Ikeda, Toshiaki, to Kabushiki Kaisha Morita Seisakusho. X-ray photographic apparatus. 4,346,297, Cl. 378-110.000.
Suzuki, Masaki: *See*—
Hara, Yoshihumi; Kubota, Saburo; Ihara, Akira; Kishimoto, Masaru; and Suzuki, Masaki, 4,345,472, Cl. 73-462.000.
Suzuki, Nagatoshi; Araki, Sadaakira; and Kawazoe, Soichi. Engine exhaust gas reflux apparatus. 4,345,572, Cl. 123-568.000.
Suzuki, Shigeo: *See*—
Kakuta, Atsushi; Suzuki, Shigeo; Mori, Yasuki; and Morishita, Hirosada, 4,346,157, Cl. 430-58.000.
Suzuki, Takeshi: *See*—
Yamatsu, Isao; Inai, Yuichi; Abe, Shinya; Suzuki, Takeshi; Suzuki, Yoshikazu; Tagaya, Osamu; and Koyanagi, Nozomu, 4,346,109, Cl. 424-318.000.
Suzuki, Yoshiaki: *See*—
Sawada, Satoru; Oono, Shigeru; Seto, Nobuo; Suzuki, Yoshiaki; Nakamura, Kotaro; and Furutachi, Nobuo, 4,346,165, Cl. 430-372.000.
Suzuki, Yoshikazu: *See*—
Yamatsu, Isao; Inai, Yuichi; Abe, Shinya; Suzuki, Takeshi; Suzuki, Yoshikazu; Tagaya, Osamu; and Koyanagi, Nozomu, 4,346,109, Cl. 424-318.000.
Suzuki, Yoshinobu; Chiba, Kiyoshi; Tukuhiro, Tomoya; Iwasawa, Yoshiyuki; Kajioka, Yasuo; and Komine, Tomio, to Shimizu Construction Co. Ltd. Exhaust gas cleaning system for diesel engines. 4,345,431, Cl. 60-286.000.
Svenska Traforskningsinstitutet: *See*—
Norman, Bo; and Grundstrom, Karl-Johan, 4,346,007, Cl. 210-360.100.
Swank, Bryan W.: *See*—
Kasting, Edward W.; Glasson, Richard E.; and Swank, Bryan W., 4,345,552, Cl. 123-90.380.
Swanson, Arthur P. Golf club. 4,345,763, Cl. 273-164.000.
Swartz, Mitchell R., to Massachusetts Institute of Technology. Electrochemical process and apparatus to control the chemical state of a material. 4,346,172, Cl. 435-168.000.
Swerlick, Isadore: *See*—
Garlington, William D.; and Swerlick, Isadore, 4,346,215, Cl. 528-348.000.
Sze, Daniel T. W., to International Business Machines Corporation. Even-odd parity checking for synchronous data transmission. 4,346,474, Cl. 371-49.000.
Szell nee Hasenohrl, Erzsebet: *See*—
Bajusz, Sandor; Szell nee Hasenohrl, Erzsebet; Barabas, Eva; Bagdy, Daniel; and Mohai nee Nagy, Zsuzsanna, 4,346,078, Cl. 424-177.000.
T. T. Haaksbergen B.V.: *See*—
Leuvelink, Gerrit W. E., 4,345,730, Cl. 245-6.000.
Tabarelli, Werner; and Lobach, Ernst W. Photolithographic method for the manufacture of integrated circuits. 4,346,164, Cl. 430-311.000.
Tabor, Edward: *See*—
Aronson, David L.; Tabor, Edward; and Gerety, Robert J., 4,346,073, Cl. 424-86.000.
Tachihara, Satoru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens. 4,345,821, Cl. 350-427.000.
Tachihara, Satoru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Telephoto zoom lens. 4,345,822, Cl. 350-427.000.
Tada, Hiroji: *See*—
Sato, Takeshi; Tada, Hiroji; and Yano, Yoshiichi, 4,345,686, Cl. 206-219.000.
Tada, Hisashi: *See*—
Asai, Hajime; Tada, Hisashi; and Gomi, Takeo, 4,345,959, Cl. 156-244.110.
Taga, Yutaka: *See*—
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Tagaya, Osamu: *See*—
Yamatsu, Isao; Inai, Yuichi; Abe, Shinya; Suzuki, Takeshi; Suzuki, Yoshikazu; Tagaya, Osamu; and Koyanagi, Nozomu, 4,346,109, Cl. 424-318.000.
Taibbi, Steven G.: *See*—
Plank, Odas P.; Slater, Richard A.; and Taibbi, Steven G., 4,346,441, Cl. 364-200.000.
Tajima, Masahiko: *See*—
Kondo, Toshio; Sagisaka, Yasuo; Tajima, Masahiko; and Kobayashi, Akio, 4,345,561, Cl. 123-440.000.
Takacs, Istvan; Vereczkey, Endre; Bosits, Gyula; and Kerey, Gyorgy, to Richter Gedeon Vegyeszeti Gyar Rt. Apparatus for the treatment of solid, granular and/or lumpy materials. 4,345,720, Cl. 241-74.000.
Takada, Masaki: *See*—
Ikuta, Shigeru; Imamura, Shigeyuki; Ishikawa, Hidehiko; Matsuura, Kazuo; Takada, Masaki; and Misaki, Hideo, 4,346,173, Cl. 435-189.000.
Takagi, Kazumasa; and Tsunoda, Masakazu, to Nissan Motor Company, Limited. Voice warning system for an automotive vehicle with ready-to-drive sensor. 4,346,364, Cl. 340-52.00D.
Takahama, Akio, to Nippon Kogaku K.K. Divisional reading device for sine signals. 4,346,447, Cl. 364-560.000.
Takahashi, Akio; Itoh, Yutaka; Shimazaki, Takeshi; Wajima, Motoyo; Morishita, Hirosada; Mizuno, Yutaka; Yokozawa, Shunya; and Tsukanishi, Kenji, to Hitachi Chemical Company, Ltd. Imide prepolymer from reaction of epoxy compound with bis-imide/diamine reaction mixture. 4,346,206, Cl. 528-88.000.
Takahashi, Akira; and Hashimoto, Masanori, to Ricoh Company, Ltd. Shutter speed setting and display apparatus. 4,345,826, Cl. 354-23.00D.
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, to Nippon Piston Ring Co., Ltd. Abrasion resistant sintered alloy for internal combustion engines. 4,345,942, Cl. 75-237.000.
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, to Nippon Piston Ring Co., Ltd. Abrasion resistant sintered alloy for internal combustion engines. 4,345,943, Cl. 75-238.000.
Takahashi, Sadao: *See*—
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Takao, Hiroshi: *See*—
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Takeshita, Masajiro: *See*—
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Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,345,943, Cl. 75-238.000.
Takeuchi, Yasuhisa: *See*—
Miyamoto, Keiichi; Inoue, Naohiko; and Takeuchi, Yasuhisa, 4,345,522, Cl. 104-89.000.
Takeyama, Kenichi; Morimoto, Takayoshi; and Hibino, Kunio, to Matsushita Electric Industrial Co. Ltd. Resist for use in forming a positive pattern with a radiation and process for forming a positive pattern with radiation. 4,346,163, Cl. 430-280.000.
Takigawa, Hiroyoshi; and Miyamura, Nobuhiro, to Bridgestone Tire Co., Ltd. Tread with spaced projections in stone ejecting groove. 4,345,632, Cl. 152-209.00R.
Takiguchi, Yo; Mishima, Hiroshi; Yamamoto, Shinjiro; and Terao, Michiya, to Sankyo Company, Limited. Fermentation process for producing compound having anthelmintic and acaricidal activities. 4,346,171, Cl. 435-119.000.
Takii, Kazuhisa: *See*—
Sonoda, Noboru; Murai, Shinji; and Takii, Kazuhisa, 4,346,235, Cl. 562-596.000.
Talbot, William J., Jr.: *See*—
Uyeda, Stanley T.; Radu, E. John; Talbot, William J., Jr.; and Feldman, Norman, 4,345,855, Cl. 405-168.000.
Tamaoki, Tatsuya: *See*—
Tomita, Fusao; Tamaoki, Tatsuya; Nakamura, Nobuo; Okubo, Shuji; Shirahata, Kunikatsu; Kasai, Masaji; and Oka, Tetsuo, 4,346,075, Cl. 424-120.000.
Tamasovics, John F.: *See*—
Balkwill, G. Russell; Robinet, Jules P.; and Tamasovics, John F., 4,345,693, Cl. 220-3.300.
Tamura, Shigeru, to Kabushiki Kaisha n a c. Process and device for producing animated cartoons. 4,346,403, Cl. 358-93.000.
Tanaka, Kazuyoshi; Kato, Hisatoyo; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Radiation image read out device. 4,346,295, Cl. 250-327.200.
Tanaka, Minoru: *See*—
Terahara, Akira; and Tanaka, Minoru, 4,346,227, Cl. 560-119.000.
Tanaka, Toru: *See*—
Komatsu, Makoto; Tanaka, Toru; and Fujita, Hideaki, 4,346,232, Cl. 562-416.000.
Tanaka, Yutaka: *See*—
Akutagawa, Touru; Okada, Takashi; and Tanaka, Yutaka, 4,346,399, Cl. 358-29.000.
Tanida, Hiroshi: *See*—
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,346,218, Cl. 544-16.000.
Tanino, Yukio: *See*—
Kazama, Yoshiteru; Kokubo, Isao; Tsuji, Akitoshi; and Tanino, Yukio, 4,345,944, Cl. 106-90.000.
Tanouchi, Tadao; Kawamura, Masanori; Okada, Takanori; and Hayashi, Masaki, to Ono Pharmaceutical Co., Ltd.; and Kissei Pharmaceutical Co., Ltd. Carboxy-imidazole derivatives, compositions and use. 4,346,099, Cl. 424-273.00R.
Tanson, Rodolphe F.: *See*—
Rinio, Johannes A.; and Tanson, Rodolphe F., 4,345,741, Cl. 254-2#7.000.
Tao, Eddie V. P.; and Staten, Gilbert S., to Eli Lilly and Company. Herbicidal 2-methylamino thiadiazolines. 4,346,225, Cl. 548-138.000.
Tate & Lyle Limited: *See*—
Rundell, John T.; Pottage, Paul R.; and Harradine, Ronald J., 4,345,947, Cl. 127-48.000.
TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH: *See*—
Leinweber, Walter, 4,346,367, Cl. 340-347.0DD.
Technicare Corporation: *See*—
Schiff, Charles M.; Maxon, Eric K.; and West, Ronald E., 4,345,847, Cl. 403-103.000.
Technicon Instruments Corporation: *See*—
Hirschfeld, Tomas, 4,346,323, Cl. 313-111.000.
Techniques Industrielles et Minieres: *See*—
Valantin, Alfred, 4,345,854, Cl. 405-159.000.
Technische Hogeschool Eindhoven: *See*—
Willems, Leonardus F.; and Vogten, Leonardus L. M., 4,346,262, Cl. 179-1.0SA.

Technomatic AG: *See—*
Ruchser, Erich; Ott, Helmut; and Baldauf, Gunter, 4,345,620, Cl. 137-596.160.
Techplastics, Inc.: *See—*
Streit, Kenneth F., 4,345,526, Cl. 108-111.000.
Tektronix, Inc.: *See—*
Baetke, Robert E., 4,346,352, Cl. 331-178.000.
Dagostino, Thomas P., 4,346,333, Cl. 315-367.000.
Temperly, Thomas: *See—*
Schroeder, Donald E.; and Temperly, Thomas, 4,345,409, Cl. 52-693.000.
Tennant Company: *See—*
Sommerfeld, George L., 4,345,353, Cl. 15-349.000.
Terabayashi, Gosaku, to Toyota Jidosha Kogyo Kabushiki Kaisha. Window wiper for vehicle. 4,345,352, Cl. 15-250.160.
Terahara, Akira; and Tanaka, Minoru, to Sankyo Company, Limited. ML-236B Derivatives and their preparation. 4,346,227, Cl. 560-119.000.
Terao, Michiya: *See—*
Takiguchi, Yo; Mishima, Hiroshi; Yamamoto, Shinjiro; and Terao, Michiya, 4,346,171, Cl. 435-119.000.
Terrell, Jamie B., to Gearhart Industries, Inc. Apparatus for chemical cutting. 4,345,646, Cl. 166-55.000.
Terrell, Ross C.; and Hansen, Kirsten, to Airco, Inc. Process for adjusting the halogen content of halogenated aliphatic ethers. 4,346,246, Cl. 568-684.000.
Terry, Paul V. Retractor for hose-connected hand pieces. 4,345,616, Cl. 137-355.170.
Tessarolo, Francesco: *See—*
Costanzi, Silvestro; Tessarolo, Francesco; Ballabio, Adriano; and Brunelli, Maurizio, 4,346,188, Cl. 524-104.000.
Tetra Pak International AB: *See—*
Jarund, Erik, 4,345,415, Cl. 53-450.000.
Texas Instruments Incorporated: *See—*
Allen, Charles A.; and Houston, David T., 4,346,390, Cl. 346-76.0PH.
Buss, Kenneth G.; and Culp, Norman L., 4,346,265, Cl. 179-84.00T.
McElroy, David J., 4,345,364, Cl. 29-571.000.
Texas Medical Products, Inc.: *See—*
Wilkinson, William R.; Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; and Crane, Terry N., 4,345,919, Cl. 55-41.000.
Tezuka, Yasuo: *See—*
Nishimura, Nobuzi; Sawa, Utazi; Tokieda, Takemi; Hayakawa, Shun-ichi; and Tezuka, Yasuo, 4,346,046, Cl. 260-458.00C.
Thayer, William L.: *See—*
Kutowy, Oleh; Thayer, William L.; and Sourirajan, Srinivasa, 4,346,126, Cl. 427-209.000.
Thermacore, Inc.: *See—*
Ernst, Donald M.; and Copenhaver, Richard L., 4,345,642, Cl. 165-86.000.
Thermo Electron Corporation: *See—*
Lee, Chunghsin; and Oettinger, Peter E., 4,346,330, Cl. 315-150.000.
Thermon Manufacturing Co.: *See—*
Goss, David C.; and Springs, Daniel R., 4,345,368, Cl. 29-611.000.
Thibault, Thomas D., to Eli Lilly and Company. 2,4-Imidazolidinediones, compositions and herbicidal method. 4,345,935, Cl. 71-92.000.
Thibault, Thomas D.; and St. Clair, Roger L., to Eli Lilly and Company. Imidazoles, compositions and herbicidal method. 4,345,936, Cl. 71-92.000.
Thiokol Corporation: *See—*
Whitesides, Roger H., Jr., 4,345,427, Cl. 60-234.000.
Thomas Jefferson University: *See—*
Johnson, E. Marshall, 4,346,070, Cl. 424-9.000.
Thomas, Jeffrey G.: *See—*
Borin, Frank W.; and Thomas, Jeffrey G., 4,346,254, Cl. 174-37.000.
Thompson, Dennis A.: *See—*
Gilmour, Neil J. L.; Martin, William B.; Sharp, James M.; Thompson, Dennis A.; and Wells, Peter W., 4,346,074, Cl. 424-92.000.
Thompson, John S.; and Jadlocki, Joseph F., Jr., to FMC Corporation. Method for inhibiting the growth of *Clostridium botulinum* and the formation of enterotoxin in corned beef and poultry and products thereof. 4,346,117, Cl. 426-264.000.
Thompson, Malcolm J.; Mandava, Nagabhushanam; Worley, Joseph F., deceased (by Worley, Anita S., a personal repesentative); Meudt, Werner J.; Dutky, Samson R.; Robbins, William E.; and Flippen-Anderson, Judith L., to United States of America, Agriculture. Plant growth promoting brassinosteroids. 4,346,226, Cl. 549-268.000.
Thomson-CSF: *See—*
Driard, Bertrand; Ricodeau, Jean; and Rougeot, Henri, 4,346,326, Cl. 313-388.000.
Micheron, Francois, 4,345,359, Cl. 29-25.350.
Ti Creda Manufacturing Limited: *See—*
Lane, Richard J., 4,345,639, Cl. 165-10.000.
Tohda, Masayuki; Takao, Hiroshi; and Kimura, Shinji, to Nissan Motor Company, Limited. Method of producing solid electrolyte oxygen-sensing element of laminated structure. 4,345,985, Cl. 204-192.0EC.
Toho Chemical Industry Co., Ltd.: *See—*
Hamanaka, Hiroyoshi; and Shinano, Mamoru, 4,346,087, Cl. 424-244.000.
Tokarzewski, Richard J.: *See—*
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,346,080, Cl. 424-84.000.
Tokas, Edward F.: *See—*
Peng, Fred M.; and Tokas, Edward F., 4,346,199, Cl. 525-316.000.
Tokieda, Takemi: *See—*
Nishimura, Nobuzi; Sawa, Utazi; Tokieda, Takemi; Hayakawa, Shun-ichi; and Tezuka, Yasuo, 4,346,046, Cl. 260-458.00C.
Tokyo Institute of Technology: *See—*
Ikawa, Tsuneo; and Yamase, Toshihiro, 4,345,982, Cl. 204-129.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kamata, Shohichi; Kimura, Yoshinori; and Hirai, Katsumi, 4,346,347, Cl. 324-158.00D.
Nakamura, Kunihiko; and Miyaji, Hiromi, 4,345,752, Cl. 271-12.000.
Nakaya, Shunichi; and Araoka, Katsumasa, 4,345,926, Cl. 62-38.000.
Ozeki, Kenichi; and Fushimi, Takashi, 4,345,874, Cl. 415-9.000.
Sato, Kouji; Takahashi, Sadao; and Kodama, Toshikazu, 4,346,322, Cl. 310-313.00B.
Tsunoda, Sachio; and Sugishita, Kaneo, 4,346,304, Cl. 290-52.000.
Tolliver, Wilbur E. Circumferential stirrup panel. 4,345,626, Cl. 140-107.000.
Tomabechi, Hideo; Osada, Hazime; and Osanai, Akira, to Olympus Optical Co., Ltd. Cassette tape recorder. 4,346,415, Cl. 360-105.000.
Tomaru, Satoru: *See—*
Kawachi, Masao; Tomaru, Satoru; Edahiro, Takao; and Suto, Shoichi, 4,345,928, Cl. 65-18.200.
Tomich, Robert G.: *See—*
Price, Charles E.; Ray, George C., III; Grieve, Harold R.; and Tomich, Robert G., 4,345,393, Cl. 40-312.000.
Tomiita, Kazuo: *See—*
Negishi, Takao; and Tomiita, Kazuo, 4,345,425, Cl. 57-289.000.
Tomita, Fusao; Tamaoki, Tatsuya; Nakamura, Nobuo; Okubo, Shuji; Shirahata, Kunikatsu; Kasai, Masaji; and Oka, Tetsuo, to Kyowa Hakko Kogyo Co., Ltd. Antibiotic DC-11 and process for production thereof. 4,346,075, Cl. 424-120.000.
Tonooka, Koji: *See—*
Abe, Hideshi; and Tonooka, Koji, 4,345,975, Cl. 203-37.000.
Toray Industries, Inc.: *See—*
Negishi, Takao; and Tomiita, Kazuo, 4,345,425, Cl. 57-289.000.
Toray Monofilament Company Limited: *See—*
Yoshimura, Hidenaga; Yamada, Kunio; Yamada, Hironori; Yamada, Ryusaku; and Kudo, Hiroaki, 4,345,602, Cl. 128-349.00R.
Torre, Jean-Paul: *See—*
Barlier, Pernette; and Torre, Jean-Paul, 4,346,147, Cl. 428-446.000.
Tosato, Larry P.; Wehrli, Henry A.; and Stewart, Robert C., deceased (by Stewart, Dorothy M., executrix), to Westinghouse Electric Corp. Apparatus and method for installing elevator guide rails. 4,345,671, Cl. 187-95.000.
Towmotor Corporation: *See—*
Callaghan, William I.; and Ehinger, Charles P., 4,345,673, Cl. 188-18.00R.
Toyo Jozo Kabushiki Kaisha: *See—*
Ikuta, Shigeru; Imamura, Shigeyuki; Ishikawa, Hidehiko; Matsuura, Kazuo; Takada, Masaki; and Misaki, Hideo, 4,346,173, Cl. 435-189.000.
Toyo Kogyo Co., Ltd.: *See—*
Iida, Koso; Shiraishi, Hideo; and Higashi, Haruki, 4,345,432, Cl. 60-290.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Kasai, Kiyoshi; Kubota, Yoshitaka; and Tsukidate, Takaaki, 4,346,068, Cl. 423-344.000.
Toyooka, Shinichi: *See—*
Osawa, Yoshitaka; Nishimura, Akira; and Toyooka, Shinichi, 4,346,139, Cl. 428-252.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Junzo; Yamada, Masatoshi; Nakamura, Kaoru; and Yasuda, Eiichi, 4,345,771, Cl. 277-205.000.
Kawai, Hisasi; Sakurai, Kazuhiro; and Matsumoto, Muneaki, 4,345,737, Cl. 251-129.000.
Moriya, Shigeru; Ogawa, Hisashi; and Katsono, Mitsuaki, 4,345,780, Cl. 280-802.000.
Nakasu, Kei, 4,345,672, Cl. 188-1.110.
Numazawa, Akio; Taga, Yutaka; and Funato, Masayoshi, 4,345,904, Cl. 474-215.000.
Obata, Haruyuki, 4,345,573, Cl. 123-572.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,345,781, Cl. 280-802.000.
Terabayashi, Gosaku, 4,345,352, Cl. 15-250.160.
Yoshitsugu, Noritada; Motonami, Masanao; and Katsuno, Mitsuaki, 4,345,782, Cl. 280-803.000.
TRE Corporation: *See—*
Mullich, Richard O., 4,345,449, Cl. 70-153.000.
Treganza, Alan F.: *See—*
Sivilotti, Olivo G.; Sulzer, John; and Treganza, Alan F., 4,345,743, Cl. 266-44.000.
Trendall, Paul B.: *See—*
Radvan, Bronislaw; Punton, Vaughan W.; and Trendall, Paul B., 4,345,970, Cl. 162-123.000.
Trent, Peter F.; and Charlebois, Raymond, to Plastibeton Canada Inc. Polymer concrete having low binder levels. 4,346,050, Cl. 264-71.000.
Tritsch, Ludwig, to Johnson & Johnson Baby Product Company. Diaper with resealable tape closure. 4,345,597, Cl. 128-287.000.
Tropea, Alfred, to Du Pont de Nemours, E. I., and Company. Application of durable, antistatic, soil release agent. 4,346,130, Cl. 427-393.100.
Trumpf GmbH & Co.: *See—*
Leibinger, Berthold; and Klingel, Hans, 4,345,744, Cl. 266-49.000.

Truth Incorporated: *See—*
Sandberg, Christopher T., 4,346,372, Cl. 340-545.000.
Tsao, George T.: *See—*
Ladisch, Michael R.; and Tsao, George T., 4,345,973, Cl. 203-19.000.
Tsien, Hsue C.: *See—*
Bellows, Richard J.; Grimes, Patrick G.; Newby, Kenneth R.; Einstein, Harry; and Tsien, Hsue C., 4,346,150, Cl. 429-18.000.
TSM. Traitements de Surface et Mecanique: *See—*
Blanc, Jacques; Coulon, Andre; and Pellus, Gilbert, 4,345,977, Cl. 204-26.000.
Tsuchida, Takayasu: *See—*
Akashi, Kunihiko; Nakamura, Yayoi; Tsuchida, Takayasu; Yoshii, Hiroe; and Ikeda, Shigeho, 4,346,169, Cl. 435-114.000.
Sano, Kounosuke; and Tsuchida, Takayasu, 4,346,170, Cl. 435-115.000.
Tsuji, Akitoshi: *See—*
Kazama, Yoshiteru; Kokubo, Isao; Tsuji, Akitoshi; and Tanino, Yukio, 4,345,944, Cl. 106-90.000.
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, to Shionogi & Co., Ltd. Cyclization process to form cephem ring. 4,346,218, Cl. 544-16.000.
Tsukamoto, Nobuo: *See—*
Ohkoshi, Seiei; Ishikawa, Isao; Okamoto, Teiji; and Tsukamoto, Nobuo, 4,346,472, Cl. 371-37.000.
Tsukanishi, Kenji: *See—*
Takahashi, Akio; Itoh, Yutaka; Shimazaki, Takeshi; Wajima, Motoyo; Morishita, Hirosada; Mizuno, Yutaka; Yokozawa, Shunya; and Tsukanishi, Kenji, 4,346,206, Cl. 528-88.000.
Tsukidate, Takaaki: *See—*
Kasai, Kiyoshi; Kubota, Yoshitaka; and Tsukidate, Takaaki, 4,346,068, Cl. 423-344.000.
Tsukii, Toshikazu, to Raytheon Company. Radio frequency energy launcher. 4,346,355, Cl. 333-33.000.
Tsunoda, Masakazu: *See—*
Takagi, Kazumasa; and Tsunoda, Masakazu, 4,346,364, Cl. 340-52.00D.
Tsunoda, Sachio; and Sugishita, Kaneo, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of controlling operation of Francis type pump turbines. 4,346,304, Cl. 290-52.000.
Tsuzuki, Akira: *See—*
Koni, Tuyoshi; Urushida, Yoshihisa; and Tsuzuki, Akira, 4,345,612, Cl. 137-101.190.
Tu, Hosheng; and Rojo, Juana E., to UOP Inc. Process for use of a zeolite molecular sieve adsorbent in an aqueous system. 4,345,946, Cl. 127-46.300.
Tu Xuan, Mai; Jufer, Marcel; and Pittet, Andre, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Movement detector for a stepping motor. 4,346,463, Cl. 368-157.000.
Tucci, John J.: *See—*
Sizemore, Ronald D.; Tucci, John J.; and Willette, Albert D., 4,345,889, Cl. 425-122.000.
Tuck, Philip C. Composition and process for stabilizing embankments. 4,345,856, Cl. 405-258.000.
Tuites, Richard C.: *See—*
Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,346,231, Cl. 560-178.000.
Tukuhiro, Tomoya: *See—*
Suzuki, Yoshinobu; Chiba, Kiyoshi; Tukuhiro, Tomoya; Iwasawa, Yoshiyuki; Kajioka, Yasuo; and Komine, Tomio, 4,345,431, Cl. 60-286.000.
Turanyi, Sandor. Apparatus for sealing an oil well pump polished rod. 4,345,766, Cl. 277-30.000.
Turchi, Peter J., to United States of America, Navy. Magnetoplasmadynamic switch. 4,346,420, Cl. 361-4.000.
Turner, Eugene D., to Briggs & Stratton Corporation. Lubrication system for rotary-trochoidal engines. 4,345,885, Cl. 418-90.000.
Turner, George F. A. M., to Ciba-Geigy AG. Film sheet cassette. 4,346,300, Cl. 206-455.000.
Turos, Sandor. Process for preparing crumb products. 4,346,121, Cl. 426-580.000.
Tyihak, Erno; Mincsovics, Emil; Dios, Sandor; Horvath, Gyula; Kalasz, Huba; Nagy, Janos; Kormendi, Ferenc; Kozma, Laszlo; Borsos, Janos; and Kiss, Janos, to Labor Muszeripari Muvek. Linear overpressured thin-layer chromatographic apparatus. 4,346,001, Cl. 210-198.300.
Tyler, Edward P.: *See—*
Hildreth, Donald M.; and Tyler, Edward P., 4,345,554, Cl. 123-179.0BG.
U.G. Closures & Plastics Limited: *See—*
Hopley, Eric T., 4,345,690, Cl. 215-216.000.
Uba, Toshio; Ching, Larry K. W.; and Harrison, Michael R., to Gates Rubber Company, The. Multicell sealed rechargeable battery. 4,346,151, Cl. 429-54.000.
Ueda, Minoru: *See—*
Fukasawa, Akira; and Ueda, Minoru, 4,345,987, Cl. 204-290.00R.
Ueda, Shigeo; and Fukuda, Yuji, to Bridgestone Tire Company Limited. Apparatus for restraining and berthing a floating body. 4,345,537, Cl. 114-219.000.
Uetsuji, Toshio: *See—*
Saito, Fumitoshi; Maeda, Sotomitsu; and Uetsuji, Toshio, 4,345,882, Cl. 417-312.000.
UHDE GmbH: *See—*
Faust, Uwe; Prave, Paul; Dorsemagen, Beate; and Hofer, Norbert, 4,346,113, Cl. 426-12.000.
Uhlmann, Otto: *See—*
Leuchs, Ottmar; Kloppner, Hans-Jurgen; and Uhlmann, Otto, 4,345,363, Cl. 29-527.400.
Ukeiley, Richard L.: *See—*
Blahut, Donald E.; and Ukeiley, Richard L., 4,346,437, Cl. 364-200.000.
Ulex, Georg A.: *See—*
Sattler, Henning; and Ulex, Georg A., 4,346,086, Cl. 424-243.000.
Ulin, Roy A., Jr.: *See—*
Hof, Craig R.; Ulin, Roy A., Jr.; and Polak, Robert B., 4,345,470, Cl. 374-106.000.
Umaba, Toshihiko; and Ito, Tadashi, to Dainippon Ink & Chemicals, Inc.; and Miyata Industry Company Limited. Powdery fire-extinguishing agent, and process for its preparation. 4,346,012, Cl. 252-7.000.
Union Carbide Corporation: *See—*
Cheung, Harry, 4,345,925, Cl. 62-13.000.
DeMatos, Henrique V., 4,346,429, Cl. 361-310.000.
Goddard, John B., 4,346,061, Cl. 423-56.000.
Somekh, George S.; and Cupper, Robert A., 4,346,015, Cl. 252-50.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Barter, Arthur J., 4,345,729, Cl. 244-169.000.
United Networks, Inc.: *See—*
Hestad, Alfred M.; and Rose, Levi L., 4,346,261, Cl. 179-1.0HF.
U.S. Industries, Inc.: *See—*
White, Charles A.; Kennedy, Jerome J.; and Wayne, Harold S., 4,345,682, Cl. 198-635.000.
United States of America
Agriculture: *See—*
Bailey, August V.; Boudreaux, Gordon J.; and Sumrell, Gene, 4,346,043, Cl. 260-404.000.
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Air Force: *See—*
Villemain, Herbert F., 4,345,698, Cl. 220-452.000.
Army: *See—*
Curchack, Herbert D.; and Hahn, A. David, 4,345,460, Cl. 73-167.000.
Dawson, Stanley R.; and Hayes, Cecil L., 4,345,643, Cl. 165-122.000.
Devine, James A.; and Miletti, Jose A., 4,345,469, Cl. 73-338.600.
Roberts, Eugene L., 4,346,315, Cl. 307-603.000.
Wolfe, Neil M., 4,345,702, Cl. 222-630.000.
Health and Human Services: *See—*
Aronson, David L.; Tabor, Edward; and Gerety, Robert J., 4,346,073, Cl. 424-86.000.
Rapoport, Henry; Weller, Dwight D.; and Gless, Richard D., 4,346,224, Cl. 546-221.000.
Health, Education and Welfare: *See—*
Silberberg, Jeffrey L., 4,346,346, Cl. 324-132.000.
Navy: *See—*
Bartoli, Filbert J.; and Meyer, Jerry R., 4,346,348, Cl. 324-158.00R.
Turchi, Peter J., 4,346,420, Cl. 361-4.000.
U.S. Philips Corporation: *See—*
Alexis, Roger P. J., 4,346,475, Cl. 375-1.000.
Barten, Piet G. J., 4,346,327, Cl. 313-413.000.
Brockmann, Klaus-Dieter K.; and van Harreveld, Teunis A., 4,346,266, Cl. 179-170.0NC.
Dijkmans, Eise C., 4,346,267, Cl. 179-170.0NC.
Hovens, Paulus J. M., 4,346,400, Cl. 358-30.000.
United Technologies Corporation: *See—*
Hecht, Ralph J., 4,346,137, Cl. 428-215.000.
McFarlin, David J., 4,346,051, Cl. 264-102.000.
University of Delaware: *See—*
Islam, Mir N., 4,346,118, Cl. 426-335.000.
University of Liverpool: *See—*
Bornat, Alan; and Clarke, Roy M., 4,345,414, Cl. 53-425.000.
University of Rochester, The: *See—*
Craxton, Robert S., 4,346,314, Cl. 307-427.000.
University Patents Inc.: *See—*
Henkel, James G.; and Gianutsos, Gerald, 4,346,112, Cl. 424-325.000.
UOP Inc.: *See—*
Tu, Hosheng; and Rojo, Juana E., 4,345,946, Cl. 127-46.300.
Upjohn Company, The: *See—*
Aristoff, Paul A., 4,346,041, Cl. 549-498.000.
Burke, Howard J.; and Hessler, Edward J., 4,346,037, Cl. 260-239.55R.
Lednicer, Daniel, 4,346,101, Cl. 424-278.000.
Upjohn Manufacturing Company M, The: *See—*
Singer, Adam, 4,346,108, Cl. 424-317.000.
Urban, Otfried; and Mundt, Peter, to Geimuplast Peter Mundt GmbH & Co., KG. Method of automatically framing a reversal film provided with edge notches. 4,345,707, Cl. 226-68.000.
Urushida, Yoshihisa: *See—*
Koni, Tuyoshi; Urushida, Yoshihisa; and Tsuzuki, Akira, 4,345,612, Cl. 137-101.190.
Uyeda, Stanley T.; Radu, E. John; Talbot, William J., Jr.; and Feldman, Norman, to Santa Fe International Corporation. Self propelled dynamically positioned reel pipe laying ship. 4,345,855, Cl. 405-168.000.

Vacval, Dusan M., to International Harvester Co. Disc brake pad retractor. 4,345,674, Cl. 188-71.800.

Vail, Garry L.: *See—*
Buijs, Henry L.; Vail, Garry L.; and Berube, Jean-Noel, 4,345,838, Cl. 356-346.000.

Vakil, Himanshu B.; and Kosky, Philip G., to General Electric Company. Mixed feed evaporator. 4,345,915, Cl. 48-197.00R.

Valantin, Alfred, to Techniques Industrielles et Minieres, a part interest. Apparatus for laying underwater pipelines. 4,345,854, Cl. 405-159.000.

Van Craenenbroeck, Raymond J. E. Safety device for a heat exchange equipment filled with pressurized liquid. 4,345,715, Cl. 237-66.000.

van den Heuvel, Eeuwoud: *See—*
de Groot, Hans; van den Heuvel, Eeuwoud; Barendrecht, Embrecht; and Janssen, Leonard J. J., 4,345,978, Cl. 204-74.000.

VanDewoestine, Robert V.: *See—*
Allaire, Roger A.; and VanDewoestine, Robert V., 4,345,528, Cl. 110-203.000.

van Drooge, Barend L., to Stork Amsterdam B.V. Reactor for anaerobic prefermentation of aqueous waste waters. 4,346,000, Cl. 210-195.100.

Van Eenam, Donald N., to Monsanto Company. Air-drying compositions for treating fibrous substrates. 4,346,027, Cl. 524-377.000.

van Harreveld, Teunis A.: *See—*
Brockmann, Klaus-Dieter K.; and van Harreveld, Teunis A., 4,346,266, Cl. 179-170.0NC.

Van Pool, Joe: *See—*
Washer, Stone P.; and Van Pool, Joe, 4,345,992, Cl. 208-120.000.

van Staveren, Hendricus C.: *See—*
Oosterling, Pieter A.; and van Staveren, Hendricus C., 4,345,420, Cl. 56-295.000.

Vascor, Inc.: *See—*
Rosen, Jonathan J., 4,345,340, Cl. 3-1.500.

Vassallo, Donald A.: *See—*
Hoh, George L.; and Vassallo, Donald A., 4,346,196, Cl. 525-196.000.

Vazquez, Gonzalo: *See—*
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Vejdemo, Stephan, executor: *See—*
Petersson, Ralf K. E., deceased; and Vejdemo, Stephan, executor, 4,345,881, Cl. 417-270.000.

Velsicol Chemical Corporation: *See—*
Luteri, George F., 4,345,933, Cl. 71-88.000.

Veluswamy, Lavanga R.: *See—*
Vernon, Lonnie W.; Veluswamy, Lavanga R.; Euker, Charles A., Jr.; and Mims, Charles A., 4,345,989, Cl. 208-10.000.

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Verbatim Corporation: *See—*
Martinelli, Lawrence G., 4,345,891, Cl. 425-289.000.

Vereczkey, Endre: *See—*
Takacs, Istvan; Vereczkey, Endre; Bosits, Gyula; and Kerey, Gyorgy, 4,345,720, Cl. 241-74.000.

Vernaleken, Hugo: *See—*
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Vernon, Lonnie W.; Veluswamy, Lavanga R.; Euker, Charles A., Jr.; and Mims, Charles A., to Exxon Research & Engineering Co. Catalytic hydrogen-donor liquefaction process. 4,345,989, Cl. 208-10.000.

Vertac Chemical Corporation: *See—*
Deavenport, Dennis L.; Howard, Kenneth J.; and Sidwell, Albert E., 4,346,248, Cl. 568-776.000.

Vertut, Jean: *See—*
Danel, Francois; Nicollet, Henri; Marchal, Paul; Robin, Marc; and Vertut, Jean, 4,345,658, Cl. 180-8.00C.

Verwaerde, Francoise; Leleu, Jean-Bernard; and Huchette, Michel, to Roquette Freres. Non-cariogenic hydrogenated starch hydrolysate, process for the preparation and applications of this hydrolysate. 4,346,116, Cl. 426-48.000.

Vescia, Michele; and Heimann, Sigismund, to BASF Aktiengesellschaft. Dyeing of NCD polyester fibers. 4,345,910, Cl. 8-610.000.

Vesperman, William C.: *See—*
Choi, Jae H.; Mottine, John J., Jr.; Sparzak, Walter J., Sr.; and Vesperman, William C., 4,346,145, Cl. 428-389.000.

Victor Company of Japan, Ltd.: *See—*
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Vigants, Arvids: *See—*
Schiavone, James A.; and Vigants, Arvids, 4,346,385, Cl. 343-703.000.

Villa-Real, Antony-Euclid C., to Medi-Timer Corporation. Monoringed rotatory medication reminder. 4,345,541, Cl. 116-308.000.

Villa-Real, Antony-Euclid C. Multi-angular panoramic automotive rear view mirror. 4,345,819, Cl. 350-304.000.

Villemain, Herbert F., to United States of America, Air Force. Aircraft self-sealing fuel tank. 4,345,698, Cl. 220-452.000.

Vinals, Joaquin F.: *See—*
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,346,243, Cl. 568-591.000.

Vinoxen Company, The: *See—*
Revici, Emanuel, 4,346,082, Cl. 424-162.000.

Vinson, Victor. Elevator. 4,345,681, Cl. 198-626.000.

Vis, Arthur D., to Candid Logic, Inc. Gap gauge. 4,345,380, Cl. 33-147.00N.

Vitafin N.V.: *See—*
Renirie, Alexis C. M., 4,345,604, Cl. 128-419.0PS.

Vladuchick, William C., to Eli Lilly and Company. Process for preparing desacetoxycephalosporanic acid. 4,346,219, Cl. 544-28.000.

Vlock, David G. Dental twist drill. 4,345,899, Cl. 433-165.000.

VLSI Technology Research Association: *See—*
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Vock, Manfred H.: *See—*
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Voest-Alpine Aktiengesellschaft: *See—*
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Vogten, Leonardus L. M.: *See—*
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Volka, Lubomir J., to Burroughs Corporation. Flat ribbon cable shield. 4,345,811, Cl. 339-143.00R.

Vorbrueggen, Helmut: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Schillinger, Eckehard, 4,346,228, Cl. 560-53.000.

Vratny, Frederick: *See—*
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Zobac, Ladislav; Malek, Zdenek; Soukup, Frantisek; Ryska, Antonin; Jelinek, Jan; and Busta, Jiri, 4,345,598, Cl. 128-303.100.

WABCO Fahrzeugbremsen GmbH: *See—*
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Wachter, William A., to Exxon Research & Engineering Co. Method of ion exchange zeolites. 4,346,067, Cl. 423-326.000.

Wada, Hirotsugu: *See—*
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Wafer, Ronald V.: *See—*
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Wain-Roy, Inc.: *See—*
Arnold, Carroll H., 4,345,872, Cl. 414-705.000.

Wajima, Motoyo: *See—*
Takahashi, Akio; Itoh, Yutaka; Shimazaki, Takeshi; Wajima, Motoyo; Morishita, Hirosada; Mizuno, Yutaka; Yokozawa, Shunya; and Tsukanishi, Kenji, 4,346,206, Cl. 528-88.000.

Walden, John P., to General Electric Company. Frequency shift inverter for variable power control. 4,346,332, Cl. 315-307.000.

Wallace, Harry L.; and Chambors, John M., to Burroughs Corporation. Matrix printer employing a special character font. 4,346,393, Cl. 346-140.00R.

Walling, John B. Connector assembly for flexible production tubing. 4,345,784, Cl. 285-39.000.

Walter, John, to Continental Group, Inc., The. Container closure device. 4,345,701, Cl. 222-569.000.

Walton, Robert R.; and Edwards, Finis E., to Wellman Thermal Systems Corporation. Soft wall hanger for furnace. 4,346,252, Cl. 373-130.000.

Wan, Jeffrey K. S., to Queen's University at Kingston. Method for disposal of chemical waste. 4,345,983, Cl. 204-158.00R.

Wang, Austin. Moving target means of shooting gallery. 4,345,765, Cl. 273-359.000.

Wardell, Myron H., Jr., to RCA Corporation. Electron tube base with flow channels therein. 4,345,812, Cl. 339-144.00R.

Warfel, David R., to Atlantic Richfield Company. Continuous process for making star-block copolymers. 4,346,193, Cl. 525-52.000.

Warner, Gary J.; and Feifel, Winfried M., to Boeing Company, The. Flap flexure retainer/seal for hydrofoil vessels and the like. 4,345,538, Cl. 114-274.000.

Warner-Lambert Company: *See—*
Schweiss, Dietrich; and Nordin, Ivan C., 4,346,097, Cl. 424-273.00P.

Warren, Dwight D. Contractor's grade rod apparatus and procedure for setting and checking grades. 4,345,382, Cl. 33-294.000.

Warthen, Daniel E. Flexible drill chuck drive. 4,345,445, Cl. 279-62.000.

Washer, Stone P.; and Van Pool, Joe, to Phillips Petroleum Company. Catalytic cracking process. 4,345,992, Cl. 208-120.000.

Washington Rotating Control Heads, Inc.: *See—*
Johnston, Paul R., 4,345,769, Cl. 277-31.000.

Watlow Electric Manufacturing Company: *See—*
Desloge, George B., 4,346,287, Cl. 219-541.000.

Watrous, Donald L., to General Electric Company. Voltage regulator circuit with multiple control functions. 4,346,337, Cl. 322-25.000.

Watson, W. Keith R. Distillation employing heat pump. 4,345,971, Cl. 202-177.000.

Wayne, Harold S.: *See—*
White, Charles A.; Kennedy, Jerome J.; and Wayne, Harold S., 4,345,682, Cl. 198-635.000.

Weber, Adam: *See—*
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Weber, Herbert, to Licentia Patent-Verwaltungs-GmbH. Compensation for transmission element nonlinearities in a radio relay transmission system. 4,346,479, Cl. 455-22.000.

Weber, Hermann P. Apparatus for coating items. 4,345,546, Cl. 118-675.000.

Weber, Roy; and Huddleston, Bruce C. Pollution reduction smokeless auto incinerator. 4,345,529, Cl. 110-213.000.

Wegele, Gunther; Brink, Gerhard; Rotta, Goetz; Roeth, Manfred; and Wittmann, Siegfried, to Chemische Fabrik Theodor Rotta GmbH & Co. KG. Process of applying dyestuffs and/or chemicals or finishing materials to textiles, fibrous products, sheet materials, papers or fleeces. 4,345,907, Cl. 8-444.000.

Wehrli, Henry A.: *See—*
Tosato, Larry P.; Wehrli, Henry A.; and Stewart, Robert C., deceased, 4,345,671, Cl. 187-95.000.

Weil, Max H.: *See—*
Bisera, Jose; and Weil, Max H., 4,345,594, Cl. 128-214.00F.

Weir, Henry J. Laundry feeding machine. 4,345,391, Cl. 38-143.000.

Weitzel, Stephen D.: *See—*
Berndlmaier, Erich; Dorler, Jack A.; Mosley, Joseph M.; and Weitzel, Stephen D., 4,346,343, Cl. 323-282.000.

Weller, Dwight D.: *See—*
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Wellman Thermal Systems Corporation: *See—*
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Wells, Peter W.: *See—*
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Welz, Ronald C., to Southern California Edison Company. Theft resisting device. 4,346,345, Cl. 324-110.000.

Wenger, Karl, to Boninchi S.A. Control member for a water-tight watch. 4,346,464, Cl. 368-289.000.

Wentzel, Frank W., Jr.: *See—*
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Werner, Peter: *See—*
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Wesley, Richard H. Process and apparatus for electrohydraulic recovery of crude oil. 4,345,650, Cl. 166-249.000.

Wessel, Wolf: *See—*
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Wessendorf, Roberta H.: *See—*
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West, Donald L.: *See—*
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West, Ronald E.: *See—*
Schiff, Charles M.; Maxon, Eric K.; and West, Ronald E., 4,345,847, Cl. 403-103.000.

Westerlund, Robert E.; and Read, Wayne L. High pressure pumping apparatus for semi-fluid material. 4,345,883, Cl. 417-317.000.

Western Electric Co., Inc.: *See—*
Carroll, Arthur E., II; Lewis, Basil C., Jr.; and Yeazel, Howard T., 4,346,396, Cl. 357-70.000.
Choi, Jae H.; Mottine, John J., Jr.; Sparzak, Walter J., Sr.; and Vesperman, William C., 4,346,145, Cl. 428-389.000.
Gutbier, Ernst A.; and Ouellette, Paul J., 4,345,814, Cl. 339-275.00R.

Westinghouse Brake and Signal Co., Ltd.: *See—*
Garrett, John M.; and King, Kenneth G., 4,346,309, Cl. 307-252.00M.

Westinghouse Electric Corp.: *See—*
Billings, William W., 4,346,375, Cl. 340-644.000.
Davey, Kent R., 4,346,320, Cl. 310-179.000.
Lanoue, Thomas J., 4,345,804, Cl. 339-9.00E.
Lessmann, Gerald G.; Simpson, Ronald P.; and O'Brokta, Ronald D., 4,346,279, Cl. 219-75.000.
Meyer, Thomas N., 4,346,273, Cl. 200-147.00R.
Tosato, Larry P.; Wehrli, Henry A.; and Stewart, Robert C., deceased, 4,345,671, Cl. 187-95.000.
Yoldas, Bulent E., 4,346,131, Cl. 428-35.000.
Yoldas, Bulent E., 4,346,324, Cl. 313-112.000.

Wheatley, Charles, to Barton Valve Company. Flanged sealing ring. 4,345,739, Cl. 251-358.000.

White, Charles A.; Kennedy, Jerome J.; and Wayne, Harold S., to U.S. Industries, Inc. Egg transporting system. 4,345,682, Cl. 198-635.000.

White, Forest B. Governor for fluid current motor. 4,346,305, Cl. 290-55.000.

Whitesides, Roger H., Jr., to Thiokol Corporation. Rocket motor or gas generator having controlled thrust or mass flow output. 4,345,427, Cl. 60-234.000.

Whitney, Douglass G.; and Martin, John K., III. Piezoelectric fluid injector. 4,345,595, Cl. 128-214.00F.

Widder, Kenneth J.; and Senyei, Andrew E., to Northwestern University. Method of delivering a therapeutic agent to a target capillary bed. 4,345,588, Cl. 128-1.300.

Wiedemann, Fritz: *See—*
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Wiedmann, Siegfried K.: *See—*
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Wiggins Teape Group Limited, The: *See—*
Radvan, Bronislaw; Punton, Vaughan W.; and Trendall, Paul B., 4,345,970, Cl. 162-123.000.

Wilcox, Milton E., to National Semiconductor Corporation. High frequency voltage-controlled oscillator. 4,346,351, Cl. 331-117.00R.

Wiley, Robert A., to Mead Corporation, The. Ink jet fluid supply system. 4,346,388, Cl. 346-75.000.

Wilhelmson, Jack. Electronic circuit for sensing deviations in physical forces thereon. 4,346,363, Cl. 340-27.00R.

Wilkinson, Samuel, to Burroughs Wellcome Co. Biologically active amides. 4,346,083, Cl. 424-177.000.

Wilkinson, William R.; Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; and Crane, Terry N., to Texas Medical Products, Inc. Degasser for biological fluids. 4,345,919, Cl. 55-41.000.

Willats, James F.: *See—*
Benson, Albert R.; and Willats, James F., 4,345,376, Cl. 30-96.000.

Willems, Leonardus F.; and Vogten, Leonardus L. M., to N.V. Philips' Gloeilampenfabrieken; and Technische Hogeschool Eindhoven. Speech analysis system. 4,346,262, Cl. 179-1.0SA.

Willenbring, Armer J., to Pako Corporation. Photographic stacking device. 4,345,754, Cl. 271-209.000.

Willette, Albert D.: *See—*
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Williams, Henry L., to Geosource Inc. Warning system with pneumatic function generator. 4,345,539, Cl. 116-68.000.

Williams, Kevin: *See—*
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Wilson, Billy E.; and Hutson, Coy R., to Power-Flame, Inc. Separable hinge assembly for a cover. 4,345,697, Cl. 220-335.000.

Wilson, Wayne; Rosko, George; and Patmore, James R., to Electronic Associates, Inc. On-line gas measurement and analysis system. 4,345,463, Cl. 73-190.0CV.

Winfrey, Richard: *See—*
Riggle, Charles M.; Read, John D.; Noe, William B.; Winfrey, Richard; Pollard, Christopher A.; and Bernett, Frank W., 4,346,416, Cl. 360-106.000.

Wise, John B., to Burroughs Corporation. Pipelined interpretive digital data processor comprised of a multi-level hierarchy of processors. 4,346,435, Cl. 364-200.000.

Wise, John B., to Burroughs Corporation. Interpretive digital data processor comprised of a multi-level hierarchy of processors and having program protection means. 4,346,436, Cl. 364-200.000.

Wittmann, Siegfried: *See—*
Wegele, Gunther; Brink, Gerhard; Rotta, Goetz; Roeth, Manfred; and Wittmann, Siegfried, 4,345,907, Cl. 8-444.000.

Wojtecki, Rudolph G.; and Kaan, Joseph P., to Eaton Corporation. Packaged electrical heating element. 4,346,277, Cl. 219-528.000.

Wolcott, Edward O.; and Wentzel, Frank W., Jr., to General Electric Company. Method and apparatus for preparing lead-acid battery pastes. 4,346,022, Cl. 252-509.000.

Wolfe, Neil M., to United States of America, Army. Fiber disseminator. 4,345,702, Cl. 222-630.000.

Wong, Robert W.; and Haines, Richard M., to Owens-Corning Fiberglas Corporation. Non-aging epoxy compatible size. 4,346,026, Cl. 524-157.000.

Wood, Laurier A.; and Humphries, Donald N., to Laurier Associates, Inc. Method of applying an adhesive to a circuit chip. 4,346,124, Cl. 427-82.000.

Woodbrey, James C., to Monsanto Company. Thermoplastic polyamide compositions. 4,346,200, Cl. 525-421.000.

Woodruff, Terry A.: *See—*
Murphy, Andrew J.; Rhodes, Robert P.; and Woodruff, Terry A., 4,346,055, Cl. 422-54.000.

Woody, Albert L.; Fox, Lawrence E.; and Reinsma, Harold L., to Caterpillar Tractor Co. Constant strain boot seal. 4,345,772, Cl. 277-212.0FB.

Woolcock, Sydney C.; and Brown, Edwin G., to EMI Limited. Checking the location of moving parts in a machine. 4,346,383, Cl. 343-12.00R.

Worley, Anita S., a personal repesentative: *See—*
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Worley, Joseph F., deceased: *See—*
Thompson, Malcolm J.; Mandava, Nagabhushanam; Worley, Joseph F., deceased; Meudt, Werner J.; Dutky, Samson R.; Robbins, William E.; and Flippen-Anderson, Judith L., 4,346,226, Cl. 549-268.000.

Wossner, Felix; Handke, Gunther; and Koller, Manfred, to Fichtel & Sachs AG. Fluid damped unit, particularly for use as shock absorber or telescopic strut. 4,345,748, Cl. 267-8.00R.

WPM, Inc.: *See—*
Bock, Robert E., 4,345,719, Cl. 239-428.500.

Wuest, Hans: *See—*
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Wulfhorst, Burkhard: *See—*
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Wurtman, Richard J.: *See—*
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Growdon, John H.; and Wurtman, Richard J., 4,346,085, Cl. 424-199.000.

Wymore, Roger S. Material handling vehicle. 4,345,873, Cl. 414-714.000.

Wysk, Stanley R.; and Palkes, Mark, to Combustion Engineering, Inc. Apparatus for retrofitting an existing steam generator with an MHD topping unit. 4,346,316, Cl. 310-11.000.
Xerox Corporation: *See*—
Faucz, Eugene C., 4,346,156, Cl. 130-39.000.
Kramer, Charles J.; Kay, David B.; and Snelling, Christopher, 4,345,835, Cl. 355-3.00R.
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Yamada, Ryusaku: *See*—
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Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Knock detecting apparatus for an internal combustion engine. 4,345,558, Cl. 123-425.000.
Yamamoto, Hitoshi: *See*—
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Yamamoto, Kuniyuki: *See*—
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Yamamoto, Toshihiro: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,346,146, Cl. 428-398.000.
Yamasawa, Masao; Ohhata, Michinobu; and Ikezawa, Toshi, to Fujitsu Limited. A/D, D/A Converter for PCM transmission system. 4,346,476, Cl. 375-8.000.
Yamase, Toshihiro: *See*—
Ikawa, Tsuneo; and Yamase, Toshihiro, 4,345,982, Cl. 204-129.000.
Yamashita, Shunroku, to Kibun Co., Ltd. Apparatus for lowering the temperature of articles. 4,345,443, Cl. 62-380.000.
Yamatsu, Isao; Inai, Yuichi; Abe, Shinya; Suzuki, Takeshi; Suzuki, Yoshikazu; Tagaya, Osamu; and Koyanagi, Nozomu, to Eisai Co., Ltd. Method of treating keratotic skin disease. 4,346,109, Cl. 424-318.000.
Yamazaki, Yoshihiko: *See*—
Nakai, Taiichiro; Sato, Masanori; Furusawa, Kahei; Yamamoto, Hitoshi; Yamazaki, Yoshihiko; and Ejiri, Yoshihiro, 4,345,816, Cl. 350-96.200.
Yano, Yoshiichi: *See*—
Sato, Takeshi; Tada, Hiroji; and Yano, Yoshiichi, 4,345,686, Cl. 206-219.000.
Yanus, John F.: *See*—
Pai, Damodar M.; Stolka, Milan; and Yanus, John F., 4,346,158, Cl. 430-59.000.
Yarn Engineering Corporation: *See*—
Economou, Peter, 4,346,178, Cl. 501-148.000.
Yasuda, Eiichi: *See*—
Hasegawa, Junzo; Yamada, Masatoshi; Nakamura, Kaoru; and Yasuda, Eiichi, 4,345,771, Cl. 277-205.000.
Yasuda, Takamasa, to Fujizoki Pharmaceutical Co., Ltd. Process for isolating superoxide dismutase from red blood cells. 4,346,174, Cl. 435-189.000.
Yasuda, Yasushi; Mizuno, Masami; Nishikawa, Hiroaki; and Murakami, Akira, to Nippon Soda Company Limited. Fungicidal compositions and methods. 4,346,098, Cl. 424-273.00R.
Yasuhara, Seishi, to Nissan Motor Co., Ltd. Soot treatment device for a Diesel engine. 4,345,429, Cl. 60-279.000.
Ybema, Douwe: *See*—
Chow, Richard T.; Krauss, Clifford J.; and Ybema, Douwe, 4,345,980, Cl. 204-119.000.
Yeazel, Howard T.: *See*—
Carroll, Arthur E., II; Lewis, Basil C., Jr.; and Yeazel, Howard T., 4,346,396, Cl. 357-70.000.
Yeda Research and Development Co. Ltd.: *See*—
Shtrikman, Shmuel, 4,346,318, Cl. 310-12.000.
Yen, Huan-Wun: *See*—
Figueroa, Luis; and Yen, Huan-Wun, 4,346,394, Cl. 357-30.000.
Yoda, Haruo; and Motoike, Jun, to Hitachi, Ltd. Visual information processing apparatus. 4,346,405, Cl. 358-105.000.
Yokota, Kouji: *See*—
Oshima, Yujiro; Fujitani, Yoshiyasu; Muraki, Hideaki; Kondoh, Shiroh; and Yokota, Kouji, 4,345,555, Cl. 123-272.000.
Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Multichannel audio power amplifier. 4,346,349, Cl. 330-10.000.
Yokozawa, Shunya: *See*—
Takahashi, Akio; Itoh, Yutaka; Shimazaki, Takeshi; Wajima, Motoyo; Morishita, Hirosada; Mizuno, Yutaka; Yokozawa, Shunya; and Tsukanishi, Kenji, 4,346,206, Cl. 528-88.000.
Yoldas, Bulent E., to Westinghouse Electric Corp. Polymerized solutions for depositing optical oxide coatings. 4,346,131, Cl. 428-35.000.
Yoldas, Bulent E., to Westinghouse Electric Corp. Heat mirror for incandescent lamp. 4,346,324, Cl. 313-112.000.
Yoneyama, Kunihiko: *See*—
Saito, Yasunori; Nakagaki, Kunihiro; Yoneyama, Kunihiko; and Ohmoto, Katsumi, 4,346,253, Cl. 174-29.000.
Yoshida, Hirofumi: *See*—
Nakamura, Toshikazu; and Yoshida, Hirofumi, 4,346,285, Cl. 219-381.000.
Yoshida, Hitoshi: *See*—
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Yoshida, Kiyoshi: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,345,501, Cl. 84-1.030.
Yoshida, Seiki: *See*—
Ikeda, Hironosuke; Oishi, Hisao; and Yoshida, Seiki, 4,345,611, Cl. 137-68.00R.
Yoshii, Hiroe: *See*—
Akashi, Kunihiko; Nakamura, Yayoi; Tsuchida, Takayasu; Yoshii, Hiroe; and Ikeda, Shigeho, 4,346,169, Cl. 435-114.000.
Yoshii, Nobuo: *See*—
Ogino, Etsuo; Yoshii, Nobuo; and Harada, Kazuo, 4,346,010, Cl. 210-714.000.
Yoshimi, Yasuhito: *See*—
Nomura, Norimasa; and Yoshimi, Yasuhito, 4,345,832, Cl. 354-320.000.
Yoshimura, Hidenaga; Yamada, Kunio; Yamada, Hironori; Yamada, Ryusaku; and Kudo, Hiroaki, to Toray Monofilament Company Limited, and Osaka City Government. Medical vascular guide wire and self-guilding type catheter. 4,345,602, Cl. 128-349.00R.
Yoshino, Kenji: *See*—
Goto, Fumio; Yoshino, Kenji; Kono, Hiroshi; and Naito, Mitsuaki, 4,345,852, Cl. 404-114.000.
Yoshioka, Mitsuru: *See*—
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,346,218, Cl. 544-16.000.
Yoshitsugu, Noritada; Motonami, Masanao; and Katsuno, Mitsuaki, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Passive seatbelt system for motor vehicles. 4,345,782, Cl. 280-803.000.
Young, Charles L., Jr.; and Gray, Ralph C., to PPG Industries, Inc. Method of applying zinc-rich primer and product. 4,346,143, Cl. 428-332.000.
Young, Janis Marie: *See*—
Young, Ruperto S., 4,345,596, Cl. 128-214.00R.
Young, Kenneth P.: *See*—
Flemings, Merton C.; Riek, Rodney G.; and Young, Kenneth P., 4,345,637, Cl. 164-113.000.
Young, Ruperto S., to Young, Janis Marie; and Wessendorf, Roberta H. Arterial catherization device. 4,345,596, Cl. 128-214.00R.
Yugen Kaisha Shinjoseisakusho: *See*—
Shinjo, Katsumi, 4,345,677, Cl. 193-2.00A.
Zanarini, Franco, to Safe S.r.l. Multi-stage, reciprocating, positive displacement compressor. 4,345,880, Cl. 417-264.000.
Zanutti, Hugo A. Vessel location system. 4,345,462, Cl. 73-178.00R.
Zaruba, John V.: *See*—
Katzman, Allison W.; Holahan, Edward T.; Zaruba, John V.; and Morrison, Howard J., 4,345,400, Cl. 46-4.000.
Zengel, Hans G.; Bergfeld, Manfred F.; and Zielke, Rainer, to Akzona Incorporated. Process for the preparation of ureas. 4,346,233, Cl. 562-439.000.
Zenith Radio Corporation: *See*—
Lai, Stephen, 4,346,398, Cl. 358-20.000.
Zeuner, Kenneth W.; and Jarman, Alonzo B., to Control Concepts, Inc. Solenoid operated valve and dashpot assembly. 4,345,736, Cl. 251-30.000.
Zielke, Rainer: *See*—
Zengel, Hans G.; Bergfeld, Manfred F.; and Zielke, Rainer, 4,346,233, Cl. 562-439.000.
Zimmerman, Donald R., to Crane Co. Tube settler module. 4,346,005, Cl. 210-232.000.
Zinn, Thomas K.: *See*—
Longiny, Michael A.; Kalchev, Dimitar; and Zinn, Thomas K., 4,345,884, Cl. 417-359.000.
Zitz, Alfred: *See*—
Droescher, Bernhard; and Zitz, Alfred, 4,345,839, Cl. 356-400.000.
Zobac, Ladislav; Malek, Zdenek; Soukup, Frantisek; Ryska, Antonin; Jelinek, Jan; and Busta, Jiri, to Vyzkumny ustav Silnoproude Elektrotechniky. Cryogenic apparatus for surgery. 4,345,598, Cl. 128-303.100.
Zulaski, John A., to S & C Electric Company. Voltage-unbalance detector for polyphase electrical systems. 4,346,307, Cl. 307-130.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bedford Industries, Inc.: *See—*
Moore, Doyle A., Re. 31,015, Cl. 242-71.900.

Bel Fuse Inc.: *See—*
Bernstein, Elliot, Re. 31,017, Cl. 339-147.00P.

Bernstein, Elliot, to Bel Fuse Inc. Method for fusing male plug at end of power line cord. Re. 31,017, Cl. 339-147.00P.

Conoco Inc.: *See—*
Oster, Clarence, Re. 31,016, Cl. 308-4.00A.

Harrington, John H.; Smyth, Richard T.; and Weir, John D., to Metco Inc. Method and apparatus for shielding the effluent from plasma spray gun assemblies. Re. 31,018, Cl. 219-121.0PL.

Metco Inc.: *See—*
Harrington, John H.; Smyth, Richard T.; and Weir, John D., Re. 31,018, Cl. 219-121.0PL.

Moore, Doyle A., to Bedford Industries, Inc. Reel adapter for tie material and method of using same. Re. 31,015, Cl. 242-71.900.

Oster, Clarence, to Conoco Inc. Anti-friction sucker rod guide assembly. Re. 31,016, Cl. 308-4.00A.

Smyth, Richard T.: *See—*
Harrington, John H.; Smyth, Richard T.; and Weir, John D., Re. 31,018, Cl. 219-121.0PL.

Weir, John D.: *See—*
Harrington, John H.; Smyth, Richard T.; and Weir, John D., Re. 31,018, Cl. 219-121.0PL.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See—*
D'Alo, Herbert F., 265,926, Cl. D24-27.000.

Acrylic Creations, Inc.: *See—*
Margulis, Craig S., 265,867, Cl. D3-78.000.

Allison, Monte C.; and Graves, Kenneth M. Tool caddy. 265,941, 8-24-82, Cl. D34-44.000.

American Standard Inc.: *See—*
Simpson, Linda S., 265,929, Cl. D25-48.000.
Simpson, Linda S., 265,930, Cl. D25-48.000.
Simpson, Linda S., 265,931, Cl. D25-48.000.
Simpson, Linda S., 265,932, Cl. D25-48.000.
Simpson, Linda S., 265,933, Cl. D25-48.000.

Aoijs, Dieudonne G., to U.S. Philips Corporation. Radio receiver. 265,904, 8-24-82, Cl. D14-70.000.

Aqualine Products Limited: *See—*
Littlefield, Reg, 265,876, Cl. D6-101.000.
Littlefield, Reg, 265,883, Cl. D8-351.000.

Barr, Josef J. Pearl earring. 265,894, 8-24-82, Cl. D11-43.000.

Barr, Josef J. Earring. 265,895, 8-24-82, Cl. D11-76.000.

Bechtel, Daniel L. Base for a rifle telescope mount. 265,920, 8-24-82, Cl. D22-7.000.

Bell, Ronald; and Sorensen, Jorn, to Force 10 Marine Ltd. Barbecue. 265,881, 8-24-82, Cl. D7-110.000.

Berteloot, Joseph W. Antfarm. 265,937, 8-24-82, Cl. D30-1.000.

Bisso, Helen, to Bisso, Paul. Cake baking frame. 265,879, 8-24-82, Cl. D7-43.000.

Bisso, Paul: *See—*
Bisso, Helen, 265,879, Cl. D7-43.000.

Black & Decker Inc.: *See—*
House, Lawrence E., II, 265,899, Cl. D13-5.000.

Bogner, Richard D.; and King, Leonard H. Microwave antenna. 265,905, 8-24-82, Cl. D14-86.000.

C & D Consulting & Design AG: *See—*
Luthy, Ernst, 265,869, Cl. D6-63.000.

Caldwell, John W. Pole-mounted sun shade. 265,862, 8-24-82, Cl. D3-5.000.

Canon Kabushiki Kaisha: *See—*
Yoshioka, Eiichi; and Fushimoto, Hideo, 265,913, Cl. D18-7.000.

Caputo, Louise, to Faberge, Incorporated. Box. 265,886, 8-24-82, Cl. D9-332.000.

Cerkovnik, Andrej; and Zvanut, Stane. Board for water sports. 265,898, 8-24-82, Cl. D12-303.000.

Clorox Company, The: *See—*
Weckman, Richard L., 265,887, Cl. D9-375.000.

Consolidated Foods Corporation: *See—*
Lawrence, James L.; and Heller, Joel, 265,889, Cl. D9-418.000.

Craig, Thomas M. Beverage can holder. 265,880, 8-24-82, Cl. D7-70.000.

Cuttriss, Richard J., to Gruber Systems, Inc. Bathtub. 265,923, 8-24-82, Cl. D23-55.000.

D'Alo, Herbert F., to Abbott Laboratories. Grippable tubing clamp or the like. 265,926, 8-24-82, Cl. D24-27.000.

Dart Industries Inc.: *See—*
Lahay, Charles A., 265,927, Cl. D24-59.000.

Eberbach, Steven J. Speaker cabinet. 265,902, 8-24-82, Cl. D14-33.000.

Eldon Industries, Inc.: *See—*
Evenson, Mel, 265,916, Cl. D19-91.000.

Ellersick, Russell R. Quartz halide lamp reflector-heat concentrator. 265,934, 8-24-82, Cl. D26-118.000.

Epperson, Charles N. Oil container or the like. 265,888, 8-24-82, Cl. D9-375.000.

Evenson, Mel, to Eldon Industries, Inc. Foldable stenographic notebook holder. 265,916, 8-24-82, Cl. D19-91.000.

Faberge, Incorporated: *See—*
Caputo, Louise, 265,886, Cl. D9-332.000.

Fallen, Floyd F.; and Wilson, Calvin L., to Reynolds Metals Company. Carton blank. 265,890, 8-24-82, Cl. D9-433.000.

Feuchs, Walter F. Building structure. 265,928, 8-24-82, Cl. D25-18.000.

Force 10 Marine Ltd.: *See—*
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Frenkel, Juergen, to Veb Werkzeugmaschinenkombinat "7 Oktober". Machine tool enclosure. 265,912, 8-24-82, Cl. D15-138.000.

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
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Fushimoto, Hideo: *See—*
Yoshioka, Eiichi; and Fushimoto, Hideo, 265,913, Cl. D18-7.000.

Gageby, Steven D. Chair. 265,871, 8-24-82, Cl. D6-76.000.

Gardisette International AG: *See—*
Stocker, Hans, 265,942, Cl. D47-6.00E.
Stocker, Hans, 265,943, Cl. D47-6.00E.

Gebhardt, James L.; and Hutchins, Ferris L., Jr., to Mead Corporation, The. Sports scoreboard. 265,892, 8-24-82, Cl. D10-46.100.

Gehlke, Stephen J. S., to Ion Systems, Inc. Air ionizer. 265,924, 8-24-82, Cl. D23-150.000.

General Mills Products Corp.: *See—*
Stephens, James R.; and Grieve, Margaret, 265,865, Cl. D3-56.000.

Gerber, Gary A. Car top ski carrier. 265,897, 8-24-82, Cl. D12-157.000.

GK Haninge Maskiner AB: *See—*
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Graves, Kenneth M.: *See—*
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Gruber Systems, Inc.: *See—*
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Jasperson, Stephen J., 265,922, Cl. D23-55.000.

Hamaguchi, Masahiko; and Sato, Yasuhiro, to Tomy Kogyo Company, Inc. Housing for amusement water toy. 265,917, 8-24-82, Cl. D21-59.000.

Hardy, Bruce N., to Silver Street, Incorporated. Drumstick holder. 265,877, 8-24-82, Cl. D6-125.000.

Hatanaka, Takefumi, to Lifewell Corporation. Paper shredder or the like. 265,909, 8-24-82, Cl. D15-127.000.

Hatanaka, Takefumi, to Lifewell Corporation. Paper shredder or the like. 265,910, 8-24-82, Cl. D15-127.000.

Hatanaka, Takefumi, to Lifewell Corporation. Paper shredder or the like. 265,911, 8-24-82, Cl. D15-127.000.

Heller, Joel: *See—*
Lawrence, James L.; and Heller, Joel, 265,889, Cl. D9-418.000.

Hiraishi, Etsuo; and Sakamoto, Masakazu, to Ryobi Limited. Printing machine. 265,914, 8-24-82, Cl. D18-13.000.

Holschneider, Johannes P. Convertible rocking chair. 265,868, 8-24-82, Cl. D6-3.000.

House, Lawrence E., II, to Black & Decker Inc. Battery charger system. 265,899, 8-24-82, Cl. D13-5.000.

Hutchins, Ferris L., Jr.: *See*—
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Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 265,896, 8-24-82, Cl. D12-143.000.
International Business Machines Corp.: *See*—
Steinbugler, Robert E., 265,906, Cl. D14-107.000.
Ion Systems, Inc.: *See*—
Gehlke, Stephen J. S., 265,924, Cl. D23-150.000.
Jasperson, Stephen J., to Gruber Systems, Inc. Bathtub. 265,922, 8-24-82, Cl. D23-55.000.
Johnson, William H., to Shenandoah Manufacturing Co., Inc. Static pressure control assembly for environmentally controlled buildings and the like. 265,900, 8-24-82, Cl. D13-12.000.
Karlsson, Gustaf, to GK Haninge Maskiner AB. Snow plow snow retaining gate. 265,907, 8-24-82, Cl. D15-12.000.
Kilham, Peter. Wood burning stove. 265,921, 8-24-82, Cl. D23-97.000.
Kilham, Peter. Bird feeder perch. 265,938, 8-24-82, Cl. D30-13.000.
Kilham, Peter. Window bird feeder. 265,939, 8-24-82, Cl. D30-14.000.
King, Leonard H.: *See*—
Bogner, Richard D.; and King, Leonard H., 265,905, Cl. D14-86.000.
Klose, Odo, to Friedrich Grohe Armaturenfabrik GmbH & Co. Support for a hand-held showerhead. 265,874, 8-24-82, Cl. D6-86.000.
Kracke, Donald R. Tote bag with attached pouch. 265,864, 8-24-82, Cl. D3-43.000.
Lahay, Charles A., to Dart Industries Inc. Urine collection device or the like. 265,927, 8-24-82, Cl. D24-59.000.
Lawrence, James L.; and Heller, Joel, to Consolidated Foods Corporation. Brassiere display package. 265,889, 8-24-82, Cl. D9-418.000.
Levin, Gary M. Jewelry box. 265,866, 8-24-82, Cl. D3-66.000.
Lifewell Corporation: *See*—
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Hatanaka, Takefumi, 265,910, Cl. D15-127.000.
Hatanaka, Takefumi, 265,911, Cl. D15-127.000.
Littlefield, Reg, to Aqualine Products Limited. Towel rack. 265,876, 8-24-82, Cl. D6-101.000.
Littlefield, Reg, to Aqualine Products Limited. Wall plate. 265,883, 8-24-82, Cl. D8-351.000.
Luthy, Ernst, to C & D Consulting & Design AG. Sofa. 265,869, 8-24-82, Cl. D6-63.000.
Mabry Industries, Inc.: *See*—
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Mabry, James B., to Mabry Industries, Inc. Vibration dampening bracket for a take-up cradle of a yarn texturing machine. 265,884, 8-24-82, Cl. D8-354.000.
Margulis, Craig S., to Acrylic Creations, Inc. Transparent lock box. 265,867, 8-24-82, Cl. D3-78.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
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McCarn, Ellen D., to McCarn Enterprises, Inc. Sewing thread organizer. 265,863, 8-24-82, Cl. D3-23.000.
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Miki, Kunishige, to Matsushita Electric Industrial Co., Ltd. Portable cassette tape recorder. 265,901, 8-24-82, Cl. D14-6.000.
Olsson, Sven O. Paint roller cleaner. 265,940, 8-24-82, Cl. D32-46.000.
Pearson, Clark: *See*—
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Wistehuff, Daniel D., 265,878, Cl. D6-146.000.
Rekow, John A. Apparel display rack. 265,872, 8-24-82, Cl. D6-85.000.
Reynolds Metals Company: *See*—
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Ryobi Limited: *See*—
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Sammons, Michael F. Carton blank. 265,891, 8-24-82, Cl. D9-433.000.
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Sankin Kogyo Kabushiki Kaisha: *See*—
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Sato, Yasuhiro: *See*—
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Schoch, Robert R. Toy airplane. 265,918, 8-24-82, Cl. D21-89.000.
Shenandoah Manufacturing Co., Inc.: *See*—
Johnson, William H., 265,900, Cl. D13-12.000.
Sher, Robert B. Pipe. 265,935, 8-24-82, Cl. D27-03.000.
Sher, Robert B. Pipe. 265,936, 8-24-82, Cl. D27-03.000.
Shih, Wen-I. Supporting frame for gas stove. 265,882, 8-24-82, Cl. D7-130.000.
Silver Street, Incorporated: *See*—
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Simpson, Linda S., to American Standard Inc. Door. 265,929, 8-24-82, Cl. D25-48.000.
Simpson, Linda S., to American Standard Inc. Door. 265,930, 8-24-82, Cl. D25-48.000.
Simpson, Linda S., to American Standard Inc. Door. 265,931, 8-24-82, Cl. D25-48.000.
Simpson, Linda S., to American Standard Inc. Door. 265,932, 8-24-82, Cl. D25-48.000.
Simpson, Linda S., to American Standard Inc. Door. 265,933, 8-24-82, Cl. D25-48.000.
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Smith, Aziza, Slacks. 265,860, 8-24-82, Cl. D2-28.000.
Smith, Ivan A., to Village Nominees Pty. Ltd. Curtain track end pulley. 265,885, 8-24-82, Cl. D8-358.000.
Smith, Larry C. Guitar stand. 265,873, 8-24-82, Cl. D6-85.000.
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Steinbugler, Robert E., to International Business Machines Corp. Modem. 265,906, 8-24-82, Cl. D14-107.000.
Stephens, James R.; and Grieve, Margaret, to General Mills Products Corp. Foldable packet for storing and displaying a jewelry article. 265,865, 8-24-82, Cl. D3-56.000.
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Stocker, Hans, to Gardisette International AG. Curtain material. 265,943, 8-24-82, Cl. D47-6.00E.
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Walasek, Stanley. Armband identification passholder with a transparent front face. 265,861, 8-24-82, Cl. D2-402.000.
Weckman, Richard L., to Clorox Company, The. Bottle. 265,887, 8-24-82, Cl. D9-375.000.
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Yoshioka, Eiichi; and Fushimoto, Hideo, to Canon Kabushiki Kaisha. Desk top electronic calculator. 265,913, 8-24-82, Cl. D18-7.000.
Zvanut, Stane: *See*—
Cerkovnik, Andrej; and Zvanut, Stane, 265,898, Cl. D12-303.000.

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CLASSIFICATION OF PATENTS

ISSUED AUGUST 24, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

161 A	4,345,335
187	4,345,336
405	4,345,337
414	4,345,338

CLASS 3

1	4,345,339
1.5	4,345,340

CLASS 4

301	4,345,341
	4,345,342
662	4,345,343

CLASS 5

62	4,345,344
437	4,345,345
	4,345,346
441	4,345,347
	4,346,298
450	4,345,348

CLASS 8

111	4,345,908
444	4,345,907
477	4,345,909
610	4,345,910

CLASS 15

104.06 R	4,345,350
144 B	4,345,351
250.16	4,345,352
349	4,345,353

CLASS 16

257	4,345,354

CLASS 19

0.6	4,345,355
200	4,345,356

CLASS 23

230 B	4,345,911
230 EP	4,345,912
230 R	4,345,913

CLASS 26

18.5	4,345,357

CLASS 29

14	4,345,358
25.35	4,345,359
159.01	4,345,360
237	4,345,361
426.5	4,345,362
527.4	4,345,363
571	4,345,364
	4,345,365
	4,345,366
603	4,345,367
611	4,345,368
622	4,345,369
828	4,345,370
836	4,345,371
874	4,345,372
	4,345,373

CLASS 30

47	4,345,374
90.1	4,345,375
96	4,345,376
181	4,345,377
266	4,345,378

CLASS 33

21 R	4,345,379
147 N	4,345,380
174 G	4,345,381
294	4,345,382
474	4,345,383

CLASS 34

16.5	4,345,384
23	4,345,385
218	4,345,386

CLASS 36

43	4,345,387

CLASS 37

195	4,345,388

CLASS 38

77.7	4,345,389
102.91	4,345,390
143	4,345,391

CLASS 40

116	4,345,392
312	4,345,393
405	4,345,394
441	4,345,395
490	4,345,396

CLASS 42

42 B	4,345,397
94	4,345,398

CLASS 43

42.06	4,345,399

CLASS 44

10 C	4,345,914

CLASS 46

4	4,345,400
79	4,345,401
206	4,345,402

CLASS 47

1.1	4,345,403
8	4,345,404
10	4,345,405

CLASS 48

197 R	4,345,915

CLASS 52

8	4,345,406
169.3	4,345,407
	4,345,408
693	4,345,409
741	4,345,410

CLASS 53

134	4,345,411
297	4,345,412
315	4,345,413
425	4,345,414
450	4,345,415

CLASS 55

5	4,345,916
33	4,345,917
38	4,345,918
41	4,345,919
46	4,345,920
223	4,345,921
302	4,345,922
314	4,345,923
379	4,345,924

CLASS 56

13.3	4,345,416
14.3	4,345,417
202	4,345,418
249	4,345,419
295	4,345,420
341	4,345,421
370	4,345,422

CLASS 57

58.84	4,345,423
209	4,345,424
289	4,345,425

CLASS 60

39.23	4,345,426
234	4,345,427
274	4,345,428
279	4,345,429
282	4,345,430
286	4,345,431
290	4,345,432
327	4,345,433
398	4,345,434
420	4,345,435
421	4,345,436
521	4,345,437
657	4,345,438

CLASS 62

13	4,345,925
38	4,345,926
71	4,345,439
116	4,345,440
140	4,345,441
160	4,345,442
380	4,345,443

CLASS 63

4	4,345,444

CLASS 65

4.4	4,345,927
18.2	4,345,928
99.5	4,345,929
102	4,345,930

CLASS 66

9 B	4,345,446

CLASS 70

38 A	4,345,447
95	4,345,448
153	4,345,449

CLASS 71

28	4,345,931
88	4,345,932
	4,345,933
92	4,345,934
	4,345,935
	4,345,936
95	4,345,937
118	4,345,938

CLASS 72

273.5	4,345,450
286	4,345,451
452	4,345,452
453.18	4,345,453

CLASS 73

1 E	4,345,454
32 A	4,345,456
37.5	4,345,457
	4,345,458
61.1 R	4,345,459
167	4,345,460
170 A	4,345,461
178 R	4,345,462
190 CV	4,345,463
201	4,345,464
204	4,345,465
298	4,345,466
309	4,345,467
326	4,345,468
338.6	4,345,469
462	4,345,472
516 LM	4,345,473
517 B	4,345,474
657	4,345,475
720	4,345,476
766	4,345,477
861.09	4,345,478
861.28	4,345,479
861.77	4,345,480
862.34	4,345,481
862.59	4,345,482
864.16	4,345,483
864.43	4,345,484

CLASS 74

5.1	4,345,485
198	4,345,486
563	4,345,487
682	4,345,488
752 A	4,345,489
761	4,345,490
831	4,345,491

CLASS 75

41	4,345,939
58	4,345,940
122	4,345,941
237	4,345,942
238	4,345,943

CLASS 76

101 R	4,345,492

CLASS 81

57.34	4,345,493
64	4,345,494

CLASS 82

41	4,345,495

CLASS 83

100	4,345,496
105	4,345,497
707	4,345,498
835	4,345,499

CLASS 84

1.01	4,345,500
1.03	4,345,501
1.21	4,345,502
383 R	4,345,503

CLASS 89

37 GM	4,345,504
154	4,345,505

CLASS 91

376 R	4,345,506
449	4,345,507
516	4,345,508

CLASS 92

78	4,345,509

CLASS 98

40 VM	4,345,510

CLASS 99

276	4,345,511
323	4,345,512
327	4,345,513
349	4,345,514
393	4,345,515
426	4,345,516
511	4,345,517

CLASS 100

98 R	4,345,518
215	4,345,519
293	4,345,520

CLASS 101

93	4,345,521

CLASS 104

89	4,345,522

CLASS 105

1 A	4,345,523
404	4,345,524

CLASS 106

90	4,345,944
300	4,345,945

CLASS 108

107	4,345,525
111	4,345,526

CLASS 110

104 R	4,345,527
203	4,345,528
213	4,345,529
215	4,345,530

CLASS 111

1	4,345,531

CLASS 112

158 E	4,345,532

CLASS 114

61	4,345,533
106	4,345,534
122	4,345,535
124	4,345,536
219	4,345,537
274	4,345,538

CLASS 116

68	4,345,539
278	4,345,540
308	4,345,541

CLASS 118

78	4,345,542
106	4,345,543
108	4,345,544
621	4,345,545
675	4,345,546

CLASS 119

20	4,345,547
108	4,345,548

CLASS 122

34	4,345,549

CLASS 123

59 B	4,345,551
78 E	4,345,550
90.38	4,345,552
149 C	4,345,553
179 BG	4,345,554
272	4,345,555
327	4,345,556
339	4,345,557
425	4,345,558
435	4,345,559
440	4,345,560
	4,345,561
	4,345,562
458	4,345,563
490	4,345,564
497	4,345,565
502	4,345,566
510	4,345,567
522	4,345,568
549	4,345,569
557	4,345,570
568	4,345,571
	4,345,572
572	4,345,573
587	4,345,574
598	4,345,575
604	4,345,576

CLASS 124

16	4,345,577
56	4,345,578

CLASS 125

15	4,345,579

CLASS 126

288	4,345,580
415	4,345,581
424	4,345,582
427	4,345,583
	4,345,584
429	4,345,585
449	4,345,586
450	4,345,587

CLASS 127

46.3	4,345,946
48	4,345,947
70	4,345,948

CLASS 128

1.3	4,345,588
4	4,345,589
166	4,345,590
169	4,345,591
204.26	4,345,592
	4,345,593
214 F	4,345,594
	4,345,595
214 R	4,345,596
287	4,345,597
303.1	4,345,598
320	4,345,599
334 R	4,345,600
339	4,345,601
349 R	4,345,602
419 PS	4,345,604
419 PT	4,345,603
728	4,345,605
784	4,345,606

CLASS 130

39	4,346,156

CLASS 132

83 R	4,345,607
160	4,345,608

CLASS 134

22.16	4,345,949
57 R	4,345,609

CLASS 137

7	4,345,610
68 R	4,345,611
101.19	4,345,612
317	4,345,613
340	4,345,614
343	4,345,615
355.17	4,345,616
385	4,345,617
393	4,345,618
512.15	4,345,619
596.16	4,345,620
624.12	4,345,621
637.1	4,345,622
637.2	4,345,623

CLASS 138

110	4,345,624
141	4,345,625

CLASS 140

107	4,345,626

CLASS 141

18	4,345,627
83	4,345,628
114	4,345,629

CLASS 144

346	4,345,630

CLASS 145

24	4,345,631

CLASS 148

2	4,345,950
	4,345,951
3	4,345,952
32	4,345,953

CLASS 152

209 R	4,345,632
328	4,345,633
353 R	4,345,634

CLASS 156

87	4,345,954
89	4,345,955
198	4,345,956
218	4,345,957
221	4,345,958
244.11	4,345,959
264	4,345,960
294	4,345,961
356	4,345,962
423	4,345,963
468	4,345,964
500	4,345,965
523	4,345,966
613	4,345,967
627	4,345,968
659.1	4,345,969

CLASS 160

133	4,345,635
297	4,345,636

CLASS 162

123	4,345,970

CLASS 164

113	4,345,637
456	4,345,638

CLASS 165

10	4,345,639
	4,345,640
41	4,345,641
86	4,345,642
122	4,345,643
154	4,345,644
176	4,345,645

CLASS 166

55	4,345,646
66	4,345,647
106	4,345,648
120	4,345,649
249	4,345,650
291	4,345,651
307	4,345,652
317	4,345,653

CLASS 169

24	4,345,654

CLASS 171

63	4,345,655

CLASS 173

131	4,345,636

CLASS 174

29	4,346,253
37	4,346,254
42	4,346,255
47	4,346,256
72 B	4,346,257

93 4,346,258

CLASS 175

40 4,345,657

CLASS 178

3 4,346,259
18 4,346,260

CLASS 179

1 HF 4,346,261
1 SA 4,346,262
2 A 4,346,263
18 DA 4,346,264
84 T 4,346,265
170 NC 4,346,266
4,346,267
175.1 A 4,346,268

CLASS 180

8 C 4,345,658
131 4,345,659
133 4,345,660
141 4,345,661
168 4,345,662
177 4,345,663
230 4,345,664
270 4,345,665

CLASS 181

207 4,345,666

CLASS 184

1 D 4,345,667
29 4,345,668

CLASS 187

10 4,345,669
29 R 4,345,670
95 4,345,671

CLASS 188

1.11 4,345,672
18 R 4,345,673
71.8 4,345,674
73.43 4,345,675

CLASS 192

107 C 4,345,676

CLASS 193

2 A 4,345,677
35 R 4,345,678

CLASS 194

4 C 4,345,679

CLASS 198

304 4,345,680
626 4,345,681
635 4,345,682
653 4,345,683
781 4,345,684
852 4,345,685

CLASS 200

11 DA 4,346,269
33 R 4,346,270
38 R 4,346,271
83 C 4,346,272
147 R 4,346,273
296 4,346,274
314 4,346,275
329 4,346,276

CLASS 202

177 4,345,971

CLASS 203

18 4,345,972
19 4,345,973
4,345,974
37 4,345,975
49 4,345,976

CLASS 204

26 4,345,977
74 4,345,978
101 4,345,979
119 4,345,980
129 4,345,981
4,345,982
158 R 4,345,983
162 R 4,345,984
192 EC 4,345,985
266 4,345,986
290 R 4,345,987

CLASS 206

219 4,345,686
418 4,345,687
455 4,346,300

CLASS 208

8 R 4,345,988
10 4,345,989
11 R 4,345,990
78 4,345,991
120 4,345,992
164 4,345,993

CLASS 209

1 4,345,994
219 4,345,995

CLASS 210

96.1 4,345,996
150 4,345,997
164 4,345,998
188 4,345,999
195.1 4,346,000
198.3 4,346,001
201 4,346,002
225 4,346,003
232 4,346,004
4,346,005
321.4 4,346,006
360.1 4,346,007
395 4,346,008
512.1 4,346,009
714 4,346,010
748 4,346,011

CLASS 211

60 T 4,345,688

CLASS 213

61 4,345,689

CLASS 215

216 4,345,690
4,345,691
252 4,345,692

CLASS 219

69 M 4,346,278
75 4,346,279
76.1 4,346,280
76.13 4,346,281
78.16 4,346,282
4,346,283
121 LK 4,346,284
121 PL Re.31,018
381 4,346,285
501 4,346,286
528 4,346,277
541 4,346,287

CLASS 220

3.3 4,345,693
86 AT 4,345,694
254 4,345,695
277 4,345,696
335 4,345,697
452 4,345,698

CLASS 222

40 4,345,699
438 4,345,700
569 4,345,701
630 4,345,702

CLASS 224

32 A 4,345,703
39 4,345,704
42.03 B 4,345,705
327 4,345,706

CLASS 226

68 4,345,707
74 4,345,708
195 4,345,709

CLASS 229

16 R 4,345,710
41 R 4,345,711
62 4,345,712

CLASS 233

1 B 4,345,713

CLASS 235

70 A 4,346,288
98 R 4,346,289
436 4,346,290

CLASS 236

46 R 4,345,714

CLASS 237

66 4,345,715

CLASS 239

56 4,345,716
102 4,345,717
333 4,345,718
428.5 4,345,719

CLASS 241

74 4,345,720

CLASS 242

18.1 4,345,721
56 R 4,345,722
71.9 Re.31,015
107 4,345,723
115 4,345,724
204 4,345,725
212 4,345,726

CLASS 244

102 R 4,345,727
168 4,345,728
169 4,345,729

CLASS 245

6 4,345,730

CLASS 248

48.2 4,345,731
441 B 4,345,732
561 4,345,733
669 4,345,734

CLASS 250

211 R 4,346,291
216 4,346,292
222 R 4,346,293
227 4,346,294
327.2 4,346,295
343 4,346,296
492.2 4,346,301

CLASS 251

1 B 4,345,735
30 4,345,736
129 4,345,737
315 4,345,738
358 4,345,739

CLASS 252

7 4,346,012
8.5 A 4,346,013
47.5 4,346,014
50 4,346,015
301.22 4,346,016
321 4,346,017
408 4,346,018
416 4,346,019
429 R 4,346,020
431 N 4,346,021
509 4,346,022
522 R 4,346,023

CLASS 254

29 A 4,345,740
287 4,345,741
291 4,345,742

CLASS 260

112 B 4,346,029
239.3 B 4,346,033
239.3 T 4,346,030
4,346,031
4,346,032
4,346,034
4,346,035
4,346,036
239.55 R 4,346,037
404 4,346,043
404.1 4,346,044
455 R 4,346,045
458 C 4,346,046
544 K 4,346,047

CLASS 261

130 4,346,048

CLASS 264

65 4,346,049
71 4,346,050
102 4,346,051
176 F 4,346,052
561 4,346,053

CLASS 266

44 4,345,743
49 4,345,744
56 4,345,745
90 4,345,746
240 4,345,747

CLASS 267

8 R 4,345,748
51 4,345,749

CLASS 269

136 4,345,750

CLASS 271

3.1 4,345,751
12 4,345,752
146 4,345,753
209 4,345,754

CLASS 272

78 4,345,755
117 4,345,756
127 4,345,757

CLASS 273

30 4,345,758
65 R 4,345,759
118 R 4,345,760
146 4,345,761
157 R 4,345,762
164 4,345,763
313 4,345,764
359 4,345,765

CLASS 277

12 4,345,767
22 4,345,768
30 4,345,766
31 4,345,769
48 4,345,770
205 4,345,771
212 FB 4,345,772

CLASS 279

62 4,345,445

CLASS 280

6 R 4,345,773
11.2 4,345,774
443 4,345,775
629 4,345,776
647 4,345,777
701 4,345,778
766 4,345,779
802 4,345,780
4,345,781
803 4,345,782

CLASS 285

12 4,345,783
39 4,345,784
50 4,345,785
131 4,345,786

CLASS 290

1 R 4,346,302
45 4,346,303
52 4,346,304
55 4,346,305

CLASS 292

346 4,345,787

CLASS 294

1 R 4,345,788
31.2 4,345,789

CLASS 297

6 4,345,790
250 4,345,791
362 4,345,792
438 4,345,793

CLASS 299

2 4,345,794

CLASS 301

6 E 4,345,795

CLASS 303

92 4,345,796

CLASS 307

108 4,346,306
130 4,346,307
252 B 4,346,308
252 M 4,346,309
264 4,346,310
268 4,346,311
270 4,346,312
350 4,346,313
427 4,346,314
603 4,346,315

CLASS 308

4 A Re.31,016
122 4,345,797
160 4,345,798
187 4,345,799
217 4,345,800
238 4,345,801

CLASS 310

11 4,346,316
4,346,317
12 4,346,318
36 4,346,319
179 4,346,320
232 4,346,321
313 B 4,346,322

CLASS 312

42 4,345,802
194 4,345,803

CLASS 313

111 4,346,323
112 4,346,324
336 4,346,325
388 4,346,326
413 4,346,327
449 4,346,328

CLASS 315

51 4,346,329
150 4,346,330
158 4,346,331
307 4,346,332
367 4,346,333

CLASS 318

45 4,346,334
351 4,346,335

CLASS 320

9 4,346,336

CLASS 322

25 4,346,337
28 4,346,338

CLASS 323

245 4,346,339
249 4,346,340
257 4,346,341
276 4,346,342
282 4,346,343
313 4,346,344

CLASS 324

110 4,346,345
132 4,346,346
158 D 4,346,347
158 R 4,346,348

CLASS 330

10 4,346,349

CLASS 331

116 FE 4,346,350
117 R 4,346,351
178 4,346,352

CLASS 332

9 R 4,346,353
43 B 4,346,354

CLASS 333

33 4,346,355

CLASS 335

6 4,346,356
16 4,346,357
4,346,358
202 4,346,359
205 4,346,360

CLASS 336

60 4,346,361

CLASS 337

248 4,346,362

CLASS 339

9 E 4,345,804
16 R 4,345,805
19 4,345,806
31 B 4,345,807
40 4,345,808
45 M 4,345,809
75 MP 4,345,810
143 R 4,345,811
144 R 4,345,812
147 P Re.31,017
184 M 4,345,813
275 R 4,345,814

CLASS 340

27 R 4,346,363
52 D 4,346,364
72 4,346,365
146.3 R 4,346,366
347 DA 4,346,368
347 DD 4,346,367
365 S 4,346,369
384 E 4,346,370
507 4,346,371
545 4,346,372
561 4,346,373
573 4,346,374
644 4,346,375
712 4,346,376
731 4,346,377
754 4,346,378
778 4,346,379
825.63 4,346,380
825.93 4,346,381

CLASS 343

5 SA 4,346,382
12 R 4,346,383
112 R 4,346,384
703 4,346,385
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PLANT PATENTS

41 : 4,879

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Malcolm Baldrige, *Secretary*

PATENT AND TRADEMARK OFFICE

Gerald J. Mossinghoff, *Commissioner*

Vol. 1021 Number 5

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

August 31, 1982



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

August 31, 1982 Volume 1021 Number 5

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Jan. 19, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,469,571, Re. S.N. 372,431, Filed Apr. 27, 1982, Cl. 128/654, DEVICE FOR ADMINSTERING A FLUID INTO THE INTESTINAL TRACT, Alexander A. Vass, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 335

3,883,406, Re. S.N. 355,429, Filed Mar. 8, 1982, Cl. 204/95, PROCESS FOR RECOVERING ELECTROLYTICALLY PRODUCED ALKALI METAL CHLORATES, Thomas F. O'Brien, et al., Owner of Record: *Inventor,* Attorney or Agent: David M. Bunnell, Ex. Gp.: 116

4,069,662, Re. S.N. 392,439, Filed June 28, 1982, Cl. 60/226R, CLEARANCE CONTROL FOR GAS TURBINE ENGINE, Ira H. Redinger, Jr., et al., Owner of Record: *United Technologies Corp., Hartford, Conn.,* Attorney or Agent: Norman Friedland, et al., Ex. Gp.: 343

4,081,556, Re. S.N. 368,683, Filed Apr. 15, 1982, Cl. 426/2, PRODUCT FOR FEEDING BEES, Jean-Louis Louveaux, Owner of Record: *Institut National De La Recherche Agronomique, Paris, France,* Attorney or Agent: Thomas P. Sarro, Ex. Gp.: 172

4,133,874, Re. S.N. 392,525, Filed June 28, 1982, Cl. 424/38, LIPID ENCAPSULATED HEMOGLOBIN CELLS, Irving F. Miller, et al., Owner of Record: *University of Illinois Foundation, Urbana, Ill.,* Attorney or Agent: William E. Dominick, et al., Ex. Gp.: 123

4,142,875, Re. S.N. 142,592, Filed Apr. 21, 1980, Cl. 55/72, PROCESS FOR THE PURIFICATION OF SCRUBBING SOLVENTS BY REMOVAL NI(CO)$_4$, Gerd Bohmholdt, et al., Owner of Record: *Veba Oel Aktiengesellschaft, Gelsenkirchen-Buer, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 177

4,182,802, Re. S.N. 328,961, Filed Dec. 12, 1981, Cl. 526/264, HYDROPHILIC POLYMERS AND CONTACT LENSES OF HIGH WATER CONTENT, Samuel Loshaek, et al., Owner of Record: *Wesley-Jessen, Inc., Chicago, Ill.,* Attorney or Agent: Warrick E. Lee, Ex. Gp.: 144

4,191,212, Re. S.N. 338,557, Filed Jan. 11, 1982, Cl. 137/601, MULTIPLE BLADE DAMPER ASSEMBLY, Donald K. Hager, Owner of Record: *Inventor,* Attorney or Agent: Peter G. Mack, Ex. Gp.: 341

4,204,165, Re. S.N. 379,562, Filed May 18, 1982, Cl. 455/226, MULTICHANNEL COHERENT RECEIVER, Patrick J. Ready, Owner of Record: *Inventor,* Attorney or Agent: Louis J. Bachand, et al., Ex. Gp.: 233

4,213,721, Re. S.N. 383,931, Filed June 1, 1982, Cl. 408/54, ALIGN BORING MACHINE, R. Warren Aldridge, Jr., Owner of Record: *Inventor,* Attorney or Agent: Charles A. Phillips, Ex. Gp.: 324

4,242,999, Re. S.N. 247,516, Filed Mar. 25, 1981, Cl. 123/548, SELF-REGULATING HEATER, Alfred Hoser, Owner of Record: *Inventor,* Attorney or Agent: David S. Kane, et al., Ex. Gp.: 342

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,193,797, Reexam. No. 90/000,234, Requested: July 30, 1982, Cl. 430/258, METHOD FOR MAKING PHOTORESISTS, Abraham B. Cohen, et al., Owner of Record: *E.I. du Pont de Nemours & Co., Inc.* Attorney or Agent: Weston B. Wardell, Jr., Ex. Gp.: 166, Requester: E.I. du Pont de Nemours & Co., Inc. Wilmington, Del.

4,219,318, Reexam. No. 90/000,230, Requested: July 21, 1982, Cl. 425/190, APPARATUS FOR PREPARING FRESH FARINACEOUS PASTES, Alfredo Cavalli, Owner of Record: *Inventor,* Attorney or Agent: Hubbell, Cohen, Stiefel & Gross, Ex. Gp.: 147, Requester: Osrow Products Corp., Kirschstein, Kirschstein, Ottinger, Cobrin, P.C., New York, N.Y.

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 2

[Document No. 2512-96A]

Trademark Applications and Examination Proceedings; Trademark Interference, Concurrent Use, Opposition and Cancellation Proceedings; Trademark Post-Registration Proceedings

Agency: Patent and Trademark Office, Commerce.

Action: Proposed rulemaking; change of hearing date and extension of comment period.

Summary: On June 29, 1982 a notice was published in the Federal Register (47 FR 28324–28343) announcing Sept. 27, 1982 as the date for a hearing concerning proposed amendments to the rules of practice in trademark cases. Because that day is Yom Kippur, a religious holi-

day for many people, the hearing has been rescheduled for the following Monday, Oct. 4, 1982, at 10:00 a.m. The period for filing comments is extended to that date as well.

Date: The date on which the hearing will be conducted is changed to Oct. 4, 1982, at 10:00 a.m. The period for filing comments is also changed to Oct. 4, 1982.

Addresses: The hearing will be held in Room 11C24 of Building 3, Crystal Plz., 2021 Jefferson Davis Hwy., Arlington, Va. Comments may be mailed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

For Further Information Contact: Miss Janet E. Rice by telephone at (703) 557-3551 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

July 29, 1982.

[FR Doc. 82-21128 Filed 8-4-82; 8:45 am]

BILLING CODE 3510-16-M

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-363,425. PO_2 "FIBER OPTIC PROBE." Dept. of Health & Human Services.

SN 6-112,980. (Patent 4,337,181) "BIODEGRADABLE STARCH-BASED BLOWN FILMS." Dept. of Agriculture.

SN 6-141,764. (Patent 4,337,763) "ILLUMINATED SURGICAL INSTRUMENT." Dept. of Health & Human Services.

SN 6-153,057. (Patent 4,337,028) "CATALYTIC MONOLITH, METHOD OF ITS FORMULATION AND COMBUSTION PROCESS USING THE CATALYTIC MONOLITH." Environmental Protection Agency.

SN 6-161,823. (Patent 4,339,295) "HYDROGEL ADHESIVES AND SANDWICHES OR LAMINATES USING MICROWAVE ENERGY." Dept. of Health & Human Services.

SN 6-182,632. (Patent 4,337,196) "METHOD FOR PRODUCING 3,6-BIS(CARBOETHOXYAMINO) -2-5-DIAZIRIDINYL-1,4-BENZOQUINONE." Dept. of Health & Human Services.

SN 6-192,261. (Patent 4,338,608) "TRIPLE-BEAM OFFSET PARABOLOIDAL ANTENNA." Dept. of Commerce.

SN 6-200,111. (Patent 4,337,129) "REGENERATION OF WASTE METALLURGICAL PROCESS LIQUOR." Dept. of Interior.

SN 6-229,215. (Patent 4,337,271) "ERYTHRO-9,10-DIHYDROXYOCTADECAN-1-OL ACETATE A BOLL WEEVIL ANTI-FEEDANT." Dept. of Agriculture.

SN 6-233,422. (Patent 4,337,226) "RECOVERY OF PLATINUM-GROUP METALS FROM ORES." Dept. of Interior.

SN 6-283,596. (Patent 4,337,549) "CARCASS CLEANING UNIT AND CONTAINMENT CHAMBER." Dept. of Agriculture.

SN 6-291,180. (Patent 3,915,651) "DIRECT DIGITAL CONTROL PIPETTE." Dept. of State.

SN 6-300,834. (Patent 4,337,227) "RECOVERY OF CHROMIUM FROM WASTE SOLUTIONS."

Examiner Education Program Contributions Tax Deductible

The Internal Revenue Service has issued a ruling that financial contributions made in support of the Patent Examiner Education Program are tax deductible for the taxable year in which the contributions are made. The ruling is reproduced below.

July 20, 1982.

Dear Mr. Mossinghoff:

This is in reply to your request for a ruling whether contributions to your office under the following circumstances are deductible under section 170 of the Internal Revenue Code.

The Patent and Trademark Office of the Department of Commerce is promoting a Patent Examiner Education Program, which will improve the capabilities of its patent examiners to make decisions on patentability. That, in turn, will improve the quality of patents issued by the Office. Private industry is being asked to provide the funds for the Program because funds are not available from Congressional appropriations or fees received by the Office. Industry is also being asked to make commercial facilities available for visits under the Program. It is not necessary that a person who makes a facility available for visits also make a financial contribution. The identification of donors and gift amounts will be known to about four individuals in the Office. Neither the examiners nor the individuals assigning examiners to visit industrial facilities will know the donors or amounts of their gifts. Donors to the Program will not have any part in the assignment of examiners to visit the facilities.

Section 170 of the Code provides, subject to certain limitations, a deduction for contributions and gifts to or for the use of organizations described in section 170(c), payment of which is made within the taxable year.

Section 170(c)(1) of the Code provides, in part, that the term "charitable contribution" means a contribution or gift to or for the use of the United States, but only if the contribution or gift is made for exclusively public purposes.

The term "charitable contribution," as used in section 170 of the Code, requires a contribution or gift. A contribution or gift, for the purposes of section 170, is a voluntary transfer of money or property made by the transferor without receipt or expectation of financial or economic benefit. If the transferor receives, or can reasonably expect to receive, sufficiently substantial financial or economic benefits in excess of those that would inure to the general public, no deduction under section 170 is allowable. *United States* v. *Transamerica Corp.*,

392 F.2d 522 (9th Cir. 1968); and *Singer Co.* v. *United States*, 449 F.2d 413 (Ct. Cl. 1971).

Rev. Rul. 69-90, 1969-1 C.B. 63, holds that voluntary payments by merchants and property owners to a city to provide unrestricted public parking facilities located in the general area of the donors' businesses and properties are charitable contributions. This conclusion is based on the fact that the payments were not consideration for an agreement on the part of the city to provide parking facilities for the use of the contributors. The parking spaces were for the use of the general public and the amount of the contributions was not based on proximity or probable use. Thus, there was no special economic benefit conferred on the contributor by reason of the contribution.

In Rev. Rul. 73-296, 1973-2 C.B. 67, the Service considered whether contributions to United States Army Unit Funds, which are integral parts of the Army, are deductible under section 170 of the Code. The Funds could accept contributions if acceptance was found to be in the best interest of the Army and did not involve the granting of special privileges to the donor. The revenue ruling concludes that contributions to the Funds under these circumstances are deductible as contributions to or for the use of the United States under section 170, provided the contributions are for exclusively public purposes.

Contributions to the Program do not confer special privileges on the donors. The contributions provide funds for a program for which funds are not available from Congressional appropriations.

Accordingly, amounts contributed to the Program are deductible under section 170 of the Code, subject to the limitations provided by that section, as contributions to or for the use of the United States, provided the contributions are used exclusively for public purposes.

Sincerely yours,

Anthony Manzanares, Jr.,
Chief, Individual Income Tax Branch

The Patent Examiner Education Program, conducted jointly by the U.S. Patent and Trademark Office and Intellectual Property Owners, Inc., is described in the notice published in the Official Gazette of May 25, 1982, 1018 OG 39.

DONALD J. QUIGG,
Deputy Commissioner of Patents and Trademarks.

Aug. 3, 1982

Status of PTO Services

The following is an update of the status of PTO services as of Aug. 3, 1982:

Service Item	FY 1982 Performance Goal (Calendar Days)	Actual	Comment
Internal Mail Processing & Delivery	4	5.0	See note below.
Filing Receipts:			
Patents	22	50	Reduction from 100 days in February.
Trademarks	30	30	Last month's 13 day backlog has been worked off.
Patent Copies:			
Window Coupons	5	93% within 5 days 99% within 10 days	
Mail Coupons*	15	99% within 15 days	
Letter Orders*	20	77% within 20 days	
Certified Copies:			
Trademark Regs.	30	20	
Applications-As-Filed*	20	93% within 15 days	
File-Wrapper/Contents*		11% within 15 days 77% within 30 days	
Walk-up Certification	1	99% within 1 day	Service now includes applications-as-filed.
Trademark Search Room:			
Filing Drawings	21	41	
Filing Reg. Certificates	3	11	
Patent Assignments	15	74	Backlog due to unavailable funding. Expect reduction in FY 1983.
Trademark Assignments	21	105	Backlog due to unavailable funding. Expect reduction in FY 1983.
Patent Official Gazette	Issue Date	On Schedule	
Patent Grants	Issue Date	On Schedule	
Trademark Official Gazette	Issue Date	On Schedule	
Trademark Registrations	Issue Date	2 days late	

*Figures exclude mail processing and delivery time.

Local Certification Service

The certification desk in the patent Public Search Room now accepts user produced copies of patent applications-as-filed for certification. Users of this service are required to prepare copies of the application as it appeared at the time of filing, and should present the copies, together with the application file at the desk. If the copies are proper, complete, and in order, a certificate will be affixed. The current charge for this service is $2.00 per certificate.

Filing Receipts

The time required to mail a filing receipt for a patent application has been reduced from 100 days in February to less than 50 calendar days at the present time. This reduction will continue, and we hope to mail filing receipts routinely within one month by Dec. 1982.

Aug. 3, 1982.

THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 31, 1982

Re. 30,928	4,273,159	4,315,387	4,329,511
D. 263,203	4,276,617	4,315,520	4,329,560
3,744,552	4,279,199	4,315,564	4,329,601
3,960,708	4,281,241	4,317,829	4,329,721
4,003,838	4,282,062	4,318,278	4,329,970
4,022,904	4,284,460	4,319,899	4,330,035
4,084,901	4,287,318	4,320,529	4,330,513
4,092,376	4,287,346	4,320,933	4,330,745
4,126,617	4,287,451	4,320,969	4,330,788
4,128,418	4,292,108	4,321,173	4,330,802
4,150,310	4,292,643	4,321,917	4,331,103
4,153,485	4,293,699	4,322,241	4,331,513
4,165,400	4,295,709	4,322,820	4,331,603
4,165,680	4,295,882	4,322,926	4,332,985
4,172,414	4,297,030	4,322,982	4,333,174
4,206,039	4,297,085	4,323,673	4,333,414
4,218,939	4,297,150	4,324,141	4,333,501
4,225,715	4,298,405	4,324,325	4,334,115
4,226,167	4,299,608	4,324,624	4,334,214
4,229,252	4,299,737	4,325,136	4,334,974
4,235,975	4,300,008	4,325,373	4,335,080
4,237,147	4,300,573	4,325,858	4,335,178
4,237,799	4,301,296	4,326,109	4,335,225
4,238,583	4,303,066	4,326,284	4,335,266
4,238,830	4,303,594	4,326,514	4,335,349
4,242,399	4,304,332	4,326,532	4,335,370
4,245,862	4,304,776	4,326,594	4,335,630
4,246,370	4,306,215	4,326,795	4,335,692
4,246,643	4,306,912	4,326,941	4,335,701
4,251,819	4,307,475	4,327,232	4,335,847
4,252,487	4,309,163	4,327,864	4,335,849
4,253,600	4,309,639	4,327,981	4,335,903
4,257,730	4,309,974	4,327,996	4,336,074
4,258,600	4,310,000	4,328,097	4,336,112
4,261,799	4,312,215	4,328,225	4,336,212
4,263,421	4,312,496	4,328,305	4,336,615
4,263,457	4,312,934	4,328,412	4,336,931
4,264,609	4,313,435	4,328,526	4,337,257
4,264,628	4,313,967	4,328,575	4,337,317
4,266,541	4,314,227	4,328,600	4,338,349
4,270,088	4,314,485	4,328,734	4,338,522
4,271,012	4,314,760	4,329,288	4,339,673
4,272,127	4,315,316	4,329,391	

Dedications

3,428,933.—*Egon Gerstenberger,* Phoenixville, Pa. STRAIN GAGE UNIT AND METHOD OF APPLYING THE GAGE. Patent dated Feb. 18, 1969. Dedication filed July 8, 1982, by the assignee, *Vishay Intertechnology, Inc.*

Hereby dedicates to the Public the remaining term of said patent with all issued claims.

3,481,189.—*William H. Brennan,* Phoenixville & *Rudolph J. Wolf, Jr.,* Worcester, Pa. STRAIN GAGE MEASURING SYSTEM. Patent dated Dec. 2, 1969. Dedication filed July 8, 1982, by the assignee, *Vishay Intertechnology, Inc.*

Hereby dedicates to the Public the remaining term of said patent with all issued claims.

3,609,624.—*Bella Nagy,* Phoenixville, Pa. STRAIN GAGE AND METHOD OF BONDING THE GAGE TO A MEMBER UNDER TEST. Patent dated Sept. 28, 1971. Dedication filed July 8, 1982, by the assignee, *Vishay Intertechnology, Inc.*

Hereby dedicates to the Public the remaining term of said patent with all issued claims.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4559
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
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	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 24, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-18-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-09-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-18-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-13-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-20-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	4-09-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	7-07-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-14-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-27-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-24-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	11-27-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,192,536 to 3,197,783, inclusive

Plant Patents ..... Numbers 2,543 to 2,545 inclusive

REISSUES

AUGUST 31, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

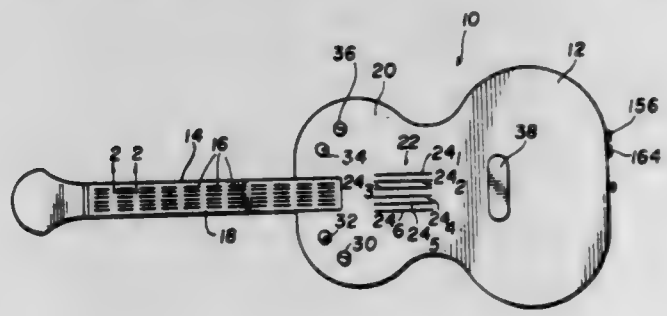
Re. 31,019
STRINGLESS ELECTRONIC MUSICAL INSTRUMENT

Fred J. Evangelista, 14 Linda La., Severna Park, Md. 21146

Original No. 4,177,705, dated Dec. 11, 1979, Ser. No. 973,801, Dec. 28, 1978. Application for reissue Jun. 25, 1980, Ser. No. 162,777

Int. Cl.³ G10H *1/00, 1/02*

U.S. Cl. 84—1.16 20 Claims



1. In an electronic musical instrument for simulating a stringed instrument having a [body portion adapted to carry] tone generating means [and a neck portion adapted to carry a finger-board assembly coupled to said tone generator means] and being operable to vary the tonal output thereof, the improvement comprising:

tone generator means including an electrical oscillator circuit [for each fundamental frequency desired to be simulated and] including switch operated circuit means [operable from said fingerboard assembly] for selectively changing [the] tonal [output] frequency [of said oscillator circuit];

[a respective] *an* output amplifier circuit coupled to said oscillator circuit and being energized in accordance with the operative state of a player actuated switch device; and

said player actuated switch device [consisting of] *comprising* a relatively thin [flexible blade-type] switch actuator member [mounted on edge in a substantially upright position on the outer surface of said body portion adjacent said fingerboard assembly,] *having a pair of sides and* being adapted [thereby] to be deflected bi-directionally [transverse] *transversely* [to said upright position] when strummed, struck, picked or plucked or bowed by a player, and at least one pair of electrical switch contacts located on each side of said actuator [element] *member*, wherein deflection of said actuator [element] *member* in either direction operates one of said pair of switch contacts to energize said output amplifier circuit.

Re. 31,020
METHOD OF MAKING A LINED CONDUIT SECTION

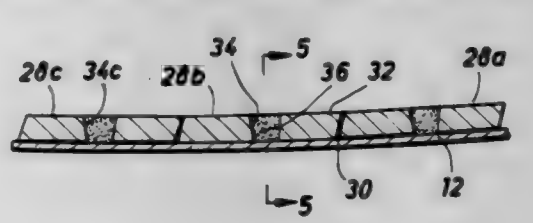
Charles F. Funk, Gulfport, Miss., assignor to Met-L-Parts, Inc., Gulfport, Miss.

Original No. 4,251,018, dated Feb. 17, 1981, Ser. No. 27,806, Apr. 6, 1979. Continuation-in-part of Ser. No. 850,285, Nov. 10, 1977, abandoned. Application for reissue Oct. 13, 1981, Ser. No. 310,652

Int. Cl.³ B23K *9/23*

U.S. Cl. 228—122 2 Claims

1. A method of lining an inside surface of a conduit with a plurality of strips of hard, relatively brittle, wear resistant material formed into elongated relatively narrow strips that have openings therethrough that have smaller cross-sectional areas on one side than on the other said method comprising the steps of disposing the inside surface in a generally upwardly facing horizontal position, placing a plurality of the strips on the upwardly facing surface in adjacent side-by-side position with the ends of the openings in the strips with the smaller cross-sectional area adjacent the upwardly facing surface, puddling weld metal briefly in first one opening and then another remote from the first while allowing the weld metal in



said first opening to cool, briefly puddling additional weld metal in said first one opening, likewise puddling weld metal in each said opening at plural brief intervals until each opening is filled to thereby maintain the temperature of the strips below that at which they will crack due to thermal stresses.

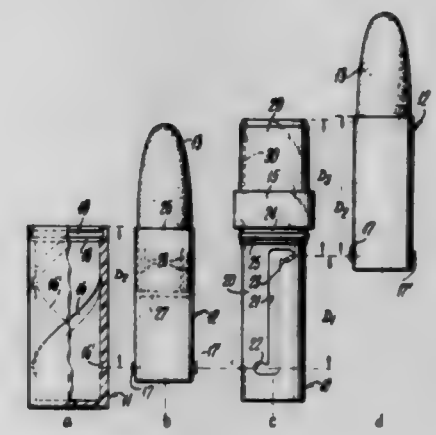
Re. 31,021
COSMETIC APPLICATOR WITH TRANSPARENT CONTAINER PORTION

Eric J. Idec, Madison; Edward F. Klimeck, Waterbury, and Eric A. Hultgren, Westport, all of Conn., assignors to Eyelet Specialty Co., Inc., Wallingford, Conn.

Original No. 4,208,144, dated Jun. 17, 1980, Ser. No. 26,755, Apr. 3, 1979. Application for reissue Feb. 13, 1981, Ser. No. 234,574

Int. Cl.³ B43K *5/12*

U.S. Cl. 401—194 19 Claims



1. In a container of the variety in which a carrier cup adapted to support cosmetic or the like substance at one end has cam-follower tracking engagement with axial propulsion cams of inner and outer rotatable tubular members, the outer tubular member being open at one end and having a cupped base closing its other end, and the inner tubular member being a sleeve including a portion projecting beyond the open end of said outer member to provide manual access for relative rotation of said members, the improvement in which said carrier cup is characterized by such an axial distance between the cam-follower location and said one end that in the retracted position of said carrier cup (a) said one end of said carrier cup is at substantially the open end of said outer member, and (b) the manually accessible projecting portion of said sleeve is translucent and enshrouds substantially the entire usable length of cosmetic or the like substance carried by said carrier cup.

Re. 31,022

MICHAEL ADDUCTS OF POLYMERIC MATERIALS USEFUL IN COATING APPLICATIONS

Stephen L. Buchwalter, Allison Park; Joseph F. Bosso, Lower Burrell, and Roger M. Christenson, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Original No. 4,248,753, dated Feb. 3, 1981, Ser. No. 937,386, Aug. 28, 1978. Application for reissue Mar. 26, 1981, Ser. No. 247,584

Int. Cl.[3] C08L *75/12, 63/02*

U.S. Cl. 523—418 25 Claims

8. The resinous composition of claim [7]. *6* in which the curing agent is selected from the class consisting of [amionoplasts] *aminoplasts* and capped isocyanates.

PLANT PATENTS

GRANTED AUGUST 31, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,882

CARNATION PLANT

Walter H. Jessel, Jr., Fremont, and William E. Duffett, Salinas, both of Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 5, 1980, Ser. No. 175,753
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—73 1 Claim

1. A new and distinct cultivar of *Dianthus caryophyllus,* L. known by the cultivar name Duke, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of commercial double flower type; flat flower form, twisting slightly with maturity; medium flower size, crimson red flower color with minimum color oxidation; fast flowering response; 4 to 6 flowers and buds showing color per flowering stem; medium peduncle length; strong peduncle strength; and tall plant height.

4,883

CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 30, 1980, Ser. No. 164,351
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name Accord, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; dark red bronze ray floret color; yellow-green (immature) to yellow (mature) disc floret color; diameter across face of capitulum ranging from 75 to 100 mm. at maturity; uniform nine week photoperiodic flowering response to short days; tall plant height, short peduncle length; and semi-upright branching pattern.

PATENTS

GRANTED AUG. 31, 1982

ERRATA

For CLASS	See PATENT NO.
464–120	4,346,570
192–084	4,346,616
374–046	4,346,754
523–511	4,347,170
524–071	4,347,171
524–319	4,347,172
524–088	4,347,173
523–116	4,347,174
523–455	4,347,175
548–516	4,347,186
548–516	4,347,187
549–436	4,347,188
549–397	4,347,189
549–497	4,347,190
549–492	4,347,191
549–498	4,347,192
376–251	4,347,214
427–096	4,347,306
373–077	4,347,400
378–156	4,347,440
372–042	4,347,485
372–046	4,347,486

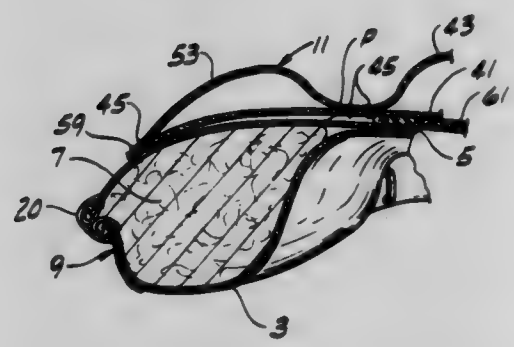
PATENTS

GRANTED AUGUST 31, 1982

GENERAL AND MECHANICAL

4,346,481
BASEBALL MITT
Roland N. Latina, Belleville, Ill., assignor to A-T-O Inc., Willoughby, Ohio
Filed Feb. 26, 1982, Ser. No. 238,364
Int. Cl.[3] A41D *13/08*
U.S. Cl. 2—19 10 Claims





1. A baseball mitt comprising front and back plies forming a mitt body having a thumb portion, a finger portion and a portion connecting the thumb and finger portions, and glove means secured to the back of the body with the front of the glove means facing said back ply, said glove means having a thumb stall disposed generally behind the thumb portion of the mitt body, at least one finger stall disposed generally behind the finger portion of the body, a crotch portion between said thumb and finger stalls, a palm portion, and a hand-receiving opening adjacent the bottom of the mitt, said glove means being joined to the body of the mitt adjacent said hand-receiving opening and at the ends of said thumb and finger stalls, but being free of attachment to the mitt body at its said palm and crotch portions, thereby forming a pocket in the mitt between the front of the glove means and the back of the body having an opening through which padding or the like may be inserted into the pocket, and providing freedom of movement of the palm and crotch portions of the glove means relative to the body of the mitt for increasing the flexibility of the mitt.

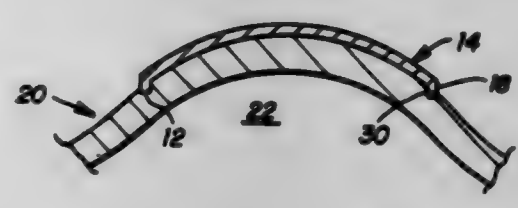
4,346,482
LIVING CONTACT LENS
Jerald L. Tennant, 806 Greentree La., and Heinz J. Smirmaul, 1207 Spring Lake Dr., both of Duncanville, Tex. 75116
Filed Jan. 22, 1981, Ser. No. 227,255
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 2 Claims

1. A contact lens for insertion into the cornea of a patient comprising:

a circular portion of a donor cornea having an anterior surface and a posterior surface, said anterior surface being curved for correction of the patient's vision;

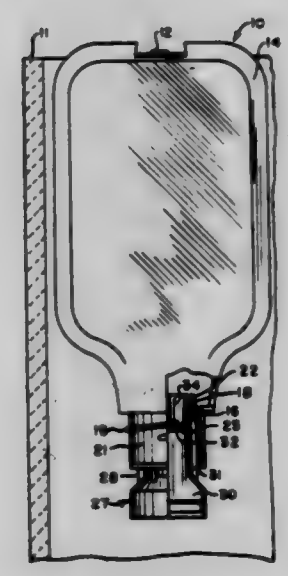
said circular portion posterior surface being ground to correspond to the curvature of the patient's eye; and

said circular portion having a depending axially posteriorly directed ring, said ring being integral with said posterior surface of said circular portion and having a height less than



the thickness of the patient's cornea for insertion into and retention by the patient's cornea.

4,346,483
FLOAT CONTROLLED LIQUID DISPENSER
Robert A. Rosen; Gayle F. Schuchmann, both of St. Louis, and James E. Pate, Winchester, all of Mo., assignors to Puro Corporation, St. Louis, Mo.
Filed Oct. 31, 1980, Ser. No. 202,701
Int. Cl.[3] E03D *9/02, 9/03*
U.S. Cl. 4—227 7 Claims



1. A liquid dispensing apparatus for periodically discharging a measured quantity of liquid from a bottle necked container into a second liquid container comprising in combination (1) a thin walled cylindrical plug of resilient plastic material adapted to be force fitted into the bottle neck of the first container, the leading portion of said insert being inwardly tapered to facilitate insertion in said bottle neck, said plug insert having a tapered frustro conical protuberance extending interiorly and upwards from the tapered end of the plug insert and terminating part way in the cylindrical interior of said plug insert, the inner end of said protuberance having a planar annular surface perpendicular to the longitudinal axis of said insert plug and an orifice through said planar surface concentric with the axis of said insert plug and (2) a cylindrical two compartment plastic float member adapted for axial movement within the cylindrical portion and within the leading inwardly tapered portion of said plug insert, one compartment consisting of an air bell and the other compartment consisting of an annular frustro conical chamber dimensioned for spaced entry therein of the conical protuberance portion of said plug insert and for receiving liquid from the orifice in said plug insert, said chamber having in its base an annular planar valve seat coaxial with the annular planar surface in said plug insert, an integral guide stem axially extending from the base of the frustro conical chamber and slightly beyond the rim of said chamber, said guide stem being freely axially movable in the plug insert's orifice but retained therein by fingers radially projecting from the end of said

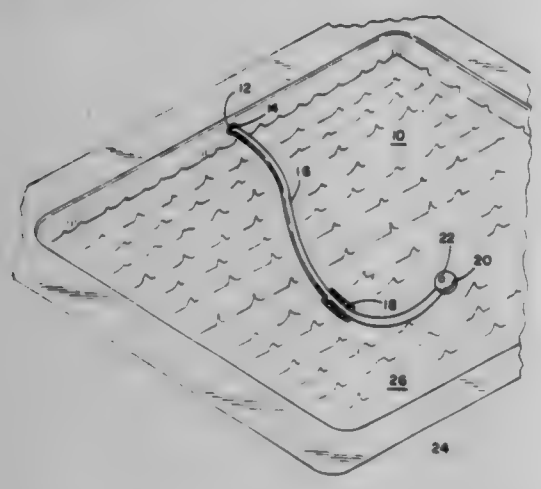
guide stem, and integral means on the exterior cylindrical surface of said plastic float member for spacing said float member from the interior cylindrical wall and the tapered end of the plug insert and for concentrically guiding the float's annular planar valve seat into a liquid sealing contact with the annular planar surface on said plug insert.

4,346,484

SWIMMING POOL INLET LOCATION CONTROL

John H. Martin, 1801-D Parkcourt Pl., Suite #104, Santa Ana, Calif. 92701

Filed Sep. 15, 1980, Ser. No. 187,617
Int. Cl.³ E04H *3/19, 3/18*
U.S. Cl. 4—507 **2 Claims**



1. A swimming pool water inlet selective variable location control retrofit device, comprising:
- a tube fabricated from an impervious material such as polyvinylchloride and having two open ends;
- removable coupling means coupling the first end of the tube in a substantially leak-proof coupling to a prior art pool return line water exit;
- a float coupled in a removable coupling near the second end of the tube; and
- a weight, coupled in a removable coupling near the second end of the tube, the weight negative buoyancy and coupling location on the tube and float positive buoyancy and coupling location on the tube selected so as to select the depth at which the second tube exit is retained in the water of the swimming pool.

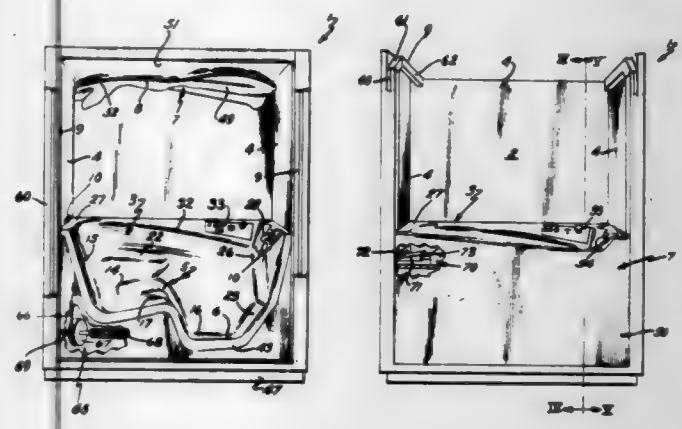
4,346,485

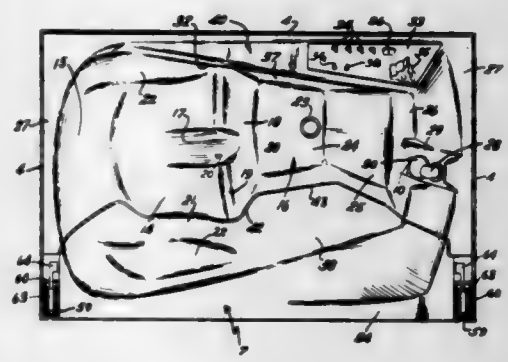
APPARATUS AND METHOD FOR BATHING INVALIDS

Stewart D. Reed, El Toro, Calif.; Arthur A. Silis, Traverse City, Mich.; John H. Kraft, Traverse City, Mich.; Raymond T. Houle, Traverse City, Mich.; Michael A. Redwine, Acme, Mich., and Frederick A. Kilbourn, Suttons Bay, Mich., assignors to Silchor, Traverse City, Mich.

Filed Sep. 15, 1980, Ser. No. 187,522
Int. Cl.³ A47K *3/02*
U.S. Cl. 4—555 **17 Claims**

1. A bathing apparatus for invalids, comprising:
- a bathtub having a lateral opening in a side thereof with sufficient size to permit invalid ingress and egress therethrough; said lateral opening being defined by a lip, and having a generally wedge-shaped contour which opens upwardly;
- a door selectively closing said opening, and having a sealing edge with a generally wedge shape which conforms with the contour of said lip;
- a compression seal connected with one of said lips and said door sealing edge;
- means for vertically translating said door between an open position wherein invalid movement through said opening is permitted, and a closed position wherein said door and said bathtub are converged to compress said seal between said lip and said door sealing edge and form a seal therebetween which is leakproof when said bathtub is filled with water to a level substantially above a base portion of said lip for immersal bathing of an invalid; and





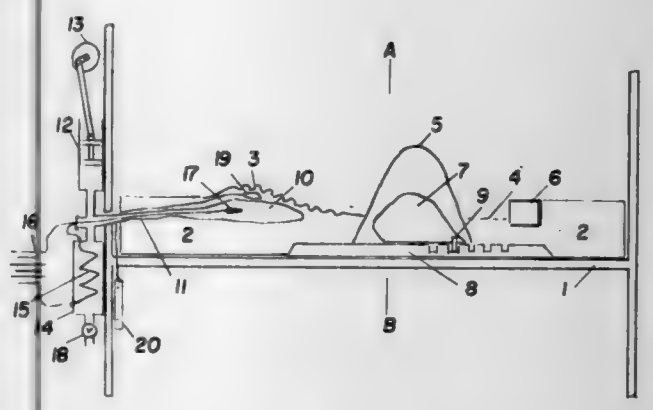
- means for selectively locking said door in the closed position.

4,346,486

TRANQUILIZING BED

Dorothy V. Keller, 1767 Belvedere Rd., Port Deposit, Md. 21904

Filed Aug. 23, 1979, Ser. No. 68,917
Int. Cl.³ A61G *7/06*; A47D *9/02*; A47C *21/04*
U.S. Cl. 5—447 **4 Claims**



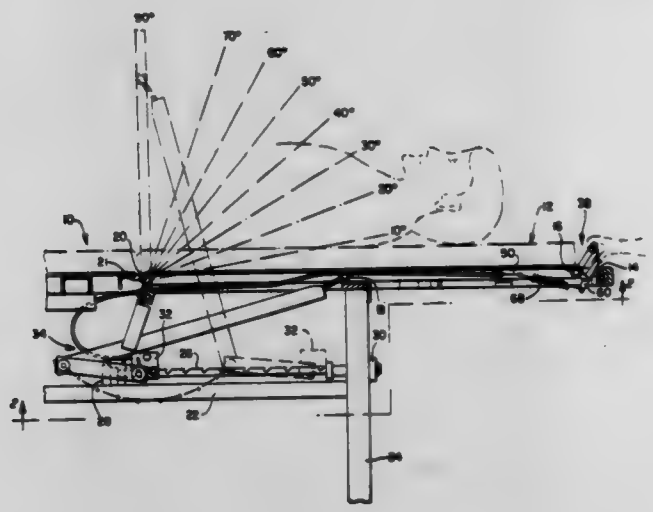
1. A mattress designed to comfort and tranquillize an occupant in the prone position having the following features;
- a head and chest support surface having a convexity,
- leg support surfaces somewhat lower than the head and chest support surface,
- movable support means, located under the head and chest support surface serving to cause a rhythmic rising and falling motion of said surface,
- a motor driven reciprocating driving means connected to said movable support means,
- a relatively narrow, removable elevation at the longitudinal centerline of said mattress adjustably mounted between the leg support surfaces on a guide bar placed longitudinally at the bottom of the mattress.

4,346,487

QUICK RELEASE MANUAL TYPE FOWLER FOR HOSPITAL STRETCHERS

Donald H. Holdt, and Donald B. Morgan, both of Cambridge, Md., assignors to Whittaker Medical Manufacturing Company, Richmond, Va.

Filed Apr. 25, 1980, Ser. No. 143,557
Int. Cl.[3] A47C *20/04*; A61G *7/00, 1/02*
U.S. Cl. 5—74 R 17 Claims



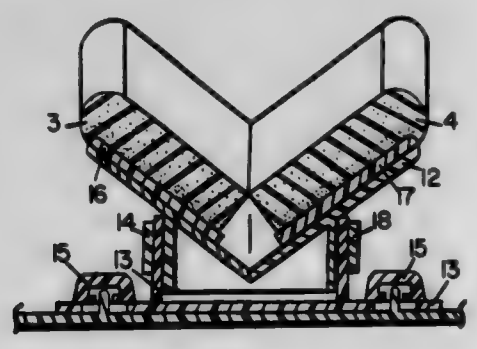
1. In a hospital stretcher having a top and a Fowler, the combination comprising means to support said Fowler at any one of a plurality of predetermined fixed angular positions of said Fowler with respect to the stretcher top, and manually operable means located on said Fowler to permit motion of said Fowler from a first of said angular positions to any other of said angular positions and said Fowler with respect to said stretcher top, said support means including a ratchet bar, linkage means interconnecting said Fowler and said ratchet bar, said ratchet bar being formed with a plurality of slots each corresponding to one of said plurality of fixed angular positions, pin means at the ratchet bar end of said linkage means cooperable with any one of said slots, and said manually operable means comprising means to release said pin means from said ratchet bar slot to permit said motion of said Fowler, said combination also including a traveling assembly which includes said pin means mounted on said ratchet bar for sliding motion longitudinally of said bar, said assembly comprising a pair of plates mounted one on each side of said ratchet bar, means to mount said pin on said plates, and spring means to bias said plates in a direction so as to normally urge said pin towards said ratchet bar slots.

4,346,488

ADJUSTABLE UPPER BODY REST

George D. Eary, Sr., 8 N. Woodlawn Ave., La Vale, Md. 21502

Filed Aug. 13, 1979, Ser. No. 65,761
Int. Cl.[3] A47G *9/00*
U.S. Cl. 5—436 6 Claims



1. An adjustable rest for the head and shoulder portion of the human body in a predetermined position and comprising:

a. a base member,

b. a pair of laterally spaced apart resilient shoulder support members adapted to support the shoulders of said human body in a predetermined position,

c. each of said shoulder members being so attached to allow limited lateral and longitudinal movement relative to the base and allow complete removeability from the said base,

d. each of said shoulder members being so attached to allow limited rotational movement around a vertical axis, and to allow limited rotational movement around a horizontal axis, whereby said shoulder support members can be positioned on support members to provide a higher elevation head rest,

e. means to secure each of said shoulder members to the base in an immovable manner at any one of many desired positions,

f. a forehead support member having separate interconnected movable members comprising at least one element supporting the forehead, configured as a "V" tilted towards the user's face when the user is in a face down position, and providing support for the human forehead at varying degrees between the vertical and horizontal positions to the right or left side,

g. said forehead support member being movable laterally and longitudinally in a limited manner relative to the base and to a lower face rest, providing means to vary the distance between and to align the lower face member with the forehead support member,

h. said forehead support member being rotatable in a limited manner about vertical and horizontal axes,

i. means provided to secure said forehead rest in the desired lateral, longitudinal and rotational position in an immovable manner as well as to allow complete removability from the base,

j. means provided to adjust the elevation of the forehead supporting member at either end only or at both ends simultaneously,

k. a lower face rest, rotatable about a horizontal axis, perpendicular to said forehead supporting member in a limited manner, providing a slightly concave central support area at an approximately forty-five degree angle relative to the base member, rising upward to the right when user's head is to the left and rising upward to the left when the user's head is to the right,

l. said lower face rest having its extremities unsupported, thereby allowing means to configure to the user's lower face when the face is turned to the right or the left,

m. lower face rest stops, one at the right and one at the left providing a variety of locations for the lower face rest to the right or left allowing additional alignment capabilities to the forehead support member,

n. a correlation capability of the position of at least one movable member as related to a mating member being provided by an index point on one member and reference numbers on the mating member,

o. a higher elevation suitable for the support of the user's head and arm while lying on the right or left side being provided by the softer bottoms of two hinged shoulder members which are turned bottom-up,

p. a support so designed to prevent side slippage or tilt of the shoulder member being provided at each end of each shoulder member for use while located in the bottom-up position with the shoulder member running downward toward the user's body.

4,346,489

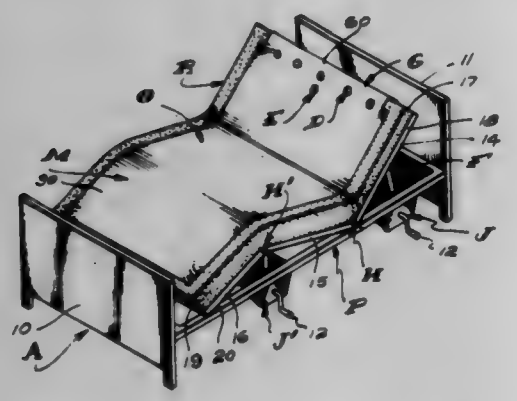
FOLDABLE WATERBED

James P. McMullan, 12300 Monarch St., Garden Grove, Calif. 92641

Filed Jun. 3, 1980, Ser. No. 155,963
Int. Cl.[3] A47C *27/08*
U.S. Cl. 5—451 8 Claims

1. In combination, an articulated bed structure including an elongate normally flat horizontal sectional mattress supporting frame, including longitudinally spaced mattress supporting

sections, adjacent sections of the frame having transversely extending opposing edges, hinge means pivotally coupling the adjacent edge portions of adjacent sections of the frame together and jack mechanisms carried by the bed structure and coupled with certain of said sections to selectively pivot those sections upwardly and downwardly relative to their pivotally related sections, an elongate normally flat horizontal flotation mattress overlying the frame and in supported engagement with the sections, said mattress including an outer jacket of supple, flexible air and waterproof sheet plastic having normally horizontal substantially flat vertically spaced top and bottom walls and vertical side and end walls and a plurality of elongate bladders of supple, flexible and waterproof sheet plastic with top, bottom, side and end walls arranged within the jacket in parallel side-by-side relationship with each other and slackly filled with water, the dimensions of the related and



assembled bladders being substantially the same as the dimensions of the jacket whereby the bladders are captively retained in assembled relationship and are reinforced by the jacket, against over inflation and distension when selected portions of the mattress are elevated above other portions thereof, a retainer to retain the mattress atop the frame, said retainer including an elongate rectangular flexible panel substantially coextensive with the frame and arranged between the bottom wall of the mattress and the frame sections and a rectangular weir of soft flexible and vertically bendable material about the perimeter of the panel and projecting upwardly about and engaging the side and end walls of the jacket, sufficient air being evacuated from within the jacket whereby the walls of the jacket establish substantial uniform contact with related opposing walls of the bladders, said jacket further including partitions extending between adjacent bladders and extending between the top and bottom walls of the jacket.

4,346,490

METHOD AND APPARATUS FOR PRODUCTION OF HONEY

Jerome Katz, and Sidney J. Fogel, both of Rochester, N.Y.

Continuation-in-part of Ser. No. 115,615, Jan. 28, 1980, which is a continuation-in-part of Ser. No. 769,291, Feb. 22, 1977, Pat. No. 4,186,060, and Ser. No. 787,832, Apr. 18, 1977, Pat. No. 4,186,058. This application Jan. 12, 1981, Ser. No. 224,071

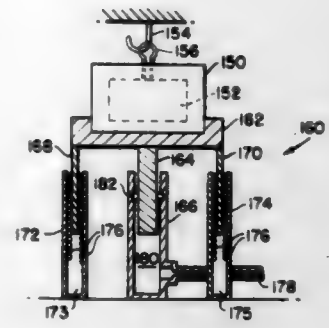
Int. Cl.³ A01K *59/00*

U.S. Cl. 6—1 **12 Claims**

2. A method for the production and collection of large amounts of honey comprising the steps of:

(a) providing an environment controlled structure in which vegetation, bee hives, and bees are maintained under optimum conditions for the production of honey and its accumulation in the hives;

(b) sensing the quantity of honey in the hives from outside said structure to produce signals related to the quantity of honey in the hives;



(c) removing the honey from the hives by hive emptying means operated in response to a predetermined signal; and

(d) collecting said honey.

4,346,491

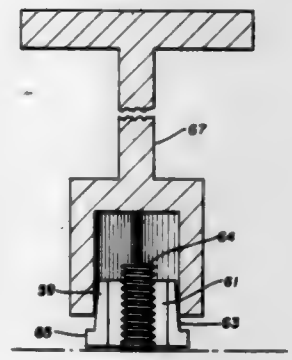
THREAD REPAIR TOOL

Roger B. Kraus, Castro Valley, and Rudy Pretti, San Leandro, both of Calif., assignors to Rethread, Inc., Castro Valley, Calif.

Filed Nov. 13, 1979, Ser. No. 93,289

Int. Cl.³ B23G *7/02*

U.S. Cl. 10—111 **13 Claims**



9. A thread repair tool, comprising:

a plurality of threaded nut sections having complementary threads forming a spiral thread when assembled about a stud or bolt to be worked on, the threads of each nut section presenting an advancing or lead edge at a predetermined angle with the normal to a stud or the like to be treated, and with the free end of said lead edge trailing, such that when said nut sections are assembled about a stud or the like to be treated, and then rotated, said lead edges apply a compressive thread reforming pressure to damaged thread material in its path to reshape damaged threads.

4,346,492

MECHANICAL TOOTHBRUSH WITH INDIVIDUAL TUFT DRIVE

Terry S. Solow, 410 Playa Blvd., La Selva Beach, Calif. 95076

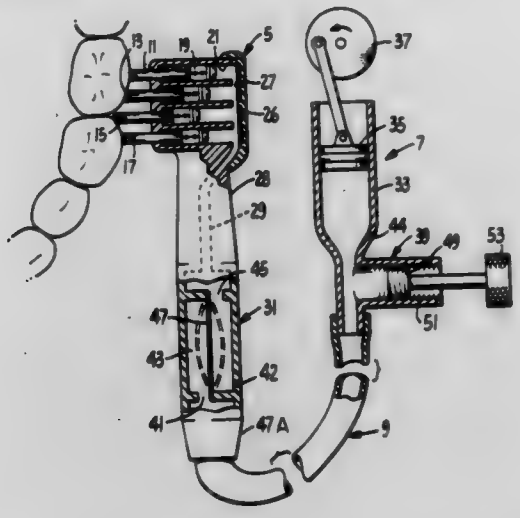
Continuation-in-part of Ser. No. 965,055, Nov. 30, 1978, Pat. No. 4,224,710. This application Mar. 10, 1980, Ser. No. 128,629

Int. Cl.³ A46B *13/02*

U.S. Cl. 15—22 R **8 Claims**

1. A mechanical brush having a head with a plurality of tufts in said head, wherein each tuft is attached to an individual piston and said pistons are each mounted for individual recip-

rocating motion within said head, and means for powering said reciprocating motion internally within said head, independent



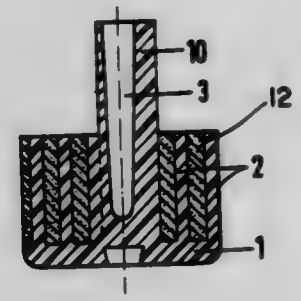
of any tuft movement caused by tuft contact with an external object.

4,346,493

DENTAL-CARE DEVICE AND BRUSH BODY SUITABLE THEREFOR

Johan H. Goudsmit, Rijnsburgerweg 48, 2333 AB Leiden, Netherlands

Filed Oct. 4, 1979, Ser. No. 81,921
Claims priority, application Netherlands, Oct. 10, 1978, 7810204
Int. Cl.³ B08B 1/00; A46B 9/04
U.S. Cl. 15—104.93 8 Claims



8. A dental care device for insertion entirely within the mouth of a human for effecting a cleaning action by bristles on tooth surfaces by chewing comprising:

(a) a chewable brush of non-edible pliable, resilient material

(b) said brush comprising:

(i) a single support body,

(ii) bristles extending from a surface of said support body only substantially in the same direction, and

(iii) a pliable and resilient projection extending from said surface of said support body, substantially in the same direction as said bristles,

(c) said brush having such dimensions that it can be inserted entirely into the human mouth and manipulated within the mouth by chewing upon the pliable and resilient projection.

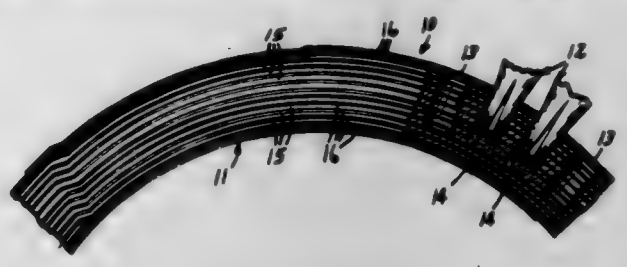
4,346,494

BRUSH STRUCTURE

Ralph C. Peabody, and Bertil J. Sundberg, both of Minneapolis, Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Feb. 17, 1981, Ser. No. 234,672
Int. Cl.³ A46B 3/16, 9/08
U.S. Cl. 15—179 21 Claims

7. A bristle brush comprising alternating layers of plastic and fiber sheet material, the language said brush including a plurality of plastic layers and a plurality of fiber layers, the innermost layer and the outermost layer both being plastic layers, said layers being secured together to provide a bristle support, a



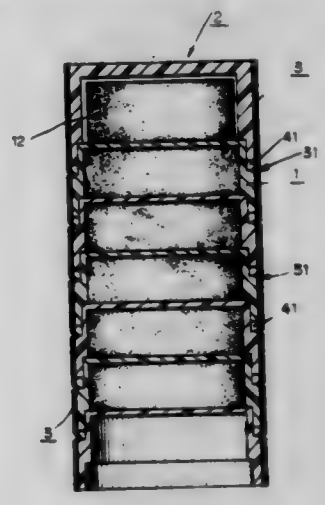
plurality of cavities in said bristle support, and a plurality of bristles held in each of said cavities.

4,346,495

SEGMENTAL BRUSHING EQUIPMENT

Chung S. Lin, 46 Alley 21, Lane 99, Pei-Yuan St., Tainan, Taiwan

Filed Dec. 27, 1979, Ser. No. 107,539
Int. Cl.³ A46B 5/00; B65D 21/00
U.S. Cl. 15—184 1 Claim



1. A segmented brush device comprising: a plurality of brush units sequentially coupled together in an end-to-end manner to form a cylindrical column, wherein an annular slot is formed between adjacent brush units; a cover for covering the first of said brush units; a sealing coat completely surrounding said brush units and said cover, said sealing coat having depressions therein, said depressions partially extending into said annular slots wherein:

a rear end of each said brush unit includes a female portion and a front end of each said brush unit includes a male portion, said male portion being longer than said female portion in the axial direction thereof and wherein the male portion of said brush units if fitted into the female portion of an adjacent brush unit for sequentially coupling said units and said slot is formed therebetween, the width of said slot being equal to the difference in length between said male portion and said female portion.

4,346,496

FOLDABLE IMPLEMENT

Michael L. Murray, P.O. Box 223, Ft. Collins, Colo. 80522

Filed Jun. 8, 1981, Ser. No. 271,782
Int. Cl.³ A46B 7/00, 9/02
U.S. Cl. 15—185 11 Claims

1. An implement comprising:

first and second elongated legs joined by a first hinge between respective one ends thereof to permit said legs to be moved toward and away from one another around said hinge, said legs being mutually shaped to define a cavity when folded together about said hinge;

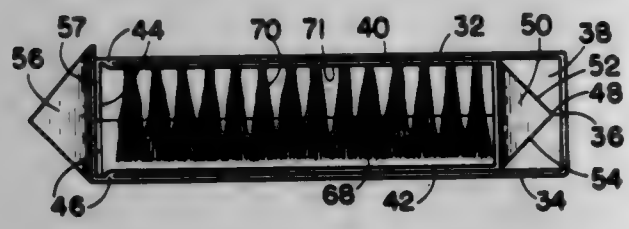
third and fourth elongated legs each of a size to nest within

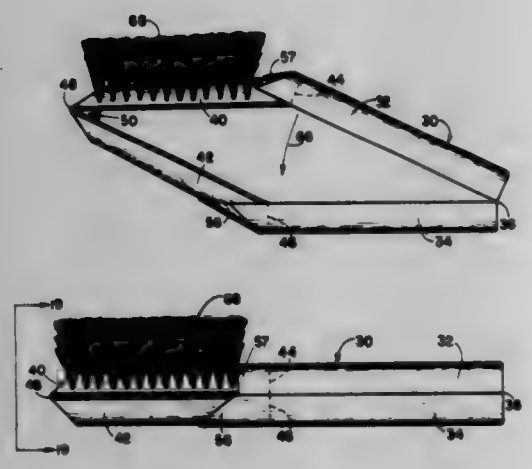
the portion of said cavity defined by a respective one of said first and second legs;

a second hinge coupling one end of said third leg to the other end of said first leg;

a third hinge coupling one end of said fourth leg to the other end of said second leg;

a fourth hinge coupling together the other ends of said third and fourth legs;





said legs individually having respective lengths permitting toggle movement of said third and fourth legs between a first stable position concealed within said cavity and a second position in which they project generally away collinearly from said cavity and said first and second legs when the latter are moved together;

and work means defined on at least one of third and fourth legs for performing a task when they so project away from said cavity.

4,346,497

DEVICE FOR REMOVING DUST FROM A WINDING MACHINE

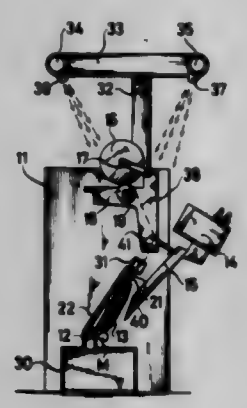
Joachim Rohner, Monchen-Gladbach, and Edmund Wey, Nettetal, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed May 14, 1980, Ser. No. 149,704

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919768

Int. Cl.³ A47L *5/38*

U.S. Cl. 15—301 **9 Claims**



1. Device for removing dust from a winding machine, comprising an air suction channel disposed alongside and adjacent to a run-off coil having thread being unwound therefrom, said air suction channel having at least one suction opening formed therein in longitudinal direction of the run-off coil, and a trough being integral with said air suction channel and disposed parallel to to the longitudinal axis of the run-off coil.

4,346,498

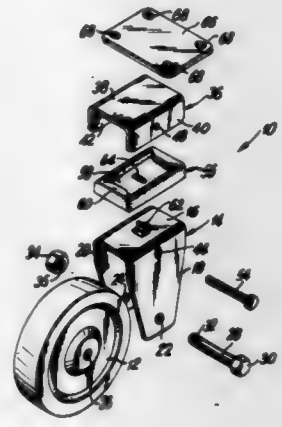
SHOCK RESISTANT CASTER ASSEMBLY

John H. Welsch, Moscow; Charles W. Nicely, Dallas, both of Pa., and Frederick C. Greene, Bellflower, Calif., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Filed Aug. 29, 1980, Ser. No. 182,437

Int. Cl.³ A47B *91/00*

U.S. Cl. 16—44 **8 Claims**



1. A caster assembly comprising:

a wheel having an opening therethrough to define a rotational axis;

a housing having at least two sections;

first means securing said sections together to permit vertical displacement of said sections with respect to each other;

second means coupling one of said housing sections to said wheel at the rotational axis thereof;

shock pad means positioned between said housing sections for resiliently cushioning the vertical displacement therebetween, said shock pad means including an elastomeric member;

said first means including a rivet disposed between said housing sections for limiting the vertical displacement between said sections, said rivet passing through elongated slots provided in one of said sections and holes provided in the other section to further permit pivotal movement thereabout between said sections;

said housing including a yoke assembly having upper and lower sections, said second means including a bolt for rotatingly coupling said wheel to said lower section;

connection means coupled to said upper section for connection of the caster assembly to a mobile device; and

said lower section including an inverted U-shaped yoke member having a bight portion and downwardly depending legs, said bolt coupling said legs to said wheel, said upper section including a cap member spaced above said bight portion, and said elastomeric member being resiliently sandwiched between said cap member and said bight portion.

4,346,499

DEVICE FOR SKINNING SMALL ANIMALS

Leroy Young, 969 Washington St., Franklinton, La. 70438

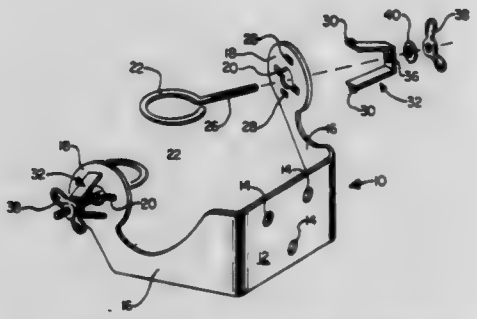
Filed Feb. 17, 1981, Ser. No. 234,652

Int. Cl.³ A22B *1/00*

U.S. Cl. 17—44.3 **10 Claims**

1. A device for holding a small animal in position to be skinned, which device comprises:

a. bracket means having leg means extending outwardly therefrom;
b. first slot means located near the ends of said leg means for receipt of an eyebolt;



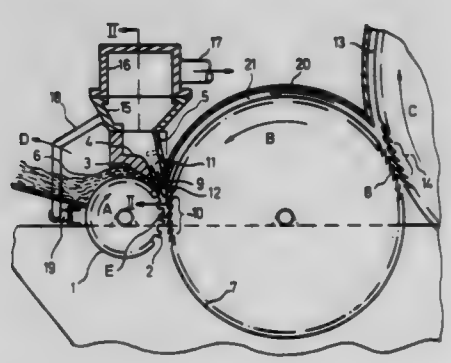
c. U-shaped clamp means for snapping engagement with said ends of said leg means adjacent said first slot means for receipt of said eyebolt; and
d. nut means for threading onto the ends of said eyebolt.

4,346,500

SPINNING PREPARATORY MACHINE

Robert Demuth, Wallisellen, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Jun. 16, 1980, Ser. No. 159,669
Claims priority, application Switzerland, Jul. 4, 1979, 6407/79
Int. Cl.³ D01G *15/40, 15/76*
U.S. Cl. 19—105 6 Claims



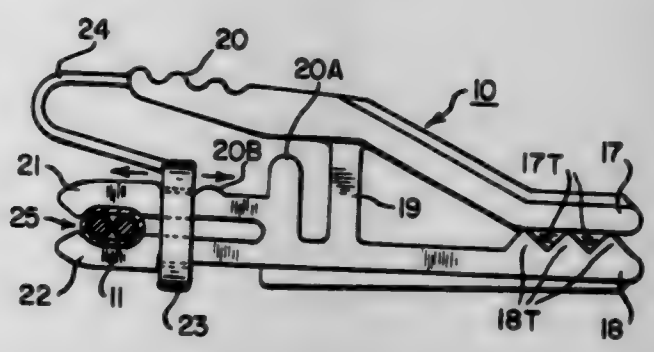
1. A spinning preparatory machine, especially a card, comprising:
a feeder roll;
means defining a feeder trough operatively associated with said feeder roll for receiving fibre material therebetween which has been infed between said feeder roll and said feeder trough;
a loosening roll provided with tip means;
said loosening roll and feeder roll coacting with one another so as to define therebetween a loosening zone for the fiber material;
a suction device located in a converging space formed between an inbound surface of the loosening roll and a surface of the feeder roll;
the feeder roll having a predetermined direction of rotation;
said loosening roll having a predetermined direction of rotation;
said predetermined direction of rotation of said feeder roll and said predetermined direction of rotation of said loosening roll being in the same rotational sense at the region of said converging space;
said means defining said feeder trough including a feeder trough body;
said suction device having a suction opening; and
said feeder trough body and said suction opening extending into the converging space up to the region of said loosening zone.

4,346,501

HEADSET CABLE STRAIN RELIEF CLAMP

Robert F. Saiya, 770 Park Ave., Huntington, N.Y. 11743

Filed May 21, 1980, Ser. No. 151,917
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—329 4 Claims



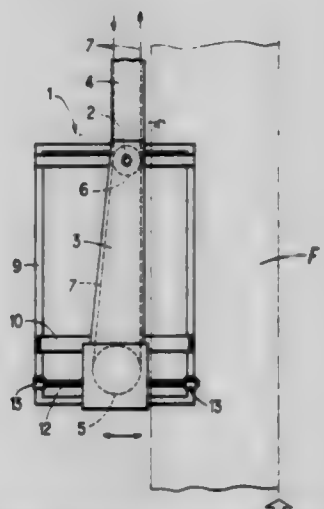
1. A strain relief clamp for adjustably securing to a user's wearing apparel a signal cable dependent from a communications headset, said clamp including a unitary integrally molded plastic structure having a pair of toothed jaws joined by a hingeless jaw closure support member, one of said jaws including a lever arm extension for manually opening said jaws to adjustably clamp secure the strain relief clamp to the user's wearing apparel; said integrally molded plastic structure further including a pair of spaced yieldable clamp arms defining a retainer slot for receiving and adjustably clamp securing the unitary strain relief clamp to the signal cable, each of said toothed jaws having a set of apparel gripping teeth aligned in a row, each of said rows being spaced from the row of the opposing jaw, the teeth of said rows being so constructed and oriented along said rows as to be non-overlapping with respect to the row of teeth of the opposing jaw.

4,346,502

TENTER ARM SWINGING APPARATUS

Hideyuki Cho, c/o Toyo Machinery Co. Ltd., No. 29-6, Zaiko-dori, Higashiyodogawa-ku, Osaka-shi, Japan

Filed Sep. 24, 1980, Ser. No. 190,405
Claims priority, application Japan, Oct. 1, 1979, 54-136389[U]
Int. Cl.³ D06C *3/02*
U.S. Cl. 26—76 3 Claims



1. A tenter arm swinging apparatus, comprising:
a frame,
an arm having means for engaging the edge of a fabric, said arm being mounted on the frame for pivotal movement about a pivot axis which extends perpendicularly to the plane of the fabric,
a threaded shaft fixedly mounted on the frame so as to be prevented from rotating relative thereto,
a case,

a nut rotatably disposed in the case and threadedly engaging the threaded shaft, a reversible motor responsive to lateral deviation of the fabric edge also mounted in said case, and a transmission means also mounted in the case for conveying shaft rotation of the motor to rotary motion of the nut, thereby causing travelling movement of the nut and case along the threaded shaft,

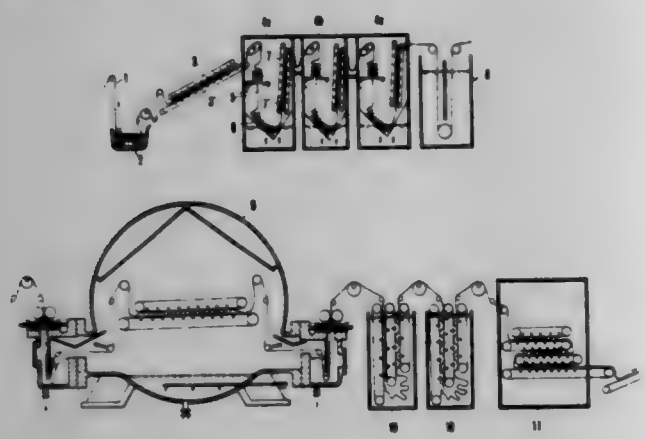
and coupling means connecting the case to the arm for causing pivotal movement of the arm about the said pivot axis in response to said travelling movement of the nut along the shaft to thereby maintain the fabric edge in a predetermined position.

4,346,503

PROCESS FOR DE-TWISTING AND CRAPING A CLOTH COMPOSED OF TWISTED YARNS

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Dec. 4, 1979, Ser. No. 100,265
Claims priority, application Japan, Dec. 20, 1978, 53-157149
Int. Cl.[3] D06B *3/10*
U.S. Cl. 28—155 1 Claim



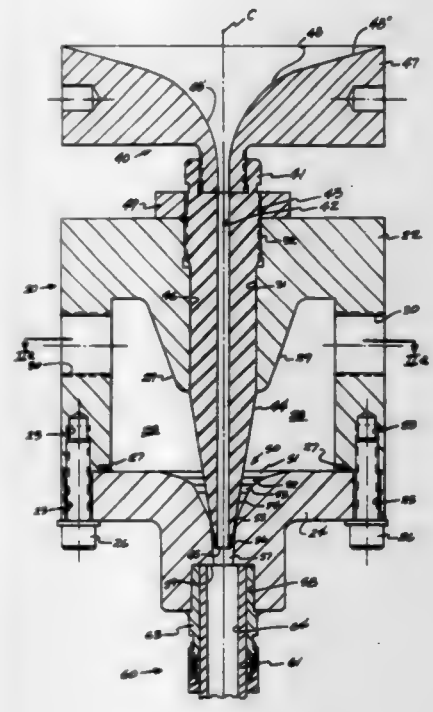
1. A process for de-twisting and craping a cloth composed of twisted yarns, comprising transporting a cloth continuously and serially through at least three vertically extending wet-heat treating chambers so that the cloth passes, in turn, through each of the at least three chambers, providing a liquid level in the lower part of each chamber with a bottom plate located in each chamber partly above and partly below the liquid level therein, maintaining a temperature gradient from 70° C. to 100° C. between the chambers with the temperature increasing stepwise by a gradient of at least 10° C. from chamber to chamber in the direction of passage of the cloth through the chambers, introducing the cloth, in turn, into each of the treating chambers and piling the cloth within each treating chamber onto a cloth-receiving table spaced upwardly from the liquid level and above the bottom plate, opening the cloth receiving tables intermittently and spontaneously when the cloth piled thereon reaches a definite amount with the cloth falling due to its weight onto the bottom plate of the wet-heat treating chamber above the liquid level for imparting beating and rubbing forces to the cloth, moving the cloth over the bottom plate below the liquid level and impregnating the cloth with hot water below the liquid level in in each treating chamber, moving the cloth over the bottom plate to above the liquid level and, above the liquid level, passing the cloth upwardly in each treating chamber through a narrow passage and jetting steam into the passage from opposite sides thereof for beating and rubbing the cloth, removing the cloth from the last one of the treating chambers and cooling the cloth to about 40° C. and thereby de-twisting the yarn of the cloth for craping the cloth successively due to the effect of the swelling of the cloth as well as the beating and rubbing forces applied to the cloth in each of the wet-heat treating chambers.

4,346,504

YARN FORWARDING AND DRAWING APPARATUS

Manfred O. Birk, Spartanburg; Wolfgang A. Pieszczek, Inman, and Brian E. Little, Spartanburg, all of S.C., assignors to Hoechst Fibers Industries, Spartanburg, S.C.

Filed Jul. 11, 1980, Ser. No. 168,654
Int. Cl.[3] D01D *5/12*; D02J *1/22*
U.S. Cl. 28—240 40 Claims



1. A fluid operated forwarding and drawing apparatus for continuous thermoplastic filament yarns comprising:

(a) a body, said body defining a fluid plenum chamber therein, said body further defining fluid inlet ports and a generally funnel shaped outlet port in communication with said plenum chamber and a bore opening in communication with said plenum chamber and located concentric to a central axis through said fluid outlet port;

(b) yarn guide means received in said bore opening and terminating in said generally funnel shaped fluid outlet port of said plenum chamber, said guide means defining a yarn passageway therethrough, said passageway being concentric to said central axis, a portion of the length of said guide means having a generally frustoconical taper to a forward tip of said means, said frustoconically tapered portion of said means cooperating with said generally funnel shaped fluid outlet port to define a nozzle structure having a fluid acceleration zone, a throat, and a diverging expansion zone, and said outlet port further defining a converging fluid transition zone beyond the tip of said yarn guide means; and

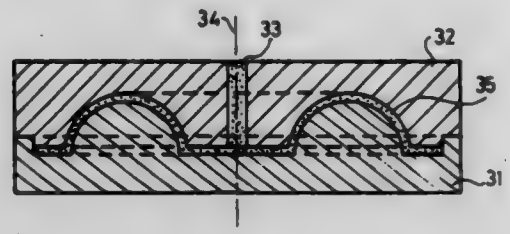
(c) an elongated tubular element located at an outer end of said converging transition zone and defining a yarn passageway of constant diameter therethrough, the diameter of said elongated tubular element being greater than the diameter of the transition zone at the exit from same, said yarn passageway abutting said outlet end of said transition zone, whereby filaments of a filament bundle are forwarded and drawn by said apparatus while avoiding any significant entanglement in said elongated tubular element or significant contact with walls defining same.

4,346,505

METHOD OF FABRICATING PIEZOELECTRIC TRANSDUCER WITH POLYMER ELEMENT

Claire Lemonon, and Francois Micheron, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 31, 1979, Ser. No. 108,706
Claims priority, application France, Jan. 4, 1979, 79 00200
Int. Cl.[3] H01L *41/22*
U.S. Cl. 29—25.35 8 Claims



1. A method of fabricating the active element of polymer material for a piezoelectric transducer, the principal faces of said active element being in the form of non-developable surfaces and said polymer material building up between said principal faces a self-supporting shell, said method comprising the steps of:

(1) shaping said polymer material in the form of said shell using shaping means while preserving the mechanical isotropy of said polymer material;

(2) coating said shell along said principal faces with first and second electrodes facing one another; and thereafter

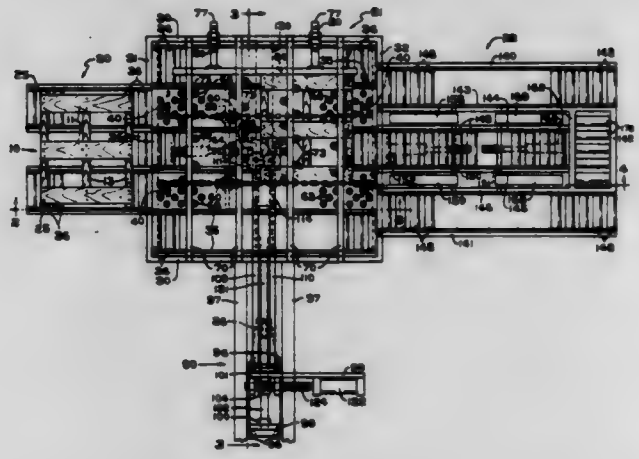
(3) applying across said electrodes a polarization voltage for subjecting said polymer material to a poling electric field oriented along the normal to said principal faces thereby endowing said polymer material with piezoelectric properties solely as a result of said poling electric field.

4,346,506

PALLET MACHINE

Troy E. Martindale, Reynoldsburg, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 28, 1980, Ser. No. 201,653
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—239 8 Claims



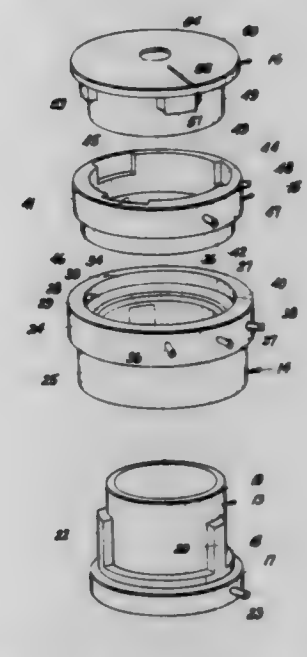
1. An apparatus for the disassembling and repairing of nailed wooden pallets, said apparatus having a support frame, a carriage mounted on one side of said support frame, said carriage having a pair of longitudinally extending supports for movement therewith, said supports having outboard ends, nail cutting means mounted on said outboard ends of said supports, said nail cutting means being flat rotary disks lying generally in a horizontal plane, drive means connected to said carriage for advancing and retracting said carriage to and from said support frame, inverting means mounted on said carriage and connected to said carriage supports for rotating said carriage supports and their cutting means selectively 180° to align said cutting means with the juncture of the upper or lower deckboards with a stringer in said pallet, and lock means for securing said pallets on said support frame.

4,346,507

PIN-BACK BUTTON MACHINE

Oran H. Heuck, P.O. Box 68053, Indianapolis, Ind. 46268

Filed Jan. 21, 1981, Ser. No. 226,851
Int. Cl.[3] B23P *11/00*
U.S. Cl. 29—243.52 21 Claims



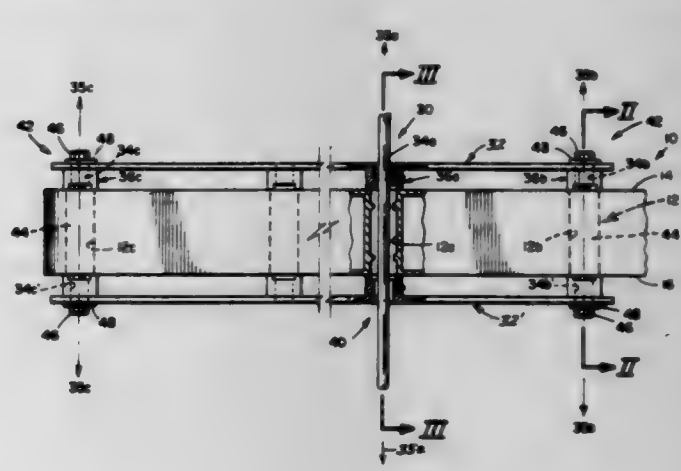
1. A die assembly for the making of pin-back buttons of the type comprising a button back, a button shell, art work and a protective cover, said die assembly comprising a base die part, a crimping die part, a ring die part and a top die part, said die parts being mountable one upon the other in the order given, cooperating means on said base die part and said crimping die part and on said ring die part and said top die part determine the depth to which said base die part enters said crimping die part and said top die part enters said ring die part, said die parts each being rotatable with respect to that die part on which it is mounted to bring selected ones of said cooperating means into and out of registry to enable each die part to perform its functions in proper sequence.

4,346,508

REBORING FIXTURE AND METHOD

David L. Baumann, Bartonville, and Richard A. Meixner, Metamora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 30, 1980, Ser. No. 154,648
Int. Cl.[3] B23D *19/10*
U.S. Cl. 29—402.18 6 Claims



1. A fixture (30) adapted to rebore a first workpiece bore

(12*a*) in a workpiece (10), said workpiece (10) having said first workpiece bore (12*a*) and also having second and third workpiece bores (12*b*,12*c*), said workpiece bores (12*a*,12*b*,12*c*) being spaced apart and extending between a one side (14) and an other side (16) of said workpiece (10), said fixture (30) comprising:

a one and an other rigid guide members (32,32') each having first, second and third guide member bores (34*a*,34*b*,34*c* and 34*a*',34*b*',34*c*') transversely extending therethrough and being spaced apart to correspond with said first, second and third workpiece bores (12*a*,12*b*,12*c*), said one and other guide members (32,32') of a construction sufficient for precisely positioning said first guide member bores (34*a*,34*a*') thereof into a predetermined relationship with said second and third workpiece bores (12*b*,12*c*), with said guide members (32,32') being along said one and other sides (14,16) respectively of said workpiece (10) and with said first, second and third guide member bores (34*a*,34*b*,34*c* and 34*a*',34*b*',34*c*') placed into a corresponding relationship with said first, second and third workpiece bores (12*a*,12*b*,12*c*) respectively;

means (42) for releasably connecting said guide members (32,32') together through said second and third workpiece bores (12*b*,12*c*) to hold said first guide member bores (34*a*,34*a*') in a predetermined relationship with said second and third workpiece bores (12*b*,12*c*) and in a generally coaxial relationship with said first workpiece bore (12*a*); and,

a one and an other pilot bushings (72,80), said one pilot bushing (72) adapted to be fitted within said first guide member bore (34*a*) of said one guide member (32), said other pilot bushing (80) adapted to be fitted within said first guide member bore (34*a*') of said other guide member (32').

4. A method for reboring a massive, longitudinally extending workpiece (10) with a one and an other sides (14,16), said workpiece (10) having spaced apart first, second and third workpiece bores (12*a*,12*b*,12*c*) transversely extending with respect to said workpiece (10) between said one and other sides (14,16), said first bore (12*a*) being relatively more worn with respect to the others (12*b*,12*c*), comprising the steps of:

fusing a quantity of a metal (92) is said first workpiece bore (12*a*) circumferentially along a surface (18*a*) thereof;

positioning a one and another rigid guide members (32,32') along said one and other sides (14,16) respectively of said workpiece (10), said one and other guide members (32,32') each having a first, second and third guide member bores (34*a*,34*b*,34*c* and 34*a*',34*b*',34*c*'), the positioning including placing said first, second and third guide member bores (34*a*,34*b*,34*c* and 34*a*',34*b*',34*c*') into a corresponding relationship with said first, second and third workpiece bores (12*a*,12*b*,12*c*) respectively;

releasably connecting said one and other guide members (32,32') together and with said workpiece (10) to hold said first guide member bores (34*a*,34*a*') in a predetermined relationship with said second and third workpiece bores (12*b*,12*c*); and,

inserting at least one pilot bushing (72 or 80) into each of said first guide member bores (34*a* and 34*a*') of said respective one and other guide members (32,32'), and feeding an elongated boring bar (52) into said first workpiece bore (12*a*) and into a supported relationship with said pilot bushings (72,80), said boring bar (52) adapted to adjustably hold a cutting tool (56) in an outwardly protruding position.

4,346,509

PROCESS FOR THE INTRODUCTION OF A PIECE OF FOAM PLASTIC INTO A POCKET FITTED TO IT

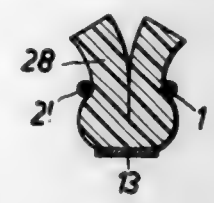
Rene Tschan, Reinach, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

Filed Oct. 6, 1980, Ser. No. 194,220

Claims priority, application Switzerland, Aug. 22, 1980, 6341/80

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—451 **4 Claims**



1. Process for the insertion of an elastically bendable platform-like piece made of foam plastic into a pocket, fitted to the piece of foam plastic, through a slit-like opening along much of an edge of the pocket, the periphery of the slit-like opening being shorter than the periphery of the cross section, perpendicular to the direction of insertion, of the piece of foam plastic, comprising bending the piece of foam plastic into the shape of an arc at first obliquely to the direction of insertion, compressing the piece bent thusly between two arms, which extend in the direction of insertion, the bent piece being approximately U-shaped in cross section, compressing further the bent piece of foam plastic until there is at least partial joining of the legs of the bent piece of foam plastic, pulling the pocket with its spread slit-like opening over the bent piece of foam material, which is compressed between the arms, moving apart the arms, and pulling the pocket together with the piece of foam plastic container therein off of the arms, the pocket being aligned with the piece of foam plastic in as far as the piece of foam plastic has not completely reassumed its original shape.

4,346,510

PRETENSIONING DIAGONALS IN LATTICE BEAM-COLUMNS

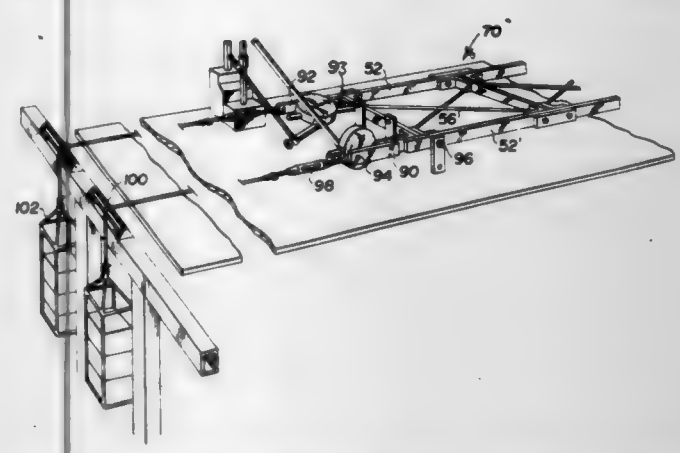
Leonard H. Stirling, Verona, Canada, assignor to Her Majesty the Queen, Ottawa, Canada

Filed Mar. 3, 1980, Ser. No. 126,998

Claims priority, application Canada, Mar. 29, 1979, 324563

Int. Cl.³ B21D *39/00*; E04C *3/10*

U.S. Cl. 29—452 **6 Claims**



1. A method of prestressing a structural member having a pair of spaced apart longitudinal elements, and a latticework made of a plurality of strut elements and diagonal members rigidly interconnected together by a plurality of joint connector means, said connector means also joining the latticework rigidly to the longitudinal elements, said method comprising the steps of

(a) interconnecting the strut elements and diagonal members rigidly together as said latticework, the latticework being freely moveable relative to said longitudinal elements;

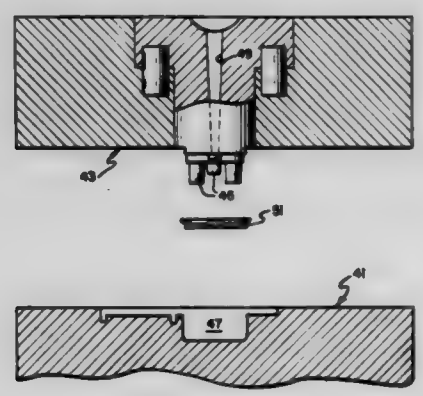
(b) applying a tensile load to said latticework only;
(c) securing said longitudinal elements rigidly to said latticework while said tensile load is being applied; and
(d) removing said tensile load whereby said structural member remains prestressed, with the diagonal members in tension, the strut elements in compression and the longitudinal elements in compression.

4,346,511

METHOD FOR PREPARING DOSIMETER FOR MEASURING SKIN DOSE

Donald E. Jones; DeRay Parker, and Paul R. Boren, all of Idaho Falls, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 55,211, Jul. 5, 1979, Pat. No. 4,286,165.
This application Jul. 2, 1980, Ser. No. 165,452
Int. Cl.[3] B23P *3/00, 25/00;* B29B *3/00;* B29F *1/10*
U.S. Cl. 29—458 10 Claims



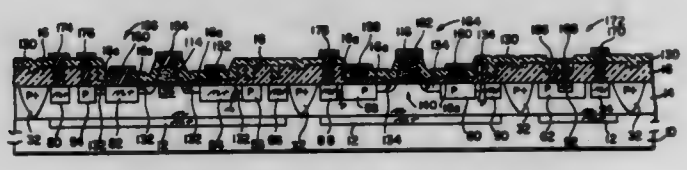
1. A method of forming personnel dosimeter holders having a plurality of windows communicating with a plurality of corresponding compartments for TLD phosphors within the front face thereof to provide uniform window thickness in corresponding windows of different holders comprising:
forming a die insert having at least one opening for receiving a window of plastic material;
affixing at least one window of plastic material within said die insert; and
positioning said die insert and window within a die shaped for injection molding of said dosimeter holder and injecting a thermoplastic material into said die around said die insert for forming said dosimeter holder with said insert embedded in the material of the holder and each of said compartments molded therein having a window therein at the front face of the holder.

4,346,512

INTEGRATED CIRCUIT MANUFACTURING METHOD

Victor K. C. Liang, San Jose; Bernard Bouyssounouse, Palo Alto, and Ernest W. Yim, Sunnyvale, all of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed May 5, 1980, Ser. No. 146,548
Int. Cl.[3] H01L *21/22*
U.S. Cl. 29—571 8 Claims



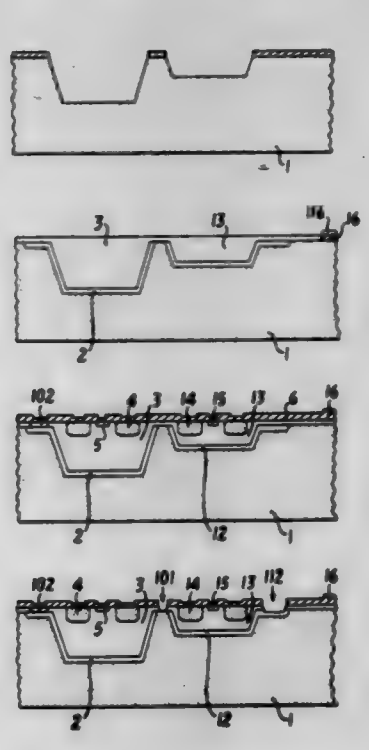
1. A method for forming a field effect transistor and a bipolar transistor in a semiconductor comprising the steps of:
(a) simultaneously forming source and drain contact regions of the field effect transistor and an emitter region of the bipolar transistor in the semiconductor with the same doping concentrations; and
(b) heating the semiconductor forming an insulating layer on a surface portion of the semiconductor disposed between the source and drain contact regions while preventing dopant in the source and drain contact regions from entering the surface portion of the semiconductor between the source and drain contact regions.

4,346,513

METHOD OF FABRICATING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE UTILIZING SELECTIVE ETCHING AND EPITAXIAL REFILL

Junichi Nishizawa, Sendai, and Masafumi Shimbo, Tokyo, both of Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai and Kabushiki Kaisha Daini Seikosha, both of, Japan

Filed May 21, 1980, Ser. No. 152,024
Claims priority, application Japan, May 22, 1979, 54-63031
Int. Cl.[3] H01L *21/205, 21/302*
U.S. Cl. 29—580 5 Claims



1. A method of fabricating a semiconductor integrated circuit device, comprising the steps of:
providing a semiconductor substrate having a main surface having a low-index crystallographic surface orientation substantially within ±0.2° of a selected one of the crystallographic orientations (111), (113) (112) and (110);
disposing a masking film on said semiconductor substrate main surface in a configuration to leave exposed portions of said semiconductor substrate main surface to be etched;
selectively etching said exposed portions of said semiconductor substrate main surface to form surface depressions in said semiconductor substrate main surface, wherein at least one of said surface depressions has a depth different from the others;
removing said masking film to expose said semiconductor substrate main surface including unetched portions thereof;
forming an epitaxial layer on said semiconductor substrate main surface from a Si—H—Cl system under conditions effective to achieve faster lateral growth than vertical growth so as to form the epitaxial layer with regions of three different thicknesses, first and second epitaxial layer regions of different thickness being formed at least partially filling said surface depressions of different depths, and a third epitaxial layer region of different thickness being formed overlying unetched portions of said semiconductor substrate main surface; and
forming additional regions of said semiconductor integrated circuit in said first and second epitaxial layer regions and

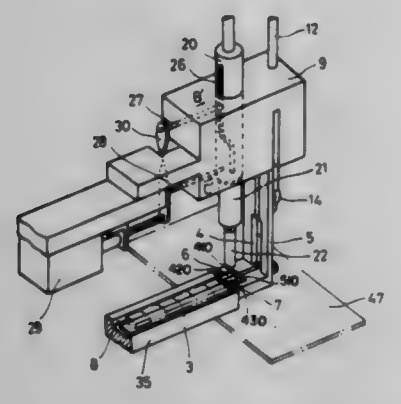
at least one of isolation regions and electrodes in said third epitaxial layer regions so as to complete said semiconductor integrated circuit.

4,346,514

APPARATUS FOR MOUNTING ELECTRONIC COMPONENTS

Yoshiaki Makizawa, Hirakata; Katsuyuki Yamamoto, Katano, and Kanji Hata, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 28, 1980, Ser. No. 125,657
Claims priority, application Japan, Mar. 5, 1979, 54-25806
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—740 **6 Claims**



1. An apparatus for mounting electronic components on a substrate comprising

a component feeder having a track along which said electronic components are fed in an aligned row into a position rectifying station,

chuck means for grasping and rectifying the position of the electronic components in said position rectifying station, said chuck means having a pair of arm pinching means which are movable relative to one another for defining a receiving recess at said rectifying station, said receiving recess including a receiving face aligned with said component feeder, side pinching faces for engaging the sides of said electronic components to rectify them in an accurate position, and an end wall to terminate feeding of electronic components into the receiving recess,

a vertically movable column having a mounting means at the lower end thereof for holding said electronic component by air suction, said mounting means being connected to a suction means,

a driving means for driving said chuck means in relation to the vertical movement of said column in a manner that the pinching means is moved so as to form a first gap slightly wider than the width of said electronic component when receiving said electronic component on said receiving face, a second gap equal to the width of said electronic component when rectifying its position and a third gap which is sufficiently wide to allow said column to pass therethrough when placing said electronic component on said substrate.

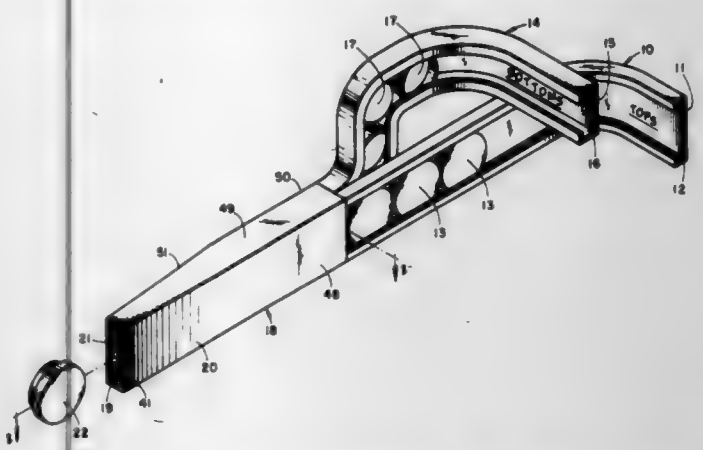
4,346,515

TELESCOPIC MATING APPARATUS

William F. Lodding, Downers Grove, and John T. Murray, Oakbrook, both of Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 11, 1980, Ser. No. 139,285
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—773 **1 Claim**

1. Apparatus for assembling top and bottom petri dish members each having an open end and a closed end with sides extending therebetween in vertical telescopic relation with the axis of said members extending horizontally comprising in combination first and second conveying means for separately conveying said top and bottom petri dish members respectively and an assembly unit, said first and second conveying means each having a rectangular C-shaped vertical cross-section with an upper groove and a lower groove along which said petri dish members are conveyed on their sides in a vertical position, said first and second conveying means being initially positioned for conveying said petri dish members in a vertical back-to-back relation with said open ends of said top and bottom petri dish members facing away from one another and wherein the second conveying means for the bottom petri dish members has a crossover portion for subsequently supplying said bottom members to the assembly unit in vertical face-to-face relation to said top members with said open ends of said top and bottom petri dish members directly facing one another, said assembly unit being tubular in shape with parallel top and bottom walls, first and second vertical sidewalls and an exit opening and wherein the second vertical sidewall angles toward the first vertical sidewall as the two sidewalls approach the exit opening, said first conveying means positioned so as to supply top petri dish members to the assembly unit adjacent to the first vertical sidewall and said second coveying means



positioned so as to supply bottom petri dish members to the assembly unit adjacent to the second vertical sidewall, said first and second conveying means and said assembly unit all being positioned so as to incline downward with respect to the horizontal so that said top and bottom petri dish members can roll on their sides in a vertical position along the conveying means and through the assembly unit, vertical means within said assembly unit for initially maintaining separation of said top and bottom petri dish members from each other as said bottom and top petri dish members enter said assembly unit, vertically actuated control means within said assembly unit for initially separately preventing movement of said top and bottom petri dish members therethrough and then subsequently separately permitting said top and bottom petri dish members to roll in a vertical position through said assembly unit, whereby said vertical bottom petri dish members abut against the angled portion of said second vertical sidewall and are pushed horizontally coaxially into a telescopic assembled relation with the vertical top petri dish members prior to the passage of such vertical top and bottom petri dish members from the exit opening of the assembly unit.

4,346,516

METHOD OF FORMING A CERAMIC CIRCUIT SUBSTRATE

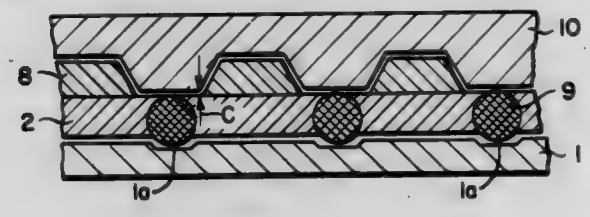
Kishio Yokouchi, Koganei; Hiromi Ogawa; Hiromitsu Yokoyama, both of Yokohama; Nobuo Kamehara, Machida; Koichi Niwa, Tama, and Kyohei Murakawa, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 8, 1981, Ser. No. 252,214
Int. Cl.³ H05K *3/00, 3/36*
U.S. Cl. 29—845 **19 Claims**

1. A method of forming a ceramic circuit substrate comprising the steps of:

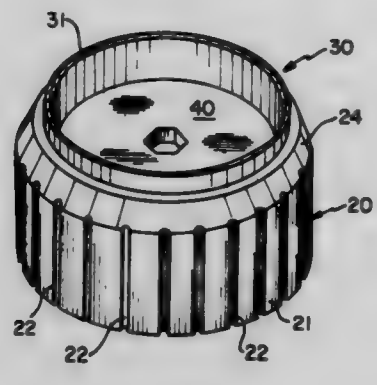
(a) a mold setting process where a mold having many holes

larger than the outer diameter of conductive balls is positioned over a green sheet placed on a tray;
(b) a contact process where said green sheet and mold are placed in close contact;
(c) a filling process where the conductive balls are filled in the holes on said mold;



(d) a pressure embedding process where the conductive balls filled in the mold holes are embedded into the green sheet; and
(e) a baking process where said green sheet is baked.

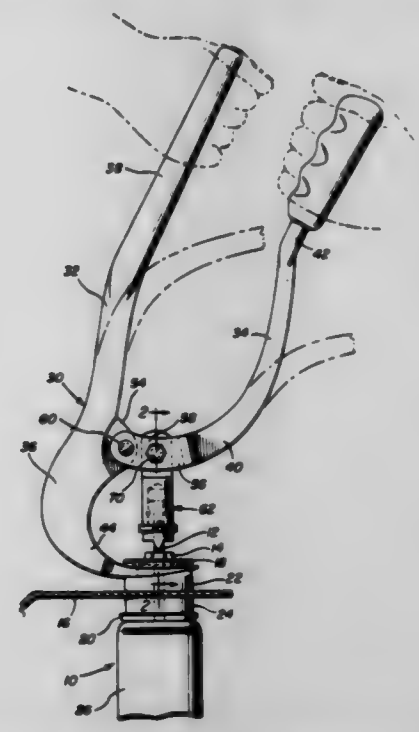
4,346,517
MUSTACHE TRIMMER
Robert A. Cianflone, 885 Lovingston Dr., Pittsburgh, Pa. 15216
Filed Oct. 15, 1980, Ser. No. 197,081
Int. Cl.³ B26B *21/00*
U.S. Cl. 30—49 13 Claims



1. A mustache trimmer comprising an annular holder having an inner cylindrical surface and a cylindrical razor blade telescoped into said holder adjacent said inner cylindrical surface of said holder, said blade having a circular cutting edge facing away from said holder along the axis of the annular holder, said cutting edge extending from said holder so as not to be obstructed from one axial end, said holder having a radial face preventing access to the razor blade from the other axial end, the outer edge of the holder nearest the cutting edge of the blade being beveled toward said cutting edge.

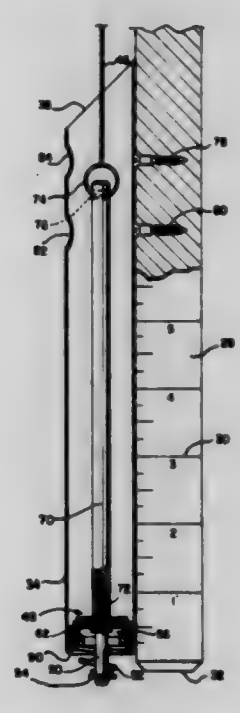
4,346,518
SHOCK ABSORBER REMOVING TOOL
David A. Wood, 9317 Southmoor Dr., Highland, Ind. 46322
Filed Nov. 21, 1980, Ser. No. 209,311
Int. Cl.³ B26B *17/02*
U.S. Cl. 30—272 R 9 Claims

1. A shock absorber removing tool comprising first and second elongated levers, one end portion of said first lever including a laterally directed terminal end having a transversely widened terminus defining an abutment surface facing toward the other end of said first lever, said terminus having a slot formed therethrough opening outwardly at one end through a marginal portion of the abutment surface and closed at its other end, the closed end of said slot being generally centered relative to the plan area of said surface, said second elongated lever including a lateral projection at a first end thereof, means pivotally attaching the outer end portion of said projection to said one end portion of said first lever at a point spaced slightly from the terminal end for relative oscillation of said levers about an axis disposed transverse to planes in which said first lever and terminal end and second lever and projection are disposed and for swinging of the other and second ends of said first and second levers, respectively, toward and away from each other, an elongated thrust member pivotally attached at one end to said second lever adjacent the intersection of said projection with said second lever for oscillation relative to said second lever about an axis substantially paralleling the first mentioned axis and with the other end of said thrust member projecting toward said surface and shiftable toward and away from the latter responsive to movement of



said other and second ends of said first and second levers away and toward each other, respectively, an end member carried by said other end of said thrust member and defining a pair of longitudinally spaced line segment wedge edges disposed transverse to the longitudinal extent of said thrust member and facing outwardly of said thrust member other end for engaging and splitting opposite radial portions of a shock absorber attaching nut backed by said abutment surface.

4,346,519
LIQUID LEVEL AND LIQUID CORING GAUGE
August Milo, 478 Schiller St., Elizabeth, N.J. 07206
Filed Sep. 2, 1980, Ser. No. 183,215
Int. Cl.³ G01F *23/04*
U.S. Cl. 33—126.4 R 4 Claims



1. In a liquid gauge suitable for sampling the liquid contents

of a tank of the type including a top opening and a bottom, the combination of

gauge stick means of sufficient length to extend from the bottom of the tank through the top opening to measure liquid levels within the tank;

liquid sampling means affixed to the gauge stick means to remove a liquid sample from the tank,

the liquid sampling means comprising a hollow, elongate sample tube; and

valve means positioned in the sampler tube and being movable between open and closed positions to alternately allow liquid to pass therethrough when in the open position and to prevent passage of liquid when in the closed position,

the valve means comprising a seat, a valve stem, a spring and a washer, the washer being normally urged toward the seat by the spring to move the valve means to the closed position and the washer being movable away from the seat against the bias of the spring to move the valve means to the said open position, the valve means further comprising a stem including threaded and unthreaded portions, a first actuator comprising a rod connected to the threaded stem portion and extending within the sample tube and away from the seat and a remote valve operator connected to the first actuator in spaced relation from the washer and extending in length a distance greater than the height of the tank, the remote valve operator extending through the top opening when the sampler tube is positioned near the bottom of the tank;

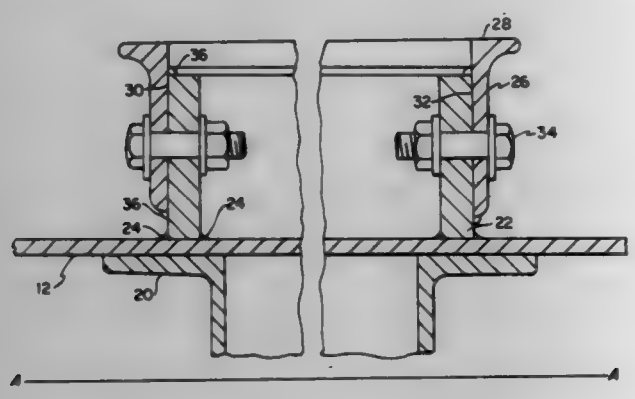
whereby the valve means may be moved to the said open position by pulling the remote valve operator from a position exteriorly of the tank.

4,346,520

ALINEMENT METHOD

Tom E. Moore, 6105 Brandon Ave., Springfield, Va. 22150

Filed Jan. 24, 1978, Ser. No. 871,861
Int. Cl.[3] F41F *23/06*
U.S. Cl. 33—180 R 1 Claim



1. A method for aiding the mounting of any of a plurality of rotating elements on a surface, each of said elements requiring parallelism to a reference plane, comprising:

fixing a first ring on said surface,

fitting a second ring about said first ring, said second ring having an interfacing plane;

manipulating said second ring relative to said first ring such that said interfacing plane is parallel to said reference plane,

maintaining said interfacing plane parallel to said reference plane,

fixing said second ring to said first ring,

mounting said element on said interfacing, plane,

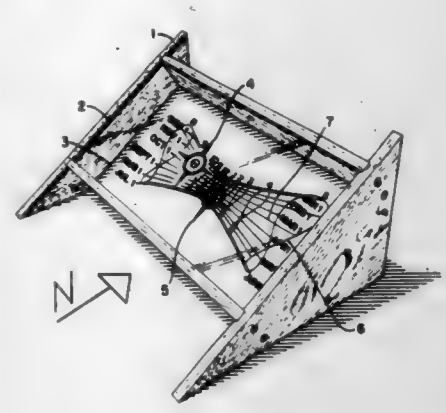
whereby each one of said plurality of elements is aligned with said reference plane as well as with each other.

4,346,521

MODERN SUNDIAL

Peter A. Luft, 1870 Sacramento #314, San Francisco, Calif. 94109

Filed Jan. 17, 1979, Ser. No. 4,172
Int. Cl.[3] G04B *49/00*
U.S. Cl. 33—269 2 Claims



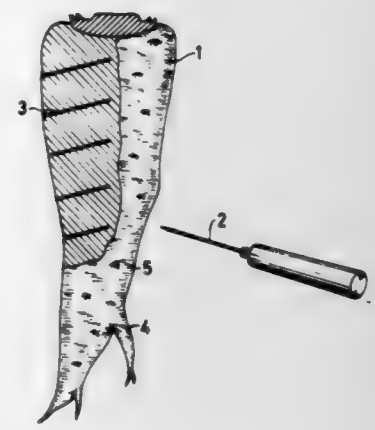
1. A sundial including a transparent plate of material adapted to face the sun, an opaque design printed on said transparent plate, and a dial, said opaque design functioning as the gnomon of the sundial, the shadow of which is cast onto the dial by the sun, said dial comprising an opaque plate of material which is held parallel to and at a fixed distance behind said transparent plate, said dial having a set of calibrated analemmae and solar declination markings printed on it whereby to provide a reference for determining the position of said shadow in order to tell the time of day and the approximate date of the year, said time of day being the correct Standard Time for the specific locale in which the sundial is designed to be used.

4,346,522

DEHYDRATING METHOD FOR A ROOT VEGETABLE AND THE LIKE

Sadao Nakagaki, Ueda, Japan, assignor to Yamajirushi Jozo Co., Ltd., Tokyo, Japan

Division of Ser. No. 93,945, Nov. 13, 1979, abandoned. This application Mar. 17, 1981, Ser. No. 244,540
Int. Cl.[3] F26B *7/00*; A23B *4/04*
U.S. Cl. 34—12 3 Claims



1. A method for dehydrating a panax ginseng which comprises

(A) manually inserting a single needle into the panax ginseng a plurality of times in at least one of the crotch portions of the panax ginseng and the portions of the panax ginseng on which hair grows to improve dehydration of the interior of the panax ginseng,

(B) dehydrating the punctured panax ginseng, and

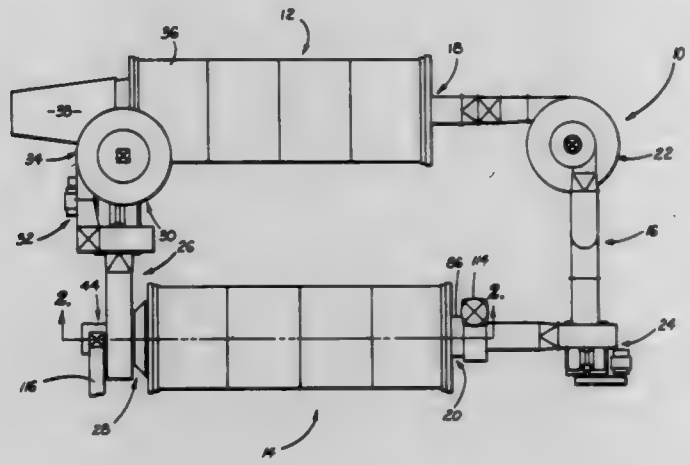
(C) spraying alcohol on the panax ginseng after dehydration has been completed to re-soften the panax ginseng which is hardened during the dehydration process.

4,346,523

METHOD AND APPARATUS FOR RECOVERING HEAT IN PRODUCT DEHYDRATION SYSTEM

Richard L. Ronning, Overland Park, Kans., assignor to Ronning Engineering Company Inc., Overland Park, Kans.

Filed Nov. 17, 1980, Ser. No. 207,216
Int. Cl.³ F26B 7/00
U.S. Cl. 34—17 7 Claims



1. A crop drying system, comprising:

a primary dryer having a direct heat exchange zone and structure operatively coupled and in communication with said zone including an air inlet, a crop inlet, and outlet-defining means for exhaust air and crop;

a predryer having an indirect heat exchange zone comprising means defining separate, adjacent, noncommunicating passages therethrough for crop and air respectively, an air inlet and an air outlet respectively operatively coupled and in communication with said air passage, and a crop inlet and outlet respectively operatively coupled and in communication with said crop passage;

means operatively coupled with said primary dryer air inlet for supplying initially hot, dry air thereto;

means operatively coupled with said predryer crop inlet for directing initially moist crop thereto;

crop moving means including conduit means operatively coupling said crop outlet of said predryer and said crop inlet of said primary dryer for passage of predried crop from said predryer to said primary dryer; and

air moving means including conduit means operatively coupling said air outlet-defining means of said primary dryer and said predryer air inlet, for passage of exhaust air from said primary dryer to said predryer in order to provide a source of heating air to said predryer.

4,346,524

METHOD AND APPARATUS FOR CONDITIONING TOBACCO

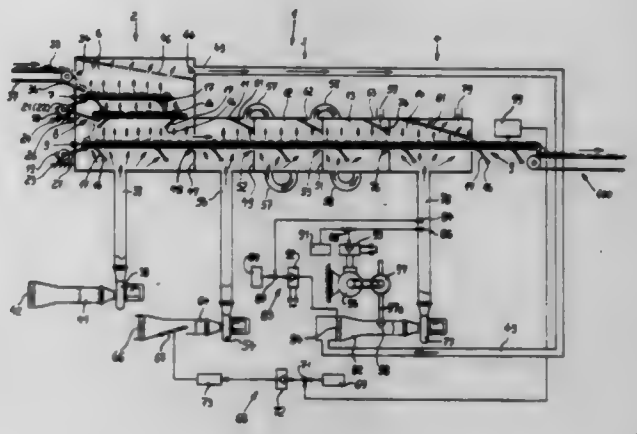
Waldemar Wochnowski, and Reinhard Hohm, both of Hamburg, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 922,575, Jul. 6, 1978, Pat. No. 4,241,515, which is a continuation of Ser. No. 448,949, Mar. 7, 1974, Pat. No. 4,143,471, which is a continuation-in-part of Ser. No. 220,599, Jan. 25, 1972, Pat. No. 3,799,176. This application May 9, 1979, Ser. No. 37,995

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904308

Int. Cl.³ F26B 21/08
U.S. Cl. 34—26 24 Claims

1. A method of conditioning tobacco, comprising the steps of transporting a continuous stream of tobacco particles at a constant rate and in a predetermined direction along a predetermined path; measuring the initial moisture content of successive increments of the stream in a first portion of said path; increasing the moisture content of the particles in a second portion of said path downstream of said first portion, as considered in said direction, when the measured initial moisture content is below a predetermined value; drying the particles of said stream in a third portion of said path downstream of said second portion including subjecting the particles of tobacco to



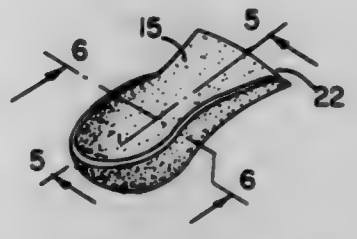
an adjustable heating action; measuring the final moisture content of successive increments of the stream of dried tobacco particles in a fourth portion of said path; and adjusting said heating action when the measured final moisture content deviates from a preselected moisture content.

4,346,525

CUSHION PAD FOR SPORT SHOES AND THE LIKE AND METHOD FOR FABRICATING SAME

John E. Larsen, Hingham, and Rob Roy McGregor, Concord, both of Mass., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 861,153, Dec. 16, 1977, abandoned. This application Nov. 6, 1979, Ser. No. 91,706
Int. Cl.³ A43B 23/08, 21/32, 19/00
U.S. Cl. 36—69 18 Claims

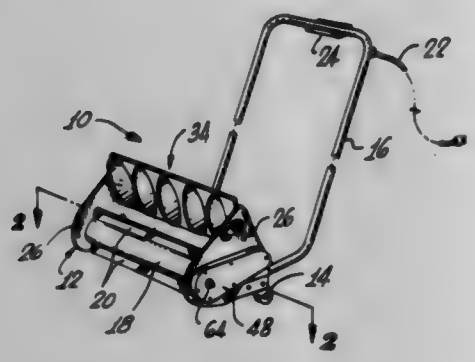


1. A cushion pad for shoes consisting essentially of a molded elastomeric compressible sheet of closed cell foam material adapted to support the calcaneus and the arch of a user's foot and having heel and arch portions of configuration conforming to the arch and heel portions of the foot being supported, said molded sheet having a forwardly extending leading edge for disposition in back of the first metatarsal joint when said cushion pad is in place in a shoe; said molded sheet having an inside edge portion which forms an upstanding arch support inside side wall extending from said leading edge; said molded sheet having an upstanding substantially vertical wall portion extending from said arch support side wall arcuately around the heel portion to an outer side thereof, said vertical wall gradually diminishing in height to merge with an outside edge portion of the molded sheet at a substantial distance from said beginning leading edge, said arch support side wall having a relatively higher vertical dimension than said upstanding substantially vertical wall portion extending from said arch support.

4,346,526
SNOW THROWER

Charles A. Mattson, Woodland Hills, and James J. Michel, Agoura, both of Calif., assignors to Allegretti & Company, Chatsworth, Calif.

Filed Apr. 3, 1980, Ser. No. 136,892
Int. Cl.³ E01H 5/00
U.S. Cl. 37—259 21 Claims

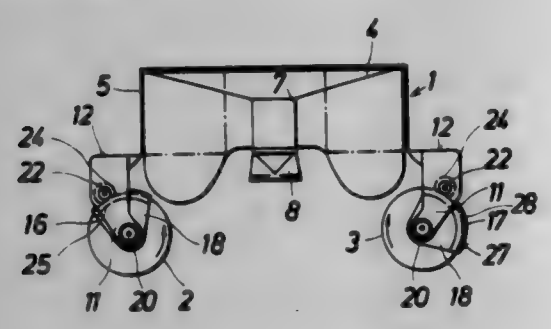


1. A snow thrower, comprising:
a housing;
means carried by said housing for picking up snow, and for throwing the snow generally upwardly from said housing;
deflector means carried for rotation with respect to said housing, and including a plurality of first deflector vanes rotatable to a position for deflecting thrown snow to one side of said housing, and a plurality of second deflector vanes rotatable to a position for deflecting thrown snow to the other side of said housing; and
locking means for locking said deflector means in a first rotatable position with said plurality of first deflector vanes in deflecting communication with the thrown snow and said plurality of second deflector vanes out of deflecting communication with the thrown snow, and a second rotatable position with said plurality of second deflector vanes in deflecting communication with the thrown snow and said plurality of first deflector vanes out of deflecting communication with the thrown snow.

4,346,527
SNOW REMOVAL APPARATUS

Alfred Schmidt, St. Blasien, Fed. Rep. of Germany, assignor to Alfred Schmidt, GmbH, St. Blasien, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 237,993
Claims priority, application European Pat. Off., Jul. 18, 1980, 80104230
Int. Cl.³ E01H 5/00
U.S. Cl. 37—250 9 Claims

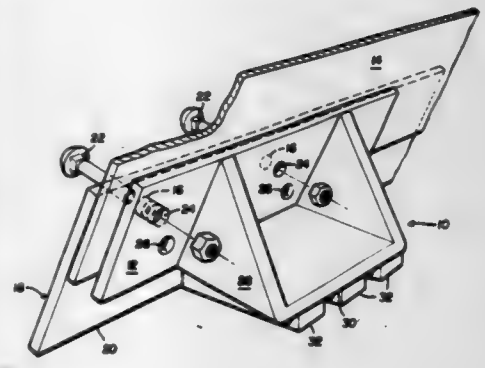


1. Apparatus for the removal of snow comprising a housing adapted to be attached to a vehicle, a blower mounted within said housing, a pair of vertically rotating clearing screws attached to said housing forwardly of and flanking said blower, and an arcuate deflector plate associated with each clearing screw, each of said deflector plates being mounted so as to lie adjacent the peripheral edge or generatrix of the associated clearing screw and being movable in a circular path, coaxial to the axis of rotation of the associated screw from a position forwardly of the plane in which the axes of rotation of each of said screws lie to a position to the rear thereof.

4,346,528
SKID SHOE FOR SNOW PLOW BLADE

Warren M. Shwayder, 2335 E. Lincoln, Birmingham, Mich. 48008

Filed Nov. 14, 1980, Ser. No. 206,801
Int. Cl.³ E01H 5/06
U.S. Cl. 37—270 6 Claims

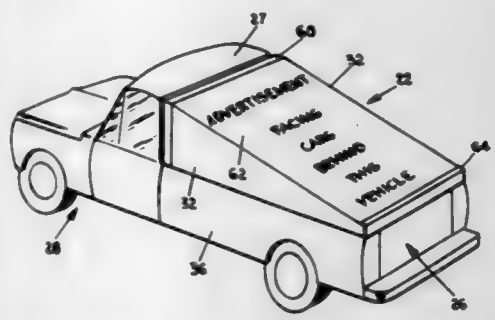


1. A skid shoe for a snow plow blade, said shoe being attached to the moldboard of said plow at the pre-existing bolt holes used to fasten said blade to said moldboard such that said shoe is mounted close to the cutting edge of said blade, said skid shoe including a bracket, and a plurality of weldable hard carbide wear bars mounted to said bracket for engaging a roadbed and for supporting the cutting edge of said blade such that the abrasive action on said blade from the roadbed is reduced by said wear bars;
and wherein each wear bar includes a matrix of carbide particles and ductile bronze packed in a weldable steel jacket, said ductile bronze providing substantial durability and shock-absorption to said particles, and said wear bars being weldable to said bracket and easily replaced by welding a new bar on the top of an old one or by welding a new bar directly to said bracket.

4,346,529
ADVERTISING DISPLAY FOR PICK-UP TRUCKS OR SIMILAR VEHICLES

Louis D. Keller, 3638 E. McMillan Rd., Twin Lake, Mich. 49457

Filed Jan. 27, 1981, Ser. No. 228,747
Int. Cl.³ G09F 21/04
U.S. Cl. 40—588 13 Claims



1. In combination with a pick-up truck having a cab and a rear deck with upstanding side walls,
a frame having a front, back and opposite sides, the front of the frame being adjacent the cab and the back of the frame being adjacent a back portion of the rear deck of the truck;
means for removably mounting the frame to the rear truck deck;
the front of the frame extending upwardly to a height near the top of the cab and sides of the frame sloping downwardly and rearwardly to a height near the top of the

truck deck side walls, thereby defining a sloping rear wall on the frame;

a medium bearing a plurality of advertising messages;

means for mounting said medium on the frame for display of one advertising message along the sloping rear wall of the frame so as to be visible from the rear of the truck; and

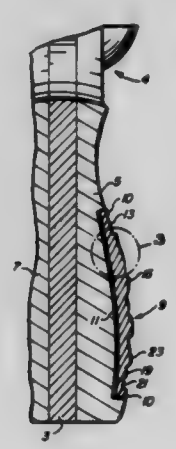
means for moving the medium within the frame to sequentially display different advertising messages.

4,346,530

LEATHER INLAY PISTOL GRIP AND METHOD OF MANUFACTURE

Finton E. Stewart, and Sylvia M. L. B. Stewart, both of P.O. Box 2863, Flagstaff, Ariz. 86003

Filed Mar. 31, 1980, Ser. No. 135,499
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—71 R 7 Claims



1. A gripping structure for a gun, said gripping structure comprising in combination:

a first gripping member attached to a first side portion of the gun, a first inlay groove being disposed in said first gripping member;

a first layer of adhesive disposed on a bottom surface of said first inlay groove;

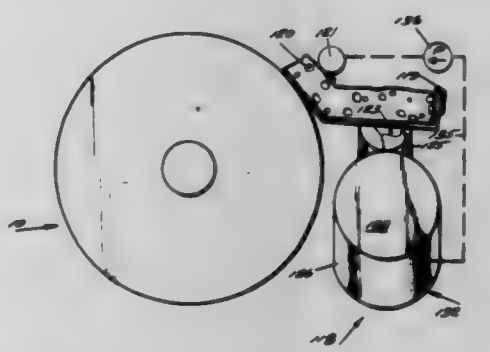
a first leather inlay having an inner surface attached by means of said first layer of adhesive to the bottom of said first inlay groove, said first leather inlay having an outer surface, an embossed pattern being disposed on said outer surface, said first leather inlay having a periphery which is substantially coextensive with the periphery of said first inlay groove such that the entire periphery of said first inlay groove fits closely to the entire periphery of said first leather inlay wherein the outer surface of said first leather inlay has a pattern embossed thereon, said embossed pattern having sufficient vertical variation therein to effect improved gripping by the trigger finger hand of the user of the gun, wherein the hardness of said first leather inlay is selected to enhance the gripping capability of said gripping structure by producing a substantially more resilient gripping surface than a wood or thermoplastic gripping surface, and wherein the thickness of said first leather inlay sufficiently exceeds the depth of said first inlay groove to make the resiliency of said first leather inlay readily detectable by the user as his trigger finger hand grips said gripping structure, said gripping structure further including a second gripping member similar to said first gripping member disposed on an opposed portion of the gun, a second inlay groove in said second gripping member substantially similar to said first inlay groove, and a second leather inlay substantially similar to said first leather inlay adhesively disposed within said second inlay groove, said first and second inlay grooves being located to hold said first and second leather inlays, respectively, at locations which cause portions of said trigger finger hand to grip said first and second leather inlays during normal firing of the gun.

4,346,531

TRANSFERRING LIQUID ONTO A ROLLER SURFACE

John H. Keeton, P.O. Box 278, Campbellsville, Ky. 42718

Continuation-in-part of Ser. No. 184,192, Sep. 5, 1980. This application Oct. 21, 1980, Ser. No. 199,365
Int. Cl.³ A01M *21/00*; A01C *23/00*
U.S. Cl. 47—1.5 13 Claims



1. Apparatus for transferring liquid onto the surface of a roller, and comprising:

a housing;

transfer means disposed in said housing and extending outwardly therefrom to contact a roller peripheral surface and for transferring liquid from said housing to the roller surface;

liquid supply means mounted above said transfer means for dripping liquid onto said transfer means;

a storage tank disposed below, and connected to, said housing along substantially the entire length thereof, and separated from said housing by a bottom wall of said housing;

means defining a plurality of openings in the bottom wall of said housing for allowing drainage of liquid from said housing into said storage tank; and

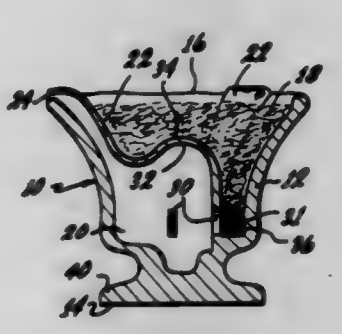
powered means for actively circulating liquid from said storage tank to said means for supplying liquid to said transfer means.

4,346,532

PLANTER

Paul D. Peterson, 3310 Azahar Pl., Rancho La Costa, Calif. 92008

Filed Oct. 9, 1979, Ser. No. 82,807
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—66 15 Claims



1. A planter, comprising:

(a) a container with side and bottom walls at least substantially closed and with a top at least substantially open so as to be suitable to have plants growing in a planting medium in said container,

(b) said container having double walls forming at least one chamber in the bottom of said container and forming at least one air passageway leading from said chamber to near the top of one of the side walls of said container and said container having an air vent to said air passageway near the upper end of said passageway thereby to vent said chamber,

(c) said container having at least one generally horizontally extending, side aeration and moisture draining opening leading from its lower inner portion to said chamber and filtration material of gravel-like size covering said aeration and moisture draining opening to prevent blocking of said aeration and moisture draining opening with such planting medium, whereby said aeration and moisture draining opening will aerate the interior of said container and will drain excess moisture from the interior of said container, and

(d) said aeration and moisture draining opening connecting to said chamber below the top of said chamber so that said chamber has a dome above said aeration and moisture draining opening to collect vapors, said chamber having a closed, solid top and being free from vertical openings from the interior of said container directly vertically through said dome to said chamber to prevent filling of said dome with moisture or planting medium.

4,346,533

DRIVE FOR A VEHICLE DOOR

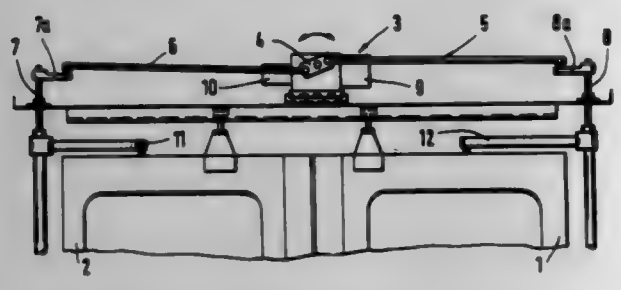
Ingo Britzke, Kassel; Manfred Horn, Kaufungen, and Peter Goosmann, Grossalmerode, all of Fed. Rep. of Germany, assignors to Gebr. Bode & Co. GmbH, Kassel, Fed. Rep. of Germany

Filed Sep. 29, 1980, Ser. No. 191,768

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016174

Int. Cl.³ E05F *15/10*

U.S. Cl. 49—28 **10 Claims**



1. Apparatus for opening and closing a pivotal door by turning a rotatable drive column in respectively opposite directions, said appartus comprising drive means for rotating the drive column of the door in opposite directions, said drive means including a linkage member drivingly coupled to the rotatable drive column to turn the column in opposite directions to open and close the door, a platform connected to said linkage member, means supporting said platform from fixed structure for movement relative thereto when the door meets an obstacle, the platform being movable in opposite directions relative to the fixed structure in accordance with the direction of movement of the door when the door meets the obstacle in response to reactive forces, first and second resilient means for opposing movement of said platform in both directions, the arrangement of said first and second resilient means being such that movement of said platform in one direction produces stress of one of said resilient means in one direction and stress of the other of said resilient means in the other direction, both resilient means acting to return the platform to its initial position upon release of stress in the resilient means for either direction of movement of said platform, and control means for controlling the operation of the drive means and the rotation of said rotatable column comprising first and second switch means and an actuator means for contacting and operating a respective one of said switch means in correspondence with the direction of movement of the platform, one of said actuator means or switch means being secured to said platform, the other being secured to the fixed structure.

4,346,534

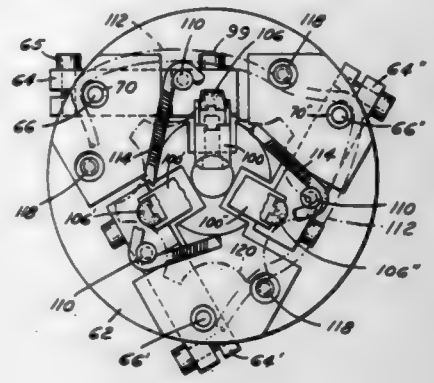
APPARATUS FOR HONING CYCLOIDAL SURFACES

Albin S. Czubak, Holland, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jun. 13, 1980, Ser. No. 159,020

Int. Cl.³ B24B *33/02, 5/16*

U.S. Cl. 51—34 A **10 Claims**



1. A honing machine useful for honing a gerotor ring workpiece having a cycloidal shape, comprising housing means movable in reciprocating fashion, spindle means disposed in said housing means for rotation about a spindle axis and reciprocable with said housing means, outer body means affixedly held to said housing means and having a cycloidal shaped outer gear means, and an inner body means coupled to said spindle means and having inner gear means eccentrically rotatable in said outer gear means, said inner body means having a bearing means interacting between said inner body means and outer body means to allow transverse motion of said inner body means perpendicular to the spindle axis during honing, a tool holder assembly means affixedly held to said inner body means having a plurality of tool holder means pivotally held to said assembly means and having an actuating means for urging said tool holder means on an arc toward the workpiece during machining, a retracting means for disengaging said tool holder means from the workpiece.

4,346,535

CAM GRINDING MACHINE

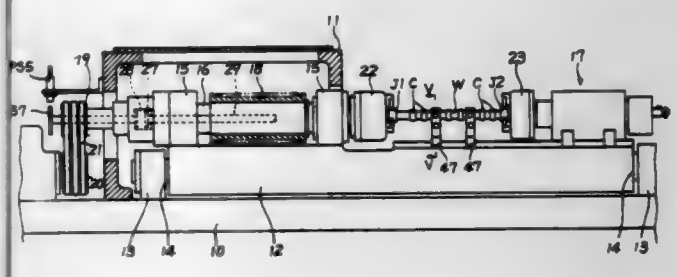
Hiroaki Asano, Chiryu; Hiroshi Ota, and Kenji Yamakage, both of Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 9, 1980, Ser. No. 167,034

Claims priority, application Japan, Jul. 13, 1979, 54-89578

Int. Cl.³ B24B *19/12*

U.S. Cl. 51—101 R **4 Claims**



1. A cam grinding machine for grinding a plurality of cam portions of a cam shaft comprising:

a traverse table;

a rocking table swingably supported on said traverse table;

a spindle rotatably supported on said rocking table;

a master cam shaft mounted on said spindle and provided with a plurality of master cams having the same cam profiles as said plurality of cam portions of said cam shaft;

a tailstock mounted on said rocking table;

a support spindle rotatably and slidably supported by said tailstock in coaxial alignment with said spindle;

a chuck body secured to said spindle for rotation therewith;

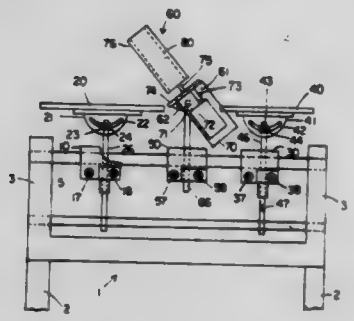
a substantially cup-shaped resilient diaphragm secured to said chuck body at the open end thereof and provided with a cylindrical hub portion at its central portion which is extended from the end wall of said diaphragm toward the open end of said diaphragm;
a plurality of jaw bases fixed to the end wall of said diaphragm in angularly spaced relationship therearound;
a jaw threaded into each of said jaw bases for adjustment in a radial direction of said diaphragm;
a hydraulic actuator formed in said spindle, a piston rod thereof extending centrally through said spindle and connected to said hub portion of said diaphragm for deflecting said diaphragm to cause said jaws to clamp one journal portion of said cam shaft;
a support block secured to said chuck body within said diaphragm and formed with an opening;
a key member pivotably supported within said opening;
a spring interposed within said support block to bias one end of said key member;
the other end of said key member being bifurcated to form an engaging face to be engaged with the end face of said cam shaft and to form a key portion to be inserted into a key way of said cam shaft;
chuck means provided on said support spindle for clamping another journal portion of said cam shaft; and
means for rotating said spindle.

4,346,536

TILTING ARBOR BELT SANDER

Norman E. Bryden, 2407 Arden Dr., Champaign, Ill. 61820

Filed Jan. 5, 1981, Ser. No. 222,690
Int. Cl.³ B24B *21/00*
U.S. Cl. 51—135 R 2 Claims



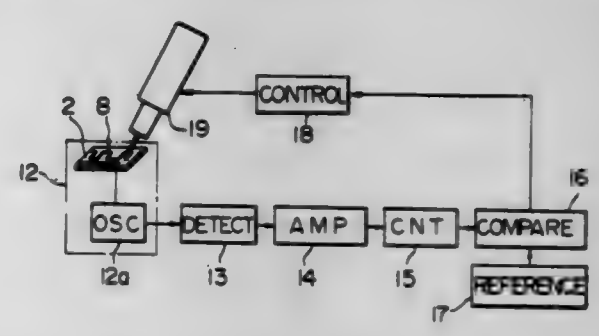
1. A belt sanding apparatus comprising:
(a) a frame, including a pair of spaced, parallel, horizontal tubular elements disposed adjacent the top of said frame,
(b) three mounting head elements positioned on said pair of horizontal tubular elements of said frame and adapted for slideable engaging movement with and along said horizontal tubular elements, said mounting head elements including means for releaseably fixing same in particular positions longitudinally of said horizontal tubular elements, said mounting head elements each being provided with spaced, vertical openings therein and with a pair of spaced, parallel, vertical tubular elements which are received in slideable engagement within said vertical openings, each of said mounting head elements being provided with means for adjusting and releaseably fixing the respective pair of vertical tubular elements located thereon in a particular vertical location,
(c) a table member attached above and to each of the respective two mounting head elements adjacent the ends of said frame, each of said table members being attached to said mounting head elements through the respective vertical tubular elements thereof and being adapted for pivotal movement about a horizontal axis perpendicular to said horizontal tubular elements of said frame, each of said table members being provided with means for releaseably fixing the particular angular positioning thereof relative to horizontal,
(d) an arbor element attached above and to the middle of said mounting head elements, said arbor element being attached to said mounting head element through said vertical tubular elements thereof and being adapted for pivotal movement about a horizontal axis perpendicular to said horizontal tubular elements of said frame, said arbor element being provided with means for releaseably fixing the particular angular positioning thereof relative to horizontal,
(e) a sanding mechanism mounted on and moveable with said arbor element, said sanding mechanism including a rotatable sanding belt, guide means for said sanding belt adapting said sanding belt to rotate about a path including an extended path parallel to the widths of said table members and transversely of said horizontal tubular elements of said frame, and motor means for driving said sanding belt, said sanding mechanism being adapted to expose the edge of a flat work-piece positioned on one of said table members to varying vertical angles of contact with said sanding belt to sand said work-piece in a direction transversely of said horizontal tubular elements of said frame.

4,346,537

CAPACITOR TRIMMING SYSTEM IN A QUARTZ-CRYSTAL OSCILLATOR

Sho Masujima, Tokyo, and Shoichi Iwaya, Kasagata, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,900
Claims priority, application Japan, Nov. 30, 1978, 53-148469
Int. Cl.³ B24C *3/32;* H01G *1/015*
U.S. Cl. 51—413 4 Claims



1. A trimming system for a quartz-crystal oscillator comprising:
(a) an oscillation circuit including a quartz-crystal piece, a trimmer capacitor coupled to said quartz-crystal piece for adjusting the oscillating frequency of the quartz-crystal piece, and a semiconductor electronic circuit coupled to said quartz-crystal piece for operating said quartz-crystal piece;
(b) said trimmer capacitor having at least a fixed outer trimming electrode, a common inner electrode fixed parallel to said trimming electrode and dielectric body sandwiched between said two electrodes, at least said trimming electrode being exposed for enabling the trimming of the area of the trimming electrode, said trimming electrode having a coarse adjustment portion parallel and aligned with said common electrode and a fine adjustment portion positioned in the same plane as the coarse adjustment portion but outside of said common electrode,
(c) a signal detector coupled acoustically with said quartz-crystal piece for providing an electrical signal relating to the oscillation of said quartz-crystal piece,
(d) a counter means connected to the output of said signal detector through an amplifier for measuring the oscillating frequency of said quartz-crystal piece,
(e) a reference frequency oscillator for providing the desired reference frequency,
(f) a comparator coupled to said counter and said reference frequency oscillator, for comparing the frequency of said quartz-crystal oscillator measured by said counter means with the output frequency of said reference frequency oscillator,

(g) a trimming unit operably coupled to said trimmer capacitor, for trimming the area of said trimming electrode of said trimmer capacitor,

(h) a memory means coupled to said counter means for storing the frequency f_1 measured by said counter means in the preceding trimming step,

(i) a calculation means coupled to said memory means, for providing the difference f_3 between the twice ($2f_2$) of the frequency measured by said counter means at the present step and the output (f_1) of said memory means,

(j) a second comparator coupled to said calculation means and said reference frequency oscillator, for comparing the output (f_3) of said calculation means with the output frequency (f_0) of the reference frequency oscillator, and providing a trigger signal when f_3 is equal to or larger than f_0, and

(k) a trimming unit control operably coupled to said trimming unit, for controlling the operation of said trimming unit according to the output of said comparator, said trimming unit control being arranged to control the trimming unit so that the coarse adjustment portion of said trimming electrode is initially trimmed and when said second comparator provides the trigger signal thereto, the fine adjustment portion of said trimming electrode is trimmed until the oscillation frequency of said quartz-crystal piece reaches the reference frequency.

4,346,538

BLOW-IN/BLOW-OUT DOUBLE-SKIN WALL CONSTRUCTION

Raymond M. L. Ting, 318 Holiday Dr., Pittsburgh, Pa. 15237

Filed Jul. 11, 1980, Ser. No. 167,467
Int. Cl.³ E04C *2/46*; E04B *1/98*
U.S. Cl. 52—1 4 Claims



1. A building wall construction comprising:

a building framework including a first frame member and spaced therefrom a second frame member, said first frame member and said second frame member being adjacent to each other;

a liner panel spanning the distance between said frame members;

confinement means releasably retaining one liner panel end to said first frame member;

fastening means positively securing said liner panel to said second frame member;

outboard support means connected to each of said frame members and extending beyond said liner panel;

subgirt means secured to the mid-region of said liner panels;

a facing panel positively secured at its mid-region to said outboard support means;

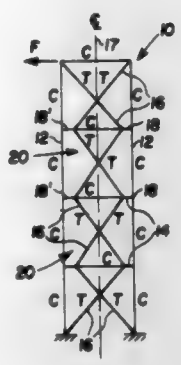
fastening means positively securing one end of said facing panel to said subgirt means; confinement means releasably retaining the other end of said facing panel.

4,346,539

LATTICE BEAM-COLUMNS

John S. Ellis, Kingston, Canada, assignor to Her Majesty the Queen as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Mar. 3, 1980, Ser. No. 126,999
Claims priority, application Canada, Mar. 29, 1979, 324564
Int. Cl.³ E04C *3/10*
U.S. Cl. 52—226 11 Claims



1. A prestressed structural member comprising:

(i) a pair of longitudinal elements spaced apart and prestressed in compression;

(ii) a plurality of strut elements spaced apart with each strut element extending between the longitudinal elements and disposed orthogonally of a line equidistant from each longitudinal element, the strut elements being prestressed in compression;

(iii) a plurality of diagonal members diagonally oriented in pairs of box sections formed by the longitudinal and strut elements, thereby forming a lattice structure, said diagonal members being prestressed in tension; and

(iv) a plurality of joint connector means rigidly interconnecting the strut elements, the diagonal members and the longitudinal members of the lattice structure, the ends of said diagonal members being connected to said strut elements and the connection between the diagonal members and the associated strut elements being substantially offset along the lengths of the associated strut elements from the intersection of the axes of the strut elements and the longitudinal elements in a manner deliberately providing predetermined eccentricity of forces carried by each diagonal member relative to the geometrical intersection of the axes of the strut and longitudinal elements, said diagonal members intersecting said strut elements inwardly of the intersection between the strut elements and the longitudinal elements and the point of intersection being offset from the intersection between the strut and longitudinal elements by a distance equal to about 10 percent of the length of the strut elements.

4,346,540

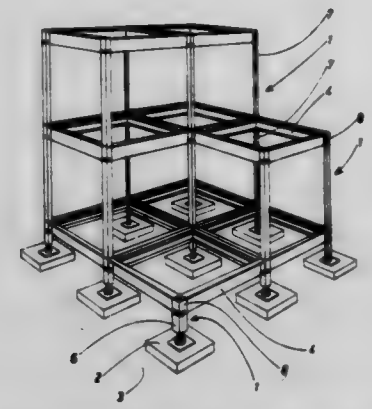
DEVICE RELATING TO BUILDING FRAMEWORKS

Leif Anderson, Bögatan 39 A, 412 72 Göteborg, Sweden

PCT No. PCT/SE79/00167, § 371 Date Apr. 9, 1980, § 102(e) Date Apr. 8, 1980, PCT Pub. No. WO80/00356, PCT Pub. Date Mar. 6, 1980
PCT Filed Aug. 8, 1979, Ser. No. 192,591
Claims priority, application Sweden, Aug. 9, 1978, 7808502
Int. Cl.³ E04B *1/24, 1/54*
U.S. Cl. 52—274 9 Claims

1. In a building framework system having a foundation supporting a number of vertical uprights in the longitudinal direction divided into elements joined to the ends of each other to form a respective complete upright, a number of substantially horizontal beams provided for the support of areas forming floor structure elements at least partly positioned above each other to form several stories of the building, which beams are provided at their ends for supporting the same by the upright elements and joining the same together with the re-

spective upright, and coupling means at the points where the upright elements are joined together and including coupling elements for attaching of the ends of the respective upright elements to each other and elements for supporting the beams connected to the coupling means, the improvement wherein the upper end of the lower upright element in the respective joint between two upright elements is permanently provided with the supporting elements for the beams at right angle to each other and further provided with a first part of the element for attaching the ends of the upright elements to each other and



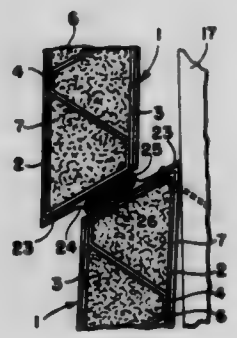
cooperating with a second part at the lower end of the upright element positioned as an upper element in the joint between the two upright elements, the end of said lower upright element being provided with projecting pins forming at least a part of the supporting elements for the beams, which beams are provided with projecting flanges arranged to rest against the ends of the upright elements and provided with holes cooperating with the pins for fixation of the respective beams, said pins forming at least a portion of said first part of the element for attaching the ends of the upright elements to each other.

4,346,541

BUILDING PANEL CONSTRUCTION AND PANEL ASSEMBLIES UTILIZING SAME

Robert F. Schmitt, Berea, Ohio, assignor to G & S Company, Strongsville, Ohio

Continuation of Ser. No. 938,383, Aug. 31, 1978, abandoned.
This application Jul. 17, 1980, Ser. No. 169,712
Int. Cl.³ E04C *1/00*
U.S. Cl. 52—309.11 43 Claims



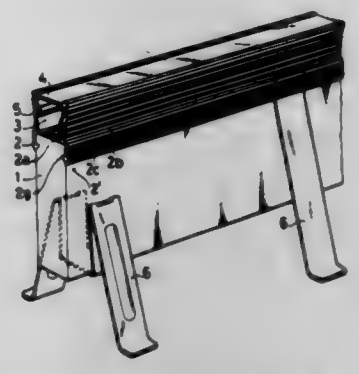
1. A building panel construction comprising a pair of facing sheets defining opposite sides of the panel; a trapezoidally corrugated sheet sandwiched between said facing sheets, the corrugations of said corrugated sheet having oppositely facing flat crests engaging said facing sheets, the first and last corrugations of said corrugated sheet having flat sides defining opposite beveled parallel edges of said panel adapted for butted engagement with the beveled edge of another panel; said edges of said panel having oppositely disposed longitudinally extending strips attached thereon for interlocking engagement with strips on the edges of adjacent panels; and rigid foam insulation filling the trapezoidal spaces defined between said facing sheets and corrugated sheet and bonded to the facing sheets and corrugated sheet.

4,346,542

JOINT FOR USE IN CONCRETE DEPOSIT

Kohkichi Tateno, No. 39-21, Zenpukuji 2-Chome, Suginami-ku, Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,606
Int. Cl.³ E01C *11/10*; E04F *15/14*
U.S. Cl. 52—396 7 Claims



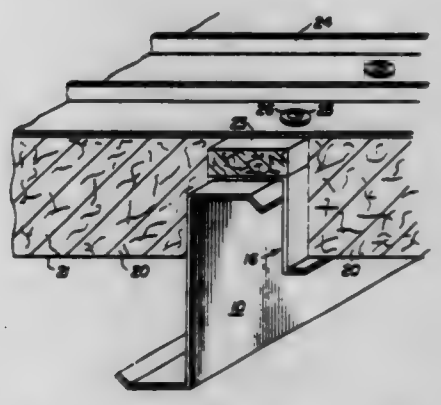
1. A joint for use in a concrete deposit, comprising an elongated joint body made of soft material adapted to be placed into the concrete deposit for the purpose of separation, a capping assembly mounted on top of said joint body, said capping assembly including a capping member connected to said joint body and a cap detachably secured to said capping member, said capping member having a lower portion engaged with and located along the entire length of said joint body and an upper portion extending upwardly from said lower portion to thereby define a space therein along the joint body, said cap being dimensioned for covering the space of said upper portion to close the same, said cap being placed on the upper portion of said capping member when concrete is hardened, and leg members removably attached to said joint body for supporting the joint, said leg members having means to vertically adjust the height of said joint.

4,346,543

BUILDING INSULATION SYSTEMS

Keith E. Wilson, and Phillip W. Blackmore, both of Camlachie, Canada, assignors to Fiberglas Canada, Inc., Toronto, Canada

Filed Jun. 20, 1980, Ser. No. 161,494
Claims priority, application Canada, May 8, 1980, 351511
Int. Cl.³ E04B *1/74*
U.S. Cl. 52—404 14 Claims



1. A metal building insulation system, comprising:

elongate metal structural members of a building frame spaced apart from one another in mutually parallel relationship;

said structural members each having a flange at the outermost sides of the respective structural member;

said flanges each having an outer face directed outwardly of said building frame;

at least one layer of heat insulating material extending between said structural members; and

means for retaining said heat insulating layer relative to said structural member, said retaining means comprising:

(a) a channel member overlying said flanges of each of said structural members and having an intermediate portion located outwardly of and extending across respective ones of said outer faces, a pair of side walls projecting inwardly from opposite longitudinal sides of said intermediate portion and a retainer projection extending laterally of the respective structural member from one of said side walls and located inwardly of said heat insulating layer; and

(b) an additional flange facing inwardly of the building frame from the innermost sides of each of said structural members, said additional flange projecting laterally of the respective structural member at the side thereof opposite from the respective retainer projection, whereby said heat insulating layer is retained by said additional flange and by said retainer projection at the opposite sides of said structural member.

4,346,544

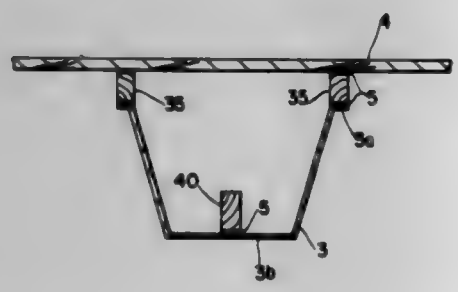
LIGHTWEIGHT BUILDING ELEMENTS WITH HIGH CARRYING CAPACITY

Jens-Frederik Larsson, Birger Jarlsgatan 62, 114 29 Stockholm, Sweden

Continuation-in-part of Ser. No. 950,291, Oct. 11, 1978, abandoned, which is a continuation of Ser. No. 569,592, Apr. 21, 1975, abandoned. This application May 30, 1979, Ser. No. 43,824

Int. Cl.³ E04C *1/24*

U.S. Cl. 52—407 **18 Claims**



1. A lightweight carrier element for forming a building element made of a number of interconnected lightweight carrier elements, the building element being mounted between horizontally spaced apart supporting points with its upper surface extending horizontally to be loaded downwardly from above onto its upper surface, and such that a downwardly directed load received onto the building element is transmitted horizontally therethrough to the supporting points, said lightweight carrier element comprising at least one lower base member for receiving tension forces, said at least one lower base member including an upwardly open box made of thin sheet metal plate material and having at its upper edges horizontally directed flanges, and an upper surface layer for receiving pressure forces in the building element and made of wood material which is essentially stiffer in all directions than the sheet metal plate of said at least one lower base member, said surface layer being wider than, and extending longitudinally beyond both sides of, its corresponding at least one lower base member, a wooden bar disposed between each of said lower base member flanges and said surface layer, each wooden bar being firmly connected to each of the lower base member and the surface layer by a continuous glue joint such that said wooden bars, surface layer, and at least one lower base member function as a one piece integral element to provide a statically cooperating and interacting carrier unit.

4,346,545

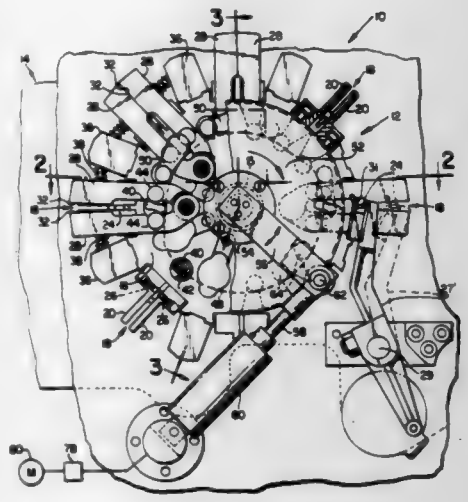
SEALING WHEEL FOR FORMING FIN SEAL PACKAGE

Francis C. Crescenzo, Springfield, and Paul J. LaFleur, Jr., Wilbraham, both of Mass., assignors to Package Machinery Company, East Longmeadow, Mass.

Filed Dec. 26, 1979, Ser. No. 107,174

Int. Cl.³ B65B *11/28*

U.S. Cl. 53—234 **15 Claims**



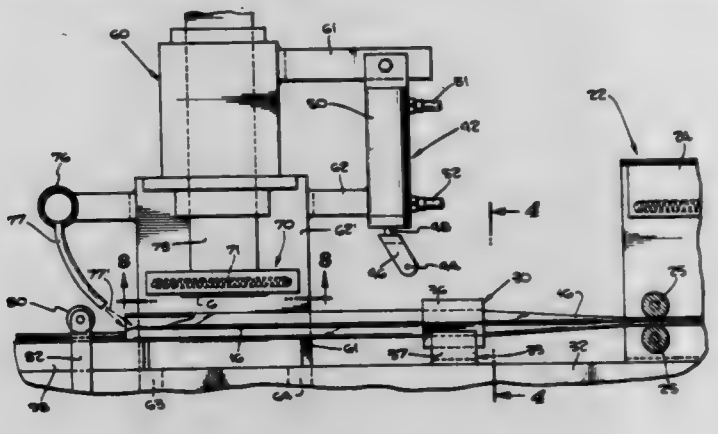
1. A sealing wheel comprising a wheel assembly, and drive means for rotatably indexing said wheel assembly through a plurality of positions including an article loading position and article discharging position, said wheel assembly including a wheel body, stationary jaw means on said wheel body defining at least one radially outwardly opening pocket for receiving an article and its wrapper and forming the wrapper in a U-fold around the article when said one pocket is in said loading position and including a pair of stationary jaws mounted in fixed position relative to said wheel body and having opposing parallel jaw surfaces defining said pocket, a pair of opposing sealing jaws pivotally supported on said wheel body in association with said one pocket for movement between open and closed positions, each of said sealing jaws being supported for movement relative to the wheel body and having a recess within which an associated one of said stationary jaws is received and surrounded on three sides by said sealing jaws when said sealing jaws are in closed position, said sealing jaws having opposing generally U-shaped sealing surfaces on said three sides for sealing said folded wrapper on three sides of said article, said stationary jaws positioned to maintain in spaced relation to said sealing surfaces marginal portions of a wrapper contained within and extending outwardly beyond the confines of said pocket when said sealing jaws are in said open position, said sealing surfaces being engageable with the extending marginal portions of the wrapper when said sealing jaws are in closed position, means for heating at least one of said sealing surfaces, means for normally biasing said sealing jaws toward said closed position and means for opening said sealing jaws when said sealing wheel is indexed to a predetermined position by said drive means and including a cam shaft supported on said wheel body between said sealing jaws for angular movement about its axis, said cam shaft and said jaws having coengageable cam surfaces for simultaneously pivoting said sealing jaws away from said stationary jaws and each other in response to angular movement of said cam shaft about its axis, a stationary cam, and an opener lever attached to said cam shaft and engaged with said stationary cam for angularly moving said cam shaft when said sealing wheel is indexed to said predetermined position.

4,346,546

AUTOMATIC FLEXIBLE CONTAINER FABRICATING MACHINE

Sidney Tasker, 853 N. Detroit St., Los Angeles, Calif. 90046

Continuation of Ser. No. 951,716, Oct. 16, 1978, abandoned.
This application Jul. 24, 1980, Ser. No. 172,067
Int. Cl.[3] B65B *61/18, 43/00*
U.S. Cl. 53—412 10 Claims



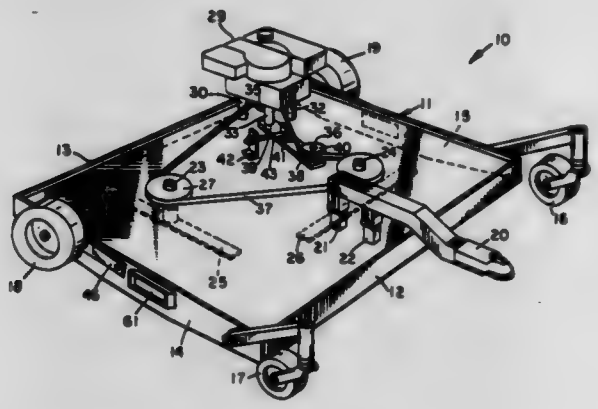
1. A machine comprising an elongated frame, means for transporting a length of tubing longitudinally thereover, the tubing being standard round tubing rolled flat, means for distending the tubing for slitting by blowing air into a slit already made, means for partially slitting the tubing at predetermined spaced positions in said distended posture to provide sections of tubing, means outside of the tubing to hold it distended adjacent the slitting means, means for applying a predetermined seal adjacent a slit in the tubing at the end of a section including means for retaining the opposite sides of the tubing in closely contiguous and proximate relationship and means for sealing portions of the tubing adjacent to said slit to provide an openable closure, means for advancing the tubing in incremental steps, means for opening a tube portion at a slit at the opposite end of said section, means for filling said tube portion from said opposite end and means for sealing said tube portion adjacent said last mentioned slit.

4,346,547

LAWN MOWER

Robert B. Allison, 8424 E. Lake Rd., Erie, Pa. 16511

Filed Mar. 27, 1981, Ser. No. 248,264
Int. Cl.[3] A01D *35/26*
U.S. Cl. 56—13.6 10 Claims



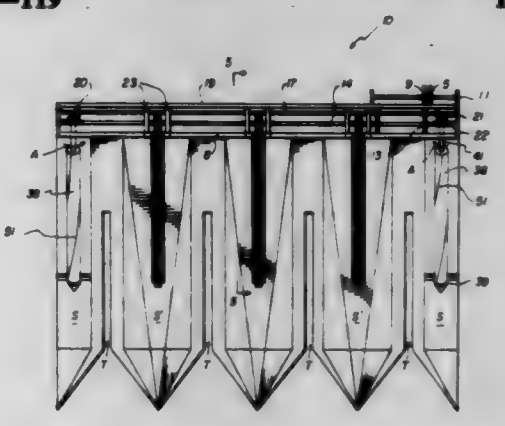
1. In combination, a mower having
a rectangular platform,
two rear ground engaging wheels and two front engaging wheels,
means vertically and adjustably supporting said rear wheels and said front wheels on said platform,
an internal combustion engine,
support means supporting said engine on said platform,
two spaced blade shafts extending downward through said platform, each said blade shaft having a blade on its end below said platform,
a pulley on each said blade shaft,
an engaging pulley on said engine shaft,
a belt tightener pulley,
tension means supporting said belt tightener pulley on said platform,
said engine support means comprising four spaced, downwardly extending columns welded on said platform and supporting said engine,
said tension means comprising a belt tensioner arm having said belt tightener pulley on the first end and pivoting other end of said belt tightener arm around the right front engine support column,
said engine support means comprising four spaced downwardly extending columns welded on said platform and and a belt passing around said pulleys.

4,346,548

ATTACHMENT FOR A HARVESTER FOR PICKING UP DOWNED CORN STALKS

Cecil G. Atkinson, White City, Kans. 66872

Filed Apr. 8, 1981, Ser. No. 252,156
Int. Cl.[3] A01D *45/02, 75/00*
U.S. Cl. 56—119 10 Claims

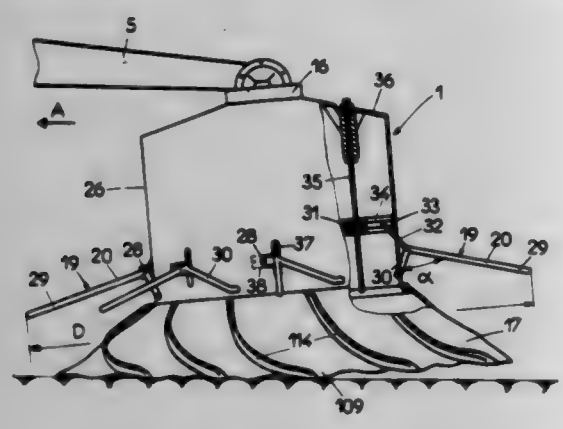


1. An attachment for a harvester for picking up and combining downed corn stalks or the like in which the harvester is of the type having a plurality of inner dividers and two outer dividers, all with tapered snouts between which throats are provided defining entrances to the combine for upright rows of corn to pass through comprising in combination:
a support frame,
roller means carried on a top surface of the outer dividers,
chain means having outwardly extending flexible finger means carried on a top surface of the inner dividers,
and drive means extending from a power takeoff of the harvester and encased in said support frame to operatively run both said roller means and said chain means whereby upright corn stalks pass into the combine through the throat areas unaffected, but downed and bent corn stalks are lifted up and directed to the corn stalk entrance of the combine, said chain means is rotatably supported and driven at one extremity proximate said frame by a driven shaft defining a portion of said drive means, and supported at a remote extremity external said frame by a support rod resiliently connected to said support frame.

4,346,549
AGRICULTURAL MACHINE FOR TEDDING AND WINDROWING FODDER CROPS

Albert Wattron, Schwenheim, and Michel Quirin, Allenwiller, both of France, assignors to Belrecolt S.A., Marmoutier, France

Filed Dec. 12, 1980, Ser. No. 215,851
Claims priority, application France, Dec. 20, 1979, 79 31889
Int. Cl.[3] A01D *79/00*
U.S. Cl. 56—370 68 Claims

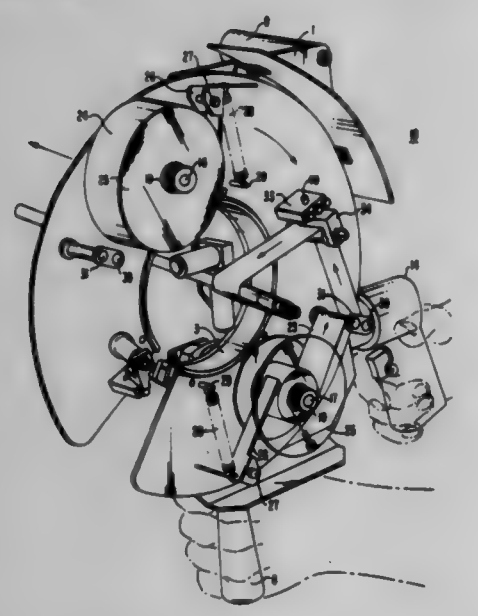


1. In a machine for handling cut herbage during forward movement of the machine on the ground,
in combination,
a support,
at least one drum mounted on said support for rotation about an upright axis,
driving means operable for rotating said drum about said axis,
a flexible deformable skirt mounted on the lower portion of said drum for rotation therewith and operative for lifting the cut herbage and moving it rearwardly, and
a plurality of impelling elements, operatively connected to said drum, each element being substantially simultaneously movable together with at least some of the remaining impelling elements relative to said skirt between a tedding position and a windrowing position.

4,346,550
TAPE WRAPPING APPARATUS

Herbert E. Ferree, Hempfield Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 27, 1980, Ser. No. 163,551
Int. Cl.[3] D07B *7/14;* B65H *81/08*
U.S. Cl. 57—10 3 Claims

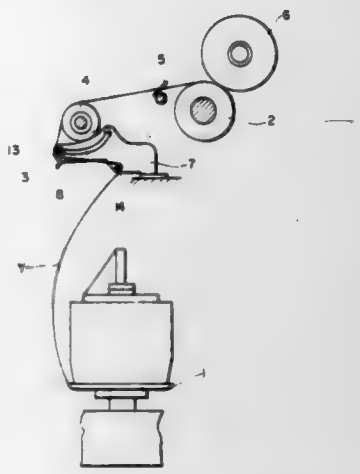


1. Tape wrapping apparatus, comprising:
(a) a support frame;
(b) rotating means rotatably disposed upon the support frame for rotating about a workpiece which is to be taped;
(c) spool means disposed upon the rotating means for feeding tape to the workpiece as the rotating means rotates for tape wrapping the workpiece;
(d) spring biased tension maintenance means disposed on the rotating means in a disposition of forceful contact with the tape on the spool means whereby the biasing of the spring biased tension maintenance means is automatically reduced for automatically adjusting to keep the tension on the tape generally constant as the tape is unwound from the spool means during a tape wrapping operation for thus producing a generally uniformly tape wrapped workpiece; and
(e) driving means interconnected with the rotating means for causing rotation thereof.

4,346,551
METHOD AND APPARATUS FOR TWISTING AND WINDING YARNS ON PACKAGES

Hideo Yanobu, Kyotoshi, and Tadashi Tanaka, Ohtsushi, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Jul. 25, 1980, Ser. No. 172,384
Claims priority, application Japan, Jul. 27, 1979, 54-96430
Int. Cl.[3] D01H *1/10, 13/10*
U.S. Cl. 57—62 6 Claims



1. An apparatus for twisting and winding yarns on packages including a double twisting spindle, a feed roller for reducing the tension of yarn coming from the double twisting spindle, an adjustable winding angle-adjusting device which is arranged between the double twisting spindle and the feed roller to set a yarn to be wound on the feed roller at a predetermined winding angle, a traverse device and a take up roller for winding the yarn on a package, wherein said feed roller comprises a first disc formed on a feed roller proper fixed to a driving shaft, a second disc disposed to confronting the first disc, a plurality of pieces having an inclined yarn guide face projected equidistantly in the circumferential direction on an end face of the discs respectively, said guide faces of the pieces being arranged to be confronting and mutually interposing between the two discs, and a spacer inserted under the pieces and disposed between the discs for adjusting the distance between the pieces.

4,346,552
BULKY TEXTURED MULTIFILAMENT YARN

Takao Negishi, and Kazuo Tomiita, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

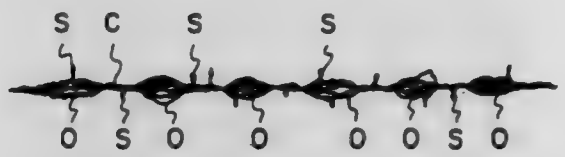
Continuation of Ser. No. 13,198, Feb. 16, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,368
Int. Cl.[3] D02G *3/34, 1/20;* D02J *1/08*
U.S. Cl. 57—208 16 Claims

1. A bulky textured multifilament yarn composed of a plurality of individual filaments having false-twisted crimps; the crimps of each of said filaments being irregularly distributed

along its length as compared to the crimp distribution of other filaments of said yarn;

said yarn comprising sections of interlaced individual filaments and sections of non-interlaced individual filaments;

said interlaced sections and non-interlaced sections being formed alternately along the lengthwise direction of said yarn;



said filaments in any predetermined length of said yarn, which contains a plurality of said alternating interlaced and non-interlaced sections, being substantially identical in length; and

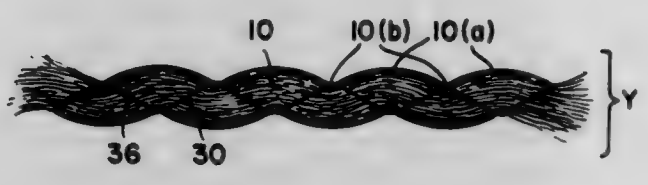
some portions of said individual filaments partially protruding out from the axis of said yarn.

4,346,553

HELICALLY WRAPPED YARN

Ira Schwartz, Villanova, Pa., assignor to Conshohocken Cotton Co., Inc., Conshohocken, Pa.

Filed Nov. 9, 1979, Ser. No. 92,997
Int. Cl.³ D02G *3/36, 3/38*
U.S. Cl. 57—210 10 Claims



1. Wrapped core yarn comprising:

(a) a core composed of fibers so arranged that the core has substantially zero tensile strength, and

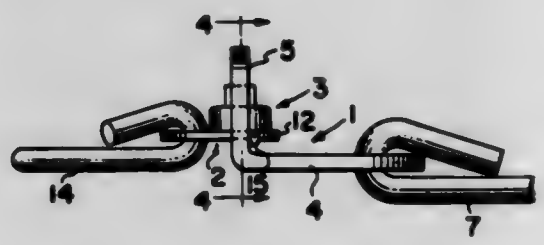
(b) a plurality of wrapper yarns wrapped under tension in both the clockwise and the counterclockwise directions around said core, whereby said yarns periodically cross over one another, said tensions on said wrapper yarns being balanced by each other and being so high as to compress said core in areas where said wrapper yarns cross over one another along the length of the core and impart to the core a sinuous configuration along its length.

4,346,554

FUSIBLE LINK CONSTRUCTION

Hermann R. Glinecke, Pennington, N.J., assignor to Globe Fire Equipment Company, Standish, Mich.

Filed Nov. 13, 1979, Ser. No. 93,398
Int. Cl.³ F16G *15/04*
U.S. Cl. 59—93 13 Claims



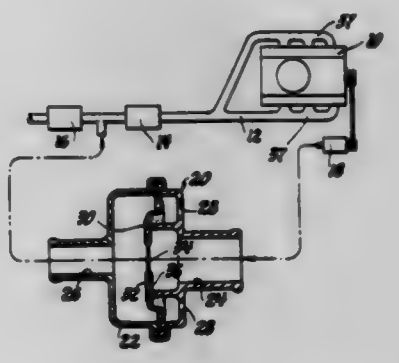
1. A fusible link construction comprising a first body having an opening therein with two spaced apart, opposed marginal edges, said first body having an extension projecting in one direction therefrom; a second body extending slidably through said opening at one marginal edge thereof, said second body having an extension projecting in one direction therefrom, said extensions projecting from their respective bodies in opposite directions; a collapsible strut accommodated in said opening and spanning the distance between said second body and the opposite marginal edge of said opening; normally engaged retaining means carried by said first body and said strut; abutment means carried by said second body and extending beyond said one marginal edge of said opening for engagement with said first body; thermally sensitive means forming part of said strut and normally preventing movement of said second body toward said opposite marginal edge of said opening a distance sufficient to enable said abutment to clear said one marginal edge of said opening, said thermally sensitive means being responsive to an increase in its temperature to a predetermined level to enable collapse of said strut an amount sufficient to enable said abutment to clear said opposite marginal edge of said opening and said second body to be withdrawn from said opening; and means on each of said extensions for coupling them to force applying means operable to withdraw said second body from said opening in response to collapse of said strut.

4,346,555

EXHAUST AIR FLOW PROPORTIONING VALVE

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 16, 1980, Ser. No. 159,455
Int. Cl.³ F01N *3/22*
U.S. Cl. 60—290 1 Claim



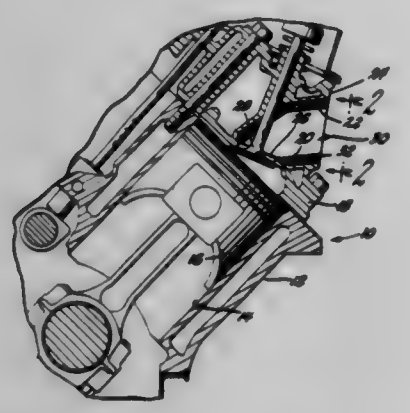
1. In combination with an engine having an exhaust system directing exhaust flow from the engine and an air pump directing air to said exhaust system, a valve controlling the rate of air flow from said pump to said exhaust system, said valve comprising a housing having a supply port connected to said pump and receiving a supply air flow from said pump at a supply pressure, a delivery port connected to said exhaust system and delivering an exhaust air flow to said exhaust system at a delivery pressure substantially equal to the pressure in said exhaust system, an excess air port discharging an air flow at substantially atmospheric pressure, and a valve seat surrounding said supply port and separating said supply port from said excess air port, and a diaphragm secured in said housing and separating said delivery port from said supply port and said valve seat and said excess air port, said diaphragm having an orofice directing said exhaust air flow from said supply port to said delivery port and one face of said diaphragm having a valve surface surrounding said orifice and associated with said valve seat, whereby the supply pressure in said supply port acts against the portion of said diaphragm face surrounded by said valve surface in opposition to the delivery pressure in said delivery port acting against the opposite face of said diaphragm and displaces said diaphragm from said valve seat the amount necessary for the rate of said exhaust air flow to be proportional to the rate of exhaust flow through said exhaust system and for the remainder of said supply air flow to be discharged through said excess air port.

4,346,556

INSULATING ENGINE EXHAUST PORT LINER

Hal H. Rice, Birmingham, and Gary A. Kruger, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 12, 1980, Ser. No. 148,904
Int. Cl.³ F01N *7/14, 7/16, 7/18*
U.S. Cl. 60—272 3 Claims



1. An insulating exhaust port liner for internal combustion engines and the like, said liner comprising

a formed thin wall body of rigidized fibrous ceramic of relatively low mass and high insulating value, said body being shaped to define at least part of the inner wall of a high temperature exhaust gas passage, and

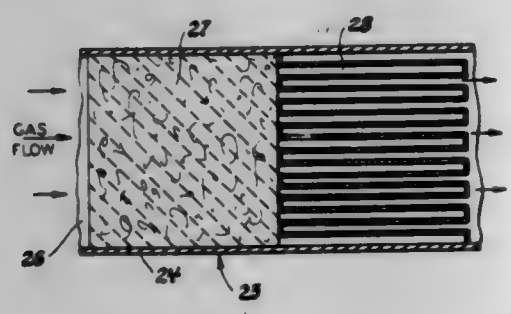
an abrasion resistant ceramic coating fused onto at least the inner gas-exposed surface of said body, said coating comprising a mixture of fused silica cement and fine glass frit sintered in place on the body inner surface at a temperature below that which will damage the thin walls of the body.

4,346,557

INCINERATION-CLEANABLE COMPOSITE DIESEL EXHAUST FILTER AND VEHICLE EQUIPPED THEREWITH

Farhang Shadman, Tucson, Ariz., and Louis Hegedus, Grosse Pointe Woods, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 7, 1980, Ser. No. 147,599
Int. Cl.³ F01N *3/02;* B01D *41/04, 50/00*
U.S. Cl. 60—311 3 Claims



1. A composite incineration-cleanable diesel exhaust particulate filter comprising

first and second filter sections capable of withstanding exhaust system and particulate incineration temperatures and disposed in series to provide for diesel exhaust gas flow through the first and then the second filter sections,

said first filter section comprising a high temperature-resistant through-flow depth-type filter material capable of collecting diesel exhaust particulates with moderate efficiency and pressure drop at many locations along interconnected paths of gas flow through said first section, and

said second filter section comprising a high temperature-resistant wall-flow monolith structure having an extended gas-porous wall surface capable of collecting diesel particulates thereon with relatively high efficiency and low pressure drop,

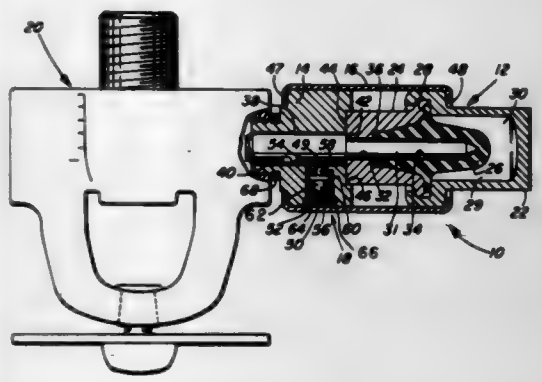
said filter being incineration-cleanable while installed by heating the exhaust gas supplied to the filter to a temperature adequate to burn particulates collected in the first filter section whereby the gas temperature in the second section is raised to a level adequate to incinerate particulates collected therein.

4,346,558

THERMAL ACTUATOR WITH LOCK OPEN FEATURE

Thomas B. Bernett, Arlington Hts., Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 15, 1980, Ser. No. 149,865
Int. Cl.³ F01B *29/10*
U.S. Cl. 60—527 7 Claims



1. A temperature responsive force generating device, said device comprising:

(a) thermally responsive actuator means, said actuator means including an output rod movable between first position and a second position;

(b) adapter means, said adapter means including,

(i) a member having a guide surface therein, said output rod received and guided by said surface, said member having a generally transversely extending surface defining a shoulder and intersecting with said guide surface; and

(ii) means for connecting said member to said actuator means,

(c) means for locking said output rod in said second position, said locking means associated with said member and including,

(i) a pin movable in said transverse surface between a first position permitting movement of said actuator rod and a second position limiting movement of said actuator rod in at least one direction,

(ii) means for biasing said pin toward said second position,

(iii) a temperature sensitive fusible member disposed intermediate a portion of said pin and said shoulder for preventing movement of said pin to said second position at temperatures below a predetermined value, said fusible member permitting movement of said pin to said second position only at temperatures at and above said predetermined value.

4,346,559

BYPASS CONTROL APPARATUS FOR TURBOCHARGED INTERNAL-COMBUSTION ENGINES

Bruno Zumstein, Lucerne, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jun. 16, 1980, Ser. No. 159,607
Claims priority, application Switzerland, Jul. 11, 1979, 6462/79
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—606 2 Claims

1. In a bypass control apparatus for turbocharged internal-combustion engines having an opening characteristic depen-

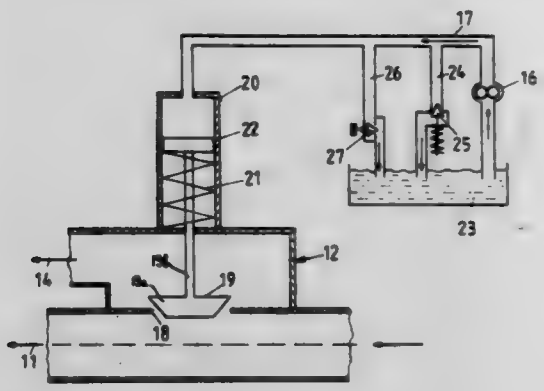
dent upon the engine speed for a bypass valve, the bypass valve being located in a bypass line which connects a point of a boost air line located downstream of a compressor with a point of an exhaust gas pipe located upstream of the turbine inlet of the engine turbocharger, the improvement which comprises:

means defining a closed hydraulic circuit;

said closed hydraulic circuit containing:

a volumetric hydraulic pump driven proportionally to the speed of the internal-combustion engine;

a tank for a hydraulic liquid for the hydraulic pump;



an actuating cylinder for the bypass valve;

a hydraulic line for connecting the hydraulic pump with the actuating cylinder;

a throttle line arranged between the hydraulic line and the tank; and

a throttle valve provided with an adjustable flow cross-section provided in said throttle line between said hydraulic line and said tank and serving to control the volumetric flow of the hydraulic liquid through said hydraulic line to said actuating cylinder for the bypass valve.

4,346,560

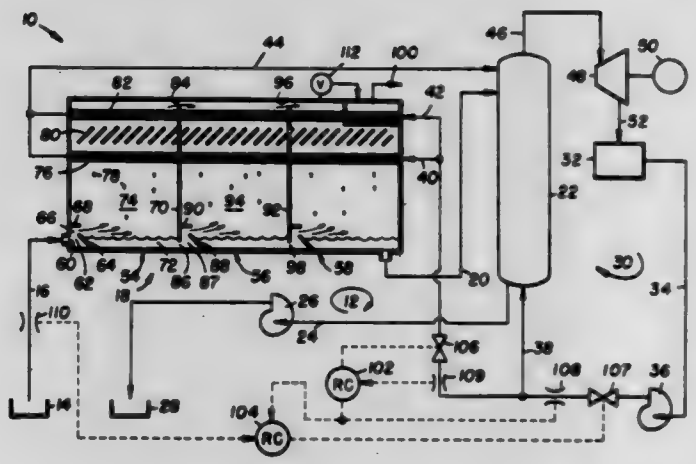
MULTI-STAGE FLASH DEGASER

Pascal M. Rapier, Richmond, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 26, 1980, Ser. No. 163,369

Int. Cl.³ F03G *7/00*

U.S. Cl. 60—641.3 **25 Claims**



1. In an energy conversion system having a direct-contact heat exchanger for transfering energy from an elevated temperature fluid, containing noncondensable gases to a working fluid, the improvement comprising means for removing the noncondensable gases from the elevated temperature fluid ahead of the heat exchanger including a flash degaser having;

means for flashing into a gaseous state at least some of the elevated temperature fluid;

means for condensing the gaseous state of the elevated temperature fluid;

means for subcooling the noncondensable gases;

means for venting said noncondensable gases;

means for introducing the elevated temperature fluid into the heat exchanger to transfer energy to said working fluid;

said working fluid being boiled to vapor in said flash degaser; and

means for introducing said vaporized working fluid into said heat exchanger.

4,346,561

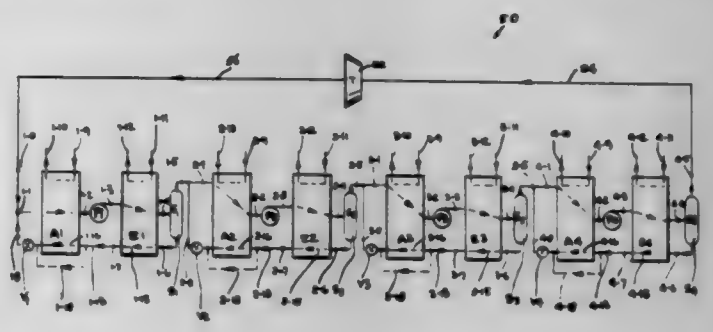
GENERATION OF ENERGY BY MEANS OF A WORKING FLUID, AND REGENERATION OF A WORKING FLUID

Alexander I. Kalina, 12439 Millbanks, Houston, Tex. 77031

Continuation of Ser. No. 92,268, Nov. 8, 1979, abandoned. This application Apr. 24, 1980, Ser. No. 143,524

Int. Cl.³ F01K *25/10*

U.S. Cl. 60—673 **32 Claims**



1. A method of generating energy, which comprises expanding a gaseous working fluid from a charged high pressure level to a spent low pressure level to release energy, and regenerating the spent working fluid by, in a plurality of successive regeneration stages:

(a) condensing the working fluid in an absorption stage by dissolving it in a solvent solution while cooling with a cooling medium, the solvent solution comprising a solvent having an initial working fluid concentration which is sufficient to provide a solvent solution boiling range suitable for absorption of the working fluid;

(b) increasing the pressure of the solvent solution containing the dissolved working fluid and evaporating the working fluid being regenerated by heating in an evaporation stage;

(c) feeding the evaporated working fluid to a succeeding regeneration stage;

(d) recycling the balance of the solvent solution remaining after evaporation of the working fluid, to constitute the solvent solution for the absorption stage of that regeneration stage; and

(e) withdrawing regenerated charged working fluid from a final regeneration stage for re-expansion to release energy.

4,346,562

THERMOELECTRIC DEVICE AND PROCESS FOR MAKING THE SAME

Shlomo Beitner, Tel Aviv, Israel, assignor to Bipol Ltd., Tel Aviv, Israel

Filed Dec. 18, 1980, Ser. No. 217,585

Int. Cl.³ F25B *21/02*; F25D *3/08*

U.S. Cl. 62—3 **19 Claims**

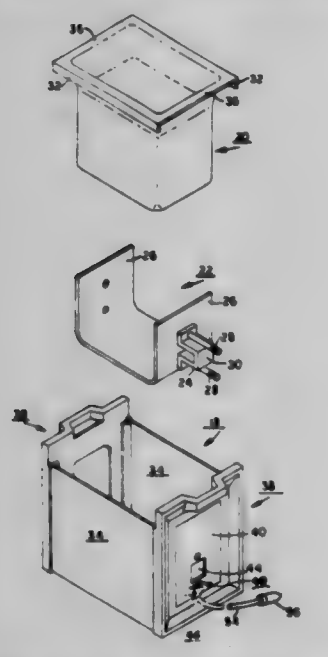
1. In a process for making a thermoelectric device powered by a thermoelectric element of the Peltier type which is held in heat-exchange between an internal thermal sink imbedded in an insulating wall and has an external thermal sink spaced from said insulating wall, and in which electrical connections connect the positive and negative poles of said thermoelectric device with an external power source, the improvement which comprises:

casting said insulating wall of foamed-in-place insulating foam about said inner thermal sink in a manner which provides an outer shell portion on said insulating wall and

a depression therein which exposes a surface of said internal thermal sink;

placing said thermoelectric element in said depression in heat-exchange with the surface of the internal thermal sink exposed by said depression;

placing an annular resilient and compressible sealing gasket on said outer shell portion in position such that it com-



pletely surrounds said depression and the thermoelectric element therein;

placing said external thermal sink in sealing contact with said sealing gasket; and,

drawing the two sinks toward each other until said gasket is compressed and said thermal sinks are in heat-exchange with said thermoelectric element.

4,346,563

SUPER CRITICAL HELIUM REFRIGERATION PROCESS AND APPARATUS

Charles B. Hood, Columbus, Ohio, assignor to CVI Incorporated, Hilliard, Ohio

Filed May 15, 1981, Ser. No. 266,573
Int. Cl.³ F25B *5/00*
U.S. Cl. 62—117 **10 Claims**



1. A closed loop, supercritical gas refrigeration apparatus comprising:

a. Compressor means to compress a supply of gaseous material to superatmospheric pressure and to force the compressed gaseous material through a refrigerative load,

b. high pressure fluid flow path means to convey substantially all of the compressed gaseous material from the compressor to the refrigerative load, said path means including;

(1) means to divide the gaseous material into two streams,

(2) means to expand the gaseous material in each stream,

(3) means to recombine the two streams, and

(4) means to pass the gaseous material through a cooling bath and the refrigerative load,

c. means to expand and liquify a portion of the gaseous material after it has passed through the refrigerative load,

d. means to introduce the liquid portion of the material into the cooling bath,

e. low pressure fluid flow path means to return the expanded gaseous material from the liquid portion of the material in the cooling bath to the compressor, and

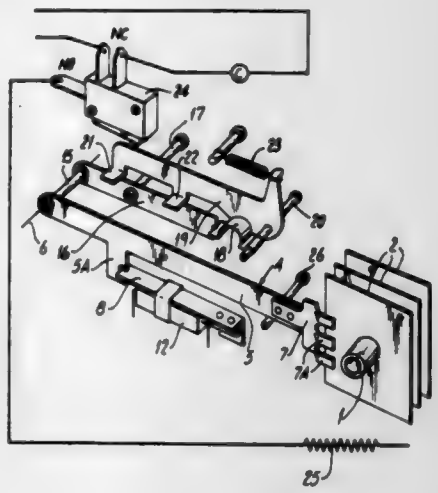
f. heat exchange means arranged to provide heat transfer from the gaseous material flowing in the high pressure fluid flow path means to the gaseous material flowing in the low pressure fluid flow path means, such that the combination of the cooling of the gaseous material in the high pressure fluid flow by expansion, by heat exchange and by the cooling bath forms a stream of cold, supercritical gas which is passed through the refrigerative load.

4,346,564

DEFROSTING CONTROL APPARATUS

Mario Gemma, Linkenheim-Hochstetten, and Burghard Baehr, Berg-Gladbach, both of Fed. Rep. of Germany, assignors to Ranco Incorporated, Dublin, Ohio

Filed Mar. 31, 1980, Ser. No. 135,546
Int. Cl.³ F25D *21/02*
U.S. Cl. 62—140 **14 Claims**



1. In a defrost control apparatus, a mechanical probe comprising an arm movable about a pivot and having a probe region disposed adjacent a surface prone to ice accretion, actuator means for effecting movement of the probe region relative to said surface about said pivot, means for cyclically energising the actuator means, and a switch operatively associated with the probe for controlling the operation of a defrosting heater, said pivot supported for shifting movement by said actuator means when pivotal movement of the probe is obstructed by ice accretion on the surface, shifting movement of said pivot and probe effecting operation of said switch.

4,346,565

GRAVITY DEFROST

William J. McCarty, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 4, 1981, Ser. No. 270,478
Int. Cl.³ F25D *21/06*; F25B *41/00, 47/00*
U.S. Cl. 62—151 **2 Claims**

1. A refrigeration system for use in a reverse air cycle type heat pump, said refrigeration system being of the type having

a refrigerant capable of boiling under relatively low pressure to absorb heat and condensing under relatively high pressure to expel heat comprising:

a compressor casing for containing a high pressure refrigerant, said casing having an inlet port and an outlet port;

a compressor in said casing for compressing said refrigerant in gaseous phase;

a condenser having a first opening in the upper portion and a second opening in the lower portion thereof;

a discharge conduit connecting said condenser first opening to said compressor outlet;

an evaporator arranged above said condenser and said compressor having a first opening in the upper portion and a second opening in the lower portion thereof;

a liquid conduit connecting the second openings in the lower portion in each of said condenser and said evaporator;

a suction conduit connecting said first opening of said evaporator to said compressor inlet;

a means for regulating the flow of refrigerant through said liquid conduit including a flow control means in said liquid conduit, a temperature responsive sensing means for controlling the flow of refrigerant through said flow control means, said temperature responsive means is arranged to sense the temperature of refrigerant in said suction line at a point relative to said compressor wherein the temperature of refrigerant at said point is in a range that will cause said sensing means to effectively control the flow of refrigerant through said flow control means during operation of said compressor at a flow rate which insures efficient operation of said evaporator and being responsive to the temperature of high pressure refrigerant migrating from said compressor casing to said point when said compressor operation terminates to provide an unrestrictive flow of refrigerant through said flow control means between said second opening in the lower portions in each of said evaporator and condenser;

a defrost flow conduit connected between said first openings in each of said condenser and said evaporator;

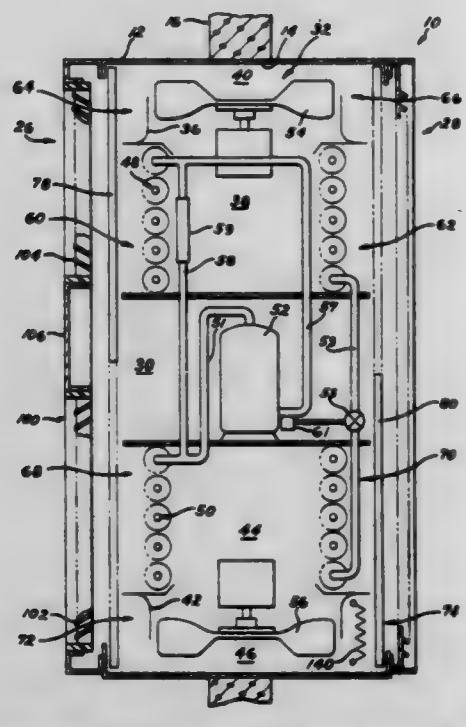
a pressure responsive valve in said defrost flow conduit being operable to a closed position when operation of said compressor creates a refrigerant pressure differential in said refrigeration system, and being operable to an open position when said pressure differential is equalized after said compressor operation terminates, so that a nonrestrictive refrigerant flow path is established through said defrost flow passage between said first opening in the upper portions in each of said condenser and said evaporator and simultaneously through said liquid line between the second openings in the lower portion of said condenser and said evaporator, thereby allowing the warmer gaseous refrigerant, when present in the condenser, to flow from the upper portion of said condenser through said defrost flow conduit into the upper portion of said evaporator to raise the temperature of said evaporator while the temperature of the refrigerant in said suction conduit at said point raised by refrigerant migrating into said line from said compressor sensed by said temperature responsive sensing means causes said flow control means to open to allow the warmed refrigerant in the lower portion of said evaporator to flow unrestricted through said liquid line into the lower portion of said condenser thereby completing an unrestricted defrost circuit between said condenser and evaporator through said liquid line and said defrost flow conduit.

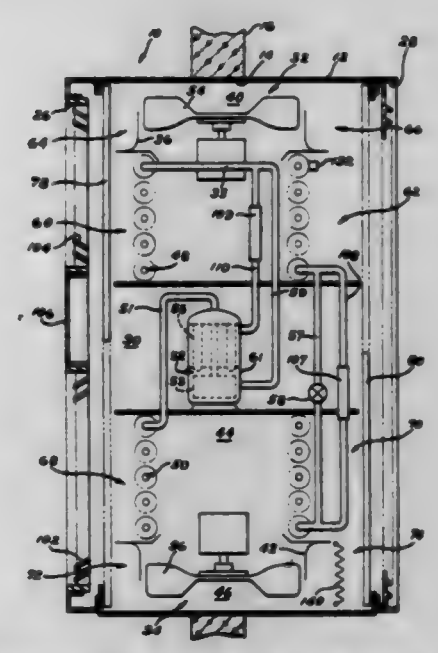
4,346,566

REFRIGERATION SYSTEM GRAVITY DEFROST

William J. McCarty; Walter J. Pohl, and Russell L. McCreary, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jun. 4, 1981, Ser. No. 270,296
Int. Cl.[3] F25B 29/00, 47/00
U.S. Cl. 62—159 6 Claims





1. A refrigeration system of the type having a refrigerant capable of boiling under relatively low pressure to absorb heat and condensing under relatively high pressure to expel heat comprising:

a hermetic casing motor, including a compressor driven by said motor for compressing a refrigerant fluid in gaseous phase having an outlet port and an inlet port;

a condenser having a first opening in the upper portion and a second opening in the lower portion thereof;

a discharge conduit connecting said condenser first opening to said compressor outlet;

an evaporator arranged above said condenser and said compressor having a first opening in the upper portion and a second opening in the lower portion thereof;

a liquid conduit connecting the second openings of said condenser and said evaporator;

a suction conduit connecting said evaporator first opening to said compressor inlet;

a flow control means in said liquid conduit;

defrost means including a first defrost flow passage connected parallel with said liquid conduit between said second openings of said evaporator and said condenser, and a second defrost flow passage connecting said first opening of said evaporator and said compressor casing to provide a series flow refrigerant path in series through said discharge conduit, compressor casing, and said second defrost flow passage, a first valve in said first defrost

flow passage and a second valve in said second defrost flow passage;

said first and second valves being operable to a closed position when a refrigerant pressure differential is present in said system and being operable to an open position when said pressure differential is bled down through said flow control means after said compressor operation terminates, so that a nonrestrictive refrigerant defrost flow path circuit is established bypassing said flow control means through said first defrost flow passage between the second opening in the lower portions of said condenser and said evaporator and through said second defrost flow passage between said first openings of said condenser and evaporator through the compressor casing, thereby allowing liquid refrigerant when present in the lower portion of said evaporator to flow through said first defrost flow passage into the lower portion of said condenser, while the warmer gasous refrigerant will flow through said second defrost flow passage from the condenser forst opening in the upper portion of said condenser through the compressor casing into the evaporator first opening in the upper portion of said evaporator to raise the temperature of said evaporator and melt frost when present;

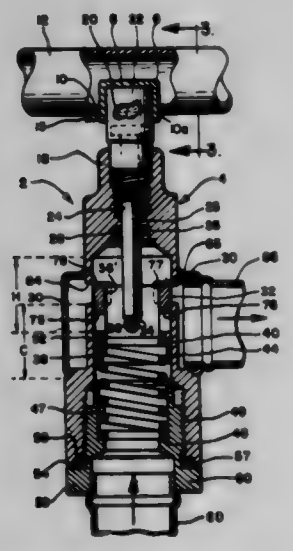
control means including resistance means for raising the temperature of refrigerant in said compressor casing to a predetermined value to insure that the refrigerant flowing through the compressor casing between the first opening of said condenser and said evaporator is maintained at a predetermined temperature independent of ambient temperature conditions.

4,346,567

HEAT PUMP CONTROL VALVE

David H. Snlader, 1225 Spruce St., Winnetka, Ill. 60093

Continuation of Ser. No. 860,592, Dec. 14, 1977, abandoned.
This application Jan. 31, 1980, Ser. No. 117,076
Int. Cl.³ F25B *13/00;* G05D *23/12*
U.S. Cl. 62—160 15 Claims



1. In a heat pump system for selectively heating and cooling a room, the system including a compressor, first and second heat exchangers each of which being connected to the compressor and to each other, a refrigerant line for conducting a refrigerant fluid to said first and second heat exchangers, the refrigerant line connecting the compressor and said first and second heat exchangers so as to form a closed circuit,

said first heat exchanger serving as an evaporator in a cooling cycle and as a condenser in a heating cycle, said second heat exchanger serving as a condenser in a cooling cycle, and as an evaporator in a heating cycle, and

a line for conducting water to and through said second heat exchanger, the water serving as a heat exchange medium therein in addition to the refrigerant fluid,

the improvement which comprises valve means responsive to temperature variations in the refrigerant line connecting said first and second heat exchangers for selectively regulating the flow of water in the water line leading to said second heat exchanger,

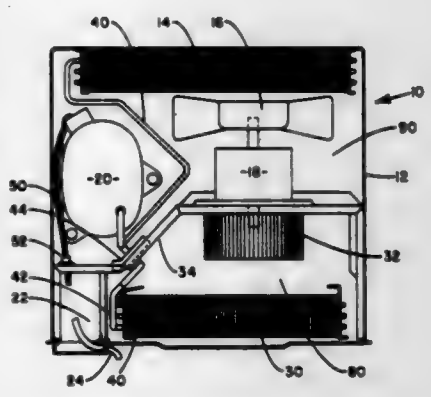
said valve means comprising a self-regulating valve for controlling the flow of water into the water line by varying the size of the orifice of the latter, said self-regulating valve being provided with temperature sensing means extending directly into the refrigerant line, the orifice of the water line being partially open at all times, so as to allow time for the temperature sensing means to sense the refrigerant temperature and to allow said self-regulating valve to position itself correctly relative to the orifice of the water line.

4,346,568

METHOD AND APPARATUS FOR SECURING TUBES IN AN AIR CONDITIONING UNIT

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Filed May 18, 1981, Ser. No. 264,910
Int. Cl.³ F25D *23/12*
U.S. Cl. 62—259.1 11 Claims



1. An air conditioning unit including a base pan which comprises:

an indoor section in communication with the space to be conditioned including an indoor heat exchanger and means for circulating air to be conditioned in heat exchange relation with the indoor heat exchanger;

an outdoor section in communication with ambient air and including an outdoor heat exchanger and a compressor;

a partition mounted to the base pan for dividing the air conditioning unit to separate the indoor section from the outdoor section, said partition further defining a partition opening;

a refrigerant carrying line extending between the indoor section and the outdoor section through the partition opening; and

a block of sealing material, said block defining at least one slit for engaging a portion of the partition at the partition opening and a line receiving slit for receiving the refrigerant carrying line, said block including excess material whereby upon the assembly of the partition to the base pan the partition opening is fully sealed with the refrigerant carrying line extending therethrough.

4,346,569

NATURAL ICE FOR COOLING ENERGY

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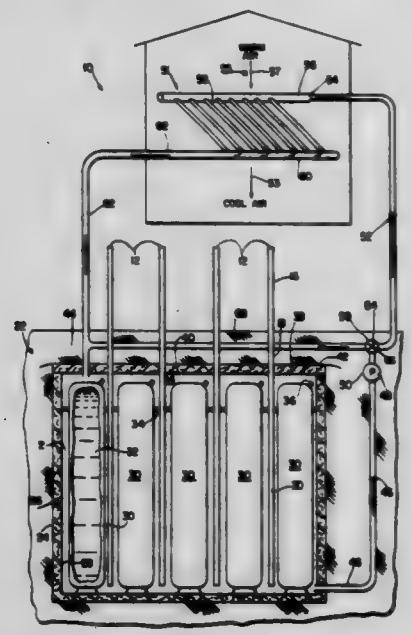
Continuation-in-part of Ser. No. 951,518, Oct. 13, 1978, Pat. No. 4,240,268. This application Dec. 22, 1980, Ser. No. 218,800
The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.
Int. Cl.³ F25D *23/12*
U.S. Cl. 62—260 12 Claims

1. A system for extracting, transmitting, storing, recovering and utilizing cold, said system comprising:

a. apparatus for extracting cold from the environment;

b. transmitting means comprising a heat pipe for transmitting said cold from environment above the ground to a location below the surface of the ground;

c. storage means for storing cold including containers of freezable liquid submerged in liquid coolant, said containers and liquid coolant being located at said location below the surface of the ground for receiving and storing cold transmitted thereto by said transmitting means;



d. recovery means for recovering cold from said storage means and delivering it to a second environment; and

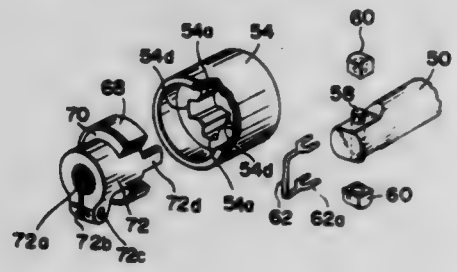
e. utilizing means connected to said recovery means for receiving cold therefrom and dispersing said cold throughout said second environment.

4,346,570

NOISE RESISTANT UNIVERSAL JOINT

Toshiaki Nakamura, Kawasaki, and Naoyuki Kuramoto, Fujisawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 30, 1979, Ser. No. 98,884
Claims priority, application Japan, Dec. 11, 1978, 53-170832
Int. Cl.³ F16D *3/18*
U.S. Cl. 464—120 4 Claims



1. A universal joint for connecting first and second shafts, comprising:

a tubular housing having oppositely disposed first and second end openings and internal angularly spaced elongated grooves extending axially from said first opening end into communication with an internal circular groove at said second opening end;

a first shaft received in the first end opening of said housing,

means cooperatively engageable with some of said internal elongated grooves for coupling the first shaft to said housing,

a generally tubular connecting member having one end adapted to be received on and detachably secured to an end of the second shaft, the opposite end of said connecting member being received in the second end opening of said housing and having axially extending pegs loosely received in other of said internal elongated grooves; and,

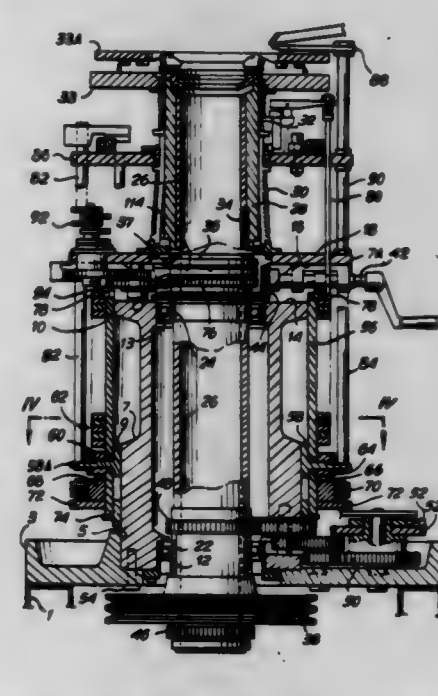
a resilient noise vibration absorbing member tightly surrounding the external surface of said connecting member and fixed relative to the base of said internal circular groove.

4,346,571

CIRCULAR KNITTING MACHINES

Arrigo Micheletti, 3, Viale Papa Giovanni XXIII°, Fucecchio, Firenze, Italy

Filed Jul. 3, 1980, Ser. No. 165,697
Claims priority, application Italy, Jul. 9, 1979, 9480 A/79
Int. Cl.³ D04B *15/32, 15/00*
U.S. Cl. 66—55 3 Claims

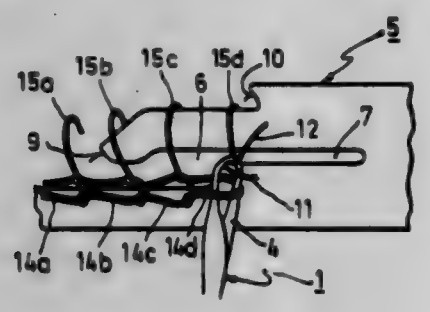


1. In a circular knitting machine, a needle cylinder with needles and jack butts carried by the needle cylinder, yarn guides, a plurality of control members for the needles and jack butts, a cam drum coaxial with the needle cylinder, a ratchet system, including a pawl, for driving the cam drum, programming means which can be advanced in relation to the rotation of the needle cylinder, said programming means comprising a program drum coaxial with the needle cylinder and the cam drum being independent thereof, said drum having programming members which can be changed, a drive system synchronised with the motion of the needle cylinder for advancing slowly the program drum, a ratchet system which determines the length of the programs and the re-phasing, and is operative to effect rapid advancement of the program drum, said system being able to be combined with the ratchet drive system of the cam drum, follower means arranged to activate and deactivate said ratchet systems, a manual control arranged to activate the rapid advancement re-phasing ratchet system for the program drum until this latter reaches a zero position at which the rapid advancement of said program drum ceases, a member disposed in the zero position of the program drum to activate the cam drum pawl until the cam drum is also moved into the zero position, and a cam in the zero position on the cam drum to control the initial slow advancement of the program drum when both the drums reach an in-phase zero position.

4,346,572
APPARATUS FOR KNITTING A SINGLE-FACED PILE FABRIC

Jose M. D. Gäell, Barcelona, Spain, assignor to Jumberca, S.A., Badalona, Spain

Division of Ser. No. 904,875, May 11, 1978, Pat. No. 4,194,374.
This application Jun. 29, 1979, Ser. No. 53,273
Claims priority, application Spain, Jun. 3, 1977, 459450
Int. Cl.³ D04B 9/12, 15/06
U.S. Cl. 66—93 10 Claims



1. A sinker having a nib portion and a belly portion defining upper and lower yarn introduction levels, the said lower level including a yarn receiving throat and a horizontal extention thereto;

means associated with said nib portion to facilitate the reentry of said nib portion into previously formed pile loops;

further means associated with said nib portion to guide the path of a base yarn into the throat of the sinker;

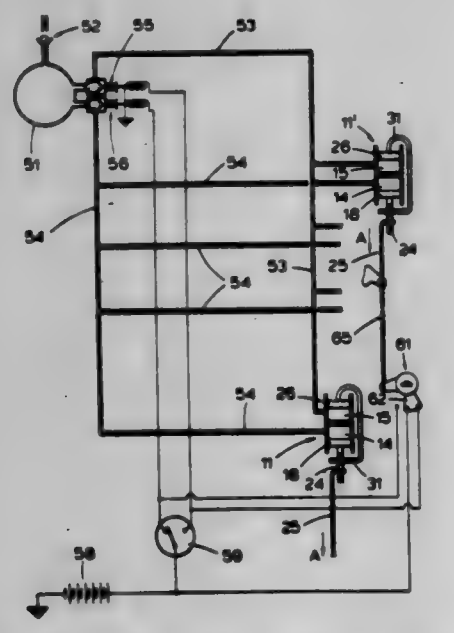
still further means associated with an uppermost loop forming surface of the said nib portion for active engagement with previously formed pile loops to fully extend said loops and to reform them to loops of uniform pile height; and

additional means associated with a loop forming surface of said belly portion of the sinker to facilitate the positive positioning of a base yarn relative to a pile yarn to insure a precise plating relationship between the said two yarns prior to and during stitch formation.

4,346,573
FLUID PRESSURE SERVOMOTOR

David Parsons, Kenilworth, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Oct. 10, 1979, Ser. No. 83,223
Claims priority, application United Kingdom, Oct. 12, 1978, 40375/78
Int. Cl.³ E05B 53/00, 51/00
U.S. Cl. 70—264 8 Claims



1. A fluid pressure servo motor comprising:

a stationary body;

two co-axial fluid chambers defined within the body and which are separated by a partition wall and are operatively independent;

a pair of co-axial piston means;

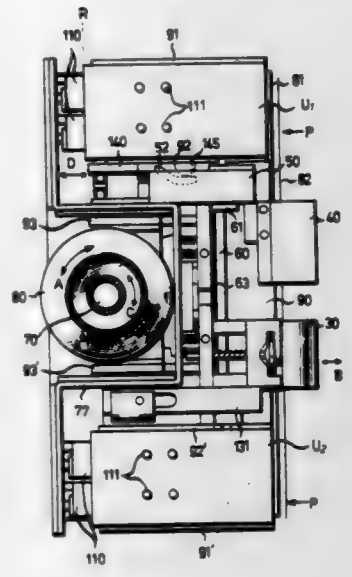
each of said piston means being located in a respective one of said chambers and being movable towards the partition wall in response to a pressure differential in the respective chamber, so as, in use, to effect alteration of a two condition device from one to the other of said conditions and each piston means having a lost motion means connection with said device to allow idle return of the piston means in the event of cessation of the pressure differential; and

a stirrup fixed to one of said two piston means and operatively bridging the other of said two piston means to act in use against said device while allowing said other piston means to move axially independently of the stirrup.

4,346,574
LOCK DEVICE OF THE PUSHBUTTON SYSTEM

Katori Nakamura, and Hisako Nakamura, both of No. 18-17, Okuzawa 6-chome, Setagaya-ku, Tokyo, Japan

Filed Oct. 1, 1980, Ser. No. 194,893
Claims priority, application Japan, Oct. 17, 1979, 54-133758; Nov. 17, 1979, 54-148329; May 16, 1980, 55-64022
Int. Cl.³ E05B 37/00
U.S. Cl. 70—313 12 Claims



1. A lock device of the pushbutton system attached to a casing base plate comprising:

at least one lock unit adapted to permit a locking and unlocking bar to rotate when pushbuttons of a number r out of a total number n are depressed in such a manner as to meet the requirements for unlocking the lock unit;

a resetting mechanism for returning said lock unit to a standby position by one reciprocating movement of a reset lever performed by turning a knob;

a locking and unlocking pawl member formed in a rotatable locking and unlocking member which is connected to said locking and unlocking bar of said lock unit;

an intermediate slider which can be reciprocated through a driving slider by turning a grip for opening and closing the door;

a dead bolt which is movable between a lock position and an unlock position, in the movable direction of said intermediate slider, said dead bolt being partly superimposed on said intermediate slider;

a notch which is formed in said intermediate slider in a portion where said intermediate slider and said dead bolt are superimposed on each other;

a notch which is formed in said dead bolt at a position slider;

a control slider which is in engagement with said locking and unlocking pawl member, said control slider being situated above the superimposed portion of said intermedi-

ate slider and said dead bolt and movable in the same direction as that of said intermediate slider when said intermediate slider is moved;

a seesaw member having a control pin at one end thereof, said seesaw member disposed in said control slider and said control pin capable of being brought into engagement with said notches of said intermediate slider and said dead bolt and released from engagement with the same;

a sub-control slider which is disposed adjacent said control slider, said sub-control slider movable in the same direction as that of said intermediate slider, between a forwardly projecting position and a rearwardly withdrawn position, and also independently movable from the forwardly projecting position to the rearwardly withdrawn position and vice versa by an operation from inside the room; and

a control projection which is disposed in said sub-control slider, said control projection capable of holding said seesaw member at a position where said control pin is in engagement with said notch of said intermediate slider and with said notch of said dead bolt when said sub-control slider is located at the forwardly projecting position, and also capable of holding said seesaw member at a position where said control pin is out of engagement with said notch of said intermediate slider and with said notch of said dead bolt when said sub-control slider is located at the rearwardly withdrawn position.

4,346,575

METHOD OF WIDTH CONTROL IN HOT STRIP MILL

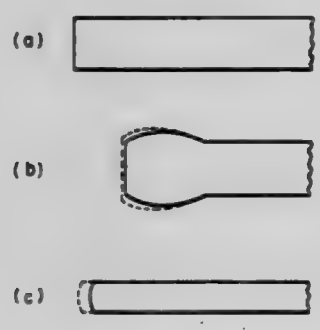
Takashi Shibahara, Osaka; Teruo Kohno, Nishinomiya, and Yoshisuke Misaka, Takarazuka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

PCT No. PCT/JP79/00264, § 371 Date Sep. 8, 1980, § 102(e) Date Sep. 8, 1980, PCT Pub. No. WO81/01114, PCT Pub. Date Apr. 30, 1981

PCT Filed Oct. 19, 1979, Ser. No. 253,630

Int. Cl.³ B21B *13/16, 37/12, 37/10*

U.S. Cl. 72—16 1 Claim



1. A method for controlling the width of material in hot strip rolling through a train of roughing roll stands in which a plurality of vertical roll stands and a plurality of horizontal roll stands are arranged in series and alternately one after another, said method comprising the steps of (1) measuring the width of a material to be rolled over at least the entire middle area out of the entire longitudinal area thereof at the delivery side of any one of the horizontal roll stands disposed intermediately in said train of roughing roll stands; (2) deriving values of the variations in width of the respective portions in the longitudinal direction based on the values of the width measured during said measuring step; (3) calculating a reference coefficient of width spread based on empirically derived data reflective of the rolling conditions of said horizontal and vertical roll stands; (4) determining respective local coefficients of width spread due to bulging at the lateral marginal portions of the material to be rolled for at least all the middle area out of the entire longitudinal area of the material to be rolled based on (a) said values of the variation in width, (b) the degree of width reduction at each of the vertical roll stands upstream of the measuring point and (c) said reference coefficient of width spread; (5) after step (4), calculating the required amount of modification to be applied for screwdown over at least the entire middle area of said material in order to reduce to zero the expected variation in width in the portions of material downstream of the places of the measurement based on the local coefficient of width spread due to respective bulgings, (b) the amount of width reduction at each of the vertical roll stands located downstream of the vertical roll stand where the opening thereof is to be controlled, (c) said reference coefficient of width spread due to bulging and (d) said values of width variation at the respective portions; and (6) controlling the opening of at least one of the vertical roll stands located downstream of said place of measurement so that said required amount of modification for screwdown is applied over at least the entire middle area out of the entire area of said material to be rolled.

4,346,576

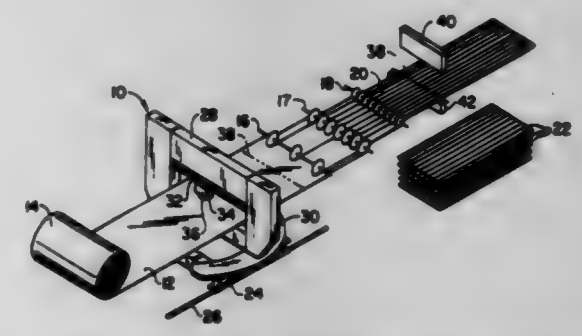
APPARATUS FOR SEVERING CORRUGATED METAL PRODUCTS

Eugene W. Sivachenko, 6471 Riverside Dr., Redding, Calif. 96001

Continuation of Ser. No. 932,253, Aug. 9, 1978, abandoned. This application Jul. 14, 1980, Ser. No. 167,942

Int. Cl.³ B21C *37/12*

U.S. Cl. 72—49 29 Claims



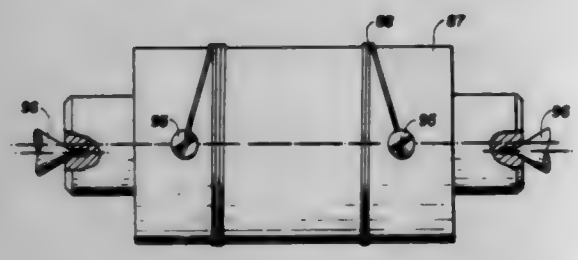
1. Apparatus for forming corrugated metal product from a substantially flat metal sheet comprising in combination: a corrugator having a plurality of cooperating sets of first and second corrugating rolls arranged so that the sheet, when passed between the rolls, is longitudinally deformed to define parallel, longitudinally extending, side-by-side corrugations; means for advancing the sheet past the roll sets to thereby longitudinally corrugate the sheet; means for forming a transverse score line in the sheet extending from a first face of the sheet towards a second, opposite face thereof including; a platform movable in the direction of travel of the sheet and positioned proximate the sheet and upstream of the corrugator, means for connecting the platform with the sheet so that the platform moves with the same speed as the sheet; and means located on the platform for scoring the sheet across its width from one edge of the sheet to the other edge thereof as the platform moves with the sheet; and means located downstream of the corrugator for and means located downstream of the corrugator for applying a force acting transversely to the faces of the corrugated plate in the vicinity of a score line; whereby the corrugated metal product is severed from a remainder of the sheet in the form of a length of corrugated plate.

5. Apparatus according to claim 1 including a pair of rails oriented parallel to the direction of travel of the sheet upstream of the corrugator, and wherein the platform slides along the rails so as to be movable in the direction of travel of the sheet.

4,346,577
METHOD FOR PRODUCING CURVED VALVE NEEDLES

Klaus-Jürgen Peters, Affalterbach; Rudolf Krauss, Stuttgart, and Ernst Binggeser, Asperg, all of Fed. Rep. of Germany, assignors to Robert Boech GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,224
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934217
Int. Cl.³ B24B *19/16*; F02M *69/00*; B21F *3/04*
U.S. Cl. 72—129 7 Claims



1. A method for producing a curved valve needle which comprises:

winding a spring-like wire of uniform contour around a mandrel to form a coil of separate side-by-side windings and securing each end of the coil to said mandrel.

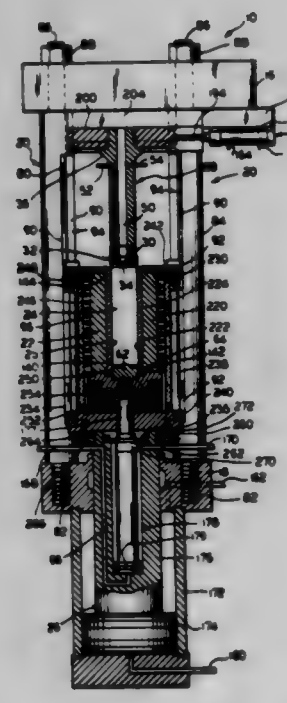
grinding down said spring-like coil lengthwise of said mandrel such that the contour of each winding is similarly ground down along its circumference from a thinnest point in each direction to its normal uniform contour, and

cutting each winding at its thinnest ground down point and at a point 180° therefrom to provide two similar curved valve needles.

4,346,578
EXTRUSION PRESS AND METHOD

Nelson K. Harrison, and Dana B. Lamb, both of 6901 W. 30th St., Berwyn, Ill. 60402

Division of Ser. No. 755,747, Dec. 30, 1976, Pat. No. 4,308,742.
This application Dec. 22, 1980, Ser. No. 218,353
Int. Cl.³ B21C *23/21*
U.S. Cl. 72—271 11 Claims

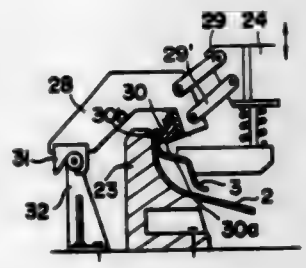


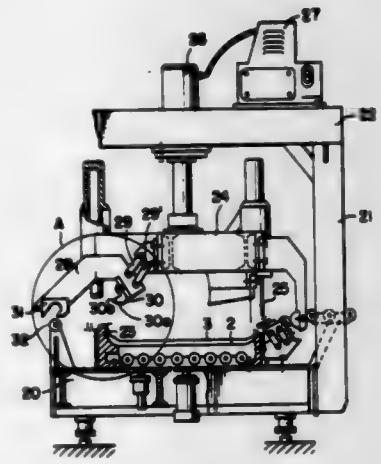
1. Apparatus for extruding high strain rate sensitive metal, said apparatus including a first platen, a receiver for receiving a to-be-extruded metal billet, said receiver being mounted on the platen, a second platen, a ram mounted on the second platen and extending towards said receiver, said ram having means for mounting an extrusion die at one end for extruding metal from within the receiver, tie rods holding the platens against separating movement by the forces generated due to the extrusion action, said tie rods taking the thrust which is exerted due to the extrusion action, said rods being pre-tensioned with a tension that is greater than the forces that will be exerted on them by the aforementioned thrust, and compression columns paralleling the respective rods and constituting stops taking the thrust of the pretension of the rods and determining the spacing between the platens, characterized by the fact that the columns are of cast iron and of a cross sectional area such that their reduction in length due to the thrust exerted on them by the pretension of the tie rods is negligible so that during the extrusion action there is no more than negligible changes in the position of the stop portion of each compression column due to changes in thrust pressure exerted upon the column by the tie rods.

4,346,579
HEMMING APPARATUS

Huehiro Takatsu, c/o Kabushiki Kaisha Takatsu Seisakusho, 22, 3-chome, Nanabancho, Minato-ku, Nagoya-shi, Aichi-ken, Japan

Filed Mar. 14, 1980, Ser. No. 130,528
Claims priority, application Japan, Mar. 15, 1979, 54-30418
Int. Cl.³ B21D *5/04, 5/16, 11/00*
U.S. Cl. 72—314 7 Claims





1. A hemming apparatus comprising a lower body, a bottom form mounted on said lower body, an upper body mounted on said lower body and vertically movable with respect to said lower body so as to clamp a work intermediate said bottom form and said upper body, a main hemming means, a pair of links connecting said main hemming means to said upper body, which operate as a parallel linkage in a vertical direction, and inclined downwardly to the main hemming means from the upper body, a bending blade attached to said main hemming means and comprising integrally formed bending blade members one of which is used for a preliminary bending of the work and the other of which is used for a primary bending of the work, a guide attached to said lower body and a shifting cam attached to said main hemming means and engageable with said guide so as to shift said main hemming means laterally with respect to the vertical movement in accordance with the downward movement of said upper body and the movement of said links wherein means is provided for raising the upper body to an extent that said main hemming means is in spaced, non-

contacting relation to said guide, said guide coming into engagement with said shifting cam to move said main hemming means such that said preliminary bending blade member is applied to the work at an angle with respect to the surface to be hemmed and such that said primary bending blade member is positioned parallel to the surface of the bottom form when the work is in its final bent stage.

4,346,580

MANUFACTURE OF LIGHTWEIGHT DRAWN AND IRONED CAN BODIES

William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Aug. 26, 1980, Ser. No. 181,467
Int. Cl.[3] B21D *45/00*
U.S. Cl. 72—344 8 Claims



1. Structure for forming lightweight flat-rolled sheet metal into a unitary can body having a closed bottom wall and an elongated sidewall defining an open end longitudinally opposite to the closed bottom wall,

the elongated sidewall of such unitary can body being formed by ironing in which sidewall metal of a seamless unitary cup-shaped article, having an open end and a closed end, is reduced in thickness and elongated by passage of the cup-shaped article through a plurality of ironing rings,

comprising

an elongated, plunger-type ironing mandrel,

such mandrel including

a work input end adapted to be supported by machine structure for providing ironing force,

a central longitudinal axis,

an external sidewall radially spaced from the central longitudinal axis so as to present a substantially circular configuration in a plane perpendicular to the central longitudinal axis, and

a terminal end longitudinally opposite to the work input end,

such terminal end defining a bottom wall configuration for contacting the interior surface at the closed end of the cup-shaped article,

the external sidewall of such ironing mandrel presenting a preselected surface configuration for formation of the can body sidewall during ironing,

the configuration of such mandrel external sidewall surface being preselected along its longitudinal length from a location contiguous to the terminal end to a predetermined location contiguous to the work input end of such mandrel,

such preselected configuration sidewall surface including

a main body portion extending over a major portion of the longitudinal length of such mandrel from its terminal end toward its work input end, and

a transition zone extending longitudinally from such main body portion toward the work input end,

the exterior sidewall surface of the ironing mandrel transition zone presenting a uniformly tapered surface extending longitudinally of the ironing mandrel,

the tapering of such transition zone surface being such that the exterior diameter of the ironing mandrel beyond the main body portion and extending in the direction of the work input end is uniformly decreased in relation to a main body portion of the ironing mandrel which presents the largest diameter dimension of the preselected surface configuration of the ironing mandrel,

a trim height plane which is perpendicular to the central longitudinal axis of the mandrel establishes a location along the length of the ironing mandrel corresponding to the desired height of an ironed can body after trimming subsequent to ironing and stripping of the formed can body from the mandrel,

the transition zone tapered surface being located at such trim height plane and extending in longitudinally opposite directions from such trim height plane,

the transition zone tapered surface having a predetermined angular relationship to the central longitudinal axis of the ironing mandrel,

such predetermined angular relationship and location of such transition zone surface being selected such that:

the sidewall of a can body being ironed has a greater thickness than the main body portion sidewall thickness in approaching such trim height plane to provide desired flanging metal thickness at the trim height plane, and

ironing of the can body sidewall extends beyond such trim height plane so that sidewall metal expires along such transition zone tapered surface beyond the trim height plane in the longitudinal direction of the work input end of the mandrel so as to present edge metal at the open end of the ironed can body of a thickness greater than that of sidewall metal at the trim height plane,

such edge metal being presented at a location where such transition zone continues establishing a tapered exterior mandrel contact surface extending toward the work input end of the mandrel, such contact surface being of smaller diameter than that existing at the edge metal location.

4,346,581

APPARATUS FOR MANUFACTURING FITTINGS

Hiroyuki Ando, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 17, 1980, Ser. No. 198,213
Claims priority, application Japan, Oct. 18, 1979, 54-133609
Int. Cl.[3] B21D *22/00*
U.S. Cl. 72—347 4 Claims

1. An apparatus for manufacturing fittings, comprising:

a bed;

a lower die mounted on said bed, said lower die having formed therein a stepped bore adapted to receive a cylindrical blank to be worked;

a hollow knockout slidably mounted in said stepped bore;

a slide;

holder means fixedly secured to said slide, said holder means having a first bore formed therein;

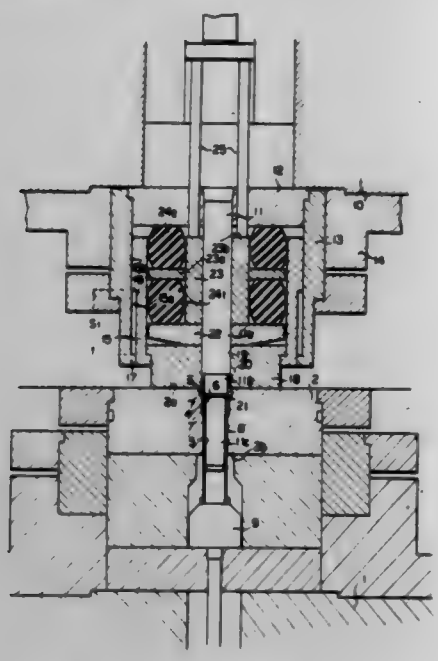
a cylindrical member slidably fitted in said holder means;

an upper die mounted in said cylindrical member, said upper die having a second bore formed therein;

a punch fixedly secured to said slide and inserted in the first and second bores of said holder means and said upper die;

a sleeve mounted on and around said punch;

cushion cylinder means for biasing said sleeve and said upper die downwards; and



elastomer means disposed around said sleeve between said holder means and said upper die for biasing said upper die downwards after said upper die is lowered on said lower die.

4,346,582

METHOD FOR FLATTENING CORRUGATED HEAT EXCHANGER PLATES

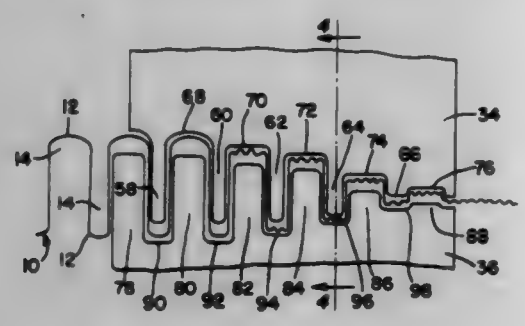
John M. Bailey, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00082, § 371 Date Jan. 28, 1980, § 102(e) Date Jan. 28, 1980, PCT Pub. No. WO81/02121, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 28, 1980, Ser. No. 165,831

Int. Cl.[3] B21D *13/02, 37/08, 43/02, 53/04*

U.S. Cl. 72—379 6 Claims



1. A method for crushing a portion of corrugated sheet in an area extending transversely to the corrugations thereof without blocking the passages between the ridges of the uncrushed portion of said corrugated sheet which includes the steps of inserting a spacing member into each of the passages on both sides of at least one ridge of said corrugated sheet in a transition area in the area to be crushed located between the uncrushed portion of said corrugated sheet and the remainder of the area to be crushed, crushing the ridge in the area between the spacing members, withdrawing the spacing members, subsequently crushing the remainder of the area to be crushed without the use of spacing members.

4,346,583

METHOD AND APPARATUS FOR DETERMINING THE HYDROGEN CONTENT OF A GAS

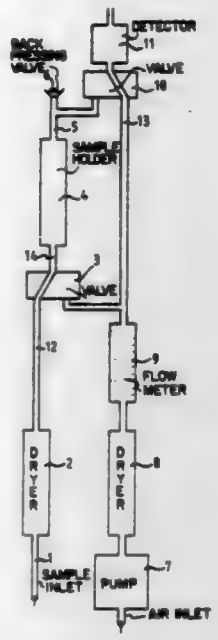
Herman M. Hoogstraat, 10 Passeweg 8, 8084 AN'tHarde, Netherlands

Filed Jun. 6, 1979, Ser. No. 45,879

Claims priority, application Netherlands, Jun. 12, 1978, 7806340

Int. Cl.[3] G01N *31/00*

U.S. Cl. 73—19 3 Claims



1. A method for determining the hydrogen content of a gas and more specifically the hydrogen content of a person's expiratory air comprising the following steps: leading the gas of which the hydrogen content is to be determined through a sample-holder, sampling the gas to be measured by closing the outlet and inlet of the sample-holder and, finally, determining the hydrogen content by connecting the outlet of the sample-holder with a detector and introducing air or another gas at a fixed rate at a predetermined overpressure into the inlet of the sample-holder, so as to drive the contents of the sample-holder i.e. the gas-sample through the detector at a fixed rate.

4,346,584

GAS ANALYZER

John R. Boehringer, 427 Parkview Dr., Wynnewood, Pa. 19096

Filed Oct. 20, 1980, Ser. No. 199,110

Int. Cl.[3] G01N *31/06*

U.S. Cl. 73—23 25 Claims

1. Gas analyzer comprising:

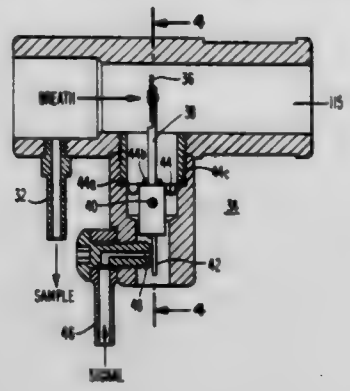
(a) a volumetric gas sampling means comprising a gas receiving cylinder and piston;

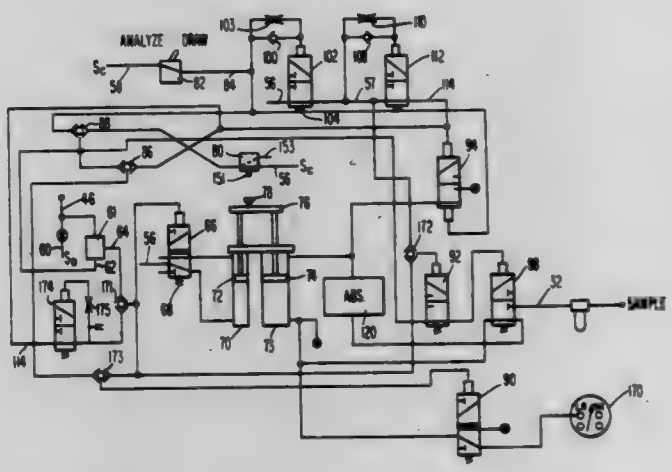
(b) sampling means actuator for reciprocally driving said sampling means piston;

(c) means for triggering said actuator;

(d) valve means for selectively connecting said sampling means to a source of said sample gas, during the sample phase of operation of said analyzer, or to a closed recycle circuit including an absorber for a gas, the content of

which in said sample gas is to be measured during the analyze phase of operation of said analyzer; and





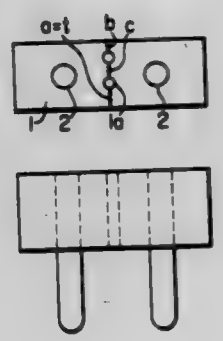
(e) means for comparing the volume of sample gas in said recycle circuit before and after passage of said gas through said recycle circuit and absorber.

4,346,585

GAS DETECTOR

Eturo Yasuda; Yoshihiro Segawa, both of Okazaki, and Minoru Ohta, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Division of Ser. No. 958,681, Nov. 8, 1978, Pat. No. 4,287,751.
This application Dec. 4, 1980, Ser. No. 213,104
Claims priority, application Japan, Nov. 9, 1977, 52/134259
Int. Cl.³ G01N *27/04*
U.S. Cl. 73—23 4 Claims



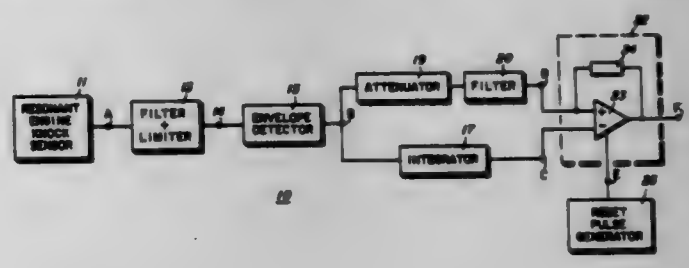
1. A gas detector comprising: a pair of electrodes; and a gas detector element comprising a sintered metal oxide block having two parallel opposed rectangular surfaces, said block having an electrical resistance that is a function of a gas to be detected, said electrodes being parallel to one another, normal to a lengthwise axis thereof, lying in a plane disposed centrally between and parallel to said surfaces, spaced a first predetermined distance apart, and embedded in and extending substantially through said block from one side to an opposing side to define a portion thereof, said portion having at least one notch disposed at said surface and extending therethrough, forming a further portion therebetween, said further protion extending substantially therethrough and of a predetermined thickness less than 0.6 millimeters for shortening the penetration time therethrough of said gas.

4,346,586

ENGINE KNOCK SIGNAL PROCESSING CIRCUIT

John H. Furrey, Schaumburg, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 22, 1980, Ser. No. 171,230
Int. Cl.³ G01L *23/22*; F02P *5/04*
U.S. Cl. 73—35 9 Claims



1. An analog engine knock signal processing circuit comprising:

engine knock sensor means for providing an analog engine knock signal representative of engine knock and engine background noise;

detector means, including a rectifier means, coupled to said knock sensor means for receiving and rectifying said knock signal and developing an envelope output signal, at an envelope terminal, representative of the peak magnitude signal envelope of the knock signal;

integrator means coupled to said envelope terminal for receiving and integrating said envelope signal and providing an average signal related to the average magnitude of said envelope signal, said average signal being provided at an average terminal, the amplitude of said average signal having a first response time in response to amplitude changes in said envelope signal,

attenuator means coupled to said envelope terminal for receiving said envelope signal and providing an amplitude attenuated signal related to a predetermined amplitude attenuation of said envelope signal, the amplitude of said attenuated signal responding to changes in the magnitude of said envelope signal faster than the amplitude of said average signal, said attenuator means including circuitry for adjusting the amplitude of said attenuated signal to less than the amplitude of said average signal for constant amplitudes of said envelope signal; and

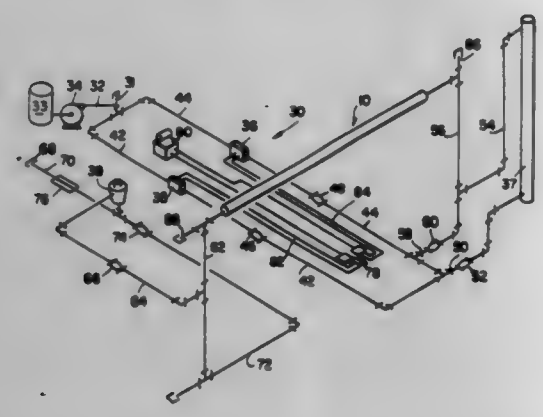
comparator means coupled to both said integrator means and said attenuator means for receiving both said average signal and said attenuated signal and providing a knock detection output signal at an output terminal in response to the amplitude of a faster responding signal derived from said attenuated signal exceeding the amplitude of said average signal, whereby by adjusting the amount of attenuation of said attenuator means, desired knock detection characteristics of the signal processing circuit for varying amplitudes of engine background noise can be readily obtained and by using the envelope signal some immunity from falsely detecting short duration engine noise spikes as engine knock is obtained.

4,346,587

PROCESS AND APPARATUS FOR TESTING FLUIDS FOR FOULING AND ANTIFOULANT PROTOCOL

Nicholas J. Brindak, Morris Plains, N.J., assignor to Drew Chemical Corporation, Boonton, N.J.

Filed Oct. 30, 1980, Ser. No. 202,352
Int. Cl.[3] G01N *17/00*
U.S. Cl. 73—61.2 18 Claims



1. An apparatus for testing a fluid to generate fouling data and other parameters to develop an antifoulant protocol for said fluid, which comprises:

a piping assembly including fluid inlet and outlet means and a heat transfer test assembly, said heat transfer test assembly including a heating member including a heating element disposed within a conduit means having a passageway for said fluid;

means for measuring temperature of said fluid entering said heat transfer test assembly;

means for supplying electrical energy of a pre-select quantity to said heating element;

means for measuring a wall temperature of said heating element;

flow means for measuring velocity of said fluid through said conduit means;

means for generating fouling data from said pre-select quantity of electrical energy supplied to said heating element, said measured temperature of said fluid and said measured wall temperature of said heating member; and

means for introducing an antifoulant into said fluid.

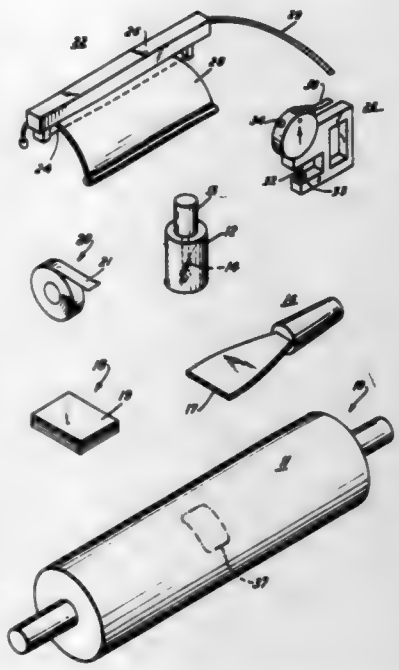
4,346,588

REPRODUCING SURFACE TESTING METHOD AND APPARATUS

Douglas E. Tuttle, 1000 Mary Allen La., Mountainside, N.J. 07092

Filed Dec. 22, 1980, Ser. No. 218,341
Int. Cl.[3] G01B *5/28*
U.S. Cl. 73—105 9 Claims

1. The method of measuring the condition and volume of a recessed reproducing surface comprising the steps of applying a fluid resin to an area of said reproducing surface to substantially fill the recesses within said areas, superimposing on and beyond said area a non-fibrous transparent flexible sheet adherent to said resin, solidifying said resin to form a solid impression, separating said sheet from said surface with said resin impression adherent thereto and determining the thickness of



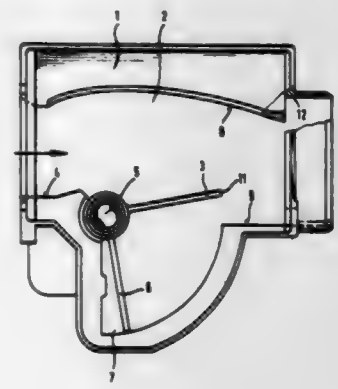
said resin impression adherent to said sheet as an indication of the condition of said printing surface.

4,346,589

FLOW RATE METER

Wolfgang Kienzle; Werner Paschke, both of Schwieberdingen, and Erwin Nägele, Hessigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,437
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944469
Int. Cl.[3] G01F *1/28*
U.S. Cl. 73—118 3 Claims

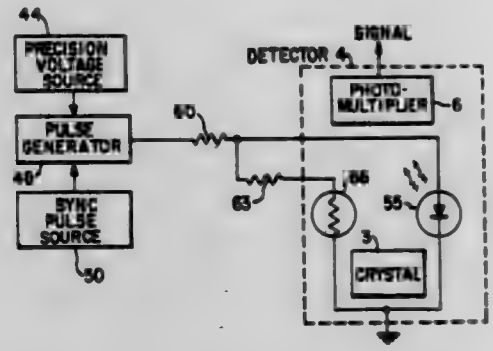


1. A flow rate meter having a housing and an air medium flow measuring device disposed in a flow channel between an inlet end and an outlet end, said measuring device being pivotable about a support shaft in accordance with the quantity of air medium flowing therethrough and counter to a restoring force, said measuring device arranged to measure the quantity of air medium aspirated by an internal combustion engine via an air intake tube, characterized in that said flow channel has a first abruptly enlarged cross section immediately downstream of said measuring device and a second abruptly enlarged cross section adjacent said outlet end downstream of said first abruptly enlarged cross section in order to influence the characteristic curve of the flow rate meter.

4,346,590
GAIN STABILIZATION FOR RADIOACTIVITY WELL LOGGING APPARATUS

Winthrop K. Brown, Bellaire, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 2, 1980, Ser. No. 182,899
Int. Cl.³ G01V 5/12
U.S. Cl. 73—151 7 Claims



1. In a radioactive well logging apparatus which bombards earth formations and fluids in a vicinity of a well borehole with neutrons from a neutron source and detects resulting gamma radiation with a detector which includes a scintillation crystal for emitting flashes of light in response to the gamma radiation, a photomultiplier tube which provides voltage pulses in response to the flashes of light furnished, a light emitting diode, oscillator means for causing said light emitting dioded to emit light scintillations, and means for mounting said light emitting diode between the scintillation crystal and the photomultiplier tube, said means for mounting further optically coupling light scintillations from said light emitting diode for gain stabilization and said scintillation crystal to said multiplier tube for well logging, an improvement comprising:

temperature sensing means, and

means connected between the light emitting diode and the oscillator means and to the temperature sensing means and being responsive to the temperature sensing means for maintaining the intensity of light emitted by the light emitting diode as the temperature changes.

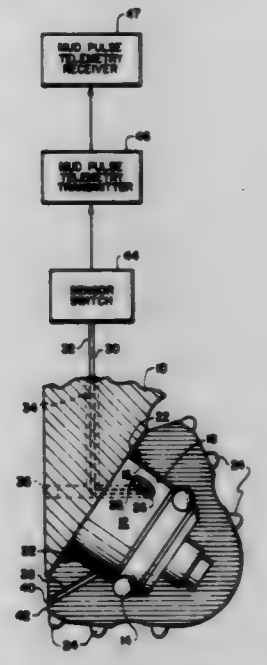
4,346,591
SENSING IMPENDING SEALED BEARING AND GAGE FAILURE

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Aug. 21, 1981, Ser. No. 295,025
Int. Cl.³ G01M 3/16
U.S. Cl. 73—151 20 Claims

1. In a drilling tool having a sealed and lubricated bearing assembly, means for sensing the admission of aqueous drilling fluid to a lubricant cavity of the bearing assembly, comprising, in combination:

means communicating with the lubricant cavity of the bearing assembly, and activated upon the presence of aqueous

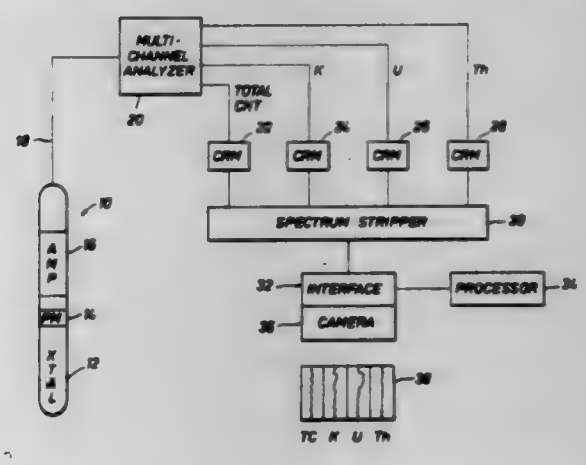


drilling fluid, for delivering a signal upon the presence of aqueous drilling fluid in the lubricant cavity.

4,346,592
METHOD FOR DETERMINING EFFECTIVE RESERVOIR POROSITY

Walter H. Fertl, Houston, Tex., and Marvin R. DeVries, Tulsa, Okla., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 18,686, Mar. 6, 1979, abandoned. This application Sep. 3, 1980, Ser. No. 183,772
Int. Cl.³ E21B 49/00
U.S. Cl. 73—152 15 Claims



12. A method for determining the effective porosity of earth formations traversed by a borehole within a geologic region; comprising:

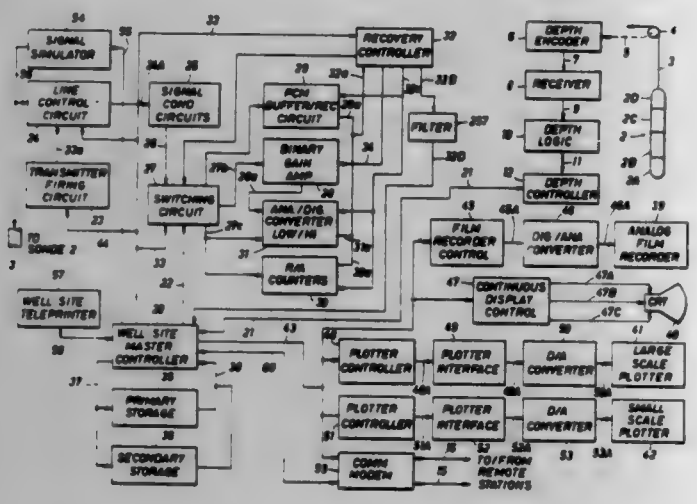
deriving measurements functionally related to the shaliness of said earth formations traversed by said borehole; and

combining said shaliness measurements with a compaction trend for said geologic region to provide an indication of the effective porosity of said earth formations.

4,346,593
WELL LOGGING CORRECTION METHOD AND APPARATUS

Anthony P. S. Howells; Raman Viswanathan, and Jorg A. Angehrn, all of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 54,072, Jul. 2, 1979, Pat. No. 4,297,879, which is a continuation-in-part of Ser. No. 949,592, Oct. 10, 1978. This application Oct. 9, 1980, Ser. No. 195,689
Int. Cl.[3] F21B *49/00*
U.S. Cl. 73—152 22 Claims



12. Method for combining a plurality of well logging measurements and the like, comprising

electrically generating a first digital indication of the magnitude of a selected lithological parameter of the earth substances traversed by a borehole,

electrically generating a second digital indication of the magnitude of a selected lithological parameter of the earth substances traversed by a borehole,

electrically generating a digital indication of borehole depth with respect to said first digital measurement,

displaying a visual representation of said first, second and third digital indications, and

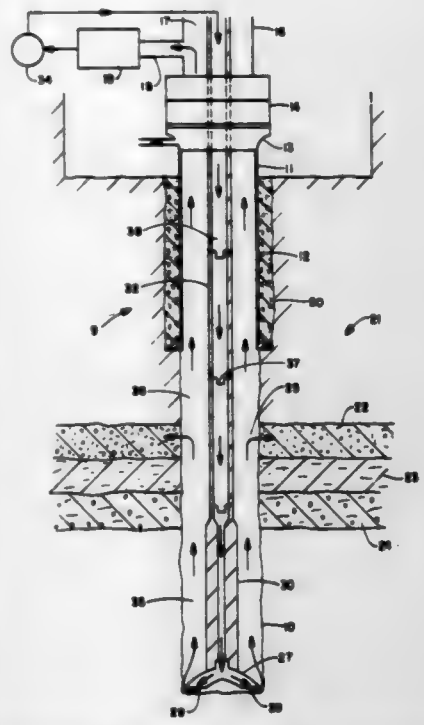
aligning said visual representation of said second digital indication with said first digital indication.

4,346,594
METHOD FOR LOCATING THE DEPTH OF A DRILL STRING WASHOUT OR LOST CIRCULATION ZONE

Allen J. Owings, 710 Saint Ives, Houston, Tex. 77079

Filed Nov. 14, 1980, Ser. No. 206,572
Int. Cl.[3] E21B *47/10*
U.S. Cl. 73—155 6 Claims

1. In an oil well drilling operation, a method of determining the depth of a drill string washout, said method comprising determining that drilling fluid return volume from the well substantially equals the drilling fluid input volume to the well; determining that a substantial drop in surface circulating pressure has occurred; for given well drilling conditions, determining a first graph of the normal circulating pressures of the drilling fluid versus the depth of points along the flow path within the well; determining for said well drilling conditions a second graph of the actual circulating pressure of the drilling fluid versus the depth of points along the flow path within the well; superimposing one graph over the other graph so as to cause lines representing circulating pressures in the drill string to intersect at the same depth as do the lines representing

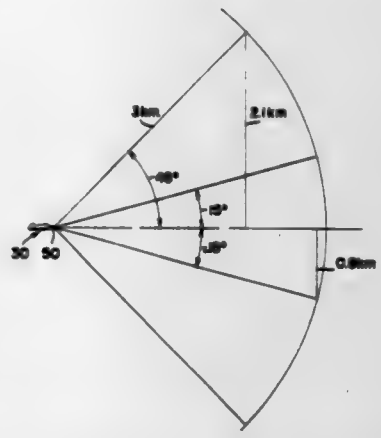


circulating pressures in the annulus, the depth of duel intersection being the depth of the washout.

4,346,595
CAT ALTITUDE AVOIDANCE SYSTEM

Robert A. Froech, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Bruce L. Gary, Pasadena, Calif.

Filed Jan. 12, 1981, Ser. No. 224,231
Int. Cl.[3] G01C *21/00*; G01N *1/08*
U.S. Cl. 73—178 R 18 Claims



1. A method for sensing temperature inversion relative to an aircraft comprising:

directing a microwave radiometer, mounted in the aircraft, into the atmosphere, to receive microwaves at each of a plurality of different angular elevations from the horizontal;

measuring an output of the radiometer at each of said elevations; and

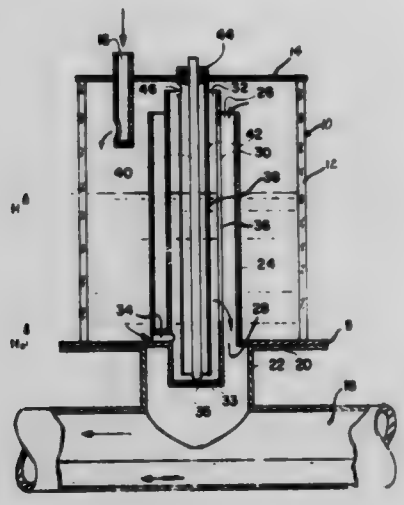
determining elevations at which the output does not substantially decrease with increasing elevation angles.

4,346,596

MILK FLOW MEASUREMENT APPARATUS

Emanuel Diamant; Lev Diamant, and Benjamin Grushko, all of Upper Galilee, Israel, assignors to Mahanaim Dink Hydraulica, Kibbutz Mahanaim, Israel

Filed Jul. 18, 1980, Ser. No. 170,085
Claims priority, application Israel, Sep. 7, 1979, 58203
Int. Cl.³ G01F *1/22, 15/08*
U.S. Cl. 73—200 12 Claims



1. Apparatus for milk flow measurement comprising:

debubbling means for receiving milk which may contain bubbles and removing bubbles therefrom;

measuring apparatus receiving milk from said debubbling means and having an outlet the rate of outflow therethrough being a predetermined function of the amount of milk contained therein; and

means for sensing the amount of milk contained in said measuring apparatus, thereby to determine the rate of flow; and

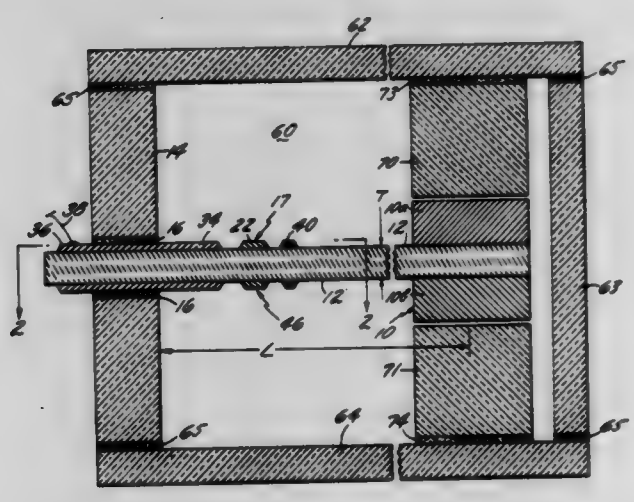
wherein said debubbling apparatus comprises a first container and said measuring apparatus comprises a second container disposed within said first container and connected thereto by a passageway which communicates with the bottom of said first container to permit only debubbled milk to enter said measuring apparatus.

4,346,597

DUAL RANGE, CANTILEVERED MASS ACCELEROMETER

Donald E. Cullen, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 3, 1980, Ser. No. 203,822
Int. Cl.³ G01P *15/08*
U.S. Cl. 73—510 3 Claims



1. A dual range, cantilevered mass accelerometer comprising:

a beam comprised of piezoelectric material rigidly disposed at a proximal end so as to form a cantilever and having an inertial mass disposed at the distal end thereof, a boundary acoustic wave device formed on said beam and oriented for significant frequency sensitivity to strain in said beam, and circuit means for providing a signal indication of the boundary acoustic velocity of a wave in said boundary acoustic wave device,

characterized by:

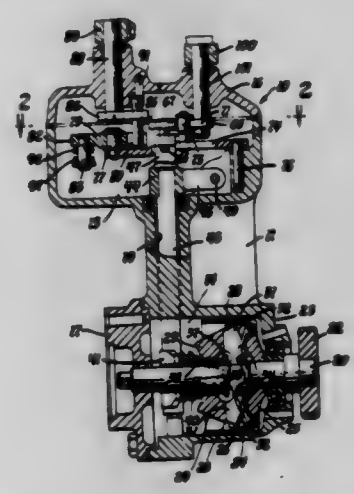
a pair of stops disposed adjacent said inertial mass and separated therefrom by a distance equivalent to deflections of said beam caused by accelerations of a magnitude defining the desired high end of the low range of said accelerometer, whereby said beam operates as a cantilever within said low range and operates as a beam supported at both ends in said high range.

4,346,598

CAM ACTUATED FUEL MODULATING ENGINE GOVERNOR

Edwin E. Hebb, Dearborn, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 970,456, Dec. 18, 1978, Pat. No. 4,235,212.
This application Jun. 19, 1980, Ser. No. 161,033
Int. Cl.³ G05D *13/14*
U.S. Cl. 73—536 4 Claims



1. A rocking flyweight governor mechanism, said mechanism comprising

a support member rotatable about an axis and having a radial support surface extending outwardly from and generally normal to said axis,

at least one flyweight supported on said surface for rotation therewith, said flyweight having a primary weight portion spaced from said axis and said support surface and a finger portion extending inwardly adjacent said axis and having a convexly curved side rockingly engaging said radial support surface to establish an effective line of contact therewith which moves toward or away from said axis in accordance with corresponding rocking motion of the flyweight on the radial support surface,

restraining means acting between radially relatively outward portions of said support member and relatively inward portions of said flyweight to restrain said flyweight against substantial radial sliding motion outward from said axis on said radial support surface and limit said flyweight to essentially rocking motion,

axially movable abutment means adjacent said axis and opposing said finger portion inwardly of its contact line with said radial support surface and

means biasing said abutment means and said finger into engagement adjacent said axis during limited axial movement of said abutment means and accompanying rocking motion of said flyweight,

whereby, upon rotation of said flyweight mechanism at increasing speeds, centrifugal force on said flyweight primary weight portion increasingly tends to rock said

flyweight outwardly, thereby urging said abutment means axially against the force of said biasing means,

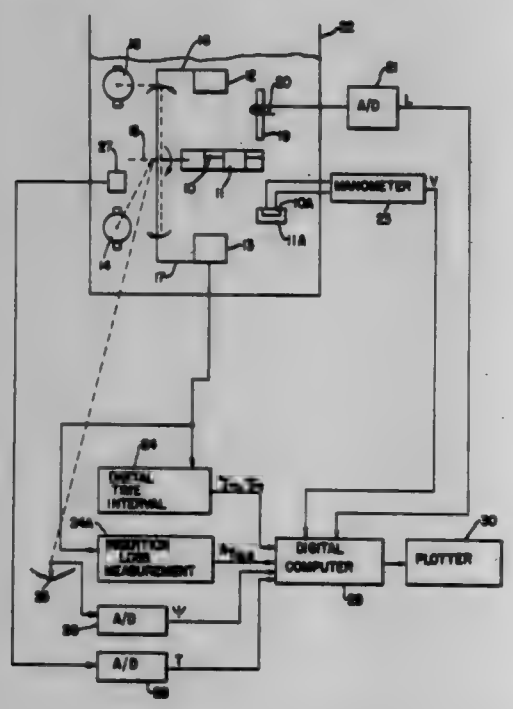
the effect on the abutment means of the exponential increase in centrifugal force with speed and outward rocking of the flyweight being in part offset by a coincidental increase in the lever arm distance from the contact line of the finger with the radial support surface to the engagement point of the finger with the movable abutment.

4,346,599

METHOD AND APPARATUS FOR ULTRASONICALLY TESTING POLYMERS

Albert J. McLaughlin, Lancaster, and Gary W. Paddison, Dover, both of Pa., assignors to Armstrong World Industries, Lancaster, Pa.

Filed Sep. 8, 1980, Ser. No. 184,786
Int. Cl.[3] G01N *29/00*
U.S. Cl. 73—597 25 Claims



1. A method of ultrasonically testing material comprising:

mounting a specimen of said material in a specimen holder;

immersing said specimen holder in a sound-conducting fluid;

obtaining ultrasonic measurements with a transmitting transducer and receiving transducer supported in opposed orientation on opposite sides of said sample holder;

rotating said transducers about an axis between said transducers;

reorienting said transducers relative to said sample holder;

obtaining new ultrasonic measurements with said transducers;

repeating the steps of obtaining ultrasonic measurements for different temperatures of said fluid;

measuring in situ the temperature dependent characteristics of said specimen at each temperature; and

determining the intrinsic storage moduli and the intrinsic loss moduli of said specimens as a function of temperature from said ultrasonic measurements and from said temperature dependent characteristics.

4,346,600

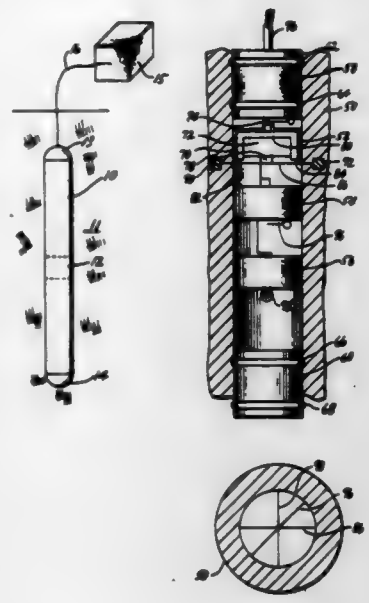
STRESS SENSOR PARTICULARLY SUITABLE FOR ELASTIC, PLASTIC AND VISCO-ELASTIC MATERIALS

Jerome B. Johnson, Goleta, Calif., and Gordon F. N. Cox, Thetford, Vt., assignors to Global Marine Inc., Los Angeles, Calif.

Filed Jul. 28, 1980, Ser. No. 172,678
Int. Cl.[3] G01L *1/10*
U.S. Cl. 73—768 12 Claims

1. An improved stress sensor for imbedding in a host material comprising:

(a) a rigid, elongated case having an effective Young's modulus relative to the host material to produce a ratio of the Young's modulus of the host material to the effective Young's modulus of the case of less than or equal to 0.25, and at least one end adapted to be imbedded in the host material; and



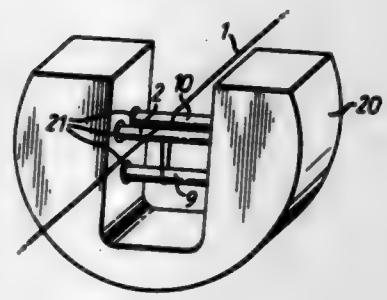
(b) at least one stress sensing transducer secured in the case and directly sensitive to stress induced on the case, the transducer being remote from the end that is adapted to be imbedded such that stress anomalies on such end do not affect the transducer.

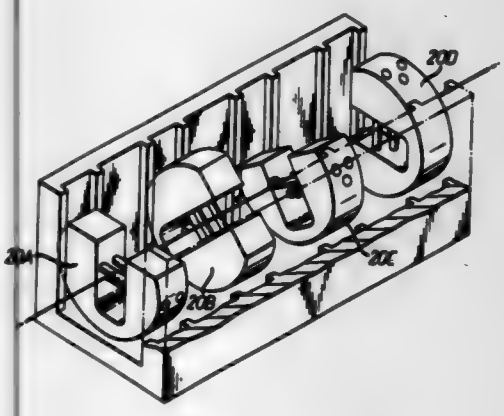
4,346,601

TESTING GLASS FIBRES

Paul W. France, Suffolk, England, assignor to The Post Office, London, England

Filed Aug. 18, 1980, Ser. No. 179,085
Int. Cl.[3] G01N *3/08*
U.S. Cl. 73—829 12 Claims





8. Apparatus for proof-testing glass fibres to detect glass fibres having a strength greater than a predetermined value, said apparatus comprising n sets of m rollers, where n and m are greater than 1, each roller being free to rotate, the rollers of each set of rollers being mounted in a respective one of n support means so that the rotational axes of the rollers in each set are parallel, and means for holding said n support means

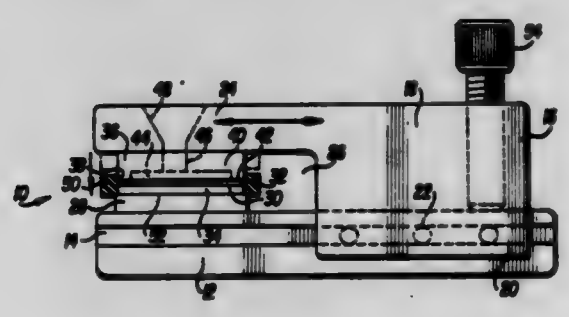
such that a plane extending perpendicularly through the rotational axes of the rollers of any one set is inclinded to similar planes through the rotational axis of the other sets of rollers, the arrangement being such that when a fibre is drawn through said sets of rollers maximum strain is induced in the fibre at positions substantially evenly distributed about the circumference of said fibre.

4,346,602

APPARATUS AND METHOD FOR MEASURING ADHESIVE BOND STRENGTH

Larry D. Gould, West Canaan, and Donald E. Garfield, Meriden, both of N.H., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 21, 1980, Ser. No. 198,977
Int. Cl.³ G01N 3/24, 33/44
U.S. Cl. 73—842 20 Claims



1. Apparatus for determining the adhesive bond strength of one material to another, comprising:

(a) a rigid base;

(b) a specimen of a first material fixed to said base and provided with a test surface;

(c) first means for providing a layer of a second material bonded to said test surface;

(d) means for selectively providing a fluid-tight seal between said test surface and said first means;

(e) second means for mounting said first means for movement relative to said test surface;

(f) third means for applying a force to cause relative movement between said base and said first means whereby the joint between said layer and said specimen is stressed; and

(g) fourth means for determining the magnitude of said force at which the adhesive bond fails between said first and second materials.

4,346,603

MICROFLOW TRANSDUCER

Carl E. Schmid, Easton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 6, 1980, Ser. No. 118,960
Int. Cl.³ G01F 1/70
U.S. Cl. 73—861.05 12 Claims

1. Apparatus for precisely measuring low mass flow rates of a high pressure fluid which comprises:

(A) a conduit defining an elongated passage therethrough having a fluid inlet and a fluid outlet;

(B) a piston within said passage propellable therealong by fluid flow through said passage, the cross-section of said piston substantially filling said passage;

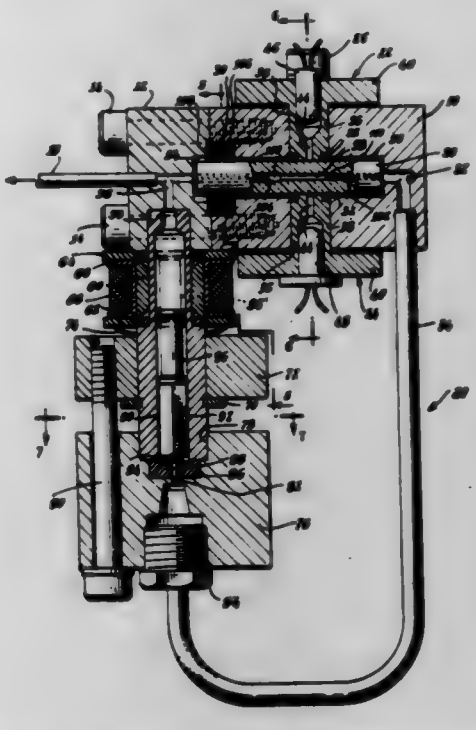
(C) a pressure vessel substantially enclosing said conduit, said pressure vessel defining

(1) a fluid supply passage arranged to channel pressurized fluid about the exterior of said conduit and into said fluid inlet, and

(2) a fluid discharge passage arranged to discharge fluid from said fluid outlet;

(D) sensor means positioned to detect the travel of said piston through a sensing region of said elongated passage in a direction from its fluid inlet to its fluid outlet;

(E) means responsive to said sensor for indicating the flow rate of the fluid in said elongated passage; and



(F) means for reversing the fluid flow direction in said elongated passage to return the piston substantially to its starting point.

4,346,604

ELECTROMAGNETIC FLOW PROBE

Richard K. Snook, Houston; Douglas R. Lester, Pasadena, both of Tex., William C. Childs, deceased, late of Houston, Tex., by Billie W. Childs executrix, assignors to Narco Bio-Systems, Inc., Houston, Tex.

Filed Jul. 14, 1980, Ser. No. 168,295
Int. Cl.³ G01F 1/58
U.S. Cl. 73—861.12 26 Claims



1. Apparatus for measuring fluid flow comprising:

(a) magnetic field production means, including means defining an operative gap, for producing a magnetic field within said operative gap with said magnetic field oriented generally along a first direction;

(b) housing means, including passage means for conducting said fluid flow through said housing means, selectively receivable by, and selectively positionable relative to, said magnetic field production means for conducting said fluid flow through said operative gap along a second direction;

(c) electrode and lead means, within said housing means, for detecting electric potential induced, within said operative gap, across the flow of fluid along a third direction; and

(d) alignment means, including selectively adjustable lug means, for holding, and selectively limiting the positionability of, said housing means relative to said magnetic field production means to effect alignment of said fluid flow within said operative gap along said second line, and to

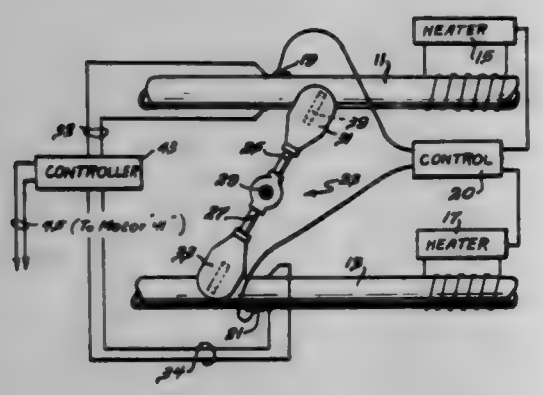
effect orientation of said electrode means for said detecting along said third line, when said housing means is so received by said magnetic field production means.

4,346,605

MAGNETIC FLOWMETER FOR ELECTRICALLY CONDUCTIVE LIQUID

Stanley B. Skladzien, Elmhurst, and Donald J. Raue, Naperville, both of Ill., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Aug. 18, 1980, Ser. No. 179,320
Int. Cl.³ G01F *1/58, 1/64*
U.S. Cl. 73—861.13 9 Claims



1. A magnetic flowmeter for an electrically conductive fluid comprising:

a first tube section having walls of non-magnetic material for passing a flow of said electrically conductive fluid;

a second tube section of non-magnetic material parallel to said first tube section but containing a still electrically insulative fluid;

means for producing a revolving magnetic field having at least two diametrically opposed components that synchronously cross the diameters of said first and said second tube sections, said magnetic field moving across said first tube generally in the direction of said flow of electrically conductive fluid;

means for comparing a first electrical signal induced by said revolving magnetic field across said flow of electrically conductive fluid with a second electrical signal induced across said still medium; and

means for varying and monitoring the frequency of of said revolving magnetic field to a frequency at which said first and said second electrical signals attain a predetermined relationship whereby the flow of said electrically conductive fluid is determined.

4,346,606

RATE METER

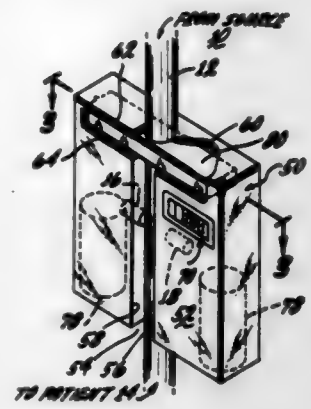
Raymond E. Cannon, San Diego; Jon A. Jenkins, Rancho Santa Fe, and Larry L. Wilson, Poway, all of Calif., assignors to IMED Corporation, San Diego, Calif.

Filed Mar. 10, 1980, Ser. No. 128,662
Int. Cl.³ G01F *13/00*; A61M *5/16*
U.S. Cl. 73—861.41 24 Claims

16. In combination for facilitating a visual display by a rate meter of the rate of fall of drops of fluid from a source to a patient,

a drip chamber for guiding the drops of fluid to the patient,

a cross bar fixedly disposed on the drip chamber for coupling to the rate meter, the cross bar being made from a resilient material and being provided with slots at its ends to enhance the resiliency of the cross bar, and



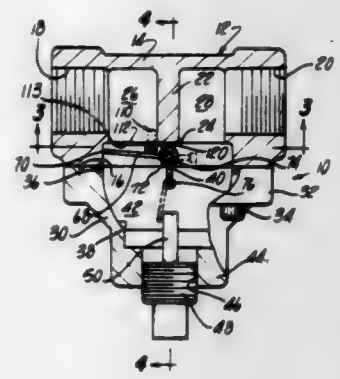
fingers at the ends of the cross bars to function as detents for retaining the rate meter.

4,346,607

FLUID FLOW METER WITH IMPROVED SEALING MEANS

Nils O. Roesen, 1755 E. Nine Mile, Hazel Park, Mich. 48030

Filed Mar. 24, 1980, Ser. No. 133,622
Int. Cl.³ G01F *1/28*
U.S. Cl. 73—861.75 6 Claims



1. A flow indicator device for a fluid system comprising a housing having a chamber, an inlet port and an outlet port registering with said chamber and adapted to be connected with said system; an interior wall extending into said chamber intermediate said inlet port and said outlet port; a vane member rotatably mounted in said housing on an axis disposed closely adjacent the free edge of said interior wall whereby said wall and said vane member cooperate to separate said inlet port from said outlet port; said housing being provided with interior walls having a substantially semi-spherical inner surface, said vane member having a substantially semicircular edge rotatable adjacent said semi-spherical surface, the center of said semi-spherical surface being displaced from the center of the semi-sphere circumscribed by said circular edge upon rotation of said vane member, whereby the space between said edge and said surface varies at each rotative position of said vane member; a shaft having opposite ends rotatably mounted in said housing; means mounting said vane member to said shaft such that said vane member rotates with said shaft about the axis of rotation of said shaft; the improvement comprising a one piece seal member, said seal member being thin walled and constructed of a resilient material, said seal member having a first portion and means for rigidly securing said first portion to said housing so that part of said first portion flatly abuts against said housing, and a second portion of said seal member formed at an end of said first portion and extending between said housing interior wall and said mounting means, said second portion extending substantially entirely along and abutting against the outer peripheral surface of said mounting means to prevent fluid leakage between said vane mounting means and said housing interior wall

and

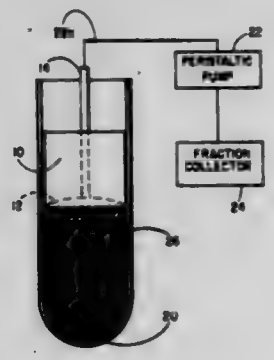
wherein said seal member is formed so that said second portion of said seal member is resiliently urged against said mounting means when said first portion of said seal member is secured to said housing.

4,346,608

FLOAT DEVICE FOR DENSITY GRADIENT FRACTIONATION

John G. Olenick, Laurel, and Patrick E. Lorenz, Olney, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 31, 1980, Ser. No. 174,069
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—863.21 2 Claims



1. In a system for fractional removal and collection of samples of a liquid contained in a tube comprising pump means for pumping out said samples of the liquid from said tube and collector means for separately collecting said samples, the improvement comprising a cylindrical plug device which floats on the surface of the liquid in the tube and which includes a length of sample conveyance tubing extending centrally therethrough in communication with the upper surface of the liquid in the tube, said plug device includes a concavity in the bottom surface thereof which facilitates the removal of air trapped between the bottom of said plug and the surface of the liquid prior to fractionation of said liquid and assures high resolution of sequential samples by minimizing turbulent flow and the consequent mixing of said liquid, and tube means for connecting said sample conveyance tubing to said pump means of the system so as to permit sequential and highly resolved removal of said samples in said tube from the upper surface of said liquid.

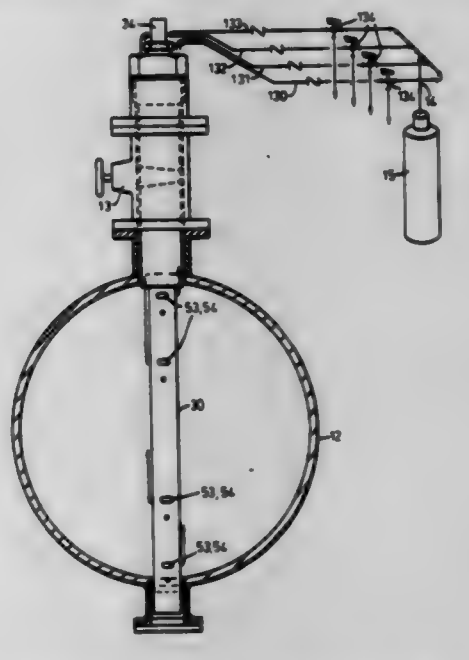
4,346,609

FLUID SAMPLING DEVICE

Hans A. Diesel, New Malden, England, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 24, 1980, Ser. No. 200,387
Claims priority, application United Kingdom, Nov. 6, 1979, 7938332
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—863.33 20 Claims

1. A fluid sampling device which, when assembled, comprises: a cylindrical sample receptacle having one end closed and the other end open, a sample entrance port in the cylindrical side of the receptacle, a sample discharge port for the discharge of samples of fluid from the interior of the receptacle; a piston reciprocable in the receptacle; a cam follower associated with the piston so that the follower and the piston move together, the cam follower having a part protruding through a slot in the cylindrical wall of the receptacle; a cylindrical sleeve in which the receptacle is received for relative rotation of the receptacle and sleeve; the sleeve having a sample entrance port which is arranged to be fully in register with the sample entrance port of the receptacle at a selected relative rotational position of the sleeve and the receptacle; the sleeve having an internal cam profile groove in which the protruding part of the cam follower is received and engaged by the sides of the groove to cause reciprocation of the piston in the receptacle during relative rotation of the sleeve and receptacle; a hollow body in which the cylindrical sleeve is received for relative rotation between the sleeve and the body; the body having a sample entrance port which is arranged to be fully in register with the sample entrance ports of the sleeve and the receptacle at a selected relative rotational position thereof; and means preventing relative rotation between the hollow body and the receptacle; the arrangement and construction of the device being such that the said sample entrance ports are fully



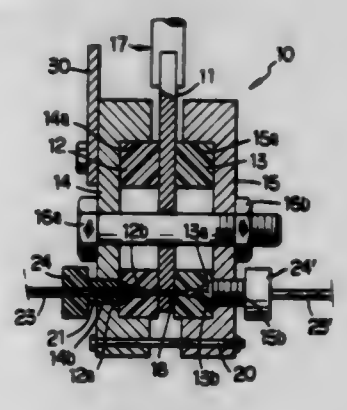
in register when the piston is positioned by the engagement of the follower and the cam profile groove substantially at the bottom of its reciprocating stroke relative to the position of the samle discharge port, and such that at least the sample entrance ports of the receptacle and sleeve are fully out of register when the piston is positioned nearer to the sample discharge port than the bottom of its reciprocating stroke, whereby on relative rotation of the sleeve and the receptacle, the movement of the piston towards the top of its stroke causes any contents of the receptacle to be expelled via the sample discharge port.

4,346,610

DEVICE FOR INTRODUCING MICRO AMOUNT OF SAMPLE INTO AN ANALYZING APPARATUS

Daido Ishii, Nagoya, and Hideki Konishi, Tokyo, both of Japan, assignors to Japan Spectroscopic Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,698
Claims priority, application Japan, Apr. 28, 1979, 54-53126
Int. Cl.³ G01N *1/20*
U.S. Cl. 73—863.73 11 Claims



1. A device for introducing micro amount of sample into an analysing apparatus comprising a valve disc of plate form, rotatably disposed about an axle thereof perpendicular to the surface of the valve disc, and a pair of secured supporting members disposed on either side of, for urging from either side

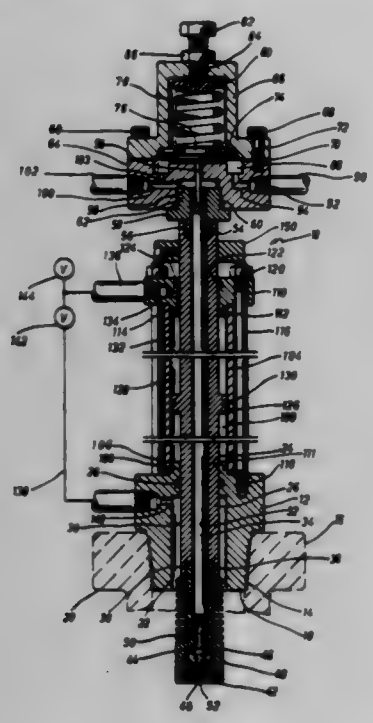
while supporting, said valve disc, and device characterized in that (1) said valve disc is provided with at least one carrier fluid flowing hole and at least one sample flowing hole having a capacity not exceeding 1 μl and having the identical capacity as a sample amount to be introduced, both holes being formed piercing through, and on a same circumferential circle with the center at the rotational axis of, said valve disc; (2) each of said supporting members is provided with at least one carrier fluid flowing passage and at least one sample flowing passage, both being formed piercing through each member at a position to be alignable with at least one of said carrier fluid flowing holes and at least one of said sample flowing holes; (3) said sample flowing hole communicated with said sample flowing passage can be moved to a position, owing to rotation of said valve disc, with a sample held therein at an amount identical to the interior capacity thereof, communicatable with the carrier fluid flowing passage; and (4) the sample held in said sample flowing hole is flowed together with a carrier fluid into said analysing apparatus wherein said pair of supporting members include respectively an annular body made of a synthetic resin for being urged onto the surface of said valve disc and an outer plate member having an annular recess for being fitted by said annular body, both being provided with said carrier fluid flowing passage and said sample flowing passage formed respectively piercing therethrough for being communicated with said carrier fluid flowing hole and said sample flowing hole respectively, the central opening in each said annular body having a diameter substantially greater than the diameter of said axle which passes therethrough.

4,346,611

INSERTION REGULATOR FOR PRESSURIZED PIPELINES

Robert H. Welker, 13839 W. Belfort, Sugar Land, Tex. 77478

Filed Dec. 19, 1980, Ser. No. 218,112
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—863.86 13 Claims



1. An apparatus for mounting a sensor means for insertion into and retraction from a pressurized vessel such as a pipeline, said apparatus comprising:

a. sensor probe mounting means adapted for sealed connection to said pipeline, said probe mounting means defining sensor probe receptacle means;

b. an elongated sensor probe shaft of tubular from defining an elongated passage, said probe shaft extending in relatively movable sealed relation through said sensor probe mounting means and defining inner and outer extremities, said sensor probe shaft being movable to an operative position where said inner extremity is positioned within said pipeline and movable to a retracted position where said inner extremity is retracted from said pipeline and positioned within said sensor probe receptacle means; and

c. an inlet valve being provided at the inner extremity of said sensor probe shaft;

d. a valve actuator shaft being movably disposed within said elongated passage and having operative connection with said inlet valve;

e. a diaphragm assembly being connected to the outer extremity of said sensor probe shaft and having actuating connection with one extremity of said valve actuator shaft;

f. means controlling actuation of said diaphragm assembly for inducing inlet valve opening movement to said diaphragm assembly and valve actuator shaft;

g. a sensor probe being located at said inner extremity of said sensor probe shaft; and

h. fluid pressure energized actuactor means being controllably coupled with said sensor probe shaft and being controllably energized by fluid pressure from said pipeline to ensure insertion movement of said probe from said receptacle to a preselected position within said pipeline, upon deenergization of said actuator means said probe shaft and sensor probe being moved to said retracted position by fluid pressure within said pipeline.

4,346,612

LIQUID SAMPLER

John H. Rand, Cornish, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 30, 1981, Ser. No. 248,934
Int. Cl.³ G01N *1/08, 1/12*
U.S. Cl. 73—864.44 3 Claims



1. A sampler comprising:

a hollow cylindrical sampling tube having a top and a bottom; valve means affixed at the bottom of said sampling tube;

a cylindrical cutting shoe having a top and a bottom;

the top of said cutting shoe being affixed to said valve means;

the bottom of said cutting shoe being sharpened;

adapter means for connecting an extension to the top of said sampling tube;

said adapter means being effective to permit substantially free flow of fluid axially therethrough;

said valve means including a cylindrical membrane having a first condition wherein it conforms to a substantially cylindrical shape permitting substantially free fluid communication therethrough and having a second condition

wherein it assumes a closed hourglass shape permitting substantially no fluid communication therethrough;

said valve means further including a body having a string guide therethrough, a string affixed at a first end to said body, a loop in said string encircling said cylindrical membrane and said string passing through said string guide; and

said loop, when tightened by pulling said string, producing said second condition.

4,346,613

LIQUID SAMPLE COLLECTOR DEVICE

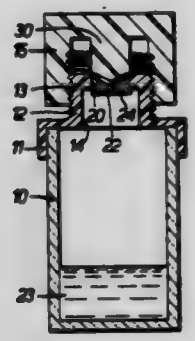
Robert C. Turner, May Cottage, Great Milton, Oxfordshire, OX9 7NT, and Rury R. Holman, 42 Meadow Close, Farmoor, Oxfordshire, OX2 9NZ, both of England

Filed Nov. 18, 1980, Ser. No. 208,025

Claims priority, application United Kingdom, Nov. 19, 1979, 7939887

Int. Cl.³ G01N *1/12*

U.S. Cl. 73—864.51 9 Claims



1. A collector device for receiving, metering and holding a sample of liquid of predetermined small volume, which comprises a collection vessel having an aperture leading into its interior, a plug which is a push-fit in the aperture and closes the vessel when inserted in the aperture prior to use of the device, the plug being capable of being pushed slidably through the aperture to enter the interior of the vessel, and a co-operating spigot member capable of being inserted into the aperture as a close fit therein, the opposed ends of the plug and spigot member being formed with co-operating formations shaped to define between them, when the said ends of the spigot and plug are abutted, a space of predetermined volume by which in use a sample of the liquid can be metered and temporarily trapped therein, whereby in use the spigot member can be advanced inwardly through the aperture in abutment with the plug to push the plug ahead of it and displace the plug from the aperture into the interior of the vessel so as to transfer the trapped metered liquid sample into the interior of the vessel, the spigot member when so advanced fitting closely within the aperture so as to close the vessel.

4,346,614

PROCESS AND DEVICE FOR INSTALLING A VERTICAL GYROSCOPE

Joseph Jouillec, Versailles, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Aug. 21, 1980, Ser. No. 179,994

Claims priority, application France, Sep. 3, 1979, 79 22006

Int. Cl.³ G01C *19/26, 19/30*

U.S. Cl. 74—5.12 2 Claims

1. A gyroscopic device adapted to be mounted on a moving craft comprising:

a mass of revolution rotatable about an axis of rotation serving as a vertical reference;

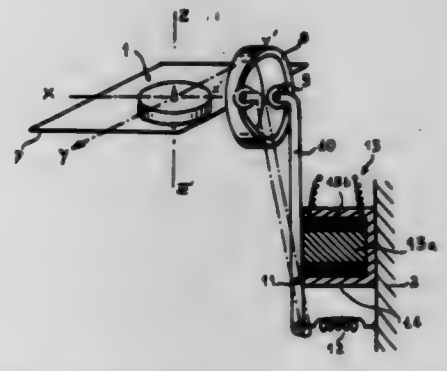
means for suspending said mass allowing said axis of rotation to be suspended with respect to the pitch axis and the roll axis of said moving craft;

drive means for driving said mass in rotation about its axis;

roll reset means for resetting said axis of rotation into roll when said mass does not rotate;

a mechanical errector system having a driven rotary pendulum, tending automatically to reset said axis of rotation of said mass on the vertical;

said drive means, said return means, and said erector system being controlled electrically in parallel from a common source of supply;



first time delay means disposed between said source and said roll reset means for producing a first delay such that, on its expiration, the kinetic moment of said mass in rotation is sufficient to insure the stability thereof; and

second time delay means disposed between said source and said erector system for producing a second delay such that, on its expiration, the speed of rotation of said pendulum is sufficient to avoid any movement of precession of the device about its roll axis.

4,346,615

STARTING DEVICE FOR AN ENGINE

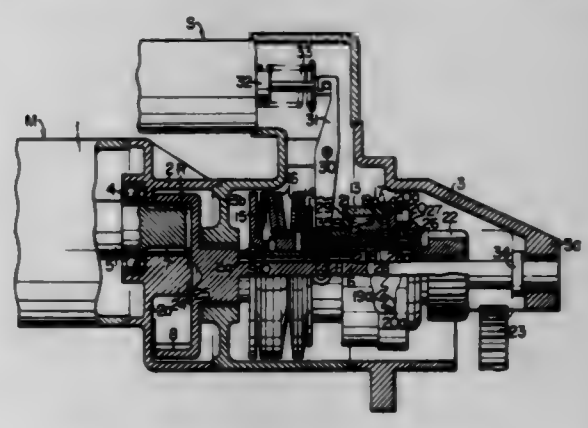
Tadao Yoseda, and Michinori Tsunoda, both of Fukaya, Japan, assignors to Sawafuji Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1980, Ser. No. 135,854

Claims priority, application Japan, Dec. 24, 1979, 54-167801

Int. Cl.³ F02N *15/06;* F16D *43/06*

U.S. Cl. 74—7 A 10 Claims



1. In a starting device for an engine in which a drive shaft coupled with a starting motor is connected to a pinion gear through a one-way clutch having a pair of drive and driven clutch members for driving a ring gear of the engine, the improvement comprising a first sleeve slidably fitted over said drive shaft through a first helical spline, said first spline acting to impart to said first sleeve a thrust in a direction toward said ring gear upon rotation of said drive shaft, a second sleeve slidably fitted over said first sleeve through a second helical spline, said second spline acting to impart to said first sleeve a further thrust in a direction toward said ring gear upon rotation of said first sleeve, said drive clutch member of said one-way clutch slidably fitted over said second sleeve through a third helical spline having a helical angle in the same direction as the first helical spline, and a buffer spring interposed between said first sleeve and said one-way clutch so as to be

deformable for absorbing an excessive load transmitted from said ring gear to said one-way clutch.

4,346,616

ELECTROMAGNETICALLY OPERATED FRICTION DISK-FREE CLUTCH

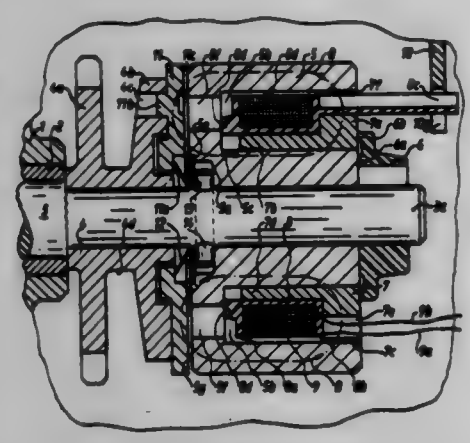
Wolfgang Geisslinger; Karel Pustka; Hermann Brönner; Ludwig Müllritter, and Gabriel Vondrowski, all of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,304

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 291754

Int. Cl.³ F16D *27/10*

U.S. Cl. 192—84 C 8 Claims



1. An electromagnetically operated disk-free clutch for coupling two rotary parts, comprising a stator in the form of a hollow cylinder of a magnetizable material, an electromagnetic coil mounted on the outer surface of said stator, a rotor connected to one rotary part and defining at one face thereof a first frictional ring and at the other face thereof an annular groove for accommodating said cylindrical stator, a magnetic armature supported for joint rotation and for an axial displacement on the second rotary part which is arranged coaxially with said first rotary part, said armature defining a second frictional ring facing said first frictional ring on said rotor, means for biasing said armature away from said rotor to form an airgap therebetween, the stator, the rotor and the armature forming together a closed magnetic circuit for the magnetic flux generated by said coil whereby the resulting attractive force axially displaces said armature against the force of said biasing means to engage said two frictional rings, the part of said rotor between said bottom of the annular groove and said first frictional ring being provided with throughgoing cutouts defining narrow bridging wall portions therebetween for concentrating the magnetic flux before entering said armature, and the outwardly directed face of said cylindrical stator being provided with a radial flange covering said annular groove and providing a uniform path for said magnetic flux, said flange having an opening, said electromagnetic coil being wound on a support body of a plastic material, the outer surface of said stator snugly fitting into said support body, said support body being made by a diecasting process and including an outwardly projecting locking pin passing through the opening in said radial flange of said stator body and engaging a corresponding recess in the same for supporting said rotor; said coil supporting body including an inwardly directed annular projection for spacing said stator from the bottom of said annular groove in said rotor, and said rotor and said stator being secured against axial displacement by a clamping ring mounted on the first rotary part and abutting against the outer end faces of said rotor and said stator.

4,346,617

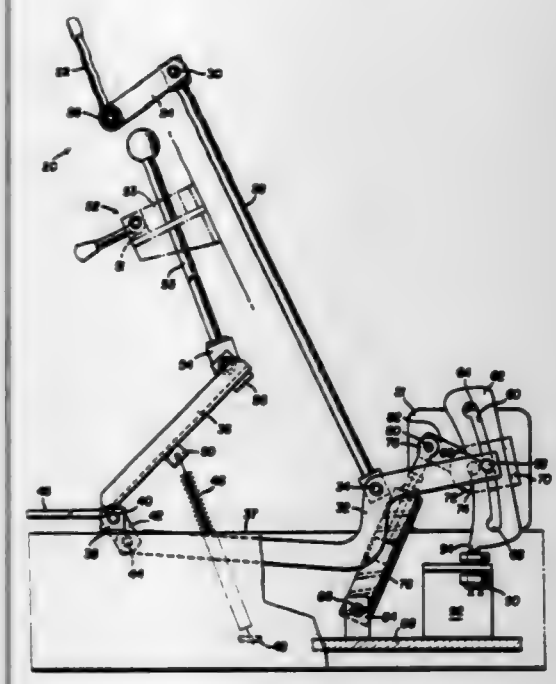
GROUND DRIVE CONTROL

Philip W. Schroeder, Derby, and Edgar K. Lindstrom, Wichita, both of Kans., assignors to J. I. Case Company

Filed Jun. 27, 1980, Ser. No. 163,553

Int. Cl.³ G05G *11/00, 1/14*

U.S. Cl. 74—481 4 Claims



1. A ground drive control mechanism for a machine having a hydrostatic transmission, a transmission control means rotatable about one axis into forward, reverse, and neutral operating positions to control the input to said hydrostatic transmission, said ground drive control mechanism comprising:

shift means including a shift lever, said shift lever connected at one of its ends to actuating linkage and movable means connected to the other end of said shift lever, said shift lever being shiftable by said movable means from a neutral position into forward or reverse;

depressible foot pedal means for controlling the speed of the machine movement in a selected direction, said foot pedal means including a pivotal foot pedal and means for biasing said foot pedal in one direction, said actuating linkage interconnecting said shift lever and said foot pedal means;

rotatable selector means mounted to said transmission control means, said rotatable selector means including a selector plate having a slot with detent positions for forward, neutral and reverse directional control, pin means for slidably mounting one end of said actuating linkage within said selector plate slot and said pin means being selectively movable into one of said detent positions in response to movement of said shift lever thereby setting said transmission to propel the machine in a selected direction, said biasing means applying a constant tension on said actuating linkage for holding said pin means locked in the selected detent position;

manual override means including a heel tab actuator connected to said foot pedal, depression of said heel tab actuator moving said actuating linkage for rotating said transmission control means towards its neutral position without affecting the directional position setting at said selector plate; and

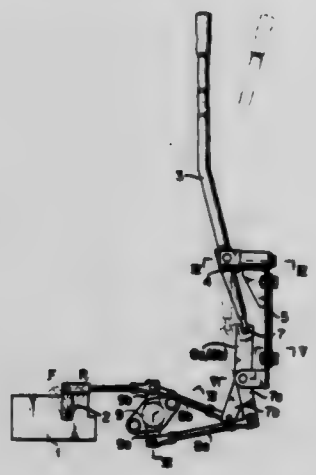
automatic override means connected to said transmission control means, said automatic override means rotating said transmission control means towards its neutral position in response to the release of said foot pedal without affecting the directional position setting at said selector plate.

4,346,618

SPEED CONTROL APPARATUS FOR A VEHICLE

Masaaki Sakamoto, Kaga, and Shinji Takeuchi, Komatsu, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 21, 1980, Ser. No. 151,979
Claims priority, application Japan, May 22, 1979, 54-62138
Int. Cl.[3] G05G *7/00, 5/16*
U.S. Cl. 74—491 1 Claim



1. A speed control apparatus for a vehicle, comprising:
a frame of the vehicle;
a speed control lever having a ball connector formed thereon at a lower end thereof pivotally mounted in every direction at an intermediate portion thereof to said frame;
a console mounted on said frame, said console having formed therein a U-shaped guide groove in which said speed control lever is adapted to move;
a pair of substantially straight levers each pivotally mounted at an intermediate portion thereof to said frame, each of said pair of levers having a notch formed threin at an upper end thereof whereby the ball connector is selectively engageable with either one of the notches as said speed control lever is moved in the guide groove of said console, the selected lever being pivoted thereby;
a pair of rod means each pivotally connected at one end thereof to the other ends of said respective levers;
a turning member rotatably mounted to said frame, said turning member having a pair of arms projecting therefrom in opposite directions from each other relative to the axis of said turning member, each arm being pivotally connected to the other ends of said respective rod means;
spring means for applying a braking force to said turning member against rotation; and
control valve means for forward and reverse change-over and speed control of the vehicle, said control valve means being connected to one of said arms and adapted to be changed over between forward and reverse positions in accordance with the turning direction of said turning member.

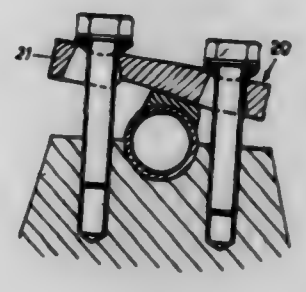
4,346,619

ADJUSTABLY CLAMPABLE MOTORCYCLE HANDLEBAR

Ernst Fehling, Werler Strasse 1, D-5757 Wickede-Wimbern, Fed. Rep. of Germany

Filed May 23, 1980, Ser. No. 152,581
Claims priority, application Fed. Rep. of Germany, May 25, 1979, 7915066[U]
Int. Cl.[3] B62K *21/18*
U.S. Cl. 74—551.1 5 Claims

1. In a mounting assembly for a motocycle having a front frame supporting a front wheel of the motocycle and a tube-shaped handlebar supported on said front frame and having a central portion and two lateral bent portions outwardly extended from the central portion, and clamping means for supporting the handlebar on said front frame, the combination comprising at least two clamping devices each including a lower clamping plate having a bearing surface to receive the respective part of said central portion, said central portion adapted to pivot in said bearing surface due to various inclined positions of the handlebar; an upper clamping plate having an upper surface and a lower surface and being formed with a pair of bores; and a pair of headed screws extending through said bores into said lower clamping plate, said central portion being



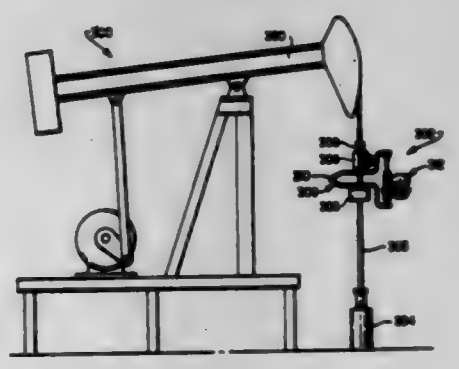
provided with an extension projecting towards said upper clamping plate and adapted to abut against said lower surface thereof, said bores widening in a direction towards said lower clamping plate to loosely receive said screws, each of said pair of screws extending into said lower clamping plate at a different distance so that said upper clamping plate is inclined due to desired inclined position of the handlebar whereby functioning of the handlebar will be maintained even in the event of loosening of said headed screws.

4,346,620

SHOCK ABSORBING MEANS FOR A ROCKER ARM TYPE OIL WELL PUMP

George E. Stanton, Orient, Ohio, assignor to Nujack Oil Pump Company, Columbus, Ohio

Filed Jun. 5, 1980, Ser. No. 156,780
Int. Cl.[3] F16H *21/32*
U.S. Cl. 74—583 6 Claims



1. A shock absorbing means for attachment to a rocker arm type well pumping apparatus, said shock absorbing means being attached to a sucker rod pumping string between a cable retention bracket and a sucker rod rotator;
the attachment including upper and lower jaws hinged at one side and having a coaxial piston and cylinder combination mounted between the jaws at the other side;
hydraulic fluid in the cylinder in contact with the piston and in fluid communication with a fluid-tight reservoir partially filled with hydraulic fluid.

4,346,621

POWER TRANSMISSION APPARATUS

William T. Griffis, Indian Trail, N.C., assignor to Automated Energy Systems, Inc., Matthews, N.C.

Filed Sep. 7, 1978, Ser. No. 940,177
Int. Cl.[3] F16H *37/06*; D06H *3/12*
U.S. Cl. 74—665 G 4 Claims

1. A power transmission apparatus for variably controlling the speed of two rotatable outputs by oppositely varying the

rotational speed of each output in direct proportion to each other, and whereby the cummulative rotational speed of the two outputs remains constant for a given input speed, said apparatus comprising

a box-like enclosed housing defining opposed side walls,

a first shaft rotatably mounted to extend at least substantially between said side walls,

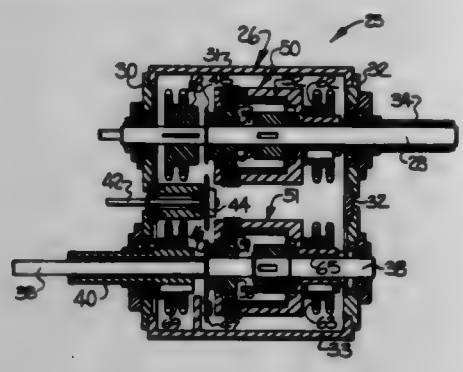
a second shaft rotatably mounted to extend at least substantially between said side walls and through one of said side walls, and being disposed parallel to and laterally spaced from said first shaft,

first and second differential drive units, said first unit being coaxially disposed about said first shaft and said second unit being coaxially disposed about said second shaft, each of said drive units comprising

(a) a circular spline having internal gear teeth,

(b) a flexible spline coaxially disposed within said circular spline and having external gear teeth, and

(c) a wave generator coaxially disposed within said flexible spline and operatively deflecting said flexible spline so that the teeth thereof operatively engage the teeth of said circular spline in at least two angularly spaced locations interspaced by locations at which the teeth are not interengaged,



power input means comprising a first sleeve rotatably mounted about said first shaft and extending through one of said housing side walls and being fixed to said circular spline of said first drive unit, a second sleeve rotatably mounted about said second shaft and being fixed to said circular spline of said second drive unit, and means interconnecting said first and second sleeves for concurrent rotation,

power output means for said first drive unit comprising means interconnecting said flexible spline of said first drive unit with said first shaft, a third sleeve rotatably mounted about said second shaft and extending through one of said housing side walls, and means interconnecting sai

power output means for said second drive unit comprising means interconnecting said flexible spline of said second drive unit with said second shaft, and

correction input means comprising a third shaft mounted to extend through one of said housing side walls, and means for interconnecting said third shaft to said wave generator of each of said drive units, and such that the wave generators uniformly rotate in opposite directions in response to rotation of said third shaft.

4,346,622

FOUR SPEED TRANSAXLE WITH MID-POSITION TRANSFER DRIVE

Stanley L. Pierce, Walled Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 9, 1980, Ser. No. 148,431
Int. Cl.[3] F16H *47/08, 37/08, 37/00*
U.S. Cl. 74—688 7 Claims

1. A four speed automatic overdrive transaxle for an engine powered vehicle comprising:

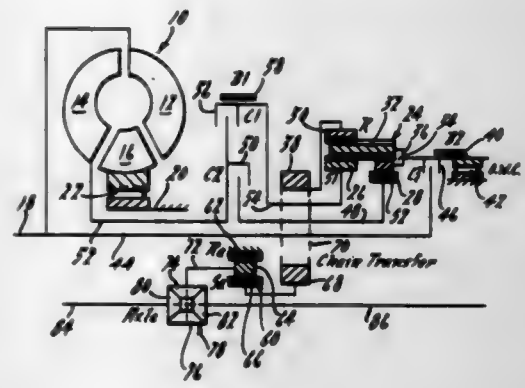
a hydrokinetic unit having a bladed impeller connected to said engine and a bladed turbine;

a compound planetary gear unit comprising a large sun gear, a small sun gear, a set of long planet pinions engaging said large sun gear, a set of short planet pinions engaging said small sun gear, said pinions being mounted on a carrier and engaging each other, and a ring gear engaging the long planet pinions;

said planetary gear unit, said hydrokinetic unit and said engine being arranged on a first axis, a differential gear mechanism having torque output side gears adapted to be connected to paired axle shafts mounted for rotation about a second axis spaced laterally with respect to said first axis;

a torque transfer drive mechanism disposed between said planetary gear unit and said hydrokinetic unit having a torque input element connected to said ring gear and a torque output element connected to the torque input side of said differential gear mechanism;

first clutch means for connecting said turbine to said large sun gear during reverse drive, second clutch means for connecting said turbine to said small sun gear during operation in the first three forward drive ratios and third clutch means for connecting said impeller to said carrier during operation in overdrive, said first clutch means and said second clutch means each having friction discs located between said engine and said torque transfer drive mechanism, said first clutch means and said second clutch means each having an annular cylinder rotatably mounted



for rotation about a common axis, said annular cylinders being in radially spaced dispersion, one with respect to the other;

first brake means for braking the large sun gear during operation in the second underdrive ratio and during operation in overdrive and second brake means for braking said carrier during operation in the first underdrive ratio and during operation in overdrive;

said first and second clutch means having a common turbine torque input element, said torque input element having an externally splined portion for carrying internally splined clutch discs of said first clutch means and an internally splined portion for carrying externally splined clutch discs of said second clutch means, said torque input element also defining an annular cylinder for said second clutch means;

an annular piston in said cylinder engageable with the clutch discs of said second clutch means, the discs of said first clutch being located radially outward from the clutch discs of said second clutch means, a torque output element of said first clutch means extending radially between said second clutch means and the torque input element of said transfer drive mechanism;

said second brake means being situated on the side of said planetary gear unit remote from said transfer drive mechanism in radially spaced relationship, one with respect to the other;

said differential gear mechanism being located approximately in the transverse operating plane of said hydroki-

netic unit, the latter being disposed between said engine and said first and second clutch means;

said torque transfer drive mechanism comprising a final drive ring gear connected to a stationary housing portion for said transaxle;

a final drive sun gear connected drivably to said ring gear;

said torque output element of said torque transfer drive mechanism being a planetary carrier; and

final drive pinions on said final drive carrier engaging said final drive sun gear and said final drive ring gear.

4,346,623

VARIABLE SPEED PLANETARY TRANSMISSION

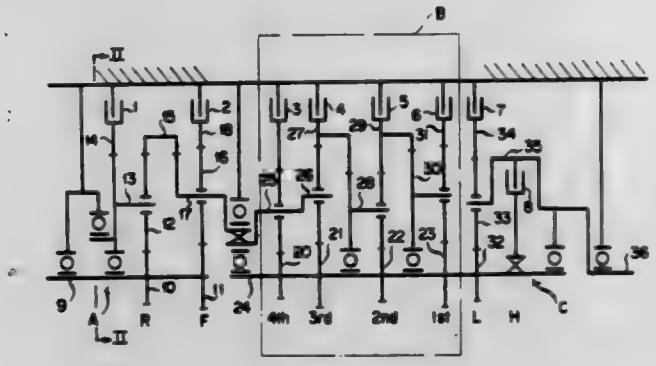
Masahiro Tatsuo, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,589

Claims priority, application Japan, Feb. 28, 1979, 54-24208[U]

Int. Cl.³ F16H *57/10, 37/00*

U.S. Cl. 74—764 **3 Claims**



1. A variable speed transmission including a transfer section for establishing operating direction, a variable speed planetary transmission section arranged in operating alignment with said transfer section, and a range section for effectively multiplying the number of speed ratios established by said variable speed planetary transmission section, said transfer section comprising a power input shaft, a planetary gear train for forward operation having a sun gear, a planet gear set, a carrier, a ring gear and brake means for selectively stopping the ring gear, and a planetary gear train for reverse operation having a sun gear, a planet gear set, a carrier and brake means for selectively stopping the carrier, the sun gears of both said planetary gear trains being coupled with said power input shaft; said variable speed planetary transmission section comprising a center shaft aligned with said power input shaft, and first, second, third and fourth planetary gear trains coupled in succession, each having a sun gear, a planet gear set, a carrier, a ring gear and brake means for selectively stopping the ring gear, the carrier of one of said planetary gear trains for forward operation of the transfer section being operatively coupled with the carrier of said fourth planetary gear train; and said range section comprising a power output shaft aligned with said center shaft, a planetary gear train having a sun gear, a planet gear set, a carrier, a ring gear, and brake means for selectively stopping the ring gear, the carrier of said planetary gear train being operatively coupled with said power output shaft, and clutch means for selectively directly coupling said center shaft with said power output shaft wherein the carrier of said first planetary gear train is coupled with the ring gear of said second planetary gear train, the carrier of said second planetary gear train is coupled with the ring gear of said third planetary gear train, and the carrier of said third planetary gear train is integrally formed with the carrier of said fourth planetary gear train.

4,346,624

PLANETARY SPEED CHANGE GEARING

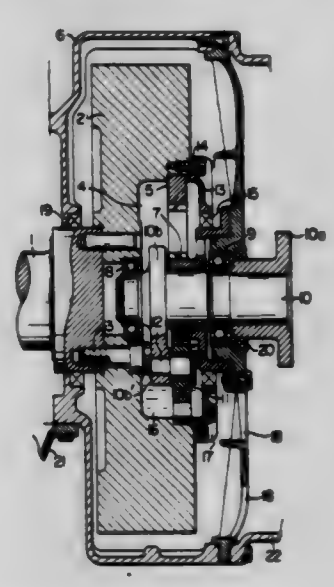
Michisuke Nagasaki, Toyonaka, and Shigehiro Sannomiya, Minoo, both of Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Nov. 13, 1979, Ser. No. 93,811

Claims priority, application Japan, Nov. 13, 1978, 53-155831[U]; Nov. 13, 1978, 53-155832[U]

Int. Cl.³ F16H *3/44, 57/10*; G05G *1/00, 3/00*

U.S. Cl. 74—784 **11 Claims**



1. A power transmission system comprising an input driver shaft and an output driven shaft, a flywheel affixed to said driver shaft for rotation with said driver shaft and including a recessed portion, a flywheel housing enclosing said flywheel and planetary speed change gear means for enabling the driven shaft to be rotated at a speed different from that of the driver shaft, said gear means comprising at least three gear types respectively supported by the flywheel, the flywheel housing and the driven shaft, said gear means being substantially disposed in the recessed portion of said flywheel so as to be substantially recessed in said flywheel, said transmission system further including a cover member concentric with said driven shaft and said sun gear, secured to said flywheel for rotation therewith and for covering the flywheel recess whereby said planetary speed change gear means are substantially enclosed in the flywheel recess.

4,346,625

APPARATUS FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE

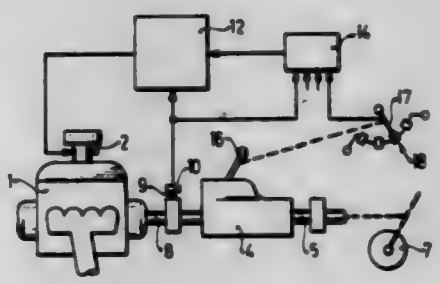
Reinhard Latsch, Vaihingen, and Valerio Bianchi, Hochdorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 114,765, Jan. 23, 1980, abandoned, which is a continuation of Ser. No. 824,190, Aug. 12, 1977, abandoned. This application Dec. 4, 1980, Ser. No. 212,769

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1976, 2642738

Int. Cl.³ B60K *41/06, 41/10*

U.S. Cl. 74—859 **2 Claims**



1. An apparatus for controlling the operation of an internal

combustion engine installed in a vehicle to provide motive power thereto comprising:

fuel-air mixture preparation means for an internal combustion engine having a combustion chamber;

a transmission means to provide transmission of rotary power at variable speed ratios from said engine to said vehicle;

an indicator means connected to the transmission for generating a signal indicating a speed ratio of the transmission;

a crankshaft rotatable by said transmission means;

a marker on said rotatable crankshaft;

transducer means for detecting said marker as said crankshaft rotates and generating a signal indicating engine speed and fluctuations in the cyclic variations of the combustion chamber pressure;

a reference means connected to receive the indicator means signal and the transducer signal and which generates a reference signal;

a control means connected to receive the transducer signal and the reference signal for changing the fuel-air mixture after comparing the fluctuations in the cyclic variations of the combustion chamber pressure with the reference signal; and wherein

the indicator means signal is fed to the reference means to adjust the reference signal in response to a change in speed ratio of the transmission.

4,346,626

CONTROL DEVICE FOR AUTOMATIC TRANSMISSION

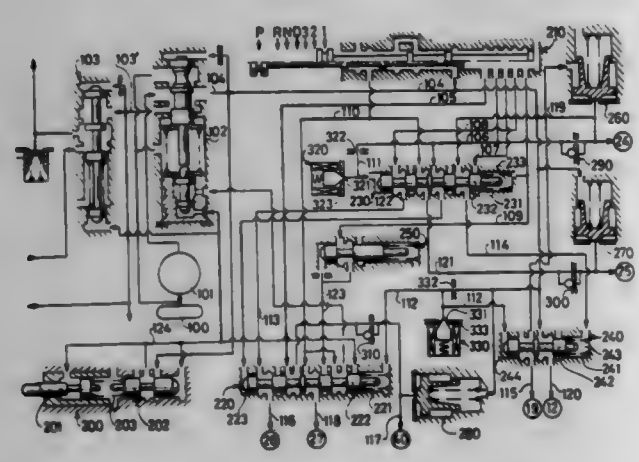
Mutsumi Kawamoto, Nagoya, Japan, assignor to Aisin-Warner K.K., Anjo Aichi, Japan

Filed Dec. 21, 1979, Ser. No. 106,376

Claims priority, application Japan, Dec. 27, 1978, 53-164836; Apr. 11, 1979, 54-43773

Int. Cl.³ B60K *41/06, 41/10*

U.S. Cl. 74—866 7 Claims



1. A control device for an automatic transmission having a gear system provided with a plurality of friction engaging elements for providing torque corresponding to a plurality of gear ratios including an overdrive ratio to a transmission output shaft, comprising:

a manual shift valve for manually selecting neutral, forward and reverse drive positions;

an electric control circuit comprising signal generating means for generating an electric signal in accordance with the vehicle running conditions and in accordance with the position selected for the manual shift valve, and a logic circuit for receiving said electric signal and generating an electric output signal corresponding to one of the gear ratios; and

a hydraulic control system comprising

a source of hydraulic pressure,

hydraulic servo means to operate said plurality of friction engaging elements,

a shift valve operable between first and second positions for receiving hydraulic pressure from said hydraulic pressure source and supplying hydraulic pressure to said hydraulic servo means through fluid passages, and

a solenoid valve to control the position of said shift valve in response to the electric output signal of said electric control circuit,

whereby said friction engaging elements associated with the overdrive ratio are engaged to provide torque to the transmission output shaft for a predetermined period of time when said manual shift lever is manually shifted from neutral to the forward or reverse drive position.

4,346,627

SHIFT CONTROL DEVICE FOR AN AUTOMATIC TRANSMISSION

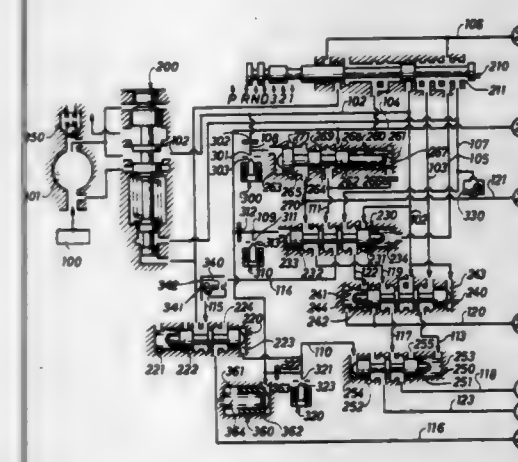
Mutsumi Kawamoto, and Nobuaki Miki, both of Nagoya, Japan, assignors to Aisin-Warner K.K., Anjo, Japan

Filed Oct. 19, 1979, Ser. No. 86,358

Claims priority, application Japan, Oct. 28, 1978, 53/132962

Int. Cl.³ B60K *41/06*

U.S. Cl. 74—869 10 Claims



1. A shift control device for a vehicle with an automatic transmission having a gear system provided with a plurality of friction engaging means for selecting a plurality of gear ratios according to vehicle running conditions, comprising:

an electric control circuit comprising signal generating means for generating an electric signal in accordance with the vehicle running conditions and a logic circuit for receiving said electric signal and generating an electric output signal corresponding to one of the gear ratios; and

a hydraulic pressure control system comprising hydraulic servo means to operate said plurality of friction engaging means,

a source of line pressure,

a shift valve operable between first and second positions, said shift valve supplying hydraulic operating pressure to said hydraulic servo means through a fluid passage,

a solenoid valve to control the position of said shift valve in response to the electric output signal of said electric control circuit,

a pressure hold valve connected to said fluid passage between said shift valve and said hydraulic servo means, said pressure hold valve responsive to hydraulic line pressure and to hydraulic operating pressure supplied by said shift valve, and

a flow control valve in fluid communication with said pressure hold valve, said flow control valve restricting discharge of hydraulic operating pressure from said pressure hold valve

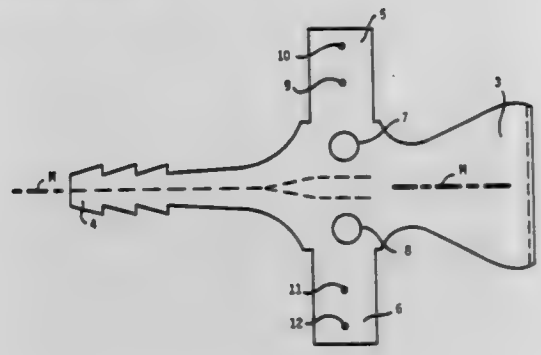
whereby discharge of hydraulic operating pressure from said hydraulic servo means is restrained and said friction engaging means remains engaged for an appointed time.

4,346,628

METHOD FOR MAKING A HEAD OF PIOLET

Jean-Claude Bibollet, F-Glapigny-74230-Thones, France

Filed Dec. 11, 1979, Ser. No. 102,425
Claims priority, application France, Dec. 12, 1978, 78 36054
Int. Cl.[3] B25D *7/00*
U.S. Cl. 76—109 3 Claims



1. A method of making the head of a piolet or the like comprising:

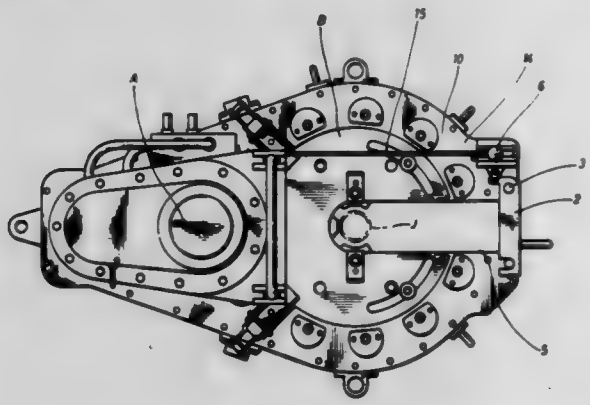
producing the head, all in one piece, by punching out a metallic blank from a plate of metal to form a head including a pike sectiion, a peen section and a mounting section having a pair of flaps for joining the head to the handle of the piolet or the like, the metallic blank being punched out with a outline which is symmetrical with respect to the longitudinal axis thereof, and then being folded symmetrically to form a crease line with respect to the medial plane of the blank along that portion of the length of the blank which corresponds to the pike section, said folding of blank taking place approximately along the longitudinal axis of the metallic blank for the portion of the length which corresponds to the pike section, the two corresponding parts which are provided in that portion of the length corresponding to the pike section being positioned closely adjacent to one another and being joined together to form the pike of the piolet or the like, the mounting section being folded at least once to form a crease line with the two flaps each extending downwardly from the crease line or lines and the peen part being essentially unfolded, viewed in a plane perpendicular to the longitudinal axis.

4,346,629

TONG ASSEMBLY

Robert B. Kinzbach, Houston, Tex., assignor to Weatherford-/Lamb, Inc., Houston, Tex.

Filed May 2, 1980, Ser. No. 145,905
Int. Cl.[3] B25B *17/00*
U.S. Cl. 81—57.2 8 Claims



1. In a tong having at least one jaw, each jaw pivotably connected to a link which link is pivotably connected to a rotary element and a drag plate connected to the rotary element for actuating the jaws, and brake means for engaging the drage plate, the improvement in brake means comprising,

brake means engageable with the drag plate for causing toggle action for placing the jaws in a gripping relationship with a joint, and

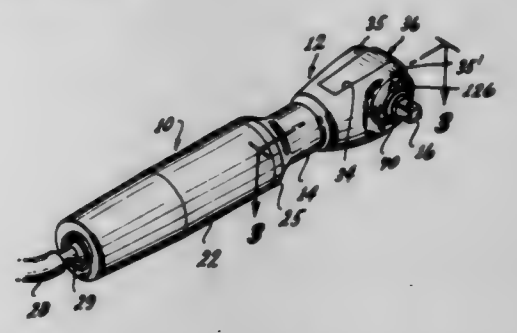
releasing means connected to the brake means for releasing the brake means when the jaws are in a seated gripping position.

4,346,630

RATCHET WRENCH

Anthony Hanson, Huntington Beach, Calif., assignor to Rodac Pneumatic Tools, Carson, Calif.

Filed Dec. 17, 1979, Ser. No. 104,538
Int. Cl.[3] B25B *17/00*
U.S. Cl. 81—57.13 2 Claims



1. In a ratchet wrench assembly having a head and a handle part and motor drive means, the head being bifurcated forming a yoke, having legs, the side parts of the head each having a circular bore therein, an angularly oscillating member positioned between the legs of the yoke the oscillatable member having a toothed bore, and means for oscillating the said member, the improvements comprising a rotor member mentioned within the head, the rotor member carrying a ratchet pawl positioned to be engagable with the teeth in the bore of the oscillating member, shaft means driven by the rotor member, means for holding the rotor member in position in the head, and a friction member mounted between a part of the said rotor and the holding means, the holding means including at least one bushing having a part fitting in one of said bores, the bushing having a radial flange part, the said rotor part having a portion of larger diameter and a portion of smaller diameter with an annular shoulder between said portions, the friction member being a flat wave washer lying between said flange and a radial surface of the rotor member formed by said portion of smaller diameter, adjacent to said annular shoulder.

4,346,631

WELL PIPE SPINNING AND TORQUEING APPARATUS

George I. Boyadjieff, Anaheim, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Sep. 16, 1980, Ser. No. 187,702
Int. Cl.[3] B25B *13/50*
U.S. Cl. 81—57.34 14 Claims

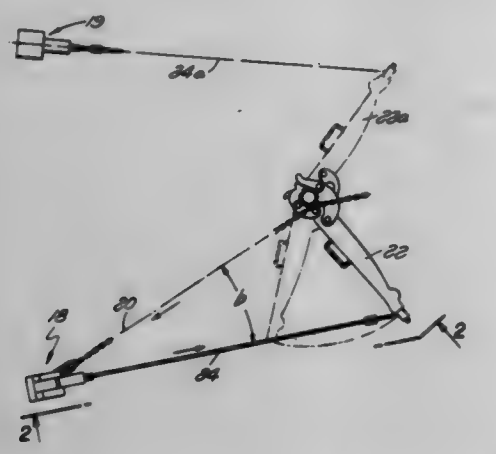
1. Well pipe spinning and torqueing apparatus comprising:

a power unit including a first section and including a second section which is power actuable along an axis relative to the first section and moves in opposite directions along said axis;

a first elongated flexible element adapted to be connected to a pipe gripping tong and connected to said movable second section of said power unit in a relation exerting a pulling force on said element and the tong upon movement of said second section of the power unit in one of said direction; and

a second elongated flexible element adapted to be wrapped about and spin a well pipe and connected to said movable

second section of the power unit in a relation exerting a pulling force on said second element to spin the pipe upon



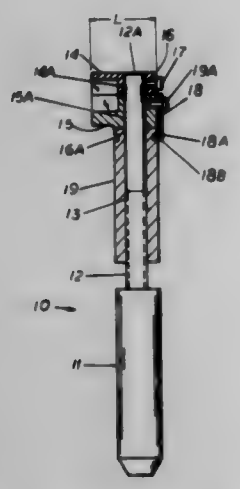
movement of said second section of the power unit in the other of said directions.

4,346,632

ADJUSTABLE SOCKET WRENCH

Julius Kovacs, 32 Cedar La., Trumbull, Conn. 06611

Filed Sep. 15, 1980, Ser. No. 187,409
Int. Cl.[3] B25B *13/16*
U.S. Cl. 81—174 6 Claims



1. An adjustable socket wrench comprising a handle means and a connected shank, a pair of socket jaws, means for fixably connecting one of said jaws to said shank and means for movably mounting the other jaw on said shank, and means for adjusting said movable jaw relative to said fixed jaw, and including a means disposed between said jaws to resist a turning moment when a torque force is applied to said wrench, wherein said last mentioned means comprises a wedge disposed between said jaws, and means for rendering said wedge slightably adjustable relative to said jaws as said jaws are moved to an adjusted position.

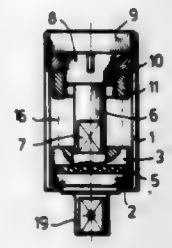
4,346,633

SPARK PLUG WRENCH ADAPTED FOR ADJUSTABLE TORQUE

Rene Rendl, Lukas-Cranach-Str. 4, D-6710 Frankenthal, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 198,720
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944182
Int. Cl.[3] B25B *23/14*
U.S. Cl. 81—475 5 Claims

1. A spark plug wrench comprising a cylindrical housing, two toothed discs disposed in said housing, spring means urging said discs against one another, said discs having sets of teeth at their confronting faces and each of said teeth having at one side a sharply depending flank and, at the other side, a shallow depending flank, a first connection means on one of said discs for engagement with an operating tool, and a second connection means on the other of said discs for operation by means to vary torque applied by said wrench, characterized by: a connection spindle (6) carried at one end of said housing and holding one of said toothed discs (3) against rotation but adapted for axial displacement relatively to the latter, said housing being equipped with an inturned collar (4) for abutment with the other of said toothed discs (2), said spindle (6) being provided with an externally-threaded collar (9) sup-



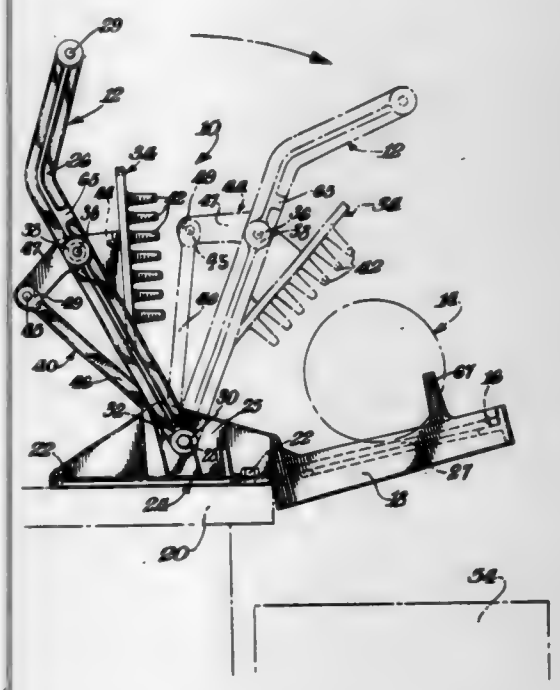
ported against the internal wall of said housing (1), a loose externally-threaded ring (10) associated with said threaded collar (9) and the latter being equipped with setscrews (12,13) for coupling and fixing said loose ring (10) to said collar (9), a torque-adjusting ring (11) disposed on a boss (8) of said spindle, said boss having external threading of opposite hand to internal threading on said loose ring (10), and a pack of spring washers between said torque-adjusting ring (11) and the inner of said toothed discs (3).

4,346,634

CHOPPING AND SHREDDING DEVICE

Frank W. Jones, Greenville, Del., assignor to Alco Foodservice Equipment Company, Wilmington, Del.

Filed Sep. 11, 1980, Ser. No. 186,119
Int. Cl.[3] B26D *3/26, 4/18*
U.S. Cl. 83—431 3 Claims



1. In a chopping and shredding device for chopping and shredding objects such as lettuce heads by a finger-carrying pusher that pushes the heads down through a set of cutting blades, the improvement according to which the device has an integral elongated aluminum base frame one end of which has mounting means for securing to the edge of a table and the other end of which is an upwardly inclined blade-supporting section that projects beyond the table edge to which the frame is secured, the pusher is carried on an elongated operating handle one end of which is pivoted to a relatively low location

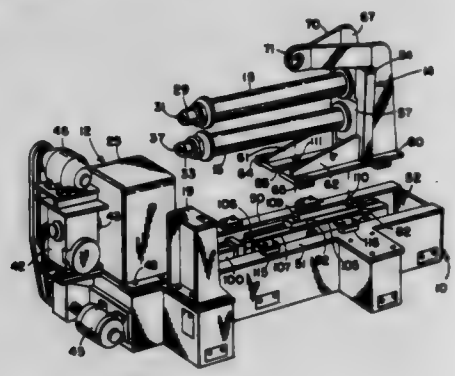
on the mounting-means-carrying end of the frame spaced from the blade-supporting section so that a lettuce head will be received between that section and the pusher when the operating handle is pivoted away from that section but is not yet vertical, the pivoting of the handle permits it to pivot away beyond the vertical, a pusher tilting linkage is pivotally connected to the pusher and to the mounting-means-carrying end of the frame at a location above that to which the operating handle is pivoted, to adjust the tilt of the pusher as it pushes its fingers through the cutting blades, the tilting linkage being on the side of the handle remote from the blade-supporting section of the frame to help counterbalance the handle when it is pivoted away just beyond the vertical, and stop means is provided to keep the handle from pushing the pusher too far into the cutting blades.

4,346,635

SLITTER WITH REMOVABLE HEAD

Ferdinand A. Krauss; Ivan S. Ganyard, both of Bay Village, and Raymond E. Sabbatis, North Olmsted, all of Ohio, assignors to Loopco Industries, Inc., Twinsburg, Ohio

Filed Nov. 5, 1979, Ser. No. 91,115
Int. Cl.³ B26D *1/24*; B23D *19/04*
U.S. Cl. 83—479 **6 Claims**



1. A slitter comprising a pair of arbors; a drive housing and idle housing supporting said arbors at opposite ends respectively; a base on which said drive and idle housings are mounted; and means to move said idle housing horizontally away from said drive housing to disconnect said arbors from said drive housing for removal of said idle housing and arbors from the slitter; said idle housing including a vertically movable journal for one of said arbors, a jack for said journal, said means to move said idle housing being operative to disconnect said jack from said vertically movable journal and vice versa; said idle housing also including a slide mounted on said base, and said means to move said idle housing including a horizontally movable actuator for said slide mounted on said base; and positioning means, including a hole and a slot, on said idle housing slide adapted to position said idle housing on said actuator in a predetermined position and alignment for such horizontal movement; said actuator including upwardly projecting pilot pins adapted to fit within said hole and slot, respectively.

4,346,636

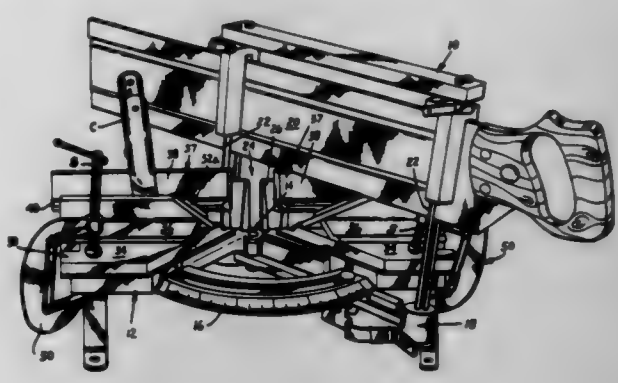
APPARATUS FOR MITERING MOLD AND THE LIKE

Elizabeth C. Taylor, 1989 Queens Way, NE., Atlanta, Ga. 30341

Filed Dec. 19, 1979, Ser. No. 105,031
Int. Cl.³ B27G *5/02*
U.S. Cl. 83—767 **10 Claims**

1. In a device for supporting decorative mold and the like having a mold face to be cut along a predetermined line, such as is used for back-mitering a strip of mold, on a substantially flat base having a saw thereon which may be set as to angularity of cut and controlled during sawing to move in a preselected path:

a profile support means comprising a profile support member having length and width and a profile thereon with the length and width corresponding to the length and width of portions of the mold face and the like, means for supporting said profile support means at a predetermined, pre-selected angle on said base including the angle at which a mold is installed and for retaining same in position thereon whereby said profile support means supports a mold at the angle corresponding to the angle of installation, said mold being placed coextensively into engagement with the profile of the face of the mold engaged with



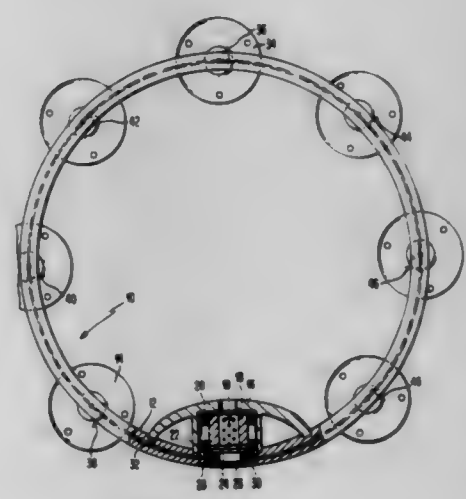
the profile of said profile means, the top of the mold being adjacent to and supported by an upper part of the profile member and the bottom of said mold being supported against said profile member at a location toward said base spaced from said upper part, means for retaining said profile support member and said mold in engagement during cutting, and means for removably retaining said profile support means on said flat base.

4,346,637

SPIN-JANGLE TAMBOURINE

Bryan L. Janszen, 60 Candlewood Dr., Yonkers, N.Y. 10710

Filed Dec. 8, 1980, Ser. No. 214,209
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—418 **26 Claims**



1. A tambourine comprising (1) a frame having window means therein; (2) cymbal means adapted for generating sound and mounted on said frame in said window means; (3) activator means mounted on said frame operatively engaging said cymbal means for moving said cymbal means and to cause said cymbal means to generate sound; and (4) spinning means mounted on said frame for rotating said frame about its latitudinal axis, said spinning means being operatively associated with said activator means to cause said activator means to move said cymbal means;

wherein said activator means comprise flexible shaft means which can be rotated about its longitudinal axis when in a flexed configuration, said flexible shaft means being mounted on said frame and extending from said spinning means to said window means, striking means mounted on said shaft means is rotated on its longitudinal axis, said

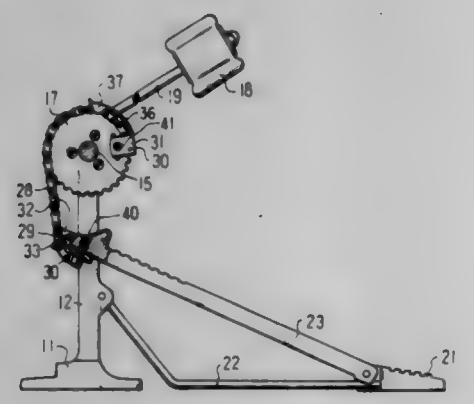
spinning means operatively engaging said flexible shaft means for rotating said flexible shaft means about its longitudinal axis.

4,346,638

FOOT OPERATED DRUM PEDAL

Masao Hoshino, Owariasahi, Japan, assignor to Hoshino Musical Instrument, Manufacturing Co., Ltd., Owariasahi, Japan

Filed Feb. 18, 1981, Ser. No. 235,711
Claims priority, application Japan, Oct. 9, 1980, 55-144367[U]
Int. Cl.³ G10D *13/00*
U.S. Cl. 84—422 R 2 Claims



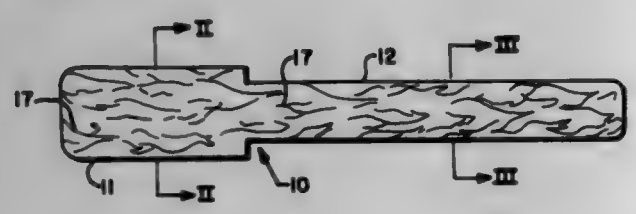
1. A foot-operated drum pedal, comprising a sprocket, and a chain connecting between the sprocket and the toe end of a pedal element, wherein a block and an inverse U-shaped bracket are attached respectively to both ends of the chain using pins, and wherein said block is screwed to the toe end of the pedal element, said bracket is screwed to and grips the sprocket, and a machine screw is inserted between the rollers of the chain disposed along the block and screwed into the block.

4,346,639

THERMOPLASTIC KEY FACE FOR PIANOS OR THE LIKE

Alex M. Vagias, Baden, Pa., assignor to Ernest Vagias, Baden, Pa.

Filed Jul. 27, 1981, Ser. No. 287,432
Int. Cl.³ G10C *3/12*
U.S. Cl. 84—437 7 Claims



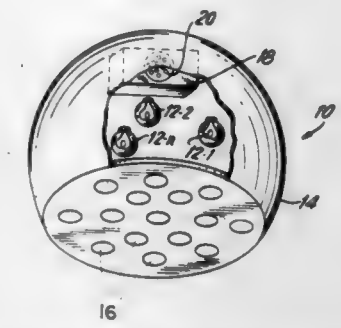
1. A key cover plate for pianos and the like comprising injection-molded thermoplastic material marbleized by incomplete mixing of a color agent to simulate the grain of natural ivory, the marbleized thermoplastic material having a Munsell hue of between 8.8Y to 6.6YR, a Munsell chroma of between 1.0 to 2.6, a Munsell value of between 8.3 and 9.3 and a contrast ratio of between 70 and 90.

4,346,640

DECORATIVE LIGHT FLASHING APPARATUS AND ACOUSTO-ELECTRIC TRANSDUCER THEREFOR

John R. Zeno, New York, and William Rosenhagen, Ossining, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,257
Int. Cl.³ A63J *17/00*
U.S. Cl. 84—464 R 6 Claims



16

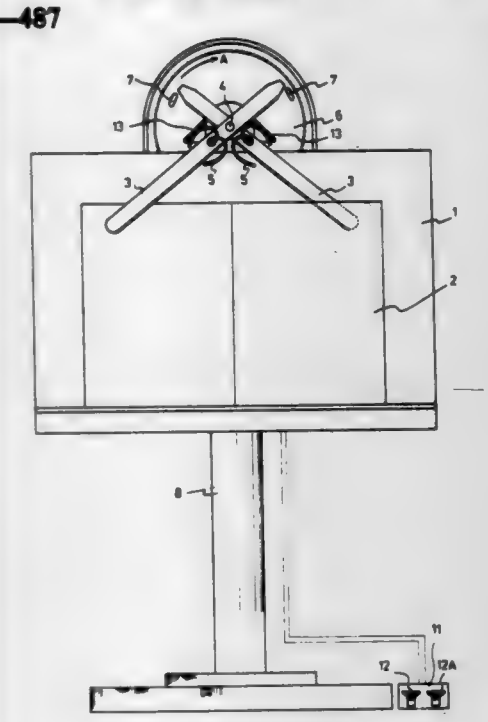
1. A decorative light flashing apparatus comprising: acousto-electric transducer means for preferentially responding to impulse-type sounds; triggerable means responsive to said transducer means for producing pulse-type signals; means responsive to said pulse-type signals for producing at least two commutating output signals; and said at least two commutating output signals being capable of individually illuminating at least two light sources.

4,346,641

APPARATUS FOR AUTOMATICALLY TURNING THE PAGES OF A MUSIC BOX

Itaru Kobayashi, 1-15-2, Motomachi, Kiyose City, Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 234,462
Claims priority, application Japan, Feb. 14, 1980, 55-17312
Int. Cl.³ G10G *7/00*
U.S. Cl. 84—487 3 Claims



1. An apparatus for automatically turning over pages of a music book consisting of:

a music book stand,

a number of page turning slats piled one over another and pivoted at the top of said music book stand, each of said slats being adapted to be inserted obliquely between every two pages of a music book and adapted to swing around said pivot between two side barriers, a gear having a number of slits arranged circumferentially and adapted to engage with the upper ends of said slats in succession during its rotation,

an electric motor for driving said gear controlled by an ordinary and a reversible switch, and

a detachable stool.

4,346,642

FASTENING DEVICE FOR EXTERNALLY COUPLING LOADS ON AIRCRAFT

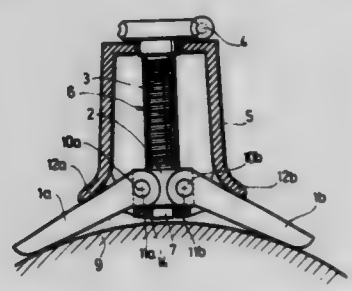
Heiko Uhle, Egmating, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,479

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911603

Int. Cl.³ B64D *1/04*; F41F *5/02*

U.S. Cl. 89—1.5 B 10 Claims



1. A fastening device for externally coupling suspended loads on aircraft comprising a pair of support arms, a lifting device arranged between said support arms and having said support arms fastened thereto in an articulated manner, and abutment means rigidly connected with said aircraft, said support arms being arranged to be actuated by said lifting device to be drawn thereby for abutment against said abutment means and to be clamped against an external load by the action of said lifting device drawing said arms against said abutment means.

4,346,643

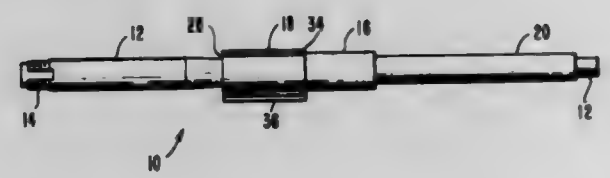
THERMAL JACKET FOR ELONGATED STRUCTURES

Peter F. Taylor, Agoura; Harold J. Tuchyner, Pacific Palisades; Algerd Basiulis, Redondo Beach, and Thomas R. Lamp, Torrance, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 7, 1979, Ser. No. 101,316

Int. Cl.³ F41F *17/00*

U.S. Cl. 89—14.1 9 Claims



1. An arrangement for reducing non-symmetrical, thermally induced strains in a gun tube comprising a heat pipe jacket including a pair of clam-shell envelopes with working fluid therein which extend lengthwise of and in thermal engagement with said gun tube and which have both radial and circumferential conductivity, respectively for conducting heat away from and for equalizing temperature gradients about said gun tube, each of said envelopes including an elongated curved inner wall in contact with said gun tube, an elongated curved outer wall spaced from and generally parallel to said inner wall, side and end walls extending between and sealed to said inner and outer walls to establish a generally half cylindrical vapor space in each of said shells, and a wick on said walls surrounding the vapor space.

4,346,644

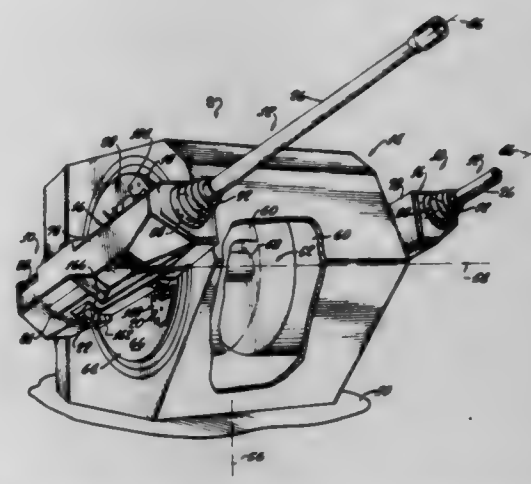
FOLDOUT CRADLE APPARATUS FOR MOUNTING AN AUTOMATIC CANNON TO A TURRET EXTERIOR

Vernet F. De Haven, and Forrest Airhart, both of Huron, Ohio, assignors to Ares, Inc., Port Clinton, Ohio

Filed Feb. 19, 1980, Ser. No. 122,661

Int. Cl.³ F41F *21/14*

U.S. Cl. 89—37 B 23 Claims



1. In a weapons system including a gun turret having an exposed member pivotally mounted on an elevational axis and at least one automatic cannon, cradle apparatus for mounting the cannon to said member, which comprises:

(a) a rigid, cannon receiving cradle;

(b) first, second and third mounting means arranged in a triangular configuration for mounting the cradle to said member for pivotal cradle movement relative thereto between closed and open positions,

said first mounting means including latching means for releasably latching the cradle to said member,

said second and third mounting means including hinging means defining a cradle hinge line therethrough and enabling the cradle to pivot about said hinge line between the closed and open positions when the latching means is in an unlatched condition; and

(c) means for mounting a cannon in the cradle for access thereto when the cradle is pivoted to the open position.

4,346,645

HYDRAULIC AXIAL PISTON ENGINE

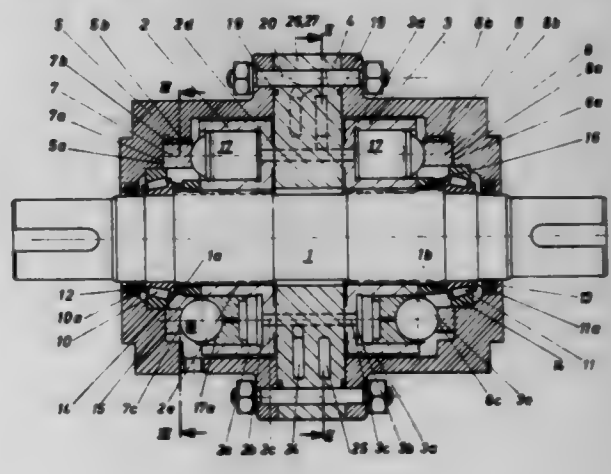
Peter Wüsthof, Lohr, Fed. Rep. of Germany, and Sinclair Cunningham, Kinghorn, Scotland, assignors to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,643

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1978, 2847952

Int. Cl.³ F01B *13/04*

U.S. Cl. 91—501 5 Claims



1. A hydraulic axial piston engine comprising: a rotary shaft;

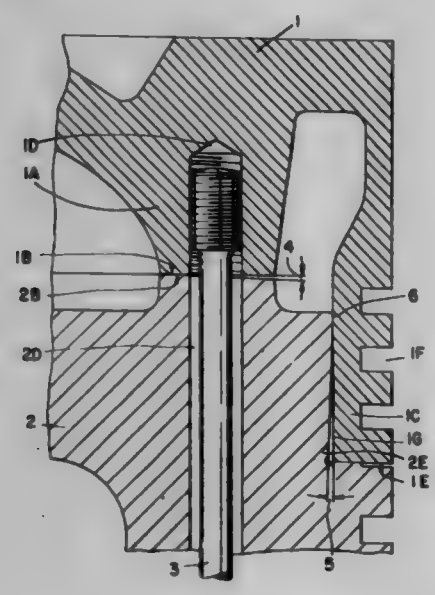
a pair of stationary lifting cams defining two facing cam surfaces arranged around said shaft; two rotary cylinder blocks supported for joint rotation on said shaft and each having a plurality of uniformly distributed and axially directed blind bores; through passages provided in the end wall of each blind bore to admit and discharge a working liquid into respective bores; two sets of working pistons arranged for reciprocating movement in said bores in contact with said cam surfaces; a stationary control plate of a substantially ring-shaped configuration defining a jacket and two annular end surfaces, an inlet port and an outlet port formed, respectiely, in said jacket, a plurality of uniformly distributed control openings formed in said end surfaces, two distributing channels arranged in said control plate at a spaced relationship and parallel to said end surfaces, each of said distributing channels communicating with one of said ports and with a set of alternate control openings; said control openings communicating with said passages in the rotary cylinder blocks; a two-piece housing mounted on said control plate and supporting said shaft for rotation and having inner wall portions which fixedly support said lifting cams, said inner wall portions being provided with inner splines and the outer periphery of said cams being provided with outer splines engaging said inner splines.

4,346,646

PISTON FOR INTERNAL COMBUSTION ENGINES

Jürgen Ellermann, Schwaikheim, Fed. Rep. of Germany, assignor to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 956,156, Oct. 31, 1978, abandoned.
This application Jul. 21, 1980, Ser. No. 170,622
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758378
Int. Cl.³ F02F 3/02; F16J 1/00
U.S. Cl. 92—220 3 Claims



1. A piston suitable for an internal combustion engine, comprising:

(a) a piston body (2) of light metal, having an abutment surface (2B) and an exterior, radially facing surface (2E) with an upper outer annular edge;

(b) a piston crown (1) of metal having a lower thermal conductivity than said light metal, said piston crown including:

(i) an inwardly projecting rib (1A) having an inner seating surface (1B), said abutment surface (2B) being abuttingly engaged to said inner seating surface to provide an abutting engagement, said abutting engagement being the sole engagement of said rib with said piston body, said rib having therein a plurality of tapped bores (1D), said piston body (2) having therein bores (2D) in alignment with said tapped bores (1D) in said rib;

(ii) screws (3) having screw-threaded heads engaged in said tapped bores (1D); and

(iii) an annular skirt (1C) having a free end (1E), said free end (1E) engaging a radially directed surface of said piston body, said annular skirt being axially spaced from said rib (1A); and

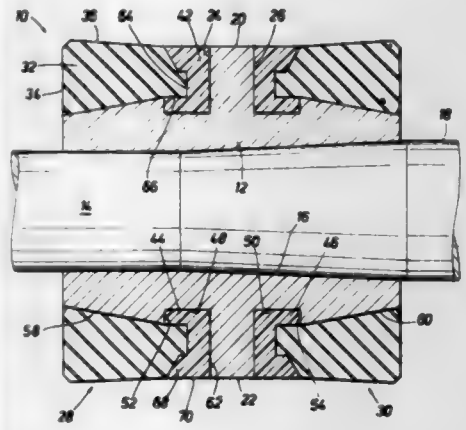
(c) means for substantially preventing creation of frictional rust between said annular skirt (1C) and said piston body (2), said means being comprised of an interior surface (1G) of said annular skirt abuttingly engaged, when said piston is at ambient non-working temperature, with said exterior, radially facing surface (2E) of said piston body only in the region (6) of said annular skirt which is adjacent to the upper outer annular edge of the piston body, said exterior, radially facing surface (2E) being spaced from said interior surface (1G) by a gradually increasing radial distance towards said free end (1E) of said annular skirt, said radial distance being reduced upon increase in working temperature of said piston to bring about complete radial surface contact between said inner surface (1G) and said exterior, radially facing surface (2E), whereby micro movements between said exterior, radially facing surface (2E) and said interior surface (1G) are substantially prevented with consequent elimination of formation of frictional rust between said interior surface (1G) and said exterior, radially facing surface (2E).

4,346,647

PISTON CONSTRUCTION FOR RECIPROCATING PUMPS

Joe T. Weaver, Midland, Tex., assignor to Weaver Manufacturing Company, Midland, Tex.

Filed Feb. 20, 1981, Ser. No. 236,624
Int. Cl.³ F16J 9/12
U.S. Cl. 92—243 16 Claims



1. A pump piston construction for a reciprocating type pump having a pump cylinder, said pump piston comprising:

a one piece piston hub adapted to be reciprocated within said pump cylinder by a piston rod, said hub defining a cylindrical abutment portion of slightly smaller diameter than an unworn cylinder of said pump and forming at least one annular abutment surface, said hub further defining an elongated annular portion of smaller diameter as compared to the diameter of said cylindrical abutment portion, said hub defining an internal passage extending through said elongated annular portion and said abutment portion and receiving said piston rod therein, said elongated annular portion defining locking groove means in the outer peripheral portions thereof, said locking means being located on opposed sides of said cylindrical abutment portion, said elongated annular portion further defining seal guide surface means defining a small dimension at the ends of said hub and a larger dimension at said locking groove means;

an annular piston seal ring composed of elastomeric material and being positioned about a portion of said hub, said piston seal ring defining an inner peripheral portion having mating relation with said elongated annular portion and being in intimate assembly with at least a portion of said elongated annular portion, said piston seal ring futher

defining a tapered outer surface portion that is yielded radially inwardly upon insertion into said pump cylinder, said piston seal ring also defining an intermediate annular axially projecting portion;

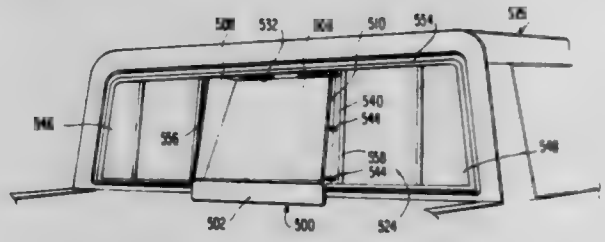
an annular anti-extrusion member being positioned about a portion of said hub and being interposed between and in intimate assembly with said piston seal ring and said abutment surface, said anti-extrusion member having an outer generally yieldable axially extending flange portion formed and being positionable in justaposed relation with said pump cylinder, said yieldable flange portion of said anti-extrusion member being located radially outwardly of said axially projecting portion of said piston seal ring and being yieldable radially outwardly into bearing contact with said pump cylinder responsive to pressure transmission through said axially projecting portion of said piston seal ring and preventing pressure induced extrusion of the elastomeric material of said piston seal ring in the annular space between said piston hub and cylinder, said anti-extrusion member defining an inner peripheral locking portion of smaller internal dimension as compared to said larger dimension of said seal guide surface means and being formed of material having sufficient elasticity to expand and pass over said tapered guide surface and to retract to the original dimension thereof, said inner peripheral locking portion being received in mechanically interlocked relation within said locking groove means, said anti-extrusion member further defining an annular intermediate groove between said outer flange portion and said inner peripheral locking portion, said intermediate axially extending portion of said piston seal ring being received in mating relation within said annular intermediate groove.

4,346,648

ATTACHMENT FOR MOTOR VEHICLES WITH REAR WINDOWS

Richard Chatlos, Johnstown, Pa., assignor to Air O Scoop Corporation, Johnstown, Pa.

Continuation-in-part of Ser. No. 118,444, Feb. 4, 1980, Pat. No. 4,326,451. This application Oct. 6, 1980, Ser. No. 194,224
Int. Cl.³ B60J *1/20*
U.S. Cl. 98—2.12 **2 Claims**



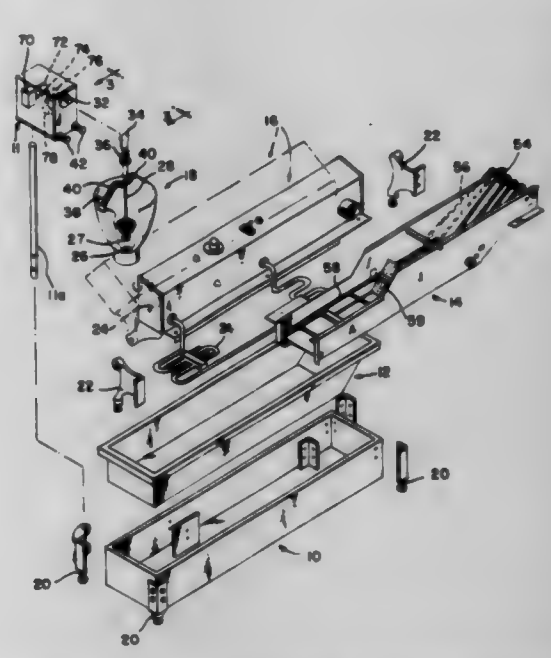
1. An air flow device for a closed motor vehicle or boat for positioning in the rear aperture thereof, said rear aperture containing a window frame, two outer window sections which are stationary and mounted in the end portions of said window frame, said two outer window sections being of such size as to form an opening therebetween, and two inner window sections which are slidably mounted in said window frame, said two inner window sections being of such size as to close off said opening when said two inner window sections are slid together and to fully open said opening when said two inner window sections are slid sufficiently far apart, which comprises a base plate, means attached to said base plate for attaching said device to the bottom portion of said window frame, two vertical side plates, each having one end attached to the end of the base plate, a top plate attached to the other end of each of said vertical side plates at a position back from the side of said two vertical side plates so that part of the device extends through the opening, the top plate contacting the inside surface of the top portion of said window frame, a back plate which is attached at its bottom to the portion of said base plate inside of said motor vehicle and is positioned with its top away from said top plate or the vertical plane of said opening thereby forming a gap between the top plate and said back plate, and two vertical side strips, each attached at a right angle to one of said vertical side plates, the unattached vertical edge of each of said vertical side strips aligning with the end of one of said outer window sections, the end of each of said inner window sections slidably fitting behind one of said vertical side strips thereby holding said device in position and preventing inward motion of said device, at least said back plate being transparent, said two side plates being generally triangular in shape, being attached on one edge to said back plate and preventing lateral air flow.

4,346,649

DOUGHNUT MAKING MACHINE AND IMPROVEMENTS THEREON

Wilbur D. Wilke, Camano Island; Archie A. Hodge, Renton; Thomas E. Belshaw, and John R. Hamblin, both of Seattle, all of Wash., assignors to Belshaw Bros., Inc., Seattle, Wash.

Filed Apr. 28, 1980, Ser. No. 144,684
Int. Cl.³ A47J *37/12*
U.S. Cl. 99—337 **11 Claims**



1. In a doughnut frying machine of the type having a hopper, a cutter for forming doughnuts, a hot liquid frying tank, a conveyor for carrying the doughnuts through the frying tank, cutter drive means, conveyor drive means and control means for actuating the cutter and conveyor drive means, the improvement comprising:

a hopper stand adjacent one end of said frying tank, said cutter drive means located on said hopper stand for operating said cutter, hopper support means on said stand a predetermined distance from said cutter drive means;

said hopper including bracket means releasably engaged by said hopper support means for accurately removably locating said hopper on said stand;

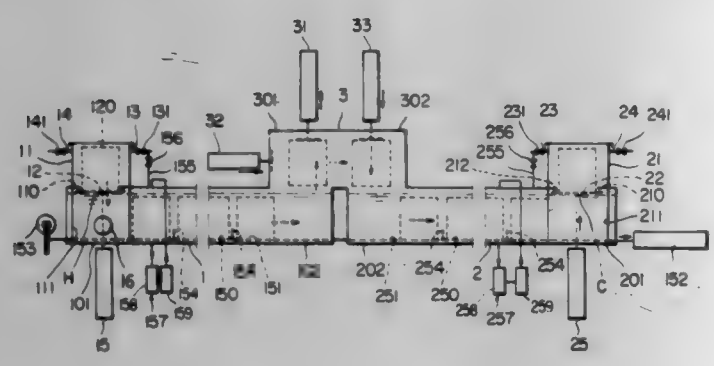
said hopper having a doughnut dispensing opening, said cutter including a piston for closing and opening the dispensing opening, said piston including rod means releasably engaged by said cutter drive means for actuating said piston to dispense the doughnuts; and

wherein said hopper is easily removed from said stand for filling and/or cleaning by releasing said hopper bracket means and said rod means and is restored to its operating position on the stand without adjustments.

4,346,650
CONTINUOUS-PROCESSING TYPE HOT-WATER STERILIZER AND FOOD COOKER

Eizo Zaitsu, Nara, Japan, assignor to Shinagawa Machinery Works Co., Ltd., Osaka, Japan

Filed Sep. 10, 1980, Ser. No. 185,896
Claims priority, application Japan, Oct. 5, 1979, 54/129245
Int. Cl.[3] A47J *27/08*
U.S. Cl. 99—361 11 Claims



1. A hot-water sterilizer and cooker of the continuous processing type for sterilizing and cooking food in packages held in product cages comprising

(1) a sterilization tank containing hot water therein under a given pressure, said tank including a first end, a second end, a preparatory chamber having pipe means connected thereto for injecting and discharging pressurized gas into and from the preparatory chamber and an elevator on which one of the product cages containing food packages can be placed, a connecting portion connecting said first end of said sterilization tank and said preparatory chamber, pipe means connected to the sterilization tank for injecting pressurized gas thereinto, hot-water circulation means connected to the sterilization tank for circulating hot water in the circulation tank, and drive means for intermittently moving the product cage immersed in the hot water through the sterilization tank from the first end to the second end thereof thereby stirring the hot water and ensuring that sufficient hot water is in constant contact with the food packages to enhance the efficiency of heat transmission,

(2) a cooling tank containing cooling water therein under a given pressure and having a first end, a second end, and an off-loading chamber connected to the second end of the cooling tank, and

(3) a transfer tank having two ends, said transfer tank being connected at one end thereof to said second end of the sterilization tank and at the other end thereof to said first end of the cooling tank.

4,346,651
TOASTER FOR BREAD AND OTHER FOOD ITEMS

Willi Schickedanz, Langener Strasse 70, 6050 Offenbach am Main, Fed. Rep. of Germany

Filed May 17, 1979, Ser. No. 39,760
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844650
Int. Cl.[3] A47J *37/08*
U.S. Cl. 99—392 2 Claims

1. A toaster for bread and other food items, comprising

a casing having at least two generally parallel upright walls defining with one another an upright space dimensioned to receive food items to be toasted, said walls having downwardly directed lower edge faces;

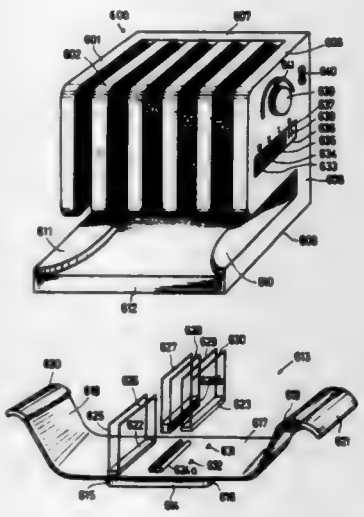
a base beneath said casing and having an upper surface spaced from and defining with said lower edge faces a clearance which is open to said spaces;

discrete carrier means insertable into and removable from said clearance and including holding means projecting from said clearance into said space for holding food items in requisite orientation;

means for causing a food item on said carrier means to enter into said space and to be extracted therefrom;

means for toasting food items which are located in said space; and

cooperating guide portions on said casing and carrier for

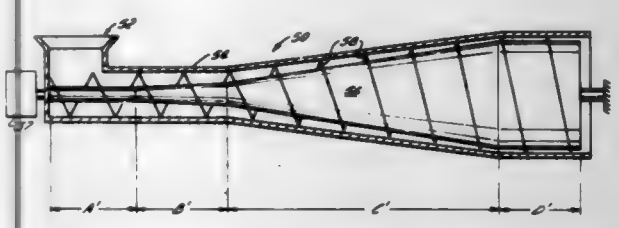


guiding the latter during said relative movement, said casing including a housing and downwardly spaced therefrom said base having an edge and on which said housing is mounted, said carrier being insertable between said base and housing; and wherein said guide portions include at least one groove formed in said base and having a cross-section which diverges in direction towards said edge in the region inwardly adjacent the same.

4,346,652
APPARATUS FOR MAKING A MEAT ANALOG

Peter W. A. de Ruyter, 3480 Rang des Soixante, St. Jean Baptiste de Rouville, Quebec, Canada (J0L 2B0)

Continuation-in-part of Ser. No. 83,330, Oct. 10, 1979, abandoned, which is a division of Ser. No. 940,108, Sep. 6, 1978, abandoned, which is a division of Ser. No. 791,137, Apr. 26, 1977, Pat. No. 4,125,635. This application Apr. 22, 1981, Ser. No. 256,612
Int. Cl.[3] A23J *3/00*
U.S. Cl. 99—483 4 Claims



1. In an apparatus for texturizing protein products, which apparatus includes:

a screw conveyor for simultaneously treating protein and moving it from one end of the conveyor to another end of the conveyor, the screw conveyor including an elongated barrel and an elongated rotatable screw means therein, the screw means comprising a screw root having helical flights therearound;

means forming a protein inlet at said one end of said screw conveyor;

means forming a protein outlet at said other end of said screw conveyor;

means for rotating said elongated rotatable screw; and

means for heating at least a portion of said screw conveyor;

the improvement wherein said screw conveyor includes a protein stretching portion, the elongated barrel in said stretching portion having an increasing internal diameter,

the screw of said screw means in said stretching portion also having an increasing diameter, the rate of increase in the diameter of the screw root being greater than the rate of increase in the internal diameter of the barrel, the helical flights of said screw in said stretching portion having decreasing helix angles therebetween, the pitch of the screw in the stretching section remaining substantially constant, the cross sectional area between the screw root and the barrel remaining substantially constant, such that the conveying capacity of said screw conveyor in said stretching portion remains substantially constant for each 360° turn of the screw therein and such that a protein product passing therethrough will be stretched in a curvilinear manner.

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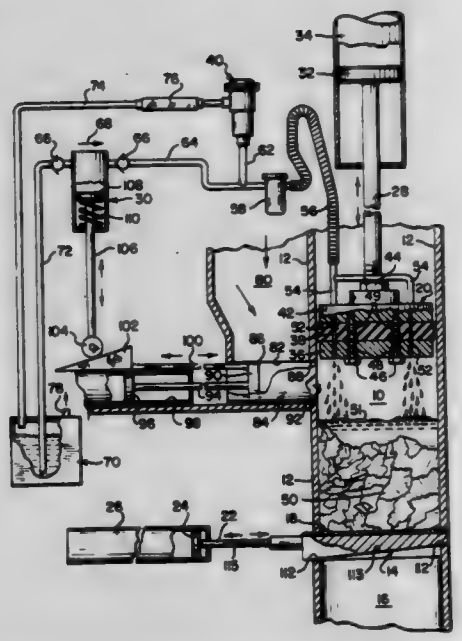
METHOD AND APPARATUS FOR REFUSE DISPOSAL

Edward Rodak, York, Pa., assignor to General Defense Corporation, Red Lion, Pa.

Filed Feb. 22, 1980, Ser. No. 123,705

Int. Cl.³ B30B *9/04, 13/00*

U.S. Cl. 100—37 **39 Claims**



1. A method of treating refuse including components that are porous and contain trapped air, comprising depositing such refuse in a chamber; supplying sufficient liquid to such chamber to assure substantially even fluid pressure throughout such refuse, which liquid has sufficiently low viscosity and surface tension to be capable of being forced into the pores of such porous components; and applying fluid pressure throughout such liquid adequate to impregnate enough liquid into such pores to increase the density of such porous components to a value greater than that of water.

13. Apparatus for treating refuse including components that are porous and contain trapped air comprising means forming a refuse receiving chamber; means for supplying fluid to said chamber and for determining when there is sufficient fluid in the chamber to transmit substantially even fluid pressure throughout such refuse deposited therein; means for raising the fluid pressure within the chamber to apply a substantially uniform fluid pressure throughout refuse deposited therein, such pressure being adequate to impregnate such fluid into the interstices of such porous refuse components for rendering them more dense than water; and means for removing the treated refuse from said chamber.

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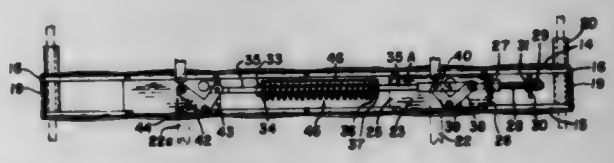
APPARATUS FOR APPLYING PRESSURE IN A VERTICAL DIRECTION

Gerald J. Orlowski, Scottsdale, Ariz., and Thomas Dugle, Cincinnati, Ohio, assignors to Armour and Company, Phoenix, Ariz.

Division of Ser. No. 963,909, Nov. 24, 1978. This application Jul. 2, 1979, Ser. No. 54,287

Int. Cl.³ B30B *1/00*

U.S. Cl. 100—268 **4 Claims**



1. Apparatus for applying a predetermined pressure in a vertical direction comprising a rod extending horizontally and being axially movable, means responsive to the axial movement of said rod for increasing the pressure applied by the apparatus in the vertical direction until the applied pressure attains said predetermined pressure, a screw extending horizontally and movable axially when it is turned, means responsive to axial movement of said screw for moving said rod axially to actuate said first mentioned means until said predetermined pressure is attained, said last mentioned means including a coil spring extending about said rod and a retaining plate secured to said rod, said last mentioned means being capable when responding to axial movement of said screw to apply force from end to end of said spring against said retaining plate to thereby move said rod only when the vertical pressure developed is less than said predetermined pressure so to limit the development of pressure greater than said predetermined pressure.

4,346,655

DEVICE FOR EXCHANGING THE FORM CYLINDER IN A PHOTOGRAVURE ROTARY MACHINE

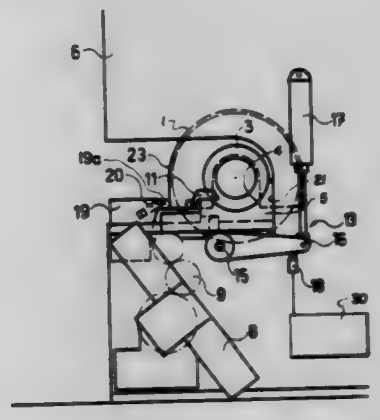
Fritz Suter, Boll, and Paul Haag, Bern, both of Switzerland, assignors to Maschinenfabrik WIFAG, Switzerland

Filed Apr. 29, 1980, Ser. No. 144,959

Claims priority, application Switzerland, May 7, 1979, 7903974

Int. Cl.³ B41F *9/18, 13/20*

U.S. Cl. 101—153 **4 Claims**



1. A device for changing a form cylinder of a photogravure rotary machine, the cylinder having a shaft with a bearing at each end and a removable bearing housing engaged over each shaft bearing, the machine having a machine control and machine side walls, comprising: a guide connected to each of said side walls, a carriage slidably mounted on each of said guides for movement into and out of an operating position, said carriage having a saddle portion shaped for receiving a respective bearing housing, said carriage slidable along said guide into its operating position to bring a respective bearing housing on a respective saddle portion into an operating position for the

form cylinder, a retaining fork pivotally mounted to each carriage and movable into an engagement position engaging a respective bearing housing to hold the respective bearing housing at a fixed axial position on a respective saddle portion, locking means connected to the side walls and engageable with said carriage in its operating position, for retaining said carriage in its operating position, an inclined member having an upper inclined surface position for engaging the cylinder shaft with said carriage moved out of its operating position, said inclined member connected to said side walls and spaced from said operating position of said carriage, and a return feed ratchet pivotally mounted to said inclined member movable into a locking position to retain the cylinder shaft on said upper inclined surface.

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DEVICE FOR MAKING PRINTED MATTER WITH CHANGING IMPRINTS

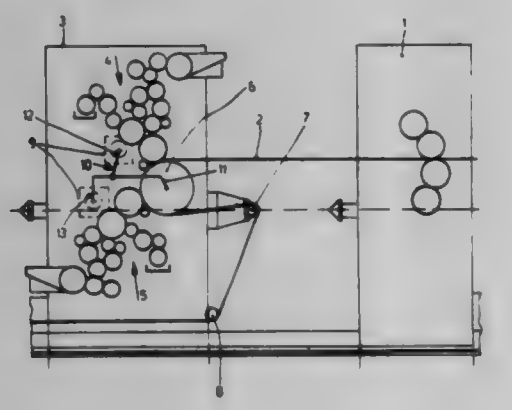
Manfred Schwaab, Ludwigshafen-Oggersheim; Helmut Puschnerat, Worms, and Kurt Storz, Neutrauchburg, all of Fed. Rep. of Germany, assignors to Albert-Frankenthal, AG, Frankenthal, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 84,328, Oct. 12, 1979, abandoned. This application Apr. 17, 1981, Ser. No. 255,150

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844418

Int. Cl.³ B41F *7/10, 13/46*

U.S. Cl. 101—181 **8 Claims**



1. In a machine for making printed matter with changing imprints or for adding additional printing to a completed print with further printing units which comprises two independently operated and actuated printing means and a common counter-pressure cylinder with which said printing means coact and at least partially around which a paper web to be printed is fed, the improvement comprising:

said printing means being disengageably coupled with said counterpressure cylinder which;

a pair of normally deactivated acceleration motors, each of which is coupled to one of said printing means and which may be activated to bring the associated printing means to the operating speed of the main drive of the machine;

coupling means associated with each of said printing means for coupling each of said printing means to the main drive of the machine following the acceleration process performed by said acceleration motor, said coupling means each having a movable first coupling element and fixed second coupling element for effecting coupling and uncoupling of the associated printing means;

adjustment means associated with each of said coupling means for actuating said first coupling elements between said coupling and uncoupling positions thereof; and

a drive assembly for each of said printing means which includes a main drive shaft on which said counter pressure cylinder is mounted, a main drive gear affixed on said main drive shaft for effecting rotation thereof, a pair of drive pinions for driving said printing means, each of which is supported for free rotation on said main drive shaft in a fixed axial position thereon, each of said drive pinions having said second coupling element of the associated coupling means rigidly affixed thereto which is disposed for engagement with the associated movable first coupling element, and said movable first coupling element being supported in an axially adjustable and non-rotatable manner on said main drive shaft and being coupled to said associated adjustment means.

4,346,657

DUPLICATION PRINTER

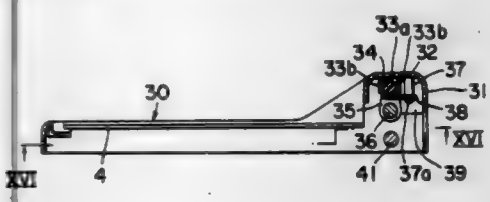
Hiroyasu Okutsu, Zama, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1980, Ser. No. 158,712

Claims priority, application Japan, Jun. 18, 1979, 54-83960[U]

Int. Cl.³ B41F *3/04*

U.S. Cl. 101—269 **8 Claims**



1. A duplication printing device comprising:

a movable base having a cushioning material on an upper surface thereof and a holding frame, said holding frame having a window opening therethrough and being removably superimposed over the upper surface of said movable base;

a relief plate having an image thereon and being removably positioned over said cushioning material;

an image duplicating and displaying unit being removably positioned over said relief plate, said unit having a paper sheet for printing said image thereon, an ink layer means for relief printing said image on said paper sheet, a display sheet, and a tacky sheet positioned adjacent said display sheet for, when said image is printed on said paper sheet, adhering to said display sheet at parts of said display sheet positioned over the parts of said image, said unit being held in position by said frame for relief printing and for visually displaying said display sheet through said window opening;

a frame case having a bridge portion upwardly extending from a top surface thereof, said bridge portion having an inner surface spaced from and facing the top surface of said frame case said frame case having an aperture defined by said bridge portion inner surface and the top surface of said frame case;

said movable base slidably extending through said aperture and slidable toward and away from said frame case;

a rotatable pivot rod extending across said aperture;

a mounting means for rotatably mounting the ends of said pivot rod on said bridge portion, said mounting means including two sets of ribs one at each opposite end of said pivot rod, and two retainers, one associated with each set of ribs, each set of ribs being integrally formed with the inner surface of said bridge portion and being spaced apart from one another, the ribs of each set extending from said inner surface and being spaced apart and rotatably accommodating said pivot rod therebetween, each of said retainers being connected to said bridge portion and respectively extending transversely across the space between the ribs of each set, said pivot rod being rotatably accommodated between each of said retainers and said inner surface;

said pivot rod respectively having swing links thereon and extending downwardly therefrom toward said frame case, the free ends of said links being movable around the longitudinal axis of said pivot rod between a first position and a second position;

said frame case having at least one stop operatively associ-

ated with said swing links for, when said free ends are pivoted to said first position, abutting said swing links for preventing said swing links from pivoting further in one direction; and

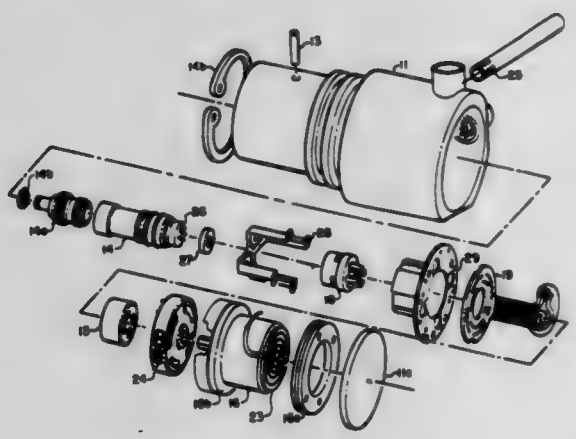
a pressure bar connected to said free ends of said swing links for, when said movable base is slid away from said frame case, frictionally engaging a top surface of said unit for pivoting said swing links to said first position and for causing said bar to press firmly against and slide over the top surface of said unit, whereby said image is relief printed on said paper sheet, and for, when said movable base is slid toward said frame case, frictionally engaging a top surface of said unit for pivoting said swing links to said second position for causing said bar to cease pressing firmly against the top surface of said unit.

4,346,658

ROCKET MOTOR ARMING-FIRING DEVICE FSU-12/B

Joseph E. Hibbs; Gerald W. Chalmers, both of Ridgecrest, and Walter J. Teixeira, Canyon Country, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 12, 1980, Ser. No. 148,856
Int. Cl.³ F42C 15/06
U.S. Cl. 102—254 12 Claims



1. A arming-firing device for preventing unintentional ignition of a rocket motor, comprising:

a housing defining a plurality of axial vent ports;

a poppet-sleeve squib assembly attached with said housing venting through a plurality of axial ports;

a poppet located within said poppet-sleeve squib assembly preventing axial venting of said arming-firing device in the 'safe' position;

a rotary solenoid having sub-assemblies, switch/indicator assembly and a rotor, having multiple cavities therein and located aft of a solenoid lock ring and forward of said poppet-sleeve squib assembly;

a barrier and sub-assembly having multiple prongs designed to fit said cavities in said rotor located between said rotor and said poppet-sleeve squib assembly;

said barrier interconnected with said poppet-sleeve squib assembly;

a solenoid return spring attachably interconnected to said rotor; and

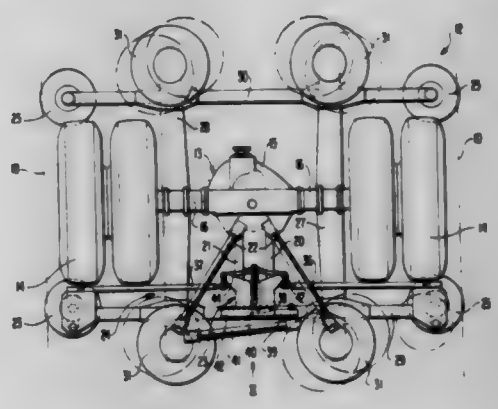
an image conduit viewer attached through said housing providing a viewing surface as to whether device is armed or not.

4,346,659

BI-MODAL MECHANICALLY TRACKABLE ROAD VEHICLE WITH AUTOMATIC AXLE LATCHING MECHANISM

Hellmuth Binder, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 84,613, Oct. 15, 1979, Pat. No. 4,267,779. This application Feb. 19, 1980, Ser. No. 122,478
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844626; Feb. 16, 1979, 2905933
Int. Cl.³ B61F 9/00
U.S. Cl. 104—247 37 Claims



1. A bi-modal mechanically trackable vehicle adapted to be driven with or without a guide track, the vehicle including at least one non-steerable axle having non-steerable wheels mounted thereon, at least one tracking transverse guide roller means on each side of the vehicle for guiding the vehicle along a guide track, means for mounting the at least one non-steerable axle on the vehicle so as to be freely pivotable about a vertical axis, means for at least indirectly mounting the at least one transverse guide roller means at the at least one non-steerable axle in an area of the wheels so as to be displaceable transversely of the vehicle within pre-set limits and for participation in the pivotable movement of the non-steerable axle, and means for automatically selectively locking the at least one non-steerable axle in an exact transverse position for driving of the vehicle without a guide track and for unlocking the at least one non-steerable axle from the exact transverse position for driving of the vehicle with a guide track, characterized in that the locking means includes a latch means longitudinally displaceable mounted on the non-steerable axle means, a latch retaining means for engaging the latch means in a substantially shape-mating fashion when the at least one non-steerable axle is in the exact transverse position, means for mounting the latch retaining means on a frame of the vehicle so as to be immovably retainable at least with respect to a transverse direction of the vehicle, and in that means are provided for coupling the latch means to the transverse guide roller means so as to enable the latch means to be longitudinally displaced by the transverse guide roller means to unlock the at least one non-steerable axle for driving on the guide track in response to transverse displacement of one of the at least one guide roller means between said pre-set limits by engagement with a guide track.

4,346,660

SELF-SUPPORTING INCINERATOR AND EXPANDABLE SHIELD THEREFOR

Eugene C. McGill, Skiatook, Okla., assignor to McGill Incorporated, Tulsa, Okla.

Filed Oct. 8, 1980, Ser. No. 195,070
Int. Cl.³ B09B 3/00
U.S. Cl. 110—235 20 Claims

1. An improved, self-supporting incinerator having a combustion chamber for burning sulfur bearing streams therein and adapted to eliminate plume formation resulting from the combustion of such sulfur bearing streams, the incinerator comprising:

a vertically disposed housing having a lower end portion, a medial portion, and an opposed upper end portion;

a vertically disposed elongated stack having a lower end portion, a medial portion, and an upper end portion;

a combustion chamber operably communication with the lower end portion of the stack, the elongated stack and the combustion chamber being concentrically disposed in the housing such that the combustion chamber is disposed substantially adjacent the lower end portion of the housing, the upper end portion of the housing (being connected to a medial portion of the stack such that the upper end portion of the stack extends) extending a predetermined distance from the upper end portion of the housing; and



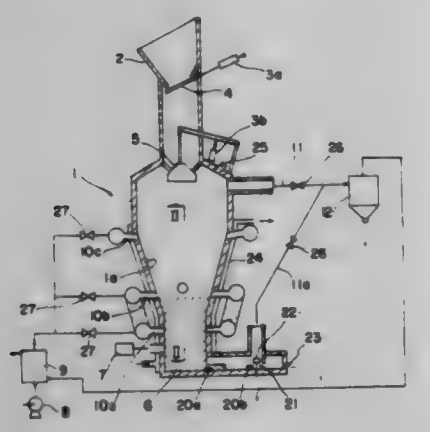
a plurality of laterally disposed support members connecting the opposed upper end portion of the housing to the medial portion of the stack such that an annular space is formed between the upper end portion of the housing and the medial portion of the stack and the housing serves as an outer shield for the portion of the stack disposed therein.

4,346,661

FURNACE FOR TREATING INDUSTRIAL WASTES

Takeo Nakamura, deceased, late of Osaka, Japan (by Fuji Nakamura, heir), assignor to Osaka Gas Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1980, Ser. No. 132,058
Int. Cl.³ F23G *3/00*
U.S. Cl. 110—259 **7 Claims**



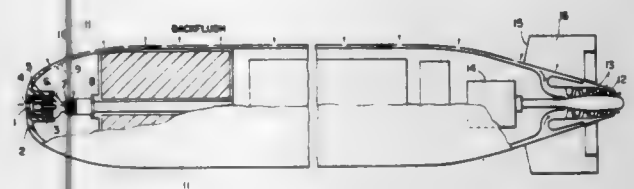
1. A furnace for treating industrial wastes by melting said industrial waste or a semi-treated product thereof comprising a high-temperature bed including an upper portion and a lower portion formed from a combustible carbonaceous material which permits a molten product to be drawn off from said lower portion of said bed, means for supplying a gas for combustion to said high-temperature bed at an intermediate portion between said upper and lower portions of said high temperature bed and means for discharging said combustion gas at an upper and a lower portion of said furnace whereby said combustion gas is caused to flow through said high temperature bed dividedly upward and downward, said means for discharging said combustion gas at the lower portion of said furnace acting also as a discharge outlet for draining off molten products from said furnace.

4,346,662

SELF-CONTAINED BACKFLUSH/START SYSTEM FOR SUCTION LFC UNDERSEA VEHICLE

Kenneth H. Rogers, Corona, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 7, 1980, Ser. No. 147,440
Int. Cl.³ F42B *19/00, 19/26*
U.S. Cl. 114—20 R **12 Claims**



1. In an underwater vehicle having an elongate body including a nose portion and a rear portion including tail fins wherein the improvement resides in providing suction laminar flow control for the outer surface thereof comprising:

water inlet means in a frontal portion and water exhaust exit nozzle means in a rear portion of the vehicle;

apertures about the body in communication with the water;

first pump means selectively operative for drawing water through the inlet means and exhausting a portion thereof out through the body apertures for backflushing the apertures and exhausting the remaining portion out through the exit nozzle means for low speed forward propulsion of the vehicle;

second pump means selectively operative for drawing water in through the body apertures and exhausting it out through the exit nozzle means for high speed forward propulsion of the vehicle;

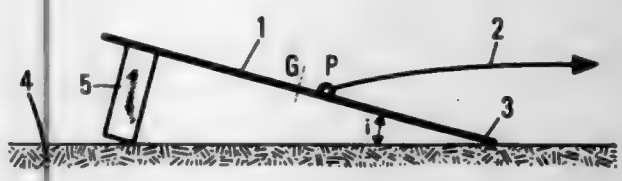
whereby upon operation of the second pump means water drawn into the apertures induces a laminar flow of water adjacent the body for reduced drag on the vehicle.

4,346,663

ANCHORING SYSTEM

Pierre Habib, Paris, and Minh P. Luong, Montgeron, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

PCT No. PCT/FR79/00038, § 371 Date Jan. 2, 1980, § 102(e) Date Jan. 2, 1980, PCT Pub. No. WO79/01017, PCT Pub. Date Nov. 29, 1979
PCT Filed Apr. 27, 1979, Ser. No. 186,026
Claims priority, application France, May 2, 1978, 78 13299
Int. Cl.³ B63B *21/26*
U.S. Cl. 114—295 **11 Claims**



1. An anchoring system comprising:

an anchor having a profiled shape for permitting complete burying thereof, said anchor comprising at least one plate having a leading edge, and said plate adapted for being retained completely buried;

flexible connection means located on said plate for having a line attached thereto, and adapted for preventing transmission of any substantial moment of rotation to said anchor;

at least one anchor line connected to at least one point of said plate by means of said flexible connection means, said point of connection being located on said plate for causing any force exerted by means of said anchor line to be ap-

plied to said plate at a fixed position forward of the center of mass of the bearing surface of said plate in the direction of displacement of said plate through the ground during positioning thereof;

penetrating means operatively associated with said at least one plate for facilitating penetration of said plate into the ground when traction is exerted on said line; and

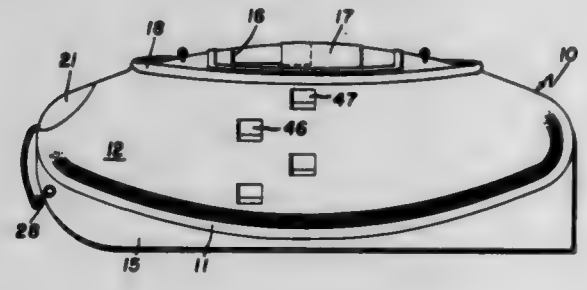
inclination means secured to and below said plate for maintaining the leading edge of said plate, when located on the bottom surface, inclined toward the water bottom at an angle of no more than 30° with respect thereto, whereby said inclination means and penetrating means operatively combine with the weight of the plate to maintain the plate inclined at said angle.

4,346,664

LIFEBOAT

Clayton T. Enzian, Jr., 3 Edgewater Dr., Wareham, Mass. 02571

Division of Ser. No. 881,644, Feb. 27, 1978, Pat. No. 4,274,171. This application Mar. 16, 1981, Ser. No. 244,162
Int. Cl.³ B63C 9/06
U.S. Cl. 114—349 5 Claims



1. Lifeboat comprising:

(a) a main body having an outer skin with an outer surface of generally prolate spheroidal shape and an inner skin with an inner surface forming an inner chamber and being generally concentric with the outer surface of said skins, said outer and inner skins being formed of fiberglass-reinforced, high-density polymer and spaced apart in a parallel relationship to form a compartment therebetween,

(b) a keel formed of heavy material extending from end to end of the main body along a bottom portion, a portion of said keel being a body of circular segmental form in cross-section integrally formed in the bottom portion of the inner chamber and having a flat upper surface that acts as a floor for the inner chamber,

(c) a hatchway aperture located at the top of the main body intermediate of the ends thereof,

(d) a hatch having the general shape of the aperture slidably carried on the main body and movable from a first position where it resides in sealing relation to the aperture to a second position where it is non-coextensive with the aperture, a downwardly-extending apron being integrally formed with both the inner and the outer skins and extending inwardly from the inner surface of the inner skin in the form of a closed plane figure that extends around the hatchway aperture, the apron serving to trap air in the upper portion of the inner chamber, the hatchway aperture and the hatch being of generally rectangular shape and straight guides being integrally formed on the outer skin of the main body parallel to the sides of the aperture to carry the hatch for sliding movement relative to the aperture,

(e) an outwardly and upwardly-extending flange integrally formed on the outer skin surface of the main body in the form of a closed plane figure that extends around and is substantially spaced from the hatchway aperture, the flange serving to inhibit wave flow into the aperture and to collect rain water, and

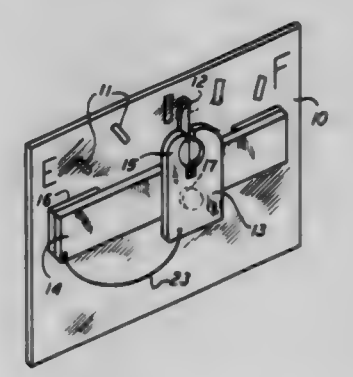
(f) a hollow ballast element extending entirely around the periphery of the inner chamber at the bottom portion thereof, the element being divided by transverse walls into a plurality of fresh water compartments, the element having a flat upper surface for use as a seat, and a water compartment is provided under the floor at the bottom of the inner chamber.

4,346,665

APPARATUS AND METHOD FOR DETERMINING VEHICULAR DISTANCE PER FUEL UNIT

Richard C. McRoberts, 1225 Harrington Dr., Racine, Wis. 53405

Filed Mar. 10, 1980, Ser. No. 128,646
Int. Cl.³ G01D 13/22, 18/00
U.S. Cl. 116—28 R 15 Claims



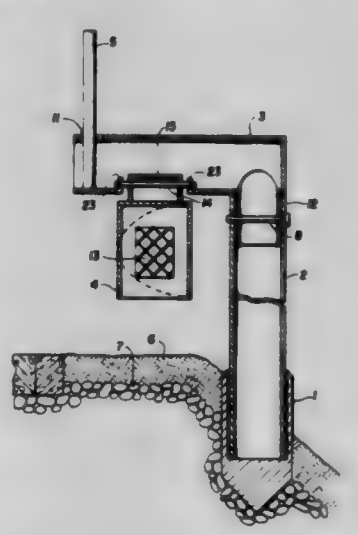
1. In a method for determining vehicular distance traveled per unit of fuel consumed by a vehicle having a distance-traversed odometer and a fuel tank and a fuel gage with a pointer, the steps comprising detachably mounting a selectively horizontally movable reference mark on a support member on the gage and in alignment with the fuel pointer on the fuel gage to thereby present the reference mark for the quantity of fuel to be consumed, noting the distance-traversed reading showing on the distance-traversed odometer, adding a quantity of fuel to the fuel tank to thereby cause the fuel gage pointer to indicate the total quantity of fuel in the fuel tank and noting said total quantity, driving the vehicle for a sufficient distance to cause the fuel gage pointer to return to the reference mark, and noting the total said sufficient distance driven and dividing said sufficient distance by the quantity of fuel previously added to the tank to determine the distance traveled per fuel unit.

4,346,666

CONSOLE TRAFFIC DIRECTION POST

Basaric Iso, Ul Lastovska br. 1, 41000 Zagreb, Yugoslavia

Continuation-in-part of Ser. No. 107,972, Dec. 28, 1979. This application Jun. 30, 1980, Ser. No. 164,339
Int. Cl.³ E01F 9/00
U.S. Cl. 116—63 R 6 Claims



3. A console traffic direction post comprising:

(a) a stake having one end adapted for driving into the

ground and an elongated hollow portion open at the other end for retaining a vertical support post within said stake;

(b) a vertical support post retained within the elongated hollow portion of the stake and extending vertically out from the open end thereof;

(c) a horizontal arm supported at one end on the vertical support post and extending horizontally therefrom;

(d) support means supporting the horizontal arm at one end thereof on the vertical support post comprising a socket allowing the horizontal arm to rotate normal to the vertical support post, and a shear pin extending through said socket, said shear pin preventing rotation of the horizontal arm under normal conditions, but capable of shearing when the horizontal arm is struck, to thereby allow the horizontal arm to rotate normal to the vertical support post;

(e) a freely rotatable reflector attached to said horizontal arm proximate the end thereof opposite the end supported on the vertical support post; and,

(f) attachment means for movably attaching the reflector to the horizontal arm comprising a socket, the opening of which is defined by a cylinder having an inner cylindrical surface circumscribing the horizontal arm and an outer surface to which the reflector is affixed whereby said reflector is freely rotatable about the horizontal arm.

4,346,667

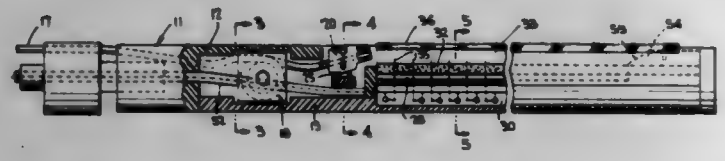
INSIDE POWDER STRIPING APPARATUS

Stanley L. Stamets, South Holland; Robert A. Winkless, Oak Lawn; Rafael J. Hernandez, Chicago; Joseph J. Merle, Oak Lawn, and Robert D. Payne, Countryside, all of Ill., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,324

Int. Cl.³ B05B *5/02*; B05C *7/02, 19/00*

U.S. Cl. 118—622 **12 Claims**



1. A powder applicator for applying a coating stripe to the exterior of a longitudinal side seam of a tubular body moving along a tubular path and wherein said side seam is generally at the 12:00 o'clock position, said powder applicator comprising a supporting horn, longitudinally extending upwardly directed brushes carried by upper portions of said horn in transversely spaced relation and generally equally spaced on opposite sides of a vertical plane through a longitudinal axis of said horn, said brushes being positioned for engagement with the interior of a tubular body adjacent to said side seam thereof to limit the width of said coating stripe, feed means adjacent said horn for sequentially moving tubular bodies along said horn in closely spaced relation, and powder flow control means in an upper part of said horn and generally between said brushes, said powder flow control means including an elongated longitudinally extending channel defined by porous wall means, a powder applying nozzle opening into one end of said channel generally in the direction of tubular body movement, said nozzle being tilted slightly vertically for directing coating powder directly on a tubular body side seam area between said brushes, means for electrostatically charging said powder delivered to said nozzle for effecting initial adherence of a majority of the coating powder directly to tubular bodies with said channel forming catcher means for powder not initially adhering to tubular bodies, charging means in said channel for charging powder falling in said channel and again directing such powder upwardly towards said path of tubular body movement for application to tubular bodies, means for directing a gas through said wall means for continuously agitating powder within said channel, diverter means in said channel at the end thereof remote from said one end for directing powder reaching said channel remote end vertically out of said channel towards the path.

4,346,668

APPARATUS FOR THE CONTACT-FREE CONTINUOUS MEASUREMENT AND MONITORING OF MAGNETIC TRACKS ON MOVING FILM STRIPS

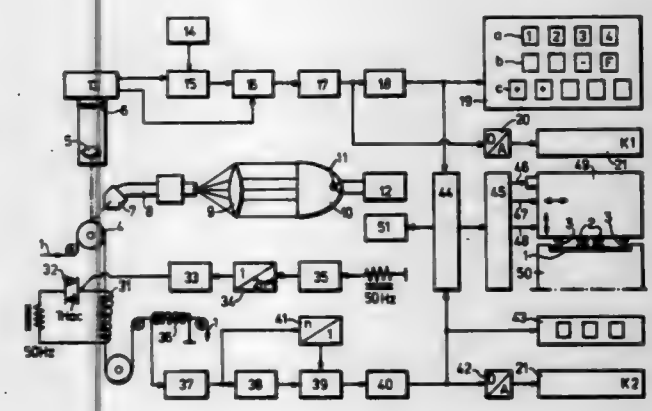
Friedmar Pöhler, Bergisch-Gladbach; Hans Falk, Leverkusen; Josef Müller, Marialinden; Hans J. Klein, Wuppertal, and Franz Hoffacker, Langenfeld, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Division of Ser. No. 21,964, Mar. 19, 1979, Pat. No. 4,276,324. This application Feb. 11, 1980, Ser. No. 120,062

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812633

Int. Cl.³ G01N *21/89*

U.S. Cl. 118—665 **21 Claims**



1. An apparatus for substantially continuously measuring and monitoring the width, thickness and position of magnetic tracks on a moving film strip in a manner which is free of contact with the film strip and which is approximately independent of the speed of movement of the film strip, comprising optical means for measuring the magnetic track width and magnetic track position, electromagnetic means for measuring the volume of the magnetic track, the apparatus being further characterized in that the optical means comprises lighting means for the film strip and the magnetic tracks, an electronic camera, projecting means for projecting the illuminated magnetic tracks onto the electronic camera, the electronic camera being constructed and arranged to generate a scanning electrical signal corresponding to width and position of the illuminated magnetic tracks, limit value means generating limit value signals predetermining the edge positions for every magnetic track, comparison means for electrically continuously comparing the scanning electrical signal with the limit value signals whereby the width and position of the magnetic tracks are determined, readout means reading out a difference between the limit value signals and the scanning electrical signals to monitor whether the tracks are of the proper width and correctly positioned on the film strip, the electromagnetic measuring means being further characterized by magnetizing means for magnetizing a portion of the moving film strip by transmitting flux changing magnetic pulses through it, means for measuring a signal generated in response to the magnetic pulses in an adjacent portion of the magnetic tracks on the film strip, and track thickness readout means for reading out the measured signals to determine whether they comply with a predetermined standard which corresponds to the thickness of the tracks.

4,346,669

VACUUM CHAMBER SEALS

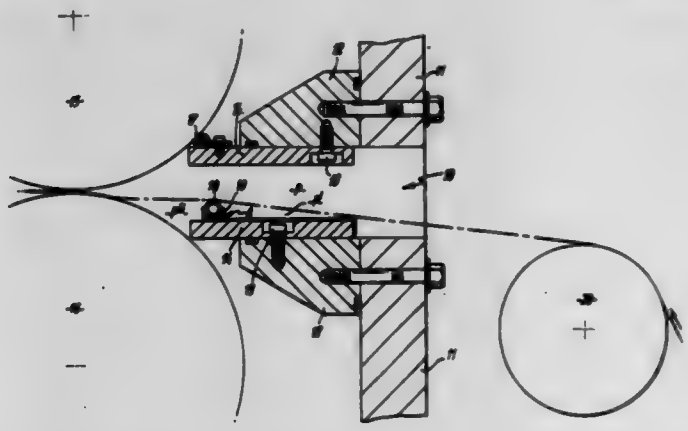
Alan H. Hill, Bury, England, assignor to General Engineering Radcliffe 1979 Limited, Radcliffe, England

Filed Oct. 10, 1980, Ser. No. 195,765

Claims priority, application United Kingdom, Oct. 12, 1979, 7935440

Int. Cl.³ C23C 13/10

U.S. Cl. 118—733 12 Claims



1. A vacuum chamber seal for the entry or exit of a web of material into a vacuum chamber, including an air lock gap defined by adjustable elements, at least one of which is in the form of a roller, and a web guide means on an atmospheric pressure side of the seal, such guide means being so disposed that, in use, it will ensure that one side of the web makes intimate contact with the roller of the air lock gap a short distance from the gap and at the atmospheric pressure side thereof and is maintained in such intimate contact as the web approaches and passes through the air lock gap, the other side of the web being spaced from the other of the adjustable elements.

4,346,670

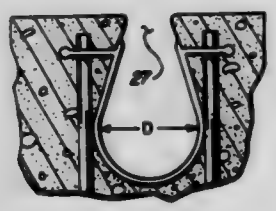
PREFABRICATED MOLD INSERTS FOR FORMING FLUME PLATFORMS FOR ANIMAL CONFINEMENT PENS AND METHOD OF CONSTRUCTION

Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034

Division of Ser. No. 99,913, Dec. 3, 1979. This application Mar. 2, 1981, Ser. No. 239,397

Int. Cl.³ A01K 1/00

U.S. Cl. 119—28 4 Claims



1. A panel for forming at least a part of a platform for confinement pens for livestock comprising:

a ground supported concrete member having a top surface, two sides, two ends and a bottom portion and at least one integrally formed flume forming a passageway therein longitudinally thereof,

said flume opening outwardly of the top surface of said panel along at least a part of its length for receiving therein animal excreta,

the width of said flume opening being substantially narrower than the width of said passageway in said flume,

one end of said flume opening outwardly of one end of said member and forming a discharge port for liquid moving through said flume forming a carrier for the excreta, and

a flexible lining forming a part of said flume,

said lining surrounding only the inner periphery thereof below said flume opening terminating below the flume opening with lateral extending flange means at its upper portion extending into the concrete member and held in place by a plurality of stakes engaging the flange means and embedded in the concrete member.

4,346,671

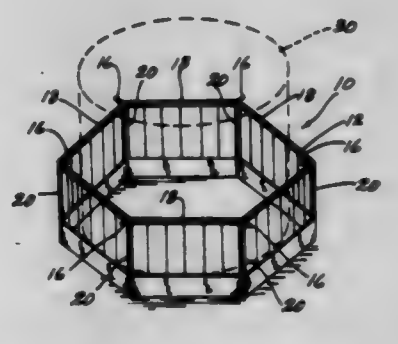
FEED AND ANIMAL ENCLOSURE

Robert L. Wagner, Hampton, Iowa, assignor to Ram Handler, Ltd., Kesley, Iowa

Filed Nov. 10, 1980, Ser. No. 205,264

Int. Cl.³ A01K 5/00; E04H 17/18

U.S. Cl. 119—60 3 Claims



1. A feed and animal enclosure comprising,

a plurality of pivotally interconnected sections,

each pair of interconnected sections including vertically aligned sleeves on adjacent section ends,

a pin received in said aligned sleeves,

said pin including an end portion extended generally horizontally between said section ends,

said sleeves and section ends being of a size and position relative to one another such that two adjacent sections may pivot towards each other in a direction away from said pin end portion to positions wherein the included angle between said adjacent sections is less than 90° and wherein abutment of said section ends with one another limits further pivotal movement towards each other, and

said pin end portion being of a size to limit pivotal movement of said two adjacent sections in a direction towards said pin end portion to positions wherein the included angle between said adjacent sections is obtuse and wherein abutment of said section ends with said pin end portion limits further pivotal movement towards each other whereby said interconnected sections, when pivoted in one direction, abut against each other and, when pivoted in the opposite direction, abut the adjacent pin end portion.

4,346,672

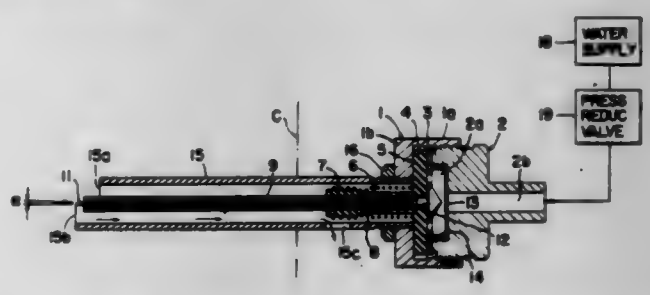
WATER DISPENSER FOR SMALL ANIMALS

Motohiro Niki, 22-11, Yushima 2-Chome, Bunkyo-Ku, Tokyo-To, Japan

Filed Jan. 30, 1981, Ser. No. 230,131

Int. Cl.³ A01K 7/00

U.S. Cl. 119—72.5 4 Claims



1. A water dispenser for feeding small animals having upstream and downstream directions and comprising: a water feed tube having an upstream end through which water flows into the tube and a downstream end through which water

flows out; a control valve interposed between the upstream end of the feed tube and a source of water and closing normally to prevent water from flowing into the feed tube, said valve having means to open it in response to inclination of the feed tube caused by a nudging force applied by a small animal to the downstream end of said tube; and a flow control member inserted in the feed tube to prevent excessive rushing of water therethrough, said flow control member being a bar having a cross sectional shape and size such as to define a passageway for water of capillary cross-sectional dimensions between said member and the inner wall surface of the feed tube.

4,346,673

APPARATUS AND METHOD FOR METERING AND CONTROLLING A FEED OF HYDROGEN FLUORIDE VAPOR

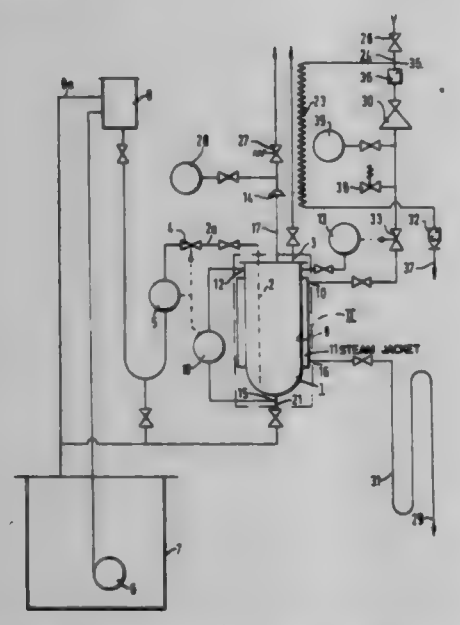
George M. Gillies, St. Annes, England, assignor to British Nuclear Fuels Limited, Warrington, England

Filed Jul. 14, 1980, Ser. No. 168,011

Claims priority, application United Kingdom, Jul. 23, 1979, 7925564

Int. Cl.³ F22B *1/02*

U.S. Cl. 122—31 R 4 Claims



1. Apparatus for metering and controlling a feed of hydrogen fluoride vapour to a chemical plant, said apparatus comprising a boiler for vaporising substantially anhydrous liquid hydrogen fluoride, having an inlet for the liquid hydrogen fluoride and an outlet for hydrogen fluoride vapour, a feed line including a control valve and a flow meter for the liquid hydrogen fluoride for connecting a source of substantially anhydrous liquid hydrogen fluoride with the boiler inlet, a heat transfer surface within the boiler arranged to be increasingly covered by the liquid hydrogen fluoride as the level of the liquid hydrogen fluoride rises in the boiler and having dimensions related to the flow rate of liquid hydrogen fluoride so that for any given liquid flow rate within predetermined limits a liquid level will be automatically established at which heat transfer through the liquid-covered heat transfer surface is such that hydrogen fluoride will boil off at a rate equal to the liquid flow rate, and thus the metered liquid flow rate will indicate the feed rate of hydrogen fluoride vapour to the plant, and means for supplying heat to the heat transfer surface above and below the liquid level such that the evaporation rate is determined essentially only by the amount of heat transfer surface covered by the liquid, and hence by the liquid level in the boiler, said heat transfer surface and said means for supplying heat to the heat transfer surface being provided by a steam jacket, and means for varying laterally the size of the heated steam jacket to vary the liquid flow limits that can be handled by the apparatus.

3. A method of producing a metered feed of hydrogen fluoride vapour utilizing apparatus comprising a boiler for vaporising substantially anhydrous liquid hydrogen fluoride, having an inlet for the liquid hydrogen fluoride and an outlet for hydrogen fluoride vapour, a feed line including a control valve and a flow meter for the liquid hydrogen fluoride for connecting a source of substantially anhydrous liquid hydrogen fluoride with the boiler inlet, a heat transfer surface within the boiler arranged to be increasingly covered by the liquid hydrogen fluoride as the level of the liquid hydrogen fluoride rises in the boiler and having dimensions related to the flow rate of liquid hydrogen fluoride so that for any given liquid flow rate within predetermined limits a liquid level will be automatically established at which heat transfer through the liquid-covered heat transfer surface is such that hydrogen fluoride will boil off at a rate equal to the liquid flow rate, and thus the metered liquid flow rate will indicate the feed rate of hydrogen fluoride vapour to the plant, and means for supplying heat to the heat transfer surface above and below the liquid level such that the evaporation rate is determined essentially only by the amount of heat transfer surface covered by the liquid, and hence by the liquid level in the boiler, said heat transfer surface and said means for supplying heat to the heat transfer surface being provided by a steam jacket and means for varying laterally the size of the heated steam jacket to vary the liquid flow limits that can be handled by the apparatus, said method comprising metering a feed of liquid hydrogen fluoride, introducing the metered feed into the boiler, supplying heat to the boiler through the heat transfer surface, and maintaining the size and location of the heat transfer surface such that liquid hydrogen fluoride is maintained in the boiler at a level partially covering said surface and the metered liquid flow rate is balanced in equilibrium by the rate of evaporation of the liquid hydrogen fluoride and any departure from said level will be automatically restored.

4,346,674

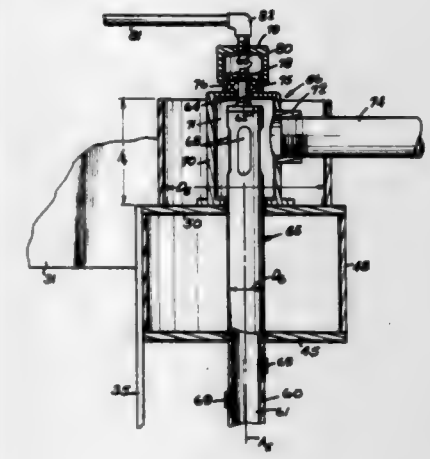
ECONOMIZER WITH SOOT BLOWER

John H. Merritt, Jr., Atlanta, Ga., assignor to Applied Engineering, Inc., Orangeburg, S.C.

Filed Feb. 18, 1981, Ser. No. 235,667

Int. Cl.³ F22B *37/52*

U.S. Cl. 122—390 4 Claims



1. An economizer construction for use in recovering heat from flue gases passing upwardly through a vertical stack via a heat transfer fluid and adapted to be cleaned with a pressurized fluid and lubricated with a lubricant comprising:

a housing defining a generally vertically extending flue gas passage therethrough about a generally vertical central axis;

a helically wound heat transfer coil positioned in said flue gas passage for placing the heat transfer fluid in a heat exchange relation with the flue gases passing through said flue gas passage, said heat transfer coil defining a generally vertically extending opening centrally therethrough concentrically of said central axis and having a first prescribed diameter; and

a soot blower assembly including an elongate soot blower

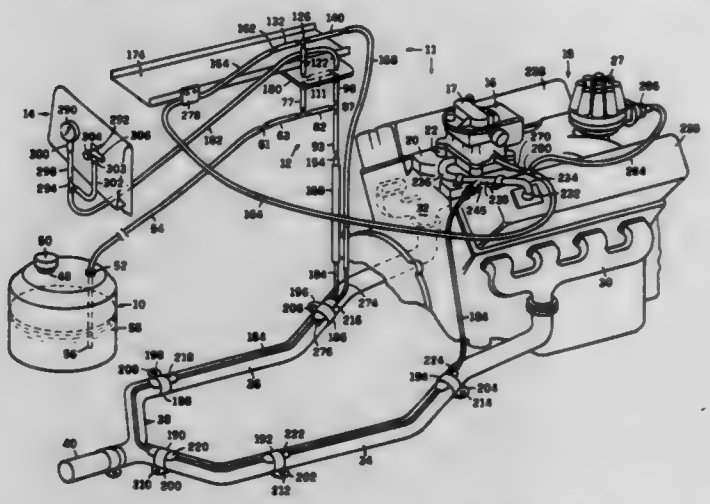
lance having an outside diameter smaller than said first prescribed diameter of said central opening through said heat transfer coil, mounting means for rotatably positioning said soot blower lance within said central opening through said coil so that the longitudinal axis of said lance is generally coaxially oriented along said central axis, drive means for selectively rotating said lance about said central axis, and fluid supply means for supplying the pressurized cleaning fluid to said lance, said lance defining a fluid passage therein in communication with said fluid supply means and defining a plurality of orifices therein for directing streams of the pressurized cleaning fluid from within said fluid passage across said central opening and onto said heat transfer coil to clean same and said mounting means including a lubricable bearing attached to the upper end of said lance so that said lance is rotatably supported in said central opening in said heat transfer coil, a bearing housing mounting said bearing and defining a lubricant chamber therein about said bearing, deflector means for deflecting the flue gases flowing through flue gas passage away from said bearing housing, pipe means communicating with said lubricant chamber and extending exteriorly of said economizer housing across said flue gas passage in said housing, and a grease fitting closing that end of said pipe means extending exteriorly of said housing so that when said lubricant chamber and said pipe means are filled with the lubricant, the flue gases flowing around said pipe means heats the lubricant therein to generate a pressure in said pipe means to force the lubricant into said lubricant chamber and against said bearing to keep said bearing lubricated.

4,346,675

STEAM INJECTION SYSTEM FOR ENGINES

John T. Holliday, Jr., 308 Strawbridge Dr., Chesterfield, Mo. 63017

Filed Aug. 30, 1980, Ser. No. 164,134
Int. Cl.[3] F02D *19/00*
U.S. Cl. 123—25 P 27 Claims



1. A system of injecting steam into the fuel-air flow of an internal combustion engine having at least one cylinder, said engine having a carburetor with a throttle plate and a fuel flow path from the carburetor to the engine cylinder; a means of producing heat; a water source present; said system comprising:

(a) a first conduit for connection to the water source and extending to association with the means for heating so that water flowing through the first conduit is converted to steam, said first conduit thence extending for connection with the fuel flow path so that steam from the first conduit can be injected in said fuel flow path at a point between the throttle plate and the engine cylinder;

(b) a second conduit for connection to the atmosphere and for connection to said fuel flow path at a point above the throttle plate;

(c) a third conduit for connecting the second conduit to the first conduit at a point in the first conduit between the water source and the heating means to allow fluid flow between the first and second conduits;

(d) a fourth conduit for connecting the third conduit to the first conduit at a point in the first conduit between the association of the first conduit with the heating means and the connection of the first conduit with the third conduit; and

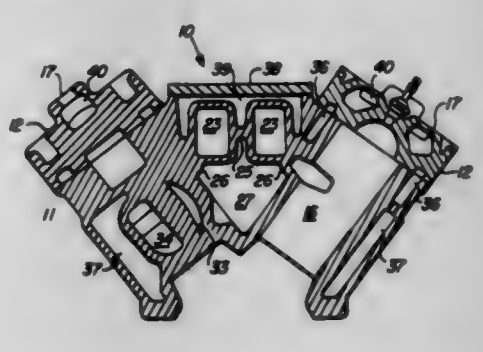
(e) means for controlling fluid flow through the conduits.

4,346,676

TWO-CYCLE V-ENGINE WITH INTEGRALLY CAST EXHAUST MANIFOLD

Alfred E. Tyner, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 6, 1979, Ser. No. 64,120
Int. Cl.[3] F01P *3/02, 3/12*
U.S. Cl. 123—41.74 1 Claim



1. A unitary cast cylinder block for a water cooled, two-cycle crankcase compression outboard motor engine, said unitary block comprising:

A. a plurality of cylinders arranged in first and second vertical banks, said banks forming a V having an included angle of approximately 74°, each of said cylinders including an inlet port means for transferring inlet gases from a crankcase to the interior of said cylinders;

B. first and second vertical exhaust gas chambers between said cylinder heads, said exhaust gas chambers opening downwardly;

C. exhaust gas passages connecting each of said cylinders of said first and second banks with said first and second exhaust gas chambers, respectively;

D. walls between said exhaust gas chambers and said cylinders to define a vertically extending central core cooling passage;

E. first and second upper cylinder cooling jackets surrounding said cylinders at their head ends;

F. a manifold cooling passage partially defined between said first exhaust gas chamber and said first upper cylinder cooling jacket and between said second exhaust gas chamber and said second upper cylinder cooling jacket, said manifold cooling passages extending along the full length of said exhaust gas chambers; and

G. first and second walls on the outside of said first and second cylinder banks, respectively, said walls spaced from said cylinders to define first and second outside cooling chambers on the outside of said V, said outside cooling chambers located near the apex of said V.

4,346,677

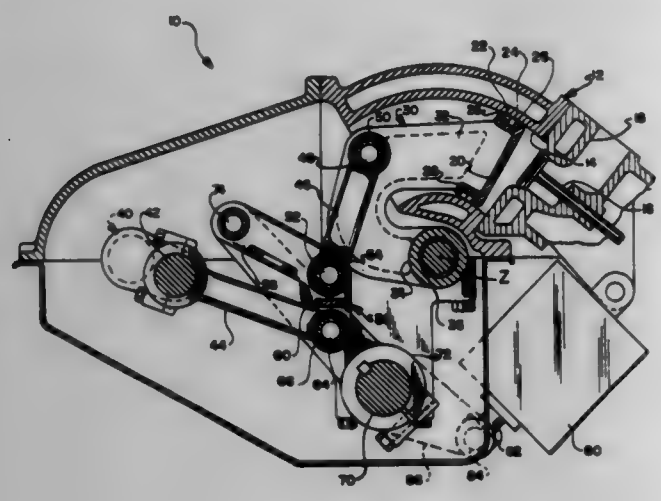
COMBUSTION ENGINE WITH SUBSTANTIALLY CONSTANT COMPRESSION

Norman H. Nye, 1348 Highbridge Rd., Cuyahoga Falls, Ohio 44223

Filed Sep. 2, 1980, Ser. No. 183,251
Int. Cl.[3] F02B *75/26*
U.S. Cl. 123—54 B 6 Claims

1. In an internal combustion engine, a crankshaft having a fixed rotary axis, a connecting rod engaging said crankshaft, an

engine block means including an arcuately shaped cylinder, valve and combustion material supply means connected to said cylinder, a piston positioned in said cylinder for reciprocation therein, a piston rod positioning said piston, a regulatory shaft positioned parallel to said crankshaft on a second fixed rotary axis, a mounting shaft for said piston rod, and link means pivotally interconnecting said piston rod to said connecting rod and



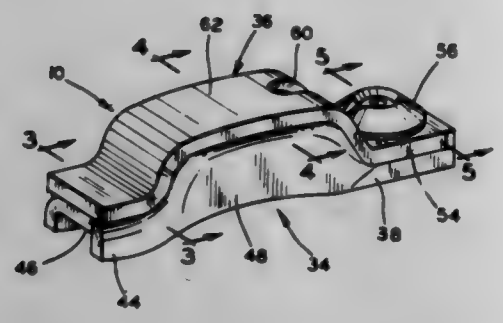
operatively connecting to said regulatory shaft to control the length of stroke of said piston dependent upon the operational condition of said engine, wherein an accelerator is provided to control engine speed, and means operatively connect said regulatory shaft to the accelerator controlling the engine to move said regulatory shaft arcuately with changes in the setting of said accelerator and reduce the length of piston stroke with less fuel supply to the engine.

4,346,678

ROCKER ARM AND METHOD OF MAKING SAME

Joseph L. Wherry, Perrysburg, Ohio, assignor to Toledo Stamping & Manufacturing Company, Toledo, Ohio

Filed Mar. 27, 1980, Ser. No. 134,447
Int. Cl.³ F01L *1/18*
U.S. Cl. 123—90.44 7 Claims



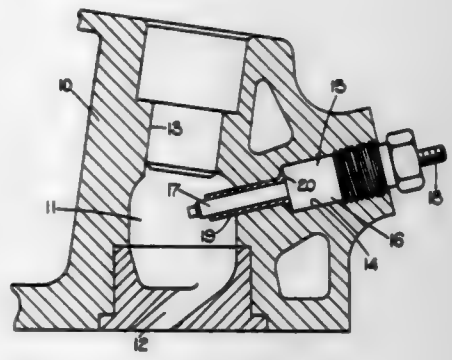
1. A stamped rocker arm of the cam-follower type comprising an upper metal strip and a lower metal piece, a surface of said metal strip being substantially contiguous with part of said metal piece, said metal piece having a rounded recess in an end portion thereof facing away from said metal strip to receive a lifter post having an end on which said rocker arm can pivot, said metal piece having a hole therein communicating with said rounded recess, said metal piece also having an additional recess at another end portion thereof to receive an end of a valve stem, said metal strip having an intermediate convex portion facing away from said metal piece to be engaged by a cam, and said strip having a slot communicating with said hole and extending at least to said convex portion thereof and forming a lubricant groove with a portion of said part of said metal piece, said groove communicating with said hole and extending at least to said convex portion of said strip, and means affixing said strip to said piece.

4,346,679

STARTING AIDS FOR INTERNAL COMBUSTION ENGINES

Richard P. Knowles, Farnborough, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 9, 1980, Ser. No. 110,629
Claims priority, application United Kingdom, Feb. 1, 1979, 7903601
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—145 A 5 Claims



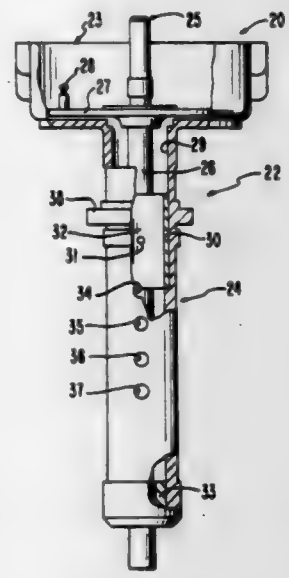
1. A starting aid for an internal combustion engine comprising a body, a tubular extension located at one end of the body, said extension having a diameter of a size such that a shoulder is formed between the body and the extension, a wound heating element located within the end of the tubular extension, said heating element in use, being heated by the passage of electric current to provide a heated surface, a sleeve mounted about said extension, said sleeve being in heat exchange relationship with the surface of the portion of the extension about which it is located, the sleeve extending from said shoulder to a position spaced from the end of the extension, the sleeve being formed from a material having a high thermal conductivity.

4,346,680

APPARATUS FOR AND METHOD OF LUBRICATING A DISTRIBUTOR FOR AN INTERNAL COMBUSTION ENGINE

Zenovie Boychuk, 86 Renato Ct., Apt. 14, Redwood City, Calif. 94061

Filed Jun. 19, 1980, Ser. No. 161,004
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—146.5 A 2 Claims



1. A method of improving the lubrication of a conventional distributor for an internal combustion engine having an upper bearing means located in a housing for supporting a rotatable shaft, said bearing member being normally located in an upper portion of said housing outside of the engine crankcase com-

partment into which said distributor is inserted, comprising the steps of:

locating said upper bearing means in said housing so that at least a lower part thereof extends into said engine crankcase compartment into which said distributor is inserted; and

providing a hole in said housing removed from said upper bearing means for admitting oil splashed on said housing due to rotation of a crankshaft to contact said shaft and migrates to said upper bearing means to lubricate said upper bearing means as said shaft rotates.

4,346,681

APPARATUS FOR FUEL METERING, AND IN PARTICULAR, SUPPLEMENTARY FUEL METERING, BY MEANS OF A SPECIAL METERING DEVICE IN AN EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINE

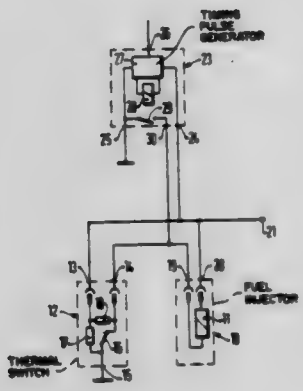
Rolf Schleicher, Leinfelden; Lutz Seebald, Möglingen, and Walter Seitz, Filderstadt, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 93,094

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848563

Int. Cl.³ F02B *3/00;* F02N *17/08*

U.S. Cl. 123—179 L 11 Claims



1. A supplementary fuel metering apparatus for an internal combustion engine which comprises:

an electrical input of the apparatus;

an electrical output of the apparatus;

apparatus actuating means for providing an operating voltage between said input and said output at predetermined times and operating conditions of the engine;

a voltage-actuated fuel metering device;

a timing pulse generator which includes

pulse transducer means, connected between said input and said output and actuated by the operating voltage, for generating electrical pulses, and

switch means, actuated by the electrical pulses generated by the pulse transducer means, for periodically connecting the fuel metering device between said input and said output; and

thermal time switch means for connecting the fuel metering device across said input and said output for at least an initial portion of each time period that the operating voltage is provided between said input and said output, whenever a sensed temperature is below a predetermined temperature value at the beginning of said time period.

4,346,682

CARBURETOR FOR A MULTICYLINDER INTERNAL COMBUSTION ENGINE AND METHOD OF OPERATION THEREOF

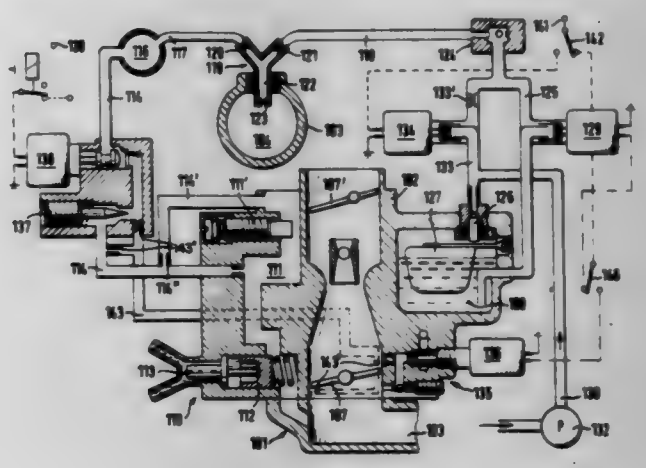
Reinhard Mader, Reisgang, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke, Munich, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,664

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907812

Int. Cl.³ F02M *23/04*

U.S. Cl. 123—179 G 25 Claims



3. A carburetion arrangement for a multicylinder internal combustion engine, the arrangement comprising at least one carburetor for forming a main fuel-air mixture, individual intake channel means for connecting the at least one carburetor to intake valves of the internal combustion engine, and separate air line means and fuel line means for respectively delivering air and fuel to the intake channel means, characterized in that control means, controlled as a function of volume, are provided for commonly distributing intake air for fuel-air mixture components formed by the separate air line means and fuel line means to the individual intake channel means, at least one additional control means is provided for controlling a small portion of the intake air, said additional control means is operable to control the intake air to the separate air line means as a fuel correction and as a function of volume with a volume of the fuel correction air being reduceable to zero, said additional control means is disposed upstream of an air distributor means for distributing air to the separate air lines means, and in that fuel distributor means are provided for distributing fuel to the separate fuel line means, said fuel distributor means are connected at zero pressure to the at least one carburetor means.

4,346,683

AUTOMATIC STARTING FLUID INJECTION APPARATUS

James W. Burke, Rte. 2, Box 476, Long Grove, Ill. 60047

Continuation-in-part of Ser. No. 926,413, Jul. 20, 1978, Pat. No. 4,202,309. This application Feb. 21, 1980, Ser. No. 123,486

The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.

Int. Cl.³ F02M *1/16*

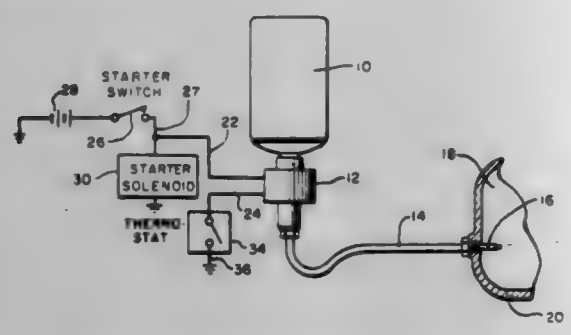
U.S. Cl. 123—180 R 21 Claims

1. An apparatus for automatically injecting a pressurized starting fluid from a valved cannister into an air intake passage of an internal combustion engine provided with starter means, said apparatus comprising:

a valve actuator having an intake bore coupled to the valved cannister and an exit bore, said valve actuator, when activated, operating to pass starting fluid continuously from the valved cannister, through the intake bore, to the exit bore, said actuator including a coil and a movable armature disposed adjacent the coil to actuate the cannister valve when electrical current is passed through the coil;

means for conducting starting fluid from the exit bore of the valve actuator to the air intake passage;

reservoir means in fluid communication with the exit bore for temporarily storing a volume of starting fluid during the period when the valve actuator is activated, and for supplying the volume of starting fluid to the air intake passage immediately following de-activation of the valve actuator, said reservoir means including a cavity formed in the armature;



means for venting the cavity formed in the armature to increase the volume of starting fluid temporarily stored in the cavity; and

means for automatically activating the valve actuator during operation of the starter means, such that the valve actuator is automatically controlled to cause starting fluid to be injected into the air intake passage during and immediately following operation of the starter means.

4,346,684

VALVE SEAT RING

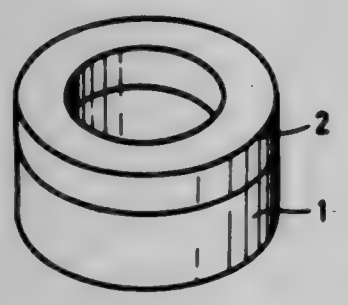
Paul Vossieck, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,762

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918248

Int. Cl.[3] F01L *3/02*

U.S. Cl. 123—188 S 10 Claims



1. In a sintered valve seat ring including an annular supporting portion and an annular facing portion superposed on the supporting portion; said supporting portion comprising a material selected from the group consisting of an iron alloy and a steel alloy and said facing portion comprising a material selected from the group consisting of a nickel alloy, a cobalt alloy and a nickel-cobalt alloy; the improvement wherein said supporting portion additionally comprises, distributed therein, up to 30% by weight of the alloy selected for said facing portion.

4,346,685

INTERNAL COMBUSTION ENGINE WITH GAS SEALING DEVICE

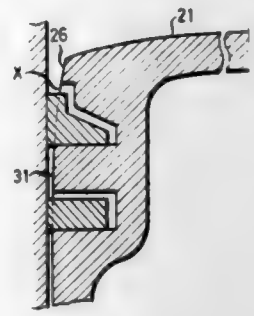
Tetsuzo Fujikawa, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Jan. 8, 1980, Ser. No. 110,301

Claims priority, application Japan, Jan. 23, 1979, 54-7317[U]

Int. Cl.[3] F02F *3/24;* F16J *9/02, 9/08*

U.S. Cl. 123—193 P 1 Claim



1. An internal combustion engine comprising

a cylinder,

a piston for reciprocating movement arranged in said cylinder,

a combustion chamber defined by a top surface of said piston and an inner surface of said cylinder,

a device for providing a gas seal between an outer circumferential surface of said piston and said inner surface of said cylinder, which comprises,

a piston ring, and

a piston ring groove formed in said outer circumferential surface of said piston for fitting said piston ring therein, in which

said piston ring groove is in the shape of an L-shaped keystone, including

an annular outer portion disposed radially outwardly of said piston and parallel to the center axis of said piston, and

an annular wedged-shaped portion contiguous with said annular outer portion, extending toward the center axis of said piston and tapered toward the center axis of said piston when viewed in a vertical section,

said piston ring groove formed in a position in the outer circumferential surface of said piston that is remote from the top surface of said piston to form a top land in a peripheral portion of said piston, of substantial thickness extending in the direction of the center axis of said piston,

said piston ring is in the shape of an L-shaped keystone, including

an annular outer ring portion disposed in said outer groove portion of said piston ring groove, extending parallel to the center axis of said piston, and

an annular wedge-shaped ring portion disposed in said wedge-shaped groove portion of said piston ring groove, tapering toward the center of axis of said piston when viewed in a vertical section, said annular wedge-shaped ring portion maintained in sliding contact at its outer circumferential surface with the inner surface of said cylinder,

with a gap defined between said L-shaped keystone piston ring and said L-shaped keystone piston ring groove, in which said top land has a diameter smaller than a diameter of a bottom land formed on the outer circumferential surface of said piston on a side of said piston ring groove opposite said top land, forming a gap between an outer circumferential surface of said top land and the inner surface of said cylinder, the diameter of said top land gradually expanding in the direction toward said piston ring groove away from said combustion chamber, said top land partially overlying said piston ring, and the outer circumferential surface of said top land curves inwardly from a maximum diameter at the edge of said piston ring

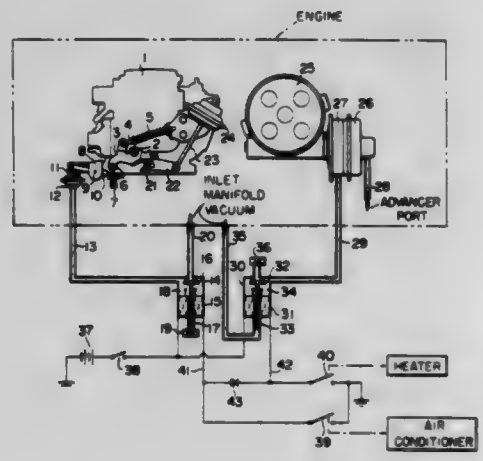
groove toward the center axis of said piston in the direction toward said combustion chamber away from said piston ring groove, to allow gas pressure to be introduced from said combustion chamber into the gap defined between said L-shaped keystone piston ring and said L-shaped keystone piston ring groove.

4,346,686

IDLE CONTROLLER FOR AN INTERNAL COMBUSTION ENGINE

Nobuaki Wakita, and Hiroshi Kanai, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 919,172, Jun. 26, 1978, abandoned.
This application May 5, 1980, Ser. No. 146,440
Claims priority, application Japan, Feb. 17, 1978, 53-17179
Int. Cl.³ F02M *3/06*; F02P *5/10*
U.S. Cl. 123—339 3 Claims



1. In a vehicle which comprises an internal combustion engine having a throttle positioner for selectively setting the engine's minimum idle rate, mechanical means for automatically increasing said idle rate above said minimum in response to certain engine conditions, and a vacuum advancer having first and second vacuum supply ports and being adapted to provide normal vacuum advance of ignition timing when said first and second ports are supplied with engine inlet manifold vacuum and to provide reduced vacuum advance of ignition timing when said first port is supplied with inlet manifold vacuum and said second port is supplied with atmospheric pressure, and having a heater for providing engine-generated heat to the vehicle during operation and an air conditioner adapted to be driven by the engine, a control system, comprising:

(a) first means for controlling said throttle positioner to automatically increase said minimum idle rate setting between a low setting and a high setting;

(b) second means for indicating operational condition of said heater;

(c) third means for controlling alternative supply of said manifold vacuum and atmospheric pressure to said second port of said vacuum advancer;

(d) fourth means for indicating operational condition of said air conditioner;

(e) said second and fourth means controlling said first means to maintain said minimum idle rate of said low setting when neither said heater nor said air conditioner is operating and to increase said minimum idle rate to said high setting when either said heater or said air conditioner is operating; and

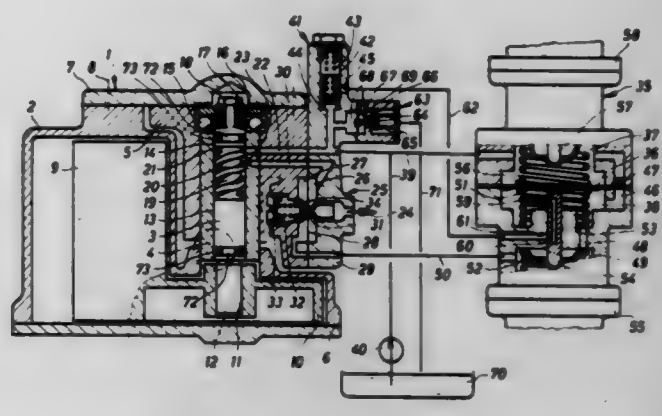
(f) said second means controlling said third means so as to supply atmospheric pressure to the second port of said vacuum advancer when said heater is operating and so as to supply said manifold vacuum to said second port during operating conditions of the engine when said heater is not operating.

4,346,687

FUEL INJECTION SYSTEMS

Armin Bauder, Neckarsulm, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Jun. 5, 1980, Ser. No. 156,743
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927110
Int. Cl.³ F02M *69/00*
U.S. Cl. 123—454 7 Claims

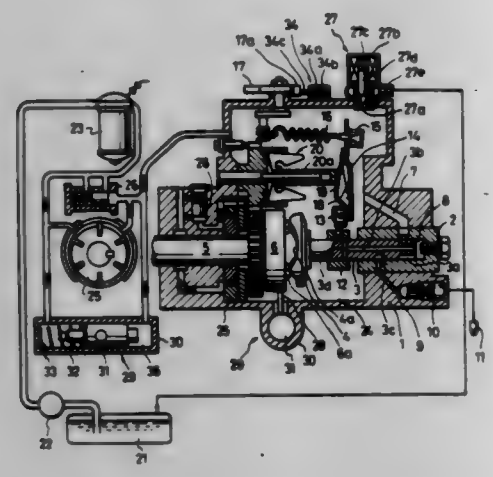


1. In a fuel injecting system for a mixture compressing spark-ignition internal combustion engine with continuous fuel injection, having a valve for maintaining a predetermined pressure in the system; means for metering air flowing through the intake manifold of the engine; a fuel proportioning valve, actuable by the air metering means, for proportioning fuel at a pressure difference which is constant but which can be varied by running parameters of the engine, the fuel proportioning valve comprising a rotatable piston valve, a piston valve cylinder, a pair of axially spaced cylindrical bearings for mounting the piston valve in the cylinder to define a space between the valve and the cylinder extending between the bearing; a fuel feed line for introducing fuel under pressure in to said space such that a lower pressure prevails outside at least one bearing; a fuel return line, a differential pressure regulating valve for regulating said pressure difference, comprising body means defining a substantially enclosed space, a diaphragm constituting a movable valve member and extending across the space to define first and second chambers, valve means for connecting the first chamber to the return line, the valve means being operable by the diaphragm, and means for connecting the second chamber to the fuel feed line upstream of the fuel proportioning valve; and a diaphragm valve having a casing defining a substantially enclosed spaced having a valve seat; a diaphragm extending across the space to define two chamber, and acting as a movable valve element for closing the valve seat, the diaphragm being held in the casing between two flat surfaces of the casing, means for connecting the first chamber to the fuel proportioning valve downstream of the fuel proportioning valve, means for connection the first chamber to an injection valve via the valve seat, and means for connecting the second chamber of the diaphragm valve to the first chamber of the differential pressure regulating valve; the improvement comprising one of the piston valve or cylinder defining an annular groove at least one of the bearings and sealing gasket means disposed in the groove to seal against the other of the valve or cylinder; a normally closed stop valve disposed in the return pipe and means for holding the stop valve open when the second chamber of the differential pressure regulating valve is above a predetermined a level; the system pressure valve having an outlet connected to the return pipe upstream of the stop valve; and the diaphragm valve having a spring and means for mounting the spring between the casing and the diaphragm such that the spring acts on the diaphragm to close the valve seat.

4,346,688
INJECTION TIMING CONTROL SYSTEM FOR FUEL INJECTION PUMP

Nobuhiro Kaibara, and Kazuyoshi Takaichi, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1979, Ser. No. 96,062
Claims priority, application Japan, Feb. 19, 1979, 54-18137
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—502 11 Claims



1. An injection timing control system in combination with a fuel injection pump for an internal combustion engine, the pump being of the type including a housing having a fuel chamber defined therein, fuel supply means for supplying fuel to said fuel chamber under pressure dependent upon engine r.p.m., and fuel injection quantity control means having an operating member operatively connected thereto and displaceable to cause a change in the fuel injection quantity of the pump, said injection timing control system being actuatable in response to pressure within said fuel chamber and comprising:

a. a magnet valve arranged to perform a periodic valve opening and closing action for control of the pressure within said fuel chamber;

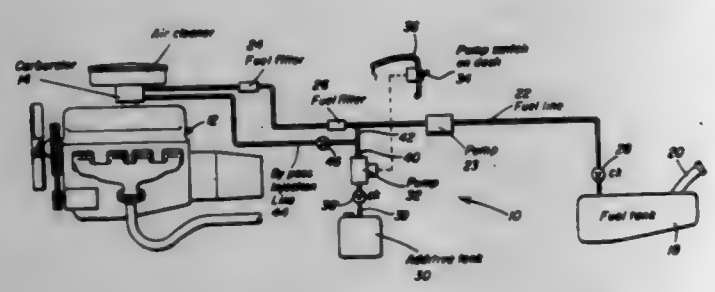
b. detecting means for electrically detecting an acceleration of said operating member and to generate an acceleration rate signal representing the rate of said acceleration of said operating member; and

c. control means for processing said acceleration rate signal to supply a control pulse signal which is a function of said acceleration rate signal to said magnet valve to drive same.

4,346,689
CONTROLLED FUEL INJECTION SYSTEM

Noah A. Neely, 9180 E. Placita Violeta, Tucson, Ark.IZONA 85715

Filed Dec. 9, 1980, Ser. No. 214,869
Int. Cl.³ F02B *13/00, 77/04*
U.S. Cl. 123—575 8 Claims



1. A controlled fuel injection system comprising:

a fuel-supplied combustion engine means including a fuel supply storage tank and a fuel line operably connected between said tank and said engine means for delivering said fuel to said engine means;

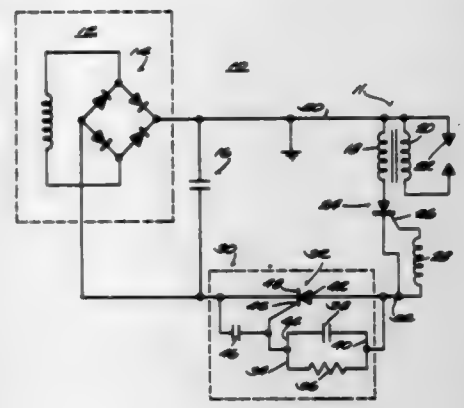
an additive supply means including an additive supply storage tank and an additive supply line connected between the additive supply storage tank and fuel line for selectively delivering an additive to said engine means; and

bypass means including a bypass injection line connected with the engine means and operatively connected with the fuel line and additive line downstream of the storage tanks for selectively delivering said fuel and said additive to said engine means in the event that a portion of said fuel line, downstream of the additive supply line becomes inoperative.

4,346,690
CD IGNITION WITH ISOLATION CIRCUIT TO PROVIDE IMMEDIATE RECHARGING OF THE CHARGE CAPACITOR

Philip A. Anderson, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 9, 1980, Ser. No. 157,418
Int. Cl.³ F02P *3/06*
U.S. Cl. 123—599 12 Claims



1. An isolation circuit adapted for use with a capacitor discharge ignition system including a charge capacitor, an ignition coil primary winding, and an ignition SCR, said isolation circuit comprising a thyristor having a gate, an anode and a cathode, said thyristor having an anode-cathode path adapted for connection in series relationship with the charge capacitor, the primary winding and the ignition SCR, said isolation circuit further comprising a parallel RC network having one end connected to said thyristor anode and having an opposite end connected to said thyristor gate, said isolation circuit providing for immediate recharging of the charge capacitor after the charge capacitor has discharged through the primary winding to effect an ignition spark.

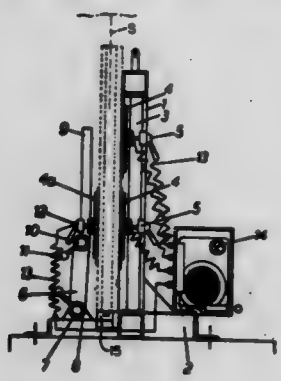
4,346,691
SLAB-GRIPPING APPARATUS

Patrick T. Bourke, Doon House, Maam, County Galway, Ireland

Division of Ser. No. 848,352, Nov. 3, 1977, which is a continuation-in-part of Ser. No. 686,213, May 12, 1976, Pat. No. 4,063,982, which is a continuation-in-part of Ser. No. 394,138, Sep. 4, 1973, Pat. No. 3,963,846. This application Aug. 7, 1979, Ser. No. 64,999
Int. Cl.³ B28D *1/02*
U.S. Cl. 125—12 8 Claims

1. In combination with a stone-cutting saw, slab-gripping apparatus comprising first gripping means in the form of at least one vacuum-operated suction cup, an upright frame on which said cup is mounted in a substantially vertical position, second gripping means in the form of at least a second vacuum-operated suction cup disposed in opposed relation to said first suction cup, means for supporting a stone slab on its edge between said cups with one face of the slab in contact with said first gripping means and the lower edge of the slab supported on said supporting means, articulated support means for said second suction cup whereby the cup may be swung into a position in which it is in contact with the opposite face of the

slab, and means for supplying suction to each of the cups such that said first cup is adapted to grip one face of the slab while the second suction cup is adapted to grip the opposite face of the slab, the saw and slab-gripping apparatus being so positioned relative to each other that the blade of the saw cuts



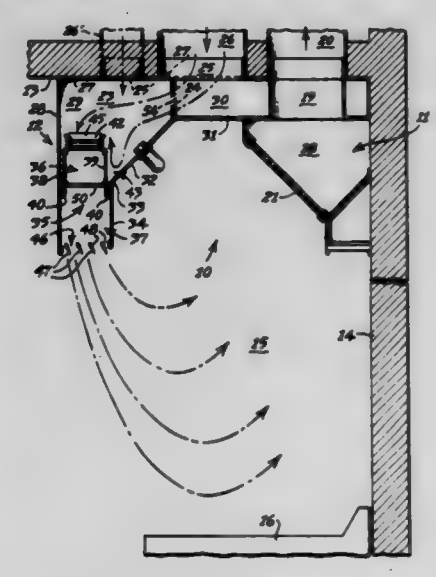
along a cutting plane substantially parallel to and between the opposed suction cups, whereby the slab may be cut into two layers and during the cutting operation the opposed suction cups and said supporting means prevent relative movement of the partly-cut layers.

4,346,692

MAKE-UP AIR DEVICE FOR RANGE HOOD

Lewis C. McCauley, Box 895, Murfreesboro, Tenn. 37130

Filed Nov. 26, 1980, Ser. No. 210,270
Int. Cl.³ F21C *15/08*; F24J *11/00*
U.S. Cl. 126—299 D **7 Claims**



1. A make-up air device for use in combination with an overhead exhaust hood above a cooking range, comprising:

(a) a supply air plenum adapted to be mounted above the front portion of a cooking range,

(b) said plenum having a lower portion, including a front wall,

(c) a supply air inlet communicating with the interior of said supply air plenum,

(d) said lower portion comprising a lower wall terminating in a lower edge portion spaced from said front wall to define an air outlet passage,

(e) a controlled air chamber extending vertically through said outlet passage,

(f) said controlled air chamber comprising an upright rear wall projecting above said lower edge portion of said lower wall to form an air pocket in the lower portion of said plenum behind said upright rear wall,

(g) said controlled air chamber comprising an inlet portion above said lower edge portion of said lower wall, and communicating with said plenum, whereby air within said supply air plenum is spread out by said air pocket before the air discharges through said inlet portion,

(h) damper means having variable size openings in said inlet portion,

(i) means for controlling said damper means to vary the size of said openings in order to vary the volume of air flowing through said inlet portion into said controlled air chamber,

(j) said controlled air chamber having a discharge opening through which air from said chamber is discharged above the cooking range,

(k) variably movable louvers mounted in said discharge opening for directing and changing the flow of air through said discharge opening, and

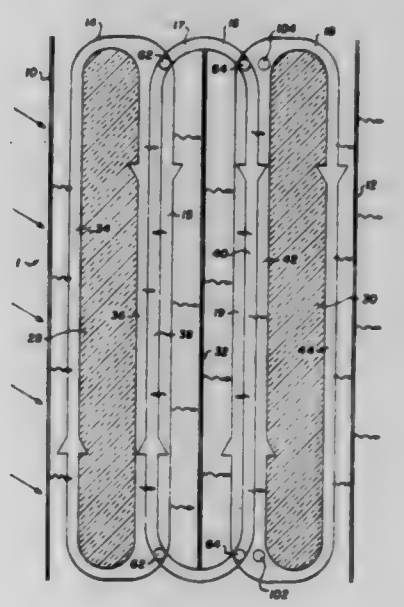
(l) baffle means within said controlled air chamber for flattening out and dampening the flow of air from said damper means to said discharge opening to reduce the velocity of the air flow through said discharge opening.

4,346,693

SOLAR PANEL

Gerard Wagner, 1202-2075 Commox St., and Klaus Schmid, 1365 Laburnum St., both of Vancouver, British Columbia, Canada

Continuation-in-part of Ser. No. 91,325, Nov. 5, 1979, abandoned. This application Oct. 31, 1980, Ser. No. 202,845
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—434 **10 Claims**



1. A solar panel, comprising:

an interior heat storage means;

a solar radiation collector wall mounted proximate a first part of said heat storage means having a collector surface for exposure to solar radiation;

a heat emitter wall mounted proximate a second part of said heat storage means opposite the first part thereof having an emitter surface for exposure to a space to be heated;

a collector fluid conducting path for directing a collector fluid around an endless loop from a primary portion of the loop wherein there is heat exchanging contact with said solar radiation collector wall to a secondary portion of the loop wherein there is heat exchanging contact with an emitter fluid and the first part of said interior heat storage means,

an emitter fluid conducting path for directing emitter fluid around an endless loop from a primary portion of the loop wherein there is heat exchanging contact with the collector fluid and the second part of said interior heat storage means to a secondary portion of the loop wherein there is heat exchanging contact with said emitter wall;

an heat exchanger panel located within said interior heat storage means having an outer surface which is in thermally conductive association with the collector fluid in the secondary portion of said collector fluid path and an inner surface which is in thermally conductive association

with the emitter fluid in the primary portion of the emitter path;

a pair of insulation panels one between the primary and secondary portions of the collector fluid conducting path and the other between primary and secondary portions of the emitter conducting fluid path;

wherein said collector and emitter walls each are made of a heat conducting sheet material, and

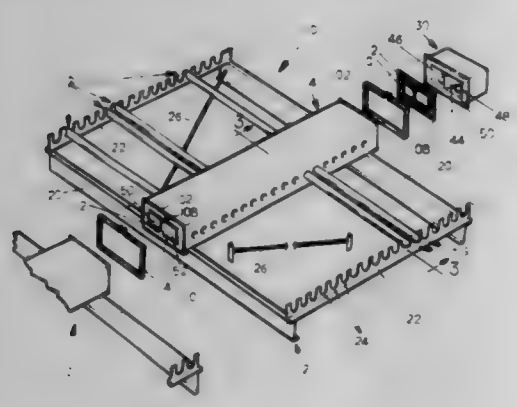
wherein said interior heat storage means further includes a storage fluid conducting path for directing a storage fluid around an endless loop from the secondary portion of the collector fluid path wherein there is heat exchanging association with the collector fluid to the primary portion of the emitter fluid path wherein there is heat exchanging association with the emitter fluid.

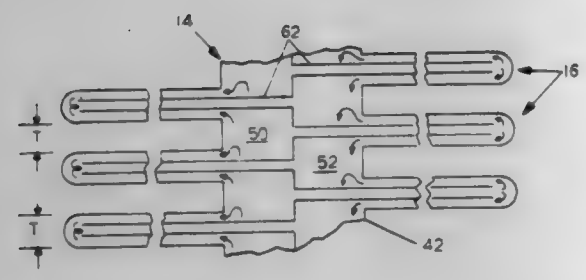
4,346,694

SOLAR COLLECTOR MODULE

Kenneth L. Moan, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 17, 1981, Ser. No. 235,076
Int. Cl.³ F24J 3/02; F28D 7/12
U.S. Cl. 126—443 7 Claims





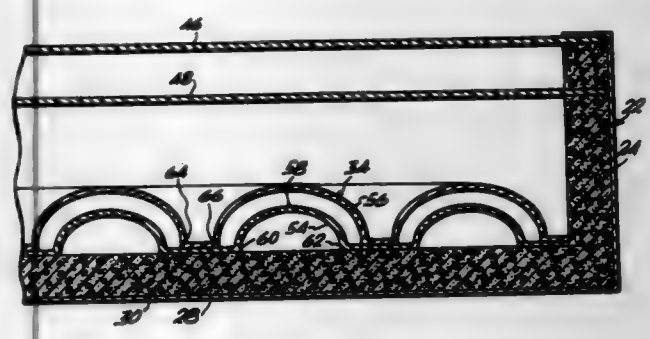
1. A solar collector module comprising, in combination, a manifold having an outer sheath, an inner sheath, a layer of insulating material disposed between said sheaths, a baffle disposed within said inner sheath and defining two passageways, and flange means for connecting said manifold to associated devices, a plurality of evacuated tube collector assemblies, each assembly comprising an elongate collector element having an inner wall and an outer wall, and an elongate hollow member disposed therein and defining an inner passageway within said member and an outer passageway between said member and said inner wall of said collector element, said inner passageway of each of said assemblies communicating with one of said two manifold passageways and the outer passageway of said each of said assemblies communicating with the other of said two manifold passageways, and a gasket disposed generally between said collector elements and said manifold sheaths and insulating material, said collector elements arranged in a staggered coplanar array on opposed sides of said manifold.

4,346,695

SOLAR HEAT EXCHANGER

George Kitzmiller, 721 E. 5 St., Miami, Fla. 33010

Filed Feb. 14, 1980, Ser. No. 121,521
Int. Cl.³ F24J 3/02
U.S. Cl. 126—444 10 Claims



1. A solar heat exchanger comprising:

a frame including a bottom, first and second ends, and upstanding side walls defining an inner surface area, an insulation layer of approximately uniform thickness throughout the inner surface area,

a plurality of channels arranged throughout the frame resting upon the insulation material,

each channel having inner and outer walls wherein fluid flows in a restricted manner between the walls through the channel, the inner wall spaced a predetermined distance from the insulation layer defining an insulation space,

solar heat trapping means comprising:

a plurality of parallel spaced apart relatively thin transparent panels spanning the side and end walls of the frame, for minimizing heat loss due to reflection and for creating a greenhouse effect increasing the amount of heating on the fluid flowing through the channels, and

the frame including inlet means in open communication with at least one channel for allowing relatively cool fluid to enter the heat exchanger and outlet means in open communication with at least one channel for allowing heated fluid to exit the heat exchanger for use in heating;

said heat exchanger comprising a serpentine heat exchanger as follows:

the channels comprise one relatively long channel having multiple 180° bends defining approximately equal channel segments, the channel includes a first end defining an outlet means and a second end defining an outlet means;

each channel comprising an ellipsodial shape, the inner wall being of an ellipsodial curvature and the outer wall being of an ellipsodial curvature,

the ellipsodial inner wall spaced a predetermined distance from the insulation layer defining an ellipsodial inner insulation space, the outer wall spaced a predetermined distance from the inner wall, the ellipsodial walls defining an ellipsodial channel, wherein a fluid may flow in a restricted manner between the inner and outer walls.

4,346,696

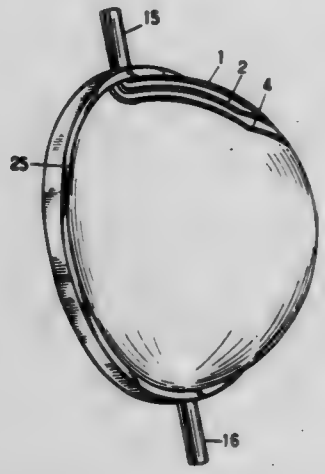
SOLAR ENERGY COLLECTOR

Robert Brunet, Eysines, France, assignor to Brunet France S.A., Eysines, France

Filed Mar. 16, 1979, Ser. No. 21,234
Claims priority, application France, Sep. 27, 1978, 78 28310
Int. Cl.³ F24J 3/02
U.S. Cl. 126—450 21 Claims

1. A solar energy collector comprising at least four domes: an outer transparent dome arranged so as to result in a greenhouse effect within said collector, a subdome, an inner dome, and an intermediate dome; each of said domes having a substantially circular base and being nested within one another so as to form said energy collector, each of said domes having a

collar at its base, said collars overlapping when said domes are nested, said collector further comprising a belt arranged above



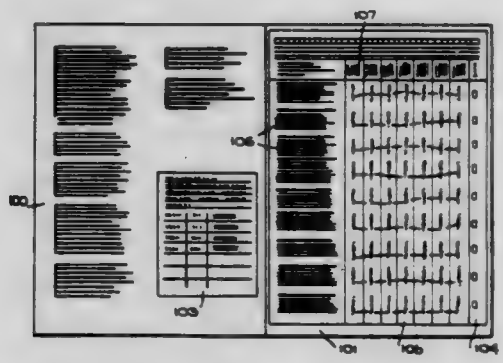
and below said collars so as to absorb stresses to which each of said domes is subjected.

4,346,697

METHOD FOR TREATING DEPRESSION AND OTHER MALADIES BY MEANS OF PATIENT-CREATED SYMPTOM GRAPHS

Kopel H. Cohen, 58 Kettle Creek Rd., Weston, Conn. 06880

Filed Mar. 5, 1979, Ser. No. 17,109
Int. Cl.[3] A61B *19/00*
U.S. Cl. 128—1 R 11 Claims



1. A method for treating patients suffering from depression by means of the controlled administration of antidepressant medication comprising the steps of:

a. administering to a patient suffering from depression an antidepressant drug on a daily basis for a first dosage period set by the practitioner, and in conjunction with the administration of said antidepressant drug during said first dosage period;

b. administering to said patient suffering from depression a patient-completable symptom chart comprising a plurality of symptom fields, each symptom field corresponding to a particular symptom of depression, and

c. said symptom fields being arranged sequentially on said chart, and

d. each of said symptom fields including a series of printed symptom indicatives, with said symptom indicatives each corresponding to a particular degree of a related symptom and said symptom field including symptom indicatives ranging from an extreme manifestation of the symptom, to symptom indicatives indicating improvement in patient condition relative to said extreme symptom, to a positive symptom indicative indicating minimum manifestation of said symptom, and

e. said symptom indicatives being arranged in said symptom field in a progressive sequence with the indicative relating to said extreme manifestation being at one end of said sequence, symptoms indicating improvement in said patient condition following said extreme symptom in said progressive sequence and said positive symptom being located at the other extremity of said progressive sequence, and

f. a patient-markable graph field arranged in association with each of said symptom fields on said patient-completable symptom chart; said graph field including a series of columns with the number of said columns in said graph field being at least equal to the number of days covered by said first dosage period, and

g. each of said columns including zone means for receiving a patient-applied indication, with each of said printed symptom indicatives having a zone means in correspondence therewith in each column of said graph field, and

h. said patient assesses his symptoms during said first dosage period by the step of applying an indication in said zone means which corresponds to the symptom indicative most closely corresponding to said patient's assessment of his symptoms on each treatment date over said first dosage period, said patient thereby creating a graphical representation of said patient's symptoms on said symptom chart; and

i. wherein upon the completion of said first dosage period, on the basis of said practitioner's assessment of the graph created on said symptom chart by said patient during said first dosage period, said practitioner increases the originally administered dosage of antidepressant drug to be taken by said patient or said practitioner maintains said dosage of antidepressant drug to be taken by said patient at said originally administered dosage level, said dosage of said antidepressant drug being increased when said patient-created graph shows no improvement in said symptoms associated with said patient's depression, and said dosage of antidepressant drug being maintained at said originally administered level when the slope of the line on said patient-markable graph field is upward or shows improvement in said symptoms associated with said patient's depression;

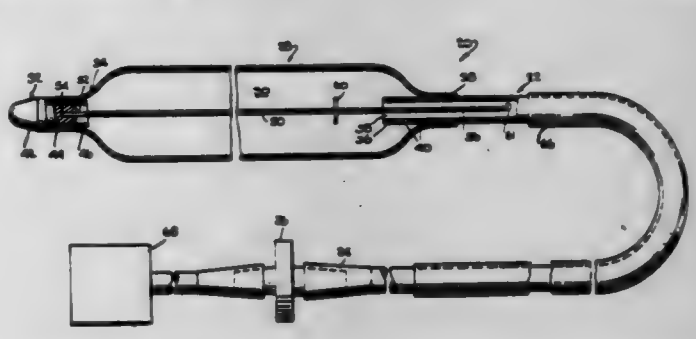
j. the administration of said patient-completable chart in combination with said antidepressant drug providing a positive therapeutic effect.

4,346,698

BALLOON CATHETER WITH ROTATABLE SUPPORT

Bruce L. Hanson, Wayne, N.J., and Sidney Wolvek, Brooklyn, N.Y., assignors to Datascope Corp., Oakland, N.J.

Continuation-in-part of Ser. No. 883,513, Mar. 6, 1978, Pat. No. 4,261,339. This application May 20, 1980, Ser. No. 151,611
Claims priority, application United Kingdom, Sep. 4, 1979, 7912427
The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.
Int. Cl.[3] A61M *29/02*
U.S. Cl. 128—1 D 9 Claims



1. A catheter comprising an inflatable and deflatable chamber having opposed ends, a catheter tube portion, one end of said chamber connected to said catheter tube portion, an elongated support member extending in said chamber between the opposed ends thereof, one end of said support member disposed at said end of said catheter tube portion and the other end disposed at the other end of the chamber opposed from said one end connected to the catheter tube portion, said sup-

port member supporting said chamber and being rotatably disposed with respect to each end of said chamber, said chamber being adapted to be rotated relative to said catheter tube portion and to be wrapped about said support member.

4,346,699

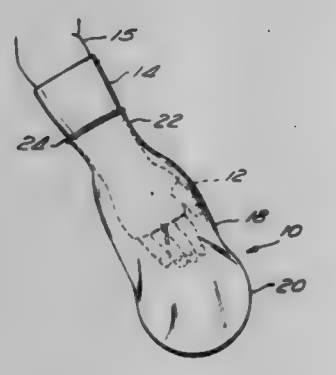
WATER PROOF CAST PROTECTOR

John D. Little, 25097 Champlain Rd., Laguna Hills, Calif. 92653, and James Z. Cloud, Jr., 1215 S. Athena Way, Anaheim, Calif. 92806

Continuation of Ser. No. 100,987, Dec. 6, 1979, abandoned, which is a continuation of Ser. No. 909,967, May 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 784,496, Apr. 4, 1977, Pat. No. 4,139,003, which is a division of Ser. No. 636,508, Dec. 1, 1975, Pat. No. 4,034,326, which is a continuation of Ser. No. 530,959, Dec. 9, 1974, abandoned. This application Mar. 30, 1981, Ser. No. 248,900

Int. Cl.[3] A61F *13/00*

U.S. Cl. 128—82 1 Claim



1. A protective covering to seal a cast or bandage on the individual's arm or leg from water in bathing comprising:

a tubular cast covering portion of flexible, resilient material, having an inside diameter larger than the outside diameter of said cast or bandage;

a closed receptacle portion of flexible, resilient material integral with one end of said cast covering portion, having an inside diameter larger than the outside diameter of said cast or bandage and adapted to enclose the hand or foot of the individual;

a tubular sealing portion of flexible, resilient material having one end integral with the other end of said cast covering portion, the other end of said sealing portion being open, said sealing portion having a substantially uniform diameter substantially less than the diameter of said cast covering portion, said sealing portion being of an extended length sufficient to form a watertight seal around a section of the arm or leg, said arm or leg section being located above the upper termination of said cast and having a diameter which varies considerably along its length; and

a flexible, stretchable rib around said open end of the sealing portion to provide strength to said sealing portion and enhance the watertight seal.

4,346,700

PRESSURE-SENSITIVE ADHESIVE SHEET MATERIAL

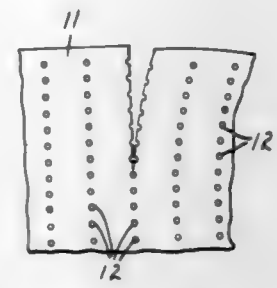
Wayne K. Dunshee, Maplewood, and Janice B. Odegaard, Afton, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 94,850, Nov. 16, 1979, abandoned, which is a continuation-in-part of Ser. No. 886,059, Mar. 13, 1978, abandoned. This application Jun. 15, 1981, Ser. No. 273,973

Int. Cl.[3] A61F *13/00*

U.S. Cl. 128—155 8 Claims

1. A conformable adhesive sheet material having viscoelastic properties similar to human skin comprising a backing sheet consisting essentially of chlorinated polyethylene and a pressure sensitive adhesive on at least a portion of at least one surface of said backing sheet, said backing sheet requiring less than about 25×10^6 dynes/cm^2 for an elongation of 20% as tested per ASTM Standard D-882 and having a stress relaxation with time when elongated 20% initially of from about 10% to about 20% after 1 minute and from about 20% to about 50% after 10 minutes.



4,346,701

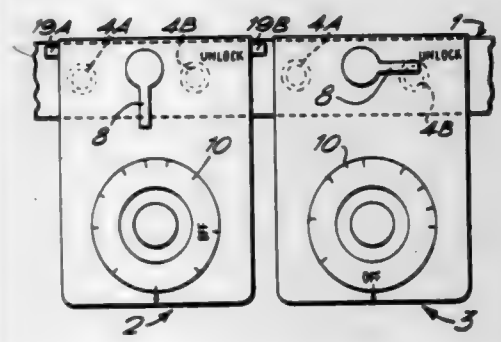
GAS ADMINISTRATION APPARATUS

David J. Richards, Bradford, England, assignor to The Medishield Corporation Limited, London, England

Filed Mar. 28, 1980, Ser. No. 134,803

Int. Cl.[3] A61M *11/00*

U.S. Cl. 128—200.14 7 Claims



1. An anesthesia machine comprising a gas-administration apparatus, and a gas flow unit removably mounted on said gas administration apparatus in a plug-in fashion, said gas flow unit having control means to control the flow of gas to said gas flow unit from said gas-administration apparatus, at least one gas port in said gas-administration apparatus to conduct gas to said gas flow unit, locking means movable between a lock position wherein said gas flow unit is secured to said gas-administration apparatus and an unlock position, and interlock means cooperating with said locking means, said interlock means preventing said control means from allowing flow of gas from said gas-administration apparatus to said gas flow unit unless said locking means is in its lock position, valve means in said at least one port normally closing each of said at least one port, said gas flow unit further including actuating means to move said valve means to open said at least one port only when said locking means is in its lock position.

4,346,702

SLIP JOINT OF ENDOTRACHEAL TUBE

Yukio Kubota, No.1-12, Uenohigashi 1-chome, Toyonaka-shi, Osaka-fu, Japan

Filed Dec. 2, 1980, Ser. No. 212,129

Claims priority, application Japan, May 1, 1980, 55-59004

Int. Cl.[3] A61M *25/02*

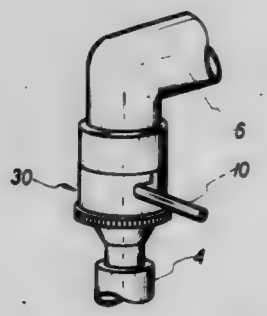
U.S. Cl. 128—207.14 4 Claims

1. A slip joint of an endotracheal tube or a tracheostomy cannula comprising

a slip joint body having opposing open ends and a passageway therebetween, means on one of said open ends adapted to be connected to an endotracheal tube or to a tracheostomy cannula, means on the other of said open ends adapted to be connected to a breathing gas source,

said body being provided in its side wall with a L-slot having a first leg disposed in the direction of said passageway, said first leg having an upper open end terminating in said other of said open ends of said slip joint body and also having a width capable of passing a catheter therethrough to be used, and the other leg of said L-slot terminating in a semicircle slightly smaller than a semicircle of the cross section of a catheter to be used, and

a ring adaptor slidably mounted around the side wall of said slip joint body in close contact therewith, said adaptor having opposing open ends and being provided in its side wall with an L-slot having a first leg disposed to align with the other leg of said L-shaped slot in said slip joint body, said first leg having an open end terminating in one of said opposing open ends of said ring adaptor and having the same width as the first leg of the L-slot of said slip



joint body, the other leg of said L-slot in said ring adaptor being disposed to align with the other leg of said L-slot in said slip joint body and terminating in a semicircle having the same size as the semicircle at the end portion of the L-slot of said slip joint body, the other leg of said L-slot in said ring adaptor extending laterally from the first leg in a direction opposite to the direction in which the other leg of the L-slot in said slip joint body extends from its first leg, and said ring adaptor being movable around the side wall of said slip joint body such that the semicircular end portion of the L-slot in the slip joint body and the semicircular end portion of the inverted L-slot in the ring adaptor form a circular hole which has a diameter slightly smaller than the outer diameter of the catheter to be used and in which the catheter can be inserted and hermetically sealed.

4,346,703

SOLUTION CONTAINER FOR CONTINUOUS AMBULATORY PERITONEAL DIALYSIS

T. Michael Dennehey, Arlington Heights; Richard J. Greff, Ingleside, and Ludwig Wolf, Jr., Crystal Lake, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 27,419, Apr. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 5,748, Jan. 23, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,008

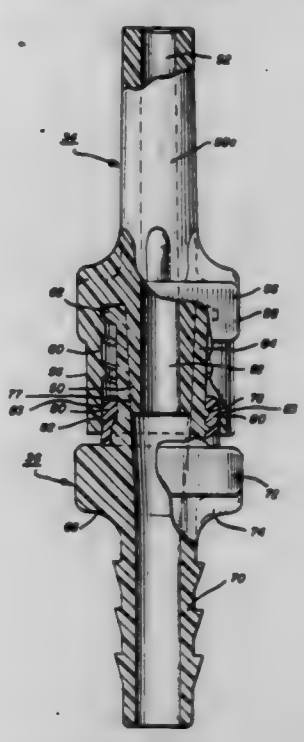
Int. Cl.³ A61J 7/00

U.S. Cl. 128—213 A 40 Claims

1. Equipment for continuous ambulatory peritoneal dialysis in which a solution container is coupled via flexible tubing to a patient's tube that communicates with the patient's peritoneal cavity, which comprises:

a flexible, foldable plastic dialysis solution container having a transfer port extending therefrom;

a flexible tube extending from said transfer port and having a luer connector at its distal end for connecting to a luer connector carried by the patient's tube, said luer connector at said distal end and said patient's tube luer connector comprising a cooperating male luer connector and female luer connector, said male luer connector having a central tubular portion defining an axial bore with at least a portion of said central tubular portion being enclosed by an outer sheath having a generally circular cross-sectional configuration, said outer sheath having a threaded internal wall, and a female luer connector comprising a main tubular member, said male luer central tubular portion and said female luer main tubular member being cooperative to provide a first liquid seal, said female luer connector having an outwardly extending flange adjacent its distal end, said flange being dimensioned to threadedly cooper-



ate with the threads on the internal wall of said male luer connector's outer sheath, and a sealing means for providing a second liquid seal with the internal wall of said outer sheath when the male and female connectors are connected, to aid in maintaining a water-tight bacteria barrier at the luer connection.

4,346,704

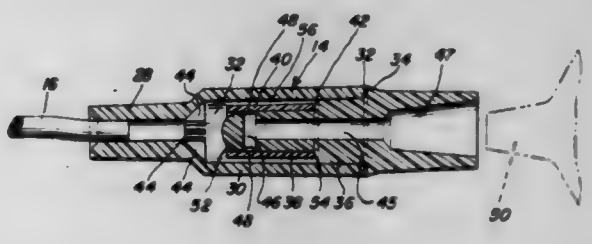
SLEEVE VALVE FOR PARENTERAL SOLUTION DEVICE

Lee K. Kulle, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Sep. 9, 1980, Ser. No. 185,478

Int. Cl.³ A61M 5/14

U.S. Cl. 128—214 R 12 Claims



1. In a sleeve valve carried in a parenteral solution administration device, which valve comprises an outer housing defining an outlet tube; an inner tubular support defining an inlet tube and having a closed forward end positioned within the outer housing, plus lateral aperture means communicating between the bore of said tubular support and the exterior thereof; and an elastic tube surrounding said inner tubular support to cover said lateral aperture means, the improvement comprising, in combination:

said inner tubular support being free of elastic, tube-retaining structure means at its closed end and adapted to permit said elastic tube to be laterally slidable on said inner tubular support through a limited distance, said outer housing defining vane means to limit the lateral advancement of said elastic tube on said support, and shoulder means positioned about said support to limit the lateral retraction of said elastic tube away from the closed end, said elastic tube covering said apertures in all lateral sliding positions,

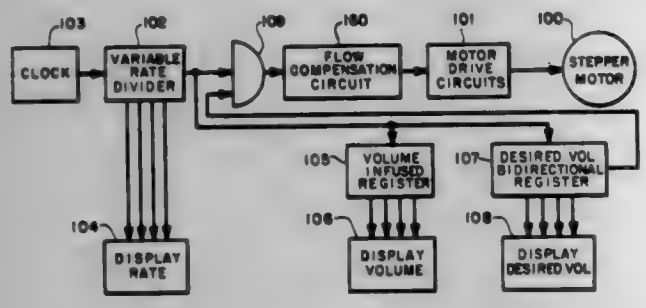
whereby, upon pressurized fluid flow through said inlet tube, said elastic tube is expanded by pressure to permit fluid flow between said tube and tubular support out of both ends of the elastic tube, the resulting flow proceeding through said vanes and said outlet tube.

4,346,705

METERING APPARATUS HAVING RATE COMPENSATION CIRCUIT

Michael O. Pekkarinen, Lincolnshire, and Norm Shim, Glenview, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Del.

Filed Oct. 9, 1980, Ser. No. 195,432
Int. Cl.[3] A61M *31/31*
U.S. Cl. 128—214 F 14 Claims



1. Metering apparatus for establishing a desired fluid flow rate through a fluid administration set of the type including a compressible tubing segment, said apparatus comprising, in combination:

a housing;

a flow metering head including a rotor mounted on said housing for rotation about a fixed axis, said rotor including a plurality of pressure rollers disposed about the circumference thereof, and a pressure plate for positioning the compressible tubing segment in compressive engagement with at least a portion of said rollers, whereby an incremental volume of fluid is pumped through said tubing segment with a predetermined increment of rotation of said rotor, said incremental volume of fluid being subject to variation from dimensional variations in the flow metering head;

means including a stepper motor for driving said rotor;

a source of repetitive clock pulses;

rate setting means comprising a first frequency divider responsive to said repetitive clock pulses for providing a first output signal, the division factor of said first divider being user-presettable according to the desired fluid flow rate;

rate compensation means comprising a second frequency divider responsive to said first output signal for providing a second output signal; and

motor drive circuit means responsive to said second output signal for applying motor control signals to said stepper motor according to the frequency of said second output signal, said second frequency divider providing a preset division factor compensating said first output signal for the variation in said incremental volume brought about by dimensional variations in said metering head whereby the desired flow rate is established in the administration set.

4,346,706

PARENTERAL ADMINISTRATION OF NUTRIMENTS

Harry H. LeVeen, 800 Poly Pl., Brooklyn, N.Y. 11220, and Vincent A. Piccone, 377 Ganesvoort Blvd., Staten Island, N.Y. 10314

Continuation of Ser. No. 25,374, Mar. 30, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,474
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—214 R 6 Claims

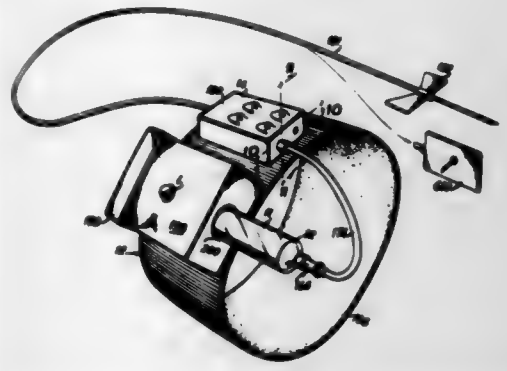
1. A method for parental administration of nutriments which comprises opening the umbilical vein and thereafter introducing into the vein an aqueous hyperalimentary solution of nutriments.

4,346,707

PISTON DRIVE ARRANGEMENT FOR INJECTOR

Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of Atlanta, Ga. 30327

Division of Ser. No. 1,091, Jan. 8, 1979, Pat. No. 4,273,122, which is a continuation-in-part of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, which is a continuation-in-part of Ser. No. 964,953, Nov. 30, 1978, Pat. No. 4,235,235. This application Mar. 27, 1981, Ser. No. 248,484
Int. Cl.[3] A61M *5/20*
U.S. Cl. 128—214 F 1 Claim



1. In an apparatus for dispensing liquid including a liquid chamber with an outlet slidably mounting a piston therein for sliding movement axially along an expelling axis toward the outlet to force liquid from the outlet and a drive member movable axially along the expelling axis to engage and force the piston toward the outlet; the improvement comprising:

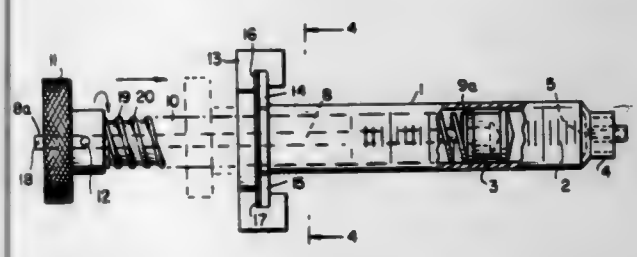
a pointed driving projection on that end of said drive member facing the piston coaxially aligned with the expelling axis; and a driven member carried by the piston, said driven member defining a conical bearing surface thereon opening toward said pointed driving projection and having an apex in registration with said expelling axis, said conical bearing surface angling away from said expelling axis with equal angles therearound so that said pointed driving projection engages said conical bearing surface in said apex to axially move said piston along said expelling axis with the force exerted on said piston by the drive member equally distributed circumferentially about said piston to prevent canting of said piston in said liquid chamber.

4,346,708

SYRINGE

Harry H. LeVeen, 321 Confederate Cir., Charleston, S.C. 29407; Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147, and Eric G. LeVeen, 3-3 Woodlike Rd., Albany, N.Y. 12203

Filed Apr. 20, 1981, Ser. No. 255,353
Int. Cl.[3] A61M *1/00*
U.S. Cl. 128—236 8 Claims



1. A manually actuable syringe comprising:

a hollow body with an interior wall, a fluid transport opening at one end thereof and a piston receiving opening at the opposite end thereof;

a piston within said body which has fluid tight engagement

with said interior wall, said piston being slidable toward and away from said transport opening;

a manually operable actuating rod extending at one end from said piston receiving opening and slidable within said body, said rod having an axial bore;

compressible spring means interconnecting said piston and the end of said actuating rod nearest said piston; and

an indicator rod connected at one end to said piston for movement therewith and slidably mounted in said bore of said actuating rod with a portion thereof visible from exteriorly of said body, whereby the position of said portion of said indicator rod is dependent on the position of said piston and the compression of said compressible spring means and indicates the pressure applied by the piston to a fluid within said body.

4,346,709

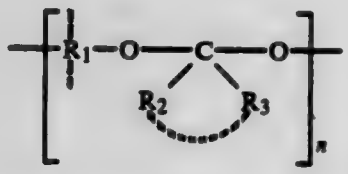
DRUG DELIVERY DEVICES COMPRISING ERODIBLE POLYMER AND EROSION RATE MODIFIER

Edward E. Schmitt, Palo Alto, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Filed Nov. 10, 1980, Ser. No. 205,636
Int. Cl.³ A61M 7/00
U.S. Cl. 128—260 **100 Claims**



1. A device for delivering a beneficial drug at a controlled rate over a prolonged period, said device shaped, sized and adapted for delivering a drug to an animal environment of use, the device comprising: (A) an erodible released rate controlling polymer of the formula:



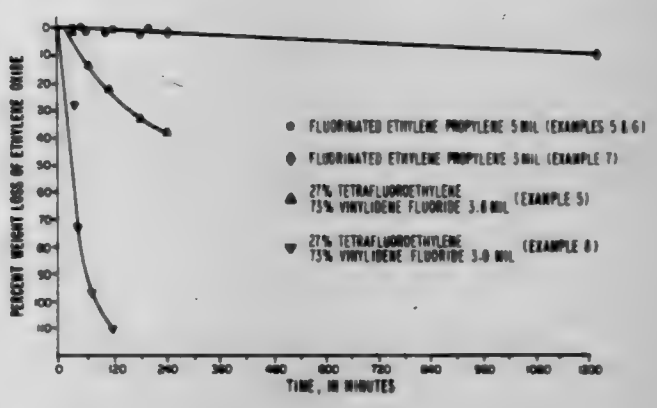
wherein (I) R_1 is a member selected from the group consisting of divalent, trivalent and tetravalent radicals consisting of alkylene of 1 to 10 carbons; alkenylene of 2 to 10 carbons; alkyleneoxy of 2 to 6 carbons; cycloalkylene of 3 to 7 carbons; cycloalkylene of 3 to 7 carbons substituted with an alkyl of 1 to 7 carbons, alkoxy of 1 to 7 carbons, an alkenyl of 2 to 7 carbons, and an alkylene of 1 to 10 carbons; cycloalkylene of 4 to 7 carbons; cycloalkenylene of 4 to 7 carbons substituted with an alkyl of 1 to 7 carbons, an alkoxy of 1 to 7 carbons, alkenyl of 2 to 7 carbons, and an alkylene of 1 to 10 carbons; arylene of 6 to 12 carbons; arylene of 6 to 12 carbons substituted with an alkyl of 1 to 7 carbons, alkyloxy of 1 to 7 carbons, alkenyl of 2 to 7 carbons, and alkylene of 1 to 10 carbons; wherein (II) R_2 and R_3 are selected from the grop consisting of alkyl of 1 to 7 carbons, alkenyl of 2 to 7 carbons, aryl or 6 to 12 carbons, an oxygen atom covalently bonded to the dioxycarbon atom, and when an oxygen atom R_2 and R_3 are a member selected from the group consisting of alkyloxy of 1 to 7 carbons; alkenyloxy of 2 to 7 carbons; and aryloxy of 6 to 12 carbons; and when only one of R_2 and R_3 is selected from said member the other R_2 and R_3 is selected from the group consisting of alkyl of 1 to 7 carbons; alkenyl of 2 to 7 carbons; and aryl of 6 to 12 carbons; wherein (III) R_2 and R_3 are intramolecularly covalently bonded to each other and to the same dioxycarbon atom, with at least one of R_2 and R_3 a ring oxygen atom forming a heterocyclic ring of 5 to 8 carbon and oxygen atoms when R_2 and R_3 are selected from the group consisting of alkylene of 2 to 6 carbons; alkenylene of 2 to 6 carbons; alkyleneoxy of 2 to 6 carbons; alkenyleneoxy of 2 to 6 carbons; alkylenedioxy of 2 to 5 carbons; alkenylenedieoxy of 2 to 5 carbons; oxa; and a heterocyclic ring of 5 to 8 carbon and oxygen atoms substituted with an alkyl of 1 to 7 carbons, an alkyloxy of 1 to 7 carbons, an alkenyl of 2 to 7 carbons, and an alkenyloxy of 2 to 7 carbons; wherein (IV) R_2 and R_3 are intramolecularly covalently bonded to each other and to the same dioxycarbon atom with at least one of R_2 and R_3 is a ring oxygen atom forming a fused polycyclic ring of 8 to 12 carbon and oxygen atoms when R_2 and R_3 are a member selected from the group consisting of aralkylene of 8 to 12 carbons; aralkenylene of 8 to 12 carbons, aryloxy of 8 to 12 carbons; aralkyleneoxy of 8 to 12 carbons; aralkenyleneoxy of 8 to 12 carbons, aralkylenedioxy of 8 to 12 carbons; aralkenylenedioxy of 8 to 12 carbons; oxa; and a fused polycyclic ring of 8 to 12 carbon and oxygen atoms substituted with an alkyl of 1 to 7 carbons, an alkyloxy of 1 to 7 carbons, an alkenyl of 2 to 7 carbons and an alkenyloxy of 2 to 7 carbons; wherein (V) R_2 and R_3 are intramolecularly covalently bonded to each other and to the same dioxycarbon atom to form a 5 to 6 member carbocyclic ring; (B) a beneficial drug in the device; (C) an erosion rate modifier in the device in an amount that effects the period of time the device erodes and effects the amount of drug released as the device erodes over time; and wherein n is greater than 10.

4,346,710

ARTICLE FOR STORAGE AND TRANSPORT OF BIOGENIC FLUIDS

Chandrakant B. Thanawalla, Exton; John R. Soulen, Narberth, and Harold G. Monsimer, Norristown, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 916,454, Jun. 16, 1978, abandoned. This application May 12, 1980, Ser. No. 148,000
Int. Cl.³ A61J 1/00
U.S. Cl. 128—272 **3 Claims**

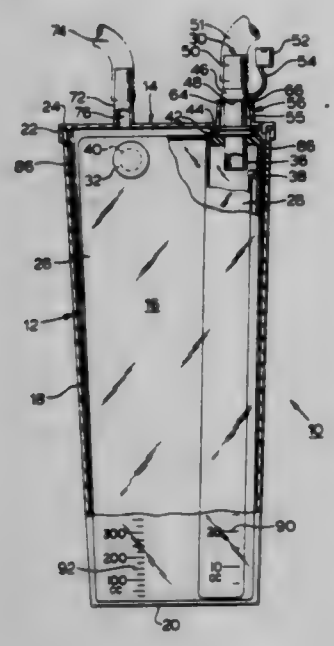


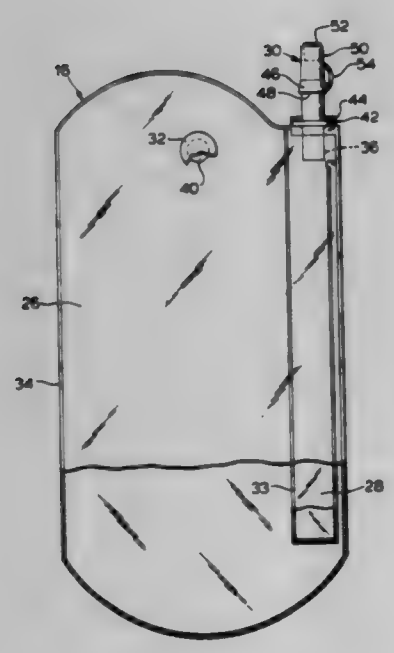
1. An article for storing and transporting biogenic fluid comprising a container formed of additive-free uncharged transparent thermoplastic of a polymer of vinylidene fluoride copolymerized with at least one monomer selected from the group consisting of tetrafluoroethylene and hexafluoropropene, wherein said vinylidene fluoride constitutes at least sixty-two percent by weight of the copolymer composition, the permeability to ethylene oxide of said thermoplastic being at least approximately 1×10^{-6} grams per minute of gaseous ethylene oxide per square centimeter of film of such thermoplastic having a thickness between 3 and 4 mils.

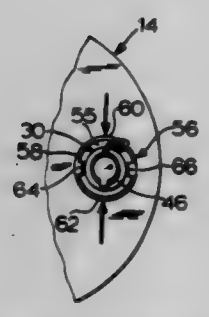
4,346,711
BODY FLUID COLLECTION DEVICE WITH DISPOSABLE LINER

Ronald T. Agdanowski, St. Peters, and Thomas F. Schuessler, Hillsboro, both of Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Jan. 16, 1981, Ser. No. 225,577
Int. Cl.³ A61M 1/00
U.S. Cl. 128—276 21 Claims







1. A body drainage collection device comprising a canister having interior and exterior sides and including a container closed at the lower end and open at the upper end and a removable cover for sealingly closing the upper end of said container, and a disposable liner removably insertable into said container and including a pliable bag having upper and lower end portions, fluid connector means sealingly connected to the upper end portion of said bag in fluid communication with the interior of said bag and having an outer portion externally of said bag for connection with the body of a patient, and gas passage means adjacent the upper end portion of said bag for allowing gas to flow from the interior to the exterior of said bag, said canister having releasable locking means for said connector means on an upper portion thereof including an opening through said canister upper portion for receiving said outer portion of said connector means and releasably locking said connector means to said canister, and lock release means on and manually operable from the exterior side of said canister upper portion for releasing said locking means to release said connector means and bag from said canister, and means for connecting the interior of said container to a source of suction.

4,346,712
RELEASABLE BALLOON CATHETER

Hajime Handa; Yasuhiro Yonekawa; Sen Yamagata; Waro Taki, all of Kyoto; Yoshito Ikada, and Hiroo Iwata, both of Uji, all of Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Feb. 13, 1980, Ser. No. 121,036
Claims priority, application Japan, Apr. 6, 1979, 54-42197; Sep. 14, 1979, 54-118634
Int. Cl.³ A61B 17/12
U.S. Cl. 128—325 12 Claims



1. A releasable balloon catheter, comprising:
a tubular catheter body;
an inflatable balloon provided at one end of said catheter body for holding a curable liquid introduced into the balloon from the catheter;
a severable tube formed at a joint part between said balloon and said catheter body and which comprises a hydrophilic polymer;
a plurality of bipolar electrodes secured to the severable tube through which a high frequency current is flowable;
means for generating a high-frequency current and connected to each of said bipolar electrodes; and
said balloon catheter being constructed such that when said balloon catheter is inserted into a vessel and carried to the desired site by the blood stream and the balloon is inflated by the introduction of said curable liquid into the balloon through the catheter body and is fixed face-to-face with the wall of the vessel at the desired site and said generating means communicates said high frequency current across said electrodes, said severable tube is heated so as to be melted or dissolved, such that said tube is cut to release said balloon from said catheter.

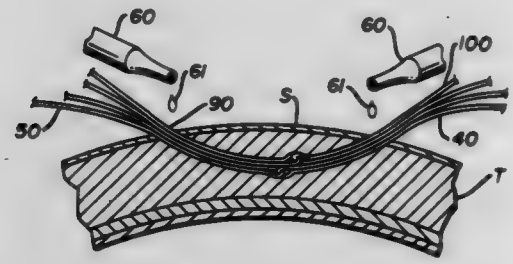
4,346,713
HAIR REPLACEMENT METHOD

Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio 44301

Continuation-in-part of Ser. No. 876,482, Feb. 9, 1978, abandoned, which is a continuation-in-part of Ser. No. 855,272, Nov. 28, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 935,521
Int. Cl.³ A61B 17/00
U.S. Cl. 128—330 4 Claims

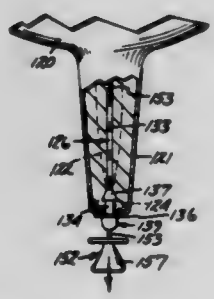
1. A method of securing replacement strands of hair to the head of a human being comprising the steps of:
(A) forming at least a first strand of hair into a U-shaped loop;
(B) penetrating the scalp and passing said first strand

through the scalp tissue so that the base of the loop and the open ends thereof project beyond the surface of the scalp;
(C) forming at least a second strand of hair into a U-shaped loop;
(D) interengaging said first and second strands;
(E) forming a third strand of hair into a U-shaped loop;
(F) passing said third strand through the scalp tissue so that the base of the loop and the open ends thereof project



beyond the surface of the scalp in opposed relation to the base and open ends of said first strand;
(G) forming a fourth strand of hair into a U-shaped loop;
(H) interengaging said third and fourth strands;
(I) pulling said first and second and said third and fourth strands in opposite directions until the interengaged portions thereof are disposed beneath the surface of the scalp with the open ends thereof projecting above the surface of the scalp.

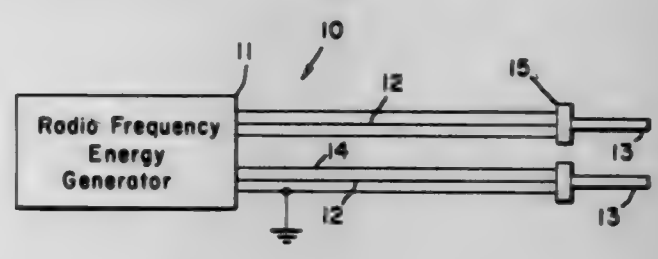
4,346,714
METHOD OF INSERTING TEAT DILATOR
Francis W. Child, Eagle Bend, Minn., assignor to Child Laboratories Inc., Eagle Bend, Minn.
Continuation-in-part of Ser. No. 55,994, Jul. 9, 1979, Pat. No. 4,281,658. This application Sep. 8, 1980, Ser. No. 185,179
Int. Cl.³ A61M *29/00*
U.S. Cl. 128—343 **13 Claims**



1. A method of inserting a dilator into the duct of a teat of a bovine animal, said dilator having a tubular member with a longitudinal passage and a one-way valve joined to the tubular member with an inserter having an elongated rod comprising: mounting the dilator on the elongated rod of the inserter by moving the rod through the one-way valve and locating the rod in the passage of the tubular member, inserting the tubular member and rod through the duct outlet into the duct of the teat, removing the inserter from the dilator, and leaving the dilator in its inserted position.

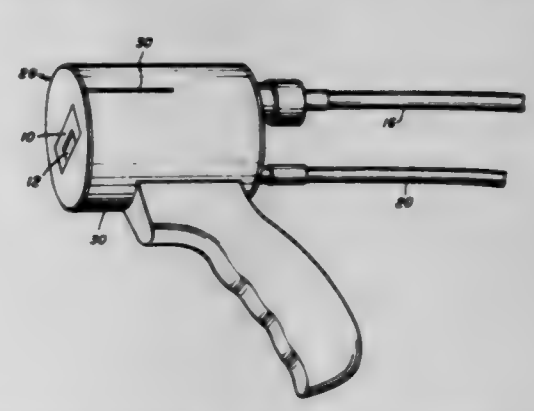
4,346,715
HYPERTHERMIA HEATING APPARATUS
Paul M. Gammell, Altadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Continuation of Ser. No. 918,705, Jul. 12, 1978, abandoned. This application May 13, 1980, Ser. No. 149,526
Int. Cl.³ A61N *1/32*
U.S. Cl. 128—422 **7 Claims**

1. An improved array of electrodes for use in delivering electromagnetic energy to a localized area of a patient's body in a hyperthermic treatment so that said improved array of electrodes provides a uniform distribution of electromagnetic flux lines within the localized area of the patient's body in order to produce a uniform and localized heating gradient, said improved array of electrodes comprising:
a. a plurality of electrodes which are arranged in sets of electrodes, each of said sets of electrodes having two of said electrodes which are spaced a particular distance apart from



each other, pairs of said sets of electrodes being spaced apart a distance which is relatively greater than said particular distance and arranged in oppositely disposed pairs whereby the localized area of the patient's body is disposed between each of said sets of electrodes of each of said pairs of said sets of electrodes; and
b. electromagnetic energy means for applying electromagnetic energy to each of said pairs of said sets of electrodes.

4,346,716
MICROWAVE DETECTION SYSTEM
Kenneth L. Carr, Harvard, Mass., assignor to M/A COM, Inc., Burlington, Mass.
Filed Mar. 31, 1980, Ser. No. 135,506
Int. Cl.³ A61B *5/05*
U.S. Cl. 128—653 **19 Claims**



1. A microwave system for the detection of cancer employing non-invasive techniques, comprising:
a microwave transmitter,
an applicator including a waveguide construction and adapted to be maintained in contact with a human body site,
means coupling the microwave transmitter to the applicator for establishing at the applicator a heating temperature greater than the normal human body temperature,
means defining a sensing aperture including a second waveguide construction also adapted to be maintained in contact with a human body site,
a microwave radiometer,
means coupling the sensing aperture to the microwave radiometer whereby the radiometer is for sensing at a resolution of fractions of a centigrade degree,
and housing means for commonly supporting at least said applicator and aperture in close proximity to each other whereby the localized heating enhances differential heating associated with the thermal characteristics of tumors to enable early detection,
said housing means including means for permitting an opera-

tor to hold the housing means to enable contact under manual control with the human body,

said applicator waveguide construction comprising a ridged waveguide having means defining a ridge,

said aperture waveguide construction comprising a rectangular waveguide disposed in the ridge of the applicator waveguide construction.

4,346,717

DEVICE FOR PUNCTUATING INTERNAL BODY ORGANS, VESSELS OR THE LIKE

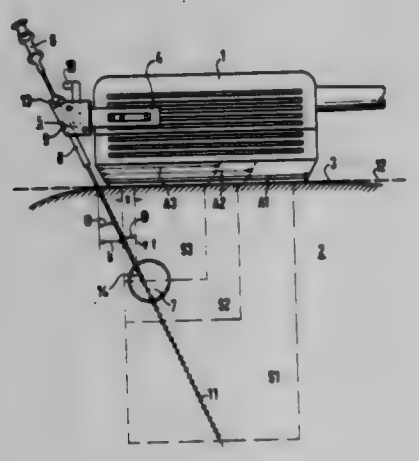
Rainer Haerten, Roettenbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 179,082

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936259

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—660 **29 Claims**



1. An ultrasound imaging apparatus for use with a puncturing device to facilitate puncturing of a body by said puncturing device, comprising (a) ultrasound signal applicator means adapted to be placed on said body for scanning a tissue region of said body, (b) imaging means responsive to output signals from said ultrasound signal applicator means for producing an image representative of said tissue region of said body, (c) guiding means coupled to said ultrasound signal applicator means for attaching a puncturing device thereto, (d) angle detecting means coupled to said guiding means for detecting the angle of a portion of said guiding means relative to said tissue region when said ultrasound signal applicator means is operationally coupled to said tissue region for scanning thereof, whereby the angle of a puncturing device relative to said tissue region may be determined when said puncturing device is attached to said guiding means for treatment of said body, and (e) directing circuit means coupled to said angle detecting means and responsive thereto for producing and superimposing on said body image a guide image beam having an orientation relative to said body image representative of the angle of said guiding means relative to said tissue region, whereby a desired orientation of said guiding means portion may be chosen to facilitate operation of a puncturing device attached thereto.

4,346,718

APPARATUS AND METHODS FOR RECORDING TIME INTERVALS

Julian R. W. Morris, Abingdon, England, assignor to Oxford Medical Systems Limited, Abingdon, England

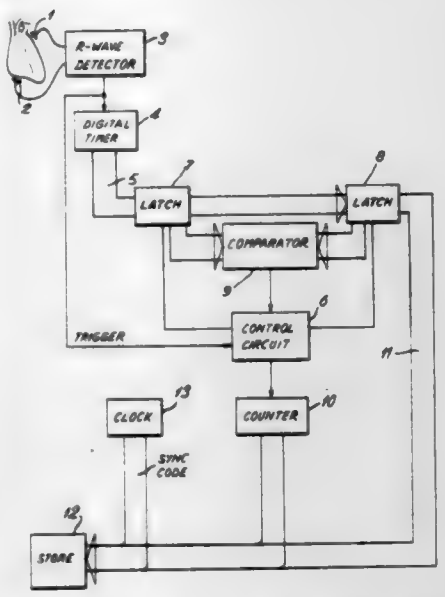
Filed Feb. 14, 1979, Ser. No. 12,111

Claims priority, application United Kingdom, Feb. 22, 1978, 6964/78

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—710 **15 Claims**

1. Apparatus for recording time intervals between repetitive events comprising means for measuring time intervals between successive such events, means for comparing the value of each succeeding time interval with the value of the previous time interval to indicate equality or non-equality to a predetermined degree of resolution, means for counting the number of succes-



sive indications of equality, and means for storing the said number together with the value of the previous time interval if non-equality is indicated.

4,346,719

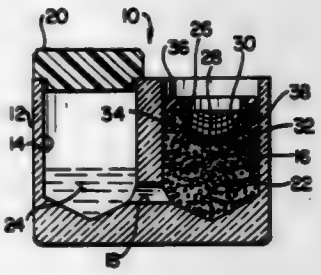
CIGARETTE EXTINGUISHER

John A. Hilkene, 650 Seventh St., Lyndhurst, N.J. 07071

Filed May 4, 1981, Ser. No. 259,855

Int. Cl.³ A24F *19/14*

U.S. Cl. 131—236 **12 Claims**



1. An extinguishing device for cigars, cigarettes, and the like, comprising:

a housing having a first hollow compartment therein for containing an extinguishing liquid, and a second hollow compartment therein containing a capillary material which provides sufficiently small pores therethroughout to provide by capillary action wetting of the capillary material when extinguishing liquid is introduced into said second compartment, said capillary material being such as to maintain its integrity when wetted with extinguishing liquid, and at least said second compartment having an open end;

transfer means for transferrng extinguishing liquid from said first compartment of said housing to said second compartment of said housing to thereby wet said capillary material in said second compartment;

an extinguishing member of wetable material for said open end of said second compartment for extinguishing a lighted article which comes into contact therewith, said extinguishing member including a bottom portion and a side wall portion which extends away from said bottom portion, said extinguishing member being supported in said open end of said second compartment so that (1) said bottom portion is at a lower elevation than said side wall portion; (2) at least the underside of said bottom portion of said extinguishing member is in contact with a first part of

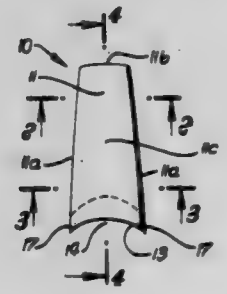
said capillary material; and (3) at least a second part of said capillary material is in juxtaposition with said side wall portion of said extinguishing member and at a higher elevation than said bottom portion of said extinguishing member, whereby at least said bottom portion of said extinguishing member is continuously wetted by said capillary material when extinguishing liquid is introduced into said second compartment.

4,346,720

CLAMP-ON ARTIFICIAL FINGERNAIL

Yosh Hokama, Torrance, Calif., assignor to International Beauty Distributors, Inc., Gardena, Calif.

Filed May 29, 1979, Ser. No. 43,021
The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.
Int. Cl.[3] A45D *29/00*
U.S. Cl. 132—73 12 Claims



1. A solid artificial fingernail attachable to a natural fingernail, comprising

(a) a thin plastic sheet element sized to provide, when attached to the natural fingernail, a forward and longitudinal extension of the natural fingernail,

(b) said element having a generally U-shaped boundary region extending forwardly of the rearwardmost extent of the element,

(c) said element having a longitudinally elongated upper arch region with curvature such that the lateral sides of the element extend generally downwardly from the arch to be spread apart when said sides are pressed down on a natural nail,

(d) said lateral sides having thickness at said boundary region, substantially in excess of the thickness of the element at said elongated arch region,

(e) said element gradually increasing in thickness from said upper arch region laterally toward said lateral boundary region along each of said lateral sides to facilitate relative and flexible spreading of said lateral sides together with flexible bending of said arch region, for downwardly gripping the natural fingernail.

4,346,721

HAIR BRUSH WITH HAIR CUTTING BLADE

Bernard Molaro, 232 Rue de Courcelles, 75017 Paris, France

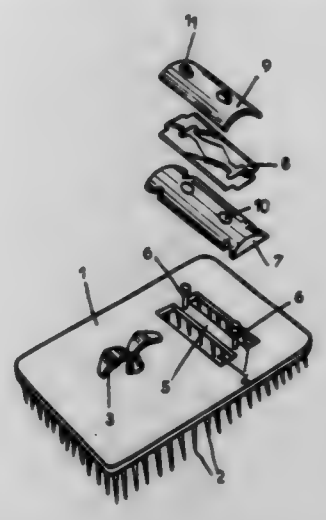
Filed May 21, 1980, Ser. No. 151,878
Claims priority, application France, May 22, 1979, 79 13030
Int. Cl.[3] A45D *44/18*
U.S. Cl. 132—85 13 Claims

1. A hair brush, comprising:

(a) an essentially flat, rigid support having two openings;

(b) a plurality of semi-rigid thread-like parts protruding generally perpendicularly from one face of the support and constituting bristles of the brush, and

(c) a double edged blade, and means for securing the blade on the support, each cutting edge of the blade extending through a respective one of the openings and being generally level with said one face of the support from which the thread-like parts protrude.

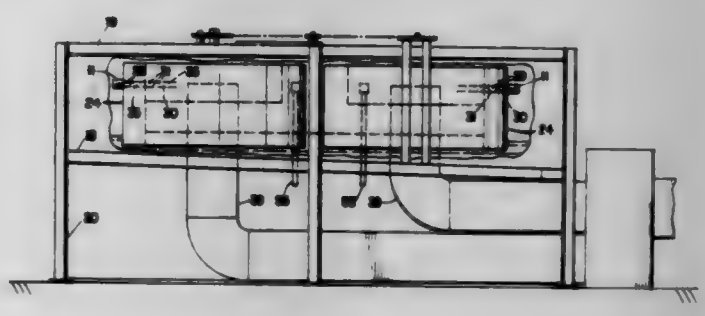


4,346,722

APPARATUS USED IN THE TREATMENT OF CANS

Alex J. Schregenberger, Neshanic, N.J., assignor to Midland-Ross Co., Cleveland, Ohio

Filed Feb. 12, 1979, Ser. No. 11,221
Int. Cl.[3] B08B *3/00*
U.S. Cl. 134—62 21 Claims



1. An apparatus used in the treatment of hollow cylindrical containers having a pair of opposing ends, one of which is open and the other of which is closed, comprising:

(a) means for holding a plurality of containers in equally spaced relation from a first axis and a second axis which are vertically disposed and parallel, and in such a way that the longitudinal axes of the containers are angularly oriented relative to the first and second axes;

(b) means for rotating the containers about the first axis in a horizontal pathway from a first position to an arcuately spaced second position while maintaining one end of the pair of opposing ends of each container closer to the first axis than the other end thereof;

(c) means for transferring the containers from the second position to a third position which is substantially opposite the second position;

(d) means for rotating the containers about the second axis in a horizontal pathway from the third position to an arcuately spaced fourth position while maintaining the other end of the pair of opposing ends of each container closer the second axis than the one end thereof;

(e) means for removing the containers from the fourth position;

(f) means disposed adjacent the horizontal pathways which the containers travel between the first and second positions and the third and fourth positions, for contacting the containers with fluid, under pressure, used in the treatment of the containers;

the container holding means (a), including:

(I) a pair of drums rotatable about the first and second axes;

(II) a plurality of rows of orifices circumferentially spaced and horizontally aligned around each of the drums, the orifices of adjacent rows being staggered vertically around the drums;

(III) a pair of annular recesses disposed circumferentially of each of the drums and sandwiching a pair of adjacent rows of orifices therebetween;

(IV) a resilient elastomeric ring disposed in each of the recesses and protruding therefrom for engaging containers; and

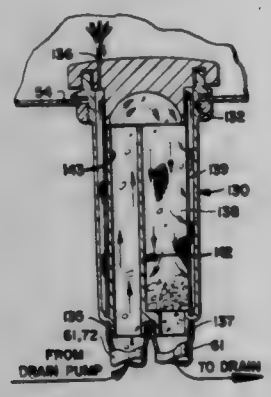
(V) means associated with the drums for drawing air exteriorly of the drums radially inwardly through the orifices into the interior of the drums, when the orifices and any containers held adjacent thereto are rotated between the first and second positions and the third and fourth positions.

4,346,723

APPARATUS FOR A WAREWASHER BYPASS SOIL COLLECTOR

Paul B. Geiger, Piqua, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Mar. 25, 1981, Ser. No. 247,449
Int. Cl.³ B08B 3/02
U.S. Cl. 134—104 **6 Claims**



1. In a dishwasher which utilizes multiple fluid fills for sequentially washing and rinsing food ware items during a complete cycle, said dishwasher having a wash chamber including rack means for receiving and supporting food ware items therein and a sump at the bottom of said chamber for containing fluid therein; primary spray means including a wash pump operable in a recirculating mode for recirculating and spraying fluid from said sump onto food ware items to remove food soil particles therefrom and carry food soil particles to the sump; a drain system having a drain inlet adjacent the bottom of said sump, a drain outlet communicating with a drain, and a drain pump operable in a draining mode for pumping fluid and food soil particles therein from said sump to a drain at intervals between successive fluid fills; and soil collector means for continuously collecting and removing food soil particles from fluid in said sump while said primary spray means is operating; the improvement comprising:

(a) said soil collector means comprising a soil collecting circuit having an inlet connected to receive fluid from said drain pump, a return outlet located within said wash chamber, and a portion, independent of said primary spray means and said wash chamber, in fluid communication with said inlet and said return outlet;

(b) said portion including a relatively fine screen soil collecting filter in said portion for removing food soil particles from fluid circulating through said soil collecting circuit to be retained within said portion during said recirculating mode, said filter having its upstream side in position to have collected soil particles flushed therefrom toward said drain outlet and into a drain during said draining mode; and

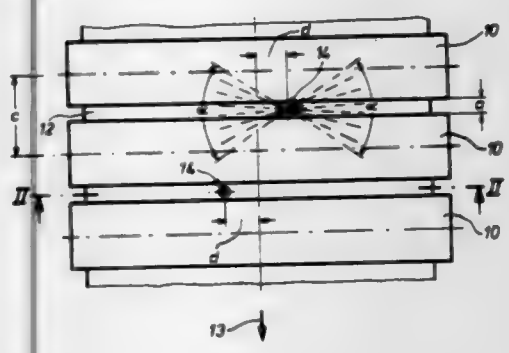
(c) means for selectively controlling said dishwasher to operate said drain pump in either a soil collecting mode by circulating fluid through said soil collecting circuit while said primary spray means is recirculating and spraying fluid onto food ware items or in a drain mode to simultaneously pump fluid and soil particles from said sump during draining.

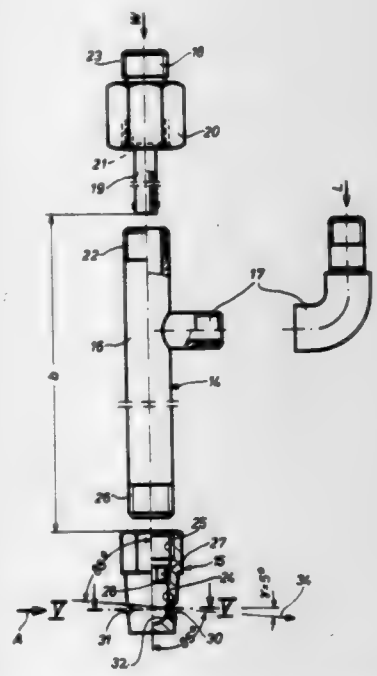
4,346,724

APPARATUS FOR SPRAYING A COOLANT ON A STEEL SLAB

Sepp Mezger, Eningen; Kurt Lerch; Hans Schrewe, both of Dusseldorf, and Fritz-Peter Pleschiutschnigg, Dortmund, all of Fed. Rep. of Germany, assignors to Lechler GmbH & Co. KG, Fellbach and Mannesmann AG, Dusseldorf, both of, Fed. Rep. of Germany

Filed Feb. 11, 1981, Ser. No. 233,563
Int. Cl.³ B08B 3/02
U.S. Cl. 134—122 R **8 Claims**





1. Apparatus for spraying a coolant on steel slabs by means of spraying nozzles preceded by a mixing chamber with separate feeds for the propellant and the coolant, the nozzle discharge being designed so that the mixture of propellant and coolant is incident in the form of wide fans and at acute angle in mutually opposite directions on the slab surface, that the nozzle discharges start from a common nozzle housing into which issues the mixing chamber, and the coolant connection to the mixing chamber being an exchangeable inset tube penetrating the mixing chamber, in particular for slab-format continuous casting issuing from a continuous casting mold, the particular nozzles acting in the gap between two adjoining guide rollers for the cast slab being oriented parallel to the axes of the guide rollers and the nozzle housing being mounted between the plane of the guide roller axes and the slab surface, characterized in that the cylindrical or mearly cylindrical nozzle housing (15) which is provided with a cylindrical feed

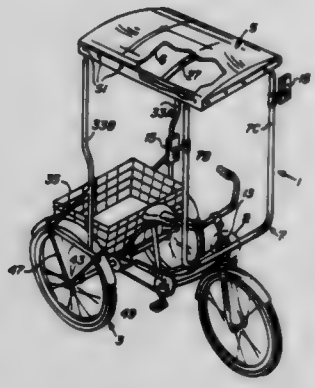
bore (24) comprises one prismatic milling (30, 31) each at two diametrically opposite locations as nozzle discharges (33), each said milling issuing radially into the feed bore (24).

4,346,725

TRICYCLE CANOPY

Leon L. Shaw, 1811 W. Prince Rd., Sp. 7, Tucson, Ariz. 85705

Filed Feb. 7, 1980, Ser. No. 119,633
Int. Cl.³ B62J *17/08*
U.S. Cl. 135—7 4 Claims



1. A tricycle canopy comprising in combination:

a flexible cover for extending approximately from the front to the rear of a tricycle to shelter or shade a rider thereof;

a horizontal cover support frame for supporting said flexible cover wherein said cover support frame includes a pair of opposed substantially horizontal side members, a pair of opposed substantially horizontal end members rigidly attached to the respective ends of said side members, and a plurality of arched cross members rigidly attached to and extending between said pair of side members for producing a curved upper surface of said flexible cover, said horizontal side members lying in a plane;

means for fastening the periphery of said flexible cover to the periphery of said cover support frame, said fastening means including a plurality of snap fastener elements rigidly attached to the periphery of said cover support frame and a plurality of corresponding mating snap fastener elements attached to peripheral edge portions of said flexible cover for effecting taut fastening of said flexible cover to said cover support frame to enable the operator to easily attach the flexible cover to or remove the flexible cover from said cover support frame;

first and second front uprights lying in a plane perpendicular to the forward direction of travel of the tricycle, said first and second front uprights being spaced sufficiently far apart to prevent any interference of said first and second front uprights with handlebars of the tricycle or with the hands or arms of the operator of the tricycle, said first and second front uprights being composed of lightweight tubular material;

a horizontal front member for supporting said first and second front uprights, said horizontal member being integral with said first and second front uprights, said horizontal member being centrally rigidly attached to the frame head of the tricycle to rigidly support the first and second uprights;

clamping means rigidly attached to said horizontal member for clamping said horizontal member rigidly to the frame head of the tricycle;

first and second spaced rear uprights for rigid attachment to a first end portion of said tricycle, respectively, said first and second portions being respectively located approximately adjacent to opposed ends of the rear axle of the tricycle where said first and second front uprights, said horizontal front member, said first and second rear uprights, and said cover support frame are all formed of lightweight metal tube material; and

first, second, third and fourth prongs each having and upper end and a lower end, the upper end of each of said prongs being rigidly attached only to said cover support frame, said first, second, third and fourth prongs extending vertically downward from the plane of said cover support frame and extending into and being rigidly, directly attached to the upper end portions of said first and second front uprights and said first and second rear uprights, respectively, said upper end portions of said first and second front uprights and said first and second rear uprights being attached only to said first, second, third and fourth prongs, respectively, the lower portions of said first, second, third and fourth prongs being attached only to said upper end portions of said first and second front uprights and said first and second rear uprights, respectively, the upper end portions of said first and second front uprights and said first and second rear uprights being vertical, said attachment of said prongs to said cover support frame being sufficiently rigid to prevent sideways, forward, and backward tilting of said first and second front uprights and said first and second rear uprights due to moderate wind forces on said flexible cover when said flexible cover is fastened to said cover support frame;

whereby said flexible cover can be easily removed from said cover support frame if a rider encounters dangerous wind conditions while he is riding the tricycle.

4,346,726

METHOD OF DRYING PIPELINES AND PUTTING GAS THEREINTO

Jean Bayen, Fanconville, and Patrick Seemama, Paris, both of France, assignors to Pipeline Service, Puteaux, France

Filed Dec. 12, 1979, Ser. No. 103,226
Claims priority, application France, Dec. 18, 1978, 78 35499
Int. Cl.³ F17D *1/02*
U.S. Cl. 137—15 6 Claims



1. A method of vacuum drying of a pipeline which is to transport a gaseous fluid, the method comprising:

connecting an ejector to one end of the pipeline, said ejector having a pressurized driving fluid injector nozzle, an aspiration chamber connected to the pipeline and a discharge port;

injecting a pressurized driving fluid into said ejector, thereby aspiring and entraining the water vapor and residual air from the pipeline to produce a fluid mixture in the aspiration chamber which is thence discharged from the discharge port, said injecting step continuing until the phase of drying the pipeline is substantially complete;

introducing the gas which is to be transported into the pipeline by displacing residual fluid from the pipeline by intake of the gas to be transported at the opposite end of the pipeline from that to which said ejector is coupled, while maintaining in the pipeline a vacuum corresponding to a pressure lower than the point at which the characteristic curves of the lower limits of flammability of the gas to be transported substantially meet;

putting the pipeline under suitable pressure; and

disconnecting the ejector when said gas which is to be transported reaches the ejector.

4,346,727

APPARATUS FOR MEASURING THE AMOUNT OF FLUID SUPPLIED BY A FLUID SUPPLY DEVICE

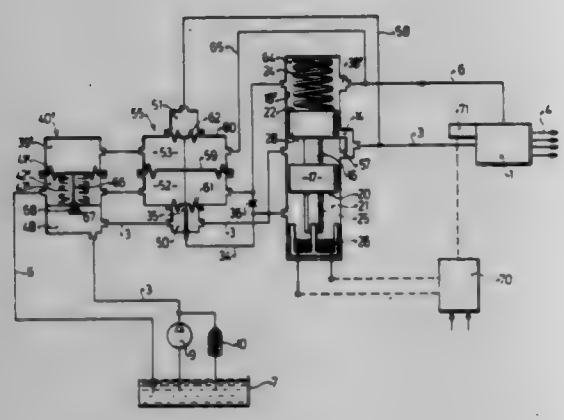
Gerhard Stumpp, Stuttgart, and Wolf Wessel, Oberriexingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 19,521, Mar. 12, 1979, Pat. No. 4,286,615. This application May 7, 1981, Ser. No. 261,332

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812233

Int. Cl.[3] G05D *11/03*

U.S. Cl. 137—117 11 Claims



1. A device for controlling the amount of fluid delivered by a fluid delivery device comprising:

a supply line for the fluid under pressure to the delivery device including a throttle element having an apportioning constant flowthrough cross-section orifice,

piston means integrated in the supply line for controlling said apportioning cross-section orifice in said throttle element,

a pressure comparison valve for providing a nominal value and for comparing pressure contrast which appears at said apportioning cross-section orifice with said nominal value in said pressure comparison valve,

an adjustment device related to said pressure comparison valve for providing a correcting regulation of said piston means, said adjustment device being activated in accordance with operation of said pressure comparison valve due to a deviation of said pressure contrast from said nominal value and wherein the position of said piston means provides a measure of the amount of flowing fluid per unit of time,

a fluid tank,

a return flow line connected to said fluid tank and wherein a part of the apportioned amount of fluid is returned through said return line to the fluid tank characterized by the fact that in said return line a constant flowthrough cross-section orifice is provided and,

a differential pressure valve operatively associated with said flowthrough cross-section orifice for the generation of a constant pressure contrast at said flowthrough cross-section orifice which is maintained constant by dumping of supply fluid by said differential pressure valve into said return flow line and to said fluid tank,

said pressure comparison valve comparing the pressure difference at said apportioning cross-section orifice of said throttle element with the pressure difference at said flowthrough cross-section orifice in said return line as said nominal value.

4,346,728

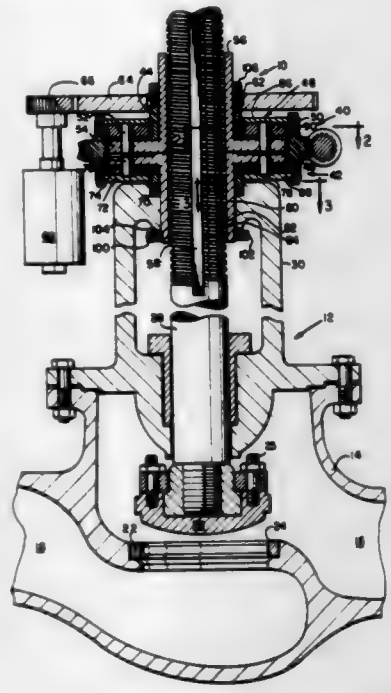
AUTOMATED DUAL MODE VALVE ACTUATOR

Harry E. Sulzer, Telford, Pa., assignor to Anchor/Darling Industries, Inc., Bala Cynwyd, Pa.

Filed Jul. 28, 1980, Ser. No. 172,560

Int. Cl.[3] F16K *31/53, 29/00*

U.S. Cl. 137—243.6 10 Claims



3. A dual mode valve actuator for automatically controlling the operation of a valve having a valve stem, comprising:

a first drive motor activated during a first mode of valve actuator operation;

a first planetary drive assembly operatively coupled to the first drive motor and to the valve stem;

a second drive motor activated during second mode of valve actuator operation, and operatively coupled to the first planetary drive assembly;

a second planetary drive assembly operatively coupled to the second drive motor and to the valve stem;

whereby during the first mode of operation, said valve stem is driven by said first planetary drive assembly to move axially, and during the second mode of operation, the two planetary drive assemblies are driven into rotation to rotate the valve stem without axial movement thereof; the valve actuator further comprising torque sensing means for sensing the torque developed by the valve stem during the first mode of operation, the torque sensing means including control means for causing the actuator to operate in the second mode of operation by deactivating the first motor and activating the second motor when the torque sensed exceeds a predetermined torque limit.

4,346,729

TEMPERATURE CONTROL SYSTEM AND PUSHBUTTON CONTROLLED PNEUMATIC ACTUATOR

Rudolph J. Franz, Schaumburg, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 29, 1979, Ser. No. 43,291

Int. Cl.[3] H01H *3/04;* F16K *11/02*

U.S. Cl. 137—353 2 Claims

1. A pushbutton actuated pneumatically operated actuator, said actuator comprising:

(a) body means, said body means defining

(i) a fluid chamber, and

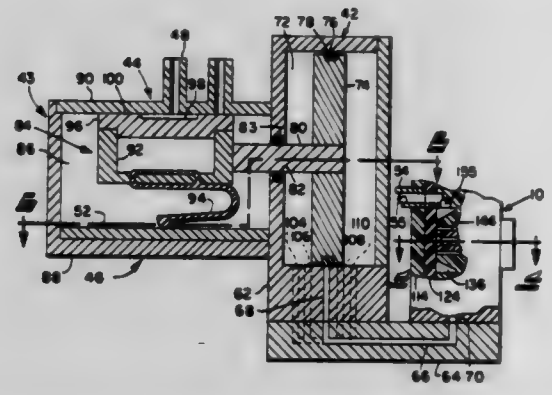
(ii) a plurality of spaced fluid outlet ports extending through a wall of said body means and in fluid communication with said chamber, with each of said ports connected to an associated outlet fluid passageway, said passageways being adapted for connection to a fluid pressure sink, said plurality of fluid ports including at

least one intermediate fluid port and two outermost fluid ports on either side of said intermediate fluid port;

(b) piston means slidably received in said chamber, said piston means including seal means located around the periphery thereof and in generally sealing engagement with said outlet fluid passageways;

(c) inlet means for communicating fluid pressure into said chamber on opposite sides of said piston seal means;

(d) valve means disposed in each of at least three of said passageways, said valve means each having a valve member adapted for selective actuation and movable between a normally closed position in which said passageway is isolated from said fluid outlet port and an open position in which said passageway communicates with said fluid outlet port, said valve means in said open position permitting fluid in said passageway to escape therefrom at a flow



rate substantially greater than said inlet port means permits fluid to enter said passageway, said piston means movable upon actuation of one of said valve means to a position in which said seal means straddles said outlet port and substantially prevents further fluid flow to said outlet passageway;

(e) said inlet means is defined by a vent passage in each of said valve members, said valve means in fluid communication with said outermost fluid ports, said vent passage closed upon said valve means being actuated to said open position; and

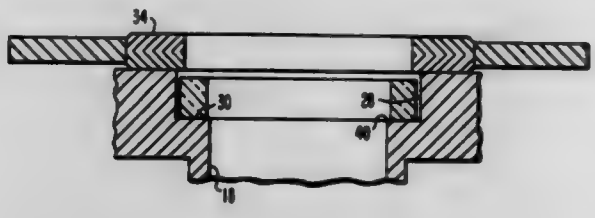
(f) check valve means disposed intermediate said valve means and said at least one intermediate fluid port, said check valve means preventing atmospheric air from venting into said passageway through said intermediate fluid port.

4,346,730

VALVE FOR ABRASIVE MATERIAL

Harold S. Gardner, Turtle Creek, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 14, 1981, Ser. No. 224,870
Int. Cl.³ F16L *7/00*
U.S. Cl. 137—375 **7 Claims**



1. An improved ball valve assembly for use in controlling the flow of an erosive fluid, said ball valve assembly of the type wherein a ball having an aperture therethrough is disposed within a housing having a first circular bore therethrough from an outer surface of said housing to another outer surface, said ball being movable between a first position wherein said aperture is aligned with said first bore so as to allow flow through said valve, and a second position wherein said aperture is out of alignment with said first bore so as to preclude flow through said valve, the improvement comprising:

a second circular bore, concentric with and of larger diameter than said first bore, extending from one of said surfaces partially into said housing so as to form an annular ledge within said housing; and

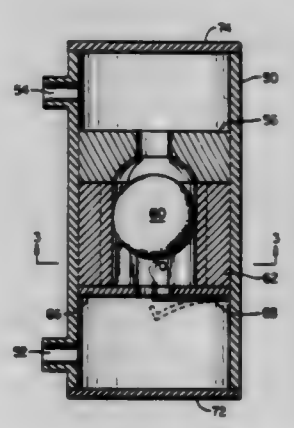
an annular deflector for reducing internal erosion of said ball valve assembly, disposed against said ledge, having an outside diameter smaller than the diameter of said second bore and an inside diameter equal to or greater than the diameter of said first bore.

4,346,731

BUOYANT ELEMENT CHECK VALVE FOR A THERMOSIPHON ENERGY SYSTEM

Harry W. Sigworth, Jr., Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 26, 1981, Ser. No. 267,130
Int. Cl.³ F16K *31/22*; G05D *23/00*
U.S. Cl. 137—433 **7 Claims**



1. A valve for regulating the flow of fluid which comprises:

a single housing having a lower fluid port and an upper fluid port;

a primary valve seat interposed in said housing between said ports;

a secondary valve seat interposed in said housing between said ports below said primary valve seat;

a valve member movably disposed in said housing between said primary and said secondary valve seats which has a density less than the fluid at or below the specified normal operating temperature and a density greater than the fluid above the specified normal operating temperature, which valve member will sealingly engage the primary valve seat to prevent the upward flow of fluid if the operating temperature is at or below the specified normal operating temperature, and which valve member will disengage from the primary valve seat and occupy intermediate positions between said valve seats to permit the downward flow of fluid and said valve member will engage the secondary valve seat to prevent said downward flow of fluid if the operating temperature is above the specified normal operating temperature.

4,346,732

PRESSURE REGULATOR FOR GASEOUS AND LIQUID FLUIDS

Kurt Moos, Wil, Switzerland, assignor to Gema AG Apparatebau, Switzerland

Filed Nov. 13, 1979, Ser. No. 93,638
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849265
Int. Cl.³ F16K *31/365*
U.S. Cl. 137—489 **15 Claims**

1. A pressure regulator for gaseous and liquid fluids comprising:

a main valve having an inlet and an outlet for a fluid, and

having a main valve body movable in a first direction to increase and in a second direction to lessen flow from said inlet to said outlet;

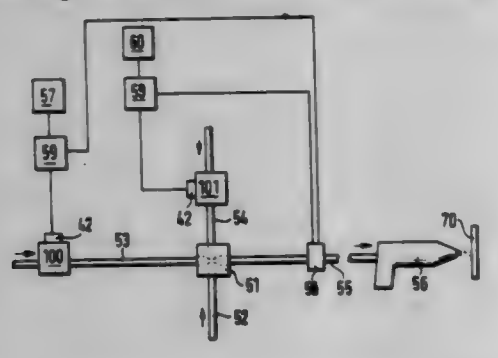
means defining a control pressure space, said control pressure space communicating with said inlet;

a control valve for controlling the pressure in said control pressure space, said control pressure space communicating via said control valve with a first vent;

force-exerting means for exerting a force in said first direction on said main valve body and being exposed to and responsive to fluid pressure in said control pressure space;

means for establishing a desired value for the fluid pressure in said outlet by controlling the fluid pressure in said control pressure space responsive to the desired value by controlling the degree of closure of said control valve; and

means defining a feedback pressure space for exerting pressure on said force-exerting means proportional to the fluid pressure in said outlet and opposed to the pressure on said force exerting means in said control pressure space, said



feedback pressure space being connected with said outlet and with a second vent; and said force-exerting means thereby exerting on said main valve body a force proportional to the pressure differential between said opposing pressures on said force-exerting means;

a cylindrical volume disposed between and communicating with said inlet, said outlet, and said feedback pressure space; said main valve body comprising a piston accomodated in said cylindrical volume; said piston having a cross-sectional area which is exposed to the fluid pressure in said inlet; said main valve body further comprising a valve closure element that communicates with said inlet and is urgeable in said first direction by fluid pressure in said inlet;

said main valve comprising first means for exposing a first cross-sectional area of said valve closure element to the fluid pressure in said inlet and second means for exposing a larger cross-sectional area of said piston than said first cross-sectional area to the fluid pressure in said inlet.

4,346,733

CONTROL VALVE

Frederick G. Grawunde, Painesville, Ohio, assignor to Fluid Controls, Inc., Mentor, Ohio

Filed Jul. 29, 1980, Ser. No. 173,436
Int. Cl.³ F16K *17/38*
U.S. Cl. 137—493 7 Claims

6. A control valve usable as a sequence valve or a pilot assisted, pressure relieving valve, comprising:

(a) a valve body defining a multi-stepped bore and spaced, first and second ports communicating with said bore;

(b) an elongate valve member comprising at least two spaced annuli joined by a reduced diameter portion, said annuli supported within said bore for reciprocating, axial motion;

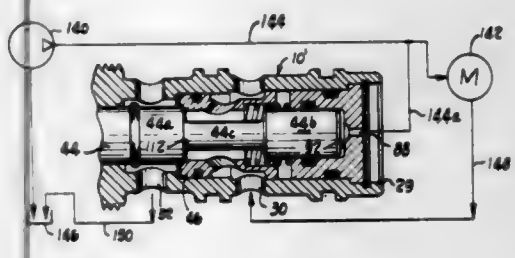
(c) one of said annuli defining a poppet valve portion and another of said annuli defining a piston portion and the one annulus being diametrically greater than the other annulus;

(d) a combination valve seat and check valve guided for reciprocating motion by said valve body bore and positioned in coaxial alignment with said valve member;

(e) said seat including an annular, internal beveled portion defining a seat surface engageable with a peripheral seating surface defined on said poppet valve portion of said valve member;

(f) spring biasing means housed within an atmospherically vented chamber defined at least partially by said valve body, urging said valve member towards engagement with said movable valve seat;

(g) stop means disposed in said vented chamber for limiting the maximum extension of said spring biasing means, whereby a biasing force applied to said valve member by said spring biasing means is substantially reduced when said valve member is engaging said movable valve seat;



(h) said one annulus defining a radial surface forming an effective pressure area exposed to fluid pressure near said first port, said fluid pressure applied to said radial surface rendering said spring biasing means at least partially ineffectual;

(i) said other annulus including an end surface that defines an effective pressure area against which a pilot pressure can be applied to further oppose said spring biasing means; and,

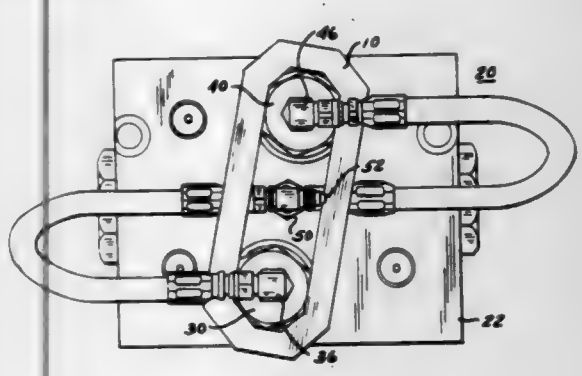
(j) sealing means mounted to said one annulus and sealingly engaging a portion of said valve body bore and operative to inhibit fluid leakage into said chamber.

4,346,734

LOCKING DEVICE

John H. Frank, New Philadelphia, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Nov. 3, 1980, Ser. No. 203,087
Int. Cl.³ F16K *17/06*
U.S. Cl. 137—506 5 Claims



4. A valve assembly having head adjusting caps on two spaced apart relief valves supported on a common body, with each headed adjusting cap having at least two parallel spaced apart flat surfaces formed thereon, the improvement comprises:

a keeper formed from a thin sheet metal plate, having an elongated opening formed therein with a length great enough to fit over the formed adjusting head and a width slightly greater than the separation between the spaced apart flat surface on the adjusting heads, being bent along the longitudinal axis of the keeper to decrease the width of the opening formed therein and placed over the adjusting

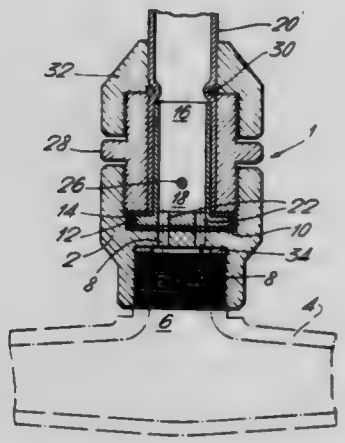
caps in engagement with the flat surfaces to prevent relative movement.

4,346,735

WATER FAUCET AND ATTACHMENT THEREFOR

Zeev Raz, Beersheva, Israel, assignor to Ben-Gurion University of the Negev, Israel, a part interest

Filed Oct. 26, 1979, Ser. No. 88,509
Claims priority, application Israel, Nov. 6, 1978, 55884
Int. Cl.[3] F16K *19/00*
U.S. Cl. 137—606 8 Claims



1. A water saving faucet particularly for kitchen sinks and bathroom basins, having at least one water valve, comprising:

a single-conduit spout having an inlet end and mounted for substantially unlimited sink-sweeping movement about a sweep axis as well as for tilting movement about a tilt axis, the axes being different but intersecting;

a mechanically operated spout valve located adjacent to the inlet end of said spout, having means for blocking and opening a waterflow path between the at least one water valve and said spout; and

means mechanically linking said blocking means to said spout, tilting movements of said spout positively moving said blocking means into and out of said waterflow path, providing a first range of selectable tilt positions which provide a continuous range of selectable waterflow rates through the spout from shut-off to maximum at any pre-adjusted temperature, and providing at least one other continuous range of selectable spout positions in which said blocking means are moved to block said waterflow path, control of the waterflow rate in both the first and the at least one other continuous ranges of selectable tilt positions, due to tilting movements about the tilt axis, being completely independent of said sink-sweeping movements about the sweep axis, whereby waterflow rates, including shutoff, and water temperature remain unchanged during sink-sweeping movement.

4,346,736

ELECTRICALLY OPERATED FLUID CONTROL VALVE UNIT

Masami Inada, Kariya; Takeharu Ohumi, and Kenji Hashimoto, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 9, 1980, Ser. No. 110,560
Claims priority, application Japan, Jan. 9, 1979, 54/1850
Int. Cl.[3] F16K *11/07, 31/08*
U.S. Cl. 137—625.48 7 Claims

6. An electrically operated fluid control valve unit comprising:

a housing having inlet and outlet ports;

a longitudinal tubular core of magnetic material secured within said housing in an axial direction and having an axial hole to permit the flow therethrough of fluid between said inlet and outlet ports;

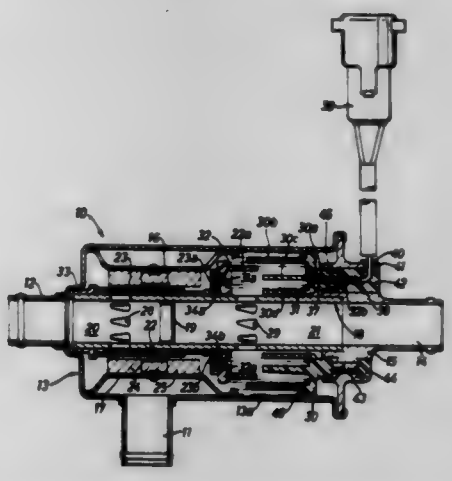
a bobbin of non-magnetic material axially slidable on said tubular core for controlling the opening area of said axial hole;

a support member of magnetic material secured within said housing and being in surrounding relationship with said tubular core;

a permanent magnet secured to said support member for providing magnetic flux in the form of a closed-loop through said support member and said tubular core;

a moving-coil wound on said bobbin across the magnetic flux of said permanent magnet for providing a linear force on said bobbin;

a pair of coil springs assembled within said housing concentrically with said tubular core, said coil springs connecting said moving-coil to an electric control circuit and biasing said bobbin to normally close said axial hole of said tubular core; and means for insulating said springs from each other and from said housing and tubular core wherein said housing is provided with an inlet port in the form of a radial port and at its opposite ends with first and second outlet ports respectively in the form of an axial port, and said tubular core is secured at its opposite ends to said first and second outlet ports and provided with an internal partition member to subdivide the interior of said tubular core into first and second chambers respectively, said tubular core being provided with a first axial hole to permit the flow of fluid from said inlet port into said first chamber and a second axial hole to permit the flow of fluid from said inlet port into said second chamber, and wherein said bobbin is biased by said springs to normally close said first axial hole and to open said second axial hole.

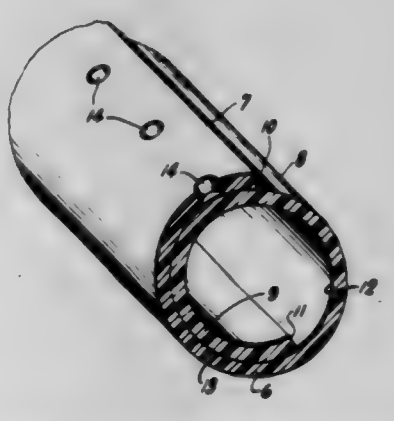


4,346,737

DRIP IRRIGATION TUBING

Robert J. Miller, Five Points, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 15, 1979, Ser. No. 94,805
Int. Cl.[3] B05B *15/00*
U.S. Cl. 138—42 2 Claims



1. A method of forming a drip irrigation tube comprising the

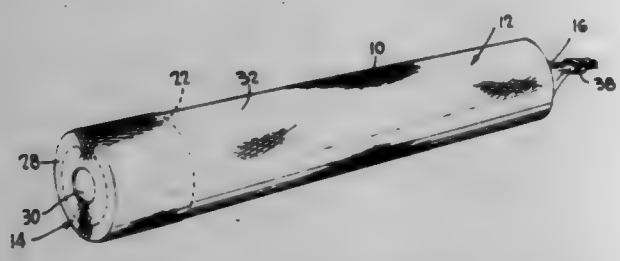
steps of providing a longitudinally elongated planar sheet of flexible material having parallel first and second longitudinal side edges, and a longitudinally extending series of holes defined therethrough parallel to said first side edge and in adjacent spaced relation thereto, transversely spiralling said sheet of flexible material on itself to define a longitudinally extending conduit of approximate circular transverse cross-section, the portion of the sheet of flexible material adjacent second side edge being positioned interiorly of the formed conduit in underlying relation to said first side edge and extending in underlying relation to the defined series of holes and for a substantial distance therebeyond to define a freely positioned flap within the formed conduit, and directly sealing said first side edge to the immediately underlying portion of the formed conduit along the full length of said first edge.

4,346,738

OVERWRAP CASING AND METHOD OF APPLYING SAME

Thomas W. Martinek, Covington, Ind., assignor to Teepak, Inc., Chicago, Ill.

Filed Jun. 9, 1981, Ser. No. 271,886
Int. Cl.[3] F16L *11/00*; B65B *11/00*; B65D *85/20*
U.S. Cl. 138—118.1 23 Claims



1. A member encased in an overwrap casing, said overwrap casing having a first end portion telescoped over one end portion of said member, said overwrap casing having a radially inwardly transversely extending portion at a free end of said member one end portion, said overwrap casing being reversely folded upon itelf at an inner end of said radially inwardly transversely extending portion to define a radially outwardly transversely extending portion, said overwrap casing having a body portion extending the full length of said member in telescoped relation to both said overwrap casing first end portion and said member, and said overwrap casing being closed at the other end of said member.

14. A method of encasing a member, said method comprising the steps of telescoping an end portion of a tubular overwrap casing over one end portion of a member, necking down the overwrap casing adjcent the one end of the member and radially inwardly and radially outwardly folding the overwrap casing at the member one end, telescoping a body portion of the overwrap casing over the overwrap casing one end portion and the entire length of the member, and closing the overwrap casing at the opposite end of the member.

4,346,739

COMPOSITE METAL TUBING

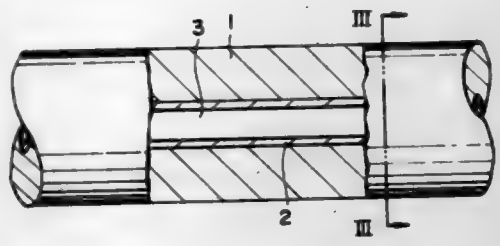
Kikuo Asada, Mishima, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Shizuoka, Japan

Filed Oct. 21, 1980, Ser. No. 199,290
Claims priority, application Japan, Oct. 24, 1979, 54-137407
Int. Cl.[3] F16L *9/14*
U.S. Cl. 138—143 3 Claims

1. A thick walled composite metal high pressure fuel injection tubing comprising:

a thick walled outer tubular member having inner and outer diameters defining concentric inner and outer cylindrical surfaces, the outer diameter of said outer tubular member being not greater than 30 mm; and

an inner tubular member having inner and outer diameters defining inner and outer cylindrical surfaces, the outer diameter of the inner tubular member being substantially equal to the inner diameter of the outer tubular member, the inner tubular member being press-fitted into the outer tubular member such that the inner tubular member outer surface abuts the outer tubular member inner surface, the



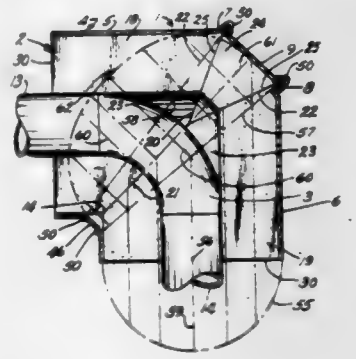
inner tubular member being made of steel having a tensile strength at least equal to 48 Kg/mm^2, the radial distance between the inner tubular member inner and outer cylindrical surfaces being equal to 1.5 to 8.5% of the outer diameter of the outer tubular member.

4,346,740

PIPE ELBOW INSULATOR AND PROTECTIVE JACKET THEREFOR

Robert O. Williams, 2264 Weber Rd., Gladwin, Mich. 48624

Filed May 9, 1980, Ser. No. 148,529
Int. Cl.[3] F16L *59/14*; B21D *53/00*
U.S. Cl. 138—149 7 Claims



1. A throatless insulator for pipe elbows, and the like, comprising:

an insulative insert, including:

first and second insulator legs, each having an interior channel shaped to respectively receive therein first and second pipe sections interconnected by an elbow;

said first and second insulator legs each having a dihedral face adapted for orientation toward each other at a medial portion of the elbow; each dihedral face including inner and outer surfaces which intersect at the central axis of said associated leg; said inner surfaces being inclined at an angle substantially equal to one-half of the included angle between said pipe sections, and abutting during an assembled condition; said outer surfaces being inclined from an associated one of the inner surfaces at an angle substantially equal to one-quarter of the included angle;

a wedge-shaped insulator gore disposed between said outer surfaces, with end faces inclined to mate with the same and form an insulative enclosure about the elbow; and

a protective jacket, including:

first and second jacket legs having a tubular shape and receiving therein said first and second insulator legs respectively; said jacket legs each having an inclined interior end oriented toward each other at a medial portion of the jacket; said first and second jacket legs being spaced apart during an assembled condition, so as to form a gap between the interior ends thereof;

a jacket gore extending between and completely about the interior ends of said legs, and overlying said insulator gore to close said gap;

means for connecting the interior ends of said jacket legs

with said jacket gore to form a protective shell enveloping said insulative insert.

3. A method for fabricating a protective jacket for pipe elbow insulators, comprising:

providing an insulative insert having first and second insulator legs with a wedge-shaped insulator gore positioned between inclined outer surfaces of the insulator legs;

forming first and second sleeve-shaped jacket legs from sheet material; said jacket legs having interior ends cut along mutually inclined, predetermined planes, and being spaced apart during an assembled condition to form a gap therebetween;

forming a jacket gore shaped to extend continuously about the periphery of said gap, and close the same; said jacket forming step including:

sizing a narrowest throat portion of said jacket gore between ¾ and 1 inch;

sizing a widest, heel portion of said jacket gore to a width substantially equal to the furthest distance between said insulator leg outer surfaces;

shaping opposing side edges of said jacket gore in a manner such that in the assembled condition said side edges lie along inclined planes which extend respectively from associated sides of said throat and heel portions; said inclined jacket leg planes substantially coextensive with said jacket gore planes; and

assembling said jacket legs and gore about said insulative insert to form a protective shall enveloping the same.

4,346,741

THREE-DIMENSIONAL WOVEN ARTICLES

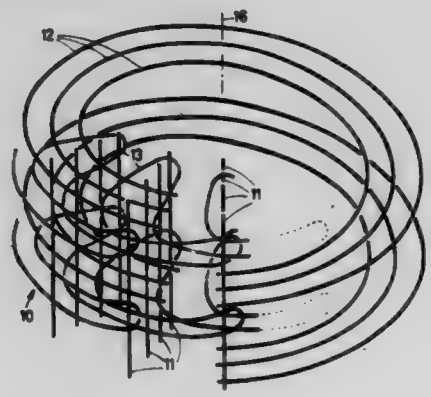
Jean Banos, Merignac; Jean-Claude Cantagrel, Saint Aubin de Medoc; Georges Cahuzac, and Jean-Louis Darrieux, both of Merignac, all of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Division of Ser. No. 916,554, Jun. 19, 1978, Pat. No. 4,183,232. This application Dec. 7, 1979, Ser. No. 101,225

Claims priority, application Sweden, Jun. 20, 1977, 7718831

Int. Cl.³ D03D *3/02*

U.S. Cl. 139—387 R **10 Claims**



1. A woven reinforced article formed as a hollow body of revolution having a thick wall formed by three-dimensional weaving comprising a triple set of rods and yarns comprising a plurality of rod-bunches circumferentially arranged about a central axis, each rod bunch having a plurality of elongated rods spaced along a common radius and respectively lying in circumferentially spaced relation to the corresponding rod in the adjacent rod bunch, a first substantially continuous yarn located to be between each of the adjacent radially-spaced rods forming superimposed courses of helically wound yarn; a second yarn extending radially between adjacent circumferentially spaced rod bunches intermediate each of said courses and being chain stitched to enclose the radially-spaced rods of each rod bunch between each of said courses of helically wound yarn.

4,346,742

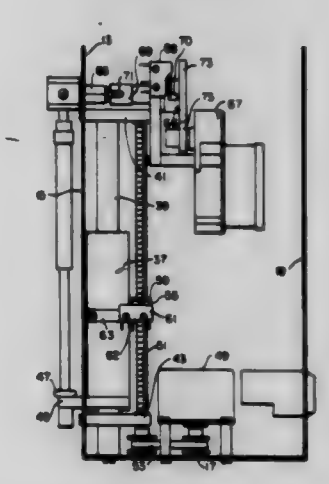
METHOD FOR DILUTING A LIQUID TFST SAMPLE AND COMPUTER CONTROLLD DILUTING APPARATUS

Charles Chase, Elk Groove; Stephen Walters, Citrus Heights, and Richard E. Meador, Sacramento, all of Calif., assignors to P.M. America, Inc., Sacramento, Calif.

Filed Jun. 2, 1980, Ser. No. 155,472

Int. Cl.³ B65B *3/32*

U.S. Cl. 141—1 **9 Claims**



1. A computer controlled diluting apparatus for the automated pick-up and delivery of a liquid test sample and diluent therefor by a syringe having a barrel, barrel tip, and plunger, said apparatus comprising

a housing,

a computer controlled syringe plunger drive means including a zero volume switch means,

computer controlled valve means mounted to said housing, said valve means having a first branch port adapted to be connected to a diluent pick-up line, a second branch port adapted to be connected to a sample pick-up line, and a distribution port which can be switched into fluid communication with either said first or second branch ports, said distribution port being adapted to releasably secure the barrel tip of a syringe, and

computer control means for sequencing said plunger drive means and said syringe barrel valve means to:

(a) pick up diluent through said diluent pick-up line to fill a preset volume of said syringe barrel,

(b) pick up sample in said sample pick-up line to fill and additional volume of said syringe barrel, and

(c) deliver sample and diluent through said sample pick-up line.

4,346,743

PRODUCT BAG FOR AEROSOL CONTAINER AND METHOD OF UTILIZING THE SAME TO FACILITATE FILLING WITH PROPELLANT

Teddy Miller, Skokie, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

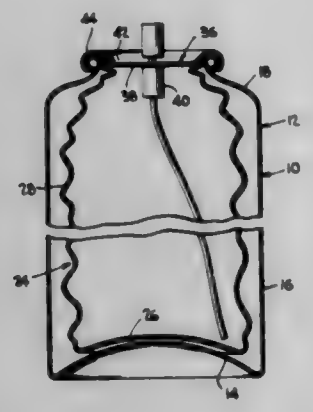
Filed Dec. 19, 1980, Ser. No. 218,159

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—3 **12 Claims**

11. A method of filling an aerosol container with a propellant wherein said aerosol container is of the type including a product bag, said method comprising the step of providing a container having an upper portion terminating in a container flange defining an opening, providing a product bag having a neck terminating in an annular flange, placing the product bag in the container with the neck extending out through the container opening and the annular flange overlying in axially spaced relation the container flange, placing a valve cup on the product bag with a sealing flange of the valve cup engaging the annular flange, pressing the valve cup down to temporarily seat the annular flange on the container flange and bonding the annular flange to the sealing flange, releasing the valve cup with the product bag pushing the valve cup upwardly and

spacing the annular flange above the container flange, and then directing a propellant into the container between the container



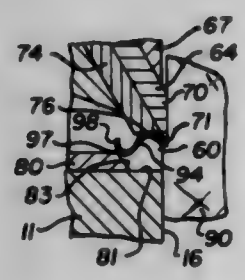
flange and the annular flange and then through the opening around the product bag neck.

4,346,744

WOOD WAFERIZING APPARATUS

Douglas C. Beer, Seattle, Wash., and Horst J. Jatzek, Coquitlam, Canada, assignors to CAE Machinery Ltd., Vancouver, Canada

Filed Aug. 22, 1980, Ser. No. 180,257
Int. Cl.[3] B27C *1/14*
U.S. Cl. 144—176 10 Claims



1. Apparatus for cutting long and thin wafers of controlled width by slicing pieces of wood along the grain thereof, comprising

a rotatable carrier element having a work surface which moves when the element is rotated around an axis,

spaced elongate and narrow slots through the carrier element, each having an entrance opening out from said work surface,

feed means for directing longitudinal sides of pieces of wood against the work surface with said sides and the grain of the wood pieces extending substantially parallel to the slots when the latter pass the wood during movement of the carrier element, and

a waferizing arrangement in each slot, each waferizing arrangement comprising

a cutter knife mounted on the carrier element at one side of one of said slots and extending longitudinally thereof, said knife having a cutting edge protruding slightly through the entrance of its slot and from the work surface to cut slices of a predetermined thickness off the sides of the wood pieces bearing against the work surface, and

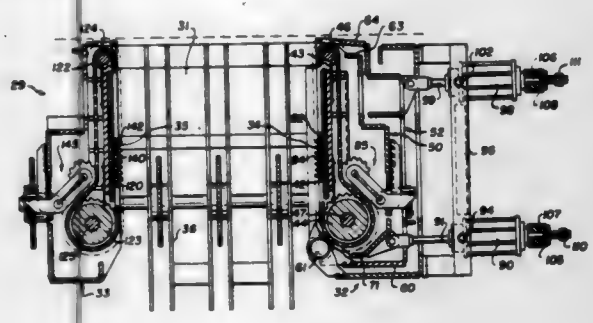
a reactor guide means on an opposite side of said slot and having a surface opposite the knife cutting edge but spaced inwardly therefrom and from the entrance of the slot a distance only sufficient to be engaged by slices which are directed thereagainst by the knife to break said slices longitudinally thereof into wafers substantially of a predetermined width.

4,346,745

WAFER SLICING APPARATUS

Jack Weavell, and Horst J. Jatzek, both of Coquitlam, Canada, assignors to CAE Machinery Ltd., Vancouver, Canada

Filed Aug. 25, 1980, Ser. No. 181,314
Int. Cl.[3] B27C *1/14*
U.S. Cl. 144—176 14 Claims



1. Apparatus for slicing from longitudinal sides of elongate wood pieces having grain running substantially from end to end thereof, relatively long and thin wafers with longitudinally extending grain, said apparatus comprising

a carrier rotatable around a central axis and having a work face,

a plurality of cutter knives arranged on the carrier and protruding from the face thereof sufficiently to cut wafers of a substantially predetermined thickness and length during rotation of the carrier,

a feed passage positioned to direct longitudinal sides of wood pieces against said carrier face to enable the knives thereof to slice wafers from the pieces during rotation of the carrier, said feed passage being defined by opposed first and second side walls each side wall having an inner end adjacent the carrier and an outer end remote from the inner end,

feed means forming part of each side wall for gripping the ends of wood pieces and moving said pieces along the passage and against the carrier face, and

support means for at least the feed means of the first side wall for maintaining the feed means in floating relationship relative to the feed means of the second side wall and resiliently permitting limited movement towards and away from the second wall feed means and permitting the ends of the first side wall to be moved independently of each other to accommodate pieces of different lengths in the feed passage at the same time.

4,346,746

ROTARY CUTTER LATHE TOOL

Louis M. Busch, 74 Cherry La., Macungie, Pa. 18062

Filed Aug. 11, 1980, Ser. No. 176,761
Int. Cl.[3] B27F *1/08*
U.S. Cl. 145—115 3 Claims



1. A rotary cutting lathe tool comprising:

(a) an elongated combination tool support body and work piece guide means, the work piece engaging side of which is generally planar;

(b) hand held handle means attached to and forming an extension of one end of said tool body;

(c) bearing means mounted at a right angle on said tool body from said planar side intermittent said tool support ends, the portion of said tool body extending from said bearing

to said tool body other end forming said work piece guide means;

(d) a concavo-concave shaped collar including a generally planar top and bottom journalled on said bearing; and,

(e) a frustum-shaped blade rotatably mounted transversely on said bearing above said collar, said blade, collar and guide means forming a die for the circular shaping of a lathe held, and turning, work piece.

4,346,747

RUN-FLAT SUPPORT AND TIRE ASSEMBLY

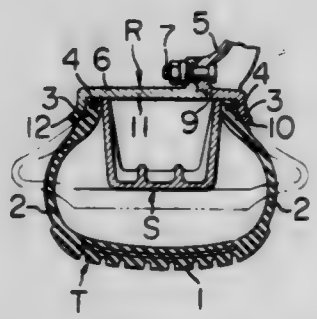
Isao Osada, Izumi, and Shoichi Sano, Tokorozawa, both of Japan, assignors to Ohtsu Tire & Rubber Co., Ltd., Osaka and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Continuation of Ser. No. 2,749, Jan. 11, 1979, abandoned. This application Aug. 29, 1980, Ser. No. 183,561

Claims priority, application Japan, Jan. 19, 1978, 53-4582

Int. Cl.[3] B60C *17/04*

U.S. Cl. 152—158 5 Claims



1. A run-flat support and tire assembly for use with a tubeless tire comprising: a split rim divided into at least two sections in an axial direction of the wheel; annular flange portions of said rim formed on the opposite sides thereof and a base portion formed therebetween; a tubeless tire mounted on said split rim and having annular bead portions formed on the opposite sides thereof; a plurality of circumferentially divided circular support members each having an inner peripheral surface thereof fitted over said base portion within an air chamber surrounded by said tubeless tire and said rim for cooperating with said flange portions to prevent displacement of said bead portions of said tubeless tire and to firmly support the tread portion of said tire when air sealed within said tire is lost; each of said support members comprising a thin-wall casing body having its inner peripheral surface formed open; said support members being further defined as trapezoid in cross section, having a radially outer peripheral wall smaller in lateral width than the opened inner peripheral surface, reinforcing ribs extending from the inner surface of said casing body to partition the interior of said casing body into a plurality of chambers; and connecting protrusions projecting circumferentially from opposite end surfaces of said casing body, said connecting protrusions at the adjacent ends of said support members being closely engaged with each other in male and female relationship and pivotally connected at their inner peripheries with each other by means of a plurality of connecting pins which extend laterally in an axial direction and being clamped between said bead portions of said tubeless tire, each of said support members having a radial height greater than that of said tire bead portions.

4,346,748

TRACTION DEVICE FOR VEHICLES

John P. Bagoy, and Joseph A. Riendl, both of 1730 W. 10th Pl., #4, Tempe, Ariz. 85281

Filed Jan. 12, 1981, Ser. No. 224,074

Int. Cl.[3] B60C *27/00, 11/00*

U.S. Cl. 152—222 9 Claims

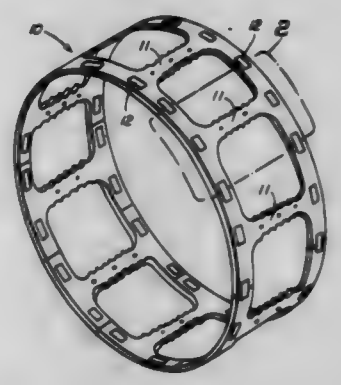
1. A wheel mountable device for increasing the traction of a tire on a road surface comprising:

a plurality of traction elements secured together in an endless chain,

said elements comprising a plastic body each having an elongated traction member having generally planar inner and outer surfaces for extending laterally across the width of the tire and a pair of fastening members formed to extend laterally one across each end of said traction member,

each of said fastening members being arcuate in shape to fit around and conform to sidewalls of the tire,

means for detachably mounting at least one stud of wear resistant material to at least one traction member of at least one of said elements,



said means comprising a bracket for wrapping around a part of said inner surface of said traction member,

said stud being secured to said bracket for extending through said traction member laterally thereof and outwardly of its outer surface, and

fastening means attached to said fastening members of said traction members for releasably securing said traction elements in an endless chain for mounting around the circumference of a tire,

whereby the inner surfaces of said traction members abut the outer periphery of the tire such that as the tire rolls along a road surface the traction members contact the road surface with the stud providing added traction for the tire.

4,346,749

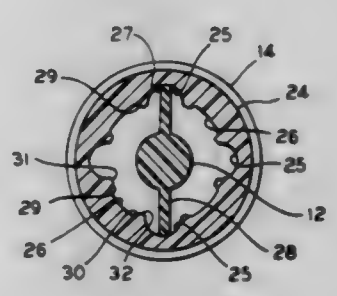
MOTOR AND ROLLER SUPPORT FOR WINDOW SHADES AND THE LIKE

Buckley A. Singletary, Plainfield, and John C. Gall, Chicago, both of Ill., assignors to Sears, Roebuck and Company, Chicago, Ill.

Filed Aug. 18, 1980, Ser. No. 179,323

Int. Cl.[3] E06B *9/208*

U.S. Cl. 160—301 24 Claims



1. An improved reversible locking clutch apparatus comprising

a housing including an annular portion having a plurality of alternately deep and shallow recesses formed in the inner surface of the periphery of said portion, and

a spindle having at least one flexible pawl extending therefrom and positioned to cooperate with the plurality of recesses of the annular portion of said housing, said pawl being unflexed when radially aligned with any of said

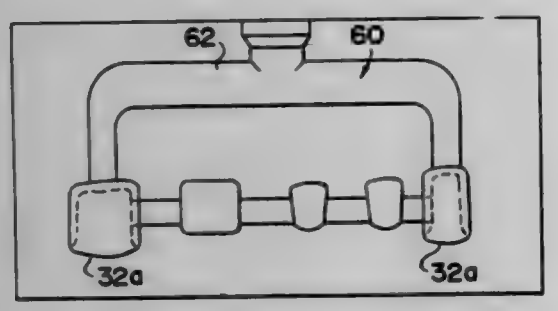
deep recesses in the inner surface of the annular portion of said housing whereby relative rotation between the housing and said spindle can be initiated in either direction therefrom, and said pawl being angularly flexed upon being positioned in any of said shallow recesses in the inner surface of the annular portion of said housing and abutting the recess surface when the end of said pawl resides in said recess, whereby relative rotation between said housing and said spindle can be initiated in only one direction therefrom.

4,346,750

METHOD OF MAKING DENTAL BRIDGE USING A PREFABRICATED NON-PRECIOUS PONTIC

Mike Z. Nemethy, Royal Dental Lab., Inc., 3869 5th Ave. North, St. Petersburg, Fla. 33713

Division of Ser. No. 42,708, May 25, 1979, Pat. No. 4,269,595.
This application Nov. 5, 1980, Ser. No. 206,292
Int. Cl.[3] B22C *9/04*
U.S. Cl. 164—35 **4 Claims**



1. A method of making dental bridges wherein at least a pair of opposed wax copings, formed by at least a pair of opposed abutment dies, are subsequently invested and cast into precious alloy copings, the improvement comprising the steps of:

providing a prefabricated pontic framework of non-precious metal having at least one pontic support with a pair of connecting bars extending therefrom;

cutting the connecting bars to a desired length to fit between the abutment dies of said pair of opposed abutment dies;

attaching one of the connecting bars to each of the wax copings of said pair of opposed wax copings;

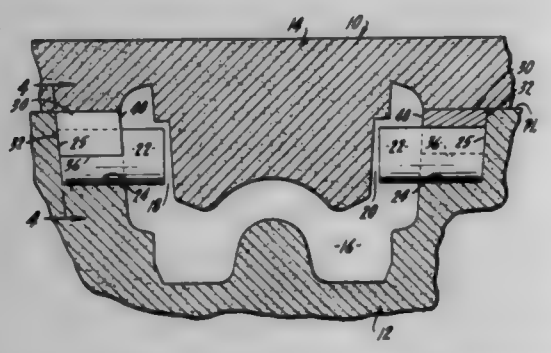
investing the pair of opposed wax copings with the prefabricated pontic framework disposed therebetween.

4,346,751

FOUNDRY MOLDS

Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,376
Int. Cl.[3] B22C *9/10*
U.S. Cl. 164—368 **1 Claim**



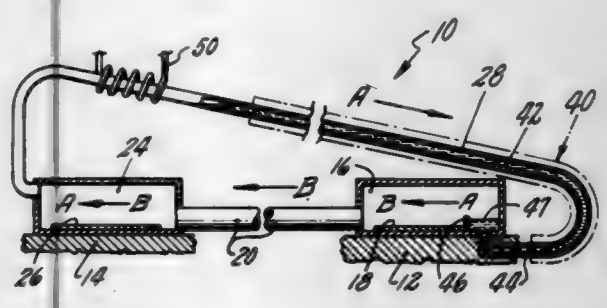
1. A sand mold drag having opposed side walls separated by a casting cavity, each side wall of the drag having an upper parting line surface with a plurality of core receiving recesses extending downwardly therefrom, each recess presenting a bottom pocket of sand for receiving the core and also presenting a pair of sand shoulders outward of and in communication with said pocket on opposite sides thereof for supporting a cover, each recess having one end opening into the casting cavity, the core resting in said pocket and only partially filling the remainder of the related recess so that said shoulders are free of the core, and a one-piece pre-molded cover set atop and in contact with each core with a pair of spaced bottom ledges of the cover resting on said shoulders substantially to fill the remainder of each drag recess, each cover having an underside concave recess fitting the top of the related core and having a flat top surface flush with the parting line surface of the related mold side wall, wherein said concave recess in each cover is tapered from a narrow width at the end adjacent the casting cavity to a wider width at the opposite end.

4,346,752

SELF-DRIVEN CHEMICAL HEAT PIPE

Arthur S. Kesten, West Hartford, and Alan F. Haught, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 19, 1981, Ser. No. 226,320
Int. Cl.[3] F28D *21/00*
U.S. Cl. 165—1 **29 Claims**



1. In a chemical heat pipe employing reversible endothermic/exothermic chemical reactions to transfer heat a relatively long distance between a heat source and a heat sink and including a closed circuit flow path in heat transfer relation with a heat source and with a heat sink at respective heat source and heat sink positions along said path, said closed circuit flow path including separate first and second arms each extending between said heat source and heat sink positions, and a chemical reactant being contained within said closed circuit flow path, the method of self-driving said reactant substantially unidirectionally around said closed circuit flow path comprising the steps of:

providing a supply of said reactant in said flow path for reaction at said heat source position;

endothermically reacting at said heat source position said reactant from said supply thereby to create gaseous reaction product at sufficient pressure relative to the pressure at said heat sink position, for establishing flow of said reaction product toward said heat sink position and to enhance transport of said reactant from said supply to said heat source position;

exothermically reacting said reaction product at said heat sink position to reform said reactant in a gaseous state; and

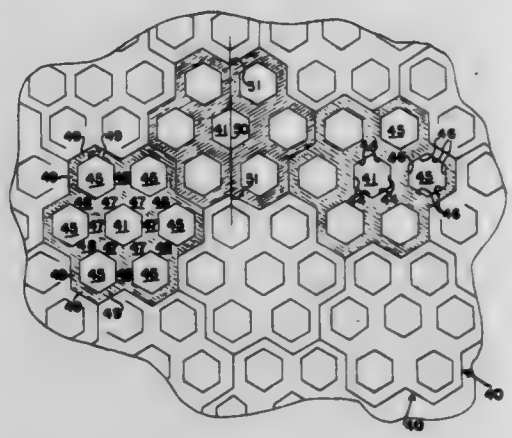
converting said reformed reactant to a liquid form and passively conducting said liquid-form reactant toward said heat source position such that it fully occludes at least a portion of said second arm and provides said reactant supply, said occlusion of said second arm by said liquid-form reactant thereby substantially preventing liquid revaporization into an otherwise counterflowing gaseous reaction product and permitting sufficient pressure difference between said heat source and said heat sink positions to establish and promote the flow of said gaseous reaction product to said heat sink position through said first arm.

4,346,753

REGENERATOR CHECKERWORK BRICK

Stanley J. Kletch, Bridgeville, Pa., assignor to Bricmont & Associates, Inc., McMurray, Pa.

Filed Jan. 6, 1981, Ser. No. 223,071
Int. Cl.³ F28D *17/02*
U.S. Cl. 165—9.1 5 Claims



1. Checkerwork bricks for a regenerator, each checkerbrick essentially including generally parallel internal planar wall sections surrounding a central flow space for conducting a heat exchange medium between opposite sides of the brick, partitioning wall segments projecting radially from said internal planar wall sections, said internal wall sections and said partitioning wall segments having substantially uniform thicknesses, and planar exterior wall segments of hexagonal configuration joined so that every three planar exterior wall segments form a flow space between each of adjacent ones of said internal wall sections to thereby form an array of outer flow spaces distributed uniformly about said central flow space, the thickness of said planar exterior wall segments being uniform and equal to about one-half the thickness of said internal wall sections so that each exterior wall segment of one brick can abut with a similar external wall segment of another brick to define an effective heat storage capacity of the two abutting walls substantially equal to the heat storage capacity of an internal planar wall section, each planar exterior wall segment being arranged to abut with an external wall segment of another brick for uniform heating or cooling of the mass of the brick by the flow of a heat transfer medium only along said central flow space and said outer flow spaces.

4,346,754

HEATING AND COOLING SYSTEM

Leland A. Imig, Goehner, Nebr., and Mickey R. Gardner, Gloucester Point, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 30, 1980, Ser. No. 145,208
Int. Cl.³ F25B *29/00*
U.S. Cl. 374—46 9 Claims

1. A device for heating and cooling a specimen undergoing fatigue testing comprising:

a fatigue testing machine;

a test specimen connected to said fatigue testing machine;

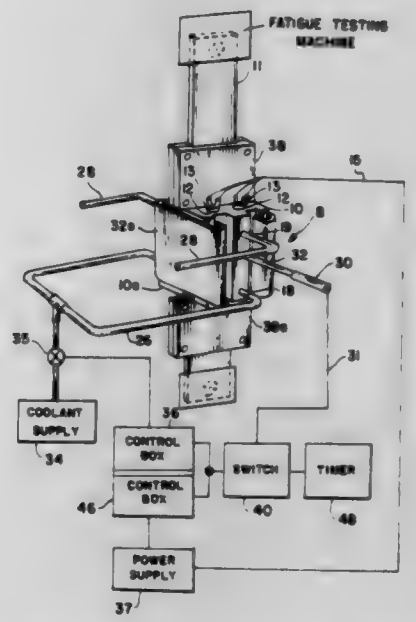
block means having a small mass to enable rapid cooling and heating thereof;

said block means being constructed and arranged to engage said test specimen;

clamping means for securing said block means to said test specimen;

cooling means for cooling said block means and test specimen to very cold temperatures;

heating means for heating said block means and test specimen to very hot temperatures; and



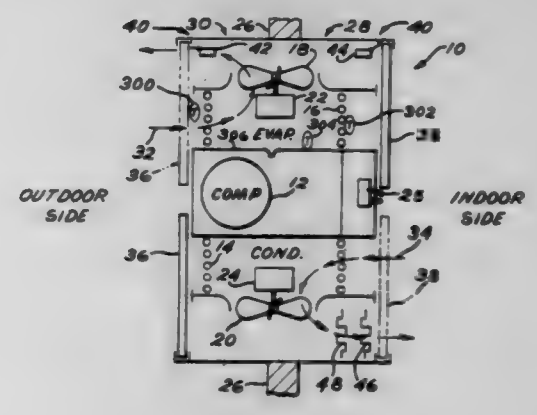
contol means for selectively activating said heating means and said cooling means to selectively heat and cool said test specimen.

4,346,755

TWO STAGE CONTROL CIRCUIT FOR REVERSIBLE AIR CYCLE HEAT PUMP

Robert P. Alley, Onondaga, N.Y.; Walter J. Pohl, Louisville, Ky., and John W. Relyea, Onondaga, N.Y., assignors to General Electric Company, Louisville, Ky.

Filed May 21, 1980, Ser. No. 151,855
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—17 25 Claims



1. A two stage control circuit for a reversible air conditioning unit of the type having a heating mode and a cooling mode of operation and including operational elements for providing first and second stages of heating and cooling, said control circuit comprising:

a mode switch for making predetermined electrical connections depending upon whether heating mode or cooling mode operation is selected;

a first stage controlled switching device connected, when activated, to energize the first stage operational elements;

a second stage controlled switching device connected, when activated, to energize the second state operational elements;

thermostatic control circuitry for comparing sensed indoor temperature with a temperature setting and for activating said first and second stage controlled switching devices depending upon the difference between sensed indoor temperature and the temperature setting, said thermostatic control circuitry operable when the heating mode is selected to activate said first stage switching device if sensed

indoor temperature is below the temperature setting and to additionally activate said second stage switching device if sensed indoor temperature is below the temperature setting by a predetermined differential amount, and operable when the cooling mode is selected to activate said first stage switching device if sensed indoor temperature exceeds the temperature setting and to additionally activate said second stage switching device if sensed indoor temperature exceeds the temperature setting by a predetermined differential amount;

a user control unit locatable remotely from a main portion of said control circuit, with power supplied to said remotely locatable user control unit from said control circuit main portion via a pair of supply conductors, one of said pair of supply conductors being subdivided into a heating mode select conductor and a cooling mode select conductor alternately selected for continuity by said mode switch;

said remotely locatable user control unit having a temperature setting potentiometer connected in adjustable voltage divider configuration across said pair of supply conductors to provide a voltage representative of the desired degree of heating or cooling;

said remotely locatable user control unit further having an indoor temperature sensor connected in a circuit to provide a voltage representative of the actual degree of heating or cooling, said indoor temperature sensor circuit responsive to said heating and cooling mode select conductors to selectively cause the voltage representative of the actual degree of heating or cooling to vary either directly or inversely with sensed temperature;

a heat limiting trimmer resistor and a cool limiting trimmer resistor respectively selected in response to said heating and cooling mode select conductors and arranged in combination with said potentiometer to controllably limit user selection of the voltage representative of the desired degree of heating or cooling; and

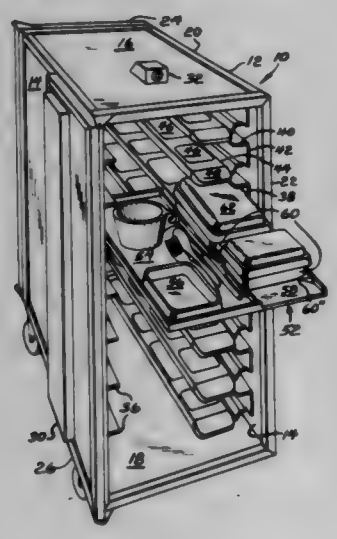
comparator circuitry responsive to the voltage representative of desired degree of heating or cooling and to the voltage representative of the actual degree of heating or cooling to activate said first and second stage controlled switching devices depending upon the amount by which the voltage representative of the actual degree of heating or cooling falls short of the voltage representative of desired degree of heating or cooling.

4,346,756

APPARATUS FOR SELECTIVELY HEATING AN INDIVIDUAL FOOD ITEM IN A REFRIGERATED ENVIRONMENT

Malcolm J. Dodd, and Joseph A. Juhas, both of Litchfield, Conn., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 20, 1980, Ser. No. 179,858
Int. Cl.[3] F25B *29/00*
U.S. Cl. 165—48 R 13 Claims



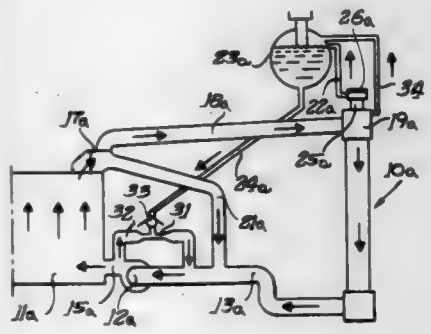
1. An apparatus for heating at least one covered container on a meal service tray while other items on the tray are refrigerated comprising an enclosed housing having a plurality of cooperative pairs of guide rail portions therein for supporting a first pair of opposed side edges of a plurality of trays; a plurality of vertically spaced, generally horizontal, thin heater shelves extending from a side wall of said housing; a ramp surface on at least one end of each of said heater shelves; a plurality of meal service trays, each of said trays having at least one abutment portion thereon which extends transversely over a portion thereof relative to said first opposed pair of side edges, said abutment portion being located on said tray to permit restraining contact with said at least one covered container relative to the tray while allowing the tray to be slid along one of said plurality of cooperating pairs of guide rail portions so that one of said thin heater shelves will pass above the tray surface and under the container contacted by said abutment portion, and at a spaced horizontal distance from said abutment portion, the ramp surface on each of said heater shelves being adapted to lift a covered container located on said tray adjacent said at least one abutment and permit a flat heater plate portion of said heater shelf with which said container is frictionally engaged to pass under said container as said container is restrained by said at least one abutment portion, said at least one container and said tray and/or said heater shelf having longitudinally extending rib and groove complementary guiding portions thereon for insuring that said at least one container will be restrained from rotational or transverse movement as said container and tray are moved relative to said heater shelf.

4,346,757

AUTOMOTIVE COOLING SYSTEM USING A NON-PRESSURIZED RESERVOIR BOTTLE

Alex S. Cheong, Mississauga, and James F. Accursi, Windsor, both of Canada, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 10, 1980, Ser. No. 185,828
Int. Cl.[3] F01P *3/00*
U.S. Cl. 165—51 6 Claims



1. In a pressurized cooling system for an automotive vehicle including an engine coolant jacket, a radiator, a coolant pump directing fluid from the radiator to the engine coolant jacket, a surge bottle connected to an overflow line from the radiator, and a make-up line from the surge bottle to a point upstream of the pump, the improvement comprising a conduit from the pump outlet to the pump inlet, and a venturi in said conduit with the venturi throat connected to said make-up line, such that the surge bottle is maintained at atmospheric pressure.

4,346,758

HEAT EXCHANGER FOR COOLING SLAG-CONTAINING GASES FROM COAL GASIFICATION

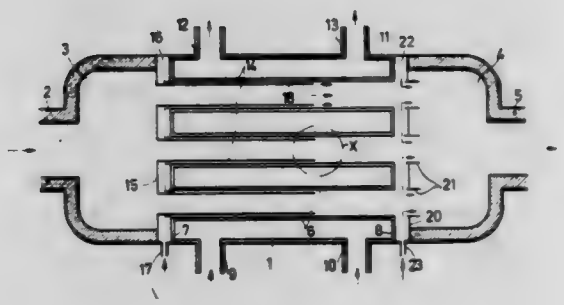
Wolfgang Kehrer, and Helmut Lachmann, both of Berlin, Fed. Rep. of Germany, assignors to Borsig GmbH, Berlin, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,390

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, 2913748

Int. Cl.³ F28F 9/22

U.S. Cl. 165—134 R 3 Claims



1. A heat exchanger, especially a tube bundle heat exchanger for cooling slag-containing gases from coal gasification in at least three streams physically to control possible solidifying of gaseous slag which would deposit internally along cold tube walls to accumulate thick thereon in a short time, which comprises in combination:

a shell, at one end of which is located a first inlet for receiving hot slag-containing gases, and an inlet chamber for receiving hot gases from said inlet, and at the other end of which is located a discharge chamber for receiving cooled-off gases, and an outlet for receiving cooled-off gases from said discharge chamber for discharge of said gases from said shell;

first tube bottoms located in said inlet chamber;

second tube bottoms located in said discharge chamber;

tubes, in the form of a tube bundle, fastened in said first and second tube bottoms and adapted to receive hot gases therethrough, said tubes extending from said inlet chamber to said discharge chamber;

a second inlet located in said shell for receiving cooler slag-free gas;

third tube bottoms located in said inlet chamber, said third tube bottoms and said first tube bottoms being spaced from one another to form a first cooler slag-free gas inlet chamber, which is in communication with said second inlet for admixing said hot and slag-free gas;

insert tubes connected to tube bottoms belonging therewith and located within tubes belonging therewith, said insert tubes having a temperature above solidification temperature of the slag and extending from the inlet side of said tubes at least partially toward the outlet side thereof, said insert tubes being spaced from tubes belonging therewith to form narrow annular spaces therebetween which communicate with said first slag-free gas inlet chamber and which are adapted to generate high discharge speed;

means for keeping warmed-up cooler slag-free gas, which discharges from said narrow annular spaces, along the inner walls of said tubes; and

means for further cooling of admixed gases discharging from said tubes.

4,346,759

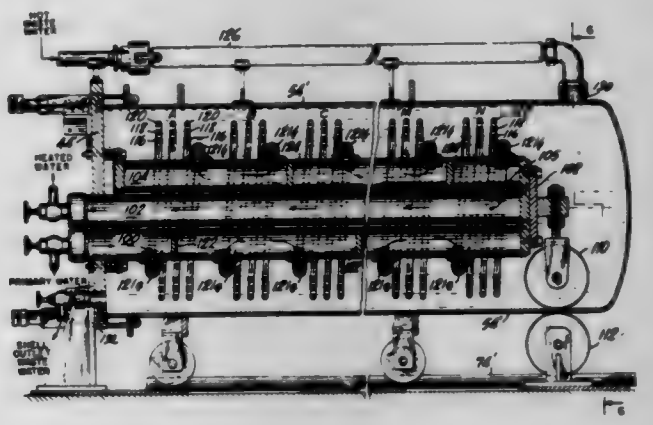
HEAT RECLAIMING SYSTEM

Kenneth W. Cohen, Harrington Park, and George P. Mansey, Hillsdale, both of N.J., assignors to Aerco International, Inc., Northvale, N.J.

Continuation-in-part of Ser. No. 894,835, Apr. 10, 1978, Pat. No. 4,256,176. This application Mar. 5, 1980, Ser. No. 127,427

Int. Cl.³ F28D 7/10

U.S. Cl. 165—163 4 Claims



1. A heat exchanger comprising duct means and shell means, said duct means providing a first space for conducting a first fluid at one temperature through said heat exchanger and said shell means enclosing said duct means so as to provide a second space therebetween for conducting a second fluid at a different temperature through said heat exchanger, said first and second spaces being isolated from each other to prevent commingling of said fluids in said heat exchanger, characterized in that said duct means comprises a plurality of coil sections through which the first fluid passes, said coil sections being arranged generally in series and being in heat transfer relation to the second fluid, each coil section comprising at least one tubular coil and means for reversing the direction of flow of the first fluid as it passes through selected ones of said coil sections and conduit means coupled to at least a selected one of the coil sections for conducting the first fluid out of the heat exchanger.

4,346,760

HEAT EXCHANGER PLATE HAVING DISTORTION RESISTANT UNIFORM PLEATS

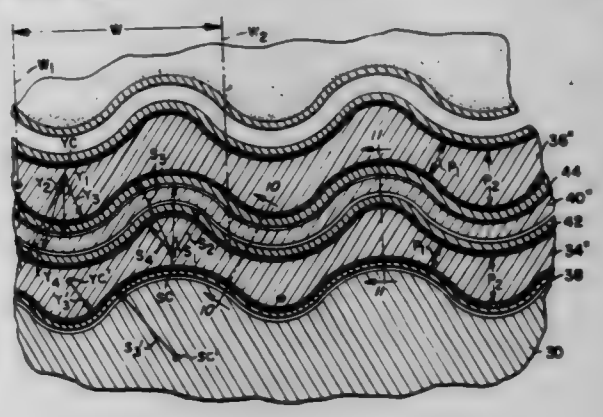
Gonzalo D. Vidal-Meza, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00208, § 371 Date Feb. 18, 1981, § 102(e) Date Feb. 18, 1981

PCT Filed Feb. 18, 1981, Ser. No. 277,742

Int. Cl.³ F28F 3/08, 3/04

U.S. Cl. 165—166 14 Claims



1. A heat exchanger plate (2,4,6,8) for forming a barrier between donative recipient fluids flowing through the heat exchanger and for forming fluid flow passages (18,20) arranged to cause heat transfer through the plate from the donative fluid to the recipient fluid, said plate (2,4,6,8) including undulatory

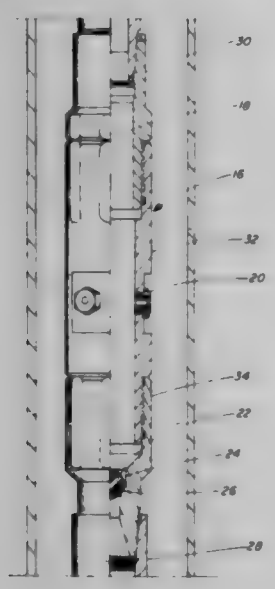
pleates (12) forming a set of donative fluid flow passages (20) on one side of said plates and a set of recipient fluid flow passages (18) on the other side of said plates interleaved with the donative fluid flow passages (20), each flow passage (18, 20) being bounded on opposite sides in plan view by the side walls (38, 42, 44) of a pleat (12) and having a central axis in plan view extending along a continuous curvilinear path between separate points on the plate perimeter, characterized in that the slope of each said side wall (38, 42, 44) of each said pleat (12) is constant along the entire length of the flow passage (18, 20), wherein the slope is measured in a plane perpendicular to the central axis of the corresponding flow passage (18, 20).

4,346,761

HYDRA-JET SLOTTING TOOL

Neal G. Skinner, and Harry A. Braswell, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 25, 1980, Ser. No. 124,009
Int. Cl.³ E21B *29/00*
U.S. Cl. 166—206 **48 Claims**



1. Apparatus for controlling the rate of tool movement in a well casing, comprising:

housing means having slip means thereon, said slip means adapted to engage said well casing;

mandrel means longitudinally slidably disposed in said housing means;

spring means adapted to bias said mandrel means against longitudinal movement; and

metering means adapted to control the rate of longitudinal movement of said mandrel means with respect to said housing means.

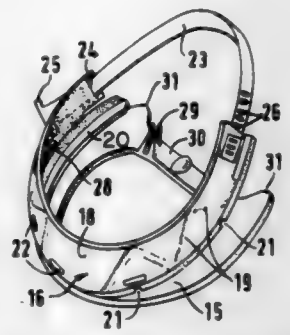
4,346,762

PLASTICS MATERIAL HORSESHOES

Igal Tovim, Millers Farm, Norwood End, Fyfield, Ongar, Essex, England

Continuation-in-part of Ser. No. 40,412, May 18, 1979, Pat. No. 4,265,314, which is a continuation of Ser. No. 777,506, Mar. 14, 1977, abandoned. This application Jul. 1, 1980, Ser. No. 165,085
Claims priority, application United Kingdom, Mar. 16, 1976, 10428/76; Sweden, Jul. 2, 1979, 7905778
Int. Cl.³ A01L *5/00, 3/00*
U.S. Cl. 168—4 **19 Claims**

1. Apparatus for shoeing a horse, comprising a strip-part of plastics material having a generally L-shaped cross-section and being pre-formed to fit against both the wall and peripheral region of the sole of a horse's hoof around the front and sides thereof, said pre-formed strip-part being adapted for adhesive application to a horse's hoof and having sufficient flexibility readily to conform closely to the configuration of the front and side walls of the hoof thereby to maximize the adhesively bonded surface contact of the strip-part with the wall of the hoof, and a pre-formed plastics material shoe-part, said shoe-part also being formed of a plastics material and being relatively inflexible as compared with the strip-part, said plastics shoe-part being pre-formed for bonding to said pre-formed strip-part after said strip has been adhesively bonded to a



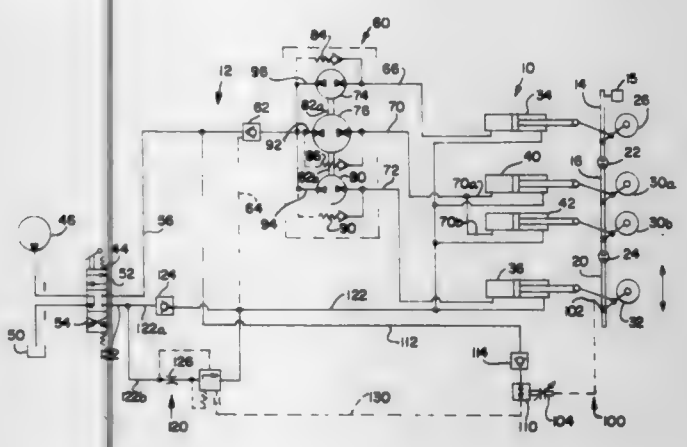
horse's hoof, said strip-part and said shoe-part being pre-united in the toe regions thereof prior to the adhesive application of said strip-part to the hoof thereby to pre-set the relative disposition of said strip-part and shoe-part for the bonding of said shoe-part to said strip-part.

4,346,763

AGRICULTURAL IMPLEMENT SECTIONAL FRAME WITH DEPTH LIMIT

William C. Swanson, Clarendon Hills, and Evert J. Heersink, Hinsdale, both of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Nov. 28, 1980, Ser. No. 210,985
Int. Cl.³ A01B *63/111*
U.S. Cl. 172—2 **8 Claims**



1. In an agricultural implement having frame sections including a main frame section and at least one flexibly attached wing frame section thereon, and a wheel assembly associated with each said frame section supporting each said frame section, a hydraulic circuit for controlling said wheel assemblies comprising:

a plurality of hydraulic cylinders, having head and rod ends, each of said plurality pivotally connected to one each of said frame sections and to one each of said wheel assemblies associated with each said frame section;

a multi-rotor rotary flow divider having one of each of said rotors for metering flow to one of each of said hydraulic cylinders;

a mechanical linkage affixed to one of said hydraulic cylinders and displaced upon displacement of said one hydraulic cylinder;

a pilot valve associated with said mechanical linkage to close upon engagement with said linkage;

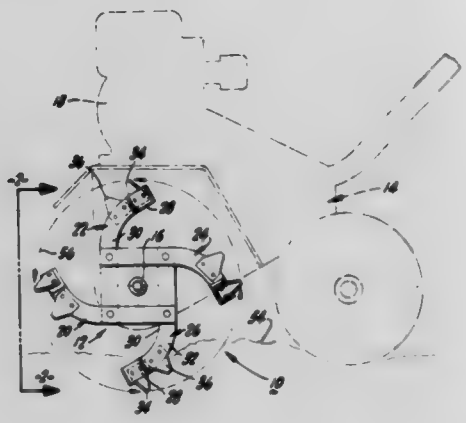
a main lowering supply flow control valve hydraulically connected to said pilot valve and hydraulically connected to said hydraulic circuit, said flow control valve terminating flow to said hydraulic cylinders when said pilot valve is closed.

4,346,764

ROTOTILLER WITH ANGULARLY DISPOSED TEETH

Joe Rossi, 2409 Soscol Ave., Napa, Calif. 94558

Filed Sep. 2, 1980, Ser. No. 183,338
Int. Cl.³ A01B *33/02*
U.S. Cl. 172—42 7 Claims



1. In a rototiller of earth having at least one tine, said rototiller further having a motor driven axle about the axis of which said at least one tine rotates, the tine including a first portion, said first portion being disposed at a substantial angle with respect to said axis, said tine further including a second portion substantially angularly disposed in relation to said first portion and also with respect to said substantial angle of said first portion with respect to said axis, each of said tine portions having a first edge continuous with the first edge of the other of said tine portions, and a second edge continuous with the second edge of the other of said tine portions, said first edge of each of said tine portions being adapted for contacting the earth before said second edge of each of said tine portions during the rotation of said at least one tine, the improvement comprising:

a. a first tooth affixed to the first portion of the at least one tine, said first tooth having a dimension along the first portion of the at least one tine and extending beyond the first edge of said first portion of the at least one tine for penetration of the earth along said first tooth dimension;

b. a second tooth affixed to the second portion of the at least one tine angularly disposed in relation to the first portion of the at least one tine, said second tooth having a dimension along the second portion of the at least one tine and extending beyond the first edge of said second portion of the at least one tine for penetration of the earth along said second tooth dimension, said first and second teeth being affixed to the tine such that said earth penetrations along said first and second teeth dimensions form an angle with one another.

4,346,765

SPEED RESPONSIVE MOTOR SHUTOFF MECHANISM FOR FLUID OPERATED TOOL

William Workman, Jr., Spring Lake, Mich., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 13,486, Feb. 21, 1979, abandoned. This application May 23, 1980, Ser. No. 152,892
Int. Cl.³ B25B *23/145*
U.S. Cl. 173—12 8 Claims

8. In a fluid operated tool for tightening threaded fasteners and the like:

a housing;

a fluid operated motor including a rotary output shaft disposed in said housing;

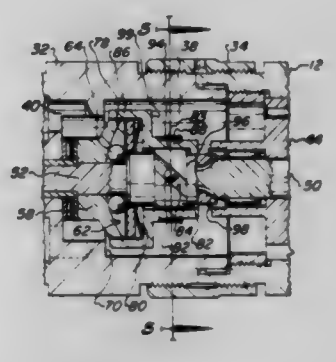
a fluid supply passage in said housing for conducting pressure fluid to said motor;

means forming a fluid exhaust passage in said housing for conducting exhaust fluid away from said motor to the exterior of said housing;

a valve closure member interposed in said exhaust passage and movable between an open position permitting exhaust fluid flow through said exhaust passage and a closed position blocking the flow of exhaust fluid through said exhaust passage to effect the stopping of said motor;

means responsive to starting of said motor to move said closure member to an open position to permit the flow of exhaust fluid through said exhaust passage, said means being responsive to decreasing motor speed to allow said closure member to move toward said closed position; and

a limited motion coupling drivably interconnecting said motor and said closure member;



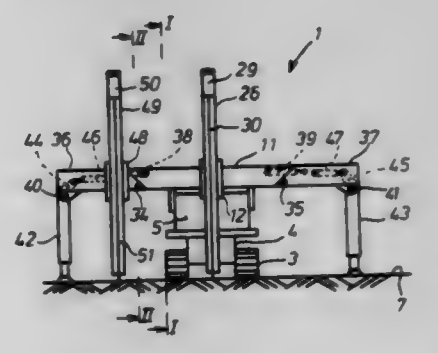
said coupling including a coupling member drivably connected to said output shaft and to said closure member and operable to permit said motor responsive means to move said closure member to said open position in response to increasing speed of said output shaft, and means forming a driving connection between said coupling member and said closure member which provides for limited axial and rotational movement of said closure member with respect to said coupling member to urge said closure member to move toward a closed position in response to decreasing speed of said output shaft.

4,346,766

DRILL CRADLE WITH ELONGATED SLIDE TRACK

Heinrich Manten, Salzgitter, Fed. Rep. of Germany, assignor to Salzgitter Maschinen und Anlagen Aktiengesellschaft, Salzgitter, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,121
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913438
Int. Cl.³ E21B *7/02, 15/04*
U.S. Cl. 173—23 9 Claims



1. A drill cradle comprising carriage means; an elongated slide track carried by said carriage means substantially parallel to the sole of a mine gallery in which the drill cradle may be used; at least one slide supported on said slide track movable therealong; an elongated rail mounted on said slide movable in axial direction and turnable about an axis; a boring bar and a drive therefor mounted on said rail; two side members respectively connected to opposite ends of said slide track for extending the latter in longitudinal direction, each of said side members having at least in a guide region for said at least one slide the same cross-section as such slide track and each of said side members being pivotally connected at one end to a respective one of said opposite ends of said slide track and having opposite said connected ends a free end; means connected to said

slide track and the respective side member for adjusting the position of each side member relative to said slide track; two supporting cylinder and piston units, each pivotally connected at one end to the free end of a respective side member, abutting when the respective side member forms an extension of said slide track, with the other end against the sole of the mine gallery; and means interconnected between each side member and the supporting cylinder and piston unit connected thereto for changing the position of the supporting cylinder and piston unit relative to the respective side member.

4,346,767

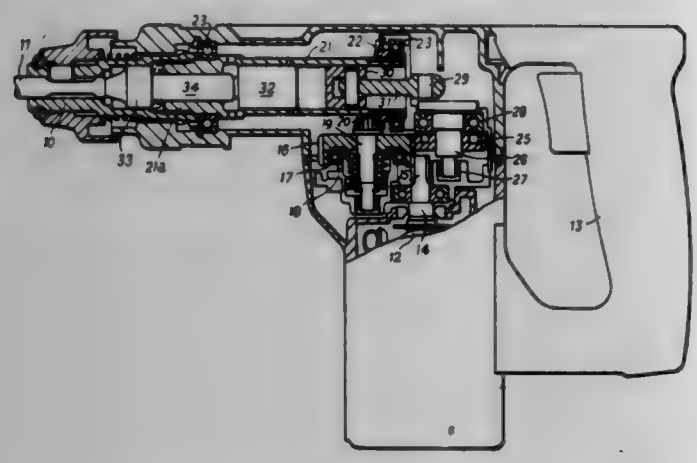
ROTARY IMPACT DRILL

Christopher A. Vaughan, Morden, England, assignor to Kango Electric Hammers Limited, London, England

Filed Jun. 11, 1980, Ser. No. 158,383

Int. Cl.³ E21C *1/12*; B25D *16/00*

U.S. Cl. 173—109 **1 Claim**



1. An electric hammer drill comprising a casing having a handle at its rearward end and carrying at its forward end a forwardly projecting drill bit holder, an electric motor mounted just forward of the handle and disposed with its axis of rotation at right angles to the axis of rotation of the holder, said casing housing means for rotating the holder, means for delivering impacts to the holder, an output gear on the motor shaft, a first pinion meshing with the output gear and connected to drive said means for the holder, a second pinion meshing with the first pinion and connected to drive said means for delivering said impacts to the holder, the respective axes of rotation of the first and second pinions being at diametrically opposite sides of the axis of the motor shaft, the four said axes being contained in a common plane, and the said axis of the second pinion being further than the said axes of the first pinion and the motor shaft from the holder.

4,346,768

IMPACT DEVICE WITH SINUSOIDAL ROTARY-TO-RECIPROCATIVE CONVERTER

Frederick W. Ross, 755 Klamath Dr., Del Mar, Calif. 92014

Continuation of Ser. No. 796,404, May 12, 1977, abandoned. This application Oct. 27, 1978, Ser. No. 955,488

Int. Cl.³ B25D *15/00*

U.S. Cl. 173—118 **33 Claims**

1. An impact device comprising:

a frame comprising an enclosing ease,

a crankshaft rotatably mounted in said enclosing case,

exciter means mounted in said enclosing case to rotate said cranshaft,

a body mounted for reciprocation along a selected straight path in said enclosing ease,

at least one connecting rod operatively connected to said crankshaft to reciprocate said body along said selected straight path upon rotation of said crankshaft,

ram means mounted for reciprocation on said enclosing case,

resilient means interposed between said body and said ram means for converting reciprocating motion of said body to impacting motion of said ram means,

impact tool means operatively mounted on said frame for impact by said ram means during each reciprocation thereof,

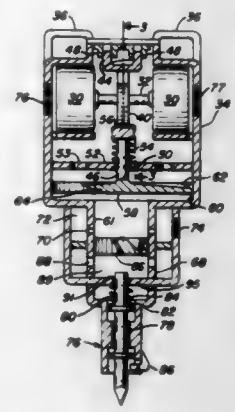
wherein the improvement comprises:

said exciter means comprising an electric drive motor,

a separate electric cooling motor with air pressure fan secured to the shaft thereof for forcing cooling air past said electric drive motor for cooling thereof,

motor control means including a master control for energizing both said cooling motor and an on-off control for the electric drive motor whereby said drive motor can only be operated with said cooling motor energized,

a dust-resistant inlet filter through which cooling air is admitted into and a dust-resistant outlet filter through which said cooling air is exhausted during operation of said cooling motor,



flow channeling elements including frame cross elements within said enclosing case to direct the flow of such cooling air from said inlet filter through said air pressure fan, past said drive motor for cooling thereof, and out through said outlet filter, and

said dust-resistant outlet filter is selected to have a pressure loss when such cooling air is flowing therethrough in relation to the pressure losses through the other elements past which such cooling air flows, to provide air pressure within said enclosing case above the ambient air pressure outside the enclosing case during operation of the cooling motor separately and during operation of both motors simultaneously for preventing dust from outside entering the enclosing case,

said separate cooling motor, said flow channeling elements, and said motor control means for reducing weight of structure and increasing efficiency of energy usage.

4,346,769

PERCUSSIVE TOOL DRIVE LINKAGE

Frank F. Simpson, Staines, England, assignor to Black & Decker Inc., Newark, Del.

Filed Dec. 12, 1979, Ser. No. 102,687

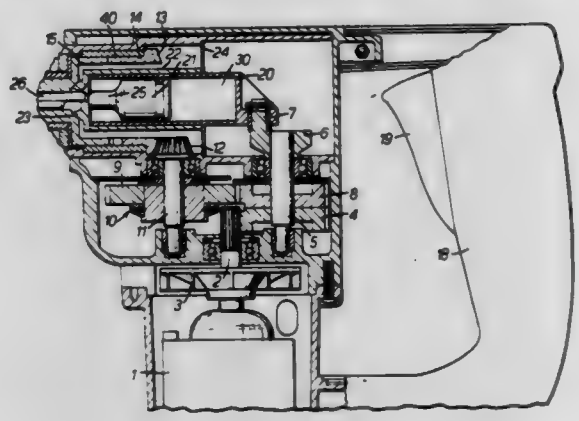
Claims priority, application United Kingdom, Dec. 12, 1978, 48306/78

Int. Cl.³ B25D *11/12*

U.S. Cl. 173—118 **15 Claims**

1. A percussive tool including a first member mounted for rotation about a first axis and connected to drive means operative to rotate the first member about the first axis, a second member rotatably connected to the first member at a position spaced from the first axis and arranged to reciprocate a third member, the arrangement being such that during percussive operation of the tool the first member drives the second member which in turn reciprocates the third member and thereby causes blows to be transmitted to a tool piece, wherein the improvement comprises means mounting the second member for pivoting movement about a second stationary axis and for sliding reciprocatory movement towards and away from the second axis, the means including a guide member receiving the

second member therein, the guide member being fixed against reciprocation but being free to pivot within the tool, and air



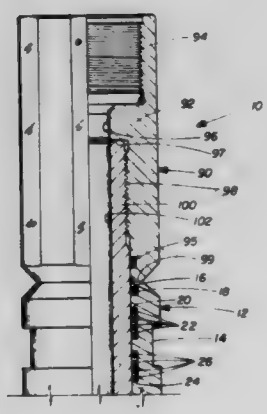
spring means between the second and third members for reciprocating movement of the third member relative to the second member.

4,346,770

HYDRAULIC JARRING TOOL

Harold K. Beck, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 14, 1980, Ser. No. 196,405
Int. Cl.[3] E21B *4/14, 31/107*
U.S. Cl. 175—297 19 Claims



1. A hydraylic well jar, comprising:
a case;
a mandrel longitudinally slidably disposed within said case;
chamber means containing a hydraulic fluid, said chamber means being defined by said case and said mandrel;
fluid bypass means comprising longitudinally oriented splines in the interior of said case;
fluid metering means on said mandrel; and
slidable seal means about said fluid metering means, said seal means having an elastomeric seal backed by a metal ring.

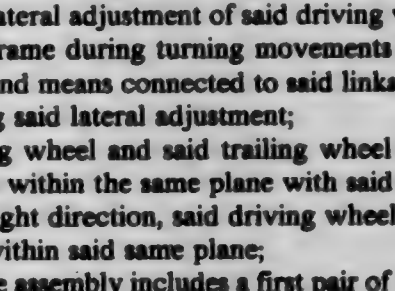
4,346,771

LOW-PROFILE, NON-PLATFORM WEIGH SCALE

Per-ölof G. Persson, Taberg, and Göte A. Göterdal, Tenhult, both of Sweden, assignors to Flintab Vagsystem AB, Jönköping, Sweden

Filed Jul. 8, 1981, Ser. No. 281,303
Int. Cl.[3] G01G *19/00, 21/22*
U.S. Cl. 177—145 24 Claims

1. A low-profile, non-platform type of weigh scale which rests on an underlying support surface and only receives an item support means with a load to be weighed thereon, said scale comprising:
a frame having at least two horizontally extending legs partially enclosing an area of the underlying support surface for defining an opening therebetween for receiving an item mover moving the load to be weighed, said legs having an upper member for directly receiving the item support means with the load to be weighed thereon, and a lower member for resting on the underlying support surface;



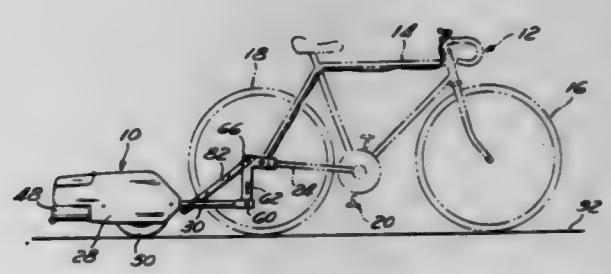
load cells positioned between said leg upper and lower members; and
signal output means for said load cells.

4,346,772

POWER ASSISTING DEVICE FOR A MANUALLY OPERATING VEHICLE

Dale L. Clifft, 5412 Crebs Ave., Tarzana, Calif. 91356

Continuation-in-part of Ser. No. 866,562, Jan. 3, 1978, abandoned. This application Nov. 22, 1978, Ser. No. 962,964
Int. Cl.[3] B62M *7/14*
U.S. Cl. 180—11 10 Claims

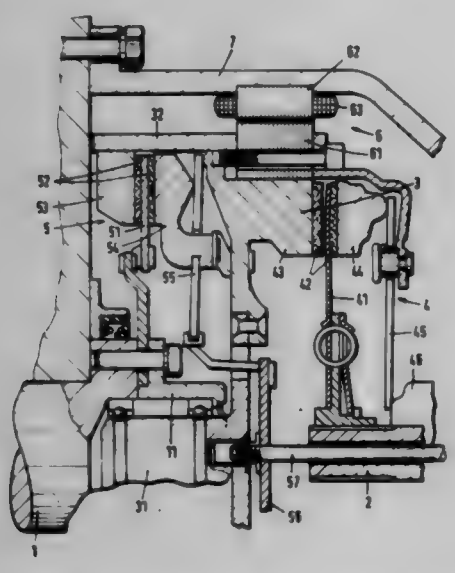


1. In combination with a vehicle having a plurality of wheels, a frame connecting said wheels, said wheels comprising a leading wheel and a trailing wheel, a power assisting assembly for said vehicle comprising:
a motor;
a driving wheel rotatably driven by said motor, said driving wheel being longitudinally spaced rearwardly of said trailing wheel, said driving wheel connected to a linkage assembly, said linkage assembly being connected to said frame, said linkage assembly including first means for limited lateral adjustment of said driving wheel in respect to said frame during turning movements of said vehicle, and second means connected to said linkage assembly for retarding said lateral adjustment;
said leading wheel and said trailing wheel being rotatably operable within the same plane with said vehicle moving in a straight direction, said driving wheel being rotatably driven within said same plane;
said linkage assembly includes a first pair of elongated members extending from said driving wheel, a second pair of members interconnecting the free end of said first pair of members and said frame of said vehicle; and
said first means being located at the connection between said first pair of members and said second pair of members, said first means including a pin capable of limited longitudinal adjustment within an elongated slot with there being a separate said pin and slot for each pair of interconnected said first member and said second member, whereby said separate pin and slot arrangement causes said driving wheel to be centered behind said trailing wheel if the said power assisting device encounters a slippery or loose surface.

4,346,773
APPARATUS FOR OPERATING A MOTOR VEHICLE

Peter Hofbauer; Karsten Ehlers, and Paulus Heidemeyer, all of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,836
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1979, 2925675
Int. Cl.[3] B60K *9/04*
U.S. Cl. 180—165 3 Claims



1. In a motor vehicle having an internal combustion engine for driving said vehicle, a transmission, a normally present, conventional flywheel means coupled between said engine and said transmission for equalizing the non-uniformities of engine output torque, first clutch means arranged between said flywheel means and said transmission for permitting shifting of transmission gears, a second, controllable clutch means arranged between said engine and said flywheel means for automatically interrupting the coupling between said engine and said flywheel means and for re-coupling said flywheel means to said engine as a function of engine operating conditions, wherein said first and second clutch means comprise a clutch housing; the improvement comprising: starter-generator means having rotor means rigidly connected with said flywheel means for rotation therewith and stator means rigidly connected with said clutch housing, wherein said rotor means comprises a toothed, windingless rotor arranged on the periphery of said flywheel means in the form of a rim, and wherein said stator means comprises a direct current exciter current winding, a generator winding and a motor winding.

4,346,774
DOPPLER RADAR MOUNTING STRUCTURE FOR MOTOR VEHICLES

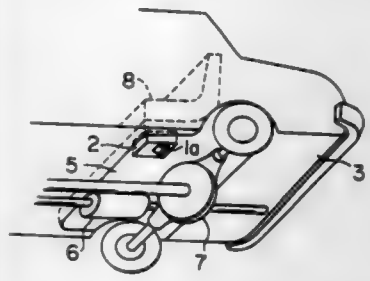
Yukitsugu Hirota, Yokohama; Akira Endo, Katsuta; Katsuhiro Kimura, Katsuta; Hiroshi Morozumi, Katsuta, and Kenji Sekine, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of Tokyo, Japan

Filed Sep. 25, 1979, Ser. No. 78,825
Claims priority, application Japan, Sep. 26, 1978, 53-118969; Dec. 13, 1978, 53-153070
Int. Cl.[3] B60T *8/10*
U.S. Cl. 180—167 11 Claims

1. In a motor vehicle having a substantially-flat undercarriage, a rear wheel axle having a differential housing and Doppler radar speed sensor including an antenna section and a sensor section mounted on the underside of the undercarriage of the vehicle for detecting the speed thereof, a mounting structure for said Doppler radar speed sensor comprising,

a chamber formed in said substantially-flat undercarriage of the vehicle, said chamber being recessed upward from the bottom level of said undercarriage and open downward for housing the whole of said Doppler radar speed sensor means, said recessed chamber being located in the vicinity of said differential housing and slightly in front of said rear wheel axle, and

means for mounting said Doppler radar speed sensor means in said chamber of said vehicle undercarriage in such a

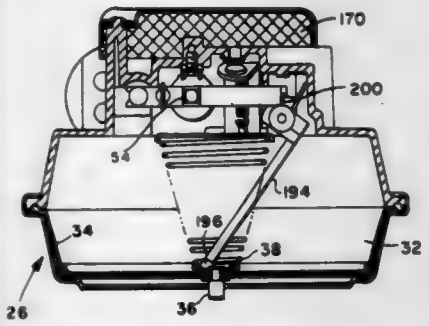


manner that the opening end surface of said antenna section is directed rearwardly of the vehicle with a downward inclination toward the road surface and is positioned higher than the bottom level of said flat undercarriage of the vehicle.

4,346,775
VEHICLE SPEED CONTROL

William A. Treadwell, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 20, 1979, Ser. No. 50,237
Int. Cl.[3] B60K *31/00*
U.S. Cl. 180—175 9 Claims



1. A vehicle speed governor for moving an engine throttle member movable in opposite directions between closed and open positions to control engine speed, said speed governor comprising:

(a) actuator means having a pressure responsive output member reciprocally movable for moving said throttle member in a throttle opening and a throttle closing direction;

(b) means defining a vacuum chamber on one side of said pressure responsive output member;

(c) valve means for providing a vacuum in said vacuum chamber for moving said pressure responsive output member in said throttle opening direction, said valve means including a valve member associated with a vacuum conduit and an atmospheric air conduit, said valve member movable from a first position relative to said vacuum port to progressively increase communication between said vacuum chamber and said vacuum port and to progressively decrease communication between said vacuum chamber and said atmospheric air port;

(d) a member movable in one direction upon an increase in engine speed and in a second direction opposite to the first direction upon a decrease in engine speed;

(e) first electrical coil means for selectively locking said member to said valve member when said engine is at a desired speed above a predetermined minimum speed;

(f) a normally open minimum speed switch connected in circuit with said electrical coil means to control the energization thereof;

(g) speed sensing means movable in response to the speed of

said vehicle for closing said minimum speed switch at vehicle speeds above a predetermined minimum speed, said speed sensing means moving said member in said second direction as said vehicle speed tends to decrease from said desired speed such that said valve member moves from said first position and said throttle moves in a throttle opening direction to maintain said engine speed at a substantially desired speed;

(h) feedback means operating between said actuating member and said valve member and operable to move said valve member toward said vacuum port as said pressure responsive means moves in its throttle opening direction and toward said atmospheric port as said pressure responsive means moves in its throttle closing direction, said feedback means moving said valve member at a first rate at throttle positions less than a predetermined minimum and moving said valve member at a second rate at throttle positions beyond said predetermined minimum position; and

(i) vacuum relief valve means connected between said vacuum chamber and the atmosphere, said relief valve means including means independent of said valve member movement for normally maintaining said relief valve means open to connect said vacuum chamber to the atmosphere through a passageway substantially dimensionally larger than said atmospheric air port so as to render said speed governor inoperable to control said vehicle speed, said vacuum relief means including second electrical coil means, which, upon energization, closes said relief valve means to isolate said vacuum chamber from the atmosphere and thereby render said speed governor operable to control said vehicle speed.

4,346,776

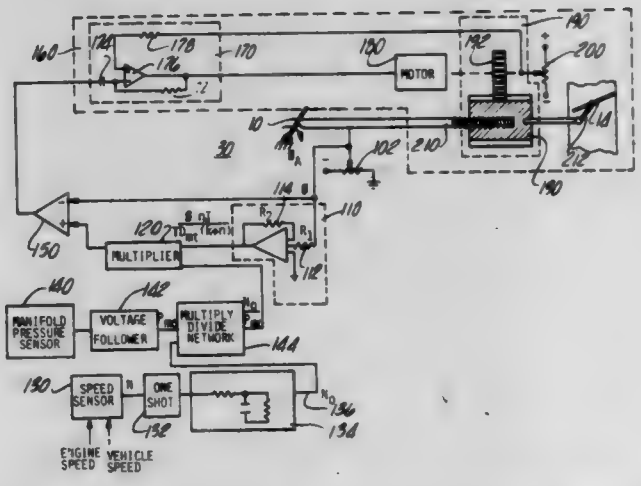
MEANS FOR IMPROVING AUTOMOBILE DRIVEABILITY

Lael B. Taplin, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 14,660, Feb. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 863,634, Dec. 22, 1977, abandoned. This application Apr. 16, 1981, Ser. No. 254,827

Int. Cl.³ B60K *13/02*

U.S. Cl. 180—179 **8 Claims**



1. In a vehicle powered by an internal combustion engine having a moveable throttle for determining the vehicle speed and a control linkage for setting the position of said throttle in response to operator commands, means for improving the driveability of the automobile, comprising:

means providing a first signal indicative of the position of the throttle set by the control linkage;

first multiplying means for multiplying said first signal by a factor which is determined by parameters of the vehicle and providing an output proportional to the product thereof;

second multiplying means for multiplying the output of said first multiplying means by a factor which is constituted by the quotient of a variable indicative of vehicle speed divided by the manifold absolute pressure of the vehicle engine and providing an output proportional to the product thereof;

means providing the difference between said first signal and the output of said second multiplying means;

differentiating means providing an output proportional to the derivative with respect to time of said output of said difference means;

control means responsive to the output of said differentiating means for modifying the output of said differentiating means in accordance with the desired dynamics of the engine and vehicle; and

means for adding to the position of said throttle set by said control linkage a displacement proportional to the output of said control means.

4,346,777

MOTOR UNIT FOR BICYCLES

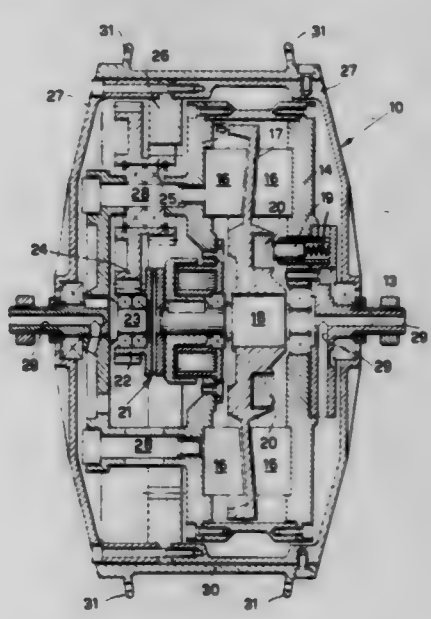
Amedeo A. Restelli, Cernusco Lombardone, Italy, assignor to Societa Italiana Catene Calibrate Regina S.p.A., Italy

Filed Mar. 12, 1979, Ser. No. 129,762

Claims priority, application Italy, Mar. 12, 1979, 21055/79[U]

Int. Cl.³ B62M *7/12*

U.S. Cl. 180—220 **1 Claim**



1. A motorized wheel for a bicycle comprising in combination:

a. a hollow substantially symmetrical and substantially cylindrical hub body rotatably supported on a central axle adapted to be fixedly mounted on a fork of a bicycle;

b. a stator including discoid portion fixed to said central axle within said hub body;

c. a discoid rotor rotatably supported between said discoid portions within said hub body;

d. a kinematic transmission including a plurality of gears rotatably mounted within said hub body and a driven member fixed to said hub body and in driving engagement with one of said gears;

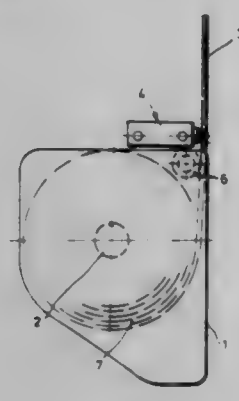
e. said transmission including an electromagnetic clutch which connects said discoid rotor through said plurality of gears and said driven member to said hub body to move said hub body in rotation;

f. spokes connected between said hub body and a wheel rim to rotate said wheel rim with rotation of said hub body.

4,346,778
AUTOMATIC SAFETY BELT SYSTEM

Erwin Blüggel, Kiel, and Wolfgang Mainka, Wolfsburg, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Mar. 7, 1980, Ser. No. 128,279
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914643
Int. Cl.³ B60R *21/10*
U.S. Cl. 180—268 6 Claims

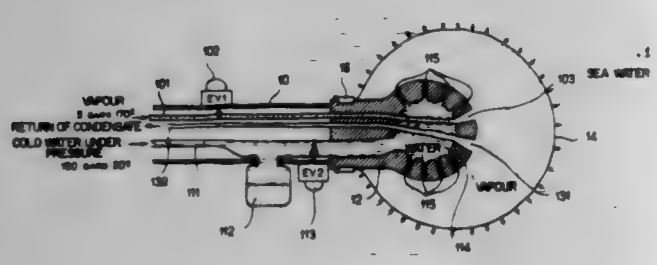


1. An automatic safety belt system with a belt band which can be wound on and off a spring-loaded roller mounted within a housing, one end of the belt band being attached to the roller, and a signaling means for signaling when a predetermined length of belt sufficient to allow it to be applied to a user is unwound, characterized in that the signaling means comprises an electro-optical device arranged in the vicinity of the belt band path and cooperating with contrast markings arranged on the belt band at positions related to the predetermined length, which positions are displaced from the end of the belt attached to the roller.

4,346,779
VAPOR IMPLOSION IN A CLOSED FLEXIBLE ENCLOSURE

Michel G. Manin, Massy, France, assignor to Compagnie Generale de Geophysique, Massy, France

Filed May 16, 1980, Ser. No. 150,580
Claims priority, application France, May 17, 1979, 79 12589
Int. Cl.³ G01V *1/135, 1/38*
U.S. Cl. 181—120 12 Claims

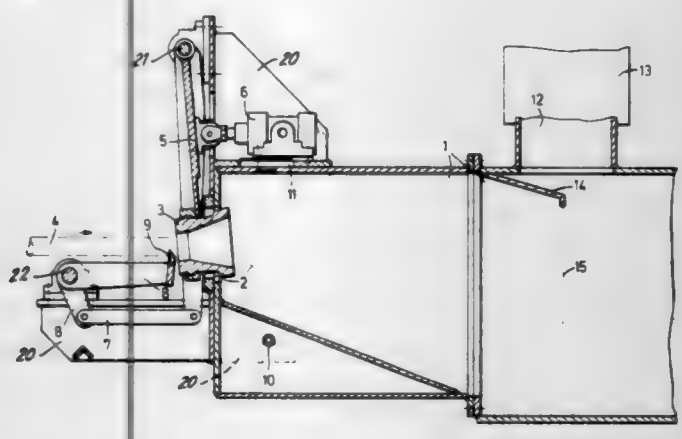


1. A method for producing a shock wave in a liquid mass by an implosion of a volume of vapour in a closed, flexible enclosure positioned within said liquid mass, said method comprising the steps of introducing into said flexible enclosure vapour at an elevated temperature relative to ambient and at a pressure above hydrostatic pressure, said enclosure as a result being progressively inflated; ceasing the introduction of vapour and allowing said vapour to be supercooled without condensing, and thereafter condensing said vapour to cause a sudden drop in pressure to the saturation pressure of the vapour at ambient temperature of the liquid mass, said condensation resulting in an implosion which can be used for seismic prospecting purposes.

4,346,780
PURGING PIPES UNDER NOISE-ATTENUATING CONDITIONS

Heinz Packschies, Mülheim; Wilhelm Feldman, Duisburg, and Albert Hankel, Essen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 282,170
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1980, 3027387
Int. Cl.³ G10K *11/00;* F01N *5/00*
U.S. Cl. 181—198 2 Claims



1. In a structure serving as an assessory for purging pipes by means of steam blowing, and under noise-attenuating conditions, a receptacle into whose other end steam has been injected, the receptacle having an opening, the improvement comprising:

a mouthpiece;

linkage means for pivotally suspending the mouthpiece at the opening;

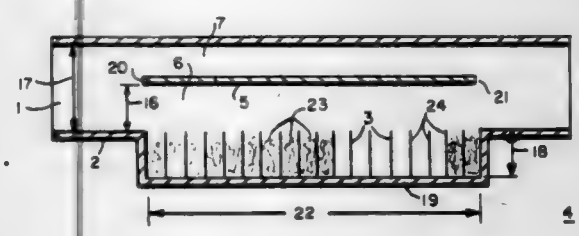
lever means connected to the linkage means and carrying a stop member for selective positioning in front of and away from the opening; and

actuator means coupled to the linkage means for placing the mouthpiece over a front end of a pipe adjacent to said opening while removing said stop and, alternatively, pivoting the mouthpiece to clear said front end while causing the stop member to be placed in front of said front end.

4,346,781
LINED-DUCT ACOUSTIC FILTER

Karl U. Ingard, South Lincoln, Mass., and William P. Patrick, Glastonbury, Conn., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 961,113, Nov. 16, 1978, abandoned, which is a continuation of Ser. No. 738,422, Nov. 3, 1976, abandoned. This application Jun. 9, 1980, Ser. No. 157,530
Int. Cl.³ F01N *1/06, 1/10, 1/24;* E04F *17/04*
U.S. Cl. 181—206 8 Claims



1. An acoustical filter for attenuating acoustic energy in a duct comprising, in combination, a duct having at least one rigid and continuous splitter plate extending longitudinally within said duct to divide the acoustic energy in said duct into at least two branched ducts of equal length; said splitter plate preventing substantially any acoustic energy in each branched duct from coupling to the other branched duct through said

plate by reflection of acoustic energy incident upon the plate back into the branched duct from whence the incident acoustic energy originated; the branched ducts having their input ends and their output ends acoustically coupled to each other, respectively; at least one of said branched ducts containing a means to alter the phase speed of the sound wave therein to define a flow path through said one branched duct having an acoustical length different from the acoustical length of the flow path through the other of said branched ducts to produce destructive wave interference at the output ends of said branched ducts and/or constructive wave interference at the input ends of said branched ducts thereby resulting in strong reflection of acoustic energy at the input ends of said branched ducts by which effects a reduced level of acoustic energy in said duct adjoing the outputs of said branched ducts is obtained.

4,346,782

METHOD OF PRODUCING AN IMPROVED VIBRATION DAMPING AND SOUND ABSORBING COATING ON A RIGID SUBSTRATE

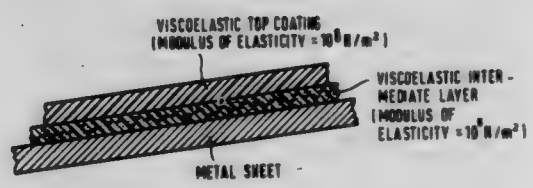
Robert Böhm, Schillerstr. 26, 6901 Wiesenbach, Fed. Rep. of Germany

Continuation of Ser. No. 100,162, Dec. 4, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,848

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2852828

Int. Cl.³ E04B *1/82*; C04B *43/00*

U.S. Cl. 181—207 **16 Claims**



1. A method of producing a vibration and sound damping and at the same time corrosion and abrasion resistant coating on a rigid substrate in which method two coating materials with different moduli of elasticity are successively applied to the substrate, characterized in that a first coating of a viscoelastic material is sprayed onto the substrate having after gelling and/or curing a modulus of elasticity of 5×10^6 to 5×10^8 dynes/cm^2 and that onto said first coating there is sprayed a second coating of a viscoelastic material which after gelling and/or curing has a modulus of elasticity of 5×10^7 to 5×10^9 dynes/cm^2, the modulus of elasticity of said second outer coating being at least 10 times greater than that of said first coating.

4,346,783

APPARATUS FOR TREATING FLOWING WORKING GASES PARTICULARLY TO REDUCE THE NOISE IN OPERATION THEREOF

Henry A. Scarton, Troy, N.Y.; Warren C. Kennedy, Pittsburgh, Pa.; Keith R. Gaylo, Syosset, N.Y., and Clark R. Caplan, Natick, Mass., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,007

Int. Cl.³ F01N *1/08*

U.S. Cl. 181—230 **6 Claims**

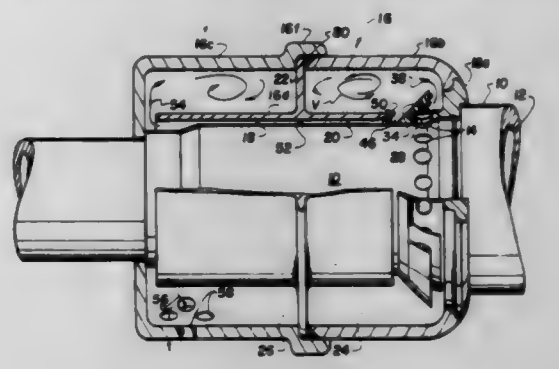
1. An apparatus for treating flowing working gases flowing from a gas operating device having a discharge conduit with at least one discharge opening for the outflow of the working gases comprising:

a housing connected around the discharge conduit and over the discharge opening defining a first and at least one other annular flow chamber around the conduit;

a dividing member in said housing for dividing said first and other annular flow chambers from each other, and defining a constricted flow passage between said first and other chambers;

an elastic valve member overlying the discharge opening and being flexible outwardly of the opening by the pressure of the working gases;

a ring member having a curved surface facing said valve member extending from the conduit toward said housing adjacent one end of said first chamber near the discharge opening, and spaced from said housing to define an inlet to said first chamber, said valve member being flexible outwardly against said curved surface by an outflow of working gases through the discharge opening;



said ring member forming an oblique face facing said first chamber and spaced from an edge of said dividing member to form an inlet to said constricted flow passage, whereby a toroidal annular vortex flow is formed by working gases in said first chamber and, with a sudden reduction of pressure of said working gases, said elastic valve member closes the discharge opening to prevent a flow of gases from said first chamber into the conduit.

4,346,784

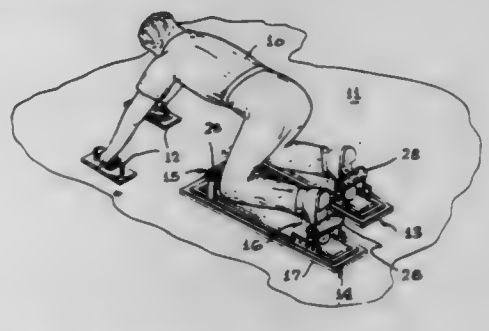
KNEE SUPPORT APPARATUS

William E. Hammond, 17330 Saticoy, Van Nuys, Calif. 91406

Filed May 27, 1980, Ser. No. 153,027

Int. Cl.³ A47C *7/50*

U.S. Cl. 182—230 **5 Claims**



1. Knee support apparatus comprising:

an elongated base member having an undersurface slidably engagable with a soft working surface;

cushion means carried on a top surface of said base member;

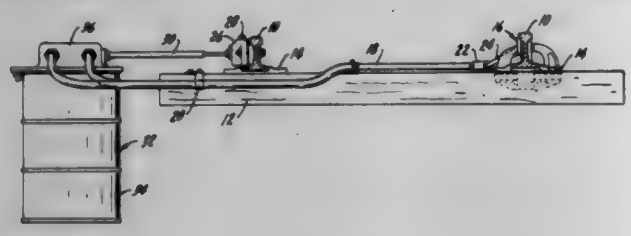
a front knee support means including a pair of spaced apart upright brackets secured to one end of said base member and a soft roller movably carried between the ends of said brackets; and

a rear foot support means including a pair of spaced apart upright brackets secured to the other end of said base member and a soft roller movably carried between the ends of said brackets.

4,346,785
RAIL LUBRICATOR

Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,337
Int. Cl.[3] B61K *3/00*
U.S. Cl. 184—3 A 14 Claims

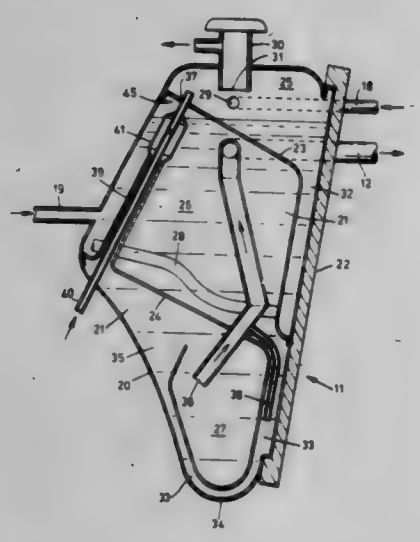


1. In a rail lubricator system which applies lubricant to the flange of a railroad car wheel riding on the head of a rail, the rail also having a base and a web, a lubricant delivery assembly, a lubricant reservoir, a lubricant conduit connecting the reservoir and the delivery assembly, at least one pump for pumping lubricant from the reservoir through the conduit to the delivery assembly and a pump drive mounted near the rail such that passing car wheels actuate the drive which then operates the pump, the improvement comprising a delivery assembly having a force-multiplying clamp means including lower-portions extending under the base of a rail, and upper portions for applying a multiplied clamping force for holding the delivery assembly to the rail, and tightening means so engaged with said lower portions as to cause the upper portions to apply said multiplied force when the tightening means are tightened on said lower portions.

4,346,786
LUBRICATION SYSTEM

Ronald A. Midgley, St. Albans, England, assignor to Rolls-Royce Limited, London, England

Filed Aug. 12, 1980, Ser. No. 177,514
Claims priority, application United Kingdom, Sep. 29, 1979, 7933868
Int. Cl.[3] F01M *11/06*
U.S. Cl. 184—6.2 13 Claims

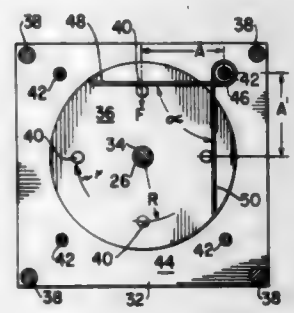


1. A tank suitable for holding a lubricant and adapted to comprise a portion of a lubrication system comprising first and second baffles respectively adapted to divide the interior of said tank into first, second and third series interconnected chambers, each adapted to contain said lubricant, an inlet adapted to supply a mixture of a gas and a lubricant to said first chamber, outlet duct means adapted to withdraw lubricant from said third chamber and venting means having an outlet through which said gas present in said first chamber is vented, said baffles being so adapted and arranged than when said tank is in its normal spacial disposition, lubricant supplied in operation to said first chamber flows into said third chamber via said second chamber, and if said tank is subsequently inverted with respect to said normal spacial disposition, any flow of lubricant from said third chamber to said second chamber is prevented or is of a sufficiently low level that an adequate quantity of lubricant is retained within said third chamber to provide a continuity of lubricant flow through said outlet duct means for a finite time period, and insufficient lubricant flows from said second chamber into said third chamber to obstruct said venting means, said outlet duct means being provided with means adapted to introduce a gas into lubricant passing therethrough when said tank is inverted with respect to said normal spacial disposition.

4,346,787
ENERGY RECOVERY DEVICE

Vernon Evans, Kinnelon, N.J., assignor to ERD, Inc., Fairfield, N.J.

Filed May 9, 1980, Ser. No. 148,554
Int. Cl.[3] F03G *1/00;* F16F *1/06*
U.S. Cl. 185—37 17 Claims



1. A device for storage and retrieval of energy during displacement of a work-load system under an input force, the work-load system generating load forces increasing in correspondence with increased displacement of the work-load system from a neutral state wherein the load forces are approximately zero, comprising:

a. plate means;

b. first means for transferring the load forces generated by the work-load system to the plate means so as to provide displacement of the plate means in accordance with the load forces;

c. energy storage means capable of generating forces in opposition to the load forces; and

d. second means for transferring the forces generated by the energy storage means to the plate means generally continuously in opposition to the load forces transferred to the plate means so as to aid in the displacement of the work-load system from its neutral state, and for transferring the load forces generated by the work-load system to the energy storage means for storage generally continuously during displacement of the work-load system toward its neutral state.

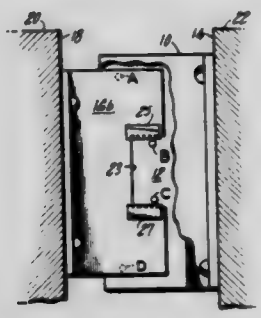
4,346,788
TAILORABLE DISCRETE OPTICAL SENSOR

Wu S. Shung, South Windsor, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Nov. 13, 1979, Ser. No. 93,474
Int. Cl.[3] B66B *1/40*
U.S. Cl. 187—29 R 1 Claim

1. A position encoder comprising first and second members relatively movable with respect to each other, said first member having disposed thereon a plurality of optical sources and sensors to form a plurality of discrete optical beams, said second member comprising a light-occluding vane of opaque material having a notch which is centrally disposed therein with respect to the direction of relative motion of the two members, the size of the vane and the size of the notch therein relative to the position of the optical sensors being such as to establish a pattern of ON/OFF states of the sensors which define a plurality of symmetrical positional zones including

zones on opposite sides of mutual central alignment of said two members, in either direction of relative motion of said two members, said notch serving to provide a capability for alter-



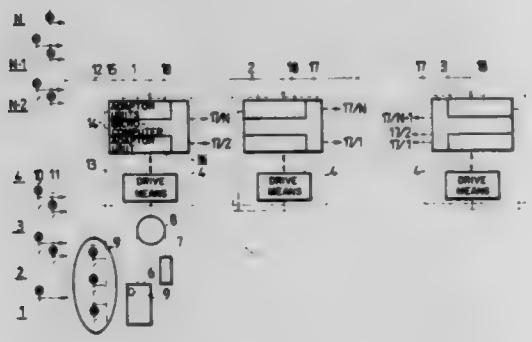
ing the effective opacity of a central portion of said vane by means of adding additional light-occluding material to said vane near the edges of said notch.

4,346,789

LIFT BATTERY CONTROL SYSTEM

Ralf C. Ekholm, Helsinki, Finland, assignor to Elevator GmbH, Zug, Switzerland

Filed May 8, 1980, Ser. No. 149,112
Claims priority, application Finland, May 16, 1979, 791570
Int. Cl.³ B66B *1/18*
U.S. Cl. 187—29 R **18 Claims**



1. An improvement in a control system for a battery of elevators in which a plurality of elevator cars serve a plurality of levels in a building; each of said levels being provided with means for making calls therefrom and means for determining the location of respective elevator cars; said elevator cars being provided with means for making calls therefrom; and location means for determining the location of the elevator cars, control means for said elevator cars, said control means having at least one microcomputer with at least one microprocessor; and said control means further having an elevator car drive means and control apparatus for controlling the elevator car drive means, wherein the improvement comprises: providing said control means with a number of data processing units, each of said data processing units having at least one microcomputer; said data processing units being adapted to jointly control the battery of elevator cars, with each respective unit having an equal position in relation to one another, being dependent upon the other units and provided with data concerning external calls of the elevator battery.

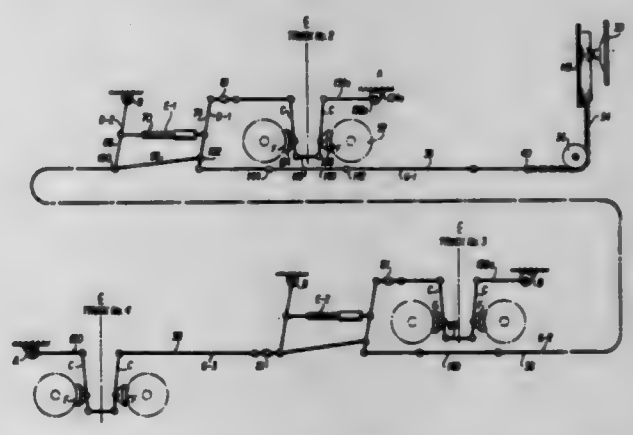
4,346,790

ARTICULATED CAR BRAKE SYSTEM

Robert B. Morrison; James T. Wade, and Robert E. Zimmerman, all of Topeka, Kans., assignors to Itel Corporation, San Francisco, Calif.

Continuation of Ser. No. 969,652, Dec. 15, 1978, abandoned.
This application Jan. 16, 1981, Ser. No. 225,723
Int. Cl.³ B61D *17/00*; B61F *3/12*; B61H *13/00*
U.S. Cl. 188—47 **15 Claims**

1. In an articulated railway car adapted to be coupled into a train, said railway car comprising a series of car units each having a center sill and connected end to end by articulated connectors to form a railway car, a single railway car truck having wheels bridging the gap between each pair of said end to end car units with the said ends mounted thereon, a hand-brake arrangement for braking said series of car units comprising (1) brake shoes disposed to be moved against wheels of a plurality of said trucks by a single hand operated mechanism, and to exert braking pressures on the wheels, (2) means for hand initiating a braking force to be transmitted to the brake shoes and (3) means for transmitting the said initiated force to the brake shoes comprising a series of brake rods, levers and linkages including a transverse horizontal lever which extends through openings in said center sills and on each side of the center sill, one end of said horizontal lever being operatively connected to the means for initiating the force and an opposite end of said horizontal lever being operatively connected to the brake shoes, and a compression force isolating link which permits transmission of tension forces only in the connection between the transverse horizontal lever and the brake shoes and which avoids movement of the force transmitting brake rods and levers when the brake shoes are moved by structure other than the hand initiating means.



10. In combination, a series of car units connected end-to-end by articulated connectors to form a railway car, a plurality of railway car trucks with wheels positioned one between each pair of car units and supporting adjacent car unit ends, brake means associated with the wheels of a plurality of said trucks including a pair of brake beams at each truck, and hand operable means for simultaneously actuating said brake means associated with at least two of said car trucks including a motion-transmitting linkage extending along the length of the car units a sufficient distance to span said two or more trucks and being movable lengthwise of the car, the brake means of each truck having a motion-transmitting system with interconnected members movable to actuate the brake beams, and a member of each system being connected to said linkage whereby movement of said linkage causes simultaneous actuation of the brake means for said two or more trucks, and each motion-transmitting system includes a member operable in tension to transmit motion when said linkage is moved to actuate the brake means but inoperable to transmit motion in a reverse direction from the brake means to said linkage.

4,346,791

FRICTION BRAKE

James C. Cumming, Pleasant Ridge, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 2, 1980, Ser. No. 193,511
Int. Cl.³ F16D *55/40*
U.S. Cl. 188—71.5 **5 Claims**

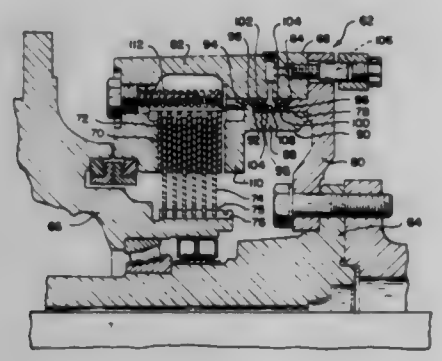
1. An improved brake for relatively rotating first and second members of the type which includes a housing secured to said first member, a plurality of brake discs carried by said housing for relative rotation therewith and axial movement therein, a plurality of reaction plates carried by said second member for relative rotation therewith and axial movement thereon, and said discs and said plates being intervened in alternating fashion to define a pack, said improvement comprising:

said housing having a central bore defined by a radially, inwardly extending annular wall and an interior cylindrical surface;

a piston having a tubular portion with an exterior cylindrical surface and a radially, outwardly extending wall having an annular surface extending outwardly from said cylindrical outer surface;

said piston being axially, slidably mounted in said bore with said annular wall, said interior cylindrical surface, said exterior cylindrical surface and said annular surface defining an expandable chamber between said bore and said piston;

a first generally U-shaped expandable seal in said chamber being seated against said annular wall of said bore and having a pair of lips capable of respectively making sliding, sealing contact with said interior cylindrical surface



and said exterior cylindrical surface; a second generally U-shaped expandable seal in said chamber being seated against said annular surface of said piston and having a pair of lips capable of respectively making sliding, sealing contact with said interior cylindrical surface and said exterior cylindrical surface;

means for selectively introducing hydraulic fluid to and discharging said hydraulic fluid from an intermediate region of said chamber between said first and said second seals, said hydraulic fluid being sealingly retained therein by said first and said second seals and capable of acting on said piston for selective movement of said piston axially relative to said bore; and

means for providing a compressive braking force to said pack being responsive to said selective movement of said piston.

4,346,792

DISC BRAKE DEVICE

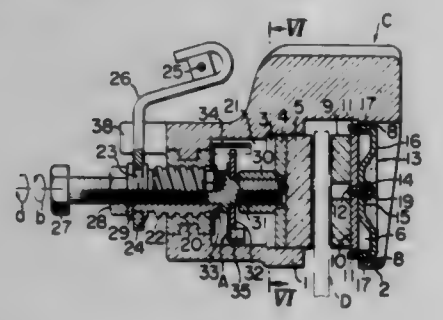
Mamoru Watanabe, Tokyo, Japan, assignor to Watanabe Engineering Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 170,816

Claims priority, application Japan, Jul. 19, 1979, 54-100095[U]

Int. Cl.³ F16D *65/02*

U.S. Cl. 188—73.32 **5 Claims**



1. A disc brake device comprising:

a brake disc;

a brake caliper having a first and a second clamp arms in straddling relation to said brake disc, said second clamp arm having a window and a plurality of notches formed in opposed inner edges of said window;

a movable friction pad connected to a pad pushing device in said first clamp arm and opposing one side surface of said brake disc;

a fixed friction pad disposed on an internal side of said second clamp arm in opposing relation to the other side surface of said brake disc;

a back plate secured to said fixed friction pad and having a plurality of notches formed in opposed outer edges thereof, said window being smaller in area than said back plate;

a stopper detachably connected to the rear of said back plate, said stopper having a plurality of first projections in engagement with the notches in said second clamp arm and in said back plate for holding said back plate against rotation relative to said second clamp arm and a plurality of second projections in abutting engagement with the external side surface of said second clamp arm for resiliently holding said back plate with said fixed pad against said second clamp arm.

4,346,793

MOTION SNUBBING DEVICE

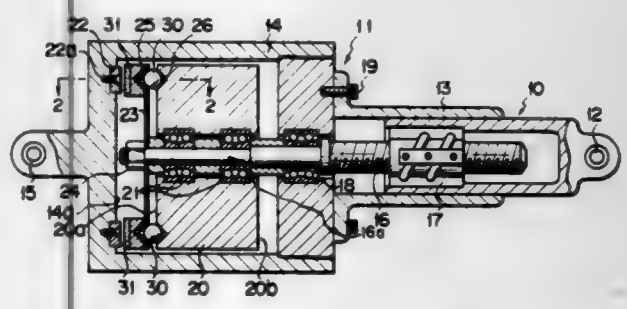
Takeshi Fuse, Kamakura, and Masaru Sekine, Hadano, both of Japan, assignors to NHK Spring Co., Ltd., Yokohama and NHK Precision Co., Ltd., Kanagawa, both of, Japan

Filed Feb. 7, 1980, Ser. No. 119,552

Claims priority, application Japan, Feb. 14, 1979, 54-15635

Int. Cl.³ F16F *7/10*

U.S. Cl. 188—134 **5 Claims**



1. A motion snubbing device of the self-release type comprising:

a pair of telescoped support members capable of axial reciprocation relative to each other while being restrained from relative rotation;

movement converting means for converting the axial movement of one of said paired support members into a rotational movement;

a shaft supported by the other support member and coupled to said movement converting means so as to be rotated by said movement converting means;

said other support member including a housing having a frictional surface extending in the radial direction of said shaft;

a rotary inertia member coupled to said shaft and being rotatable relative to said shaft in a co-axial relation to said shaft while being restrained from movement in the axial direction of said shaft, said inertia member having an end face;

first recess means formed in said end face of said inertia member at positions near the periphery of said end face and at a constant radial distance from said axis;

an elastic plate member capable of flexing and being connected to said shaft for rotation in unison with said shaft, said elastic plate member being normally spaced apart from said end face of said inertia member;

second recess means formed on said elastic plate member on the side thereof facing said first recess means in said inertia

member and at positions corresponding to said first recess means;

rolling means interposed between and received in said first and second recess means for transmitting the rotation of said elastic plate member to said inertia member; and

brake shoes provided on said elastic plate member on the side thereof opposite said inertia member and facing said frictional surface of said housing,

whereby as said shaft is rotated in a given direction at an increasing acceleration responsive to relative telescoping axial movement of said support members, said rolling means are moved in such a manner as to come out of the associated first and/or second recess means against the biasing force of said elastic plate member, thereby bringing said brake shoes into frictional engagement with said frictional surface of said housing to stop the rotation of said shaft; and

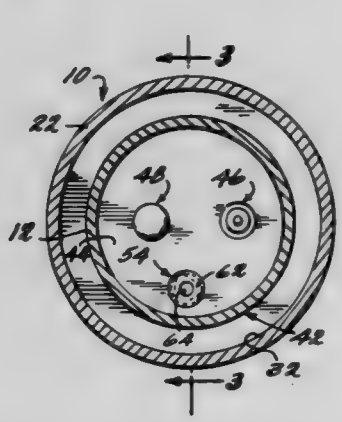
whereby if an external force is substantially continuously applied to said telescoped support members in one given direction, the engagement of said brake shoes with said frictional surface of said housing self-releases due to said inertia member's continued rotation.

4,346,794

SHOCK ABSORBER WITH IMPROVED BACK CHECK AND ANTI-DUMP VALVE MECHANISMS

Paul Smeltzer, Napierville, Ill., assignor to Maremont Corporation, Carol Stream, Ill.

Filed Feb. 4, 1980, Ser. No. 118,311
Int. Cl.³ F16F 9/20
U.S. Cl. 188—322.14 **6 Claims**



1. In a hydraulic shock absorber adapted to be connected between the sprung and unsprung masses of a vehicle including a tubular member defining a cylindrical chamber, a piston slidably mounted within said cylindrical chamber, a piston rod extending from one side of said piston outwardly from one end of said tubular member, closure means on said one end of said tubular member closing the one end of said tubular member and slidably sealingly engaging said piston rod, end closure means on the opposite end of said tubular member, connecting means for connecting said shock absorber operatively between said masses, hydraulic fluid filling rebound and compression spaces within said cylindrical chamber on the piston rod side of said piston and on the opposite side thereof respectively, said piston having passage means therethrough, rebound valve means disposed in cooperating relation with said passage means to control flow of fluid from said rebound space to said compression space, a compression valve mechanism carried by said piston for controlling flow of fluid from said compression space to said rebound space across said piston, and means to accommodate the flow of hydraulic fluid resulting from piston rod displacement, the improvement which comprises

means defining a fluid flow path leading from said compression space; and

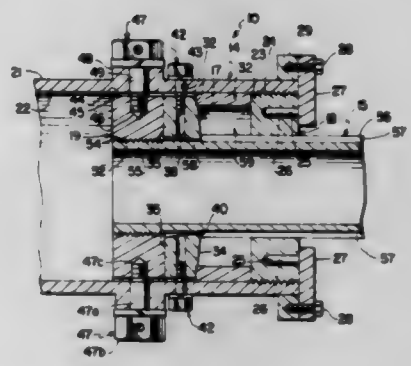
check valve means movably mounted within said flow path for movement from a first closed position generally closing said parallel flow path, into an open position permitting fluid flow through said flow path in response to an initial increase in pressure in said compression space, and from said open position into a second closed position preventing further flow of fluid through said flow path in response to an increase in the pressure of the hydraulic fluid in said compression space to a predetermined pressure above the initial increased level, said check valve means including means to progressively restrict flow through said path during a portion of the movement of said check valve means into said second closed position.

4,346,795

ENERGY ABSORBING ASSEMBLY

Donald L. Herbert, Lexington, Ohio, assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jun. 23, 1980, Ser. No. 162,053
Int. Cl.³ F16F 7/12
U.S. Cl. 188—375 **3 Claims**



1. An assembly for absorbing energy between first and second tubes subject to relative movement, the combination comprising:

a first guide ring rigidly coupled to the inside of the first tube, having an inner diameter substantially equal to the outer diameter of the second tube and receiving the second tube therein;

a cutting ring coupled to the inside of the first tube by shearable fasteners spaced from said first guide ring, said cutting ring having an inner surface defining an annular cutting edge with a diameter less than the outer diameter of the second tube, the second tube having an area of reduced diameter receiving said cutting edge therein; and

a second guide ring rigidly coupled to the second tube and received in the first tube on the side of said cutting ring opposite from said first guide ring, said second guide ring having an outer diameter substantially equal to the inner diameter of the first tube,

shearable means, coupled to the first tube and said second guide ring, for coupling said second guide ring to the first tube,

whereby, upon subjection of the two tubes to relative movement, said cutting edge cuts into a layer of the second tube thereby absorbing at least a part of the energy tending to relatively move the two tubes.

4,346,796

DRIVE MECHANISM WITH CLUTCH AND BRAKE ASSEMBLIES

Kunimitsu Ueno, Hirakata, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,894
Int. Cl.³ B60K 41/24; F16D 13/74
U.S. Cl. 192—18 A **3 Claims**

1. A drive mechanism having a clutch assembly and a brake assembly, comprising:

a housing;

an input shaft rotatably supported by said housing;

a first inner drum of said clutch assembly fixedly secured to said input shaft, said first inner drum having formed therein

a first fluid passage for clutch actuation and a second fluid passage for lubricant;

a second inner drum of said brake assembly fixedly secured to said housing, said second inner drum having formed therein a third fluid passage for brake actuation and a fourth fluid passage for lubricant;

an output shaft rotatably supported by said second inner drum;

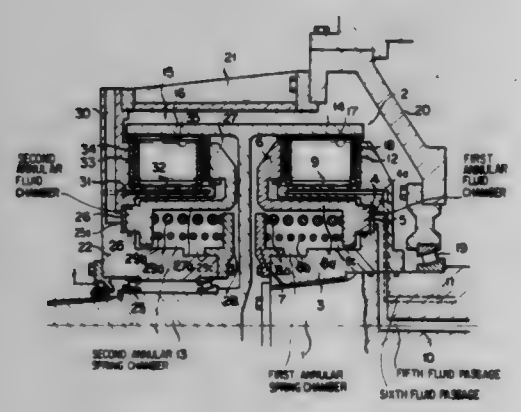
a first outer drum of said clutch assembly fixedly connected to said output shaft;

a second outer drum of said brake assembly fixedly connected to said output shaft;

a first annular retainer plate fixedly secured to said first inner drum;

first piston means operatively disposed relative to said first inner drum defining a first annular fluid chamber between one end face thereof and said first inner drum and a first annular spring chamber between said first annular retainer plate, said first inner drum and said first piston means, said first annular fluid chamber being communicated with said first fluid passage, said first piston means having a first annular pusher plate integrally formed therewith;

a plurality of first annular plates mounted on an outer peripheral surface of said first inner drum;



a plurality of first disks mounted on an inner peripheral surface of said first outer drum, said first annular plates and said first disks being alternately arranged;

first spring means disposed in said first spring chamber for biasing said first annular pusher plate toward engaging said first annular plates with said first disks;

a second annular retainer plate fixedly secured to said second inner drum;

second piston means operatively disposed relative to said second inner drum defining a second annular fluid chamber between one end face thereof and said second inner drum and a second annular spring chamber between said second annular retainer plate, said second inner drum and said second piston means, said second annular fluid chamber being communicated with said third fluid passage, said second piston means having a second annular pusher plate integrally formed therewith;

a plurality of second annular plates mounted on an outer peripheral surface of said second inner drum;

a plurality of second disks mounted on an inner peripheral surface of said second outer drum, said second annular plates and said second disks being alternately arranged; and

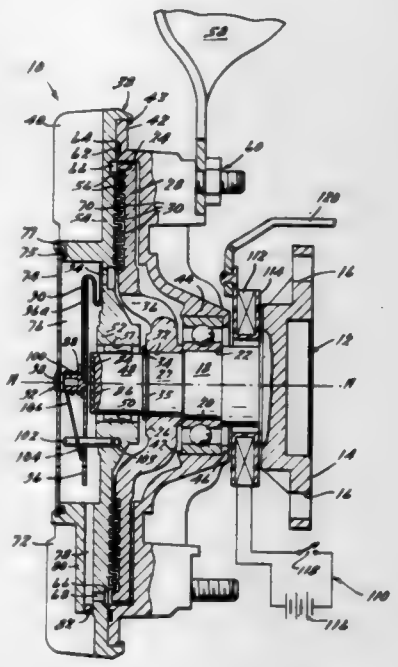
second spring means disposed in said second spring chamber for biasing said second annular pusher plate toward engaging said second annular plates with said second disks.

4,346,797

MAGNETICALLY ACTUATED VISCOUS FLUID COUPLING

Warren G. Bopp, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 25, 1980, Ser. No. 172,320
Int. Cl.³ F16D *35/00, 43/25*
U.S. Cl. 192—58 B **32 Claims**



1. A viscous fluid clutch comprising:

first and second members mounted for relative rotation about a common axis and defining cooperating shear surfaces;

means operative to generate a flow of viscous fluid between said surfaces; and

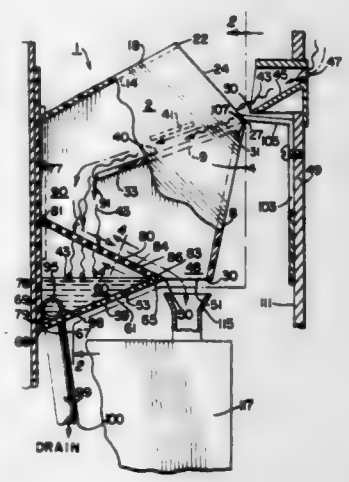
a valving element carried by one of said members and operable to frictionally engage the other of said members to effect modulation of said flow by producing a limited rotation of said valving element with respect to said valve element carrying member.

4,346,798

LIQUID DIVERTING COIN HOPPER

Davis M. Agey, III, 2054 Kingston Ave., Norfolk, Va. 23503

Filed Mar. 12, 1980, Ser. No. 129,775
Int. Cl.³ G07F *1/04*
U.S. Cl. 194—1 K **10 Claims**



10. A liquid diverting coin hopper for vending machines comprising:

a hopper having openings in the top and bottom thereof;

a front wall having an extension section;

said extension section forming a first downwardly extending support surface within said hopper;

a second downwardly extending support surface below said

first downwardly extending support surface, said second downwardly extending support surface slanting in the opposite direction from the first support surface;

said second downwardly extending support surface having a plurality of countersunk perforations on its surface and slots adjacent the edges of said second support surface, the peripheries of said perforations and said slots are substantially in contact with each other so as to present a substantially continuous barrier to the passage of liquid longitudinally of said second support surface, for the passage of liquid therethrough;

a compartment below said countersunk-perforations, said compartment for collecting liquid passing though said perforations; and

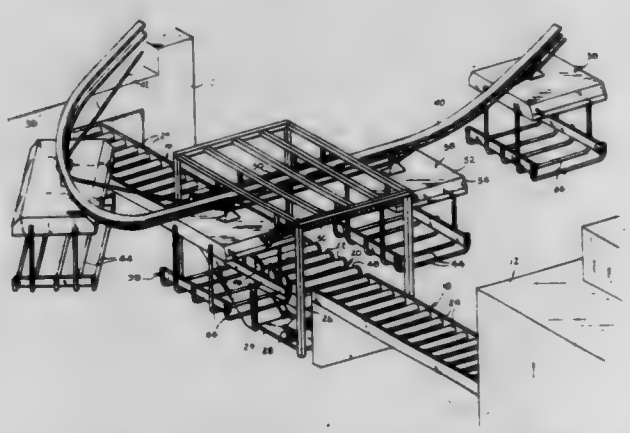
drainage means within said compartment for draining said liquid from within said compartment to the outside of said vending machine.

4,346,799

CONVEYOR SYSTEM WITH PART TRANSFER DEVICE

Dennis L. Dunville, Mishawaka, Ind.; William W. Seaton, Dexter, and Charles H. Good, Ann Arbor, both of Mich., assignors to Dearborn Fabricating & Engineering Corp., Mishawaka, Ind.

Filed Jun. 3, 1980, Ser. No. 156,058
Int. Cl.³ B65G *47/34*
U.S. Cl. 198—367 **6 Claims**



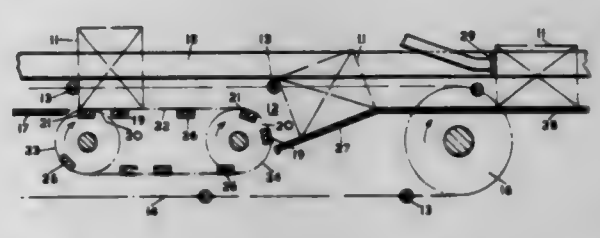
1. A conveyor system for conveying parts comprising a first conveyor section and a second conveyor section separated therefrom by an intermediate conveyor section, each conveyor section having a part supporting a surface, said conveyor sections being aligned to convey a plurality of parts over each conveyor section supporting surface, said intermediate conveyor section being shiftable between an upper operative position in which the supporting surfaces of the conveyor sections are generally co-planar to accommodate the passing of parts thereover and a lower position in which the supporting surface of said intermediate conveyor section is located below the supporting surfaces of said first and second conveyor sections, a plurality of carriers each supported for movement over said intermediate conveyor section, each carrier including a base which is located below the supporting surface of said intermediate conveyor section when the carrier is positioned above such conveyor section and the conveyor section is in its upper position to allow said parts to be conveyed over said conveyor sections and through the carrier, means for shifting said intermediate conveyor section between its upper and lower positions, the supporting surface of said intermediate conveyor section being located below the base of each carrier when the carrier is positioned above such conveyor section and such conveyor section is in its lower position to cause the part over the intermediate conveyor section to be supported by the carrier, and means for moving said carriers over said intermediate conveyor section to remove parts from or to place parts upon such conveyor section when said parts are supported by the carriers, said carriers and means for moving the carriers over said intermediate conveyor section being components of an overhead conveyor, said intermediate conveyor section supporting surface including a plurality of spaced apart rollers extending transversely to the direction of part movement over such conveyor section, each carrier base including a plurality of spaced apart rod members, said rod members located between rollers of said intermediate conveyor section when the conveyor section is in its upper position and a carrier is positioned thereabove with the periphery of the rollers extending above the rod members.

4,346,800

APPARATUS FOR TURNING OVER CONVEYED ARTICLES

John D. Bennett; Brian Holmes, both of Leeds, and David C. Morton, Harrogate, all of England, assignors to Baker Perkins Holdings Ltd., Peterborough, England

Filed May 12, 1980, Ser. No. 148,931
Claims priority, application United Kingdom, May 30, 1979, 7918743
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—412 **6 Claims**



1. Apparatus for turning over a procession of articles of generally rectangular shape and having opposite longer and shorter sides, comprising a dead plate devoid of discontinuities, a continuously travelling feed conveyer including pushers which engage successive articles in the procession to advance them in an upright condition supported by their shorter undersurfaces along the dead plate, movable platform means, movable at a position aligned with the end of the dead plate to support said shorter undersurfaces of the articles as they leave the dead plate and continue to be advanced by the pushers, means for imparting to the platform means movement relative to the pushers which is effective to cause the articles to topple forwardly in succession under gravity alone from the platform means as the articles continue to be advanced by the pushers, and a support positioned to receive in a lying condition and supported by their longer undersurfaces the articles toppling forwardly from the supporting means at a level permitting further conveyance along it of said articles by said pushers.

4,346,801

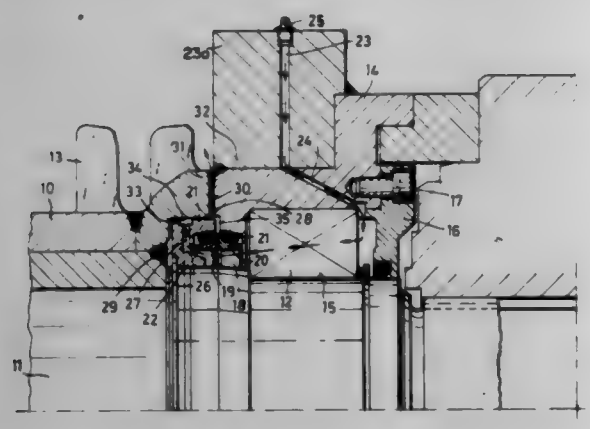
LUBRICATING SPROCKET DRUM MOUNTING

Manfred Redder, Bergkamen-Oberaden, and Dieter Grundken, Lunen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jun. 10, 1980, Ser. No. 158,044
Int. Cl.³ B65G *45/02*
U.S. Cl. 198—500 **15 Claims**

1. A drive arrangement for transferring drive to a scraper assembly of a scraper-chain conveyor, the drive arrangement comprising a drivable sprocket drum rotatably mounted in a drive frame by two bearings, the bearings being individually located in housings at the ends of the sprocket drum, a respective seal being located between each bearing and the adjacent end of the sprocket drum, each seal having at least two relatively movable parts, means being provided for supplying lubricant to the bearings and the seals, wherein the lubricant supply means includes a respective lubricant path for the bearing and the seal at each end of the sprocket drum, each lubricant path passing through both its bearing and its seal, wherein each lubricant path includes a lubricant discharge passage leading away from the respective seal, and wherein each lubricant discharge passage includes a radial gap formed between an end face of the sprocket drum and an adjacent end face of the respective bearing housing, and axial channels in a respec-

tive support ring, radial channels in said support ring, and an axial gap formed between the outer periphery of said support



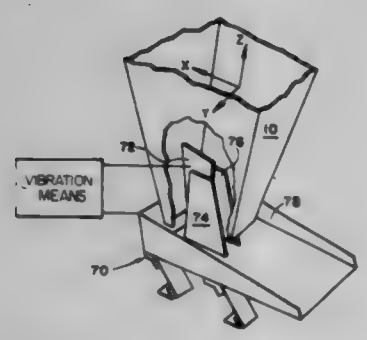
ring and an inner surface of a respective groove machined in the adjacent end face of the sprocket drum.

4,346,802

COMBINATION ANTI-BRIDGING DEVICE AND VIBRATING TRAY

Jakhin B. Popper, Kyriat Motzkin, Israel, assignor to Popper Engineering Ltd., Kyriat Motzkin, Israel

Division of Ser. No. 852,539, Nov. 17, 1977, abandoned. This application Sep. 24, 1979, Ser. No. 77,934
Int. Cl.³ B65G *47/44*
U.S. Cl. 198—533 **3 Claims**



1. Apparatus for preventing bridging of bulk material in a housing for storing or handling goods in bulk, the housing having an egress opening for discharge of the goods therefrom and having defined therein a flowpath direction axis along which the goods travel within the housing en route to the egress opening when in use, the apparatus comprising:

flow discharge control means for preventing bridging of the goods during travel thereof through the housing, said flow discharge control means comprising a first unitary generally flat plate disposed along said flowpath direction axis, at least a part of said plate being within the housing when in use;

vibration means for causing vibration of said plate relative to the housing along a vibration axis parallel to said plate and substantially perpendicular to said flowpath direction axis in longitudinal reciprocal motion, thereby applying a shearing force to the goods along an axis orthogonal to the flowpath direction axis without appreciably compacting the goods; and

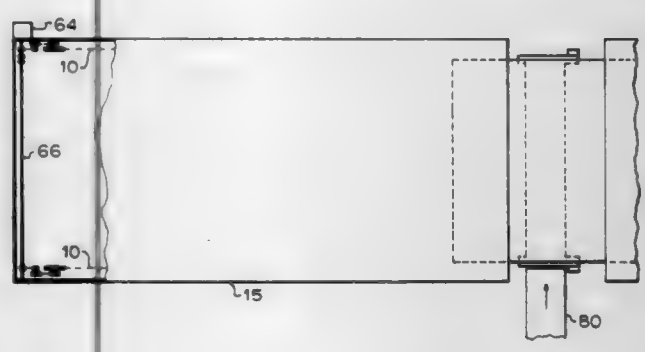
a tray disposed in operative association with the egress opening of the housing downstream thereof and extending outwardly therefrom, said tray being arranged for vibration generally parallel to the plane thereof for urging said goods away from said egress opening in an outflow direction, wherein said unitary generally flat plate is fixedly connected to said tray and arranged such that the plane of said plate lies generally parallel to said outflow direction and wherein said vibration means are connected to said tray, thereby causing vibration of said tray and said plate along an axis parallel to said outflow direction and thus producing a combined anti-bridging action within the confines of said housing and a removal action of goods from the housing along said tray.

4,346,803

CONVEYOR

Wolfgang Haessler, Orangeville, and Djuro Slivar, Brampton, both of Canada, assignors to Haessler & DeWay Limited, Brampton, Canada

Filed Jan. 3, 1978, Ser. No. 866,637
Int. Cl.³ B65G *23/44*
U.S. Cl. 198—813 **4 Claims**



1. Improved construction for endless conveyors driven by an endless chain,

said chain being mounted for movement on a mounting,

said endless conveyor chain being driven and supported by sprockets,

and where a first such sprocket defines the end of a length of said endless conveyor chain,

the shaft mounting said sprocket forming part of an assembly which is movably on said mounting to allow movement of said shaft in a direction to increase or decrease the tension along such length in said endless chain,

a second such sprocket, chain driven and rotatably mounted in said assembly for translation therewith,

said second sprocket being connected to said first sprocket so that rotation of said second sprocket drives said first sprocket,

drive means mounted on said mounting including a third sprocket connected by a drive chain to said second sprocket for driving the latter,

said third sprocket being disposed on the opposite side of said second sprocket from said conveyor chain length whereby tension in said drive chain opposes tension in said length of conveyor chain,

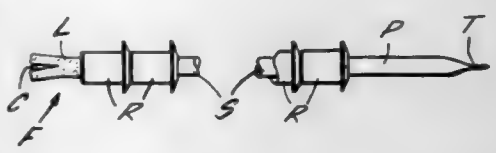
wherein said second sprocket is of smaller diameter than said first sprocket.

4,346,804

STORING AND HANDLING OF HOLLOW RIVETS

John Powderly, Birmingham, England, assignor to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 912,373, Jun. 5, 1978, abandoned. This application Oct. 2, 1980, Ser. No. 193,146
Int. Cl.³ B65D *85/62*
U.S. Cl. 206—338 **6 Claims**



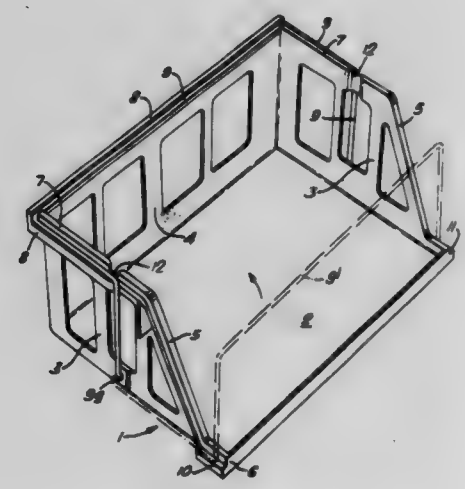
1. A rivet assembly comprising: a tubular sleeve with an integrally formed engagement means disposed at one end thereof, said sleeve being adapted to substantially receive a blind-riveting mandrel introduced at the other end; and a row of hollow rivets on the exterior of the sleeve slidably disposed

thereon in a head-to-tail relation, the head of the first rivet in the row being nearest to the engagement means, said engagement means being integrally formed on the tubular sleeve so as to prevent said rivets from sliding thereover, said rivets further being arranged to slide over said other end onto said mandrel.

4,346,805
CONTAINER

Paul H. Upperton, Shoreham-by-Sea, England, assignor to GPG International Limited, Warwickshire, England

Filed Sep. 18, 1980, Ser. No. 188,579
Claims priority, application United Kingdom, Oct. 30, 1979, 7937534
Int. Cl.³ B65D *21/04*
U.S. Cl. 206—506 20 Claims



1. A container for stacking as a vertical column with a similar container which comprises a substantially flat base; wall means upstanding from the base, said wall means comprising opposed forwardly and rearwardly extending side wall parts which together with said base form an open front and an open top which wholly overlie said base; upper edge means for supporting the base of a similar container in vertically stacked overlying relationship, said upper edge means being located on the wall means spaced from and rearwardly of the front of the base, and said side wall parts forwardly of the upper edge means being shaped to permit access to the container from the sides thereof adjacent to its open front, and a pivotally mounted frame member movable from a first, inoperative, position clear of said open front and open top into a second position in which it abuts stop means forwardly of and below said upper edge means, said frame member in its second position providing a support part which extends upwardly from said stop means and with respect to the base to provide support forwardly of the upper edge means to a said overlying container beneath the base of that container adjacent to the front thereof where the base of the overlying container is substantially parallel with the base of the underlying container and will project forwardly in cantilevered manner from the support provided by said upper edge means of the underlying container.

4,346,806
SHELF ORGANIZER

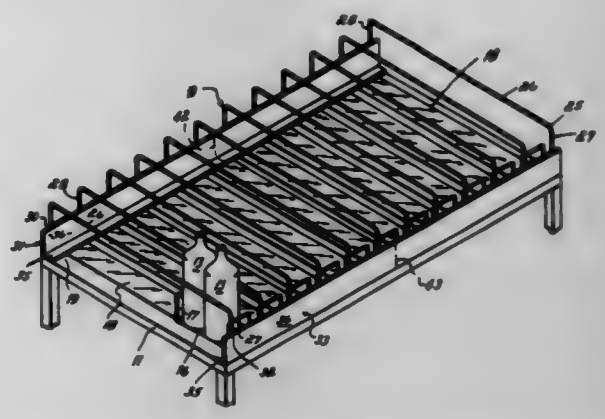
Rafael T. Bustos, Clarkston, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Mar. 11, 1980, Ser. No. 129,342
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—49 S 10 Claims

1. A shelf organizer comprising,

a plurality of horizontal wires having end sections extending downwardly from the opposite ends thereof,

two sheets of corrugated plastic material, each of said sheets comprising at least one generally flat ply of plastic material and one corrugated ply of plastic material, each of said sheets being scored longitudinally thereof such that the sheets may be folded about the longitudinal score line to locate one section of each of said sheets including both said generally flat ply and said corrugated ply in a horizontal plane and the other section including both said generally flat ply and said corrugated ply in a vertical plane, the vertical section having an exposed edge generally parallel to the score line,



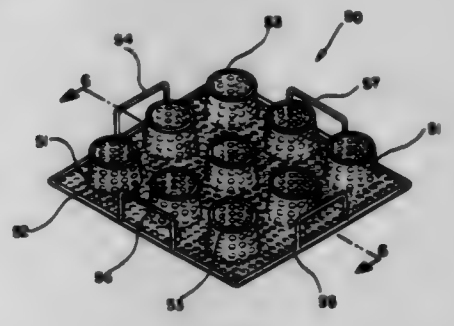
vertically extending pockets in said vertical section of each of said sheets of corrugated plastic material, said pockets being defined between the corrugations of said corrugated plastic material and said pockets being open at said exposed edge, and

one end section of each of said wires extending downwardly into a pocket of one of said corrugated sheets of plastic material.

4,346,807
FLATWARE PROCESSING SYSTEM

Clyde R. Weihe, 17 Linbergh Ave., Needham Heights, Mass. 02194

Filed May 5, 1980, Ser. No. 146,206
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—60 R 2 Claims



1. Basket means for holding flatware while being washed and rinsed in a dishwashing machine comprising:

(a) a horizontally disposed base member; and

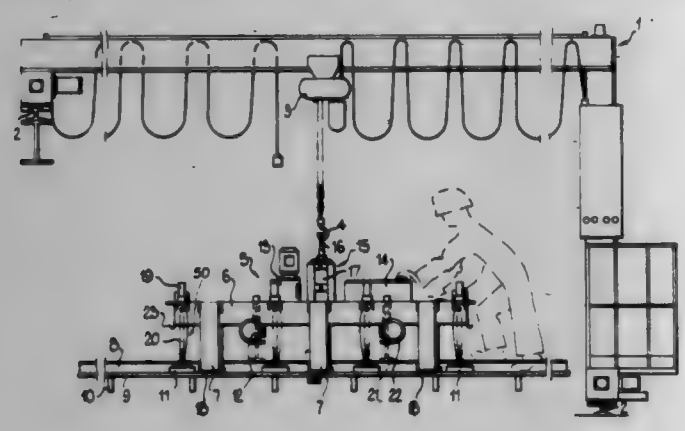
(b) a plurality of individual, spaced-apart receptacles supported on said base member, each receptacle having the shape of a right, truncated cone for containment of a limited number of pieces of flatware, each receptacle being opened at the top and defined by a horizontally disposed circular-shaped opening of pre-determined diameter in a plane parallel to the said base member, said circular-shaped top opening limiting the number of pieces of flatware that can be placed in each said receptacle and the truncated shape of said receptacle allowing the flatware placed in the receptacle to spread out at the bottom of the receptacle, exposing the flatware surfaces to washing and rinsing water,

said base member and said receptacles being of porous construction thereby allowing the free passage of wash and rinse water into and from the inside of the flatware receptacles.

4,346,808
DEVICE FOR USE IN WELDING REINFORCEMENT MEMBERS TO PANEL PLATES

Walther Garlung, Kalandseid, and Helge Dahl, Os, both of Norway, assignors to Total Transportation Systems (International) A/S, Os, Norway

Filed Jul. 18, 1979, Ser. No. 58,460
Claims priority, application Norway, Mar. 30, 1979, 791077
Int. Cl.[3] B66C *5/04*
U.S. Cl. 212—212 14 Claims



1. Apparatus for transporting and positioning a sectional reinforcement member relative to a panel plate to which it is to be attached comprising:

boom means,

means angularly movable about a generally vertical axis for connecting said boom means to a crane,

a plurality of gripping means for holding a sectional reinforcement member,

first means for mounting said plurality of gripping means to said boom means,

a plurality of lifting magnets for holding a panel plate,

second means for mounting said plurality of lifting magnets to said boom means,

at least one jack means for pressing said sectional reinforcement member against said panel plate,

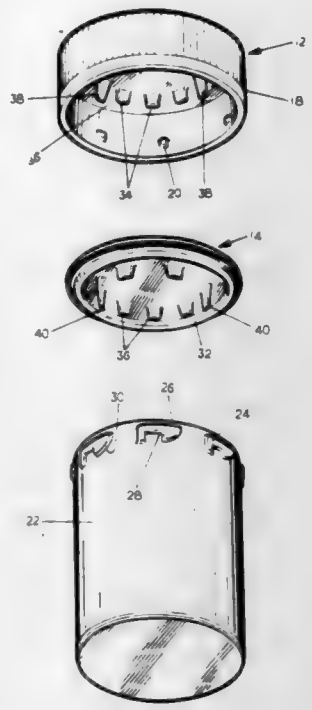
said boom means being equipped with said at least one jack means.

4,346,809
TWO-PIECE CLOSURE HAVING A CHILD-RESISTANT MODE AND A NON CHILD-RESISTANT MODE

Maximillian Kusz, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 30, 1981, Ser. No. 259,134
Int. Cl.[3] B65D *55/02*
U.S. Cl. 215—214 7 Claims

1. A convertible child-resistant closure for an open mouth container having an annular rim on the open end thereof, and circumferentially spaced locking lugs having downwardly opening notches, comprising an outer closure, said outer closure including a circular panel section and an annular skirt depending from the periphery thereof, said skirt sized to fit around the annular rim of the container, a plurality of integrally formed, circumferentially spaced keys projecting inwardly from the inside annular surface of said skirt and constructed and arranged to fit within the notches of said locking lugs; a resilient, disc shaped liner within said outer closure; means on said outer closure to retain said liner within said outer closure, permitting limited axial movement of said liner within said closure, selectively engagable spacing means on said panel and said liner providing two relative axial positions of said liner within said outer closure, said spacing means arranged to deform said resilient liner between said rim and said spacing means when said liner is in one axial position

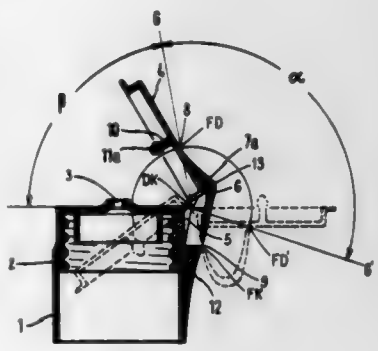


relative to said outer closure, thereby providing an upward bias to retain said keys within said notches.

4,346,810
CLOSURE FOR BOTTLES

Richard Kneissl, Munich, Fed. Rep. of Germany, assignor to Nova-Handels AG, Zurich, Switzerland

Filed Sep. 9, 1980, Ser. No. 185,535
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936717
Int. Cl.[3] B65D *43/16*
U.S. Cl. 215—237 8 Claims



1. A bottle closure means adapted to be mounted on the upper end of a bottle neck, said closure comprising:

a cylindrical collar having a pour opening formed therein;

a cap hinged to said collar and having a sealing member thereon for engaging and sealing said pour opening, said cap being movable about a cap hinge axis from an open position wherein said sealing member is spaced from said pour opening to a closed position wherein said sealing member engages and seals said pour opening;

at least one spring acting strip having a first hinged connection to a collar projection at a first hinged point and a second hinged connection to said cap at a second hinged point,

said cap being movable to a reversal position between said open and closed positions wherein said spring acting strip commences imparting a force on said cap to move said cap to said closed position;

said collar, cap and spring strip being integrally formed from plastic and being mutually joined by plastic hinges at said

hinge axis, said first hinged point and said second hinged point;

a first angle being formed by a first line passing through said second hinged point and said hinge axis when said cap is in said open position and a second line passing through the same points when said cap is in its said reversal position;

a second angle being formed by said second line and a third line passing through the same points when said cap is in said closed position;

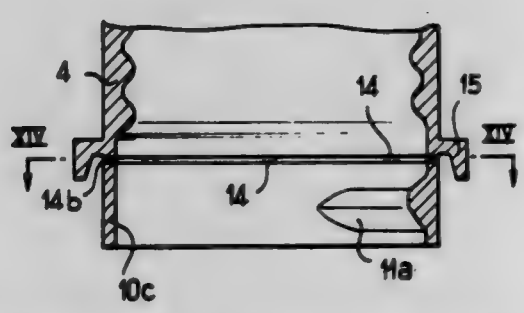
said second angle being smaller than said first angle.

4,346,811

PILFER-PROOF CLOSURE CAP OF PLASTIC MATERIAL

Fernand Hilaire, Monte Carlo, Monaco, assignor to Captocap Limited, Vaduz, Liechtenstein

Filed Mar. 8, 1979, Ser. No. 18,789
Claims priority, application France, Mar. 28, 1978, 78 08912
Int. Cl.[3] B65D *41/34*
U.S. Cl. 215—252 2 Claims



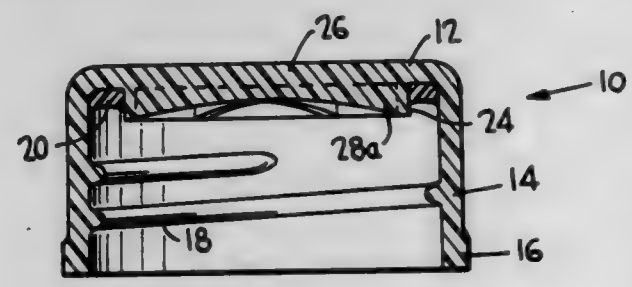
1. A pilfer-proof closure cap of plastic material for sealing a container having a threaded neck portion, said closure cap comprising an internally threaded shell to be screwed on the neck of the container and a ring to be applied beneath an annular projection formed on the neck of the container, said ring being joined to the shell by means of bridges of plastic material designed to tear-off at the time of unscrewing of the cap, said ring having a free end which has a rib which is intended to be applied beneath said annular projection of the neck of the container, wherein the rib of the ring extends over less than one-half the circumference of the ring and at least one bridge having a larger cross-sectional area than the other bridges is disposed substantially opposite to said rib.

4,346,812

PLASTIC CLOSURE WITH REINFORCED CENTRAL PANEL

John N. Banich, Sr., Chicago, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Mar. 10, 1981, Ser. No. 242,197
Int. Cl.[3] B65D *53/02*
U.S. Cl. 215—352 3 Claims



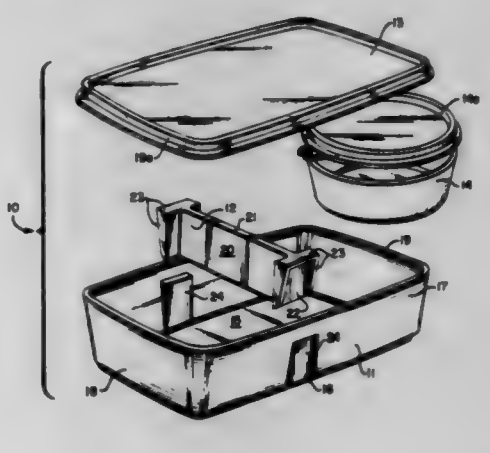
1. A closure cap for carbonated beverages and like products packaged at a pressure other than atmospheric, said closure cap being of a molded plastic material construction and comprising an end wall and a depending skirt, an annular sealing ring seated on an underside of said end wall adjacent said skirt and surrounding a central panel of said end wall, and reinforcing means integral with said end wall and in the general area of said central panel, said end wall having on said underside an annular seat for said sealing ring with said annular seat being in part defined by a depending annular rib, and said reinforcing means being on said underside of said end wall within said annular rib, said reinforcing means being in the form of radiating ribs intersecting at the center of said central panel and extending radially outwardly to said annular rib, said radiating ribs being of substantially the same height as said annular rib at their intersections with said annular rib.

4,346,813

CLOSURED AND DIVIDED BOX

Kazunobu Cho, Tokyo, Japan; Roger P. Beauchamp, Harrisville, and Robert F. Batemou, Greenville, both of R.I., assignors to Dart Industries Inc., Los Angeles, Calif.

Continuation of Ser. No. 710,755, Aug. 2, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 845,505
Int. Cl.[3] B65D *25/04*
U.S. Cl. 220—22 1 Claim



1. A sealable storage container having an interconnecting side and bottom wall construction said side wall including inwardly directed oppositely positioned protrusions of a width of between about 25% and 60% of the height of said side wall and which extend between points proximate said bottom wall and the upper edge of said side wall, said protrusions gradually increasing in depth toward their upper extents to create a wedge-like appearance inwardly of said container and an upright imperforate divider member having an upright flange at either end thereof, each of said flanges being bounded along its vertical and upper extents by outwardly extending walls that mate with said protrusions and which at the lower extent thereof blend into said flange in a shape compatible with the interconnection between said side and bottom wall construction.

4,346,814

SIDE SEAM STRIPES

Kenneth R. Rentmeester, Varrington, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 3, 1980, Ser. No. 126,190
Int. Cl.[3] B65D *7/34;* B29D *23/10;* B65D *1/16*
U.S. Cl. 220—75 7 Claims

1. A container having a hollow body formed from a flat sheet of metal and containing a seam along a side thereof wherein said seam has exposed raw metal facing inwardly, said container including a side seam stripe comprising a coating being thixotropic in nature and applied over the raw metal at a rate of about 5 mg per square inch to gel and thus adhere across the rough surface of the exposed raw metal sufficiently to substantially prevent any metal exposure after application and during curing at elevated temperatures.

2. The container of claim 1 wherein said side seam is a welded lap joint presenting a raw edge of metal inwardly into said container and portions of inward metal surface adjacent

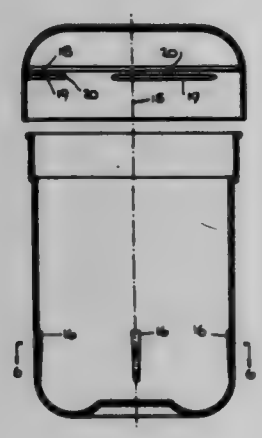
said joint which are rough and raw metal and said curing temperatures are in the range of 250° F. to 400° F.

4,346,815

FROZEN FOOD CONTAINER

Roger F. Raymor, and Les Adams, both of Toledo, Ohio, assignors to Seligco Food Corporation, Brooklyn, N.Y.

Filed Nov. 5, 1980, Ser. No. 204,211
Int. Cl.[3] B65D *41/16, 41/18*
U.S. Cl. 220—306 7 Claims



1. A container for storing frozen foods such as ice cream and the like, comprising:

a base,

a cylindrical body member joined to said base,

a rim disposed at the end of said cylindrical body member opposite said base and including an edge projecting radially outwardly from said rim perpendicular to the longitudinal axis of said container,

a cover adapted for slidable positioning over said rim, and means, disposed on the inner surface of said cover and adapted for interlocking engagement with said edge of said rim, for securing said cover on said cylindrical body member, said securing means comprising a first annular ridge disposed on the inner surface of said cover and projecting radially inwardly perpendicular to the longitudinal axis of said container, and a plurality of second annular ridges disposed on the inner surface of said cover and projecting radially inwardly perpendicular to the longitudinal axis of said container, said plurality of second annular ridges being spaced apart from said first annular ridge so as to form a plurality of spaces on the inner surface of said cover between said first and second ridges for receiving said edge of said rim when said cover is disposed on said cylindrical body member and thereby securing said cover on said body member.

4,346,816

PLASTIC END COVER FOR DRUMS

Gilles E. A. Caille, Paris, France, assignor to Expandet, Paris, France

PCT No. PCT/FR80/00044, § 371 Date Dec. 9, 1980, § 102(e) Date Dec. 9, 1980, PCT Pub. No. WO80/02273, PCT Pub. Date Oct. 30, 1980
PCT Filed Mar. 25, 1980, Ser. No. 220,066
Claims priority, application France, Apr. 24, 1979, 79 10314
Int. Cl.[3] B65D *41/16, 41/18*
U.S. Cl. 220—306 1 Claim

1. An end cover for covering and protecting a drum having an upper tray with a circumferential lip, comprising:

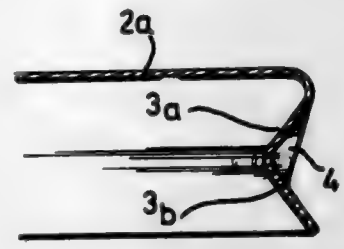
a circular top provided with an outer circumferential edge, said top having a diameter corresponding to the diameter of the drum to be covered and having an axis of symmetry perpendicular to the plane of said top; and

a peripheral member comprising:

a convergent linear wall integral with said outer edge of said top;

a divergent linear wall joined to said convergent linear wall and forming a circumferential V-shaped groove opening toward the exterior of said walls; and

flat ribs spaced from one another around said V-shaped groove, each of said ribs being disposed in a vertical radial plane passing through said axis of symmetry, protruding from and being integral with said walls on either side of the apex of said V-shaped groove formed



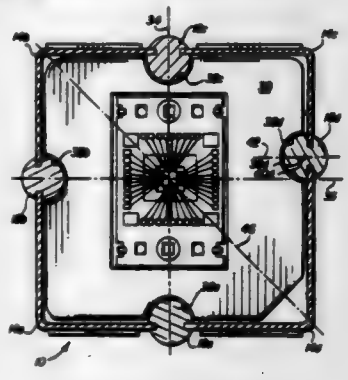
by said walls, and being positioned within said V-shaped groove to add rigidity to said walls and for preventing said walls from spreading apart, whereby said peripheral member is forcefully deformed when said end cover is placed on the lip of the drum thereby assuring that said end cover remains fixed on the drum to seal the upper tray of the drum against intrusion of outside agents.

4,346,817

MATERIAL HANDLING APPARATUS

DeWayne E. Karcher, Glendale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 37,187, May 8, 1979, abandoned. This application May 27, 1980, Ser. No. 153,367
Int. Cl.[3] B65G *1/08*
U.S. Cl. 221—312 R 9 Claims



1. Material handling apparatus comprising:

a magazine having substantially planar walls defining a prismatic interior storage space having a rectangular cross section, and open top and bottom faces, said magazine adapted to have stored therein a plurality of substantially rectangular laminar fixtures having four sides, each of said fixtures having means forming "n" recesses, where "n" is an integer greater than 1, in the sides of said fixture, there being no more than one recess in a given side of a fixture;

retention means mounted on said wall means for retaining in said storage space fixtures placed therein, said retention means permitting fixtures to be inserted into the storage space and to be removed therefrom through either face of the storage space;

means forming "n" protrusions, on the walls defining the storage space there being no more than one protrusion on a given wall, said protrusions being substantially parallel to each other and extending between said top and bottom faces, and each of said protrusions projecting into said space, said protrusions and recesses in the fixtures being asymmetrically and co-operatively positioned so that each protrusion projects into a corresponding recess of each fixture stored in the magazine, and so that each fixture

stored in the magazine can have only one orientation with respect to the magazine and so that each fixture stored in the magazine is prevented from substantially changing its orientation with respect to the magazine irrespective of the number of fixtures stored therein and irrespective of subsequent changes in orientation of the magazine.

4,346,818

ARRANGEMENT FOR THE THERMAL SPRAYING OF METAL AND CERAMIC POWDERS

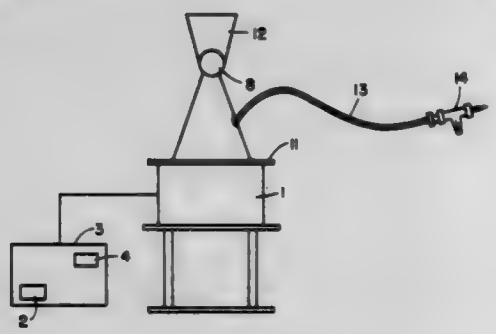
Erich Bösmiller, Lohhof, Fed. Rep. of Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,520

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1979, 2946569

Int. Cl.³ B67D *5/34*

U.S. Cl. 222—58 **3 Claims**



1. Arrangement for the thermal spraying of metal powders and ceramic powders and their admixing through a powder storage receptacle, and arrangements for the conveyance of the powder from the storage receptacle to a spray gun, comprising the powder storage receptacle with the conveying arrangements is installed on a precision scale which includes a device for the continuous registration of a weight change of powder material in the storage receptacle per time interval, and a calculating circuit in which the weight loss ΔG presently registered during one time interval is divided by the duration of the time interval ΔT; said precision scale further comprises a scale with an electronic display and an electronic data output and said calculating circuit comprising a microcomputer.

4,346,819

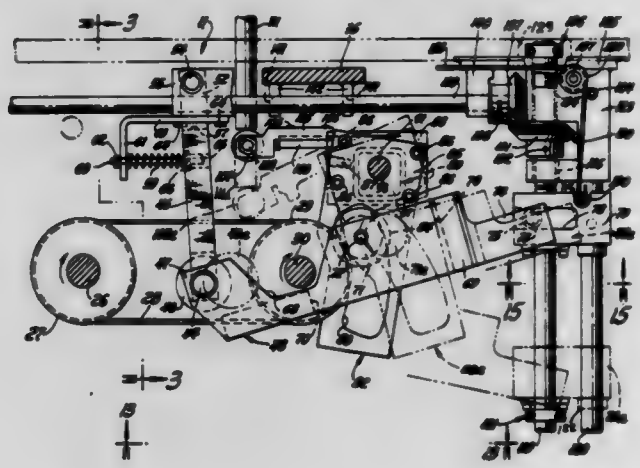
CARTON FILLER AND VOLUME ADJUSTER APPARATUS FOR PACKAGING MACHINES

Ivan L. Kauffman, Commerce Township, Oakland County, and Gregory J. Dwyer, Livonia, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 29, 1979, Ser. No. 89,056

Int. Cl.³ G01F *11/02*

U.S. Cl. 222—41 **14 Claims**



1. A filler drive and volume adjustment apparatus for use in a packaging machine which forms, fills and closes cartons, characterized in that said apparatus includes:

(a) at least one filler operating shaft for operating a carton filler apparatus on a packaging machine;

(b) a pivotally mounted roller carrier plate;

(c) at least one roller means mounted on said carrier plate and disposed for operative engagement with the lower end of said at least one filler operating shaft for actuating said filler operating shaft between a lowered position and a raised position;

(d) a first cam follower link operatively attached to said roller carrier plate for pivoting said carrier plate between operative positions;

(e) a cam carrier link having a roller cam operatively engaged with said first cam follower link;

(f) means for rollably supporting one end of said cam carrier link;

(g) a second cam follower link having one end pivotally mounted on the packaging machine and the other end pivotally connected to the other end of said cam carrier link; and,

(h) means for pivoting said second cam follower link between operative positions for oscillating said cam carrier link and said first cam follower link to pivot the roller carrier plate between operative positions for actuating said filler operating shaft between a lowered position and a raised position.

4,346,820

APPARATUS FOR MIXING AND DISPERSING TWO SUBSTANCES UNDER STERILE CONDITIONS

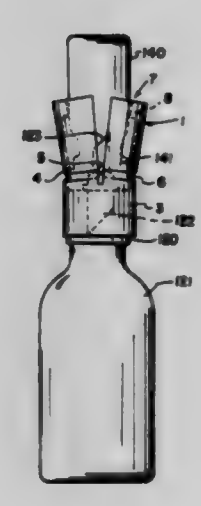
Claudio Cavazza, Rome, Italy, assignor to Sigma-Tau Industrie Farmaceutiche Riunite, Italy

Filed May 2, 1980, Ser. No. 145,977

Claims priority, application Italy, May 2, 1979, 48916 A/79

Int. Cl.³ A61J *1/00*

U.S. Cl. 222—83 **4 Claims**



1. Apparatus for mixing and dispensing two substances comprising in combination:

a first container for sealingly containing a first substance, said first container having a neck of reduced diameter defining a discharge opening and being sealed by a stopper, said container neck with its stopper having a large diameter portion;

a second container for sealingly containing a second substance, said second container having a neck defining a discharge opening;

a sleeve dimensioned to sealingly receive into one end thereof the neck of the first container and into the opposite end thereof the neck of the second container, and having intermediate said opposite ends a transversely extending, peripherally continuous septum provided with a centrally positioned opening, said one end of said sleeve having an inwardly extending lip engaged behind said large diameter portion;

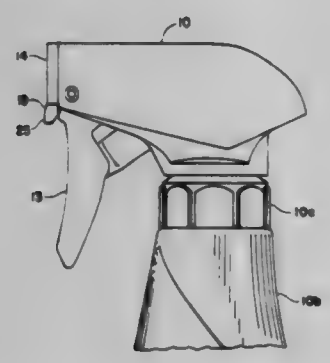
an elongated transfer spout having a first end to project into the second container and a second end to enter the first container through said stopper, said transfer spout having a portion intermediate said first and second ends sealingly retained in said septum opening and being provided with two substantially parallel passages extending longitudinally therethrough, the first and second ends of the transfer spout being bevelled so that the respective ends of the substantially parallel passages open into the bevelled ends at different longitudinal locations, wherein the bevelled second end of the transfer spout provides a piercing tip, and wherein said inwardly extending lip maintains said piercing tip from piercing engagement with said stopper of said first container before said first container is slid axially toward said piercing tip to allow mixing of the two container contents.

4,346,821

CHILD-RESISTANT CLOSURES FOR CONTAINER MOUNTED SPRAY DISPENSERS

Walter H. Wesner, Plantation, and Fred E. Wallace, Boca Raton, both of Fla., assignors to AFA Consolidated Corporation, Hialeah, Fla.

Continuation-in-part of Ser. No. 887,144, Mar. 16, 1978, abandoned. This application Jan. 31, 1979, Ser. No. 8,222
Int. Cl.³ B67D *5/42*
U.S. Cl. 222—153 **9 Claims**



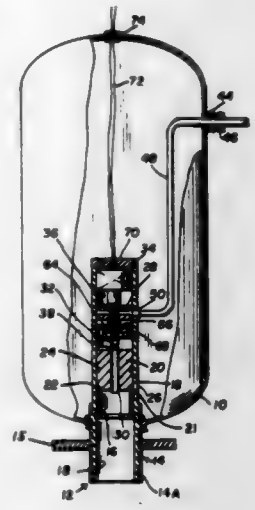
1. An overcap for selectively closing and opening the outlet orifice of a liquid dispenser having a nose bushing in which said orifice is formed, said overcap being coupled to said nose bushing for sliding movement with respect thereto between a first or orifice closing position and a second or orifice opening position, said overcap including a first portion that is deflective with respect to said nose bushing and having detent means formed thereon, said detent means cooperating in a locking relationship with a surface of said nose bushing to hold said overcap against sliding movement when said overcap is in said first position, deflection of said portion of said overcap being operative to release said detent from locking relationship with said nose bushing whereby said overcap is movable to said second position from said first position, and wherein said overcap includes a second deflective portion spaced from said first deflective portion, said second deflective portion having a ramp surface provided thereon adjacent said nose bushing, said ramp surface cooperating with said nose bushing to produce an interference fit in the engagement of said orifice by said overcap as said overcap is moved from said second position to said first position.

4,346,822

AIR BLASTER OR AIR ACCUMULATOR AND QUICK DUMP APPARATUS

Theodore S. Wadensten, Wyoming, and Alfred Carocci, Johnston, both of R.I., assignors to Vibco, Inc., Wyoming, R.I.

Division of Ser. No. 945,457, Sep. 25, 1978, Pat. No. 4,197,966. This application Dec. 13, 1979, Ser. No. 103,187
Int. Cl.³ B65D *88/72*
U.S. Cl. 222—195 **16 Claims**



1. An air accumulator and quick release apparatus for producing a blast of pressurized air into a storage bin for material, said apparatus including:

(a) a pressure tank and means for removably mounting said tank exterior of said bin, the pressure tank adapted to receive and store pressurized air, said tank having a large opening formed therein;

(b) a removable pipe mounted in said large opening and with said pipe having an open and a closed end and when mounted in said large opening the open end of the pipe is within the bin and adapted to direct the blast into the interior of the bin;

(c) a quick air release apparatus carried within said pipe and within said pressure tank when the pipe is mounted within the large opening of the pressure tank;

(d) a smoothly formed bore of regular diameter provided in the removable pipe;

(e) a front tubular stop carried within the bore in said pipe, said stop secured so that with the pipe mounted within the tank the extending open end of the pipe discharges the pressurized air within the bin and a rear end of the front tubular stop is within the tank;

(f) a multiplicity of discharge holes formed in the pipe, said holes arranged in a plane substantially transverse to the axis of the smoothly formed bore in the pipe and with the forward edges of these holes disposed toward the open end of the pipe and with said forward edges of the holes adjacent and inwardly of the rear end of the front tubular stop;

(g) a pipe piston slidable in said bore and sized so as to provide a minimum of air loss for and during movement of said piston in said smooth bore, a forward movement of the pipe piston established by the front stop, this forward movement of the piston as it engages this stop covering the discharge holes sufficiently to shut off the flow of pressurized air from the tank;

(h) means provided in the smooth bore of the pipe and limiting the rearward movement of the pipe piston and at this rearward limit of movement the discharge holes in the pipe are uncovered for a free flow of air from the tank to the interior of the pipe forwardly of the piston and from this pipe through the open end of the pipe and into the bin;

(i) a header member carried and mounted in the smooth bore of the pipe and rearwardly of the pipe piston, said header adapted to receive and deliver pressurized air to the interior portion of the pipe;

(j) a small rigid tube carried by the small header member, said small tube extending through an aperture central of the pipe piston, said tube disposed to carry pressurized air from the header member;

(k) an air conduit adapted to carry pressurized air from an external source outside of said pressure tank to and through said tank and to the header member thence to the interior of the small rigid tube;

(l) a piston carried in the bore of the small tube and reciprocably movable therein to forward and rear limits of movement;

(m) means for moving this small piston in the bore of this small tube to said two limits of movement;

(n) a small tubular seal having an opening therethrough, said tubular seal secured in the bore of the small tube, this tubular seal positioned in the tube so as to engage the face of the small piston at a forward limit of movement to effect a shut off of flow of pressurized air through the small tube and forwardly of the small piston;

(o) a plurality of outlet holes formed in the sidewall of the small tube, said plurality of outlet holes positioned so that at the forward limit of movement of the small piston the outlet holes in the small tube are uncovered allowing pressurized air to flow from the header member through the tube and then from the outlet holes into that portion of the pipe to the rear of the pipe piston, the pressurized air flowing into said pipe portion urging the pipe piston forwardly toward and to the front tubular stop in the pipe;

(p) a one-way valve provided in the pipe and adapted to permit flow of pressurized air from the interior portion of the pipe to the rear of the pipe piston and then through the one-way valve through conducting passageways to the interior of the pressure tank, the small piston in the rigid tube when moved from sealing engagement with the tubular seal in the small tube and to its rear limit of movement is rearwardly of the outlet holes in the small rigid tube and closes the small tube to the influent flow of pressurized air and opens that pipe area rearwardly of the pipe piston to allow the pressurized air in said portion to flow from this area through the plurality of outlet holes in the tube and through the tube to the open end of the pipe and into the bin to reduce a forward force on the piston, and,

(q) a complementary chamfer provided between the outer front edge of the pipe piston and the rear of the front tubular stop in the pipe, said chamfer providing a force surface upon which the pressurized air flowing from the tank impinges to urge the pipe piston rearwardly.

4,346,823

MULTIPLE FUNCTION CLOSURE

Lawrence C. Eppenbach, 419 Kennedy St., Juneau, Ak. 99801

Filed Aug. 4, 1980, Ser. No. 174,884
Int. Cl.³ G01F *11/26*
U.S. Cl. 222—443 11 Claims

1. A multiple-function closure for a container for divided material wherein the container has an opening, said closure comprising:

a first cap having an end wall and means for attaching the first cap to the container so that the end wall can at least partially span the opening of the container, said end wall having opening means extending therethrough;

a measuring unit;

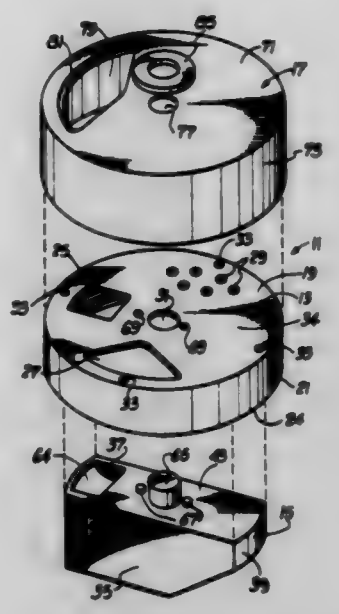
means for mounting the measuring unit on one side of the end wall;

said measuring unit having means responsive to the orientation of the measuring unit for measuring a predetermined volume of the divided material;

a first portion of said opening means communicating with the measuring unit so that said first portion can receive said predetermined volume of divided material from the measuring unit and a second portion of the opening means passing through said end wall so that said second portion cannot receive said predetermined volume of divided material from the measuring unit;

a second cap having an outlet therein; and

means for mounting said second cap on the other side of the first cap for movement relative to the first cap such that the outlet can selectively be placed in a position overlying



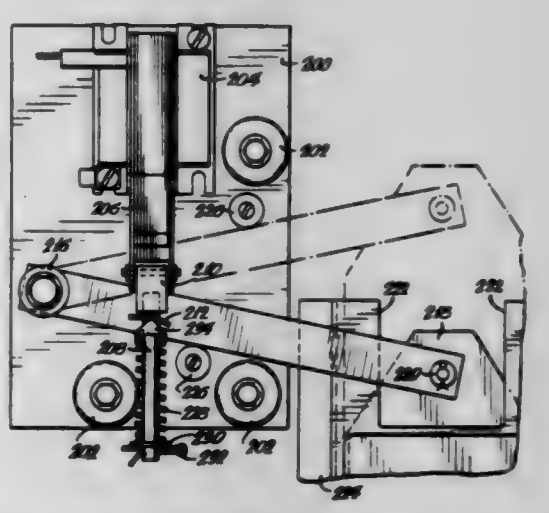
on imperforate portion of said end wall to define a closed position, or in communication with said first portion of said opening means to define a measured dispensing position, or in communication with said second portion of said opening means to define a non-measured dispensing position.

4,346,824

ICE DISPENSING MECHANISM

Benjamin D. Miller, and Albert L. Schafer, both of Chicago, Ill., assignors to Remcor Products Company, Franklin Park, Ill.

Filed Mar. 20, 1980, Ser. No. 131,990
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—504 6 Claims

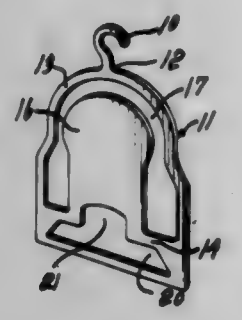


4. A mechanism for dispensing ice from a container having an opening accommodating passage of ice therethrough, said mechanism comprising gate means movable between a closed position for blocking the opening and an open position for unblocking the opening; a solenoid having a plunger movable between extended and retracted positions, and a spring coupling said plunger and said gate means, said plunger when retracted exerting forces on said spring to move said gate means to its open position and when extended relieving said spring of forces for return of said gate means to its closed position, said spring being placed under compression upon retraction of said plunger.

4,346,825
HAT SUPPORTING DEVICE

Jean-Paul Leger, 4776 Du Tremblay, Chomedey, Laval, Quebec H7W 2S9, Canada

Filed Oct. 15, 1979, Ser. No. 84,899
Claims priority, application Canada, Feb. 23, 1979, 322236
Int. Cl.[3] A47F *7/19*; A47J *51/086, 51/097*
U.S. Cl. 223—66 13 Claims

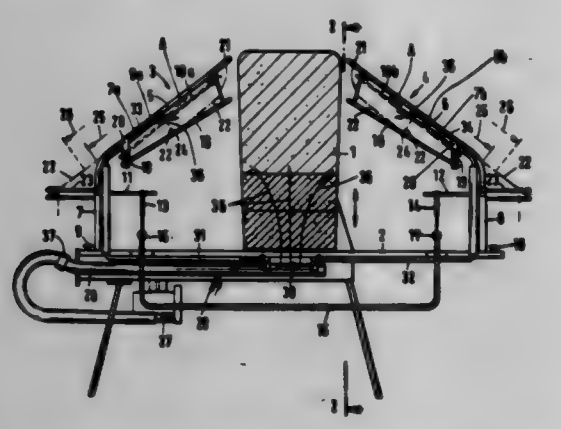


1. An apparatus for supporting a knitted soft hat and a scarf comprising a frame having at least one suspension means adapted to support the frame, the frame including a pair of outer laterally disposed frame members extending downwards from the suspension means, hat support means for supporting a knitted soft hat, the hat support means comprising a hat support member having a profile generally following the inner shape of a knitted soft hat and adapted to support a knitted soft hat below the suspension means, the hat support member including a pair of generally straight lateral edge portions joined by a central at least partially curved edge portion such that said edge portions form said profile, the lateral and central edge portions being spaced from the inner edges of said frame members an amount sufficient to permit a said soft knitted hat to be readily placed on said hat support member, and a scarf support means, located below hat support member, for supporting a scarf and including a horizontal bar portion which defines the lower edge of an opening of sufficient size to receive a scarf therein so that, in use, the said scarf is inserted into said opening and extends over said bar portion to be supported thereby, said scarf support means and said hat support means lying in the same plane and said apparatus including no moving parts.

4,346,826
APPARATUS AND METHOD FOR USE IN FINISH PRESSING

Gero Ehemann, Ippener, Fed. Rep. of Germany, assignor to Kurt Ehemann Spezialmaschinenfabrik KG, Delmenhorst, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,758
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929057; Jul. 27, 1979, 2930622; Oct. 26, 1979, 2943420
Int. Cl.[3] D06F *71/18, 71/40*
U.S. Cl. 223—70 11 Claims

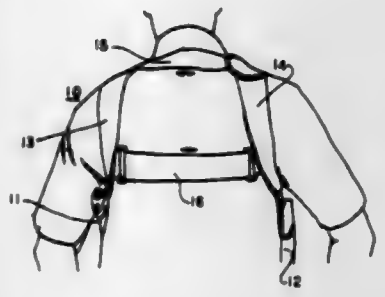


1. In combination with a dummy for use in finish pressing sweaters, jackets and similar garments, primarily made of knit fabric, consisting of a hollow body for the body portion and two pivot arms for the sleeves of the garment, which arms are pivotally mounted independently of the hollow body on the base support of the dummy, the improvement comprising first means for pivotally securing each of the pivot arms about a substantially perpendicular axis, and wherein the arms comprise a carrying rod, an air-pervious metal profile sheet and second means for hingedly mounting said profile sheet to said carrying rod so that the metal profile sheet is moved towards the carrying rod as said arms pivot about said perpendicular axis toward a first position.

4,346,827
VESTLIKE WEAPON CARRIER

John E. Bianchi, and Richard D. E. Nichols, both of Fallbrook, Calif., assignors to Bianchi Leather Products, Inc., Temecula, Calif.

Filed Dec. 5, 1980, Ser. No. 213,382
Int. Cl.[3] A41D *1/04*; F41C *33/00*
U.S. Cl. 224—206 5 Claims



1. A vestlike handgun carrier comprising:
a holster body including a pair of spaced support points, one located in the muzzle and the second in the chamber region of a handgun carried in the holster body;
a first crescent shaped shoulder strap,
means securing the opposite ends of said shoulder strap to respective spaced support points of said holster body,
a second crescent shaped shoulder strap,
means connecting the ends of said second crescent shaped shoulder strap in the opposite underarm region of the wearer,
first broad area elastic means joining said first and second crescent shaped shoulder straps across the rear of the shoulders of the wearer below his collar,
second broad area elastic means joining said first and second crescent shaped shoulder straps across the back of the wearer,
said first and second joining means constituting the interconnection between said first and second crescent shaped shoulder straps;
said first and second crescent shaped shoulder straps and said first and second joining means defining a quadrilateral support structure for the holster capable of limited distortion with movement of the wearer while maintaining the holster and handgun therein in relatively stable position under the wearer's arm.

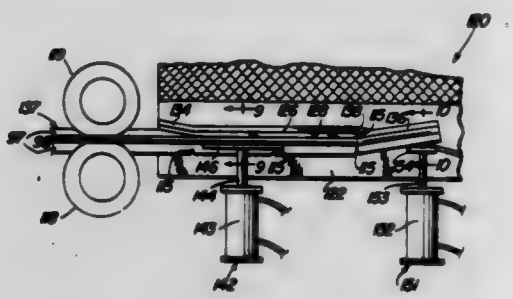
4,346,828
RAILROAD RAIL FRAGMENTING APPARATUS AND METHOD

Terrance V. Crawley, 30 Woodlawn Dr., Apt. A, Chattanooga, Tenn.

Filed Apr. 10, 1980, Ser. No. 138,974
Int. Cl.[3] B26F *3/00*
U.S. Cl. 225—2 14 Claims

1. Apparatus for fragmenting a rail having laterally outwardly extending base flanges, a wheel supporting head, and a web connecting said base flanges and said head, said apparatus comprising support means adapted to support said rail in an upright position so that the base flanges extend substantially horizontally, a pair of chisel members adapted to move in a plane extending generally transversely to said rail and into

engagement with the laterally outer side edges of the base flanges of said rail with sufficient force to insert a pair of laterally oppositely arranged notches in said flanges, the direction of movement of each of said chisel members being inclined at an angle of about 10 degrees above the horizontal when said



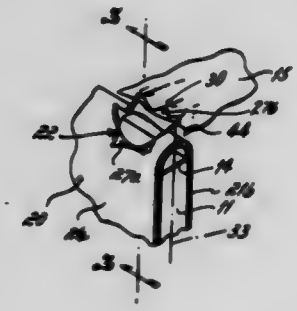
rail is supported in said upright position by said support means during notching, holding means adapted to engage a portion of said rail at one side of said notches and to prevent movement of said rail, and breaking means adapted to engage another portion of said rail at the other side of said notches and to bend said other portion until it breaks off.

4,346,829

ROLL DISPENSER CARTON

Daniel J. Myers, Cincinnati, Ohio, assignor to The Nivison-Weiskopf Co., Cincinnati, Ohio

Filed Sep. 2, 1980, Ser. No. 183,154
Int. Cl.³ B26D *1/02*
U.S. Cl. 225—48 **11 Claims**



1. A roll dispenser carton comprising

at least three panels joined one to the other in carton configuration, said carton being sized to receive a roll of sheet material therein, and said sheet material being withdrawable from said carton in a discharge direction, and

a cutting edge structure connected to at least one panel of said carton, said cutting edge structure comprising

a series of buds extending outwardly from said panel, each of said buds comprising at least leading and trailing petals adapted to engage sheet material unwrapped from said roll for tearing a desired length of sheet material off said roll, said plural buds being positioned along at least one phantom line disposed generally perpendicular to the discharge direction of said sheet material from said carton, at least some of said leading petals cooperating to permit tearing of said desired sheet length from said roll and at least some of said trailing petals cooperating to cause the free end of sheet material still wrapped on said roll to remain attached to said cutting edge structure after said desired length is torn off when said sheet material is one of a polyethylene film and a film produced from a copolymer of vinylidine chloride and vinyl chloride.

4,346,830

DISPENSER CARTON

Donald P. Hauser, Cincinnati, Ohio, assignor to The C. W. Zumbiel Company, Cincinnati, Ohio

Filed Apr. 14, 1980, Ser. No. 140,223
Int. Cl.³ B26D *1/02*
U.S. Cl. 225—49 **19 Claims**



1. A carton comprising

two adjacent panels joined one to the other at a corner, said panels being formed from a one-piece blank, said panels being angularly disposed relative one to the other to define a phantom corner line at said corner,

a fold section located at said corner of said panels, said fold section being defined by a score line in said one-piece blank, and

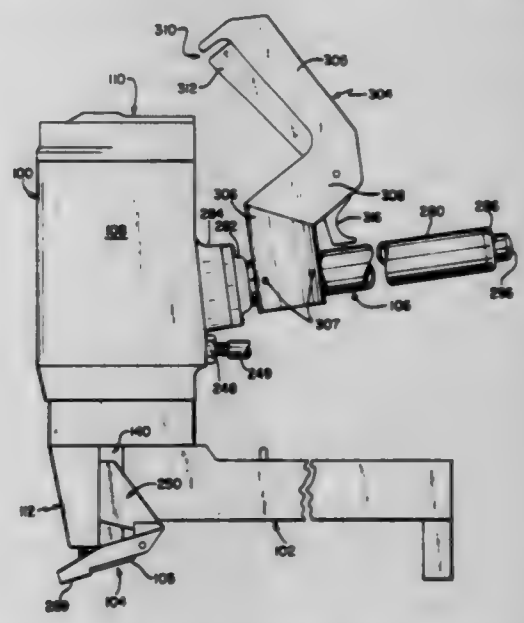
a cutting section located at said corner of said panels, said cutting section and said fold section being positioned generally in line one with another, said cutting section being formed from one of said panels by a cut line which extends completely through said one panel, said cutting section remaining integral with the other panel from which said cutting section was not formed, and said cutting section extending outwardly from said other panel beyond said phantom corner line.

4,346,831

PNEUMATIC FASTENING TOOLS

Harry M. Haytayan, Sunnyside La., Lincoln, Mass. 01773

Filed Jan. 9, 1980, Ser. No. 110,776
Int. Cl.³ B25C *1/04*
U.S. Cl. 227—8 **14 Claims**



1. In a fastener driving tool for holding and attaching parts to a workpiece, said tool comprising a driver and a parts holder attached to said driver;

said driver comprising a nozzle having a hammer travelway, means for positioning a fastener in said travelway, a hammer mounted for reciprocal movement along said travel-

way, a piston attached to said hammer, a cylinder slidably containing said piston, operating means for causing said hammer to move through a drive stroke and a return stroke along said travelway, said operating means comprising means including a control valve and means responsive to said control valve for selectively (a) applying a high pressure gas to one side of said piston so as to urge said piston to move said hammer through its drive stroke or (b) removing high pressure gas from said one side of said piston so as to permit said piston to move said hammer through its return stroke, and safety means for preventing said operating means from causing said hammer to move through its said drive stroke until said safety means is operated, said safety means comprising means including a safety valve for selectively (a) applying a high pressure gas to the other side of said piston so as to urge said piston to move said hammer through its return stroke or (b) removing high pressure gas from said other side of said piston so as to permit said piston to move said hammer through its drive stroke, said safety means comprising an actuating member arranged to operate said safety valve when said actuating member is depressed; and

said parts holder comprising a part support member adapted to support in the path of movement of said hammer a part intended to be fastened to a workpiece, and means movably supporting said part support member for movement toward and away from said nozzle so that when said part support member is engaged with a workpiece and moved toward said nozzle a selected amount, said actuating member will be depressed by said workpiece, said part support member or a part supported by said part support member, whereby said driver may be operated to drive a fastener out of said hammer travelway into a workpiece with said fastener penetrating the part held by said part support member as it is discharged from said travelway;

the improvement comprising a tool support member attached to and extending away from said housing; an operating rod slidably supported by said support member and adapted to engage and operate said control valve, force-transmitting means for moving said operating rod so as to engage and operate said control valve, and additional means for selectively preventing said operating rod from operating said control valve when said operating rod is moved by said force-transmitting means.

4,346,832

SNAP-LOCK CONTAINER

Jack R. Werner, 6500 Farralone, Canoga Park, Calif. 91304

Filed Jun. 24, 1977, Ser. No. 809,617

Int. Cl.³ B65D *3/00*

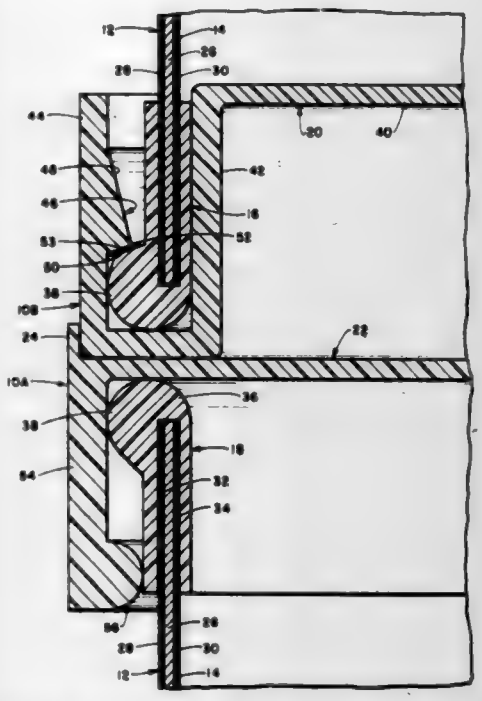
U.S. Cl. 229—4.5 **15 Claims**

1. A cylinder assembly with top and bottom ends which can be covered to form a closed container comprising:

a stiff, resilient, paperboard sheet with top and bottom edges and opposite ends, which includes inner and outer coatings of thermoplastic material;

at least one edge member disposed at at least one of said edges of said sheet, each edge member having a pair of legs lying against opposite faces of the sheet structure and a base portion connecting the legs, abutting said top or bottom edge and formed with a radially, outwardly extending bead;

said sheet structure being formed into a largely cylindrical shape by wrapping said coated sheet into cylindrical shape with the opposite ends overlapped so that the inner and outer coatings are in contact and said inner and outer coatings being thermally fused together at the overlapped sheet ends; and



each of said edge members being formed of thermoplastic material with the legs thereof thermally fused to the inner and outer thermoplastic coatings of said sheet structure.

4,346,833

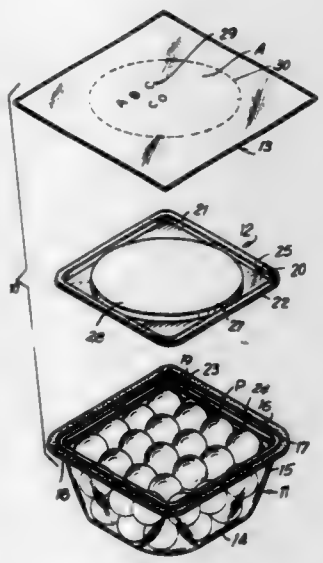
REPLACEABLE MULTIPLE SEAL PACKAGE

Daniel Bernhardt, P.O. Box 681, Rutland, Vt. 05701

Continuation-in-part of Ser. No. 175,367, Aug. 5, 1980, and Ser. No. 187,464, Sep. 15, 1980. This application Mar. 30, 1981, Ser. No. 248,996

Int. Cl.³ B65D *5/64, 43/00*

U.S. Cl. 229—43 **14 Claims**



1. A recloseable multiple seal package for food or the like comprising a container having a bottom and side wall portions extending upwardly from said bottom, the upper ends of said wall portions defining an open mouth portion, a laterally directed ledge member extending outwardly from the upper extremity of said side wall portions, a rim member extending upwardly from the outer extremity of said ledge member, and an outwardly directed perimetrical flange extending from the upper extremity of said rim, said flange and ledge being vertically offset, a cap member disposed in closing position of said mouth portion, said cap member including a depending skirt disposed within said container and frictionally engaging the inner faces of said side wall portions, a laterally outwardly directed shoulder extending from said skirt, said shoulder overlying said ledge member and having an upper surface in

substantial coplanar alignment with the upper surface of said flange, a raised table portion formed on said cap member within the area defined by said skirt, said table portion including an upper planar face portion in substantial coplanar alignment with said upper surface of said flange, a resilient closure film in registry with said flange, first and second substantially continuous perimetrical seal connections defined between said film and the said upper surface of said flange and said shoulder, respectively, and a central connection area defined between said film and said upper face of said table, said central connection area including means for securement of said film to said cap member, indicia means on the central area of said film in registry with said table, said securement means retaining the central area of said film on said table upon removal of the film from the cap.

4,346,834

THERMOPLASTIC CARRYING BAG WITH POLYOLEFIN RESIN BLEND

Ranjit Mazumdar, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 18, 1980, Ser. No. 208,092
Int. Cl.³ B65D *30/00*; B32B *27/00*
U.S. Cl. 229—54 R **8 Claims**



1. A thermoplastic polyolefin film having heat sealing properties and comprising a blend of

(a) 5 to 20 weight % high density copolymer of ethylene with about 1 to 10 weight % alpha-olefin having 6 to 8 carbon atoms (HDPE), and having a melt index of 0.2 to 2;

(b) 20 to 70 weight % linear low density copolymer of ethylene with 1 to 10 weight % alpha-olefin having 4 to 12 carbon atoms (LLDPE), and having a melt index of 0.2 to 2; and

(c) 20 to 70 weight % highly branched low density ethylene homopolymer (LDPE) having a fractional melt index of 0.5 to 0.9.

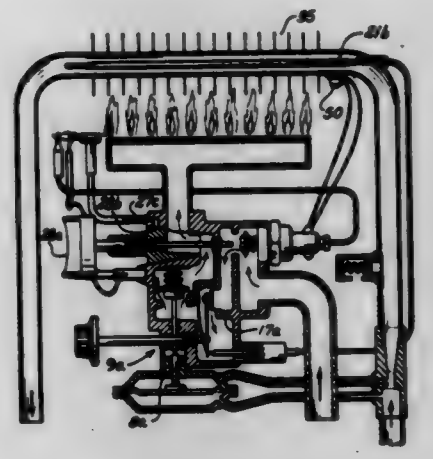
4,346,835

INSTANTANEOUS WATER HEATER GAS CONTROL VALVE

Albin Trotter, and Ursus Trotter, both of Karen 2908, Las Cruces, N. Mex. 88001

Filed Apr. 8, 1981, Ser. No. 252,218
Int. Cl.³ F28F *27/00*
U.S. Cl. 236—24 **5 Claims**

1. An improved water operated control valve for controlling and modulating the flow of gas to the burner of an instantaneous water heater, the control valve comprising a water controlled diaphragm actuator, and a multi-chamber gas valve assembly comprising a spring-biased valve means operated by a rod connected to a resilient diaphragm of the water controlled actuator and which separates the actuator into first and second chambers, said chamber being fluid connected respectively to the throat and inlet of a venturi-restrictor inserted in the water inlet duct of the water heater, and wherein the gas valve assembly comprises an inlet chamber connected to a gas duct, a first intermediate chamber connected to the inlet chamber by means of a thermostatic valve, a second intermediate chamber connected to the first intermediate chamber through a gas flow limiter operated by a settable temperature controller, and an outlet chamber separated from the second intermediate chamber by said spring biased valve means operated by



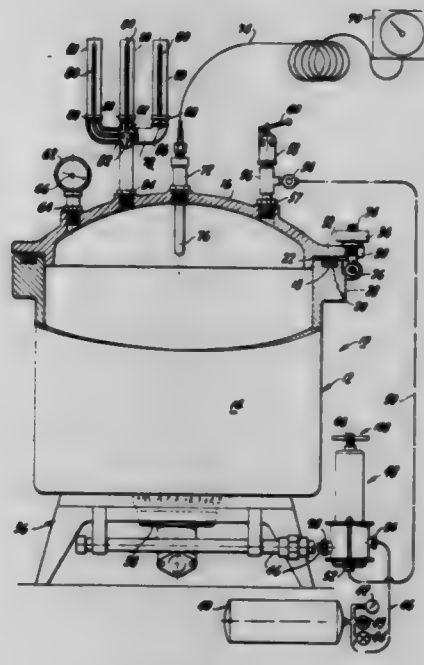
the rod connected to the diaphragm of the water controlled actuator.

4,346,836

PRESSURE COOKER CANNING UNIT

Louis F. Nagel, P.O. Box 1767, Oakland, Calif. 94604

Continuation of Ser. No. 814,729, Jul. 11, 1977, abandoned. This application Jan. 2, 1979, Ser. No. 178
Int. Cl.³ F22B *35/00*
U.S. Cl. 236—26 A **11 Claims**



1. A pressure cooking canning unit for canning with saturated steam pressure comprising in combustion:

a. a pressurizable retort;

b. a gas burner means arranged with said retort for providing a heating flame to said retort and generating a steam pressure within said retort, said gas burner means having a combustible gas supply for providing combustible gas from said gas supply to said burner means; and

c. control means for automatically modulating the flow of gas from said gas supply to said burner means in direct accord with the steam pressure within said retort, said control means comprising a diaphragm actuated regulator between said gas supply and said burner, said regulator having:

1. a core housing with first and second ends with a first diaphragm element sealing said first end of said housing, a second diaphragm element sealing said second end of said housing, connecting means for rigidly connecting said first and second diaphragm elements into a diaphragm assembly wherein said first and second diaphragm ele-

ments are displaceable in unison, a gas flow passage through said core housing between said first and second diaphragm elements wherein said gas passage has a gas chamber space in communication with said first and second diaphragm elements for equalization of gas pressures on said diaphragm elements, said gas flow passage having further an inlet in communication with said gas supply, said inlet having a constricted opening in said housing to said chamber space and an outlet from said chamber space in communication with said burner means, and, a single poppet having a base end seated on said first diaphragm element and a nose end positionable in said constricted opening in position to the direction of gas flow and displaceable therein on displacements of said diaphragm assembly whereby the effective size of the opening is varied according to said diaphragm assembly displacements;

2. an end housing coupled to said first end of said core housing constructed to form a steam pressure chamber in conjunction with said first diaphragm element opposite said gas chamber space, said end housing having a steam inlet in communication with said retort; and,

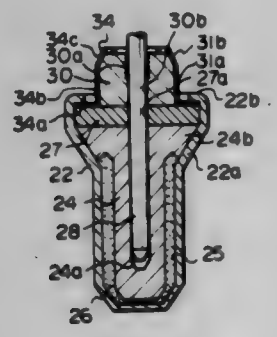
3. a spring housing coupled to said second end of said core housing with an internal spring element operably engaging said second diaphragm element opposite said gas chamber space, said spring housing having further spring compression adjusting means for adjusting the effective compression bias of said spring element as applied against said second diaphragm element.

4,346,837

THERMOSTAT FOR CONTROLLING THE FLOW OF COOLING WATER OF AN ENGINE

Masao Inagaki, Okazaki, and Shigeru Sato, Togoshi, both of Japan, assignors to Toyota Jidosha K.K., Toyota and Fuji-Thomson Co., Ltd., Togoshi, both of, Japan

Filed Jan. 27, 1981, Ser. No. 228,733
Claims priority, application Japan, Jan. 29, 1980, 55/8458[U]
Int. Cl.³ F01P 7/02
U.S. Cl. 236—34.5 11 Claims



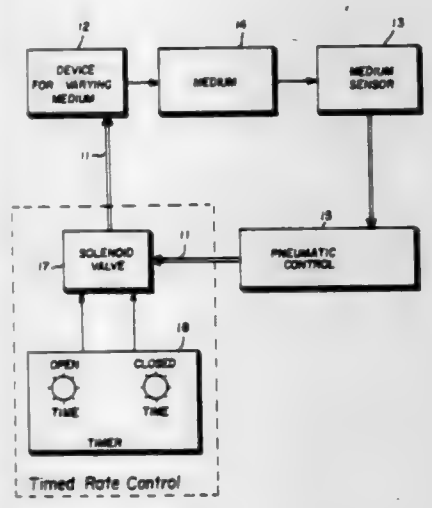
1. A thermostat arranged in a coolant passage of an internal combustion engine, said thermostat comprising a casing stationarily arranged in the coolant passage, a valve which normally shuts off the coolant passage, a wax container which contains therein an expansible wax sensitive to temperature and is connected to the valve, and a drive rod which has an inner portion slidably inserted into the wax container and has an outer portion projecting outwardly from an end face of said wax container and connected to the casing, the drive rod projecting due to the expanding operation of the wax for actuating the valve to open the coolant passage when the temperature of the coolant reaches a predetermined temperature, the improvement wherein said thermostat comprises a sealing sleeve made of an elastic material and having a hole through which the drive rod passes, and a generally hollow cylindrical spring cap enclosing said sealing sleeve and contacting an outer circumferential wall of said sealing sleeve for pressing an inner wall of the hole of said sealing sleeve onto the drive rod due to the spring force of said spring cap, the inner wall of the hole of said sealing sleeve having a plurality of triangular shaped projections formed thereon at a position remote from the end face of the wax container, and said sealing sleeve having an inwardly slanted circumferential wall located around said triangular shaped projections, said spring cap having a resilient inwardly slanted portion which resiliently contacts the inwardly slanted outer circumferential wall of said sealing sleeve for pressing said triangular shaped projections onto the drive rod due to the resilient force of said resilient inwardly slanted portion.

4,346,838

TIMED RATE PNEUMATIC CONTROL

William L. Mayo, 200 Lake Rd., E. Fork, Hamlin, N.Y. 14464

Filed Feb. 12, 1981, Ser. No. 233,874
Int. Cl.³ G05D 23/32
U.S. Cl. 236—46 R 14 Claims



1. A timed rate control for a system that includes a multiposition device for varying a medium, a sensor and a controller arranged for detecting variation in said medium and applying to said multiposition device a pneumatic pressure that varies as a function of the detected medium variation to adjust the position of said device to alter said medium, and a pneumatic line arranged for transmitting said variable pneumatic pressure from said controller to said multiposition device, said timed rate control comprising:

a. a solenoid valve operably arranged in said pneumatic line between said controller and said device;

b. said solenoid valve having a closed state blocking transmission of pneumatic pressure from said controller to said device and effectively holding said device in a position determined by pneumatic pressure in said pneumatic line between said device and said closed solenoid valve;

c. said solenoid valve having an open state opening said pneumatic line to apply said variable pressure from said controller to said device to adjust the position of said device as a function of air pressure from said controller during said open state of said solenoid valve;

d. a timer setable for variably determining both an interval for said closed state and an interval for said open state of said solenoid valve to establish a timed rate for controlling said multiposition device; and

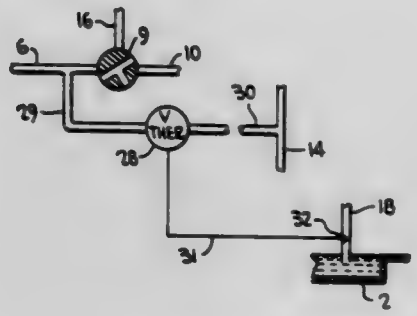
e. said timer being connected to said solenoid valve to operate said solenoid valve alternately in said closed state and open state intervals while said system operates to adjust the position of said multiposition device during said open state intervals and to hold an adjusted position of said multiposition device during said closed state intervals.

4,346,839

SYSTEM FOR HEATING THE SERVICE CABIN OF A MOTOR VEHICLE

Gottfried Moser, Gladbach, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 123,944
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928999
Int. Cl.³ B60H *1/02*
U.S. Cl. 237—12.3 R 2 Claims



1. A system for heating the service cabin of a motor vehicle having a work implement thereon for use such as in agriculture or earth moving, comprising a hydraulic pump for feeding oil under pressure from an oil reservoir associated with the vehicle and through an oil conduit system back to the reservoir, a hydraulic apparatus provided for operating the work implement being coupled into the oil conduit system for heating the oil passing therethrough, a throttling element having a fixed throttled cross-section coupled into the oil conduit system in parallel to said hydraulic apparatus for heating the oil passing therethrough, manually operable valve means in the oil conduit system upstream of said hydraulic apparatus and said throttling element for selectively valving the oil to said hydraulic apparatus and/or to said throttling element, a heat exchanger coupled into the oil conduit system downstream of said hydraulic apparatus and said throttling element for heating the service cabin area, said heat exchanger having an oil return line downstream thereof extending into the reservoir, the oil conduit system having a line by-passing said valve means and being connected upstream of said heat exchanger, a thermostatic valve in said by-pass line, and a thermostat operatively connecting said thermostatic valve and said return line from said heat exchanger for heat sensing the oil from said heat exchanger before reaching said oil reservoir, whereby the flow of oil may be selectively directed by operation of said manually operable valve means through said throttling element and/or through said hydraulic apparatus or only through said by-pass line depending on the temperature sensed by said thermostat for thereby regulating the temperature of said heat exchanger.

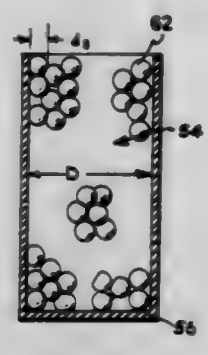
4,346,840

VOLATILE DISPENSING COMPOSITION AND METHOD

Laurel A. Gaiser, 2528 Fifth Ave., Sacramento, Calif. 95818, and Conrad J. Gaiser, P.O. Box 534, Zephyr Cove, Nev. 89448

Continuation-in-part of Ser. No. 742,560, Nov. 17, 1976, abandoned. This application Aug. 17, 1979, Ser. No. 67,340
Int. Cl.³ A61L *9/04*
U.S. Cl. 239—6 12 Claims

1. A method of providing a plurality of volatile-dispensing products of the same volatile-dispensing composition and bulk volume but with varied volatility which comprises adsorbing the volatile-dispensing composition onto a plurality of varied size range fractions of an inert solid adsorbent carrier of spherical or substantially spherical particles and packaging each of the resultant adsorbate-solid fractions of varied particle size range into containers having a cross-sectional diagonal at least



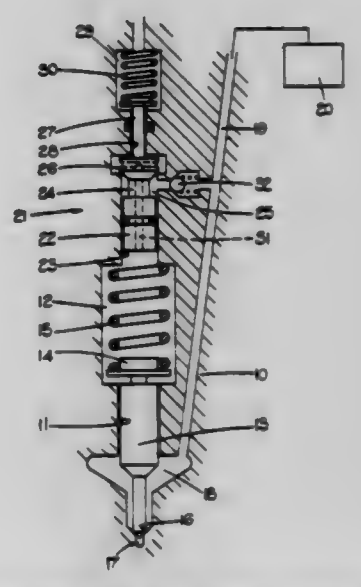
about 5 times the average particle diameter of said adsorbent particles.

4,346,841

FUEL INJECTION NOZZLE UNIT

Ivor Fenne, Greenford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 13, 1981, Ser. No. 224,696
Claims priority, application United Kingdom, Feb. 2, 1980, 8003564
Int. Cl.³ F02M *47/02*
U.S. Cl. 239—125 4 Claims

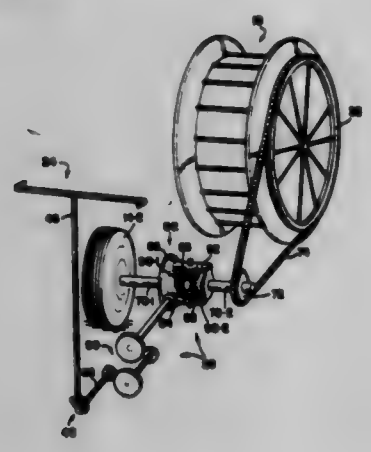


1. A fuel injection nozzle unit of the kind intended to supply fuel to a compression ignition engine and comprising a body defining a bore, a valve member slidable in the bore for controlling the flow of fuel through an outlet, resilient means loading the valve member in a direction to prevent flow of fuel through the outlet, said resilient means being located within a chamber defined in the body and into which fuel can leak from the working clearance defined between the valve member and the wall of the bore, means for draining fuel from said chamber the body defining an inlet for liquid fuel under pressure, the pressure of fuel in use, acting on the valve member to lift the valve member against the action of the resilient means, the means for draining fuel from said chamber comprising a relief valve including a valve element having one surface exposed to the pressure in the chamber and an opposing surface which is exposed to the pressure exterior of the nozzle unit, resilient means biassing the valve element to a closed position, the pressure in said chamber acting upon said one surface to move the valve element to an open position to allow fuel to flow to said fuel inlet and a non-return valve, through which the fuel flows to said inlet, the pressure required to move said valve element to the open position being greater than the sum of the maximum residual pressure at the fuel inlet when in use the delivery of fuel has ceased, and the pressure required to open the non-return valve.

4,346,842
IRRIGATION DEVICE AND A METHOD OF OPERATING SUCH DEVICE

Theunis C. Botha, Stettyn, Worcester, Cape Province, South Africa

Continuation-in-part of Ser. No. 10,933, Feb. 9, 1979, abandoned. This application Nov. 21, 1980, Ser. No. 209,203
Claims priority, application South Africa, Feb. 22, 1978, 78/1038
Int. Cl.³ B05B 3/18; A01G 25/09
U.S. Cl. 239—183 9 Claims

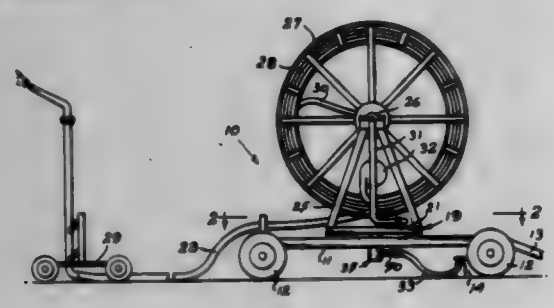


1. A self-propelled irrigation device which comprises:
a wheeled chassis having at least one drive wheel;
take-up means on the chassis for taking up a supply hose extending away from the device;
irrigation means on the chassis, connected or connectable in fluid flow communication with the supply hose;
drive means; and
differential drive transmission means comprising an input shaft connected to the drive means, and differentially-driven first and second output shafts, the first output shaft being connected to the drive wheel and the second output shaft being connected to the take-up means, whereby, in operation, drive from the drive means is apportioned differentially between the take-up means for taking up the hose and the drive wheel for propelling the irrigation device in the direction in which the hose extends away from the device.

4,346,843
PIVOTALLY MOUNTED HOSE REEL FRAME FOR IRRIGATION MACHINE

Z. Vance Long, and Elvin F. Barwick, both of Tarboro, N.C., assignors to Long Mfg. N.C., Inc., Tarboro, N.C.

Filed Jun. 30, 1980, Ser. No. 164,384
Int. Cl.³ B05H 75/00
U.S. Cl. 239—199 2 Claims

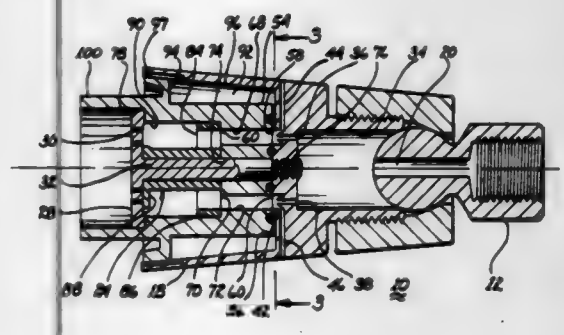


1. In an irrigation machine, a rotary union for use in a high pressure fluid line having a predetermined inner diameter comprising a body, said body including a ring member having an inner diameter which is at least substantially as large as the inner diameter of said fluid line and a bottom member, a plurality of post means disposed outwardly of the inner diameter of said fluid line and connecting said ring member to said bottom member in fixed spaced relationship with each other, sleeve means disposed about said ring member and said bottom member, seal means connecting said sleeve means to said ring member and said bottom member to permit said sleeve means to rotate relative to said body while substantially preventing the escape of fluid from said body, means for connecting a first portion of said fluid line to said ring member in axial alignment with the inner diameter thereof, and means for connecting a second portion of said fluid line to said sleeve means in a position to introduce fluid into said body between said ring member and said bottom member, whereby substantially no thrust load is applied to said rotary union so that said sleeve means is freely rotated relative to said body while fluid under pressure is passing through said union and the flow of fluid through said union is not restricted.

4,346,844
AERATED PULSATING SHOWER HEAD

Richard C. Harmony, Tucson, Ariz., assignor to Conservation Associates Incorporated, Newark, Del.

Filed Jan. 28, 1980, Ser. No. 116,226
Int. Cl.³ B05B 1/08, 1/18, 7/00
U.S. Cl. 239—383 9 Claims

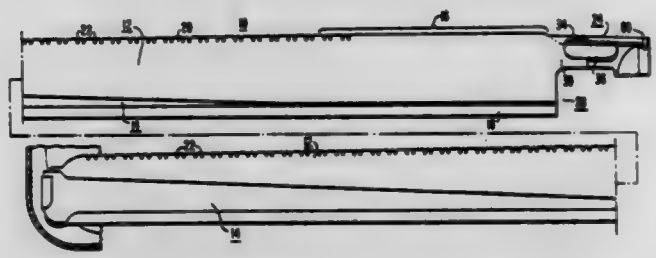


1. An aerated pulsating shower head connectable to a source of water under pressure, said shower head comprising in combination:
(a) an outer shell, said outer shell including a first chamber for receiving the water under pressure and a second chamber;
(b) a pair of diametrically opposed passageways disposed in said outer shell and interconnecting said first and second chambers, each of said pair of passageways including an outlet disposed in said second chamber;
(c) means for aerating the water flowing through at least one of said passageways;
(d) an inner shell disposed within said second chamber, said inner shell being positionally rotatable with respect to said outer shell, said inner shell including a third chamber;
(e) a pair of further passageways extending from said one end of said inner shell into said third chamber, each said further passageway including an inlet positionable coincident with an outlet of said pair of passageways in said outer shell;
(f) means disposed in said one end for directing a proportionate flow of water from at least one of said pair of passageways into said second chamber and through at least one of said further passageways into said third chamber, depending upon the relative rotational position of said inner shell with respect to said outer shell;
(g) a rotor rotatably mounted within said third chamber, said rotor being rotationally responsive to the flow of water through said further passageways into said third chamber;
(h) a disc having a pattern of discharge ports for discharging water from said third chamber;
(i) a chopper operatively associated with said rotor for intermittently terminating water flow through some of said discharge ports to produce a pulsating water spray; and
(j) a plurality of grooves interconnected with said second chamber for discharging water as a spray from said second chamber.

4,346,845
GAS BURNER

Alfred Meyerhoff, Hempfield Township, Westmoreland County; John C. Kastovich, Murrysville; James A. Richard, Monroeville, all of Pa., and Richard J. Vales, Elyria, Ohio, assignors to York-Luxaire, Inc., Elyria, Ohio

Filed Aug. 7, 1980, Ser. No. 175,973
Int. Cl.[3] F23D *15/00*
U.S. Cl. 239—418 4 Claims



1. In combination:

a one-piece gas burner member formed of a single, monolithic metal sheet, said member including a tubular portion with an upstream, generally open gas and primary air receiving end, an opposite closed end, and port means in the upper portion of a part of said tubular portion;

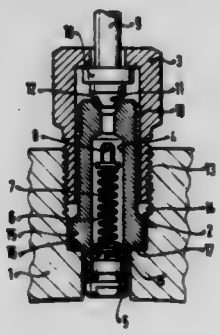
the upstream portion of said member being of generally cylindrical shape in cross section for at least a minor part of the length of said tubular portion and including at the upstream end of said upstream portion a shaped part which is downwardly open from about the horizontal mid-plane of said cylindrical shape, the upper quadrant walls of said shaped part including at least one opening therein for the admission of part of the inlet air to said member, said shaped part having a downwardly-open, saddle-shaped, upstream end adapted to be received on the circumference of a gas spud; and

a primary air shutter of substantially uniform cylindrical shape throughout a major portion of its length and of a circumferential inner dimension to telescopically fit around said cylindrical shape of said upstream portion of said member and around said shaped part, said shutter having a converging tube-shaped entry at its upstream end through which primary air is admitted to said member, said shutter being longitudinally slidable to vary the admission of said primary air.

4,346,846
FUEL INJECTION NOZZLE

Ewald Eblen, Stuttgart, and Karl Hofmann, Remseck, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 42,259, May 24, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,714
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2826038
Int. Cl.[3] F02M *61/16*
U.S. Cl. 239—533.3 9 Claims

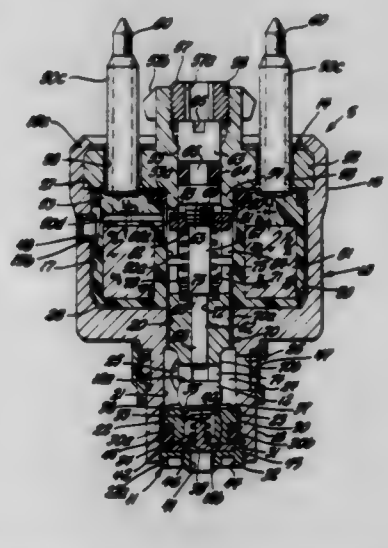


1. Fuel injection nozzle having a fuel inlet end and a fuel injection end for internal combustion engines arranged to be supported in a bore of the internal combustion engine, further including a nozzle holder, said nozzle holder including an axially aligned bore therein and extraction means on its upper extremity for removal of said nozzle holder from said bore of said internal combustion engine, said extraction means including at least one groove in said upper extremity, a preassembled valve module secured in the bore of said nozzle holder from the injection side of said injection nozzle and an exteriorly threaded cap for clamping a fuel feed line to said nozzle holder, further wherein said internal combustion engine bore is threaded and arranged to receive said exteriorly threaded cap whereby said fuel feed line is clamped to said nozzle holder in an end-to-end pressure-tight fit and said nozzle holder is locked in said bore of said internal combustion engine.

4,346,847
ELECTROMAGNETIC FUEL INJECTOR WITH ADJUSTABLE ARMATURE SPRING

Paul Rissi, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 21, 1980, Ser. No. 170,734
Int. Cl.[3] F02M *51/06*
U.S. Cl. 239—585 2 Claims



1. An electromagnetic fuel injection valve having a housing with a solenoid pole piece defining a generally cylindrical bore within which an armature is positioned at one end thereof for opening and closing movements to open and close a fuel discharge passage, a spring in said bore effective at one end to bias the armature in a direction to close the fuel discharge passage, adjustable stop elements seating against the other end of said spring, said stop elements including a nut having an annular face in engagement with the spring and noncircular confirmations extending outboard said face, said housing defining axially oriented slots receiving said conformations and restraining the nut against rotation, a guide pin extending axially of and telescoped with said bore, said spring and said armature and threadedly receiving the nut, said guide pin having an externally accessible driver-receiving head, said guide pin further having an abutment shoulder engageable with the armature whereby to fix the extent of armature movement in the spring compressing direction and an abutment screw adjustably threaded in said bore of said housing for abutment against said head of said guide pin whereby to retain said guide pin against axial movement in one direction.

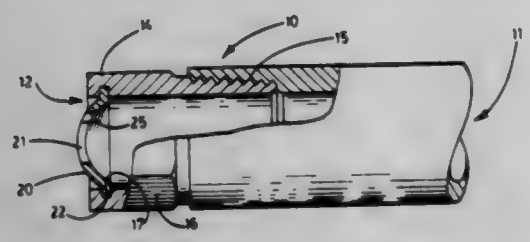
4,346,848
NOZZLE WITH ORIFICE PLATE INSERT

William R. Malcolm, 2281 N. Piedra Rd., Sanger, Calif. 93657

Continuation of Ser. No. 74,722, Sep. 12, 1979, abandoned, which is a continuation of Ser. No. 930,904, Aug. 4, 1978, abandoned. This application Oct. 29, 1980, Ser. No. 201,708
Int. Cl.[3] B05B *1/02*
U.S. Cl. 239—596 6 Claims

1. An orifice plate for a sprinkler having a nozzle for release of a fluid stream from the sprinkler along a prdetermined

substantially straight path, the orifice plate comprising a member having a concave surface, a periphery dimensioned to permit the member to be mounted on the nozzle transversely of the predetermined path with said concave surface facing inwardly of the sprinkler and an orifice extending through the member in a position to be substantially centrally disposed with respect to the predetermined path when the member is



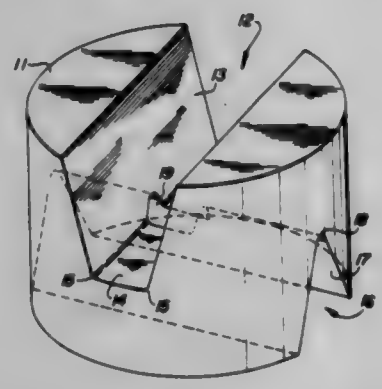
mounted on the nozzle, the orifice having a periphery with at least three angular corners arranged in a pattern extending radially away from and substantially symmetrical to said path to break away outer portions of the fluid stream from the main body of the fluid stream for precipitation nearer to the sprinkler than the fluid of said main body of the fluid stream without substantially reducing the range of the sprinkler.

4,346,849

AIRLESS SPRAY NOZZLE AND METHOD OF MAKING IT

Alvin A. Rood, Oberlin, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Jul. 19, 1976, Ser. No. 706,361
Int. Cl.³ B05B *1/00*
U.S. Cl. 239—597 **42 Claims**



1. An airless spray nozzle comprising a tip having an orifice formed by a first groove on a first side of the tip, with side walls which make the groove substantially wedge-shaped at the bottom; and

an interpenetrating second groove on a second side of the tip opposed to the first side, said second groove being substantially trapezoid shaped with a substantially flat bottom and with side walls angled away from the bottom of said second groove;

wherein the spray tip produces a flat fan spray pattern of liquid when the tip is connected to a source of fluid under pressure.

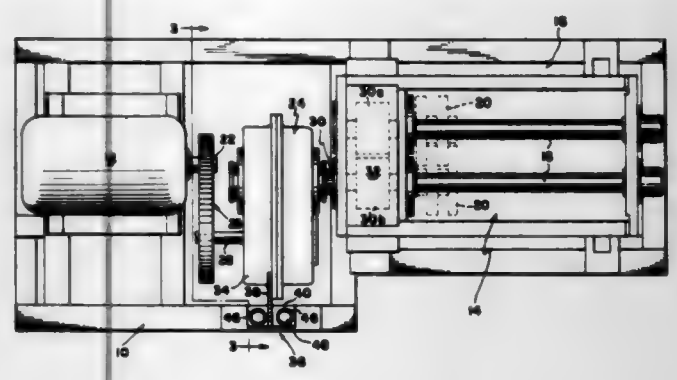
4,346,850

SHREDDING MACHINE INCORPORATING A TORQUE CUSHIONING ASSEMBLY

Carl Westergaard, Palatine, Ill., assignor to Mitts & Merrill Inc., Saginaw, Mich.

Filed Aug. 18, 1980, Ser. No. 179,068
Int. Cl.³ B02C *18/20*
U.S. Cl. 241—36 **6 Claims**

1. In a shredding machine having a frame defining a shredding chamber, rotatable comminuting mechanism having knife means mounted in said chamber and operable when rotated to shred material fed into said chamber, drive means including a reversible drive motor operatively coupled to said comminuting means, and torque responsive means for reversing the direction of rotation of said drive motor in response to an overload on said comminuting means; the improvement wherein said drive means comprises drive transmission means drivingly coupling said motor to said comminuting means, said



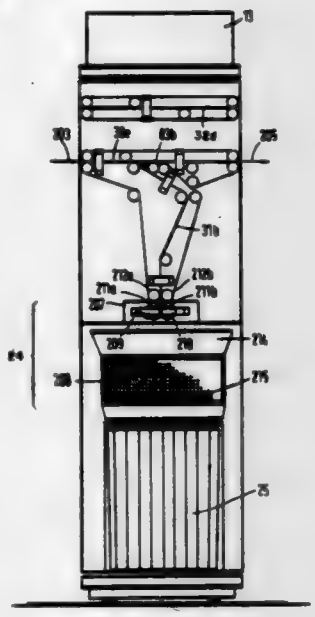
transmission means including a casing, a first rotatable shaft projecting from said casing, said first shaft being rotatably journaled in said frame and coupled to said comminuting means to constitute the drive shaft therefor, and resilient means mounted on said frame and engaged with said casing for resiliently resisting rotative movement of said casing bodily relative to said frame about the axis of said first shaft.

4,346,851

DEVICE FOR AUTOMATICALLY SHREDDING THIN SHEETS

Herbert Bernardi, Haag, and Gerd von Aschwege, Munich, both of Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft für Automation und Organisation mbH, Fed. Rep. of Germany

Division of Ser. No. 867,011, Jan. 5, 1978, Pat. No. 4,236,639.
This application Jan. 24, 1980, Ser. No. 115,120
Claims priority, application Fed. Rep. of Germany, May 1, 1977, 2729830
Int. Cl.³ B02C *4/42*
U.S. Cl. 241—159 **6 Claims**



1. In a device for shredding thin paper sheets, such as bank notes, which sheets have been sorted out in an automatic sorting device in which the individual sheets are withdrawn from a stack, are tested for a plurality of criteria and are assigned to certain sorting classes, depending on the test results, one of these sorting classes being that of genuine bank notes which are no longer fit for circulation, an improvement comprising:

a housing having an inlet opening for sequentially receiving the sheets and an outlet opening;

means within said housing for transporting the sheets

through a first feed path between said inlet and said outlet openings;

conveyor means movably mounted in said housing having one end disposed along said first path for selectively receiving and directing sheets through a second path to an opposite end of said conveyor means, said conveyor means having end rollers at its opposite end;

sorting means connected to said means for transporting the sheets for selecting sheets to be received by said conveyor means;

a pair of shredding cylinders rotatably mounted in said housing in parallel along said second feed path and at a location spaced from said opposite end of said conveyor means, said pair of shredding cylinders defining a nip therebetween for receiving the sheets directed by said conveyor means and shredding the sheets;

drive means connected to said conveyor means for driving said conveyor means; and

bridging elements connected between said pair of shredding cylinders and said conveyor means and rollers for confining and establishing a closed continuous transition in said second feed path between said conveyor means and said nip;

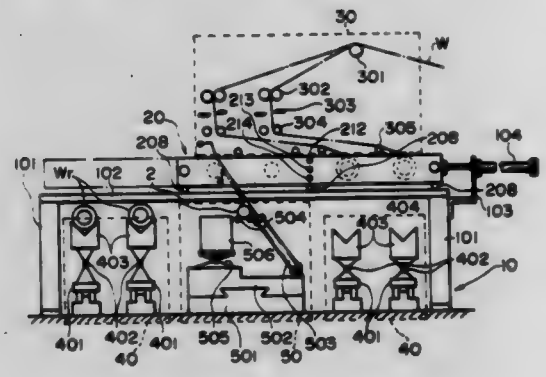
said drive means of said conveyor means operable to also drive said shredding cylinders.

4,346,852

WEB WINDING DEVICE

Ken Kawada, and Kazumasa Harada, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 24, 1980, Ser. No. 200,358
Claims priority, application Japan, Oct. 26, 1979, 54-13854
Int. Cl.³ B65H *35/02, 19/04*
U.S. Cl. 242—56.2 7 Claims



1. A web winding device for continuously winding web segments produced by slitting a web comprising:

a stationary frame;

a first web winding and product discharging station, a core supplying and web attaching station, and a second web winding and product discharging station arranged side-by-side in said stationary frame in the stated order; and

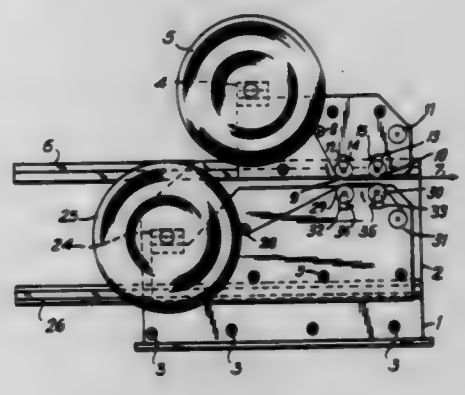
a winding unit having two web winding means which are coupled together extending in the longitudinal direction of said web, each of said web winding means being adapted to hold a core for a corresponding one of said web segments and to rotate said cores to cause said web segments to be wound thereon, said winding unit being reciprocatably mounted on said stationary frame in such a manner that said winding unit is reciprocatable over said stations.

4,346,853

UNWINDING MACHINE

Romano Stefanoni, Via Fiume 10, Nova Milanese (Milano), and Eliseo Annoni, Via Fratellanza 4, Bollate (Milano), both of Italy

Continuation-in-part of Ser. No. 70,824, Aug. 29, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,560
Int. Cl.³ B65H *19/18, 19/20*
U.S. Cl. 242—58.1 10 Claims



1. An unwinding machine for adhesive tapes comprising a frame, two rotatable tape reels on said frame for successive unwinding of tape therefrom, a driving launching roller for each reel, one reel being unwound by pulling on the tape from a location outside the machine while the other reel serves as a spare and is at rest, the driving launching roller associated with the spare reel being operated to engage the end of tape therefrom to unwind the tape from the spare reel when the tape on said one reel is approaching the end thereof, first and second rollers for each reel adjacent the path of the tape from the respective reel to the location outside the machine, said first and second rollers for the reels defining two opposed straight travel sections, and cutting means with eccentric pressing members associated with said first and second rollers such that the cutting means associated with the first roller of the reel being unwound and the cutting means associated with the second roller of the spare reel are simultaneously operated when the speeds of the two reels are the same to cause the tape from the reel being unwound to be cut while the tape leading to the launching roller from the spare reel is cut while simultaneously the cut end of the tape from the spare wheel is joined to the cut end of the tape extending to the location outside the machine, the joinder being effected in said travel section by said eccentric pressing members.

4,346,854

PRINTER PAPER TAKE-UP AND STORAGE DEVICE

Lawrence W. Markus, Lake Bluff; George Smejkal, Mt. Prospect, and Melvin A. Lace, Prospect Heights, all of Ill., assignors to Extel Corporation, Northbrook, Ill.

Filed Oct. 24, 1980, Ser. No. 200,603
Int. Cl.³ B65H *17/02, 25/22, 75/18*
U.S. Cl. 242—67.1 R 7 Claims

1. In a paper take-up and storage device adapted for use with a printer of the kind employing a paper web as a record medium, the printer including a paper drive for advancing the record-bearing paper web out of the printer, and requiring the paper drive to effect a reverse movement of a limited length of the web back into the printer for a given printer operating condition, the take-up and storage device comprising:

a paper web storage reel;

a reel drive motor for rotating the reel;

a control switch connected in an energizing circuit for the motor;

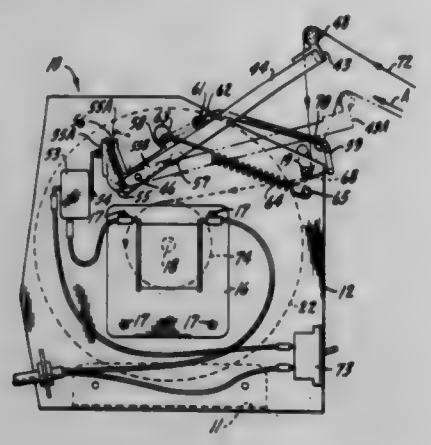
a guide bail, extending transversely of the reel in position to engage the paper web ahead of the reel, the bail being pivotally movable from a home position into a range of deflected positions in response to take-up of the web onto the reel;

bail bias means urging the bail towards its home position;

and an actuator lever aligned with the bail and the control switch and pivotally movable from a take-up position, in which the actuator lever effectively actuates the control switch to energize the motor, to a range of inactive positions in which the actuator lever effectively actuates the control switch to de-energize the motor in response to positioning of the bail in its deflected position range;

the improved construction comprising:

actuator bias means linking the actuator lever and the bail and biasing the switch actuator lever toward engagement with the bail for movement therewith;



a paper presence sensor arm aligned with the actuator lever and positioned to engage the web adjacent the reel, the presence sensor arm being movable, by the web, from a no-paper position, in which it holds the actuator lever in its range of inactive positions independently of the position of the bail, to a paper-present position in which the sensor arm is effectively released from the actuator lever so that the lever follows the bail;

and paper presence bias means biasing the presence sensor arm toward its no-paper position;

essentially the only force opposing reverse movement of the web through said limited length being a limited bias force applied to the bail by the bail bias means.

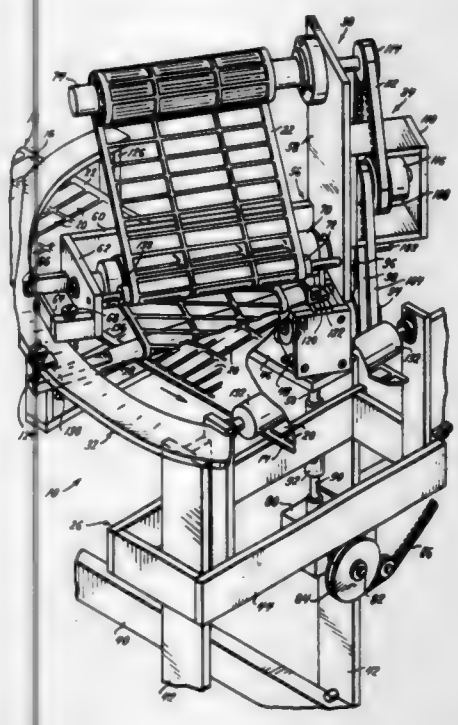
4,346,855

STRIPPING METHOD AND APPARATUS FOR THE PROCESSING OF A CONTINUOUS LAMINATED WEB

Frank M. Biggar, III, Lakeview, N.Y., assignor to Elizabeth S. Biggar, Hamburg, N.Y.

Filed Jul. 24, 1980, Ser. No. 172,026
Int. Cl.³ B65H *17/02, 17/20, 27/00*
U.S. Cl. 242—67.2 **43 Claims**

1. In a machine for the processing of a continuous laminated web, such as in the production of labels and the like, where the laminae is die cut to define a matrix portion to be separated from a substrate, a stripper apparatus for separating the matrix from the substrate as the web travels, said apparatus compris-



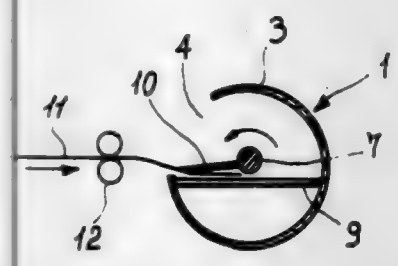
ing: means for separating the matrix at a skewing angle relative the web, as the web travels.

4,346,856

DEVICE FOR AUTOMATIC REWINDING OF MATERIAL DELIVERED IN SHEETS IN HELIOGRAPHIC AND SIMILAR MACHINES

Fausto Paietta, Bareggio, Italy, assignor to C.M.E. F. Lli Paietta, Bareggio, Italy

Filed Oct. 28, 1980, Ser. No. 201,612
Claims priority, application Italy, Oct. 30, 1979, 26919 A/79
Int. Cl.³ B65H *75/28*
U.S. Cl. 242—74 **11 Claims**



1. Device for the automatic rewinding of material delivered in sheets in heliographic and similar machines, particularly for heliographic machines for textile industries, comprising:

at least one winding member mounted for free rotation about an axis, said winding member comprising a substantially cylindrical hollow casing presenting a substantially C-shaped cross section and defining a lengthwise slot extending along substantially the entire length of said hollow casing; and

a motor-driven shaft mounted within said hollow casing coaxially with the axis of said winding member and provided with suitable means for securing the leading edge of a sheet to be rewound to said hollow casing after insertion of said sheet through said slot, said shaft, after securing of the leading edge, pulling round said hollow casing, in order to wind the sheet around the casing, said shaft extending substantially all along the entire length of said hollow casing, said means for securing the leading edge comprising a plurality of radial tabs fitted onto said shaft at intervals along the length of the aforesaid shaft, said shaft and tabs being rotatable within said hollow casing, corresonding elements being provided within said hollow

casing for cooperating with said tabs to secure said leading edge between the tabs and said corresponding elements.

4,346,857

FISHING REEL

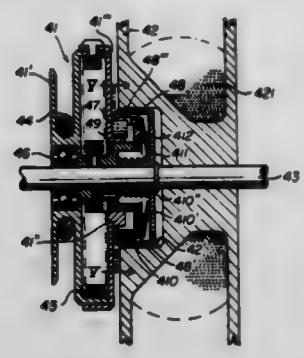
Robert Moll, Chesserex, Switzerland, assignor to Etablissement Liotte Representations Etrangeres, Vaduz, Liechtenstein

Filed Mar. 25, 1980, Ser. No. 133,921

Claims priority, application Switzerland, Mar. 29, 1979, 2896/79

Int. Cl.³ A01K *89/00*

U.S. Cl. 242—84.3 2 Claims



1. A fishing reel comprising a rotatable line drum and actuating means for rewinding the fishing line onto said drum, said actuating means comprising an actuating pulley on which a flexible cable is wound, said flexible cable being adapted to allow manually pulling the same to rotate said pulley, a return device coupled to said pulley for rotating the same back into a rest position subsequently to said pulling of said cable, and a unidirectional clutch device adapted to temporarily couple said actuating pulley to said line drum for rewinding the cable, said clutch device further comprising a radially extending cam member secured to said actuating pulley, a hollow member secured to said line drum having a cylindrical inner surface coaxially surrounding said cam member, at least two rollers freely placed on the peripheric surface of said cam member and roller guiding means for maintaining said rollers in parallel relationship with the axis of said line drum and in substantially constant spacing from each other, the shape and the dimensions of said cam member and the respective diameter of said cylindrical surface of said hollow member and of said rollers being adapted to cause the rollers to take up a wedging position for coupling said actuating pulley to said line drum when the cam member is rotated in a first direction, and to cause the rollers to move into an inoperative position, allowing free rotation of said line drum, when the cam member is rotated in the second, i.e. opposite direction, said clutch device further comprising a cylindrical spring member arranged in the space between said rollers and said cylindrical inner surface of said hollow member, so as to contact said hollow member only in the coupled state of the clutch device, said cylindrical spring member having a supporting member adapted to maintain the same in coaxial relationship with respect to the line drum and to prevent rotation of said cylindrical spring member except in the direction in which the coupling occurs.

4,346,858

EXTERNAL RELEASE FOR REDUCED TENSION MECHANISM

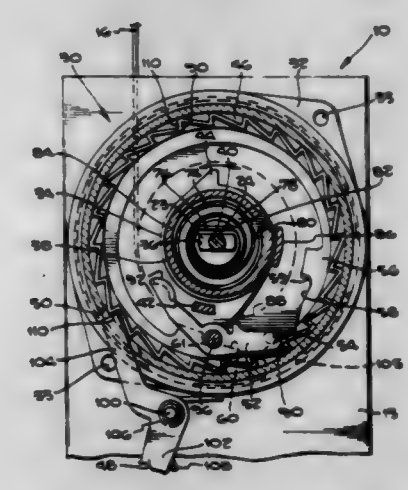
William M. Hollowell, Pacific Palisades, and Avraham Ziv, Sepulveda, both of Calif., assignors to American Safety Equipment Corporation, San Fernando, Calif.

Filed Jun. 30, 1980, Ser. No. 164,843

Int. Cl.³ A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107 6 Claims

1. In a dual tension safety belt retractor including a frame having a frame side wall, a shaft rotatably mounted on the frame, a belt storage reel connected to the shaft, said shaft having an end protruding through the frame side wall, a retraction mechanism mounted to apply a power rewind bias and low tension rewind bias to said reel via said shaft, said retraction mechanism including a housing having an inner annular surface defining inwardly facing teeth, a pawl associated with said shaft and engageable with said teeth to block out said power rewind bias wherein the improvement comprises:



means for selective annular rotation of said housing inner annular surface relative said housing whereby said power rewind bias may be applied to said shaft when said pawl is engaged with said teeth.

4,346,859

TAPE RECORDER

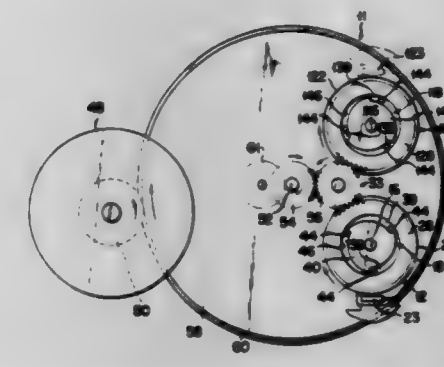
Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 142,243

Claims priority, application Japan, May 2, 1979, 54-59087[U]; May 2, 1979, 54-59088[U]

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—201 5 Claims



3. In a tape recorder which comprises a reel mechanism capable of transmitting a drive force from a drive disk to a driven disk through a one-way clutch provided with vortically shaped notches and balls loosely slidable through the notches, the reel mechanism including a reel rest and a reel shaft,

the improvement wherein:

the drive disk comprises a reel gear;

the balls of the one-way clutch are made of magnetically attractable material;

a magnetic member is provided for magnetically attracting the balls of the one-way clutch so that the balls are always pressed against the reel gear;

the magnetic member comprising a magnetic ring which is fitted to the reel rest rotatable with the reel shaft of the reel mechanism, the magnetic ring having on the surface thereof S and N poles which are alternately provided in the circumferential direction of the magnetic ring;

a magnetism-sensitive element is provided and is set closely adjacent to the magnetic ring and which generates pulses at a fixed period when detecting variations in the magnetic

force of the magnetic ring when the magnetic ring rotates with the reel shaft of the reel mechanism; and

a tape counter is coupled to count the pulses generated by the magnetism-sensitive element.

4,346,860

VANE FAIRING FOR INERTIAL SEPARATOR

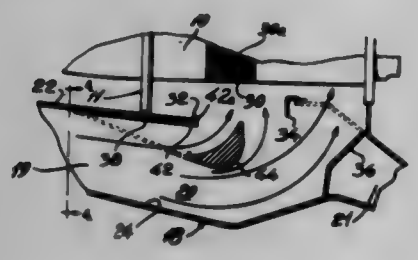
Donald J. Tedstone, St. Lambert, Canada, assignor to Pratt & Whitney Aircraft of Canada Limited, Longueuil, Canada

Continuation-in-part of Ser. No. 58,425, Jul. 18, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,453

Claims priority, application Canada,

Int. Cl.[3] B64D *33/02*; F02G *3/00*

U.S. Cl. 244—53 B 6 Claims



1. An air duct assembly for a gas turbine engine, wherein the engine has a longitudinal axis and an air intake open in a lateral direction, the air duct having an inlet and an outlet extending substantially parallel to the longitudinal axis of the engine and adjacent to the engine in the area of the air intake, an opening defined in a first wall of the air duct communicating with the engine air intake, the air duct having a pair of side walls and a second wall opposite said first wall, a deflecting flap hinged to the first wall of the air duct upstream of the opening and extending rearwardly relative to the inlet, the air deflecting flap having a trailing edge and the flap being movable between a first position wherein the flap is against the first wall of said air duct and the trailing edge of the flap is adjacent the opening, and a second position wherein the flap extends over a part of the cross-section of said air duct with a trailing edge being substantially midway between the first and second walls of the air duct thereby reducing the cross-section of the air passage, a fairing attached to and extending between the side walls of the air duct, the fairing having a leading edge and a trailing edge with the leading edge being located immediately downstream of the trailing edge of the deflecting flap when the deflecting flap is in its second position, the fairing having an airfoil shape with a high pressure concave surface and a low pressure convex surface extending between the leading edge of the trailing edge of the fairing and shaped such that the leading edge portion of the fairing is in the direction of the longitudinal axis of the air duct while the trailing edge portion of the fairing is in the direction of the air intake of the engine, the leading portion and the trailing portion of the fairing having flat surfaces merging with the convex surface thereof such that the angle defined by the flat surfaces of the leading and trailing portions of the fairing is an acute angle, whereby the fairing will divert air into the intake whether the deflecting flap is in the first position or the second position.

4,346,861

APPARATUS FOR HANGING A PROPULSION UNIT ON AN AIRCRAFT CELL, TOOLING AND PROCESS FOR USING SAME

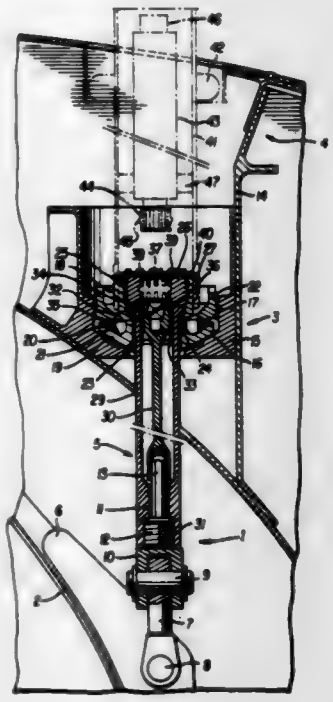
Paul J. Legrand, Vaux le Penil; Michel L. Dubeau, Dammarie les Lys, and Guy R. Pachomoff, Corbeil-Essonnes, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", Paris, France

Filed Apr. 7, 1980, Ser. No. 137,916

Claims priority, application France, Apr. 9, 1979, 79 09396

Int. Cl.[3] B64D *27/00, 29/00*

U.S. Cl. 244—54 8 Claims



1. Apparatus for hanging an engine propulsion unit on an aircraft cell, enabling setting of an engine attachment through a small recess provided in the cell, consisting of only three assemblies: first and second assemblies permanently respectively fixed to the engine and cell, and a third liaison assembly comprising two at least partially cylindrical and coaxial parts connecting only said first and second assemblies, wherein said second assembly forms an articulation and said articulation of the second assembly includes an axial passage enabling at least partial introduction of said liaison assembly through said recess of said cell, whereby said engine is both suspended and centered by said third assembly.

8. A process for hanging an engine propulsion unit on an aircraft cell through a small recess in said cell, by means of first and second assemblies respectively permanently fixed to the engine and cell, and a third liaison assembly connecting said first and second assemblies, said second assembly having an axial passage therein, wherein said method comprises:

positioning said engine vertically beneath said cell with said first assembly being vertically aligned;

engaging a guide tube tool passing through said recess of said cell to a first element of said second assembly to rotationally lock said guide tube; utilizing a first spanner tool to introduce a first part of said liaison assembly through said guide tube and said axial passage, and to lock said first part of said liaison assembly between said first element of said second assembly and a shaft of said first assembly;

tightening said first part of said liaison assembly on said shaft of said first assembly whereby said engine is raised toward said cell;

utilizing a second spanner tool to introduce a second part of said liaison assembly through said guide tube and said axial passage, and to position one end of said second part of said liaison assembly over a rotational blocking portion of said shaft of said first assembly;

utilizing said second spanner tool to introduce a locking part of said liaison assembly through said guide tube and lock-

ing said locking part to said first element of said second assembly with slight overtightening therebetween;

withdrawing said second spanner tool and said guide tube tool; and

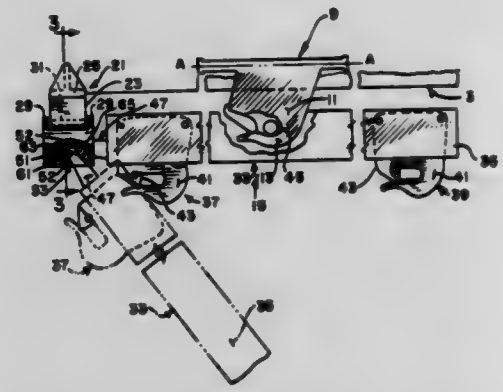
utilizing an elastic element to block rotational movement between said locking part and said first part of said second assembly.

4,346,862

DUAL LOAD POINT EXTERNAL LOAD SUSPENSION IMPLEMENT

Ernest H. Richburg, Hamden, Conn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 2, 1981, Ser. No. 230,768
Int. Cl.[3] B64C *1/08*
U.S. Cl. 244—137 R 4 Claims



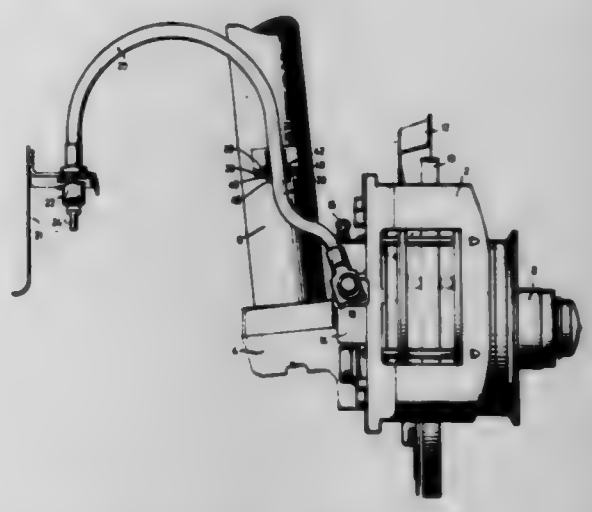
1. In an aircraft, such as a helicopter or the like, having a support structure and a single point external loads attachment hook means, said aircraft hook means being pivotal about an axis parallel to the longitudinal axis of said aircraft and being selectively operable between a first position in which a load is securely held thereby and a second position in which said load may be selectively released, wherein the improvement comprises: a dual point suspension implement adapted to be secured to said aircraft and to support an external load by means of two load suspension points spaced longitudinally from one another on said dual point suspension implement, said suspension implement comprising a carriage support secured to said aircraft support structure forwardly of said aircraft hook means, said carriage support extending laterally with respect to said aircraft and comprising a curved track member having its radius of curvature substantially coincident with said pivot axis of said aircraft hook means, said implement further comprising a carriage, the latter having a plurality of rollers, said rollers being engageable with said curved track whereby said carriage is free to move along said curved track in arcuate fashion with respect to said pivotal axis of said aircraft hook means whereby said implement is free to swing relative to said aircraft relative to said pivot axis, and a main body extending longitudinally of the aircraft below said support structure, means carried by said main body for engagement with said aircraft hook means, said main body further having said two external loads suspension points spaced from one another therealong in longitudinal direction of said aircraft, said means for engaging said aircraft hook means being intermediate said two external loads suspension points, said main body further having means at the front of said main body for engagement with said carriage, said carriage engagement means upon selective actuation of said aircraft hook means from its first to its second position permitting said main body to swing downwardly from a load carrying position in which said main body is substantially parallel to the longitudinal axis of said aircraft to a release position in which said main body angles downwardly relative to said aircraft longitudinal axis and pivots about said carriage engagement means and in which said carriage engagement means separates from said carriage allowing said main body and any external load carried thereby to fall free of said aircraft.

4,346,863

ATTACHMENT DEVICE FOR A BRAKE HOSE

Günther Zeiträger, Hattersheim; Gerhard Krause, Flörsheim, and Herbert Guthmann, Bischofsheim, all of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 17, 1980, Ser. No. 197,894
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004421
Int. Cl.[3] A62C *23/04*
U.S. Cl. 248—75 5 Claims



1. In a vehicle wheel brake installation wherein the wheel brake assembly is suspended with the wheel to be braked at a resilient strut to permit movement thereof relative to the vehicle body which is controlled and limited and wherein a flexible brake hose has one end attached to the vehicle body and the other end secured to the wheel brake assembly, the improvement for securing said brake hose in said installation comprising:

a device attaching an intermediate portion of the brake hose to a portion of the resilient strut in a motionally responsive manner, said device including a sleeve connected to the brake hose so as to be axially and rotationally fixed with respect thereto to a connection point thereon located at a distance along the brake hose from the securing point of said other end of the brake hose to the wheel brake assembly which is greater than the distance of said connection point from said securing point, a holding part firmly secured to the resilient strut, and clamping means fixing said sleeve to said holding part.

4,346,864

MEANS AND METHOD FOR MOUNTING TEMPERATURE SENSORS

Murray F. Feller, Dunnellon, Fla., assignor to Wilgood Corporation, Jacksonville, Fla.

Filed Nov. 21, 1980, Ser. No. 209,157
Int. Cl.[3] A47B *96/00*; G01K *1/14*
U.S. Cl. 248—231 11 Claims



1. Means for mounting a temperature sensor on a pipe, comprising a sheet-metal strap having a medial portion and first and second integral portions extending oppositely from said

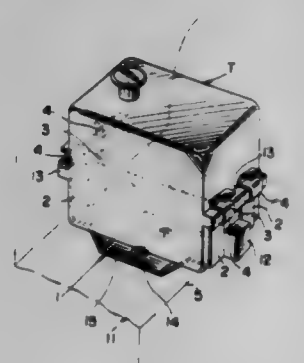
medial portion, said first integral portion being elongated to constitute a first strip, said medial portion being wider than said strip and having an aperture therein through which said strip can be threaded so that the strip forms a loop for encircling the temperature sensor and said first and second integral portions of the strap extend oppositely from said medial portion for encircling a pipe whose temperature is to be sensed, said integral portions having end portions remote from said medial portion which are adapted to be drawn toward each other and secured together with said strap tensioned about the temperature sensor and about the pipe in "FIG.-8" configuration.

4,346,865

FITTING STRUCTURE FOR A TANK

Masanori Murata, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,459
Claims priority, application Japan, Mar. 8, 1979, 54-28625[U]
Int. Cl.³ A47K *1/08*
U.S. Cl. 248—311.2 **13 Claims**



1. A structure for fitting a tank in an engine compartment of a vehicle body, comprising a fitting member for partitioning the engine compartment, and a bracket fixed on the fitting member, the bracket having a first engaging portion for positioning the tank in its longitudinal direction, a second engaging portion for positioning the tank in its lateral direction and a third engaging portion for positioning the tank in its vertical direction, the first, second and third engaging portions of the bracket being so designed as to engage with the opposite side walls of the tank thereby to hold detachably the lower portion of the tank relative to the vehicle body when the tank is set in position onto the bracket and wherein both end portions of the bracket are bent to form an erecting portion, respectively, such bent portions constituting the first engaging portion in such a way that the tank is held between the bent end portions of the bracket, the bent portions of the bracket being further bent outwardly in a channel shape to constitute the third engaging portion with which a projection fixed on each opposite side wall of the tank at its intermediate portion is to be engaged.

4,346,866

HANDY HANGER MOLDING CLIP

John W. O'Hara, 10466 Sunset Ter., Des Moines, Iowa 50322

Filed Apr. 28, 1980, Ser. No. 144,575
Int. Cl.³ A47F *5/00*
U.S. Cl. 248—316 B **3 Claims**

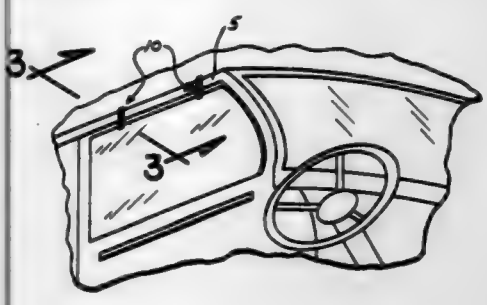
1. A hanger molding clip for use in a vehicle having a deformable headliner ceiling and a molding strip around the perimeter of said ceiling and adjacent thereto; said clip comprising:

fastening means for manually selectively fastening objects thereto, said fastening means including an alligator clip;

a fastener component means for attachment to said fastening means;

a resilient mounting component means for being deformably placed between said headliner ceiling and said molding strip for securement to said vehicle;

hinge means for hingably connecting said fastener component means to said mounting component means, said hinge means comprising a plurality of parallel score lines which partially penetrate the thickness of said resilient mounting component means; and



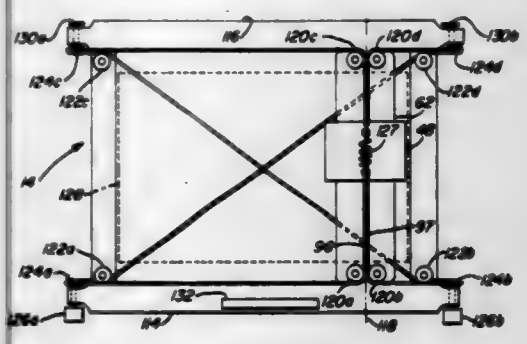
wherein said fastener component means, mounting component means and hinge means is of integral, one piece construction.

4,346,867

TRANSPORT MECHANISM FOR ULTRASONIC SCANNER

Donald E. Dick, Sunshine Canyon, Salina Star Rte., Boulder, Colo. 80302; Robert L. Metz, 408 William No. 5, Superior, Colo. 80027; D. Scott RoJohn, 2645 Juniper Ave., Boulder, Colo. 80302, and Raymond D. Elliott, 1569 S. Pearl, Denver, Colo. 80210

Division of Ser. No. 922,185, Jul. 5, 1978, Pat. No. 4,233,988. This application May 19, 1980, Ser. No. 151,338
Int. Cl.³ F16M *13/00*; F16H *27/02, 55/52*
U.S. Cl. 248—424 **5 Claims**



1. A transport mechanism comprising:

a pair of rails mounted so that they are substantially parallel to each other;

a bridge having two ends, said bridge being mounted on said rails for movement over a predetermined portion of said rails, said bridge having a longitudinal axis, said bridge being mounted on said rails so that its longitudinal axis is substantially perpendicular to the rails;

a carriage mounted on the bridge for movement substantially parallel to the longitudinal axis of the bridge;

a pair of rail pulleys mounted on each rail outside of said predetermined portions;

two pairs of bridge pulleys, a pair of bridge pulleys being mounted substantially at each end of the bridge;

a pair of flexible cables, each cable having two ends;

means for fastening each of the ends of each cable to said carriage, with at least one end of each cable being attached to said carriage by tensioning means;

said cables being positioned on and guided to and from said pulleys so that when the rail pulleys on the same one of the rails rotate in the same direction at the same rate, the bridge moves parallel to the rails, when said rail pulleys on the same one of said rails rotate in the opposite direction at the same rate, the carriage moves on the bridge; and

means for separately and simultaneously applying torque to at least two pulleys around each of which passes a different one of the flexible cables to move the carriage and the

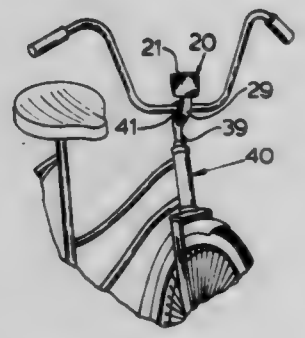
bridge so that when the speed of said cables is the same, one or the other of the bridge and carriage moves, and when the speed of the cables is different, both of the bridge and carriage move.

4,346,868

DISPLAY DEVICE

Henry Lindner, Wood Dale, Ill., assignor to Beatrice Foods Co., Div. of Elgin Molded Plastics, Elgin, Ill.

Filed May 19, 1980, Ser. No. 151,374
Int. Cl.³ A47G 1/16
U.S. Cl. 248—475 R 11 Claims



1. A display device comprising in combination:

(A) a backing plate means of integral one-piece molded construction having a back face and

(B) a bracket means which is slidably engagable into a locking engagement with said backing plate means,

(C) mounting means for said bracket means which is integral with said backing plate, said mounting means comprising:

(1) a pair of retaining guides, each one of said pair being in spaced, parallel relationship to the other thereof, each one thereof having a vertical extension which upstands from said back face of said backing plate and a gib which horizontally extends from the top of said vertical extensions horizontally relative to said back face, the two gibs being in opposed spaced generally parallel relationship one to the other, each gib and its associated said extension defining a channel,

(2) raised bearing pad means positioned integrally on said back face, in adjacent relationship to said extensions and in spaced adjacent parallel relationship to said gibs, the combination of said pad means and said retaining guides defining a slot within which said bracket means, can slidably move, and further defining a cavity in the region of said pad means and said back face,

(3) a ramp means integrally associated with said back plate and disposed across a pair of adjacent end regions of said retaining guides with the ramp height increasing with increasing distance away from said end regions, the height of said ramp being about equal to the height of said bearing pads relative to said back face,

(4) a raised region integrally upstanding from said backing plate located adjacent said ramp means and forwardly from said end regions, said raised region defining perimetrically a pocket which is approximately in said back face, said raised region having a height about equal to the height of said bearing pads relative to said back face,

(5) a stop plate means upstanding from said back face and extending across a portion of said back face adjacently to said raised region,

(D) said bracket means having a tongue means defined therein adjacent one end thereof projecting from one side surface thereof which tongue terminates in an abutting ledge means on the side thereof remote from said one end and which tongue has an inclined surface means thereon which increases in height relative to said one side surface with increasing distances from said one end up to said ledge,

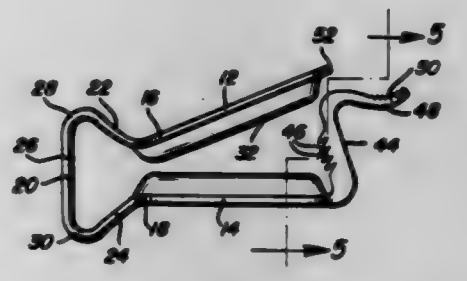
(E) the interrelationship between said mounting means and said bracket means being such that, when said bracket is slidably engaged with said retaining guides and is slid relative to said backing plate means until said tongue has moved over said ramp, said tongue seats in said pocket with said one end being in adjacent relationship to said stop plate, thereby locking said bracket means in engagement with said backing plate means.

4,346,869

TUBE CLAMP

Robert L. MacNeill, 54 High St., Newburyport, Mass. 01950

Filed Mar. 12, 1981, Ser. No. 242,848
Int. Cl.³ F16K 7/04
U.S. Cl. 251—10 2 Claims



1. A fluid flow blocking pump for use in conjunction with blood lines and associated tubing sections presently used during hemodialysis procedures, said clamp comprising a one-piece construction including first and second elongated, side-by-side and generally parallel longitudinally straight jaw members including first and second pairs of corresponding ends, an open loop member having spaced opposite ends formed integrally with one pair of said corresponding ends, said jaw members and loop member being constructed of shape retentive and slightly resilient plastic material with said loop interconnecting said one pair of jaw member ends for relative angular swinging of said jaw members between closed juxtaposed substantially parallel positions and open positions with said jaw members swung at least slightly away from each other and divergent toward the second pair of corresponding ends thereof, said jaw members, when in said closed positions, including closely juxtaposed parallel sides, one of said juxtaposed sides including a lengthwise extending elongated raised rib thereon of smooth substantially sine wave shape in cross section, the other of said juxtaposed sides defining a lengthwise extending elongated channel of substantially sine wave shape in cross section and with the radius of curvature of the apex portion of the first mentioned sine wave shape being slightly less than the radius of curvature of the second mentioned sine wave shape, one of the other pair of corresponding ends of said jaw members including a transverse terminal end lip and the other end of said other pair of corresponding ends including a generally right angulated elongated tongue formed integrally therewith, said tongue extending outwardly of said other end in the direction in which the other jaw member is swingable toward the open position and including transversely extending longitudinally spaced ratchet teeth formed on the side thereof facing said loop member, said ratchet teeth facing away from the free end of said tongue and engageable by said lip to releasably prevent relative swinging movement of said jaw members toward said open positions, the juncture of said tongue with said other end of said other pair of corresponding ends being somewhat flexive and resilient, whereby said tongue may be swung, slightly away from said loop, to disengage said teeth from said lip, said tongue, in non-flexed condition, being inclined slightly inwardly toward the connecting loop member end of said jaw members, said loop member, when in a relaxed state, including a pair of generally straight arm portions convergent toward one pair of ends thereof comprising said opposite ends of said loop member, and an integral elongated and generally longitudinally straight connecting bight member extending between and connecting the other pair of ends of said arm portions, said jaw members being generally strap-like in configuration and said rib being formed on the side of one of said strap-like

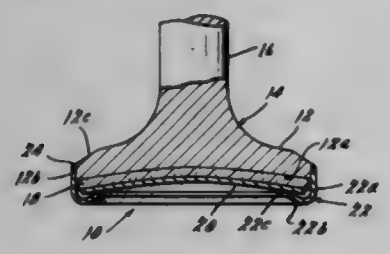
jaws opposing the other jaw, said other jaw member including a pair of laterally and longitudinally extending ribs formed thereon on the side opposing said one jaw member and said channel is defined between said pair of ribs.

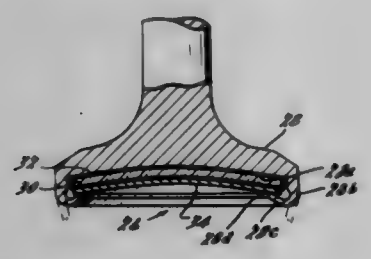
4,346,870

THERMAL BARRIER FOR POPPET VALVE

Richard Chute, Birmingham; Jay M. Larson, Marshall; Theodore N. Tunnecliffe, Battle Creek, and Roger P. Worthen, Farmington Hills, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 26, 1980, Ser. No. 210,692
Int. Cl.³ F01L *3/00*
U.S. Cl. 251—356 13 Claims





1. A thermal barrier for a poppet valve having a mushroom head defining a circular face portion normally exposed to combusting gases in a combustion chamber of an expansible chamber engine, the thermal barrier comprising:

an insulator substantially covering the face portion; and

a flange member including a skirt portion fixed at one end of the valve head and bent over at the other end to define a flange portion clamping said insulator against the face portion, said skirt portion having a wall circumscribing the insulator and extending at said other end beyond the general plane of the outer periphery of the insulator and a flange portion bent over the outer periphery of the insulator and contacting only the outer end of means covering said insulator, said flange portion making an inside angle of less than ninety degrees with the wall of said skirt portion.

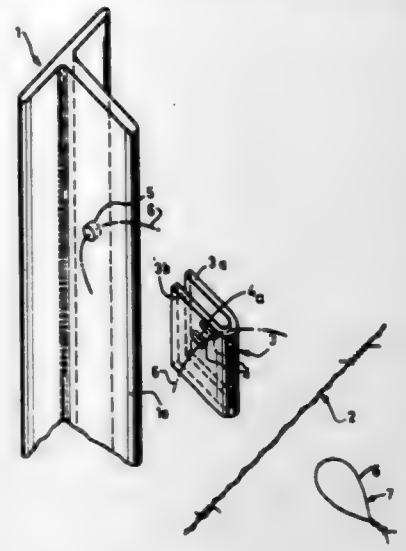
4,346,871

STRUCTURE FOR AFFIXING METALLIC WIRE TO SUPPORT POSTS

Francois M. Mauduit, 12, rue de la Vicomte, 76490 Caudebec-en-Caux, France

Filed May 3, 1979, Ser. No. 35,630
Claims priority, application France, May 10, 1978, 78 13879
Int. Cl.³ A01K *3/00*
U.S. Cl. 256—10 6 Claims

1. A device for fixing metallic wires on support posts, externally to same, characterized in that between each post and each wire there is inserted a piece of non-oxidizable material which is not electrically conductive and which physically separates the wires from the posts, with the further provisions that said post is provided with an opening, said piece of non-oxidizable material is provided with a complemental opening, and said post and piece are tied together with a flexible fixation tying member which passes through said complemental openings and around said metallic wire so as to hold the latter in



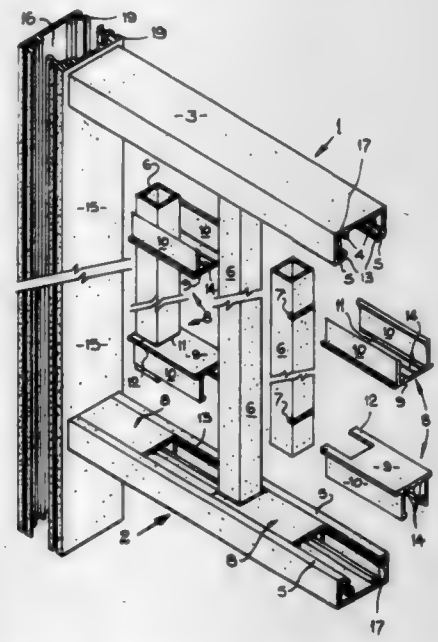
place against said piece of non-oxidizable material and out of direct contact with the said post.

4,346,872

BALUSTRADE CONSTRUCTION

Andrew G. Tornya, 207 Edgecliff Rd., Woollahra, N.S.W., 2025, Australia

Filed Aug. 16, 1979, Ser. No. 67,134
Claims priority, application Australia, Jul. 19, 1979, 49084/79
Int. Cl.³ E04H *17/14*
U.S. Cl. 256—65 11 Claims



1. A balustrade unit comprising a pair of spaced-apart channel-section members, the mouths of which are directed towards each other, the free edges of each said channel-section member being bent so as to form a pair of longitudinally-extending flanges, and a pair of longitudinally-extending, spaced-apart engaging elements provided on and upstanding from the base portion of each said channel-section member; a plurality of balusters disposable between said channel-section members, each baluster having, adjacent each end thereof, a transverse slot, the two slots in each baluster being in the same side thereof and parallel, and the ends of said balusters being receivable between said engaging elements when said balusters are in position between said channel-section members; and a plurality of spacers each one of which extends between adjacent balusters of said balustrade unit, each said spacer having a table portion the side edges of which are receivable in rebates in said longitudinally-extending flanges, and a pair of valances disposed normal to said table portion and adapted to irremovably engage with said engaging elements when said spacer is

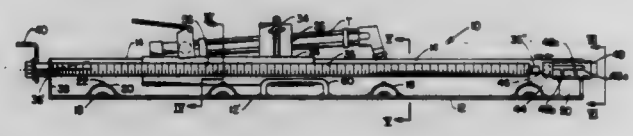
disposed between adjacent balusters, each said table portion including a bight the base of which is receivable in a said transverse slot and the limbs of which extend on either side of the baluster to enclose the space between a baluster and a longitudinally-extending flange.

4,346,873

LEAD SCREW PORTABLE TORCH DRIVE

Franklin W. Domres, 4117 Crescent Beach Rd., Manistee, Mich. 49660

Filed Feb. 18, 1981, Ser. No. 235,524
Int. Cl.[3] B23K 7/10
U.S. Cl. 266—71 13 Claims



1. A portable torch support and guide comprising:
an elongated support base for resting on metallic stock to be cut;
retention magnets attached to said support base and oriented to engage the metallic stock for retaining said support base to said stock;
an upstanding carriage track along said support base;
a torch mounting carriage movable along said carriage track and having means for mounting a torch thereon;
a feed screw lengthwise along said elongated support base, having a first end and an opposite second end, a screw actuator at said first end of said feed screw,
a first bearing support on said support base, at said first end of said feed screw, said feed screw being tiltable at said first bearing support through a small acute angle;
a second bearing support adjacent the opposite end of said support base from said first bearing support, shiftable into and out of support engagement with said second end of said feed screw;
and said carriage having a threaded member in engagement with said feed screw for driving said carriage therealong, said feed screw being releasable from said threaded member with tilting of said feed screw to allow rapid return of said carriage to its starting position.

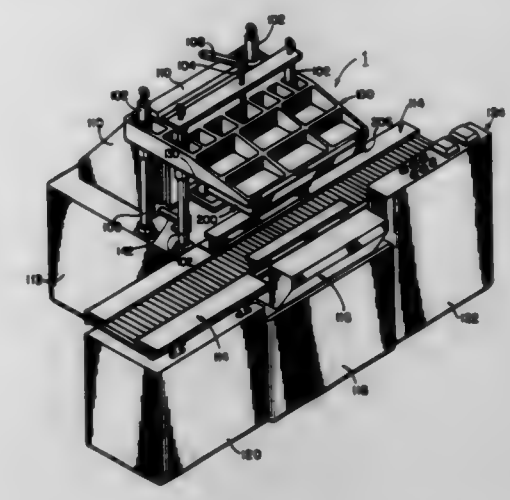
4,346,874

VACUUM ACTUATED HOLDING APPARATUS FOR A PLASTIC WELDING MACHINE

Joseph V. Kurpiewski, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed May 27, 1980, Ser. No. 153,175
Int. Cl.[3] B25B 11/00
U.S. Cl. 269—21 20 Claims

1. A holding means for use with a plastic welding machine having a vacuum supply means, the holding means comprising:
(a) a mounting plate, having a face adapted to receive an article to be retained to the holding means;
(b) actuation means comprising at least one port extending through the face of the mounting plate;
(c) a vacuum actuated piston means operatively associated with the actuation means and the vacuum supply means;
side plate means, movably connected to selected edges of the mounting plate and operatively associated with the vacuum actuated piston means; and
(e) means for engaging selected portions of the article to be retained within the holding means responsive to move-



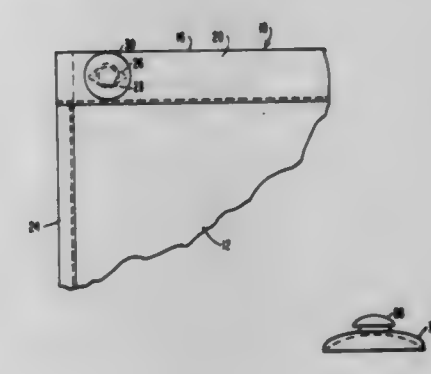
ment of the side plate means, the engaging means being operatively associated with the side plate means.

4,346,875

PASTRY CLOTH HAVING SUCTION CUPS REMOVABLY ASSOCIATED THEREWITH

Patricia J. Spencer, 805 Valley View Rd., Ft. Collins, Colo. 80524, and Carrie P. DeRoeck, 8952 W. 81st La., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 166,757, Jul. 7, 1980, abandoned. This application Aug. 21, 1981, Ser. No. 295,221
Int. Cl.[3] A47J 43/00; B32B 3/12, 3/16
U.S. Cl. 269—302.1 8 Claims

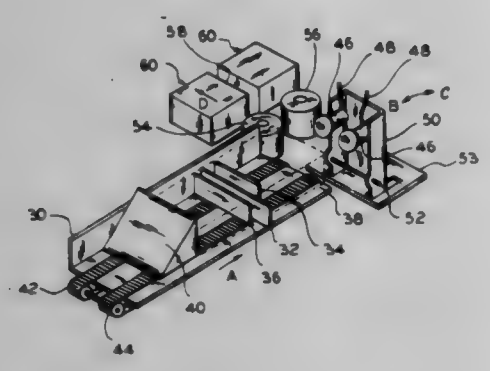


1. A pastry cloth assembly comprising:
a sheet of flexible cloth, of a material suitable for the rolling-out thereon of dough in the preparation of a food, having a peripheral margin;
a plurality of first fastener parts spaced successively around said margin;
and a plurality of suction cups each securingly engageable with a flat surface and each having a second fastener part individually connectable removably with a respective one of said first fastener parts to dispose all of said suction cups on a single major surface of said cloth, engagement of said cups with said surface permitting stretching of said cloth to enable rolling of said dough against said surface through said cloth.

4,346,876
VACUUM DOCUMENT FEEDER

Kenneth L. Guenther, Park Ridge; Jerry J. Kosner, Jr., Oakbrook Terrace; Rolf B. Erikson, Highland Park, and Edward H. Zemke, Chicago, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed May 12, 1980, Ser. No. 148,068
Int. Cl.[3] B65H *3/08, 1/02*
U.S. Cl. 271—11 10 Claims



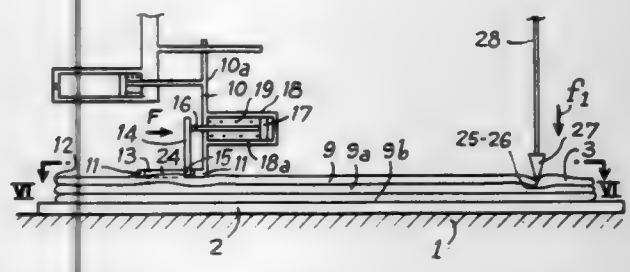
1. A vacuum document feeder system comprising:
drive means to provide power to a four bar mechanism having at least one bearing point, said drive means causing said bearing point to cyclically rotate over a somewhat crescent shaped coupler curve,
support means connected to said bearing point,
at least one document seizing vacuum cup means pivotally mounted on the support means whereby said vacuum cup means cyclically follows said somewhat crescent shaped coupler curve,
means for delivering vertically oriented documents from a horizontal stack of documents to a document pick-up location at an end of the horizontal stack,
said vacuum cup means pivoting from a substantially vertical orientation to an angle relative to said vertical orientation to accomodate documents leaning at said angle relative to said vertical orientation,
document transport means for moving documents in a direction away from said vacuum cup means, said document transport means having a nip for receiving documents seized and removed from said horizontal stack by said vacuum cup means,
said support means cyclically approaching and leaving said stack in substantially horizontal, perpendicular directions relative to said vertically oriented documents,
the document at the end of the horizontal stack of documents being seized by said vacuum cup means when said support means is at substantially one end of said crescent shaped coupler curve,
said vacuum cup means with said documents approaching said nip in a direction parallel to the direction of travel of said documents when placed in said nip,
and cam means associated with the support means for coordinating the bearing point movement with both the pivoting and vacuumizing of the cup means.

4,346,877
DEVICE FOR HANDLING SHEET-LIKE PIECES

Joël Doyen, Ste Savine, and Jean-Pierre Raisin, Troyes, both of France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly, France

Filed May 9, 1980, Ser. No. 148,507
Claims priority, application France, May 17, 1979, 79 12639
Int. Cl.[3] B65H *3/26*
U.S. Cl. 271—19 10 Claims

1. In a device for handling a piece of supple, elastically deformable sheet such as a piece of material comprising a frame and a sheet support mounted thereon,
at least one gripping means mounted above the support for gripping the sheet, the gripping means comprising a gripper body and at least two gripper elements comprising first and second gripper elements mounted to move with respect to each other on the gripper body, displacing means associated with the gripping means for displacing the gripper elements with respect to one another, means for mounting the gripper body on the frame movable between a first position for which at least one of the gripper elements contacts the sheets and at least one second position for which the gripper elements are spaced apart

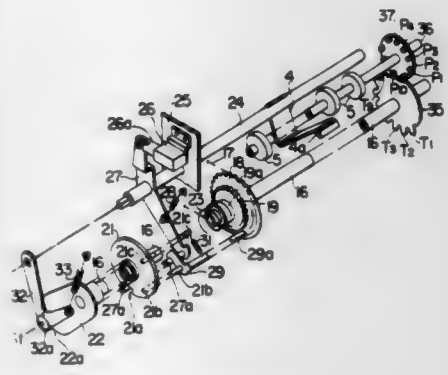


from the support, means for displacing the gripper body between the first and second positions,
the first gripper element having a swelling surface for at least partially enveloping a portion of the sheet when the gripper element is in its first position to cause the sheet to swell in the area enveloped by the first gripper element, and means for moving the second gripper element toward a portion of the first gripper element across the swell of the sheet to pinch the sheet between the two gripper elements.

4,346,878
SHEET FEEDING APPARATUS

Masahiro Aizawa, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,093
Claims priority, application Japan, Apr. 9, 1979, 54-42749; Apr. 9, 1979, 54-42750
Int. Cl.[3] B65H *3/06, 1/14*
U.S. Cl. 271—118 9 Claims



1. A sheet feeding apparatus comprising:
a cassette for holding a plurality of sheets and including a bottom plate movable upwardly to bring said sheets into a sheet feeding position and movable downwardly to withdraw said sheets from said position;
means including a roller located above said cassette at said sheet feeding position for feeding sheets individually from said cassette;
a pushing member adapted to engage the lower surface of said bottom plate for moving said bottom plate upwardly and downwardly; and
drive means connected to said pushing member for intermittently moving said pushing member in a first direction to move said bottom plate upwardly to bring said sheets into engagement with said roller and a second direction to allow said bottom plate to move downwardly to withdraw said sheets from said roller; said drive means being connected intermittently to said push member by a clutch comprising a rotating ratchet wheel, a pawl lever adapted

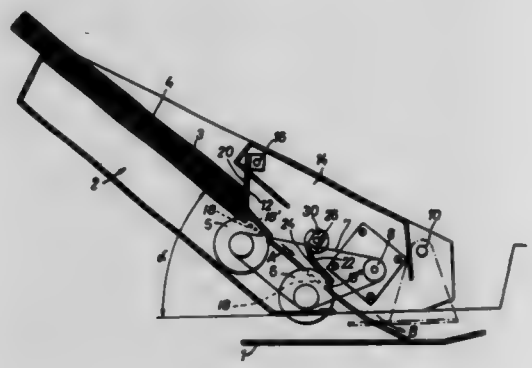
to engage said ratchet wheel and connected integrally with a cam, means connected to said pawl lever for moving it into engagement with said ratchet wheel to cause rotation of said cam when desired to move said pusher member, and means including a cam follower engaging said cam for moving said pusher member upwardly and then downwardly upon rotation of said cam.

4,346,879

SHEET SEPARATING DEVICE FOR OFFICE MACHINES

Kurt Ruenzi, Kuesnachterstrasse 59, CH-8126 Zumikon, Switzerland

Filed Aug. 27, 1980, Ser. No. 181,676
Claims priority, application Switzerland, Sep. 7, 1979, 8076/79
Int. Cl.³ B65H 3/52
U.S. Cl. 271—121 2 Claims



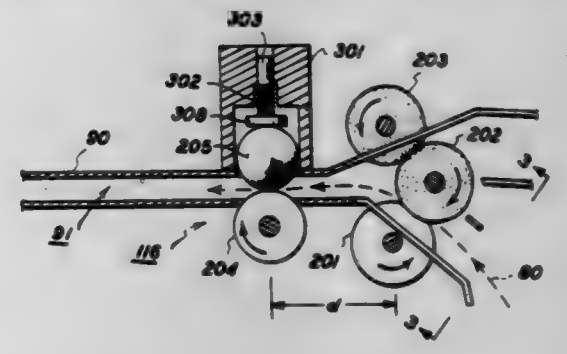
1. A device for separating sheets of paper from a stack and for feeding the sheets to an office machine, comprising bottom means (3) for supporting the sheet stack (4), said bottom having longitudinally aligned slots (18) therein, at least a portion of said bottom means being inclined to the horizontal, first separating means (5, 12) operatively arranged for cooperation with said bottom means, and second separating means (6, 22) also operatively arranged for cooperation with said bottom means downstream of said first separating means (5, 12) as viewed in the direction of sheet advance, wherein each of said first and second separating means comprises at least one first and second plate-like separating member (12, 22) provided with a friction facing (20, 24) and at least one first and second separating roller (5, 6) also provided with a friction facing, said first and second separating rollers (5, 6) reaching upwardly through the respective slot (18) in the bottom means (3), whereby a sheet is supported by said bottom means even downstream of said first and second separating rollers (5, 6), said first and second separating members (12, 22) being arranged above the respective separating roller, wherein each of the plate-like separating members (12, 22) comprises two fingers (19) forming further slots (18', 18'') in register with said slots (18) in the bottom means (3), whereby said separating roller (5, 6) is reaching between the fingers (19) of the respective separating member (12, 22) to such an extent that a sheet of paper transported through the gap between the separating member and the separating roller assumes a somewhat flat curvature, and wherein the separating member (12) of the first separating means is rigidly secured and held in position, said first separating member (12) having an angularly extending upper section, whereby a portion of the stack rests against said upper section, said first separating member further comprising a lower section forming said fingers (19), said device further comprising tilting means for the downstream, second separating member (22), whereby said downstream, second separating member (22) is tiltable through a limited angle.

4,346,880

APPARATUS FOR INVERTING SUBSTRATES

George J. Roller, Rochester, and Richard P. Schell, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 2, 1980, Ser. No. 193,242
Int. Cl.³ B65H 29/00
U.S. Cl. 271—186 10 Claims



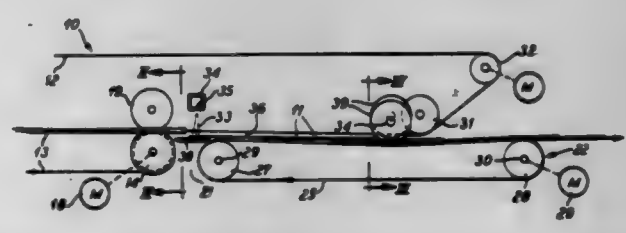
1. A substrate inverter, comprising:
(a) inversion channel means;
(b) input drive means for driving a substrate into said channel means, said input drive means including a smooth roll and an elastomeric roll that forms an input nip, said smooth roll having a narrower width than said elastomeric roll;
(c) output drive means for driving a substrate out of said channel means, said output drive means including said elastomeric roll; and
(d) return nip means located within said channel means and downstream of said input drive means and arranged for applying a continuous force to the substrate in a direction opposite to the initial incoming sheet direction while and at the same time the substrate is being influenced by said input means, whereby as the last portion of the substrate leaves said input means the force of said nip means will drive the substrate into said output means for movement out of said channel means.

4,346,881

METHOD OF AND MEANS FOR HANDLING PAPER SHEETS TO BE STACKED

Kenneth G. Frye, Lee, Mass., assignor to Lenox Machine Company, Inc., Lenox, Mass.

Continuation of Ser. No. 29,397, Apr. 12, 1979, abandoned. This application Feb. 6, 1981, Ser. No. 232,170
Int. Cl.³ B65H 9/14, 29/12
U.S. Cl. 271—208 17 Claims



1. A method of handling paper sheets to be stacked, comprising:
advancing the sheets seriatim gripped between upper and lower corunning high speed conveyor belts in which said lower belts leave the advancing ends of the sheets at a predetermined point while said upper high speed conveyor belts extend a substantial distance beyond said point into sheet controlling tunnel relation over a slower speed multi-belt conveyor;
propelling the sheets across a gap from said lower high speed conveyor belts toward and onto said slower speed conveyor;
and after each successive sheet has been fully received on

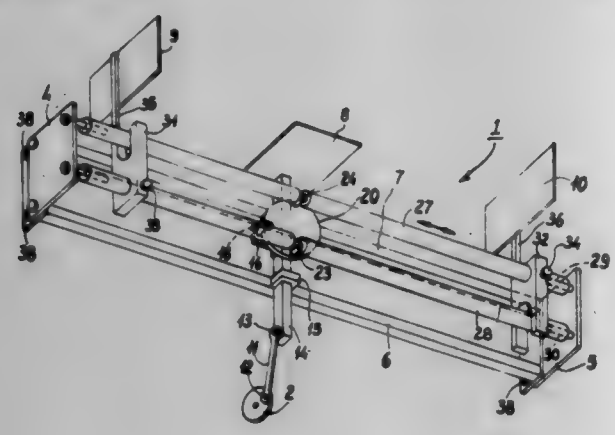
said slower speed conveyor stopping high speed advance of the sheet and effecting impermanent wave-like longitudinal jam preventing stiffening rib deflection of the sheet and causing the sheet to travel with the slower speed conveyor so as to receive from said high speed conveyor belts a succeeding sheet in superimposed overlapping relation for stacking purposes.

4,346,882

JOGGING DEVICE

Giorgio Pessina, and Aldo Perobelli, both of Via Arborina 2, Paderno-Dugnano, Italy

Filed May 5, 1980, Ser. No. 146,204
Claims priority, application Italy, May 18, 1979, 22808 A/79
Int. Cl.³ B65H *31/38*
U.S. Cl. 271—221 **8 Claims**



1. A jogger device for jogging signatures or sheets during the formation of stacks in bookbinding machines, said jogger device comprising:

(A) a source of rotary motion,

(B) a supporting structure,

(C) a central jogging vane,

(D) two side jogging vanes,

(E) displaceable elements supporting said central and side vanes from said supporting structure for jogging movement relative to said structure,

(F) means for converting the rotary motion of said source of rotary motion to reciprocating motion,

(G) one of said displaceable elements constituting an elongated straight element,

(H) means mounting said straight element for axial reciprocation,

(I) means securing the central vane to the straight element, and

(J) means adjustably connecting the side vanes to the displaceable elements for the same, characteristized in that:

(K) said supporting structure constitutes two side members connected by two elongated mutually spaced transverse members,

(L) said means for mounting said axially reciprocating straight element being supported by said two mutually spaced transverse members,

(M) a bracket mounted on said axially reciprocating straight element,

(N) a pin carried by said bracket,

(O) an oscillating element rotatably mounted on said support means for said reciprocating straight element,

(P) a pair of pins carried by said oscillating element at diametrically opposed points with respect to the axis of rotation of the oscillating element,

(Q) a radial slot in the oscillating element in which the bracket pin rides,

(R) two transverse rods mutually spaced apart and located between said side members,

(S) means mounting said rods for independent axial reciprocation,

(T) said rods being shorter than the distance between the side members,

(U) each of said rods having means thereon for engaging a different one of the pins supported by the oscillating element, and

(V) said displaceable elements which support the side vanes being adjustably connected to different ones of the rods,

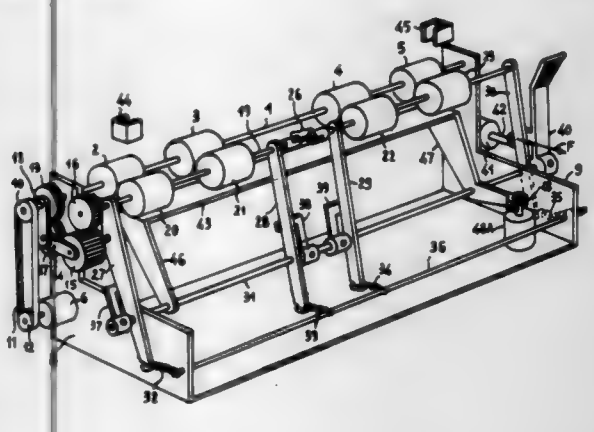
(W) whereby rotation of the source of rotary motion jogs the central vane in a direction transverse to the axially reciprocating members and jogs the side vanes in a direction transverse to the jogging direction of the central vane.

4,346,883

DOCUMENT POSITIONING AND FEEDING APPARATUS FOR HIGH SPEED PRINTERS

Marcello Speraggi, Milan, Italy, assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 28, 1980, Ser. No. 182,165
Claims priority, application Italy, Aug. 30, 1979, 25357 A/79
Int. Cl.³ B65H *5/02*
U.S. Cl. 271—274 **2 Claims**



1. In a document feeder apparatus for a printer comprising:

back feeding roller element;

fore feeding roller element;

support means for said roller elements, said support means aligning the axis of rotation of said fore feeding element with the axis of rotation of the back feeding elements, said support means maintaining said roller elements in resilient contact with one another, said support means allowing parts of said roller elements to assume a different distance therebetween while maintaining the axis of rotation of the parts parallel to each other; and

coupling means connecting said back feeding roller element to said fore feeding roller element, said coupling means being operable to provide equal and opposite rotation of said roller elements, said coupling means further being operable to substantially prevent relative rotary motion between said elements during the feeding of stock into the printer;

whereby one of said feeding elements is divided in at least two parts having parallel shafts, the shafts of said two parts being coupled by a universal joint which secures for the two parts identical acts of rotary motion, and said support means allowing the shafts of said two parts to be positioned at different distances from the shaft of the other of said feeding element.

4,346,884

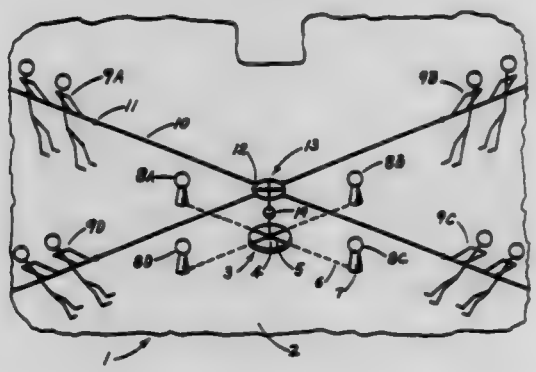
MULTI-TEAM TUG-OF-WAR GAME APPARATUS

Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211

Filed Sep. 26, 1980, Ser. No. 191,085
Int. Cl.³ A63B *21/28*
U.S. Cl. 273—1 GH **8 Claims**

1. Multi-team tug-of-war game apparatus comprising a playing surface, said playing surface including a game area, a plurality of tugging ropes, a central hub including a vertically

dependent position indicating pointer, means for attaching one end of each of said ropes to said central hub, a game apparatus positioning indicator means for indicating the starting position of said pointer over said game area, and for indicating the proper relative radial orientation of said ropes relative to said hub, a plurality of goals on said playing surface positioned about and spaced from said starting position, and a goal contactor means on said pointer for contacting said goals to indicate the winner of a tug-of-war contest whereby a plurality of ropes equal in number to the number of teams using the apparatus may be attached to said hub at proper positions and relative radial orientation, said hub may be positioned centrally relative to said goal means, and team players may pull their respective ropes in an attempt to cause said goal contactor means to contact their assigned goal to win tug-of-war contest.

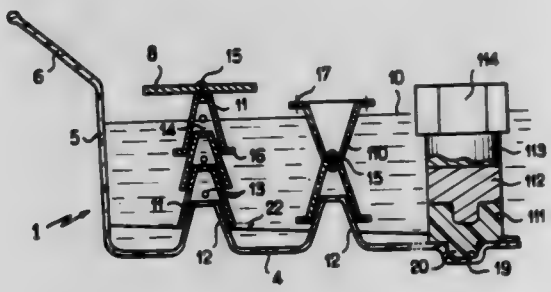


4,346,885

WATER-AND/OR SANDBOX CONSTRUCTION

Marcel Mathou, 12630 Gages, France

Filed Oct. 23, 1980, Ser. No. 200,056
Claims priority, application France, Nov. 7, 1979, 79 27501
Int. Cl.[3] A63G *31/00*
U.S. Cl. 272—1 A 11 Claims



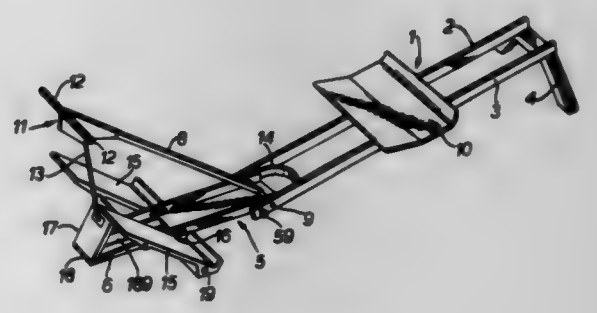
1. A box construction for water, sand or the like product, comprising an integrally molded body having a bottom and side-walls prolongated outwardly by inwardly inclined edge portions, said body defining an inner space for containing a product, a separate construction member, a separate support member for supporting said construction member within said inner space for said body, said bottom of said body being locally provided with shaped mounting portions integrally formed therewith, said separate support member having releasable engaging means for releasable nesting engagement with a said shaped mounting portion so as to support at a distance inwardly from said edge portions of said body said releasable construction member at a selected height above said bottom wall of said body whereby said construction member is accessible when said box is filled with a product.

4,346,886

VARIABLE RESISTANCE EXERCISING DEVICE

Alan W. Cox, Bray, and Paul N. Rainey, Kingston-upon-Thames, both of England, assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 4, 1980, Ser. No. 156,509
Claims priority, application United Kingdom, Jun. 4, 1979, 7919375
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—72 16 Claims



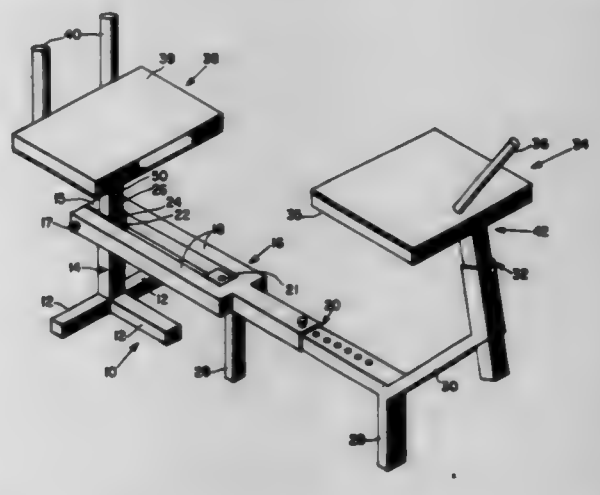
1. An exercising device comprising:
a housing in which is mounted a plurality of spaced apart rotatable surfaces;
a flexible, elongate member that passes into the housing, around the rotatable surfaces and out of the housing;
means for selectively and releasably locking at least one of the surfaces against rotation to enable a user of said exercising device to select in a repeatible manner different degrees of effort that must be exerted in using said device;
a framework,
an arm having one end pivotally secured to said framework, said arm having said housing mounted thereon, and adjacent the other end thereof; and
a take-up reel mounted in said housing and resiliently biased into a take-up action, the flexible elongate member being connected at one end to said framework and at the other end to said take-up reel.

4,346,887

DONKEY CALF EXERCISING MACHINE

Leonard Poole, c/o Williamson, Esq., P.O. Box 36015, Cincinnati, Ohio 45236

Filed Feb. 8, 1979, Ser. No. 10,236
Int. Cl.[3] A63B *23/04*
U.S. Cl. 272—117 4 Claims



1. An exercising apparatus for developing an exerciser's calf muscles, said apparatus comprising:
(a) an upright front post means for supporting a substantially horizontal linking means;
(b) said horizontal linking means pivotally mounted on a horizontal member attached to said upright front post means and extending for a length of about an exerciser's

upper body, the extended end of said linking means having a leg means for safety and floor support when not in use;

(c) a force resistance means attached to the extended end of said linking means said force resistance means having a weight press member positioned in a spaced relation above the exerciser's lower back when he bends the trunk of his body forward and assumes a donkey-like pose;

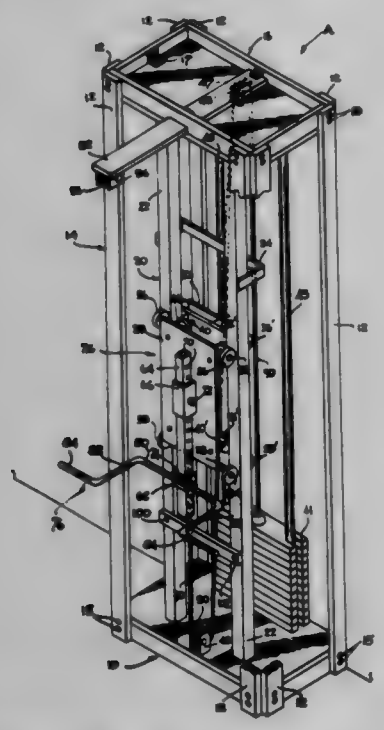
(d) a forearm support means associated with said front post means and positioned in a special relation away from and at a lower elevation than that of said weight press member so that whereon the exerciser can place his forearms for leverage when in said donkey-like pose so that he may exert an upwardly directed force against said press with his lower back causing said horizontal linking means to pivot, and whereby he may exercise his calf muscles by periodically exerting an additional upwardly directed force against said press via Donkey Raise, said Donkey Raises being performed by flexing his calf muscles, like a ballet dancer, whereby he may perform continuous tension sets.

4,346,888

WEIGHT LIFTING EXERCISING APPARATUS HAVING A MOVABLE CARRIAGE

William Szabo, 10126 Langmoir Ave., Sunland, Calif. 91040

Filed Jul. 7, 1980, Ser. No. 166,077
Int. Cl.[3] A63B *21/06*
U.S. Cl. 272—118 32 Claims



1. A weight lifting exercising apparatus comprising:

(a) a base structure for disposition on a floor or other supporting surface,

(b) a generally upright frame associated with the base structure and extending upwardly therefrom,

(c) a vertically shiftable carriage associated with said frame and base structure and capable of being vertically movable against one or more weights,

(d) a first pulley operatively mounted on said frame generally above said carriage and at a height normally greater than the height of a user of the apparatus,

(e) a second pulley operatively mounted on said base structure at a height normally less than the height of a user and which is located substantially forwardly of the first pulley,

(f) a third pulley operatively mounted on said frame at a height normally above the height of the user and which is located forwardly of said second pulley and at a position so that it would be substantially immediately vertically above the user of the apparatus,

(g) a fourth pulley operatively mounted on said carriage and located forwardly of said second pulley and rearwardly of said third pulley

(h) cable means operatively engagable with said carriage and with one or more weights and capable of being selectively trained about any two or more of said first and second and third and fourth pulleys in a desired configuration selected to perform a certain weight lifting exercise, and

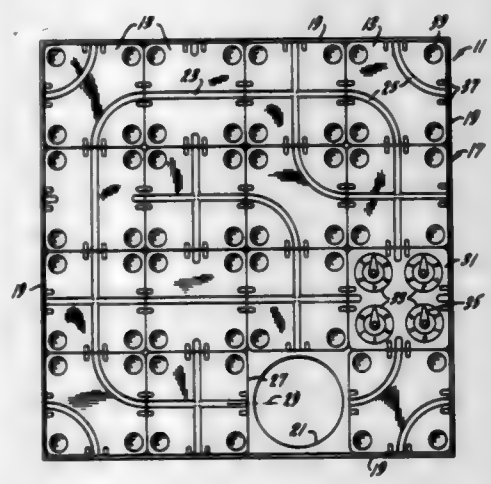
(i) handle means operatively connected to said carriage and operatively coupled to said cable means through said carriage, said handle means being engagable by a user to apply a force thereto to thereby attempt to shift the carriage against the one or more weights.

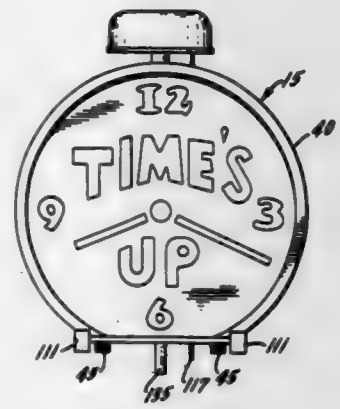
4,346,889

BOARD GAME WITH PATH CREATING TILES FOR VEHICLE

Gordon A. Barlow, and John R. Krutsch, both of Glenview, Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Feb. 2, 1981, Ser. No. 230,615
Int. Cl.[3] A63F *9/00, 9/06*
U.S. Cl. 273—1 GA 5 Claims





1. A board game including:

a plurality of generally similar rectangular tiles slidable relative to one another to form a rectangular pattern with one vacant space equal in size to a tile,

at least one groove formed in the top surface of some of said tiles and more than one groove formed in the top surface of other of said tiles with each groove extending from one side edge of a tile to another side edge of a tile with all grooves intersecting the side edges of its tile at the midpoint of each side edge so that continuous paths can be formed on adjacent tiles if each adjacent tile has a groove extending to its side edges that is contiguous to an adjacent tile or discontinuous paths can be formed if one of the tiles does not have a groove extending to its side edge that is contiguous with an adjacent tile,

a self-propelled vehicle adapted to move across the tiles, said vehicle having guide means which ride in the grooves to steer the vehicle across the tiles,

an alarm carried by said vehicle, and

means to sound the alarm when the vehicle reaches the side edge of a tile.

4,346,890

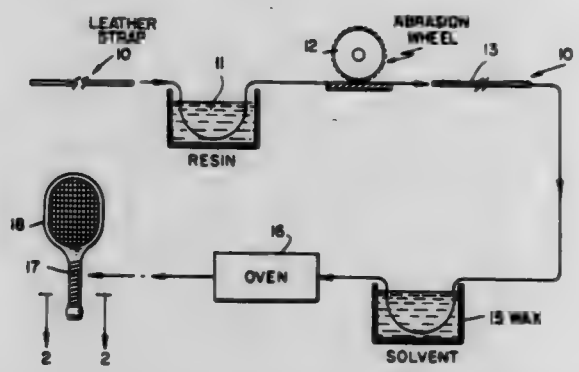
LEATHER GRIP

Bernard Kaminstein, 329 Franklin, Paramus, N.J. 07652

Filed Jan. 25, 1979, Ser. No. 6,459

Int. Cl.³ A63B *49/08*; B32B *9/02*

U.S. Cl. 273—73 J **8 Claims**



1. An improved leather grip comprising a base handle and a porous natural leather piece covering said handle, said leather piece comprising an outer roughened gripping surface, the structure of said leather piece on and below said surface and within said leather including an incorporated tackifier resinous thermoplastic material in the structure, said thermoplastic material including a thermoplastic plastic selected from the group consisting of a polyvinyl ester, a polyacrylic, polystyrene, a polybutadiene or copolymer thereof, a polyvinylhalogen, polyvinylidene chloride, a nitride, and neoprene, said thermoplastic material including a first solvent, and also including a plasticizer selected from the group consisting of tricresyl phosphate, dibutyl phthalate, dioctyl phthalate, a polycarboxylic acid polyester of a nuclearly halogenated aryl ether alcohol, butyl phthalyl butyl glycolate, dioctyl sebacate, di-(2-ethylhexyl) tetrachlorophthalate, ethylene, glycol dioleate, and a polyester plasticizer, said structure of said leather piece having an organic second solvent solution selected from the group consisting of an aliphatic solvent, benzene, xylene and toluene, and containing in solution a solvated form of a wax selected from the group consisting of beeswax and a microcrystalline wax, formed and absorbed into, and dispersed throughout, said porous leather piece on and below said roughened surface, said wax being present in from about 5 percent by weight to 15 percent by weight of the total solution, said leather piece being in the form of a strip which is wound around said handle and bonded thereto.

3. A method for forming an outer roughened gripping surface on a porous natural leather piece, and thereby improving the grip of leather, comprising:

(a) providing a porous natural leather piece;

(b) incorporating into the structure of said leather piece, on and below said surface and within said leather, an included tackifier resinous thermoplastic material in the structure, said thermoplastic material including a thermoplastic plastic selected from the group consisting of a polyvinyl ester, a polyacryllic, polystyrene, a polybutadiene or copolymer thereof, a polyvinylhalogen, polyvinylidene chloride, a nitride, and neoprene, said thermoplastic material including a first solvent, and also including a plasticizer selected from the group consisting of tricresyl phosphate, dibutyl phthalate, dioctyl phthalate, a polycarboxylic acid polyester of a nuclearly halogenated aryl ether alcohol, butyl phthalyl butyl glycolate, dioctyl sebacate, di-(2-ethylhexyl) tetrachlorophthalate, ethylene, glycol dioleate, and a polyester plasticizer;

(c) roughening at least said surface of the leather;

(d) absorbing into said leather piece, on and below said roughened surface, by applying onto said roughened surface by spraying or brushing, and forming into and dispersing throughout said roughened surface, an organic second solvent solution selected from the group consisting of an aliphatic solvent, benzene, xylene and toluene, said second solvent containing in solution a solvated form of a wax selected from the group consisting of beeswax and a microcrystalline wax; and

(e) drying said leather piece, so that said wax containing second solvent is dispersed in and absorbed throughout the porous leather piece.

4,346,891

RACKETS

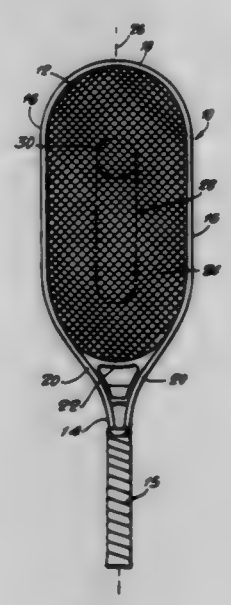
David Epstein, 8A Ground floor, Tung Shan Ter., Stubbs Rd., Hong Kong, Hong Kong

Filed Aug. 6, 1979, Ser. No. 64,308

Claims priority, application United Kingdom, Aug. 4, 1978, 32228/78

Int. Cl.³ A63B *49/02*

U.S. Cl. 273—73 C **3 Claims**



1. A tennis racket comprising:

a head,

a grip whose length is sufficient for two handed use,

a neck portion joining said head and said grip, said neck portion and said grip comprising a handle, an open frame defining said head and comprising two sides which are substantially straight and parallel to one another and to the axis of the handle and rounded substantially semi-circular ends joining said two sides,

said frame having a width which is approximately 9″,

the racket having an overall length which is approximately 27″ with said frame about twice as long as said width of said frame, whereby the neck is much shorter than in a conventional tennis racket,

two sets of strings extending across said open frame to define a strung area, said sets of strings comprising parallel strings in each set, said strings of one set crossing said strings of said other set at an angle of about 90°, and said strings of said two sets being interwoven with one another,

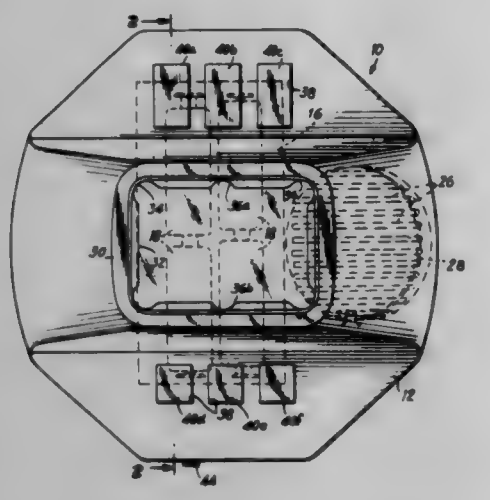
a sweet spot defined by said strung area, said sweet spot being in the shape of an elongated oval whose elongation is substantially parallel to and extends along the line of said axis of the handle, and said sweet spot extending substantially closer to the handle than in a conventional tennis racket.

4,346,892

ELECTRONIC POOL GAME

Garry E. Kitchen, 137 New Bridge Rd.; Steven G. Kitchen, 520 Knoll Rd., both of New Milford, N.J. 07646, and James C. Wickstead, Pitney Rd. & W. Main St., Mendham, N.J. 07945

Filed Feb. 15, 1980, Ser. No. 121,950
Int. Cl.[3] A63F 9/02
U.S. Cl. 273—85 G 19 Claims



1. An electronic pool game comprising matrix display means for providing a representation of the playing surface of a pool table; driving and control circuit means for applying driving signals to said matrix display means for the positioning of indicia representative of pool balls at discrete locations on said matrix display means, including a cue ball, and for providing further driving signals to said matrix display means for providing indicia representative of intended direction of displacement of said cue ball indicia; manually operable input switch means coupled to said driving and control circuit means for selective application of control signals to said driving and control circuit means for the selective positioning of said direction indicia and for the selective initiation of the displacement of said cue ball indicia in the direction determined by the positioning of said direction indicia, said driving and control means including means for detecting the duration that said input switch means is maintained in a selected state, and means for displacing the cue ball indicia over a distance representative of velocity of displacement, said velocity displacement being proportional to at least a portion of the duration that said input switch means is maintained in said selected state.

4,346,893

REMOTE CONTROLLED SPORTS GAME

Edmund E. Landsinger, Torrance, and Denis V. Bosley, Rancho Palos Verdes, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

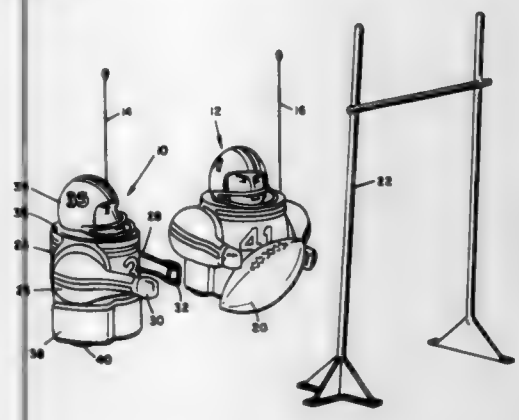
Filed Oct. 9, 1980, Ser. No. 195,717
Int. Cl.[3] A63F 7/06; A63H 29/22, 30/02
U.S. Cl. 273—85 F 14 Claims

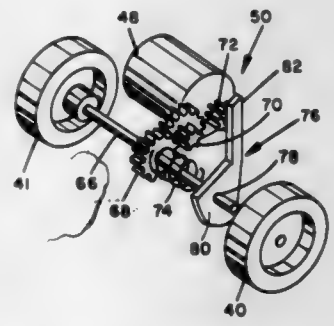
1. In a remotely controlled sports game, the combination comprising:

first and second figures, each of said figures having motor means and radio signal receiving means of different operating frequencies, said receiving means including a manually operable switch for energizing said motor means in a first direction and for driving said motor means in the reverse direction in response to a received radio signal;

first and second radio signal transmitting means, each of said transmitting means having an operating frequency corresponding to the operating frequency of the receiving means of one of said figures;

drive means within each of said figures operable in response to actuation of the transmitting means associated therewith for manipulating said figures on a surface, said drive means including a pair of drive wheels coupled to a common axle and operable through said motor means, with means pivotally coupled to said common axle in proximity to one of said drive wheels and pivoted in response to the reverse direction of operation of said motor means for contacting the surface and for lifting the proximate drive wheel from the surface for pivoting said figure about the point of contact for the timed duration of the received radio signal;





game object means having a configuration for being manipulated on a surface upon impact with said figures in response to manipulation thereof by an operator; and

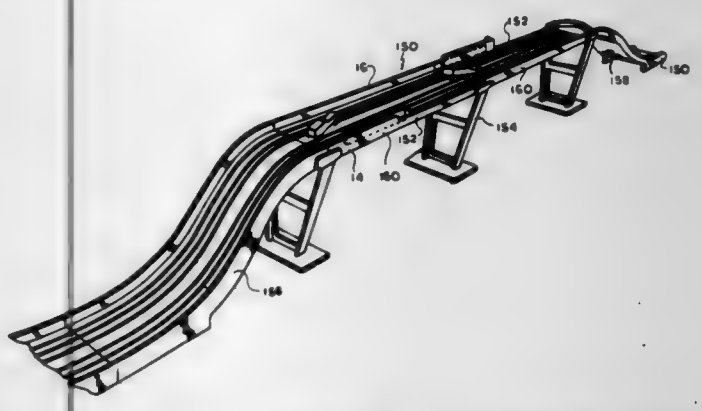
game goal means configured for positioning on a surface for enabling the operator to direct said game object means toward said goal means for effecting scoring.

4,346,894

DRIVER SKILL TEST FOR TOY MINIATURE VEHICLES

Julius Cooper, New Hyde Park, and Neil Tilbor, Fresh Meadows, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,824
Int. Cl.[3] A63F 9/14
U.S. Cl. 273—86 B 5 Claims



1. In a toy vehicle game including a relatively flat slotless track having spaced sidewalls defining at least a pair of lanes therebetween, at least one controllable toy vehicle including means for biasing said vehicle into one or another of said lanes for guiding engagement with the adjacent track sidewall, and player operable control means for varying the speed of the controllable vehicle and selectively actuating said biasing means to cause said controllable vehicle to switch lanes, the

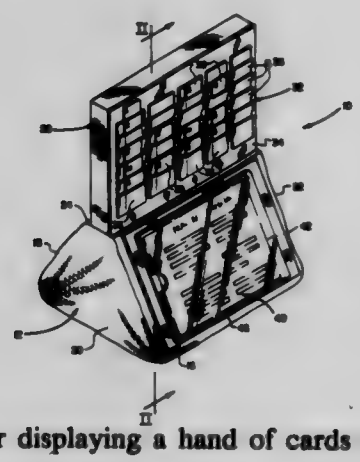
improvement comprising a track section having interrupted sidewall portions in each of said sidewalls through which a vehicle may pass when moving in the adjacent track lane whereby the player must actuate said control means to cause the controllable vehicle to switch lanes from said adjacent track lane to the other lane to avoid having the controllable vehicle leave the track; each of said interrupted sidewalls having an elongated opening formed therein extending parallel to their respective adjacent lanes; and means for adjusting the length of said openings including a wall section slidably mounted in said track section for movement parallel to the track sidewall across its associated opening.

4,346,895

PLAYING CARD CADDY

Wanda J. Brownlee, 1131 Elmwood, Lewisville, Tex. 75067

Filed Feb. 17, 1981, Ser. No. 235,107
Int. Cl.[3] A63F *1/10*
U.S. Cl. 273—150 1 Claim



1. A holder for displaying a hand of cards comprising, in combination:

a flexible support bag having a wide bottom panel, a relatively narrow top panel, and sloping side panels interconnecting the top and bottom panels;

a volume of flowable, aggregate material disposed within said support bag;

an upright card display panel secured to the top panel of the support bag, said card display panel including an array of card pockets arranged in row and columns; and,

an instruction sheet display panel secured to one of the sloping side panels for receiving and displaying a sheet of printed instructions.

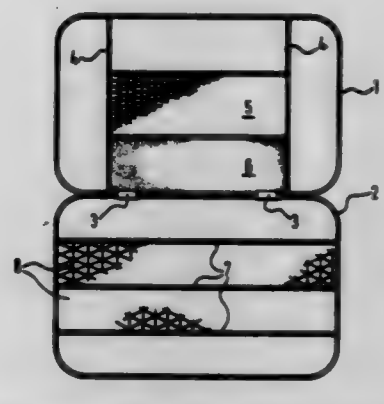
4,346,896

PORTABLE GOLF PRACTICE MAT

Leonard V. Russell, Cobham, and Derek N. Beaney, Woking, both of England, assignors to Universal Materials Company Limited, Middlesex, England

Filed Feb. 6, 1981, Ser. No. 232,373
Claims priority, application United Kingdom, Feb. 8, 1980, 8004322
Int. Cl.[3] A63B *69/36*
U.S. Cl. 273—195 A 6 Claims

1. A portable golf practice mat comprising two frames, means hinging said frames together and forming a hinge axis, first means secured within one of said frames and defining a first area arranged such that a golfer can stand thereon so as to stabilise said mat during use, and second means secured within the order of said frames and defining a second area forming at least one playing surface wherein a golf ball can be placed, said second means including a first playing surface region and a second playing surface region, said first playing surface region comprising one of turf and simulated turf, and said second playing surface region arranged to hold a tee in a playing



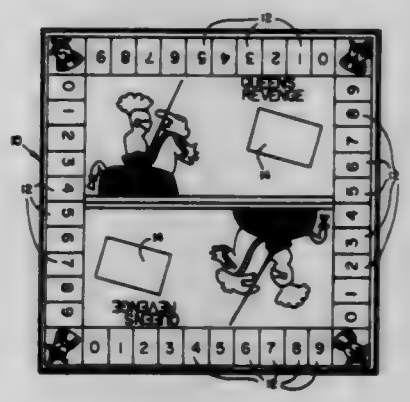
position so that a golf ball can be placed on the tee and driven from the tee.

4,346,897

BOARD GAME APPARATUS

Harry A. Sisak, 24 Hearthstone Dr., Reading, Pa. 19606

Filed Sep. 12, 1980, Ser. No. 186,437
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—271 13 Claims



3. A game board apparatus for combining chance play and the performance of mathematical operations comprising:

a. a game board each side of which contains a plurality of numbered spaces;

b. a set of markers to be placed on said numbered spaces on the board;

c. at least two dice marked as follows:

i. a first die with a first figure on one face, and a second figure on another face;

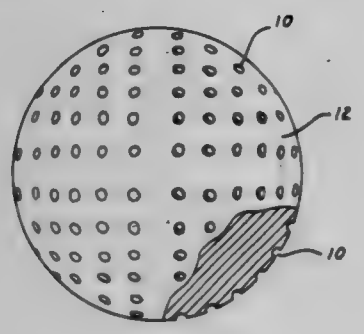
ii. a second die having three faces marked with a third figure and three faces marked with a fourth figure; and

d. at least one deck of cards including at least two cards containing different figures thereon, and the remainder of which include numerical values thereon.

4,346,898
PUTTING GOLF BALL

Frank C. Badke, 1617 Riverside, McDade Estates, Conroe, Tex. 77301

Continuation-in-part of Ser. No. 935,904, Aug. 23, 1978, abandoned. This application Jul. 9, 1979, Ser. No. 55,507
Int. Cl.³ A63B *37/14*
U.S. Cl. 273—232 7 Claims

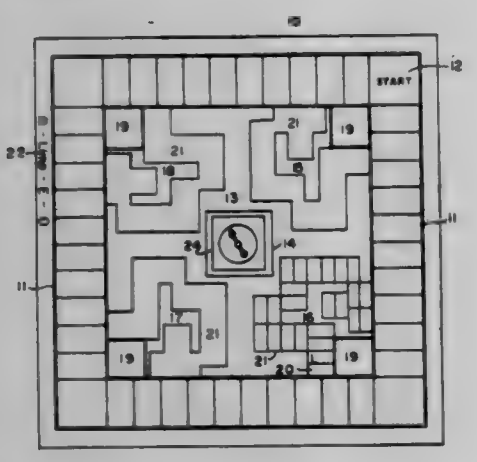


1. A putting golf ball having a plurality of concave surface depressions over the surface thereof, each of said depressions having a surface diameter in the range of 0.020 inches to 0.080 inches having improved line of putting stroke accuracy.

4,346,899
BOARD GAME FEATURING OLYMPIC SPORTS

George E. Nuebling, Sr., Box 940, Rte. 1, Hollywood, Md. 20636

Filed Sep. 16, 1980, Ser. No. 187,483
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—244 2 Claims



1. An olympic sports game apparatus with elements of chance and tests of individual skill, for competitive play by a plurality of individuals, said game apparatus having

a playing board,

a closed primary playing course, for use by all players, at the periphery of said playing board, said primary course divided into a succession of contigious playing spaces that are inscribed with randomly unique information granting awards, imposing penalties, providing sanctuaries, and instructing game play,

a plurality of distinctively marked secondary playing courses for individual and challenged play thereon, said secondary courses arranged upon a central area of said playing board, each said secondary playing course featuring a major classification of related olympic sports, each said secondary playing course being divided into a randomly oriented succession of numbered contigious playing spaces wherein said numbered playing spaces are inscribed with randomly varying informations granting awards, imposing penalties, and instructing secondary course game play,

a combination of means for regulating movements of said players upon said primary and said secondary courses for play, and

means for displaying, upon said primary and said secondary courses, the positions of each said player during all turns at play, wherein the improvement comprises:

(a). a first combination of chance and skill apparatus for regulating play upon said primary course, said first combination further comprising printed instructions for game play randomly distributed among said playing spaces of said primary course, a die for providing a further element of chance, and a spinner for providing a test of said players' individual skills;

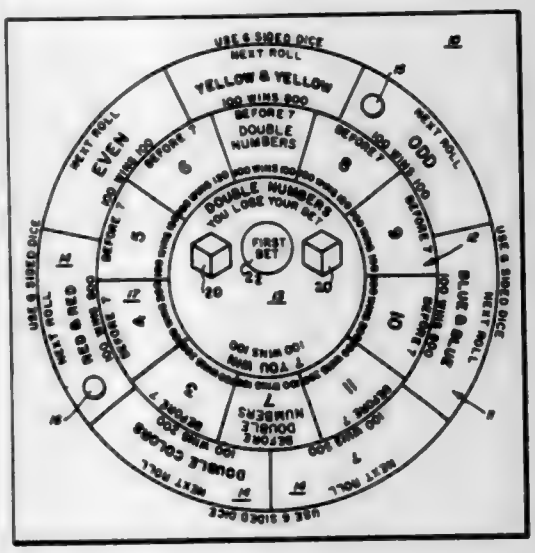
(b). a second combination of chance and skill apparatus for regulating play upon said plurality of secondary course, said second combination further comprising at least one of said numbered spaces of said secondary courses having instructions for play thereon, a deck of special cards for assigning points and for specifying player movements, a plurality of decks of event cards, a deck thereof distinctively marked to correspond to each secondary course, said event cards for identifying specific olympic games to be played and for setting winning point values, and a spinner for a test of said players' individual skills; and

(c). a plurality of two-part playing pieces for displaying player' positions upon said primary and said secondary courses, during turns at play, each said two-part playing piece uniquely colored so as to idenfify its assigned player, said two-part playing piece for use as a combined entity to mark player position, during play, on said primary course, said two-part playing piece for use, during intervals of game play on said secondary courses, as separated entities, firstly, to mark said player's last position on said primary course, and secondly, to mark said player's then current progress on said secondary course, a first part of said two-part playing piece being a pedestal, and a second part of said two-part piece being an artistic sports figurine, said pedestal and said figurine having bonding means for temporary assembly by said player of said combined entity.

4,346,900
GAME BOARD AND DICE USABLE THEREWITH

Stewart Lamlee, 55 W. 86th St., New York, N.Y. 10024

Continuation of Ser. No. 893,756, Apr. 5, 1978, abandoned. This application Aug. 25, 1980, Ser. No. 181,190
Int. Cl.³ A63F *3/00, 9/04*
U.S. Cl. 273—274 1 Claim



1. In a game apparatus for two or more players, the apparatus comprising:

a game board comprising a central circular playing area, a middle annular playing area surrounding the central circular playing area, and an outer annular playing area surrounding the middle annular playing area,

a pair of dice,

numerical indicia on the faces of each die and color indicia on the faces of each die, wherein the color indicia on the

opposite faces of a single die are the same and wherein the color indicia on adjacent faces of a single die are different,

a plurality of pairs of dice, each pair comprising dice shaped differently than the other pairs,

die shape indicating means on the game board defining the shape of the dice to be used with the game board,

a first series of arcuate segments comprising the middle annular playing area, and first means on each of the first series of arcuate segments indicating a winning outcome determined by numerical indicia displayed on the upturned faces of cast dice,

a second series of arcuate segments comprising the outer annular playing area, second means on the second series of arcuate segments indicating a winning outcome determined by color indicia displayed on the upturned faces of cast dice, and third means on the second series of arcuate segments indicating a winning outcome determined by numerical indicia displayed on the upturned faces of cast dice,

chips for marking a bet in the middle annular playing area and in the outer annular playing area,

first bet marking means for marking a first bet in the central circular playing area, and

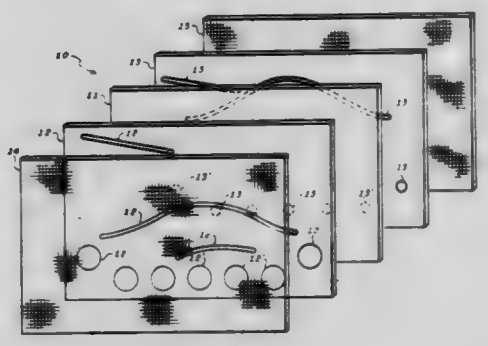
fourth means on the central circular playing area indicating if the first bet is won or lost, said second means on the second series of arcuate segments indicating the placement of the first bet marking means if the first bet is neither won nor lost.

4,346,901

LIVE FIRE THERMAL TARGET

Donald W. Booth, Huntsville, Ala., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 25, 1981, Ser. No. 247,467
Int. Cl.³ F41J *1/00, 9/13, 5/08*
U.S. Cl. 273—408 **8 Claims**



1. A thermal target comprising:

resistive material having at least first and second surfaces;

insulating means disposed upon at least the first and second surfaces of said resistive material and having portions of insulation removed therefrom at predetermined locations; and

continuous electrode means disposed upon said insulation means and fastened to at least the first and second surfaces of said resistive material for applying an electrical potential thereto.

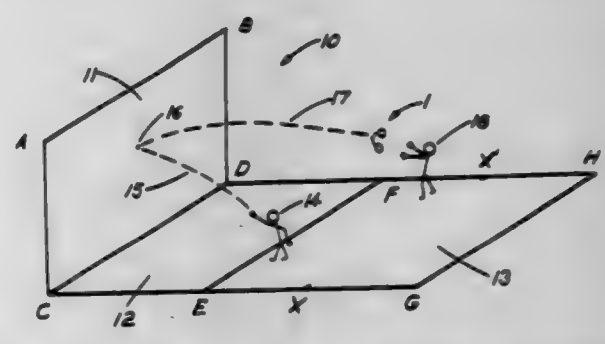
4,346,902

HANDBALL GAME UTILIZING PAIRED TETHERED BALLS

Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211

Continuation-in-part of Ser. No. 62,578, Aug. 1, 1979, abandoned. This application Sep. 2, 1980, Ser. No. 182,946
Int. Cl.³ A63B *71/04, 43/00*
U.S. Cl. 273—411 **9 Claims**

1. A handball type game and apparatus therefor, for individual and team players, played on a court layout, comprising a horizontal and a vertical playing surface means including a game area means, and a pair of tethered spherical balls, said tethered balls being especially suited for one of said players to make one-handed throws, that is, both of said tethered balls are thrown simultaneously from one hand, and also for one of said players to make two-handed catches, that is, one ball each of said tethered balls is caught separately and simultaneously in the hands of one of said players, each ball of said pair of tethered spherical balls being substantially identical in nature and consisting substantially of resilient and pliable organic material, each said ball having an optimum diameter of about 1⅝ to



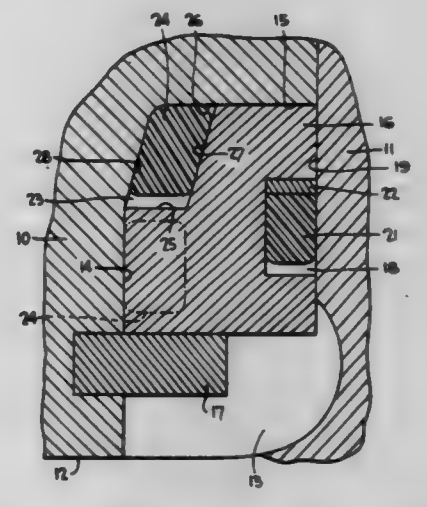
2⅞ inches (4.2 to 7.4 cms), each said ball having an optimum weight of about 1.1 to 3.5 ounces (31 to 100 gms), each said ball having an optimum relative vertical rebound characteristic value of about 50 to 90 percent, said tethered balls being connected together by a strong, flexible, inelastic cord, said cord having an optimum length between individual balls of about 10 to 20 inches (25.4 to 50.8 cms), whereby said players normally utilize said tethered balls on said court layout for throwing, catching, and rebound play, in a prescribed manner, in order to gain maximum point score.

4,346,903

HIGH-PRESSURE SEAL IN PISTON

Siegfried Heiermann, Waltrop, Fed. Rep. of Germany, assignor to Klockner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 245,095
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 8007319[U]
Int. Cl.³ F16J *15/18*
U.S. Cl. 277—58 **4 Claims**



1. In a piston and cylinder arrangement wherein the piston has an annular recess therein adjacent a high-pressure area defined between the piston and the wall of the cylinder, high-pressure seal means mounted in said recess, comprising: a one-piece backup support ring defining together with the cylinder wall a first, annular sealing chamber; an annular, elastomeric dynamic seal ring disposed in said chamber; said support ring further defining together with the piston a second, annular sealing chamber; an annular, elastomeric static seal ring disposed in said second chamber; said second chamber being defined by a pair of spaced apart end faces and a pair of

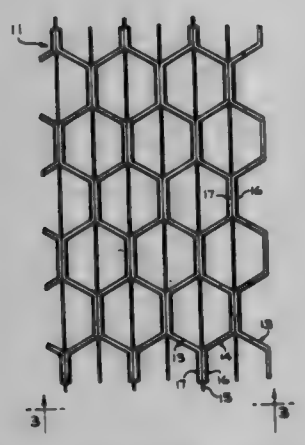
spaced apart conical faces extending therebetween; said recess having an annular side wall lying parallel to the piston axis and an end wall lying perpendicular thereto; said conical faces sloping radially outwardly in a direction toward said end wall; and said static seal initially encircling said side wall and being shifted into said second sealing chamber by said support ring upon assembly thereof; said static seal being radially expanded by said conical faces when disposed in said second sealing chamber to thereby tightly engage said piston, whereby to improve the seal between said piston and said cylinder.

4,346,904

HONEYCOMB STRUCTURE FOR USE IN ABRADABLE SEALS

Shelton Watkins, Jr., 185 Westwind Rd., Louisville, Ky. 40207

Filed Nov. 26, 1980, Ser. No. 210,822
Int. Cl.[3] B32B *3/12*; F16J *15/28*
U.S. Cl. 277—236 6 Claims



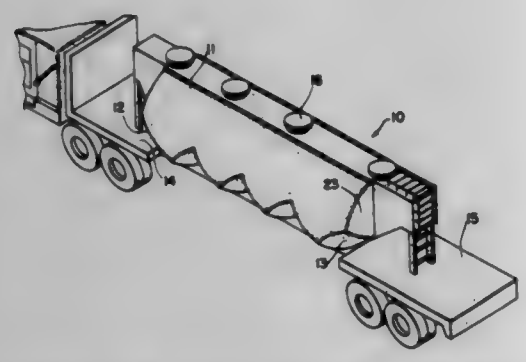
1. In an improved honeycomb structure of the type which conventionally includes a plurality of semi-hexagonal elongate strips joined together along adjacent engaging strip sections, the improvement comprising an elongate ribbon having a width less than the width of said strips interposed between successive ones of said strips, the edges of said ribbon being within the top and bottom margins of the hexagonal cell structure formed by said joined strips.

4,346,905

TANK TRAILER

Andrew Smetanick, Freeport, Pa., assignor to Freeport Transport, Inc., Freeport, Pa.

Filed Jul. 30, 1979, Ser. No. 62,050
Int. Cl.[3] B62D *53/06*
U.S. Cl. 280—5 C 6 Claims



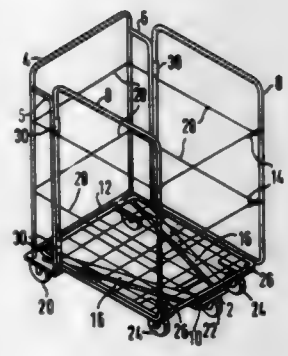
1. A tank trailer for transporting dry and liquid flowable materials comprising a horizontally disposed substantially cylindrical tank having front and rear transverse end walls, said tank supported upon a longitudinal frame element structure along its bottom portion and said frame structure having upwardly inclined ends terminating at the end walls of said tank, a hopper structure on each of said tank end walls and inclining upwardly and outwardly from the bottom portion of said end wall, said hopper structure having a width less than one third of the diameter of said tank, front and rear platforms adapted to carry goods thereon connected to and extending horizontally away from the ends of said frame structure at the bottom portions of the respective end walls and each platform having a width approximately equal to the diameter of the tank, said tank, frame structure and platforms defining a single structural unit, said hoppers each projecting over a portion of a respective platform, and vertical support means between each of said platforms and the upper end of the respective hopper structure.

4,346,906

ROLL PALLET

Joseph F. Thorpe, Somerset, England, assignor to Cheddar Valley Engineering Limited, England

Filed Jun. 24, 1980, Ser. No. 162,494
Claims priority, application United Kingdom, Jun. 26, 1979, 7922229
Int. Cl.[3] B62B *3/02*
U.S. Cl. 280—33.99 H 7 Claims



1. A roll pallet comprising
a frame including two limbs which converge from one end of the frame to the other,
a plurality of wheels provided on the frame for supporting the pallet on the ground, said wheels comprising two wheels disposed at the said one end of the frame and a further wheel disposed at the other end of the frame,
an end wall secured to the frame at the said one end of the frame,
a load-carrying deck pivotably connected to the frame at the said one end of the frame, and
stabilizing wheels provided on the deck at locations away from the region of connection of the deck to the frame
the deck being movable between a load-bearing position in which the deck is generally parallel to the ground on which the pallet stands with the stabilizing wheels then being on or adjacent the ground for this position, and a raised position in which the deck is generally parallel to the end wall, the convergent limbs of the frame being such that these limbs can enter between the corresponding limbs of a similar pallet at the same vertical level when the deck is in the raised position thereof.

4,346,907

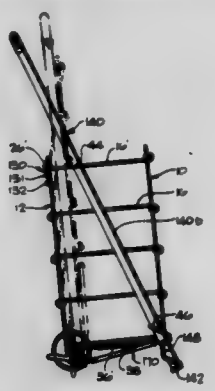
SHOPPING CART WITH AUXILIARY LOAD CARRIER

Julian B. Swann, 2951 Riverside Dr., Apt. 510, Ottawa, Ontario, Canada (K1V 8W6)

Filed Mar. 24, 1980, Ser. No. 133,078
Int. Cl.[3] B62B *1/04*
U.S. Cl. 280—47.18 28 Claims

1. In a shopping cart of the type having a collapsible basket with a front and a back and with sides formed by ribs which provide a parallelogram linkage connecting the front and the back and allow the basket to be folded from an open to a collapsed condition while the front and back remain substantially parallel, the basket having wheels mounted on axle means extending adjacent the bottom of the basket back, and

the cart further comprising a frame including a handle bridging the top of the basket and legs which straddle the basket, the frame being pivoted to opposite sides of the basket adjacent the top of said back and the legs being located by guide members extending from the lower frontal area of the basket so that the frame and basket constitute two foldably connected portions movable from an open condition to a collapsed condition, said legs including stop means for supporting the basket front in said open condition; the improvement comprising an auxiliary, foldable load carrier pivotably mounted on a first of said foldably connected portions, said carrier having a folded condition close to the basket when the basket is collapsed and being



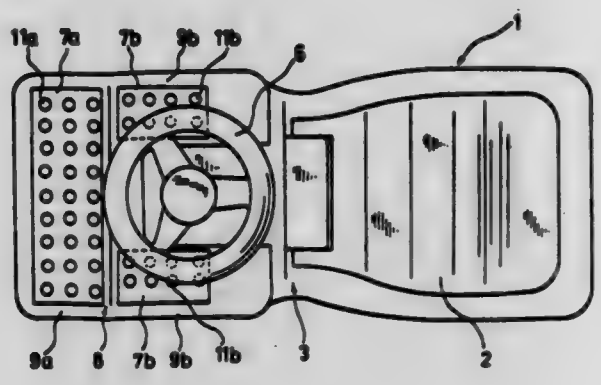
movable to an operative condition when said portions are in a folded condition proximate to said collapsed condition, in which operative condition the carrier projects beyond one of said portions in a plane below said axle means to provide a load carrying surface forming a substantial right angle with said one portion and having a clear space thereabove, said carrier and the second of said portions having interengaging means effective when said carrier is in the operative condition firstly to locate the portions at said folded condition, secondly to support the carrier, and thirdly to inhibit upward pivoting of the carrier so that the cart can stand upright on a level surface contacted by the wheels and carrier only.

4,346,908

VEHICLE FOR CHILDREN

Kenzou Kasai, Higashishimizu, Japan, assignor to Kasai Kabushiki Kaisha, Osaka, Japan

Filed May 29, 1980, Ser. No. 154,239
Claims priority, application Japan, Jun. 1, 1979, 54-74876[U]
Int. Cl.³ B62M *1/00*
U.S. Cl. 280—87.02 R **3 Claims**



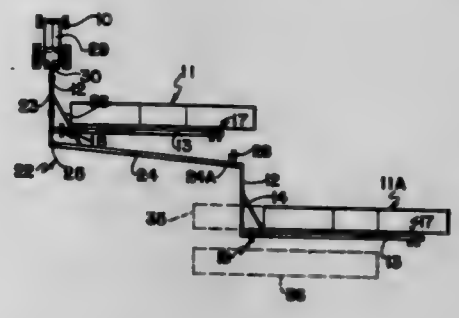
1. A play vehicle for children comprising a vehicle body having front and rear ends, pair of front and rear wheels mounted at said front and rear ends respectively, a handle mounted on said vehicle body intermediate said front and rear ends, a seat mounted on said vehicle body to the rear of said handle, means to hingedly mount said seat to said vehicle body, a base mounted on said vehicle body to the front of said handle, said base comprising a plurality of upwardly projecting bosses arranged in a lattice pattern for receiving blocks for block building, said vehicle body, said handle and said seat all being so configured that a child can push said vehicle forward by straddling said seat and kicking the ground.

4,346,909

TRANSPORT MECHANISM FOR SINGLE AND MULTIPLE UNIT PULL TYPE IMPLEMENTS

David R. Hundeby, Elbow, Canada, assignor to Macdon Industries, Winnipeg, Canada

Filed Oct. 15, 1979, Ser. No. 85,018
Claims priority, application Canada, Oct. 27, 1978, 314551
Int. Cl.³ B60D *1/14*; A01B *73/00*; A01D *55/00*
U.S. Cl. 280—411 C **17 Claims**



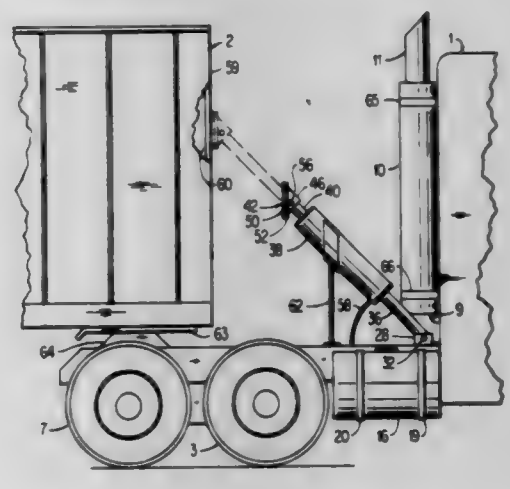
1. In pull type implements such as swathers and the like which include a frame including a transverse rear member, the improvements comprising means for mounting at least two such implements selectively in field working position whereby said implements are in echelon one behind and to one side of the other, and at least one transport position, said means including a rear offside wheel assembly for each implement operatively mounted thereto for selective castoring action from a straight ahead orientation when in field working position, to orientations at an angle to the fore and aft axis of the implement when in the transport position, means to detachably lock said wheel assemblies in any of the said orientations, a hitch pole assembly for each implement extending forwardly from one end of said transverse rear member, said hitch pole assembly of said one implement being connected by the front end thereof to adjacent the outboard end of said transverse rear member of the other of said implements.

4,346,910

ANTI-JACKNIFE DEVICE

Milton A. Beck, Marion, S.C., assignor to Larry Harold Kline, Charleston, S.C.

Filed Jul. 31, 1980, Ser. No. 173,916
Int. Cl.³ B62D *53/06*
U.S. Cl. 280—432 **19 Claims**



1. A device for use with a vehicle with a rear pivot connec-

tor and a trailor connectable to said rear pivot connector comprising:

a. a structure secured to a horizontal surface of said vehicle, forward of said rear pivot connector, including mechanical means that is operative, when activated, to extend rigidly between said vehicle and the front vertical surface of said trailer;

b. activation means secured to said vehicle and operative to activate said mechanical means at a pre-specified condition during the operation of said vehicle; and

c. said mechanical means comprising:

(1) a first hydraulic cylinder means secured to said vehicle;

(2) a first moveable hydraulic shaft secured within said first hydraulic means and operative when activated to extend rigidly between said first hydraulic cylinder means and said trailer; and

(3) a first stop means secured to said first moveable hydraulic shaft, whereby when said mechanical means is activated and said first moveable hydraulic shaft extends rigidly between said first hydraulic cylinder means and said trailer, said first stop means will press against said trailer,

whereby when said pre-specified condition is reached during the operation of said vehicle, said structure extends rigidly between said vehicle and said front vertical surface of said trailer holding said vehicle and said trailer rigidly together.

4,346,911

HITCH

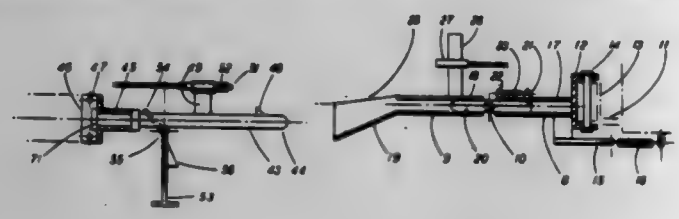
Colin R. Wiese, Fairlight, Milbrulong, New South Wales 2737, Australia

Filed Aug. 25, 1980, Ser. No. 181,279

Claims priority, application Australia, Sep. 17, 1979, PE0488; Nov. 22, 1979, PE1431

Int. Cl.[3] B60D *1/08, 1/14*

U.S. Cl. 280—478 R 10 Claims



4. A hitch comprising a prime mover drawbar, an implement drawbar, a first part of the prime mover drawbar connectable to a prime mover in normal manner, a second part of the prime mover drawbar, a pivot having a horizontal axis between the said first and second parts of the prime mover drawbar, means for holding the said first and second parts substantially in line while the implement drawbar is being joined to the prime mover drawbar, a spring loaded latch member on the second part of the prime mover drawbar, a downwardly and rearwardly extending ramp at the rear end of the second part, a second latch member on the implement drawbar at or near its end remote from the implement adapted to engage with the said spring loaded latch member when the implement drawbar is fully engaged with the prime mover drawbar, the ramp guiding the said remote end of the implement drawbar to engage with and slide along the second part of the prime mover drawbar until the spring loaded latch member and second latch member engage when the prime mover drawbar and implement drawbar are brought together, and means on the implement drawbar for freeing the two parts of the prime mover drawbar to allow rotation about the said horizontal axis when the prime mover drawbar and implement drawbar are fully engaged.

4,346,912

BASKET FOR STROLLER

Linda Habib, 345 E. 73rd St., New York, N.Y. 10021

Filed Apr. 12, 1979, Ser. No. 29,438

Int. Cl.[3] B62B *7/08*

U.S. Cl. 280—644 9 Claims



1. The combination comprising a collapsible stroller of the type having two upright members each with a handle thereon and means including a supporting linkage extending between the two upright members for collapsing the stroller from a use position where the upright members are spaced apart to a collapsed position where the upright members are relatively close together, said basket including a back, sides, a flat bottom for accepting parcels to be placed thereon and a front all of a non-foldable material which are joined together, said back and said sides being of substantially the same height and said front being of substantially from about only one-quarter to about only one-third the height of the back and the sides and engaging the supporting linkage while leaving the major portion of the basket front open, a respective flexible means for attaching the basket in a freely hanging manner only to a respective upright member and only at one point thereon, there being only two of said attaching means which serve as the only means for attaching the basket and each attaching means including means for a pivotal connection to the upper end of a respective side of the basket and means for a slidable connection to the respective upright member with the open front of the basket facing the upright members to trap articles placed in the basket against the stroller, the length of each said attaching means being such as to permit the stroller to be collapsed without removing the non-foldable basket from the stroller.

4,346,913

FALSE RELEASE REGISTERING CIRCUIT FOR COLLISION PROTECTIVE DEVICES

Werner Schrauf, Schwieberdingen; Peter Werner, Wiernsheim-Iptingen; Luer Luetkens, Reutlingen; Hans-Heinrich Maue, Asperg, and Wadym Suchowerskyj, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,693

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924252

Int. Cl.[3] B60R *21/08*

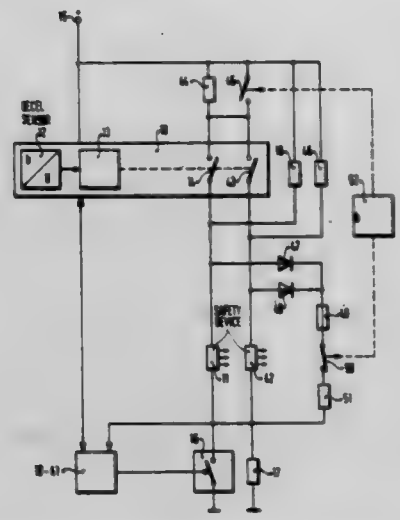
U.S. Cl. 280—735 13 Claims

1. A circuit for registering falsely initiated releases of at least one shock-absorbing protective device, in a vehicle, intended to be released into operative position in case of shock-producing accident, comprising, in addition to a first deceleration sensor (12,13) and at least one normally open switch (14,43) operable in response thereto and connected in series with at least one electrically operated shock-absorbing protective device (11,42) for control of the release thereof:

a second deceleration sensor (52) responsive to a rate of deceleration exceeding a predetermined minimum rate and a normally closed switch (50) operable in response thereto;

a storage register (49) responsive to a current exceeding a

predetermined minimum current connected in a series circuit combination with said normally closed switch (50), said series circuit combination (49,50) being connected in a circuit branch disposed in parallel with said at least one protective device (11,42),



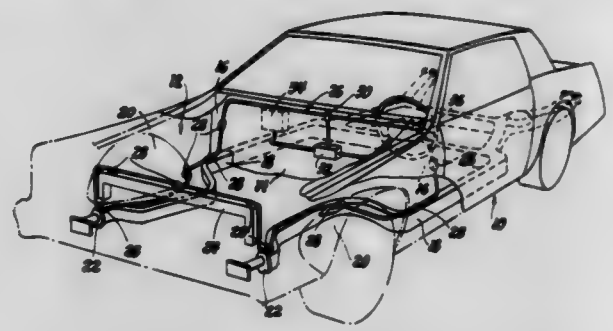
whereby registration of a current in said storage register (49) exceeding said minimum is indicative of a falsely initiated release of said protective device, by virtue of the failure of said second sensor (52) to open said normally closed switch (50) in response to deceleration before the release of said protective device.

4,346,914

ACOUSTIC EMISSION AUTOMOTIVE CRASH SENSOR

Gerald D. Livers, Santa Barbara, and Frank L. Benedict, San Pedro, both of Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1980, Ser. No. 217,245
Int. Cl.³ B60R *21/08*
U.S. Cl. 280—735 4 Claims



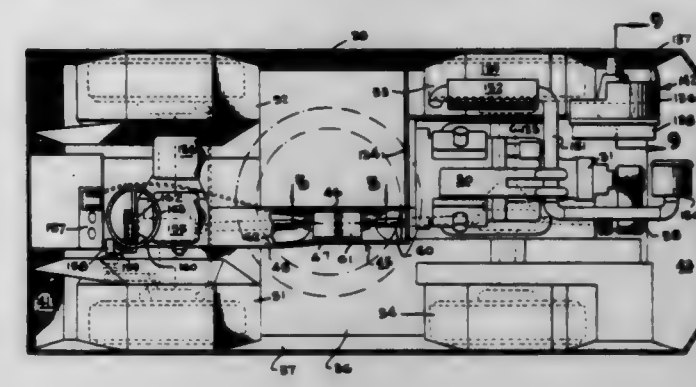
1. In combination with a vehicle having structure emitting an acoustic signal upon deformation thereof due to vehicle impact with an object and an occupant restraint, an acoustic emission sensor arrangement comprising, in combination, elongate wave guide means generating a wave in response to an acoustic signal, means connecting the wave guide means to a discrete location on the vehicle structure to provide an entry site into the wave guide means for acoustic signals originating in the vehicle structure upon deformation thereof, a sensor generating an electrical output signal in response to a predetermined force impressed thereon, means mounting the sensor on the vehicle at a location remote from the entry site, means connecting the wave guide means to the sensor to generate an electrical output signal in response to acoustic signals emitted from the vehicle structure, and means responsive to the sensor output signal for actuating the occupant restraint when the sensor output signal indicates that a predetermined level of vehicle impact has occurred.

4,346,915

VEHICLE

James C. LeBlanc, 38261 Long St., Mt. Clemens, Mich. 48045

Division of Ser. No. 927,600, Jul. 21, 1978, abandoned. This application May 1, 1980, Ser. No. 145,602
Int. Cl.³ B62D *1/20*
U.S. Cl. 280—779 7 Claims



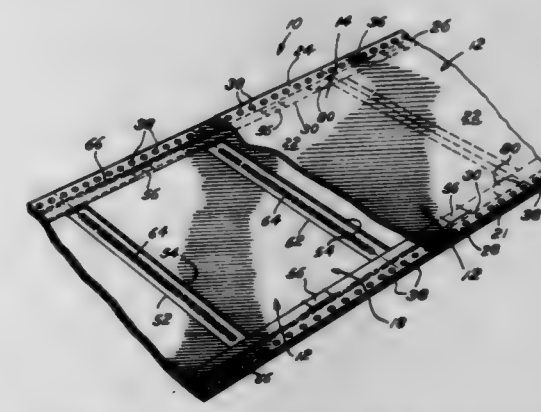
1. In a vehicle having a body, the body having a longitudinal centerline running fore and aft through the middle of the body, an operator's station comprising supporting means for supporting an operator disposed at a forward location of said body, a steering gear assembly mounted on said body and disposed on the side of said supporting means opposite said longitudinal centerline, said steering gear assembly having an arm portion projecting horizontally toward said longitudinal centerline across the driver's legs supporting a steering wheel disposed at said supporting means, at least three vision blocks mounted in a front end of said body adjacent said supporting means, said vision blocks being disposed substantially at eye level of an operator disposed in a normal operating position at said supporting means and being arcuately spaced to provide a panoramic direct line of sight view for the operator.

4,346,916

MULTIPLE PLY BUSINESS FORM AND MANIFOLD ASSEMBLY

Oscar A. Shelton, Denton, Tex., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed May 19, 1980, Ser. No. 151,165
Int. Cl.³ B41L *1/20*; B65D *27/10*
U.S. Cl. 282—11.5 A 16 Claims



1. In a multiple ply business form of the type having at least a first ply, a second ply, and a third ply intermediate said first and second plies, said first and second plies having lateral edge portions and upper and lower edge portions, means for securing said upper and lower edge portions together, said third ply being removable from between said first and second plies, an improvement in said business form comprising first and second side portions and a central portion defining said third ply, said central portion being severed from said first and second side portions, said central portion having first and second edges spaced away from said securing means, said first and second edges thereby being free of said securing means, further means

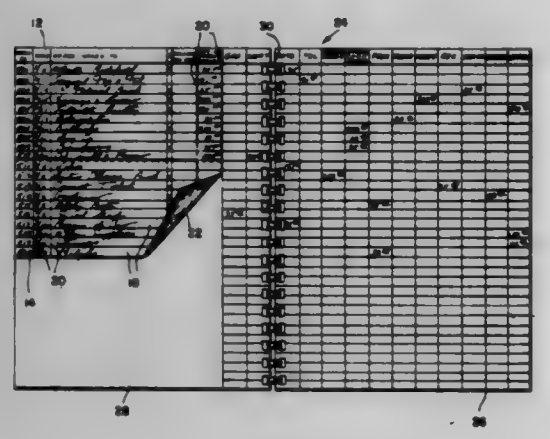
for securing said side portions of said third ply to said lateral edge portions of said first and second plies, said central portion having third and fourth edges in substantially contiguous relationship to said side portions, and at least one set of cooperating and complementary projecting means and cut-out means defined along said side portions and on said third and fourth edges of said central portion, said projecting means and said cut-out means being completely severed from each other and being directly adjacent each other, said first and second plies, said side portions, and said cooperating and complementary means defining means for retaining said central section in a substantially immobile position relative to said first and second plies, said complementary and cooperating means defining the essential means for avoiding undersired relative movement between said third ply and said first and second plies in a direction transverse to said first and second edges of said central portion.

4,346,917

CHECKBOOK ACCOUNTING SYSTEM

Bruce N. Clancy, 118 Via Buena Ventura, Redondo Beach, Calif. 90277

Filed Sep. 25, 1978, Ser. No. 945,483
Int. Cl.³ B42D *12/00*
U.S. Cl. 283—58 **8 Claims**



1. A checkbook register and account record journal system comprising:

a plurality of checkbook register sheets each arranged to receive check information on a single line detachably secured on one end,

each of said register sheets having a plurality of spaced apart parallel lines on the obverse side for recording additional check information,

an account record journal sheet having a plurality of spaced apart parallel lines on the obverse side adapted to be aligned with said lines on said register sheets for indicating specific headings according to task for each check,

the reverse side of said checkbook register sheet adapted to be attached to said record journal sheet, and

said account record journal sheet adapted to receive and hold said register sheets aligned to form contiguous parallel lines with said account record journal sheet thereby providing a complete journal page having check information, deposit information and journal information and from a single entry.

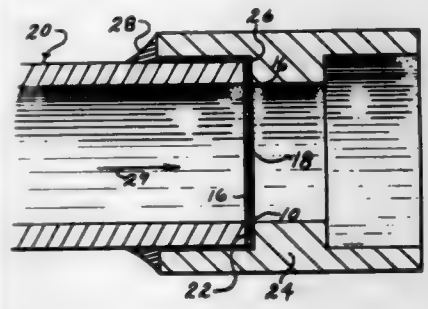
4,346,918

PIPE SPACER USED IN WELDING

Goodwin A. Lycan, P.O. Box 23, Stevensville, Mich. 49127

Continuation-in-part of Ser. No. 36,780, May 7, 1979, abandoned. This application Apr. 3, 1981, Ser. No. 250,620
Int. Cl.³ F16L *13/04*
U.S. Cl. 285—22 **6 Claims**

1. A spacer for positioning between the end of a pipe and an internal annular shoulder of a bore of a fitting into which bore said pipe is inserted in preparation for welding the pipe to the fitting, said spacer including a ring-shaped body, said body having a yieldable offset section serving to increase the effective thickness of said spacer and having an outer diametrical dimension approximating the outer diametrical dimension of said pipe whereby said body abuts one of said pipe end and fitting shoulder at said offset section when positioned between said fitting shoulder and pipe end, said offset section being yieldable sufficiently to space said one pipe end or fitting shoulder from the remainder of said spacer to prevent unyielding abutment between the pipe and spacer upon pipe expansion



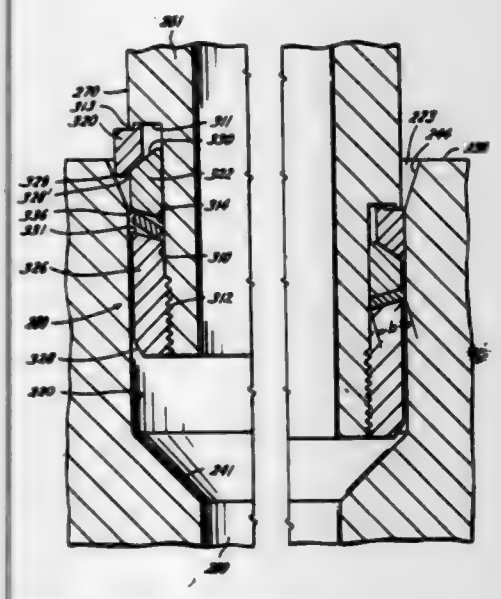
during welding, the improvement comprising a split formed in said spacer body defining spaced ends of the spacer body, said spacer body lying substantially in the same plane except for said offset section, a tab part extending from said spacer body, said tab part projecting generally perpendicularly relative to said plane of the body and constituting means for extending between said fitting and pipe and beyond the fitting to indicate the presence of the spacer when positioned between said pipe end and said fitting shoulder.

4,346,919

REMOTE AUTOMATIC MAKE-UP STAB-IN SEALING SYSTEM

Charles D. Morrill, Bellaire, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Division of Ser. No. 833,553, Sep. 15, 1977, Pat. No. 4,229,027. This application Nov. 6, 1978, Ser. No. 958,313
The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—25 **24 Claims**



1. A sealing system, comprising:

first apparatus having a projecting structure;

second apparatus having a bore therein, said bore being of sufficient size to telescopically receive said projecting structure therein;

seal means for substantially simultaneously forming metal-to-metal seals with said projecting structure and said bore, said seal means including a metal seal gasket; and

actuation means responsive to the telescopic insertion of said

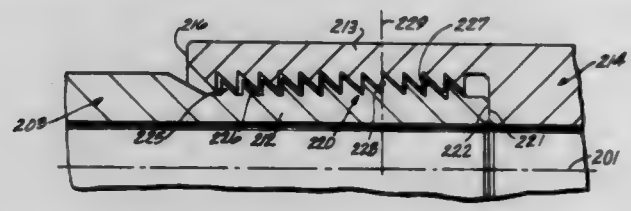
structure into said bore for actuating said seal means, said actuation means including deformation means for forcing said metal seal gasket to deform and form said metal-to-metal seals and reciprocating means for actuating said deformation means.

4,346,920

THREADED CONNECTION USING VARIABLE LEAD THREADS

Patrick E. Dailey, Torrance, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 28, 1980, Ser. No. 144,347
Int. Cl.³ F16L *15/00*
U.S. Cl. 285—89 **38 Claims**



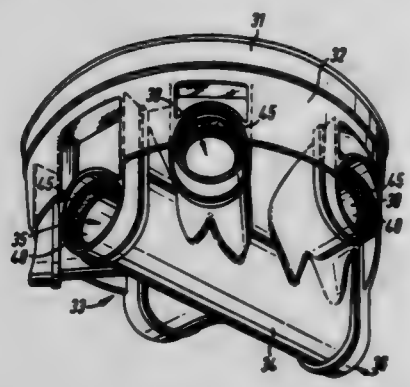
1. A threaded connection for connecting first and second members and subject after assembly to a load of specified magnitude applied in a selected direction along the axis of the threads, and in which the threads as so loaded are uniformly stressed, the threads being of constant pitch throughout their lengths along the members with each thread having a load face which is loaded when said load is applied in said direction to the connection, and characterized in that the load faces of the threads on at least one of the members is defined to have a lead which varies from a constant lead by an amount which, at any given location along the threads, is equal to the amount of net relative deflection due to strain of the members along the axis at such location in response to the application to the connection of the load of specified magnitude in the selected direction.

4,346,921

DRAINAGE INSPECTION CHAMBERS

Anthony Gill, Swanley; John Gosden, and Robert W. Parker, both of Maidstone, all of England, assignors to Reed International Limited, London, England

Filed Mar. 6, 1980, Ser. No. 127,629
Claims priority, application United Kingdom, Mar. 13, 1979, 7908782; May 4, 1979, 7915727
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—110 **8 Claims**



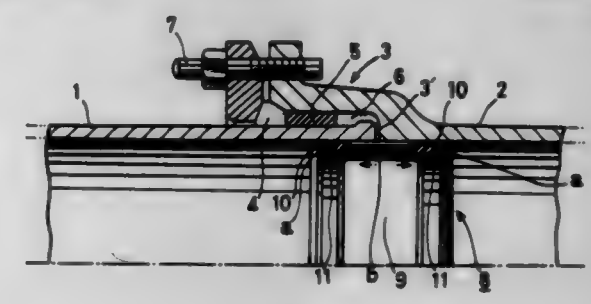
1. A drainage inspection chamber of prefabricated plastics construction having a manhole access and a base with at least one channel in the base extending between an inlet opening and an outlet opening, the base of said prefabricated inspection chamber being formed from plastics material and having an integral side wall structure, circular openings in the side wall structure constituting said inlet and outlet openings, separately formed socket members for receiving inlet and outlet pipes, said separately formed socket members being located at each of said openings, and each said socket member being provided with a resilient sealing member for sealing said socket member with the outer surface of a pipe fitted into the socket member, each said sealing member being so configured and being so arranged relative to its associated socket member that said sealing member also serves simultaneously to seal said associated socket member with the internal surface of the inspection chamber.

4,346,922

DEVICE FOR PREVENTING LEAKAGE AT PIPE JOINTS

Hisao Ohtsuga, 5-26, Kamiosaki 4-chome, Shinagawa-ku, Tokyo, Japan (141); Koji Uzawa, 4-8, Hibarigaoka Kita 2-chome, Hoya city, Tokyo, Japan (188); Takashi Kamuro, 34-18, Nishimachi 5-chome, Kokubunji city, Tokyo, Japan (185); Susumu Sudo, 2670, Kami-iida, Totsuka-ku, Yokahama city, Kanagawa Pref., Japan (245); Tomoyoshi Hirose, 13-2, Kyomachi 2-chome, Kawasaki-ku, Kawasaki city, Kanagawa Pref., Japan (210); Masafumi Miyao, 16-4-1413, Harumi 3-chome, Chuo-ku, Tokyo, Japan (104), and Motoyuki Koga, 9-18, Nakamachi 1-chome, Meguro-ku, Tokyo, Japan (153)

Filed Mar. 21, 1980, Ser. No. 132,543
Int. Cl.³ F16L *21/00*
U.S. Cl. 285—109 **11 Claims**



1. A device for forming an airtight and watertight seal between the joint of two pipes, said device comprising:

an integral cylindrical member made of an elastic material and having a longitudinal intermediate portion, said cylindrical member being inside of and in contact with the inner peripheral surfaces of the respective ends of two pipes that form a joint between the two pipes, said intermediate portion being radially adjacent to the joint of the two pipes;

two belt members, each respectively positioned around the radial outer peripheral surface of a longitudinal end of said cylindrical member and impregnated with a bonding agent for, when pressure is exerted thereon, oozing the bonding agent therefrom; and

two expanding members, each respectively positioned inside the inner peripheral surface of a longitudinal end of said cylindrical member for radially expanding the respective cylindrical member longitudinal end for exerting pressure on one of said belt members for causing the bonding agent thereof to be oozed therefrom, whereby the radial outer peripheral surfaces of the longitudinal ends of said cylindrical member are respectively bonded to the inner peripheral surfaces of the two pipe ends, thereby forming an airtight and watertight seal between the joint of the two pipes.

4,346,923

APPARATUS FOR JOINING TUBING

Verity C. Smith, Dedham; Robert J. Baker, Pembroke; Wylie W. Barrow, Jr., and H. Daniel Doane, both of Duxbury, all of Mass., assignors to Vaponics Inc., Plymouth, Mass.

Filed Aug. 23, 1979, Ser. No. 69,516
Int. Cl.³ F16L *17/02*
U.S. Cl. 285—340 **1 Claim**

1. An adapting and coupling arrangement for forming a firm mechanical joint between a first section of tubing of a metal selected from a group consisting of titanium, tantalum, zirco-

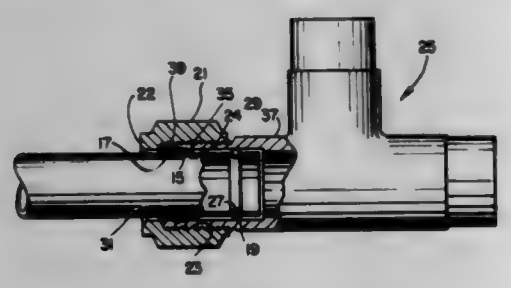
nium and stainless steel and a second section of tubing of a metal selected from said group, said second section having an open end adapted to telescopingly receive said first section, each of said first and second sections of tubing having inner and outer surfaces, comprising

a sealing means made of noncontaminating material, mounted on said outer surface of said first section for providing a fluid-tight seal between said outer surface of said first section of tubing and said inner surface of said second section of tubing when said second section telescopically receives said first section,

a mechanical stop, fixedly attached against movement relative to said outer surface of said first section of tubing at a location farther from said second section than said sealing means,

a ferrule having

an inner surface arranged so that said ferrule loosely slidably engages said outer surface of said first section of tubing at a location between said sealing means and said mechanical stop,



a pivoting surface facing said mechanical stop and adapted to engage said mechanical stop so that said ferrule pivots on said mechanical stop, and

an outer tapered surface having a narrow end facing said second section of tubing for conformably, pivotally engaging said inner surface of said second section at said open end, and

coupling means mounted on one of said first and second sections of tubing and adapted to engage the other of said first and second sections to draw said first and second sections together, causing said ferrule to engage said mechanical stop and said inner surface of said second section whereby said pivoting movement is produced,

said ferrule, said inner surface of said second section at said open end, said mechanical stop, and said first section of tubing being arranged to be in an overlapping weded relation with each other when said first and second sections of tubing are drawn together by said coupling means to form said firm mechanical joint.

4,346,924

RELEASABLE FASTENING DEVICE

Leslie V. Herriott, Wolverhampton, England, assignor to Lowe and Fletcher Limited, Walsall, England

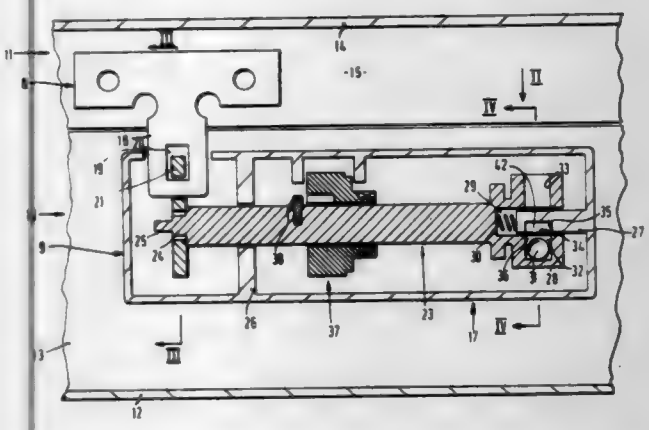
Filed Mar. 31, 1980, Ser. No. 135,696

Claims priority, application United Kingdom, Apr. 12, 1979, 7913091

Int. Cl.³ E05C 3/06

U.S. Cl. 292—129 2 Claims

1. A container comprising a base, a lid hinged to the base and a fastening device, wherein the base and the lid each comprise respective peripheral walls which abut when the container is closed, the fastening device comprises first and second parts which are secured to respective ones of the base and lid, the first part of the fastening device includes a body and a further member mounted in the body for movement relative thereto between a fastening position and a releasing position, the fastening member having means for fastening the second part of the device in a predetermined position relative to the body when the fastening member is in its fastening position, the fastening device further comprises a combination lock mechanism for releasably locking the fastening member in its fastening position, the first part of the fastening device further comprises a retaining element which is engageable with the fastening member and is movable relative thereto and relative to the body under the action of gravity from a retaining position in which the retaining element retains the fastening member in its fastening position to an inactive position in which the retaining element allows the fastening member to move from its fastening position to its releasing position, there is formed in one of the fastening member and the body a first recess defined, in part, by first and second boundary surfaces, there is formed in



the other of the fastener member and body a second recess which is larger than the retaining element, said first boundary surface is perpendicular to said peripheral walls and faces towards the second recess, said second boundary surface is inclined to said first boundary surface and to said peripheral walls, said second boundary surface also faces towards the second recess, the retaining element is movable within the first and second recesses and the distance between said first boundary surface and a mouth of the second recess is less than the corresponding dimension of the retaining element.

4,346,925

HANDLE DEVICE OF LID OPENER MECHANISM

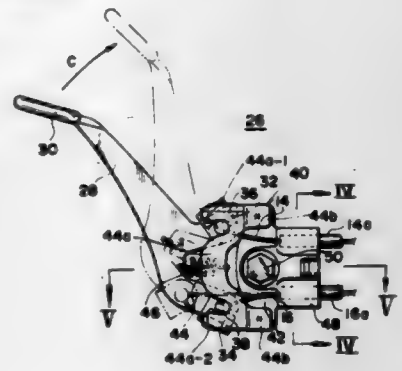
Yasumasa Okada, Hino, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 2, 1980, Ser. No. 166,690

Claims priority, application Japan, Jul. 5, 1979, 54-84441

Int. Cl.³ E05C 7/00

U.S. Cl. 292—336.3 10 Claims



1. In a lid opener mechanism including two locking devices for respectively locking two lids, and two control wires respectively connected at their one ends to said two locking devices for making said locking devices inoperative when pulled in a given direction, a handle device for operating said control wires, comprising:

a supporter stationarily arranged at a position far from said two locking devices;

a single lever having one end forking into first and second work portions;

swinging means for swinging said single lever relative to said supporter;

biasing means for biasing said lever to take a predetermined neutral position; and

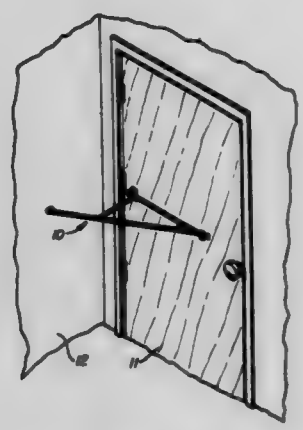
connecting means for connecting the other ends of said control wires to said first and second work portions of said lever respectively, whereby when said lever is swung in a direction against the force of the biasing means causing one of said first and second work portions to pull its corresponding control wire in the given direction, the corresponding locking device becomes inoperative thereby to unlock the corresponding lid.

4,346,926

DOOR SECURITY DEVICE

Frank E. Lucas, 121 Park Plaza Dr., Daly City, Calif. 94015

Filed Jul. 20, 1981, Ser. No. 284,418
Int. Cl.³ E05F *5/14*
U.S. Cl. 292—338 9 Claims



1. A door security device for use with a door mounted transverse to an adjacent wall comprising:

an elongate stop rod having inner and outer ends, said outer end adapted to engaged the wall;

a first hinge means for pivotally mounting said inner end to said door;

an elongate spacing rod having first and second ends and attached at said first end to an intermediate position along said stop rod; and

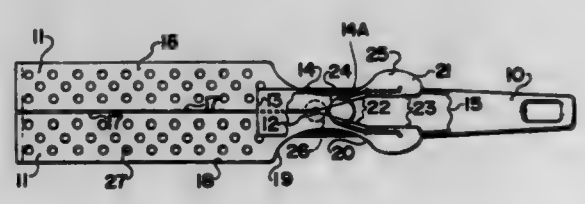
a second hinge means, horizontally aligned with said first hinge means, for pivotally mounting said second end of said spacing rod to said door, said second hinge means including means for permitting the movement of said spacing rod and stop rod therewith between a first position parallel to the door and a second position generally perpendicular to the door and also including means for preventing the movement of said stop rod past said second position.

4,346,927

ADJUSTABLE SPATULA

Walter E. Karg, 132 - 1065 Beaverhill Blvd., Winnipeg, Manitoba, Canada

Filed Oct. 3, 1980, Ser. No. 193,805
Int. Cl.³ A47J *43/28*
U.S. Cl. 294—7 4 Claims



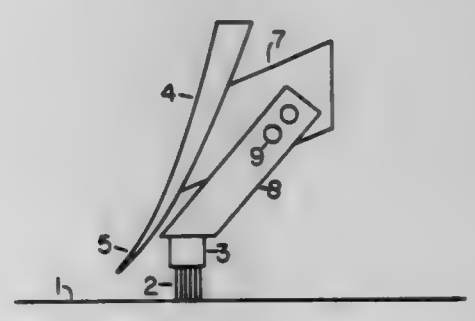
1. A spatula for cooking and the like comprising in combination a handle portion, a pair of spatula halves pivotally supported adjacent the front end of said handle portion and extending forwardly therefrom, in side by side planar relationship, actuating portions extending rearwardly from each of the spatula halves substantially parallel to said handle portion and spring means reacting between said actuating portions normally urging them apart and the spatula halves together, said handle portion including apertured retaining lips adjacent said pivotal support, said spatula halves engaging through said retaining lips, the inner edges of said actuating portions of said spatula halves diverging outwardly from one another when said spatula halves are together and a pivot pin extending upwardly from the plane of the handle portion and engaging between said spatula halves at the junction between the inner edges of said spatula halves and the inner edges of said actuating portions, said spring means normally urging and retaining said spatula halves in engagement under said retaining lips.

4,346,928

SNOW PLOW ATTACHMENT

Marvin S. Towsend, 1365 Potomac Heights Dr., Oxon Hill, Md. 20022

Continuation-in-part of Ser. No. 874,816, Feb. 3, 1978, Pat. No. 4,153,287. This application Mar. 20, 1979, Ser. No. 22,169
Int. Cl.³ E01H *5/12*
U.S. Cl. 294—51 4 Claims



1. In a plow having a plow blade, a plow blade support, and a means for attaching the plow blade to a motor vehicle, the improvement, comprising:

a. a bristle support having semirigid bristles for contacting the surface to be cleared, said bristle support having a forward end with an upper surface and a rearward end, said forward end having its bristles forward of and adjacent to the leading edge of the plow blade thereby directing the moved material which is moved into the plow blade; said semirigid bristles serving the functions of brushing down and scraping down the surface and resiliently yielding to and riding over irregularities on the surface; and

b. means for positioning said bristle support adjacent to the leading edge of the plow blade.

4,346,929

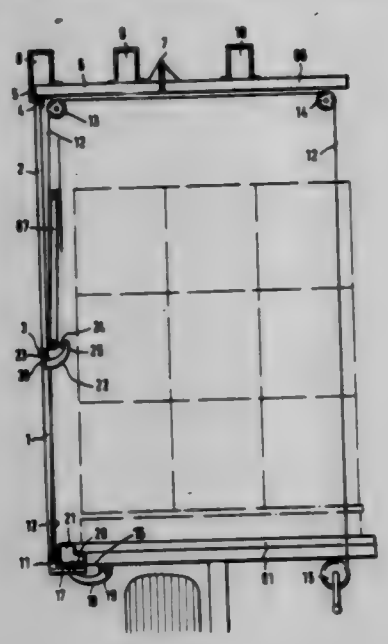
TRUCK WITH LOADING PLATFORM AND BODY

Günter Peters, Staumühle 228, 4791 Hövelhof, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,946
Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919608
Int. Cl.³ B62D *27/00*
U.S. Cl. 296—36 9 Claims

1. A truck having a flat-roof with a central stationary element, a loading platform, a pair of spaced end walls at opposite ends of the loading platform and a body comprising a side-wall made of two lengthwise elements that are hinged together, the side-wall element adjacent to the roof of the truck being hinged along the edge that is adjacent to the roof, an element of the roof that is hinged to said side-wall element also being moveable and, hinged to the central stationary roof element by a hinge elevated above the flat roof, a rope attached to said side-wall element that is hinged only to said roof-hinged side-wall element, which rope extends near the hinge between the side-wall element and the moveable roof element, an open guide pulley secured to the stationary end walls and for orienting the rope in a plane parallel with the stationary roof ele-

ment, a guide pulley within the truck body for leading the rope away from said central stationary roof element, and a winch



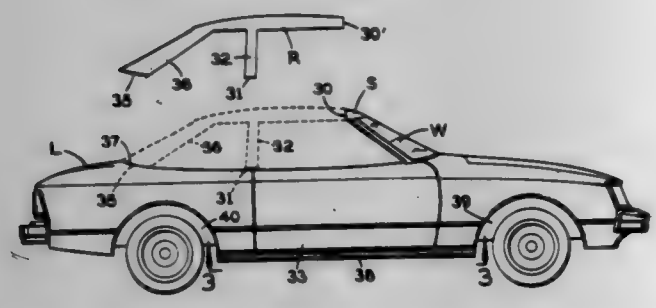
for selectively drawing and releasing the rope to open and to close the side-wall of the truck.

4,346,930

CONVERTIBLE CAR AND METHOD OF MAKING SAME

Charles R. Northey, Boca Raton, Fla., assignor to Grandeur Motorcar Corporation, Pompano Beach, Fla.

Filed Mar. 28, 1980, Ser. No. 134,877
Int. Cl.[3] B60J 7/00
U.S. Cl. 296—107 20 Claims



11. In a two-door passenger car having a foldable convertible top, the improvement which comprises:

reinforcing members extending inside the rocker panels of the car body along substantially their entire length between the front and rear wheel wells on each side;

reinforcing plates attached to the opposite sides of the car body on the inside just above the floor between the rear wheel wells and the respective door posts;

reinforcing plates attached to the opposite sides of the car body on the inside just above the floor immediately in front of the door opening on that side;

and a hinged operating linkage for the convertible top attached to each side of the car body.

4,346,931

BIFOLD VEHICLE DOOR ASSEMBLY

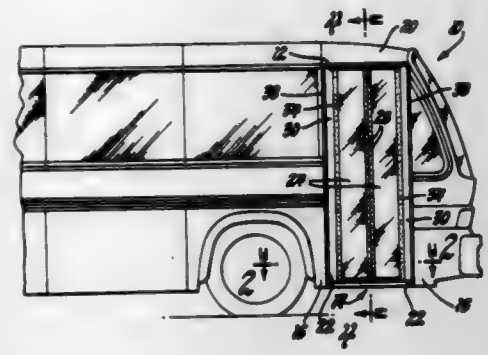
Ralph H. Merkle, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1980, Ser. No. 206,139
Int. Cl.[3] B60J 5/06
U.S. Cl. 296—148 3 Claims

1. In a vehicle having a body side of non-linear cross-section and a passenger access port having upper and lower walls defined by the vehicle and side walls defined by the body side, a door assembly for opening and closing the access port, comprising,

a pair of bifold doors movable between an unfolded position closing the access port and a folded position opening the access port, each door in unfolded position having an outer planar panel disposed between the upper and lower walls, each door further having a side panel having an outer planar portion located generally coplanar to a respective outer panel, an inner portion located inwardly of the body side and an intermediate arcuate portion extending between the inner and outer portions past a respective side wall,

first hinge means interconnecting each planar panel and the outer planar portion of a respective side panel,



second hinge means interconnecting the inner portion of each side panel and the vehicle to mount each bifold door on the vehicle,

means rotating the side panels about the second hinge means to move each door between the unfolded position and a folded position wherein the side panels are located inwardly of the side walls to one side thereof and the outer panels are folded inwardly of the access port and are located adjacent the side walls and the side panels,

and cooperating means on each outer panel and one of the upper and lower walls for guiding movement of the planar panels as the bifold doors move between unfolded and folded positions.

4,346,932

HINGE DEVICE FOR AN OPENABLE AUTOMOBILE ROOF

Hidefumi Iwata, Koganei; Yoshimasa Tuchiya, Sayama, and Toshiharu Iidaka, Funabashi, all of Japan, assignors to Koku-san Kinzoku Kogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Aug. 14, 1980, Ser. No. 178,097
Claims priority, application Japan, Aug. 16, 1979, 54-103560
Int. Cl.[3] B60J 7/18
U.S. Cl. 296—216 3 Claims



1. A hinge device for an openable automobile roof having a lid portion, which comprises:

a hinge housing formed at an edge portion of an opening in the automobile roof panel, said housing being provided at the front side thereof with an entrance and a dead end recess extending substantially horizontally with said entrance, in facing relation to said opening;

a rigid hinge tongue attached to said lid portion and having a cross-section smaller than the recess of said housing; and

a guide portion provided in front of said entrance and having

a tapered guiding surface, for engaging said tongue, spaced apart from said entrance, and in facing relation thereto, so as to permit insertion of said tongue into the recess,

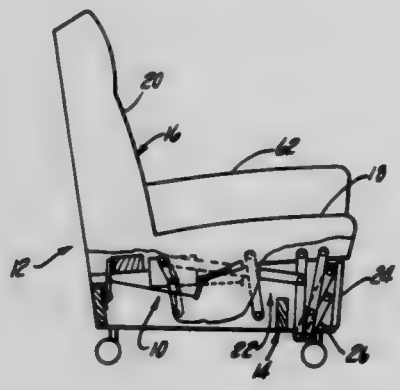
said rigid hinge tongue having an expanded portion at its free end to snugly fit into the dead-end recess, and a stopper section to slide on said tapered guiding surface when said lid portion is in a position to close said opening in the automobile roof panel.

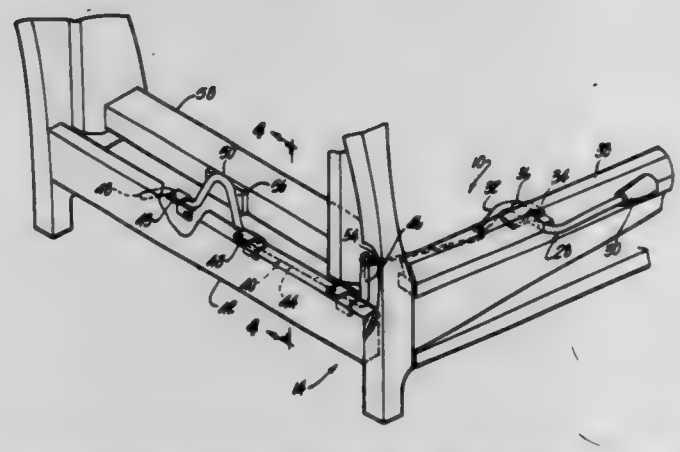
4,346,933

RECLINING ACTUATOR FOR A RECLINER CHAIR

Ronald E. Jacobs, Georgetown, Ky., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed May 6, 1980, Ser. No. 147,192
Int. Cl.[3] A47C *1/02*
U.S. Cl. 297—89 10 Claims





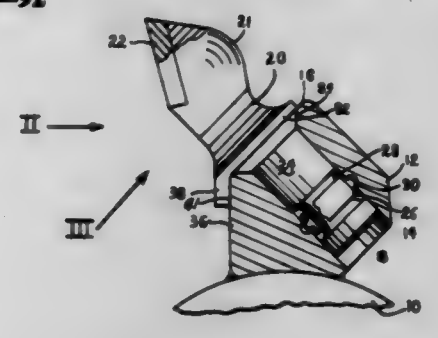
1. In a reclining chair comprising a chair frame, a seat unit, and linkage means mounting said seat unit on said chair frame for back and forth movement between a seating position and a reclining position located forwardly of said seating position, an actuator assembly mounted on said chair frame and operable when actuated to move said seat unit from said seating position toward said reclining position, said actuator assembly comprising a handle mounted on said chair frame movable between an idle position and an operative position, an activator member mounted on said chair frame for movement between a rest position and an activated position, link means connecting said handle with said activator member for transmitting the movement of said handle from said idle position toward said operative position to said activator member to move said activator member from said rest position to said activated position, said activator member being in a non-connected relation with said seat unit and having an abutting portion located in the part of movement of said seat unit so that when said seat unit is in said seating position, movement of said activator member from said rest position toward said activated position in response to movement of said handle from said idle position toward said operative position causes said abutting portion to abut said seat unit and apply a forwardly directed force to said seat unit operable to move said seat unit from said seating position toward said reclining position.

4,346,934

EXCAVATING BIT

Michael A. College, Everett, and Robert J. McKeury, Windber, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 811,181, Jun. 29, 1977, abandoned.
This application Feb. 5, 1979, Ser. No. 9,710
Int. Cl.[3] E21C *35/18*
U.S. Cl. 299—92 10 Claims



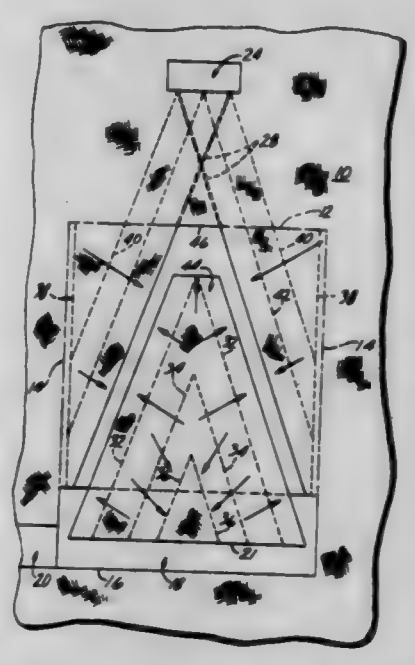
1. A nonrotatable excavating bit, designed for mounting in a support block having a bore in one face and a smooth exterior face which is angularly related to, but not perpendicular to, the bore axis, said bit comprising a substantially flat working portion on one end and a cylindrical shank portion on the other; said shank portion adapted to be received in said bore so as to retain said bit in the support block; an abutment shoulder formed by the juncture of said shank portion with said working portion; a tang extending from said abutment shoulder; said tang having a tang face which faces said shank portion; said tang face is angularly related to, but not perpendicular to, the shank portion axis; said tang face in and of itself sufficiently defining a means for mating with said smooth exterior face of said support block and holding said bit nonrotatable in the support block.

4,346,935

METHOD FOR FRAGMENTING OIL SHALE FORMATION

Wilhelmus G. J. Huijnen, Gouda, Netherlands, assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Nov. 17, 1980, Ser. No. 207,480
Int. Cl.[3] E21C *41/10*
U.S. Cl. 299—2 29 Claims



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed in an in situ retort site in a subterranean formation containing oil shale, the in situ retort containing a fragmented permeable mass of formation particles containing oil shale, the method comprising the steps of:

forming a void in a lower portion of the retort site;

placing a primary sub-round of explosive in a portion of un-

fragmented formation within the retort site above the void, said primary sub-round defining a boundary of said portion of unfragmented formation;

placing a secondary sub-round of explosive in said portion of unfragmented formation;

detonating the primary sub-round of explosive for fracturing such unfragmented formation generally along said boundary to separate such portion of formation from adjacent unfragmented formation for forming at least one new face adjacent the separated portion of formation, the separated portion of formation containing the secondary sub-round of explosive;

detonating the secondary sub-round of explosive after such new face is formed and before the separated portion of formation reaches the bottom of the void for explosively expanding said separated portion of formation for forming at least a portion of a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort; and

establishing a retorting zone in the fragmented mass for producing liquid and gaseous products of retorting.

4,346,936

TREATMENT OF SUBTERRANEAN URANIUM-BEARING FORMATIONS

Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 19, 1980, Ser. No. 179,549

Int. Cl.³ E21B *43/28*

U.S. Cl. 299—4 **11 Claims**

10. In the process for in situ leaching of mineral values from a mineral-bearing subterranean formation comprising pumping an oxidant-containing lixiviant under pressure into the formation through one or more injection wells, allowing the lixiviant to leach out the mineral values in the formation, and removing from said formation the lixiviant pregnant with the mineral values through one or more production wells spaced from said injection wells, the improvement comprising:

(a) prior to injecting the lixiviant into the formation, pumping oxidant into the formation until said oxidant has broken through at the production wells, and

(b) shutting in the production wells to permit oxidation of the formation.

4,346,937

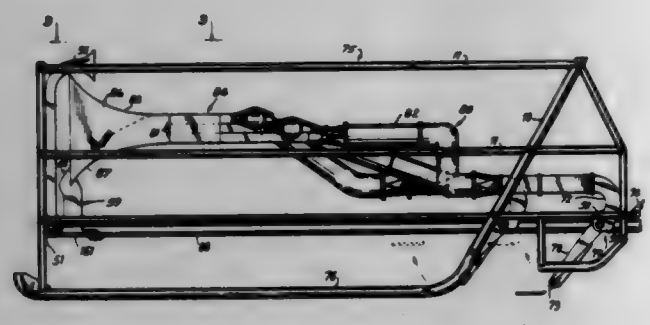
DREDGING APPARATUS INCLUDING SUCTION NOZZLES

John P. Latimer; Robert M. Donaldson; Ted W. Christian, and Glean E. Miller, all of Newport News, Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Jun. 2, 1980, Ser. No. 155,316

Int. Cl.³ E02F *7/00*

U.S. Cl. 299—8 **22 Claims**



1. A dredge vehicle for moving forwardly along the ocean floor and a dredge assembly for collecting solid ore particles from the ocean floor and delivering the ore particles to an elevator means, the dredging assembly comprising:

collection means to collect solid particles from the ocean floor mixed with a relatively large quantity of water, the collection means extending transversely across a forward portion of the dredge vehicle;

pumping means in series fluid flow connection with the collection means, and so designed that during operation a flow comprising a suspension of solid ore particles with a relatively large quantity of water is accelerated from the collection means through the pumping means;

pump conduit means having a first end and a second end, the first end being in fluid flow connection with the pumping means;

ore particle screening means in fluid flow connection with the second end of the pump conduit means to separate solid particles from at least a portion of the water in the pump conduit means;

elevator feed conduit means in fluid flow connection with the second end of the pump conduit means and designed to feed solid particles not passed by the screening means to an elevator means leading to the ocean surface; and

a manifold in fluid flow connection with the pump conduit means, the manifold comprising an elevator feed manifold conduit and an exhaust manifold conduit, the screening means being in fluid flow connection between the pump conduit means and the exhaust manifold, whereby a majority of the water and solid particles below a predetermined size are passed by the screening means to the exhaust manifold.

4,346,938

HAULING AND CUTTING PLANT

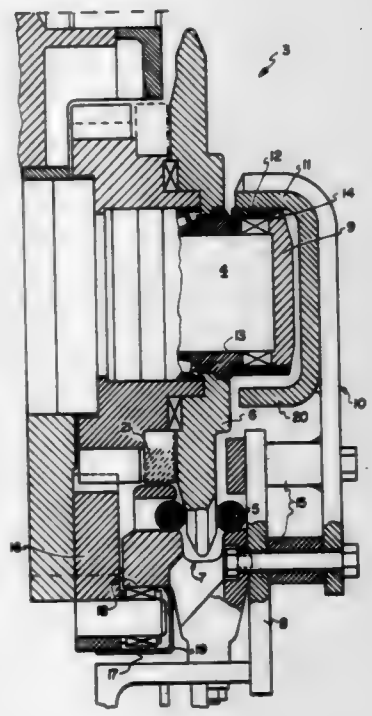
Ernst Braun, Essen-Heisingen, Fed. Rep. of Germany, assignor to Halbach & Braun, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,748

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938446

Int. Cl.³ E21C *29/16*

U.S. Cl. 299—43 **10 Claims**



1. An improved hauling and cutting assembly of the type having a conveyor trough, a scraper chain conveyor bridging the conveyor trough, a bearing pin mounted on the conveyor, a sprocket wheel arranged on the bearing pin, a base frame connected to the conveyor trough having a portion with a guide slot longitudinally extending in the conveying direction, and a drive chain engaging the sprocket wheel extending within the guide slot, wherein the improvement comprises a roller member radially mounted for rotation at the end of the bearing pin, and guide means connected to the base frame overlapping said roller member for radially supporting said roller member.

4,346,939

COWL ASSEMBLY FOR LONGWALL MINING MACHINE

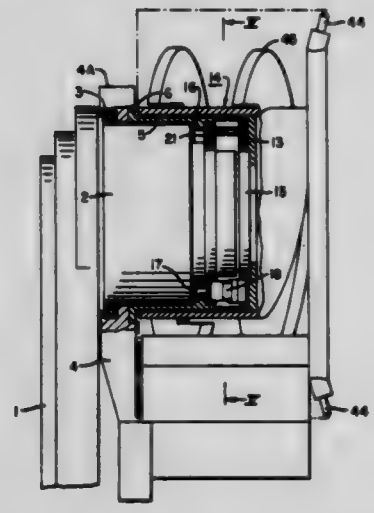
Rolf Krause, Essen, Fed. Rep. of Germany, assignor to Gerb. Eickhoff Machinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Oct. 7, 1980, Ser. No. 195,245

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941921

Int. Cl.³ E21C 35/20

U.S. Cl. 299—45 7 Claims



1. A cowl assembly for the hollow cutter drum of a longwall mining machine mounted for rotation on a support element extending outwardly from a cutter drum support arm, said cowl assembly being pivotal about the axis of the cutter drum and comprising a cylindrical member positioned within the hollow cutter drum and extending along a substantial length of the cutter drum, bearing means for mounting the opposite ends of said cylindrical member on said support element, an arm extending radially outwardly from said cylindrical member, and a cowl carried on said arm.

4,346,940

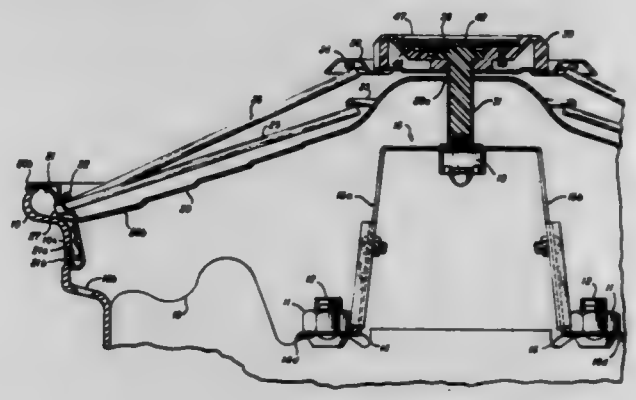
WHEEL COVER LOCKING ASSEMBLIES

Richard Tatar, Walton, N.Y., assignor to Del-Met Corporation, Walton, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,056

Int. Cl.³ B60B 7/00

U.S. Cl. 301—37 AT 5 Claims



3. A locking assembly for locking a wheel cover on a vehicle wheel which is secured to a vehicle by a plurality of lug nuts for rotation of said wheel about an axis, comprising, in combination: a mounting bracket adapted to be secured under a pair of said lug nuts and to locate a threaded nut axially outwardly from said wheel on said axis; a rotatable knob member adapted to seat against a central portion of said wheel cover surrounding said axis; a threaded bolt means journalled in said knob member for rotation about said axis and adapted to threadedly engage said threaded nut; and a cam seated within said rotatable knob member, said cam being pivotable between a first position at which rotation of said knob member causes rotation of said bolt means and a second position at which rotation of said knob member does not cause rotation of said bolt means, said cam comprising a disc pivotable about a pivot axis displaced from and substantially parallel to said axis of rotation of said wheel.

4,346,941

HYDRAULIC PRESSURE CONTROL VALVE DEVICE OF HYDRAULIC BRAKE SYSTEM FOR VEHICLES

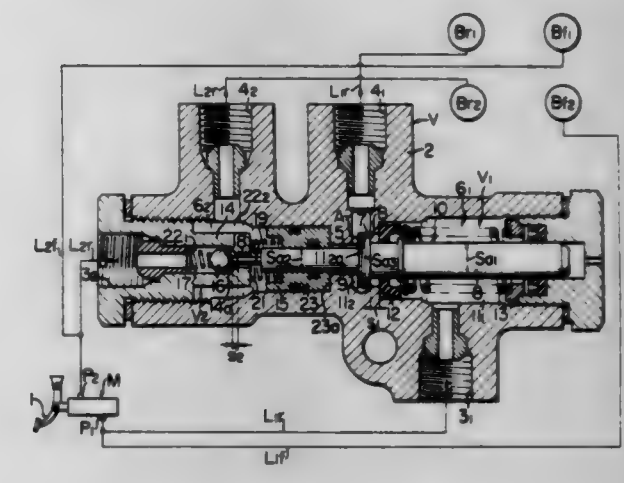
Mitutoyo Mizusawa, Ueda, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

Filed Aug. 27, 1980, Ser. No. 181,845

Claims priority, application Japan, Aug. 30, 1979, 54-110630

Int. Cl.³ B60T 8/26

U.S. Cl. 303—6 C 5 Claims



1. A hydraulic pressure control valve device of hydraulic brake system for vehicles comprising:

a valve housing having a first inlet port and a second inlet port communicating with a first outlet port and a second output port of a master cylinder, respectively, a first outlet port and a second outlet port communicating with a left rear wheel brake and a right rear wheel brake of the vehicle, respectively;

a first control pressure chamber defined in said valve housing for connection between said first inlet and outlet ports;

a second control pressure chamber defined in said valve housing for connection between said second inlet and outlet ports;

a cylinder bore defined in said valve housing for connection between said first and second outlet ports;

a pressure reducing valve adapted to normally open said first control pressure chamber in the normal state and to repeatedly open and close said first control pressure chamber when the pressure at said first inlet port is raised beyond a predetermined level, thereby to transmit said first inlet port pressure to said first outlet port at a proportionally reduced rate, said reducing valve including an input oil pressure chamber communicating with said first inlet port, an output oil pressure chamber communicating with said first outlet port, a valve seat separating said input oil pressure chamber and said output oil pressure chamber from each other, a piston valve having a pressure receiving piston disposed in said output oil pressure chamber, said pressure receiving piston being formed at its opposite sides with a pair of pressure-receiving surfaces of different areas and cooperating with said valve seat for controlling communication between said output and input oil pressure chambers, and a spring means for biasing said piston valve in the opening direction relative to said valve seat;

a cut-off valve adapted to normally open said second control pressure chamber in the normal state and so associated with said pressure reducing valve as to close said second control pressure chamber immediately upon or before the closing of said pressure reducing valve; and

a balance piston slidable in said cylinder bore and adapted to move, when the pressure at said first outlet port is higher than the pressure at said second outlet port, in the direction to achieve an equilibrium of these pressures;

the improvement comprising a valve rod integrally connected to said pressure receiving piston and projecting into said second control pressure chamber to act directly on said cut-off valve for opening and closing thereof.

4,346,942

HYDRAULIC BRAKE FORCE AMPLIFIER

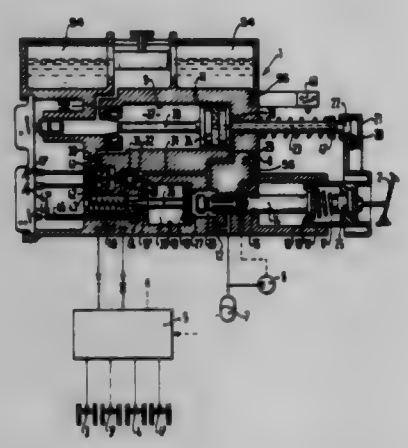
Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 132,346

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918785

Int. Cl.³ B60T *17/18*

U.S. Cl. 303—92 8 Claims



1. A hydraulic brake force amplifier for multiple-circuit brake systems, arranged to be actuated by a brake pedal via a travel-limiting spring and further provided with a control valve, said control valve adapted to control both a connection of a source of pressure medium with a main cylinder and a connection of the main cylinder with a relief location, said control valve further being disposed parallel to said main cylinder and connected therewith via a force transmitting device which cooperates with an arresting piston member, said arresting piston member arranged to limit the stroke of said control valve and capable of being switched off if the pressure supply fails, characterized in that said arresting piston member cooperates with means which permit its use as a second main cylinder upon pressure failure in said brake system.

4,346,943

ANTI-LOCKING APPARATUS

Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

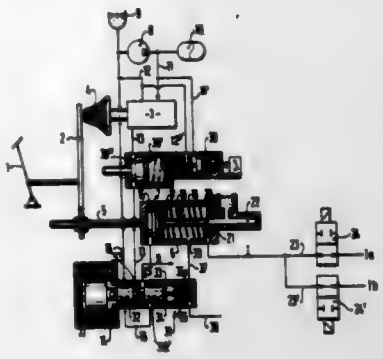
Filed Mar. 20, 1980, Ser. No. 132,057

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915821

Int. Cl.³ B60T *8/04*

U.S. Cl. 303—119 16 Claims

1. A hydraulic main cylinder including a primary side, a secondary side, and an anti-locking apparatus for a hydraulic brake system including a valve pedal push rod, a foot-actuated brake control valve, a travel-limiting spring secured on said brake control valve, and a pressure source, whereby at least one pressure medium proceeds from said pressure source to the primary side of said hydraulic main cylinder, said hydraulic main cylinder arranged to supply closed brake circuits and further including a check valve device, one 3/2-way switching valve and at least one 2/2-way valve for the purpose of anti-locking pressure modulation, characterized in that said brake



circuits are connected via said check valve device with a relief side of the pressure medium source.

4,346,944

HYDRAULIC MAIN BRAKE CYLINDER

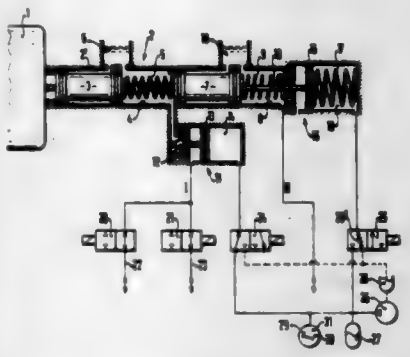
Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,862

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925478

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—119 7 Claims



1. A multiple brake system including:

a hydraulic main cylinder to provide brake pressure having a main piston and a housing,

a plurality of wheel brake cylinders;

a brake line for hydraulic connection of the main cylinder and the plurality of wheel brake cylinders; and

an anti-locking apparatus which includes;

a first switching member having a plunger piston connected in the brake line to control hydraulic connection of main cylinder and the plurality of wheel brake cylinders such that when the first switching member opens, the brake pressure of the main cylinder is reduced;

a second switching member having a restoring piston which is connected to the main cylinder to be integral with the housing and mechanically connected to bias the main piston; and

a plurality of magnetic valves connected to the plurality of wheel brake cylinders to monitor brake pressure

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4,346,945

MULTIPURPOSE RECIPROCAL BEARING UNIT

Nobuyuki Tsuboi, 2-1, Okayama 5-Chome, Shijonawate City, Osaka, Japan (575)

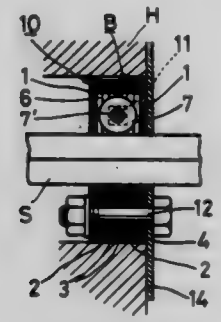
Filed Sep. 26, 1980, Ser. No. 191,645

Int. Cl.³ F16C *29/04*

U.S. Cl. 308—6 R 13 Claims

1. A reciprocal bearing device to be provided between a shaft member and a support member, comprising a plurality of substantially thin members layered in an axial direction of said shaft member in a manner to form a casing, said thin members

having a central aperture and a plurality of securement-receiving openings disposed about said central aperture, a plurality of some of said thin members also having a plurality of first openings disposed about said central aperture, said first openings having a roller accommodating portion and a bearing accommodating portion, a plurality of other of said thin members having a plurality of roller accommodating apertures, a plurality of roller means mounted in said casing, said roller means



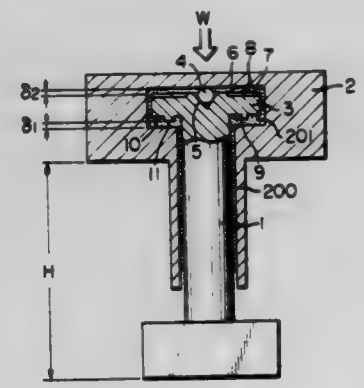
comprising rollers rotatable in bearings, said rollers being received in said roller accommodating apertures and in said roller accommodating portions of said first openings, said bearings being received in said bearing accommodating portions of said first openings, whereby said bearings are fixed non-rotatably in said casing within said bearing accommodating portions of said first openings and said rollers are rotatably in said roller accommodating apertures and in said roller accommodating portions of said first openings.

4,346,946

ROTARY DEVICE

Teruo Maruyama, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 23, 1980, Ser. No. 171,375
Claims priority, application Japan, Jul. 26, 1979, 54-95366
Int. Cl.³ F16C *32/06*
U.S. Cl. 308—9 **4 Claims**



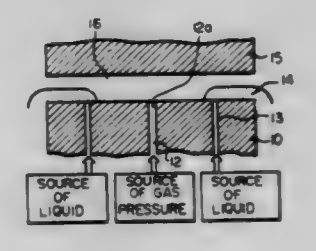
1. A rotary device comprising:
a shaft having at least one free end;
a housing engaged through a lubricating fluid with said shaft for rotation relative thereto;
a projection, which extends from a surface of said free end of said shaft or the surface of said housing in opposed relationship with said free end of said shaft, to carry the axial load when the device is not rotating;
a first dynamic thrust bearing which acts in such a way that the free end of said shaft and the surface of said housing, in opposed relationship with said free end of said shaft are forced to be separated in the axial direction when the device is rotated; and
a second dynamic thrust bearing which acts to produce a force which conteracts the axially acting force produced by said first dynamic thrust bearing, said second dynamic thrust bearing being formed in a relatively moving surface different from said surface with said projection and said surface in opposed relation thereto, said second dynamic thrust bearing having a greater change in load carrying capacity with displacement in the axial direction, than said first dynamic thrust bearing, at the point at which said first and second dynamic thrust bearings are in equilibrium.

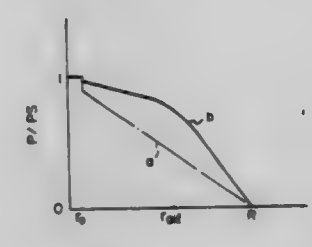
4,346,947

HYDROSTATIC PRESSURE GAS-LIQUID DOUBLE PHASE BEARING

Tsunamitsu Nakahara, No. 10-19, 3-chome, Denenchofu, Ota-ku, Tokyo; Hiroshi Aoki, No. 11-6, 1-chome, Minami-Senzoku, Ota-ku, Tokyo, both of Japan, and Toru Kurisu, Tokyo, Japan, assignors to Citizen Watch Company Limited; Tsunamitsu Nakahara and Hiroshi Aoki, all of Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,537
Int. Cl.³ F16C *32/06*
U.S. Cl. 308—9 **9 Claims**





1. A hydrostatic pressure bearing for a rotor having a bearing surface, comprising:
a stationary body having a bearing surface and spaced from the bearing surface of said rotor by a predetermined clearance;
a central gas passageway formed in a central part of said stationary body and communicating with a source of gas under pressure, said gas passageway opening to said clearance to form a gas film therebetween; and
liquid passageway means circumferentially formed in said stationary body around said central gas passageway and communicating with a source liquid, said liquid passageway means opening to said clearance to provide a thin liquid film which is adhered to the bearing surface of said stationary body in a circle shape during rotation of said rotor;
whereby said gas under pressure flows between said thin liquid film and the bearing surface of said rotor to rotatably support said rotor.

8. A hydrostatic pressure bearing for a shaft having an outer bearing surface, comprising:
a cylindrical body having an inner bearing surface and spaced from the bearing surface of said shaft by a predetermined clearance;
central gas passageway means formed in a central part of said cylindrical body and communicating with a source of gas under pressure, said gas passageway opening to said clearance to form a gas film therebetween; and
first and second liquid passageway means formed in said cylindrical body on both sides of said central gas passageway means and communicating with a source liquid, said liquid passageway means opening to said clearance to provide first and second thin liquid films which are adhered to the bearing surface of said cylindrical body during rotation of said shaft;
whereby said gas under pressure flows between said thin liquid films and the bearing surface of said rotor to rotatably support said shaft.

4,346,948

THRUST BEARING DEVICE, PARTICULARLY FOR TAKING UP OSCILLATING ROTATIONAL MOVEMENTS

Svend H. Kristiansen, Naestved, Denmark, assignor to Nordisk Ventilator Co., A/S, Naestved, Denmark

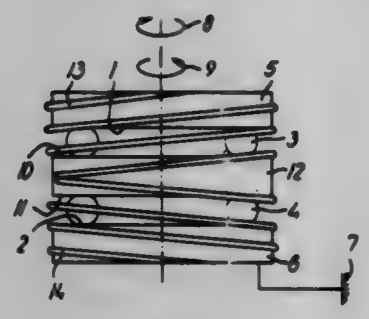
PCT No. PCT/DK80/00003, § 371 Date Sep. 19, 1980, § 102(e) Date Sep. 12, 1980, PCT Pub. No. WO80/01503, PCT Pub. Date Jul. 24, 1980

PCT Filed Jan. 9, 1980, Ser. No. 205,369

Claims priority, application Denmark, Jan. 19, 1979, 251/79

Int. Cl.³ F16C *19/10, 19/50*

U.S. Cl. 308—219 11 Claims



1. A thrust bearing device, particularly for taking up small oscillating rotational movements of two coaxial roller races extending in parallel planes to be relatively movable with respect to one another and being subjected to an axial loading force, comprising; first and second coaxial race rings forming said relatively movable roller races, intermediate roller races extending in parallel planes in an opposed relationship to each of said relatively movable races to provide two coaxial thrust bearings coupled in series with respect to said loading force, coupling means firmly connecting said intermediate races, a set of roller members arranged between each of said relatively movable races and the opposed intermediate race, and blocking means acting on said coupling means and each of said first and second race rings to prevent relative rotational movement between one of the relatively movable races and its opposed intermediate race for one direction of revolution and between the other of the relatively movable races and its opposed intermediate race for the other direction of revolution, said blocking means comprising clamping means arranged laterally with respect to said coupling means and each of said first and second race rings, respectively, to exert a pressure transverse to the common axis of said coaxial bearings and firmly clamp said coupling means with respect to said first race ring for said one direction of revolution and with respect to said second race ring for said other direction of revolution.

4,346,949

ROTOR ASSEMBLY PROVIDED WITH A BEARING HAVING VIRTUALLY ZERO AXIAL CLEARANCE

Jean-Francois Beau, Saint-Ouen L'Aumone, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 6, 1980, Ser. No. 127,833

Claims priority, application France, Mar. 20, 1979, 79 07022

Int. Cl.³ H03K *5/22*

U.S. Cl. 308—236 3 Claims

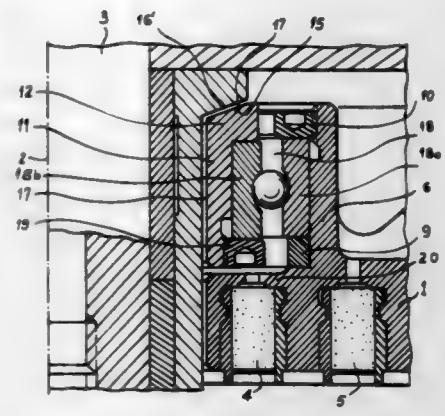
1. A rotor assembly comprising:

a rotor adapted for rotation about a shaft;

a bearing comprising inner and outer races concentric with said rotor and rolling members disposed to roll between said races;

one of said races being secured to said rotor and the other thereof being secured to a rotatable annular member concentric with said rotor, said rotor and said annular member being longitudinally relatively displaceable to the extent of the axial clearance of said bearing;

magnetic means secured to each of said rotor and said annular member, which means cooperate to maintain said rotor



and said annular member longitudinally displaced by said axial clearance.

4,346,950

DOOR CONSTRUCTION FOR ELECTRONIC EQUIPMENT

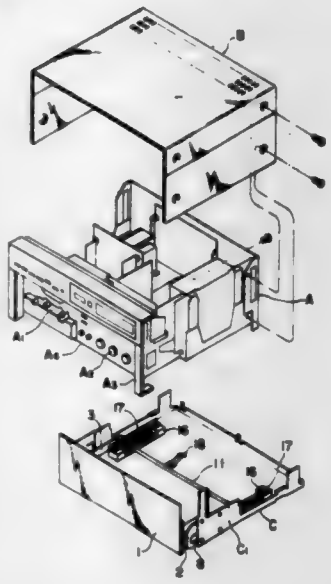
Hitoshi Ueno; Shirokazu Yazaki, and Yukitada Ayukawa, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,229

Claims priority, application Japan, Jul. 20, 1979, 54-92238

Int. Cl.³ A47B *88/00;* A47F *3/00;* E05D *15/58*

U.S. Cl. 312—138 R 9 Claims



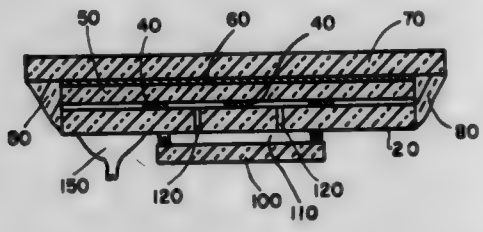
1. A door construction for covering control knobs upon the front panel of electronic equipment comprising: a door member; means for forming a pair of guide grooves one on each side of said door member, each of said guide grooves having a linear guide groove extending longitudinally and an enlarged circular guide groove at a forward portion of said linear grooves; first and second hinge members attached to said door member on opposite sides thereof; first and second guide rollers rotatably mounted upon corresponding ones of said first and second hinge members, each of said guide rollers having a substantially oblong portion and a coaxial cylindrical portion, said door being movable only horizontally when said oblong portions are engaged with said linear grooves and said door being only rotatable when said circular portions are engaged with said enlarged circular grooves.

4,346,951

METHOD FOR PROVIDING A GAS RESERVOIR FOR A GAS DISPLAY PANEL

Bernard Caras, Princeton, and Robert E. Kollmyer, Bridgewater, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 19, 1980, Ser. No. 161,155
Int. Cl.³ H01J 9/18
U.S. Cl. 316—19 3 Claims



1. The method of making a display panel comprising the steps of

loosely assembling a glass base plate and a glass face plate with a sealing frit to form the panel envelope,

seating an auxiliary glass plate on the outer surface of said base plate with a sealing frit between them,

placing a plurality of metal clamps along the perimeter of the envelope formed by the base plate and face plate while leaving the central portions of the base plate and face plate open to the atmosphere,

placing metal weights at the ends of said auxiliary glass plate but leaving the center thereof exposed to the atmosphere, and

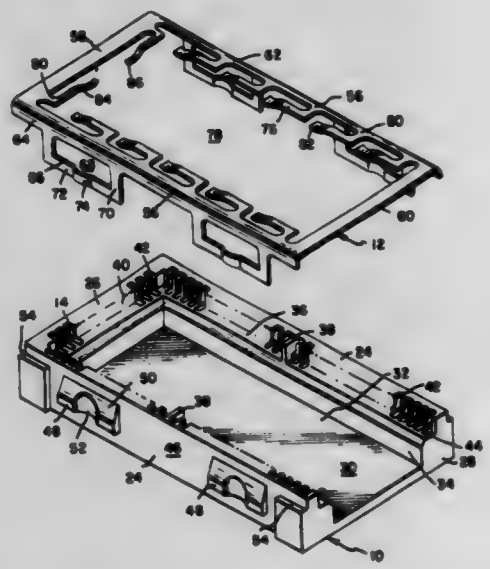
applying heat to cause the base plate and face plate to become sealed together and to cause the auxiliary plate to become sealed to said base plate, the entire panel undergoing substantially uniform temperature change due to the presence of said metal clamps and said metal weights.

4,346,952

CONNECTOR FOR A CERAMIC SUBSTRATE

Edward J. Bright, Elizabethtown; David A. Kaplon, Harrisburg, and William S. Scheingold, Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 16, 1980, Ser. No. 159,429
Int. Cl.³ H01R 9/09
U.S. Cl. 339—17 CF 2 Claims



1. An electrical connector for removably mounting a substrate to a printed circuit board with the substrate being of the type having one end adapted to receive thereon a test or card edge connector, said electrical connector comprising:

a. an elongated housing having an open top and an open end through which one end of a substrate may extend and with the side walls, floor and other end wall defining a substrate-receiving cavity, and vertical cells spaced along the inside surfaces of at least the two opposing side walls and further bores extending downwardly through the housing floor from the cells;

b. a plurality of spring members positioned in the cells with a lower end extending through the bores for insertion into a circuit board and an upper end bent back around to form a U-shape with the free end thereof being bent to project laterally into the cavity to provide a contact arm, said spring members being outwardly curved between the upper and lower ends with the amount of curvature being a radius of from about one inch to about two and one-half inches; and

c. a hold down frame having biasing means thereon and removably attached to the housing for biasing a substrate which may be positioned in the cavity against the laterally projecting contact arms.

4,346,953

ANTENNA COUPLING ASSEMBLY

Luason L. Carnaghan, Norwich, and Raymond J. Phillips, Oakdale, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1980, Ser. No. 139,072
Int. Cl.³ H01R 11/00
U.S. Cl. 339—28 3 Claims



1. A flexible adapter assembly for coupling a pair of flexible electrical connectors comprising:

an adapter at each end, with each adapter having a collar with inner threads and an extension sleeve with barbed type annular rings, said each adapter having an aperture through its axis;

a pair of cylindrical pieces with each of said pair respectively inserted in the aperture of said each adapter, said cylindrical pieces having a flange abutting respective sleeves of each adapter;

a pair of spring supports with each of said spring supports having one end abutting respective cylindrical pieces;

a spring abutting and coiled around each of said spring supports; and

a watertight sleeve enclosing said adapter extension sleeves, said cylindrical pieces, said spring supports and said spring.

4,346,954

CONNECTOR FOR ELONGATED UNDERWATER TOWED ARRAY

James Appling, Canoga Park, Calif., assignor to The Bendix Corporation, Sylmar, Calif.

Filed Apr. 7, 1980, Ser. No. 137,934
Int. Cl.³ H01R 13/62
U.S. Cl. 339—89 M 6 Claims

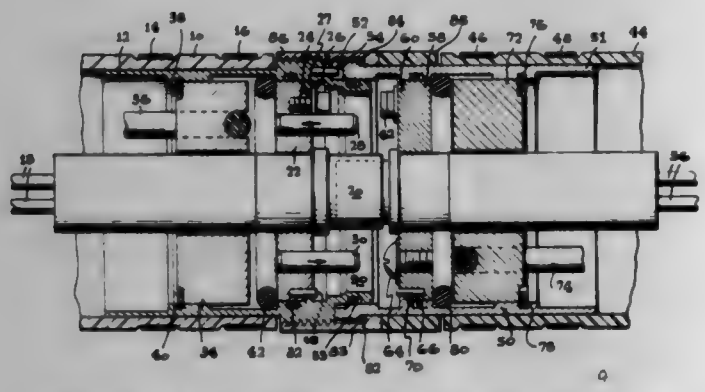
1. A connector assembly for electrically and mechanically connecting two elongated sonar arrays, each array including a length of flexible hose, electrical wiring, and hydrocarbon dielectric material in said hose, said arrays being adapted to be towed through the water at substantial depths, said connector assembly including telescoping male and female connector sections;

characterized in that each of said connector sections includes an elongated cylindrical extension to which said flexible hose is clamped, and first and second internal flanges and a groove adjacent each of said flanges, one of said connector sections including a large diameter portion carrying external threads and the other of said connector

sections having an outwardly directed flange at its end opposite said cylindrical extension,

lightweight bulkhead members each having a centrally located port positioned in each of said connector sections and means securing said bulkhead members to each of said first internal flanges, oppositely directed check valves in one of said bulkhead members effective to limit the pressure drop across said bulkhead member, a fill port in the other of said bulkhead members and means for opening and closing said port,

strength member supports positioned in each of said connector members in contact with each of said second internal flanges and retainer rings in said grooves adjacent said second internal flanges to prevent axial movement of said strength member supports,



a plurality of high strength rope members attached to each of said strength member supports which, when under load, tend to pull said strength member supports against said retainer rings,

mating electrical connector halves positioned in each of said centrally located ports,

flexible spacer means positioned between said bulkhead members and said strength member supports in each of said connector sections,

a collar having internal threads and an internally directed flange carried on said other connector member adjacent said outwardly directed flange and a shear ring positioned between said internally directed flange and said outwardly directed flange such that when said collar is threadedly engaged with said one connector section, said outwardly and inwardly directed flanges are pulled together against said shear ring.

4,346,955

SELF-STRIPPING TERMINAL FOR AN ELECTRICAL CONNECTOR

Andre Chesnais, Choisy Le-Roi, and Philippe Thiery, La Celle St. Cloud, both of France, assignors to Souriau & Cie, Boulogne-Billancourt and Socapex, Suresnes, both of, France

Continuation of Ser. No. 972,374, Dec. 22, 1978. This application Feb. 1, 1980, Ser. No. 117,485

Claims priority, application France, Dec. 28, 1977, 77 39420; May 23, 1979, 79 13188

Int. Cl.³ H01K *11/20*

U.S. Cl. 339—97 R **16 Claims**

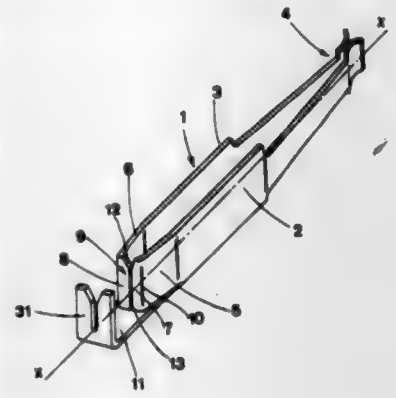
1. In a self-stripping terminal of the type wherein an electrical conductor simultaneously is stripped of its insulation and received in a slot defined between first and second opposed limbs of a forked member carried on a support structure, the conductor being supported in said terminal with its elongated central axis parallel to the longitudinal axis of said terminal, said limbs being substantially perpendicular to said longitudinal axis, the improvement comprising:

a first cantilever supported resilient arm supporting, with its free end said first limb with respect to said second limb;

said arm being substantially parallel to said longitudinal axis and substantially flexible in a plane parallel to said longitudinal axis;

said slot having first and second slot walls defined on said first and second limbs respectively, said first and second slot walls being substantially parallel to each other and to said terminal longitudinal axis to restrain degradation of the conductor core when the conductor is received therebetween;

said forked member further comprising first and second mouth walls defined on said first and second limbs respectively, said first and second mouth walls being disposed at



an outwardly opening angle with respect to each other, extending from said slot, to form a tapered guide mouth for stripping and guiding conductors into said slot, said first and second mouth walls being substantially parallel to said terminal longitudinal axis to restrain degradation of the conductor core when the conductor is moved therebetween.

4,346,956

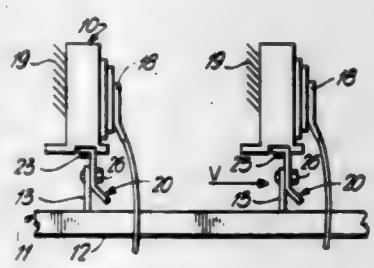
DISTRIBUTING FRAME AND TERMINAL BLOCK MEMBER ASSEMBLIES

Louis Suffi, Westchester, Ill., assignor to Northern Telecom, Inc., Nashville, Tenn.

Filed Apr. 17, 1980, Ser. No. 141,260

Int. Cl.³ H01R *13/60*

U.S. Cl. 339—119 R **3 Claims**



1. A distributing frame and terminal block member comprising: a frame which has a first frame member and a plurality of second frame members spaced appart and secured in a row to said first frame member;

a plurality of terminal blocks;

a plurality of one-piece mounting brackets each mounting a single terminal block and each connected to a separate one of said second frame members;

each mounting bracket comprising a flanged end secured to its terminal block and a body comprising two interconnected parts lying in different planes from one another, the body being formed with a slot extending from one to the other of the body parts and being mountable upon the second frame member by a screw passing through the slot into the second frame member, the bracket being movable upon the second frame member to slide the slot along the screw, when the screw is loosened, to move the screw from end to end of the slot and change the angle of orientation of the bracket relative to the second frame member, by virtue of the body parts lying in their different planes, and thus change the orientation of the associated terminal

block independent of the orientation to all other terminal blocks in said row.

4,346,957

ELECTRIC CONNECTOR

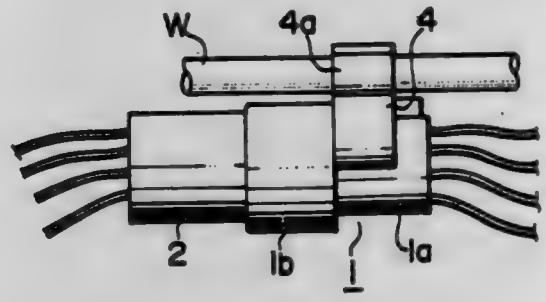
Yasuyosi Fukao, Toyota, and Hisaki Mayumi, Tsu, both of Japan, assignors to Tokai Electric Wire Company Limited, Yokkaichi and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 12, 1980, Ser. No. 186,448

Claims priority, application Japan, Sep. 13, 1979, 54-127732[U]

Int. Cl.³ H01R *13/60*

U.S. Cl. 339—119 R 3 Claims



1. An electric connector comprising: a connector housing having a generally cylindrical form, a supporting arm projecting from the outer peripheral surface of the wall of said connector housing, a clamping tab integral with said supporting arm, said supporting arm and said clamping tab as a unit being cantilevered by the wall of said connector housing in such a manner that said clamping tab extends over a certain portion of the circumference of said connector housing at a suitable distance from the latter, said clamping tab being provided at its surface facing said connector housing with a wire receiving recess formed at a portion near the free end thereof, and at least two parallel protrusions formed on the outer peripheral portion of said wall of said connector housing at a portion of the latter confronting said wire receiving recess and extending in an axial direction of said connector housing, said clamping tab resiliently clamping the wire or the like rod-like member between said wire receiving recess and said protrusions.

4,346,958

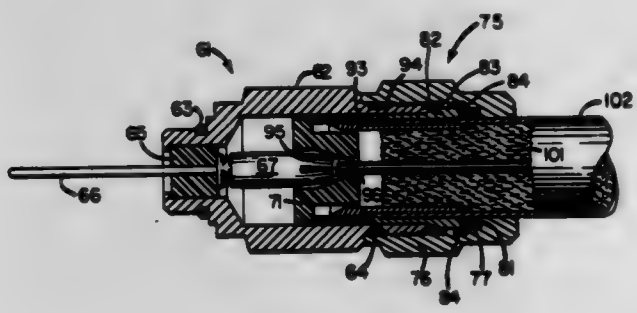
CONNECTOR FOR CO-AXIAL CABLE

Clayton H. Blanchard, Horseheads, N.Y., assignor to LRC Electronics, Inc., Horseheads, N.Y.

Filed Oct. 23, 1980, Ser. No. 199,963

Int. Cl.³ H01R *13/36*

U.S. Cl. 339—177 R 13 Claims



1. A connector for co-axial cable, the cable having a substantially rigid electrically conductive jacket, a center conductor, and electrical insulating means therebetween, said connector comprising:

an entry barrel assembly comprising:

an entry barrel having at least one open end;

electrically conductive chuck means within said entry barrel and opening toward said open end;

cylindrical mandrel means fixed in said entry barrel and extending outwardly from said open end thereof;

pusher means loosely engaging said mandrel means and axially movable with respect thereto;

electrically insulative collar means positioned between said chuck means and said pusher means and longitudinally movable in said entry barrel; and

cooperative means on said chuck means and on said collar for closing said chuck means upon engagement of said chuck means by said collar means pursuant to axial motion of said collar means toward said chuck means;

a clamp nut assembly comprising:

a clamp nut having a substantially open ended cylindrical configuration; and

a ferrule mounted within said clamp nut; and

cooperative means on said entry barrel assembly and said clamp nut assembly to grip the jacket of said cable;

whereby upon engagement of said entry barrel and clamp nut assemblies, said cooperative chuck closing means closes on the center conductor and said cooperative jacket gripping means grips the cable jacket.

4,346,959

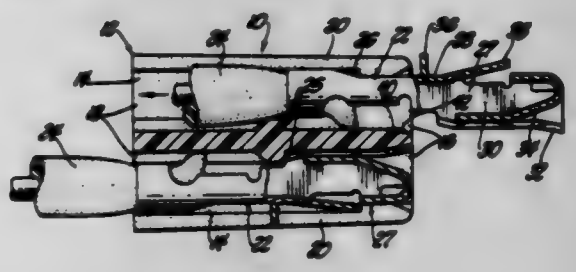
PULL-TO-SEAT ELECTRICAL CONNECTOR

James D. Daugherty, Brookfield; Joseph H. Gladd, Cortland, both of Ohio, and John M. Chupak, West Middlesex, Pa., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1980, Ser. No. 205,424

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—217 S 3 Claims



1. In an electrical connector which includes

a connector body having a plurality of longitudinal terminal cavities which have contact and conductor openings at opposite ends of the connector body, and a plurality of longitudinal assembly slots which extend through an exterior wall of the connector body for admitting conductor wires laterally into the terminal cavities, and

a plurality of terminals which are disposed in the terminal cavities and attached to conductor wires which are passed through the longitudinal assembly slots during assembly of the terminals into the connector body, said terminals being pulled to seat against retention shoulders in the terminal cavities which face the contact openings to retain the terminals in the direction toward the conductor openings,

the improvement comprising;

said terminal cavities having second retention shoulders which are adjacent the longitudinal slots and face the conductor openings,

said terminals having projecting tabs disposed in the longitudinal slots for orienting the terminals in the cavities and latch fingers engaging the second retention shoulders to retain the terminals in the direction toward the contact openings, and

said latch fingers being accessible via the longitudinal slots for releasing them from the second retention shoulders so that the terminals may be individually removed from the terminal cavities through the contact openings.

4,346,960
BINOCULAR TELESCOPE HAVING A DOUBLE-JOINT CONNECTING BRIDGE

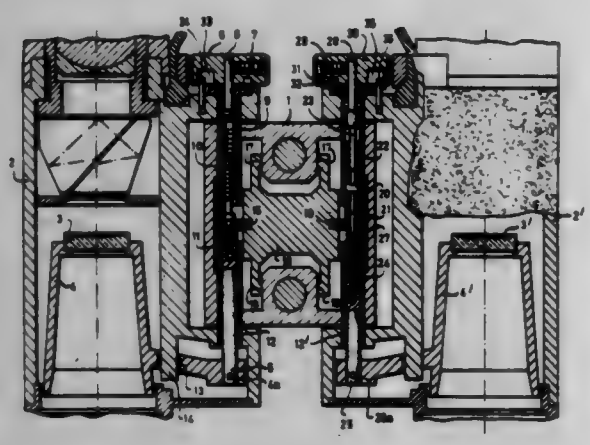
Willi Lehrmund, Leun, and Erwin Altenheiner, Waldsolms, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,654

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948421

Int. Cl.³ G02B *7/06*

U.S. Cl. 350—76 7 Claims



4. A binocular telescope comprising first and second individual telescope housings each having an offset hinge arm, and a bridge having pivotal connection on spaced parallel axes to the respective hinge arms of said housings, each of said housings containing an internal axially displaceable focusing optical element; a first single manually accessible control element and associated motion-transmitting structure traversing said bridge and foldable on said parallel axes for transmitting identical axial displacements to said internal optical elements, there being an axially fixed connection between said structure and one of said focusing optical elements and an axially variable connection between said structure and the other of said focusing optical elements, and a second single manually accessible control element and associated motion-transmitting structure including means associated with said axially variable connection for selectively varying the axial position of the other of said focusing optical elements to the exclusion of said one optical element.

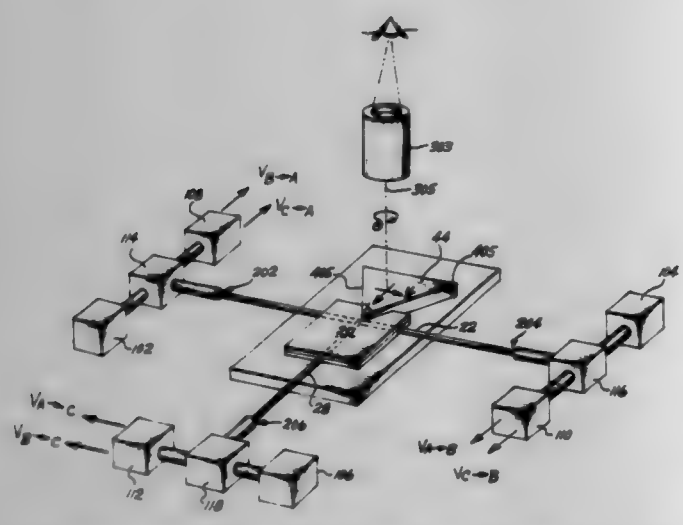
4,346,961
FIBER OPTIC T COUPLER

David R. Porter, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 2, 1979, Ser. No. 26,373

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.16 1 Claim



1. A method of providing predetermined value of coupling coefficients in a fiber optic T coupler having a notched fiber comprising:

coupling first, second, and third source and receiver systems to the first, second, and third ports of said fiber optic T coupler having a notched fiber;

inserting a mirrored wedge in the notch of said notched fiber; and,

adjusting the depth of insertion of said mirrored wedge as a function of receiver output voltages of said receiver systems to provide said predetermined value of coupling coefficients.

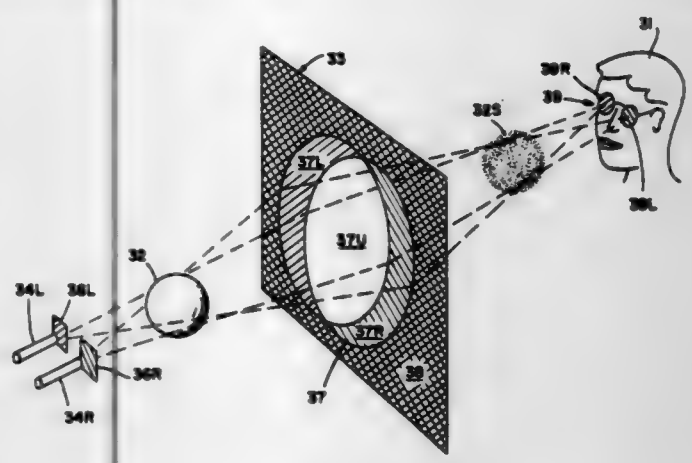
4,346,962
LIGHT ANALYZING LENTICULAR SCREEN FOR VIEWING STEREO IMAGES

Lawrence Holmes, Jr, 605 Hamburg Turnpike, Apt. 102, Pompton Lakes, N.J. 07442

Division of Ser. No. 651,202, Jan. 21, 1976, Pat. No. 4,172,632. This application Jun. 15, 1979, Ser. No. 48,757

Int. Cl.³ G03B *21/60*

U.S. Cl. 350—128 7 Claims



1. A light-analyzing lenticular screen for intercepting a mixture of light having a first characteristic and light having a second characteristic and for causing one eye of an observer to perceive only said light having said first characteristic and for causing the other eye of said observer to perceive only said light which has said second characteristic, comprising:

a first plurality of linear parallel spaced-apart light-analyzing elements which are at least partially transparent to light having said first characteristic and which are opaque to light having said second characteristic,

a second plurality of linear parallel spaced-apart light-analyzing elements alternated with said first plurality of elements in parallel relationship therewith, said second elements being at least partially transparent to light having said second characteristic and being opaque to light having said first characteristic, and

a lenticular screen disposed parallel to said first and second light-analyzing elements and having lens means for restricting visibility of said first plurality of light-analyzing elements to said one eye and restricting visibility of said second plurality of light-analyzing elements to said other eye.

4,346,963
LIQUID CRYSTAL DISPLAY DEVICE

Manfred Kobale, Faistenhaar, and Hans Krueger, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 6, 1979, Ser. No. 10,260

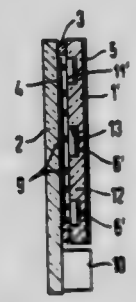
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1978, 2805970

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—344 15 Claims

1. In a liquid crystal display device having a pair of carrier plates spaced apart by a frame to provide a chamber receiving

a liquid crystal layer, each of said pair of carrier plates on a surface facing said chamber and engaging said layer being provided with electrically conductive coatings with at least one of these coatings being subdivided into separately operable segments with areas of the liquid crystal layer being disposed between an operable segment and the opposite coating and regions of the layer that are not located between an operable segment and the opposite coating, means for maintaining the spacing between the facing surfaces of said carrier plates, and drive circuitry connected to said coatings, the improvements comprising said chamber being constructed to cause said layer to have a thickness in said regions which is less than the thickness of the layer in the areas, said layer being of a cholesteric



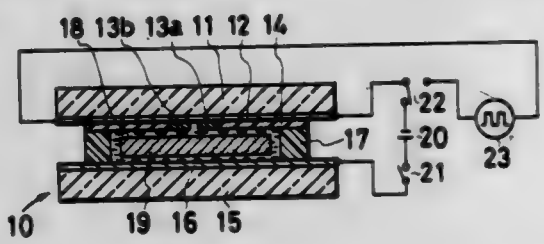
material containing at least one pleochroic dye, said material having a positive dielectric anisotropy and being homeotropically oriented at its plate parallel boundary surfaces, the helical pitch of the liquid crystal being such that in each of said regions, the liquid crystal layer is continuously homeotropically oriented to provide light transmissive zones, in each area at a non-energized segment, the liquid crystal layer has a planar cholesteric or focal-conical orientation and in each area at an energized segment, the layer has a homeotropic orientation to provide light transmissive zones and said drive circuitry being designed to energize each of the segments which belong in a background of the selected image so that the display operates with a complementary drive.

4,346,964

ELECTROCHROMIC DISPLAY DEVICE

Satoshi Ishihama; Taisuke Miyoshi, and Koji Iwasa, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Apr. 25, 1980, Ser. No. 143,911
Claims priority, application Japan, May 28, 1979, 54-065916
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 11 Claims



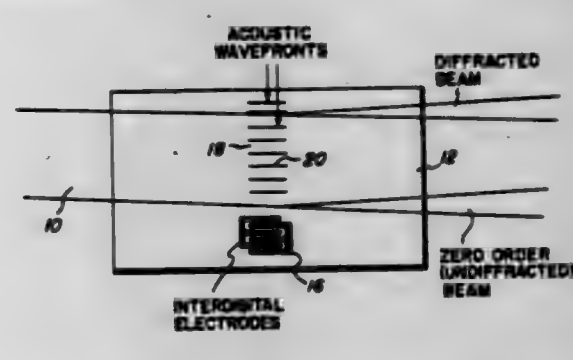
1. In an electrochromic display device of the type having a plurality of electrode segments comprised of electrochromic material in contact with an electrolyte such that the electrode segments exhibit either colored or bleached states depending on the amount of electric charge held by the electrode segments: means for selectively applying a DC electric field between preselected bleached electrode segments and colored electrode segments effective to transfer electric charges between the preselected electrode segments through the electrolyte to thereby change the display state of the electrochromic display device.

4,345,965

LIGHT MODULATOR/DEFLECTOR USING ACOUSTIC SURFACE WAVES

Robert A. Sprague, Saratoga, Calif., and Dror Sarid, Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 27, 1980, Ser. No. 153,381
Int. Cl.³ G02F *1/16*
U.S. Cl. 350—358 4 Claims



1. An acousto-optic modulator/deflector system including a light source (34) and an electrical signal source (44) comprising:

a piezoelectric substrate (32) having relatively flat sides,

a set of interdigital electrodes (30) on one side of said substrate (32), said electrodes introducing on the surface of said substrate acoustic waves (38) in response to an electrical signal from said electrical signal source applied to said interdigital electrodes,

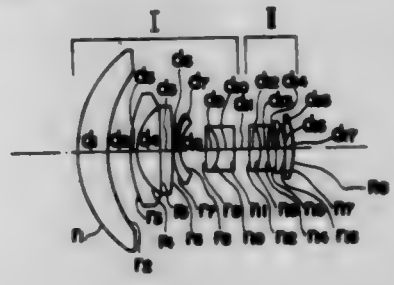
an illuminating light beam from said light source introduced into said substrate (32) through a side adjacent to the side with said interdigital electrodes (30), said beam being directed at said side at an angle such that the light beam suffers total internal reflection near the grazing incidence of the active surface where the acoustic waves (38) are generated, in a plane perpendicular to the direction of travel of the acoustic waves, the output beam being reflected from the active surface containing the acoustic waves and leaving said substrate through the remaining portion of said substrate in a zero order undiffracted direction (48) and a first order diffracted direction (46).

4,346,966

COMPACT LENS SYSTEM OPERABLE IN DIFFERENT MEDIUMS

Akiyoshi Nakamura, Sakai; Toshinobu Ogura, Tondabayashi, and Masahide Tanaka, Toyonaka, all of Japan, assignors to Minolta Camera Co., Ltd., Daisen-Nishimachi, Japan

Filed Jul. 9, 1980, Ser. No. 167,119
Claims priority, application Japan, Jul. 16, 1979, 54-90512
Int. Cl.³ G02B *9/64*
U.S. Cl. 350—412 9 Claims



1. A compact lens system of optical elements capable of adapting to different mediums comprising;

a first lens group having a front surface directly facing a medium which transmits light to the lens system, the center of curvature of the front surface being located approximately at the entrance pupil of the lens system; and

a second lens group operatively connected to and located at the image side of the first lens group with an air space

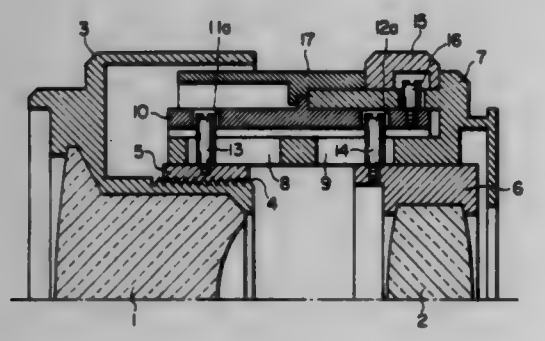
formed between the first and second lens groups, the air space being selected in the overall design of the lens system so that the field curvature of the lens system can be changed without any substantial change in other aberrations by variation of the air space, wherein the air space is changeable by a predetermined value to adjust for the change in the medium adjacent the front surface to maintain a relatively flat image surface irrespective of the change in the medium.

4,346,967

ZOOM LENS BARREL FOR MACROPHOTOGRAPHING

Shinsuke Komoto, Tokyo, and Tetsuo Sekiguchi, Kumagaya, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,334
Claims priority, application Japan, Jun. 25, 1979, 54-86911[U]
Int. Cl.³ G02B *7/10*
U.S. Cl. 350—430 **10 Claims**



1. In a zoom lens barrel capable of performing macrophotographing operations including a zooming operation sleeve and a focus operation sleeve in which for zooming said zooming operation sleeve is rotated so that the positions of the first lens group and the second lens group are defined by a zooming cam slot and a lead slot formed in a cam sleeve and for focusing said focus operation sleeve is rotated to thereby determine the position of the first lens group in the direction of the optical axis, said zoom lens barrel being characterized in that a linear slot is provided extending from a telephoto end position of the zooming cam slot forwardly parallel to the optical axis direction of said lens groups.

4,346,968

WALL MOUNTED VISUAL FIELD TESTING SYSTEM

John A. Melin, Oakland; Russell P. Irwin, Berkeley, and Gordon L. Epstein, San Francisco, all of Calif., assignors to Pacific Innovations, San Bruno, Calif.

Filed Feb. 4, 1980, Ser. No. 118,566
Int. Cl.³ A61B *3/02*
U.S. Cl. 351—23 **10 Claims**

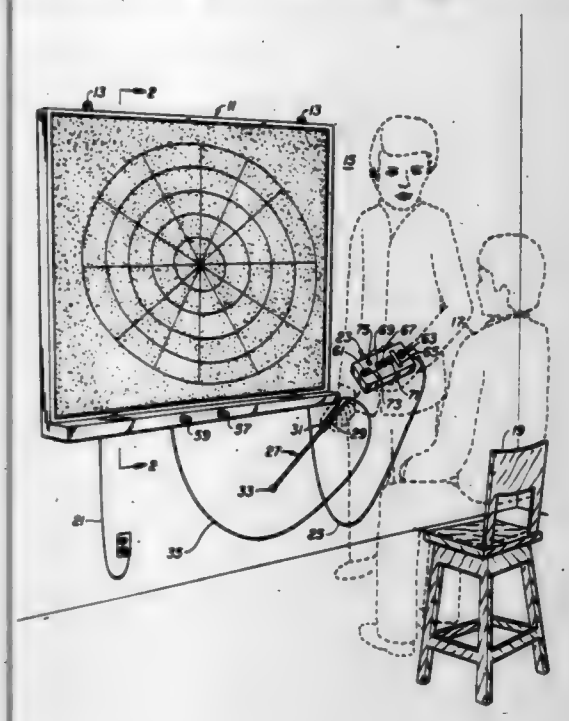
1. A visual field testing unit, comprising:

a frame especially adapted for one side to be hung against a building wall;

a flat semi-transparent tinted sheet held by said frame on an opposite side thereof, a front surface of said sheet being black matte finished,

a plurality of substantially point light sources held by said frame in a spaced apart relationship over a two-dimensional area behind said semi-transparent sheet and characterized by being visible through said sheet when appropriately energized with electrical energy, said sheet attenuating enough light to make said lights normally invisible when they are not energized; and

control means connected to each of said lights for selectively energizing in time sequence various pre-determined distinct combinations of only a few of said lights at one time,



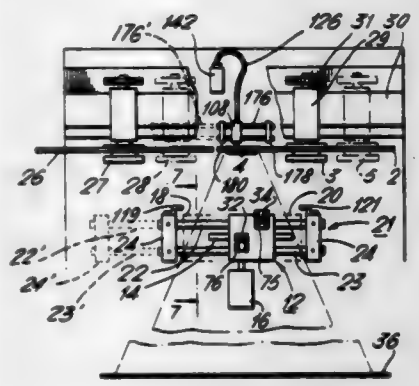
whereby blind spots in a person's visual field of view may be identified.

4,346,969

PHOTOGRAPHIC TYPE COMPOSING MACHINE WITH HEADLINING ATTACHMENT

Louis M. Moyroud, Delray Beach, Fla., assignor to Autologic, S.A., Bussigny-pres-Lausanne, Switzerland

Division of Ser. No. 763,611, Jan. 28, 1977, Pat. No. 4,119,977. This application Jun. 27, 1979, Ser. No. 52,664
Claims priority, application United Kingdom, Jan. 29, 1976, 3642/76
Int. Cl.³ B41B *13/00*
U.S. Cl. 354—7 **4 Claims**



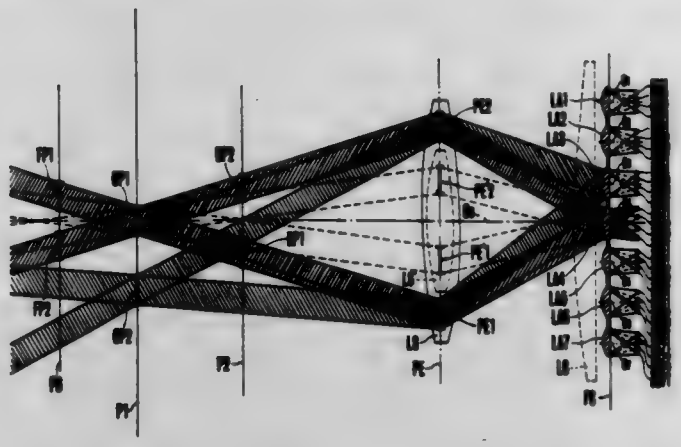
1. A photocomposing machine which is convertible between a first mode and a second mode of operation, said machine including focusing means for focusing character images on a first recording surface during said first mode movable reflector means, and means for enabling said second mode of operation by selectively moving said reflector means into the path of images from said focusing means so as to deflect said images and cause them to be focused on a second recording surface during said second mode of operation, said second recording surface being an elongated strip adapted to receive one line or column of relatively large characters, and including means for rotatably supporting said second recording surface so that said second recording surface is rotatably movable between two positions, one in which said characters are side-by-side on said strip, and the other in which said characters are above or below one another.

4,346,970

FOCUS DETECTING DEVICE

Takashi Kawabata, Kamakura; Tokuichi Tsunekawa, Yokohama; Kazuya Hosoe, Machida; Takao Kinoshita, Tokyo; Shinji Sakai, Tokyo, and Tatsuya Taguchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1980, Ser. No. 179,548
Claims priority, application Japan, Aug. 24, 1979, 54-107728
Int. Cl.³ G03B 7/08
U.S. Cl. 354—25 20 Claims



1. A TTL type focus detecting device comprising:

a plurality of lens elements positiioned at or near a plane corresponding to a prescribed focal plane of an objective lens;

a plurality of pairs of photosensitive elements corresponding to each of said lens elements;

means for automatically selecting at least one of the pairs of said photosensitive elements corresponding to each of said lens elements; and

circuit means receptive of the outputs of said selected ones of the pairs of said photosensitive elements for detecting whether or not a positional difference is present between two images of an object formed on said plane with two light beams from said objective lens at two virtual exit openings lying almost symmetrical to each other with respect to an optical axis thereof, said circuit means producing an output indicative of whether or not said objective lens is in a sharp focused condition on said object; said automatically selecting means being responsive to an output of said circuit means and making said selection on the basis of said output.

4,346,971

PHOTOGRAPHIC APPARATUS WITH CONTROLLED SHUTTER BLADE TIME OUT

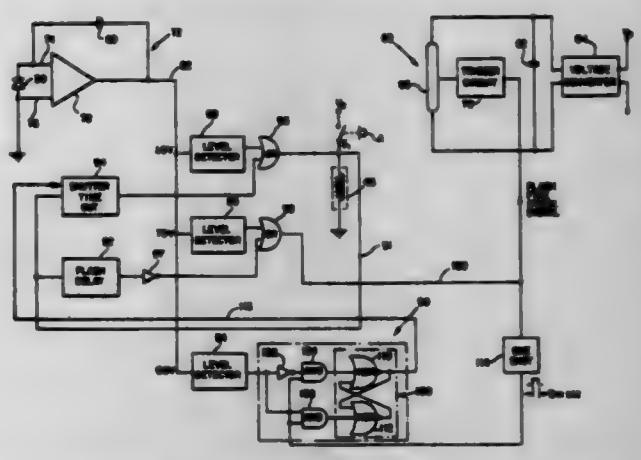
Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 80,431, Oct. 1, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,722
Int. Cl.³ G03B 7/097, 7/16, 15/05
U.S. Cl. 354—34 11 Claims

1. In a photograhic camera apparatus of the type for use with a source of artificial illumination and including means for defining a film plane, means for transmitting light from a scene along an optical path to expose photosensitive film located in the film plane, an exposure control system for allowing the passage of scene light along the optical path to the film plane for a period of time to define an exposure interval, means for providing a flash fire signal to ignite the source of artificial illumination at an appropriate instant during the exposure interval, and means for detecting scene light in correspondence with the scene light admitted to the film plane, the improvement comprising:

means responsive to the detection of scene light to a determinate signal level during a select time period immediately following the flash fire signal for providing a select output signal; and

means responsive to said select output signal during said select time period for imposing one maximum time limit to



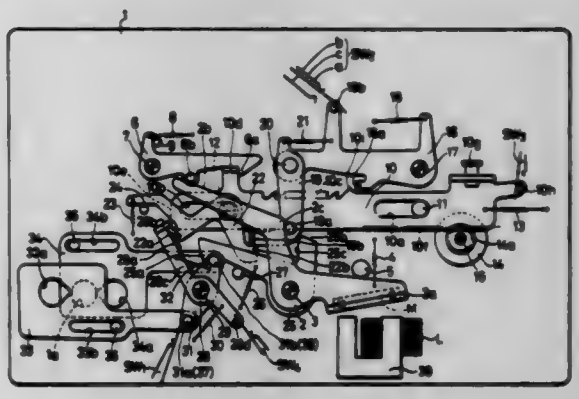
the duration of the exposure interval, said time limit imposing means being further responsive to the absence of said select output signal during said select time period for imposing another maximum time limit to the duration of the exposure interval.

4,346,972

CAMERA EQUIPPED WITH AN AUTOMATICALLY CONTROLLING DEVICE FOR FOCUSING AND SHUTTER OPERATION

Tamotsu Takahashi, Shiki, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Jan. 6, 1981, Ser. No. 222,873
Claims priority, application Japan, Jan. 7, 1980, 55/457
Int. Cl.³ G03B 3/10
U.S. Cl. 354—195 7 Claims



1. A camera having a shutter, comprising:

an electromagnetic operating device including therein a single electromagnet capable of taking a first state and a second state;

a focusing mechanism connected to said electromagnetic operating device and capable of being held normally at its start position;

a focus detection controlling circuit capable of being connected to said electromagnet and capable of changing the state of said electromagnet from said first state to said second state in association with a shutter releasing operation to release said focusing mechanism through said electromagnetic operating device to start the focusing operation and capable of changing again the state of said electromagnet from said second state to said first state to stop the focusing operation of said focusing mechanism through said electromagnetic operating device when focused;

a switching means connected to said focus detection controlling circuit and capable of connecting normally said focus

detection controlling circuit to said electromagnet and capable of being switched over when focused;

shutter opening and closing operating mechanisms capable of being operated by said electromagnetic operating device;

an exposure controlling circuit capable of being connected to said electromagnet and capable of changing the state of said electromagnet from said first state to said second state to make said shutter opening operating mechanism operate through said electromagnetic operating device to open said shutter when the focusing operation has ended and when said exposure controlling circuit is connected to said electromagnet by switching-over of said switching means and capable of changing the state of said electromagnet from said second state to said first state to make said shutter closing operating mechanism operate through said electromagnetic operating device to close said shutter when a proper exposure time has elapsed; and

a controlling means capable of operating to transmit the operation of said electromagnetic operating device to said shutter opening and closing operating mechanisms after the focusing operation has ended.

4,346,973

FOCUSING SCREEN INTERCHANGING DEVICE IN SINGLE LENS REFLEX CAMERA

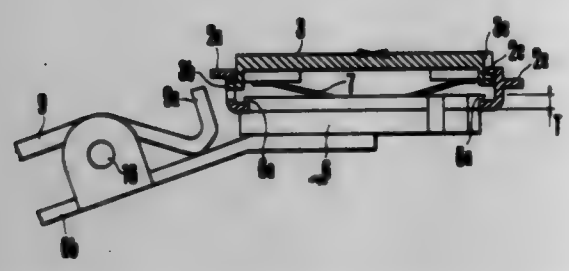
Makoto Katsuma, Yokohama; Masayuki Suzuki, Tokyo; Kenichi Shinbori, Yokohama, and Hiroyasu Murakami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1981, Ser. No. 230,272

Claims priority, application Japan, Jan. 31, 1980, 55-12929; Jul. 8, 1980, 55-93006; Jul. 9, 1980, 55-93712

Int. Cl.³ G03B *13/00, 19/12*

U.S. Cl. 354—152 10 Claims



5. A focusing screen interchanging device in a single lens reflex camera comprising:

a focusing screen;

a fixture member for fixing the focusing screen to a camera body, said fixture member being united together with the focusing screen and holding the focusing screen in a freely shiftable manner at its inside, said fixture member being further provided in a manner freely attachable to and detachable from the camera;

biasing means to bias the focusing screen, said biasing means being provided at the fixture member;

a standard member provided at the camera body, the focusing screen being pressed against said standard member by the bias force of the biasing member when the fixture member is fixed with the camera body; and

holding means for holding the fixture member within the camera body, said holding means being provided in the camera body.

4,346,974

LIGHT LEAKAGE PREVENTING DEVICE FOR REFLEX CAMERAS

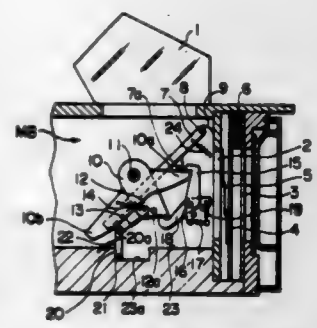
Toshihisa Saito, Tokyo, and Nobuyoshi Inoue, Kawagoe, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,694

Claims priority, application Japan, May 19, 1980, 55-68371[U]; May 19, 1980, 55-68372[U]

Int. Cl.³ G03B *19/12*

U.S. Cl. 354—154 8 Claims



1. A light leakage preventing device for reflex cameras comprising a mirror box, a reflecting mirror rotatably supported within said mirror box and movable between an up position and a down position, and a light intercepting member capable of being brought to a light intercepting position in association with the movement of said reflecting mirror in order to intercept light passing through between the lower edge of said reflecting mirror and the floor surface of said mirror box when said reflecting mirror is moved from the up position to the down position, said device further comprising a flexible light intercepting member interposed between the upper edge of said reflecting mirror and the rear wall of said mirror box and extending over the entire lateral width of said mirror box.

4,346,975

MULTIPLE CONTROL SYSTEM FOR CAMERA

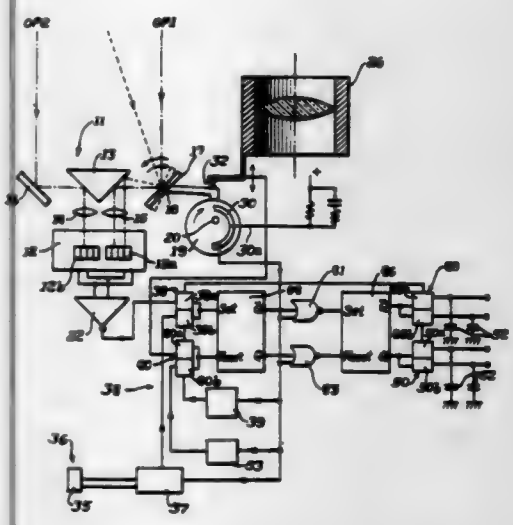
Tadao Isono, Kokubunji, Japan, assignor to Osawa Precision Industries, Ltd., Japan

Continuation-in-part of Ser. No. 860,030, Dec. 12, 1977, abandoned. This application Aug. 2, 1979, Ser. No. 63,021

Claims priority, application Japan, Dec. 10, 1976, 51-147758

Int. Cl.³ G03B *3/10, 7/091*

U.S. Cl. 354—195 8 Claims



1. An automatic optical instrument adjusting system for comparing transduced inputs of ambient conditions with the levels representative of states of the instrument and for correctively adjusting the instrument state in response to the difference between the conditions and the state comprising:

focusing means for providing signals dependent on the distance to a subject and converting same to timed pulses representative of each ambient condition;

measuring means defining the setting of the objective lens of the instrument and converting same to timed pulses representative of each operative state;

a timed pulsing apparatus for regularly and periodically issuing controlling signals;

an evaluation circuit for processing two inputted timed pulses and for generating output signals having timing relative to the differences between said two inputted timed pulses;

automatic switch means connected between said focusing means, said measuring means and said evaluation circuit and operated by said timed pulsing apparatus for selectively controlling the inputs to said evaluation circuit; and

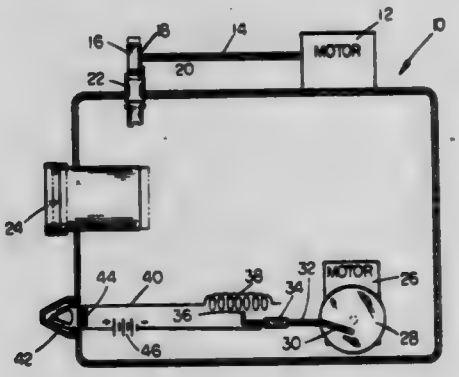
storage circuit means connected to selectively receive signals from said evaluation circuit and for holding said signals representative of the difference between the conditions and the states until an updated signal of the same type is received.

4,346,976

DEVICE FOR AUTOMATIC RECIPROCATION OF LENS ANGLE AND APERTURE OF SURVEILLANCE CAMERA

Milo Kottas; Mary E. Kottas, both of Box 187, Milligan, Fillmore County, Nebr. 68406; Robert P. Kottas, 3000 Farnam St., Apt. 5D, Omaha, Douglas County, Nebr. 68131; Charles E. Kottas, P.O. Box 1006, Grand Island, Hall County, Nebr. 68801, and Joseph W. Kottas, 1640 Burr St., Lincoln, Lancaster County, Nebr. 68502

Filed Mar. 12, 1981, Ser. No. 242,874
Int. Cl.³ G03B *3/00, 13/02, 7/08*
U.S. Cl. 354—196 4 Claims



1. A surveillance camera comprising: a lens of variable angle and motor actuated cam means for automatically and continually reciprocating the angle of the lens between a wide setting and a narrow setting.

4,346,977

BLADE TYPE FOCAL PLANE SHUTTER

Osamu Ooba, Kohokudai 9-8-18, Abiko-shi, Chiba-ken, Japan

Continuation-in-part of Ser. No. 113,031, Jan. 15, 1980, abandoned. This application Apr. 29, 1981, Ser. No. 258,784
Claims priority, application Japan, Jan. 19, 1979, 54-5452[U]
Int. Cl.³ G03B *9/40*
U.S. Cl. 354—246 9 Claims

1. A blade type focal plane shutter comprising:

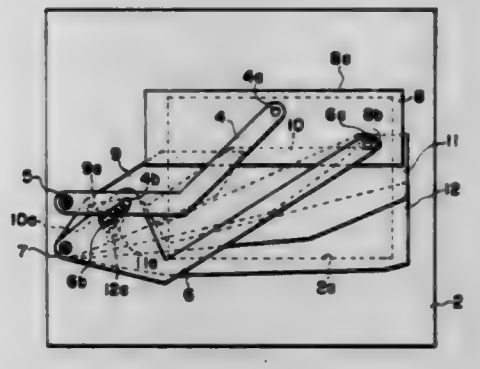
a shutter base plate having an exposure aperture therein;

a main arm rotatably supported on said base plate at the side of said exposure aperture;

an auxiliary arm rotatably supported on said base plate at the side of said exposure aperture and pin-slot-connected to said main arm;

a plurality of auxiliary opaque laminae rotatably supported by a common shaft on said base plate at the side of said exposure aperture, each of said auxiliary laminae being pin-slot-connected to said main arm and respectively movable between exposure aperture covering positions and exposure aperture opening positions; and

a main opaque lamina pivoted on said main arm and pin-slot-connected to said auxiliary arm and movable between an exposure aperture covering position and an exposure aperture opening position to form an exposure slit, said



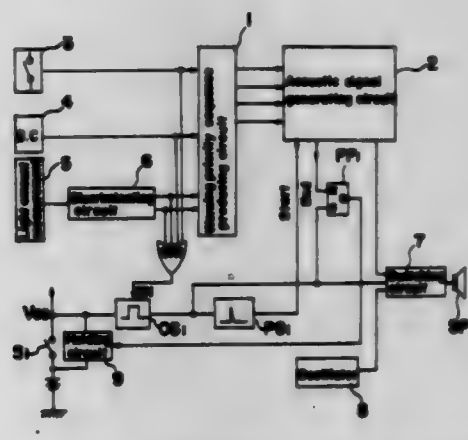
main lamina being made of material comparatively high in strength and said auxiliary laminae being made of material lighter in weight than the material of said main lamina.

4,346,978

OPERATING AID ARRANGEMENT FOR CAMERAS

Nobuyuki Taniguchi, Sakai; Masaaki Nakai, Nara; Tokuji Ishida, Daito, and Isamu Uchida, Kawachinagano, all of Japan, assignors to Minolta Camera Company, Sakai, Japan

Filed Dec. 2, 1980, Ser. No. 212,152
Claims priority, application Japan, Dec. 3, 1979, 54-157212; Dec. 3, 1979, 54-157213; Dec. 3, 1979, 54-157214
Int. Cl.³ G03B *17/18*
U.S. Cl. 354—289 25 Claims



1. A camera capable of informing a person of conditions of a camera by means of voice comprising:

means for detecting a camera condition;

means for selecting a plurality of information in a predetermined order in response to said detecting means;

means for generating a voice to narrate said plurality of said information in said predetermined order; and

means for producing a preparatory sound to call the attention of the person to the camera prior to the narration.

4,346,979

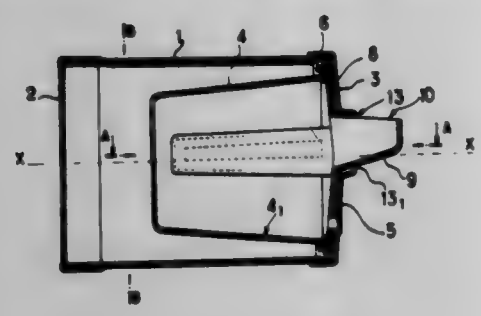
PHOTOGRAPHIC DEVELOPING TANK

Guy Faubert, Creteil, France, assignor to Diaralux, Creteil, France

Filed Feb. 24, 1981, Ser. No. 237,664
Claims priority, application France, Aug. 18, 1980, 80 18060
Int. Cl.³ G03D *13/04*
U.S. Cl. 354—307 9 Claims

1. A light-tight photographic developing tank comprising a cylindrical body (1) containing a cup (4) to receive a product before said product acts on an exposed sensitive paper disposed within the body, the cup having a filling orifice (10) on an extremity opening to the exterior of the body for filling the cup with the product when the tank is in a first position wherein said filling orifice (10) is substantially horizontal, said cup (4)

further comprising at least one discharge orifice (12) opening into the interior of the body (4) to discharge the product in the cup into the body when the tank is rotated around the axis of the cylindrical body away from said first position, said filling

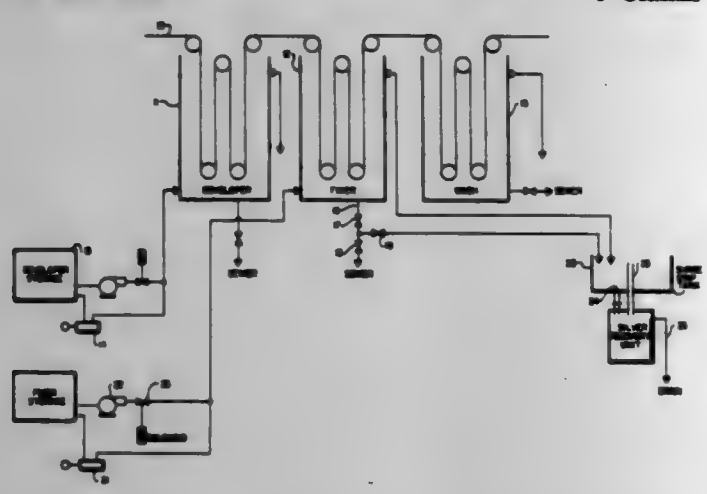


orifice (10) being oriented laterally to the axis of the body of the tank (1), and, when the tank is in said first position, the discharge orifice (12) being disposed above the lower generatrix of the cup disposed in the axial plane of the cup which is perpendicular to the plane of the filling orifice (10).

4,346,980
SILVER RECOVERY SYSTEM FOR X-RAY AND PHOTOGRAPHIC FILM PROCESSORS

James C. Palazzolo, 3605 E. Monza Dr., Salt Lake City, Utah 84119

Filed Jan. 25, 1980, Ser. No. 115,210
Int. Cl.³ G03D *3/06*
U.S. Cl. 354—322 9 Claims



1. An automated film processor having individual developer, fixer and washer containers and with means for continuously transporting x-ray film through said tanks serially and associated with a removeable silver recovery unit comprising:

overflow means on said fixer container;

bottom discharge means on said fixer container;

a surge-drip tank having a capacity at least as large as said fixer container, said surge-drip tank having a lower discharge orifice sized to discharge liquid at a slow flow rate and an upper overflow port, said overflow port and said discharge orifice positioned to drain liquid into said removeable silver recovery unit;

overflow conduit means connecting said fixer container overflow with surge-drip tank;

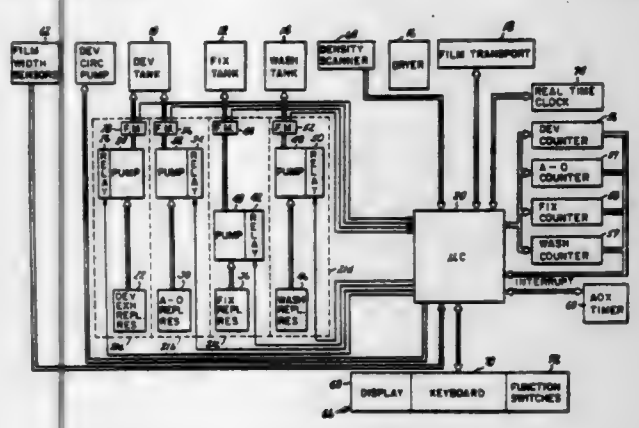
developer automatic refill means connected to said developer container;

fixer automatic refill means connected to said fixer container.

4,346,981
DUAL RATE AUTOMATIC ANTI-OXIDATION REPLENISHER CONTROL

Kenneth M. Kaufmann, Minneapolis, Minn., assignor to Pako Corporation, Del.

Continuation-in-part of Ser. No. 168,020, Jul. 14, 1980, Pat. No. 4,295,729. This application May 15, 1981, Ser. No. 263,868
Int. Cl.³ G03D *3/06*
U.S. Cl. 354—324 9 Claims



1. In a processor of photosensitive material in which anti-oxidation replenishment is provided, the improvement comprising:

means for storing a first replenishment rate and a second, lower replenishment rate;

means for providing a first signal indicative of operating time of the processor;

means for providing a second signal indicative of non-operating time of the processor; and

anti-oxidation control means for controlling the anti-oxidation replenishment at the first replenishment rate as a function of the first signal to compensate for changes in chemical activity of processor fluid due to aerial oxidation under normal operating conditions of the processor, and for controlling anti-oxidation replenishment at the second, lower rate as a function of the second signal to compensate for changes in chemical activity of the processor fluid due to aerial oxidation of the processor solution under non-operating conditions of the processor.

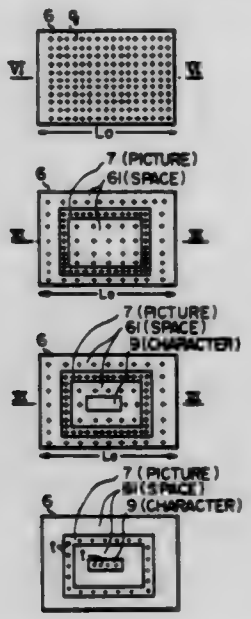
4,346,982
ELECTROPHOTOGRAPHIC RECORDING DEVICE

Junzo Nakajima, Kawasaki; Masayuki Hida, Yokohama, and Masakatsu Horie, Atsugi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 11, 1980, Ser. No. 139,402
Claims priority, application Japan, Apr. 20, 1979, 54-48675
Int. Cl.³ G03G *15/048, 15/30*
U.S. Cl. 355—3 R 6 Claims

1. An electrophotographic recording device comprising: a light-sensitive recording medium, means for uniformly precharging the surface of said light-sensitive recording medium, means for forming a latent image of a picture on the charged lightsensitive recording medium by exposure of a positive optical image of the picture, means for forming latent images of characters on the charged light-sensitive recording medium by exposure of negative optical images of the characters, and means for development of the latent images formed on the light-sensitive recording medium including a magnetic roller having a potential selected as a predetermined value between

the potential of the precharged light-sensitive recording medium and zero potential and single component toner for devel-



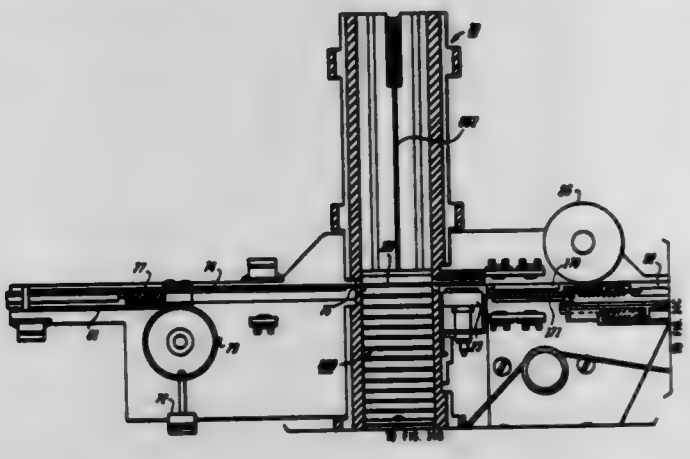
opment of said latent images of both the picture and the characters.

4,346,983

XERORADIOGRAPHIC INTRAORAL DENTAL SYSTEM

Lothar S. Jeromin, Sierra Madre; Glenn F. Geddes, Alta Loma; Otto S. Baumann, Glendale, and Joseph F. Santoro, Glendora, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 24, 1979, Ser. No. 60,074
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R 1 Claim



1. A xerographic system for developing X-ray sensitive plates of differing sizes enclosed in optically opaque covers comprising:

an input station into which an exposed plate and its cover is inserted comprising means for removing said plate from said cover,

a development station for producing an image from said exposed plate onto some recording media,

means for storing a plurality of plates of differing sizes,

means for charging said plates,

an output station into which an empty cover is inserted comprising means for determining the size of said cover, and means for inserting a charged plate into said cover,

means for transporting plates through said input station, said development station, means for storing, means for charging and said output station, in that order, and

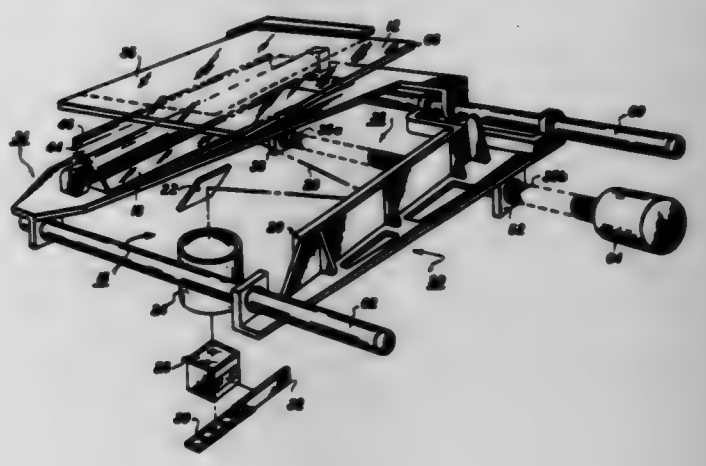
wherein said means for storing is responsive to said output station determining means to supply to the charging means and thereafter to said output station a plate of a size corresponding to that of said cover.

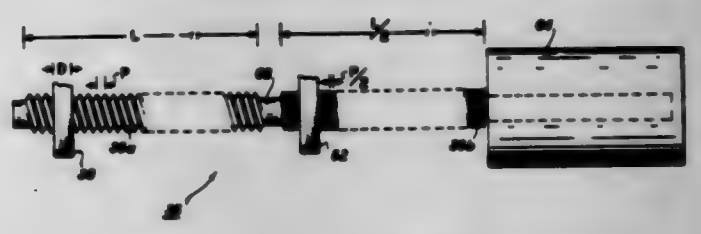
4,346,984

DOCUMENT SCANNER

William Kingsley, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 20, 1980, Ser. No. 198,392
Int. Cl.³ G03G *15/28*; G03B *27/38*
U.S. Cl. 355—8 6 Claims





3. A scanning system for incrementally scanning a document in an object plane, the system comprising

a full rate scan mirror and a half rate mirror mounted respectively for independent movement on a first and second movable carriage disposed beneath said object plane,

a lead screw having along its length a first threaded segment with a pitch P cm/rev and a second threaded segment with a pitch P/2/cm/rev,

means for threadingly engaging said first carriage with said first threaded segment and said second carriage with said second threaded segment, and

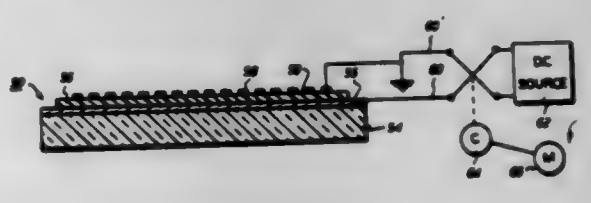
means for rotating said lead screw whereby each carriage is advanced along the respective shaft segment at a rate of speed proportional to the velocity of said rotating means and the respective segment pitch.

4,346,985

AUTOMATIC DEVELOPMENT CONTROL

P. Keith Watson, and Lawrence J. Fraser, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1979, Ser. No. 51,650
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 D 2 Claims



1. An automatic development control apparatus for use in electrophotographic machines wherein a pair of said parallel members form a channel through which developer material passes, one of members being constructed such that toner can be electrostatically attracted thereto and scavenged therefrom for permitting the concentration of the toner in the developer to be measured from the optical density of the toner attracted to the said one of the members, the improvement comprising said one of said members comprising:

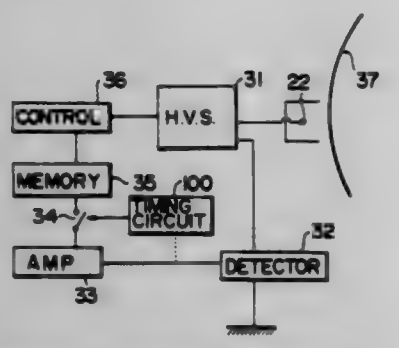
a uniform, transparent conductive substrate;
a transparent insulating layer covering said substrate;
a plurality of spaced-apart, opaque fingers on said insulating layer, said fingers being interconnected and electrically conductive;
means for grounding said fingers and
means for alternately applying positive and negative voltages to said substrate.

4,346,986

IMAGE FORMATION METHOD AND APPARATUS

Tsukasa Kuge, Tokyo; Yasuyuki Tamura, Kawasaki, and Koichi Tanigawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 969,887, Dec. 15, 1978, abandoned.
This application Feb. 3, 1981, Ser. No. 231,110
Claims priority, application Japan, Dec. 22, 1977, 52-154623
Int. Cl.[3] G03G *15/02*; H01T *19/00*
U.S. Cl. 355—14 CH 8 Claims



1. An image forming apparatus comprising:
a plurality of process means for forming an image on a rotatable medium and for transferring the image onto a transfer material;
means for rotating said rotatable medium through an initial one turn without an image forming operation before the start of image formation and for subsequently rotating said rotatable medium for image formation after completion of said initial turn, wherein said rotatable medium is placed in a standard state by uniformly charing it during said initial turn;
detecting means for detecting an electrical condition of one of said process means when said rotatable medium is rotated during the time of said initial turn by said rotating means before the start of image formation; and
control means for controlling, during said initial turn, said one process means in response to said detecting means to approach an electrical condition having a predetermined value, memorizing the resultant value of the approaching control and holding it after the start of the image formation during at least the time of the image forming operation, wherein said control means controls, during the image forming operation, said one process means in accordance with the memorized value and independently of said detecting means.

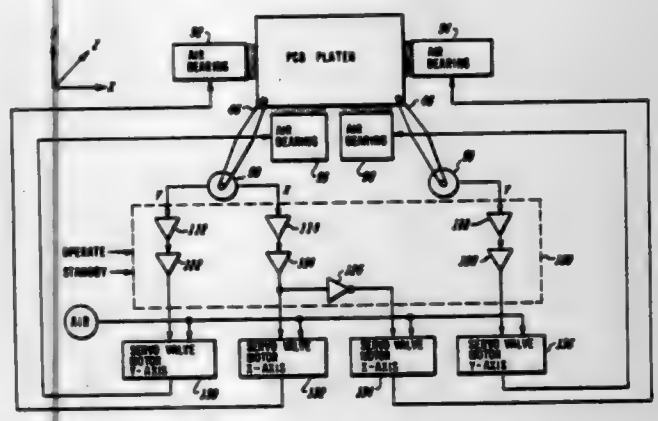
4,346,987

PRINTED CIRCUIT BOARD PROJECTION IMAGING SYSTEM

Phijit Jalichandra, San Marino; John S. Dowell, Rosemead, and John A. Carlson, Monrovia, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 18, 1980, Ser. No. 170,198
Int. Cl.[3] G03B *27/52*
U.S. Cl. 355—40 5 Claims

1. Apparatus for producing printed circuit boards including a projection imaging system for projecting an electrical circuit image from a master onto a radiation sensitive coated printed circuit board panel positioned at a location spaced apart from said master, said projection imaging system comprising:
means for generating radiation;
first support means for supporting said master, said master having said circuit pattern formed thereon in a predetermined size format, said radiation being incident on said pattern;
a projection lens assembly positioned with respect to said master for receiving radiation transmitted through said master and for projecting an image having a size format larger than said predetermined size format onto said radiation sensitive coated printed circuit board panel;
second support means for supporting said radiation sensitive coated printed circuit board panel at said spaced apart location;
registration means for maintaining said second support means in optical alignment with the image projected from said master, said registration means comprising at least two air bearings for positioning said second support means in first and second axial directions, said two air bearings comprising first and second air bearings positioned at opposite edges of said second support means and operating in a push-pull arrangement to position said second support means in said first and second axial directions, a third air bearing along the lateral edge of said second



support means operating to position said second support means in third and fourth axial directions transverse to said first and second axial directions, a fourth air bearing along the same lateral edge of said second support means and adjacent to said third air bearing and operating in synchronization with said third air bearing to position said second support means in said third and fourth axial directions, or independently of said third bearing to provide a rotational adjusting movement to said second support means;
said second support means including an illumination source on one side of said printed circuit board panel and a radiation detector on the other side of said printed circuit board panel, said printed circuit board panel having holes associated therewith, the panel being in optical alignment with the image projected from said master when the radiation generated by said illumination source passes through said holes and is detected by said radiation detector; and
means for maintaining the spacing between the radiation generating means and the master and the master and the radiation sensitive coated printed circuit board panel substantially constant.

4,346,988

DISTANCE MEASURING DEVICE

Hiroyuki Kimura, Kawasaki; Shuichi Tamura, Yokohama, and Hideo Yokota, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

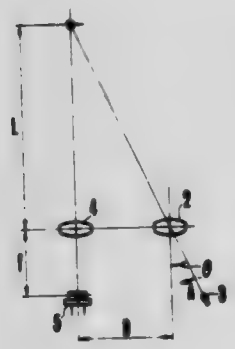
Filed Nov. 6, 1979, Ser. No. 91,777
Claims priority, application Japan, Nov. 10, 1978, 53-138438
Int. Cl.[3] G01C *3/00, 5/00*; H01L *9/00*
U.S. Cl. 356—1 3 Claims

1. A distance measuring device for measuring a distance from the device to an object by the triangulation principle having:
(a) light source means provided with a light source and light

projecting means and positioned to define a predetermined illumination domain on said object;

(b) light sensitive means arranged in spaced relation from said light source means by a predetermined distance and responsive to light reflected from said projection domain for producing a predetermined signal;

(c) either said light source means or said light sensitive means being movable along a predetermined path; and





(d) said light source being constructed to provide a higher radiant energy density at its marginal zone of a light emitting surface thereof than at its central zone at least on a cross section of the light emitting surface along a plane containing the optical axis of the light source means and the optical axis of the light sensitive means, while the projection domain on the object has a corresponding energy density distribution as said light source.

4,346,989

SURVEYING INSTRUMENT

Alfred F. Gort, Loveland, Colo., and Charles E. Moore, Rochester, N.Y., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 842,864, Oct. 17, 1977, abandoned, which is a division of Ser. No. 742,938, Nov. 18, 1976, Pat. No. 4,108,539.
This application Aug. 30, 1979, Ser. No. 71,433
Int. Cl.³ G01C *3/08;* G01B *11/26*
U.S. Cl. 356—5 **1 Claim**

1. A tacheometer comprising:

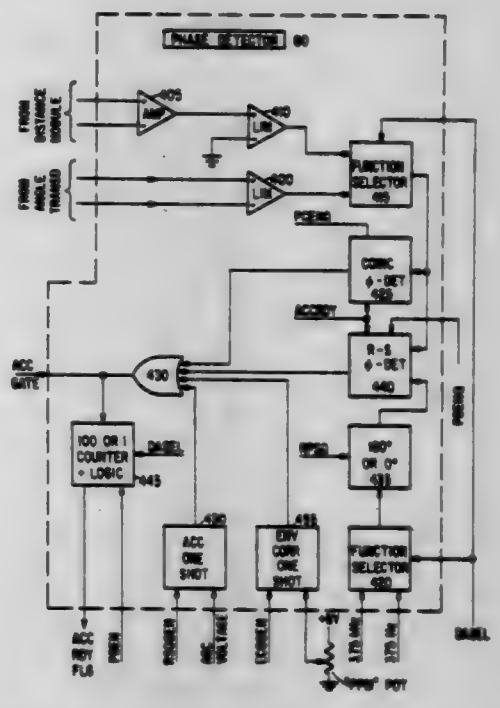
first reference signal generation means for producing a first reference signal having a first frequency;

distance measuring means coupled to the first reference signal generation means for measuring a distance and producing a distance output signal having a frequency equal to the first frequency and a phase shift with respect to the first reference signal indicative of the measured distance;

second reference signal generation means for producing a second reference signal having a second frequency;

angle measuring means coupled to the second reference signal generation means for measuring an angle and producing an angle output signal having a frequency equal to the second frequency and a phase shift with respect to the second reference signal indicative of the measured angle;

function selection means coupled to the first reference signal and the distance output signal and also to the second reference signal and the angle output signal, for respectively producing at first times upon a reference output and a data output the first reference signal and the distance output signal and also for respectively producing thereupon at second times the second reference signal and the angle output signal; and



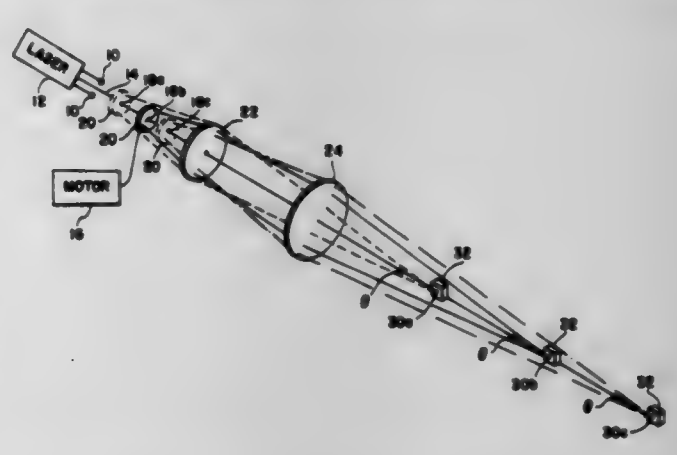
phase measurement means coupled to the reference and data outputs of the function selection means for measuring the phase difference of the signals thereupon and producing an output signal indicative of that phase difference.

4,346,990

SCANNING AFOCAL LASER VELOCIMETER PROJECTION LENS SYSTEM

David B. Rhodes, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 7, 1979, Ser. No. 73,477
Int. Cl.³ G01P *3/36;* G02B *3/00*
U.S. Cl. 356—28.5 **5 Claims**



1. An optical scanner for focusing light beams at points in space comprising:

afocal lens means providing constant crossbeam angle, constant focal volume and constant magnification;

scanning lens means having a common optical axis with said afocal lens means; and

means for moving said scanning lens means along the optical axis relative to said afocal lens means to scan points in space.

4,346,991
METHOD AND APPARATUS FOR MEASURING RETINAL BLOOD FLOW

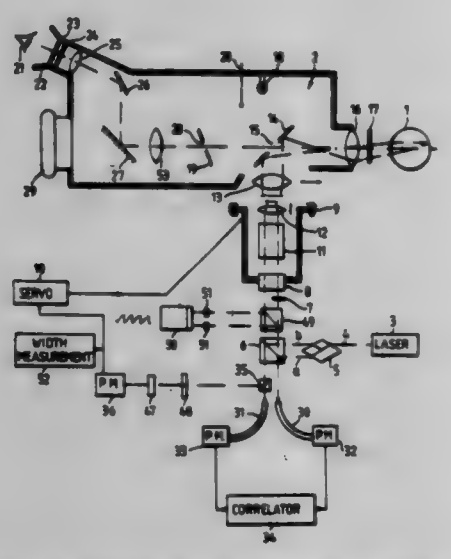
Keith Gardner; Edward R. Pike, both of Malvern, and David W. Hill, London, all of England, assignors to National Research Development Corporation, London, England

Filed Oct. 22, 1980, Ser. No. 199,639

Claims priority, application United Kingdom, Oct. 31, 1979, 7937799

Int. Cl.³ G01P *3/36*

U.S. Cl. 356—28.5 9 Claims



1. Apparatus for measuring retinal blood flow comprising a fundus camera for observation of the fundus of an eye, a laser for illuminating a portion of a retinal blood vessel, means for detecting laser radiation scattered by the eyes to determine retinal blood flow from the doppler shift imparted to the laser radiation by moving blood corpuscles, and an optical system for directing twin beams of laser radiation along an optical path into the eye and directing radiation reflected by the eye back along the optical path into the detecting means, the optical system including a beam rotator for rotating the plane containing the two beams to align along a retinal blood vessel, and means for causing the twin beams to intersect where required in the eye.

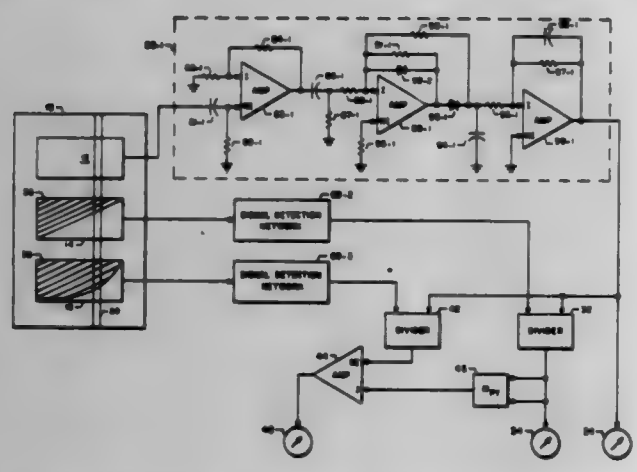
4,346,992
LASER DETECTOR AND SPECTRAL ANALYZER

Jacob Schwartz, Arlington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 797,596, Feb. 7, 1969, abandoned. This application Feb. 15, 1973, Ser. No. 332,827

Int. Cl.³ G01N *21/00;* G01J *1/42, 3/48*

U.S. Cl. 356—73 11 Claims



1. Apparatus for the detection and spectral analysis of radiant light energy comprising:

a wedge filter having a predetermined variation in optical passband which is dependent upon the position thereon;

photoelectric detection means disposed behind said filter and responsive to energy transmitted thereby to produce a first output signal which increases linearly with the position at which energy is transmitted by said filter and a second output signal which increases quadratically with said position; and

signal processing means coupled to said detection means for combining said output signals such as to provide outputs representative of selected spectral properties of said energy.

4,346,993
PULL-THROUGH STRUCTURE FOR MEASURING THE CURVATURE OF THE INTERNAL WALL OF A PIPE OR TUBE

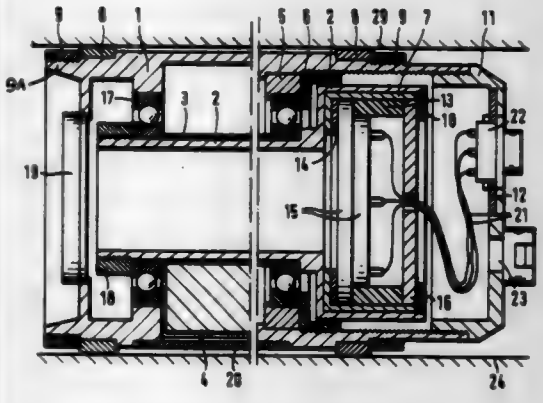
Elmar Trost, Ratingen, and Rudolf Reusch, Duesseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,330

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945290

Int. Cl.³ G01C *9/06*

U.S. Cl. 356—138 10 Claims



1. A pull-through structure for measuring the flexure of the inner wall of a pipe or tube, by means of a laser beam emanating from a laser beam emitter and substantially axially passing through said pipe or tube comprising in combination,

a casing coaxially mounted in said pipe or tube and adapted to be slidably axially pulled therethrough,

measuring means operatively mounted in said casing and adapted to measure the flexure of said pipe or tube at the position of said casing therein,

said measuring means comprising a laser beam detector freely swingably mounted in said casing about the axis of the casing and thereby about the axis of the pipe or tube to be measured, said laser beam detector having a dead weight eccentrically fixed thereto which maintains said laser beam detector in a predetermined angular position in said casing.

4,346,994
SECONDARY ALIGNMENT TARGET FOR AN ELECTRO-OPTICAL ALIGNMENT MEASURING SYSTEM

Jose C. Cruz, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 25, 1980, Ser. No. 162,937

Int. Cl.³ G01B *11/26*

U.S. Cl. 356—152 21 Claims

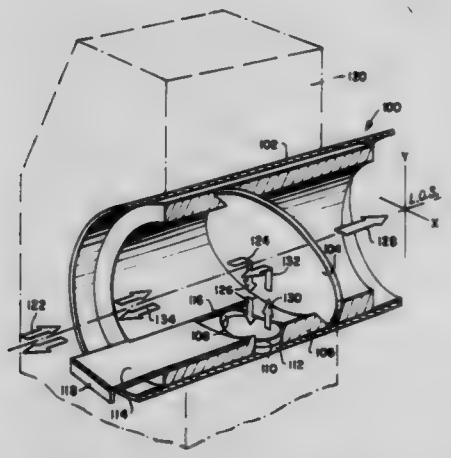
1. A target apparatus for use in optically determining the translational and rotational orientation of a target station relative to a reference line-of-sight established by an optical beam, said target apparatus comprising:

(a) a housing structure mountable in fixed relationship to the target station;

(b) beam splitting means positioned by said housing structure to transmit a first portion of the optical beam in a continuous path along the established reference line-of-sight

while simultaneously reflecting a second portion of the optical beam at an angle relative to the reference line-of-sight;

(c) optical window means disposed in said housing structure to receive said second portion of the optical beam and to transmit a first sub-portion of said second beam portion while simultaneously reflecting a second sub-portion of said second beam portion back toward said beam splitting



means such that said second sub-portion is rereflected at said beam splitting means to provide an optical signal indicative of the rotational orientation of the target station relative to the reference line-of-sight; and

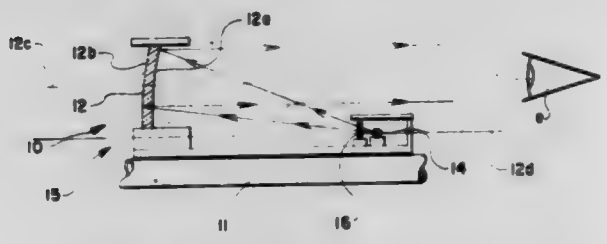
(d) detecting means for receiving said first sub-portion from said optical window means to provide an electrical signal indicative of the translational orientation of the target station relative to the reference line-of-sight.

4,346,995

OFF AXIS OPTICAL SIGHT SYSTEM FOR A FIREARM

Donald D. Morris, 7904 N. Arizona Dr., Raleigh, N.C. 27604

Filed Jul. 14, 1980, Ser. No. 168,607
Int. Cl.³ G02B *27/34*
U.S. Cl. 356—251 3 Claims



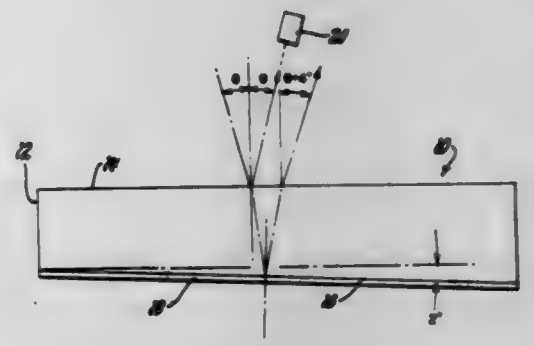
1. An off axis optical sight system for a firearm such as a rifle especially designed to be effective in situations where a target is situated in a dim or dark area a substantial distance from the observer and firearm, comprising: a generally fully transparent single concave meniscus lens of approximately zero refractive power and having an optical axis lying generally below the concave meniscus lens and parallel to the line of sight and convex and concave opposite sides with the concave side directly facing the eye of the observer sighting through said optical sight system; a light source disposed on said optical axis at generally the reflective focal point of said concave meniscus lens between the concave meniscus lens and the observer's eye; spherical aberration corrective lens means disposed inwardly of the reflective focal point of said fully transparent single concave meniscus lens and interposed between said light source and said concave meniscus lens for providing for the parallel passage of light from said concave meniscus lens to the observer's eye so as to correct the spherical aberration of said concave meniscus lens when acting as a reflector by effectively bringing the image of said light source to the same aiming point over substantially the entire visual field of said concave meniscus lens; and therein the respective surfaces of said concave meniscus lens are so proportioned to produce two coinciding images of the light source that appear at infinity in focus on a selected target, whereby the fully transparent concave meniscus lens allows maximum light to pass therethrough to the observer's eye such that the target appears clear to the observer.

4,346,996

STANDARD REFLECTIVE DEVICE

Carl E. Miller, Millington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 23, 1980, Ser. No. 199,973
Int. Cl.³ G01N *21/55*
U.S. Cl. 356—243 1 Claim



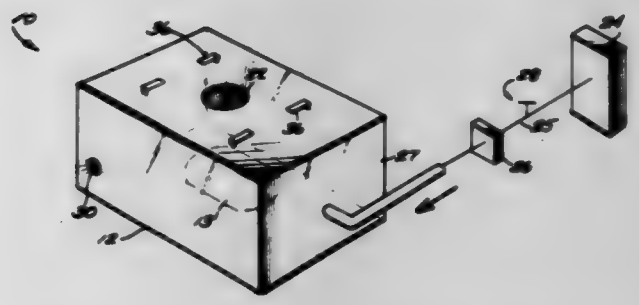
1. A standard reflecting device for an optical apparatus comprising a wedge shaped element having a flat polished front surface for specular reflection of a predetermined fraction of radiation incident thereupon, and a rear surface inclined at an angle to the front surface and treated with an antireflection coating to minimize reflected radiation from the rear surface, the element being selected from the family of materials consisting of semitransparent crystals and glasses wherein for near normal incidence the reflected fraction substantially equals $(n-1)^2/(n+1)^2$ where n is the index of refraction of the material at the wavelength of the incident radiation.

4,346,997

POSITIVE PRESSURE MAINTENANCE FOR SAMPLE PRESENTATION

Robert F. Willis, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Jun. 9, 1980, Ser. No. 157,841
Int. Cl.³ G01N *21/57*; G01J *3/46*
U.S. Cl. 356—244 25 Claims



1. A method of presenting a non-rigid sample to a color measuring instrument having a head with an open viewing port, comprising the steps of

(a) continuously supplying fluid under pressure to the instrument head to exhaust through the viewing port to prevent sample lint and dust from entering the head, to facilitate removal of heat generated by the instrument, and to facilitate maintenance of a sample so that a flat, distortion-free surface can be examined; and

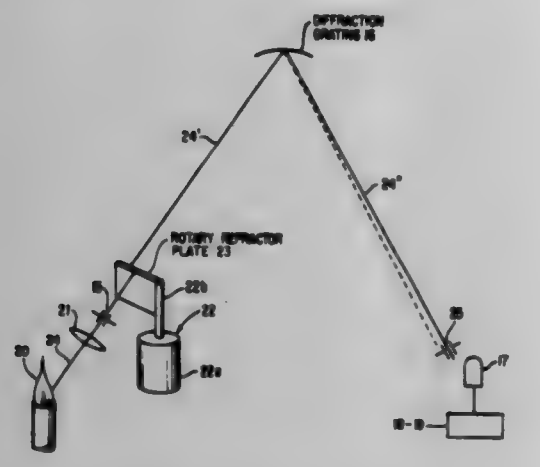
(b) exhausting the fluid supplied to the instrument head from a location distinct from the viewing port when the viewing port is covered with a sample to be examined.

4,346,998

BACKGROUND CORRECTOR FOR SPECTROCHEMICAL ANALYSES OF BIOLOGICAL SAMPLES

Michael L. Franklin, Parsippany, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 741,814, Nov. 15, 1976, abandoned. This application Aug. 20, 1979, Ser. No. 68,239
Int. Cl.[3] G01J *3/06, 3/38;* G01N *21/73*
U.S. Cl. 356—307 7 Claims



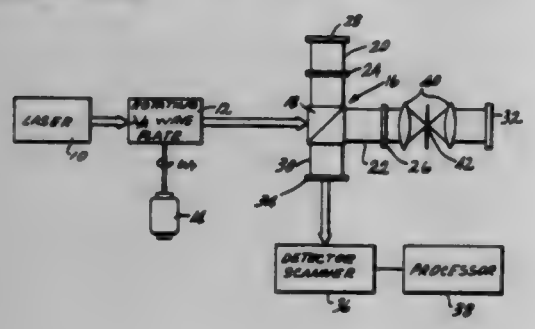
1. In an emission spectrometer arrangement for determining the amount of one or more trace substances of interest in a biological sample and having means providing dynamic background correction with each wavelength of interest of the electromagnetic radiation spectrum, the improvement comprising first means receiving a collected electromagnetic radiation emission beam derived from the sample for determining the intensity of said beam over at least one preselected range of the electromagnetic spectrum, said first means including a rotatable refractor plate which is mounted off-axis with respect to the beam whereby the plate will move into and out of the path of the beam while rotating at a constant angular velocity, said first means receiving said beam during the period the plate is in and out of the path of the beam.

4,346,999

DIGITAL HETERODYNE WAVEFRONT ANALYZER

Norbert A. Massie, Westlake Village, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 29, 1980, Ser. No. 191,604
Int. Cl.[3] G01B *9/02*
U.S. Cl. 356—349 9 Claims



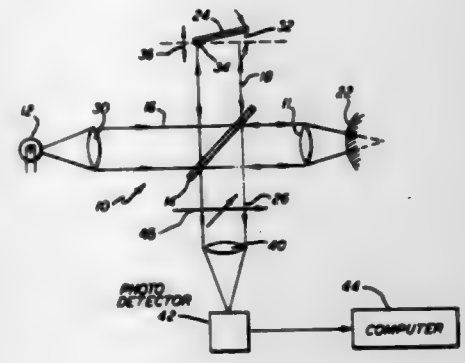
5. A wavefront analyzer comprising an interferometer including a beam splitter for directing an incoming beam along two paths, mirror means for reflecting the beams along said two paths back to the beam splitter, the beam splitter directing the beam along a common output path, a quarterwave plate along each of said two paths between the beam splitter and the mirror means, a polarizer along the output path of the interferometer, means detecting variations in light level in the output from the polarizer, and means for converting the reflected wave travelling along one of said two paths into a plannar wavefront for subsequent interference with the wave travelling along the other one of said two paths.

4,347,000

INTERFEROMETRIC SYSTEM

Francois P. G. Lacoste, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 26, 1979, Ser. No. 106,874
Int. Cl.[3] G01B *11/00*
U.S. Cl. 356—360 9 Claims



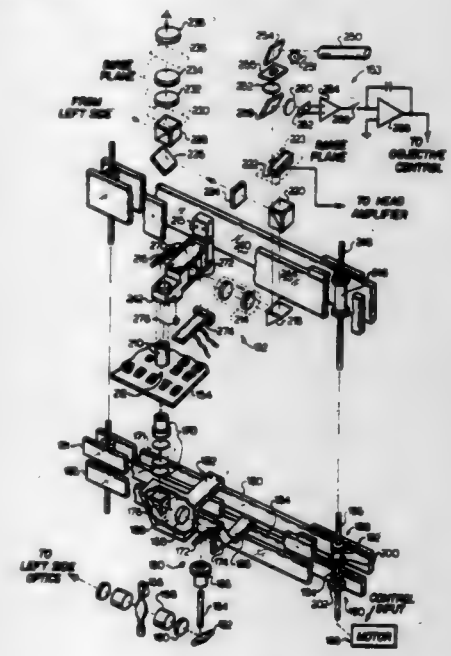
9. A method of testing a lens comprising the steps of:
(a) splitting a light beam into first and second light beams,
(b) supporting a lens to be tested in the path of said first light beam,
(c) reflecting said first and second light beams to recombine and form a single recombined light beam,
(d) varying the angle of reflection and path length of the second light beam, and
(e) photoelectrically detecting the entire recombined beam to generate an output signal representative of the complex point spread function of the lens.

4,347,001

AUTOMATIC PHOTOMASK INSPECTION SYSTEM AND APPARATUS

Kenneth Levy, Saratoga, and Paul Sandland, San Jose, both of Calif., assignors to KLA Instruments Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 892,972, Apr. 4, 1978, Pat. No. 4,247,203. This application Apr. 3, 1979, Ser. No. 26,784
Int. Cl.[3] G01B *11/14*
U.S. Cl. 356—398 3 Claims



1. Optical inspection apparatus for detecting differences between two like objects, comprising:
carriage means for supporting the objects to be inspected

and for simultaneously moving such objects along an inspection path;

illuminator means for illuminating corresponding portions of said objects as they are moved along said path;

electro-optical means for individually inspecting said illuminated portions and for developing first and second electrical signals respectively corresponding thereto, said electro-optical means including separate optical systems for respectively collecting light from said corresponding portions of the inspected objects, and each said system including photosensitive detector means responsive to the collected light and operative to generate electrical signals commensurate therewith, each said separate optical system further including a movable member, an objective lens carried by said movable member for collimating light rays received from one of said objects, a variable focal length lens assembly for receiving the collimated light rays and focusing them onto an image plane at said detector means, an adjustable attachment means mounting said objective lens to the said movable member, focus monitoring means for determining the position of said objective lens relative to the inspected object and for developing an adjustment signal, and adjustment means responsive to said adjustment signal and operative to adjust said attachment means so as to maintain said objective in a focused position relative to the inspected object, the movable member of one of said separate optical systems being mechanically coupled to the movable member of the other of said separate optical systems such that movement of one of said members in one direction causes a like movement of the other of said members in the opposite direction, said focus monitoring means including a laser for passing a narrow beam of light through at least a portion of said separate optical system at an angle relative to the optical axis thereof and onto a peripheral spot of the inspected object, and means disposed along said optical axis for detecting the position of said spot relative to said focused position and for developing said adjustment signal commensurate therewith, said focus monitoring means further including an aperture disposed within the path of the incident laser beam so as to cause the beam spot to have a predetermined configuration which permits unambiguous detection of out-of-focus images caused by an object surface having varying reflectivity;

memory means for storing said first and second electrical signals;

means for scanning said memory means and for electronically aligning a readout of said first signal relative to a readout of said second signal; and

means for comparing the electronically aligned signals and for indicating any difference therebetween.

4,347,002

METHOD AND APPARATUS FOR THE PREPARATION OF DRILLING MUD

Raisa I. Bora, kvartal 24, 53, kv. 89, Tashkent, Chilanzar, U.S.S.R.

PCT No. PCT/SU79/00090, § 371 Date Sep. 16, 1980, § 102(e) Date Sep. 11, 1980, PCT Pub. No. WO80/01495, PCT Pub. Date Jul. 24, 1980

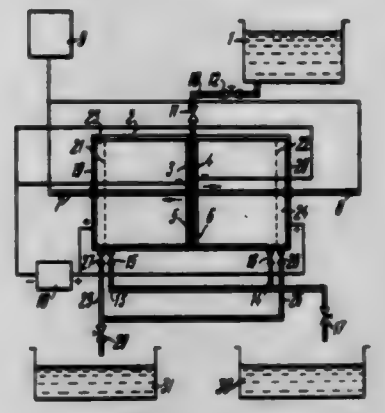
PCT Filed Sep. 28, 1979, Ser. No. 205,441

Claims priority, application U.S.S.R., Jan. 16, 1979, 2705502

Int. Cl.³ B28C *5/46*; B01F *15/02, 11/00*

U.S. Cl. 366—6 15 Claims

1. A method for the preparation of drilling mud comprising mixing solid and liquid phases of drilling mud to obtain a homogenous suspension, characterized in that drilling mud is caused to pass under pressure after the mixing through apertures of a diameter which is greater than maximum size of an individual solid phase particle but smaller than the diameter of aggregates of particles, to prepare dispersed drilling mud, and wherein the pH of the drilling mud is caused to grow simultaneously with the passage of the drilling mud through the aper-



tures by subjecting the drilling mud to a unipolar electric treatment.

4,347,003

TWO-STAGE EXTRUDER

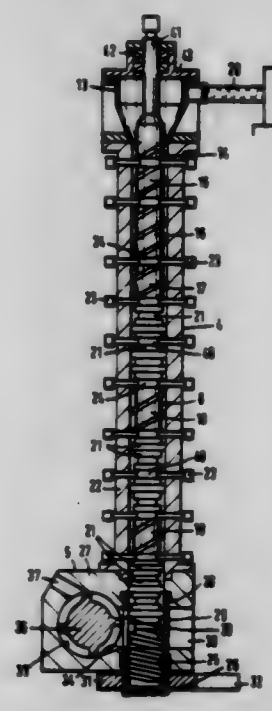
Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 10, 1980, Ser. No. 158,281

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924317

Int. Cl.³ A21C *1/10*; B28C *7/16*; B29F *3/01*

U.S. Cl. 366—75 5 Claims



1. A two-stage extruder for thermoplastic moulding materials, said extruder comprising:

two separate extruding stages, one of said stages being disposed horizontally and the other of said stages being disposed vertically, each of said stages having a working chamber, said chambers being in communication with each other at a common junction between the stages for allowing material to pass from the working chamber of one stage to the working chamber of the other stage, said chambers also being radially offset from each other at said junction such that the axis of each stage does intersect the axis of the other stage at said junction, said chambers meeting tangentially at said junction to form a connecting passage for said communication;

a rotatable plasticizing member disposed in said vertical chamber of said vertical extruding stage;

kneading blades connected to said plasticizing member, said kneading blades being disposed in groups wherein each

kneading blade of each group extends radially of said vertical chamber and is circumferentially offset with respect to the next adjacent blade in the same group;

conveying screw components formed on said plasticizing member between said groups of kneading blades;

pins projecting radially into said working chamber of said vertical extruding stage, with certain of said pins extending between kneading blades of one group; and

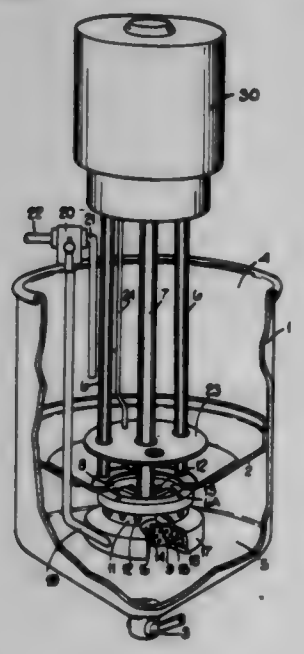
a bearing mounting said plasticizing member rotatably at its upper end.

4,347,004

MIXING APPARATUS

Stanley A. Platts, Warley, England, assignor to Unishear Mixers Limited, Tipton, England

Filed Jun. 13, 1979, Ser. No. 48,259
Int. Cl.[3] B01F *7/26*
U.S. Cl. 366—137 13 Claims



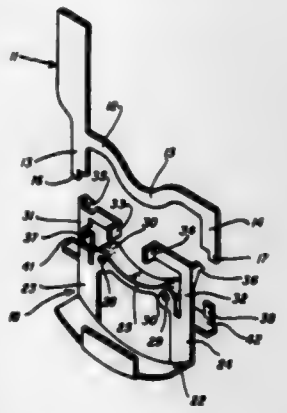
1. A mixing apparatus comprising a container having a separate enclosure, first and second mixing chambers containing respectively first and second bladed rotary impellers and disposed within said enclosure, the mixing chambers having respective inlets disposed in oppositely facing relationship, the container being arranged to receive material to be mixed supplied to an opening thereof and to supply said material in a first direction into the first mixing chamber through its respective inlet, means surrounding the first impeller forming generally radial openings and being arranged in shearing relation to the blades of the first impeller so that material urged radially outwardly through said openings into an intermediate chamber by rotation of the impeller is subjected to a shearing action, the enclosure being arranged to receive material leaving the first mixing chamber and to communicate with the inlet of the second mixing chamber in a second direction opposed to said first direction, further means surrounding the second impeller forming generally radial openings and arranged in shearing relation with the blades of the second impeller so that material urged outwardly through said openings by rotation of the second impeller is subjected to a shearing action, and a discharge chamber having an outlet and arranged to receive material passing through the openings of said further means and being so constructed and arranged that receipt of such material creates an over pressure in the discharge chamber such that material may be discharged under pressure through said outlet.

4,347,005

MECHANISM TO FACILITATE TYPE DISC CHANGES

Josef Leadl, Ottensoos, Fed. Rep. of Germany, assignor to Triumph-Adler A.G., Nuremberg, Fed. Rep. of Germany

Filed Oct. 2, 1980, Ser. No. 193,310
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011116
Int. Cl.[3] B41J *1/24*
U.S. Cl. 400—144.2 4 Claims



1. In a typewriter having a support frame for supporting a positioning motor and shaft having a type disc removably mounted on the end of said shaft,

means for facilitating type disc changes comprising support means secured to said support frame,

means for axially pushing said type disc off said shaft comprising flexible fingers extending upwardly from said support means with the upper ends thereof on opposite sides of said shaft on the motor side of said type disc and normally out of contact with said type disc,

lever means, and

means pivotally supporting said lever means for movement relative to said support means,

said lever means being normally biased to rest position by said flexible fingers and being pivotally movable to push said flexible fingers against and to axially push off and disengage said type disc from said shaft.

4,347,006

PAPER INSERT AND LINE FEED MECHANISM

Iraj D. Shakib, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1980, Ser. No. 211,996
Int. Cl.[3] B41J *11/36, 23/34*
U.S. Cl. 400—187 14 Claims

1. A motor driven indexing system for indexing a platen of a printer comprising:

a motor having a continuous output;

a platen;

a first clutch engageable to transmit said motor output;

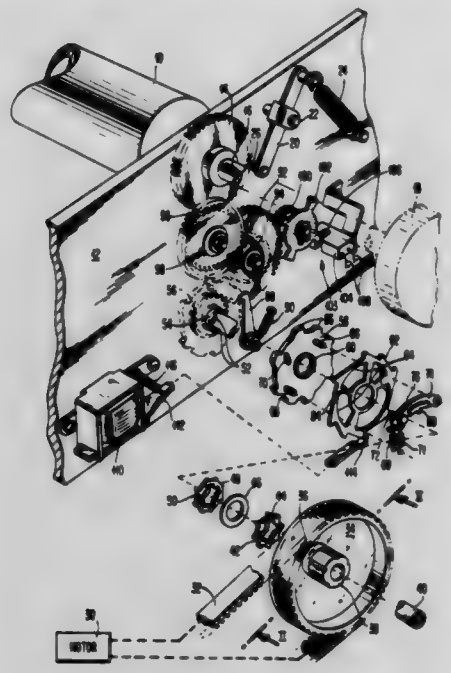
a second clutch driven by said first clutch;

a drive train;

said second clutch engageable to transmit the said output of said motor transmitted by said first clutch to said second clutch to said drive train;

said drive train drivingly engaged with said platen, whereby

the engagement of said clutches connects drivingly said motor to said platen and disengagement of said clutches



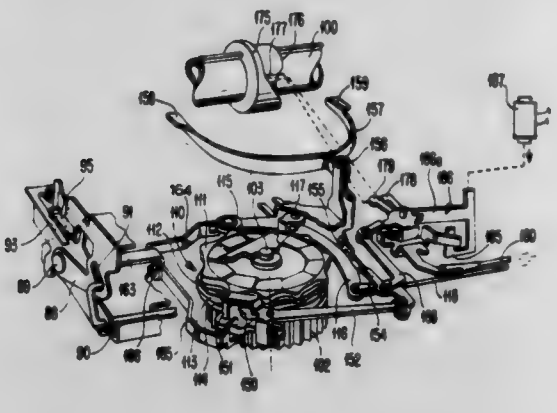
frees said motor from driving engagement with said platen and said platen from connection with said first clutch.

4,347,007

TYPEWRITER CARTRIDGE AND FEED MECHANISM THEREFOR

John O. Schaefer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 27, 1977, Ser. No. 801,286
Int. Cl.[3] B41J *35/28*
U.S. Cl. 400—208 18 Claims



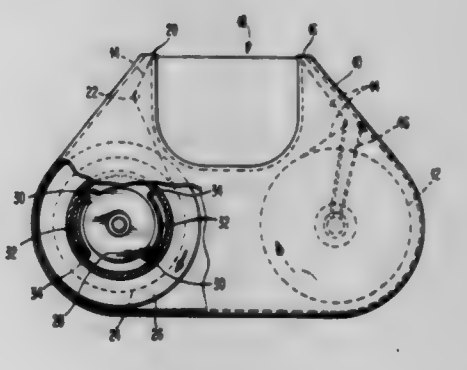
1. A typewriter cartridge and drive mechanism therefor, said cartridge comprising a case having a body portion and having integral spaced apart guide members projecting therefrom for positioning a preselected portion of a typewriter ribbon in a plane at a predetermined location and distance from said body portion; a first spool mounted for rotation within said body portion, having a fixed axis of rotation and for holding a supply of typewriter ribbon, and a second spool spaced from said first spool for receiving said ribbon; said second spool having an axis which is mounted for motion in a predetermined path within said body portion; means defining an opening along the perimeter of said case and in said path; and means to bias said second spool in said path towards and into said opening and against at least a portion of said means defining said opening; said drive mechanism comprising a ribbon advancing means operatively associated with said opening for providing engagement against said ribbon on said second spool and for moving said second spool away from said means defining said opening; means on said cartridge defining a pivot for said cartridge along an axis thereof essentially parallel to said plane, said cartridge being movable between a first home position and a second elevated position about said axis; first and second cam means, said first cam means operable cyclically to elevate said cartridge from said home position to one of a plurality of print positions, and then to bring said cartridge back to its home position; said second cam means including said ribbon advancing means for effecting advancement of said ribbon upon said cartridge being elevated about said pivot.

4,347,008

ANTI-REVERSAL BACKCHECK FOR PRINTER RIBBON CARTRIDGE TAKEUP SPOOL

Peter F. Jagodzinski; Thomas R. Field, and Carl D. Patrick, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1980, Ser. No. 163,656
Int. Cl.[3] B41J *35/28*
U.S. Cl. 400—208 3 Claims



1. A ribbon cartridge for containing and supporting a printing ribbon comprising,

a cavity having at least a top and bottom surface,

a supply spool mounted within said cavity and comprising a core and a coiled supply of ribbon,

a take-up spool rotationally mounted within said cavity for accumulating ribbon dispensed from said supply spool,

said cavity further comprising aperture means for permitting the passage of said ribbon exteriorally of said cavity, said ribbon attached to said take-up spool,

said take-up spool further comprising outwardly extending arms proximate to one end of said takeup spool, said arms extending substantially concentric with said take-up spool,

and said cavity further comprising a truncated cylindrical surface in one of said top or bottom surfaces, said cylindrical surface being further provided with ratchet teeth about the interior of said cylindrical surface;

said arms of said take-up spool engageable with said ratchet teeth to provide resistance to rotation of said take-up spool in a selected direction of rotation substantially in excess of any resistance to the rotation of said take-up spool in the opposite direction of rotation, said arms being flexible and positioned within and confined by said truncated cylindrical surface and said ratchet teeth thereon, to increase the effective rigidity of said arms in response to attempted rotation in said selected direction of said takeup spool, said ratchet teeth serving as means to limit the bowing of said arms through confined contact between said arms and said ratchet teeth.

4,347,009

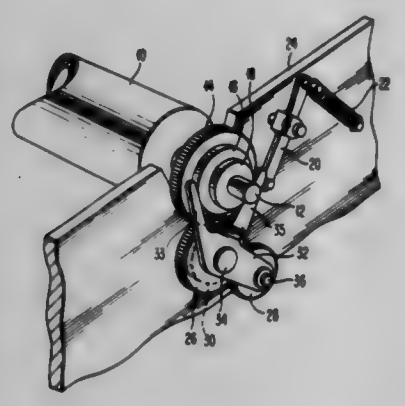
OPERATOR INTERCHANGEABLE GEAR DRIVEN PLATEN AND PLATEN DRIVE MECHANISM FOR TYPEWRITERS AND PRINTERS

Clifford G. Brown, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 273,556
Int. Cl.[3] B41J *19/96*
U.S. Cl. 400—611 13 Claims

1. A platen drive apparatus for driving interchangeable platens having differing line feed amounts due to different diameter platen gears comprising:

a drive gear;
an idler gear driven by said drive gear;
an interchangeable plate gear having an axis of rotation and a predetermined number of gear teeth, driveable by said idler gear;
means for effecting automatic adjustment of said idler gear in a gear ratio change in which the number of teeth on a platen gear is subject to change with tooth pitch held constant, said means comprising a constraint member and a support member,



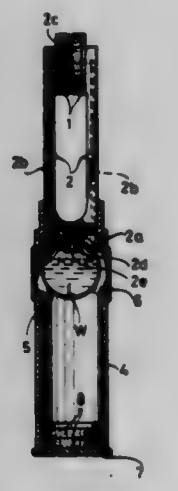
said constraint member of predetermined configuration supported coaxially with said platen gear axis, said configuration dictated by the number of gear teeth on said platen gear;
said support member for said idler gear pivotally supported about said driving gear and engageable with said constraint member to define a spatially confined position of said idler gear in mesh with said platen gear whereby said constraint member associated with said platen gear causes constrained engagement of said idler with said platen gear, thereby facilitating operator exchange of platens, platen gears and constraint members to control the amount of line feed of said gear driven platen.

4,347,010

CLEANING DEVICE FOR EYEGLASSES

Alex Petkoff, No. 131, Hochstädter Landstrasse, 645 Hanau/-Hohe Tanne, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 66,139
Int. Cl.³ G02C *11/08*
U.S. Cl. 401—10 8 Claims



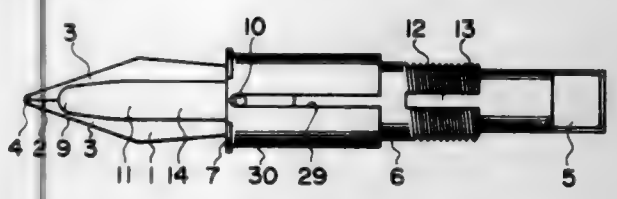
1. A cleaning device for eyeglasses comprising:
(a) an elongated, rigid tubular wall means defining a casing, the opposite top and bottom ends thereof being open, the interior thereof being unobstructed and the interior cross-sectional configuration thereof being substantially uniform between positions adjacent the top and bottom ends thereof;
(b) removable cover means for closing said opposite top and bottom ends;
(c) a guide member substantially conforming to the interior cross-sectional configuration of said casing and longitudinally slidable therein between upper and lower positions in said casing;
(d) a projection extending rearwardly from said guide member;
(e) two spaced resilient limbs extending forwardly from said guide member, the free ends of said limbs each including retainer means, said limbs being adapted to extend around the edge of a spectacle lens;
(f) a spong-like wiper member replaceably mounted on each of said retainer means at the free end of the respective resilient limb;
(g) conduit means extending through said projection, through said guide member and through each of said limbs and communicating with each of said sponge-like wipers;
(h) a collapsible bag detachably secured to said rearwardly extending projection for containing a liquid cleaning agent; and
(i) a pair of apertures in opposite sides of said tubular wall means in alignment with said collapsible bag when said guide member is positioned at said upper position in said casing, and resilient diaphragm means covering each of said apertures;
(j) whereby when said guide member is at said lower position said limbs and wipers are contained within said casing, and when said guide member is in said upper position said limbs extend above said casing in an operative position, and in said latter position said resilient diaphragms may be pressed towards each other to compress opposite sides of said collapsible bag and cause said liquid cleaning agent to be fed through said conduit means to each of said sponge-like wipers when eyeglasses are being cleaned.

4,347,011

FOUNTAIN PEN EQUIPPED WITH A RESILIENCY ADJUSTMENT DEVICE

Seikichi Yanagita, Chigasaki, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1979, Ser. No. 92,878
Claims priority, application Japan, Nov. 17, 1978, 53-141094; Feb. 28, 1979, 54-22030; Feb. 28, 1979, 54-22031; Feb. 28, 1979, 54-22032; Jul. 16, 1979, 54-97665[U]
Int. Cl.³ B43K *1/02*
U.S. Cl. 401—231 22 Claims



1. A fountain pen comprising:
a pen core;
a pen tip having a writing point, said pen tip being operatively mounted on said pen core;
a pen tip mounting portion and an overflow ink containing chamber formed in said pen core;
a pen core cover positioned around a portion of said pen core and sealingly covering at least said pen tip mounting portion and said over-flow ink containing chamber formed in said pen core, said core cover including a guide portion having a guide slot formed at least on a surface of one end portion of said guide portion closer to said writing point in such a manner that said guide slot lies along an axial line of the upper surface of said pen;
a tongue-shaped flexible retaining member having a first end portion contacting said pen tip, a curved portion which is curved towards said point, an air gap formed between said curved portion and said tip, and a straight portion which is not in contact with said tip, said retaining member being positioned in said guide slot so as to be slidable on the outer

surface of said pen core cover and to be slidable with respect to said pen tip;

knob means coupled to an outer surface of said retaining member;

a rotation-type shifting cylinder rotatably mounted around said pen core cover, said shifting cylinder having a spiral groove formed on an inner surface thereof, said knob means being engaged with said groove on said inner surface; and

a holder cylinder to which is detachably mounted said pen core cover.

4,347,012

METHOD AND APPARATUS FOR TENSION SETTING AND COMPRESSION RELEASING TUBULAR CONNECTORS

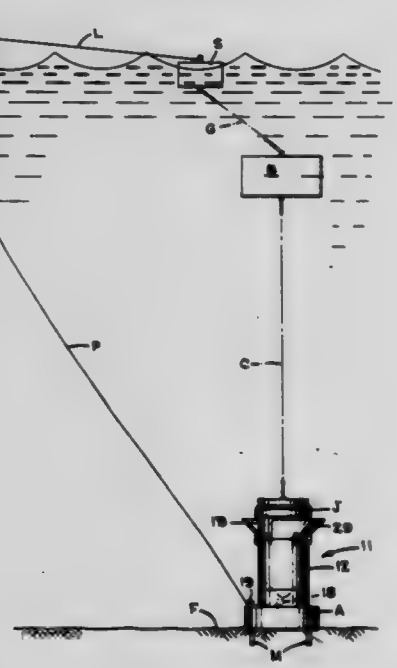
Gregory L. Glidden, Houston, Tex., assignor to FMC Corporation, Chicago, Ill.

Filed Sep. 4, 1979, Ser. No. 71,811

Claims priority, application United Kingdom, Oct. 7, 1978, 39709/78

Int. Cl.³ F16B *1/00*; F16D *9/00*; F16P *5/00*

U.S. Cl. 403—2 **13 Claims**



1. A connector for releasably securing two objects together at a remote location using axial tension to lock two portions of the connector together and using axial compression to unlock the two portions, said connector comprising:

an outer element having an annular passage defined by the inner surface of said outer element, and having an inner groove extending radially outward from the inner surface of said outer element;

an inner element having an annular outer surface to slidably fit inside said passage of said outer element;

a spring means attached to the outer portion of said inner element, said spring means being biased in a radially outward direction from said inner element;

means for compressing said spring means in a radially inward direction to facilitate moving said spring means and said inner element into said passage, said spring means expanding into said inner groove to lock said inner element to said outer element when tension is applied to bias said inner element axially away from said outer element; and

a sloping cam surface adjacent said inner groove in said outer element for compressing said spring means in a radially inward direction to release said inner element from said outer element when the weight of said inner element biases said inner element axially toward said outer element.

4,347,013

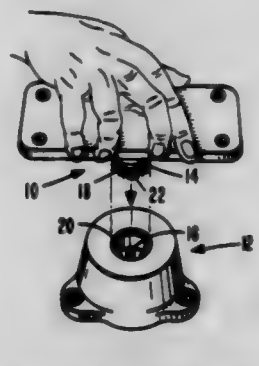
MOUNTING DEPTH-FINDERS, OR FISH FINDERS

William A. Turner, 2704 First St., and Johnny R. Nunnelee, Rte. 1, Box 223 Hillcrest Dr., both of Gadsden, Ala. 35901

Division of Ser. No. 941,650, Sep. 11, 1978, abandoned. This application Dec. 5, 1979, Ser. No. 100,686

Int. Cl.³ F16B *7/00*; F16D *1/10*

U.S. Cl. 403—4 **4 Claims**



1. A swivel mounting device comprising:

a male member including an attachment portion, adapted for attachment to a depth finder or the like, and a stem portion, extending from the attachment portion and having a plurality of first grooves therein, extending longitudinally of the stem portion, and a second groove therein, extending circumferentially around the stem portion between the first grooves and the attachment portion; and

a female member adapted for attachment to a boat or the like and having a recess adapted to receive the male member stem portion and including therein (a) a spring loaded pawl member for engaging one of the male member first grooves while permitting ratcheting rotation between the male member and the female member, and (b) three spring loaded slide members for engaging the male member second groove to releasably retain the male member and the female member together.

4,347,014

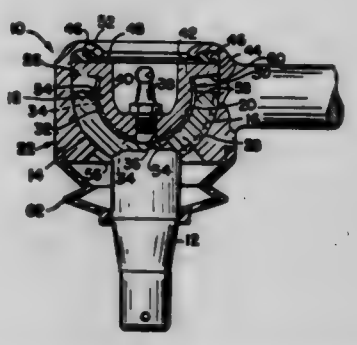
HEMISPHERICAL BALL AND SOCKET JOINT

Joseph E. Smith, Birmingham, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Jul. 30, 1979, Ser. No. 61,644

Int. Cl.³ F16C *11/06*

U.S. Cl. 403—36 **14 Claims**



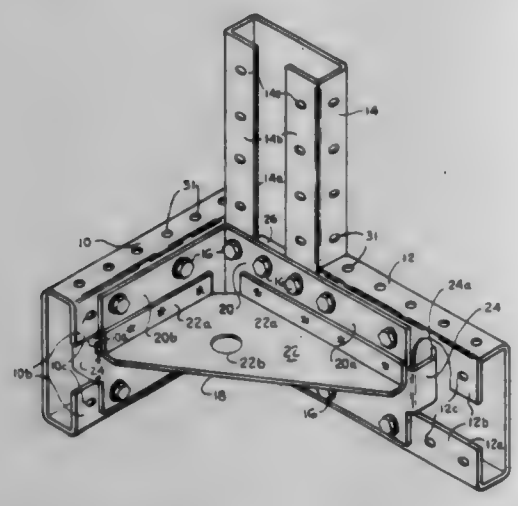
1. A ball joint structure comprising a stud and a half-ball member integrally formed at one end of said stud, a peripheral spherical surface on said half-ball member and a recess in the end of said half-ball member having a concave substantially hemispherical surface, said peripheral spherical surface and said concave hemispherical surface being substantially concentric with each other, a socket member having a concave spherical surface engaged with the peripheral spherical surface of said half-ball member, a cup-shaped retainer member having a substantially hemispherical peripheral surface concentric to and engaged with said concave hemispherical surface in the recess of said half-ball, a grease fitting disposed at the bottom of said cup-shaped retainer member, biasing means urging said concentric spherical surfaces in mutual swiveling sliding engagement, and means holding said biasing means.

4,347,015

STRUCTURAL FRAME CORNER ASSEMBLY FOR ELECTRICAL SWITCHBOARDS AND THE LIKE

William F. Olashaw, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,201
Int. Cl.[3] F16D *1/00*
U.S. Cl. 403—219 8 Claims



1. A structural frame corner assembly for enclosures such as electrical switchboards and the like, said assembly comprising, in combination:

A. an elongated width post, an elongated depth post and an elongated vertical post arranged in mutually perpendicular relationship with a terminal portion of said vertical post disposed in intermediate, abutting relation with terminal portions of said width and depth posts at a corner of the enclosure frame,

(1) each of said posts being C-shaped in cross-section to provide a coextensive slot flanked by flanges having corresponding patterns of holes preformed therein;

B. a sheet metal gusset sub-assembly including

(1) a brace integrally formed having a pair of elongated legs arranged at a right angle;

(2) vertically spaced patterns of preformed holes distributed along the lengths of said legs;

(3) a triangular gusset plate affixed to said legs to reinforce their right angular relationship; and

(4) a finger integrally formed with the free end of each said leg and bent back in directions away from said gusset plate, the lengths of said fingers being slightly in excess of the depth of said post slots; and

C. self-threading screws utilizing said preformed holes in said post flanges and said brace legs to assemble said gusset sub-assembly to said width, depth and vertical posts and thus rigidly preserve their mutually perpendicular relationship, said fingers resiliently engaging said width and depth posts through said slots therein to tension said assembly.

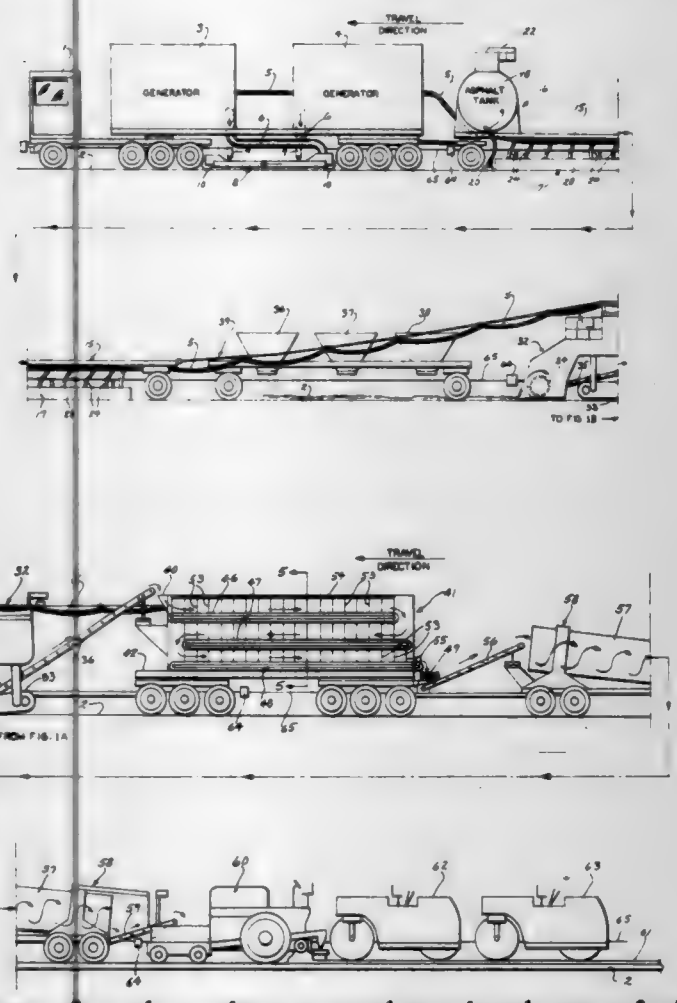
4,347,016

METHOD AND APPARATUS FOR ASPHALT PAVING

Robert A. Sindelar, 606 E. South St., and Donald J. Alexander, 125 Webster St., both of Beaver Dam, Wis. 53916

Filed Aug. 21, 1980, Ser. No. 180,157
Int. Cl.[3] E01C *23/14*
U.S. Cl. 404—95 8 Claims

1. An apparatus for asphalt paving, comprising a train having a forward end and a rear end and disposed to move in a forward direction along a roadway having an existing layer of asphalt pavement, an electrical generating unit mounted on the forward portion of the train and operable to burn a fuel and generate electricity, said generating unit having a waste gas discharge conduit for discharging waste gases of combustion, an electric power line connected to the generating unit and extending along the train to transmit electrical power, a pavement pre-heating unit mounted on the train adjacent the generating unit and operably connected to said conduit for discharging said waste gases into contact with said pavement to preheat the same, a first microwave heating unit connected to the train at a location to the rear of said pre-heating unit and operably connected to the power line for generating microwave energy and directing said microwave energy against said pavement to soften the pavement, pavement removing means connected to the train and located to the rear of said first microwave heating unit for removing the pre-heated layer of



pavement from the roadway, means located to the rear of said first microwave heating unit for adding additional materials to the removed asphalt pavement to provide a new batch, a second microwave heating unit connected to the train and located to the rear of said pavement removing means for receiving said batch and generating microwave energy of sufficient intensity to heat the batch and melt the asphalt, and means disposed to the rear of said second microwave heating unit for applying the heated batch onto the roadway as a fresh layer of pavement.

4,347,017

BARRIER BLOCK FOR PROTECTING COASTAL AND RIVERSIDE STRUCTURES

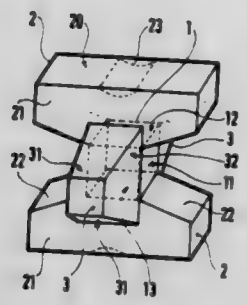
Arnauld Chevallier, Grenoble, France, assignor to Societe Grenobloise d'Etudes et d'Applications Hydrauliques (SOGREAH), Echirolles, France

Filed Feb. 12, 1980, Ser. No. 120,796
Claims priority, application France, Feb. 14, 1979, 79 03774
Int. Cl.[3] E02B *3/04*
U.S. Cl. 405—29 8 Claims

1. A barrier block for defences protecting coastal and riverside structures, the improvement wherein the block is constituted by a central core of substantially cubic shape having laterally opposed un-hidden side faces and:

firstly top and bottom faces provided with respective top and bottom anvil-shaped legs, the anvil-shaped legs having respective top and bottom surfaces disposed parallel to one another and to said top and bottom faces of the core, the anvil-shaped legs further including inclined flats stemming from said opposite un-hidden side faces of the core; and

secondly opposite front and back faces provided with respective front and back legs in the form of four-sided truncated pyramids, one pair of opposite sides of the pyramid-shaped legs stemming from the sides of the anvil-shaped legs and the



other pair of opposite sides having their bases at least partially in common with one edge of the adjoining un-hidden side faces of the core, such that said one pair of opposite sides of said pyramid-shaped legs overlap and are supported by the sides of said anvil-shaped legs.

4,347,018

LINING OR RELINING OF TUNNELS

Noel T. Wrightson, Rugby, and Russell D. Currie, Shrewsbury, both of England, assignors to Johnston Construction Limited and Johnston Pipes Limited, both of Redhill, England

Filed Aug. 5, 1980, Ser. No. 175,681

Claims priority, application United Kingdom, Aug. 9, 1979, 7927764

Int. Cl.³ E21D *11/00;* F16L *55/18;* B23P *19/04*

U.S. Cl. 405—150 6 Claims



1. A method of lining or relining a tunnel, for example a sewer, comprising the steps of overlapping the edges of a pipe including a single longitudinal split in order to reduce the cross-sectional periphery of the pipe, the pipe being of a material of sufficient pliability to permit the overlapping of its edges without fracture, inserting the pipe with overlapped edges into the tunnel, re-aligning the edges of the pipe and thereby expanding the pipe in the tunnel, securing the edges of the pipe together to retain the pipe in its expanded form, deforming a collar into a shape in which a first dimension of the collar is increased and a second dimension is decreased, inserting the deformed collar into the tunnel with its said first dimension generally along the tunnel, expanding the collar back to its original shape, rotating the collar about an axis generally transverse of the tunnel to locate the collar in the tunnel and engaging the pipe with the collar when expanding the pipe in the tunnel.

4,347,019

COMPOSITE COMPLEX PROFILE AND THE PROCESS FOR ITS MANUFACTURING

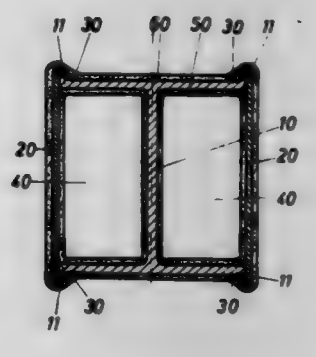
Paul Metz, Luxembourg, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Aug. 13, 1980, Ser. No. 177,592

Claims priority, application Luxembourg, Aug. 14, 1979, 81607

Int. Cl.³ E04C *3/34*

U.S. Cl. 405—255 6 Claims



1. A post comprising:

a steel H-beam core formed with a central web and lateral flanges unitary with said web, each of said flanges being formed with an outwardly turned spur along the outer edge of an outer face thereof;

a pair of steel sheets each having inwardly bent edges, each of said sheets bridging two spaced-apart flanges of said H-beam with the inwardly bent edges of said sheets form-fittingly engaged over the spurs of said flanges, said sheets lying parallel to said web and defining a pair of compartments with said web and inner surfaces of said flanges;

an outer layer of colloidal concrete bonded directly to the steel of said sheets and said flanges and completely enveloping same; and

inner layers of colloidal concrete bonded directly to surfaces of said flanges and said sheets defining said compartments and thereby lining same.

4,347,020

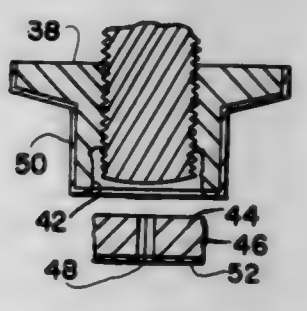
MINE ROOF BOLT ASSEMBLY

Claude C. White, Birmingham, and Frederick Carr, Tuscaloosa, both of Ala., assignors to Birmingham Bolt Company and Jim Walter Resources, Inc., both of Birmingham, Ala.

Filed Jan. 2, 1980, Ser. No. 109,189

Int. Cl.³ E21D *20/02*

U.S. Cl. 405—260 18 Claims



1. A mine roof bolt assembly for insertion in a bore in a mine roof, said roof bolt assembly including

(a) a shank

(b) a first means for anchoring an end of said shank in said mine roof at the back end of the bore

(c) a head member having a bore engaged with the opposite end of said shank

(d) a second means for permitting rotational movement of

said head member with respect to said shank and relative longitudinal movement of the head member with respect to the shank in the direction of the face of the mine roof

(e) a third means within the bore of said head member for limiting relative rotational and longitudinal movement of said head member with respect to said shank

(f) said third means being disengageable from said head member to allow further rotational and longitudinal movement of said head member with respect to said shank, unimpeded travel of said shank through said head member and upward movement of the head member towards the face of the mine roof, and

(g) a fourth means positioned on said shank between said head member and the face of the mine roof, said fourth means being forced upwardly against the face of the mine roof upon movement of the head member towards the face of the mine roof.

4,347,021

MINE ROOF SUPPORTS

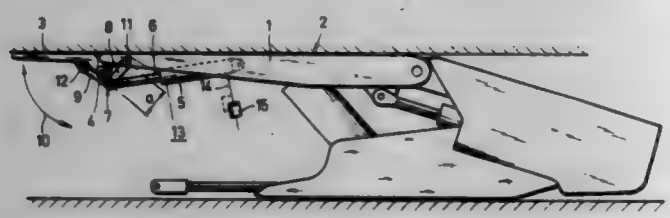
Burckhardt Elsner, Lunen, and Rüdiger Kirchbrücher, Dortmund-Brackel, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 147,896

Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918411; Oct. 18, 1979, 2942093

Int. Cl.³ E21D *17/054*

U.S. Cl. 405—293 **14 Claims**



1. In or for a mine roof support, a multi-part extendible upper roof contacting structure composed of a main roof-contacting structure, an auxiliary roof-contacting structure pivotably connected to the main structure, an appliance for pivoting the auxiliary structure about the main structure, and linkage means for enabling the appliance to adjust the position of the auxiliary structure between limiting positions aligned with the main structure and stowed beneath the main structure, said appliance comprising a piston and cylinder unit carried by the main structure and disposed therebeneath, and the linkage means comprising a first guide member pivotably connected to the auxiliary structure, a second guide member pivotably connected to the main structure, and means pivotably connecting the guide members to the piston and cylinder unit.

4,347,022

AIR TABLE SYSTEM

Ronald A. Lenhart, Lakewood, Colo., assignor to Precision Metal Fabricators, Inc., Arvada, Colo.

Continuation-in-part of Ser. No. 947,441, Oct. 2, 1978. This application Apr. 7, 1980, Ser. No. 138,006

Int. Cl.³ B65G *51/02*

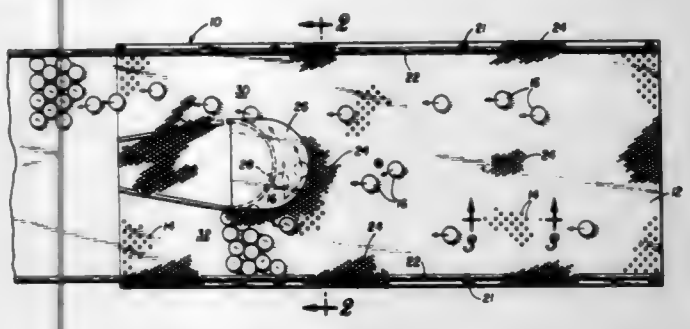
U.S. Cl. 406—88 **8 Claims**

1. An air table apparatus for the transport of objects which comprises:

a table having a surface, edges and an underside with a prearranged pattern of air jet openings in the surface slanted in a downstream direction and communicating the surface and the underside;

a plenum adapted to be connected to a source of air under pressure underlying and attached to the underside of the table surface;

a perforated cover spaced and supported above the table surface a distance slightly greater than the height of an object being worked upon including solid cover portions; and,



a vertical barrier means positioned between the table surface and the cover such that objects moving under the solid cover, separate and pass to either side of the barrier means.

4,347,023

HOLD DOWN SUPPORT SYSTEM

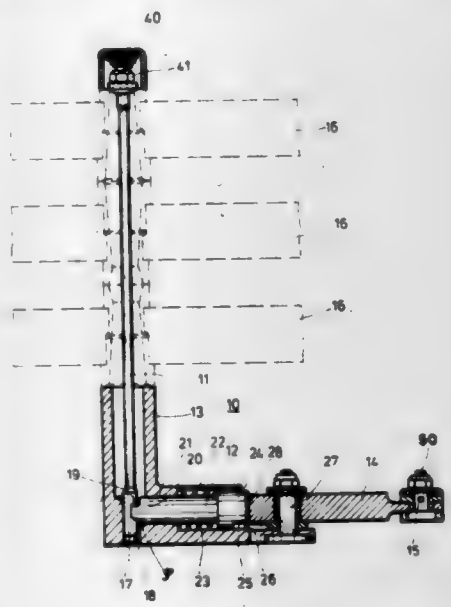
Ioannis Rizos, Hohenbrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,264

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853070

Int. Cl.³ B60P *1/64, 7/06;* B63B *25/00*

U.S. Cl. 410—32 **15 Claims**

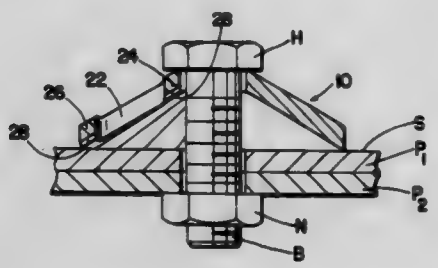


1. System for holding support elements, comprising a hold-down device, said hold-down device including an axially extending pin arranged to support at least one support element, an axially extending locking bolt extending transversely of said pin for securing said pin in the held position, means for biasing said locking bolt out of the position securing said pin in the held position, said biasing means at least in part being introduced into said locking bolt through said pin, blocking means for preventing said locking bolt from being displaced from the position where it secures said pin in the held position, said biasing means comprises a projection extending outwardly from one of said pin and said locking bolt toward the other one of said locking bolt and said pin, a recess formed in the other one of said locking bolt and said pin, said recess having a shape conforming to the shape of said projection and arranged to receive said projection, when said projection is located within said recess each of said projection and recess having a surface in contact with the other said surface with said surfaces extending obliquely of the axial direction of said locking bolt, and means for tensioning said pin so that the interaction of said contacting surfaces biases said locking bolt away from said pin.

4,347,024
TENSION INDICATING AND LOCK CONE WASHER

Chester P. Coldren, Canton, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 22, 1980, Ser. No. 180,289
Int. Cl.³ F16B 43/00
U.S. Cl. 411—11 4 Claims

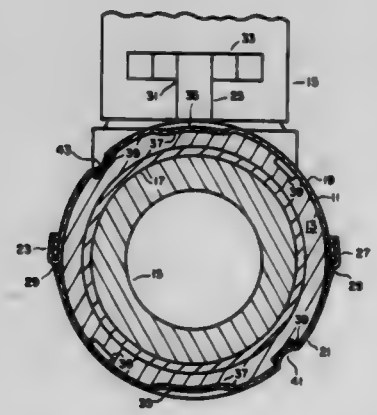


1. A tension indicating the lock cone washer for use in connection with a headed fastener and bearing surface, said washer adapted to be compressed between the head of the headed fastener and the bearing surface to indicate the tension in the headed fastener is within a predetermined range comprising a predetermined minimum and maximum tension, said washer comprising a generally annular body of non-malleable material having a generally centrally located aperture therethrough, said body defined by an inner and an outer diameter, said body of a generally frustoconical shape in cross-section, a generally radially extending through slot extending from adjacent the inner diameter to adjacent the other diameter, at least one web defined by the remaining material aligned with the slot adjacent at least one of the inner and the outer diameter of the body, said web defining remaining material of a cross sectional area, taken on a plane containing the axis of said aperture, selected to result in through cracking of said web defining remaining material when said body is subject to a compression force equal in magnitude to the predetermined minimum tension.

4,347,025
REPLACEABLE FUEL NOZZLE NUT LOCKWASHER

James M. Long, Windsor, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 17, 1980, Ser. No. 187,888
Int. Cl.³ F16B 39/02; F16L 35/00
U.S. Cl. 411—201 6 Claims



1. A replaceable fuel nozzle nut lockwasher for securing a fuel nozzle nut to a fuel nozzle comprising, in combination:

a first semicircular shaped member adapted to fit upon the upper portion of said fuel nozzle nut, said first semicircular shaped member having a first tab located at one end thereof, a second tab located at the opposite end thereof, and a third tab located in the center thereof, said third tab adapted to fit within a slot located in said fuel nozzle so as to prevent the rotational movement of said fuel nozzle nut lockwasher about said fuel nozzle nut;

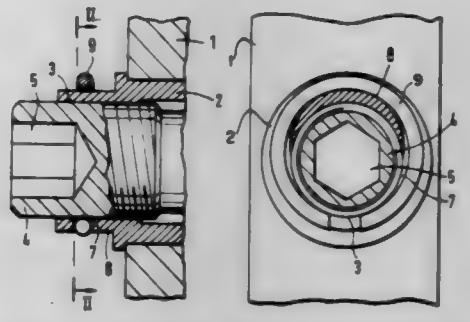
a second semicircular shaped member adapted to fit upon the lower portion of said fuel nozzle nut, said second semicircular shaped member having a pair of apertures, the first of which is adapted to receive the first tab of said first semicircular shaped member, and the second of which is adapted to receive the second tab of said first semicircular shaped member; and

a pair of preformed grooves, the first of which is located in said first semicircular shaped member, and fits within a first groove located in said fuel nozzle nut, and the second of which is located in said second semicircular shaped member, and fits within a second groove located in said fuel nozzle nut, said pair of preformed grooves adapted to prevent the axial movement of said fuel nozzle nut lockwasher upon said fuel nozzle nut.

4,347,026
RETAINING MEANS

Peter Schelhas, Stuttgart, and Walter Schlott, Kernen, both of Fed. Rep. of Germany, assignors to Robert Basch GmbH Stuttgart, Germany

Filed Dec. 3, 1979, Ser. No. 99,436
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904537
Int. Cl.³ F16B 39/34
U.S. Cl. 411—299 5 Claims



1. A retainer for an adjustable element comprising:

a first member of generally cylindrical shape having a longitudinal axis with an opening therethrough along said axis, a circumferentially extending variable depth groove formed in a portion of said first member in a circumferential direction, said groove being formed eccentric to the axis of the opening and with a portion of said groove penetrating into said opening along at least one location thereof;

a second member, supporting in the opening of said first member and being adjustable axially therein with respect to said first member;

ring shaped resilient means arranged in said groove of said first member, said resilient means having a portion thereof extending into said axial opening at said at least one location and in frictional contact with said second member.

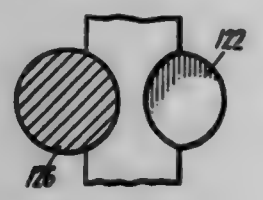
4,347,027
DRILL SCREW

Brian Brindle, Glen Waverley, Australia, assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 671,454, Mar. 29, 1976, abandoned. This application Aug. 3, 1977, Ser. No. 821,365
Int. Cl.³ F16B 25/00
U.S. Cl. 411—387 1 Claim

1. A drilling and reaming screw for use in fastening two or more juxtaposed workpieces, said screw comprising a drill tip, a shank having a surface defining a first radius, a head, a screw thread on a portion of the length of the shank, and two or more frangible reaming means projecting from a region of the shank intermediate the tip and the thread and pinched from the shank material, said projecting reaming means being integral with the

shank and each including an inner and an outer portion, said inner portion extending radially inwardly from the shank surface to a juncture line which includes upper and lower segments, each segment intersecting the shank surface at an acute angle thereto, said outer portion extending radially beyond the shank surface to a radius at least as great as the crest radius of the thread being thereby operative in workpieces made of



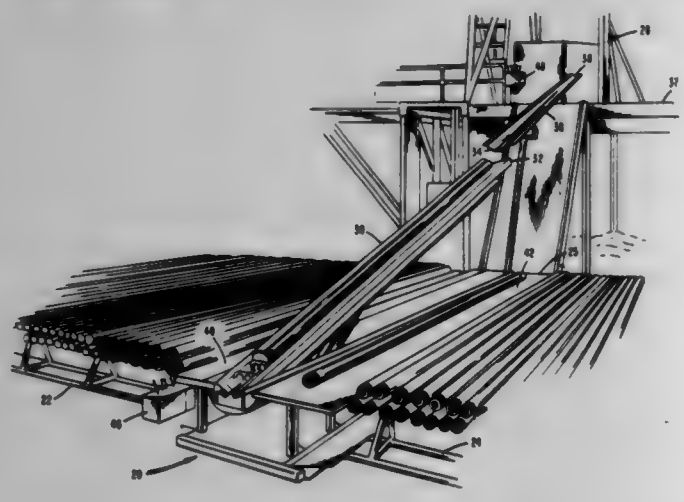
materials of less than a predetermined hardness to form a hole having a radius at least as great as the crest radius of the thread, but being so weakly connected to the shank that the reaming means will be broken and separated from the shank in workpieces formed of materials of more than the predetermined hardness, said separation occurring along a line lying entirely beneath the surface of the shank such that no harmful protuberances remain.

4,347,028

PIPE HANDLING APPARATUS

Charles D. Dugan, Odessa, Tex., assignor to Automatic Pipe Racker, Inc., Odessa, Tex.

Filed Sep. 17, 1979, Ser. No. 76,301
Int. Cl.³ E21B *19/14*
U.S. Cl. 414—22 **12 Claims**



12. In an apparatus for handling tubular goods used in a drilling operation, the apparatus transferring the tubular goods between a storage location and an elevated platform and comprising a support frame located at the storage location, a trough having a first end pivotally connected to the support frame, and lift means for moving the trough between a lowered position in which the trough is positioned to receive goods from the storage location and to transfer goods to the storage location and a raised position in which a second end of the trough is raised so as to permit transfer of goods between the trough and elevated platform, the improvement wherein said lift means comprises:

a first lift device positioned between said support frame and said trough for assisting initial movement of said trough from its lowered position towards its raised position, said first lift device being vertically spaced from said trough when said trough is in the raised position thereof; and

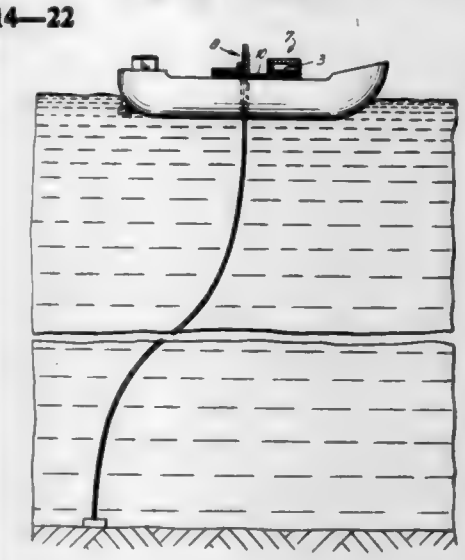
a second lift device interconnected between said support frame and said trough and having an axis skew to the vertical, said second lift device being operable to control movement of said trough between said lowered and said raised positions.

4,347,029

PIPE TRANSFER SYSTEM

John P. Latimer; Robert Donaldson, both of Newport News, Va.; Michael Cross, Everett, Wash.; Harold MacPhaiden, Mercer Island, Wash.; Loren D. Skiles, Everett, Wash.; Henry Schauer, Bothell, Wash., and Thomas J. Reynolds, Lake Stevens, Wash., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Dec. 28, 1979, Ser. No. 108,123
Int. Cl.³ E21B *19/00*
U.S. Cl. 414—22 **28 Claims**



1. On a floating surface vessel designed for the dredging of the abyssal ocean depths, the vessel comprising main dredge line hoist means, for supporting a pipeline extending from the vessel to the ocean floor, the dredge line hoist means being pivotally connected to the vessel about at least two transverse axes; and storage means for storing individual pipe lengths on the surface vessel; the improvement comprising:

(a) track means for transporting individual pipe lengths from the storage means to the relatively pivotably movable dredge line hoist means;

(b) primary track support means, secured to the vessel and movably supporting the track means at least at one end thereof, the track means extending in line with one of the transverse axes about which the dredge line hoist means is pivotally connected to the floating surface vessel;

(c) secondary track support means pivotally connected to the vessel about a single axis parallel to the centerline of the track means and to one of the transverse axes about which the dredge line hoist means is pivotally connected to the surface vessel; the secondary track support means being adjacent the dredge line hoist means; and

(d) pivot means, connecting the portion of the track means supported on the secondary support means to the remaining portion of the track means, the pivot means permitting relative pivotal motion between the first and second portions of the track means about at least a vertical axis.

4,347,030

WHEELCHAIR LOADING DEVICE FOR TRAINS

John C. Kingston, Suite 1210, 261 Cooper St., Ottawa, Ontario, Canada (K2P 0G3)

Continuation-in-part of Ser. No. 14,604, Feb. 23, 1979, abandoned. This application Jul. 3, 1980, Ser. No. 165,554
Claims priority, application Canada, Oct. 31, 1978, 315540
Int. Cl.³ B60P *1/48*
U.S. Cl. 414—556 **6 Claims**

1. A device for loading and detraining wheelchair confined passengers at an entrance to a railway coach comprising,

a movable horizontal loading platform and a pair of spaced apart and opposed linkage means arranged on either side of the entrance for pivotally connecting said loading platform to said coach,

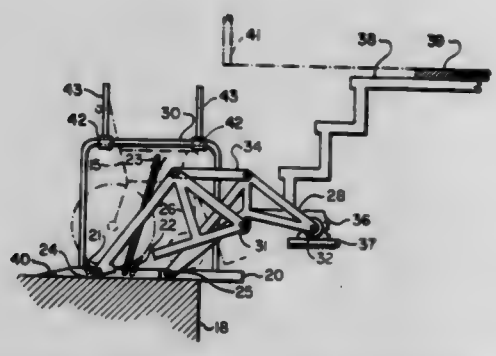
each of said linkage means comprising

three linkage sections which define two co-operating parallelograms, the first and second of said sections each defining a triangular frame and being pivotally connected to said loading platform and said coach and pivotally connected to each other by the third of said linkage sections,

wherein each triangular frame approximates a right angled frame

and wherein the pivotal connections of the first and second linkage sections with the coach are below the coach stairwell and wherein the hypotenuse portion of the second linkage section is deflected inwardly of the triangular frame and disposed above the pivotal connection of the first linkage section with the coach;

said third linkage section constituting a side which is common to said two co-operating parallelograms and which is parallel to said loading platform,



whereby the distance between the pivotal connections of the first and second linkage sections at the loading platform, the distance between the pivotal connections of the first and second linkage sections at the coach and the distance between the pivotal connections of the third linkage section with the first and second linkage sections are all equal

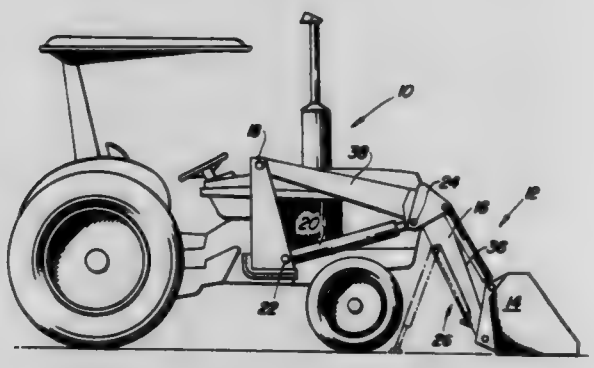
and wherein, when said loading platform is interior of said coach, the pivotal connection of said second linkage section with said loading platform is inboard of the coach relative to the pivotal connection of said first linkage section with said coach, and when said loading platform is exterior of the coach the the pivotal connection of said second linkage section with said loading platform is outboard of the coach relative to the pivotal connection of said first linkage section with said coach.

4,347,031

PARKING STAND FOR TRACTOR-DISMOUNTED FRONT LOADER

Henry Friesen, Niagara Falls, and Mervin P. Kizlyk, Welland, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed Jun. 23, 1980, Ser. No. 161,841
Int. Cl.[3] E02F *3/74*
U.S. Cl. 414—686 1 Claim



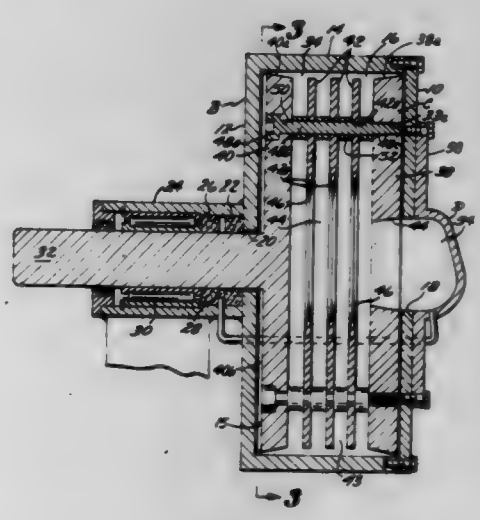
1. In an implement parking stand having an elongated upper member pivoted at its upper end to the implement for swinging toward and away from the implement respectively between transport and park positions, a lower member slidingly interfitting with the upper member and swingable therewith between transport and park positions, and releasable lock means selectively engageable and disengageable between the members for selecting lengthened or shortened conditions thereof, the improvement residing in that the members are of channel cross section so dimensioned that one fits within the other with the open sides of the channels facing in the same direction, the side flanges of the outer of the members being of greater height than those of the inner member, the flanges of the outer member in the areas thereof of greater height having rigid thereon a plurality of lugs spaced lengthwise thereof and extending partly across the inner member sufficiently to overlie the inner member flanges and thus to confine the inner member between the lugs and the bottom of the outer member and said lock means being so constructed as to serve, in the shortened condition of the members, to lock the members to the implement in transport position.

4,347,032

METHOD FOR PUMPING SLURRY AND APPARATUS FOR USE THEREWITH

Clarence R. Possell, 4842 Viane Way, San Diego, Calif. 92110

Continuation-in-part of Ser. No. 858,654, Dec. 8, 1977, abandoned. This application Feb. 19, 1980, Ser. No. 117,641
Int. Cl.[3] F04D *7/04*
U.S. Cl. 415—90 9 Claims



1. A method of pumping a slurry that has a liquid outer phase and an inner phase that includes a plurality of solid particles, said method comprising the steps of:

a. defining a first vertically extending circular confined space between first and second laterally spaced side surface that are connected on their outer peripheral portions by an end surface, said end surface having a discharge opening in the upper portion thereof, said first side surface having a substantially centered inlet opening for said slurry;

b. disposing first and second laterally spaced circular surfaces in said confined space adjacent said first and second side surfaces, said first surface having a centered opening therein axially aligned with said inlet opening and said first and second circular surface having outer peripheral surfaces that taper inwardly towards one another;

c. disposing a plurality of laterally spaced ring-shaped surfaces between said circular surfaces, said ring-shaped surfaces defining a plurality of centered openings that are axially aligned with said inlet opening;

d. discharging said slurry towards said inlet opening;

e. pre-rotating said slurry to a first rate prior to said slurry entering said inlet opening; and

f. concurrently rotating said first and second surfaces and ring-shaped surfaces at a rate greater than that of said pre-rotating slurry entering said confined space, with the rotation of said first and second surface and ring-shaped surfaces relative to said slurry in said confined space shearing boundary layers of said slurry that adhere to said

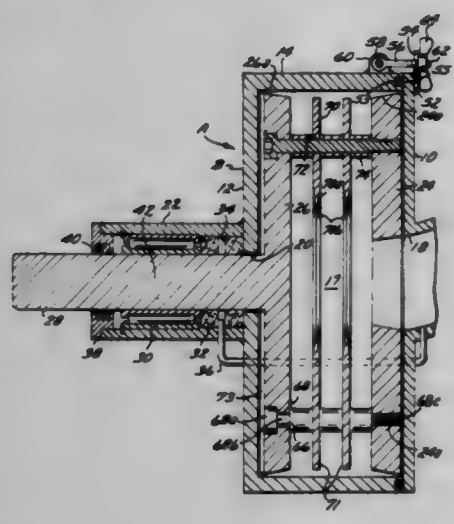
first and second surfaces and ring-shaped surfaces and in so doing importing rotational movement to said slurry in said confined space to cause said slurry to rotate with a desired degree of kinetic energy prior to sequentially flowing through said discharge opening to allow additional pre-rotating slurry to enter said confined space with said pre-rotation minimizing the slippage between said slurry and said first and second surfaces and ring-shaped surfaces, and said taper serving to direct said slurry inwardly towards said ring-shaped surface to have rotational kinetic energy imparted thereto.

4,347,033

CONCRETE PUMP AND METHOD OF USING SAME

Clarence R. Possell, 4842 Viane Way, San Diego, Calif. 92110

Filed Feb. 19, 1980, Ser. No. 117,642
Int. Cl.³ F01D *1/36;* B65G *53/32*
U.S. Cl. 415—90 **13 Claims**



1. A method of pumping flowable concrete containing aggregate to a desired location at a substantially constant rate and with no sharp variation in pressure, said method comprising the steps of:

a. defining a vertically extending circular confined space by first and second side walls that have an end wall extending therebetween, said first side wall having a centered inlet opening therein and said end wall defining a discharge opening;

b. disposing substantially vertical first and second circular surfaces in said confined space in fixed laterally spaced relationship with a plurality of laterally spaced ring-shaped surfaces situated therebetween, said first and second circular surfaces adjacent said first and second side walls, said first surface having a centered opening therein in communication with said inlet opening, and the inner peripheries of said ring-shaped surfaces formed to define circular knife edges;

c. concurrently rotating said first and second circular surfaces and said ring-shaped surfaces;

d. sequentially discharging said flowable concrete into said confined space through said inlet opening as said first and second circular surfaces and ring-shaped surfaces rotate, with boundary layers of said flowable concrete that adhere to said first and second circular surfaces and ring-shaped surfaces being sheared from the balance of said flowable concrete in said confines space with resultant rotation of said flowable cement in said confined space, said flowable concrete after entering said confined space following an outwardly directed spiral path due to the centrifugal force exerted thereon, and the major portion of said aggregate traveling outwardly through the spaces between said ring-shaped discs, with a minor portion of said aggregate of too great size to pass through said spaces pressure contacting said rotating circular knives to be severed into portions sufficiently small as to pass through said spaces, and said flowable concrete including said major portion of said aggregates and said portions thereof moving in stream line flow through said discharge opening;

e. directing said flowable concrete from said discharge opening into an elongate diverging passage in which the walls defining same are at such an angle relative to said center line of said diverging passage that no separation of said flowable concrete from said walls takes place which would result in turbulent flow and joining of said flowable concrete in said passage;

f. directing the discharge of said flowable concrete from said diverging passage into an elongate circular passage defined by a resilient side wall, with said resilient side wall being subject to a minimum of strain due to said flowable concrete traveling through the same at a substantially constant rate and with no sharp variations in pressure;

g. utilizing the rotation of said second circular surface relative to said flowable concrete in said confined space to generate a longitudinal force on said second circular surface that counteracts the imbalance on said first and second circular surfaces and ring-shaped surfaces due to the flow of said flowable concrete into said confined space;

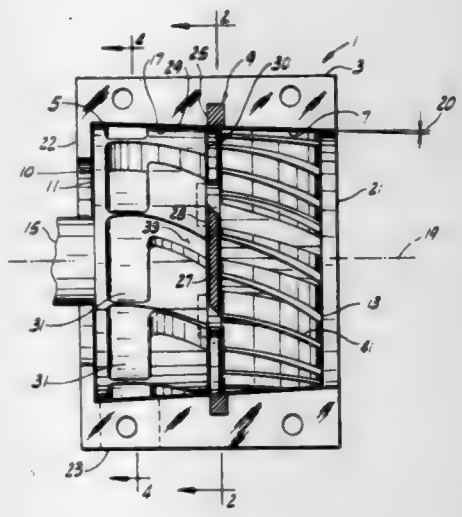
h. forming the exterior edge surfaces of said first and second surfaces to taper inwardly towards one another to direct flowable concrete in the outer portion of said confined space back into said ring-shaped surfaces and prevent aggregate accumulating between said first and second circular surfaces and said ring-shaped surfaces and said end wall that said first and second circular surfaces and ring shaped surfaces become jammed by said aggregate and cannot rotate.

4,347,034

GAS TURBINE

Zoltan Vigh, Anaheim, Calif., assignor to Zepco, Inc., Lincoln, Nebr.

Filed May 29, 1979, Ser. No. 43,320
Int. Cl.³ F01D *1/04*
U.S. Cl. 415—92 **12 Claims**



1. A rotary gas turbine comprising:

a housing having a chamber therein for a rotor;

the chamber having a periphery which is a surface of revolution about an axis extending through the chamber;

a rotor mounted for rotation in the chamber on said axis; and

a stator wall at one end of the chamber;

said rotor having an end face in rotary sealing relationship with said wall and a peripheral surface in rotary sealing relationship with the periphery of said chamber, said rotor further having a plurality of recesses spaced at equal intervals around its periphery, each recess extending radially into said rotor from said peripheral surface thereof and having a passage extending to said end face thereof;

said housing having an inlet for gas under pressure for di-

recting the gas into said recesses in the rotor at an angle for propulsion of the rotor;

said wall being adapted to block each of said passages at said end face of the rotor throughout a part of a revolution of the rotor to hold gas in the recesses for compression and said wall being ported for exit of gas from each recess via the respective passage as the rotor rotates through another part of its revolution for expansion of the gas and resultant impulsing of the rotor, the passage of each recess being closed by the wall for at least a substantial portion of the arc of rotation of the rotor during which the recess receives gas from the inlet and being open during a major portion of the arc of rotation of the rotor during which the recess does not receive gas from the inlet.

4,347,035

CENTRIFUGAL PUMP WITH SINGLE BLADE IMPELLER

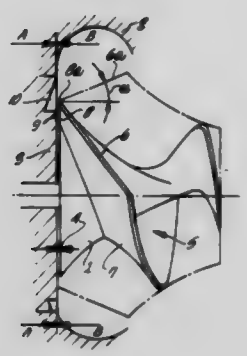
Martin Stahle, Postfach 12, CH-8213 Neunkirch, Switzerland

Filed Apr. 13, 1979, Ser. No. 29,650

Claims priority, application Switzerland, Aug. 31, 1978, 9185/78

Int. Cl.³ F01D *15/00*

U.S. Cl. 415—121 B **11 Claims**



1. A centrifugal pump for pumping fluids containing long-fibered solids, comprising:

a housing having an axial inlet, a tangential outlet and a substantially planar end wall, perpendicular to the axis of the housing, opposite the inlet end thereof,

a single blade impeller mounted to rotate within said housing, said impeller having a substantially cone-shaped hub and a screw blade mounted on said hub, said blade having a radially outer edge having a configuration that upon rotation defines a surface of revolution which flares from the inlet end of said housing towards said end wall to a maximum diameter between said inlet and said end wall and then slopes inwardly towards said end wall; and

cutting means in the area of the intersection of said blade and said end wall for cutting long-fibered solids,

whereby long fibered solids in the fluid handled by said pump which become entangled on said blade slide toward said end wall on the portion of said blade defining the inwardly sloping portion of said surface of revolution and enter the area of said cutting means where they are cut and then be discharged from the pump.

4,347,036

FLUID ENERGY CONVERTING METHOD AND APPARATUS

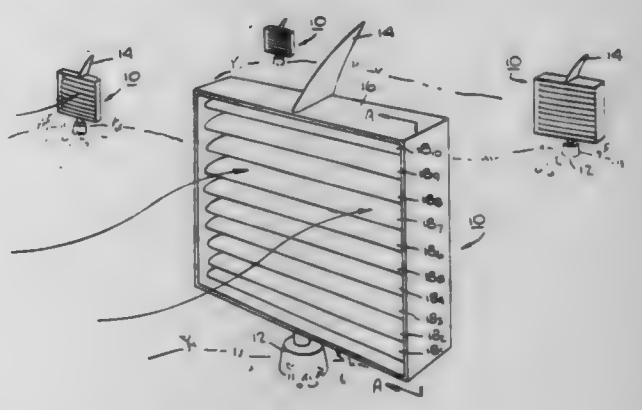
Lee Arnold, 177 E. 77th St., New York, N.Y. 10021

Division of Ser. No. 884,816, Mar. 9, 1978, Pat. No. 4,184,805. This application Nov. 16, 1979, Ser. No. 94,790

Int. Cl.³ F03D *5/06*

U.S. Cl. 416—1 **39 Claims**

1. A method for converting the kinetic energy of a fluid stream into useful work comprising the steps of positioning a device including a cascade of thin airfoils in a moving fluid stream to define an aerodynamic system wherein the airfoils are at zero angle of attack when undisturbed and are provided with at least two degrees of freedom and wherein adjacent airfoils are movable out of phase, adjusting the system until the velocity of the fluid stream is a critical velocity for the system



sufficient to induce flutter oscillations, disturbing at least one of the airfoils, and then utilizing the resultant oscillations to produce useful work.

4,347,037

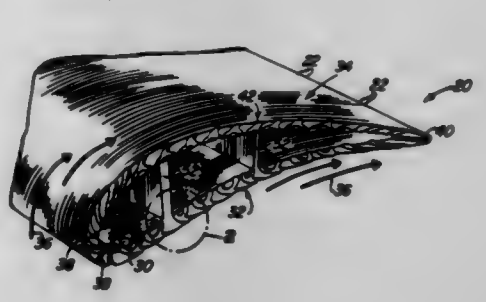
LAMINATED AIRFOIL AND METHOD FOR TURBOMACHINERY

Charles E. Corrigan, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 9,201, Feb. 5, 1979, which is a division of Ser. No. 789,371, Apr. 20, 1977, Pat. No. 4,221,539. This application Oct. 14, 1980, Ser. No. 195,896

Int. Cl.³ F01D *5/18*

U.S. Cl. 416—97 A **1 Claim**



1. A cooled, rotary turbine blade for use in turbomachinery comprising a plurality of thin, radially extending laminae stacked generally in a chordwise direction and bonded together to form the major portion of said turbine blade including external pressure and suction surfaces thereof adapted to be arranged in momentum exchange relationship with fluid flow of the turbomachinery, each lamina comprising:

a peripheral wall closing the radially outer end of said lamina and forming segments of said external pressure and suction surfaces, said peripheral wall surrounding a relatively large central cavity open at the radially inner end of said lamina for receiving cooling fluid flow, said peripheral wall further defining a fir tree configured root section adjacent said radially inner end adapted to be secured to a turbine wheel hub of said turbomachinery;

an inner wall spaced closely inwardly of said peripheral wall and extending radially along generally parallel to both said segments of the external pressure and suction surfaces to define a narrow, radially elongated impingement zone of said central cavity disposed between said peripheral and inner walls, said inner wall extending around to close the radially outer end of said central cavity;

support strut means extending radially between and interconnecting the radially outer end portions of said peripheral and inner walls;

a plurality of recesses in said inner wall extending generally perpendicularly thereto whereby cooling flow from said central cavity passes through said recesses into said im-

pingement zone to impinge substantially perpendicularly upon the inner face of said peripheral wall;

protrusions on said inner face of the peripheral wall generally aligned with said recesses to promote turbulence of cooling fluid flow in said impingement zone; and

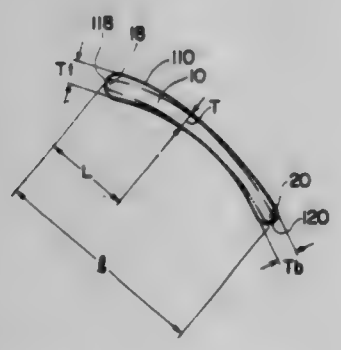
exhaust port recesses in said peripheral wall extending from said impingement zone to open onto said segments of the external pressure and suction surfaces, said exhaust port recesses opening into said impingement zone at locations non-aligned with said recesses in the inner wall and extending in a radially outward direction within said peripheral wall whereby rotation of said blade assists in centrifugally pumping cooling fluid flow out of said exhaust port recesses.

4,347,038

FLEXIBLE BLADE FAN

Masaharu Hayashi, Toyota, and Sunzo Tsuchikawa, Ichinomiya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 14, 1980, Ser. No. 139,749
Claims priority, application Japan, Apr. 20, 1979, 54-48819
Int. Cl.³ F04D *29/38*
U.S. Cl. 416—132 A **2 Claims**



1. A multiblade fan of plastics comprising:

a central hub and a plurality of blades radially extending from said hub, each blade being flexibly integral with said hub, at least one of said blades having a contour of a transverse cross section through a region neighboring the foot of said blade, said contour of said blade being provided under a condition in which a rate of continuous thickness change between a middle point and the leading edge in said transverse cross section is regulated relative to a thickness T of said middle point so that the ratio of a thickness Tf of said leading edge divided by the thickness T of said middle point falls within a range of from 1.0 to 1.5 while another rate of continuous thickness change between said middle point and the trailing edge in the same transverse cross section is regulated relative to the thickness T of said middle point so that the ratio of a thickness Tb of said trailing edge divided by the thickness T of said middle point falls within a range of from 0.7 to 1.2, said middle point being located in said transverse cross section inwardly from said leading edge at a distance L given by multiplying the entire length l of said transverse cross section by 0.4 to 0.6 wherein, said region of said blade is limited in area so that the following holds,

$$Se = S\ (0.2 \text{ to } 0.6)$$

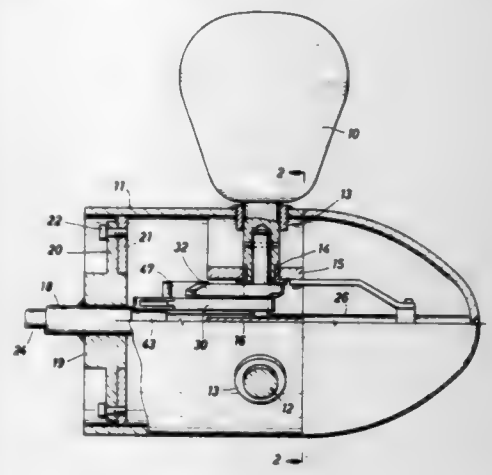
where, Se is a length of said region and S is an entire length of said blade.

4,347,039

VARIABLE PITCH SCREW PROPELLER

Ronald Houghton, 16902 David Glen, Friendswood, Tex. 77546

Filed Feb. 25, 1980, Ser. No. 124,587
Int. Cl.³ B63H *3/04*
U.S. Cl. 416—167 **5 Claims**



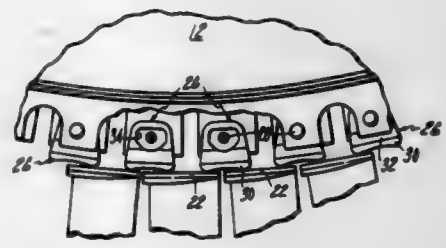
1. A variable pitch screw propeller, including a hollow hub, a plurality of propeller blades, each blade attached to a blade shaft that extends through and is mounted in bearings in the hub wall with the propeller blade extending laterally of the hub for rotation with the hub and around the longitudinal axis of the blade shaft, a hollow drive shaft connected to the hub, a pitch control rod extending into the hub, means mounting the pitch control rod for movement along the longitudinal axis of the hub, means connecting the control rod with each blade shaft for rotation of the blade shafts in unison to change the pitch of the propeller blades as the control rod is moved axially relative to the hub through a sufficient angle of rotation to move the blades from a minimum drag feathered position in-line with the direction of movement of the hub to positions for providing forward thrust, no thrust, and rearward thrust upon rotation of the hub, said connecting means including a crank arm connected to each blade shaft for rotating the shafts around their longitudinal axes, a telescoping drive arm having one end pivotally connected to the hub and one end pivotally connected to the control arm, and a drive pin connected to one of the arms and engaging a slot in the other arm to cause the crank arm to rotate as the control rod is moved along its longitudinal axis.

4,347,040

BLADE TO BLADE VIBRATION DAMPER

John C. Jones, Palm Beach Gardens; Perry P. Sifford, Jupiter, and Joel F. Sutton, Juno Isles, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 2, 1980, Ser. No. 193,514
Int. Cl.³ F01D *5/10*
U.S. Cl. 416—190 **8 Claims**



1. In a rotor assembly of the axial flow rotary machine type in which a plurality of individually mounted blades, each having a platform section, extend outwardly on the machine, the improvement comprising:

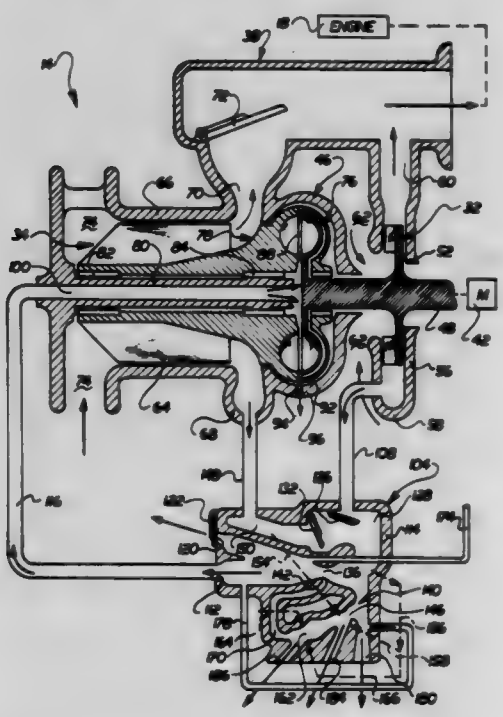
a blade to blade damper adapted to seat against a pair of

adjacent blade platform sections in response to centrifugally generated loads in an operating engine and of essentially "T" shaped cross section geometry including a top bar and a web extending circumferentially with respect to the machine between said pair of adjacent blade platform sections wherein the top bar provides longitudinal stiffness in the direction of expected slip load forces and the web provides transverse stiffness in the direction normal to the expected slip load forces.

4,347,041
FUEL SUPPLY APPARATUS

Paul Cooper, Titusville, N.J., assignor to TRW Inc., Cleveland, Ohio

Filed Jul. 12, 1979, Ser. No. 56,908
Int. Cl.³ F04B *23/04, 49/08*
U.S. Cl. 417—15 13 Claims

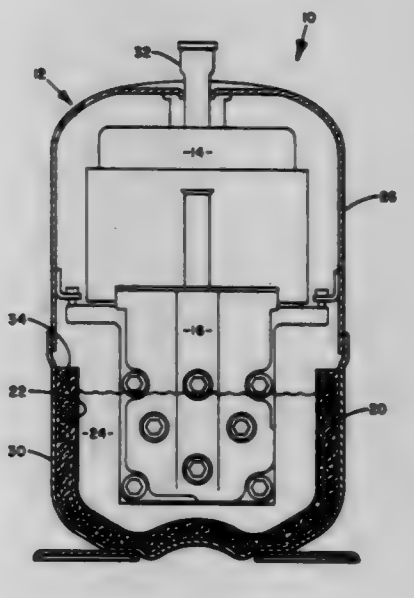


1. An apparatus for supplying fuel to an engine, said apparatus comprising tank means for holding a body of liquid fuel which is supplied to the engine during operation of the engine, first pump means submerged in the body of liquid fuel in said tank means for pumping fuel from said tank means, motor means submerged in the body of liquid fuel in said tank means for driving said first pump means, fluid coupling means submerged in the body of fuel in said tank means and connected with said motor means and said first pump means for transmitting drive forces from said motor means to said first pump means, said fluid coupling means including an input member connectd with said motor means, an output member connected with said first pump means, and chamber means for holding fuel which transmits drive forces from said input member to said output member during operation of said motor means, and control means submerged in the body of fuel for effecting operation of said fluid coupling means between an engaged condition in which said fluid coupling means is effective to transmit drive forces between said motor means and said first pump means and a disengaged condition in which said coupling means is ineffective to transmit drive forces from said motor means to said first pump means, said control means including means for directing a flow of fuel from the body of fuel to said chamber means during operation of said coupling means from the disengaged condition to the engaged condition and for directing a flow of a gas from outside of the body of fuel to said chamber means during operation of said coupling means from the engaged condition to the disengaged condition.

4,347,042
MOTOR COMPRESSOR UNIT AND A METHOD OF REDUCING NOISE TRANSMITTED THEREFROM

Timothy M. Holdsworth, Chittenango, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,870
Int. Cl.³ F04B *39/00*
U.S. Cl. 417—53 6 Claims



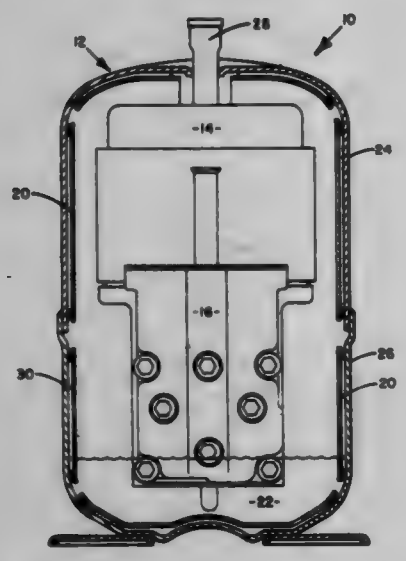
1. A motor compressor unit comprising:
a shell;
compressor means located within the shell for compressing a vapor;
motor means located within the shell for driving the compressor means;
a supply of lubricant disposed within the shell;
a lubricant absorbent, fibrous material positioned against interior surfaces of the shell for dampening sound waves generated within the motor compressor unit, extending above the lubricant supply, and including an edge exposed to vapor within the shell, wherein lubricant entrained in vapor inside the shell flows onto said exposed edge and therefrom migrates throughout the lining; and
a cover positioned between the lubricant supply and the fibrous material for separating the fibrous material from the lubricant supply and preventing contamination thereof by the fibrous material.

5. A method of reducing noise transmitted from a motor compressor unit of the type having a shell, a lubricant supply disposed therein, a lubricant absorbent, fibrous material positioned against interior surfaces of the shell, and a cover separating the lubricant absorbent material from the lubricant supply, the method comprising the steps of:
wetting the lubricant absorbent material with lubricant;
drawing lubricant throughout the lubricant absorbent material, wherein the lubricant absorbent material becomes resilient; and
conducting energy in sound waves generated within the motor compressor unit through the cover to compress the lubricant absorbent material between the shell and the cover and to transform energy in the sound waves into potential energy of the lubricant absorbent material, dampening the sound waves generated within the motor compressor unit.

4,347,043
MOTOR COMPRESSOR UNIT AND A METHOD OF DAMPENING SOUND WAVES GENERATED THEREIN

Richard D. Morris, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,871
Int. Cl.³ F04B 39/00
U.S. Cl. 417—53 10 Claims



1. A motor compressor unit comprising:
a shell;
compressor means located within the shell for compressing a vapor;
motor means located within the shell for driving the compressor means;
a supply of lubricant disposed within the shell; and
a resilient lining positioned adjacent to the shell, annularly extending around the compressor means, and defining a plurality of perforations extending through the lining to conduct lubricant entrained in vapor within the shell through the lining and between the shell and the lining to capture a thin, annular film of lubricant therebetween.

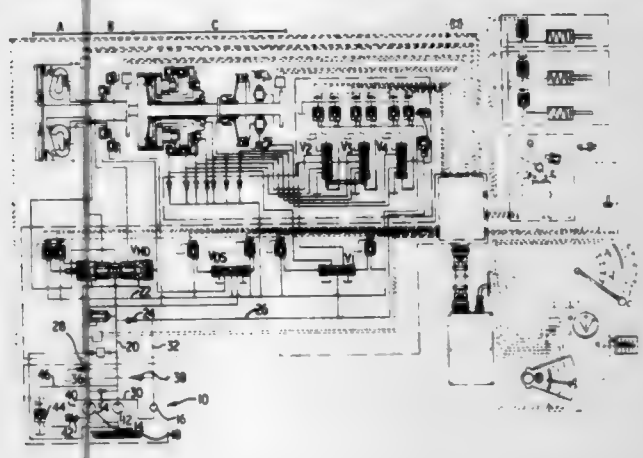
6. A method for dampening sound waves generated within a motor compressor unit having a shell, a supply of lubricant disposed therewithin, compressor means located within the shell, and a lining extending around the compressor means, positioned adjacent to the shell, and defining a plurality of perforations extending through the lining, the method comprising the steps of:
conducting lubricant through the lining perforations and between the shell and the lining to capture a thin, annular film of lubricant extending around the compressor means; and
transforming energy contained within the generated sound waves into lateral motion of the lubricant.

4,347,044
PUMPS

Karl G. Ahlen, Bromma, and Nils A. Norberg, Stockholm, both of Sweden, assignors to S.R.M. Hydromekanik Aktiebolag, Sweden

Filed Aug. 15, 1979, Ser. No. 66,536
Claims priority, application United Kingdom, Aug. 18, 1978, 33809/78; Nov. 21, 1978, 45432/78; Fed. Rep. of Germany, Dec. 20, 1978, 2855085
Int. Cl.³ F04B 49/00
U.S. Cl. 417—253 30 Claims

1. A system for providing pressurized fluid comprising a first pump an a second pump, said first pump having means for supplying pressurized fluid continuously, said second pump connected to the discharge side of the first pump via a non-return valve when the outlet pressure of the second pump exceeds by a predetermined amount the outlet pressure of the first pump, a by-pass connecting channel from the outlet side of the second pump to the inlet side of the second pump, and a selectively operable shut-off valve in said by-pass connecting channel arranged such that when the shut-off valve of the by-pass connecting channel is open, fluid from the second pump does not supply fluid to the outlet of the first pump, said by-pass channel and the maximum opening of the shut-off valve each having a flow cross-sectional area at least as great as the delivery flow cross-sectional area of the second pump, said shut-off valve being a disc valve which closes upon move-



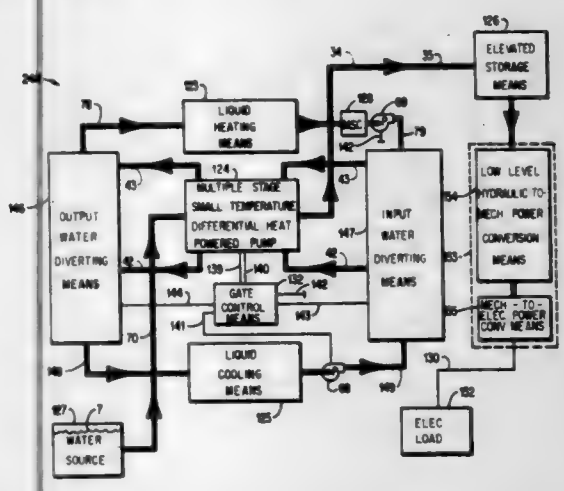
ment toward the inlet of the second pump, and a control device for controlling the opening of the shut-off valve independently of the pressure in the first and second pumps.

5. A system according to claim 1, including an auxiliary high pressure pump having an outlet pressure greater than the first and second pumps, the inlet side of the high pressure pump being connected to the discharge side of the second pump.

4,347,045
MULTIPLE-STAGE SMALL TEMPERATURE DIFFERENTIAL HEAT-POWERED PUMP

Francis L. Burnham, 1333 Five Chop Rd., SE., Orangeburg, S.C. 29115

Filed Mar. 10, 1981, Ser. No. 242,242
Int. Cl.³ F04B 25/00
U.S. Cl. 417—253 16 Claims



1. A pump system for pumping a first liquid from a source to an output facility comprising:
a. a multiple-stage small temperature differential heat-powered pump;
b. a second liquid heating means operable to heat a second liquid to a hot temperature, where it becomes a hot liquid which is divertable into said multiple-stage small temperature differential heat-powered pump;
c. a third liquid cooling means operable to cool a third liquid to a cold temperature where it becomes a cold liquid which is divertable into said multiple-stage small temperature differential heat-powered pump;
d. a liquid diverting means within which said hot liquid and said cold liquid are pumped, said liquid diverting means controls the flow of said hot liquid and said cold liquid

into said multiple-stage small temperature differential heat-powered pump;

e. a plurality of troughs within which said input liquid diverting means diverts said hot liquid and said cold liquid;

f. said multiple-stage small temperature differential heat-powered pump comprising:

(1) a plurality of pumping stages; and

(2) a plurality of check valves, one of said plurality of check valves being located on the input and output of said multiple-stage small temperature differential heat-powered pump and between each of said plurality of pumping stages;

g. each of said plurality of pumping stages comprising:

(1) a pressure chamber operable to hold said first liquid; and

(2) a flexible member within said pressure chamber operable, when expanded, to exert pressure against said first liquid and to force said first liquid from said pressure chamber through the one of said plurality of check valves between said pressure chamber and the next pressure chamber of the next subsequent pumping stage of said plurality of pumping stages or said output, if said pressure chamber is within the last of said plurality of pumping stages, when said pressure within said pressure chamber exceeds the next pressure in said next pressure chamber or said output;

h. each of said flexible members, connected to a container which is one of a plurality of containers, each said container holding one of a plurality of vaporizable liquids, whereby when said container is subjected to said hot liquid, said one of said plurality of vaporizable liquids vaporizes causing said flexible member to expand and, when said container is subjected to said cold liquid, said one of said plurality of vaporizable liquids condenses causing said flexible member to contract; and

i. each said container of said plurality of containers secured within one of said plurality of troughs whereby each said container is subjected alternately to said hot liquid and said cold liquid.

4,347,046

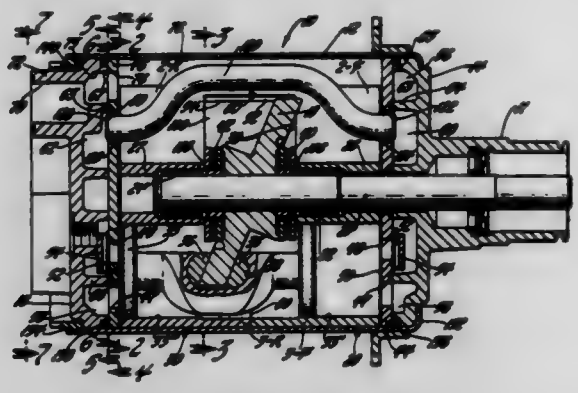
SWASH PLATE COMPRESSOR

Byron L. Bracken, Miamisburg, and Frank W. Hodits, Jr., Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 966,067, Dec. 4, 1978, abandoned. This application Sep. 12, 1980, Ser. No. 186,749

Int. Cl.³ F04B *1/16, 1/18, 39/16*

U.S. Cl. 417—269 7 Claims



1. A swash plate compressor, comprising: a cylindrical shell surrounding front and rear cylinder heads disposed at opposite ends of said shell, said rear cylinder head having a suction inlet and a discharge outlet, a cylinder block disposed intermediate said heads within said shell, said cylinder block including three longitudinally disposed tubular portions arranged about the shell axis and configured to provide open space between adjacent pairs of said tubular portions to reduce the weight of said cylinder block and with an upper two of the tubular portions above the third to form with said shell a low pressure gas upper inlet channel and a pair of low pressure gas lower exit channels, said tubular portions defining front and rear cylinder bores on opposite sides of an inwardly-facing notched-out opening and front and rear hubs respectively, between said front and rear cylinder bores and in communication with said upper inlet channel, whereby to define by said notched-out opening a location for a swash-plate and by said hubs a location for journal means, journal means in said hubs, a compressor drive shaft rotatably supported by said journal means; a swash plate rotatable by said drive shaft in said location for a swash plate, piston means arranged to reciprocate within said cylinder bores in response to rotation of said swash plate, front and rear thrust bearings in said location for a swash plate between each hub and said swash plate so as to restrict endwise movement of said shaft, front and rear valve plates respectively interposed between said cylinder block and said front and rear cylinder heads, each of said front and rear valve plates having inlet and outlet ports therein communicating with associated front and rear cylinder bores, each of said front and rear cylinder heads configured to define with their respective front and rear valve plates an outer low pressure gas suction chamber opposite the open space of said tubular portions and an inner high pressure gas discharge chamber, cross-over passage means interconnecting the inner high pressure gas discharge chambers of said front and rear cylinder heads, means in said rear head and its associated valve plate providing direct axial flow communication from said suction inlet to said upper inlet channel for receiving a mixture of low pressure gas and oil into said upper inlet channel, means in said front and rear heads and their associated valve plates providing axial flow communication from said upper inlet channel to said outer low pressure gas suction chambers via said location for a swash plate and each of said lower exit channels for introduction of a low pressure gas and oil mixture into said cylinder bores, whereby low pressure gas and oil mixture, upon entering said upper inlet channel, flows in heat exchange relation with said upper two of the tubular portions to increase the temperature of said mixture sufficiently to separate a portion of the oil from the gas and deposit the oil portion by gravity on said upper two of the tubular portions for subsequent gravitational flow to the journal means in said hubs by way of the communication of said inlet channel with said hubs to lubricate said front and rear journal means and thrust bearings, and whereby the oil remaining in said mixture after said separation is caused by the flow of said gas to exit said upper inlet channel via the location for said swash plate so that sufficient of the remaining oil admixed with said gas impinges upon and wets the surfaces of said swash plate to lubricate same during reciprocation of said piston means.

4,347,047

HYDRAULIC PUMP FOR POWER STEERING

Shookichi Shiozawa; Tomomi Nakayama, both of Susono; Kyosuke Haga, Anjo; Ryutaro Abe, Toyokawa, and Yoshiyuki Takeuchi, Gamagori, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 14, 1980, Ser. No. 177,911

Claims priority, application Japan, Aug. 16, 1979, 54/103529

Int. Cl.³ F04B *49/02, 49/08*

U.S. Cl. 417—310 3 Claims

1. A hydraulic pump for use in a power steering apparatus comprising:

a pump housing having an intake hole and a discharge port;

a cam ring received in said pump housing and having an internal cam bore;

a drive shaft rotatably carried by said pump housing and extending into said internal cam bore in coaxial alignment with the axis of the center of symmetry of said internal cam bore;

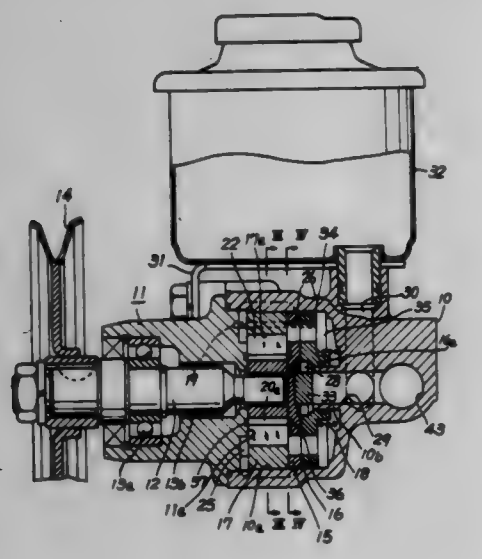
a pump rotor carried on said drive shaft for integral rotation

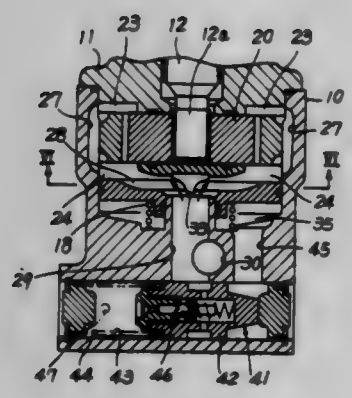
therewith and received in said internal cam bore for defining a pump chamber;

a pressure plate received in said pump housing in contact relationship with said cam ring for defining inlet port means fluidically communicated with an inlet area of said pump chamber and outlet port means fluidically communicated with an outlet area of said pump chamber;

a subplate received in said pump housing in contact relationship with said pressure plate for defining at a contact portion with said pressure plate a low pressure passage extending in a diametral direction and communicated with said inlet port means;

said pump housing being formed with a low pressure hole in coaxial relationship with said internal cam bore and communicated at one end thereof with said low pressure passage and at the other end thereof with said intake hole;





a pressure chamber between said subplate and said pump housing wherein said pressure chamber is fluidically communicated with said outlet port means of said pressure plate through said subplate;

a throttle element disposed on said discharge port through which pressurized fluid from said pressure chamber is discharged;

a flow volume control valve responsive to the pressure difference across said throttle element for returning a part of pressurized fluid through said low pressure hole and said low pressure passage; and

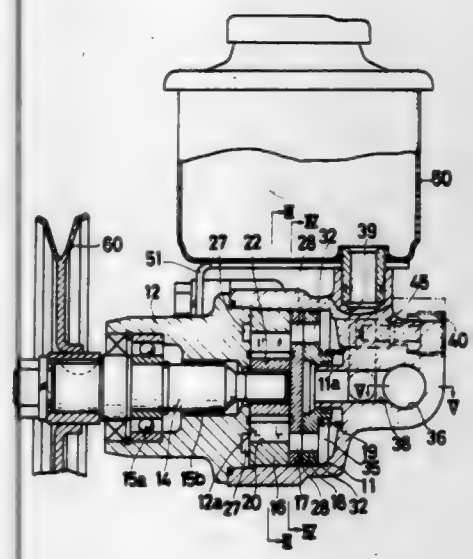
a branch member for branching the flow of fluid flowing in said low pressure hole in the axial direction into the the flow flowing along said low pressure passage in the radial direction.

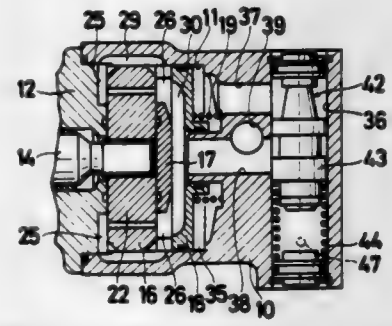
4,347,048

HYDRAULIC PUMP FOR POWER STEERING

Minoru Kawabata; Susumu Honaga, both of Aichi, and Yoshiharu Inaguma, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 15, 1980, Ser. No. 186,843
Claims priority, application Japan, Sep. 26, 1979, 54/124982
Int. Cl.[3] F04B 49/02, 49/08
U.S. Cl. 417—310 2 Claims





1. A hydraulic pump for use in a power steering apparatus comprising:

a pump body having an inner bore;

a support member fixedly inserted into one open end of said inner bore of said pump body so as to constitute a pump housing;

a cam ring received in said inner bore in contact relationship with one side wall of said support member and having an internal cam bore;

a drive shaft rotatably carried by said support member through a pair of bearings and extending into said internal cam bore in coaxial alignment with the axis of the center of symmetry of said internal cam bore;

a pump rotor carried on said drive shaft for integral rotation therewith and received in said internal cam bore for defining a pump chamber;

a plurality of vanes radially slidably received in said pump rotor for contacting said internal cam bore;

a pressure plate received in the inner bore of said pump body in contact relationship with said cam ring for defining inlet port means fluidically communicated with an inlet area of said pump chamber and outlet port means fluidically communicated with an outlet area of said pump chamber;

a subplate received in the inner bore of said pump body in contact relationship with said pressure plate for defining at a contact portion with said pressure plate a low pressure passage extending in a radial direction and communicated with said inlet port means;

said pump body being formed with a low pressure hole in coaxial relationship with said internal cam bore and communicated at one end thereof with said low pressure passage;

said pump body being formed with a vertical intake hole

communicated with the intermediate of said low pressure hole;

a pressure chamber between said subplate and said pump housing wherein said pressure chamber is fluidically communicated with said outlet port means of said pressure plate through said subplate;

a spring interposed within said pressure chamber for urging said subplate, pressure plate and cam ring toward the one side wall of said support member;

said pump body being formed with a discharge passage in parallel relationship with said low pressure hole and communicated at one end thereof with said pressure chamber and at the other end thereof with said power steering apparatus;

said pump body being formed with a horizontal valve bore in perpendicular relationship and communicated with said low pressure hole;

said pump body being formed with an outlet passage in parallel relationship with said low pressure hole and communicated at one end thereof with said pressure chamber and at the other end thereof with said valve bore;

a throttle element disposed on said discharge passage through which pressurized fluid from said pressure chamber is discharged to said power steering apparatus; and

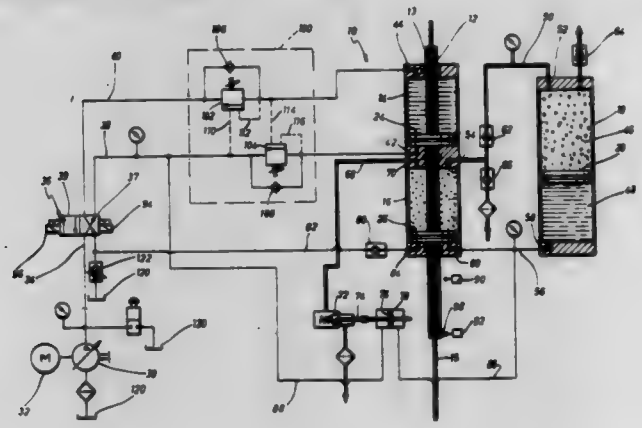
a flow volume control valve slidably received in said valve bore and responsive to the pressure difference across said throttle element for returning a part of pressurized fluid through said outlet passage, valve bore, low pressure hole and low pressure passage.

4,347,049

BALANCE HYDRAULIC PUMPING UNIT

John M. Anderson, P.O. Box 5202, Corpus Christi, Tex. 78405

Filed Jun. 17, 1980, Ser. No. 160,347
Int. Cl.³ F04B *47/12, 47/14*
U.S. Cl. 417—403 3 Claims



1. A balance hydraulic well pumping unit comprising,

a working rod passing through first and second vertically positioned cylinders,

a first piston positioned in the first cylinder and connected to the rod,

a second piston positioned in the second cylinder and connected to the rod,

hydraulic power means connected to the first cylinder on both sides of the first piston for alternately supplying hydraulic fluid to opposite sides of the first piston for moving the working rod upwardly and downwardly;

an accumulator,

a first fluid connection between one end of the accumulator and the second cylinder at a point above the second piston,

a second fluid connection between the second end of the accumulator and the second cylinder at a point below the second piston whereby movement of the first piston downwardly actuates the second piston to store energy in the accumulator for assisting the movement of the working rod upwardly on the upward stroke of the pumping unit,

said fluid in the second cylinder above the second piston is air and the first fluid connection includes,

a first check valve allowing fluid flow from the second cylinder to the accumulator,

a second check valve connected to the second cylinder above the second piston allowing flow of air from the atmosphere into the second cylinder,

a relief valve connected to the one end of the accumulator, and

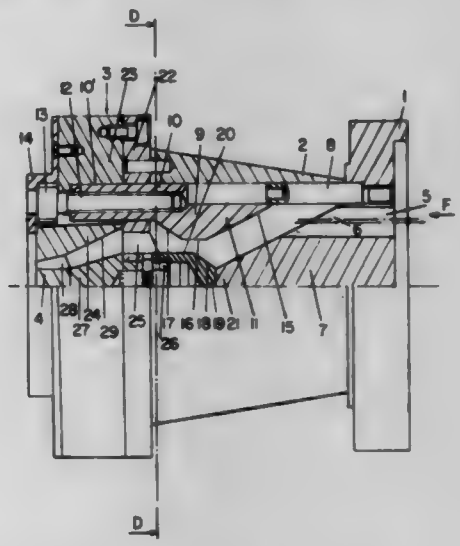
a relief valve connected to the second cylinder above the second piston allowing air at a predetermined pressure to flow from the second cylinder.

4,347,050

EXTRUSION VESSEL WITH CONTROLLED CIRCULAR DISTRIBUTION OF THE EXTRUDED MATERIAL

Blaise F. Figuereo, 344, rue Paul Doumer, 78510 Triel sur Seine (Yvelines), France

Filed Dec. 19, 1980, Ser. No. 218,103
Claims priority, application France, Dec. 19, 1979, 79 31048; Nov. 21, 1980, 80 24721
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—72 R 8 Claims



1. An extrusion vessel for the controlled distribution of extruded material in combination with a die mounted at the exit of an extruder comprising a base plate (1), said base plate comprising one set of orifices (5) disposed therein, said orifices of said one set being disposed substantially in a circular pattern and substantially equidistant from each other, a frustum (7) secured to said base plate (1), said frustum (7) comprising a second set of orifices (6) aligned respectively with and in extension of said first set of orifices (5), distributors (9) aligned respectively with said second set of orifices (6), said distributors (9) being substantially parallel to the longitudinal axis of said vessel and respectively moveable in the direction of said base plate (1) to reduce the passage between the corresponding lateral surface of said frustums (7) and moveable in the opposite direction toward said die to achieve a passage equal to or greater than a cross-section equivalent to that of the corresponding one of said second set of orifices (6), and said distributors (9) comprising respectively projections (11) extending toward the center of said vessel.

4,347,051

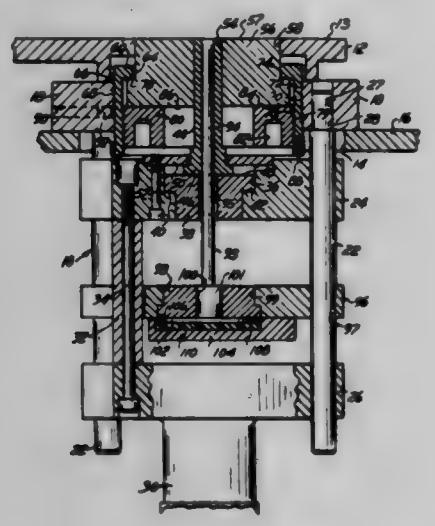
DIE AND PUNCH ASSEMBLY FOR COMPACTING POWDER MATERIAL

Raymond P. DeSantis, Royal Oak, Mich., assignor to PTX-Dentronix, Inc., Lincoln Park, Mich.

Filed Sep. 17, 1979, Ser. No. 76,366
Int. Cl.² B30B *11/02*
U.S. Cl. 425—78 11 Claims

1. In a unitary punch and die assembly for mounting on a powder compacting press, said assembly comprising a die plate, a bore in said die plate and a removable die bushing

disposed in said bore, a die bushing retainer collet in the form of a cylindrical sleeve member provided with a peripheral thread engageable with an internal thread formed in the bore in said die plate, a bore in said retainer collet having an enlarged diameter portion defining a stepped annular surface, said die bushing having a conforming configuration with a reduced



diameter portion and a stepped annular surface engaged with said annular surface in said retainer collet bore, an internal thread in said enlarged diameter portion of said retainer collet bore and a ring member having a peripheral thread engageable with said internal thread and an end face engaged with an end of said die bushing for holding said die bushing in said retainer collet bore with said annular surfaces in mutual engagement.

4,347,052

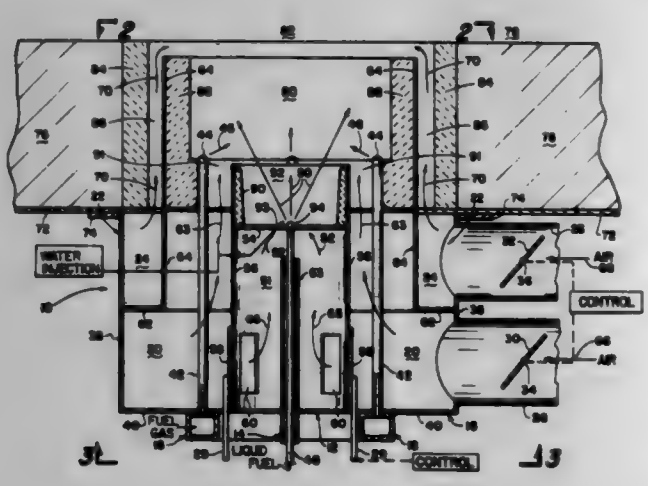
LOW NOX BURNER

Robert D. Reed; Richard R. Martin, and Hershel E. Goodnight, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 916,766, Jun. 19, 1978, Pat. No. 4,257,763. This application Apr. 2, 1979, Ser. No. 26,325

Int. Cl.³ F23Q *9/00*

U.S. Cl. 431—188 **4 Claims**



1. In a fluid fuel burner positioned in a furnace opening for minimum production of NOx burner under variable rates of fuel supply having a refractory lined first combustion space with an opening thereto which contains a centrally located pre-combustion space opening into said first combustion space and having a liquid fuel nozzle therein; a plurality of coaxially located gaseous fuel nozzles for directing gaseous fuel from a gaseous fuel source into said first combustion space, a primary combustion air chamber surrounding said liquid fuel nozzle for introduction of primary combustion air into said pre-combustion chamber, means to supply secondary air into a first annular space formed between the opening in said first combustion space and said pre-combustion space, the total of said primary and secondary air being supplied from a single controllable source and thence divided into said primary and secondary portions, a second annulus between said first combustion space and said furnace opening to supply tertiary air from a separate controllable source to immediately downstream of said first combustion space and means to ignite the resulting combustion fuel-air mixture, the improvement comprising means to control the amount of primary air into said pre-combustion chamber and means to simultaneously control the single controllable source of said primary-secondary air and the separate controllable source of said tertiary air whereby the total of said primary-secondary air in the first space is less than stochiometric while the amount of tertiary air will make the total air greater than the stoichiometric requirements of the fuels being burned.

4,347,053

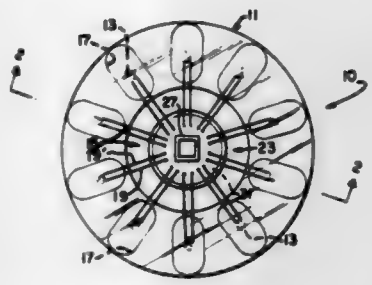
PHOTOGRAPHIC FLASH DEVICE USING LIGHT-EMITTING PYROTECHNIC CHARGES

Timothy Fohl, Carlisle, and Andre C. Bouchard, Peabody, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 5, 1980, Ser. No. 146,578

Int. Cl.³ F21K *5/00*

U.S. Cl. 431—359 **19 Claims**



1. A photographic flash device comprising:

a light-transmitting, insulative housing including a plurality of individual chambers and a common expansion cavity therein, each of said chambers having access to said expansion cavity through an opening therebetween, said expansion cavity substantially larger than each of said chambers;

a plurality of pyrotechnic charges, each of said charges located within a respective one of said chambers within said housing for emitting light through said housing upon ignition thereof, each of said charges exhausting into said expansion cavity through said opening; and

a plurality of electrical ignition means each connected to a respective one of said pyrotechnic charges to permit said charges to be individually flashed.

4,347,054

ORTHODONTIC EXPANSION SCREW

Hans-Joachim Kraus, Waldbronn, and Berthold Walter, Remchingen-Wi, both of Fed. Rep. of Germany, assignors to Dentaurum H.P. Winkelstroeter KG, Ispringen, Fed. Rep. of Germany

Filed Mar. 20, 1978, Ser. No. 887,955

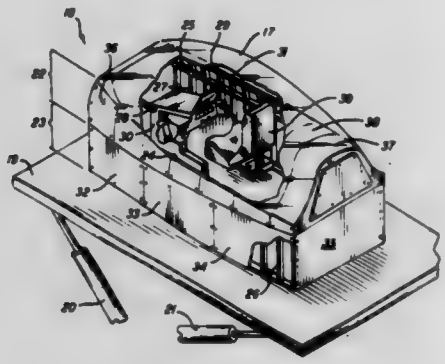
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712696

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—7 **8 Claims**

1. An orthodontic expansion screw comprising a first body section having a projecting portion of reduced cross-sectional area extending from a body portion of larger cross-sectional area and having a theaded bore extending through said body portions; said body portions being integrally formed in a single unit; a second body section having a relieved portion for receiving said first section projecting portion in overlapping relation; said second section having a portion defining a threaded bore in axial alignment with said relieved portion; at least one guide pin attached to said first body section, said

second body section having a guide bore for receiving said guide pin and having a projecting guide portion which prolongs its guide bore; said guide portion extending beyond the threaded bore of said second body section in the direction of said first body section; said relieved portion and threaded bore portion of said second section being integrally formed in a single unit; spindle means threadedly engaging said threaded bores of said first and second body sections for effecting rela-



tive movement between said screw sections; said threaded bore in said screw first body section projecting portion enabling said first body section to be moved along the length of said spindle means a distance greater than the length of said bore in said first body section portion of larger sectional area in the course of effecting movement of said first body section relative to said second body section; retention means connected to each screw body section for retainin said screw body sections relative to teeth of a user of said screw.

4,347,055

SIMULATOR STRUCTURE

Robert J. Geiger, Kirkwood, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,178
Int. Cl.[3] G09B 9/08
U.S. Cl. 434—30 2 Claims

1. A vehicle simulator structure to present a maximum of realism for a trainee in the operator's position within the simulator, said vehicle simulator being of a type in which said trainee in the operator's position can see at least a portion of the external surface of the vehicle being simulated, said simulator structure comprising:

a planar surface to function as the simulator base,

a first pair of spaced-apart sill members extending horizontally and spaced from said planar surface a predetermined distance to define space to enclose simulator-related components,

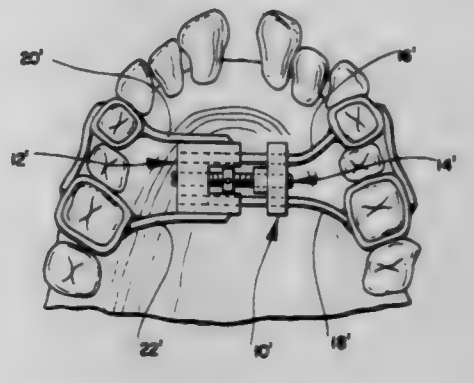
a second pair of spaced-apart sill members extending substantially parallel to said first sill members on the opposite side furthermost from said planar surface and spaced from said first sill members by a distance precalculated to cover only the portion of the vehicle being simulated that is visible from the operator's position,

the length of said simulator structure is co-extensive with the length of said first and second pairs of sill members, which length is limited to only as far forward and at least as far rearward from the operator's position on the vehicle being simulated that is visible from the operator's position,

a first plurality of spaced-apart rib members extending between said planar surface and said first sill members to fixedly support said first sill members at said predetermined distance from said planar surface,

a second plurality of spaced-apart rib members extending between said first and said second sill members, each rib member in said second plurality being removable selectively,

the outer edge of said second plurality of rib members being



formed to substantially the same contours as the corresponding ribs in a vehicle being simulated and the length of these second plurality of rib members being sufficient to space said second sill members from said first sill members by said precalculated distance,

said second plurality of rib members being spaced apart from each other a distance substantially the same as the corresponding ribs in a vehicle being simulated,

the thickness of each one of said second plurality of rib members is sufficient to provide strength to support at least the same component supported by the corresponding rib members in the vehicle being simulated,

a plurality of surface panel members preformed to cover predetermined rib members, a plurality of means to fixedly attach preselected surface panel members in position, and

means to detachably attach the panel members not selected for fixedly attaching in position,

so that the panel members which are detachably attached are removable for access to the space within the simulator.

4,347,056

METHOD OF MAKING ABSORBABLE SURGICAL THREADS

Boris G. Yasnitsky, pereulok Rogatinsky, 56, kv. 1; Galina M. Tsukanova, prospekt Moskovsky, 198/2, kv. 66; Valentin A. Oridoroga, ulitsa Sotsialisticheskaya, 15, all of Kharkov, and Jury A. Furmanov, prospekt Nauki, 142, korpus 12, kv. 4, Kiev, all of U.S.S.R.

Filed Feb. 17, 1981, Ser. No. 235,053
Int. Cl.[3] D06M *1/00, 1/22*
U.S. Cl. 8—116 R 4 Claims

1. A method of making absorbable surgical threads consisting in oxidizing cellulose threads with nitrogen oxides, washing said threads with water and treating the threads with a protophilic solvent for 1 to 2 hours at room temperature, removing from the solvent and holding the said threads at a temperature of 70° to 90° C. for 1 to 2 hours.

4,347,057

METHOD OF MAKING ABSORBABLE SURGICAL SUTURES

Boris G. Yasnitsky, pereulok Rogatinsky, 56, kv. 1; Galina M. Tsukanova, prospekt Moskovsky, 198/2, kv. 66; Valentin A. Oridoroga, ulitsa Sotsialisticheskaya, 15, all of Kharkov, and Jury A. Furmanov, prospekt Nauki, 142, korpus 12, kv. 4, Kiev, all of U.S.S.R.

Filed Mar. 5, 1981, Ser. No. 240,680
Int. Cl.[3] D06M *1/00, 1/22*
U.S. Cl. 8—116 R 2 Claims

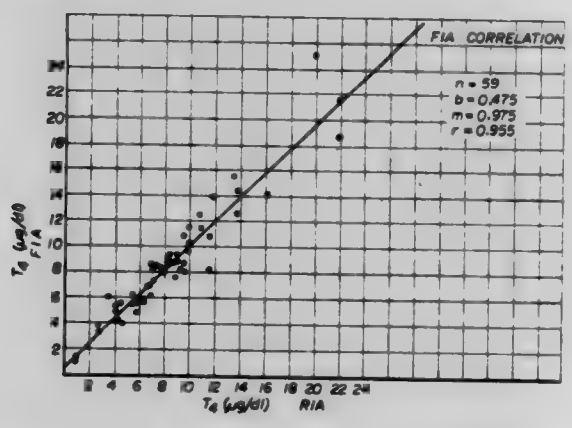
1. A method of making absorbable surgical sutures comprising treating cellulose threads with nitrogen dioxide in a solution of an organic solvent at a temperature of −11° to 21° C. for 10 to 30 minutes, withdrawing the cellulose threads from the organic solvent and holding them in a sealed chamber at a temperature of +30° to 70° C. for 15 minutes to 1.5 hours at a superatmospheric pressure of 506 hPa to 1519 hPa.

4,347,058

THYROID POLARIZATION FLUOROIMMUNOASSAY

Alan J. Polito, Irvine, and Kurtis R. Bray, Garden Grove, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Sep. 15, 1980, Ser. No. 187,238
The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.
Int. Cl.[3] G01N *33/52, 33/54, 33/78*
U.S. Cl. 23—230 B 11 Claims



1. A polarization fluoroimmunoassay for a thyroid hormone selected from a group consisting of $(T_3)_x$ and $(T_4)_{1-x}$, wherein x is 0 or 1 comprising:

(a) contacting a serum sample to be assayed with an amount of a suitable base sufficient to denature thyroxine binding globulins present in said serum sample to thereby form a solution;

(b) incubating said solution;

(c) contacting an aliquot of said solution with a separating agent;

(d) separating thyroid hormone bound to separating agent from serum and thereby simultaneously removing nonspecific serum effects as well as background fluorescence;

(e) contacting said thyroid hormone bound to separating agent with an antibody against said thyroid hormone, said antibody having a higher affinity for said thyroid hormone than the affinity of said separating agent for said thyroid hormone;

(f) incubating said separating agent-antibody combination;

(g) separating free antibody and thyroid hormone bound antibody from said separating agent;

(h) contacting said free antibody with fluorescent labeled thyroid hormone; and

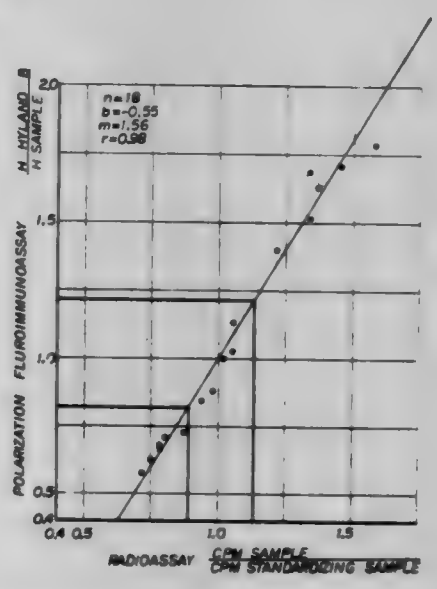
(i) fluorometrically measuring the fluorescence polarization in said mixture of step (h); wherein said measurement is directly proportional to the level of said thyroid hormone in the serum sample being assayed.

4,347,059

T_3 UPTAKE POLARIZATION FLUOROIMMUNOASSAY

Alan J. Polito, Irvine, and Kurtis R. Bray, Garden Grove, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Sep. 15, 1980, Ser. No. 187,239
The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.
Int. Cl.[3] G01N *33/52, 33/54, 33/78*
U.S. Cl. 23—230 B 11 Claims



1. A T_3 uptake polarization fluoroimmunoassay procedure comprising:

(a) contacting a serum sample to be assayed with T_3 to thereby form a solution, the amount of said T_3 being sufficient to assess the unsaturated binding capacity of serum proteins;

(b) contacting an aliquot of said solution with a separating agent;

(c) incubating said aliquot-separating agent combination;

(d) separating T_3 bound to separating agent from said serum and thereby simultaneously removing nonspecific serum effects as well as background fluorescence;

(e) contacting said T_3 bound separating agent with an antibody against T_3, said antibody having a higher affinity for T_3 than the affinity of said separating agent for T_3 and the amount of said antibody being sufficient to remove at least substantially all of said T_3 from said separating agent;

(f) incubating said separating agent-antibody combination;

(g) separating free antibody and T_3 bound antibody from said separating agent;

(h) contacting said free antibody with fluorescent labeled T_3; and

(i) fluorometrically measuring the fluorescence polarization in said mixture of step (h);

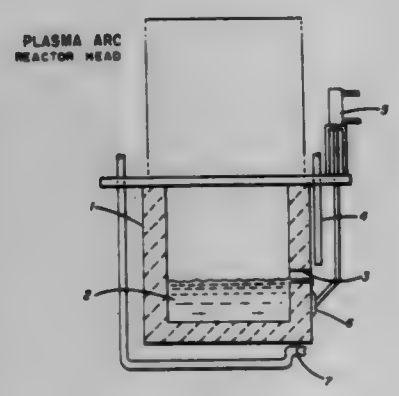
wherein said measurement is inversely proportional to the T_3 uptake of the sample being assayed.

4,347,060

METHOD FOR MAKING ANTIMONY TRIOXIDE POWDER

Roy L. Blizzard, Mission Viego, Calif., and Thomas O. Martin, Pasadena, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 86,379, Oct. 19, 1979, abandoned. This application Apr. 22, 1981, Ser. No. 256,436
Int. Cl.³ B01D *7/00*
U.S. Cl. 23—294 R 10 Claims



1. A method of preparing submicron antimony trioxide powder, which comprises heating within a reactor having a side exit port crude antimony trioxide containing from 1 to 10 weight percent of metal oxide impurities less volatile than antimony trioxide with an inert gas heated by a plasma arc, said heated inert gas having a temperature sufficient to vaporize the antimony trioxide and form a liquid slag of the less volatile metal oxide impurities of the crude antimony trioxide, removing vaporized antimony trioxide in a stream of exhausted hot gas, and liquid slag through said exit port, contacting the exiting vaporized antimony trioxide and liquid slag with an inert quench gas, thereby to condense vaporized antimony trioxide, separating condensed antimony trioxide powder having a weight mean particle size of between about 0.1 and about 0.5 micron from the exhausted gas, and mechanically removing solidified slag periodically from the exit port.

4,347,061

LIQUID FUEL COMPOSITION, METHOD OF PREPARING SAID COMPOSITION AND EMULSIFIER

Rud F. Madsen; W. Kofod Nielsen, and Ole Hansen, all of Nakskov, Denmark, assignors to Aktieselskabet de Danske Sukkerfabrikker, Copenhagen, Denmark

Filed May 23, 1980, Ser. No. 152,745
Claims priority, application Denmark, May 28, 1979, 2198/79
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 12 Claims

1. A liquid fuel composition comprising a stable emulsion of a liquid mineral oil fuel, an aqueous solution of a product selected from the group consisting of saccharose, starch decomposition products and mixtures thereof, and at least one non-ionic polymeric emulsifier.

4,347,062

COMPLEXES OF HIGH IRON CONTENT SOLUBLE IN ORGANIC MEDIA AND USABLE AS COMBUSTION ADDITIVES IN LIQUID FUELS

Maurice Born, Nanterre; Lucienne Briquet, and Gabriel de Gaudemaris, both of Rueil-Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 14, 1980, Ser. No. 130,307
Claims priority, application France, Mar. 16, 1979, 79 06783
Int. Cl.³ C10L *1/30*
U.S. Cl. 44—68 42 Claims

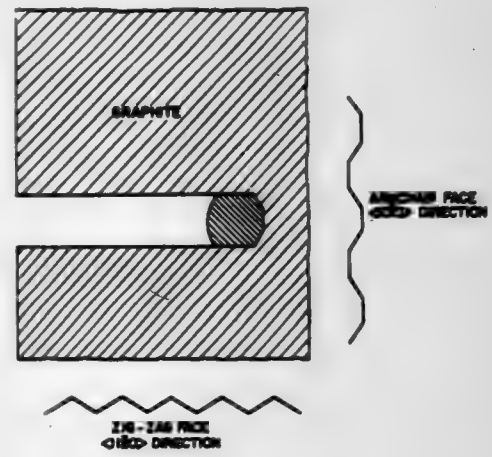
1. An iron complex soluble in hydrocarbon fuels, said complex being formed from at least one sulfonic acid and ferric iron; wherein the ratio R of the number of acid gram-equivalents of said sulfonic acid to the number of gram-atoms of iron in said complex is from about 1/6 to 1/12.

4,347,063

PROCESS FOR CATALYTICALLY GASIFYING CARBON

Rexford D. Sherwood, Suffern, N.Y.; Rees T. K. Baker, Murray Hill, N.J.; Eric G. Derouane, Champion, Belgium, and Wim J. Pieters, Morristown, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 27, 1981, Ser. No. 248,266
Int. Cl.³ C10J *3/00*
U.S. Cl. 48—197 R 9 Claims



1. A process for catalytically gasifying carbon with steam in the presence of a catalytic metal comprising Ni, Co, Mo and mixtures thereof, said process comprising the steps of:

(a) contacting a composite of said metal and graphite with an inert, hydrogen-containing atmosphere at a temperature ranging between about 800°–975° C. for a time sufficient for the metal to form a plurality of metal-containing channels in the graphite;

(b) contacting said channeled composite formed in (a) with an inert hydrogen-containing atmosphere at a temperature of at least about 975° C. for a time sufficient for said metal in said channels to spread out and chemically wet at least a portion of the surface of said channels;

(c) contacting said metal-wetted, channeled composite formed in (b) with an oxidizing atmosphere at a temperature of at least about 800° C. to form a dispersion of discrete particles of said metal on said graphite; and

(d) contacting the dispersed metal/graphite composite formed in (c) with steam at a temperature of at least about 800° C. for a time sufficient for the metal to achieve the desired amount of gasification of the carbon.

4,347,064

PROCESS OF GASIFYING FINE-GRAINED SOLID FUELS

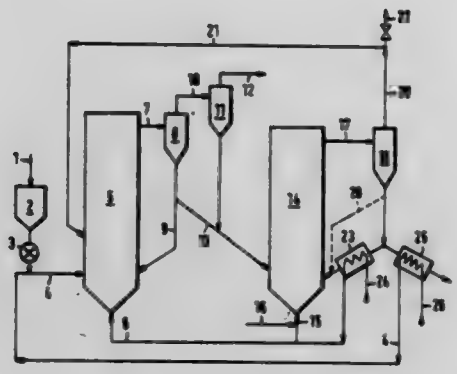
Lothar Reh; Martin Hirsch, both of Frankfurt am Main; Gerhard Baron, Hofheim; Eberhard Blaum, and Carl Hafke, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 64,977, Aug. 8, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 225,952

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836175

Int. Cl.³ C10J 3/54

U.S. Cl. 48—197 R 9 Claims



1. In a process of gasifying fine-grained solid fuels to produce a product gas which contains hydrogen, carbon oxides and methane in two interconnected gasifying stages by treatment with at least one of the gasifying agents of the group consisting of steam, oxygen and carbon dioxide, the gasifying stage containing a first reactor and a first separation zone, said first reactor containing a circulating fluidized bed zone, fresh fine-grained solid fuel is introduced into said first reactor of the first gasifying stage and partially gasified therein and product gas is withdrawn from said first separation zone, maintaining a temperature in the first gasifying stage in the range of 800° to 1100° C., in said first separation zone, solids are separated from said product gas and said separated solids are divided into two partial streams, a first partial stream of which is recycled into the first gasifying stage and the second partial stream of solids is fed into the second gasifying stage, said second gasifying stage containing a second reactor and a second separation zone, said second reactor containing a circulating fluidized bed zone, in said second separation zone solids are separated from the hot gas produced in said second gasifying stage, feeding gasifying agent into the reactor of the first gasifying stage which consists mainly of steam and contains less oxygen than the gasifying agent fed into the second gasifying stage; and maintaining a temperature in the second gasifying stage which is higher than the temperature maintained in the first gasifying stage and is below the melting point of ash formed from the solid fuel; the improvement which comprises

A. maintaining a pressure in the first and second gasifying stage in the range of 10 to 60 bars;

B. feeding at least one-half of the hot gas from the second separation zone into the reactor of the first gasifying stage;

C. a first part of the separated solids from the second separation zone is recycled to the second gasifying stage and the balance of said separated solids is withdrawn, and

D. cooling that portion of solids withdrawn in step C and neither feeding the cooled withdrawn solids into said first nor said second gasifying stage.

4,347,065

PROCESS FOR THE SEPARATION OF PAINT MISTS FROM THE EXHAUST AIR OF LACQUER PAINTING PLANTS

Wolfgang Gass, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 282,166

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028706

Int. Cl.³ B01D 51/00

U.S. Cl. 55—6 3 Claims

1. A process for the separation of paint mists from the exhaust gases of lacquer painting plants, characterized in that the exhaust gases containing paint particles comprising the mists are conducted through a microwave field to convert the paint particles to paint dust and the thus-produced paint dust is separated from the exhaust gases by means for removing dust and like solid particles from gases.

4,347,066

REMOVAL OF CO AND UNSATURATED HYDROCARBONS FROM GAS STREAMS USING COPPER OXALATE COMPLEXES

Gerald Doyle, Whitehouse Station, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 13, 1981, Ser. No. 282,654

Int. Cl.³ B01D 53/14

U.S. Cl. 55—56 15 Claims

1. A process for selectively removing CO from a CO containing gas stream which comprises contacting the gas stream with a mixture of Cu_2O and oxalic acid in an inert organic solvent.

4,347,067

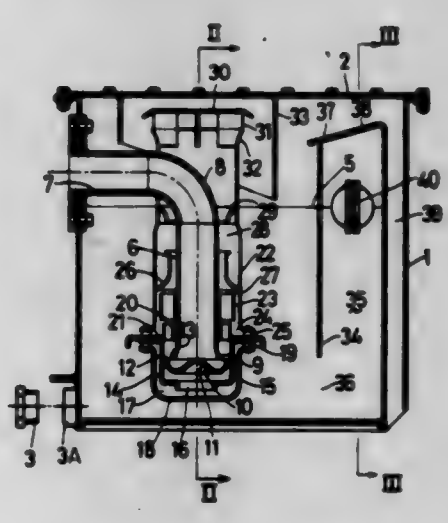
GAS SCRUBBER WITH PLURAL VERTICAL LIQUID INLETS

Arthur J. Homer, Selcourt, South Africa, assignor to Marrett Manufacturing (Proprietary) Limited, Boksburg, South Africa

Filed May 14, 1981, Ser. No. 263,538

Int. Cl.³ B01D 47/02, 47/10

U.S. Cl. 55—227 10 Claims



1. A gas-scrubber, comprising: a scrubbing mechanism located within a container shaped housing (1) containing a scrubbing liquid to a predetermined level (5), gas inlet conduit (6) having a portion thereof extending downwardly within said housing and wherein the scrubbing mechanism is arranged concentrically with said downwardly extending portion of said gas inlet conduit (6), said mechanism comprising means (10) for distributing gas emanating from a lower end of the inlet conduit portion around the circumference thereof such that the path of the gas is upwardly directed around the outside of the inlet conduit portion, means (14) surrounding the distributing

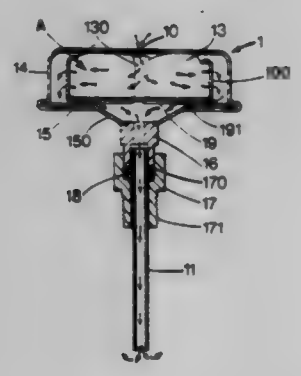
means for defining therewith a first scrubbing liquid inlet (15) located adjacent the path for upwardly moving gas emanating from the lower end of the inlet conduit portion and having an opening (16) communicating with the liquid contained in the housing, a plurality of angularly spaced upwardly directed transfer conduits (20) disposed around the inlet conduit portion in said path above the first scrubbing liquid inlet and constructed and arranged with respect to larger diameter co-axial tubular passage members (23) located directly above the transfer conduits so as to define therewith both a second scrubbing liquid inlet and venturi means for drawing further quantities of scrubbing liquid into admixture with the initial gas-liquid mixture, a cowling (22) enclosing the gas inlet conduit portion, transfer conduits and tubular members and defining a mixing chamber (28) above the tubular members for promoting adequate mixing of the gas and scrubbing liquid, and means defining an outlet (31) at the upper end of the cowling co-axial with the inlet conduit portion for directing a gas liquid mixture outwardly above the level of liquid in the scrubber housing and said housing having a gas outlet.

4,347,068

ADMISSION DEVICE FOR AN INLET MANIFOLD OF AN INTERNAL COMBUSTION ENGINE

Walter R. Cooper, 18 St. Helen's Way, Allesley, Conventry, West Midlands, England

Filed Jan. 30, 1980, Ser. No. 117,000
Int. Cl.³ B01D *50/00*; F02M *23/04*
U.S. Cl. 55—319 **2 Claims**



1. An air admission device for an inlet manifold of an internal combustion engine comprises:

a closed container providing an air expansion chamber and having a fine metering air inlet orifice for entry of atmospheric air into the chamber so as to be cooled by expansion therein;

an elongate air outlet tube directly and rigidly connected to the container and communicating with the chamber through a wall thereof opposite said air inlet orifice, said air outlet tube being adapted to be fitted in a hole provided therefor in an inlet manifold of an internal combustion engine so that the tube passes through the hole and extends for a substantial distance into the manifold from the chamber of the container, which container in such position of use is thus exteriorly mounted on the manifold;

a body of foam texture material accommodated in the expansion chamber and disposed between the air inlet orifice and the communication of the elongate outlet tube with said chamber, said body of foam material having a central opening therein for receiving air flow from the air inlet orifice; and

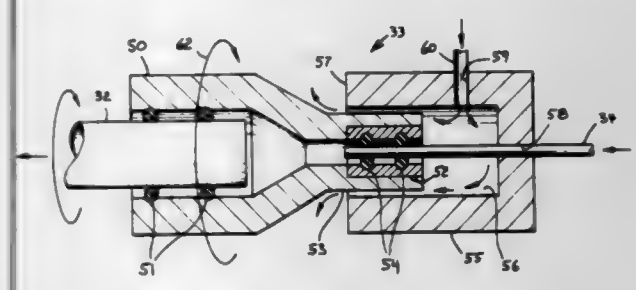
a deflector plate in the chamber carrying the body of foam texture material and interposed between the latter and the communication of the elongate outlet tube with the chamber, said deflector plate being radially channelled at that side thereof opposite to the body of foam texture material for the passage of air between the deflector plate and the wall of the container adjacent thereto and through which the elongate outlet tube communicates with the chamber, the deflector plate further having side lugs engaging the body of foam texture material for location of said body on the deflector plate and in the chamber with annular clearance therein whereby air entering the chamber through the fine metering air inlet orifice enters the central opening in the body of foam texture material and is deflected radially outwardly therethrough by the deflector plate to the annular clearance for subsequent inward radial flow between the radially channelled side of the deflector plate and the adjacent wall of the container to the communication of the elongate outlet tube and via the latter into the inlet manifold for creating turbulence in the flow of a fuel/air mixture through the manifold into the engine.

4,347,069

METHOD OF SUPPLYING FLUID TO A ROTATING TUBE

Eugene A. Haney, Lawrenceville, and Fred P. Partus, Marietta, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 11, 1981, Ser. No. 242,775
Int. Cl.³ C03B *37/07*
U.S. Cl. 65—3.12 **6 Claims**



1. A method of introducing a vapor stream into a rotating optical fiber preform tube comprising the steps of:

a. generating a vapor stream comprised of a vaporized glass forming precursor entrained in an oxidizing carrier gas;

b. flowing the vapor stream into the rotating optical fiber preform tube through an at least partially sealed rotary joint; and

c. preventing any material alteration in the composition of the vapor stream from occurring should the rotary joint seal become leaky by flowing a stream of fluid consisting essentially of said oxidizing carrier gas over the rotary joint at a pressure greater than the pressure of the vapor stream as it flows through the rotary joint.

6. A method of delivering a fluid stream through a stationary conduit and into a rotating tube through a junction of the stationary conduit and the rotating tube without altering the qualitative composition of the fluid stream by ingress of ambient air at the junction, characterized by flowing a fluid constituent of the fluid stream over the junction at a pressure in excess of the pressure of the fluid stream within the junction.

4,347,070

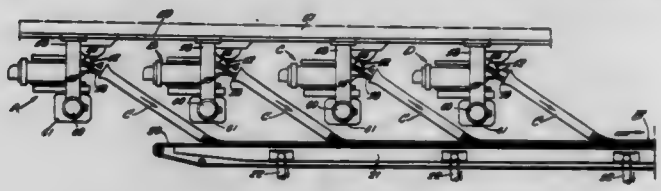
CONTROLS FOR TORATION FIBERIZATION

Marcel Levecque, Birchrunville, Pa.; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, France, assignors to Saint-Gobain Industries, Paris, France

Continuation of Ser. No. 926,954, Jul. 20, 1978, Pat. No. 4,199,338, which is a continuation-in-part of Ser. No. 834,540, Sep. 19, 1977, Pat. No. 4,145,203, Ser. No. 762,789, Jan. 25, 1977, Pat. No. 4,102,662, and Ser. No. 676,755, Apr. 14, 1976, Pat. No. 4,118,213, said Ser. No. 762,789, and Ser. No. 676,755, each is a continuation-in-part of Ser. No. 557,282, Mar. 11, 1975, Pat. No. 4,015,964, which is a continuation-in-part of Ser. No. 353,984, Apr. 24, 1973, Pat. No. 3,885,940. This application Dec. 10, 1979, Ser. No. 102,256
Claims priority, application France, Apr. 19, 1978, 78 11488
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—9 **7 Claims**

1. Apparatus for forming fibrous blanket comprising a perforated fiber collecting conveyor moving in a generally horizon-

tal path, fiber forming mechanism located above the path of the collecting conveyor and comprising a series of fiberizing centers in a plurality of spaced positions along the path of the conveyor, each center including a supply means for delivering a downwardly directed stream of molten thermoplastic attenuable material, and each center including means for effecting gaseous attenuation of the streams of molten material comprising means for generating a gaseous blast and means for generating a gaseous jet, the blast generating means being directed in



a downwardly inclined path, and the jet being of smaller cross section than the blast and having higher kinetic energy per unit of volume than the blast and penetrating transversely thereof, and mounting mechanism for the blast and jet generating means including means providing for positioning the jet in the path of a stream of molten material and providing for delivery of the blast and jet in various relatively inclined paths both directed downwardly toward the path of the fiber collecting conveyor.

4,347,071

APPARATUS FOR PRODUCTION AND CUTTING OF GLASS FIBRES

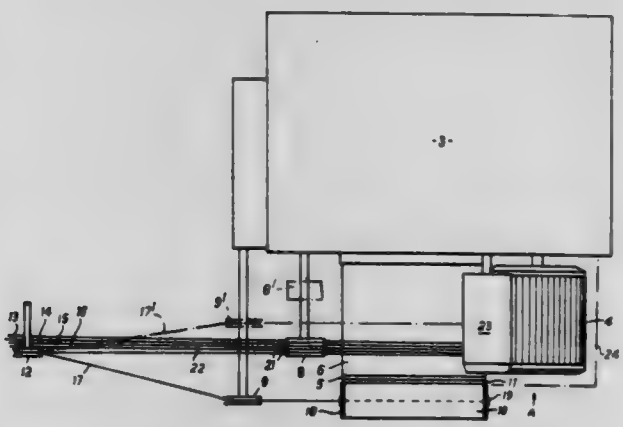
John H. Willis, Anderson, S.C., and Trevor C. Heath, Yateley, England, assignors to TBA Industrial Products, Limited, Manchester, United Kingdom and Bishop & Associates, Incorporated, Greenville, S.C.

Continuation of Ser. No. 97,249, Nov. 26, 1979, abandoned. This application Feb. 20, 1981, Ser. No. 236,362

Claims priority, application United Kingdom, Nov. 24, 1978, 45911/78

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—10.2 **8 Claims**



1. In an apparatus for drawing newly-spun and dressed glass filaments from a bushing, of the kind having:

(a) a rotary cutter constituted by a blade roll with radially directed blades projecting from its surface,

(b) a back-up roll having a resilient surface,

(c) means mounting said blade roll and said back-up roll with their respective axes of rotation parallel and with at least the tips of the blades of the blade roll in contact with said resilient surface of the back-up roll to define a cutting zone for the cutter,

(d) an auxiliary start-up roll,

(e) variable speed drive means for accelerating said auxiliary start-up roll to a surface speed at least equal to the surface speed of the cutter roll under production conditions,

(f) guide means operable to divert a bundle of filaments being wound on said auxiliary start-up roll to the surface of the back-up roll and thereafter into the cutting zone of the cutter, whereby the filaments are cut into staple fibers,

the improvement that said auxiliary start-up roll is adapted to receive plural turns of a bundle of filaments wound thereon to form a cake such that said bundle may be subjected to drawing as said start-up roll rotates.

4,347,072

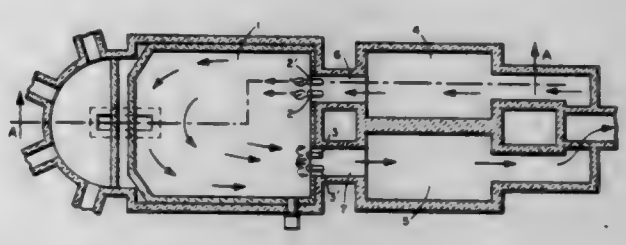
METHOD AND DEVICE FOR REDUCING NO_x GENERATED IN GLASS-MELTING FURNACE

Kinnosuke Nagaoka, Amagasaki; Tsumugu Kato, and Mitsuru Nozawa, both of Nagoya, all of Japan, assignors to Ishizuka Glass Co., Ltd., Aichi and Agency of Industrial Science and Technology, Tokyo, both of, Japan

Filed Nov. 21, 1980, Ser. No. 209,043

Int. Cl.³ C03B *5/16*

U.S. Cl. 65—27 **12 Claims**



1. A method for reducing NO_x content in a waste gas generated in a glass melting furnace of side firing or end firing type which is equipped with a regenerator, comprising supplying hydrocarbons into the waste gas from fuel combustion produced over a melting tank within a combustion chamber, without supplying sufficient additional oxygen for burning said hydrocarbons, so as to effect the reducing reaction of the NO_x in the combustion waste gas.

9. A glass-melting furnace of side firing or end firing type equipped with a regenerator, comprising a combustion chamber provided above a glass-melting tank in which an unmelted batch material is fed and melted material is stored, at least two sets of burners for alternatively feeding a fuel and oxygen supply which is to be burned into the combustion chamber, means for feeding hydrocarbons into the waste gas produced by combustion of the fuel simultaneously with the feeding of fuel and oxygen supply by a first set of burners, and control means for restricting the oxygen supply to the hydrocarbon feeding means while combustion is occurring at said first set of burners, whereby the NO_x in the waste gas from the glass-melting furnace can be reduced.

4,347,073

METHOD OF PRODUCING GLASS FROM AGGLOMERATES WHICH INCLUDE ORGANIC COATED SCRAP GLASS

Patrick F. Aubourg, Granville, and Mark A. Propster, Gahanna, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 12, 1981, Ser. No. 242,879

Int. Cl.³ C03B *1/00*

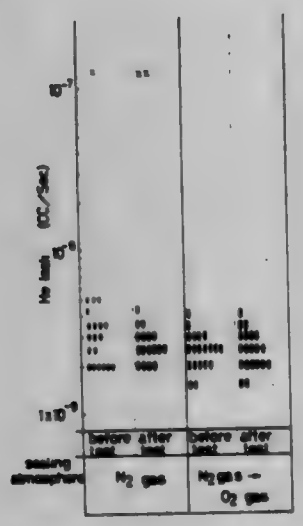
U.S. Cl. 65—28 **9 Claims**

1. In a process comprising converting molten-glass forming ingredients and water into agglomerates, heating a vertical bed of gravitationally downwardly moving agglomerates in a chamber by direct contact with a gaseous heating medium so as to produce dry, heated non-aggregated agglomerates, melting said agglomerates in a glass melting furnace, the improvement wherein a portion of said molten-glass forming ingredients includes glass cullet having an organic coating thereon and pyrolizing said coating during said heating step.

4,347,074
SEALING TECHNIQUE FOR SEMICONDUCTOR DEVICES

Akio Isohara, Osaka; Kiyoshi Sawae, Nara; Hisao Kawaguchi, Sakai, and Takeo Fujimoto, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 17, 1980, Ser. No. 207,470
Claims priority, application Japan, Nov. 16, 1979, 54-149294; Feb. 14, 1980, 55-17446; Feb. 14, 1980, 55-17447
Int. Cl.³ C03C *27/04*
U.S. Cl. 65—32 4 Claims



1. A method for sealing a semiconductor device, comprising the steps of:

introducing a semiconductor device into a sealing chamber;

applying a glass frit to said semiconductor device; p1 pressurizing the atmosphere in said sealing chamber such that the internal pressure of said chamber is greater than one-half the atmospheric pressure at room temperature after sealing;

introducing an inert gas into the atmosphere of said sealing chamber, thereby pre-sealing said semiconductor device with said glass frit under the inert gas atmosphere; and

introducing oxygen gas into the atmosphere of said sealing chamber, thereby completing the sealing of said semiconductor device with said glass frit.

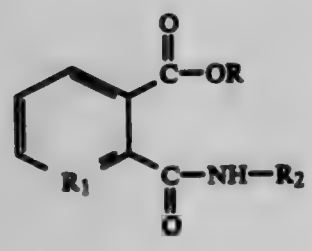
3. The method of claim 1, wherein said inert gas comprises nitrogen gas.

4,347,075
METHOD FOR USING NICOTINIC ACID DERIVATIVES AS PLANT GROWTH REGULANTS

Frederic G. Bollinger; John J. D'Amico, both of St. Louis, and Dale J. Hansen, St. Charles, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 932,736, Aug. 9, 1978, Pat. No. 4,261,730, which is a continuation-in-part of Ser. No. 753,260, Dec. 22, 1976, abandoned. This application Oct. 20, 1980, Ser. No. 198,327
Int. Cl.³ A01N *43/40*
U.S. Cl. 71—94 2 Claims

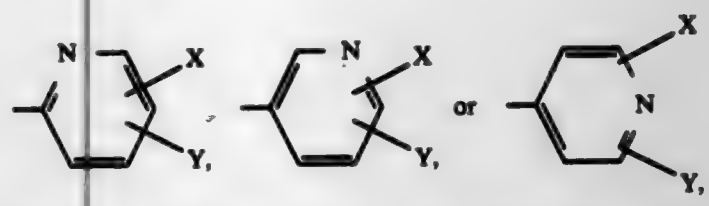
1. A method for altering the development of the reproductive components of a corn plant which comprises applying to said corn plant an effective, non-lethal amount of a compound of the formula



wherein R is hydrogen or lower alkyl; R_1 is nitrogen; R_2 is



pyridyl,



wherein X is hydrogen, halogen, CF_3, lower alkyl or lower alkoxy; Y is halogen, CF_3, lower alkyl or lower alkoxy; provided that neither X nor Y may be chlorine in the 4 position when the nitrogen atom is in the 3 position; and agriculturally acceptable salts thereof.

4,347,076
ALUMINUM-TRANSITION METAL ALLOYS MADE USING RAPIDLY SOLIDIFIED POWERS AND METHOD

Ranjan Ray, Waltham, Mass.; Donald E. Polk, Washington, D.C., and Bill C. Giessen, Cambridge, Mass., assignors to Marko Materials, Inc., North Billerica, Mass.

Filed Oct. 3, 1980, Ser. No. 193,417
Int. Cl.³ C22C *1/04*
U.S. Cl. 75—0.5 R 19 Claims

1. The method of making an alloy comprised of at least one of the group consisting of nominally pure aluminum and conventional aluminum alloys containing at least 80 wt% aluminum wherein said one of the group is further alloyed with between 5 to 16 wt% of a transition metal selected from the group consisting of iron, nickel, cobalt, manganese, vanadium, chromium, molybdenum, tungsten, titanium, zirconium, boron, and mixtures thereof wherein said manganese, vanadium, molybdenum, tungsten, titanium and zirconium, when present, are at a combined level up to 5 wt% and boron, when present, at a level up to 1 wt%, comprising the steps of

(a) forming a melt of said alloy,

(b) contacting said melt against a rapidly moving quench surface adapted to quench said melt at a rate in the range of approximately 10^5° to 10^7° C./second and form thereby a rapidly solidified brittle ribbon of said alloy characterized by a metastable structure, and,

(c) comminuting said ribbon into fragments so as to form a powder thereof.

4,347,077
PROCESS FOR PRODUCING MAGNESIUM ALLOYS

Takeshi Goto, Atsugi; Noboru Kawakami, Tokyo; Itsuo Hirano, Sagamihara; Yoichi Itakura, Musashino, and Yuji Kawahara, Chigasaki, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed Nov. 12, 1980, Ser. No. 206,298
Claims priority, application Japan, Nov. 19, 1979, 54-148993
Int. Cl.³ C22C *23/00, 1/00*
U.S. Cl. 75—0.5 B 7 Claims

1. Process for producing a magnesium alloy which comprises the steps of:

(a) reducing magnesium oxide with a carbonaceous substance at high temperature to form a gaseous reaction product comprising gaseous magnesium,

(b) rapidly gas cooling said gaseous reaction product with a cooling gas in an amount of at least 10 times the amount of

said gaseous reaction product in an inert atmosphere containing metal powder of at least one of aluminum, copper, nickel, iron, silicon, or alloys thereof,

(c) condensing the gaseous magnesium on the surface of said metal powder, and

(d) subjecting the condensed product of step (c) to heat treatment.

4,347,078

PROCESS AND APPARATUS FOR THE DESULFURIZING OF IRON MELTS

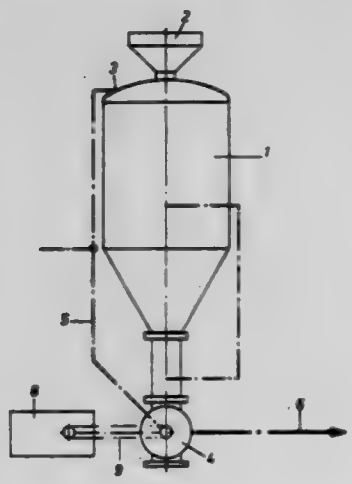
Jean Goedert, Esch, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Dec. 21, 1979, Ser. No. 106,367

Claims priority, application Luxembourg, Dec. 21, 1978, 80692

Int. Cl.³ C21C 7/00

U.S. Cl. 75—51 5 Claims



1. In a method for the desulfurizing of iron melts of the type in which an iron melt in a metallurgical vessel is treated with a desulfurizing agent blown in by means of a propellant through inlet means, the improvement comprising providing a storage bin that is connected over a vane type blowthrough feeder and gas propellant means with said inlet means; maintaining within said inlet means a gas propellant pressure higher than the counteracting ferrostatic pressure; and continuously feeding variable quantities of a desulfurizing agent through said inlet means by varying the rotational speed of the vanes in a vane type blowthrough feeder, without having to vary said propellant pressure.

4,347,079

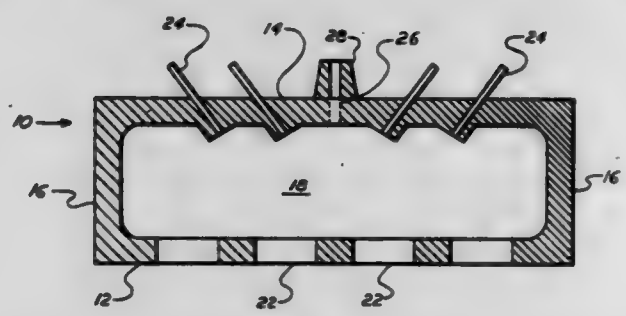
METHOD OF OPERATING AN OPEN-HEARTH FURNACE

William Wells, Charlotte, N.C., assignor to Korf Technologies, Inc., Charlotte, N.C.

Filed Mar. 12, 1981, Ser. No. 243,019

Int. Cl.³ C21C 7/00

U.S. Cl. 75—52 7 Claims



1. In a method of operating an open-hearth furnace to produce steel in a molten metal bath therein, said furnace having a front wall with charging openings therein and a back wall with a taphole therein, the improvement comprising introducing at least one stream of oxygen through the furnace back wall lining on each side of the furnace taphole, each oxygen stream being injected horizontally through a tuyere beneath the surface of the molten metal bath and said stream being inclined toward the center of the molten metal bath at an angle between the tuyere and the furnace back wall lining of from about 45° to about 60° to form an active bath area in said furnace in front of said taphole.

4,347,080

AUSTENITIC FREE-CUTTING STAINLESS STEEL

Minoru Yanagida, Ohbu, and Tomio Kono, Nagoya, both of Japan, assignors to Daido Tokushuko K.K., Nagoya, Japan

Filed Jan. 7, 1981, Ser. No. 223,034

Claims priority, application Japan, Jan. 12, 1980, 55/1749; Sep. 18, 1980, 55/128635; Oct. 17, 1980, 55/144409

Int. Cl.³ C22C 38/06

U.S. Cl. 75—124 7 Claims

1. An austenitic free-cutting stainless steel which essentially consists of:

C: 0.005 to 0.2%,
Si: 0.01 to 2.0%,
Mn: 0.01 to 20%,
S: 0.005 to 0.07%,
Cr: 12 to 30%,
Ni: 2 to 20%,
N: 0.003 to 0.10%,
Pb: 0.03 to 0.40%,
B: 0.0005 to 0.030%, and the balance being substantially Fe.

4,347,081

DENTAL ALLOY

Arthur Minkowitz, Albertson, N.Y., assignor to Futura Dental Products, Inc., Long Island City, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,872

Int. Cl.³ C22C 9/04

U.S. Cl. 75—157.5 5 Claims

1. An alloy consisting essentially of in percent weight:

copper	60–66
silicon	0.60–1.65
aluminum	0.25–0.75
titanium	0.20–0.80
chromium	0.10–0.80, and
zinc	33–36.

4,347,082

MISCHMETAL ALLOY FOR STORAGE OF HYDROGEN

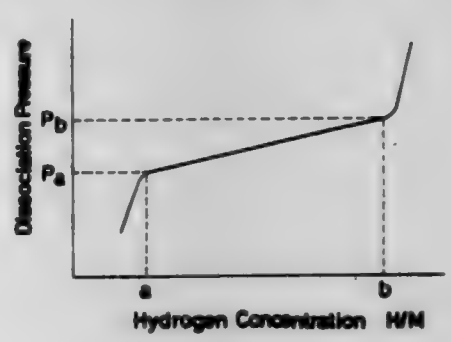
Yasuaki Osumi, Misoo; Hiroshi Suzuki, Ikeda; Akihiko Kato, Matsubara, and Masanori Nakane, Ibaragi, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Oct. 1, 1980, Ser. No. 192,809

Claims priority, application Japan, Oct. 23, 1979, 54-137489

Int. Cl.³ C22C 19/05

U.S. Cl. 75—171 2 Claims



1. A quaternary mischmetal alloy for storage of hydrogen,

having a low flatness factor and represented by the general formula:

$$MmNi_{5-x}Cr_{x-y}A_y$$

wherein, Mm denotes Mischmetal, A is one member selected from the group consisting of Al, Co, Cu, Fe, Mn and Si, x denotes a number of a value within the range of from 0.1 to 1, y is a number of a value within the range of from 0.01 to 0.99, provided that the value of x is greater than that of y.

4,347,083

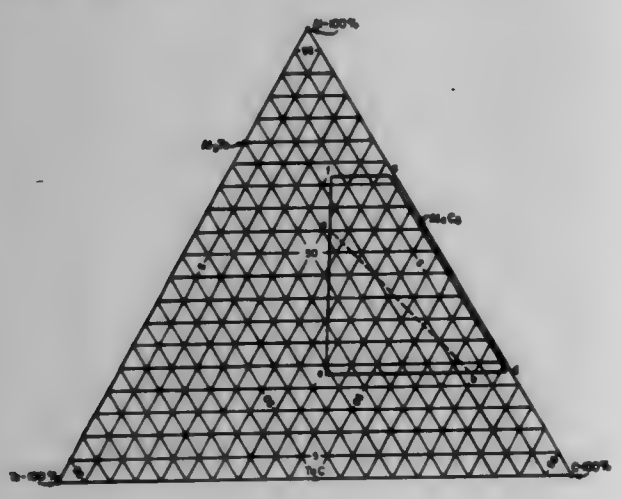
CHEMICALLY BONDED ALUMINUM COATING FOR CARBON VIA MONOCARBIDES

Raymond V. Sara, North Olmsted, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 874,366, Jan. 1, 1978, Pat. No. 4,252,856, which is a division of Ser. No. 697,611, Jun. 18, 1976, Pat. No. 4,104,417, which is a continuation-in-part of Ser. No. 444,556, Feb. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 340,287, Mar. 12, 1973, abandoned. This application Aug. 29, 1980, Ser. No. 182,494

Int. Cl.³ B22F *9/00*; B32B *15/14*; C22C *1/04, 29/00*

U.S. Cl. 75—204 7 Claims



4. A process for making a composite material wherein carbon is distributed in an aluminum matrix via an interfacial bond of a metal carbide, said metal selected from the group consisting of tantalum, titanium and hafnium, the process comprising:

(a) preparing a mixture of carbon and a compound selected from the group consisting of Al_3Ta, Al_3Ti and Al_3Hf;

(b) reacting said mixture at a temperature at which said metal is soluble in the aluminum for a time period sufficient to release the aluminum and form said metal carbide interface between the carbon and the aluminum; and

(c) densifying said mixture at a temperature of about the melting temperature of aluminum.

4,347,084

ELECTRODES OF SINTERED TANTALUM POWDER OF FINE GRAIN SIZE AND PROCESS OF PRODUCTION

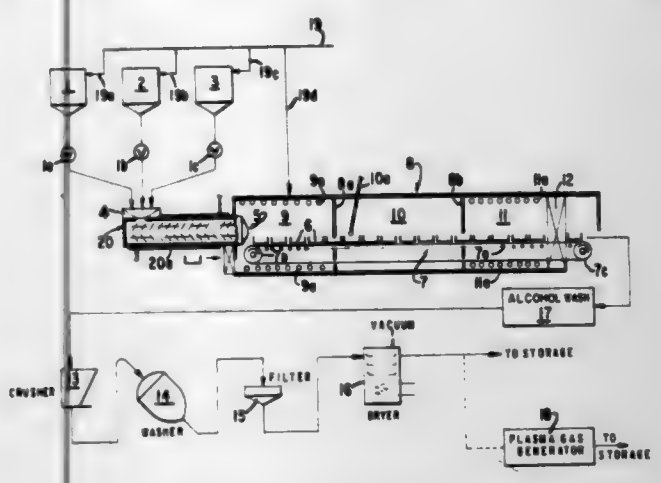
Reinhard Hähn, Langelsheim, and Dieter Behrens, Goslar, both of Fed. Rep. of Germany, assignors to Hermann C. Starck Berlin, Berlin, Fed. Rep. of Germany

Division of Ser. No. 956,898, Nov. 2, 1978, Pat. No. 4,231,790, which is a continuation of Ser. No. 677,038, Apr. 14, 1976, abandoned. This application May 2, 1980, Ser. No. 146,093

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1975, 2517180

Int. Cl.³ B22F *5/00*

U.S. Cl. 75—245 4 Claims



1. An electrode having an electrical capacitance in excess of 10,000 μC/g prepared by sintering tantalum powder having a grain size finer than 2.5 μm.

4,347,085

INSULATIVE COATINGS FOR ELECTRICAL STEELS

Michael H. Haselkorn, Franklin, and Dannie S. Loudermilk, Middletown, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Apr. 23, 1981, Ser. No. 256,856

Int. Cl.³ C23F *7/10*

U.S. Cl. 148—6.16 17 Claims

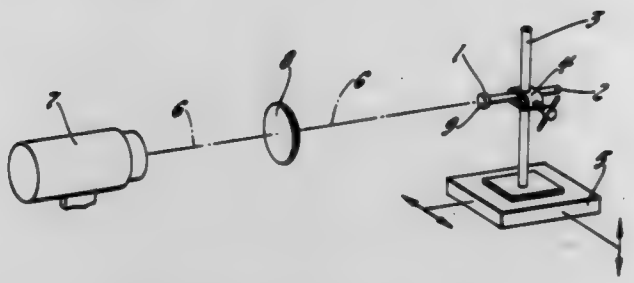
1. An aqueous coating solution for forming an insulative coating directly on electrical steels and on steels having a mill glass thereon, said coating solution comprising a premix solution and a colloidal silica solution, said premix solution containing an Al^{+++}, Mg^{++} and $H_2PO_4^-$ concentration in the following relative relationship on a water-free basis: from 3 to 11% by weight Al^{+++} calculated as Al_2O_3, from 3 to 15% by weight Mg^{++} calculated as MgO, and 78 to 87% by weight $H_2PO_4^-$ calculated as H_3PO_4, the total weight percentage of Al^{+++} (as Al_2O_3), Mg^{++} (as MgO) and $H_2PO_4^-$ (as H_3PO_4) being 100% on a water-free basis, said concentration of Al^{+++}, Mg^{++} and $H_2PO_4^-$ comprising 100 parts by weight calculated as Al_2O_3, MgO and H_3PO_4 respectively on a water-free basis, said premix also comprising from about 10 to about 45 parts by weight C_rO_3 for every 100 parts by weight $H_2PO_4^-$ calculated as H_3PO_4 on a water-free basis, from about 5 to about 20 parts of a compound chosen from the class consisting of boric acid, vanadium pentoxide and mixtures thereof per 100 parts $H_2PO_4^-$ calculated as H_3PO_4 on a water-free basis and additional Mg^{++} up to that amount which will go into solution, said colloidal silica solution being present in an amount of from that amount which will form a good glass up to 40 volume percent to provide a coating solution having a premix solution to colloidal silica solution volume ratio up to 1.5:1.

4,347,086

SELECTIVE MAGNETIZATION OF RARE-EARTH TRANSITION METAL ALLOYS

Andrew R. Claplyvy, Troy; Jan F. Herbst, Warren, and John J. Croat, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 7, 1980, Ser. No. 138,240
Int. Cl.[3] H01F *1/00*
U.S. Cl. 148—101 3 Claims



1. A method of forming an integral region of hard magnetism in a portion of a magnetically soft rare-earth transition metal alloy body comprising

forming said alloy body to place it entirely in an amorphous, magnetically soft condition and thereafter

selectively tempering the portion of said body in said region to convert the structure of the alloy thereat from an amorphous to a crystalline state such that said region has high magnetic coercivity.

4,347,087

GRANULAR PROPELLANT POWDER BASED ON NITROCELLULOSE, OILY NITRATE ESTER AND POLYVINYL NITRATE, AND PROCESS

Bernard M. Zeller, Brunoy; Rene J. Couturier, Mennecy, and Robert A. Tribot, Hiersac, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 5, 1979, Ser. No. 100,646
Claims priority, application France, Dec. 22, 1978, 78 36103
Int. Cl.[3] C06B *25/26*
U.S. Cl. 149—98 7 Claims

1. A granular homogeneous propellant powder having suitable power for use in tank guns, which consists essentially of 50–75 parts by weight of nitrocellulose, 5–25 parts by weight of polyvinyl nitrate and 5–25 parts by weight of an oily nitrate ester which is a member selected from the group consisting of nitroglycerine, trimethylolmethane trinitrate and trimethylolethane trinitrate, said nitrocellulose, said polyvinyl nitrate and said oily nitrate ester being the energy-producing bases in the total amount of 100 parts.

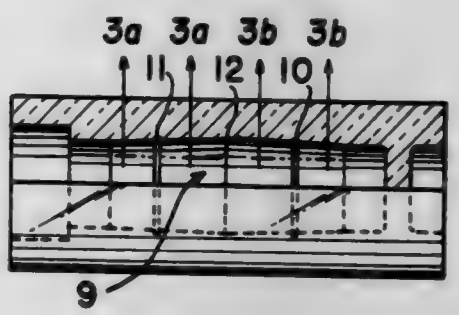
4,347,088

BUBBLE TUBES FOR SPIRIT LEVELS

Daniel Jacquet, Mulhouse, France, assignor to Stanley Mabo S.A., Besancon, France

Filed Dec. 15, 1980, Ser. No. 216,089
Claims priority, application France, Dec. 13, 1979, 79 31027
Int. Cl.[3] B29C *27/08;* G01C *9/26*
U.S. Cl. 156—69 3 Claims

1. A method for manufacturing a cylindrical bubble tube for a spirit level, including the steps of providing a tubular hollow body with a closed end and an open end and an inner barrel-shaped cavity having the same axis as the bubble tube, substantially filling said hollow body with a suitable liquid, inserting a hollow plug having an inner cavity of a precisely determined volume to close the open end of the tubular body and spill some of the liquid therefrom, the volume of the cavity of said plug being equal to the desired volume of the air bubble in said



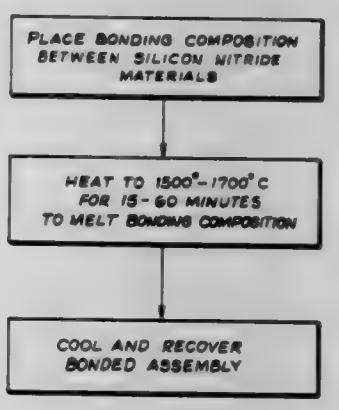
bubble tube, and sealing the plug in the open end of the hollow body.

4,347,089

METHOD FOR BONDING SILICON NITRIDE

Ronald E. Loehman, Palo Alto, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Jul. 29, 1981, Ser. No. 288,125
Int. Cl.[3] C03C *29/00;* C04B *33/34, 37/00*
U.S. Cl. 156—89 10 Claims



1. A method of joining silicon nitride materials to form a thermally matched bond containing oxynitrides which comprises:

a. providing a glass or ceramic bonding composition capable of providing oxynitrides when melted in contact with silicon nitride;

b. placing said bonding composition between the materials to be joined;

c. heating said composition and materials to a temperature sufficient to melt the composition;

d. maintaining said temperature for a time period sufficient to permit a portion of said materials to react with said melted composition;

e. thereafter cooling the joined materials to recover bonded assembly.

4,347,090

PROCESS FOR FORMING LAMINATED PIPE

Edward P. Anderson, Mickleton, N.J., and Donald G. Curran, Norwood, Pa., assignors to Bunnell Plastics, Inc., Mickelton, N.J.

Filed Oct. 24, 1980, Ser. No. 200,263
Int. Cl.[3] B32B *31/26*
U.S. Cl. 156—149 20 Claims

1. A process for forming a laminated tubular structure which comprises:

(a) applying a sleeve of a fabric about a tube of thermoplastic polymer,

(b) inserting a plug into each end of said liner to seal the interior of said liner from the surrounding atmosphere, at least one of said plugs having pressure relief valve means to prevent the pressure of vaporized liquid within said

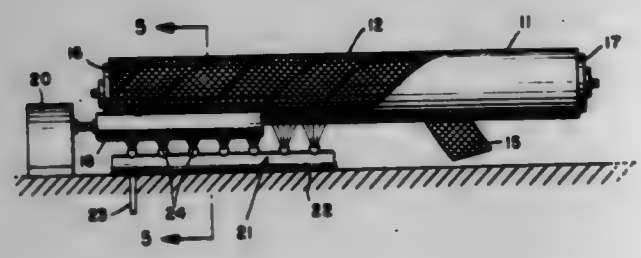
liner from exceeding a given value upon heating said liner and sleeve to elevated temperatures,

(c) introducing to said liner a liquid which is chemically inert with respect to said liner and has a boiling point substantially below the melting point of said thermoplastic polymer,

(d) applying heat to an arcuate portion of the outer surface of said liner through said sleeve while rotating said liner and sleeve, the time of heating and the rates of application of heat and rotation of said liner and sleeve being such as to cause the exterior surface of said liner to melt and volatilization of a portion of said liquid to create a pressure within said liner which exceeds the pressure of the atmosphere external of said liner to cause said liner to expand radially whereby the molten exterior surface thereof enters into the interstices of said fabric, said liquid within said liner providing a temperature gradient across the wall of said liner whereby the inner surface thereof remains solid and self-supporting, and

(e) cooling said liner to solidify the exterior surface thereof to produce a permanent mechanical bond between said sleeve and the outer surface of said liner.

15. A process for forming a corrosion-resistant laminated tubular structure which comprises:



(a) applying a sleeve of glass fabric about a seamless tube of thermoplastic fluorinated polymer,

(b) inserting a plug into each end of said liner to seal the interior of said liner from the surrounding atmosphere, at least one of said plugs having pressure relief valve means to prevent the pressure of vaporized liquid within said liner from exceeding a predetermined value upon heating said liner and sleeve to elevated temperatures,

(c) introducing water to said liner,

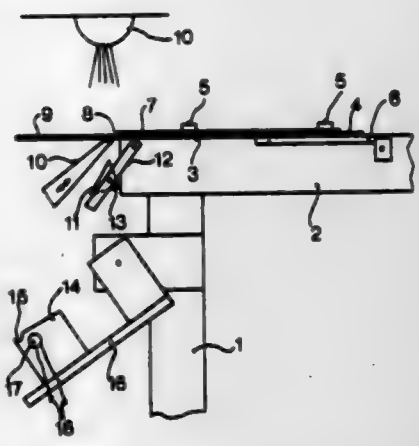
(d) rotating said liner and sleeve about a substantially horizontal axis, and applying heat to an arcuate portion of the outer surface of said liner through said sleeve, the time of heating and the rates of application of heat and rotation of said liner and sleeve being such as to cause the exterior surface of said liner to melt the volatilization of a portion of said water to create a pressure of from about 0.1 to about 10 psig within said liner, to cause said liner to expand radially whereby the molten exterior surface thereof enters into the interstices of said fabric, said water within said liner providing a temperature gradient across the wall of said liner whereby the inner surface thereof remains solid and self-supporting, and

(e) cooling said liner to solidify the exterior surface thereof to produce a permanent mechanical bond between said sleeve and the outer surface of said liner.

4,347,091
APPARATUS FOR THE PRODUCTION OF JACKETS FOR RECORDING DISKS

Karl Hauck, Maxdorf; Hubert Fehrenbach, Kehl; Dieter Mayer; Herbert Wagner, both of Ludwigshafen, and Kurt Zwintzscher, Willstaett, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,259
Claims priority, application Fed. Rep. of Germany, May 12, 1980, 8012859[U]
Int. Cl.³ B09D *23/10*
U.S. Cl. 156—217 7 Claims



1. In an apparatus for the production of a jacket for a recording disk from a foldable blanket of plastic material, comprising a stationary surface provided with positioning elements for receiving one-half of the blank, at least one sheet-like spacer member extending the length of the fold to be made and having an edge serving as a folding blade, means for positioning said spacer member on said stationary surface, means having a surface for bending the other half of the blade, through an angle of 180°, over said spacer member and said one-half of the blank, and means for heating the fold area of the blade incident to said folding,

the improvement that, for minimizing the outward buckling of the jacket as a result of the residual restoring force of the plastic material at the fold, there are provided after treatment means including:

a bar extending parallel to the folding blade of the spacer member and having a groove whose cross-sectional shape corresponds to that of the external diameter of the completed jacket,

heat-producing means in said bar which are connectable to a source of energy, and

means for moving said bar towards and away from the folding blade.

4,347,092
PANTY LINER

James J. Hlaban, Neenah; Herbert E. Grube, and Paul S. Woon, both of Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

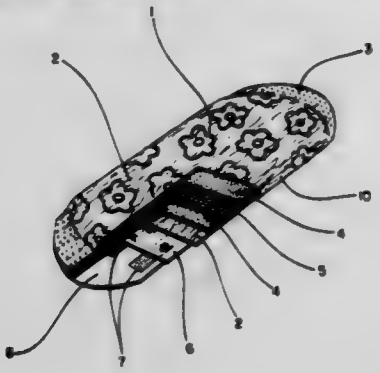
Filed May 27, 1980, Ser. No. 153,210
Int. Cl.³ B31F *23/10*
U.S. Cl. 156—227 1 Claim

1. A process for eliminating the delamination of the ends of a sanitary napkin having a fluid impervious baffle, an absorbent pad and a fluid permeable wrap said absorbent pad and said cover being coterminous and adhesively attached by a water soluble adhesive comprising:

(a) folding said wrap and said pad along its longitudinal axis to produce a double thickness of said absorbent pad with said wrap surrounding said folded pad and the longitudinal edges of the wrapped pad being closely adjacent each other;

(b) attaching said baffle to said wrapped pad over said longitudinal edge, said baffle being coterminous with said

folded wrapped pad so that each end of the napkin has a coterminous folded layer of said absorbent pad and wrap and the end of said baffle;



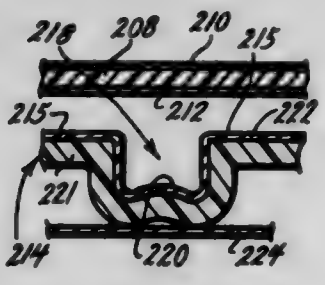
(c) moistening each of said ends;
(d) applying a water based emulsion adhesive to said ends;
(e) subjecting said ends to compressive force.

4,347,093

METHOD OF PRODUCING AN INTEGRATED SOLAR ROOF SYSTEM

Alfred M. Mayo, and Charles C. Convers, both of Dallas, Tex., assignors to Pure Power Incorporated, Dallas, Tex.

Division of Ser. No. 939,664, Sep. 5, 1978, Pat. No. 4,299,202.
This application Aug. 17, 1981, Ser. No. 293,312
Int. Cl.[3] F23J 3/02
U.S. Cl. 156—242 14 Claims



1. A method of producing a liquid absorber assembly for use in a liquid solar collector panel, the absorber assembly being a relatively thin, generally rectangular structure and having channels for the flow of liquid therethrough, the channels being defined between staggered buttons defining circuitous channels through which the liquid flows from one edge of the absorber to an opposite edge, the method comprising the steps of:

forming a casting plate of a configuration complementary to the buttons and channels of the absorber assembly with slots extending along opposite side edges of the casting plate for the receipt of inlet and outlet manifolds;

placing inlet and outlet manifolds in the slots along the opposite side edges of the casting plates, the manifolds each having openings for the flow of liquid to and from the channels represented by ridges of the casting plate;

applying a curable plastic material over substantially the entire surface of the casting plate having the complementary configuration and partially up the facing sides of the manifolds for substantially the full length of each so as to partially embed the manifolds in the plastic, at least that portion of the plastic adjacent the surface of the casting plate being impervious to the liquid to flow through the absorber assembly;

allowing the plastic to at least partially cure and then removing the plastic layer defining a lower sheet of the absorber assembly from the casting plate;

forming an upper sheet of the absorber assembly of a generally flat sheet material impervious to the passage of the liquid therethrough;

applying a light-absorptive coating to one side of the upper sheet so as to extend over substantially the entire sheet;

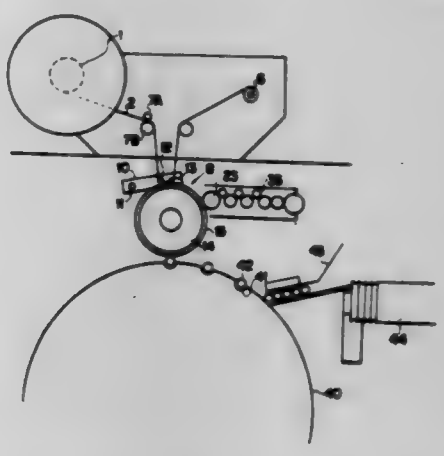
bonding the other side of the upper sheet to the tops of the buttons of the lower sheet with the channels for the liquid defined between the buttons and between the upper and lower sheets.

4,347,094

LABEL APPLYING APPARATUS

Shinichiro Watanabe, Tokyo, Japan, assignor to Sawara Mfg. Works Co., Ltd. and Fukushima Printing Industries Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP79/00268, § 371 Date Dec. 5, 1980, § 102(e) Date Aug. 13, 1980, PCT Pub. No. WO80/02131, PCT Pub. Date Oct. 16, 1980
PCT Filed Oct. 23, 1979, Ser. No. 219,308
Claims priority, application Japan, Apr. 5, 1979, 54-41413; May 4, 1979, 54-54303
Int. Cl.[3] B65C 9/18, 9/46
U.S. Cl. 156—387 11 Claims



1. Apparatus for applying labels to articles, comprising:
elongated carrier means comprising a strip for supporting a plurality of discontinuous labels which are adapted to releasably adhere to said strip by an adhesive on one surface thereof;
supply and take-up rolls for said elongated carrier means;
label turnout and separator means for separating said labels from said strip intermediate of said supply and take-up rolls to charge said labels with static electricity by friction created by peeling said lables from said strip, so that said labels are attracted by said static electricity to an electrically charged roller whose periphery is dielectric, with the adhesive surfaces of said labels turned out, thereby supplying said labels to the next station;
means for applying said labels to said articles; and
means disposed between said label turnout and separator means and said label applying means for interposing printed indicia between said adhesive surface of said labels and said articles to be labelled.

4,347,095

ADHESIVE APPLICATOR

Kyoichi Yamashita, 2361 Nippa-cho, Kohoku-ku, Yokohama-shi, Kanagawa 223, Japan

Filed Jan. 16, 1981, Ser. No. 225,547
Claims priority, application Japan, Jan. 16, 1980, 55-2629
Int. Cl.[3] B05C 1/00
U.S. Cl. 156—578 7 Claims

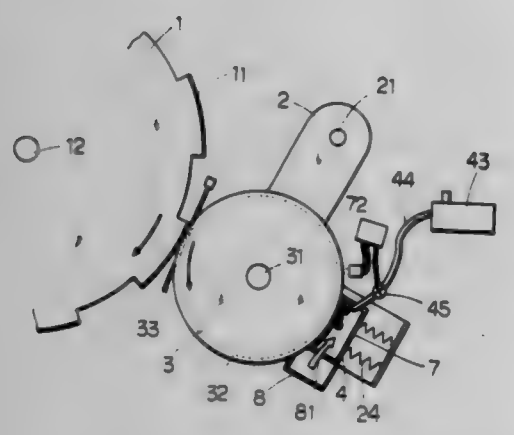
1. An apparatus for supplying an adhesive to a cylindrical drum rotatable about a vertical axis for applying the adhesive to an object, the apparatus comprising:

a container disposed in close contact with the drum and having a curved wall extending parallel and adjacent to the circumference of said drum;

first and second compartments defined in said container, juxtaposed downstream and upstream with respect to the direction of rotation of said drum, and exposed to said drum through openings in said curved wall, the downstream side walls of the first and second compartments

intersecting with the curved wall to define scraping edges, respectively;

an upper compartment defined in said container over said first and second compartments;



a passage communicating the upper and first compartments; and

drain pipes substantially aligned with said scraping edges and communicating the first and second compartments to the upper compartment, respectively.

4,347,096

PORTABLE TIRE REPAIR APPARATUS

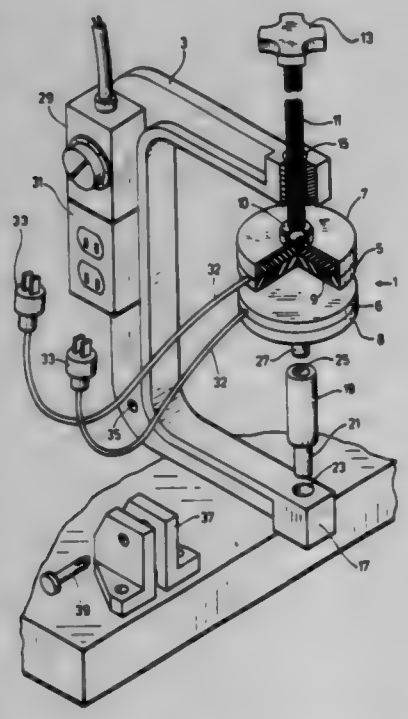
John J. Schorscher, Toronto, Canada, assignor to Tip Top Remaco Ltd., Toronto, Canada

Continuation of Ser. No. 912,199, Jun. 5, 1978, abandoned. This application Jun. 12, 1981, Ser. No. 273,181

Claims priority, application Canada, Apr. 24, 1978, 301840

Int. Cl.³ B29H *5/16*; B30B *15/34*

U.S. Cl. 156—583.3 3 Claims



1. A portable tire repair apparatus comprising an open sided frame having interior and exterior free frame ends, opposing interior and exterior heating elements supported from said interior and exterior frame ends respectively, means for moving the exterior heating element to adjust the distance between said heating elements and for clamping a damaged tire portion therebetween and support means at said interior frame end for supporting said interior heating element in an operating position, said support means comprising a shank of fixed length for spacing said interior heating element away from said interior frame end to a position for gaining access to essentially all areas on the inner surface of the tire when in said operating position and a socket at said interior frame end for seating said shank, said shank being slidable out of and back into said socket for readily removing said shank and interior heating element from said frame to fit said interior frame end into the tire and for readily replacing said shank and interior heating element in said socket in a position for repairing sidewall damage when said interior frame end is in the tire, each of said heating elements having resilient heating surfaces and being provided with a thermostat for maintaining a preset temperature range at said resilient heating surfaces.

4,347,097

METHOD AND APPARATUS FOR PRODUCING A MULTILAYER SEMICONDUCTOR DEVICE UTILIZING LIQUID GROWTH

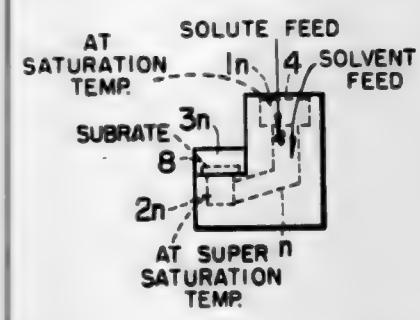
Jun-ichi Nishizawa, Sendai, Japan, assignor to Handotai Kenkyu Shinkokou, Sendai, Japan

Continuation of Ser. No. 862,998, Dec. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 561,092, Mar. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 314,448, Dec. 12, 1972, abandoned. This application Aug. 14, 1980, Ser. No. 177,864

Claims priority, application Japan, Dec. 14, 1971, 46-100622; Fed. Rep. of Germany, Dec. 13, 1972, 2260980; United Kingdom, Dec. 13, 1972, 57380/72

Int. Cl.³ C30B *19/06*

U.S. Cl. 156—622 27 Claims



1. An apparatus for producing semiconductor devices by depositing a multi-layer structure on each of a given number of substrates by utilizing liquid growth, comprising:

a boat having a plurality of first holes arranged in sequence thereon and a plurality of second holes which are provided at higher positions than those of the first holes and interconnected by solutes respectively to the first holes during the deposition of epitaxial layers,

means for heating the solutes in the second holes to higher temperatures than those of the solutes in the first holes to effect a selected temperature difference in said interconnected first and second holes during and continuously between the deposition of epitaxial layers;

sliding plates coupled to the boat for successively shifting the substrate held thereon on and close to the first holes, and

means for guiding said movable plates in only one given direction for a given number of times to grow said multilayers on a given number of substrates successively and for keeping said substrates contacting said solutions for each of given time intervals.

4,347,098

SOLVENT VAPOR RECOVERY FROM A POLYMER SOLUTION

John S. Hubby, Cronulla, Australia, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1980, Ser. No. 177,956

Int. Cl.³ B01D *1/14*

U.S. Cl. 159—16 S 10 Claims

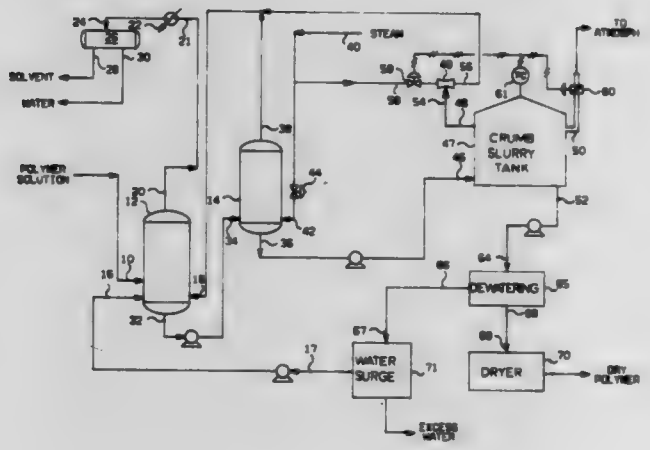
1. Apparatus comprising:

a first polymer receiving vessel having a product inlet, a steam inlet, a product outlet and a vapor outlet;

a second polymer receiving vessel having a product inlet in

flow communication with the product outlet of the first polymer receiving vessel, a product outlet and a first vapor outlet;

a third polymer receiving vessel having a product inlet, a product outlet in flow communication with the product inlet of the first polymer receiving vessel, and a vapor outlet;



means for fluid flow between the vapor outlet of the first polymer receiving vessel and the third polymer receiving vessel;

vapor recovery means having a vapor inlet in flow communication with the first vapor outlet of the second polymer receiving vessel and a vapor outlet in flow communication with the third polymer receiving vessel via the means for fluid flow between the vapor outlet of the first polymer receiving vessel and the third polymer receiving vessel.

4,347,099

PROCESS FOR THE RECLAMATION OF WASTE PAPER

Jean De Ceuster, Vilvoorde, and Paul Essemaeker, Brussels, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Continuation of Ser. No. 758,869, Jan. 12, 1977, abandoned. This application Nov. 17, 1980, Ser. No. 207,761

Claims priority, application Luxembourg, Jan. 16, 1976, 74199; Aug. 4, 1976, 75528

Int. Cl.³ D21C *5/02*

U.S. Cl. 162—5 33 Claims

1. A process for the reclamation of waste paper comprising contacting the waste paper with an aqueous alkaline solution which contains at least one hydroxycarboxylated polymer, said hydroxycarboxylated polymer comprising a main carbon chain substituted by carboxy groups —COOM where M represents a substituent selected from the group consisting of hydrogen, an alkali metal atom and an ammonium group to deink fibers of the waste paper, and producing a paper from the deinked fiber.

4,347,100

STRENGTH OF PAPER FROM MECHANICAL OR THERMOMECHANICAL PULP

Albert Brucato, Seattle, Wash., assignor to The Chemithon Corporation, Seattle, Wash.

Filed May 21, 1981, Ser. No. 265,811

Int. Cl.³ D21B *1/16*

U.S. Cl. 162—10 24 Claims

1. A method of improving the bursting strength of paper made from mechanical or thermomechanical pulp which comprises incorporating into mechanical or thermomechanical pulp at an elevated temperature and pressure an anionic organic surface active agent in an amount sufficient to improve the bursting strength of the paper subsequently formed from the pulp.

4,347,101

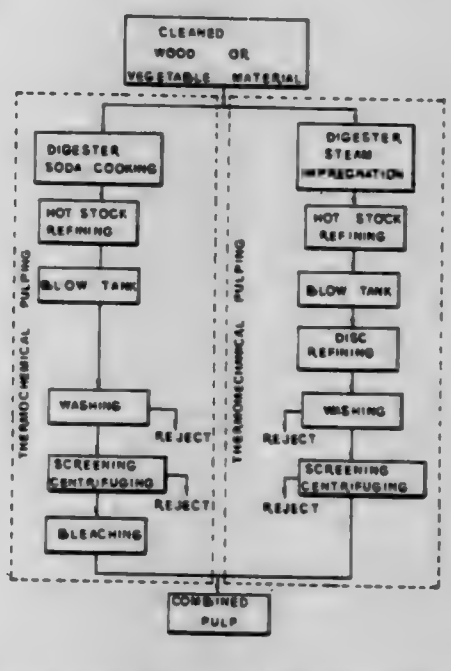
PROCESS FOR PRODUCING NEWSPRINT

Eduardo J. Villavicencio, Mexico City, Mexico, assignor to W. R. Grace & Co., New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 210,057

Int. Cl.³ D21C *1/02, 3/26*

U.S. Cl. 162—25 12 Claims



1. A method for producing a high quality newsprint pulp from wood or vegetable fibrous material comprising:

(a) providing a quantity of said fibrous material in a form suitable for input into a digester;

(b) (i) conveying at least forty percent by weight of said quantity of fibrous material to a thermochemical digester and contacting said fibrous material with an alkaline cooking liquor whereby lignin is removed from said fibrous material and said fibrous components;

(ii) after digesting said fiber for from 0.1 to 1 hour at 140° C. to 190° C., refining the digested fiber at above 100° C.;

(iii) rapidly reducing the pressure on said digested and refined fibers to approximately ambient pressure and washing and screening said fiber to remove pulping chemicals and dirt and other foreign fragments therefrom; and

(iv) contacting said washed and screened fibers with a bleachant for a time sufficient to raise the GE brightness of said fibers to greater than about 60;

(c) (i) conveying the remainder of said quantity of fibrous material to a thermomechanical digester which consists of a first section and a second section, said sections being separated by a refiner;

(ii) contacting said fibrous material within the first section, of said thermomechanical digester with steam at a pressure greater than about 2 kg/sq. cm and mechanically working said fiber in said section of the digester to partially reduce said fibrous material to its fiber components;

(iii) conveying the fibrous material from the first section of said digester to a refiner and refining said fibrous material;

(iv) contacting the refined fiber in a second section of said thermomechanical digester with steam at a pressure of less than about 2 kg/cm^2, whereby said fibrous material is substantially reduced to its fiber components;

(v) refining the digested fiber and rapidly reducing the pressure on the digested fiber to approximately ambient pressure; and

(vi) refining said digested and elevated pressure refined fibers at ambient pressure; and washing and screening the refined fibers to remove dirt and large fiber fragments therefrom;

(d) intermixing the bleached fiber from thermochemical

digestion with the fiber from thermomechanical digestion; and;

(e) producing a newsprint paper from such intermixed fibers.

4,347,102

ELIMINATION OF POTASSIUM COMPOUNDS FROM SODIUM-BASED PULPED CYCLES

Hugh W. Nelson, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 2, 1981, Ser. No. 250,346
Int. Cl.[3] D21C *11/12*
U.S. Cl. 162—35 3 Claims

1. In a pulping and recovery cycle where heavy black liquor including potassium compounds is passed into a chemical recovery furnace to form a smelt of inorganic material from the heavy black liquor,

passing magnesium nesosilicate into the black liquor prior to its introduction into furnace,

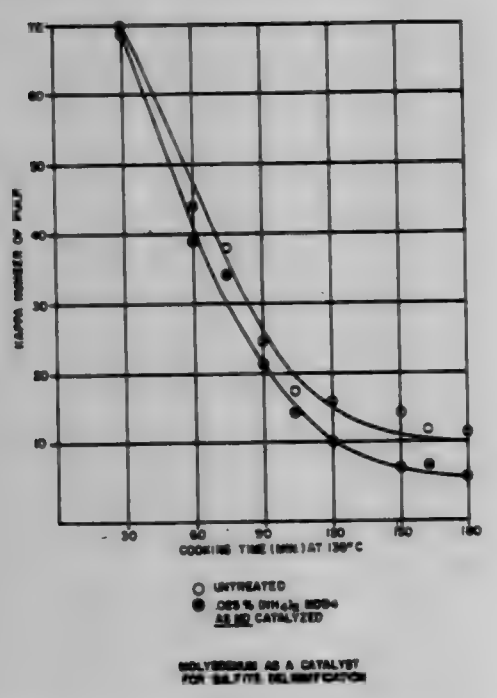
whereby the potassium and magnesium nesosilicate combine in the furnace bed to form magnesium potassium silicate as a high-melting insoluble reaction product.

4,347,103

METHOD FOR SULFITE PULPING USING WATER-SOLUBLE MOLYBDENUM-CONTAINING COMPOUNDS AS CATALYSTS

Dominic S. Reade, Woodridge, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 14, 1980, Ser. No. 168,923
Int. Cl.[3] D21C *3/00, 3/06*
U.S. Cl. 162—79 3 Claims



MOLYBDENUM AS A CATALYST FOR SULFITE DELIGNIFICATION

1. An improved method for sulfite pulping of wood chips in which wood chips are digested in a sulfite pulping liquor to produce a wood pulp, the improvement comprising adding to the sulfite pulping liquor prior to digesting the wood chips a pulping catalyst consisting essentially of 0.0025–0.100 weight percent of a water-soluble molybdenum-containing compound based on the weight of the wood chips, and pulping the wood to a Kappa No. below 15 using said water-soluble molybdenum-containing sulfite pulping liquor.

4,347,104

MOISTURE-INSENSITIVE ELECTRICALLY-CONDUCTIVE PAPER

Daryl D. Dressler, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 18, 1979, Ser. No. 40,417
Int. Cl.[3] D21H *1/02*
U.S. Cl. 162—103 6 Claims

1. Electrically-conductive paper which has little change in electrical conductivity with changes in humidity and comprises

(1) 2–50 parts by weight of wood pulp,

(2) correspondingly 98–50 parts by weight of water-dispersible synthetic wood pulp (SWP),

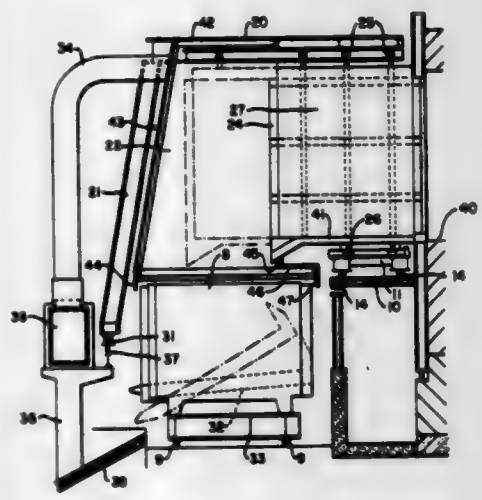
(3) electrically conductive carbonaceous fibers comprising at least 80% carbon by weight and in an amount providing 1–35% by weight of the paper, the SWP/wood pulp ratio being at least 4:1 when the paper is unencapsulated and at most 9:1 when the paper is encapsulated in an envelope which transmits less than one gram of water per 100 square inches per 24 hours at 100° F. and 95% relative humidity.

4,347,105

COKE SIDE GANTRY CAR FOR A BATTERY OF COKE OVENS

Hans-Jurgen Kwasnik, Herne, and Hans-Gunter Piduch, Bochum, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 205,893
Int. Cl.[3] C10B *5/00*
U.S. Cl. 202—263 3 Claims



1. Apparatus adapted to traverse along a platform at the coke side of a coke oven battery in a generally parallel relation therewith and generally parallel with movement of a hot coke car along tracks below said platform, said apparatus including the combination of a gantry car to move along the coke side of said coke oven battery, said gantry car supporting a coke oven door extractor, a coke oven door cleaner, a coke oven door frame cleaner, and a hood to collect emissions during pushing of coke from an oven chamber, said hood having a horizontal opening overlying said hot coke car, at least two gantry support rails, one rail being arranged to extend along said platform and the other rail being arranged to extend along outwardly beyond said tracks to support said gantry car for traversing movement, a coke guide grading for directing hot coke from an oven chamber above said platform into said hot coke car, a coke guide casing having continuous rigid side walls enclosing said coke guide grading and spanning the distance between an

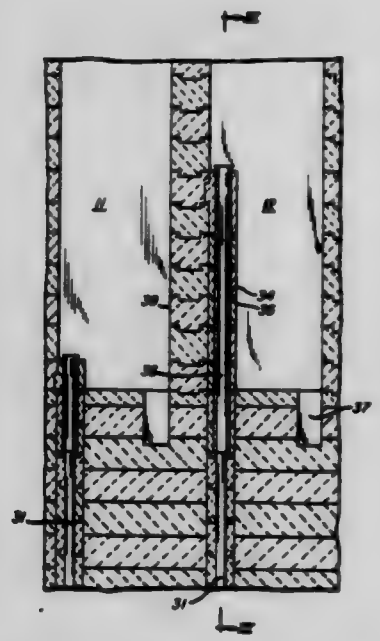
oven chamber and said hood, means including an overhead rail supported by said gantry car to extend within said hood for suspended support of said coke guide casing and said coke guide grading and for movement thereof on said gantry car in an axial direction of a coke oven chamber in said battery between a coke-guiding position interconnecting the oven chamber opening with said hood and a retracted position where said coke guide casing and said coke guide grading extend into said hood whereby said other rail receives a substantial part of the weight thereof from said gantry car, said hood having an opening through which said coke guide casing and said coke guide grading can move, and seal means between said hood and said coke guide casing in said coke-guiding position, said coke guide grading having an end portion within said hood engaging said horizontal opening in said hood in sealing relation when in the coke-guiding position thereof.

4,347,106

REGENERATIVELY-OPERATED COKE OVEN

Folkard Wackerbarth, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H, Bochum, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 71,607, Aug. 31, 1979, abandoned. This application Apr. 1, 1981, Ser. No. 249,811
Int. Cl.³ C10B *1/06, 5/12, 21/00*
U.S. Cl. 202—141 8 Claims



1. Apparatus for supplying non-preheated gas to heating flues between oven chambers of a regeneratively-heated coke oven, said apparatus including burners projecting into said heating flues, said burners having a lining forming a gas-conducting wall surface consisting of a refractory material capable of withstanding temperatures of at least 1000° C. and defining a smoothness sufficient to substantially prevent accretion of carbon on said wall surface at said temperatures.

4,347,107

ELECTROPLATING TIN AND TIN ALLOYS AND BATHS THEREFOR

Robert J. Teichmann, Belleville, and Linda J. Mayer, Denville, both of N.J., assignors to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Apr. 2, 1981, Ser. No. 250,373
Int. Cl.³ C25D *3/60*
U.S. Cl. 204—44 21 Claims

1. An aqeous electroplating bath for the deposition of bright metallic tin or alloys of tin with copper or rhodium which comprises a bath soluble divalent tin compound in an amount sufficient to deposit tin on the substrate being plated, an inorganic acid in an amount sufficient to maintain the bath pH not in excess of about 2.0, a brightening amount of an aromatic amine brightener, a nonionic surfactant, and a sufficient amount of an aromatic sulfonic acid to maintain the stability of the plating bath and enhance the brightness of the electrodeposit.

4,347,108

ELECTRODEPOSITION OF COPPER, ACIDIC COPPER ELECTROPLATING BATHS AND ADDITIVES THEREFOR

William J. Willis, North Royalton, Ohio, assignor to Rohco, Inc., Cleveland, Ohio

Filed May 29, 1981, Ser. No. 268,645
Int. Cl.³ C25D *3/38*
U.S. Cl. 204—52 R 23 Claims

1. An aqueous acidic copper electroplating bath containing as essential ingredients:

(A) one or more bath-soluble copper salts,

(B) free acid,

(C) chloride ions,

(D) an effective amount of one or more bath-soluble nitrogen and sulfur-containing brightening compounds prepared by reacting a mixture of

(a) a disulfide having the formula

$$[RR'NCS_2]_2 \qquad \text{(Formula I)}$$

wherein R and R' are each independently hydrogen, alkyl or aryl groups,

(b) a halo hydroxy sulfonic acid having the formula

$$X(CH_2)_nCH(OH)CH_2SO_3M \qquad \text{(Formula II)}$$

wherein X is a halogen, n is one or two and M is hydrogen or an alkali metal,

(c) an aliphatic aldehyde having up to three carbon atoms in

(d) an aqueous alkaline medium, and

(E) one or more heterocyclic sulfur-nitrogen compounds selected from the group consisting of

(e) 2-thiazolidinethione and its lower alkyl derivatives,

(f) 2-imidazolidinethione and its lower alkyl derivatives, and

(g) bath-soluble reaction products of (e) or (f) with an alkyl aldehyde or dialdehyde.

22. An additive composition for aqueous acidic copper electroplating baths comprising an aqueous mixture of

(A) one or more bath-soluble brightening compounds prepared by reacting a mixture of

(a) a disulfide having the formula

$$[RR'NCS_2]_2 \qquad \text{(Formula I)}$$

wherein R and R' are each independently hydrogen, alkyl or aryl groups,

(b) a halo hydroxy sulfonic acid having the formula

$$X(CH_2)_nCH(OH)CH_2SO_3M \qquad \text{(Formula II)}$$

wherein X is a halogen, n is one or two and M is hydrogen or an alkali metal,

(c) an aliphatic aldehyde having up to three carbon atoms in,

(d) an aqueous alkaline medium, and

(B) one or more heterocyclic sulfur-nitrogen compounds selected from the group consisting of

(e) 2-thiazolidinethione and its lower alkyl derivatives,

(f) 2-imidazolidinethione and its lower alkyl derivatives, and

(g) bath-soluble reaction products of (e) or (f) with an alkyl aldehyde or dialdehyde, and

(C) at least one non-ionic wetting agent.

4,347,109
METHOD FOR MAKING ACETALDEHYDE FROM ETHANOL

Thomas M. Meshbesher, Edina, Minn., assignor to Electrohol Corporation, Edina, Minn.

Filed Oct. 23, 1980, Ser. No. 199,939
Int. Cl.³ C25B *3/02, 8/00;* C07C *45/29*
U.S. Cl. 204—5.9 R 12 Claims

1. A method for making acetaldehyde from ethyl alcohol comprising the steps of:

(a) bringing an ethyl alcohol-containing fuel into contact with an anode of a fuel cell, which fuel cell includes the anode, a cathode, an electrolyte within the cell, and external circuit means electrically connecting the cathode to the anode, exterior to the fuel cell; and bringing an oxidant into contact with the cathode;

(b) anodically treating said fuel by electrochemically oxidizing the ethyl alcohol to acetaldehyde at the anode, thereby producing a flow of current in the external circuit means at a voltage in the circuit means from about 1 to 1000 millivolts;

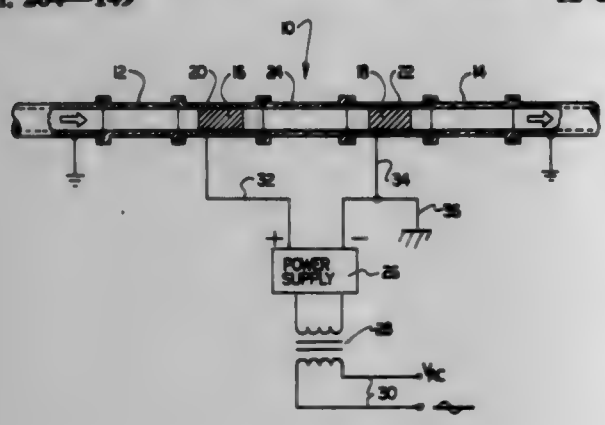
(c) taking at least the products of the resulting anodically treated fuel out of the oxidation reaction to avoid the formation of condensates or more highly oxidized products at the anode; and

(d) recovering a major amount of the thus-produced aldehyde.

4,347,110
METHOD FOR TALL OIL RECOVERY AND APPARATUS THEREFOR

Edward R. Joyce, and William L. Smith, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 168,375, Jul. 10, 1980, abandoned. This application Nov. 25, 1980, Ser. No. 210,221
Int. Cl.³ C02F *1/46, 1/48;* C25B *9/00;* B03C *5/00*
U.S. Cl. 204—149 12 Claims



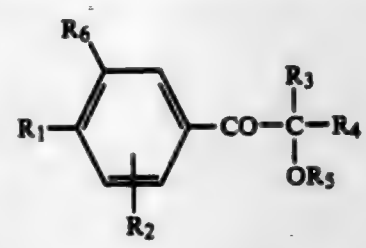
12. A method for enhancing the extent of removal of dispersed particles of tall oil soap in a flowing confined stream of black liquor which comprises passing said stream of black liquor in contact first with a positively charged first electrode and then with a negatively charged second electrode to agglomerate said particles into larger particles said electrodes being maintained in electrical isolation one from the other, and said positively charged electrode being maintained in electrical isolation to earth ground, applying a positive D.C. potential to said positively charged electrode relative to earth ground, and applying a negative D.C. potential relative to said positively charged electrode by absorbing electrons from said second electrode into earth through a conductor electrically connected to the earth.

4,347,111
PHOTOSENSITIVE HYDROXYALKYLPHENONES

Jürgen Gehlhaus, Heppenheim, and Manfred Kieser, Darmstadt, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 906,505, May 16, 1978, abandoned. This application Nov. 26, 1979, Ser. No. 99,792
Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722264
Int. Cl.³ C08F *2/50;* B32B *27/16*
U.S. Cl. 204—159.16 21 Claims

1. A method of photopolymerizing a photopolymerizable composition which comprises irradiating, with effective radiation, a composition comprising at least one photopolymerizable unsaturated compound and a photosensitizingly effective amount of at least one compound of formula (I)



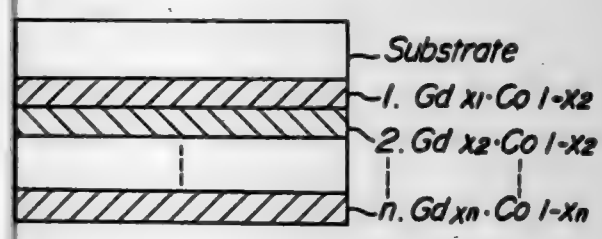
(I)

wherein R_1 is hydrogen, chlorine, phenyl, diaklylamino of 2–4 C-atoms or alkyl or alkoxy each of up to 18 C-atoms; R_2 is hydrogen, chlorine, bromine or alkyl or alkoxy each of up to 4 C-atoms; R_3 and R_4, which can be the same or different, each is alkyl of up to 6 C-atoms; R_5 is hydrogen; and R_6 is hydrogen or methyl.

4,347,112
METHOD OF MAKING A RECORDING MEDIUM

Yuji Togami, Isehara, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

Division of Ser. No. 82,238, Oct. 5, 1979, Pat. No. 4,293,621. This application Apr. 16, 1981, Ser. No. 254,636
Claims priority, application Japan, Oct. 12, 1978, 53-125298; May 4, 1979, 54-54153
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 M 6 Claims



1. A method of forming a recording medium for magnetically recording a binary code signal comprising forming an amorphous magnetic layer consisting of at least a rare earth metal and an iron family metal, forming said amorphous magnetic layer as a plurality of thin amorphous magnetic layers stacked on each other, causing the composition ratio between the rare earth metal and the iron family metal in each of said thin layers to be different from the composition ratio in an adjacent one of said thin layers and causing the thickness of a first one of said plurality of amorphous magnetic thin layers which has a larger perpendicular magnetic anisotropy to be larger than the thickness of a second adjacent one of said amorphous magnetic thin layers which has a smaller perpendicular magnetic anisotropy, said amorphous magnetic layer enabling said recording medium to magnetically and thermally stably record a binary code signal even if the diameter of a recorded information bit is on the order of one micrometer.

4,347,113

OXYGEN CONTENT EXHAUST GAS SENSOR, AND METHOD OF ITS MANUFACTURE

Hermann Fischer, Stuttgart; Karl-Hermann Friese, Leonberg; Hans-Ulrich Gruber, Gerlingen; Wolfgang Heinemann, Weissach; Günter Knoll, Stuttgart; Ernst Linder, Mühlacker; Helmut Maurer, Schwieberdingen; Rainer Noack, Markgröningen; Leo Steinke, Waiblingen-Hegnach; Lothar Weber, Stuttgart, and Helmut Weyl, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

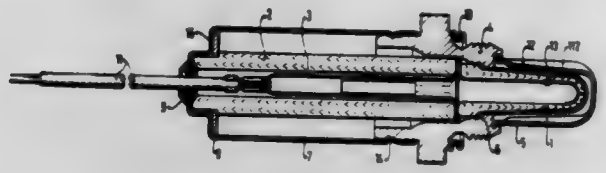
Filed Mar. 25, 1980, Ser. No. 133,811

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 2913633

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S

18 Claims



1. Electrochemical sensor to determine the oxygen content in gases resulting from a combustion process, particularly exhaust gases from an internal combustion engine having

a solid electrolyte body (1) comprising stabilized zirconium dioxide, having a first surface portion exposed to the combustion gases, and a second surface portion exposed to a reference substance of known oxygen concentration;

a first electrode (12) applied to said first surface portion;

a second electrode (13) applied to said second surface portion;

and a porous ceramic protective cover layer (112) covering the first electrode,

and wherein, in accordance with the invention, the electrodes are characterized in that

the first electrode comprises a mixture of powdery ceramic material, forming a support structure or support lattice, and a platinum-rhodium alloy;

and the second electrode comprises an alloy of palladium and another noble metal.

11. Method to make an electrochemical sensor to determine the oxygen content in gases resulting from a combustion process, particularly the exhaust gases from an internal combustion engine, having a solid electrolyte body (1) comprising stabilized zirconium dioxide and having a first surface portion exposed to the gases and a second surface portion exposed to a reference substance of known oxygen concentration;

a first electrode (12) applied to said first surface portion;

a second electrode (13) applied to the second surface portion;

and a porous ceramic protective cover layer (112) covering the first electrode, said method comprising the steps of

1. providing a presintered solid electrolyte body comprising stabilized zirconium dioxide;

1.1 applying a platinum-rhodium alloy and powdery ceramic material to said first surface to form the first electrode, shaped in form of a conductive track;

1.2 applying a palladium-platinum alloy on the second surface to form the second electrode, shaped in form of a conductive track;

2. sintering the solid electrolyte body with the electrode layers applied thereto at a temperature of between about 1400° to 1700° C.;

3. supplying a layer of a noble metal or a mixture of noble metals over at least said second electrode and covering the second electrode at least in part,

said noble metal or mixture of noble metals comprising at least one of the materials of the group of consisting of

3.1 noble metal alloys dissolved in water or organic solvents;

3.2 colloidal noble metal suspension;

3.3 powdered noble metal suspension;

4. sintering the layer of step 3 at a temperature of between about 800° C. to 1300° C.; and

5. applying the porous ceramic protective covering layer (112).

4,347,114

FLAT THIN FILM TYPE OXYGEN SENSOR

Shinji Kimura, Yokohama; Hiroshi Takao, Kamakura; Satoshi Ambe, Yokosuka, and Yoshio Akimune, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

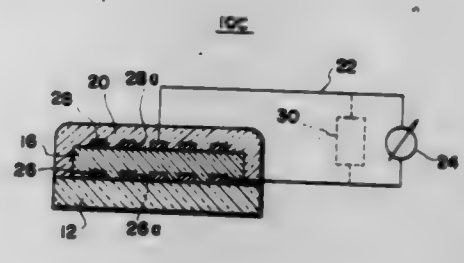
Filed Jun. 23, 1980, Ser. No. 162,001

Claims priority, application Japan, Jun. 26, 1979, 54-79736

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S

6 Claims



1. An oxygen sensor comprising:

(a) an oxygen ion conductive solid electrolyte layer;

(b) an electronically conductive reference electrode layer having a plurality of openings therein, said electrode layer being in intimate contact with one side of said electrolyte layer, said solid electrolyte layer extending through said openings;

(c) a partition layer of an electrochemically inactive material in intimate contact with the other side of said electrode layer, said electrolyte layer joining said partition layer through said openings in said reference electrode layer;

(d) an electronically conductive measurement electrode layer in intimate contact with the other side of said electrolyte layer, said measurement electrode layer having a plurality of openings therein;

(e) a porous protective layer in intimate contact with the other side of said measurement electrode layer, said porous protective layer extending through said openings in said measurement electrode layer, said protective layer contacting said electrolyte layer through said openings.

4,347,115

ELECTROPLATING APPARATUS

Manfred Espenhahn, and Manfred Folwaczny, both of Essen, Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hütte, Duisburg, Fed. Rep. of Germany

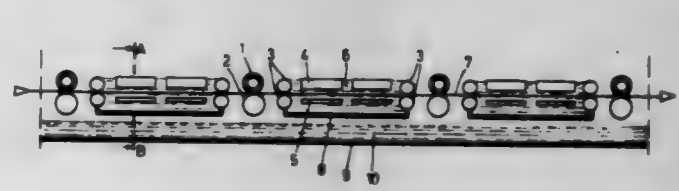
Filed May 1, 1981, Ser. No. 259,721

Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017079

Int. Cl.³ C25D *17/00, 17/10*

U.S. Cl. 204—206

9 Claims



1. An apparatus for the electroplating of metal strips, and more particularly for the zinc-coating of steel strip, which comprises a tank that is filled with electrolyte liquid, and, immersed therein, at least one anode disposed above a strip to

be electrolytically coated and at least one anode disposed below said strip, both of said anodes being parallel to said strip, the anode (4) disposed above the strip (7) being electrolytically consumable and made of an electrolytically depositable metal for deposition on said strip, and the anode (5) disposed below said strip (7) consisting essentially of a material that is insoluble in the electrolyte and not electrolytically consumable, each of said anodes being connected to a source of current, said anode (5) disposed below said strip being provided with means for disconnecting the same from said source of current.

4,347,116

TWO-STAGE COAL LIQUEFACTION

Darrell D. Whitehurst, Titusville; Thomas O. Mitchell, Trenton, and Malvina Farcasiu, Princeton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 8, 1978, Ser. No. 903,911

Claims priority, application United Kingdom, Jun. 8, 1977, 23951/77

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 LE 3 Claims

1. In a process for solvent refining of coal by mixing comminuted coal in a first stage with a solvent derived in the process as recited hereinafter, reacting the mixed coal and solvent in a second stage characterized by presence of hydrogen donor compounds, separating undissolved solids, and separately recovering from the product of reacting coal a solvent refined coal product of low melting point and a solvent fraction for mixing with comminuted coal in said first stage; the improvement which comprises separating from the mixture produced in said first stage a light fraction boiling below about 275° C. and containing compounds of about fourteen carbon atoms and less derived from said mixture, subjecting said light fraction to catalytic hydrogenation under conditions to reduce the monocyclic phenol content thereof and to convert polycyclic aromatic hydrocarbons to hydrogen donors, passing to said second stage the residue of solvent and coal from which said light fraction has been removed, and adding said hydrogenated light fraction to the reactants for said second stage.

4,347,117

DONOR SOLVENT COAL LIQUEFACTION WITH BOTTOMS RECYCLE AT ELEVATED PRESSURE

Richard F. Bauman, Houston; John W. Taunton, Seabrook; George H. Anderson, Houston; Kes L. Trachte, Baytown, and Steve J. Hsia, Friendswood, all of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 106,068, Dec. 20, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,410

Int. Cl.³ C10G *1/00, 1/06*

U.S. Cl. 208—8 LE 25 Claims

1. A process for liquefying coal and similar solid carbonaceous materials comprising the steps of:

(a) contacting the solid carbonaceous material, a solvent or diluent containing at least 0.8 wt % donatable hydrogen and at least about 10 wt % naphthenic components at a temperature within the range from about 700° to about 950° F. and at a pressure within the range from about 1750 to about 2800 psig;

(b) maintaining the contacting of step (a) for a nominal period of time sufficient to liquefy at least a portion of the solid carbonaceous material,

(c) separating the effluent resulting from the contacting of step (a) after the contacting has been continued for a sufficient period of time to liquefy at least a portion of the solid carbonaceous material thereby yielding a normally gaseous product, a normally liquid product and a bottoms product; and

(d) separating a naphtha boiling range product and a heavier boiling product from the liquid.

4,347,118

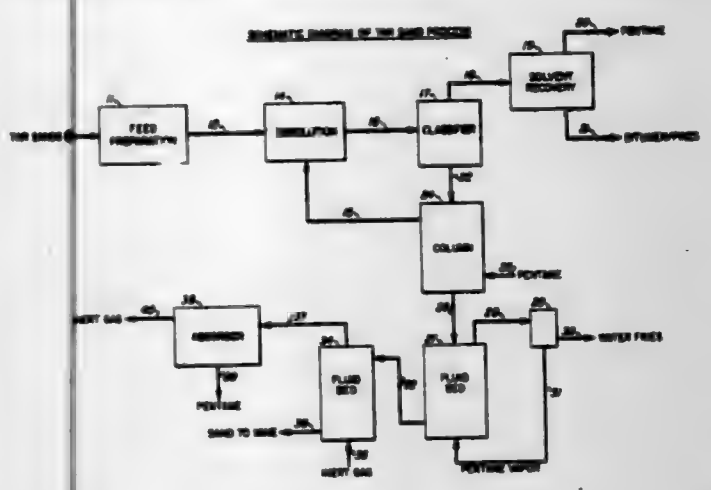
SOLVENT EXTRACTION PROCESS FOR TAR SANDS

Edward W. Funk; Walter G. May, both of Summit, and James C. Pirkle, Jr., Westfield, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 1, 1979, Ser. No. 80,454

Int. Cl.³ C10G *1/04*

U.S. Cl. 208—11 LE 8 Claims



1. A process for solvent extraction of bitumen from tar sands containing water and inorganic fines and recovering the solvent which comprises

mixing the tar sands in a dissolution zone with C_5 to C_6 hydrocarbon solvent having a normal boiling point of from about 25° to 60° C.;

maintaining the solvent to bitumen weight ratio in the dissolution zone at from about 0.5:1 to 1.5:1;

passing the resultant mixture to a classifier wherein an overflow of a viscous mixture of bitumen and inorganic fines is separated from an underflow of extracted sand, then passing the underflow of extracted sand through a countercurrent extraction column wherein the sand is further extracted;

introducing the extracted sand into a first fluid-bed drying zone fluidized by C_5 to C_6 hydrocarbon solvent vapors and heated to a drying temperature which is about 25° to 60° C. higher than the normal boiling point of said C_5 to C_6 hydrocarbon solvent, wherein unbound solvent is removed from extracted sand and the sand water content is lowered to less than about 2 wt.%; and

conducting the so-treated sand to a second fluid-bed drying zone fluidized by inert gas heated to a temperature of from 25° to 100° C. wherein bound solvent is removed.

4,347,119

HORIZONTAL OIL SHALE AND TAR SANDS RETORT

Delbert D. Thomas, 313 High St., Redlands, Calif. 92373

Filed Nov. 21, 1980, Ser. No. 208,946

Int. Cl.³ C10G *1/02;* C10B *47/18, 53/06*

U.S. Cl. 208—11 R 15 Claims

1. A method for retorting carbonaceous materials including tar sands and/or oil shale in a substantially horizontal retort comprising the steps of:

introducing carbonaceous material having varying proportions of tar sand and oil shale, into a substantially horizontal retort tube having a retort zone, said retort zone having an upstream end and a downstream end;

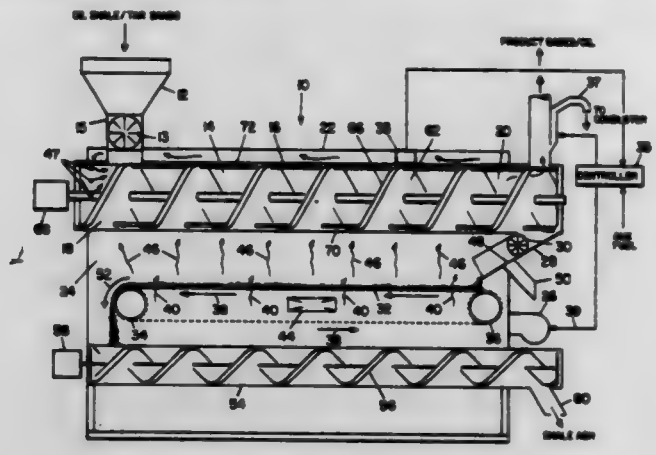
conveying said carbonaceous material substantially horizontally through said retort zone and simultaneously mixing said carbonaceous material;

heating said carbonaceous material in said retort zone to a temperature sufficient to pyrolyze said carbonaceous material to form product gases and oil and pyrolysis residue;

conveying the pyrolysis residue substantially horizontally beneath said retort zone while combusting any carbonaceous material in said pyrolysis residue to produce at least a portion of the heat for heating said retort tube, with the

amount of heat produced by such combustion varying with the composition of said carbonaceous material, said combustion also producing hot waste solids;

supplying additional fuel for combustion in the zone beneath



said retort to supplement the heat provided by the combusting of said carbonaceous material selectively to raise the temperature of the retort to the desired retorting levels; and

disposing of the waste combustion products.

4,347,120

UPGRADING OF HEAVY HYDROCARBONS

Ardis L. Anderson, and James R. McConaghy, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Dec. 22, 1980, Ser. No. 219,006
Int. Cl.³ C10B *47/00*; C01B *2/14*; C10G *13/22*
U.S. Cl. 208—50 5 Claims

1. A process for upgrading a heavy liquid hydrocarbonaceous material comprising:

(a) subjecting said heavy liquid hydrocarbonaceous material to a hydrogen donor diluent cracking step;

(b) fractionating the products from said cracking step and subjecting the bottoms stream from the fractionation to delayed coking;

(c) passing delayed coke to a top fed internally fired moving bed vertical shaft kiln;

(d) introducing combustion air into said kiln to provide a combustion zone;

(e) maintaining upward gas flow in said kiln and recovering flue gas including nitrogen from the top of the kiln;

(f) introducing steam to the lower portion of said shaft kiln whereby hydrogen is produced by reaction of steam with descending hot coke;

(g) recovering a substantially nitrogen-free hydrogen-rich gas stream from said shaft kiln from a level above the steam injection level and below the combustion air injection level; and

(h) utilizing hydrogen from said hydrogen-rich gas stream to hydrogenate hydrogen-depleted recycle donor solvent for use in said donor cracking step.

4,347,121

PRODUCTION OF LUBRICATING OILS

Jerome F. Mayer, San Anselmo; Stephen J. Miller, San Francisco, and Dennis J. O'Rear, Tiburon, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 9, 1980, Ser. No. 195,554
Int. Cl.³ C10G *11/05, 45/12, 49/08, 69/04*
U.S. Cl. 208—58 12 Claims

1. A process for preparing stable lubricant oil stocks, comprising:

(a) hydrocracking a hydrocarbonaceous feed to produce a hydrocrackate wherein the portion of said hydrocrackate which boils above about 200° C. has a total nitrogen content of less than 10 ppm by weight;

(b) stabilizing at least part of said hydrocrackate portion by catalytic hydrofinishing; and

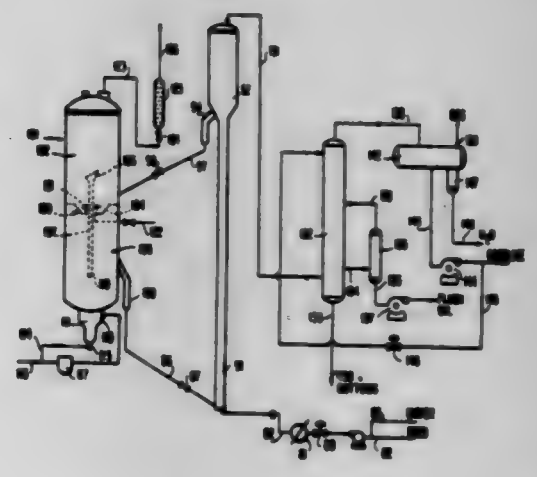
(c) dewaxing all or part of the portion of said stabilized hydrocrackate which boils above about 200° C. by contacting said stabilized hydrocrackate fraction with a dewaxing catalyst comprising an intermediate pore size zeolite.

4,347,122

CARBO-METALLIC OIL CONVERSION WITH LIQUID WATER

George D. Myers, and Lloyd E. Busch, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 14, 1979, Ser. No. 94,217
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—113 52 Claims



1. A process for economically converting carbometallic oils to lighter products, comprising:

I. providing a converter feed containing 650° F.+ material, said 650° F.+ material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);

II. bringing said converter feed together with cracking catalyst having an equilibrium microactivity test conversion activity level of at least about 40 and bearing an accumulation of at least about 3000 ppm Nickel Equivalents of heavy metal(s) expressed as metal(s) by weight on regenerated equilibrium catalyst;

III. bringing said converter feed together with liquid water in a weight ratio relative to feed in the range of about 0.04 to about 0.15;

IV. forming a stream containing a mixture of said converter feed, said catalyst and steam resulting from the vaporization of said liquid water and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined at a lineal velocity of at least about 25 feet per second for a vapor residence time in the range of about 0.5 to about 10 seconds at a reaction chamber outlet temperature of about 975° to about 1300° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 60% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;

V. separating said catalyst from the catalyst cracking products;

VI. stripping said separated catalyst;

VII. regenerating said catalyst; and

VIII. recycling the regenerated catalyst to the reactor for contact with fresh feed.

4,347,123

REFORMING WITH MULTIMETALLIC CATALYSTS

Charles H. Mauldin, and William C. Baird, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 5, 1980, Ser. No. 146,381
Int. Cl.[3] C10G *35/06*
U.S. Cl. 208—136 12 Claims

1. In a process for reforming an olefinic, nitrogen and sulfur containing hydrocarbon feed by contact thereof with a dried, calcined catalyst comprised of from about 0.1 to about 20 percent of a Group VI-B metal component composited with an inorganic oxide support, the improvement comprising

contacting and post-treating said dried, calcined catalyst composite with a solution of an alkali or alkaline-earth metal compound, incorporating from about 0.1 percent to about 4 percent of an alkali or alkaline-earth metal substantially entirely upon the surface of said catalyst composite sufficient to neutralize the Bronsted acidity of said catalyst composite, again

drying, and again

calcining said neutralized catalyst composite, and then

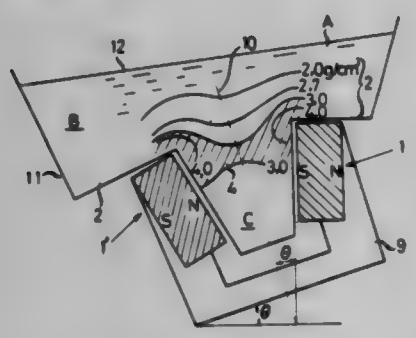
contacting said hydrocarbon feed with said dried, calcined, post-neutralized catalyst composite.

4,347,124

METHOD AND DEVICE OF SEPARATING MATERIALS OF DIFFERENT DENSITY BY FERROMAGNETIC LIQUID

Junzo Shimotizaka, and Toyohisa Fujita, both of Sendai, Japan, assignors to Nittetsu Mining Co., Ltd., Japan

Filed Apr. 16, 1981, Ser. No. 254,765
Claims priority, application Japan, Jun. 24, 1980, 55-84573
Int. Cl.[3] B03B *5/36*
U.S. Cl. 209—1 3 Claims



1. An apparatus for separating nonferromagnetic solids according to specific gravity comprising:

a vessel having a bottom with upstream and downstream bottom portions which are inclined with respect to the horizontal;

at least one V-shaped groove defined in said vessel bottom between and below said upstream and downstream bottom portions, having side walls which sre symmetrical about a plane which is inclined with respect to the vertical;

a magnet with a pole face facing each side wall of said V-shaped groove for establishing a magnetic field thereacross and across said vessel; and

a ferromagnetic liquid filling said groove and vessel to a selected level above said upstream and downstream bottom portions and wherein equibuoyancy lines of force are established according to said magnetic field, so that with nonferromagnetic solids supplied to said vessel in the vicinity of said upstream bottom portion, solids of greater specific gravity move across said equibuoyancy lines and into said at least one groove and solids of less specific gravity move along said equibuoyancy lines and to the vicinity of said downstream bottom portion.

4,347,125

SORTING OF ORES WITH DETECTABLE COMPOUNDS

Peter M. Di Giacomo, Mission Viejo, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Dec. 5, 1979, Ser. No. 100,618
Int. Cl.[3] B07C *5/02*
U.S. Cl. 209—3.3 20 Claims

1. A process for separating ore particles from gangue particles, comprising the steps of:

a. conditioning the particles with a conditioning agent comprising a compound having both a surface-selective functional group and a detectable moiety, to selectively coat either

i. at least a portion of the ore particles or

ii. at least a portion of the gangue particles to the substantial exclusion of the other;

b. detecting the coated particles; and

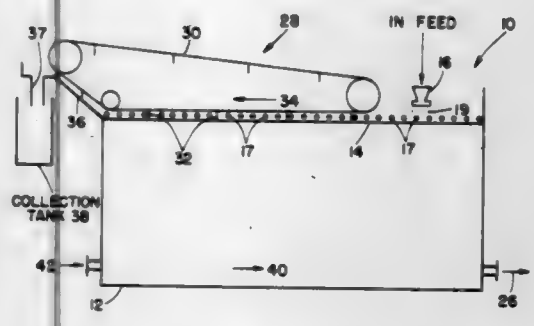
c. separating the detected, coated particles from the substantially uncoated particles.

4,347,126

APPARATUS AND METHOD FOR FLOTATION SEPARATION UTILIZING A SPRAY NOZZLE

Phillip E. McGarry, Palmerton, and David E. Herman, Jim Thorpe, both of Pa., assignors to Gulf & Western Manufacturing Company, New York, N.Y.

Filed Jan. 29, 1981, Ser. No. 230,058
Int. Cl.[3] B03D *1/02, 1/14*
U.S. Cl. 209—164 25 Claims



1. Apparatus for froth flotation separation of the components of a slurry having particulate matter therein, said apparatus comprising:

a. a flotation tank;

b. at least one spray nozzle adapted to cause a diverging spray, said spary nozzle positioned above said flotation tank and further adapted to spray under pressure an input slurry containing said particulate matter so that said particulate matter is dispersed through an aeration zone of increasing cross sectional area into the surface of a liquid in said tank to create a froth phase on the surface in which a quantity of the particulate matter is floating; and

c. means for controlling the agitation created by said at least one spray nozzle to provide a zone of turbulence extending a limited distance beneath the surface of a liquid in said tank.

8. A method for froth flotation separation of the components of a slurry having particulate matter therein, said method comprising the steps of:

a. spraying under pressure an input slurry having particulate matter therein through at least one spray nozzle adapted to cause a diverging spray so that said particulate matter is dispersed through an aeration zone into a liquid surface to create a froth on the surface in which a quantity of the particulate matter is floating;

b. controlling the agitation created by said at least one spary nozzle to provide a zone of turbulence extending a limited distance beneath said liquid surface; and

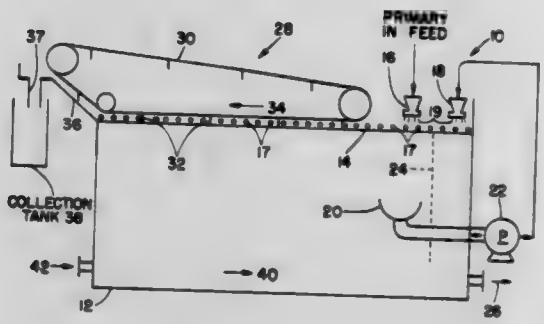
c. removing the froth from the liquid surface.

4,347,127

APPARATUS AND METHOD FOR FROTH FLOTATION SEPARATION OF THE COMPONENTS OF A SLURRY

James Duttera, Springfield; Raymond P. Jefferis, III, Gladwyne; David Matteson, Media, and Alexander Szentlaszloi, Westchester, all of Pa., assignors to Gulf & Western Manufacturing Company, New York, N.Y.

Filed Jan. 29, 1981, Ser. No. 230,059
Int. Cl.[3] B03D *1/02, 1/14*
U.S. Cl. 209—164 19 Claims



1. Apparatus for froth flotation separation of the components of a slurry having particulate matter therein which is to be separated, said apparatus comprising:

a. a flotation tank including means for withdrawing a floating fraction and means for withdrawing a tailings fraction;

b. means for feeding slurry comprising at least one primary spray nozzle adapted to cause a diverging spray, said spray nozzle positioned above said flotation tank and further adapted to spray under pressure input slurry of particulate matter so that said particulate matter is dispersed through an aeration zone of increasing cross sectional area into a liquid surface in the tank to create a froth on the surface;

c. a collector means positioned in said tank below said feed means for collecting sinking materials; and

d. at least one recycle spray nozzle positioned above said tank for spraying said collected sinking materials through an aeration zone into the liquid surface.

10. A method for froth flotation separation of the components of a slurry having particulate matter therein which is to be separated, said method comprising the steps of:

a. spraying under pressure an input slurry of particulate matter through a means for feeding slurry, said means for feeding slurry comprising a primary spray nozzle adapted to cause a diverging spray so that said particulate matter is dispersed through an aeration zone into a liquid surface to create a froth on the surface having a substantial quantity of particulate matter floating therein, while other components of the slurry and a minor quantity of particulate matter sink in the liquid, whereby the froth can be removed from the liquid surface;

b. collecting said sinking materials from the spray of the primary spray nozzle in a collector means positioned below said feed means;

c. utilizing a recycle spray nozzle to respray through an aeration zone into the liquid surface said collected sinking materials, whereby particulate matter therein is recycled and a portion of the recycled material floats as a froth on the liquid surface;

d. withdrawing said froth formed in steps a and c; and

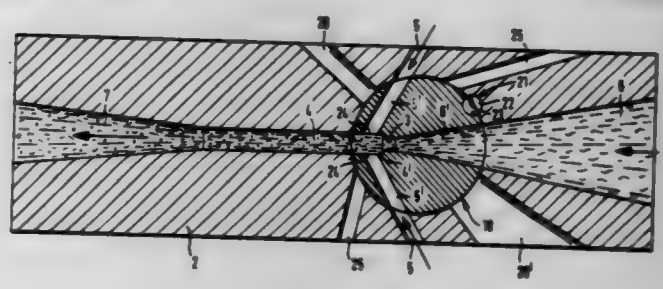
e. withdrawing a tailings fraction.

4,347,128

FLOTATION APPARATUS FOR DE-INKING PULP SUSPENSIONS

Wolfgang Barnscheidt, Dormagen-Straberg, Fed. Rep. of Germany, assignor to Feldmühle Aktiengesellschaft, Fed. Rep. of Germany and E. & M. Lamort S.A., France

Filed Apr. 8, 1981, Ser. No. 252,067
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3013655; Apr. 26, 1980, 3015788
Int. Cl.[3] B03D *1/24*
U.S. Cl. 209—170 8 Claims



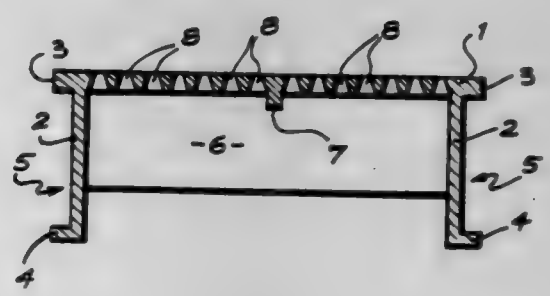
1. In flotation apparatus for de-inking of pulp suspension including a flotation cell and injectors for feeding said pulp suspension therethrough into said cell and for aerating said pulp suspension, the improvement comprising that said injectors are formed to define a wide slot nozzle having a generally rectangular configuration with a width dimension and a height dimension, said nozzle being dimensioned with a ratio of cross-sectional area to periphery of between 1.5 and 4 and that a generally rectangular mixing chamber receiving pulp suspension from said wide slot nozzle is provided adjacent said nozzle, said mixing chamber having a cross-sectional area which is between 1.3 to 1.7 times the cross-sectional area of said wide slot nozzle.

4,347,129

SCREENING MODULE

William Rutherford, Valentine, Australia, assignor to Hunter Wire Products Limited, Warners Bay, Australia

Continuation of Ser. No. 932,063, Aug. 8, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,226
Claims priority, application Australia, Aug. 10, 1977, PD1183
Int. Cl.[3] B07B *1/49*
U.S. Cl. 209—399 5 Claims



1. A screening panel comprising a support frame having a plurality of framing bars aligned in parallel equi-spaced array across an area to be screened, and a plurality of elongated strips retained on said bars and each formed from a resilient plastics material; wherein each said framing bar has a substantially uniform rectangular cross-section and is positioned in said array with its wider sides vertical; each said strip has a planar surface member, a plurality of slots which extend through said surface member and are wider at the under side of said surface member than at the upper side thereof, two side walls which depend downwardly from said surface member, one adjacent each of two opposite edges thereof, and a plurality of reinforcing webs formed between the inner faces of said side walls and said under side of said surface member; and wherein each side wall has an outwardly facing channel

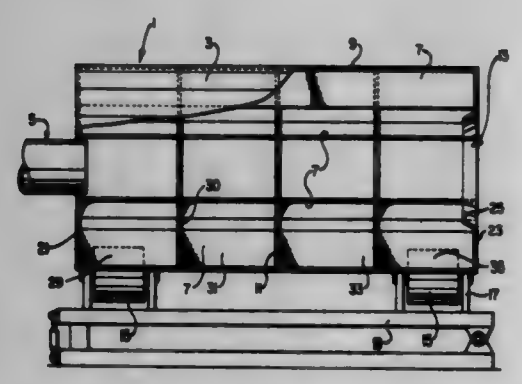
formed therein, the width of each said channel corresponding to the width of said wider side of said framing bars and the depth of each said channel corresponding to approximately one half of the width of the narrower sides of said framing bars whereby each said strip can be engaged between two adjacent ones of said framing bars without the use of tools by deforming of the resilient plastics material of the strip and pushing the strip into place so that each a wide side, corners and half the narrow side of the adjacent framing bar so that said framing bars are substantially fully enclosed by said strips when said assembly is complete.

4,347,130

PLACER MINERAL CONCENTRATOR AND PROCESS

Earl G. Younge, 20369 - 49A Ave., Langley, B.C., V3A 7H3, Canada

Continuation-in-part of Ser. No. 50,310, Jun. 20, 1979, Pat. No. 4,265,743. This application Mar. 25, 1981, Ser. No. 247,322
Claims priority, application Canada, Nov. 23, 1978, 316785
Int. Cl.³ B03B 5/56
U.S. Cl. 209—452 7 Claims



1. Apparatus for extracting heavy metal from a precious metal-bearing ore comprising:

a rotatably mounted cylindrical drum having a substantially horizontally disposed axis, said drum having an input end, an output end, and an internal peripheral surface, said input end being substantially closed about input pipe means adapted for flowing a slurry of precious metal ore into said drum at a predetermined rate, the internal peripheral surface of said drum having a plurality of continuously annular riffles of predetermined height evenly spaced from the closed input end to and including the output end and having a plurality of longitudinally extending circumferentially spaced riffles of a height less than said annular riffles, means for selectively rotating said drum at a predetermined speed,

the size, spacing and respective heights of the longitudinal riffles and annular riffles, and the speed of the rotation of the drum are each such that the slurry is caused to vortex in a helical fashion over the said riffles and build a stream bed-like matrix of heavier particles within compartments formed by the riffles, the speed of rotation of the drum such that the matrix is maintained within the compartment by centrifugal force with the vortex action causing heavier particles to settle and form part of the matrix within the compartments, while the lighter particles are kept in suspension by the vortex action and are carried out of the apparatus through the output end,

means for selectively and periodically tilting said drum and flushing out said matrix with liquid.

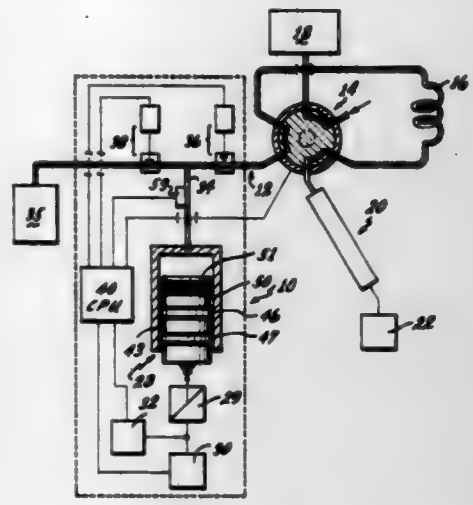
4,347,131

LIQUID CHROMATOGRAPHIC PUMP MODULE

Robert Brownlee, 26050 Kriste La., Los Altos Hills, Calif. 94022

Filed Apr. 28, 1981, Ser. No. 258,404
Int. Cl.³ B01D 15/08
U.S. Cl. 210—101 8 Claims

1. In LC apparatus, a separation column having a stationary phase through which a pump drives a mobile phase containing a sample having components to be separated by differential adsorption as the sample is passed through the stationary phase, a sample injection valve, a one shot delivery system comprising a pump, means for refilling the pump including a reservoir of said mobile phase, a first positive actuated valve for connecting the pump output to said sample injection valve during a delivery stroke, a second positive activated valve for connecting said pump to said reservoir of said mobile phase during the uptake stroke, means for driving the pump to deliver therefrom precise quantities of the said mobile phase to the sample injection valve, fast return motor means, means for connecting the pump to said fast return means during the uptake stroke, means for synchronizing and controlling the foregoing elements such that said first valve is opened and said second valve is closed during the uptake stroke as operated by said fast return motor means while said first valve is closed and said second valve is opened when the pump is connected to said first motor means for said delivery stroke.

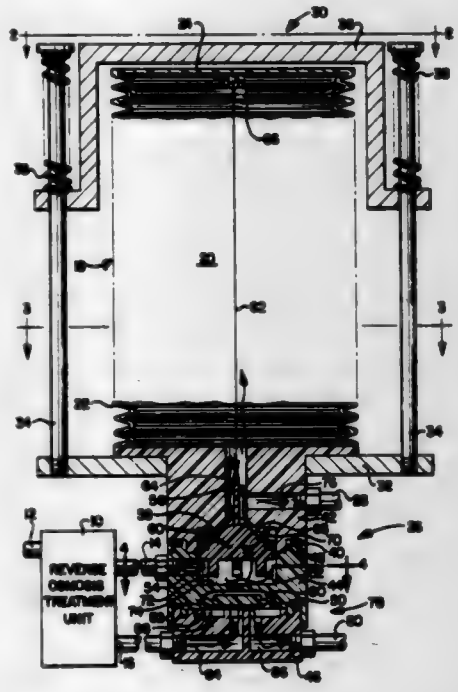


4,347,132

REVERSE OSMOSIS EXPANSIBLE PRESSURIZED PERMEATE STORAGE HAVING PERMEATE AND CONCENTRATE CONTROLS

Stephen H. Davis, Dayton, Ohio, assignor to Water Refining Company, Inc., Middletown, Ohio

Filed Feb. 17, 1981, Ser. No. 235,221
Int. Cl.³ B01D 31/00
U.S. Cl. 210—104 32 Claims



1. An arrangement for storing treated water received from a

reverse osmosis treatment unit of the type having a treated water output line and a bleed water output line separated by a reverse osmosis semipermeable membrane, and for maintaining the stored treated water under pressure, comprising:

expandable container means having a movable portion and defining an expandable storage chamber for storing treated water,

container valve means, connecting said storage chamber to said treated water output line of said reverse osmosis treatment unit, for permitting flow of treated water to said storage chamber when less than a predetermined quantity of treated water is stored in said storage chamber, and for terminating said flow of treated water to said storage chamber when said predetermined quantity of treated water is stored in said storage chamber, said container valve means including mechanical linkage means connected to said movable portion of said container means for providing solely mechanical control of said container valve means, and

pressure spring means for applying a spring force to said expandable container means to maintain said stored treated water in said storage chamber under pressure.

4,347,133

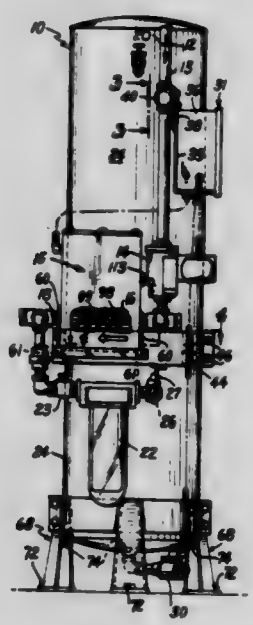
ELECTROMAGNETIC GROUND WATER CONDITIONING SYSTEM AND SAMPLING DEVICE FOR WASTE WATER AND FERMENTATION MAKEUP WATER

Miguel F. Brigante, 16550 NW. 10th Ave., Miami, Fla. 33169

Continuation-in-part of Ser. No. 153,219, May 27, 1980, Pat. No. 4,288,323. This application Jun. 5, 1981, Ser. No. 270,741

Int. Cl.³ C02F *1/48*

U.S. Cl. 210—138 10 Claims



1. An electromagnetic ground water conditioning apparatus comprising:

a holding tank with an inlet and an outlet for holding ground water which is treated in said apparatus;

an electromagnetic water conditioning unit comprising an inlet from said tank, a ferromagnetic casing, an electromagnetic winding surrounding said casing to create a magnetic field of about 3,000 oersteds on said casing, an impeller mounting in bearings at each end of said casing which rotates in response to the water pressure from said inlet and a water outlet at the other end of said casing;

a pump between said holding tank outlet and said electromagnetic unit;

a semicircular band fitted with flanges which encircles said holding tank and is adapted to hold a bracket supporting means to mount said electromagnetic unit at about the middle of said holding tank;

a bracket connected to said band to mount said electromagnetic water conditioning unit;

a pipe means connecting said pump to the inlet pipe of said electromagnetic unit;

a filter means between said pump and inlet pipe fed by water passing through said pipe means;

said pipe means further connecting said filter means to the outlet of said electromagnetic unit;

a return line from the outlet of said filter to said holding tank for recirculating water from said filter back into said holding tank by the pumping action of said pump into said electromagnetic water conditioning unit; and

a blowdown unit comprising timing devices electrically connected to a solenoid operated drain valve at the bottom of said tank whereby solids precipitated by the electromagnetic treatment in said electromagnetic unit are blown out of said tank for predetermined short intervals of the order of seconds to thereby clarify the incoming water without the need for water treatment chemicals.

4,347,134

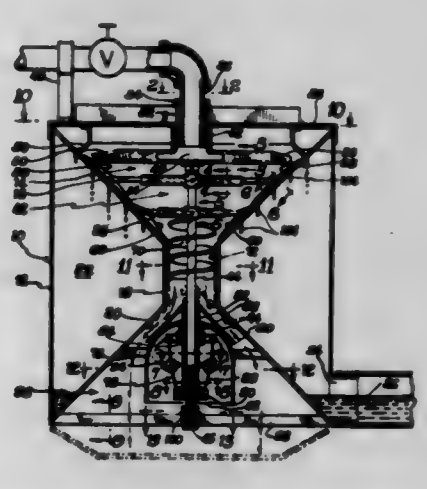
SLURRY SEPARATOR HAVING REACTION NOZZLE DRIVEN ROTORY BLADES WIPING A CONICAL FILTER

Oswald C. Svehaug, 114 SW. 5th, Milton-Freewater, Oreg. 97862

Filed Sep. 3, 1981, Ser. No. 298,858

Int. Cl.³ C02C *1/22*; B01D *29/26*

U.S. Cl. 210—147 4 Claims



1. A separator for separating a mixture of liquids and solids delivered under pressure to the separator as a slurry, said separator comprising:

(a) a stationary frame defining an upwardly open perforated conical grid, which is generally symmetrical about a vertical central axis;

(b) a rotor structure on a vertical axis freely rotatably mounted coaxially with said central axis inside said stationary frame;

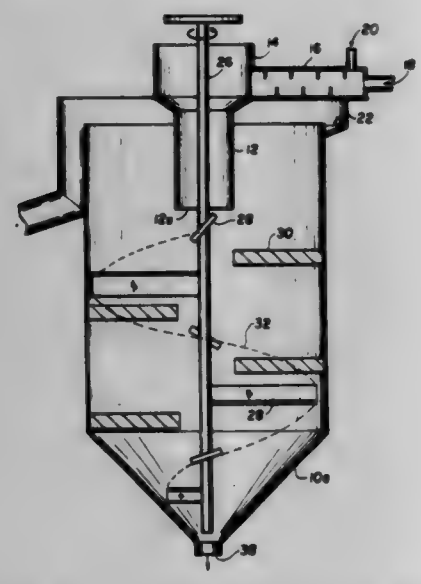
(c) said rotor structure including a nozzle angularly directed with respect to a radial direction from said vertical axis spaced from and directed toward said grid, said nozzle having means to supply same with pressurized slurry and directed such that slurry forced through said nozzle causes said rotary structure to rotate; and

(d) a plurality of wiper blades, some of which are circumferentially staggered and axially overlapping with respect to others supported on said rotary structure and held against the surface of said grid such that as said frame rotates said wiper squeegees across said grid to press liquid through said grid, with said blades being angled such that axially upstream blades squeegee slurry downward and into the paths of more downstream blades to cause a continuous progressive squeegee action in the downward direction.

4,347,135
APPARATUS FOR SUPERFLOCCULATING AND THICKENING A SLUDGE

Jean R. M. Lafosse, and Bernard J. Robert, both of Avon, France, assignors to Fives-Cail Babcock, Paris, France

Filed Aug. 18, 1978, Ser. No. 934,995
Claims priority, application France, Aug. 23, 1977, 77 25647
Int. Cl.[3] C02F *1/52*
U.S. Cl. 210—208 8 Claims



1. An apparatus for superflocculating and thickening a sludge, which comprises

(a) a cylindrical vessel having an upper part and a lower part,

(b) an axially extending delivery conduit having an outlet in the upper third part of the vessel,

(c) means for feeding a mixture of the sludge and of a flocculating agent to the delivery conduit whereby the mixture is delivered into the vessel through the delivery conduit outlet,

(d) means for collecting liquid removed from the mixture delivered into the vessel and for discharging the removed liquid peripherally of the vessel at the upper part thereof,

(e) a vertical rotary shaft extending through the vessel,

(f) vanes mounted on the rotary shaft for rotation therewith,

(g) counter-vanes arranged in the vessel to cooperate with the vanes,

(1) the vanes and counter-vanes extending in substantially radial planes and being inclined with respect to each other, the inclinations of cooperating vanes and counter-vanes being in opposite directions, the vanes forming a discontinuous helix extending from the upper to the lower part of the vessel and the pitch of the helix diminishing towards the lower part of the vessel, and

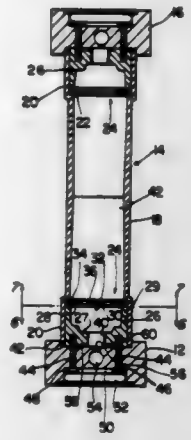
(h) a discharge conduit for the thickened sludge in the lower part of the vessel.

4,347,136
BACTERIA STATIC FILTER ASSEMBLY

Neil Friesen, 11 Cornwallis Dr., Northwest Calgary, Alberta, Canada (T2K 1T5), and Urs Steiner, 2138 - 28th Ave., Southwest Calgary, Alberta, Canada (T2T 1K5)

Filed Feb. 18, 1981, Ser. No. 235,607
Int. Cl.[3] B01D *27/02*
U.S. Cl. 210—253 7 Claims

1. A filter assembly comprising two elongated filter tubes, each filter tube having end portions defining remotely facing shoulders in its interior, a screen unit seated on each of said shoulders, an end plug seated in each of said end portions and holding each screen unit seated against its respective shoulder, each of said end plugs having a through passage for a passing liquid, and a filter medium in the filter tube between said screen units, said two filter units being disposed in parallel relation, end plates at opposite ends of said filter units secured to said filter units and forming in combination therewith an integral filter assembly, each of said end plates having flow passages therein in sealed communication with said through passages in said end plugs said flow passages being arranged with said through passages to supply liquid to and remove liquid from

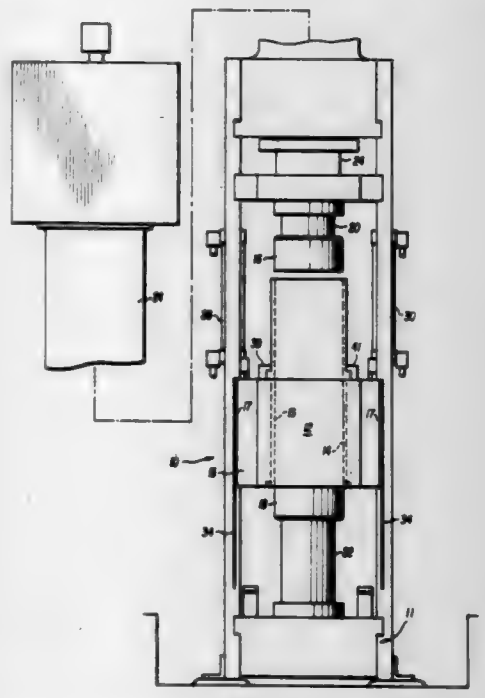


said filter medium, each end plug having an outer end opposing a respective end plate, and a sealing ring carried by each end plug surrounding its through passage with each sealing ring compressively engaging a respective end plate.

4,347,137
APPARATUS FOR CONSOLIDATION OF SLURRIES OF SOLID PARTICULATE MATERIALS

Perry J. Dick, Jr., Pittsburgh, Pa., assignor to Norwood Minerals, Inc., Pittsburgh, Pa.

Filed Jun. 17, 1981, Ser. No. 274,541
Int. Cl.[3] B01D *33/00*
U.S. Cl. 210—329 12 Claims



1. An apparatus for removing liquid from a slurry of solid particulate material and for consolidating said solid material into a shape-retaining slug, comprising

(a) a cylindrical consolidation chamber in which the slurry is to be consolidated, which is substantially sealed against the passage of solid material, said chamber comprising

(i) a first cylindrical piston mounted in a stationary position with its axis aligned vertically, the upper surface of said piston being its working face,

(ii) a mold comprising a cylindrical wall defining a cylindrical bore in which said first piston is movable axially and which is disposed with its axis aligned vertically and a horizontal table having a circular opening through one end thereof, said table being mounted to the upper edge of said wall so that said opening communicates with said bore in said wall and the surface of the

table extends outward from said wall in a direction perpendicular to the axis thereof, said mold having a compression position in which the face of said first piston is within the lower edge of said bore and a charging position in which the face of said first piston is at about the same level as the upper surface of said table, and

(iii) a second cylindrical piston having its axis aligned vertically and movable axially within said cylindrical bore, the lower surface of said piston being its working face,

(b) a drainage means for allowing liquid to escape from said chamber during consolidation of said slurry,

(c) a porous structure for retaining solid particulate material within said chamber and for allowing liquid to escape from said chamber during consolidation, said porous structure being disposed between said drainage means and said slurry within said chamber,

(d) a first pressure means for reciprocating said mold between its compression position and its charging position and for maintaining said mold in each of said positions,

(e) a compression means for reciprocating said second piston axially within said bore and for applying compressive stress to said slurry within said chamber to cause consolidation thereof,

(f) a charging box comprising at least one vertically aligned wall and two horizontally aligned open ends which define a volume, said box being slidable horizontally on said table between a filling position in which said box is disposed on said table so that the lower end of said box is closed to the flow of slurry therethrough and a charging position in which said box is disposed on said table so that the lower end thereof communicates with the bore of said mold,

(g) a second pressure means for reciprocating said charging box between its filling position and its charging position by sliding said box on said table and for maintaining said box in each of said positions,

(h) a means for filling said charging box with a predetermined amount of slurry, said filling means being disposed over said charging box when it is in its filling position, wherein

(1) when said mold is filled with slurry and is in its compression position and said charging box is in its filling position, said compression means is actuated thereby moving said second piston downward into said bore of said mold and applying compressive stress to the slurry through said second piston to consolidate said slurry into a slug of solid material and said filling means is actuated thereby filling said charging box with a predetermined amount of slurry,

(2) said compression means is then actuated thereby moving said second piston upward out of said chamber and said first pressure means is actuated thereby moving said mold from its compression position to its charging position and stripping the mold from the slug of solid material,

(3) said second pressure means is then actuated thereby sliding said filled charging box on said table from its filling position to its charging position, thereby pushing said slug of solid material off of the upper surface of said first piston and said table,

(4) said first pressure means is then actuated thereby moving said mold from its charging position to its compression position and filling the mold with the slurry in the charging box, and

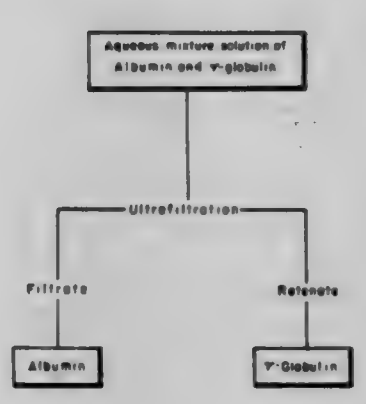
(5) said second pressure means is then actuated thereby sliding said empty charging box on said table from its charging position to its filling position.

4,347,138

METHOD OF SEPARATING SERUM ALBUMIN AND GAMMA-GLOBULIN FROM EACH OTHER

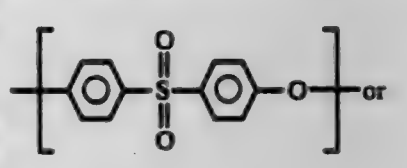
Shotaro Ohno; Kenji Koyama, both of Tokuyama, and Mitsutoshi Fukuda, Shin Nanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

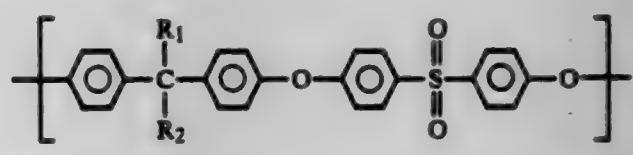
Filed Dec. 3, 1980, Ser. No. 212,746
Claims priority, application Japan, Dec. 10, 1979, 54-159131
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—639 **3 Claims**



1. A method of separating serum albumin and a serum γ-globulin from each other in a solution of a mixture thereof using a semipermeable membrane, said method comprising forcing the blood serum protein mixture solution through an ultrafiltration membrane

having a cut off molecular weight of about 100,000 and composed of an aromatic polyether sulfone having recurring units represented by the following formula:





wherein R_1 and R_2 each stand for a hydrogen atom or an alkyl group having 1 to 2 carbon atoms,

while adjusting the total protein concentration and salt concentration in the mixture solution to not more than 4 g/dl and not more than 0.6 mole/l, respectively, and also adjusting the pH of the solution to a value of from about 3.8 to about 4.7.

4,347,139

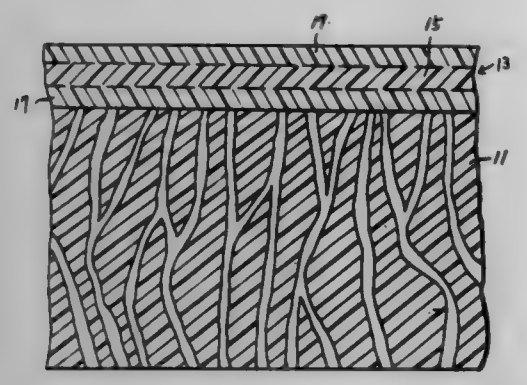
MEMBRANE FOR REVERSE OSMOSIS AND METHOD OF MAKING THE SAME

Yoshihiro Hayashi, Kyoto, Japan, assignor to Juichiro Ozawa, Japan

Filed Mar. 24, 1980, Ser. No. 132,848
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—654 **7 Claims**

1. A method of making a membrane for reverse osmosis which is capable of passing non-ionic substance and blocking the passage of ionic substances and which comprising a porous base and a thin high polymer film attached to said porous base, said thin high polymer film including at least one layer of radical polymer of nitrogen containing monomer and alkyl metal and at least one layer of polymer of nitrogen containing monomer which are alternately laminated together, said method comprising the steps of: placing at least one porous base in a plasma created by glow discharge; and introducing alternately a first polymerization reaction feed including nitrogen containing monomer, alkyl metal and an inert carrier gas and a second polymerization reaction feed including nitrogen

containing monomer, an inert carrier gas and no alkyl metal into said plasma to alternately cause on said porous base a radical polymerization reaction between nitrogen containing monomer and alkyl metal and a polymerization reaction of nitrogen containing monomer.



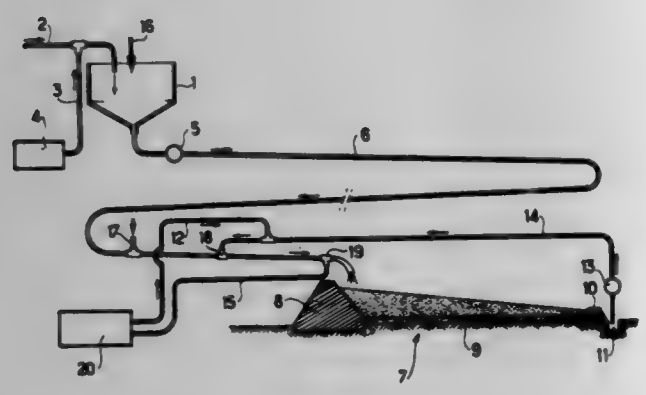
7. A method of using a membrane according to claim 1, for reverse osmosis comprising supplying an aqueous solution of ionic and non-ionic substance to one side of said membrane to separate the ionic substances from the non-ionic substances, the non-ionic substances passing through said membrane and the ionic substances being blocked from passage to said membrane.

4,347,140

INSTALLATION FOR AND A METHOD OF SPREADING CLAYEY MUD AND RECLAIMING LAND

Elie Condolios, and Pierre Couratin, both of Grenoble, France, assignors to Alsthom-Atlantique, Paris, France

Filed Jan. 13, 1981, Ser. No. 224,761
Int. Cl.³ C02F *1/54*
U.S. Cl. 210—710 4 Claims



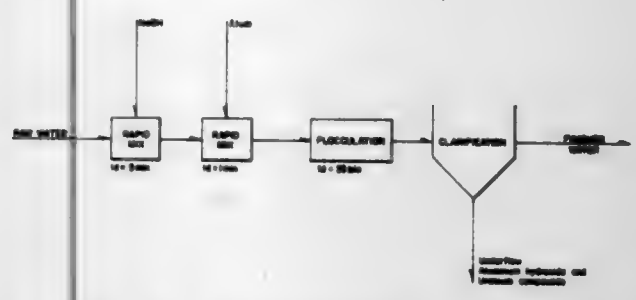
1. An installation for spreading clayey mud on ground defining a spreading area which is free from water and which is prepared to receive the mud by laying a filtering bottom above the level of ground water, said installation comprising a decanting tank, means for supplying to said tank a mixture of mud and flocculating agent for settling, a pipe leading from said decanting tank, a mud extraction pump within said pipe for extracting said settled mixture of mud and flocculating agent from the decanting tank and to convey said mixture up to at least one high mud pouring point located above said prepared ground, said installation further comprising means connected to said pipe just upstream of said at least one high mud pouring point for adding extra flocculating agent to said mixture to effect superflocculation of the extracted mud just prior to spreading over the spreading area, said spreading area lying between at least one upstream embankment and one downstream embankment, the upsteam embankment constituting said high pouring point and said spreading area further being slightly inclined downwardly and away from said upper embankment in a direction towards said downstream embankment.

4,347,141

PROCESS FOR REMOVAL OF RADIOACTIVE MATERIALS FROM AQUEOUS SOLUTIONS

Michael R. Rothberg, 8268 S. Locust St., Englewood, Colo. 80112

Filed Jul. 14, 1980, Ser. No. 168,009
Int. Cl.³ C02F *1/52*
U.S. Cl. 210—721 7 Claims



1. A process for decontaminating a water solution having contained therein naturally occurring radioactive materials, said solution containing dissolved uranium and having both alpha particle and beta particle activity and a pH of about 7.0–8.6, comprising the steps of:

adjusting the pH of the solution to greater than 9.0 and less than 10.0 while simultaneously rapidly mixing said solution;

adding approximately eighty to one hundred milligrams per liter of alum while simultaneously rapidly mixing said solution for a period of at least 1 minute, thereby lowering the pH of the solution to between 5.5 and 7.0;

slowing mixing said solution for a period of about twenty minutes to thereby form a precipitate containing aluminum hydroxide and said dissolved uranium in said solution; and

separating said precipitate from the solution.

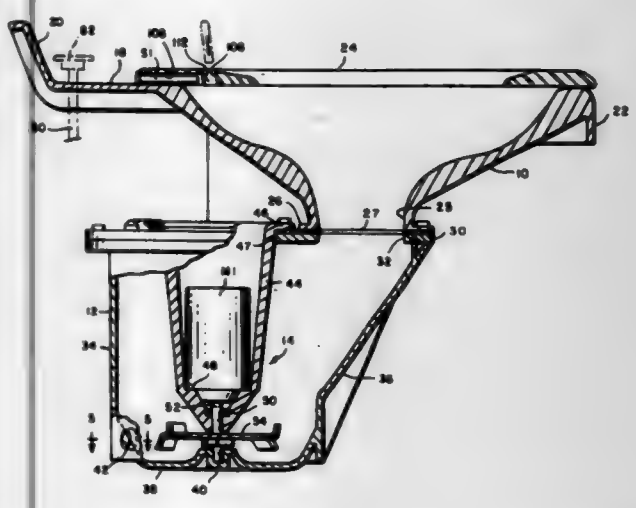
5. The process as defined in claim 1 further including the step of incorporating simultaneously with the addition of alum approximately 6.0 milligrams per liter of hydrogen peroxide.

4,347,142

EFFLUENT TREATMENT IN A NON-POLLUTING TOILET SYSTEM

James H. Albertassi, West Falmouth, Mass.; Walter O. Heinze, Swarthmore, Pa., and Aaron Landsman, Buzzards Bay, Mass., assignors to International Water Saving Systems, Inc., New York, N.Y.

Continuation of Ser. No. 37,655, May 11, 1979, abandoned, and a continuation-in-part of Ser. No. 939,992, Sep. 6, 1978, abandoned. This application Dec. 22, 1980, Ser. No. 219,242
Int. Cl.³ C02F *1/76*
U.S. Cl. 210—756 1 Claim



1. The method of treating human waste effluent solid matter in a toilet system wherein there is a bowl for receiving a de-

posit of effluent, a pump for delivering flush water to the bowl to effect flushing and a treating tank containing a hydraulic attrition device for receiving effluent and flush water from the bowl, the method comprising, with the aid of the pump, delivering 1½ liters of flush water to the bowl to flush the effluent from the bowl into the treating tank and, with the aid of the hydraulic attrition device in the form of a rotating blade having a blade diameter of 3 to 7 inches, rotated at 5000 rpm for 2½ minutes, reducing the solids in the effluent by hydraulic attrition in contrast to maceration to a particle size which ranges from ¼ inch to ½ microns and in which the solid matter in excess of 1/64 of an inch does not exceed more than 18% of the total solid matter, adding a decontaminant to the treating tank during hydraulic attrition to effect decontamination in the form of a 20 gram tablet containing 60% to 95% by weight of calcium hypochlorite and passing said effluent through an upflow filter containing a bed of buoyant particulate material, to separate the solids from the effluent.

4,347,143

APPARATUS AND PROCESS FOR PURIFYING POLLUTED WATER CONTAINED IN NATURAL OR ARTIFICIAL POOLS BY DIRECT INJECTION OF OXYGEN

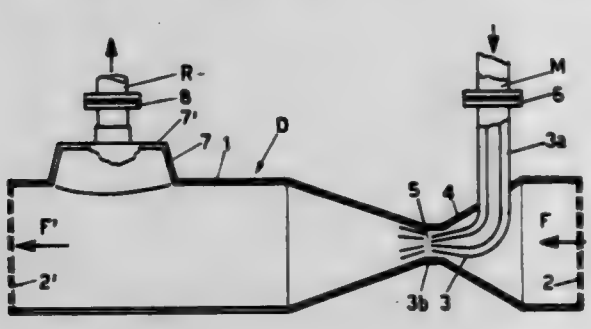
Gianmaria Righetti, Via Losanna 29, Milano, Italy

Filed Nov. 8, 1976, Ser. No. 740,068

Claims priority, application Italy, Nov. 11, 1975, 29164 A/75; Sep. 10, 1976, 27088 A/76

Int. Cl.³ C02F *1/72*

U.S. Cl. 210—758 11 Claims



1. An apparatus for oxygenating polluted water contained in natural or artificial bodies of water exposed at the surface thereof to the atmosphere, comprising:

(a) pipe means, placeable at the bottom of the body of water, for permitting passage therethrough of water in the body of water, said pipe means comprising a horizontally disposed, longitudinally extended, axially open, substantially tubular pipe having a Venturi-shaped throat therein;

(b) injection means for injecting pressurized oxygen into said pipe means in a manner such that the water is caused to flow through said pipe means, said injecting means including a nozzle, the injection throat of which being directed axially, in a downstream direction, at the throttling zone of the Venturi-shaped throat of said pipe; and

(c) an oxygen collection means for collecting undissolved oxygen before it is expelled from said pipe means, comprising an oxygen collecting chamber fixedly secured to said pipe means at a distance downstream of the point of oxygen introduction by said injection means.

11. A method of oxygenating polluted water contained in natural or artificial bodies of water exposed at the surface thereof to the atmosphere, using the apparatus of claim 1, comprising:

submerging said pipe means to the bottom of the body of water;

injecting oxygen by means of said injection means; and

collecting undissolved oxygen before it is expelled from said pipe means, by means of said oxygen collection means.

4,347,144

PROCESS FOR THE PURIFICATION OF EFFLUENT

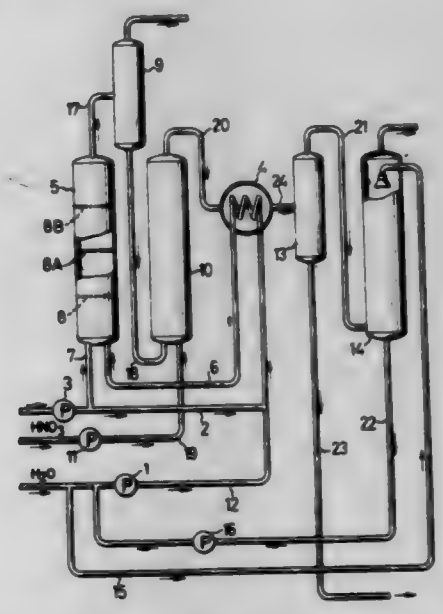
Kurt Bodenbeaner, Wiesbaden; Helmut Perkow, Hofheim am Taunus, and Helmut Vollmüller, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 318,860

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042193

Int. Cl.³ C02F *1/72*

U.S. Cl. 210—761 5 Claims



1. A process for the purification of effluent containing organic impurities which are difficult to degrade, by oxidation in an aqueous phase at temperatures of 100° to 310° C. and under elevated pressure, the effluent being initially treated in a first stage with gases containing oxygen, but without addition of catalysts, until the C.O.D. value has been reduced by 50 to 98%, which comprises subjecting the effluent which has received preliminary treatment in this way, subsequently, in a second stage, to treatment with an oxidizing agent stronger than oxygen, in the liquid phase and at the same, or at a higher, temperature, until the C.O.D. value has fallen to approximately 0 g/l.

4,347,145

FOAM COMPOSITION FOR TREATING TEXTILE MATERIALS AND METHOD OF PREPARATION

Razmic S. Gregorian, Aiken, and Chettoor G. Namboodri, North Augusta, both of S.C., assignors to United Merchants & Manufacturers, Inc., New York, N.Y.

Continuation of Ser. No. 943,830, Sep. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 794,627, May 6, 1977, abandoned, and Ser. No. 584,389, Jun. 6, 1975, Pat. No. 4,118,526. This application Jul. 2, 1980, Ser. No. 165,266

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.³ D06M *13/00;* B01J *13/00;* C09B *67/02;* C09K *3/18*

U.S. Cl. 252—8.6 18 Claims

1. A foamable composition which is capable of being formed into a foam suitable for treating fabrics with a finishing agent, said foam being sufficiently stable to substantially retain its characteristics during application and not collapse between the time when the initial foaming takes place and the time when the foam is introduced into the fabric, said composition comprising a predetermined amount of fabric finishing agent sufficient to impart the desired finish to the fabric and an effective amount up to about 10 percent of foaming agent sufficient to form said composition into a stable foam having a blow ratio in the range from about 2:1 to 20:1, and a foam density in the range from about 0.5 gm/cc to 0.05 gm/cc, and wherein the ratio of active solids to that of total foamer is at least 8:1.

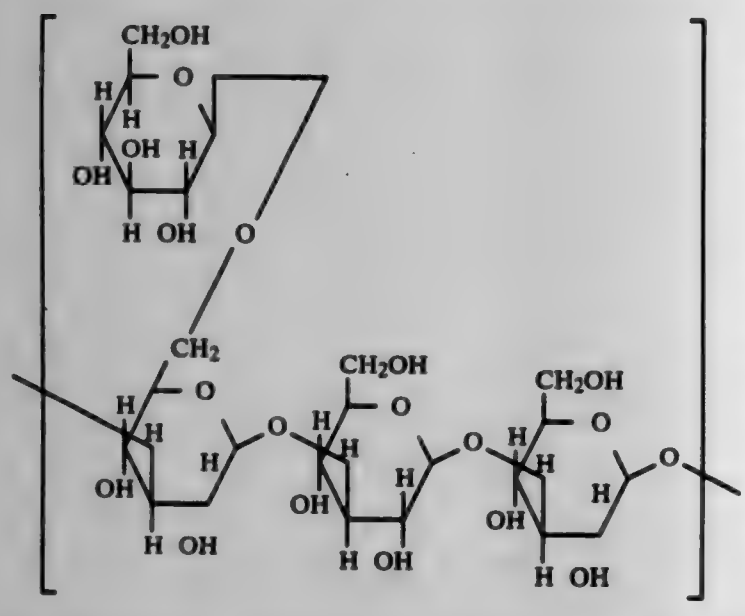
4,347,146

OIL RECOVERY PROCESS EMPLOYING A NON-IONIC GLUCAN IN COMBINATION WITH CLAY FLOCCULANT

Milton K. Abdo, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 29, 1981, Ser. No. 229,372
Int. Cl.[3] E21B *43/22*
U.S. Cl. 252—8.55 D 3 Claims

1. In an improved process for producing petroleum from a petroleum-bearing subterranean formation wherein an aqueous driving fluid containing a poly(glycosylglucan) thickening agent, the glycosylglucan having the structural formula:



is injected into said formation through an input well and passed through the formation to an output well, the improvement comprising employing in combination with said poly(glycosylglucan) between about 5 ppm and about 50 ppm or unhydrolyzed polyacrylamide having a weight average molecular weight between about one million and about 7 million, whereby adsorption of said poly(glycosylglucan) by clays is minimized.

4,347,147

PROCESS FOR PREPARING OVERBASED MAGNESIUM SULFONATES

Ronald J. Allain, Naperville, Ill., and Dodd W. Fong, Richmond, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 184,156, Sep. 4, 1980, Pat. No. 4,306,983, and a continuation-in-part of Ser. No. 24,230, Mar. 26, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,323
The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.
Int. Cl.[3] C10M *1/40*
U.S. Cl. 252—33.3 5 Claims

1. In the method of preparing overbased magnesium sulfonates by sulfonating an alkyl benzene with a material containing SO_3 which material is selected from one member of the group consisting of SO_3 and oleum and reacting the alkyl sulfonate product with magnesium oxide in the presence of a low viscosity diluent, water, alcohol, and CO_2, the improvement which comprises positively utilizing oleum in the sulfonation step and additionally adding to the original overbased magnesium sulfonate sufficient magnesium oxide and a surfactant couple comprising a C_{12}–C_{18} fatty acid and an alkanol amide which produces a superbased magnesium sulfonate with a magnesium content of about 14–23% and a zone particle size of about 40% 200 A and about 60% 0.1–1.0 microns.

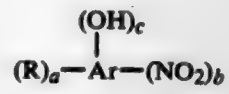
4,347,148

FULL AND LUBRICANT COMPOSITIONS CONTAINING NITRO PHENOLS

Kirk E. Davis, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 705,653, Jul. 15, 1976, abandoned. This application Nov. 19, 1979, Ser. No. 95,290
Int. Cl.[3] C10M *1/32, 3/26, 5/20, 7/30*
U.S. Cl. 252—51.5 R 75 Claims

1. A nitro phenol of the formula



wherein R is an aliphatic substituent of at least about 40 carbon atoms; R is para to at least one -OH substituent attached directly to Ar; b and c are each independently integers of 1 up to three times the number of aromatic nuclei in Ar with the sum b+c not exceeding the number of unsatisfied valences in Ar, a is one and Ar is a benzene moiety having 0 to 3 optional substituents selected from the group consisting of lower alkyl, lower alkoxyl, halo, carboxy, carboxy ester of mono- and dihydric C_{1-7} alkanols and carboxamide wherein the amide nitrogen can have up to 1 or 2 C_{1-7} alkyl substituents and combinations of said optional substituents.

59. A fuel or lubricant composition comprising a major proportion of a normally liquid fuel or a lubricating oil of lubricating viscosity and a minor proportion of the nitro phenol claimed in claim 1.

4,347,149

AQUEOUS BLEACH COMPOSITIONS

Eileen Smith, Chester; Doreen A. Timperley, Widnes, and Dorothy M. Titchener, Chester, all of England, assignors to Interox Chemicals Limited, England

Filed Mar. 18, 1981, Ser. No. 245,140
Claims priority, application United Kingdom, Apr. 1, 1980, 8010886
Int. Cl.[3] C11D *7/54*
U.S. Cl. 252—102 18 Claims

1. A liquid bleach composition comprising:
3% to 20% by weight hydrogen peroxide;
at least one base in an amount sufficient to render the composition alkaline;
5% to 20% by weight ethanol;
a stabilising amount of a substituted amino compound having the formula $R—NR—(CH_2)_p]_q—NR_2$ in which p is from 2 to 6, q is from 0 to 2, and R represents an acetate or methylene phosphate group;
and water.

4,347,150

PENETRATING COMPOSITIONS FOR WET REMOVAL OF FRIABLE INSULATION MATERIALS

John Arpin, 1716 Melville St., Ocean, N.J. 07712

Filed Jun. 16, 1981, Ser. No. 274,172
Int. Cl.[3] B08B *7/00*
U.S. Cl. 252—135 11 Claims

1. A stripping composition useful for removing a friable material comprising a blend of
PART I an aqueous silicate solution component comprising:
(a) 5 to 30 weight percent of an aqueous alkali metal silicate selected from potassium silicate or a mixture of potassium silicate and sodium silicate;
(b) 0.01 to 10 weight percent of a cationic or nonionic surfactant;
(c) 70 to 95 weight percent water; and
PART II an acrylic polymer dispersion component comprising:
(a) 45 to 65 weight percent of an acrylic polymer latex having a solids content of 40 to 65 weight percent, said

acrylic polymer selected from the group consisting of homopolymers and copolymers of lower alkyl esters of acrylic acid or lower alkyl esters of an alpha-lower alkyl acid or mixtures thereof;

(b) 0.01 to 10 weight percent of a reagent that reacts with said alkali silicate;

(c) 35 to 55 weight percent water;

wherein the ratio of PART I to PART II provides a blended composition having a solids content between 5 and 30 weight percent.

4,347,151

CLEANER-POLISH FOR FIBERGLASS AND CERAMIC SURFACES

Robert H. Lohr, Union Grove, and Lee W. Morgan, Racine, both of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jun. 30, 1981, Ser. No. 279,126

Int. Cl.³ C11D *17/00*

U.S. Cl. 252—163 **7 Claims**

1. A cleaner-polish for kitchen and bathroom surfaces, comprising:

(a) From about 0.3 to 8% of an anionic and nonionic surfactant which will produce an oil in water emulsion;

(b) From about 0 to 18% by weight of an abrasive;

(c) From about 5 to about 40% by weight of an isoparaffinic hydrocarbon having a kauri-butanol value of from about 27 to 29;

(d) From about 1 to 8% by weight of a polymer having M_n of greater than 3,000 and soluble in said hydrocarbon, said polymer comprising at least 80% of isobornyl acrylate, isobornyl methacrylate, cyclohexyl acrylate, cyclohexyl methacrylate, vinyl toluene, t-butyl styrene and mixtures thereof;

(e) And about 30 to 90% by weight water.

4,347,152

PHOSPHATE-FREE CONCENTRATED PARTICULATE HEAVY DUTY LAUNDRY DETERGENT

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 747,002, Dec. 2, 1976, Pat. No. 4,260,651. This application Sep. 2, 1980, Ser. No. 183,021

Int. Cl.³ C02B *1/44*; C11D *3/10, 3/12, 11/00*

U.S. Cl. 252—174 **10 Claims**

1. A free flowing, phosphate free, particulate, heavy duty laundry detergent of bulk density of at least 0.6 g/cc and particle sizes in the range of 4 to 40 mesh which comprises nucleus particles of alkali metal carbonate and alkali metal bicarbonate, in a ratio of 1:10 to 10:1 by weight, initially of particle sizes in the 20 to 100 mesh range, containing and coated with a first coating of a normally liquid or pasty nonionic detergent, which nonionic detergent coating is coated with a first coating of detergent building zeolite particles, said zeolite particles comprising ion exchanging aluminosilicate zeolite selected from the group consisting of crystalline, amorphous and mixed crystalline and amorphous zeolites, said zeolites having an ultimate particle diameter in the range of from about 0.005 to about 20 microns, and wherein the percentages of alkali metal carbonate and alkali metal bicarbonate, zeolite and nonionic detergent in said first nonionic detergent and zeolite coated particle are in the ranges of about 20 to 40%, 40 to 60% and 10 to 30% respectively, and on said first nonionic detergent and zeolite coating a second coating of nonionic detergent, and on said second coating of nonionic detergent a second coating of said detergent building zeolite, wherein the amount of nonionic detergent coated onto said first formed particle is about 1:2 to 1:1 of the amount of nonionic detergent in said first formed particle, and wherein the amount of zeolite applied to said second nonionic detergent coating is about 1:2 to 1:1 of the amount of zeolite in said first formed particle and wherein said detergent building zeolite has ultimate particle diameters in the range of from about 0.005 to 20 microns, and wherein the hardness ion exchange rate and capacity of said zeolite is such that when about 375 ppm of said zeolite on an anhydrous basis is placed in water at about 45° C. containing about 40 ppm of undissolved calcium ion while vigorously stirring, the dissolved calcium ion content of the water is reduced to at least about 8 ppm in at least 5 minutes.

4,347,153

DEODORANT ABRASIVE CLEANER FOR SURFACE TREATMENT

David C. Hooper, Ashford; George A. Johnson, Gayton; Donald Peter, Thornton-Hough, and George K. Rennie, Bebington, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed May 14, 1979, Ser. No. 38,981

Claims priority, application United Kingdom, May 16, 1978, 19844/78

Int. Cl.³ C11D *3/14, 7/02*

U.S. Cl. 252—174.25 **15 Claims**

1. A deodorant abrasive cleaner product suitable for application to surfaces other than human skin, which product comprises:

(i) from 1 to 99.9% by weight of a water-insoluble particulate abrasive material having a particle size diameter of from 1 to 250 microns, a specific gravity of from 0.5 to 5 and a Mohs' hardness of from 2 to 7; and

(ii) from 0.1 to 20% by weight of a deodorant composition comprising from 45 to 100% by weight of deodorant active components, said components having a lipoxidase-inhibiting capacity of at least 50% or a Raoult variance ratio of at least 1.1, said components being classified into six classes consisting of:

Class 1: phenolic substances

Class 2: essential oils, extracts, resins and synthetic oils

Class 3: aldehydes and ketones

Class 4: polycyclic compounds

Class 5: esters

Class 6: alcohols

provided that where a component can be classified into more than one class, it is placed in the lower or lowest numbered class;

said components being so selected that

(a) the deodorant composition contains at least five components of which at least one must be selected from each of Class 1, Class 2 and Class 4;

(b) the deodorant composition contains components from at least 4 of the 6 classes; and

(c) any component present in the deodorant composition at a concentration of less than 0.5% by weight of said composition is eliminated from the requirements of (a) and (b);

the deodorant composition having a deodorant value of from 0.50 to 3.5 as measured by the Deodorant Value Test.

4,347,154

METHYLENE CHLORIDE STABILIZER FORMULATION FOR USE IN AEROSOLS

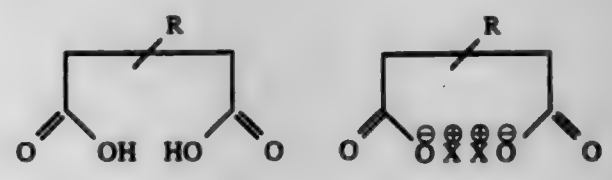
Robert W. Simmons, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 23, 1980, Ser. No. 199,787

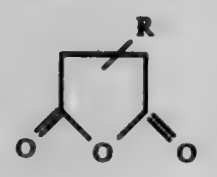
Int. Cl.³ C09K *3/30*; C07C *17/42*; C23F *11/14*

U.S. Cl. 252—305 **2 Claims**

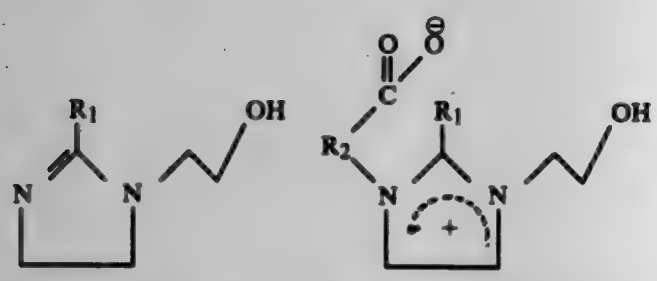
2. An aqueous aerosol composition containing a chlorinated hydrocarbon suitable for use in aerosol spray cans wherein said composition contains an inhibitor against metal corrosion which is selected from the group of substituted succinic acid and substituted imidazoline derivatives having the formulas



-continued



wherein X is sodium, potassium, ammonium or an amino group and R is an alkyl or alkenyl radical having from 3 to 16 carbon atoms, and



wherein R_1 is an aliphatic hydrocarbon radical having from one to twelve carbons and R_2 is a divalent hydrocarbon chain having from two to six carbon atoms, and wherein X, having the above meaning, may be substituted on the carboxyl radical of the imidazoline derivative.

4,347,155

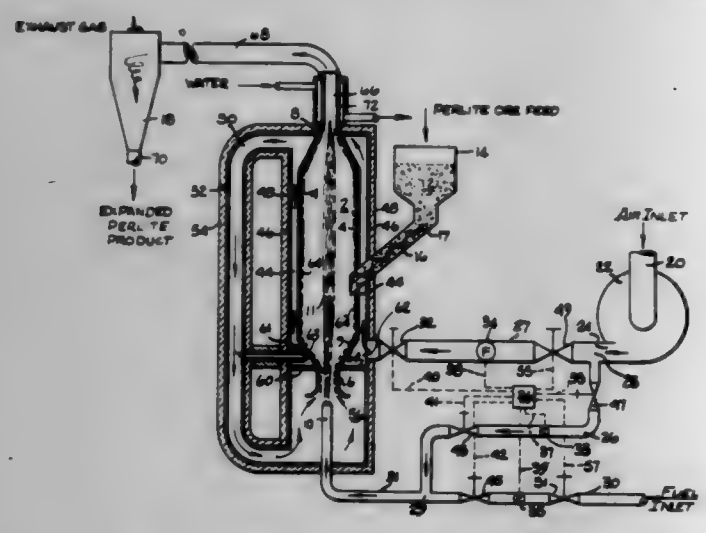
ENERGY EFFICIENT PERLITE EXPANSION PROCESS

Kenneth L. Jenkins, Littleton, Colo., assignor to Manville Service Corporation, Denver, Colo.

Continuation of Ser. No. 754,385, Dec. 27, 1976, abandoned. This application Mar. 19, 1981, Ser. No. 245,421

Int. Cl.³ C04B *31/26, 31/22;* F27B *15/00*

U.S. Cl. 252—378 P 8 Claims



1. In a perlite expansion process wherein perlite ore is charged to a flame zone in an expansion chamber where it is rapidly heated and expands, and is thereafter transported out of the flame zone by entrainment in the exhaust gas stream of the flame zone, and wherein said expansion chamber has an inlet port at one end and an outlet port at the other end and burner means for creating said flame zone is disposed directly in proximity to the inlet port; an improvement whereby the thermal energy consumed is efficiently utilized to expand perlite ore, sintering is minimized, improved perlite ore expansion is obtained, and equipment service life is extended, which improvement comprises:

(a) enclosing said inlet port and a delayed mixing gas burner in a first enclosure which is closed to the ambient atmosphere;

(b) providing said first enclosure with a cross-sectional area substantially greater than the cross-sectional area of said delayed mixing gas burner;

(c) providing a supply of air and a supply of fuel for combustion;

(d) separating the supply of air into a first air stream and a second air stream;

(e) mixing said first air stream with said supply of fuel and passing the resultant fuel/air mixture to said delayed mixing gas burner;

(f) controlling the relative proportions of air in said first stream and said second air stream such that the amount of air in said first air stream is that quantity which is at least sufficient to initiate and maintain minimal combustion of said fuel, but less than the amount which is required to obtain stoichiometric combustion of the fuel;

(g) passing said second air stream into a second enclosure which surrounds at least a portion of the wall of said expansion chamber and wherein said second air stream is heated by the heat passing through said wall of said chamber;

(h) passing the heated second air stream from said second enclosure through a conduit into said first enclosure;

(i) controlling the total amount of air provided such that the quantity of air is at least the amount necessary to obtain significant combustion of said fuel; and

(j) controlling the flow rate and ratio of said fuel and air such that a long luminous flame having a diameter substantially less than the diameter of said expansion chamber is produced throughout at least half the axial dimension of said expansion chamber, a moving laminar layer of air is created along the inner surface of said wall of said expansion chamber, and the length of the flame path and temperature of the flame zone are suited to the characteristics of the perlite ore feed.

2. A process as in claim 1 wherein the volumetric ratio of the amount of air in said first air stream to the amount of air in said second air stream is in the range of 1:9 to 3:2.

8. A process as in claim 1 and further comprising:

(a) passing said second air stream into said second enclosure at a location adjacent to the bottom of said expansion chamber.

4,347,156

SYSTEM AND PROCESS FOR REACTIVATING CARBON

Luis A. Lombana, Belmont; Daniel E. Myers, Palo Alto, both of Calif., and Orris E. Albertson, Salt Lake City, Utah, assignors to Lurgi Corporation, Belmont, Calif.

Continuation of Ser. No. 26,485, Apr. 2, 1979, abandoned. This application Feb. 11, 1981, Ser. No. 233,337

Int. Cl.³ B01J *20/34;* C01B *31/10;* F23G *5/04;* F26B *17/12*

U.S. Cl. 252—420 5 Claims

1. A process for reactivating wet spent activated carbon, in a furnace having at least a baking zone and a reactivating zone comprising:

a. heating the wet spent activated carbon in a drying means to drive off water as steam;

b. thereafter removing volatile organic chemicals by baking the carbon in a passing stream of gas in the baking zone to drive off the volatile organic chemicals and carry the chemicals out in the stream of gas;

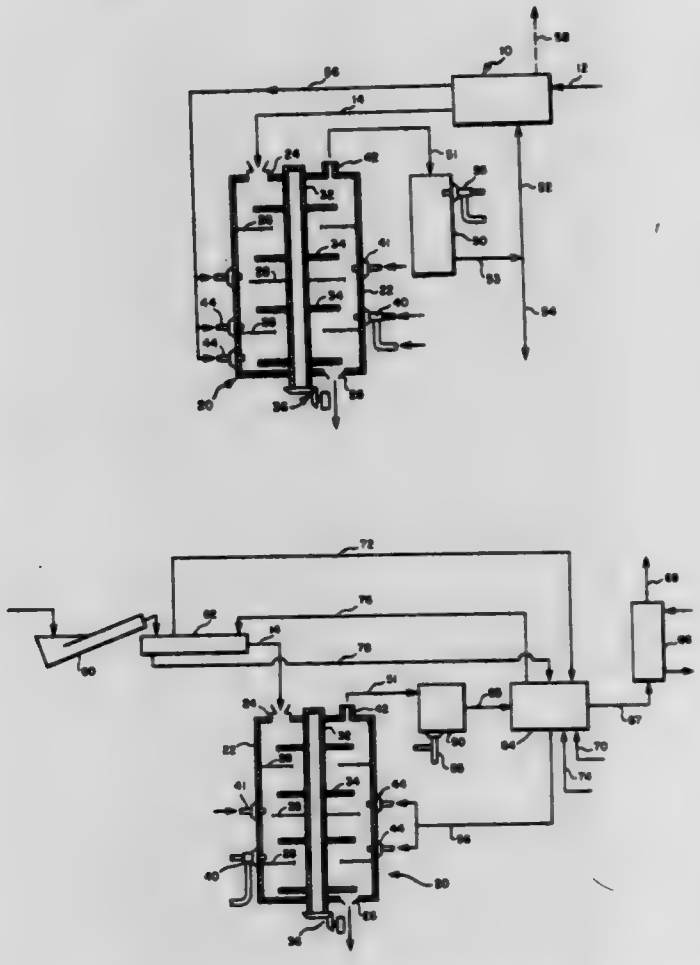
c. transferring steam which was evolved from the wet spent activated carbon to the reactivating zone;

d. reactivating the baked carbon in the reactivating zone in the presence of the steam substantially all of which was evolved from the wet spent activated carbon in the drying means;

e. transferring the gas containing volatile organic chemicals from the baking zone to an afterburner to burn the chemicals;

f. removing hot gas from the afterburner and bringing the gas into heat exchange relationship with the wet spent

activated carbon in the drying means to heat and dry the wet spent activated carbon and simultaneously provide a



source of steam for reactivation of the spent activated carbon.

4,347,157

CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Yasuharu Yamada, Osaka, and Kiyoshi Kawai, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 7, 1980, Ser. No. 138,148

Claims priority, application Japan, Apr. 25, 1979, 54-51641; Jan. 28, 1980, 55-9200

Int. Cl.³ C08F 4/64, 4/68

U.S. Cl. 252—429 B 19 Claims

1. A solid catalyst component for olefin polymerization prepared by a method consisting essentially of reacting an organomagnesium compound represented by the formula,

$$R^5MgX \text{ or } R^6{}_2Mg$$

wherein R^5 and R^6 are each alkyl, aryl, aralkyl or alkenyl group having 1 to 20 carbon atoms, and X is a chlorine, bromine or iodine atom,

$$R^1{}_aA1(OR)_bX_c$$

with an alkoxy aluminum compound of the formula wherein R^1 and R^2 are each a hydrocarbon group having 1 to 20 carbon atom, X is a halogen atom and a,b, and c are numbers satisfying the equations at the same time,

$$O \leq a < 3,\ O < b < 3,\ O \leq c < 3,\ a+b+c=3$$

to produce a solid product which is a catalyst carrier, and supporting a titanium compound and/or a vanadium compound on said solid product.

4,347,158

SUPPORTED HIGH EFFICIENCY POLYOLEFIN CATALYST COMPONENT AND METHODS OF MAKING AND USING THE SAME

Malcolm J. Kaus, Mohegan Lake, N.Y., and Nemesio D. Miro, Woodridge, N.J., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed May 2, 1980, Ser. No. 146,341

Int. Cl.³ C08F 4/64, 4/68, 4/62

U.S. Cl. 252—429 B 18 Claims

1. A method of producing a polymerization catalyst component suitable for use in the polymerization of alpha-olefins, comprising:

(a) co-comminuting a support base, an inorganic Lewis acid and a first organic electron donor to form a catalyst component support suitable for use in alpha-olefin polymerization, said support base selected from the group consisting of the Group IIA and IIIA salts and the salts of the multivalent metals of the first transition series with the exception of copper; and

(b) then co-comminuting said catalyst component support formed in step(a) with a polymerization-active tri-, tetra-, or penta-valent transition metal compound of a Group IVB-VIB metal.

4,347,159

ACTIVATORS FOR ZIEGLER TYPE POLYMERIZATION CATALYSTS

Walter Nudenberg, Newtown; Yong S. Rim, Woodbridge, and Demetreos N. Matthews, Bethany, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed May 23, 1980, Ser. No. 152,900

Int. Cl.³ C08F 4/68

U.S. Cl. 252—429 B 19 Claims

1. A catalyst composition comprising an activator in combination with a primary catalyst system, wherein said primary catalyst system comprises a vanadium compound and an organometallic compound of the formula RMgX, $LiAlR_4$, or $R_AAl_2X_B$, wherein R is a hydrocarbon radical having 1 to 12 carbon atoms, X is a halogen atom; A is a number from 2 to 6, and B is a number from 0 to 4, with the proviso that the sum of A and B is 6 and that at least one of the groups attached either to the vanadium compound or to the organometallic compound is a halogen atom, and said activator is a chlorinated tetrahydrofurfuryl tetrahydrofuroate, an alkyl ester of chlorinated tetrahydrofuroic acid wherein the alkyl group has 1 to 8 carbon atoms, a chlorinated alkylene bis-tetrahydrofuroate wherein the alkylene group has 2 or 3 carbon atoms, a chlorinated oxy-bis [alkylene (2-furoate)], wherein the alkylene group is ethanediyl, 1,3 propanediyl, alkyl substituted ethanediyl or alkyl substituted, 1,3 propanediyl wherein the alkyl group on the ethanediyl or 1,3 propanediyl has 1 to 8 carbon atoms.

4,347,160

TITANIUM HALIDE CATALYST SYSTEM

Ronald A. Epstein, and Robert I. Mink, both of Yonkers, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 27, 1980, Ser. No. 163,615

Int. Cl.³ C08F 4/64

U.S. Cl. 252—429 B 54 Claims

1. A catalyst system comprising:

(a) an organoaluminum containing component; and

(b) a titanium halide containing component obtained by:

(i) co-pulverizing a halogen containing magnesium compound with an electron-donor compound to produce a co-pulverized product;

(ii) reacting the co-pulverized product with an organic phosphite to produce a reaction product; and

(iii) reacting the reaction product with a titanium halide compound.

4,347,161

POLYMERIZATION OF OLEFINS

Richard E. Dietz, and Max P. McDaniel, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 3,439, Jan. 15, 1979, Pat. No. 4,240,929.
This application Aug. 7, 1980, Ser. No. 176,218
The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.
Int. Cl.[3] C08F *4/64*
U.S. Cl. 252—429 B 23 Claims

1. A catalyst composition obtained by milling a magnesium alkoxide with an intimate mixture of a magnesium dihalide and a tetravalent, halogenated titanium compound represented by the formula $TiX_a(OR')_{4-a}$ in which X stands for bromine, chlorine or iodine or mixtures thereof, a is an integer of 1 to 4 and R' is an alkyl, cycloalkyl, or aryl group and combinations thereof containing from 1 to about 20 carbon atoms in the presence of chlorinated silica.

4,347,162

CATALYST FOR THE POLYMERIZATION OF ALPHA-OLEFINS

Renzo Invernizzi, Milan; Ferdinando Ligorati, Usmate; Maurizio Fontanesi, Concorezzo, and Roberto Catenacci, Milan, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Mar. 6, 1981, Ser. No. 241,288
Int. Cl.[3] C08F *4/64*
U.S. Cl. 252—429 B 16 Claims

1. A Ziegler catalytic system formed by the combination of an organometallic compound of a metal of Group I, II or III of the Periodic System of the Elements and a catalytic component formed of a compound of a transition metal of Group IV, V or VI of said Periodic System supported on a carrier, characterized in that said carrier is an active solid complex obtained by reacting magnesium chloride with an aliphatic alcohol and a fluorine-containing compound at a temperature of from about 100° C. to about 200° C., said complex comprising from 2 to 15% by weight of fluorine and from 0.4 to 11% by weight of alcoholic hydroxyl groups.

4,347,163

TE-CONTAINING METHACROLEIN OXIDATION CATALYSTS AND THEIR USE

Wilfrid G. Shaw, Lyndhurst, and Christos Paparizos, Willowick, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Oct. 3, 1980, Ser. No. 193,865
Int. Cl.[3] B01J *27/14*
U.S. Cl. 252—435 8 Claims

1. A catalytic composition of the empirical formula:

$$Mo_{12}P_{0.1\text{-}3}Te_{0.01\text{-}2}M_{0.1\text{-}3}M'_{0.01\text{-}3}X_aO_b \quad (I)$$

M is at least one of K, Rb and Cs;
M' is Cu or a combination of Cu and V;
X is at least one of Ba, Zn, Ga, Nb, Cd, Ti, Ca, Mg, Ta, Zr, Bi, Ce, Ce, Ni, Co, Cr, Fe and Tl when a >0;
a is a number of 0 to about 2; and
b is a number that satisfies the valence requirements of the other elements present.

4,347,164

MONO- AND POLY-METALLIC SUPPORTED CATALYSTS

Julius Scherzer, Anaheim, Calif., assignor to Filtrol Corporation, Los Angeles, Calif.

Filed Dec. 8, 1980, Ser. No. 214,212
Int. Cl.[3] B01J *29/10, 29/20, 27/26*
U.S. Cl. 252—455 Z 7 Claims

1. A process for preparing a zeolite containing uniformly distributed, finely divided metal particles which comprises treating a Y-type zeolite having a metal cation in exchangeable position with an aqueous solution containing a complex cyanide salt dissolved therein, the anion of the complex salt being capable of forming a water-insoluble salt with the exchangeable cation of the zeolite, exchanging the cation of the complex salt with the exchangeable cation of the zeolite and reacting the anion of the complex salt with the exchanged cation of the zeolite, separating the treated zeolite from the solution, drying the zeolite and subjecting the dried zeolite to a reducing gas treatment to decompose the cyanide and to form finely dispersed metal particles in the zeolite of a size below the limits of detection by x-ray radiation.

2. A process according to claim 1 wherein the zeolite contains after the treatment with the complex cyanide salt at least one of the metals selected from the group consisting of cobalt, iron, copper, manganese, nickel, tin, zinc, a rare earth metal of the Lanthanide series.

4,347,165

CONDUCTOR POWDERS

Neil Matheson, III, Garland, Tex., assignor to Graham Magnetics, Inc., North Richland Hills, Tex.

Filed Mar. 5, 1979, Ser. No. 17,419
Int. Cl.[3] H01B *1/02*
U.S. Cl. 252—513 5 Claims

1. An electroconductive paint product, containing electroconductive metal particles in a liquid vehicle, said particles being present in a quantity effective, upon solidification of said paint, to be in particle-to-particle contact with one another, and wherein said particles have a stabilized electroconductive surface comprising

(a) a first reaction product of said electroconductive metal with an electroconductive carbide, nitride, boride or silicide and, also,

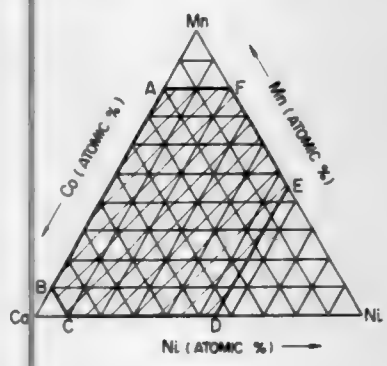
(b) an effective amount of second reaction product of said electroconductive metal with sulfur to form means to improve the stability of the electroconductivity of a coating formed of said paint to moisture and heat.

4,347,166

THERMISTOR COMPOSITION

Hiromi Tosaki; Hideo Arima; Teruo Mozume; Akira Ikegami, all of Yokohama; Tokio Isogai, and Ichiro Tsubokawa, both of Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 22, 1979, Ser. No. 14,276
Claims priority, application Japan, Feb. 22, 1978, 53/18461
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—519 8 Claims



1. A thermistor material, which comprises a spinel complex metal oxide of a fired mixture of powder of manganese oxide and powder of ruthenium oxide with at least one of powder of cobalt oxide and powder of nickel oxide, the spinel complex metal oxide containing 0.5–40% by atom of ruthenium atom.

4,347,167
FINE-GRAIN SEMICONDUCTING CERAMIC COMPOSITIONS

David A. Payne, Champaign, Ill., and Sang M. Park, Penn Yan, N.Y., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Oct. 1, 1980, Ser. No. 192,693
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—520 15 Claims

1. A method for producing a fine-grain semiconducting internal boundary layer ceramic composition comprising the steps of:

A. forming a mixture comprising:

(a) about 89–99.3% by weight of finely divided strontium titanate;

(b) a combination of metal oxides selected from

(1) about 0.1–5% of an oxide of a tetravalent metal selected from the group consisting of Ti, Zr, Ge, Si and Sn, and about 0.5–5.0% of an oxide of a trivalent metal selected from the group consisting of Bi, B, Fe, Sb, La and the rare earth and transition metals; and

(2) about 0.1–5% of an oxide of a divalent metal selected from the group consisting of Sr, Ca, Ba and Pb and about 0.5%–5% of an oxide of a pentavalent or hexavalent metal selected from the group consisting of W^{+6}, Nb^{+5}, Ta^{+5} and Mo^{+6}, and

(c) about 0.1–1.0% of an oxide of a univalent metal selected from the group consisting of Cu and Ag; and

B. pressing and firing the mixture of step A at a temperature of about 1200°–1400° C. for about 10–300 minutes.

4,347,168
SPRAY-DRIED GRANULAR DETERGENT COMPOSITIONS FOR IMPROVED GREASY SOIL REMOVAL

Alan P. Murphy, Cincinnati, Ohio; Rory J. M. Smith, Rowlands Gill, and Maxim C. Brooks, Newcastle upon Tyne, both of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 959,039, Nov. 8, 1978, abandoned. This application Aug. 1, 1980, Ser. No. 174,486
Claims priority, application United Kingdom, Nov. 17, 1977, 47981/77
Int. Cl.³ C11D *1/86, 17/06*
U.S. Cl. 252—547 12 Claims

1. A spray-dried granular detergent composition having improved odor characteristics and containing from about 6% to about 15% of a surface active system comprising:

(a) from about 10% to about 40% by weight of a cationic surfactant which is quaternary ammonium salt having one group which is a C_{12-18} alkyl or alkenyl, a second group which is methyl, a third group which is hydroxyethyl and a fourth group which is selected from the group consisting of methyl and hydroxyethyl;

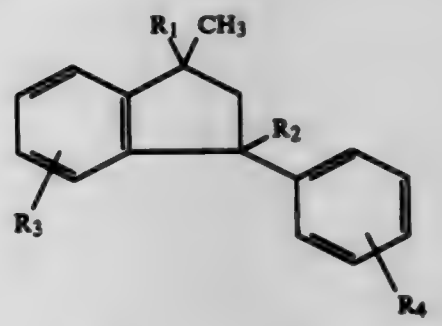
(b) at least about 50% by weight of a mixture of anionic and alkoxylated nonionic surfactants in a weight ratio of 3:1 to 1:3.

4,347,169
ELECTRICAL INSULATING OIL AND OIL-FILLED ELECTRICAL APPLIANCES

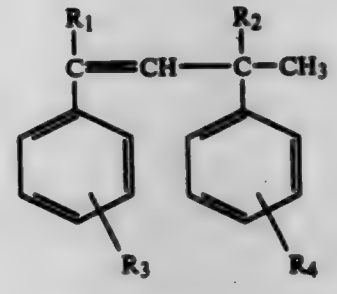
Atsushi Sato, Tokyo; Naoya Takahashi, Yokohama; Keiji Endo, Yokohama, and Hitoshi Yanagishita, Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Jun. 23, 1981, Ser. No. 276,709
Claims priority, application Japan, Jun. 30, 1980, 55-88924; Jun. 30, 1980, 55-88925; Jun. 30, 1980, 55-88926; Jul. 22, 1980, 55-99380; Jul. 22, 1980, 55-99381; Jul. 22, 1980, 55-99382
Int. Cl.³ H01B *3/00;* H05K *5/00;* H01B *7/02;* H01G *4/22*
U.S. Cl. 252—567 16 Claims

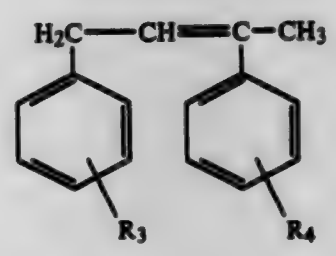
7. An oil-filled electrical appliance which is impregnated with an electrical insulating oil comprising at least one member of diarylalkanes and at least one member selected from the group consisting of the compounds represented by the general formulae (I) to (IV):



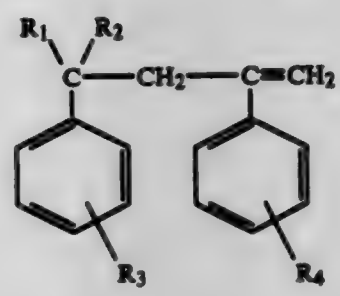
(I)



(II)



(III)



(IV)

wherein each of R_1 to R_4 is a hydrogen atom or a methyl group and the total number of carbon atoms in R_1 to R_4 is an integer from zero to 2.

15. The oil-filled electrical appliance in any one of claims 7 to 12, wherein the insulating material used in said oil-filled electrical appliance is insulating paper or synthetic resin film or their combination.

4,347,170
UNSATURATED POLYESTER COMPOSITIONS AND THEIR USE

Waltherus J. Sep, Doorn, and Adam Huijsman, Hasselt, both of Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Oct. 6, 1980, Ser. No. 194,500
Claims priority, application United Kingdom, Oct. 12, 1979, 7935602
Int. Cl.³ C08L *91/06;* C08K *5/03, 5/05*
U.S. Cl. 523—511 7 Claims

1. An unsaturated curable polyester composition comprising:

(a) an unsaturated polyester which is derived from an ethylenically unsaturated dicarboxylic acid, a C_2–C_6 diol and optionally a saturated or hydro-aromatic dicarboxylic acid;

(b) a volatile reactive monomer selected from the group consisting of styrene, vinyl-toluene and α-methylstyrene in an amount of 30–60% by weight; and

(c) from 0.005 to 3% by weight of a combination of adjuncts comprising

(1) a paraffin wax having an average molecular weight of 250–700, and

(2) An alkylaromatic or alkenylaromatic compound having from 10 to 30 carbon atoms, or a mono-alcohol selected from the group consisting of n-octanol-1, 2-ethyl-hexanol-1, dodecanol-1, tetradecylol-1 and hexadecanol-1,

in which the weight ratio of (c1): (c2) is from 1:20 to 1:2.

4,347,171

CHEMICALLY MODIFIED ASPHALT JOINT SEALING COMPOSITIONS

William E. Uffner, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 25, 1981, Ser. No. 247,565

Int. Cl.³ C08L *95/00*

U.S. Cl. 524—71 **1 Claim**

1. A composition for use as a highway joint sealing material, said composition having a recovery of at least 60% for the resilience test of ASTM D 3405-75-T and having at least five cycles for the bond test of Federal Specification SS-S-164, said composition comprising the reaction product of a mixture consisting essentially of asphalt flux, styrene and a vulcanizable styrene-butadiene rubber, said rubber being a copolymer of about 25% by weight styrene and about 75% by weight butadiene, and said mixture being about 69.4% to about 73.8% asphalt flux, about 10.9% to about 12.6% styrene and about 14.8% to about 18.3% of said rubber, based on the weight of flux, styrene and said rubber.

4,347,172

PROCESS AND COMPOSITION FOR COATING METALS

Takao Nishida, and Takashi Hirohata, both of Osaka, Japan, assignors to Amchem Products, Inc., Ambler, Pa.

Division of Ser. No. 797,758, May 17, 1977, abandoned, and a continuation-in-part of Ser. No. 445,434, Feb. 25, 1974, abandoned, which is a continuation of Ser. No. 232,625, Mar. 7, 1972, abandoned. This application May 15, 1980, Ser. No. 150,082

Claims priority, application Japan, Mar. 10, 1971, 46/012462

Int. Cl.³ C08L *9/06, 23/06*

U.S. Cl. 524—319 **34 Claims**

1. An acidic aqueous coating composition for use in coating metal surfaces having a pH of about 1.6 to about 5.0 and comprising solid particles of resin dispersed in said composition, dissolved fluoride, and a ferric iron-containing compound which is soluble in said composition and which is a source of soluble ferric iron, the source of said soluble ferric iron including a source other than said metal surface, and wherein said soluble iron-containing compound is present in an amount such that it releases at least about 0.025 g/l of dissolved ferric iron into the composition, and wherein said ingredients are present in amounts such that the said composition is capable of forming on a metal surface immersed therein and in a substantially electrostatic field-free environment a resinous coating which increases in amount during at least a portion of the time said surface is immersed in said composition.

4,347,173

OPAQUE BLACK DYE FOR COLOR CODING OF WIRE ENAMELS, VARNISHES AND SYNTHETIC RESINS

Jacques S. Merian, and Gerald J. Schiller, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 6, 1980, Ser. No. 156,962

Int. Cl.³ C08L *77/06*

U.S. Cl. 524—88 **12 Claims**

1. An organic wire enamel, varnish, or synthetic resin containing a phthalocyanine blue dye and a red dye which is a mixture of a rhodamine violet dye and a monoazo chromium complex yellow dye.

4,347,174

CEMENT COMPOSITIONS

Yoshinori Nagase; Kyoichiro Shibatani; Junichi Yamauchi, and Ikuo Omura, all of Kurashiki, Japan, assignors to Kuraray Company, Limited, Kurashiki, Japan

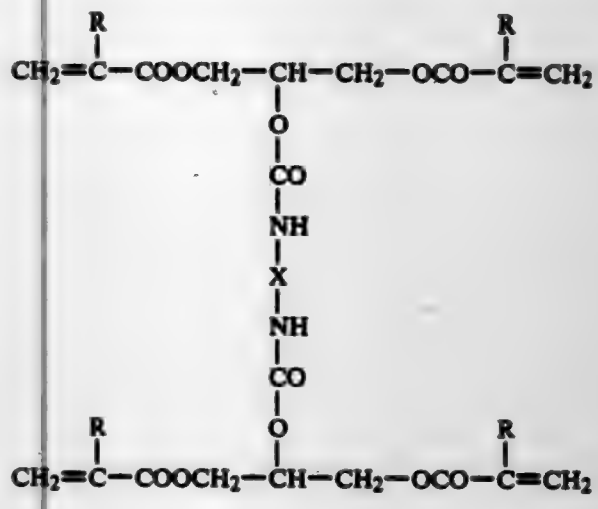
Filed Apr. 21, 1981, Ser. No. 256,154

Claims priority, application Japan, Apr. 29, 1980, 55-57598; Nov. 17, 1980, 55-162515

Int. Cl.³ A61K *6/08;* C08K *3/36, 5/54;* C08F *26/02*

U.S. Cl. 523—116 **34 Claims**

1. In a cement composition which comprises (a) a filler, (b) a binder to be used in admixture with the filler, and (c) a curing agent for polymerizing the binder, the cement composition which is characterized by that said binder comprises, based on the total weight of the binder, 20–100% by weight of (A) a free-radical polymerizable monomer of the following formula:



wherein R is a hydrogen atom or a methyl group and X is an organic residue having 1–48 carbon atoms, and 0–80% by weight of (B) a mono-, di- or tri-functional free-radical polymerizable monomer which is copolymerizable with monomer (A).

4,347,175

METHOD FOR STABILIZATION OF POLYMERS

Olga A. Shustova, Grokholsky pereulok, 30, korpus 1, kv. 41; Georgy P. Gladyshev, Vinnitskaya, ulitsa 5, kv. 111, and Tamara P. Potapova, Bolshaya Cheremushkinskaya ulitsa, 1, korpus 2, kv. 64, all of Moscow, U.S.S.R.

Filed Nov. 23, 1977, Ser. No. 854,207

Int. Cl.³ C08K *5/09*

U.S. Cl. 523—455 **7 Claims**

1. A method for stabilizing polymers susceptible to oxidative destruction which comprises intermixing a homopolymer or copolymer selected from the group consisting of epoxies, polyamides, polyimides, silicones and fluoroorganic polymers with a multi-valent metal formate in an amount ranging from 0.1 to 20 parts by weight per 100 parts by weight of the polymer, heat-treating the polymer-formate mixture at the decomposition temperature of the multi-valent metal formate for a time sufficient to completely decompose said formate.

4,347,176

COMPOUNDS AND METHODS OF MAKING SAME

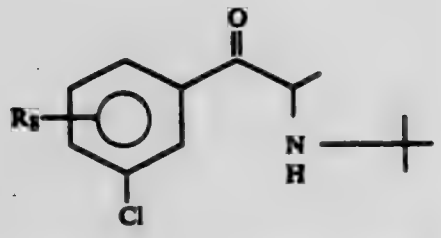
Nariman B. Mehta, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Apr. 14, 1980, Ser. No. 140,157

Int. Cl.³ C07G *7/00;* C07C *69/527, 101/30;* G01N *33/54*

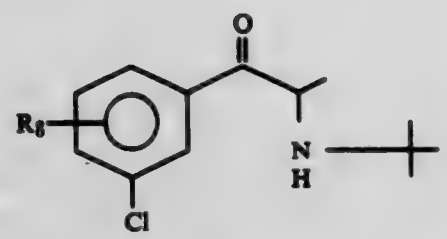
U.S. Cl. 260—112 B **18 Claims**

1. A compound of the formula



wherein R_8 is $(CH_2)_n$—O—$CO(CH_2)_p$—CO_2H where n is an integer from 1 to 5 and p is an integer from 1 to 4.

14. An immunogen comprising a conjugate comprising a compound of formula:



wherein R_8 is as defined for claim 1, coupled to a suitable immunogenic carrier material.

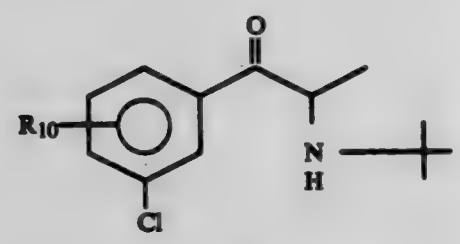
4,347,177

COMPOUNDS AND METHODS OF MAKING THEM

Arthur P. Phillips, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Apr. 14, 1980, Ser. No. 140,159
Int. Cl.³ C07G *7/00*; C07C *103/30*; G01N *33/54*
U.S. Cl. 260—112 B 21 Claims

1. A compound of the formula



wherein R_{10} is O—$(CH_2)_p$COOH where p is an integer from 1 to 4.

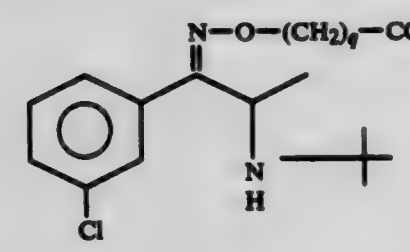
4,347,178

COMPOUNDS AND METHODS OF MAKING

John W. A. Findlay, Chapel Hill; Robert F. Butz, Durham, and Richard M. Welch, Raleigh, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

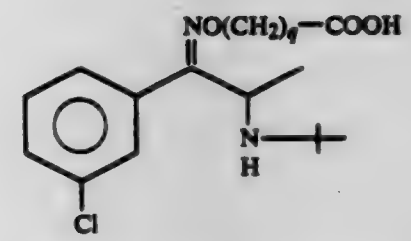
Filed Apr. 14, 1980, Ser. No. 140,160
Int. Cl.³ C07C *123/00, 131/00*; G01N *33/54*
U.S. Cl. 260—112 B 14 Claims

1. A compound of the formula



where q is an integer from 1 to 3.

11. An immunogen comprising a conjugate comprising a compound of formula



wherein q is as defined for claim 1, coupled to a suitable immunogenic carrier material.

4,347,179

PROCESS FOR THE PREPARATION OF IMMUNOGAMMAGLOBULIN USING TRITHIONATE COMPOUNDS

Syoji Ono, Kodaira; Shuzi Miura, Hino, and Tsunemasa Yoshida, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP79/00131, § 371 Date Jan. 23, 1981, § 102(e) Date Jan. 22, 1981, PCT Pub. No. WO80/02561, PCT Pub. Date Nov. 27, 1980
PCT Filed May 23, 1979, Ser. No. 233,611
Int. Cl.³ A61K *39/395, 39/44*; C07G *7/00*
U.S. Cl. 260—112 B 8 Claims

1. A process for the preparation of immunogammaglobulin derivatives in which the reaction of human immunogammaglobulin with a compound capable of forming trithionate ion and another compound capable of forming sulfite ion in water is carried out in water to cleave interchain disulfide bonds in said immunogammaglobulin and simultaneously the sulfur atoms cleaved are S-sulfonated (—S—SO_3^-).

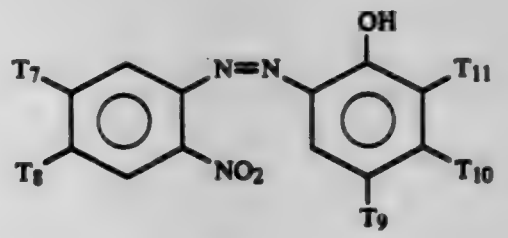
4,347,180

HIGH CAUSTIC COUPLING PROCESS FOR PREPARING SUBSTITUTED 2-NITRO-2'-HYDROXYAZOBENZENES

Roland A. E. Winter, Armonk, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 38,768, May 16, 1979, Pat. No. 4,275,004, which is a continuation-in-part of Ser. No. 918,984, Jun. 26, 1978, Pat. No. 4,226,763. This application Jan. 5, 1981, Ser. No. 222,808
The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.
Int. Cl.³ C07C *107/06*; C07D *249/20*; C09B *29/12*
U.S. Cl. 260—206 11 Claims

1. A process for the production of a compound of the formula



wherein

T_7 is hydrogen or chlorine,

T_8 is hydrogen, chlorine, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, carboalkoxy of 2 to 9 carbon atoms, carboxy or —SO_3H,

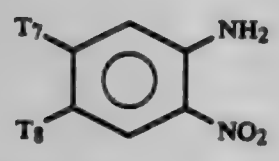
T_9 is alkyl of 1 to 12 carbon atoms, alkoxy of 1 to 4 carbon atoms, phenyl, phenyl substituted with alkyl groups, said alkyl groups having 1 to 8 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, carboalkoxy of 2 to 9 carbon atoms, chlorine, carboxyethyl or arylalkyl of 7 to 9 carbon atoms,

T_{10} is hydrogen, alkyl of 1 to 12 carbon atoms, lower alkoxy

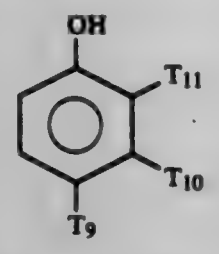
of 1 to 4 carbon atoms, aralalkyl of 7 to 9 carbon atoms, chlorine or hydroxyl, and

T_{11} is hydrogen, which comprises

adding an essentially stoichiometric to a small excess amount, relevant to the phenol to be coupled, of an aqueous mineral acid solution of a diazonium salt of an amine of the formula



where T_7 and T_8 are defined as above, to a strongly alkaline lower alkanol or aqueous lower alkanol solution of a phenol of the formula



where T_9, T_{10} and T_{11} are defined as above, containing alkali metal hydroxide in sufficient amount to neutralize completely the acid diazonium salt solution as added and to still provide an excess of hydroxyl ion concentration and to provide a pH value substantially over 11 throughout the coupling reaction in the reaction mixture, wherein the reaction solvent mixture is at least 50% by weight of lower alkanol, while maintaining the reaction temperature between −15° C. and +30° C., and

acidifying the reaction mixture to isolate the product.

4,347,181

INTERMEDIATES FOR PRODUCING BICYCLIC β-LACTAM-ANTIBIOTICS

Terence C. Smale, Epsom Downs, England, assignor to Beecham Group Limited, England

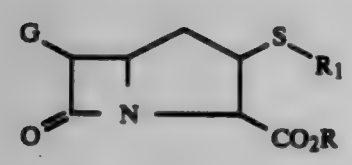
Division of Ser. No. 955,598, Oct. 30, 1978, Pat. No. 4,223,038. This application Feb. 11, 1980, Ser. No. 120,499

Claims priority, application United Kingdom, Dec. 11, 1977, 47201/77

Int. Cl.³ C07D *487/04*; A61K *31/40*

U.S. Cl. 260—245.2 T **29 Claims**

1. A compound of the formula



wherein

R_1 is alkyl of 1 to 6 carbon atoms, unsubstituted or monosubstituted by hydroxy, amino, alkanoylamino of 1 to 6 carbon atoms, benzyloxycarbonylamino, or p-nitrobenzyloxycarbonylamino; phenyl; or phenyl substituted by one or more members selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, amino alkanoylamino of 1 to 6 carbon atoms, benzyloxycarbonylamino or p-nitrobenzyloxycarbonylamino;

R is alkyl of 1 to 6 carbon atoms, benzyl, p-nitrobenzyl, p-methoxybenzyl, phenacyl, p-bromophenacyl, 2,2,2-trichloroethyl, phthalidyl, phthalimidomethyl, α-ethoxycarbonylethyl or alkanoyloxymethyl of 1 to 6 carbon atoms, and

G is hydrogen, alkyl or alkenyl, said alkyl and alkenyl being unsubstituted or substituted by hydroxy, oxo, methoxycarbonyl, phenyl or phenyl substituted by alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, nitro or halo.

4,347,182

PREPARATION OF PENICILLANIC ACID DERIVATIVES

Peter J. Giddings, Westbury; David I. John, Epsom Downs, and Eric J. Thomas, Oxford, all of England, assignors to Beecham Group Limited, England

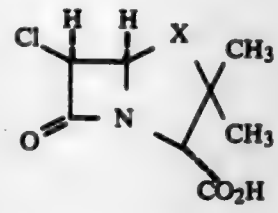
Filed Mar. 24, 1980, Ser. No. 133,627

Claims priority, application United Kingdom, Mar. 29, 1979, 7911038; May 3, 1979, 7915469; European Pat. Off., Jan. 7, 1980, 80300067.8; Japan, Jan. 10, 1980, 55/1720

Int. Cl.³ C07D *499/00*

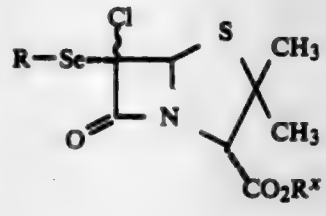
U.S. Cl. 260—245.2 R **5 Claims**

1. A process for the preparation of a compound of the formula (I):



(I)

wherein X is S, SO or SO_2, or a pharmaceutically acceptable salt or in-vivo hydrolysable ester thereof which process comprises reacting compound of the formula (II):



(II)

wherein R^x is hydrogen or a carboxyl-blocking group and R is phenyl unsubstituted or substituted by C_{1-3} alkyl, C_{1-3} alkoxy, hydroxy or nitro to deselenate it without 6-dehalogenation with a trialkyl tin hydride or a dialkyl tin dihydride or triphenyl tin hydride wherein the phenyl groups are unsubstituted or substituted by C_{1-3} alkyl, C_{1-6} alkoxy, hydroxy or nitro, and thereafter optionally removing any carboxyl-blocking group R^x; and/or oxidising the S atom to an SO or SO_2 group; and/or esterifying the salt of the compound of the formula (I) to yield an in-vivo hydrolysable ester thereof.

4,347,183

PROCESS FOR THE SYNTHESIS OF PENEMS AND CARBAPENEMS

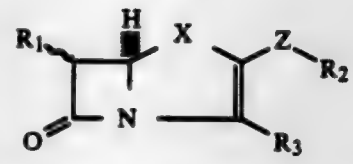
Adriano Afonso, West Caldwell, and Frank Hon, Paramus, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Feb. 2, 1981, Ser. No. 230,774

Int. Cl.³ C07D *499/04*

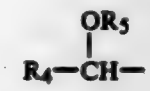
U.S. Cl. 260—245.2 R **16 Claims**

1. The process for the preparation of a compound of Formula I:



I

wherein R_1 is hydrogen, lower alkyl, acylamino or



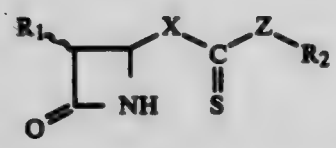
wherein R_4 is hydrogen, lower alkyl, aryl, heteroaryl and R_5 is an O-protecting group:

R_2 is lower alkyl, aryl, alkylaryl, an N-protected amino-lower alkyl, an O-protected hydroxyalkyl, thioalkyl, thioaryl, thioheteroaryl, an α-(N-protected) amino acid ester or an alkylcarboxylic acid ester;

R_3 is nitrile, tetrazole, or —$COOR_6$ wherein R_6 is lower alkyl, lower alkylthihalogenomethykl, aryl, allyl, or a metabolisable ester:

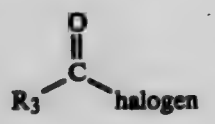
X and Z are independently sulfur, oxygen, -NR_7 wherein R_7 is acyl, alkyl, aryl, or an N-protecting group; or —$(CH_2)_n$—wherein n is 1 or 2;

which comprises the reaction of an azetidinone of Formula A:



A

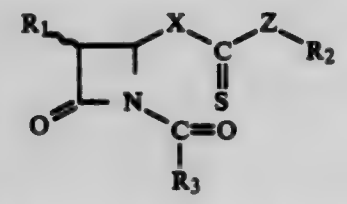
wherein R_1, R_2, X and Z are as hereinabove defined, with an acid halide of Formula B:



B

wherein in R_3 is as hereinabove defined,

in an inert solvent in the presence of a tertiary amine and an alkaline earth metal carbonate; followed by reaction of the thereby produced imido derivative of Formula C:



C

wherein in R_1, R_2, R_3, X and Z are as hereinabove defined:

with a trialkyl phosphite, said reaction being carried out at temperatures in the range of from about 20° to about 80° C.

4,347,184

PROCESS FOR SEPARATING AND RECOVERING COPROPORPHYRIN AND UROPORPHYRIN FROM A CULTURE BROTH CONTAINING THEM

Ichiro Kojima; Kenji Maruhashi, both of Yokohama, and Yasuo Fujiwara, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Mar. 25, 1981, Ser. No. 247,501
Claims priority, application Japan, Mar. 25, 1980, 55-036882
Int. Cl.³ C07D *207/00*
U.S. Cl. 260—314 1 Claim

1. A process for separating and recovering coproporphyrin III and uroporphyrin III from a cultured broth containing them, which comprises

(1) adjusting the pH of the liquid phase of a cultured broth containing coproporphyrin III and uroporphyrin III to a range of 2.5 to 4 to form a solid precipitate containing coproporphyrin III and uroporphyrin III and collecting the precipitate,

(2) preparing an aqueous alkaline solution of the solid precipitate obtained in step (1), adjusting the pH of the solution to a range of more than 4 but not over 6, to form a solid precipitate containing coproporphyrin III, and collecting the precipitate, and

(3) adjusting the pH of the residue left after collection of the precipitate in step (2) to a range of 1 to 4 to form a solid precipitate containing uroporphyrin III and collecting the precipitate.

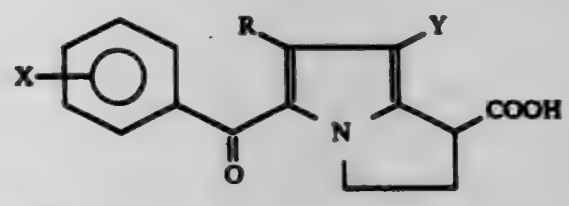
4,347,185

PROCESSES FOR PREPARING 5-BENZOYL-7-HALO-1,2-DIHYDRO-3H-PYRROLO[1,2-A]PYRROLE-1-CARBOXYLIC ACIDS

Joseph M. Muchowski, Sunnyvale, Calif., and Robert Greenhouse, Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 20, 1980, Ser. No. 198,551
Int. Cl.³ A61K *31/40*; C07D *487/04, 209/00*
U.S. Cl. 260—326.25 20 Claims

1. A process for preparing a compound of the formula



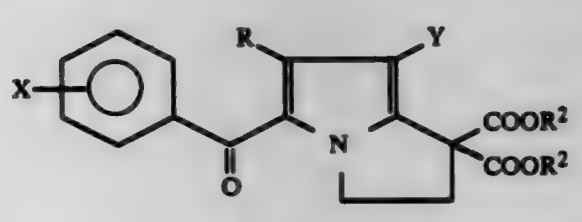
(VII)

wherein

R is hydrogen or lower alkyl;

X is hydrogen, lower alkyl, lower alkoxyl, lower alkoxycarbonyl, carboxyl, lower alkylcarbonyl, sulfonic acid, sulfonic acid alkyl ester, fluoro, chloro or bromo; and

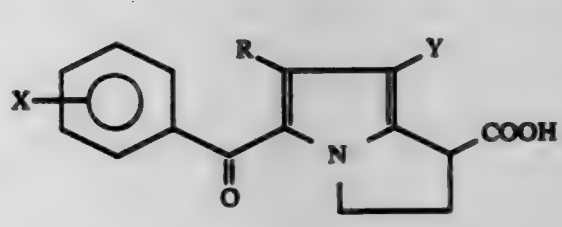
Y is chloro or bromo; which comprises decarboxylating a compound of the formula



(V)

wherein R, X, and Y are as herein defined and each R^2 is independently hydrogen or lower alkyl.

19. A process for preparing a compound of the formula



(VII)

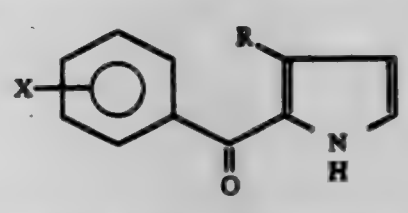
wherein:

R is hydrogen or lower alkyl;

X is hydrogen, lower alkyl, lower alkoxyl, lower alkoxycarbonyl, carboxyl, lower alkylcarbonyl, sulfonic acid, sulfonic acid alkyl ester, fluoro, chloro or bromo; and

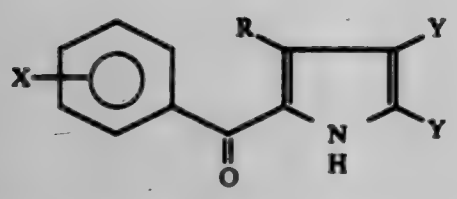
Y is chloro or bromo; which process comprises:

(a) treating a compound of the formula



(I)

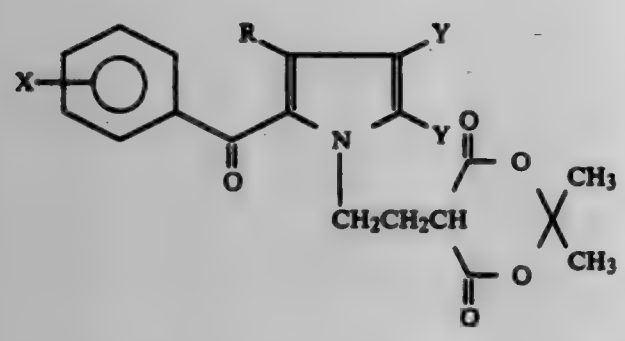
wherein R and X are as herein defined, with a halogenating agent to obtain a compound of the formula



(II)

wherein R, X and Y are as herein defined, followed by;

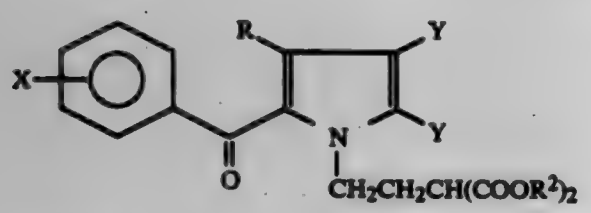
(b) treating the compound of formula II with spiro[2.5]-5,7-dioxa-6,6-dimethyloctane-4,8-dione after preliminary treatment of II with an alkali metal hydride in the presence of an aprotic organic solvent; to obtain a compound of the formula



(III)

wherein R, X and Y are as herein defined; followed by

(c) treating the compound of formula III with a lower alkyl alcohol in the presence of acid to obtain a compound of the formula

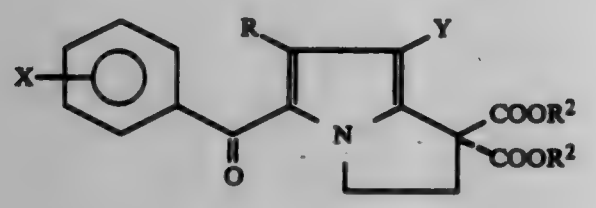


(IV)

wherein

R, X and Y are as herein defined, and each R^2 is independently lower alkyl; followed by

(d) treating the compound of formula IV with an alkali metal hydride in the presence of an aprotic organic solvent; to obtain a compound of the formula

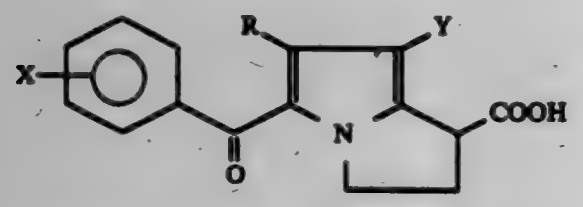


(V)

wherein

R, X Y and R^2 are as herein defined; followed by

(e) treating the compound of formula V with an inorganic base, and subsequently treating the resulting product with an inorganic acid to obtain a compound of formula

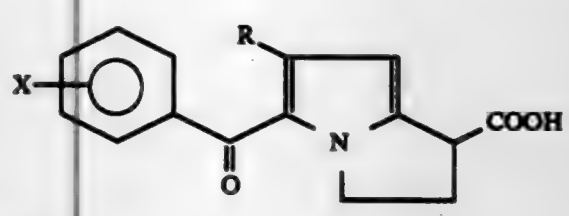


(VII)

optionally followed by

(f) converting the compound of formula (VII) to a corresponding pharmaceutically acceptable non-toxic ester or salt.

20. A process for preparing a compound of the formula



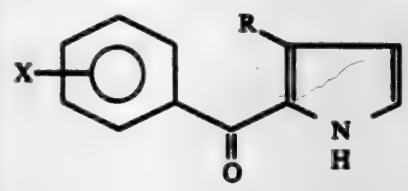
(VI)

wherein:

R is hydrogen or lower alkyl;

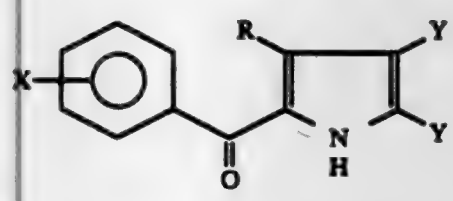
X is hydrogen, lower alkyl, lower alkoxyl, lower alkoxycarbonyl, carboxyl, lower alkylcarbonyl, sulfonic acid, sulfonic acid alkyl ester, or fluoro, which process comprises:

(a) treating a compound of the formula



(I)

wherein R and X are as herein defined, except that X may also be chloro or bromo with a halogenating agent to obtain a compound of the formula

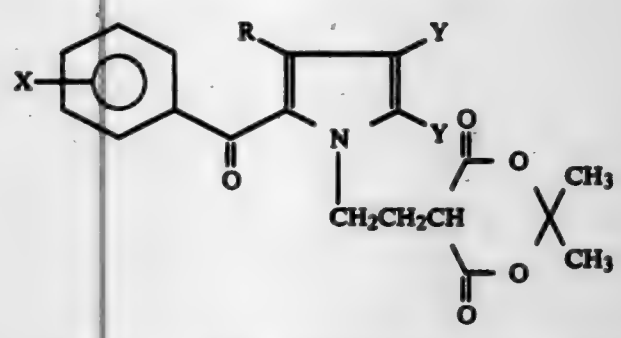


(II)

wherein

R and X are as herein defined, and Y is chloro or bromo, followed by;

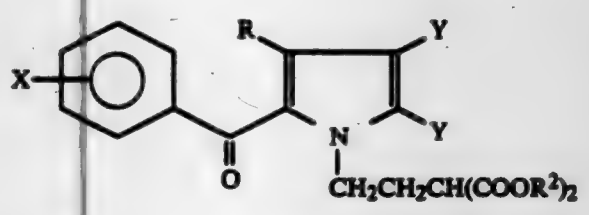
(b) treating the compound of formula II with spiro[2.5]-5,7-dioxa-6,6-dimethyloctane-4,8-dione after preliminary treatment of II with an alkali metal hydride in the presence of an aprotic organic solvent; to obtain a compound of the formula



(III)

wherein R, X and Y are as herein defined; followed by

(c) treating the compound of formula III with a lower alkyl alcohol in the presence of acid to obtain a compound of the formula



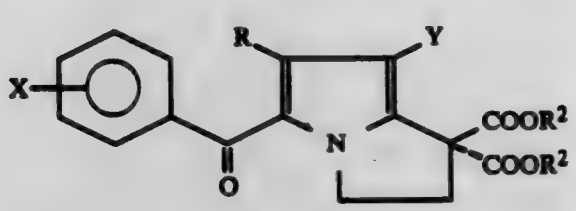
(IV)

wherein

R, X and Y are as herein defined, and each R^2 is independently lower alkyl; followed by

(d) treating the compound of formula IV with an alkali metal

hydride in the presence of an aprotic organic solvent; to obtain a compound of the formula



(V)

wherein

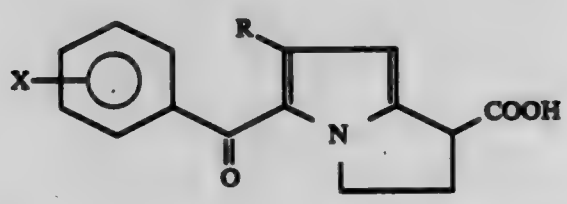
R, X Y and R^2 are as herein defined; followed by

(e) treating the compound of formula V with either

(1) hydrogen and hydrogenation catalyst, followed by inorganic base, followed by inorganic acid, or

(2) inorganic base, followed by hydrogen and hydrogenation catalyst, followed by inorganic acid, or

(3) inorganic base, followed by inorganic acid, followed by hydrogen and hydrogenation catalyst to obtain a compound of formula



(VI)

wherein R and X are as herein defined except that X cannot be chloro or bromo, optionally followed by

(f) converting the compound of formula (VI) to a corresponding pharmaceutically acceptable non-toxic ester or salt.

4,347,186

PROCESS FOR PREPARING 5-AROYL 1,2-DIHYDRO-3-H PYRROLO[1,2-A]PYRROLE-1-CARBOXYLIC ACIDS AND NOVEL INTERMEDIATES THEREIN

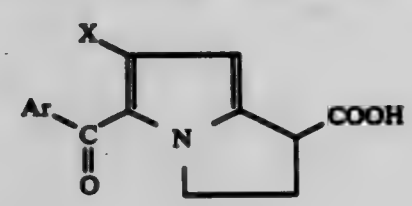
Joseph M. Muchowski, Sunnyvale, Calif., and Robert Greenhouse, Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 20, 1980, Ser. No. 198,552

Int. Cl.[3] A61K *31/40*; C07D *209/00, 487/04*

U.S. Cl. 548—516 35 Claims

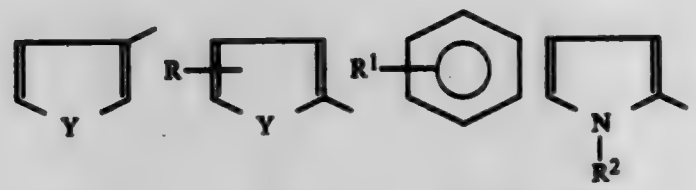
1. A process for preparing a compound of the formula



(I)

wherein:

X is hydrogen or lower alkyl; Ar is a moiety selected from the group consisting of



(IA), (IB), (IC) and (ID)

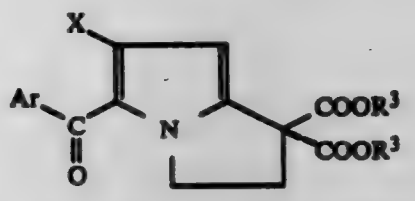
in which:

Y is oxygen or sulfur;

R is hydrogen, methyl, chloro, or bromo;

R^1 is hydrogen, lower alkyl, lower alkoxyl, lower alkoxycarbonyl, lower alkylcarbonyl, fluoro, chloro or bromo,

R^2 is hydrogen or lower alkyl; which comprises decarboxylating a compound represented by the formula



(II)

wherein X and Ar are as defined previously, and R^3 is hydrogen or lower alkyl.

4,347,187

PROCESS FOR PREPARING 5-AROYL 1,2-DIHYDRO-3H-PYRROLO[1,2-A]PYRROLE-1-CARBOXYLIC ACIDS AND NOVEL INTERMEDIATES THEREIN

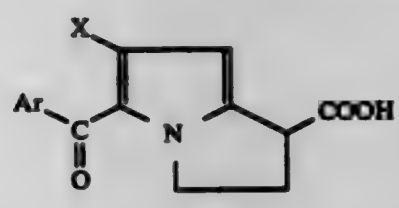
Joseph M. Muchowski, Sunnyvale, Calif., and Robert Greenhouse, Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 198,552, Oct. 20, 1980. This application Jun. 11, 1981, Ser. No. 272,818

Int. Cl.[3] A61K *31/40*; C07D *209/00, 487/04*

U.S. Cl. 548—516 41 Claims

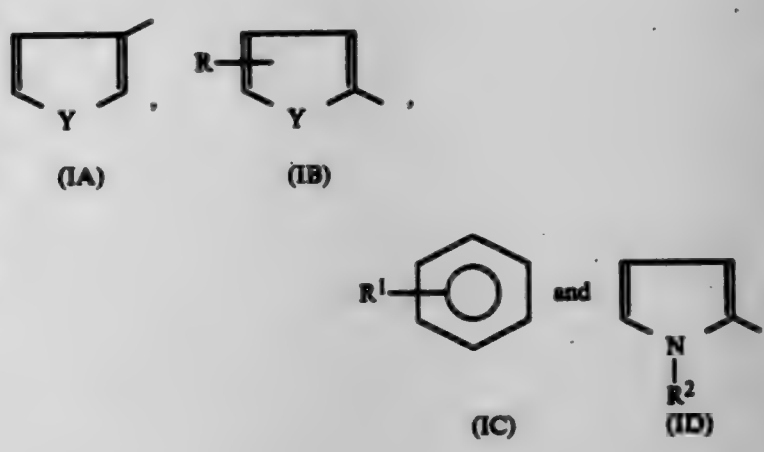
1. A process for preparing a compound of the formula



(I)

wherein:

X is chloro or bromo; Ar is a moiety selected from the group consisting of



(IA), (IB), (IC) and (ID)

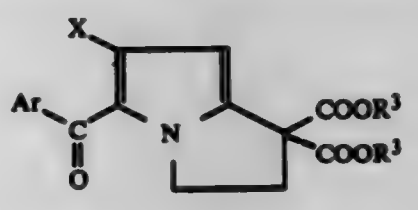
in which:

Y is oxygen or sulfur;

R is hydrogen, methyl, chloro, or bromo;

R^1 is hydrogen, lower alkyl, lower alkoxyl, lower alkoxycarbonyl, lower alkylcarbonyl, fluoro, chloro or bromo,

R^2 is hydrogen or lower alkyl; which process comprises decarboxylating a compound represented by the formula



(II)

wherein X and Ar are as defined previously, and R^3 is hydrogen or lower alkyl.

4,347,188
N-BENZOYLANTHRANILATE DERIVATIVES

Osamu Kirino, Ashiya; Toshiro Kato, Ibaraki, and Shigeo Yamamoto, Ikeda, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

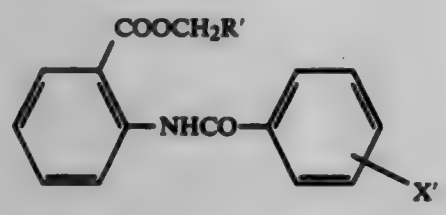
Division of Ser. No. 862,527, Dec. 20, 1977, Pat. No. 4,235,925. This application Jun. 30, 1980, Ser. No. 164,886

Claims priority, application Japan, Jan. 6, 1977, 52/693; Feb. 8, 1977, 52/13447; Mar. 10, 1977, 52/26727; Jun. 3, 1977, 52/65973

Int. Cl.³ C07D *317/44*

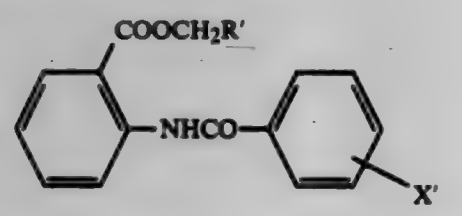
U.S. Cl. 549—436 9 Claims

1. A compound of the formula,



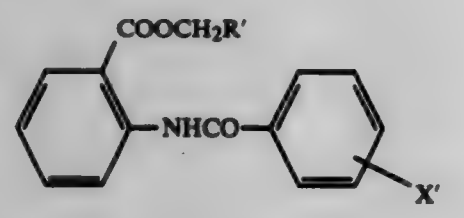
wherein X′ is a 2,4-dimethoxy group and R′ is an n-propyl group.

3. A compound of the formula,



wherein X′ is a 3,4-methylenedioxy group and R′ is an ethyl or n-propyl group.

4. A compound of the formula,



wherein X′ is a 3-iodine atom and R′ is a n-propyl group.

4,347,189
PROCESS FOR SEPARATING 1,4 CINEOLES FROM 1,8 CINEOLES

Theodore P. Goldstein, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 11, 1981, Ser. No. 262,165

Int. Cl.³ C07D *311/02, 307/77*

U.S. Cl. 549—397 17 Claims

1. A method of separating 1,4 cineole from a mixture comprising 1,4 and 1,8 cineoles comprising:

contacting said mixture with a zeolite having a constraint index of from 0.2 to 12 and port sizes of approximately 6.7–7.0 angstroms such that said 1,4 cineole is sorbed into said zeolite;

separating said zeolite and said mixture; and

desorbing said 1,4 cineole from said zeolite.

4,347,190
2-METHYL-2-VINYL-5-(1′-HYDROXY OR ACYLOXY-1′,5′-DIMETHYL-HEX-4′-EN-1′-YL)TETRAHYDROFURAN

Roman Kaiser, Clifton, N.J., and Dietmar Lamparsky, Wangen, Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

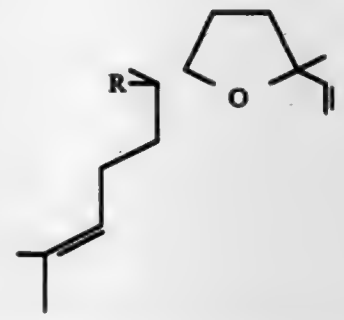
Division of Ser. No. 71,160, Aug. 30, 1979, Pat. No. 4,255,337. This application Sep. 12, 1980, Ser. No. 187,937

Claims priority, application Switzerland, Sep. 8, 1978, 9470/78

Int. Cl.³ C07D *307/17, 307/16*

U.S. Cl. 549—497 3 Claims

1. Compounds of the formula



wherein R represents a hydroxy or acyloxy group.

4,347,191
PROCESS FOR THE PREPARATION OF 5-DIMETHYLAMINOMETHYL-2-FURANMETHANOL

John Cooper, Tonbridge Wells, and Dennis V. Lee, Leeds, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Mar. 5, 1981, Ser. No. 240,651

Claims priority, application United Kingdom, Mar. 8, 1980, 8007943

Int. Cl.³ C07D *307/52*

U.S. Cl. 549—492 5 Claims

1. A process for preparing 5-dimethylaminomethyl-2-furanmethanol which comprises subjecting 2-furan-methanol to a Mannich reaction accomplished using bis(dimethylamino)methane.

4,347,192
DERIVATIVES OF α,β-UNSATURATED KETONES

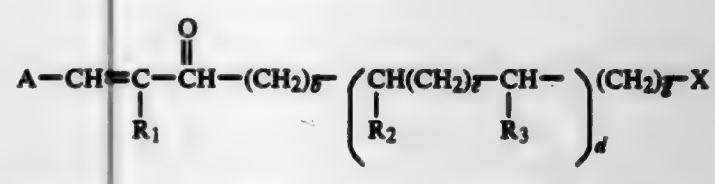
Richard A. Mueller, Glencoe, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 61,732, Jul. 30, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 171,877

Int. Cl.³ C07C *49/235;* C07D *307/20*

U.S. Cl. 549—498 21 Claims

1. A compound of the formula



wherein A is a phenyl, furyl or cyclohexyl radical, each being either unsubstituted or substituted with from one to three nitro, halogen, hydroxy, alkyl, alkoxy or trifluoromethyl radical, with each alkyl radical being a straight-chain or branched-chain group containing from 1 to 6 carbon atoms and with each alkoxy radical being a straight-chain or branched-chain group containing from 1 to 4 carbon atoms the substitutions each being the same or different; R_1 is hydrogen or a methyl radical; b and g are each an integer from 0 to 5; d and e are each 0 to 1; the sum of b, e, g and 2d is an integer from 3 to 5; when e is 0 or 1, R_2 and R_3 are a hydrogen, methyl, ethyl or phenyl radical R_2 and R_3 being the same or different, the phenyl

radical being unsubstituted or substituted by a halo or alkyl radical containing from 1 to 3 carbon atoms or, when e is 0, R_2 and R_3 are interconnected to form, together with the intervening ethylene radical, a phenyl ring that is unsubstituted or substituted by one halogen or alkyl radical containing from 1 to 3 carbon atoms; and X is hydroxy or halogen.

4,347,193

ARYL BORANE COMPLEXES

Howard E. Shook, Jr., Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 20, 1979, Ser. No. 31,978
Int. Cl.[2] C07F *15/04*
U.S. Cl. 260—439 R 4 Claims

1. A compound having the general formula $Ni[NH_3]_4[(NC)B(C_6H_4\text{-}R)_3]_2$ wherein R is selected from the group consisting of hydrogen, halogen, alkyl groups having 1–6 carbon atoms and aryl groups having 6–10 carbon atoms.

4,347,194

POLYHYDROXYL POLYETHER COMPOUNDS CONTAINING PHOSPHORUS

Sally P. Ginter, Sanford; Chester E. Pawloski, Bay City, and Violete L. Stevens, Midland, all of Mich., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 162,707, Jun. 25, 1980, Pat. No. 4,298,709.
This application May 11, 1981, Ser. No. 262,264
Int. Cl.[3] C07F *9/09*
U.S. Cl. 260—929 9 Claims

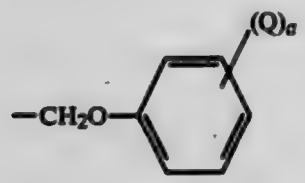
1. Compounds of the formula:

$$R\{-[-C_2H_3(Y)O-]_m X\}_n$$

where

R is the residue left by the removal of n active hydrogen atoms from an initiator compound for alkylene oxide polymerization RH_n;

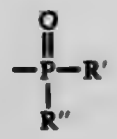
Y is independently —H, —CH_3, —C_2H_5, —CH_2Cl, —CH_2CCl_3, —CH_2Br,



where

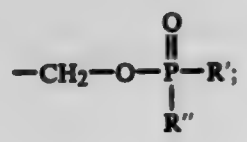
Q is independently —Cl or —Br and a=1–5, or —CH_2OX where

X is independently —H or



and

R′ and R″ are each independently alkyl, phenyl, haloalkyl, halophenyl, alkoxy, haloalkoxy, polyhaloalkoxy, polyhalophenoxy alkoxy, dialkylamino, arylamino, halophenoxy, or alkylhalophenoxy of up to about 20 carbons; provided that at least one Y is —CH_2OH and at least one Y is



and

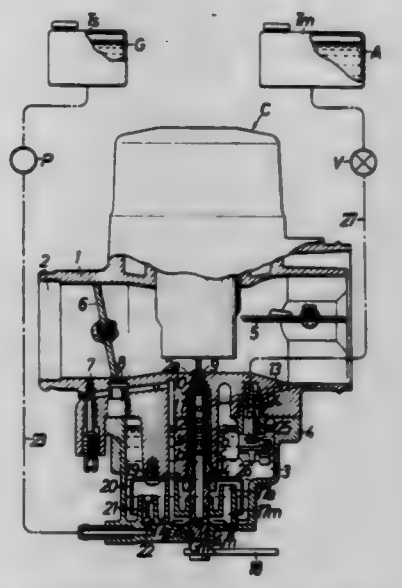
m and n are integers such that m is at least 2, n being 1–8.

4,347,195

CARBURETOR

Kouhei Ogawa, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,300
Claims priority, application Japan, Mar. 31, 1980, 55-41617
Int. Cl.[3] F02M *13/06*
U.S. Cl. 261—18 R 4 Claims



1. A carburetor comprising an intake passage, a main nozzle opening to the intake passage, a float chamber, a main fuel passage for connecting said main nozzle with said float chamber, a slow fuel nozzle opening to said intake passage, a slow fuel passage for connecting said slow fuel nozzle with said main fuel passage, a change-over valve interposed between said main fuel passage and said slow fuel passage, said change-over valve being provided with main jet ports of different diameters and slow jet ports of different diameters for changing the degree of communications between said main fuel passage and said float chamber and between said slow fuel passage and said main fuel passage, a stationary supporting sleeve having groups of apertures formed in the peripheral wall thereof and an annular chamber surrounding said peripheral wall, said annular chamber communicating with said intake passage upstream of said main nozzle, and an air bleed pipe rotatably fitted in said supporting sleeve and having said main fuel passage defined therein, said air bleed pipe being provided in its peripheral wall with a plurality of groups of air bleed ports of different air bleed characteristics, said air bleed ports being adapted to be placed in selective communication with said groups of apertures of said supporting sleeve in accordance with the rotational position of said air bleed pipe.

4,347,196

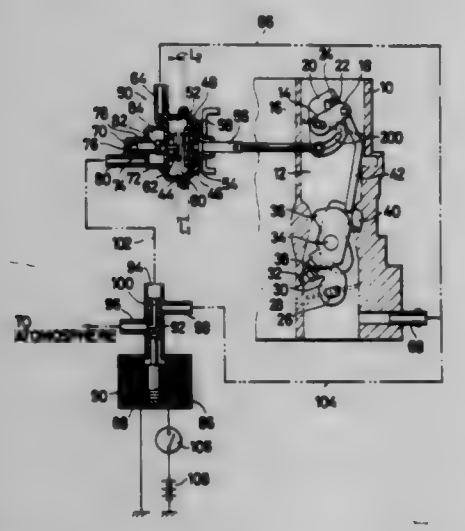
CARBURETOR EQUIPPED WITH AN AUTO-CHOKE DEVICE

Shigeyuki Kenma, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1980, Ser. No. 114,969
Claims priority, application Japan, Jan. 24, 1979, 54-6058
Int. Cl.[3] F02M *1/14*
U.S. Cl. 261—39 B 5 Claims

1. In a carburetor equipped with an auto-choke device for an internal combustion engine, comprising a choke valve arranged in a suction passage of said carburetor and a throttle valve arranged in said suction passage downstream of said choke valve, the improvement comprising vacuum motor means responsive to a negative pressure generated downstream of said throttle valve for opening said choke valve to a predetermined first degree when the engine temperature is below a set temperature and to a predetermined second degree

which is greater than said first degree when the engine temperature is at or above said set temperature, said vacuum motor means including a negative pressure chamber into which said negative pressure generated downstream of said throttle valve is introduced, and means for communicating said negative pressure chamber with atmospheric pressure to prevent said vacuum motor means from opening said choke valve to said second degree of opening from said first degree of opening when the engine temperature is below said set temperature, wherein said vacuum motor means includes a diaphragm which defines at least a portion of said negative pressure cham-



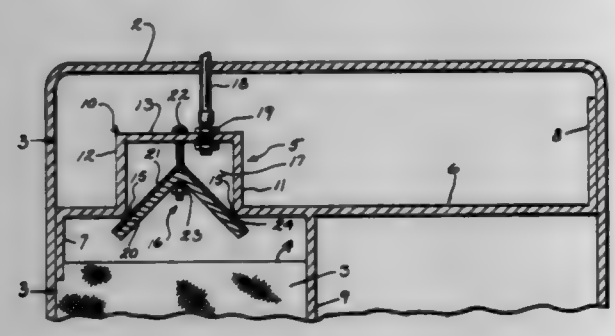
ber and which is coupled to said choke valve by coupling means so as to open said choke valve when the negative pressure has been introduced into said negative pressure chamber, and wherein said means for communicating said negative pressure chamber with atmospheric pressure includes a leak valve means which introduces the negative pressure of said negative pressure chamber into a leak chamber when said diaphragm has shifted a first predetermined distance and opened said choke valve said predetermined first degree, means being provided for communicating said leak chamber with atmospheric pressure when the engine temperature is below said set temperature.

4,347,197

WATER DISTRIBUTOR

Randolph B. Cox, Madison, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed May 12, 1980, Ser. No. 148,775
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—106 **9 Claims**



1. A distributor for the uniform supply of water from a water input line operating at line pressure to an extended area disposed therebeneath, said distributor comprising:

(a) means forming an elongated chamber adapted for connection with said water line, said chamber having at least one elongated restrictive gap disposed in its lower portion,

(b) means disposed in said gap for causing the formation of a miniscus across said gap as water flows into said chamber from said water line, to thereby prevent water from flowing through said gap,

(c) said chamber being enclosed and being generally sealed above said gap so that said chamber becomes pressurized below the said line pressure as water rises therein whereby said miniscus is ultimately broken by the rising pressure within said chamber to permit water to be discharged downwardly through said gap,

(d) said gap being defined by:

(1) a corner disposed in a chamber wall,

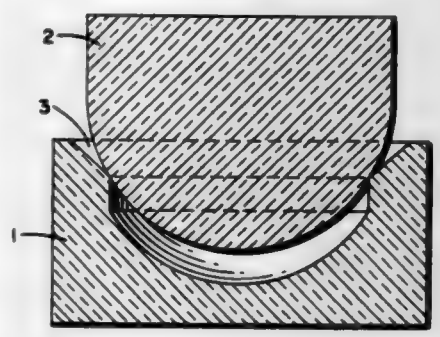
(2) and a flow control assembly disposed adjacent said corner and generally tangential thereto.

4,347,198

PRODUCING SOFT CONTACT LENSES

Shinzo Ohkada, Kyoto, and Hideki Kenjo, Otsu, both of Japan, assignors to Toray Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 940,318, Sep. 7, 1978, abandoned. This application Sep. 25, 1980, Ser. No. 190,820
Claims priority, application Japan, Sep. 12, 1977, 52/108925; Sep. 12, 1977, 52/108926
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—2.3 **11 Claims**



1. A process for producing a soft contact lens comprising:

pouring an excess amount of an original solution for producing a soft contact lens into a concave mold which is placed in a vessel,

said original solution comprising a component (A) selected from the group consisting of hydrophilic polymers and monomers which yield a hydrophilic component when polymerized, a component (B) selected from the group consisting of hydrophobic polymers and monomers which yield a hydrophobic component when polymerized, and a solvent (C),

the weight ratio of (A):(B) being from about 85:15 to about 55:45 and solvent (C) being about 50 to 95% by weight of the total original solution;

placing a convex mold on said concave mold and overflowing the excess of said original solution, the vapor pressure of the lowest boiling component in said original solution inside said vessel being at least about 20% of the saturated partial pressure exhibited by said original solution;

gelling said original solution between the two molds to form therebetween a lens having a tensile strength of at least about 0.1 kgf/cm^2;

immersing said lens and said two molds in a liquid to peel said lens from said molds; and

extracting the thus-peeled lens by an extraction treatment with water.

4,347,199

METHOD AND APPARATUS FOR RAPIDLY FREEZING MOLTEN METALS AND METALLOIDS IN PARTICULATE FORM

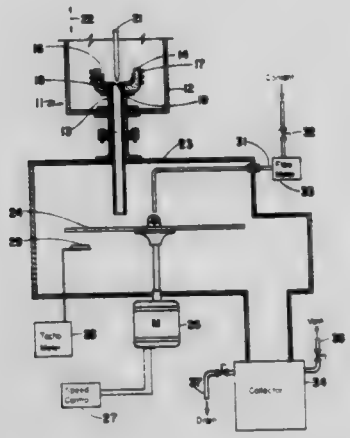
John L. Speier, Midland, Mich., and Thomas M. Gentle, Richmond, Calif., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 2, 1981, Ser. No. 239,306
Int. Cl.³ B01J *2/14*
U.S. Cl. 264—8 **6 Claims**

1. A method for rapid freezing of metals and metalloids in particulate form from a melt of such materials, the method comprising:

rotating a substantially horizontally mounted disc-like member at high speed,

introducing a stream of volatile liquid coolant at the center of rotation of said disc-like member in sufficient quantity to provide an outwardly flowing film of coolant liquid over substantially the entire upper surface of the disc-like member, and



introducing molten material into the film of liquid coolant on the rotating disc-like member at a distance spaced from the center of rotaion of the member,

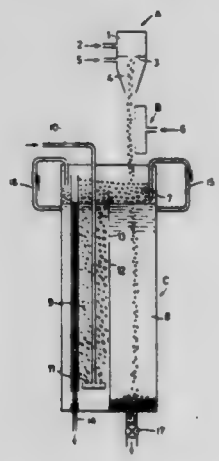
whereby said molten material is cooled to the solid state by vaporization of the liquid coolant and dispersed by centrifugal forces acting upon the coolant and material.

4,347,200

METHOD OF PRODUCING MICROSPHERES BY VIBRATIONS

Giovanni Bezzi, Bagnacavallo; Ego Pauluzzi, Bologna, and Mauro Zanardi, Filattiera, all of Italy, assignors to Agip Nucleare S.p.A., Rome, Italy

Division of Ser. No. 895,365, Apr. 11, 1978, Pat. No. 4,285,645.
This application Mar. 24, 1980, Ser. No. 132,889
Claims priority, application Italy, Apr. 15, 1977, 22498 A/77
Int. Cl.[3] B01J *2/04, 2/06*
U.S. Cl. 264—9 1 Claim



1. A method of producing microspheres or spherules from a solution of a solidifiable material, which comprises:

(a) forming, in a vibratory apparatus, a string of droplets of said solution;

(b) passing said string of droplets through an inert, non-gelling gas shield before said droplets exit the droplet-forming apparatus;

(c) passing a stream of a reacting gelling gas as to impinge upon said droplets as they emerge from the droplet-forming apparatus to effect pre-gelling of said droplets;

(d) passing said pre-gelled droplets to a cushioning foam layer overlying a solution of a gelling agent; and

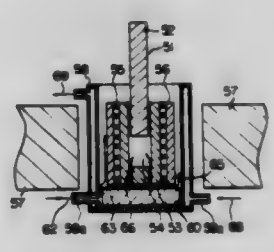
(e) passing said droplets through said solution of gelling agent to effect final gelling.

4,347,201

PROCESS AND APPARATUS FOR PRODUCING A TEMPERATURE SENSITIVE ELEMENT

Masato Sagawa, and Wataru Yamagishi, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 31, 1979, Ser. No. 89,737
Claims priority, application Japan, Nov. 4, 1978, 53-135149
Int. Cl.[3] C04B *35/50*
U.S. Cl. 264—24 4 Claims



1. A process for producing a polycrystalline temperature-sensitive ferromagnetic element comprising the steps of:

compacting fine grain powders of a spin reorientation type ferromagnetic material while applying a magnetic field and heating the fine grain powders of the spin reorientation type ferromagnetic material to a temperature higher than a transition temperature range of said material, wherein the transition temperature range of said material is room temperature or above and wherein the easy direction of magnetization of said spin reorientation type ferromagnetic material is uniformly parallel to the basal planes (P) of the grain powder crystals below the transition temperature range and the easy direction of magnetization is uniformly parallel to the A axes of the grain powder crystals above the transition temperature range; and

producing from the compacted spin reorientation type ferromagnetic material a polycrystalline temperature sensitive element, in which the easy direction of magnetization is uniformly oriented and reoriented at the transition temperature range of the material,

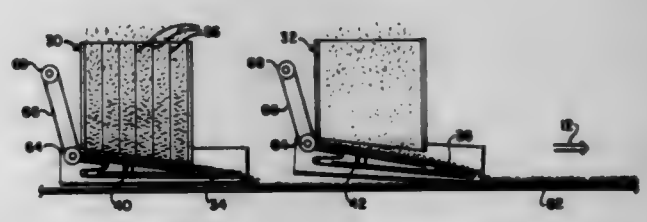
said spin reorientation type material being a rare earth cobalt alloy material generally expressed by a formula of RCo_5, wherein the T component is one rare earth element selected from a group consisting of neodymium (Nd), dysprosium (Dy), and terbium (Tb) and the Co component consists of cobalt or is cobalt and an additive metal which partly replaces the cobalt.

4,347,202

METHOD FOR PRODUCTION OF DIRECTIONALLY ORIENTED LIGNOCELLULOSIC PRODUCTS, INCLUDING MEANS FOR CROSS-MACHINE ORIENTATION

David J. Henckel, and Thomas E. Peters, both of Boise, Id., assignors to Morrison-Knudsen Forest Products Co., Inc., Boise, Id.

Filed Feb. 2, 1981, Ser. No. 230,691
Int. Cl.[3] B06B *1/02*
U.S. Cl. 264—24 9 Claims



1. A method of forming a continuous mat of directionally oriented lignocellulosic particles and depositing the mat on a mat-receiving surface in a direction substantially transverse to the direction of movement of the mat-receiving surface, comprising:

providing a high-voltage orienting zone generating a directional electrical field substantially transverse to the direction of movement of the mat-receiving surface for alignment of particles generally transverse to the direction of movement thereof,

cascading a multitude of lignocellulosic particles through the orienting zone for electrostatic alignment thereof with their longer dimension generally parallel to the electrical lines of force within the orienting zone,

moving a mat-receiving surface below the orienting zone to receive the cascading aligned particles thereon to form a continuous mat, and

causing an electrical current to flow within the mat on the mat-receiving surface to produce a directional electrical field immediately above the mat substantially transverse to the direction of movement of the mat-receiving surface and parallel to the electrical field of the orienting zone.

4,347,203

PROCESS FOR PRODUCING ACRYLIC FIBER

Koji Mimura, Hiroshima; Yasunori Kawachi, Ohtake, and Atsushi Kawai, Hiroshima, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed May 22, 1980, Ser. No. 152,172

Claims priority, application Japan, May 30, 1979, 54-67185; Jun. 5, 1979, 54-70415

Int. Cl.³ B29D *27/00*; B29F *3/10*

U.S. Cl. 264—41 **4 Claims**



1. A method for producing an acrylic fiber, which comprises wet-spinning a spinning solution having a viscosity of about 30 to 60 poises, as measured at 50° C. and containing acrylonitrile polymer, under such spinning conditions that the ratio of spinning draft to maximum spinning draft is in the range of 0.5 to 0.9 and subjecting the spun filament to successive washing, drawing and drying treatments to produce a fiber which is covered on the outside with creases running along the fiber axis, adjacent creases being 0.1 to 5μ apart on the average; which has in any of its cross-sections two or more macrovoids, 2μ or more in major diameter, which extend in the direction of fiber axis; and which has 30 to 150 microcrimps per 25 mm of fiber length.

4,347,204

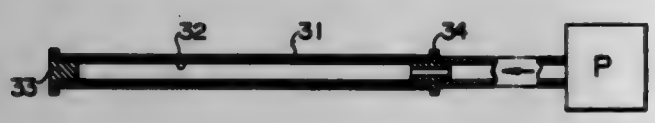
FLEXIBLE TUBE AND METHOD OF MANUFACTURING SAME

Takeji Takagi, Machida, and Kiyokazu Hosaka, Fuchu, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Division of Ser. No. 73,712, Sep. 10, 1979, Pat. No. 4,279,245. This application Jul. 17, 1980, Ser. No. 169,596

Int. Cl.³ A61B *1/00*

U.S. Cl. 264—127 **8 Claims**



1. In a method of manufacturing an endoscope comprising forming a flexible tube wherein the steps comprise forming a tubular body of a crystalline polymer material having a porous microstructure including a number of micro-nodes which are coupled together by fibrils, applying a solution of synthetic resin material having gas tightness and stretchability to one of the internal and external peripheral surfaces of the tubular body, and subsequently applying a pressure or suction to either peripheral surface of the tubular body to cause the solution of the synthetic resin material to permeate into the pores of the porous microstructure of the tubular body, thus filling the pores.

4,347,205

PROCESS FOR PREPARING AN INFLATABLE PAD FOR A FACE MASK

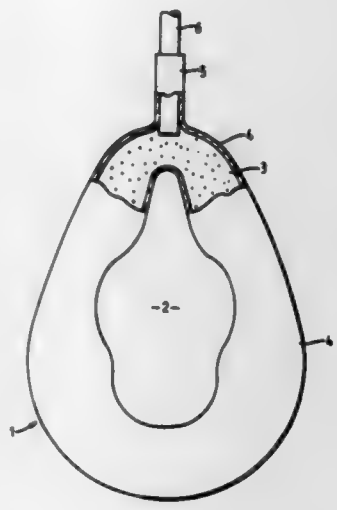
Mervin Stewart, Waringstown, Ireland, assignor to Warne Surgical Products Limited, Andover, England

Filed Mar. 19, 1980, Ser. No. 131,743

Claims priority, application United Kingdom, Apr. 3, 1979, 7911512

Int. Cl.³ B29H *3/042*

U.S. Cl. 264—130 **9 Claims**



1. A process for preparing an inflatable pad for a face mask comprising providing a substantially planar former which is shaped to correspond with the desired configuration of the pad, coating all surfaces of said former with a curable composition which when cured is elastic, air-impermeable and releasable from said former, curing said coating to provide an elastic air-impermeable sheath completely covering said former which is releasable from said former to define an inflation chamber, the coating being conducted in such a manner as to provide a conduit in said sheath for entry of gas into said inflation chamber to inflate said sheath, the former remaining within the inflation chamber and comprising a flexible material which will remain within and conform to the contours of the inflation chamber when the chamber is inflated.

4,347,206

METHOD OF EXTRUDING POLYPROPYLENE YARN

John S. Roberts, Howell, N.J., assignor to Kling-Tecs, Inc., Mantoloking, N.J.

Continuation-in-part of Ser. No. 127,360, Mar. 15, 1980, Pat. No. 4,303,606, which is a continuation of Ser. No. 893,371, Apr. 4, 1978, Pat. No. 4,193,961. This application Jan. 27, 1981, Ser. No. 229,012

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.³ D01D *5/12*

U.S. Cl. 264—176 F **16 Claims**

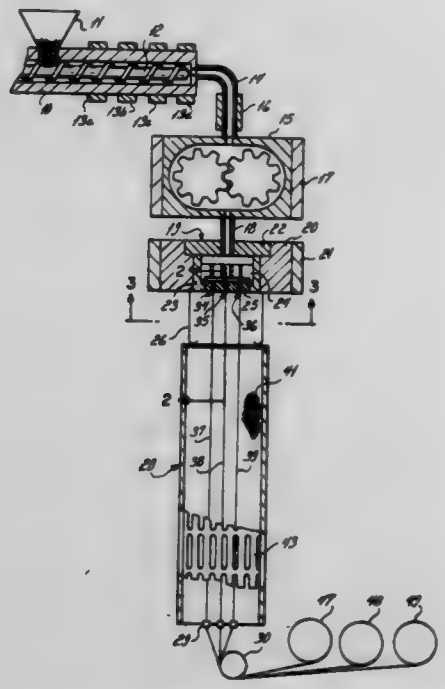
1. A method of producing a multi-filament polypropylene yarn, comprising:

heating polypropylene having a narrow molecular weight distribution with a swell value of less than 2.5 to a temperature at which it is molten;

extruding the molten polypropylene at a temperature less than 350° F. into a plurality of filaments;

passing the filaments through a first zone having a tempera-

ture sufficiently high to retard cooling of the filaments therein;
drawing-down the filaments to their undrawn denier in said first zone;
then passing the filaments through a second zone; and
directing cooling gas over the filaments in said second zone to cool them;



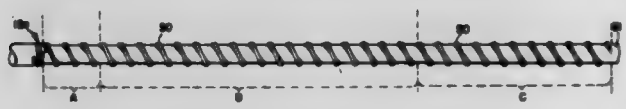
the combination of the swell value of the polypropylene, the temperature of extrusion, and the temperature of said first zone interacting to substantially eliminate the occurrence of resonance in the filaments as they are drawn-down in said first zone.

4,347,207

METHOD OF EXTRUDING POLYPROPYLENE YARN

John S. Roberts, Howell, N.J., assignor to Kling-Tecs, Inc., Mantoloking, N.J.

Continuation-in-part of Ser. No. 229,012, Jan. 27, 1981, which is a continuation-in-part of Ser. No. 127,360, Mar. 15, 1980, Pat. No. 4,303,606, which is a continuation of Ser. No. 893,371, Apr. 4, 1978, Pat. No. 4,193,961. This application Mar. 17, 1981, Ser. No. 244,810
Int. Cl.³ D01D 5/22
U.S. Cl. 264—176 F 12 Claims



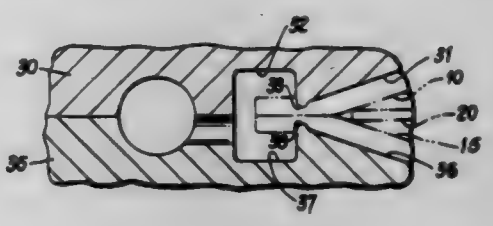
1. A method of extruding solution dyed polypropylene filaments, comprising:
feeding a mixture of polypropylene pellets and color concentrate to a screw of an extruder having a length/diameter ratio of at least 25:1, said screw having a screw flight extending the effective length of said screw, said screw flight defining a feed section, a transition section, and a metering section, the depth of undercut of said screw flight decreasing through said transition section in the direction of feed with the ratio of the depth of said undercut in said feed section to that in said metering section being at least 4.5:1, and the length of said transition section being at least the sum of the lengths of said feed and metering sections;
rotating said screw to feed said mixture therealong from said feed section;
applying external heat to said mixture in said transition section at a temperature less than 385° F. to melt said mixture before it reaches said metering section;
thoroughly mixing said melt during the passage thereof through said transition section;
applying external heat to said melt in said metering section at a temperature less than 385° F. and at least equal to the temperature of said melt; and
extruding said melt at a controlled temperature less than 385° F. into a plurality of solution dyed filaments;
the relative dimensions of said transition section effecting efficient mixing of the melt therein while substantially eliminating the occurrence of an adiabatic condition therein with higher throughput rates of extrusion at low temperature.

4,347,208

METHOD OF MAKING FILTER CELL HAVING SEALED PERIPHERY

Kenneth Southall, Wethersfield, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,345
Int. Cl.³ B29C 6/04
U.S. Cl. 264—229 11 Claims



1. A method of making a filter cell comprising two cellulosic fiber containing filter media, the filter cell having a sealed periphery, comprising:
(a) compressing peripheries of each media to form a flange at the periphery of each media;
(b) aligning the two media to provide intimate face-to-face contact between the flanges;
(c) providing spacer means between the media with a profile which causes each of the filter media within its flange to dish outwardly from the other media when the flanges are brought into intimate face-to face contact;
(d) placing the two media with the spacer means therebetween into a mold which surrounds the flanges, the mold having a means for providing a recompressing force to the inner portions of the flanges; and
(e) injecting into the mold a thermoplastic polymer to form a seal around the two flanges,
wherein the recompression force is sufficient to maintain the flanges in intimate face-to-face contact with each other and to prevent seepage of the polymer between the flanges when the polymer is injected into the mold.

4,347,209

METHOD FOR MOLDING ELONGATED PARISONS

Sadao Suzuki, Tokyo, Japan, assignor to Yoshino Kogyosho Co., Ltd., Japan

Continuation of Ser. No. 58,777, Jul. 19, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,855
Int. Cl.³ B29D 3/00
U.S. Cl. 264—250 2 Claims

1. A method for injection molding an elongated, closed bottom polymer parison to be blow molded into a final biaxially-stretched shape; comprising the steps of injection molding an open bottom parison by introducing molten polymer into a tubular mold cavity defined by a first set of a core and a mold unit having an end of the core thereof extending into said mold unit, such that at least a portion of said core is capable of eccentric movement within said mold unit so as to cause non-uniform wall thickness of said parison when not firmly retained from movement within said mold unit, an end portion of said end extending into and retained in an opening in said mold unit so as to prevent eccentric movement of said core within said

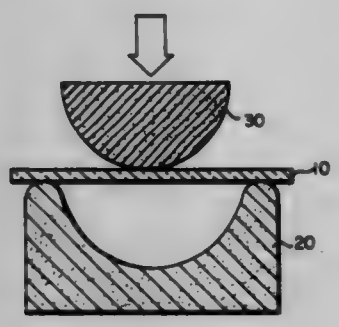
mold unit, and thereafter injection molding a bottom wall integrally with said open bottom parison to form said closed bottom parison by introducing molten polymer into a second mold cavity defined by a second set of a core and a mold unit and the open bottom of said open bottom parison clamped between said second set core and mold unit, whereby the closed bottom parison has substantially uniformly thin walls.

4,347,210

METHOD OF FORGING SPINEL DOMES

Edward A. Maguire, Ashland, and Richard L. Gentilman, Acton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 9, 1980, Ser. No. 148,427
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—294 **15 Claims**



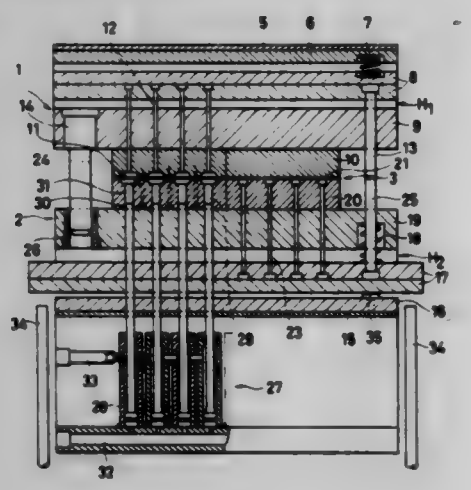
1. A method of comprising the steps of:
placing a plate of spinel between two portion of a mold, said two portions having complementary shapes for forming a cavity of a predetermined complex shape;
the composition of said spinel comprising a ratio of Al_2O_3:-MgO in the range of greater than 1:1 to 3.5:1;
heating said spinel to a temperature in the range below its melting point and above its single phase transition point; and
applying a pressure to said mold for producing compound stresses in said spinel plate to plastically deform said spinel plate to the complex shape of the mold cavity.

4,347,211

PROCESS AND APPARATUS FOR MOLDING PLASTICS

Kazuo Bandoh, No. 81-8, Toyama, Momoyama-cho, Fushimi-ku, Kyoto-shi, Japan

Filed Aug. 25, 1980, Ser. No. 180,932
Claims priority, application Japan, Aug. 24, 1979, 54/108424
Int. Cl.³ B29G *3/00*
U.S. Cl. 264—297 **5 Claims**



1. In a method of simultaneously molding a plurality of plastic articles in a mold having a plurality of cavities, the improvement wherein said mold comprises a plurality of bores, each bore forming a pot located adjacent a respective mold cavity, each pot being adapted to hold plastics material for injecting directly into said mold cavity by means of a plunger moveable in said pot, said mold being free of runners and gates, and wherein said method comprises injecting the plastics material directly into each cavity from said pot located adjacent its respective cavity, said pot being directly opened to and communicating with said cavity, such that the plastics material is injected directly thereinto without passing through a runner or a gate.

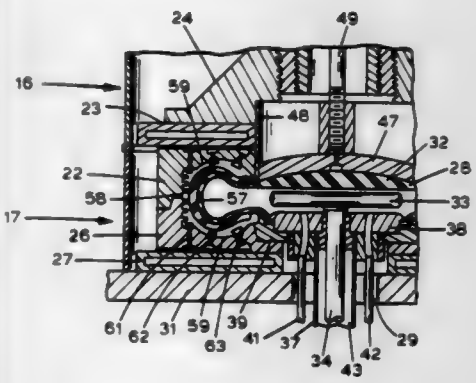
2. In a molding apparatus including an upper mold and a lower mold having molding surfaces having mating depressions therein forming a plurality of molding cavities, and means for injecting a plastics molding material into said cavities; the improvement wherein said injecting means comprises a plurality of plungers, each plunger being associated with one of said cavities and moveable in a bore, said bore at one end being directly opened to and communicating with said cavity, said open end of each bore serving as a separate pot for each cavity from which pot plastics material is directly injectable into its adjacent cavity without passing through a gate, said apparatus being free of a main runner, auxiliary runners, cull portion, and gates.

4,347,212

METHOD FOR FORMING A TIRE

Russell W. Carter, Des Moines, Iowa, assignor to Corn States Metal Fabricators, Inc., West Des Moines, Iowa

Filed Aug. 26, 1980, Ser. No. 181,461
Int. Cl.³ B29H *5/02*
U.S. Cl. 264—315 **2 Claims**



1. The method for forming a tire wherein shaping pressure and heat are applied to a preformed expandable tire band that is centered within a closed tire cavity and that has an outer surface expandable against the inner surface of the side wall of the tire cavity, comprising the steps of:
(a) continuously, without any intermediate stop, expanding the tire band from an initial non-distended condition to a final expanded condition in full conforming engagement with the inner surface of the tire cavity side wall to thereby continuously force all air from the space about the tire band to the atmosphere through air passages in the tire cavity side wall, the air passages having terminal ends in said inner surface thereof,
(b) closing said terminal ends by moving a yieldable valve section to a passage closing position within the terminal end of each passage concurrently with the continuous expanding of the outer surface of the tire band into full conforming engagement with the inner surface of the cavity side wall,
(c) forming said valve section with an end face that is smooth and continuous with the inner surface of the cavity side wall when the valve section is in a passage closing position therefor,
(d) yieldably maintaining each said valve section in an open position away from said inner surface until moved by the outer surface of the continuously expanding tire band to said passage closing position therefor, upon said full conforming engagement, and

(e) releasing the expanding pressure on the final expanded tire band and removing the formed tire from the tire cavity whereby each said yieldable valve section moves to the position therefor away from the inner surface to open said terminal ends of the air passages.

4,347,213

METHOD OF FORMING CONTOURED CUSHION

John E. Rogers, Jr., 700 N. Valley St., Anaheim, Calif. 92801

Filed Mar. 28, 1980, Ser. No. 134,981
Int. Cl.[3] B29D *9/04*
U.S. Cl. 264—510 13 Claims



1. A method of making a contoured cushion removably disposed on a recess defining support, said cushion contours conforming to the shape of the portion of a person's body resting on said cushion, comprising:

a. providing a pliable closed bag that is substantially filled with a plurality of particles that tend to flow relative to one another when subjected to pressure;

b. disposing said bag in said recess defining support;

c. positioning said person on said bag when the latter is disposed in said recess defining support and subsequently causing said person to move relative to said recess defining support, with the weight of said person causing said particles in said bag to flow relative to one another for a first portion of said bag in contact with said body of said person to conform to the contour thereof, and a second portion of said bag in said recess defining support to assume the shape thereof;

d. applying a partial vacuum to the interior of said bag to hold the same in the configuration to which it has been deformed by the weight of said person being supported thereon;

e. removing said person from said bag;

f. removing said bag from said recess defining support while maintaining said partial vacuum on the interior of said bag;

g. applying a fluid solidifiable material to the exterior of said bag while maintaining said partial vacuum thereon to substantially envelop said bag, said material being of a type that solidifies upon standing for a period of time and said material after solidifying providing a shell that tends to hold said bag in the shape to which it has been deformed;

h. releasing said partial vacuum after said material has solidified; and

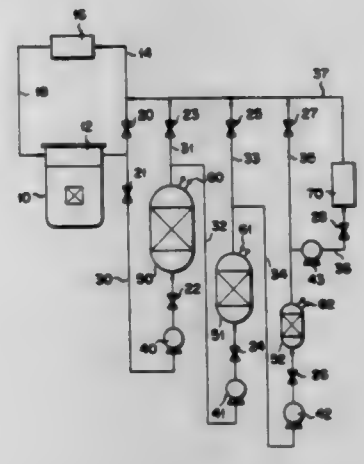
i. disposing said bag on said recess defining support to serve as said cushion for said person to rest thereon, and said cushion conforming to the contour of the portion of the body of said person in contact therewith.

4,347,214

FAILED FUEL DETECTION AND LOCATION APPARATUS

Hajime Sato, Kawasaki; Tetsuo Morisue, Yokohama, and Hideaki Heki, Kanagawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 15, 1980, Ser. No. 140,609
Claims priority, application Japan, Apr. 23, 1979, 54-49107; Apr. 23, 1979, 54-49108; Apr. 23, 1979, 54-49110
Int. Cl.[3] G21C *17/00*
U.S. Cl. 376—251 8 Claims



1. An apparatus for detecting the location of failed fuel by analyzing tag gas consisting of rare gas released in cover gas from the failed fuel, said rare gas being at least one from the group consisting of Xenon and Krypton, comprising:

(a) tag gas collection/enrichment means including at least two activated-charcoal adsorption columns for collecting tag gas from cover gas at an ambient temperature and for enriching said collected tag gas to an analyzable concentration, said columns being connected and being progressively smaller in volume in accordance with the increase in the degree of enrichment of the tag gas to an analyzable concentration;

(b) a line for introducing said cover gas containing tag gas into said tag gas collection/enrichment means;

(c) tag gas analysis means for analyzing said enriched tag gas to determine the composition thereof;

(d) a line for supplying said enriched tag gas to said analysis means; and

(e) a line for transmitting residual gas from which said collected gas is separated to a cover gas clean-up system.

4,347,215

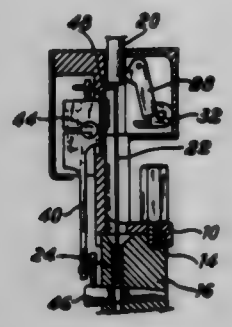
DEVICE FOR THE AUTOMATION OF AT LEAST ONE OPERATION IN AN INJECTOR FOR GAS CHROMATOGRAPHIC COLUMNS

Giorgio Sisti, Melzo; Bruno Tosi, Carate Brianza, both of Italy, and Sorin Trestianu, Brussels, Belgium, assignors to Carlo Erba Strumentazione S.p.A., Italy

Filed Jan. 2, 1981, Ser. No. 222,047
Claims priority, application Italy, Jan. 25, 1980, 19456 A/80
Int. Cl.[3] G01N *1/14, 31/08*
U.S. Cl. 422—63 9 Claims

1. A device for coordinating the position of an injection syringe needle in a gas chromatographic apparatus with at least one other operation of the gas chromatographic apparatus downstream of said device, said device comprising a first channel for introducing the injection syringe, said channel being substantially aligned with the injection channel of a gas chromatographic injector; at least one means for detecting the presence of the injection syringe at least at one point in said channel, wherein said detecting means comprises a position sensor and a lever rotatable around a lever axis substantially perpendicular to the axis of said first channel, wherein said lever has an arm and a shaped appendix, wherein said shaped

appendix protrudes into said channel when said lever is in its rest position, and wherein said appendix is positioned so that, when an injection syringe is introduced into said channel past said at least one point, the injection syringe contacts said appendix and causes rotation of said lever about said lever axis from said rest position so that said arm acts on said position



sensor to indicate detection of the presence of the injection syringe in the first channel at said at least one point; and at least one servomechanical means actuatable in response to said detecting means for controlling said other operation depending on whether or not the injection syringe is detected in the channel by said at least one detecting means.

4,347,216

WET SAMPLE DECOMPOSING APPARATUS

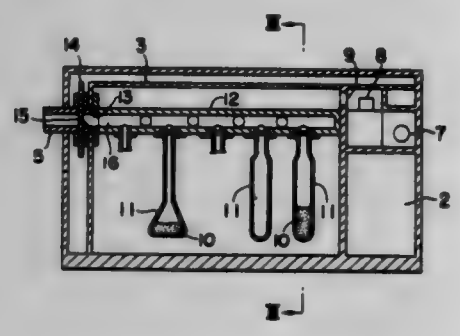
Kazuyoshi Kawasaki, and Yasumitsu Katsuno, both of Kitakyushu, Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1981, Ser. No. 277,197

Claims priority, application Japan, Jun. 30, 1980, 55-88923; Sep. 12, 1980, 55-126777

Int. Cl.³ G01N *31/12*; H05B *6/64*

U.S. Cl. 422—78 **13 Claims**



1. A sample decomposing apparatus comprising;

a microwave heating container forming a chamber and having on one side thereof a transparent door that intercepts microwaves and a wall having a perforation formed therethrough;

a microwave controller for controlling microwaves radiated in said chamber;

a plurality of sample decomposing containers;

means defining a hollow gas collector having a first gas discharge opening and a plurality of inlet opening means therein for removably mounting and affixing to said collector means each of said plurality of sample decomposing containers each containing a sample to be decomposed to generate said first gas, said hollow gas collector being disposed in said microwave heating container;

means for introducing a second gas into the hollow gas collector from the exterior thereof; and

external suction means for removing said first and second gases from said gas collector through said perforation in the wall of said heating container.

4,347,217

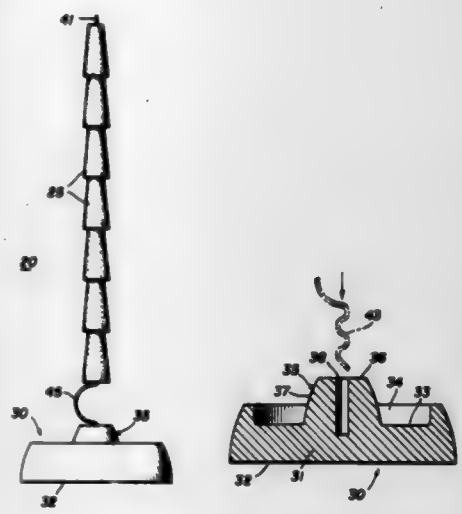
INCENSE HOLDER

Andrew P. Radkins, Bartlett; David P. Macarus, Downers Grove; James A. Radkins, Chicago, and Jay S. Waxman, Skokie, all of Ill., assignors to Genieco Inc., Chicago, Ill.

Filed May 19, 1980, Ser. No. 151,202

Int. Cl.³ A61L *9/03*

U.S. Cl. 422—126 **9 Claims**



1. A carrier for incense beads having holes therethrough, said carrier comprising a rod adapted to extend through the holes of one or more associated incense beads, an axially elongated mounting portion at one end of said rod having a lateral extent greater than the thickness of said rod, and a laterally-offset stop portion adjacent to said mounting portion shaped and dimensioned to prevent the passage of associated incense beads therealong thereby to maintain a predetermined space between the associated incense beads and said mounting portion.

5. An incense holder for incense beads having holes therethrough, said holder comprising a body having a bottom wall adapted to rest upon an associated underlying support surface, an upstanding projection extending upwardly from said bottom wall centrally thereof and projecting well above the remainder of said body, and an elongated mounting bore extending downwardly through said projection centrally thereof, an elongated rod having a diameter substantially less than the diameter of said mounting bore and adapted to extend through the holes of one or more associated incense beads, an axially elongated mounting portion at one end of said rod having a lateral extent greater than the thickness of said rod and shaped and dimensioned to be received in a substantially stable upright orientation in said mounting bore, and a laterally-offset stop portion adjacent to said mounting portion shaped and dimensioned to prevent the passage of incense beads therealong and to limit the depth of insertion of said mounting portion in said mounting bore thereby to maintain a predetermined space between the incense beads and said body.

4,347,218

APPARATUS FOR MAKING CARBON BLACK

Oskar Posch, Biberist, Switzerland, assignor to Anstalt Mura, Vaduz, Liechtenstein

Division of Ser. No. 936,764, Aug. 25, 1978, Pat. No. 4,246,232. This application May 27, 1980, Ser. No. 153,253

Claims priority, application Switzerland, Sep. 2, 1977, 10759/77

Int. Cl.³ C09C *1/00*

U.S. Cl. 422—151 **3 Claims**

1. Apparatus for production of carbon black, the apparatus being of a type having:

a reactor including a reaction chamber for carbon black formation and an overall cover;

a plurality of unjacketed feed units mounted to said overall cover, each equipped for separately supplying air to said

reaction chamber from an air supply apparatus and spraying hydrocarbon material into the air near a discharge end of the feed unit;

a heat exchanger provided on the discharge side of said reactor for reducing the temperature of the reactor output gases and the carbon black produced therein; and

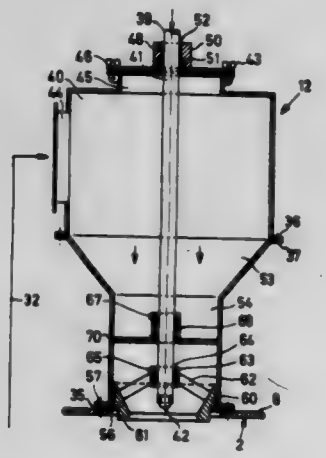
a means on the discharge side of said heat exchanger for delivering the carbon black from the reactor,

each of said units comprising:

an input air chamber section having an air supply inlet and being open at its output end, and further comprising a coverable opening and a demountable cover therefor opposite its output end;

an output guide section having an open input end mounted to the open output end of said input air chamber and tapering down to a cylindrical portion narrower than said input air chamber;

a hydrocarbon supply pipe extending through said air input chamber and through said output guide section and isolating air in said input air chamber from hydrocarbon material;



a spray nozzle mounted to said supply pipe for spraying hydrocarbon material into air passing through said narrower cylindrical portion of said output guide section;

a vortex member having restricting flow openings and demountably affixed to said supply pipe within said narrower cylindrical portion of said output guide section; and

an air output restricting nozzle demountably affixed to said supply pipe and removably mounted to said output guide section adjacent the output of said output guide section;

said supply pipe, spray nozzle, vortex member and output restricting nozzle being connected together with said cover as an interconnected unit, and being proportioned to feed reagent air and hydrocarbon for production of a particular grade of carbon black in said apparatus, and said interconnected unit being removable from the feed unit through said coverable opening of said input air chamber to permit easy demounting of said vortex member, said air output restricting nozzle and said spray nozzle from said supply pipes.

4,347,219

CATALYTIC CONVERTER FOR EXHAUST-GAS CLEANING USE AND METHOD OF ASSEMBLING SAME

Yutaka Noritake, Kawagoe; Ikuo Kajitani, Hanno; Sakuji Arai, Ageo, and Toshiaki Muto, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1980, Ser. No. 220,145

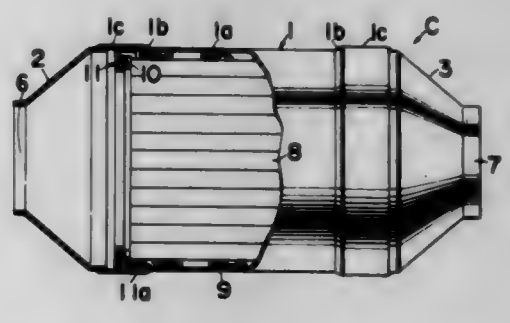
Claims priority, application Japan, Dec. 29, 1979, 54-172154; Dec. 29, 1979, 54-182816[U]

Int. Cl.³ F01N *3/28*

U.S. Cl. 422—180 **8 Claims**

1. In a catalytic converter for exhaust-gas cleaning use in which a monolithic catalyst substrate is supported in a hollow cylindrical casing body by a tubular cushioning element of wire-mesh form and held axially in place by a pair of annular holding fixtures secured to the casing body and each fitted with an end cushioning element for engagement with the adjacent end face of the catalyst substrate, the improvement wherein said casing body comprises an integral cylinder having a smaller-diameter cylindrical portion and a larger-diameter cylindrical portion connected to at least one end of said smaller-diameter cylindrical portion through the medium of a sloped shoulder portion and wherein said tubular cushioning element extends into said larger-diameter cylindrical portion whereby when the monolithic catalyst substrate and the tubular cushioning element surrounding the same are inserted into the casing body, the larger-diameter portion and the sloped shoulder portion gradually compress the tubular cushioning element to facilitate the insertion thereof.

8. A method of assembling a catalytic converter for exhaust-gas cleaning use in which a monolithic catalyst substrate is supported in a hollow cylindrical casing body by cushioning



means, said method comprising the steps of: forming said casing body with an enlarged-diameter portion at least at one end thereof which is connected with the central straight cylindrical portion of the casing body through the intermediary of a sloped shoulder portion; fitting over said enlarged-diameter portion an insertion jig defining an outwardly divergent flaring insertion opening therein the smallest diameter of which is larger than the inside diameter of the central straight cylindrical portion of the casing body; inserting said catalyst subetrate as covered around the periphery thereof with a tubular cushioning element through said insertion opening of said insertion jig into the enlarged-diameter portion of said casing body while subjecting said cushioning element to a primary radial compression; and inserting said catalyst substrate further into said casing body over said sloped shoulder portion while subjecting said cushioning element to a secondary radial compression until said catalyst substrate is held in a predetermined position within said casing body.

4,347,220

SYSTEM FOR DRYING AND BURNING VISCOUS AQUEOUS LIQUORS WHICH CONTAIN ORGANICS

Hugh W. Nelson, West Hartford; George J. Prohazka, Simsbury, both of Conn., and Keith W. Morris, Ashton, Canada, assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 27, 1980, Ser. No. 163,836

Int. Cl.³ D21C *11/04*

U.S. Cl. 422—185 **1 Claim**

1. A system for producing smelt from black liquor, including,

means connected to a source of heavy black liquor for supplying heavy black liquor containing both organic and inorganic solids,

means connected to a source of sawdust for supplying sawdust in the form of solid particles which are finely-divided and porous and combustible,

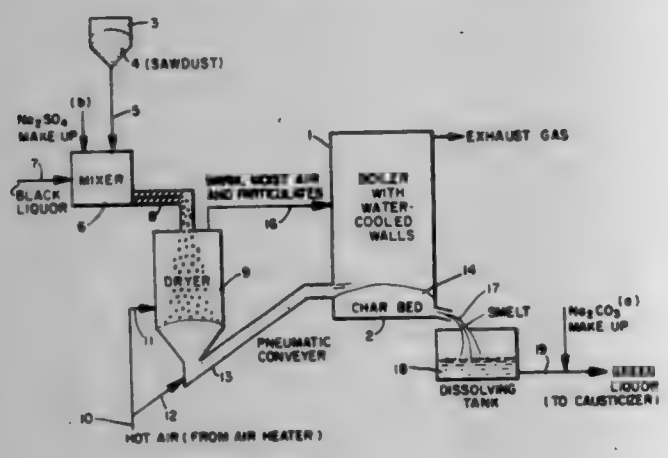
a mixer connected to the means for supplying the black liquor and the means for supplying sawdust particles to intimately contact the liquor and sawdust particles to coat the sawdust particles with the solids of the black liquor,

a drying vessel connected to the mixer to receive the mixture,

means for supplying dry heated air,

a first conduit connecting the means for supplying the dry heated air to the drying vessel to introduce dry heated air into the dryer to vaporize the water from the solids of the black liquor and leave the solids as a dry coat on the sawdust particles,

a boiler having water-cooled walls and a hearth on which organic material is burned to generate heat with which to convert the boiler water into steam,



a second conduit connecting the dryer to the boiler to transport the heated moist air from the dryer into the furnace of the boiler above the hearth as combustion air,

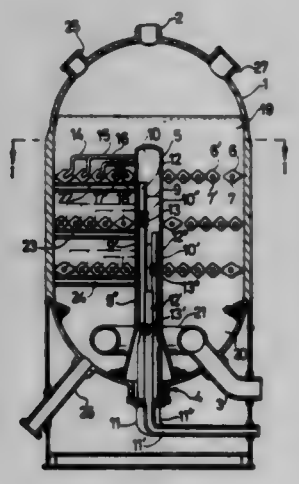
a third conduit connecting the dryer to the boiler to transport the sawdust particles with their coat of solid material to the hearth of the boiler furnace where the solid material forms a bed in which the organic solids burn and the inorganic solids smelt, a dissolving tank containing water, and a means for flowing the smelt from the boiler into a body of water in the dissolving tank to form green liquor.

4,347,221

CATALYTIC CONVERTER

Jun Zamma; Isao Makino, both of Chiba; Toshiyuki Mii, Funabashi, and Kazumi Shima, Chiba, all of Japan, assignors to Toyo Engineering Corporation, Japan

Filed Mar. 2, 1981, Ser. No. 239,614
Claims priority, application Japan, Mar. 13, 1980, 55-3092
Int. Cl.[3] F28D *21/00*
U.S. Cl. 422—207 16 Claims



1. A catalytic converter which comprises:

a converter shell having a make-up gas inlet port, a product gas outlet port, an opening and a plurality of gas supply conduits through which a part of the make-up gas is adapted to be fed for controlling the reaction temperature, said gas supply conduits being positioned in said opening in said shell;

a single catalyst bed disposed in said converter shell;

a hollow gas supply chamber disposed within said catalyst bed, said gas supply chamber being closed at one end thereof and in communication at the other end thereof with said opening for receiving said gas supply conduits therein;

at least one stage of gas injection means comprising a plurality of gas injection rings which are disposed within said catalyst bed, said gas injection rings incorporating gas sparging means;

a plurality of beams which extend between and are secured to the inner surface of said converter shell and the outer surface of said gas supply chamber and which support said gas injection rings in said at least one stage, each of said beams being secured at one end to a point on said inner wall of said converter shell and at the other end to a point opposite thereto on said outer wall of said gas supply chamber;

at least one small chamber formed within said gas supply chamber, the number of said small chambers being equal to the number of the stages of said gas injection means;

elongated connecting means for interconnecting each of said small chambers to each of said gas supply conduits, said connecting means being installed inside said gas supply chamber, and

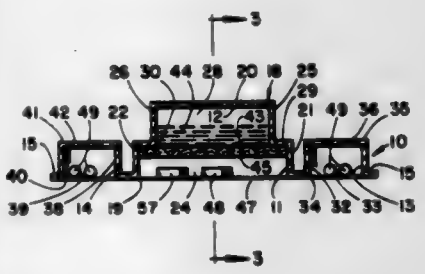
connecting tubes for interconnecting each of said small chambers to each stage of said gas injection means.

4,347,222

GAS GENERATING APPARATUS FOR ANAEROBIC ATMOSPHERE

Glenn L. Beall, Gurnee, and Robert P. Noonan, Naperville, both of Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 21, 1981, Ser. No. 257,512
Int. Cl.[3] B01J *8/00*
U.S. Cl. 422—211 7 Claims



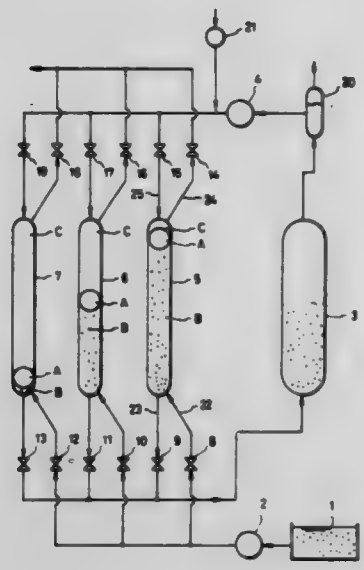
1. Apparatus for generating an anaerobic atmosphere which comprises in combination a first receptacle having upper and lower transversely positioned openings, a second receptacle closed at one end and having an opposite end communicating with the upper opening of said first receptacle, said second receptacle containing a liquid and having the upper opening between said second receptacle and said first receptacle sealed in a gas and liquid-tight manner with a first rupturable film, said first receptacle containing a composition capable of producing a reducing gas upon contact thereof with the liquid from said second receptacle, said first receptacle also containing an absorbent material located along and covering the first rupturable film at the upper opening thereof, said lower opening of said first receptacle being sealed in a gas and liquid-tight manner with a second rupturable film, a separate third receptacle located adjacent to said first receptacle, said third receptacle containing a catalyst capable of catalyzing the reaction between the reducing gas and oxygen, said third receptacle also having an opening enabling the catalyst to communicate with the surrounding atmosphere.

4,347,223

APPARATUS FOR MAKING SUPPLY OF HIGH PRESSURE LIQUID AND RELIEF OF PRESSURE OF THE SAME

Yoji Kitaoka, Ichihara; Mizuho Hirato, Hitachi, and Kazuo Miyatani, Tokyo, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 193,079
Claims priority, application Japan, Oct. 18, 1979, 54-133599
Int. Cl.[3] B01J *3/02, 8/00;* F04F *11/02*
U.S. Cl. 422—242 1 Claim



1. Apparatus for use in high-pressure liquefaction reaction processes of the type in which a material slurry is supplied under a high pressure into a high-pressure liquefaction reaction vessel through utilization of the pressure possessed by a high-pressure product slurry from the high-pressure liquefaction reaction vessel and, at the same time, a product slurry is put for a pressure relief and taken out as a low-pressure product, which comprises:

a high-pressure liquefaction reaction vessel;

at least one cylinder having a float therein;

a low-pressure slurry pump for supplying under a low pressure a material slurry into said cylinder;

a material slurry introduction pipe having a valve and connecting between said low-pressure slurry pump and a lower end of said cylinder;

a material slurry discharge pipe for guiding under a high pressure a material slurry from said cylinder to said high-pressure liquefaction reaction vessel, said material slurry discharge pipe having a valve and connecting between a lower end portion of said cylinder and the high-pressure liquefaction reaction vessel;

a product slurry introduction pipe for guiding under a high pressure a product slurry from said high-pressure liquefaction reaction vessel to said cylinder, said product slurry introduction pipe being connected to an upper end portion of said cylinder through said high-pressure liquefaction reaction vessel, a gas separator for separating gas out of the product slurry, a pump operative to compensate for a pressure loss due to the reaction and a valve; and

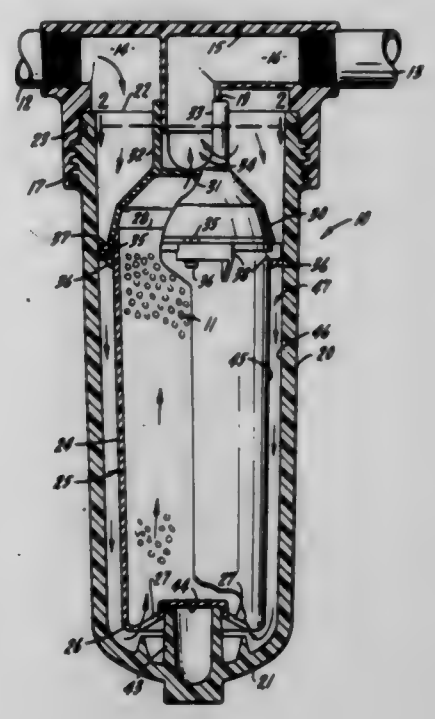
a product slurry discharge pipe for recovering under a low pressure a product slurry from an upper end portion of said cylinder, said product slurry discharge pipe including a valve and being adapted to release the pressure of the high pressure product slurry introduced into said cylinder and recover the pressure released product slurry upon the introduction of the material slurry into the lower end of said cylinder by said low-pressure slurry pump.

4,347,224

CHEMICAL DISPENSER

Adolf F. Beckert, Woodbury; Dennis G. Winberg, Cottage Grove, and Duane D. Nowlin, New Brighton, all of Minn., assignors to Ecodyne Corporation, Lincolnshire, Ill.

Filed May 30, 1980, Ser. No. 154,646
Int. Cl.[3] B01F *1/00, 3/12*
U.S. Cl. 422—277 8 Claims



1. Apparatus for dissolving a solid chemical into a pressurized liquid flowing through a conduit, comprising;

(a) a fixed housing having a liquid inlet opening and a liquid outlet opening connected to said conduit, a downwardly facing opening below said liquid inlet and outlet openings, downwardly facing tubular means in said downwardly facing opening, and said tubular means being connected to said outlet opening;

(b) a removable housing havings a closed end and an open end, said open end being removably connected to said downwardly facing opening of said fixed housing; and

(c) a removable cartridge containing a supply of said solid chemical, means for centering and holding said cartridge in said removable housing below said tubular means in said fixed housing, the outside surface of said cartridge being spaced from and facing the inside surface of said removable housing, there being a liquid inlet hole in said cartridge, a relatively small liquid outlet hole at the top of said cartridge, a tubular extension protruding upwardly from the upper end of said cartridge around said liquid outlet hole, said extension being coupled with said tubular means in said fixed housing, there being a relatively large aperture through said extension;

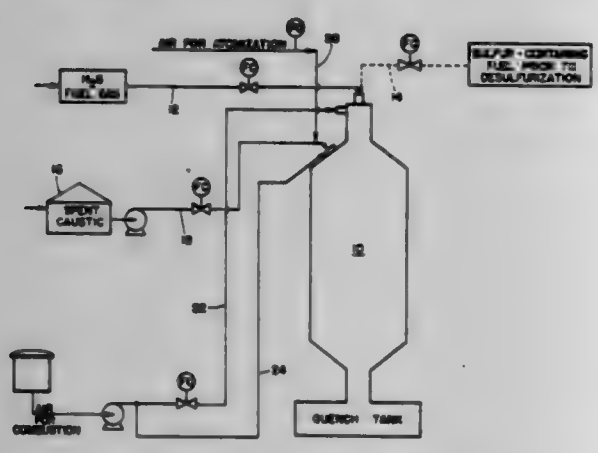
whereby all of said liquid flowing through said conduit enters said removable housing, a minor amount of such liquid in said removable housing flowing between said facing surfaces and into said liquid inlet hole of said cartridge, said minor amount of liquid flowing through said solid chemical in said cartridge and dissolving same and then out said liquid outlet hole into said tubular extension, the remainder of said liquid in said removable housing flowing through said aperture into said extension where it is mixed with the dissolved chemical and then enters said tubular means and exits through said outlet opening.

4,347,225

METHOD FOR TREATING ALKALINE EFFLUENTS RESULTING FROM PETROLEUM PROCESSING

Costandi A. Audeh, Princeton, and Saverio G. Greco, Princeton Junction, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,309
The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.
Int. Cl.[3] C01D *5/00*
U.S. Cl. 423—207 9 Claims



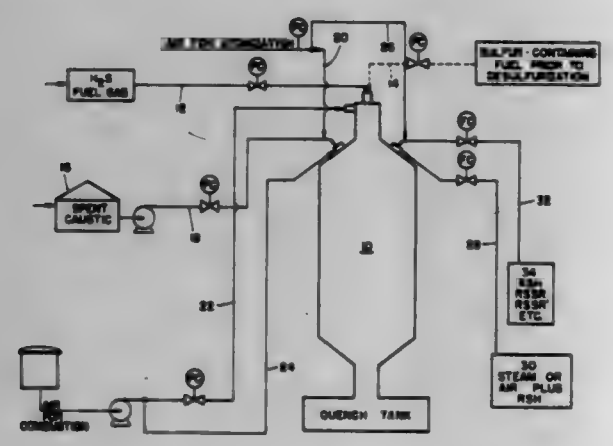
1. A method for treating alkaline effluents resulting from petroleum processing comprising incinerating said effluents in the presence of oxygen and a sufficient amount of hydrogen sulfide to convert the alkaline material to the corresponding sulfate.

4,347,226

METHOD FOR TREATING SULFUR-CONTAINING EFFLUENTS RESULTING FROM PETROLEUM PROCESSING

Costandi A. Audeh, Princeton, and Saverio G. Greco, Princeton Junction, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 3, 1981, Ser. No. 239,922
The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.
Int. Cl.[3] C01D *5/00*
U.S. Cl. 423—207 7 Claims



1. A process for disposal of noxious waste products generated in petroleum refining including spent caustic solution and concentrated sulfur effluent from treating of petroleum fractions to remove sulfur therefrom comprising incinerating said spent caustic solution and said concentrated sulfur effluent together in the presence of air so that the sulfur contained in said concentrated sulfur effluent is converted to the oxides of sulfur which react with the incinerated caustic to form alkali metal sulfates.

4,347,227

PROCESS FOR REMOVING SO_x AND NO_x COMPOUNDS FROM GAS STREAMS

Robert H. Hass, Fullerton, and Walter Albertson, Brea, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 242,611, Mar. 11, 1981. This application Jul. 14, 1981, Ser. No. 283,183
Int. Cl.[3] B01D *53/34*
U.S. Cl. 423—235 41 Claims

1. A process for treating a feed gas comprising NO_x and SO_x components, which process comprises:

(1) contacting said feed gas with a first liquid comprising the reaction product of formic acid or oxalic acid with one or more alkanolamines containing a tertiary amine functional group under conditions such that the SO_x content of said feed gas is decreased;

(2) subjecting said first liquid after said contacting in step (1) to conditions, including an elevated temperature and the presence of added formate ion, such that a sulfur component selected from the group consisting of elemental sulfur, hydrogen sulfide, and a mixture thereof forms;

(3) separating said sulfur component from said first liquid;

(4) contacting the gas of decreased SO_x content produced in step (1) with a second liquid comprising a NO_x-reactive metal-containing ion in chelated form under conditions such that the NO_x content of said gas is decreased and the concentration of nitrogen components in said second liquid increases;

(5) contacting the second liquid after said contacting in step (4) with a solid substance containing one or more tertiary amine functional groups under conditions, including an elevated temperature and pressure and the presence of added formate ion, such that the concentration of nitrogen components in said second liquid decreases; and

(6) withdrawing a product gas from step (4) of reduced SO_x and NO_x content in comparison to the feed gas.

4,347,228

PROCESS FOR DEFLUORINATION OF PHOSPHORIC ACID

Friedrich Wolstein, Essen, and Gerhard Koch, Marklohe, both of Fed. Rep. of Germany, assignors to Uhde GmbH and Kali Chemie AG, both of Dortmund, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 236,657
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009622
Int. Cl.[3] C01B *25/16*
U.S. Cl. 423—321 R 3 Claims

1. In a process for the defluorination of phosphoric acid by a method which includes a heating step conducted in the presence of an additive present in the acid, and comprising silica, to accomplish both concentration and removal of fluorine, the improvement wherein the additive consists essentially of active porous silica gel having a specific surface of 130 to 600 m^2/g and having a mean pore volume of 0.3 to 1.5 m 1/g.

4,347,229

PROCESS FOR THE PYROGENIC PRODUCTION OF FINELY DIVIDED OXIDE OF A METAL AND/OR A METALLOID

Josef Schmid, Rheinfelden; Ludwig Lange, Bruhl; Hans Klebe, and Dieter Schutte, both of Rheinfelden, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 156,082

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923182

The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.

Int. Cl.³ C01B *33/113;* C01F *7/02;* C01G *23/047, 17/02*

U.S. Cl. 423—336 9 Claims

1. In a process for the production of a finely divided oxide of a metal or metalloid or mixture of a metal oxide and a metalloid oxide employing as starting materials (1) a vaporizable halogen compound of the metal, metalloid or mixture of metal and metalloidal halide, (2) an oxygen containing gas and (3) a combustible gas and in which the elemental halogen formed during the formation of the oxide of the metal or metalloid or mixture thereof from the burning of the combustible gas and the hydrolysis of the vaporizable halogen compound is reacted during the cooling of the reaction product with gaseous hydrogen introduced below reaction temperature of the oxyhydrogen gas mixture formed by mixing the gaseous hydrogen with oxygen containing waste gases to form hydrogen halide, the improvement comprising mixing the gaseous hydrogen with an inert gas and introducing the mixture into the cooling section through a single pipe into the waste gases containing halogen while the reaction product is cooled in the cooling section.

4,347,230

PROCESS FOR THE PREPARATION OF ALPHA MERCURIC IODIDE MONOCRYSTALS

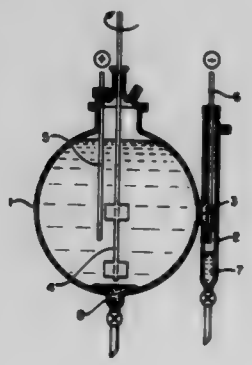
Ion F. Nicolau, Seyssins, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 23, 1980, Ser. No. 161,923

Claims priority, application France, Jun. 26, 1979, 79 16418

Int. Cl.³ C30B *29/12*

U.S. Cl. 423—491 13 Claims



ELECTROLYTIC PURIFICATION

1. A process for the growth of alpha mercuric iodide monocrystals in solution, comprising the steps of preparing an alpha mercuric iodide solution in an organic sulphoxide and causing growth on a nucleus located in a cavity able to block the growth defects of the monocrystal, the nucleus resting by one face on the bottom of a prismatic cavity having a rectangular cross-section made in a nucleus carrier in the direction of the nucleus.

4,347,231

PREPARATION OF HYDROGEN PEROXIDE FROM ITS ELEMENTS

Robert C. Michaelson, Waldwick, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jun. 17, 1981, Ser. No. 274,575

Int. Cl.³ C01B *15/02*

U.S. Cl. 423—584 11 Claims

1. In a process for producing hydrogen peroxide by the catalyzed reaction of hydrogen and oxygen, the improvement which comprises contacting gaseous hydrogen and oxygen with a two phase homogeneous catalysis system, which contains (i) an inert organic solvent having dissolved therein an iridium complex homogeneous catalyst and a quinone-derivative reaction promoter, which catalyst has the formula $IrCl(CO)(XR_3)_2$ wherein X is selected from the group of elements consisting of P, As, and Sb and wherein R is selected from the group consisting of phenyl, alkyl radicals having 2 to 6 carbon atoms, and cyclohexyl radicals, and (ii) an aqueous solution as the second phase, for sufficient time to form hydrogen peroxide; extracting hydrogen peroxide reaction product from the organic phase into the aqueous phase; and recovering the aqueous phase containing hydrogen peroxide.

4,347,232

PREPARATION OF HYDROGEN PEROXIDE FROM ITS ELEMENTS

Robert C. Michaelson, Waldwick, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jun. 17, 1981, Ser. No. 274,597

Int. Cl.³ C01B *15/02*

U.S. Cl. 423—584 8 Claims

1. In a process for producing hydrogen peroxide by the catalyzed reaction of hydrogen and oxygen, the improvement which comprises contacting gaseous hydrogen and oxygen with a two phase homogeneous catalysis system, which contains (i) an inert organic solvent phase having dissolved therein as the homogeneous catalyst a palladium(O) complex of dibenzylidene acetone and (ii) an aqueous solution as the second phase, for sufficient time to form hydrogen peroxide; extracting hydrogen peroxide reaction product from the organic phase into the aqueous phase; and recovering the aqueous phase containing hydrogen peroxide.

4,347,233

DENTAL CARIES DETECTION

Junichi Yamauchi; Kyoichiro Shibatani; Eiji Ikeguchi; Ikuo Omura, and Yoshinori Nagase, all of Kurashiki, Japan, assignors to Kuraray Company, Limited, Kurashiki, Japan

Filed Nov. 29, 1979, Ser. No. 98,686

Claims priority, application Japan, Dec. 4, 1978, 53-150410

Int. Cl.³ A61K *6/00, 49/00;* G01N *1/30, 21/25*

U.S. Cl. 424—7 3 Claims

1. A method for distinguishing, by observation with visible light, between the carious portion and the sound portion of a decaying tooth by selectively dyeing the carious portion, which comprises applying a solution of Acid Red (CI 45100) in a concentration of from 0.1 to 5.0% by weight in a solvent which comprises at least 60% by weight of a mono-, di- or tri-hydroxy compound containing 2 to 20 carbon atoms to a decayed tooth to selectively dye the carious portion of the tooth, and then within 10 seconds after applying the solution washing away the remaining solution before the sound portion of the tooth is dyed with said solution.

4,347,234

MEDICINALLY USEFUL, SHAPED MASS OF COLLAGEN RESORBABLE IN THE BODY

Helmut Wahlig, Darmstadt; Elvira Dingeldain, Dreieich, and Dietrich Braun, Darmstadt-Arheilgen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 82,520, Oct. 9, 1979, Pat. No. 4,291,013.
This application Jun. 15, 1981, Ser. No. 273,291
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1978, 2843963
Int. Cl.[3] A61K *9/22, 9/26;* A61F *13/00;* A61L *15/03*
U.S. Cl. 424—15 6 Claims

1. A collagen based drug delivery system which is resorbable in the body, is sterilized and has been compacted into the shape of a tablet, spheroid, foil, pipe, plate, fiber, granule, strand or tube implantable into the body, by the application of heat of a temperature of 40°–200° C., optionally also with application of pressure of 300–1200 bar, with extrusion, with injection molding or with sintering and which, upon administration to the body, essentially maintains its shape and effects a retarded liberation of the drug, comprising 0.2–20 weight percent of a pharmacologically active drug material, 1–25 weight percent of a bioresorbable binding agent for collagen, and the balance being finely ground collagen, the binding agent consisting essentially of a co- or homopolymer of natural amino acids or of hydrolyzed collagen or hydrolyzed elastin.

4,347,235

WATER-SOLUBLE TABLET

Louis G. Daunora, Lakewood, Colo., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 3, 1981, Ser. No. 299,122
Int. Cl.[3] A61K *2/46, 9/20, 31/765*
U.S. Cl. 424—44 8 Claims

1. In a water-soluble tablet comprising one or more active ingredients, additives and one or more lubricants, the improvement wherein sodium propionate is present.

4,347,236

PROCESS FOR THE PREPARATION OF A MIXTURE OF AN ANTI-INFLAMMATORY STEROID AND A FLUORO-CHLORO-HYDROCARBON TO BE USED AS A PROPELLANT

Paavo T. Tanskanen, Kuopio, Finland, assignor to Orion-yhtymä Oy, Finland

Filed May 19, 1981, Ser. No. 265,333
Claims priority, application Finland, May 19, 1980, 801610
Int. Cl.[3] A61L *9/04;* A61K *31/56*
U.S. Cl. 424—45 17 Claims

1. A process for preparing a stable aerosol formulation of beclomethasone dipropionate in a fluoro-chlorohydrocarbon propellant wherein the beclomethasone dipropionate has a particle size smaller than 5 μm, said process comprising suspending beclomethasone dipropionate, ground into a particle size smaller than 5 μm, in a small quantity of a fluoro-chlorohydrocarbon propellant at a temperature of from about −40° to +5° C., stirring the resultant mixture for at least 24 hours at a temperature of from about −40° to +5° C. in the course of which time the mixture is brought to the stabilization stage, and adding to the stabilized mixture during or after said stirring a further quantity of the propellant sufficient to make an aerosol formulation suitable for use in inhalation therapy, whereby increase in the particle size of the beclomethasone dipropionate is substantially prevented throughout said process and during subsequent storage.

4,347,237

LOWER FATTY ACID GLYCERIDE HIGH-HLB LUBRICATING SUPPOSITORY AND METHOD FOR MAKING AND USING THE SAME

Kenneth L. Evenstad, 16235 Holdridge Rd., Wayzata, Minn. 55391, and Hiep Nguyen, 18605 33rd Ave. North, Plymouth, Minn. 55447

Filed Mar. 2, 1981, Ser. No. 239,882
Int. Cl.[3] A61K *9/02*
U.S. Cl. 424—78 12 Claims

1. A lubricating suppository for the human vaginal canal, which suppository is solid at normal ambient temperatures but melts at human body temperature to form a substantially homogeneous liquid having the appearance of a single liquid phase, said suppository comprising:

(a) a continuous phase comprising a water soluble polyoxyalkylene polyol component consisting essentially of polyoxyethylene glycol having a molecular weight within the range of 400 to 5000, said component being formulated to have a melting range low enough to ensure the formation of a clear molten liquid at less than about 75° C.;

(b) about 10–60 parts per one hundred parts by weight of said polyoxyalkylene polyol component, of a nonionic surfactant having an HLB value greater than 12, said nonionic surfactant being uniformly distributed through said continuous phase;

(c) about 10–40 parts per hundred, based on the weight of said polyoxyalkylene polyol component, of a C_6–C_{12} aliphatic carboxylic acid glyceride said glyceride being uniformly distributed throughout said continuous phase with the aid of said nonionic surfactant;

said lubricating suppository, in either the solid or molten state, having sufficient compatibility with water to be readily uniformly distributable in water.

4,347,238

AUTOCLAVABLE EMULSION CONTAINING SILVER SULPHADIAZINE

Derek A. Hollingsbee, Chelmsford, England, assignor to Smith & Nephew Associated Companies Limited, England

Filed Oct. 24, 1980, Ser. No. 200,429
Claims priority, application United Kingdom, Oct. 26, 1979, 7937183
Int. Cl.[3] A61K *31/78, 31/00, 47/00, 31/555*
U.S. Cl. 424—81 6 Claims

1. A heat sterilized, mobile, drop-forming, ophthalmic oil-in-water emulsion which comprises an aqueous solution of 0.04 to 0.25% of a pharmaceutically acceptable salt of polyacrylic acid lightly cross-linked with triallyl sucrose, a pharmacologically acceptable vegetable or mineral oil and a therapeutically effective amount of finely divided silver sulphadiazine.

4,347,239

INACTIVATED RABIES VACCINE FOR VETERINARY USE

Edmund P. Bass, and Richard L. Sharpee, both of Lincoln, Nebr., assignors to Norden Laboratories, Inc., Lincoln, Nebr.

Filed Jul. 30, 1980, Ser. No. 174,306
Int. Cl.[3] A61K *39/205*
U.S. Cl. 424—89 11 Claims

1. An inactivated rabies virus vaccine capable of inducing immunity in feline animals without serious side effects comprising a vaccinal amount of inactivated HCP-SAD strain of rabies virus which has been adapted, before inactivation, to grow in swine testicle cell cultures, an adjuvant and a carrier therefor.

4,347,240

ANTITUMOR AGENT CONTAINING *LACTOBACILLUS CASEI* YIT 9018

Masahiko Mutai, Higashi Yamato; Teruo Yokokura, Tokyo; Seizaburo Kobayashi, and Ikuo Kato, both of Hachioji, all of Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,725
Claims priority, application Japan, Feb. 27, 1979, 54-21339
Int. Cl.³ A61K *39/02*
U.S. Cl. 424—92 8 Claims

1. A composition for inhibiting tumor growth, which comprises a tumor growth-inhibiting amount of whole cells of *Lactobacillus casei* YIT 9018 and a physiologically acceptable saline carrier.

4,347,241

DELAYED RELEASE COATED METAL PHOSPHIDE PESTICIDES

Wolfgang Kapp, Offenbach am Main, Fed. Rep. of Germany, assignor to Degesch GmbH, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 716,701, Aug. 19, 1976, abandoned. This application Mar. 1, 1978, Ser. No. 882,949
Claims priority, application South Africa, Sep. 2, 1975, 75/5587
Int. Cl.³ A01N *55/00, 59/26*
U.S. Cl. 424—128 7 Claims

1. A composition for pest control by fumigation including a metal phosphide, selected from the group consisting of aluminum phosphide, magnesium phosphide and calcium phosphide, dry-coated with a composition composed of urea, which urea has first been rendered water-repellent by treatment in a non-polar organic solvent with a water-repellent poly(methyl hydrogen)siloxane substance in the presence of air and an organometallic catalyst of a noble transition metal of Group VIII of the Periodic Table, or of tin, said coating composition also including a substance which is chemically or physically modifiable or decomposable to cause apertures to be formed in the coating under predetermined conditions for access of water or water vapor to the phosphide particles, said modifiable or decomposable substance being selected from the group consisting of ammonium carbamate, ammonium carbonate, sodium bicarbonate, ammonium bicarbonate, ammonium cyanide and potassium bicarbonate.

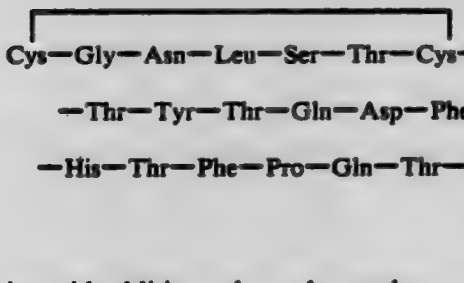
4,347,242

HYPOCALCAEMIC PEPTIDES AND PROCESS FOR THEIR MANUFACTURE

Robert Neher, Binningen, and Bernhard Riniker, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 632,928, Nov. 18, 1975, abandoned, which is a continuation of Ser. No. 488,880, Jul. 15, 1974, abandoned, which is a division of Ser. No. 253,077, May 15, 1972, abandoned, which is a continuation of Ser. No. 831,776, Jun. 9, 1969, abandoned. This application Mar. 22, 1978, Ser. No. 889,066
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 2 Claims

1. The dotriacontapeptide amide of the formula



its acid addition salts and complexes.

4,347,243

ACID SOLUBLE, PEPSIN RESISTANT PLATELET AGGREGATING MATERIAL

Morris D. Schneider, Knoxville, Tenn., assignor to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 81,974, Oct. 4, 1979, abandoned, which is a continuation of Ser. No. 875,730, Feb. 7, 1978, abandoned. This application Aug. 12, 1981, Ser. No. 292,200
Int. Cl.³ A61K *37/02, 37/12*; C12P *21/06*; C12N *9/00*; C07G *7/00*
U.S. Cl. 424—177 15 Claims

1. A method of preparing a hemostatic agent comprising the steps of:

(a) extracting cleansed, homogenized equine arterial tissue with dilute aqueous acid at from about 0° C. to 5° C.,
(b) dialyzing the extract against dilute acid,
(c) subjecting the retentate to proteolysis with pepsin, and
(d) precipitating the hemostatic agent by the addition of a water soluble salt to the resulting mixture.

7. An acid soluble, pepsin resistant, non-dialyzable, proteinaceous hemostatic agent isolated from equine arterial tissue characterized by the ability to enhance platelet aggregating activity in mammalian blood, stable for extended periods of time at temperatures as low as −85° C., losing its platelet aggregating activity when exposed to collagenase at 37° C. or when heated at 100° C. for fifteen minutes; containing the following average number of amino acid residues per 1,000 total amino acid residues:

Lysine	23.8	Glycine	254.2
Histidine	10.4	Alanine	100.1
Hydroxylysine	5.5	Cysteine	10.7
Hydroxyproline	42.4	Valine	44.0
Aspartic Acid	75.1	Methionine	6.6
Threonine	36.0	Isoleucine	31.9
Serine	52.8	Leucine	52.1
Glutamic Acid	94.3	Tryosine	15.2
Proline	87.1	Phenylalanine	25.9
		Arginine	33.9;

which on SDS-PAGE electrophoresis products bands characteristic of the following molecular weights:

322,000
300,000
250,000
220,000
163,000
132,000
116,000
100,000
61,500
51,500
45,000
36,000

4,347,244

GANGLIOSIDE CONTAINING COMPOSITIONS FOR TREATING DIARRHEA

Marie-Claude Mynard, Sainte Foy-les-Lyon, and Jean-Louis Tayot, La Tour de Salvagny, both of France, assignors to Societe Anonyme dite: Institut Merieux, Lyons, France

PCT No. PCT/FR80/00037, § 371 Date Nov. 13, 1980, § 102(e) Date Nov. 13, 1980, PCT Pub. No. WO80/01875, PCT Pub. Date Sep. 18, 1980
PCT Filed Mar. 17, 1980, Ser. No. 217,114
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1979, 2910509; France, Mar. 16, 1979, 79 06732
Int. Cl.³ A61K *31/70*
U.S. Cl. 424—180 23 Claims

1. A medicament for the treatment of acute diarrhea comprising an orally administrable medium having fixed thereon an effective amount of a ganglioside or ganglioside derivative

having an affinity for the toxins produced by bacteria responsible for diarrhea, said medium having a strong affinity for the gangliosides or which can be chemically linked to the said ganglioside or ganglioside derivative, said medium further having a high specific surface, and allowing satisfactory contact between the ganglioside and the toxin to be neutralized.

4,347,245

SPIRONOLACTONE-CONTAINING COMPOSITION AND USE THEREOF

German Shapiro, 938 Eudora St., Denver, Colo. 80220

Filed May 26, 1981, Ser. No. 266,924
Int. Cl.³ A61K *31/58*
U.S. Cl. 424—241 **10 Claims**

1. A composition for effectively suppressing excess androgenic activity which occurs at a skin site so as to effectively treat hirsuitisum, said composition being directly applied to said skin site, the composition consisting essentially of:

a liquid carrier selected from the group consisting of alcohol, urea, mineral oil and white petrolatum; and

spironolactone in an amount of from about 0.25 wt% to about 5.0 wt% which effectively suppresses excess androgenic activity at said skin site.

6. In a process for treating at least one skin site characterized by excess androgenic activity so as to effectively suppress said excess androgenic activity, the improvement comprising: directly applying a spironolactone-containing composition to said at least one skin site, said composition consisting essentially of a liquid carrier selected from the group consisting of alcohol, urea, mineral oil and white petroleum and spironolactone in an amount of from about 0.25 wt% to about 5.0 wt% which effectively suppresses androgenic activity at said skin site.

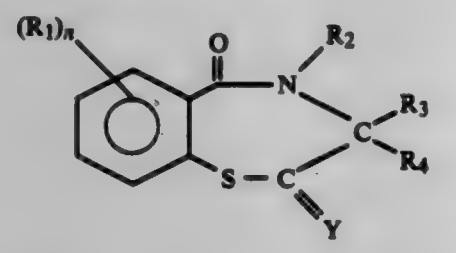
4,347,246

ANTIHYPERTENSIVE LACTAMS

John T. Suh, Greenwich, Conn.; Bruce E. Williams, Cottage Grove, Minn.; Jerry W. Skiles, Tuckahoe, and Bernard Loev, Scarsdale, both of N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Continuation-in-part of Ser. No. 142,945, Apr. 23, 1980, Pat. No. 4,287,203. This application May 15, 1980, Ser. No. 263,824
Int. Cl.³ A61K *31/55*; C07D *281/04, 281/18*
U.S. Cl. 424—246 **9 Claims**

1. A compound of the formula



wherein

R_1 is independently C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_2–C_{20} alkynyl, hydroxy, C_1–C_{10} alkoxy, hydroxy C_1–C_{20} alkyl, thio, thio C_1–C_{20} alkyl, C_1–C_{20} amino, amino C_1–C_{20} alkyl, C_1–C_{20} alkylamino, nitro, cyano, C_1–C_{20} alkanoyl, carboxy, carboxy C_1–C_{20} alkyl, carb C_1–C_{10} alkoxy, carb C_1–C_{10} alkoxy, carb C_1–C_{10} alkoxy C_1–C_{20} alkyl, C_1–C_{20} alkylsulfoxy, C_1–C_{20} alkylsulfonyl, sulfonyl, sulfonamido, halogen, trifluoromethyl, or methylenedioxy,

n is an integer from 1 to 4 inclusive,

R_2, R_3 and R_4 are independently hydrogen, C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_2–C_{20} alkynyl, C_3–C_{16} cycloalkyl, phenyl, tolyl, benzyl, phenyethyl, dimethoxyphenol, hydroxybenzyl, indanyl, naphthyl, tetrahydronaphthyl, decahydronaphthyl, pyridyl, quinolyn, pyrrolidyl, pyrrolyl, morpholinyl, furyl, furfuryl, tetrahydrofurfuryl, benzimidazolyl, thiomorpholinyl, thienyl, imidazolyl, or tetrahydroindolyl, and Y is=0,=S,=NR_1, =NOR_1, or =N—NH_2, R_1 being the same as defined above.

9. A process for treating hypertension which comprises administering to the hypertensive animal an effective amount of a compound according to claim 1.

4,347,247

PHARMACOLOGICAL PREPARATION COMPOSED OF A QUINOXALINE DERIVATIVE MIXED WITH SODIUM BICARBONATE

Vincenzo Giobbio, Turin, and Livio Buracchi, Ivrea, both of Italy, assignors to Pierrel S.p.A., Milan, Italy

Filed May 1, 1980, Ser. No. 145,811
Claims priority, application Italy, May 7, 1979, 67949 A/79
Int. Cl.³ A61K *31/495*
U.S. Cl. 424—250 **3 Claims**

1. A pharmaceutical composition for use in animal husbandry, consisting essentially of sodium bicarbonate and a quinoxaline derivative selected group the group consisting of 2-methyl-3(β-hydroxyethylcarbamoyl)quinoxaline-1,4-di-N-oxide and N_1,N_4-dioxo-quinoxaline-2-methyleneimino-N-methylurethane, the sodium bicarbonate and said derivative being admixed in a weight ratio of at least 50% sodium bicarbonate.

4,347,248

2,3-DISUBSTITUTED-THIAZOLO[3,2-a]PYRIMIDINES

William B. Wright, Jr., Woodcliff Lake; Andrew S. Tomcufcik, Old Tappan, both of N.J., and Joseph W. Marsico, Jr., Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 23, 1981, Ser. No. 246,347
Int. Cl.³ C07D *513/04*; A61K *31/38*
U.S. Cl. 424—251 **7 Claims**

1. A compound selected from the group consisting of 2-(p-fluorophenyl)-3-(p-fluorobenzyl)-6,7-dihydro-5H-thiazolo[3,2-a]pyrimidine and the pharmacologically acceptable acid-addition salts thereof.

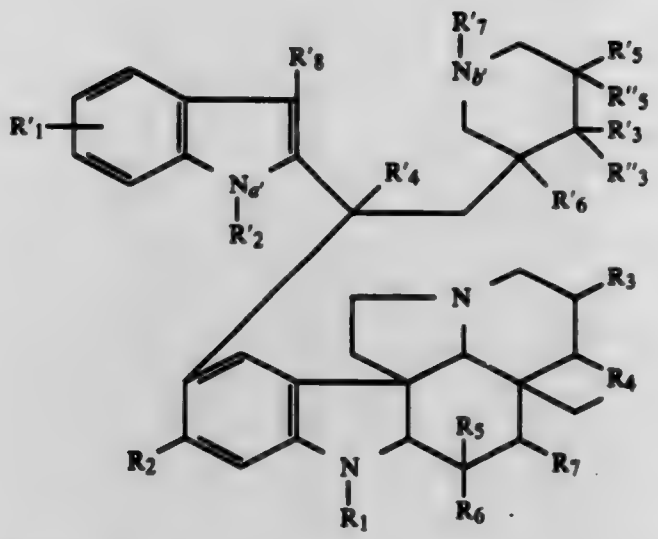
4,347,249

CLASS OF SECO BIS-INDOLIC COMPOUNDS WHICH CAN BE USED AS DRUGS AND A PROCESS FOR THE PREPARATION THEREOF

Pierre Potier, Bois d'Arcy; Nicole Langlois; Yves Langlois, both of Bures-sur-Yvette; Ratremaniaina Z. Andriamialisoa, Les Ulis, and Pierre Mangeney, Paris, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Jul. 9, 1980, Ser. No. 167,377
Claims priority, application France, Jul. 17, 1979, 79 18453
Int. Cl.³ A61K *31/475*; C07D *519/04*
U.S. Cl. 424—262 **18 Claims**

1. Compounds corresponding to the general formula:



(I)

in which

R'_1 is selected from a hydrogen atom, formyl, and alkoxy, acyl, and halogenoacyl radicals of 1 to 5 carbon atoms,

R'_2 is selected from a hydrogen atom and alkyl radicals of 1 to 5 carbon atoms,

R'_3 and R''_3 are each independently selected from a hydrogen atom and hydroxyl and alkanoyloxy radicals of 1 to 5 carbon atoms, or R'_3 and R''_3 together form a carbonyl group, or R'_3 and R'_5 together form an epoxy bridge or a double bond,

R'_4 is selected from a hydrogen atom and alkyloxycarbonyl in which the alkyl portion has from 1 to 5 carbon atoms, hydroxymethyl, alkanoyloxymethyl radicals in which the alkanoyloxy portion has from 1 to 5 carbon atoms and acetamido radicals,

R'_5 and R''_5 are each independently selected from a hydrogen atom and hydroxyl, alkanoyloxy radicals of 1 to 5 carbon atoms, ethyl and 2-hydroxyethyl radicals,

R'_6 is selected from a hydrogen atom and ethyl, 2-hydroxyethyl and acetyl radicals,

R'_7 and R'_8 are each independently selected from a hydrogen atom and methyl, hydroxymethylene, alkoxymethylene in which the alkoxy group has 1 to 5 carbon atoms, aryloxymethylene in which the aryl group is monocyclic with 5 or 6 atoms in the ring, aminomethylene, monoalkyl and dialkyl aminomethylene in which the alkyl groups have from 1 to 5 carbon atoms, arylaminomethylene in which the aryl group is monocyclic with 5 or 6 atoms in the ring, hydroxyethyl aminomethylene, alkyl thiomethylene in which the alkyl group has from 1 to 5 carbon atoms, aryl thiomethylene in which the aryl group is monocyclic and has 5 or 6 atoms in the ring, cyanomethylene and acylmethylene radicals in which the acyl portion has from 1 to 5 carbon atoms,

R_1 is selected from a hydrogen atom and alkyl, formyl and acyl radicals in which the alkyl and acyl radicals have from 1 to 5 carbon atoms,

R_2 is selected from a hydrogen atom and alkoxy radicals having from 1 to 5 carbon atoms,

R_3 is selected from a hydrogen atom and hydroxyl and alkanoyloxy radicals of 1 to 5 carbon atoms, or R_3 and R_4 together form an epoxy bridge or a double bond,

R_4 is selected from a hydrogen atom and hydroxyl and alkanoyloxy radicals of 1 to 5 carbon atoms or R_4 and R_5 together form an epoxy bridge,

R_6 is selected from alkyloxycarbonyl in which the alkyl portion has from 1 to 5 carbon atoms, hydrazido, acetamido, hydroxymethyl and alkanoyloxymethylene radicals in which the alkanoyloxy portion has 1 to 5 carbon atoms,

R_5 and R_7 are selected from a hydrogen atom and hydroxide and alkanoyloxy radicals of 1 to 5 carbon atoms,

as well as their pharmaceutically acceptable acid addition salts and their pharmaceutically acceptable quaternary ammonium salts.

17. A pharmaceutical composition for treating leukemia comprising an effective amount of at least one compound according to any one of claim 1 to 3 as active ingredient.

18. A method of treating leukemia comprising administering an effective amount of a compound according to claim 1.

4,347,250

PYRIDYL ALKYLTHIOUREA AND ALKYLAMINO-NITROETHYLENE

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City; Geoffrey R. Owen, High Wycombe, and Rodney C. Young, Bengeo, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

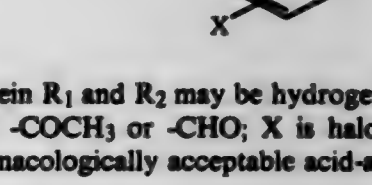
Division of Ser. No. 35,152, May 2, 1979, Pat. No. 4,247,558, which is a division of Ser. No. 892,231, Mar. 31, 1978, Pat. No. 4,166,856, which is a division of Ser. No. 686,185, May 13, 1976, Pat. No. 4,098,898. This application Sep. 2, 1980, Ser. No. 183,555

Claims priority, application United Kingdom, May 21, 1975, 21817/75; Nov. 20, 1975, 47782/75

Int. Cl.³ C07D *213/64, 213/75;* A61K *31/44*

U.S. Cl. 424—263 7 Claims

1. A compound of the formula:



wherein X is sulphur or $CHNO_2$; Y is amino, lower alkylamino, di(lower alkyl)amino, lower alkoxy, phenylethyl, allyl, 2,2,2-trifluoroethyl, or $(CH_2)_nR$; Z is sulphur or methylene; Het is a pyridine ring which ring is optionally substituted by lower alkyl, hydroxy, halogen or amino; n is an integer from 1 to 12; and R is hydroxy or lower alkoxy; provided that when X is sulphur, Y is not phenylethyl or a pharmaceutically acceptable acid addition salt thereof.

7. A method of blocking histamine H_2-receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim 1.

4,347,251

NOVEL 3-SUBSTITUTED AMINO-1-SUBSTITUTED HETEROARYL-2-PYRAZOLINES

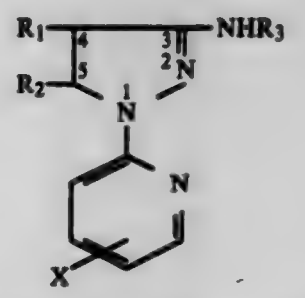
Joseph P. Joseph, Montvale, N.J.; John P. Dusza, Nanuet, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 13, 1981, Ser. No. 282,827

Int. Cl.³ A61K *31/44;* C07D *401/04*

U.S. Cl. 424—263 8 Claims

1. A compound selected from the group consisting of those of the formula:



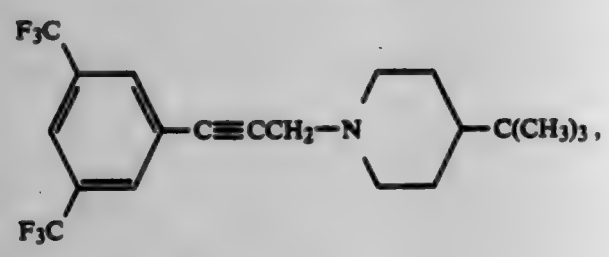
wherein R_1 and R_2 may be hydrogen or lower alkyl (C_1–C_4); R_3 is -$COCH_3$ or -CHO; X is halo or trifluoromethyl or a pharmacologically acceptable acid-addition salt thereof.

4,347,252
RODENTICIDAL 1-(3,5-BISTRIFLUOROMETHYLPHENYL)-3-(4-T-BUTYL-PIPERIDINO)PROP-1-YNE

Allan P. Leftwick, Ilford, and Edgar W. Parnell, Hornchurch, both of England, assignors to May & Baker Ltd., Essex, England

Filed May 11, 1981, Ser. No. 262,521
Claims priority, application United Kingdom, May 13, 1980, 8015740
Int. Cl.³ A61K *31/445;* C07D *211/14*
U.S. Cl. 424—267 14 Claims

1. 1-(3,5-Bistrifluoromethylphenyl)-3-(4-tert-butyl-piperidino)prop-1-yne of the formula:



or an acid addition salt thereof.

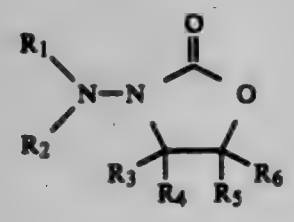
4. A method for killing undesired warm-blooded vermin which comprises the oral administration to the animal of an effective lethal amount of the phenylpropargylamine derivative claimed in claim 1 or an acid addition salt thereof.

4,347,253
FUNGICIDES

Jost Harr, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

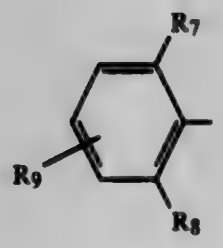
Filed Aug. 15, 1980, Ser. No. 178,276
Claims priority, application United Kingdom, Apr. 25, 1980, 8013719; Apr. 25, 1980, 8013720; Apr. 25, 1980, 8013721
Int. Cl.³ A01N *43/36, 43/76, 47/10, 59/20*
U.S. Cl. 424—272 12 Claims

1. A fungicidal composition comprising a component a) of formula I



I

wherein
R_1 is



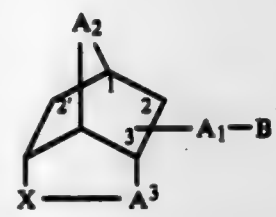
wherein
R_7 and R_8, independently, are C_{1-4}alkyl, halogen or C_{1-4}alkoxy, and
R_9 is hydrogen, C_{1-4}alkyl or halogen;
R_2 is CO–R_{10},
wherein
R_{10} is C_{1-4}alkoxy-C_{1-4}alkyl, C_{1-4}alkyl-thio-C_{1-4}alkyl, 2-furyl, 2-tetrahydrofuryl, halogenated 2-furyl, halogenated 2-tetrahydrofuryl, 1-imidazolymethyl, 1-pyrrazolylmethyl, 2-tetrahydrofuryloxymethyl, 2-tetrahydropyranyloxymethyl, C_{1-4}halogenalkyl, and
R_3, R_4, R_5 and R_6 are independently hydrogen or C_{1-4}alkyl, and
a component (b) selected from the group consisting of mancozeb and maneb; the weight ratio of component a) to component (b) being in the range of 1:1 to 1:10.

4,347,254
TRICYCLIC CAGE COMPOUNDS, THEIR SYNTHESIS AND USE AS ANTIVIRAL AGENTS

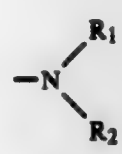
Junki Katsube, Osaka; Hiromi Shimomura, Hyogo; Shun Inokuma, Osaka, and Akihiko Sugie, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 29,694, Apr. 13, 1979, abandoned. This application Jul. 22, 1980, Ser. No. 171,109
Claims priority, application Japan, Apr. 14, 1978, 53-44386; Oct. 20, 1978, 53-129812; Mar. 7, 1979, 54-27170
Int. Cl.³ A61K *31/38, 31/34, 31/35;* C07D *307/92*
U.S. Cl. 424—275 20 Claims

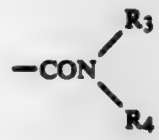
1. A compound of the formula:



wherein A_1 is a single bond or a C_1–C_5 alkylene group bonding at the 2-, 2'- or 3-position, A_2 is a C_1–C_3 alkylene group, A_3 is a C_1–C_4 alkylene group, X is —O— or —SO_n—, wherein n is an integer of 0 to 2 and B is a cyano group; an amino group of the formula:

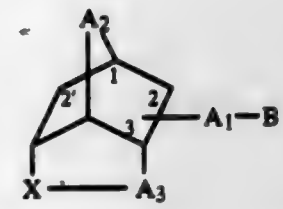


wherein R_1 is a hydrogen atom, a C_1–C_5 alkyl group, a C_3–C_5 alkenyl group, a C_3–C_5 alkynyl group or a C_7–C_9 aralkyl group and R_2 is a hydrogen atom, a C_1–C_5 alkyl group, a C_3–C_5 alkenyl group, a C_3–C_5 alkynyl group, a C_7–C_9 aralkyl group, a C_2–C_5 alkoxycarbonyl group, a benzyloxycarbonyl group, a C_2–C_5 alkanoyl group or a C_2–C_4 haloalkanoyl group; or a carbamoyl group of the formula:



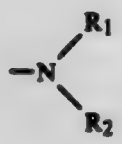
wherein R_3 and R_4 are each a hydrogen atom, a C_1–C_5 alkyl group or a C_3–C_5 alkenyl group, or non-toxic salts thereof.

13. A method for inhibiting the growth of virus in mammals which comprises administering orally or parenterally to said mammals an effective antiviral amount of at least one compound of the formula:

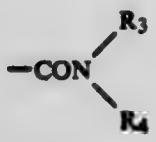


wherein A_1 is a single bond or a C_1–C_5 alkylene group bonding at the 2-, 2'- or 3-position, A_2 is a C_1–C_3 alkylene group, A_3 is a C_1–C_4 alkylene group, X is —O— or —SO_n—, wherein n is

an integer of 0 to 2 and B is a carboxy group; a C_2–C_5 alkoxycarbonyl group; a cyano group; an amino group of the formula:



wherein R_1 is a hydrogen atom, a C_1–C_5 alkyl group, a C_3–C_5 alkenyl group, a C_3–C_5 alkynyl group or a C_7–C_9 aralkyl group and R_2 is a hydrogen atom, a C_1–C_5 alkyl group, a C_3–C_5 alkenyl group, a C_3–C_5 alkynyl group, a C_7–C_9 aralkyl group, a C_2–C_5 alkoxycarbonyl group, a benzyloxycarbonyl group, a C_2–C_5 alkanoyl group or a C_2–C_4 haloalkanoyl group; or a carbamoyl group of the formula:



wherein R_3 and R_4 are each a hydrogen atom, a C_1–C_5 alkyl group or a C_3–C_5 alkenyl group, or non-toxic salts thereof; and a pharmaceutically acceptable carrier or diluent.

4,347,255

SNAKE BITE THERAPY

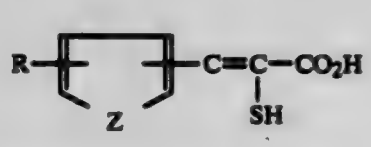
Eugene L. Giroux, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Continuation of Ser. No. 140,446, Apr. 17, 1980, abandoned. This application Aug. 7, 1981, Ser. No. 290,906

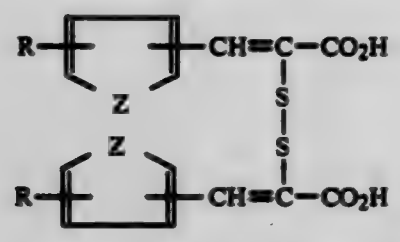
Int. Cl.³ A61K *31/34, 31/38, 31/40*

U.S. Cl. 424—285 **6 Claims**

1. A method of reducing local hemorrhage and tissue necrosis in mammals resulting from the bite or sting of a venomous snake which comprises administering to said mammal a local hemorrhage and tissue necrosis reducing amount of a compound having the formula:



or a corresponding disulfide of the formula:



wherein Z is 0 and R is selected from the group consisting of H, methyl, ethyl, hydroxy, methoxy, ethoxy, fluoro, chloro, bromo, iodo and trifluoromethyl; or a pharmaceutically acceptable salt thereof.

4,347,256

ANTI-JUVENILE HORMONES

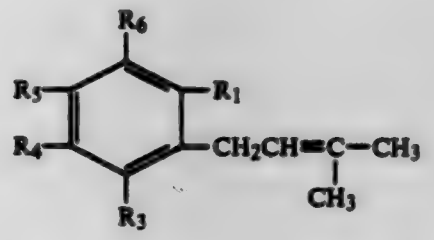
William S. Bowers, Geneva, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,745

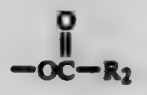
Int. Cl.³ A01N *37/02, 31/08, 31/14*

U.S. Cl. 424—311 **13 Claims**

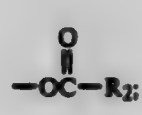
1. A method of treating an insect to inhibit the juvenile hormone activity in said insect and thereby effect insect control which comprises contacting an insect with a juvenile-hormone inhibiting amount of an active anti-juvenile hormone corresponding to the formula:



where R_1 and R_5 are independently hydrogen; straight or branch chain lower alkyl or alkenyl having 1–4 carbon atoms;



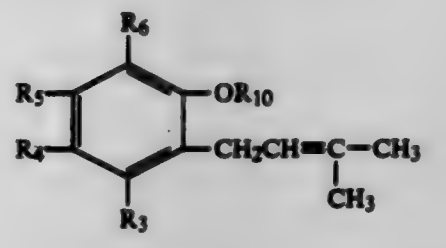
where R_2 is straight or branch chain lower alkyl having 1–6 carbon atoms; —X—R_7 where X is O or S and R_7 is hydrogen, or straight or branch chain lower alkyl lower alkenyl or lower alkynyl containing 1–4 carbon atoms; provided that at least one of R_1 and R_5 is —X—R_7 or



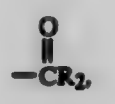
and where R_3, R_4 and R_6 are hydrogen or straight or branch chain lower alkyl, alkenyl, alkoxy, or alkenoxy having 1–4 carbon atoms or R_3 and R_4 taken together are



4. The method as in claim 1 of treating an insect to inhibit the juvenile hormone activity in said insect and thereby effect insect control which comprises contacting an insect with an active anti-juvenile hormone corresponding to



where R_{10} is hydrogen, straight or branch chain alkyl or alkenyl containing 1–4 carbon atoms,



where R_2 is straight or branch chain lower alkyl containing 1–6 carbon atoms;

where R_4 and R_5 are hydrogen or an organic substituent selected from straight or branch chain lower alkyl, alkoxy alkenoxy or alkynoxy having 1–4 carbon atoms, and

where R_3 and R_6 are hydrogen or straight or branch chain lower alkyl, alkenyl, alkoxy, alkenoxy or alkynoxy having 1–4 carbon atoms.

4,347,257

PROLACTIN SUPPRESSION IN MAMMALS

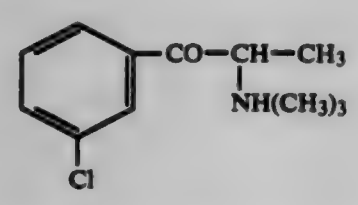
Warren C. Stern, Raleigh, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 82,598, Oct. 9, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 177,128

Int. Cl.[3] A61K *31/135*

U.S. Cl. 424—330 21 Claims

1. A method of suppressing elevated prolactin secretion in a human in which said suppression is medically desirable, which comprises administering to said human an effective non-toxic prolactin secretion suppression amount of a compound of the formula (I)



(I)

or a pharmaceutically acceptable acid addition salt thereof.

4,347,258

PROCESS FOR THE PREPARATION OF A STABLE FOOD PRODUCT FROM LACTEAL COMPONENTS

Karl Merkenich, Rimbach; Wilhelm Koch, Ladenburg; Kaete Glandorf; Gerd Uhlmann, both of Mannheim, and Guenther Scheurer, Hassloch, all of Fed. Rep. of Germany, assignors to Benckiser-Knapsack GmbH, Ladenburg, Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,672

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917086

Int. Cl.[3] A23C *20/00, 23/00;* A23D *3/02*

U.S. Cl. 426—334 14 Claims

1. A process for the preparation of a stable food product from milk components, comprising the steps of:

mixing from about 20–40% by weight skim milk powder, from about 0–45% by weight butter fat, and from about 30–80% by weight water with from about 2–6% by weight, based upon the weight of skim milk and butter fat, of a mixture of salts comprising monosodium phosphate, sodium polyphosphate having about 70% P_2O_5 and a cross-linked polyphosphate having a pH value of 2.9, in a proportion of approximately 3:4:2;

heating the resulting mixture to a temperature of from about 50°–120° C., within about 2–20 minutes under agitation in an apparatus for the production of processed cheese; and then

recovering the product.

4,347,259

METHOD FOR REDUCING THE BACTERIAL POPULATION OF BLOOD POWDER

Yoshio Suzuki, Kamakura, and Masao Shimizu, Yokohama, both of Japan, assignors to Niigata Engineering Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 77,809, Sep. 21, 1979, abandoned, which is a continuation of Ser. No. 925,338, Jul. 17, 1978, abandoned. This application Jan. 15, 1980, Ser. No. 112,254

Claims priority, application Japan, Jul. 16, 1977, 52/85388

Int. Cl.[3] A23B *4/00*

U.S. Cl. 426—465 16 Claims

1. A method for reducing the bacterial population of a blood powder without substantially heat denaturing the blood protein in said powder or degrading the water solubility or heat coagulability of said blood protein during said method for reducing the bacterial population, which comprises heating said blood powder which has a moisture content of about 30% by weight or less at a temperature of about 80° to 160° C. for a period of time to reduce the bacterial population of said blood powder so as to obtain blood products having a solubility of at least 50%.

4,347,260

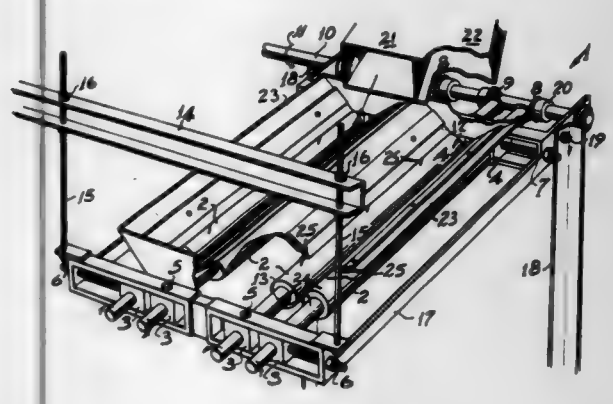
METHOD OF SEPARATING ALMOND KERNELS FROM ALMONDS WITH SHELLS

Alan W. Crompton, Marryatville, Australia, assignor to Alf Hannaford & Co. Pty. Limited, Beverley, Australia

Filed Jun. 27, 1980, Ser. No. 163,687

Int. Cl.[3] A23N *5/00*

U.S. Cl. 426—483 3 Claims



1. A method of separating a mixture of almond kernels and almond kernels still retained within at least a part of their shells, the method comprises placing a mixture of said kernels with and without their shells onto two substantially parallel rollers having their axes inclined to the horizontal and having a separation gap therebetween sized to permit passage of almond kernels therethrough, each roller rotating about its longitudinal axis in a direction contra to the other roller such that its circumference rises past the separation gap and proceeds upwardly and outwardly with respect to the surface of the other roller, and moving a mixture of said kernels still with shells into said separation gap in a direction transverse to the direction of movement of each roller, thereby allowing almond kernels without their shells to drop through the said separation gap due to an aligning effect caused by the upward and outward movement of the respective surface of the roller.

4,347,261

PROCESS FOR PREPARATION OF ALGIN OR PECTIN GELS

Ian A. Challen; Sandra East, both of Rushden, and George R. Sanderson, Bedford, all of England, assignors to International Octrooi Maatschappit "Octropa" B.V., Rotterdam, Netherlands

Continuation of Ser. No. 74,375, Sep. 10, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 171,674

Claims priority, application United Kingdom, Sep. 8, 1978, 36085/78

Int. Cl.[3] A23L *1/04*

U.S. Cl. 426—573 8 Claims

1. In a process for producing an aqueous gel which comprises releasing a gelling agent into a gellable aqueous sol selected from the group consisting of aqueous alginate and low-methoxy-pectate sols, the improvement which comprises rapidly mixing throughout said sol an aqueous slurry of a finely divided foodstuff and calcium sulphate particles in an amount such that the calcium sulphate particles constitute 0.2 to 1% by weight of the total mix, and then under shear-free conditions allowing the calcium sulphate to release the calcium ions in solution so that the mixture is gelled, the said mixing being completed before gelation begins, the bulk volume ratio between the sol and the slurry being in the range 3:1 to 1:3, and the ratio of the volume of water in the sol to the water available in the slurry being greater than 1.5:1.

4,347,262

ALUMINUM-MAGNESIUM ALLOYS IN LOW RESISTANCE CONTACTS TO SILICON

Sanford M. Marcus, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 26, 1980, Ser. No. 210,553
Int. Cl.[3] C23C *17/00*; H01L *23/48*
U.S. Cl. 427—74 5 Claims

1. A thick-film metallizing paste for use in providing low resistance electrically conductive contacts to a silicon solar cell coated with Si_3N_4, said paste comprising an organic vehicle containing, in particle form, a mixture of a major amount of a metal powder, a minor amount of finely divided glass frits, and a small amount of a 50 Al:50 Mg alloy.

4,347,263

METHOD OF APPLYING AN ANTIREFLECTIVE AND/OR DIELECTRIC COATING

Daniel L. Whitehouse, Clarksburg, Md., assignor to Solarex Corporation, Rockville, Md.

Continuation-in-part of Ser. No. 154,770, May 30, 1980, abandoned. This application Apr. 24, 1981, Ser. No. 257,250
Int. Cl.[3] B05D *1/34*
U.S. Cl. 427—74 10 Claims

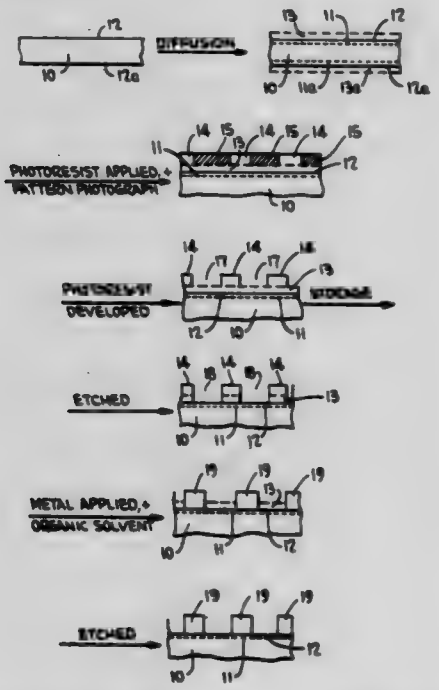
1. A method of applying an antireflective coating to the surface of a photovoltaic cell, said surface being adapted to absorb light impinging thereon, comprising heating said surface to a temperature above approximately 325° C., and directing to said surface from separate sources (a) a vapor comprising a metal compound selected from the group consisting of a metal halide or metal alkoxide, and (b) oxygen, so that an antireflective layer of the respective oxide is deposited on said surface.

4,347,264

METHOD OF APPLYING CONTACTS TO A SILICON WAFER AND PRODUCT FORMED THEREBY

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Division of Ser. No. 614,618, Sep. 18, 1975, abandoned. This application Jun. 13, 1978, Ser. No. 915,288
Int. Cl.[3] B05D *5/12*; F16L *55/10*; H01L *31/00*
U.S. Cl. 430—314 2 Claims



1. A method of forming a contact pattern on a silicon wafer to be used as a solar energy cell, comprising

(a) heating a wafer of silicon with a diffusant to for a p-n junction in a zone extending inwardly from a surface of the wafer and a layer of a glass on the surface of the wafer,

(b) coating the glass on the surface with a layer of photoresist composition,

(c) photographically exposing the photoresist layer in a predetermined pattern,

(d) developing the photoresist layer and thereby removing the exposed portions of the layer,

(e) removing those portions of the glass layer underlying the developed portions of the photoresist layer down to the silicon surface of the wafer,

(f) depositing an electrically conductive metal on the exposed portions of the silicon surface to act as contacts in the solar energy cell while the remainder of the wafer surface is protected and covered by undeveloped portions of the photoresist layer and portions of the glass layer underlying said undeveloped portions,

(g) removing the remainder of the photoresist layer, and

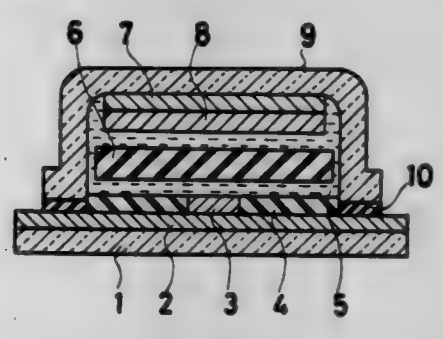
(h) removing the entirety of the glass from the surface of the wafer thereby leaving a metal contact adhered to said surface in a predetermined pattern, said surface and said metal contact being free of said glass, and exposing non-contact covered portions of said surface to ambient conditions only after said contact pattern has been adhered to said surface.

4,347,265

FORMATION OF AN ELECTROCHROMIC DISPLAY LAYER

Junichi Washo, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 13, 1980, Ser. No. 120,987
Claims priority, application Japan, Feb. 16, 1979, 54-17525
Int. Cl.[3] G02F *1/17*
U.S. Cl. 427—108 10 Claims



1. A process of making an electrochromic layer comprising the steps of:

providing a metallic compound selected from one member of the group consisting of chlorides and ethers of tungsten and molybdenum;

dissolving said metallic chloride in an organic alcohol solvent therefor or said metallic ether in an aromic hydrocarbon solvent therefor so as to produce an organic solution;

applying said organic solution to the surface of a substrate; and

calcining said resulting coated substrate at a temperature of from 200° to 500° C. to produce said electrochromic layer.

4,347,266

PROTECTION AGAINST SOILING

Edward C. Norman, and Howard A. Dowell, both of Downingtown, Pa., assignors to Enterra Corporation, Lionville, Pa.

Filed Aug. 13, 1979, Ser. No. 66,022
Int. Cl.[3] B65B *33/00*
U.S. Cl. 427—154 9 Claims

1. In the process of protecting the surface of a water-resistant article against soiling by spraying on that surface an aqueous surfactant-containing dispersion of a film former that forms a film which can be flushed off with water, and after exposure to the soiling flushing off that film along with any soil on it, the improvement according to which the surface protected is a

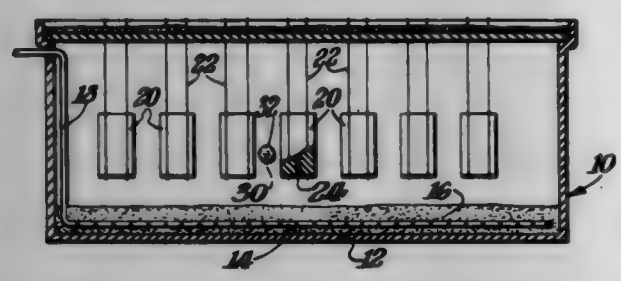
heavily waxed or shined hydrophobic surface and the aqueous dispersion contains not over 1% total surfactant but at least 0.02% fluorinated surfactant leveling agent that causes the sprayed-on aqueous dispersion to form a relatively level coating over essentially the entire surface.

4,347,267

DIFFUSION COATING THROUGH RESTRICTIONS

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 89,949, Oct. 31, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 230,333
Int. Cl.[3] B05D *7/22, 7/14;* C23C *13/02*
U.S. Cl. 427—237 18 Claims



1. In the diffusion coating of the internal surface of a hollow in a metal workpiece where that hollow is accessible only through a passageway less than about 5 millimeters wide, the improvement according to which there is applied over that internal surface an essentially uniform layer of particles consisting essentially of all the metal to be diffused into that surface, and the workpiece so treated is subjected to diffusion coating temperature while the hollow is exposed through the passageway to an energizer-containing diffusion coating atmosphere.

17. In the diffusion coating of a workpiece by holding it in a gaseous diffusion coating atmosphere at a diffusion coating temperature until the desired coating is formed on its surface, the improvement according to which the workpiece has an interior accessible only through a passageway less than about 5 millimeters wide, and before the diffusion coating treatment that interior is packed with a dry powdered diffusion coating pack that causes the interior to be diffusion coated by that pack while the exterior of the workpiece is diffusion coated by the diffusion coating atmosphere.

4,347,268

NOVEL FLUOROELASTOMER FILM COMPOSITIONS CONTAINING VINYL COPOLYMERS AND METHOD FOR THE PREPARATION THEREOF

Donald Close, Stow, Ohio, assignor to David Hudson, Inc., Stow, Ohio

Filed Aug. 18, 1980, Ser. No. 178,896
Int. Cl.[3] C08L *27/16, 27/06, 31/04*
U.S. Cl. 427—385.5 4 Claims

1. An improved method for preparing fluoroelastomer solutions which can be employed to coat various substrates comprising the steps of:

dissolving a fluoroelastomer gum selected from the group consisting of copolymers of vinylidene fluoride and hexafluoropropylene, and terpolymers of vinylidene fluoride, hexafluoropropylene and tetrafluoroethylene in a solvent; and

adding a vinyl copolymer selected from the group consisting of vinyl chloride-vinyl acetate copolymer resins, acid modified resins thereof and hydroxyl modified resins thereof to said gum solution;

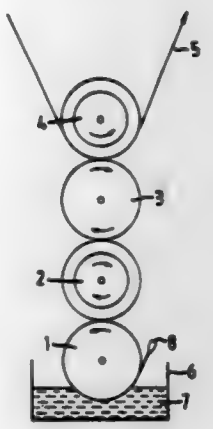
the improvement wherein said fluoroelastomer gum and vinyl copolymer solution is devoid of metallic oxides in order to improve adhesion between coatings formed therefrom and various substrates.

4,347,269

METHOD OF AND APPARATUS FOR APPLYING A COATING TO A WEB OF SHEET MATERIAL

Geoffrey S. Keep, Henley-on-Thames, England, assignor to The Wiggins Teape Group Limited, Hampshire, England

Filed Apr. 2, 1981, Ser. No. 250,294
Claims priority, application United Kingdom, Apr. 8, 1980, 8011462
Int. Cl.[3] B05D *1/28*
U.S. Cl. 427—428 3 Claims



1. A method of applying a coating composition to a continuous web of sheet material, comprising the steps of applying a metered amount of coating composition by means of a gravure roll to a transfer roll, transferring the coating composition from the transfer roll to an applicator roll which is driven independently of, and rotates in the same sense as, the transfer roll, and transferring the composition from the applicator roll to a moving web of sheet material to be coated, characterised in that the direction of movement of the web at its point of contact with the applicator roll is the same as the direction of movement of the applicator roll surface at that point.

4,347,270

DECORATIVE ARTICLE

Frederick E. Hart, 3019 K St. N.W., Washington, D.C. 20007

Continuation of Ser. No. 757,336, Jan. 6, 1977, abandoned. This application Aug. 29, 1980, Ser. No. 182,593
Int. Cl.[3] B44C *5/04*
U.S. Cl. 428—13 6 Claims



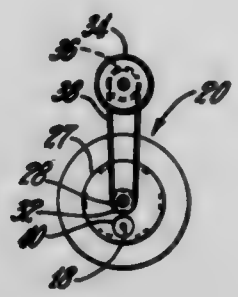
1. A decorative article comprising in combination a substantially homogeneous mass of transparent material presenting at least one viewing surface, and comprising a first portion which provides said viewing surface and a second portion integrally joined with said first portion but lying beneath said viewing surface, said second portion presenting a shaped, transparent and normally indiscernible interface with said first portion; and means non-uniformly disposed over said shaped interface for providing regions of said interface which remain transparent, indiscernible and limit the visibility of the interface to less than its entirety, and other regions of the interface which are visible when viewed through said viewing surface.

4,347,271

FIBROUS PRODUCT

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 48,926, Jun. 15, 1979, Pat. No. 4,310,585. This application Apr. 20, 1981, Ser. No. 255,587
Int. Cl.³ F16L 58/16
U.S. Cl. 428—36 8 Claims



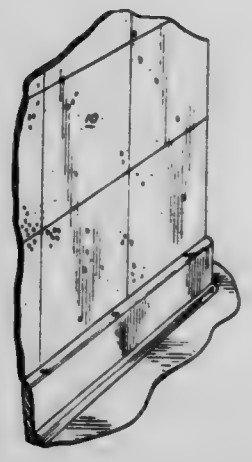
1. A molded fibrous pipe wrap insulation comprising a body of fibers of inorganic fiber-forming material, an organic binder in the body of fibers and the organic binder cured, an inner surface region of the fibers of the pipe wrap insulation being further impregnated with hybrid binder comprising organic and inorganic bonding materials and the hybrid binder cured.

4,347,272

FLEXIBLE COMPOSITION OF CORK AND SHEET STRUCTURES MADE THEREFROM

Donald H. Schmidt, 14745 Major Ave., Oak Forest, Ill. 60452

Continuation-in-part of Ser. No. 167,697, Jul. 11, 1980, abandoned. This application Nov. 24, 1980, Ser. No. 209,415
Int. Cl.³ A61F 13/02; B32B 23/00, 9/04; B28B 3/00
U.S. Cl. 428—40 17 Claims



9. A flexible sheet which comprises an intimate mixture of 20 parts by weight of cork granules, said granules containing from 1 to 10 parts by weight of a liquid organic polyol plasticizer for the cork, said cork granules being dispersed and bonded together in a matrix of 4 to 60 parts by weight of a flexible, plasticized polyvinyl chloride resin, said flexible sheet being no more than ¼ inch and carrying on one side thereof a second layer of contact adhesive and a third, peel-sheet layer overlying the contact adhesive layer for peeling away to expose the contact adhesive layer for use.

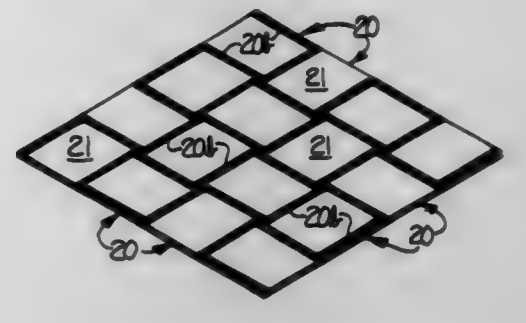
4,347,273

PILE CARPET TILE WITH CUT AND LOOP PILE

Robert V. Dale, North Babylon, N.Y., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Filed May 27, 1981, Ser. No. 267,544
Int. Cl.³ B32B 3/00
U.S. Cl. 428—44 6 Claims

1. A pile carpet tile of square configuration having a pile body of loop pile extending from one end to the opposing end of the tile, and a pair of opposing side marginal areas of cut pile extending along opposite sides of said loop pile body



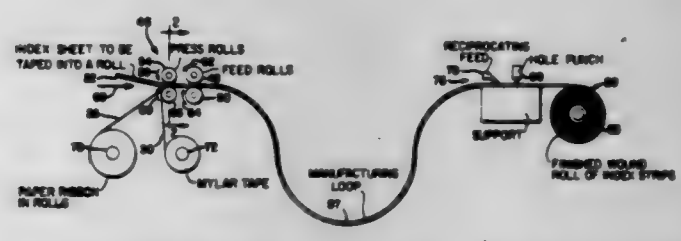
from said one end to said opposing end of the tile, and wherein the cut pile is of greater height than the loop pile body and presents an appearance contrasting with that of said loop pile body.

4,347,274

VISIBLE INDEXES

Alexander P. Janssen, c/o Datastrip Corporation, 1575 Avon St. Extended, Charlottesville, Va. 22901

Continuation-in-part of Ser. No. 30,458, Apr. 16, 1979, Pat. No. 4,250,216, which is a continuation of Ser. No. 795,882, May 11, 1977, abandoned, which is a division of Ser. No. 505,078, Sep. 11, 1974, abandoned. This application Jan. 26, 1981, Ser. No. 228,356
The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.
Int. Cl.³ B32B 3/14, 3/16
U.S. Cl. 428—78 5 Claims



1. A visible index strip roll comprising: a plurality of serially disposed assemblages, each composed of a plurality of separate and independent index strips, a backing sheet, and means removably attaching said index strips in juxtaposed, face-to-face relationship to said backing sheet; ribbons which are separate and distinct from said assemblages and extend along the series of assemblages on opposite sides thereof, there being perforations in said ribbons at intervals therealong for registering said index strip roll in a process machine; and flexible, adhesively faced tapes spanning, and bonding the perforated ribbons to, the backing sheets of the index strip assemblages, each said tape extending lengthwise over a plurality of said index strip assemblages.

4,347,275

CARPET TILE AND METHOD OF MAKING SAME

Teruo Kajikawa, Yokosuka, and Sakuya Iwai, Tokyo, both of Japan, assignors to Nippon Petrochemical Company, Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,606
Int. Cl.³ B05D 7/24; B32B 11/04
U.S. Cl. 428—95 13 Claims

1. Method of making a carpet tile, which comprises heat-melting a mixture at 100°-240° C., said mixture containing (a) 100 parts by weight of a solvent deasphalted asphalt and (b) 10

to 70 parts by weight of a copolymer of an olefin and a polar monomer with the polar monomer content of the copolymer being 0.5 to 20% by weight, backing a carpet material with the molten mixture, cooling the backed carpet material and then cutting or punching the backed carpet material as desired to produce the carpet tile.

12. A carpet tile comprising:

(i) an unbacked carpet material;

(ii) a backing further comprising:

(a) 100 parts by weight of a solvent deasphalted asphalt, and

(b) 10 to 70 parts by weight of a copolymer of an olefin and a polar monomer with the polar monomer content of the copolymer being 0.5 to 20% by weight.

4,347,276

DASHBOARD FOR MOTOR VEHICLES

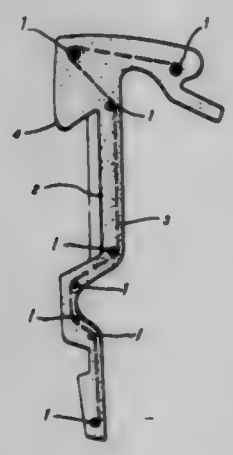
Kurt Weber, Rimbach; Peter Rutsch, Abtsteinach, and Lothar Hirschinger, Mannheim, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Filed Apr. 7, 1981, Ser. No. 251,769

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016199

Int. Cl.³ B32B *3/24, 3/26, 5/00, 5/20*

U.S. Cl. 428—160 **9 Claims**



1. A dashboard for a motor vehicle which comprises a deep-drawn plastic sheet having a dashboard shape laminated underneath to polyurethane foam in which is embedded a fixture of reinforcement members arranged in truss fashion and a mat of mineral fibers, said mat completely covering all members and spaces of said fixture.

4,347,277

CORROSION RESISTANT COATED ARTICLES WHICH INCLUDE AN INTERMEDIATE COATING LAYER OF A THERMOSETTING POLYMER AND NON-SILICEOUS FILLER

William R. Slama, North Olmsted; Robert B. Washburn, and Dale J. Semanisin, both of Cleveland, all of Ohio, assignors to General Signal Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 957,084, Nov. 3, 1978, Pat. No. 4,237,177. This application Aug. 14, 1980, Ser. No. 178,168

The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.

Int. Cl.³ B05D *7/00, 1/02*

U.S. Cl. 428—215 **11 Claims**

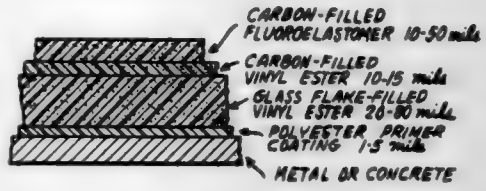
1. A coated article resistant to corrosion or deterioration which comprises:

a substrate;

a primer coating layer in contact with the surface of said substrate, said primer coating layer being a thermosetting polymeric material and having a thickness from about 1 to about 5 mils;

an inner coating layer in bonded contact with said primer coating layer, said inner coating layer being an admixture of a thermosetting polymeric material and a siliceous filler material and having a thickness from about 20 to about 80 mils;

an intermediate coating layer in bonded contact with said inner coating layer, said intermediate coating layer being an admixture of a thermosetting polymeric material and a non-siliceous filler material and having a thickness from about 10 to about 15 mils; and



an outer coating layer in chemically bonded contact with said intermediate coating layer, said outer coating layer being an admixture of a fluoroelastomer and a non-siliceous filler material and having a thickness from about 10 to about 50 mils.

4,347,278

POLYTETRAFLUOROETHYLENE FLUOROCARBON RESIN DISPERSION-CONTAINING COATING COMPOSITION FOR GLASS FIBERS, GLASS FIBERS, AND GLASS FIBER FABRIC COATED THEREWITH

Martin C. Flautt; Robert Wong, both of Granville, and Joseph F. Walsh, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 16,265, Feb. 28, 1979, which is a continuation of Ser. No. 773,573, Mar. 2, 1977, abandoned. This application Oct. 27, 1980, Ser. No. 200,675

Int. Cl.³ B32B *7/00;* D02G *3/00*

U.S. Cl. 428—288 **1 Claim**

1. A glass fiber fabric coated with the residue formed by removing water from a padding composition consisting essentially of an aqueous dispersion of polytetrafluoroethylene resin and a lubricant selected from a dispersible vegetable oil, the condensation product of dimethylaminopropylamine with pelargonic acid and an amide-substituted polyethyleneamine, wherein the glass fibers of said fabric are sized with the residue formed by removing water from a sizing composition comprising an aqueous dispersion of polytetrafluoroethylene resin, a film-forming polymer, a thixotropic gelling agent and an organo silane coupling agent.

4,347,279

HIGH PERFORMANCE CARBON FIBER, PROCESS FOR PRODUCTION THEREOF, AND COMPOSITE MATERIALS PREPARED THEREWITH

Yasuo Saji, Mishima; Kozo Tanaka, Numazushi, and Takashi Yamauchi, Shizuoka, all of Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1981, Ser. No. 294,866

Claims priority, application Japan, Aug. 22, 1980, 55-114764

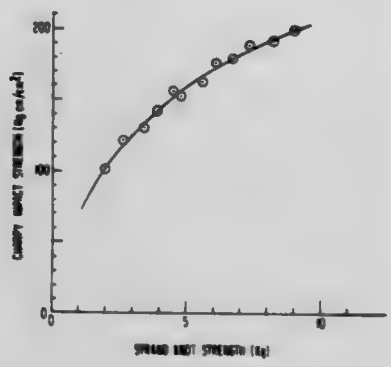
Int. Cl.³ B32B *31/18*

U.S. Cl. 428—294 **13 Claims**

1. A process for producing a carbon fiber having a single yarn diameter of from 2 to 6 microns and showing a strand knot strength of at least 7 kilograms when formed into a strand of 0.4±0.01 gram per meter, said process comprising: subjecting a 0.1 to 0.6 denier acrylonitrile-based fiber having a tensile strength of at least 6 grams per denier to a preoxidation treatment consisting of (a) a first preoxidation treatment wherein the acrylonitrile-based fiber is treated under such tension as to provide a shrinkage of at least 3% until the equilibrium water content reaches 5%, and (b) a second preoxidation treatment wherein the acrylonitrile-based fiber is treated under such tension as to provide a shrinkage of at least 1%, said preoxidation treatment is conducted in an oxidizing atmosphere having a temperature of from 240° C. to 300° C. while maintaining the

relation between the preoxidation time (t) (minutes) and average preoxidation treatment temperature (T) (°C.) satisfying the equation (I):

$$(310-T)\times(0.8-3)=t \quad \text{(I)}$$



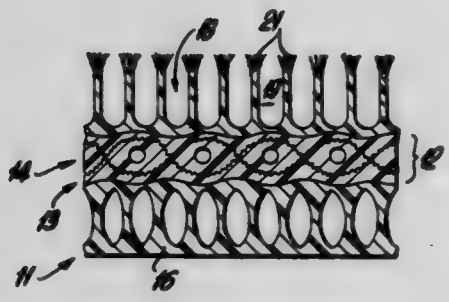
and subjecting the thus preoxidized fiber to a carbonization treatment in an inert gas maintained at from 1,000° C. to 1,800° C.

4,347,280

SHOCK ABSORBING SHEET MATERIAL

Charles R. Lau, Key Colony Beach, Fla.; William Jensen, and Perrin A. Allen, both of Norwalk, Conn., assignors to GEOS Corporation, Stamford, Conn.

Filed Jul. 8, 1981, Ser. No. 281,511
Int. Cl.³ B32B *3/00, 3/26;* A63B *59/00, 49/00*
U.S. Cl. 428—304.4 12 Claims



1. In combination in an impact absorbing material, a laminate having a first, central layer and second and third layer adhered to opposite sides of said first layer, said first layer including a textile base disposed in polyurethane, each of said second and third layers comprising polyurethane, the surface of said second layer remote from said first layer having opened pores.

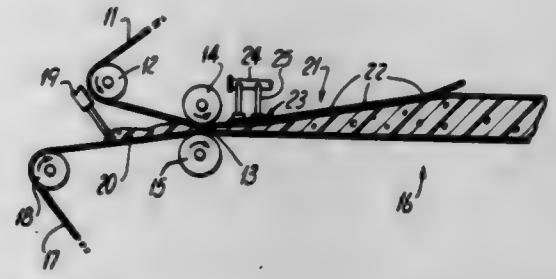
4,347,281

FOAM BOARD HAVING IMPROVED EVENNESS AND THE METHOD AND APPARATUS FOR ITS CONTINUOUS MANUFACTURE

Steven Futcher, Crumpsall; John J. Gardener, Bury, and Victor F. Hodgson, Worsley, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 8, 1981, Ser. No. 223,301
Claims priority, application United Kingdom, Jan. 17, 1980, 8001534
Int. Cl.³ B29D *27/04*
U.S. Cl. 428—318.4 7 Claims

1. A method for the manufacture of foam board consisting of a core of plastics foam, especially polyurethane or polyisocyanurate foam, sandwiched between two flexible facing sheets, the process comprising continuously advancing upper and lower facing sheets in spaced opposed transversely parallel disposition; depositing a liquid mixture of plastics foam-forming ingredients onto at least one of the facing sheets, usually the lower sheet, bringing the sheets into proximate relationship so that both sheets contact the foam-forming mixture; constricting the sheets so that the foam mixture is spread across the width of the sheets and fully occupies the space therebetween; exerting a predetermined constant pressure on and simultaneously applying suction to the upper facing sheet



during expansion of the foam-forming mixture; and thereafter allowing the foam to cure.

2. Foam boards having improved evenness produced the apparatus according to by the method to claim 1.

4,347,282

CHEMICAL CARBONLESS COPY PAPER AND TRANSFER MEDIUM THEREFOR

Gerry H. Ehrhardt, West Des Moines, and Gene D. Carlson, Ankeny, both of Iowa, assignors to Frye Copysystems, Inc., Des Moines, Iowa

Continuation-in-part of Ser. No. 34,030, Apr. 27, 1979, abandoned, Ser. No. 34,130, Apr. 27, 1979, abandoned, and Ser. No. 34,131, Apr. 27, 1979, abandoned. This application Jun. 18, 1980, Ser. No. 160,724
Int. Cl.³ B41M *5/22, 5/16*
U.S. Cl. 428—320.4 24 Claims



1. A pressure sensitive chemical type transfer medium comprising:

planar sheet material having an at least partially transferable coating layer disposed on one surface thereof constituted by the solidified residue of an applied hot melt low oil content wax base emulsified liquid film including a chemically modified wax-like material having flow agent and dispersant properties homogeneously intermixed therewith and having discrete liquid droplets of a water base solution of an ionized metallic halogen salt electron accepting chromogenic reagent material distributed therein.

4,347,283

TRANSFER-ONTO-PLAIN PAPER TYPE PRESSURE-SENSITIVE COPYING PAPER

Shigetoshi Hiraishi, Tokyo, and Toshihiko Matsushita, Funabashi, both of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,828
Claims priority, application Japan, Mar. 6, 1980, 55-28374
Int. Cl.³ B32B *3/26;* B41M *3/12*
U.S. Cl. 428—320.8 5 Claims

1. A transfer-onto-plain paper type pressure-sensitive copying paper produced by coating a substrate with double capsules and wax enclosing said double capsules, which double capsules have been prepared by previously forming primary microcapsules containing, as a core material, either colorless electron-donating color former or colorless electron-accepting

color developer which reacts with said color former to give a colored product, enclosing the formed primary microcapsules in whichever of the color former or the color developer is not contained in the primary microcapsules, and then microencapsulating the enclosed primary microcapsules to form double capsules.

4,347,284

WHITE COVER SHEET MATERIAL CAPABLE OF REFLECTING ULTRAVIOLET RAYS

Obayashi Tsutomu, Tokyo, and Endou Mituo, Souka, both of Japan, assignors to Hiraoka & Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,137
Int. Cl.³ B32B *5/16, 15/08;* G01S *7/36*
U.S. Cl. 428—328 20 Claims

8. A white cover sheet material capable of reflecting ultraviolet rays, which comprises a substrate sheet layer and at least one outer surface layer formed on at least one surface of said substrate sheet layer, said outer surface layer comprising:

(A) a substantially colorless matrix material comprising at least one thermoplastic polymer material and,

(B) a white ultraviolet ray-reflecting agent dispersed in said matrix material and comprising zirconium oxide (ZrO_2).

4,347,285

CURABLE AQUEOUS SILICATE COMPOSITION, USES THEREOF, AND COATINGS OR LAYERS MADE THEREFROM

Vernon H. Batdorf, Minneapolis, Minn., assignor to H. B. Fuller Company, St. Paul, Minn.

Filed Feb. 26, 1981, Ser. No. 238,642
Int. Cl.³ B32B *9/04, 9/06;* B05D *3/02*
U.S. Cl. 428—332 49 Claims

1. An aqueous silicate composition which is curable at room temperature and which comprises:

(a) an aqueous solution or colloidal dispersion of an alkali metal silicate;

(b) an aqueous latex comprising elastomeric latex particles stably distributed in an aqueous medium;

(c) at least one metal salt of a divalent metal, said metal salt being a coreactant for said alkali metal silicate at room temperature, having a reactivity with alkali metal silicates at least equal to the cations of metals of Group II, A or B, of the Periodic Table, and having a water solubility ranging from about 10^{-1} to 10^{-4} weight-% at a pH of 7 and room temperature; provided that:

if said water solubility is greater than 10^{-2} weight-%, any divalent metal cation of said metal salt is less reactive with alkali metal silicates than Ca^{++}, and

if said water solubility is less than 10^{-3} weight-%, a divalent cation of said metal salt is more reactive with alkali metal silicates than −325 U.S. mesh ZnO;

said component (c) being selected to provide a sufficiently complete curing of said alkali metal silicate to impart, to a 10 mm-thick coating of said composition after 14 days of curing at room temperature, water resistance and a Barcol hardness of at least 10 at the exposed or top surface of the coating; said component (c) also being selected to permit a pot life for said composition of at least 15 minutes at room temperature.

7. A cured layer at least about 1.5 mm. thick on a substrate wherein the layer comprises the composition of claim 1 which has been cured to a crosslinked solid upon the substrate.

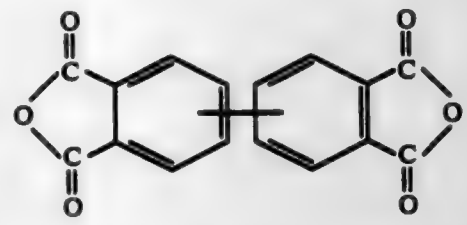
4,347,286

HEAT FUSIBLE POLYIMIDE COMPOUND FILMS AND PROCESS FOR PRODUCING THE SAME

Takashi Ishizuka; Yasuhiro Moriyama, and Masao Nakamura, all of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

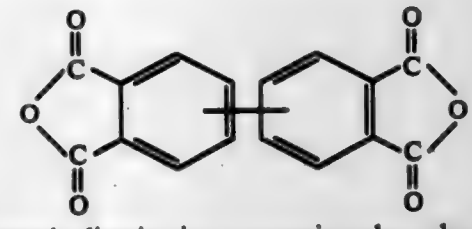
Filed Feb. 25, 1981, Ser. No. 238,283
Claims priority, application Japan, Feb. 25, 1980, 55-23019
Int. Cl.³ B05D *5/10, 5/12;* B32B *27/08, 27/28;* C09J *7/02*
U.S. Cl. 428—349 16 Claims

1. A heat-fusible polyimide compound film which comprises a polyimide film and a heat-fusible layer composed of a polyimide precursor having a volatile material content of about 5 to about 50% by weight which is prepared by converting a part of a polyamide acid obtained by reacting a biphenyltetracarboxylic acid dianhydride represented by the general formula



with an aromatic diamine into imide, provided on at least one surface of said polyimide film.

9. A process for producing a heat-fusible polyimide compound film which comprises applying a solution of a polyamide acid obtained by reacting a biphenyltetracarboxylic acid dianhydride represented by the general formula



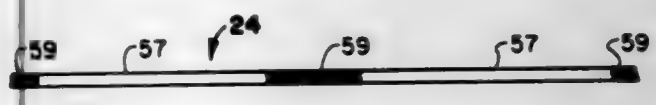
with an aromatic diamine in an organic polar solvent to at least one surface of a polyimide film, and drying thereafter with heating to convert a part of said polyamide acid into the imide form while maintaining the volatile material content at about 5 to about 60% by weight, by which a heat-fusible layer composed of a polyimide precursor is formed.

4,347,287

SEGMENTED PULTRUSIONS COMPRISING CONTINUOUS LENGTHS OF FIBER HAVING SELECTED AREAS ALONG THE LENGTHS CONTAINING RESIN MATRIX IMPREGNATIONS

Armand F. Lewis; Chen-Chi M. Ma; Hoa Quach, and Edward J. Krasnicki, all of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Aug. 14, 1980, Ser. No. 178,226
Int. Cl.³ B32B *3/10;* D02G *3/36*
U.S. Cl. 428—378 4 Claims



1. A segmented pultruded shape comprising a continuous length of a plurality of fiber reinforcements impregnated with a matrix material; said length of fiber reinforcements having been formed into a continuous series of alternating rigid segments and flexible segments, the matrix material impregnating said rigid segments having been cured and the matrix material impregnating said flexible segments having been removed.

4,347,288

HIGH-VOLTAGE CABLE HAVING A POLYTHENE CONTAINING INSULATION SHEATH WHICH IS PROVIDED WITH MEANS TO AVOID OR IMPEDE THE FORMATION OR THE GROWTH OF WATERTREES, THE MEANS COMPRISING A METAL COMPLEX

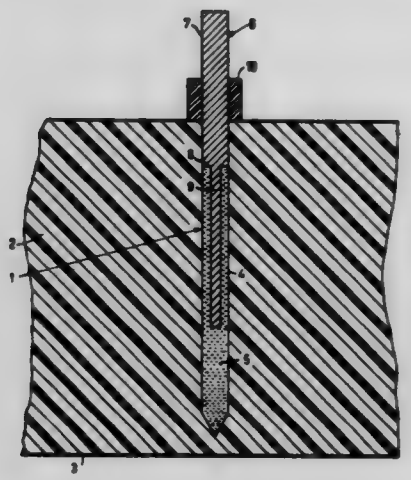
Lourens Minnema, and Grietje N. Van Boekel-Mol, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 2, 1980, Ser. No. 194,156

Claims priority, application Netherlands, Oct. 16, 1979, 7907626

Int. Cl.³ B32B *15/02, 15/08;* H01B *3/30*

U.S. Cl. 428—389 5 Claims



1. A high-voltage cable comprising a conductor and an ethylene polymer insulating sheath provided around said conductor and mixed in said insulating sheath a sufficient amount of a chemical means for preventing or impeding the formation of, or the growth of, watertrees, characterized in that said chemical means is a metal complex of a compound selected from the group consisting of diketones, salicylic acid which may be substituted with 1–2 lower alkyl groups and a Schiff's base formed from an amine and salicylaldehyde which may be substituted with 1–2 lower alkyl groups.

4,347,289

USE OF S-119 IN LITHOGRAPHIC FOUNTAIN SOLUTIONS

George T. Colegrove, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 3, 1981, Ser. No. 289,562

Int. Cl.³ B32B *15/04;* C09K *13/04, 13/06, 13/02*

U.S. Cl. 428—457 9 Claims

8. A method of storing image-bearing lithographic plates for prolonged periods of time which comprises coating said plates with an aqueous solution of 0.5 to 5% (by weight) heteropolysaccharide S-119.

4,347,290

STEEL WIRE REINFORCING ELEMENTS

Guy Haemers, Deerlijk, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium

Division of Ser. No. 40,902, May 21, 1979, Pat. No. 4,255,496. This application Sep. 3, 1980, Ser. No. 183,646

Claims priority, application United Kingdom, May 26, 1978, 23062/78

Int. Cl.³ B32B *15/06, 15/18*

U.S. Cl. 428—625 4 Claims

1. A rubber composition containing at least one steel wire element wherein the steel wire is provided with an adhesive coating comprising a brass alloy containing about 58% to 75% of copper and about 0.5% to 10% of cobalt.

4,347,291

MAGNETIC RECORDING MEDIUM AND PREPARATION THEREOF

Yasumichi Tokuoka, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1980, Ser. No. 208,687

Claims priority, application Japan, Nov. 28, 1979, 54/152914

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ G11B *5/62*

U.S. Cl. 428—694 2 Claims

1. A magnetic recording tape which has a coercive force of 1000 Oe or more and a residual magnetic flux density of 2000 gauss or more and an orientation degree, which is the ratio of the squareness ratio in the longitudinal direction to the squareness ratio in the transverse direction, of

$$\text{Orientation degree} \geqq 4.90 \times \frac{\text{squareness ratio}}{\text{in longitudinal direction}} - 1.87$$

comprising: a magnetic metallic iron powder mixed with a binder and coated on a substrate;

wherein said magnetic metallic iron powder is prepared by forming an alkaline aqueous slurry of an acicular hydrated iron oxide or an acicular iron oxide having a pH in the range of 8 to 14, adding a water soluble silicate to said slurry in an amount of 0.1 to 10 mol%, as SiO_2 to Fe, treating said slurry by a hydrothermal reaction in a closed reactor at 100° to 250° C. for 5 minutes or longer, dehydrating and drying said slurry to obtain a dry iron oxide containing an SiO_2 component, and converting it into a magnetic metallic iron powder by reduction in a hydrogen reducing atmosphere.

4,347,292

ELECTRIC CELL ASSEMBLY WITH AN ALKALINE ELECTROLYTE AND CURRENT OUTPUT WIRES

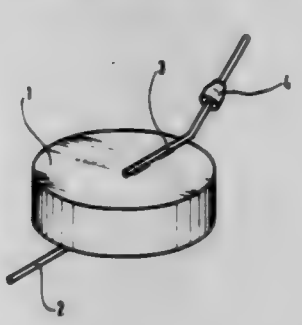
Alain Bernard, Pessac, and Raymond Bonnaterre, Merignac, both of France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Jun. 24, 1981, Ser. No. 276,981

Claims priority, application France, Jun. 30, 1980, 80 14533

Int. Cl.³ H01M *2/32*

U.S. Cl. 429—65 3 Claims

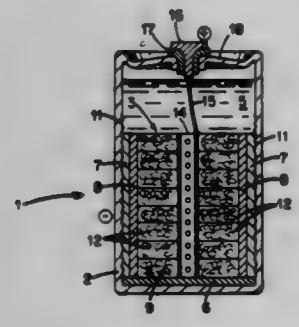


1. An electric cell assembly having an alkaline electrolyte and current output wires electrically connected to the positive terminal and negative terminal of the electric cell assembly, wherein the metal wire which corresponds to the negative terminal is surrounded, near said terminal and entirely outside the electric cell, with a bead made of a glass which is practically unalterable by said electrolyte.

4,347,293
ELECTROCHEMICAL CELL

Franz Goebel, Sudbury, and Cyril Morgan, Manchester, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 29, 1980, Ser. No. 145,181
Int. Cl.³ H01M 6/02
U.S. Cl. 429—105 11 Claims



1. A carbon current collector cathode structure for use with an electrolytic solution of an electrochemical system of a primary electrochemical cell, said carbon current collector cathode structure comprising:

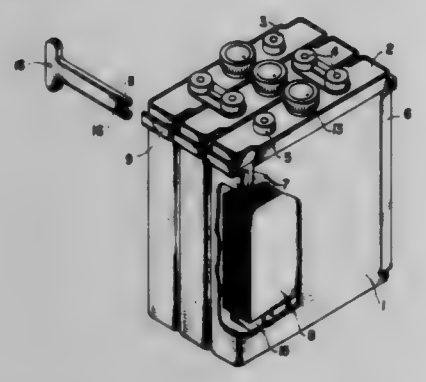
a plurality of individual porous carbon elements superimposed one above the other in a stacked array and each having a network of electrolyte-conducting channels formed therein for receiving an electrolytic solution by which the carbon element can be permeated by the electrolytic solution, each of said carbon elements having an opening extending completely therethrough; and

an elongated, hollow, metal current collector tube having a plurality of openings formed therein along its length and positioned within and along the openings in the stacked array of carbon elements and in direct physical contact with the porous carbon elements of the stacked array, said current collector tube being adapted to receive an electrolytic solution therein and to supply said electrolytic solution to the array of stacked carbon elements by way of the openings formed therein whereby the electrolytic solution can permeate the carbon elements by way of the electrolyte-conducting channels formed in the carbon elements.

4,347,294
NOVEL ELECTRIC STORAGE BATTERY ASSEMBLY

Santiago Mejia, Cerrera 30 No. 12-99, Bogota, Colombia

Filed Feb. 12, 1981, Ser. No. 234,509
Int. Cl.³ H01M 6/42
U.S. Cl. 429—151 5 Claims

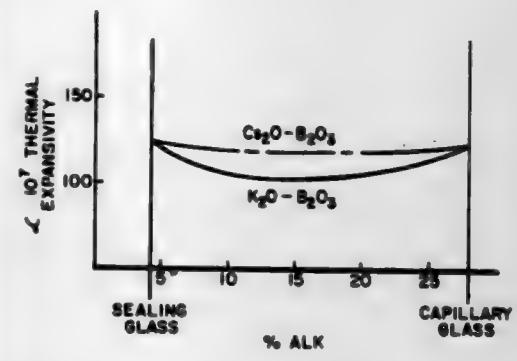


1. A composite electric storage battery assembly comprising a plurality of removably interlocked individual cell casing units, each of said units being provided on alternate corner edges with vertical dovetail projecting ribs and dovetail grooves, the dovetail ribs and grooves of adjacent cell units matingly and removably interengaging with one another, a plurality of removable conductor straps mechanically and electrically interconnecting the electrode terminal posts of adjacent cell units in a series arrangement, each of said cell units being covered and closed by a lid provided with openings to receive the terminal posts of the cell unit and a screw threaded hollow boss to permit the filling of the cell with an electrolyte fluid, said boss being closed off by a correspondingly threaded mating filler cap, each of said lids having a horizontal rib which removably and matingly engages with a corresponding shaped recess formed in a horizontally slidable transverse lug.

4,347,295
SEALING GLASSES FOR ELECTROCHEMICAL, ELECTRICAL, ELECTRONIC, AND OPTICAL APPLICATIONS

Andrew Herczog, Hammondsport, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 195,377, Oct. 9, 1980, Pat. No. 4,311,772. This application Aug. 20, 1981, Ser. No. 294,472
Int. Cl.³ H01M 6/18
U.S. Cl. 429—193 6 Claims

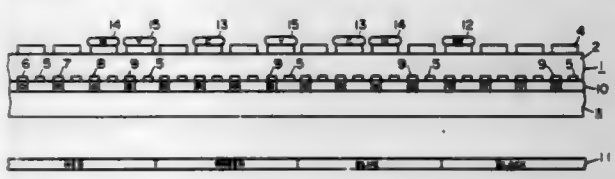


1. A sealing glass comprising, expressed in mole percent on the oxide basis as calculated from the batch, of about 3–30% R_2O and 60–95% B_2O_3, wherein R_2O consists of at least one alkali metal oxide selected from the group of K_2O, Rb_2O, and Cs_2O, the sum of $R_2O+B_2O_3$ constituting at least 70 mole percent of the total composition, sealed to a base glass containing at least 10% by weight of an alkali metal oxide having a smaller alkali metal than an alkali metal oxide in said sealing glass, said sealing glass having a softening point below the annealing point of the glass to be sealed and a coefficient of thermal expansion closely compatible with that of the base glass.

4,347,296
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND ELECTROPHOTOGRAPHIC PROCESS

Shunichi Ishihara, Kodaira; Nobuo Kitajima, Toride; Yuji Nishigaki, Kawasaki, and Nobuko Kitahara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1980, Ser. No. 201,479
Claims priority, application Japan, Nov. 1, 1979, 54-142305
Int. Cl.³ G03G 13/01, 5/14
U.S. Cl. 430—42 8 Claims



1. A color electrographic process which comprises:

applying a voltage between a transparent electrode and a color filter electrode of an electrophotographic photosensitive member comprising isolated conductive members for forming elements a substrate, and a photoconductive element therebetween, said photoconductive element having, at least one transparent electrode and color filter electrodes, conducting imagewise exposure from the substrate sid , resulting in the formation of a difference in distribution voltage between the area where light passes

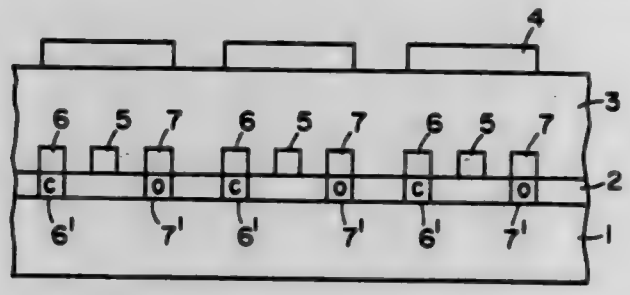
through a color filter electrode and the area where light does not pass through a color filter electrode with regard to the voltage distribution between the transparent electrode and the isolated conductive member and between the color filter electrode and the isolated conductive member, thereby forming a voltage image depending upon the change of voltage of the isolated conductive member produced corresponding to the difference in the distribution voltage, and developing the voltage image with a color toner corresponding to the color light passing through the color filter electrode.

4,347,297

ELECTROPHOTOGRAPHIC METHOD AND ELEMENT

Shunichi Ishihara, Kodaira; Nobuo Kitajima, Toride; Yuji Nishigaki, Kawasaki, and Nobuko Kitahara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1980, Ser. No. 204,286
Claims priority, application Japan, Nov. 5, 1979, 54/142933
Int. Cl.³ G03G *13/01, 5/14*
U.S. Cl. 430—42 6 Claims



1. An electrophotographic method which comprises the steps of:

(a) simultaneously applying voltages between a transparent electrode and two other electrodes in an electrophotographic photosensitive member comprising a multitude of isolated electrically conductive overlayers for image element formation, a photoconductive layer, a multitude of sets of electrodes, each set of electrodes being composed of a nontransparent electrode layer, a transparent electrode layer, a color filter electrode layer, and a substrate, to effect the color image exposure from the side of the color filter electrode to thereby produce differences between a region corresponding to those color portions in the image original having wavelength regions not transmitting through the color filter electrode but transmitting through the transparent electrode and each of a region corresponding to a white portion in the image original where light transmits through both the transparent electrode and the color filter electrode, a region corresponding to a color portion in the image original having a wavelength region which transmits through the color filter electrodes, and a region corresponding to a black portion in the image original where no light transmits through the transparent electrode and the color filter electrode with respect to the distributed voltages between the transparent electrode and the isolated electrically conductive member, between the color filter electrode and the isolated electrically conductive member, and between the nontransparent electrode and the isolated electrically conductive member; and

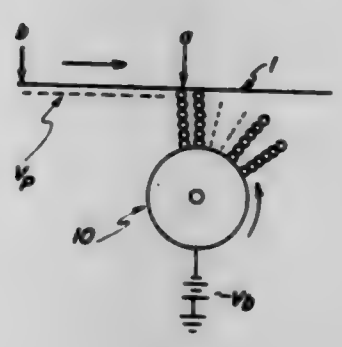
(b) causing a developing material to be selectively adhered to the isolated electrically conductive member of the region corresponding to those color portions in the image original having wavelength regions not transmitting through the color filter electrode but transmitting through the transparent electrode, by a difference in the electric potential of said isolated electrically conductive member which occurs in correspondence to the difference in the distributed voltages.

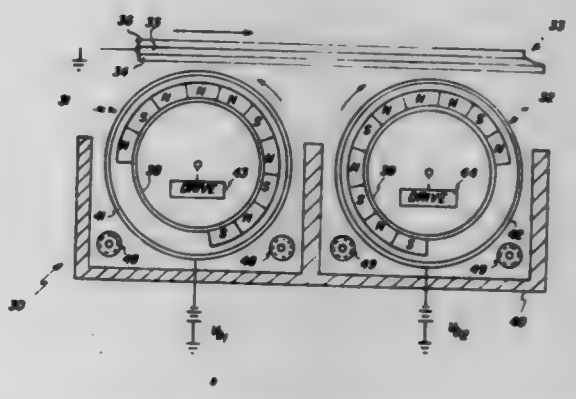
4,347,298

ELECTROGRAPHIC DEVELOPMENT APPARATUS AND METHOD FOR USE WITH PARTIALLY-CONDUCTIVE DEVELOPER

Arthur S. Kroll, Spencerport, and Frank A. Shuster, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 27,115, Apr. 4, 1979, Pat. No. 4,292,921.
This application Apr. 27, 1981, Ser. No. 258,228
Int. Cl.³ G03G *13/06, 13/08*
U.S. Cl. 430—97 11 Claims





1. A method of developing an electrostatic image on the surface of an image member, said method comprising:

(a) moving said member past a development zone in a downstream direction;

(b) at a first location in said zone transporting partially-conductive electrographic developer across said surface in a direction generally opposite said downstream direction; and

(c) at a second location in said zone transporting partially-conductive developer across said surface in generally said downstream direction.

4,347,299

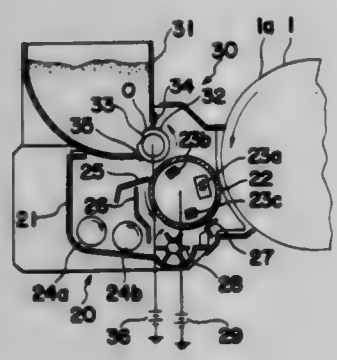
METHOD OF CONTROLLING TONER CONCENTRATION FOR ELECTROPHOTOGRAPHIC COPYING APPARATUS

Hiroshi Ozawa, and Masao Tokumoto, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 16, 1979, Ser. No. 67,238
Claims priority, application Japan, Aug. 16, 1978, 53-100309; Jan. 20, 1979, 54-5817
Int. Cl.³ G03G *13/08, 13/09*
U.S. Cl. 430—122 15 Claims

1. A method of controlling toner concentration for an electrophotographic copying apparatus including a developing device for developing an electrostatic latent image formed on a photosensitive member into a visible toner image with a two-component developing material which is composed of triboelectrically chargeable toner and magnetizable carrier and fed to a developing station by a developing sleeve having a plurality of magnets arranged in the interior thereof, said method comprising the steps of collecting an amount of toner corresponding to the concentration of the developing material

from the toner left on said developing sleeve after developing the image by means of a toner collecting roller impressed with a voltage opposite in polarity to the toner and rotatably disposed to contact the flow of said developing material on said developing sleeve at a point past, in the direction of movement of the developing material, the position at which the develop-



ing sleeve supplies the toner to the photosensitive member, supplying approximately a predetermined constant amount of toner to said developing sleeve for replenishing the toner thus collected, and varying the voltage impressed on said toner collecting roller so as to correspond to the state of image to be copied.

4,347,300

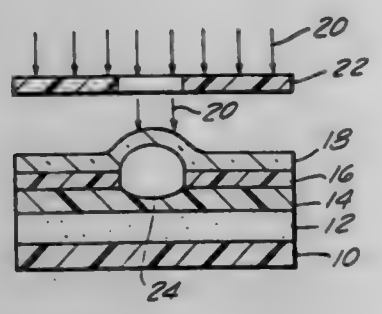
IMAGING PEEL APART ELEMENT EMPLOYING TWO PHOTOHARDENABLE LAYERS

Ken-Ichi Shimazu, Pleasantville, and Takao Nakayama, Yonkers, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Continuation-in-part of Ser. No. 802,851, Jun. 2, 1977, abandoned. This application May 11, 1978, Ser. No. 904,840

Int. Cl.³ G03C 1/54, 1/78

U.S. Cl. 430—156 **6 Claims**



1. A multi-layered sheet construction capable of reproducing both positive and negative forms of a photographic transparency image which comprises successive adherent layers comprised of:

(a) A flexible, transparent, substantially gas impermeable top support capable of transmitting radiant energy therethrough and having adhered to one surface thereof;

(b) A first photosensitive composition layer which comprises (i) a major amount of a light-sensitive, substantially gas generating diazonium substance and may contain (ii) minor amounts of resinous materials, such that said photosensitive composition disintegrates with a concurrent forced expulsion of gas upon exposure to an ultraviolet energy supply to which it is reactive, said photosensitive layer having adhered thereto;

(c) An image forming layer comprising a resinous material which is capable of being imagewise separated upon the application of dissociative shearing forces, said image forming layer comprising, based on weight of solids:

I. From about 25% to 100% light sensitive composition comprising (i) up to 10% photoinitiator, (ii) at least 90% material capable of hardening, crosslinking or polymerizing upon being blended with said photoinitiator and being exposed to ultraviolet radiation; and

II. Up to 75% of materials selected from the group consisting of binding resins, fillers and colorants, said image forming layer having adhered thereto;

(d) A bottom support having a substantially regular surface, whereby, upon exposure of the multi-layered sheet construction to an ultraviolet radiant energy source through a photographic transparency from the direction of the top transparent support, said energy causes said first photosensitive composition to spontaneously, outwardly expel a gas so as to exert outward forces on said top support and said image layer at the exposed locations, thereby forming an imagewise bubble system which is visible through said top support, said radiant energy is transmitted through said first photosensitive composition layer and reaches and reacts with said image forming composition layer, causing the light sensitive composition in said image forming layer to harden at the thusly exposed locations such that upon a subsequent separation of said bottom and said top supports, solely by means of peeling forces, an imagewise shearing of the image layer is effected along interfaces which are in underlying registration with an interface formed between the exposed and unexposed portions of the first photosensitive layer; and a negative reproduction of the transparency image is thereby produced comprising said bottom support, and the negatively imagewise separated image forming layer attached to the bottom support, and a positive reproduction of the transparency image is simultaneously produced in the form of said top support, the unexposed first photosensitive composition layer attached to said top support, and the positively imagewise separated image forming layer material attached to and in registration with said unexposed first photosensitive layer.

4,347,301

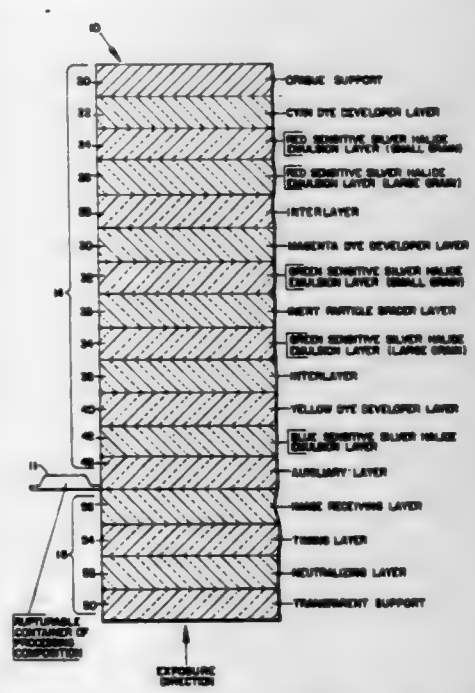
NOVEL DIFFUSION TRANSFER FILM UNITS

Peter O. Kliem, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 26, 1980, Ser. No. 210,808

Int. Cl.³ G03C 5/54

U.S. Cl. 430—215 **44 Claims**



15. A photographic diffusion transfer film unit comprising a support carrying at least one photosensitive element comprising a first and second photosensitive silver halide layer and a dyeable receiving layer adapted to receive a dye image diffusing thereto after photoexposure and processing of said photosensitive element; said first and second silver halide layers being sensitive to substantially the same spectral absorption

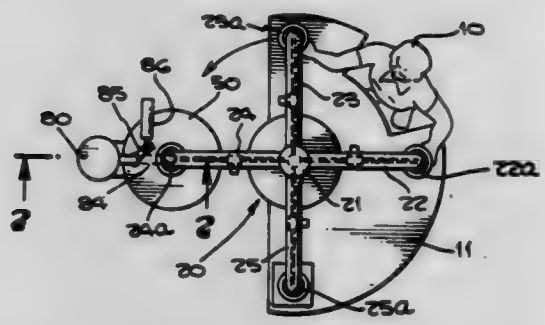
region; said first and second photosensitive silver halide layers having associated therewith a material which provides a dye image forming material which is diffusible during processing as a function of the point-to-point degree of silver haide exposure to actinic radiation; and, intermediate and contiguous to said first and second photosensitive silver halide layers, a spacer layer consisting essentially of particles which are substantially non-swelling in alkali, and substantially non-film forming; said particles being less than or equal to the silver halide grains in average diameter; said silver halide grains being 2.5μ or less in average diameter.

4,347,302

PROCESS FOR APPLYING A THIN COATING IN LIQUID FORM AND SUBSEQUENTLY DRYING IT

Alexander Gotman, 818 Fifth St., Apt. 5, Santa Monica, Calif. 90403

Filed Jun. 6, 1980, Ser. No. 157,185
Int. Cl.[3] B05D *5/12, 3/12*
U.S. Cl. 430—270 7 Claims



1. In a method wherein a liquid coating material is applied to the surface of a substrate while the substrate is being spun in order to provide a thin coating on its surface, and wherein the coating is subsequently dried, the improvement comprising:

(a) selecting a coating chamber;

(b) charging the atmosphere of the coating chamber with a solvent for the coating material in a saturated vaporous form;

(c) placing the substrate inside the coating chamber;

(d) then depositing a quantity of the liquid coating material upon one surface of the substrate;

(e) rotating the substrate about a self-contained vertical axis so as to radially disperse the liquid and thereby form a coating of uniform thickness on the substrate, by virtue of the saturated atmosphere which prevents any drying action upon the coating;

(f) then selecting a drying chamber and, without exposing the interior of the coating chamber to outside atmosphere, placing the drying chamber in communication with the coating chamber so that the saturated atmosphere then occupies both chambers;

(g) moving the coated substrate from the coating chamber into the drying chamber;

(h) then independently sealing the drying chamber so as to retain both coated substrate and saturated atmosphere therein; and

(i) thereafter initiating a drying action in the drying chamber so as to eliminate the saturated atmosphere therein while also drying the coating.

4,347,303

DRY PLANOGRAPHIC PRINTING PLATE WITH ORGANIC ACID ADDITIVE

Masaya Asano; Yoichi Mori, and Yoshiaki Takayama, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 86,326, Oct. 19, 1979, abandoned. This application May 18, 1981, Ser. No. 264,617
Claims priority, application Japan, Oct. 20, 1978, 53/128577
Int. Cl.[3] G03C *1/74, 1/68;* G03F *7/10*
U.S. Cl. 430—272 4 Claims

1. A positive acting presensitized dry planographic printing plate comprising:

(a) a base layer having sufficient strength to withstand the stress normally encountered in the printing process;

(b) a photo-sensitive layer superimposed on the base layer comprising at least one photopolymerizable unsaturated compound having a boiling point above about 100° C., a photoinitiator and an organic acid, the amount of said organic acid is such that the total concentration of the acid group in the photosensitive layer is in the range of about 0.01 m mol/g to 1.0 m mol/g; and

(c) a silicone rubber layer superimposed on the photo-sensitive layer with or without an intervening layer comprising one or more silicone primers or silane coupling agents or combination thereof, wherein said silicone rubber layer comprises crosslinked diorganopolysiloxanes having the central repeating unit of



wherein n is not less than 2, R and R' being selected from the groups consisting of alkyl, aryl and cyanoalkyl groups having 1–20 carbon atoms.

4,347,304

PROCESS FOR FORMING METALLIC IMAGE

Hideki Sakurai, Sendai; Mitsuo Nakatani, Yokohama; Hitoshi Oka, Yokohama; Hitoshi Yokono, Yokohama, and Tokio Isogai, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 277,049
Claims priority, application Japan, Jun. 25, 1980, 55/85099; Jun. 25, 1980, 55/85100
Int. Cl.[3] G03C *5/00*
U.S. Cl. 430—291 8 Claims

1. A process for forming a metallic image comprising coating a solution of a photosensitive material on the surface of a substrate having through-holes and on the through-hole parts, drying the photosensitive material, irradiating the resulting substrate with an actinic light through a photo-mask, and contacting the resulting substrate with a solution of metallic salt to deposit metal particles on the unexposed portions, characterized in that as the photosensitive material there is used either one of the following (a) or (b):

(a) at least one member selected from organic compounds having in the molecule at least one linkage of the formula: —M—(—M—M)$_n$—, wherein M is at least one member selected from the group consisting of Si, Ge and Sn, and n is zero or 1 or more,

(b) a mixture of at least one above-mentioned compound (a) and at least one photosensitizer selected from the group consisting of nitrofluorene and derivatives thereof, benzophenone and derivatives thereof, acetophenone and derivatives thereof, benzil and derivatives thereof, benzoin and derivatives thereof,

dissolved in a solvent (c) selected from the group consisting of halogenated hydrocarbons, aromatic hydrocarbons, heterocyclic compounds, and a mixture thereof.

4,347,305

PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATE PRECURSORS AND METHODS OF PREPARING PRINTING PLATE THEREFROM

Keisuke Shiba, and Tadao Toyama, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 21, 1980, Ser. No. 198,999
Claims priority, application Japan, Oct. 23, 1979, 54-136729
Int. Cl.³ G03F *7/02*
U.S. Cl. 430—302 10 Claims

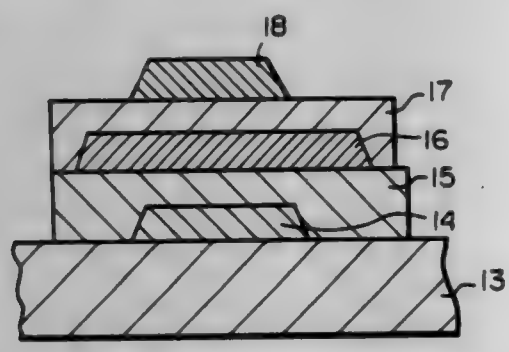
1. A method of preparing a planographic printing plate utilizing a photosensitive lithographic printing plate precursor comprising an aluminum support having a hydrophilic surface, (a) a positive type non-silver photosensitive layer capable of providing an oleophilic image and (b) a photographic silver halide emulsion layer, said emulsion being unfogged and internally sensitized type, containing a fogging agent and free from any tanning developing agent, the two coatings (a) and (b) being superimposed on the support in order, said method comprising imagewise exposing said photosensitive planographic printing plate, processing said silver halide emulsion with a surface developer free from a fogging agent to obtain a corresponding silver image, irradiating said positive type non-silver photosensitive layer through said silver image with light active to said non-silver photosensitive layer, and finally removing the irradiated portion of said positive type non-silver photosensitive layer to expose the hydrophilic surface of said underlying aluminum support.

4,347,306

METHOD OF MANUFACTURING ELECTRONIC DEVICE HAVING MULTILAYER WIRING STRUCTURE

Shiro Takeda, Sagamihara, and Minoru Nakajima, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 12, 1980, Ser. No. 148,722
Claims priority, application Japan, May 12, 1979, 54-57611; Dec. 26, 1979, 54-168113; Dec. 26, 1979, 54-168124; Dec. 27, 1979, 54-169156
Int. Cl.³ G03C *5/00*
U.S. Cl. 427—96 28 Claims



1. In a method of manufacturing on a substrate an electronic device including a multilayer wiring structure comprising forming an interlayer insulation layer comprised of a thermosetting polyimide between a previously formed respective lower metal layer of wiring and a subsequently formed respective upper metal layer of wiring, said method comprising forming said multilayer wiring structure to have at least one of said interlayer insulation layers between at least one pair of said respective upper and lower metal wiring layers, the improvement comprising using as the thermoset polyimide an addition polymerization type polyimide comprising imide rings in the recurring groups and reactive end groups with triple bonds.

4,347,307

DIMENSIONALLY STABILIZED IMAGING ELEMENT AND METHOD

Raymond F. Limoges, Rochester; Anthony A. Scribani, Fairport, and Robert J. Wilson, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 202,401, Oct. 31, 1980, Pat. No. 4,308,342.
This application Aug. 3, 1981, Ser. No. 289,844
Int. Cl.³ G03C *1/52*
U.S. Cl. 430—338 4 Claims

1. In a method of making an imaging element comprising, on a polymeric film support, at least one layer comprising an amine-generating composition that includes a reducible cobalt-(III) complex containing releasable amine ligands, and an amine-responsive dye precursor; the method comprising the steps of

(a) coating said composition and said precursor onto a support having dimensional changes that are no greater than ±0.1% in width and length when heated in an uncoated state for about 5 seconds at a temperature of about 125° C., to form at least one layer and;

(b) drying said layer to form the element;

the improvement wherein said method further includes, prior to exposure of the element to activating radiation, the additional steps of (c) dimensionally stabilizing said dried element by heating said dried element to a temperature of between about 100° C. and about 140° C. for a length of time sufficient to form in said element an overall thermal-reaction hysteresis that produces dimensional changes of no greater than ±0.03% in width or length when said element is processed by heating for about 5 seconds at a temperature of about 125° C.

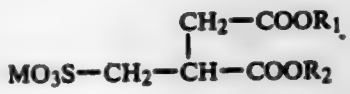
4,347,308

PHOTOGRAPHIC MATERIALS

Tetsuo Takeuchi, Fujinomiya; Yasuo Mukunoki, and Junji Minamizono, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 17, 1981, Ser. No. 235,223
Claims priority, application Japan, Feb. 15, 1980, 55-18089; Feb. 15, 1980, 55-18090
Int. Cl.³ G03C *1/38, 1/76, 1/84, 1/82*
U.S. Cl. 430—529 21 Claims

1. A photographic light-sensitive element comprising a silver halide and containing in at least one photographic layer thereof a compound of formula (I)



(I)

wherein at least one of R_1 and R_2 is a fluorine-substituted alkyl group, and R_1 or R_2 can be a substituted or unsubstituted alkyl or aryl group, and M is a cation.

4,347,309

PHOTOSENSITIVE POLYPHOSPHATE COMPRISING AG AND CL

Che-Kuang Wu, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 25, 1981, Ser. No. 237,853
Int. Cl.³ G03C *1/02, 1/52*
U.S. Cl. 430—616 3 Claims

1. A photosensitive polyphosphate comprising Ag and Cl which is produced by:

(a) condensing a mixture comprising KH_2PO_4 and Ag_3PO_4 in weight ratio (KH_2PO_4:Ag_3PO_4) in the range of about 50:1 to 1:1 to cause water evolution and the formation of a solid or liquid condensation product therefrom; and

(b) reacting the condensation product of (a) with dissolved NaCl to provide a photosensitive polyphosphate product.

4,347,310

HEAT DEVELOPABLE SILVER IMAGE FORMING MATERIALS

Tetsuo Shiga, Fuji, Japan; Masaru Ozaki, Drexel Hill, Pa.; Tatsumi Arakawa, Fuji, Japan; Takeo Kimura, Fuji, Japan, and Hidehiko Kobayashi, Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 113,415, Jan. 18, 1980, abandoned, which is a continuation of Ser. No. 951,546, Oct. 16, 1978, abandoned. This application Apr. 29, 1981, Ser. No. 258,859
Claims priority, application Japan, Oct. 14, 1977, 52-122479
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—620 8 Claims

1. A post-activatable heat developable silver image forming material comprising:

(a) a silver salt of a long chain aliphatic carboxlic acid having 12 to 24 carbon atoms;

(b) at least one member selected from the group consisting of (i) organic haloamides having a unit of —CONX— or —SO_2NX, wherein X represents a chlorine atom, a bromine atom or an iodine atom, (ii) iodine, and (iii) a compound or a composition comprising a halogen atom as a halogen component and an organic component containing an element of Groups IV, V or VI of the Periodic Table excluding sulfur and whose atomic number is 14 or more, said member being capable of forming a photosensitive silver compound by reaction of 0.01 to 0.5 mole thereof with 1 mole of the silver salt (a);

(c) a reducing agent for silver ion in an amount of 0.1 percent by weight to 200 percent by weight based on the weight of the silver salt (a); and

(d) a compound in an amount of 0.03 mole to 2 moles based on the mole of the silver salt (a), of the formula

$$R^1NH—\overset{\overset{NH}{\|}}{C}—NHR^2$$

wherein R^1 and R^2 independently represent an aryl group; an aryl group substituted with an acetyl group, an amino group, an alkyl group or alkoxy group; an alkyl group; an alkyl group substituted with an amino group, a carboxyl group, a mercapto group or an acetyl group; a cycloalkyl group; a S-, Se-, O- or N-containing heterocyclic group; an amidinyl group; a sulfanil group; a cyano group; an amino group; a nitro group and a hydrogen atom;
malonyl guanidine or guanine.

4,347,311

ENZYME IMMUNOASSAY FOR DETERMINING ANTIGEN SPECIFIC ANTIBODIES AND TEST KIT FOR CARRYING OUT THIS ASSAY

Hans H. Schmitz, Hamburg, Fed. Rep. of Germany, assignor to MEDAC Gesellschaft fur Klinishce Spezialpraparate mbH, Hamburg, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 165,395
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930706
Int. Cl.³ G01N *33/54;* C12Q *1/70;* C12N *9/96*
U.S. Cl. 435—5 4 Claims

1. An enzyme immunoassay method for determining the presence of antibodies which are specific to antigens using enzyme-labelled viruses or microbial cells in an antibody-antigen reaction, said method comprising the sequential steps of:

(a) coating a solid support with antibodies which selectively bind IgM, IgA, IgG or IgE antibodies which are to be determined in a serum specimen;

(b) contacting the coated support with the serum specimen containing the antibodies to be determined which antibodies are selectively bound by the antibodies of the coated support;

(c) removing unbound components of the specimen from the support;

(d) reacting the selectively bound antibodies at pH about 8.7 with a solution containing: carbonate buffer, calf serum, non-ionic detergent and a peroxidase conjugate of a virus or a microbial cell which conjugate is highly specific to the bound antibody and which conjugate has been prepared by periodate coupling the virus or microbial cell in a carbonate buffer of pH about 9.3 and of high mg/ml virus or microbial cell concentration; and thereafter

(e) determining the enzyme activity of the reaction product as a measure of the presence of the antibodies to be determined.

4,347,312

DETECTION OF ANTIBIOTICS IN MILK

Rodney J. Brown, Logan, Utah, and Harold E. Swaisgood, Raleigh, N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Mar. 20, 1980, Ser. No. 131,914
Int. Cl.³ G01N *33/54;* C12N *9/96*
U.S. Cl. 435—7 14 Claims

1. A method for detecting the presence of antibiotics having a lactam ring in milk which comprises the steps of:

(a) contacting a solid matrix having attached thereto a purified immobilized antibody with a volume of milk and an enzyme-labeled antibiotic having a lactam ring, said antibody being specific to said antibiotic and said enzyme-labeled antibiotic being covalently conjugated to the antibiotic through a carboxy group in the antibiotic molecule;

(b) separating the matrix from the milk and rinsing the matrix with water to remove excess milk and enzyme-labeled antibiotic;

(c) contacting the rinsed matrix with a substrate, said substrate in the presence of said enzyme-labeled antibiotic exhibiting a color change the amount of which is quantitatively related to the amount of enzyme-labeled antibiotic; and

(d) measuring the amount of antibiotic present in said milk by comparing the color change in said substrate with a standard, said purified immobilized antibody having been prepared according to the steps which comprise:

(i) covalently conjugating an antibiotic having a lactam-ring to a protein through said lactam-ring;

(ii) injecting into a host animal capable of raising antibodies specific to said antibiotic the conjugate obtained in step (i) so as to raise said specific antibodies;

(iii) covalently conjugating the sme antibiotic as used in step (i) to a second protein capable of binding thereto through said lactam-ring and different than the protein used in step (i) to form a second conjugate;

(iv) covalently binding said second conjugate to a solid matrix to form an affinity matrix for purifying the antibodies;

(v) isolating and purifying the specific antibiodies raised in step (ii) by contacting the host animal serum with the affinity matrix; and

(vi) recovering the specific antibodies in a pure form and immobilizing the purified antibodies on a solid matrix.

4,347,313

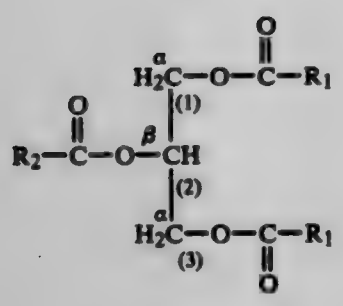
ANALYTICAL DETERMINATION OF LIPASE

Henning F. Proelss, Birmingham, Ala., assignor to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

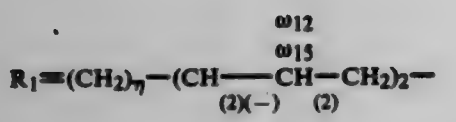
Continuation of Ser. No. 881,756, Feb. 27, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 210,120
Int. Cl.³ C12Q *1/26, 1/44*
U.S. Cl. 435—19 21 Claims

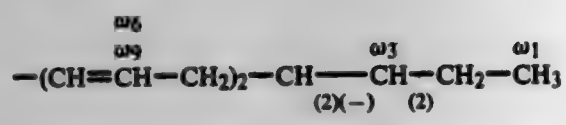
1. A method for the specific determination of lipase activity in a biological fluid comprising:

(a) adding a sample of a biological fluid sample to an emulsified substrate, constituting a heterogeneous system, containing from about 1.0×10^{-4} mole per liter to about 4.0×10^{-4} mole per liter of a water-insoluble triglyceride having the structural formula:



R_1=





n=1, (2), 3, (4), 5

R_2=a member selected from the group consisting of R_1 and saturated or (poly)unsaturated fatty acid alkyl chains;

and wherein said substrate also contains a bile salt;

(b) simultaneously, or immediately thereafter, adding an amount of lipoxygenase high enough to convert the acid produced by lipolysis to its acid hydroperoxide at a rate sufficient to ensure that lipolysis is the limiting reaction but low enough to ensure that the rate of reaction with said substrate itself remains low; and

(c) measuring the production of said acid hydroperoxide.

4,347,314

PROCESS FOR THE PREPARATION OF PENICILLIN DERIVATIVES

Martin Cole, and Robert A. Edmondson, both of Dorking, England, assignors to Beecham Group Limited, England

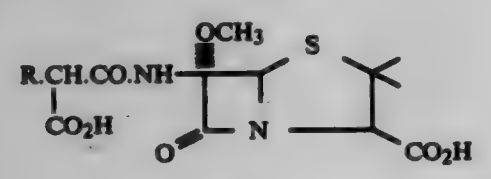
Filed May 13, 1980, Ser. No. 149,342

Claims priority, application United Kingdom, May 15, 1979, 7916773

Int. Cl.³ C12P *37/00*

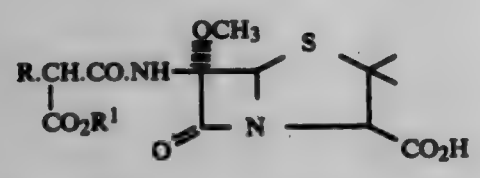
U.S. Cl. 435—43 **7 Claims**

1. A process for the preparation of a 6α-methoxy penicillin formula (I):



(I)

wherein R represents phenyl or 2- or 3-thienyl, which process comprises subjecting a compound of formula (IV):



(IV)

where R^1 is an aryl radical , to the action of an enzyme selected from the group consisting of bromelain, papain, gelatase, trypsin, pancreatin and an esterase-producing strain of *Escherichia coli, Pseudomonas aeruginosa, Aspergillus niger*, and Saccharomyces sp.

4,347,315

SYNTHESIS OF RIBOSIDES USING BACTERIAL PHOSPHORYLASE

Thomas A. Krenitsky, Chapel Hill, and Janet L. Rideout, Raleigh, both of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Apr. 25, 1980, Ser. No. 143,832

Int. Cl.³ C12P *19/38*

U.S. Cl. 435—87 **9 Claims**

1. A method for the preparation of 4-substituted-1-B-D-ribofuranosyl-1H-imidazo(4,5-c)pyridines which method comprises the reaction of the corresponding 4-substituted-1H-imidazo(4,5-c)pyridine with a ribose donor system comprising ribose-1-phosphate and bacterial phosphorylase enzyme.

4,347,316

PROCESS FOR ISOMERIZING GLUCOSE TO FRUCTOSE

Toshio Yoshioka; Kazuo Teramoto, and Masaharu Shimamura, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

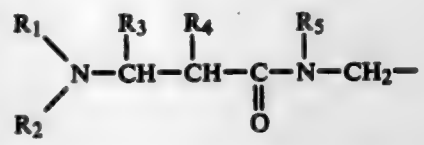
Continuation of Ser. No. 114,270, Jan. 22, 1980, Pat. No. 4,275,156. This application May 22, 1981, Ser. No. 266,155

Claims priority, application Japan, Jan. 23, 1979, 54/6727

Int. Cl.³ C12P *19/24*

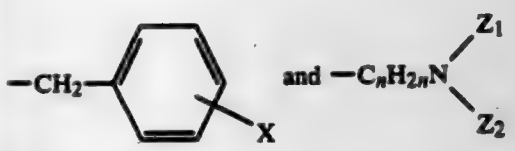
U.S. Cl. 435—94 **13 Claims**

1. A process for isomerizing to produce fructose from glucose, comprising bringing a glucose-containing solution into contact with an enzymatically active product comprising an organic polymeric material comprised of at least 50% by weight, based on the weight of the organic polymeric material, of a monovinyl aromatic compound in polymerized form, said polymerized monovinyl aromatic compound having a β-aminopropionamidomethyl group as a side chain represented by the formula I:

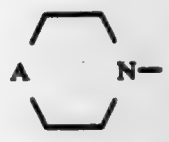


I

wherein R_1 is selected from hydrogen, an alkyl group having 1 to 6 carbon atoms and a hydroxyalkyl group having 2 to 6 carbon atoms, R_2 is selected from an alkyl group having 1 to 6 carbon atoms, a hydroxyalkyl group having 2 to 6 carbon atoms,



(where X, Z_1 and Z_2 are selected from hydrogen and an alkyl group having 1 to 6 carbon atoms, and n is an integer of from 2 to 6), or R_1 and R_2 form together with the nitrogen atom, to which R_1 and R_2 are bonded, a heterocyclic structure represented by the formula:



where A is $—CH_2—$, —O— or $—NR_6$-(wherein R_6 is H or an alkyl group having 1 to 6 carbons), and R_3, R_4 and R_5 may be the same as or different from each other and are selected from hydrogen and a methyl group, said organic polymeric material having glucose isomerase immobilized with said side chain of the organic polymeric material, whereby at least a part of the glucose is isomerized into fructose.

4,347,317

METHOD FOR PRODUCING L-GLUTAMIC ACID BY FERMENTATION

Minoru Yoshimura, Kawasaki; Yoshihiro Takenaka, Fujisawa; Shigeho Ikeda, and Hiroe Yoshii, both of Yokohama, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,705
Claims priority, application Japan, Aug. 10, 1979, 54-102448
Int. Cl.³ C12P *13/14*
U.S. Cl. 435—110 16 Claims

1. A method for producing L-glutamic acid by fermentation which comprises aerobically culturing in aqueous culture medium a mutant of the genus Brevibacterium or Corynebacterium of which ADP phosphorylation is less inhibited than its parent strain by ADP phosphorylation inhibition, and recovering L-glutamic acid accumulated in the resulting culture liquid, wherein the mutant is selected from the group consisting of:

Corynebacterium glutamicum NRRL B-12210
Brevibacterium lactofermentum NRRL B-12212
Brevibacterium lactofermentum NRRL B-12213
Brevibacterium flavum NRRL B-12204
Corynebacterium glutamicum NRRL B-12207
Brevibacterium lactofermentum NRRL B-12214
Brevibacterium lactofermentum NRRL B-12215
Brevibacterium flavum NRRL B-12205
Brevibacterium lactofermentum NRRL B-12216
Corynebacterium glutamicum NRRL B-12208
Brevibacterium lactofermentum NRRL B-12217
Brevibacterium lactofermentum NRRL B-12218
Brevibacterium flavum NRRL B-12206
Corynebacterium glutamicum NRRL B-12209.

4,347,318

METHOD FOR PRODUCING L-THREONINE BY FERMENTATION

Kiyoshi Miwa, Matsudo; Takayasu Tsuchida; Osamu Kurahashi, both of Kawasaki; Shigeru Nakamori, Yokohama; Konosuke Sano, Tokyo, and Haruo Momose, Kamakura, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Apr. 2, 1980, Ser. No. 136,475
Claims priority, application Japan, Apr. 2, 1979, 54-39617
Int. Cl.³ C12P *13/08;* C12N *15/00, 1/20;* C12R *1/19*
U.S. Cl. 435—115 4 Claims

1. A method for producing L-threonine by fermentation which comprises culturing in a culture medium an L-threonine producing microorganism wherein said microorganism is produced by incorporating into a recipient microorganism of the genus Escherichia which does not require L-threonine for growth, a plasmid, in which a deoxyribonucleic acid fragment which possesses genetic information relating to L-threonine synthesis obtained from a mutant resistant to α-amino-β-hydroxy valeric acid of the genus Escherichia, has been inserted.

4. A bacterium of the genus Escherichia which is Escherichia coli NRRL B-12100.

4,347,319

MICROBIOLOGICAL EPOXIDATION PROCESS

Ching-Tsang Hou; Ramesh N. Patel, both of Edison, N.J., and Allen I. Laskin, New York, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 24,262, Mar. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 896,476, Apr. 14, 1978, abandoned. This application Oct. 24, 1980, Ser. No. 200,600
Int. Cl.³ C12P *17/02*
U.S. Cl. 435—123 10 Claims

1. A process for the epoxidation of a C_2–C_4 n-alkene, dienes or vinyl aromatic compounds which comprises: epoxidizing in a reaction medium said alkene, diene or vinyl aromatic compound, under aerobic conditions, in the presence of cells of a bacterial methylotrophic microorganism or any enzyme preparation prepared from said cells and exhibiting oxygenase enzyme activity until at least a portion of said corresponding epoxide is produced in isolable amounts, wherein said microorganisms have been aerobically grown in a nutrient medium containing methane and said microorganism are methane-utilizing micororganism strains selected from the group consisting of:

Methylosinum trichosporium	(CRL 15 PM1)	NRRL B-11,202
Methylosinus sporium	(CRL 16 PM2)	NRRL B-11,203
Methylocystic parvus	(CRL 18 PM4)	NRRL B-11,204
Methylomonas methanica	(CRL M4P)	NRRL B-11,205
Methylomonas methanica	(CRL 21 PM7)	NRRL B-11,206
Methylomonas albus	(CRL M8Y)	NRRL B-11,207
Methylomonas streptobacterium	(CRL 17 PM3)	NRRL B-11,208
Methylomonas agile	(CRL 22 PM9)	NRRL B-11,209
Methylomonas rubrum	(CRL M6P)	NRRL B-11,210
Methylomonas rubrum	(CRL 20 PM6)	NRRL B-11,211
Methylomonas rosaceus	(CRL M10P)	NRRL B-11,212
Methylomonas rosaceus	(CRL M7P)	NRRL B-11,213
Methylobacter chroococcum	(CRL M6)	NRRL B-11,214
Methylobacter chroococcum	(CRL 23, PM8)	NRRL B-11,215
Methylobacter bovis	(CRL M1Y)	NRRL B-11,216
Methylobacter bovis	(CRL 19 PM5)	NRRL B-11,217
Methylobacter vinelandii	(CRL M5Y)	NRRL B-11,218
Methylococcus capsulatus	(CRL M1)	NRRL B-11,219
Methylococcus minimus	(CRL 24 PM12)	NRRL B-11,220
Methylococcus capsulatus	(CRL 25 PM13)	NRRL B-11,221
Methylobacterium organophilum	(CRL 26 R6)	NRRL B-11,222

and mutants thereof.

4,347,320

IMMOBILIZATION OF MICROORGANISMS IN GELLED CARRAGEENAN

Gerald B. Borglum, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 24, 1980, Ser. No. 209,411
Int. Cl.³ C12P *7/48, 7/06;* C12N *11/10*
U.S. Cl. 435—144 6 Claims

1. A method of preparing immobilized viable *Aspergillus niger* or *Saccharomyces cerevisiae* microorganisms which comprises the steps of mixing said microorganisms with an aqueous solution of kappa-carrageenan at a temperature of about 25° to 50° C. and gelling the mixture by the addition of a compound selected from the group consisting of an epihalohydrin:alkylene polyamine polymer having a mole ratio of from about 0.60:1 to 2.7:1 and a molecular weight of from 4,000 to 50,000 and polyethyleneimine having a molecular weight of from 300 to 50,000 to form a gel matrix containing said immobilized viable microorganisms.

4,347,321

METHOD AND APPARATUS FOR PRODUCING ALCOHOL

Joseph E. Lionelle; Jeffrey A. Staffa, and William L. McCormick, all of Salida, Colo., assignors to Bio-Systems Research, Inc., Salida, Colo.

Filed Oct. 7, 1980, Ser. No. 194,850
Int. Cl.³ B01D *3/14;* C12M *1/02;* C12P *7/06*
U.S. Cl. 435—161 20 Claims

1. In a method of producing alcohol from fermentable material which comprises the steps of:

heating a mixture of water and a fermentable material to form a cooked mash;

fermenting the cooked mash to form a beer;

boiling the beer to produce a first vapor rich in alcohol;

partially condensing the first vapor to produce a liquid condensate and a second vapor further enriched in alcohol; and

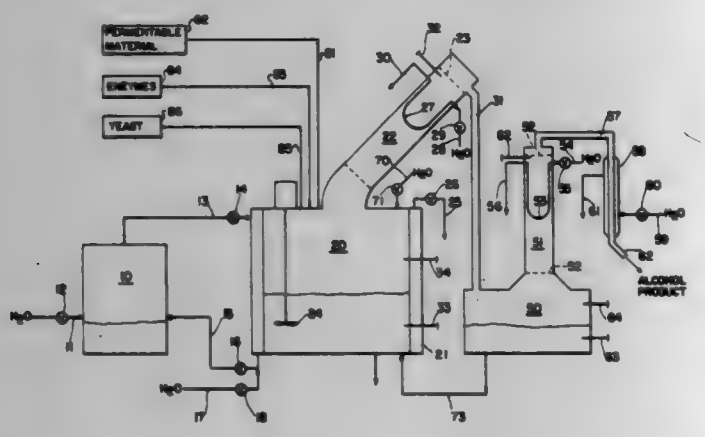
recovering an alcohol product from said second vapor;

the improvement wherein:

said steps of heating, fermenting, and boiling are carried out sequentially in a single vessel;

said liquid condensate is returned to said vessel;

said step of partially condensing said first vapor comprises passing said first vapor upwardly through a packed column and cooling the upper portion of said packed column; and



said step of recovering an alcohol product from said second vapor comprises passing said second vapor from the top of said packed column to a second vessel, partially condensing vapor from the top of said second vessel to produce a further liquid condensate and a third vapor enriched in alcohol, returning said further liquid condensate to said second vessel, and condensing said third vapor to form a liquid alcohol product.

4,347,322

CHROMATOGRAPHIC PROCESS FOR ENZYME PURIFICATION

Richard A. Johnson, and Norman E. Lloyd, both of Clinton, Iowa, assignors to Nabisco Brands, Inc., New York, N.Y.

Filed Jan. 12, 1981, Ser. No. 224,590

Int. Cl.³ C12N *11/12, 9/26, 9/92*

U.S. Cl. 435—179 **11 Claims**

1. A chromatographic process for producing a purified enzyme preparation comprising contacting an impure liquid enzyme preparation containing enzyme and soluble impurities with an ion exchange material known to adsorb the enzyme in a column wherein both the enzyme and the soluble impurities are adsorbed by the ion exchange material and adding an additional amount of the impure liquid enzyme preparation whereby the soluble impurities in the additional impure liquid enzyme preparation are preferentially adsorbed by the ion exchange material and the adsorbed enzyme is displaced from the ion exchange material thereby producing a purified liquid enzyme preparation substantially more concentrated than the impure liquid enzyme preparation.

4,347,323

GLYCEROL KINASE FROM *STREPTOMYCES CANUS*

Shigeyuki Imamura; Tohru Matsumoto; Naoki Muto, and Hideo Misaki, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed May 28, 1980, Ser. No. 154,029

Claims priority, application Japan, Jun. 6, 1979, 54-71459

Int. Cl.³ C12N *9/12*; C12R *1/465*; C12Q *1/48*

U.S. Cl. 435—194 **2 Claims**

1. Glycerol kinase having the following properties:

(1) enzyme action: catalyzes at least the following reaction:



(2) molecular weight: 72000±7200

(3) isoelectric point: 4.5

(4) Km value:

glycerol	4.8×10^{-5}M
dihydroxyacetone	6.6×10^{-4}M
D-glyceraldehyde	3.5×10^{-4}M
ATP	2×10^{-4}M

(5) specificities for nucelotides: ATP>CTP>ITP>>GTP, UTP

(6) optimum pH: pH 9–10

(7) pH stability: pH 5.5–10

(8) effect of metal ions: stimulated by Mg++, inhibited by Ca++ and Mn++

(9) heat stability: stable up to 45° C.

2. A process for the production of glycerol kinase, which comprises culturing *Streptomyces canus* FERM-P No. 4977 in a nutrient medium containing carbon and nitrogen sources and inorganic salt, and then isolating the thus-produced glycerol kinase from the cultured medium.

4,347,324

PROCESS FOR ISOLATION OF PROTEINS FROM PLANT LEAVES

Samuel G. Wildman, Santa Monica, Calif., and Prachuab Kwanyuen, Gary, N.C., assignors to Leaf Proteins, Inc., Raleigh, N.C.

Continuation-in-part of Ser. No. 78,505, Sep. 24, 1979, Pat. No. 4,268,632. This application May 15, 1981, Ser. No. 264,116

Int. Cl.³ C12N *9/88*

U.S. Cl. 435—232 **24 Claims**

1. A process for obtaining ribulose 1,5-diphosphate carboxylase from plant material comprising the leaves of green plants which process comprises the steps:

(a) converting the leaves to a pulp comprising a mixture of a solid portion and a liquid portion, said liquid portion containing dissolved ribulose 1,5-diphosphate carboxylase;

(b) adjusting, if necessary, the pH of the liquid portion to within the range of pH 6.0 to a pH sufficiently above the isoelectric point of the proteins in the liquid portion that said proteins do not precipitate;

(c) separating the liquid portion from the solid portion; and

(d) storing said liquid portion at a temperature at which said ribulose 1,5-diphosphate carboxylase crystallizes.

4,347,325

POTASSIUM-ALUMINUM-PHOSPHATE COMPOSITIONS

Christian G. Michel, Ossining; Carolyn A. Ertell, Yonkers, and Johst H. Burk, Mohegan Lake, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 28, 1980, Ser. No. 210,906

Int. Cl.³ C04B *1/00*

U.S. Cl. 501—1 **89 Claims**

1. A solid potassium-aluminum-phosphate composition of matter having the nominal formula:

$$(K_2O)_x(Al_2O_3)_y(P_2O_5)_8(H_2O)_n$$

wherein x represents a number ranging from about 0.3 to about 2, y represents a number ranging from about 3 to about 15 and n represents a number ranging up to about 100; comprising a hydrated oxide of aluminum and at least one potassium-

aluminum-phosphate species selected from the group consisting of:

$KAl_3H_8(PO_4)_6.6H_2O$

$KAl_3H_{14}(PO_4)_8.4H_2O$ and

$K_3Al_5H_6(PO_4)_8.18H_2O$

self-bound into a solid mass.

4,347,326

FOAMABLE GLASS COMPOSITION AND GLASS FOAM

Isamu Iwami, Zushi; Shingo Kimura, Yokohama, and Toshio Iwasa, Tokyo, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,547

Claims priority, application Japan, Mar. 17, 1980, 55/32654; Mar. 17, 1980, 55/32655; Dec. 3, 1980, 55/169674

Int. Cl.³ C03C *11/00, 3/04, 3/08, 3/10*

U.S. Cl. 501—39 **16 Claims**

1. A foamable glass composition consisting essentially of 100 parts by weight of anhydrous modified sodium silicate glass and 0.5 to 4 parts by weight of calcium carbonate ($CaCO_3$) as foaming agent, wherein the composition of anhydrous modified sodium silicate glass is

$Na_2O.xSiO_2$ (x = 3 to 3.8)	75 to 95 wt. %
Modifier CaO	5 to 15 wt. %
Modifier MO	0 to 10 wt. %

(M: boron or metal other than sodium and calcium).

7. A foam produced by foaming the foamable glass composition of claim 1 of which cell wall is made of oxides in the composition as designated below, and wherein the content of CO_2 in the gas components existing in the cell is not less than 50 vol.%

$54.6 \leqq SiO_2 \leqq 74.5\%$

$15.7 \leqq Na_2O \leqq 24.2\%$

$5.3 \leqq CaO \leqq 17.2\%$

$0 \leqq MO \leqq 10.0\%$

(M: boron or metal other than sodium and calcium).

4,347,327

RECOVERY OF LITHIUM FROM BRINES

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 939,545, Sep. 5, 1978, Pat. No. 4,221,767, which is a division of Ser. No. 812,534, Jul. 5, 1977, Pat. No. 4,116,856. This application Nov. 19, 1979, Ser. No. 95,692

Int. Cl.³ C08D *5/20*

U.S. Cl. 521—28 **9 Claims**

1. A particulate anion exchange resin having suspended therein a microcrystalline $LiOH.2Al(OH)_3$ structure.

4,347,328

ANTI-CLUMPING OF ION EXCHANGE RESINS

Zita T. K. Harmon, and Lowell B. Lindy, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 8, 1980, Ser. No. 185,083

Int. Cl.³ B01J *39/18, 41/12*

U.S. Cl. 521—28 **14 Claims**

1. A method for reducing the clumping or interaction exhibited between cation and anion exchange resins in a resin bed comprising a mixture of cation and anion exchange resins, said method comprising the step of contacting the cation or anion resin prior, during or subsequent to the formation of the mixed resin bed with an aqueous dispersion of water-insoluble polymer particles having a number average particle size from about 100 to about 800 Å and bearing a moiety having an opposite ionic character than the cation or anion resin being treated, wherein the water-insoluble polymer particles are employed in an amount sufficient to reduce the clumping or interaction of the cation and anion resins but less than an amount which significantly affects the ion-exchange kinetics of the treated cation or anion resin.

4,347,329

EXPANDABLE POLYOLEFIN COMPOSITIONS AND POLYOLEFIN FOAM PREPARATION PROCESS

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed May 29, 1980, Ser. No. 154,332

Int. Cl.³ C08J *9/14*

U.S. Cl. 521—79 **20 Claims**

1. A process for preparing closed-cell olefin polymer foamed articles having increased maximum achievable cross-sectional areas and having good dimensional stability which process comprises the steps of:

(A) heat plastifying a normally solid olefin polymer resin selected from the group consisting of ethylene homopolymers and substantially non-neutralized ethylenic copolymers derived from at least about 50 weight percent of ethylene;

(B) admixing said heat plastified resin under elevated temperature and pressure with

(1) a stability control agent selected from the group consisting of partial esters of long-chain fatty acids with polyols, higher alkyl amines, fatty acid amides, complete esters of higher fatty acids, and substantially non-neutralized a-olefin-monoethylenically unsaturated carboxylic acid copolymers and

(2) a mixed blowing agent

(a) which comprises from about 50 to about 95 weight percent of dichlorodifluoromethane and from about 5 to about 50 weight percent of an aliphatic hydrocarbon compound or a halogenated hydrocarbon compound having a normal atmospheric boiling point of from about 0° C. to about 50° C., and

(b) which has a saturated vapor pressure at 100° C. of less than about 32 kg/cm^2 but greater than about 25 kg/cm^2; and

(C) extruding the resultant mixture into a zone of lower temperature and pressure to thereby form said olefin polymer foam.

4,347,330

LOW-COST SURFACTANT COMPOSITIONS FOR HIGH RESILIENCY FLEXIBLE FOAMS

John G. Demou, Lincoln Park; Edward R. Pray, Dearborn, and Robert L. McBrayer, Lincoln Park, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Sep. 8, 1981, Ser. No. 300,048

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—110 **14 Claims**

1. The method for improving cell structure with little or no shrinkage or foam collapse in molded high resilience open celled flexible polyurethane foams prepared by the reaction of an organic polyol having a hydroxyl functionality of at least 2 with an organic polyisocyanate in the presence of a blowing agent, said method comprising incorporating with the reactants three cell modifiers consisting of a polysiloxane-polyoxyalkylene copolymer, a polymethylsiloxane, and a polyether polyol cell modifier containing polyoxyethylene groups in amount of at least about 80 percent by weight of said polyether polyol.

4,347,331

FOAMED, LOW DENSITY, HIGHLY EXTENDED UNSATURATED POLYESTER RESIN SYRUP COMPOSITION, A SHAPED ARTICLE COMPRISED OF THE COMPOSITION AND A PROCESS FOR PREPARING SUCH ARTICLE

James M. Self, Taylor, S.C., assignor to Tanner Chemical Company, Inc., S.C.

Continuation-in-part of Ser. No. 191,134, Sep. 26, 1980, abandoned. This application Jul. 9, 1981, Ser. No. 281,726

Int. Cl.[3] C08J *9/00*

U.S. Cl. 521—119 33 Claims

1. A foamed, low density, highly extended, polymerized unsaturated polyester resin syrup product comprising:

(a) polymerized unsaturated polyester resin syrup; and

(b) the reaction product of aqueous aluminum hydroxie chloride solution and reactive, non-reinforcing, extender material capable of providing a blowing agent which is selected from the group consisting of inorganic carbonate compounds, inorganic bicarbonate compounds and mixtures thereof,

wherein the original weight ratio of the sum of the reactive, non-reinforcing, extender material and the aqueous aluminum hydroxie chloride solution to the unsaturated polyester resin syrup is from about 0.5:1.0 to about 10.0:1.0 and the original weight ratio of the reactive, non-reinforcing, extender material to the aqueous aluminum hydroxie chloride solution is less than about 5.0:1.0.

4,347,332

POLYAMIDE/POLYETHYLENE COPOLYMER FILM AND METHOD FOR PRODUCING

Thomas W. Odorzynski, Green Bay, and Jack E. Knott, II, Appleton, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 1, 1981, Ser. No. 249,974

Claims priority, application United Kingdom, Jun. 19, 1980, 8020135

Int. Cl.[3] C08K *5/36*

U.S. Cl. 524—169 9 Claims

1. In a method for the production of a film having relatively high levels of strength and toughness and good oxygen barrier properties, the steps comprising:

a. forming a blend of about 90 to 20 weight percent of a film-forming polyamide resin having a molecular weight of about 20,000 to 30,000 and a melting point temperature of about 415 degrees to 440 degrees Fahrenheit, conversely about 10 to 80 weight percent of an ethylene vinyl alcohol copolymer having a molecular weight of about 15,000 to 30,000 and a melting point temperature of about 325 degrees to 375 degrees Fahrenheit, and about 2 to 25 percent, based upon the weight of said polyamide resin, of a plasticizer therefor, said plasticizer being effective to lower the processing temperature of said polyamide resin to a value approximately that of said copolymer and below the temperature at which any sustantial amount of degradation would occur therein under appropriate conditions for extrusion;

b. heating said blend to said processing temperature;

c. forcing said blend through an extrusion die to produce a film of said blend; and

d. cooling said film to obtain a product having such desirable levels of toughness and oxygen barrier capability.

4,347,333

EMULSION COATING COMPOSITION CONTAINING SILICONE AND ACRYLIC POLYMER

Robert H. Lohr, Union Grove, and Lee W. Morgan, Racine, both of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jun. 16, 1980, Ser. No. 159,723

Int. Cl.[3] C08J *3/00*

U.S. Cl. 524—269 11 Claims

1. An emulsion hard surface coating composition comprising:

(a) At least one solvent of (i) a poor hydrogen bonding solvent the solubility parameter of the solvent being from about 6.0 to 8.2 or (ii) a moderate hydrogen bonding solvent, the solubility parameter of the solvent being from about 6.0 to 7.5;

(b) Water;

(c) From about 0.5 to % by weight of at least one surfactant;

(d) From 0 to about 20% by weight of an abrasive;

(e) From about 3 to 15% by weight of at least one silicone;

(f) From 0 to about 10% by weight of a wax; and

(g) From about 0.5 to 3% by weight of an acrylic polymer which has an M_n of greater than about 3000 and is soluble in said solvent,

with the proviso that: (i) if the emulsion is an oil-in-water emulsion, then the solvent is present in an amount of from about 5–65% by weight and the water is present in an amount of from about 15 to 90% by weight; or (ii) if the emulsion is a water-in-oil emulsion, then the solvent is present in an amount of from about 15–90% by weight and the water is present in an amount of from about 5 to 65% by weight.

4,347,334

PARTICULATE AGENT FOR IMPEDING THE COMBUSTIBILITY OF COMBUSTIBLE SUBSTANCES

Horst Staendeke; Franz-Josef Dany, and Joachim Kandler, all of Erftstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 4, 1981, Ser. No. 231,377

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005252

Int. Cl.[3] C08K *3/32*

U.S. Cl. 524—416 7 Claims

1. Particulate agent, for impeding the combustibility of combustible substances, based on a free-flowing pulverulent ammonium polyphosphate of the general formula:

$$H_{(n-m)+2}(NH_4)_mP_nO_{3n+1}$$

in which n stands for a whole number with an average value of about 20 to 800 and the ratio m/n is about 1, and a phenol resin, the agent containing:

(a) about 75 to 99.9 weight % of the free-flowing pulverulent ammonium polyphosphate, and

(b) about 0.1 to 25 weight % of a hardened, water-insoluble phenol resin enveloping the individual ammonium polyphosphate particles.

4,347,335

HIGH BOND STRENGTH AQUEOUS PHENOL MODIFIED POLYESTER COATING COMPOSITION

Charles H. Thomas, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 19, 1981, Ser. No. 226,339

Int. Cl.[3] C09D *3/52, 3/56, 3/66*

U.S. Cl. 524—538 9 Claims

1. A water reducible composition, comprising:

(I) a polyester resin consisting essentially of the reaction product of: (a) an organic dicarboxylic acid selected from the group consisting of aromatic dicarboxylic acids, tetrahydrophthalic acid, and mixtures thereof; (b) an organic compound selected from tris(2 hydroxy alkyl)isocyanurate, where the alkyl group contains from 2 to 6 carbon

atoms, and organic polyhydric alcohols containing more than two hydroxyl groups per molecule, and mixtures thereof; (c) saturated fatty acid, and (d) tricarboxylic acid; and

(II) additive consisting essentially of: (a) 8 wt.% to 30 wt.%, based on 100% polyester solids, of an aqueous solution of a water soluble, unmodified phenol-formaldehyde resin having an average molecular weight of below about 275; and (b) 20 wt.% to 55 wt.%, based on the polyester solids, of water soluble aminoplast selected from the group consisting of urea-formaldehyde condensation products and melamine-formaldehyde condensation products, to provide a water reducible composition; where the composition is free of saturated aliphatic dicarboxylic acid and saturated aliphatic dihydric alcohol reactants.

4,347,336

HEAT CURED SILICONE ELASTOMER

Gary R. Homan, and Charles A. Romig, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 13, 1981, Ser. No. 310,025

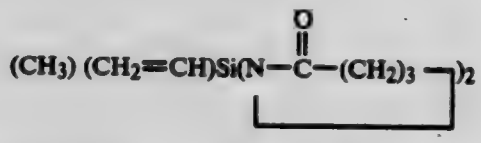
Int. Cl.³ C08L *83/04*

U.S. Cl. 524—731 **12 Claims**

1. A composition comprising the product obtained by mixing, in the absence of moisture,

(A) 100 parts by weight of hydroxyl endblocked polydiorganosiloxane having a viscosity of from 0.07 to 50 Pa.s at 25° C. wherein each organic radical is selected from a group consisting of methyl, ethyl, vinyl, phenyl, and 3,3,3-trifluoropropyl radicals, there being from 0 to 2 inclusive percent vinyl radicals, from 0 to 50 inclusive percent 3,3,3-trifluoropropyl radicals, and from 0 to 30 percent inclusive phenyl radicals, all percents based on the total number of organic radicals in the polydiorganosiloxane;

(B) sufficient



to give from 0.9 to 1.1 moles of (B) for each two moles of hydroxyl radical in (A), and

(C) 0.1 to 5 parts by weight of organic peroxide.

4,347,337

ETHYLENE-VINYL ALCOHOL WITH PHENOL ADDITIVE

Jack E. Knott, II, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 130,229, Mar. 14, 1980, Pat. No. 4,289,830. This application Apr. 3, 1981, Ser. No. 250,844

Int. Cl.³ C08F *8/00, 16/06;* C08K *5/13*

U.S. Cl. 525—60 **1 Claim**

1. A method for decreasing the gas permeability in the presence of moisture of an ethylene-vinyl alcohol polymer gas-barrier layer comprising the step of adding at least about one percent of an ortho-substituted phenol having a melting point below about 185° C. and a boiling point above about 125° C. to the polymer before forming the barrier layer.

4,347,338

PROCESS FOR PREPARING THERMOSETTABLE POLYURETHANE WHICH COMPRISES BLENDING A POLYISOCYANATE WITH A FIRST THERMOPLASTIC RESIN AND THEN BLENDING WITH A SECOND THERMOPLASTIC RESIN WHICH IS A POLYURETHANE

Hideyasu Torii, Kawagoe, and Susumu Nakamura, Kawaguchi, both of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd. and Ukima Colour & Chemicals Mfg. Co., Ltd., both of Tokyo, Japan

Filed May 19, 1981, Ser. No. 265,244

Claims priority, application Japan, May 29, 1980, 55-70860

Int. Cl.³ C08L *75/04*

U.S. Cl. 525—123 **5 Claims**

1. A process for preparing a thermosettable polyurethane product which comprises blending a compound having two or more terminal isocyanate groups with a thermoplastic resin which is inert to an isocyanate group to prepare an isocyanate compound batch and further blending the isocyanate compound batch with a thermoplastic polyurethane resin and fabricating the resulting mixture.

4,347,339

CATIONIC BLOCK COPOLYMERS

Jan E. Boevink, Malabar; Arthur P. Derrick, Sylvania, both of Australia, and John A. Moodie, Lisle, Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed May 8, 1981, Ser. No. 261,827

Int. Cl.³ C08L *39/04, 57/12, 71/02, 77/06*

U.S. Cl. 525—180 **33 Claims**

1. A method of manufacture of a water soluble cationic block copolymer comprising the steps of:

selecting at least one first polymeric species having amino groups in the polymeric structure thereof wherein a majority of the amino groups are quaternary,

selecting at least one second polymeric species having amino groups in the polymeric structure thereof wherein a majority of the amino groups are other than quaternary amino groups, and

interlinking said selected first and said selected second polymer species to form a block copolymer.

4,347,340

METHOD FOR PREPARING THERMOELASTOMERIC THREE-BLOCK COPOLYMERS

Paolo Giusti, Pisa, Italy, assignor to Anic, S.p.A., Palermo, Italy

Filed Apr. 6, 1981, Ser. No. 250,925

Claims priority, application Italy, Apr. 10, 1980, 21290 A/80

Int. Cl.³ C08F *297/04*

U.S. Cl. 525—249 **11 Claims**

1. A process for the preparation of three-block copolymers of the ABA or the ABC type wherein the blocks A and C are of a plastomeric nature and the block B is of an elastomeric nature, comprising the steps of effecting the sequential polymerization of the monomers relative to the first plastomeric block, the elastomeric block and the second plastomeric block in the order given, in the presence of a catalytic system comprised of:

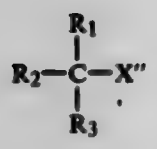
(a) a compound of aluminum having the formula AlR_2X', wherein both the radicals R are hydrogen atoms, or alkyl radicals, equal or different, containing up to 8 carbon atoms, and X' is an atom of fluorine, chlorine, bromine or iodine, or a radical containing up to 8 carbon atoms, and

(b) a compound selected from the group consisting of:

(1) X_2'' wherein X'' is a halogen equal to, or different from, X';

(2) X''X''' wherein X'' is a halogen as defined above and X''' is a halogen other than X'', and

(3) a group



wherein

X″ is a halogen,

R_1 is a member selected from the group consisting of hydrogen, an alkyl radical containing from 1 to 8 carbon atoms, an aromatic radical, an alkenyl radical containing from 2 to 8 carbon atoms,

R_3 is a member selected from the group consisting of hydrogen, an alkyl radical containing from 1 to 8 carbon atoms, an aromatic radical, an alkenyl radical containing from 2 to 8 carbon atoms, and an aralkyl radical, and

R_2 is a member selected from the group consisting of an alkyl radical containing from 1 to 8 carbon atoms, an alkenyl radical containing from 2 to 8 carbon atoms, an aromatic radical, an aralkyl radical, an alkaryl radical, a cycloalkyl radical containing from 3 to 10 carbon atoms, and a group



wherein R_1, R_3 and X″ are as hereinbefore defined and R_4 is a member selected from the group consisting of an aromatic radical, an aralkyl radical and a methylene chain $-(CH_2)_n-$ wherein n is an integer comprised between 1 and 10.

4,347,341

PROCESS FOR THE PRODUCTION OF ETHYLENE GRAFT COPOLYMERS CONTAINING ANHYDRIDE OR CARBOXYL GROUPS

Herbert Bartl, Odenthal, and Klaus Schuster, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 24, 1981, Ser. No. 295,642

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3033001

Int. Cl.³ C08F *263/04, 255/02*

U.S. Cl. 525—267 7 Claims

1. A process for the production of ethylene graft copolymers containing anhydride or carboxyl groups in homogeneous or heterogeneous phase in an organic solvent, wherein

(A) from 5 to 70% by weight of a monomer mixture of:

(a) from 10 to 70% by weight of a vinyl ester of an aliphatic C_1–C_{18}-monocarboxylic acid; and

(b) from 90 to 30% by weight of maleic acid anhydride, its C_1–C_{20}-alkyl semiesters or mixtures thereof;

are radically polymerised in the presence of

(B) from 95 to 30% by weight of an ethylene homopolymer or an ethylene/vinyl ester copolymer containing from 5 to 70% by weight of copolymerised units of a vinyl ester of an aliphatic C_1–C_{18}-monocarboxylic acid as the graft substrate in tert.-butanol or methylene chloride, the sum total of (A) and (B) and the sum total of (a) and (b) each a mounting to 100% by weight.

4,347,342

PROCESS FOR INITIATING RADICAL REACTIONS EMPLOYING HYDROXIMIC ACID DERIVATIVES

Jan D. Van Drumpt, Deventer, and Wilhelmus M. Beijleveld, Oist, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

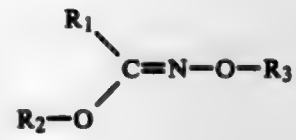
Filed Feb. 20, 1981, Ser. No. 236,342

Claims priority, application Netherlands, Feb. 29, 1980, 8001231

Int. Cl.³ C08G *17/14;* C08F *27/00*

U.S. Cl. 525—374 19 Claims

1. In an improved process for initiating radical reactions, the improvement comprises employing as an initiator a compound of the formula

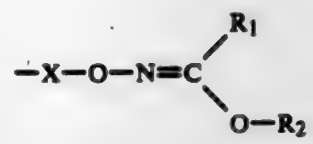


wherein

R_1 is selected from the class consisting of substituted or unsubstituted: C_1–C_{22} alkyl, C_2–C_{22} alkenyl, C_6–C_{20} cyclohexyl, C_6–C_{20} phenyl and C_7–C_{20} aralkyl;

R_2 is selected from the class consisting of substituted or unsubstituted: C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_6–C_{20} cyclohexyl, C_6–C_{20} phenyl, C_7–C_{20} aralkyl, C_2–C_{21} alkylcarbonyl, C_3–C_{21} alkenylcarbonyl, C_7–C_{21} cyclohexylcarbonyl, C_7–C_{21} phenylcarbonyl, C_8–C_{21} aralkylcarbonyl, C_7–C_{21} alkoxycarbonyl, C_3–C_{21} alkenyloxycarbonyl, C_7–C_{21} cyclohexyloxycarbonyl, C_7–C_{21} phenoxycarbonyl and C_8–C_{21} aralkyloxycarbonyl; and

R_3 is hydrogen, a group selected from the class consisting of substituted or unsubstituted: C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_6–C_{20} cyclohexyl, C_6–C_{20} phenyl, C_7–C_{20} aralkyl, C_2–C_{21} alkylcarbonyl, C_3–C_{21} alkenylcarbonyl C_7–C_{21} cyclohexylcarbonyl, C_7–C_{21} phenylcarbonyl, C_8–C_{21} aralkylcarbonyl, C_7–C_{21} alkoxycarbonyl, C_3–C_{21} alkenyloxycarbonyl, C_7–C_{21} cyclohexyloxycarbonyl, C_7–C_{21} phenyloxycarbonyl and C_8–C_{21} aralkyloxycarbonyl; a



group wherein X is substituted or unsubstituted: C_1–C_{12} alkylene, C_2–C_{12} alkenylene, C_6–C_{12} cycloalkylene or phenylene; or a $-SO_2Y$ group wherein Y is substituted or unsubstituted: C_1–C_{20} alkyl, C_6–C_{20} cycloalkyl or phenyl.

4,347,343

THICKENED VINYL ESTER RESIN COMPOSITIONS

James L. Brewbaker, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 21, 1981, Ser. No. 226,963

Int. Cl.³ C08L *63/00*

U.S. Cl. 525—530 12 Claims

1. A curable polymer composition capable of being B-staged with the addition of magnesium oxide, said composition comprising (1) a curable resin having no free carboxyl groups and which is the reaction product of about equivalent amounts of an unsaturated monocarboxylic acid and a polyglycidyl ether, (2) a reactive diluent and (3) a thickening agent which is a polyether having terminal carboxyl groups and repeating groups consisting essentially of ethoxy moieties, said polyether being, the reaction product of a polyethylene oxide having a molecular weight greater than about 4,500 and the anhydride of a polycarboxylic acid, said thickening agent having more than two carboxyl groups per molecule.

4,347,344

ORIENTED P-METHYL STYRENE POLYMER

S. Christine Ong, Somerville, and Margaret N. Bright, Jamesburg, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,535
Int. Cl.³ C08F 12/12
U.S. Cl. 526—347.1 5 Claims

1. A biaxially-oriented film consisting essentially of a layer of solid thermoplastic methyl styrene polymer, said polymer having at least 90 percent repeating units of 4-methylstyrene.

4,347,345

PROCESS FOR THE PRODUCTION OF BROKEN-DOWN ORGANIC LIGNIN-CELLULOSE SILICATE POLYMERS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 257,126, Apr. 24, 1981, Pat. No. 4,313,857, which is a division of Ser. No. 203,730, Nov. 3, 1980, which is a continuation-in-part of Ser. No. 112,290, Jan. 15, 1980, Pat. No. 4,220,757, which is a continuation-in-part of Ser. No. 29,202, Apr. 12, 1979, Pat. No. 4,220,757. This application Nov. 9, 1981, Ser. No. 319,210
Int. Cl.³ C08B 31/00
U.S. Cl. 527—301 20 Claims

1. The process for the production of a polyurethane silicate product by mixing and reacting a broken-down alkali metal lignin-cellulose silicate polymer and a substituted organic compound having a substituent which will split off during the reaction to said broken-down alkali metal lignin-cellulose silicate polymer in the amount wherein the mols of the substituted radicals are about equal to the mols of the alkali radicals in the mixture thereby producing a broken-down organic lignin-cellulose silicate polymer then 1 to 95 parts by weight of the broken-down organic lignin-cellulose silicate polymer and 50 parts by weight of a polyisocyanate or a polyisothiocyanate are mixed and reacted thereby producing a polyurethane silicate product.

4,347,346

SILICONE RELEASE COATINGS AND INHIBITORS

Richard P. Eckberg, Round Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 2, 1981, Ser. No. 250,479
Int. Cl.³ C08G 77/06
U.S. Cl. 528—15 19 Claims

1. A silicone release coating composition having improved catalyzed bath life at ambient temperatures comprised of:

a. an olefinorganopolysiloxane having units of the structural formula

$$R_aR'_bSiO_{\frac{4-a-b}{2}}$$

b. an organohydrogenpolysiloxane having units of the structural formula

$$R_aH_bSiO_{\frac{4-a-b}{2}}$$

wherein R is selected from the group consisting of a monovalent hydrocarbon radical, a halogenated monovalent hydrocarbon radical, a cyanoalkyl radical and mixtures thereof, R′ is an olefinic hydrocarbon radical, wherein a has a value of from 0 to 3, inclusive, b has a value of from 0.005 to 2.0, inclusive, and the sum of a and b is equal to from 0.8 to 3, inclusive;

c. a sufficient amount of a precious metal catalyst to cause the co-reaction of (a) and (b); and

d. a dialkylacetylenedicarboxylate having the general formula

ROOCC≡CCOOR

where R is as defined above and wherein said dialkylacetylenedicarboxylate is present in an amount effective for inhibiting premature gelation but insufficient for preventing cure at elevated temperature; wherein said silicone release coating composition has a viscosity of, approximately, 25 to 5000 centipoise at 25° C.

4,347,347

CROSSLINKED ORGANOMETALLIC BLOCK COPOLYMERS AND PROCESS FOR PRODUCTION THEREOF

Seishi Yajima; Kiyohito Okamura; Yoshio Hasegawa, and Takemi Yamamura, all of Oharai, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Jun. 18, 1980, Ser. No. 160,516
Claims priority, application Japan, Jun. 28, 1979, 54-80792; Mar. 21, 1980, 54-34909
Int. Cl.³ C08G 77/60, 77/54
U.S. Cl. 528—30 3 Claims

1. An organometallic copolymer having a number average molecular weight of about 1000 to about 50000 composed of (A) a polycarbosilane portion with a number average molecular weight of about 500 to about 10000 having a main chain skeleton composed mainly of carbosilane units of the formula $-(Si\text{-}CH_2)-$ and (B) a polymetallosiloxane portion with a number average molecular weight of about 500 to about 10000 having a main chain skeleton composed of metalloxane units of the formula $-(M\text{-}O)-$ wherein M represents a metal atom selected from the group consisting of Ti and Zr and siloxane units of the formula $-(Si\text{-}O)-$; each silicon atom of said carbosilane units having bonded thereto a side-chain group selected from the group consisting of hydrogen, lower alkyl and phenyl, most of the metal atoms M in said metalloxane units having bonded thereto a side-chain group selected from the group consisting of lower alkoxy, phenoxy and acetylacetoxy, most of the silicon atoms of said siloxane units having bonded thereto a side-chain group selected from the group consisting of alkyl and phenyl, the ratio of the total number of said metalloxane units to that of said siloxane units being in the range of from about 30:1 to about 1:30, the ratio of the total number of said carbosilane units to the sum of the total number of said metalloxane units and the total number of said siloxane units being in the range of about 100:1 to about 1:100, and at least some of the silicon atoms of said polycarbosilane portion (A) being bonded through oxygen to at least some of the metal atoms M and/or silicon atoms of said polymetallosiloxane portion (B) whereby the polycarbosilane portion (A) is crosslinked with the polymetallosiloxane portion (B).

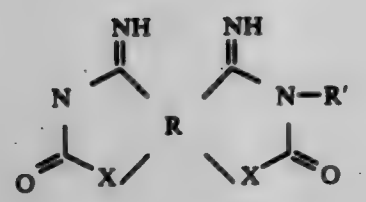
4,347,348

HEAT-RESISTANT HETEROCYCLIC POLYMERS AND METHODS FOR PRODUCING SAME

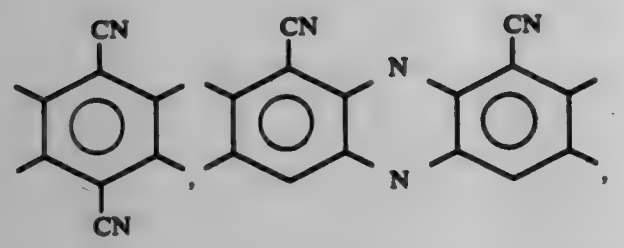
Alexei Y. Chernikhov, prospekt Veranadskogo, 93, kv. 64; Mikhail N. Yakovlev, ulitsa Amurskaya, 8, kv. 93, both of Moscow; Valentina B. Lysova, Pavlovsky posad, ulitsa Juzhnaya, 22, kv. 59, Moskovskaya oblast; Evgeny L. Gefter, B. Dorogomilovskaya ulitsa, 56, kv. 60, and Nina N. Shmagina, ulitsa Moldogulovoi, 8, korpus 1, kv. 66, both of Moscow, all of U.S.S.R.

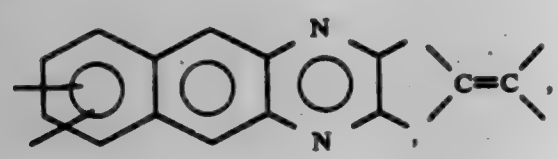
Continuation of Ser. No. 912,541, Jun. 5, 1978, abandoned. This application Jun. 20, 1980, Ser. No. 161,381
The portion of the term of this patent subsequent to Oct. 21, 1997, has been disclaimed.
Int. Cl.³ C08G 18/18, 18/77, 18/78
U.S. Cl. 528—51 8 Claims

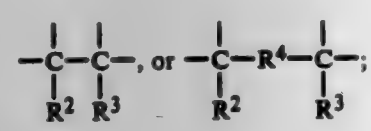
1. Heat-resistant heterocyclic polymers of the formula:



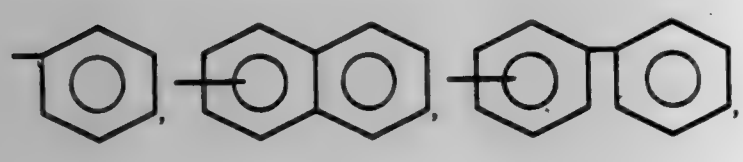
wherein
X is NH or O;
R is

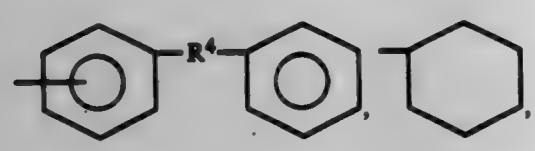


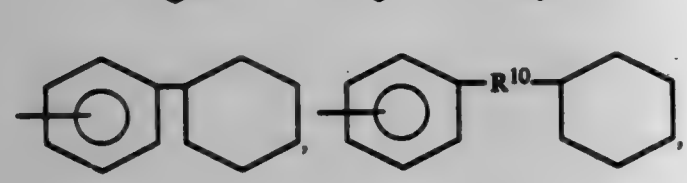


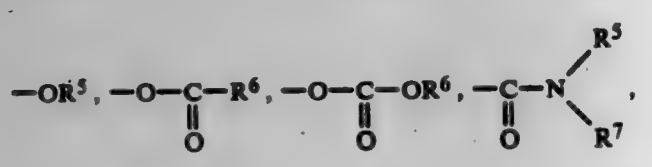


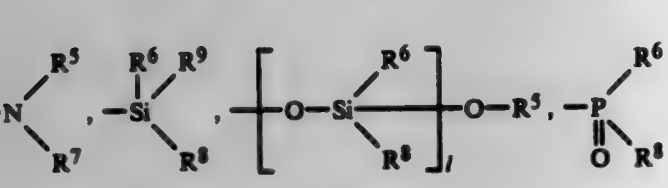
R^2 and R^3=H, C_fH_{2f+1}, C_fH_{2f-1},

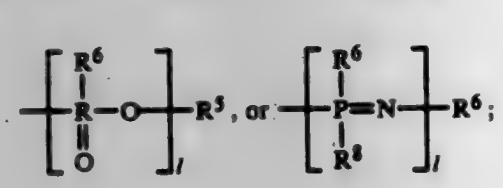




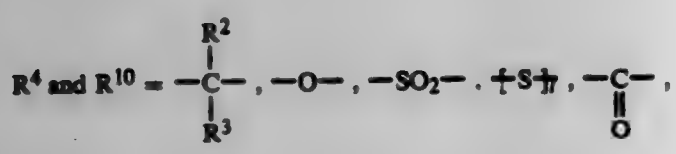




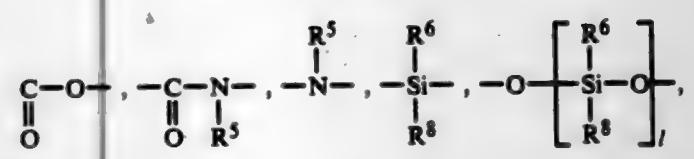


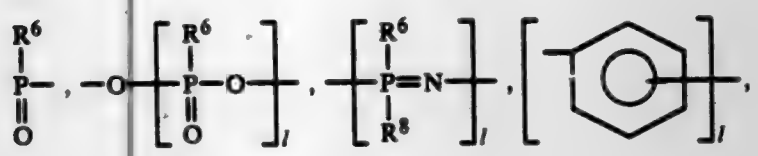


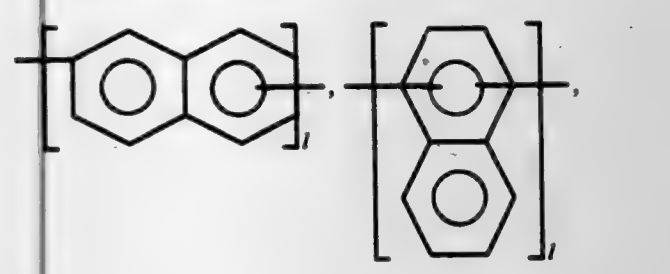
R^4 and R^{10}=

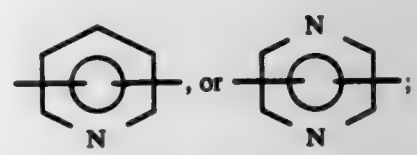


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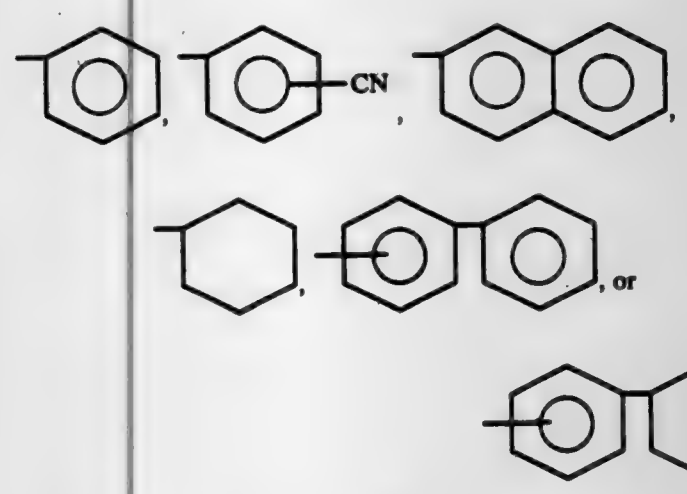


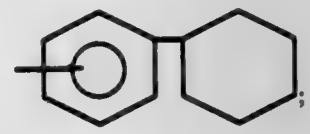




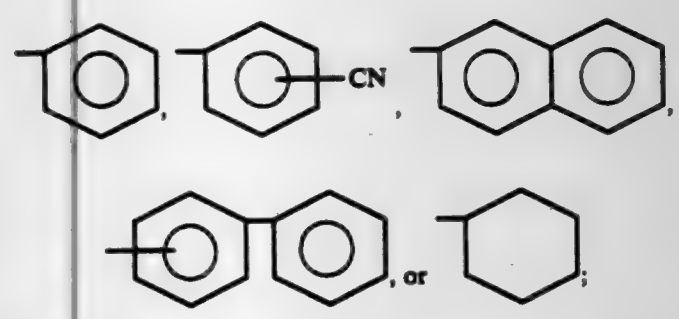


R^5 and R^7 are the same or different and=H,C_fH_{2f+1}, C_fH_{2f-1},

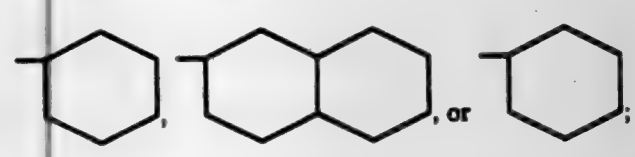




R^6 and R^8 are the same or different and=C_fH_{2f+1}, C_fH_{2f-1},

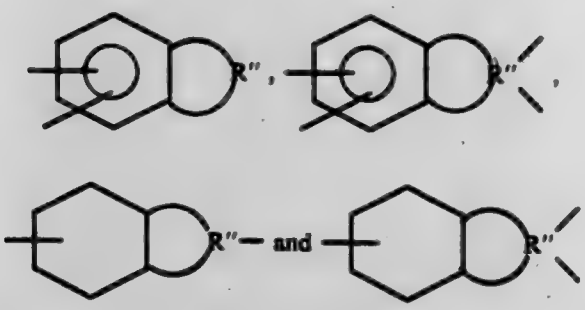


R^9=C_fH_{2f+1}, C_fH_{2f-1},

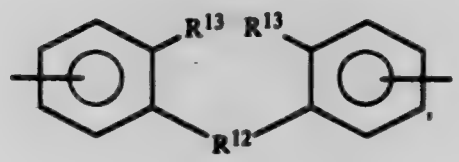


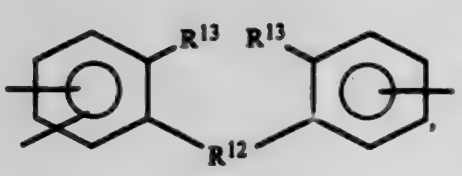
f=1-5, l=1-1000,
R also being an organic radical comprising at least one saturated or unsaturated hydrocarbon pentatomic cycle; a penta-

tomic heterocycle comprising at least one atom selected from the group consisting of nitrogen, sulfur and oxygen; a cyclic compound of boron and phosphorus or boron or phosphorus, an aromatic radical comprising halogen atoms connected directly to the aromatic fragment; a halogen-containing aliphatic radical of 2–1000 carbon atoms; an aromatic nitrile-containing radical with a nitrile group in meta position an amino or hydroxy group; an organic residue comprising at least one fragment selected from the group consisting of



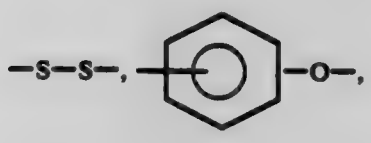
wherein R^{11} is an organic radical containing 3 to 8 atoms selected from the group consisting of carbon, nitrogen and sulfur: a radical of the structure:

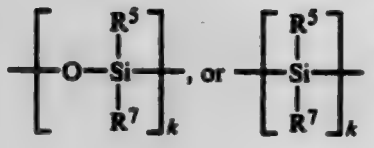




wherein

R^{12}=—NH—CO—NH—, —NH—CO—, —NH—CO—O—, —CH=N—, R^{13}=H, CN,





K=5–100, and

wherein R′ is an organic radical of 2–1000 carbon atoms; a radical of 2–1000 carbon atoms and including at least one of the elements silicon, fluorine, chlorine, bromine, nitrogen, phosphorus, boron, and oxygen, each of said elements being in an amount of 1 to 1000 atoms.

4,347,349

AROMATIC POLYESTER AND FILAMENTS

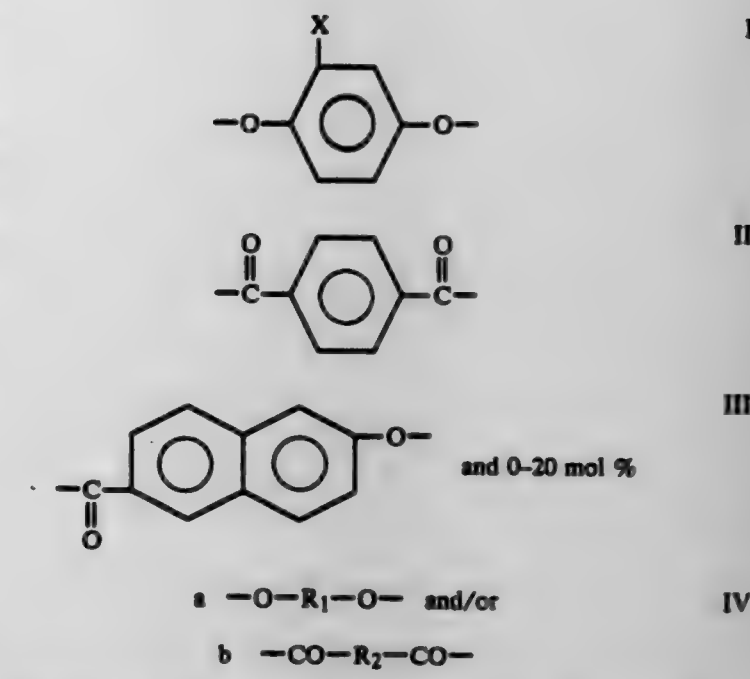
Roger K. Siemionko, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 28, 1980, Ser. No. 173,099

Int. Cl.³ C08G 63/06

U.S. Cl. 528—190 12 Claims

1. Polyesters of fiber-forming molecular weight consisting essentially of units having the following structural formulas:



and 0–20 mol %

wherein X is chloro- or methyl, and wherein unit 4a is a dioxy unit derived from hydroquinone, resorcinol, 2,5- or 2,6-dichlorohydroquinone, and unit IVb is isophthaloyl, in the proportions of about 75 to 95 mol % of Units I and II and about 5–25 mol % of Units III and IV of which at least 5 mol % is Unit III, the dioxy units and the dicarbonyl units in the polymer are substantially equimolar in quantity.

4,347,350

POLYESTER COMPOSITIONS CONTAINING RESIDUES OF DIHYDROXYALKOXY COUMARINS

Patrick J. Horner, Welwyn Garden City, and Robert B. Rashbrook, Hatfield, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 28, 1980, Ser. No. 210,755

Claims priority, application United Kingdom, Dec. 10, 1979, 7942481

Int. Cl.³ C08G 63/66

U.S. Cl. 528—190 7 Claims

1. A linear polyester which contains in its molecule esterification residues of di(hydroxyalkoxy)coumarins selected from the group consisting of 6,7-di(hydroxyalkoxy)-coumarin, 7,8-di-(hydroxyalkoxy)-coumarin, 5,7-di(hydroxyalkoxy)-coumarin, 4-methyl-6,7-di(hydroxyalkoxy)-coumarin, 4-methyl-7,8-di(hydroxyalkoxy)-coumarin and 4-methyl-5,7-di(hydroxyalkoxy)-coumarin, the amount of said residues being 0.05 to 10% by weight based on the total polymer.

4,347,351

LINEAR POLYESTERS FROM AROMATIC DICARBOXYLIC ACIDS AND CYCLIC ALKYLENE CARBONATES PREPARED USING SIX-MEMBERED AROMATIC NITROGEN-CONTAINING HETEROCYCLIC GROUPS

Daniel J. Swart, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

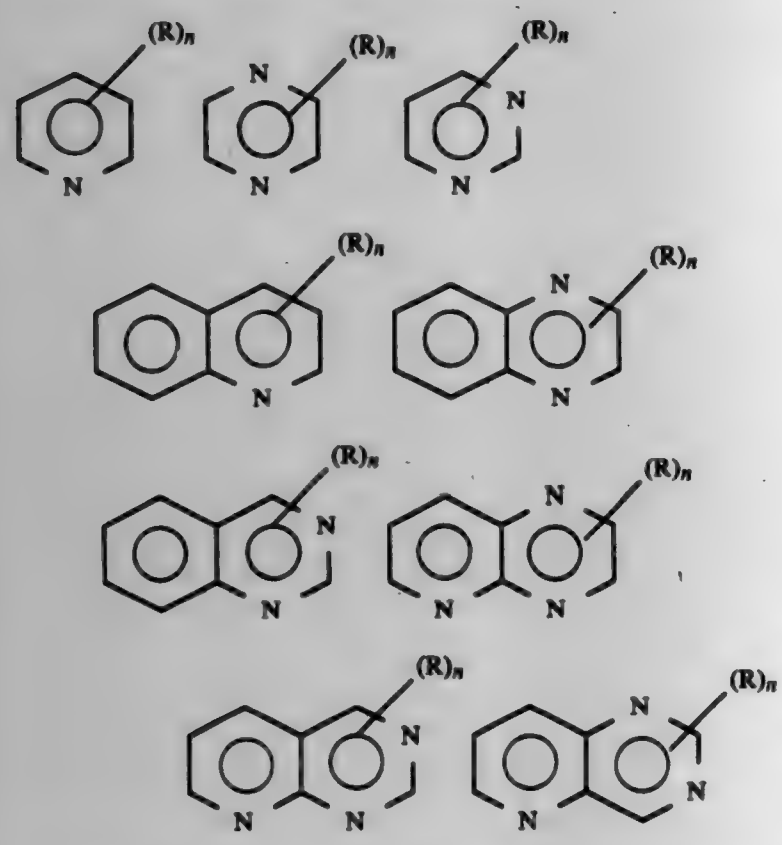
Continuation-in-part of Ser. No. 112,007, Jan. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 35,171, May 2, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,075

Int. Cl.³ C08G 63/62

U.S. Cl. 528—271 8 Claims

1. In the process for forming linear polyesters from an aromatic dicarboxylic acid and a cyclic alkylene carbonate, said process comprising reacting by contacting an aromatic dicarboxylic acid with a cyclic alkylene carbonate in a molar ratio of dicarboxylic acid to cyclic alkylene carbonate of from about 1:1 to about 1:4 at a temperature from about 145° C. to about 260° C. in the presence of a catalytic amount of a catalyst,

followed by polycondensation, the improvement wherein the catalyst comprises an organic compound containing at least one six-membered aromatic nitrogen-containing heterocyclic moiety selected from the group consisting of



wherein R is amino, phenyl, or a radical containing up to 4 carbons selected from alkyl, alkylamino, dialkylamino and alkoxyalkyl; and n is one or two.

4,347,352

NOVEL POLYMERIC COMPOUNDS, PROCESSES AND METHODS OF USE

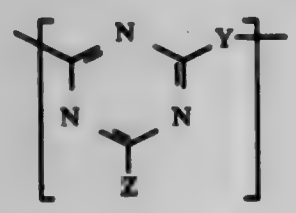
Eugene P. Wenseler, Sharonville, Ohio, assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 126,995, Mar. 3, 1980, Pat. No. 4,314,001. This application Apr. 15, 1981, Ser. No. 254,501

Int. Cl.³ C08G *73/06*; C08L *79/04*

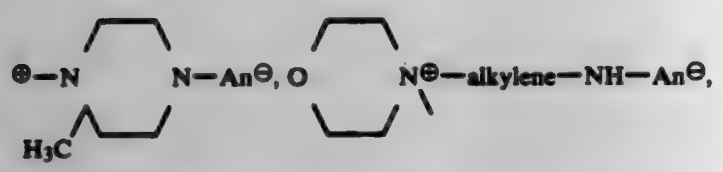
U.S. Cl. 528—423 **29 Claims**

1. A water-soluble polymeric quaternary ammonium compound consisting essentially of repeating units of the formula



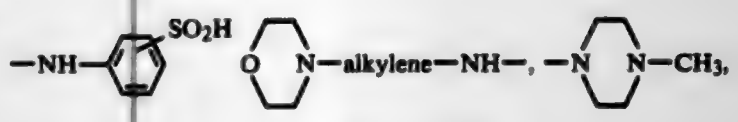
wherein:

Y represents a moiety selected from the group consisting of —N⊕$(CH_3)_2$-alkylene-NR- An⊖,



and —N⊕$(CH_3)_2$-alkylene-N⊕$(CH_3)_2$-2An⊖;

Z represents a moiety selected from the group consisting of -N(R^1)-alkylene[1]-N$(R^2)_2$, —N⊕$(R^1)_2R^3$ An⊖,



—NH-alkylene[1]-NR^4-alkylene[1]-NH_2

in which alkylene and alkylene[1] are each selected from the group consisting of —CH_2CH_2—, —$CH_2CH_2CH_2$—, and —$CH_2CH_2CH_2CH_2$—; R, R^1, R^2, and R^4 are each selected from the group consisting of hydrogen, non-tertiary C_1 to C_4 hydroxyalkyl and non-tertiary C_1 to C_4 alkyl; R^3 is a non-tertiary C_1 to C_{18} alkyl; and An⊖ is a monovalent anion.

4,347,353

METHOD FOR INHIBITING THE CORROSION-CAUSING TENDENCY AND COLORATION OF HALOGEN-CONTAINING OLEFIN RESIN BLENDS

Shigeo Miyata, Takamatsu, and Masataka Kuroda, Kagawa, both of Japan, assignors to Kyowa Chemical Industry, Co., Ltd., Tokyo, Japan

Division of Ser. No. 102,523, Dec. 11, 1979, Pat. No. 4,284,762. This application Apr. 22, 1981, Ser. No. 256,673

Claims priority, application Japan, Dec. 14, 1978, 53/153732

Int. Cl.³ C08K *3/22, 5/09, 5/42*

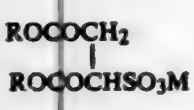
U.S. Cl. 528—485 **5 Claims**

1. In a method for inhibiting the corrosion-causing tendency and coloration of a blend containing at least two members selected from the group consisting of polyethylene, polypropylene, poly(1-butene), poly(4-methyl-1-pentene), an ethylene-propylene copolymer, and a copolymer of at least one alpha-olefin with a diene, said blend containing a halogen component, by incorporating about 0.01 to about 5 parts by weight of a hydrotalcite in the halogen component-containing blend, the improvement which comprises mixing the blend, containing a halogen component attributed to a polymerization catalyst and/or to post-halogenation, with a hydrotalcite of the formula

$$Mg_{1-x}Al_x(OH)_2A^{n-}_{x/n}\cdot mH_2O$$

wherein $O<x\leq 0.5$, m is a positive number, and A^{n-} represents an anion having a valence of n,

or with a product resulting from the surface-coating of said hydrotalcite with an anionic surface-active agent selected from the group consisting of an alkali metal salt of a fatty acid of the formula RCOOM in which R is an alkyl group having 3 to 40 carbon atoms and M represents an alkali metal atom, an alkali metal salt of an alkylsulfate of the formula $ROSO_3M$ in which R and M are as defined above, an alkali metal salt of an alkylsulfonate of the formula RSO_3M in which R and M are as defined above, an alkali metal salt of an alkylarylsulfonate of the formula R-aryl-SO_3M in which R and M are as defined above and aryl represents phenyl, naphthyl or tolyl, and an alkali metal salt of a sulfosuccinic ester of the formula



in which R and M are as defined above, said hydrotalcite having

(i) a BET specific surface area of not more than 30 m^2/g, and

(ii) an average secondary particle size of not more than 3 microns.

4,347,354

PREPARATION OF 1-N-[ω-AMINO-α-HYDROXYALKANOYL]AMINO-GLYCOSIDE POLYSILYLATED ANTIBIOTICS AND PRODUCTS OBTAINED THEREFROM

Martin J. Cron, Fayetteville; John G. Keil, Manlius; Jeng S. Lin, Clay; Mariano Ruggeri, Liverpool, and Derek Walker, Jamesville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 33,912, Apr. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 896,430, Apr. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 791,806, Apr. 28, 1977, abandoned. This application Oct. 1, 1980, Ser. No. 192,656

Int. Cl.³ C07H *15/22*

U.S. Cl. 536—10 30 Claims

28. Polysilylated 4'-deoxykanamycin A containing from 0 to 2 conventional non-silyl amino-blocking groups on amino groups other than the C-1 amino group.

4,347,355

INHIBITORS OF TRANSPEPTIDASE

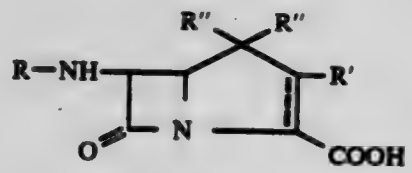
Daniel T. Chu, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 123,142, Feb. 21, 1980, abandoned. This application Dec. 1, 1980, Ser. No. 212,006

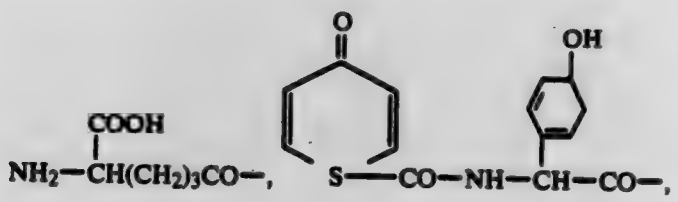
Int. Cl.³ C07D *487/04*

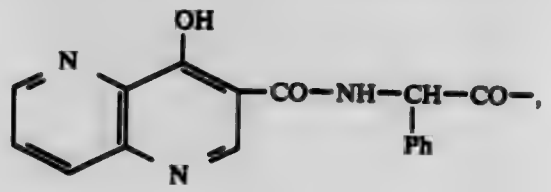
U.S. Cl. 542—420 3 Claims

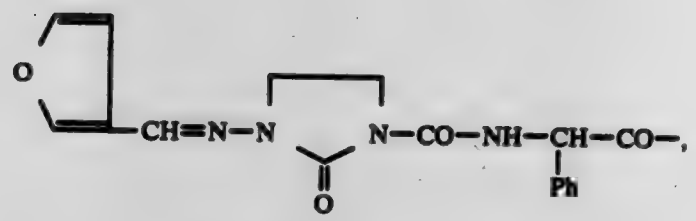
1. A compound of the formula

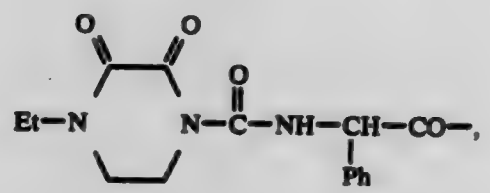


wherein R is hydrogen or acyl selected from the group consisting of phenacetyl, phenoxyacetyl, cyanoacetyl, thenylacetyl, p-hydroxyphenylmalonoyl, α-sulfophenacetyl, N-benzoylglycylphenylglycyl, a moiety of the formula

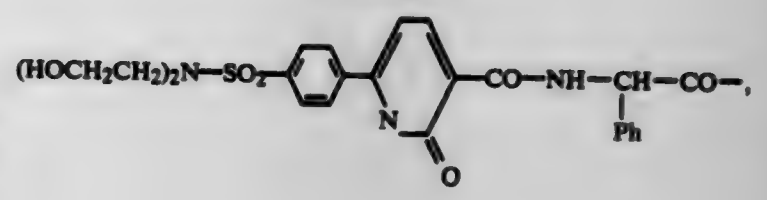


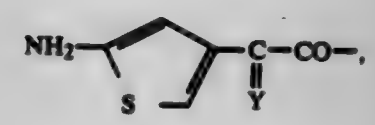






-continued





wherein Y is 0 or NOR", and a mercaptoacetyl of the formula R°SCH₂CO— wherein R° is phenyl, 4-pyridyl, 2-chloro-2-butenyl, allyl or n-butyl, R' is hydrogen, loweralkyl, loweralkoxyalkyl, loweralkoxy, loweralkylmercapto or phenylmercapto, each R" is loweralkyl, and the broken line represents an optional double bond, and pivaloxymethyl esters thereof.

4,347,356

NOVEL NITROGEN-CONTAINING MONOTERPENE DERIVATIVES

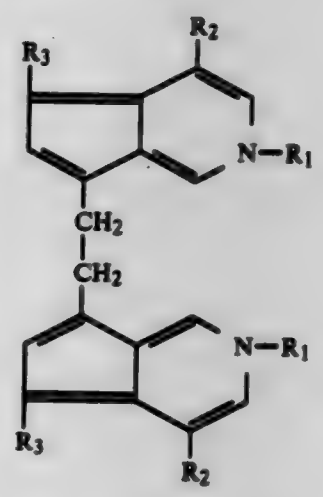
Ryousuke Touyama, Kobe; Hiroyuki Inouye, Kyoto; Tetsuro Shingu, Nishinomiya; Yoshio Takeda, Tokushima; Takeshi Ikumoto, Kobe; Hidetoshi Okuyama, Kobe, and Osamu Yamamoto, Kobe, all of Japan, assignors to Taito Co., Ltd., Tokyo, Japan

Division of Ser. No. 953,275, Oct. 20, 1978, Pat. No. 4,232,159. This application Mar. 31, 1980, Ser. No. 136,080

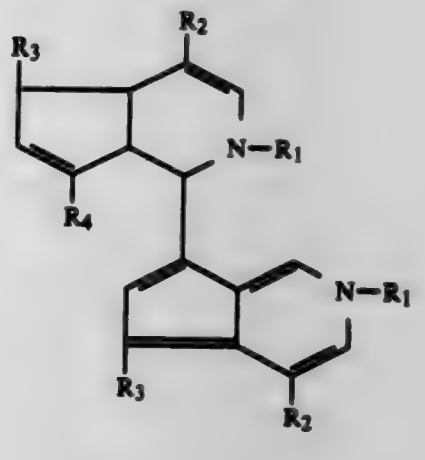
Int. Cl.³ C07D *401/06*

U.S. Cl. 542—430 5 Claims

1. Compounds of the formula:

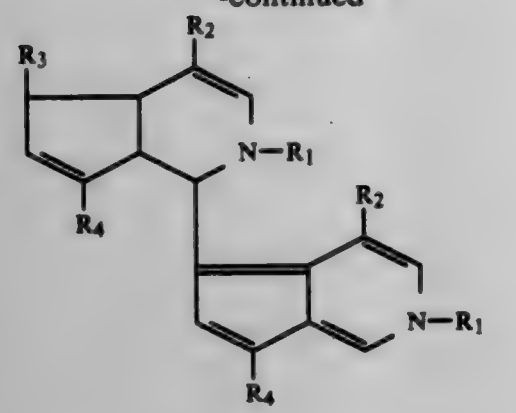


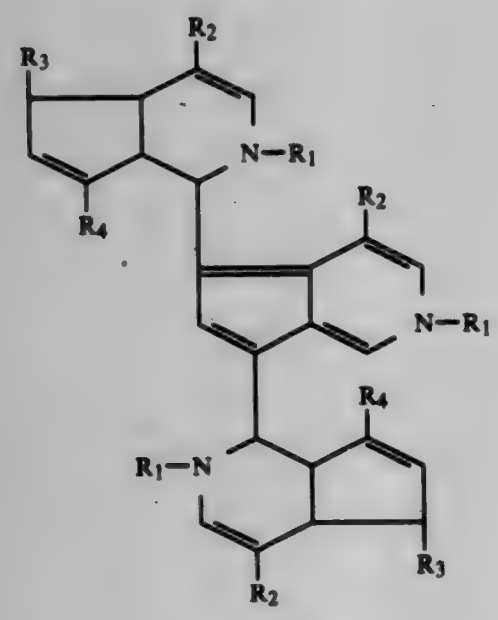
(6)

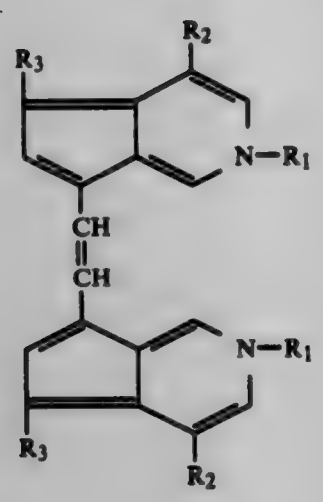


(7)

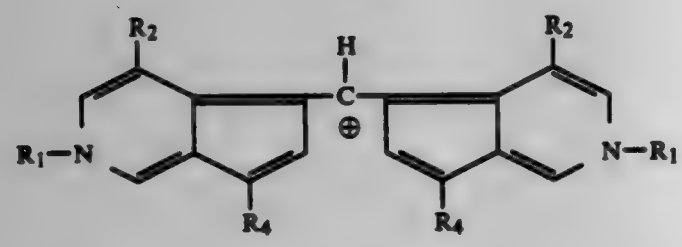
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(10)



(11)

wherein:

R_1 represents a lower alkyl group, phenyl, lower alkyl group containing carboxylic acid radical or a lower alkyl group containing a carboxylic acid ester radical,

R_2 represents —COOH or —COOR, wherein R represents a lower alkyl group,

R_3 represents hydrogen or a lower alkyl group, and

R_4 represents a lower alkyl group or $—CH_2OH$.

4,347,357

PROCESS FOR THE PREPARATION OF V-TRIAZOLE COMPOUNDS

Alfons Doriars, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

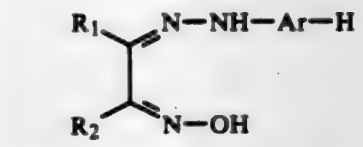
Filed Apr. 30, 1981, Ser. No. 259,307

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019521

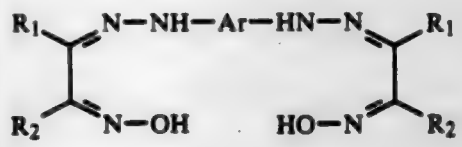
Int. Cl.³ C07D *55/02*

U.S. Cl. 542—462 2 Claims

1. In the cyclodehydration of an α-oximinohydrazone of the formula



or



(9)

in which

R_1 and R_2 each independently is an optionally substituted alkyl or aryl radical, and

Ar is an arylene radical,

to produce the corresponding 2-aryl-v-triazole, the improvement which consists essentially of effecting the cyclodehydration at 120° to 200° C. in a predominantly aqueous medium.

4,347,358

CEPHALOSPORIN INTERMEDIATES

Cornelis A. Bruynes, Koudekerk an der Rijn, Netherlands, assignor to Gist-Brocades N.V., Delft, Netherlands

Filed Feb. 29, 1980, Ser. No. 126,127

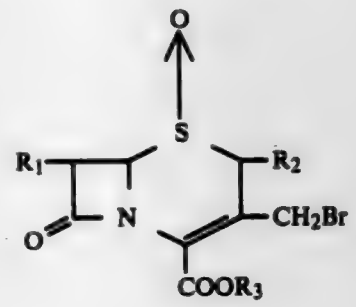
Claims priority, application Netherlands, Mar. 6, 1979, 7901774

The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.

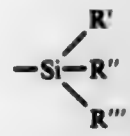
Int. Cl.³ C07D *501/20*

U.S. Cl. 544—016 14 Claims

1. Bromo-substituted deacetoxycephalosporins of the formula



wherein R_1 is selected from the group consisting of benzamido, formamido, phenylacetamido and phenoxyacetamido, R_2 is selected from the group consisting of hydrogen and bromine and R_3 is a silyl group of the formula



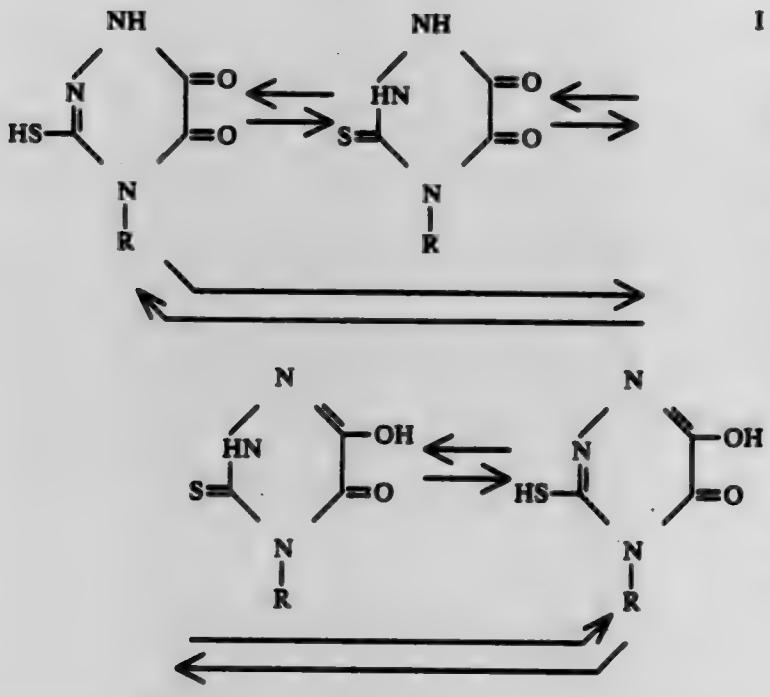
wherein R′, R″ and R‴ are individually selected from the group consisting of alkyl of 1 to 6 carbon atoms, a halogen-substituted alkyl of 1 to 6 carbon atoms and phenyl.

4,347,359
1,2,4-TRIAZINES

Daniel Farge; Pierre Le Roy, both of Thiais; Claude Moutonnier, Le Plessis Robinson, and Jean-Francois Peyronel, Palaiseau, all of France, assignors to Rhone-Poulenc Industries, France

Filed Jan. 15, 1981, Ser. No. 225,446
Claims priority, application France, Jan. 17, 1980, 80 00979; May 13, 1980, 80 10708
Int. Cl.³ C07D *253/06*
U.S. Cl. 544—182 12 Claims

1. A triazine of the formula:



I

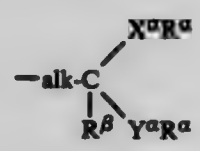
wherein R represents:

(a) 2,2-dimethyl-dioxolan-4-yl methyl or 2,2-dimethyldioxan-5-yl;

(b) C_2–C_4 alkyl substituted with a member selected from the group consisting of alkylsulphonylamino, sulphamoylamino, alkoxycarbonylamino, ureido, alkylureido, dialkylureido and substituted acylamino wherein the acyl group is substituted with hydroxy, amino, alkylamino, or dialkylamino;

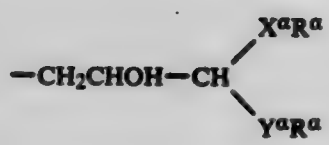
(c) C_2–C_5 alkyl substituted with alkoxyimino or hydroxyimino;

(d) a radical of the formula:



II

or



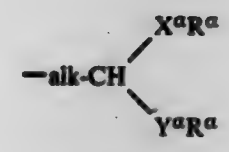
III

wherein alk represents C_1–C_4 alkylene, X^a and Y^a are identical and represent oxygen or sulphur atoms and R^a represents an alkyl radical, or X^a and Y^a are identical or different and represent oxygen or sulphur atoms and the radicals R^a together form an alkylene radical of 2 or 3 carbon atoms, and R^β represents C_1–C_3 alkyl;

(e) carbamoyloxyalkyl, alkylsulphinylalkyl, or alkylsulphonylalkyl in which the alkyl moiety bonded to the triazine grouping in formula I has 2 to 4 carbon atoms;

(f) phenylalkyl or alkylthioalkyl; or

(g) a radical of the formula:



IV

wherein alk, X^a, Y^a, and R^a are as defined previously, the alkyl and acyl moieties of radicals mentioned above are linear or branched and, unless otherwise specified, contain 1 to 4 carbon atoms, or

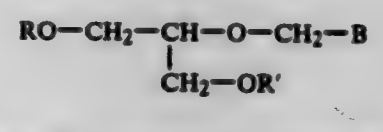
an alkali metal or alkaline earth metal salt thereof.

4,347,360
RING OPEN NUCLEOSIDE ANALOGUES

Kelvin K. Ogilvie, Candiac, Canada, assignor to ens BIO LOGICALS Inc., Toronto, Canada

Filed Sep. 16, 1980, Ser. No. 187,631
Int. Cl.³ C07D *473/18, 473/34*
U.S. Cl. 544—276 6 Claims

1. Compounds of the general formula:



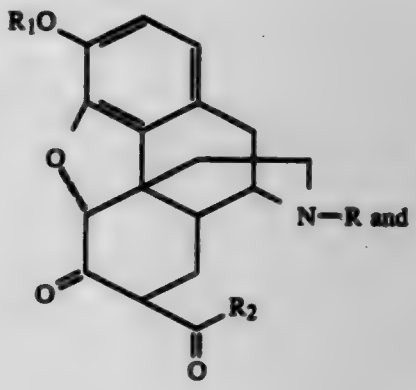
wherein R and R′ are independently selected from hydrogen, and lower alkyl-substituted silyl, and B represents an unsubstituted adenine or guanine group linked to the side group shown in formula (I) above at its 9-position.

4,347,361
4,5α-EPOXY-3-HYDROXY OR METHOXY-7-(1-HYDROXY-ALKYL OR 1-OXOALKYL)MORPHINAN-6-ONE COMPOUNDS

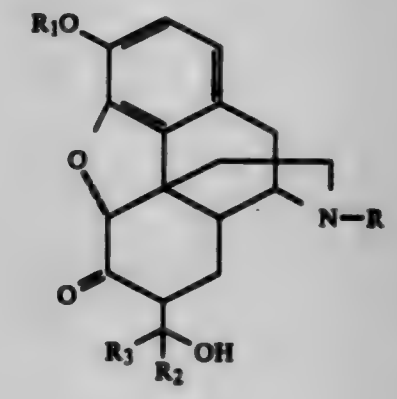
James E. Quick, Lexington; Raj K. Razdan, Belmont, and Haldean C. Dalzell, Weston, all of Mass., assignors to SISA, Incorporated, Cambridge, Mass.

Filed Dec. 10, 1980, Ser. No. 215,051
Int. Cl.³ C07D *489/02;* A61K *31/485*
U.S. Cl. 546—45 23 Claims

1. 4,5α-epoxy-3-hydroxy or methoxy-7-(1-hydroxyalkyl or 1-oxoalkyl)morphinan-6-one compounds characterized by the structural formulae:



N—R and



wherein R is methyl, cyclopropylmethyl, cyclobutylmethyl, propargyl, allyl, dimethylallyl, cis-chloroallyl or furfuryl; R_1 is H or methyl; R_2 is straight or branched chain alkyl of from 1 to 10 carbon atoms, phenyl or phenylalkyl in which the alkyl chain contains from 1 to 6 carbon atoms, and R_3 is a straight chain alkyl of 1 to 4 carbon atoms.

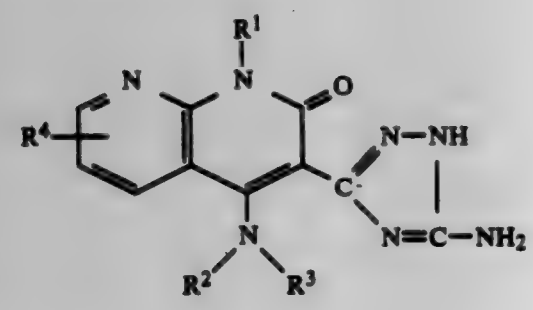
4,347,362

1-ALKYL-4-AMINO-3-(3-AMINOTRIAZOLO)-1,8 NAPHTHYRIDINE-2-ONES

Stanley C. Bell, Narberth, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Oct. 8, 1981, Ser. No. 309,630
Int. Cl.³ C07D *471/04*
U.S. Cl. 546—123 **2 Claims**

1. A compound of the formula:



in which

R^1 is hydrogen or alkyl of 1 to 6 carbon atoms; and

R^2 and R^3 are independently hydrogen or alkyl of 1 to 6 carbon atoms;

R^4 is hydrogen or alkyl of 1 to 6 carbon atoms;

or a pharmaceutically acceptable salt thereof.

4,347,363

PROCESS FOR PREPARING 1,2-DIHYDRO-6-METHYL-2-OXO-5-(PYRIDINYL)-NICOTINONITRILES

Baldev Singh, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Sep. 17, 1981, Ser. No. 303,178
Int. Cl.³ C07D *213/85*
U.S. Cl. 546—249 **3 Claims**

1. The process which comprises reacting pyridinylmethyl methyl ketone with ethoxymethylenemalononitrile in a lower-alkanol to produce 1,2-dihydro-6-methyl-2-oxo-5-(pyridinyl)-nicotinonitrile, where pyridinyl is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents.

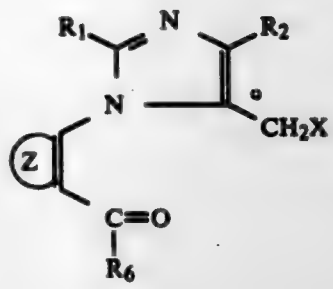
4,347,364

IMIDAZODIAZEPINES

Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 242,860
Int. Cl.³ C07D *233/66, 403/04, 409/04*
U.S. Cl. 546—256 **2 Claims**

1. A compound of the formula



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, amino lower alkyl, C_1 to C_7 acyloxy lower alkyl, phenyl, C_1 to C_7 alkoxy lower alkyl, halo lower alkyl, mono- or di- C_1 to C_7 alkyl or phenyl or chlorophenyl or tolyl substituted amino lower alkyl, pyridyl, tolyl alkyl and the groups



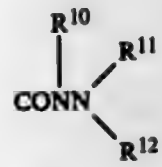
wherein R is hydrogen or lower alkyl; and COOR wherein R is lower alkyl; R_2 is selected from the group consisting of hydrogen, lower alkyl, C_1 to C_7 acyloxy lower alkyl, C_1 to C_7 alkoxy lower alkyl, chloro, bromo, iodo, mono- or di- C_1 to C_7 alkyl or phenyl or chlorophenyl or tolyl substituted amino lower alkyl, cyano, cyano lower alkyl, mono- or di- C_1 to C_7 alkyl or phenyl or chlorophenyl or tolyl substituted amino, the group —COOR where R is lower alkyl, the group



where R is hydrogen or lower alkyl; the group



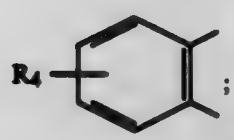
(where R, R'are lower alkyl, lower alkenyl, phenyl, chlorophenyl, tolyl or together R and R' with the nitrogen atom form a part of a 5- or 6-membered heterocyclic ring); the group



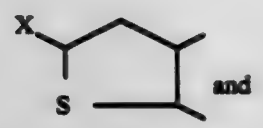
where R^{10}, R^{11}, R^{12} are lower alkyl, and the group $(CH_2)_nNR^{13}R^{14}$ where n is 1 to 4 and R^{13}, R^{14} are hydrogen or lower alkyl or R^{13}, R^{14} together with the nitrogen atom form a part of a 5- or 6-membered heterocyclic ring with limitation that where R^{10}, R^{11} or R^{12} is a basic side chain, then remaining substituents are hydrogen or lower alkyl; R_4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, mono- or di-C_1 to C_7 alkyl or phenyl or chlorophenyl or tolyl substituted amino, C_1 to C_7 alkoxy lower alkyl and lower alkanoyl; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo/nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl and X is a leaving group selected from the group consisting of halogen and alkyl or phenyl, chlorophenyl or tolyl sulfonate; and



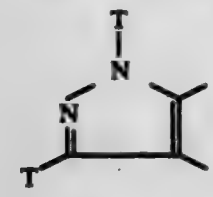
is selected from the group consisting of



wherein X is chlorine, bromine, iodine or hydrogen



wherein X is chlorine, bromine, iodine or hydrogen



wherein T is hydrogen or lower alkyl

4,347,365

IMIDAZODIAZEPINES

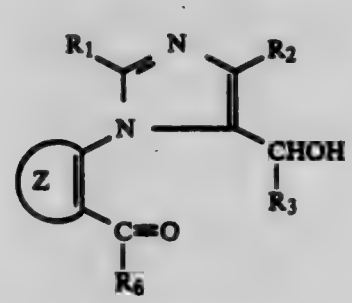
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1978, abandoned, which is a continuation of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 242,861

Int. Cl.³ C07D *233/66, 403/04, 409/04*

U.S. Cl. 546—256 1 Claim

1. A compound of the formula



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, C_1 to C_7 acyloxy lower alkyl, phenyl, C_1 to C_7 alkoxy lower alkyl, halo lower alkyl, amino lower alkyl, mono- or di- C_1 to C_7 alkyl or phenyl or chlorophenyl or tolyl substituted amino lower alkyl pyridyl, tolyl alkyl and the groups



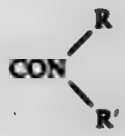
wherein R is hydrogen or lower alkyl and COOR wherein R is lower alkyl; R_2 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, C_1 to C_7 acyloxy lower alkyl, C_1 to C_7 alkoxy lower alkyl, halo lower alkyl, chloro, bromo, iodo, cyano, cyano lower alkyl, mono- or di- C_1 to C_7 alkyl or phenyl or chlorophenyl or tolyl substituted amino lower alkyl, amino lower alkyl, amino, mono- or di- C_1 to C_7 alkyl or phenyl or chlorophenyl or tolyl substituted amino, the group —COOR where R is hydrogen or lower alkyl, the group



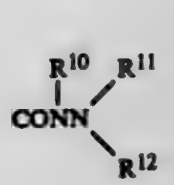
where R is hydrogen or lower alkyl, or the group



wherein R′ is hydrogen, lower alkyl, hydroxy, phenyl, C_1 to C_7 alkoxy, amino, mono or di-alkylamino and phenyl or tolyl amino and R is hydrogen or lower alkyl, the group



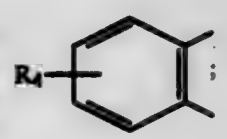
(where R, R′ are hydrogen, lower alkyl, phenyl or tolyl, hydroxy lower alkyl, lower alkenyl, or together R and R′ with the nitrogen atom may form a part of a 5- or 6-membered heterocyclic ring and the group $(CH_2)_nNRR'$ where R and R′ are hydrogen, lower alkyl, hydroxy lower alkyl, lower alkenyl, phenyl, tolyl or together R and R′ with the nitrogen atom form a part of a 5- or 6-membered heterocyclic ring); the group



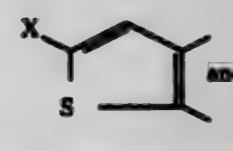
where R^{10}, R^{11}, R^{12} are hydrogen or lower alkyl, and the group $(CH_2)_nNR^{13}R^{14}$ where n is 1 to 4 and R^{13}, R^{14} are hydrogen or lower alkyl with limitation that where R^{10}, R^{11} or R^{12} is a basic side chain, then remaining substituents are hydrogen or lower alkyl; R_4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, hydroxy lower alkyl and lower alkanoyl; R_3 is selected from the group consisting of hydrogen and lower alkyl; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo/nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; and



is selected from the group consisting of

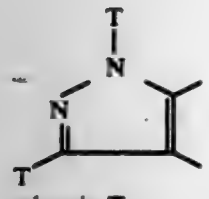


wherein X is chlorine bromine, iodine or hydrogen



wherein X is chlorine, bromine, iodine or hydrogen

-continued



wherein T is hydrogen or lower alkyl

and the pharmaceutically acceptable salts thereof.

4,347,366

2-(PYRIDYLTHIO)PYRIDINE-N-OXIDES

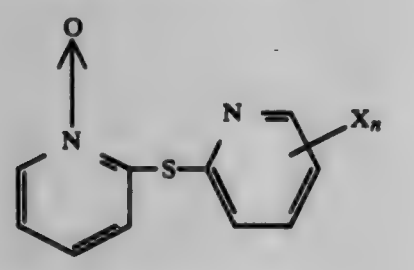
John J. D'Amico, Olivette, and David E. Schafer, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 963,487, Nov. 24, 1978, Pat. No. 4,239,527. This application May 19, 1980, Ser. No. 225,898

Int. Cl.[3] C07D *213/62;* A01N *43/40*

U.S. Cl. 546—261 3 Claims

1. A compound having the formula



wherein X is halogen and n is 0, 1, 2, 3 or 4.

4,347,367

3-SUBSTITUTED-6-(1'-HYDROXYETHYL)-7-OXO-1-AZABICYCLO[3.2.0]-HEPT-2-ENE-2-CARBOXYLIC ACID

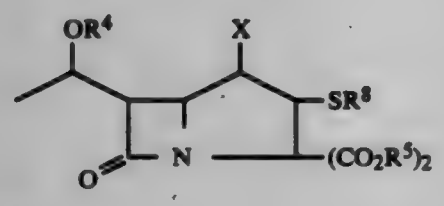
Burton G. Christensen, Scotch Plains; David B. R. Johnston, Warren, and Susan M. Schmitt, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 134,604, Mar. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 843,375, Oct. 19, 1977, abandoned. This application Nov. 14, 1980, Ser. No. 206,935

Int. Cl.[3] C07D *487/04*

U.S. Cl. 546—272 2 Claims

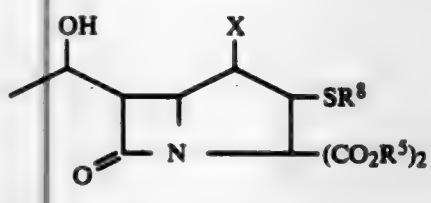
1. A compound selected from the group consisting of:



wherein:

R^4 is hydrogen; R^5 is a removable protecting group or a pharamceutically acceptable ester moiety; and R^8 is selected from the group consisting of hydrogen, substituted and unsubstituted: alkyl, alkenyl, and alkynyl, having from 1–10 carbon atoms; cycloalkyl, cycloalkylalkyl and alkylcycloalkyl, having 3–6 carbon atoms in the cycloalkyl ring and 1–6 carbon atoms in the alkyl moieties; phenyl, aralkyl, aralkenyl, and aralkynyl wherein the aryl moiety is phenyl and the linear chain has 1–6 carbon atoms; wherein the substituent or substituents relative to the above-named R^8 radicals are selected from the group consisting of: amino, mono-, di- and trialkylamino, hydroxyl, alkoxyl, mercapto, alkylthio, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano and carboxy; and wherein the alkyl moieties of the above-recited substituents have 1–6 carbon atoms; X is chloro or bromo.

2. A compound having the structure:



wherein:

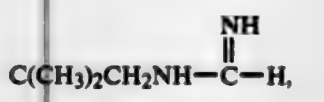
R^5 is a removable protecting group or a pharmaceutically acceptable ester moeity; and

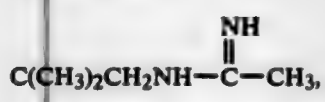
R^8 is selected from the group consisting of:

H,

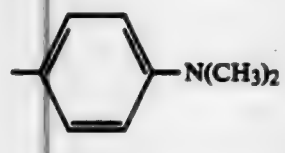
CH_3,

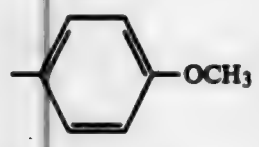
$C(CH_3)_2CH_2NH_2$,





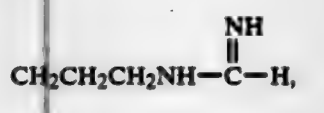


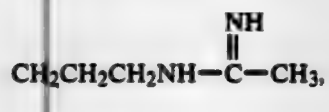




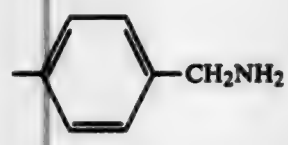
$CH_2CH_2CH_2NH_2$,

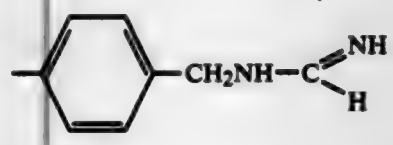
$CH_2CH(CH_3)NH_2$,

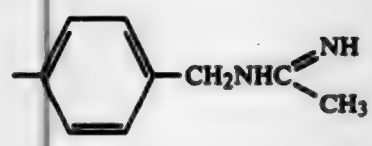




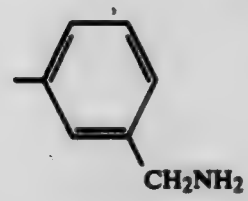
$CH_2CH_2NH_2$

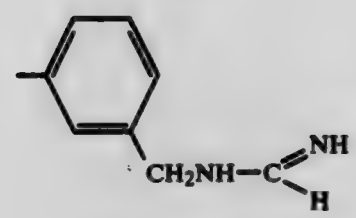


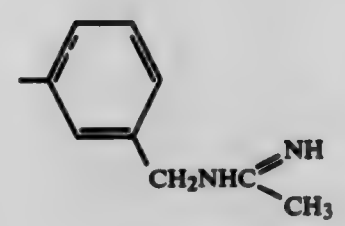


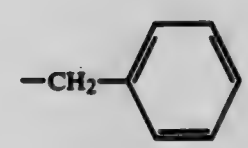


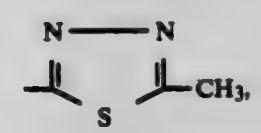
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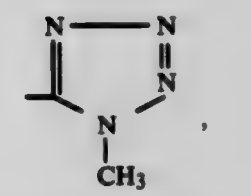








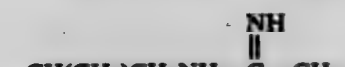




$CH(CH_3)CH_2NH_2$,



$CH(CH_3)CH_2NH-C(=NH)-H$, or



$CH(CH_3)CH_2NH-C(=NH)-CH_3$.

4,347,368

3-SUBSTITUTED-6-SUBSTITUTED-7-OXO-1-AZABICYCLO[3.2.0]HEPT-2-ENE-2-CARBOXYLIC ACID

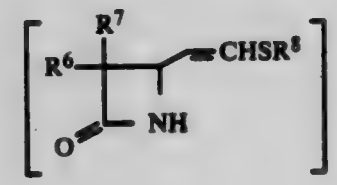
Burton G. Christensen, Scotch Plains; David B. R. Johnston, Warren, and Susan M. Schmitt, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 134,381, Mar. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 933,681, Aug. 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 843,378, Oct. 19, 1977, abandoned. This application Nov. 14, 1980, Ser. No. 207,042

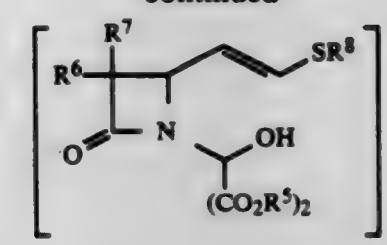
Int. Cl.³ C07D *487/04*

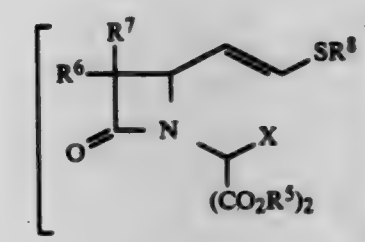
U.S. Cl. 546—272 2 Claims

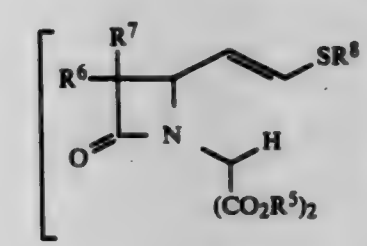
1. A compound selected from the group consisting of:

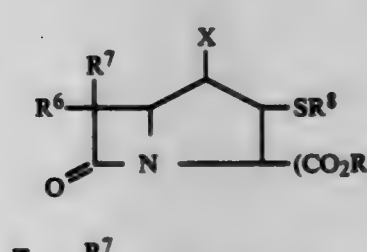


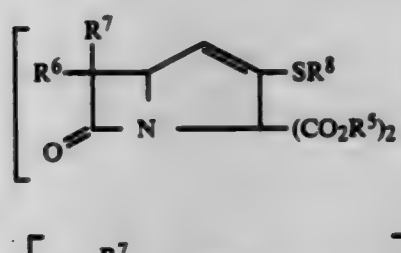
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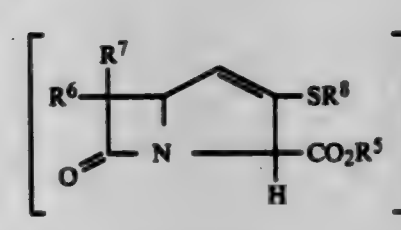






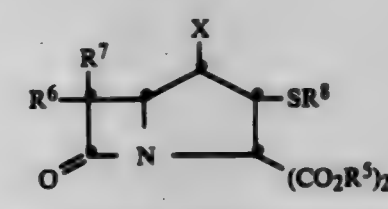






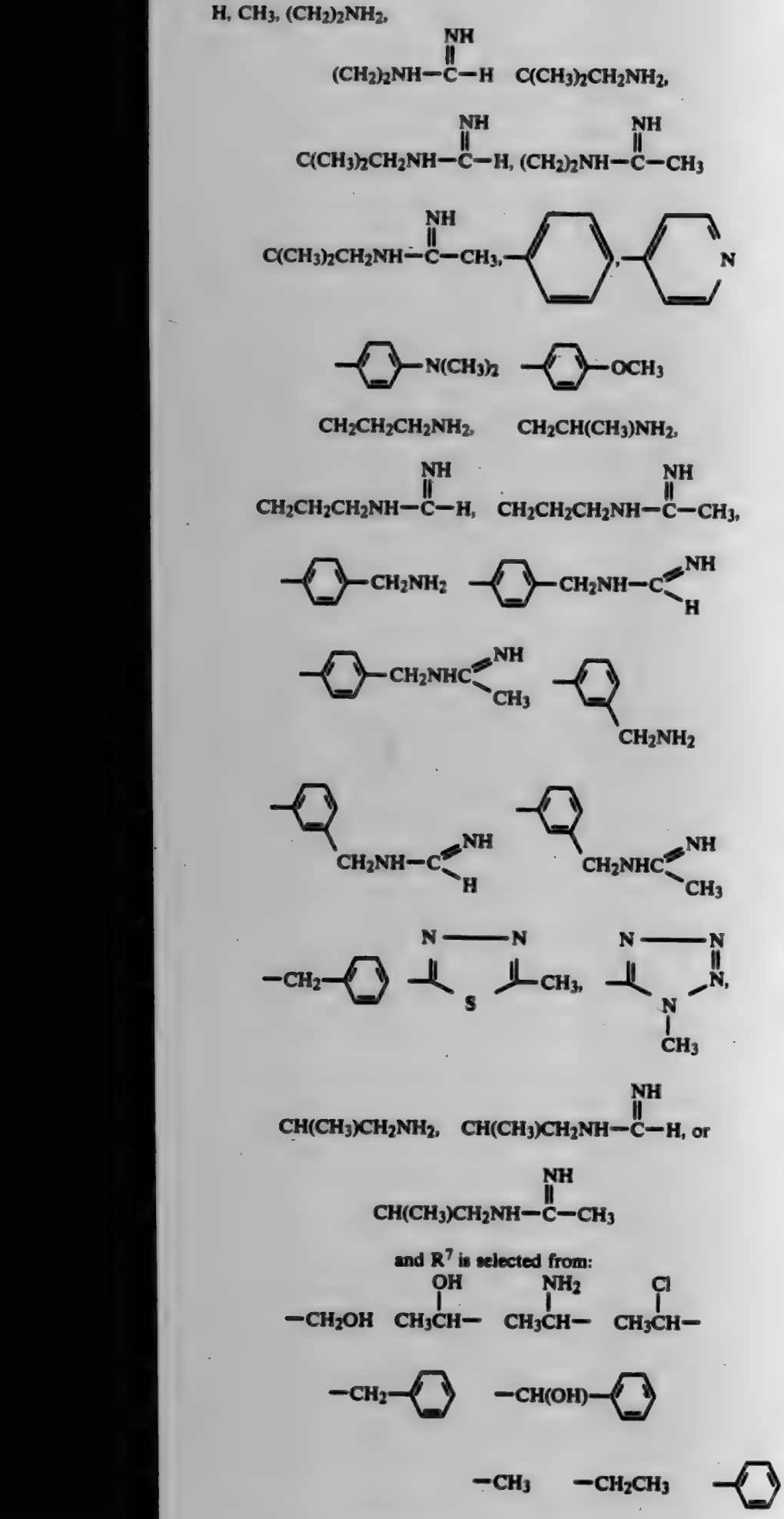
wherein R^5 is a removable protecting group or a pharmaceutically acceptable ester moiety; and R^6, R^7, and R^8 are independently selected from the group consisting of hydrogen, substituted and unsubstituted: alkyl, alkenyl, and alkynyl, having from 1–10 carbon atoms; cycloalkyl, cycloalkylalkyl, and alkylcycloalkyl, having 3–6 carbon atoms in the cycloalkyl ring and 1–6 carbon atoms in the alkyl moieties; phenyl, aralkyl, aralkenyl, and aralkynyl wherein the aryl moiety is phenyl and the linear chain has 1–6 carbon atoms; wherein the substituent or substituents relative to the above-named radicals are selected from the group consisting of: amino, mono-, di- and trialkylamino, hydroxyl, alkoxyl, mercapto, alkylthio, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano and carboxy; and wherein the alkyl moieties of the above-recited substituents have 1–6 carbon atoms; when R^7/R^6 is hydrogen, R^6/R^7 is not 1-hydroxyethyl when $-SR^8$ is $-SCH_2CH_2NH_2$; X is chloro or bromo.

2. A compound having the structure:



wherein R^5 is a removable protecting group or a pharmaceuti-

cally acceptable ester moiety R^6 is hydrogen or methyl and R^8 is selected from the group consisting of:



when R^7/R^6 is hydrogen, R^6/R^7 is not 1-hydroxyethyl when $-SR^8$ is $-SCH_2CH_2NH_2$.

4,347,369

8-HYDROXY-HEXAHYDRONAPHTH[1',2':4,-5]IMIDAZO[2,1-b]THIAZOLE AND ITS DERIVATIVES

Takeshi Hara, Hachioji, and Yasutaka Kayama, Hino, both of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP79/00316, § 371 Date Aug. 15, 1980, § 102(e) Date Aug. 15, 1980, PCT Pub. No. WO80/01275, PCT Pub. Date Jun. 26, 1980

PCT Filed Dec. 12, 1979, Ser. No. 202,383

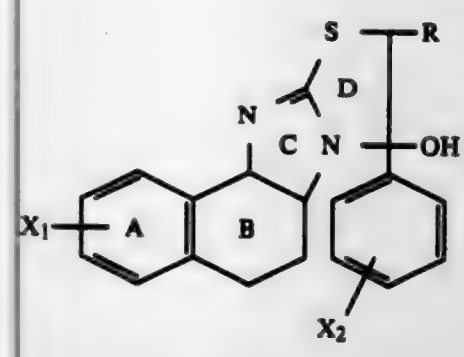
Claims priority, application Japan, Dec. 15, 1978, 53-154108

Int. Cl.[3] A61K *31/425;* C07D *513/04*

U.S. Cl. 548—149

3 Claims

1. Hexahydronaphth[1',2':4,5]imidazo[2,1-b]thiazoles of formula [I] and acid adducts thereof with an inorganic or organic acid



[I]

where X_1 and X_2 stand for hydrogen and halogen atoms; R represents a hydrogen atom, lower alkyl of 1 to 4 carbon atoms or carboxyl-substituted low alkyl given as $-(CH_2)_nCOOH$ where n is an integral number of 1 to 3; A, B, C and D symbolize the rings respectively, and the configuration of rings B and C is trans.

4,347,370

GUANIDINE DERIVATIVES OF IMIDAZOLES AND THIAZOLES

David J. Gilman, Macclesfield; James M. Wardleworth, Wilmslow, both of England, and Tobias O. Yellin, Wallingford, Pa., assignors to Imperial Chemical Industries Ltd., London, England and ICI Americas Inc., Wilmington, Del.

Continuation of Ser. No. 65,802, Aug. 13, 1979, Pat. No. 4,262,126, which is a continuation of Ser. No. 897,912, Apr. 19, 1978, Pat. No. 4,165,378. This application Jul. 25, 1980, Ser. No. 172,302

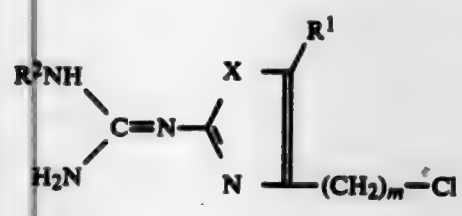
Claims priority, application United Kingdom, Apr. 20, 1977, 16389/77

Int. Cl.[3] C07D *277/40, 263/48*

U.S. Cl. 548—193

6 Claims

1. A guanidine compound of the following formula (XIX):



XIX

wherein

X is a sulphur atom or an NH radical;

R^1 is a hydrogen or halogen atom or an alkyl radical of 1 to 6 carbon atoms;

R^2 is a hydrogen atom, an alkyl radical of 1 to 10 carbon atoms, an alkanoyl radical of 1 to 6 carbon atoms or an aroyl radical of 7 to 11 carbon atoms; and

m is 1 to 4.

4,347,371

DISULFIDE COMPOUNDS

Jun-ichi Iwao, Takarazuka; Masayuki Oya, Ibaraki, and Tadashi Iso, Tondabayashi, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

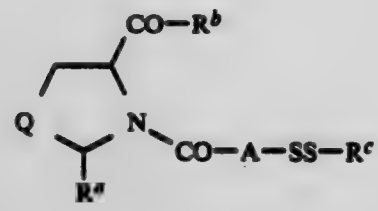
Filed Dec. 18, 1979, Ser. No. 104,970

Claims priority, application Japan, Dec. 30, 1978, 53-163964; Jan. 29, 1979, 54-9392; Mar. 17, 1979, 54-31334; Jun. 26, 1979, 54-81043; Jul. 3, 1979, 54-84827

Int. Cl.³ C07D *277/02*

U.S. Cl. 548—201 20 Claims

1. A compound of the formula



wherein

Q is sulfur;

R^a is R^1, R^7, or R^{10};

R^b is R^2, R^8, or R^{11};

R^c is R^3, R^9, or R^{12};

and when

R^a is R^1, R^b is R^2, and R^c is R^3; or

R^a is R^7, R^b is R^8, and R^c is R^9; or

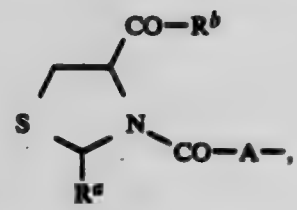
R^a is R^{10}, R^b is R^{11}, and R^c is R^{12}

A is alkylene having 1 to 3 carbon atoms;

R^1 is lower alkanoylmercapto-lower alkyl, benzoylmercapto-lower alkyl, alkyl having 8 to 20 carbon atoms, alkenyl having 2 to 20 carbon atoms, cycloalkyl, phenyl, furyl, thienyl, pyridyl, naphthyl, substituted cycloalkyl, substituted aralkyl, substituted phenyl, substituted furyl, substituted thienyl, substituted pyridyl or substituted napthhthyl wherein the substituents are 1 to 3 groups independently selected from lower alkyl, hydroxy, lower alkoxy, lower alkylenedioxy, lower alkanoyloxy, benzoyloxy, benzyloxycarbonyloxy, lower alkanoylmercapto, benzoylmercapto, halogen, nitro, amino, lower alkylamino, lower alkanoylamino, benzoylamino, benzyloxycarbonylamino, carboxy, sulfamoyl and lower alkylaminosulfonyl;

R^2 is hydroxy, lower alkoxy, amino, phenoxy, substituted lower alkoxy wherein the substituent is hydroxy, succinimido, maleimido, phthalimido or lower alkanoyloxy or substituted phenoxy wherein the substituent is hydroxy, lower alkoxy or halogen;

R^3 is alkyl having 1 to 10 carbon atoms, phenyl, lower alkenyl, phenylloweralkyl, tetrahydrofuryl-lower alkyl, R^{19},



substituted lower alkyl or substituted phenyl wherein the substituents are 1 to 2 groups independently selected from lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, benzoyloxy, benzyloxycarbonyloxy, amino, lower alkylamino, lower alkanoylamino, benzoylamino, benzyloxycarbonylamino, carboxy and carbamoyl;

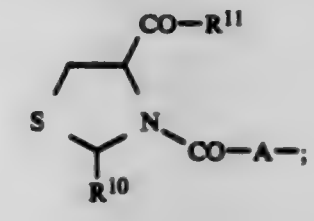
R^7 and R^{10} each is hydrogen or lower alkyl;

R^8 is hydroxy or lower alkoxy;

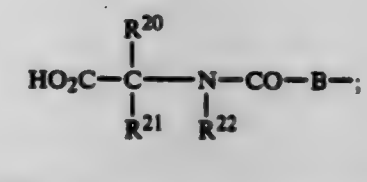
R^9 is alkyl having 1 to 10 carbon atoms, lower alkenyl, tetrahydrofuryl-lower alkyl, phenyl, aralkyl, R^{19}, substituted lower alkyl or substituted phenyl wherein the substituents are 1 to 2 groups independently selected from lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, benzoyloxy, benzyloxycarbonyloxy, amino, lower alkylamino, lower alkanoylamino, benzoylamino, benzyloxycarbonylamino, carboxy and carbamoyl;

R^{11} is amino, phenoxy or substituted lower alkoxy wherein the substituent is hydroxy, succinimido, maleimido, phthalimido or lower alkanoyloxy;

R^{12} is alkyl having 1 to 10 carbon atoms, lower alkenyl, tetrahydrofuryl-lower alkyl or



R^{19} is



B is lower alkylene;

R^{20} and R^{22} each is hydrogen or lower alkyl;

R^{21} is hydrogen, lower alkyl lower alkanoylmercapto-lower alkyl, or benzoylmercapto-lower alkyl;

wherein the terms lower alkyl, lower alkoxy, lower alkenyl, lower alkylene, and lower alkanoyl refer to groups containing from 1 to 7 carbon atoms, and the cycloalkyl groups are cyclohexyl groups.

4,347,372

BENZOXAZOLYL-GLYOXYLONITRILE-2-OXIME ETHER DERIVATIVES

Werner Föry; Basel; Haukur Kristinsson, Bottmingen; and Henry Szczepanski, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Henry Szczepanski, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

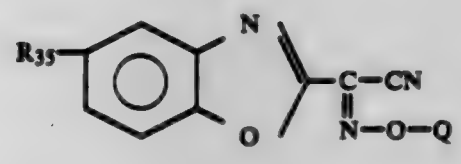
Filed Aug. 28, 1979, Ser. No. 70,288

Claims priority, application Switzerland, Sep. 1, 1978, 9255/78

Int. Cl.³ C07D *263/58*; A01N *43/76*

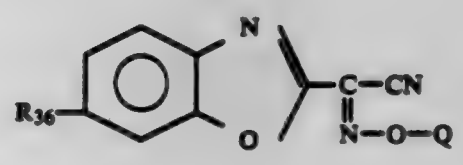
U.S. Cl. 548—217 4 Claims

1. A compound of the formula



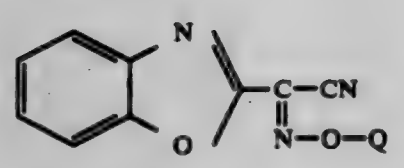
wherein R_{35} is methyl, tert.butyl or chloro, and Q is hydrogen, cyanomethyl, methallyl or $—CON(CH_3)_2$.

3. A compound of the formula



wherein R_{36} is methyl or nitro, and Q is hydrogen, cyanomethyl, allyl, propargyl or $—CON(CH_3)_2$.

4. A compound of the formula



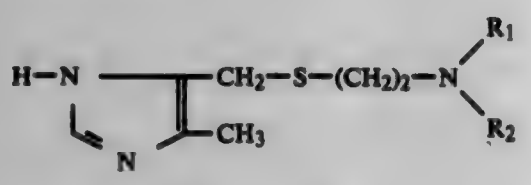
wherein Q is hydrogen; methyl; cyanomethyl; propargyl; benzyl; alkylcarbonyl in which the alkyl group has from 1 to 4 carbon atoms; chloromethylcarbonyl; alkoxycarbonyl in which the alkyl group has from 1 to 4 carbon atoms; ethylthiocarbonyl; alkenylcarbonyl in which the alkenyl group has 2 or 3 carbon atoms; phenylcarbonyl mono-substituted by methyl, methoxy, or nitro, or mono- or di-substituted by chlorine; N-methylcarbamoyl; N-chloromethylcarbamoyl; N-(2'-chloroethyl)-carbamoyl; N-dichlorophenylcarbamoyl; N-allylcarbamoyl; N,N-dimethylcarbamoyl; N-methyl-N-methoxycarbamoyl; 2-furanoyl; or methylsulfonyl.

4,347,373
DERIVATIVES OF 4-METHYL-5-[(2-AMINOETHYL)-THIOMETHYL]-IMIDAZOLE

Franco Turconi, Via S. Dalmazio 14, 21047 Saronno (Varese), Italy

Filed Mar. 9, 1981, Ser. No. 241,563
Claims priority, application Italy, Mar. 18, 1980, 20734 A/80
Int. Cl.[3] C07D *233/64, 403/12, 409/12*
U.S. Cl. 548—336 10 Claims

1. A derivative of 4-methyl-5-[(2-aminoethyl)-thiomethyl]-imidazole of the formula:



wherein R_1 is —H, —CH_3 or —C_2H_5, wherein R_2 is an acylic radical of an antiinflammatory acid selected from the group consisting of indomethacin, diflunisal, flurbiprofen, indoprofen, 4-diphenylyl-ethyl-acetic acid, ibuprofen, naproxen, suprofen, ketoprofen and salicylic acid and wherein R_1 can equal R_2, or a physiologically acceptable salt thereof.

4,347,374
ACID ADDITION SALTS OF N-TRITYL-α-FLUOROMETHYLHISTIDINE ENANTIOMER DERIVATIVES

Janos Kollonitsch, Westfield; Leroy M. Perkins, Metuchen; George A. Doldouras, Fanwood, and Stephen Marburg, Metuchen, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 21, 1980, Ser. No. 170,398
Int. Cl.[3] C07D *233/64*
U.S. Cl. 548—344 3 Claims

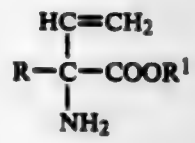
1. (S) (—)-N_{im}-trityl-α-fluoromethylhistidine methyl ester.d-α-bromocamphor-π-sulfonic acid salt.

4,347,375
PROCESS FOR PREPARING AMINO ACIDS AND ESTERS

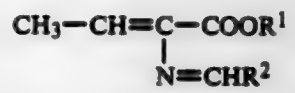
Arthur A. Patchett, Westfield, N.J., and William J. Greenlee, New York, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 64,348, Aug. 6, 1979, Pat. No. 4,275,220, which is a continuation of Ser. No. 927,209, Jul. 24, 1978, abandoned. This application Dec. 3, 1980, Ser. No. 212,383
Int. Cl.[3] C07D *233/64; C07C 101/30*
U.S. Cl. 548—344 7 Claims

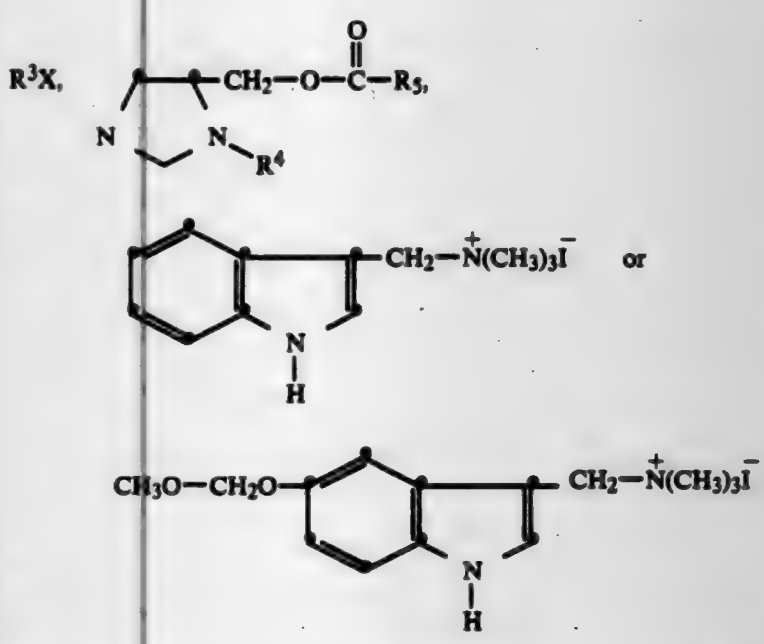
1. A process for preparing compounds having the formula:



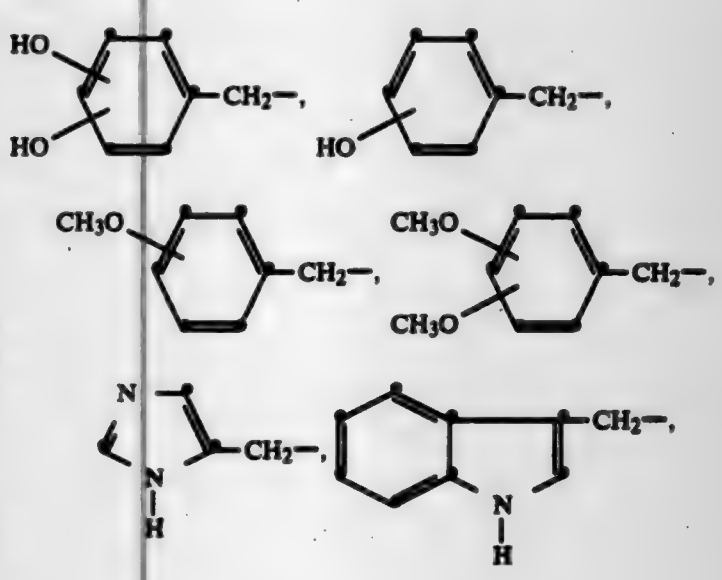
which comprises (a) treating a compound of the formula:



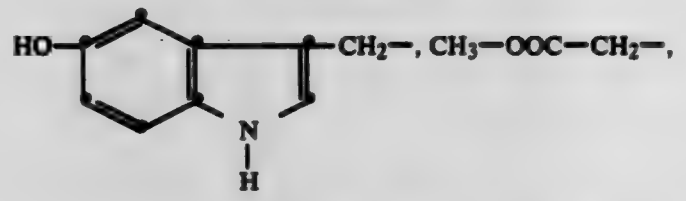
with a strong amine base, (b) reacting the product from (a) with an alkylating agent selected from the group consisting of:



and (c) hydrolyzing the product from (b), wherein R is alkyl, alkenyl or substituted alkyl selected from a group consisting of:

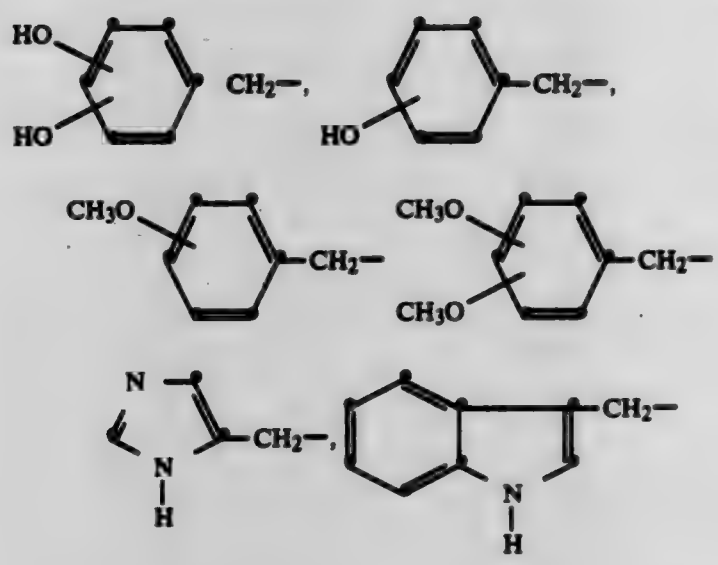


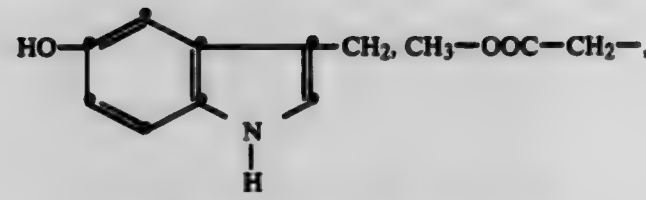
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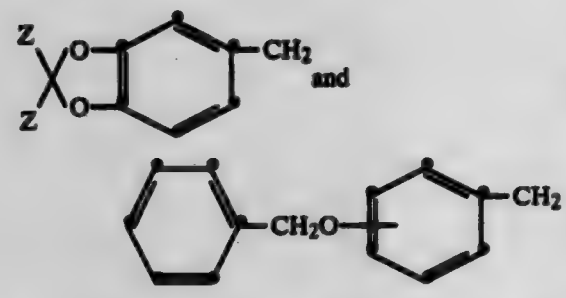
HOOC—CH_2— and H_2N—CH_2—CH_2—CH_2,

R^1 is lower alkyl, R^2 is the residue of an aldehyde R^2CHO having no α-hydrogen where R^2 is a phenyl or substituted phenyl group wherein the substituents are Cl, Br, I, C_1–C_3 alkyl or NO_2, R^3 is alkyl, alkenyl substituted alkyl selected from the group consisting of:





HOOC—CH_2—, H_2N—CH_2—CH_2—CH_2—,



wherein Z is H, lower alkyl, phenyl or substituted phenyl, R^4 is alkyl or aryl sulfonyl wherein said aryl-sulfonyl is p-toluenesulfonyl, benzenesulfonyl, nitrophenylsulfonyl or chlorophenyl sulfonyl, and R^5 is alkyl, aryl or alkaryl and X is Cl, Br or I.

4,347,376

METHOD OF MAKING AND POLYMERIZING PERFLUOROALKYLENE ACETYLENE COMPOUNDS

Kurt Baum, Pasadena; Clifford D. Bedford, Mountain View, and Ronald O. Hunadi, Los Angeles, all of Calif., assignors to Fluorchem Inc., Azusa, Calif.

Filed Dec. 24, 1980, Ser. No. 219,938
Int. Cl.³ C07F 7/08
U.S. Cl. 556—466 6 Claims

1. A method of preparing a fluorinated alkylene compound comprising the steps of:

carrying out the addition reaction of a perfluoroalkyl iodide having the formula $R(CF_2)_nI$, wherein R is —I or —CF_3 and n is a whole number from 5 to about 20, inclusive, and $HC{\equiv}CSi(CH_3)_3$ to form $R'(CF_2)_n$—$CH{=}CISi(CH_3)_3$, wherein R' is $(CH_3)_3SiIC{=}CH$— or —CF_3; and

subjecting the $R'(CF_2)_n$—$CH{=}CISi(CH_3)_3$ to dehydrohalogenation with a suitable base to obtain $R''(CF_2)_n$—$C{\equiv}CSi(CH_3)_3$, wherein R'' is —CF_3 or $(CH_3)_3SiC{\equiv}C$—.

4,347,377

PROCESS FOR THE PREPARATION OF POLYHALOGENPHENYL CARBAMATES

Istvan Bitter; Rudolf Soos; Geza Toth; Laszlo Töke, and Gabor Szabo, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed Sep. 19, 1980, Ser. No. 188,966
Claims priority, application Hungary, Sep. 14, 1979, CI 1963
Int. Cl.³ C07C 125/067
U.S. Cl. 560—32 8 Claims

1. A process for the preparation of a polyhalogenphenyl carbamate of the formula

$$R^2\text{-}OCONHR^1 \quad (I)$$

wherein

R^1 is aralkyl or aryl in which the aromatic rings can be substituted: and

R^2 is phenyl substituted with three, four or five halogens, which comprises

reacting a compound of the formula

$$R^1\text{-}N{=}CCl_2 \quad (II)$$

with a polyhalogen phenolate of the formula

$$R^2\text{-}OM \quad (III)$$

wherein

M is an alkali metal, and subsequently hydrolyzing a compound of the formula

$$(R^2\text{-}O)_2C{=}NR' \quad (IV)$$

in an acidic medium, with or without isolation.

4,347,378

ANTIMICROBIAL GLYCOLIC ACID DERIVATIVES

August V. Bailey, New Orleans; Gordon J. Boudreaux, Metairie, and Gene Sumrell, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 235,812, Feb. 19, 1981. This application Oct. 5, 1981, Ser. No. 308,350
Int. Cl.³ C07C 69/76
U.S. Cl. 560—105 2 Claims

1. A diester of glycolic acid having antimicrobial activity and the general structure:

$$C_6H_5CH_2CH_2COOCH_2COOR$$

where R is an alkyl group of 1 to 4 carbon atoms and may be branched or unbranched.

4,347,379

SYNTHESIS OF ALPHA-ALKOXYCARBOXYLIC ACIDS

John T. Lai, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 10, 1980, Ser. No. 129,000
Int. Cl.³ C07C 51/00
U.S. Cl. 562—495 7 Claims

1. A method for preparing an alpha-alkoxycarboxylic acid, or alpha-thioalkoxycarboxylic acid, comprising reacting an organic compound selected from the group consisting of alcohols, thioalcohols, phenols and thio-phenols with a cycloalka-

none, dialkylketone or aralkylketone in the presence of (i) a haloform, (ii) alkali metal hydroxide, and (iii) a phase transfer catalyst selected from the group consisting of tertiary and quaternary compounds of Group VA and Group VIA elements, and, a polyether, said phase transfer catalyst being present in an amount sufficient to form a salt of said alpha-alkoxycarboxylic acid or alpha-thioalkoxycarboxylic acid; forming said alpha-alkoxycarboxylic acid or alpha-thioalkoxycarboxylic acid by acidifying said salt; and, recovering said alpha-alkoxycarboxylic acid or alpha-thioalkoxycarboxylic acid.

2. The method of claim 1 including, in addition, de-alkoxylating said alpha-alkoxycarboxylic acid or alpha-thioalkoxycarboxylic acid; and, recovering an alpha-substituted alpha-beta monoolefinically unsaturated carboxylic acid which optionally is also beta-substituted.

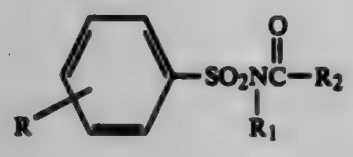
4,347,380

N-ACYLSULFONAMIDE HERBICIDAL ANTIDOTES

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 31,906, Apr. 20, 1979, Pat. No. 4,266,078.
This application Nov. 21, 1980, Ser. No. 208,912
Int. Cl.³ C07C *143/82*
U.S. Cl. 564—91 3 Claims

1. A compound of the formula



in which

R is methyl or chloro;

R_1 is selected from the group consisting of hydrogen and a metal ion;

R_2 is alkoxyalkyl having 2-5 carbon atoms.

4,347,381

METHOD OF TREATING LONG CHAIN ALKYL AMINES OR PRODUCTS DERIVED THEREFROM

Melvin E. Tuvell, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jan. 24, 1978, Ser. No. 871,811
Int. Cl.³ C07C *85/26*
U.S. Cl. 564—2 7 Claims

1. A process of treating pink colored amine products derived from long chain alkyl amines or pink colored long chain alkyl amines to eliminate the pink color in said amine products or said amines, comprising the step of reacting with said amine products or said amines a color eliminating effective amount of hydrogen peroxide at a temperature of at least about 30° to about 60° C. for a period of at least about 5 minutes to about 30 minutes.

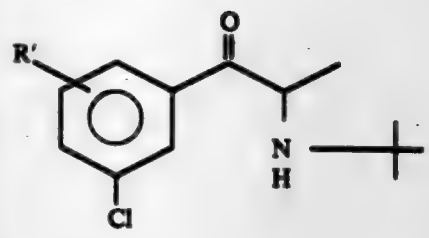
4,347,382

3^H LABELED COMPOUNDS

Jeffrey D. Scharver, Durham, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Apr. 15, 1980, Ser. No. 140,606
Int. Cl.³ C07C *25/24*; C07G *7/00*; G01N *33/54*
U.S. Cl. 564—183 3 Claims

1. A compound of formula:



wherein R' is a radioisotope.

4,347,383

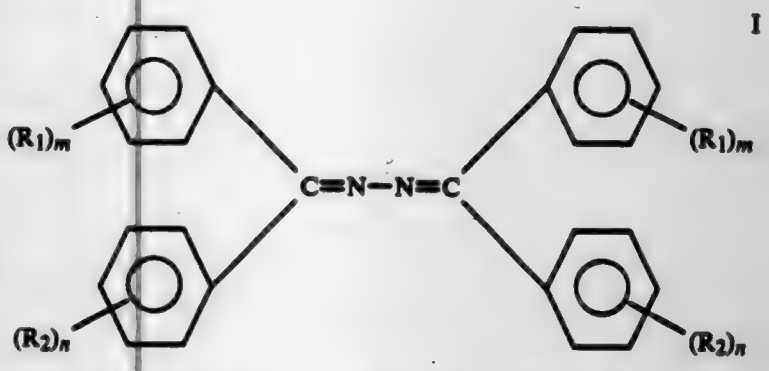
PROCESS FOR PRODUCING BENZOPHENONE-AZINES

Tomiya Ishiki; Tetsuo Tomita, both of Tokyo; Shuzabu Sakaguchi, Matsudo; Toshiaki Kohzaki, Matsudo; Osamu Aoki, Matsudo; Norio Takeda, Matsudo, and Yoshiyuki Aoki, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,194
Claims priority, application Japan, May 11, 1979, 54-57707; Feb. 1, 1980, 55-11304
Int. Cl.³ C07C *109/16*
U.S. Cl. 564—249 4 Claims

1. A process for producing a benzophenone-azine having the formula:

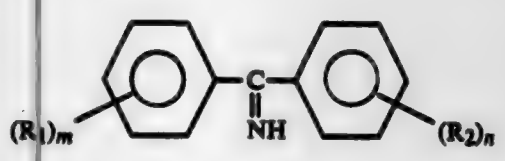
I



wherein R_1 and R_2 may be the same or different, and each of R_1 and R_2 is independently an aliphatic hydrocarbon radical having 1-5 carbon atoms or halogen; m is 0 or integer of 1-5; and n is 0 or integer of 1-5;

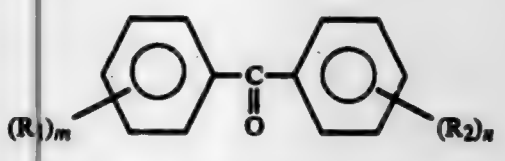
said process comprising reacting (a) a benzophenone-imine having the formula:

II



wherein R_1, R_2, m, and n are as defined above with molecular oxygen; or (b) a benzophenone having the formula:

III



wherein R_1, R_2, m and n are as defined above with ammonia and molecular oxygen at temperature of 60°-300° C., said reaction being carried out in the presence of a catalyst containing at least one material selected from the group consisting of copper; copper alloys; and metal oxides selected from the group consisting of oxides of Cr, Mn, Co, Ni, Tl, Pb, Cu, V and Ag.

4,347,384

PRODUCTION OF MERCAPTANS

Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 23, 1981, Ser. No. 246,669
Int. Cl.³ B01J *31/02, 27/02;* C07C *149/06, 143/16*
U.S. Cl. 568—37 4 Claims

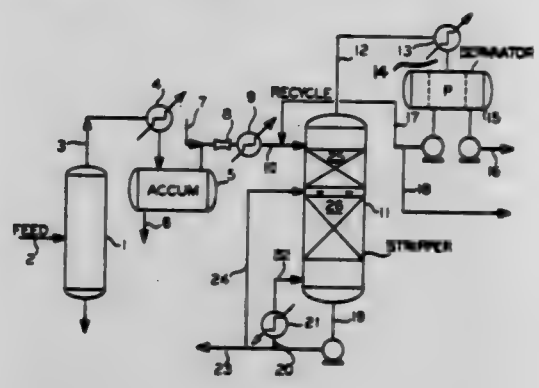
1. A process for the preparation of mercaptans which process comprises reacting olefins or polyolefins at a temperature of about −10° to 70° C. with hydrogen sulfide under pressure of about 1 to 10 atmospheres in the presence of about 0.05 to 10 percent by weight of the olefins of trifluoromethylsulfonic acid.

4,347,385

PROCESS FOR THE SEPARATION OF SULFUR COMPOUNDS FROM WATER

Jack S. Scoggin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 14, 1981, Ser. No. 254,230
Int. Cl.³ C02F *1/04;* C07C *149/06*
U.S. Cl. 568—72 4 Claims



1. In a process for the production of mercaptans by reacting hydrogen sulfide and olefins with the reaction product being separated in a fractionation column employing a steam ejector and forming a steam condensate stream from the steam ejector effluent which is contaminated with mercaptans and other materials from the fractionation column and said mercaptans being separated from the steam condensate stream from the steam ejector by distillation wherein the improvement comprises

separating the mercaptans from said steam condensate stream by feeding said condensate to a stripper having at least two stripping sections operated under conditions to remove a vaporous stripper overhead stream and a stripper bottoms aqueous stream, and recycling a portion of said stripper bottoms stream to an upper portion of the lowermost stripping section of said stripper.

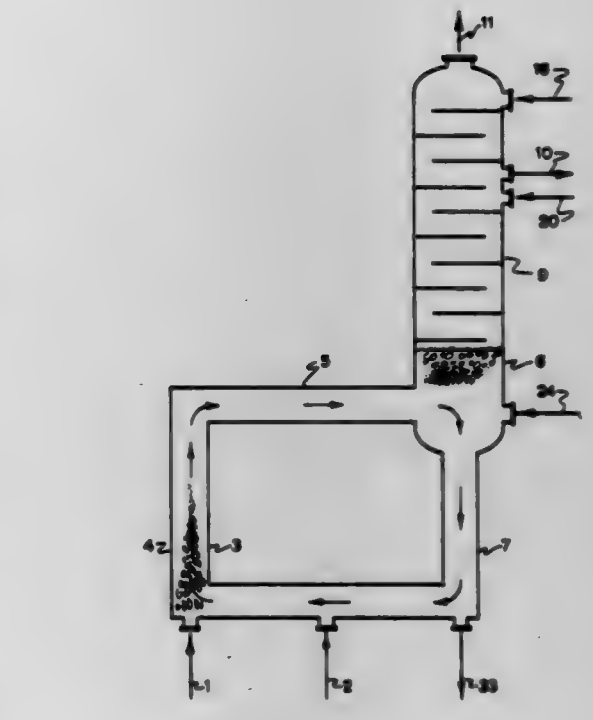
4,347,386

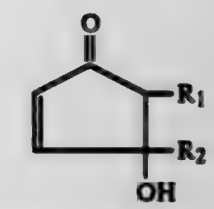
PROCESS FOR PREPARING CYCLOPENTENOLONES

Kenji Saito, Toyonaka, and Hiroshi Yamachika, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

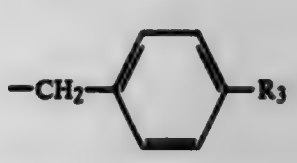
Filed Apr. 22, 1981, Ser. No. 256,570
Claims priority, application Japan, Apr. 30, 1980, 55/58475; Nov. 20, 1980, 55/164372
Int. Cl.³ C07C *45/67*
U.S. Cl. 568—310 4 Claims

1. A process for preparing cyclopentenolones which comprises treating a 4-hydroxy-4-R_2-5-R_1-2-cyclopentenone of the formula:

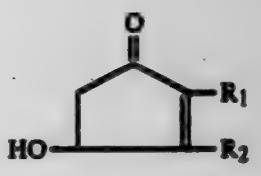




wherein R_1 is an alkyl group having not more than 6 carbon atoms, an alkenyl group having not more than 6 carbon atoms, an alkynyl group having not more than 6 carbon atoms or a group of the formula:



in which R_3 is hydrogen, methyl or halogen and R_2 is a hydrogen atom or a methyl group, provided that when R_2 is hydrogen, R_1 is neither α-methylallyl nor α-methylpropargyl, in an aqueous medium to give the corresponding 2-R_1-3-R_2-4-hydroxy-2-cyclopentenone of the formula:



wherein R_1 and R_2 are each as defined above.

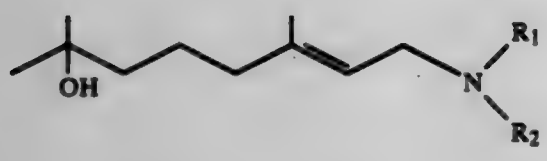
4,347,387

PROCESS FOR PREPARING HYDROXYCITRONELLAL

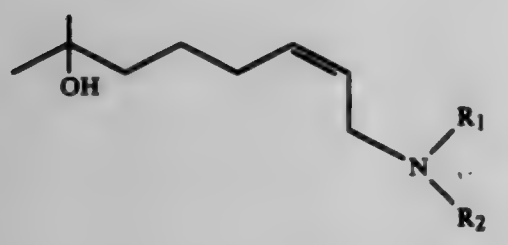
Susumu Akutagawa, Yokohama, and Takanao Taketomi, Chiba, both of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 212,964
Int. Cl.³ C07C *45/42, 47/20*
U.S. Cl. 568—450 11 Claims

1. A process for preparing hydroxycitronellal comprising isomerizing a 7-hydroxygeranylamine compound (I) or a 7-hydroxynerylamine compound (II), represented by formulae (I) and (II), respectively,



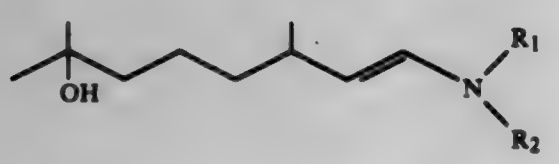
(I)



(II)

wherein R_1 and R_2 each represents an alkyl group containing from 1 to 6 carbon atoms or a cycloalkyl group, or R_1 and R_2 may jointly form together with the adjacent nitrogen atom a 5- or 6-membered ring that may contain other heterocyclic atoms selected from nitrogen and oxygen,

using a catalytically effective amount of a catalyst composed of a divalent palladium compound and a phosphine compound at a temperature of from about 140° to 180° C. for about 5 to 20 hours, to thereby convert the amine compound to a 7-hydroxyaldehydoenamine represented by formula (III)



(III)

wherein R_1 and R_2 are the same as defined above, and then hydrolyzing the enamine using a dilute acid.

4,347,388

3,6-DIMETHYL-3-HYDROXY-OCT-1-YNES AND -OCT-1-ENES, DERIVATIVES OF THESE, AND THEIR USE AS SCENTS, AND IN THE PREPARATION OF 3,6-DIMETHYL-3-HYDROXY-OCTANE

Walter Gramlich, Edingen; Werner Hoffmann, Neuhofen; Leopold Hupfer, Friedelsheim; Bernd Meissner, Heidelberg, and Juergen Paetsch, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

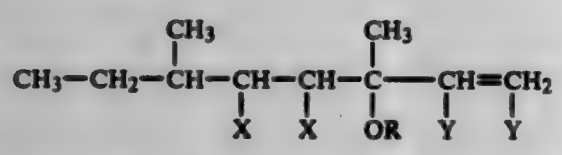
Filed Jul. 2, 1981, Ser. No. 279,801

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027269

Int. Cl.³ C07C *33/02, 33/03, 69/145, 69/24*

U.S. Cl. 568—840 **3 Claims**

1. 3,6-Dimethyl-3-hydroxy-oct-1-ene and its derivatives, of the general formula I



(I)

where X and Y are H or the two X's and/or the two Y's together are a further bond between the carbon atoms on which they are present, and R is H, —CO—CH_3, —CO—C_2H_5 or —CO—C_3H_7.

4,347,389

VAPOR PHASE NITRATION OF AROMATIC COMPOUNDS

Ignatius Schumacher, Ballwin, and Kang-bo Wang, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 31, 1980, Ser. No. 221,658

Int. Cl.³ C07C *76/02, 79/10, 79/12*

U.S. Cl. 568—937 **21 Claims**

1. In a process for the vapor phase nitration of aromatic compounds selected from the group consisting of monohalobenzenes and aromatic hydrocarbons where the aromatic compound is contacted with a nitrating agent in the vapor phase to yield the corresponding nitroaromatic compound, the improvement comprising conducting the nitration in the presence of a nitration promoting catalyst consisting essentially of a phosphorous-vanadium-oxygen complex wherein the phosphorus-to-vanadium atom ratio in the phosphorus-vanadium-oxygen complex ranges from about 1:2 to about 2:1 and greater than 50 percent of the vanadium is in the tetravalent state.

4,347,390

PROCESS FOR PRODUCING 1-BROMO-3,5-DICHLOROBENZENE

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Kyoto; Isao Yokomichi, Kusatsu; Yasuhiro Tsujii, Kusatsu; Itaru Shigehara, Kusatsu; Kuniaki Nagatani, Kusatsu, and Shigeyuki Nishimura, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka

Continuation of Ser. No. 823,098, Aug. 9, 1977, abandoned. This application Nov. 13, 1980, Ser. No. 206,392

Claims priority, application Japan, Aug. 25, 1976, 51-100504; Sep. 9, 1976, 51-108518; Oct. 12, 1976, 51-122591; Oct. 12, 1976, 51-122592

Int. Cl.³ C07C *17/02*

U.S. Cl. 570—202 **8 Claims**

1. A process for producing 1-bromo-3,5-dichlorobenzene which comprises;

(a) brominating m-dichlorobenzene, p-dichlorobenzene or a mixture of dichlorobenzene compounds not including more than 20% by weight of o-dichlorobenzene by adding bromine to the dichlorobenzene compound at 0° to 180° C. in the presence of an aluminum halide at a mole ratio of 0.001 to 1 of aluminum halide to total amount of halobenzenes thereby obtaining product bromodichlorobenzene compounds;

(b) isomerizing the product bromodichlorobenzene compounds in the reaction mixture at 80° to 180° C. in the presence of an aluminum halide at a mole ratio of 0.02 to 1 of aluminum halide to total amount of halobenzenes after the bromination reaction thereby forming a product mixture comprising (a) monobromodichlorobenzene, (b) dichlorobenzene, and (c) dibromodichlorobenzene;

(c) distilling the reaction mixture to separate the dichlorobenzene, the monobromodichlorobenzene and the dibromodichlorobenzene components from the reaction mixture;

(d) cooling the monobromodichlorobenzene thereby crystallizing 1-bromo-3,5-dichlorobenzene and separating the same; and

(e) recycling a portion or all of the residue constituting dichlorobenzene, dibromodichlorobenzene and the monobromodichlorobenzene not containing substantial amounts of 1-bromo-3,5-dichlorobenzene into a fresh raw material for said bromination reaction of step (a) or into the bromination product of step (b) which is to be isomerized.

4,347,391

PROCESS FOR PREPARING ETHYLENE DICHLORIDE

Ramsey G. Campbell, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 622,183, Oct. 10, 1975, abandoned, which is a continuation of Ser. No. 368,569, Jun. 11, 1973. This application Jan. 9, 1979, Ser. No. 2,155

Int. Cl.[3] C07C 17/02

U.S. Cl. 570—252 10 Claims

1. A process for the production of ethylene dichloride in a circulating liquid medium, said liquid medium comprising a liquid selected from chlorinated hydrocarbons containing two carbon atoms and mixtures thereof, said circulating liquid medium being circulated through a reaction zone maintained at a temperature below that at which the liquid medium vaporizes at the pressure maintained therein and at a level of from about 85° C. to about 180° C. and a vaporization zone maintained at a pressure lower than that of the reaction zone and at a temperature such that liquid ethylene dichloride vaporizes under the conditions of pressure and temperature therein, said vaporization zone being disposed above said reaction zone to produce a static pressure on the below-disposed said reaction zone, said process comprising the steps of:

(a) introducing ethylene and chlorine into said reaction zone;

(b) forming crude liquid ethylene dichloride within said reaction zone by the reaction of said ethylene and chlorine;

(c) passing said crude liquid ethylene dichloride with said circulating liquid medium from said reaction zone into said vaporization zone;

(d) vaporizing at least a portion of said crude liquid ethylene dichloride in said vaporization zone by means of the heat of reaction between ethylene and chlorine in said reaction zone to form vaporized impure ethylene dichloride while effecting cooling of said circulating liquid medium; and

(e) passing said vaporized impure ethylene dichloride to a rectification zone, rectifying said vaporized ethylene dichloride by means of the heat of reaction of ethylene and chlorine generated within said reaction zone, and recovering purified ethylene dichloride from said rectification zone while simultaneously returning said cooled circulating liquid medium from said vaporization zone to said reaction zone.

4,347,392

PROCESS FOR THE SELECTIVE HYDROGENATION OF A HYDROCARBON FRACTION WITH 2 OR 3 CARBON ATOMS PER MOLECULE

Jean Cosyns, Maule; Daniel Durand, Rueil-Malmaison, and Gerard Leger, St. Genis les Ollieres, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 9, 1980, Ser. No. 157,764

Claims priority, application France, Jun. 8, 1979, 79 14925

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.[3] C07C 5/08, 7/00

U.S. Cl. 585—259 9 Claims

1. A process for selectively hydrogenating a C_2 and/or C_3 hydrocarbon fraction comprising at least one mono-olefinic hydrocarbon, at least one acetylenic hydrocarbon, and at least one diolefinic hydrocarbon, to selectively hydrogenate the acetylenic hydrocarbon and the diolefinic hydrocarbon, without substantial hydrogenation of the mono-olefinic hydrocarbon, comprising contacting said hydrocarbon fraction and hydrogen with a catalyst of palladium-on-alumina, with the average size of the palladium crystallites in said catalyst being at least 50 Angströms.

4,347,393

PROCESS FOR CONTINUOUS PRODUCTION OF CUMENE AND/OR DIISOPROPYLBENZENE

Hisaya Miki, Ichihara, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 19, 1981, Ser. No. 294,204

Claims priority, application Japan, Aug. 22, 1980, 55-114818

Int. Cl.[3] C07C 2/70, 5/22

U.S. Cl. 585—323 1 Claim

1. In a process for producing cumene and/or diisopropylbenzene which comprises, in combination,

(I) an alkylating step of reacting benzene with propylene in the presence of a liquid aluminum chloride complex catalyst,

(II) a transalkylating step of reacting the reaction product of step (I) containing the complex catalyst with recycle isopropylbenzene compounds from a distillation step (V) below in the presence of added fresh aluminum chloride and hydrogen chloride in a reaction zone different from the reaction zone of step (I),

(III) a catalyst separating step of separating the liquid aluminum chloride complex catalyst from the transalkylation product of step (II) in a zone different from the zone of step (II) and recycling the separated catalyst to step (I) and/or step (II),

(IV) a neutralization step of neutralizing the transalkylation product of step (III) with an alkali in a zone different from the zone of step (III), and

(V) fractionally distilling the neutralization product of step (IV) in a zone different from the zone of step (IV) to recover the cumene fraction and/or the diisopropylbenzene fraction and recycling the remaining isopropylbenzene compounds to step (II); characterized in that

(a) step (I) is carried out at a temperature of about 40° C. to about 85° C. while maintaining the activity coefficient (M) of the catalyst at about 10×10^{-4} to about 300×10^{-4} and the concentration of aluminum chloride in the system at 0.005 to 0.15 mole/liter, and

(b) step (II) is carried out without removing the catalyst from the reaction product of step (I) and at a temperature of about 40° C. to about 75° C. in the presence of added fresh aluminum chloride in an amount of 2 to 20 parts by weight/hr per 1000 parts by weight/hr of diisopropylbenzene in the reaction system while maintaining the activity coefficient (M) of the catalyst in the system at about 30×10^{-4} to about 300×10^{-4} and the concentration of aluminum chloride in the system at 0.3 to 1 mole/liter.

4,347,394

BENZENE SYNTHESIS

Clifford M. Detz, San Rafael, and Leslie A. Field, Oakland, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 10, 1980, Ser. No. 215,194

Int. Cl.[3] C07C 2/52, 12/46, 15/02

U.S. Cl. 585—419 13 Claims

1. A process for selectively preparing a product having a substantial benzene content from normal and slightly branched hydrocarbons, comprising

(a) contacting a hydrocarbonaceous feed, which comprises normal and slightly branched hydrocarbons and has a boiling range above about 40° C. and less than about 200° C. with a conversion catalyst which comprises an intermediate pore size zeolite and a platinum compound, and wherein said zeolite is substantially free of acidity; and

(b) recovering a benzene containing effluent.

4,347,395

CONVERSION OF PARAFFINIC HYDROCARBONS TO AROMATICS OVER ZEOLITE CATALYSTS

Yung F. Chu, and Arthur W. Chester, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,132
Int. Cl.³ C07C *12/02, 12/42, 12/46*
U.S. Cl. 585—420 19 Claims

1. A process for producing aromatics from a feedstock containing predominantly paraffinic hydrocarbons of 2 to 16 carbon atoms which comprises contacting said feedstock and air or oxygen with a crystalline zeolite catalyst comprising a zeolite having a constraint index within the approximate range of 1 to 12 and a silica to alumina ratio of at least 12 and having incorporated therein a minor amount of metal or metal oxide oxidative dehydrogenation components.

4,347,396

PROCESS FOR PRODUCING STYRENE

Hirotaka Takano; Hideyuki Takahashi; Ryoichi Hirogohri, and Kohji Kato, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1981, Ser. No. 246,012
Claims priority, application Japan, Mar. 27, 1980, 55-39196
Int. Cl.³ C07C *15/10*
U.S. Cl. 585—441 4 Claims

1. A process for producing styrene by dehydrogenation of ethylbenzene comprising feeding steam and ethylbenzene to three or more dehydrogenation reactors connected in series, an intermediate heat exchanger for heating the reaction mixture through heat exchange with steam being provided between each of said dehydrogenation reactors, said steam being first used as a medium to heat the respective intermediate heat exchangers, and then said seam being mixed with ethylbenzene supplied as the feed to the first of said series of reactors, wherein 3 to 10 mols of steam are mixed with one mol of ethylbenzene and the temperature and pressure at the inlet of the final dehydrogenation reactor are 600°–680° C. and 0.4–0.8 kg/cm^2 (abs.), respectively.

4,347,397

TREATMENT OF EFFLUENT RESULTING FROM CONVERSION OF METHANOL TO GASOLINE IN ORDER TO DECREASE DURENE AND PRODUCE DISTILLATE

Francis G. Dwyer, West Chester, and Albin Huss, Jr., Chadds Ford, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 27, 1981, Ser. No. 257,693
Int. Cl.³ C07C *5/22*
U.S. Cl. 585—469 12 Claims

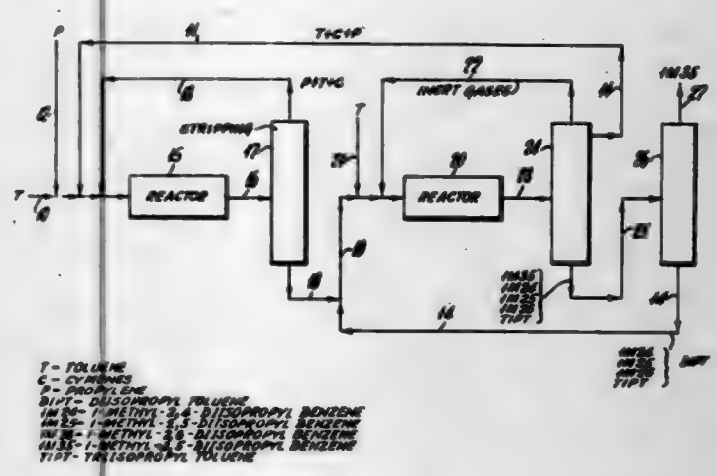
1. In the process for the conversion a methanol to gasoline over a ZSM-5 type zeolite wherein methanol is contacted with said zeolite at elevated temperature in order to effect conversion to gasoline with a concurrent formation of durene, the improvement which comprises: contacting a liquid fraction comprising a durene containing fraction of the effluent from said methanol-to-gasoline conversion process and further comprising less than about five percent by weight benzene with a solid acidic isomerization catalyst having a pore size sufficiently large to admit tetramethylbenzenes at elevated temperatures ranging from about 500° to 1000° F. so as to effect isomerization of said durene to produce 1,2,3,4- and 1,2,3,5-tetramethylbenzenes and thereby diminish the same.

4,347,398

PROCESS FOR PREPARATION OF 1-METHYL-3,5-DIISOPROPYL BENZENE

John M. Crone, Jr., Fishkill, and Robert M. Suggitt, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 135,609, Mar. 31, 1980, Pat. No. 4,314,091. This application Jul. 13, 1980, Ser. No. 282,370
The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.
Int. Cl.³ C07C *5/22*
U.S. Cl. 585—474 6 Claims



1. The method which comprises

isomerizing in an isomerization operation a charge stream containing at least one diisopropyl toluene other than 1-methyl-3,5-diisopropyl benzene in the presence of isomerization catalyst at isomerization conditions including temperature of 200° F.–800° F. thereby forming isomerized product stream containing increased proportions of 1-methyl-3,5-diisopropyl benzene and decreased proportions of other diisopropyl toluenes in the diisopropyl toluene fraction;

recovering from said isomerizing operation and isomerized product stream containing said 1-methyl-3,5-diisopropyl benzene and decreased proportions of other diisopropyl toluene; and

separating 1-methyl-3,5-diisopropyl benzene from said isomerized product stream.

5. The method which comprises

transalkylating in a transalkylation operation a charge stream containing (i) toluene, (ii) desired 1methyl-3,5-diisopropyl toluene and at least one other undesired diisopropyl toluene, and (iii) triisopropyl toluenes, at transalkylating conditions including temperature of 500° F.–625° F. thereby forming transalkylated product stream containing 1-methyl-3,5-diisopropyl benzene and decreased proportions of (i) toluene, (ii) said other undesired diisopropyl toluene, and (iii) said triisopropyl toluenes;

recovering said product stream containing 1-methyl-3,5-diisopropyl benzene and decreased proportions of (i) toluene, (ii) said other undesired diisopropyl toluene, and (iii) said triisopropyl toluenes; and

separating 1-methyl-3,5-diisopropyl benzene from said product stream containing 1-methyl-3,5-diisopropyl benzene and decreased proportions of (i) toluene, (ii) said other undesired diisopropyl toluene, and (iii) said triisopropyl toluenes.

4,347,399

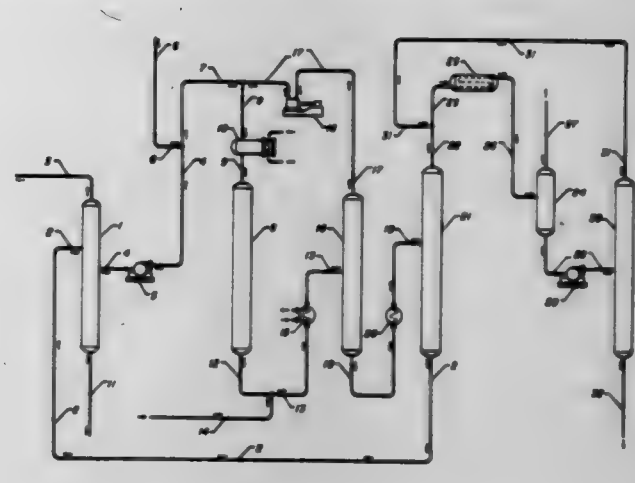
ISOMERIZATION OF NORMAL BUTANE

Lynn H. Rice, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 3, 1981, Ser. No. 270,054
Int. Cl.³ C07C *5/13*
U.S. Cl. 585—738 6 Claims

1. A process for the isomerization of normal butane which comprises the steps of:

(a) introducing a hydrocarbon feed stream comprising mixed butanes into a first separation zone at conditions to produce an isobutane stream and a normal butane stream;
(b) separating the isobutane steam, and passing the normal butane stream into a catalyst-containing isomerization zone in admixture with hydrogen, said isomerization zone being maintained at isomerization reaction conditions;
(c) passing the effluent stream from the isomerization zone into a second separation zone at conditions to produce a hydrogen-rich vapor phase and a liquid hydrocarbon phase comprising isobutane, unreacted normal butane, and C_4-hydrocarbon by-products;
(d) recycling the hydrogen-rich vapor phase to said isomerization zone;
(e) recovering and introducing the hydrocarbon phase into a third separation zone at conditions to produce a butanes stream and a C_4-hydrocarbon by-products stream containing residual hydrogen and isobutane;
(f) returning said butanes stream to said first separation zone for the recovery of isobutane, and recycling unreacted normal butane to said isomerization zone;
(g) passing said by-product stream into a refrigerated fourth separation zone at conditions to provide a hydrogen-rich by-products stream and a liquefied stream comprising isobutane;
(h) separating and recovering the hydrogen-rich by-products stream, and introducing the refrigerated isobutane stream into a fifth separation zone at conditions to separate a vapor phase comprising substantially all of the residual hydrogen and by-products contained therein; and,

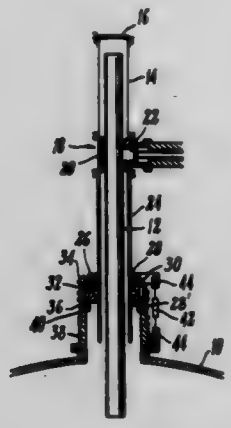


(i) recycling said vapor phase to said refrigerated fourth separation zone, and recovering the liquefied isobutane stream from said fifth separation zone.

4,347,400
APPARATUS FOR REHEATING MOLTEN STEEL IN LADLES

Gabriel Lamarque, Paris, France, assignor to Stein Heurtey, Ris Orangis, France

Filed Oct. 7, 1980, Ser. No. 195,059
Claims priority, application France, Oct. 11, 1979, 79 25293
Int. Cl.³ H05B 7/00
U.S. Cl. 373—77 5 Claims



1. In an apparatus for reheating molten steel in a ladle under a shielding gaseous atmosphere, said apparatus being of the type including at least one fluid-tight electrode housing supporting an elongated electrode and movably extending through a cover of the ladle or of a vessel containing the ladle, and means for sealing the exterior of said housing and thereby for preventing leakage from said cover during relative movement of said housing with respect to said cover, the improvement wherein said sealing means comprises:

a hollow, water-cooled jacket assembly surrounding said housing, said assembly having therethrough a passage through which said housing extends, said assembly having therein annular recesses receiving at least one annular packing contacting the exterior of said housing and at least one annular scraper blade contacting the exterior of said housing;

a collar rigid with said cover;

a flexible, vacuum tight coupling connecting said assembly to said collar; and

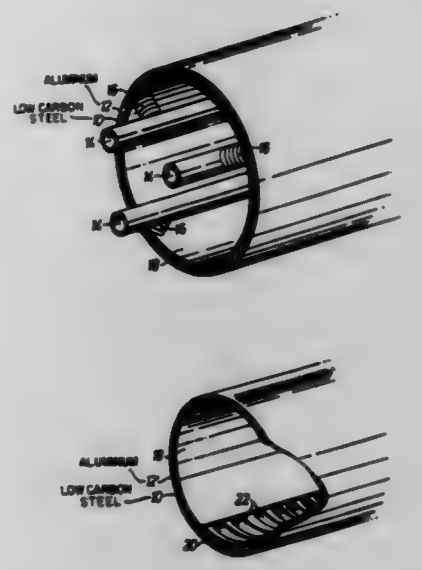
means for limiting movement of said coupling in opposite directions axially of said housing.

4,347,401
GAS-FILLED CABLE WITH COMPOSITE CONDUIT OF LOW CARBON STEEL AND ALUMINUM AND HAVING PARTICLE TRAPS

Niels Knudsen, Lerum; Veikko Orpana, Oxelösund; Matti Wisur, Oxelösund; Olov Wärulf, Oxelösund; Hakan Bergqvist, Mölndal, and Raoul Afzelius, Älvängen, all of Sweden, assignors to SPACAB AB, Oxelösund, Sweden

PCT No. PCT/SE79/00025, § 371 Date Oct. 9, 1979, § 102(e) Date Oct. 2, 1979, PCT Pub. No. WO79/00607, PCT Pub. Date Aug. 23, 1979
PCT Filed Feb. 8, 1979, Ser. No. 185,919
Claims priority, application Sweden, Feb. 9, 1978, 7801543
Int. Cl.³ H01B 9/06; H02G 5/06
U.S. Cl. 174—14 R 6 Claims

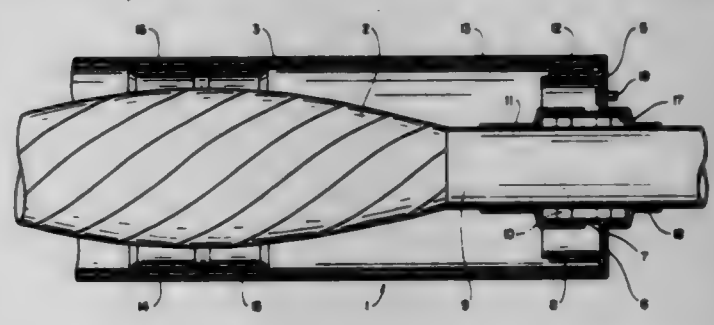
1. A gas-filled cable having particle trap means and intended for the transmission of high voltage electric current, said cable including at least one electric conductor, an enclosing conduit comprising a cylindrical metal sheath and a metal shield of non-magnetic material fitting inside said sheath, a plurality of supporting insulators for supporting the at least one electric conductor within said conduit spaced from the interior of said metal shield, said metal shield forming a tube-like lining for said metal sheath, said metal shield having a plurality of openings therethrough spaced therealong defining said particle trap means, said interior of said cable being filled with an insulating gaseous medium.



4,347,402
CABLE SPLICE ENCLOSURES AND METHOD OF USE

Thierry Reyners, Sanchidrian 12, Pozuelo, Madrid 23, Spain

Continuation of Ser. No. 79,107, Sep. 26, 1979, abandoned, which is a continuation of Ser. No. 836,411, Sep. 26, 1977, abandoned. This application Apr. 21, 1980, Ser. No. 142,610
Claims priority, application Spain, Sep. 28, 1976, 223470
Int. Cl.³ H02G 13/06; B21F 15/02; H02G 1/14
U.S. Cl. 174—91 25 Claims



1. A method for obtaining access to an electrical splice in a splice casing containing a splice of electrical cable, the casing comprising:

(i) an outer cylindrical envelope (3) which extends beyond the splice, the outer cylindrical envelope having a longitudinal gap along an axial plane and comprising means (4) for closing the gap which means are detachable and can be removed;

(ii) a rigid collar (6) at each end of the envelope (3) between the envelope and one of the cables, the collar comprising an annular interior flange (7) and radially separated therefrom an annular exterior flange (8), wherein at least the interior flange is cylindrical and extends toward the center of the casing;

(iii) for each collar, a first heat-shrinkable sleeve (11) covered on the inside with a bonding agent, which sleeve is applied to the interior cylindrical flange and to the portion of the cable adjacent thereto so as to form a hermetic seal between the interior flange and the cable;

(iv) a flexible sleeve (13) which is applied to the inside of the outer envelope, the sleeve comprising two portions, the adjacent inner ends (30) of the two portions being joined together and the other ends being extended and folded over inward at the end of said envelope and applied to the

outer surface of the outer flange of its respective collar so as to form a hermetic seal therewith, wherein when a pressurized gas is introduced into the casing, the first heat-shrinkable sleeve and the flexible sleeve tend to press more firmly against the surface to which they apply, so that the hermetic seals formed at each end of the envelope are thus rendered tighter, each portion of the flexible sleeve being capable of being inverted and moved towards its respective collar where it remains in the inverted position;

(v) two metallic rings (14, 15) connected to each other by their edges in the median zone of the splice, and wherein the adjacent inner ends (30) of the two portions of the flexible sleeve are applied respectively to the surfaces of said rings;

(vi) a second heat-shrinkable sleeve (16) applied to and adhering to the outer surfaces of the connected rings immediately below the outer envelope, which second heat-shrinkable sleeve establishes a hermetic joint between the rings, the method comprising the steps of:

(a) removing the outer cylindrical envelope,

(b) removing the second heat-shrinkable sleeve fitted on the two connected rings,

(c) separating the two rings, and

(d) moving each portion of the flexible sleeve towards its respective collar by inverting each portion so as to at least partially uncover the splice.

2. A method of making a joint between two elongate substrates and providing a hollow, hermetically sealed, partially removable enclosure around the joint, which method is characterized by the steps of:

(a) selecting an apparatus comprising two generally cylindrical, flexible sleeves (13), each flexible sleeve comprising a first open end section (12), a second open end section (30), and a generally cylindrical, flexible, deformable connecting section (32) connecting the first and second open end section;

(b) placing one of the flexible sleeves over each of the substrates;

(c) joining the substrates to each other;

(d) hermetically sealing each of the first open end sections to its respective substrate by heating a heat-shrinkable sleeve; and

(e) hermetically sealing the second open end sections to each other.

18. A casing for splices of electric cables comprising:

(a) an outer cylindrical envelope (3) which extends beyond the splice;

(b) a rigid collar (6) at each end of the envelope (3) between the envelope and a cable, the collar comprising an annular interior flange (7) and radially separated therefrom an annular exterior flange (8) wherein at least the interior flange is cylindrical and extends toward the center of the casing;

(c) for each collar, a first heat-shrinkable sleeve (11), covered on the inside with a bonding agent which sleeve is applied to the interior cylindrical flange and to the portion of the cable adjacent thereto so as to form a hermetic seal between the interior flange and the cable; and

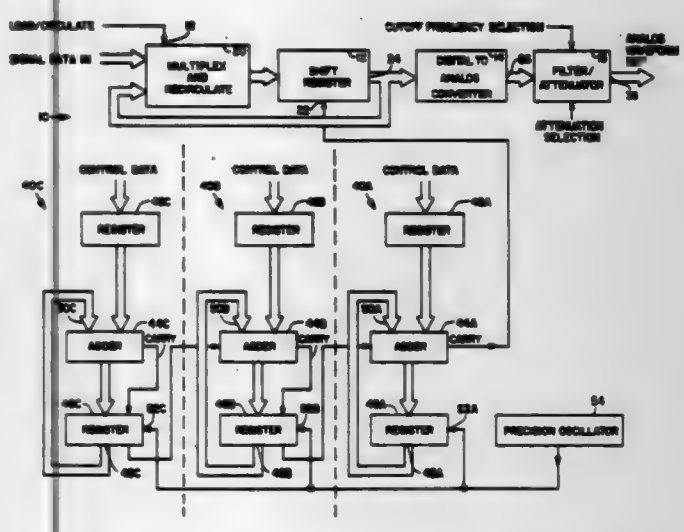
(d) a flexible sleeve (13) which is applied to the inside of the outer envelope, wherein each end (12) of the flexible sleeve is extended and folded over inwards at the respective end of said envelope and is applied to the outer surface of the outer flange of said collar so as to form a hermetic seal therewith, wherein when a pressurized gas is introduced into the casing, the first heat-shrinkable sleeves and the flexible sleeve tend to press more firmly against the surfaces to which they are applied, so that the hermetic seals formed at each end of the envelope are thus rendered tighter.

4,347,403

ELECTRICAL WAVEFORM SYNTHESIZER

Joseph E. Schwager, Endwell, and Harry E. Urban, Endicott, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1980, Ser. No. 143,257
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SA 9 Claims



1. An electrical waveform synthesizer comprising:

multiplex and recirculate means having a data input, a load/-circulate input, and a recirculated signal input for receiving a digital input signal;

a shift register connected to said multiplex and recirculate means for receipt of digital output signals therefrom and having a plurality of loadable stages for loading digital signals therein, a clock input where clock signals maybe applied to effect shifting of data between said plurality of loadable stages, and an output which is connected to said recirculated signal input of said multiplex and recirculate means;

a digital-to-analog converter connected to said output of said shift register; and

clock means connected to the clock input of said shift register said clock means including a plurality of frequency division circuits, each frequency division circuit further including;

an input register for receiving control signals;

an adder circuit connected to said input register for receipt of augend signals therefrom,

an output register connected to said adder circuit to receive signals therefrom and connected to said adder circuit to provided addend signals therefor and an output connected to adder circuits of succeeding frequency circuits, if any, for providing additional addend signals therefor,

the adder circuit of one of said frequency circuits having an output connected to said shift register clock input, and

an oscillator having an output connected to each of said output registers of said plurality of frequency division circuits.

4,347,404

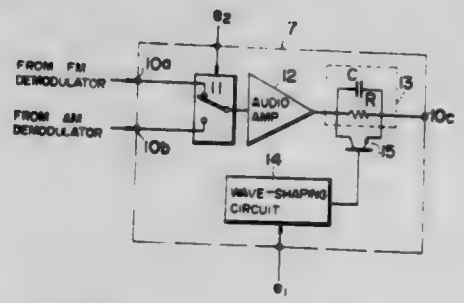
CONTROL DEVICE FOR AN AUTOMOTIVE VEHICLE FM RADIO

Teruo Kawasaki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Jun. 26, 1980, Ser. No. 163,280
Claims priority, application Japan, Jul. 2, 1979, 54-82686
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GB 5 Claims

1. A bass sound control device for an FM car radio, which comprises:

(a) an AM/FM selector for selecting AM broadcasting or FM broadcasting;
(b) a pilot signal discriminator for outputting, where said AM/FM selector selects FM broadcasting, a control signal when stereophonic broadcasting is being received and no signal when monaural broadcasting is being received;
(c) an AM demodulator for outputting AM audio output signals where said AM/FM selector selects AM broadcasting;
(d) an FM demodulator for outputting FM audio output signals where said AM/FM selector selects FM broadcasting, said FM demodulator being connected to said pilot signal discriminator;
(e) an audio amplifier for amplifying the AM audio output signals where said AM/FM selector selects AM broadcasting and the FM audio signals where said AM/FM



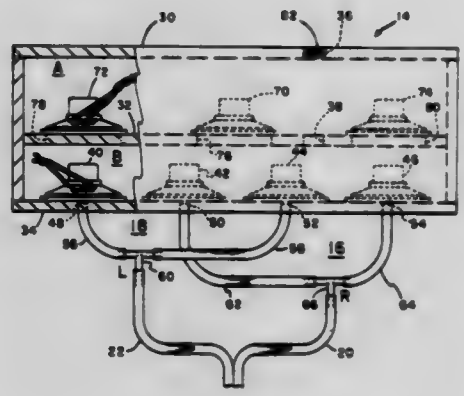
selector selects FM broadcasting, said audio amplifier being selectively connected to said AM demodulator or said FM demodulator;
(f) a bass sound reduction means for reducing bass sound, said bass sound reduction means being connected to said audio amplifier;
(g) switching means responsive to the control signal outputted from said pilot signal discriminator, said switching means being connected in parallel to said bass sound reduction means to short said bass sound reduction means when stereophonic broadcasting is being received and to connect said bass sound reduction means in series to said audio amplifier when monaural broadcasting is being received;
whereby the bass sound of the amplified FM audio signals is reproduced in stereophonic broadcasting and is reduced in monaural broadcasting.

4,347,405

SOUND REPRODUCING SYSTEMS UTILIZING ACOUSTIC PROCESSING UNIT

Lanny C. Davis, Buffalo Grove, Ill., assignor to CBS Inc., New York, N.Y.

Continuation-in-part of Ser. No. 72,965, Sep. 6, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 176,617
Int. Cl.³ H04S *1/00*
U.S. Cl. 179—1 G **27 Claims**



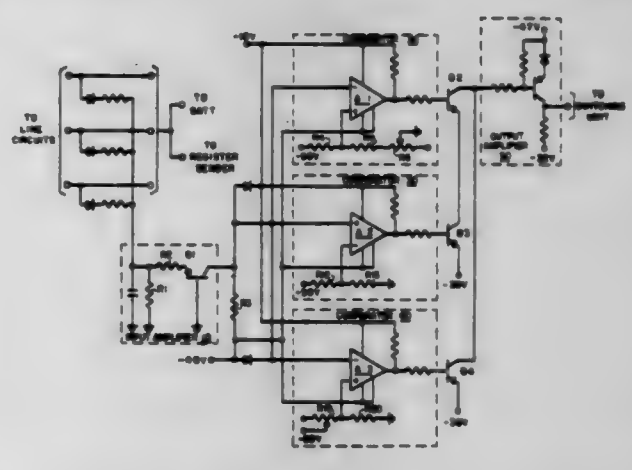
17. An acoustic processing unit for producing first and second composite acoustic signals from at least first and second electro-acoustic signals, said processing unit comprising:
a box-like substantially sealed enclosure having at least first and second openings in a wall thereof,
acoustic transmission means defining first and second separate acoustic output ports acoustically coupled to said first and second openings,
at least first and second electro-acoustic transducers mounted within said enclosure over said at least first and second openings, respectively, for converting said electro-acoustic signals to corresponding acoustic signals and supplying acoustic power only to respective ones of said acoustic output ports and so arranged relative to each other that an energized transducer mechanically induces substantially corresponding vibrations in the other transducers, and
means for supplying first and second different electrical signals to said at least first and second transducers, respectively.

4,347,406

PULSE DETECTOR CIRCUIT

John F. Zarawski, Streamwood, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Jun. 2, 1980, Ser. No. 155,699
Int. Cl.³ H04B *1/10*; H04Q *3/70*
U.S. Cl. 179—18 D **10 Claims**



1. A pulse detection circuit for use in a telephone switching system, including a line circuit means operated to provide class of service pulses and supervisory signal pulses, said pulse detection circuit comprising:
first detection means connected to said line circuit means, operated to generate a first class of service detection signal in response to detection of each of said class of service pulses appearing during the absence of said supervisory signal pulses; and
second detection means connected to said line circuit means, operated to generate a second class of service detection signal in response to detection of each of said class of service pulses appearing during the presence of said supervisory signal pulses.

4,347,407

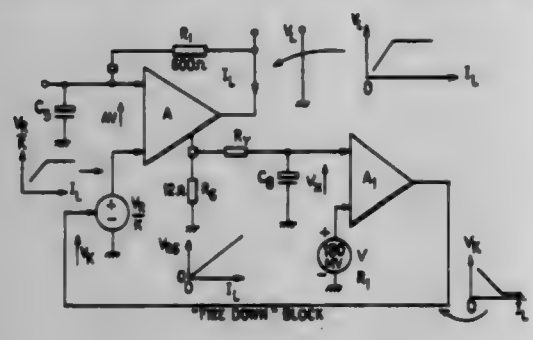
ELECTRONIC TELEPHONE CIRCUIT

Peter F. Blomley, Bishop's Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 27, 1980, Ser. No. 181,590
Claims priority, application United Kingdom, Aug. 31, 1979, 7930246
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—81 R **7 Claims**

1. A shunt voltage regulation circuit for a network external to said circuit, said network adapted for the bidirectional transfer of audio frequency signals, said circuit including a first and a second series coupled comparator amplifiers with both amplifiers having two inputs and at least one output, said first

amplifier having a first input coupled to a supply of voltage to said network and a second input coupled to a source of reference voltage whereby an output of said first amplifier is a voltage dependent on the comparison of voltages at said inputs; said output from said first amplifier coupled to said network to supply regulated voltage thereto, a second output of said first amplifier coupled over a path to a first input of said second amplifier to apply a voltage proportional to the output



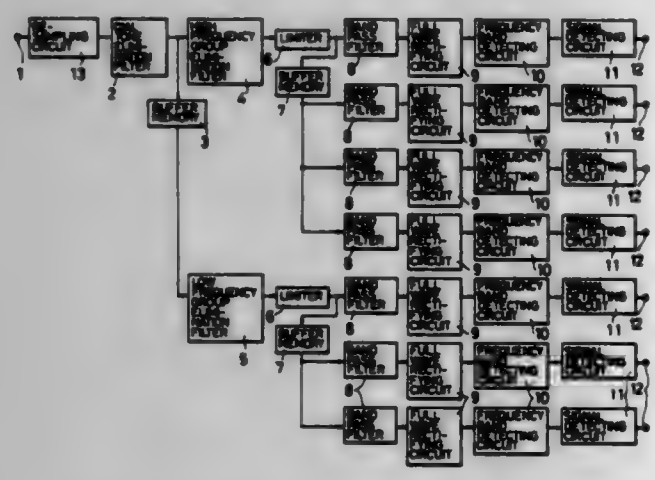
of said first amplifier to said first input to said second amplifier, a second source of reference voltage coupled to the second input of said second amplifier, the output of said second amplifier coupled to the first source of reference voltage to adjust the first reference voltage in accordance with the value of the voltage of the output of said second amplifier representing a comparison between the voltges at the inputs to said second amplifier.

4,347,408

MULTI-FREQUENCY SIGNAL RECEIVER

Hiroko Ito, Tokyo; Eiji Ohira, Hachiouji, and Akira Ichikawa, Kokubunji, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Hitachi, Ltd., both of Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,697
Claims priority, application Japan, Dec. 6, 1978, 53-149943
Int. Cl.[3] H04M *1/50*
U.S. Cl. 179—84 VF 5 Claims



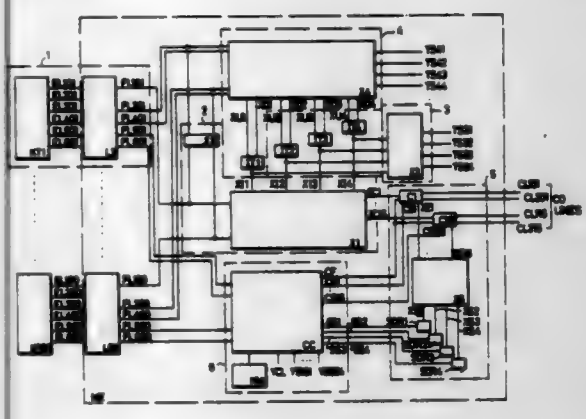
1. A multi-frequency signal receiver comprising: input means for inputting digital input signals which have been sampled at a first sampling frequency f_1; resampling means connected to said input means for resampling the digital input signals at a second sampling frequency f_2 which has a value of f_1/n, wherein n denotes an integer having a value of 2 or larger; and digital filter means for selecting signals in predetermined frequency bands among the digital input signals resampled by said resampling means to identify the frequency of the digital input signals.

4,347,409

KEY TELEPHONE SYSTEM

Seiki Ogawa, Tokyo; Michio Mito, and Tsuyoshi Shinoi, both of Kawasaki, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo and Nippon Tsushin Kogyo Kabushiki Kaisha, Kawasaki, both of, Japan

Filed Aug. 18, 1980, Ser. No. 178,950
Claims priority, application Japan, Aug. 20, 1979, 54/104921; Aug. 20, 1979, 54/113353[U]; Aug. 20, 1979, 54/113354[U]
Int. Cl.[3] H04Q *5/20*
U.S. Cl. 179—99 P 6 Claims



1. In a key telephone system comprising a main equipment connected to a plurality of central office lines and a plurality of key telephones connected to said main equipment, an arrangement in which said main equipment comprises:

(a) a central-office-line interface circuit connected to said central office lines,

(b) a key-telephone interface circuit connected to each of said plurality of key telephones,

(c) a first switching matrix including columns, at least some of which are connected to said central-office-line interface circuit, and rows connected to respective said key-telephone interface circuits,

(d) a second switching matrix including columns connected to said central-office-line interface circuit,

(e) a dual-tone multifrequency sending circuit connected at the output end to rows of said second switching matrix,

(f) an intercom trunk circuit connected to remaining columns of said first switching matrix,

(g) a third switching matrix including rows connected to said columns of the first switching matrix which are connected to said intercom trunk circuit and columns connected to a tone source,

(h) a fourth switching matrix including columns connected to said intercom trunk circuit and tone source and rows connected to said key-telephone interface circuits,

(i) a fifth switching matrix inserted between respective ends of the key-telephone interface circuit connected respectively to the first switching matrix and to said fourth switching matrix, and

(j) a main controlling means connected to the key-telephone interface circuit and dual-tone multifrequency sending circuit and to respective control leads of the first to fifth switching matrixes for controlling said switching matrixes to perform selected cross-point switching in response to a call request signal.

4,347,410

MICROPHONE DROOP AND SENSITIVITY MEASUREMENT DEVICE

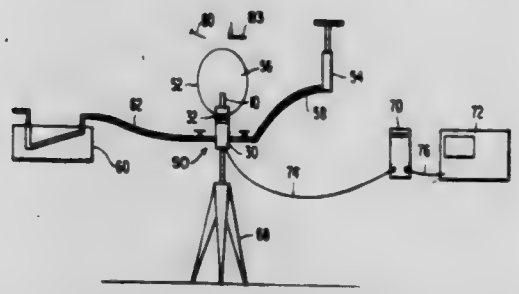
Paul D. Schomer, 2117 Robert Dr., Champaign, Ill. 61820, and Alan B. Hunt, 326 Townsend Hall U.R.H., Urbana, Ill. 61801

Filed Feb. 26, 1980, Ser. No. 124,873
Int. Cl.[3] H04R *29/00*
U.S. Cl. 179—175.1 A 72 Claims

49. An apparatus comprising

(a) an acoustical transducer;

(b) means for applying a positive fluidic pressure with respect to the ambient pressure to said transducer; and



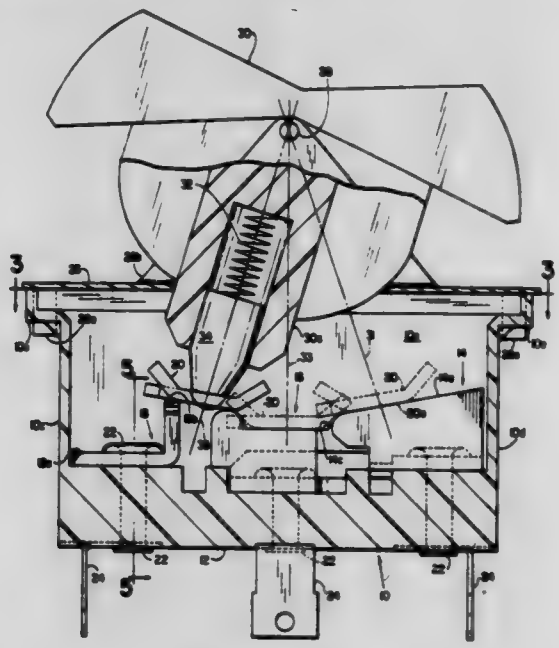
(c) means for reducing said positive fluidic pressure at a fast rate such that an acoustic negative step function is applied to said transducer.

4,347,411

PROGRESSIVE SWITCH

Frank J. Discenza, Rocky Hill, and Milton N. Ives, Wolcott, both of Conn., assignors to Carlingswitch, Inc., West Hartford, Conn.

Filed Dec. 2, 1980, Ser. No. 212,137
Int. Cl.³ H01H *15/00*
U.S. Cl. 200—1 B 12 Claims



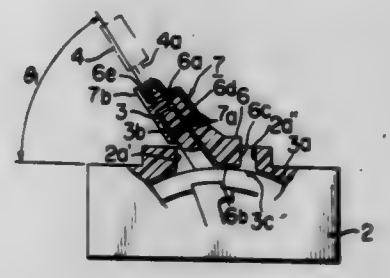
2. A progressive switch comprising a case, actuator means movably mounted in said case, a movable contact connected to said actuator for movement horizontally of said case between first, second and third positions, first, second and third fixed contacts disposed generally along the horizontal path of movement of said movable contact, said first contact having a portion for engaging laterally spaced regions of said movable contact, and said first contact also defining a projecting portion arranged alongside said second contact such that said movable contact regions engage said first and second fixed contacts in said second position for said movable contact, and said third fixed contact so spaced longitudinally from said second contact as to engage one laterally extending edge of said movable contact when said movable contact has its other laterally extending edge still in contact with said first and second fixed contacts.

4,347,412

HANDLE LOCK DEVICE FOR A SWITCH

Kazunobu Mihara, and Kazuyoshi Sugihara, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1980, Ser. No. 109,400
Claims priority, application Japan, Jan. 12, 1979, 54-3170[U]; Jun. 16, 1979, 54-3677[U]
Int. Cl.³ E05B *65/00*; H01H *9/20*; H02H *11/00*
U.S. Cl. 200—42 T 1 Claim



1. A handle lock device for use with a switch device, the switch device including a case having an elongated opening with two extreme ends, and a rod-shaped handle extending through and movable within said opening and which is capable of being moved between the two extreme positions and when said handle is at one extreme, a space is formed between said handle and the other end of the opening, said handle lock device comprising:

a single-piece cover member detachably fitted over said handle when said handle is in either of said two extreme positions, said cover member having:

(a) a cover portion which closely covers only the portion of the handle which extends outside the opening of the case;

(b) an elongated portion integral with said cover portion and extending generally laterally of said portion and having a size for substantially filling said space which is between the handle and the other end of the opening when the handle is in one of the two extreme positions, thereby preventing the handle from substantially deviating from said one position;

(c) a projection extending from the end of said cover portion at the free end of the handle and having an aperture therethrough transversely of the handle; and

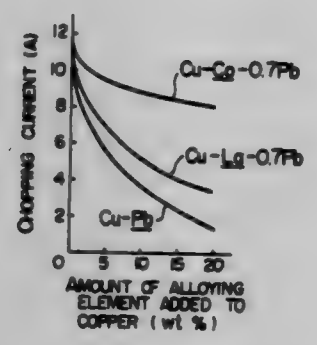
(d) an aperture in said cover portion at a position intermediate the length of the cover portion and extending in a direction generally perpendicular to the direction of said aperture in said projection; and

a separate detent member removably mounted on said cover member and having a tongue portion through said aperture in said cover portion and being sufficiently long for engaging in a hole in the handle when said cover member is on the handle for holding said cover member on the handle, and a cover engaging portion connected to said tongue portion and engaging the end of said cover portion from which said projection extends and having a slot extending inwardly from the free end of said cover engaging portion with the parts on the opposite sides of the slot lying on opposite sides of said projection, the ends of said parts on opposite sides of said slot being bent outwardly away from the end of said cover portion and extending past said aperture in said projection, whereby when a lock hasp is passed through said aperture in said projection, the hasp blocks movement of said outwardly bent ends of said parts from being moved past said projection, thereby preventing movement of said tongue out of said cover portion and thus locking the detent member to the cover member and the cover member to the handle.

4,347,413
ELECTRODES OF VACUUM CIRCUIT BREAKER

Ryuji Watanabe, Tokaimura, and Keiichi Kuniya, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 30, 1979, Ser. No. 62,117
Claims priority, application Japan, Jul. 28, 1978, 53/91475
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B 15 Claims

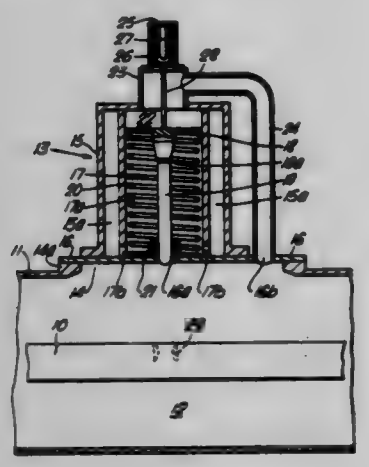


1. An electrode for a vacuum circuit breaker made of a cast alloy consisting essentially of copper, about 0.1 to 20wt % of a rare earth metal and about 0.01 to 10wt % of a metal having a lower melting point and a higher vapor pressure than copper, wherein a part of said rare earth metal and a part of said metal having lower melting point and higher vapor pressure than copper are crystallized in the grain boundary or in the grains of copper.

4,347,414
ARC SHORTING DEVICE

Peter Headley, Tynemouth; Thomas Kelsey, Wylam, and John Murdy, Washington, all of England, assignors to Northern Engineering Industries, Limited, Newcastle-on-Tyne, England

Filed May 5, 1980, Ser. No. 146,297
Int. Cl.³ H01H *33/04*
U.S. Cl. 200—144 R 9 Claims

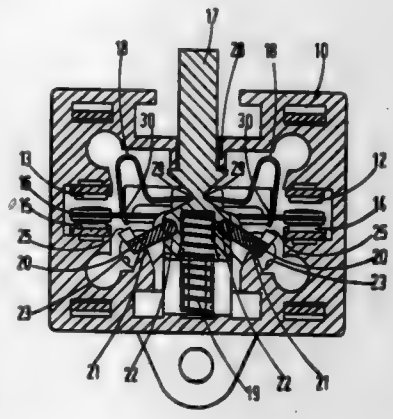


1. An arc-shorting device in high-voltage metal clad switchgear comprising a conductor within an enclosure containing fluid insulating medium, which device comprises a contact movable to a position to interconnect said conductor electrically to said enclosure and piston-and-cylinder mechanism the cylinder of which communicates with the interior of said enclosure, said mechanism being operable in response to a rise in pressure in said fluid medium upon occurrence of an arc in said enclosure to move said contact to said position.

4,347,415
ELECTRIC QUICK-BREAK SWITCH WITH FORCED OPENING OF THE CONTACTS

Fiorino Falchi, Sangano, Italy, assignor to General Electric Company, New York, N.Y.

Filed Jan. 29, 1981, Ser. No. 229,476
Claims priority, application Italy, Feb. 6, 1980, 19728 A/80
Int. Cl.³ H01H *3/32*
U.S. Cl. 200—154 9 Claims



1. A snap action electric switch with supplemental means for opening normally closed switch contacts, comprising:
(a) a stationary housing;
(b) a longitudinally movable rod extending within said housing;
(c) at least a pair of stationary contacts fixed in said housing on opposing sides of said rod;
(d) a movable contact bridge extending about said rod;
(e) spring pivot points located on said rod;
(f) snap action springs extending from opposing sides of said contact bridge to said spring pivot points so that when the rod is in a first position the contact bridge engages said pair of stationary contacts and upon movement of the rod in a first direction, the contact bridge snaps in an opposite direction to disengage from the pair of stationary contacts;
(g) first and second levers each comprising an inner and an outer end;
(h) means for hinging the inner ends of said levers on opposing sides of the rod at lever pivot points displaced in the first direction from the spring pivot points;
(i) stationary fulcrum means positioned on opposing sides of the rod to engage and rotate said levers upon displacement of the rod;
(j) said levers being formed so that in the event the snap action springs fail to disengage the contact bridge from the pair of fixed contacts upon displacement of the rod, the levers engage the contact bridge on opposing sides of the rod and force such disengagement; and
(k) stationary guide means cooperating with said levers to control displacement of the levers to prevent the levers from disengaging the contact bridge from said pair of stationary contacts when said rod is in the predetermined position.

4,347,416
MEMBRANE SWITCH CONTROL PANEL ARRANGEMENT AND LABEL ASSEMBLY FOR LABELING SAME

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321

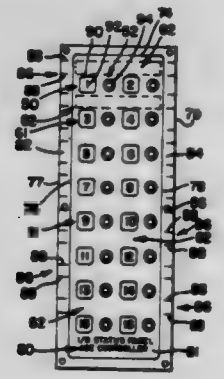
Filed May 12, 1980, Ser. No. 148,907
Int. Cl.³ H01H *9/16*
U.S. Cl. 200—317 3 Claims

1. In a membrane switch control panel arrangement of generally quadrilateral configuration including a circuit board having circuitry integrating a predetermined number of control input and output switches including for each switch a switch set including a pair of contacts on one side of the board to be manually closed and a bulb connected for illumination when the switch is closed and a viewing aperture in the board,

adjacent the set contacts, through which the bulb is visible when so illuminated, a membrane sheet of flexible non-metallic material coextensive with and overlying said one side of the board with one side of same engaging said board side, said membrane sheet being formed to define first apertures aligned with each switch set contact pair respectively and having secured over each of its said first apertures on the other side of same a planar electrically conductive switch contact closing member of film thickness dimensions for manual closing of aperture exposed switch contacts, said membrane sheet including second apertures, respectively, aligned with the bulb viewing aperture of the respective switch sets, a legend sheet of flexible non-metallic material coextensive with and overlying said other side of membrane sheet with one side of said legend sheet engaging said other side of said membrane sheet, with said legend sheet bearing location indicia for the respective swtiches and viewing apertures of the respective switch sets, and a rigid mounting sheet to which said circuit board is secured with said membrane sheet and said legend sheet disposed therebetween and with said mounting sheet being apertured to expose for viewing said legend sheet location indicia,

the improvement wherein:

said circuit board switch sets, said membrane sheet first apertures and switch contact closing members thereof, said membrane sheet second apertures, and said legend sheet switch location indicia for the respective switch sets being arranged in like modular form comprising for each module one of the switch sets, a membrane sheet first and second apertures therefor, a membrane sheet contact member for closing the module switch contacts, and leg-



end sheet switch and viewing aperture location indicia for the module switch set, with the switch set of each module being oriented such that in the switch set thereof the switch contacts and viewing aperture are similarly oriented in side by side spaced apart relation, and with said modules being grouped in parallel, spaced apart rows that extend across the width of said panel arrangement of which each said row has an equal number of said modules, said rows are of substantially uniform height and length, and said modules forming each row being in columnar relation across the height of said panel arrangement,

said legend sheet defining for each of said rows and in proximity to same an elongate switch indicia receiving zone, with said zones being of substantially uniform length and height, and being substantially coextensive with the respective rows,

with those of said zones proximating those of said modules having their switch sets integrated in the circuitry each being overlaid by a label affixed to the other side of said legend sheet and paralleling said rows,

said labels respectively bearing in-field applied functional indicia of the switch set of the modules said labels respectively identify,

said labels being of substantially the same length and weight, and disposing said functional indicia thereof in substantially columnar relation to the respective modules served by same,

said legend sheet bearing a quadrilateral marginal delineation in circumscribing relation about said location indicia thereof of which two opposed sides extend normally of said zones,

said mounting sheet aperture complementing said legend sheet marginal delineation,

said legend sheet bearing outside said marginal delineation thereof, and adjacent both said sides thereof, for each of said zones, a pair of label centering indicia lines spaced apart the height of said labels,

said labels having a length that approximates but is short of the distance between said marginal delineation two sides and being approximately centered therebetween,

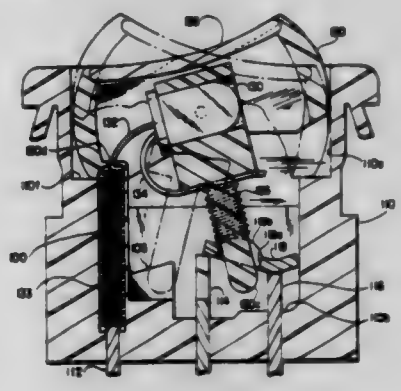
whereby prior to assembly of said panel arrangement and after said circuitry integration has been completed and said identification and functional indicia of the individual module switch sets of said switches of said circuitry has finally become coordinated and known, said functional indicia for such switch sets of each module group may be in-field applied to the respective labels to be applied to the respective zones that serve, respectively, such module groups, prior to applying such labels to said legend sheet, and each such label may be applied to said legend sheet at its zone indicated by said location indicia by aligning such label with said alignment pairs of centering indicia lines for such zone, and centering such label between said marginal delineation opposed sides, with said label centering indicia lines being covered by said mounting sheet on the assembled relation of said panel arrangement.

4,347,417

SWITCH CONSTRUCTION

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Feb. 17, 1981, Ser. No. 234,664
Int. Cl.³ H01H 9/18, 5/06, 21/42
U.S. Cl. 200—67 G 14 Claims



1. A switch comprising a base of insulating plastic and defining an upwardly open cavity, a plurality of fixed contacts spaced along the bottom wall of said base cavity, said switch having means defining actuator support regions, an actuator including support means cooperating with said support regions to movably support said actuator, said actuator molded of dielectric material and including an integrally formed depending portion, a movable contact element slidably received inside said switch base cavity for pivotal and translational movement generally across the upper ends of certain of said spaced contacts to selectively bridge said certain fixed contacts, a metal spring retained by said integrally formed depending actuator portion and engaging said movable contact element to bias said movable element toward said fixed contacts, said movable contact element having at least one upwardly open recess to loosely receive the lowermost end of said depending actuator portion and said movable contact element having raised laterally spaced portions adjacent said recess for slidably engaging said spring during actuator movement, whereby said element is moved in response to actuator movement and said spring serves as the sole lost motion connection between said contact element and said actuator.

11. A switch comprising a base defining an upwardly open cavity, a plurality of fixed contacts spaced along the bottom

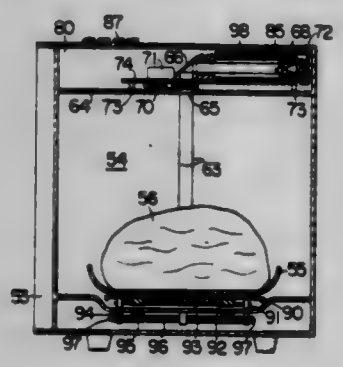
wall of said base cavity, said switch having side wall means defining aligned actuator support regions, actuator means having laterally aligned support means cooperating with said support regions to movably support said actuator means, said actuator means including a depending portion, a movable contact element slidably received inside said switch case cavity for movement generally across the upper ends of certain of said spaced fixed contacts to selectively bridge certain of said fixed contacts, said movable contact element having at least one upwardly open recess to receive said depending portion so that said element is moved in response to actuator means movement, said switch base defining at least one vertically elongated cavity outside the path of movement of said movable contact element, a fixed contact in the bottom wall of said vertically elongated cavity, a resistor in said elongated cavity and having one end in electrical contact with said fixed contact, a compression spring above said resistor and having one end in said elongated cavity and in electrical contact with the other end of said resistor, said spring having its other end engaging said movable actuator means, a lamp located in a recess defined by said actuator means, and at least one electrical lead from said lamp in electrical contact with said spring other end.

4,347,418

HEAT-COOKING APPARATUS INCORPORATING INFRARED DETECTING SYSTEM

Tomotaka Nobue; Shigeru Kusunoki; Kazunari Nishii, all of Yamatokoriyama, and Keijiro Mori, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 27, 1980, Ser. No. 125,249
Claims priority, application Japan, Mar. 2, 1979, 54-24845; Mar. 2, 1979, 54-24846; Mar. 2, 1979, 54-24848; Mar. 2, 1979, 54-24849; Apr. 20, 1979, 54-54042[U]; May 23, 1979, 54-63670
Int. Cl.³ H05B 9/06
U.S. Cl. 219—10.55 B 20 Claims



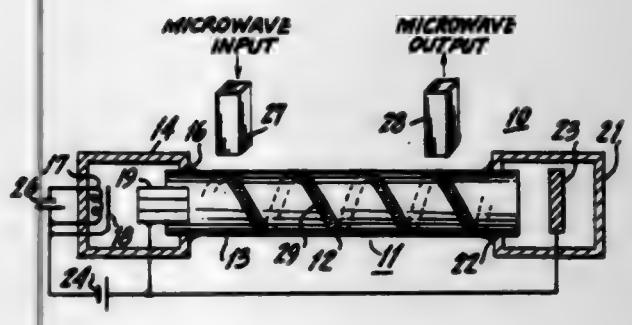
1. In a heat-cooking apparatus including an oven cavity adapted to accommodate the material to be cooked, a heat source for heating said material accommodated by said oven cavity, an infrared sensor adapted to produce a signal proportional to the rate at which infrared rays are applied thereto, an infrared detecting optic system for introducing the infrared rays radiated from said material to said infrared sensor, an infrared detecting circuit system adapted to convert the output of said infrared sensor into an electric signal, and a controller for controlling said heat source in accordance with the output of said infrared detecting equipment, the improvement wherein said infrared detecting optic system includes a peephole through which the infrared rays radiated from said material emerge from said oven cavity, said peephole being formed in one of the walls defining said oven cavity; a stationary reflective plate having a reflective surface facing said oven cavity through said peephole; an elongated shield cylinder having an opening for introducing the infrared rays reflected from said stationary reflective plate to said infrared sensor, said shield cylinder having a length and opening size which defines the radiant area from which originate the infrared rays introduced into said infrared sensor and which protects said infrared sensor from contamination; and means for closing said peephole when the level of the output from said infrared detecting equipment is above the level of a previously set reference signal.

4,347,419

TRAVELLING-WAVE TUBE UTILIZING VACUUM HOUSING AS AN RF CIRCUIT

Louis J. Jasper, Jr., Ocean, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 14, 1980, Ser. No. 140,345
Int. Cl.³ H05B 6/64
U.S. Cl. 219—10.55 A 8 Claims



1. A microwave device including an elongated, hollow vacuum housing; means sealing a first end of said housing including a heater, a cathode and an anode extending within said housing; means sealing a second end of said housing including a collector extending within said housing; a conductive helix extending longitudinally between said ends of said vacuum housing and sealed therein, said helix having a given thickness dimension; and means coupling rf energy into and out of said helix, wherein the improvement comprises:

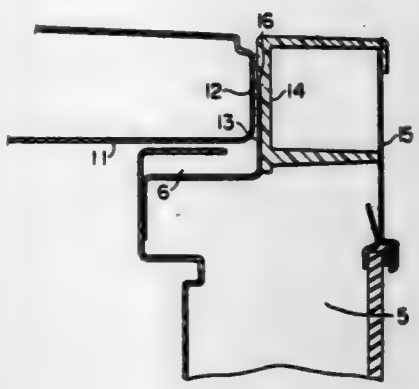
said housing includes a first dielectric portion and a second conductive helix portion, said dielectric portion and said helix portion being sealed together to form a unitary, intertwined, hermetically sealed enclosure, said helix having an inner surface and an outer surface, said inner surface being located within the interior of said vacuum housing for exposure to said vacuum and said outer surface being disposed on the outside of said housing for exposure to the outside atmosphere.

4,347,420

MICROWAVE SEAL STRUCTURE IN MICROWAVE OVEN

Nobuo Ikeda, Nara; Junzo Tanaka, Fujiidera, and Hirofumi Yoshimura, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 10, 1980, Ser. No. 158,229
Claims priority, application Japan, Sep. 11, 1979, 54-117113
Int. Cl.³ H05B 6/76
U.S. Cl. 219—10.55 D 10 Claims



1. A microwave heating apparatus comprising:

a heating chamber having an access opening, an inner wall and a front wall;

means for generating microwave energy and for guiding said energy into said heating chamber;

a door for openably closing the access opening of said heating chamber;

a choke secured about the periphery of said door, said choke being received within said heating chamber when said door is in its closed position and spaced from the inner wall of said chamber to provide a gap therebetween, said choke inhibiting microwave energy from leaking from said heating chamber through said gap to the outside of said apparatus when said door is in its closed position;

a wall portion of said door attached to said choke and extending outside said heating chamber with one surface facing the front wall portion thereof when said door is in its closed position, said wall portion having a plurality of slits spaced around the access opening of said door and extending in a direction substantially normal to the edge of said access opening with the tops ends thereof facing the outside of said apparatus; and

means for maintaining the top ends of said slits substantially electrically open to the outside of said apparatus with respect to microwave energy leaking from within said heating chamber when said door is in its closed position.

4,347,421

AUTOMATIC PIPE CIRCUMFERENCE WELDING APPARATUS

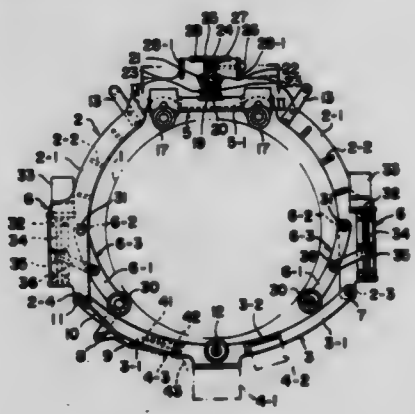
Mutsuo Mukuda; Masahiro Murakami, and Kazuo Aotsuka, all of Amagasaki, Japan, assignors to Sumitomo Precision Products Company Limited, Amagasaki, Japan

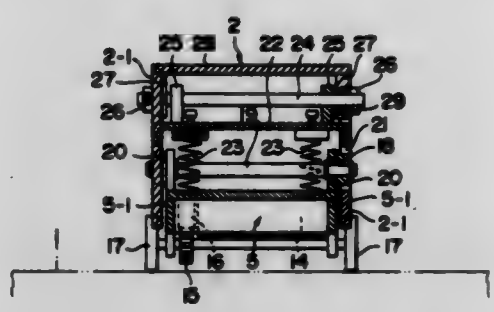
Filed Feb. 11, 1981, Ser. No. 233,576

Claims priority, application Japan, Feb. 15, 1980, 55-18679[U]; Feb. 29, 1980, 55-26589[U]

Int. Cl.³ B23K 9/225

U.S. Cl. 219—60 A 8 Claims





1. An automatic pipe circumference welding apparatus comprising: a first arcuate frame including a welding unit and wire feeding means; and a second arcuate frame detachably attached to both the ends of the first-named arcuate frame and including clamp means and guide rollers substantially at both the ends thereof and a running truck having drive wheels substantially at the center thereof, said running truck further having a shaft rotatably laid at the center above the upper surface of the truck body and made slidable in the direction of the height of said running truck, a horizontal plate disposed above said shaft and made slidable in said direction, shock absorbing means interposed between the upper surface of said body and said horizontal plate, and means for pushing said horizontal plate thereby to bring said drive wheels through said shock absorbing means into close contact with a pipe to be welded.

4,347,422

PROCESS AND APPARATUS FOR CONTROLLING THE ELECTRODE ON A SPARK EROSION MACHINE

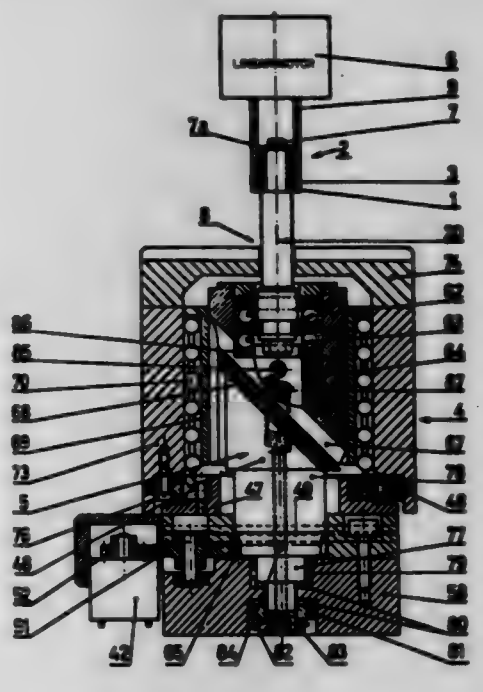
Rudolf Schneider, Reinach, Switzerland, assignor to Erowa AG, Reinach, Switzerland

Filed Mar. 15, 1979, Ser. No. 20,728

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811274

Int. Cl.³ B23P 1/12

U.S. Cl. 219—69 M 6 Claims



1. A process for controlling the electrode on a spark erosion machine, wherein the electrode is subjected to a drive force advancing the electrode within a dielectric fluid until it reaches the required working gap relative to a workpiece to be machined, wherein the force acting on the electrode due to the drive force and the pressure in the dielectric fluid is measured and the advancing speed at which the electrode is moved towards the workpiece is controlled in dependence on said measured force such that the said force is limited to a predetermined value.

4,347,423

ELECTRIC DISCHARGE MACHINE

Hideo Katsube, Hachioji; Gotaro Gamo, Komae; Yoshiyuki Nomura, and Kanemasa Okuda, both of Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jun. 4, 1980, Ser. No. 156,396

Claims priority, application Japan, Jun. 15, 1979, 54-75277

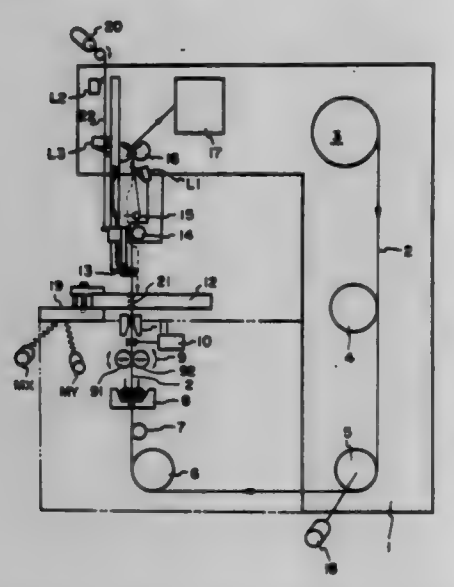
Int. Cl.³ B23P 1/08

U.S. Cl. 219—69 W 10 Claims

1. An electric spark machine for machining a workpiece by an electric spark generated between the workpiece and a flexible, elongated electrode which is fed longitudinally from a first side of the workpiece to a second side of the workpiece to provide a fresh supply thereof while predetermined relative motion is established between the workpiece and the electrode, which comprises:

clamping mechanism means for clamping the electrode when the electrode breaks, the portion of the electrode which is clamped being on the first side of the workpiece,

wherein the clamping mechanism means comprises a block having an inwardly tapered surface, a pair of rollers between which said electrode passes, said rollers being mounted to move between a first position in which said rollers contact said inwardly tapered surface and a second position in which said rollers are spaced apart from said inwardly tapered surface, whereby said electrode is permitted to pass through said clamping mechanism means in only one direction when said rollers are in said first position and said electrode is unclamped when said rollers are in said second position; and



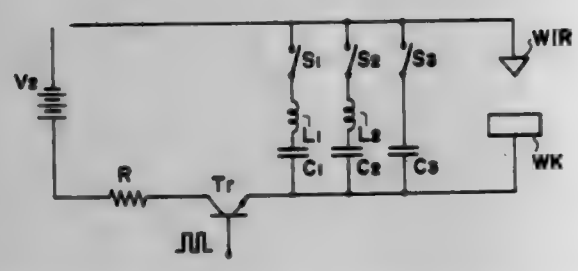
electrode feed mechanism means for receiving the broken electrode clamped by the clamping means and moving the broken end thereof to a predetermined position on the second side of the workpiece.

4,347,424

WIRE-CUT, ELECTRIC-DISCHARGE MACHINING POWER SOURCE

Haruki Obara, Sagamihara, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,447
Claims priority, application Japan, Oct. 4, 1979, 54-128380
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 C 4 Claims



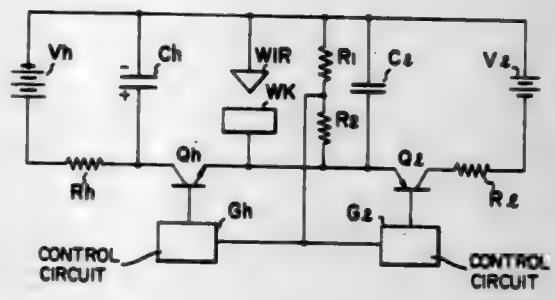
1. An improved wire-cut, electric-discharge machining power source of the type employing a transistor-capacitor discharge circuit, wherein the improvement comprises: a plurality of inductors having different inductance values; a plurality of capacitors of different capacitance values, each capacitor being series-connected to one of the plurality of inductors to form a plurality of capacitor-inductor pairs, the inductance value of the inductor in any capacitor-inductor pair being greater than the inductance value of the inductor in any other capacitor-inductor pair that includes a capacitor having a smaller capacitance value; and switch means for selectively connecting the capacitor-inductor pairs to the transistor-capacitor discharge circuit.

4,347,425

WIRE-CUT, ELECTRIC-DISCHARGE MACHINING POWER SOURCE

Haruki Obara, Sagamihara, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,448
Claims priority, application Japan, Oct. 5, 1979, 54-128702
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 C 4 Claims



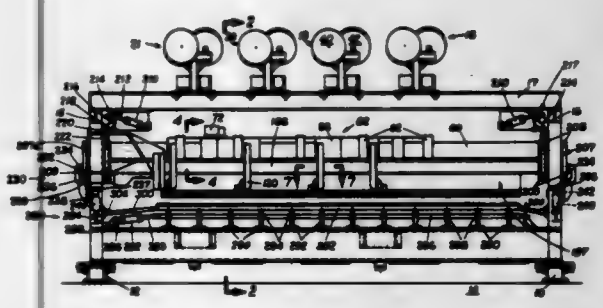
1. An electric-discharge machining power source for using an electrode to machine a workpiece comprising: a first low-current discharge circuit means for making the electrode positive and the workpiece negative to produce a reverse discharge; means for detecting the potential between the electrode and the workpiece to determine when the reverse discharge occurs; and a second high-current discharge circuit means, responsive to the means for detecting the potential, for making the electrode negative and the workpiece positive to produce a main machining discharge upon detection of the reverse discharge.

4,347,426

ARC-SPOT WELDING METHOD AND APPARATUS

Don A. Ware, St. Charles; Steve A. Coughlin, Ballwin, and Oscie B. Whatley, Florissant, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 4, 1980, Ser. No. 175,211
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—125.1 40 Claims

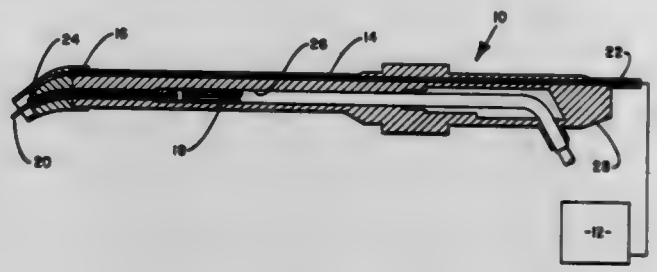


1. Apparatus for making a plurality of arc-spot welds in a predetermined pattern comprising: a plurality of torches mounted upon a carriage which is longitudinally movable relative to a work piece; said carriage being movable along a longitudinally extending fixed beam; said fixed beam being movable vertically to allow removal of a completed work piece and insertion of a new work piece; said work piece being supported by at least one work piece support located below the work piece which is vertically movable to allow exit of a completed work piece and insertion of a new work piece; a clamping assembly mounted above said work piece support and being movable toward said work piece to engage said work piece and hold it in place for welding and being movable away from the work piece to allow exit of completed work piece; said carriage being provided with control means which stops said carriage whereby said torches will be located at positions above the work piece corresponding to the desired pattern.

4,347,427
SUBMERGED ARC WELDING GUN

Dennis R. Gentilo, Jeannette; Donald A. Smith, Greensburg, and David L. Pifer, Jeannette, all of Pa., assignors to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Jun. 19, 1980, Ser. No. 161,233
Int. Cl.³ B23K 9/18
U.S. Cl. 219—137.8 3 Claims

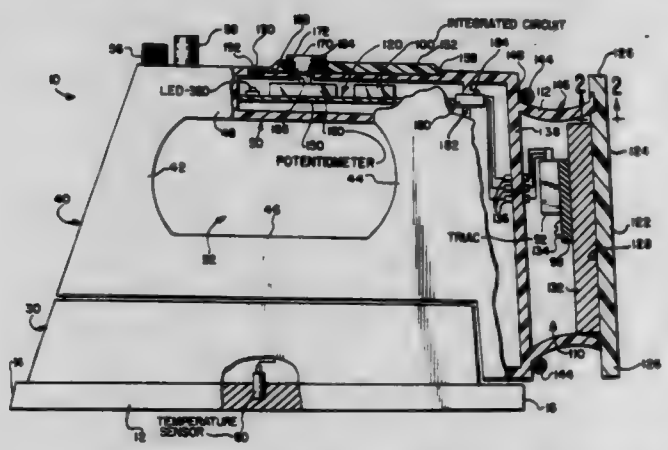


1. A submerged arc welding gun comprising:
first passage means for directing a welding wire from an entrance end of the gun to a discharge end of the gun,
second passage means for directing welding flux material from an entrance end of the gun to the discharge end of the gun, a source of fluid under pressure for propelling welding flux through the second passage means,
a nozzle member having discharge opening encircling the discharge end of the gun so that welding flux and welding wire pass simultaneously from the gun, the nozzle having at least one opening formed therein for venting the fluid to accomplish substantial separation of the fluid from the flux with the width of said one opening being substantially less than the width of the discharge opening.

4,347,428
HANDLE AND SUPPORTING STRUCTURE FOR AN ELECTRIC PRESSING IRON HAVING ELECTRONIC TEMPERATURE CONTROL

Rainer Conrad, Hanau, and Hubert Seifert, Heusenstamm, both of Fed. Rep. of Germany, assignors to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,407
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1979, 2934520; Aug. 27, 1979, 7924294[U]
Int. Cl.³ H05B 1/02; D06F 75/26, 75/34
U.S. Cl. 219—251 6 Claims

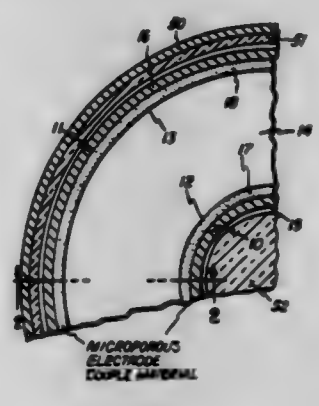


1. In a pressing iron comprising a soleplate, an electric heater arranged to heat the soleplate when the electric heater is energized, a supporting structure mounted to the soleplate, a handle supported by the supporting structure and spaced from the soleplate and the electric heater, an electronic temperature control including a temperature sensor responsive to the temperature of the soleplate, a thyristor controlling energization of the electric heater and tending to emit heat, other electronic components tending to be affected adversely by heat, and a cooling plate mounted to the thyristor so as to dissipate heat from the thyristor, the supporting structure having a cavity containing the thyristor and the cooling plate, and the electronic components tending to be affected adversely by heat being located in the supporting structure but outside the cavity at a location remote therefrom, so as to be remote from the thyristor and the cooling plate, as well as from the soleplate and the electric heater, an improvement wherein the cooling plate is mounted to a detachable wall of the supporting structure, wherein the detachable wall is detachable for replacement of the thyristor without separation of other parts of the supporting structure from the soleplate, and wherein the detachable wall is shaped so as to provide a resting stand, which allows the pressing iron to be rested flatly upon a horizontal surface without contact between the soleplate and the horizontal surface.

4,347,429
HIGH CAPACITY CORROSION AND EROSION RESISTANT ELECTRODES FOR AC ELECTRODE BOILERS

Fritz G. Will, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,788
Int. Cl.³ H05B 3/60; F22B 1/30; C25B 11/04
U.S. Cl. 219—288 16 Claims



1. An electrode boiler containing an aqueous electrolyte and a pair of spaced electrodes connected to an AC power source and separated by said aqueous electrolyte, each said electrode comprising:
an electrically conductive metal substrate; and
a microporous electrochemically active mass comprising a reversible electrode couple adhering to one face of said substrate covering substantially the entire said face of said substrate and being present in such quantity that at least some of each member of said electrode couple is present at all times during use, said electrodes being disposed with said active masses facing each other and in contact with said electrolyte, said electrode couple consisting essentially of a material which is electrochemically reversibly oxidized and reduced in response to AC current flow therethrough from one electrode to the other allowing high current density use without promoting corrosion and erosion of the electrodes.

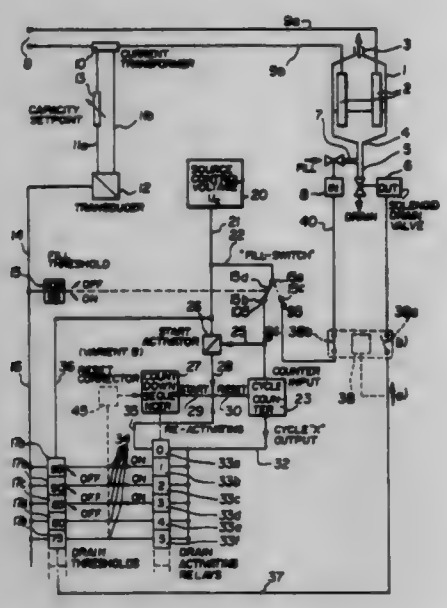
4,347,430
VAPOR GENERATOR WITH CYCLING MONITORING OF CONDUCTIVITY

Michael Howard-Leicester, Edelweiss Valley, General Delivery, Wilson's Corner, Quebec; Siegbert Gundacker, Kars, and Larry J. Moffatt, Ottawa, all of Canada, assignors to Michael Howard-Leicester, Quebec, Canada

Filed Feb. 14, 1980, Ser. No. 121,408
Int. Cl.³ H05B 1/02, 3/60
U.S. Cl. 219—295 26 Claims

1. A method of operating a water-vapor generator comprising a vaporization vessel containing water and having electrodes which are connected to a power supply between which flows a current the magnitude of which depends on the depth of immersion of the electrodes in the water in the vessel and

the conductivity of the water, the method comprising continuously measuring the magnitude of the electrode current, filling the vessel with water to an extent to give a predetermined maximum electrode current, allowing water in the vessel to boil off until a predetermined minimum electrode current is achieved, re-filling the vessel to obtain again the predetermined maximum electrode current and repeating the boiling and filling steps to provide a plurality of cycles each containing a boil leg and a fill leg, obtaining a measure of the frequency of each of successive pluralities of cycles which corresponds to



the actual conductivity of the water and comparing the measure obtained with a predetermined frequency value which corresponds to a desired conductivity of the water, and if the measured frequency is greater than the predetermined frequency, automatically discharging from the vessel a quantity of water which is directly proportional to the amount by which the measured frequency exceeds the predetermined frequency, whereby said quantity of water discharged is directly proportional to the difference between the actual conductivity and desired conductivity of the water.

4,347,431

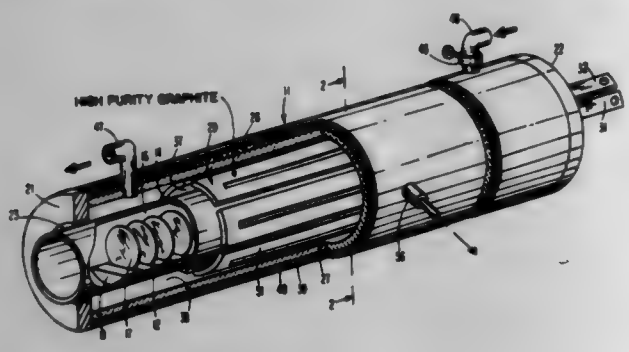
DIFFUSION FURNACE

Charles W. Pearce, Emmaus, and Paul F. Schmidt, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Inc. and Western Electric Company, Inc., both of New York, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,120

Int. Cl.³ H05B *3/10*

U.S. Cl. 219—390 **6 Claims**



1. A diffusion furnace which comprises:

a central process tube of a material taken from the group of silicon and quartz;

a resistance heating element of a high purity graphite material having an ash content of no more than 100 parts per million, said element being disposed about said process tube; and

an insulative envelope substantially enclosing the process tube and forming with said process tube an annular heater chamber for housing the heating element, said envelope having an inner wall of a material taken from the group of high purity graphite having an ash content of no more than 100 parts per million and quartz, such that the combination of the heating element and said envelope and process tube are capable of heating the space within said process tube to a temperature range including temperatures of 700° C. and 1250° C. substantially without contaminating transfer of undesirable impurities from such heater chamber toward the space within the process tube.

4,347,432

GLASS CERAMIC COOKING APPLIANCE

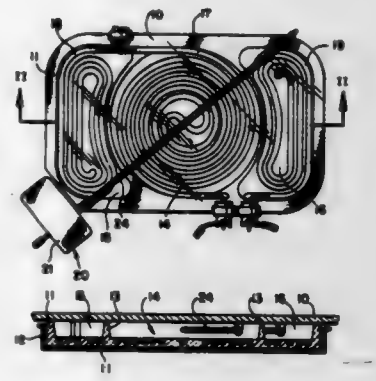
Gerhard Gösaler, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Geräte Blanc u. Fischer, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,226

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007037

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—449 **10 Claims**



1. A glass ceramic cooking appliance, comprising:

a glass ceramic cooking surface; at least two electric heating means for the cooking surface;

means for individually switching the at least two heating means on and off;

a temperature sensor subject to the thermal influence of each of the at least two heating means; and

a thermal cutout, operable in response to the temperature sensor, and having a variable operating temperature which can be changed in response to the switching means; and,

an insulating tray the at least two heating means and the switching and thermally separating the at least two heating means.

4,347,433

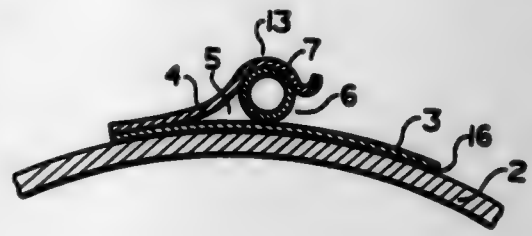
HEAT TRANSFER APPARATUS FOR RELEASABLY SECURING HEATING OR COOLING MEANS TO PIPE

Rudolph G. Wojtecki, Mantua, and Joseph P. Kaan, Stow, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 21, 1979, Ser. No. 50,922

Int. Cl.³ H05B *3/40*

U.S. Cl. 219—535 **4 Claims**



1. A heat transfer apparatus adapted to lay along the outer surface of a pipe having an outer circumference radius of curvature and to releasably secure an elongate heating or cooling means to the pipe, said apparatus comprising:

an elongate heat conductive base member having a wall having sufficient flexibility to conform to the radius of curvature of the outer circumference of the pipe,

a single resilient side wall extending from the side of the base member that faces away from the pipe, said side wall extending over the base member to provide a longitudinally extending cavity therebetween that extends along the entire length of the base member and is suitably sized to contain the heating or cooling means, said side wall ending over the base member in a spaced-apart relationship with the base member to provide a longitudinally extending entrance-way into the cavity along the entire length of the base member that is suitably sized to permit the heating or cooling means to be inserted into and removed from the cavity, and said side wall shaped in such a manner that when the heating or cooling means is inserted through the entrance-way and into the cavity the side wall presses uniformly against the heating or cooling means and urges said means against the base member to provide a more effective heat transfer contacting relationship therebetween, and

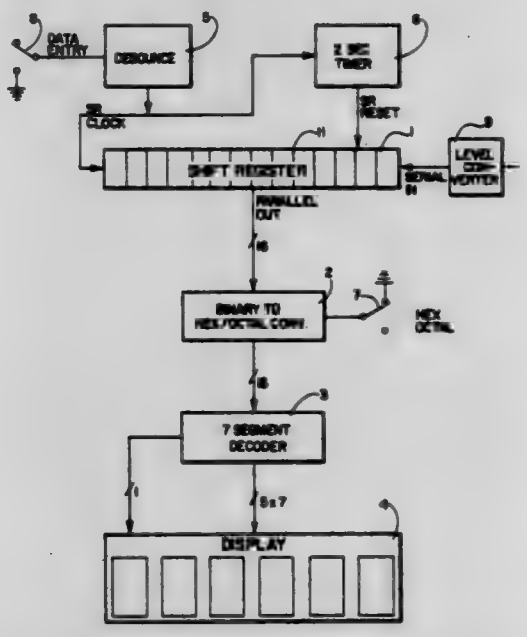
means disposed along the length of the apparatus for securing the apparatus to the outer surface of the pipe, said securing means adapted to provide a secured heat transfer contacting relationship therebetween and designed so as not to interfere with the entrance-way in order that the heating or cooling means can be inserted into and removed from the cavity without having to release the apparatus from the pipe.

4,347,434

HAND HELD DATA BUS ANALYZER

Albert Kovalick, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 18, 1980, Ser. No. 113,009
Int. Cl.³ G01R *31/02*
U.S. Cl. 235—92 SH **6 Claims**



1. Logic level sensing and storage apparatus for assembling a digital word in a selected sequence from a data paths, said apparatus comprising:

a probe tip;

a shift register means coupled to said probe tip for containing a digital word therein;

a display means coupled to said shift register means for displaying a visual indication of said digital word;

a manually activated switch coupled to said shift register means; and

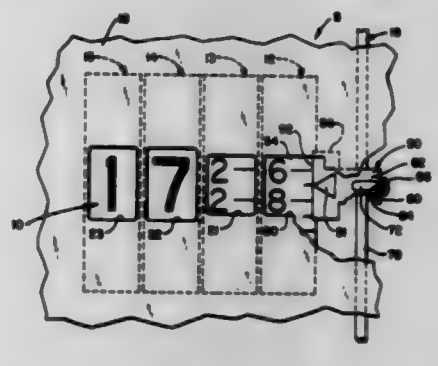
means for clocking a representation of a first data bit on a data path in electrical contact with said probe tip into said shift register means in response to activation of said manually activated switch.

4,347,435

READOUT MECHANISM FOR FUEL PUMP COUNTER

Alfred C. Evans, Simsbury, and Bruno S. Smilgys, Hartford, both of Conn., assignors to Veeder Industries, Inc., Hartford, Conn.

Filed Jan. 26, 1981, Ser. No. 228,320
Int. Cl.³ B67D *5/22*; G01D *13/22*
U.S. Cl. 235—94 R **8 Claims**



1. In a fuel pump cost counter for registering the accumulated cost count of fuel delivered and having a plurality of cost counter wheels coaxially mounted in ascending order of significance from right to left as the counter is read from the front thereof, the first order cost counter wheel having an outer indicia rim with an annular arrangement of a plurality of angularly spaced axially extending and axially overlapping cost count increment graduations representing larger and smaller cost count increments respectively, the first larger cost count increment graduations axially extending to the left of the remaining cost count increment graduations as the counter is read from the said front thereof, and a read mechanism comprising a graduation indicator and mounting means for mounting the graduation indicator adjacent to said indicia rim for reading from the said front of the counter the accumulated cost count of the first order counter wheel with its axially extending graduations, the improvement wherein the read mechanism comprises mask means having a first selective operative position masking from the said front of the counter the said remaining cost count increment graduations only, and wherein the read mechanism mounting means is operable for selectively mounting the mask means in its said first operative position for reading with the graduation indicator and from the said front of the counter, the accumulated cost count of the first order counter wheel with the said first cost count increment graduations and without the said remaining cost count increment graduations.

4,347,436

PHOTOELECTRIC TRANSDUCING ELEMENT WITH HIGH POLYMER SUBSTRATE

Tadaji Fukuda; Masao Sugata, both of Kawasaki; Takashi Nakagiri, Tokyo, and Masaki Konishi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

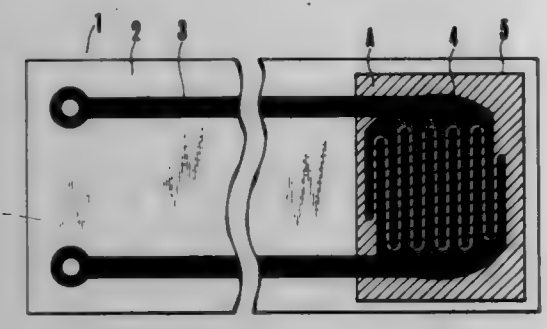
Filed Mar. 25, 1980, Ser. No. 134,150
Claims priority, application Japan, Mar. 26, 1979, 54-35257
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—211 R **5 Claims**

1. In a photoelectric transducing element formed on a flexible high polymer insulating film substrate, the improvement comprising:

a conductor layer which is printed on one surface of said high polymer insulating film substrate and comprising at least a pair of independent conductor patterns; and

a photoelectric transducing layer comprising amorphous photoconductive thin film formed by a thin film forming

means with a portion thereof being superimposed on the patterned portion of said conductor layer and the remain-



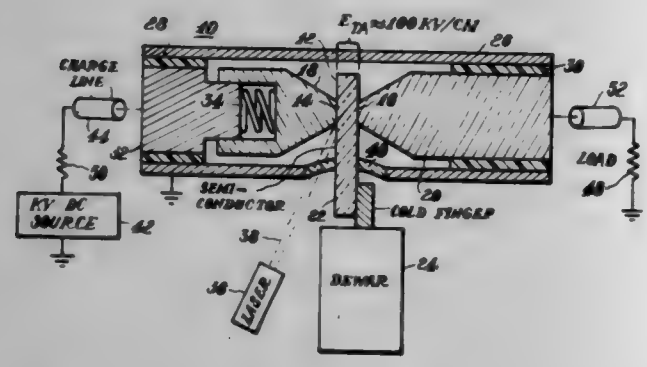
ing portion thereof contacting the plane of the high polymer insulating film substrate.

4,347,437

LIGHT ACTIVATED SWITCHING BY THE AVALANCHE EFFECT IN SEMICONDUCTORS

Gerard Mourou, Rochester, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Filed Jun. 17, 1980, Ser. No. 160,351
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—211 R **36 Claims**



1. The method of switching high voltages with the aid of a body of semiconductive material which comprises the steps of applying, with said voltage to be switched, an electrical field across said body having a predetermined magnitude below that for bulk dielectric breakdown therein, and applying optical energy to said body of levels in such relationship to said predetermined field magnitude that conduction by avalanche multiplication occurs in said body and enables switching therethrough.

4,347,438

LIGHT TRANSCEIVER DEVICE

Richard Spielman, 4401 W. Pratt Ave., Lincolnwood, Ill. 60646

Division of Ser. No. 5,002, Jan. 22, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,674
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—221 **9 Claims**

1. An improved light transceiver for transmitting and receiving a light beam along a predetermined light path, said transceiver comprising:

a frame having spaced apart side members,

one of said side members including an enclosure and having an opening aligned with said path but otherwise being light tight,

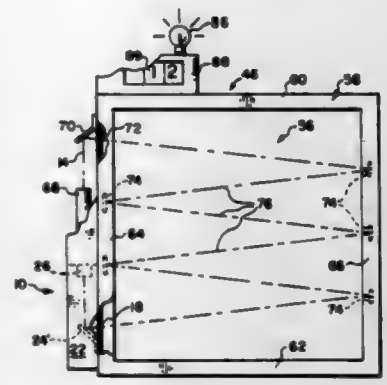
a light source for emitting a light beam and being located within said enclosure,

an aperture in said enclosure to permit passage of light from said source toward said other side member,

light receiver means secured within said enclosure including an active element to receive said light, said element being offset from said opening,

light directing mirror means on said other side member for receiving the light beam from said source and directing it along said path into said opening in the enclosure, and

light reflecting means secured within said enclosure offset from said element and aligned with said opening, said light



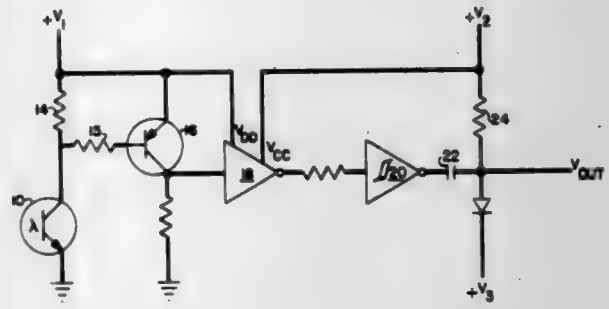
path and said element for directing light passing trough said opening from said source to said active element, said reflecting means directing substantially all light received at an angle from said path to positions around and away from said receiver active element.

4,347,439

LEVEL-SHIFT AND PULSE SHAPING CIRCUITRY

Stanley E. Wood, Inyokern, and Kenneth L. Moore, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 811,742, Jun. 30, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,644
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—222 R **5 Claims**



1. A light detection device for measuring motion of an object comprising:

a lamp for emitting light;

a collimator with a plurality of slots spaced a predetermined distance from said lamp for transmitting light from a predetermined direction from said lamp such that passage of an object through said space between said lamp and collimator sequentially cuts off transmitted light through said slots of said collimator; and

a plurality of level-shift and pulse shaping circuits with a phototransistor per circuit, said phototransistors connected to respond near their maximum output voltage thus permitting logic level, TTL level, connections placed on the opposite side of said slotted collimator from said lamp such that each phototransistor monitors the transmitted light from a predetermined group of slots in said collimator.

4,347,440

FILTER ARRANGEMENT FOR AN X-RAY APPARATUS

Werner Haas, Lafayette, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

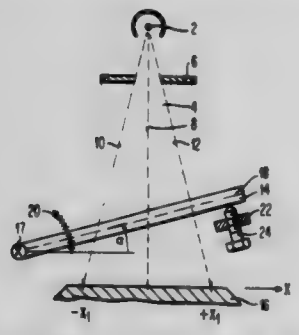
Filed Jul. 9, 1980, Ser. No. 166,805
Int. Cl.³ G21F *3/02*; G21K *3/00*
U.S. Cl. 378—156 **12 Claims**

1. A filter arrangement for an X-ray apparatus having an

X-ray source for emitting X-rays, and a collimator for forming a bundle from said X-rays and for directing said bundle of X-rays onto a target, said bundle of X-rays defining a center beam axis, comprising

(a) a single filter plate having a first and a second end face which are opposed to each other, said filter plate being positioned in said bundle for passing said X-rays therethrough and for attenuation of said X-rays before their impingement on said target;

(b) means for pivotally mounting said filter plate on a pivoting axis which is non-parallel to said center beam axis and



for rotating said filter plate about said pivoting axis between a lower setting angle and an upper setting angle into a plurality of selected positions, wherein said two setting angles determine the setting range of said filter plate, such that in said whole setting range said first end face is always exposed to said entire bundle of X-rays, said entire bundle thereby passing through said filter plate and exiting through said second end face, thereby obtaining selected non-uniform radiation profiles of said X-rays transmitted to said target; and

(c) means for locking said filter plate in a selected position within said setting range.

4,347,441

DUAL PROBE INTERFEROMETER FOR OBJECT PROFILE MEASURING

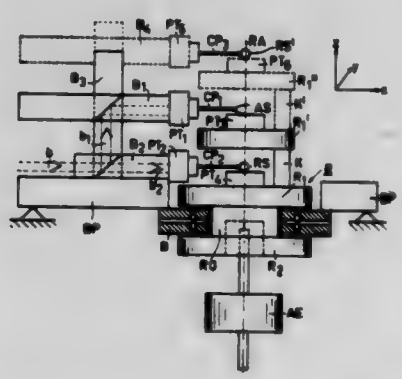
Jan G. Dil; Johannes C. Driessen, and Wichert Mesman, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 193,972

Claims priority, application Netherlands, Sep. 22, 1980, 8005259

Int. Cl.³ G01N *21/86*

U.S. Cl. 250—560 **8 Claims**



1. An apparatus for measuring the profile of an object, which apparatus comprises a rotatable measuring table for the object, a measuring probe having one end which is adapted to be pressed against the object and a second end carrying a reflecting element, and an interferometer, whose measuring arm incorporates the reflecting element of the measuring probe, characterized by a reference table for a reference object, which reference table is rotatable in synchronism with and about the same axis as the measuring table, a reference probe, having one end which is adapted to be pressed against the reference object, and a second end carrying a reflecting element which is incorporated in the reference arm of the interferometer.

4,347,442

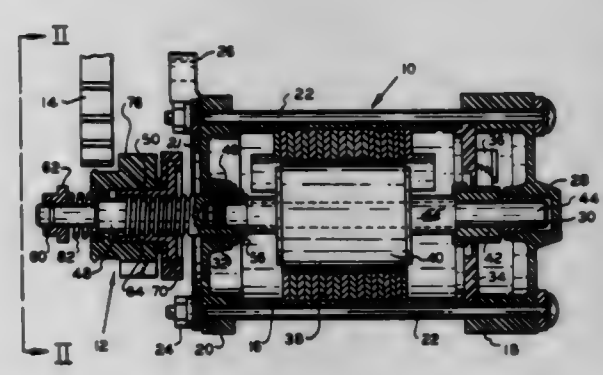
DOUBLE INSULATED STARTER MOTOR

Dale A. White, Eaton Rapids; Paul P. Kluwe, Vermontville, and Leon D. Greenwood, Eaton Rapids, all of Mich., assignors to Eaton Stamping Company, Eaton Rapids, Mich.

Filed Jul. 14, 1980, Ser. No. 168,135

Int. Cl.³ F02N *11/14*

U.S. Cl. 290—48 **15 Claims**



1. A starter for internal combustion engines characterized by its dielectric nature and economy of construction comprising, in combination, a synthetic plastic tubular casing having an inner surface and ends, a synthetic plastic end cap mounted on each casing end, connector means mounting said end caps upon said casing, a bearing mounted in each of said end caps, an electric field coil mounted within said casing having a diameter slightly less than the diameter of said casing inner surface, armature shaft structure supported on said bearings including a cantilever portion extending exteriorly of an end cap and a coaxial interior portion within said casing, an armature defined on said shaft structure interior portion within said field coil, armature brushes within said casing energizing said armature, said armature shaft cantilever and interior portions comprising separate interconnected shafts, connection means interconnecting said cantilever and interior portion shafts providing an integral armature shaft structure assembly, and starter pinion gear means mounted upon said cantilever portion.

4,347,443

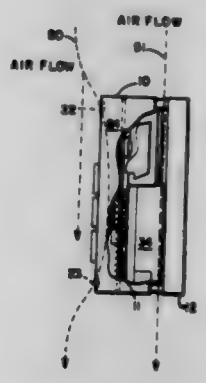
ROOM THERMOSTAT WITH ELECTRONIC CIRCUIT BOARD HEAT REMOVAL AIR WASH

John M. Whitney, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 18, 1981, Ser. No. 275,003

Int. Cl.³ H01H *35/14*; H02B *1/00*

U.S. Cl. 307—117 **11 Claims**



1. A thermostat comprising

a base member adapted to be mounted on a wall of a space in which the temperature is to be controlled,

a cover member,

a circuit board means for supporting electrical components

of an electrical circuit on a front side of said board means, said components including a temperature responsive element, a power supply circuit, a signal output circuit,

means for mounting said circuit board in said cover member with space between the back side of said circuit board and said cover to allow air to flow over said circuit board to remove heat therefrom,

shield means attached to said front side of said circuit board to shield said temperature responsive element from heat generated in said power supply circuit and signal output circuit, and

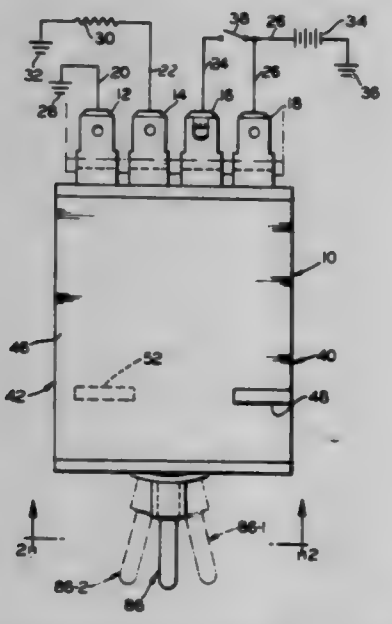
means connecting said circuit board means to said base member.

4,347,444

AUTOMOTIVE BACKLIGHT HEATER AND TIMING CONTROL MEANS

Robert E. Taylor, Cadillac; Norman A. Rautiola, Reed City, and Gerald K. Miller, Hersey, all of Mich., assignors to Nartron Corporation, Reed City, Mich., a part interest

Filed Feb. 7, 1980, Ser. No. 119,214
Int. Cl.³ H01H *43/00*
U.S. Cl. 307—141 **93 Claims**



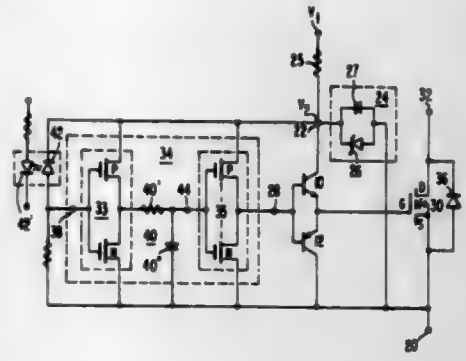
1. An electrical switching and timing assembly, comprising first switch means selectively electrically closable and openable, circuit means having an input end and an output end, said input end being adapted for electrical connection to a master switch assembly and through said master switch assembly to a source of electrical potential, said output end being adapted for electrical connection to associated electrical load means, said circuit means being closable by selective closing of said first switch means only if said selective closing of said first switch means occurs when said master switch assembly is closed, said circuit means comprising electrical timing means effective for opening said circuit means within a first preselected span of time after said circuit means is first closed by said first switch means, said electrical timing means also being effective for opening said circuit means within a second predetermined span of time after the expiration of said first preselected span of time and upon said circuit means being again closed by said first switch means, said second preselected span of time being different from said first preselected span of time, and wherein said first switch means is effective for opening said circuit means even before the expiration of either of said preselected spans of time.

4,347,445

FLOATING HYBRID SWITCH

Richard H. Baker, Bedford, Mass., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 31, 1979, Ser. No. 108,523
Int. Cl.³ H03K *17/687, 19/092*
U.S. Cl. 307—255 **9 Claims**



1. A floating hybrid switching circuit comprising a VMOS transistor having a source drain path and a gate electrode, a pair of complementary series connected bipolar transistors having common base input electrodes and common output electrodes, the common output electrodes having the same nomenclature and being d.c. coupled to the gate electrode, said series transistors having a main current path between a power supply terminal and a floating reference terminal, said reference terminal being d.c. connected to one electrode of the field effect transistor source drain path and one electrode of the main path of the series transistors to maintain said one electrode at the same floating d.c. reference potential, a control circuit for deriving an output signal coupled to the common base electrodes, said output signal having first and second levels respectively causing a main current path of a first of the bipolar transistors to be cut off while a main current path of the second bipolar transistor is conducting and the main current path of the first bipolar transistor to be conducting while the main current path of the second bipolar transistor is cut off, the bipolar transistors when responsive to the first level maintaining the gate electrode at a predetermined constant voltage relative to the reference terminal via a low impedance path between the reference terminal and the gate electrode to cut off the VMOS transistor source drain path and when responsive to the second level coupling the voltage at the other electrode of the bipolar transistor main current path to the gate electrode to activate the VMOS transistor source drain path into a conducting state, and diode means connected between the reference terminal and the other electrode of the main current path of the bipolar transistors for maintaining a constant predetermined voltage difference between the reference terminal and the other electrode of the main current path of the bipolar transistors to prevent false triggering of the bipolar transistors in response to transient voltage variations between the power supply and reference terminals.

4,347,446

EMITTER COUPLED LOGIC CIRCUIT WITH ACTIVE PULL-DOWN

John E. Price, Palo Alto, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

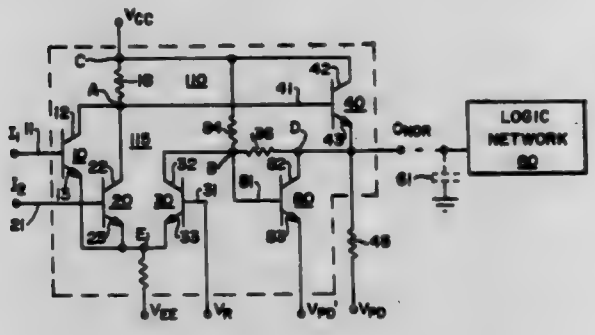
Filed Dec. 10, 1979, Ser. No. 101,466
Int. Cl.³ H03K *19/086, 19/092*
U.S. Cl. 307—443 **12 Claims**

1. In a logic system, an emitter coupled logic circuit comprising:

input difference circuit means including first and second difference circuit branches having respective first and second switching transistors with opposite operating states switching in response to at least one input logic signal and associated first and second load circuits and first and second output nodes;

emitter-follower transistor circuit means coupled to one of said output nodes of said switching transistors for sensing the operating state thereof and producing an output logic signal corresponding thereto on an output signal node; and

transition circuit means including a transition transistor coupled between the other one of said output nodes of said



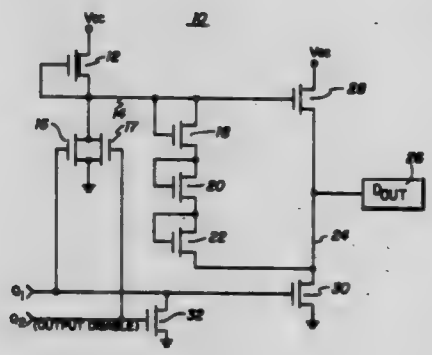
switching transistors and said output signal node for providing large current drive to said output signal node during each transition of said output logic signal in one direction and bias circuit connections for said transition transistor directly incorporating at least a portion of an associated one of said load circuits in a manner such that said transition transistor operates only during said output logic signal transitions in said one direction.

4,347,447

CURRENT LIMITING MOS TRANSISTOR DRIVER CIRCUIT

Robert J. Proebsting, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US81/00497, § 371 Date Apr. 16, 1981, § 102(e) Date Apr. 16, 1981
PCT Filed Apr. 16, 1981, Ser. No. 275,056
Int. Cl.³ H03K *19/003, 19/007, 19/094, 17/16*
U.S. Cl. 307—548 **15 Claims**



1. A current limiting MOS transistor circuit for driving an output node, comprising:

a driver transistor having the gate terminal thereof connected to receive a control signal, the drain terminal thereof connected to a power terminal, and the source terminal thereof connected to said output node, and

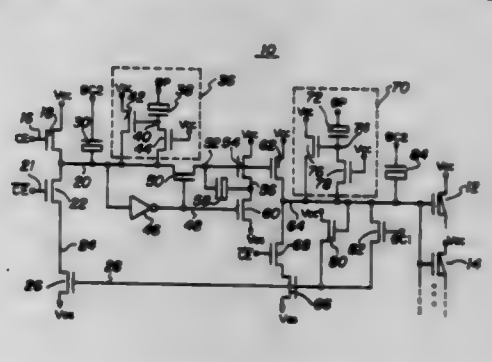
means connected between the gate and source terminals of said driver transistor for limiting the maximum voltage difference therebetween to a predetermined voltage thereby limiting the current flow through said driver transistor, wherein said means for limiting comprises a plurality of serially connected transistors each having the gate and drain terminals thereof connected together, the first of said transistors having the gate and drain terminals thereof connected to the gate terminal of said driver transistor, each succeeding transistor having the gate and drain terminals thereof connected to the source terminal of the preceeding transistor and the last of said transistors having the source terminal thereof connected to the source terminal of said driver transistor.

4,347,448

BUFFER CIRCUIT FOR SEMICONDUCTOR MEMORY

Robert S. Plachno, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/01495, § 371 Date Nov. 7, 1980, § 102(e) Date Nov. 7, 1980, PCT Pub. No. WO82/01795, PCT Pub. Date May 27, 1982
PCT Filed Nov. 7, 1980, Ser. No. 265,984
Int. Cl.³ H03K *17/284, 17/16, 17/687*
U.S. Cl. 307—583 **21 Claims**



1. A circuit for controlling a plurality of power transfer transistors, comprising:

means responsive to a first enable signal for charging a node which is connected to control the state of said power transfer transistors;

means responsive to a second enable signal for coupling said node to a reference voltage and for discharging said node to a predetermined voltage;

means responsive to a first clock signal for isolating said node from said reference voltage; and

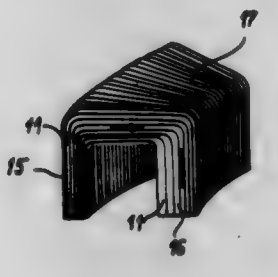
means for coupling a negatively going clock signal to said node to drive said node to a voltage below said predetermined voltage whereby said power transfer transistors are rendered nonconductive.

4,347,449

PROCESS FOR MAKING A MAGNETIC ARMATURE OF DIVIDED STRUCTURE AND ARMATURE THUS OBTAINED

Jean-Francois Beau, Saint-Ouen l'Aumone, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 6, 1980, Ser. No. 127,830
Claims priority, application France, Mar. 20, 1979, 79 07021
Int. Cl.³ H02K *15/02*
U.S. Cl. 310—42 **9 Claims**



1. A process for forming a magnetic armature having an annular shape and a concentric annular groove defined in part by concentric inner and outer radial rings, said inner ring having a radial thickness greater than that of said outer ring, said process comprising the steps of:

winding a filamentary magnetic material on an annular mandrel having a cross-section on one side of a plane at right angles to the axis of said mandrel, which cross-section corresponds in part to the cross-sectional contour of said groove, to produce a toroidal winding having an outer

shape on said side of said plane which at least approximately corresponds to the desired outer shape of said armature;

impregnating said winding with a hardenable material capable when hardened of joining together the turns of said winding;

hardening said material; and

cutting said winding along said plane to form said armature.

4,347,450

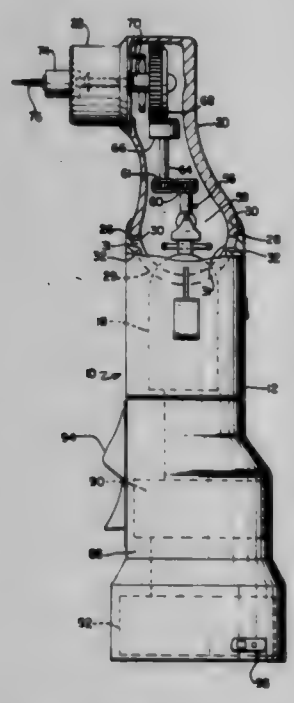
PORTABLE POWER TOOL

Wallace M. Colligan, Rte. 1, P.O. Box 28, Preston, Md. 21655

Filed Dec. 10, 1980, Ser. No. 215,090

Int. Cl.[3] H02K *7/14*; F16C *1/02*

U.S. Cl. 310—50 13 Claims



1. A portable power tool comprising:

an elongated body portion having ends;

power means in said body portion;

a heat portion adjacent one end of said body portion, said head portion including an implement holding chuck;

a driving connection between said power means and said chuck; and

means for allowing pivotal displacement of said head portion with respect to said body portion between a normal, aligned position with respect to said body portion and displaced positions in which said head portion is inclined with respect to said body portion, said pivotal displacement allowing means including:

(i) a swivelable joint between said body portion and said head portion;

(ii) an angular coupling in said driving connection, said angular coupling being disposed adjacent said swivelable joint;

said body portion having a longitudinal axis, said head portion also having a longitudinal axis, said longitudinal axis of said head portion normally being parallel with said longitudinal axis of said body portion when said head portion is in said normal, aligned position, and wherein said chuck has a rotational axis which is normal to the axis of said head.

4,347,451

SALIENT POLE DYNAMOELECTRIC MACHINE

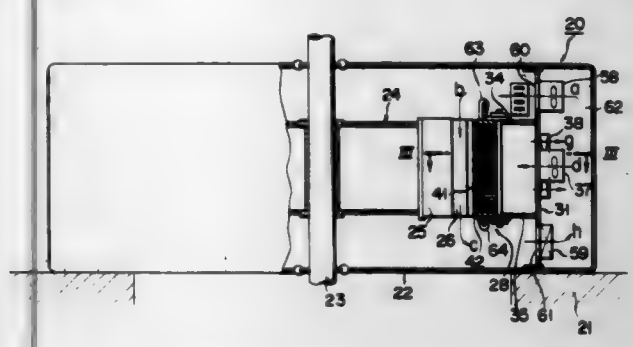
Akinori Mizuyama, Komae, and Tadahisa Ogita, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 18, 1980, Ser. No. 141,659

Claims priority, application Japan, Apr. 25, 1979, 54-50252

Int. Cl.[3] H02K *9/04*

U.S. Cl. 310—59 11 Claims



1. A salient pole dynamoelectric machine comprising:

a cylindrical housing;

a central rotary shaft disposed in the center of said housing;

a rotor rotatably disposed in said housing on said central rotary shaft having an outer peripheral wall fitted with a plurality of circumferentially arranged adjacent salient poles and having airflow spaces defined between said adjacent salient poles;

a stator having an outer peripheral wall and an inner peripheral wall and disposed in said housing to concentrically surround said rotor, wherein said stator inner peripheral wall is fitted with circumferentially arranged stator coils having stator coil ends extending beyond said stator inner peripheral wall;

a cylindrical partition wall which further comprises a cylindrical base wall circumferentially spaced a prescribed distance from said inner peripheral wall of said stator and a plurality of annular rims formed on both a top and bottom end of said cylindrical base wall, said cylindrical base wall and said annular rims cooperating to completely enclose said inner peripheral wall of said stator;

a plurality of air inlet chambers and air outlet chambers circumferentially alternately arranged between said outer peripheral wall and said inner peripheral wall of said stator;

first blower means communicating with said air inlet chambers for conducting air into said stator;

first air cooler means disposed adjacent said air outlet chambers for cooling hot air delivered from said stator;

second blower means provided on said housing for supplying air to said airflow spaces between said adjacent salient poles of said rotor; and

second air cooler means provided on said housing for cooling hot air drawn from said airflow spaces defined between said adjacent salient poles of said rotor.

4,347,452

MICRO-DISPLACEMENT DEVICE

Issei Imahashi, Yamanashi, Japan, assignor to Telmec Co., Ltd., Japan

Filed Sep. 15, 1980, Ser. No. 187,170

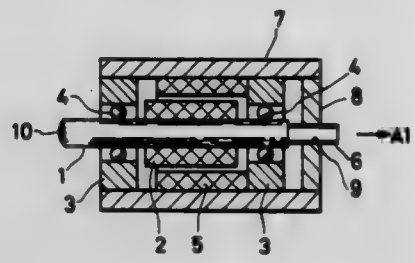
Claims priority, application Japan, Mar. 5, 1980, 55-27614

Int. Cl.[3] H02K *7/12*

U.S. Cl. 310—76 2 Claims

1. A backlash free micro-displacement device comprising a rotary shaft fixedly secured along a center axis of a rotor of a step motor and having screw threads formed around its outer periphery, bearings fixedly secured to a casing for supporting said rotary shaft so as to be rotationally and axially displaceable, a stator of the step motor provided on said casing for rotationally driving said rotor, and a nut provided on said casing and threadedly engaging the screw threads around said

rotary shaft said rotor in all axial positions of said shaft being axially offset in the same direction with respect to said stator with the respective magnetic fields of said rotor and stator



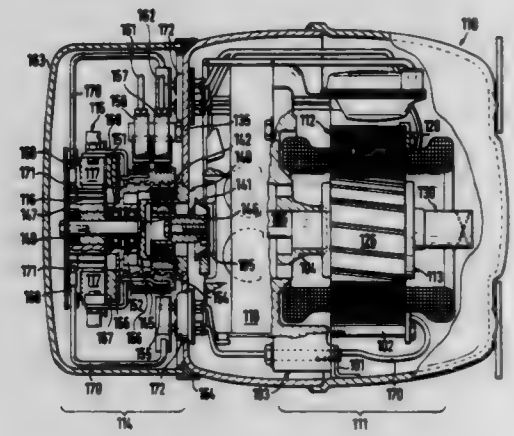
overlapping and the centers of their magnetic fields being staggered and urging said shaft in the same axial direction at all times.

4,347,453

DIRECT CURRENT MOTOR WITH MAGNETIC COUPLING

Ernst Gaus, Bürgerstrasse 9, 7500 Karlsruhe, Fed. Rep. of Germany

Filed Feb. 6, 1980, Ser. No. 118,983
Int. Cl.³ H02K *49/00*
U.S. Cl. 310—104 13 Claims



1. A direct-current motor particularly for driving compressors in refrigeration aggregates, comprising a housing; a stator in said housing; a rotor in said housing concentrically surrounded by said stator and defining an annular clearance therewith, said rotor including an output shaft; commutator means in said housing; a magnetic coupling in said housing intermediate said rotor and said commutator means for transmitting rotation to the latter, said coupling including two magnetically coupled discrete rotatable elements one of which is driven by said rotor and the other of which drives said commutator means; and means hermetically subdividing said housing into two compartments one of which contains said stator, rotor and one of said rotatable members whereas the other compartment contains said commutator means and the other of said rotatable elements; said output shaft extending through said subdividing means for said other compartment into direct driving connection with an aggregate to be driven, torque required for driving said commutator means being transmitted indirectly by said magnetic coupling.

4,347,454

STATOR WINDING FOR AN ELECTRIC MACHINE

Klaus Gellert; Günter Nagel, and Franz J. Pollmeier, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 67,145
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2836229
Int. Cl.³ H02K *19/26*
U.S. Cl. 310—193 2 Claims



1. A stator winding assembly for an electric machine comprising:

a stack of stator laminations formed with at least one slot having a given cross-section along its length, the cross-section of the slot being enlarged at at least one point along the slot to provide at least one recess in the laminations, each such recess surrounding the slot and bounded on its sides and bottom by the lamination stack; and

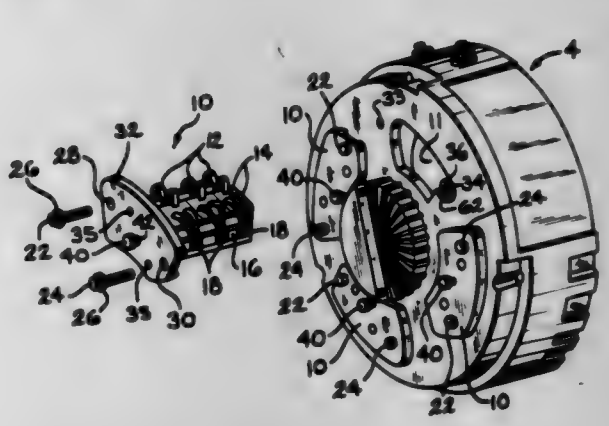
a winding inserted in the slot, the winding comprising at least one insulated conductor having a protective outer corona coating, and at least one portion of the winding, at at least one point corresponding to the position of a recess having an enlarged cross-section comprising a wrapping of insulating tape adapted to engage and lock in the recess to secure the winding against motion in the axial directon.

4,347,455

REMOVABLE BRUSH HOLDER WITH BRUSH CLAMPING DEVICE

Jeffrey T. Major, Cygnet; LeRoy A. Yard, Oregon, and Danny B. Holzscheiter, Toledo, all of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Apr. 18, 1980, Ser. No. 141,539
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—239 3 Claims



1. In a dynamoelectric machine having an armature contact surface, and an end frame, the combination comprising:

a plurality of separate removable brush holders adapted to be axially removable from the exterior of said machine, said end frame of said machine having apertures therethrough adapted to receive each said brush holder therein;

said end frame including means for receiving attachment each means for attaching said brush holder to said end frame;

means for making electrical connection to said brush holder;

each said removable brush holder including manually operable means for retaining a brush in a predetermined position therein and releasing said brush after said brush holder is firmly attached to said end frame, and for retaining said brush in a second predetermined position and releasing said brush after said removable brush holder is removed from

said end frame by manually tilting said brush holder; so that each said brush holder is adapted to be tilted to avoid contact with said armature contact surface while being passed through said aperture, and said brush holder being adapted to retain said brush in a position removed from said contact surface during movement of said brush holder with respect to said armature contact surface until said movement has ceased; said manually operable means being a threaded member;

said brush holder defines a threaded aperture therein, adapted to adjustably retain said threaded member therein;

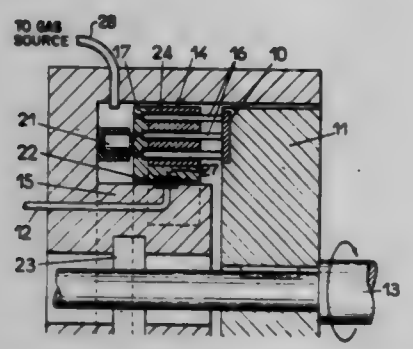
said threaded member being inserted into said brush holder so that a tip thereof presses against said brush, causing said brush to be retained in a predetermined position in said brush holder.

4,347,456

SLIDING ELECTRICAL CONTACT DEVICES

Jean-Pierre Chabrerie, Gif-sur-Yvette, France, assignor to Etat Francais, Paris, France

Continuation of Ser. No. 944,860, Sep. 22, 1978, abandoned. This application Jul. 7, 1980, Ser. No. 166,366
Claims priority, application France, Oct. 3, 1977, 77 29716
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—248 11 Claims



1. An electrical contact device for current transfer comprising:

a brush having at least one bundle of stiff wholly metal wires of a diameter less than 80 microns and sole means with which one end portion of said bundle has a tight connection retaining said end portion in a predetermined direction with respect to said sole means,

a track arranged to be moved in operation in a direction transverse to said predetermined direction with respect to said brush,

means for maintaining the other end portion of said bundle in rubbing contact with the track,

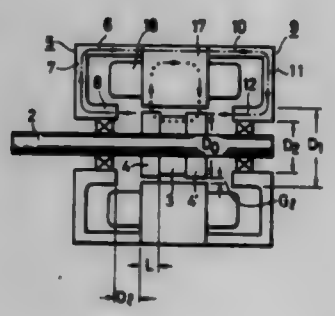
and means for maintaining the brush and track in a dry non oxidizing atmosphere.

4,347,457

PERMANENT MAGNET TYPE STEPPING MOTOR

Masafumi Sakamoto, Kiryu, Japan, assignor to Japan Servo Co., Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,717
Claims priority, application Japan, Sep. 19, 1980, 55-129216
Int. Cl.³ H02K *3/42*
U.S. Cl. 310—256 2 Claims



1. A permanent magnet type stepping motor that is characterized in having a rotor made of a circular-plate permanent magnet with one side magnetized as N-pole and the other side as S-pole sandwiched between two rotor yokes made of magnetic circular plate and mounted in one unit on a rotor shaft by way of a hole penetrating through its center, a cover comprising a front portion including an outer diameter side cylindrical part, a cover circular plate part, and an inner diameter side cylindrical part installed at the central part of the aforesaid circular plate part all of which are composed in one unit and made of magnetic material and a rear cover of the same construction, the rotor shaft of the aforesaid rotor being held by the inner diameter sides of the respective inner diameter side cylindrical parts of the aforesaid front and rear covers such that the rotor rotates freely, a stator firmly held by binding bolts and nuts between the aforesaid front and rear covers arranged in a position where its inner surface opposes the outer periphery of the aforesaid rotor yokes across a small air gap, toothed wheel-like jags fabricated around the outer periphery of the aforesaid rotor yokes opposing the inner surface of the stator to facilitate the rotor to make a stepwise rotation by letting a stepwise DC current flow through the stator coils wound around the aforesaid stator, wherein with D_1 for the outer diameter and D_2 for the inner diameter respectively of the inner diameter side cylindrical parts of the aforesaid front cover and rear cover respectively, D_0 for the outer diameter of the rotor yokes, L for the respective length of the rotor yokes in the shaftwise direction, Gl for the dimension of the air gap between the outer periphery of the rotor yokes and the inner surface of the stator, Dl for the distance of space between the end surface of the inner diameter side cylindrical parts respectively of the front cover and the rear cover and the opposing end surface of the rotor yokes, and n for any optional number, by satisfying the following relationship

$$Dl/Gl > n\cdot(D_1^2 - D_2^2)/(4D_0\cdot L),$$

the magnetic flux leaking outside the motor is controlled to less than 1/n of the effective magnetic flux.

4,347,458

PHOTOMULTIPLIER TUBE HAVING A GAIN MODIFYING NICHROME DYNODE

Charles M. Tomasetti, Leola, and John A. Ulaky, Washington Boro, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,276
Int. Cl.³ H01J *43/00*
U.S. Cl. 313—103 R 5 Claims



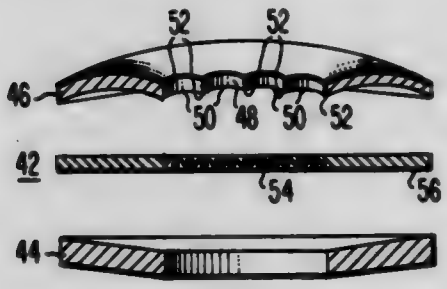
1. An electron discharge multiplier device including an evacuated envelope having therein a photocathode, an anode, and a plurality of dynodes for propagating and concatenating electron emission from said photocathode to said anode, each of a plurality of said dynodes consisting of a supporting substrate having a secondary emissive material on an exposed surface thereof, and at least one of said dynodes being adjacent to said anode and comprising nichrome whose exposed surface is substantially devoid of secondary emissive material to provide gain reduction and stability.

4,347,459

MESH ASSEMBLY HAVING REDUCED MICROPHONICS FOR A PICK-UP TUBE

Timothy E. Benner, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,769
Int. Cl.³ H01J 29/08, 31/38
U.S. Cl. 313—383 7 Claims



1. In a pick-up tube having a generally cylindrical envelope, a faceplate at one end of said envelope, a photoconductive target electrode adjacent to said faceplate, a cathode in the other end of said envelope and a mesh assembly disposed in spaced relation adjacent to said target electrode between said target electrode and said cathode, the improvement wherein said mesh assembly comprises:

a mesh electrode disposed between an annular mesh support ring and an annular mesh damping ring, said mesh damping ring having a substantially bow-shaped cross-section extending from the inner periphery of said damping ring to the outer periphery thereof, said damping ring being fixedly attached at a plurality of spaced points around its outer periphery to said mesh electrode and to said mesh support ring, said inner periphery of said damping ring being formed into a plurality of arcuately shaped regions extending around said inner periphery, each of said arcuately shaped regions being interconnected by a portion of said damping ring which is in contact with said mesh electrode, the annular region between said inner periphery and said outer periphery of said bow-shaped damping ring and the axially extending region between said damping ring and said mesh electrode forming a vibration damping chamber extending circumferentially around said assembly and having a plurality of entrances formed by said arcuately shaped regions of said mesh damping ring.

4,347,460

COMPACT FLUORESCENT LAMP ASSEMBLY

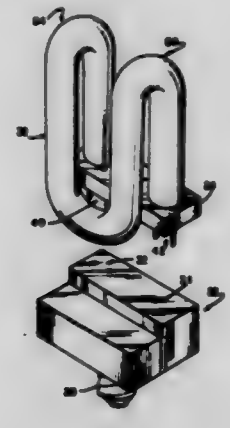
Frank M. Latassa, Magnolia, and John G. Ray, Topsfield, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 3, 1980, Ser. No. 126,818
Int. Cl.³ H01J 25/50, 13/46, 19/78; H01K 1/62
U.S. Cl. 315—63 7 Claims

1. A fluorescent lamp assembly for use with an incandescent fixture, said assembly comprising:

a first housing containing a ballast for said lamp and having a screw-in, incandescent type base projecting from one surface thereof and a pair of contact receiving means on another surface thereof; and

a second housing including lamp starting means, a fluorescent lamp having a given effective length projecting



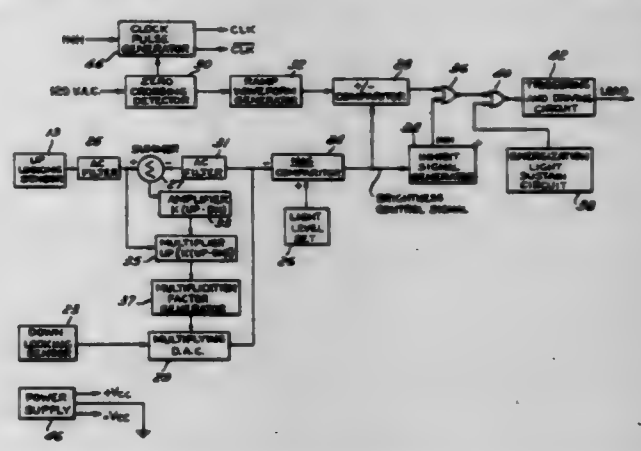
therefrom and a pair of contacts for mating with said pair of contact receiving means.

4,347,461

INCIDENT ILLUMINATION RESPONSIVE LIGHT CONTROL

Randolph S. Carlson, Irvine, Calif., assignor to Robert L. Elving, Anaheim, Calif.

Filed Oct. 23, 1980, Ser. No. 199,825
Int. Cl.³ H05B 37/02
U.S. Cl. 315—158 14 Claims



1. An illumination level control system for controlling the output of a light source in response to measurements of natural light, artificial light, and surface reflections in a given area, comprising:

first sensing means for determining the level of artificial light produced at a given source;

second sensing means for determining levels of natural light and artificial light reflected from said given area;

means connected to the output of said second light sensing means for scaling the level of said output;

means responsive to the output of said first sensing means and that portion of the output of said scaling means representing light reflected from said given source for producing a signal which is proportional to the difference between said outputs;

means responsive to said proportional signal and connected to said scaling means for changing the scaling factor of said scaling means in proportion to the value of said proportional signal;

means for providing a reference signal representing a predetermined desired light level;

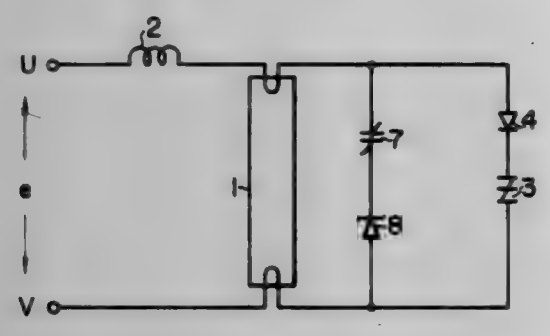
means responsive to said reference signal and the output of said scaling means for producing a control signal representing the combined values of said reference signal and said scaled output signal; and

means responsive to said control signal and connected to an illumination source for controlling said illumination source to produce light at a level proportional to the value of said control signal.

4,347,462
DISCHARGE LAMP LIGHTING DEVICE

Hiromi Adachi, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1980, Ser. No. 218,151
Claims priority, application Japan, Dec. 27, 1979, 54-170768
Int. Cl.³ H05B *41/16*
U.S. Cl. 315—290 4 Claims

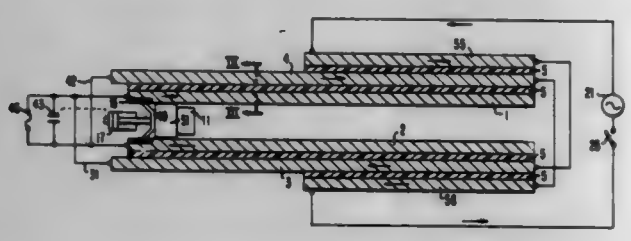


1. A discharge lamp lighting device comprising: a discharge lamp; an inductive stabilizer connected in series with said discharge lamp; a nonlinear capacitor; semiconductor switch means connected in parallel with said discharge lamp; a Zener diode connected in series with said nonlinear capacitor with the series connected nonlinear capacitor and Zener diode coupled in parallel with said discharge lamp.

4,347,463
ELECTROMAGNETIC PROJECTILE LAUNCHER WITH SELF-AUGMENTING RAILS

George A. Kemeny, Wilkins Township, Allegheny County, and Donald C. Litz, Murrysville Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 3, 1980, Ser. No. 137,059
Int. Cl.³ H02K *41/00*
U.S. Cl. 318—135 23 Claims

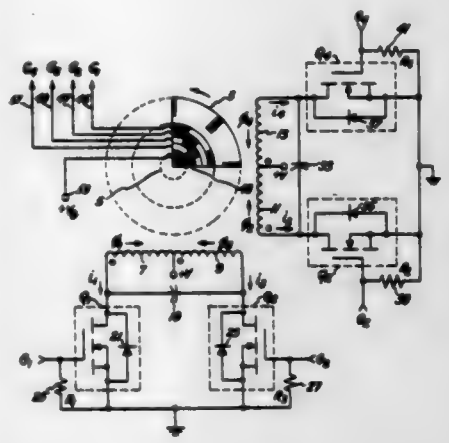


1. An electromagnetic projectile launcher comprising:
a first conductor;
a second conductor disposed generally parallel to said first conductor;
means for propelling a projectile from one end of the first and second conductors to the other end thereof and for conducting current therebetween;
a third conductor disposed generally parallel and adjacent said second conductor and being electrically connected to said first conductor adjacent said one end thereof;
a fourth conductor disposed generally parallel and adjacent said first conductor and being electrically connected to said second conductor adjacent said one end thereof;
a source of high current electrically connected to the other end of said third and fourth conductors; and
circuit breaking means electrically connected between the one end of said first and second conductors, whereby the current required for launching a projectile at a predetermined velocity is rapidly commutated to the first and second conductors by opening said circuit breaking means and the current is lower than that required utilizing a single pair of conductors.

4,347,464
FET MOTOR DRIVE SYSTEM

John N. Park, Rexford, and Robert L. Steigerwald, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,724
Int. Cl.³ H02K *24/02*
U.S. Cl. 318—254 4 Claims



1. A synchronous motor drive system comprising:
a multiphase stator having two windings per stator phase;
a shaft;
a multipole rotor affixed to said shaft, said shaft mounted for rotation in said stator;
switch means for controlling the current to each of said windings, said switch means including a field effect transistor for each winding, each said field effect transistor having a gate, a source and a drain, the drain of each field effect transistor being connected to one end of a corresponding winding, the source of each field effect transistor being connected to ground, the other end of each of said windings adapted to be connected to an external DC source, said windings being connected so that current flowing in one winding of a stator phase results in flux in the opposite direction from the flux resulting from current flowing in the other winding of the same stator phase;
distribution means having a pattern of conductive and non-conductive material mounted to turn with said shaft for determining the sequence said field effect transistors are energized; and
pick up means in contact with said distributor means for coupling an external source of gate voltage to said distributor means and for selectively coupling gate voltage to the gates of said field effect transistors dependent on the pattern of said distribution means and the shaft instantaneous position.

4,347,465
CIRCUIT ARRANGEMENT FOR POWER WINDOWS

Horst Goertler, Sachsenheim; Friedrich Hetzel, Mühlacker; Uwe Knobloch, Heilbronn-Sontheim; Hans Müller, Mühlacker-Mühlhausen; Hans Prohaska; Horst Rachner, both of Bietigheim-Bissingen, and Wolfgang Spieth, Freiberg, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,585
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2926938
Int. Cl.³ H02P *1/22*
U.S. Cl. 318—266 1 Claim

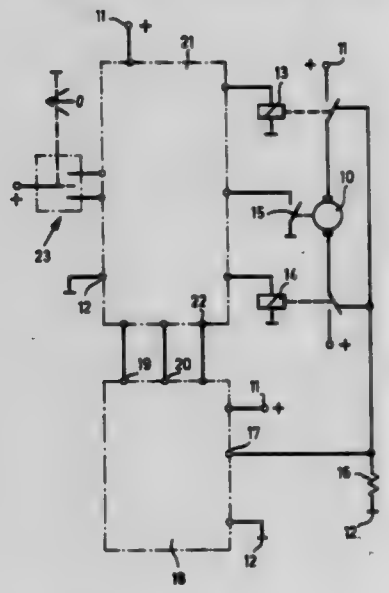
1. A safety control circuit for the electric motor of a power window for automotive vehicles which senses the motor current and differentiates between a tight fitting of the window pane and an obstacle blockage, said control circuit comprising, in combination:
first means for selectively applying and reversing operating current to said motor wherein said first means applies said operating current to said motor in a selected one of two

current directions to reverse the output motion direction of said motor and removes said operating current to stop said motor;

second means for detecting the operating current of said motor for providing a first output signal indicative thereof;

third means having an input coupled to said second means and being responsive to said first output signal for providing a second output signal indicative of the instantaneous value of said first output signal;

fourth means for providing a reference signal indicative of a predetermined instantaneous operating current level;



fifth means having a pair of inputs respectively coupled to said third and fourth means for comparing said reference signal to said second output signal and for providing a third output signal when the level of said second signal exceeds the level of said reference signal during a predetermined time period; and,

a switching element coupled between said first means and said fifth means and being responsive to said third output signal to remove or reverse said operating current from said motor when the level of said second signal exceeds the level of said reference signal during said predetermined time period.

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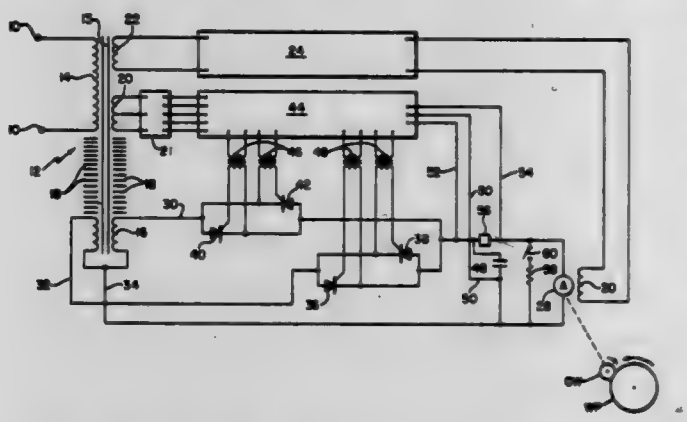
MOTOR CONTROLLING

Allen E. Ottoson, Westboro, Mass., assignor to Vee Arc Corporation, Westboro, Mass.

Continuation of Ser. No. 904,402, May 10, 1978. This application Dec. 27, 1979, Ser. No. 107,595

Int. Cl.³ H02K *27/20*

U.S. Cl. 318—301 **16 Claims**



1. A DC motor system operable in motor and generator modes and comprising:

an AC source for delivering AC power,

a DC motor having a motor field and an armature,

rectifier means including at least one pair of oppositely poled controlled rectifiers and an armature capacitor coupled from said controlled rectifiers and disposed across said armature,

said rectifier means connected to receive AC power from said AC source and to rectify said AC to DC across said armature capacitor,

controller means including means coupled from the AC source and means responsive to armature voltage magnitude for controlling the triggering of one of said controlled rectifiers to enable current flow for normal motor operation of the armature and for alternatively and mutually exclusively controlling the triggering of the other of said controlled rectifiers to enable the generator mode,

inductive reactanct means including a field conductor,

and electrical conductor means interconnecting in series said AC source, field conductor and rectifier means,

said field conductor providing a magnetic circuit leakage path coupled in series between the AC source and the rectifier means to apply power generated in the armature back into the AC source via the magnetic leakage path as well as applying power input to the armature in motoring.

4,347,467

CONTROL CIRCUIT FOR A D.C. MOTOR

Trevor C. Boxer, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

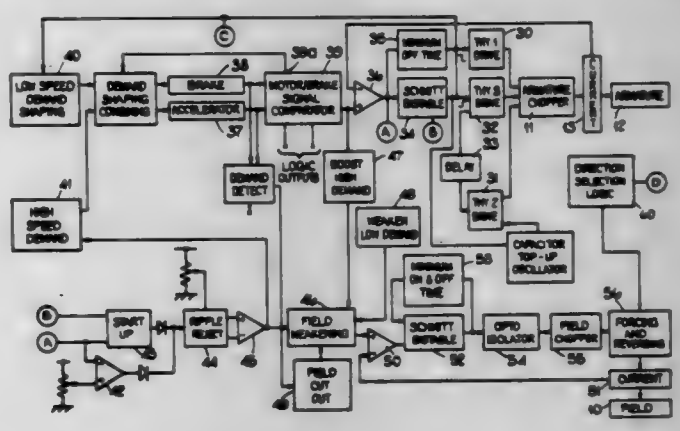
PCT No. PCT/GB78/00047, § 371 Date Jul. 23, 1979, § 102(e) Date Jul. 23, 1979, PCT Pub. No. W079/00441, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 4, 1978, Ser. No. 224,222

Claims priority, application United Kingdom, Dec. 8, 1977, 51066/77

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—317 **4 Claims**



1. A motor control circuit for a DC motor, comprising a chopper circuit with a main switch element arranged to be turned on or off to control the flow of current to the motor armature in accordance with a current demand signal applied to said chopper circuit, a field current control circuit controlling the motor field current independently of the chopper circuit, and speed compensation means for varying the current demand signal automatically to compensate for speed changes, said speed compensation means comprising a circuit responsive only to the ratio of the on and off times of the main switch element.

4,347,468

ELECTRONIC VARIABLE SPEED AUTOMOTIVE BLOWER CONTROL SYSTEM

Robert A. Wilke, Winona, Minn., assignor to Lake Center Industries, Winona, Minn.

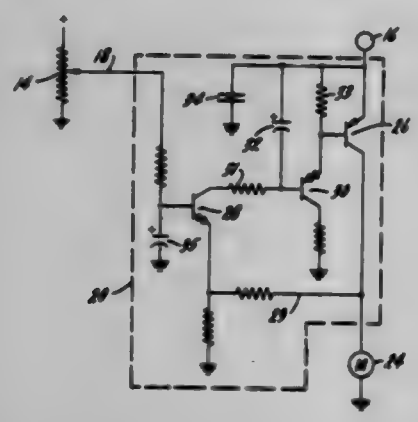
Filed Apr. 28, 1980, Ser. No. 144,339

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—331 **4 Claims**

1. In a control for use with a blower motor in a heating

and/or cooling system for a car or the like, a manually operable potentiometer to provide a variable voltage and adapted to be connected to the car battery, a circuit from the potentiometer including a power transistor adapted to be connected between the car battery and the blower motor, and being the only element that drops voltage therebetween, and a voltage comparator arranged to compare the voltage from the potentiometer to the output voltage from the power transistor including a transistor with its collector connected to ground and its emitter connected to the power transistor so as to turn on the power transistor if the potentiometer voltage is higher than the power transistor output voltage and to turn off the power transistor if the potentiometer voltage is lower than the power transistor output voltage.

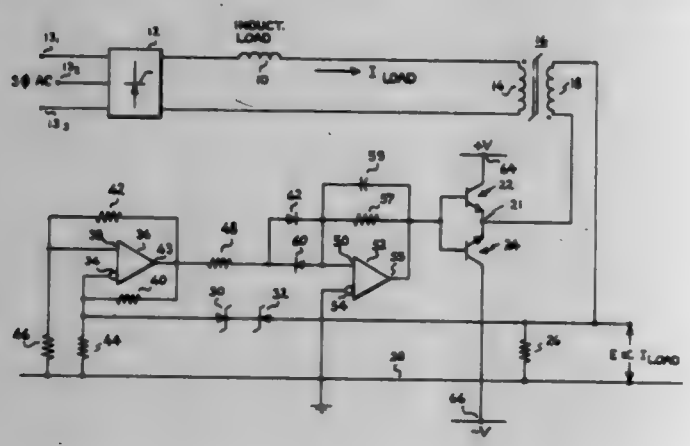


4,347,469

ELECTRONIC-MAGNETIC CURRENT ISOLATOR CIRCUIT

Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company, Salem, Va.

Filed Aug. 14, 1979, Ser. No. 66,590
Int. Cl.³ H02P *1/34*
U.S. Cl. 318—533 20 Claims



1. An isolator circuit for providing an isolated output signal proportional to the electrical current flowing in a load supplied by a power circuit, comprising, in combination:

(a) a load coupled to said power circuit;

(b) a magnetic device including a primary and a secondary winding wound on a core structure formed from material having a substantially square loop magnetization characteristic, said primary winding being coupled to said load and responsive to the current in said load to drive the core structure in a first magnetizable direction towards saturation;

(c) an output signal impedance coupled to one end of said secondary winding and being responsive to the current flowing therein to generate said output signal; and

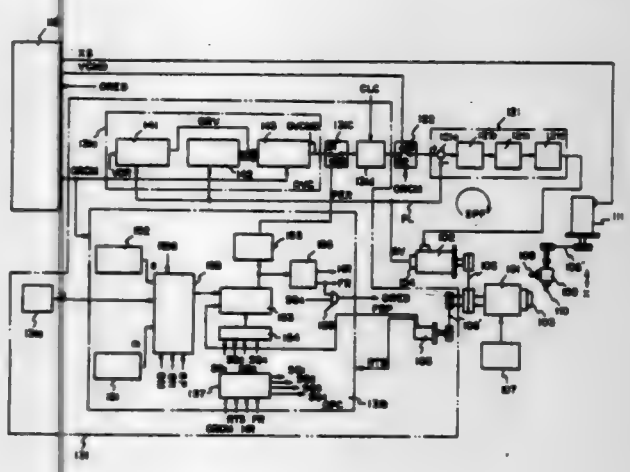
(d) control circuit means coupled between said output signal impedance and the other end of said secondary winding and being responsive to said output signal to develop and apply to said secondary winding a voltage to drive the core structure toward saturation in a second magnetizable direction opposite from said first direction, whereby an operating condition alternating between positive and negative saturation limits will be established in which current flowing in the secondary winding is proportionally related to the current flowing in the primary winding by the turns ratio between said primary and secondary windings.

4,347,470

SPINDLE ORIENTATION CONTROL APPARATUS

Yoshinori Kohzai; Yoshiki Fujioka, and Naoto Ota, all of Hino, Japan, assignors to Fujitsu Fanuc Limited, Japan

Filed Feb. 20, 1981, Ser. No. 236,623
Claims priority, application Japan, Feb. 23, 1980, 55-21817
Int. Cl.³ G05B *19/28*
U.S. Cl. 318—602 6 Claims



1. A spindle orientation control apparatus which comprises:

a motor for driving a spindle;

speed control means for rotating the spindle at a speed in accordance with a command speed;

position control means for stopping the spindle at a commanded spindle stopping position;

stopping position command means for digitally instructing the commanded spindle stopping position;

a position sensor for generating a one-revolution pulse each time the spindle makes one complete revolution and a position pulse each time the spindle rotates by a predetermined angle;

error monitoring means for monitoring an error between said commanded spindle stopping position and the actual rotational position of the spindle upon receiving each of the pulses generated by said position sensor, said error monitoring means generating a signal when the error attains a predetermined value; and

means for generating a signal indicative of an orientation speed;

the spindle being speed-controlled so as to rotate at the orientation speed until said error monitoring means generates said signal, and positioned-controlled after the generation of said signal so as to reduce the error to zero, the speed and position control operations being performed when the apparatus is in a spindle orientation control mode.

4,347,471

MACHINE TOOL DRIVE MOTOR CONTROL SYSTEM

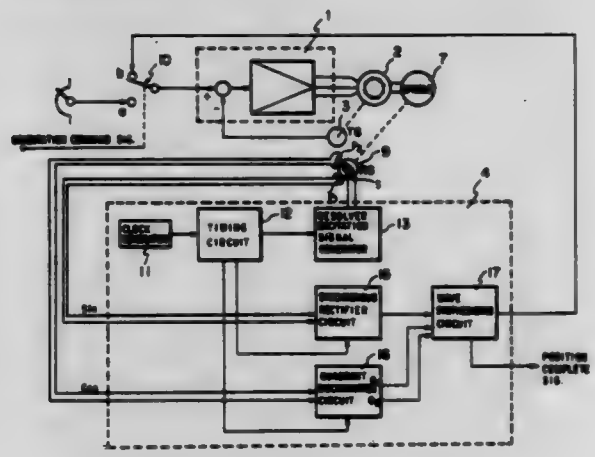
Yoshinori Kohzai; Yoshiki Fujioka, and Naoto Ota, all of Hino, Japan, assignors to Fujitsu Fanuc Limited, Japan

Filed Dec. 14, 1979, Ser. No. 103,576
Claims priority, application Japan, Dec. 16, 1978, 53-156760
Int. Cl.³ G05B *5/01*
U.S. Cl. 318—616 5 Claims

1. An improved control system for a machine tool of the type including a motor for driving the spindle of the machine

tool, said motor being controlled by a control unit in a speed control loop for limiting to zero the difference between a speed command signal and a speed feedback signal, wherein the improvement comprises:

positioning means for generating a position feedback signal for the input of said control unit to rigidly stop said spindle at a predetermined angular position occurring once per 360 degrees of rotation of said spindle, said positioning means including



a resolver operationally connected to said spindle and having a secondary winding which receives an excitation signal and two primary windings which generate sine and cosine signals in response thereto; and

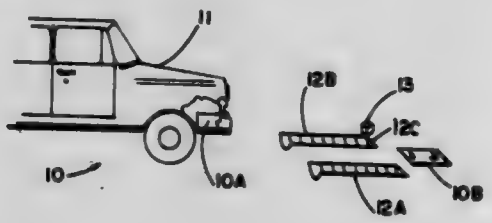
orientation control circuit means responsive to the sine and cosine signals from said resolver for synthesizing said position feedback signal, said position feedback signal comprising a monotonically changing function of angular deviation from said predetermined angular position, which function is symmetrical with respect to the points at which the deviation becomes zero.

4,347,472

APPARATUS AND METHOD FOR CHARGING A BATTERY IN A VEHICLE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Oct. 20, 1980, Ser. No. 198,724
Int. Cl.³ H02J 7/00
U.S. Cl. 320—2 3 Claims



1. A system for charging a battery in a motor vehicle comprising in combination:

a motor vehicle containing a battery for operating said motor vehicle,

a parking and charging location for said motor vehicle,

first means at said parking location including means for generating an alternating magnetic field defining battery charging energy,

second means at said parking location for sensing the presence of said motor vehicle at said parking location,

third means controlled by said sensing means for activating said first means to cause the generation of charging energy when said sensing means senses the presence of said motor vehicle at said parking location,

fourth means including induction means supported by said motor vehicle at a location thereon to generate charging electrical energy for said battery and means for inputting said charging electrical energy and applying same to charge the battery of said motor vehicle,

fifth means for sensing the charge of said battery of said vehicle at said parking location,

said fifth means including means for generating a short wave signal,

sixth means at said parking location for receiving said short wave signal and converting same to an electrical control signal, and

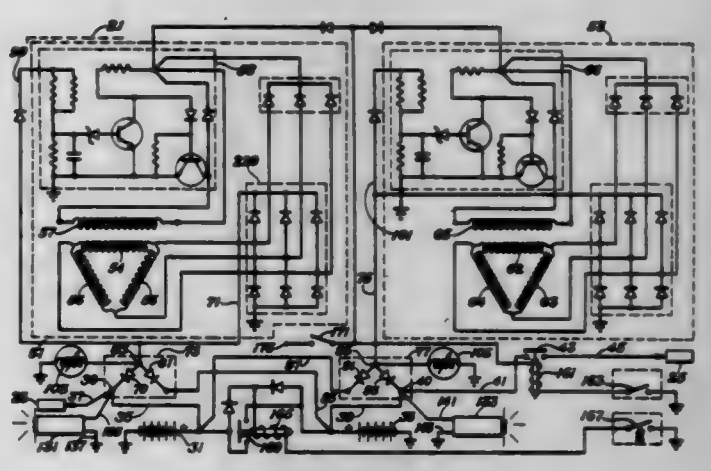
seventh means controlled by said control signal for deactivating said means controlled by said third means to substantially reduce the amount of said charging energy generated when said battery is substantially fully charged.

4,347,473

DUAL ALTERNATOR POWER SYSTEM FOR MOTOR VEHICLE

Lebern W. Stroud, 3237 Gerome, Fort Worth, Tex. 76118

Filed Apr. 26, 1979, Ser. No. 33,443
Int. Cl.³ H02J 7/14, 1/00, 3/00
U.S. Cl. 320—15 1 Claim



1. In a motor vehicle which includes an engine and electrically operated means employed in the operation of said vehicle and which carries electrically operated equipment used for emergency purposes, an electrical power system, comprising:

a first battery having a positive terminal coupled to said electrically operated means,

a second battery having a positive terminal adapted to be coupled to said electrically operated equipment,

first alternator means driven by the engine of said motor vehicle and having an output lead,

first and second electrical leads coupled to said output lead of said first alternator means and to said positive terminals of said first and second batteries respectively,

first and second diode means coupled to said first and second electrical leads respectively for allowing the flow of current in a direction only from said output lead of said first alternator means to said first and second electrical leads,

second alternator means driven by the engine of said motor vehicle and having an output lead,

third and fourth electrical leads coupled to said output lead of said second alternator means and to said positive terminals of said first and second batteries respectively,

third and dourth diode means coupled to said first and second electrical leads respectively for allowing the flow of current in a direction only from said output lead of said second alternator means to said third and fourth electrical leads,

first regulator means for regulating the electrical voltage applied to said first alternator means, said first regulator means having an input coupled to said output lead of said first alternator means,

second regulator means for regulating the electrical voltage applied to said second alternator means, said second regu-

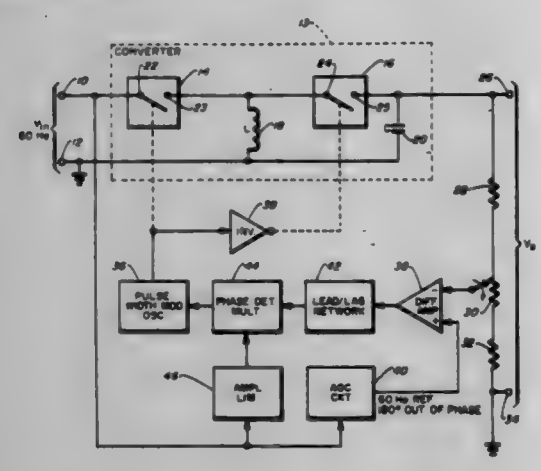
lator means having an input coupled to said output lead of said second alternator means.

4,347,474

SOLID STATE REGULATED POWER TRANSFORMER WITH WAVEFORM CONDITIONING CAPABILITY

James L. Brooks, Oxnard; Roger I. Staab, Camarillo, both of Calif.; James C. Bowers, and Harry A. Nienhaus, both of Tampa, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 18, 1980, Ser. No. 188,419
Int. Cl.³ G05F *1/445*
U.S. Cl. 323—224 **9 Claims**



1. A solid state regulating power transformer which provides variable step up or step down voltage transformation and which provides a regulated AC output signal from an unregulated AC input signal comprising:

a. means for chopping said AC input signal at a chopper frequency to provide a chopped signal, said means for chopping being controllable for adjusting the duty cycle of said means for chopping;

b. filter means for removing the chopper frequency from said chopped signal to provide a filtered signal, said filtered signal being said regulated AC output signal;

c. means for providing a reference signal at the frequency of said AC input signal;

d. means for providing a feedback signal derived from the filtered signal;

e. means for adjusting the gain of the transformer by providing one of means for varying the amplitude of said reference signal and means for varying the amplitude of said feedback signal;

f. means for comparing the amplitude of the reference signal with the amplitude of the feedback signal derived from the filtered signal to produce an error signal related to the difference therebetween, said error signal being coupled to said means for chopping to adjust the duty cycle of said means for chopping wherein the amplitude of said AC output signal is adjusted so that the error signal is driven toward zero and the AC output signal is regulated;

g. said means for comparing including:

differential amplifier means having a first input coupled to receive said feedback signal, a second input coupled to receive said reference signal, and an output, said differential amplifier means providing a signal related to the difference between its two inputs at its output; and

pulse-width-modulated oscillator means coupled to receive the output of said differential amplifier means for adjusting the duty cycle of said pulse-width-modulated oscillator means, the output of said pulse-width-modulated oscillator means being coupled to said means for chopping to adjust the duty cycle of said means for chopping;

h. said means for chopping and said filter means including:

a first bidirectional switching means having a first terminal and a second terminal, the signal side of said AC input signal being coupled to the first terminal of said first bidirectional switching means;

an inductor means coupled between the second terminal of said first bidirectional switching means and the return side of said AC input signal;

a second bidirectional switching means having a first terminal and a second terminal, the first terminal of said second bidirectional switching means being coupled to the second terminal of said first bidirectional switching means, and

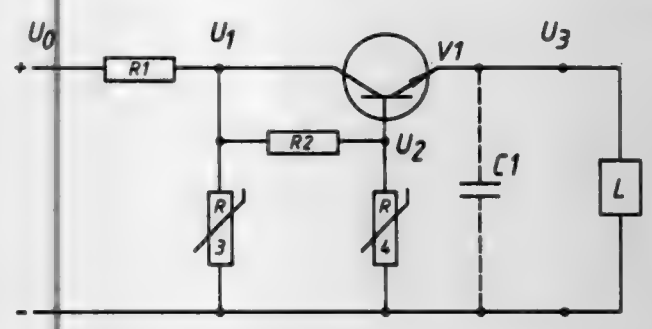
a capacitor means coupled between the second terminal of said second bidirectional switching means and the return side of said AC input signal.

4,347,475

OVERVOLTAGE PROTECTION DEVICE MAINLY FOR VEHICLE-BOUND ELECTRONIC EQUIPMENT

Ulf Ullin, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Jun. 22, 1981, Ser. No. 275,788
Claims priority, application Sweden, Jun. 23, 1980, 8004603
Int. Cl.³ G05F *5/00*
U.S. Cl. 323—303 **5 Claims**



1. An overvoltage protection device designed to protect electronic equipment against high energy transients, comprising:

an input to the device,

an output from the device,

a varistor arranged to have at least a part of an input signal applied to said input appear thereacross,

a voltage-dividing unit consisting of a resistor and a voltage-limiting element connected across the varistor,

a transistor arranged to receive the voltage appearing at a point between the resistor and the varistor as its imput signal, and the voltage appearing at a point between the resistor and the voltage-limiting element as its base voltage,

wherein the output signal of said transistor, which provides the signal appearing on the output of the overvoltage protection device, is arranged to be controlled so that when the voltage of the input signal is below a certain predetermined level, the output and imput signals of the transistor are substantially equal, whereas when the voltage of the input signal is above said predetermined level, the output signal of the transistor is clamped so that it never exceeds the said predetermined level.

4,347,476

VOLTAGE-TEMPERATURE INSENSITIVE ON-CHIP REFERENCE VOLTAGE SOURCE COMPATIBLE WITH VLSI MANUFACTURING TECHNIQUES

Matthias L. Tam, Monterey Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 4, 1980, Ser. No. 212,783
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—313 **2 Claims**

1. A voltage and temperature insensitive reference circuit voltage source for predetermining the proportion of supply voltage to constitute the output voltage comprising in combination:

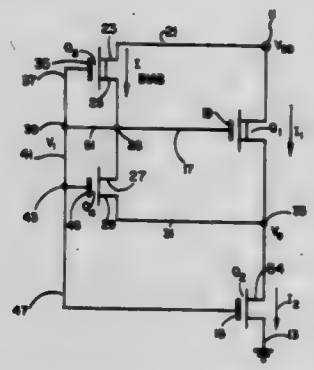
a pull-up depletion FET and a pull-down enhancement FET connected between a source of supply voltage and a reference point;

a two element biasing circuit connected between said source and the pull-down FET connected to the reference point;

said pull-up FET having a gate;

a connection from the biasing circuit at a point between said elements to said gate;

an output connection from the junction of said pull-up and pull-down FETs; and,



one of said elements which is connected between the source and the other of said elements being characterized by high resistance relative to the other of said elements whereby the proportion of voltage available at said output connection remains substantially constant regardless of source voltage variation and ambient temperature,

said other element comprising an enhancement FET matched to said pull-down FET; and,

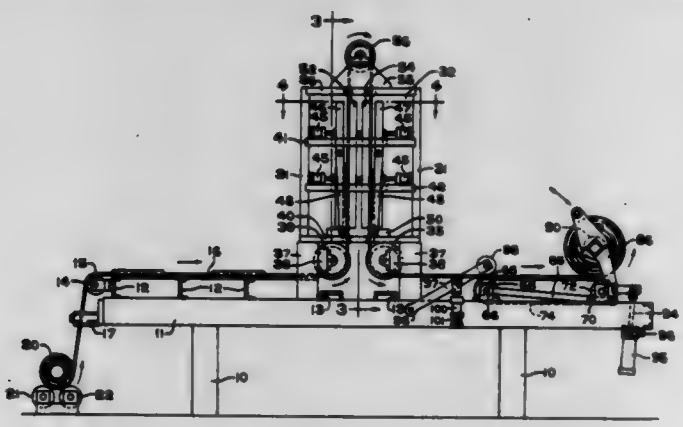
the ratio of the geometries of configuration of the pull-up FET to the pull-down FET determines said output voltage.

4,347,477

MAT TESTING APPARATUS

Clifford A. Landsness, and Thomas M. Buehrle, both of Akron, Ohio, assignors to The B.F. Goodrich Company, New York, N.Y.

Filed Aug. 15, 1980, Ser. No. 178,483
Int. Cl.³ G01R *31/12*
U.S. Cl. 324—54 **5 Claims**



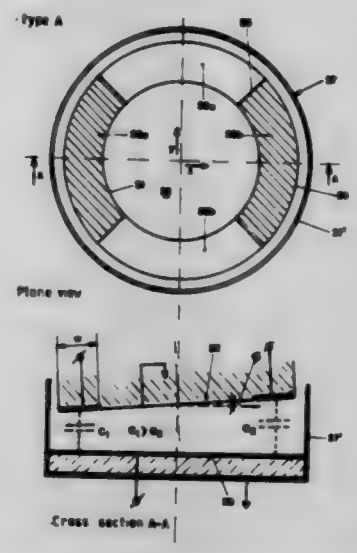
1. An apparatus for the testing of the electrical non-conductivity of a rubberized mat comprising support means having a forward portion and a rearward portion, at least two pairs of spaced flat electrode plates mounted on said support means intermediate of said forward and rearward portion, said plates are vertically disposed, power operated means mounted on said support means and interconnected to one of said plates in each of said pairs of electrode plates for moving said one plates respectively from a vertical storage position into a position closely adjacent to one of a remaining plates in each pair of plates to provide a small gap therebetween for contact with a thin mat suspended therebetween, means for applying a voltage to said one of said moveable electrode plates, and means on said support means for feeding mat material from said forward portion for windup on a take-up roll mounted on said rearward portion and for movement between said pairs of electrode plates.

4,347,478

CAPACITIVE GAUGE

Willem C. Heerens, Arnoldsonstraat 23, 2286 AG Rijswijk, Netherlands, and Gerrit H. Peerbolte, Liaztstraat 82, 2625 BL Delft, Netherlands

Filed Jul. 7, 1980, Ser. No. 166,627
Claims priority, application Netherlands, Jul. 17, 1979, 7905562
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **21 Claims**



1. Capacitive sensor, comprising at least one capacitor to be connected in a bridge circuit, said capacitor having at least one of its electrode supports coated with an electrode overlay such that a system of gap-separated sub-electrodes is formed, of which at least one functions as a guard element and at least one functions as a capacitor element, if activated, said system being electro-statically shielded by a sleeve surrounding the electrode supports, characterized in that a sub-electrode (28*a*) functioning, if activated, together with a related area of an opposite electrode plate as a capacitor element, cooperates with at least another similar simultaneously activatable sub-electrode (28*b*) forming together with a related area of the opposite electrode plate another capacitor element, which sub-electrodes (28*a, b*) even if they are in a geometrical respect separated by at least a gap or similar means, yet are surrounded from all sides by sub-electrodes (23, 29; FIG. 6) functioning as guard elements.

4,347,479

TEST METHODS AND STRUCTURES FOR SEMICONDUCTOR INTEGRATED CIRCUITS FOR ELECTRICALLY DETERMINING CERTAIN TOLERANCES DURING THE PHOTOLITHOGRAPHIC STEPS

Rene Cullet, Barbizon, France, assignor to International Business Machines Corporation, Armonk, N.Y.

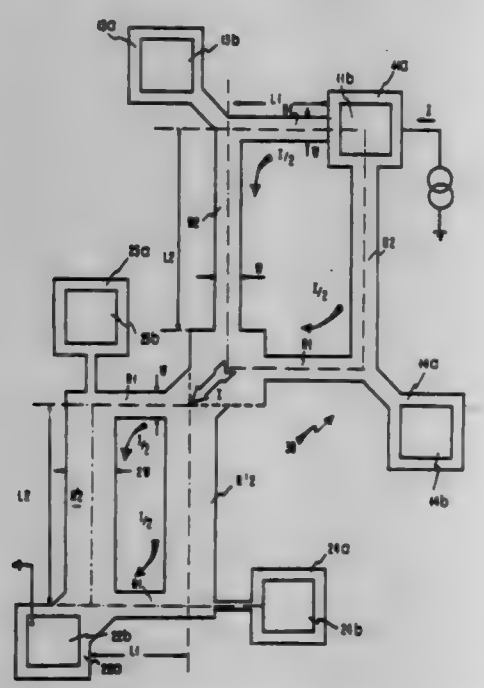
Filed Nov. 24, 1980, Ser. No. 210,081
Claims priority, application France, Jan. 9, 1980, 80 00751
Int. Cl.³ G01R *27/14, 31/00*
U.S. Cl. 324—64 **6 Claims**

1. A test structure formed in a semiconductor wafer, the wafer including semiconductor devices therein having lines made by lithographic process steps, the test structure formed in the wafer for electrically monitoring the variations in line width relative to nominal line width ($\Delta W/W$), the structure comprising:

a first resistance bridge having a first branch including at least two resistive elements, each element having a resistance value defined by the length, width and resistivity of

the element and a second branch including at least two resistive elements, each element having a resistance value defined by the length, width and resistivity of the element, the first branch electrically connected in parallel with the second branch and of a resistance value approximately equal to that of the second branch, the first branch further including means for monitoring a voltage across one resistive element in the first branch and the second branch further including means for monitoring voltage across one resistive element in the second branch so that when a current is applied to the bridge, a voltage difference (ΔV_1) between the two branches can be measured, and

a second resistive bridge having a first branch including at least two resistive elements, each element having a resistance value defined by the length, width and resistivity of the element and a second branch including at least two



resistive elements, each element having a resistance value defined by the length, width and resistivity of the element, the first branch electrically connected and parallel with the second branch and of a resistance value approximately equal to the second branch, the first branch including means for monitoring a voltage at one resistive element of the first branch and means for monitoring the voltage at one resistive element of the second branch so that the voltage difference between the two elements (ΔV_2) can be monitored when a current is applied to the second bridge whereby variation in line width relative to nominal line width ($\Delta W/W$) for lines fabricated in and on the wafer may be directly monitored by measuring the voltage difference (ΔV_1) between the first and second branches of the first bridge and the voltage difference (ΔV_2) between the first and second branches of the second bridge.

4,347,480

MAGNETIC RESONANCE GYRO PHASE SHIFTER

Lincoln S. Ferriss, Lincoln Park, N.J., assignor to The Singer Company, Little Falls, N.J.

Division of Ser. No. 931,702, Aug. 7, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,717

Int. Cl.³ H03K *5/15, 3/86*

U.S. Cl. 328—55 **3 Claims**

1. A phase shifter comprising:

a source of input signals,

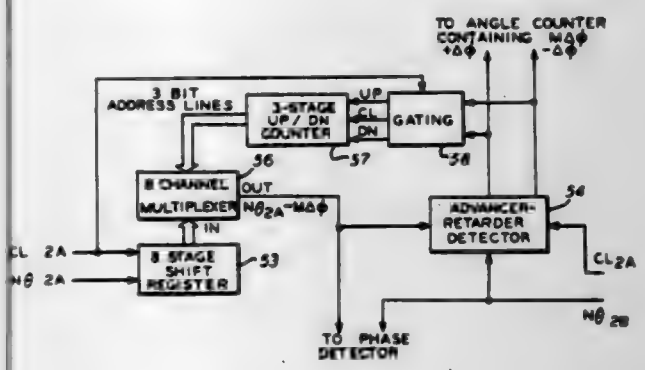
a shift register containing eight images of said input signal,

an eight channel multiplexer connected to said shift register for maintaining the phase shifted input signals within a selected monotonic range,

an advancer retarder detector connected to the output of said eight channel multiplexer for developing an electronic window for retarding the input signals which fall within said electronic window,

a gating circuit connected to the output of said advancer retarder detector, and

a three stage up/down counter connected to the output of said gating circuit and providing a three bit address to the input of said eight channel multiplexer said gating circuit operative under said advancer retarder detector to alter the con-



tents of said three stage counter whereby flip-flops in said counter determine a binary number 0 through 7 which represents closure of one of eight switches of said eight channel multiplexer, said altering of said counter causing switches in said eight channel multiplexer which were previously closed to open and causing adjacent switches which were previously open to close thereby connecting the correspondingly numbered state of said shift register to the output line of said eight channel multiplexer.

4,347,481

PULSE WIDTH MODULATED SIGNAL AMPLIFIER

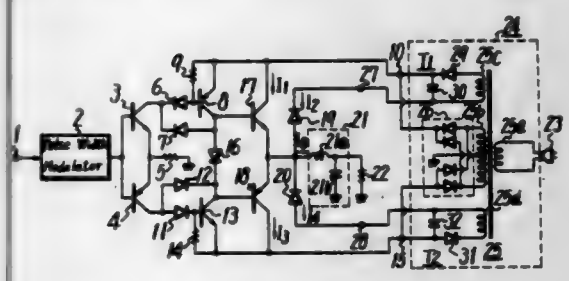
Tadao Yoshida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,266

Claims priority, application Japan, May 24, 1979, 54-64178

Int. Cl.³ H03F *3/38*

U.S. Cl. 330—251 **5 Claims**



1. A pulse width modulated signal amplifier comprising, a transformer having primary, secondary, tertiary and biquadratic windings and a magnetic core, the primary winding being supplied with an AC voltage there across, first and second rectifier circuits connected across said secondary winding, the outputs of said first and second rectifier circuits forming first and second DC voltage terminals, respectively, third and fourth rectifier circuits connected to said tertiary and biquadratic windings, respectively, the outputs of said third and fourth rectifier circuits forming third and fourth DC voltage terminals, respectively, first and second switching transistors each having a control electrode and the main current path connected in series between said first and second DC voltage terminals and their connection point connected to an output terminal, signal input means for supplying a pulse width modulated signal to the control electrodes of said first and second switching transistors, low pass filter means having an input connected to said output terminal and an output to be connected to a load, a first circuit means including a first diode means and connected between said third DC voltage terminal and said output terminal, and a second circuit means including

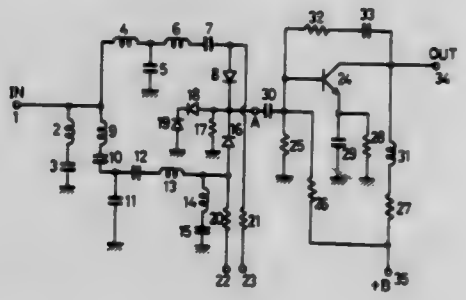
a second diode means and connected between said fourth DC voltage terminal and said output terminal.

4,347,482

AMPLIFIER EQUIPPED WITH CIRCUIT FOR PREVENTING ELECTROSTATIC BREAKDOWN

Shigeo Ohta, and Takeo Suzuki, both of Soma, Kazumic Kuwabara, Namie-Machi, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 142,218
Claims priority, application Japan, May 2, 1979, 54-59382[U]
Int. Cl.³ H03F 3/04
U.S. Cl. 330—298 5 Claims



1. An amplifier equipped with a circuit for preventing electrostatic breakdown, comprising:

a resistor connected between an input terminal of the amplifier and ground;

means for applying a constant d-c voltage to said resistor; and

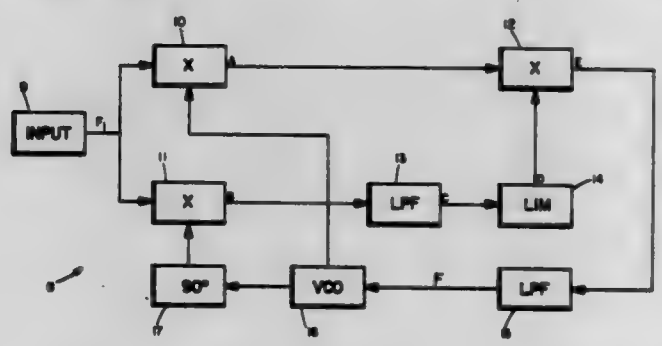
a series circuit consisting of a diode and a Zener diode, the cathodes of each of which being connected to each other, the anode of said Zener diode being grounded in parallel with said resistor, and the Zener voltage of said Zener diode being set to be greater than the voltage across the terminals of said resistor.

4,347,483

FREQUENCY AND PHASE LOCK LOOP WITH SEPARATED AFC AND PHASE LOCKING

Michael D. Flasza, Schaumburg, and Jouke N. Rypkema, Lombard, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 28, 1980, Ser. No. 172,920
Int. Cl.³ H03L 7/10
U.S. Cl. 331—12 1 Claim



1. An automatic phase and frequency control system for producing phase and frequency synchronization between a locally generated signal and an input signal comprising;

voltage controlled oscillator means producing said locally generated signal having a frequency responsive to a control signal;

signal generating means producing first and second beat signals between said input signal and said locally generated signal, said beat signals having a substantially quadrature relationship;

translating means converting said first beat signal to a constant amplitude signal having a phase relative to said second beat signal which varies in a predetermined relationship to the frequency of said first beat signal, said translating means being capable of coupling a DC signal;

multiplying means multiplying said second beat signal from said signal generating means and the output signal of said translating means to develop a composite correction signal, said multiplying means including a single-balanced signal multiplier capable of receiving signals of a single sign from said signal generating means and said translating means; and

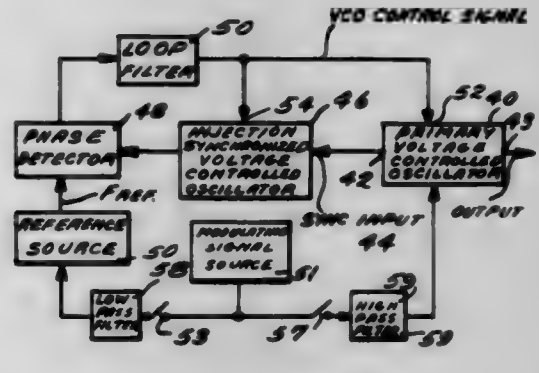
low pass filter means coupling said composite correction signal to the control signal input of said voltage controlled oscillator, said composite correction signal including the fundamental beat note frequency of said input signal and said locally generated signal.

4,347,484

SYNTHESIZER HAVING AN INJECTION SYNCHRONIZED DIVIDER

Johannes J. Vandegraaf, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Jun. 2, 1980, Ser. No. 155,386
Int. Cl.³ H03L 7/08
U.S. Cl. 331—25 27 Claims



1. A phase-locked loop circuit comprising:

a loop phase detector including a first signal input for coupling to a reference source, a second signal input, and a signal output for providing a signal related to the phase difference between the signals coupled to said first and second signal inputs;

a loop filter coupled to the output of said phase detector for providing a loop control signal;

a first signal controlled frequency source including a control input coupled to said loop control signal, for providing an output signal that is frequency dependent upon said control signal; and

a second signal controlled frequency source including a first control input coupled to said loop control signal and a second control input coupled to the output of said first signal controlled frequency source for providing an output to said second signal input of said loop phase detector, said second signal controlled frequency source being synchronized, via the signal from said first signal controlled frequency source to its second control input, to a sub-harmonic of the output frequency of said first signal controlled frequency source whereby said second signal controlled frequency source functions in said phase-locked loop as a divider having a divide ratio equal to the sub-harmonic onto which it is synchronized.

4,347,485

EXCIMER-PUMPED BLUE-GREEN LASER

Leon Esterowitz, Annandale; Roger E. Allen, Alexandria, both of Va.; Melvin R. Kruer, Oxon Hill, and Filbert J. Bartoli, Upper Marlboro, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 868,360, Jan. 10, 1978, abandoned. This application May 23, 1979, Ser. No. 41,969

Int. Cl.³ H01S *3/14*

U.S. Cl. 372—42 8 Claims



1. A solid-state laser element for obtaining blue-green radiation emission in a laser:

a rare-earth host laser crystal, said host laser crystal including therein uniformly dispersed trivalent rare-earth activator ions, and

uniformly dispersed divalent sensitizer ions.

4,347,486

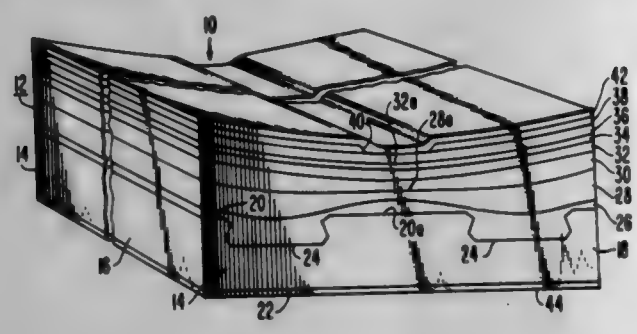
SINGLE FILAMENT SEMICONDUCTOR LASER WITH LARGE EMITTING AREA

Dan Botez, Mount Holly, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 84,387, Oct. 12, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,651

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—46 20 Claims



1. A semiconductor laser comprising:

a body of semiconductor material including a substrate having a surface and a pair of spaced substantially parallel dove-tail shaped grooves in said surface, said body having a pair of end surfaces between which said grooves extend, said end surfaces being reflective to light with at least one of said end surfaces being partially transparent to light,

a first confinement epitaxial layer over said surface of the substrate and the surfaces of the grooves, said first confinement layer having a flat surface portion over the portion of the substrate between the grooves,

a guide epitaxial layer over said first confinement layer,

a thin active epitaxial layer over said guide layer,

a second confinement epitaxial layer over said active layer,

said first confinement layer and guide layer being of one conductivity type and the second confinement layer being of the opposite conductivity type,

the active layer being of a material having an index of refraction greater than that of the materials of the first and second confinement layers and the guide layer being of a material having an index of refraction less than that of the material of the active layer but greater than that of the material of each of the first and second confinement layers,

the active layer being the recombination region of the laser with the light being generated therein in the vicinity of the portion which is over the flat surface portion of the first confinement layer, and

conductive contacts on said body at opposite sides of the active layer.

4,347,487

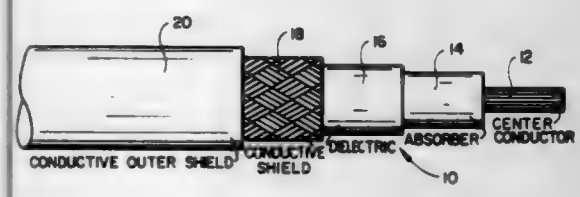
HIGH FREQUENCY ATTENUATION CABLE

Albert R. Martin, Oakland, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Nov. 25, 1980, Ser. No. 210,202

Int. Cl.³ H01P *3/06*

U.S. Cl. 333—1 9 Claims



1. A high frequency attenuation cable comprising:

a conductor;

a high frequency absorption medium for attenuating high frequency energy through the cable, the absorption medium surrounding the conductor;

dielectric surrounding the absorption medium;

electrically conductive shielding means confining high frequency energy to the absorption medium, the shielding means surrounding the dielectric; and

electrically conductive outer jacketing means preventing the shielding means from becoming a high frequency transmission line, the jacketing means surrounding the shielding means.

4,347,488

MULTI-POLE CIRCUIT BREAKER

Charles Mune, West Hartford, and Bohdan Krasij, Avon, both of Conn., assignors to Carlingswitch, Inc., West Hartford, Conn.

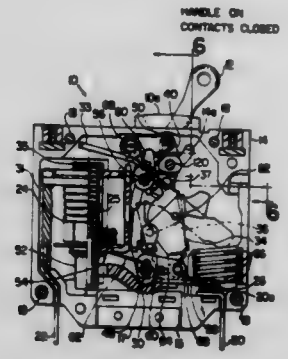
Filed Nov. 21, 1980, Ser. No. 209,159

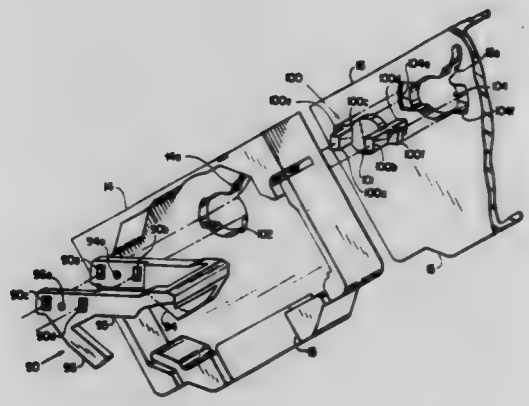
Int. Cl.³ H01H *73/06, 71/02*

U.S. Cl. 335—9 11 Claims

1. The combination of a plurality of circuit breaker units, each unit having its own case containing; a pair of relatively movable contacts, an automatically resettable mechanism including a pivotable contact arm movable between open and closed positions, a tripping device including an armature pivotally movable toward and away from an electromagnetic coil or the like, said mechanism including a crank arm movable between "on" and "off" positions and a collapsible link with one end pivotally connected to said crank arm and its other end to said contact arm, latch means for preventing said link from collapsing, and means for disabling said latch means when said crank arm is moved "on" and said armature has been moved toward said coil, a common trip member of U-shape, with one leg of the "U" located adjacent one inside wall of the case and having a portion engageable with the associated resettable mechanism, the other leg of the U-shaped common trip member having a portion engageable with said means for disabling said latch means; at least two mating cases having abutting side walls assembled adjacent one another and having aligned openings defining a cavity, a common trip coupler located in said cavity and having opposing portions cooperating with

portions of the U-shaped common trip members inside adjacent switch cases to cause pivotal movement of one of said





members to move said coupler and in turn to effect pivotal movement of the trip member in the adjacent case.

4,347,489

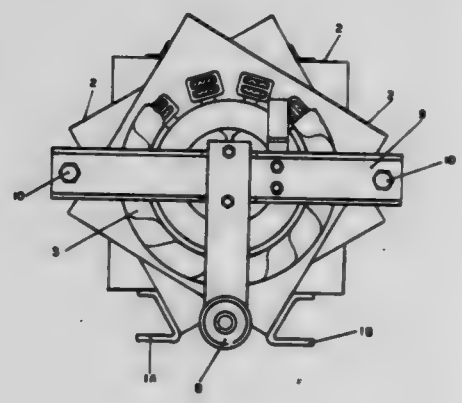
VARIABLE THREE-PHASE INDUCTOR

Bruno Bambozzi, 856 Jose Bonifacio Str., Matao, SP, Brazil

Filed Nov. 12, 1980, Ser. No. 205,965

Int. Cl.³ H01F *33/00, 21/06*

U.S. Cl. 336—10 **8 Claims**



1. A variable inductor for use with a three-phase input, comprising:

a frame formed by a plurality of like square plates which are rotated with respect to each other in a single direction about a common axis, each plate having a central hole centered on the axis to define a hollow cylindrical interior volume extending axially through the frame;

a Y network including like first, second and third coils which are each connected at one end to a common point, the Y network being shaped into a hollow, elongated and generally cylindrical structure with an axis and a circumference, in which structure the first, second and third coils extend parallel to the axis and are distributed around the circumference, the structure extending into the interior volume of the frame and being coaxial therewith;

a movable reluctor having an exterior cylindrical shape and an axis, the axis of the reluctor and the axis of the structure being coincident with each other and the reluctor being axially movable into and out of the structure without physical contact therewith; and

means attached to the frame and reluctor and moving the reluctor in and out of the structure when the means is operated by a user.

4,347,490

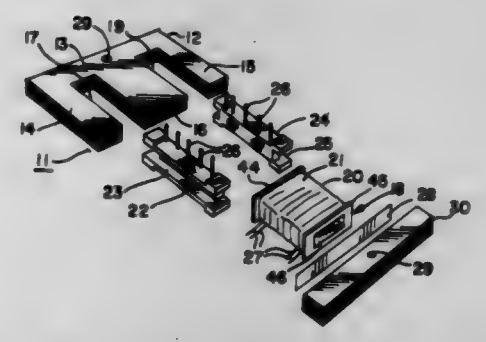
LOW PROFILE TRANSFORMER

David A. Peterson, McHenry, Ill., assignor to Prem Magnetics, Inc., McHenry, Ill.

Filed Mar. 6, 1981, Ser. No. 241,447

Int. Cl.³ H01F *15/10, 27/30*

U.S. Cl. 336—60 **10 Claims**



1. A low profile transformer comprising in combination, a magnetic core having a stem, two outer legs and a center leg, a window formed between the center leg and each of the outer legs, a bobbin assembly including coil windings thereon received by said center leg, connecting pin headers mounted onto said inner side of said outer legs in said windows, pins connecting to associated electronic circuitry mounted on said headers, and said pin headers, said coil windings and said core being of substantially the same height.

4,347,491

ROTARY VARIABLE DIFFERENTIAL TRANSFORMER WITH SUBSTANTIALLY LINEAR OUTPUT

Jacob Chass, Rego Park, N.Y., assignor to Pickering & Company, Inc., Plainview, N.Y.

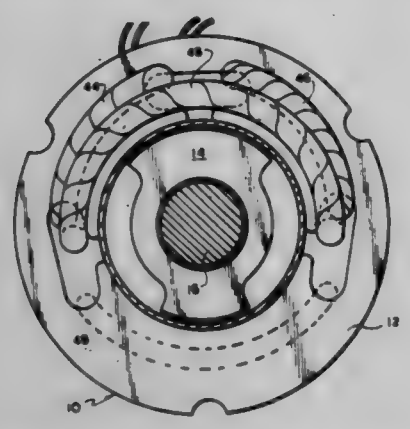
Filed Feb. 2, 1981, Ser. No. 230,338

Int. Cl.³ H01F *21/06*

U.S. Cl. 336—135 **7 Claims**

1. A rotary variable differential transformer comprising: a stator having a circular rotor opening extending therethrough; first and second secondary coils connected to each other in series opposition extending arcuately along adjacent substantial quadrants of the periphery of said opening; a primary coil extending along substantially half the periphery of said opening; and a rotor positioned within said opening, said rotor having first and second diametrically opposed pole pieces, said

first pole piece being equal in arcuate length to one half the combined arcuate length spanned by said secondary coils and



said second pole piece being equal in arcuate length to one third the remainder of the periphery of said opening.

4,347,492

VARIABLE INDUCTANCE TRANSDUCERS

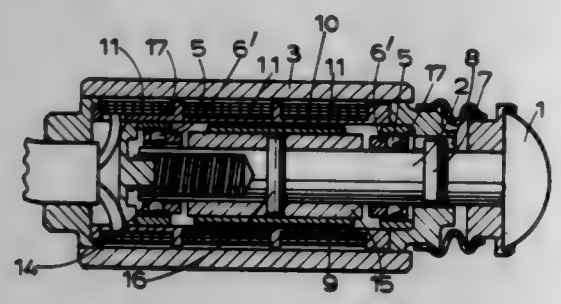
John M. Davis, Loxwood, and Barrie C. Burton, Stockton, both of England, assignors to System E Controls Ltd., Leamington Spa, England

Filed Dec. 9, 1980, Ser. No. 214,769

Claims priority, application United Kingdom, Dec. 15, 1979, 7943280

Int. Cl.³ H01F *21/06*

U.S. Cl. 336—136 **1 Claim**



1. In a variable inductance transducer comprising; a cylindrical housing; an elongate cylindrical plunger formed in one piece and mounted within said housing coaxially therewith for movement in the direction of the length of said plunger, an end portion of said plunger projecting from one end of said housing, a sensing tip on said projecting end portion, means preventing rotation of said plunger within said housing about the axis thereof; a hollow elongate cylindrical bobbin mounted rigidly within said housing coaxial with said housing and said plunger and having first and second ends, a multi-turn electrical coil wound on said bobbin; a hollow tubular magnetic core, said core being mounted on and secured to said plunger and disposed for movement, with said plunger, within said bobbin, said core being shorter than said bobbin and wholly therewithin, and first and second linear ball bearing means locating said plunger within said housing for said linear movement without lateral play, the improvement wherein said first bearing means comprises a first outer race located in said first end of said bobbin and a ring of circumferentially spaced bearing balls, said balls bearing directly on said first outer race and a portion of said plunger, and said second bearing means comprises a second outer race located in said second end of said bobbin and a second ring of circumferentially spaced bearing balls, said last-mentioned balls bearing directly on a second outer race and a further portion of said plunger axially spaced from said first portion, and said core lying axially wholly between said first and second bearing means.

4,347,493

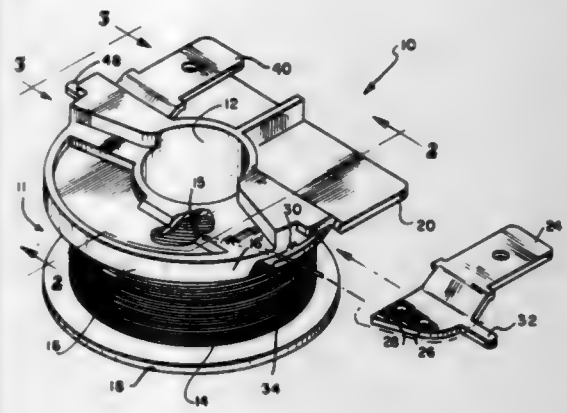
COIL ASSEMBLY

Richard E. Adams, Indianapolis, and Richard W. Stafford, Clayton, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 772,585, Feb. 28, 1977, abandoned. This application Feb. 28, 1978, Ser. No. 880,522

Int. Cl.³ H01F *15/10, 27/30*

U.S. Cl. 336—192 **4 Claims**



1. A coil assembly comprising:

(a) a spindle,

(b) a terminal retaining flange extending from an end of said spindle and a second flange extending from an opposite end of said spindle,

(c) a first slot extending from an outer face of said terminal retaining flange into but not through a thickness of same and to an outer edge thereof,

(d) a second slot disposed substantially diametrically opposed from said first slot and extending from said outer face through a thickness of said terminal retaining flange to an inner face and to an outer edge thereof, at least a portion of said second slot extending to at least a near side of said spindle,

(e) electrical terminals carried in said first and second slots, and

(f) a coil of wire wound about said spindle, a start of said wire connected to a terminal and extending therefrom through said portion of said second slot extending to at least a near side of said spindle,

and an end of said wire connected to the other of said electrical terminals

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4,347,494

BIMETAL-CONTROLLED OVERLOAD PROTECTION SWITCH

Fritz Krasser, Altdorf, Fed. Rep. of Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf, Fed. Rep. of Germany

Filed Oct. 13, 1981, Ser. No. 310,868

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038512

Int. Cl.³ H01H *73/30*

U.S. Cl. 337—66 **12 Claims**

1. In an overload protection switch including a narrow housing, bimetal strip means mounted in the housing, a pushbutton mounted in, and projecting out of, the housing and made of insulating material, the pushbutton being provided with a partition and being movable relative to the housing between an on position in which a conductive path is established via the strip means and an off position in which such conductive path is broken, and spring means urging the pushbutton into its off position, the improvement wherein:

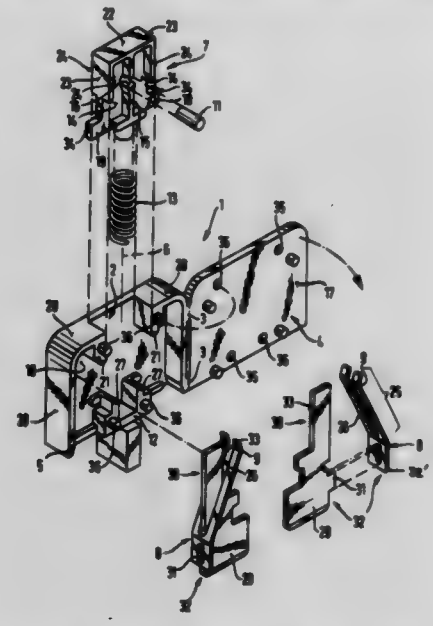
said housing, said pushbutton and said bimetal strip means are physically symmetrical to the longitudinal center axis of said housing;

the path of movement of said pushbutton is along that center axis;

said bimetal strip means comprise two identical bimetal strips disposed symmetrically relative to the center axis,

each strip having a first part fastened to said housing and a second part which is movable relative to said housing in response to temperature changes, with said second parts converging toward one another while remaining out of contact;

said pushbutton carries a conductive contact piece at a location such that in the on position of said pushbutton said



contact piece is wedged between said strips just beyond the location where said second parts are closest to one another to be held by said second parts against the force of said spring means and in the off position of said pushbutton said partition is disposed between said strips at the location where said second parts are closest to one another.

4,347,495

METHOD OF DETECTING OXYGEN AND AN OXYGEN SENSOR THEREPOR

Donald N. Hunter, Bognor Regis, and Richard J. Brook, Leeds, both of England, assignors to Rosemount Engineering Company Limited, West Sussex, England

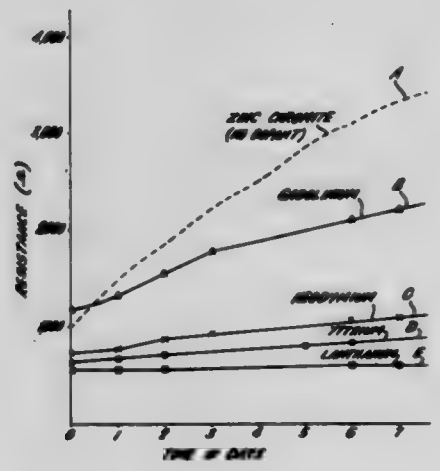
PCT No. PCT/GB80/00017, § 371 Date Sep. 30, 1980, § 102(e) Date Sep. 23, 1980, PCT Pub. No. WO80/01610, PCT Pub. Date Aug. 7, 1980

PCT Filed Jan. 31, 1980, Ser. No. 205,953

Claims priority, application United Kingdom, Jan. 31, 1979, 7903377

Int. Cl.³ H01L *7/00*

U.S. Cl. 338—34 **12 Claims**



1. A sensing element for an oxygen detector, comprising a body of chromium-rich zinc chromite having in excess of a stoichiometric proportion of chromium in zinc chromite, and means for making electrical contact with the body of zinc chromite to sense its electrical resistance.

4,347,496

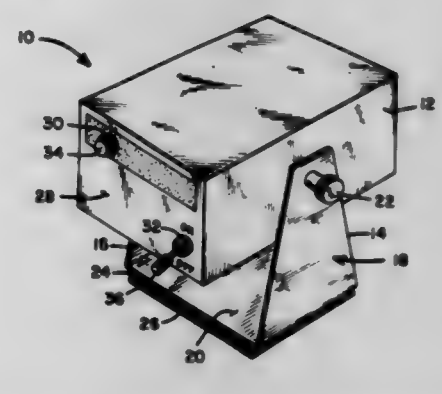
ELECTRONIC FUEL MANAGEMENT SYSTEM

Thomas P. Kubalak, 1112 - 45th Ave. NE., Minneapolis, Minn. 55421; Gene M. Berghoff, 6923 Woodland Dr., Eden Prairie, Minn. 55344, and William J. Palmer, 4900 W. 111th, Bloomington, Minn. 55437

Filed Mar. 10, 1980, Ser. No. 128,517

Int. Cl.³ B60Q *1/34*; H01H *35/06*

U.S. Cl. 340—52 R **2 Claims**



1. Apparatus for indicating when the acceleration of a device in a selected direction exceeds a predetermined value, comprising, in combination:

(a) a housing having a longitudinal axis;

(b) switch means mounted in the housing, including an electrically conductive acceleration responsive mass movable in a direction aligned with said longitudinal axis, and a plurality of electrical contacts disposed at one end of said switch means for bridging contact by said mass when moved to said one end;

(c) a light emitting diode mounted in said housing and visible from without said housing;

(d) a disabling switch mounted in said housing and operable from without said housing;

(e) a battery removably mounted within said housing;

(f) means connecting said battery, said switch means, said diode, and said disabling switch in a series circuit;

(g) a support bracket having a base surface and support legs extending from said surface;

(h) means carried by said legs for engaging sides of said housing in adjustable supporting relation about a pivotal axis orthogonal to said longitudinal axis;

(i) Velcro loop and hook means for removably fastening said base surface to a generally flat mounting portion of the device, with said pivotal axis generally horizontal and said directions in alignment;

(j) and means fixing the adjusted position of said housing about said pivotal axis to determine the acceleration required to move said mass into bridging engagement with said contacts.

4,347,497

A.C. OPERATED SIGNALLING DEVICE FOR MOPEDS

Marc Bonnet, Valentigney, and Daniel Borde, Beaulieu-Mandeure, both of France, assignors to Cycles Peugeot, Valentigney, France

Filed Jun. 27, 1978, Ser. No. 919,517

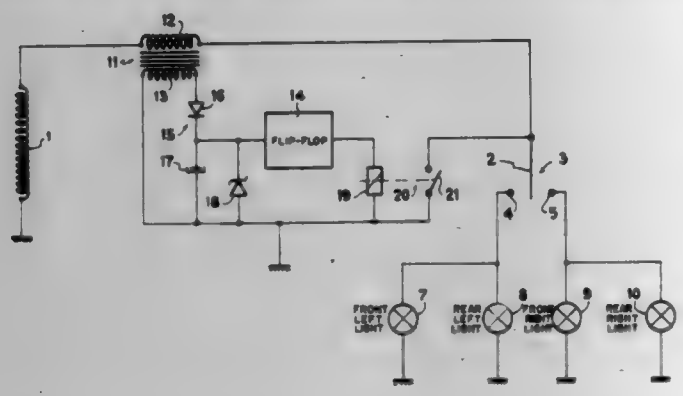
Claims priority, application France, Jun. 29, 1977, 77 19943

Int. Cl.³ B60Q *1/34*; G08B *21/00*

U.S. Cl. 340—73 **7 Claims**

1. An electric installation supplied with power by an a.c. source such as a magnetic flywheel of a Moped, comprising at least a main load, a circuit connecting the main load to said source, a monitoring system connected to monitor operation of said main load, a current detector connected in series in said circuit and capable of ensuring, as a function of the current detected, an automatic supply of power to the monitoring system by inductive coupling from said current detector to said monitoring system, said monitoring system being connected to be operatively responsive to said current detector, said moni-

toring system including means for intermittently controlling the supply of power to the main load, said monitoring system



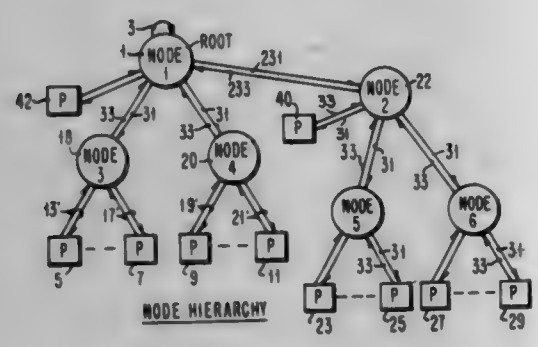
being powered exclusively by the power supplied to the monitoring system from said current detector.

4,347,498

METHOD AND MEANS FOR DEMAND ACCESSING AND BROADCAST TRANSMISSION AMONG PORTS IN A DISTRIBUTED STAR NETWORK

Robert P. Lee, Woodstock, N.Y., and Felix H. Closs, Adliswil, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1979, Ser. No. 96,356
Int. Cl.[3] H04Q *3/60*
U.S. Cl. 340—825.02 12 Claims



1. A data communications system comprising:

a transmission medium formed from an inverted three network of nodes and full duplex connecting links, the tree network having a network root node, said root node of a tree or subtree thereof having an in-degree of zero, each duplex link including an up-link and a down-link respectively defining a signal path direction toward or away from the network root node, each up and down-link being in either an idle or occupied state;

a plurality of transceiving ports attaching the network at selected nodes, ready ones of the ports transmitting messages at will;

each nodes includes:

means for ascertaining whether the state of each terminating up-link and down-link is idle or occupied; and

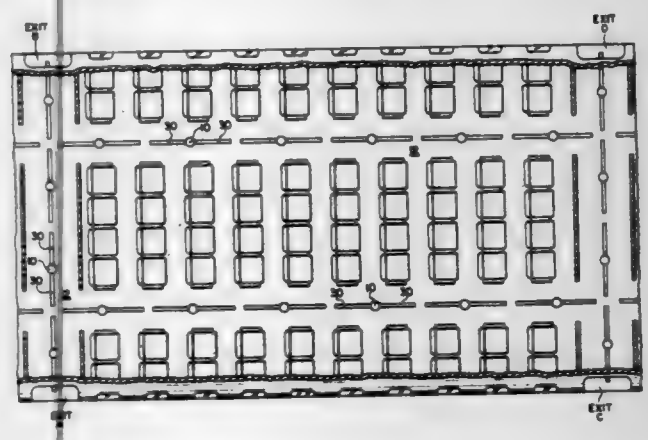
means responsive to the first occurring ascertained state transition from idle to occupied among the terminating up-links for completing an exclusive signal path connection to an outbound up-link only if the outbound up-link is concurrently idle.

4,347,499

EMERGENCY GUIDANCE SYSTEM

Thomas F. Burkman, Sr., 7525 Monroe, Niles, Ill. 60648, and Gary Cummings, Torrance, Calif., assignors to Thomas F. Burkman, Sr., Niles, Ill.

Filed Jan. 2, 1981, Ser. No. 222,002
Int. Cl.[3] G08B *7/00*
U.S. Cl. 340—371 33 Claims


EXIT
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armature, coils wound on said cores for generating magnetic fluxes linking said cores and said armature, an insulating plate through which said cores project, and at least four coils disposed in a plane on a surface of said insulating plate and spirally wound around said magnetic poles to surround said poles; and

said switching means is disposed among said four magnetic poles.

4,347,501

INSTALLATION FOR TRANSMITTING ALARM SIGNALS

Dag Akerberg, Järfälla, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

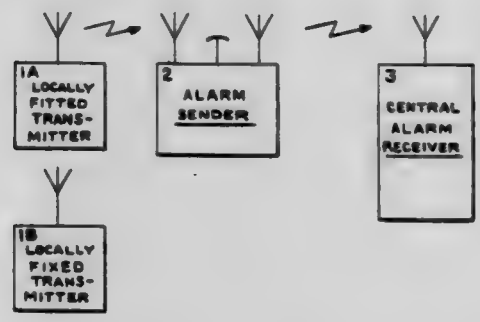
PCT No. PCT/SE79/00188, § 371 Date May 15, 1980, § 102(e) Date Apr. 18, 1980, PCT Pub. No. WO80/00630, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 13, 1979, Ser. No. 195,637

Claims priority, application Sweden, Sep. 15, 1978, 7809742S

Int. Cl.³ G08B *1/08;* H04Q *7/00*

U.S. Cl. 340—539 3 Claims



1. An alarm system for use in an area having a plurality of localized regions for indicating in which of the localized regions the alarm is given, said alarm system comprising: a central alarm receiver means for receiving coded alarm signals and giving area indications in accordance with received coded location-identifying alarm signals; a plurality of fixed short range transmitter means, each of said fixed transmitter means being in one of the localized regions for inductively transmitting coded location-identifying alarm signals unique to the localized region only within a short range associated with said region and not to said central alarm receiver means; and a plurality of personal portable alarm senders, each of said senders including a receiver means for receiving and storing the coded location-identifying alarm signals emitted by the fixed short range transmitter means when in close proximity thereto so that as a portable alarm sender is moved through the area it stores the coded location-identifying alarm signals associated with the localized region of its instant location to the exclusion of other coded location-identifying alarm signals, and a fixed dummy transmitter means in proximity with two of said fixed transmitter means in an area where the two transmitters having an area of partially overlapping transmission ranges for preventing the receiver means of a sender in that area from receiving and storing any coded location-identifying alarm signal other than the one already stored, and each of said senders including user-operable transmitter means for emitting stored coded-location alarm signals to said central alarm receiver means, said user-operable transmitter means having a range which is greater than the range of said short range transmitter means.

4,347,502

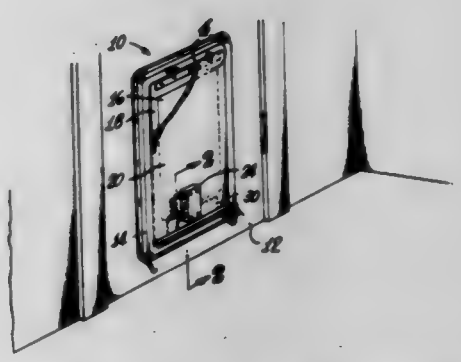
EARLY WARNING ELECTRICAL SOUND ALARM SYSTEM FOR PET DOOR STRUCTURE

David L. Holmes, Westminster, and Anne M. Hollander, Northridge, both of Calif., assignors to Johnson Pet-Door, Inc., Valencia, Calif.

Filed May 27, 1980, Ser. No. 153,567

Int. Cl.³ G08B *13/08, 13/14*

U.S. Cl. 340—545 16 Claims



1. A sound alarm system for signalling unauthorized entry through a pet door when the door is covered and not in use, said system comprising in combination:

a pet door including a frame defining a passageway therethrough, and a flap swingable mounted passageway for swinging movement in either direction therethrough; cover means removably secured to one side of said frame adjacent said flap for preventing entry through said passageway; and an electrically powered sound alarm for signalling removal of said cover means said alarm including a sound signal box, and switch means having an activated state and a deactivated state, said switch means disposed between said flap and said cover means and positioned to maintain said switch means in a deactivated state when said cover means is removably secured to said frame, and further comprising second interior cover means removably secured to the opposite side of said frame adjacent said flap for preventing entry through the passageway, wherein said sound signal box includes a trip switch means which activates the sound alarm in the event said second interior cover means is removed from said frame.

4,347,503

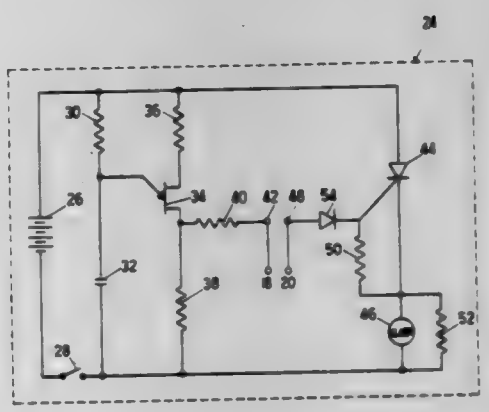
BEDWETTING DETECTION DEVICE

Otto A. Uyehara, Madison, Wis., assignor to Health Guardian Company, Monroe, Wis.

Filed Feb. 17, 1981, Ser. No. 234,825

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—604 7 Claims



1. A battery-operated bedwetting detector comprising

a pair of conductors (12, 14) adapted to being installed in the bed of the user;

a moisture-permeable insulator (16) adapted for placement between the conductors (12, 14);

an electric current detector circuit (44, 50, 52, 54) connected to a first of the conductors (12, 14) to detect current flow therethrough;

an alarm (46) connected to the detector circuit to awaken the user when the detector circuit senses current flow;

a periodic pulse generating circuit (30, 32, 34, 36, 38, 40) connected to the second of the conductors (12, 14) to periodically generate an electrical pulse on the second of the conductors (12, 14) so as to cause current to flow through the first conductor if the insulator (16) is damp; and

a voltage divider (36, 38) in the pulse generating circuit connected so that the voltage of the pulse created by the pulsing circuit is less than the electrolysis voltage of water.

4,347,504

DEVICE FOR DETECTING A BURNT-OUT FUSE

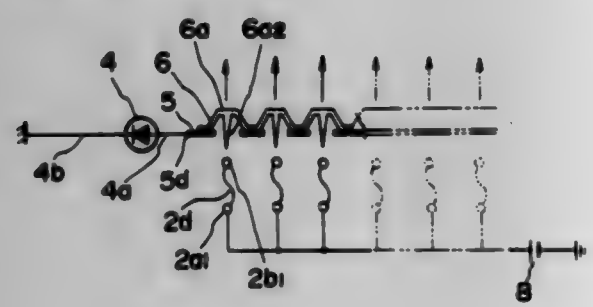
Satoru Murofushi, Shizuoka; Tadao Shibuya, Fujieda; Shinichi Kato, Fujisawa, and Mitsuo Endo, Gotenba, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa and Yazaki Corporation, Tokyo, both of, Japan

Filed Aug. 21, 1980, Ser. No. 179,999

Claims priority, application Japan, Aug. 24, 1979, 54-115900[U]

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—638 5 Claims



1. A device for detecting a burnt fuse in a fuse box accommodating a plurality of parallelly arranged blade-type fuses each having an input end and an output end, said device comprising:

an insulative support body mounted on the fuse box;

resilient contact means supported by said support body in a facing relation to the output end of the blade-type fuses;

a light-emitting element connected between said resilient contact means and ground; and

a grounding element electrically connected between said resilient contact means and said light-emitting element, said grounding element and said resilient contact means being in contact with each other in overlapped fashion, over substantially the whole area thereof.

4,347,505

DEVICE FOR CONTROLLING A CIRCUIT

Gary B. Anderson, Tahoe City, Calif., assignor to Antroy Enterprises, Inc., San Francisco, Calif.

Filed Jan. 29, 1979, Ser. No. 7,411

Int. Cl.³ G01G *23/20;* H01C *10/10*

U.S. Cl. 340—666 8 Claims

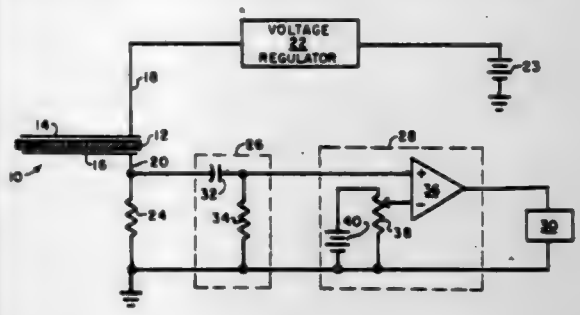
1. A pressure detecting device comprising

a circuit,

a thin resiliently deformable sheet of semiconductor material having an internal electrical conductivity generally invariable according tc applied pressure, the surface of said semiconductor material having microscopic ridges and depressions therein,

a first electrode connected to said circuit comprising a flexible sheet of electrically conductive metal foil, selected from the group consisting of copper, steel and aluminum and alloys thereof, in mechanical contact with one side of said resiliently deformable sheet material and electrically connected to said circuit,

a second electrode connected to said circuit comprising a flexible sheet of electrically conductive metal foil, selected from the group consisting of copper, steel and aluminum and alloys thereof, in mechanical contact with the other



side of said resiliently deformable semiconductor sheet material and electrically connected to said circuit, and

said circuit being responsive to deforming of said microscopic ridges and depressions in the presence of applied pressure on said first electrode, resiliently deformable semiconductor sheet and second electrode combination for providing an output signal that is a function of said applied pressure.

4,347,506

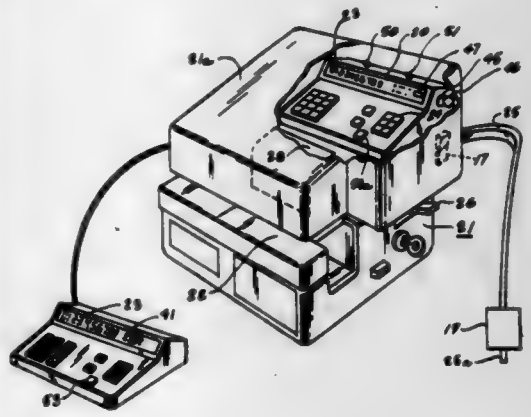
ELECTRONIC POSTAGE METER HAVING CHECK DATE WARNING WITH CONTROL FOR OVERRIDING THE CHECK DATE WARNING

Edward C. Duwel, Trumbull, Conn., and John H. Soderberg, Monroe, N.Y., assignors to Pitney Bowes, Inc., Stamford, Conn.

Filed Feb. 24, 1981, Ser. No. 237,807

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—679 12 Claims



1. In an electronic postal meter having a postage printing device and a computer means and further including date setting means and an access door enabling external access to date setting means; the improvement comprising switch means connected to said door for signaling the position thereof to said computer means, a warning indicator coupled to said computer means for indicating that said door is opened, said computer means having an operating power input and means responsive to application of power to said meter for inhibiting operation of said meter until said access door has been opened and closed at least once and means coupled to said computer means for enabling operation of said meter when said door is closed and operable such that said meter can be enabled for operation without opening and closing said door.

4,347,507

VISUAL DISPLAY APPARATUS

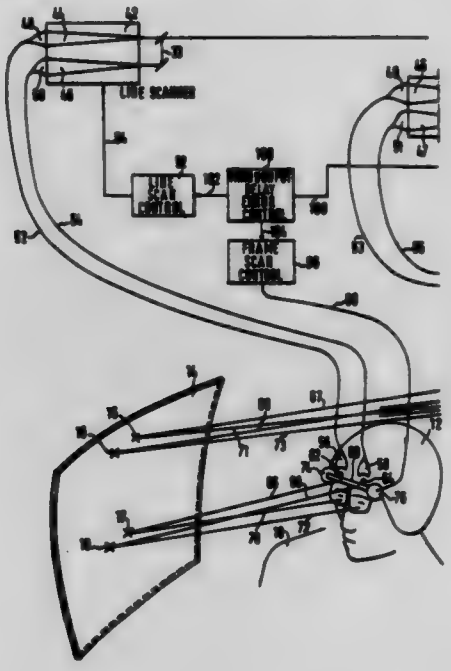
Archer M. Spooner, Orlando, Fla., assignor to Redifon Simulation Limited, Sussex, England

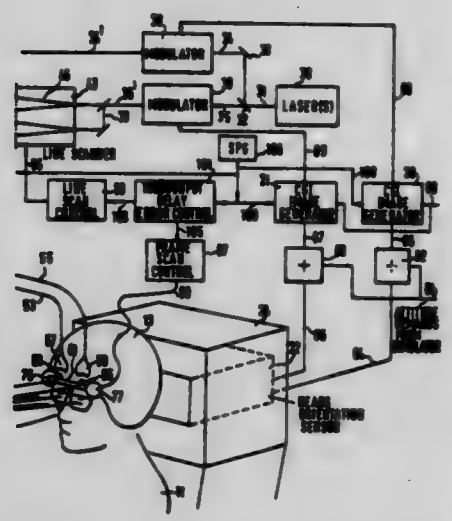
Filed Dec. 21, 1979, Ser. No. 105,875

Claims priority, application United Kingdom, Dec. 21, 1978, 49521/78

Int. Cl.³ G09G 3/00

U.S. Cl. 340—705 6 Claims





1. Head-coupled, area-of-interest, visual display apparatus providing pseudo-collimated viewing for more than one viewer, comprising a part-spherical retro-reflective screen of area greater than a viewer's field of view and, for each viewer, a helmet, sensing means for sensing the orientation of the respective viewer's head and helmet, visual image generating means for generating an image representing a simulated view in the direction of the respective viewer's instantaneous line of view according to a common simulated vehicle position and heading and under control of the respective sensing means, a laser light source for producing a laser beam, a laser beam modulator for modulating said laser beam, optical means for providing identical left eye and right eye views, separate line scanners for each said view for scanning the modulated laser beam over the input ends of respective fibre optic light guides, the said fibre optic light guides having their output ends at spaced-apart positions on the respective viewer's helmet, and frame scanning means mounted on the said helmet for receiving light from the light guide outputs and projecting the light as a scanned image upon the said screen.

4,347,508

VISUAL DISPLAY APPARATUS

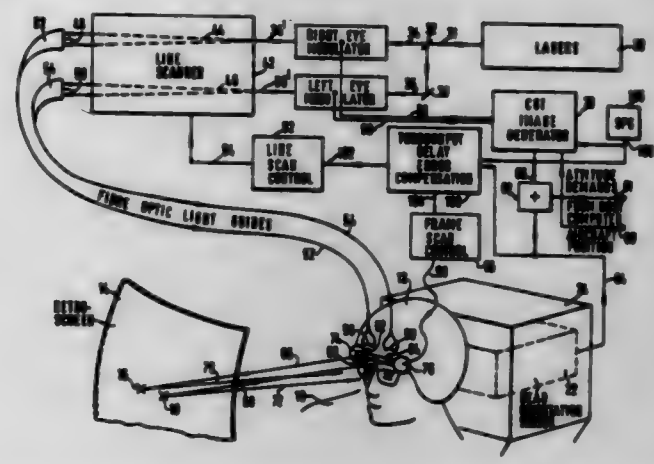
Archer M. Spooner, Orlando, Fla., assignor to Redifon Simulation Limited, England

Filed Dec. 21, 1979, Ser. No. 105,877

Claims priority, application United Kingdom, Dec. 21, 1978, 49522/78

Int. Cl.³ G09G 3/00

U.S. Cl. 340—705 5 Claims



1. Head-coupled, area-of-interest, visual display apparatus providing three-dimensional viewing for one viewer, comprising a part-spherical retro-reflective screen of area greater than a viewer's instantaneous field of view, a helmet, sensing means for sensing the orientation of the viewer's head and helmet, visual image generating means (CGI) for generating an image representing a simulated view in the direction of the viewer's instantaneous line of view according to the viewer's simulated position and heading and under control of the said sensing means, the said image generating means being adapted for providing two visual images corresponding respectively to the viewer's left eye and right eye views, a laser light source for supplying a laser beam which is split to pass through separate laser beam modulators for the left eye and right eye views, separate line scanners for each said view for scanning the modulated laser beam over the input ends of respective fibre optic light guides, the said fibre optic light guides having their output ends at spaced-apart positions on the viewer's helmet, and frame scanning means mounted on the said helmet for receiving light from the light guide outputs and projecting the light as a scanned image upon the said screen.

4,347,509

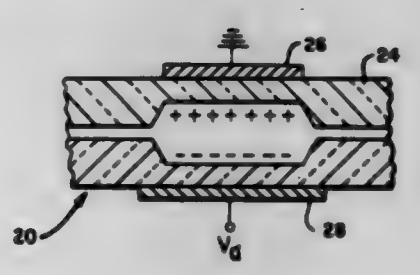
PLASMA DISPLAY WITH DIRECT TRANSFORMER DRIVE APPARATUS

Jay B. Hardway, and Larry W. Eichman, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 27, 1980, Ser. No. 125,070

Int. Cl.³ G09G 3/28

U.S. Cl. 340—778 11 Claims



1. Apparatus for driving a gas-discharge device of the type having an array of cells in which each cell has a column electrode and a segment electrode comprising in combination:

a plurality of column conductors each connected to one of said column electrodes;

a plurality of segment conductors each connected to one of said segment electrodes forming a matrix with said plurality of column conductors;

a low level direct current voltage source;

a single multi-tap secondary, high voltage autotransformer having primary windings coupled to said voltage source and center tapped secondary windings having one end connected directly to said column electrodes for supplying a high level alternating voltage pulse to said column electrodes which level is insufficient to discharge the electrode, said secondary windings further having a center tapped portion connected directly to said segment electrode for supplying a low level alternating voltage pulse to said segment electrodes whose level is insufficient to discharge the electrodes, said high and low level voltage pulses being generated in response to the primary windings being alternately enabled and disabled in response to receiving alternating pulses from said voltage source;

means connected to said low level direct current voltage source and said secondary windings for varying the output level of the voltage source in accordance with the number of cells being discharged;

a source of high frequency system clock pulses;

first switching means connected to said source of clock pulses, said low voltage direct current voltage source and said primary windings for outputting a plurality of alternating voltage pulses to said primary windings in response to receiving said clock pulses;

a plurality of second switching means each connected to one of said column conductors and to ground, each of said second switching means adapted to ground its associated column conductor to remove the high level alternating voltage pulses from its associated column electrodes when enabled;

a plurality of third switching means connected to said segment conductors and said source of clock pulses, said third switching means operated by the clock pulses for supplying said low voltage alternating pulses to said segment conductors which is out of phase with the supply of said high level alternating voltage pulses supplied to said column conductors by the secondary windings of the autotransformer;

and control means connected to said column and segment conductors and said source of clock pulses for generating control signals over said conductors to enable selected column and segment electrodes to be discharged in response to receiving said high and low level alternating voltage pulses respectively.

4,347,510

APPARATUS FOR AUTOMATIC SELECTIVE SWITCHING AND TRANSMISSION OF INPUT SIGNALS

Yukinobu Ishigaki, Machida, and Hideaki Ozaki, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 26, 1980, Ser. No. 134,223

Claims priority, application Japan, Mar. 29, 1979, 54-36233; May 18, 1979, 54-61330; May 28, 1979, 54-65863

Int. Cl.³ H04Q *3/00*

U.S. Cl. 340—825.5 3 Claims

1. Apparatus for automatic selective switching and transmitting of input signals comprising:

switching means provided respectively for respective transmitting systems of a plurality of input signals and undergoing opening and closing operation thereby to carry out non-transmitting and transmitting of signals;

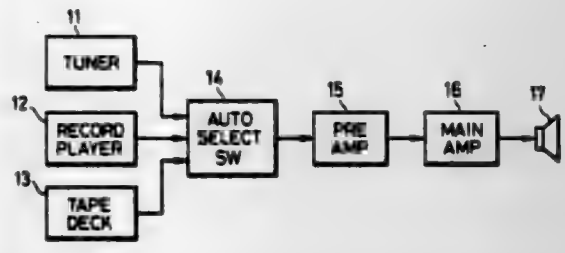
input signal detection circuit means supplied with said input signals and detecting same to produce detected signals; and

means for forming control signals supplied with said detected signals and forming control signals for closing the switching means provided for the transmitting system of an input signal which has arrived and causing the switching means of the other transmitting systems to open or to remain opened,

said switching means being a plurality of normally-open switch means which close when said control signals are applied thereto,

said control signal forming means generating a control signal which causes closure of the switching means provided for the transmitting system of an input signal which has arrived and does not generate a control signal with respect to the switching means provided for the other input signal transmitting systems,

said control signal forming means comprising differentiation circuits provided respectively in correspondence with



said input signal detection circuit means and respectively differentiating the output detected signals thereof, R-S flip-flops provided respectively in correspondence with said differentiation circuits and having respective setting input terminals to which respective output differentiated pulses of said differentiation circuits are applied, each R-S flip-flop having a resetting input terminal connected to the output side of other differentiation circuits not corresponding to that R-S flip-flop, and AND gates provided respectively in correspondence with the R-S flip-flops and supplied with the outputs of said R-S flip-flops and the output of said corresponding input signal detection circuit means, said control signals being obtained respectively from said AND gates.

4,347,511

PRECISION NAVIGATION APPARATUS

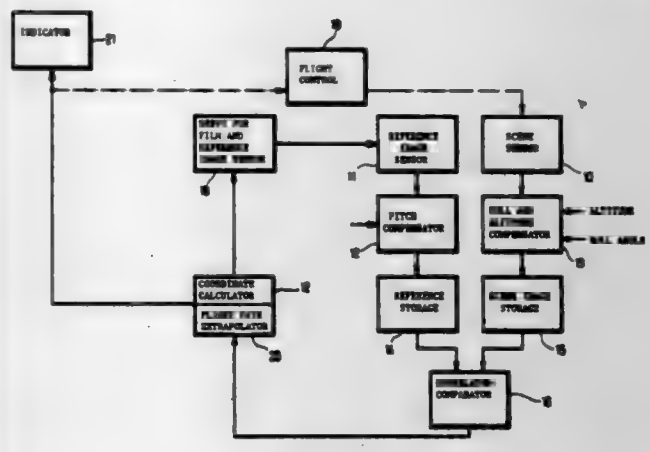
Otto Hofmann, Kirchstockach; Walter Kroy, Ottobrunn, and Peter Nave, Hohenbrunn, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,898

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914693

Int. Cl.³ G01S *13/89*

U.S. Cl. 343—5 PC 12 Claims



1. A device for image-correlation precision navigation of bodies flying over terrain comprising: a plurality of reference images of the terrain to be flown over, said images each having a given width, a scene sensor for scanning the terrain flown over and producing values corresponding to the scenes

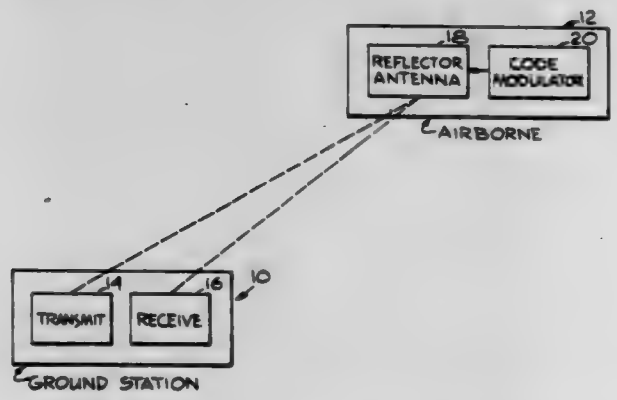
scanned, a reference image sensor for continuously and simultaneously scanning the reference images corresponding to the terrain scanned by the scene sensor and producing values corresponding to the reference images, comparator means for comparing the values of the scanned reference images and scene with each other, feedback means responsive to said comparator for shifting the scanning of said reference image sensor along a course over said reference images based on the comparison of said comparator means so that the course corresponds to that of the body flying over the terrain, said reference image sensor having means for scanning only the area of said film over a range less than the widths of the images around the map course and said feedback means having means for shifting the range along the widths of the images.

4,347,512

COMMUNICATIONS SYSTEMS UTILIZING A RETRODIRECTIVE ANTENNA HAVING CONTROLLABLE REFLECTIVITY CHARACTERISTICS

Edmund F. Sweeney, Laurel, Md., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 18, 1968, Ser. No. 723,348
Int. Cl.[3] G01S *13/74*; H01Q *19/08*
U.S. Cl. 343—6.5 R 5 Claims



1. An antenna structure including:

a focussing means including a plurality of substantially parallel electrical conductors each coincident with a common spherical surface,

a reflector means having controllably variable reflectivity characteristics and being supported at the locus of substantially one-half the radius of said spherical surface, and

means supporting said focussing means relative to said reflector means for directing energy-propagating along a first path and incident on said focussing means against said reflector means and for redirecting such energy reflected by said reflector means against said focussing means for redirection along said first path.

4,347,513

NETTED SEARCH RADAR SYSTEM

John K. Schindler, Chelmsford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 47,527, Jun. 8, 1979, abandoned. This application Sep. 9, 1980, Ser. No. 185,469
Int. Cl.[3] G01S *7/38, 13/74, 13/48*
U.S. Cl. 343—18 E 8 Claims

1. A netted search radar system to defeat monopulse anti-radiation missiles comprising in combination:

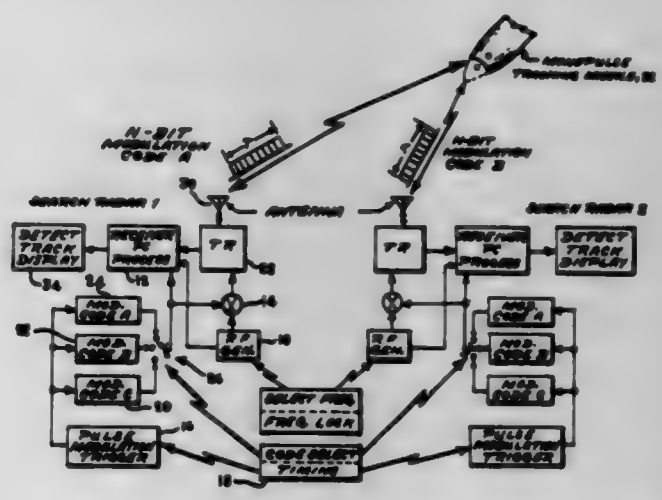
a plurality of search radar units at fixed locations operating simultaneously and scanning asynchronously, each of said plurality of search radar units comprises in combination:

an R.F. generator to provide an R.F. carrier frequency, said R.F. generator including a mixer to receive a modulation source, each of said plurality of search radar units operating at substantially the same R.F. carrier frequency,

a modulation means connected to said mixer in order to modulate said R.F. carrier frequency thereby providing a modulated signal, said modulation means utilizing one of a plurality of selectable modulation codes which is different from that of all other search radar units,

a T/R switch receiving said modulated signal from said mixer, said T/R switch applying said modulated signal to an antenna for transmission, said modulated signal being radiated to a target in a surveillance region to produce a reflected target return signal, the reflected target return signals from all of said plurality of search radar units are combined in space to comprise a received signal for reception by said antenna and applied to said T/R switch,

a receiver/processor unit connected to said T/R switch having said received signal applied thereto, said receiver/processor unit processing said received signal containing said plurality of returned modulation codes to



selectively detect the modulation code that was transmitted by its own search radar unit, said receiver/-processor unit providing target data, and;

a radar control unit electronically linked with each of said plurality of search radar units, said radar control unit controls the selection of the R.F. carrier frequency within each R.F. generator of said plurality of search radar units, said radar control unit periodically locking said R.F. carrier frequency to an external source within radar control unit to maintain R.F. carrier frequency stability, said radar control unit selecting a different modulation code for each of said plurality of search radar units, said radar control unit providing timing signals to each of said plurality of search radar units which synchronizes the triggering of said modulation means and provides for a specific delay of each modulated signal to insure an overlap in signal transmission in the surveillance region.

4,347,514

TROPOSCATTER SYSTEM ANTENNA ALIGNMENT

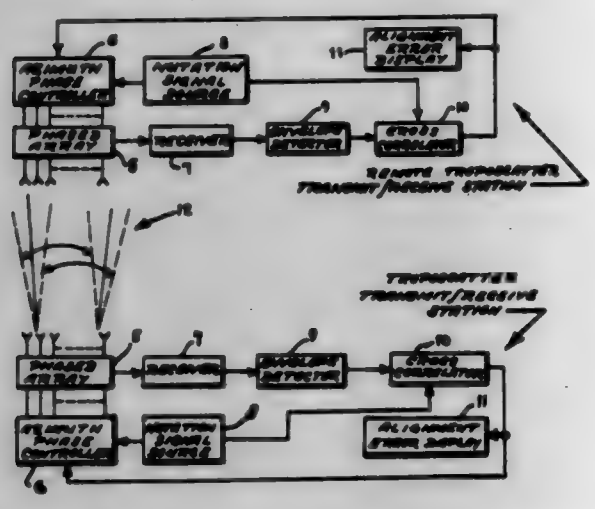
William P. Birkemeier, Madison, Wis., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 19, 1980, Ser. No. 179,597
Int. Cl.[3] G01S *1/44*
U.S. Cl. 343—100 CS 8 Claims

8. An antenna aligment method comprising the steps of

nutating the antenna receive beam with a sinusoidal nutating signal to provide a received signal having a modulated envelope,

crosscorrelating said nutating signal within the modulated envelope of said received signal, and



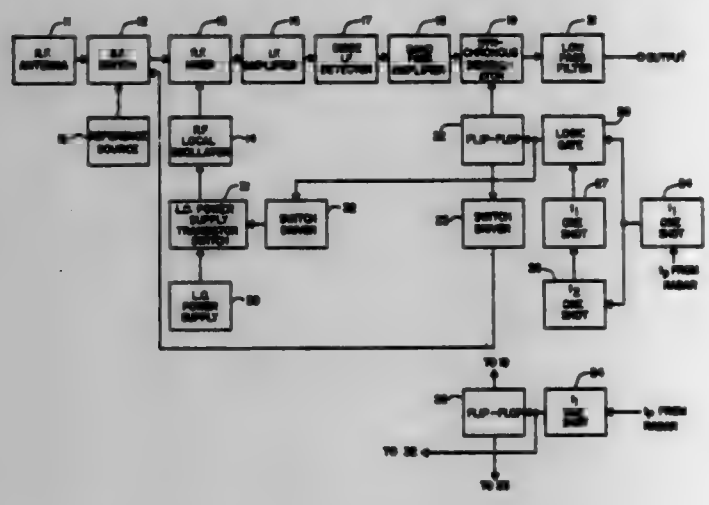
orienting said antenna receiver beam in response to the crosscorrelation function.

4,347,515

RADAR RADIOMETER AND ITS USE

Mervyn C. Hoover, Jr., Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 14, 1980, Ser. No. 196,225
Int. Cl.[3] H04B *7/00;* G01S *7/40*
U.S. Cl. 343—100 ME 18 Claims



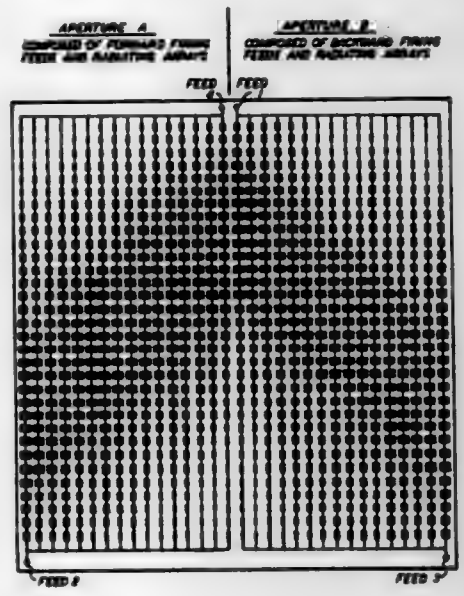
1. A radar-radiometer comprising:
an antenna;
a reference signal source;
an antenna switch having a first input connected to said antenna and another input connected to said reference signal source and an output;
a mixer circuit connected to said output of said antenna switch;
a local oscillator connected to said mixer;
a power supply;
a power switch connected to said local oscillator and to said power supply for selective interruption of the flow of electrical power therebetween; and
logic circuit means for actuating said antenna switch and said power switch and operatively connected thereto, whereby the signals from said antenna and said local oscillator are interrupted to effect a high degree of signal attenuation for high power level RF sources.

4,347,516

RECTANGULAR BEAM SHAPING ANTENNA EMPLOYING MICROSTRIP RADIATORS

Abraham Shrekenhamer, Wharton, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jul. 9, 1980, Ser. No. 167,285
Int. Cl.[3] H01Q *1/28, 3/24*
U.S. Cl. 343—700 MS 8 Claims



1. A rectangular antenna aperture for Doppler navigation systems aligned along the direction of travel of an aircraft and consisting of a series of parallel arrays of radiating elements coupled to feed means, and having the radiating coefficients of said radiating elements and the coupling coefficients of said arrays to said feed means adjusted so that the amplitude function of said aperture along the axis of travel is a truncation of a long slanted array amplitude function, comprising:

(a) a single rectangular aperture;

(b) first and second forward-firing traveling feed arrays disposed along one end of said aperture;

(c) first and second backward-firing traveling wave feed arrays arranged along the opposite end of said aperture, each of said traveling wave feed arrays having two input ports;

(d) a first set of forward-firing traveling wave radiating arrays extending between said feed arrays in spaced relationship with each other, each of said first set of forward-firing traveling wave radiating arrays having one end coupled to said first forward-firing traveling wave feed array and another end coupled to said first backward-firing traveling wave feed array;

(e) a first set of backward-firing traveling wave radiating arrays disposed in the spaces between said first set of forward-firing traveling wave radiating arrays such that said first set of forward and said first set of backward arrays alternate with each other, each of said backward-firing traveling wave radiating arrays having their one end coupled to said first forward-firing traveling wave feed array and their other end coupled to said first backward-firing traveling wave feed array;

(f) a second set of forward-firing traveling wave radiating arrays, one such array being disposed adjacent each of said first set of forward-firing traveling wave radiating arrays;

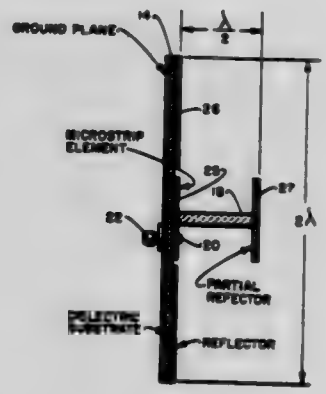
(g) a second set of backward-firing traveling wave radiating arrays one being disposed next to each of said first set of backward-firing traveling wave radiating arrays, each of the arrays of the said second sets of forward and backward-firing traveling wave radiating arrays having one end coupled to said second forward-firing traveling wave feed array and their other end coupled to said second backward firing traveling wave feed array, whereby with a single aperture eight separate beams can be generated.

4,347,517

MICROSTRIP BACKFIRE ANTENNA

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1981, Ser. No. 228,429
Int. Cl.³ H01Q *1/38, 19/12*
U.S. Cl. 343—700 MS 22 Claims



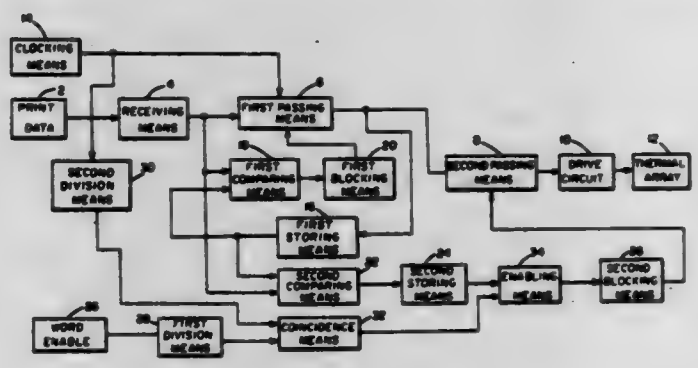
1. A microstrip backfire antenna comprising:
a. a thin ground plane conductor;
b. a thin microstrip radiating element spaced from said ground plane by a dielectric substrate;
c. said radiating element being fed at at least one feed point located thereon;
d. a partial reflector mounted directly above and parallel to said radiating element and ground plane at a distance of approximately one-half wavelength from said ground plane and forming a backfire cavity in the spacing between said ground plane and said partial reflector;
e. said ground plane operating as a total reflector, and said backfire cavity operating to provide multiple reflections between the partial and total reflectors of electromagnetic waves radiating from said radiating element with energy being radiated normal to and through said partial reflector.

4,347,518

THERMAL ARRAY PROTECTION APPARATUS

Glenn L. Williams, Bay Village, and Edward J. Reilly, Mayfield Heights, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 72,544, Sep. 4, 1979, Pat. No. 4,271,414. This application May 29, 1981, Ser. No. 268,434
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—1.1 7 Claims



7. A method of thermal array protection for use in thermal imaging apparatuses of the type having a linear array of heat generating resistive elements used to place marks on thermal sensitive recording media during printing operations, said method comprising the steps of:
(a) receiving an incoming digital first line of data from an appropriate source, said first line of data comprising a plurality of individual datum;
(b) passing said digital first line of data to a driving means for current driving thermal array stylii;
(c) clocking the passing first line of data to position and synchronize the individual datum within said first line of data to the individual stylus to be driven;
(d) storing said first line of data;
(e) receiving an incoming digital second line of data from said appropriate source, said second line of data comprising a plurality of individual datum;
(f) blocking the passing to said driving means of the individual datum within said second line of data for those positions in which data exists in corresponding positions of the stored first line of data;
(g) passing the datum not blocked from said second line of data to said driving means;
(h) clocking the passing of the unblocked datum of said second line of data to position and synchronize said unblocked datum of said second line of data to the individual stylus to be driven;
(i) storing said unblocked datum of said second line of data;
(j) receiving an incoming digital third line of data from said appropriate source, said third line of data comprising a plurality of individual datum;
(k) combining the datum passed in said first line of data and said second line of data;
(l) comparing each datum position of the combined line of data to determine if datum exists in corresponding positions with said third line of data received; and
(m) blocking the passing to said driving means of the individual datum within said third line of data for those datum positions in wh

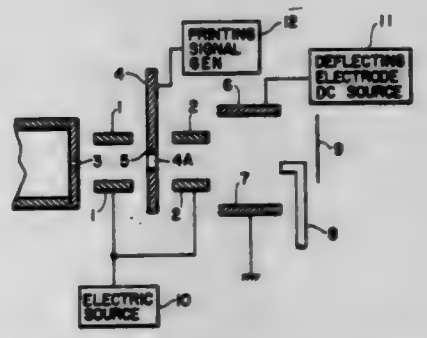
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4,347,519

INK JET PRINTER

Masatsugu Kikuchi, and Masayoshi Tamai, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,045
Claims priority, application Japan, Aug. 23, 1979, 54-106655
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 3 Claims



1. An ink jet printer comprising: a plurality of nozzles for producing ink jets which separate into ink particles; charging electrodes disposed substantially at ink jet separating positions for controlling the charging of said ink particles according to a printing signal; deflecting electrodes for deflecting charged ink drops toward a gutter; at least one set of auxiliary charging electrodes disposed adjacent said charging electrodes for charging ink particles separated at positions shifted from the positions of said charging electrodes; and means for continuously applying a predetermined voltage to said auxiliary charging electrodes.

4,347,520
INK JET PRINTER

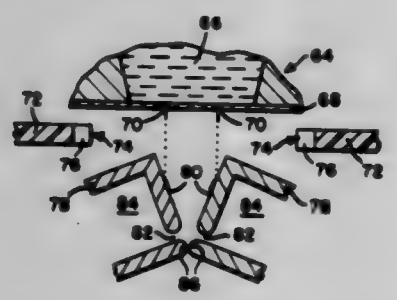
Suresh C. Paranjpe, Dallas; James W. Davis, Richardson, both of Tex.; Robert J. Scranton, and Roger D. Wells, both of Dayton, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 75,055, Sep. 12, 1979. This application Sep. 23, 1980, Ser. No. 189,872

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 8 Claims



1. An ink jet printer for depositing ink drops on a print receiving medium, comprising:

print head means for generating a plurality of jet drop streams, said streams being arranged in at least one row,

a pair of drop catchers, each catcher defining a drop impingement surface, said pair of catchers being pivotable into drop catching positions with said drop impingement surfaces being substantially parallel and positioned on opposite sides of said row of jet drop streams for catching drops deflected thereto by an electrostatic deflection field, and said pair of catchers being pivotable into full catch positions in which said drop impingement surfaces are inclined with respect to said row of jet drop streams and said catchers intercept all of the drops in said jet drop streams, and

means for pivoting said pair of drop catchers between said drop catching positions and said full catch positions, whereby drops are caught continuously by said catchers before and after printing with said catchers in said full catch positions, thus increasing the reliability of start up and shut down.

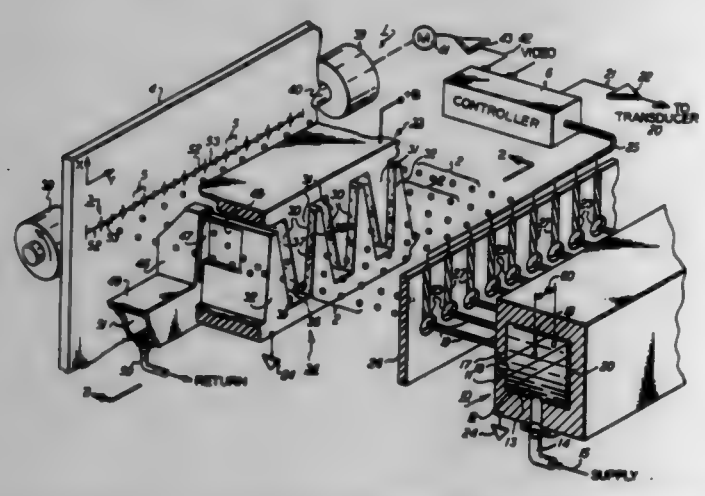
4,347,521
TILTED DEFLECTION ELECTRODE METHOD AND APPARATUS FOR LIQUID DROP PRINTING SYSTEMS

Roger G. Teumer, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 1980, Ser. No. 203,210

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 13 Claims



1. Liquid drop apparatus for printing with drops on a target in alignment with the pixels of a linear scan line of a raster image comprising:

drop generating means for generating a plurality of drop streams in flight toward a target moving with respect to said generating means including a linear array of nozzles for emitting liquid under pressure to create liquid columns from which the drops are formed, the nozzle spacing within the array being a distance enabling drops from a single nozzle to address multiple pixels within a segment of a raster image scan line at the target,

drop deflecting means for deflecting charged drops having a first electrode which defines a series of teeth-like extensions which form angled surfaces and a second electrode which defines a second series of teeth-like extensions which interleave with said first set to create an electrostatic field between said angled surfaces which intercepts the flight path of each stream for deflecting drops from a single nozzle to address multiple pixels within a scan line segment when said first and second electrodes are coupled to an energizing potential,

drop charging means for charging drops to enable the deflecting means to deflect drops to the multiple pixel addresses within a segment of a scan line at a target, and

controller means for coupling charging voltages to the drop charging means in a sequence compatible with the angle of the electrode surfaces for creation of a linear row of drops in alignment with a scan line of a raster pattern.

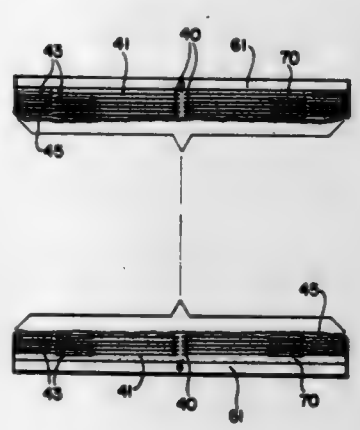
4,347,522
LAMINATED METAL CHARGE PLATE

Surinder K. Bahl, and Walter L. Schutrum, both of Dayton, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Apr. 1, 1981, Ser. No. 249,769

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 14 Claims



1. A charge plate for a jet drop printer, comprising:

a. a plurality of matched laminations of electrically conductive material of readily etchable thickness each lamination comprising a plurality of electrode segments with electrical lead segments attached thereto;

b. means bonding said laminations together in matching alignment to provide a plurality of charge electrodes with attached leads; and

c. non-conductive encapsulating material structurally supporting said charge electrodes and said leads.

4,347,523
LASER RECORDER

Yuji Ohara, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 22, 1981, Ser. No. 256,468

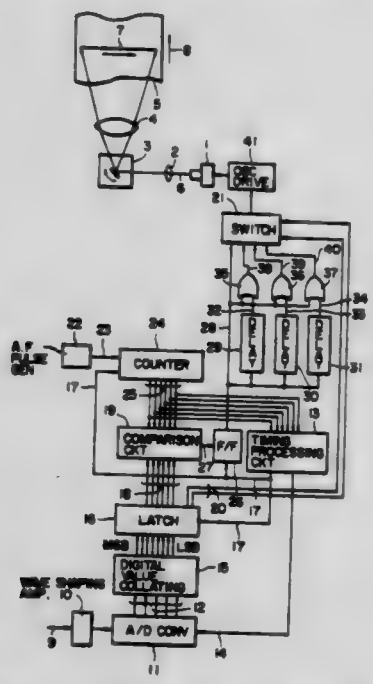
Claims priority, application Japan, Apr. 24, 1980, 55/54608

Int. Cl.³ G01D *15/14*

U.S. Cl. 346—108 10 Claims

1. A laser recorder comprising: means for sampling an input signal with a sampling signal; means for producing a high frequency pulse signal having a frequency higher than the

frequency of said sampling signal; means for outputting a number of high frequency pulses from said high frequency pulse signal in a predetermined sampling period according to a level of said input signal; means for producing a fundamental pulse width modulation signal having a pulse width corresponding to said number of high frequency pulses; means for delaying said fundamental pulse width modulation signal to provide a plurality of delayed pulse width modulation signals of different delay times, means for forming a plurality of com-



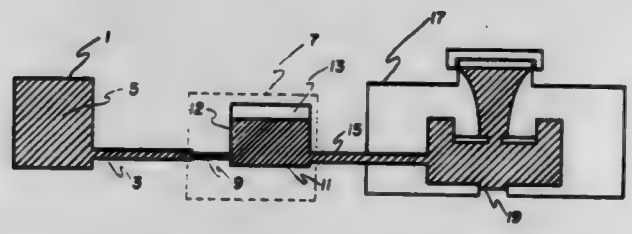
posite pulse width modulation signals as logic operations of said fundamental pulse width modulation signal and at least two of said plurality of delayed pulse width modulation signals; means for selecting one of said fundamental pulse width modulation signal and composite pulse width modulation signals for every sampling period; and means for binary modulating a laser light beam in response to the selected one of said fundamental pulse width modulation signal and said composite pulse width modulation signals.

4,347,524

APPARATUS FOR ABSORBING SHOCKS TO THE INK SUPPLY OF AN INK JET PRINTER

Pedro F. Engel, Fort Collins, and Phillip A. McCollum, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 7, 1980, Ser. No. 175,991
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 4 Claims



1. Apparatus for absorbing physical shock pulses travelling through the ink within an ink supply tube connecting an ink supply cartridge and a print head of an ink jet printer, the apparatus comprising:

restriction means positioned along the ink supply tube for restricting the flow of the ink through the ink supply tube; and

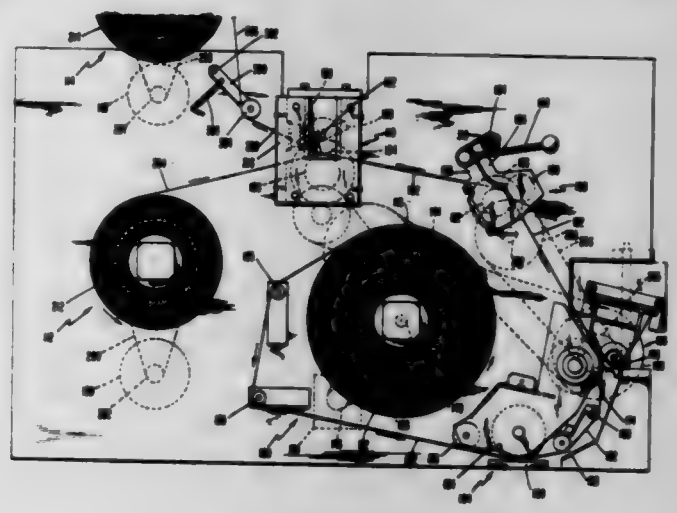
reservoir means having an input for receiving ink from the restriction means and having an output connected to the print head.

4,347,525

ELECTROSTATIC LABEL PRINTING SYSTEM

Robert A. Moore, Amherst; Bruce K. Norlund, Keene; Harold S. Kontrovitz, Keene; Clayton B. Robbins, Keene, and Jeffrey B. Brooks, Keene, all of N.H., assignors to Markem Corporation, Keene, N.H.

Division of Ser. No. 87,153, Oct. 22, 1979, Pat. No. 4,281,334.
This application Sep. 25, 1980, Ser. No. 190,804
The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.
Int. Cl.³ G01D *15/06*; G03G *15/22*
U.S. Cl. 346—153.1 4 Claims



1. An electrostatic label printing system for printing label indicia on a continuous strip of label stock comprising an adhesive-backed layer capable of receiving a latent charge image and a releasable backing layer on the adhesive surface thereof, said electrostatic label printing system comprising:

(a) a supply reel for dispensing a continuous strip of said label stock,

(b) an electrostatic write station for carrying out latent imaging at discrete locations on the adhesive-backed layer of said continuous strip of label stock to form successive latent images thereon,

(c) a developing station for rendering visible the latent image produced on said continuous strip of label stock by the electrostatic write station,

(d) a pressure fixing station for rendering permanent the visible images developed on said continuous strip of label stock by said developing station, said pressure fixing station comprising first and second pressure rollers for grippingly engaging said continuous strip of label stock therebetween,

(e) a rotary die cutting station for die cutting only the adhesive-backed layer of said continuous strip of label stock around said discrete locations to form individual printed labels on the releasable backing layer, said rotary die cutting station including a rotating cutting member having at least one die cutting element thereon having a tangential velocity for making periodic penetrating contact with said adhesive-backed layer,

(f) drive means for supplying rotary power to said rotary cutting member and to at least one of said first and second pressure rollers for drawing the continuous strip of label stock grippingly engaged therebetween through said electrostatic write station and said developing station at a uniform feed velocity equal to the tangential velocity of said cutting element,

(g) label takeup means for drawing said continuous strip of label stock through said rotary cutting station at said uniform feed velocity and for rewinding said releasable backing layer with said individual printed labels thereon onto a label takeup reel,

(h) waste takeup means for drawing said continuous strip of label stock through said rotary cutting station at said uniform feed velocity and for rewinding onto a waste

takeup reel the strip of waste cuttings cut from the adhesive-backed layer by the die cutting operation, and

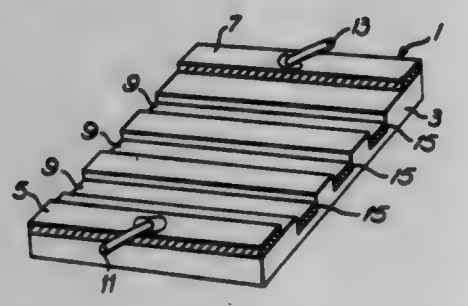
(i) means for defining said discrete locations on the adhesive-backed layer of said continuous strip of label stock at said electrostatic write station.

4,347,526

RADIATION DETECTORS

Charles T. Elliott, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 15, 1980, Ser. No. 140,506
Claims priority, application United Kingdom, May 1, 1979, 7915147
Int. Cl.³ H01L 27/14
U.S. Cl. 357—30 11 Claims



6. A radiation detector comprising: a substrate of cadmium mercury telluride photoconductive material responsive to infra-red radiation of wavelength lying in the 3 to 5 μm or 8 to 14 μm bands of the infra-red spectrum; a photosensitive element formed of the substrate material between an input contact to the substrate and an output contact to the substrate; there being defined a photocarrier flow-path between the input and output contacts; and a plurality of spaced separate regions of conductive material, each in ohmic contact with the substrate material, disposed in the photo-carrier flow-path for providing means for recombining a substantial proportion of photocarriers generated in the substrate material, the spacing between the input contact and a first one of the regions of conductive material, between adjacent regions of the conductive material, and between a last one of the regions of conductive material and the output contact, being substantially less than the spacing between the input contact and the output contact, and such as to extend the bandwidth response of the element.

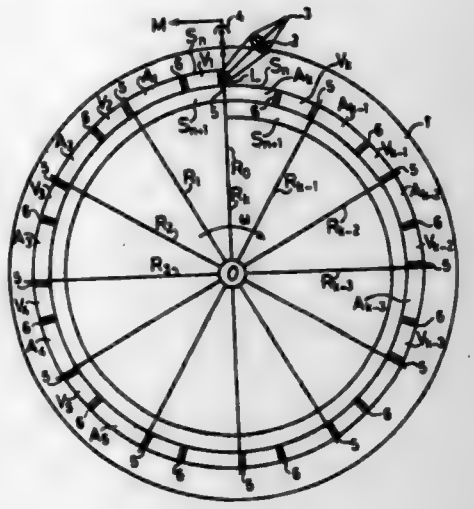
4,347,527

VIDEO RECORDING ON DISK AND DEVICE FOR THE REPETITIVE READING OF SUCH A RECORDING

Lucien Laines, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Aug. 14, 1980, Ser. No. 178,127
Claims priority, application France, Aug. 17, 1979, 79 20887
Int. Cl.³ A04N 5/76
U.S. Cl. 358—4 12 Claims

1. A system for audio-visual recording on a disk of video signals arranged along a track comprising a system of turns, audio signals being associated with the video signals so as to transcribe the sound accompaniment of each of the achromatic or polychromatic pictures stores on the disk, characterized in that in at least one annular reading region of this disk each turn is subdivided into equal sectors each having at least two successive zones in which are respectively provided a block of video data and a block of audio data, the quantity of data contained in each audio data block being adequate to permit the reproduction of a sound accompaniment portion whose duration in real time substantially exceeds the processing time



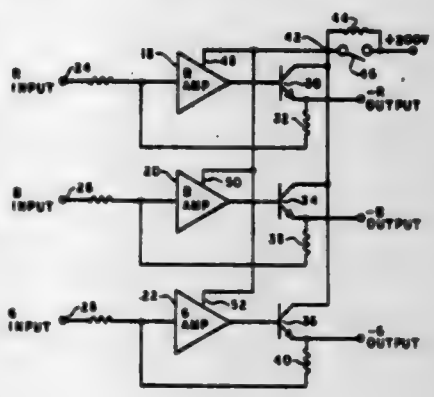
of this audio data block during a reading intended for television.

4,347,528

G2 SET-UP CIRCUIT FOR A TELEVISION RECEIVER

Fred D. Johnson, Evanston, and George J. Tzakis, Glenview, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 16, 1981, Ser. No. 244,422
Int. Cl.³ H04N 9/62, 9/20
U.S. Cl. 358—10 4 Claims



1. In a television receiver whose CRT includes three cathodes and a G2 electrode, and which has three video output amplifiers for driving the cathodes, a set-up circuit for establishing three similar video output voltages for use in properly setting the G2 electrode voltage, comprising:

three video output transistors, each having an emitter, a collector and a base, and each receiving the output of one of the video amplifiers at its base;

three emitter resistances, each coupled to the emitter of one of the video output transistors for developing a video output voltage thereacross;

a common collector load;

means for coupling the collector load between a supply voltage and the collectors of the three output transistors; and

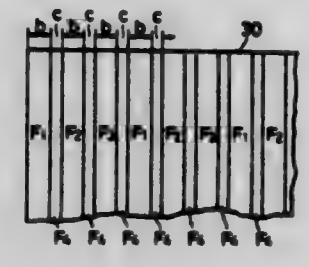
means for shunting the load during normal receiver operation to apply the supply voltage to the collectors of the output transistors, and for removing the shunt from the common load during G2 set-up so that the load is coupled in series with the collectors of all the output transistors for dropping a selected voltage thereacross and establishing a common, selected output voltage at the emitters of the video output transistors.

4,347,529

COLOR-RESOLVING STRIPED FILTER FOR CAMERA TUBE

Itsuo Takanashi; Shintaro Nakagaki; Tadayoshi Miyoshi, all of Yokohama; Koichiro Motoyama, Ninomiya-Machi; Kenichi Miyazaki, Sagamihara, and Sumio Yokokawa, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 4, 1980, Ser. No. 137,417
Claims priority, application Japan, Apr. 4, 1979, 54-40471
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 5 Claims



1. A color-resolving striped filter for use in a camera tube, said filter comprising a plurality of groups of filter stripes, said groups being disposed in parallel and consecutively arranged in a repeated sequence, each of said groups consisting of six filter stripes, which comprise:

a first filter stripe having a light transmission characteristic for transmitting the light of one of the three primary colors of an addition mixture color,

a second filter stripe having a light transmission characteristic for transmitting the light of a mixed color which includes the primary color transmitted through said first filter stripe and one of the other two primary colors,

a transparent third filter stripe for transmitting white light, and

three filter stripes of a fourth light transmitting characteristic, each of said fourth characteristic stripes being disposed between and adjacent to the first, second, and third filter stripes,

each of the first, second, and third filter stripes having a first and uniform width and each of the stripes with a fourth characteristic having a second and uniform width which is less than said first width,

said six filter stripes of each group being arranged in parallel and consecutively in a specific sequence.

4,347,530

SCANNING MIRROR ARRANGEMENT

Norman B. Stetson, Lexington, Mass., assignor to Inframetrics, Inc., Boston, Mass.

Filed Oct. 24, 1980, Ser. No. 200,571
Int. Cl.³ H04N 7/18, 3/08
U.S. Cl. 358—113 22 Claims

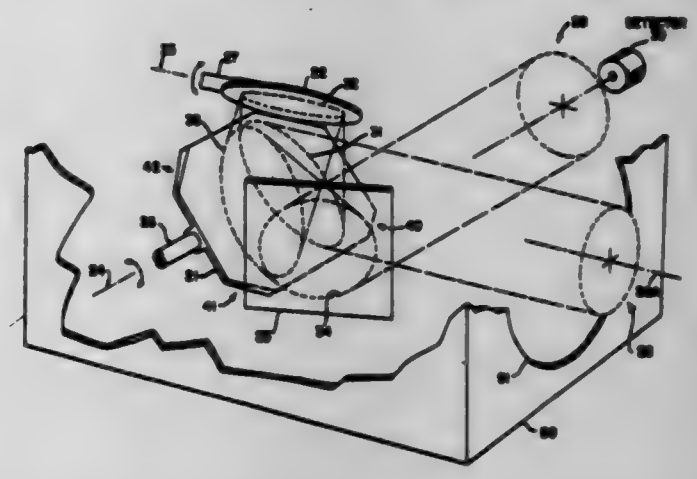
1. An opto-mechanical scanning mechanism for use in an imaging system that scans an object field in two dimensions comprising:

A. vertical-scan planar reflector means (21) positioned to receive radiant energy along a first optical path (28) from an object field and to reflect said radiant energy along a second optical path (27) different from said first optical path,

B. vertical-scan drive means (45) for varying the angular position of said vertical-scan planar reflector means about a first axis (24) that is substantially orthogonal to said first optical path,

C. horizontal-scan planar reflector means (22) positioned to receive said radiant energy reflected from said vertical-scan reflector means along said second optical path (20) and to reflect said radiant energy back onto said vertical-scan reflector means along a third optical path (38) different from said second optical path, said vertical-scan reflector means thereby reflecting said radiant energy along a fourth optical path (39) in a plane different from said first optical path, said fourth optical path leading to an image field,

D. horizontal-scan drive means (46) for varying the angular position of said horizontal-scan planar reflector means about a second axis (25) that is substantially orthogonal to



said second and third optical paths, said first, second and third optical paths being unobstructed,

E. radiant energy detector means (30) for detecting radiant energy in said fourth optical path, and

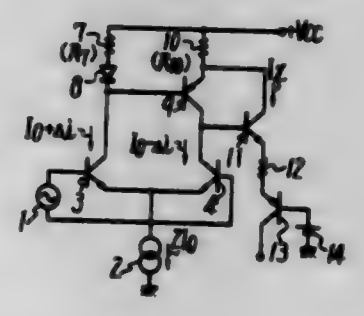
F. optical focusing means (35, 36, 37) for focusing elemental areas of said object field on said radiant energy detector means.

4,347,531

CIRCUIT CONVERTING A PAIR OF DIFFERENTIAL INPUT SIGNALS TO SINGLE-ENDED OUTPUT SIGNALS

Akira Yamakoshi, Saitama; Kyoichi Murakami, and Tsutomu Niimura, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,706
Claims priority, application Japan, Sep. 20, 1979, 54-121341
Int. Cl.³ H04N 5/18
U.S. Cl. 358—172 18 Claims



1. A signal converting circuit comprising:

differential amplifier means having first and second outputs and producing first and second differential currents at said first and second outputs, respectively;

output means for producing an output current in response to one of said first and second differential currents; and

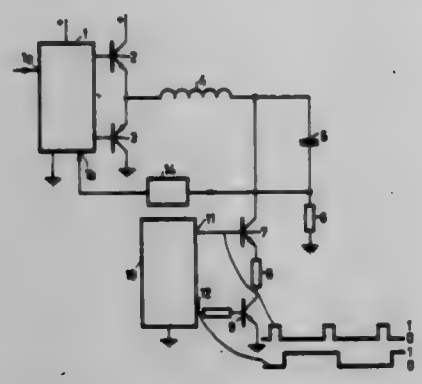
means for controlling the current gain of said signal converting circuit in response to said first and second differential currents, said means for controlling including a first circuit supplied with said first differential current and having first resistive means with a first resistance value, and a second circuit supplied with said second differential current and having second resistive means with second resistance value, the current gain of said signal converting circuit being controlled by the resistance values of said first and second resistive means.

4,347,532

PICTURE DISPLAY DEVICE ARRANGED FOR DISPLAYING A MIXED PICTURE SIGNAL AS AN INTERLACED TELEVISION PICTURE

Jan A. C. Korver, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,407
Claims priority, application Netherlands, Oct. 15, 1979, 7907598; Apr. 25, 1980, 8002410
Int. Cl.³ H04N 5/22
U.S. Cl. 358—183 17 Claims



1. A picture display device having means for displaying as an interlaced television picture on a picture display tube, a mixed picture signal including a television signal produced in accordance with a television standard, a digitally generated picture, and a text information signal, comprising:

means for generating field and line deflection signals for deflecting one or more electron beams when produced in said picture display tube, and

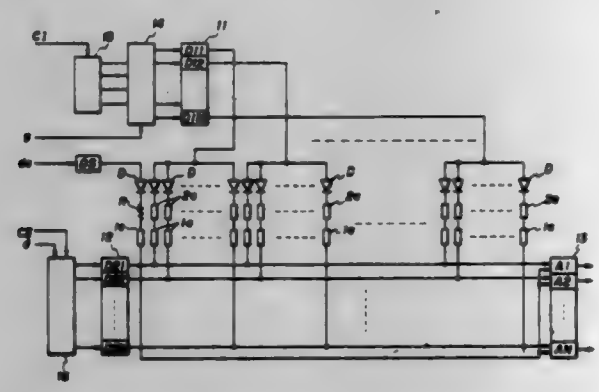
means for generating a signal for additionally deflecting said electron beams in the vertical direction for substantially eliminating the interlace in a portion of said displayed picture in which said digitally generated picture and text information signals are displayed, said additional deflection signal having a picture frequency such that the picture lines displayed on said picture display screen of said picture display tube substantially coincide.

4,347,533

FACSIMILE READING AND RECORDING DEVICE

Mutsuo Ogawa, Yamato, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,279
Claims priority, application Japan, Sep. 6, 1979, 54-113560
Int. Cl.³ H04N 1/22
U.S. Cl. 358—296 10 Claims



1. A reading and recording device comprising:

a read head comprising a plurality of semiconductive photoconductive elements for reading image information,

a record head comprising a plurality of exothermic resistor elements for recording image information, said read head and said record head being substantially the same in circuit arrangement, and

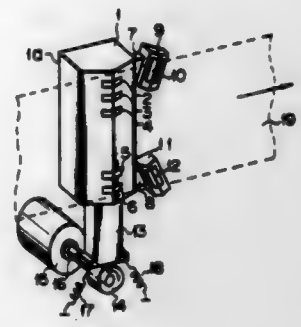
a set of drive circuits which is connected to said read head and said record head and which can be used commonly for reading and recording image information selectively.

4,347,534

AUTO-TRACKING SYSTEM FOR MAGNETIC TAPE RECORDING DEVICE

Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1980, Ser. No. 220,180
Claims priority, application Japan, Jan. 18, 1980, 55-4297
Int. Cl.³ G11B 21/10
U.S. Cl. 360—77 9 Claims



1. An auto-tracking system for a multichannel head unit having a plurality of transducers for respective channels, comprising:

a pair of detecting heads having respective center posiitions disposed in positions corresponding respectively to at least two transducers of the multichannel head unit and in close vicinity to a magnetic tape having a plurality of recording tracks, said detecting heads being symmetrically inclined with respect to a tape traveling direction and arranged so that respective center positions of said detecting heads are each in alignment with center positions of the corresponding respective recording tracks of said magnetic tape;

said detecting heads each having a track width greater than that of each of said transducers of said multichannel head unit within a range not reaching a transducer adjacent to the transducer associated with the respective detecting head so as to reproduce signals regularly continuously recorded on the respective recording tracks of said magnetic tape;

tracking error detecting means coupled to said detecting heads for detecting as a tracking error signal a relative change in phase of the reproduced signals from said two detecting heads; and

reproducing position correcting means coupled to said tracking error detecting means for correcting the positions of at least one of said multichannel head unit, said detecting heads, and said magnetic tape in accordance with the tracking error signal from said tracking error detecting means.

4,347,535

READ/WRITE HEAD CARRIAGE ASSEMBLY

Warren L. Dalziel, Monte Sereno, Calif., assignor to Shugart Associates, Sunnyvale, Calif.

Filed Dec. 19, 1977, Ser. No. 861,909
Int. Cl.³ G11B 5/016
U.S. Cl. 360—99 1 Claim

1. A read/write head carriage assembly for a disk recorder comprising:

a carriage member;

an arm pivotally affixed to said carriage member for movement toward and away from a loaded position;

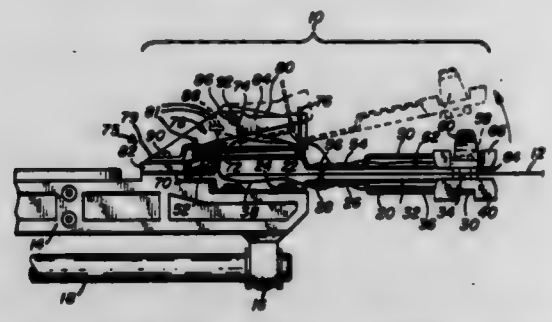
disk engaging means affixed to said arm;

means for biasing said arm toward said loaded position at which said disk engaging means is loaded in compliance with a suitably disposed disk; and

damping means coupled between said carriage member and

said arm for damping motion of said arm toward said loaded position:

said damping means including a bifurcated stop member having first and second finger portions disposed in spaced-apart relationship, and a blade which is at least partially



disposed between and frictionally engaged with said finger portions so as to spread apart said finger portions, thereby developing an opposing frictional force in response to motion between said stop member and said blade, whereby the motion of said arm toward said loaded position is damped.

4,347,536

ROTARY CYLINDER APPARATUS

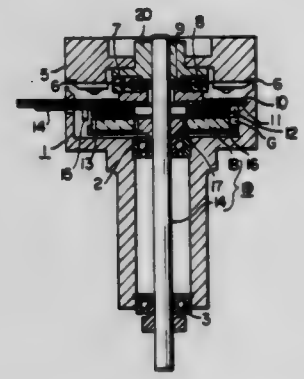
Kunio Miyashita; Tadashi Takahashi, and Shigeki Morinaga, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 4, 1980, Ser. No. 109,499

Claims priority, application Japan, Jan. 10, 1979, 54-687; Jan. 26, 1979, 54-7177

Int. Cl.³ G11B 5/52

U.S. Cl. 360—107 13 Claims



1. A rotary cylinder apparatus comprising:

a rotary drum having a magnetic head mounted thereon;

a brushless motor for driving said rotary drum;

a stationary drum disposed opposite to said rotary drum for housing said brushless motor;

rotational speed detecting means including a detecting coil for detecting the rate of rotation of said brushless motor;

said brushless motor including a shaft connected to said rotary drum, a rotary yoke mounted on said shaft, a multiple permanent magnet rotor supported by said rotary yoke, a stator yoke mounted on a portion of said stationary drum, and a driving coil mounted on said stator yoke opposite to said permanent magnet rotor with a predetermined gap being provided between the driving coil and the stator yoke; and

position detecting means mounted adjacent said driving coil of said brushless motor for detecting the position of said permanent magnet rotor to control the current supplied to said driving coil;

said detecting coil of said rotational speed detecting means being laminated with said driving coil between said stator yoke and said permanent magnet rotor and being disposed in a cross relationship with magnetic flux of said permanent magnet rotor for generating signals representing the rotational speed of said brushless motor.

4,347,537

TAPE CARTRIDGE ASSEMBLY AND TAPE TRANSPORT APPARATUS FOR USE THEREWITH

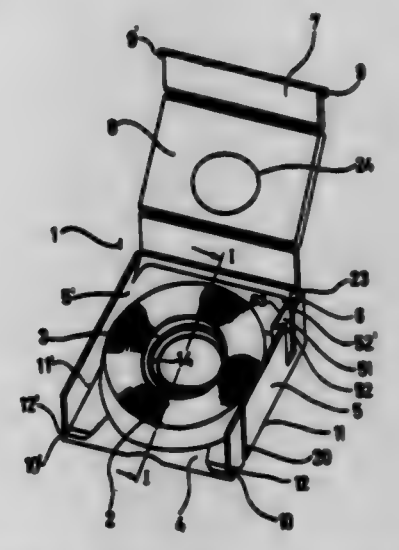
Klaus Schoettle, Heidelberg; Peter Dobler, Ludwigshafen; Lothar Gliniorz, Frankenthal, and Werner Hoffmann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 27, 1980, Ser. No. 125,036

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912423

Int. Cl.³ G11B 23/02

U.S. Cl. 360—132 14 Claims



1. A tape cartridge, in particular a magnetic tape cassette, comprising a housing having a bottom wall, a top wall, two side walls and front and rear walls, and in said housing at least one roll of tape wound on a hub,

wherein the side walls and the rear wall are rigidly attached to the bottom wall, the front wall is releasably connected to the bottom of the side walls and the top wall is a lid which is hingedly connected to the rear wall and the front wall and is foldable into two lid portions, such that the lid, together with the front wall can be folded about an edge of the rear wall against the outer surface of the bottom wall;

wherein the surfaces coming into contact after the folding operation possess releasable connecting means, and

wherein locking means acting on the hub are provided to hold said tape roll(s) in the cartridge housing.

4,347,538

METHOD AND APPARATUS FOR THE MEASUREMENT AND INDICATION OF THE POSITION OF A COILED MATERIAL IN TAPE FORM

Otto Klank, Arpke, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/DE78/00037, § 371 Date Aug. 6, 1979, § 102(e) Date Aug. 6, 1979, PCT Pub. No. WO79/00352, PCT Pub. Date Jun. 28, 1979

PCT Filed Dec. 6, 1978, Ser. No. 129,379

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754368

Int. Cl.³ G11B 27/10

U.S. Cl. 360—137 14 Claims

1. Apparatus for indicating the position of a tape wound on first and second reels and movable therebetween, comprising:

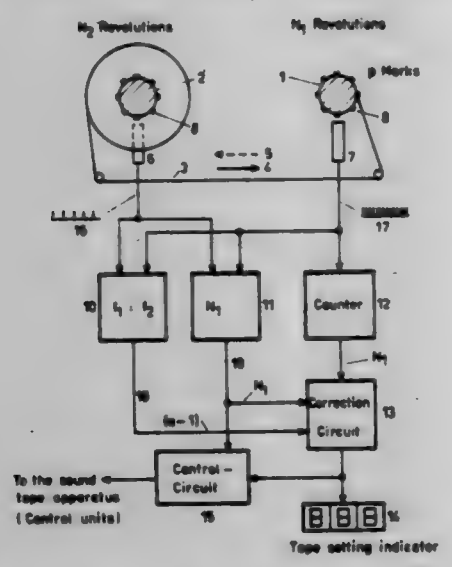
pulse generating means coupled to said first and second reels for generating first and second pulse trains having pulse repetition frequencies corresponding to the angular speeds of said first and second reels, respectively;

frequency ratio means for determining the ratio a of the pulse repetition frequency of said first pulse train to the pulse repetition frequency of said second pulse train, said

determination being made when one of said reels has substantially no tape wound thereon;

turns counting means for determining the maximum total number of turns N_{1max} of tape on one of said reels when said reel is completely loaded;

pulse counting means coupled to said pulse generating means for counting the number of accumulated pulses N_1



in said first pulse train starting from the beginning of the winding of said tape on said first reel; and

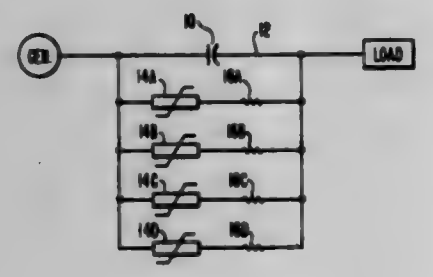
correction circuit means coupled to the outputs of said frequency ratio means, turns counting means and pulse counting means, the output of said correction circuit means corresponding to the position L of the tape on said first reel.

4,347,539

ELECTRICAL EQUIPMENT PROTECTIVE APPARATUS WITH ENERGY BALANCING AMONG PARALLEL VARISTORS

Charles A. Peterson, Van Buren Township, Monroe County, and Robert T. Innis, Bloomington Township, Monroe County, both of Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 3, 1981, Ser. No. 270,176
Int. Cl.³ H02H 7/16
U.S. Cl. 361—16 6 Claims



1. Electrical equipment overvoltage protection apparatus comprising:

a plurality of varistor devices connected mutually in parallel for connection across the protected electrical equipment, each of said varistor devices exhibiting a drop in resistance value to become highly conductive upon application of a voltage of a magnitude that would be injurious to the protected electrical equipment, the total number of said plurality of varistor devices being sufficient to absorb without damage the energy associated with an anticipated fault current; and,

current sharing means connected with said plurality of varistor devices for insuring approximate equality of current conducted, and hence energy absorption required, by respective ones of said plurality of varistor devices despite inherent variation in the conduction characteristics of the varistor devices themselves;

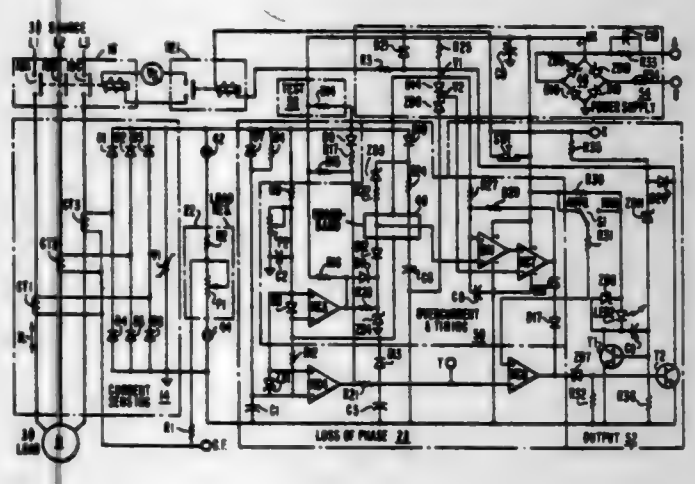
said current sharing means comprising a plurality of resistors connected respectively in series with said plurality of varistor devices, said resistors each having a positive temperature coefficient of resistance so a more highly conductive one of said varistor devices is relieved of excessive current by the resistive heating of the resistor connected in series with it to force current to another, less highly conductive, one of said varistor devices.

4,347,540

SOLID-STATE LOAD PROTECTION SYSTEM HAVING GROUND FAULT SENSING

Wardell Gary, Oak Park, Mich., and Ernest F. Conroy, Jr., Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1981, Ser. No. 258,106
Int. Cl.³ H02H 3/16
U.S. Cl. 361—47 38 Claims



1. A load protection system, comprising:

sensor means for sensing circuit current in an electrical circuit, said sensor means having a neutral leg and a pair of output terminals, said output terminals providing an output signal thereat which is related to said circuit current;

a pair of resistive elements in serial circuit relationship with each other, connected across said output terminals;

a third resistive element connected at one end between said pair of resistive elements and at the other end to said neutral leg;

ground fault sensing means connected across said output terminals and to said neutral leg for producing a trip signal upon detecting a current flow in said third resistive element during a ground fault; and

circuit control trip means connected to said ground fault sensing means and to said electrical circuit for opening said electrical circuit when said trip signal is provided.

4,347,541

CIRCUIT BREAKER

Wen T. Chen, West Newton, and Vincent C. Oxley, Wayland, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 14, 1981, Ser. No. 225,067
Int. Cl.³ H02H 9/08
U.S. Cl. 361—50 5 Claims

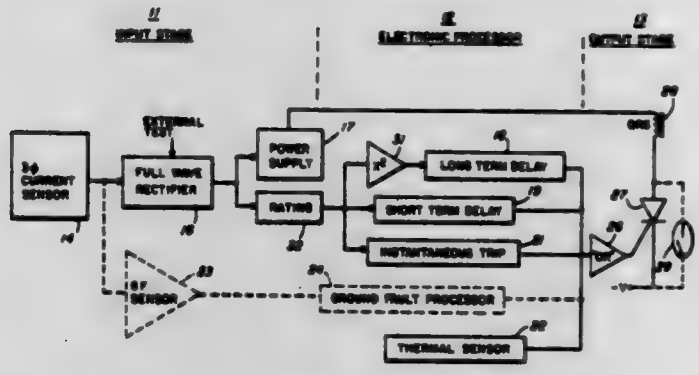
1. An improved circuit breaker including a solenoid for actuation in an event of an electrical overload, wherein the improvement comprises

means for sensing current through an electrical circuit subject to interruption by said circuit breaker in the event of an electrical overload;

means for converting the sensed current to a voltage proportional thereto;

means for detecting an excess of said proportional voltage over a predetermined voltage;

means for squaring the excess of said proportional voltage;



voltage controlled oscillator means responsive to the squared excess voltage for providing signals during a presence of said excess voltage; and

means for counting said signals, and, upon reaching a predetermined count, actuating said solenoid.

4,347,542

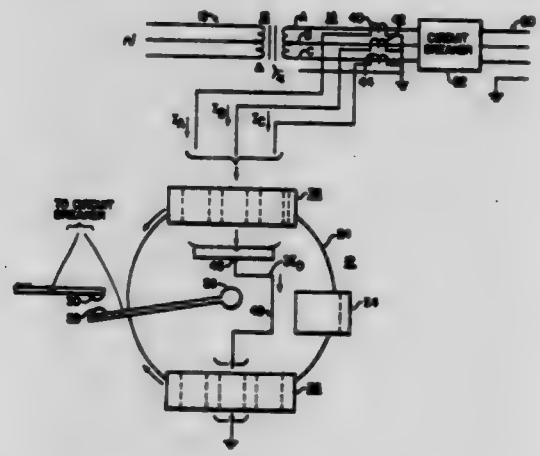
RATIO GROUND RELAY

Howard J. Calhoun, Coral Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 20, 1981, Ser. No. 245,769

Int. Cl.³ H02H *3/26*

U.S. Cl. 361—76 6 Claims



1. An induction disc ratio ground relay for detecting open phases and phase-to-ground faults in a three-phase electrical power system, having means providing signals responsive to the three phase currents and the zero sequence current at the relaying point, a first electromagnet which provides an operating torque which is a function of the zero sequence current, and a second electromagnet having a three-legged magnetic core structure and electrical windings which are energized by the three phase current signals to provide a restraining torque which is a function of the positive sequence current minus the negative sequence current, and electrical contacts actuatable in response to a predetermined relationship between the operating and restraining torques, the improvement comprising: the windings of the second electromagnet are arranged on at least two of the three legs of the three-legged magnetic core structure and energized by the three phase current signals such that the length of the magnetic flux path is the same for each of the three possible phase-to-ground faults, to provide similar restraining torques for similar faults, regardless of the faulted phase.

4,347,543

RECTIFIER CIRCUIT DIODE ARRAY AND CIRCUIT PROTECTOR

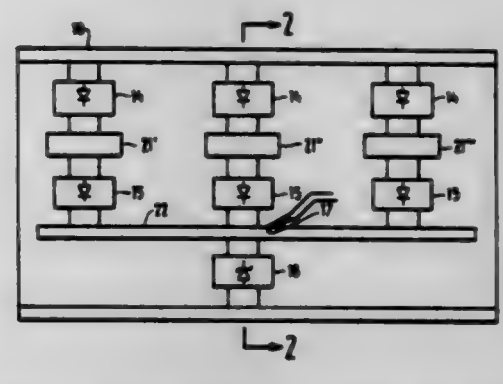
Manfred Frister, Schwieberdingen, and Friedhelm Meyer, Illingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,516

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950073

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—91 8 Claims



1. In a rectifier circuit structure particularly for use in a motor vehicle alternating current generator, comprising a plurality of diodes (14,15) arranged in an array, at least one connection plug (21) for coupling an input AC signal to said rectifier circuit, an electrically conductive cooling device (18) defining a recess, said cooling device (18) comprising a first output terminal of said rectifier circuit, and in which at least one positively poled diode (15) and at least one negatively poled diode (14) and an associated connection plug (21) are disposed one above the other in the form of a column and located in said recess of said cooling device, and a second output terminal (22),

comprising in accordance with the invention:

a Zener diode (16) in said column and connected between the output terminals (18,22) of said rectifier circuit and being polarized in the blocking direction during normal operation of said diodes (14,15) of said rectifier circuit, the breakdown voltage value of said Zener diode (16) being greater than the normal output voltage of said rectifier circuit;

said second output terminal (22) of said rectifier circuit being arranged in said column in contact with and between said Zener diode (16) and one of said diodes (15);

an electrode terminal of one of said diodes (14) and the corresponding electrode terminal of said Zener diode (16) being in direct and conductive contact with said cooling device (18); and

a temperature-sensing element (17) disposed on said second output terminal (22) for sensing the temperature of said Zener diode (16) and said second output terminal (22).

4,347,544

INJECTOR DRIVE CIRCUIT

Masahiro Ohba, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 21, 1980, Ser. No. 209,119

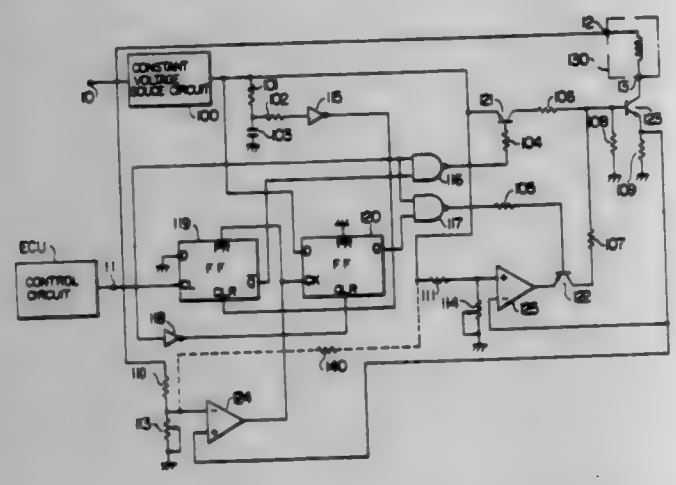
Claims priority, application Japan, Nov. 28, 1979, 54-153983

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—154 6 Claims

1. An injector drive circuit for driving an injector having a valve opened and closed according to a pulse signal with the pulse duration thereof corresponding to the quantity of fuel supplied to the engine, comprising a power transistor with the collector-emitter path thereof connected in series with an injector coil for supplying current to said injector coil for the pulse duration of said pulse signal, a first comparator circuit section for determining whether a peak current of a predetermined value has been caused to flow through said injector coil

after the appearance of said pulse signal or not, a second comparator circuit section for determining whether a working current of a preset value has been caused to flow through said injector coil after the peak current has been caused through said injector coil or not, a first current control section for supplying current to the base of said power transistor for a period until said first comparator circuit section detects said



peak current through said injector coil during the presence of said pulse signal, and a second current control section for supplying current to the base of said power transistor only when said second comparator circuit section determines that no working current is flowing through said injector coil after the detection of said peak current through said injector coil by said first comparator circuit section during the presence of said pulse signal.

4,347,545

BURGLARPROOFING DEVICE FOR AUTOMOTIVE VEHICLES

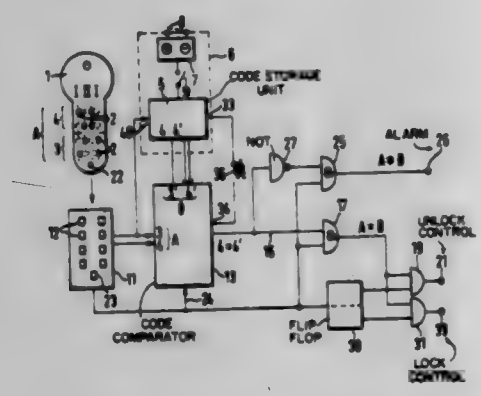
Walter Weishaupt, Munich, and Hans-Dieter Fournell, Haar, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,359

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928913

Int. Cl.³ H01H *47/34*

U.S. Cl. 361—172 **18 Claims**



1. Burglarproofing device for automotive vehicles with a code transmitter for a settable code, with a code storage unit for a stored code corresponding to the settable code, with a code reader, and with a code comparator, which latter makes it possible to use the automotive vehicle in case of coincidence between the settable code and the stored code, characterized in that the stored code consists of two partial codes, of which the first partial code can be re-stored in the rest condition of the device and upon coincidence of the second partial code with the corresponding partial code of the code transmitter.

4,347,546

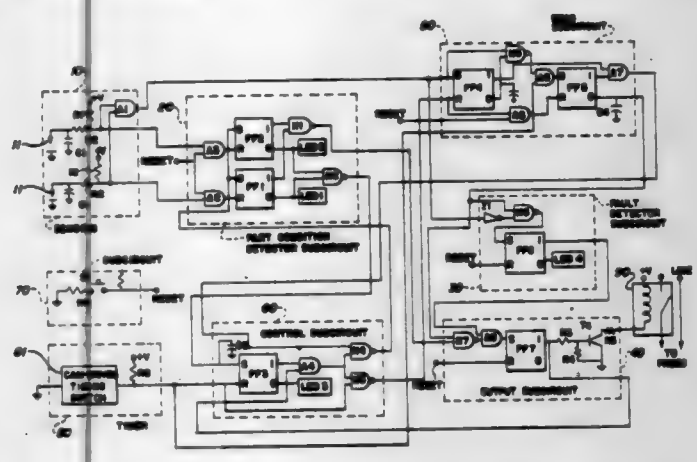
LOGIC CIRCUIT FOR PART DETECTOR

Paul J. Unnerstall, 6319 Mackenzie Ct., St. Louis, Mo. 63123

Filed Aug. 25, 1980, Ser. No. 180,998

Int. Cl.³ H02H *5/00*

U.S. Cl. 361—179 **2 Claims**



1. For use with that type of machine transferring a succession of items and characterized by having dwell periods, during which such items are inspected for the presence or position of a part, alternating with periods of transfer movement, and utilizing an electrical part sensor whose normal actuation and deactuation occur during such dwell period,

inspection circuitry comprising

timing switch means having a first and second condition and changing therebetween in response to the progress of the machine, the second switch condition being associated with machine transfer movement and the first condition being associated with machine dwell, in combination with

(a) means, effective on the switching of said switch means from said second condition to said first condition, for canceling both a prior read signal and the prior latching of such part sensor,

(b) means, effective thereafter on normal actuation of such part sensor, to check for the continued presence of such prior read signal and if present, to halt the machine, and also to signal the sensing by such part sensor of the presence of such part, and to latch any sensor signal thereof,

(c) means, effective on deactuation of such part sensor after initial sensing, to normally terminate its sensing signal, to furnish a read signal, and to read the condition of such latching and halt the machine in the event of a condition of non-latching, together with

(d) means, effective on switching from said first timing switch condition to said second timing switch condition, to furnish a read signal and again to read the condition of such latching and of the then condition of sensing by the part sensor, and to halt the machine in the event either of a condition of non-latching or the then presence of a sensor signal, said read signal to be normally deactuated thereafter on switching from said second timing switch condition to said first condition as set forth in (a) hereinabove.

whereby halting of the machine in any of the events mentioned in paragraphs (b), (c) and (d) above will occur during the machine dwell period in the event of failure of the timing switch or the abnormal presence of a sensor signal, as well as in the event of failure to latch.

4,347,547

ENERGY INTERLOCK SYSTEM FOR A LINEAR ACCELERATOR

Robert Gibson, Walnut Creek, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed May 22, 1980, Ser. No. 152,486

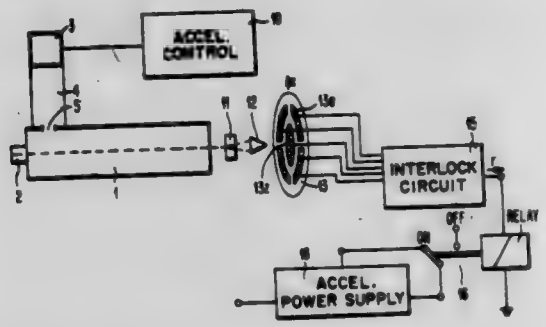
Int. Cl.³ H01H *47/24*

U.S. Cl. 361—187 **6 Claims**

1. An X-ray energy monitoring system for the supervision of

a linear accelerator of the type having no electron beam bending system, said accelerator emitting electron pulses which are directed to a target for generation of X-ray pulses, comprising in combination:

(a) a flattening filter exposed to said X-ray pulses for flattening the intensity distribution of X-ray pulses transmitted therethrough such that said intensity distribution contains a flat middle portion when the energy of said X-ray pulses is adjusted correctly;



(b) an ionization chamber for measuring the intensity distribution of said transmitted X-ray pulses;

(c) discriminator means connected to said ionization chamber for determining flatness deviations in the intensity distributions of said transmitted X-ray pulses, each such flatness deviation being an indication of a change of said correctly adjusted X-ray energy; and

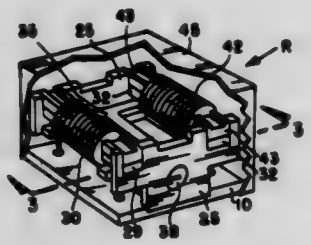
(d) switch means operated by said discriminator means dependent upon said flatness deviations, for interlocking the operation of said linear accelerator.

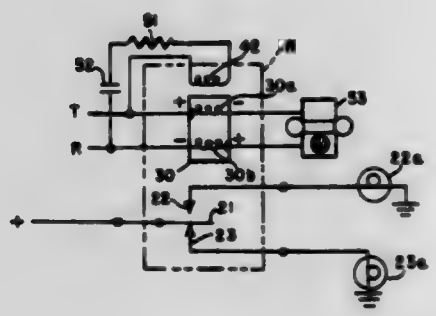
4,347,548

ELECTRICAL RELAY

Anthony E. Sprando, 3115 NW. Cornell Rd., Portland, Oreg. 97210

Filed Feb. 27, 1981, Ser. No. 238,846
Int. Cl.³ H01H *47/04*
U.S. Cl. 361—210 8 Claims





1. An electromagnetic relay for use with a transmission line that transmits AC current under one condition and DC current under another condition, said relay comprising:

base plate means of insulating material having stationary contact means and movable contact means thereon;

frame means mounted on said base plate means;

armature means of magnetizable material having a cross member and arm means extending outwardly from opposite sides of said cross member;

means pivotally mounting said armature means to said frame means about an axis extending through said cross member with said arm means being disposed in a plane which is substantially parallel to said base plate means so that said arm means can move toward and away from said base plate means;

first coil means disposed adjacent one of said arm means and having bifilar windings for series connection with the transmission line;

second coil means disposed adjacent the other of said arm means and having a single winding;

means for connecting said single winding in parallel with the transmission line to block flow of DC current to said single winding so that when AC current flows in the transmission line the AC current flows in said bifilar windings and said single winding causing said armature means to remain stationary, but, when DC current flows in the transmission line, said connecting means blocks flow of DC current to said single winding so that said bifilar windings attract said one arm means to said first coil means; and

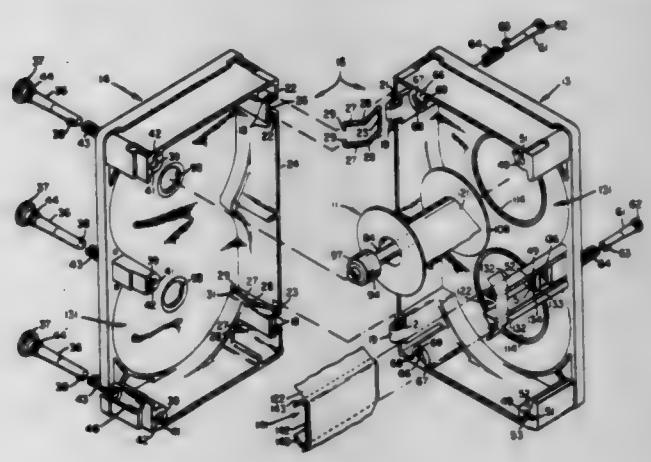
actuating means on said armature means for engaging said movable contact means for moving said movable contact means into engagement with and disengagement with said stationary contact means when said one arm means is attracted to said first coil means.

4,347,549

ANTI-STATIC STRUCTURE FOR MAGNETIC TAPE GUIDES

Erno H. Fechner, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 24, 1980, Ser. No. 132,715
Int. Cl.³ H05F *3/00*
U.S. Cl. 361—212 3 Claims



1. An anti-static shield for a tape guide post arranged for confronting only one flat face of said tape, comprising:

a shield member attachable to said guide post and covering the tape-confronting portions thereof to define a bearing surface for said tape; and

said shield member being formed of electrically conductive material and being electrically coupled only to said one tape face.

4,347,550

SENSOR DETECTOR ELEMENT FOR AN ELECTRICAL HYGROMETER

Peter Rockliff, 45, Heath Dr., Boston Spa, Yorkshire, England

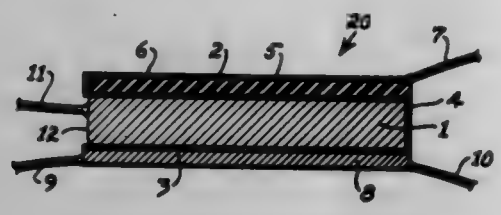
Continuation-in-part of Ser. No. 863,472, Dec. 22, 1977, abandoned. This application May 28, 1980, Ser. No. 153,902
Int. Cl.³ H01G *7/00*
U.S. Cl. 361—286 3 Claims

1. A detector element of capacitance type for use in an electrical hygrometer comprising:

(a) a first electrode comprising a substrate of silicon doped to render it electrically conductive and having at least one surface,

(b) at least said one surface being thermally oxidized to produce a thin, moisture-impermeable barrier layer of silicon oxide,

(c) a dielectric layer of insoluble hygroscopic material upon and supported by said barrier layer on said one surface,



(d) a moisture permeable second electrode upon and supported by said dielectric layer, and

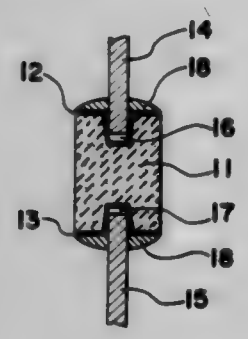
(e) said moisture-impermeable barrier layer of silicon oxide effectively eliminating electrical conductivity between said first and second electrodes, and causing said electrodes to function strictly capacitively.

4,347,551

CERAMIC CAPACITOR WITH TERMINALS IN SOCKETS

Yukio Tanaka, Tsuruga, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 9, 1980, Ser. No. 157,864
Claims priority, application Japan, Jun. 20, 1979, 54-85418[U]
Int. Cl.³ H01G *1/14*
U.S. Cl. 361—307 7 Claims



1. A ceramic capacitor arrangement, comprising:

a substantially axially elongated body shaped as a cylinder, made of a ceramic material and having opposite ends, first and second sockets formed at opposite ends of said elongated body, respectively, each of said sockets being narrowed in a direction axially inwardly of the body;

first and second electrode films deposited on said opposite ends, respectively;

first and second terminal pins each having a straightened portion pressure-fitted into said first and second sockets, respectively; each of said end portions being of uniform cross-section along the length thereof; and

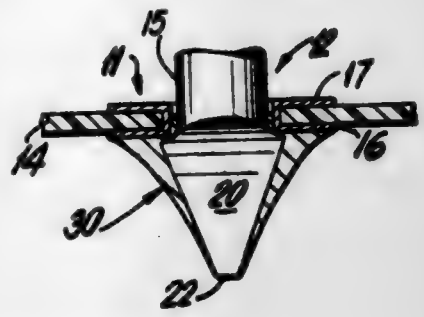
first and second solder beads deposited on opposite ends of the elongated body, respectively, in intimate contact with said pins and said electrode films.

4,347,552

ASSEMBLY OF ELECTRICAL COMPONENTS WITH SUBSTRATES

Robert E. Pearcy, and James E. Raus, both of Indianapolis, Ind., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,263
Int. Cl.³ H05K *1/00*
U.S. Cl. 361—398 9 Claims



1. An assembly comprising:

(a) a substrate having a mounting hole threthrough; and

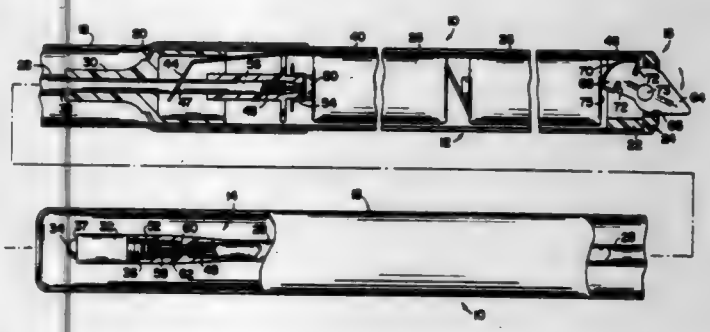
(b) an electrical component mounted on the substrate; the component having a body portion and at least one lead of malleable conductive metal having a cylindrical shank portion extending from the body portion into and at least partway through the hole with a radial clearance from the wall of the hole less than the radius of such shank portion, the lead moreover having an arrowhead-shaped tip formed at the end thereof and integrally joined to said shank portion and positioned on the opposite side of the substrate from the component body for mechanically fastening the lead and component to the substrate, such tip being constituted of solid metal over the full extent of the dimensions occupied by such tip, the tip having barbs disposed rearward of the end of the tip, said barbs being characterized by respective backward facing points at the transversely outer extremities of said tip, and by respective surfaces extending from such points to said shank portion so as to be engageable with said opposite side of said substrate without a significant wedging effect on the side of said hole, the width between the points of such barbs being greater than the corresponding distance across the hole by an amount which is small enough to permit said tip to have been manually forced forward through said hole but which is large enough to produce a positive lock between such barbs and such substrate.

4,347,553

FLEXIBLE LIGHT WITH PROTECTIVE CAP

John R. Saron, 6638 Mango South, St. Petersburg, Fla. 33707

Filed Oct. 26, 1981, Ser. No. 314,721
Int. Cl.³ F21L *3/00*
U.S. Cl. 362—189 9 Claims



1. A light comprising an outer housing configured to retain a voltage source therein having an extended bulb assembly mounted within one end thereof, a protective cap removably attached to said outer housing disposed to enclose said extended bulb assembly when said light is not in use, and a switch pivotally mounted on the opposite end thereof, said extended

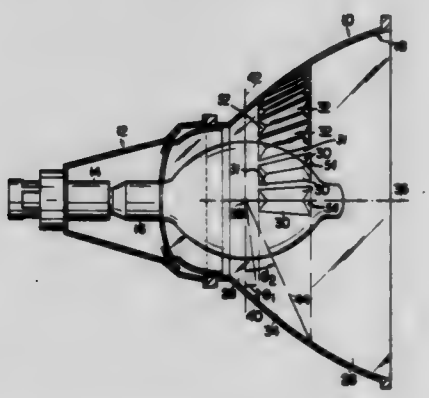
bulb assembly comprises an elongated hollow flexible sleeve disposed within said protective cap when said light is not in use, said extended bulb assembly having a mounting member attached to one end thereof to attach said extended bulb assembly to said outer housing and a bulb housing having a light source at least partially disposed therein attached to the opposite end thereof, a first conductor extending substantially the length of said flexible light coupled to said light source, a second conductor disposed within said elongated hollow flexible sleeve coupled between said voltage source and another portion of said light source, said switch comprising a body including a cam member formed thereon and a switch contact attached to said cam member being pivotally movable between a first and second position to selectively isolate said first conductor from said voltage source when in said first position to deactuate said flexible light and to selectively couple said first conductor to said voltage source to actuate said light when in said second position.

4,347,554

LUMINAIRE

Nobuo Matsushita, Tokyo, Japan, assignor to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Sep. 18, 1980, Ser. No. 188,491
Claims priority, application Japan, Sep. 21, 1979, 54-122410
Int. Cl.[3] F21V *7/00*
U.S. Cl. 362—297 16 Claims



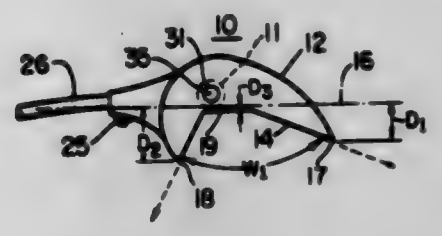
1. A luminaire comprising:
a light source;
a reflector surrounding the light source and reflecting light emitted by the light source to a desired direction;
said reflector including a first region formed on the inner surface of said reflector, located at first and second places, said first place being located adjacent a light projecting end portion of said reflector and said second place being located adjacent a base end portion of said reflector and each having a smooth reflecting surface; and
a second region formed on the inner surface of said reflector disposed between the two places of said first region;
a plurality of substantially identical reflecting surface units positioned in said second region, each having slanted opposite side portions which intersect each other wherein the plurality of reflecting surface units are arranged in a circumferential direction at fixed intervals such that each of said smooth reflecting surface portions are defined between two adjacent reflecting surface units and each connect the first and second places of said first region, wherein a first imaginary straight line segment connecting a first end of the reflecting surface unit and the light center of the light source forms a first fixed angle with a reference plane normal to the axis of the reflector and containing the light center, a second imaginary straight line segment connecting a second end of the reflecting surface unit and the light source which forms a second fixed angle with the reference plane, and wherein said reflector in said first and second regions further comprises a multilayer structure including a base member forming the shape of the reflector, a high reflecting film deposited on the base member, and a transparent protective film deposited on the high reflecting film.

4,347,555

COMPOUND BEAM ILLUMINATING

William B. Elmer, 2 Chestnut St., Andover, Mass. 01810

Division of Ser. No. 49,087, Jun. 18, 1979, Pat. No. 4,288,847.
This application Apr. 16, 1981, Ser. No. 254,945
Int. Cl.[3] F21V *7/00*
U.S. Cl. 362—299 6 Claims



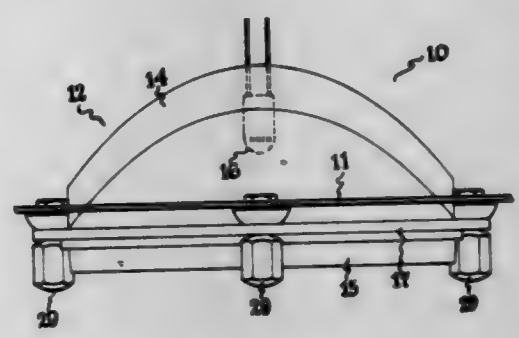
1. Illuminating apparatus comprising,
a light source,
a relatively opaque diffuse reflector having a principal light emitting opening for reflecting light from said source through said opening in a first primary light beam in a first principal direction of maximum illumination,
and transflecting means adjacent to said light source for receiving light therefrom and transmitting a portion of the received light for use by an observer and reflecting back another part of said received light toward the interior of said reflector for illumination reinforcement of said first primary light beam.

4,347,556

VEHICLE HEADLAMP HAVING AN INTEGRAL TRIM RIM MOUNTING ASSEMBLY

Robert N. Malm, Willoughby, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 16, 1979, Ser. No. 85,454
Int. Cl.[3] F21V *7/00*
U.S. Cl. 362—307 11 Claims



1. A sealed beam headlamp assembly comprising an envelope, having a reflector and light transmissive lens, a light source sealed within and focused relative to said envelope, and a trim rim integrally molded with and projecting outwardly from the exterior of said envelope, said rim having a plurality of openings therein for receiving studs therethrough.

4,347,557

SWIVEL JOINT

Jerome Warshawsky, Baldwin Harbor, N.Y., assignor to I. W. Industries, Inc., Melville, N.Y.

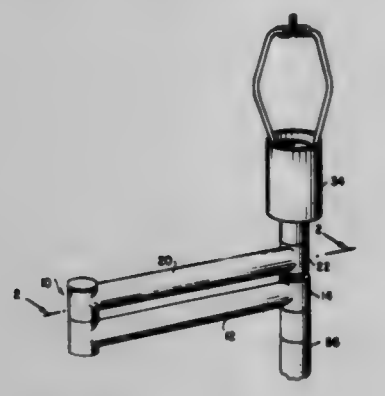
Division of Ser. No. 28,102, Apr. 9, 1979, Pat. No. 4,247,886.
This application Aug. 29, 1980, Ser. No. 182,786
Int. Cl.[3] F21M *3/18*
U.S. Cl. 362—427 14 Claims

1. A swivel joint assembly comprising:
a. a first tubular arm member having a first end joint on one

end and a connecting tubular element on the other end, said first end joint having an arcuate groove thereon;

b. a second tubular arm member having a second end joint on one end and a connecting tubular element on the other end substantially identical to said connecting tubular element on said first tubular arm, said second end joint having stop means thereon for limiting rotational movement of said swivel joint to approximately 360°; and

c. a base, connected to said connecting tubular element of said first tubular arm member; and



d. a light fixture connected to said connecting tubular element of said second tubular arm member; and

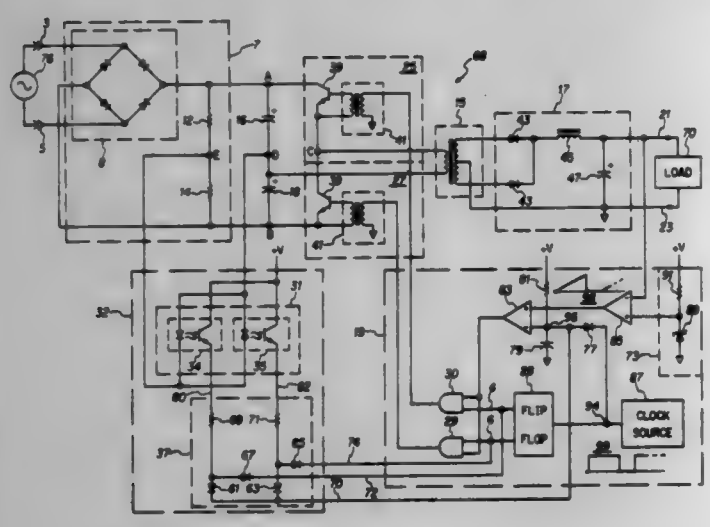
e. swivel means for providing rotational movement between said first and second end joints, including fastener means for securing said first and second end joints to each other, whereby said stop means protrudes into said arcuate groove and a stop shoulder on said arcuate groove coacting with said stop means to limit rotational movement of said swivel joint.

4,347,558

VOLTAGE BALANCE CONTROL FOR SPLIT CAPACITORS IN HALF BRIDGE DC TO DC CONVERTER

Wayne A. Kalinsky, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 2, 1981, Ser. No. 250,520
Int. Cl.³ H02M *3/335*; H02P *13/22*
U.S. Cl. 363—17 **4 Claims**



1. A DC to DC converter, comprising:

a DC to AC inverter means for inverting a first signal to obtain a second signal including a bridge network with a series connection of a first capacitor connected to a second capacitor at a first node, a first switch connected to the second capacitor at a second node, a second switch connected to the first switch at a third node, and a fourth node that connects the second switch to the first capacitor;

output AC to DC converter means for converting the second signal into a third signal;

transformer means for coupling the second signal from the inverter means to the output AC to DC converter means, a primary of which is connected between the first and third nodes and the secondary is connected across the input to the output AC to DC converter;

control signal generator means for generating a first control signal for controlling the first switch and a second control signal for controlling the second switch such that, when activated, the first switch places the first capacitor electrically across the primary winding and when activated the second switch places the second capacitor electrically across the primary winding; and

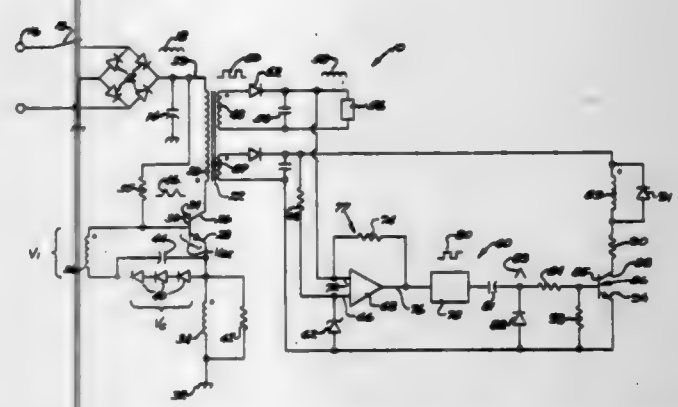
voltage balance control means for sensing a voltage imbalance across the first and second capacitors and for modifying the operation of the control signal generator means in response to a sensed voltage imbalance to cause the inverter means to compensate for the sensed voltage imbalance.

4,347,559

SWITCHING POWER SUPPLY

Clayton L. Sturgeon, Johnson City, Tenn., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 2, 1981, Ser. No. 239,856
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **12 Claims**



1. In a switching power supply having power switching means for furnishing a series of shaped pulses to output means to provide an output voltage within a selected range, voltage controlled oscillator means are responsive to the output voltage for providing control pulses representative of the output voltage level, and means magnetically responsive to the control pulses are magnetically coupled to the power switching means for driving the switching means to regulate the output voltage to be within said selected range, the magnetic means comprising saturable transformer means having first winding means and having other winding means magnetically coupled to the first winding means, the first winding means being responsive to the control pulses to provide corresponding driving pulses in the other winding means for driving the switching means to regulate the output voltage to be within said selected range.

4,347,560

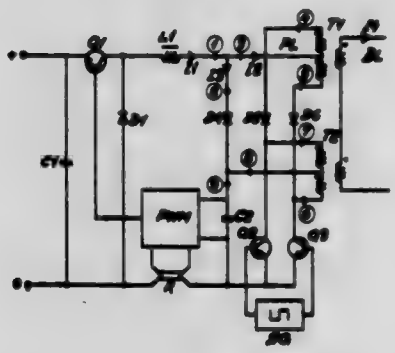
SQUARE WAVE GENERATOR

Ole S. Selersen, Kokkedal, Denmark, assignor to Christian Rovsing A/S, Ballerup, Denmark

Filed Mar. 20, 1981, Ser. No. 245,988
Claims priority, application Denmark, Mar. 21, 1980, 1232/80
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—24 **1 Claim**

1. A square wave generator for the supply of power to at least one unit which is selectively connectable to a busline, said generator having a source of current which through an inductance applies a pulsating direct current to a center tap of a primary winding of a transformer through one of two direct current conductors, said primary winding having ends connected to the other of said two direct current conductors through respective alternately conductive static switches thereof, wherein the generator comprises a second output

transformer having a primary winding connected in parallel to the primary winding of the first output transformer through diodes and having a center tap which is connected to the direct



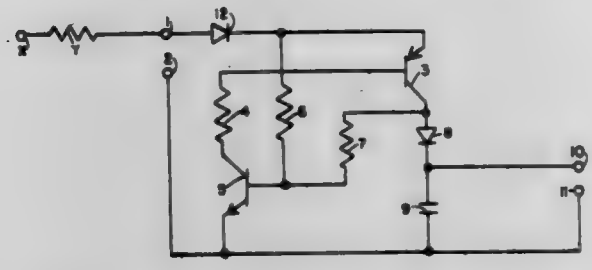
current conductors through a diode and a capacitor, respectively, the secondary windings of the two transformers being connected in series in the busline.

4,347,561

ALTERNATING CURRENT TO DIRECT CURRENT POWER SUPPLY

Norvel J. McLellan, 1002 N. Main St., Pleasanton, Tex. 78064

Filed Dec. 17, 1980, Ser. No. 217,406
Int. Cl.³ H02M *1/14*
U.S. Cl. 363—45 4 Claims



1. A alternating current to direct current power supply that has a power input terminal that is connected to one lead of a diode and the other lead of said diode is connected to one lead of a resistor and to the emitter of a PNP transistor and the other lead of said resistor is connected to the base of a NPN transistor and the emitter of said NPN transistor is connected to a second power input terminal and the base of said PNP transistor is connected to one lead of a second resistor and the other lead of said second resistor is connected to the collector of said NPN transistor and one lead of a second diode is connected to the collector of said PNP transistor and the other lead of said second diode is connected to one lead of a capacitor and the other lead of said capacitor is connected to said second power input terminal and one lead of a third resistor is connected to the collector of said PNP transistor and the other lead of said third resistor is connected to the base of said NPN transistor and a positive power output terminal is connected to the junction of said second diode and said capacitor and a negative power output terminal is connected to said second power input terminal.

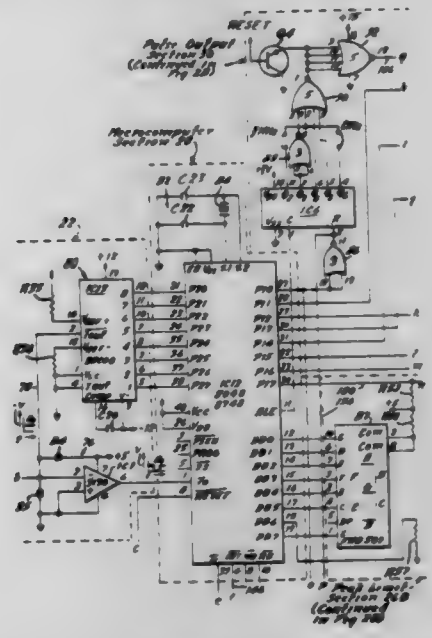
4,347,562

DIGITAL POWER CONVERTER TRIGGER

James H. Galloway, New Baltimore, Mich., assignor to Oxy Metal Industries Corporation, Warren, Mich.

Filed Jun. 23, 1980, Ser. No. 161,896
Int. Cl.³ H02P *13/26*
U.S. Cl. 363—87 22 Claims

1. In a static converter for converting between a three phase a-c voltage and a d-c voltage by means of a rectifier circuit comprising at least one controlled rectifier associated with each phase and wherein the conduction of such one controlled rectifier is controlled by trigger pulses applied to a gate electrode with one of the a-c and d-c voltages being variable in magnitude by controlling the time of occurrence at which the trigger pulses are applied to the gate electrode, an improved controlled trigger circuit comprising: timing means for digitally timing the interval between phases relative to a determinable time occurrence of at least one phase of the three phase a-c and for determining therefrom a trigger sequence number representative of sixty electrical degrees and for providing the trigger pulses upon attainment of a digital count of said trigger sequence number which is representative of the time between successive trigger pulses whereby said time of occurrence for the trigger pulses will be controlled, regulation means responsive to variations in magnitude of at least one of the voltage and current of one of the a-c and d-c voltages and for digitally providing an error number varying in magnitude in response to such variations, control circuit means responsive to said error number for varying the magnitude of said trigger sequence number at said timing means whereby the time between successive trigger pulses will be varied and hence said time of occurrence will be varied to regulate the magnitude of said at least one of the voltage and current, and fixed frequency clock means for providing clock pulses at a fixed known frequency from which the timing functions are performed.



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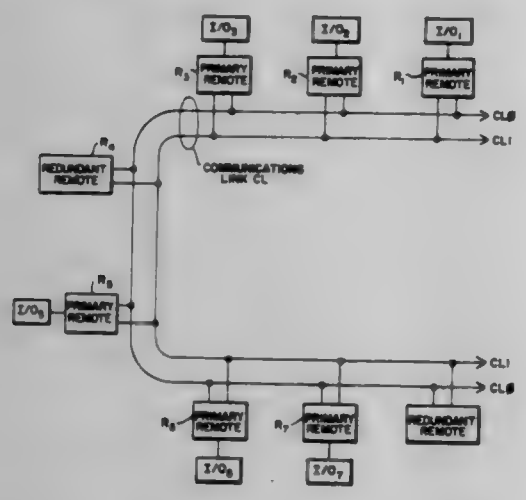
INDUSTRIAL CONTROL SYSTEM

Candelario Paredes, Dallas, and Billy R. Slater, Plano, both of Tex., assignors to Forney Engineering Company, Carrollton, Tex.

Filed Jun. 16, 1980, Ser. No. 159,597
Int. Cl.³ G06F *15/46, 11/00*
U.S. Cl. 364—137 7 Claims

1. A distributed process control system comprising a plurality of primary control units interconnected by a communications link, each of said primary control units having a central processing unit and a plurality of input/output devices connected thereto, said input/output devices sensing the condition of and controlling the operation of a process, the central processing unit of each of said primary control units containing a stored applications program which responds to the condition of input devices connected thereto and controlling the output devices connected thereto in accordance with said applications program, each of said primary control units being operable to receive data from and transmit data to each of the other primary control units over said communications link, at least one redundant control unit connected to said communications link and operable to receive data from and transmit data to each of said primary control units connected to said communications link, said redundant control unit comprising a central processing unit with a stored program and comprising means to monitor said primary control units and to respond to the central

processing unit of one of said primary control units failing to carry out its stored applications program, to carry out such applications program in the central processing unit of the redundant control unit, said redundant control unit receiving data from said one of said primary control units representing the condition of the input and output devices of the primary control unit over said communications link and sending instructions to said one of said primary control units to direct



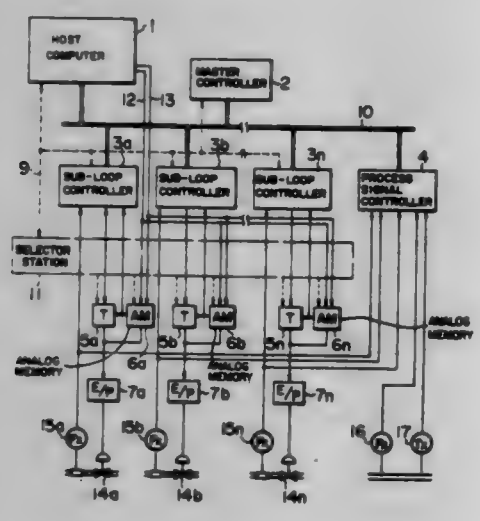
changes in the output devices of the primary control unit in accordance with such applications program being carried out in said redundant control unit, each primary control unit including means to respond to instructions received from said redundant control unit over said communications link directing changes in the output devices of such primary control unit to effect corresponding changes in the output devices of such primary control unit.

4,347,564

HIERARCHICAL-STRUCTURE PLANT CONTROL SYSTEM

Akira Sugano, and Eiji Tooyama, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 25, 1980, Ser. No. 162,890
Claims priority, application Japan, May 2, 1979, 54-53330
Int. Cl.³ G06F *15/46, 15/16, 11/16*
U.S. Cl. 364—132 **6 Claims**



1. A hierarchical-structure plant control system comprising:

a master controller for computing a plurality of control command signals which are provided respectively corresponding to a plurality of operation terminals of a plant;

a plurality of sub-loop controllers each connected to the master controller through a system bus, and each of which is supplied with the corresponding one of said plurality of control command signals to produce a control output for controlling the positions of the corresponding one of the plurality of operation terminals on the basis of a stored control program;

a host computer for storing a part of the control programs for the plurality of sub-loop controllers and, if one of said plurality of sub-loop controllers breaks down, producing a command which permits the position of the corresponding operation terminal to change in place of the broken-down sub-loop controller;

a plurality of analog memories respectively corresponding to said plurality of sub-loop controllers and connected to said host computer through a common signal line each of which stores a value of a control signal from the corresponding sub-loop controller upon a first operation mode, and increases or decreases the stored value in response to the command from the host computer upon a second operation mode, and

transmitting means for, when one of the plurality of sub-loop controllers breaks down, transmitting the failure occurrence information to said host computer, supplying an output of the analog memory corresponding to the broken-down sub-loop controller to the corresponding operation terminal in place of the output of the broken-down sub-loop controller, and changing the operation mode of the corresponding analogy memory into the second operation mode.

4,347,565

ADDRESS CONTROL SYSTEM FOR SOFTWARE SIMULATION

Saburo Kaneda, Yokohama; Takamitsu Tsuchimoto, Kawasaki; Kazuyuki Shimizu, Machida, and Fujio Ikegami, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 30, 1979, Ser. No. 98,989
Int. Cl.³ G06F *7/00, 9/00*
U.S. Cl. 364—200 **10 Claims**

1. An address control system for software simulation in a data processor, wherein the data processor has a prefix processing unit for producing an absolute address signal, coordinates logical and real addresses of a virtual machine simulated program and a virtual machine monitor simulator program in a main memory, and simulates the execution of a simulated instruction by the execution of at least one of the instructions of the virtual machine monitor simulator program, said system comprising:

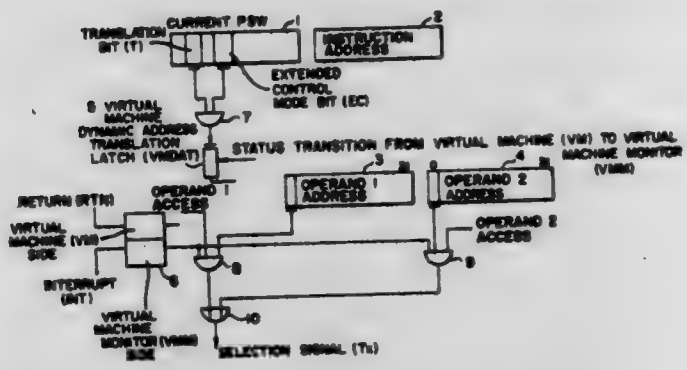
first means for holding information for discriminating the operating state of the virtual machine monitor simulator program and the operating state of the virtual machine simulated program;

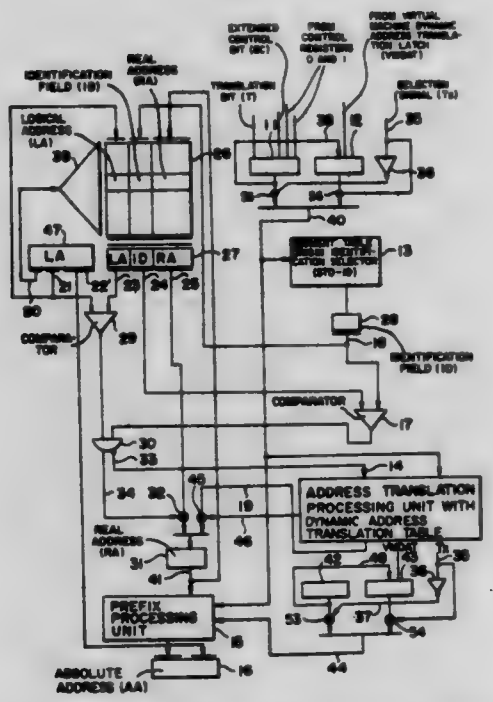
second means, operatively connected to the prefix processing unit, for holding preceding address translation control information and a preceding prefix signal which are both used by the data processor for coordinating a simulated logical operand address with a simulated real operand address in the main memory, when the simulation is performed by the virtual machine monitor simulator program;

third means, operatively connected to the prefix processing unit, for holding current address translation control information and a current prefix signal which are both used by the data processor for coordinating a simulator logical operand address with a simulator real operand address in the main memory; and

fourth means, operatively connected to said first, said second and said third means, for indicating the selection of the contents of either said second means or said third means as a translation input to the prefix processing unit of the data processor during the operation of the simulator program, the contents of said second means being selected

when a simulated operand to be used resides in the virtual machine simulated program, and the contents of said third





means being selected when a simulator operand to be used resides in the virtual machine monitor simulator program.

4,347,566

DATA PROCESSOR WITH REGISTER FILE AND ARITHMETIC LOGIC CIRCUIT ON ONE CHIP AND REGISTER MEANS DIRECTLY CONNECTED TO THE CHIP

Akira Koda; Fumitaka Sato, both of Ome, and Shinji Nishibe, Hachioji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 5, 1979, Ser. No. 100,447

Claims priority, application Japan, Dec. 11, 1978, 53-151928; Dec. 11, 1978, 53-151929

Int. Cl.³ G06F *9/34*

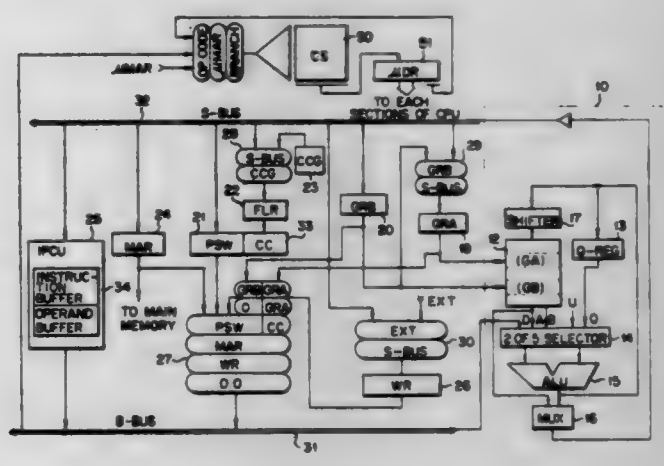
U.S. Cl. 364—200 11 Claims

1. A data processor controlled by a microprogram for executing a user instruction comprising:

a semiconductor logic circuit including register file means having a plurality of addressable locations for storing information, at least one of which is for storing an operand, the semiconductor logic circuit further including an arithmetic logic circuit and selector means provided between the register file means and the arithmetic logic circuit for selectively transferring information from the register file means to the arithmetic logic circuit, the arithmetic logic circuit, the selector means and the register file means being part of the same chip, the register file means having an input through which the addressable locations can be addressed and the chip having a terminal coupled to said input;

register means connected directly to the chip terminal to which the input of the register file means of the semiconductor logic circuit is coupled for storing an address of one of the addressable locations of the register file means;

means for writing into the register means an address from the user instruction of an addressable location of the register file means for storing an operand;



means under control of the microprogram for reading an operand stored in the register file means using the address written in the register means, and for transferring the operand read from the register file means to the arithmetic logic circuit through the selector means, the arithmetic logic circuit executing an operation of the user instruction while the microprogram is being executed.

4,347,567

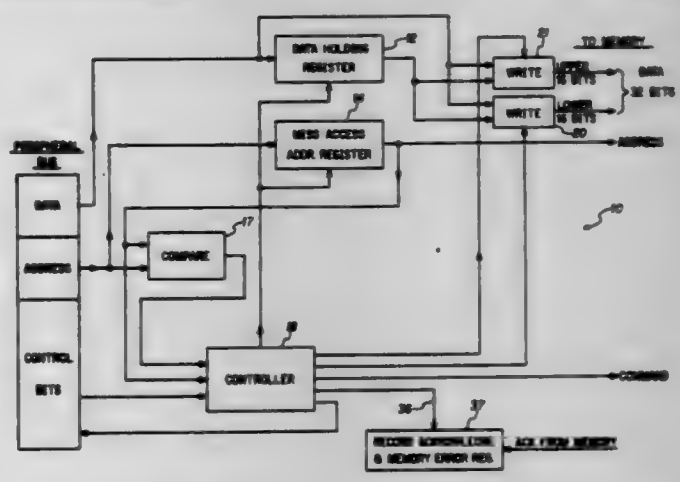
COMPUTER SYSTEM APPARATUS FOR IMPROVING ACCESS TO MEMORY BY DEFERRING WRITE OPERATIONS

George F. DeTar, Jr., Westminster, Colo.; Marcus J. Schaefer, Plano, and William R. Busby, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 6, 1980, Ser. No. 118,940

Int. Cl.³ G06F *5/06*

U.S. Cl. 364—200 8 Claims



1. In a computer system, wherein a device on a bus can gain control of the bus and send a write command including an address and a data word of a first number of bits on the bus to be written to a memory which operates with a word of at least twice said first number of bits, the improvement comprising:

means for receiving from said bus a first write command including a first address and data word to be written to said memory;

means for storing said first data word and address;

means for receiving a second write command including a second address and data word to be written to the memory;

means for comparing said received second address with said stored first address and making a determination whether

said first and second addreses lie within a single one of said memory words; and

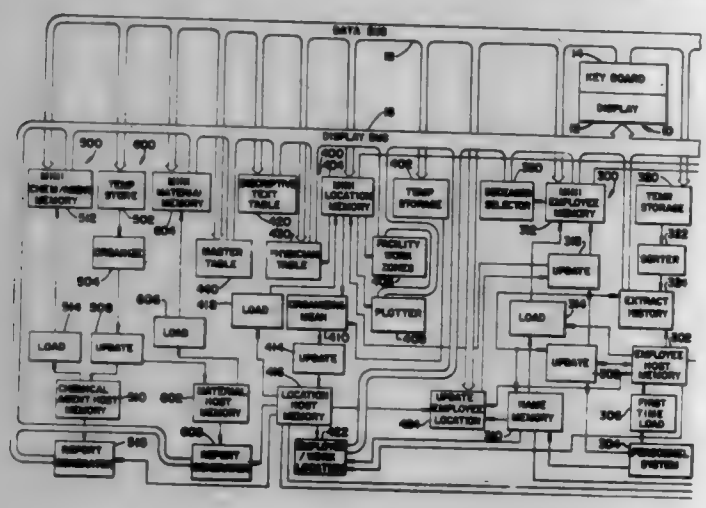
means, responsive to the determination that said first and second addresses lie in said one memory word, for performing a single write of said first and second data words to said one memory word.

4,347,568

OCCUPATIONAL HEALTH/ENVIRONMENTAL SURVEILLANCE

Edward L. Giguere, Parma; Paul H. Kaiser, North Olmsted; Gordon M. Campbell, North Ridgeville, all of Ohio; Peter F. Hoffman, O'Fallon, Ill., and Hansford Boutchyard, Jr., Brunswick, Ohio, assignors to Diamond Shamrock Corporation, Wilmington, Del.

Filed Dec. 7, 1978, Ser. No. 967,520
Int. Cl.[3] G06F *7/00*
U.S. Cl. 364—300 26 Claims



1. A method of manipulating data concerning the health of a plurality of employees in a computer system, each of the employees working in at least one work location, each of the employees being identifiable by an employee identification and each of the work locations being identifiable by a work location identification, substances of which at least some are potentially hazardous being or having been present in at least one of the work locations, each of the substances being identifiable by a substance identification, the computer system having a substance data base for storing substance identifications, an employee identification data base for storing employee identifications, and an employee health data base for storing employee health data concerning each of the identified employees, said method comprising:

storing in the employee identification data base an identification of each employee and in conjunction with each stored employee identification storing a work location identification for each work location at which the employee has worked and in conjunction with each stored location identification storing an identification of the date the employee has worked at that work location;

updating the employee identification data base with the steps of entering new employee identifications when new employees are hired; entering additional work location identifications and date identifications in conjunction with each stored employee identification when the identified employee changes work locations;

storing in the substance data base substance identifications of substances which are or have been used and in conjunction with each substance identification storing the work location identification of each work location at which the substance has been present and in conjunction with each work location identification an identification of the dates the substance was present at that work location;

updating the substance data base including the steps of: entering additional substance identifications when additional substances are used and entering additional work location identifications and date identifications in conjunction with each stored substance identification when the use of that substance is commensed or discontinued at the identified work location;

storing in the employee health data base the employee identification of each employee and in conjunction with each employee identification, health data concerning the employee identified; and

updating the employee health data base including the steps of: entering additional employee identifications of new employees; entering additional health data in conjunction with each stored employee identification as new health data is acquired concerning the identified employee;

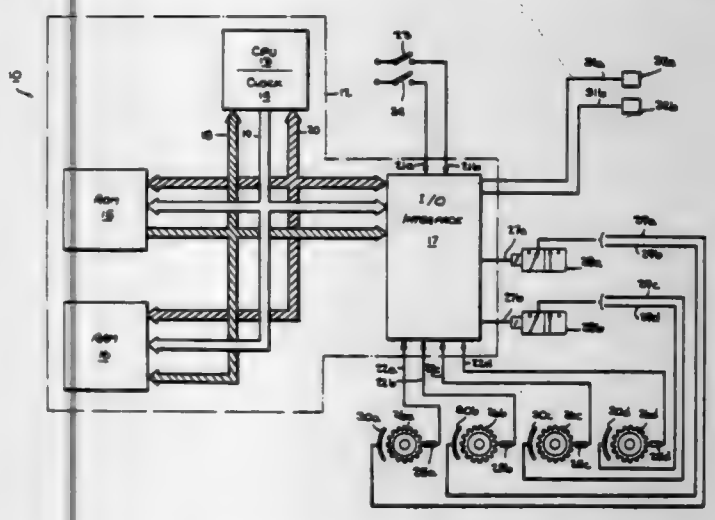
whereby data is stored in interrelated data bases for relatively easy retrieval of data concerning employees, substances, work locations, employee health, and combinations thereof.

4,347,569

WHEEL SLIP SYSTEM

John J. Allen, Jr., Watertown, and Bruce W. Shute, Henderson Harbor, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Aug. 12, 1980, Ser. No. 177,347
Int. Cl.[3] G06F *15/20*; G01P *3/48*
U.S. Cl. 364—426 18 Claims



1. A method for detecting wheelslip on a railway car comprising the steps of:

initially measuring the speed of each of a plurality of wheels while the car is coasting;

determining valid initial measured speeds;

normalizing the valid initial measured speeds in order to derive a normalizing factor for each wheel;

subsequently measuring the speed of each wheel from which a valid initial measured speed was determined;

applying the normalizing factor of each wheel to the corresponding subsequently measured speeds;

comparing the normalized subsequent speed measurements of the wheels to each other and to previous corresponding normalized speed measurements for each wheel;

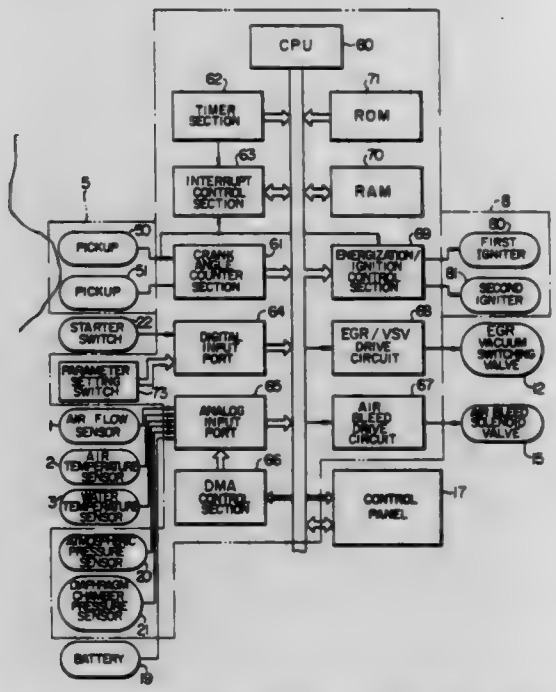
indicating when the compared normalized speeds between wheels differ from each other by more than a first predetermined amount thereby showing that a wheel is slipping and when the compared normalized speeds for each wheel differ by more than a second predetermined amount thereby showing that the wheels are slipping.

4,347,570

METHOD AND APPARATUS FOR CONTROLLING IGNITION COIL ENERGIZATION

Susumu Akiyama, Kariya; Kenzo Ito, Okazaki; Hiroyasu Fukaya, Nagoya; Haruhiko Ogiso, Kariya; Yuji Hirabayashi, Aichi, and Takahide Kawamura, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyoto, both of, Japan

Filed Dec. 14, 1979, Ser. No. 103,942
Claims priority, application Japan, Dec. 18, 1978, 53-157782
Int. Cl.[3] F02P 5/08, 3/02; F02B 5/02
U.S. Cl. 364—431.04 5 Claims



4. An apparatus for controlling an internal combustion engine having an output shaft rotated by the combustion of air-fuel mixture ignited by a spark voltage generated by an ignition coil, said apparatus comprising:

sensor means sensing operating conditions of said engine and developing sensor binary signals indicative of said sensed operating conditions;

memory means memorizing a predetermined control program;

processor means responsive to said sensor means and said memory means for developing a first and second binary signals indicative of coil energization and deenergization instants defining rotational positions of said output shaft, respectively, by:

repeatedly calculating said coil deenergization instant by using said sensor binary signals,

discriminating whether said ignition coil has been commanded to be under energized condition or not,

determining, when said discrimination result is positive, an optimum coil deenergization instant, and

generating said second binary signal in response to said optimal coil deenergization instant; and

igniter means connected to said processor means and said ignition coil for energizing and deenergizing said ignition coil at the rotational positions defined by said first and second binary signals.

4,347,571

INTEGRATED CLOSED LOOP ENGINE CONTROL

Chun-Keung Leung, Farmington, and William R. Seitz, Royal Oak, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 904,138, May 8, 1978. This application Sep. 15, 1980, Ser. No. 187,393
Int. Cl.[3] F02B 3/08; F02D 5/02; F02M 51/00
U.S. Cl. 364—431.06 35 Claims

34. A fuel management control for an internal combustion engine having at least one combustion chamber wherein a combustible mixture is burned to generate a force which is applied to a movable member therein, comprising:

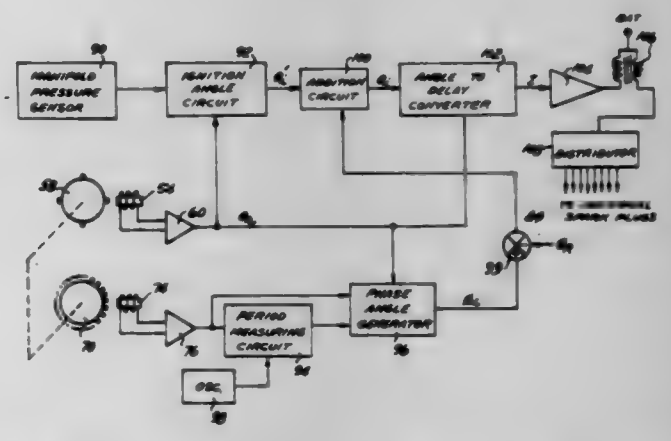
means for generating a reference signal indicative of at least one predetermined position of the movable member;

means for detecting the motion of the member and for generating velocity profile signals indicative of the substantially instantaneous velocity of the member in relation to said reference signal;

means for generating desired velocity profile signals indicative of the desired velocity profile of the movable member;

means responsive to said velocity profile signal for generating a correction signal indicative of the magnitude of the difference of at least two different deviations of said velocity profile signals; and

combustible fuel mixture control means responsive to at least one other operational parameter of the engine and said correction signal to control the amount of combustible mixture delivered to the chamber to minimize the magnitude of the difference in the velocity profile signals from the desired velocity profile signals.



35. A method for controlling the operation of an internal combustion engine having at least one combustion chamber wherein a combustible mixture is burned to generate a force applied to a movable member thereof, the method comprising:

generating a reference signal indicative of at least one predetermined position of the movable member;

detecting the motion of the movable member for generating elocity profile signal indicative of the instantaneous velocity of the member in relation to said reference signal;

generating desired velocity profile signals indicative of the desired operation of the internal combustion engine;

generating a correction signal indicative of the magnitude of the difference of at least two deviations of the velocity profile signals from said desired velocity profile signal;

generating a parameter signal indicative of at least one other operational parameter of the engine; and

combining said parameter and correction signals to generate control signals controlling the combustion of the combustible mixture delivered to the chamber to minimize the magnitude of the difference between the velocity profile signals and the desired velocity profile signals.

4,347,572

METHOD AND APPARATUS FOR AN AIRCRAFT CLIMB-OUT GUIDANCE SYSTEM

James W. Berwick, Jr., Seattle; Robert J. Bleeg, Mercer Island, and Vincent E. McFaddin, Renton, all of Wash., assignors to The Boeing Company, Seattle, Wash.

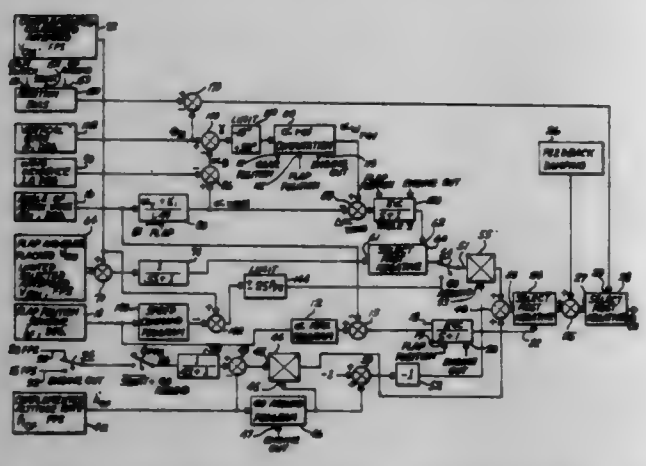
Filed Nov. 2, 1979, Ser. No. 90,812
Int. Cl.[3] G06F 15/50; G06G 7/78
U.S. Cl. 364—433 12 Claims

1. A method for determining the climb-out guidance of an aircraft comprising the descending priority steps of:

(a) performing controls (b) through (d) below but under no

circumstances allowing aircraft angle of attack to exceed a predetermined stick shaker value;

(b) controlling vertical speed to achieve a predetermined acceptable, minimum climb rate regardless of airspeed loss;



(c) commanding both increased vertical speed and airspeed control in response to excess thrust upon exceeding said acceptable minimum climb rate; and

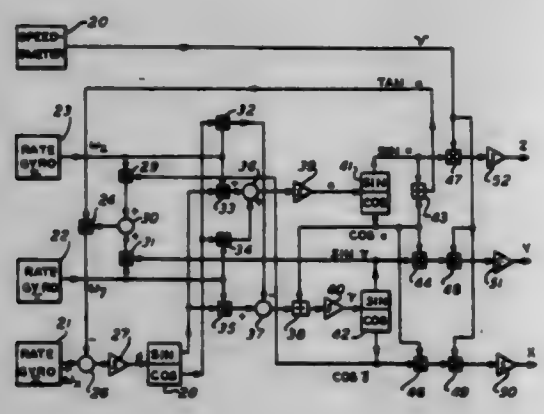
(d) controlling airspeed to a specified value in response to achieving a climb rate significantly higher than said minimum climb rate.

4,347,573

LAND-VEHICLE NAVIGATION SYSTEM

Bernard Friedland, West Orange, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Oct. 30, 1978, Ser. No. 956,459
Int. Cl.[3] G06F *15/50*
U.S. Cl. 364—453 9 Claims



1. A land vehicle navigation system comprising:

means for providing a signal indicative of the speed of the vehicle,

means strapped down to said vehicle along three orthogonal axes for generating angular rate signals along said axes, and

means for combining said signal indicative of the speed of said vehicle and said orthogonal rate signals for determining the position of said vehicle along said three axes.

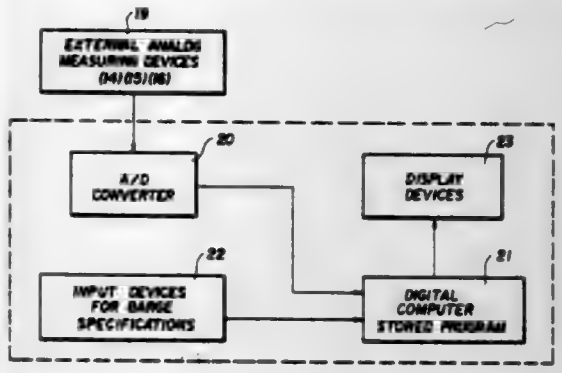
4,347,574

METHOD OF AND APPARATUS FOR DETERMINING WITH PRECISION THE PAYLOAD OF A WATER BORNE VESSEL

Ward H. Parsons, 1202 Green Glen Rd., Birmingham, Ala. 35216

Continuation-in-part of Ser. No. 950,472, Oct. 11, 1978, abandoned. This application Jul. 7, 1980, Ser. No. 166,362
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—463 2 Claims

1. In a weighing system for water borne vessels to enable an accurate determination of the weight of material loaded on a vessel, a floating vessel body portion adapted to receive material from a loading means, a list angle sensor fixed on said body portion and operable to measure the list angle of the vessel before and after loading with material and to provide list angle indications proportional to the degree of list before and after loading, a trim angle sensor fixed on said body portion and operable to measure the trim angle of the vessel before and after loading with material and to provide trim angle indications proportional to the degree of trim before and after loading, and a linear distance measuring device positioned above said body portion at a fixed reference point relative to the body portion and adapted to measure the distance from said reference point to the level of water in which the body portion is floating and to measure the distance from the reference point to a fixed point on the body portion before and after loading a weight measuring means connected to said list angle sensor, trim angle sensor and linear measuring means for accurately determining the weight of material loaded on said vessel.

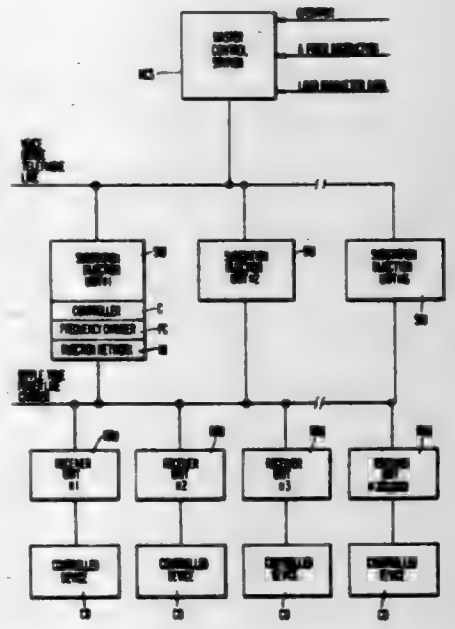


4,347,575

SYSTEM FOR CONTROLLING POWER DISTRIBUTION TO CUSTOMER LOADS

George P. Gurr, Dunwoody; John N. Davis, Atlanta, and E. Thomas Wiggins, Dunwoody, all of Ga., assignors to Sangamo Weston, Inc., Atlanta, Ga.

Continuation of Ser. No. 53,740, Jul. 2, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 176,553
Int. Cl.[3] H04Q *9/00*; H02J *3/10*
U.S. Cl. 364—492 12 Claims



1. An electric power system for controlling the distribution of power along power lines from a substation to a plurality of loads, which comprises:

a master control station including first programmable digital data processor means and input/output devices adapted to be controlled for generating master control signals;

at least one substation injection unit located at said substa-

tion in communication with said master control station and adapted for control by second programmable digital data processor means for injecting, in response to certain of said master control signals, pulse code signals onto said power lines; and

a plurality of remote receiver units each adapted to be connected to a particular load device and to said power lines for receiving said pulse code signals, each of said remote receiver units responsive to one of said pulse code signals for connecting or disconnecting its load from said power lines; and

wherein said substation injection unit further comprises:

means for converting the frequency of a standard three-phase power line voltage signal generated by said utility at said substation to a preselected frequency desired for said pulse code signals;

means responsive to said second data processor means for controlling the output of said frequency converting means to generate said pulse code signals; and

means for injecting said pulse code signals onto said power lines for transmission to said remote receiver units; and

wherein said frequency converting means comprises:

three-phase rectifier means including a plurality of conduction controlled solid state devices under the control of said second data processor means for receiving said three-phase power line voltage signal and for developing a DC voltage signal of a predetermined level; and

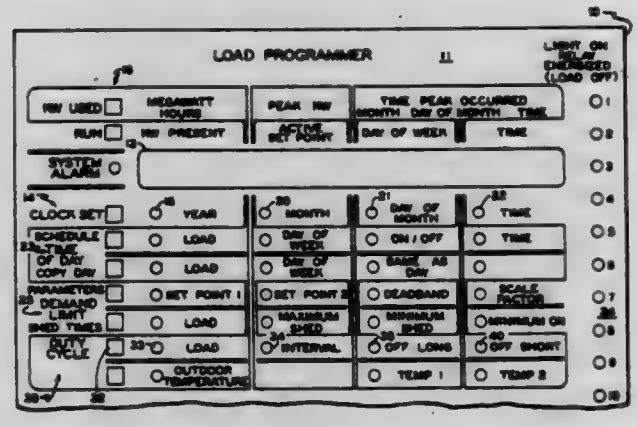
three-phase inverter means including a plurality of conduction controlled solid state devices under the control of said second data processor means for receiving said DC voltage signal from said rectifier means and for converting same to said pulse code signal at said preselected frequency.

4,347,576

LOAD MANAGEMENT CONTROL APPARATUS WITH IMPROVED DUTY CYCLE OPERATION

Robert A. Kensinger, Dakota County, and Robert N. Norman, Hennepin County, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 28, 1980, Ser. No. 144,495
Int. Cl.³ G06F *15/56*; H02J *13/00*
U.S. Cl. 364—493 11 Claims



1. In a load management control apparatus comprising,

a plurality of switch means adapted to control individual loads for individual duty cycles of a predetermined off time for each operating time interval,

means connected to said switch means for programming the operation of said switch means to select a percentage off time and an operating time interval for certain of said switch means and thus its load,

means connected to said means for programming for determining the total percentage of off time of all the loads which are being duty cycled and rounding this number off to the closest whole number, and

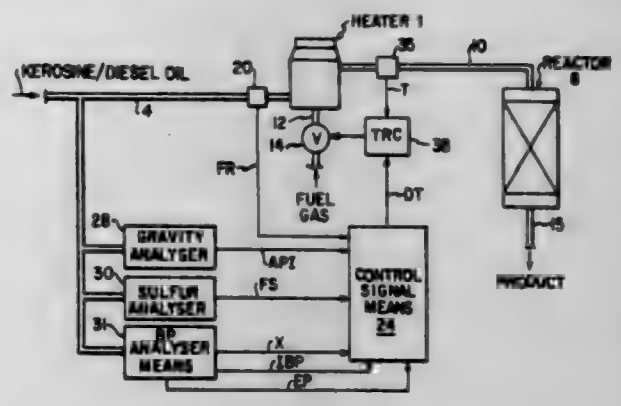
control means connected to said means for programming for always maintaining the number of loads off the same as said whole number.

4,347,577

FEEDSTOCK TEMPERATURE CONTROL SYSTEM

Charles A. Ganster, Houston, and Gerald V. Nelson, Nederland, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,723
Int. Cl.³ C01G *21/00*; G06G *7/58*
U.S. Cl. 364—501 10 Claims



1. A control system for controlling the temperature of kerosine/diesel fuel feedstock being fed to a reactor in a hydrotreating unit comprising heater means receiving the feedstock for heating the feedstock in accordance with a control signal DT corresponding to a desired temperature for the feedstock entering the reactor and providing the heated feedstock to the reactor, gravity analyzer means for sensing the API gravity of the feedstock and providing a signal API corresponding thereto, sulfur analyzer means for sensing the sulfur content of the feedstock and providing a corresponding signal FS, boiling point analyzer means for sensing the 50% boiling point temperature, the initial boiling point temperature and the end point temperature of the feedstock and providing corresponding signals X, IBP and EP, respectively, flow rate means for sensing the flow rate of the feedstock and providing a signal FR representative thereof, and control signal means connected to the heater means, to the gravity analyzer means, to the sulfur analyzer means, to the boiling point analyzer means and to the flow rate means for providing control signal DT in accordance with signals API, FS, X, IBP, EP and FR, said control signal means includes means connected to the boiling point analyzer means and to the gravity analyzer means for providing a signal MW corresponding to the molecular weight of the feedstock in accordance with signals X and API, SF computer means connected to the boiling point analyzer means for providing a signal SF corresponding to a sulfur factor of the gas oil which is at the estimated distillation temperature at which half of the sulfur in the feedstock is distilled overhead, in accordance with signal X and

$$SF = C9 - C10e^{-C11(X)} \quad \text{1a.}$$

when the value for X is less than 450° F., and

$$SF = C9 - C10(X) + C11(X^2) \quad \text{1b.}$$

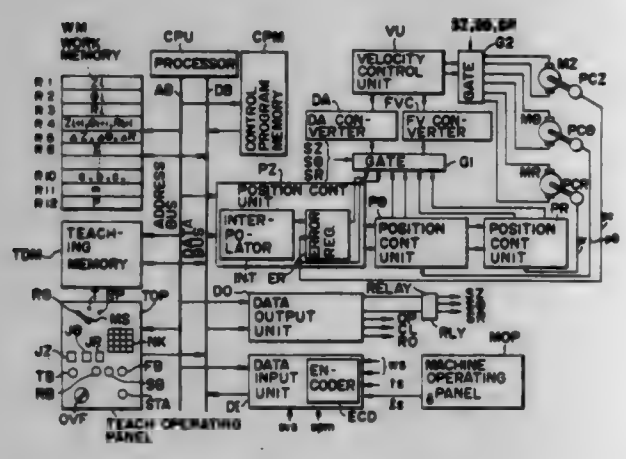
when the value for X is equal to or greater than 450° F., where C9, C10 and C11 are constants having one set of values for equation 1a and another set of values for equation 1b, subtracting means connected to the boiling point analyzer means for subtracting signal IBP from signal EP to provide signal R corresponding to the temperature range of the kerosine/diesel fuel, ALHSV signal means connected to the flow rate means and receiving a direct current voltage CAT.VOL. corresponding to the catalyst volume of the reactor in barrels for providing a signal ALHSV corresponding to the actual liquid hourly space velocity of the kerosine/diesel fuel in accordance with signal FR and the voltage CAT VOL, A signal means connected to the MW computer means, to the SF computer means, to the subtracting means, to the sulfur analyzer means and to the gravity analyzer means for providing a signal A corresponding to a feedstock correlating parameter in accor-

dance with signals MW, SF, R, FS and API, CT computer means connected to the A signal means for providing signals CT95, CT90, CT80 and CT70, corresponding to the correction temperature for 95%, 90%, 80% and 70% desulfurization, respectively, RT signal means connected to the CT signal means for providing signals RT95, RT90, RT80 and RT70 corresponding to the reciprocal temperatures for 95%, 90%, 80% and 70% desulfurization, respectively, in accordance with signals CT95, CT90, CT80, and CT70, sulfur signal means for providing a signal DPS corresponding to the desired product sulfur content and a signal DDS corresponding to a percent desulfurization necessary to achieve the desired product sulfur content in accordance with signal FS, K signal means connected to the sulfur analyzer means for providing signals K95, K90, K80 and K70, corresponding to reaction rate constants for 95%, 90%, 80% and 70% desulfurization, respectively, in accordance with signal FS, slope and intercept signal means connected to the RT signal means, to the sulfur signal means and to the K signal means for providing signals m and b corresponding to the slope and intercept, respectively, of a straight line approximating the kinetic relationship between the reaction rate constant and the reciprocal temperatures in accordance with signals DDS, RT95, RT90, RT80, RT70, K95, K90, K80 and K70, Z signal means connected to the ALHSV signal means, to the sulfur analyzer means and to the sulfur signal means for providing a signal Z corresponding to a reaction rate constant for the desired product sulfur content in accordance with signals ALHSV, FS and DPS, and temperature signal means connected to the slope and intercept signal means and to the Z signal means for providing signal DT in accordance with signals m, b, and Z.

4,347,578
INDUSTRIAL ROBOT CONTROL SYSTEM

Hajimu Inaba, Hino, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Apr. 13, 1979, Ser. No. 29,851
Claims priority, application Japan, Apr. 26, 1978, 53-049413
Int. Cl.[3] G06F *15/46;* G05B *19/42*
U.S. Cl. 364—513 21 Claims



19. A method for controlling an industrial robot in a machine tool and workpiece exchange system comprising the steps of:

(a) entering and storing teach data for operation of the robot in teach memory means in a program having specified codes for automatically modifying the stored teach data or sequence of the programmed teach data in accordance with data corresponding to the program codes read from work memory means;

(b) entering and coding data of the current position of the robot and external data relating to machine work identity, insufficient machine work, and abnormality detection in data entry and coding means;

(c) storing the coded data of the current position of the robot and coded external data in the work memory means;

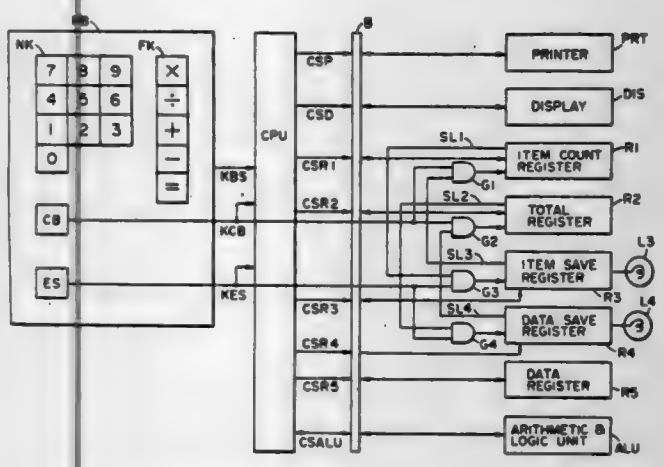
(d) processing by processor means the coded program from the teach memory means to read the teach data and modify the teach data or sequence of the programmed teach data in accordance with coded data read from the work memory means; and

(e) automatically controlling the operation of the robot in accordance with the processed teach and external data program.

4,347,579
ELECTRONIC INSTRUMENT HAVING AN OPERATION COUNT FUNCTION

Shigeru Matsuyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,579
Claims priority, application Japan, Mar. 3, 1979, 54-24051
Int. Cl.[3] G06F *13/00*
U.S. Cl. 364—709 9 Claims



1. An electronic instrument having an operation count function, comprising:

data input means for entering data into said instrument to be operated on;

operation instructing means for generating processing instruction signals;

data processing means connected to said data input means and said operation instructing means and responsive to a processing instruction signal generated by said operation instructing means for processing the data entered by said data input means to obtain a result;

first storage means connected to said data processing means and said operation instructing means and responsive to the result obtained by said data processing means and each processing instruction signal generated by said operation instructing means for storing the result and the number of times a processing instruction signal has been generated;

second storage means for storing the result and the number of times a processing instruction signal has been generated stored in said first storing means;

data transmission means connected between said first storage means and said second storage means to transmit data therebetween;

first instruction control key means connected to said data transmission means for controlling said data transmission means to transmit the same data as that stored in said first storage means to said second storage means for storage therein, said first instruction control key means being operable in the event of an interruption of a series of operations by said data processing means each initiated by each said processing signal, wherein operation of said first instruction control key means causes said first and said second storage means to store the same data; and

second instruction control key means connected to said data transmission means for controlling said data transmission means to transmit the data stored in said second storage means to said first storage means for storage therein, said second instruction control key means being operable in order to resume the interrupted series of operations, whereby if the data stored in said first storage means is

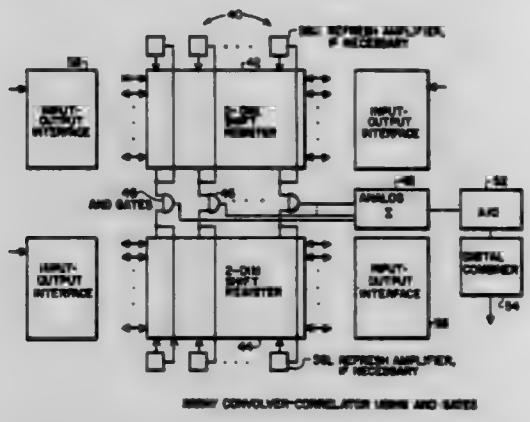
destroyed during the period of interruption, the operation of said second instruction control key means will restore said data to said first storage means from said second storage means.

4,347,580

ARRAY CONVOLVER/CORRELATOR

James W. Bond, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 21, 1980, Ser. No. 170,492
Int. Cl.[3] G06G *7/19*; G06F *15/34*
U.S. Cl. 364—824 12 Claims



1. An array convolver-correlator comprising:

first and second two-dimensional shift registers defined by N rows and M columns, the columns of the two registers being aligned, N and M being in the range of 4 to 512, data capable of entering at least one of the left or right columns of each of the two shift registers, the data shifting downward to the bottom row in the first, upper, shift register and upward to the top row in the second, lower, shift register;

a plurality of M means for multiplying, comprising M gating means, each having an input from the bottom row of the upper shift register and the top row of the lower shift register of corresponding columns of the two shift registers;

means for summing, having M inputs connected to the M gating means, for summing the input signals in an analog manner;

means, whose input is connected to the output of the summing means, for converting the analog input signal into a digital signal; and

a means for combining, whose input is connected to the output of the A-to-D converting means, for accumulating shifted outputs of the A-to-D converting means by addition and subtraction.

4,347,581

INPUT SETTING METHOD FOR DIGITAL OPERATIONAL DEVICES

Mitsuru Yamaura; Ryotaro Kondow, both of Fuchu; Megumu Mitani, Tama, and Yoshiji Nii, Kawaguchi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

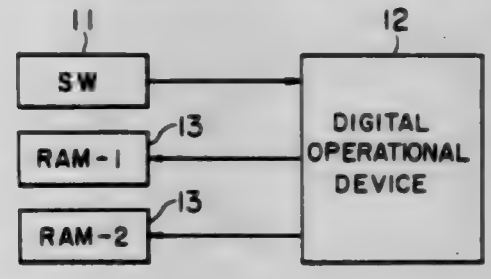
Filed Sep. 24, 1979, Ser. No. 78,511
Int. Cl.[3] G06F *7/04*
U.S. Cl. 364—900 4 Claims

1. An input setting method for a protective relaying apparatus for an electric power system, said relaying apparatus including an input setting switch for digitally setting data required for a protective relaying operation of said relaying apparatus, a digital operational device connected to receive said data for periodically executing said relaying operation, and a memory device for storing said data, said method comprising the steps of:

setting said data by utilizing said input setting switch;

storing the data set by said input setting switch in said memory device;

comparing the data set by said input setting switch with the data stored in said memory device during time intervals between periodic executions of said relaying operation;



carrying out said relaying operation utilizing said data when the compared data are found equal; and,

issuing an alarm signal when the compared data are found to be unequal.

4,347,582

CENTRAL TIMER UNIT FOR BUFFERING CONTROL DATA IN A TELECOMMUNICATIONS SYSTEM

Reinhard Frank, Munich, Fed. Rep. of Germany, assignor to Siemens Corporation, Iselin, N.J.

Filed Apr. 23, 1980, Ser. No. 143,159
Int. Cl.[3] G06F *13/06*; H04M *15/00, 3/00*
U.S. Cl. 364—900 10 Claims

1. A central timer unit of a telecommunication system for buffering pieces of control information received in random order and to be sent out after individual delay times associated with each respective piece of information, said timer unit comprising in combination:

(a) a random access memory having storage cells, each storage cell designed for storing data of

(1) a piece of control information and

(2) a chain address of another storage cell containing another piece of control information to be read out at the same time;

(b) a plurality of time control units each including:

a series of storage units designed for storing a random access memory address; and

read selector means for interrogating the associated series of storage units sequentially and repeatedly in accordance with an individually established operating rate;

said time control units being arranged to form a multilevel hierarchy of clock units each representing by the state of its respective read selector means a digit of a current internal time value;

(c) write selector means commonly assigned to the time control units for randomly selecting a storge unit by means of the most significant non-zero digit of the individual delay time value of a respective piece of control information and for storing therein the address of the storage cell selected for buffering the respective piece of control information; and

(d) a control device having:

an input buffer for temporarily storing incoming pieces of control information;

an output device for transmitting outgoing pieces of control information; and

control means for transmitting address data and data of a piece of control information from said input buffer to the write selector means and said random access memory, between said time control units and said random access memory, and from said random access memory to said output device;

wherein the random access memory address of each piece of control information is handed down to the neighboring lower level time control unit of the hierarchy whenever at a respective digit of the internal storage time value the associated

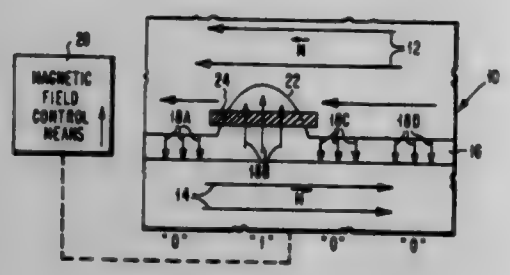
storage unit is selected said random access memory address is read out.

4,347,583

NEEL WALL SEGMENT DETECTION IN CROSS-TIE MEMORY SYSTEMS

Robert A. Scranton, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,511
Int. Cl.[3] G11C *7/00, 19/08*
U.S. Cl. 365—87 5 Claims



4. A device for detecting the polarity of a Neel wall segment in a cross-tie memory system in a garnet film four-fold in-plane anisotropy comprising:

means for applying a magnetic field in a first direction to a Neel wall segment to expand a segment having a polarity in said first direction into a transverse domain, and

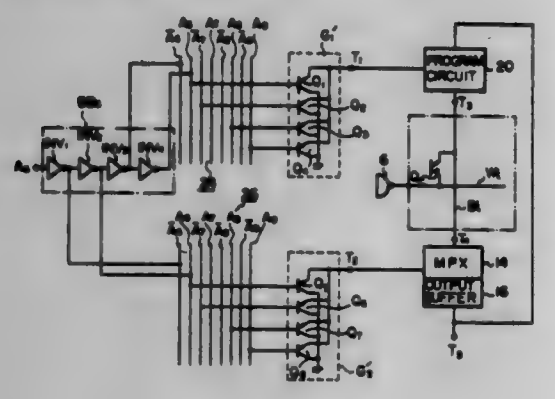
sensing means for detecting the presence or absence of said transverse domain.

4,347,584

PROGRAMMABLE READ-ONLY MEMORY DEVICE

Toshitaka Fukushima, Yokohama; Kazumi Koyama, Ikoma; Kouji Ueno, Kawasaki; Yuichi Kawabata, Yokohama, and Tamio Miyamura, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 21, 1980, Ser. No. 141,934
Claims priority, application Japan, Apr. 23, 1979, 54-50036
Int. Cl.[3] G11C *7/00*
U.S. Cl. 365—104 9 Claims



1. A bipolar PROM device having a plurality of memory cells which are located at respective cross positions of a plurality of word lines and a plurality of bit lines and which are selected by word address signals and bit address signals applied to said PROM device, said PROM device comprising:

a word address buffer for amplifying said word address signals;

a word address decoder for decoding the word address signals from said word address buffer;

one or more bit address buffers for amplifying said bit address signals;

a first bit address decoder for decoding the bit address signals from said bit address buffer for writing-in of information;

a second bit address decoder for decoding the bit address signals from said one or more bit address buffers for reading-out of information, at least one of said first and second bit address decoders being composed of a plurality of AND gates, each of said AND gates comprising an output terminal and a plurality of PNP type transistors each comprising an emitter, a base, and a collector, to each said base of said transistors being applied the address signals from said bit address buffer, each said collector of said transistors being connected commonly to ground, and each said emitter of said transistor being connected commonly to said output terminal of said AND gate;

a program circuit for initially writing-in information to the selected memory cells; and

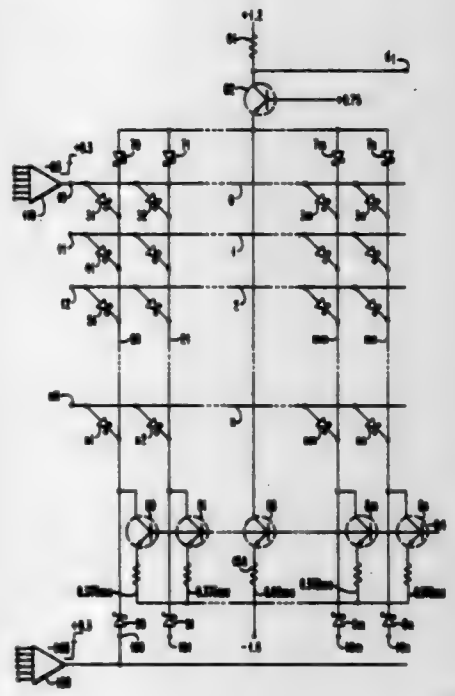
a multiplexer for reading-out information from the selected memory cells.

4,347,585

REPRODUCE ONLY STORAGE MATRIX

David B. Eardley, Stanfordville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,921
Int. Cl.[3] G11C *11/36, 7/00, 17/06*
U.S. Cl. 365—105 10 Claims



1. A reproduce only storage matrix comprising:

rows and columns of conductors,

a relatively high barrier Schottky diode device connecting a respective row conductor to a respective column conductor at each matrix crossover at which a stored binary number of a given value is desired,

a multiple of relatively low barrier Schottky diode devices, each of said low barrier diode devices being connected to a respective column conductor for selecting said column, each said low barrier diode device being rendered conductive only when its respective column is unselected, and

a multiple of current sinks,

each of said current sinks being connected to a respective column conductor,

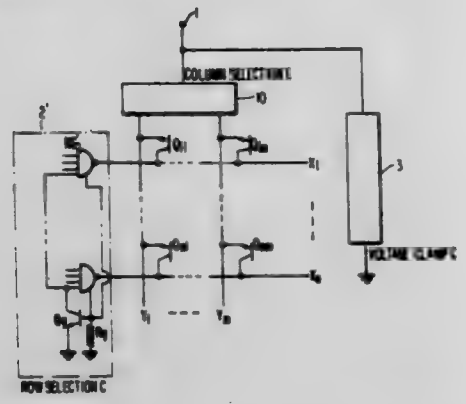
the current in each current sink flowing through a respective one of said high barrier diode devices, if present, only if the associated column conductor is selected, said current flowing through said one of said low barrier diode devices when the associated column conductor is unselected.

4,347,586

SEMICONDUCTOR MEMORY DEVICE

Yoshinobu Natsui, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,736
Claims priority, application Japan, Jun. 7, 1979, 54-71409
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—174 16 Claims



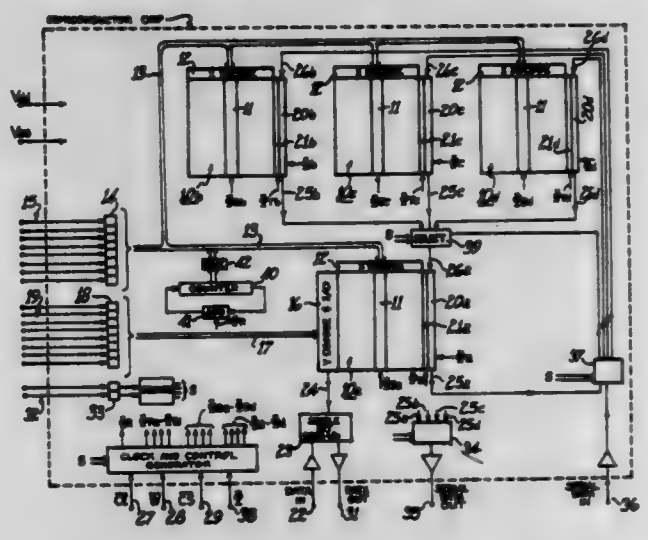
1. A semiconductor memory device comprising a plurality of column lines, a plurality of row lines intersecting said column lines, a plurality of programmable memory cells disposed at the intersections of said column lines and said row lines, a write terminal connectable to a write current source, the state of each of said memory cells being changed by supplying thereto an electric current larger than a predetermined value, a column selection circuit for selectively providing a first current path between a selected one of said column lines and said write terminal, a row selection circuit for selectively providing a second current path between a selected one of said row lines and a reference voltage source different from said write current source, and a current limiter circuit associated with one of said first and second current paths for limiting the amount of write current supplied to a selected memory cell designated by the selected column line and the selected row line within a regulated amount larger than said predetermined value.

4,347,587

SEMICONDUCTOR INTEGRATED CIRCUIT MEMORY DEVICE WITH BOTH SERIAL AND RANDOM ACCESS ARRAYS

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 23, 1979, Ser. No. 97,104
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—189 10 Claims



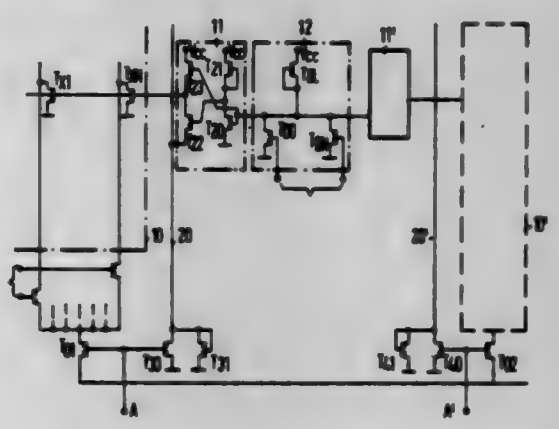
1. A memory device comprising a body of single crystal semiconductor material, a random-access read/write array formed in one face of said body, a serial-access read/write memory also formed in said one face, first addressing means for receiving and decoding a row address for selecting a row in both said memory array and said memory, second addressing means for receiving and decoding a column address for selecting a column in said random access memory array, third addressing means for receiving an address selecting between the random-access memory array or said serial-access memory, each said memory array and said memory having a serial access register, means to selectively clock the serial access registers of said memory array and said memory means, for connecting a data output from the serial access register of the serial-access memory to a data input of the random access memory array, and single-bit input/output access means coupling said random-access memory array to input/output connections for said body.

4,347,588

MOS-INTEGRATED CIRCUIT ARRANGEMENT FOR SUPPRESSING QUIESCENT CURRENTS FLOWING IN WORD LINE DRIVERS OF SEMICONDUCTOR MEMORIES

Kurt Hoffmann, Taufkirchen, and Karl J. Zapf, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,579
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855744
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—206 3 Claims



1. MOS integrated circuit arrangement for suppressing quiescent currents flowing in word line drivers of semiconductor memories, comprising bit lines, word lines connected to the word line drivers, and respective controlled switch means addressed by a storage activation signal for suppressing residual currents in the word line drivers, said controlled switch means being connected between the output circuit of the word line drivers and reference potential.

4,347,589

REFRESH COUNTER TEST

Robert J. Proebsting, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Continuation of Ser. No. 39,248, May 15, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,180
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—222 6 Claims

1. In a memory having a refresh counter, row clock generator and column clock generator, a method for testing the operation of the refresh counter comprising:

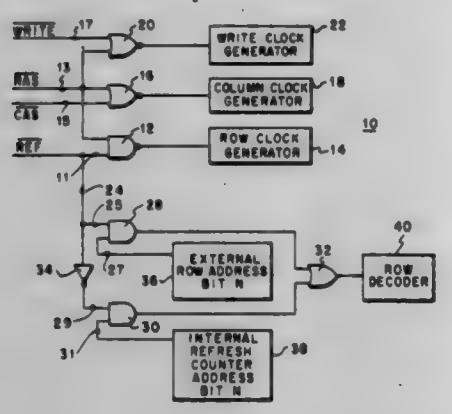
writing a preselected background into the memory;

enabling the row clock generator with a refresh signal;

selecting a row determined by the refresh counter;

enabling the column clock generator;

writing in the memory in the row selected by the refresh counter; and



reading the memory to determine correct operation of the refresh counter.

4,347,590

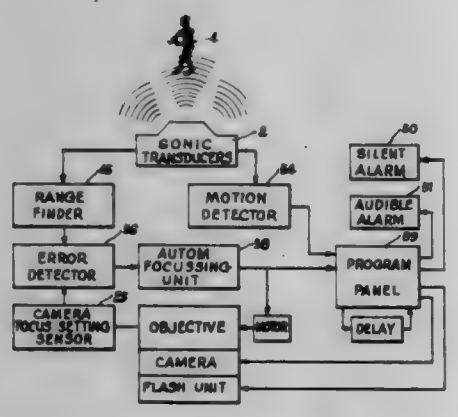
AREA SURVEILLANCE SYSTEM

Vernon G. Heger, 3517 Albatross, and Henri J. A. Charmasson, 2030 Sunset Blvd., both of San Diego, Calif. 92103

Filed Mar. 3, 1980, Ser. No. 126,579

Int. Cl.³ G03B *3/00*; G08B *13/16*

U.S. Cl. 367—93 **2 Claims**



1. An automatic focusing assembly for adjusting the objective of a camera in response to the movement of a body within the camera field of vision which comprises:

means for periodically emitting an ultrasonic signal over an area within said field of vision;

means for detecting the echo of said ultrasonic signal reverberating from said area;

means for generating a first binary-coded signal proportional to the elapsed time between said ultrasonic signal and the detection of said reverberating echo;

means for generating a second binary-coded signal proportional to the setting of said objective;

means for detecting coincidence between said first and second binary-coded signals;

a first gear coupled to said objective;

a pair of semi-circular gears alternately engaging said first gear;

an uni-directional electrical motor; means for coupling said electrical motor to said pair of semi-circular gears and means, responsive to said means for detecting coincidence for de-energizing said motor.

4,347,591

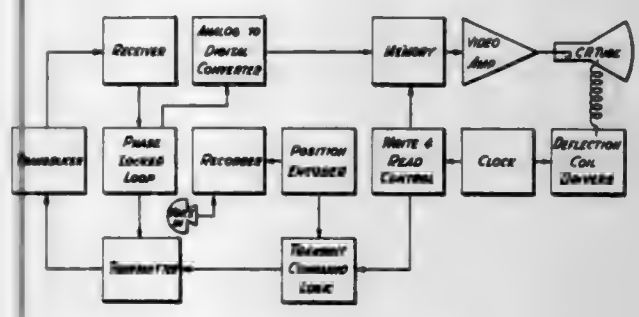
IMAGING SONAR SYSTEM AND METHOD

William F. Stembridge, 3541 Prince George, East Point, Ga. 30044; Roger P. Woodward, 2652 Fleur de Lis Pl., Atlanta, Ga. 30040, and Larry H. Glassman, 5994 Benton Woods Dr. NE., Atlanta, Ga. 30042

Continuation of Ser. No. 581,037, May 27, 1975, abandoned, Ser. No. 800,803, May 26, 1977, abandoned, and Ser. No. 74,862, Sep. 12, 1979, abandoned. This application Oct. 29, 1980, Ser. No. 201,909

Int. Cl.³ G01S *15/96*

U.S. Cl. 367—104 **34 Claims**



1. An imaging sonar system comprising:

(A) a transmitter and receiver;

(B) rotatable transducer means coupled with said transmitter and receiver for generating sound waves and for detecting echoes therefrom;

(C) drive means for rotating said rotatable transducer means;

(D) transducer position sensing means for sensing the rotary position of said rotatable transducer means;

(E) analog to digital converter means coupled with said receiver for converting receiver emitted signals into digital form;

(F) digital memory means for storing receiver emitted signals as digital data;

(G) write and read control means for respectively entering digital data into and recalling digital data from said memory means;

(H) a cathode ray tube coupled with said memory means and having beam deflector means synchronized with said memory read control means for displaying data recalled from said memory means as an image of echoes detected by said transducer means; and

(I) transmit command logic means coupled with said memory write control means and with said transducer position sensing means for initiating transmit commands to said transmitter with the memory write control means synchronized with sensed transducer positions.

4,347,592

SONAR

Huibert B. Langeraar, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

PCT No. PCT/NL79/00003, § 371 Date Apr. 22, 1980, § 102(e) Date Apr. 14, 1980, PCT Pub. No. WO80/00497, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 2, 1979, Ser. No. 206,193

Claims priority, application Netherlands, Aug. 22, 1978, 7808635

Int. Cl.³ G01S *7/52*; G01K *11/00*

U.S. Cl. 367—137 **11 Claims**

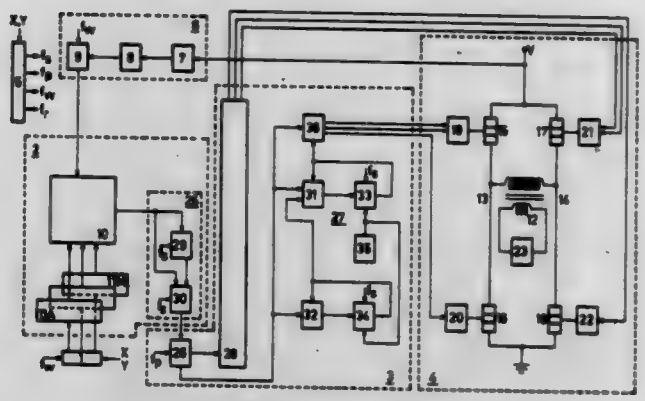
1. Arrangement for generating amplitude-modulated, ultrasonic transmission pulses, characterised in that said arrangement comprises a combination of:

a. a switching circuit controlled with a plurality of switching pulses per pulse interval, which switching circuit includes an inductive load circuit for generating the transmission pulses;

b. a unit for generating timing signals determining the switching pulse frequency;

c. a memory, of which the memory locations are filled with

the information, required per transmission pulse interval, about the pulse width of the switching pulses to be generated, which information is derived from the desired amplitude pattern of the transmission pulses to be generated;



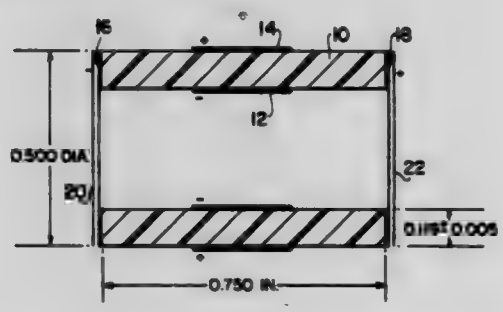
d. a switching-pulse generator for producing the switching pulses, using the timing signals on the one hand and the pulse width information in the memory on the other hand;
e. an address generator for generating addresses on the supply of the timing signals to read out the memory.

4,347,593

PIEZOCERAMIC TUBULAR ELEMENT WITH ZERO END DISPLACEMENT

W. James Trott, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1979, Ser. No. 101,362
Int. Cl.[3] H04R *17/00*
U.S. Cl. 367—159 4 Claims



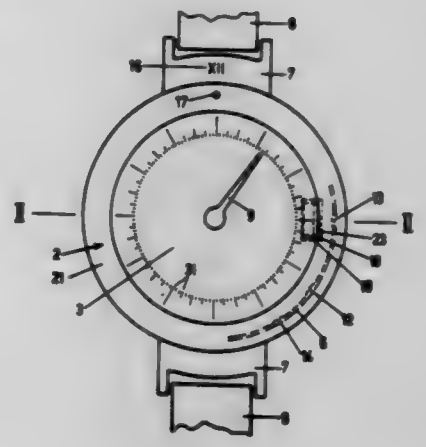
1. A piezoelectric hydrophone having omnidirectional sensitivity over a wide frequency range comprising:
a tubular element of piezoceramic material having thickness t and outside radius a;
said tubular element including a central polarized section of length h, and polarized end sections;
said central polarized sections being polarized in a direction perpendicular different from that of said end sections and with said end sections polarized in the same direction;
said tubular piezoceramic element having a length which is about 1.5 times the outer diameter of the element;
central electrode means, disposed relative to said central polarized section, for sensing the voltage output of said central polarized section;
end electrode means, disposed relative to said polarized end sections, for sensing the voltage output of said polarized end sections, said end and said central electrode means being connected electrically in parallel:
whereby pressure on the ends of the end sections causes a voltage output from said central electrode means the central section which is substantially equal and opposite to the voltage output from the said end electrode means sections whereby the vector sum of these voltages obtained via the parallel connection of said electrode means is zero and the ends are insensitive to pressure thereon.

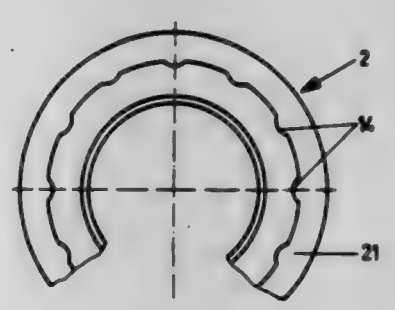
4,347,594

WORLD WATCH

Pierre Tschanz, Neuwis 25, Küsnacht, Switzerland

PCT No. PCT/CH79/00073, § 371 Date Jan. 23, 1980, § 102(e) Date Jan. 7, 1980, PCT Pub. No. WO79/01104, PCT Pub. Date Dec. 13, 1979
PCT Filed May 22, 1979, Ser. No. 192,522
Claims priority, application Switzerland, May 23, 1978, 5618/78
Int. Cl.[3] G04B *19/22*
U.S. Cl. 368—21 4 Claims





1. A world watch comprising:
a pair of spaced means for attaching straps;
a locking ring disposed between said pair of attaching means and fixedly secured thereto;
a watch case including a watch movement, a watch face, a watch hand driven by said watch movement for indication of time and a bezel disposed about said watch face and fixedly secured to said case, said watch case rotatable secured to said locking ring;
means for locking said watch case in a selected one of a plurality of rotational positions with respect to said locking ring, the length of the arc between each adjacent pair of said rotational positions corresponding to a time difference of one hour;
a reference numeral disposed on one of said attaching means; and
a reference mark disposed on said bezel, the number of rotational positions between the location of said reference numeral and the location of said reference mark indicating the time difference in hours between two selected time zones.

4,347,595

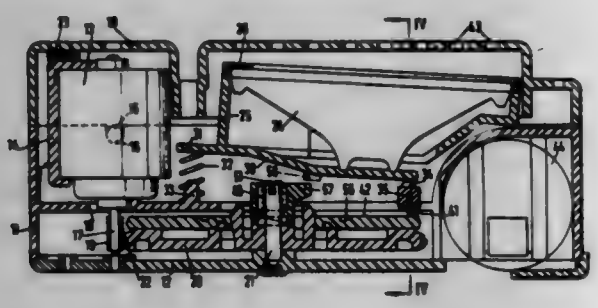
RECORD PLAYER

Mun-Hay Ngai, 130-132 Argyle St., 3/fl. Flat C., Kowloon, Hong Kong

Filed Jun. 23, 1980, Ser. No. 161,700
Claims priority, application United Kingdom, Jan. 22, 1980, 8002091; Apr. 1, 1980, 8010959
Int. Cl.[3] A63H *3/33;* G11B *17/06*
U.S. Cl. 369—67 12 Claims

1. A record player suitable for a toy and comprising a con-

tainer, means for supplying electric power, an electric motor, a turntable mounted in the container and rotatable by said electric motor, a speaker movable about a pivot towards the turntable under the bias of first spring means, a tone arm having a stylus and being movable with the speaker towards the turntable against the bias of second spring means so as to engage a record in use on the turntable, the second spring means biasing the tone arm radially outwardly of the turntable, reset means mounted on the turntable and engageable with the speaker or a part connected thereto as the tone arm moves towards the centre of the turntable, said reset means being operable on engagment with the speaker or the part to pivot the speaker away from the turntable against the bias of the first spring means so as to allow the second spring means to move the tone arm away from and radially outwardly of the turntable and a switch mechanism connected electrically in series with said motor and said means for supplying electric power for automatically interrupting the circuit between said means for supplying electric powers and said motor when said tone arm reaches its radially outermost position, said switch mechanism comprising first and second switches connected electrically in parallel with each other, said first switch being manually operable and being of a type which when actuated only briefly makes an electrical circuit between the means for supplying electric power and said electric motor and said second switch having fixed and movable contacts, means resiliently urging said movable contact toward said fixed contact and a pivotably mounted lever which acts between said tone arm and said movable contact to move said movable contact away from said fixed contact when said tone arm supports said stylus at or adjacent its radially outermost position so that said fixed and movable contacts are separated when but only when said tone arm supports said stylus at or adjacent its radially outermost position.



4,347,596

DISC PLAYER APPARATUS

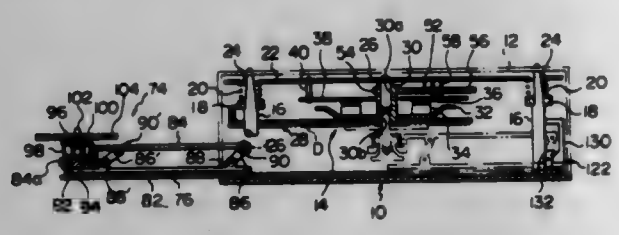
Kunio Abe; Masatsugu Saito; Masao Ono, and Yuji Ikedo, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 9, 1981, Ser. No. 223,617

Claims priority, application Japan, Jan. 11, 1980, 55-1897; Jan. 11, 1980, 55-1899; Jan. 11, 1980, 55-1901

Int. Cl.[3] G11B *1/00, 25/04*

U.S. Cl. 369—72 17 Claims



1. A disc player apparatus comprising

a base plate,

a plurality of support members upstanding from the base plate,

elastic support elements respectively mounted on the support members,

a disc and drive support structure including a turntable for holding thereto a disc to be played back, the support structure being supported in weight transmitting relationship on said support members through said elastic support elements,

a carriage plate movable into and out of a position below said support structure, and

a lower disc support unit movable with said carriage plate and including an elastic support element, the lower disc support unit being supported on said carriage plate through said elastic support element of the unit.

4,347,597

AUTOMATIC TONE ARM RETURNING DEVICE

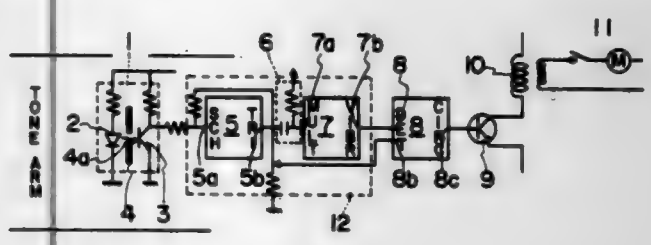
Shunkichi Hioki, Tokyo, Japan, assignor to Katoh Electrical Machinery Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 166,594

Claims priority, application Japan, Jul. 14, 1979, 54-89694

Int. Cl.[3] G11B *17/00*

U.S. Cl. 369—231 4 Claims



1. In a record player with a tone arm, an automobile tone arm returning device having detecting means for detecting the lead out groove of a record being played by the record player, said tone arm returning device comprising:

(a) pulse generator means with an output side for producing pulses whose cycle corresponds to the speed of the tone arm movement during the record playing;

(b) a Schmitt trigger circuit with an input and an output side, the input side of the Schmitt trigger circuit being connected to the output side of the pulse generator means;

(c) a one-shot multivibrator with an input side and an output side, with the multivibrator input side connected to the output side of the Schmitt trigger circuit;

(d) a comparator detector with two enabling gates and one output gate, one each of the enabling gates being respectively connected to the output sides of the one-shot multivibrator and the Schmitt trigger circuit;

(e) a switching transistor with a relay on the output side of the switching transistor, said switching transistor being operatively connected to the output side of the comparator detectors;

(f) and, a motor operatively connected to the switching transistor through the relay to reset the tone arm, whereby, the position of the tone arm as being in the lead out groove is detected when an enabling signal is present at both enabling gates.

4,347,598

TONE ARM ASSEMBLY

Fumio Arakawa, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 209,359

Claims priority, application Japan, Nov. 30, 1979, 54-154193

Int. Cl.[3] G11B *3/16*

U.S. Cl. 369—254 11 Claims

1. A tone arm assembly comprising:

a tone arm shaft having a cartridge assembly mounted on a first end thereof;

a first rotatable member coupled to the other end of said tone arm shaft;

a second rotatable member extending in the vertical direction, said second rotatable member being rotatable about a vertical axis and being mounted upon a base member;

said first rotatable member being rotatably supported by said second rotatable member and said first rotatable member being rotatable about a horizontal axis;

connecting means detachably mounted on said first rotatable member for limiting said rotational movement of said first rotatable member about said horizontal axis; and

a weight shaft coupled integrally with said connecting member.

6. A tone arm assembly comprising:

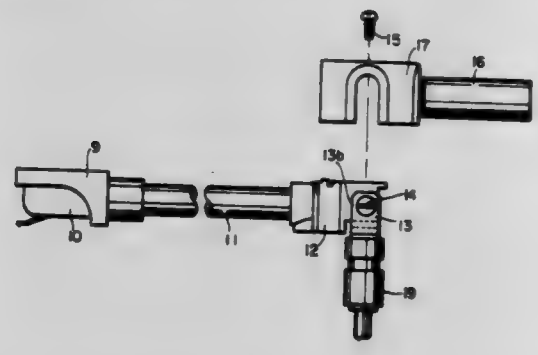
a base plate, a drive motor and a turntable coupled to be rotated by said drive motor, said drive motor being secured to said base plate;

a tone arm support base secured to said base plate;

a vertical tubular shaft extending upwardly from said tone arm support base;

a tone arm shaft having a phonocartridge mounted at a first end thereof;

a first rotatable member coupled to the other end of said tone arm shaft;



a second rotatable member coupled to the upper end of said vertical shaft, said second rotatable member being rotatable about a vertical axis upon said vertical shaft and said first rotatable member being rotatable about a horizontal axis on said second rotatable member, said first rotatable member being provided with stop means wherein said tone arm shaft is rotatable from a horizontal position prior to the attachment thereto of a connecting member and a weight shaft;

said connecting member having apertures on opposite sides thereof and being detachably mounted to said first rotatable member; and

an upper plate disposed over said motor and tone arm support base, said upper plate having separate apertures therein corresponding to the positions of a turntable drive spindle and said vertical shaft and being solid throughout most of the extent of said tone arm shaft and cartridge.

4,347,599

SPINDLE CLAMP ASSEMBLY FOR A VIDEO RECORDER-PLAYBACK MACHINE

George Vitale, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Oct. 20, 1980, Ser. No. 198,694
Int. Cl.[3] G11B *25/04, 3/62*
U.S. Cl. 369—270 37 Claims

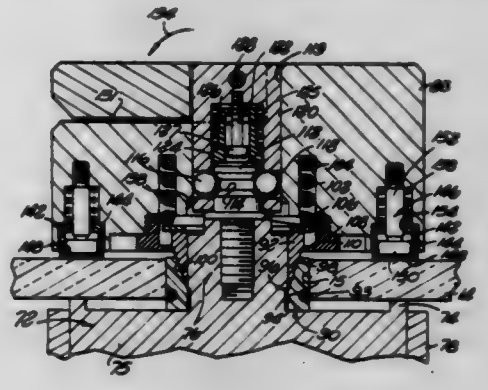
1. A spindle clamp assembly for positioning a disc upon a rotatable drive spindle having a shaft portion for reception through an opening formed in the disc, comprising:

a radially expansible sleeve receivable about the spindle and within the opening formed in the disc;

a collet receivable about the spindle adjacent said sleeve, said sleeve and said collet being configured with respect to each other such that displacement of said collet toward said sleeve causes substantially uniform radial expansion of said sleeve into bearing engagement with the disc for centering the disc with respect to the spindle;

a clamp housing receivable over the spindle and including locking means for locking engagement with the spindle for retaining the disc on the spindle; and

biasing means carried by said housing for engaging said collet when said housing is received over the spindle for



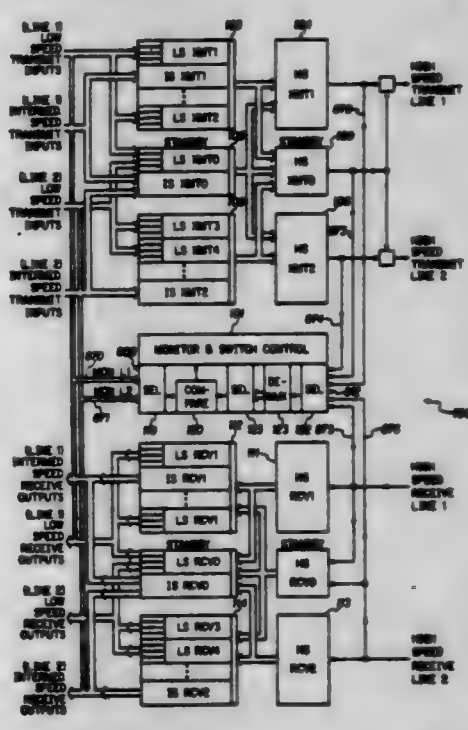
displacing said collet toward said sleeve for radial expansion of said sleeve.

4,347,600

MONITORED MULDEM WITH SELF TEST OF THE MONITOR

Ned E. Abbott, McKinney; Hampapur R. Keshavan, Dallas, and Robert J. McGuire, Richardson, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 3, 1980, Ser. No. 156,150
Int. Cl.[3] H04J *3/14*
U.S. Cl. 370—13 18 Claims



1. A multiplexer with an improved monitoring system for the detection of malfunctions, comprising in combination:

a plurality of parallel data input groups;

transmission means multiplexing said data input groups for serial transmission of high speed data; and

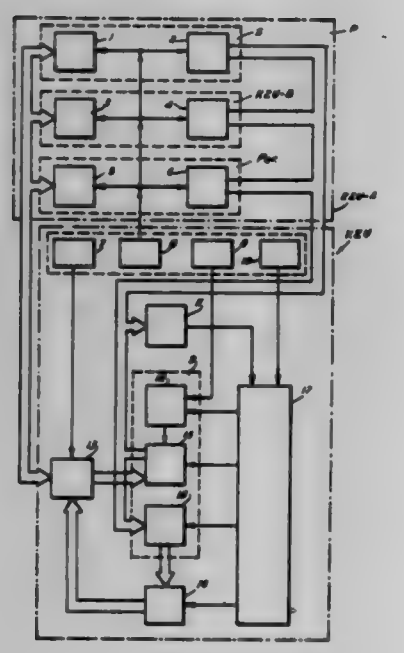
monitor means testing data paths through said multiplexer for detection of malfunctions in said multiplexer, and including monitor self-test means for detection of malfunctions in said monitor means;

wherein said monitor means has a first input side connected to the inputs to said data input groups and has a second input side connected to the output of said transmission means for monitoring data path failures through said multiplexer by comparing the latter's input and output, and wherein said monitor self-test means comprises error injection means injecting errors at one of said input sides of said monitor means for testing the latter's detection thereof.

4,347,601
METHOD AND SYSTEM FOR PROCESSING CODED INFORMATION TRANSMITTED DURING CYCLICALLY SUCCESSIVE TIME FRAMES

Hans Schmidt, Neustadt a.d. Aisch, Fed. Rep. of Germany, assignor to TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Sep. 28, 1979, Ser. No. 80,071
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843179
Int. Cl.³ H04Q *11/04*; G06F *13/00*
U.S. Cl. 370—58 7 Claims

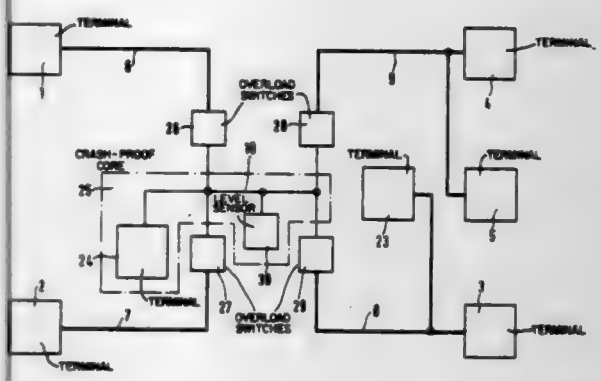


1. A method of processing encoded information transmitted during cyclically successive time frames, the method including processing all information in real time during a computing time channel of a time frame subdivided into computing time channels using a control logic cooperating with a storage, the control logic being made up of programmable and permanently wired functional circuits stages, writing in the information via an input bus line into a storage of a processor, the processor being comprised of a central part and peripheral units, the central part including an instruction storage, a data storage, a computing unit, a program-word register, an input multiplexer device and a hardward-control unit; and selecting a particular program from a plurality of programs stored in the programmed functional circuit stages as a function of the significance of the information using the instruction storage to control the write-in of a particular program word from the data storage into the program-word register as a function of the significance of the information; using the program-word storage to in turn call forth one of the programs; in dependence upon the information written into the data storage computing a plurality of predefined and ordered variables in accordance with Boolean algebra; storing in an intermediate storage the program word for the next processing operation, the next processing operation being a processing operation which is to begin at a completely predetermined moment in time within the predetermined time frame; and converting the information into control commands for the peripheral units made available on an output bus line.

4,347,602
CIRCUIT ARRANGEMENT FOR TIME DIVISION MULTIPLEX DATA TRANSMISSION WITH A BUS SYSTEM

Horst Kister, Wehrheim, and Horst Ullrich, Schöneck, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Fed. Rep. of Germany

Filed May 1, 1979, Ser. No. 35,003
Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823708; Jul. 7, 1978, 2829839
Int. Cl.³ H04J *3/08*
U.S. Cl. 370—85 9 Claims



1. An arrangement for time division multiplex data transmission with a bus system which includes a bus line and a plurality of terminals connected to the bus line in data transmitting connection with each other in a predetermined succession and in a predetermined combination, in which each terminal has at least one programmable counter having a counting input for connection with a synchronizing signal generator and an output for connection with switching means to produce a data transmitting connection between the bus line and a data source or sink of this terminal, the counters of all terminals being synchronized with each other, means connected in the combination to detect short circuits and to shut down individual sections of the bus line to protect the individual sections without shutting down all sections, and a resistor arranged between the bus line and a terminal to limit short circuits, the resistor having a resistance value which increases as the current increases.

4,347,603
SYSTEM FOR EXCHANGING ENCODED MESSAGES BETWEEN STATIONS

Jean-Baptiste Jacob; Yves Mathieu, both of Perros-Guirec, and Michel Ruvoen, Trebeurden, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed May 1, 1980, Ser. No. 145,539
Claims priority, application France, May 4, 1979, 79 11319
Int. Cl.³ H04J *3/08*; H04L *1/16, 1/10*
U.S. Cl. 370—85 9 Claims

1. A system for exchanging encoded messages between stations connected by a signal bus and a data bus, each station being connected to a general timebase and including a connection module connected to the data bus and to the signal bus; wherein the signal bus and data bus are serial multiplex links synchronous with the timebase, a time interval comprising consecutive even-numbered and odd-numbered time slots is allocated in each signalling frame to each connection module, and wherein each connection module comprises:

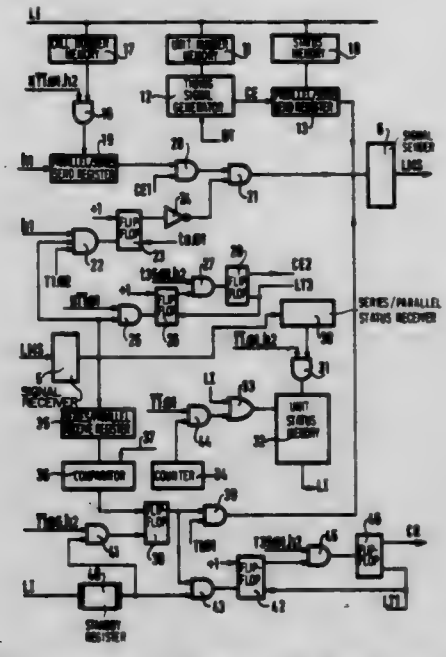
means for calling a station by sending a number relating to the called station in the time interval of said connection module,

means for receiving a response from the called station during said time interval of said connection module and authorizing the sending of a data message,

means for sending a response upon receipt of a number sent from a calling station in said time interval of said connection module,

means for storing a data message and sending said message in a data bus frame,

means for receiving a data message and means for storing the message,



means for computing the parity of the sent message and sending a parity bit at the end of the message, and

means for computing the parity of the received data message and sending the result of the computation in the data frame following the message.

4,347,604

BI-DIRECTIONAL DATA COMMUNICATIONS SYSTEM

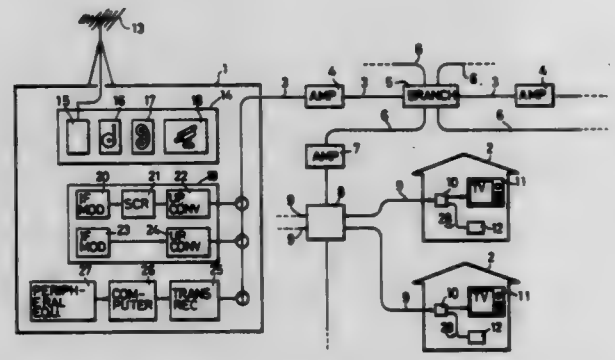
Masaki Saito, and Tetuo Kanazashi, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 156,532

Claims priority, application Japan, Jun. 8, 1979, 54-72514

Int. Cl.[3] H04J *3/06*

U.S. Cl. 370—85 6 Claims



1. A bi-directional data communications system comprising:

a center facility, said center facility transmitting at predetermined intervals a cycle start frame signal and a plurality of synchronizing frame signals for each start frame signal;

a down-data line connected to said center facility for transmission of first data said start frame signal and said synchronizing frame signal from said center facility to terminal control units and an up-data line connected to said center facility for transmission of second data from said terminal control units to said center facility; and

a plurality of terminal control units coupled to said up-data line and said down-data line, each said terminal control unit comprising a counter, said counter being initialized by said cycle start frame signal received upon said down-data line and said counter counting in response to said synchronizing frame signals received on said down-data line, and means for simultaneously transmitting said second data to said center facility on said up-data line and receiving said first data from said center facility on said down-data line when the count output value from said counter reaches a predetermined value.

4,347,605

MULTIPLEXED TELECOMMUNICATION SYSTEMS

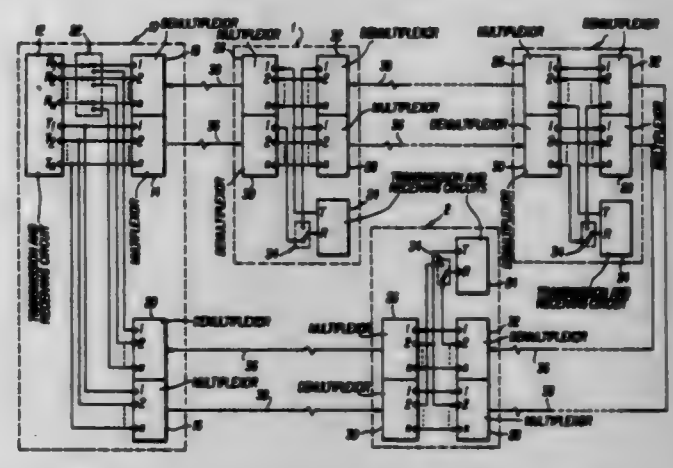
Masao Hashizume, Tokyo, and Akira Kitazawa, Chofu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 11, 1980, Ser. No. 139,400

Claims priority, application Japan, Apr. 13, 1979, 54-45174

Int. Cl.[3] H04J *3/02*

U.S. Cl. 370—88 7 Claims



7. A multiplexed telecommunication system comprising:

a first looped unidirectional transmission line for transmitting signals in a first direction;

a second looped unidirectional transmission line for transmitting signals in a second direction opposite to said first direction; and

a plurality of stations coupled to said first and second transmission lines, each of said stations including,

first means for simultaneously bi-directionally transmitting multiplexed communication signals on both said first and second transmission lines, and

second means for selectively receiving specified signals for each station from either one of the first or the second transmission lines which is not in a fault condition.

4,347,606

METHOD OF FRAME SYNCHRONIZATION OF A DIGITAL TDM COMMUNICATION SYSTEM AND ARRANGEMENT FOR PERFORMING THE METHOD

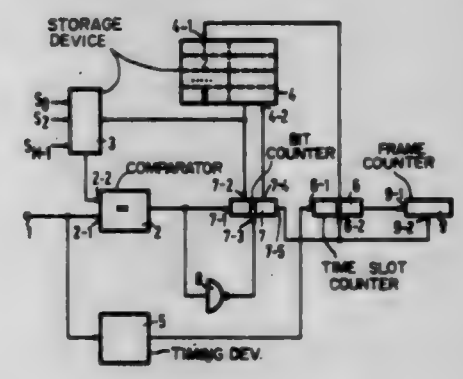
Jacobus Hoogeveen, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,544

Claims priority, application Netherlands, Apr. 26, 1979, 7903284

Int. Cl.[3] H04J *3/06*

U.S. Cl. 370—105 4 Claims



1. A method of frame synchronization of a digital time-division multiplex (TDM) communication system wherein a frame includes a sequence of N consecutive time slots, each slot

containing at least one bit, at least one slot of which comprising at at least one synchronization bit, and wherein M such frames (M>2) comprise a complete synchronization pattern having a numerical order of 0 to M−1, characterized in that the method comprises the following steps:

first step, comparing each incoming bit of a sequence of N consecutive time slots with a bit of the synchronisation pattern, the numerical order of said synchronization pattern bit being initially 0 and subsequently equal to the number of times bit-agreement was detected in respective time slot positions in immediately preceding, consecutive frames;

second step, determining, for each time slot position, whether there is agreement or not;

third step, recording for each time slot position the number of times there was bit agreements in the immediately preceding consecutive frames and in the present frame when bit agreement is detected in the present frame;

fourth step, repeating said first, second and third steps until a number M of consecutive, frame bit-agreements is detected in one time slot position;

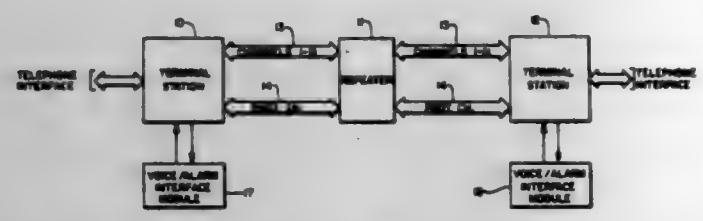
fifth step, designating the bit in the one time slot position, associated with said M bit-agreements as determined in the preceding step, as the synchronization bit.

4,347,607

VOICE ALARM SIGNALLING SYSTEM

Thomas J. Nixon, Gaithersburg, Md., and Harold Iley, Huntsville, Ala., assignors to Harris Corporation, Melbourne, Fla.

Filed May 9, 1980, Ser. No. 148,286
Int. Cl.[3] H04L *5/00*
U.S. Cl. 370—110.1 30 Claims



1. In a multichannel communication network wherein information signals are conveyed among a plurality of subscribers by way of a transceiver station to which said information signals are interfaced and transmitted therefrom over respective ones of a plurality of data conveying channels, a system for carrying out voice and/or alarm communications between said transceiver stations comprising:

first means, disposed at a calling transceiver station, for encoding voice and/or alarm signals applied thereto and causing said encoded voice and/or alarm signals to be asynchronously transmitted over each of said plurality of channels so as to be conveyed thereby in addition to said information signals to a called transceiver station, so that the same encoded voice and/or alarm signal that is transmitted over one of said data conveying channels is also conveyed over every other one of said plurality of channels; and

second means, disposed at said called transceiver station, for decoding the asynchronously transmitted encoded voice and/or alarm signals conveyed over a selected one of said plurality of channels and thereby reconstructing said voice and/or alarm signals.

4,347,608

SELF-CHECKING SYSTEM FOR ELECTRONIC PROCESSING EQUIPMENT

Silvano Appiano, Montafia-Asti; Duccio Di Pino, Pino Torinese-Torina, and Cesare Poggio, Turin, all of Italy, assignors to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Jan. 22, 1980, Ser. No. 114,294
Claims priority, application Italy, Jan. 24, 1979, 67150 A/79
Int. Cl.[3] G06F *11/00*
U.S. Cl. 371—16 8 Claims

1. In a system for the control of a plurality of peripheral units by a processor programmed to exchanged information with said peripheral units,

the combination therewith of a checking unit addressable by said processor during execution of a diagnostic program, said checking unit comprising:

memory means storing a plurality of microprograms each involving the emission of code words in a succession of phases;

timing means responsive to reception of a memory address from said processor for reading out from said memory means to said processor, at a predetermined rate varying for different microprograms, code words pertaining to the successive phases of a microprogram identified by said memory address; and

alarm means triggerable by said processor to indicate a malfunction upon detection of a disparity between code words read out from said memory means and corresponding words simultaneously generated in said processor as part of the latter's diagnostic program;

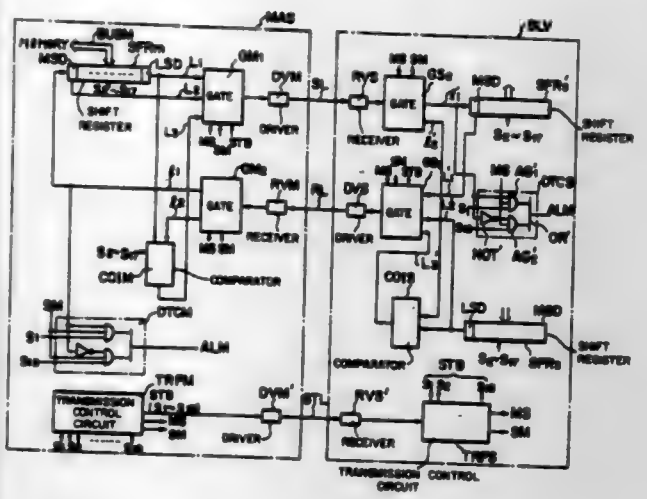
said timing means including a source of stepping pulses of variable cadence, selector means connected to said source for adjusting said cadence under the control of a memory address received from said processor, and a pulse counter connected to said source for advancement by said stepping pulses.

4,347,609

METHOD AND SYSTEM FOR TRANSMISSION OF SERIAL DATA

Hiroomi Fukuyama, Hachioji; Shinichi Isobe, Tachikawa; Mikio Yonekura, Hino, and Minoru Kataoka, Tokyo, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,935
Claims priority, application Japan, Sep. 4, 1979, 54-113253
Int. Cl.[3] G06F *11/08;* H04L *1/14*
U.S. Cl. 371—34 9 Claims



1. A serial data transmission method for transmitting N-bit serial data (where N is a positive number) from data sending means to data receiving means through data transmission lines, comprising the steps of:

(a) sending a start bit from the data sending means to the data receiving means, through a first of the data transmission

lines, the start bit having a predetermined logical value and being sent before the transmission of the N-bit serial data;

(b) detecting, in the receiving means, whether the logical value of the start bit is the predetermined logical value;

(c) sending, from the data sending means to the data receiving means, the N-bit serial data;

(d) sending back, from the data receiving means to the data sending means, the contents of the received bit serial each time one bit of the bit serial is received by the data receiving means;

(e) comparing bit-by-bit, in the data sending means, the bit serial sent to and returned from the data receiving means;

(f) sending, from the data sending means to the data receiving means, the results of the bit-by-bit comparison as an alarm bit after the transmission of the N-bit serial data;

(g) detecting the logical value of the alarm bit on the data receiving means side to determine if there are any transmission errors; and

(h) issuing a first alarm signal if the logical value of the start bit detected in the data receiving means is different from the predetermined logical value.

4,347,610

CONTROL CIRCUIT FOR THE DRIVE CURRENT OF A LASER

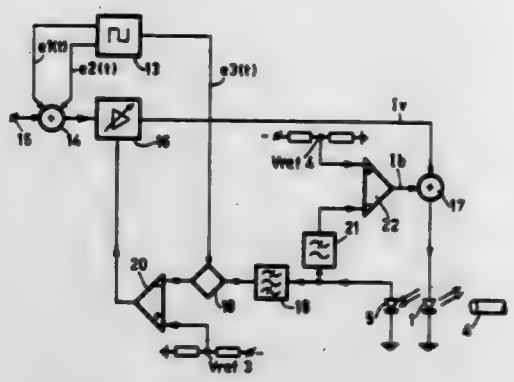
Lambertus J. Meuleman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,289

Claims priority, application Netherlands, Oct. 18, 1979, 7907683

Int. Cl.³ H01S *3/13*

U.S. Cl. 372—29 4 Claims



1. A control circuit for controlling a component of an injection laser drive current which current is formed by a modulation current component and a bias current component, characterized in that said circuit comprises detection means for detecting in a signal derived from the optical output signal of the laser the intermodulation product signal of at least two signals which are present in the modulation current component with substantially constant amplitudes in order to generate a control signal, and means for comparing the control signal with a reference signal for forming an error signal, and control means for controlling the intensity of the said component of the laser drive current in response to the error signal.

4,347,611

LARGE OPTICAL CAVITY (LOC) MESA LASER

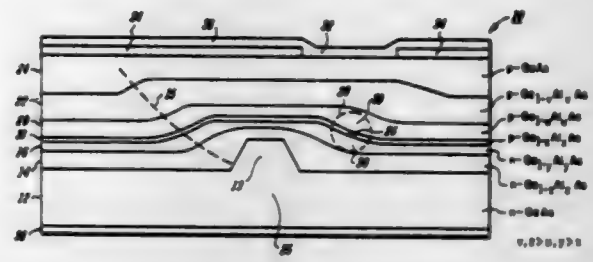
Donald R. Scifres, Los Altos; Robert D. Burnham, Los Altos Hills, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 6, 1980, Ser. No. 204,431

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—45 6 Claims

1. In an injection laser having a plurality of contiguous semiconductor layers deposited on a semiconductor substrate, one of said layers fabricated to have a lower bandgap and higher refractive index than at least adjacent layers thereto to form an active layer for carrier recombination and radiation propagation under lasing conditions, cladding layers comprising said adjacent layers, an elongated mesa on the top surface of said substrate whereby during crystal growth of said semiconductor layers, said active layer and cladding layers will form about said mesa, means associated with said laser to confine current to a portion of said active layer, said current confinement means having a longitudinal extent parallel with the elongated extent of said mesa and being displaced therefrom whereby said radiation propagation and radiation emis-



sion from said laser occurs in and from a region in said active layer at the point of said displacement, the improvement comprising at least one radiation confining layer provided between said active layer and one of said cladding layers, said radiation confining layer having a bandgap and index of refraction intermediate of the bandgap and the indices of refraction of said active layer and said one cladding layer, said radiation confining layer forming a large optical cavity for the propagation of said radiation to focus the beam produced thereby into a narrow index guided radiation filament.

4,347,612

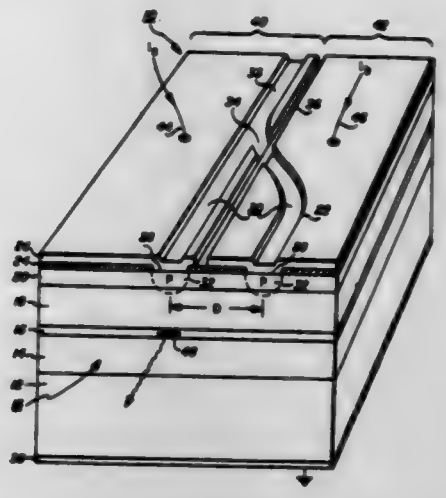
SEMICONDUCTOR INJECTION LASER FOR HIGH SPEED MODULATION

Dan H. Fekete, Palo Alto; Donald R. Scifres, Los Altos, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 25, 1980, Ser. No. 181,263

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—50 6 Claims



1. In a semiconductor injection laser for high speed modulation wherein several layers of semiconductor material are fabricated on a semiconductor substrate, one of said layers forming an active layer wherein radiation is generated upon forward biasing of said laser and upon applying pumping current to said active layer in excess of its lasing threshold whereby an optical emitter region is created having an axis along which the generated radiation propagates characterized by optical injector means on the same subetrate as said laser and having its own optical emitting region non-colinear with the axis of optical emission of said laser but optically coupled thereto at at least one point therealong and, means operatively associated with said optical injector means to cause said injector means to inject radiation into said laser optical emitter

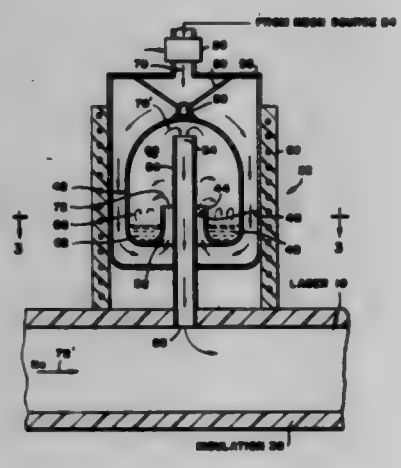
region just prior to or concurrently with the pulsing of said laser to decrease the response time of said laser to pulsed current modulation.

4,347,613

METHOD AND APPARATUS FOR CONVECTION CONTROL OF METALLIC HALIDE VAPOR DENSITY IN A METALLIC HALIDE LASER

Robert A. Froech, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Thomas J. Pivirotto, La Canada, Calif.

Filed Mar. 14, 1980, Ser. No. 130,496
Int. Cl.[3] H01S *3/02, 3/22*
U.S. Cl. 372—56 16 Claims



1. In a metallic halide laser comprised of a tube having a first gas entry port, a gas exit port, and a second gas entry port in said tube on the side of said first gas entry port remote from said exit port, and an apparatus for the control of metallic halide vapor density within said laser between said second entry port and said exit port, the combination comprising:

reservoir means for containing a metallic halide material in either a liquid or solid state form;

heating means for varying the temperature of said metallic halide material to effect a predetermined metallic halide vapor density within said reservoir means;

means for flowing a buffer gas into said reservoir means; and

means for exhausting a mixture of said buffer gas and a portion of said metallic halide vapor from said reservoir means into said laser through said first entry port; and

means for flowing buffer gas into said tube through said second gas entry port, thereby controlling the metallic halide vapor density within said laser.

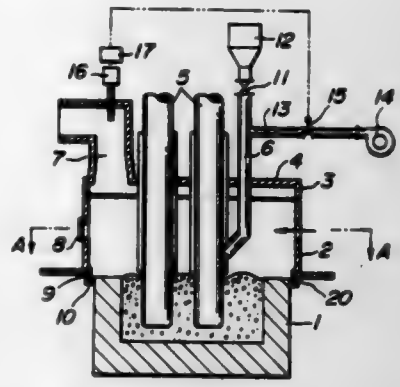
4,347,614

APPARATUS FOR REFINING FERROSILICON

Yoshiyuki Nakamura; Seiichi Matsubara, both of Tokyo; Takashi Matsui, Yokohama; Taiji Kumagai, Ichikawa; Taizo Senga, Waga, and Tsutomu Fukutsu, Yokohama, all of Japan, assignors to Japan Metals & Chemicals Co., Ltd., Tokyo, Japan

Division of Ser. No. 53,480, Jun. 29, 1979, Pat. No. 4,255,184.
This application Mar. 5, 1980, Ser. No. 127,279
Claims priority, application Japan, Jul. 18, 1978, 53-86782; Jul. 18, 1978, 53-86783
Int. Cl.[3] H05B *7/00*
U.S. Cl. 373—77 3 Claims

1. A semi-closed electric furnace for refining ferrosilicon, comprising a furnace shell having an upper rim, a heat-shielding hood having an upright wall and arranged over the shell with its lower end spaced from the upper rim of the shell by a gap, vertically arranged electrodes penetrating the heat-shielding hood, pipes arranged around the electrodes and opening above the level of the charged raw materials for charging raw materials into the region of the furnace near and around the electrodes, at least one openable window in the upright wall for poking charged raw materials, a duct for discharging exhaust gas arranged at an upper portion of the heat-shielding hood, a plurality of pressurized air-introducing pipes arranged around the electrodes, each pipe having a lower mouth opening near the level of charged raw materials around the electrodes for suppressing and burning the rising CO gas evolved at the reaction zone and for passing the burnt gas transversely from the electrodes along the surface of the charged raw materials towards the shell, means for adjusting the gap between the lower end of the upright wall and the upper rim of the shell, means for determining the concentration of oxygen in the exhaust gas, and means for controlling the sum of the volume of the air introduced by way of the air-introducing pipes and the air invaded into the heat-shielding hood from the gap and the poking window and for controlling the ratio of invaded air volume to the sum of introduced air volume plus the invaded air volume depending on the concentration of oxygen in the exhaust gas.

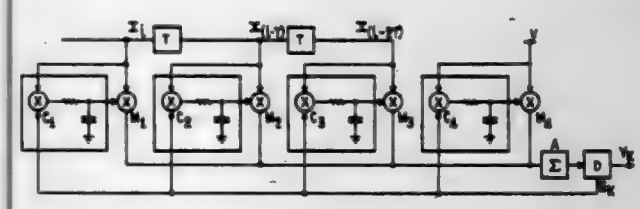


4,347,615

TRANSVERSAL EQUALIZERS

Christopher P. Ash, Caversham, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Sep. 16, 1980, Ser. No. 187,827
Claims priority, application United Kingdom, Sep. 19, 1979, 7932403
Int. Cl.[3] H04L *25/03;* H03K *5/159;* H04B *3/04*
U.S. Cl. 375—14 2 Claims



1. An adaptive equaliser receiving an input signal susceptible to an original d.c. offset, and comprising in combination:

a plurality of stages, including second and subsequent stages which include a tapped delay line providing a time-spaced sample of the input signal applied to a first stage of the plurality of stages, and wherein each stage further includes a correlator and a multiplier, the correlator and the multiplier of the first stage being arranged to receive the input signal, and the correlator and the multiplier of the second and subsequent stages being arranged to receive the respective time-spaced sample of the input signal, each said correlator further receiving an error signal and providing an output signal to its respective said multiplier, said respective multiplier being arranged to provide a further output signal;

accumulator means for receiving and summing the further output signals from the multipliers to provide a summation output signal;

a further stage including a fixed voltage source, a further correlator and a further multiplier, each having an input connected to said fixed voltage source, said further corre-

lator receiving the error signal and provide a further output signal to the further multiplier, said further multiplier providing a multiplier output signal to said accumulator, said accumulator summing said multiplier output signal of said further multiplier with said further output signals of said multipliers; and

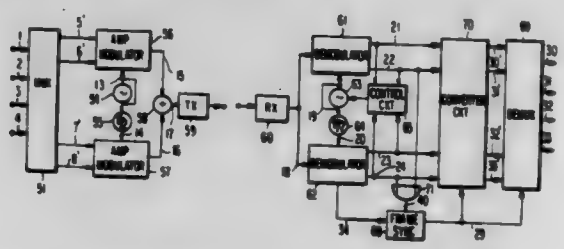
decision circuit means for receiving the summation output signal from said accumulator means and for comparing said summation output signal with a reference signal to provide a decision output signal and said error signal, said error signal being applied to said correlators to correct residual error, and to the further correlator of said further stage to control the gain of the further multiplier, whereby to compensate for the original d.c. offset in the input signal.

4,347,616

DIGITAL MULTI-LEVEL MULTI-PHASE MODULATION COMMUNICATION SYSTEM

Masatoshi Murakami, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,539
Claims priority, application Japan, Jul. 31, 1979, 54-97792
Int. Cl.³ H04L *27/18*
U.S. Cl. 375—20 **5 Claims**



1. A digital multi-phase multi-level modulation communication system having a transmitter section and a receiver section, wherein said transmitter section comprises means for multi-phase multi-level modulating a carrier wave with at least four trains of first digital signals each including a first frame signal of a predetermined pattern and for transmitting the modulated carrier wave, and wherein said receiver section comprises means for performing coherent detection and multi-level decision on said modulated carrier wave to provide second digital signals corresponding to said first digital signals, means responsive to at least one of said second digital signals for establishing frame synchronization and providing frame timing, means responsive to said frame timing for extracting second frame signal corresponding to said first frame signal from said second digital signals, and means responsive to said second frame signal and said second digital signals for changing the trains of said second digital signals and the polarities thereof to reproduce said first digital signals from said second digital signals.

4,347,617

ASYNCHRONOUS TRANSMISSION SYSTEM FOR BINARY-CODED INFORMATION

Kazuo Murano, Tokyo; Kazuo Yamaguchi, Hiratsuka; Norio Murakami, Yokohama, and Toshitaka Tsuda, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 26, 1980, Ser. No. 210,850
Claims priority, application Japan, Nov. 27, 1979, 54/153403; Nov. 30, 1979, 54/155009; Nov. 30, 1979, 54/155010
Int. Cl.³ H03K *5/26*
U.S. Cl. 375—22 **8 Claims**

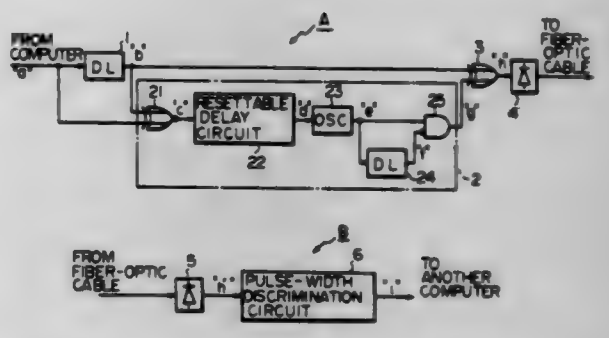
1. An asynchronous transmission system for binary coded information comprising:

first receiving means for receiving a binary-coded signal;

delaying means, operatively connected to said first receiving means, for delaying said binary-coded signal and for generating a delayed binary-coded signal;

refresh pulse generating means, operatively connected to said first receiving means and to said delaying means, for generating refresh pulses after a period of successive data of the same code in said delayed binary-coded signal are received for a predetermined period of time and before a next change in said binary-coded signal is received, the pulse width of said refresh pulses being smaller than a minimum period of data;

combining means, operatively connected to said delaying means and to said refresh pulse generating means, for combining said delayed binary-coded signal with said refresh pulses and for generating a combined signal, the polarity of said refresh pulses being opposite to that of said delayed binary-coded signal;



transmitting means, operatively connected to said combining means, for transmitting said combined signal as a transmitted signal;

second receiving means, operatively connected to said transmitting means, for receiving and passing therethrough said transmitted signal; and

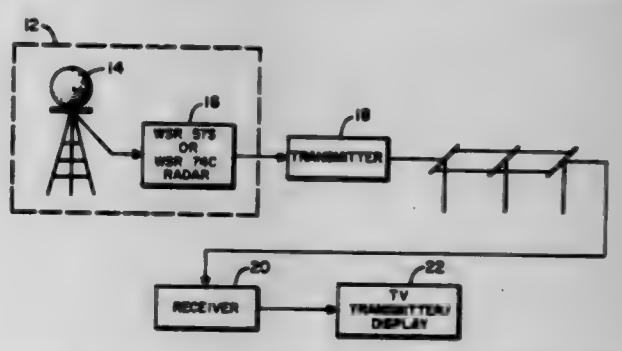
pulse-width discriminating means, operatively connected to said second receiving means, for removing said refresh pulses from said transmitted signal and for generating and transmitting a received signal so that said binary-coded signal is restored.

4,347,618

APPARATUS FOR PROCESSING WEATHER RADAR INFORMATION

Stephen P. Kavouras, 9450 Cedar Ave. South, Bloomington, Minn. 55424; Paul C. Post, Eagan, Minn.; Roderick A. Wells, St. Louis Park, Minn., and Stephen L. Rutkowski, Savage, Minn., assignors to Stephen P. Kavouras, Bloomington, Minn.

Filed Jun. 30, 1980, Ser. No. 164,881
Int. Cl.³ H04B *17/00*; G01S *7/04*
U.S. Cl. 375—37 **14 Claims**



1. A system for relaying weather radar data from a radar apparatus at a transmitting site to a remote receiving site comprising in combination:

(a) transmitter means coupled to receive radar video signals in a polar coordinate format representative of differing levels of precipitation, elevation, azimuth and range from said radar apparatus, said transmitter means including;

i. sensitivity time correction means for modifying said radar video signals representative of levels of precipitation as a function of said radar video signals from said radar apparatus representative of range,

ii. buffering means coupled to said sensitivity time correction means for at least temporarily storing the modified

signals representative of levels of precipitation for each of a plurality of ranges at a given azimuth,

iii. A programmable processor having a central processor unit, and a plurality of memory modules each coupled thereto by a data bus, a control bus and an address bus,

iv. means coupling said buffering means to one of said plurality of memory modules via said data bus for entering the contents of said buffering means into said one of said plurality of memory modules at addressable locations therein,

v. means including said programmable processor for converting the data entered into said one of said memory modules from said buffering means from a polar coordinate format to a rectangular coordinate format and for storing the converted results back in one of said plurality of memory modules,

vi. modulator means coupled to said programmable processor by said data bus, control bus and address bus, said modulator means including means for generating control signals and discrete signals representative of said converted results which are indicative of the levels of precipitation existing at differing ranges and azimuth values,

(b) a communications link adapted to be connected to said modulator means in said transmitter means for receiving said discrete signals indicative of levels of precipitation and said generated control signals; and

(c) receiver means coupled to said communications link for receiving said discrete signals indicative of levels of precipitation and said generated control signals, said receiver means including;

i. demodulation means for re-converting the received discrete signals to digital values indicative of levels of precipitation,

ii. memory means coupled to said demodulation means for storing said digital values into a plurality of range dependent groupings, and

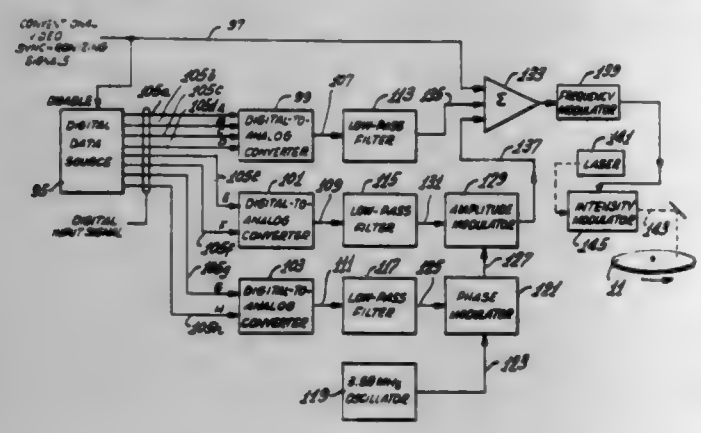
iii. means coupled to the output of said memory means for converting the digital values sequentially read from said receiver's memory means to a composite video signal suitable for controlling video display apparatus.

4,347,619

DIGITAL FORMATTING SYSTEM

Wayne R. Dakin, Huntington Beach, Calif., and Jordan Isailovic, Belgrade, Yugoslavia, assignors to Discovision Associates, Costa Mesa, Calif.

Filed Dec. 19, 1980, Ser. No. 218,584
Int. Cl.[3] H04N 9/36; H04L 25/49
U.S. Cl. 375—37 27 Claims



1. A method of formatting digital information into a format similar to that of a color video signal, comprising steps of:

converting the digital information into a first multi-level signal and a second multi-level signal, each signal having at least two signal states, and each level of said multi-level signals representing a corresponding arrangement of binary states of said digital information;

providing a subcarrier having a prescribed frequency;

modulating the subcarrier in accordance with the second multi-level signal;

providing video synchronization signals; and

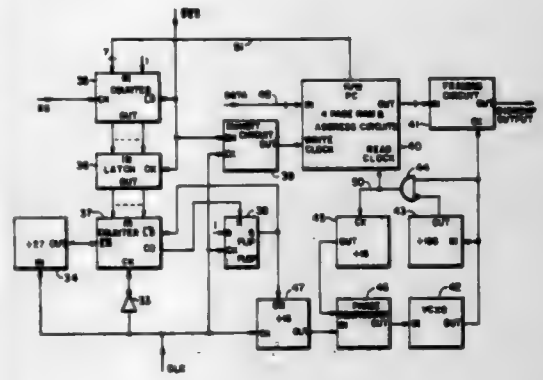
summing together the first multi-level signal, the modulated subcarrier, and the synchronization signals, to produce a composite signal having a format similar to that of a color video signal.

4,347,620

METHOD OF AND APPARATUS FOR REGENERATING A SIGNAL FREQUENCY IN A DIGITAL SIGNAL TRANSMISSION SYSTEM

David H. A. Black, Chelsea; Georges H. Pelletier, Aylmer, and Hing F. Lee, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 16, 1980, Ser. No. 187,815
Int. Cl.[3] H04L 7/00
U.S. Cl. 375—112 8 Claims



1. In a digital signal transmission system in which digital signals at a first frequency are synchronized with positive stuffing to a second, slightly higher, frequency for transmission, a stuffing signal is transmitted to identify the location of each item of stuffed information, and received signals at said second frequency are desynchronized to said first frequency by writing the received signals, but not the stuffed information, into a memory and reading signals from the memory at the first frequency, a method of producing a first signal at the first frequency at a receiver of the system comprising the steps of:

producing from the received signals a second signal at said second frequency;

comparing the relative phases of writing into and reading from the memory in respect of each stuffing signal;

producing a third signal at a frequency which is dependent upon the stuffing frequency modified in dependence upon each comparison of said relative phases;

generating said first signal using an oscillator; and

controlling the oscillation frequency of the oscillator in dependence upon phase differences between the first signal and the second signal reduced in frequency by the frequency of the third signal.

4,347,621

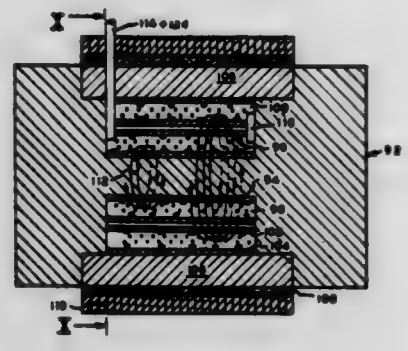
TROCHOIDAL NUCLEAR FUSION REACTOR

William G. Dow, Ann Arbor, Mich., assignor to Environmental Institute of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 845,325, Oct. 25, 1977. This application Jun. 3, 1980, Ser. No. 156,034
The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.
Int. Cl.[3] G21B 1/00
U.S. Cl. 376—139 8 Claims

3. The method of producing and confining a stream of fusionable ions as in claim 1 wherein said electric field has a variable potential thereacross, said stream comprising a plural-

ity of streams of high kinetic energy fusionable ions and space-charge neutralizing electrons, said streams having a different



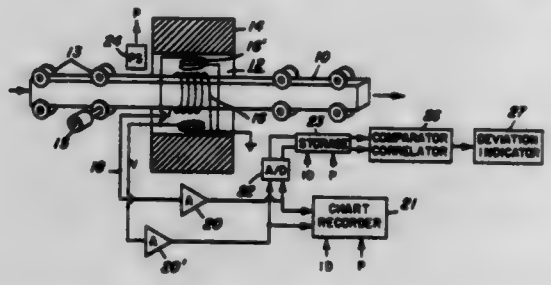
average potentials and introduced into said crossed electric and magnetic fields at distinct equipotential locations.

4,347,622

SIGNATURE SURVEILLANCE OF NUCLEAR FUEL

Henry Bernatowicz, Fremont, Calif., and Frederick C. Schoenig, Jr., Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 7, 1980, Ser. No. 137,592
Int. Cl.[3] G21C *17/00*; G01R *33/16*
U.S. Cl. 376—245 22 Claims



1. A method for surveillance of nuclear fuel material in an elongated fuel material containing container, wherein said fuel material includes distributed ferromagnetic particles, comprising the steps of:

(1) providing apparatus for scanning said container to produce susceptibility change signals indicative of changes in magnetic susceptibility of said material along the length of said container due to said ferromagnetic particles;

(2) performing a first scan along the length of said container at a given time in its life to produce a first susceptibility change signal as a first signature of said fuel material containing container;

(3) recording said first signature;

(4) performing a second scan along the length of said container at a subsequent time in its life to produce a second susceptibility change signal as a second signature of said fuel material containing container; and

(5) comparing said second signature to said first signature whereby similarity of the signatures indicates absence of tampering.

4,347,623

FLASH JET COOLANT PUMPING SYSTEM

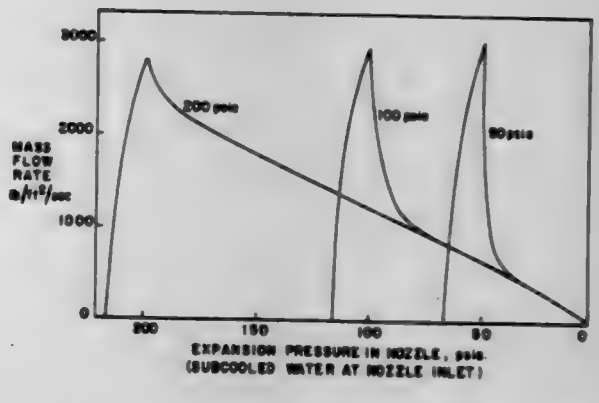
A. O. Winfried Reinsch, 13140 Carousel La., Del Mar, Calif. 92014

Continuation of Ser. No. 920,985, Jun. 30, 1978, which is a continuation-in-part of Ser. No. 684,853, May 10, 1976, abandoned. This application Jul. 29, 1980, Ser. No. 173,416
Int. Cl.[3] G21C *15/18*
U.S. Cl. 376—392 14 Claims

1. A system using the energy of heated water for pumping water into a vessel, such system comprising:

a flash jet pump having a nozzle with converging and diverging sections, said converging section being connected to receive water from the source of saturated water, said converging and diverging sections being sized for, and comprising means for, flashing a portion of said saturated water into steam, in said divergent section of said nozzle and producing a super-sonic two-phase flow wherein the ratio of the nozzle outlet area to the nozzle throat area is in the range of 10:1 to 50:1,

a housing surrounding said flash jet pump,



a source of cooled water that is cooler than said heated water connected to said housing for being drawn into said super-sonic two-phase flow downstream of said divergent section of said nozzle,

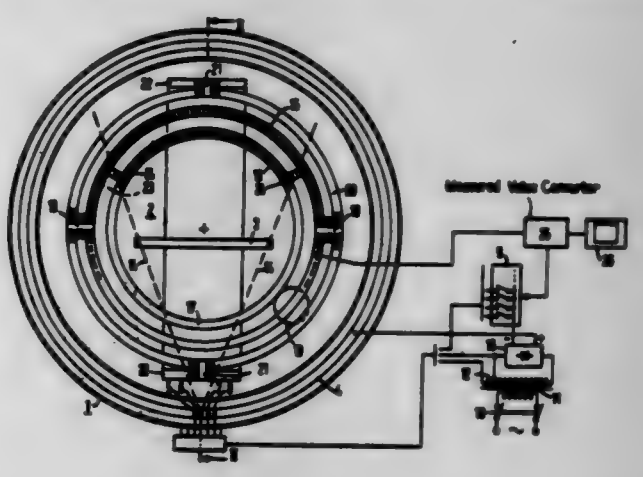
the outlet of said flash jet pump is connected to discharge the combined flow of said saturated water and said cooled water into said vessel.

4,347,624

X-RAY DIAGNOSTIC APPARATUS FOR PRODUCING TRANSVERSE LAYER IMAGES

Edgar Tschunt, Rathsberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 875,385, Feb. 6, 1978, Pat. No. 4,219,733. This application Jan. 28, 1980, Ser. No. 115,751
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714759
Int. Cl.[3] G03B *41/16*
U.S. Cl. 378—10 8 Claims



1. An x-ray diagnostic apparatus for producing transverse layer images of a radiography subject with an x-ray measuring arrangement comprising an x-ray source which produces a fan-shaped x-ray beam penetrating the radiography subject, the cross-sectional extent of the beam, perpendicular to the layer plane, being equal to the layer thickness and, in the layer plane, being of such a magnitude that the entire layer is penetrated with radiation, and comprising also a radiation receiver which detects the intensity of radiation emanating from the layer, said radiation receiver being constructed as a circular ring into which the radiography subject may be inserted and comprising a series of detectors, with means for changing the

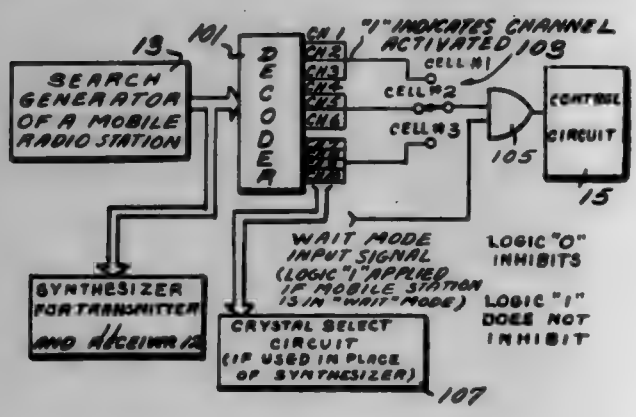
direction of the axis of symmetry of the x-ray beam to effect a scanning operation, and with a measured value converter for the transformation of the signals supplied by the radiation receiver during a scanning operation into a layer image, characterized in that the x-ray source (1) is arranged outside the radiation receiver (15), in that the radiation receiver (15) has gimbal mounting means, and guide means (24) acting on said radiation receiver (15) for swiveling that particular part of the circular ring forming the radiation receiver (15), which is required to detect the x-radiation issuing from the radiography subject, into the x-ray beam (14).

4,347,625

ARRANGEMENT FOR CELLULAR OPERATION OF A REPEATER TRUNKING SYSTEM

James W. Williams, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Jun. 16, 1980, Ser. No. 159,650
Int. Cl.³ H04B 7/14, 1/44, 1/00
U.S. Cl. 455—17 26 Claims



1. In a repeater trunking system wherein a first plurality of radio stations communicate with one another via a first plurality of repeaters, each repeater operating on a different one of a first group of communication channels, said first group of channels constituting a first cell, and wherein a second plurality of radio stations communicate with one another via a second plurality of repeaters, each repeater operating on a different one of a second group of communication channels, said second group constituting a second cell and wherein a radio station originating a call scans potentially available communication channels to locate an unused channel and, upon locating an unused channel, initiates an attempted exchange of signals between the call originating radio station and the repeater operating on the located unused channel, a successful exchange of signals dedicating that repeater and unused channel to the use of the call originating station, an arrangement for the cellular operation of the call originating radio station comprising:

means for generating signals on each of the communication channels of both the first and second groups of communication channels for scanning to find an unused channel within either said first or second group;

means for initiating an attempted exchange of signals on each channel scanned to determine whether that particular communications channel is unused; and

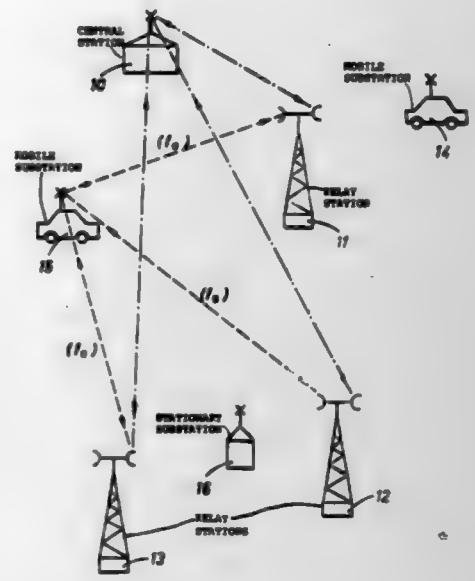
means coupled to said generating means for selecting operation in either said first or second cell, the selection of a cell selectively inhibiting the completion of such an attempted exchange of signals on any channel not within the selected cell, whereby said radio station, operating in a call originate mode, scans only the channels of the selected cell.

4,347,626

RADIO TELEPHONE COMMUNICATION NETWORK

Manfred Wenzel, Berlin, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 106,159
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856019
Int. Cl.³ H04B 7/26
U.S. Cl. 455—18 8 Claims



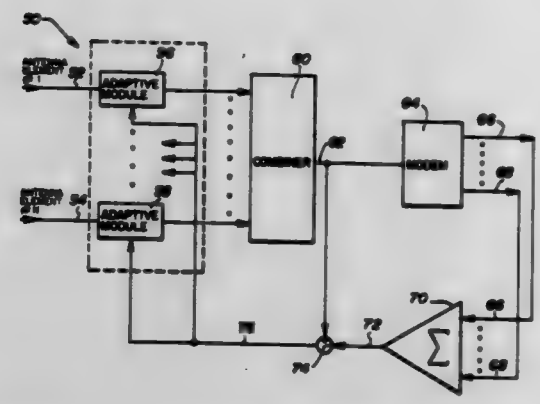
1. In a radio telephone network that includes a central station, at least two relay stations and a plurality of substations, all operating in the same radio channel, each substation being constructed to initiate a radio telephone connection by transmitting a calling signal which is received simultaneously by more than one of the relay stations, each relay station including a respective evaluator constructed to evaluate each received calling signal and means controlled by the evaluator for emitting, to the central station, an identification signal characteristic of the relay station upon recognition of a calling signal as the correct one, and the central station being constructed to transmit a selective calling signal characteristic for only that relay station whose identification signal is received first by the central station to cause the latter relay station to switch through the radio telephone connection, the improvement wherein, in each said relay station, said evaluator serves to detect selective calling signals emitted by the central station and not characteristic for its respective relay station, and each said relay station includes a time storage unit comprising: time delay means connected to said evaluator of its respective relay station to be switched, in response to recognition of a calling signal by said associated evaluator, from a reset state in which it is inactive to a set state in which it triggers emission of an identification signal after a delay period which is characteristic of said relay station and which differs from that of all other relay stations in the network such that a first one of said relay stations has a characteristic delay period which is shorter than that of all other relay stations and a second one of said relay stations has a characteristic delay period which is longer than that of all other relay stations; and means responsive to detection of such selective calling signal by its associated evaluator subsequent to recognition of a calling signal and prior to emission of a resulting identification signal for returning said time delay means to its reset state and preventing emission of that identification signal, and said first one of said relay stations further comprises means for automatically returning its said time delay means to its reset state at the end of a time interval which follows recognition of a calling signal and is longer than the delay period characteristic of said second one of said relay stations in the network.

4,347,627

ADAPTIVE ARRAY PROCESSOR AND PROCESSING METHOD FOR COMMUNICATION SYSTEM

Larry D. Alter, Treasure Island, Fla., assignor to E-Systems, Inc., Dallas, Tex.

Filed Feb. 26, 1979, Ser. No. 15,232
Int. Cl.[3] H04B 7/08
U.S. Cl. 455—136 4 Claims



1. An adaptive array processor for nulling directional interference signals and optimizing gain for received signals for use in a multi-channel communication system having a plurality of antenna elements producing antenna element signals, comprising:

a plurality of adaptive modules, each adaptive module being connected to one of said antenna elements for modifying the magnitude and phase of an antenna element signal to produce a processed signal;

a combiner for combining the processed signals from said adaptive modules to produce a summation signal;

a modem for dividing and processing noise from the summation signal to produce a plurality of channel signals with a reduced overall interference level relative to the summation signal;

summer means for summing the channel signals to produce a composite reference signal having a reduced interference level relative to the summation signal;

subtractor means for subtracting the composite reference signal from the summation signal to produce an error signal which corresponds to the interference level in the summation signal relative to the composite reference signal;

transmission means for applying the error signal to said adaptive modules to perform a control function; and

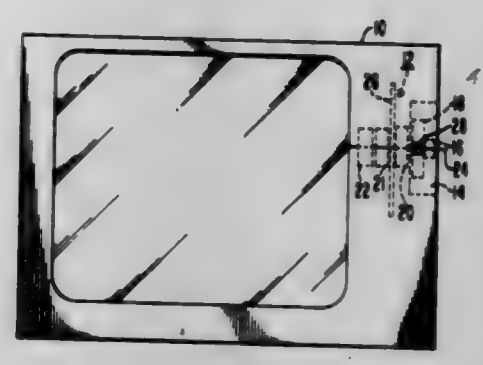
said adaptive modules being responsive to the error signal for modifying the phase and magnitude of the antenna element signals to null interfering signals received on the antenna elements and to enhance the signal-to-interference ratio in the summation signal.

4,347,628

ROTARY TUNING MECHANISM

Walter F. Speer, Speedway City, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 28, 1980, Ser. No. 201,440
Int. Cl.[3] H04B 1/16; H03J 5/04
U.S. Cl. 455—173 10 Claims



1. In a receiver tuning apparatus system including an automatic fine tuning (AFT) circuit, apparatus comprising:

a gear wheel having an axis and a circumferential surface disposed around said axis and a face surface substantially perpendicular to said axis;

a plurality of first teeth extending from said circumferential surface;

a plurality of second teeth extending from said face surface;

a shaft directed along the axis of said gear wheel;

a spacer having at least one surface defining a plane substantially perpendicular to said axis at a predetermined distance from said face surface;

said gear wheel, said first and second teeth, said shaft and said spacer being part of an integral structure of a dielectric material;

a housing having first and second planar sections;

said surface of said spacer engaging said first planar section at said predetermined distance;

at least two detent members symmetrically disposed about said axis and supported by said second planar section to engage said second teeth;

means connecting said first and second planar sections for urging said detent members against ones of said second teeth and for urging said surface of said spacer against said first planar section; and

a switch connected to said AFT circuit and having a contact member located so that said contact member engages said first teeth.

DESIGN PATENTS

GRANTED AUG. 31, 1982

ERRATA

For CLASS	See PATENT NO.
D32–025	265,999

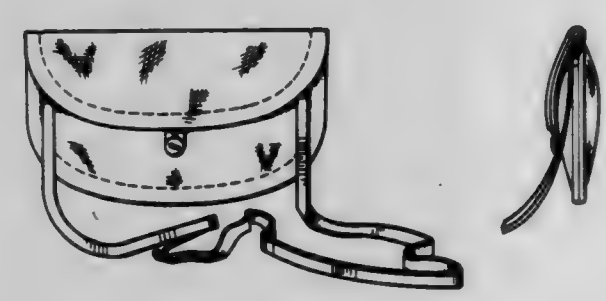
DESIGNS

AUGUST 31, 1982

265,945
SUPPORT FOR EAR PROTECTOR
Bo G. Lönnstedt, Kvarnbergsvagen 23, S-141 45 Huddinge, Sweden
Filed Nov. 27, 1979, Ser. No. 98,299
Claims priority, application Sweden, May 28, 1979, 79-1334
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—232



265,946
EYEGLASS CASE
Lily Lerner, 6 Graystone Rd., Asheville, N.C. 28804
Filed Jan. 15, 1980, Ser. No. 113,028
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—34



265,947
POUCH
Peter Nienstaedt, 9th Floor, Granville House 41C, Granville Rd., Kowloon, Hong Kong
Filed Apr. 16, 1980, Ser. No. 140,860
Claims priority, application United Kingdom, Jan. 14, 1980, 993154
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—52



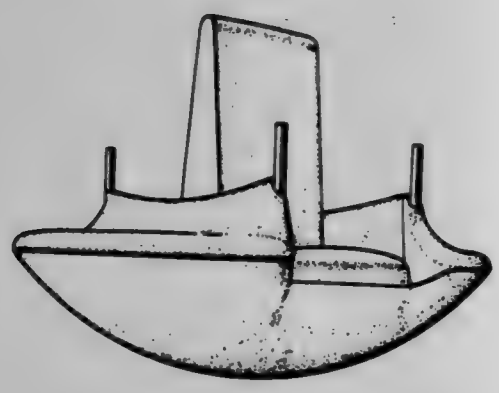
265,948
LUGGAGE
Ted Stark, Montclair, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Oct. 17, 1980, Ser. No. 197,779
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



265,949
GARMENT BAG
Ted Stark, Montclair, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Oct. 17, 1980, Ser. No. 197,781
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



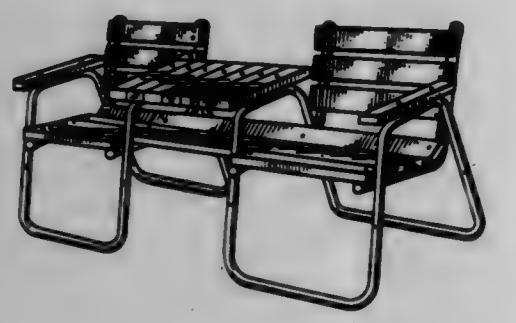
265,950
ROCKING SEAT
Rosemary E. A. Martin, 7 Trentishoe Mansions, 90 Charing Cross Rd., London WC2H OJE, England
Filed Dec. 11, 1979, Ser. No. 102,402
Claims priority, application United Kingdom, Jun. 14, 1979, 79990302
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—10



265,951
STOOL OR SIMILAR ARTICLE
Anthony W. Simpson, 5 South St., St. Johnsbury, Vt. 05819
Filed Dec. 5, 1979, Ser. No. 100,698
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—29



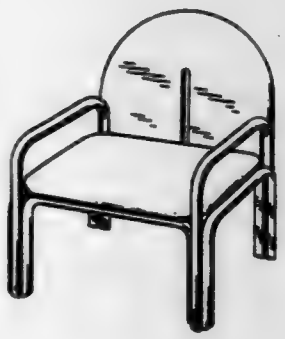
265,952
COMBINED MULTIPLE SEATING UNIT AND TABLE
George Theodore, Strongsville, Ohio, assignor to Cardinal American Corporation, Cleveland, Ohio
Filed Jan. 28, 1980, Ser. No. 115,943
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—45



265,953
CHAIR
Henry Olko, Chicken Valley Rd., Locust Valley, N.Y. 11560
Filed Oct. 18, 1979, Ser. No. 86,078
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



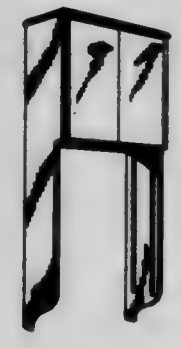
265,954
CHAIR
Gae Aulenti, Milan, Italy, assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 827,609, Aug. 25, 1977. This application Mar. 24, 1980, Ser. No. 133,476
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



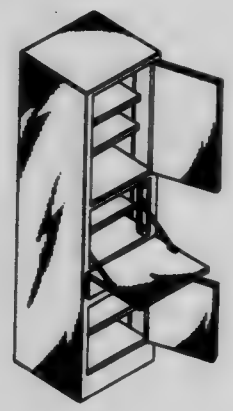
265,955
SEAT
William B. Raftery, Ann Arbor, and Ronald L. Whitwam, Caledonia, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Jun. 11, 1979, Ser. No. 47,098
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



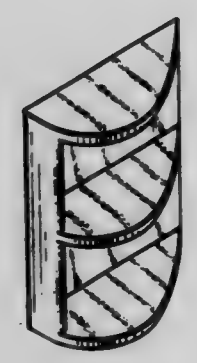
265,956
TOILET/BIDET CABINET
Gregory Wolf, West Reading; Scott Sandman, Fleetwood, and Clark Pearson, Birdsboro, all of Pa., assignors to The Tappan Company, Mansfield, Ohio
Filed Oct. 5, 1979, Ser. No. 82,122
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—127



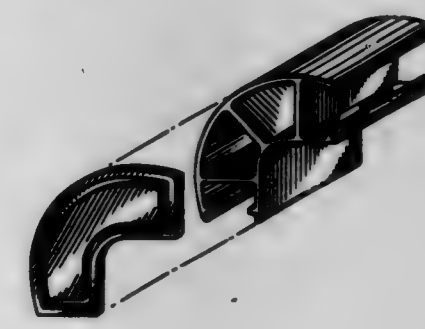
265,957
STORAGE CABINET FOR A BATHROOM
Gregory Wolf, West Reading; Scott Sandman, Fleetwood, and Clark Pearson, Birdsboro, all of Pa., assignors to The Tappan Company, Mansfield, Ohio
Filed Oct. 5, 1979, Ser. No. 82,123
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—170



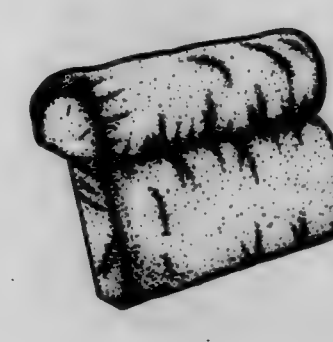
265,958
SHELVING UNIT
Frederick E. Markus, 20 Park Ave., Belmont, Mass. 02178
Filed Sep. 20, 1979, Ser. No. 77,292
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



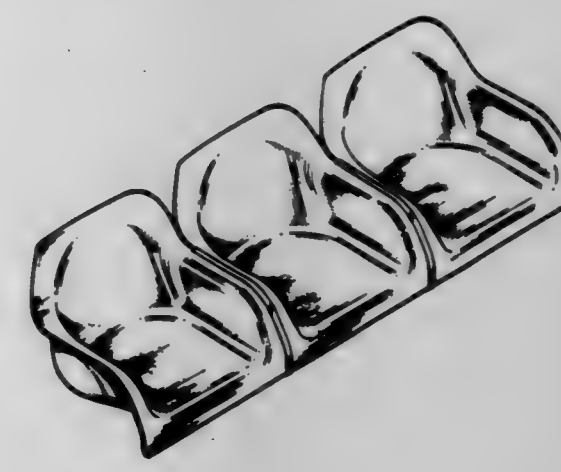
265,959
CORNER CONNECTOR FOR FURNITURE PANELS
Alan E. Blum, Frontenac, and Thomas F. Gambon, St. Louis, both of Mo., assignors to Charleswood Furniture Corp., Wright City, Mo.
Filed Aug. 13, 1979, Ser. No. 65,895
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191



265,960
CHAIR BACK OR SIMILAR ARTICLE
Richard McCarthy, 280 Halcyon Ave., Winston-Salem, N.C.
Filed Oct. 22, 1979, Ser. No. 87,434
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—197



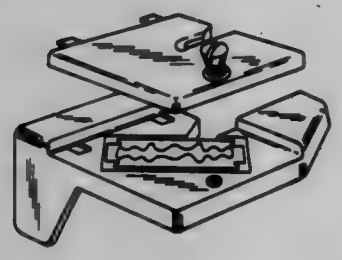
265,961
MULTIPLE SEATING UNIT
Warren H. Snodgrass, 223 Woodland Rd., Kentfield, Calif. 94904
Division of Ser. No. 61,485, Jul. 27, 1979. This application Apr. 24, 1981, Ser. No. 257,121
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197



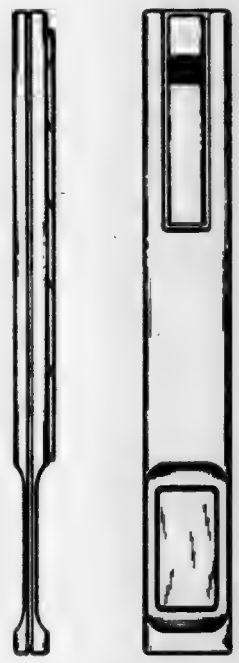
265,962
RATCHET TYPE SOCKET WRENCH
Osamu Izumisawa, No. 24-10, 2 chome asahico, Nerimaku, Tokyo, Japan
Filed Nov. 30, 1979, Ser. No. 99,028
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—25



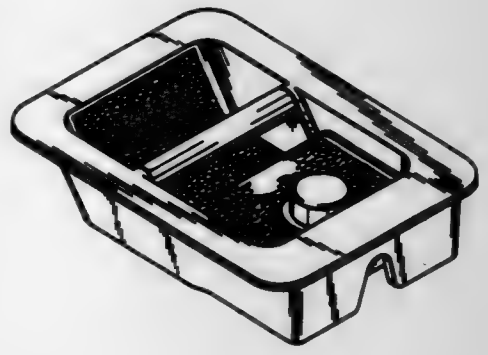
265,963
SLITTER
Harold G. Murdock, 30 Eastfield Dr., Rolling Hills, Calif. 90274, and Laverne B. Moore, 17701 Avalon, Space 288, Carson, Calif. 90746
Filed Feb. 15, 1980, Ser. No. 121,713
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98



265,964
COMBINED HOLDER FOR A MAGNIFIER AND A LETTER-OPENER
Walter Henkels, Holunderweg 1, 5142 Hückelhoven, Fed. Rep. of Germany
Filed Jul. 2, 1980, Ser. No. 165,420
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1980, MR 130
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D8—104



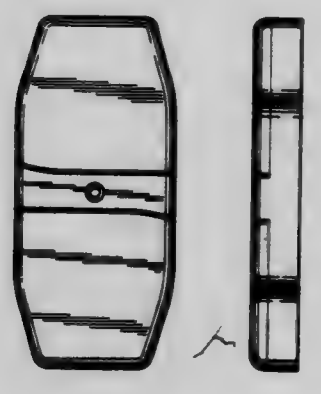
265,965
LATCH HOUSING WITH PUSH BUTTON
Edwin W. Davis, Medina, and Lee S. Weinerman, Cleveland, both of Ohio, assignors to The Eastern Company, Cleveland, Ohio
Filed Mar. 19, 1980, Ser. No. 131,779
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—302



265,966
HOOD FOR PREVENTING OBSERVATION OF A KEYSET
Ingvar Freijd, Linköping, Sweden, assignor to Datasaab AB, Jarfalla, Sweden
Filed Aug. 28, 1979, Ser. No. 70,459
Claims priority, application Sweden, Mar. 2, 1979, 79-0546
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—346



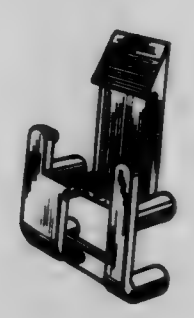
265,967
ELECTRIC OUTLET COVER
Fredric M. Newman, 29040 Apple Blossom La., Farmington Hills, Mich. 48018
Filed May 16, 1980, Ser. No. 150,560
Term of patent 14 years
Int. Cl. D8—*09*; D13—*03*
U.S. Cl. D8—350



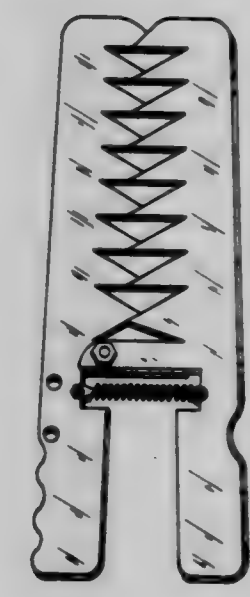
265,968
HATCH FOR A POWER SUPPLY CORD
Paul Bergin, 58471 Fir Rd., South, Mishawaka, Ind. 46544
Filed Feb. 29, 1980, Ser. No. 125,962
Term of patent 14 years
Int. Cl. D13—*04*
U.S. Cl. D8—352



265,969
WIRE MOUNTING CLIP
Juergen R. Koessler, 6271 Nicolle Pl., Richmond, British Columbia, Canada (V7C 4V7)
Filed Mar. 6, 1980, Ser. No. 127,905
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



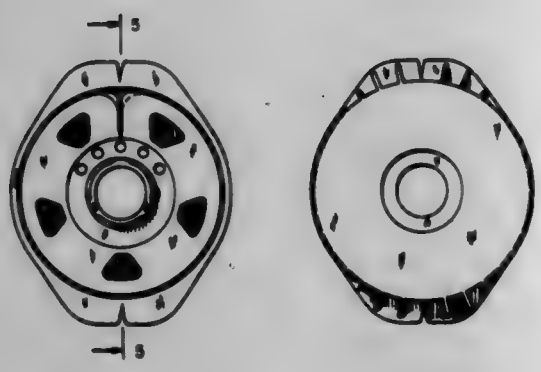
265,970
MOORING DEVICE FOR BOATS
Homer A. Watts, Rte. 5, Box 712, Holly Grove Rd., Thomasville, N.C. 27360
Filed Jan. 18, 1979, Ser. No. 4,384
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—395



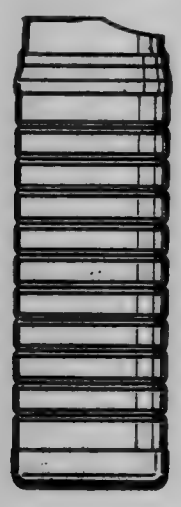
265,971
PERFUME BOTTLE
Albert Kaufmann, Versoy-Geneve, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Mar. 19, 1979, Ser. No. 22,075
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—337



265,972
DISPENSER FOR SURGICAL SUTURES
Seymour Black, West Hartford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Filed Apr. 3, 1980, Ser. No. 136,850
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—339



265,973
DISPENSER FOR CLEANING POWDERS
Jean-Marie Gombert, Mignaloux-Beauvoir, France, assignor to Airwick Industries, Inc., Carlstadt, N.J.
Filed Jan. 14, 1980, Ser. No. 111,565
Claims priority, application Switzerland, Jul. 20, 1979, 110634/79
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—366



265,974
DISPENSER FOR SOLID MATERIAL
Jean-Marie Gombert, Mignaloux-Beauvoir, France, assignor to Airwick Industries, Inc., Carlstadt, N.J.
Filed Jan. 28, 1980, Ser. No. 116,357
Claims priority, application Switzerland, Aug. 7, 1979, 110662/79
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—366



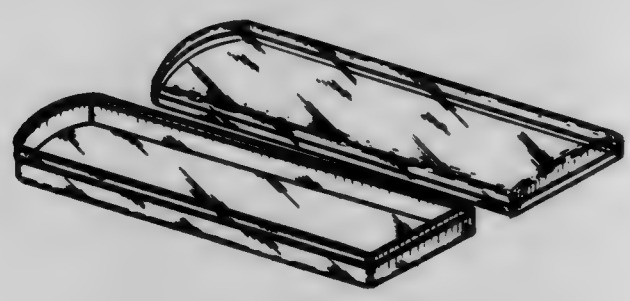
265,975
FLASK
Marcel Vaussanvin, Tournus, France, assignor to Manufacture Metallurgique de Tournus, S.A., Tournus, France
Filed Jul. 25, 1979, Ser. No. 60,372
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—406



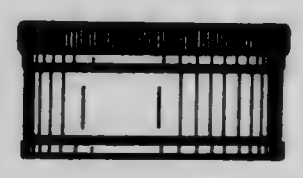
265,976
DISPLAY HOLDER
Barbara Astor, Pelham Manor, and Terry E. Snyder, New York, both of N.Y., assignors to Revlon, Inc., New York, N.Y.
Filed Mar. 12, 1979, Ser. No. 19,444
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415



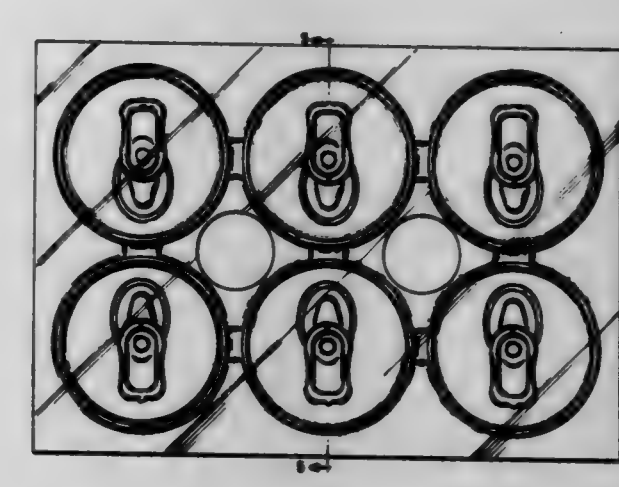
265,977
GLOVE BOX
Murray Strongwater, 822 Moore St., Woodmere, N.Y. 11598
Filed Dec. 26, 1979, Ser. No. 106,701
Term of patent 14 years
Int. Cl. D3—*02;* D9—*03*
U.S. Cl. D9—424



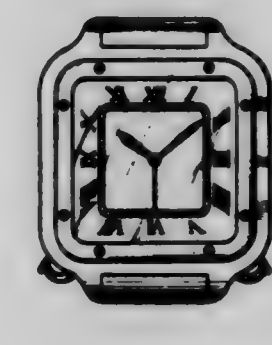
265,978
CAP FOR TELESCOPIC SIGHT TURRET
Fred L. Jennie, Newport Beach, Calif., assignor to Fontaine Industries, Inc., Garden Grove, Calif.
Filed Jan. 15, 1980, Ser. No. 112,370
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—453



265,979
CAN CARRIER
Horst F. W. Arfert, Midlothian, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Mar. 17, 1980, Ser. No. 130,745
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—344



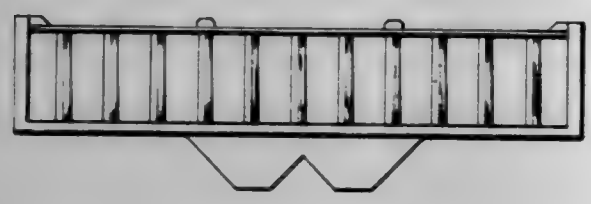
265,980
ALARM CLOCK
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Galen, Switzerland
Filed Apr. 9, 1980, Ser. No. 138,273
Claims priority, application Hague, Oct. 11, 1979, 69435
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—26



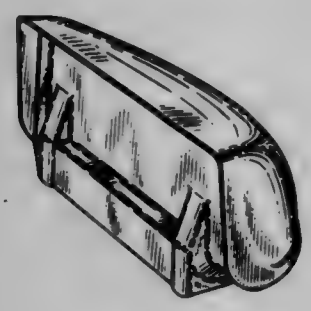
265,981
STERILIZATION INDICATOR
John M. Chiznacky, Pompton Plains, N.J., assignor to Akzona Incorporated, Asheville, N.C.
Filed May 24, 1979, Ser. No. 42,384
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



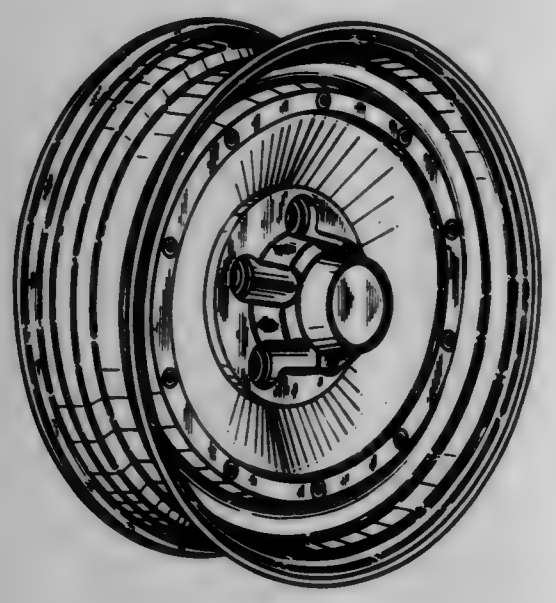
265,982
HOPPER DUMP TRUCK BOX
Wayne Miller, R.R. #1, Petersfield, Manitoba, Canada (R0C 2L0)
Filed Mar. 7, 1980, Ser. No. 128,048
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—15



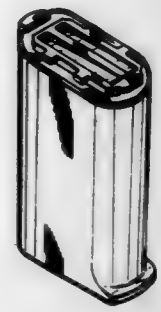
265,983
AERODYNAMIC FAIRING FOR USE ATOP A TRUCK CAB AND THE LIKE
Patrick F. Sullivan, 3645 Glen Oak, Eugene, Oreg. 97405, and Russell R. Wakefield, 5535 Cody, Eugene, Oreg. 97402
Filed Mar. 19, 1981, Ser. No. 245,455
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



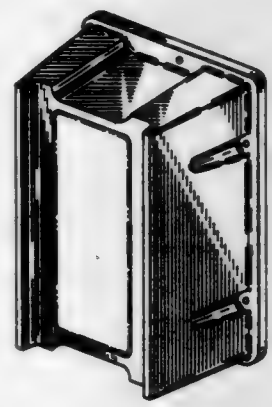
265,984
VEHICLE WHEEL
John A. Main, Plymouth, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.
Filed Jan. 14, 1980, Ser. No. 111,575
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—212



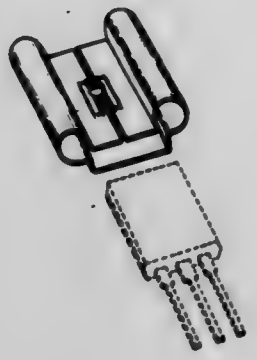
265,985
RECHARGEABLE BATTERY PACK
Lawrence E. House, II, Baltimore, Md., assignor to Black & Decker, Inc., Newark, Del.
Filed Oct. 17, 1979, Ser. No. 86,029
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—4



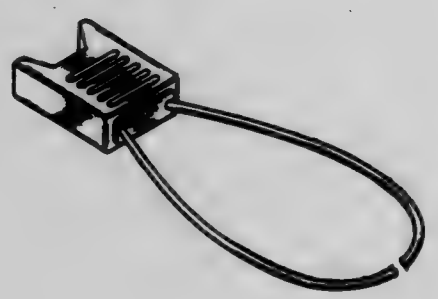
265,986
ELECTRONIC ENCLOSURE COVER
Henry W. Wearsch, Concord Township, Lake County; Ronald A. Marino, Chester Township, Geauga County; Joseph Ludvik, Lyndhurst, and William H. Rowe, Chagrin Falls, all of Ohio, assignor to Reliance Electric Company, Cleveland, Ohio
Filed Jan. 30, 1980, Ser. No. 116,937
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—13



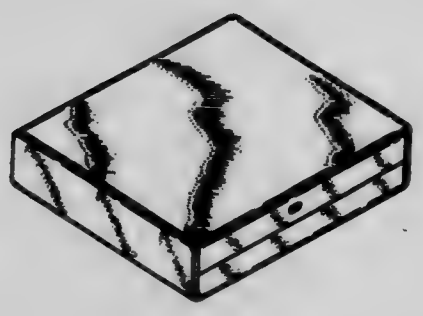
265,987
SELF-HOLDING HEAT SINK FOR ELECTRONIC DEVICES
Alfred F. McCarthy, Belmount, N.H., assignor to Astrid Engineering, Inc., Laconia, N.H.
Filed Feb. 25, 1980, Ser. No. 124,308
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—23



265,988
INLINE FUSE HOLDER
John B. Gordon, 55215 Mayflower Rd., South Bend, Ind. 46628
Filed Apr. 4, 1980, Ser. No. 137,266
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—35

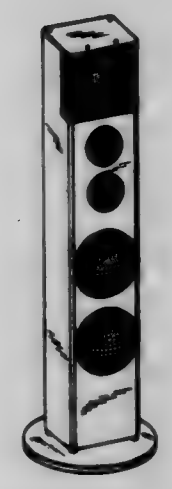


265,989
CONTAINER FOR SMALL ELECTRONIC STRUCTURAL COMPONENTS
Bobby J. Harris, 2954 Sunwood Dr., San Jose, Calif. 95111, and James P. Sayers, 10534 Merriman Rd., Cupertino, Calif. 95014
Filed Dec. 19, 1979, Ser. No. 105,396
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D13—41

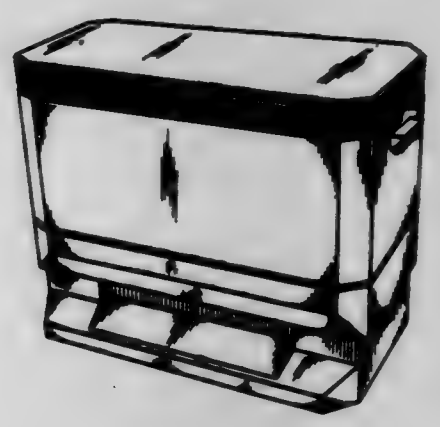


265,990
COLUMNAR LOUDSPEAKER
Peter Hartwein, Koenigstein, and Peter Schneider, Kronberg, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Aug. 22, 1979, Ser. No. 68,713
Term of patent 3½ years
Int. Cl. D14—*01*
U.S. Cl. D14—34

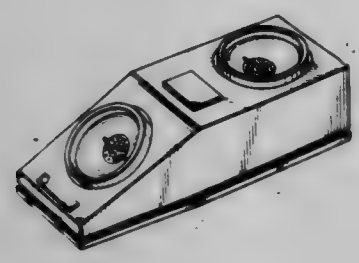




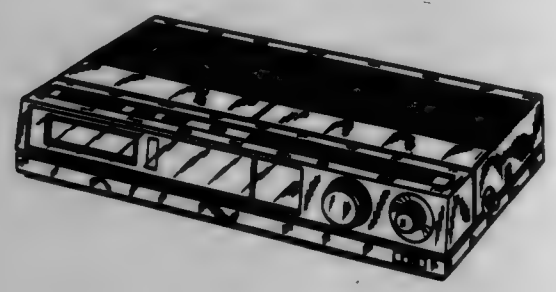
265,991
TRANSMISSION SWITCHING EQUIPMENT CABINET
Peter D. H. Trussler, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Oct. 31, 1979, Ser. No. 89,940
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—52



265,992
ACOUSTIC COUPLER
Takashi Hirata, and Kunio Hirose, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 9, 1979, Ser. No. 82,910
Claims priority, application Japan, Apr. 9, 1979, 54-14364
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—57



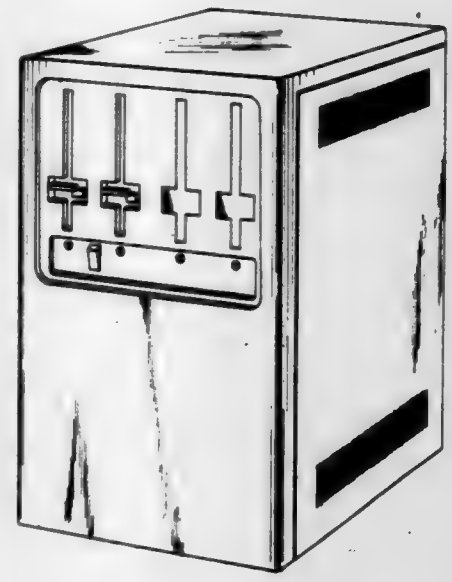
265,993
CLOCK RADIO RECEIVER
Hans T. Meelen, Geldrop, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 25, 1980, Ser. No. 172,316
Claims priority, application United Kingdom, Feb. 1, 1980, 993425
Term of patent 14 years
Int. Cl. D14—*03*; D10—*01*
U.S. Cl. D14—73



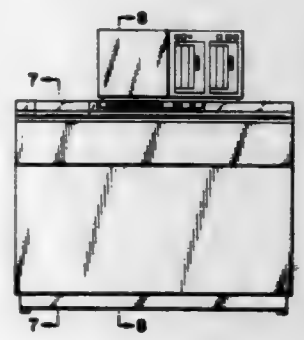
265,994
FACSIMILE RECORDER AND TRANSCEIVER
Masao Yoshihama, Yokohama, and Fumiyo Kojima, Hiratsuka, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 12, 1980, Ser. No. 129,760
Claims priority, application Japan, Sep. 17, 1979, 54-39067
Term of patent 7 years
Int. Cl. D14—*02, 01*
U.S. Cl. D14—94



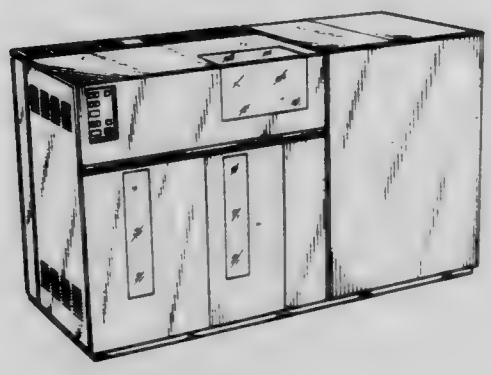
265,995
CONTROL UNIT FOR A DISTRIBUTED DATA SYSTEM
Collan B. Kneale, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 12, 1979, Ser. No. 102,602
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—107



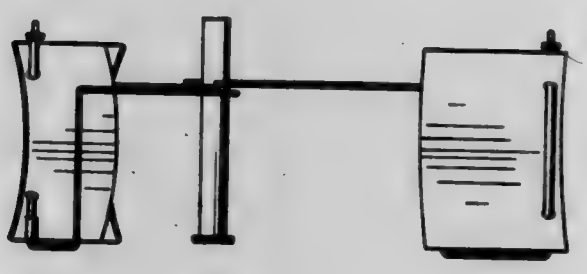
265,996
CONTROLLER FOR COMPUTER PRINTING SYSTEM
Masahiro Kondo, Tokyo, and Yoshinori Sugiura, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 24, 1980, Ser. No. 115,007
Claims priority, application Japan, Jul. 30, 1979, 54-31987
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—107



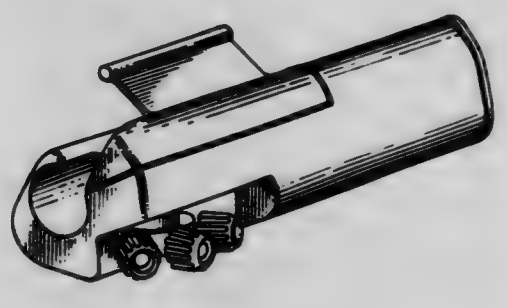
265,997
PRINTER FOR COMPUTER SYSTEM
Masahiro Kando, Tokyo, and Nori Kato, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 24, 1980, Ser. No. 114,891
Claims priority, application Japan, Jul. 30, 1979, 54-31968
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—111



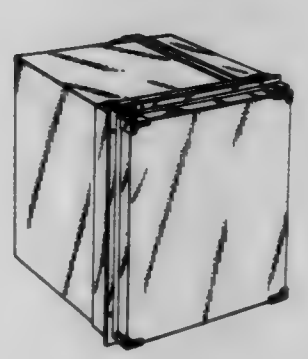
265,998
WIND ROTOR
Joseph A. Wagle, and Joseph H. Wagle, both of 6503 W. 71st St., Indianapolis, Ind. 46278
Filed Apr. 2, 1979, Ser. No. 25,984
Term of patent 14 years
Int. Cl. D15—*1*
U.S. Cl. D15—1



265,999
SPRINKLER FOR AN IRONING PRESS
Olindo Baruffa, Thonex, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed Dec. 4, 1979, Ser. No. 100,229
Claims priority, application Switzerland, Jun. 18, 1979, 110502
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—25

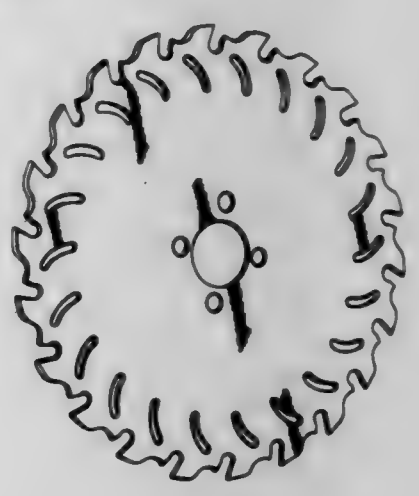


266,000
ELECTRIC REFRIGERATOR
Naoya Kawakami, Yono, Japan, assignor to Sawafuji Electric Co., Ltd., Japan
Filed Feb. 29, 1980, Ser. No. 125,835
Claims priority, application Japan, Sep. 11, 1979, 54-38415
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—88

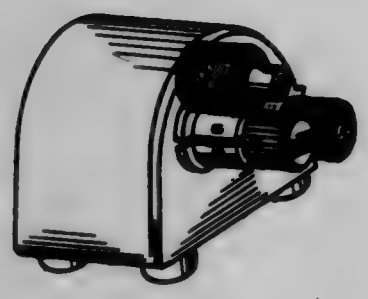




266,001
ROTARY TOOL HOLDER
Zeev Wertheimer, Nahariya, Israel, assignor to Iscar Ltd., Nahariya, Israel
Filed May 22, 1980, Ser. No. 152,427
Claims priority, application Israel, Nov. 30, 1979, 7778; Dec. 19, 1979, 7790
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—140



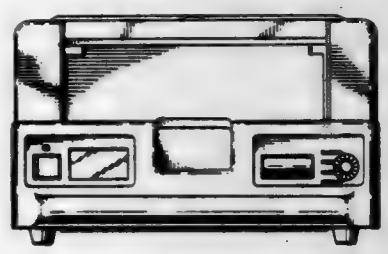
266,002
FILM REPAIR APPARATUS
James S. Stanfield, 1044 19th St., Santa Monica, Calif. 90403, and Daniel E. Rodriguez, 1065 E. Concha St., Altadena, Calif. 91001
Filed Oct. 23, 1979, Ser. No. 87,535
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—41



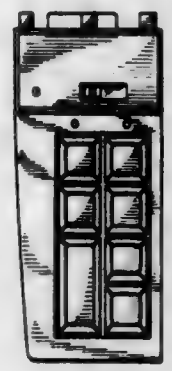
266,003
GUITAR
Thomas G. Lieber, Valley Stream, N.Y., assignor to Spellbinder Inc., New York, N.Y.
Filed Jan. 22, 1980, Ser. No. 114,223
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

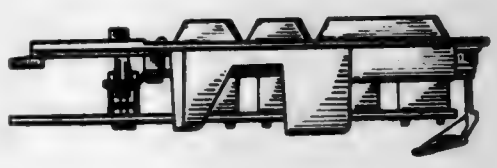


266,004
PAPER SHEET COUNTER
Hiroyuki Onda, and Kenji Ishibashi, both of Tokyo, Japan, assignors to Musashi Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 1, 1979, Ser. No. 44,464
Claims priority, application Japan, Dec. 13, 1978, 53-52316
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—3

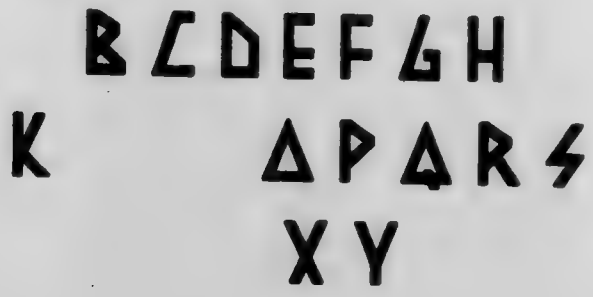


266,005
CALCULATOR KEYBOARD MODULE
Myron Beitler, West Orange, and John N. Johnston, North Plainfield, both of N.J., assignors to Litton Business Systems, Inc., Morris Plains, N.J.
Filed May 18, 1979, Ser. No. 40,133
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7





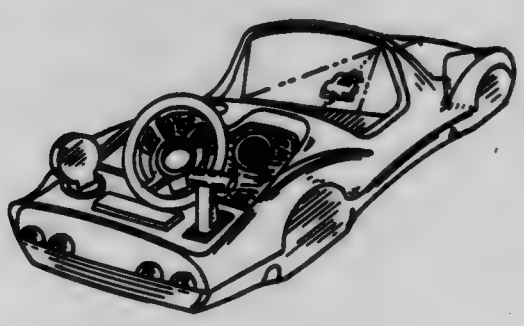
266,006
TYPEFACE
Georgia L. M. Roulo, 2650 N. Lakeview Ave., Chicago, Ill. 60614
Filed Jan. 30, 1980, Ser. No. 116,870
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24



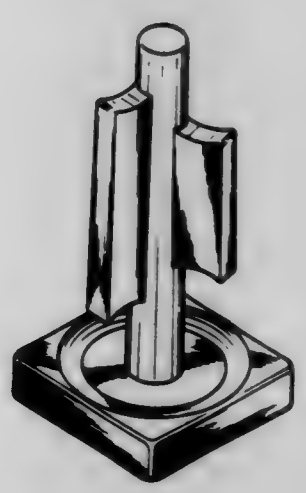
266,007
BALLPOINT PEN
Jerome P. Salinger, Roslyn, N.Y., assignor to Jonathan Bradley Pens, Inc., Long Island City, N.Y.
Filed Jun. 9, 1980, Ser. No. 158,051
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—42



266,008
TOY DRIVING SIMULATOR
Ronald R. Klawitter, Hermann, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.
Filed Jan. 3, 1980, Ser. No. 109,240
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—63



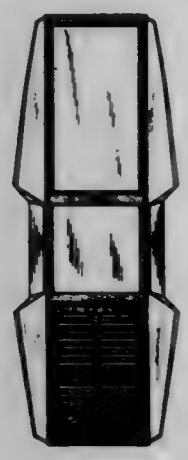
266,009
DESK ACCESSORY FOR HOLDING RUBBER BANDS AND PAPER CLIPS AND THE LIKE
Shirley Carney, 7012 Wakefield, Dallas, Tex. 75231
Filed Sep. 3, 1980, Ser. No. 183,850
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75



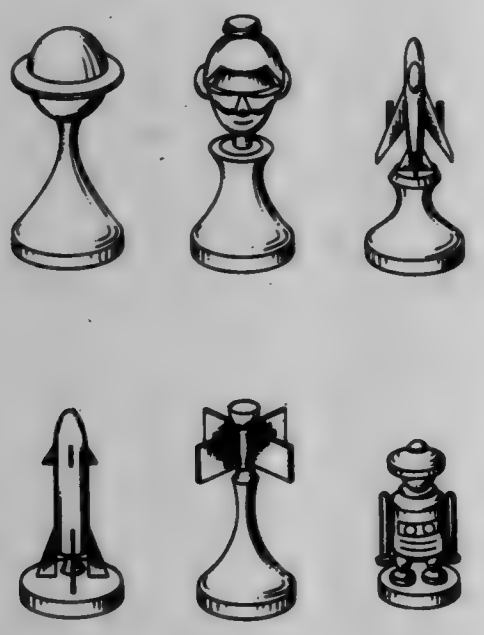
266,010
GOLF GAME TARGET
Donald G. Cofer, Simons Island, Ga., assignor to Cofer and Fitzgerald, Simons Island, Ga.
Filed Dec. 5, 1979, Ser. No. 100,362
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—8



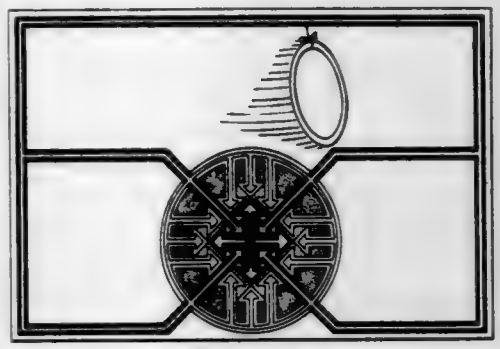
266,011
ELECTRONIC GAME HOUSING
Kathleen A. Holland, Wakefield, Mass., assignor to CPG Products Corp., Beverly, Mass.
Filed Feb. 7, 1980, Ser. No. 119,357
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



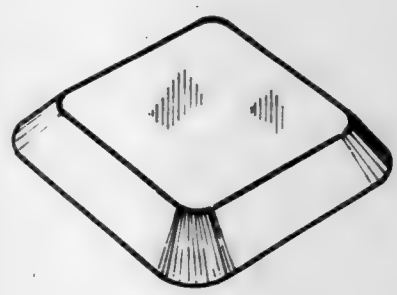
266,012
SET OF CHESS PIECES
Mingder Shyu, 3105 Kipling Pl., Fremont, Calif. 94536
Filed Oct. 4, 1979, Ser. No. 81,630
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—52



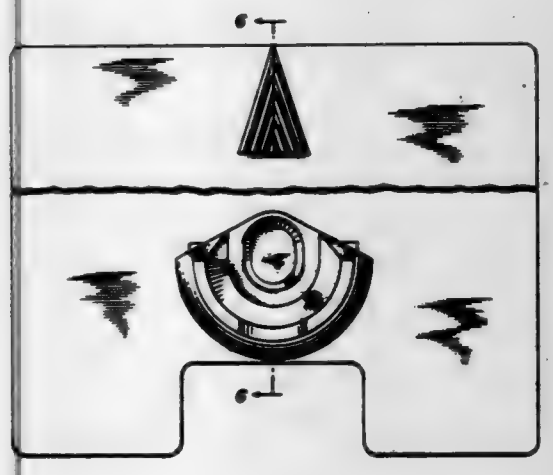
266,013
GAME TARGET
Floyd F. Perry, P. O. Box 217, and Donald L. Farnsworth, 1142 Uplands Dr., both of El Dorado Hills, Calif. 95630
Filed May 8, 1980, Ser. No. 147,744
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—5



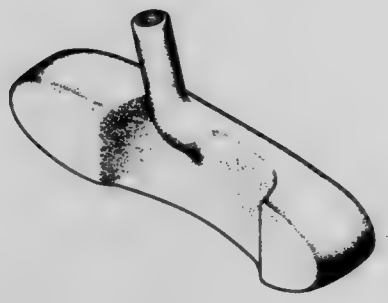
266,014
AERIAL TOY
Dennis D. Wittman, 1319 Eastwood Ave., Akron, Ohio 44305
Filed Apr. 24, 1978, Ser. No. 899,645
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—86



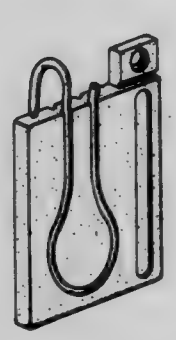
266,015
COMBINED FOOTBALL KICKER'S PRACTICE MAT AND AUXILIARY TEE
John C. Patton, 1460 Tulane, Vidor, Tex. 77662
Filed Jul. 23, 1979, Ser. No. 59,672
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—209



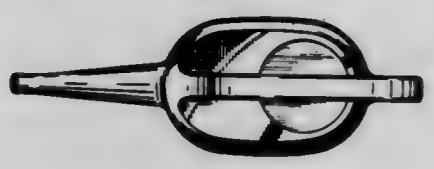
266,016
GOLF PUTTER HEAD
Charles A. Sanna, 909 Farwell Dr., Madison, Wis. 53704
Filed May 12, 1980, Ser. No. 149,293
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217



266,017
WATERING CAN
Harlan F. Kellogg, 1617 Sprucewood, Rockford, Ill. 61107
Filed Feb. 7, 1980, Ser. No. 119,302
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—11

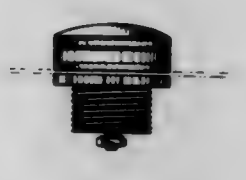


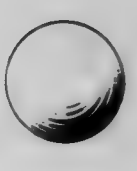
266,018
WATERING CAN
Richard D. Dilyard, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Mar. 26, 1982, Ser. No. 247,719
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—11



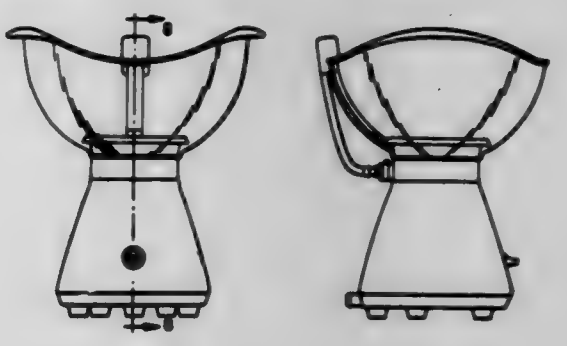


266,019
PROPANE TANK SAFETY PRESSURE VENT VALVE
Raymond R. Crossman, 2796 Wissemann Dr., Sacramento, Calif. 95816
Filed Feb. 19, 1980, Ser. No. 122,595
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

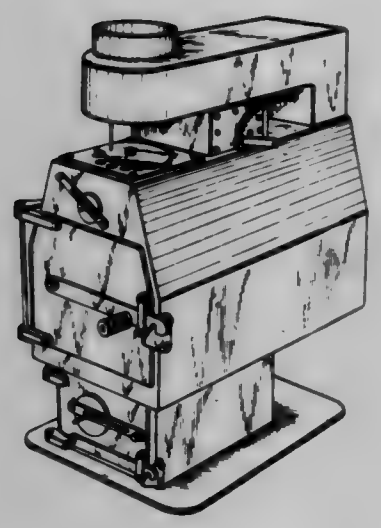




266,020
FACE WASHER
Toshio Mikiya, and Tadahisa Mogaki, both of Tokyo, Japan, assignors to Nikki Co., Ltd., Tokyo, Japan
Filed May 22, 1979, Ser. No. 41,506
Claims priority, application Japan, Nov. 28, 1978, 53-50071
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



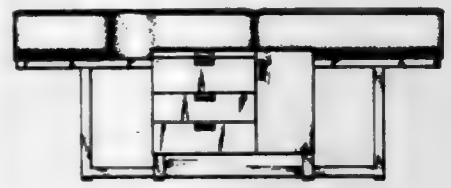
266,021
WOOD BURNING STOVE
Peter Kilham, P.O. Box 98, Pole 27, Mill Rd., Foster, R.I. 02825
Filed Apr. 21, 1980, Ser. No. 142,110
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

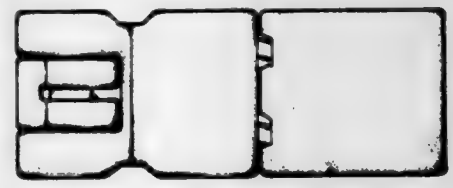


266,022
HEAT EXCHANGER
Thomas R. Carruthers, Glasgow, Scotland, assignor to Fleming Fabrications Limited, Glasgow, Scotland
Filed Feb. 16, 1979, Ser. No. 12,736
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—136

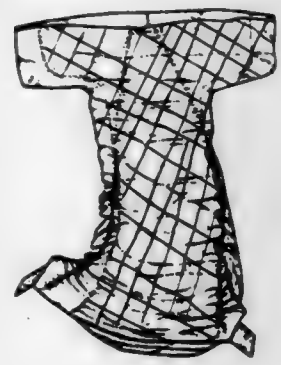


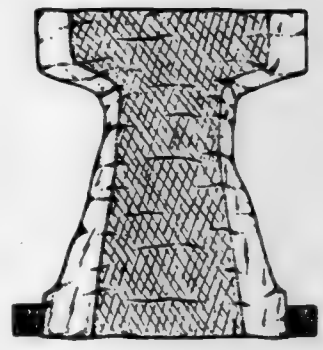
266,023
COMBINED TREATMENT TABLE AND CABINET ASSEMBLY
Walter A. McLachlan, P.O. Box 1783, Gimli, Manitoba, Canada
Filed Jun. 19, 1978, Ser. No. 907,245
Term of patent 14 years
Int. Cl. 24—*01*; 6—*04*
U.S. Cl. D24—3





266,024
DIAPER
Maj I. Ternström, Gothenburg, and Leif R. U. Widlund, Pixbo, both of Sweden, assignors to Molnlycke AB, Gothenburg, Sweden
Filed Dec. 31, 1979, Ser. No. 108,695
Claims priority, application Sweden, Jul. 2, 1979, 791588
Term of patent 14 years
Int. Cl. D24—*04*; D2—*01*
U.S. Cl. D24—50

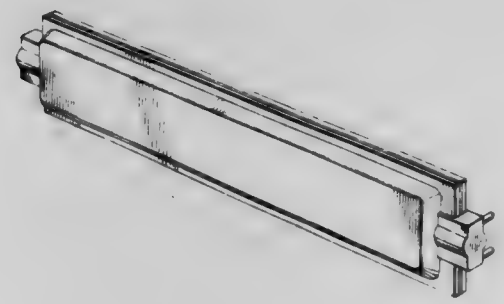




266,025
HIGH-INTENSITY DISCHARGE LAMP
Elmer N. Polhemus, Summit, N.J., and Theodore C. Retzer, Richardson, Tex., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 13, 1979, Ser. No. 93,325
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—2



266,026
FLUORESCENT LAMP
Kazuo Ariga, and Youichiro Akanuma, both of Tokyo, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Dec. 4, 1979, Ser. No. 100,138
Claims priority, application Japan, Feb. 20, 1979, 54-6030
The portion of the term of this patent subsequent to May 1, 1993, has been disclaimed.
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—3



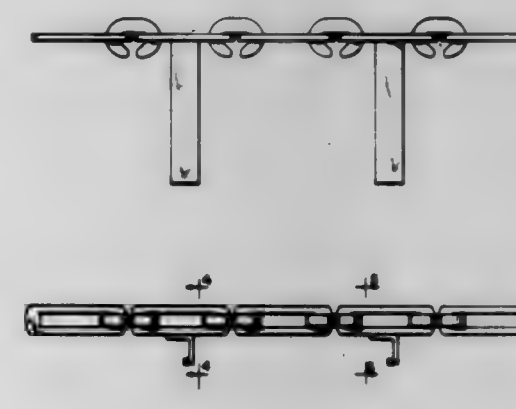
266,027
MOTORCYCLE HEADLIGHT BOOT
Charles A. Saunders, IV, P.O. Box 1246, Columbus, Nebr. 68601
Filed Mar. 12, 1979, Ser. No. 19,885
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D26—139



266,028
ILLUMINATED MIRROR CASE
Raymond Boyd, 2235 Cambridge Rd., Broomall, Pa. 19008
Filed Apr. 30, 1980, Ser. No. 144,977
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—82



266,029
CHAIN FOR WASTE REMOVAL CONVEYOR FOR A BARN
Seizaburo Fujisawa, Suzaka, Japan, assignor to Orion Machinery Co., Ltd., Nagano, Japan
Filed Dec. 4, 1979, Ser. No. 99,992
Claims priority, application Japan, Nov. 13, 1978, 53-47884
Term of patent 14 years
Int. Cl. D08—*99*
U.S. Cl. D34—29



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Latina, Roland N., 4,346,481, Cl. 2-19.000.

Abbott Laboratories: *See—*
Chu, Daniel T., 4,347,355, Cl. 542-420.000.

Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., to Rockwell International Corporation. Monitored muldem with self test of the monitor. 4,347,600, Cl. 370-13.000.

Abdo, Milton K., to Mobil Oil Corporation. Oil recovery process employing a non-ionic glucan in combination with clay flocculant. 4,347,146, Cl. 252-8.55D.

Abe, Kunio; Saito, Masatsugu; Ono, Masao; and Ikedo, Yuji, to Pioneer Electronic Corporation. Disc player apparatus. 4,347,596, Cl. 369-72.000.

Abe, Ryutaro: *See—*
Shiozawa, Shookichi; Nakayama, Tomomi; Haga, Kyosuke; Abe, Ryutaro; and Takeuchi, Yoshiyuki, 4,347,047, Cl. 417-310.000.

Abex Corporation: *See—*
Frank, Earl E., 4,346,751, Cl. 164-368.000.
Frank, Earl E., 4,346,785, Cl. 184-3.00A.

Accursi, James F.: *See—*
Cheong, Alex S.; and Accursi, James F., 4,346,757, Cl. 165-51.000.

ACF Industries, Incorporated: *See—*
Ware, Don A.; Coughlin, Steve A.; and Whatley, Oscie B., 4,347,426, Cl. 219-125.100.

Adachi, Hiromi, to Mitsubishi Denki Kabushiki Kaisha. Discharge lamp lighting device. 4,347,462, Cl. 315-290.000.

Adams, Les: *See—*
Raymor, Roger F.; and Adams, Les, 4,346,815, Cl. 220-306.000.

Adams, Richard E.; and Stafford, Richard W., to Emhart Industries, Inc. Coil assembly. 4,347,493, Cl. 336-192.000.

Aerco International, Inc.: *See—*
Cohen, Kenneth W.; and Mansey, George P., 4,346,759, Cl. 165-163.000.

AFA Consolidated Corporation: *See—*
Wesner, Walter H.; and Wallace, Fred E., 4,346,821, Cl. 222-153.000.

Afonso, Adriano; and Hon, Frank, to Schering Corporation. Process for the synthesis of penems and carbapenems. 4,347,183, Cl. 260-245.20R.

Afzelius, Raoul: *See—*
Knudsen, Niels; Orpana, Veikko; Wisur, Matti; Warulf, Olov; Bergqvist, Hakan; and Afzelius, Raoul, 4,347,401, Cl. 174-14.00R.

Agdanowski, Ronald T.; and Schuessler, Thomas F., to Sherwood Medical Industries Inc. Body fluid collection device with disposable liner. 4,346,711, Cl. 128-276.000.

Agence Nationale de Valorisation de la Recherche: *See—*
Doyen, Joel; and Raisin, Jean-Pierre, 4,346,877, Cl. 271-19.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Potier, Pierre; Langlois, Nicole; Langlois, Yves; Andriamialisoa, Ratremaniaina Z.; and Mangeney, Pierre, 4,347,249, Cl. 424-262.000.

Agency of Industrial Science and Technology: *See—*
Kitaoka, Yoji; Hirato, Mizuho; and Miyatani, Kazuo, 4,347,223, Cl. 422-242.000.
Nagaoka, Kinnosuke; Kato, Tsumugu; and Nozawa, Mitsuru, 4,347,072, Cl. 65-27.000.
Osumi, Yasuaki; Suzuki, Hiroshi; Kato, Akihiko; and Nakane, Masanori, 4,347,082, Cl. 75-171.000.

Agey, Davis M., III. Liquid diverting coin hopper. 4,346,798, Cl. 194-1.00K.

AGFA-Gevaert AG: *See—*
Geisslinger, Wolfgang; Pustka, Karel; Bronner, Hermann; Mullritter, Ludwig; and Vondrowski, Gabriel, 4,346,616, Cl. 192-84.00C.

Agfa-Gevaert Aktiengesellschaft: *See—*
Pohler, Friedmar; Falk, Hans; Muller, Josef; Klein, Hans J.; and Hoffacker, Franz, 4,346,668, Cl. 118-665.000.

Agip Nucleare S.p.A.: *See—*
Bezzi, Giovanni; Pauluzzi, Ego; and Zanardi, Mauro, 4,347,200, Cl. 264-9.000.

Ahlen, Karl G.; and Norberg, Nils A., to S.R.M. Hydromekanik Aktiebolag. Pumps. 4,347,044, Cl. 417-253.000.

Air O Scoop Corporation: *See—*
Chatlos, Richard, 4,346,648, Cl. 98-2.120.

Airhart, Forrest: *See—*
De Haven, Vernet F.; and Airhart, Forrest, 4,346,644, Cl. 89-37.00B.

Aisin Seiki Kabushiki Kaisha: *See—*
Hayashi, Masaharu; and Tsuchikawa, Sunzo, 4,347,038, Cl. 416-132.00A.
Inada, Masami; Ohumi, Takeharu; and Hashimoto, Kenji, 4,346,736, Cl. 137-625.480.

Aisin-Warner K.K.: *See—*
Kawamoto, Mutsumi, 4,346,626, Cl. 74-866.000.
Kawamoto, Mutsumi; and Miki, Nobuaki, 4,346,627, Cl. 74-869.000.

Aizawa, Masahiro, to Ricoh Company, Ltd. Sheet feeding apparatus. 4,346,878, Cl. 271-118.000.

Ajinomoto Company, Incorporated: *See—*
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Yoshimura, Minoru; Takenaka, Yoshihiro; Ikeda, Shigeho; and Yoshii, Hiroe, 4,347,317, Cl. 435-110.000.

Akerberg, Dag, to Telefonaktiebolaget L M Ericsson. Installation for transmitting alarm signals. 4,347,501, Cl. 340-539.000.

Akimune, Yoshio: *See—*
Kimura, Shinji; Takao, Hiroshi; Ambe, Satoshi; and Akimune, Yoshio, 4,347,114, Cl. 204-195.00S.

Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling ignition coil energization. 4,347,570, Cl. 364-431.040.

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Madsen, Rud F.; Nielsen, W. Kofod; and Hansen, Ole, 4,347,061, Cl. 44-51.000.

Akutagawa, Susunu; and Taketomi, Takanao, to Takasago Perfumery Co., Ltd. Process for preparing hydroxycitronellal. 4,347,387, Cl. 568-450.000.

Akzona Incorporated: *See—*
Van Drumpt, Jan D.; and Beijleveld, Wilhelmus M., 4,347,342, Cl. 525-374.000.

Albert-Frankenthal, AG: *See—*
Schwaab, Manfred; Puschnerat, Helmut; and Storz, Kurt, 4,346,656, Cl. 101-181.000.

Albertassi, James H.; Heinze, Walter O.; and Landsman, Aaron, to International Water Saving Systems, Inc. Effluent treatment in a non-polluting toilet system. 4,347,142, Cl. 210-756.000.

Albertson, Orris E.: *See—*
Lombana, Luis A.; Myers, Daniel E.; and Albertson, Orris E., 4,347,156, Cl. 252-420.000.

Albertson, Walter: *See—*
Hass, Robert H.; and Albertson, Walter, 4,347,227, Cl. 423-235.000.

Alco Foodservice Equipment Company: *See—*
Jones, Frank W., 4,346,634, Cl. 83-431.000.

Alexander, Donald J.: *See—*
Sindelar, Robert A.; and Alexander, Donald J., 4,347,016, Cl. 404-95.000.

Alf Hannaford & Co. Pty. Limited: *See—*
Crompton, Alan W., 4,347,260, Cl. 426-483.000.

Alfred Schmidt, GmbH: *See—*
Schmidt, Alfred, 4,346,527, Cl. 37-250.000.

Allain, Ronald J.; and Fong, Dodd W., to Nalco Chemical Company. Process for preparing overbased magnesium sulfonates. 4,347,147, Cl. 252-33.300.

Allegretti & Company: *See—*
Mattson, Charles A.; and Michel, James J., 4,346,526, Cl. 37-259.000.

Allen, John J., Jr.; and Shute, Bruce W., to General Signal Corporation. Wheel slip system. 4,347,569, Cl. 364-426.000.

Allen, Perrin A.: *See—*
Lau, Charles R.; Jensen, William; and Allen, Perrin A., 4,347,280, Cl. 428-304.400.

Allen, Roger E.: *See—*
Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., 4,347,485, Cl. 372-42.000.

Alley, Robert P.; Pohl, Walter J.; and Relyea, John W., to General Electric Company. Two stage control circuit for reversible air cycle heat pump. 4,346,755, Cl. 165-17.000.

Allied Corporation: *See—*
Sweeney, Edmund F., 4,347,512, Cl. 343-6.50R.

Allison, Robert B. Lawn mower. 4,346,547, Cl. 56-13.600.

Alloy Surfaces Company, Inc.: *See—*
Baldi, Alfonso L., 4,347,267, Cl. 427-237.000.

Alps Electric Co., Ltd.: *See—*
Ohta, Shigeo; and Suzuki, Takeo, 4,347,482, Cl. 330-298.000.

Alsthom-Atlantique: *See—*
Condolios, Elie; and Couratin, Pierre, 4,347,140, Cl. 210-710.000.

Altenheiner, Erwin: *See—*
Lehrmund, Willi; and Altenheiner, Erwin, 4,346,960, Cl. 350-76.000.

Alter, Larry D., to E-Systems, Inc. Adaptive array processor and processing method for communication system. 4,347,627, Cl. 455-136.000.

ALZA Corporation: *See—*
Schmitt, Edward E., 4,346,709, Cl. 128-260.000.

Ambe, Satoshi: *See—*
Kimura, Shinji; Takao, Hiroshi; Ambe, Satoshi; and Akimune, Yoshio, 4,347,114, Cl. 204-195.00S.

Amchem Products, Inc.: *See—*
Nishida, Takao; and Hirohata, Takashi, 4,347,172, Cl. 524-319.000.

Amdahl Corporation: *See—*
Price, John E., 4,347,446, Cl. 307-443.000.

American Can Company: *See—*
Knott, Jack E., II, 4,347,337, Cl. 525-60.000.
Odorzynski, Thomas W.; and Knott, Jack E., II, 4,347,332, Cl. 524-169.000.
Rentmeester, Kenneth R., 4,346,814, Cl. 220-75.000.

American Cyanamid Company: *See—*
Joseph, Joseph P.; Dusza, John P.; and Bernstein, Seymour, 4,347,251, Cl. 424-263.000.
Wright, William B., Jr.; Tomcufcik, Andrew S.; and Marsico, Joseph W., Jr., 4,347,248, Cl. 424-251.000.

American Home Products Corporation: *See—*
Bell, Stanley C., 4,347,362, Cl. 546-123.000.

American Safety Equipment Corporation: *See—*
Hollowell, William M.; and Ziv, Avraham, 4,346,858, Cl. 242-107.000.

AMF Incorporated: *See—*
Southall, Kenneth, 4,347,208, Cl. 264-229.000.

AMP Incorporated: *See—*
Bright, Edward J.; Kaplon, David A.; and Scheingold, William S., 4,346,952, Cl. 339-17.0CF.

Ampex Corporation: *See—*
Fechner, Erno H., 4,347,549, Cl. 361-212.000.

Anchor/Darling Industries, Inc.: *See—*
Sulzer, Harry E., 4,346,728, Cl. 137-243.600.

Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Two-stage extruder. 4,347,003, Cl. 366-75.000.

Anderson, Ardis L.; and McConaghy, James R., to Conoco Inc. Upgrading of heavy hydrocarbons. 4,347,120, Cl. 208-50.000.

Anderson, Edward P.; and Curran, Donald G., to Bunnell Plastics, Inc. Process for forming laminated pipe. 4,347,090, Cl. 156-149.000.

Anderson, Gary B., to Antroy Enterprises, Inc. Device for controlling a circuit. 4,347,505, Cl. 340-666.000.

Anderson, George H.: *See—*
Bauman, Richard F.; Taunton, John W.; Anderson, George H.; Trachte, Ken L.; and Hsia, Steve J., 4,347,117, Cl. 208-8.0LE.

Anderson, John M. Balance hydraulic pumping unit. 4,347,049, Cl. 417-403.000.

Anderson, Leif. Device relating to building frameworks. 4,346,540, Cl. 52-274.000.

Anderson, Philip A., to Outboard Marine Corporation. CD Ignition with isolation circuit to provide immediate recharging of the charge capacitor. 4,346,690, Cl. 123-599.000.

Ando, Hiroyuki, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for manufacturing fittings. 4,346,581, Cl. 72-347.000.

Andriamialisoa, Ratremaniaina Z.: *See—*
Potier, Pierre; Langlois, Nicole; Langlois, Yves; Andriamialisoa, Ratremaniaina Z.; and Mangeney, Pierre, 4,347,249, Cl. 424-262.000.

Angehrn, Jorg A.: *See—*
Howells, Anthony P. S.; Viswanathan, Raman; and Angehrn, Jorg A., 4,346,593, Cl. 73-152.000.

Anic, S.p.A.: *See—*
Giusti, Paolo, 4,347,340, Cl. 525-249.000.

Annoni, Eliseo: *See—*
Stefanoni, Romano; and Annoni, Eliseo, 4,346,853, Cl. 242-58.100.

Anstalt Mura: *See—*
Posch, Oskar, 4,347,218, Cl. 422-151.000.

Antroy Enterprises, Inc.: *See—*
Anderson, Gary B., 4,347,505, Cl. 340-666.000.

Aoki, Hiroshi: *See—*
Nakahara, Tsunamitsu; Aoki, Hiroshi; and Kurisu, Toru, 4,346,947, Cl. 308-9.000.

Aoki, Osamu: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Sakaguchi, Shuzabu; Kohzaki, Toshiaki; Aoki, Osamu; Takeda, Norio; and Aoki, Yoshiyuki, 4,347,383, Cl. 564-249.000.

Aoki, Yoshiyuki: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Sakaguchi, Shuzabu; Kohzaki, Toshiaki; Aoki, Osamu; Takeda, Norio; and Aoki, Yoshiyuki, 4,347,383, Cl. 564-249.000.

Aotsuka, Kazuo: *See—*
Mukuda, Mutsuo; Murakami, Masahiro; and Aotsuka, Kazuo, 4,347,421, Cl. 219-60.00A.

Appiano, Silvano; Di Pino, Duccio; and Poggio, Cesare, to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A. Self-checking system for electronic processing equipment. 4,347,608, Cl. 371-16.000.

Applied Engineering, Inc.: *See—*
Merritt, John H., Jr., 4,346,674, Cl. 122-390.000.

Appling, James, to Bendix Corporation, The. Connector for elongated underwater towed array. 4,346,954, Cl. 339-89.00M.

Arai, Sakuji: *See—*
Noritake, Yutaka; Kajitani, Ikuo; Arai, Sakuji; and Muto, Toshiaki, 4,347,219, Cl. 422-180.000.

Arakawa, Fumio, to Pioneer Electronic Corporation. Tone arm assembly. 4,347,598, Cl. 369-254.000.

Arakawa, Tatsumi: *See—*
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; Kimura, Takeo; and Kobayashi, Hidehiko, 4,347,310, Cl. 430-620.000.

Arbed S.A.: *See—*
Goedert, Jean, 4,347,078, Cl. 75-51.000.
Metz, Paul, 4,347,019, Cl. 405-255.000.

Ares, Inc.: *See—*
De Haven, Vernet F.; and Airhart, Forrest, 4,346,644, Cl. 89-37.00B.

Arima, Hideo: *See—*
Tosaki, Hiromi; Arima, Hideo; Mozume, Teruo; Ikegami, Akira; Isogai, Tokio; and Tsubokawa, Ichiro, 4,347,166, Cl. 252-519.000.

Armco Inc.: *See—*
Haselkorn, Michael H.; and Loudermilk, Dannie S., 4,347,085, Cl. 148-6.160.

Armour and Company: *See—*
Orlowski, Gerald J.; and Dugle, Thomas, 4,346,654, Cl. 100-268.000.

Armstrong World Industries: *See—*
McLaughlin, Albert J.; and Paddison, Gary W., 4,346,599, Cl. 73-597.000.

Arnold, Lee. Fluid energy converting method and apparatus. 4,347,036, Cl. 416-1.000.

Arpin, John. Penetrating compositions for wet removal of friable insulation materials. 4,347,150, Cl. 252-135.000.

Asada, Kikuo, to Usui Kokusai Sangyo Kabushiki Kaisha. Composite metal tubing. 4,346,739, Cl. 138-143.000.

Asahi-Dow Limited: *See—*
Iwami, Isamu; Kimura, Shingo; and Iwasa, Toshio, 4,347,326, Cl. 501-39.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; Kimura, Takeo; and Kobayashi, Hidehiko, 4,347,310, Cl. 430-620.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Komoto, Shinsuke; and Sekiguchi, Tetsuo, 4,346,967, Cl. 350-430.000.

Asano, Hiroaki; Ota, Hiroshi; and Yamakage, Kenji, to Toyoda Koki Kabushiki Kaisha. Cam grinding machine. 4,346,535, Cl. 51-101.00R.

Asano, Masaya; Mori, Yoichi; and Takayama, Yoshiaki, to Toray Industries, Inc. Dry planographic printing plate with organic acid additive. 4,347,303, Cl. 430-272.000.

ASEA Aktiebolag: *See—*
Ullin, Ulf, 4,347,475, Cl. 323-303.000.

Ash, Christopher P., to Plessey Overseas Limited. Transversal equalizers. 4,347,615, Cl. 375-14.000.

Ashland Oil, Inc.: *See—*
Myers, George D.; and Busch, Lloyd E., 4,347,122, Cl. 208-118.000.

Atkinson, Cecil G. Attachment for a harvester for picking up downed corn stalks. 4,346,548, Cl. 56-119.000.

Atlantic Richfield Company: *See—*
Schelhas, Peter; and Schlott, Walter, 4,347,026, Cl. 411-299.000.

Aubourg, Patrick F.; and Propster, Mark A., to Owens-Corning Fiberglas Corporation. Method of producing glass from agglomerates which include organic coated scrap glass. 4,347,073, Cl. 65-28.000.

Audeh, Costandi A.; and Greco, Saverio G., to Mobil Oil Corporation. Method for treating alkaline effluents resulting from petroleum processing. 4,347,225, Cl. 423-207.000.

Audeh, Costandi A.; and Greco, Saverio G., to Mobil Oil Corporation. Method for treating sulfur-containing effluents resulting from petroleum processing. 4,347,226, Cl. 423-207.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Bauder, Armin, 4,346,687, Cl. 123-454.000.

Autologic, S.A.: *See—*
Moyroud, Louis M., 4,346,969, Cl. 354-7.000.

Automated Energy Systems, Inc.: *See—*
Griffin, William T., 4,346,621, Cl. 74-665.00G.

Automatic Pipe Racker, Inc.: *See—*
Dugan, Charles D., 4,347,028, Cl. 414-22.000.

Automotive Products Limited: *See—*
Parsons, David, 4,346,573, Cl. 70-264.000.

Ayukawa, Yukitada: *See—*
Ueno, Hitoshi; Yazaki, Shirokazu; and Ayukawa, Yukitada, 4,346,950, Cl. 312-138.00R.

B. F. Goodrich Company, The: *See—*
Lai, John T., 4,347,379, Cl. 562-495.000.
Landsness, Clifford A.; and Buehrle, Thomas M., 4,347,477, Cl. 324-54.000.
Martindale, Troy E., 4,346,506, Cl. 29-239.000.

Badke, Frank C. Putting golf ball. 4,346,898, Cl. 273-232.000.

Baehr, Burghard: *See—*
Gemma, Mario; and Baehr, Burghard, 4,346,564, Cl. 62-140.000.

Bagoy, John P.; and Riendl, Joseph A. Traction device for vehicles. 4,346,748, Cl. 152-222.000.

Bahl, Surinder K.; and Schutrum, Walter L., to Mead Corporation, The. Laminated metal charge plate. 4,347,522, Cl. 346-75.000.

Bailey, August V.; Boudreaux, Gordon J.; and Sumrell, Gene, to United States of America, Agriculture. Antimicrobial glycolic acid derivatives. 4,347,378, Cl. 560-105.000.

Bailey, John M., to Caterpillar Tractor Co. Method for flattening corrugated heat exchanger plates. 4,346,582, Cl. 72-379.000.

Baird, William C., Jr.: *See—*
Mauldin, Charles H.; and Baird, William C., Jr., 4,347,123, Cl. 208-136.000.

Baker Perkins Holdings Ltd.: *See—*
Bennett, John D.; Holmes, Brian; and Morton, David C., 4,346,800, Cl. 198-412.000.

Baker, Rees T. K.: *See—*
Sherwood, Rexford D.; Baker, Rees T. K.; Derouane, Eric G.; and Pieters, Wim J., 4,347,063, Cl. 48-197.00R.

Baker, Richard H., to Exxon Research and Engineering Co. Floating hybrid switch. 4,347,445, Cl. 307-255.000.

Baker, Robert J.: *See—*
Smith, Verity C.; Baker, Robert J.; Barrow, Wyile W., Jr.; and Doane, H. Daniel, 4,346,923, Cl. 285-340.000.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Diffusion coating through restrictions. 4,347,267, Cl. 427-237.000.

Bambozzi, Bruno. Variable three-phase inductor. 4,347,489, Cl. 336-10.000.

Bandoh, Kazuo. Process and apparatus for molding plastics. 4,347,211, Cl. 264-297.000.

Banich, John N., Sr., to Continental Group, Inc., The. Plastic closure with reinforced central panel. 4,346,812, Cl. 215-352.000.

Banos, Jean; Cantagrel, Jean-Claude; Cahuzac, Georges; and Darrieux, Jean-Louis, to Societe Nationale Industrielle et Aerospatiale. Three-dimensional woven articles. 4,346,741, Cl. 139-387.00R.

Barlow, Gordon A.; and Krutsch, John R., to Gordon Barlow Design. Board game with path creating tiles for vehicle. 4,346,889, Cl. 273-1.0GA.

Barnscheidt, Wolfgang, to Feldmuhle Aktiengesellschaft; and E. & M. Lamort S.A. Flotation apparatus for de-inking pulp suspensions. 4,347,128, Cl. 209-170.000.

Baron, Gerhard: *See—*
Reh, Lothar; Hirsch, Martin; Baron, Gerhard; Blaum, Eberhard; and Hafke, Carl, 4,347,064, Cl. 48-197.00R.

Barrow, Wyile W., Jr.: *See—*
Smith, Verity C.; Baker, Robert J.; Barrow, Wyile W., Jr.; and Doane, H. Daniel, 4,346,923, Cl. 285-340.000.

Bartl, Herbert; and Schuster, Klaus, to Bayer Aktiengesellschaft. Process for the production of ethylene graft copolymers containing anhydride or carboxyl groups. 4,347,341, Cl. 525-267.000.

Bartoli, Filbert J.: *See—*
Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., 4,347,485, Cl. 372-42.000.

Barwick, Elvin F.: *See—*
Long, Z. Vance; and Barwick, Elvin F., 4,346,843, Cl. 239-199.000.

BASF Aktiengesellschaft: *See—*
Gramlich, Walter; Hoffmann, Werner; Hupfer, Leopold; Meissner, Bernd; and Paetsch, Juergen, 4,347,388, Cl. 568-840.000.
Hauck, Karl; Fehrenbach, Hubert; Mayer, Dieter; Wagner, Herbert; and Zwintzscher, Kurt, 4,347,091, Cl. 156-217.000.
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; and Hoffmann, Werner, 4,347,537, Cl. 360-132.000.

BASF Wyandotte Corporation: *See—*
Demou, John G.; Pray, Edward R.; and McBrayer, Robert L., 4,347,330, Cl. 521-110.000.

Basiulis, Algerd: *See—*
Taylor, Peter F.; Tuchyner, Harold J.; Basiulis, Algerd; and Lamp, Thomas R., 4,346,643, Cl. 89-14.100.

Bass, Edmund P.; and Sharpee, Richard L., to Norden Laboratories, Inc. Inactivated rabies vaccine for veterinary use. 4,347,239, Cl. 424-89.000.

Batdorf, Vernon H., to H. B. Fuller Company. Curable aqueous silicate composition, uses thereof, and coatings or layers made therefrom. 4,347,285, Cl. 428-332.000.

Batemou, Robert F.: *See—*
Cho, Kazunobu; Beauchamp, Roger P.; and Batemou, Robert F., 4,346,813, Cl. 220-22.000.

Battigelli, Jean A.: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,347,070, Cl. 65-9.000.

Bauder, Armin, to Audi NSU Auto Union Aktiengesellschaft. Fuel injection systems. 4,346,687, Cl. 123-454.000.

Baum, Kurt; Bedford, Clifford D.; and Hunadi, Ronald O., to Fluorchem Inc. Method of making and polymerizing perfluoroalkylene acetylene compounds. 4,347,376, Cl. 556-466.000.

Bauman, Richard F.; Taunton, John W.; Anderson, George H.; Trachte, Ken L.; and Hsia, Steve J., to Exxon Research & Engineering Co. Donor solvent coal liquefaction with bottoms recycle at elevated pressure. 4,347,117, Cl. 208-8.0LE.

Bauman, William C.: *See—*
Lee, John M.; and Bauman, William C., 4,347,327, Cl. 521-28.000.

Baumann, David L.; and Meismer, Richard A., to Caterpillar Tractor Co. Reboring fixture and method. 4,346,508, Cl. 29-402.180.

Baumann, Otto S.: *See—*
Jeromin, Lothar S.; Geddes, Glenn F.; Baumann, Otto S.; and Santoro, Joseph F., 4,346,983, Cl. 355-3.00R.

Baxter Travenol Laboratories, Inc.: *See—*
Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., 4,346,703, Cl. 128-213.00A.
Kulle, Lee K., 4,346,704, Cl. 128-214.00R.
Pekkarinen, Michael O.; and Shim, Norm, 4,346,705, Cl. 128-214.00F.

Bayen, Jean; and Scemama, Patrick, to Pipeline Service. Method of drying pipelines and putting gas thereinto. 4,346,726, Cl. 137-15.000.

Bayer Aktiengesellschaft: *See—*
Bartl, Herbert; and Schuster, Klaus, 4,347,341, Cl. 525-267.000.
Dorlars, Alfons, 4,347,357, Cl. 542-462.000.

Bayerische Motoren Werke: *See—*
Mader, Reinhard, 4,346,682, Cl. 123-179.00G.

Bayerische Motoren Werke A.G.: *See—*
Weishaupt, Walter; and Fournell, Hans-Dieter, 4,347,545, Cl. 361-172.000.

BBC Brown, Boveri & Company Limited: *See—*
Zumstein, Bruno, 4,346,559, Cl. 60-606.000.

Beall, Glenn L.; and Noonan, Robert P., to Miles Laboratories, Inc. Gas generating apparatus for anaerobic atmosphere. 4,347,222, Cl. 422-211.000.

Beaney, Derek N.: *See—*
Russell, Leonard V.; and Beaney, Derek N., 4,346,896, Cl. 273-195.00A.

Beatrice Foods Co., Div. of Elgin Molded Plastics: *See—*
Lindner, Henry, 4,346,868, Cl. 248-475.00R.

Beau, Jean-Francois, to Societe Nationale Industrielle Aerospatiale. Rotor assembly provided with a bearing having virtually zero axial clearance. 4,346,949, Cl. 308-236.000.

Beau, Jean-Francois, to Societe Nationale Industrielle Aerospatiale. Process for making a magnetic armature of divided structure and armature thus obtained. 4,347,449, Cl. 310-42.000.

Beauchamp, Roger P.: *See—*
Cho, Kazunobu; Beauchamp, Roger P.; and Batemou, Robert F., 4,346,813, Cl. 220-22.000.

Beck, Harold K., to Halliburton Company. Hydraulic jarring tool. 4,346,770, Cl. 175-297.000.

Beck, Milton A., to Kline, Larry Harold. Anti-Jacknife device. 4,346,910, Cl. 280-432.000.

Beckert, Adolf F.; Winberg, Dennis G.; and Nowlin, Duane D., to Ecodyne Corporation. Chemical dispenser. 4,347,224, Cl. 422-277.000.

Beckman Instruments, Inc.: *See—*
Polito, Alan J.; and Bray, Kurtis R., 4,347,058, Cl. 23-230.00B.
Polito, Alan J.; and Bray, Kurtis R., 4,347,059, Cl. 23-230.00B.

Bedford, Clifford D.: *See—*
Baum, Kurt; Bedford, Clifford D.; and Hunadi, Ronald O., 4,347,376, Cl. 556-466.000.

Beecham Group Limited: *See—*
Cole, Martin; and Edmondson, Robert A., 4,347,314, Cl. 435-43.000.
Giddings, Peter J.; John, David I.; and Thomas, Eric J., 4,347,182, Cl. 260-245.20R.
Smale, Terence C., 4,347,181, Cl. 260-245.20T.

Beer, Douglas C.; and Jatzek, Horst J., to CAE Machinery Ltd. Wood waferizing apparatus. 4,346,744, Cl. 144-176.000.

Behrens, Dieter: *See—*
Hahn, Reinhard; and Behrens, Dieter, 4,347,084, Cl. 75-245.000.

Beijleveld, Wilhelmus M.: *See—*
Van Drumpt, Jan D.; and Beijleveld, Wilhelmus M., 4,347,342, Cl. 525-374.000.

Beitner, Shlomo, to Bipol Ltd. Thermoelectric device and process for making the same. 4,346,562, Cl. 62-3.000.

Bell & Howell Company: *See—*
Guenther, Kenneth L.; Kosner, Jerry J., Jr.; Erikson, Rolf B.; and Zemke, Edward H., 4,346,876, Cl. 271-11.000.

Bell, Stanley C., to American Home Products Corporation. 1-Alkyl-4-amino-3-(3-aminotriazolo)-1,8 naphthyridine-2-ones. 4,347,362, Cl. 546-123.000.

Bell Telephone Laboratories, Inc.: *See—*
Pearce, Charles W.; and Schmidt, Paul F., 4,347,431, Cl. 219-390.000.

Belrecolt S.A.: *See—*
Wattron, Albert; and Quirin, Michel, 4,346,549, Cl. 56-370.000.

Belshaw Bros., Inc.: *See—*
Wilke, Wilbur D.; Hodge, Archie A.; Belshaw, Thomas E.; and Hamblin, John R., 4,346,649, Cl. 99-337.000.

Belshaw, Thomas E.: *See—*
Wilke, Wilbur D.; Hodge, Archie A.; Belshaw, Thomas E.; and Hamblin, John R., 4,346,649, Cl. 99-337.000.

Ben-Gurion University of the Negev: *See—*
Raz, Zeev, 4,346,735, Cl. 137-606.000.

Benckiser-Knapsack GmbH: *See—*
Merkenich, Karl; Koch, Wilhelm; Glandorf, Kaete; Uhlmann, Gerd; and Scheurer, Guenther, 4,347,258, Cl. 426-334.000.

Bendix Corporation, The: *See—*
Appling, James, 4,346,954, Cl. 339-89.00M.
Leung, Chun-Keung; and Seitz, William R., 4,347,571, Cl. 364-431.080.
Taplin, Lael B., 4,346,776, Cl. 180-179.000.

Benedict, Frank L.: *See—*
Livers, Gerald D.; and Benedict, Frank L., 4,346,914, Cl. 280-735.000.

Benner, Timothy E., to RCA Corporation. Mesh assembly having reduced microphonics for a pick-up tube. 4,347,459, Cl. 313-383.000.

Bennett, John D.; Holmes, Brian; and Morton, David C., to Baker Perkins Holdings Ltd. Apparatus for turning over conveyed articles. 4,346,800, Cl. 198-412.000.

Berghoff, Gene M.: *See—*
Kubalak, Thomas P.; Berghoff, Gene M.; and Palmer, William J., 4,347,496, Cl. 340-52.00R.

Bergqvist, Hakan: *See—*
Knudsen, Niels; Orpana, Veikko; Wisur, Matti; Warulf, Olov; Bergqvist, Hakan; and Afzelius, Raoul, 4,347,401, Cl. 174-14.00R.

Bernard, Alain; and Bonnaterre, Raymond, to Saft-Societe des Accumulateurs Fixes et de Traction. Electric cell assembly with an alkaline electrolyte and current output wires. 4,347,292, Cl. 429-65.000.

Bernardi, Herbert; and von Aschwege, Gerd, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Device for automatically shredding thin sheets. 4,346,851, Cl. 241-159.000.

Bernatowicz, Henry; and Schoenig, Frederick C., Jr., to General Electric Company. Signature surveillance of nuclear fuel. 4,347,622, Cl. 376-245.000.

Bernett, Thomas B., to Eaton Corporation. Thermal actuator with lock open feature. 4,346,558, Cl. 60-527.000.

Bernhardt, Daniel. Replaceable multiple seal package. 4,346,833, Cl. 229-43.000.

Bernstein, Seymour: *See*—
Joseph, Joseph P.; Dusza, John P.; and Bernstein, Seymour, 4,347,251, Cl. 424-263.000.

Berwick, James W., Jr.; Bleeg, Robert J.; and McFaddin, Vincent E., to Boeing Company, The. Method and apparatus for an aircraft climb-out guidance system. 4,347,572, Cl. 364-433.000.

Bezzi, Giovanni; Pauluzzi, Ego; and Zanardi, Mauro, to Agip Nucleare S.p.A. Method of producing microspheres by vibrations. 4,347,200, Cl 264-9.000.

Bianchi, John E.; and Nichols, Richard D. E., to Bianchi Leather Products, Inc. Vestlike weapon carrier. 4,346,827, Cl. 224-206.000.

Bianchi Leather Products, Inc.: *See*—
Bianchi, John E.; and Nichols, Richard D. E., 4,346,827, Cl. 224-206.000.

Bianchi, Valerio: *See*—
Latsch, Reinhard; and Bianchi, Valerio, 4,346,625, Cl. 74-859.000.

Bibollet, Jean-Claude. Method for making a head of piolet. 4,346,628, Cl. 76-109.000.

Biggar, Elizabeth S.: *See*—
Biggar, Frank M., III, 4,346,855, Cl. 242-67.200.

Biggar, Frank M., III, to Biggar, Elizabeth S. Stripping method and apparatus for the processing of a continuous laminated web. 4,346,855, Cl. 242-67.200.

Binder, Hellmuth, to Daimler-Benz Aktiengesellschaft. Bi-modal mechanically trackable road vehicle with automatic axle latching mechanism. 4,346,659, Cl. 104-247.000.

Binggeser, Ernst: *See*—
Peters, Klaus-Jurgen; Krauss, Rudolf; and Binggeser, Ernst, 4,346,577, Cl. 72-129.000.

Bio-Systems Research, Inc.: *See*—
Lionelle, Joseph E.; Staffa, Jeffrey A.; and McCormick, William L., 4,347,321, Cl. 435-161.000.

Bipol Ltd.: *See*—
Beitner, Shlomo, 4,346,562, Cl. 62-3.000.

Birk, Manfred O.; Piesczek, Wolfgang A.; and Little, Brian E., to Hoechst Fibers Industries. Yarn forwarding and drawing apparatus. 4,346,504, Cl. 28-240.000.

Birkemeier, William P., to United States of America, Air Force. Troposcatter system antenna alignment. 4,347,514, Cl. 343-100.0CS.

Birmingham Bolt Company: *See*—
White, Claude C.; and Carr, Frederick, 4,347,020, Cl. 405-260.000.

Bishop & Associates, Incorporated: *See*—
Willis, John H.; and Heath, Trevor C., 4,347,071, Cl. 65-10.200.

Bitter, Istvan; Soos, Rudolf; Toth, Geza; Toke, Laszlo; and Szabo, Gabor, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Process for the preparation of polyhalogenphenyl carbamates. 4,347,377, Cl. 560-32.000.

Black, David H. A.; Pelletier, Georges H.; and Lee, Hing F., to Northern Telecom Limited. Method of and apparatus for regenerating a signal frequency in a digital signal transmission system. 4,347,620, Cl. 375-112.000.

Black & Decker Inc.: *See*—
Cox, Alan W.; and Rainey, Paul N., 4,346,886, Cl. 272-72.000.
Simpson, Frank F., 4,346,769, Cl. 173-118.000.

Blackmore, Phillip W.: *See*—
Wilson, Keith E.; and Blackmore, Phillip W., 4,346,543, Cl. 52-404.000.

Blanchard, Clayton H., to LRC Electronics, Inc. Connector for co-axial cable. 4,346,958, Cl. 339-177.00R.

Blaum, Eberhard: *See*—
Reh, Lothar; Hirsch, Martin; Baron, Gerhard; Blaum, Eberhard; and Hafke, Carl, 4,347,064, Cl. 48-197.00R.

Bleeg, Robert J.: *See*—
Berwick, James W., Jr.; Bleeg, Robert J.; and McFaddin, Vincent E., 4,347,572, Cl. 364-433.000.

Blizzard, Roy L.; and Martin, Thomas O., to PPG Industries, Inc. Method for making antimony trioxide powder. 4,347,060, Cl. 23-294.00R.

Blomley, Peter F., to International Standard Electric Corporation. Electronic telephone circuit. 4,347,407, Cl. 179-81.00R.

Blount, David H. Process for the production of broken-down organic lignin-cellulose silicate polymers. 4,347,345, Cl. 527-301.000.

Bluggel, Erwin; and Mainka, Wolfgang, to Volkswagenwerk Aktiengesellschaft. Automatic safety belt system. 4,346,778, Cl. 180-268.000.

Bodenbenner, Kurt; Perkow, Helmut; and Vollmuller, Helmut, to Hoechst Aktiengesellschaft. Process for the purification of effluent. 4,347,144, Cl. 210-761.000.

Boehringer, John R. Gas analyzer. 4,346,584, Cl. 73-23.000.

Boehringer Mannheim GmbH: *See*—
Proelss, Henning F., 4,347,313, Cl. 435-19.000.

Boeing Company, The: *See*—
Berwick, James W., Jr.; Bleeg, Robert J.; and McFaddin, Vincent E., 4,347,572, Cl. 364-433.000.
Porter, David R., 4,346,961, Cl. 350-96.160.

Boevink, Jan E.; Derrick, Arthur P.; and Moodie, John A., to Nalco Chemical Company. Cationic block copolymers. 4,347,339, Cl. 525-180.000.

Bohm, Robert. Method of producing an improved vibration damping and sound absorbing coating on a rigid substrate. 4,346,782, Cl. 181-207.000.

Bollinger, Frederic G.; D'Amico, John J.; and Hansen, Dale J., to Monsanto Company. Method for using nicotinic acid derivatives as plant growth regulants. 4,347,075, Cl. 71-94.000.

Bolton, Theodore S.: *See*—
Perrone, Terrence J.; Bolton, Theodore S.; and Caronna, Cosimo, 4,346,568, Cl. 62-259.100.

Bond, James W., to United States of America, Navy. Array convolver/correlator. 4,347,580, Cl. 364-824.000.

Bonnaterre, Raymond: *See*—
Bernard, Alain; and Bonnaterre, Raymond, 4,347,292, Cl. 429-65.000.

Bonnet, Marc; and Borde, Daniel, to Cycles Peugeot. A.C. Operated signalling device for mopeds. 4,347,497, Cl. 340-73.000.

Booth, Donald W., to Sperry Corporation. Live fire thermal target. 4,346,901, Cl. 273-408.000.

Bopp, Warren G., to Eaton Corporation. Magnetically actuated viscous fluid coupling. 4,346,797, Cl. 192-58.00B.

Borde, Daniel: *See*—
Bonnet, Marc; and Borde, Daniel, 4,347,497, Cl. 340-73.000.

Boren, Paul R.: *See*—
Jones, Donald E.; Parker, DeRay; and Boren, Paul R., 4,346,511, Cl. 29-458.000.

Borg-Warner Corporation: *See*—
Cheong, Alex S.; and Accursi, James F., 4,346,757, Cl. 165-51.000.

Borglum, Gerald B., to Miles Laboratories, Inc. Immobilization of microorganisms in gelled carrageenan. 4,347,320, Cl. 435-144.000.

Born, Maurice; Briquet, Lucienne; and de Gaudemaris, Gabriel, to Institut Francais du Petrole. Complexes of high iron content soluble in organic media and usable as combustion additives in liquid fuels. 4,347,062, Cl. 44-68.000.

Born, Raisa I. Method and apparatus for the preparation of drilling mud. 4,347,002, Cl. 366-6.000.

Borsig GmbH: *See*—
Kehrer, Wolfgang; and Lachmann, Helmut, 4,346,758, Cl. 165-134.00R.

Bosley, Denis V.: *See*—
Landsinger, Edmund E.; and Bosley, Denis V., 4,346,893, Cl. 273-85.00F.

Bosmiller, Erich, to Motoren-und Turbinen-Union Munchen GmbH. Arrangement for the thermal spraying of metal and ceramic powders. 4,346,818, Cl. 222-58.000.

Botez, Dan, to RCA Corporation. Single filament semiconductor laser with large emitting area. 4,347,486, Cl. 372-46.000.

Botha, Theunis C. Irrigation device and a method of operating such device. 4,346,842, Cl. 239-183.000.

Bouchard, Andre C.: *See*—
Fohl, Timothy; and Bouchard, Andre C., 4,347,053, Cl. 431-359.000.

Boudreaux, Gordon J.: *See*—
Bailey, August V.; Boudreaux, Gordon J.; and Sumrell, Gene, 4,347,378, Cl. 560-105.000.

Bourke, Patrick T. Slab-gripping apparatus. 4,346,691, Cl. 125-12.000.

Boutchyard, Hansford, Jr.: *See*—
Giguere, Edward L.; Kaiser, Paul H.; Campbell, Gordon M.; Hoffman, Peter F.; and Boutchyard, Hansford, Jr., 4,347,568, Cl. 364-300.000.

Bouyssounouse, Bernard: *See*—
Liang, Victor K. C.; Bouyssounouse, Bernard; and Yim, Ernest W., 4,346,512, Cl. 29-571.000.

Bowers, James C.: *See*—
Brooks, James L.; Staab, Roger I.; Bowers, James C.; and Nienhaus, Harry A., 4,347,474, Cl. 323-224.000.

Bowers, William S., to Cornell Research Foundation, Inc. Anti-juvenile hormones. 4,347,256, Cl. 424-311.000.

Boxer, Trevor C., to Lucas Industries Limited. Control circuit for a D.C. motor. 4,347,467, Cl. 318-317.000.

Boyadjieff, George I., to Varco International, Inc. Well pipe spinning and torqueing apparatus. 4,346,631, Cl. 81-57.340.

Boychuk, Zenovie. Apparatus for and method of lubricating a distributor for an internal combustion engine. 4,346,680, Cl. 123-146.50A.

Braswell, Harry A.: *See*—
Skinner, Neal G.; and Braswell, Harry A., 4,346,761, Cl. 166-206.000.

Braun, Dietrich: *See*—
Wahlig, Helmut; Dingeldain, Elvira; and Braun, Dietrich, 4,347,234, Cl. 424-15.000.

Braun, Ernst, to Halbach & Braun. Hauling and cutting plant. 4,346,938, Cl. 299-43.000.

Bray, Kurtis R.: *See*—
Polito, Alan J.; and Bray, Kurtis R., 4,347,058, Cl. 23-230.00B.
Polito, Alan J.; and Bray, Kurtis R., 4,347,059, Cl. 23-230.00B.

Brewbaker, James L., to Dow Chemical Company, The. Thickened vinyl ester resin compositions. 4,347,343, Cl. 525-530.000.

Bricmont & Associates, Inc.: *See*—
Kletch, Stanley J., 4,346,753, Cl. 165-9.100.

Brigante, Miguel F. Electromagnetic ground water conditioning system and sampling device for waste water and fermentation makeup water. 4,347,133, Cl. 210-138.000.

Bright, Edward J.; Kaplon, David A.; and Scheingold, William S., to AMP Incorporated. Connector for a ceramic substrate. 4,346,952, Cl. 339-17.0CF.
Bright, Margaret N.: *See—*
Ong, S. Christine; and Bright, Margaret N., 4,347,344, Cl. 526-347.100.
Brindak, Nicholas J., to Drew Chemical Corporation. Process and apparatus for testing fluids for fouling and antifoulant protocol. 4,346,587, Cl. 73-61.200.
Brindle, Brian, to Illinois Tool Works Inc. Drill screw. 4,347,027, Cl. 411-387.000.
Briquet, Lucienne: *See—*
Born, Maurice; Briquet, Lucienne; and de Gaudemaris, Gabriel, 4,347,062, Cl. 44-68.000.
Bristol-Myers Company: *See—*
Cron, Martin J.; Keil, John G.; Lin, Jeng S.; Ruggeri, Mariano; and Walker, Derek, 4,347,354, Cl. 536-10.000.
British Nuclear Fuels Limited: *See—*
Gillies, George M., 4,346,673, Cl. 122-31.00R.
Britzke, Ingo; Horn, Manfred; and Gossmann, Peter, to Gebr. Bode & Co. GmbH. Drive for a vehicle door. 4,346,533, Cl. 49-28.000.
Bronner, Hermann: *See—*
Geisslinger, Wolfgang; Pustka, Karel; Bronner, Hermann; Mullritter, Ludwig; and Vondrowski, Gabriel, 4,346,616, Cl. 192-84.00C.
Brook, Richard J.: *See—*
Hunter, Donald N.; and Brook, Richard J., 4,347,495, Cl. 338-34.000.
Brooks, James L.; Staab, Roger I.; Bowers, James C.; and Nienhaus, Harry A., to United States of America, Navy. Solid state regulated power transformer with waveform conditioning capability. 4,347,474, Cl. 323-224.000.
Brooks, Jeffrey B.: *See—*
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,347,525, Cl. 346-153.100.
Brooks, Maxim C.: *See—*
Murphy, Alan P.; Smith, Rory J. M.; and Brooks, Maxim C., 4,347,168, Cl. 252-547.000.
Brown, Clifford G., to International Business Machines Corporation. Operator interchangeable gear driven platen and platen drive mechanism for typewriters and printers. 4,347,009, Cl. 400-611.000.
Brown, Rodney J.; and Swaisgood, Harold E., to Research Triangle Institute. Detection of antibiotics in milk. 4,347,312, Cl. 435-7.000.
Brown, Winthrop K., to Texaco Inc. Gain stabilization for radioactivity well logging apparatus. 4,346,590, Cl. 73-151.000.
Brownlee, Robert. Liquid chromatographic pump module. 4,347,131, Cl. 210-101.000.
Brownlee, Wanda J. Playing card caddy. 4,346,895, Cl. 273-150.000.
Brucato, Albert, to Chemithon Corporation, The. Strength of paper from mechanical or thermomechanical pulp. 4,347,100, Cl. 162-10.000.
Brucken, Byron L.; and Hodits, Frank W., Jr., to General Motors Corporation. Swash plate compressor. 4,347,046, Cl. 417-269.000.
Brunet France S.A.: *See—*
Brunet, Robert, 4,346,696, Cl. 126-450.000.
Brunet, Robert, to Brunet France S.A. Solar energy collector. 4,346,696, Cl. 126-450.000.
Brunswick Corporation: *See—*
Tyner, Alfred E., 4,346,676, Cl. 123-41.740.
Bruynes, Cornelis A., to Gist-Brocades N.V. Cephalosporin intermediates. 4,347,358, Cl. 544-016.000.
Bryden, Norman E. Tilting arbor belt sander. 4,346,536, Cl. 51-135.00R.
Buehrle, Thomas M.: *See—*
Landsness, Clifford A.; and Buehrle, Thomas M., 4,347,477, Cl. 324-54.000.
Bunger, Richard E. Prefabricated mold inserts for forming flume platforms for animal confinement pens and method of construction. 4,346,670, Cl. 119-28.000.
Bunnell Plastics, Inc.: *See—*
Anderson, Edward P.; and Curran, Donald G., 4,347,090, Cl. 156-149.000.
Buracchi, Livio: *See—*
Giobbio, Vincenzo; and Buracchi, Livio, 4,347,247, Cl. 424-250.000.
Burk, Johst H.: *See—*
Michel, Christian G.; Ertell, Carolyn A.; and Burk, Johst H., 4,347,325, Cl. 501-1.000.
Burke, James W. Automatic starting fluid injection apparatus. 4,346,683, Cl. 123-180.00R.
Burkman, Thomas F., Sr.; and Cummings, Gary, to Burkman, Thomas F., Sr. Emergency guidance system. 4,347,499, Cl. 340-371.000.
Burlington Industries, Inc.: *See—*
Willis, Robert F., 4,346,997, Cl. 356-244.000.
Burnham, Francis L. Multiple-stage small temperature differential heat-powered pump. 4,347,045, Cl. 417-253.000.
Burnham, Robert D.: *See—*
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,347,611, Cl. 372-45.000.
Burroughs Corporation: *See—*
Caras, Bernard; and Kollmyer, Robert E., 4,346,951, Cl. 316-19.000.
Burroughs Wellcome Co.: *See—*
Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., 4,347,178, Cl. 260-112.00B.
Krenitsky, Thomas A.; and Rideout, Janet L., 4,347,315, Cl. 435-87.000.
Mehta, Nariman B., 4,347,176, Cl. 260-112.00B.
Phillips, Arthur P., 4,347,177, Cl. 260-112.00B.
Scharver, Jeffrey D., 4,347,382, Cl. 564-183.000.
Stern, Warren C., 4,347,257, Cl. 424-330.000.
Burton, Barrie C.: *See—*
Davis, John M.; and Burton, Barrie C., 4,347,492, Cl. 336-136.000.
Busby, William R.: *See—*
DeTar, George F., Jr.; Schaefer, Marcus J.; and Busby, William R., 4,347,567, Cl. 364-200.000.
Busch, Lloyd E.: *See—*
Myers, George D.; and Busch, Lloyd E., 4,347,122, Cl. 208-113.000.
Busch, Louis M. Rotary cutter lathe tool. 4,346,746, Cl. 145-115.000.
Bustos, Rafael T., to Leggett & Platt, Incorporated. Shelf organizer. 4,346,806, Cl. 211-49.00S.
Butz, Robert F.: *See—*
Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., 4,347,178, Cl. 260-112.00B.
C.M.E. F. Lli Paietta: *See—*
Paietta, Fausto, 4,346,856, Cl. 242-74.000.
C. W. Zumbiel Company, The: *See—*
Hauser, Donald P., 4,346,830, Cl. 225-49.000.
CAE Machinery Ltd.: *See—*
Beer, Douglas C.; and Jatzek, Horst J., 4,346,744, Cl. 144-176.000.
Weavell, Jack; and Jatzek, Horst J., 4,346,745, Cl. 144-176.000.
Cahuzac, Georges: *See—*
Banos, Jean; Cantagrel, Jean-Claude; Cahuzac, Georges; and Darrieux, Jean-Louis, 4,346,741, Cl. 139-387.00R.
Caille, Gilles E. A., to Expandet. Plastic end cover for drums. 4,346,816, Cl. 220-306.000.
Calhoun, Howard J., to Westinghouse Electric Corp. Ratio ground relay. 4,347,542, Cl. 361-76.000.
Campbell, Gordon M.: *See—*
Giguere, Edward L.; Kaiser, Paul H.; Campbell, Gordon M.; Hoffman, Peter F.; and Boutchyard, Hansford, Jr., 4,347,568, Cl. 364-300.000.
Campbell, Ramsey G., to Stauffer Chemical Company. Process for preparing ethylene dichloride. 4,347,391, Cl. 570-252.000.
Cannon, Raymond E.; Jenkins, Jon A.; and Wilson, Larry L., to IMED Corporation. Rate meter. 4,346,606, Cl. 73-861.410.
Canon Kabushiki Kaisha: *See—*
Fukuda, Tadaji; Sugata, Masao; Nakagiri, Takashi; and Konishi, Masaki, 4,347,436, Cl. 250-211.00R.
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,347,296, Cl. 430-42.000.
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Katsuma, Makoto; Suzuki, Masayuki; Shinbori, Kenichi; and Murakami, Hiroyasu, 4,346,973, Cl. 354-152.000.
Kawabata, Takashi; Tsunekawa, Tokuichi; Hosoe, Kazuya; Kinoshita, Takao; Sakai, Shinji; and Taguchi, Tatsuya, 4,346,970, Cl. 354-25.000.
Kimura, Hiroyuki; Tamura, Shuichi; and Yokota, Hideo, 4,346,988, Cl. 356-1.000.
Kuge, Tsukasa; Tamura, Yasuyuki; and Tanigawa, Koichi, 4,346,986, Cl. 355-14.0CH.
Matsuyama, Shigeru, 4,347,579, Cl. 364-709.000.
Cantagrel, Jean-Claude: *See—*
Banos, Jean; Cantagrel, Jean-Claude; Cahuzac, Georges; and Darrieux, Jean-Louis, 4,346,741, Cl. 139-387.00R.
Caplan, Clark R.: *See—*
Scarton, Henry A.; Kennedy, Warren C.; Gaylo, Keith R.; and Caplan, Clark R., 4,346,783, Cl. 181-230.000.
Captocap Limited: *See—*
Hilaire, Fernand, 4,346,811, Cl. 215-252.000.
Caras, Bernard; and Kollmyer, Robert E., to Burroughs Corporation. Method for providing a gas reservoir for a gas display panel. 4,346,951, Cl. 316-19.000.
Carl Freudenberg, Firma: *See—*
Weber, Kurt; Rutsch, Peter; and Hirschinger, Lothar, 4,347,276, Cl. 428-160.000.
Carl Zeiss-Stiftung: *See—*
Lehrmund, Willi; and Altenheiner, Erwin, 4,346,960, Cl. 350-76.000.
Carlingswitch, Inc.: *See—*
Discenza, Frank J.; and Ives, Milton N., 4,347,411, Cl. 200-1.00B.
Mune, Charles; and Krasij, Bohdan, 4,347,488, Cl. 335-9.000.
Sorenson, Richard W., 4,347,417, Cl. 200-67.00G.
Carlo Erba Strumentazione S.p.A.: *See—*
Sisti, Giorgio; Tosi, Bruno; and Trestianu, Sorin, 4,347,215, Cl. 422-63.000.
Carlson, Gene D.: *See—*
Ehrhardt, Gerry H.; and Carlson, Gene D., 4,347,282, Cl. 428-320.400.
Carlson, John A.: *See—*
Jalichandra, Phijit; Dowell, John S.; and Carlson, John A., 4,346,987, Cl. 355-40.000.
Carlson, Randolph S., to Elving, Robert L. Incident illumination responsive light control. 4,347,461, Cl. 315-158.000.
Carnaghan, Euason L.; and Phillips, Raymond J., to United States of America, Navy. Antenna coupling assembly. 4,346,953, Cl. 339-28.000.

Carocci, Alfred: *See—*
Wadensten, Theodore S.; and Carocci, Alfred, 4,346,822, Cl. 222-195.000.

Caronna, Cosimo: *See—*
Perrone, Terrence J.; Bolton, Theodore S.; and Caronna, Cosimo, 4,346,568, Cl. 62-259.100.

Carr, Frederick: *See—*
White, Claude C.; and Carr, Frederick, 4,347,020, Cl. 405-260.000.

Carr, Kenneth L., to M/A COM, Inc. Microwave detection system. 4,346,7.6, Cl. 128-653.000.

Carrier Corporation: *See—*
Holdsworth, Timothy M., 4,347,042, Cl. 417-53.000.
Morris, Richard D., 4,347,043, Cl. 417-53.000.
Perrone, Terrence J.; Bolton, Theodore S.; and Caronna, Cosimo, 4,346,568, Cl. 62-259.100.

Carter, Russell W., to Corn States Metal Fabricators, Inc. Method for forming a tire. 4,347,212, Cl. 264-315.000.

Catenacci, Roberto: *See—*
Invernizzi, Renzo; Ligorati, Ferdinando; Fontanesi, Maurizio; and Catenacci, Roberto, 4,347,162, Cl. 252-429.00B.

Caterpillar Tractor Co.: *See—*
Bailey, John M., 4,346,582, Cl. 72-379.000.
Baumann, David L.; and Meismer, Richard A., 4,346,508, Cl. 29-402.180.
Vidal-Meza, Gonzalo D., 4,346,760, Cl. 165-166.000.

Cavazza, Claudio, to Sigma-Tau Industrie Farmaceutiche Riunite. Apparatus for mixing and dispersing two substances under sterile conditions. 4,346,820, Cl. 222-83.000.

CBS Inc.: *See—*
Davis, Lanny C., 4,347,405, Cl. 179-1.00G.

Chabrerie, Jean-Pierre, to Etat Francais. Sliding electrical contact devices. 4,347,456, Cl. 310-248.000.

Challen, Ian A.; East, Sandra; and Sanderson, George R., to International Octrooi Maatischappit "Octropa" B.V. Process for preparation of algin or pectin gels. 4,347,261, Cl. 426-573.000.

Chalmers, Gerald W.: *See—*
Hibbs, Joseph E.; Chalmers, Gerald W.; and Teixeira, Walter J., 4,346,658, Cl. 102-254.000.

Charmasson, Henri J. A.: *See—*
Heger, Vernon G.; and Charmasson, Henri J. A., 4,347,590, Cl. 367-93.000.

Chase, Charles; Walters, Stephen; and Meador, Richard E., to P.M. America, Inc. Method for diluting a liquid test sample and computer controlld diluting apparatus. 4,346,742, Cl. 141-1.000.

Chass, Jacob, to Pickering & Company, Inc. Rotary variable differential transformer with substantially linear output. 4,347,491, Cl. 336-135.000.

Chatlos, Richard, to Air O Scoop Corporation. Attachment for motor vehicles with rear windows. 4,346,648, Cl. 98-2.120.

Cheddar Valley Engineering Limited: *See—*
Thorpe, Joseph F., 4,346,906, Cl. 280-33.99H.

Chemithon Corporation, The: *See—*
Brucato, Albert, 4,347,100, Cl. 162-10.000.

Chen, Wen T.; and Oxley, Vincent C., to GTE Laboratories Incorporated. Circuit breaker. 4,347,541, Cl. 361-50.000.

Cheong, Alex S.; and Accursi, James F., to Borg-Warner Corporation. Automotive cooling system using a non-pressurized reservoir bottle. 4,346,757, Cl. 165-51.000.

Chernikhov, Alexei Y.; Yakovlev, Mikhail N.; Lysova, Valentina B.; Gefter, Evgeny L.; and Shmagina, Nina N. Heat-resistant heterocyclic polymers and methods for producing same. 4,347,348, Cl. 528-51.000.

Chesnais, Andre; and Thiery, Philippe, to Souriau & Cie; and Socapex. Self-stripping terminal for an electrical connector. 4,346,955, Cl. 339-97.00R.

Chester, Arthur W.: *See—*
Chu, Yung F.; and Chester, Arthur W., 4,347,395, Cl. 585-420.000.

Chevallier, Arnauld, to Societe Grenobloise d'Etudes et d'Applications Hydrauliques (SOGREAH). Barrier block for protecting coastal and riverside structures. 4,347,017, Cl. 405-29.000.

Chevron Research Company: *See—*
Detz, Clifford M.; and Field, Leslie A., 4,347,394, Cl. 585-419.000.
Mayer, Jerome F.; Miller, Stephen J.; and O'Rear, Dennis J., 4,347,121, Cl. 208-58.000.
Sigworth, Harry W., Jr., 4,346,731, Cl. 137-433.000.

Child, Francis W., to Child Laboratories Inc. Method of inserting teat dilator. 4,346,714, Cl. 128-343.000.

Child Laboratories Inc.: *See—*
Child, Francis W., 4,346,714, Cl. 128-343.000.

Childs, Billie W., executrix: *See—*
Childs, William C., deceased; Snook, Richard K.; and Lester, Douglas R., 4,346,604, Cl. 73-861.120.

Childs, William C., deceased (by Childs, Billie W., executrix); Snook, Richard K.; and Lester, Douglas R., to Narco Bio-Systems, Inc. Electromagnetic flow probe. 4,346,604, Cl. 73-861.120.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Bitter, Istvan; Soos, Rudolf; Toth, Geza; Toke, Laszlo; and Szabo, Gabor, 4,347,377, Cl. 560-32.000.

Cho, Hideyuki. Tenter arm swinging apparatus. 4,346,502, Cl. 26-76.000.

Cho, Kazunobu; Beauchamp, Roger P.; and Batemou, Robert F., to Dart Industries Inc. Closured and divided box. 4,346,813, Cl. 220-22.000.

Chraplyvy, Andrew R.; Herbst, Jan F.; and Croat, John J., to General Motors Corporation. Selective magnetization of rare-earth transition metal alloys. 4,347,086, Cl. 148-101.000.

Christensen, Burton G.; Johnston, David B. R.; and Schmitt, Susan M., to Merck & Co., Inc. 3-Substituted-6-(1'-hydroxyethyl)-7-oxo-1-azabicyclo[3.2.0]-hept-2-ene-2-carboxylic acid. 4,347,367, Cl. 546-272.000.

Christensen, Burton G.; Johnston, David B. R.; and Schmitt, Susan M., to Merck & Co., Inc. 3-Substituted-6-substituted-7-oxo-1-azabicyclo[3.2.0]hept-2-ene-2-carboxylic acid. 4,347,368, Cl. 546-272.000.

Christian Rovsing A/S: *See—*
Seiersen, Ole S., 4,347,560, Cl. 363-24.000.

Christian, Ted W.: *See—*
Latimer, John P.; Donaldson, Robert M.; Christian, Ted W.; and Miller, Glenn E., 4,346,937, Cl. 299-8.000.

Chu, Daniel T., to Abbott Laboratories. Inhibitors of transpeptidase. 4,347,355, Cl. 542-420.000.

Chu, Yung F.; and Chester, Arthur W., to Mobil Oil Corporation. Conversion of paraffinic hydrocarbons to aromatics over zeolite catalysts. 4,347,395, Cl. 585-420.000.

Chupak, John M.: *See—*
Daugherty, James D.; Gladd, Joseph H.; and Chupak, John M., 4,346,959, Cl. 339-217.00S.

Chute, Richard; Larson, Jay M.; Tunnecliffe, Theodore N.; and Worthen, Roger P., to Eaton Corporation. Thermal barrier for poppet valve. 4,346,870, Cl. 251-356.000.

Cianflone, Robert A. Mustache trimmer. 4,346,517, Cl. 30-49.000.

Ciba-Geigy Corporation: *See—*
Lukaszczyk, Alfons; Martin, Henry; Diel, Peter J.; Fory, Werner; Gaizi, Karl; Kristinsson, Haukur; Muller, Beat; Muntwyler, Rene; Pachlatko, Johannes P.; Rempfler, Hermann; Schurter, Rolf; and Szczepanski, Henry, 4,347,372, Cl. 548-217.000.
Neher, Robert; and Riniker, Bernhard, 4,347,242, Cl. 424-177.000.
Winter, Roland A. E.; and Dexter, Martin, 4,347,180, Cl. 260-206.000.

Citizen Watch Company Limited: *See—*
Nakahara, Tsunamitsu; Aoki, Hiroshi; and Kurisu, Toru, 4,346,947, Cl. 308-9.000.

Clancy, Bruce N. Checkbook accounting system. 4,346,917, Cl. 283-58.000.

Clifft, Dale L. Power assisting device for a manually operating vehicle. 4,346,772, Cl. 180-11.000.

Close, Donald, to David Hudson, Inc. Novel fluoroelastomer film compositions containing vinyl copolymers and method for the preparation thereof. 4,347,268, Cl. 427-385.500.

Closs, Felix H.: *See—*
Lee, Robert P.; and Closs, Felix H., 4,347,498, Cl. 340-825.020.

Cloud, James Z., Jr.: *See—*
Little, John D.; and Cloud, James Z., Jr., 4,346,699, Cl. 128-82.000.

Cohen, Kenneth W.; and Mansey, George P., to Aerco International, Inc. Heat reclaiming system. 4,346,759, Cl. 165-163.000.

Cohen, Kopel H. Method for treating depression and other maladies by means of patient-created symptom graphs. 4,346,697, Cl. 128-1.00R.

Coldren, Chester P., to Eaton Corporation. Tension indicating and lock cone washer. 4,347,024, Cl. 411-11.000.

Cole, Martin; and Edmondson, Robert A., to Beecham Group Limited. Process for the preparation of penicillin derivatives. 4,347,314, Cl. 435-43.000.

Colegrove, George T., to Merck & Co., Inc. Use of S-119 in lithographic fountain solutions. 4,347,289, Cl. 428-457.000.

Colgate-Palmolive Company: *See—*
Larsen, John E.; and McGregor, Rob Roy, 4,346,525, Cl. 36-69.000.
Wixon, Harold E., 4,347,152, Cl. 252-174.000.

College, Michael A.; and McKenry, Robert J., to Kennametal Inc. Excavating bit. 4,346,934, Cl. 299-92.000.

Colligan, Wallace M. Portable power tool. 4,347,450, Cl. 310-50.000.

Combustion Engineering, Inc.: *See—*
Nelson, Hugh W., 4,347,102, Cl. 162-35.000.
Nelson, Hugh W.; Prohazka, George J.; and Morris, Keith W., 4,347,220, Cl. 422-185.000.

Commissariat a l'Energie Atomique: *See—*
Nicolau, Ion F., 4,347,230, Cl. 423-491.000.

Compagnie Generale de Geophysique: *See—*
Manin, Michel G., 4,346,779, Cl. 181-120.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Jacob, Jean-Baptiste; Mathieu, Yves; and Ruvoen, Michel, 4,347,603, Cl. 370-85.000.

Condolios, Elie; and Couratin, Pierre, to Alsthom-Atlantique. Installation for and a method of spreading clayey mud and reclaiming land. 4,347,140, Cl. 210-710.000.

Conoco Inc.: *See—*
Anderson, Ardis L.; and McConaghy, James R., 4,347,120, Cl. 208-50.000.

Conrad, Rainer; and Seifert, Hubert, to Rowenta-Werke GmbH. Handle and supporting structure for an electric pressing iron having electronic temperature control. 4,347,428, Cl. 219-251.000.

Conroy, Ernest F., Jr.: *See—*
Gary, Wardell; and Conroy, Ernest F., Jr., 4,347,540, Cl. 361-47.000.

Conservation Associates Incorporated: *See—*
Harmony, Richard C., 4,346,844, Cl. 239-383.000.

Conshohocken Cotton Co., Inc.: *See—*
Schwartz, Ira, 4,346,553, Cl. 57-210.000.

Continental Group, Inc., The: *See—*
Banich, John N., Sr., 4,346,812, Cl. 215-352.000.
Miller, Teddy, 4,346,743, Cl. 141-3.000.
Stamets, Stanley L.; Winkless, Robert A.; Hernandez, Rafael J.; Merle, Joseph J.; and Payne, Robert D., 4,346,667, Cl. 118-622.000.

Convers, Charles C.: *See—*
Mayo, Alfred M.; and Convers, Charles C., 4,347,093, Cl. 156-242.000.
Cooper Industries, Inc.: *See—*
Workman, William, Jr., 4,346,765, Cl. 173-12.000.
Cooper, John; and Lee, Dennis V., to Smith Kline & French Laboratories Limited. Process for the preparation of 5-dimethylaminomethyl-2-furanmethanol. 4,347,191, Cl. 549-492.000.
Cooper, Julius; and Tilbor, Neil, to Ideal Toy Corporation. Driver skill test for toy miniature vehicles. 4,346,894, Cl. 273-86.00B.
Cooper, Paul, to TRW Inc. Fuel supply apparatus. 4,347,041, Cl. 417-15.000.
Cooper, Walter R. Admission device for an inlet manifold of an internal combustion engine. 4,347,068, Cl. 55-319.000.
Copal Company Limited: *See—*
Saito, Toshihisa; and Inoue, Nobuyoshi, 4,346,974, Cl. 354-154.000.
Takahashi, Tamotsu, 4,346,972, Cl. 354-195.000.
Corn States Metal Fabricators, Inc.: *See—*
Carter, Russell W., 4,347,212, Cl. 264-315.000.
Cornell Research Foundation, Inc.: *See—*
Bowers, William S., 4,347,256, Cl. 424-311.000.
Corning Glass Works: *See—*
Herczog, Andrew, 4,347,295, Cl. 429-193.000.
Wu, Che-Kuang, 4,347,309, Cl. 430-616.000.
Corrigan, Charles E., to Garrett Corporation, The. Laminated airfoil and method for turbomachinery. 4,347,037, Cl. 416-97.00A.
Cosyns, Jean; Durand, Daniel; and Leger, Gerard, to Institut Francais du Petrole. Process for the selective hydrogenation of a hydrocarbon fraction with 2 or 3 carbon atoms per molecule. 4,347,392, Cl. 585-259.000.
Coughlin, Steve A.: *See—*
Ware, Don A.; Coughlin, Steve A.; and Whatley, Oscie B., 4,347,426, Cl. 219-125.100.
Couratin, Pierre: *See—*
Condolios, Elie; and Couratin, Pierre, 4,347,140, Cl. 210-710.000.
Couturier, Rene J.: *See—*
Zeller, Bernard M.; Couturier, Rene J.; and Tribot, Robert A., 4,347,087, Cl. 149-98.000.
Cox, Alan W.; and Rainey, Paul N., to Black & Decker Inc. Variable resistance exercising device. 4,346,886, Cl. 272-72.000.
Cox, Gordon F. N.: *See—*
Johnson, Jerome B.; and Cox, Gordon F. N., 4,346,600, Cl. 73-768.000.
Cox, Randolph B., to Research Products Corporation. Water distributor. 4,347,197, Cl. 261-106.000.
Crawley, Terrance V. Railroad rail fragmenting apparatus and method. 4,346,828, Cl. 225-2.000.
Crescenzo, Francis C.; and LaFleur, Paul J., Jr., to Package Machinery Company. Sealing wheel for forming fin seal package. 4,346,545, Cl. 53-234.000.
Croat, John J.: *See—*
Chraplyvy, Andrew R.; Herbst, Jan F.; and Croat, John J., 4,347,086, Cl. 148-101.000.
Crompton, Alan W., to Alf Hannaford & Co. Pty. Limited. Method of separating almond kernels from almonds with shells. 4,347,260, Cl. 426-483.000.
Cron, Martin J.; Keil, John G.; Lin, Jeng S.; Ruggeri, Mariano; and Walker, Derek, to Bristol-Myers Company. Preparation of 1-N-[ω-amino-α-hydroxyalkanoyl]aminoglycoside polysilylated antibiotics and products obtained therefrom. 4,347,354, Cl. 536-10.000.
Crone, John M., Jr.; and Suggitt, Robert M., to Texaco Inc. Process for preparation of 1-methyl-3,5-diisopropyl benzene. 4,347,398, Cl. 585-474.000.
Cross, Michael: *See—*
Latimer, John P.; Donaldson, Robert; Cross, Michael; MacPhaiden, Harold; Skiles, Loren D.; Schauer, Henry; and Reynolds, Thomas J., 4,347,029, Cl. 414-22.000.
Cruz, Jose C., to Cummins Engine Company, Inc. Secondary alignment target for an electro-optical alignment measuring system. 4,346,994, Cl. 356-152.000.
CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Appiano, Silvano; Di Pino, Duccio; and Poggio, Cesare, 4,347,608, Cl. 371-16.000.
Cullen, Donald E., to United Technologies Corporation. Dual range, cantilevered mass accelerometer. 4,346,597, Cl. 73-510.000.
Cullet, Rene, to International Business Machines Corporation. Test methods and structures for semiconductor integrated circuits for electrically determining certain tolerances during the photolithographic steps. 4,347,479, Cl. 324-64.000.
Cumming, James C., to Rockwell International Corporation. Friction brake. 4,346,791, Cl. 188-71.500.
Cummings, Gary: *See—*
Burkman, Thomas F., Sr.; and Cummings, Gary, 4,347,499, Cl. 340-371.000.
Cummins Engine Company, Inc.: *See—*
Cruz, Jose C., 4,346,994, Cl. 356-152.000.
Cunningham, Sinclair: *See—*
Wusthof, Peter; and Cunningham, Sinclair, 4,346,645, Cl. 91-501.000.
Curran, Donald G.: *See—*
Anderson, Edward P.; and Curran, Donald G., 4,347,090, Cl. 156-149.000.
Currie, Russell D.: *See—*
Wrightson, Noel T.; and Currie, Russell D., 4,347,018, Cl. 405-150.000.
CVI Incorporated: *See—*
Hood, Charles B., 4,346,563, Cl. 62-117.000.
Cycles Peugeot: *See—*
Bonnet, Marc; and Borde, Daniel, 4,347,497, Cl. 340-73.000.
Czubak, Albin S., to Ex-Cell-O Corporation. Apparatus for honing cycloidal surfaces. 4,346,534, Cl. 51-34.00A.
Dahl, Helge: *See—*
Garlung, Walther; and Dahl, Helge, 4,346,808, Cl. 212-212.000.
Daido Tokushuko K.K.: *See—*
Yanagida, Minoru; and Kono, Tomio, 4,347,080, Cl. 75-124.000.
Dailey, Patrick E., to Smith International, Inc. Threaded connection using variable lead threads. 4,346,920, Cl. 285-89.000.
Daimler-Benz Aktiengesellschaft: *See—*
Binder, Hellmuth, 4,346,659, Cl. 104-247.000.
Gans, Wolfgang, 4,347,065, Cl. 55-6.000.
Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See—*
Torii, Hideyasu; and Nakamura, Susumu, 4,347,338, Cl. 525-123.000.
Dakin, Wayne R.; and Isailovic, Jordan, to Discovision Associates. Digital formatting system. 4,347,619, Cl. 375-37.000.
Dale, Robert V., to Fieldcrest Mills, Inc. Pile carpet tile with cut and loop pile. 4,347,273, Cl. 428-44.000.
Dalzell, Haldean C.: *See—*
Quick, James E.; Razdan, Raj K.; and Dalzell, Haldean C., 4,347,361, Cl. 546-45.000.
Dalziel, Warren L., to Shugart Associates. Read/write head carriage assembly. 4,347,535, Cl. 360-99.000.
D'Amico, John J.; and Schafer, David E., to Monsanto Company. 2-(Pyridylthio)pyridine-N-oxides. 4,347,366, Cl. 546-261.000.
D'Amico, John J.: *See—*
Bollinger, Frederic G.; D'Amico, John J.; and Hansen, Dale J., 4,347,075, Cl. 71-94.000.
Dany, Franz-Josef: *See—*
Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, 4,347,334, Cl. 524-416.000.
Darrieux, Jean-Louis: *See—*
Banos, Jean; Cantagrel, Jean-Claude; Cahuzac, Georges; and Darrieux, Jean-Louis, 4,346,741, Cl. 139-387.00R.
Dart Industries Inc.: *See—*
Cho, Kazunobu; Beauchamp, Roger P.; and Batemou, Robert F., 4,346,813, Cl. 220-22.000.
Kaus, Malcolm J.; and Miro, Nemesio D., 4,347,158, Cl. 252-429.00B.
Datascope Corp.: *See—*
Hanson, Bruce L.; and Wolvek, Sidney, 4,346,698, Cl. 128-1.00D.
Daugherty, James D.; Gladd, Joseph H.; and Chupak, John M., to General Motors Corporation. Pull-to-seat electrical connector. 4,346,959, Cl. 339-217.00S.
Daunora, Louis G., to Miles Laboratories, Inc. Water-soluble tablet. 4,347,235, Cl. 424-44.000.
David Hudson, Inc.: *See—*
Close, Donald, 4,347,268, Cl. 427-385.500.
Davis, James W.: *See—*
Paranjpe, Suresh C.; Davis, James W.; Scranton, Robert J.; and Wells, Roger D., 4,347,520, Cl. 346-75.000.
Davis, John M.; and Burton, Barrie C., to System E Controls Ltd. Variable inductance transducers. 4,347,492, Cl. 336-136.000.
Davis, John N.: *See—*
Gurr, George P.; Davis, John N.; and Wiggins, E. Thomas, 4,347,575, Cl. 364-492.000.
Davis, Kirk E., to Lubrizol Corporation, The. Full and lubricant compositions containing nitro phenols. 4,347,148, Cl. 252-51.50R.
Davis, Lanny C., to CBS Inc. Sound reproducing systems utilizing acoustic processing unit. 4,347,405, Cl. 179-1.00G.
Davis, Stephen H., to Water Refining Company, Inc. Reverse osmosis expansible pressurized permeate storage having permeate and concentrate controls. 4,347,132, Cl. 210-104.000.
Dearborn Fabricating & Engineering Corp.: *See—*
Dunville, Dennis L.; Seaton, William W.; and Good, Charles H., 4,346,799, Cl. 198-367.000.
De Ceuster, Jean; and Essemaeker, Paul, to Solvay & Cie. Process for the reclamation of waste paper. 4,347,099, Cl. 162-5.000.
Deepsea Ventures, Inc.: *See—*
Latimer, John P.; Donaldson, Robert M.; Christian, Ted W.; and Miller, Glenn E., 4,346,937, Cl. 299-8.000.
Latimer, John P.; Donaldson, Robert; Cross, Michael; MacPhaiden, Harold; Skiles, Loren D.; Schauer, Henry; and Reynolds, Thomas J., 4,347,029, Cl. 414-22.000.
Deere & Company: *See—*
Friesen, Henry; and Kizlyk, Mervin P., 4,347,031, Cl. 414-686.000.
de Gaudemaris, Gabriel: *See—*
Born, Maurice; Briquet, Lucienne; and de Gaudemaris, Gabriel, 4,347,062, Cl. 44-68.000.
Degesch GmbH: *See—*
Kapp, Wolfgang, 4,347,241, Cl. 424-128.000.
Degussa Aktiengesellschaft: *See—*
Schmid, Josef; Lange, Ludwig; Klebe, Hans; and Schutte, Dieter, 4,347,229, Cl. 423-336.000.
De Haven, Vernet F.; and Airhart, Forrest, to Ares, Inc. Foldout cradle apparatus for mounting an automatic cannon to a turret exterior. 4,346,644, Cl. 89-37.00B.
Del-Met Corporation: *See—*
Tatar, Richard, 4,346,940, Cl. 301-37.0AT.
Demou, John G.; Pray, Edward R.; and McBrayer, Robert L., to BASF Wyandotte Corporation. Low-cost surfactant compositions for high resiliency flexible foams. 4,347,330, Cl. 521-110.000.

Demuth, Robert, to Rieter Machine Works Ltd. Spinning preparatory machine. 4,346,500, Cl. 19-105.000.

Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., to Baxter Travenol Laboratories, Inc. Solution container for continuous ambulatory peritoneal dialysis. 4,346,703, Cl. 128-213.00A.

Dentaurum H.P. Winkelstroeter KG: *See—*
Kraus, Hans-Joachim; and Walter, Berthold, 4,347,054, Cl. 433-7.000.

DeRoeck, Carrie P.: *See—*
Spencer, Patricia J.; and DeRoeck, Carrie P., 4,346,875, Cl. 269-302.100.

Derouane, Eric G.: *See—*
Sherwood, Rexford D.; Baker, Rees T. K.; Derouane, Eric G.; and Pieters, Wim J., 4,347,063, Cl. 48-197.00R.

Derrick, Arthur P.: *See—*
Boevink, Jan E.; Derrick, Arthur P.; and Moodie, John A., 4,347,339, Cl. 525-180.000.

de Ruyter, Peter W. A. Apparatus for making a meat analog. 4,346,652, Cl. 99-483.000.

DeSantis, Raymond P., to PTX-Dentronix, Inc. Die and punch assembly for compacting powder material. 4,347,051, Cl. 425-78.000.

DeTar, George F., Jr.; Schaefer, Marcus J.; and Busby, William R., to Rockwell International Corporation. Computer system apparatus for improving access to memory by deferring write operations. 4,347,567, Cl. 364-200.000.

Detz, Clifford M.; and Field, Leslie A., to Chevron Research Company. Benzene synthesis. 4,347,394, Cl. 585-419.000.

DeVries, Marvin R.: *See—*
Fertl, Walter H.; and DeVries, Marvin R., 4,346,592, Cl. 73-152.000.

Dexter, Martin: *See—*
Winter, Roland A. E.; and Dexter, Martin, 4,347,180, Cl. 260-206.000.

Diamant, Emanuel; Diamant, Lev; and Grushko, Benjamin, to Mahanaim Diuk Hydraulica. Milk flow measurement apparatus. 4,346,596, Cl. 73-200.000.

Diamant, Lev: *See—*
Diamant, Emanuel; Diamant, Lev; and Grushko, Benjamin, 4,346,596, Cl. 73-200.000.

Diamond Shamrock Corporation: *See—*
Giguere, Edward L.; Kaiser, Paul H.; Campbell, Gordon M.; Hoffman, Peter F.; and Boutchyard, Hansford, Jr., 4,347,568, Cl. 364-300.000.

Diaralux: *See—*
Faubert, Guy, 4,346,979, Cl. 354-307.000.

Dick, Donald E.; Metz, Robert L.; RoJohn, D. Scott; and Elliott, Raymond D. Transport mechanism for ultrasonic scanner. 4,346,867, Cl. 248-424.000.

Dick, Perry J., Jr., to Norwood Minerals, Inc. Apparatus for consolidation of slurries of solid particulate materials. 4,347,137, Cl. 210-329.000.

Diel, Peter J.: *See—*
Lukaszczyk, Alfons; Martin, Henry; Diel, Peter J.; Fory, Werner; Gatzi, Karl; Kristinsson, Haukur; Muller, Beat; Muntwyler, Rene; Pachlatko, Johannes P.; Rempfler, Hermann; Schurter, Rolf; and Szczepanski, Henry, 4,347,372, Cl. 548-217.000.

Diesel, Hans A., to Exxon Research & Engineering Co. Fluid sampling device. 4,346,609, Cl. 73-863.330.

Diesel Kiki Co., Ltd.: *See—*
Kaibara, Nobuhiro; and Takaichi, Kazuyoshi, 4,346,688, Cl. 123-502.000.

Dietz, Richard E.; and McDaniel, Max P., to Phillips Petroleum Company. Polymerization of olefins. 4,347,161, Cl. 252-429.00B.

Di Giacomo, Peter M., to Occidental Research Corporation. Sorting of ores with detectable compounds. 4,347,125, Cl. 209-3.300.

Dil, Jan G.; Driessen, Johannes C.; and Mesman, Wichert, to U.S. Philips Corporation. Dual probe interferometer for object profile measuring. 4,347,441, Cl. 250-560.000.

Dingeldain, Elvira: *See—*
Wahlig, Helmut; Dingeldain, Elvira; and Braun, Dietrich, 4,347,234, Cl. 424-15.000.

Dinger, Edward H., to General Electric Company. Electronic-magnetic current isolator circuit. 4,347,469, Cl. 318-533.000.

Di Pino, Duccio: *See—*
Appiano, Silvano; Di Pino, Duccio; and Poggio, Cesare, 4,347,608, Cl. 371-16.000.

Discenza, Frank J.; and Ives, Milton N., to Carlingswitch, Inc. Progressive switch. 4,347,411, Cl. 200-1.00B.

Discovision Associates: *See—*
Dakin, Wayne R.; and Isailovic, Jordan, 4,347,619, Cl. 375-37.000.
Vitale, George, 4,347,599, Cl. 369-270.000.

Doane, H. Daniel: *See—*
Smith, Verity C.; Baker, Robert J.; Barrow, Wyile W., Jr.; and Doane, H. Daniel, 4,346,923, Cl. 285-340.000.

Dobler, Peter: *See—*
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; and Hoffmann, Werner, 4,347,537, Cl. 360-132.000.

Dr. C. Otto & Comp. G.m.b.H: *See—*
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Dr. C. Otto & Comp. G.m.b.H.: *See—*
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, 4,347,105, Cl. 202-263.000.

Dodd, Malcolm J.; and Juhas, Joseph A., to UOP Inc. Apparatus for selectively heating an individual food item in a refrigerated environment. 4,346,756, Cl. 165-48.00R.

Doldouras, George A.: *See—*
Kollonitsch, Janos; Perkins, Leroy M.; Doldouras, George A.; and Marburg, Stephen, 4,347,374, Cl. 548-344.000.

Domres, Franklin W. Lead screw portable torch drive. 4,346,873, Cl. 266-71.000.

Donaldson, Robert: *See—*
Latimer, John P.; Donaldson, Robert; Cross, Michael; MacPhaiden, Harold; Skiles, Loren D.; Schauer, Henry; and Reynolds, Thomas J., 4,347,029, Cl. 414-22.000.

Donaldson, Robert M.: *See—*
Latimer, John P.; Donaldson, Robert M.; Christian, Ted W.; and Miller, Glenn E., 4,346,937, Cl. 299-8.000.

Dorlars, Alfons, to Bayer Aktiengesellschaft. Process for the preparation of s-triazole compounds. 4,347,357, Cl. 542-462.000.

Dow Chemical Company, The: *See—*
Brewbaker, James L., 4,347,343, Cl. 525-530.000.
Ginter, Sally P.; Pawloski, Chester E.; and Stevens, Violete L., 4,347,194, Cl. 260-929.000.
Harmon, Zita T. K.; and Lindy, Lowell B., 4,347,328, Cl. 521-28.000.
Lee, John M.; and Bauman, William C., 4,347,327, Cl. 521-28.000.
Park, Chung P., 4,347,329, Cl. 521-79.000.
Simmons, Robert W., 4,347,154, Cl. 252-305.000.
Swart, Daniel J., 4,347,351, Cl. 528-271.000.

Dow Corning Corporation: *See—*
Homan, Gary R.; and Romig, Charles A., 4,347,336, Cl. 524-731.000.
Speier, John L.; and Gentle, Thomas M., 4,347,199, Cl. 264-8.000.

Dow, William G., to Environmental Institute of Michigan. Trochoidal nuclear fusion reactor. 4,347,621, Cl. 376-139.000.

Dowell, Howard A.: *See—*
Norman, Edward C.; and Dowell, Howard A., 4,347,266, Cl. 427-154.000.

Dowell, John S.: *See—*
Jalichandra, Phijit; Dowell, John S.; and Carlson, John A., 4,346,987, Cl. 355-40.000.

Doyen, Joel; and Raisin, Jean-Pierre, to Agence Nationale de Valorisation de la Recherche. Device for handling sheet-like pieces. 4,346,877, Cl. 271-19.000.

Doyle, Gerald, to Exxon Research & Engineering Co. Removal of CO and unsaturated hydrocarbons from gas streams using copper oxalate complexes. 4,347,066, Cl. 55-56.000.

Dresser Industries, Inc.: *See—*
Fertl, Walter H.; and DeVries, Marvin R., 4,346,592, Cl. 73-152.000.
Howells, Anthony P. S.; Viswanathan, Raman; and Angehrn, Jorg A., 4,346,593, Cl. 73-152.000.

Dressler, Daryl D., to Minnesota Mining and Manufacturing Company. Moisture-insensitive electrically-conductive paper. 4,347,104, Cl. 162-103.000.

Drew Chemical Corporation: *See—*
Brindak, Nicholas J., 4,346,587, Cl. 73-61.200.

Driessen, Johannes C.: *See—*
Dil, Jan G.; Driessen, Johannes C.; and Mesman, Wichert, 4,347,441, Cl. 250-560.000.

Dubeau, Michel L.: *See—*
Legrand, Paul J.; Dubeau, Michel L.; and Pachomoff, Guy R., 4,346,861, Cl. 244-54.000.

Dugan, Charles D., to Automatic Pipe Racker, Inc. Pipe handling apparatus. 4,347,028, Cl. 414-22.000.

Dugle, Thomas: *See—*
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Dunshee, Wayne K.; and Odegaard, Janice B., to Minnesota Mining & Manufacturing Company. Pressure-sensitive adhesive sheet material. 4,346,700, Cl. 128-155.000.

Dunville, Dennis L.; Seaton, William W.; and Good, Charles H., to Dearborn Fabricating & Engineering Corp. Conveyor system with part transfer device. 4,346,799, Cl. 198-367.000.

Du Pont de Nemours, E. I., and Company: *See—*
Marcus, Sanford M., 4,347,262, Cl. 427-74.000.
Shook, Howard E., Jr., 4,347,193, Cl. 260-439.00R.
Siemionko, Roger K., 4,347,349, Cl. 528-190.000.

Durand, Daniel: *See—*
Cosyns, Jean; Durand, Daniel; and Leger, Gerard, 4,347,392, Cl. 585-259.000.

Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Pyridyl alkylthiourea and alkylamino-nitroethylene. 4,347,250, Cl. 424-263.000.

Dusza, John P.: *See—*
Joseph, Joseph P.; Dusza, John P.; and Bernstein, Seymour, 4,347,251, Cl. 424-263.000.

Duttera, James; Jefferis, Raymond P., III; Matteson, David; and Szentlaszloi, Alexander, to Gulf & Western Manufacturing Company. Apparatus and method for froth flotation separation of the components of a slurry. 4,347,127, Cl. 209-164.000.

Duwel, Edward C.; and Soderberg, John H., to Pitney Bowes, Inc. Electronic postage meter having check date warning with control for overriding the check date warning. 4,347,506, Cl. 340-679.000.

Dwyer, Francis G.; and Huss, Albin, Jr., to Mobil Oil Corporation. Treatment of effluent resulting from conversion of methanol to gasoline in order to decrease durene and produce distillate. 4,347,397, Cl. 585-469.000.

Dwyer, Gregory J.: *See—*
Kauffman, Ivan L.; and Dwyer, Gregory J., 4,346,819, Cl. 222-41.000.
E.G.O. Elektro-Gerate Blanc u. Fischer: *See—*
Gossler, Gerhard, 4,347,432, Cl. 219-449.000.
E. & M. Lamort S.A.: *See—*
Barnscheidt, Wolfgang, 4,347,128, Cl. 209-170.000.
E-Systems, Inc.: *See—*
Alter, Larry D., 4,347,627, Cl. 455-136.000.
Eardley, David B., to International Business Machines Corporation. Reproduce only storage matrix. 4,347,585, Cl. 365-105.000.
Eary, George D., Sr. Adjustable upper body rest. 4,346,488, Cl. 5-436.000.
East, Sandra: *See—*
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Eastman Kodak Company: *See—*
Kroll, Arthur S.; and Shuster, Frank A., 4,347,298, Cl. 430-97.000.
Limoges, Raymond F.; Scribani, Anthony A.; and Wilson, Robert J., 4,347,307, Cl. 430-338.000.
Eaton Corporation: *See—*
Bernett, Thomas B., 4,346,558, Cl. 60-527.000.
Bopp, Warren G., 4,346,797, Cl. 192-58.00B.
Chute, Richard; Larson, Jay M.; Tunnecliffe, Theodore N.; and Worthen, Roger P., 4,346,870, Cl. 251-356.000.
Coldren, Chester P., 4,347,024, Cl. 411-11.000.
Franz, Rudolph J., 4,346,729, Cl. 137-353.000.
Treadwell, William A., 4,346,775, Cl. 180-175.000.
Wojtecki, Rudolph G.; and Kaan, Joseph P., 4,347,433, Cl. 219-535.000.
Eaton Stamping Company: *See—*
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Eblen, Ewald; and Hofmann, Karl, to Robert Bosch GmbH. Fuel injection nozzle. 4,346,846, Cl. 239-533.300.
Eckberg, Richard P., to General Electric Company. Silicone release coatings and inhibitors. 4,347,346, Cl. 528-15.000.
Ecodyne Corporation: *See—*
Beckert, Adolf F.; Winberg, Dennis G.; and Nowlin, Duane D., 4,347,224, Cl. 422-277.000.
Edmondson, Robert A.: *See—*
Cole, Martin; and Edmondson, Robert A., 4,347,314, Cl. 435-43.000.
Ehemann, Gero, to Kurt Ehemann Spezialmaschinenfabrik KG. Apparatus and method for use in finish pressing. 4,346,826, Cl. 223-70.000.
Ehlers, Karsten: *See—*
Hofbauer, Peter; Ehlers, Karsten; and Heidemeyer, Paulus, 4,346,773, Cl. 180-165.000.
Ehrhardt, Gerry H.; and Carlson, Gene D., to Frye Copysystems, Inc. Chemical carbonless copy paper and transfer medium therefor. 4,347,282, Cl. 428-320.400.
Eichman, Larry W.: *See—*
Hardway, Jay B.; and Eichman, Larry W., 4,347,509, Cl. 340-778.000.
Ekholm, Ralf C., to Elevator GmbH. Lift battery control system. 4,346,789, Cl. 187-29.00R.
Electrohol Corporation: *See—*
Meshbesher, Thomas M., 4,347,109, Cl. 204-5.90R.
Elevator GmbH: *See—*
Ekholm, Ralf C., 4,346,789, Cl. 187-29.00R.
Ellenberger & Poensgen GmbH: *See—*
Krasser, Fritz, 4,347,494, Cl. 337-66.000.
Ellermann, Jurgen, to Mahle GmbH. Piston for internal combustion engines. 4,346,646, Cl. 92-220.000.
Elliott, Charles T., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Radiation detectors. 4,347,526, Cl. 357-30.000.
Elliott, Raymond D.: *See—*
Dick, Donald E.; Metz, Robert L.; RoJohn, D. Scott; and Elliott, Raymond D., 4,346,867, Cl. 248-424.000.
Elliott Turbomachinery Co., Inc.: *See—*
Gentilo, Dennis R.; Smith, Donald A.; and Pifer, David L., 4,347,427, Cl. 219-137.800.
Ellis, John S., to Her Majesty the Queen as represented by the Minister of National Defence of Her Majesty's Canadian Government. Lattice beam-columns. 4,346,539, Cl. 52-226.000.
Elmer, William B. Compound beam illuminating. 4,347,555, Cl. 362-299.000.
Elsner, Burckhardt; and Kirchbrucher, Rudiger, to Gewerkschaft Eisenhutte Westfalia. Mine roof supports. 4,347,021, Cl. 405-293.000.
Eltra Corporation: *See—*
Major, Jeffrey T.; Yard, LeRoy A.; and Holzscheiter, Danny B., 4,347,455, Cl. 310-239.000.
Elving, Robert L.: *See—*
Carlson, Randolph S., 4,347,461, Cl. 315-158.000.
Emhart Industries, Inc.: *See—*
Adams, Richard E.; and Stafford, Richard W., 4,347,493, Cl. 336-192.000.
Endo, Akira: *See—*
Hirota, Yukitsugu; Endo, Akira; Kimura, Katsuhiro; Morozumi, Hiroshi; and Sekine, Kenji, 4,346,774, Cl. 180-167.000.
Endo, Keiji: *See—*
Sato, Atsushi; Takahashi, Naoya; Endo, Keiji; and Yanagishita, Hitoshi, 4,347,169, Cl. 252-567.000.
Endo, Mitsuo: *See—*
Murofushi, Satoru; Shibuya, Tadao; Kato, Shinichi; and Endo, Mitsuo, 4,347,504, Cl. 340-638.000.
Engel, Pedro F.; and McCollum, Phillip A., to Hewlett-Packard Company. Apparatus for absorbing shocks to the ink supply of an ink jet printer. 4,347,524, Cl. 346-140.00R.
ens BIO LOGICALS Inc.: *See—*
Ogilvie, Kelvin K., 4,347,360, Cl. 544-276.000.
Enterra Corporation: *See—*
Norman, Edward C.; and Dowell, Howard A., 4,347,266, Cl. 427-154.000.
Environmental Institute of Michigan: *See—*
Dow, William G., 4,347,621, Cl. 376-139.000.
Enzian, Clayton T., Jr. Lifeboat. 4,346,664, Cl. 114-349.000.
Eppenbach, Lawrence C. Multiple function closure. 4,346,823, Cl. 222-443.000.
Epstein, David. Rackets. 4,346,891, Cl. 273-73.00C.
Epstein, Gordon L.: *See—*
Melin, John A.; Irwin, Russell P.; and Epstein, Gordon L., 4,346,968, Cl. 351-23.000.
Epstein, Ronald A.; and Mink, Robert I., to Stauffer Chemical Company. Titanium halide catalyst system. 4,347,160, Cl. 252-429.00B.
ERD, Inc.: *See—*
Evans, Vernon, 4,346,787, Cl. 185-37.000.
Erikson, Rolf B.: *See—*
Guenther, Kenneth L.; Kosner, Jerry J., Jr.; Erikson, Rolf B.; and Zemke, Edward H., 4,346,876, Cl. 271-11.000.
Erowa AG: *See—*
Schneider, Rudolf, 4,347,422, Cl. 219-69.00M.
Ertell, Carolyn A.: *See—*
Michel, Christian G.; Ertell, Carolyn A.; and Burk, Johst H., 4,347,325, Cl. 501-1.000.
Espenhahn, Manfred; and Folwaczny, Manfred, to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte. Electroplating apparatus. 4,347,115, Cl. 204-206.000.
Essemaeker, Paul: *See—*
De Ceuster, Jean; and Essemaeker, Paul, 4,347,099, Cl. 162-5.000.
Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., to United States of America, Navy. Excimer-pumped blue-green laser. 4,347,485, Cl. 372-42.000.
Etablissement Liotte Representations Etrangeres: *See—*
Moll, Robert, 4,346,857, Cl. 242-84.300.
Etat Francais: *See—*
Chabrerie, Jean-Pierre, 4,347,456, Cl. 310-248.000.
Ethyl Corporation: *See—*
Tuvell, Melvin E., 4,347,381, Cl. 564-2.000.
Euteco Impianti S.p.A.: *See—*
Invernizzi, Renzo; Ligorati, Ferdinando; Fontanesi, Maurizio; and Catenacci, Roberto, 4,347,162, Cl. 252-429.00B.
Evans, Alfred C.; and Smilgys, Bruno S., to Veeder Industries, Inc. Readout mechanism for fuel pump counter. 4,347,435, Cl. 235-94.00R.
Evans, Robert F. Sensing impending sealed bearing and gage failure. 4,346,591, Cl. 73-151.000.
Evans, Vernon, to ERD, Inc. Energy recovery device. 4,346,787, Cl. 185-37.000.
Evenstad, Kenneth L.; and Nguyen, Hiep. Lower fatty acid glyceride high-HLB lubricating suppository and method for making and using the same. 4,347,237, Cl. 424-78.000.
Ex-Cell-O Corporation: *See—*
Czubak, Albin S., 4,346,534, Cl. 51-34.00A.
Kauffman, Ivan L.; and Dwyer, Gregory J., 4,346,819, Cl. 222-41.000.
Expandet: *See—*
Caille, Gilles E. A., 4,346,816, Cl. 220-306.000.
Extel Corporation: *See—*
Markus, Lawrence W.; Smejkal, George; and Lace, Melvin A., 4,346,854, Cl. 242-67.10R.
Exxon Research and Engineering Co.: *See—*
Baker, Richard H., 4,347,445, Cl. 307-255.000.
Bauman, Richard F.; Taunton, John W.; Anderson, George H.; Trachte, Ken L.; and Hsia, Steve J., 4,347,117, Cl. 208-8.0LE.
Diesel, Hans A., 4,346,609, Cl. 73-863.330.
Doyle, Gerald, 4,347,066, Cl. 55-56.000.
Funk, Edward W.; May, Walter G.; and Pirkle, James C., Jr., 4,347,118, Cl. 208-11.0LE.
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,347,319, Cl. 435-123.000.
Mauldin, Charles H.; and Baird, William C., Jr., 4,347,123, Cl. 208-136.000.
Sherwood, Rexford D.; Baker, Rees T. K.; Derouane, Eric G.; and Pieters, Wim J., 4,347,063, Cl. 48-197.00R.
Falchi, Fiorino, to General Electric Company. Electric quick-break switch with forced opening of the contacts. 4,347,415, Cl. 200-154.000.
Falk, Hans: *See—*
Pohler, Friedmar; Falk, Hans; Muller, Josef; Klein, Hans J.; and Hoffacker, Franz, 4,346,668, Cl. 118-665.000.
Farcasiu, Malvina: *See—*
Whitehurst, Darrell D.; Mitchell, Thomas O.; and Farcasiu, Malvina, 4,347,116, Cl. 208-8.0LE.
Farge, Daniel; Le Roy, Pierre; Moutonnier, Claude; and Peyronel, Jean-Francois, to Rhone-Poulenc Industries. 1,2,4-Triazines. 4,347,359, Cl. 544-182.000.
Faubert, Guy, to Diaralux. Photographic developing tank. 4,346,979, Cl. 354-307.000.

Fechner, Erno H., to Ampex Corporation. Anti-static structure for magnetic tape guides. 4,347,549, Cl. 361-212.000.
Fehling, Ernst. Adjustably clampable motorcycle handlebar. 4,346,619, Cl. 74-551.100.
Fehrenbach, Hubert: *See*—
Hauck, Karl; Fehrenbach, Hubert; Mayer, Dieter; Wagner, Herbert; and Zwintzscher, Kurt, 4,347,091, Cl. 156-217.000.
Fekete, Dan H.; Scifres, Donald R.; and Streifer, William, to Xerox Corporation. Semiconductor injection laser for high speed modulation. 4,347,612, Cl. 372-50.000.
Feldman, Wilhelm: *See*—
Packschies, Heinz; Feldman, Wilhelm; and Hankel, Albert, 4,346,780, Cl. 181-198.000.
Feldmuhle Aktiengesellschaft: *See*—
Barnscheidt, Wolfgang, 4,347,128, Cl. 209-170.000.
Feller, Murray F., to Wilgood Corporation. Means and method for mounting temperature sensors. 4,346,864, Cl. 248-231.000.
Fenne, Ivor, to Lucas Industries Limited. Fuel injection nozzle unit. 4,346,841, Cl. 239-125.000.
Ferree, Herbert E., to Westinghouse Electric Corp. Tape wrapping apparatus. 4,346,550, Cl. 57-10.000.
Ferriss, Lincoln S., to Singer Company, The. Magnetic resonance gyro phase shifter. 4,347,480, Cl. 328-55.000.
Fertl, Walter H.; and DeVries, Marvin R., to Dresser Industries, Inc. Method for determining effective reservoir porosity. 4,346,592, Cl. 73-152.000.
Fiberglas Canada, Inc.: *See*—
Wilson, Keith E.; and Blackmore, Phillip W., 4,346,543, Cl. 52-404.000.
Field, Leslie A.: *See*—
Detz, Clifford M.; and Field, Leslie A., 4,347,394, Cl. 585-419.000.
Field, Thomas R.: *See*—
Jagodzinski, Peter F.; Field, Thomas R.; and Patrick, Carl D., 4,347,008, Cl. 400-208.000.
Fieldcrest Mills, Inc.: *See*—
Dale, Robert V., 4,347,273, Cl. 428-44.000.
Fields, Ellis K., to Standard Oil Company (Indiana). Production of mercaptans. 4,347,384, Cl. 568-37.000.
Figuereo, Blaise F. Extrusion vessel with controlled circular distribution of the extruded material. 4,347,050, Cl. 425-72.00R.
Filtrol Corporation: *See*—
Scherzer, Julius, 4,347,164, Cl. 252-455.00Z.
Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., to Burroughs Wellcome Co. Compounds and methods of making. 4,347,178, Cl. 260-112.00B.
Fischer, Hermann; Friese, Karl-Hermann; Gruber, Hans-Ulrich; Heinemann, Wolfgang; Knoll, Gunter; Linder, Ernst; Maurer, Helmut; Noack, Rainer; Steinke, Leo; Weber, Lothar; and Weyl, Helmut, to Robert Bosch GmbH. Oxygen content exhaust gas sensor, and method of its manufacture. 4,347,113, Cl. 204-195.00S.
Fives-Cail Babcock: *See*—
Lafosse, Jean R. M.; and Robert, Bernard J., 4,347,135, Cl. 210-208.000.
Flasza, Michael D.; and Rypkema, Jouke N., to Zenith Radio Corporation. Frequency and phase lock loop with separated AFC and phase locking. 4,347,483, Cl. 331-12.000.
Flautt, Martin C.; Wong, Robert; and Walsh, Joseph F., to Owens-Corning Fiberglas Corporation. Polytetrafluoroethylene fluorocarbon resin dispersion-containing coating composition for glass fibers, glass fibers, and glass fiber fabric coated therewith. 4,347,278, Cl. 428-288.000.
Flintab Vagsystem AB: *See*—
Persson, Per-olof G.; and Goterdal, Gote A., 4,346,771, Cl. 177-145.000.
Fluid Controls, Inc.: *See*—
Grawunde, Frederick G., 4,346,733, Cl. 137-493.000.
Fluorchem Inc.: *See*—
Baum, Kurt; Bedford, Clifford D.; and Hunadi, Ronald O., 4,347,376, Cl. 556-466.000.
FMC Corporation: *See*—
Glidden, Gregory L., 4,347,012, Cl. 403-2.000.
Michaelson, Robert C., 4,347,231, Cl. 423-584.000.
Michaelson, Robert C., 4,347,232, Cl. 423-584.000.
Fogel, Sidney J.: *See*—
Katz, Jerome; and Fogel, Sidney J., 4,346,490, Cl. 6-1.000.
Fohl, Timothy; and Bouchard, Andre C., to GTE Products Corporation. Photographic flash device using light-emitting pyrotechnic charges. 4,347,053, Cl. 431-359.000.
Folwaczny, Manfred: *See*—
Espenhahn, Manfred; and Folwaczny, Manfred, 4,347,115, Cl. 204-206.000.
Fong, Dodd W.: *See*—
Allain, Ronald J.; and Fong, Dodd W., 4,347,147, Cl. 252-33.300.
Fontanesi, Maurizio: *See*—
Invernizzi, Renzo; Ligorati, Ferdinando; Fontanesi, Maurizio; and Catenacci, Roberto, 4,347,162, Cl. 252-429.00B.
Ford Motor Company: *See*—
Pierce, Stanley L., 4,346,622, Cl. 74-688.000.
Forney Engineering Company: *See*—
Paredes, Candelario; and Slater, Billy R., 4,347,563, Cl. 364-137.000.
Fory, Werner: *See*—
Lukaszczyk, Alfons; Martin, Henry; Diel, Peter J.; Fory, Werner; Gatzi, Karl; Kristinsson, Haukur; Muller, Beat; Muntwyler, Rene; Pachlatko, Johannes P.; Rempfler, Hermann; Schurter, Rolf; and Szczepanski, Henry, 4,347,372, Cl. 548-217.000.
Fournell, Hans-Dieter: *See*—
Weishaupt, Walter; and Fournell, Hans-Dieter, 4,347,545, Cl. 361-172.000.
France, Paul W., to Post Office, The. Testing glass fibres. 4,346,601, Cl. 73-829.000.
Frank, Earl E., to Abex Corporation. Foundry molds. 4,346,751, Cl. 164-368.000.
Frank, Earl E., to Abex Corporation. Rail lubricator. 4,346,785, Cl. 184-3.00A.
Frank, John H., to Warner & Swasey Company, The. Locking device. 4,346,734, Cl. 137-506.000.
Frank, Reinhard, to Siemens Corporation. Central timer unit for buffering control data in a telecommunications system. 4,347,582, Cl. 364-900.000.
Franklin, Michael L., to Hoffmann-La Roche Inc. Background corrector for spectrochemical analyses of biological samples. 4,346,998, Cl. 356-307.000.
Franz, Rudolph J., to Eaton Corporation. Temperature control system and pushbutton controlled pneumatic actuator. 4,346,729, Cl. 137-353.000.
Fraser, Lawrence J.: *See*—
Watson, P. Keith; and Fraser, Lawrence J., 4,346,985, Cl. 355-14.00D.
Freeport Transport, Inc.: *See*—
Smetanick, Andrew, 4,346,905, Cl. 280-5.00C.
Friedland, Bernard, to Singer Company, The. Land-vehicle navigation system. 4,347,573, Cl. 364-453.000.
Friese, Karl-Hermann: *See*—
Fischer, Hermann; Friese, Karl-Hermann; Gruber, Hans-Ulrich; Heinemann, Wolfgang; Knoll, Gunter; Linder, Ernst; Maurer, Helmut; Noack, Rainer; Steinke, Leo; Weber, Lothar; and Weyl, Helmut, 4,347,113, Cl. 204-195.00S.
Friesen, Henry; and Kizlyk, Mervin P., to Deere & Company. Parking stand for tractor-dismounted front loader. 4,347,031, Cl. 414-686.000.
Friesen, Neil; and Steiner, Urs. Bacteria static filter assembly. 4,347,136, Cl. 210-253.000.
Frister, Manfred; and Meyer, Friedhelm, to Robert Bosch GmbH. Rectifier circuit diode array and circuit protector. 4,347,543, Cl. 361-91.000.
Frye Copysystems, Inc.: *See*—
Ehrhardt, Gerry H.; and Carlson, Gene D., 4,347,282, Cl. 428-320.400.
Frye, Kenneth G., to Lenox Machine Company, Inc. Method of and means for handling paper sheets to be stacked. 4,346,881, Cl. 271-208.000.
Fryer, Rodney I.: *See*—
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Walser, Armin; and Fryer, Rodney I., 4,347,365, Cl. 546-256.000.
Fuji Photo Film Co., Ltd.: *See*—
Kawada, Ken; and Harada, Kazumasa, 4,346,852, Cl. 242-56.200.
Ohara, Yuji, 4,347,523, Cl. 346-108.000.
Shiba, Keisuke; and Toyama, Tadao, 4,347,305, Cl. 430-302.000.
Takeuchi, Tetsuo; Mukunoki, Yasuo; and Minanizono, Junji, 4,347,308, Cl. 430-529.000.
Fuji-Thomson Co., Ltd.: *See*—
Inagaki, Masao; and Sato, Shigeru, 4,346,837, Cl. 236-34.500.
Fuji Xerox Co., Ltd.: *See*—
Kikuchi, Masatsugu; and Tamai, Masayoshi, 4,347,519, Cl. 346-75.000.
Fujikawa, Kanichi: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; Shigehara, Itaru; Nagatani, Kuniaki; and Nishimura, Shigeyuki, 4,347,390, Cl. 570-202.000.
Fujikawa, Tetsuzo, to Kawasaki Jukogyo Kabushiki Kaisha. Internal combustion engine with gas sealing device. 4,346,685, Cl. 123-193.00P.
Fujimoto, Takeo: *See*—
Inohara, Akio; Sawae, Kiyoshi; Kawaguchi, Hisao; and Fujimoto, Takeo, 4,347,074, Cl. 65-32.000.
Fujioka, Yoshiki: *See*—
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,347,470, Cl. 318-602.000.
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Fujita, Toyohisa: *See*—
Shimojizaka, Junzo; and Fujita, Toyohisa, 4,347,124, Cl. 209-1.000.
Fujitsu Fanuc Limited: *See*—
Fukuyama, Hiroomi; Isobe, Shinichi; Yonekura, Mikio; and Kataoka, Minoru, 4,347,609, Cl. 371-34.000.
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Katsube, Hideo; Gamo, Gotaro; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,347,423, Cl. 219-69.00W.
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,347,470, Cl. 318-602.000.
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,347,471, Cl. 318-616.000.
Obara, Haruki, 4,347,424, Cl. 219-69.00C.
Obara, Haruki, 4,347,425, Cl. 219-69.00C.
Fujitsu Limited: *See*—
Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Kawabata, Yuichi; and Miyamura, Tamio, 4,347,584, Cl. 365-104.000.
Kaneda, Saburo; Tsuchimoto, Takamitsu; Shimizu, Kazuyuki; and Ikegami, Fujio, 4,347,565, Cl. 364-200.000.
Murano, Kazuo; Yamaguchi, Kazuo; Murakami, Norio; and Tsuda, Toshitaka, 4,347,617, Cl. 375-22.000.

Nakajima, Junzo; Hida, Masayuki; and Horie, Masakatsu, 4,346,982, Cl. 355-3.00R.
Sagawa, Masato; and Yamagishi, Wataru, 4,347,201, Cl. 264-24.000.
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Yokouchi, Kishio; Ogawa, Hiromi; Yokoyama, Hiromitsu; Kamehara, Nobuo; Niwa, Koichi; and Murakawa, Kyohei, 4,346,516, Cl. 29-845.000.

Fujiwara, Yasuo: *See—*
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Fukao, Yasuyosi; and Mayumi, Hisaki, to Tokai Electric Wire Company Limited; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electric connector. 4,346,957, Cl. 339-119.00R.

Fukaya, Hiroyasu: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,347,570, Cl. 364-431.040.

Fukuda, Mitsutoshi: *See—*
Ohno, Shotaro; Koyama, Kenji; and Fukuda, Mitsutoshi, 4,347,138, Cl. 210-639.000.

Fukuda, Tadaji; Sugata, Masao; Nakagiri, Takashi; and Konishi, Masaki, to Canon Kabushiki Kaisha. Photoelectric transducing element with high polymer substrate. 4,347,436, Cl. 250-211.00R.

Fukushima Printing Industries Co., Ltd.: *See—*
Watanabe, Shinichiro, 4,347,094, Cl. 156-387.000.

Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Kawabata, Yuichi; and Miyamura, Tamio, to Fujitsu Limited. Programmable read-only memory device. 4,347,584, Cl. 365-104.000.

Fukutsu, Tsutomu: *See—*
Nakamura, Yoshiyuki; Matsubara, Seiichi; Matsui, Takashi; Kumagai, Taiji; Senga, Taizo; and Fukutsu, Tsutomu, 4,347,614, Cl. 373-77.000.

Fukuyama, Hiroomi; Isobe, Shinichi; Yonekura, Mikio; and Kataoka, Minoru, to Fujitsu Fanuc Limited. Method and system for transmission of serial data. 4,347,609, Cl. 371-34.000.

Funk, Edward W.; May, Walter G.; and Pirkle, James C., Jr., to Exxon Research & Engineering Co. Solvent extraction process for tar sands. 4,347,118, Cl. 208-11.0LE.

Furmanov, Jury A.: *See—*
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Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; and Furmanov, Jury A., 4,347,057, Cl. 8-116.00R.

Furrey, John H., to Motorola Inc. Engine knock signal processing circuit. 4,346,586, Cl. 73-35.000.

Fuse, Takeshi; and Sekine, Masaru, to NHK Spring Co., Ltd.; and NHK Precision Co., Ltd. Motion snubbing device. 4,346,793, Cl. 188-134.000.

Futcher, Steven; Gardener, John J.; and Hodgson, Victor F., to Imperial Chemical Industries Limited. Foam board having improved evenness and the method and apparatus for its continuous manufacture. 4,347,281, Cl. 428-318.400.

Futura Dental Products, Inc.: *See—*
Minkowitz, Arthur, 4,347,081, Cl. 75-157.500.

G.A.O. Gesellschaft fur Automation und Organisation mbH: *See—*
Bernardi, Herbert; and von Aschwege, Gerd, 4,346,851, Cl. 241-159.000.

G. D. Searle & Co.: *See—*
Mueller, Richard A., 4,347,192, Cl. 549-498.000.

G. L. Rexroth GmbH: *See—*
Wusthof, Peter; and Cunningham, Sinclair, 4,346,645, Cl. 91-501.000.

G & S Company: *See—*
Schmitt, Robert F., 4,346,541, Cl. 52-309.110.

Gaiser, Conrad J.: *See—*
Gaiser, Laurel A.; and Gaiser, Conrad J., 4,346,840, Cl. 239-6.000.

Gaiser, Laurel A.; and Gaiser, Conrad J. Volatile dispensing composition and method. 4,346,840, Cl. 239-6.000.

Gall, John C.: *See—*
Singletary, Buckley A.; and Gall, John C., 4,346,749, Cl. 160-301.000.

Galloway, James H., to Oxy Metal Industries Corporation. Digital power converter trigger. 4,347,562, Cl. 363-87.000.

Gammell, Paul M., to United States of America, National Aeronautics and Space Administration. Hyperthermia heating apparatus. 4,346,715, Cl. 128-422.000.

Gamo, Gotaro: *See—*
Katsube, Hideo; Gamo, Gotaro; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,347,423, Cl. 219-69.00W.

Ganellin, Charon R.: *See—*
Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,347,250, Cl. 424-263.000.

Gans, Wolfgang, to Daimler-Benz Aktiengesellschaft. Process for the separation of paint mists from the exhaust air of lacquer painting plants. 4,347,065, Cl. 55-6.000.

Ganster, Charles A.; and Nelson, Gerald V., to Texaco Inc. Feedstock temperature control system. 4,347,577, Cl. 364-501.000.

Ganyard, Ivan S.: *See—*
Krauss, Ferdinand A.; Ganyard, Ivan S.; and Sabbatis, Raymond E., 4,346,635, Cl. 83-479.000.

Gardener, John J.: *See—*
Futcher, Steven; Gardener, John J.; and Hodgson, Victor F., 4,347,281, Cl. 428-318.400.

Gardner, Harold S., to United States of America, Energy. Valve for abrasive material. 4,346,730, Cl. 137-375.000.

Gardner, Keith; Pike, Edward R.; and Hill, David W., to National Research Development Corporation. Method and apparatus for measuring retinal blood flow. 4,346,991, Cl. 356-28.500.

Gardner, Mickey R.: *See—*
Imig, Leland A.; and Gardner, Mickey R., 4,346,754, Cl. 374-46.000.

Garfield, Donald E.: *See—*
Gould, Larry D.; and Garfield, Donald E., 4,346,602, Cl. 73-842.000.

Garlung, Walther; and Dahl, Helge, to Total Transportation Systems (International) A/S. Device for use in welding reinforcement members to panel plates. 4,346,808, Cl. 212-212.000.

Garrett Corporation, The: *See—*
Corrigan, Charles E., 4,347,037, Cl. 416-97.00A.

Gary, Bruce L.: *See—*
United States of America, National Aeronautics and Space Administration; and Gary, Bruce L., 4,346,595, Cl. 73-178.00R.

Gary, Wardell; and Conroy, Ernest F., Jr., to Westinghouse Electric Corp. Solid-state load protection system having ground fault sensing. 4,347,540, Cl. 361-47.000.

Gatzi, Karl: *See—*
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Gaus, Ernst. Direct current motor with magnetic coupling. 4,347,453, Cl. 310-104.000.

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Gebr. Bode & Co. GmbH: *See—*
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Gehlhaus, Jurgen; and Kieser, Manfred, to Merck Patent Gesellschaft mit beschrankter Haftung. Photosensitive hydroxyalkylphenones. 4,347,111, Cl. 204-159.160.

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Geiger, Robert J., to Singer Company, The. Simulator structure. 4,347,055, Cl. 434-30.000.

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Gellert, Klaus; Nagel, Gunter; and Pollmeier, Franz J., to Siemens Aktiengesellschaft. Stator winding for an electric machine. 4,347,454, Cl. 310-193.000.

Gema AG Apparatebau: *See—*
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Kurpiewski, Joseph V., 4,346,874, Cl. 269-21.000.

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Eckberg, Richard P., 4,347,346, Cl. 528-15.000.
Falchi, Fiorino, 4,347,415, Cl. 200-154.000.
Malm, Robert N., 4,347,556, Cl. 362-307.000.
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Olashaw, William F., 4,347,015, Cl. 403-219.000.
Park, John N.; and Steigerwald, Robert L., 4,347,464, Cl. 318-254.000.
Vandegraaf, Johannes J., 4,347,484, Cl. 331-25.000.
Will, Fritz G., 4,347,429, Cl. 219-288.000.
Williams, James W., 4,347,625, Cl. 455-17.000.

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General Motors Corporation: *See—*
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Merkle, Ralph H., 4,346,931, Cl. 296-148.000.
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Rice, Hal H.; and Kruger, Gary A., 4,346,556, Cl. 60-272.000.
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Gentilman, Richard L.: *See*—
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Gentilo, Dennis R.; Smith, Donald A.; and Pifer, David L., to Elliott Turbomachinery Co., Inc. Submerged arc welding gun. 4,347,427, Cl. 219-137.800.

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Gerb. Eickhoff Machinenfabrik und Eisengiesserei m.b.H.: *See*—
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Gibson, Robert, to Siemens Medical Laboratories, Inc. Energy interlock system for a linear accelerator. 4,347,547, Cl. 361-187.000.

Giddings Peter J.; John, David I.; and Thomas, Eric J., to Beecham Group Limited. Preparation of penicillanic acid derivatives. 4,347,182, Cl. 260-245.20R.

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Giguere, Edward L.; Kaiser, Paul H.; Campbell, Gordon M.; Hoffman, Peter F.; and Boutchyard, Hansford, Jr., to Diamond Shamrock Corporation. Occupational health/environmental surveillance. 4,347,568, Cl. 364-300.000.

Gill, Anthony; Gosden, John; and Parker, Robert W., to Reed International Limited. Drainage inspection chambers. 4,346,921, Cl. 285-110.000.

Gillies, George M., to British Nuclear Fuels Limited. Apparatus and method for metering and controlling a feed of hydrogen fluoride vapor. 4,346,673, Cl. 122-31.00R.

Gilman, David J.; Wardleworth, James M.; and Yellin, Tobias O., to Imperial Chemical Industries Ltd.; and ICI Americas Inc. Guanidine derivatives of imidazoles and thiazoles. 4,347,370, Cl. 548-193.000.

Ginter, Sally P.; Pawloski, Chester E.; and Stevens, Violete L., to Dow Chemical Co., The. Polyhydroxyl polyether compounds containing phosphorus. 4,347,194, Cl. 260-929.000.

Giobbio, Vincenzo; and Buracchi, Livio, to Pierrel S.p.A. Pharmacological preparation composed of a quinoxaline derivative mixed with sodium bicarbonate. 4,347,247, Cl. 424-250.000.

Giroux, Eugene L., to Richardson-Merrell Inc. Snake bite therapy. 4,347,255, Cl. 424-285.000.

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Bruynes, Cornelis A., 4,347,358, Cl. 544-016.000.

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Givaudan Corporation: *See*—
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Glidden, Gregory L., to FMC Corporation. Method and apparatus for tension setting and compression releasing tubular connectors. 4,347,012, Cl. 403-2.000.

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Global Marine Inc.: *See*—
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Goebel, Franz; and Morgan, Cyril, to GTE Products Corporation. Electrochemical cell. 4,347,293, Cl. 429-105.000.

Goedert, Jean, to Arbed S.A. Process and apparatus for the desulfurizing of iron melts. 4,347,078, Cl. 75-51.000.

Goertler, Horst; Hetzel, Friedrich; Knobloch, Uwe; Muller, Hans; Prohaska, Hans; Rachner, Horst; and Spieth, Wolfgang, to ITT Industries, Inc. Circuit arrangement for power windows. 4,347,465, Cl. 318-266.000.

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Good, Charles H.: *See*—
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Gort, Alfred F.; and Moore, Charles E., to Hewlett-Packard Company. Surveying instrument. 4,346,989, Cl. 356-5.000.

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Gossler, Gerhard, to E.G.O. Elektro-Gerate Blanc u. Fischer. Glass ceramic cooking appliance. 4,347,432, Cl. 219-449.000.

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Gotman, Alexander. Process for applying a thin coating in liquid form and subsequently drying it. 4,347,302, Cl. 430-270.000.

Goto, Takeshi; Kawakami, Noboru; Hirano, Itsuo; Itakura, Yoichi; and Kawahara, Yuji, to Toyo Soda Manufacturing Co., Ltd. Process for producing magnesium alloys. 4,347,077, Cl. 75-0.50B.

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Gould, Larry D.; and Garfield, Donald E., to United States of America, Army. Apparatus and method for measuring adhesive bond strength. 4,346,602, Cl. 73-842.000.

GPG International Limited: *See*—
Upperton, Paul H., 4,346,805, Cl. 206-506.000.

Graham Magnetics, Inc.: *See*—
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Gramlich, Walter; Hoffmann, Werner; Hupfer, Leopold; Meissner, Bernd; and Paetsch, Juergen, to BASF Aktiengesellschaft. 3,6-Dimethyl-3-hydroxy-oct-1-ynes and -oct-1-enes, derivatives of these, and their use as scents, and in the preparation of 3,6-dimethyl-3-hydroxy-octane. 4,347,388, Cl. 568-840.000.

Grandeur Motorcar Corporation: *See*—
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Greenhouse, Robert: *See*—
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Gregorian, Razmic S.; and Namboodri, Chettoor G., to United Merchants & Manufacturers, Inc. Foam composition for treating textile materials and method of preparation. 4,347,145, Cl. 252-8.600.

Griffin, William T., to Automated Energy Systems, Inc. Power transmission apparatus. 4,346,621, Cl. 74-665.00G.

Grube, Herbert E.: *See*—
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GTE Products Corporation: *See—*
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Goebel, Franz; and Morgan, Cyril, 4,347,293, Cl. 429-105.000.
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Guell, Jose M. D., to Jumberca, S.A. Apparatus for knitting a single-faced pile fabric. 4,346,572, Cl. 66-93.000.
Guenther, Kenneth L.; Kosner, Jerry J., Jr.; Erikson, Rolf B.; and Zemke, Edward H., to Bell & Howell Company. Vacuum document feeder. 4,346,876, Cl. 271-11.000.
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McGarry, Phillip E.; and Herman, David E., 4,347,126, Cl. 209-164.000.
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Gurr, George P.; Davis, John N.; and Wiggins, E. Thomas, to Sangamo Weston, Inc. System for controlling power distribution to customer loads. 4,347,575, Cl. 364-492.000.
Guthmann, Herbert: *See—*
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Habib, Pierre; and Luong, Minh P., to Institut Francais du Petrole. Anchoring system. 4,346,663, Cl. 114-295.000.
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Haessler, Wolfgang; and Slivar, Djuro, to Haessler & DeWay Limited. Conveyor. 4,346,803, Cl. 198-813.000.
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Hara, Takeshi; and Kayama, Yasutaka, to Teijin Limited. 8-Hydroxyhexahydronaphth[1',2':4,5]imidazo[2,1-b]thiazole and its derivatives. 4,347,369, Cl. 548-149.000.
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Harmony, Richard C., to Conservation Associates Incorporated. Aerated pulsating shower head. 4,346,844, Cl. 239-383.000.
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Hart, Frederick E. Decorative article. 4,347,270, Cl. 428-13.000.
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Hashizume, Masao; and Kitazawa, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Multiplexed telecommunication systems. 4,347,605, Cl. 370-88.000.
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Hayashi, Masaharu; and Tsuchikawa, Sunzo, to Aisin Seiki Kabushiki Kaisha. Flexible blade fan. 4,347,038, Cl. 416-132.00A.
Hayashi, Yoshihiro, to Juichiro Ozawa. Membrane for reverse osmosis and method of making the same. 4,347,139, Cl. 210-654.000.
Haytayan, Harry M. Pneumatic fastening tools. 4,346,831, Cl. 227-8.000.
Headley, Peter; Kelsey, Thomas; and Murdy, John, to Northern Engineering Industries, Limited. Arc shorting device. 4,347,414, Cl. 200-144.00R.
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Henckel, David J.; and Peters, Thomas E., to Morrison-Knudsen Forest Products Co., Inc. Method for production of directionally oriented lignocellulosic products, including means for cross-machine orientation. 4,347,202, Cl. 264-24.000.
Her Majesty the Queen: *See—*
Stirling, Leonard H., 4,346,510, Cl. 29-452.000.
Her Majesty the Queen as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See—*
Ellis, John S., 4,346,539, Cl. 52-226.000.
Herbert, Donald L., to Harvey Hubbell Incorporated. Energy absorbing assembly. 4,346,795, Cl. 188-375.000.
Herbst, Jan F.: *See—*
Chraplyvy, Andrew R.; Herbst, Jan F.; and Croat, John J., 4,347,086, Cl. 148-101.000.

Herczog, Andrew, to Corning Glass Works. Sealing glasses for electrochemical, electrical, electronic, and optical applications. 4,347,295, Cl. 429-193.000.
Herman, David E.: *See*—
McGarry, Phillip E.; and Herman, David E., 4,347,126, Cl. 209-164.000.
Hermann Berstorff Maschinenbau GmbH: *See*—
Anders, Dietmar, 4,347,003, Cl. 366-75.000.
Hermann C. Starck Berlin: *See*—
Hahn, Reinhard; and Behrens, Dieter, 4,347,084, Cl. 75-245.000.
Hernandez, Rafael J.: *See*—
Stamets, Stanley L.; Winkless, Robert A.; Hernandez, Rafael J.; Merle, Joseph J.; and Payne, Robert D., 4,346,667, Cl. 118-622.000.
Herriott, Leslie V., to Lowe and Fletcher Limited. Releasable fastening device. 4,346,924, Cl. 292-129.000.
Hetzel, Friedrich: *See*—
Goertler, Horst; Hetzel, Friedrich; Knobloch, Uwe; Muller, Hans; Prohaska, Hans; Rachner, Horst; and Spieth, Wolfgang, 4,347,465, Cl. 318-266.000.
Heuck, Oran H. Pin-back button machine. 4,346,507, Cl. 29-243.520.
Hewlett-Packard Company: *See*—
Engel, Pedro F.; and McCollum, Phillip A., 4,347,524, Cl. 346-140.00R.
Gort, Alfred F.; and Moore, Charles E., 4,346,989, Cl. 356-5.000.
Kovalick, Albert, 4,347,434, Cl. 235-92.0SH.
Hibbs, Joseph E.; Chalmers, Gerald W.; and Teixeira, Walter J., to United States of America, Navy. Rocket motor arming-firing device FSU-12/B. 4,346,658, Cl. 102-254.000.
Hida, Masayuki: *See*—
Nakajima, Junzo; Hida, Masayuki; and Horie, Masakatsu, 4,346,982, Cl. 355-3.00R.
Hilaire, Fernand, to Captocap Limited. Pilfer-proof closure cap of plastic material. 4,346,811, Cl. 215-252.000.
Hilkene, John A. Cigarette extinguisher. 4,346,719, Cl. 131-236.000.
Hill, Alan H., to General Engineering Radcliffe 1979 Limited. Vacuum chamber seals. 4,346,669, Cl. 118-733.000.
Hill, David W.: *See*—
Gardner, Keith; Pike, Edward R.; and Hill, David W., 4,346,991, Cl. 356-28.500.
Hioki, Shunkichi, to Katoh Electrical Machinery Co., Ltd. Automatic tone arm returning device. 4,347,597, Cl. 369-231.000.
Hirabayashi, Yuji: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,347,570, Cl. 364-431.040.
Hiraishi, Shigetoshi; and Matsushita, Toshihiko, to Mitsubishi Paper Mills, Ltd. Transfer-onto-plain paper type pressure-sensitive copying paper. 4,347,283, Cl. 428-320.800.
Hirano, Itsuo: *See*—
Goto, Takeshi; Kawakami, Noboru; Hirano, Itsuo; Itakura, Yoichi; and Kawahara, Yuji, 4,347,077, Cl. 75-0.50B.
Hiraoka & Co., Ltd.: *See*—
Tsutomu, Obayashi; and Mituo, Endou, 4,347,284, Cl. 428-328.000.
Hirato, Mizuho: *See*—
Kitaoka, Yoji; Hirato, Mizuho; and Miyatani, Kazuo, 4,347,223, Cl. 422-242.000.
Hirogohri, Ryoichi: *See*—
Takano, Hirotaka; Takahashi, Hideyuki; Hirogohri, Ryoichi; and Kato, Kohji, 4,347,396, Cl. 585-441.000.
Hirohata, Takashi: *See*—
Nishida, Takao; and Hirohata, Takashi, 4,347,172, Cl. 524-319.000.
Hirose, Tomoyoshi: *See*—
Ohtsuga, Hisao; Uzawa, Koji; Kamuro, Takashi; Sudo, Susumu; Hirose, Tomoyoshi; Miyao, Masafumi; and Koga, Motoyuki, 4,346,922, Cl. 285-109.000.
Hirota, Yukitsugu; Endo, Akira; Kimura, Katsuhiro; Morozumi, Hiroshi; and Sekine, Kenji, to Hitachi, Ltd.; and Nissan Motor Co., Ltd. Doppler radar mounting structure for motor vehicles. 4,346,774, Cl. 180-167.000.
Hirsch, Martin: *See*—
Reh, Lothar; Hirsch, Martin; Baron, Gerhard; Blaum, Eberhard; and Hafke, Carl, 4,347,064, Cl. 48-197.00R.
Hirschinger, Lothar: *See*—
Weber, Kurt; Rutsch, Peter; and Hirschinger, Lothar, 4,347,276, Cl. 428-160.000.
Hitachi, Ltd.: *See*—
Hirota, Yukitsugu; Endo, Akira; Kimura, Katsuhiro; Morozumi, Hiroshi; and Sekine, Kenji, 4,346,774, Cl. 180-167.000.
Ito, Hiroko; Ohira, Eiji; and Ichikawa, Akira, 4,347,408, Cl. 179-84.0VF.
Kenma, Shigeyuki, 4,347,196, Cl. 261-39.00B.
Miyashita, Kunio; Takahashi, Tadashi; and Morinaga, Shigeki, 4,347,536, Cl. 360-107.000.
Sakurai, Hideki; Nakatani, Mitsuo; Oka, Hitoshi; Yokono, Hitoshi; and Isogai, Tokio, 4,347,304, Cl. 430-291.000.
Sugano, Akira; and Tooyama, Eiji, 4,347,564, Cl. 364-132.000.
Tosaki, Hiromi; Arima, Hideo; Mozume, Teruo; Ikegami, Akira; Isogai, Tokio; and Tsubokawa, Ichiro, 4,347,166, Cl. 252-519.000.
Watanabe, Ryuji; and Kuniya, Keiichi, 4,347,413, Cl. 200-144.00B.
Hlaban, James J.; Grube, Herbert E.; and Woon, Paul S., to Kimberly-Clark Corporation. Panty liner. 4,347,092, Cl. 156-227.000.
Hobart Corporation: *See*—
Geiger, Paul B., 4,346,723, Cl. 134-104.000.
Hodge, Archie A.: *See*—
Wilke, Wilbur D.; Hodge, Archie A.; Belshaw, Thomas E.; and Hamblin, John R., 4,346,649, Cl. 99-337.000.
Hodgson, Victor F.: *See*—
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Hodits, Frank W., Jr.: *See*—
Brucken, Byron L.; and Hodits, Frank W., Jr., 4,347,046, Cl. 417-269.000.
Hoechst Aktiengesellschaft: *See*—
Bodenbenner, Kurt; Perkow, Helmut; and Vollmuller, Helmut, 4,347,144, Cl. 210-761.000.
Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, 4,347,334, Cl. 524-416.000.
Hoechst Fibers Industries: *See*—
Birk, Manfred O.; Piesczek, Wolfgang A.; and Little, Brian E., 4,346,504, Cl. 28-240.000.
Hofbauer, Peter; Ehlers, Karsten; and Heidemeyer, Paulus, to Volkswagenwerk Aktiengesellschaft. Apparatus for operating a motor vehicle. 4,346,773, Cl. 180-165.000.
Hoffacker, Franz: *See*—
Pohler, Friedmar; Falk, Hans; Muller, Josef; Klein, Hans J.; and Hoffacker, Franz, 4,346,668, Cl. 118-665.000.
Hoffman, Peter F.: *See*—
Giguere, Edward L.; Kaiser, Paul H.; Campbell, Gordon M.; Hoffman, Peter F.; and Boutchyard, Hansford, Jr., 4,347,568, Cl. 364-300.000.
Hoffmann, Kurt; and Zapf, Karl J., to Siemens Aktiengesellschaft. MOS-Integrated circuit arrangement for suppressing quiescent currents flowing in word line drivers of semiconductor memories. 4,347,588, Cl. 365-206.000.
Hoffmann-La Roche Inc.: *See*—
Franklin, Michael L., 4,346,998, Cl. 356-307.000.
Walser, Armin; and Fryer, Rodney I., 4,347,364, Cl. 546-256.000.
Walser, Armin; and Fryer, Rodney I., 4,347,365, Cl. 546-256.000.
Hoffmann, Werner: *See*—
Gramlich, Walter; Hoffmann, Werner; Hupfer, Leopold; Meissner, Bernd; and Paetsch, Juergen, 4,347,388, Cl. 568-840.000.
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; and Hoffmann, Werner, 4,347,537, Cl. 360-132.000.
Hofmann, Karl: *See*—
Eblen, Ewald; and Hofmann, Karl, 4,346,846, Cl. 239-533.300.
Hofmann, Otto; Kroy, Walter; and Nave, Peter, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Precision navigation apparatus. 4,347,511, Cl. 343-5.0PC.
Hohm, Reinhard: *See*—
Wochnowski, Waldemar; and Hohm, Reinhard, 4,346,524, Cl. 34-26.000.
Hokama, Yosh, to International Beauty Distributors, Inc. Clamp-on artificial fingernail. 4,346,720, Cl. 132-73.000.
Holdsworth, Timothy M., to Carrier Corporation. Motor compressor unit and a method of reducing noise transmitted therefrom. 4,347,042, Cl. 417-53.000.
Holdt, Donald H.; and Morgan, Donald B., to Whittaker Medical Manufacturing Company. Quick release manual type Fowler for hospital stretchers. 4,346,487, Cl. 5-74.00R.
Hollander, Anne M.: *See*—
Holmes, David L.; and Hollander, Anne M., 4,347,502, Cl. 340-545.000.
Hollandse Signaalapparaten B.V.: *See*—
Langeraar, Huibert B., 4,347,592, Cl. 367-137.000.
Holliday, John T., Jr. Steam injection system for engines. 4,346,675, Cl. 123-25.00P.
Hollingsbee, Derek A., to Smith & Nephew Associated Companies Limited. Autoclavable emulsion containing silver sulphadiazine. 4,347,238, Cl. 424-81.000.
Hollowell, William M.; and Ziv, Avraham, to American Safety Equipment Corporation. External release for reduced tension mechanism. 4,346,858, Cl. 242-107.000.
Holman, Rury R.: *See*—
Turner, Robert C.; and Holman, Rury R., 4,346,613, Cl. 73-864.510.
Holmes, Brian: *See*—
Bennett, John D.; Holmes, Brian; and Morton, David C., 4,346,800, Cl. 198-412.000.
Holmes, David L.; and Hollander, Anne M., to Johnson Pet-Dor, Inc. Early warning electrical sound alarm system for pet door structure. 4,347,502, Cl. 340-545.000.
Holmes, Lawrence, Jr. Light analyzing lenticular screen for viewing stereo images. 4,346,962, Cl. 350-128.000.
Holzscheiter, Danny B.: *See*—
Major, Jeffrey T.; Yard, LeRoy A.; and Holzscheiter, Danny B., 4,347,455, Cl. 310-239.000.
Homan, Gary R.; and Romig, Charles A., to Dow Corning Corporation. Heat cured silicone elastomer. 4,347,336, Cl. 524-731.000.
Homer, Arthur J., to Marrett Manufacturing (Proprietary) Limited. Gas scrubber with plural vertical liquid inlets. 4,347,067, Cl. 55-227.000.
Hon, Frank: *See*—
Afonso, Adriano; and Hon, Frank, 4,347,183, Cl. 260-245.20R.
Honaga, Susumu: *See*—
Kawabata, Minoru; Honaga, Susumu; and Inaguma, Yoshiharu, 4,347,048, Cl. 417-310.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Noritake, Yutaka; Kajitani, Ikuo; Arai, Sakuji; and Muto, Toshiaki, 4,347,219, Cl. 422-180.000.
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Osada, Isao; and Sano, Shoichi, 4,346,747, Cl. 152-158.000.

Honeywell Inc.: *See—*
Kensinger, Robert A.; and Norman, Robert N., 4,347,576, Cl. 364-493.000.
Whitney, John M., 4,347,443, Cl. 307-117.000.

Honeywell Information Systems Inc.: *See—*
Karcher, DeWayne E., 4,346,817, Cl. 221-312.00R.
Speraggi, Marcello, 4,346,883, Cl. 271-274.000.

Hood, Charles B., to CVI Incorporated. Super critical helium refrigeration process and apparatus. 4,346,563, Cl. 62-117.000.

Hoogeveen, Jacobus, to U.S. Philips Corporation. Method of frame synchronization of a digital TDM communication system and arrangement for performing the method. 4,347,606, Cl. 370-105.000.

Hoogstraat, Herman M. Method and apparatus for determining the hydrogen content of a gas. 4,346,583, Cl. 73-19.000.

Hooker Chemicals & Plastics Corp.: *See—*
Teichmann, Robert J.; and Mayer, Linda J., 4,347,107, Cl. 204-44.000.

Hooper, David C.; Johnson, George A.; Peter, Donald; and Rennie, George K., to Lever Brothers Company. Deodorant abrasive cleaner for surface treatment. 4,347,153, Cl. 252-174.250.

Hoover, Mervyn C., Jr., to United States of America, Navy. Radar radiometer and its use. 4,347,515, Cl. 343-100.0ME.

Hoover Universal, Inc.: *See—*
Jacobs, Ronald E., 4,346,933, Cl. 297-89.000.

Horie, Masakatsu: *See—*
Nakajima, Junzo; Hida, Masayuki; and Horie, Masakatsu, 4,346,982, Cl. 355-3.00R.

Horn, Manfred: *See—*
Britzke, Ingo; Horn, Manfred; and Gossmann, Peter, 4,346,533, Cl. 49-28.000.

Horner, Patrick J.; and Rashbrook, Robert B., to Imperial Chemical Industries Limited. Polyester compositions containing residues of dihydroxyalkoxy coumarins. 4,347,350, Cl. 528-190.000.

Hosaka, Kiyokazu: *See—*
Takagi, Takeji; and Hosaka, Kiyokazu, 4,347,204, Cl. 264-127.000.

Hoshino, Masao, to Hoshino Musical Instrument, Manufacturing Co., Ltd. Foot operated drum pedal. 4,346,638, Cl. 84-422.00R.

Hoshino Musical Instrument, Manufacturing Co., Ltd.: *See—*
Hoshino, Masao, 4,346,638, Cl. 84-422.00R.

Hosoe, Kazuya: *See—*
Kawabata, Takashi; Tsunekawa, Tokuichi; Hosoe, Kazuya; Kinoshita, Takao; Sakai, Shinji; and Taguchi, Tatsuya, 4,346,970, Cl. 354-25.000.

Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., to Exxon Research & Engineering Co. Microbiological epoxidation process. 4,347,319, Cl. 435-123.000.

Houghton, Ronald. Variable pitch screw propeller. 4,347,039, Cl. 416-167.000.

Houle, Raymond T.: *See—*
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilbourn, Frederick A., 4,346,485, Cl. 4-555.000.

Howard-Leicester, Michael; Gundacker, Siegbert; and Moffatt, Larry J., to Howard-Leicester, Michael. Vapor generator with cycling monitoring of conductivity. 4,347,430, Cl. 219-295.000.

Howells, Anthony P. S.; Viswanathan, Raman; and Angehrn, Jorg A., to Dresser Industries, Inc. Well logging correction method and apparatus. 4,346,593, Cl. 73-152.000.

Hsia, Steve J.: *See—*
Bauman, Richard F.; Taunton, John W.; Anderson, George H.; Trachte, Ken L.; and Hsia, Steve J., 4,347,117, Cl. 208-8.0LE.

Hubby, John S., to Phillips Petroleum Company. Solvent vapor recovery from a polymer solution. 4,347,098, Cl. 159-16.00S.

Hughes Aircraft Company: *See—*
Taylor, Peter F.; Tuchyner, Harold J.; Basiulis, Algerd; and Lamp, Thomas R., 4,346,643, Cl. 89-14.100.

Huijnen, Wilhelmus G. J., to Occidental Oil Shale, Inc. Method for fragmenting oil shale formation. 4,346,935, Cl. 299-2.000.

Huijsman, Adam: *See—*
Sep, Waltherus J.; and Huijsman, Adam, 4,347,170, Cl. 523-511.000.

Hunadi, Ronald O.: *See—*
Baum, Kurt; Bedford, Clifford D.; and Hunadi, Ronald O., 4,347,376, Cl. 556-466.000.

Hundeby, David R., to Macdon Industries. Transport mechanism for single and multiple unit pull type implements. 4,346,909, Cl. 280-411.00C.

Hunt, Alan B.: *See—*
Schomer, Paul D.; and Hunt, Alan B., 4,347,410, Cl. 179-175.10A.

Hunter, Donald N.; and Brook, Richard J., to Rosemount Engineering Company Limited. Method of detecting oxygen and an oxygen sensor therefor. 4,347,495, Cl. 338-34.000.

Hunter Wire Products Limited: *See—*
Rutherford, William, 4,347,129, Cl. 209-399.000.

Hupfer, Leopold: *See—*
Gramlich, Walter; Hoffmann, Werner; Hupfer, Leopold; Meissner, Bernd; and Paetsch, Juergen, 4,347,388, Cl. 568-840.000.

Huss, Albin, Jr.: *See—*
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I. W. Industries, Inc.: *See—*
Warshawsky, Jerome, 4,347,557, Cl. 362-427.000.

Ichikawa, Akira: *See—*
Ito, Hiroko; Ohira, Eiji; and Ichikawa, Akira, 4,347,408, Cl. 179-84.0VF.

ICI Americas Inc.: *See—*
Gilman, David J.; Wardleworth, James M.; and Yellin, Tobias O., 4,347,370, Cl. 548-193.000.

Ideal Toy Corporation: *See—*
Cooper, Julius; and Tilbor, Neil, 4,346,894, Cl. 273-86.00B.
Zeno, John R.; and Rosenhagen, William, 4,346,640, Cl. 84-464.00R.

Iidaka, Toshiharu: *See—*
Iwata, Hidefumi; Tuchiya, Yoshimasa; and Iidaka, Toshiharu, 4,346,932, Cl. 296-216.000.

Ikada, Yoshito: *See—*
Handa, Hajime; Yonekawa, Yasuhiro; Yamagata, Sen; Taki, Waro; Ikada, Yoshito; and Iwata, Hiroo, 4,346,712, Cl. 128-325.000.

Ikeda, Nobuo; Tanaka, Junzo; and Yoshimura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Microwave seal structure in microwave oven. 4,347,420, Cl. 219-10.55D.

Ikeda, Shigeho: *See—*
Yoshimura, Minoru; Takenaka, Yoshihiro; Ikeda, Shigeho; and Yoshii, Hiroe, 4,347,317, Cl. 435-110.000.

Ikedo, Yuji: *See—*
Abe, Kunio; Saito, Masatsugu; Ono, Masao; and Ikedo, Yuji, 4,347,596, Cl. 369-72.000.

Ikegami, Akira: *See—*
Tosaki, Hiromi; Arima, Hideo; Mozume, Teruo; Ikegami, Akira; Isogai, Tokio; and Tsubokawa, Ichiro, 4,347,166, Cl. 252-519.000.

Ikegami, Fujio: *See—*
Kaneda, Saburo; Tsuchimoto, Takamitsu; Shimizu, Kazuyuki; and Ikegami, Fujio, 4,347,565, Cl. 364-200.000.

Ikeguchi, Eiji: *See—*
Yamauchi, Junichi; Shibatani, Kyoichiro; Ikeguchi, Eiji; Omura, Ikuo; and Nagase, Yoshinori, 4,347,233, Cl. 424-7.000.

Ikumoto, Takeshi: *See—*
Touyama, Ryousuke; Inouye, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,347,356, Cl. 542-430.000.

Iley, Harold: *See—*
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Illinois Tool Works Inc.: *See—*
Brindle, Brian, 4,347,027, Cl. 411-387.000.

Imahashi, Issei, to Telmec Co., Ltd. Micro-displacement device. 4,347,452, Cl. 310-76.000.

Imamura, Shigeyuki; Matsumoto, Tohru; Muto, Naoki; and Misaki, Hideo, to Toyo Jozo Kabushiki Kaisha. Glycerol kinase from *Streptomyces canus*. 4,347,323, Cl. 435-194.000.

IMED Corporation: *See—*
Cannon, Raymond E.; Jenkins, Jon A.; and Wilson, Larry L., 4,346,606, Cl. 73-861.410.

Imig, Leland A.; and Gardner, Mickey R., to United States of America, National Aeronautics and Space Administration. Heating and cooling system. 4,346,754, Cl. 374-46.000.

Imperial Chemical Industries Limited: *See—*
Futcher, Steven; Gardener, John J.; and Hodgson, Victor F., 4,347,281, Cl. 428-318.400.
Gilman, David J.; Wardleworth, James M.; and Yellin, Tobias O., 4,347,370, Cl. 548-193.000.
Horner, Patrick J.; and Rashbrook, Robert B., 4,347,350, Cl. 528-190.000.

Inaba, Hajimu, to Fujitsu Fanuc Limited. Industrial robot control system. 4,347,578, Cl. 364-513.000.

Inada, Masami; Ohumi, Takeharu; and Hashimoto, Kenji, to Aisin Seiki Kabushiki Kaisha. Electrically operated fluid control valve unit. 4,346,736, Cl. 137-625.480.

Inagaki, Masao; and Sato, Shigeru, to Toyota Jidosha K.K.; and Fuji-Thomson Co., Ltd. Thermostat for controlling the flow of cooling water of an engine. 4,346,837, Cl. 236-34.500.

Inaguma, Yoshiharu: *See—*
Kawabata, Minoru; Honaga, Susumu; and Inaguma, Yoshiharu, 4,347,048, Cl. 417-310.000.

Inframetrics, Inc.: *See—*
Stetson, Norman B., 4,347,530, Cl. 358-113.000.

Ingard, Karl U.; and Patrick, William P., to Massachusetts Institute of Technology. Lined-duct acoustic filter. 4,346,781, Cl. 181-206.000.

Innis, Robert T.: *See—*
Peterson, Charles A.; and Innis, Robert T., 4,347,539, Cl. 361-16.000.

Inohara, Akio; Sawae, Kiyoshi; Kawaguchi, Hisao; and Fujimoto, Takeo, to Sharp Kabushiki Kaisha. Sealing technique for semiconductor devices. 4,347,074, Cl. 65-32.000.

Inokuma, Shun: *See—*
Katsube, Junki; Shimomura, Hiromi; Inokuma, Shun; and Sugie, Akihiko, 4,347,254, Cl. 424-275.000.

Inoue, Nobuyoshi: *See—*
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Inouye, Hiroyuki: *See—*
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Institut Francais du Petrole: *See—*
Born, Maurice; Briquet, Lucienne; and de Gaudemaris, Gabriel, 4,347,062, Cl. 44-68.000.
Cosyns, Jean; Durand, Daniel; and Leger, Gerard, 4,347,392, Cl. 585-259.000.
Habib, Pierre; and Luong, Minh P., 4,346,663, Cl. 114-295.000.

International Beauty Distributors, Inc.: *See—*
Hokama, Yosh, 4,346,720, Cl. 132-73.000.

International Business Machines Corporation: *See*—
Brown, Clifford G., 4,347,009, Cl. 400-611.000.
Cullet, Rene, 4,347,479, Cl. 324-64.000.
Eardley, David B., 4,347,585, Cl. 365-105.000.
Jagodzinski, Peter F.; Field, Thomas R.; and Patrick, Carl D., 4,347,008, Cl. 400-208.000.
Lee, Robert P.; and Closs, Felix H., 4,347,498, Cl. 340-825.020.
Schaefer, John O., 4,347,007, Cl. 400-208.000.
Scranton, Robert A., 4,347,583, Cl. 365-87.000.
Shakib, Iraj D., 4,347,006, Cl. 400-187.000.

International Harvester Co.: *See*—
Swanson, William C.; and Heersink, Evert J., 4,346,763, Cl. 172-2.000.

International Octrooi Maatischappit "Octropa" B.V.: *See*—
Challen, Ian A.; East, Sandra; and Sanderson, George R., 4,347,261, Cl. 426-573.000.

International Standard Electric Corporation: *See*—
Blomley, Peter F., 4,347,407, Cl. 179-81.00R.

International Water Saving Systems, Inc.: *See*—
Albertassi, James H.; Heinze, Walter O.; and Landsman, Aaron, 4,347,142, Cl. 210-756.000.

Internationale Octrooi Maatschappij "Octropa" B.V.: *See*—
Sep, Waltherus J.; and Huijsman, Adam, 4,347,170, Cl. 523-511.000.

Interox Chemicals Limited: *See*—
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,347,149, Cl. 252-102.000.

Invernizzi, Renzo; Ligorati, Ferdinando; Fontanesi, Maurizio; and Catenacci, Roberto, to Euteco Impianti S.p.A. Catalyst for the polymerization of alpha-olefins. 4,347,162, Cl. 252-429.00B.

Irwin, Russell P.: *See*—
Melin, John A.; Irwin, Russell P.; and Epstein, Gordon L., 4,346,968, Cl. 351-23.000.

Isailovic, Jordan: *See*—
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Ishida, Tokuji: *See*—
Taniguchi, Nobuyuki; Nakai, Masaaki; Ishida, Tokuji; and Uchida, Isamu, 4,346,978, Cl. 354-289.000.

Ishidoshiro, Hiroshi: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,346,503, Cl. 28-155.000.

Ishigaki, Yukinobu; and Ozaki, Hideaki, to Victor Company of Japan, Ltd. Apparatus for automatic selective switching and transmission of input signals. 4,347,510, Cl. 340-825.500.

Ishihama, Satoshi; Miyoshi, Taisuke; and Iwasa, Koji, to Kabushiki Kaisha Daini Seikosha. Electrochromic display device. 4,346,964, Cl. 350-357.000.

Ishihara Sangyo Kaisha Ltd.: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; Shigehara, Itaru; Nagatani, Kuniaki; and Nishimura, Shigeyuki, 4,347,390, Cl. 570-202.000.

Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member and electrophotographic process. 4,347,296, Cl. 430-42.000.

Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, to Canon Kabushiki Kaisha. Electrophotographic method and element. 4,347,297, Cl. 430-42.000.

Ishii, Daido; and Konishi, Hideki, to Japan Spectroscopic Co., Ltd. Device for introducing micro amount of sample into an anaiyzing apparatus. 4,346,610, Cl. 73-863.730.

Ishizuka Glass Co., Ltd.: *See*—
Nagaoka, Kinnosuke; Kato, Tsumugu; and Nozawa, Mitsuru, 4,347,072, Cl. 65-27.000.

Ishizuka, Takashi; Moriyama, Yasuhiro; and Nakamura, Masao, to Nitto Electric Industrial Co., Ltd. Heat fusible polyimide compound films and process for producing the same. 4,347,286, Cl. 428-349.000.

Iso, Basaric. Console traffic direction post. 4,346,666, Cl. 116-63.00R.

Iso, Tadashi: *See*—
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,347,371, Cl. 548-201.000.

Isobe, Shinichi: *See*—
Fukuyama, Hiroomi; Isobe, Shinichi; Yonekura, Mikio; and Kataoka, Minoru, 4,347,609, Cl. 371-34.000.

Isogai, Tokio: *See*—
Sakurai, Hideki; Nakatani, Mitsuo; Oka, Hitoshi; Yokono, Hitoshi; and Isogai, Tokio, 4,347,304, Cl. 430-291.000.
Tosaki, Hiromi; Arima, Hideo; Mozume, Teruo; Ikegami, Akira; Isogai, Tokio; and Tsubokawa, Ichiro, 4,347,166, Cl. 252-519.000.

Isono, Tadao, to Osawa Precision Industries, Ltd. Multiple control system for camera. 4,346,975, Cl. 354-195.000.

Isshiki, Tomiya; Tomita, Tetsuo; Sakaguchi, Shuzabu; Kohzaki, Toshiaki; Aoki, Osamu; Takeda, Norio; and Aoki, Yoshiyuki, to Mitsubishi Gas Chemical Company, Inc. Process for producing benzophenone-azines. 4,347,383, Cl. 564-249.000.

Itakura, Yoichi: *See*—
Goto, Takeshi; Kawakami, Noboru; Hirano, Itsuo; Itakura, Yoichi; and Kawahara, Yuji, 4,347,077, Cl. 75-0.50B.

Itel Corporation: *See*—
Morrison, Robert B.; Wade, James T.; and Zimmerman, Robert E., 4,346,790, Cl. 188-47.000.

Ito, Hiroko; Ohira, Eiji; and Ichikawa, Akira, to Nippon Telegraph and Telephone Public Corporation; and Hitachi, Ltd. Multi-frequency signal receiver. 4,347,408, Cl. 179-84.0VF.

Ito, Kenzo: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,347,570, Cl. 364-431.040.

ITT Industries, Inc.: *See*—
Goertler, Horst; Hetzel, Friedrich; Knobloch, Uwe; Muller, Hans; Prohaska, Hans; Rachner, Horst; and Spieth, Wolfgang, 4,347,465, Cl. 318-266.000.

Ives, Milton N.: *See*—
Discenza, Frank J.; and Ives, Milton N., 4,347,411, Cl. 200-1.00B.

Iwai, Sakuya: *See*—
Kajikawa, Teruo; and Iwai, Sakuya, 4,347,275, Cl. 428-95.000.

Iwami, Isamu; Kimura, Shingo; and Iwasa, Toshio, to Asahi-Dow Limited. Foamable glass composition and glass foam. 4,347,326, Cl. 501-39.000.

Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, to Santen Pharmaceutical Co., Ltd. Disulfide compounds. 4,347,371, Cl. 548-201.000.

Iwasa, Koji: *See*—
Ishihama, Satoshi; Miyoshi, Taisuke; and Iwasa, Koji, 4,346,964, Cl. 350-357.000.

Iwasa, Toshio: *See*—
Iwami, Isamu; Kimura, Shingo; and Iwasa, Toshio, 4,347,326, Cl. 501-39.000.

Iwata, Hidefumi; Tuchiya, Yoshimasa; and Iidaka, Toshiharu, to Kokusan Kinzoku Kogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Hinge device for an openable automobile roof. 4,346,932, Cl. 296-216.000.

Iwata, Hiroo: *See*—
Handa, Hajime; Yonekawa, Yasuhiro; Yamagata, Sen; Taki, Waro; Ikada, Yoshito; and Iwata, Hiroo, 4,346,712, Cl. 128-325.000.

Iwaya, Shoichi: *See*—
Masujima, Sho; and Iwaya, Shoichi, 4,346,537, Cl. 51-413.000.

J. I. Case Company: *See*—
Schroeder, Philip W.; and Lindstrom, Edgar K., 4,346,617, Cl. 74-481.000.

Jacob, Jean-Baptiste; Mathieu, Yves; and Ruvoen, Michel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. System for exchanging encoded messages between stations. 4,347,603, Cl. 370-85.000.

Jacobs, Ronald E., to Hoover Universal, Inc. Reclining actuator for a recliner chair. 4,346,933, Cl. 297-89.000.

Jacquet, Daniel, to Stanley Mabo S.A. Bubble tubes for spirit levels. 4,347,088, Cl. 156-69.000.

Jagodzinski, Peter F.; Field, Thomas R.; and Patrick, Carl D., to International Business Machines Corporation. Anti-reversal backcheck for printer ribbon cartridge takeup spool. 4,347,008, Cl. 400-208.000.

Jalichandra, Phijit; Dowell, John S.; and Carlson, John A., to Xerox Corporation. Printed circuit board projection imaging system. 4,346,987, Cl. 355-40.000.

Janssen, Alexander P. Visible indexes. 4,347,274, Cl. 428-78.000.

Janszen, Bryan L. Spin-jangle tambourine. 4,346,637, Cl. 84-418.000.

Japan Metals & Chemicals Co., Ltd.: *See*—
Nakamura, Yoshiyuki; Matsubara, Seiichi; Matsui, Takashi; Kumagai, Taiji; Senga, Taizo; and Fukutsu, Tsutomu, 4,347,614, Cl. 373-77.000.

Japan Servo Co.: *See*—
Sakamoto, Masafumi, 4,347,457, Cl. 310-256.000.

Japan Spectroscopic Co., Ltd.: *See*—
Ishii, Daido; and Konishi, Hideki, 4,346,610, Cl. 73-863.730.

Jasper, Louis J., Jr., to United States of America, Army. Travelling-wave tube utilizing vacuum housing as an rf circuit. 4,347,419, Cl. 219-10.55A.

Jatzek, Horst J.: *See*—
Beer, Douglas C.; and Jatzek, Horst J., 4,346,744, Cl. 144-176.000.
Weavell, Jack; and Jatzek, Horst J., 4,346,745, Cl. 144-176.000.

Jefferis, Raymond P., III: *See*—
Duttera, James; Jefferis, Raymond P., III; Matteson, David; and Szentlaszloi, Alexander, 4,347,127, Cl. 209-164.000.

Jenkins, Jon A.: *See*—
Cannon, Raymond E.; Jenkins, Jon A.; and Wilson, Larry L., 4,346,606, Cl. 73-861.410.

Jenkins, Kenneth L., to Manville Service Corporation. Energy efficient perlite expansion process. 4,347,155, Cl. 252-378.00P.

Jensen, William: *See*—
Lau, Charles R.; Jensen, William; and Allen, Perrin A., 4,347,280, Cl. 428-304.400.

Jeromin, Lothar S.; Geddes, Glenn F.; Baumann, Otto S.; and Santoro, Joseph F., to Xerox Corporation. Xeroradiographic intraoral dental system. 4,346,983, Cl. 355-3.00R.

Jim Walter Resources, Inc.: *See*—
White, Claude C.; and Carr, Frederick, 4,347,020, Cl. 405-260.000.

John, David I.: *See*—
Giddings, Peter J.; John, David I.; and Thomas, Eric J., 4,347,182, Cl 260-245.20R.

John Zink Company: *See*—
Reed, Robert D.; Martin, Richard R.; and Goodnight, Hershel E., 4,347,052, Cl. 431-188.000.

Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Photographic apparatus with controlled shutter blade time out. 4,346,971, Cl. 354-34.000.

Johnson, Fred D.; and Tzakis, George J., to Zenith Radio Corporation. G2 Set-up circuit for a television receiver. 4,347,528, Cl. 358-10.000.

Johnson, George A.: *See*—
Hooper, David C.; Johnson, George A.; Peter, Donald; and Rennie, George K., 4,347,153, Cl. 252-174.250.

Johnson, Jerome B.; and Cox, Gordon F. N., to Global Marine Inc. Stress sensor particularly suitable for elastic, plastic and visco-elastic materials. 4,346,600, Cl. 73-768.000.

Johnson Pet-Dor, Inc.: *See—*
Holmes, David L.; and Hollander, Anne M., 4,347,502, Cl. 340-545.000.

Johnson, Richard A.; and Lloyd, Norman E., to Nabisco Brands, Inc. Chromatographic process for enzyme purification. 4,347,322, Cl. 435-179.000.

Johnston Construction Limited: *See—*
Wrightson, Noel T.; and Currie, Russell D., 4,347,018, Cl. 405-150.000.

Johnston, David B. R.: *See—*
Christensen, Burton G.; Johnston, David B. R.; and Schmitt, Susan M., 4,347,367, Cl. 546-272.000.
Christensen, Burton G.; Johnston, David B. R.; and Schmitt, Susan M., 4,347,368, Cl. 546-272.000.

Johnston Pipes Limited: *See—*
Wrightson, Noel T.; and Currie, Russell D., 4,347,018, Cl. 405-150.000.

Jones, Donald E.; Parker, DeRay; and Boren, Paul R., to United States of America, Energy. Method for preparing dosimeter for measuring skin dose. 4,346,511, Cl. 29-458.000.

Jones, Frank W., to Alco Foodservice Equipment Company. Chopping and shredding device. 4,346,634, Cl. 83-431.000.

Jones, John C.; Sifford, Perry P.; and Sutton, Joel F., to United Technologies Corporation. Blade to blade vibration damper. 4,347,040, Cl. 416-190.000.

Joseph, Joseph P.; Dusza, John P.; and Bernstein, Seymour, to American Cyanamid Company. Novel 3-substituted amino-1-substituted heteroaryl-2-pyrazolines. 4,347,251, Cl. 424-263.000.

Jouaillec, Joseph, to Societe Nationale Industrielle Aerospatiale. Process and device for installing a vertical gyroscope. 4,346,614, Cl. 74-5.120.

Joyce, Edward R.; and Smith, William L., to SCM Corporation. Method for tall oil recovery and apparatus therefor. 4,347,110, Cl. 204-149.000.

Juhas, Joseph A.: *See—*
Dodd, Malcolm J.; and Juhas, Joseph A., 4,346,756, Cl. 165-48.00R.

Juichiro Ozawa: *See—*
Hayashi, Yoshihiro, 4,347,139, Cl. 210-654.000.

Jumberca, S.A.: *See—*
Guell, Jose M. D., 4,346,572, Cl. 66-93.000.

Kaan, Joseph P.: *See—*
Wojtecki, Rudolph G.; and Kaan, Joseph P., 4,347,433, Cl. 219-535.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Ishihama, Satoshi; Miyoshi, Taisuke; and Iwasa, Koji, 4,346,964, Cl. 350-357.000.
Nishizawa, Junichi; and Shimbo, Masafumi, 4,346,513, Cl. 29-580.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Ando, Hiroyuki, 4,346,581, Cl. 72-347.000.
Sakamoto, Masaaki; and Takeuchi, Shinji, 4,346,618, Cl. 74-491.000.
Tatsuo, Masahiro, 4,346,623, Cl. 74-764.000.
Ueno, Kunimitsu, 4,346,796, Cl. 192-18.00A.

Kabushiki Kaisha Yakult Honsha: *See—*
Mutai, Masahiko; Yokokura, Teruo; Kobayashi, Seizaburo; and Kato, Ikuo, 4,347,240, Cl. 424-92.000.

Kaibara, Nobuhiro; and Takaichi, Kazuyoshi, to Diesel Kiki Co., Ltd. Injection timing control system for fuel injection pump. 4,346,688, Cl. 123-502.000.

Kaiser, Paul H.: *See—*
Giguere, Edward L.; Kaiser, Paul H.; Campbell, Gordon M.; Hoffman, Peter F.; and Boutchyard, Hansford, Jr., 4,347,568, Cl. 364-300.000.

Kaiser, Roman; and Lamparsky, Dietmar, to Givaudan Corporation. 2-Methyl-2-vinyl-5-(1'-hydroxy or acyloxy-1',5'-dimethyl-hex-4'-en-1'-yl)tetrahydrofuran. 4,347,190, Cl. 549-497.000.

Kajikawa, Teruo; and Iwai, Sakuya, to Nippon Petrochemical Company. Carpet tile and method of making same. 4,347,275, Cl. 428-95.000.

Kajitani, Ikuo: *See—*
Noritake, Yutaka; Kajitani, Ikuo; Arai, Sakuji; and Muto, Toshiaki, 4,347,219, Cl. 422-180.000.

Kali Chemie AG: *See—*
Wolstein, Friedrich; and Koch, Gerhard, 4,347,228, Cl. 423-321.00R.

Kalina, Alexander I. Generation of energy by means of a working fluid, and regeneration of a working fluid. 4,346,561, Cl. 60-673.000.

Kalinsky, Wayne A., to Rockwell International Corporation. Voltage balance control for split capacitors in half bridge DC to DC converter. 4,347,558, Cl. 363-17.000.

Kaloi, Cyril M., to United States of America, Navy. Microstrip backfire antenna. 4,347,517, Cl. 343-700.0MS.

Kamehara, Nobuo: *See—*
Yokouchi, Kishio; Ogawa, Hiromi; Yokoyama, Hiromitsu; Kamehara, Nobuo; Niwa, Koichi; and Murakawa, Kyohei, 4,346,516, Cl. 29-845.000.

Kaminstein, Bernard. Leather grip. 4,346,890, Cl. 273-73.00J.

Kamuro, Takashi: *See—*
Ohtsuga, Hisao; Uzawa, Koji; Kamuro, Takashi; Sudo, Susumu; Hirose, Tomoyoshi; Miyao, Masafumi; and Koga, Motoyuki, 4,346,922, Cl. 285-109.000.

Kanai, Hiroshi: *See—*
Wakita, Nobuaki; and Kanai, Hiroshi, 4,346,686, Cl. 123-339.000.

Kanazashi, Tetuo: *See—*
Saito, Masaki; and Kanazashi, Tetuo, 4,347,604, Cl. 370-85.000.

Kandler, Joachim: *See—*
Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, 4,347,334, Cl. 524-416.000.

Kaneda, Saburo; Tsuchimoto, Takamitsu; Shimizu, Kazuyuki; and Ikegami, Fujio, to Fujitsu Limited. Address control system for software simulation. 4,347,565, Cl. 364-200.000.

Kango Electric Hammers Limited: *See—*
Vaughan, Christopher A., 4,346,767, Cl. 173-109.000.

Kaplon, David A.: *See—*
Bright, Edward J.; Kaplon, David A.; and Scheingold, William S., 4,346,952, Cl. 339-17.0CF.

Kapp, Wolfgang, to Degesch GmbH. Delayed release coated metal phosphide pesticides. 4,347,241, Cl. 424-128.000.

Karcher, DeWayne E., to Honeywell Information Systems Inc. Material handling apparatus. 4,346,817, Cl. 221-312.00R.

Karg, Walter E. Adjustable spatula. 4,346,927, Cl. 294-7.000.

Kassai Kabushiki Kaisha: *See—*
Kassai, Kenzou, 4,346,908, Cl. 280-87.02R.

Kassai, Kenzou, to Kassai Kabushiki Kaisha. Vehicle for children. 4,346,908, Cl. 280-87.02R.

Kastovich, John C.: *See—*
Meyerhoff, Alfred; Kastovich, John C.; Richard, James A.; and Vales, Richard J., 4,346,845, Cl. 239-418.000.

Kataoka, Minoru: *See—*
Fukuyama, Hiroomi; Isobe, Shinichi; Yonekura, Mikio; and Kataoka, Minoru, 4,347,609, Cl. 371-34.000.

Kato, Akihiko: *See—*
Osumi, Yasuaki; Suzuki, Hiroshi; Kato, Akihiko; and Nakane, Masanori, 4,347,082, Cl. 75-171.000.

Kato, Ikuo: *See—*
Mutai, Masahiko; Yokokura, Teruo; Kobayashi, Seizaburo; and Kato, Ikuo, 4,347,240, Cl. 424-92.000.

Kato, Kohji: *See—*
Takano, Hirotaka; Takahashi, Hideyuki; Hirogohri, Ryoichi; and Kato, Kohji, 4,347,396, Cl. 585-441.000.

Kato, Shinichi: *See—*
Murofushi, Satoru; Shibuya, Tadao; Kato, Shinichi; and Endo, Mitsuo, 4,347,504, Cl. 340-638.000.

Kato, Toshiro: *See—*
Kirino, Osamu; Kato, Toshiro; and Yamamoto, Shigeo, 4,347,188, Cl. 549-436.000.

Kato, Tsumugu: *See—*
Nagaoka, Kinnosuke; Kato, Tsumugu; and Nozawa, Mitsuru, 4,347,072, Cl. 65-27.000.

Katoh Electrical Machinery Co., Ltd.: *See—*
Hicki, Shunkichi, 4,347,597, Cl. 369-231.000.

Katsube, Hideo; Gamo, Gotaro; Nomura, Yoshiyuki; and Okuda, Kanemasa, to Fujitsu Fanuc Limited. Electric discharge machine. 4,347,423, Cl. 219-69.00W.

Katsube, Junki; Shimomura, Hiromi; Inokuma, Shun; and Sugie, Akihiko, to Sumitomo Chemical Company, Limited. Tricyclic cage compounds, their synthesis and use as antiviral agents. 4,347,254, Cl. 424-275.000.

Katsuma, Makoto; Suzuki, Masayuki; Shinbori, Kenichi; and Murakami, Hiroyasu, to Canon Kabushiki Kaisha. Focusing screen interchanging device in single lens reflex camera. 4,346,973, Cl. 354-152.000.

Katsuno, Yasumitsu: *See—*
Kawasaki, Kazuyoshi; and Katsuno, Yasumitsu, 4,347,216, Cl. 422-78.000.

Katz, Jerome; and Fogel, Sidney J. Method and apparatus for production of honey. 4,346,490, Cl. 6-1.000.

Kauffman, Ivan L.; and Dwyer, Gregory J., to Ex-Cell-O Corporation. Carton filler and volume adjuster apparatus for packaging machines. 4,346,819, Cl. 222-41.000.

Kaufmann, Kenneth M., to Pako Corporation. Dual rate automatic anti-oxidation replenisher control. 4,346,981, Cl. 354-324.000.

Kaus, Malcolm J.; and Miro, Nemesio D., to Dart Industries, Inc. Supported high efficiency polyolefin catalyst component and methods of making and using the same. 4,347,158, Cl. 252-429.00B.

Kavouras, Stephen P.; Post, Paul C.; Wells, Roderick A.; and Rutkowski, Stephen L., to Kavouras, Stephen P. Apparatus for processing weather radar information. 4,347,618, Cl. 375-37.000.

Kawabata, Minoru; Honaga, Susumu; and Inaguma, Yoshiharu, to Toyoda Koki Kabushiki Kaisha. Hydraulic pump for power steering. 4,347,048, Cl. 417-310.000.

Kawabata, Takashi; Tsunekawa, Tokuichi; Hosoe, Kazuya; Kinoshita, Takao; Sakai, Shinji; and Taguchi, Tatsuya, to Canon Kabushiki Kaisha. Focus detecting device. 4,346,970, Cl. 354-25.000.

Kawabata, Yuichi: *See—*
Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Kawabata, Yuichi; and Miyamura, Tamio, 4,347,584, Cl. 365-104.000.

Kawachi, Yasunori: *See—*
Mimura, Koji; Kawachi, Yasunori; and Kawai, Atsushi, 4,347,203, Cl. 264-41.000.

Kawada, Ken; and Harada, Kazumasa, to Fuji Photo Film Co., Ltd. Web winding device. 4,346,852, Cl. 242-56.200.

Kawaguchi, Hisao: *See—*
Inohara, Akio; Sawae, Kiyoshi; Kawaguchi, Hisao; and Fujimoto, Takeo, 4,347,074, Cl. 65-32.000.

Kawahara, Yuji: *See*—
Goto, Takeshi; Kawakami, Noboru; Hirano, Itsuo; Itakura, Yoichi; and Kawahara, Yuji, 4,347,077, Cl. 75-0.50B.
Kawai, Atsushi: *See*—
Mimura, Koji; Kawachi, Yasunori; and Kawai, Atsushi, 4,347,203, Cl. 264-41.000.
Kawai, Kiyoshi: *See*—
Yamada, Yasuharu; and Kawai, Kiyoshi, 4,347,157, Cl. 252-429.00B.
Kawakami, Noboru: *See*—
Goto, Takeshi; Kawakami, Noboru; Hirano, Itsuo; Itakura, Yoichi; and Kawahara, Yuji, 4,347,077, Cl. 75-0.50B.
Kawamoto, Mutsumi, to Aisin-Warner K.K. Control device for automatic transmission. 4,346,626, Cl. 74-866.000.
Kawamoto, Mutsumi; and Miki, Nobuaki, to Aisin-Warner K.K. Shift control device for an automatic transmission. 4,346,627, Cl. 74-869.000.
Kawamura, Takahide: *See*—
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,347,570, Cl. 364-431.040.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fujikawa, Tetsuzo, 4,346,685, Cl. 123-193.00P.
Kawasaki, Kazuyoshi; and Katsuno, Yasumitsu, to Mitsubishi Kasei Kogyo Kabushiki Kaisha. Wet sample decomposing apparatus. 4,347,216, Cl. 422-78.000.
Kawasaki, Teruo, to Nissan Motor Co., Ltd. Control device for an automotive vehicle FM radio. 4,347,404, Cl. 179-1.0GB.
Kayama, Yasutaka: *See*—
Hara, Takeshi; and Kayama, Yasutaka, 4,347,369, Cl. 548-149.000.
Keep, Geoffrey S., to Wiggins Teape Group Limited, The. Method of and apparatus for applying a coating to a web of sheet material. 4,347,269, Cl. 427-428.000.
Keeton, John H. Transferring liquid onto a roller surface. 4,346,531, Cl. 47-1.500.
Kehrer, Wolfgang; and Lachmann, Helmut, to Borsig GmbH. Heat exchanger for cooling slag-containing gases from coal gasification. 4,346,758, Cl. 165-134.00R.
Keil, John G.: *See*—
Cron, Martin J.; Keil, John G.; Lin, Jeng S.; Ruggeri, Mariano; and Walker, Derek, 4,347,354, Cl. 536-10.000.
Keller, Dorothy V. Tranquilizing bed. 4,346,486, Cl. 5-447.000.
Keller, Louis D. Advertising display for pick-up trucks or similar vehicles. 4,346,529, Cl. 40-588.000.
Kelsey, Thomas: *See*—
Headley, Peter; Kelsey, Thomas; and Murdy, John, 4,347,414, Cl. 200-144.00R.
Kemeny, George A.; and Litz, Donald C., to Westinghouse Electric Corp. Electromagnetic projectile launcher with self-augmenting rails. 4,347,463, Cl. 318-135.000.
Kenjo, Hideki: *See*—
Ohkada, Shinzo; and Kenjo, Hideki, 4,347,198, Cl. 264-2.300.
Kenma, Shigeyuki, to Hitachi, Ltd. Carburetor equipped with an auto-choke device. 4,347,196, Cl. 261-39.00B.
Kennametal Inc.: *See*—
College, Michael A.; and McKenry, Robert J., 4,346,934, Cl. 299-92.000.
Kennedy, Warren C.: *See*—
Scarton, Henry A.; Kennedy, Warren C.; Gaylo, Keith R.; and Caplan, Clark R., 4,346,783, Cl. 181-230.000.
Kensinger, Robert A.; and Norman, Robert N., to Honeywell Inc. Load management control apparatus with improved duty cycle operation. 4,347,576, Cl. 364-493.000.
Keshavan, Hampapur R.: *See*—
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,347,600, Cl. 370-13.000.
Kesten, Arthur S.; and Haught, Alan F., to United Technologies Corporation. Self-driven chemical heat pipe. 4,346,752, Cl. 165-1.000.
Kienzle, Wolfgang; Paschke, Werner; and Nagele, Erwin, to Robert Bosch GmbH. Flow rate meter. 4,346,589, Cl. 73-118.000.
Kieser, Manfred: *See*—
Gehlhaus, Jurgen; and Kieser, Manfred, 4,347,111, Cl. 204-159.160.
Kikuchi, Masatsugu; and Tamai, Masayoshi, to Fuji Xerox Co., Ltd. Ink jet printer. 4,347,519, Cl. 346-75.000.
Kilbourn, Frederick A.: *See*—
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilbourn, Frederick A., 4,346,485, Cl. 4-555.000.
Kimberly-Clark Corporation: *See*—
Hlaban, James J.; Grube, Herbert E.; and Woon, Paul S., 4,347,092, Cl. 156-227.000.
Kimura, Hiroyuki; Tamura, Shuichi; and Yokota, Hideo, to Canon Kabushiki Kaisha. Distance measuring device. 4,346,988, Cl. 356-1.000.
Kimura, Katsuhiro: *See*—
Hirota, Yukitsugu; Endo, Akira; Kimura, Katsuhiro; Morozumi, Hiroshi; and Sekine, Kenji, 4,346,774, Cl. 180-167.000.
Kimura, Kenji, to Olympus Optical Co., Ltd. Auto-tracking system for magnetic tape recording device. 4,347,534, Cl. 360-77.000.
Kimura, Shingo: *See*—
Iwami, Isamu; Kimura, Shingo; and Iwasa, Toshio, 4,347,326, Cl. 501-39.000.
Kimura, Shinji; Takao, Hiroshi; Ambe, Satoshi; and Akimune, Yoshio, to Nissan Motor Co., Ltd. Flat thin film type oxygen sensor. 4,347,114, Cl. 204-195.00S.
Kimura, Takeo: *See*—
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; Kimura, Takeo; and Kobayashi, Hidehiko, 4,347,310, Cl. 430-620.000.
Kingsley, William, to Xerox Corporation. Document scanner. 4,346,984, Cl. 355-8.000.
Kingston, John C. Wheelchair loading device for trains. 4,347,030, Cl. 414-556.000.
Kinoshita, Takao: *See*—
Kawabata, Takashi; Tsunekawa, Tokuichi; Hosoe, Kazuya; Kinoshita, Takao; Sakai, Shinji; and Taguchi, Tatsuya, 4,346,970, Cl. 354-25.000.
Kinzbach, Robert B., to Weatherford/Lamb, Inc. Tong assembly. 4,346,629, Cl. 81-57.200.
Kirchbrucher, Rudiger: *See*—
Elsner, Burckhardt; and Kirchbrucher, Rudiger, 4,347,021, Cl. 405-293.000.
Kirino, Osamu; Kato, Toshiro; and Yamamoto, Shigeo, to Sumitomo Chemical Company, Limited. N-Benzoylanthranilate derivatives. 4,347,188, Cl. 549-436.000.
Kister, Horst; and Ullrich, Horst, to VDO Adolf Schindling AG. Circuit arrangement for time division multiplex data transmission with a bus system. 4,347,602, Cl. 370-85.000.
Kitahara, Nobuko: *See*—
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,347,296, Cl. 430-42.000.
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,347,297, Cl. 430-42.000.
Kitajima, Nobuo: *See*—
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,347,296, Cl. 430-42.000.
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,347,297, Cl. 430-42.000.
Kitaoka, Yoji; Hirato, Mizuho; and Miyatani, Kazuo, to Agency of Industrial Science and Technology. Apparatus for making supply of high pressure liquid and relief of pressure of the same. 4,347,223, Cl. 422-242.000.
Kitazawa, Akira: *See*—
Hashizume, Masao; and Kitazawa, Akira, 4,347,605, Cl. 370-88.000.
Kitchen, Garry E.; Kitchen, Steven G.; and Wickstead, James C. Electronic pool game. 4,346,892, Cl. 273-85.00G.
Kitchen, Steven G.: *See*—
Kitchen, Garry E.; Kitchen, Steven G.; and Wickstead, James C., 4,346,892, Cl. 273-85.00G.
Kitzmiller, George. Solar heat exchanger. 4,346,695, Cl. 126-444.000.
Kizlyk, Mervin P.: *See*—
Friesen, Henry; and Kizlyk, Mervin P., 4,347,031, Cl. 414-686.000.
KLA Instruments Corporation: *See*—
Levy, Kenneth; and Sandland, Paul, 4,347,001, Cl. 356-398.000.
Klank, Otto, to Licentia Patent-Verwaltungs-GmbH. Method and apparatus for the measurement and indication of the position of a coiled material in tape form. 4,347,538, Cl. 360-137.000.
Klebe, Hans: *See*—
Schmid, Josef; Lange, Ludwig; Klebe, Hans; and Schutte, Dieter, 4,347,229, Cl. 423-336.000.
Klein, Hans J.: *See*—
Pohler, Friedmar; Falk, Hans; Muller, Josef; Klein, Hans J.; and Hoffacker, Franz, 4,346,668, Cl. 118-665.000.
Kletch, Stanley J., to Bricmont & Associates, Inc. Regenerator checkerwork brick. 4,346,753, Cl. 165-9.100.
Kliem, Peter O., to Polaroid Corporation. Novel diffusion transfer film units. 4,347,301, Cl. 430-215.000.
Kline, Larry Harold: *See*—
Beck, Milton A., 4,346,910, Cl. 280-432.000.
Kling-Tecs, Inc.: *See*—
Roberts, John S., 4,347,206, Cl. 264-176.00F.
Roberts, John S., 4,347,207, Cl. 264-176.00F.
Klockner-Humboldt-Deutz AG: *See*—
Moser, Gottfried, 4,346,839, Cl. 237-12.30R.
Klockner-Werke AG: *See*—
Heiermann, Siegfried, 4,346,903, Cl. 277-58.000.
Kluwe, Paul P.: *See*—
White, Dale A.; Kluwe, Paul P.; and Greenwood, Leon D., 4,347,442, Cl. 290-48.000.
Kneissl, Richard, to Nova-Handels AG. Closure for bottles. 4,346,810, Cl. 215-237.000.
Knobloch, Uwe: *See*—
Goertler, Horst; Hetzel, Friedrich; Knobloch, Uwe; Muller, Hans; Prohaska, Hans; Rachner, Horst; and Spieth, Wolfgang, 4,347,465, Cl. 318-266.000.
Knoll, Gunter: *See*—
Fischer, Hermann; Friese, Karl-Hermann; Gruber, Hans-Ulrich; Heinemann, Wolfgang; Knoll, Gunter; Linder, Ernst; Maurer, Helmut; Noack, Rainer; Steinke, Leo; Weber, Lothar; and Weyl, Helmut, 4,347,113, Cl. 204-195.00S.
Knott, Jack E., II, to American Can Company. Ethylene-vinyl alcohol with phenol additive. 4,347,337, Cl. 525-60.000.
Knott, Jack E., II: *See*—
Odorzynski, Thomas W.; and Knott, Jack E., II, 4,347,332, Cl. 524-169.000.
Knowles, Richard P., to Lucas Industries Limited. Starting aids for internal combustion engines. 4,346,679, Cl. 123-145.00A.
Knudsen, Niels; Orpana, Veikko; Wisur, Matti; Warulf, Olov; Bergqvist, Hakan; and Afzelius, Raoul, to SPACAB AB. Gas-filled cable with composite conduit of low carbon steel and aluminum and having particle traps. 4,347,401, Cl. 174-14.00R.

Kobale, Manfred; and Krueger, Hans, to Siemens Aktiengesellschaft. Liquid crystal display device. 4,346,963, Cl. 350-344.000.

Kobayashi, Hidehiko: *See*—
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; Kimura, Takeo; and Kobayashi, Hidehiko, 4,347,310, Cl. 430-620.000.

Kobayashi, Itaru. Apparatus for automatically turning the pages of a music box. 4,346,641, Cl. 84-487.000.

Kobayashi, Seizaburo: *See*—
Mutai, Masahiko; Yokokura, Teruo; Kobayashi, Seizaburo; and Kato, Ikuo, 4,347,240, Cl. 424-92.000.

Koch, Gerhard: *See*—
Wolstein, Friedrich; and Koch, Gerhard, 4,347,228, Cl. 423-321.00R.

Koch, Wilhelm: *See*—
Merkenich, Karl; Koch, Wilhelm; Glandorf, Kaete; Uhlmann, Gerd; and Scheurer, Guenther, 4,347,258, Cl. 426-334.000.

Koda, Akira; Sato, Fumitaka; and Nishibe, Shinji, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processor with register file and arithmetic logic circuit on one chip and register means directly connected to the chip. 4,347,566, Cl. 364-200.000.

Koga, Motoyuki: *See*—
Ohtsuga, Hisao; Uzawa, Koji; Kamuro, Takashi; Sudo, Susumu; Hirose, Tomoyoshi; Miyao, Masafumi; and Koga, Motoyuki, 4,346,922, Cl. 285-109.000.

Kohno, Teruo: *See*—
Shibahara, Takashi; Kohno, Teruo; and Misaka, Yoshisuke, 4,346,575, Cl. 72-16.000.

Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, to Fujitsu Fanuc Limited. Spindle orientation control apparatus. 4,347,470, Cl. 318-602.000.

Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, to Fujitsu Fanuc Limited. Machine tool drive motor control system. 4,347,471, Cl. 318-616.000.

Kohzaki, Toshiaki: *See*—
Isshiki, Tomiya; Tomita, Tetsuo; Sakaguchi, Shuzabu; Kohzaki, Toshiaki; Aoki, Osamu; Takeda, Norio; and Aoki, Yoshiyuki, 4,347,383, Cl. 564-249.000.

Kojima, Ichiro; Maruhashi, Kenji; and Fujiwara, Yasuo, to Nippon Oil Company, Ltd. Process for separating and recovering coproporphyrin and uroporphyrin from a culture broth containing them. 4,347,184, Cl. 260-314.000.

Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See*—
Iwata, Hidefumi; Tuchiya, Yoshimasa; and Iidaka, Toshiharu, 4,346,932, Cl. 296-216.000.

Kollmyer, Robert E.: *See*—
Caras, Bernard; and Kollmyer, Robert E., 4,346,951, Cl. 316-19.000.

Kollonitsch, Janos; Perkins, Leroy M.; Doldouras, George A.; and Marburg, Stephen, to Merck & Co., Inc. Acid addition salts of N-trityl-α-fluoromethylhistidine enantiomer derivatives. 4,347,374, Cl. 548-344.000.

Komoto, Shinsuke; and Sekiguchi, Tetsuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens barrel for macrophotographing. 4,346,967, Cl. 350-430.000.

Kondow, Ryotaro: *See*—
Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Nii, Yoshiji, 4,347,581, Cl. 364-900.000.

Konishi, Hideki: *See*—
Ishii, Daido; and Konishi, Hideki, 4,346,610, Cl. 73-863.730.

Konishi, Masaki: *See*—
Fukuda, Tadaji; Sugata, Masao; Nakagiri, Takashi; and Konishi, Masaki, 4,347,436, Cl. 250-211.00R.

Kono, Tomio: *See*—
Yanagida, Minoru; and Kono, Tomio, 4,347,080, Cl. 75-124.000.

Kontrovitz, Harold S.: *See*—
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,347,525, Cl. 346-153.100.

Korf Technologies, Inc.: *See*—
Wells, William, 4,347,079, Cl. 75-52.000.

Korver, Jan A. C., to U.S. Philips Corporation. Picture display device arranged for displaying a mixed picture signal as an interlaced television picture. 4,347,532, Cl. 358-183.000.

Kosner, Jerry J., Jr.: *See*—
Guenther, Kenneth L.; Kosner, Jerry J., Jr.; Erikson, Rolf B.; and Zemke, Edward H., 4,346,876, Cl. 271-11.000.

Kottas, Charles E.: *See*—
Kottas, Milo; Kottas, Mary E.; Kottas, Robert P.; Kottas, Charles E.; and Kottas, Joseph W., 4,346,976, Cl. 354-196.000.

Kottas, Joseph W.: *See*—
Kottas, Milo; Kottas, Mary E.; Kottas, Robert P.; Kottas, Charles E.; and Kottas, Joseph W., 4,346,976, Cl. 354-196.000.

Kottas, Mary E.: *See*—
Kottas, Milo; Kottas, Mary E.; Kottas, Robert P.; Kottas, Charles E.; and Kottas, Joseph W., 4,346,976, Cl. 354-196.000.

Kottas, Milo; Kottas, Mary E.; Kottas, Robert P.; Kottas, Charles E.; and Kottas, Joseph W. Device for automatic reciprocation of lens angle and aperture of surveillance camera. 4,346,976, Cl. 354-196.000.

Kottas, Robert P.: *See*—
Kottas, Milo; Kottas, Mary E.; Kottas, Robert P.; Kottas, Charles E.; and Kottas, Joseph W., 4,346,976, Cl. 354-196.000.

Kovacs, Julius. Adjustable socket wrench. 4,346,632, Cl. 81-174.000.

Kovalick, Albert, to Hewlett-Packard Company. Hand held data bus analyzer. 4,347,434, Cl. 235-92.0SH.

Koyama, Kazumi: *See*—
Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Kawabata, Yuichi; and Miyamura, Tamio, 4,347,584, Cl. 365-104.000.

Koyama, Kenji: *See*—
Ohno, Shotaro; Koyama, Kenji; and Fukuda, Mitsutoshi, 4,347,138, Cl. 210-639.000.

Kraft, John H.: *See*—
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilbourn, Frederick A., 4,346,485, Cl. 4-555.000.

Krasij, Bohdan: *See*—
Mune, Charles; and Krasij, Bohdan, 4,347,488, Cl. 335-9.000.

Krasnicki, Edward J.: *See*—
Lewis, Armand F.; Ma, Chen-Chi M.; Quach, Hoa; and Krasnicki, Edward J., 4,347,287, Cl. 428-378.000.

Krasser, Fritz, to Ellenberger & Poensgen GmbH. Bimetal-controlled overload protection switch. 4,347,494, Cl. 337-66.000.

Kraus, Hans-Joachim; and Walter, Berthold, to Dentaurum H.P. Winkelstroeter KG. Orthodontic expansion screw. 4,347,054, Cl. 433-7.000.

Kraus, Roger B.; and Pretti, Rudy, to Rethread, Inc. Thread repair tool. 4,346,491, Cl. 10-111.000.

Krause, Gerhard: *See*—
Zeitrager, Gunther; Krause, Gerhard; and Guthmann, Herbert, 4,346,863, Cl. 248-75.000.

Krause, Rolf, to Gerb. Eickhoff Machinenfabrik und Eisengiesserei m.b.H. Cowl assembly for longwall mining machine. 4,346,939, Cl. 299-45.000.

Krauss, Ferdinand A.; Ganyard, Ivan S.; and Sabbatis, Raymond E., to Loopco Industries, Inc. Slitter with removable head. 4,346,635, Cl. 83-479.000.

Krauss, Rudolf: *See*—
Peters, Klaus-Jurgen; Krauss, Rudolf; and Binggeser, Ernst, 4,346,577, Cl. 72-129.000.

Krenitsky, Thomas A.; and Rideout, Janet L., to Burroughs Wellcome Co. Synthesis of ribosides using bacterial phosphorylase. 4,347,315, Cl. 435-87.000.

Kristiansen, Svend H., to Nordisk Ventilator Co., A/S. Thrust bearing device, particularly for taking up oscillating rotational movements. 4,346,948, Cl. 308-219.000.

Kristinsson, Haukur: *See*—
Lukaszczyk, Alfons; Martin, Henry; Diel, Peter J.; Fory, Werner; Gatzi, Karl; Kristinsson, Haukur; Muller, Beat; Muntwyler, Rene; Pachlatko, Johannes P.; Rempfler, Hermann; Schurter, Rolf; and Szczepanski, Henry, 4,347,372, Cl. 548-217.000.

Kroll, Arthur S.; and Shuster, Frank A., to Eastman Kodak Company. Electrographic development apparatus and method for use with partially-conductive developer. 4,347,298, Cl. 430-97.000.

Kroy, Walter: *See*—
Hofmann, Otto; Kroy, Walter; and Nave, Peter, 4,347,511, Cl. 343-5.0PC.

Krueger, Hans: *See*—
Kobale, Manfred; and Krueger, Hans, 4,346,963, Cl. 350-344.000.

Kruer, Melvin R.: *See*—
Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., 4,347,485, Cl. 372-42.000.

Kruger, Gary A.: *See*—
Rice, Hal H.; and Kruger, Gary A., 4,346,556, Cl. 60-272.000.

Krutsch, John R.: *See*—
Barlow, Gordon A.; and Krutsch, John R., 4,346,889, Cl. 273-1.0GA.

Kubalak, Thomas P.; Berghoff, Gene M.; and Palmer, William J. Electronic fuel management system. 4,347,496, Cl. 340-52.00R.

Kubota, Yukio. Slip joint of endotracheal tube. 4,346,702, Cl. 128-207.140.

Kuge, Tsukasa; Tamura, Yasuyuki; and Tanigawa, Koichi, to Canon Kabushiki Kaisha. Image formation method and apparatus. 4,346,986, Cl. 355-14.0CH.

Kulle, Lee K., to Baxter Travenol Laboratories, Inc. Sleeve valve for parenteral solution device. 4,346,704, Cl. 128-214.00R.

Kumagai, Taiji: *See*—
Nakamura, Yoshiyuki; Matsubara, Seiichi; Matsui, Takashi; Kumagai, Taiji; Senga, Taizo; and Fukutsu, Tsutomu, 4,347,614, Cl. 373-77.000.

Kuniya, Keiichi: *See*—
Watanabe, Ryuji; and Kuniya, Keiichi, 4,347,413, Cl. 200-144.00B.

Kurahashi, Osamu: *See*—
Miwa, Kiyoshi; Tsuchida, Takayasu; Kurahashi, Osamu; Nakamori, Shigeru; Sano, Kohosuke; and Momose, Haruo, 4,347,318, Cl. 435-115.000.

Kuramoto, Naoyuki: *See*—
Nakamura, Toshiaki; and Kuramoto, Naoyuki, 4,346,570, Cl. 464-120.000.

Kuraray Company, Ltd.: *See*—
Handa, Hajime; Yonekawa, Yasuhiro; Yamagata, Sen; Taki, Waro; Ikada, Yoshito; and Iwata, Hiroo, 4,346,712, Cl. 128-325.000.
Nagase, Yoshinori; Shibatani, Kyoichiro; Yamauchi, Junichi; and Omura, Ikuo, 4,347,174, Cl. 523-116.000.
Yamauchi, Junichi; Shibatani, Kyoichiro; Ikeguchi, Eiji; Omura, Ikuo; and Nagase, Yoshinori, 4,347,233, Cl. 424-7.000.

Kurisu, Toru: *See*—
Nakahara, Tsunamitsu; Aoki, Hiroshi; and Kurisu, Toru, 4,346,947, Cl. 308-9.000.

Kuroda, Masataka: *See*—
Miyata, Shigeo; and Kuroda, Masataka, 4,347,353, Cl. 528-485.000.

Kurpiewski, Joseph V., to General Battery Corporation. Vacuum actuated holding apparatus for a plastic welding machine. 4,346,874, Cl. 269-21.000.

Kurt Ehemann Spezialmaschinenfabrik KG: *See—*
Ehemann, Gero, 4,346,826, Cl. 223-70.000.

Kusunoki, Shigeru: *See—*
Nobue, Tomotaka; Kusunoki, Shigeru; Nishii, Kazunari; and Mori, Keijiro, 4,347,418, Cl. 219-10.55B.

Kusz, Maximillian, to Owens-Illinois, Inc. Two-piece closure having a child-resistant mode and a non child-resistant mode. 4,346,809, Cl. 215-214.000.

Kwanyuen, Prachuab: *See—*
Wildman, Samuel G.; and Kwanyuen, Prachuab, 4,347,324, Cl. 435-232.000.

Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, to Dr. C. Otto & Comp. G.m.b.H. Coke side gantry car for a battery of coke ovens. 4,347,105, Cl. 202-263.000.

Kyowa Chemical Industry, Co., Ltd.: *See—*
Miyata, Shigeo; and Kuroda, Masataka, 4,347,353, Cl. 528-485.000.

Lace, Melvin A.: *See—*
Markus, Lawrence W.; Smejkal, George; and Lace, Melvin A., 4,346,854, Cl. 242-67.10R.

Lachmann, Helmut: *See—*
Kehrer, Wolfgang; and Lachmann, Helmut, 4,346,758, Cl. 165-134.00R.

Lacoste, Francois P. G., to Perkin-Elmer Corporation, The. Interferometric system. 4,347 000, Cl. 356-360.000.

LaFleur, Paul J., Jr.: *See—*
Crescenzo, Francis C.; and LaFleur, Paul J., Jr., 4,346,545, Cl. 53-234.000.

Lafosse, Jean R. M.; and Robert, Bernard J., to Fives-Cail Babcock. Apparatus for superflocculating and thickening a sludge. 4,347,135, Cl. 210-208.000.

Lai, John T., to B. F. Goodrich Company, The. Synthesis of alpha-alkoxycarboxylic acids. 4,347,379, Cl. 562-495.000.

Lainez, Lucien, to Thomson-Brandt. Video recording on disk and device for the repetitive reading of such a recording. 4,347,527, Cl. 358-4.000.

Lake Center Industries: *See—*
Wilke, Robert A., 4,347,468, Cl. 318-331.000.

Lamarque, Gabriel, to Stein Heurtey. Apparatus for reheating molten steel in ladles. 4,347,400, Cl. 373-77.000.

Lamb, Dana B.: *See—*
Harrison, Nelson K.; and Lamb, Dana B., 4,346,578, Cl. 72-271.000.

Lamlee, Stewart. Game board and dice usable therewith. 4,346,900, Cl. 273-274.000.

Lamp, Thomas R.: *See—*
Taylor, Peter F.; Tuchyner, Harold J.; Basiulis, Algerd; and Lamp, Thomas R., 4,346,643, Cl. 89-14.100.

Lamparsky, Dietmar: *See—*
Kaiser, Roman; and Lamparsky, Dietmar, 4,347,190, Cl. 549-497.000.

Landsinger, Edmund E.; and Bosley, Denis V., to Mattel, Inc. Remote controlled sports game. 4,346,893, Cl. 273-85.00F.

Landsman, Aaron: *See—*
Albertassi, James H.; Heinze, Walter O.; and Landsman, Aaron, 4,347,142, Cl. 210-756.000.

Landsness, Clifford A.; and Buehrle, Thomas M., to B.F. Goodrich Company, The. Mat testing apparatus. 4,347,477, Cl. 324-54.000.

Lange, Ludwig: *See—*
Schmid, Josef; Lange, Ludwig; Klebe, Hans; and Schutte, Dieter, 4,347,229, Cl. 423-336.000.

Langeraar, Huibert B., to Hollandse Signaalapparaten B.V. Sonar. 4,347,592, Cl. 367-137.000.

Langlois, Nicole: *See—*
Potier, Pierre; Langlois, Nicole; Langlois, Yves; Andriamialisoa, Ratremaniaina Z.; and Mangeney, Pierre, 4,347,249, Cl. 424-262.000.

Langlois, Yves: *See—*
Potier, Pierre; Langlois, Nicole; Langlois, Yves; Andriamialisoa, Ratremaniaina Z.; and Mangeney, Pierre, 4,347,249, Cl. 424-262.000.

Larsen, John E.; and McGregor, Rob Roy, to Colgate-Palmolive Company. Cushion pad for sport shoes and the like and method for fabricating same. 4,346,525, Cl. 36-69.000.

Larson, Jay M.: *See—*
Chute, Richard; Larson, Jay M.; Tunnecliffe, Theodore N.; and Worthen, Roger P., 4,346,870, Cl. 251-356.000.

Larssen, Jens-Frederik. Lightweight building elements with high carrying capacity. 4,346,544, Cl. 52-407.000.

Laskin, Allen I.: *See—*
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,347,319, Cl. 435-123.000.

Latassa, Frank M.; and Ray, John G., to GTE Products Corporation. Compact fluorescent lamp assembly. 4,347,460, Cl. 315-63.000.

Latimer, John P.; Donaldson, Robert M.; Christian, Ted W.; and Miller, Glenn E., to Deepsea Ventures, Inc. Dredging apparatus including suction nozzles. 4,346,937, Cl. 299-8.000.

Latimer, John P.; Donaldson, Robert; Cross, Michael; MacPhaiden, Harold; Skiles, Loren D.; Schauer, Henry; and Reynolds, Thomas J., to Deepsea Ventures, Inc. Pipe transfer system. 4,347,029, Cl. 414-22.000.

Latina, Roland N., to A-T-O Inc. Baseball mitt. 4,346,481, Cl. 2-19.000.

Latsch, Reinhard; and Bianchi, Valerio, to Robert Bosch GmbH. Apparatus for controlling an internal combustion engine. 4,346,625, Cl. 74-859.000.

Lau, Charles R.; Jensen, William; and Allen, Perrin A., to GEOS Corporation. Shock absorbing sheet material. 4,347,280, Cl. 428-304.400.

Leaf Proteins, Inc.: *See—*
Wildman, Samuel G.; and Kwanyuen, Prachuab, 4,347,324, Cl. 435-232.000.

LeBlanc, James C. Vehicle. 4,346,915, Cl. 280-779.000.

Lechler GmbH & Co. KG: *See—*
Mezger, Sepp; Lerch, Kurt; Schrewe, Hans; and Pleschiutschnigg, Fritz-Peter, 4,346,724, Cl. 134-122.00R.

Lee, Dennis V.: *See—*
Cooper, John; and Lee, Dennis V., 4,347,191, Cl. 549-492.000.

Lee, Hing F.: *See—*
Black, David H. A.; Pelletier, Georges H.; and Lee, Hing F., 4,347,620, Cl. 375-112.000.

Lee, John M.; and Bauman, William C., to Dow Chemical Company, The. Recovery of lithium from brines. 4,347,327, Cl. 521-28.000.

Lee, Robert P.; and Closs, Felix H., to International Business Machines Corporation. Method and means for demand accessing and broadcast transmission among ports in a distributed star network. 4,347,498, Cl. 340-825.020.

Leftwich, Allan P.; and Parnell, Edgar W., to May & Baker Ltd. Rodenticidal 1-(3,5-bistrifluoromethylphenyl)-3-(4-t-butylpiperidino)-prop-1-yne. 4,347,252, Cl. 424-267.000.

Leger, Gerard: *See—*
Cosyns, Jean; Durand, Daniel; and Leger, Gerard, 4,347,392, Cl. 585-259.000.

Leger, Jean-Paul. Hat supporting device. 4,346,825, Cl. 223-66.000.

Leggett & Platt, Incorporated: *See—*
Bustos, Rafael T., 4,346,806, Cl. 211-49.00S.

Legrand, Paul J.; Dubeau, Michel L.; and Pachomoff, Guy R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". Apparatus for hanging a propulsion unit on an aircraft cell, tooling and process for using same. 4,346,861, Cl. 244-54.000.

Lehrmund, Willi; and Altenheiner, Erwin, to Carl Zeiss-Stiftung. Binocular telescope having a double-joint connecting bridge. 4,346,960, Cl. 350-76.000.

Leiber, Heinz, to Robert Bosch GmbH. Hydraulic brake force amplifier. 4,346,942, Cl. 303-92.000.

Leiber, Heinz, to Robert Bosch GmbH. Anti-locking apparatus. 4,346,943, Cl. 303-119.000.

Leiber, Heinz, to Robert Bosch GmbH. Hydraulic main brake cylinder. 4,346,944, Cl. 303-119.000.

Lemelson, Jerome H. Apparatus and method for charging a battery in a vehicle. 4,347,472, Cl. 320-2.000.

Lemonon, Claire; and Micheron, Francois, to Thomson-CSF. Method of fabricating piezoelectric transducer with polymer element. 4,346,505, Cl. 29-25.350.

Lendl, Josef, to Triumph-Adler A.G. Mechanism to facilitate type disc changes. 4,347,005, Cl. 400-144.200.

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Merkenich, Karl; Koch, Wilhelm; Glandorf, Kaete; Uhlmann, Gerd; and Scheurer, Guenther, to Benckiser-Knapsack GmbH. Process for the preparation of a stable food product from lacteal components. 4,347,258, Cl. 426-334.000.
Merkle, Ralph H., to General Motors Corporation. Bifold vehicle door assembly. 4,346,931, Cl. 296-148.000.
Merle, Joseph J.: *See*—
Stamets, Stanley L.; Winkless, Robert A.; Hernandez, Rafael J.; Merle, Joseph J.; and Payne, Robert D., 4,346,667, Cl. 118-622.000.
Merritt, John H., Jr., to Applied Engineering, Inc. Economizer with soot blower. 4,346,674, Cl. 122-390.000.
Meshbesher, Thomas M., to Electrohol Corporation. Method for making acetaldehyde from ethanol. 4,347,109, Cl. 204-5.90R.
Mesman, Wichert: *See*—
Dil, Jan G.; Driessen, Johannes C.; and Mesman, Wichert, 4,347,441, Cl. 250-560.000.
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See*—
Hofmann, Otto; Kroy, Walter; and Nave, Peter, 4,347,511, Cl. 343-5.0PC.
Rizos, Ioannis, 4,347,023, Cl. 410-32.000.
Uhle, Heiko, 4,346,642, Cl. 89-1.50B.
Metallgesellschaft Aktiengesellschaft: *See*—
Reh, Lothar; Hirsch, Martin; Baron, Gerhard; Blaum, Eberhard; and Hafke, Carl, 4,347,064, Cl. 48-197.00R.
Metropolitan Wire Corporation: *See*—
Welsch, John H.; Nicely, Charles W.; and Greene, Frederick C., 4,346,498, Cl. 16-44.000.
Metz, Paul, to Arbed S.A. Composite complex profile and the process for its manufacturing. 4,347,019, Cl. 405-255.000.
Metz, Robert L.: *See*—
Dick, Donald E.; Metz, Robert L.; RoJohn, D. Scott; and Elliott, Raymond D., 4,346,867, Cl. 248-424.000.
Meuleman, Lambertus J., to U.S. Philips Corporation. Control circuit for the drive current of a laser. 4,347,610, Cl. 372-29.000.
Meyer, Friedhelm: *See*—
Frister, Manfred; and Meyer, Friedhelm, 4,347,543, Cl. 361-91.000.
Meyerhoff, Alfred; Kastovich, John C.; Richard, James A.; and Vales, Richard J., to York-Luxaire, Inc. Gas burner. 4,346,845, Cl. 239-418.000.
Mezger, Sepp; Lerch, Kurt; Schrewe, Hans; and Pleschiutschnigg, Fritz-Peter, to Lechler GmbH & Co. KG; and Mannesmann AG. Apparatus for spraying a coolant on a steel slab. 4,346,724, Cl. 134-122.00R.
Michaelson, Robert C., to FMC Corporation. Preparation of hydrogen peroxide from its elements. 4,347,231, Cl. 423-584.000.
Michaelson, Robert C., to FMC Corporation. Preparation of hydrogen peroxide from its elements. 4,347,232, Cl. 423-584.000.
Michel, Christian G.; Ertell, Carolyn A.; and Burk, Johst H., to Stauffer Chemical Company. Potassium-aluminum-phosphate compositions. 4,347,325, Cl. 501-1.000.
Michel, James J.: *See*—
Mattson, Charles A.; and Michel, James J., 4,346,526, Cl. 37-259.000.
Micheletti, Arrigo. Circular knitting machines. 4,346,571, Cl. 66-55.000.
Micheron, Francois: *See*—
Lemonon, Claire; and Micheron, Francois, 4,346,505, Cl. 29-25.350.
Midgley, Ronald A., to Rolls-Royce Limited. Lubrication system. 4,346,786, Cl. 184-6.200.
Midland-Ross Co.: *See*—
Schregenberger, Alex J., 4,346,722, Cl. 134-62.000.
Mihara, Kazunobu; and Sugihara, Kazuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Handle lock device for a switch. 4,347,412, Cl. 200-42.00T.
Mii, Toshiyuki: *See*—
Zamma, Jun; Makino, Isao; Mii, Toshiyuki; and Shima, Kazumi, 4,347,221, Cl. 422-207.000.
Miki, Hisaya, to Mitsui Petrochemical Industries, Ltd. Process for continuous production of cumene and/or diisopropylbenzene. 4,347,393, Cl. 585-323.000.
Miki, Nobuaki: *See*—
Kawamoto, Mutsumi; and Miki, Nobuaki, 4,346,627, Cl. 74-869.000.
Miles Laboratories, Inc.: *See*—
Beall, Glenn L.; and Noonan, Robert P., 4,347,222, Cl. 422-211.000.
Borglum, Gerald B., 4,347,320, Cl. 435-144.000.
Daunora, Louis G., 4,347,235, Cl. 424-44.000.
Lodding, William F.; and Murray, John T., 4,346,515, Cl. 29-773.000.
Miller, Benjamin D.; and Schafer, Albert L., to Remcor Products Company. Ice dispensing mechanism. 4,346,824, Cl. 222-504.000.
Miller, Carl E., to General Motors Corporation. Standard reflective device. 4,346,996, Cl. 356-243.000.
Miller, Gerald K.: *See*—
Taylor, Robert E.; Rautiola, Norman A.; and Miller, Gerald K., 4,347,444, Cl. 307-141.000.
Miller, Glenn E.: *See*—
Latimer, John P.; Donaldson, Robert M.; Christian, Ted W.; and Miller, Glenn E., 4,346,937, Cl. 299-8.000.
Miller, Robert J., to University of California, The Regents of the. Drip irrigation tubing. 4,346,737, Cl. 138-42.000.
Miller, Stephen J.: *See*—
Mayer, Jerome F.; Miller, Stephen J.; and O'Rear, Dennis J., 4,347,121, Cl. 208-58.000.
Miller, Teddy, to Continental Group, Inc., The. Product bag for aerosol container and method of utilizing the same to facilitate filling with propellant. 4,346,743, Cl. 141-3.000.
Milo, August. Liquid level and liquid coring gauge. 4,346,519, Cl. 33-126.40R.
Mimura, Koji; Kawachi, Yasunori; and Kawai, Atsushi, to Mitsubishi Rayon Company, Ltd. Process for producing acrylic fiber. 4,347,203, Cl. 264-41.000.
Minanizono, Junji: *See*—
Takeuchi, Tetsuo; Mukunoki, Yasuo; and Minanizono, Junji, 4,347,308, Cl. 430-529.000.
Ministry of International Trade and Industry: *See*—
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Mink, Robert I.: *See*—
Epstein, Ronald A.; and Mink, Robert I., 4,347,160, Cl. 252-429.00B.
Minkowitz, Arthur, to Futura Dental Products, Inc. Dental alloy. 4,347,081, Cl. 75-157.500.
Minnema, Lourens; and Van Boekel-Mol, Grietje N., to U.S. Philips Corporation. High-voltage cable having a polythene containing insulation sheath which is provided with means to avoid or impede the formation or the growth of watertrees, the means comprising a metal complex. 4,347,288, Cl. 428-389.000.
Minnesota Mining and Manufacturing Company: *See*—
Dressler, Daryl D., 4,347,104, Cl. 162-103.000.
Dunshee, Wayne K.; and Odegaard, Janice B., 4,346,700, Cl. 128-155.000.
Minolta Camera Company: *See*—
Taniguchi, Nobuyuki; Nakai, Masaaki; Ishida, Tokuji; and Uchida, Isamu, 4,346,978, Cl. 354-289.000.
Minolta Camera Co., Ltd.: *See*—
Nakamura, Akiyoshi; Ogura, Toshinobu; and Tanaka, Masahide, 4,346,966, Cl. 350-412.000.
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Miro, Nemesio D.: *See*—
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Misaka, Yoshisuke: *See*—
Shibahara, Takashi; Kohno, Teruo; and Misaka, Yoshisuke, 4,346,575, Cl. 72-16.000.
Misaki, Hideo: *See*—
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Mitani, Megumu: *See*—
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Mitchell, Thomas O.: *See*—
Whitehurst, Darrell D.; Mitchell, Thomas O.; and Farcasiu, Malvina, 4,347,116, Cl. 208-8.0LE.
Mito, Michio: *See*—
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Adachi, Hiromi, 4,347,462, Cl. 315-290.000.
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Mitsubishi Gas Chemical Company, Inc.: *See*—
Isshiki, Tomiya; Tomita, Tetsuo; Sakaguchi, Shuzabu; Kohzaki, Toshiaki; Aoki, Osamu; Takeda, Norio; and Aoki, Yoshiyuki, 4,347,383, Cl. 564-249.000.
Mitsubishi Kasei Kogyo Kabushiki Kaisha: *See*—
Kawasaki, Kazuyoshi; and Katsuno, Yasumitsu, 4,347,216, Cl. 422-78.000.

Mitsubishi Paper Mills, Ltd.: *See*—
Hiraishi, Shigetoshi; and Matsushita, Toshihiko, 4,347,283, Cl. 428-320.800.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Takano, Hirotaka; Takahashi, Hideyuki; Hirogohri, Ryoichi; and Kato, Kohji, 4,347,396, Cl. 585-441.000.
Mitsubishi Rayon Company, Ltd.: *See*—
Mimura, Koji; Kawachi, Yasunori; and Kawai, Atsushi, 4,347,203, Cl. 264-41.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Miki, Hisaya, 4,347,393, Cl. 585-323.000.
Mitts & Merrill Inc.: *See*—
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Miwa, Kiyoshi; Tsuchida, Takayasu; Kurahashi, Osamu; Nakamori, Shigeru; Sano, Konosuke; and Momose, Haruo, to Ajinomoto Company, Incorporated. Method for producing L-threonine by fermentation. 4,347,318, Cl. 435-115.000.
Miyamura, Tamio: *See*—
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Miyao, Masafumi: *See*—
Ohtsuga, Hisao; Uzawa, Koji; Kamuro, Takashi; Sudo, Susumu; Hirose, Tomoyoshi; Miyao, Masafumi; and Koga, Motoyuki, 4,346,922, Cl. 285-109.000.
Miyashita, Kunio; Takahashi, Tadashi; and Morinaga, Shigeki, to Hitachi, Ltd. Rotary cylinder apparatus. 4,347,536, Cl. 360-107.000.
Miyata, Shigeo; and Kuroda, Masataka, to Kyowa Chemical Industry, Co., Ltd. Method for inhibiting the corrosion-causing tendency and coloration of halogen-containing olefin resin blends. 4,347,353, Cl. 528-485.000.
Miyatani, Kazuo: *See*—
Kitaoka, Yoji; Hirato, Mizuho; and Miyatani, Kazuo, 4,347,223, Cl. 422-242.000.
Miyazaki, Kenichi: *See*—
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Miyoshi, Tadayoshi: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Miyoshi, Tadayoshi; Motoyama, Koichiro; Miyazaki, Kenichi; and Yokokawa, Sumio, 4,347,529, Cl. 358-44.000.
Miyoshi, Taisuke: *See*—
Ishihama, Satoshi; Miyoshi, Taisuke; and Iwasa, Koji, 4,346,964, Cl. 350-357.000.
Mizusawa, Mitutoyo, to Nissin Kogyo Kabushiki Kaisha. Hydraulic pressure control valve device of hydraulic brake system for vehicles. 4,346,941, Cl. 303-6.00C.
Mizuyama, Akinori; and Ogita, Tadahisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Salient pole dynamoelectric machine. 4,347,451, Cl. 310-59.000.
Moan, Kenneth L., to Owens-Illinois, Inc. Solar collector module. 4,346,694, Cl. 126-443.000.
Mobil Oil Corporation: *See*—
Abdo, Milton K., 4,347,146, Cl. 252-8.55D.
Audeh, Costandi A.; and Greco, Saverio G., 4,347,225, Cl. 423-207.000.
Audeh, Costandi A.; and Greco, Saverio G., 4,347,226, Cl. 423-207.000.
Chu, Yung F.; and Chester, Arthur W., 4,347,395, Cl. 585-420.000.
Dwyer, Francis G.; and Huss, Albin, Jr., 4,347,397, Cl. 585-469.000.
Goldstein, Theodore P., 4,347,189, Cl. 549-397.000.
Mazumdar, Ranjit, 4,346,834, Cl. 229-54.00R.
Ong, S. Christine; and Bright, Margaret N., 4,347,344, Cl. 526-347.100.
Whitehurst, Darrell D.; Mitchell, Thomas O.; and Farcasiu, Malvina, 4,347,116, Cl. 208-8.0LE.
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Molaro, Bernard. Hair brush with hair cutting blade. 4,346,721, Cl. 132-85.000.
Moll, Robert, to Etablissement Liotte Representations Etrangeres. Fishing reel. 4,346,857, Cl. 242-84.300.
Momose, Haruo: *See*—
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Monsanto Company: *See*—
Bollinger, Frederic G.; D'Amico, John J.; and Hansen, Dale J., 4,347,075, Cl. 71-94.000.
D'Amico, John J.; and Schafer, David E., 4,347,366, Cl. 546-261.000.
Schumacher, Ignatius; and Wang, Kang-bo, 4,347,389, Cl. 568-937.000.
Monsimer, Harold G.: *See*—
Thanawalla, Chandrakant B.; Soulen, John R.; and Monsimer, Harold G., 4,346,710, Cl. 128-272.000.
Moodie, John A.: *See*—
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Moore Business Forms, Inc.: *See*—
Shelton, Oscar A., 4,346,916, Cl. 282-11.50A.
Moore, Charles E.: *See*—
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Moore, Kenneth L.: *See*—
Wood, Stanley E.; and Moore, Kenneth L., 4,347,439, Cl. 250-222.00R.
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., to Markem Corporation. Electrostatic label printing system. 4,347,525, Cl. 346-153.100.
Moore, Tom E. Alinement method. 4,346,520, Cl. 33-180.00R.
Moos, Kurt, to Gema AG Apparatebau. Pressure regulator for gaseous and liquid fluids. 4,346,732, Cl. 137-489.000.
Morgan, Cyril: *See*—
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Mori, Keijiro: *See*—
Nobue, Tomotaka; Kusunoki, Shigeru; Nishii, Kazunari; and Mori, Keijiro, 4,347,418, Cl. 219-10.55B.
Mori, Yoichi: *See*—
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Morinaga, Shigeki: *See*—
Miyashita, Kunio; Takahashi, Tadashi; and Morinaga, Shigeki, 4,347,536, Cl. 360-107.000.
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Morozumi, Hiroshi: *See*—
Hirota, Yukitsugu; Endo, Akira; Kimura, Katsuhiro; Morozumi, Hiroshi; and Sekine, Kenji, 4,346,774, Cl. 180-167.000.
Morrill, Charles D., to Smith International, Inc. Remote automatic make-up stab-in sealing system. 4,346,919, Cl. 285-25.000.
Morris, Donald D. Off axis optical sight system for a firearm. 4,346,995, Cl. 356-251.000.
Morris, Julian R. W., to Oxford Medical Systems Limited. Apparatus and methods for recording time intervals. 4,346,718, Cl. 128-710.000.
Morris, Keith W.: *See*—
Nelson, Hugh W.; Prohazka, George J.; and Morris, Keith W., 4,347,220, Cl. 422-185.000.
Morris, Richard D., to Carrier Corporation. Motor compressor unit and a method of dampening sound waves generated therein. 4,347,043, Cl. 417-53.000.
Morrison-Knudsen Forest Products Co., Inc.: *See*—
Henckel, David J.; and Peters, Thomas E., 4,347,202, Cl. 264-24.000.
Morrison, Robert B.; Wade, James T.; and Zimmerman, Robert E., to Itel Corporation. Articulated car brake system. 4,346,790, Cl. 188-47.000.
Morton, David C.: *See*—
Bennett, John D.; Holmes, Brian; and Morton, David C., 4,346,800, Cl. 198-412.000.
Moser, Gottfried, to Klockner-Humboldt-Deutz AG. System for heating the service cabin of a motor vehicle. 4,346,839, Cl. 237-12.30R.
Mostek Corporation: *See*—
Plachno, Robert S., 4,347,448, Cl. 307-583.000.
Proebsting, Robert J., 4,347,447, Cl. 307-548.000.
Proebsting, Robert J., 4,347,589, Cl. 365-222.000.
Motoren-und Turbinen-Union Munchen GmbH: *See*—
Bosmiller, Erich, 4,346,818, Cl. 222-58.000.
Motorola Inc.: *See*—
Furrey, John H., 4,346,586, Cl. 73-35.000.
Motoyama, Koichiro: *See*—
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Mourou, Gerard, to University of Rochester, The. Light activated switching by the avalanche effect in semiconductors. 4,347,437, Cl. 250-211.00R.
Moutonnier, Claude: *See*—
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Moyroud, Louis M., to Autologic, S.A. Photographic type composing machine with headlining attachment. 4,346,969, Cl. 354-7.000.
Mozume, Teruo: *See*—
Tosaki, Hiromi; Arima, Hideo; Mozume, Teruo; Ikegami, Akira; Isogai, Tokio; and Tsubokawa, Ichiro, 4,347,166, Cl. 252-519.000.
Muchowski, Joseph M.; and Greenhouse, Robert, to Syntex (U.S.A.) Inc. Processes for preparing 5-benzoyl-7-halo-1,2-dihydro-3H-pyrrolo[1,2-a]pyrrole-1-carboxylic acids. 4,347,185, Cl. 260-326.250.
Muchowski, Joseph M.; and Greenhouse, Robert, to Syntex (U.S.A.) Inc. Process for preparing 5-aroyl 1,2-dihydro-3-H pyrrolo[1,2-a]pyrrole-1-carboxylic acids and novel intermediates therein. 4,347,186, Cl. 548-516.000.
Muchowski, Joseph M.; and Greenhouse, Robert, to Syntex (U.S.A.) Inc. Process for preparing 5-aroyl 1,2-dihydro-3H-pyrrolo[1,2-a]pyrrole-1-carboxylic acids and novel intermediates therein. 4,347,187, Cl. 548-516.000.

Mueller, Richard A., to G. D. Searle & Co. Derivatives of α,β-unsaturated ketones. 4,347,192, Cl. 549-498.000.

Mukuda, Mutsuo; Murakami, Masahiro; and Aotsuka, Kazuo, to Sumitomo Precision Products Company Limited. Automatic pipe circumference welding apparatus. 4,347,421, Cl. 219-60.00A.

Mukunoki, Yasuo: *See*—
Takeuchi, Tetsuo; Mukunoki, Yasuo; and Minanizono, Junji, 4,347,308, Cl. 430-529.000.

Muller, Beat: *See*—
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Muller, Hans: *See*—
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Mullritter, Ludwig: *See*—
Geisslinger, Wolfgang; Pustka, Karel; Bronner, Hermann; Mullritter, Ludwig; and Vondrowski, Gabriel, 4,346,616, Cl. 192-84.00C.

Mune, Charles; and Krasij, Bohdan, to Carlingswitch, Inc. Multi-pole circuit breaker. 4,347,488, Cl. 335-9.000.

Muntwyler, Rene: *See*—
Lukaszczyk, Alfons; Martin, Henry; Diel, Peter J.; Fory, Werner; Gatzi, Karl; Kristinsson, Haukur; Muller, Beat; Muntwyler, Rene; Pachlatko, Johannes P.; Rempfler, Hermann; Schurter, Rolf; and Szczepanski, Henry, 4,347,372, Cl. 548-217.000.

Murakami, Hiroyasu: *See*—
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Murakami, Kyoichi: *See*—
Yamakoshi, Akira; Murakami, Kyoichi; and Niimura, Tsutomu, 4,347,531, Cl. 358-172.000.

Murakami, Masahiro: *See*—
Mukuda, Mutsuo; Murakami, Masahiro; and Aotsuka, Kazuo, 4,347,421, Cl. 219-60.00A.

Murakami, Masatoshi, to Nippon Electric Co., Ltd. Digital multi-level multi-phase modulation communication system. 4,347,616, Cl. 375-20.000.

Murakami, Norio: *See*—
Murano, Kazuo; Yamaguchi, Kazuo; Murakami, Norio; and Tsuda, Toshitaka, 4,347,617, Cl. 375-22.000.

Murakawa, Kyohei: *See*—
Yokouchi, Kishio; Ogawa, Hiromi; Yokoyama, Hiromitsu; Kamehara, Nobuo; Niwa, Koichi; and Murakawa, Kyohei, 4,346,516, Cl. 29-845.000.

Murano, Kazuo; Yamaguchi, Kazuo; Murakami, Norio; and Tsuda, Toshitaka, to Fujitsu Limited. Asynchronous transmission system for binary-coded information. 4,347,617, Cl. 375-22.000.

Murata Kikai Kabushiki Kaisha: *See*—
Yanobu, Hideo; and Tanaka, Tadashi, 4,346,551, Cl. 57-62.000.

Murata Manufacturing Co., Ltd.: *See*—
Tanaka, Yukio, 4,347,551, Cl. 361-307.000.

Murata, Masanori, to Nissan Motor Co., Ltd. Fitting structure for a tank. 4,346,865, Cl. 248-311.200.

Murdy, John: *See*—
Headley, Peter; Kelsey, Thomas; and Murdy, John, 4,347,414, Cl. 200-144.00R.

Murofushi, Satoru; Shibuya, Tadao; Kato, Shinichi; and Endo, Mitsuo, to Nissan Motor Co., Ltd.; and Yazaki Corporation. Device for detecting a burnt-out fuse. 4,347,504, Cl. 340-638.000.

Murphy, Alan P.; Smith, Rory J. M.; and Brooks, Maxim C., to Procter & Gamble Company, The. Spray-dried granular detergent compositions for improved greasy soil removal. 4,347,168, Cl. 252-547.000.

Murray, John T.: *See*—
Lodding, William F.; and Murray, John T., 4,346,515, Cl. 29-773.000.

Murray, Michael L. Foldable implement. 4,346,496, Cl. 15-185.000.

Mutai, Masahiko; Yokokura, Teruo; Kobayashi, Seizaburo; and Kato, Ikuo, to Kabushiki Kaisha Yakult Honsha. Antitumor agent containing *Lactobacillus casei* YIT 9018. 4,347,240, Cl. 424-92.000.

Muto, Naoki: *See*—
Imamura, Shigeyuki; Matsumoto, Tohru; Muto, Naoki; and Misaki, Hideo, 4,347,323, Cl. 435-194.000.

Muto, Toshiaki: *See*—
Noritake, Yutaka; Kajitani, Ikuo; Arai, Sakuji; and Muto, Toshiaki, 4,347,219, Cl. 422-180.000.

Myers, Daniel E.: *See*—
Lombana, Luis A.; Myers, Daniel E.; and Albertson, Orris E., 4,347,156, Cl. 252-420.000.

Myers, Daniel J., to Nivison-Weiskopf Co., The. Roll dispenser carton. 4,346,829, Cl. 225-48.000.

Myers, George D.; and Busch, Lloyd E., to Ashland Oil, Inc. Carbometallic oil conversion with liquid water. 4,347,122, Cl. 208-113.000.

Mynard, Marie-Claude; and Tayot, Jean-Louis, to Societe Anonyme dite: Institut Merieux. Ganglioside containing compositions for treating diarrhea. 4,347,244, Cl. 424-180.000.

Nabisco Brands, Inc.: *See*—
Johnson, Richard A.; and Lloyd, Norman E., 4,347,322, Cl. 435-179.000.

Nagaoka, Kinnosuke; Kato, Tsumugu; and Nozawa, Mitsuru, to Ishizuka Glass Co., Ltd.; and Agency of Industrial Science and Technology. Method and device for reducing NO_x generated in glass-melting furnace. 4,347,072, Cl. 65-27.000.

Nagasaki, Michisuke; and Sannomiya, Shigehiro, to Yanmar Diesel Engine Co., Ltd. Planetary speed change gearing. 4,346,624, Cl. 74-784.000.

Nagase, Yoshinori; Shibatani, Kyoichiro; Yamauchi, Junichi; and Omura, Ikuo, to Kuraray Company, Limited. Cement compositions. 4,347,174, Cl. 523-116.000.

Nagase, Yoshinori: *See*—
Yamauchi, Junichi; Shibatani, Kyoichiro; Ikeguchi, Eiji; Omura, Ikuo; and Nagase, Yoshinori, 4,347,233, Cl. 424-7.000.

Nagatani, Kuniaki: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; Shigehara, Itaru; Nagatani, Kuniaki; and Nishimura, Shigeyuki, 4,347,390, Cl. 570-202.000.

Nagel, Gunter: *See*—
Gellert, Klaus; Nagel, Gunter; and Pollmeier, Franz J., 4,347,454, Cl. 310-193.000.

Nagel, Louis F. Pressure cooker canning unit. 4,346,836, Cl. 236-26.00A.

Nagele, Erwin: *See*—
Kienzle, Wolfgang; Paschke, Werner; and Nagele, Erwin, 4,346,589, Cl. 73-118.000.

Nakagaki, Sadao, to Yamajirushi Jozo Co., Ltd. Dehydrating method for a root vegetable and the like. 4,346,522, Cl. 34-12.000.

Nakagaki, Shintaro: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Miyoshi, Tadayoshi; Motoyama, Koichiro; Miyazaki, Kenichi; and Yokokawa, Sumio, 4,347,529, Cl. 358-44.000.

Nakagiri, Takashi: *See*—
Fukuda, Tadaji; Sugata, Masao; Nakagiri, Takashi; and Konishi, Masaki, 4,347,436, Cl. 250-211.00R.

Nakahara, Tsunamitsu; Aoki, Hiroshi; and Kurisu, Toru, to Citizen Watch Company Limited; Nakahara, Tsunamitsu; and Aoki, Hiroshi. Hydrostatic pressure gas-liquid double phase bearing. 4,346,947, Cl. 308-9.000.

Nakai, Masaaki: *See*—
Taniguchi, Nobuyuki; Nakai, Masaaki; Ishida, Tokuji; and Uchida, Isamu, 4,346,978, Cl. 354-289.000.

Nakajima, Junzo; Hida, Masayuki; and Horie, Masakatsu, to Fujitsu Limited. Electrophotographic recording device. 4,346,982, Cl. 355-3.00R.

Nakajima, Minoru: *See*—
Takeda, Shiro; and Nakajima, Minoru, 4,347,306, Cl. 427-96.000.

Nakamori, Shigeru: *See*—
Miwa, Kiyoshi; Tsuchida, Takayasu; Kurahashi, Osamu; Nakamori, Shigeru; Sano, Konosuke; and Momose, Haruo, 4,347,318, Cl. 435-115.000.

Nakamura, Akiyoshi; Ogura, Toshinobu; and Tanaka, Masahide, to Minolta Camera Co., Ltd. Compact lens system operable in different mediums. 4,346,966, Cl. 350-412.000.

Nakamura, Fuji, heir: *See*—
Nakamura, Takeo, deceased, 4,346,661, Cl. 110-259.000.

Nakamura, Hisako: *See*—
Nakamura, Katori; and Nakamura, Hisako, 4,346,574, Cl. 70-313.000.

Nakamura, Katori; and Nakamura, Hisako. Lock device of the pushbutton system. 4,346,574, Cl. 70-313.000.

Nakamura, Masao: *See*—
Ishizuka, Takashi; Moriyama, Yasuhiro; and Nakamura, Masao, 4,347,286, Cl. 428-349.000.

Nakamura, Susumu: *See*—
Torii, Hideyasu; and Nakamura, Susumu, 4,347,338, Cl. 525-123.000.

Nakamura, Takeo, deceased (by Nakamura, Fuji, heir), to Osaka Gas Kabushiki Kaisha. Furnace for treating industrial wastes. 4,346,661, Cl. 110-259.000.

Nakamura, Toshiaki; and Kuramoto, Naoyuki, to Nissan Motor Co., Ltd. Noise resistant universal joint. 4,346,570, Cl. 464-120.000.

Nakamura, Yoshiyuki; Matsubara, Seiichi; Matsui, Takashi; Kumagai, Taiji; Senga, Taizo; and Fukutsu, Tsutomu, to Japan Metals & Chemicals Co., Ltd. Apparatus for refining ferrosilicon. 4,347,614, Cl. 373-77.000.

Nakane, Masanori: *See*—
Osumi, Yasuaki; Suzuki, Hiroshi; Kato, Akihiko; and Nakane, Masanori, 4,347,082, Cl. 75-171.000.

Nakatani, Mitsuo: *See*—
Sakurai, Hideki; Nakatani, Mitsuo; Oka, Hitoshi; Yokono, Hitoshi; and Isogai, Tokio, 4,347,304, Cl. 430-291.000.

Nakayama, Takao: *See*—
Shimazu, Ken-Ichi; and Nakayama, Takao, 4,347,300, Cl. 430-156.000.

Nakayama, Tomomi: *See*—
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Nalco Chemical Company: *See*—
Allain, Ronald J.; and Fong, Dodd W., 4,347,147, Cl. 252-33.300.
Boevink, Jan E.; Derrick, Arthur P.; and Moodie, John A., 4,347,339, Cl. 525-180.000.
Rende, Dominic S., 4,347,103, Cl. 162-79.000.

Namboodri, Chettoor G.: *See*—
Gregorian, Razmic S.; and Namboodri, Chettoor G., 4,347,145, Cl. 252-8.600.

Narco Bio-Systems, Inc.: *See*—
Childs, William C., deceased; Snook, Richard K.; and Lester, Douglas R., 4,346,604, Cl. 73-861.120.

Nartron Corporation: *See—*
Taylor, Robert E.; Rautiola, Norman A.; and Miller, Gerald K., 4,347,444, Cl. 307-141.000.
National Research Development Corporation: *See—*
Gardner, Keith; Pike, Edward R.; and Hill, David W., 4,346,991, Cl. 356-28.500.
National Steel Corporation: *See—*
Saunders, William T., 4,346,580, Cl. 72-344.000.
Natsui, Yoshinobu, to Nippon Electric Co., Ltd. Semiconductor memory device. 4,347,586, Cl. 365-174.000.
Nave, Peter: *See—*
Hofmann, Otto; Kroy, Walter; and Nave, Peter, 4,347,511, Cl. 343-5.0PC.
NCR Corporation: *See—*
Hardway, Jay B.; and Eichman, Larry W., 4,347,509, Cl. 340-778.000.
Neely, Noah A. Controlled fuel injection system. 4,346,689, Cl. 123-575.000.
Negishi, Takao; and Tomiita, Kazuo, to Toray Industries, Inc. Bulky textured multifilament yarn. 4,346,552, Cl. 57-208.000.
Neher, Robert; and Riniker, Bernhard, to Ciba-Geigy Corporation. Hypocalcaemic peptides and process for their manufacture. 4,347,242, Cl. 424-177.000.
Nelson, Gerald V.: *See—*
Ganster, Charles A.; and Nelson, Gerald V., 4,347,577, Cl. 364-501.000.
Nelson, Hugh W., to Combustion Engineering, Inc. Elimination of potassium compounds from sodium-based pulped cycles. 4,347,102, Cl. 162-35.000.
Nelson, Hugh W.; Prohazka, George J.; and Morris, Keith W., to Combustion Engineering, Inc. System for drying and burning viscous aqueous liquors which contain organics. 4,347,220, Cl. 422-185.000.
Nemethy, Mike Z. Method of making dental bridge using a prefabricated non-precious pontic. 4,346,750, Cl. 164-35.000.
Ngai, Mun-Hay. Record player. 4,347,595, Cl. 369-67.000.
Nguyen, Hiep: *See—*
Evenstad, Kenneth L.; and Nguyen, Hiep, 4,347,237, Cl. 424-78.000.
NHK Precision Co., Ltd.: *See—*
Fuse, Takeshi; and Sekine, Masaru, 4,346,793, Cl. 188-134.000.
NHK Spring Co., Ltd.: *See—*
Fuse, Takeshi; and Sekine, Masaru, 4,346,793, Cl. 188-134.000.
Nicely, Charles W.: *See—*
Welsch, John H.; Nicely, Charles W.; and Greene, Frederick C., 4,346,498, Cl. 16-44.000.
Nichols, Richard D. E.: *See—*
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Nicolau, Ion F., to Commissariat a l'Energie Atomique. Process for the preparation of alpha mercuric iodide monocrystals. 4,347,230, Cl. 423-491.000.
Nielsen, W. Kofod: *See—*
Madsen, Rud F.; Nielsen, W. Kofod; and Hansen, Ole, 4,347,061, Cl. 44-51.000.
Nienhaus, Harry A.: *See—*
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Nii, Yoshiji: *See—*
Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Nii, Yoshiji, 4,347,581, Cl. 364-900.000.
Niigata Engineering Co., Ltd.: *See—*
Suzuki, Yoshio; and Shimizu, Masao, 4,347,259, Cl. 426-465.000.
Niimura, Tsutomu: *See—*
Yamakoshi, Akira; Murakami, Kyoichi; and Niimura, Tsutomu, 4,347,531, Cl. 358-172.000.
Niki, Motohiro. Water dispenser for small animals. 4,346,672, Cl. 119-72.500.
Nippon Electric Co., Ltd.: *See—*
Murakami, Masatoshi, 4,347,616, Cl. 375-20.000.
Natsui, Yoshinobu, 4,347,586, Cl. 365-174.000.
Nippon Hoso Kyokai: *See—*
Togami, Yuji, 4,347,112, Cl. 204-192.00M.
Nippon Oil Company, Ltd.: *See—*
Kojima, Ichiro; Maruhashi, Kenji; and Fujiwara, Yasuo, 4,347,184, Cl. 260-314.000.
Nippon Petrochemical Company: *See—*
Kajikawa, Teruo; and Iwai, Sakuya, 4,347,275, Cl. 428-95.000.
Nippon Petrochemicals Company, Limited: *See—*
Sato, Atsushi; Takahashi, Naoya; Endo, Keiji; and Yanagishita, Hitoshi, 4,347,169, Cl. 252-567.000.
Nippon Soken, Inc.: *See—*
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, 4,346,585, Cl. 73-23.000.
Nippon Telegraph and Telephone Public Corporation: *See—*
Ito, Hiroko; Ohira, Eiji; and Ichikawa, Akira, 4,347,408, Cl. 179-84.0VF.
Ogawa, Seiki; Mito, Michio; and Shinoi, Tsuyoshi, 4,347,409, Cl. 179-99.00P.
Nippon Tsushin Kogyo Kabushiki Kaisha: *See—*
Ogawa, Seiki; Mito, Michio; and Shinoi, Tsuyoshi, 4,347,409, Cl. 179-99.00P.
Nippondenso Co., Ltd.: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,347,570, Cl. 364-431.040.
Ohba, Masahiro, 4,347,544, Cl. 361-154.000.
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Nishibe, Shinji: *See—*
Koda, Akira; Sato, Fumitaka; and Nishibe, Shinji, 4,347,566, Cl. 364-200.000.
Nishida, Takao; and Hirohata, Takashi, to Amchem Products, Inc. Process and composition for coating metals. 4,347,172, Cl. 524-319.000.
Nishigaki, Yuji: *See—*
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,347,296, Cl. 430-42.000.
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,347,297, Cl. 430-42.000.
Nishii, Kazunari: *See—*
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Nishimura, Shigeyuki: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; Shigehara, Itaru; Nagatani, Kuniaki; and Nishimura, Shigeyuki, 4,347,390, Cl. 570-202.000.
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; Shigehara, Itaru; Nagatani, Kuniaki; and Nishimura, Shigeyuki, to Ishihara Sangyo Kaisha Ltd. Process for producing 1-bromo-3,5-dichlorobenzene. 4,347,390, Cl. 570-202.000.
Nishizawa, Jun-ichi, to Handotai Kenkyu Shinkokou. Method and apparatus for producing a multilayer semiconductor device utilizing liquid growth. 4,347,097, Cl. 156-622.000.
Nishizawa, Junichi; and Shimbo, Masafumi, to Zaidan Hojin Handotai Kenkyu Shinkokai; and Kabushiki Kaisha Daini Seikosha. Method of fabricating semiconductor integrated circuit device utilizing selective etching and epitaxial refill. 4,346,513, Cl. 29-580.000.
Nissan Motor Co., Ltd.: *See—*
Hirota, Yukitsugu; Endo, Akira; Kimura, Katsuhiro; Morozumi, Hiroshi; and Sekine, Kenji, 4,346,774, Cl. 180-167.000.
Iwata, Hidefumi; Tuchiya, Yoshimasa; and Iidaka, Toshiharu, 4,346,932, Cl. 296-216.000.
Kawasaki, Teruo, 4,347,404, Cl. 179-1.0GB.
Kimura, Shinji; Takao, Hiroshi; Ambe, Satoshi; and Akimune, Yoshio, 4,347,114, Cl. 204-195.00S.
Murata, Masanori, 4,346,865, Cl. 248-311.200.
Murofushi, Satoru; Shibuya, Tadao; Kato, Shinichi; and Endo, Mitsuo, 4,347,504, Cl. 340-638.000.
Nakamura, Toshiaki; and Kuramoto, Naoyuki, 4,346,570, Cl. 464-120.000.
Okada, Yasumasa, 4,346,925, Cl. 292-336.300.
Nissin Kogyo Kabushiki Kaisha: *See—*
Mizusawa, Mitutoyo, 4,346,941, Cl. 303-6.00C.
Nittetsu Mining Co., Ltd.: *See—*
Shimoiizaka, Junzo; and Fujita, Toyohisa, 4,347,124, Cl. 209-1.000.
Nitto Electric Industrial Co., Ltd.: *See—*
Ishizuka, Takashi; Moriyama, Yasuhiro; and Nakamura, Masao, 4,347,286, Cl. 428-349.000.
Nivison-Weiskopf Co., The: *See—*
Myers, Daniel J., 4,346,829, Cl. 225-48.000.
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Yokouchi, Kishio; Ogawa, Hiromi; Yokoyama, Hiromitsu; Kamehara, Nobuo; Niwa, Koichi; and Murakawa, Kyohei, 4,346,516, Cl. 29-845.000.
Nixon, Thomas J.; and Iley, Harold, to Harris Corporation. Voice alarm signalling system. 4,347,607, Cl. 370-110.100.
Noack, Rainer: *See—*
Fischer, Hermann; Friese, Karl-Hermann; Gruber, Hans-Ulrich; Heinemann, Wolfgang; Knoll, Gunter; Linder, Ernst; Maurer, Helmut; Noack, Rainer; Steinke, Leo; Weber, Lothar; and Weyl, Helmut, 4,347,113, Cl. 204-195.00S.
Nobue, Tomotaka; Kusunoki, Shigeru; Nishii, Kazunari; and Mori, Keijiro, to Matsushita Electric Industrial Co., Ltd. Heat-cooking apparatus incorporating infrared detecting system. 4,347,418, Cl. 219-10.55B.
Nomura, Yoshiyuki: *See—*
Katsube, Hideo; Gamo, Gotaro; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,347,423, Cl. 219-69.00W.
Noonan, Robert P.: *See—*
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Norberg, Nils A.: *See—*
Ahlen, Karl G.; and Norberg, Nils A., 4,347,044, Cl. 417-253.000.
Norden Laboratories, Inc.: *See—*
Bass, Edmund P.; and Sharpee, Richard L., 4,347,239, Cl. 424-89.000.
Nordisk Ventilator Co., A/S: *See—*
Kristiansen, Svend H., 4,346,948, Cl. 308-219.000.
Nordson Corporation: *See—*
Rood, Alvin A., 4,346,849, Cl. 239-597.000.
Noritake, Yutaka; Kajitani, Ikuo; Arai, Sakuji; and Muto, Toshiaki, to Honda Giken Kogyo Kabushiki Kaisha. Catalytic converter for exhaust-gas cleaning use and method of assembling same. 4,347,219, Cl. 422-180.000.
Norlund, Bruce K.: *See—*
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,347,525, Cl. 346-153.100.
Norman, Edward C.; and Dowell, Howard A., to Enterra Corporation. Protection against soiling. 4,347,266, Cl. 427-154.000.
Norman, Robert N.: *See—*
Kensinger, Robert A.; and Norman, Robert N., 4,347,576, Cl. 364-493.000.

Northern Engineering Industries, Limited: *See—*
Headley, Peter; Kelsey, Thomas; and Murdy, John, 4,347,414, Cl. 200-144.00R.

Northern Telecom, Inc.: *See—*
Suffi, Louis, 4,346,956, Cl. 339-119.00R.

Northern Telecom Limited: *See—*
Black, David H. A.; Pelletier, Georges H.; and Lee, Hing F., 4,347,620, Cl. 375-112.000.

Northey, Charles R., to Grandeur Motorcar Corporation. Convertible car and method of making same. 4,346,930, Cl. 296-107.000.

Norwood Minerals, Inc.: *See—*
Dick, Perry J., Jr., 4,347,137, Cl. 210-329.000.

Nova-Handels AG: *See—*
Kneissl, Richard, 4,346,810, Cl. 215-237.000.

Nowlin, Duane D.: *See—*
Beckert, Adolf F.; Winberg, Dennis G.; and Nowlin, Duane D., 4,347,224, Cl. 422-277.000.

Nozawa, Mitsuru: *See—*
Nagaoka, Kinnosuke; Kato, Tsumugu; and Nozawa, Mitsuru, 4,347,072, Cl. 65-27.000.

Nudenberg, Walter; Rim, Yong S.; and Matthews, Demetreos N., to Uniroyal, Inc. Activators for Ziegler type polymerization catalysts. 4,347,159, Cl. 252-429.00B.

Nuebling, George E., Sr. Board game featuring olympic sports. 4,346,899, Cl. 273-244.000.

Nujack Oil Pump Company: *See—*
Stanton, George E., 4,346,620, Cl. 74-583.000.

Nunnelee, Johnny R.: *See—*
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N.V. Bekaert S.A.: *See—*
Haemers, Guy, 4,347,290, Cl. 428-625.000.

Nye, Norman H. Combustion engine with substantially constant compression. 4,346,677, Cl. 123-54.00B.

Obara, Haruki, to Fujitsu Fanuc Limited. Wire-cut, electric-discharge machining power source. 4,347,424, Cl. 219-69.00C.

Obara, Haruki, to Fujitsu Fanuc Limited. Wire-cut, electric-discharge machining power source. 4,347,425, Cl. 219-69.00C.

Occidental Oil Shale, Inc.: *See—*
Huijnen, Wilhelmus G. J., 4,346,935, Cl. 299-2.000.

Occidental Research Corporation: *See—*
Di Giacomo, Peter M., 4,347,125, Cl. 209-3.300.

Odegaard, Janice B.: *See—*
Dunshee, Wayne K.; and Odegaard, Janice B., 4,346,700, Cl. 128-155.000.

Odorzynski, Thomas W.; and Knott, Jack E., II, to American Can Company. Polyamide/polyethylene copolymer film and method for producing. 4,347,332, Cl. 524-169.000.

Ogawa, Hiromi: *See—*
Yokouchi, Kishio; Ogawa, Hiromi; Yokoyama, Hiromitsu; Kamehara, Nobuo; Niwa, Koichi; and Murakawa, Kyohei, 4,346,516, Cl. 29-845.000.

Ogawa, Kouhei, to Honda Giken Kogyo Kabushiki Kaisha. Carburetor. 4,347,195, Cl. 261-18.00R.

Ogawa, Mutsuo, to Ricoh Company, Ltd. Facsimile reading and recording device. 4,347,533, Cl. 358-296.000.

Ogawa, Seiki; Mito, Michio; and Shinoi, Tsuyoshi, to Nippon Telegraph and Telephone Public Corporation; and Nippon Tsushin Kogyo Kabushiki Kaisha. Key telephone system. 4,347,409, Cl. 179-99.00P.

Ogden, Ralph. Membrane switch control panel arrangement and label assembly for labeling same. 4,347,416, Cl. 200-317.000.

Ogilvie, Kelvin K., to ens BIO LOGICALS Inc. Ring open nucleoside analogues. 4,347,360, Cl. 544-276.000.

Ogiso, Haruhiko: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,347,570, Cl. 364-431.040.

Ogita, Tadahisa: *See—*
Mizuyama, Akinori; and Ogita, Tadahisa, 4,347,451, Cl. 310-59.000.

Ogura, Toshinobu: *See—*
Nakamura, Akiyoshi; Ogura, Toshinobu; and Tanaka, Masahide, 4,346,966, Cl. 350-412.000.

O'Hara, John W. Handy hanger molding clip. 4,346,866, Cl. 248-316.00B.

Ohara, Yuji, to Fuji Photo Film Co., Ltd. Laser recorder. 4,347,523, Cl. 346-108.000.

Ohba, Masahiro, to Nippondenso Co., Ltd. Injector drive circuit. 4,347,544, Cl. 361-154.000.

Ohira, Eiji: *See—*
Ito, Hiroko; Ohira, Eiji; and Ichikawa, Akira, 4,347,408, Cl. 179-84.0VF.

Ohkada, Shinzo; and Kenjo, Hideki, to Toray Industries, Ltd. Producing soft contact lenses. 4,347,198, Cl. 264-2.300.

Ohno, Shotaro; Koyama, Kenji; and Fukuda, Mitsutoshi, to Toyo Soda Manufacturing Co., Ltd. Method of separating serum albumin and gamma-globulin from each other. 4,347,138, Cl. 210-639.000.

Ohta, Minoru: *See—*
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, 4,346,585, Cl. 73-23.000.

Ohta, Shigeo; and Suzuki, Takeo, to Alps Electric Co., Ltd. Amplifier equipped with circuit for preventing electrostatic breakdown. 4,347,482, Cl. 330-298.000.

Ohtsu Tire & Rubber Co., Ltd.: *See—*
Osada, Isao; and Sano, Shoichi, 4,346,747, Cl. 152-158.000.

Ohtsuga, Hisao; Uzawa, Koji; Kamuro, Takashi; Sudo, Susumu; Hirose, Tomoyoshi; Miyao, Masafumi; and Koga, Motoyuki. Device for preventing leakage at pipe joints. 4,346,922, Cl. 285-109.000.

Ohumi, Takeharu: *See—*
Inada, Masami; Ohumi, Takeharu; and Hashimoto, Kenji, 4,346,736, Cl. 137-625.480.

Oka, Hitoshi: *See—*
Sakurai, Hideki; Nakatani, Mitsuo; Oka, Hitoshi; Yokono, Hitoshi; and Isogai, Tokio, 4,347,304, Cl. 430-291.000.

Okada, Yasumasa, to Nissan Motor Co., Ltd. Handle device of lid opener mechanism. 4,346,925, Cl. 292-336.300.

Okamura, Kiyohito: *See—*
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,347,347, Cl. 528-30.000.

Okuda, Kanemasa: *See—*
Katsube, Hideo; Gamo, Gotaro; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,347,423, Cl. 219-69.00W.

Okutsu, Hiroyasu, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Duplication printer. 4,346,657, Cl. 101-269.000.

Okuyama, Hidetoshi: *See—*
Touyama, Ryousuke; Inouye, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,347,356, Cl. 542-430.000.

Olashaw, William F., to General Electric Company. Structural frame corner assembly for electrical switchboards and the like. 4,347,015, Cl. 403-219.000.

Olenick, John G.; and Lorenz, Patrick E., to United States of America, Army. Float device for density gradient fractionation. 4,346,608, Cl. 73-863.210.

Olympus Optical Co., Ltd.: *See—*
Kimura, Kenji, 4,347,534, Cl. 360-77.000.
Osanai, Akira, 4,346,859, Cl. 242-201.000.
Takagi, Takeji; and Hosaka, Kiyokazu, 4,347,204, Cl. 264-127.000.

Omura, Ikuo: *See—*
Nagase, Yoshinori; Shibatani, Kyoichiro; Yamauchi, Junichi; and Omura, Ikuo, 4,347,174, Cl. 523-116.000.
Yamauchi, Junichi; Shibatani, Kyoichiro; Ikeguchi, Eiji; Omura, Ikuo; and Nagase, Yoshinori, 4,347,233, Cl. 424-7.000.

Ong, S. Christine; and Bright, Margaret N., to Mobil Oil Corporation. Oriented p-methyl styrene polymer. 4,347,344, Cl. 526-347.100.

Ono, Masao: *See—*
Abe, Kunio; Saito, Masatsugu; Ono, Masao; and Ikedo, Yuji, 4,347,596, Cl. 369-72.000.

Ono, Syoji; Miura, Shuzi; and Yoshida, Tsunemasa, to Teijin Limited. Process for the preparation of immunogammaglobulin using trithionate compounds. 4,347,179, Cl. 260-112.00B.

Ooba, Osamu. Blade type focal plane shutter. 4,346,977, Cl. 354-246.000.

O'Rear, Dennis J.: *See—*
Mayer, Jerome F.; Miller, Stephen J.; and O'Rear, Dennis J., 4,347,121, Cl. 208-58.000.

Oridoroga, Valentin A.: *See—*
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; and Furmanov, Jury A., 4,347,056, Cl. 8-116.00R.
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; and Furmanov, Jury A., 4,347,057, Cl. 8-116.00R.

Orion-yhtyma Oy: *See—*
Tanskanen, Paavo T., 4,347,236, Cl. 424-45.000.

Orlowski, Gerald J.; and Dugle, Thomas, to Armour and Company. Apparatus for applying pressure in a vertical direction. 4,346,654, Cl. 100-268.000.

Orpana, Veikko: *See—*
Knudsen, Niels; Orpana, Veikko; Wisur, Matti; Warulf, Olov; Bergqvist, Hakan; and Afzelius, Raoul, 4,347,401, Cl. 174-14.00R.

Osada, Isao; and Sano, Shoichi, to Ohtsu Tire & Rubber Co., Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Run-flat support and tire assembly. 4,346,747, Cl. 152-158.000.

Osaka Gas Kabushiki Kaisha: *See—*
Nakamura, Takeo, deceased, 4,346,661, Cl. 110-259.000.

Osanai, Akira, to Olympus Optical Co., Ltd. Tape recorder. 4,346,859, Cl. 242-201.000.

Osawa Precision Industries, Ltd.: *See—*
Isono, Tadao, 4,346,975, Cl. 354-195.000.

Osumi, Yasuaki; Suzuki, Hiroshi; Kato, Akihiko; and Nakane, Masanori, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Mischmetal alloy for storage of hydrogen. 4,347,082, Cl. 75-171.000.

Ota, Hiroshi: *See—*
Asano, Hiroaki; Ota, Hiroshi; and Yamakage, Kenji, 4,346,535, Cl. 51-101.00R.

Ota, Naoto: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,347,470, Cl. 318-602.000.
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,347,471, Cl. 318-616.000.

Otis Elevator Company: *See—*
Shung, Wu S., 4,346,788, Cl. 187-29.00R.

Ottoson, Allen E., to Vee Arc Corporation. Motor controlling. 4,347,466, Cl. 318-301.000.

Outboard Marine Corporation: *See—*
Anderson, Philip A., 4,346,690, Cl. 123-599.000.

Owen, Geoffrey R.: *See—*
Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,347,250, Cl. 424-263.000.

Owens-Corning Fiberglas Corporation: *See—*
Aubourg, Patrick F.; and Propster, Mark A., 4,347,073, Cl. 65-28.000.
Flautt, Martin C.; Wong, Robert; and Walsh, Joseph F., 4,347,278, Cl. 428-288.000.
Shannon, Richard F., 4,347,271, Cl. 428-36.000.
Uffner, William E., 4,347,171, Cl. 524-71.000.

Owens-Illinois, Inc.: *See—*
Kusz, Maximillian, 4,346,809, Cl. 215-214.000.
Moan, Kenneth L., 4,346,694, Cl. 126-443.000.

Owings, Allen J. Method for locating the depth of a drill string washout or lost circulation zone. 4,346,594, Cl. 73-155.000.

Oxford Medical Systems Limited: *See—*
Morris, Julian R. W., 4,346,718, Cl. 128-710.000.

Oxley, Vincent C.: *See—*
Chen, Wen T.; and Oxley, Vincent C., 4,347,541, Cl. 361-50.000.

Oxy Metal Industries Corporation: *See—*
Galloway, James H., 4,347,562, Cl. 363-87.000.

Oya, Masayuki: *See—*
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,347,371, Cl. 548-201.000.

Ozaki, Hideaki: *See—*
Ishigaki, Yukinobu; and Ozaki, Hideaki, 4,347,510, Cl. 340-825.500.

Ozaki, Masaru: *See—*
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; Kimura, Takeo; and Kobayashi, Hidehiko, 4,347,310, Cl. 430-620.000.

Ozawa, Hiroshi; and Tokumoto, Masao, to Minolta Camera Kabushiki Kaisha. Method of controlling toner concentration for electrophotographic copying apparatus. 4,347,299, Cl. 430-122.000.

P.M. America, Inc.: *See—*
Chase, Charles; Walters, Stephen; and Meador, Richard E., 4,346,742, Cl. 141-1.000.

Pachlatko, Johannes P.: *See—*
Lukaszczyk, Alfons; Martin, Henry; Diel, Peter J.; Fory, Werner; Gatzi, Karl; Kristinsson, Haukur; Muller, Beat; Muntwyler, Rene; Pachlatko, Johannes P.; Rempfler, Hermann; Schurter, Rolf; and Szczepanski, Henry, 4,347,372, Cl. 548-217.000.

Pachomoff, Guy R.: *See—*
Legrand, Paul J.; Dubeau, Michel L.; and Pachomoff, Guy R., 4,346,861, Cl. 244-54.000.

Pacific Innovations: *See—*
Melin, John A.; Irwin, Russell P.; and Epstein, Gordon L., 4,346,968, Cl. 351-23.000.

Package Machinery Company: *See—*
Crescenzo, Francis C.; and LaFleur, Paul J., Jr., 4,346,545, Cl. 53-234.000.

Packschies, Heinz; Feldman, Wilhelm; and Hankel, Albert, to Mannesmann Aktiengesellschaft. Purging pipes under noise-attenuating conditions. 4,346,780, Cl. 181-198.000.

Paddison, Gary W.: *See—*
McLaughlin, Albert J.; and Paddison, Gary W., 4,346,599, Cl. 73-597.000.

Paetsch, Juergen: *See—*
Gramlich, Walter; Hoffmann, Werner; Hupfer, Leopold; Meissner, Bernd; and Paetsch, Juergen, 4,347,388, Cl. 568-840.000.

Paietta, Fausto, to C.M.E. F. Lli Paietta. Device for automatic rewinding of material delivered in sheets in heliographic and similar machines. 4,346,856, Cl. 242-74.000.

Pako Corporation: *See—*
Kaufmann, Kenneth M., 4,346,981, Cl. 354-324.000.

Palazzolo, James C. Silver recovery system for X-ray and photographic film processors. 4,346,980, Cl. 354-322.000.

Pallos, Ferenc M., to Stauffer Chemical Company. N-Acylsulfonamide herbicidal antidotes. 4,347,380, Cl. 564-91.000.

Palmer, William J.: *See—*
Kubalak, Thomas P.; Berghoff, Gene M.; and Palmer, William J., 4,347,496, Cl. 340-52.00R.

Paparizos, Christos: *See—*
Shaw, Wilfrid G.; and Paparizos, Christos, 4,347,163, Cl. 252-435.000.

Paranjpe, Suresh C.; Davis, James W.; Scranton, Robert J.; and Wells, Roger D., to Mead Corporation, The. Ink jet printer. 4,347,520, Cl. 346-75.000.

Paredes, Candelario; and Slater, Billy R., to Forney Engineering Company. Industrial control system. 4,347,563, Cl. 364-137.000.

Park, Chung P., to Dow Chemical Company, The. Expandable polyolefin compositions and polyolefin foam preparation process. 4,347,329, Cl. 521-79.000.

Park, John N.; and Steigerwald, Robert L., to General Electric Company. FET Motor drive system. 4,347,464, Cl. 318-254.000.

Park, Sang M.: *See—*
Payne, David A.; and Park, Sang M., 4,347,167, Cl. 252-520.000.

Parker, DeRay: *See—*
Jones, Donald E.; Parker, DeRay; and Boren, Paul R., 4,346,511, Cl. 29-458.000.

Parker, Robert W.: *See—*
Gill, Anthony; Gosden, John; and Parker, Robert W., 4,346,921, Cl. 285-110.000.

Parnell, Edgar W.: *See—*
Leftwick, Allan P.; and Parnell, Edgar W., 4,347,252, Cl. 424-267.000.

Parsons, David, to Automotive Products Limited. Fluid pressure servomotor. 4,346,573, Cl. 70-264.000.

Parsons, Ward H. Method of and apparatus for determining with precision the payload of a water borne vessel. 4,347,574, Cl. 364-463.000.

Partus, Fred P.: *See—*
Haney, Eugene A.; and Partus, Fred P., 4,347,069, Cl. 65-3.120.

Paschke, Werner: *See—*
Kienzle, Wolfgang; Paschke, Werner; and Nagele, Erwin, 4,346,589, Cl. 73-118.000.

Patchett, Arthur A.; and Greenlee, William J., to Merck & Co., Inc. Process for preparing amino acids and esters. 4,347,375, Cl. 548-344.000.

Pate, James E.: *See—*
Rosen, Robert A.; Schuchmann, Gayle F.; and Pate, James E., 4,346,483, Cl. 4-227.000.

Patel, Ramesh N.: *See—*
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,347,319, Cl. 435-123.000.

Patrick, Carl D.: *See—*
Jagodzinski, Peter F.; Field, Thomas R.; and Patrick, Carl D., 4,347,008, Cl. 400-208.000.

Patrick, William P.: *See—*
Ingard, Karl U.; and Patrick, William P., 4,346,781, Cl. 181-206.000.

Pauluzzi, Ego: *See—*
Bezzi, Giovanni; Pauluzzi, Ego; and Zanardi, Mauro, 4,347,200, Cl. 264-9.000.

Pawloski, Chester E.: *See—*
Ginter, Sally P.; Pawloski, Chester E.; and Stevens, Violete L., 4,347,194, Cl. 260-929.000.

Payne, David A.; and Park, Sang M., to University of Illinois Foundation. Fine-grain semiconducting ceramic compositions. 4,347,167, Cl. 252-520.000.

Payne, Robert D.: *See—*
Stamets, Stanley L.; Winkless, Robert A.; Hernandez, Rafael J.; Merle, Joseph J.; and Payne, Robert D., 4,346,667, Cl. 118-622.000.

Peabody, Ralph C.; and Sundberg, Bertil J. Brush structure. 4,346,494, Cl. 15-179.000.

Pearce, Charles W.; and Schmidt, Paul F., to Bell Telephone Laboratories, Inc.; and Western Electric Company, Inc. Diffusion furnace. 4,347,431, Cl. 219-390.000.

Pearcy, Robert E.; and Raus, James E., to Western Electric Company, Inc. Assembly of electrical components with substrates. 4,347,552, Cl. 361-398.000.

Peerbolte, Gerrit H.: *See—*
Heerens, Willem C.; and Peerbolte, Gerrit H., 4,347,478, Cl. 324-61.00R.

Pekkarinen, Michael O.; and Shim, Norm, to Baxter Travenol Laboratories, Inc. Metering apparatus having rate compensation circuit. 4,346,705, Cl. 128-214.00F.

Pelletier, Georges H.: *See—*
Black, David H. A.; Pelletier, Georges H.; and Lee, Hing F., 4,347,620, Cl. 375-112.000.

Pennwalt Corporation: *See—*
Thanawalla, Chandrakant B.; Soulen, John R.; and Monsimer, Harold G., 4,346,710, Cl. 128-272.000.

Perkin-Elmer Corporation, The: *See—*
Lacoste, Francois P. G., 4,347,000, Cl. 356-360.000.
Schmid, Carl E., 4,346,603, Cl. 73-861.050.

Perkins, Leroy M.: *See—*
Kollonitsch, Janos; Perkins, Leroy M.; Doldouras, George A.; and Marburg, Stephen, 4,347,374, Cl. 548-344.000.

Perkow, Helmut: *See—*
Bodenbenner, Kurt; Perkow, Helmut; and Vollmuller, Helmut, 4,347,144, Cl. 210-761.000.

Perobelli, Aldo: *See—*
Pessina, Giorgio; and Perobelli, Aldo, 4,346,882, Cl. 271-221.000.

Perrone, Terrence J.; Bolton, Theodore S.; and Caronna, Cosimo, to Carrier Corporation. Method and apparatus for securing tubes in an air conditioning unit. 4,346,568, Cl. 62-259.100.

Persson, Per-olof G.; and Goterdal, Gote A., to Flintab Vagsystem AB. Low-profile, non-platform weigh scale. 4,346,771, Cl. 177-145.000.

Pessina, Giorgio; and Perobelli, Aldo. Jogging device. 4,346,882, Cl. 271-221.000.

Peter, Donald: *See—*
Hooper, David C.; Johnson, George A.; Peter, Donald; and Rennie, George K., 4,347,153, Cl. 252-174.250.

Peters, Gunter. Truck with loading platform and body. 4,346,929, Cl. 296-36.000.

Peters, Klaus-Jurgen; Krauss, Rudolf; and Binggeser, Ernst, to Robert Bosch GmbH. Method for producing curved valve needles. 4,346,577, Cl. 72-129.000.

Peters, Thomas E.: *See—*
Henckel, David J.; and Peters, Thomas E., 4,347,202, Cl. 264-24.000.

Peterson, Charles A.; and Innis, Robert T., to Westinghouse Electric Corp. Electrical equipment protective apparatus with energy balancing among parallel varistors. 4,347,539, Cl. 361-16.000.

Peterson, David A., to Prem Magnetics, Inc. Low profile transformer. 4,347,490, Cl. 336-60.000.

Peterson, Paul D. Planter. 4,346,532, Cl. 47-66.000.

Petkoff, Alex. Cleaning device for eyeglasses. 4,347,010, Cl. 401-10.000.

Peyronel, Jean-Francois: *See—*
Farge, Daniel; Le Roy, Pierre; Moutonnier, Claude; and Peyronel, Jean-Francois, 4,347,359, Cl. 544-182.000.

Phillips, Arthur P., to Burroughs Wellcome Co. Compounds and methods of making them. 4,347,177, Cl. 260-112.00B.

Phillips Petroleum Company: *See—*
Dietz, Richard E.; and McDaniel, Max P., 4,347,161, Cl. 252-429.00B.

Hubby, John S., 4,347,098, Cl. 159-16.00S.
Scoggin, Jack S., 4,347,385, Cl. 568-72.000.

Phillips, Raymond J.: *See—*
Carnaghan, Luason L.; and Phillips, Raymond J., 4,346,953, Cl. 339-28.000.

Piccone, Vincent A.: *See—*
LeVeen, Harry H.; and Piccone, Vincent A., 4,346,706, Cl. 128-214.00R.

Pickering & Company, Inc.: *See—*
Chass, Jacob, 4,347,491, Cl. 336-135.000.

Piduch, Hans-Gunter: *See—*
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, 4,347,105, Cl. 202-263.000.

Pierce, Stanley L., to Ford Motor Company. Four speed transaxle with mid-position transfer drive. 4,346,622, Cl. 74-688.000.

Pierrel S.p.A.: *See—*
Giobbio, Vincenzo; and Buracchi, Livio, 4,347,247, Cl. 424-250.000.

Piesczek, Wolfgang A.: *See—*
Birk, Manfred O.; Piesczek, Wolfgang A.; and Little, Brian E., 4,346,504, Cl. 28-240.000.

Pieters, Wim J.: *See—*
Sherwood, Rexford D.; Baker, Rees T. K.; Derouane, Eric G.; and Pieters, Wim J., 4,347,063, Cl. 48-197.00R.

Pifer, David L.: *See—*
Gentilo, Dennis R.; Smith, Donald A.; and Pifer, David L., 4,347,427, Cl. 219-137.800.

Pike, Edward R.: *See—*
Gardner, Keith; Pike, Edward R.; and Hill, David W., 4,346,991, Cl. 356-28.500.

Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
Okutsu, Hiroyasu, 4,346,657, Cl. 101-269.000.
Yanagita, Seikichi, 4,347,011, Cl. 401-231.000.

Pioneer Electronic Corporation: *See—*
Abe, Kunio; Saito, Masatsugu; Ono, Masao; and Ikedo, Yuji, 4,347,596, Cl. 369-72.000.
Arakawa, Fumio, 4,347,598, Cl. 369-254.000.
Saito, Masaki; and Kanazashi, Tetuo, 4,347,604, Cl. 370-85.000.
Ueno, Hitoshi; Yazaki, Shirokazu; and Ayukawa, Yukitada, 4,346,950, Cl. 312-138.00R.

Pipeline Service: *See—*
Bayen, Jean; and Scemama, Patrick, 4,346,726, Cl. 137-15.000.

Pirkle, James C., Jr.: *See—*
Funk, Edward W.; May, Walter G.; and Pirkle, James C., Jr., 4,347,118, Cl. 208-11.0LE.

Pitney Bowes, Inc.: *See—*
Duwel, Edward C.; and Soderberg, John H., 4,347,506, Cl. 340-679.000.

Pivirotto, Thomas J.: *See—*
United States of America, National Aeronautics and Space Administration; and Pivirotto, Thomas J., 4,347,613, Cl. 372-56.000.

Plachno, Robert S., to Mostek Corporation. Buffer circuit for semiconductor memory. 4,347,448, Cl. 307-583.000.

Plantard, Dominique: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,347,070, Cl. 65-9.000.

Platts, Stanley A., to Unishear Mixers Limited. Mixing apparatus. 4,347,004, Cl. 366-137.000.

Pleschiutschnigg, Fritz-Peter: *See—*
Mezger, Sepp; Lerch, Kurt; Schrewe, Hans; and Pleschiutschnigg, Fritz-Peter, 4,346,724, Cl. 134-122.00R.

Plessey Overseas Limited: *See—*
Ash, Christopher P., 4,347,615, Cl. 375-14.000.

Poggio, Cesare: *See—*
Appiano, Silvano; Di Pino, Duccio; and Poggio, Cesare, 4,347,608, Cl. 371-16.000.

Pohl, Walter J.: *See—*
Alley, Robert P.; Pohl, Walter J.; and Relyea, John W., 4,346,755, Cl. 165-17.000.
McCarty, William J.; Pohl, Walter J.; and McCreary, Russell L., 4,346,566, Cl. 62-159.000.

Pohler, Friedmar; Falk, Hans; Muller, Josef; Klein, Hans J.; and Hoffacker, Franz, to Agfa-Gevaert Aktiengesellschaft. Apparatus for the contact-free continuous measurement and monitoring of magnetic tracks on moving film strips. 4,346,668, Cl. 118-665.000.

Polaroid Corporation: *See—*
Johnson, Bruce K.; and Whiteside, George D., 4,346,971, Cl. 354-34.000.
Kliem, Peter O., 4,347,301, Cl. 430-215.000.

Polito, Alan J.; and Bray, Kurtis R., to Beckman Instruments, Inc. Thyroid polarization fluoroimmunoassay. 4,347,058, Cl. 23-230.00B.

Polito, Alan J.; and Bray, Kurtis R., to Beckman Instruments, Inc. T_3 Uptake polarization fluoroimmunoassay. 4,347,059, Cl. 23-230.00B.

Polk, Donald E.: *See—*
Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., 4,347,076, Cl. 75-0.50R.

Pollmeier, Franz J.: *See—*
Gellert, Klaus; Nagel, Gunter; and Pollmeier, Franz J., 4,347,454, Cl. 310-193.000.

Polychrome Corporation: *See—*
Shimazu, Ken-Ichi; and Nakayama, Takao, 4,347,300, Cl. 430-156.000.

Poole, Leonard. Donkey calf exercising machine. 4,346,887, Cl. 272-117.000.

Popper Engineering Ltd.: *See—*
Popper, Jakhin B., 4,346,802, Cl. 198-533.000.

Popper, Jakhin B., to Popper Engineering Ltd. Combination anti-bridging device and vibrating tray. 4,346,802, Cl. 198-533.000.

Porter, David R., to Boeing Company, The. Fiber optic T coupler. 4,346,961, Cl. 350-96.160.

Posch, Oskar, to Anstalt Mura. Apparatus for making carbon black. 4,347,218, Cl. 422-151.000.

Possell, Clarence R. Method for pumping slurry and apparatus for use therewith. 4,347,032, Cl. 415-90.000.

Possell, Clarence R. Concrete pump and method of using same. 4,347,033, Cl. 415-90.000.

Post Office, The: *See—*
France, Paul W., 4,346,601, Cl. 73-829.000.

Post, Paul C.: *See—*
Kavouras, Stephen P.; Post, Paul C.; Wells, Roderick A.; and Rutkowski, Stephen L., 4,347,618, Cl. 375-37.000.

Potapova, Tamara P.: *See—*
Shustova, Olga A.; Gladyshev, Georgy P.; and Potapova, Tamara P., 4,347,175, Cl. 523-455.000.

Potier, Pierre; Langlois, Nicole; Langlois, Yves; Andriamialisoa, Ratremaniaina Z.; and Mangeney, Pierre, to Agence Nationale de Valorisation de la Recherche (ANVAR). Class of seco bis-indolic compounds which can be used as drugs and a process for the preparation thereof. 4,347,249, Cl. 424-262.000.

Powderly, John, to USM Corporation. Storing and handling of hollow rivets. 4,346,804, Cl. 206-338.000.

PPG Industries, Inc.: *See—*
Blizzard, Roy L.; and Martin, Thomas O., 4,347,060, Cl. 23-294.00R.

Pratt & Whitney Aircraft of Canada Limited: *See—*
Tedstone, Donald J., 4,346,860, Cl. 244-53.00B.

Pray, Edward R.: *See—*
Demou, John G.; Pray, Edward R.; and McBrayer, Robert L., 4,347,330, Cl. 521-110.000.

Precision Metal Fabricators, Inc.: *See—*
Lenhart, Ronald A., 4,347,022, Cl. 406-88.000.

Prem Magnetics, Inc.: *See—*
Peterson, David A., 4,347,490, Cl. 336-60.000.

Pretti, Rudy: *See—*
Kraus, Roger B.; and Pretti, Rudy, 4,346,491, Cl. 10-111.000.

Price, John E., to Amdahl Corporation. Emitter coupled logic circuit with active pull-down. 4,347,446, Cl. 307-443.000.

Procter & Gamble Company, The: *See—*
Murphy, Alan P.; Smith, Rory J. M.; and Brooks, Maxim C., 4,347,168, Cl. 252-547.000.

Proebsting, Robert J., to Mostek Corporation. Current limiting MOS transistor driver circuit. 4,347,447, Cl. 307-548.000.

Proebsting, Robert J., to Mostek Corporation. Refresh counter test. 4,347,589, Cl. 365-222.000.

Proelss, Henning F., to Boehringer Mannheim GmbH. Analytical determination of lipase. 4,347,313, Cl. 435-19.000.

Prohaska, Hans: *See—*
Goertler, Horst; Hetzel, Friedrich; Knobloch, Uwe; Muller, Hans; Prohaska, Hans; Rachner, Horst; and Spieth, Wolfgang, 4,347,465, Cl. 318-266.000.

Prohazka, George J.: *See—*
Nelson, Hugh W.; Prohazka, George J.; and Morris, Keith W., 4,347,220, Cl. 422-185.000.

Propster, Mark A.: *See—*
Aubourg, Patrick F.; and Propster, Mark A., 4,347,073, Cl. 65-28.000.

PTX-Dentronix, Inc.: *See—*
DeSantis, Raymond P., 4,347,051, Cl. 425-78.000.

Pure Power Incorporated: *See—*
Mayo, Alfred M.; and Convers, Charles C., 4,347,093, Cl. 156-242.000.

Puro Corporation: *See—*
Rosen, Robert A.; Schuchmann, Gayle F.; and Pate, James E., 4,346,483, Cl. 4-227.000.

Puschnerat, Helmut: *See—*
Schwaab, Manfred; Puschnerat, Helmut; and Storz, Kurt, 4,346,656, Cl. 101-181.000.

Pustka, Karel: *See—*
Geisslinger, Wolfgang; Pustka, Karel; Bronner, Hermann; Mullritter, Ludwig; and Vondrowski, Gabriel, 4,346,616, Cl. 192-84.00C.

Quach, Hoa: *See—*
Lewis, Armand F.; Ma, Chen-Chi M.; Quach, Hoa; and Krasnicki, Edward J., 4,347,287, Cl. 428-378.000.

Quick, James E.; Razdan, Raj K.; and Dalzell, Haldean C., to SISA, Incorporated. 4,5α-Epoxy-3-hydroxy or methoxy-7-(1-hydroxy-alkyl or 1-oxoalkyl)morphinan-6-one compounds. 4,347,361, Cl. 546-45.000.

Quirin, Michel: *See—*
Wattron, Albert; and Quirin, Michel, 4,346,549, Cl. 56-370.000.

Rachner, Horst: *See—*
Goertler, Horst; Hetzel, Friedrich; Knobloch, Uwe; Muller, Hans; Prohaska, Hans; Rachner, Horst; and Spieth, Wolfgang, 4,347,465, Cl. 318-266.000.

Radkins, Andrew P.; Macarus, David P.; Radkins, James A.; and Waxman, Jay S., to Genieco Inc. Incense holder. 4,347,217, Cl. 422-126.000.

Radkins, James A.: *See—*
Radkins, Andrew P.; Macarus, David P.; Radkins, James A.; and Waxman, Jay S., 4,347,217, Cl. 422-126.000.

Rainey, Paul N.: *See—*
Cox, Alan W.; and Rainey, Paul N., 4,346,886, Cl. 272-72.000.

Raisin, Jean-Pierre: *See—*
Doyen, Joel; and Raisin, Jean-Pierre, 4,346,877, Cl. 271-19.000.
Ram Handler, Ltd.: *See—*
Wagner, Robert L., 4,346,671, Cl. 119-60.000.
Ranco Incorporated: *See—*
Gemma, Mario; and Baehr, Burghard, 4,346,564, Cl. 62-140.000.
Rand, John H., to United States of America, Army. Liquid sampler. 4,346,612, Cl. 73-864.440.
Rao, G. R. Mohan, to Texas Instruments Incorporated. Semiconductor integrated circuit memory device with both serial and random access arrays. 4,347,587, Cl. 365-189.000.
Rapier, Pascal M., to United States of America, Energy. Multi-stage flash degaser. 4,346,560, Cl. 60-641.300.
Rashbrook, Robert B.: *See—*
Horner, Patrick J.; and Rashbrook, Robert B., 4,347,350, Cl. 528-190.000.
Raue, Donald J.: *See—*
Skladzien, Stanley B.; and Raue, Donald J., 4,346,605, Cl. 73-861.130.
Raus, James E.: *See—*
Pearcy, Robert E.; and Raus, James E., 4,347,552, Cl. 361-398.000.
Rautiola, Norman A.: *See—*
Taylor, Robert E.; Rautiola, Norman A.; and Miller, Gerald K., 4,347,444, Cl. 307-141.000.
Ray, John G.: *See—*
Latassa, Frank M.; and Ray, John G., 4,347,460, Cl. 315-63.000.
Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., to Marko Materials, Inc. Aluminum-transition metal alloys made using rapidly solidified powers and method. 4,347,076, Cl. 75-0.50R.
Raychem Corporation: *See—*
Martin, Albert R., 4,347,487, Cl. 333-1.000.
Raymor, Roger F.; and Adams, Les, to Seligco Food Corporation. Frozen food container. 4,346,815, Cl. 220-306.000.
Raytheon Company: *See—*
Liang, Victor K. C.; Bouyssounouse, Bernard; and Yim, Ernest W., 4,346,512, Cl. 29-571.000.
Maguire, Edward A.; and Gentilman, Richard L., 4,347,210, Cl. 264-294.000.
Raz, Zeev, to Ben-Gurion University of the Negev, a part interest. Water faucet and attachment therefor. 4,346,735, Cl. 137-606.000.
Razdan, Raj K.: *See—*
Quick, James E.; Razdan, Raj K.; and Dalzell, Haldean C., 4,347,361, Cl. 546-45.000.
RCA Corporation: *See—*
Benner, Timothy E., 4,347,459, Cl. 313-383.000.
Botez, Dan, 4,347,486, Cl. 372-46.000.
Speer, Walter F., 4,347,628, Cl. 455-173.000.
Tomasetti, Charles M.; and Ulaky, John A., 4,347,458, Cl. 313-103.00R.
Redder, Manfred; and Grundken, Dieter, to Gewerkschaft Eisenhutte Westfalia. Lubricating sprocket drum mounting. 4,346,801, Cl. 198-500.000.
Redifon Simulation Limited: *See—*
Spooner, Archer M., 4,347,507, Cl. 340-705.000.
Spooner, Archer M., 4,347,508, Cl. 340-705.000.
Redwine, Michael A.: *See—*
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilbourn, Frederick A., 4,346,485, Cl. 4-555.000.
Reed International Limited: *See—*
Gill, Anthony; Gosden, John; and Parker, Robert W., 4,346,921, Cl. 285-110.000.
Reed, Robert D.; Martin, Richard R.; and Goodnight, Hershel E., to John Zink Company. Low NOX burner. 4,347,052, Cl. 431-188.000.
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilbourn, Frederick A., to Silchor. Apparatus and method for bathing invalids. 4,346,485, Cl. 4-555.000.
Reh, Lothar; Hirsch, Martin; Baron, Gerhard; Blaum, Eberhard; and Hafke, Carl, to Metallgesellschaft Aktiengesellschaft. Process of gasifying fine-grained solid fuels. 4,347,064, Cl. 48-197.00R.
Reilly, Edward J.: *See—*
Williams, Glenn L.; and Reilly, Edward J., 4,347,518, Cl. 346-1.100.
Reinsch, A. O. Winfried. Flash jet coolant pumping system. 4,347,623, Cl. 376-392.000.
Relyea, John W.: *See—*
Alley, Robert P.; Pohl, Walter J.; and Relyea, John W., 4,346,755, Cl. 165-17.000.
Remcor Products Company: *See—*
Miller, Benjamin D.; and Schafer, Albert L., 4,346,824, Cl. 222-504.000.
Rempfler, Hermann: *See—*
Lukaszczyk, Alfons; Martin, Henry; Diel, Peter J.; Fory, Werner; Gatzi, Karl; Kristinsson, Haukur; Muller, Beat; Muntwyler, Rene; Pachlatko, Johannes P.; Rempfler, Hermann; Schurter, Rolf; and Szczepanski, Henry, 4,347,372, Cl. 548-217.000.
Rende, Dominic S., to Nalco Chemical Company. Method for sulfite pulping using water-soluble molybdenum-containing compounds as catalysts. 4,347,103, Cl. 162-79.000.
Rendl, Rene. Spark plug wrench adapted for adjustable torque. 4,346,633, Cl. 81-475.000.
Rennie, George K.: *See—*
Hooper, David C.; Johnson, George A.; Peter, Donald; and Rennie, George K., 4,347,153, Cl. 252-174.250.
Rensselaer Polytechnic Institute: *See—*
Scarton, Henry A.; Kennedy, Warren C.; Gaylo, Keith R.; and Caplan, Clark R., 4,346,783, Cl. 181-230.000.
Rentmeester, Kenneth R., to American Can Company. Side seam stripes. 4,346,814, Cl. 220-75.000.
Research Corporation: *See—*
Schneider, Morris D., 4,347,243, Cl. 424-177.000.
Research Products Corporation: *See—*
Cox, Randolph B., 4,347,197, Cl. 261-106.000.
Research Triangle Institute: *See—*
Brown, Rodney J.; and Swaisgood, Harold E., 4,347,312, Cl. 435-7.000.
Restelli, Amedeo A., to Societa Italiana Catene Calibrate Regina S.p.A. Motor unit for bicycles. 4,346,777, Cl. 180-220.000.
Rethread, Inc.: *See—*
Kraus, Roger B.; and Pretti, Rudy, 4,346,491, Cl. 10-111.000.
Reusch, Rudolf: *See—*
Trost, Elmar; and Reusch, Rudolf, 4,346,993, Cl. 356-138.000.
Reyners, Thierry. Cable splice enclosures and method of use. 4,347,402, Cl. 174-91.000.
Reynolds, Thomas J.: *See—*
Latimer, John P.; Donaldson, Robert; Cross, Michael; MacPhaiden, Harold; Skiles, Loren D.; Schauer, Henry; and Reynolds, Thomas J., 4,347,029, Cl. 414-22.000.
Rheinmetall GmbH: *See—*
Trost, Elmar; and Reusch, Rudolf, 4,346,993, Cl. 356-138.000.
Rhodes, David B., to United States of America, National Aeronautics and Space Administration. Scanning afocal laser velocimeter projection lens system. 4,346,990, Cl. 356-28.500.
Rhone-Poulenc Industries: *See—*
Farge, Daniel; Le Roy, Pierre; Moutonnier, Claude; and Peyronel, Jean-Francois, 4,347,359, Cl. 544-182.000.
Rice, Hal H.; and Kruger, Gary A., to General Motors Corporation. Insulating engine exhaust port liner. 4,346,556, Cl. 60-272.000.
Rice, Lynn H., to UOP Inc. Isomerization of normal butane. 4,347,399, Cl. 585-738.000.
Richard, James A.: *See—*
Meyerhoff, Alfred; Kastovich, John C.; Richard, James A.; and Vales, Richard J., 4,346,845, Cl. 239-418.000.
Richards, David J., to Medishield Corporation Limited, The. Gas administration apparatus. 4,346,701, Cl. 128-200.140.
Richardson-Merrell Inc.: *See—*
Girout, Eugene L., 4,347,255, Cl. 424-285.000.
Richburg, Ernest H., to United States of America, Army. Dual load point external load suspension implement. 4,346,862, Cl. 244-137.00R.
Ricoh Company, Ltd.: *See—*
Aizawa, Masahiro, 4,346,878, Cl. 271-118.000.
Ogawa, Mutsuo, 4,347,533, Cl. 358-296.000.
Rideout, Janet L.: *See—*
Krenitsky, Thomas A.; and Rideout, Janet L., 4,347,315, Cl. 435-87.000.
Riendl, Joseph A.: *See—*
Bagoy, John P.; and Riendl, Joseph A., 4,346,748, Cl. 152-222.000.
Rieter Machine Works Ltd.: *See—*
Demuth, Robert, 4,346,500, Cl. 19-105.000.
Righetti, Gianmaria. Apparatus and process for purifying polluted water contained in natural or artificial pools by direct injection of oxygen. 4,347,143, Cl. 210-758.000.
Rim, Yong S.: *See—*
Nudenberg, Walter; Rim, Yong S.; and Matthews, Demetreos N., 4,347,159, Cl. 252-429.00B.
Riniker, Bernhard: *See—*
Nehet, Robert; and Riniker, Bernhard, 4,347,242, Cl. 424-177.000.
Rissi, Paul, to General Motors Corporation. Electromagnetic fuel injector with adjustable armature spring. 4,346,847, Cl. 239-585.000.
Rizos, Ioannis, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Hold down support system. 4,347,023, Cl. 410-32.000.
Robbins, Clayton B.: *See—*
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,347,525, Cl. 346-153.100.
Robert, Bernard J.: *See—*
Lafosse, Jean R. M.; and Robert, Bernard J., 4,347,135, Cl. 210-208.000.
Robert Bosch GmbH: *See—*
Eblen, Ewald; and Hofmann, Karl, 4,346,846, Cl. 239-533.300.
Fischer, Hermann; Friese, Karl-Hermann; Gruber, Hans-Ulrich; Heinemann, Wolfgang; Knoll, Gunter; Linder, Ernst; Maurer, Helmut; Noack, Rainer; Steinke, Leo; Weber, Lothar; and Weyl, Helmut, 4,347,113, Cl. 204-195.00S.
Frister, Manfred; and Meyer, Friedhelm, 4,347,543, Cl. 361-91.000.
Kienzle, Wolfgang; Paschke, Werner; and Nagele, Erwin, 4,346,589, Cl. 73-118.000.
Latsch, Reinhard; and Bianchi, Valerio, 4,346,625, Cl. 74-859.000.
Leiber, Heinz, 4,346,942, Cl. 303-92.000.
Leiber, Heinz, 4,346,943, Cl. 303-119.000.
Leiber, Heinz, 4,346,944, Cl. 303-119.000.
Peters, Klaus-Jurgen; Krauss, Rudolf; and Binggeser, Ernst, 4,346,577, Cl. 72-129.000.
Schleicher, Rolf; Seebald, Lutz; and Seitz, Walter, 4,346,681, Cl. 123-179.00L.
Schrauf, Werner; Werner, Peter; Luetkens, Luer; Maue, Hans-Heinrich; and Suchowerskyj, Wadym, 4,346,913, Cl. 280-735.000.
Stumpp, Gerhard; and Wessel, Wolf, 4,346,727, Cl. 137-117.000.
Wenzel, Manfred, 4,347,626, Cl. 455-18.000.
Roberts, John S., to Kling-Tecs, Inc. Method of extruding polypropylene yarn. 4,347,206, Cl. 264-176.00F.

Roberts, John S., to Kling-Tecs, Inc. Method of extruding polypropylene yarn. 4,347,207, Cl. 264-176.00F.
Rockliff, Peter. Sensor detector element for an electrical hygrometer. 4,347,550, Cl. 361-286.000.
Rockwell International Corporation: *See*—
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,347,600, Cl. 370-13.000.
Cumming, James C., 4,346,791, Cl. 188-71.500.
DeTar, George F., Jr.; Schaefer, Marcus J.; and Busby, William R., 4,347,567, Cl. 364-200.000.
Kalinsky, Wayne A., 4,347,558, Cl. 363-17.000.
Massie, Norbert A., 4,346,999, Cl. 356-349.000.
Tam, Matthias L., 4,347,476, Cl. 323-313.000.
Rodac Pneumatic Tools: *See*—
Hanson, Anthony, 4,346,630, Cl. 81-57.130.
Rodak, Edward, to General Defense Corporation. Method and apparatus for refuse disposal. 4,346,653, Cl. 100-37.000.
Rogers, John E., Jr. Method of forming contoured cushion. 4,347,213, Cl. 264-510.000.
Rogers, Kenneth H., to United States of America, Navy. Self-contained backflush/start system for suction LFC undersea vehicle. 4,346,662, Cl. 114-20.00R.
Rohco, Inc.: *See*—
Willis, William J., 4,347,108, Cl. 204-52.00R.
Rohner, Joachim; and Wey, Edmund, to W. Schlafhorst & Co. Device for removing dust from a winding machine. 4,346,497, Cl. 15-301.000.
RoJohn, D. Scott: *See*—
Dick, Donald E.; Metz, Robert L.; RoJohn, D. Scott; and Elliott, Raymond D., 4,346,867, Cl. 248-424.000.
Roller, George J.; and Schell, Richard P., to Xerox Corporation. Apparatus for inverting substrates. 4,346,880, Cl. 271-186.000.
Rolls-Royce Limited: *See*—
Midgley, Ronald A., 4,346,786, Cl. 184-6.200.
Romig, Charles A.: *See*—
Homan, Gary R.; and Romig, Charles A., 4,347,336, Cl. 524-731.000.
Ronning Engineering Company Inc.: *See*—
Ronning, Richard L., 4,346,523, Cl. 34-17.000.
Ronning, Richard L., to Ronning Engineering Company Inc. Method and apparatus for recovering heat in product dehydration system. 4,346,523, Cl. 34-17.000.
Rood, Alvin A., to Nordson Corporation. Airless spray nozzle and method of making it. 4,346,849, Cl. 239-597.000.
Rosaen, Nils O. Fluid flow meter with improved sealing means. 4,346,607, Cl. 73-861.750.
Rosemount Engineering Company Limited: *See*—
Hunter, Donald N.; and Brook, Richard J., 4,347,495, Cl. 338-34.000.
Rosen, Robert A.; Schuchmann, Gayle F.; and Pate, James E., to Puro Corporation. Float controlled liquid dispenser. 4,346,483, Cl. 4-227.000.
Rosenhagen, William: *See*—
Zeno, John R.; and Rosenhagen, William, 4,346,640, Cl. 84-464.00R.
Ross, Frederick W. Impact device with sinusoidal rotary-to-reciprocative converter. 4,346,768, Cl. 173-118.000.
Rossi, Joe. Rototiller with angularly disposed teeth. 4,346,764, Cl. 172-42.000.
Rothberg, Michael R. Process for removal of radioactive materials from aqueous solutions. 4,347,141, Cl. 210-721.000.
Rowenta-Werke GmbH: *See*—
Conrad, Rainer; and Seifert, Hubert, 4,347,428, Cl. 219-251.000.
Ruenzi, Kurt. Sheet separating device for office machines. 4,346,879, Cl. 271-121.000.
Ruggeri, Mariano: *See*—
Cron, Martin J.; Keil, John G.; Lin, Jeng S.; Ruggeri, Mariano; and Walker, Derek, 4,347,354, Cl. 536-10.000.
Russell, Leonard V.; and Beaney, Derek N., to Universal Materials Company Limited. Portable golf practice mat. 4,346,896, Cl. 273-195.00A.
Rutherford, William, to Hunter Wire Products Limited. Screening module. 4,347,129, Cl. 209-399.000.
Rutkowski, Stephen L.: *See*—
Kavouras, Stephen P.; Post, Paul C.; Wells, Roderick A.; and Rutkowski, Stephen L., 4,347,618, Cl. 375-37.000.
Rutsch, Peter: *See*—
Weber, Kurt; Rutsch, Peter; and Hirschinger, Lothar, 4,347,276, Cl. 428-160.000.
Ruvoen, Michel: *See*—
Jacob, Jean-Baptiste; Mathieu, Yves; and Ruvoen, Michel, 4,347,603, Cl. 370-85.000.
Rypkema, Jouke N.: *See*—
Flasza, Michael D.; and Rypkema, Jouke N., 4,347,483, Cl. 331-12.000.
S. C. Johnson & Son, Inc.: *See*—
Lohr, Robert H.; and Morgan, Lee W., 4,347,151, Cl. 252-163.000.
Lohr, Robert H.; and Morgan, Lee W., 4,347,333, Cl. 524-269.000.
S.R.M. Hydromekanik Aktiebolag: *See*—
Ahlen, Karl G.; and Norberg, Nils A., 4,347,044, Cl. 417-253.000.
Sabbatis, Raymond E.: *See*—
Krauss, Ferdinand A.; Ganyard, Ivan S.; and Sabbatis, Raymond E., 4,346,635, Cl. 83-479.000.
Saft-Societe des Accumulateurs Fixes et de Traction: *See*—
Bernard, Alain; and Bonnaterre, Raymond, 4,347,292, Cl. 429-65.000.
Sagawa, Masato; and Yamagishi, Wataru, to Fujitsu Limited. Process and apparatus for producing a temperature sensitive element. 4,347,201, Cl. 264-24.000.
Saint-Gobain Industries: *See*—
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,347,070, Cl. 65-9.000.
Saito, Kenji; and Yamachika, Hiroshi, to Sumitomo Chemical Company, Limited. Process for preparing cyclopentenolones. 4,347,386, Cl. 568-310.000.
Saito, Masaki; and Kanazashi, Tetuo, to Pioneer Electronic Corporation. Bi-directional data communications system. 4,347,604, Cl. 370-85.000.
Saito, Masatsugu: *See*—
Abe, Kunio; Saito, Masatsugu; Ono, Masao; and Ikedo, Yuji, 4,347,596, Cl. 369-72.000.
Saito, Toshihisa; and Inoue, Nobuyoshi, to Copal Company Limited. Light leakage preventing device for reflex cameras. 4,346,974, Cl. 354-154.000.
Saiya, Robert F. Headset cable strain relief clamp. 4,346,501, Cl. 24-329.000.
Saji, Yasuo; Tanaka, Kozo; and Yamauchi, Takashi, to Toho Beslon Co., Ltd. High performance carbon fiber, process for production thereof, and composite materials prepared therewith. 4,347,279, Cl. 428-294.000.
Sakaguchi, Shuzabu: *See*—
Isshiki, Tomiya; Tomita, Tetsuo; Sakaguchi, Shuzabu; Kohzaki, Toshiaki; Aoki, Osamu; Takeda, Norio; and Aoki, Yoshiyuki, 4,347,383, Cl. 564-249.000.
Sakai, Shinji: *See*—
Kawabata, Takashi; Tsunekawa, Tokuichi; Hosoe, Kazuya; Kinoshita, Takao; Sakai, Shinji; and Taguchi, Tatsuya, 4,346,970, Cl. 354-25.000.
Sakamoto, Masaaki; and Takeuchi, Shinji, to Kabushiki Kaisha Komatsu Seisakusho. Speed control apparatus for a vehicle. 4,346,618, Cl. 74-491.000.
Sakamoto, Masafumi, to Japan Servo Co. Permanent magnet type stepping motor. 4,347,457, Cl. 310-256.000.
Sakurai, Hideki; Nakatani, Mitsuo; Oka, Hitoshi; Yokono, Hitoshi; and Isogai, Tokio, to Hitachi, Ltd. Process for forming metallic image. 4,347,304, Cl. 430-291.000.
Salzgitter Maschinen und Anlagen Aktiengesellschaft: *See*—
Manten, Heinrich, 4,346,766, Cl. 173-23.000.
Sanders Associates, Inc.: *See*—
Schwartz, Jacob, 4,346,992, Cl. 356-73.000.
Sanderson, George R.: *See*—
Challen, Ian A.; East, Sandra; and Sanderson, George R., 4,347,261, Cl. 426-573.000.
Sandland, Paul: *See*—
Levy, Kenneth; and Sandland, Paul, 4,347,001, Cl. 356-398.000.
Sando Iron Works Co., Ltd.: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,346,503, Cl. 28-155.000.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Process for de-twisting and craping a cloth composed of twisted yarns. 4,346,503, Cl. 28-155.000.
Sandoz Ltd.: *See*—
Harr, Jost, 4,347,253, Cl. 424-272.000.
Sangamo Weston, Inc.: *See*—
Gurr, George P.; Davis, John N.; and Wiggins, E. Thomas, 4,347,575, Cl. 364-492.000.
Sannomiya, Shigehiro: *See*—
Nagasaki, Michisuke; and Sannomiya, Shigehiro, 4,346,624, Cl. 74-784.000.
Sano, Konosuke: *See*—
Miwa, Kiyoshi; Tsuchida, Takayasu; Kurahashi, Osamu; Nakamori, Shigeru; Sano, Konosuke; and Momose, Haruo, 4,347,318, Cl. 435-115.000.
Sano, Shoichi: *See*—
Osada, Isao; and Sano, Shoichi, 4,346,747, Cl. 152-158.000.
Santen Pharmaceutical Co., Ltd.: *See*—
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,347,371, Cl. 548-201.000.
Santoro, Joseph F.: *See*—
Jeromin, Lothar S.; Geddes, Glenn F.; Baumann, Otto S.; and Santoro, Joseph F., 4,346,983, Cl. 355-3.00R.
Sara, Raymond V., to Union Carbide Corporation. Chemically bonded aluminum coating for carbon via monocarbides. 4,347,083, Cl. 75-204.000.
Sarid, Dror: *See*—
Sprague, Robert A.; and Sarid, Dror, 4,346,965, Cl. 350-358.000.
Saron, John R. Flexible light with protective cap. 4,347,553, Cl. 362-189.000.
Sato, Atsushi; Takahashi, Naoya; Endo, Keiji; and Yanagishita, Hitoshi, to Nippon Petrochemicals Company, Limited. Electrical insulating oil and oil-filled electrical appliances. 4,347,169, Cl. 252-567.000.
Sato, Fumitaka: *See*—
Koda, Akira; Sato, Fumitaka; and Nishibe, Shinji, 4,347,566, Cl. 364-200.000.
Sato, Hajime; Morisue, Tetsuo; and Heki, Hideaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Failed fuel detection and location apparatus. 4,347,214, Cl. 376-251.000.
Sato, Shigeru: *See*—
Inagaki, Masao; and Sato, Shigeru, 4,346,837, Cl. 236-34.500.
Saunders, William T., to National Steel Corporation. Manufacture of lightweight drawn and ironed can bodies. 4,346,580, Cl. 72-344.000.

Sawae, Kiyoshi: *See—*
Inohara, Akio; Sawae, Kiyoshi; Kawaguchi, Hisao; and Fujimoto, Takeo, 4,347,074, Cl. 65-32.000.

Sawafuji Denki Kabushiki Kaisha: *See—*
Yoneda, Tadao; and Tsunoda, Michinori, 4,346,615, Cl. 74-7.00A.

Sawara Mfg. Works Co., Ltd.: *See—*
Watanabe, Shinichiro, 4,347,094, Cl. 156-387.000.

Scarton, Henry A.; Kennedy, Warren C.; Gaylo, Keith R.; and Caplan, Clark R., to Rensselaer Polytechnic Institute. Apparatus for treating flowing working gases particularly to reduce the noise in operation thereof. 4,346,783, Cl. 181-230.000.

Scemama, Patrick: *See—*
Bayen, Jean; and Scemama, Patrick, 4,346,726, Cl. 137-15.000.

Schaefer, John O., to International Business Machines Corporation. Typewriter cartridge and feed mechanism therefor. 4,347,007, Cl. 400-208.000.

Schaefer, Marcus J.: *See—*
DeTar, George F., Jr.; Schaefer, Marcus J.; and Busby, William R., 4,347,567, Cl. 364-200.000.

Schafer, Albert L.: *See—*
Miller, Benjamin D.; and Schafer, Albert L., 4,346,824, Cl. 222-504.000.

Schafer, David E.: *See—*
D'Amico, John J.; and Schafer, David E., 4,347,366, Cl. 546-261.000.

Scharver, Jeffrey D., to Burroughs Wellcome Co. 3^H Labeled compounds. 4,347,382, Cl. 564-183.000.

Schauer, Henry: *See—*
Latimer, John P.; Donaldson, Robert; Cross, Michael; MacPhaiden, Harold; Skiles, Loren D.; Schauer, Henry; and Reynolds, Thomas J., 4,347,029, Cl. 414-22.000.

Scheingold, William S.: *See—*
Bright, Edward J.; Kaplon, David A.; and Scheingold, William S., 4,346,952, Cl. 339-17.0CF.

Schelhas, Peter; and Schlott, Walter, to Atlantic Richfield Company. Retaining means. 4,347,026, Cl. 411-299.000.

Schell, Richard P.: *See—*
Roller, George J.; and Schell, Richard P., 4,346,880, Cl. 271-186.000.

Schering Corporation: *See—*
Afonso, Adriano; and Hon, Frank, 4,347,183, Cl. 260-245.20R.

Scherzer, Julius, to Filtrol Corporation. Mono- and poly-metallic supported catalysts. 4,347,164, Cl. 252-455.00Z.

Scheurer, Guenther: *See—*
Merkenich, Karl; Koch, Wilhelm; Glandorf, Kaete; Uhlmann, Gerd; and Scheurer, Guenther, 4,347,258, Cl. 426-334.000.

Schickedanz, Willi. Toaster for bread and other food items. 4,346,651, Cl. 99-392.000.

Schiller, Gerald J.: *See—*
Merian, Jacques S.; and Schiller, Gerald J., 4,347,173, Cl. 524-88.000.

Schindler, John K., to United States of America, Air Force. Netted search radar system. 4,347,513, Cl. 343-18.00E.

Schleicher, Rolf; Seebald, Lutz; and Seitz, Walter, to Robert Bosch GmbH. Apparatus for fuel metering, and in particular, supplementary fuel metering, by means of a special metering device in an externally ignited internal combustion engine. 4,346,681, Cl. 123-179.00L.

Schlott, Walter: *See—*
Schelhas, Peter; and Schlott, Walter, 4,347,026, Cl. 411-299.000.

Schmid, Carl E., to Perkin-Elmer Corporation, The. Microflow transducer. 4,346,603, Cl. 73-861.050.

Schmid, Josef; Lange, Ludwig; Klebe, Hans; and Schutte, Dieter, to Degussa Aktiengesellschaft. Process for the pyrogenic production of finely divided oxide of a metal and/or a metalloid. 4,347,229, Cl. 423-336.000.

Schmid, Klaus: *See—*
Wagner, Gerard; and Schmid, Klaus, 4,346,693, Cl. 126-434.000.

Schmidt, Alfred, to Alfred Schmidt, GmbH. Snow removal apparatus. 4,346,527, Cl. 37-250.000.

Schmidt, Donald H. Flexible composition of cork and sheet structures made therefrom. 4,347,272, Cl. 428-40.000.

Schmidt, Hans, to TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH. Method and system for processing coded information transmitted during cyclically successive time frames. 4,347,601, Cl. 370-58.000.

Schmidt, Paul F.: *See—*
Pearce, Charles W.; and Schmidt, Paul F., 4,347,431, Cl. 219-390.000.

Schmitt, Edward E., to ALZA Corporation. Drug delivery devices comprising erodible polymer and erosion rate modifier. 4,346,709, Cl. 128-260.000.

Schmitt, Robert F., to G & S Company. Building panel construction and panel assemblies utilizing same. 4,346,541, Cl. 52-309.110.

Schmitt, Susan M.: *See—*
Christensen, Burton G.; Johnston, David B. R.; and Schmitt, Susan M., 4,347,367, Cl. 546-272.000.
Christensen, Burton G.; Johnston, David B. R.; and Schmitt, Susan M., 4,347,368, Cl. 546-272.000.

Schmitz, Hans H., to MEDAC Gesellschaft fur Klinishce Spezialpraparate mbH. Enzyme immunoassay for determining antigen specific antibodies and test kit for carrying out this assay. 4,347,311, Cl. 435-5.000.

Schneider, Morris D., to Research Corporation. Acid soluble, pepsin resistant platelet aggregating material. 4,347,243, Cl. 424-177.000.

Schneider, Rudolf, to Erowa AG. Process and apparatus for controlling the electrode on a spark erosion machine. 4,347,422, Cl. 219-69.00M.

Schoenig, Frederick C., Jr.: *See—*
Bernatowicz, Henry; and Schoenig, Frederick C., Jr., 4,347,622, Cl. 376-245.000.

Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; and Hoffmann, Werner, to BASF Aktiengesellschaft. Tape cartridge assembly and tape transport apparatus for use therewith. 4,347,537, Cl. 360-132.000.

Schomer, Paul D.; and Hunt, Alan B. Microphone droop and sensitivity measurement device. 4,347,410, Cl. 179-175.10A.

Schorscher, John J., to Tip Top Remaco Ltd. Portable tire repair apparatus. 4,347,096, Cl. 156-583.300.

Schrauf, Werner; Werner, Peter; Luetkens, Luer; Maue, Hans-Heinrich; and Suchowerskyj, Wadym, to Robert Bosch GmbH. False release registering circuit for collision protective devices. 4,346,913, Cl. 280-735.000.

Schregenberger, Alex J., to Midland-Ross Co. Apparatus used in the treatment of cans. 4,346,722, Cl. 134-62.000.

Schrewe, Hans: *See—*
Mezger, Sepp; Lerch, Kurt; Schrewe, Hans; and Pleschiutschnigg, Fritz-Peter, 4,346,724, Cl. 134-122.00R.

Schroeder, Philip W.; and Lindstrom, Edgar K., to J. I. Case Company. Ground drive control. 4,346,617, Cl. 74-481.000.

Schuchmann, Gayle F.: *See—*
Rosen, Robert A.; Schuchmann, Gayle F.; and Pate, James E., 4,346,483, Cl. 4-227.000.

Schuessler, Thomas F.: *See—*
Agdanowski, Ronald T.; and Schuessler, Thomas F., 4,346,711, Cl. 128-276.000.

Schumacher, Ignatius; and Wang, Kang-bo, to Monsanto Company. Vapor phase nitration of aromatic compounds. 4,347,389, Cl. 568-937.000.

Schurter, Rolf: *See—*
Lukaszczyk, Alfons; Martin, Henry; Diel, Peter J.; Fory, Werner; Gatzi, Karl; Kristinsson, Haukur; Muller, Beat; Muntwyler, Rene; Pachlatko, Johannes P.; Rempfler, Hermann; Schurter, Rolf; and Szczepanski, Henry, 4,347,372, Cl. 548-217.000.

Schuster, Klaus: *See—*
Bartl, Herbert; and Schuster, Klaus, 4,347,341, Cl. 525-267.000.

Schutrum, Walter L.: *See—*
Bahl, Surinder K.; and Schutrum, Walter L., 4,347,522, Cl. 346-75.000.

Schutte, Dieter: *See—*
Schmid, Josef; Lange, Ludwig; Klebe, Hans; and Schutte, Dieter, 4,347,229, Cl. 423-336.000.

Schwaab, Manfred; Puschnerat, Helmut; and Storz, Kurt, to Albert-Frankenthal, AG. Device for making printed matter with changing imprints. 4,346,656, Cl. 101-181.000.

Schwager, Joseph E.; and Urban, Harry E., to United States of America, Navy. Electrical waveform synthesizer. 4,347,403, Cl. 179-1.0SA.

Schwartz, Ira, to Conshohocken Cotton Co., Inc. Helically wrapped yarn. 4,346,553, Cl. 57-210.000.

Schwartz, Jacob, to Sanders Associates, Inc. Laser detector and spectral analyzer. 4,346,992, Cl. 356-73.000.

Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, to Xerox Corporation. Large optical cavity (LOC) mesa laser. 4,347,611, Cl. 372-45.000.

Scifres, Donald R.: *See—*
Fekete, Dan H.; Scifres, Donald R.; and Streifer, William, 4,347,612, Cl. 372-50.000.

SCM Corporation: *See—*
Joyce, Edward R.; and Smith, William L., 4,347,110, Cl. 204-149.000.

Scoggin, Jack S., to Phillips Petroleum Company. Process for the separation of sulfur compounds from water. 4,347,385, Cl. 568-72.000.

Scranton, Robert A., to International Business Machines Corporation. Neel wall segment detection in cross-tie memory systems. 4,347,583, Cl. 365-87.000.

Scranton, Robert J.: *See—*
Paranjpe, Suresh C.; Davis, James W.; Scranton, Robert J.; and Wells, Roger D., 4,347,520, Cl. 346-75.000.

Scribani, Anthony A.: *See—*
Limoges, Raymond F.; Scribani, Anthony A.; and Wilson, Robert J., 4,347,307, Cl. 430-338.000.

Sears, Roebuck and Company: *See—*
Singletary, Buckley A.; and Gall, John C., 4,346,749, Cl. 160-301.000.

Seaton, William W.: *See—*
Dunville, Dennis L.; Seaton, William W.; and Good, Charles H., 4,346,799, Cl. 198-367.000.

Seebald, Lutz: *See—*
Schleicher, Rolf; Seebald, Lutz; and Seitz, Walter, 4,346,681, Cl. 123-179.00L.

Segawa, Yoshihiro: *See—*
Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, 4,346,585, Cl. 73-23.000.

Seiersen, Ole S., to Christian Rovsing A/S. Square wave generator. 4,347,560, Cl. 363-24.000.

Seifert, Hubert: *See—*
Conrad, Rainer; and Seifert, Hubert, 4,347,428, Cl. 219-251.000.

Seitz, Walter: *See—*
Schleicher, Rolf; Seebald, Lutz; and Seitz, Walter, 4,346,681, Cl. 123-179.00L.

Seitz, William R.: *See—*
Leung, Chun-Keung; and Seitz, William R., 4,347,571, Cl. 364-431.080.

Sekiguchi, Tetsuo: *See*—
Komoto, Shinsuke; and Sekiguchi, Tetsuo, 4,346,967, Cl. 350-430.000.
Sekine, Kenji: *See*—
Hirota, Yukitsugu; Endo, Akira; Kimura, Katsuhiro; Morozumi, Hiroshi; and Sekine, Kenji, 4,346,774, Cl. 180-167.000.
Sekine, Masaru: *See*—
Fuse, Takeshi; and Sekine, Masaru, 4,346,793, Cl. 188-134.000.
Self, James M., to Tanner Chemical Company, Inc. Foamed, low density, highly extended unsaturated polyester resin syrup composition, a shaped article comprised of the composition and a process for preparing such article. 4,347,331, Cl. 521-119.000.
Seligco Food Corporation: *See*—
Raymor, Roger F.; and Adams, Les, 4,346,815, Cl. 220-306.000.
Semanisin, Dale J.: *See*—
Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., 4,347,277, Cl. 428-215.000.
Senga, Taizo: *See*—
Nakamura, Yoshiyuki; Matsubara, Seiichi; Matsui, Takashi; Kumagai, Taiji; Senga, Taizo; and Fukutsu, Tsutomu, 4,347,614, Cl. 373-77.000.
Sep, Waltherus J.; and Huijsman, Adam, to Internationale Octrooi Maatschappij "Octropa" B.V. Unsaturated polyester compositions and their use. 4,347,170, Cl. 523-511.000.
Shadman, Farhang; and Hegedus, Louis, to General Motors Corporation. Incineration-cleanable composite diesel exhaust filter and vehicle equipped therewith. 4,346,557, Cl. 60-311.000.
Shakib, Iraj D., to International Business Machines Corporation. Paper insert and line feed mechanism. 4,347,006, Cl. 400-187.000.
Shannon, Richard F., to Owens-Corning Fiberglas Corporation. Fibrous product. 4,347,271, Cl. 428-36.000.
Shapiro, German. Spironolactone-containing composition and use thereof. 4,347,245, Cl. 424-241.000.
Sharp Kabushiki Kaisha: *See*—
Inohara, Akio; Sawae, Kiyoshi; Kawaguchi, Hisao; and Fujimoto, Takeo, 4,347,074, Cl. 65-32.000.
Washo, Junichi, 4,347,265, Cl. 427-108.000.
Sharpee, Richard L.: *See*—
Bass, Edmund P.; and Sharpee, Richard L., 4,347,239, Cl. 424-89.000.
Shaw, Leon L. Tricycle canopy. 4,346,725, Cl. 135-7.000.
Shaw, Wilfrid G.; and Paparizos, Christos, to Standard Oil Company. Te-containing methacrolein oxidation catalysts and their use. 4,347,163, Cl. 252-435.000.
Shelton, Oscar A., to Moore Business Forms, Inc. Multiple ply business form and manifold assembly. 4,346,916, Cl. 282-11.50A.
Sherwood Medical Industries Inc.: *See*—
Agdanowski, Ronald T.; and Schuessler, Thomas F., 4,346,711, Cl. 128-276.000.
Sherwood, Rexford D.; Baker, Rees T. K.; Derouane, Eric G.; and Pieters, Wim J., to Exxon Research & Engineering Co. Process for catalytically gasifying carbon. 4,347,063, Cl. 48-197.00R.
Shiba, Keisuke; and Toyama, Tadao, to Fuji Photo Film Co., Ltd. Photosensitive lithographic printing plate precursors and methods of preparing printing plate therefrom. 4,347,305, Cl. 430-302.000.
Shibahara, Takashi; Kohno, Teruo; and Misaka, Yoshisuke, to Sumitomo Metal Industries, Ltd. Method of width control in hot strip mill. 4,346,575, Cl. 72-16.000.
Shibatani, Kyoichiro: *See*—
Nagase, Yoshinori; Shibatani, Kyoichiro; Yamauchi, Junichi; and Omura, Ikuo, 4,347,174, Cl. 523-116.000.
Yamauchi, Junichi; Shibatani, Kyoichiro; Ikeguchi, Eiji; Omura, Ikuo; and Nagase, Yoshinori, 4,347,233, Cl. 424-7.000.
Shibuya, Tadao: *See*—
Murofushi, Satoru; Shibuya, Tadao; Kato, Shinichi; and Endo, Mitsuo, 4,347,504, Cl. 340-638.000.
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; Kimura, Takeo; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Heat developable silver image forming materials. 4,347,310, Cl. 430-620.000.
Shigehara, Itaru: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; Shigehara, Itaru; Nagatani, Kuniaki; and Nishimura, Shigeyuki, 4,347,390, Cl. 570-202.000.
Shim, Norm: *See*—
Pekkarinen, Michael O.; and Shim, Norm, 4,346,705, Cl. 128-214.00F.
Shima, Kazumi: *See*—
Zamma, Jun; Makino, Isao; Mii, Toshiyuki; and Shima, Kazumi, 4,347,221, Cl. 422-207.000.
Shimamura, Masaharu: *See*—
Yoshioka, Toshio; Teramoto, Kazuo; and Shimamura, Masaharu, 4,347,316, Cl. 435-94.000.
Shimazu, Ken-Ichi; and Nakayama, Takao, to Polychrome Corporation. Imaging peel apart element employing two photohardenable layers. 4,347,300, Cl. 430-156.000.
Shimbo, Masafumi: *See*—
Nishizawa, Junichi; and Shimbo, Masafumi, 4,346,513, Cl. 29-580.000.
Shimizu, Kazuyuki: *See*—
Kaneda, Saburo; Tsuchimoto, Takamitsu; Shimizu, Kazuyuki; and Ikegami, Fujio, 4,347,565, Cl. 364-200.000.
Shimizu, Masao: *See*—
Suzuki, Yoshio; and Shimizu, Masao, 4,347,259, Cl. 426-465.000.
Shimoiizaka, Junzo; and Fujita, Toyohisa, to Nittetsu Mining Co., Ltd. Method and device of separating materials of different density by ferromagnetic liquid. 4,347,124, Cl. 209-1.000.
Shimomura, Hiromi: *See*—
Katsube, Junki; Shimomura, Hiromi; Inokuma, Shun; and Sugie, Akihiko, 4,347,254, Cl. 424-275.000.
Shinagawa Machinery Works Co., Ltd.: *See*—
Zaitsu, Eizo, 4,346,650, Cl. 99-361.000.
Shinbori, Kenichi: *See*—
Katsuma, Makoto; Suzuki, Masayuki; Shinbori, Kenichi; and Murakami, Hiroyasu, 4,346,973, Cl. 354-152.000.
Shingu, Tetsuro: *See*—
Touyama, Ryousuke; Inouye, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,347,356, Cl. 542-430.000.
Shinoi, Tsuyoshi: *See*—
Ogawa, Seiki; Mito, Michio; and Shinoi, Tsuyoshi, 4,347,409, Cl. 179-99.00P.
Shiozawa, Shookichi; Nakayama, Tomomi; Haga, Kyosuke; Abe, Ryutaro; and Takeuchi, Yoshiyuki, to Toyoda Koki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic pump for power steering. 4,347,047, Cl. 417-310.000.
Shmagina, Nina N.: *See*—
Chernikhov, Alexei Y.; Yakovlev, Mikhail N.; Lysova, Valentina B.; Gefter, Evgeny L.; and Shmagina, Nina N., 4,347,348, Cl. 528-51.000.
Shook, Howard E., Jr., to Du Pont de Nemours, E. I., and Company. Aryl borane complexes. 4,347,193, Cl. 260-439.00R.
Shrekenhamer, Abraham, to Singer Company, The. Rectangular beam shaping antenna employing microstrip radiators. 4,347,516, Cl. 343-700.0MS.
Shugart Associates: *See*—
Dalziel, Warren L., 4,347,535, Cl. 360-99.000.
Shung, Wu S., to Otis Elevator Company. Tailorable discrete optical sensor. 4,346,788, Cl. 187-29.00R.
Shuster, Frank A.: *See*—
Kroll, Arthur S.; and Shuster, Frank A., 4,347,298, Cl. 430-97.000.
Shustova, Olga A.; Gladyshev, Georgy P.; and Potapova, Tamara P. Method for stabilization of polymers. 4,347,175, Cl. 523-455.000.
Shute, Bruce W.: *See*—
Allen, John J., Jr.; and Shute, Bruce W., 4,347,569, Cl. 364-426.000.
Shwayder, Warren M. Skid shoe for snow plow blade. 4,346,528, Cl. 37-270.000.
Siemens Aktiengesellschaft: *See*—
Gellert, Klaus; Nagel, Gunter; and Pollmeier, Franz J., 4,347,454, Cl. 310-193.000.
Haerten, Rainer, 4,346,717, Cl. 128-660.000.
Hoffmann, Kurt; and Zapf, Karl J., 4,347,588, Cl. 365-206.000.
Kobale, Manfred; and Krueger, Hans, 4,346,963, Cl. 350-344.000.
Tschunt, Edgar, 4,347,624, Cl. 378-10.000.
Siemens Corporation: *See*—
Frank, Reinhard, 4,347,582, Cl. 364-900.000.
Siemens Medical Laboratories, Inc.: *See*—
Gibson, Robert, 4,347,547, Cl. 361-187.000.
Haas, Werner, 4,347,440, Cl. 378-156.000.
Siemionko, Roger K., to Du Pont de Nemours, E. I., and Company. Aromatic polyester and filaments. 4,347,349, Cl. 528-190.000.
Sifford, Perry P.: *See*—
Jones, John C.; Sifford, Perry P.; and Sutton, Joel F., 4,347,040, Cl. 416-190.000.
Sigma-Tau Industrie Farmaceutiche Riunite: *See*—
Cavazza, Claudio, 4,346,820, Cl. 222-83.000.
Sigworth, Harry W., Jr., to Chevron Research Company. Buoyant element check valve for a thermosiphon energy system. 4,346,731, Cl. 137-433.000.
Silchor: *See*—
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilbourn, Frederick A., 4,346,485, Cl. 4-555.000.
Sills, Arthur A.: *See*—
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilbourn, Frederick A., 4,346,485, Cl. 4-555.000.
Simmons, Robert W., to Dow Chemical Company, The. Methylene chloride stabilizer formulation for use in aerosols. 4,347,154, Cl. 252-305.000.
Simpson, Frank F., to Black & Decker Inc. Percussive tool drive linkage. 4,346,769, Cl. 173-118.000.
Sindelar, Robert A.; and Alexander, Donald J. Method and apparatus for asphalt paving. 4,347,016, Cl. 404-95.000.
Singer Company, The: *See*—
Ferriss, Lincoln S., 4,347,480, Cl. 328-55.000.
Friedland, Bernard, 4,347,573, Cl. 364-453.000.
Geiger, Robert J., 4,347,055, Cl. 434-30.000.
Shrekenhamer, Abraham, 4,347,516, Cl. 343-700.0MS.
Singh, Baldev, to Sterling Drug Inc. Process for preparing 1,2-dihydro-6-methyl-2-oxo-5-(pyridinyl)nicotinonitriles. 4,347,363, Cl. 546-249.000.
Singletary, Buckley A.; and Gall, John C., to Sears, Roebuck and Company. Motor and roller support for window shades and the like. 4,346,749, Cl. 160-301.000.
SISA, Incorporated: *See*—
Quick, James E.; Razdan, Raj K.; and Dalzell, Haldean C., 4,347,361, Cl. 546-45.000.
Sisak, Harry A. Board game apparatus. 4,346,897, Cl. 273-271.000.

Sisti, Giorgio; Tosi, Bruno; and Trestianu, Sorin, to Carlo Erba Strumentazione S.p.A. Device for the automation of at least one operation in an injector for gas chromatographic columns. 4,347,215, Cl. 422-63.000.

Sivachenko, Eugene W. Apparatus for severing corrugated metal products. 4,346,576, Cl. 72-49.000.

Skiles, Jerry W.: *See*—
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, 4,347,246, Cl. 424-246.000.

Skiles, Loren D.: *See*—
Latimer, John P.; Donaldson, Robert; Cross, Michael; MacPhaiden, Harold; Skiles, Loren D.; Schauer, Henry; and Reynolds, Thomas J., 4,347,029, Cl. 414-22.000.

Skinner, Neal G.; and Braswell, Harry A., to Halliburton Company. Hydra-jet slotting tool. 4,346,761, Cl. 166-206.000.

Skladzien, Stanley B.; and Raue, Donald J., to United States of America, Energy. Magnetic flowmeter for electrically conductive liquid. 4,346,605, Cl. 73-861.130.

Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., to General Signal Corporation. Corrosion resistant coated articles which include an intermediate coating layer of a thermosetting polymer and non-siliceous filler. 4,347,277, Cl. 428-215.000.

Slater, Billy R.: *See*—
Paredes, Candelario; and Slater, Billy R., 4,347,563, Cl. 364-137.000.

Slivar, Djuro: *See*—
Haessler, Wolfgang; and Slivar, Djuro, 4,346,803, Cl. 198-813.000.

Smale, Terence C., to Beecham Group Limited. Intermediates for producing bicyclic β-lactam-antibiotics. 4,347,181, Cl. 260-245.20T.

Smejkal, George: *See*—
Markus, Lawrence W.; Smejkal, George; and Lace, Melvin A., 4,346,854, Cl. 242-67.10R.

Smeltzer, Paul, to Maremont Corporation. Shock absorber with improved back check and anti-dump valve mechanisms. 4,346,794, Cl. 188-322.140.

Smetanick, Andrew, to Freeport Transport, Inc. Tank trailer. 4,346,905, Cl. 280-5.00C.

Smilgys, Bruno S.: *See*—
Evans, Alfred C.; and Smilgys, Bruno S., 4,347,435, Cl. 235-94.00R.

Smirmaul, Heinz J.: *See*—
Tennant, Jerald L.; and Smirmaul, Heinz J., 4,346,482, Cl. 3-13.000.

Smith, Donald A.: *See*—
Gentilo, Dennis R.; Smith, Donald A.; and Pifer, David L., 4,347,427, Cl. 219-137.800.

Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., to Interox Chemicals Limited. Aqueous bleach compositions. 4,347,149, Cl. 252-102.000.

Smith International, Inc.: *See*—
Dailey, Patrick E., 4,346,920, Cl. 285-89.000.
Morrill, Charles D., 4,346,919, Cl. 285-25.000.

Smith, Joseph E., to Gulf & Western Manufacturing Company. Hemispherical ball and socket joint. 4,347,014, Cl. 403-36.000.

Smith Kline & French Laboratories Limited: *See*—
Cooper, John; and Lee, Dennis V., 4,347,191, Cl. 549-492.000.
Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,347,250, Cl. 424-263.000.

Smith & Nephew Associated Companies Limited: *See*—
Hollingsbee, Derek A., 4,347,238, Cl. 424-81.000.

Smith, Rory J. M.: *See*—
Murphy, Alan P.; Smith, Rory J. M.; and Brooks, Maxim C., 4,347,168, Cl. 252-547.000.

Smith, Verity C.; Baker, Robert J.; Barrow, Wyile W., Jr.; and Doane, H. Daniel, to Vaponics Inc. Apparatus for joining tubing. 4,346,923, Cl. 285-340.000.

Smith, William L.: *See*—
Joyce, Edward R.; and Smith, William L., 4,347,110, Cl. 204-149.000.

Sniader, David H. Heat pump control valve. 4,346,567, Cl. 62-160.000.

Snook, Richard K.: *See*—
Childs, William C., deceased; Snook, Richard K.; and Lester, Douglas R., 4,346,604, Cl. 73-861.120.

Socapex: *See*—
Chesnais, Andre; and Thiery, Philippe, 4,346,955, Cl. 339-97.00R.

Societa Italiana Catene Calibrate Regina S.p.A.: *See*—
Restelli, Amedeo A., 4,346,777, Cl. 180-220.000.

Societe Anonyme dite: Institut Merieux: *See*—
Mynard, Marie-Claude; and Tayot, Jean-Louis, 4,347,244, Cl. 424-180.000.

Societe Grenobloise d'Etudes et d'Applications Hydrauliques (SOGREAH): *See*—
Chevallier, Arnauld, 4,347,017, Cl. 405-29.000.

Societe Nationale des Poudres et Explosifs: *See*—
Zeller, Bernard M.; Couturier, Rene J.; and Tribot, Robert A., 4,347,087, Cl. 149-98.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See*—
Legrand, Paul J.; Dubeau, Michel L.; and Pachomoff, Guy R., 4,346,861, Cl. 244-54.000.

Societe Nationale Industrielle Aerospatiale: *See*—
Beau, Jean-Francois, 4,346,949, Cl. 308-236.000.
Beau, Jean-Francois, 4,347,449, Cl. 310-42.000.
Jousillec, Joseph, 4,346,614, Cl. 74-5.120.

Societe Nationale Industrielle et Aerospatiale: *See*—
Banos, Jean; Cantagrel, Jean-Claude; Cahuzac, Georges; and Darrieux, Jean-Louis, 4,346,741, Cl. 139-387.00R.

Soderberg, John H.: *See*—
Duwel, Edward C.; and Soderberg, John H., 4,347,506, Cl. 340-679.000.

Solarex Corporation: *See*—
Lindmayer, Joseph, 4,347,264, Cl. 430-314.000.
Whitehouse, Daniel L., 4,347,263, Cl. 427-74.000.

Solow, Terry S. Mechanical toothbrush with individual tuft drive. 4,346,492, Cl. 15-22.00R.

Solvay & Cie.: *See*—
De Ceuster, Jean; and Essemaeker, Paul, 4,347,099, Cl. 162-5.000.

Sony Corporation: *See*—
Yamakoshi, Akira; Murakami, Kyoichi; and Niimura, Tsutomu, 4,347,531, Cl. 358-172.000.
Yoshida, Tadao, 4,347,481, Cl. 330-251.000.

Soos, Rudolf: *See*—
Bitter, Istvan; Soos, Rudolf; Toth, Geza; Toke, Laszlo; and Szabo, Gabor, 4,347,377, Cl. 560-32.000.

Sorenson, Richard W., to Carlingswitch, Inc. Switch construction. 4,347,417, Cl. 200-67.00G.

Soulen, John R.: *See*—
Thanawalla, Chandrakant B.; Soulen, John R.; and Monsimer, Harold G., 4,346,710, Cl. 128-272.000.

Souriau & Cie: *See*—
Chesnais, Andre; and Thiery, Philippe, 4,346,955, Cl. 339-97.00R.

Southall, Kenneth, to AMF Incorporated. Method of making filter cell having sealed periphery. 4,347,208, Cl. 264-229.000.

SPACAB AB: *See*—
Knudsen, Niels; Orpana, Veikko; Wisur, Matti; Warulf, Olov; Bergqvist, Hakan; and Afzelius, Raoul, 4,347,401, Cl. 174-14.00R.

Speer, Walter F., to RCA Corporation. Rotary tuning mechanism. 4,347,628, Cl. 455-173.000.

Speier, John L.; and Gentle, Thomas M., to Dow Corning Corporation. Method and apparatus for rapidly freezing molten metals and metalloids in particulate form. 4,347,199, Cl. 264-8.000.

Spencer, Patricia J.; and DeRoeck, Carrie P. Pastry cloth having suction cups removably associated therewith. 4,346,875, Cl. 269-302.100.

Speraggi, Marcello, to Honeywell Information Systems Inc. Document positioning and feeding apparatus for high speed printers. 4,346,883, Cl. 271-274.000.

Sperry Corporation: *See*—
Booth, Donald W., 4,346,901, Cl. 273-408.000.

Spielman, Richard. Light transceiver device. 4,347,438, Cl. 250-221.000.

Spieth, Wolfgang: *See*—
Goertler, Horst; Hetzel, Friedrich; Knobloch, Uwe; Muller, Hans; Prohaska, Hans; Rachner, Horst; and Spieth, Wolfgang, 4,347,465, Cl. 318-266.000.

Spooner, Archer M., to Redifon Simulation Limited. Visual display apparatus. 4,347,507, Cl. 340-705.000.

Spooner, Archer M., to Redifon Simulation Limited. Visual display apparatus. 4,347,508, Cl. 340-705.000.

Sprague, Robert A.; and Sarid, Dror, to Xerox Corporation. Light modulator/deflector using acoustic surface waves. 4,346,965, Cl. 350-358.000.

Sprando, Anthony E. Electrical relay. 4,347,548, Cl. 361-210.000.

SRI International: *See*—
Loehman, Ronald E., 4,347,089, Cl. 156-89.000.

Staab, Roger I.: *See*—
Brooks, James L.; Staab, Roger I.; Bowers, James C.; and Nienhaus, Harry A., 4,347,474, Cl. 323-224.000.

Staendeke, Horst; Dany, Franz-Josef; and Kandler, Joachim, to Hoechst Aktiengesellschaft. Particulate agent for impeding the combustibility of combustible substances. 4,347,334, Cl. 524-416.000.

Staffa, Jeffrey A.: *See*—
Lionelle, Joseph E.; Staffa, Jeffrey A.; and McCormick, William L., 4,347,321, Cl. 435-161.000.

Stafford, Richard W.: *See*—
Adams, Richard E.; and Stafford, Richard W., 4,347,493, Cl. 336-192.000.

Stahle, Martin. Centrifugal pump with single blade impeller. 4,347,035, Cl. 415-121.00B.

Stamets, Stanley L.; Winkless, Robert A.; Hernandez, Rafael J.; Merle, Joseph J.; and Payne, Robert D., to Continental Group, Inc., The. Inside powder striping apparatus. 4,346,667, Cl. 118-622.000.

Standard Oil Company: *See*—
Shaw, Wilfrid G.; and Paparizos, Christos, 4,347,163, Cl. 252-435.000.

Standard Oil Company (Indiana): *See*—
Fields, Ellis K., 4,347,384, Cl. 568-37.000.

Stanley Mabo S.A.: *See*—
Jacquet, Daniel, 4,347,088, Cl. 156-69.000.

Stanton, George E., to Nujack Oil Pump Company. Shock absorbing means for a rocker arm type oil well pump. 4,346,620, Cl. 74-583.000.

Stauffer Chemical Company: *See*—
Campbell, Ramsey G., 4,347,391, Cl. 570-252.000.
Epstein, Ronald A.; and Mink, Robert I., 4,347,160, Cl. 252-429.00B.
Michel, Christian G.; Ertell, Carolyn A.; and Burk, Johst H., 4,347,325, Cl. 501-1.000.
Pallos, Ferenc M., 4,347,380, Cl. 564-91.000.

Stefanoni, Romano; and Annoni, Eliseo. Unwinding machine. 4,346,853, Cl. 242-58.100.

Steigerwald, Robert L.: *See*—
Park, John N.; and Steigerwald, Robert L., 4,347,464, Cl. 318-254.000.

Stein Heurtey: *See—*
Lamarque, Gabriel, 4,347,400, Cl. 373-77.000.
Steiner, Urs: *See—*
Friesen, Neil; and Steiner, Urs, 4,347,136, Cl. 210-253.000.
Steinke, Leo: *See—*
Fischer, Hermann; Friese, Karl-Hermann; Gruber, Hans-Ulrich; Heinemann, Wolfgang; Knoll, Gunter; Linder, Ernst; Maurer, Helmut; Noack, Rainer; Steinke, Leo; Weber, Lothar; and Weyl, Helmut, 4,347,113, Cl. 204-195.00S.
Stembridge, William F.; Woodward, Roger P.; and Glassman, Larry H. Imaging sonar system and method. 4,347,591, Cl. 367-104.000.
Sterling Drug Inc.: *See—*
Singh, Baldev, 4,347,363, Cl. 546-249.000.
Wesseler, Eugene P., 4,347,352, Cl. 528-423.000.
Stern, Warren C., to Burroughs Wellcome Co. Prolactin suppression in mammals. 4,347,257, Cl. 424-330.000.
Stetson, Norman B., to Inframetrics, Inc. Scanning mirror arrangement. 4,347,530, Cl. 358-113.000.
Stevens, Violete L.: *See—*
Ginter, Sally P.; Pawloski, Chester E.; and Stevens, Violete L., 4,347,194, Cl. 260-929.000.
Stewart, Finton E.; and Stewart, Sylvia M. L. B. Leather inlay pistol grip and method of manufacture. 4,346,530, Cl. 42-71.00R.
Stewart, Mervin, to Warne Surgical Products Limited. Process for preparing an inflatable pad for a face mask. 4,347,205, Cl. 264-130.000.
Stewart, Sylvia M. L. B.: *See—*
Stewart, Finton E.; and Stewart, Sylvia M. L. B., 4,346,530, Cl. 42-71.00R.
Stirling, Leonard H., to Her Majesty the Queen. Pretensioning diagonals in lattice beam-columns. 4,346,510, Cl. 29-452.000.
Stoltman, Donald D., to General Motors Corporation. Exhaust air flow proportioning valve. 4,346,555, Cl. 60-290.000.
Storz, Kurt: *See—*
Schwaab, Manfred; Puschnerat, Helmut; and Storz, Kurt, 4,346,656, Cl. 101-181.000.
Streifer, William: *See—*
Fekete, Dan H.; Scifres, Donald R.; and Streifer, William, 4,347,612, Cl. 372-50.000.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,347,611, Cl. 372-45.000.
Stroud, Lebern W. Dual alternator power system for motor vehicle. 4,347,473, Cl. 320-15.000.
Stumpp, Gerhard; and Wessel, Wolf, to Robert Bosch GmbH. Apparatus for measuring the amount of fluid supplied by a fluid supply device. 4,346,727, Cl. 137-117.000.
Sturgeon, Clayton L., to Texas Instruments Incorporated. Switching power supply. 4,347,559, Cl. 363-21.000.
Suchowerskyj, Wadym: *See—*
Schrauf, Werner; Werner, Peter; Luetkens, Luer; Maue, Hans-Heinrich; and Suchowerskyj, Wadym, 4,346,913, Cl. 280-735.000.
Sudo, Susumu: *See—*
Ohtsuga, Hisao; Uzawa, Koji; Kamuro, Takashi; Sudo, Susumu; Hirose, Tomoyoshi; Miyao, Masafumi; and Koga, Motoyuki, 4,346,922, Cl. 285-109.000.
Suffi, Louis, to Northern Telecom, Inc. Distributing frame and terminal block member assemblies. 4,346,956, Cl. 339-119.00R.
Sugano, Akira; and Tooyama, Eiji, to Hitachi, Ltd. Hierarchical-structure plant control system. 4,347,564, Cl. 364-132.000.
Sugata, Masao: *See—*
Fukuda, Tadaji; Sugata, Masao; Nakagiri, Takashi; and Konishi, Masaki, 4,347,436, Cl. 250-211.00R.
Suggitt, Robert M.: *See—*
Crone, John M., Jr.; and Suggitt, Robert M., 4,347,398, Cl. 585-474.000.
Sugie, Akihiko: *See—*
Katsube, Junki; Shimomura, Hiromi; Inokuma, Shun; and Sugie, Akihiko, 4,347,254, Cl. 424-275.000.
Sugihara, Kazuyoshi: *See—*
Mihara, Kazunobu; and Sugihara, Kazuyoshi, 4,347,412, Cl. 200-42.00T.
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, to USV Pharmaceutical Corporation. Antihypertensive lactams. 4,347,246, Cl. 424-246.000.
Sulzer, Harry E., to Anchor/Darling Industries, Inc. Automated dual mode valve actuator. 4,346,728, Cl. 137-243.600.
Sumitomo Chemical Company, Limited: *See—*
Katsube, Junki; Shimomura, Hiromi; Inokuma, Shun; and Sugie, Akihiko, 4,347,254, Cl. 424-275.000.
Kirino, Osamu; Kato, Toshiro; and Yamamoto, Shigeo, 4,347,188, Cl. 549-436.000.
Saito, Kenji; and Yamachika, Hiroshi, 4,347,386, Cl. 568-310.000.
Yamada, Yasuharu; and Kawai, Kiyoshi, 4,347,157, Cl. 252-429.00B.
Sumitomo Metal Industries, Ltd.: *See—*
Shibahara, Takashi; Kohno, Teruo; and Misaka, Yoshisuke, 4,346,575, Cl. 72-16.000.
Sumitomo Precision Products Company Limited: *See—*
Mukuda, Mutsuo; Murakami, Masahiro; and Aotsuka, Kazuo, 4,347,421, Cl. 219-60.00A.
Sumrell, Gene: *See—*
Bailey, August V.; Boudreaux, Gordon J.; and Sumrell, Gene, 4,347,378, Cl. 560-105.000.
Sundberg, Bertil J.: *See—*
Peabody, Ralph C.; and Sundberg, Bertil J., 4,346,494, Cl. 15-179.000.
Suter, Fritz; and Haag, Paul, to Maschinenfabrik WIFAG. Device for exchanging the form cylinder in a photogravure rotary machine. 4,346,655, Cl. 101-153.000.
Sutton, Joel F.: *See—*
Jones, John C.; Sifford, Perry P.; and Sutton, Joel F., 4,347,040, Cl. 416-190.000.
Suzuki, Hiroshi: *See—*
Osumi, Yasuaki; Suzuki, Hiroshi; Kato, Akihiko; and Nakane, Masanori, 4,347,082, Cl. 75-171.000.
Suzuki, Masayuki: *See—*
Katsuma, Makoto; Suzuki, Masayuki; Shinbori, Kenichi; and Murakami, Hiroyasu, 4,346,973, Cl. 354-152.000.
Suzuki, Sadao, to Yoshino Kogyosho Co., Ltd. Method for molding elongated parisons. 4,347,209, Cl. 264-250.000.
Suzuki, Takeo: *See—*
Ohta, Shigeo; and Suzuki, Takeo, 4,347,482, Cl. 330-298.000.
Suzuki, Yoshio; and Shimizu, Masao, to Niigata Engineering Co., Ltd. Method for reducing the bacterial population of blood powder. 4,347,259, Cl. 426-465.000.
Svehaug, Oswald C. Slurry separator having reaction nozzle driven rotory blades wiping a conical filter. 4,347,134, Cl. 210-147.000.
Swaisgood, Harold E.: *See—*
Brown, Rodney J.; and Swaisgood, Harold E., 4,347,312, Cl. 435-7.000.
Swann, Julian B. Shopping cart with auxiliary load carrier. 4,346,907, Cl. 280-47.180.
Swanson, William C.; and Heersink, Evert J., to International Harvester Co. Agricultural implement sectional frame with depth limit. 4,346,763, Cl. 172-2.000.
Swart, Daniel J., to Dow Chemical Company, The. Linear polyesters from aromatic dicarboxylic acids and cyclic alkylene carbonates prepared using six-membered aromatic nitrogen-containing heterocyclic groups. 4,347,351, Cl. 528-271.000.
Sweeney, Edmund F., to Allied Corporation. Communications systems utilizing a retrodirective antenna having controllable reflectivity characteristics. 4,347,512, Cl. 343-6.50R.
Syntex (U.S.A.) Inc.: *See—*
Muchowski, Joseph M.; and Greenhouse, Robert, 4,347,185, Cl. 260-326.250.
Muchowski, Joseph M.; and Greenhouse, Robert, 4,347,186, Cl. 548-516.000.
Muchowski, Joseph M.; and Greenhouse, Robert, 4,347,187, Cl. 548-516.000.
System E Controls Ltd.: *See—*
Davis, John M.; and Burton, Barrie C., 4,347,492, Cl. 336-136.000.
Szabo, Gabor: *See—*
Bitter, Istvan; Soos, Rudolf; Toth, Geza; Toke, Laszlo; and Szabo, Gabor, 4,347,377, Cl. 560-32.000.
Szabo, William. Weight lifting exercising apparatus having a movable carriage. 4,346,888, Cl. 272-118.000.
Szczepanski, Henry: *See—*
Lukaszczyk, Alfons; Martin, Henry; Diel, Peter J.; Fory, Werner; Gatzi, Karl; Kristinsson, Haukur; Muller, Beat; Muntwyler, Rene; Pachlatko, Johannes P.; Rempfler, Hermann; Schurter, Rolf; and Szczepanski, Henry, 4,347,372, Cl. 548-217.000.
Szentlaszloi, Alexander: *See—*
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Taguchi, Tatsuya: *See—*
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Taito Co., Ltd.: *See—*
Touyama, Ryousuke; Inouye, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,347,356, Cl. 542-430.000.
Takagi, Takeji; and Hosaka, Kiyokazu, to Olympus Optical Co., Ltd. Flexible tube and method of manufacturing same. 4,347,204, Cl. 264-127.000.
Takahashi, Hideyuki: *See—*
Takano, Hirotaka; Takahashi, Hideyuki; Hirogohri, Ryoichi; and Kato, Kohji, 4,347,396, Cl. 585-441.000.
Takahashi, Naoya: *See—*
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Takahashi, Tadashi: *See—*
Miyashita, Kunio; Takahashi, Tadashi; and Morinaga, Shigeki, 4,347,536, Cl. 360-107.000.
Takahashi, Tamotsu, to Copal Company Limited. Camera equipped with an automatically controlling device for focusing and shutter operation. 4,346,972, Cl. 354-195.000.
Takaichi, Kazuyoshi: *See—*
Kaibara, Nobuhiro; and Takaichi, Kazuyoshi, 4,346,688, Cl. 123-502.000.
Takanashi, Itsuo; Nakagaki, Shintaro; Miyoshi, Tadayoshi; Motoyama, Koichiro; Miyazaki, Kenichi; and Yokokawa, Sumio, to Victor Company of Japan, Ltd. Color-resolving striped filter for camera tube. 4,347,529, Cl. 358-44.000.
Takano, Hirotaka; Takahashi, Hideyuki; Hirogohri, Ryoichi; and Kato, Kohji, to Mitsubishi Petrochemical Co., Ltd. Process for producing styrene. 4,347,396, Cl. 585-441.000.

Takao, Hiroshi: *See—*
Kimura, Shinji; Takao, Hiroshi; Ambe, Satoshi; and Akimune, Yoshio, 4,347,114, Cl. 204-195.00S.
Takasago Perfumery Co., Ltd.: *See—*
Akutagawa, Susumu; and Taketomi, Takanao, 4,347,387, Cl. 568-450.000.
Takatsu, Huehiro. Hemming apparatus. 4,346,579, Cl. 72-314.000.
Takayama, Yoshiaki: *See—*
Asano, Masaya; Mori, Yoichi; and Takayama, Yoshiaki, 4,347,303, Cl. 430-272.000.
Takeda, Norio: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Sakaguchi, Shuzabu; Kohzaki, Toshiaki; Aoki, Osamu; Takeda, Norio; and Aoki, Yoshiyuki, 4,347,383, Cl. 564-249.000.
Takeda, Shiro; and Nakajima, Minoru, to Fujitsu Limited. Method of manufacturing electronic device having multilayer wiring structure. 4,347,306, Cl. 427-96.000.
Takeda, Yoshio: *See—*
Touyama, Ryousuke; Inouye, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,347,356, Cl. 542-430.000.
Takenaka, Yoshihiro: *See—*
Yoshimura, Minoru; Takenaka, Yoshihiro; Ikeda, Shigeho; and Yoshii, Hiroe, 4,347,317, Cl. 435-110.000.
Taketomi, Takanao: *See—*
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Takeuchi, Shinji: *See—*
Sakamoto, Masaaki; and Takeuchi, Shinji, 4,346,618, Cl. 74-491.000.
Takeuchi, Tetsuo; Mukunoki, Yasuo; and Minanizono, Junji, to Fuji Photo Film Co., Ltd. Photographic materials. 4,347,308, Cl. 430-529.000.
Takeuchi, Yoshiyuki: *See—*
Shiozawa, Shookichi; Nakayama, Tomomi; Haga, Kyosuke; Abe, Ryutaro; and Takeuchi, Yoshiyuki, 4,347,047, Cl. 417-310.000.
Taki, Waro: *See—*
Handa, Hajime; Yonekawa, Yasuhiro; Yamagata, Sen; Taki, Waro; Ikada, Yoshito; and Iwata, Hiroo, 4,346,712, Cl. 128-325.000.
Tam, Matthias L., to Rockwell International Corporation. Voltage-temperature insensitive on-chip reference voltage source compatible with VLSI manufacturing techniques. 4,347,476, Cl. 323-313.000.
Tamai, Masayoshi: *See—*
Kikuchi, Masatsugu; and Tamai, Masayoshi, 4,347,519, Cl. 346-75.000.
Tamura, Shuichi: *See—*
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Tamura, Yasuyuki: *See—*
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Tanaka, Junzo: *See—*
Ikeda, Nobuo; Tanaka, Junzo; and Yoshimura, Hirofumi, 4,347,420, Cl. 219-10.55D.
Tanaka, Kozo: *See—*
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Tanaka, Masahide: *See—*
Nakamura, Akiyoshi; Ogura, Toshinobu; and Tanaka, Masahide, 4,346,966, Cl. 350-412.000.
Tanaka, Tadashi: *See—*
Yanobu, Hideo; and Tanaka, Tadashi, 4,346,551, Cl. 57-62.000.
Tanaka, Yukio, to Murata Manufacturing Co., Ltd. Ceramic capacitor with terminals in sockets. 4,347,551, Cl. 361-307.000.
Tanigawa, Koichi: *See—*
Kuge, Tsukasa; Tamura, Yasuyuki; and Tanigawa, Koichi, 4,346,986, Cl. 355-14.0CH.
Taniguchi, Nobuyuki; Nakai, Masaaki; Ishida, Tokuji; and Uchida, Isamu, to Minolta Camera Company. Operating aid arrangement for cameras. 4,346,978, Cl. 354-289.000.
Tanner Chemical Company, Inc.: *See—*
Self, James M., 4,347,331, Cl. 521-119.000.
Tanskanen, Paavo T., to Orion-yhtyma Oy. Process for the preparation of a mixture of an anti-inflammatory steroid and a fluoro-chloro-hydrocarbon to be used as a propellant. 4,347,236, Cl. 424-45.000.
Taplin, Lael B., to Bendix Corporation, The. Means for improving automobile driveability. 4,346,776, Cl. 180-179.000.
Tasker, Sidney. Automatic flexible container fabricating machine. 4,346,546, Cl. 53-412.000.
Tatar, Richard, to Del-Met Corporation. Wheel cover locking assemblies. 4,346,940, Cl. 301-37.0AT.
Tateno, Kohkichi. Joint for use in concrete deposit. 4,346,542, Cl. 52-396.000.
Tatsuo, Masahiro, to Kabushiki Kaisha Komatsu Seisakusho. Variable speed planetary transmission. 4,346,623, Cl. 74-764.000.
Taunton, John W.: *See—*
Bauman, Richard F.; Taunton, John W.; Anderson, George H.; Trachte, Ken L.; and Hsia, Steve J., 4,347,117, Cl. 208-8.0LE.
Taylor, Elizabeth C. Apparatus for mitering mold and the like. 4,346,636, Cl. 83-767.000.
Taylor, Peter F.; Tuchyner, Harold J.; Basiulis, Algerd; and Lamp, Thomas R., to Hughes Aircraft Company. Thermal jacket for elongated structures. 4,346,643, Cl. 89-14.100.
Taylor, Robert E.; Rautiola, Norman A.; and Miller, Gerald K., to Nartron Corporation, a part interest. Automotive backlight heater and timing control means. 4,347,444, Cl. 307-141.000.
Tayot, Jean-Louis: *See—*
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TBA Industrial Products, Limited: *See—*
Willis, John H.; and Heath, Trevor C., 4,347,071, Cl. 65-10.200.
TDK Electronics Co., Ltd.: *See—*
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Tokuoka, Yasumichi, 4,347,291, Cl. 428-694.000.
TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH: *See—*
Schmidt, Hans, 4,347,601, Cl. 370-58.000.
Tedstone, Donald J., to Pratt & Whitney Aircraft of Canada Limited. Vane fairing for inertial separator. 4,346,860, Cl. 244-53.00B.
Teepak, Inc.: *See—*
Martinek, Thomas W., 4,346,738, Cl. 138-118.100.
Teichmann, Robert J.; and Mayer, Linda J., to Hooker Chemicals & Plastics Corp. Electroplating tin and tin alloys and baths therefor. 4,347,107, Cl. 204-44.000.
Teijin Limited: *See—*
Hara, Takeshi; and Kayama, Yasutaka, 4,347,369, Cl. 548-149.000.
Ono, Syoji; Miura, Shuzi; and Yoshida, Tsunemasa, 4,347,179, Cl. 260-112.00B.
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Telefonaktiebolaget L M Ericsson: *See—*
Akerberg, Dag, 4,347,501, Cl. 340-539.000.
Telmec Co., Ltd.: *See—*
Imahashi, Issei, 4,347,452, Cl. 310-76.000.
Tennant, Jerald L.; and Smirmaul, Heinz J. Living contact lens. 4,346,482, Cl. 3-13.000.
Teramoto, Kazuo: *See—*
Yoshioka, Toshio; Teramoto, Kazuo; and Shimamura, Masaharu, 4,347,316, Cl. 435-94.000.
Teumer, Roger G., to Xerox Corporation. Tilted deflection electrode method and apparatus for liquid drop printing systems. 4,347,521, Cl. 346-75.000.
Texaco Inc.: *See—*
Brown, Winthrop K., 4,346,590, Cl. 73-151.000.
Crone, John M., Jr.; and Suggitt, Robert M., 4,347,398, Cl. 585-474.000.
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Texas Instruments Incorporated: *See—*
Rao, G. R. Mohan, 4,347,587, Cl. 365-189.000.
Sturgeon, Clayton L., 4,347,559, Cl. 363-21.000.
Thanawalla, Chandrakant B.; Soulen, John R.; and Monsimer, Harold G., to Pennwalt Corporation. Article for storage and transport of biogenic fluids. 4,346,710, Cl. 128-272.000.
Thiery, Philippe: *See—*
Chesnais, Andre; and Thiery, Philippe, 4,346,955, Cl. 339-97.00R.
Thomas, Charles H., to Westinghouse Electric Corp. High bond strength aqueous phenol modified polyester coating composition. 4,347,335, Cl. 524-538.000.
Thomas, Delbert D. Horizontal oil shale and tar sands retort. 4,347,119, Cl. 208-11.00R.
Thomas, Eric J.: *See—*
Giddings, Peter J.; John, David I.; and Thomas, Eric J., 4,347,182, Cl. 260-245.20R.
Thomson-Brandt: *See—*
Lainez, Lucien, 4,347,527, Cl. 358-4.000.
Thomson-CSF: *See—*
Lemonon, Claire; and Micheron, Francois, 4,346,505, Cl. 29-25.350.
Thorpe, Joseph F., to Cheddar Valley Engineering Limited. Roll pallet. 4,346,906, Cl. 280-33.99H.
Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See—*
Espenhahn, Manfred; and Folwaczny, Manfred, 4,347,115, Cl. 204-206.000.
Tilbor, Neil: *See—*
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Timperley, Doreen A.: *See—*
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,347,149, Cl. 252-102.000.
Ting, Raymond M. L. Blow-in/blow-out double-skin wall construction. 4,346,538, Cl. 52-1.000.
Tip Top Remaco Ltd.: *See—*
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Titchener, Dorothy M.: *See—*
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Togami, Yuji, to Nippon Hoso Kyokai. Method of making a recording medium. 4,347,112, Cl. 204-192.00M.
Toho Beslon Co., Ltd.: *See—*
Saji, Yasuo; Tanaka, Kozo; and Yamauchi, Takashi, 4,347,279, Cl. 428-294.000.
Tokai Electric Wire Company Limited: *See—*
Fukao, Yasuyosi; and Mayumi, Hisaki, 4,346,957, Cl. 339-119.00R.
Toke, Laszlo: *See—*
Bitter, Istvan; Soos, Rudolf; Toth, Geza; Toke, Laszlo; and Szabo, Gabor, 4,347,377, Cl. 560-32.000.
Tokumoto, Masao: *See—*
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Tokuoka, Yasumichi, to TDK Electronics Co., Ltd. Magnetic recording medium and preparation thereof. 4,347,291, Cl. 428-694.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hashizume, Masao; and Kitazawa, Akira, 4,347,605, Cl. 370-88.000.

Koda, Akira; Sato, Fumitaka; and Nishibe, Shinji, 4,347,566, Cl. 364-200.000.
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Sato, Hajime; Morisue, Tetsuo; and Heki, Hideaki, 4,347,214, Cl. 376-251.000.
Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Nii, Yoshiji, 4,347,581, Cl. 364-900.000.

Toledo Stamping & Manufacturing Company: *See—*
Wherry, Joseph L., 4,346,678, Cl. 123-90.440.

Tomasetti, Charles M.; and Ulaky, John A., to RCA Corporation. Photomultiplier tube having a gain modifying Nichrome dynode. 4,347,458, Cl. 313-103.00R.

Tomcufcik, Andrew S.: *See—*
Wright, William B., Jr.; Tomcufcik, Andrew S.; and Marsico, Joseph W., Jr., 4,347,248, Cl. 424-251.000.

Tomiita, Kazuo: *See—*
Negishi, Takao; and Tomiita, Kazuo, 4,346,552, Cl. 57-208.000.

Tomita, Tetsuo: *See—*
Isshiki, Tomiya; Tomita, Tetsuo; Sakaguchi, Shuzabu; Kohzaki, Toshiaki; Aoki, Osamu; Takeda, Norio; and Aoki, Yoshiyuki, 4,347,383, Cl. 564-249.000.

Tooyama, Eiji: *See—*
Sugano, Akira; and Tooyama, Eiji, 4,347,564, Cl. 364-132.000.

Toray Industries, Inc.: *See—*
Asano, Masaya; Mori, Yoichi; and Takayama, Yoshiaki, 4,347,303, Cl. 430-272.000.
Negishi, Takao; and Tomiita, Kazuo, 4,346,552, Cl. 57-208.000.
Yoshioka, Toshio; Teramoto, Kazuo; and Shimamura, Masaharu, 4,347,316, Cl. 435-94.000.

Toray Industries, Ltd.: *See—*
Ohkada, Shinzo; and Kenjo, Hideki, 4,347,198, Cl. 264-2.300.

Torii, Hideyasu; and Nakamura, Susumu, to Dainichiseika Color & Chemicals Mfg. Co., Ltd.; and Ukima Colour & Chemicals Mfg. Co., Ltd. Process for preparing thermosettable polyurethane which comprises blending a polyisocyanate with a first thermoplastic resin and then blending with a second thermoplastic resin which is a polyurethane. 4,347,338, Cl. 525-123.000.

Tornya, Andrew G. Balustrade construction. 4,346,872, Cl. 256-65.000.

Tosaki, Hiromi; Arima, Hideo; Mozume, Teruo; Ikegami, Akira; Isogai, Tokio; and Tsubokawa, Ichiro, to Hitachi, Ltd. Thermistor composition. 4,347,166, Cl. 252-519.000.

Toshiba Electric Equipment Corporation: *See—*
Matsushita, Nobuo, 4,347,554, Cl. 362-297.000.

Tosi, Bruno: *See—*
Sisti, Giorgio; Tosi, Bruno; and Trestianu, Sorin, 4,347,215, Cl. 422-63.000.

Total Transportation Systems (International) A/S: *See—*
Garlung, Walther; and Dahl, Helge, 4,346,808, Cl. 212-212.000.

Toth, Geza: *See—*
Bitter, Istvan; Soos, Rudolf; Toth, Geza; Toke, Laszlo; and Szabo, Gabor, 4,347,377, Cl. 560-32.000.

Touyama, Ryousuke; Inouye, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, to Taito Co., Ltd. Novel nitrogen-containing monoterpene derivatives. 4,347,356, Cl. 542-430.000.

Tovim, Igal. Plastics material horseshoes. 4,346,762, Cl. 168-4.000.

Towsend, Marvin S. Snow plow attachment. 4,346,928, Cl. 294-51.000.

Toyama, Tadao: *See—*
Shiba, Keisuke; and Toyama, Tadao, 4,347,305, Cl. 430-302.000.

Toyo Engineering Corporation: *See—*
Zamma, Jun; Makino, Isao; Mii, Toshiyuki; and Shima, Kazumi, 4,347,221, Cl. 422-207.000.

Toyo Jozo Kabushiki Kaisha: *See—*
Imamura, Shigeyuki; Matsumoto, Tohru; Muto, Naoki; and Misaki, Hideo, 4,347,323, Cl. 435-194.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Goto, Takeshi; Kawakami, Noboru; Hirano, Itsuo; Itakura, Yoichi; and Kawahara, Yuji, 4,347,077, Cl. 75-0.50B.
Ohno, Shotaro; Koyama, Kenji; and Fukuda, Mitsutoshi, 4,347,138, Cl. 210-639.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Asano, Hiroaki; Ota, Hiroshi; and Yamakage, Kenji, 4,346,535, Cl. 51-101.00R.
Kawabata, Minoru; Honaga, Susumu; and Inaguma, Yoshiharu, 4,347,048, Cl. 417-310.000.
Shiozawa, Shookichi; Nakayama, Tomomi; Haga, Kyosuke; Abe, Ryutaro; and Takeuchi, Yoshiyuki, 4,347,047, Cl. 417-310.000.

Toyota Jidosha K.K.: *See—*
Inagaki, Masao; and Sato, Shigeru, 4,346,837, Cl. 236-34.500.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Akiyama, Susumu; Ito, Kenzo; Fukaya, Hiroyasu; Ogiso, Haruhiko; Hirabayashi, Yuji; and Kawamura, Takahide, 4,347,570, Cl. 364-431.040.
Fukao, Yasuyosi; and Mayumi, Hisaki, 4,346,957, Cl. 339-119.00R.
Shiozawa, Shookichi; Nakayama, Tomomi; Haga, Kyosuke; Abe, Ryutaro; and Takeuchi, Yoshiyuki, 4,347,047, Cl. 417-310.000.
Wakita, Nobuaki; and Kanai, Hiroshi, 4,346,686, Cl. 123-339.000.

Trachte, Ken L.: *See—*
Bauman, Richard F.; Taunton, John W.; Anderson, George H.; Trachte, Ken L.; and Hsia, Steve J., 4,347,117, Cl. 208-8.0LE.

Treadwell, William A., to Eaton Corporation. Vehicle speed control. 4,346,775, Cl. 180-175.000.

Trestianu, Sorin: *See—*
Sisti, Giorgio; Tosi, Bruno; and Trestianu, Sorin, 4,347,215, Cl. 422-63.000.

Tribot, Robert A.: *See—*
Zeller, Bernard M.; Couturier, Rene J.; and Tribot, Robert A., 4,347,087, Cl. 149-98.000.

Triumph-Adler A.G.: *See—*
Lendl, Josef, 4,347,005, Cl. 400-144.200.

Trost, Elmar; and Reusch, Rudolf, to Rheinmetall GmbH. Pull-through structure for measuring the curvature of the internal wall of a pipe or tube. 4,346,993, Cl. 356-138.000.

Trott, W. James, to United States of America, Navy. Piezoceramic tubular element with zero end displacement. 4,347,593, Cl. 367-159.000.

Trotter, Albin; and Trotter, Ursus. Instantaneous water heater gas control valve. 4,346,835, Cl. 236-24.000.

Trotter, Ursus: *See—*
Trotter, Albin; and Trotter, Ursus, 4,346,835, Cl. 236-24.000.

TRW Inc.: *See—*
Cooper, Paul, 4,347,041, Cl. 417-15.000.

Tschan, Rene, to Lonza Ltd. Process for the introduction of a piece of foam plastic into a pocket fitted to it. 4,346,509, Cl. 29-451.000.

Tschanz, Pierre. World watch. 4,347,594, Cl. 368-21.000.

Tschunt, Edgar, to Siemens Aktiengesellschaft. X-ray diagnostic apparatus for producing transverse layer images. 4,347,624, Cl. 378-10.000.

Tsuboi, Nobuyuki. Multipurpose reciprocal bearing unit. 4,346,945, Cl. 308-6.00R.

Tsubokawa, Ichiro: *See—*
Tosaki, Hiromi; Arima, Hideo; Mozume, Teruo; Ikegami, Akira; Isogai, Tokio; and Tsubokawa, Ichiro, 4,347,166, Cl. 252-519.000.

Tsuchida, Takayasu: *See—*
Miwa, Kiyoshi; Tsuchida, Takayasu; Kurahashi, Osamu; Nakamori, Shigeru; Sano, Konosuke; and Momose, Haruo, 4,347,318, Cl. 435-115.000.

Tsuchikawa, Sunzo: *See—*
Hayashi, Masaharu; and Tsuchikawa, Sunzo, 4,347,038, Cl. 416-132.00A.

Tsuchimoto, Takamitsu: *See—*
Kaneda, Saburo; Tsuchimoto, Takamitsu; Shimizu, Kazuyuki; and Ikegami, Fujio, 4,347,565, Cl. 364-200.000.

Tsuda, Toshitaka: *See—*
Murano, Kazuo; Yamaguchi, Kazuo; Murakami, Norio; and Tsuda, Toshitaka, 4,347,617, Cl. 375-22.000.

Tsujii, Yasuhiro: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; Shigehara, Itaru; Nagatani, Kuniaki; and Nishimura, Shigeyuki, 4,347,390, Cl. 570-202.000.

Tsukanova, Galina M.: *See—*
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; and Furmanov, Jury A., 4,347,056, Cl. 8-116.00R.
Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; and Furmanov, Jury A., 4,347,057, Cl. 8-116.00R.

Tsunekawa, Tokuichi: *See—*
Kawabata, Takashi; Tsunekawa, Tokuichi; Hosoe, Kazuya; Kinoshita, Takao; Sakai, Shinji; and Taguchi, Tatsuya, 4,346,970, Cl. 354-25.000.

Tsunoda, Michinori: *See—*
Yoneda, Tadao; and Tsunoda, Michinori, 4,346,615, Cl. 74-7.00A.

Tsutomu, Obayashi; and Mituo, Endou, to Hiraoka & Co., Ltd. White cover sheet material capable of reflecting ultraviolet rays. 4,347,284, Cl. 428-328.000.

Tuchiya, Yoshimasa: *See—*
Iwata, Hidefumi; Tuchiya, Yoshimasa; and Iidaka, Toshiharu, 4,346,932, Cl. 296-216.000.

Tuchyner, Harold J.: *See—*
Taylor, Peter F.; Tuchyner, Harold J.; Basiulis, Algerd; and Lamp, Thomas R., 4,346,643, Cl. 89-14.100.

Tunnecliffe, Theodore N.: *See—*
Chute, Richard; Larson, Jay M.; Tunnecliffe, Theodore N.; and Worthen, Roger P., 4,346,870, Cl. 251-356.000.

Turconi, Franco. Derivatives of 4-methyl-5-[(2-aminoethyl)-thiomethyl]-imidazole. 4,347,373, Cl. 548-336.000.

Turner, Robert C.; and Holman, Rury R. Liquid sample collector device. 4,346,613, Cl. 73-864.510.

Turner, William A.; and Nunnelee, Johnny R. Mounting depth-finders, or fish finders. 4,347,013, Cl. 403-4.000.

Tuttle, Douglas E. Reproducing surface testing method and apparatus. 4,346,588, Cl. 73-105.000.

Tuvell, Melvin E., to Ethyl Corporation. Method of treating long chain alkyl amines or products derived therefrom. 4,347,381, Cl. 564-2.000.

Tyner, Alfred E., to Brunswick Corporation. Two-cycle V-engine with integrally cast exhaust manifold. 4,346,676, Cl. 123-41.740.

Tzakis, George J.: *See—*
Johnson, Fred D.; and Tzakis, George J., 4,347,528, Cl. 358-10.000.

Ube Industries, Ltd.: *See—*
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,347,347, Cl. 528-30.000.

Uchida, Isamu: *See—*
Taniguchi, Nobuyuki; Nakai, Masaaki; Ishida, Tokuji; and Uchida, Isamu, 4,346,978, Cl. 354-289.000.

Ueda, Mitsuru, to Nippondenso Co., Ltd. Electric alarm device. 4,347,500, Cl. 340-388.000.

Ueno, Hitoshi; Yazaki, Shirokazu; and Ayukawa, Yukitada, to Pioneer Electronic Corporation. Door construction for electronic equipment. 4,346,950, Cl. 312-138.00R.

Ueno, Kouji: *See—*
Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Kawabata, Yuichi; and Miyamura, Tamio, 4,347,584, Cl. 365-104.000.

Ueno, Kunimitsu, to Kabushiki Kaisha Komatsu Seisakusho. Drive mechanism with clutch and brake assemblies. 4,346,796, Cl. 192-18.00A.
Uffner, William E., to Owens-Corning Fiberglas Corporation. Chemically modified asphalt joint sealing compositions. 4,347,171, Cl. 524-71.000.
Uhde GmbH: *See*—
Wolstein, Friedrich; and Koch, Gerhard, 4,347,228, Cl. 423-321.00R.
Uhle, Heiko, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Fastening device for externally coupling loads on aircraft. 4,346,642, Cl. 89-1.50B.
Uhlmann, Gerd: *See*—
Merkenich, Karl; Koch, Wilhelm; Glandorf, Kaete; Uhlmann, Gerd; and Scheurer, Guenther, 4,347,258, Cl. 426-334.000.
Ukima Colour & Chemicals Mfg. Co., Ltd.: *See*—
Torii, Hideyasu; and Nakamura, Susumu, 4,347,338, Cl. 525-123.000.
Ulaky, John A.: *See*—
Tomasetti, Charles M.; and Ulaky, John A., 4,347,458, Cl. 313-103.00R.
Ullin, Ulf, to ASEA Aktiebolag. Overvoltage protection device mainly for vehicle-bound electronic equipment. 4,347,475, Cl. 323-303.000.
Ullrich, Horst: *See*—
Kister, Horst; and Ullrich, Horst, 4,347,602, Cl. 370-85.000.
Union Carbide Corporation: *See*—
Sara, Raymond V., 4,347,083, Cl. 75-204.000.
Union Oil Company of California: *See*—
Hass, Robert H.; and Albertson, Walter, 4,347,227, Cl. 423-235.000.
Uniroyal, Inc.: *See*—
Nudenberg, Walter; Rim, Yong S.; and Matthews, Demetreos N., 4,347,159, Cl. 252-429.00B.
Unishear Mixers Limited: *See*—
Platts, Stanley A., 4,347,004, Cl. 366-137.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Elliott, Charles T., 4,347,526, Cl. 357-30.000.
United Merchants & Manufacturers, Inc.: *See*—
Gregorian, Razmic S.; and Namboodri, Chettoor G., 4,347,145, Cl. 252-8.600.
United States of America
Agriculture: *See*—
Bailey, August V.; Boudreaux, Gordon J.; and Sumrell, Gene, 4,347,378, Cl. 560-105.000.
Air Force: *See*—
Birkemeier, William P., 4,347,514, Cl. 343-100.0CS.
Schindler, John K., 4,347,513, Cl. 343-18.00E.
Army: *See*—
Gould, Larry D.; and Garfield, Donald E., 4,346,602, Cl. 73-842.000.
Jasper, Louis J., Jr., 4,347,419, Cl. 219-10.55A.
Olenick, John G.; and Lorenz, Patrick E., 4,346,608, Cl. 73-863.210.
Rand, John H., 4,346,612, Cl. 73-864.440.
Richburg, Ernest H., 4,346,862, Cl. 244-137.00R.
Energy: *See*—
Gardner, Harold S., 4,346,730, Cl. 137-375.000.
Jones, Donald E.; Parker, DeRay; and Boren, Paul R., 4,346,511, Cl. 29-458.000.
Rapier, Pascal M., 4,346,560, Cl. 60-641.300.
Skladzien, Stanley B.; and Raue, Donald J., 4,346,605, Cl. 73-861.130.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Gary, Bruce L. CAT Altitude avoidance system. 4,346,595, Cl. 73-178.00R.
Pivirotto, Thomas J. Method and apparatus for convection control of metallic halide vapor density in a metallic halide laser. 4,347,613, Cl. 372-56.000.
National Aeronautics and Space Administration: *See*—
Gammell, Paul M., 4,346,715, Cl. 128-422.000.
Imig, Leland A.; and Gardner, Mickey R., 4,346,754, Cl. 374-46.000.
Rhodes, David B., 4,346,990, Cl. 356-28.500.
Navy: *See*—
Bond, James W., 4,347,580, Cl. 364-824.000.
Brooks, James L.; Staab, Roger I.; Bowers, James C.; and Nienhaus, Harry A., 4,347,474, Cl. 323-224.000.
Carnaghan, Luason L.; and Phillips, Raymond J., 4,346,953, Cl. 339-28.000.
Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., 4,347,485, Cl. 372-42.000.
Hibbs, Joseph E.; Chalmers, Gerald W.; and Teixeira, Walter J., 4,346,658, Cl. 102-254.000.
Hoover, Mervyn C., Jr., 4,347,515, Cl. 343-100.0ME.
Kaloi, Cyril M., 4,347,517, Cl. 343-700.0MS.
Long, James M., 4,347,025, Cl. 411-201.000.
Rogers, Kenneth H., 4,346,662, Cl. 114-20.00R.
Schwager, Joseph E.; and Urban, Harry E., 4,347,403, Cl. 179-1.0SA.
Trott, W. James, 4,347,593, Cl. 367-159.000.
Wood, Stanley E.; and Moore, Kenneth L., 4,347,439, Cl. 250-222.00R.
U.S. Philips Corporation: *See*—
Dil, Jan G.; Driessen, Johannes C.; and Mesman, Wichert, 4,347,441, Cl. 250-560.000.
Hoogeveen, Jacobus, 4,347,606, Cl. 370-105.000.
Korver, Jan A. C., 4,347,532, Cl. 358-183.000.
Meuleman, Lambertus J., 4,347,610, Cl. 372-29.000.
Minnema, Lourens; and Van Boekel-Mol, Grietje N., 4,347,288, Cl. 428-389.000.
United Technologies Corporation: *See*—
Cullen, Donald E., 4,346,597, Cl. 73-510.000.
Jones, John C.; Sifford, Perry P.; and Sutton, Joel F., 4,347,040, Cl. 416-190.000.
Kesten, Arthur S.; and Haught, Alan F., 4,346,752, Cl. 165-1.000.
Universal Materials Company Limited: *See*—
Russell, Leonard V.; and Beaney, Derek N., 4,346,896, Cl. 273-195.00A.
University of California, The Regents of the: *See*—
Miller, Robert J., 4,346,737, Cl. 138-42.000.
University of Illinois Foundation: *See*—
Payne, David A.; and Park, Sang M., 4,347,167, Cl. 252-520.000.
University of Rochester, The: *See*—
Mourou, Gerard, 4,347,437, Cl. 250-211.00R.
Unnerstall, Paul J. Logic circuit for part detector. 4,347,546, Cl. 361-179.000.
UOP Inc.: *See*—
Dodd, Malcolm J.; and Juhas, Joseph A., 4,346,756, Cl. 165-48.00R.
Rice, Lynn H., 4,347,399, Cl. 585-738.000.
Upperton, Paul H., to GPG International Limited. Container. 4,346,805, Cl. 206-506.000.
Urban, Harry E.: *See*—
Schwager, Joseph E.; and Urban, Harry E., 4,347,403, Cl. 179-1.0SA.
USM Corporation: *See*—
Powderly, John, 4,346,804, Cl. 206-338.000.
Usui Kokusai Sangyo Kabushiki Kaisha: *See*—
Asada, Kikuo, 4,346,739, Cl. 138-143.000.
USV Pharmaceutical Corporation: *See*—
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, 4,347,246, Cl. 424-246.000.
Uyehara, Otto A., to Health Guardian Company. Bedwetting detection device. 4,347,503, Cl. 340-604.000.
Uzawa, Koji: *See*—
Ohtsuga, Hisao; Uzawa, Koji; Kamuro, Takashi; Sudo, Susumu; Hirose, Tomoyoshi; Miyao, Masafumi; and Koga, Motoyuki, 4,346,922, Cl. 285-109.000.
Vagias, Alex M., to Vagias, Ernest. Thermoplastic key face for pianos or the like. 4,346,639, Cl. 84-437.000.
Vagias, Ernest: *See*—
Vagias, Alex M., 4,346,639, Cl. 84-437.000.
Vales, Richard J.: *See*—
Meyerhoff, Alfred; Kastovich, John C.; Richard, James A.; and Vales, Richard J., 4,346,845, Cl. 239-418.000.
Van Boekel-Mol, Grietje N.: *See*—
Minnema, Lourens; and Van Boekel-Mol, Grietje N., 4,347,288, Cl. 428-389.000.
Vandegraaf, Johannes J., to General Electric Company. Synthesizer having an injection synchronized divider. 4,347,484, Cl. 331-25.000.
Van Drumpt, Jan D.; and Beijleveld, Wilhelmus M., to Akzona Incorporated. Process for initiating radical reactions employing hydroximic acid derivatives. 4,347,342, Cl. 525-374.000.
Vaponics Inc.: *See*—
Smith, Verity C.; Baker, Robert J.; Barrow, Wyile W., Jr.; and Doane, H. Daniel, 4,346,923, Cl. 285-340.000.
Varco International, Inc.: *See*—
Boyadjieff, George I., 4,346,631, Cl. 81-57.340.
Vaughan, Christopher A., to Kango Electric Hammers Limited. Rotary impact drill. 4,346,767, Cl. 173-109.000.
VDO Adolf Schindling AG: *See*—
Kister, Horst; and Ullrich, Horst, 4,347,602, Cl. 370-85.000.
Vee Arc Corporation: *See*—
Ottoson, Allen E., 4,347,466, Cl. 318-301.000.
Veeder Industries, Inc.: *See*—
Evans, Alfred C.; and Smilgys, Bruno S., 4,347,435, Cl. 235-94.00R.
Vibco, Inc.: *See*—
Wadensten, Theodore S.; and Carocci, Alfred, 4,346,822, Cl. 222-195.000.
Victor Company of Japan, Ltd.: *See*—
Ishigaki, Yukinobu; and Ozaki, Hideaki, 4,347,510, Cl. 340-825.500.
Takanashi, Itsuo; Nakagaki, Shintaro; Miyoshi, Tadayoshi; Motoyama, Koichiro; Miyazaki, Kenichi; and Yokokawa, Sumio, 4,347,529, Cl. 358-44.000.
Vidal-Meza, Gonzalo D., to Caterpillar Tractor Co. Heat exchanger plate having distortion resistant uniform pleats. 4,346,760, Cl. 165-166.000.
Vigh, Zoltan, to Zepco, Inc. Gas turbine. 4,347,034, Cl. 415-92.000.
Villavicencio, Eduardo J., to W. R. Grace & Co. Process for producing newsprint. 4,347,101, Cl. 162-25.000.
Viswanathan, Raman: *See*—
Howells, Anthony P. S.; Viswanathan, Raman; and Angehrn, Jorg A., 4,346,593, Cl. 73-152.000.
Vitale, George, to Discovision Associates. Spindle clamp assembly for a video recorder-playback machine. 4,347,599, Cl. 369-270.000.
Volkswagenwerk Aktiengesellschaft: *See*—
Bluggel, Erwin; and Mainka, Wolfgang, 4,346,778, Cl. 180-268.000.
Hofbauer, Peter; Ehlers, Karsten; and Heidemeyer, Paulus, 4,346,773, Cl. 180-165.000.

Vollmuller, Helmut: *See*—
Bodenbenner, Kurt; Perkow, Helmut; and Vollmuller, Helmut, 4,347,144, Cl. 210-761.000.

von Aschwege, Gerd: *See*—
Bernardi, Herbert; and von Aschwege, Gerd, 4,346,851, Cl. 241-159.000.

Vondrowski, Gabriel: *See*—
Geisslinger, Wolfgang; Pustka, Karel; Bronner, Hermann; Mullritter, Ludwig; and Vondrowski, Gabriel, 4,346,616, Cl. 192-84.00C.

Vossieck, Paul, to Goetze AG. Valve seat ring. 4,346,684, Cl. 123-188.00S.

W. R. Grace & Co.: *See*—
Villavicencio, Eduardo J., 4,347,101, Cl. 162-25.000.

W. Schlafhorst & Co.: *See*—
Rohner, Joachim; and Wey, Edmund, 4,346,497, Cl. 15-301.000.

Wackerbarth, Folkard, to Dr. C. Otto & Comp. G.m.b.H. Regeneratively-operated coke oven. 4,347,106, Cl. 202-141.000.

Wade, James T.: *See*—
Morrison, Robert B.; Wade, James T.; and Zimmerman, Robert E., 4,346,790, Cl. 188-47.000.

Wadensten, Theodore S.; and Carocci, Alfred, to Vibco, Inc. Air blaster or air accumulator and quick dump apparatus. 4,346,822, Cl. 222-195.000.

Wagner, Gerard; and Schmid, Klaus. Solar panel. 4,346,693, Cl. 126-434.000.

Wagner, Herbert: *See*—
Hauck, Karl; Fehrenbach, Hubert; Mayer, Dieter; Wagner, Herbert; and Zwintzscher, Kurt, 4,347,091, Cl. 156-217.000.

Wagner, Robert L., to Ram Handler, Ltd. Feed and animal enclosure. 4,346,671, Cl. 119-60.000.

Wahlig, Helmut; Dingeldain, Elvira; and Braun, Dietrich, to Merck Patent Gesellschaft mit beschrankter Haftung. Medicinally useful, shaped mass of collagen resorbable in the body. 4,347,234, Cl. 424-15.000.

Wakita, Nobuaki; and Kanai, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Idle controller for an internal combustion engine. 4,346,686, Cl. 123-339.000.

Walker, Derek: *See*—
Cron, Martin J.; Keil, John G.; Lin, Jeng S.; Ruggeri, Mariano; and Walker, Derek, 4,347,354, Cl. 536-10.000.

Wallace, Fred E.: *See*—
Wesner, Walter H.; and Wallace, Fred E., 4,346,821, Cl. 222-153.000.

Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Imidazodiazepines. 4,347,364, Cl. 546-256.000.

Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Imidazodiazepines. 4,347,365, Cl. 546-256.000.

Walsh, Joseph F.: *See*—
Flautt, Martin C.; Wong, Robert; and Walsh, Joseph F., 4,347,278, Cl. 428-288.000.

Walter, Berthold: *See*—
Kraus, Hans-Joachim; and Walter, Berthold, 4,347,054, Cl. 433-7.000.

Walters, Stephen: *See*—
Chase, Charles; Walters, Stephen; and Meador, Richard E., 4,346,742, Cl. 141-1.000.

Wang, Kang-bo: *See*—
Schumacher, Ignatius; and Wang, Kang-bo, 4,347,389, Cl. 568-937.000.

Wardleworth, James M.: *See*—
Gilman, David J.; Wardleworth, James M.; and Yellin, Tobias O., 4,347,370, Cl. 548-193.000.

Ware, Don A.; Coughlin, Steve A.; and Whatley, Oscie B., to ACF Industries, Incorporated. Arc-spot welding method and apparatus. 4,347,426, Cl. 219-125.100.

Warehime, Norwood R. Multi-team tug-of-war game apparatus. 4,346,884, Cl. 273-1.0GH.

Warehime, Norwood R. Handball game utilizing paired tethered balls. 4,346,902, Cl. 273-411.000.

Warne Surgical Products Limited: *See*—
Stewart, Mervin, 4,347,205, Cl. 264-130.000.

Warner & Swasey Company, The: *See*—
Frank, John H., 4,346,734, Cl. 137-506.000.

Warshawsky, Jerome, to I. W. Industries, Inc. Swivel joint. 4,347,557, Cl. 362-427.000.

Warulf, Olov: *See*—
Knudsen, Niels; Orpana, Veikko; Wisur, Matti; Warulf, Olov; Bergqvist, Hakan; and Afzelius, Raoul, 4,347,401, Cl. 174-14.00R.

Washburn, Robert B.: *See*—
Slama, William R.; Washburn, Robert B.; and Semanisin, Dale J., 4,347,277, Cl. 428-215.000.

Washo, Junichi, to Sharp Kabushiki Kaisha. Formation of an electrochromic display layer. 4,347,265, Cl. 427-108.000.

Watanabe Engineering Kabushiki Kaisha: *See*—
Watanabe, Mamoru, 4,346,792, Cl. 188-73.320.

Watanabe, Mamoru, to Watanabe Engineering Kabushiki Kaisha. Disc brake device. 4,346,792, Cl. 188-73.320.

Watanabe, Ryuji; and Kuniya, Keiichi, to Hitachi, Ltd. Electrodes of vacuum circuit breaker. 4,347,413, Cl. 200-144.00B.

Watanabe, Shinichiro, to Sawara Mfg. Works Co., Ltd.; and Fukushima Printing Industries Co., Ltd. Label applying apparatus. 4,347,094, Cl. 156-387.000.

Water Refining Company, Inc.: *See*—
Davis, Stephen H., 4,347,132, Cl. 210-104.000.

Watkins, Shelton, Jr. Honeycomb structure for use in abradable seals. 4,346,904, Cl. 277-236.000.

Watson, P. Keith; and Fraser, Lawrence J., to Xerox Corporation. Automatic development control. 4,346,985, Cl. 355-14.00D.

Wattron, Albert; and Quirin, Michel, to Belrecolt S.A. Agricultural machine for tedding and windrowing fodder crops. 4,346,549, Cl. 56-370.000.

Waxman, Jay S.: *See*—
Radkins, Andrew P.; Macarus, David P.; Radkins, James A.; and Waxman, Jay S., 4,347,217, Cl. 422-126.000.

Weatherford/Lamb, Inc.: *See*—
Kinzbach, Robert B., 4,346,629, Cl. 81-57.200.

Weavell, Jack; and Jatzek, Horst J., to CAE Machinery Ltd. Wafer slicing apparatus. 4,346,745, Cl. 144-176.000.

Weaver, Joe T., to Weaver Manufacturing Company. Piston construction for reciprocating pumps. 4,346,647, Cl. 92-243.000.

Weaver Manufacturing Company: *See*—
Weaver, Joe T., 4,346,647, Cl. 92-243.000.

Weber, Kurt; Rutsch, Peter; and Hirschinger, Lothar, to Carl Freudenberg, Firma. Dashboard for motor vehicles. 4,347,276, Cl. 428-160.000.

Weber, Lothar: *See*—
Fischer, Hermann; Friese, Karl-Hermann; Gruber, Hans-Ulrich; Heinemann, Wolfgang; Knoll, Gunter; Linder, Ernst; Maurer, Helmut; Noack, Rainer; Steinke, Leo; Weber, Lothar; and Weyl, Helmut, 4,347,113, Cl. 204-195.00S.

Weihe, Clyde R. Flatware processing system. 4,346,807, Cl. 211-60.00R.

Weishaupt, Walter; and Fournell, Hans-Dieter, to Bayerische Motoren Werke A.G. Burglarproofing device for automotive vehicles. 4,347,545, Cl. 361-172.000.

Welch, Richard M.: *See*—
Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., 4,347,178, Cl. 260-112.00B.

Welker, Robert H. Insertion regulator for pressurized pipelines. 4,346,611, Cl. 73-863.860.

Wells, Roderick A.: *See*—
Kavouras, Stephen P.; Post, Paul C.; Wells, Roderick A.; and Rutkowski, Stephen L., 4,347,618, Cl. 375-37.000.

Wells, Roger D.: *See*—
Paranjpe, Suresh C.; Davis, James W.; Scranton, Robert J.; and Wells, Roger D., 4,347,520, Cl. 346-75.000.

Wells, William, to Korf Technologies, Inc. Method of operating an open-hearth furnace. 4,347,079, Cl. 75-52.000.

Welsch, John H.; Nicely, Charles W.; and Greene, Frederick C., to Metropolitan Wire Corporation. Shock resistant caster assembly. 4,346,498, Cl. 16-44.000.

Wenzel, Manfred, to Robert Bosch GmbH. Radio telephone communication network. 4,347,626, Cl. 455-18.000.

Werner, Jack R. Snap-lock container. 4,346,832, Cl. 229-4.500.

Werner, Peter: *See*—
Schrauf, Werner; Werner, Peter; Luetkens, Luer; Maue, Hans-Heinrich; and Suchowerskyj, Wadym, 4,346,913, Cl. 280-735.000.

Wesner, Walter H.; and Wallace, Fred E., to AFA Consolidated Corporation. Child-resistant closures for container mounted spray dispensers. 4,346,821, Cl. 222-153.000.

Wessel, Wolf: *See*—
Stumpp, Gerhard; and Wessel, Wolf, 4,346,727, Cl. 137-117.000.

Wesseler, Eugene P., to Sterling Drug Inc. Novel polymeric compounds, processes and methods of use. 4,347,352, Cl. 528-423.000.

Westergaard, Carl, to Mitts & Merrill Inc. Shredding machine incorporating a torque cushioning assembly. 4,346,850, Cl. 241-36.000.

Western Electric Company, Inc.: *See*—
Haney, Eugene A.; and Partus, Fred P., 4,347,069, Cl. 65-3.120.
Pearce, Charles W.; and Schmidt, Paul F., 4,347,431, Cl. 219-390.000.
Pearcy, Robert E.; and Raus, James E., 4,347,552, Cl. 361-398.000.

Westinghouse Electric Corp.: *See*—
Calhoun, Howard J., 4,347,542, Cl. 361-76.000.
Ferree, Herbert E., 4,346,550, Cl. 57-10.000.
Gary, Wardell; and Conroy, Ernest F., Jr., 4,347,540, Cl. 361-47.000.
Kemeny, George A.; and Litz, Donald C., 4,347,463, Cl. 318-135.000.
Merian, Jacques S.; and Schiller, Gerald J., 4,347,173, Cl. 524-88.000.
Peterson, Charles A.; and Innis, Robert T., 4,347,539, Cl. 361-16.000.
Thomas, Charles H., 4,347,335, Cl. 524-538.000.

Wey, Edmund: *See*—
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Weyl, Helmut: *See*—
Fischer, Hermann; Friese, Karl-Hermann; Gruber, Hans-Ulrich; Heinemann, Wolfgang; Knoll, Gunter; Linder, Ernst; Maurer, Helmut; Noack, Rainer; Steinke, Leo; Weber, Lothar; and Weyl, Helmut, 4,347,113, Cl. 204-195.00S.

Whatley, Oscie B.: *See*—
Ware, Don A.; Coughlin, Steve A.; and Whatley, Oscie B., 4,347,426, Cl. 219-125.100.

Wherry, Joseph L., to Toledo Stamping & Manufacturing Company. Rocker arm and method of making same. 4,346,678, Cl. 123-90.440.

White, Claude C.; and Carr, Frederick, to Birmingham Bolt Company; and Jim Walter Resources, Inc. Mine roof bolt assembly. 4,347,020, Cl. 405-260.000.

White, Dale A.; Kluwe, Paul P.; and Greenwood, Leon D., to Eaton Stamping Company. Double insulated starter motor. 4,347,442, Cl. 290-48.000.

Whitehouse, Daniel L., to Solarex Corporation. Method of applying an antireflective and/or dielectric coating. 4,347,263, Cl. 427-74.000.

Whitehurst, Darrell D.; Mitchell, Thomas O.; and Farcasiu, Malvina, to Mobil Oil Corporation. Two-stage coal liquefaction. 4,347,116, Cl. 208-8.0LE.

Whiteside, George D.: *See*—
Johnson, Bruce K.; and Whiteside, George D., 4,346,971, Cl. 354-34.000.

Whitney, Douglass G.; and Martin, John K., III. Piston drive arrangement for injector. 4,346,707, Cl. 128-214.00F.

Whitney, John M., to Honeywell Inc. Room thermostat with electronic circuit board heat removal air wash. 4,347,443, Cl. 307-117.000.

Whittaker Medical Manufacturing Company: *See*—
Holdt, Donald H.; and Morgan, Donald B., 4,346,487, Cl. 5-74.00R.

Wickstead, James C.: *See*—
Kitchen, Garry E.; Kitchen, Steven G.; and Wickstead, James C., 4,346,892, Cl. 273-85.00G.

Wiese, Colin R. Hitch. 4,346,911, Cl. 280-478.00R.

Wiggins, E. Thomas: *See*—
Gurr, George P.; Davis, John N.; and Wiggins, E. Thomas, 4,347,575, Cl. 364-492.000.

Wiggins Teape Group Limited, The: *See*—
Keep, Geoffrey S., 4,347,269, Cl. 427-428.000.

Wildman, Samuel G.; and Kwanyuen, Prachuab, to Leaf Proteins, Inc. Process for isolation of proteins from plant leaves. 4,347,324, Cl. 435-232.000.

Wilgood Corporation: *See*—
Feller, Murray F., 4,346,864, Cl. 248-231.000.

Wilke, Robert A., to Lake Center Industries. Electronic variable speed automotive blower control system. 4,347,468, Cl. 318-331.000.

Wilke, Wilbur D.; Hodge, Archie A.; Belshaw, Thomas E.; and Hamblin, John R., to Belshaw Bros., Inc. Doughnut making machine and improvements thereon. 4,346,649, Cl. 99-337.000.

Will, Fritz G., to General Electric Company. High capacity corrosion and erosion resistant electrodes for AC electrode boilers. 4,347,429, Cl. 219-288.000.

Williams, Bruce E.: *See*—
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, 4,347,246, Cl. 424-246.000.

Williams, Glenn L.; and Reilly, Edward J., to Gould Inc. Thermal array protection apparatus. 4,347,518, Cl. 346-1.100.

Williams, James W., to General Electric Company. Arrangement for cellular operation of a repeater trunking system. 4,347,625, Cl. 455-17.000.

Williams, Robert O. Pipe elbow insulator and protective jacket therefor. 4,346,740, Cl. 138-149.000.

Willis, John H.; and Heath, Trevor C., to TBA Industrial Products, Limited; and Bishop & Associates, Incorporated. Apparatus for production and cutting of glass fibres. 4,347,071, Cl. 65-10.200.

Willis, Robert F., to Burlington Industries, Inc. Positive pressure maintenance for sample presentation. 4,346,997, Cl. 356-244.000.

Willis, William J., to Rohco, Inc. Electrodeposition of copper, acidic copper electroplating baths and additives therefor. 4,347,108, Cl. 204-52.00R.

Wilson, Keith E.; and Blackmore, Phillip W., to Fiberglas Canada, Inc. Building insulation systems. 4,346,543, Cl. 52-404.000.

Wilson, Larry L.: *See*—
Cannon, Raymond E.; Jenkins, Jon A.; and Wilson, Larry L., 4,346,606, Cl. 73-861.410.

Wilson, Robert J.: *See*—
Limoges, Raymond F.; Scribani, Anthony A.; and Wilson, Robert J., 4,347,307, Cl. 430-338.000.

Winberg, Dennis G.: *See*—
Beckert, Adolf F.; Winberg, Dennis G.; and Nowlin, Duane D., 4,347,224, Cl. 422-277.000.

Winkless, Robert A.: *See*—
Stamets, Stanley L.; Winkless, Robert A.; Hernandez, Rafael J.; Merle, Joseph J.; and Payne, Robert D., 4,346,667, Cl. 118-622.000.

Winter, Roland A. E.; and Dexter, Martin, to Ciba-Geigy Corporation. High caustic coupling process for preparing substituted 2-nitro-2'-hydroxyazobenzenes. 4,347,180, Cl. 260-206.000.

Wisur, Matti: *See*—
Knudsen, Niels; Orpana, Veikko; Wisur, Matti; Warulf, Olov; Bergqvist, Hakan; and Afzelius, Raoul, 4,347,401, Cl. 174-14.00R.

Wixon, Harold E., to Colgate-Palmolive Company. Phosphate-free concentrated particulate heavy duty laundry detergent. 4,347,152, Cl. 252-174.000.

Wochnowski, Waldemar; and Hohm, Reinhard, to Hauni-Werke Korber & Co. KG. Method and apparatus for conditioning tobacco. 4,346,524, Cl. 34-26.000.

Wojtecki, Rudolph G.; and Kaan, Joseph P., to Eaton Corporation. Heat transfer apparatus for releasably securing heating or cooling means to pipe. 4,347,433, Cl. 219-535.000.

Wolf, Ludwig, Jr.: *See*—
Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., 4,346,703, Cl. 128-213.00A.

Wolstein, Friedrich; and Koch, Gerhard, to Uhde GmbH; and Kali Chemie AG. Process for defluorination of phosphoric acid. 4,347,228, Cl. 423-321.00R.

Wolvek, Sidney: *See*—
Hanson, Bruce L.; and Wolvek, Sidney, 4,346,698, Cl. 128-1.00D.

Wong, Robert: *See*—
Flautt, Martin C.; Wong, Robert; and Walsh, Joseph F., 4,347,278, Cl. 428-288.000.

Wood, David A. Shock absorber removing tool. 4,346,518, Cl. 30-272.00R.

Wood, Stanley E.; and Moore, Kenneth L., to United States of America, Navy. Level-shift and pulse shaping circuitry. 4,347,439, Cl. 250-222.00R.

Woodward, Roger P.: *See*—
Stembridge, William F.; Woodward, Roger P.; and Glassman, Larry H., 4,347,591, Cl. 367-104.000.

Woon, Paul S.: *See*—
Hlaban, James J.; Grube, Herbert E.; and Woon, Paul S., 4,347,092, Cl. 156-227.000.

Workman, William, Jr., to Cooper Industries, Inc. Speed responsive motor shutoff mechanism for fluid operated tool. 4,346,765, Cl. 173-12.000.

Worthen, Roger P.: *See*—
Chute, Richard; Larson, Jay M.; Tunnecliffe, Theodore N.; and Worthen, Roger P., 4,346,870, Cl. 251-356.000.

Wright, William B., Jr.; Tomcufcik, Andrew S.; and Marsico, Joseph W., Jr., to American Cyanamid Company. 2,3-Disubstituted-thiazolo[3,2-a]pyrimidines. 4,347,248, Cl. 424-251.000.

Wrightson, Noel T.; and Currie, Russell D., to Johnston Construction Limited; and Johnston Pipes Limited. Lining or relining of tunnels. 4,347,018, Cl. 405-150.000.

Wu, Che-Kuang, to Corning Glass Works. Photosensitive polyphosphate comprising Ag and Cl. 4,347,309, Cl. 430-616.000.

Wusthof, Peter; and Cunningham, Sinclair, to G. L. Rexroth GmbH. Hydraulic axial piston engine. 4,346,645, Cl. 91-501.000.

Xerox Corporation: *See*—
Fekete, Dan H.; Scifres, Donald R.; and Streifer, William, 4,347,612, Cl. 372-50.000.
Jalichandra, Phijit; Dowell, John S.; and Carlson, John A., 4,346,987, Cl. 355-40.000.
Jeromin, Lothar S.; Geddes, Glenn F.; Baumann, Otto S.; and Santoro, Joseph F., 4,346,983, Cl. 355-3.00R.
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Roller, George J.; and Schell, Richard P., 4,346,880, Cl. 271-186.000.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,347,611, Cl. 372-45.000.
Sprague, Robert A.; and Sarid, Dror, 4,346,965, Cl. 350-358.000.
Teumer, Roger G., 4,347,521, Cl. 346-75.000.
Watson, P. Keith; and Fraser, Lawrence J., 4,346,985, Cl. 355-14.00D.

Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, to Ube Industries, Ltd. Crosslinked organometallic block copolymers and process for production thereof. 4,347,347, Cl. 528-30.000.

Yakovlev, Mikhail N.: *See*—
Chernikhov, Alexei Y.; Yakovlev, Mikhail N.; Lysova, Valentina B.; Gefter, Evgeny L.; and Shmagina, Nina N., 4,347,348, Cl. 528-51.000.

Yamachika, Hiroshi: *See*—
Saito, Kenji; and Yamachika, Hiroshi, 4,347,386, Cl. 568-310.000.

Yamada, Yasuharu; and Kawai, Kiyoshi, to Sumitomo Chemical Company, Limited. Catalysts for the polymerization of olefins. 4,347,157, Cl. 252-429.00B.

Yamagata, Sen: *See*—
Handa, Hajime; Yonekawa, Yasuhiro; Yamagata, Sen; Taki, Waro; Ikada, Yoshito; and Iwata, Hiroo, 4,346,712, Cl. 128-325.000.

Yamagishi, Wataru: *See*—
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Yamaguchi, Kazuo: *See*—
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Yamajirushi Jozo Co., Ltd.: *See*—
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Yamakage, Kenji: *See*—
Asano, Hiroaki; Ota, Hiroshi; and Yamakage, Kenji, 4,346,535, Cl. 51-101.00R.

Yamakoshi, Akira; Murakami, Kyoichi; and Niimura, Tsutomu, to Sony Corporation. Circuit converting a pair of differential input signals to single-ended output signals. 4,347,531, Cl. 358-172.000.

Yamamoto, Katsuyuki: *See*—
Makizawa, Yoshiaki; Yamamoto, Katsuyuki; and Hata, Kanji, 4,346,514, Cl. 29-740.000.

Yamamoto, Osamu: *See*—
Touyama, Ryousuke; Inouye, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,347,356, Cl. 542-430.000.

Yamamoto, Shigeo: *See*—
Kirino, Osamu; Kato, Toshiro; and Yamamoto, Shigeo, 4,347,188, Cl. 549-436.000.

Yamamura, Takemi: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,347,347, Cl. 528-30.000.

Yamashita, Kyoichi. Adhesive applicator. 4,347,095, Cl. 156-578.000.

Yamauchi, Junichi; Shibatani, Kyoichiro; Ikeguchi, Eiji; Omura, Ikuo; and Nagase, Yoshinori, to Kuraray Company, Limited. Dental caries detection. 4,347,233, Cl. 424-7.000.

Yamauchi, Junichi: *See*—
Nagase, Yoshinori; Shibatani, Kyoichiro; Yamauchi, Junichi; and Omura, Ikuo, 4,347,174, Cl. 523-116.000.

Yamauchi, Takashi: *See*—
Saji, Yasuo; Tanaka, Kozo; and Yamauchi, Takashi, 4,347,279, Cl. 428-294.000.

Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Nii, Yoshiji, to Tokyo Shibaura Denki Kabushiki Kaisha. Input setting method for digital operational devices. 4,347,581, Cl. 364-900.000.

Yan, Tsoung-Yuan, to Mobil Oil Corporation. Treatment of subterranean uranium-bearing formations. 4,346,936, Cl. 299-4.000.

Yanagida, Minoru; and Kono, Tomio, to Daido Tokushuko K.K. Austenitic free-cutting stainless steel. 4,347,080, Cl. 75-124.000.

Yanagishita, Hitoshi: *See*—
Sato, Atsushi; Takahashi, Naoya; Endo, Keiji; and Yanagishita, Hitoshi, 4,347,169, Cl. 252-567.000.

Yanagita, Seikichi, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Fountain pen equipped with a resiliency adjustment device. 4,347,011, Cl. 401-231.000.

Yanmar Diesel Engine Co., Ltd.: *See*—
Nagasaki, Michisuke; and Sannomiya, Shigehiro, 4,346,624, Cl. 74-784.000.

Yanobu, Hideo; and Tanaka, Tadashi, to Murata Kikai Kabushiki Kaisha. Method and apparatus for twisting and winding yarns on packages. 4,346,551, Cl. 57-62.000.

Yard, LeRoy A.: *See*—
Major, Jeffrey T.; Yard, LeRoy A.; and Holzscheiter, Danny B., 4,347,455, Cl. 310-239.000.

Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; and Furmanov, Jury A. Method of making absorbable surgical threads. 4,347,056, Cl. 8-116.00R.

Yasnitsky, Boris G.; Tsukanova, Galina M.; Oridoroga, Valentin A.; and Furmanov, Jury A. Method of making absorbable surgical sutures. 4,347,057, Cl. 8-116.00R.

Yasuda, Eturo; Segawa, Yoshihiro; and Ohta, Minoru, to Nippon Soken, Inc. Gas detector. 4,346,585, Cl. 73-23.000.

Yazaki Corporation: *See*—
Murofushi, Satoru; Shibuya, Tadao; Kato, Shinichi; and Endo, Mitsuo, 4,347,504, Cl. 340-638.000.

Yazaki, Shirokazu: *See*—
Ueno, Hitoshi; Yazaki, Shirokazu; and Ayukawa, Yukitada, 4,346,950, Cl. 312-138.00R.

Yellin, Tobias O.: *See*—
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Yim, Ernest W.: *See*—
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Yokokawa, Sumio: *See*—
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Mutai, Masahiko; Yokokura, Teruo; Kobayashi, Seizaburo; and Kato, Ikuo, 4,347,240, Cl. 424-92.000.

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Yokono, Hitoshi: *See*—
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Yokota, Hideo: *See*—
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Yokouchi, Kishio; Ogawa, Hiromi; Yokoyama, Hiromitsu; Kamehara, Nobuo; Niwa, Koichi; and Murakawa, Kyohei, to Fujitsu Limited. Method of forming a ceramic circuit substrate. 4,346,516, Cl. 29-845.000.

Yokoyama, Hiromitsu: *See*—
Yokouchi, Kishio; Ogawa, Hiromi; Yokoyama, Hiromitsu; Kamehara, Nobuo; Niwa, Koichi; and Murakawa, Kyohei, 4,346,516, Cl. 29-845.000.

Yoneda, Tadao; and Tsunoda, Michinori, to Sawafuji Denki Kabushiki Kaisha. Starting device for an engine. 4,346,615, Cl. 74-7.00A.

Yonekawa, Yasuhiro: *See*—
Handa, Hajime; Yonekawa, Yasuhiro; Yamagata, Sen; Taki, Waro; Ikada, Yoshito; and Iwata, Hiroo, 4,346,712, Cl. 128-325.000.

Yonekura, Mikio: *See*—
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York-Luxaire, Inc.: *See*—
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Yoshida, Tadao, to Sony Corporation. Pulse width modulated signal amplifier. 4,347,481, Cl. 330-251.000.

Yoshida, Tsunemasa: *See*—
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Yoshimura, Minoru; Takenaka, Yoshihiro; Ikeda, Shigeho; and Yoshii, Hiroe, 4,347,317, Cl. 435-110.000.

Yoshimura, Hirofumi: *See*—
Ikeda, Nobuo; Tanaka, Junzo; and Yoshimura, Hirofumi, 4,347,420, Cl. 219-10.55D.

Yoshimura, Minoru; Takenaka, Yoshihiro; Ikeda, Shigeho; and Yoshii, Hiroe, to Ajinomoto Company, Incorporated. Method for producing L-glutamic acid by fermentation. 4,347,317, Cl. 435-110.000.

Yoshino Kogyosho Co., Ltd.: *See*—
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Yoshioka, Toshio; Teramoto, Kazuo; and Shimamura, Masaharu, to Toray Industries, Inc. Process for isomerizing glucose to fructose. 4,347,316, Cl. 435-94.000.

Young, Leroy. Device for skinning small animals. 4,346,499, Cl. 17-44.300.

Young, Rodney C.: *See*—
Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,347,250, Cl. 424-263.000.

Younge, Earl G. Placer mineral concentrator and process. 4,347,130, Cl. 209-452.000.

Yuan, Shao W. Natural ice for cooling energy. 4,346,569, Cl. 62-260.000.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
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Zaitsu, Eizo, to Shinagawa Machinery Works Co., Ltd. Continuous-processing type hot-water sterilizer and food cooker. 4,346,650, Cl. 99-361.000.

Zamma, Jun; Makino, Isao; Mii, Toshiyuki; and Shima, Kazumi, to Toyo Engineering Corporation. Catalytic converter. 4,347,221, Cl. 422-207.000.

Zanardi, Mauro: *See*—
Bezzi, Giovanni; Pauluzzi, Ego; and Zanardi, Mauro, 4,347,200, Cl. 264-9.000.

Zapf, Karl J.: *See*—
Hoffmann, Kurt; and Zapf, Karl J., 4,347,588, Cl. 365-206.000.

Zeitrager, Gunther; Krause, Gerhard; and Guthmann, Herbert, to General Motors Corporation. Attachment device for a brake hose. 4,346,863, Cl. 248-75.000.

Zeller, Bernard M.; Couturier, Rene J.; and Tribot, Robert A., to Societe Nationale des Poudres et Explosifs. Granular propellant powder based on nitrocellulose, oily nitrate ester and polyvinyl nitrate, and process. 4,347,087, Cl. 149-98.000.

Zemke, Edward H.: *See*—
Guenther, Kenneth L.; Kosner, Jerry J., Jr.; Erikson, Rolf B.; and Zemke, Edward H., 4,346,876, Cl. 271-11.000.

Zenith Radio Corporation: *See*—
Flasza, Michael D.; and Rypkema, Jouke N., 4,347,483, Cl. 331-12.000.
Johnson, Fred D.; and Tzakis, George J., 4,347,528, Cl. 358-10.000.

Zeno, John R.; and Rosenhagen, William, to Ideal Toy Corporation. Decorative light flashing apparatus and acousto-electric transducer therefor. 4,346,640, Cl. 84-464.00R.

Zepco, Inc.: *See*—
Vigh, Zoltan, 4,347,034, Cl. 415-92.000.

Zimmerman, Robert E.: *See*—
Morrison, Robert B.; Wade, James T.; and Zimmerman, Robert E., 4,346,790, Cl. 188-47.000.

Ziv, Avraham: *See*—
Hollowell, William M.; and Ziv, Avraham, 4,346,858, Cl. 242-107.000.

Zumstein, Bruno, to BBC Brown, Boveri & Company Limited. Bypass control apparatus for turbocharged internal-combustion engines. 4,346,559, Cl. 60-606.000.

Zurawski, John F., to GTE Automatic Electric Labs Inc. Pulse detector circuit. 4,347,406, Cl. 179-18.00D.

Zwintzscher, Kurt: *See*—
Hauck, Karl; Fehrenbach, Hubert; Mayer, Dieter; Wagner, Herbert; and Zwintzscher, Kurt, 4,347,091, Cl. 156-217.000.

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PATENTS WERE ISSUED ON THE 31ST DAY OF AUGUST, 1982

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Bosso, Joseph F.: *See*—
Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., Re. 31,022, Cl. 523-418.000.

Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., to PPG Industries, Inc. Michael adducts of polymeric materials useful in coating applications. Re. 31,022, Cl. 523-418.000.

Christenson, Roger M.: *See*—
Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., Re. 31,022, Cl. 523-418.000.

Evangelista, Fred J. Stringless electronic musical instrument. Re. 31,019, Cl. 84-1.160.

Eyelet Specialty Co., Inc.: *See*—
Idec, Eric J.; Klimeck, Edward F.; and Hultgren, Eric A., Re. 31,021, Cl. 401-194.000.

Funk, Charles F., to Met-L-Parts, Inc. Method of making a lined conduit section. Re. 31,020, Cl. 228-122.000.

Hultgren, Eric A.: *See*—
Idec, Eric J.; Klimeck, Edward F.; and Hultgren, Eric A., Re. 31,021, Cl. 401-194.000.

Idec, Eric J.; Klimeck, Edward F.; and Hultgren, Eric A., to Eyelet Specialty Co., Inc. Cosmetic applicator with transparent container portion. Re. 31,021, Cl. 401-194.000.

Klimeck, Edward F.: *See*—
Idec, Eric J.; Klimeck, Edward F.; and Hultgren, Eric A., Re. 31,021, Cl. 401-194.000.

Met-L-Parts, Inc.: *See*—
Funk, Charles F., Re. 31,020, Cl. 228-122.000.

PPG Industries, Inc.: *See*—
Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., Re. 31,022, Cl. 523-418.000.

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Airwick Industries, Inc.: *See*—
Gombert, Jean-Marie, 265,973, Cl. D9-366.000.
Gombert, Jean-Marie, 265,974, Cl. D9-366.000.

Akanuma, Youichiro: *See*—
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Akzona Incorporated: *See*—
Chizacky, John M., 265,981, Cl. D10-57.000.

American Cyanamid Company: *See*—
Black, Seymour, 265,972, Cl. D9-339.000.

Arfert, Horst F. W., to Reynolds Metals Company. Can carrier. 265,979, 8-31-82, Cl. D9-344.000.

Ariga, Kazuo; and Akanuma, Youichiro, to Stanley Electric Co., Ltd. Fluorescent lamp. 266,026, 8-31-82, Cl. D26-3.000.

Astor, Barbara; and Snyder, Terry E., to Revlon, Inc. Display holder. 265,976, 8-31-82, Cl. D9-415.000.

Aulenti, Gae, to Knoll International, Inc. Chair. 265,954, 8-31-82, Cl. D6-73.000.

Baruffa, Olindo, to Mefina S.A. Sprinkler for an ironing press. 265,999, 8-31-82, Cl. D32-25.000.

Beitler, Myron; and Johnston, John N., to Litton Business Systems, Inc. Calculator keyboard module. 266,005, 8-31-82, Cl. D18-7.000.

Bergin, Paul. Hatch for a power supply cord. 265,968, 8-31-82, Cl. D8-352.000.

Black & Decker, Inc.: *See*—
House, Lawrence E., II, 265,985, Cl. D13-4.000.

Black, Seymour, to American Cyanamid Company. Dispenser for surgical sutures. 265,972, 8-31-82, Cl. D9-339.000.

Blum, Alan E.; and Gambon, Thomas F., to Charleswood Furniture Corp. Corner connector for furniture panels. 265,959, 8-31-82, Cl. D6-191.000.

Boyd, Raymond. Illuminated mirror case. 266,028, 8-31-82, Cl. D28-12.000.

Braun Aktiengesellschaft: *See*—
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Cardinal American Corporation: *See*—
Theodore, George, 265,952, Cl. D6-45.000.

Carney, Shirley. Desk accessory for holding rubber bands and paper clips and the like. 266,009, 8-31-82, Cl. D19-75.000.

Carruthers, Thomas R., to Fleming Fabrications Limited. Heat exchanger. 266,022, 8-31-82, Cl. D23-136.000.

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Blum, Alan E.; and Gambon, Thomas F., 265,959, Cl. D6-191.000.

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Cofer, Donald G., to Cofer and Fitzgerald. Golf game target. 266,010, 8-31-82, Cl. D21-8.000.

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Crossman, Raymond R. Propane tank safety pressure vent valve. 266,019, 8-31-82, Cl. D23-19.000.

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Davis, Edwin W.; and Weinerman, Lee S., to Eastern Company, The. Latch housing with push button. 265,965, 8-31-82, Cl. D8-302.000.

Dilyard, Richard D., to Rubbermaid Incorporated. Watering can. 266,018, 8-31-82, Cl. D23-11.000.

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Freijd, Ingvar, to Datasaab AB. Hood for preventing observation of a keyset. 265,966, 8-31-82, Cl. D8-346.000.

Fujisawa, Seizaburo, to Orion Machinery Co., Ltd. Chain for waste removal conveyor for a barn. 266,029, 8-31-82, Cl. D34-29.000.

Gambon, Thomas F.: *See*—
Blum, Alan E.; and Gambon, Thomas F., 265,959, Cl. D6-191.000.

Gombert, Jean-Marie, to Airwick Industries, Inc. Dispenser for cleaning powders. 265,973, 8-31-82, Cl. D9-366.000.

Gombert, Jean-Marie, to Airwick Industries, Inc. Dispenser for solid material. 265,974, 8-31-82, Cl. D9-366.000.

Gordon, John B. Inline fuse holder. 265,988, 8-31-82, Cl. D13-35.000.

Harris, Bobby J.; and Sayers, James P. Container for small electronic structural components. 265,989, 8-31-82, Cl. D13-41.000.

Hartwein, Peter; and Schneider, Peter, to Braun Aktiengesellschaft. Columnar loudspeaker. 265,990, 8-31-82, Cl. D14-34.000.

Henkels, Walter. Combined holder for a magnifier and a letter-opener. 265,964, 8-31-82, Cl. D8-104.000.

Hirata, Takashi; and Hirose, Kunio, to Canon Kabushiki Kaisha. Acoustic coupler. 265,992, 8-31-82, Cl. D14-57.000.

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Holland, Kathleen A., to CPG Products Corp. Electronic game housing. 266,011, 8-31-82, Cl. D21-13.000.

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Iscar Ltd.: *See*—
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Izumisawa, Osamu. Ratchet type socket wrench. 265,962, 8-31-82, Cl. D8-25.000.

Jennie, Fred L., to Fontaine Industries, Inc. Cap for telescopic sight turret. 265,978, 8-31-82, Cl. D9-453.000.

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Kaufmann, Albert, to Interdica S.A. Perfume bottle. 265,971, 8-31-82, Cl. D9-337.000.
Kawakami, Naoya, to Sawafuji Electric Co., Ltd. Electric refrigerator. 266,000, 8-31-82, Cl. D15-88.000.
Kellogg, Harlan F. Watering can. 266,017, 8-31-82, Cl. D23-11.000.
Kelsey-Hayes Co.: *See—*
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Kilham, Peter. Wood burning stove. 266,021, 8-31-82, Cl. D23-97.000.
Klawitter, Ronald R., to Steven Manufacturing Company. Toy driving simulator. 266,008, 8-31-82, Cl. D19-63.000.
Kneale, Collan B., to International Business Machines Corporation. Control unit for a distributed data system. 265,995, 8-31-82, Cl. D14-107.000.
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Lieber, Thomas G., to Spellbinder Inc. Guitar. 266,003, 8-31-82, Cl. D17-14.000.
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Stark, Ted, 265,949, Cl. D3-71.000.
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Markus, Frederick E. Shelving unit. 265,958, 8-31-82, Cl. D6-186.000.
Martin, Rosemary E. A. Rocking seat. 265,950, 8-31-82, Cl. D6-10.000.
McCarthy, Alfred F., to Aavid Engineering, Inc. Self-holding heat sink for electronic devices. 265,987, 8-31-82, Cl. D13-23.000.
McCarthy, Richard. Chair back or similar article. 265,960, 8-31-82, Cl. D6-197.000.
McLachlan, Walter A. Combined treatment table and cabinet assembly. 266,023, 8-31-82, Cl. D24-3.000.
Meelen, Hans T., to U.S. Philips Corporation. Clock radio receiver. 265,993, 8-31-82, Cl. D14-73.000.
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Mikiya, Toshio; and Mogaki, Tadahisa, to Nikki Co., Ltd. Face washer. 266,020, 8-31-82, Cl. D23-48.000.
Miller, Wayne. Hopper dump truck box. 265,982, 8-31-82, Cl. D12-15.000.
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Wearsch, Henry W.; Marino, Ronald A.; Ludvik, Joseph; and Rowe, William H., to Reliance Electric Company. Electronic enclosure cover. 265,986, 8-31-82, Cl. D13-13.000.
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25.35 4,346,505
239 4,346,506
243.52 4,346,507
402.18 4,346,508
451 4,346,509
452 4,346,510
458 4,346,511
571 4,346,512
580 4,346,513
740 4,346,514
773 4,346,515
845 4,346,516

CLASS 30

49 4,346,517
272 R 4,346,518

CLASS 33

126.4 R 4,346,519
180 R 4,346,520
269 4,346,521

CLASS 34

12 4,346,522
17 4,346,523
26 4,346,524

CLASS 36

69 4,346,525

CLASS 37

250 4,346,527
259 4,346,526
270 4,346,528

CLASS 40

588 4,346,529

CLASS 42

71 R 4,346,530

CLASS 44

51 4,347,061
68 4,347,062

CLASS 47

1.5 4,346,531
66 4,346,532

CLASS 48

197 R 4,347,063
4,347,064

CLASS 49

28 4,346,533

CLASS 51

34 A 4,346,534
101 R 4,346,535
135 R 4,346,536
413 4,346,537

CLASS 52

1 4,346,538
226 4,346,539
274 4,346,540
309.11 4,346,541
396 4,346,542
404 4,346,543
407 4,346,544

CLASS 53

234 4,346,545
412 4,346,546

CLASS 55

6 4,347,065
56 4,347,066
227 4,347,067
319 4,347,068

CLASS 56

13.6 4,346,547
119 4,346,548
370 4,346,549

CLASS 57

10 4,346,550
62 4,346,551
208 4,346,552
210 4,346,553

CLASS 59

93 4,346,554

CLASS 60

272 4,346,556
290 4,346,555
311 4,346,557
527 4,346,558
606 4,346,559
641.3 4,346,560
673 4,346,561

CLASS 62

3 4,346,562
117 4,346,563
140 4,346,564
151 4,346,565
159 4,346,566
160 4,346,567
259.1 4,346,568
260 4,346,569

CLASS 65

3.12 4,347,069
9 4,347,070
10.2 4,347,071
27 4,347,072
28 4,347,073
32 4,347,074

CLASS 66

55 4,346,571
93 4,346,572

CLASS 70

264 4,346,573
313 4,346,574

CLASS 71

94 4,347,075

CLASS 72

16 4,346,575
49 4,346,576
129 4,346,577
271 4,346,578
314 4,346,579
344 4,346,580
347 4,346,581
379 4,346,582

CLASS 73

19 4,346,583
23 4,346,584
4,346,585
35 4,346,586
61.2 4,346,587
105 4,346,588
118 4,346,589
151 4,346,590
4,346,591
152 4,346,592
4,346,593
155 4,346,594
178 R 4,346,595
200 4,346,596
510 4,346,597
536 4,346,598
597 4,346,599
768 4,346,600
829 4,346,601
842 4,346,602
861.05 4,346,603
861.12 4,346,604
861.13 4,346,605
861.41 4,346,606
861.75 4,346,607
863.21 4,346,608
863.33 4,346,609
863.73 4,346,610
863.86 4,346,611
864.44 4,346,612
864.51 4,346,613

CLASS 74

5.12 4,346,614
7 A 4,346,615
481 4,346,617
491 4,346,618
551.1 4,346,619
583 4,346,620
665 G 4,346,621
688 4,346,622
764 4,346,623
784 4,346,624
859 4,346,625
866 4,346,626
869 4,346,627

CLASS 75

0.5 B 4,347,077
0.5 R 4,347,076
51 4,347,078
52 4,347,079
124 4,347,080
157.5 4,347,081
171 4,347,082
204 4,347,083
245 4,347,084

CLASS 76

109 4,346,628

CLASS 81

57.13 4,346,630
57.2 4,346,629
57.34 4,346,631
174 4,346,632
475 4,346,633

CLASS 83

431 4,346,634
479 4,346,635
767 4,346,636

CLASS 84

1.16 Re.31,019
418 4,346,637
422 R 4,346,638
437 4,346,639
464 R 4,346,640
487 4,346,641

CLASS 89

1.5 B 4,346,642
14.1 4,346,643
37 B 4,346,644

CLASS 91

501 4,346,645

CLASS 92

220 4,346,646
243 4,346,647

CLASS 98

2.12 4,346,648

CLASS 99

337 4,346,649
361 4,346,650
392 4,346,651
483 4,346,652

CLASS 100

37 4,346,653
268 4,346,654

CLASS 101

153 4,346,655
181 4,346,656
269 4,346,657

CLASS 102

254 4,346,658

CLASS 104

247 4,346,659

CLASS 110

235 4,346,660
259 4,346,661

CLASS 114

20 R 4,346,662
295 4,346,663
349 4,346,664

CLASS 116

28 R 4,346,665
63 R 4,346,666

CLASS 118

622 4,346,667
665 4,346,668
733 4,346,669

CLASS 119

28 4,346,670
60 4,346,671
72.5 4,346,672

CLASS 122

31 R 4,346,673
390 4,346,674

CLASS 123

25 P 4,346,675
41.74 4,346,676
54 B 4,346,677
90.44 4,346,678
145 A 4,346,679
146.5 A 4,346,680
179 G 4,346,682
179 L 4,346,681
180 R 4,346,683
188 S 4,346,684
193 P 4,346,685
339 4,346,686
454 4,346,687
502 4,346,688
575 4,346,689
599 4,346,690

CLASS 125

12 4,346,691

CLASS 126

299 D 4,346,692
434 4,346,693
443 4,346,694
444 4,346,695
450 4,346,696

CLASS 128

1 D 4,346,698
1 R 4,346,697
82 4,346,699
155 4,346,700
200.14 4,346,701
207.14 4,346,702
213 A 4,346,703
214 F 4,346,705
4,346,707
214 R 4,346,704
4,346,706
236 4,346,708
260 4,346,709
272 4,346,710
276 4,346,711
325 4,346,712
330 4,346,713
343 4,346,714
422 4,346,715
653 4,346,716
660 4,346,717
710 4,346,718

CLASS 131

236 4,346,719

CLASS 132

73 4,346,720
85 4,346,721

CLASS 134

62 4,346,722
104 4,346,723
122 R 4,346,724

CLASS 135

7 4,346,725

CLASS 137

15 4,346,726
117 4,346,727
243.6 4,346,728
353 4,346,729
375 4,346,730
433 4,346,731
489 4,346,732
493 4,346,733
506 4,346,734
606 4,346,735
625.48 4,346,736

CLASS 138

42 4,346,737
118.1 4,346,738
143 4,346,739
149 4,346,740

CLASS 139

387 R 4,346,741

CLASS 141

1 4,346,742
3 4,346,743

CLASS 144

176 4,346,744
4,346,745

CLASS 145

115 4,346,746

CLASS 148

6.16 4,347,085
101 4,347,086

CLASS 149

98 4,347,087

CLASS 152

158 4,346,747
222 4,346,748

CLASS 156

69 4,347,088
89 4,347,089
149 4,347,090
217 4,347,091
227 4,347,092
242 4,347,093
387 4,347,094
578 4,347,095
583.3 4,347,096
622 4,347,097

CLASS 159

16 S 4,347,098

CLASS 160

301 4,346,749

CLASS 162

5 4,347,099
10 4,347,100
25 4,347,101
35 4,347,102
79 4,347,103
103 4,347,104

CLASS 164

35 4,346,750
368 4,346,751

CLASS 165

1 4,346,752
9.1 4,346,753
17 4,346,755
48 R 4,346,756
51 4,346,757
134 R 4,346,758
163 4,346,759
166 4,346,760

CLASS 166

206 4,346,761

CLASS 168

4 4,346,762

CLASS 172

2 4,346,763
42 4,346,764

CLASS 173

12 4,346,765
23 4,346,766
109 4,346,767
118 4,346,768
4,346,769

CLASS 174

14 R 4,347,401
91 4,347,402

CLASS 175

297 4,346,770

CLASS 177

145 4,346,771

CLASS 179

1 G 4,347,405
1 GB 4,347,404
1 SA 4,347,403
18 D 4,347,406
81 R 4,347,407
84 VF 4,347,408
99 P 4,347,409
175.1 A 4,347,410

CLASS 180

11 4,346,772
165 4,346,773
167 4,346,774
175 4,346,775
179 4,346,776
220 4,346,777
268 4,346,778

CLASS 181

120 4,346,779
198 4,346,780
206 4,346,781
207 4,346,782
230 4,346,783

CLASS 182

4,346,784

CLASS 184

3 A 4,346,785
6.2 4,346,786

CLASS 185

37 4,346,787

CLASS 187

29 R 4,346,788
4,346,789

CLASS 188

47 4,346,790

71.5 4,346,791
73.32 4,346,792
134 4,346,793
322.14 4,346,794
375 4,346,795

CLASS 192

18 A 4,346,796
58 B 4,346,797
84 C 4,346,616

CLASS 194

1 K 4,346,798

CLASS 198

367 4,346,799
412 4,346,800
500 4,346,801
533 4,346,802
813 4,346,803

CLASS 200

1 B 4,347,411
42 T 4,347,412
67 G 4,347,417
144 B 4,347,413
144 R 4,347,414
154 4,347,415
317 4,347,416

CLASS 202

141 4,347,106
263 4,347,105

CLASS 204

5.9 R 4,347,109
44 4,347,107
52 R 4,347,108
149 4,347,110
159.16 4,347,111
192 M 4,347,112
195 S 4,347,113
4,347,114
206 4,347,115

CLASS 206

338 4,346,804
506 4,346,805

CLASS 208

8 LE 4,347,116
4,347,117
11 LE 4,347,118
11 R 4,347,119
50 4,347,120
58 4,347,121
113 4,347,122
136 4,347,123

CLASS 209

1 4,347,124
3.3 4,347,125
164 4,347,126
4,347,127
170 4,347,128
199 4,347,129
452 4,347,130

CLASS 210

101 4,347,131
104 4,347,132
138 4,347,133
147 4,347,134
208 4,347,135
253 4,347,136
329 4,347,137
639 4,347,138
654 4,347,139
710 4,347,140
721 4,347,141
756 4,347,142
758 4,347,143
761 4,347,144

CLASS 211

49 S 4,346,806
60 R 4,346,807

CLASS 212

212 4,346,808

CLASS 215

214 4,346,809
237 4,346,810
252 4,346,811
352 4,346,812

CLASS 219

10.55 A 4,347,419
10.55 B 4,347,418
10.55 D 4,347,420
60 A 4,347,421
69 C 4,347,424
4,347,425
69 M 4,347,422
69 W 4,347,423
125.1 4,347,426
137.8 4,347,427
251 4,347,428
288 4,347,429
295 4,347,430
390 4,347,431
449 4,347,432
535 4,347,433

CLASS 220

22 4,346,813
75 4,346,814
306 4,346,815
4,346,816

CLASS 221

312 R 4,346,817

CLASS 222

41 4,346,819
58 4,346,818
83 4,346,820
153 4,346,821
195 4,346,822
443 4,346,823
504 4,346,824

CLASS 223

66 4,346,825
70 4,346,826

CLASS 224

206 4,346,827

CLASS 225

2 4,346,828
48 4,346,829
49 4,346,830

CLASS 227

8 4,346,831

CLASS 228

122 Re.31,020

CLASS 229

4.5 4,346,832
43 4,346,833
54 R 4,346,834

CLASS 235

92 SH 4,347,434
94 R 4,347,435

CLASS 236

24 4,346,835
26 A 4,346,836
34.5 4,346,837
46 R 4,346,838

CLASS 237

12.3 R 4,346,839

CLASS 239

6 4,346,840
125 4,346,841
183 4,346,842
199 4,346,843
383 4,346,844
418 4,346,845
533.3 4,346,846
585 4,346,847
596 4,346,848
597 4,346,849

CLASS 241

36 4,346,850
159 4,346,851

CLASS 242

56.2 4,346,852
58.1 4,346,853
67.1 R 4,346,854
67.2 4,346,855
74 4,346,856
84.3 4,346,857
107 4,346,858
201 4,346,859

CLASS 244

53 B 4,346,860
54 4,346,861
137 R 4,346,862

CLASS 248

75 4,346,863
231 4,346,864
311.2 4,346,865
316 B 4,346,866
424 4,346,867
475 R 4,346,868

CLASS 250

211 R 4,347,436
4,347,437
221 4,347,438
222 R 4,347,439
560 4,347,441

CLASS 251

10 4,346,869
356 4,346,870

CLASS 252

8.55 D 4,347,146
8.6 4,347,145
33.3 4,347,147
51.5 R 4,347,148
102 4,347,149
135 4,347,150
163 4,347,151
174 4,347,152
174.25 4,347,153
305 4,347,154
378 P 4,347,155
420 4,347,156
429 B 4,347,157
4,347,158
4,347,159
4,347,160
4,347,161
4,347,162
435 4,347,163
455 Z 4,347,164
513 4,347,165
519 4,347,166
520 4,347,167
547 4,347,168
567 4,347,169

CLASS 256

10 4,346,871
65 4,346,872

CLASS 260

112 B 4,347,176
4,347,177
4,347,178
4,347,179
206 4,347,180
245.2 R 4,347,182
4,347,183
245.2 T 4,347,181
314 4,347,184
326.25 4,347,185
439 R 4,347,193
929 4,347,194

CLASS 261

18 R 4,347,195
39 B 4,347,196
106 4,347,197

CLASS 264

2.3 4,347,198
8 4,347,199
9 4,347,200
24 4,347,201
4,347,202
41 4,347,203
127 4,347,204
130 4,347,205
176 F 4,347,206
4,347,207
229 4,347,208
250 4,347,209
294 4,347,210
297 4,347,211
315 4,347,212
510 4,347,213

CLASS 266

71 4,346,873

CLASS 269

21 4,346,874
302.1 4,346,875

CLASS 271

11 4,346,876
19 4,346,877
118 4,346,878
121 4,346,879
186 4,346,880
208 4,346,881
221 4,346,882
274 4,346,883

CLASS 272

1 A 4,346,885
72 4,346,886
117 4,346,887
118 4,346,888

CLASS 273

1 GA 4,346,889
1 GH 4,346,884
73 C 4,346,891
73 J 4,346,890
85 F 4,346,893
85 G 4,346,892
86 B 4,346,894
150 4,346,895
195 A 4,346,896
232 4,346,898
244 4,346,899
271 4,346,897
274 4,346,900
408 4,346,901
411 4,346,902

CLASS 277

58 4,346,903
236 4,346,904

CLASS 280

5 C 4,346,905
33.99 H 4,346,906
47.18 4,346,907
87.02 R 4,346,908
411 C 4,346,909
432 4,346,910
478 R 4,346,911
644 4,346,912
735 4,346,913
4,346,914
779 4,346,915

CLASS 282

11.5 A 4,346,916

CLASS 283

58 4,346,917

CLASS 285

22 4,346,918
25 4,346,919
89 4,346,920
109 4,346,922
110 4,346,921
340 4,346,923

CLASS 290

48 4,347,442

CLASS 292

129 4,346,924
336.3 4,346,925
338 4,346,926

CLASS 294

7 4,346,927
51 4,346,928

CLASS 296

36 4,346,929
107 4,346,930
148 4,346,931
216 4,346,932

CLASS 297

89 4,346,933

CLASS 299

2 4,346,935
4 4,346,936
8 4,346,937
43 4,346,938
45 4,346,939
92 4,346,934

CLASS 301

37 AT 4,346,940

CLASS 303

6 C 4,346,941
92 4,346,942
119 4,346,943
4,346,944

CLASS 307

117 4,347,443
141 4,347,444
255 4,347,445
443 4,347,446
548 4,347,447
583 4,347,448

CLASS 308

6 R 4,346,945
9 4,346,946
4,346,947
219 4,346,948
236 4,346,949

CLASS 310

42 4,347,449
50 4,347,450
59 4,347,451
76 4,347,452
104 4,347,453
193 4,347,454
239 4,347,455
248 4,347,456
256 4,347,457

CLASS 312

138 R 4,346,950

CLASS 313

103 R 4,347,458
383 4,347,459

CLASS 315

63 4,347,460
158 4,347,461
290 4,347,462

CLASS 316

19 4,346,951

CLASS 318

135 4,347,463
254 4,347,464
266 4,347,465
301 4,347,466
317 4,347,467
331 4,347,468
533 4,347,469
602 4,347,470
616 4,347,471

CLASS 320

2 4,347,472
15 4,347,473

CLASS 323

224 4,347,474
303 4,347,475
313 4,347,476

CLASS 324

54 4,347,477
61 R 4,347,478
64 4,347,479

CLASS 328

55 4,347,480

CLASS 330

251 4,347,481
298 4,347,482

CLASS 331

12 4,347,483
25 4,347,484

CLASS 333

1 4,347,487

CLASS 335

9 4,347,488

CLASS 336

10 4,347,489
60 4,347,490
135 4,347,491
136 4,347,492
192 4,347,493

CLASS 337

66 4,347,494

CLASS 338

34 4,347,495

CLASS 339

17 CF 4,346,952
28 4,346,953
89 M 4,346,954
97 R 4,346,955
119 R 4,346,956
4,346,957
177 R 4,346,958
217 S 4,346,959

CLASS 340

52 R 4,347,496
73 4,347,497
371 4,347,499
388 4,347,500
539 4,347,501
545 4,347,502
604 4,347,503
638 4,347,504
666 4,347,505
679 4,347,506
705 4,347,507
4,347,508
778 4,347,509
825.02 4,347,498
825.5 4,347,510

CLASS 343

5 PC 4,347,511
6.5 R 4,347,512
18 E 4,347,513
100 CS 4,347,514
100 ME 4,347,515
700 MS 4,347,516
4,347,517

CLASS 346

1.1 4,347,518
75 4,347,519
4,347,520
4,347,521
4,347,522
108 4,347,523
140 R 4,347,524
153.1 4,347,525

CLASS 350

76 4,346,960
96.16 4,346,961
128 4,346,962
344 4,346,963
357 4,346,964
358 4,346,965
412 4,346,966
430 4,346,967

CLASS 351

23 4,346,968

CLASS 354

7 4,346,969
25 4,346,970
34 4,346,971
152 4,346,973
154 4,346,974
195 4,346,972
4,346,975
196 4,346,976
246 4,346,977
289 4,346,978
307 4,346,979
322 4,346,980
324 4,346,981

CLASS 355

3 R 4,346,982
4,346,983
8 4,346,984
14 CH 4,346,986
14 D 4,346,985
40 4,346,987

CLASS 356

1 4,346,988
5 4,346,989
28.5 4,346,990
4,346,991
73 4,346,992
138 4,346,993
152 4,346,994
243 4,346,996
244 4,346,997
251 4,346,995
307 4,346,998
349 4,346,999
360 4,347,000
398 4,347,001

CLASS 357

30 4,347,526

CLASS 358

4 4,347,527
10 4,347,528
44 4,347,529
113 4,347,530
172 4,347,531
183 4,347,532
296 4,347,533

CLASS 360

77 4,347,534
99 4,347,535
107 4,347,536
132 4,347,537
137 4,347,538

CLASS 361

16 4,347,539
47 4,347,540
50 4,347,541
76 4,347,542
91 4,347,543
154 4,347,544
172 4,347,545
179 4,347,546
187 4,347,547
210 4,347,548
212 4,347,549
286 4,347,550
307 4,347,551
398 4,347,552

CLASS 362

189 4,347,553
297 4,347,554
299 4,347,555
307 4,347,556
427 4,347,557

CLASS 363

17 4,347,558
21 4,347,559
24 4,347,560
45 4,347,561
87 4,347,562

CLASS 364

132 4,347,564
137 4,347,563
200 4,347,565
4,347,566
4,347,567
300 4,347,568
426 4,347,569
431.04 4,347,570
431.08 4,347,571

433 4,347,572
453 4,347,573
463 4,347,574
492 4,347,575
493 4,347,576
501 4,347,577
513 4,347,578
709 4,347,579
824 4,347,580
900 4,347,581
4,347,582

CLASS 365

87 4,347,583
104 4,347,584
105 4,347,585
174 4,347,586
189 4,347,587
206 4,347,588
222 4,347,589

CLASS 366

6 4,347,002
75 4,347,003
137 4,347,004

CLASS 367

93 4,347,590
104 4,347,591
137 4,347,592
159 4,347,593

CLASS 368

21 4,347,594

CLASS 369

67 4,347,595
72 4,347,596
231 4,347,597
254 4,347,598
270 4,347,599

CLASS 370

13 4,347,600
58 4,347,601
85 4,347,602
4,347,603
4,347,604
88 4,347,605
105 4,347,606
110.1 4,347,607

CLASS 371

16 4,347,608
34 4,347,609

CLASS 372

29 4,347,610
42 4,347,485
45 4,347,611
46 4,347,486
50 4,347,612
56 4,347,613

CLASS 373

77 4,347,400
4,347,614

CLASS 374

46 4,346,754

CLASS 378

14 4,347,615
20 4,347,616
22 4,347,617
37 4,347,618
4,347,619
112 4,347,620

CLASS 376

139 4,347,621
245 4,347,622
251 4,347,214
392 4,347,623

CLASS 378

10 4,347,624
156 4,347,440

CLASS 400

144.2 4,347,005
187 4,347,006
208 4,347,007
4,347,008
611 4,347,009

CLASS 401

10 4,347,010
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33 : 265,987
34 : 265,948

265,949
265,981
266,005
266,025
36 : 265,953
265,976
265,977
266,003
266,007

37 : 265,946
265,960
265,970
39 : 265,952
265,965
265,986
266,014
266,018
41 : 265,983

42 : 265,956
265,957
266,028
44 : 266,021
48 : 266,009
266,015
50 : 265,951
51 : 265,979
55 : 266,016

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06 : 4,882
4,883

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